



Veterans Administration Medical Center
Baltimore, Maryland

**Improve SPD/N&FS Kitchen Efficiency
VA Project No. 512-14-113**

Specifications – Volume 1
Divisions 1 – 20

100% Construction Documents Submission
June 8, 2016

VAMC Baltimore
10 North Greene Street
Baltimore, MD 21201

Contracting Officer's Representative: William Runser

OKKS STUDIOS, Inc., a subsidiary of Delta Engineers, Architects, & Land Surveyors, PC - Architect
Henry Adams, LLC - Mechanical, Electrical and Plumbing Engineer
Woods Peacock Engineering Consultants, Inc. – Structural Engineer
GHD – Fire Protection Engineer
Tricon – Food Service Consultant

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**DEPARTMENT OF VETERANS AFFAIRS
VHA MASTER SPECIFICATIONS**

**TABLE OF CONTENTS
Section 00 01 10**

REFER TO VOLUME 2 FOR DIVISIONS 21 - 48

DIVISION 00 - SPECIAL SECTIONS

00 01 10.1	Table of Contents - Volume 1
00 01 15	List of Drawing Sheets

DIVISION 01 - GENERAL REQUIREMENTS

01 00 00	General Requirements
01 32 16.15	Project Schedules (Small Projects - Design/Build)
01 33 23	Shop Drawings, Product Data, and Samples
01 35 26	Safety Requirements
01 42 19	Reference Standards
01 57 19	Temporary Environmental Controls
01 58 16	Temporary Interior Signage
01 74 19	Construction Waste Management
01 81 11	Sustainable Design Requirements

DIVISION 02 - EXISTING CONDITIONS

02 41 00	Demolition
02 42 00	Cutting and Patching

DIVISION 03 - CONCRETE

03 30 53	(Short-Form) Cast-in-Place Concrete
----------	-------------------------------------

DIVISION 04 - MASONRY - NOT USED

DIVISION 05 - METALS

05 50 00	Metal Fabrications
----------	--------------------

DIVISION 06 - WOOD, PLASTICS AND COMPOSITES

06 10 00	Rough Carpentry
06 20 00	Finish Carpentry

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 21 13	Thermal Insulation
07 81 00	Applied Fireproofing
07 84 00	Firestopping
07 92 00	Joint Sealants

DIVISION 08 - OPENINGS

08 11 13	Hollow Metal Doors and Frames
08 14 00	Interior Wood Doors
08 71 00	Door Hardware
08 71 13	Automatic Door Operators
08 71 13.11	Low Energy Power Assist Door Operators
08 80 00	Glazing

DIVISION 09 - FINISHES

09 05 16	Subsurface Preparation for Floor Finishes
09 06 00	Schedule of Finishes
09 22 16	Non-Structural Metal Framing
09 29 00	Gypsum Board
09 30 13	Ceramic/Porcelain Tiling
09 51 00	Acoustical Ceilings
09 65 13	Resilient Base and Accessories
09 65 16	Resilient Sheet Flooring
09 65 19	Resilient Tile Flooring
09 67 23.40	Resinous Poured in Place Resilient Flooring (RES 1)
09 68 00	Carpeting
09 91 00	Painting
09 96 59	High-Build Glazed Coatings

DIVISION 10 - SPECIALTIES

10 21 13	Toilet Compartments
10 26 00	Wall and Door Protection
10 28 00	Toilet, Bath, and Locker Room Accessories

DIVISION 11 - EQUIPMENT

11 40 00	Foodservice Equipment
11 70 00	Miscellaneous Medical Equipment

DIVISION 12 - FURNISHINGS - NOT USED

DIVISION 13 - SPECIAL CONSTRUCTION - NOT USED

DIVISION 14- CONVEYING EQUIPEMENT - NOT USED

REFER TO VOLUME 2 FOR DIVISIONS 21 - 48

SECTION 00 01 15
LIST OF DRAWING SHEETS

The drawings listed below accompanying this specification form a part of the contract.

GENERAL

G001	Cover Sheet
G002	Building & General Information
G003	Basement Life Safety Plan
G004	Accessibility Guidelines Sheet

STRUCTURAL

S001	Structural Notes
S002	Special Inspection Notes
S003	Special Inspection Notes
S100	Basement Level - Plans - D Quad
S400	Partial Plan - Cart Washer Pit
S500	Sections and Details

ARCHITECTURAL

AG101	Basement Level - SPS / MSD Phase 1 Plans
AG102	Basement Level - SPS / MSD Phase 2A Plans
AG103	Basement Level - N&FS Phase 2B Plans
AG104	Basement Level - SPS / MSD Phase 3 Plans
AD100	Basement Level - Demolition Overall Plan
AD101	Basement Level - Demolition Plan SPS / MSD - Phase 1
AD102	Basement Level - Demolition Plan SPS / MSD - Phase 2A
AD103	Basement Level - Demolition Plan N&FS - Phase 2B
AD104	Basement Level - Demolition Plan SPS / MSD - Phase 3
A100	Basement Level - New Work Overall Plan
A101	Basement Level - New Work Plan SPS / MSD - Phase 1
A102	Basement Level - New Work Plan SPS / MSD - Phase 2A
A103	Basement Level - New Work Plan N&FS - Phase 2B
A104	Basement Level - New Work Plan SPS / MSD - Phase 3

A110	Basement Level - Enlarged Plans
A111	Basement Level - Enlarged Plans
A201	Basement Level - Reflected Ceiling Plan SPS / MSD
A202	Basement Level - Reflected Ceiling Plan N&FS
A301	Basement Level - Equipment Plan SPS / MSD
A302	Basement Level - Equipment Plan N&FS
A303	Basement Level - Equipment List SPS / MSD N&FS
A400	Interior Elevations
A401	Interior Elevations
A402	Interior Elevations
A500	Casework & General Details
A600	Door & Frame Types, Schedule, Details & Partition Types
A601	Metal Wall Panel Details
AI101	Basement Level - Finish Plan SPS / MSD
AI102	Basement Level - Finish Plan N&FS

FOODSERVICE

K101	Dietary Recommended Equipment Layout
K102	Dietary Recommended Equipment Utility Rough-Ins

FIRE PROTECTION

FA001	Reference Sheet Fire Alarm
FK101	Basement Level - Demolition Plan SPS / MSD - Phase 1
FK102	Basement Level - Demolition Plan SPS / MSD - Phase 2A
FK103	Basement Level - Demolition Plan N&FS - Phase 2B
FK104	Basement Level - Demolition Plan SPS / MSD - Phase 3
FA101	Basement Level - New Work Plan SPS / MSD - Phase 1
FA102	Basement Level - New Work Plan SPS / MSD - Phase 2A
FA103	Basement Level - New Work Plan N&FS - Phase 2B
FA104	Basement Level - New Work Plan SPS / MSD - Phase 3
FA501	Details Fire Alarm
FX001	Reference Sheet Sprinkler
FJ101	Basement Level - Demolition Plan SPS / MSD - Phase 1
FJ102	Basement Level - Demolition Plan SPS / MSD - Phase 2A
FJ103	Basement Level - Demolition Plan N&FS - Phase 2B

FJ104	Basement Level - Demolition Plan SPS / MSD - Phase 3
FX101	Basement Level - New Work Plan SPS / MSD - Phase 1
FX102	Basement Level - New Work Plan SPS / MSD - Phase 2A
FX103	Basement Level - New Work Plan N&FS - Phase 2B
FX104	Basement Level - New Work Plan SPS / MSD - Phase 3
FX501	Details Sprinkler

MECHANICAL

M001	Mechanical Cover Sheet
MD101	Interstitial - Demolition Plan SPS / MSD - Phase 1
MD102	Interstitial - Demolition Plan SPS / MSD - Phase 2A
MD103	Basement - Demolition Plan N&FS - Phase 2B
MD104	Interstitial - Demolition Plan SPS / MSD - Phase 3
MD201	Sub-Basement - Demolition Steam Piping Plan SPS / MSD
MD202	Basement - Demolition Piping Plan SPS / MSD - Phase 2A
MD203	Basement - Demolition Piping Plan N&FS - Phase 2B
MD204	Basement - Demolition Piping Plan SPS / MSD - Phase 3
M101	Interstitial - New Work Plan SPS / MSD - Phase 1
M102	Interstitial - New Work Plan SPS / MSD - Phase 2A
M103	Basement - New Work Plan N&FS - Phase 2B
M104	Interstitial - New Work Plan SPS / MSD - Phase 3
M105	Basement - New Work Plan SPS / MSD - Phase 2A
M106	Basement - New Work Plan SPS / MSD - Phase 3
M107	Interstitial - Temporary Ductwork Plan
M201	Sub-Basement - New Work Steam Piping Plan SPS / MSD
M202	Basement - New Work Piping Plan SPS / MSD - Phase 2A
M203	Basement - New Work Piping Plan N&FS - Phase 2B
M204	Basement - New Work Piping Plan SPS / MSD - Phase 3
M301	Basement - Space Pressurization Diagram
M401	Room 1A113 Mechanical Part Plans - Ductwork
M402	Room BD116 Mechanical Part Plans - Ductwork
M403	Penthouse Mechanical Part Plans - Ductwork
M404	Room 1A113 Mechanical Part Plans - Piping
M405	Room BD116 Mechanical Part Plans - Piping
M501	Mechanical Details
M502	Mechanical Details
M503	Mechanical Details
M601	Air Riser Diagram

M701	Automatic Temperature Controls
M702	Automatic Temperature Controls
M703	Automatic Temperature Controls
M704	Automatic Temperature Controls
M801	Mechanical Schedules

PLUMBING

P001	Plumbing Cover Sheet
PD101	Basement - Demolition Plumbing Plan SPS / MSD - Phase 1
PD102	Basement - Demolition Plumbing Plan SPS / MSD - Phase 2A
PD103	Basement - Demolition Plumbing Plan N&FS - Phase 2B
PD104	Basement - Demolition Plumbing Plan SPS / MSD - Phase 3
P101	Basement - New Work Plumbing Plan SPS / MSD - Phase 2A
P102	Basement - New Work Plumbing Plan N&FS - Phase 2B
P103	Basement - New Work Plumbing Plan SPS / MSD - Phase 3
P401	Basement - New Work Plumbing Part Plan SPS / MSD - Phase 3
P402	Basement - New Work Plumbing Part Plan SPS / MSD - Phase 3
P501	Plumbing Details
P502	Plumbing Details
P503	Plumbing Details
P601	Plumbing Risers
P801	Plumbing Schedules

ELECTRICAL

E001	Electrical Cover Sheet
ED101	Basement - Demolition Lighting Plan - SPS&MSD - Phase 2A
ED102	Basement - Demolition Lighting Plan - N&FS - Phase 2B
ED103	Basement - Demolition Lighting Plan - SPS&MSD - Phase 3
ED201	Basement - Demolition Power & Comm Plan - SPS&MSD - Phase 1
ED202	Basement - Demolition Power & Comm Plan - SPS&MSD - Phase 2A
ED203	Basement - Demolition Power & Comm Plan - N&FS - Phase 2B
ED204	Basement - Demolition Power & Comm Plan - SPS&MSD - Phase 3
ED301	7th Floor Quad B - Demolition Lighting Plan
ED302	7th Floor Quad A - Demolition Lighting Plan

E101	Basement - New Work Lighting Plan - SPS&MSD - Phase 2A
E102	Basement - New Work Lighting Plan - N&FS - Phase 2B
E103	Basement - New Work Lighting Plan - SPS&MSD - Phase 3
E201	Basement - New Work Power & Comm Plan - SPS&MSD - Phase 2A
E202	Basement - New Work Power & Comm Plan - N&FS - Phase 2B
E203	Basement - New Work Power & Comm Plan - SPS&MSD - Phase 3
E301	7th Floor Quad B - New Work Lighting Plan
E302	7th Floor Quad A - New Work Lighting Plan
E401	Room 1A113 Electrical Part Plans - Demolition and New Work
E402	Room BD116 Electrical Part Plans - Demolition and New Work
E403	Room 7D101 Electrical Part Plans - Demolition & New Work
E501	Electrical Schedules
E502	Electrical Schedules
E503	Electrical Schedules
E504	Electrical Schedules
E505	Electrical Schedules
E601	Electrical Details
E602	Electrical Details
E603	Electrical Details
E701	Electrical Diagrams

- - - E N D - - -

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
LIST OF DRAWING SHEETS

VAMC BALTIMORE, MD
JUNE 8, 2016
00 01 15-6

SECTION 01 00 00
GENERAL REQUIREMENTS

1.1 SAFETY REQUIREMENTS

- A. Refer to section 01 35 26, SAFETY REQUIREMENTS for safety and infection control requirements.

1.2 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 Improve Sterile Processing & Distribution / Nutrition & Food Service Kitchen Efficiency and Atrium Lights Replacement as required by drawings and specifications.
- B. Visits to the site by Bidders may be made only by appointment with the Contracting Officer.
- C. Offices of OKKS Studios, a subsidiary of Delta Engineers, Architects, & Land Surveyors, P.C., as Architect-Engineers, 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 OSHA certified "competent person" who is an employee of or a subcontractor to the General Contractor (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present.
- F. A third-party Commissioning Agent acceptable to the Contracting Officer's Representative shall be engaged by the Contractor to perform commissioning services prior to Substantial Completion.

1.3 STATEMENT OF BID ITEM(S)

- A. ITEM I, GENERAL CONSTRUCTION: Work includes, but not limited to, providing all labor, tools, equipment, materials and supervision to complete all work related to the Improve Sterile Processing & Distribution (SPD) / Nutrition & Food Service (N&FS) Kitchen Efficiency and Atrium Lights Replacement project. Work includes but is not limited to, general construction, interior demolition, alterations to

architectural, HVAC, plumbing, electrical, and fire protection. This project is intended to be performed while surrounding areas maintain occupancy and continuous operation. The work will be performed in three phases as described below. Also, this project requires work on the atrium ceiling for the replacement of ceiling lights. This work will require a contractor with significant experience in infectious control environments and general construction activities within an operating hospital environment. The atrium lighting modifications may be performed at any time while the work in the SPD and N&FS areas is being performed.

ITEM II, Electrical Work: Work includes all labor, material, equipment and supervision to perform the required electrical construction work on this project including lighting, power, data, and communications. Power, lighting, data, communications and other systems shall be provided in temporary work areas.

ITEM III, Mechanical Work: Work includes all labor, material, equipment and supervision to perform the required Mechanical construction work on this project including piping, ductwork, mechanical equipment, supply, return, exhaust, steam, plumbing, and medical gases. It also includes providing temporary heating, ventilating, air conditioning, and humidification without interruption to the construction area and all areas affected by the construction.

ITEM IV, Fire Protection: Work includes all labor, material, equipment and supervision to perform the required fire protection construction work on this project including alarms and automatic sprinklers. All required services shall be provided in temporary work areas.

ITEM V, Sterile Processing and AMMS/MSD Storage Equipment: The Government's separate contractor will disconnect, relocate, and reinstall sterile processing and related equipment as indicated on the Equipment Schedule. The existing high density storage equipment in the AMMS/MSD area will be relocated for temporary use as shown on the drawings and then removed by the Government.

- B. ALTERNATE NO. 1: Delete modifications to atrium lighting.
- C. ALTERNATE NO. 2: Delete replacement of existing kitchen ceiling and light fixtures.
- D. ALTERNATE NO. 3: Delete all work in kitchen except construction of Detergent Storage Room BA105D and separation of kitchen from Corridor CB-2 and Soiled Terminal CB-3.

1.4 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

- A. Drawings and contract documents may be obtained from the website where the solicitation is posted. Documents will be provided in electronic format (PDF). Documents may be printed and distributed at the Contractor's expense. Documents will not be provided on in AutoCAD, Microstation, Revit, or any format that can be altered by the recipient.
- B. The contractor will be responsible for making their own copies of drawings from the CD supplied for bidding purposes. They will also be responsible for making copies of specifications from the hard copy or electronic version supplied to them for bidding purposes.
- C. Contractor's Use of A/E's CAD Files After Award:
 - 1. General: At Contractor's written request, copies of A/E's CAD files may be provided to Contractor for Contractor's use in connection with this Project. Such files will be provided on a Compact Disk (CD).
 - 2. The Contractor shall pay the cost of preparing and delivering Electronic Files for the Contractor's use. Such costs shall not be the basis for a change to the Contract Sum.
 - 3. The following conditions shall govern the use of Electronic Files of architectural and engineering Instruments of Service including construction documents prepared by the Architect-Engineer and/or its consultants (the "Electronic Files").
 - a. The Contractor assumes full responsibility for the utilization of the Electronic Files furnished including but not limited to the accuracy, format, completeness and content thereof. The Electronic Files, prepared as Instruments of Service, represent the status of the documents comprising the Electronic Files as of the date of transfer to the Contractor. Subsequent changes to the original file may render the transferred copy obsolete. Additionally, data stored on electronic media can deteriorate undetected or be modified without the A/E's knowledge. Therefore the Electronic Files are provided without warranty or obligation on the part of the A/E as to accuracy of information contained in the files. It is the sole responsibility of the Contractor to identify and make all required updates, revisions and/or corrections.

- b. The Contractor agrees to indemnify, and hold the A/E and/or its principals, employees agents and consultants ("Indemnities") harmless from any and all claims, losses, damages, costs (including but not limited to reasonable attorneys' fees and professional and administrative time at regular hourly rates) arising out of or in connection with the use of the Electronic Files.
 - c. Electronic files will be provided to the Contractor as stated elsewhere in this document. Additional Electronic Files requested at any other time and for any other purpose, including use by the Construction Contractor, will be provided subject to the terms and conditions stated above at a fee payable to the A/E that represents the actual cost to the A/E for preparation of such files.
4. The Contractor shall return the CD and all copies of portions of the CD, upon Substantial Completion of the Project, to the A/E.

1.5 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 of their employees and sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

- 1. General Contractor's and sub-contractors' 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 so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
- 3. No film, digital or electronic photography of VA premises is allowed without written permission of the Contracting Officer.
- 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 Contracting Officer.

C. Key Control:

1. The General Contractor shall provide duplicate keys and lock combinations to the COR for the purpose of security inspections of every area of project including tool boxes and parked machines and take any emergency action.
2. The General Contractor shall turn over all permanent lock cylinders to the VA locksmith for permanent installation. See Section 08 71 00, DOOR HARDWARE and coordinate.

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. Certain documents, sketches, videos or photographs and drawings may be marked "Law Enforcement Sensitive" or "Sensitive Unclassified". Secure such information in separate containers and limit the access to only those who will need it for the project. Return the information to the Contracting Officer upon request.
4. These security documents shall not be removed or transmitted from the project site without the written approval of COR.
5. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
6. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".
7. All electronic information shall be stored in specified location following VA standards and procedures using an Engineering Document Management Software (EDMS).
 - a. Security, access and maintenance of all project drawings, both scanned and electronic shall be performed and tracked through the EDMS system.

- b. "Sensitive information" including drawings and other documents may be attached to e-mail provided all VA encryption procedures are followed.
- E. Motor Vehicle Restrictions
 - 1. Vehicle authorization request shall be required for any vehicle entering the site and such request shall be submitted 24 hours before the date and time of access. Access shall be restricted to picking up and dropping off materials and supplies.
 - 2. Separate permits shall be issued for General Contractor and its employees for parking in designated areas only.

1.6 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 Contracting Officer. 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. The Contractor shall, under regulations prescribed by the Contracting Officer, 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.

(FAR 52.236-10)

- C. Working space and space available for storing materials shall be as determined by the COR.
- D. Workmen are subject to rules of Medical Center applicable to their conduct.
- E. 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. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted except as permitted by COR where required by limited working space.

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.
3. Materials and equipment shall not be delivered through the Greene Street entrances, or the underground parking facility. They shall not be transported using the elevators near the main building entrance. Materials and equipment shall not be transported through the main lobby, the Emergency Department, or other entrances on the east side of the building.
4. Where access by Medical Center personnel to vacated portions of buildings is not required, storage of Contractor's materials and equipment will be permitted subject to fire and safety requirements.

F. Utilities Services: Where necessary to cut existing pipes, electrical wires, conduits, cables, etc., of utility services, or of fire protection systems or communications systems (except telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COR. All such actions shall be coordinated with the COR or Utility Company involved:

1. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.

G. Phasing: The Medical Center must maintain its operation 24 hours a day 7 days a week. Therefore, any interruption in service must be scheduled and coordinated with the COR to ensure that no lapses in operation occur. The work shall be conducted in 3 separate phases and sub-phases within each phase, with each phase or sub-phase substantially complete before beginning next phase, and allowing two weeks for government move and relocation between phases. It is the CONTRACTOR'S responsibility to develop a work plan and schedule detailing, at a minimum, the procedures to be employed, the equipment and materials to be used, the interim life safety measure to be used

during the work, and a schedule defining the duration of the work with milestone subtasks. To insure such executions, Contractor shall furnish the COR with a schedule of phasing dates on which the Contractor intends to accomplish work in each specific area of site, building or portion thereof. In addition, Contractor shall notify the COR two weeks in advance of the proposed date of starting work in each specific area of site, building or portion thereof. Arrange such phasing dates to insure accomplishment of this work in successive phases mutually agreeable to Medical Center Director, COR, Equipment Vendor, Stakeholders and Contractor, as follows:

Phase I: During Phase 1 construction, all SPS equipment will be decommissioned and placed into storage by the Government's separate contractor. Existing utilities to all the equipment shall be disconnected, removed and capped at the perimeter of the space by the Contractor. Finishes shall be restored so that the space can temporarily function as bulk storage. AMMS/MSD will move into the existing vacated SPS.

Phases IIA and IIB: These two phases include demolition and construction in both Bulk Storage and the Kitchen portions of the work. These two phases can happen simultaneously. Phase 2A includes the demolition and new work on the AMMS/MSD side of the suite, and includes the demolition and new work for the new AMMS/MSD locker rooms & Staff Lounge across the corridor, and includes the new structural slab work in preparation for the work that will be done in the SPS spaces. Phase 2B is all demolition work and new work associated with the Kitchen.

Phase III: This Phase includes the demolition and new work for all the areas associated with the SPS spaces & Sterile Storage. When the construction is completed, the new and stored equipment will be installed.

H. The Baltimore VA Medical Center will be occupied and will need to be accessible during performance of work; but immediate areas of alterations will vacated when required to tie into existing.

1. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not

- be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.
2. Immediate areas of alterations not mentioned in preceding Subparagraph 1 will be temporarily vacated while alterations are performed.
- I. When an area of the building is turned over to Contractor, Contractor shall accept entire responsibility including upkeep and maintenance therefore:
1. Contractor shall maintain a minimum temperature of 4 degrees C (40 degrees F) at all times, except as otherwise specified.
 2. Contractor shall maintain in operating condition existing fire protection and alarm equipment. In connection with fire alarm equipment, Contractor shall make arrangements for pre-inspection of site with Fire Department or Company (Department of Veterans Affairs or municipal) whichever will be required to respond to an alarm from Contractor's employee or watchman.
- J. 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, gases, sewer or air pipes, 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 COR.
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 Resident COR. 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 a detailed work plan, the Medical Center Director's prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS and 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS for additional requirements.

2. Contractor shall submit a request to interrupt any such services to COR, in writing, 48 hours in advance of proposed interruption. 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 COR.
 5. In case of a contract construction emergency, service will be interrupted on approval of COR. Such approval will be confirmed in writing as soon as practical.
 6. In case of accidental interruption of utility services, Contractor shall restore utilities immediately or provide temporary services that permit continuation of operations.
 7. Contractor shall provide contact information in case of an inadvertent or unexpected utility outage. Contact shall be monitored 24 hours a day, 7 days a week.
- K. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned shall be removed and sealed, capped or plugged at the main, branch or panel they originate from. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.
- L. 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.
 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the COR.

- M. Coordinate the work for this contract with other construction operations as directed by COR. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.7 ALTERATIONS

- A. Survey: Before any work is started, the Contractor shall make a thorough survey with the COR and a representative of VA Supply Service, of areas of buildings in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by all three, to the Contracting Officer. This report shall list by rooms and spaces:
1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas of building.
 2. Shall note any discrepancies between drawings and existing conditions at site.
 3. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and COR.
- B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of COR, to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government.
- C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and COR together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.
- D. Protection: Provide the following protective measures:
1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.

2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

1.8 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 identified by attached tags or 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 COR.
2. Any item designated to be removed that also has a VA tag shall be identified by the Contractor to the COR. The identification tag shall be removed and given to the COR prior to disposal. Only after the tag has been given to the COR and the COR confirms the status of the item shall the item be removed.
3. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.
4. Items of portable equipment and furnishings located in rooms and spaces in which work is to be done under this contract shall remain the property of the Government. When rooms and spaces are vacated by the Department of Veterans Affairs during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.

1.9 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 COR. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COR 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 (walls, ceilings, partitions, floors, mechanical and electrical 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 workers to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) 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).

1.10 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 COR's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings to the COR within 15 calendar days after each completed phase and after the acceptance of the project by the COR.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.11 USE OF ROADWAYS

- A. For hauling, use only established public roads and roads on Medical Center property.

1.12 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to written approval and compliance with the following provisions:
 - 1. The warranty period shall begin at Substantial Completion, not the date the equipment is first put into service.

2. Permission to use each unit or system must be given by COR in writing. If the equipment is not installed and maintained in accordance with the written agreement and following provisions, the COR will withdraw permission for use of the equipment.
3. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
4. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
5. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
6. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
7. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government.
- B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.
- C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.
- D. Any damage to the equipment or excessive wear due to prolonged use will be repaired replaced by the contractor at the contractor's expense.

1.13 USE OF EXISTING ELEVATORS

- A. Use of existing elevators for handling building materials and Contractor's personnel will be permitted subject to following provisions:
1. Contractor makes all arrangements with the COR for use of elevators. The COTR will ascertain that elevators are in proper condition. Contractor may use elevators 7, 8, 9, and 10 unless others are specifically permitted by the COR, during hours on days designated by the COR, and for special nonrecurring time intervals when permission is granted. Personnel for operating elevators will not be provided by the Department of Veterans Affairs.
 2. Contractor covers and provides maximum protection of following elevator components:
 - a. Entrance jambs, heads soffits and threshold plates.
 - b. Entrance columns, canopy, return panels and inside surfaces of car enclosure walls.
 - c. Finish flooring.
 3. Government will accept hoisting ropes of elevator and rope of each speed governor if they are worn under normal operation. However, if these ropes are damaged by action of foreign matter such as sand, lime, grit, stones, etc., during temporary use, they shall be removed and replaced by new hoisting ropes at the contractor's expense.
 4. If brake lining of elevators are excessively worn or damaged during temporary use, they shall be removed and replaced by new brake lining at the contractor's expense.
 5. All parts of main controller, starter, relay panel, selector, etc., worn or damaged during temporary use shall be removed and replaced with new parts at the contractor's expense, if recommended by elevator inspector after elevator is released by Contractor.
 6. Place elevator in condition equal, less normal wear, to that existing at time it was placed in service of Contractor as approved by Contracting Officer.

1.14 AVAILABILITY AND USE OF UTILITY SERVICES

- A. Except in the case of rental HVAC unit support, the Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Power, cooling, and heating for rental HVAC units shall be provided independent of the building utilities. The amount to be paid

by the Contractor for chargeable electrical services shall be the prevailing rates charged to the Government. The Contractor shall carefully conserve any utilities furnished without charge.

- B. The Contractor, at Contractor's expense and in a workmanlike manner, in compliance with code and as satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia and repair restore the infrastructure as required.
- C. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:
 - 1. Obtain heat by connecting to Medical Center heating distribution system.
- D. Electricity (for Construction and Testing): Furnish all temporary electric services.
 - 1. Obtain electricity by connecting to the Medical Center electrical distribution system at location determined by the COR. Electricity is available at no cost to the Contractor.
- E. Water (for 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 COR's discretion) of use of water from Medical Center's system.

1.15 NEW TELEPHONE EQUIPMENT

- A. The contractor shall coordinate with the work of installation of telephone equipment by others. This work shall be completed before the building is turned over to VA.

1.16 COMMISSIONING

- A. Various sections of the project specifications require equipment startup, testing, and adjusting services. The contractor shall engage a third-party Commissioning Agent and coordinate the work required by individual specification sections with the commissioning services requirements specified herein. The Commissioning Agent shall add, modify, and refine the commissioning procedures, as approved by the Department of Veterans Affairs (VA), to suit field conditions and actual manufacturer's equipment, incorporate test data and procedure results, and provide detailed scheduling for all commissioning tasks.
- B. Commissioning is a systematic process of verifying that the building systems perform interactively according to the construction documents and the VA's operational needs. The commissioning process shall encompass and coordinate the system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training. Commissioning during the construction and post-occupancy phases is intended to achieve the following specific objectives according to the contract documents:
1. Verify that the applicable equipment and systems are installed in accordance with the contract documents and according to the manufacturer's recommendations.
 2. Verify and document proper integrated performance of equipment and systems.
 3. Verify that Operations & Maintenance documentation is complete.
 4. Verify that all components requiring servicing can be accessed, serviced and removed without disturbing nearby components including ducts, piping, cabling or wiring.
 5. Verify that the VA's operating personnel are adequately trained to enable them to operate, monitor, adjust, maintain, and repair building systems in an effective and energy-efficient manner.
 6. Document the successful achievement of the commissioning objectives listed above.
- C. The commissioning process does not take away from or reduce the responsibility of the Contractor to provide a finished and fully functioning product.

- D. For this construction project, the Contractor shall engage the services of a third-party, independent, licensed or certified Commissioning Agent. The Commissioning Agent shall be acceptable to the VA.
- E. The following new or modified systems shall be commissioned as part of this project:
1. Fire sprinkler systems: Wet pipe system, dry pipe system, pre-action system, special agent systems.
 2. Domestic water distribution: Backflow preventers.
 3. Domestic hot water systems: Water heaters, circulation pumps and point of use heaters.
 4. Medical gas systems: Except medical air systems.
 5. HVAC:
 - a. Noise and vibration control
 - b. Direct digital control system
 - c. Chilled water system
 - d. Steam/heating hot water system
 - e. Air handling, ventilation and exhaust systems
 - f. Terminal unit systems
 6. Electrical:
 - a. Medium-Voltage Electrical Distribution Systems
 - b. Low-Voltage Distribution System
 - c. Lighting control system
- F. The Commissioning Agent will be responsible for the overall management of the commissioning process as well as coordinating scheduling of commissioning tasks with the VA and the Contractor. As directed by the VA, the Contractor shall incorporate Commissioning tasks, including, but not limited to, Systems Functional Performance Testing (including predecessors) with the Master Construction Schedule.

G. Within 30 days of contract award, the Contractor shall designate a specific individual as the Commissioning Manager (CxM) to manage and lead the commissioning effort on behalf of the Contractor. The Commissioning Manager shall be the single point of contact and communications for all commissioning related services by the Contractor.

H. Within 30 days of contract award, the Contractor shall ensure that each subcontractor designates specific individuals as Commissioning Representatives (CXR) to be responsible for commissioning related tasks. The Contractor shall ensure the designated Commissioning Representatives participate in the commissioning process as team members providing commissioning testing services, equipment operation, adjustments, and corrections if necessary. The Contractor shall ensure that all Commissioning Representatives shall have sufficient authority to direct their respective staff to provide the services required, and to speak on behalf of their organizations in all commissioning related contractual matters.

I. Quality Assurance

1. Instructor Qualifications: Factory authorized service representatives shall be experienced in training, operation, and maintenance procedures for installed systems, subsystems, and equipment.
2. Test Equipment Calibration: The Contractor shall comply with test equipment manufacturer's calibration procedures and intervals. Recalibrate test instruments immediately whenever instruments have been repaired following damage or dropping. Affix calibration tags to test instruments. Instruments shall have been calibrated within six months prior to use.

J. Coordination

1. Management: The Commissioning Agent will coordinate the commissioning activities with the VA and Contractor. The Commissioning Agent will submit commissioning documents and information to the VA. All commissioning team members shall work together to fulfill their contracted responsibilities and meet the objectives of the contract documents.

2. Scheduling: The Contractor shall work with the Commissioning Agent and the VA to incorporate the commissioning activities into the construction schedule. The Commissioning Agent will provide sufficient information (including, but not limited to, tasks, durations and predecessors) on commissioning activities to allow the Contractor and the VA to schedule commissioning activities. All parties shall address scheduling issues and make necessary notifications in a timely manner in order to expedite the project and the commissioning process. The Contractor shall update the Master Construction as directed by the VA.
3. Commissioning Coordinating Meetings: The Commissioning Agent will conduct periodic Commissioning Coordination Meetings of the commissioning team to review status of commissioning activities, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.
4. Pretesting Meetings: The Commissioning Agent will conduct pretest meetings of the commissioning team to review startup reports, Pre-Functional Checklist results, Systems Functional Performance Testing procedures, testing personnel and instrumentation requirements.
5. Systems Functional Performance Testing Coordination: The Contractor shall coordinate testing activities to accommodate required quality assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting. The Contractor shall coordinate the schedule times for tests, inspections, obtaining samples, and similar activities.

1.17 TESTS

- A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.
- B. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

- C. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire system which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a system which involves several components of different disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.
- D. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonable period of time during which operating and environmental conditions remain reasonably constant.
- E. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

1.18 INSTRUCTIONS

- A. Contractor shall furnish Maintenance and Operating manuals and verbal instructions when required by the various sections of the specifications and as hereinafter specified.
- B. Manuals: Maintenance and operating manuals and one compact disc (four hard copies and one electronic copy each) for each separate piece of equipment shall be delivered to the COR coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason

for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.

- C. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed training to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at the job site. At the conclusion of each training session, a video recording of the session shall be provided to the COR. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the COR and shall be considered concluded only when the COR is satisfied in regard to complete and thorough coverage. The contractor shall submit a course outline with associated material to the COR for review and approval prior to scheduling training to ensure the subject matter covers the expectations of the VA and the contractual requirements. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the COR, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

1.19 GOVERNMENT-FURNISHED PROPERTY

- A. The Government shall deliver to the Contractor, the Government-furnished property shown on the drawings.
- B. Equipment furnished by Government to be installed by Contractor will be furnished to Contractor at the Medical Center.
- C. Storage space for Government provided equipment will be provided by the Government and the Contractor shall be prepared to unload and store such equipment therein upon its receipt at the Medical Center.
- D. Notify Contracting Officer in writing, 60 days in advance, of date on which Contractor will be prepared to receive equipment furnished by

Government. Arrangements will then be made by the Government for delivery of equipment.

1. Immediately upon delivery of equipment, Contractor shall arrange for a joint inspection thereof with a representative of the Government. At such time the Contractor shall acknowledge receipt of equipment described, make notations, and immediately furnish the Government representative with a written statement as to its condition or shortages.
2. Contractor thereafter is responsible for such equipment until such time as acceptance of contract work is made by the Government.

- E. Equipment furnished by the Government may be delivered in a partially assembled (knock down) condition in accordance with existing standard commercial practices, complete with all fittings, fastenings, and appliances necessary for connections to respective services installed under contract. All fittings and appliances (i.e., couplings, ells, tees, nipples, piping, conduits, cables, and the like) necessary to make the connection between the Government furnished equipment item and the utility stub-up shall be furnished and installed by the contractor at no additional cost to the Government.
- F. Completely assemble and install the Government furnished equipment in place ready for proper operation in accordance with specifications and drawings.
- G. Furnish supervision of installation of equipment at construction site by qualified factory trained technicians regularly employed by the equipment manufacturer.

1.20 RELOCATED ITEMS

- A. Contractor shall disconnect, dismantle as necessary, remove and reinstall in new location, all existing equipment and items indicated by symbol "R" or otherwise shown to be relocated by the Contractor.
- B. Perform relocation of such equipment or items at such times and in such a manner as directed by the COR.
- C. Suitably cap existing service lines, such as steam, condensate return, water, drain, gas, air, vacuum and/or electrical, at the main whenever such lines are disconnected from equipment to be relocated. Remove abandoned lines in finished areas and cap as specified herein before under paragraph 1.6 K., "Abandoned Lines".
- D. Provide all mechanical and electrical service connections, fittings, fastenings and any other materials necessary for assembly and

installation of relocated equipment; and leave such equipment in proper operating condition.

- E. All service lines such as noted above for relocated equipment shall be in place at point of relocation ready for use before any existing equipment is disconnected. Make relocated existing equipment ready for operation or use immediately after reinstallation.

1.21 SAFETY SIGN

- A. Provide a Safety Sign where directed by COR. Sign material, construction, finishes, and wording shall be approved by the COR.
- B. Post the number of accident free days on a daily basis.

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SECTION 01 32 16.15
PROJECT SCHEDULES
(SMALL PROJECTS - DESIGN/BID/BUILD)

PART 1- GENERAL

1.1 DESCRIPTION:

- A. The Contractor shall develop a Critical Path Method (CPM) plan and schedule demonstrating fulfillment of the contract requirements (Project Schedule), and shall keep the Project Schedule up-to-date in accordance with the requirements of this section and shall utilize the plan for scheduling, coordinating and monitoring work under this contract (including all activities of subcontractors, equipment vendors and suppliers). Conventional Critical Path Method (CPM) technique shall be utilized to satisfy both time and cost applications.

1.2 CONTRACTOR'S REPRESENTATIVE:

- A. The Contractor shall designate an authorized representative responsible for the Project Schedule including preparation, review and progress reporting with and to the Contracting Officer's Representative (COR).
- B. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the requirements of this specification section.
- C. The Contractor's representative shall have the option of developing the project schedule within their organization or to engage the services of an outside consultant. If an outside scheduling consultant is utilized, Section 1.3 of this specification will apply.

1.3 CONTRACTOR'S CONSULTANT:

- A. The Contractor shall submit a qualification proposal to the COR, within 10 days of bid acceptance. The qualification proposal shall include:
1. The name and address of the proposed consultant.
 2. Information to show that the proposed consultant has the qualifications to meet the requirements specified in the preceding paragraph.
 3. A representative sample of prior construction projects, which the proposed consultant has performed complete project scheduling services. These representative samples shall be of similar size and scope.
- B. The Contracting Officer has the right to approve or disapprove the proposed consultant, and will notify the Contractor of the VA decision within seven calendar days from receipt of the qualification proposal. In case of disapproval, the Contractor shall resubmit another consultant within 10 calendar days for renewed consideration. The Contractor shall

have their scheduling consultant approved prior to submitting any schedule for approval.

1.4 COMPUTER PRODUCED SCHEDULES

- A. The contractor shall provide monthly, to the Department of Veterans Affairs (VA), all computer-produced time/cost schedules and reports generated from monthly project updates. This monthly computer service will include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of the scheduling software approved by the COR; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data; and the resulting monthly updated schedule in PDM format. These must be submitted with and substantively support the contractor's monthly payment request and the signed look ahead report. The COR shall identify the five different report formats that the contractor shall provide.
- B. The contractor shall be responsible for the correctness and timeliness of the computer-produced reports. The Contractor shall also responsible for the accurate and timely submittal of the updated project schedule and all CPM data necessary to produce the computer reports and payment request that is specified.
- C. The VA will report errors in computer-produced reports to the Contractor's representative within ten calendar days from receipt of reports. The Contractor shall reprocess the computer-produced reports and associated diskette(s), when requested by the Contracting Officer's representative, to correct errors which affect the payment and schedule for the project.

1.5 THE COMPLETE PROJECT SCHEDULE SUBMITTAL

- A. Within 30 calendar days after receipt of Notice to Proceed, the Contractor shall submit for the COR review; three color copies of the interim schedule on sheets of paper 765 x 1070 mm (30 x 42 inches) and an electronic file in the previously approved CPM schedule program. The submittal shall also include three copies of a computer-produced activity/event ID schedule showing project duration; phase completion dates; and other data, including event cost. Each activity/event on the computer-produced schedule shall contain as a minimum, but not limited to, activity/event ID, activity/event description, duration, budget amount, early start date, early finish date, late start date, late finish date and total float. Work activity/event relationships shall be restricted to finish-to-start or start-to-start without lead or lag constraints. Activity/event date constraints, not required by the contract, will not be accepted unless submitted to and approved by the

COR. The contractor shall make a separate written detailed request to the COR identifying these date constraints and secure the COR's written approval before incorporating them into the network diagram. The COR's separate approval of the Project Schedule shall not excuse the contractor of this requirement. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events, but must have zero duration. The complete working schedule shall reflect the Contractor's approach to scheduling the complete project. **The final Project Schedule in its original form shall contain no contract changes or delays which may have been incurred during the final network diagram development period and shall reflect the entire contract duration as defined in the bid documents.** These changes/delays shall be entered at the first update after the final Project Schedule has been approved. The Contractor should provide their requests for time and supporting time extension analysis for contract time as a result of contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

- B. Within 30 calendar days after receipt of the complete project interim Project Schedule and the complete final Project Schedule, the Contracting Officer or his representative, will do one or both of the following:
 - 1. Notify the Contractor concerning his actions, opinions, and objections.
 - 2. Organize a meeting with the Contractor at or near the job site for joint review, correction or adjustment of the proposed plan will be scheduled if required. Within 10 calendar days after the joint review, the Contractor shall revise and shall submit three color copies of the revised Project Schedule, three copies of the revised computer-produced activity/event ID schedule and a revised electronic file as specified by the COR. The revised submission will be reviewed by the COR and, if found to be as previously agreed upon, will be approved.
- C. The approved baseline schedule and the computer-produced schedule(s) generated there from shall constitute the approved baseline schedule until subsequently revised in accordance with the requirements of this section.
- D. The Complete Project Schedule shall contain enough work activities/events to clearly identify critical milestones and procedures during the construction of the work.

1.6 WORK ACTIVITY/EVENT COST DATA

- A. The Contractor shall cost load all work activities/events except procurement activities. The cumulative amount of all cost loaded work activities/events (including alternates) shall equal the total contract price. Prorate overhead, profit and general conditions on all work activities/events for the entire project length. The Contractor shall generate from this information cash flow curves indicating graphically the total percentage of work activity/event dollar value scheduled to be in place on early finish, late finish. These cash flow curves will be used by the COR to assist him in determining approval or disapproval of the cost loading. Negative work activity/event cost data will not be acceptable, except on VA issued contract changes.
- B. The Contractor shall cost load work activities/events for guarantee period services, test, balance and adjust various systems in accordance with the provisions in Article, FAR 52.232 - 5 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 83 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS).
- C. In accordance with FAR 52.236 - 1 (PERFORMANCE OF WORK BY THE CONTRACTOR) and VAAR 852.236 - 72 (PERFORMANCE OF WORK BY THE CONTRACTOR), the Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required by this Section, a responsibility code for all activities/events of the project for which the Contractor's forces will perform the work.
- D. The Contractor shall cost load work activities/events for all BID ITEMS including ASBESTOS ABATEMENT. The sum of each BID ITEM work shall equal the value of the bid item in the Contractors' bid.

1.7 PROJECT SCHEDULE REQUIREMENTS

- A. Show on the project schedule the sequence of work activities/events required for complete performance of all items of work. The Contractor Shall:
 - 1. Show activities/events as:
 - a. Contractor's time required for submittal of shop drawings, templates, fabrication, delivery and similar pre-construction work.
 - b. COR's and Architect-Engineer's review and approval of shop drawings, equipment schedules, samples, template, or similar items.
 - c. Interruption of VA Facilities utilities, delivery of Government furnished equipment, and rough-in drawings, project phasing and any other specification requirements.

- d. Test, balance and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions and preventive maintenance tasks.
 - e. VA inspection and acceptance activity/event with a minimum duration of five work days at the end of each phase and immediately preceding any VA move activity/event required by the contract phasing for that phase.
- 2. Show not only the activities/events for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, to another for those trades who are performing major work under this contract.
- 3. Break up the work into activities/events of a duration no longer than 2 calendar weeks each or one reporting period, except as to non-construction activities/events (i.e., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities/events for which the COR may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals will not be less than 20 work days.
- 4. Describe work activities/events clearly, so the work is readily identifiable for assessment of completion. Activities/events labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable.
- 5. The schedule shall be generally numbered in such a way to reflect either discipline, phase or location of the work.
- B. The Contractor shall submit the following supporting data in addition to the project schedule:
 - 1. The appropriate project calendar including working days and holidays.
 - 2. The planned number of shifts per day.
 - 3. The number of hours per shift.Failure of the Contractor to include this data shall delay the review of the submittal until the COR is in receipt of the missing data.
- C. To the extent that the Project Schedule or any revised Project Schedule shows anything not jointly agreed upon, it shall not be deemed to have been approved by the COR. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable completion date of each phase regardless of the COR's approval of the Project Schedule.
- D. Compact Disk Requirements and CPM Activity/Event Record Specifications:
Submit to the VA an electronic file(s) containing one file of the data

required to produce a schedule, reflecting all the activities/events of the complete project schedule being submitted.

1.8 PAYMENT TO THE CONTRACTOR:

- A. Monthly, the Contractor shall submit the AIA application and certificate for payment documents G702 & G703 reflecting updated schedule activities and cost data in accordance with the provisions of the following Article, PAYMENT AND PROGRESS REPORTING, as the basis upon which progress payments will be made pursuant to Article, FAR 52.232 - 5 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 83 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS). The Contractor shall be entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated project schedule. Monthly payment requests shall include: a listing of all agreed upon project schedule changes and associated data; and an electronic file (s) of the resulting monthly updated schedule.
- B. Approval of the Contractor's monthly Application for Payment shall be contingent, among other factors, on the submittal of a satisfactory monthly update of the project schedule.

1.9 PAYMENT AND PROGRESS REPORTING

- A. Monthly schedule update meetings will be held on dates mutually agreed to by the COR and the Contractor. Contractor and their CPM consultant (if applicable) shall attend all monthly schedule update meetings. The Contractor shall accurately update the Project Schedule and all other data required and provide this information to the COR three work days in advance of the schedule update meeting. Job progress will be reviewed to verify:
 - 1. Actual start and/or finish dates for updated/completed activities/events.
 - 2. Remaining duration for each activity/event started, or scheduled to start, but not completed.
 - 3. Logic, time and cost data for change orders, and supplemental agreements that are to be incorporated into the Project Schedule.
 - 4. Changes in activity/event sequence and/or duration which have been made, pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.
 - 5. Completion percentage for all completed and partially completed activities/events.
 - 6. Logic and duration revisions required by this section of the specifications.
 - 7. Activity/event duration and percent complete shall be updated independently.

- B. After completion of the joint review, the contractor shall generate an updated computer-produced calendar-dated schedule and supply the COR's representative with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified.
- C. After completing the monthly schedule update, the Contractor's representative or scheduling consultant shall rerun all current period contract change(s) against the prior approved monthly project schedule. The analysis shall only include original workday durations and schedule logic agreed upon by the contractor and COR for the contract change(s). When there is a disagreement on logic and/or durations, the Contractor shall use the schedule logic and/or durations provided and approved by the COR. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the VA in accordance to the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule update requirements and shall be submitted to the COR within fourteen (14) calendar days of completing the regular schedule update. **Before inserting the contract changes durations, care must be taken to ensure that only the original durations will be used for the analysis, not the reported durations after progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed record keeping for each of the manual progress payment updates.**
- D. Following approval of the CPM schedule, the VA, the General Contractor, its approved CPM Consultant, Contracting Officer or his representative, and all subcontractors needed, as determined by the COR, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippage of project schedule and to identify any necessary actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor shall conclude the meeting with a clear understanding of those work and administrative actions necessary to maintain project schedule status during the reporting period. This schedule coordination meeting will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from that schedule update. If the project is behind schedule, discussions should include ways to prevent further slippage as well as ways to improve the project schedule status, when appropriate.

1.10 RESPONSIBILITY FOR COMPLETION

- A. If it becomes apparent from the current revised monthly progress schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:
 - 1. Increase construction labor force in such quantities and crafts as necessary to eliminate the backlog of work.
 - 2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
 - 3. Reschedule the work in conformance with the specification requirements.
- B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the COR for the proposed schedule changes. If such actions are approved, the representative schedule revisions shall be incorporated by the Contractor into the Project Schedule before the next update, at no additional cost to the Government.

1.11 CHANGES TO THE SCHEDULE

- A. Within 30 calendar days after VA acceptance and approval of any updated project schedule, the Contractor shall submit a revised electronic file (s) and a list of any activity/event changes including predecessors and successors for any of the following reasons:
 - 1. Delay in completion of any activity/event or group of activities/events, which may be involved with contract changes, strikes, unusual weather, and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the CPM as the direct cause for delaying the project beyond the acceptable limits.
 - 2. Delays in submittals, or deliveries, or work stoppage are encountered which make rescheduling of the work necessary.
 - 3. The schedule does not represent the actual prosecution and progress of the project.
 - 4. When there is, or has been, a substantial revision to the activity/event costs regardless of the cause for these revisions.
- B. CPM revisions made under this paragraph which affect the previously approved computer-produced schedules for Government furnished equipment, vacating of areas by the VA Facility, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, shall be furnished in writing to the COR for approval.

- C. COR's approval for the revised project schedule and all relevant data is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer or the VA representative.
- D. The cost of revisions to the project schedule resulting from contract changes will be included in the proposal for changes in work as specified in FAR 52.243 - 4 (Changes) and VAAR 852.236 - 88 (Changes - Supplemental), and will be based on the complexity of the revision or contract change, labor hours expended in analyzing the change, and the total cost of the change.
- E. The cost of revisions to the Project Schedule not resulting from contract changes is the responsibility of the Contractor.

1.12 ADJUSTMENT OF CONTRACT COMPLETION

- A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data and supporting evidence as the COR may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity/event logic, durations (in work days) and costs is obligatory to any approvals. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved in this request. The COR's determination as to the total number of days of contract extension will be based upon the current computer-produced calendar-dated schedule for the time period in question and all other relevant information.
- B. Actual delays in activities/events which, according to the computer-produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The COR will within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the COR's decision.
- C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under FAR 52.243 - 4 (Changes) and VAAR 852.236 - 88 (Changes - Supplemental). The Contractor shall include, as a part of each change order proposal, a sketch showing all CPM logic revisions, duration (in work days) changes, and cost changes, for work in question and its relationship to other activities on the approved network diagram.

D. All delays due to non-work activities/events such as RFI's, WEATHER, STRIKES, and similar non-work activities/events shall be analyzed on a month by month basis.

- - - E N D - - -

Statement of Special Inspections

Project: *Improve SPD/N&FS Kitchen Efficiency*

Location: *Baltimore, MD*

Owner: *Department of Veterans Affairs*

Design Professional in Responsible Charge: *Woods Peacock Engineering Consultants, Inc.*

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This *Statement of Special Inspections* encompass the following disciplines:

☒ Structural ☐ Mechanical/Electrical/Plumbing
☐ Architectural ☐ Other: _____

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: _____ or ☐ per attached schedule.

Prepared by:

(type or print name)

Signature

Date

Design Professional Seal

Owner's Authorization:

Building Official's Acceptance:

Signature

Date

Signature

Date

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- | | |
|--|--|
| <input type="checkbox"/> Soils and Foundations | <input type="checkbox"/> Spray Fire Resistant Material |
| <input checked="" type="checkbox"/> Cast-in-Place Concrete | <input type="checkbox"/> Wood Construction |
| <input type="checkbox"/> Precast Concrete | <input type="checkbox"/> Exterior Insulation and Finish System |
| <input type="checkbox"/> Masonry | <input type="checkbox"/> Mechanical & Electrical Systems |
| <input checked="" type="checkbox"/> Structural Steel | <input type="checkbox"/> Architectural Systems |
| <input type="checkbox"/> Cold-Formed Steel Framing | <input type="checkbox"/> Special Cases |

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Special Inspection Coordinator		
2. Inspector		
3. Inspector		
4. Testing Agency		
5. Testing Agency		
6. Other		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.
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International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Exterior Design Institute (EDI) Certification

EDI-EIFS	EIFS Third Party Inspector
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Other

Item	Agency # (Qualif.)	Scope
1. Mix Design	ACI-CCI ICC-RCSI	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.
2. Material Certification		
3. Reinforcement Installation	ACI-CCI ICC-RCSI	Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters
4. Concrete Placement	ACI-CCI ICC-RCSI	Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.
5. Sampling and Testing of Concrete	ACI-CFTT ACI-STT	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).
6. Curing and Protection	ACI-CCI ICC-RCSI	Inspect curing, cold weather protection and hot weather protection procedures.
7. Other:		

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures <input type="checkbox"/> Fabricator Exempt	AWS/AISC- SSI ICC-SWSI	<i>Review shop fabrication and quality control procedures.</i>
2. Material Certification	AWS/AISC- SSI ICC-SWSI	<i>Review certified mill test reports and identification markings on wide-flange shapes, high-strength bolts, nuts and welding electrodes</i>
3. Welding	AWS-CWI ASNT	<i>Visually inspect all welds. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds.</i> <i>Ultrasonic testing of all full-penetration welds.</i>
4. Structural Details	PE/SE	<i>Inspect steel frame for compliance with structural drawings, including bracing, member configuration and connection details.</i>
5. Other:		

Final Report of Special Inspections

Project: *Improve SPD/N&FS Kitchen Efficiency*

Location: *Baltimore, MD*

Owner: *Department of Veterans Affairs*

Owner's Address:

Architect of Record: *OKKS Studios*

Structural Engineer of Record: *Woods Peacock Engineering Consultants, Inc.*

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector

(Type or print name)

Signature

Date

Licensed Professional Seal

Final Report of Special Inspections

Agent's Final Report

Project: *Improve SPD/N&FS Kitchen Efficiency*

Agent:

Special Inspector:

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Agent of the Special Inspector

(Type or print name)

Signature

Date _____

Licensed Professional Seal or Certification

Contractor's Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated in the Quality Assurance Plan must submit a Statement of Responsibility.

Project:

Contractor's Name:

Address:

License No.:

Description of designated building systems and components included in the Statement of Responsibility:

Contractor's Acknowledgment of Special Requirements

I hereby acknowledge that I have received, read, and understand the Quality Assurance Plan and Special Inspection program.

I hereby acknowledge that control will be exercised to obtain conformance with the construction documents approved by the Building Official.

Signature

Date

Contractor's Provisions for Quality Control

Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of reports is attached to this Statement.

Identification and qualifications of the person(s) exercising such control and their position(s) in the organization are attached to this Statement.

Fabricator's Certificate of Compliance

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per section 1704.2 of the International Building Code must submit a *Fabricator's Certificate of Compliance* at the completion of fabrication.

Project:

Fabricator's Name:

Address:

Certification or Approval Agency:

Certification Number:

Date of Last Audit or Approval:

Description of structural members and assemblies that have been fabricated:

I hereby certify that items described above were fabricated in strict accordance with the approved construction documents.

Signature

Date

Title

Attach copies of fabricator's certification or building code evaluation service report and fabricator's quality control manual

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

PART 1 - GENERAL

1.1 REFERENCED REQUIREMENTS

- A. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.
- B. For the purposes of this contract, samples (including laboratory samples to be tested), 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.

1.2 SUBMISSION AND PREPARATION REQUIREMENTS

- A. 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:
 - 1. Satisfactory written evidence is presented to, and approved by Contracting Officer Representative (COR), that manufacturer cannot make scheduled delivery of approved item or;
 - 2. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;
 - 3. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.
- B. Submittals will be reviewed for compliance with contract requirements by Architect-Engineer, and action thereon will be taken by COR.
- C. Submittal Preparation:
 - 1. Manufacturer's literature shall be marked to identify products, features, standards, and other characteristics applicable to this project.
 - 2. Shop drawings shall be prepared specifically for this project. Contract Documents may not be used as shop drawings.
 - 3. Samples shall be actual material or product to be used and shall show full range of colors and textures that can be expected in finished

product. Photographs or reproduction of colors and textures are not acceptable.

1.3 TRANSMITTAL AND REVIEW TIME

- A. 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.
- B. Allow a minimum of two weeks for review of each submittal. Allow an additional week for review of submittals that require review by more than one discipline.
 - 1. Reviews will be prioritized based on the schedule of submittals submitted by the Contractor.
 - 2. If large quantities of submittals are received by the Architect-Engineer in a short period of time, the review time will be increased.
- C. Submittals will be transmitted between Architect and Engineer and returned to Contractor by First Class mail. If faster deliveries are required by the Contractor, the Contractor shall provide the Architect-Engineer with an account number to charge the expedited delivery.
- D. Within two weeks of Notice to Proceed, Contractor shall submit a schedule for submittals using the Submittal Log appended to the end of this Section. The document will be available Contractor as a Microsoft Excel document. Schedule shall include the following information:
 - 1. Submittal identification including specification reference and product or material to be reviewed.
 - 2. Date that A/E will receive submittal.
 - 3. Date that Contractor must receive reviewed submittal in order to obtain product or material in a timely fashion.
- E. Review of submittals will not begin until submittals are complete. When coordination is required between multiple submittals, such as hollow metal, doors, and hardware, review will not begin until all related submittals have been received.

1.4 IDENTIFICATION OF SUBMITTALS

- A. Contractor will assign a file number to each submittal before sending to the Architect-Engineer or the Government. The number shall include the specification section number where the product or material is specified followed by a sequential number for that specification section. Each product or material submitted under a single specification section shall have a distinct number (e.g.: submittal for carpet and adhesive would be numbered 09 68 00-01 and 09 68 00-02 respectively.)

- B. Resubmittals shall be identified using the original submittal number followed by a resubmittal number.
- C. Contractor, in any subsequent correspondence, shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.

1.5 ADDITIONAL SUBMITTALS

- A. 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 COR, 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.

1.6 SCHEDULES

- A. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and Architect-Engineer. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and Architect-Engineer assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.

1.7 QUANTITIES

- A. Submittals must be submitted by Contractor only and shipped prepaid. Neither the Contracting Officer nor the Architect-Engineer assume responsibility for checking quantities or exact numbers included in such submittals.
- B. Submit samples in quadruplicate unless otherwise specified. Submit shop drawings, schedules, manufacturers' literature and data, and certificates except where a greater number is specified. For each submittal requiring review, submit not less than eight copies of each submittal. Two copies will be retained by the Contracting Officer's Representative, one copy will be retained by the Architect, and one copy will be retained by the mechanical/electrical engineer as appropriate. The remaining copies will be marked with action taken and returned to the General contractor for distribution.
- C. Submittals will receive consideration only when accompanied by a transmittal letter signed by Contractor and identifying submittal number. Letter shall contain the list of items each identified by its submittal number, 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.
- D. In addition to complying with the applicable requirements specified in preceding Article 1.9, samples which are required to have Laboratory Tests (those preceded by symbol "LT" under the separate sections of the specification shall be tested, at the expense of Contractor, in an independent commercial laboratory approved by Contracting Officer.
1. Laboratory shall furnish COR with a certificate stating that it is fully equipped and qualified to perform intended work, is fully acquainted with specification requirements and intended use of materials and is an independent establishment in no way connected with organization of Contractor or with manufacturer or supplier of materials to be tested.
 2. Certificates shall also set forth a list of comparable projects upon which laboratory has performed similar functions during past five years.
 3. Samples and laboratory tests shall be sent directly to approved commercial testing laboratory.
 4. Contractor shall send a copy of transmittal letter to both COR and to Architect-Engineer simultaneously with submission of material to a commercial testing laboratory.
 5. Laboratory test reports shall be sent directly to COR and Architect-Engineer for appropriate action.
 6. Laboratory reports shall list contract specification test requirements and a comparative list of the laboratory test results. When tests show that the material meets specification requirements, the laboratory shall so certify on test report.
 7. Laboratory test reports shall also include a recommendation for approval or disapproval of tested item.

- E. 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.
- F. Approved samples will be kept on file by the COR 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.
- G. 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. Submittals found by the Contractor not to be in compliance with the Contract Documents shall not be forwarded to the COR or the Architect-Engineer.
 - 1. For each drawing required, submit four legible full size paper or copies.
 - 2. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, submittal number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
 - 3. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate Architect-Engineer's review stamp. Submittals requiring review by more than one discipline shall have space for each discipline's stamp.
 - 4. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
 - 5. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.
 - 6. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.

1.8 DELIVERY INSTRUCTIONS

- A. Samples (except laboratory samples), shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to:
OKKS Studios
2 Wisconsin Circle, Suite 820
Chevy Chase, MD 20815
- B. At the time of transmittal to the Architect-Engineer, the Contractor shall also send a copy of the complete submittal directly to the COR.

1.9 ELECTRONIC FILES AND SUBMISSIONS

- A. Architect-Engineer will accept submittals submitted in electronic format.
 - 1. Submittals shall be in PDF format and shall not require color printing.
 - 2. Submittals shall be designed to be printed on 216 x 279 mm (8½"x11"), 216 x 356 mm (8½"x14"), or 279 x 432 mm (11"x17") paper.
 - 3. Submittals shall be clear and legible when printed on paper sizes stated above.
- B. Submittals received electronically will be returned electronically.
- C. Use of Architect-Engineer's Electronic Files: Refer to Section 01 00 00, GENERAL REQUIREMENTS, for terms and conditions of using the Architect-Engineer's Electronic Files.

1.10 SPECIAL INSPECTIONS SAMPLE FORMS

- A. Special Inspectors shall keep records of inspections. The Special Inspector shall furnish inspection reports to the COR, and to the Registered Design Professional in responsible charge. Reports shall indicate that work inspected was or was not complete in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the COR and to the Registered Design Professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and correction of discrepancies noted in the inspections shall be submitted at a point in time agreed upon at the preconstruction meeting.
- B. The following sample forms have been provided at the back of this specification section:
 - 1. Statement of Special Inspections.
 - 2. Final Report of Special Inspections.
 - 3. Contractor's Statement of Responsibility.
 - 4. Fabricator's Certificate of Compliance.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

- - - E N D - - -

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
SHOP DRAWINGS, PRODUCTS DATA AND SAMPLES

VAMC BALTIMORE, MD
JUNE 8, 2016
01 33 23-8

Submittal Log

VA Project Information

Name: Improve Sterile Processing and N&FS Kitchen Efficiency
 Project No.: 512-14-113
 Contract No.:
 Location: VAMC Baltimore
 COR: William Runser, PE
 Telephone: 410.605.7148
 Email: william.runser@va.gov

Contractor Information

Name:
 Project No.:
 Address:
 Project Manager:
 Telephone:
 Email:

A/E Information

Name: OKKS Studios, Inc. a subsidiary of Delta
 Project No.: 2013.999.112
 Address: 2 Wisconsin Circle, Suite 820
 Chevy Chase, MD 20815
 Project Manager Tom Sachs
 Telephone: 240.744.1080
 Email: tsachs@okksstudios.com

Number	Submittal Description	Specification Section and Paragraph	Date to be submitted for A/E and COR review	Type of Submittal							Required Distribution Dates				Review Status					Remarks
				Shop Drawing	Sample	Manufacture Literature	Certificate	Guarantee	Test Report	Other	Received by A/E and COR	Review by A/E Consultnat Required?	Coordination with Other Submittals Required?	Return to Contractor	Approved	Approved as Noted	Revise and Resubmit	Rejected	Returned to Contractor	
Division 0 - Procurement and Contracting Requirements																				
1																				
2																				
3																				
Division 1 - General Requirements																				
1																				
2																				
3																				
Division 2 - Existing Conditions																				
1																				
2																				
3																				
Division 3 - Concrete																				
1																				
2																				
3																				
Division 4 - Masonry																				
1																				
2																				
3																				
Division 5 - Metals																				
1																				
2																				
3																				
Division 6 - Wood, Plastics and Composites																				
1																				
2																				
3																				
Division 7 - Thermal and Moisture Protection																				

Submittal Log

VA Project Information

Name: Improve Sterile Processing and N&FS Kitchen Efficiency
 Project No.: 512-14-113
 Contract No.:
 Location: VAMC Baltimore
 COR: William Runser, PE
 Telephone: 410.605.7148
 Email: william.runser@va.gov

Contractor Information

Name:
 Project No.:
 Address:
 Project Manager:
 Telephone:
 Email:

A/E Information

Name: OKKS Studios, Inc. a subsidiary of Delta
 Project No.: 2013.999.112
 Address: 2 Wisconsin Circle, Suite 820
 Chevy Chase, MD 20815
 Project Manager Tom Sachs
 Telephone: 240.744.1080
 Email: tsachs@okksstudios.com

Number	Submittal Description	Specification Section and Paragraph	Date to be submitted for A/E and COR review	Type of Submittal							Required Distribution Dates				Review Status					Remarks
				Shop Drawing	Sample	Manufacture Literature	Certificate	Guarantee	Test Report	Other	Received by A/E and COR	Review by A/E Consultant Required?	Coordination with Other Submittals Required?	Return to Contractor	Approved	Approved as Noted	Revise and Resubmit	Rejected	Returned to Contractor	
1																				
2																				
3																				
Division 8 - Openings																				
1																				
2																				
3																				
Division 9 - Finishes																				
1																				
2																				
3																				
Division 10 - Specialties																				
1																				
2																				
3																				
Division 11 - Equipment																				
1																				
2																				
3																				
Division 12 - Furnishings																				
1																				
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3																				
Division 13 - Special Construction																				
1																				
2																				
3																				
Division 14 - Conveying Equipment																				
1																				
2																				

Submittal Log

VA Project Information

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 Project No.: 512-14-113
 Contract No.:
 Location: VAMC Baltimore
 COR: William Runser, PE
 Telephone: 410.605.7148
 Email: william.runser@va.gov

Contractor Information

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 Project Manager:
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3																				
Division 21 - Fire Suppression																				
1																				
2																				
3																				
Division 22 - Plumbing																				
1																				
2																				
3																				
Division 23 - Heating Ventilating and Air Conditioning																				
1																				
2																				
3																				
Division 25 - Integrated Automation																				
1																				
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3																				
Division 26 - Electrical																				
1																				
2																				
3																				
Division 27 - Communications																				
1																				
2																				
3																				
Division 28 - Electronic Safety and Security																				
1																				
2																				
3																				
Division 31 - Earthwork																				

Submittal Log

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1																				
2																				
3																				
Division 32 - Exterior Improvements																				
1																				
2																				
3																				
Division 33 - Utilities																				
1																				
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Division 34 - Transportation																				
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3																				
Division 35 - Waterway and Marine Construction																				
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2																				
3																				
Division 40 - Process Integration																				
1																				
2																				
3																				
Division 41 - Material Processing and Handling																				
1																				
2																				
3																				
Division 42 - Process Heating, Cooling, and Drying Equipment																				
1																				
2																				

Submittal Log

VA Project Information

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3																				
Division 43 - Process Gas and Liquid Handling, Purification, and Storage Equipment																				
1																				
2																				
3																				
Division 44 - Polution and Waste Control Equipment																				
1																				
2																				
3																				
Division 45 - Industry-Specific Manufacturing Equipment																				
1																				
2																				
3																				
Division 46 - Water and Wastewater Equipment																				
1																				
2																				
3																				

SECTION 01 35 26
SAFETY REQUIREMENTS

1.1 APPLICABLE PUBLICATIONS:

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

B. American Society of Safety Engineers (ASSE):

A10.34-2012.....Protection of the Public on or Adjacent to
Construction Sites

C. American Society for Testing and Materials (ASTM):

E84-2013.....Surface Burning Characteristics of Building
Materials

D. The Facilities Guidelines Institute (FGI):

FGI Guidelines-2010Guidelines for Design and Construction of
Healthcare Facilities

E. National Fire Protection Association (NFPA):

10-2013.....Standard for Portable Fire Extinguishers

30-2012.....Flammable and Combustible Liquids Code

51B-2014.....Standard for Fire Prevention During Welding,
Cutting and Other Hot Work

70-2014.....National Electrical Code

70B-2013.....Recommended Practice for Electrical Equipment
Maintenance

70E-2012Standard for Electrical Safety in the Workplace

241-2013.....Standard for Safeguarding Construction,
Alteration, and Demolition Operations

F. The Joint Commission (TJC)

TJC ManualComprehensive Accreditation and Certification
Manual

G. 29cU.S. Occupational Safety and Health Administration (OSHA):

29 CFR 1904Reporting and Recording Injuries & Illnesses

29 CFR 1910Safety and Health Regulations for General
Industry

29 CFR 1926Safety and Health Regulations for Construction
Industry

CPL 2-0.124.....Multi-Employer Citation Policy

H. VHA Directive 2005-007

1.2 DEFINITIONS:

A. OSHA "Competent Person" (CP). One who is capable of identifying existing and predictable hazards in the surroundings and working conditions which are unsanitary, hazardous or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them (see 29 CFR 1926.32(f)).

B. "Qualified Person" means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.

C. High Visibility Accident. Any mishap which may generate publicity or high visibility.

D. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

E. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

1. Death, regardless of the time between the injury and death, or the length of the illness;

2. Days away from work (any time lost after day of injury/illness onset);

3. Restricted work;
4. Transfer to another job;
5. Medical treatment beyond first aid;
6. Loss of consciousness; **or**
7. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

1.3 REGULATORY REQUIREMENTS:

- A. In addition to the detailed requirements included in the provisions of this contract, comply with 29 CFR 1926, comply with 29 CFR 1910 as incorporated by reference within 29 CFR 1926, comply with ASSE A10.34, and all applicable [federal, state, and local] laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern except with specific approval and acceptance by the Contracting Officer's Representative (COR) or Government Designated Authority.

1.4 ACCIDENT PREVENTION PLAN (APP):

- A. The APP (aka Construction Safety & Health Plan) shall interface with the Contractor's overall safety and health program. Include any portions of the Contractor's overall safety and health program referenced in the APP in the applicable APP element and ensure it is site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all worksite safety and health of each subcontractor(s). Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out.
- B. The APP shall be prepared as follows:

1. Written in English by a qualified person who is employed by the Prime Contractor articulating the specific work and hazards pertaining to the contract (model language can be found in ASSE A10.33). Specifically articulating the safety requirements found within these VA contract safety specifications.
2. Address both the Prime Contractors and the subcontractors work operations.
3. State measures to be taken to control hazards associated with materials, services, or equipment provided by suppliers.
4. Address all the elements/sub-elements and in order as follows:
 - a. **SIGNATURE SHEET.** Title, signature, and phone number of the following:
 - 1) Plan preparer (Qualified Person such as corporate safety staff person or contracted Certified Safety Professional with construction safety experience);
 - 2) Plan approver (company/corporate officers authorized to obligate the company);
 - 3) Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional). Provide concurrence of other applicable corporate and project personnel (Contractor).
 - b. **BACKGROUND INFORMATION.** List the following:
 - 1) Contractor;
 - 2) Contract number;
 - 3) Project name;
 - 4) Brief project description, description of work to be performed, and location; phases of work anticipated (these will require an AHA).
 - c. **STATEMENT OF SAFETY AND HEALTH POLICY.** Provide a copy of current corporate/company Safety and Health Policy Statement, detailing

commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract should be provided.

d. RESPONSIBILITIES AND LINES OF AUTHORITIES. Provide the following:

- 1) A statement of the employer's ultimate responsibility for the implementation of his SOH program;
- 2) Identification and accountability of personnel responsible for safety at both corporate and project level. Contracts specifically requiring safety or industrial hygiene personnel shall include a copy of their resumes.
- 3) The names of Competent and/or Qualified Person(s) and proof of competency/qualification to meet specific OSHA Competent/Qualified Person(s) requirements must be attached;
- 4) Requirements that no work shall be performed unless a designated competent person is present on the job site;
- 5) Requirements for pre-task Activity Hazard Analysis (AHAs);
- 6) Lines of authority;
- 7) Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified;

e. SUBCONTRACTORS AND SUPPLIERS. If applicable, provide procedures for coordinating SOH activities with other employers on the job site:

- 1) Identification of subcontractors and suppliers (if known);
- 2) Safety responsibilities of subcontractors and suppliers.

f. TRAINING.

- 1) Site-specific SOH orientation training at the time of initial hire or assignment to the project for every employee before working on the project site is required.

- 2) Mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, crane operator, rigger, crane signal person, fall protection, electrical lockout/NFPA 70E, machine/equipment lockout, confined space, etc...) and any requirements for periodic retraining/recertification are required.
- 3) Procedures for ongoing safety and health training for supervisors and employees shall be established to address changes in site hazards/conditions.
- 4) OSHA 10-hour training is required for all workers on site and the OSHA 30-hour training is required for Trade Competent Persons (CPs)

g. SAFETY AND HEALTH INSPECTIONS.

- 1) Specific assignment of responsibilities for a minimum daily job site safety and health inspection during periods of work activity: Who will conduct (e.g., "Site Safety and Health CP"), proof of inspector's training/qualifications, when inspections will be conducted, procedures for documentation, deficiency tracking system, and follow-up procedures.
- 2) Any external inspections/certifications that may be required (e.g., contracted CSP or CSHT)

h. ACCIDENT INVESTIGATION & REPORTING. The Contractor shall conduct mishap investigations of all OSHA Recordable Incidents. The APP shall include accident/incident investigation procedure & identify person(s) responsible to provide the following to the COR or Government Designated Authority:

- 1) Exposure data (man-hours worked);
- 2) Accident investigations, reports, and logs.

i. PLANS (PROGRAMS, PROCEDURES) REQUIRED. Based on a risk assessment of contracted activities and on mandatory OSHA compliance programs, the Contractor shall address all applicable occupational risks in site-specific compliance and accident prevention plans. These Plans shall include but are not be

limited to procedures for addressing the risks associates with the following:

- 1) Emergency response;
- 2) Fire Prevention;
- 3) Medical Support;
- 4) Posting of emergency telephone numbers;
- 5) Prevention of alcohol and drug abuse;
- 6) Site sanitation (housekeeping, drinking water, toilets);
- 7) Night operations and lighting;
- 8) Hazard communication program;
- 9) Welding/Cutting "Hot" work;
- 10) Electrical Safe Work Practices (Electrical LOTO/NFPA 70E);
- 11) General Electrical Safety
- 12) Hazardous energy control (Machine LOTO);
- 13) Site-Specific Fall Protection & Prevention;
- 149) Respiratory protection;
- 15) Health hazard control program;
- 16) Crystalline Silica Monitoring (Assessment);
- 17) Demolition plan (to include engineering survey);
- 18) Formwork and shoring erection and removal.

C. Submit the APP to the COR and Facility Safety Manager or Government Designated Authority for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

D. Once accepted by the COR, Project Manager, and Facility Safety Manager or Government Designated Authority, the APP and attachments will be

enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

- E. Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Project Manager, facility Safety Manager, and Contracting Officer Representative. Should any severe hazard exposure, i.e. imminent danger, become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ASSE/SAFE A10.34) and the environment.

1.5 ACTIVITY HAZARD ANALYSES (AHAS) :

- A. AHAs are also known as Job Hazard Analyses, Job Safety Analyses, and Activity Safety Analyses. Before beginning each work activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or sub-contractor is to perform the work, the Contractor(s) performing that work activity shall prepare an AHA (Example electronic AHA forms can be found on the US Army Corps of Engineers web site)
- B. AHAs shall define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk.
- C. Work shall not begin until the AHA for the work activity has been accepted by the COR and Facility Safety Manager and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.
 - 1. The names of the Competent/Qualified Person(s) required for a particular activity (for example, excavations, scaffolding, fall protection, other activities as specified by OSHA and/or other State and Local agencies) shall be identified and included in the AHA.

Certification of their competency/qualification shall be submitted to the Government Designated Authority (GDA) for acceptance prior to the start of that work activity.

2. The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).
 - a. If more than one Competent/Qualified Person is used on the AHA activity, a list of names shall be submitted as an attachment to the AHA. Those listed must be Competent/Qualified for the type of work involved in the AHA and familiar with current site safety issues.
 - b. If a new Competent/Qualified Person (not on the original list) is added, the list shall be updated (an administrative action not requiring an updated AHA). The new person shall acknowledge in writing that he or she has reviewed the AHA and is familiar with current site safety issues.
3. Submit AHAs to the COR and Facility Safety Manager for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES for review at least 15 calendar days prior to the start of each phase. Subsequent AHAs as shall be formatted as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.
4. The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.
5. Develop the activity hazard analyses using the project schedule as the basis for the activities performed. All activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier, or subcontractor and provided to the prime contractor for review and approval and then submitted to the COR and Facility Safety Manager or Government Designated Authority.

1.6 PRECONSTRUCTION CONFERENCE:

- A. Contractor representatives who have a responsibility or significant role in implementation of the accident prevention program, as required by 29 CFR 1926.20(b)(1), on the project shall attend the preconstruction conference to gain a mutual understanding of its implementation. This includes the project superintendent, subcontractor superintendents, and any other assigned safety and health professionals.
- B. Discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, establish a schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.
- C. Deficiencies in the submitted APP will be brought to the attention of the Contractor within 14 calendar days of submittal, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Do not begin work until there is an accepted APP.

1.7 "SITE SAFETY AND HEALTH OFFICER" (SSHO) AND "COMPETENT PERSON" (CP):

- A. The Prime Contractor shall designate a minimum of one SSHO that will be identified as the SSHO to administer the Contractor's safety program and government-accepted Accident Prevention Plan. Each subcontractor shall designate a minimum of one CP in compliance with 29 CFR 1926.20(b)(2) that will be identified as a CP to administer their individual safety programs.
- B. Further, all specialized Competent Persons for the work crews will be supplied by the respective contractor as required by 29 CFR 1926 (i.e. Asbestos, Electrical, Cranes, & Derricks, Demolition, Fall Protection, Fire Safety/Life Safety, Ladder, Rigging, Scaffolds, and Trenches/Excavations).
- C. These Competent Persons can have collateral duties as the subcontractor's superintendent and/or work crew lead persons as well as fill more than one specialized CP role (i.e. Asbestos, Electrical,

Cranes, & Derricks, Demolition, Fall Protection, Fire Safety/Life Safety, Ladder, Rigging, Scaffolds, and Trenches/Excavations).

- D. The SSHO or an equally-qualified Designated Representative/alternate will maintain a presence on the site during construction operations in accordance with FAR Clause 52.236-6: *Superintendence by the Contractor*. CPs will maintain presence during their construction activities in accordance with above mentioned clause. A listing of the designated SSHO and all known CPs shall be submitted prior to the start of work as part of the APP with the training documentation and/or AHA as listed in Section 1.8 below.
- E. The repeated presence of uncontrolled hazards during a contractor's work operations will result in the designated CP as being deemed incompetent and result in the required removal of the employee in accordance with FAR Clause 52.236-5: Material and Workmanship, Paragraph (c).

1.8 TRAINING:

- A. The designated Prime Contractor SSHO must meet the requirements of all applicable OSHA standards and be capable (through training, experience, and qualifications) of ensuring that the requirements of 29 CFR 1926.16 and other appropriate Federal, State and local requirements are met for the project. As a minimum the SSHO must have completed the OSHA 30-hour Construction Safety class and have five (5) years of construction industry safety experience or three (3) years if he/she possesses a Certified Safety Professional (CSP) or certified Construction Safety and Health Technician (CSHT) certification or have a safety and health degree from an accredited university or college.
- B. All designated CPs shall have completed the OSHA 30-hour Construction Safety course within the past 5 years.
- C. In addition to the OSHA 30 Hour Construction Safety Course, all CPs with high hazard work operations such as operations involving asbestos, electrical, cranes, demolition, work at heights/fall protection, fire safety/life safety, ladder, rigging, scaffolds, and trenches/excavations shall have a specialized formal course in the hazard recognition & control associated with those high hazard work

operations. Documented "repeat" deficiencies in the execution of safety requirements will require retaking the requisite formal course.

- D. All other construction workers shall have the OSHA 10-hour Construction Safety Outreach course and any necessary safety training to be able to identify hazards within their work environment.
- E. Submit training records associated with the above training requirements to the Contracting Officer Representative for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES 15 calendar days prior to the date of the preconstruction conference for acceptance.
- F. Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the SSHO or his/her designated representative. As a minimum, this briefing shall include information on the site-specific hazards, construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, emergency procedures, accident reporting etc... Documentation shall be provided to the COR that individuals have undergone contractor's safety briefing.
- G. Ongoing safety training will be accomplished in the form of weekly documented safety meeting.

1.9 INSPECTIONS:

- A. The SSHO shall conduct frequent and regular safety inspections (daily) of the site and each of the subcontractors CPs shall conduct frequent and regular safety inspections (daily) of the their work operations as required by 29 CFR 1926.20(b)(2). Each week, the SSHO shall conduct a formal documented inspection of the entire construction areas with the subcontractors' "Trade Safety and Health CPs" present in their work areas. Coordinate with, and report findings and corrective actions weekly to Contracting Officer Representative or Government Designated Authority.

1.10 ACCIDENTS, OSHA 300 LOGS, AND MAN-HOURS:

- A. Notify the Contracting Officer as soon as practical, but no more than four hours after any accident meeting the definition of OSHA Recordable Injuries or Illnesses or High Visibility Accidents, property damage

equal to or greater than \$5,000, or any weight handling equipment accident. Within notification include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Contracting Officer Representative determines whether a government investigation will be conducted.

- B. Conduct an accident investigation for recordable injuries and illnesses, for Medical Treatment defined in paragraph DEFINITIONS, and property damage accidents resulting in at least \$20,000 in damages, to establish the root cause(s) of the accident. Complete the VA Form 2162, and provide the report to the Contracting Officer Representative or Government Designated Authority within 5 calendar days of the accident. The Contracting Officer Representative or Government Designated Authority will provide copies of any required or special forms.
- C. A summation of all labor-hours worked by the contractor and associated sub-contractors for each month will be reported to the Contracting Officer Representative or Government Designated Authority monthly.
- D. A summation of all OSHA recordable accidents experienced on site by the contractor and associated sub-contractors for each month will be provided to the Contracting Officer Representative or Government Designated Authority monthly. The contractor and associated sub-contractors' OSHA 300 logs will be made available to the Contracting Officer Representative or Government Designated Authority as requested.

1.11 PERSONAL PROTECTIVE EQUIPMENT (PPE) :

- A. PPE is governed in all areas by the nature of the work the employee is performing. For example, specific PPE required for performing work on electrical equipment is identified in NFPA 70E, Standard for Electrical Safety in the Workplace.
- B. Mandatory PPE includes:

- 1. Hard Hats - unless written authorization is given by the Contracting Officer Representative or Government Designated Authority in circumstances of work operations that have limited potential for

falling object hazards such as during finishing work or minor remodeling. With authorization to relax the requirement of hard hats, if a worker becomes exposed to an overhead falling object hazard, then hard hats would be required in accordance with the OSHA regulations.

2. Safety glasses - unless written authorization is given by the Contracting Officer Representative or Government Designated Authority appropriate safety glasses meeting the ANSI Z.87.1 standard must be worn by each person on site.
3. Appropriate Safety Shoes - based on the hazards present, safety shoes meeting the requirements of ASTM F2413-11 shall be worn by each person on site unless written authorization is given by the Contracting Officer Representative or Government Designated Authority.
4. Hearing protection - Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks.

1.12 INFECTION CONTROL

- A. Infection Control is critical in all medical center facilities. Interior construction activities causing disturbance of existing dust, or creating new dust, must be conducted within ventilation-controlled areas that minimize the flow of airborne particles into patient areas.
- B. An AHA associated with infection control will be performed by VA personnel in accordance with FGI Guidelines (i.e. Infection Control Risk Assessment (ICRA)). The ICRA procedure found on the American Society for Healthcare Engineering (ASHE) website will be utilized. Risk classifications of Class II or lower will require approval by the Contracting Officer Representative before beginning any construction work. Risk classifications of Class III or higher will require a permit before beginning any construction work. Infection Control permits will be issued by the Project Engineer. The Infection Control Permits will be posted outside the appropriate construction area. More than one permit may be issued for a construction project if the work is located in separate areas requiring separate classes. The primary project scope area for this project is: **Class III**, however, work

outside the primary project scope area may vary. The required infection control precautions with each class are as follows:

1. Class I requirements:

a. During Construction Work:

- 1) Notify the Project Manager, and Facility Safety Manager, and Contracting Officer Representative or Government Designated Authority.
- 2) Execute work by methods to minimize raising dust from construction operations.
- 3) Ceiling tiles: Immediately replace a ceiling tiles displaced for visual inspection.

b. Upon Completion:

- 1) Clean work area upon completion of task
- 2) Notify the Project Manager, Facility Safety Manager, and Contracting Officer Representative or Government Designated Authority.

2. Class II requirements:

a. During Construction Work:

- 1) Notify the Project Manager, Facility Safety Manager, and Contracting Officer Representative or Government Designated Authority.
- 2) Provide active means to prevent airborne dust from dispersing into atmosphere such as wet methods or tool mounted dust collectors where possible.
- 3) Water mist work surfaces to control dust while cutting.
- 4) Seal unused doors with duct tape.
- 5) Block off and seal air vents.
- 6) Remove or isolate HVAC system in areas where work is being performed.

b. Upon Completion:

- 1) Wipe work surfaces with cleaner/disinfectant.
- 2) Contain construction waste before transport in tightly covered containers.
- 3) Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area.
- 4) Upon completion, restore HVAC system where work was performed
- 5) Notify the Project Manager, Facility Safety Manager, and Contracting Officer Representative or Government Designated Authority.

3. Class III requirements:

a. During Construction Work:

- 1) Obtain permit from the Project Manager, Facility Safety Manager, and Contracting Officer Representative or Government Designated Authority.
- 2) Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system.
- 3) Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. Install construction barriers and ceiling protection carefully, outside of normal work hours.
- 4) Maintain negative air pressure, 0.01 inches of water gauge, within work site utilizing HEPA equipped air filtration units and continuously monitored with a digital display, recording and alarm instrument, which must be calibrated on installation, maintained with periodic calibration and monitored by the contractor.
- 5) Contain construction waste before transport in tightly covered containers.

- 6) Cover transport receptacles or carts. Tape covering unless solid lid.

b. Upon Completion:

- 1) Do not remove barriers from work area until completed project is inspected by the Project Manager, Facility Safety Manager, and Contracting Officer Representative or Government Designated Authority and thoroughly cleaned by the VA Environmental Services Department.
- 2) Remove construction barriers and ceiling protection carefully to minimize spreading of dirt and debris associated with construction, outside of normal work hours.
- 3) Vacuum work area with HEPA filtered vacuums.
- 4) Wet mop area with cleaner/disinfectant.
- 5) Upon completion, restore HVAC system where work was performed.
- 6) Return permit to the Contracting Officer Representative or Government Designated Authority.

4. Class IV requirements:

a. During Construction Work:

- 1) Obtain permit from the Contracting Officer Representative or Government Designated Authority.
- 2) Isolate HVAC system in area where work is being done to prevent contamination of duct system.
- 3) Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. Install construction barriers and ceiling protection carefully, outside of normal work hours.
- 4) Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.
- 5) Seal holes, pipes, conduits, and punctures.

- 6) Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave work site.
- 7) All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.

b. Upon Completion:

- 1) Do not remove barriers from work area until completed project is inspected by the Contracting Officer Representative or Government Designated Authority with thorough cleaning by the VA Environmental Services Dept.
- 2) Remove construction barriers and ceiling protection carefully to minimize spreading of dirt and debris associated with construction, outside of normal work hours.
- 3) Contain construction waste before transport in tightly covered containers.
- 4) Cover transport receptacles or carts. Tape covering unless solid lid.
- 5) Vacuum work area with HEPA filtered vacuums.
- 6) Wet mop area with cleaner/disinfectant.
- 7) Upon completion, restore HVAC system where work was performed.
- 8) Return permit to the Contracting Officer Representative or Government Designated Authority.

C. Barriers shall be erected as required based upon classification (Class III & IV requires barriers) and shall be constructed as follows:

1. Class III and IV - closed door with masking tape applied over the frame and door is acceptable for projects that can be contained in a single room.

2. Construction, demolition or reconstruction not capable of containment within a single room must have the following barriers erected and made presentable on hospital occupied side:
 - a. Class III & IV (where dust control is the only hazard, and an agreement is reached with the COR and Medical Center) - Airtight plastic barrier that extends from the floor to ceiling. Seams must be sealed with duct tape to prevent dust and debris from escaping
 - b. Class III & IV - Drywall barrier erected with joints covered or sealed to prevent dust and debris from escaping.
 - c. Class III & IV - Seal all penetrations in existing barrier airtight
 - d. Class III & IV - Barriers at penetration of ceiling envelopes, chases and ceiling spaces to stop movement air and debris
 - e. Class IV only - Anteroom or double entrance openings that allow workers to remove protective clothing or vacuum off existing clothing
 - f. Class III & IV - At elevators shafts or stairways within the field of construction, overlapping flap minimum of two feet wide of polyethylene enclosures for personnel access.

D. Products and Materials:

1. Sheet Plastic: Fire retardant polystyrene, 6-mil thickness meeting local fire codes.
2. Barrier Doors: Self Closing 45 minute or 90 minute fire-rated solid core wood or hollow metal in steel frame, painted as appropriate for partition in which door is installed.
3. Dust proof one-hour or two-hour fire-rated drywall and metal stud assemblies.
4. High Efficiency Particulate Air-Equipped filtration machine rated at 95% capture of 0.3 microns including pollen, mold spores and dust particles. HEPA filters should have ASHRAE 85 or other prefilter to extend the useful life of the HEPA. Provide both primary and

secondary filtrations units. Maintenance of equipment and replacement of the HEPA filters and other filters will be in accordance with manufacturer's instructions.

5. Exhaust Hoses: Heavy duty, flexible steel reinforced; Ventilation Blower Hose
 6. Adhesive Walk-off Mats: Provide minimum size mats of 24 inches x 36 inches
 7. Disinfectant: Hospital-approved disinfectant or equivalent product
 8. Portable Ceiling Access Module
- E. Before any construction on site begins, all contractor personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the medical center.
- F. A dust control program will be establish and maintained as part of the contractor's infection preventive measures in accordance with the FGI Guidelines for Design and Construction of Healthcare Facilities. Prior to start of work, prepare a plan detailing project-specific dust protection measures with associated product data, including periodic status reports, and submit to COR and Facility CSC for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- G. Medical center Infection Control personnel will monitor for airborne disease (e.g. aspergillosis) during construction. A baseline of conditions will 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 with safe thresholds established.
- H. In general, the following preventive measures shall be adopted during construction to keep down dust and prevent mold.
1. Contractor shall verify that construction exhaust to exterior is not reintroduced to the medical center through intake vents, or building openings. HEPA filtration is required where the exhaust dust may reenter the medical center.

2. Exhaust hoses shall be exhausted so that dust is not reintroduced to the medical center.
3. Adhesive Walk-off/Carpet Walk-off Mats shall be used at all interior transitions from the construction area to occupied medical center area. These mats shall be changed as often as required to maintain clean work areas directly outside construction area at all times.
4. Vacuum and wet mop all transition areas from construction to the occupied medical center at the end of each workday. Vacuum shall utilize HEPA filtration. Maintain surrounding area frequently. Remove debris as it is created. Transport these outside the construction area in containers with tightly fitting lids.
5. The contractor shall not haul debris through patient-care areas without prior approval of the COR and the Medical Center. When, approved, debris shall be hauled in enclosed dust proof containers or wrapped in plastic and sealed with duct tape. No sharp objects should be allowed to cut through the plastic. Wipe down the exterior of the containers with a damp rag to remove dust. All equipment, tools, material, etc. transported through occupied areas shall be made free from dust and moisture by vacuuming and wipe down.
6. There shall be no standing water during construction. This includes water in equipment drip pans and open containers within the construction areas. All accidental spills must be cleaned up and dried within 12 hours. Remove and dispose of porous materials that remain damp for more than 72 hours.
7. At completion, remove construction barriers and ceiling protection carefully, outside of normal work hours. Vacuum and clean all surfaces free of dust after the removal.

I. 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.

1.13 TUBERCULOSIS SCREENING

A. Contractor shall provide written certification that all contract employees assigned to the work site have had a pre-placement tuberculin screening within 90 days prior to assignment to the worksite and been found have negative TB screening reactions. Contractors shall be required to show documentation of negative TB screening reactions for any additional workers who are added after the 90-day requirement before they will be allowed to work on the work site. NOTE: This can be the Center for Disease Control (CDC) and Prevention and two-step skin testing or a Food and Drug Administration (FDA)-approved blood test.

1. Contract employees manifesting positive screening reactions to the tuberculin shall be examined according to current CDC guidelines prior to working on VHA property.

2. Subsequently, if the employee is found without evidence of active (infectious) pulmonary TB, a statement documenting examination by a physician shall be on file with the employer (construction contractor), noting that the employee with a positive tuberculin screening test is without evidence of active (infectious) pulmonary TB.

3. If the employee is found with evidence of active (infectious) pulmonary TB, the employee shall require treatment with a subsequent statement to the fact on file with the employer before being allowed to return to work on VHA property.

1.14 FIRE SAFETY

A. Fire Safety Plan: Establish and maintain a site-specific 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 COR for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. This plan may be an element of the Accident Prevention Plan. 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 COR that individuals have undergone contractor's safety briefing.

- B. 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.
- C. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).
- D. Temporary Construction Partitions: Install and maintain temporary construction partitions to provide 1-hour fire rated smoke-tight separations between construction areas and adjoining areas. Construct partitions of gypsum board on both sides of metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install Class C, $\frac{3}{4}$ hour fire/smoke rated doors with self-closing devices. Care shall be exercised to eliminate any damage caused by installation and removal of any temporary construction partitions. Contractor is responsible for repair or replacement back to the original condition of any existing items damaged by said installation and/or removal.
- E. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- F. Means of Egress: Do not block exiting or means of egress, including paths from exits to roads. Minimize disruptions and coordinate with Contracting Officer Representative.
- G. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Contracting Officer Representative.
- H. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.

- I. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- J. Sprinklers: Install, test and activate new automatic sprinklers prior to removing existing sprinklers.
- K. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Contracting Officer Representative. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed shall be recorded by the medical center and copies provided to the COR.
- L. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Contracting Officer Representative.
- M. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with COR. Obtain permits from COR at least 48 hours in advance. Designate contractor's responsible project-site fire prevention program manager to permit hot work.
- N. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to COR and Facility Safety Manager.
- O. Smoking: Smoking, use of smokeless tobacco, and use of electronic cigarettes is prohibited inside existing buildings and on Department of Veterans Affairs property.
- P. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- Q. If required, submit documentation to the COR or other Government Designated Authority that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.15 ELECTRICAL

- A. All electrical work shall comply with NFPA 70 (NEC), NFPA 70B, NFPA 70E, 29 CFR Part 1910 Subpart J - General Environmental Controls, 29 CFR Part 1910 Subpart S - Electrical, and 29 CFR 1926 Subpart K in addition to other references required by contract.
- B. All qualified persons performing electrical work under this contract shall be licensed journeyman or master electricians. All apprentice electricians performing under this contract shall be deemed unqualified persons unless they are working under the immediate supervision of a licensed electrician or master electrician.
- C. All electrical work will be accomplished de-energized and in the Electrically Safe Work Condition (refer to NFPA 70E for Work Involving Electrical Hazards, including Exemptions to Work Permit). Any Contractor, subcontractor or temporary worker who fails to fully comply with this requirement is subject to immediate termination in accordance with FAR clause 52.236-5(c). Only in rare circumstance where achieving an electrically safe work condition prior to beginning work would increase or cause additional hazards, or is infeasible due to equipment design or operational limitations is energized work permitted. The Contracting Officer Representative or Government Designated Authority with approval of the Medical Center Director will make the determination if the circumstances would meet the exception outlined above. An AHA specific to energized work activities will be developed, reviewed, and accepted prior to the start of that work.
 - 1. Development of a Hazardous Electrical Energy Control Procedure is required prior to de-energization. A single Simple Lockout/Tagout Procedure for multiple work operations can only be used for work involving qualified person(s) de-energizing one set of conductors or circuit part source. Task specific Complex Lockout/Tagout Procedures are required at all other times.
 - 2. Verification of the absence of voltage after de-energization and lockout/tagout is considered "energized electrical work" (live work) under NFPA 70E, and shall only be performed by qualified persons wearing appropriate shock protective (voltage rated) gloves and arc rate personal protective clothing and equipment, using Underwriters Laboratories (UL) tested and appropriately rated contact electrical

testing instruments or equipment appropriate for the environment in which they will be used.

3. Personal Protective Equipment (PPE) and electrical testing instruments will be readily available for inspection by the The Contracting Officer Representative or Government Designated Authority.

D. Before beginning any electrical work, an Activity Hazard Analysis (AHA) will be conducted to include Shock Hazard and Arc Flash Hazard analyses (NFPA Tables can be used only as a last alternative and it is strongly suggested a full Arc Flash Hazard Analyses be conducted). Work shall not begin until the AHA for the work activity has been accepted by the COR and Facility Safety Manager and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.

E. Ground-fault circuit interrupters. All 120-volt, single-phase 15- and 20-ampere receptacle outlets on construction sites shall have approved ground-fault circuit interrupters for personnel protection. "Assured Equipment Grounding Conductor Program" only is not allowed.

1.16 FALL PROTECTION

A. The fall protection (FP) threshold height requirement is 6 ft (1.8 m) for ALL WORK, unless specified differently or the OSHA 29 CFR 1926 requirements are more stringent, to include steel erection activities, systems-engineered activities (prefabricated) metal buildings, residential (wood) construction and scaffolding work.

1. The use of a Safety Monitoring System (SMS) as a fall protection method is prohibited.
2. The use of Controlled Access Zone (CAZ) as a fall protection method is prohibited.
3. A Warning Line System (WLS) may ONLY be used on floors or flat or low-sloped roofs (between 0 - 18.4 degrees or 4:12 slope) and shall be erected around all sides of the work area (See 29 CFR 1926.502(f) for construction of WLS requirements). Working within the WLS does not require FP. No worker shall be allowed in the area between the

roof or floor edge and the WLS without FP. FP is required when working outside the WLS.

4. Fall protection while using a ladder will be governed by the OSHA requirements.

1.17 SCAFFOLDS AND OTHER WORK PLATFORMS

- A. All scaffolds and other work platforms construction activities shall comply with 29 CFR 1926 Subpart L.
- B. The fall protection (FP) threshold height requirement is 6 ft (1.8 m) as stated in Section 1.16.
- C. The following hierarchy and prohibitions shall be followed in selecting appropriate work platforms.
 1. Scaffolds, platforms, or temporary floors shall be provided for all work except that can be performed safely from the ground or similar footing.
 2. Ladders less than 20 feet may be used as work platforms only when use of small hand tools or handling of light material is involved.
 3. Ladder jacks, lean-to, and prop-scaffolds are prohibited.
 4. Emergency descent devices shall not be used as working platforms.

1.18 CONFINED SPACE ENTRY

- A. All confined space entry shall comply with 29 CFR 1910.146 except for specifically referenced operations in 29 CFR 1926 such as excavations/trenches [1926.651(g)].
- B. A site-specific Confined Space Entry Plan (including permitting process) shall be developed and submitted to the COR and/or other Government Designated Authority.

1.19 WELDING AND CUTTING

- A. As specified in section 1.14, Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with and obtain permits from COR and/or other Government Designated Authority at least 48 hours in advance. Designate contractor's responsible project-site fire prevention program manager to permit hot work.

1.20 LADDERS

- A. All Ladder use shall comply with 29 CFR 1926 Subpart X.
- B. All portable ladders shall be of sufficient length and shall be placed so that workers will not stretch or assume a hazardous position.
- C. Manufacturer safety labels shall be in place on ladders
- D. Step Ladders shall not be used in the closed position
- E. Top steps or cap of step ladders shall not be used as a step
- F. Portable ladders, used as temporary access, shall extend at least 3 ft (0.9 m) above the upper landing surface.
 - 1. When a 3 ft (0.9-m) extension is not possible, a grasping device (such as a grab rail) shall be provided to assist workers in mounting and dismounting the ladder.
 - 2. In no case shall the length of the ladder be such that ladder deflection under a load would, by itself, cause the ladder to slip from its support.
- G. Ladders shall be inspected for visible defects on a daily basis and after any occurrence that could affect their safe use. Broken or damaged ladders shall be immediately tagged "DO NOT USE," or with similar wording, and withdrawn from service until restored to a condition meeting their original design.

1.21 FLOOR & WALL OPENINGS

- A. All floor and wall openings shall comply with 29 CFR 1926 Subpart M.
- B. Floor and roof holes/openings are any that measure over 2 in (51 mm) in any direction of a walking/working surface which persons may trip or fall into or where objects may fall to the level below. See 21.F for covering and labeling requirements.
- C. All floor openings or hole into which a person can accidentally walk or fall through shall be guarded either by a railing system with toeboards along all exposed sides or a load-bearing cover. When the cover is not in place, the opening or hole shall be protected by a removable guardrail system or shall be attended when the guarding system has been removed, or other fall protection system.

1. Covers shall be capable of supporting, without failure, at least twice the weight of the worker, equipment and material combined.
2. Covers shall be secured when installed, clearly marked with the word "HOLE", "COVER" or "Danger, Roof Opening-Do Not Remove" or color-coded or equivalent methods (e.g., red or orange "X"). Workers must be made aware of the meaning for color coding and equivalent methods.

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IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
SAFETY REQUIREMENTS

VAMC BALTIMORE, MD
JUNE 8, 2016
01 35 26 -30

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. 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)

- A. 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)
425 Eye Street N.W, (sixth floor)
Washington, DC 20001
Telephone Numbers: (202) 632-5249 or (202) 632-5178
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)

- A. 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.aabchq.com
AAMA	American Architectural Manufacturer's Association http://www.aamanet.org
ACGIH	American Conference of Governmental Industrial Hygienists http://www.acgih.org
ACI	American Concrete Institute http://www.aci-int.net
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
AISC	American Institute of Steel Construction http://www.aisc.org
AISI	American Iron and Steel Institute http://www.steel.org
AMCA	Air Movement and Control Association, Inc. http://www.amca.org
ANSI	American National Standards Institute, Inc. http://www.ansi.org
ARI	Air-Conditioning and Refrigeration Institute http://www.ari.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

CISPI	Cast Iron Soil Pipe Institute http://www.cispi.org
CPMB	Concrete Plant Manufacturers Bureau http://www.cpmc.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
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
HPVA	Hardwood Plywood & Veneer Association http://www.hpva.org
IEEE	Institute of Electrical and Electronics Engineers http://www.ieee.org/
IPCEA	Insulated Power Cable Engineers Association 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.org
NBS	National Bureau of Standards See - NIST

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>

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>

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

RFCI The Resilient Floor Covering Institute
<http://www.rfci.com>

RMA Rubber Manufacturers Association, Inc.
<http://www.rma.org>

SDI Steel Door Institute
<http://www.steeldoor.org>

IGMA Insulating Glass Manufacturers Alliance
<http://www.igmaonline.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>
TEMA Tubular Exchange Manufacturers Association
<http://www.tema.org>
UL Underwriters' Laboratories Incorporated
<http://www.ul.com>
ULC Underwriters' Laboratories of Canada
<http://www.ulc.ca>

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IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
REFERENCE STANDARDS

VAMC BALTIMORE, MD
JUNE 8, 2016
01 42 19-6

SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 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, 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.

1.2 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.

1.3 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

1.4 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 Contracting Officer's Representative (COR) 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 COR 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. Not used.
 - 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 material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the District Office of the U.S. Soil Conservation Service and the Department of Veterans Affairs if required.
 - 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.
- 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.

1.5 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 COR. 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. 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.
 3. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
 4. Handle discarded materials other than those included in the solid waste category as directed by the COR.
- 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.
- 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 Maryland 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: Not used.

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 COR. 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 6:00p.m unless otherwise permitted by local ordinance or the COR. 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 15 m (50 feet) (dBA):

CONCRETE MIXERS	75
CONCRETE PUMPS	75
JACK HAMMERS	75
TRUCKS	75
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 15 m (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 900 to 1800 mm (three to six feet) in front of any building face. Submit the recorded information to the COR 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 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 COR. 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

1.1 DESCRIPTION

- A. This section specifies temporary interior signs.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNS

- A. Fabricate from 50 Kg (110 pound) or heavier matte finish white paper.
- B. Sign shall not be less than 100 mm (4-inch) wide by 300 mm (12 inch) long size tag. Signs shall comply with applicable requirements of the Uniform Federal Accessibility Standards (UFAS) and Architectural Barriers Act (ABA), including requirements for tactile messages.
- C. Mount temporary signs where they are readily visible.
- D. Temporary exit signs shall be illuminated with either rechargeable batteries or the building emergency power system.
- E. Signs that will be in place for more than 24 hours shall be printed by computer. Strokes shall be approximately 3 mm (1/8 inch) wide. Tactile signs may be Braille or have raised letters.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install temporary signs attached so that they are securely fastened to wall, door or pendant.
- B. Install temporary signs to identify room function and room number.

3.2 LOCATION

- A. Install exit signs so that egress path is clearly marked.
- B. Install temporary signs to identify room function and room number.
- C. Install directional signs to guide occupants to destinations.
- D. 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.
- E. Replace signs that have been removed, lost, damaged, or have become illegible.

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100% CONSTRUCTION DOCUMENTS SUBMISSION
TEMPORARY INTERIOR SIGNAGE

VAMC BALTIMORE, MD
JUNE 8, 2016
01 58 16-2

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 recycling by implementing, at a minimum, the procedures described below:
 - 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, copper, 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.
 - 14. Fluorescent lamps.

1.2 RELATED WORK

- A. Section 02 41 00, DEMOLITION.
- B. Section 01 00 00, GENERAL REQUIREMENTS.
- C. Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.
- D. Lead Paint: Section 02 83 33.13, LEAD BASED PAINT REMOVAL AND DISPOSAL.

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 recycle construction and demolition waste 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/tools/cwm.php> 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 Contracting Officer's Representative (COR) 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, and 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.
- C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.
- D. 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

- A. 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.

1. U.S. Green Building Council (USGBC): Green Building Certification Institute Rating System for New Construction.
2. Green Guide for HealthCare (GGHC)

1.7 RECORDS

- A. 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, and 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.
- 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, and invoices. Include the net total costs for each disposal.

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CONSTRUCTION WASTE MANAGEMENT

VAMC BALTIMORE, MD
JUNE 8, 2016
01 74 19-8

SECTION 01 81 11

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes general requirements and procedures to comply with the Guiding Principles for Leadership in High Performance and Sustainable Buildings Memorandum of Understanding incorporated in the Executive Orders 13423 and 13514; Energy Policy Act of 2005 (EPA 2005) and the Energy Independence and Security Act of 2007 (EISA 2007).

1.2 OBJECTIVES

A. To maximize resource efficiency and reduce the environmental impacts of construction and operation, the Contractor during the construction phase of this project shall implement the following procedures:

1. Select products that minimize consumption of energy, water and non-renewable resources, while minimizing the amounts of pollution resulting from the production and employment of building technologies. It is the intent of this project to conform to EPA's Five Guiding Principles on environmentally preferable purchasing. The five principles are:
 - a. Include environmental considerations as part of the normal purchasing process.
 - b. Emphasize pollution prevention early in the purchasing process.
 - c. Examine multiple environmental attributes throughout a product's or service's life cycle.
 - d. Compare relevant environmental impacts when selecting products and services.
 - e. Collect and base purchasing decisions on accurate and meaningful information about environmental performance.
2. Control sources for potential Indoor Air Quality (IAQ) pollutants by controlled selection of materials and processes used in project construction in order to attain superior IAQ.
3. Products and processes that achieve the above objectives to the extent currently possible and practical have been selected and included in these Construction Documents. The Contractor is responsible to maintain and support these objectives in developing means and methods for performing the work of this Contract and in

- proposing product substitutions and/or changes to specified processes.
4. Use building practices that insure construction debris and particulates do not contaminate or enter duct work prior to system startup and turn over.

1.3 RELATED DOCUMENTS

- A. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT

1.4 DEFINITIONS

- A. Agrifiber Products: Composite panel products derived from agricultural fiber
- B. Biobased Product: As defined in the 2002 Farm Bill, a product determined by the Secretary to be a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials
- C. Biobased Content: The weight of the biobased material divided by the total weight of the product and expressed as a percentage by weight
- D. Certificates of Chain-of-Custody: Certificates signed by manufacturers certifying that wood used to make products has been tracked through its extraction and fabrication to ensure that it was obtained from forests certified by a specified certification program
- E. Composite Wood: A product consisting of wood fiber or other plant particles bonded together by a resin or binder
- F. Construction and Demolition Waste: Includes solid wastes, such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, repair and demolition operations. A construction waste management plan is to be provided by the Contractor as defined in Section 01 74 19.
- G. Third Party Certification: Certification of levels of environmental achievement by nationally recognized sustainability rating system.
- H. Light Pollution: Light that extends beyond its source such that the additional light is wasted in an unwanted area or in an area where it inhibits view of the night sky
- I. Recycled Content Materials: Products that contain pre-consumer or post-consumer materials as all or part of their feedstock

- J. Post-Consumer Recycled Content: The percentage by weight of constituent materials that have been recovered or otherwise diverted from the solid-waste stream after consumer use
- K. Pre-Consumer Recycled Content: Materials that have been recovered or otherwise diverted from the solid-waste stream during the manufacturing process. Pre-consumer content must be material that would not have otherwise entered the waste stream as per Section 5 of the FTC Act, Part 260 "Guidelines for the Use of Environmental Marketing Claims": www.ftc.gov/bcp/grnrule/guides980427
- L. Regional Materials: Materials that are extracted, harvested, recovered, and manufactured within a radius of 250 miles (400 km) from the Project site
- M. Salvaged or Reused Materials: Materials extracted from existing buildings in order to be reused in other buildings without being manufactured
- N. Sealant: Any material that fills and seals gaps between other materials
- O. Type 1 Finishes: Materials and finishes which have a potential for short-term levels of off gassing from chemicals inherent in their manufacturing process, or which are applied in a form requiring vehicles or carriers for spreading which release a high level of particulate matter in the process of installation and/or curing.
- P. Type 2 Finishes: "Fuzzy" materials and finishes which are woven, fibrous, or porous in nature and tend to adsorb chemicals offgas
- Q. Volatile Organic Compounds (VOCs): Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. Compounds that have negligible photochemical reactivity, listed in EPA 40 CFR 51.100(s), are also excluded from this regulatory definition.

1.5 SUBMITTALS

- A. Sustainable Design Submittals:
 - 1. Water Conserving Fixtures: Submittals must include manufacturer's cut sheets for all water-consuming plumbing fixtures and fittings (toilets, urinals, faucets, showerheads, etc.) highlighting maximum flow rates and/or flush rates. Include cut sheets for any automatic faucet-control devices.
 - 2. Process Water Use: Provide manufacturer's cut sheets for all water-consuming commercial equipment (clothes washers, dishwashers, ice

- machines, etc.), highlighting water consumption performance. Include manufacturer's cut sheets or product data for any cooling towers, highlighting water consumption estimates, water use reduction measures, and corrosion inhibitors.
3. Elimination of CFCs AND HCFCs: Provide manufacturer's cut sheets for all cooling equipment with manufacturer's product data, highlighting refrigerants; provide manufacturer's cut sheets for all fire-suppression equipment, highlighting fire-suppression agents; provide manufacturer's cut-sheets for all polystyrene insulation (XPS) and closed-cell spray foam polyurethane insulation, highlighting the blowing agent(s).
 4. Appliances and Equipment: Provide copies of manufacturer's product data for all Energy Star eligible equipment and appliances, (excluding HVAC and lighting components), verifying compliance with EPA's Energy Star program.
 5. On-Site Renewable Energy Systems: Provide cut sheets and manufacturer's product data for all on-site renewable energy generating components and equipment, including documentation of output capacity.
 6. Measurement and Verification Systems: Provide cut sheets and manufacturer's product data for all controls systems, highlighting electrical metering and trending capability components.
 7. Salvaged or Reused Materials: Provide documentation that lists each salvaged or reused material, the source or vendor of the material, the purchase price, and the replacement cost if greater than the purchase price.
 8. Recycled Content: Submittals for all materials with recycled content (excluding MEP systems equipment and components) must include the following documentation:
 - a. Cost of each material or product, excluding cost of labor and equipment for installation.
 - b. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the percentage of post-consumer and pre-consumer recycled content (by weight) of each material or product.
 - c. An Electronic spreadsheet that tabulates the Project's total materials cost and combined recycled content value (defined as the sum of the post-consumer recycled content value plus one-half

of the pre-consumer recycled content value) expressed as a percentage of total materials cost. This spreadsheet shall be submitted every third month with the Contractor's Certificate and Application for Payment. It should indicate, on an ongoing basis, line items for each material, including cost, pre-consumer recycled content, post-consumer recycled content, and combined recycled content value.

9. Regional Materials: Submittals for all products or materials expected to contribute to the regional calculation (excluding MEP systems equipment and components) must include the following documentation:
 - a. Cost of each material or product, excluding cost of labor and equipment for installation
 - b. Location of product manufacture and distance from point of manufacture to the Project Site
 - c. Location of point of extraction, harvest, or recovery for each raw material in each product and distance from the point of extraction, harvest, or recovery to the Project Site
 - d. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the location and distance from the Project Site to the point of manufacture for each regional material
 - e. Manufacturer's product data, product literature, or a letter from the manufacturer verifying the location and distance from the Project Site to the point of extraction, harvest, or recovery for each regional material or product, including, at a minimum, gravel and fill, planting materials, concrete, masonry, and GWB
 - f. An electronic spreadsheet that tabulates the Project's total materials cost and regional materials value, expressed as a percentage of total materials cost. This spreadsheet shall be submitted every third month with the Contractor's Certificate and Application for Payment. It should indicate on an ongoing basis, line items for each material, including cost, location of manufacture, distance from manufacturing plant to the Project Site, location of raw material extraction, and distance from extraction point to the Project Site.
10. Outdoor Air Delivery Monitoring: Provide manufacturer's cut sheets highlighting the installed carbon dioxide monitoring system

- components and sequence of controls shop drawing documentation, including CO2 differential set-points and alarm capabilities.
11. Interior Adhesives and Sealants: Submittals for all field-applied adhesives and sealants, which have a potential impact on indoor air, must include manufacturer's MSDSs or other Product Data highlighting VOC content.
 - a. Provide manufacturers' documentation verifying all adhesives used to apply laminates, whether shop-applied or field-applied, contain no urea-formaldehyde.
 12. Interior Paints and Coatings: Submittals for all field-applied paints and coatings, which have a potential impact on indoor air, must include manufacturer's MSDSs or other Product Data highlighting VOC content
 13. Exterior Paints and Coatings: Not used. .
 14. Floor Coverings:
 - a. Carpet Systems: Submittals for all carpet must include the following:
 - 1) A copy of an assessment from the Building for Environmental and Economic Sustainability (BEES) software model, either Version 3.0 or 4.0, with parameters of the model set as described by this specification section.
 - 2) Manufacturer's product data verifying that all carpet systems meet or exceed the testing and product requirements of the Carpet and Rug Institute Green Label Plus program.
 15. Air Filtration: Provide manufacturer's cut sheets and product data highlighting the following:
 - a. Minimum Efficiency Reporting Value (MERV) for filtration media in all air handling units (AHUs) per ASHRAE HVAC Design Manual for Hospitals and Clinics.
 - b. Minimum Efficiency Reporting Value (MERV) for filtration media installed at return air grilles during construction if permanently installed AHUs are used during construction. See above for requirements
 16. Mercury in Lighting: Provide manufacturer's cut sheets or product data for all fluorescent or HID lamps highlighting mercury content.
 17. Lighting Controls: Provide manufacturer's cut sheets and shop drawing documentation highlighting all lighting controls systems components.

18. Thermal Comfort Controls: Provide manufacturer's cut sheets and shop drawing documentation highlighting all thermal comfort-control systems components.
 19. Blended Cement: It is the intent of this specification to reduce CO₂ emissions and other environmentally detrimental effects resulting from the production of Portland cement by requiring that all concrete mixes, in aggregate, utilize blended cement mixes to displace Portland cement as specified in Section 03 30 00, CONCRETE typically included in conventional construction. Provide the following submittals:
 - a. Copies of concrete design mixes for all installed concrete
 - b. Copies of typical regional baseline concrete design mixes for all compressive strengths used on the Project
 - c. Quantities in cubic yards of each installed concrete mix
 20. Gypsum Wall Board: Provide manufacturer's cut sheets or product data verifying that all gypsum wallboard products are moisture and mold-resistant.
 21. Fiberglass Insulation: Provide manufacturer's cut sheets or product data verifying that fiberglass batt insulation contains no urea-formaldehyde.
- B. Project Materials Cost Data: Provide a spreadsheet in an electronic file indicating the total cost for the Project and the total cost of building materials used for the Project, as follows:
1. Not more than 60 days after the Preconstruction Meeting, the General Contractor shall provide to the Owner and Architect a preliminary schedule of materials costs for all materials used for the Project organized by specification section. Exclude labor costs and all mechanical, electrical, and plumbing (MEP) systems materials and labor costs. Include the following:
 - a. Identify each reused or salvaged material, its cost, and its replacement value.
 - b. Identify each recycled-content material, its post-consumer and pre-consumer recycled content as a percentage the product's weight, its cost, its combined recycled content value (defined as the sum of the post-consumer recycled content value plus one-half of the pre-consumer recycled content value), and the total combined recycled content value for all materials as a percentage of total materials costs.

- c. Identify each regional material, its cost, its manufacturing location, the distance of this location from the Project site, the source location for each raw material component of the material, the distance of these extraction locations from the Project site, and the total value of regional materials as a percentage of total materials costs.
 - d. Identify each biobased material, its source, its cost, and the total value of biobased materials as a percentage of total materials costs. Also provide the total value of rapidly renewable materials (materials made from plants that are harvested in less than a 10-year cycle) as a percentage of total materials costs.
 - e. Identify each wood-based material, its cost, the total wood-based materials cost, each FSC Certified wood material, its cost, and the total value of Certified wood as a percentage of total wood-based materials costs.
2. Provide final versions of the above spreadsheets to the Owner and Architect not more than 14 days after Substantial Completion.
- C. Construction Waste Management: See Section 01 74 19 "Construction Waste Management" for submittal requirements.
- D. Construction Indoor Air Quality (IAQ) Management: Submittals must include the following:
- 1. Not more than 30 days after the Preconstruction Meeting, prepare and submit for the Architect and Owner's approval, an electronic copy of the draft Construction IAQ Management Plan in an electronic file including, but not limited to, descriptions of the following:
 - 2. Instruction procedures for meeting or exceeding the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 1995, Chapter 3, including procedures for HVAC Protection, Source Control, Pathway Interruption, Housekeeping, and Scheduling
 - a. Instruction procedures for protecting absorptive materials stored on-site or installed from moisture damage
 - b. Schedule of submission to Architect of photographs of on-site construction IAQ management measures such as protection of ducts and on-site stored oil installed absorptive materials

- c. Instruction procedures if air handlers must be used during construction, including a description of filtration media to be used at each return air grille
 - d. Instruction procedure for replacing all air-filtration media immediately prior to occupancy after completion of construction, including a description of filtration media to be used at each air handling or air supply unit
- 3. Not more than 30 days following receipt of the approved draft CIAQMP, submit an electronic copy of the approved CIAQMP in an electronic file, along with the following:
 - a. Manufacturer's cut sheets and product data highlighting the Minimum Efficiency Reporting Value (MERV) for all filtration media to be installed at return air grilles during construction if permanently installed AHUs are used during construction.
 - b. Manufacturer's cut sheets and product data highlighting the Minimum Efficiency Reporting Value (MERV) for filtration media in all air handling units (AHUs).
- 4. Not more than 14 days after Substantial Completion provide the following:
 - a. Documentation verifying required replacement of air filtration media in all air handling units (AHUs) after the completion of construction and prior to occupancy and, if applicable, required installation of filtration during construction.
 - b. Minimum of 18 Construction photographs: Six photographs taken on three different occasions during construction of the SMACNA approaches employed, along with a brief description of each approach, documenting implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.
 - c. A copy of the report from testing and inspecting agency documenting the results of IAQ testing, demonstrating conformance with IAQ testing procedures and requirements defined in Section 01 81 09 "Testing for Indoor Air Quality."
- E. Sustainable Design Progress Reports: Concurrent with each Application for Payment, submit reports for the following:
 - 1. Construction Waste Management: Waste reduction progress reports and logs complying with the requirements of Section 01 74 19 "Construction Waste Management."

2. Construction IAQ Management: See details below under Section 3.2 Construction Indoor Air Quality Management for Construction IAQ management progress report requirements.

1.6 QUALITY ASSURANCE

- A. Preconstruction Meeting: After award of Contract and prior to the commencement of the Work, schedule and conduct meeting with Owner, Architect, and all Subcontractors to discuss the Construction Waste Management Plan, the required Construction Indoor Air Quality (IAQ) Management Plan, and all other Sustainable Design Requirements. The purpose of this meeting is to develop a mutual understanding of the Project's Sustainable Design Requirements and coordination of the Contractor's management of these requirements with the Contracting Officer's Representative (COR).
- B. Construction Job Conferences: The status of compliance with the Sustainable Design Requirements of these specifications will be an agenda item at all regular job meetings conducted during the course of work at the site.

PART 2 - PRODUCTS

2.1 PRODUCT ENVIRONMENTAL REQUIREMENTS

- A. Do not burn rubbish, organic matter, etc. or any material on the site. Dispose of legally in accordance with Specifications Sections 01 74 19.
- B. Water-Conserving Fixtures: Plumbing fixtures and fittings shall use in aggregate at least 20% less water than the water use baseline calculated for the building after meeting the Energy Policy Act of 1992 fixture performance requirements. Flow and flush rates shall not exceed the following:
1. Toilets: no more than 1.3 gallons per flush, otherwise be dual flush 1.6/0.8 gallons per flush, and have documented bowl evacuation capability per MaP testing of at least 400 grams
 2. Urinals: Waterless or Water sense rated with no more than 0.5 gallons per flush.
 3. Lavatory Faucets: 0.5 gpm with automatic faucet controls
 4. Kitchen Sink Lavatories: 2.2 gpm
 5. Showerheads: no more than 1.5gpm
- C. Elimination of CFCs AND HCFCs:

1. Ozone Protection and Greenhouse Gas Reduction: Base building cooling equipment shall contain no refrigerants other than the following:
HCFC-123, HFC-134a, HFC-245fa, HFC-407c, or HFC 410a.
 2. Fire suppression systems may not contain ozone-depleting substances such as halon 1301 and 1211.
 3. Extruded polystyrene insulation (XPS) and closed-cell spray foam polyurethane insulation shall not be manufactured with hydrochlorofluorocarbon (HCFC) blowing agents.
- D. Appliances and Equipment: All materials and equipment being installed that falls under the Energy Star or FEMP programs must be Energy Star or FEMP-rated. Refer to each program's website for a complete list.
- E. HVAC Distribution Efficiency:
1. All duct systems shall be constructed of aluminum, stainless steel or galvanized sheet metal, as deemed appropriate based on the application requirements. No fiberglass duct board shall be permitted.
 2. All medium- and high-pressure ductwork systems shall be pressure-tested in accordance with the current SMACNA standards.
 3. All ductwork shall be externally insulated. No interior duct liner shall be permitted.
 4. Where possible, all air terminal connections shall be hard-connected with sheet metal ductwork. If flexible ductwork is used, no flexible duct extension shall be more than six feet in length.
 5. All HVAC equipment shall be isolated from the ductwork system with flexible duct connectors to minimize the transmittance of vibration.
 6. All supply and return air branch ducts shall include the appropriate style of volume damper. Air terminal devices such as grilles, registers, and diffusers shall be balanced at duct branch dampers, not at terminal face.
- F. Measurement and Verification: Install controls and monitoring devices as required by MEP divisions order to comply with International Performance Measurement & Verification Protocol (IPMVP), Volume III: Concepts and Options for Determining Energy Savings in New Construction, April 2003, Option D.
1. The IPMVP provides guidance on situation-appropriate application of measurement and verification strategies.
- G. Salvaged or Reused materials: There shall be no substitutions for specified salvaged and reused materials and products.

1. Salvaged materials: Use of salvaged materials reduces impacts of disposal and manufacturing of replacements.

H. Recycled Content of Materials:

1. Provide building materials with recycled content such that post-consumer recycled content value plus half the pre-consumer recycled content value constitutes a minimum of 30% of the cost of materials used for the Project, exclusive of all MEP equipment, labor, and delivery costs. The Contractor shall make all attempts to maximize the procurement of materials with recycled content.
 - a. e post-consumer recycled content value of a material shall be determined by dividing the weight of post-consumer recycled content by the total weight of the material and multiplying by the cost of the material.
 - b. Do not include mechanical and electrical components in the calculations.
 - c. Do not include labor and delivery costs in the calculations.
 - d. Recycled content of materials shall be defined according to the Federal Trade Commission's "Guide for the Use of Environmental Marketing Claims," 16 CFR 260.7 (e).
 - e. Utilize all on-site existing paving materials that are scheduled for demolition as granulated fill, and include the cost of this material had it been purchased in the calculations for recycled content value.
 - f. The materials in the following list must contain the minimum recycled content indicated:

Category	Minimum Recycled Content
Cast-in-Place Concrete	6% pre-consumer
Steel Fabrications	60% combined
Steel Studs	30% combined
Aluminum Fabrications	35% combined
Rigid Insulation	20% pre-consumer
Batt insulation	30% combined

I. Biobased Content:

1. For products designated by the USDA's BioPreferred program, provide products that meet or exceed USDA recommendations for biobased content, so long as products meet all other performance requirements in VA master specifications. For more information regarding the product categories covered by the BioPreferred program, visit <http://www.biopreferred.gov>

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SUSTAINABLE DESIGN REQUIREMENTS

VAMC BALTIMORE, MD
JUNE 8, 2016
01 81 11-14

SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies demolition and removal of portions of buildings, utilities and debris from trash dumps shown.

1.2 RELATED WORK:

- A. Safety Requirements: GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Disconnecting utility services prior to demolition: Section 01 00 00, GENERAL REQUIREMENTS.
- C. Reserved items that are to remain the property of the Government: Section 01 00 00, GENERAL REQUIREMENTS.
- D. Environmental Protection: Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.
- E. Construction Waste Management: Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT.
- F. Infectious Control: Section 01 00 00, GENERAL REQUIREMENTS, Article 1.7, INFECTION PREVENTION MEASURES.

1.3 PROTECTION:

- A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures. Comply with requirements of GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations. Comply with requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS.
- C. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to; ice, flooding, or pollution. Vacuum and dust the work area daily.
- D. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The contractor shall take necessary precautions to avoid damages to existing items to remain in place, to be reused, or to remain the property of the Medical Center; any damaged items shall be repaired or replaced as approved by the Contracting Officer Representative (COR).

The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal works. Repairs, reinforcement, or structural replacement must have COR's approval.

E. The work shall comply with the requirements of Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.

F. The work shall comply with the requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article 1.8 INFECTION PREVENTION MEASURES.

1.4 UTILITY SERVICES:

- A. Demolish and remove outside utility service lines shown to be removed.
- B. Remove abandoned outside utility lines that would interfere with installation of new utility lines and new construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 DEMOLITION:

- A. Completely demolish and remove construction, including all appurtenances related or connected thereto, as necessary to complete the renovations shown on the drawings.
- B. Debris, including brick, concrete, stone, metals and similar materials shall become property of Contractor and shall be disposed of by him daily, off the Medical Center to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the COR. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations.
- C. Remove and legally dispose of all materials, other than earth to remain as part of project work, from any trash dumps shown. Materials removed shall become property of contractor and shall be disposed of in compliance with applicable federal, state or local permits, rules and/or regulations. Materials that are discovered to be hazardous shall be handled as unforeseen.
- D. Remove existing utilities as indicated or uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the COR. When Utility

lines are encountered that are not indicated on the drawings, the COR shall be notified prior to further work in that area.

3.2 CLEAN-UP:

- A. On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to COR. Clean-up shall include off the Medical Center disposal of all items and materials not required to remain property of the Government as well as all debris and rubbish resulting from demolition operations.

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DEMOLITION

VAMC BALTIMORE, MD
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02 41 00-4

SECTION 02 42 00
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes procedural requirements for cutting and patching.
- B. Definition: Cutting and patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and repair required to restore surfaces to their original condition.
- C. Refer to other sections for other requirements and limitations applicable to cutting and patching individual parts of the Work.
- D. Coordinate cutting and patching with demolition requirements specified in other sections of these specifications.

1.2 RELATED WORK

- A. General demolition requirements: Section 02 41 00, DEMOLITION.

1.3 SUBMITTALS

- A. Cutting and Patching Plan: Submit a proposal to the Contracting Officer's Representative (COR), describing procedures at least 7 calendar days in advance of the time cutting and patching will initially be performed.
 - 1. Include the following information, as applicable:
 - a. Description of the extent of cutting and patching required. Show how it will be performed.
 - b. Description of the anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in appearance and other significant visual elements.
 - c. List of products to be used and entities that will perform work.
 - d. Dates and hours of operation when cutting and patching will be performed.
 - e. Compatibility and cohesion characteristics of patching compounds with adjacent materials.
 - f. Details and engineering calculations showing integration of reinforcement with the original structure, where cutting and

patching involves adding reinforcement to structural elements.

2. Approval by the Contracting Officer or Contracting Officer's Representative to proceed with cutting and patching does not waive the right to later require complete removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
- B. Operational Limitations: Do not cut and patch operating elements, safety related systems, or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements, safety related systems or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the COR's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction that is cut and patched in a visually unsatisfactorily manner.
 1. Retain the original installer or fabricator to cut and patch exposed work if the original installer or fabricator is identified in the Contract Documents or is known to the Contractor and is available for the work.
 2. If it is not possible to engage the original installer or fabricator, engage a Specialist who is specifically experienced in the work.

1.5 EXISTING WARRANTIES

- A. Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to avoid any existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use materials identical to existing materials to the maximum extent available.
- B. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
- C. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before cutting, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
- B. Before proceeding with cutting and patching involving two or more trades, meet at the Project site with the entities providing or affected by the cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Provide temporary support of work to be cut.
- B. Protect existing conditions during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Bypass in-service existing pipe, conduit, or ductwork scheduled to be removed or relocated before cutting.

3.3 PERFORMANCE

- A. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained and adjoining construction. Where possible, review proposed procedures with the original installer and comply with the original installer's recommendations.
 - 1. In general, use hand or small power tools designed for sawing or grinding, not for hammering and chopping.

2. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 3. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 4. Cut through masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 2. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Where removed walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 4. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface that contains the patch after the area has received primer and other undercoats.
 5. Patch, repair or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- D. Perform cutting and patching work listed in Division 1 Section "Work Restrictions" during Government Unoccupied Hours.

3.4 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items.
- B. Thoroughly clean piping, conduit, and similar features before applying paint, restored pipe coverings, or other finishing materials.

END OF SECTION 02 42 00

SECTION 03 30 53
(SHORT-FORM) CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies cast-in-place structural concrete and material and mixes for other concrete.

1.2 TOLERANCES:

- A. ACI 117.
- B. Slab Finishes: ACI 117, F-number method in accordance with ASTM E1155.

1.3 REGULATORY REQUIREMENTS:

- A. ACI SP-66 ACI Detailing Manual
- B. ACI 318 - Building Code Requirements for Reinforced Concrete.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Concrete Mix Design.
- C. Shop Drawings: Reinforcing steel: Complete shop drawings.
- D. Manufacturer's Certificates: Air-entraining admixture, chemical admixtures, curing compounds, waterstops.

1.5 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Concrete Institute (ACI):
 - 117-10.....Specification for Tolerances for Concrete Construction, Materials and Commentary
 - 301-10.....Specifications for Structural Concrete
 - SP-66-04ACI Detailing Manual
 - 318-11.....Building Code Requirements for Structural Concrete and Commentary
 - 347-04.....Guide to Formwork for Concrete
- C. American Society for Testing And Materials (ASTM):
 - A615/A615M-09.....Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement
 - C31/C31M-10.....Standard Practice for Making and Curing Concrete Test Specimens in the Field
 - C33/C33M-11a.....Standard Specification for Concrete Aggregates
 - C39/C39M-12.....Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

C94/C94M-12.....Standard Specification for Ready Mixed Concrete
 C150-11.....Standard Specification for Portland Cement
 C171-07.....Standard Specification for Sheet Material for
 Curing Concrete
 C172-10.....Standard Practice for Sampling Freshly Mixed
 Concrete
 C173-10.....Standard Test Method for Air Content of Freshly
 Mixed Concrete by the Volumetric Method
 C192/C192M-07.....Standard Practice for Making and Curing Concrete
 Test Specimens in the Laboratory
 C231-10.....Standard Test Method for Air Content of Freshly
 Mixed Concrete by the Pressure Method
 C494/C494M-11.....Standard Specification for Chemical Admixtures
 for Concrete
 C618-12.....Standard Specification for Coal Fly Ash and Raw
 or Calcined Natural Pozzolan for Use in Concrete
 C1116/C1116M-10.....Standard Specification for Fiber-Reinforced
 Concrete
 D4397-10.....Standard Specification for Polyethylene Sheeting
 for Construction, Industrial and Agricultural
 Applications
 E1155-96(2008).....Standard Test Method for Determining F_F Floor
 Flatness and F_L Floor Levelness Numbers

PART 2 - PRODUCTS

2.1 FORMS:

Wood, plywood, metal, or other materials, approved by Resident Engineer, of grade or type suitable to obtain type of finish specified.

2.2 MATERIALS:

- A. Portland Cement: ASTM C150, Type I or II.
- B. Fly Ash: ASTM C618, Class C or F including supplementary optional requirements relating to reactive aggregates and alkalis, and loss on ignition (LOI) not to exceed 5 percent.
- C. Coarse Aggregate: ASTM C33, Size 67 for reinforced concrete structural slabs.
- D. Pea Gravel Aggregate: For concrete topping slabs.
- E. Fine Aggregate: ASTM C33.
- F. Mixing Water: Fresh, clean, and potable.
- G. Chemical Admixtures: ASTM C494.
- H. Reinforcing Steel: ASTM A615, deformed. See structural drawings for grade.

- I. Synthetic Fibers: Monofilament polypropylene fibers for primary reinforcing of concrete slabs. Use appropriate length and 0.9 kg/m³ (1.5 lb. per cubic yard). Product shall have a UL rating.
- J. Bonding Agent: ASTM C1059, Type II, non-dispersible, acrylic emulsion or styrene butadiene.
- K. Waterstops: Self-expanding butyl strip waterstops, manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 20 by 25 mm.
- L. Embedded Items: Steel angles and headed studs, see Section 05 50 00
- M. Sheet Materials for Curing Concrete: ASTM C171.
- N. Liquid Hardener and Dustproofer: Fluosilicate solution or magnesium fluosilicate or zinc fluosilicate. Magnesium and zinc may be used separately or in combination as recommended by manufacturer.
- O. Liquid Densifier/Sealer: 100 percent active colorless aqueous silicate solution.

2.3 CONCRETE MIXES:

- A. Design of concrete mixes using materials specified shall be the responsibility of the Contractor as set forth under Option C of ASTM C94.
- B. Compressive strength at 28 days shall be not less than 30mpa (4000 psi).
- C. Establish strength of concrete by testing prior to beginning concreting operation. Test consists of average of three cylinders made and cured in accordance with ASTM C192 and tested in accordance with ASTM C39.
- D. Maximum slump for vibrated concrete is 100 mm (4 inches) tested in accordance with ASTM C143.
- E. Concrete Topping Slab Design Mix:
 - 1. Pea gravel aggregate shall be used in place of course aggregate for concrete topping slabs less than 2 inches in thickness.
 - 2. Synthetic fiber reinforcing shall be used in all concrete topping slabs.
- F. Cement and water factor (See Table I):

TABLE I - CEMENT AND WATER FACTORS FOR CONCRETE

Concrete: Strength	Non-Air-Entrained		Air-Entrained	
Min. 28 Day Comp. Str. MPa (psi)	Min. Cement kg/m ³ (lbs/c. yd)	Max. Water Cement Ratio	Min. Cement kg/m ³ (lbs/c. yd)	Max. Water Cement Ratio
30 (4000) ¹	360 (610)	0.42	N/A	N/A

1. If trial mixes are used, the proposed mix design shall achieve a compressive strength 8.3 MPa (1200 psi) in excess of f'c.

2.4 BATCHING & MIXING:

- A. Store, batch, and mix materials as specified in ASTM C94.
 1. Job-Mixed: Concrete mixed at job site shall be mixed in a batch mixer in manner specified for stationary mixers in ASTM C94.
 2. Ready-Mixed: Ready-mixed concrete comply with ASTM C94, except use of non-agitating equipment for transporting concrete to the site will not be permitted. With each load of concrete delivered to project, ready-mixed concrete producer shall furnish, in duplicate, certification as required by ASTM C94.

PART 3 - EXECUTION

3.1 FORMWORK:

- A. Installation conform to ACI 347. Sufficiently tight to hold concrete without leakage, sufficiently braced to withstand vibration of concrete, and to carry, without appreciable deflection, all dead and live loads to which they may be subjected.
- B. Treating and Wetting: Treat or wet contact forms as follows:
 1. Coat plywood and board forms with non-staining form sealer.
 2. Clean and coat removable metal forms with light form oil before reinforcement is placed.
 3. Use sealer on reused plywood forms as specified for new material.
- C. Inserts, sleeves, and similar items: Inserts, sleeves, and other items specified as furnished under this and other sections of specifications and required to be in their final position at time concrete is placed and shall be properly located, accurately positioned and built into construction, and maintained securely in place.
- D. Construction Tolerances:
 1. Contractor is responsible for setting and maintaining concrete formwork to assure erection of completed work within tolerances specified to accommodate installation or other rough and finish materials. Remedial work necessary for correcting excessive tolerances is the responsibility of the Contractor. Erected work that exceeds specified tolerance limits shall be remedied or removed and replaced, at no additional cost to the Government.
 2. Permissible surface irregularities for various classes of materials are defined as "finishes" in specification sections covering individual materials. They are to be distinguished from tolerances specified which are applicable to surface irregularities of structural elements.

3.2 REINFORCEMENT:

Details of concrete reinforcement, unless otherwise shown, in accordance with ACI 318 and ACI SP-66. Support and securely tie reinforcing steel to prevent displacement during placing of concrete.

3.3 EMBEDDED ITEMS:

Install embedded items, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303 "Code of Standard Practice for Steel Buildings and Bridges." Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.4 PLACING CONCRETE:

- A. Remove hardened concrete, debris and other foreign materials from interior of forms, and from inside of mixing and conveying equipment. Provide screeds at required elevations for concrete slabs.
- B. Before placing new concrete on or against concrete which has set, existing surfaces shall be roughened and cleaned free from all laitance, foreign matter, and loose particles. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Convey concrete from mixer to final place of deposit by method which will prevent segregation or loss of ingredients. Do not deposit in work concrete that has attained its initial set or has contained its water or cement more than 1 1/2 hours. Do not allow concrete to drop freely more than 1500 mm (5 feet) in unexposed work nor more than 900 mm (3 feet) in exposed work. Place and consolidate concrete in horizontal layers not exceeding 300 mm (12 inches) in thickness. Consolidate concrete by spading, rodding, and mechanical vibrator. Do not secure vibrator to forms or reinforcement. Vibration shall be carried on continuously with placing of concrete.

3.5 WATERSTOPS:

Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.6 PROTECTION AND CURING:

Protect exposed surfaces of concrete from premature drying, wash by running water, or mechanical injury. Curing method shall be subject to approval by Resident Engineer.

3.7 FORM REMOVAL:

Forms remain in place until concrete has a sufficient strength to carry its own weight and loads supported. Removal of forms at any time is the Contractor's sole responsibility.

3.8 SURFACE PREPARATION:

Immediately after forms have been removed and work has been examined and approved by Resident Engineer, remove loose materials, and patch all stone pockets, surface honeycomb, or similar deficiencies with cement mortar made with 1 part portland cement and 2 to 3 parts sand.

3.9 FINISHES:

A. Overhead Surface Finishes:

1. Unfinished Areas: Overhead concrete surfaces exposed in unfinished areas, above suspended ceilings, and other unfinished areas exposed or concealed will not require additional finishing.

B. Slab Finishes:

1. Scratch Finish: Slab surfaces to receive a bonded applied cementitious application shall all be thoroughly raked or wire broomed after partial setting (within 2 hours after placing) to roughen surface to insure a permanent bond between base slab and applied cementitious materials.
2. Floating: Allow water brought to surface by float used for rough finishing to evaporate before surface is again floated or troweled. Do not sprinkle dry cement on surface to absorb water.
3. Steel Trowel Finish: Applied toppings, concrete surfaces to receive resilient floor covering or carpet, future floor roof and all monolithic concrete floor slabs exposed in finished work and for which no other finish is shown or specified shall be steel troweled. Final steel troweling to secure a smooth, dense surface shall be delayed as long as possible, generally when the surface can no longer be dented with finger. During final troweling, tilt steel trowel at a slight angle and exert heavy pressure on trowel to compact cement paste and form a dense, smooth surface. Finished surface shall be free of trowel marks, uniform in texture and appearance.
4. Finished slab flatness (FF) and levelness (FL) values comply with the following minimum requirements:

Slab on grade & Shored suspended slabs	Unshored suspended slabs
Specified overall value F _F 25/F _L 20	Specified overall value F _F 25
Minimum local value F _F 17/F _L 15	Minimum local value F _F 17

3.10 SURFACE TREATMENTS:

- A. Surface treatments shall be mixed and applied in accordance with manufacturer's printed instructions.
- B. Liquid Densifier/Sealer: Use on all exposed concrete floors and concrete floors to receive.

3.11 APPLIED TOPPING:

- A. Separate concrete topping with thickness and strength shown with only enough water to insure a stiff, workable, plastic mix.
- B. Continuously place applied topping until entire section is complete, struck off with straightedge, compact by rolling or tamping, float and steel trowel to a hard smooth finish.

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies items and assemblies fabricated from structural steel shapes and other materials as shown and specified.
- B. Items specified.
 - 1. Steel framing and supports for applications where framing and supports are not specified in other sections.

1.2 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
 - 1. Each item specified, showing complete detail, location in the project, material and size of components, method of joining various components and assemblies, finish, and location, size and type of anchors.
 - 2. Mark items requiring field assembly for erection identification and furnish erection drawings and instructions.
 - 3. Provide templates and rough-in measurements as required.
- C. Furnish setting drawings and instructions for installation of anchors to be preset into concrete work, and for the positioning of items having anchors to be built into concrete construction.

1.3 QUALITY ASSURANCE

- A. Each manufactured product shall meet, as a minimum, the requirements specified, and shall be a standard commercial product of a manufacturer regularly presently manufacturing items of type specified.
- B. Each product type shall be the same and be made by the same manufacturer.
- C. Assembled product to the greatest extent possible before delivery to the site.
- D. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

1.4 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A36/A36M-12.....Structural Steel
 - A240/A240M-14.....Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications.
 - F593-13.....Stainless Steel Bolts, Hex Cap Screws, and Studs
- C. American Welding Society (AWS):
 - D1.1-10.....Structural Welding Code Steel
 - D1.1-07.....Structural Welding Code Stainless Steel
- D. National Association of Architectural Metal Manufacturers (NAAMM)
 - AMP 500-06.....Metal Finishes Manual
- E. Structural Steel Painting Council (SSPC)/Society of Protective Coatings:
 - SP 1-04.....No. 1, Solvent Cleaning
 - SP 2-04.....No. 2, Hand Tool Cleaning
 - SP 3-04.....No. 3, Power Tool Cleaning

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Structural Steel: ASTM A36.
- B. Stainless Steel: ASTM A240, Type 302 or 304.

2.2 HARDWARE

- A. Fasteners:
 - 1. Headed Studs:
 - a. ASTM F593 for stainless steel.

2.3 FABRICATION GENERAL

- A. Material
 - 1. Use material as specified. Use material of commercial quality and suitable for intended purpose for material that is not named or its standard of quality not specified.
 - 2. Use material free of defects which could affect the appearance or service ability of the finished product.
- B. Size:

1. Size and thickness of members as shown.
2. When size and thickness is not specified or shown for an individual part, use size and thickness not less than that used for the same component on similar standard commercial items or in accordance with established shop methods.

C. Connections

1. Except as otherwise specified, connections may be made by welding.
2. Field riveting will not be approved.

D. Fasteners and Anchors

1. Use methods for fastening or anchoring metal fabrications to building construction as shown or specified.
2. Where fasteners and anchors are not shown, design the type, size, location and spacing to resist the loads imposed without deformation of the members or causing failure of the anchor or fastener, and suit the sequence of installation.
3. Use material and finish of the fasteners compatible with the kinds of materials which are fastened together and their location in the finished work.

E. Workmanship

1. General:

- a. Fabricate items to design shown.
- b. Furnish members in longest lengths commercially available within the limits shown and specified.
- c. Fabricate straight, true, free from warp and twist, and where applicable square and in same plane.
- d. Provide holes, sinkages and reinforcement shown and required for fasteners and anchorage items.
- e. Provide openings, cut-outs, and tapped holes for attachment and clearances required for work of other trades.
- f. Prepare members for the installation and fitting of hardware.
- g. Fabricate surfaces and edges free from sharp edges, burrs and projections which may cause injury.

2. Welding:

- a. Weld in accordance with AWS.
- b. Welds shall show good fusion, be free from cracks and porosity and accomplish secure and rigid joints in proper alignment.
- c. Where exposed in the finished work, continuous weld for the full length of the members joined and have depressed areas filled and

protruding welds finished smooth and flush with adjacent surfaces.

d. Finish welded joints to match finish of adjacent surface.

3. Joining:

a. Miter or butt members at corners.

b. Where frames members are butted at corners, cut leg of frame member perpendicular to surface, as required for clearance.

4. Cutting and Fitting:

a. Accurately cut, machine and fit joints, corners, copes, and miters.

b. Fit pieces together as required.

c. Fabricate connections for ease of assembly and disassembly without use of special tools.

d. Joints firm when assembled.

e. Conceal joining, fitting and welding on exposed work as far as practical.

f. The fit of components and the alignment of holes shall eliminate the need to modify component or to use exceptional force in the assembly of item and eliminate the need to use other than common tools.

F. Finish:

1. Finish exposed surfaces in accordance with NAAMM AMP 500 Metal Finishes Manual.

2. Steel: NAAMM AMP 504.

a. Surfaces exposed in the finished work:

1) Finish smooth rough surfaces and remove projections.

2) Fill holes, dents and similar voids and depressions with epoxy type patching compound.

c. Shop Prime Painting:

1) Surfaces of Ferrous metal:

a) Items not specified to have other coatings.

b) Remove all loose mill scale, rust, and paint, by hand or power tool cleaning as defined in SSPC-SP2 and SP3.

c) Clean of oil, grease, soil and other detrimental matter by use of solvents or cleaning compounds as defined in SSPC-SP1.

d) After cleaning and finishing apply one coat of primer as specified in Section 09 91 00, PAINTING.

3. Stainless Steel: NAAMM AMP-504 Finish No. 4.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set work accurately, in alignment and where shown, plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.
- B. Items set into concrete.
 - 1. Provide temporary bracing for such items until concrete is set.
 - 2. Place in accordance with setting drawings and instructions.
- C. Set corner guards and similar items flush with finish floor and, where applicable, flush with side of opening.
- D. Field weld in accordance with AWS.
 - 1. Design and finish as specified for shop welding.
 - 2. Use continuous weld unless specified otherwise.
- E. Install anchoring devices and fasteners as shown and as necessary for securing metal fabrications to building construction as specified.

3.2 INSTALLATION OF SUPPORTS

- A. Anchorage to structure.
 - 1. Secure angles to structural steel by continuous welding.
 - 2. See Section 03 30 53 for embedding headed studs/angles into concrete.

3.3 CLEAN AND ADJUSTING

- A. Clean after installation exposed prefinished and plated items and items fabricated from stainless steel as recommended by the metal manufacturer and protected from damage until completion of the project.

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**SECTION 06 10 00
ROUGH CARPENTRY**

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Section specifies wood blocking, framing, sheathing, furring, nailers, sub-flooring, rough hardware, and light wood construction.

1.2 RELATED WORK:

- A. Milled woodwork: Section 06 20 00, FINISH CARPENTRY.
- B. Gypsum sheathing: Section 09 29 00, GYPSUM BOARD.
- C. Metal Stud Framing: Section 09 22 16, NON-STRUCTURAL METAL FRAMING.

1.3 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Product data and certification for fire retardant treatment.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect lumber and other products from dampness both during and after delivery at site.
- B. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
- C. Stack plywood and other board products so as to prevent warping.
- D. Locate stacks on well drained areas, supported at least 150 mm (6 inches) above grade and cover with well-ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.5 QUALITY ASSURANCE

- A. All lumber shall be fire retardant treated.
- B. Each piece of lumber shall bear a stamp indicating type of fire retardant treatment.

1.6 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. American Society of Mechanical Engineers (ASME):
 - B18.2.1-96(R2005).....Square and Hex Bolts and Screws
 - B18.2.2-87.....Square and Hex Nuts
 - B18.6.1-97.....Wood Screws
- C. American Society for Testing And Materials (ASTM):
 - C954-10.....Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Studs from

0.033 inch (2.24 mm) to 0.112-inch (2.84 mm) in thickness

C1002-07.....Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Metal Studs

D1760-01.....Pressure Treatment of Timber Products

D2559-10.....Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions

D3498-11.....Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems

F844-07.....Washers, Steel, Plain (Flat) Unhardened for General Use

F1667-08.....Nails, Spikes, and Staples

D. Federal Specifications (Fed. Spec.):

MM-L-736C.....Lumber; Hardwood

E. Commercial Item Description (CID):

A-A-55615.....Shield, Expansion (Wood Screw and Lag Bolt Self Threading Anchors)

F. Military Specification (Mil. Spec.):

MIL-L-19140E.....Lumber and Plywood, Fire-Retardant Treated

G. U.S. Department of Commerce Product Standard (PS)

PS 1-95.....Construction and Industrial Plywood

PS 20-05.....American Softwood Lumber Standard

PART 2 - PRODUCTS

2.1 LUMBER:

- A. Unless otherwise specified, each piece of lumber bear grade mark, stamp, or other identifying marks indicating grades of material, and rules or standards under which produced.
 - 1. Identifying marks in accordance with rule or standard under which material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
 - 2. Inspection agency for lumber approved by the Board of Review, American Lumber Standards Committee, to grade species used.
- B. Non-Structural Lumber:
 - 1. Unless otherwise specified, species graded under the grading rules of an inspection agency approved by Board of Review, American Lumber Standards Committee.

2. Furring, blocking, nailers and similar items 100 mm (4 inches) and narrower Standard Grade; and, members 150 mm (6 inches) and wider, Number 2 Grade.

C. Sizes:

1. Conforming to Prod. Std., PS20.
2. Size references are nominal sizes, unless otherwise specified, actual sizes within manufacturing tolerances allowed by standard under which produced.

D. Moisture Content: At time of delivery shall be maintained at the site and shall be as follows:

1. Boards and lumber 50 mm (2 inches) and less in thickness: 19 percent or less.
2. Lumber over 50 mm (2 inches) thick: 25 percent or less.

E. Fire Retardant Treatment: All lumber used on this site shall be fire retardant treated.

1. Mil Spec. MIL-L-19140 with piece of treated material bearing identification of testing agency and showing performance rating.
2. Treatment and performance inspection, by an independent and qualified testing agency that establishes performance ratings.

2.2 PLYWOOD

- A. Comply with Prod. Std., PS 1.
- B. Bear the mark of a recognized association or independent inspection agency that maintains continuing control over quality of plywood which identifies compliance by veneer grade, group number, span rating where applicable, and glue type.

2.3 ROUGH HARDWARE AND ADHESIVES:

- A. Miscellaneous Bolts: Expansion Bolts: C1D, A-A-55615; lag bolt, long enough to extend at least 65 mm (2-1/2 inches) into masonry or concrete. Use 13 mm (1/2 inch) bolt unless shown otherwise.
- B. Washers
 1. ASTM F844.
 2. Use zinc or cadmium coated steel or cast iron for washers exposed to moisture.
- C. Screws:
 1. Wood to Wood: ANSI B18.6.1 or ASTM C1002.
 2. Wood to Steel: ASTM C954, or ASTM C1002.
 3. Use zinc or cadmium coated steel or cast iron for washers exposed to moisture.
- E. Nails:

1. Size and type best suited for purpose unless noted otherwise. Use aluminum-alloy nails, plated nails, or zinc-coated nails, for nailing wood work exposed to moisture.
2. ASTM F1667:
 - a. Common: Type I, Style 10.
 - b. Concrete: Type I, Style 11.
 - c. Barbed: Type I, Style 26.
 - d. Underlayment: Type I, Style 25.
 - e. Masonry: Type I, Style 27.
 - f. Use special nails designed for use with ties, strap anchors, framing connectors, joists hangers, and similar items. Nails not less than 32 mm (1-1/4 inches) long, 8d and deformed or annular ring shank.

PART 3 - EXECUTION

3.1 INSTALLATION OF FRAMING AND MISCELLANEOUS WOOD MEMBERS:

A. Fasteners:

1. Nails.

- a. Nail in accordance with the Recommended Nailing Schedule as specified in AFPA Manual for House Framing where detailed nailing requirements are not indicated. Select nail size and nail spacing sufficient to develop adequate strength for the connection without splitting the members.
- b. Use special nails with framing connectors.
- c. Use eight penny or larger nails for nailing through 25 mm (1 inch) thick lumber and for toe nailing 50 mm (2 inch) thick lumber.
- d. Use 16 penny or larger nails for nailing through 50 mm (2 inch) thick lumber.
- e. Select the size and number of nails in accordance with the Nailing Schedule except for special nails with framing anchors.

2. Bolts:

- a. Fit bolt heads and nuts bearing on wood with washers.
- b. Countersink bolt heads flush with the surface of nailers.
- c. Embed in concrete and solid masonry or use expansion bolts. Special bolts or screws designed for anchor to solid masonry or concrete in drilled holes may be used.
- d. Use toggle bolts to hollow masonry or sheet metal.
- e. Use bolts to steel over 2.84 mm (0.112 inch, 11 gage) in thickness. Secure wood nailers to vertical structural steel members with bolts, placed one at ends of nailer and 600 mm (24 inch) intervals between end bolts. Use clips to beam flanges.

3. Drill Screws to steel less than 2.84 mm (0.112 inch) thick.
 - a. ASTM C1002 for steel less than 0.84 mm (0.033 inch) thick.
 - b. ASTM C 954 for steel over 0.84 mm (0.033 inch) thick.
 4. Power actuated drive pins may be used where practical to anchor to solid masonry, concrete, or steel.
 5. Do not anchor to wood plugs or nailing blocks in masonry or concrete. Use metal plugs, inserts or similar fastening.
 6. Screws to Join Wood:
 - a. Where shown or option to nails.
 - b. ASTM C1002, sized to provide not less than 25 mm (1 inch) penetration into anchorage member.
 - c. Spaced same as nails.
- B. Blocking Nailers, and Furring:
1. Install furring, blocking, nailers, and grounds where shown.
 2. Use longest lengths practicable.
 3. Use fire retardant treated wood blocking where shown at openings and where shown or specified.
 4. Layers of Blocking or Plates:
 - a. Stagger end joints between upper and lower pieces.
 - b. Nail at ends and not over 600 mm (24 inches) between ends.
 - c. Stagger nails from side to side of wood member over 125 mm (5 inches) in width.

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IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
ROUGH CARPENTRY

VAMC BALTIMORE, MD
JUNE 8, 2016
06 10 00-6

SECTION 06 20 00
FINISH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies interior millwork.
- B. Items specified.
 - 1. Countertops
 - 2. Plastic Laminate
 - 3. Solid Surface Material

1.2 RELATED WORK

- A. Framing, furring and blocking: Section 06 10 00, ROUGH CARPENTRY.
- B. Wood doors: Section 08 14 00, INTERIOR WOOD DOORS.
- C. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Electrical light fixtures and duplex outlets: Division 26, ELECTRICAL.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
 - 1. Millwork items - Quarter full size scale for sections and details; 1:50 (1/4-inch) for elevations and plans.
 - 2. Show construction and installation.
- C. Samples:
 - 1. Plastic laminate, solid surface material, and any other exposed to view material: 150 mm by 300 mm (6 by 12 inches). Submit samples of actual material. Photographs, printed color charts and other reproductions will not be acceptable.
- D. Certificates:
 - 1. Indicating preservative treatment and fire retardant treatment of materials meet the requirements specified.
 - 2. Indicating moisture content of materials meet the requirements specified.
- E. List of acceptable sealers for fire retardant and preservative treated materials.
- F. Manufacturer's literature and data:
 - 1. Finish hardware
 - 2. Sinks with fittings (for information only - review will be by plumbing engineer)

3. Electrical components (for information only - review will be by electrical engineer)
4. Plastic Laminate
5. Solid Surface Material

1.4 DELIVERY, STORAGE AND HANDLING

- A. Protect lumber and millwork from dampness, maintaining moisture content specified both during and after delivery at site.
- B. Store finishing lumber and millwork in weathertight well ventilated structures or in space in existing buildings designated by Resident Engineer. Store at a minimum temperature of 21°C (70°F) for not less than 10 days before installation.
- C. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop shall be a certified participant in AWI's Quality Certification Program.
- B. Installer Qualifications: Certified participant in AWI's Quality Certification Program.
- C. Source Limitation: Engage a qualified woodworking firm to assume undivided responsibility for production of interior architectural woodwork.
- D. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for Premium Grade of interior architectural woodwork.
- E. Fire Test Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.
- F. Forest Certification: Provide interior architectural woodwork produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

- G. Pre-Installation Conference: Conduct conference at Project site to review installation conditions and requirements. Do not proceed with installation until all conditions are satisfactory to the installer.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society of Testing and Materials (ASTM):
- A167-99 (R2009).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
 - B26/B26M-09.....Aluminum-Alloy Sand Castings
 - B221-08.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
 - E84-10.....Surface Burning Characteristics of Building Materials
- C. Builders Hardware Manufacturers Association (BHMA):
- A156.9-03.....Cabinet Hardware
 - A156.11-10.....Cabinet Locks
- D. International Solid Surface Fabricators Association (ISSFA):
- ISSFA-2-01 (2007).....Classification and Standards for Solid Surfacing Material
- E. National Particleboard Association (NPA):
- NPA A208.1-09.....Particleboard
- F. Architectural Woodwork Institute (AWI):
- AWI-09.....Architectural Woodwork Quality Standards and Quality Certification Program
- G. National Electrical Manufacturers Association (NEMA):
- LD 3-05.....High-Pressure Decorative Laminates
- H. U.S. Department of Commerce, Product Standard (PS)
- PS 1-09.....Structural Plywood
 - PS 2-10.....Performance Standard for Wood-Based Structural-Use Panels
 - PS 20-15.....American Softwood Lumber Standard
- I. Military Specification (Mil. Spec):
- MIL-L-19140E.....Lumber and Plywood, Fire-Retardant Treated
- J. Federal Specifications (Fed. Spec.):
- A-A-1922A.....Shield Expansion
 - A-A-1936.....Contact Adhesive
 - FF-N-836D.....Nut, Square, Hexagon Cap, Slotted, Castle
 - FF-S-111D(1).....Screw, Wood

MM-L-736(C).....Lumber, Hardwood

PART 2 - PRODUCTS

2.1 BIO-BASED MATERIAL:

- A. Bio-based Materials: For products designated by the USDA's Bio-Preferred program, provide products that meet or exceed USDA recommendations for bio-based content, so long as products meet all performance requirements in this specification section. For more information regarding the product categories covered by the Bio-Preferred program, visit <http://www.bio-preferred.gov>

2.2 LUMBER

- A. Grading and Marking:
1. Lumber shall bear the grade mark, stamp, or other identifying marks indicating grades of material.
 2. Such identifying marks on a material shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
 3. The inspection agency for lumber shall be approved by the Board of Review, American Lumber Standards Committee, to grade species used.
- B. Sizes:
1. Lumber Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which product is produced.
 2. Millwork, standing and running trim, and rails: Actual size as shown or specified.
- C. Hardwood: MM-L-736, species as specified for each item.
- D. Softwood: PS-20, exposed to view appearance grades:
1. Use C select or D select, vertical grain for transparent finish including stain transparent finish.
 2. Use Prime for painted or opaque finish.

2.3 PLYWOOD

- A. Softwood Plywood:
1. Product Standard PS-1
 2. Grading and Marking:
 - a. Each sheet of plywood shall bear the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood.

- b. The mark shall identify the plywood by species group or identification index, and shall show glue type, grade, and compliance with PS1.
- 3. Plywood, 13 mm (1/2 inch) and thicker; not less than five ply construction, except 32 mm (1-1/4 inch) thick plywood not less than seven ply.
- 4. Plastic Laminate Plywood Cores:
 - a. Exterior Type, and species group.
 - b. Veneer Grade: A-C.
- 5. Shelving Plywood:
 - a. Interior Type, any species group.
 - b. Veneer Grade: A-B.
- 6. Other: As specified for item.
- B. Hardwood Plywood:
 - 1. HPVA: HP1
 - 2. Species of face veneer shall be as shown or as specified in connection with each particular item.
 - 3. Inside of Building:
 - a. Use Type II (interior) A grade veneer for transparent finish.

2.4 PARTICLEBOARD

- A. NPA A208.1 and PS-2
- B. Plastic Laminate Particleboard Cores:
 - 1. Use Type 1, Grade 1-M-3, or Type 2, Grade 2-M-2, unless otherwise specified.
 - 2. Use Type 2, Grade 2-M-2, exterior bond, for tops with sinks.
- C. General Use: Type 1, Grade 1-M-3 or Type 2, Grade 2-M-2.

2.5 PLASTIC LAMINATE

- A. NEMA LD-3.
- B. Fire Resistance when tested in accordance with ASTM E84:
 - 1. Flame Spread: Not to exceed 25.
 - 2. Smoke Developed: Not to exceed 450.
- C. Exposed decorative surfaces including countertops, both sides of cabinet doors, and for items having plastic laminate finish. General Purpose, Type HGL.
 - 1. Thickness for Horizontal Surfaces: Grade 10, 1.1 mm (0.044 inch).
 - 2. Thickness for Vertical Surfaces: Grade 20, 0.7 mm (0.028 inch).
- D. Cabinet Interiors including Shelving: Both of following options to comply with NEMA, CLS as a minimum.
 - 1. Plastic laminate clad plywood or particle board.
 - 2. Resin impregnated decorative paper thermally fused to particle board.

- E. Backing sheet on bottom of plastic laminate covered wood tops: Backer, Type HGP.
- F. Post Forming Fabrication, Decorative Surfaces: Post forming, Type HGP.
- G. Color and Patterns:
 - 1. PL-1: Refer to Section 09 06 00, SCHEDULE OF FINISHES.

2.6 ADHESIVE

- A. For Plastic Laminate: Fed. Spec. A-A-1936.
- B. Unextended urea resin, unextended melamine resin, phenol resin, or resorcinol resin.
- C. Free of toxic chemicals such as formaldehyde.

2.7 SOLID SURFACING MATERIAL

- A. Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.
 - 1. Minimum thickness: 13 mm (1/2 inch).
 - 2. Non-porous.
- B. Fabrication: ops in one piece unless indicated otherwise.
 - 1. Fabricate countertops in one piece unless otherwise indicated.
 - 2. Provide shop fabricated and eased edges.
 - 3. Provide integral backsplashes and shop fabricated endsplashes for field installation.
- C. Plumbing fixture preparation:
 - 1. Drill holes in counter tops for plumbing fittings in shop.
 - 2. Cut openings for sink bowls in shop.
- D. Fire Resistance:
 - 1. Flame Spread: Not to exceed 25.
 - 2. Smoke Developed: Not to exceed 450.
- E. Adhesives: As recommended by manufacturer. Color shall match sheet material.
- F. Colors and Patterns:
 - 1. SSC-1: Refer to Section 09 06 00, SCHEDULE OF FINISHES.
 - 2. SSC-2: Refer to Section 09 06 00, SCHEDULE OF FINISHES.

2.8 STAINLESS STEEL

- A. ASTM A167, Type 302 or 304.

2.9 ALUMINUM CAST

- A. ASTM B26

2.10 ALUMINUM EXTRUDED

- A. ASTM B221

2.11 HARDWARE

- A. Rough Hardware:

1. Furnish rough hardware with a standard plating, applied after punching, forming and assembly of parts; galvanized, cadmium plated, or zinc-coated by electric-galvanizing process.
2. Use galvanized coating on ferrous metal for all work unless non-ferrous metals or stainless is used.
3. Fasteners:
 - a. Bolts with Nuts: FF-N-836.
 - b. Expansion Bolts: A-A-1922A.
 - c. Screws: Fed. Spec. FF-S-111.

B. Finish Hardware

1. Cabinet Hardware: ANSI A156.9.
 - a. Door/Drawer Pulls: B02011.
 - b. Drawer Slides: B05051 for drawers over 150 mm (6 inches) deep, B05052 for drawers 75 mm to 150 mm 3 to 6 inches) deep, and B05053 for drawers less than 75 mm (3 inches) deep.
 - c. Sliding Door Tracks: B07063.
 - d. Adjustable Shelf Standards: B4061 with shelf rest B04083.
 - e. Concealed Hinges: B1601, minimum 110 degree opening.
 - f. Butt Hinges: B01361, for flush doors, B01381 for inset lipped doors, and B01521 for overlay doors.
 - g. Cabinet Door Catch: B0371 or B03172.
 - h. Vertical Slotted Shelf Standard: B04103 with shelf brackets B04113, sized for shelf depth.
2. Cabinet Locks: ANSI A156.11.
 - a. Drawers and Hinged Door: E07262.
 - b. Sliding Door: E07162.
3. Thru-Wall Counter Brackets:
 - a. Steel angles drilled for fasteners on 100 mm (4 inches) centers.
 - b. Baked enamel prime coat finish.
4. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

2.12 MOISTURE CONTENT

- A. Moisture content of lumber and millwork at time of delivery to site.
1. Interior finish lumber, trim, and millwork 32 mm (1-1/4 inches) or less in nominal thickness: 12 percent on 85 percent of the pieces and 15 percent on the remainder.
 2. Moisture content of other materials shall be in accordance with the standards under which the products are produced.

2.13 FIRE RETARDANT TREATMENT

- A. Where wood members and plywood are specified to be fire retardant treated, the treatment shall be in accordance with Mil. Spec. MIL-L19140.
- B. Treatment and performance inspection shall be by an independent and qualified testing agency that establishes performance ratings.
- C. Each piece of treated material shall bear identification of the testing agency and shall indicate performance in accordance with such rating of flame spread and smoke developed.
- D. Treat wood for maximum flame spread of 25 and smoke developed of 25.
- E. Fire Resistant Softwood Plywood:
 - 1. Use Grade A, Exterior, plywood for treatment.
 - 2. Meet the following requirements when tested in accordance with ASTM E84.
 - a. Flame spread: 0 to 25.
 - b. Smoke developed: 100 maximum
- F. Fire Resistant Hardwood Plywood:
 - 1. Core: Fire retardant treated softwood plywood.
 - 2. Hardwood face and back veneers untreated,
 - 3. Factory seal panel edges, to prevent loss of fire retardant salts.

2.14 PRESERVATIVE TREATMENT

- A. Wood members and plywood used for countertops with sinks in contact with plaster, masonry or concrete, including wood members used for rough framing of millwork items except heart-wood Redwood and Western Red Cedar shall be preservative treated in accordance with AWP Standards.
- B. Use Grade A, exterior plywood for treatment.

2.15 FABRICATION

- A. General:
 - 1. Except as otherwise specified, use AWI Premium Grade for architectural woodwork and interior millwork.
 - 2. Finish woodwork shall be free from pitch pockets.
 - 3. Except where special profiles are shown, trim shall be standard stock molding and members of the same species.
 - 4. Plywood shall be not less than 13 mm (1/2 inch), unless otherwise shown or specified.
 - 5. Edges of members in contact with concrete or masonry shall have a square corner caulking rebate.
 - 6. Fabricate members less than 4 m (14 feet) in length from one piece of lumber, back channeled and molded as shown.

7. Interior trim and items of millwork to be painted may be fabricated from jointed, built-up, or laminated members, unless otherwise shown on drawings or specified.
8. Plastic Laminate Work:
 - a. Factory glued to either a plywood or a particle board core, thickness as shown or specified.
 - b. Cover exposed edges with plastic laminate, except where aluminum, stainless steel, or plastic molded edge strips are shown or specified. Use plastic molded edge strips on 19 mm (3/4-inch) molded thick or thinner core material.
 - c. Provide plastic backing sheet on underside of countertops, vanity tops including back splashes and end splashes of countertops.
 - d. Use backing sheet on concealed large panel surface when decorative face does not occur.
- B. Countertops:
 1. Fabrication with solid surface material as indicated over 32 mm (1-1/4 inch) thick core unless shown otherwise.
 - a. Use solid surfacing material for exposed edges of tops and on back splash and end splash.
 - b. Use solid surfacing material not less than 50 mm (1/2 inch) thick.
 - c. Assemble back splash and end splash to counter top. Back splash and end splashes shall be the same material as countertop.
 - d. Use one piece counters for straight runs.
 - d. Miter corners for field joints with overlapping blocking on underside of joint.

PART 3 - EXECUTION

3.1 ENVIRONMENTAL REQUIREMENTS

- A. Maintain work areas and storage areas to a minimum temperature of 21°C (70°F) for not less than 10 days before and during installation of interior millwork.
- B. Do not install finish lumber or millwork in any room or space where wet process systems such as concrete, masonry, or plaster work is not complete and dry.

3.2 INSTALLATION

- A. General:
 1. Millwork receiving transparent finish shall be primed and back-painted on concealed surfaces. Set no millwork until primed and back-painted.

2. Set nails for putty stopping. Use washers under bolt heads where no other bearing plate occurs.
3. Seal cut edges of preservative and fire retardant treated wood materials with a certified acceptable sealer.
4. Coordinate with plumbing and electrical work for installation of fixtures and service connections in millwork items.
5. Plumb and level items unless shown otherwise.
6. Nail finish at each blocking, lookout, or other nailer and intermediate points; toggle or expansion bolt in place where nails are not suitable.

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**SECTION 07 21 13
THERMAL INSULATION**

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies thermal and acoustical insulation for buildings.
- B. Acoustical insulation is identified by thickness and words "Acoustical Insulation".

1.2 RELATED WORK

- A. Safing insulation: Section 07 84 00, FIRESTOPPING.

1.3 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Insulation, each type used
 - 2. Adhesive, each type used.
 - 3. Tape
- C. Certificates: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

1.4 STORAGE AND HANDLING:

- A. Store insulation materials in weathertight enclosure.
- B. Protect insulation from damage from handling, weather and construction operations before, during, and after installation.

1.5 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):

C665-06.....Mineral Fiber Blanket Thermal Insulation for
Light Frame Construction and Manufactured
Housing

C954-10.....Steel Drill Screws for the Application of
Gypsum Panel Products or Metal Plaster Base to
Steel Studs From 0.033 (0.84 mm) inch to 0.112
inch (2.84 mm) in thickness

C1002-07.....Steel Self-Piercing Tapping Screws for the
Application of Gypsum Panel Products or Metal
Plaster Bases to Wood Studs or Steel Studs
E84-10.....Surface Burning Characteristics of Building
Materials
F1667-11.....Driven Fasteners: Nails, Spikes and Staples.

PART 2 - PRODUCTS

2.1 INSULATION - GENERAL:

- A. Where thermal resistance ("R" value) is specified or shown for insulation, the thickness shown on the drawings is nominal. Use only insulation with actual thickness that is not less than that required to provide the thermal resistance specified.
- B. Where "R" value is not specified for insulation, use the thickness shown on the drawings.
- C. Where more than one type of insulation is specified, the type of insulation for each use is optional, except use only one type of insulation in any particular area.
- D. Insulation Products shall comply with following minimum content standards for recovered materials:

Material Type	Percent by Weight
Perlite composite board	23 percent post consumer recovered paper
Polyisocyanurate/polyurethane	
Rigid foam	9 percent recovered material
Foam-in-place	5 percent recovered material
Glass fiber reinforced	6 percent recovered material
Phenolic rigid foam	5 percent recovered material
Rock wool material	75 percent recovered material

The minimum-content standards are based on the weight (not the volume) of the material in the insulating core only.

2.2 FURRING INSULATION:

- A. Batt or Blanket: Optional.
- B. Mineral Fiber: ASTM C665, Type I and ASTM E136.

2.3 ACOUSTICAL INSULATION:

- A. Mineral Fiber Blankets: ASTM C665. Maximum flame spread of 0 and smoke development of 0 when tested in accordance with ASTM E84.
- B. Thickness as shown; of widths and lengths to fit tight against framing.

2.4 FASTENERS:

- A. Staples or Nails: ASTM F1667, zinc-coated, size and type best suited for purpose.
- B. Screws: ASTM C954 or C1002, size and length best suited for purpose with washer not less than 50 mm (two inches) in diameter.
- C. Impaling Pins: Steel pins with head not less than 50 mm (two inches) in diameter with adhesive for anchorage to substrate. Provide impaling pins of length to extend beyond insulation and retain cap washer when washer is placed on the pin.

2.5 ADHESIVE:

- A. As recommended by the manufacturer of the insulation.

2.6 TAPE:

- A. Pressure sensitive adhesive on one face.
- B. Perm rating of not more than 0.50.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

- A. Install insulation with the vapor barrier facing the warm side, unless specified otherwise.
- B. Install batt or blanket insulation with tight joints and filling framing void completely. Seal cuts, tears, and unlapped joints with tape.
- C. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise.

3.2 FURRING BLANKET INSULATION:

- A. Pack insulation around door frames and windows and in building expansion joints, door soffits and other voids. Pack behind outlets around pipes, ducts, and services encased in walls. Open voids are not permitted. Hold insulation in place with pressure sensitive tape.
- B. Lap vapor retarder flanges together over face of framing for continuous surface. Seal all penetrations through the insulation.
- C. Fasten blanket insulation between metal studs or framing and exterior wall furring by continuous pressure sensitive tape along flanged edges.

3.3 ACOUSTICAL INSULATION:

- A. Fasten blanket insulation between metal studs and wall furring with continuous pressure sensitive tape along edges or adhesive.
- B. Pack insulation around door frames and windows and in cracks, expansion joints, control joints, door soffits and other voids. Pack behind outlets, around pipes, ducts, and services encased in wall or partition. Hold insulation in place with pressure sensitive tape or adhesive.
- C. Do not compress insulation below required thickness except where embedded items prevent required thickness.
- D. Where acoustical insulation is installed above suspended ceilings install blanket at right angles to the main runners or framing. Extend insulation over wall insulation systems not extending to structure above.

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**SECTION 07 81 00
APPLIED FIREPROOFING**

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies spray-applied mineral fiber and cementitious coverings to provide fire resistance to interior structural steel members shown.

1.2 RELATED WORK:

- A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.
- B. Firestopping: Section 07 84 00, FIRESTOPPING.

1.3 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Sustainable Design Submittals, as described below:
 - 1. Volatile organic compounds per volume as specified in PART 2 - PRODUCTS.
- C. Installer qualifications.
- D. Testing laboratory accreditations.
- E. Manufacturer's Literature and Data:
 - 1. Manufacturer's complete and detailed application instructions and specifications.
 - 2. Manufacturer's repair and patching instructions.
- F. Certificates:
 - 1. Certificate from testing laboratory attesting fireproofing material and application method meet the specified fire ratings.
 - a. List thickness and density of material required to meet fire ratings.
 - b. Accompanied by complete test report and test record.
 - 2. Manufacturer's certificate indicating sprayed-on fireproofing material supplied under the Contract is same within manufacturing tolerance as fireproofing material tested.
- G. Miscellaneous:
 - 1. Manufacturer's written approval of surfaces to receive sprayed-on fireproofing.
 - 2. Manufacturer's written approval of completed installation.

3. Manufacturer's written approval of the applicators of fireproofing material.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver to job-site in sealed containers marked and labeled to show manufacturer's name and brand and UL certification markings of compliance with the specified requirements.
- B. Remove damaged or opened containers from the site.
- C. Store the materials off the ground, under cover, away from damp surfaces.
- D. Keep dry until ready for use.
- E. Remove materials that have been exposed to water before installation from the site.

1.4 FIELD CONDITIONS:

- A. Temperature: Do not apply fireproofing when substrate or ambient temperature is below 4 degrees C (40 degrees F) unless temporary protection and heat are provided to maintain temperature at or above stated value during application and for 24 hours before and after application.
- B. Humidity: Maintain relative humidity levels within limits recommended by fireproofing manufacturer.
- C. Ventilation: Provide ventilation to properly dry the fireproofing after application. Provide a minimum of four (4) air exchanges per hour by forced air circulation. When permitted by Contracting Officer Representative (COR), ventilate by natural circulation.

1.5 QUALITY ASSURANCE:

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements. Submit manufacturer's certification that each installer is trained and qualified to install the specified fireproofing. Submit evidence that each installer has a minimum of three (3) years' experience and a minimum of four (4) installations using the specified fireproofing.
- B. Testing Laboratory Accreditation Requirements: Construction materials testing laboratories must be accredited by a laboratory accreditation authority. Submit a copy of the Certificate of Accreditation and Scope of Accreditation.

- C. Test for fire endurance in accordance with ASTM E119, for fire rating specified, in a nationally recognized laboratory.
- D. Manufacturer's inspection and approval of surfaces to receive fireproofing.
- E. Manufacturer's approval of fireproofing applications.
- F. Manufacturer's approval of completed installation.
- G. Pre-Application Test Area.
 - 1. Apply a test area consisting of a typical overhead fireproofing installation, including not less than 4.5 m (15 feet) of beam and deck.
 - a. Apply for the hourly ratings required in the construction documents.
 - 2. Install in location selected by the COR, for approval by the representative of the fireproofing material manufacturer and the COR.
 - 3. Perform Bond test for cohesive and adhesive strength in accordance with ASTM E736 for each applied fireproofing design used.
 - 4. Perform density test in accordance with ASTM E736 for each applied fireproofing design used.
 - 5. Do not proceed in other areas until installation of test area has been completed and approved.
 - 6. Keep approved installation area open for observation as criteria for sprayed-on fireproofing.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. ASTM International (ASTM):
 - C841-03(R2013).....Installation of Interior Lathing and Furring
 - C847-14.....Metal Lath
 - D2240-05(R2010).....Test Method for Rubber Property - Durometer Hardness
 - E84-14.....Surface Burning Characteristics of Building Materials
 - E119-12a.....Fire Tests of Building Construction and Materials
 - E605-93(R2011).....Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members

- E736-00 (R2011)Cohesion/Adhesion of Sprayed Fire-Resistive
Materials Applied to Structural Members
- E759-92 (R2011)The Effect of Deflection on Sprayed Fire-
Resistive Material Applied to Structural
Members
- E760-92 (R2011)Impact on Bonding of Sprayed Fire-Resistive
Material Applied to Structural Members
- E761-92 (R2011)Compressive Strength of Fire-Resistive Material
Applied to Structural Members
- E859-93 (R2011)Air Erosion of Sprayed Fire-Resistive Materials
Applied to Structural Members
- E937-93 (R2011)Corrosion of Steel by Sprayed Fire-Resistive
Material Applied to Structural Members
- E1042-02 (R2014)Acoustically, Absorptive Materials Applied by
Trowel or Spray.
- G21-13.....Determining Resistance of Synthetic Polymeric
Materials to Fungi
- C. Underwriters Laboratories, Inc. (UL):
Fire Resistance Directory...Latest Edition including Supplements
- D. Warnock Hersey (WH):
Certification Listings..Latest Edition
- E. Factory Mutual System (FM):
Approval Guide.....Latest Edition including Supplements
- F. Environmental Protection Agency (EPA):
40 CFR 59(2014).....National Volatile Organic Compound Emission
Standards for Consumer and Commercial Products

PART 2 - PRODUCTS

2.1 SPRAYED-ON FIREPROOFING:

- A. ASTM E1042, Class (a), Category A.
1. Type I, factory mixed cementitious materials with approved aggregate.
- B. Materials containing asbestos are not permitted.
- C. Fireproofing characteristics when applied in the thickness and density required to achieve the fire-rating specified.

	Characteristic	Test	Results
1.	Deflection	ASTM E759	No cracking, spalling, or delamination when backing to which it is applied has a deflection up to 1/120 in 3 m

	Characteristic	Test	Results
			(10 ft.)
2.	Corrosion-Resistance	ASTM E937	No promotion of corrosion of steel.
3.	Bond Impact	ASTM E760	No cracking, spalling, or delamination.
4.	Cohesion/Adhesion (Bond Strength)	ASTM E736	Minimum cohesive/adhesive strength of 9.57 kPa (200 lbf per sq. ft.) for protected areas. 19.15 kPa (400 lbf per sq. ft.) for exposed areas.
5.	Air Erosion	ASTM E859	Maximum gain weight of the collecting filter 0.27 gm per sq. meter (0.025 gm per sq. ft.).
6.	Compressive Strength	ASTM E761	Minimum compressive strength 48 kPa (1000 psf).
7.	Surface Burning Characteristics with adhesive and sealer to be used	ASTM E84	Flame spread 25 or less smoke developed 50 or less
8.	Fungi Resistance	ASTM G21	Resistance to mold growth when inoculated with aspergillus niger (28 days for general application)

2.2 ADHESIVE:

- A. Adhesive shall be approved by the fireproofing manufacturer for the application intended and may be an integral part of the material or applied separately to surface receiving fireproofing material.

2.3 SEALER:

- A. Surface burning characteristics as specified for fireproofing material.
- B. Fungus resistant.
- C. Sealer may be an integral part of the material or applied separately to the exposed surface. When applied separately use contrasting color pigmented sealer, white preferred.
- D. VOC content: Product to comply with VOC content limits of authorities having jurisdiction and the following VOC limits when calculated according to 40 CFR 59, (EPA Method 24):
1. Flat Paints and Coatings: 50 g/L.
 2. Nonflat Paints and Coatings: 150 g/L.
 3. Primers, Sealers, and Undercoaters: 200 g/L.

2.4 WATER:

- A. Clean, fresh, and free from organic and mineral impurities.
- B. pH of 6.9 to 7.1.

2.5 MECHANICAL BOND MATERIAL:

- A. Expanded Metal Lath: ASTM C847, minimum weight of 0.92 kg per square meter (1.7 pounds per square yard) or as required, according to fire-resistance designs indicated and fire proofing manufacturer's written instructions.
- B. Fasteners: ASTM C841.
- C. Reinforcing Fabric: Glass- or carbon-fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.
- D. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachments.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Verify surfaces to receive fireproofing are clean and free of dust, soot, oil, grease, water soluble materials or any foreign substance which would prevent adhesion of the fireproofing material.
- B. Verify hangers, inserts and clips are installed before the application of fireproofing material.
- C. Verify ductwork, piping, and other obstructing material and equipment is not installed that will interfere with fireproofing installation.
- D. Verify concrete work on steel decking and concrete encased steel is completed.
- E. Verify temperature and enclosure conditions required by fire-proofing material manufacturer.
- F. Conduct tests according to fireproofing manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond. Submit test report.

3.2 APPLICATION:

- A. Do not start application until written approval has been obtained from manufacturer of fireproofing materials that surfaces have been inspected by the manufacturer or his representative, and are suitable to receive sprayed-on fireproofing.
- B. Coordinate application of fireproofing material with other trades.

- C. Cover other work and exterior openings subject to damage from fallout or overspray of fireproofing materials during application.
- D. Application of Metal Lath:
 - 1. Apply to beam and columns having painted surfaces which fail ASTM E736 Bond Test requirements in pre-application test area.
 - 2. Apply to beam flanges 305 mm (12-inches) or more in width.
 - 3. Apply to column flanges 406 mm (16-inches) or more in width.
 - 4. Apply to beam or column web 406 mm (16-inches) or more in depth.
 - 5. Tack weld or mechanically fasten on maximum of 305 mm (12-inch) center.
 - 6. Lap and tie lath member in accordance with ASTM C841.
- E. Mix and apply in accordance with manufacturer's instructions.
 - 1. Mechanically control material and water ratios.
 - 2. Apply adhesive and sealer, when not an integral part of the materials, in accordance with the manufacturer's instructions.
 - 3. Apply to density and thickness indicated in UL Fire Resistance Directory, FM Approval Guide, or WH Certification Listings unless specified otherwise. Test in accordance with ASTM E119.
 - 4. Minimum ASTM E605 applied dry density per cubic meter (cubic foot) for the underside of the walk on deck (interstitial) hung purlin or beam and steel deck, columns in interstitial spaces and mechanical equipment rooms to be as follows:
 - a. Type I - 350 kg per cubic meter (22 lb. per cubic ft.).
 - b. Provide materials with higher density of 640 kg per cubic metric (40 lb. per cubic foot) in mechanical rooms and parking garages.
- F. Complete application is to be completed in one area. Inspection and approval by COR is required before removal of application equipment and proceeding with further work.

3.3 FIELD TESTS:

- A. The applied fireproofing to be tested by a COR approved independent testing laboratory and paid for by the Contractor. Submit test reports documenting results of tests on the applied material in the project.
- B. COR will select area to be tested in specific bays on each floor using a geometric grid pattern. Apply test sample every 929 square meters (10,000 square feet) of floor area or two (2) for each floor, whichever produces the greatest number of test areas.

- C. Test for thickness and density in accordance with ASTM E605. Areas showing thickness less than that required as a result of fire endurance test are not acceptable.
- D. Areas showing less than required fireproofing characteristics are not suitable for the following field tests.
 - 1. Test for cohesion/adhesion: ASTM E736.
 - 2. Test for bond impact strength: ASTM E760.

3.4 PATCHING AND REPAIRING:

- A. Inspect after mechanical, electrical and other trades have completed work in contact with fireproofing material, but before sprayed material is covered by subsequent construction.
- B. Perform corrective measures in accordance with fireproofing material manufacturer's recommendations.
 - 1. Respray areas requiring additional fireproofing material to provide the required thickness, and replace dislodged or removed material.
 - 2. Spray material for patching by machine directly on point to be patched, or into a container and then hand apply.
 - 3. Do not hand mix material.
- C. Repair:
 - 1. Respray test and rejected areas.
 - 2. Patch fireproofing material which is removed or disturbed after approval.
- D. Perform final inspection of sprayed areas after patching and repair.

3.5 SCHEDULE:

- A. Apply fireproofing material in interior structural steel members and on underside of interior steel floor and roof decks, except on following surfaces:
 - 1. Structural steel and underside of steel decks in elevator or dumbwaiter machine rooms.
 - 2. Steel members in elevator hoist ways.
 - 3. Areas used as air handling plenums.

Element	Hourly Rating
Columns supporting more than one floor	3 hours
Floor decks	2 hours
Floor supports	2 hours

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SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.1 DESCRIPTION

- A. Closures of openings in walls, floors, and roof decks against penetration of flame, heat, and smoke or gases in fire resistant rated construction.
- B. Closure of openings in walls against penetration of gases or smoke in smoke partitions.

1.2 RELATED WORK

- A. Expansion and seismic joint firestopping: Section 07 95 13, EXPANSION JOINT COVER ASSEMBLIES.
- B. Spray applied fireproofing: Section 07 81 00, APPLIED FIREPROOFING
- C. Sealants and application: Section 07 92 00, JOINT SEALANTS.
- D. Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Manufacturers literature, data, and installation instructions for types of firestopping and smoke stopping used.
- C. List of FM, UL, or WH classification number of systems installed.
- D. Certified laboratory test reports for ASTM E814 tests for systems not listed by FM, UL, or WH proposed for use.
- E. Installer's qualifications.
- F. Inspector's qualifications.
- G. Certificates from manufacturer attesting that firestopping materials comply with specified requirements.

1.4 DELIVERY AND STORAGE

- A. Deliver materials in their original unopened containers with manufacturer's name and product identification.
- B. Store in a location providing protection from damage and exposure to the elements.

1.5 WARRANTY

- A. Firestopping work subject to the terms of the Article "Warranty of Construction", FAR clause 52.246-21, except extend the warranty period to five years.

1.6 QUALITY ASSURANCE

- A. FM, UL, or WH or other approved laboratory tested products will be acceptable.
- B. Personnel installing firestopping shall be certified by the manufacturer as having completed the manufacturer's training program and is fully proficient in installation requirements.
- C. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991 or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements." Submit qualification data.

1.7 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - E84-10.....Surface Burning Characteristics of Building Materials
 - E814-11.....Fire Tests of Through-Penetration Fire Stops
- C. Factory Mutual Engineering and Research Corporation (FM):
 - Annual Issue Approval Guide Building Materials
- D. Underwriters Laboratories, Inc. (UL):
 - Annual Issue Building Materials Directory
 - Annual Issue Fire Resistance Directory
 - 1479-10.....Fire Tests of Through-Penetration Firestops
- E. Warnock Hersey (WH):
 - Annual Issue Certification Listings

PART 2 - PRODUCTS

2.1 FIRESTOP SYSTEMS

- A. Firestop material shall match Medical Center standard: Hilti FS1.
- B. Use either factory built (Firestop Devices) or field erected (through-Penetration Firestop Systems) to form a specific building system maintaining required integrity of the fire barrier and stop the passage of gases or smoke.
- C. Through-penetration firestop systems and firestop devices tested in accordance with ASTM E814 or UL 1479 using the "F" or "T" rating to maintain the same rating and integrity as the fire barrier being sealed. "T" ratings are not required for penetrations smaller than or

equal to 100 mm (4 in) nominal pipe or 0.01 m² (16 sq. in.) in overall cross sectional area.

- D. Products requiring heat activation to seal an opening by its intumescence are not permitted by VA Fire and Safety for use in firestop systems. .
- E. Firestop sealants used for firestopping or smoke sealing shall have following properties:
 - 1. Contain no flammable or toxic solvents.
 - 2. Release no dangerous or flammable out gassing during the drying or curing of products.
 - 3. Water-resistant after drying or curing and unaffected by high humidity, condensation or transient water exposure.
 - 4. When used in exposed areas, shall be capable of being sanded and finished with similar surface treatments as used on the surrounding wall or floor surface.
- F. Firestopping system or devices used for penetrations by glass pipe, plastic pipe or conduits, unenclosed cables, or other non-metallic materials shall have following properties:
 - 1. Classified for use with the particular type of penetrating material used.
 - 2. Penetrations containing loose electrical cables, computer data cables, and communications cables protected using firestopping systems that allow unrestricted cable changes without damage to the seal.
 - 3. Intumescent products which would expand to seal the opening and act as fire, smoke, toxic fumes, and, water sealant.
- G. Maximum flame spread of 25 and smoke development of 50 when tested in accordance with ASTM E84 or UL 723. Material shall be an approved firestopping material as listed in UL Fire Resistance Directory or by a nationally recognized testing laboratory.
- H. FM, UL, or WH rated or tested by an approved laboratory in accordance with ASTM E814.
- I. Materials to be nontoxic and noncarcinogen at all stages of application or during fire conditions and to not contain hazardous chemicals. Provide firestop material that is free from Ethylene Glycol, PCB, MEK, and asbestos. .

J. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
2. For floor penetrations with annular spaces exceeding 101 mm (4 in.) or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means acceptable to the firestop manufacturer.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

2.2 SMOKE STOPPING IN SMOKE PARTITIONS

- A. Use silicone sealant in smoke partitions as specified in Section 07 92 00, JOINT SEALANTS.
- B. Use mineral fiber filler and bond breaker behind sealant.
- C. Sealants shall have a maximum flame spread of 25 and smoke developed of 50 when tested in accordance with E84.
- D. When used in exposed areas capable of being sanded and finished with similar surface treatments as used on the surrounding wall or floor surface.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Submit product data and installation instructions, as required by article, submittals, after an on site examination of areas to receive firestopping.
- B. Examine substrates and conditions with installer present for compliance with requirements for opening configuration, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove dirt, grease, oil, loose materials, or other substances that prevent adherence and bonding or application of the firestopping or smoke stopping materials.
- B. Remove insulation on insulated pipe for a distance of 150 mm (six inches) on either side of the fire rated assembly prior to applying the

firestopping materials unless the firestopping materials are tested and approved for use on insulated pipes.

- C. Prime substrates where required by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- D. Masking Tape: Apply masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing seal of firestopping with substrates.

3.3 INSTALLATION

- A. Do not begin work until the specified material data and installation instructions of the proposed firestopping systems have been submitted and approved.
- B. Install firestopping systems with smoke stopping in accordance with FM, UL, WH, or other approved system details and installation instructions.
- C. Install smoke stopping seals in smoke partitions.
- D. Products of different manufacturers shall not come in direct contact with one another.

3.4 CLEAN-UP

- A. As work on each floor is completed, remove materials, litter, and debris.
- B. Clean up spills of liquid type materials.
- C. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.
- D. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to provide firestopping complying with specified requirements.

3.5 INSPECTIONS AND ACCEPTANCE OF WORK

- A. Do not conceal or enclose firestop assemblies until inspection is complete and approved by the Contracting Officer Representative (COR).
- B. Furnish service of approved inspector to inspect firestopping in accordance with ASTM E2393 and ASTM E2174 for firestop inspection, and document inspection results. Submit written reports indicating locations of and types of penetrations and type of firestopping used at each location; type is to be recorded by UL listed printed numbers.

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SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Section covers all sealant and caulking materials and their application, wherever required for complete installation of building materials or systems.

1.2 RELATED WORK:

- A. Firestopping penetrations: Section 07 84 00, FIRESTOPPING.
- B. Glazing: Section 08 80 00, GLAZING.
- C. Sound rated gypsum partitions/sound sealants: Section 09 29 00, GYPSUM BOARD.

1.3 QUALITY CONTROL:

- A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. VOC: Acrylic latex and Silicon sealants shall have less than 50g/l VOC content.

1.4 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's installation instructions for each product used.
- C. Cured samples of exposed sealants for each color where required to match adjacent material.
- D. Manufacturer's Literature and Data:
 - 1. Caulking compound
 - 2. Primers
 - 3. Sealing compound, each type, including compatibility when different sealants are in contact with each other.

1.5 PROJECT CONDITIONS:

- A. Environmental Limitations:
 - 1. Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint

sealant manufacturer or are below 4.4 °C (40 °F) or when joint substrates are wet.

B. Joint-Width Conditions:

1. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

C. Joint-Substrate Conditions:

1. Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 DELIVERY, HANDLING, AND STORAGE:

- A. Deliver materials in manufacturers' original unopened containers, with brand names, date of manufacture, shelf life, and material designation clearly marked thereon.
- B. Carefully handle and store to prevent inclusion of foreign materials.
- C. Do not subject to sustained temperatures exceeding 32° C (90° F) or less than 5° C (40° F).

1.7 DEFINITIONS:

- A. Definitions of terms in accordance with ASTM C717 and as specified.
- B. Back-up Rod: A type of sealant backing.
- C. Bond Breakers: A type of sealant backing.
- D. Filler: A sealant backing used behind a back-up rod.

1.8 WARRANTY:

- A. Warranty exterior sealing against leaks, adhesion, and cohesive failure, and subject to terms of "Warranty of Construction", FAR clause 52.246-21, except that warranty period shall be extended to two years.
- B. General Warranty: Special warranty specified in this Article shall not deprive Government of other rights Government may have under other provisions of Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.

1.9 APPLICABLE PUBLICATIONS:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
C612-10.....Mineral Fiber Block and Board Thermal

Insulation.

C717-10.....Standard Terminology of Building Seals and Sealants.

C834-10.....Latex Sealants.

C919-08.....Use of Sealants in Acoustical Applications.

C920-10.....Elastomeric Joint Sealants.

C1193-09.....Standard Guide for Use of Joint Sealants.

C1330-02 (R2007).....Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

D1056-07.....Specification for Flexible Cellular Materials—Sponge or Expanded Rubber.

84-15a.....**Standard Test Method for Surface Burning Characteristics of Building Materials**

C. Sealant, Waterproofing and Restoration Institute (SWRI).
The Professionals' Guide

PART 2 - PRODUCTS

2.1 INTERIOR SEALANTS

- A. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system are to comply with the following limits for VOC content when calculated according to 40 CFR 59, (EPA Method 24):
 - 1. Architectural Sealants: 250 g/L.
 - 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 - 3. Sealant Primers for Porous Substrates: 775 g/L.
- B. Flame spread rating shall be 25 or less; smoke developed rating shall be 50 or less when tested in accordance with ASTM E84.
- C. Food Service: Use a Vinyl Acetate Homopolymer, or other low VOC, non-toxic sealant approved for use in food preparation areas.
- D. Location of interior sealants:
 - 1. Typical narrow joint 6 mm, (1/4 inch) or less at walls and adjacent components.
 - 2. Perimeter of doors, windows, access panels which adjoin concrete or masonry surfaces.
 - 3. Joints at masonry walls and columns, piers or concrete walls.
 - 4. Exposed isolation joints at top of full height walls.
 - 5. Joints between plumbing fixtures and ceramic tile and joints formed where nonplanar tile surfaces meet.

2.2 SEALANT TYPES:

- A. S-1 (plumbing fixtures and millwork):
 - 1. ASTM C920 silicone.
 - 2. Type S.
 - 3. Class 25.
 - 4. Grade NS.
 - 5. Shore A hardness of 25-30
 - 6. Non-yellowing, mildew resistant.
 - 7. Color:
 - a. Plumbing Fixtures: White
 - b. Millwork: Clear
- B. S-2 (hollow metal frames):
 - 1. ASTM C834, acrylic latex, paintable.
- C. S-3 (acoustic):
 - 1. ASTM C920, polyurethane or polysulfide.
 - 2. Type S.
 - 3. Class 25.
 - 4. Grade NS.
 - 5. Shore A hardness of 25-45.
- D. S-4 (floor joints, thresholds, control joints, ceramic tile):
 - 1. ASTM C920, polyurethane or polysulfide.
 - 2. Type S.
 - 3. Class 25.
 - 4. Grade P.
 - 5. Shore hardness of 15-45.

2.2 COLOR:

- A. Color of exposed to view sealants shall match adjacent surfaces unless sealant is paintable. Color for other locations shall be light gray or aluminum, unless specified otherwise.
- B. Caulking shall be light gray or white, unless specified otherwise.

2.3 JOINT SEALANT BACKING:

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

1. Type C: Closed-cell material with a surface skin.
- C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 32° C (minus 26° F). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4 FILLER:

- A. Mineral fiber board: ASTM C612, Class 1.
- B. Thickness same as joint width.
- C. Depth to fill void completely behind back-up rod.
- D. Stain free type.

2.5 PRIMER:

- A. As recommended by manufacturer of caulking or sealant material.
- B. Stain free type.

2.6 CLEANERS-NON POUROUS SURFACES:

- A. Chemical cleaners acceptable to manufacturer of sealants and sealant backing material, free of oily residues and other substances capable of staining or harming joint substrates and adjacent non-porous surfaces and formulated to promote adhesion of sealant and substrates.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant.
- B. Coordinate for repair and resolution of unsound substrate materials.
- C. Inspect for uniform joint widths and that dimensions are within tolerance established by sealant manufacturer.

3.2 PREPARATIONS:

- A. Prepare joints in accordance with manufacturer's instructions and SWRI.
- B. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, lacquer

paint, or other foreign matter that would tend to destroy or impair adhesion.

1. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants.
 2. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- C. Do not cut or damage joint edges.
- D. Apply masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds.
1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Apply primer to sides of joints wherever required by compound manufacturer's printed instructions.
1. Apply primer prior to installation of back-up rod or bond breaker tape.
 2. Use brush or other approved means that will reach all parts of joints.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

3.3 BACKING INSTALLATION:

- A. Install back-up material, to form joints enclosed on three sides as required for specified depth of sealant.

- B. Where deep joints occur, install filler to fill space behind the back-up rod and position the rod at proper depth.
- C. Cut fillers installed by others to proper depth for installation of back-up rod and sealants.
- D. Install back-up rod, without puncturing the material, to a uniform depth, within plus or minus 3 mm (1/8 inch) for sealant depths specified.
- E. Where space for back-up rod does not exist, install bond breaker tape strip at bottom (or back) of joint so sealant bonds only to two opposing surfaces.
- F. Take all necessary steps to prevent three sided adhesion of sealants.

3.4 SEALANT DEPTHS AND GEOMETRY:

- A. At widths up to 6 mm (1/4 inch), sealant depth equal to width.
- B. At widths over 6 mm (1/4 inch), sealant depth 1/2 of width up to 13 mm (1/2 inch) maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

3.5 INSTALLATION:

- A. General:
 - 1. Apply sealants and caulking only when ambient temperature is between 5° C and 38° C (40° and 100° F).
 - 2. Do not use polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present.
 - 3. Do not use sealant type listed by manufacture as not suitable for use in locations specified.
 - 4. Apply caulking and sealing compound in accordance with manufacturer's printed instructions.
 - 5. Avoid dropping or smearing compound on adjacent surfaces.
 - 6. Fill joints solidly with compound and finish compound smooth.
 - 7. Tool joints to concave surface unless shown or specified otherwise.
 - 8. Apply compounds with nozzle size to fit joint width.
 - 9. Test sealants for compatibility with each other and substrate. Use only compatible sealant.
- B. For application of sealants, follow requirements of ASTM C1193 unless specified otherwise.
- C. Where gypsum board partitions are of sound rated, fire rated, or smoke barrier construction, follow requirements of ASTM C919 only to seal all

cut-outs and intersections with the adjoining construction unless specified otherwise.

1. Apply a 6 mm (1/4 inch) minimum bead of sealant each side of runners (tracks), including those used at partition intersections with dissimilar wall construction.
2. Coordinate with application of gypsum board to install sealant immediately prior to application of gypsum board.
3. Partition intersections: Seal edges of face layer of gypsum board abutting intersecting partitions, before taping and finishing or application of veneer plaster-joint reinforcing.
4. Openings: Apply a 6 mm (1/4 inch) bead of sealant around all cut-outs to seal openings of electrical boxes, ducts, pipes and similar penetrations. To seal electrical boxes, seal sides and backs.

3.6 FIELD QUALITY CONTROL:

- A. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements.

3.7 CLEANING:

- A. Fresh compound accidentally smeared on adjoining surfaces: Scrape off immediately and rub clean with a solvent as recommended by the caulking or sealant manufacturer.
- B. After filling and finishing joints, remove masking tape.
- C. Leave adjacent surfaces in a clean and unstained condition.

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies steel doors, steel frames and related components.
- B. Terms relating to steel doors and frames as defined in ANSI A123.1 and as specified.

1.2 RELATED WORK

- A. Solid Core Wood Doors: Section 08 14 00, INTERIOR WOOD DOORS.
- B. Door Hardware: Section 08 71 00, DOOR HARDWARE.
- C. Power Door Operators: Section 08 71 13, AUTOMATIC DOOR OPERATORS.
- D. Glazing and ballistic rated glazing: Section 08 80 00, GLAZING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Hollow metal frame submittals will be reviewed concurrently with door hardware, wood door, and automatic door operator submittals. Review will not begin until all submittals have been received and are determined to be complete.
- C. Manufacturers Literature and Data: Complete description of doors, frames, materials, construction, physical characteristics and, for fire rated frames, conformance with NFPA 80 and Underwriters Laboratory, Inc., or Intertek Testing Services or Factory Mutual fire rating requirements.
- D. Hollow Metal Schedule: Indicate opening number/location, size, thickness, profile, rating, glazing material, hardware set, installation and anchorage details, and swing.

1.4 SHIPMENT

- A. Prior to shipment label each door and frame to show location, size, door swing and other pertinent information.
- B. Fasten temporary steel spreaders across the bottom of each door frame.

1.5 STORAGE AND HANDLING

- A. Store doors and frames at the site under cover.
- B. Protect from rust and damage during storage and erection until completion.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. Steel Door Institute (SDI):
- 113-01 (R2006).....Thermal Transmittance of Steel Door and Frame Assemblies
- 128-09.....Acoustical Performance for Steel Door and Frame Assemblies
- C. American National Standard Institute:
- A250.8-2003 (R2008).....Specifications for Standard Steel Doors and Frames
- D. American Society for Testing and Materials (ASTM):
- A1008-10.....Steel, sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy and High Strength Low Alloy with Improved Formability
- E90-09.....Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
- E. National Fire Protection Association (NFPA):
- 80-13.....Fire Doors and Fire Windows
- F. Underwriters Laboratories, Inc. (UL):
- Fire Resistance Directory...Latest Edition
- G. Intertek Testing Services (ITS):
- Certifications Listings...Latest Edition
- H. Factory Mutual System (FM):
- Approval Guide...Latest Edition

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Sheet Steel: ASTM A1008, cold-rolled for panels (face sheets) of doors.
- B. Door Construction: Heavy duty, SDI A250.8, Level 2, Model 2 of size and design shown. Unitized steel grid core construction. Galvanized cold rolled face sheets; galvanized stiles, tops and bottoms.
- C. Fabrication:
1. Follow SDI A250.8 for fabrication of standard steel doors, except as specified otherwise. Doors to receive hardware specified in Section 08 71 00, DOOR HARDWARE. Tolerances as per SDI A250.8. Thickness, 44 mm (1-3/4 inches), unless otherwise shown.

2. Close top edge of exterior doors flush and seal to prevent water intrusion.
3. When vertical steel stiffeners are used for core construction, fill spaces between stiffeners with mineral fiber insulation.
- D. Anchors, Fastenings and Accessories: Fastenings anchors, clips connecting members and sleeves from zinc coated steel.
- E. Prime Paint: Paint that meets or exceeds the requirements of A250.8.

2.2 METAL FRAMES

A. General:

1. Thickness:

- a. Comply with SDI A250.8, type and style as indicated.
- b. Frames for manually operated doors: 1.52 mm (0.060 inch, 16ga.) thick sheet steel.
- c. Frames for power operated doors: 1.9 mm (0.075 inch, 14ga.) thick sheet steel.
2. Frames for doors in areas subject to significant amounts of moisture such as sterile processing, dishwashing, toilets, and kitchen: Fabricate from 1.7 mm (0.067 inch) thick galvanized steel conforming to ASTM A525.
3. Frames for labeled fire rated doors and windows.
 - a. Comply with NFPA 80. Test by Underwriters Laboratories, Inc., Intertek Testing Services, or Factory Mutual or other independent testing service acceptable to the Contracting Officer.
 - b. Fire rated labels of approving laboratory permanently attached to frames as evidence of conformance with these requirements. Provide labels of metal or engraved stamp, with raised or incised markings.
4. Knocked-down frames are not acceptable.

B. Reinforcement and Covers:

1. ANSI A250.8 for, minimum thickness of steel reinforcement welded to back of frames.
2. Provide mortar guards securely fastened to back of hardware reinforcements.

C. Terminated Stops: Provide terminated stops on door frames that do not have fire rating and are not installed in smoke barrier. Comply with ANSI A250.8.

D. Glazed Openings:

1. Integral stop on exterior, corridor, or secure side of door.
2. Design rabbet width and depth to receive glazing material or panel shown or specified.

E. Frame Anchors:

1. Floor anchors:

- a. At bottom of jamb use 1.3 mm (0.053 inch) thick steel clip angles welded to jamb and drilled to receive two 6 mm (1/4 inch) floor bolts. Use 50 mm x 50 mm (2 inch by 2 inch) 9 mm by (3/8 inch) clip angle for lead lined frames, drilled for 9 mm (3/8 inch) floor bolts.
- b. Where mullions occur, provide 2.3 mm (0.093 inch) thick steel channel anchors, drilled for two 6 mm (1/4 inch) floor bolts and frame anchor screws.

2. Jamb anchors:

- a. Locate anchors on jambs near top and bottom of each frame, and at intermediate points not over 600 mm (24 inches) apart, except for fire rated frames space anchors as required by labeling authority.
- b. Form jamb anchors of not less than 1 mm (0.042 inch) thick steel unless otherwise specified.
- c. Anchors set in masonry: Use adjustable anchors designed for friction fit against the frame and for extension into the masonry not less than 250 mm (10 inches). Use one of following type:
 - 1) Wire loop type of 5 mm (3/16 inch) diameter wire.
 - 2) T-shape or strap and stirrup type of corrugated or perforated sheet steel.
- d. Anchors for stud partitions: Either weld to frame or use lock-in snap-in type. Provide tabs for securing anchor to the sides of the studs.
- e. Anchors for frames set in prepared openings:
 - 1) Steel pipe spacers with 6 mm (1/4 inch) inside diameter welded to plate reinforcing at jamb stops or hat shaped formed strap spacers, 50 mm (2 inches) wide, welded to jamb near stop.
 - 2) Drill jamb stop and strap spacers for 6 mm (1/4 inch) flat head bolts to pass thru frame and spacers.
 - 3) Two piece frames: Subframe or rough buck drilled for 6 mm (1/4 inch) bolts.

f. Anchors for observation windows and other continuous frames set in stud partitions.

1) In addition to jamb anchors, weld clip anchors to sills and heads of continuous frames over 1200 mm (4 feet) long.

2) Anchors spaced 600 mm (24 inches) on centers maximum.

g. Modify frame anchors to fit special frame and wall construction and provide special anchors where shown or required.

2.3 SHOP PRIMING

A. Shop prime hollow metal frames so that they are ready for field painting. Comply with ANSI A250.8.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Plumb, align and brace frames securely until permanent anchors are set.

1. Use triangular bracing near each corner on both sides of frames with temporary wood spreaders at midpoint.

2. Use wood or metal spreaders at bottom of frame if the shipping spreader is removed.

3. Protect frame from accidental damage and abuse.

4. Where construction will permit concealment, leave the shipping spreaders in place after installation, otherwise remove the spreaders after the frames are set and anchored.

5. Remove spreaders and braces only after the walls are built and jamb anchors are secured.

B. Floor Anchors:

1. Anchor the bottom of door frames to floor with two 6 mm (1/4 inch) diameter expansion bolts.

2. Power actuated drivepins may be used to secure frame anchors to concrete floors.

C. Jamb Anchors:

1. Secure anchors to sides of studs with two fasteners through anchor tabs. Use steel drill screws to steel studs.

2. Coat frame back with a bituminous coating prior to lining of grout filling in masonry walls.

3. Frames set in prepared openings of masonry or concrete: Expansion bolt to wall with 6 mm (1/4 inch) expansion bolts through spacers. Where subframes or rough bucks are used, 6 mm (1/4 inch) expansion bolts on 600 mm (24 inch) centers or power activated drive pins 600

mm (24 inches) on centers. Secure two piece frames to subframe or rough buck with machine screws on both faces.

D. Install anchors for labeled fire rated doors to provide rating as required.

E. Overhead Bracing (power operated doors): Provide jamb extensions to structure above, anchor clip angles with not less than two, 9 mm (3/8 inch) expansion bolts or power actuated drive pins to concrete slab. Weld to steel overhead members.

3.2 INSTALLATION OF DOORS AND APPLICATION OF HARDWARE

A. Install doors and hardware as specified in Sections 08 14 00, INTERIOR WOOD DOORS and Section 08 71 00, DOOR HARDWARE.

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SECTION 08 14 00
INTERIOR WOOD DOORS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies interior flush doors with prefinish, prefit option.
- B. Section also includes fire rated doors.

1.2 RELATED WORK

- A. Metal door frames: Section 08 11 13, HOLLOW METAL DOORS AND FRAMES.
- B. Door hardware including hardware location (height): Section 08 71 00, DOOR HARDWARE.
- C. Glazing: Section 08 80 00, GLAZING.
- D. Finish: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Interior Wood Door submittals will be reviewed concurrently with hollow metal frame, door hardware, and automatic door operator submittals. Review will not begin until all submittals have been received and are determined to be complete.
- C. Samples: Veneer sample 200 mm (8 inch) by 275 mm (11 inch) by 6 mm (1/4 inch) showing specified wood species sanded to receive a transparent finish. Factory finish veneer sample where the prefinished option is accepted.
- D. Shop Drawings:
 - 1. Show every door in project and schedule location in building.
 - 2. Door schedule: Indicate type, grade, finish and size; include detail of glazing, fire rating, hardware, swing and pertinent details.
 - 3. Provide information concerning specific requirements not included in the manufacturer's literature and data submittal.
- E. Manufacturer's Literature and Data:
 - 1. Full description of door construction, materials and installation requirements. Identify referenced standards.
 - 2. Labeled fire rated doors showing conformance with NFPA 80.
- F. Laboratory Test Reports:
 - 1. Screw holding capacity test report in accordance with WDMA T.M.10.

2. Split resistance test report in accordance with WDMA T.M.5.
3. Cycle/Slam test report in accordance with WDMA T.M.7.
4. Hinge-Loading test report in accordance with WDMA T.M.8.

1.4 WARRANTY

- A. Doors are subject to terms of Article titled "Warranty of Construction", FAR clause 52.246-21, except that warranty shall be as follows:
 1. For interior doors, manufacturer's warranty for lifetime of original installation.

1.5 DELIVERY AND STORAGE

- A. Factory seal doors and accessories in minimum of 6 mill polyethylene bags or cardboard packages which shall remain unbroken during delivery and storage.
- B. Store in accordance with WDMA I.S.1-A, Job Site Information.
- C. Label package for door opening where used.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. Window and Door Manufacturers Association (WDMA):
 - I.S.1A-11.....Architectural Wood Flush Doors
 - T.M.5-90.....Slit Resistance Test Method
 - T.M.7-08.....Cycle-Slam Test Method
 - T.M.8-08.....Hinge Loading Test Method
 - T.M.10-08.....Screwholding Test Method
- C. National Fire Protection Association (NFPA):
 - 80-10.....Protection of Buildings from Exterior Fire
 - 252-08.....Fire Tests of Door Assemblies

PART 2 - PRODUCTS

2.1 FLUSH DOORS

- A. General:
 1. Meet requirements of WDMA I.S.1-A, Extra Heavy Duty.
 2. Adhesive: Type II
 3. Thickness: 45 mm (1-3/4 inches) unless otherwise shown or specified.
 4. Core Type: Particle or staved lumber with internal blocking as required for hardware.
- B. Face Veneer:

1. In accordance with WDMA I.S.1-A.
2. Match existing doors using one species throughout the project unless scheduled or otherwise shown.
3. Species and grade: Premium Grade, quarter sawn red oak.
 - a. AA grade face veneer
 - b. Match face veneers for doors for uniform effect of color and grain at joints.
 - c. Door edges shall be same species as door face veneer.
4. Factory finish doors with clear, transparent finishing.
- C. Wood for stops and moldings of flush doors required to have transparent finish:
 1. Solid Wood of same species as face veneer.
 2. Glazing:
 - a. On non-labeled doors use applied wood stops nailed tight on room side and attached on opposite side with flathead, countersunk wood screws, spaced approximately 125 mm (5 inches) on centers.
 - b. On labeled doors use applied metal stops of type necessary to maintain fire rating. Paint stops to match door color.
- D. Fire rated wood doors:
 1. Fire Performance Rating:
 - a. "B" label, 1-1/2 hours.
 - b. "C" label, 3/4 hour.
 2. Labels:
 - a. Doors shall conform to the requirements of ASTM E2074, or NFPA 252, and, carry an identifying label from a qualified testing and inspection agency for class of door or opening shown designating fire performance rating.
 - b. Metal labels with raised or incised markings.
 3. Performance Criteria for Stiles of doors utilizing standard mortise leaf hinges:
 - a. Hinge Loading: WDMA T.M.8. Average of 10 test samples for Extra Heavy Duty doors.
 - b. Direct screw withdrawal: WDMA T.M.10 for Extra Heavy Duty doors. Average of 10 test samples using a steel, fully threaded #12 wood screw.
 - c. Cycle Slam: 1,000,000 cycles with no loose hinge screws or other visible signs of failure when tested in accordance with WDMA T.M.7.

4. Additional Hardware Reinforcement:
 - a. Provide fire rated doors with hardware reinforcement blocking.
 - b. Size of lock blocks as required to secure hardware specified.
 - c. Top, bottom and intermediate rail blocks shall measure not less than 125 mm (five inches) minimum by full core width.
 - d. Reinforcement blocking in compliance with manufacturer's labeling requirements.
 - e. Mineral material similar to core is not acceptable.
 5. Other Core Components: Manufacturer's standard as allowed by the labeling requirements.
 6. Provide steel frame approved for use in labeled doors for vision panels.
- E. Fire Rated and Smoke Barrier Doors:
1. For glazed openings use steel frames approved for use in labeled doors.
 2. Provide a steel astragal on one leaf of pairs of doors, including double egress doors.

2.2 FACTORY FINISH AND FIT

- A. Flush doors shall be factory machined to receive hardware, bevels, undercuts, cutouts, accessories and fitting for frame.
- B. Factory fit to conform to specification for shop fitting, including factory application of sealer to edge and routings.
- C. Flush doors to receive transparent finish (in addition to being prefit) shall be factory finished as follows:
 1. WDMA I.S.1-A Section F-3 specification for System TR-4, Conversion Varnish or System TR-5, Catalyzed Vinyl.
 2. Use stain when required to produce finish that matches existing doors in adjacent areas or provided architectural sample type.

2.3 IDENTIFICATION MARK:

- A. On top edge of door.
- B. Either a stamp, brand or other indelible mark, giving manufacturer's name, door's trade name, construction of door, code date of manufacture and quality.
- C. Accompanied by either of the following additional requirements:
 1. An identification mark or a separate certification including name of inspection organization.
 2. Identification of standards for door, including glue type.

2.4 SEALING:

- A. Give top and bottom edge of doors two coats of catalyzed polyurethane or water resistant sealer before sealing in shipping containers.

PART 3 - EXECUTION

3.1 DOOR PREPARATION

- A. Do not violate the qualified testing and inspection agency label requirements for fire rated doors.
- B. Clearances between Doors and Frames and Floors: Maximum 3 mm (1/8 inch) clearance at the jambs, heads, and meeting stiles, and a 19 mm (3/4 inch) clearance at bottom, except as otherwise specified.
- C. Provide cutouts for special details required and specified.
- D. Rout doors for hardware using templates and location heights specified in Section, 08 71 00 DOOR HARDWARE.
- E. Fit doors to frame, bevel lock edge of doors 3 mm (1/8 inch) for each 50 mm (two inches) of door thickness and undercut where indicated.
- F. Immediately after fitting and cutting of doors for hardware, seal cut edges of doors with two coats of water resistant sealer.
- G. Finish surfaces, including both faces, top, bottom and edges of the doors smooth to touch.
- H. Apply a steel astragal on the opposite side of active door on pairs of fire rated doors.
- I. Apply a steel astragal to meeting style of active leaf of pair of doors or double egress smoke doors.

3.2 INSTALLATION OF DOORS APPLICATION OF HARDWARE

- A. Install doors and hardware as specified in this Section.

3.3 DOOR PROTECTION

- A. As door installation is completed, place polyethylene bag or cardboard shipping container over door and tape in place.
- B. Provide protective covering over knobs and handles in addition to covering door.

- - - E N D - - -

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
INTERIOR WOOD DOORS

VAMC BALTIMORE, MD
JUNE 8, 2016
08 14 00-6

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Door hardware and related items necessary for complete installation and operation of doors.

1.2 RELATED WORK

- A. Caulking: Section 07 92 00 JOINT SEALANTS.
- B. Section 08 14 00, INTERIOR WOOD DOORS
- C. Section 08 11 13, HOLLOW METAL DOORS AND FRAMES
- D. Section 08 71 13, AUTOMATIC DOOR OPERATORS
- E. Section 08 71 13.11, LOW ENERGY DOOR OPERATORS
- F. Finishes: Section 09 06 00, SCHEDULE FOR FINISHES.
- G. Painting: Section 09 91 00, PAINTING.
- H. Card Readers: Section 28 13 11, PHYSICAL ACCESS CONTROL SYSTEMS.
- I. Electrical: Division 26, ELECTRICAL.
- J. Fire Detection: Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 GENERAL

- A. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards) unless specified otherwise.
- B. Provide rated door hardware assemblies where required by most current version of the International Building Code (IBC).
- C. Hardware for Labeled Fire Doors and Exit Doors: Conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Provide hardware listed by UL, except where heavier materials, large size, or better grades are specified herein under paragraph HARDWARE SETS. In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements.
- D. Hardware for application on metal and wood doors and frames shall be made to standard templates. Furnish templates to the fabricator of these items in sufficient time so as not to delay the construction.
- E. The following items shall be of the same manufacturer, except as otherwise specified:
 - 1. Mortise locksets.
 - 2. Hinges for hollow metal and wood doors.
 - 3. Surface applied overhead door closers.

4. Exit devices.
5. Floor closers.

1.4 WARRANTY

- A. Automatic door operators shall be subject to the terms of FAR Clause 52.246-21, except that the Warranty period shall be two years in lieu of one year for all items except as noted below:
 1. Locks, latchsets, and panic hardware: 5 years.
 2. Door closers and continuous hinges: 10 years.

1.5 MAINTENANCE MANUALS

- A. In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS", furnish maintenance manuals and instructions on all door hardware. Provide installation instructions with the submittal documentation.

1.6 SUBMITTALS

- A. Submittals shall be in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Submit 6 copies of the schedule per Section 01 33 23. Submit 2 final copies of the final approved schedules to VAMC Locksmith as record copies (VISN Locksmith if the VAMC does not have a locksmith).
- B. Door hardware submittals will be reviewed concurrently with hollow metal frame, wood door, and automatic door operator submittals. Review will not begin until all submittals have been received and are determined to be complete.
- C. Hardware Schedule: Prepare and submit hardware schedule in tabular form that includes the following information:
 1. Hardware set number.
 2. Doors to receive hardware set.
 3. Door swing, size, and fire rating.
 4. Each item of hardware
 - a. Manufacturer's name.
 - b. Product name and model number.
 - c. Function (locks closers and other operating devices).
 - d. Finish (AMSI/BHMA designation).
 - e. Quantity of each item for each door opening.
 5. Key control.
- D. Samples and Manufacturers' Literature:
 1. Samples: All exposed to view hardware items proposed for the project shall be submitted for approval. Tag and mark all items with

- manufacturer's name, catalog number and project number. After acceptance, samples may be installed in the Work.
2. Manufacturers' Literature: Submit product data for each specified hardware item. Include product description sufficient to confirm compliance with these specifications and installation instructions. Identify options necessary for proper installation and operation.
- E. Certificate of Compliance and Test Reports: Submit certificates that hardware conforms to the requirements specified herein. Certificates shall be accompanied by copies of reports as referenced. The testing shall have been conducted either in the manufacturer's plant and certified by an independent testing laboratory or conducted in an independent laboratory, within four years of submittal of reports for approval.

1.7 DELIVERY AND MARKING

- A. Deliver items of hardware to job site in their original containers, complete with necessary appurtenances including screws, keys, and instructions. Tag one of each different item of hardware and deliver to Resident Engineer for reference purposes. Tag shall identify items by Project Specification number and manufacturer's catalog number. These items shall remain on file in Resident Engineer's office until all other similar items have been installed in project, at which time the Resident Engineer will deliver items on file to Contractor for installation in predetermined locations on the project.

1.8 PREINSTALLATION MEETING

- A. Convene a preinstallation meeting not less than 30 days before start of installation of door hardware. Require attendance of parties directly affecting work of this section, including Contractor and Installer, Architect, Project Engineer and VA Locksmith, Hardware Consultant, and Hardware Manufacturer's Representative. Review the following:
1. Inspection of door hardware.
 2. Job and surface readiness.
 3. Coordination with other work.
 4. Protection of hardware surfaces.
 5. Substrate surface protection.
 6. Installation.
 7. Adjusting.
 8. Repair.
 9. Field quality control.

10. Cleaning.

1.9 INSTRUCTIONS

- A. Hardware Sets are indicated on the drawings. They refer to Hardware Sets in the Hardware Schedule at the end of this Section.
- B. Keying: All cylinders shall be keyed into existing Master Key System. Contractor shall obtain instructions from the Contracting Officer and the VA Locksmith on hierarchy and labeling to be used.

1.10 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. In text, hardware items are referred to by series, types, etc., listed in such specifications and standards, except as otherwise specified.
- B. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
 - A156.1-06.....Butts and Hinges
 - A156.2-03.....Bored and Pre-assembled Locks and Latches
 - A156.3-08.....Exit Devices, Coordinators, and Auto Flush Bolts
 - A156.4-08.....Door Controls (Closers)
 - A156.5-01.....Auxiliary Locks and Associated Products
 - A156.8-05.....Door Controls-Overhead Stops and Holders
 - A156.13-05.....Mortise Locks and Latches Series 1000
 - A156.16-08.....Auxiliary Hardware
 - A156.18-06.....Materials and Finishes
 - A156.21-09.....Thresholds
 - A156.22-05.....Door Gasketing and Edge Seal Systems
 - A156.26-06.....Continuous Hinges
- C. National Fire Protection Association (NFPA):
 - 80-10.....Fire Doors and Fire Windows
 - 101-09.....Life Safety Code
- D. Underwriters Laboratories, Inc. (UL):
 - Building Materials Directory (2008)

PART 2 - PRODUCTS

2.1 GENERAL

- A. Manufacturers' Catalog Number References: Where manufacturers' products are specified herein, products of other manufacturers which are

considered equivalent to those specified may be used. Manufacturers whose products are specified are identified by abbreviations as follows:

Adams-Rite	Adams Rite Mfg. Co.	Pomona, CA
Best	Best Access Systems	Indianapolis, IN
Corbin Russwin	Corbin Russwin, Inc./Assa Abloy	Monroe, NC
Don-Jo	Don-Jo Manufacturing	Sterling, MA
G.E. Security	GE Security, Inc.	Bradentown, FL
Markar	Markar Architectural Products	Pomona, CA
Pemko	Pemko Manufacturing Co.	Ventura, CA
Rixson	Rixson	Franklin Park, IL
Rockwood	Rockwood Manufacturing Co.	Rockwood, PA
Securitron	Securitron Magnalock Corp.	Sparks, NV
Southern Folger	Southern Folger Detention Equipment Co.	San Antonio, TX
Stanley	The Stanley Works	New Britain, CT
Tice	Tice Industries	Portland, OR
Trimco	Triangle Brass Mfg. Co.	Los Angeles, CA
Zero	Zero Weather Stripping Co.	New York, NY

2.2 BUTT HINGES

A. ANSI A156.1. Provide only five-knuckle ball bearing type hinges with hospital tips. The following types of butt hinges shall be used for the types of doors listed, except where otherwise specified:

1. Interior Doors: Type A8112/A5112 for doors 900 mm (3 feet) wide or less and Type A8111/A5111 for doors over 900 mm (3 feet) wide. Hinges for doors exposed to high humidity areas (shower rooms, toilet rooms, janitor rooms, etc. shall be of stainless steel material.

B. Provide quantity and size of hinges per door leaf as follows:

1. Doors up to 1210 mm (4 feet) high: 2 hinges.
2. Doors 1210 mm (4 feet) to 2260 mm (7 feet 5 inches) high: 3 hinges minimum.
3. Doors greater than 2260 mm (7 feet 5 inches) high: 4 hinges.
4. Doors up to 900 mm (3 feet) wide, standard weight: 114 mm x 114 mm (4-1/2 inches x 4-1/2 inches) hinges.

5. Doors over 900 mm (3 feet) to 1065 mm (3 feet 6 inches) wide, standard weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
6. Doors over 1065 mm (3 feet 6 inches) to 1210 mm (4 feet), heavy weight: 127 mm x 114 mm (5 inches x 4-1/2 inches).
7. Provide heavy-weight hinges where specified.
8. At doors weighing 330 kg (150 lbs.) or more, furnish 127 mm (5 inch) high hinges.

2.3 CONTINUOUS HINGES

- A. ANSI/BHMA A156.26, Grade 1-600.
 1. Listed under Category N in BHMA's "Certified Product Directory."
- B. General: Minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4 inches (102 mm); fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete
- C. Continuous, Barrel-Type Hinges: Hinge with knuckles formed around a Teflon-coated 6.35mm (0.25-inch) minimum diameter pin that extends entire length of hinge.
 1. Base Metal for Exterior Hinges: Stainless steel.
 2. Provide with non-removable pin (hospital tip option) at lockable outswing doors.
 3. Where required to clear adjacent casing, trim, and wall conditions and allow full door swing, provide wide throw hinges of minimum width required.
 4. Provide with manufacturer's cut-outs for separate mortised power transfers and/or mortised automatic door bottoms where they occur.
 5. Where thru-wire power transfers are integral to the hinge, provide hinge with easily removable portion to allow easy access to wiring connections.
 6. Where models are specified that provide an integral wrap-around edge guard for the hinge edge of the door, provide manufacturer's adjustable threaded stud and machine screw mechanism to allow the door to be adjusted within the wrap-around edge guard.

2.4 DOOR CLOSING DEVICES

- A. Closing devices shall be products of one manufacturer for each type specified.

2.5 OVERHEAD CLOSERS

- A. Conform to ANSI A156.4, Grade 1.
- B. Closers shall conform to the following:

1. The closer shall have minimum 50 percent adjustable closing force over minimum value for that closer and have adjustable hydraulic back check effective between 60 degrees and 85 degrees of door opening.
2. Closer shall have hold-open feature except when installed in a fire rated opening.
3. Size Requirements: Provide multi-size closers, sizes 1 through 6, except where multi-size closer is not available for the required application.
4. Material of closer body shall be forged or cast.
5. Arm and brackets for closers shall be steel, malleable iron or high strength ductile cast iron.
6. Closers shall have full size metal cover; plastic covers will not be accepted.
7. Closers shall have adjustable hydraulic back-check, separate valves for closing and latching speed, adjustable back-check positioning valve, and adjustable delayed action valve.
8. Provide closers with any accessories required for the mounting application, including (but not limited to) drop plates, special soffit plates, spacers for heavy-duty parallel arm fifth screws, bull-nose or other regular arm brackets, longer or shorter arm assemblies, and special factory templating. Provide special arms, drop plates, and templating as needed to allow mounting at doors with overhead stops and/or holders.
9. Closer arms or backcheck valve shall not be used to stop the door from overswing, except in applications where a separate wall, floor, or overhead stop cannot be used.
10. Provide parallel arm closers with heavy duty rigid arm.
11. Where closers are to be installed on the push side of the door, provide parallel arm type except where conditions require use of top jamb arm.
12. Provide all surface closers with the same body attachment screw pattern for ease of replacement and maintenance.
13. All closers shall have a 38 mm (1½ inches) minimum piston diameter.

2.6 DOOR STOPS

- A. Conform to ANSI A156.16.
- B. Provide door stops wherever an opened door or any item of hardware thereon would strike a wall, column, equipment or other parts of

building construction. For concrete, masonry or quarry tile construction, use lead expansion shields for mounting door stops.

- C. Where cylindrical locks with turn pieces or pushbuttons occur, equip wall bumpers Type L02251 (rubber pads having concave face) to receive turn piece or button.
- D. Provide floor stops (Type L02141 or L02161 in office areas; Type L02121 x 3 screws into floor elsewhere. Wall bumpers, where used, must be installed to impact the trim or the door within the leading half of its width. Floor stops, where used, must be installed within 4-inches of the wall face and impact the door within the leading half of its width.
- E. Where drywall partitions occur, use floor stops or provide blocking behind wall stops and anchor with toggle bolts. Use Type L02141 or L02161 in office areas, Type L02121 elsewhere.
- F. Provide stop Type L02011, as applicable for exterior doors. At outswing doors where stop can be installed in concrete, provide stop mated to concrete anchor set in 76mm (3-inch) core-drilled hole and filled with quick-setting cement.
- G. Where the specified wall or floor stop cannot be used, provide concealed overhead stops (surface-mounted where concealed cannot be used).

2.7 LOCKS AND LATCHES

- A. Conform to ANSI A156.2. Locks and latches for doors 45 mm (1-3/4 inch) thick or over shall have beveled fronts. Lock cylinders shall have seven pins. Cylinders for all locksets shall be removable core type. Cylinders shall be furnished with construction removable cores and construction master keys. Cylinder shall be removable by special key or tool. Construct all cores so that they will be interchangeable into the core housings of all mortise locks, rim locks, cylindrical locks, and any other type lock included in the Great Grand Master Key System. Disassembly of lever or lockset shall not be required to remove core from lockset. All locksets or latches on double doors with fire label shall have latch bolt with 19 mm (3/4 inch) throw, unless shorter throw allowed by the door manufacturer's fire label. Provide temporary keying device or construction core of allow opening and closing during construction and prior to the installation of final cores.
- B. In addition to above requirements, locks and latches shall comply with following requirements:

1. Levers shall meet ADA requirements including tactile warnings at entrance to dangerous areas.
2. Mortise Lock and Latch Sets: Conform to ANSI/BHMA A156.13. Mortise locksets shall be series 1000, minimum Grade 1. All locksets and latchsets shall have lever handles fabricated from cast stainless steel. Provide sectional (lever x rose) lever design matching Medical Center standard: Yale 8800 series with CRR 8807FL lever. No substitute lever material shall be accepted. All locks and latchsets shall be furnished with 122.55 mm (4-7/8-inch) curved lip strike and wrought box. At outswing pairs with overlapping astragals, provide flat lip strip with 21mm (7/8-inch) lip-to-center dimension. Lock function F02 shall be furnished with emergency tools/keys for emergency entrance. All lock cases installed on lead lined doors shall be lead lined before applying final hardware finish. Furnish armored fronts for all mortise locks. Where mortise locks are installed in high-humidity locations or where exposed to the exterior on both sides of the opening, provide non-ferrous mortise lock case.
2. Auxiliary locks shall be as specified under hardware sets and conform to ANSI A156.5.
3. Privacy locks shall have an inside thumbturn for privacy and an outside thumbturn for emergency entrance.

2.8 KEYS

- A. Stamp all keys with change number and key set symbol. Furnish five keys for each lock. Obtain instructions from the Contracting Officer and VA Locksmith regarding master keying.

2.9 ARMOR PLATES, KICK PLATES, MOP PLATES AND DOOR EDGING

- A. Conform to ANSI Standard A156.6.
- B. Provide protective plates and door edging as specified below:
 1. Kick plates, mop plates and armor plates of metal, Type J100 series.
 2. Provide kick plates and mop plates where specified. Kick plates shall be 254 mm (10 inches) or 305 mm (12 inches) high. Mop plates shall be 152 mm (6 inches) high. Both kick and mop plates shall be minimum 1.27 mm (0.050 inches) thick. Provide kick and mop plates beveled on all 4 edges (B4E). On push side of doors where jamb stop extends to floor, make kick plates 38 mm (1-1/2 inches) less than width of door, except pairs of metal doors which shall have plates 25 mm (1 inch) less than width of each door. Extend all other kick

and mop plates to within 6 mm (1/4 inch) of each edge of doors. Kick and mop plates shall butt astragals. For jamb stop requirements, see specification sections pertaining to door frames.

3. Kick plates and/or mop plates are not required on following door sides:
 - a. Armor plate side of doors;
 - b. Exterior side of exterior doors;
 - c. Closet side of closet doors;
 - d. Both sides of aluminum entrance doors.
4. Armor plates for doors are listed under Article "Hardware Sets".

Armor plates shall be thickness as noted in the hardware set, 875 mm (35 inches) high and 38 mm (1-1/2 inches) less than width of doors, except on pairs of metal doors. Provide armor plates beveled on all 4 edges (B4E). Plates on pairs of metal doors shall be 25 mm (1 inch) less than width of each door. Where top of intermediate rail of door is less than 875 mm (35 inches) from door bottom, extend armor plates to within 13 mm (1/2 inch) of top of intermediate rail. On doors equipped with panic devices, extend armor plates to within 13 mm (1/2 inch) of panic bolt push bar.
5. Provide stainless steel edge guards where so specified at wood doors. Provide mortised type instead of surface type except where door construction and/or ratings will not allow. Provide edge guards of bevel and thickness to match wood door. Provide edge guards with factory cut-outs for door hardware that must be installed through or extend through the edge guard. Provide full-height edge guards except where door rating does not allow; in such cases, provide edge guards to height of bottom of typical lockset armor front. Forward edge guards to wood door manufacturer for factory installation on doors.

2.10 EXIT DEVICES

- A. Conform to ANSI Standard A156.3. Exit devices shall be Grade 1; type and function are specified in hardware sets. Provide flush with finished floor strikes for vertical rod exit devices in interior of building. Trim shall have cast satin stainless steel lever handles of design similar to locksets, unless otherwise specified. Provide key cylinders for keyed operating trim and, where specified, cylinder dogging.

- B. Surface vertical rod panics shall only be provided less bottom rod; provide fire pins as required by exit device and door fire labels. Do not provide surface vertical rod panics at exterior doors.
- C. Concealed vertical rod panics shall be provided less bottom rod at interior doors, unless lockable or otherwise specified; provide fire pins as required by exit device and door fire labels. Where concealed vertical rod panics are specified at exterior doors, provide with both top and bottom rods.
- D. At non-rated openings with panic hardware, provide panic hardware with key cylinder dogging feature.
- E. Exit devices shall comply with Underwriters Laboratories, Inc., requirements for Fire Exit Hardware. Submit proof of compliance.

2.11 FLUSH BOLTS (LEVER EXTENSION)

- A. Conform to ANSI A156.16. Flush bolts shall be Type L24081 unless otherwise specified. Furnish proper dustproof strikes conforming to ANSI A156.16, for flush bolts required on lower part of doors.
- B. Lever extension manual flush bolts shall only be used at non-fire-rated pairs for rooms only accessed by maintenance personnel.
- C. Face plates for cylindrical strikes shall be rectangular and not less than 25 mm by 63 mm (1 inch by 2-1/2 inches).
- D. Friction-fit cylindrical dustproof strikes with circular face plate may be used only where metal thresholds occur.
- E. Provide extension rods for top bolt where door height exceeds 2184 mm (7 feet 2 inches).

2.12 DOOR PULLS WITH PLATES

- A. Conform to ANSI A156.6. Pull Type J401, 152 mm (6 inches) high by 19 mm (3/4 inches) diameter with plate Type J302, 90 mm by 350 mm (3-1/2 inches by 14 inches), unless otherwise specified. Provide pull with projection of 70 mm (2 3/4 inches) and a clearance of 51 mm (2 inches). Cut plates of door pull plate for cylinders, or turn pieces where required.

2.13 PUSH PLATES

- A. Conform to ANSI A156.6. Metal, Type J302, 200 mm (8 inches) wide by 350 mm (14 inches) high. Provide metal Type J302 plates 100 mm (4 inches wide by 350 mm (14 inches) high) where push plates are specified for doors with stiles less than 200 mm (8 inches) wide. Cut plates for cylinders, and turn pieces where required.

2.14 COMBINATION PUSH AND PULL PLATES

- A. Conform to ANSI 156.6. Type J303, stainless steel 3 mm (1/8 inch) thick, 80 mm (3-1/3 inches) wide by 800 mm (16 inches) high), top and bottom edges shall be rounded. Secure plates to wood doors with 38 mm (1-1/2 inch) long No. 12 wood screws. Cut plates for turn pieces, and cylinders where required. Pull shall be mounted down.

2.15 COORDINATORS

- A. Conform to ANSI A156.16. Coordinators, when specified for fire doors, shall comply with Underwriters Laboratories, Inc., requirements for fire door hardware. Coordinator may be omitted on exterior pairs of doors where either door will close independently regardless of the position of the other door. Coordinator may be omitted on interior pairs of non-labeled open where open back strike is used. Open back strike shall not be used on labeled doors. Paint coordinators to match door frames, unless coordinators are plated. Provide bar type coordinators, except where gravity coordinators are required at acoustic pairs. For bar type coordinators, provide filler bars for full width and, as required, brackets for push-side surface mounted closers, overhead stops, and vertical rod panic strikes.

2.16 THRESHOLDS

- A. Conform to ANSI A156.21, mill finish extruded aluminum, except as otherwise specified. In existing construction, thresholds shall be installed in a bed of sealant with ¼-20 stainless steel machine screws and expansion shields. In new construction, embed aluminum anchors coated with epoxy in concrete to secure thresholds. Furnish thresholds for the full width of the openings.
- B. At exterior doors and any interior doors exposed to moisture, provide threshold with non-slipabrasive finish.
- C. Provide with miter returns where threshold extends more than 12 mm (0.5 inch) from fame face.

2.17 MISCELLANEOUS HARDWARE

- A. Access Doors (including Sheet Metal, Screen and Woven Wire Mesh Types): Except for fire-rated doors and doors to Temperature Control Cabinets, equip each single or double metal access door with Lock Type E76213, conforming to ANSI A156.5. Key locks as directed. Ship lock prepaid to the door manufacturer. Hinges shall be provided by door manufacturer.
- B. Mutes: Conform to ANSI A156.16. Provide door mutes or door silencers Type L03011 or L03021, depending on frame material, of white or light

gray color, on each steel or wood door frame, except at fire-rated frames, lead-lined frames and frames for sound-resistant, lightproof and electromagnetically shielded doors. Furnish 3 mutes for single doors and 2 mutes for each pair of doors, except double-acting doors. Provide 4 mutes or silencers for frames for each Dutch type door. Provide 2 mutes for each edge of sliding door which would contact door frame.

2.18 FINISHES

- A. Exposed surfaces of hardware shall have ANSI A156.18, finishes as specified below. Finishes on all hinges, pivots, closers, thresholds, etc., shall be as specified below under "Miscellaneous Finishes." For field painting (final coat) of ferrous hardware, see Section 09 91 00, PAINTING.
- B. 626 or 630: All surfaces on exterior and interior of buildings, except where other finishes are specified.
- C. Miscellaneous Finishes:
 - 1. Hinges --exterior doors: 630.
 - 2. Hinges --interior doors: 626 or 630.
 - 3. Locksets and latchsets --interior doors: 626 or 630.
 - 4. Door Closers: Factory applied paint finish. Dull or Satin Aluminum color.
 - 5. Thresholds: Clear anodized aluminum or marble, as scheduled.
 - 5. Cover plates for floor hinges and pivots: 630.
 - 6. Other primed steel hardware: 600.
- D. Anti-microbial Coating: All hand-operated hardware (levers, pulls, push bars, push plates, paddles, and panic bars) shall be provided with an anti-microbial/anti-fungal coating that has passed ASTM E2180 tests. Coating to consist of ionic silver (Ag+). Silver ions surround bacterial cells, inhibiting growth of bacteria, mold, and mildew by blockading food and respiration supplies.

2.19 BASE METALS

- A. Apply specified U.S. Standard finishes on different base metals as following:

Finish	Base Metal
626	Brass or bronze
630	Stainless steel

PART 3 - EXECUTION

3.1 HARDWARE HEIGHTS

- A. Locate hardware on doors at heights to match existing hardware. The Contractor shall visit the site, verify location of existing hardware and submit locations to VA Contracting Officer for approval or, if acceptable to the Contracting Officer, mount hardware in accordance with the following (all dimensions shown as height above finish floor):
1. Exit devices centerline of strike (where applicable) 1024 mm (40-5/16 inches).
 2. Locksets and latch sets centerline of strike 1024 mm (40-5/16 inches).
 3. Deadlocks centerline of strike 1219 mm (48 inches).
 4. Centerline of door pulls to be 1016 mm (40 inches).
 5. Push plates and push-pull shall be 1270 mm (50 inches) to top of plate.
 6. Push-pull latch to be 1024 mm (40-5/16 inches) to centerline of strike.
 7. Locate other hardware at standard commercial heights. Locate push and pull plates to prevent conflict with other hardware.

3.2 INSTALLATION

- A. Closer devices, including those with hold-open features, shall be equipped and mounted to provide maximum door opening permitted by building construction or equipment. Closers shall be mounted on side of door inside rooms and away from corridors. At exterior doors, closers shall be mounted on interior side. Where closers are mounted on doors they shall be mounted with sex nuts and bolts; foot shall be fastened to frame with machine screws.

- B. Hinge Size Requirements:

Door Thickness	Door Width	Hinge Height
45 mm (1-3/4 inch)	900 mm (3 feet) and less	113 mm (4-1/2 inches)
45 mm (1-3/4 inch)	Over 900 mm (3 feet) but not more than 1200 mm (4 feet)	125 mm (5 inches)

- C. Hinge leaves shall be sufficiently wide to allow doors to swing clear of door frame trim and surrounding conditions.

D. Hinges Required Per Door:

Doors over 1500 mm (5 ft) high and not over 2280 mm (7 ft 6 in) high	3 butts
Doors over 2280 mm (7 feet 6 inches) high	4 butts

E. Fastenings: Suitable size and type and shall harmonize with hardware as to material and finish. Provide machine screws and lead expansion shields to secure hardware to concrete, ceramic or quarry floor tile, or solid masonry. Fiber or rawl plugs and adhesives are not permitted. All fastenings exposed to weather shall be of stainless steel.

F. After locks have been installed; show in presence of Contracting Officer that keys operate their respective locks in accordance with keying requirements. (All keys, Master Key level and above shall be sent Registered Mail to the Medical Center Director along with the bitting list. Also a copy of the invoice shall be sent to the Contracting Officer for his records.) Installation of locks which do not meet specified keying requirements shall be considered sufficient justification for rejection and replacement of all locks installed on project.

3.3 FINAL INSPECTION

A. Installer to provide letter to VA Contracting Officer that upon completion, installer has visited the Project and has accomplished the following:

1. Re-adjust hardware.
2. Evaluate maintenance procedures and recommend changes or additions, and instruct VA personnel.
3. Identify items that have deteriorated or failed.
4. Submit written report identifying problems.

3.4 DEMONSTRATION

A. Demonstrate efficacy of mechanical hardware and electrical, and electronic hardware systems, including adjustment and maintenance procedures, to satisfaction of Resident/Project Engineer and VA Locksmith.

3.5 HARDWARE SETS

A. Following sets of hardware correspond to those shown on drawings.

Hardware Set HW-1

1½ pair butts	114 x 114 mm (4½ x 4½")
1 mortise lockset	Storeroom Function F07
1 card reader	
1 electric strike	
1 closer	
1 wall stop	
1 kick plate	305 mm (12") high, push side
3 silencers	

Hardware Set HW-2

1½ pair butts	114 x 114 mm (4½ x 4½")
1 mortise latchset	Passage Function F01
1 closer	
1 floor stop	
1 kick plate	305 mm (12") high, stainless steel, push side
3 silencers	

Hardware Set HW-3

1½ pair butts	127 x 114 mm (5" x 4½")
1 mortise lockset	Storeroom Function F07
1 card reader	
1 electric strike	
1 closer	
1 wall stop	
1 kick plate	305 mm (12") high, stainless steel, push side
3 silencers	

Hardware Set HW-4

1½ pair butts	127 x 114 mm (5" x 4½"), stainless steel
1 mortise latchset	Passage Function F01, stainless steel
1 closer	
1 wall stop	stainless steel
2 armor plates	875 mm (35") high, stainless steel
3 silencers	

Hardware Set HW-5

1½ pair butts	114 x 114 mm (4½ x 4½"), stainless steel
1 mortise latchset	Passage Function F01, stainless steel
1 closer	
1 wall stop	stainless steel
2 kick plates	305 mm (12") high, stainless steel
3 silencers	

Hardware Set HW-6

1½ pair butts	114 x 114 mm (4½ x 4½")
1 mortise lockset	Office Function F04
1 closer	
1 wall stop	
1 kick plate	305 mm (12") high, stainless steel, push side
1 coat hook	
3 silencers	

Hardware Set HW-7

1½ pair butts	114 x 114 mm (4½ x 4½"), stainless steel
1 mortise lockset	Storeroom Function F07, stainless steel
1 closer	
1 wall stop	
1 kick plate	305 mm (12") high, stainless steel, pull side
3 silencers	

Hardware Set HW-8 (pair, unequal leaves)

3 pair butts	127 x 114 mm (5" x 4½"), heavy weight, stainless steel
1 mortise lockset	Storeroom Function F07, stainless steel
1 exit device	
2 closers	
1 set auto flush bolts	top and bottom
2 wall stops	
2 kick plates	305 mm (12") high, pull side, each leaf, stainless steel
2 silencers	

Hardware Set HW-9

3 pair butts	127 x 114 mm (5" x 4½"), heavy weight, stainless steel
1 mortise lockset	Storeroom Function F07, stainless steel
2 exit devices	
1 card reader	
1 electric strike	
2 closers	
1 set auto flush bolts	top and bottom
2 wall stops	
2 kick plates	305 mm (12") high, pull side, each leaf, stainless steel
2 silencers	

Hardware Set HW-10

2 continuous hinges	Heavy weight, stainless steel
1 mortise latchset	Passage Function F01, stainless steel
1 dummy pull	Match latchset, stainless steel
2 automatic operators	Push plates each side
2 wall stops	
4 armor plates	875 mm (35") high, both sides, each leaf, stainless steel
2 silencers	

Hardware Set HW-11

2 continuous hinges	Heavy weight
1 mortise lockset	Storage Function F07
1 dummy pull	Match lockset
2 exit devices	
1 card reader	
1 electric strike	
2 closers	
1 astragal	Full height of door
1 coordinator	
2 wall stops	
4 kick plates	305 mm (12") high, both sides, each leaf, stainless steel
2 silencers	

Hardware Set HW-12

1½ pair butts	114 x 114 mm (4½ x 4½"), stainless steel
1 mortise latchset	Passage Function F01, stainless steel
1 closer	
1 wall stop	
2 kick plates	305 mm (12") high, stainless steel
3 silencers	

Hardware Set HW-13

2 continuous hinges	Heavy weight
1 mortise lockset	Storage Function F07
1 dummy pull	Match lockset
2 exit devices	
1 card reader	
1 electric strike	
2 closers	
1 astragal	Full height of door
1 coordinator	
2 wall stops	
4 kick plates	305 mm (12") high, both sides, each leaf, stainless steel
2 silencers	

Hardware Set HW-14

1½ pair butts	127 x 114 mm (5" x 4½"), stainless steel, heavy weight
1 mortise lockset	Storeroom Function F07, stainless steel
1 card reader	
1 electric strike	
1 closer	
1 exit device	
1 wall stop	
1 kick plate	305 mm (12") high, push side
3 silencers	

Hardware Set HW-15

1½ pair butts	114 x 114 mm (4½ x 4½"), stainless steel
1 mortise lockset	Storeroom Function F07, stainless steel

1 closer
1 floor stop
1 kick plate 305 mm (12") high, push side
3 silencers

Hardware Set HW-16

3 pair butts 127 x 114 mm (5" x 4½"), heavy weight,
stainless steel
1 mortise lockset Storeroom Function F07, stainless steel
1 set manual flush bolts top and bottom
2 wall stops
2 armor plates 875 mm (35") high, pull side, each leaf,
stainless steel
2 silencers

Hardware Set HW-T1 (Doors in Construction Barriers) - 45 Minute Fire

Rating*

1½ pair butts** 114 x 114 mm (4½ x 4½")
1 mortise lockset Office Function F04
1 deadbolt Key outside; thumbturn inside
1 closer
1 stop floor or wall stop as appropriate
1 set weatherstripping head and jambs
1 automatic door bottom

*** For pairs of doors provide 3 pair butts, 2 closers, 1 set flush bolts, 1 full height astragal and weatherstripping at meeting stiles, 1 coordinator, and 2 automatic door bottoms.**

****Hinges shown are for door leaves up to 36-inches wide. Refer to paragraph 2.2 for hinge sizes to be used with wider doors.**

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SECTION 08 71 13
AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies equipment, controls and accessories for automatic operation of swing and sliding doors.

1.2 RELATED WORK

- A. Door hardware; Section 08 71 00, DOOR HARDWARE.
- B. Glass and glazing of doors and frames; Section 08 80 00, GLAZING.
- C. Electric general wiring, connections and equipment requirements; Division 26, ELECTRICAL.
- D. Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 QUALITY ASSURANCE

- A. Automatic door operators, controls and other equipment shall be products of a manufacturer regularly engaged in manufacturing such equipment for a minimum of three years.
- B. One type of automatic door equipment shall be used throughout the building.
- C. Equipment installer shall have specialized experience and shall be approved by the manufacturer.

1.4 WARRANTY

- A. Automatic door operators shall be subject to the terms of the "Warranty of Construction", FAR clause 52.246-21, except that the Warranty period shall be two years in lieu of one year.

1.5 MAINTENANCE MANUALS

- A. In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS," furnish maintenance manuals and instructions on automatic door operators.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Automatic Door Operator submittals will be reviewed concurrently with door hardware, hollow metal frame and interior wood door submittals. Review will not begin until all submittals have been received and are determined to be complete.
- C. Manufacturer's literature and data describing operators, power units, controls, door hardware and safety devices.

D. Shop Drawings:

1. Showing location of controls and safety devices in relationship to each automatically operated door.
2. Showing layout, profiles, product components, including anchorage, accessories, as applicable.
3. Submit templates, wiring diagrams, fabrication details and other information to coordinate the proper installation of the automatic door operators.

1.7 DESIGN CRITERIA

- A. As a minimum automatic door equipment shall comply with the requirements of BHMA 156.10. Except as otherwise noted on drawings, provide operators which will move the doors from the fully closed to fully opened position in three seconds maximum time interval, when speed adjustment is at maximum setting.
- B. Equipment: Conforming to UL 325. Provide key operated power disconnect wall switch for each door installation.
- C. Electrical Wiring, Connections and Equipment: Provide all motor, starter, controls, associated devices, and interconnecting wiring required for the installation. Equipment and wiring shall be as specified in Division 26, ELECTRICAL.

1.8 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. Builders Hardware Manufacturers Association, Inc. (BHMA):
A156.10-05.....Power Operated Pedestrian Doors (BHMA 1601)
- C. Underwriters Laboratory (UL):
325-10.....Door, Drapery, Gate, Louver, and Window
Operators and Systems

1.9 DELIVERY AND STORAGE

- A. Delivery shall be in factory's original, unopened, undamaged container with identification labels attached.

PART 2 - PRODUCTS

2.1 SWING DOOR OPERATORS

- A. General: Swing door operators shall be of institutional type, door panel size 600 mm to 1250 mm (2'-0" to 5'-0") width, weight not to exceed 300 kg (600 pounds), electric operated for overhead mounting

within the header or transom. Furnish metal mounting supports, brackets and other accessories necessary for the installation of operators at the head of the door frames. The motor on automatic door operator shall be provided with an interlock so that the motor will not operate when doors are electrically locked from opening.

- B. Operators shall have checking mechanism providing cushioning action at last part of door travel, in both opening and closing cycle. Operators shall be capable of recycling doors instantaneously to full open position from any point in the closing cycle when control switch is activated. Operators shall, when automatic power is interrupted or shut-off, permit doors to easily open manually without damage to automatic operator system.
- C. Operator, enclosed in housing, shall open door by energizing motor and shall stop by electrically reducing voltage and stalling motor against mechanical stop. Door shall close by means of spring energy, and close force shall be controlled by gear system and motor being used as dynamic break without power, or controlled by hydraulic closer in electro-hydraulic operators. System shall operate as manual door control in event of power failure. Opening and closing speeds shall be adjustable:
 - 1. Operator Housing: Housing shall be a minimum of 112 mm (4-1/2 inches) wide by 140 mm (5.5 inches) high aluminum extrusions with enclosed end caps for application to 100 mm (4 inches) and larger frame systems. All structural sections shall have a minimum thickness of 3.2 mm (0.125 inch) and be fabricated of a minimum of 6063-T5 aluminum alloy.
 - 2. Power Operator: Completely assembled and sealed unit which shall include gear drive transmission, mechanical spring and bearings, all located in aluminum case and filled with special lubricant for extreme temperature conditions. Complete unit shall be rubber mounted with provisions for easy maintenance and replacement, without removing door from pivots or frame.
 - 3. Connecting hardware shall have drive arm attached to door with a pin linkage rotating in a self-lubricating bearing. Door shall not pivot on shaft of operator.
 - 4. Electrical Control: Operator shall have a self contained electrical control unit, including necessary transformers, relays, rectifiers, and other electronic components for proper operation and switching

of power operator. All connecting harnesses shall have interlocking plugs.

2.2 POWER UNITS

- A. Each power unit shall be self-contained, electric operated and independent of the door operator. Capacity and size of power circuits shall be in accordance with automatic door operator manufacturer's specifications and Division 26 - ELECTRICAL.

2.3 DOOR CONTROLS

- A. Opening and closing actions of doors shall be actuated by controls and safety devices specified, and conform to ANSI 156.10. Controls shall cause doors to open instantly when control device is actuated; hold doors in open positions; then, cause doors to close, unless safety device or reactivated control interrupts operation.
- B. Manual Controls:
 - 1. Push Plate Wall Switch: Recess type, stainless steel push plate minimum 100 mm by 100 mm (four-inch by four-inch), with 13 mm (1/2-inch) high letters "To Operate Door--Push" engraved on face of plate.

2.4 SAFETY DEVICES

- A. General: Area over which doors swing or slide shall be a safety section and anyone standing in path of door's movement shall be protected by a safety device.
- B. Each swing door shall have installed on the pull side a presence sensor to detect any person standing in the door swing path and prevent the door from opening.
- C. Time delay switches shall be adjustable between 3 to 60 seconds and shall control closing cycle of doors.
- D. Decals with sign "In" or "Do Not Enter" shall be installed on both faces of each door where shown.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordinate installation of equipment with other related work. Manual controls and power disconnect switches shall be recessed or semi-flush mounted in partitions. Secure operator components to adjacent construction with suitable fastenings. Conceal conduits, piping, and electric equipment, in finish work.

- B. Install power units in locations shown. Where units are to be mounted on walls, provide metal supports or shelves for the units. All equipment, including time delay switches, shall be accessible for maintenance and adjustment.
- C. Operators shall be adjusted and must function properly for the type of traffic (pedestrians, carts, stretchers and wheelchairs) expected to pass through doors. Each door leaf of pairs of doors shall open and close in synchronization. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.
- D. Install controls at positions shown and make them convenient for particular traffic expected to pass through openings. Maximum height of push plate wall switches from finished floors shall be 40 inches unless otherwise approved by the Resident Engineer.

3.2 INSPECTION, ADJUSTMENT, AND PROTECTION

- A. When installation is completed, test door operation and make necessary adjustments. Include the following as a minimum.
 - 1. Speed.
 - 2. Safety devices.
 - 3. Emergency operation.
 - 4. Operating devices (Push plates).
 - 5. Clearances.
- B. Provide protection for doors, operators, and operating devices to protect against damage during ongoing construction activities.

3.3 INSTRUCTIONS

- A. Following the installation and final adjustments of the door operators, the installer shall fully instruct VA personnel for on the operating, servicing and safety requirements for the swing and sliding automatic door operators.
- B. Coordinate instruction to VA personnel with VA Contracting Officer.

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IMPROVE SPD/N&FS KITCHEN EFFICIENCY
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AUTOMATIC DOOR OPERATORS

VAMC BALTIMORE, MD
JUNE 8, 2016
08 71 13-6

SECTION 08 71 13.11
LOW ENERGY POWER ASSIST DOOR OPERATORS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies low energy power assisted automatic operation of swing doors. The door operator system shall be complete including operator, controls, door arm and operator enclosure (header and cover).

1.2 RELATED WORK

- A. Sealants; Section 07 92 00, JOINT SEALANTS.
- B. Steel doors; Section 08 11 13, HOLLOW METAL DOORS AND FRAMES.
- C. Wood doors; Section 08 14 00, INTERIOR WOOD DOORS.
- D. Door hardware; Section 08 71 00, DOOR HARDWARE.
- E. Glass and glazing of doors and frames; Section 08 80 00, GLAZING.
- F. Smoke detectors for control of fire/smoke doors to be wired per Section 28 31 00, FIRE DETECTION AND ALARM.
- G. Electric general wiring, connections and equipment requirements; Division 26, ELECTRICAL.

1.3 MANUFACTURER'S QUALIFICATIONS

- A. Power assisted door operators, controls and other equipment shall be products of a manufacturer regularly engaged in manufacturing such equipment for a minimum of three years.
- B. One manufacturer of automatic door equipment shall be used throughout the project area.

1.4 WARRANTY

- A. Power assisted door operators, controls and other related equipment shall be subject to the terms of the "Warranty of Construction", FAR clause 52.246-21, except that the warranty period shall be two years in lieu of one year.

1.5 MAINTENANCE MANUALS

- A. In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS," furnish three copies of maintenance manuals and instructions on automatic door operators.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Low energy power assist door operator submittals will be reviewed concurrently with hollow metal frame, wood door, door hardware, and

automatic door operator submittals. Review will not begin until all submittals have been received and are determined to be complete.

C. Manufacturer's literature and data describing operators, power units, controls, door hardware and safety devices.

D. Shop Drawings:

Showing location of controls and safety devices in relationship to each automatically operated door. This includes templates, wiring diagrams, fabrication details, anchorage and other information to providers of related work to coordinate the proper installation of the door operators.

1.7 DESIGN CRITERIA

A. Power assisted automatic door equipment shall accommodate normal traffic as well as the weight of the doors.

B. Equipment: UL approved and comply with applicable codes. Motors shall be rated minimum one-quarter horsepower and shall be single phase and 115 volts.

C. Electrical Wiring; Provide wiring so that only a single power supply is required. Equipment and wiring shall be as specified in Division 26, ELECTRICAL.

1.8 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standards Institute (ANSI):
ICC/ANSI A117.1-03.....Guideline for Accessible and Usable Buildings
and Facilities-Providing Accessibility and
Usability for Physically Handicapped People

C. Builders Hardware Manufacturers Association, Inc. (BHMA):
156.19-07.....Power Assist and Low Energy Power Operated
Doors

PART 2 - PRODUCTS

2.1 OPERATORS

A. Automatic door operators shall be for commercial doors and shall be electromechanical and surface mounted above the door to the header or transom bar. The opening force shall be generated by a permanent magnet DC motor driving a combination spiral bevel/spur gear reducer and transmitted to the door through an arm linkage. Opening speed shall be

adjustable and feature dual backcheck control allowing adjustment of backcheck speed and position. Closing shall be by spring force generated by a metal compression spring. The spring shall reduce manual opening force to not more than 67 N (15 lbf). The minimum diameter of spring wire shall be .007mm (172 in.). Under the specified design load of the door, the spring shall be capable of performing 2,000,000 cycles before fracture. Adjustable closing speed and fixed latch speed shall control the door in the closing cycle. The doors shall be operated manually at any time without damage to the operator or components.

B. All operators shall have checking mechanism providing cushioning action at last part of door travel, in both opening and closing cycle. Operators shall recycle doors instantaneously to full open position from any point in closing cycle when control switch is reactivated.

C. Operator shall be swinging type enclosed in housing. Operator shall open door by energizing motor and shall stop by electrically reducing voltage and stalling motor against mechanical stop. Door shall close by means of spring energy, and close force shall be controlled by gear system and motor being used as dynamic break without power. System shall operate as manual door control in event of power failure. Opening and closing speeds shall be adjustable:

1. Swing Operator Housing: Housing shall be 140 mm (5-1/2 inches) wide by 150 mm (6 inches) high aluminum extrusions with enclosed end caps for application to 100 mm (4 inch) and larger frame systems. All structural sections shall have a minimum thickness of 3.7 mm (0.146 inch) and be fabricated of 6063-T5 aluminum alloy.
2. Swing Power Operator: Completely assembled and sealed unit which shall include helical gear drive transmission, mechanical spring and bearings, all located in cast aluminum case and filled with special lubricant for extreme temperature conditions. A "DC" shunt-wound permanent magnet motor with sealed ball bearings shall be attached to transmission system. Complete unit shall be rubber mounted with provisions for easy maintenance and replacement, without removing door from pivots or frame.
3. Connecting hardware for swing overhead concealed type power operator shall have drive arm attached to door with a pin linkage rotating in a self-lubricating bearing and adjustable slide block, traveling in an interconnected track and top pivot assembly. Top track and pivot

assembly shall be fabricated of steel. Door shall not pivot on shaft of operator.

4. Electrical Control: Operator shall have a self contained electrical control unit, including necessary transformers, relays, rectifiers, and other electronic components for proper operation and switching of power operator. Relays shall be plug-in type for individual replacement and all connecting harnesses shall have interlocking plugs. Control shall also include time delay for normal cycle. Swing door control shall include safe-swing circuit with optional switching which automatically limits power and slows door when approached from the doors swing area.
5. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.

2.2 ENCLOSURE

- A. Operator shall be completely self-contained within an extruded aluminum housing (alloy 6063-T6) to conceal operator mechanism and mounting brackets and with removable access cover with an overall maximum size of 140 mm (5-1/2 inches) wide by 150 mm (6 inches) deep. Header color shall be integral color anodized/painted to match adjacent storefront/frame finish.

2.3 ACTIVATION DEVICES

- A. Automatic: Opening cycle shall be activated by pressing switches with international symbol of accessibility and "PRESS TO OPERATE DOOR" engraved on the faceplate. Switches shall be installed in a standard 2-gang electrical wall box and placed in a location in compliance with ANSI A117.1. Switches may be wall mounted or mounted on a free standing post or guard rail.
- B. Manual: Push-to-operate; manually pushing the door shall activate the automatic opening cycle. Door shall automatically close after timer delay expires.
- C. Opening and closing force, measured 25 mm (1 inch) out from the lock stile of the door, shall not exceed 67 N (15 lbf) to stop the door when operating in either direction or cycle.
- D. Opening Time: Doors shall be field adjusted so that opening time to back check or 80 degrees, whichever occurs first, shall be 3 seconds or longer as required in Table 1. Backcheck shall not occur before 60 degrees opening.

Total opening time to fully open shall be as in Table II.

E. Closing Time:

Doors shall be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer as required in Table 1.

1. Doors shall be field adjusted to close from 10 degrees to fully close position in not less than 1.5 seconds.
2. Doors shall be field adjusted to remain fully open for not less than 5 seconds.
3. Table 1 provides speed settings for various widths and weights of doors for obtaining results complying with this paragraph.

F. Cycle Tests:

1. Low Energy Power Operated, Low Energy Power Open and Power Assist Operators shall be cycle tested for 300,000 cycles.
2. Use the widest and heaviest door specified as a test specimen. Narrower or lighter doors of the same configurations shall then be considered to meet the cycle test requirements.

Table 1

Minimum Opening Time to Backcheck or 80 degrees, which ever occurs first and the Minimum Closing Time from 90 degrees to Latch Check or 10 degrees.

"D" Door Leaf Width- mm (inches)	"W" Door Weight in kg (pounds) Matrix Values are in seconds				
	(100) 45.4	(56.7) 125	(68.0) 150	(79.4) 175	(90.7) 200
(914) 36	3.0	3.5	3.5	4.0	4.0
(1067) 42	3.5	4.0	4.0	4.5	4.5

Doors of other weights and widths can be calculated using the formula;

$T = DvW/133$ in US units $T = DvW/2260$ in SI (metric) units

Where: T= Time, seconds

D= Door width, mm (inches)

W= Door weight, kg (lbs)

The values for "T" time have been rounded up to the nearest half second.

These values are based on a kinetic energy of (1.25 lbf-ft).

Table II

Total Opening Time to Full Open Position

Backcheck at 60 degrees	Backcheck at 70 degrees	Backcheck at 80 degrees
Table 1 plus 2 seconds	Table 1 plus 1.5 seconds	Table 1 plus 1 second

Note: To determine maximum times from close to full open, the operator shall be adjusted as shown in the chart. Backcheck occurring at a point between positions in Table II shall use the lowest setting. For example, if the backcheck occurs at 75 degrees, the full open shall be the time shown in Table 1 plus 1.5 seconds.

2.4 POWER UNITS

- A. Provide separate self-contained electric circuits for automatic operators located on each floor of the building. Interruption or failure of power circuits for operators located on one floor of the building shall not interfere with continuous performance of automatic operated doors located on other floors. Capacity and size of power circuits shall be in accordance with automatic operator manufacturer's specifications.

2.5 SAFETY DEVICES

- A. Time delay switches shall be adjustable between 5 to 60 seconds and shall control closing cycle of doors.
- B. Decals with sign "In" or "Do Not Enter" shall be installed on both faces of each door where shown and shall conform to the requirements of ANSI/BHMA A156.19.
- C. Each swing door shall have installed a motion sensor to detect any person standing in the door swing path and prevent the door from opening.
- D. Motion sensors shall consist of detection modules, factory prepared to be attached to each side of the lock/strike stile, an armored flex link power cable and bracket assembly, factory prepared for attachment to the pivot stile; a logic board and a position encoder which shall mount to the operator. The detection modules shall contain transmitting and receiving diodes and sense multidimensional zones for detection of people and/or objects in the door area. Detection modules shall be high impact, shock resistant zinc castings with tinted lenses. The swing door sensor system shall provide complete operate and safety zone coverage. These zones shall be fully adjusted to meet specific jobsite

conditions (sidewalls, adjacent panels, etc.) The system shall not be affected by ultrasonic, ambient light or radios frequencies within the vicinity of the swing door.

- E. Each swing door shall have installed a re-activation sensor mounted on the push-side door face near the top detect any person standing in the door swing path and prevent the door from closing. Wiring for the re-activation sensor between the door and frame shall be concealed in a power transfer device, hinge or pivot provided under Section 08 71 00; wire chase in door provided under door section.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordinate installation of equipment with other related work. Manual controls and power disconnect switches shall be recessed or semi-flush mounted in partitions. Secure operator components to adjacent construction with suitable fastenings. Conceal conduits, piping, and electric equipment in finish work.
- B. Install power units in locations shown. Where units are to be mounted on walls, provide metal supports or shelves for the units. All equipment, including time delay switches, shall be accessible for maintenance and adjustment.
- C. Operators shall be adjusted and must function properly for the type of traffic (pedestrians) expected to pass through doors. Each door leaf of pairs of doors shall open and close in synchronization. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.
- D. Install controls at positions shown and make them convenient for particular traffic expected to pass through openings. Maximum height of push plate wall switches from finished floors shall be 40 inches unless otherwise approved by the Contracting Officer's Representative (COR).

----- END -----

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
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LOW ENERGY POWER ASSIST DOOR OPERATORS

VAMC BALTIMORE, MD
JUNE 8, 2016
08 71 13.11-8

SECTION 08 80 00
GLAZING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies glass, plastic, related glazing materials and accessories. Glazing products specified apply to factory or field glazed items.

1.2 RELATED WORK

- A. Factory glazed by manufacturer in following units:
1. Borrowed Lights: Section 08 11 13, HOLLOW METAL DOORS AND FRAMES
 2. Windows in interior doors: Section 08 14 00, INTERIOR WOOD DOORS
 3. Mirrors: Section 10 28 00, TOILET, BATH, AND LAUNDRY ACCESSORIES.
 4. Section 08 42 29, AUTOMATIC ENTRANCES

1.3 LABELS

- A. Temporary labels:
1. Provide temporary label on each light of glass and plastic material identifying manufacturer or brand and glass type, quality and nominal thickness.
 2. Label in accordance with NFRC (National Fenestration Rating Council) label requirements.
 3. Temporary labels shall remain intact until glass and plastic material is approved by Contracting Officer's Representative (COR).
- B. Permanent labels:
1. Locate in corner for each pane.
 2. Label in accordance with ANSI Z97.1 and SGCC (Safety Glass Certification Council) label requirements.
 - a. Tempered glass.
 - b. Laminated glass or have certificate for panes without permanent label.
 - c. Organic coated glass.

1.4 PERFORMANCE REQUIREMENTS

- A. Glass Thickness:
1. Select thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with ASCE 7 or any other applicable code. In no case shall glass be less than 6mm (1/4 inch) nominal thickness.
 2. Test in accordance with ASTM E 1300.

3. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Certificates:
 1. Certificates stating that wire glass, meets requirements for safety glazing material as specified in ANSI Z97.1.
- C. Warranty: Submit written guaranty, conforming to General Condition requirements, and to "Warranty of Construction" Article in this Section.
- D. Manufacturer's Literature and Data:
 1. Glass, each kind required.
 2. Insulating glass units.
 3. Elastic compound for metal sash glazing.
 4. Putty, for wood sash glazing.
 5. Elastic compound for metal sash glazing.
 6. Putty, for wood sash glazing.
 7. Glazing cushion.
 8. Sealing compound.
- E. Samples:
 1. Size: 150 mm by 150 mm (6 inches by 6 inches).
- F. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.
- B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.
- C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.
- D. Protect laminated security glazing units against face and edge damage during entire sequence of fabrication, handling, and delivery to

installation location. Provide protective covering on exposed faces of glazing plastics, and mark inside as "INTERIOR FACE" or "PROTECTED FACE":

1. Protect sealed-air-space insulating glazing units from exposure to abnormal pressure changes, as could result from substantial changes in altitude during delivery by air freight. Provide temporary breather tubes which do not nullify applicable warranties on hermetic seals.
2. Temporary protections: The glass front and polycarbonate back of glazing shall be temporarily protected with compatible, peelable, heat-resistant film which will be peeled for inspections and re-applied and finally removed after doors and windows are installed at destination. Since many adhesives will attack polycarbonate, the film used on exposed polycarbonate surfaces shall be approved and applied by manufacturer.
3. Edge protection: To cushion and protect glass clad, polycarbonate, and Noviflex edges from contamination or foreign matter, the four edges shall be sealed the depth of glazing with continuous standard-thickness Santoprene tape. Alternatively, continuous channel shaped extrusion of Santoprene shall be used, with flanges extending into face sides of glazing.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured products.

1.8 WARRANTY

- A. Warranty: Conform to terms of "Warranty of Construction", FAR clause 52.246-21, except extend warranty period for the following:
 1. Insulating glass units to remain sealed for 10 years.
 2. Laminated glass units to remain laminated for 5 years.

1.9 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):
Z97.1-09.....Safety Glazing Material Used in
Building - Safety Performance Specifications
and Methods of Test.

- C. American Society for Testing and Materials (ASTM):
- C864-05.....Dense Elastomeric Compression Seal Gaskets,
Setting Blocks, and Spacers
 - C920-11.....Elastomeric Joint Sealants
 - C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated
and Uncoated Glass.
 - E84-10.....Surface Burning Characteristics of Building
Materials
 - E119-10.....Standard Test Methods for Fire Test of Building
Construction and Material
 - E2190-10.....Insulating Glass Unit
- D. National Fire Protection Association (NFPA):
- 80-13.....Fire Doors and Windows.
 - 252-12.....Standard Method of Fire Test of Door Assemblies
 - 257-12.....Standard on Fire Test for Window and Glass
Block Assemblies
- E. National Fenestration Rating Council (NFRC)
- F. Safety Glazing Certification Council (SGCC) 2012:
Certified Products Directory (Issued Semi-Annually).
- G. Glass Association of North America (GANA):
Glazing Manual (Latest Edition)
Sealant Manual (2009)
- H. American Society of Civil Engineers (ASCE):
ASCE 7-10.....Wind Load Provisions

PART 2 - PRODUCT

2.1 GLASS

- A. Use thickness stated unless specified otherwise in assemblies or required by code.

2.2 HEAT-TREATED GLASS

- A. Clear Heat Strengthened Glass:
1. ASTM C1048, Kind HS, Condition A, Type I, Class 1, Quality q3.
 2. Thickness, 6 mm (1/4 inch) unless indicated otherwise.
- B. Clear Tempered Glass:
1. ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.
 2. Thickness, 6 mm (1/4 inch) or as indicated.
- C. Clear Tempered Glazing:

1. Both panes ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3.
2. Thickness: Each pane **3 mm (1/8 inch) thick** unless indicated otherwise.

2.3 FIRE RESISTANT GLASS WITHOUT WIRE MESH

- A. Fire-Protection-Rated Glazing: Ceramic laminated clear and wireless glazing material units tested for use in fire door assemblies or fire windows, UL, ITS-WHI or equivalent listed and labeled by testing agency in accordance with IBC, for fire-protection ratings as indicated, based upon positive-pressure testing per NFPA 257 or UL 9, and complying with NFPA 80.
 1. Hose-Stream Test: Units must comply with UL10C, UBC 72- and UBC 7-4, except units having fire-protection rating of 20 minutes.
 2. Labeling: Permanently label fire-protection-rated glazing units in accordance with IBC.
 3. Fire-Protection-Rated Laminated Ceramic Glazing: Units made from two lites of clear, ceramic glass, 8 mm (5/16 inch) total thickness, for rating scheduled.
 4. Surface Finish: Premium Grade - Ground and polished on both sides

2.4 GLAZING ACCESSORIES

- A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work shall have a finish that will not corrode or stain while in service.
- B. Setting Blocks: ASTM C864:
 1. Channel shape; having 6 mm (1/4 inch) internal depth.
 2. Shore a hardness of 80 to 90 Durometer.
 3. Block lengths: 50 mm (two inches) except 100 to 150 mm (four to six inches) for insulating glass.
 4. Block width: Approximately 1.6 mm (1/16 inch) less than the full width of the rabbet.
 5. Block thickness: Minimum 4.8 mm (3/16 inch). Thickness sized for rabbet depth as required.
- C. Spacers: ASTM C864:
 1. Channel shape having a 6 mm (1/4 inch) internal depth.
 2. Flanges not less 2.4 mm (3/32 inch) thick and web 3 mm (1/8 inch) thick.
 3. Lengths: One to 25 to 76 mm (one to three inches).

4. Shore a hardness of 40 to 50 Durometer.

D. Sealing Tapes:

1. Semi-solid polymeric based material exhibiting pressure-sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.
2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.

E. Glazing Gaskets: ASTM C864:

1. Firm dense wedge shape for locking in sash.
2. Soft, closed cell with locking key for sash key.
3. Flanges may terminate above the glazing-beads or terminate flush with top of beads.

F. Glazing Sealants: ASTM C920, silicone neutral cure:

1. Type S.
2. Class 25
3. Grade NS.
4. Shore A hardness of 25 to 30 Durometer.

G. Color:

1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be nonstaining.
2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black, gray, or neutral color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.
2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer's approved shop drawings.

B. Installer shall advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.

- C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units to prevent damage to glass and glazing units by cleaning materials.

3.2 PREPARATION

- A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.
- B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.
- C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.
- D. Verify that components used are compatible.
- E. Clean and dry glazing surfaces.
- F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

3.3 INSTALLATION - GENERAL

- A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.
- B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.
- C. Set glazing without bending, twisting, or forcing of units.
- D. Do not allow glass to rest on or contact any framing member.
- E. Patterned Glass:
 - 1. Install units with one patterned surface with smooth surface on the weather side.
 - 2. Install units in interior partitions with pattern in same direction in all openings.
- F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.
- G. Plastic:
 - 1. Use dry glazing method.
 - 2. Use only neoprene or EPDM gaskets.
- H. Laminated Glass:
 - 1. Tape edges to seal interlayer and protect from glazing sealants.
 - 2. Do not use putty or glazing compounds.
- I. Insulating Glass Units:
 - 1. Glaze in compliance with glass manufacturer's written instructions.

2. When glazing gaskets are used, they shall be of sufficient size and depth to cover glass seal or metal channel frame completely.
3. Do not use putty or glazing compounds.
4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.
5. Install with tape or gunnable sealant in wood sash.

3.4 INSTALLATION - DRY METHOD (TAPE AND GASKET SPLINE GLAZING)

- A. Cut glazing tape to length; install on glazing pane. Seal corners by butting and sealing junctions with butyl sealant.
- B. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Trim protruding tape edge.

3.5 INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

- A. Cut glazing tape to length and install against permanent stops, projecting 1.6 mm (1/16 inch) above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.
- C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
- D. Install removable stops, spacer shims inserted between glazing and applied stops at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.
- E. Fill gaps between pane and applied stop with clear silicone sealant to depth equal to bite on glazing, to uniform and level line.
- F. Trim protruding tape edge.

3.6 REPLACEMENT AND CLEANING

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by COR.
- B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.
- C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3.7 PROTECTION

- A. Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

3.8 GLAZING SCHEDULE

- A. Glass Type MG-1: Clear fully tempered float glass.
 - 1. Unit Thickness: 6 mm ($\frac{1}{4}$ inch).
 - 2. Safety glazing label required.
- B. Glass Type FR-1: Fire-protection-rated laminated ceramic glazing.
 - 1. Thickness: 8 mm (5/16 inch).
 - 2. Rating: 45 minute.
 - 3. Application: Fire-protection-rated door assemblies.
 - 4. Fire rating label required.
- C. Glass Type FR-2: Fire-protection-rated laminated ceramic glazing.
 - 1. Thickness: 8 mm (5/16 inch).
 - 2. Rating: 60 minute.
 - 3. Application: Fire-protection-rated window assemblies.
 - 4. Fire rating label required.

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100% CONSTRUCTION DOCUMENTS SUBMISSION
GLAZING

VAMC BALTIMORE, MD
JUNE 8, 2016
08 80 00-10

SECTION 09 05 16
SUBSURFACE PREPARATION FOR FLOOR FINISHES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies subsurface preparation requirements for areas to receive the installation of applied and resinous flooring. This section also includes removal of existing floor coverings, floor leveling and repair as required.

1.2 RELATED WORK

- A. Section 07 92 00, JOINT SEALANTS.
- B. Section 09 65 16, RESILIENT SHEET FLOORING; Section 09 65 19 RESILIENT TILE FLOORING; Section 09 67 23.20, RESINOUS URETHANE TROVELED MORTAR WITH VINYL CHIP BROADCAST (RES-2); Section 09 67 23 60, RESINOUS (Urethane Mortar) FLOORING and Section 09 68 00, CARPETING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA and TEST DATA.
- B. Written approval confirming product compatibility with subfloor material manufacturer and the flooring manufacturer
- C. Product Data:
1. Underlayment Primer
 2. Cementitious Self-Leveling Underlayment
- D. Test Data:
1. Moisture test and pH results performed by a qualified independent testing agency or warranty holding manufacturer's technical representative.

1.4 DELIVERY AND STORAGE

- A. Deliver materials in containers with labels legible and intact and grade-seals unbroken.
- B. Store material to prevent damage or contamination.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):

D638-10 (2010)	Test Method for Tensile Properties of Plastics
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D4259-88 (2012)	Standard Practice for Abrading Concrete to alter the surface profile of the concrete and to remove foreign materials and weak surface laitance.
C109M-12 (2012)	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens) Modified Air Cure Only
D7234-12 (2012)	Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
E96/E96M - 12 (2012)	Standard Test Methods for Water Vapor Transmission of Materials
F710-11 (2011)	Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
F1869-11 (2011)	Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
F2170-11 (2011)	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

PART 2 - PRODUCTS

2.1 CEMENTITIOUS SELF-LEVELING UNDERLAYMENT

A. System Descriptions:

1. High performance self-leveling underlayment resurfacer. Single component, self-leveling, cementitious material designed for easy application as an underlayment for all types of flooring materials. It is used for substrate repair and leveling.

B. Products: Subject to compliance with applicable fire, health, environmental, and safety requirements for storage, handling, installation, and clean up. Gypsum-based products are unacceptable.

C. System Characteristics:

1. Wearing Surface: smooth
2. Thickness: Ranging from feathered edge to 1", per application. Applications greater than 1" require additional 3/8" aggregate to mix or as recommended by manufacturer.

D. Underlayment must be calcium aluminate cement-based, containing Portland cement. Gypsum-based products are unacceptable.

E. Compressive Strength: Minimum 4100 psi in 28 days in accordance with ASTM C109M

F. Flexural Strength: Minimum 1000 psi in 28 days in accordance with ASTM 348

- G. Dry Time: Underlayment shall receive the application of floor coverings in 16 hours and resinous flooring in 3-7 days.
- H. Primer: compatible and as recommended by manufacturer for use over intended substrate
- I. System Components: Manufacturer's standard components that are compatible with each other and as follows:
1. Primer:
 - a. Resin: copolymer
 - b. Formulation Description: single component ready to use.
 - c. Application Method: Squeegee and medium nap roller.
All puddles must be removed, and material must be allowed to dry, 1-2 hours at 70F/21C.
 - d. Number of Coats: (1) one.
 2. Grout Resurfacing Base:
 - a. Formulation Description: Single component, cementitious self-leveling high early, high strength grout.
 - b. Application Method: colloidal mix pump, cam rake, spike roll.
 - 1) Thickness of Coats: Per architectural scope, 1" lifts.
 - 2) Number of Coats: More than one if needed.
 - c. Aggregates: for applications greater than 1inch, require additional 3/8" aggregate to mix.

Property	Test	Value
Compressive Strength	ASTM C109	2,200 psi @ 24 hrs 3,000 psi @ 7 days
Initial set time Final Set time	ASTM C191	30-45 min. 1 to 1.5 hours
Bond Strength	ASTM D7234	100% bond to concrete failure

PART 3 - EXECUTION

3.1 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperature of work areas at not less than 16 degree C (60 degrees F), without interruption, for not less than 24 hours before testing and not less than three days after testing.
- B. Maintain higher temperatures for a longer period of time where required by manufacturer's recommendation.
- C. Do not install materials when the temperatures of the substrate or materials are not within 60-85 degrees F/16-30 degrees C.

3.2 SURFACE PREPARATION

- A. Existing concrete slabs with existing floor coverings:
 - 1. Conduct visual observation of existing floor covering for adhesion, water damage, alkaline deposits, and other defects.
 - 2. Remove existing floor covering and adhesives. Comply with local, state and federal regulations and the RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to the floor covering being removed.
- B. Concrete shall meet the requirements of ASTM F710 and be sound, solid, clean, and free of all oil, grease, dirt, curing compounds, and any substance that might act as a bond-breaker before application. As required prepare slab by mechanical methods. No chemicals or solvents should be used.
- C. General: Prepare and clean substrates according to flooring manufacturer's written instructions for substrate indicated.
- D. Prepare concrete substrates per ASTM D4259 as follows:
 - 1. Dry abrasive blasting.
 - 2. Wet abrasive blasting.
 - 3. Vacuum-assisted abrasive blasting.
 - 4. Centrifugal-shot abrasive blasting.
 - 5. Comply with manufacturer's written instructions.
- E. Repair damaged and deteriorated concrete according to flooring manufacturer's written recommendations.
- F. Verify that concrete substrates are dry.
- G. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of per flooring manufactures formal and project specific written recommendation.
- H. Perform in situ probe test, ASTM F2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity per flooring manufactures formal and project specific written recommendation.
- I. Provide a written report showing test placement and results.
- J. Prepare joints in accordance with Section 07 92 00, JOINT SEALANTS and material manufacturer's instructions.

- K. Alkalinity: Measure surface pH in accordance with procedures provided in ASTM F710 or as outlined by qualified testing agency or flooring manufacturer's technical representative.
- L. Tolerances: Subsurface shall meet the flatness and levelness tolerance specified on drawings or recommended by the floor finish manufacturer. Tolerance shall also not to exceed 1/4" deviation in 10'. As required, install underlayment to achieve required tolerance.
- M. Other Subsurface: For all other subsurface conditions, such as wood or metal, contact the floor finish or underlayment manufacturer, as appropriate, for proper preparation practices.

3.4 CEMENTITIOUS UNDERLAYMENT:

- A. Install cementitious self-leveling underlayment as required to correct surface defects, floor flatness or levelness corrections to meet the tolerance requirements as or detailed on drawings, address non-moving cracks or joints, provide a smooth surface for the installation of floor covering, or meet elevation requirements detailed on drawings.
- B. Mix and apply in accordance with manufacturer's instructions.

3.5 PROTECTION

- A. Prior to the installation of the finish flooring, the surface of the underlayment should be protected from abuse by other trades by the use of plywood, Masonite, or other suitable protection course

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SUBSURFACE PREPARATION FOR FLOOR FINISHES

VAMC BALTIMORE, MD
JUNE 8, 2016
09 05 16-6

**SECTION 09 06 00
SCHEDULE FOR FINISHES**

SECTION 09 06 00-SCHEDULE FOR FINISHES

Location: BALTIMORE, MD

Project no. and Name: IMPROVE SPD/N&FS KITCHEN EFFICIENCY

Submission: 100% CONSTRUCTION DOCUMENTS SUBMISSION

Date: February 26, 2016

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
SCHEDULE FOR FINISHES

VAMC BALTIMORE, MD
JUNE 8, 2016
09 06 00-i

**SECTION 09 06 00
SCHEDULE FOR FINISHES**

PART I - GENERAL

1.1 DESCRIPTION

- A. This section contains a coordinated system in which requirements for materials specified in other sections shown are identified by abbreviated material names and finish codes in the room finish schedule or shown for other locations.

1.2 MANUFACTURERS

- A. Manufacturer's trade names and numbers used herein are only to identify colors, finishes, textures and patterns. Products of other manufacturer's equivalent to colors, finishes, textures and patterns of manufacturers listed that meet requirements of technical specifications will be acceptable upon approval in writing by contracting officer for finish requirements.

1.3 SUBMITALS

- A. Submit in accordance with SECTION 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES—provide quadruplicate samples for color approval of materials and finishes specified in this section.
- B. Products and finishes identified below are basis of design. Colors, patterns, and other visual characteristics that do not match the products identified below may result in rejection or changes to other finish materials. Changes required to ensure consistency and compatibility of finish materials shall not be cause for changes to the contract sum or the contract time.
- C. Printed color charts or other reproductions will not be acceptable.

1.4 APPLICABLE PUBLICATIONS

- A. Publications listed in technical sections are applicable to products identified below.

PART 2- PRODUCTS**2.1 DIVISION 08 - OPENINGS****A. SECTION 08 31 13, ACCESS DOORS AND FRAMES**

Material	Finish/Color
Steel	Match adjacent surface color - semi-gloss paint
Stainless steel	Satin stainless

2.2 DIVISION 09 - FINISHES

Symbol	Description	Manufacturer	Style/Color
ACT-1	ACOUSTIC CEILING TILE	ARMSTRONG	CLEAN ROOM VL UNPERFORATED, 870, WHITE, 24"X48"
ACT-2	ACOUSTIC CEILING TILE	ARMSTRONG	FINE FISSURED, 1729, WHITE, 24"X48"
ACT-3	ACOUSTIC CEILING TILE	ARMSTRONG	FINE FISSURED, 1728, WHITE, 24"X24"
CPT-1	CARPET TILE	J&J INVISION	KINETEX, 1814 VELOCITY, 1603 POSITION
CT-1	CERAMIC TILE	CROSSVILLE	SHADES BY CROSSVILLE, MIST, 24"X24"
CT-2	CERAMIC TILE	CROSSVILLE	SHADES BY CROSSVILLE, FOG, 24"X24"
CT-3	CERAMIC TILE	TBD	MATCH EXISTING - IVORY
CT-4	CERAMIC TILE	TBD	MATCH EXISTING - BLUE
CT-5	CERAMIC TILE	TBD	MATCH EXISTING - DARK TAN
CT-6	CERAMIC TILE	CROSSVILLE	SHADES BY CROSSVILLE, MIST, 12"X24"
CT-7	CERAMIC TILE	CROSSVILLE	SHADES BY CROSSVILLE, FOG, 12"X24"
GT-1	GLASS TILE	CROSSVILLE	EBB AND FLOW EF04/.1MIXMOS, SAND AND SURF LINEAR MIXED

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
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SCHEDULE FOR FINISHES

VAMC BALTIMORE, MD
JUNE 8, 2016
09 06 00-3

GT-2	GLASS TILE	CROSSVILLE	EBB AND FLOW EF03//.MIXMOS, FLORA AND FAUNA LINEAR MIXED
PL-1	PLASTIC LAMINATE	FORMICA	CHESTNUT WOODLINE 5884-58
PNT-1	PAINT	SHERWIN WILLIAMS	CRISP LINEN SW6378
PNT-2	PAINT	SHERWIN WILLIAMS	FUNCTIONAL GRAY SW7024
PNT-3	PAINT	SHERWIN WILLIAMS	SLEEPY BLUE SW6225
PNT-4	PAINT	SHERWIN WILLIAMS	MEDITERRANEAN SW7617
PNT-5	PAINT	SHERWIN WILLIAMS	DOWN HOME SW6081
PNT-6	PAINT	SHERWIN WILLIAMS	DOWNY SW7002
PNT-7	PAINT	SHERWIN WILLIAMS	SOFTENED GREEN SW6177
PNT-8	PAINT, EPOXY	SHERWIN WILLIAMS	CRISP LINEN, SW6378
QT-1	QUARRY TILE	TBD	MATCH EXISTING - TERRA COTTA
QT-2	QUARRY TILE	TBD	MATCH EXISTING - BEIGE
QT-3	QUARRY TILE	TBD	MATCH EXISTING - GRAY
RB-1	RUBBER BASE	JOHNSONITE	31 ZEPHER
RES-1	RESINOUS FLOORING	STONHARD	STONCLAD, COLOR: SLATE; TEXTURE LEVEL #2
SF-1	SEAMLESS SHEET FLOORING	ARMSTRONG	MEDINTONE, NATURAL WHITE H8311; WELDING ROD TO MATCH FLOOR COLOR; INTEGRAL BASE
SF-2	SEAMLESS SHEET FLOORING	ARMSTRONG	MEDINTONE, WOODLAND BLUE MID H8356; WELDING ROD TO MATCH FLOOR COLOR; INTEGRAL BASE
SSC-1	SOLID SURFACE COUNTERTOP	FORMICA	MIRAGE 733
SSC-2	SOLID SURFACE COUNTERTOP	FORMICA	LUNA SAND 757
TP-1	TOILET PARTITION	GLOBAL	CHARCOAL 9237
TP-2	TOILET PARTITION	GLOBAL	MOCHA 9212
VCT-1	VINYL COMPOSITION TILE	MANNINGTON	PROGRESSIONS, 55129 PUTTY

2.3 DIVISION 10 - SPECIALTIES**A. SECTION 10 26 00, WALL GUARDS AND CORNER GUARDS**

Item	Material	Manufacturer	Mfg. Color Name/No.
CORNER GUARDS	VINYL	KOROGUARD	TAN / G100
HANDRAIL	VINYL	KOROGUARD	HONEY MAPLE / H60W
WALL GUARDS / WALL COVERING	VINYL	KOROGUARD	TAN
WALL GUARDS	STAINLESS STEEL		SATIN STAINLESS STEEL
WALL PROTECTION PANELS	STAINLESS STEEL		SATIN STAINLESS STEEL

B. SECTION 10 28 00, TOILET, BATH, AND LOCKER ROOM ACCESSORIES

Item/ Type	Finish	Manufacturer	Mfg. Color Name/No.
LOCKERS	SOLID PHENOLIC	SUMMIT	TO BE SELECTED FROM MANUFACTURER'S AVAILABLE COLORS

--- E N D---

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
SCHEDULE FOR FINISHES

VAMC BALTIMORE, MD
JUNE 8, 2016
09 06 00-6

SECTION 09 22 16
NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies steel studs wall systems, ceiling or soffit suspended or furred framing, wall furring, fasteners, and accessories for the screw attachment of gypsum board, plaster bases or other building boards.

1.2 RELATED WORK

- A. Ceiling suspension systems for acoustical panels: Section 09 51 00, ACOUSTICAL CEILINGS
- B. Gypsum board panels: Section 09 29 00, GYPSUM BOARD.

1.3 TERMINOLOGY

- A. Description of terms shall be in accordance with ASTM C754, ASTM C11, ASTM C841 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are located, the underside of structure overhead shall be the underside of the floor or roof construction supported by beams, trusses, or bar joists. In interstitial spaces with walk-on floors the underside of the walk-on floor is the underside of structure overhead.
- C. Thickness of steel specified is the minimum bare (uncoated) steel thickness.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Studs, runners and accessories.
 - 2. Hanger inserts.
 - 3. Channels (Rolled steel).
 - 4. Furring channels.
 - 5. Screws, clips and other fasteners.
 - 6. Typical assemblies for fire rated construction.
- C. Test Results: Fire rating test designation, each fire rating required for each assembly.

1.5 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

- A. In accordance with the requirements of ASTM C754.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society For Testing And Materials (ASTM)
- A641-09.....Zinc-Coated (Galvanized) Carbon Steel Wire
 - C11-10.....Terminology Relating to Gypsum and Related Building Materials and Systems
 - C635-07.....Manufacture, Performance, and Testing of Metal Suspension System for Acoustical Tile and Lay-in Panel Ceilings
 - C636-08.....Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
 - C645-09.....Non-Structural Steel Framing Members
 - C754-11.....Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
 - C841-03 (R2008).....Installation of Interior Lathing and Furring
 - C954-10.....Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

PART 2 - PRODUCTS

2.1 PROTECTIVE COATING

- A. Galvanize steel studs, runners (track), rigid (hat section) furring channels and rolled channels, with coating designation of G-60 minimum, per ASTM 123.

2.2 STEEL STUDS AND RUNNERS (TRACK)

- A. ASTM C645, modified for thickness specified and sizes as shown.
- 1. Use ASTM A525 steel, 0.8 mm (0.0329-inch) thick bare metal (33 mil).
 - 2. Runners same thickness as studs.
- B. Provide not less than two cutouts in web of each stud, approximately 300 mm (12 inches) from each end, and intermediate cutouts on approximately 600 mm (24-inch) centers.
- C. Doubled studs for openings and studs for supporting concrete backer-board.
- D. Studs 3600 mm (12 feet) or less in length shall be in one piece.

2.3 FURRING CHANNELS

- A. Rigid furring channels (hat shape): ASTM C645.
- B. Resilient furring channels:

1. Not less than 0.45 mm (0.0179-inch) thick bare metal.
 2. Semi-hat shape, only one flange for anchorage with channel web leg slotted on anchorage side, channel web leg on other side stiffens fastener surface but shall not contact anchorage surface other channel leg is attached to.
- C. "Z" Furring Channels:
1. Not less than 0.45 mm (0.0179-inch)-thick bare metal, with 32 mm (1-1/4 inch) and 19 mm (3/4-inch) flanges.
 2. Web furring depth to suit thickness of insulation with slotted perforations.
- D. Rolled Steel Channels: ASTM C754, cold rolled; or, ASTM C841, cold rolled.

2.4 FASTENERS, CLIPS, AND OTHER METAL ACCESSORIES

- A. ASTM C754, except as otherwise specified.
- B. For fire rated construction: Type and size same as used in fire rating test.
- C. Fasteners for steel studs thicker than 0.84 mm (0.033-inch) thick. Use ASTM C954 steel drill screws of size and type recommended by the manufacturer of the material being fastened.
- D. Clips: ASTM C841 (paragraph 6.11), manufacturer's standard items. Clips used in lieu of tie wire shall have holding power equivalent to that provided by the tie wire for the specific application.
- E. Concrete ceiling hanger inserts (anchorage for hanger wire and hanger straps): Steel, zinc-coated (galvanized), manufacturers standard items, designed to support twice the hanger loads imposed and the type of hanger used.
- F. Tie Wire and Hanger Wire:
1. ASTM A641, soft temper, Class 1 coating.
 2. Gage (diameter) as specified in ASTM C754 or ASTM C841.
- G. Attachments for Wall Furring:
1. Manufacturers standard items fabricated from zinc-coated (galvanized) steel sheet.
 2. For concrete or masonry walls: Metal slots with adjustable inserts or adjustable wall furring brackets. Spacers may be fabricated from 1 mm (0.0396-inch) thick galvanized steel with corrugated edges.

2.5 SUSPENDED CEILING SYSTEM FOR GYPSUM BOARD

- A. Conform to ASTM C635, heavy duty, with not less than 35 mm (1-3/8 inch) wide knurled capped flange face designed for screw attachment of gypsum board.
- B. Wall track channel with 35 mm (1-3/8 inch) wide flange.

PART 3 - EXECUTION

3.1 INSTALLATION CRITERIA

- A. Where fire rated construction is required for walls, partitions, columns, beams and floor-ceiling assemblies, the construction shall be same as that used in fire rating test.
- B. Construction requirements for fire rated assemblies and materials shall be as shown and specified, the provisions of the Scope paragraph (1.2) of ASTM C754 and ASTM C841 regarding details of construction shall not apply.

3.2 INSTALLING STUDS

- A. Install studs in accordance with ASTM C754, except as otherwise shown or specified.
- B. Space studs not more than 406 mm (16 inches) on center.
- C. Cut studs 6 mm to 9 mm (1/4 to 3/8-inch) less than floor to underside of structure overhead.
- D. Extend studs to underside of structure overhead.
- E. Openings:
 - 1. Frame jambs of openings in stud partitions and furring with two studs placed back to back or as shown. Framing at openings shall have a minimum thickness of 1.0 mm (0.0396 inches).
 - 2. Fasten back to back studs together with 9 mm (3/8-inch) long Type S pan head screws at not less than 600 mm (two feet) on center, staggered along webs.
 - 3. Studs fastened flange to flange shall have splice plates on both sides approximately 50 X 75 mm (2 by 3 inches) screwed to each stud with two screws in each stud. Locate splice plates at 600 mm (24 inches) on center between runner tracks.
- F. Fastening Studs:
 - 1. Fasten studs located adjacent to partition intersections, corners and studs at jambs of openings to flange of runner tracks with two screws through each end of each stud and flange of runner.
 - 2. Do not fasten studs to top runner track when studs extend to underside of structure overhead.
- G. Form control joint, with double studs spaced 13 mm (1/2-inch) apart.

3.3 INSTALLING WALL FURRING FOR FINISH APPLIED TO ONE SIDE ONLY

- A. In accordance with ASTM C754, or ASTM C841 except as otherwise specified or shown.
- B. Wall furring-Stud System:
 - 1. Framed with 63 mm (2-1/2 inch) or narrower studs, 406 mm (16 inches) on center.

2. Brace as specified in ASTM C754 for Wall Furring-Stud System or brace with sections or runners or studs placed horizontally at not less than three foot vertical intervals on side without finish.
 3. Securely fasten braces to each stud with two Type S pan head screws at each bearing.
- C. Installing Wall Furring-Bracket System: Space furring channels not more than 400 mm (16 inches) on center.

3.4 INSTALLING SUPPORTS REQUIRED BY OTHER TRADES

- A. Provide for attachment and support of electrical outlets, plumbing, heating fixtures, recessed type plumbing fixture accessories, access panel frames, wall bumpers, toilet stall partitions, urinal screens, wall-hung casework, handrail brackets, recessed fire extinguisher cabinets and other items like auto door buttons and auto door operators supported by stud construction.
- B. Provide additional studs where required. Install metal backing plates, or special metal shapes as required, securely fastened to metal studs.

3.5 INSTALLING FURRED AND SUSPENDED CEILINGS OR SOFFITS

- A. Install furred and suspended ceilings or soffits in accordance with ASTM C754 or ASTM C841 except as otherwise specified or shown for screw attached gypsum board ceilings and for plaster ceilings or soffits.
 1. Space framing at 600 mm (24-inch) centers for gypsum board anchorage.
- B. Where bar joists or beams are more than 1200 mm (48 inches) apart, provide intermediate hangers so that spacing between supports does not exceed 1200 mm (48 inches). Use clips, bolts, or wire ties for direct attachment to steel framing.
- C. Existing concrete construction exposed or concrete on steel decking:
 1. Use power actuated fasteners either eye pin, threaded studs or drive pins for type of hanger attachment required.
 2. Install fasteners at approximate mid height of concrete beams or joists. Do not install in bottom of beams or joists.
- D. Steel decking without concrete topping:
 1. Do not fasten to steel decking 0.76 mm (0.0299-inch) or thinner.
 2. Toggle bolt to decking 0.9 mm (0.0359-inch) or thicker only where anchorage to steel framing is not possible.
- E. Installing suspended ceiling system for gypsum board (ASTM C635 Option):
 1. Install only for ceilings to receive screw attached gypsum board.
 2. Install in accordance with ASTM C636.
 - a. Install main runners spaced 1200 mm (48 inches) on center.
 - b. Install 1200 mm (four foot) tees not over 600 mm (24 inches) on center; locate for edge support of gypsum board.
 - c. Install wall track channel at perimeter.

H. Installing Ceiling Bracing System:

1. Construct bracing of 38 mm (1-1/2 inch) channels for lengths up to 2400 mm (8 feet) and 50 mm (2 inch) channels for lengths over 2400 mm (8 feet) with ends bent to form surfaces for anchorage to carrying channels and over head construction. Lap channels not less than 600 mm (2 feet) at midpoint back to back. Screw or bolt lap together with two fasteners.
2. Install bracing at an approximate 45 degree angle to carrying channels and structure overhead; secure as specified to structure overhead with two fasteners and to carrying channels with two fasteners or wire ties.

3.6 TOLERANCES

- A. Fastening surface for application of subsequent materials shall not vary more than 3 mm (1/8-inch) from the layout line.
- B. Plumb and align vertical members within 3 mm (1/8-inch).
- C. Level or align ceilings within 3 mm (1/8-inch).

- - - E N D - - -

SECTION 09 29 00
GYPSUM BOARD

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies installation and finishing of gypsum board.

1.2 RELATED WORK

A. Installation of steel framing members for walls, partitions, furring, soffits, and ceilings: Section 09 22 16, NON-STRUCTURAL METAL FRAMING.

B. Acoustical Sealants: Section 07 92 00, JOINT SEALANTS.

1.3 TERMINOLOGY

A. Definitions and description of terms shall be in accordance with ASTM C11, C840, and as specified.

B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead shall be the underside of the floor or roof construction supported by the trusses or bar joists.

C. "Yoked": Gypsum board cut out for opening with no joint at the opening (along door jamb or above the door).

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Cornerbead and edge trim.
2. Finishing materials.
3. Laminating adhesive.
4. Gypsum board, each type.
5. Joint compound.
6. Joint tape.
7. Fire rated assemblies.
8. Verification of compliance with requirements for recycled content.

C. Test Results:

1. Fire rating test, each fire rating required for each assembly.
2. Sound rating test.

1.5 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

A. In accordance with the requirements of ASTM C840.

1.6 ENVIRONMENTAL CONDITIONS

A. In accordance with the requirements of ASTM C840.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing And Materials (ASTM):
- C11-08.....Terminology Relating to Gypsum and Related Building Materials and Systems
 - C475-02.....Joint Compound and Joint Tape for Finishing Gypsum Board
 - C840-08.....Application and Finishing of Gypsum Board
 - C919-08.....Sealants in Acoustical Applications
 - C954-07.....Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases to Steel Stud from 0.033 in. (0.84mm) to 0.112 in. (2.84mm) in thickness
 - C1002-07.....Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
 - C1047-05.....Accessories for Gypsum Wallboard and Gypsum Veneer Base
 - C1177-06.....Glass Mat Gypsum Substrate for Use as Sheathing
 - C1658-06.....Glass Mat Gypsum Panels
 - C1396-06.....Gypsum Board
 - E84-15Aa.....Surface Burning Characteristics of Building Materials
- C. Underwriters Laboratories Inc. (UL):
- Latest Edition.....Fire Resistance Directory
- D. Inchcape Testing Services (ITS):
- Latest Editions.....Certification Listings

PART 2 - PRODUCTS

2.1 GYPSUM BOARD

- A. Gypsum Board: ASTM C1396, Type X, 16 mm (5/8 inch) thick unless shown otherwise. Shall contain a minimum of 20 percent recycled gypsum.
- B. Coreboard or Shaft Wall Liner Panels.
1. ASTM C1396, Type X.
 2. ASTM C1658: Glass Mat Gypsum Panels,
 3. Coreboard for shaft walls 300, 400, 600 mm (12, 16, or 24 inches) wide by required lengths 25 mm (one inch) thick with paper faces treated to resist moisture.

- C. Water Resistant Gypsum Backing Board: ASTM C620, Type X, 16 mm (5/8 inch) thick.
- D. Gypsum cores shall contain maximum percentage of post industrial recycled gypsum content available in the area (a minimum of 95 percent post industrial recycled gypsum content). Paper facings shall contain 100 percent post-consumer recycled paper content.

2.2 ACCESSORIES

- A. ASTM C1047, except form of 0.39 mm (0.015 inch) thick zinc coated steel sheet. PVC plastic accessories will not be acceptable.
- B. Flanges not less than 22 mm (7/8 inch) wide with punchouts or deformations as required to provide compound bond.
- C. Acoustic Insulation/Sound Attenuation Blankets: Mineral wool with a density of not less than 0.9kg/0.03 cubic meters (2 pounds/cubic foot). Thickness shall be 89 mm (3½ inches) unless indicated otherwise.

2.3 FASTENERS

- A. ASTM C1002 and ASTM C840, except as otherwise specified.
- B. ASTM C954, for steel studs thicker than 0.04 mm (0.33 inch).
- C. Select screws of size and type recommended by the manufacturer of the material being fastened.
- D. For fire rated construction, type and size same as used in fire rating test.
- E. Clips: Zinc-coated (galvanized) steel; gypsum board manufacturer's standard items.

2.4 FINISHING MATERIALS AND LAMINATING ADHESIVE

- A. ASTM C475 and ASTM C840. Free of antifreeze, vinyl adhesives, preservatives, biocides and other VOC. Adhesive shall contain a maximum VOC content of 50 g/l.
- B. Joint Tape: Fiberglass, self-adhesive joint tape.
- C. Joint Compound: All-purpose setting type or ready-mixed joint compound suitable for filling, joint treatment, finishing corners and installing trim. Comply with ASTM C475.

PART 3 - EXECUTION

3.1 GENERAL

- A. Comply with manufacturer's instructions for environmental conditions.
- B. Do not permit dust from finishing to migrate into occupied areas or ventilation system.
- C. Patch around new and existing wall penetrations to prevent passage of smoke.

3.2 GYPSUM BOARD HEIGHTS

- A. Extend all layers of gypsum board from floor to underside of structure overhead, unless shown otherwise.

3.3 INSTALLING GYPSUM BOARD

- A. Coordinate installation of gypsum board with other trades and related work.
- B. Install gypsum board in accordance with ASTM C840, except as otherwise specified.
- C. Moisture and Mold-Resistant Assemblies: Provide and install moisture and mold-resistant glass mat gypsum wallboard products with moisture-resistant surfaces complying with ASTM C1658 where shown and in locations which might be subject to moisture exposure during construction.
- D. Use gypsum boards in maximum practical lengths to minimize number of end joints.
- E. Bring gypsum board into contact, but do not force into place.
- F. Ceilings use perpendicular application.
- G. Walls:
 - 1. When gypsum board is installed parallel to framing members, space fasteners 300 mm (12 inches) on center in field of the board, and 200 mm (8 inches) on center along edges.
 - 2. When gypsum board is installed perpendicular to framing members, space fasteners 300 mm (12 inches) on center in field and along edges.
 - 3. Stagger screws on abutting edges or ends.
 - 4. For single-ply construction, apply gypsum board with long dimension either parallel or perpendicular to framing members as required to minimize number of joints.
 - 5. For two-ply gypsum board assemblies, apply base ply of gypsum board to assure minimum number of joints in face layer. Apply face ply of wallboard to base ply so that joints of face ply do not occur at joints of base ply with joints over framing members.
 - 6. No offset in exposed face of walls and partitions will be permitted because of single-ply and two-ply application requirements.
 - 7. Control Joints ASTM C840 and as follows:
 - a. Locate at both side jambs of openings if gypsum board is not "yoked". Use one system throughout.
 - b. Not required for wall lengths less than 9000 mm (30 feet).
 - c. Extend control joints the full height of the wall or length of soffit/ceiling membrane.

H. Acoustical or Sound Rated Partitions, Fire and Smoke Partitions:

1. Cut gypsum board for a space approximately 3 mm to 6 mm (1/8 to 1/4 inch) wide around partition perimeter.
2. Coordinate for application of caulking or sealants to space prior to taping and finishing.
3. For sound rated partitions, use sealing compound (ASTM C919) to fill the annular spaces between all receptacle boxes and the partition finish material through which the boxes protrude to seal all holes and/or openings on the back and sides of the boxes. STC minimum values as shown.

I. Electrical and Telecommunications Boxes:

1. Seal annular spaces between electrical and telecommunications receptacle boxes and gypsum board partitions.

J. Accessories:

1. Set accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified.
2. Install in one piece, without the limits of the longest commercially available lengths.
3. Corner Beads:
 - a. Install at all vertical and horizontal external corners and where shown.
 - b. Use screws only. Do not use crimping tool.
4. Edge Trim (casings Beads):
 - a. Where gypsum board terminates against dissimilar materials and at perimeter of openings, except where covered by flanges, casings or permanently built-in equipment.
 - b. Where gypsum board surfaces of non-load bearing assemblies abut load bearing members.
 - c. Where shown.

3.4 FINISHING OF GYPSUM BOARD

A. Finish joints, edges, corners, and fastener heads in accordance with ASTM C840.

1. Use Level 4 finish for all finished areas open to public view.
2. Use Level 3 finish for areas concealed behind millwork, lockers and other built-in items as well as on occupied side of temporary partitions.
3. Use Level 2 finish for areas above ceiling and construction side of temporary partitions.
4. Ensure that all joints are finished to a level that complies with requirements for fire rating.

- B. Before proceeding with installation of finishing materials, assure the following:
 - 1. Gypsum board is fastened and held close to framing or furring.
 - 2. Fastening heads in gypsum board are slightly below surface in dimple formed by driving tool.
- C. Finish joints, fasteners, and all openings, including openings around penetrations, on that part of the gypsum board extending above suspended ceilings to seal surface of non-decorated portion of smoke barrier, fire rated and sound rated gypsum board construction. After the installation of hanger rods, hanger wires, supports, equipment, conduits, piping and similar work, seal remaining openings and maintain the integrity of the smoke barrier, fire rated, and sound rated construction. Sanding is not required of non-decorated surfaces.

3.5 REPAIRS

- A. After taping and finishing has been completed, and before decoration, repair all damaged and defective work, including nondecorated surfaces.
- B. Patch holes or openings 13 mm (1/2 inch) or less in diameter, or equivalent size, with a setting type finishing compound or patching plaster.
- C. Repair holes or openings over 13 mm (1/2 inch) diameter, or equivalent size, with 16 mm (5/8 inch) thick gypsum board secured in such a manner as to provide solid substrate equivalent to undamaged surface.
- D. Tape and refinish scratched, abraded or damaged finish surfaces including cracks and joints in non decorated surface to provide smoke tight construction, fire protection equivalent to the fire rated construction and STC equivalent to the sound rated construction.

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SECTION 09 30 13
CERAMIC/PORCELAIN TILING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies ceramic, porcelain, glass, and quarry tile and marble thresholds and waterproofing membranes for thin-set applications.

1.2 RELATED WORK

- A. Sealing of joints where specified: Section 07 92 00, JOINT SEALANTS.
- B. Metal and resilient edge strips at joints with new resilient flooring, and carpeting: Section 09 65 19, RESILIENT TILE FLOORING and Section 09 68 00, CARPETING.
- C. Finishes: Ceramic tile products and installation are specified in this Section. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
1. Ceramic tile, each type, each color, each size to be installed.
 2. Paver tile, each size, type, color and pattern to be installed.
 3. Porcelain tile, each type, color, patterns and size to be installed.
 4. Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces for each type of tile.
- C. Product Data:
1. Ceramic and porcelain tile, marked to show each type, size, and shape required.
 2. Leveling compound.
 3. Latex-Portland cement mortar and grout.
 4. Waterproofing isolation membrane.
- D. Certification:
1. Master grade, ANSI A137.1.
 2. Manufacturer's certificates indicating that the following materials and products comply with specification requirements.

1.4 DELIVERY AND STORAGE

- A. Deliver materials in containers with labels legible and intact and grade-seals unbroken.
- B. Store material to prevent damage or contamination.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):
 - A108.1A-11.....Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar
 - A108.4-05.....Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile Setting Epoxy Adhesives
 - A108.5-05.....Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar
 - A108.6-05.....Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy
 - A118.1-05.....Dry-Set Portland Cement Mortar
 - A118.4-05.....Latex-Portland Cement Mortar
 - A118.6-05.....Standard Cement Grouts for Tile Installation
 - A136.1-05.....Organic Adhesives for Installation of Ceramic Tile
 - A137.1-08.....Ceramic Tile
- C. American Society For Testing And Materials (ASTM):
 - C109/C109M-11.....Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 inch. or [50-mm] Cube Specimens)
 - C241-09.....Abrasion Resistance of Stone Subjected to Foot Traffic
 - C348-08.....Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars
 - C979-10.....Pigments for Integrally Colored Concrete
 - C1027-09.....Determining "Visible Abrasion Resistance on Glazed Ceramic Tile"

- C1028-07.....Determining the Static Coefficient of Friction
of Ceramic Tile and Other Like Surfaces by the
Horizontal Dynamometer Pull Meter Method
- C1127-09.....Standard Guide for Use of High Solids Content,
Cold Liquid-Applied Elastomeric Waterproofing
Membrane with an Integral Wearing Surface
- C1178/C1178M-11.....Standard Specification for Coated Glass Mat
Water-Resistant Gypsum Backing Panel
- C1325-08.....Non-Asbestos Fiber-Mat Reinforced Cementitious
Backer Units
- D5109-99 (R2004).....Standard Test Methods for Copper-Clad
Thermosetting Laminates for Printed Wiring
Boards
- D. Marble Institute of America (MIA): Design Manual III-2007
- E. Tile Council of America, Inc. (TCA):
2007.....Handbook for Ceramic Tile Installation

PART 2 - PRODUCTS

2.1 TILE

- A. Comply with ANSI A137.1, Standard Grade, except as modified:
 - 1. Inspection procedures listed under the Appendix of ANSI A137.1.
 - 2. Abrasion Resistance Classification:
 - a. Tested in accordance with values listed in Table 1, ASTM C 1027.
 - b. Class V, 12000 revolutions for floors in Corridors, Kitchens,
Storage including Refrigerated Rooms
 - c. Class IV, 6000 revolutions for remaining areas.
 - 3. Slip Resistant Tile for Floors:
 - a. Coefficient of friction, when tested in accordance with ASTM
C1028, required for level of performance:
 - 1) Not less than 0.7 (wet condition) for bathing areas.
 - 2) Not less than 0.8 on ramps for wet and dry conditions.
 - 3) Not less than 0.6, except 0.8 on ramps as stated above, for
wet and dry conditions for other areas.
 - b. Tile Having Abrasive Grains:
 - 1. Unglazed Ceramic Mosaic Tile: Abrasive grains throughout body
of the tile.
 - 4. Do not use back mounted tiles in showers unless certified by
manufacturer as noted in paragraph 1.3.D.

5. Factory Blending: For tile with color variations, within the ranges selected during sample submittals blend tile in the factory and package so tile units taken from one package show the same range in colors as those taken from other packages and match approved samples.
 7. Factory-Applied Temporary Protective Coating:
 - a. Protect exposed face surfaces (top surface) of tile against adherence of mortar and grout by pre-coating with a continuous film of petroleum paraffin wax, applied hot.
 - b. Do not coat unexposed tile surfaces.
 - c. Pre-wax tiles set or grouted with latex modified mortars.
- B. Porcelain Tile:
1. Floor Tile (CT-1):
 - a. Size: 600 mm x 600 mm x 10.5 mm (24 inches x 24 inches x 7/16 inch).
 - b. Product: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - c. Color: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - d. Trim: Matching shapes and sizes as indicated or required.
 2. Floor Tile (CT-2):
 - a. Size: 600 mm x 600 mm x 10.5 mm (24 inches x 24 inches x 7/16 inch).
 - b. Product: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - c. Color: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - d. Trim: Matching shapes and sizes as indicated or required.
 3. Wall and Base Tile (CT-6):
 - a. Size: 300 mm x 600 mm x 10.5 mm (12 inches x 24 inches x 7/16 inch) installed in horizontal pattern.
 - b. Product: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - c. Color: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - d. Trim: Matching shapes and sizes as indicated or required.
 4. Wall and Base Tile (CT-7):
 - a. Size: 300 mm x 600 mm x 10.5 mm (12 inches x 24 inches x 7/16 inch) installed in horizontal pattern.
 - b. Product: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - c. Color: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - d. Trim: Matching shapes and sizes as indicated or required.
- C. Ceramic Mosaic Tile (for patching and repair of existing tile):
3. Wall Tile (CT-3):

- a. Size: 108 mm x 108 mm (4¼ inch x 4¼ inch).
- b. Color: Ivory to match existing.
- c. Trim: Matching shapes and sizes as indicated or required.
- 4. Wall Tile (CT-4):
 - a. Size: 108 mm x 108 mm (4¼ inch x 4¼ inch).
 - b. Color: Blue to match existing.
 - c. Trim: Matching shapes and sizes as indicated or required.
- 5. Wall Tile (CT-5):
 - a. Size: 108 mm x 108 mm (4¼ inch x 4¼ inch).
 - b. Color: Dark tan to match existing.
 - c. Trim: Matching shapes and sizes as indicated or required.
- D. Glass Tile:
 - 1. Wall Tile (GT-1):
 - a. Size: 13 mm tall x 51 mm and 102 mm long x 6 mm thick (½ inch tall x 2 inch and 4 inch long x ¼ inch thick) in horizontal pattern.
 - b. Product: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - c. Color: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Wall Tile (GT-2):
 - a. Size: 13 mm tall x 51 mm and 102 mm long x 6 mm thick (½ inch tall x 2 inch and 4 inch long x ¼ inch thick) installed in horizontal pattern.
 - b. Product: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
 - c. Color: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.
- E. Unglazed Quarry Tile: Nominal 13 mm (1/2 inch) thick, square edges.
 - 1. Floor Tile (QT-1):
 - a. Size: 152 mm x 152 mm (6 inch x 6 inch).
 - b. Color: Terra Cotta to match existing.
 - c. Trim: Matching shapes and sizes as indicated or required.
 - 3. Floor Tile (QT-2):
 - a. Size: 152 mm x 152 mm (6 inch x 6 inch).
 - b. Color: Beige to match existing.
 - c. Trim: Matching shapes and sizes as indicated or required.
 - 4. Floor Tile (QT-3):
 - a. Size: 152 mm x 152 mm (6 inch x 6 inch).
 - b. Color: Gray to match existing.
 - c. Trim: Matching shapes and sizes as indicated or required.
- F. Trim Shapes:

1. Conform to applicable requirements of adjoining floor and wall tile.
2. Use slip resistant trim shapes for horizontal surfaces of showers, shower curbs, drying area curbs, and seats.
3. Use trim shapes sizes conforming to size of adjoining field wall tile unless detailed or specified otherwise.
4. Internal and External Corners:
 - a. Square internal and external corner joints are not acceptable.
 - b. External corners including edges: Use bullnose shapes.
 - c. Internal corners: Use cove shapes.
 - d. Base to floor internal corners: Use special shapes providing integral cove vertical and horizontal joint.
 - e. Base to floor external corners: Use special shapes providing bullnose vertical edge with integral cove horizontal joint. Use stop at bottom of openings having bullnose return to wall.
 - f. Wall top edge internal corners: Use special shapes providing integral cove vertical joint with bullnose top edge.
 - g. Wall top edge external corners: Use special shapes providing bullnose vertical and horizontal joint edge.
 - h. For unglazed ceramic mosaic and glazed wall tile installed in Portland cement mortar setting bed, use cove and bullnose shapes as applicable. When ceramic mosaic wall and base tile is required, use C Series cove and bullnose shapes.
 - i. For unglazed ceramic mosaic and glazed wall tile installed in dry-set Portland cement mortar, latex-Portland cement mortar, and organic adhesive (thin set methods), use cove and surface bullnose shapes as applicable.

2.2 CEMENTITIOUS BACKER UNITS

- A. Use in showers or wet areas.
- B. ASTM C1325.
- C. Use Cementitious backer units in maximum available lengths.
- D. Thickness shall match adjacent gypsum board.

2.3 JOINT MATERIALS FOR CEMENTITIOUS BACKER UNITS

- A. Reinforcing Tape: Vinyl coated woven glass fiber mesh tape, open weave, 50 mm (2 inches) wide. Tape with pressure sensitive adhesive backing will not be permitted.
- B. Tape Embedding Material: Latex-Portland cement mortar complying with ANSI A108.1.

- C. Joint material, including reinforcing tape, and tape embedding material, shall be as specifically recommended by the backer unit manufacturer.

2.4 FASTENERS

- A. Screws for Cementitious Backer Units.
 - 1. Standard screws for gypsum board are not acceptable.
 - 2. Minimum 11 mm (7/16 inch) diameter head, corrosion resistant coated, with washers.
 - 3. ASTM C954 for steel 1 mm (0.033 inch) thick.
 - 4. ASTM C1002 for steel framing less than 0.0329 inch thick.
- B. Washers: Galvanized steel, 13 mm (1/2 inch) minimum diameter.

2.5 GLASS MAT WATER RESISTANT GYPSUM BACKER BOARD

- A. Confirm to ASTM C1178/C1178M, Optional System for Cementitious Backer Units.

2.6 SETTING MATERIALS OR BOND COATS

- A. Conform to TCA Handbook for Ceramic Tile Installation.
- B. Latex-Portland Cement Mortar: ANSI A118.1.
 - 1. For wall applications, provide non-sagging, latex-Portland cement mortar complying with ANSI A118.1.
 - 2. Prepackaged Dry-Mortar Mix: Factory-prepared mixture of Portland cement; dry, redispersible, ethylene vinyl acetate additive; and other ingredients to which only water needs to be added at Project site.
- C. Dry-Set Portland Cement Mortar: ANSI A118.1. For wall applications, provide non-sagging, latex-Portland cement mortar complying with ANSI A108.4.
- D. Organic Adhesives: ANSI A136.1, Type 1.
- E. Waterproofing Isolation Membrane:
 - 1. Sheet System TCA F122-02.
 - 2. Optional System to elastomeric waterproof membrane.
 - 3. Composite sheet consisting of ASTM D5109, Type II, Grade I Chlorinated Polyethylene (CM) sheet reinforced on both sides with a non-woven polyester fiber.
 - 4. Designed for use in wet areas as an isolation and positive waterproofing membranes for thin-set bonding of sheet to substrate and thin-set bonding of ceramic and porcelain tile or marble to sheet. Suited for both horizontal and vertical applications.

5. Conform to the following additional physical properties:

Property	Units	Results	Test Method
Hardness Shore A	Points	70-80	ASTM D2240 (10 Second Reading)
Shrinkage	Percent	5 maximum	ASTM D1204
Brittleness		No crack remains flexible at temperature-37 degrees C (-25 degrees F)	ASTM D2497 13 mm (1/2- inch) Mandrel Bend
Retention of Properties after Heat Aging	Percent of original	80 Tensile 80 Breaking 80 Elongation	ASTM D3045, 90 degrees C (194 degrees F) for 168 hours

6. Manufacturer's standard sheet size with prefabricated or preformed inside and outside corners.

7. Sheet manufacturer's solvent welding liquid or xylene and edge sealant.

2.7 GROUTING MATERIALS

A. Coloring Pigments:

1. Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
2. Add coloring pigments to grout by the manufacturer.
3. Job colored grout is not acceptable.
4. Use is required in Commercial Portland Cement Grout, Dry-Set Grout, and Latex-Portland Cement Grout.
5. Color: **TO BE SELECTED**

B. Latex-Portland Cement Grout: ANSI A108.1 color as specified.

1. Unsanded grout mixture for joints 3.2 mm (1/8 inch) and narrower.
2. Sanded grout mixture for joints 3.2 mm (1/8 inch) and wider.

2.8 PATCHING AND LEVELING COMPOUND

A. Portland cement base, polymer-modified, self-leveling compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

B. Shall have minimum following physical properties:

1. Compressive strength - 25 MPa (3500 psig) per ASTM C109/C109M.
2. Flexural strength - 7 MPa (1000 psig) per ASTM C348 (28 day value).
3. Tensile strength - 600 psi per ANSI 118.7.

- 4. Density - 1.9.
- C. Capable of being applied in layers up to 38 mm (1-1/2 inches) thick without fillers and up to 100 mm (four inches) thick with fillers, being brought to a feather edge, and being trowelled to a smooth finish.
- D. Primers, fillers, and reinforcement as required by manufacturer for application and substrate condition.
- E. Ready for use in 48 hours after application.

2.9 MARBLE

- A. Soundness Classification in accordance with MIA Design Manual III Groups.
- B. Thresholds:
 - 1. Group A, Minimum abrasive hardness (Ha) of 10.0 per ASTM C241.
 - 2. Honed finish on exposed faces.
 - 3. Thickness and contour as shown on drawings. Bevels and slopes shall comply with the requirements of the ADA and ABA Accessibility Guidelines and the Uniform Federal Accessibility Standards, whichever is more restrictive.
 - 4. Fabricate from one piece without holes, cracks, or open seams; full depth of wall or frame opening by full width of wall or frame opening; 19 mm (3/4-inch) minimum thickness and 6 mm (1/4-inch) minimum thickness at beveled edge.
 - 5. Set not more than 13 mm (1/2-inch) above adjoining finished floor surfaces, with transition edges beveled on a slope of no greater than 1:2. On existing floor slabs provide 13 mm (1/2-inch) above ceramic tile surface with bevel edge joint top flush with adjacent floor.
 - 6. One piece full width of door opening.

2.10 METAL FINISHING AND EDGE-PROTECTION

- A. Ceramic edge-protection and finishing sections.
- B. L-shape profile with 3.2 mm (1/8 inch) wide top section and vertical wall section that together form the visible surface and integrated grout joint spacer.
- C. Material: Polished Chrome Aluminum.
- D. Height: **TO BE SELECTED.**

2.11 WATER

- A. Clean, potable and free from salts and other injurious elements to mortar and grout materials.

2.12 CLEANING COMPOUNDS

- A. Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- B. Materials containing acid or caustic material not acceptable.

PART 3 - EXECUTION

3.1 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperature of work areas at not less than 16 degree C (60 degrees F), without interruption, for not less than 24 hours before installation and not less than three days after installation.
- B. Maintain higher temperatures for a longer period of time where required by manufacturer's recommendation and ANSI Specifications for installation.
- C. Do not install tile when the temperature is above 38 degrees C (100 degrees F).
- D. Do not install materials when the temperature of the substrate is below 16 degrees C (60 degrees F).
- E. Do not allow temperature to fall below 10 degrees C (50 degrees F) after fourth day of completion of tile work.

3.2 ALLOWABLE TOLERANCE

- A. Variation in plane of sub-floor, including concrete fills leveling compounds and mortar beds:
 - 1. Not more than 1 in 1000 (1/8 inch in 10 feet).
- B. Variation in Plane of Wall Surfaces:
 - 1. Not more than 1 in 800 (1/8 inch in eight feet).

3.3 SURFACE PREPARATION

- A. Patching and Leveling:
 - 1. Mix and apply patching and leveling compound in accordance with manufacturer's instructions.
 - 2. Fill holes and cracks and align concrete floors that are out of required plane with patching and leveling compound.
 - a. Thickness of compound as required to bring finish tile system to elevation shown.
 - b. Float finish.
- B. Mortar Bed for Slopes to Drains:
 - 1. Slope compound to drain where drains are shown.

2. Install mortar bed in depressed slab sloped to drains not less than 1 in 100 (1/8 inch per foot).
 3. Allow not less than 50 mm (2 inch) depression at edge of depressed slab.
 4. Screed for slope to drain and float finish.
 5. Cure mortar bed for not less than seven days. Do not use curing compounds or coatings.
- D. Additional preparation of concrete floors for tile set with epoxy, or furan-resin shall be in accordance with the manufacturer's printed instructions.
- F. Walls:
1. In showers or other wet areas cover studs with polyethylene sheet.
 2. Apply leveling coats of material compatible with wall surface and tile setting material to wall surfaces, other than concrete and masonry that are out of required plane.
- G. Existing Floors and Walls:
1. Remove existing composition floor finishes and adhesive. Prepare surface by grinding, chipping, self-contained power blast cleaning or other suitable mechanical methods to completely expose uncontaminated concrete or masonry surfaces. Follow safety requirements of ANSI A10.20.

3.4 CEMENTITIOUS BACKER UNITS

- A. Remove polyethylene wrapping from cementitious backer units and separate to allow for air circulation. Allow moisture content of backer units to dry down to a maximum of 35 percent before applying joint treatment and tile.
- B. Install in accordance with ANSI A108.1 except as specified otherwise.
- C. Install units horizontally or vertically to minimize joints with end joints over framing members. Units with rounded edges; face rounded edge away from studs to form a V joint for joint treatment.
- D. Secure cementitious backer units to each framing member with screws spaced not more than 200 mm (eight inches) on center and not closer than 13 mm (1/2 inch) from the edge of the backer unit or as recommended by backer unit manufacturer. Install screws so that the screw heads are flush with the surface of the backer unit.
- E. Where backer unit joins shower pans or waterproofing, lap backer unit over turned up waterproof system. Install fasteners only through top one-inch of turned up waterproof systems.

F. Do not install joint treatment for seven days after installation of cementitious backer unit.

G. Joint Treatment:

1. Fill horizontal and vertical joints and corners with latex-Portland cement mortar. Apply fiberglass tape over joints and corners and embed with same mortar.
2. Leave 6 mm (1/4 inch) space for sealant at lips of tubs, sinks, or other plumbing receptors.

3.5 GLASS MAT WATER-RESISTANT GYPSUM BACKER BOARD

- A. Install in accordance with manufacturer's instructions. TCA Systems W245-01.
- B. Treat joints with tape and latex-Portland cement mortar or adhesive.

3.6 MARBLE

- A. Set in dry-set Portland cement mortar or latex-Portland cement mortar bond coat.

3.7 CERAMIC TILE - GENERAL

- A. Comply with ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" applicable to methods of installation.
- B. Comply with TCA Installation Guidelines:
- C. Setting Beds or Bond Coats:
 1. Set floor tile in elastomeric bond coat over elastomeric membrane ANSI 108. 13, TCA System F122
 2. Set tile installed over gypsum board and gypsum plaster in organic adhesive, ANSI A108.1, TCA System W242-02.
 3. Set trim shapes in same material specified for setting adjoining tile.
- D. Workmanship:
 1. Lay out tile work so that no tile less than one-half full size is used. Make all cuts on the outer edge of the field.
 2. Set tile firmly in place with finish surfaces in true planes.
 3. Form intersections and returns accurately.
 4. Cut and drill tile neatly without marring surface.
 5. Cut edges of tile abutting penetrations, finish, or built-in items:
 - a. Fit tile closely around electrical outlets, piping, fixtures and fittings, so that plates, escutcheons, collars and flanges will overlap cut edge of tile.

- b. Seal tile joints water tight as specified in Section 07 92 00, JOINT SEALANTS, around electrical outlets, piping fixtures and fittings before cover plates and escutcheons are set in place.
- 6. Completed work shall be free from hollow sounding areas and loose, cracked or defective tile.
- 7. Remove and reset tiles that are out of plane or misaligned.
- 8. Floors:
 - a. Extend floor tile beneath casework and equipment, except those units mounted in wall recesses.
 - b. Align finish surface of new tile work flush with other and existing adjoining floor finish where shown.
 - c. In areas where floor drains occur, slope to drains where shown.
 - d. Shove and vibrate tiles over 200 mm (8 inches) square to achieve full support of bond coat.
- 9. Walls:
 - a. Cover walls to nominal wainscot heights shown with tile.
 - b. Finish reveals of openings with tile, except where other finish materials are shown or specified.
 - c. Finish wall surfaces behind and at sides of casework and equipment, except those units mounted in wall recesses, with same tile as scheduled for room proper.
- 10. Joints:
 - a. Keep all joints in line, straight, level, perpendicular and of even width unless shown otherwise.
 - b. Make joints 2 mm (1/16 inch) wide for glazed wall tile and mosaic tile work.

3.8 THIN SET CERAMIC AND PORCELAIN TILE INSTALLED WITH DRY-SET PORTLAND CEMENT AND LATEX-PORTLAND CEMENT MORTAR

- A. Installation of Tile: ANSI A108.1, except as specified otherwise.
- B. Slope tile work to drains not less than 1 in 100 (1/8 inch per foot).

3.9 THIN SET CERAMIC AND PORCELAIN TILE INSTALLED WITH ORGANIC ADHESIVE

- A. Installation of Tile: ANSI A108.1.

3.10 GROUTING

- A. Grout Type and Location:
 - 1. Grout for glazed wall and base tile, latex-Portland cement grout.
- B. Workmanship:
 - 1. Install and cure grout in accordance with the applicable standard.

3.11 CLEANING

- A. Thoroughly sponge and wash tile. Polish glazed surfaces with clean dry cloths.
- B. Methods and materials used shall not damage or impair appearance of tile surfaces.
- C. The use of acid or acid cleaners on glazed tile surfaces is prohibited.
- D. Clean tile grouted with epoxy, furan and commercial Portland cement grout and tile set in elastomeric bond coat as recommended by the manufacturer of the grout and bond coat.

3.12 PROTECTION

- A. Keep traffic off tile floor, until grout and setting material is firmly set and cured.
- B. Where traffic occurs over tile floor, cover tile floor with not less than 9 mm (3/8 inch) thick plywood, wood particle board, or hardboard securely taped in place. Do not remove protective cover until time for final inspection. Clean tile of any tape, adhesive and stains.

- - - E N D - - -

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1- GENERAL

1.1 DESCRIPTION

- A. Metal ceiling suspension system for acoustical ceilings.
- B. Acoustical units.

1.2 RELATED WORK

- A. Suspension systems for gypsum board ceilings: Section 09 22 16, NON-STRUCTURAL METAL FRAMING
- B. Finishes: Acoustical ceiling products and installation are specified in this Section. Specific ceiling panels and their location are indicated on the drawings.
- C. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTAL

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - 1. Acoustical units, each type, with label indicating conformance to specification requirements, including units specified to match existing.
 - 2. Ceiling suspension system components.
- C. Manufacturer's Literature and Data:
 - 1. Ceiling suspension system, each type, showing complete details of installation.
 - 2. Acoustical units, each type
- D. Manufacturer's Certificates: Acoustical units, each type, in accordance with specification requirements.

1.4 DEFINITIONS

- A. Standard definitions as defined in ASTM C634.
- B. Terminology as defined in ASTM E1264.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A641/A641M-09.....Zinc-coated (Galvanized) Carbon Steel Wire

- A653/A653M-11.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process
- C423-09.....Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- C634-11.....Standard Terminology Relating to Environmental Acoustics
- C635-13.....Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- C636-13.....Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- E84-13.....Surface Burning Characteristics of Building Materials
- E119-12.....Fire Tests of Building Construction and Materials
- E413-10.....Classification for Rating Sound Insulation.
- E1264-08e1.....Classification for Acoustical Ceiling Products
- C. International Organization for Standardization (ISO)
- ISO 14644-1.....Classification of Air Cleanliness

PART 2- PRODUCTS

2.1 METAL SUSPENSION SYSTEM

- A. ASTM C635, heavy-duty system, except as otherwise specified.
 - 1. Ceiling suspension system members may be fabricated from either of the following unless specified otherwise.
 - a. Galvanized cold-rolled steel, bonderized.
 - b. Extruded aluminum.
 - 2. Use same construction for cross runners as main runners. Use of lighter-duty sections for cross runners is not acceptable.
- B. Exposed grid suspension system for support of lay-in panels:
 - 1. Exposed grid width not less than 22 mm (7/8 inch) with not less than 8 mm (5/16 inch) panel bearing surface.
 - 2. Fabricate wall molding and other special molding from the same material with same exposed width and finish as the exposed grid members.
 - 3. On exposed metal surfaces apply baked-on enamel flat texture finish in color to match adjacent acoustical units.
- C. Hold-down clips: Galvanized steel, aluminum or PVC clips to prevent lifting of acoustic panels when they are being cleaned.

2.2 PERIMETER SEAL

- A. Vinyl, polyethylene or polyurethane open cell sponge material having density of 1.3 plus or minus 10 percent, compression set less than 10 percent with pressure sensitive adhesive coating on one side.
- B. Thickness as required to fill voids between back of wall molding and finish wall.
- C. Not less than 9 mm (3/8 inch) wide strip.

2.3 GRID COVER

- A. PVC cap for exposed to view portions of existing ceiling grid and trim.
 - 1. Performance features: Mold, mildew, and humidity resistant; washable.
 - 2. Fire Rating: Class A.
 - 3. Color: White.

2.4 WIRE

- A. ASTM A641, Class 1 zinc coating, soft temper, pre-stretched.
- B. Yield Stress Load: At least three times design load.
- C. For wire hangers: Minimum diameter 2.68 mm (0.1055 inch).
- D. For bracing wires: Minimum diameter 3.43 mm (0.1350 inch).

2.5 ANCHORS AND INSERTS

- A. Use anchors or inserts to support twice the loads imposed by hangers attached thereto.
- B. Hanger Inserts:
 - 1. Fabricate inserts from steel, zinc-coated (galvanized after fabrication).
 - 2. Flush ceiling insert type:
 - a. Designed to provide a shell covered opening over a wire loop to permit attachment of hangers and keep concrete out of insert recess.
 - b. Insert opening inside shell approximately 16 mm (5/8 inch) wide by 9 mm (3/8 inch) high over top of wire.
 - c. Wire 5 mm (3/16 inch) diameter with length to provide positive hooked anchorage in concrete.
- C. Clips:
 - 1. Galvanized steel.
 - 2. Designed to clamp to steel beam or bar joists, or secure framing member together.
 - 3. Designed to rigidly secure framing members together.
 - 4. Designed to sustain twice the loads imposed by hangers or items supported.

2.6 CARRYING CHANNELS FOR SECONDARY FRAMING

- A. Fabricate from cold-rolled or hot-rolled steel, black asphaltic paint finish, free of rust.
- B. Weighing not less than the following, per 300 m (per thousand linear feet):

Size mm	Size Inches	Cold-rolled		Hot-rolled	
		Kg	Pound	Kg	Pound
38	1 1/2	215.4	475	508	1120
50	2	267.6	590	571.5	1260

2.7 ACOUSTICAL UNITS

- A. General:
1. Ceiling Tile shall meet minimum 37% bio-based content in accordance with USDA Bio-Preferred Product requirements.
 2. ASTM E1264, weighing 3.6 kg/m² (3/4 psf) minimum for mineral fiber panels or tile.
 3. Class A Flame Spread: ASTM 84
 4. Minimum NRC (Noise Reduction Coefficient): 0.55 unless specified otherwise: ASTM C423.
 5. Minimum CAC (Ceiling Attenuation Class): 40-44 range unless specified otherwise: ASTM E413.
 6. Manufacturers standard finish, minimum Light Reflectance (LR) coefficient of 0.75 on the exposed surfaces.
 7. Lay-in panels: Sizes and edge profile as indicated.
- B. Special faced acoustical tile units AT (SP) shall be used for surgery/clean areas, kitchens, SPD and wet areas as per referenced in PG-18-14, Room Finishes, Door, & Hardware Schedule. AT (SP) Special faced acoustical tile units shall provide anti-microbial coated surfaces suitable for use in Class 5 Clean Rooms per ISO 14644-1. Special faced acoustical tile units shall meet all general requirements stated in this specification.
- C. ACT-1
1. Basis of Design: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES
 2. Minimum NRC (Noise Reduction Coefficient): .55
 3. Minimum CAC (Ceiling Attenuation Class): 40
 4. Light Reflectance (LR) coefficient of .80 on the exposed surfaces.
 5. Edge/Profile: Square
 6. Color: White
 7. Size: 600 mm x 1200 mm x 16 mm (2 feet x 4 feet x 5/8 inch)

8: Performance features: Mold and mildew protected; sag resistant; scrubbable.

9. Fire Rating: Class A.

D. ACT-2

1. Basis of Design: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES
2. Minimum NRC (Noise Reduction Coefficient): .55.
3. Minimum CAC (Ceiling Attenuation Class): 35.
4. Light Reflectance (LR) coefficient of .85 on the exposed surfaces.
5. Edge/Profile: Square.
6. Color: White.
7. Size: 600 mm x 1200 mm x 16 mm (2 feet x 4 feet x 5/8 inch).
8. Performance features: Mold and mildew protected; sag resistant.
9. Fire Rating: Class A.

E. ACT-3

1. Basis of Design: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES
2. Minimum NRC (Noise Reduction Coefficient): .55.
3. Minimum CAC (Ceiling Attenuation Class): 35.
4. Light Reflectance (LR) coefficient of .85 on the exposed surfaces.
5. Edge/Profile: Square.
6. Color: White.
7. Size: 600 mm x 600 mm x 16 mm (2 feet x 2 feet x 5/8 inch).
8. Performance features: Mold and mildew protected; sag resistant.
9. Fire Rating: Class A.

PART 3 EXECUTION

3.1 CEILING TREATMENT

- A. Treatment of ceilings shall include sides and soffits of ceiling beams, furred work 600 mm (24 inches) wide and over, and vertical surfaces at changes in ceiling heights unless otherwise shown. Install acoustic tiles after wet finishes have been installed and solvents have cured.
- B. Lay out acoustical units centered as in each room or defined boundary of space unless dimensioned or shown otherwise on reflected ceiling plan drawings.
- C. All devices located within acoustical ceiling units shall be centered unless dimensioned or shown otherwise on reflected ceiling plan drawings.
- D. Perimeter Seal:
 1. Install perimeter seal between vertical leg of wall molding and finish wall, partition, and other vertical surfaces.
 2. Install perimeter seal to finish flush with exposed faces of horizontal legs of wall molding.

E. Existing ceiling:

1. Where extension of existing ceilings occur, match existing.
2. Where acoustical units are salvaged and reinstalled or joined, use salvaged units within a space. Do not mix new and salvaged units within a space which results in contrast between old and new acoustic units.
3. Comply with specifications for new acoustical units for new units required to match appearance of existing units.

3.2 CEILING SUSPENSION SYSTEM INSTALLATION

A. General:

1. Install metal suspension system for acoustical tile and lay-in panels in accordance with ASTM C636, except as specified otherwise.
2. Use direct or indirect hung suspension system or combination thereof as defined in ASTM C635.
3. Support a maximum area of 1.48 m² (16 sf) of ceiling per hanger.
4. Prevent deflection in excess of 1/360 of span of cross runner and main runner.
5. Provide extra hangers, minimum of one hanger at each corner of each item of mechanical, electrical and miscellaneous equipment supported by ceiling suspension system not having separate support or hangers.
6. Provide not less than 100 mm (4 inch) clearance from the exposed face of the acoustical units to the underside of ducts, pipe, conduit, secondary suspension channels, concrete beams or joists; and steel beam or bar joist unless furred system is shown,
7. Use main runners not less than 1200 mm (48 inches) in length.
8. Install hanger wires vertically. Angled wires are not acceptable except for seismic restraint bracing wires.

B. Anchorage to Structure:

1. Concrete:
 - a. Install hanger inserts and wire loops required for support of hanger and bracing wire in concrete forms before concrete is placed. Install hanger wires with looped ends through steel deck if steel deck does not have attachment device.
 - b. Use eye pins or threaded studs with screw-on eyes in existing or already placed concrete structures to support hanger and bracing wire. Install in sides of concrete beams or joists at mid height.
2. Steel:
 - a. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels for attachment of hanger wires.

- (1) Size and space carrying channels to insure that the maximum deflection specified will not be exceeded.
 - (2) Attach hangers to steel carrying channels, spaced 1200 mm (4 feet) on center, unless area supported or deflection exceeds the amount specified.
- b. Attach carrying channels to the bottom flange of steel beams spaced not 1200 mm (4 feet) on center before fire proofing is installed. Weld or use steel clips to attach to beam to develop full strength of carrying channel.
- C. Direct Hung Suspension System:
1. As illustrated in ASTM C635.
 2. Support main runners by hanger wires attached directly to the structure overhead.
 3. Maximum spacing of hangers, 1200 mm (4 feet) on centers unless interference occurs by mechanical systems. Use indirect hung suspension system where not possible to maintain hanger spacing.
- D. Indirect Hung Suspension System:
1. As illustrated in ASTM C635.
 2. Space carrying channels for indirect hung suspension system not more than 1200 mm (4 feet) on center. Space hangers for carrying channels not more than 2400 mm (8 feet) on center or for carrying channels less than 1200 mm (4 feet) on center so as to insure that specified requirements are not exceeded.
 3. Support main runners by specially designed clips attached to carrying channels.

3.3 ACOUSTICAL UNIT INSTALLATION

- A. Cut acoustic units for perimeter borders and penetrations to fit tight against penetration for joint not concealed by molding.
- B. Install acoustic panels in exposed grid with not less than 6 mm (1/4 inch) bearing at edges on supports.
1. Install tile to lay level and in full contact with exposed grid.
 2. Replace cracked, broken, stained, dirty, or tile not cut for minimum bearing.
- C. Install hold-down clips for ACT-1.

3.4 CLEAN-UP AND COMPLETION

- A. Replace damaged, discolored, dirty, cracked and broken acoustical units.
- B. Leave finished work free from defects.

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IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
ACOUSTICAL CEILINGS

VAMC BALTIMORE, MD
JUNE 8, 2016
09 51 00-8

SECTION 09 65 13
RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the installation of rubber base.
- B. Resilient transitions strips for use with resilient flooring and carpet.

1.2 RELATED WORK

- A. Resilient flooring: Section 09 65 16, RESILIENT SHEET FLOORING.
- B. Carpet: Section 09 68 00, CARPETING.
- C. Finishes: Resilient base products and installation are specified in this Section.
- D. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product.
 - 2. Adhesive: Literature indicating each type, application and installation instructions.
- C. Samples:
 - 1. Base: 150 mm (6 inches) long, each type and color.
 - 2. Transitions Strips: 150 mm (6 inches) long, each type and color.

1.4 DELIVERY

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.5 STORAGE

- A. Store materials in weather tight and dry storage facility.
- B. Protect material from damage by handling and construction operations before, during, and after installation.

1.6 APPLICABLE PUBLICATIONS

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - F1344-10.....Rubber Floor Tile

- F1859-10.....Rubber Sheet Floor Covering without Backing
- F1860-10.....Rubber Sheet Floor Covering with Backing
- F1861-12.....Resilient Wall Base
- C. Federal Specifications (Fed. Spec.):
 - RR-T-650E.....Treads, Metallic and Non-Metallic, Nonskid

PART 2 - PRODUCTS

2.1 GENERAL

- A. Use only products by the same manufacturer and from the same production run.

2.2 RESILIENT BASE

- A. ASTM F1861, 3 mm (1/8 inch) thick, 100 mm (4 inches) high, Type TP, rubber.
 - 1. Style B-cove, for use with resilient flooring.
 - 2. Style A-straight, for use with carpeting.
- B. Color: As specified in Section 09 06 00, SCHEDULE FOR FINISHES.

2.3 TRANSITION STRIPS

- A. Rubber.
- B. Profile: As indicated or necessary to provide transition between the following flooring materials:
 - 1. Resilient tile to sheet vinyl.
 - 2. Resilient tile to carpet.
- C. Color: As selected from the manufacturer's full range of available colors.

2.4 PRIMER (FOR CONCRETE FLOORS)

- A. As recommended by the adhesive and tile manufacturer.

2.5 ADHESIVES

- A. Use products recommended by the material manufacturer for the conditions of use.
- B. Use low-VOC adhesive during installation. Water based adhesive with low VOC is preferred over solvent based adhesive.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials above 21° C (70 °F), for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs, between 21° C and 27° C (70°F and 80°F) for at least 48 hours, before, during, and after installation.

- C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.

3.2 INSTALLATION REQUIREMENTS

- A. Install in accordance with the manufacturer's instructions.
- B. Submit proposed installation deviation from this specification to the Contracting Officer indicating the differences in the method of installation.

3.3 PREPARATION

- A. Examine surfaces on which material is to be installed.
- B. Do not use adhesive for leveling or filling.
- C. Grind, sand, or cut away protrusions; grind high spots.
- D. Clean substrate area of oil, grease, dust, paint, and deleterious substances.
- E. Preparation of existing installation:
 - 1. Remove existing base including adhesive.
 - 2. Do not use solvents to remove adhesives.
 - 3. Prepare substrate as specified.

3.4 BASE INSTALLATION

- A. Location:
 - 1. Unless otherwise specified or shown, where base is scheduled, install base over toe space of base of casework, lockers, laboratory, pharmacy furniture island cabinets and where other equipment occurs.
 - 2. Extend base scheduled for room into adjacent closet, alcoves, and around columns.
- B. Application:
 - 1. Apply adhesive uniformly with no bare spots.
 - 2. Set base with joints aligned and butted to touch for entire height.
 - 3. Before starting installation, layout base material to provide the minimum number of joints with no strip less than 600 mm (24 inches) length.
 - a. Short pieces to save material will not be permitted.
 - b. Locate joints as remote from corners as the material lengths or the wall configuration will permit.
- C. Form corners and end stops as follows:
 - 1. Score back of outside corner.
 - 2. Score face of inside corner and notch cove.
- D. Roll base for complete adhesion.

3.5 TRANSITION STRIP INSTALLATION

- A. Location: Install transition strip wherever floor finish material changes. Extend transition strip for the full length of the intersection of two materials.
- B. Installation:
 - 1. Apply adhesive uniformly across the full length of the transition strip.
 - 2. Ensure that the edge of each floor finish is protected by transition strip.
 - 3. Install to provide a smooth transition between finishes of differing thicknesses.

3.6 CLEANING AND PROTECTION

- A. Clean all exposed surfaces of base and adjoining areas of adhesive spatter before it sets.
- B. After two weeks, scrub resilient base, sheet rubber and treads materials with a minimum amount of water and a mild detergent. Leave surfaces clean and free of detergent residue. Polish resilient base to a gloss finish.
- C. Where protective materials are removed and immediately prior to acceptance, replace damaged materials and re-clean resilient materials. Damaged materials are defined as having cuts, gouges, scrapes or tears and not fully adhered.

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SECTION 09 65 16
RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section specifies the installation of sheet flooring with backing.
- B. Grades of resilient sheet vinyl floor covering without backing having vinyl plastic wearlayer with backing.
- C. Seamless sheet vinyl flooring.
- D. Installation of sheet flooring including heat welded seams.

1.2 RELATED WORK

- A. Resilient base and transition strips: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.
- B. Refer to drawings for location of products specified in this section.
- C. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 QUALITY CONTROL-QUALIFICATIONS:

- A. The Contracting Officer shall approve products or service of proposed manufacturer, suppliers, and installers, and the Contractor shall submit certification that:
 - 1. Heat welded seaming is manufacturer's prescribed method of installation.
 - 2. Installer is approved by manufacturer of materials and has technical qualifications, experience, trained personnel, and facilities to install specified items.
 - 3. Manufacturer's product submitted has been in satisfactory operation, on three installations similar and equivalent in size to this project for three years. Submit list of installations.
- B. The sheet vinyl floor coverings shall meet fire performance characteristics as determined by testing products, per ASTM test method, indicated below by Underwriters Laboratories, Inc. (UL) or another recognized testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class I, per ASTM E648.
 - 2. Smoke Density: Less than 450 per ASTM E662.
- C. The floor covering manufacturer shall certify that products supplied for installation comply with local regulations controlling use of volatile organic compounds (VOC's).

1.4 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, submit following:
- B. Manufacturer's Literature and Data:
 - 1. Description of resilient material and accessories to be provided.
 - 2. Resilient material manufacturer's recommendations for adhesives, weld rods, sealants, and underlayment.
 - 3. Application and installation instructions.
- C. Samples:
 - 1. Sheet material, 38 mm by 300 mm (1-1/2 inch by 12 inch), of each color and pattern with a welded seam using proposed welding rod 300 mm (12 inches) square for each type, pattern and color.
 - 2. Cap strip and fillet strip, 300 mm (12 inches) for integral base.
- D. Shop Drawings and Certificates:
 - 1. Layout of joints showing patterns where joints are expressed, and type and location of obscure type joints. Indicate orientation of directional patterns.
 - 2. Certificates:
 - a. Quality Control Certificate Submittals and lists specified in paragraph, QUALIFICATIONS.
 - b. Certification that installer is approved by the flooring manufacturer.

1.5 PROJECT CONDITIONS

- A. Maintain temperature of floor materials and room, where work occurs, above 18 ° C (65 °F) and below 38 ° C (100 °F) for 48 hours before, during and for 48 hours after installation. After above period, room temperature shall not fall below 13 ° C (55 °F).
- B. Construction in or near areas to receive flooring work shall be complete, dry and cured. Do not install resilient flooring over slabs until they have been cured and are sufficiently dry to achieve a bond with adhesive. Follow flooring manufacturer's recommendations for bond and moisture testing.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in original sealed packages or containers; labeled for identification with manufacturer's name and brand.
- B. Deliver sheet flooring in full width roll, completely enclosed in factory wrap, clearly marked with the manufacturer's number, type and color, production run number and manufacture date.
- C. Store materials in weathertight and dry storage facility. Protect from damage due to handling, weather, and construction operations before,

during and after installation. Store sheet flooring on end with ambient temperatures maintained as recommended by manufacturer.

D. Store sheet flooring on end.

E. Move floor coverings and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.7 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Society For Testing Materials (ASTM):

E648-10.....Critical Radiant Flux of Floor-Covering Systems
Using a Radiant Energy Source.

E662-12.....Specific Optical Density of Smoke Generated by
Solid Materials.

F710-08.....Practice for Preparing Concrete Floors and Other
Monolithic Floors to Receive Resilient Flooring.

F1303-04 (2009).....Sheet Vinyl Floor Covering with Backing.

F1869-10.....Moisture Vapor Emission Rate of Concrete
Subfloor using Anhydrous Calcium Chloride

F1913-04 (2010).....Sheet Vinyl Flooring without Backing

F2170-09.....Determining Relative Humidity in Concrete Floor
Slabs using In-situ Probes

C. Resilient Floor Covering Institute (RFCI):

Recommended Work Practices for Removal of Resilient Floor Coverings.

1.8 SCHEDULING

A. Interior finish work such as gypsum board finishing, concrete, ceiling work, and painting work shall be complete and dry before installation. Mechanical, electrical, and other work above ceiling line shall be completed. Heating, ventilating, and air conditioning systems shall be installed and operating in order to maintain temperature and humidity requirements.

1.9 WARRANTY:

A. Submit written warranty, in accordance with FAR clause 52.246-21, Warranty of Construction requirements except that warranty period shall be extended to include two (2) years.

PART 2 - PRODUCTS

2.1 SEAMLESS SHEET VINYL FLOOR COVERINGS (SF-1/SF-2)

A. Sheet Vinyl Floor Coverings: Minimum thickness nominal

2 mm (0.08 inch). Sheet flooring shall conform to ASTM F1913 and material requirements specified in ASTM F1303, Type II, Grade 1, backing classification not applicable. Foam backed sheet flooring is not acceptable.

- B. Size: Provide maximum size sheet vinyl material produced by manufacturer to provide minimum number of joints. Minimum size width acceptable - 1200 mm (48 inches).
- C. Each color and pattern of sheet flooring shall be of same production run.
- D. Provide 151 mm (6 inch) high integral base where seamless sheet vinyl floor covering is installed.

2.2 WELDING ROD:

- A. Product of floor covering manufacturer in color shall match field color of sheet vinyl covering.

2.3 APPLICATION MATERIALS AND ACCESSORIES

- A. Floor Adhesive: Type recommended by sheet flooring material manufacturer for conditions of use.
- B. Mastic Underlayment (for concrete floors): Provide products with latex or polyvinyl acetate resins in mix. Condition to be corrected shall determine type of underlayment selected for use.

2.4 SHEET FLOORING

- A. ASTM F1913, ISO 10581, Type II, without backing.
- B. Minimum nominal thickness and width: 2 mm (0.08 inch).
- C. Sheet size: 1800 mm (6 ft) minimum wide.
- D. Wear layer thickness: 2 mm (0.08 inch).
- E. Critical Radiant Flux: 0.45 watts per sq.cm or more, Class I, per ASTM E648.
- F. Smoke density: less than 450 per ASTM E662.
- G. Static Load Limit: 750 psi per ASTM F970.
- H. Color and pattern of sheet flooring of the same production run. SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.

2.5 ADHESIVES

- A. Water resistant type recommended by the sheet flooring manufacturer for the conditions of use. VOC not to exceed 50g/L

2.6 BASE CAP STRIP AND COVE STRIP

- A. Extruded vinyl compatible with the sheet flooring.
- B. Cap strip "J" shape with feathered edge flange approximately 25 mm (one inch) wide; top designed to receive sheet flooring with 13 mm (1/2 inch) flange lapping top of flooring
- C. Cove strip 70 mm (2-3/4 inch) radius.

D. Base height: 151 mm (6 inches) unless indicated otherwise.

2.7 LEVELING COMPOUND (FOR CONCRETE FLOORS)

A. Provide cementitious products with latex or polyvinyl acetate resins in the mix.

2.8 PRIMER (FOR CONCRETE SUBFLOORS)

A. As recommended by the adhesive or sheet flooring manufacturer.

2.9 EDGE STRIPS

A. Extruded aluminum, mill finish, mechanically cleaned.

B. 28 mm (1-1/8 inch) wide, 6 mm (1/4 inch) thick, bevel one edge to 3 mm (1/8 inch) thick.

C. Drill and counter sink edge strips for flat head screws. Space holes near ends and approximately 225 mm (9 inches) on center in between.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

A. Maintain temperature of sheet flooring above 36 °C (65 °F), for 48 hours before installation.

B. Maintain temperature of rooms where sheet flooring work occurs above 36 °C (65 °F), for 48 hours, before installation and during installation.

C. After installation, maintain temperature at or above 36 °C (65 °F.)

D. Building is permanently enclosed.

E. Wet construction in or near areas to receive sheet flooring is complete, dry and cured.

3.2 SUBFLOOR PREPARATION

A. Concrete Subfloors: Verify that concrete slabs comply with ASTM F710.

1. Installer shall examine surfaces on which resilient sheet flooring is to be installed, and shall advise Contractor, in writing, of areas which are unacceptable for installation of flooring material. Installer shall advise Contractor which methods are to be used to correct conditions that will impair proper installation. Installation shall not proceed until unsatisfactory conditions have been corrected.

2. Slab substrates dry, free of curing compounds, sealers, hardeners, and other materials which would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by Resilient Floor Covering Institute recommendations in manual RFCI-MRP.

B. Broom or vacuum clean substrates to be covered by sheet vinyl floor coverings immediately before installation. Following cleaning, examine

substrates to determine if there is visually any evidence of moisture, alkaline salts, carbonation, or dust.

- C. Primer: If recommended by flooring manufacturer, prior to application of adhesive, apply concrete slab primer in accordance with manufacturer's directions.
- D. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- E. Fill cracks, joints, depressions, and other irregularities in concrete with leveling compound.
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- F. Clean floor of oil, paint, dust and deleterious substances. Leave floor dry and cured free of residue from existing curing or cleaning agents.
- G. Moisture Testing: Perform moisture and pH test as recommended by the flooring and adhesive manufacturers. Perform test locations starting on the deepest part of the concrete structure. Proceed with installation only after concrete substrates meet or exceed the manufacturer's requirements. In the absence of specific guidance from the flooring or adhesive manufacturer the following requirements are to be met:
 - 1. Perform moisture vapor emission tests in accordance with ASTM F1869. Proceed with installation only after substrates have a maximum moisture-vapor-emission rate of 1.36 kg of water/92.9 sq. m (3lb of water/1000 sq. ft.) in 24 hours.
 - 2. Perform concrete internal relative humidity testing using situ probes in accordance with ASTM F2170. Proceed with installation only after concrete reaches maximum 75 percent relative humidity level measurement.
- H. Preparation shall include the removal of existing resilient floor and existing adhesive. Do not use solvents to remove adhesives. Coordinate with Asbestos Abatement Section if asbestos abatement procedures will be involved.
- I. Remove existing resilient flooring and adhesive completely in accordance with Resilient Floor Covering Institute recommendations in manual RFCI-WP. Solvents shall not be used.

3.3 INSTALLATION OF FLOORING

- A. Install work in strict compliance with manufacturer's instructions and approved layout drawings.
- B. Maintain uniformity of vinyl floor covering direction.

- C. Arrange for a minimum number of seams and place them in inconspicuous and low traffic areas, but in no case less than 150 mm (6 inches) away from parallel joints in flooring substrates.
- D. Match edges of resilient floor coverings for color shading and pattern at seams.
- E. Where resilient sheet flooring abuts other flooring material install transition strip to protect edge of both materials and provide a smooth transition between materials.
- F. Extend sheet vinyl floor coverings into toe spaces, door reveals, closets, and similar openings.
- G. Inform the Contracting Officer of conflicts between this section and the manufacturer's instructions or recommendations for auxiliary materials, or installation methods, before proceeding.
- H. Install sheet in full coverage adhesives.
 - 1. Air pockets or loose edges will not be accepted.
 - 2. Trim sheet materials to touch in the length of intersection at pipes and vertical projections; seal joints at pipe with waterproof cement or sealant.
- I. Keep joints to a minimum; avoid small filler pieces or strips.
- J. Follow manufacturer's recommendations for seams at butt joints. Do not leave any open joints that would be readily visible from a standing position.
- K. Follow manufacturer's recommendations regarding pattern match, if applicable.

3.4 WELDING

- A. Heat weld all joints of flooring and base using equipment and procedures recommended by flooring manufacturer.
- B. Welding shall consist of routing joint, inserting a welding rod into routed space, and terminally fusing into a homogeneous joint.
- C. Upon completion of welding, surface across joint shall finish flush, free from voids, and recessed or raised areas.
- D. Fusion of Material: Joint shall be fused a minimum of 65 percent through thickness of material, and after welding shall meet specified characteristics for flooring.

3.5 CLEANING

- A. Clean small adhesive marks during installation of sheet flooring before adhesive sets, excessive adhesive smearing will not be accepted.
- B. Remove visible adhesive and other surface blemishes using methods and cleaner recommended by floor covering manufacturers.
- C. Clean and polish materials per flooring manufacturer's written recommendations.

- D. Vacuum floor thoroughly.
- E. Do not wash floor until after period recommended by floor covering manufacturer and then prepare in accordance with manufacturer's recommendations.
- F. Upon completion, Contracting Officer shall inspect floor and base to ascertain that work was done in accordance with manufacturer's printed instructions.
- G. Perform initial maintenance according to flooring manufacturer's written recommendations.

3.6 PROTECTION:

- A. Protect installed flooring as recommended by flooring manufacturer against damage from rolling loads, other trades, or placement of fixtures and furnishings.
- B. Keep traffic off sheet flooring for 24 hours after installation.
- C. Where construction traffic is anticipated, cover sheet flooring with reinforced kraft paper properly secured and maintained until removal is authorized by the Resident Engineer.
- D. Where protective materials are removed and immediately prior to acceptance, repair any damage, re-clean sheet flooring, lightly re-apply polish and buff floor.

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SECTION 09 65 19
RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the installation of vinyl composition tile flooring, rubber tile flooring, and accessories.

1.2 RELATED WORK

- A. Resilient Base and Transitions Strips: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.
- B. Resilient Sheet Flooring: Section 09 65 16, RESILIENT SHEET FLOORING.
- C. Refer to drawings for location of products specified in this section.
- D. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
1. Description of each product.
 2. Resilient material manufacturer's recommendations for adhesives, underlayment, primers and polish.
 3. Application and installation instructions.
- C. Samples:
1. Tile: 300 mm by 300 mm (12 inches by 12 inches) for each type, pattern and color.
 2. Feature Strips: 150 mm (6 inches) long.
- D. Shop Drawings:
1. Layout of patterns shown on the drawings.
 2. Edge strip locations showing types and detail cross sections.
- E. Test Reports:
1. Abrasion resistance: Depth of wear for each tile type and color and volume loss of tile, certified by independent laboratory.
 2. Tested per ASTM F510.

1.4 DELIVERY

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Materials from containers which have been distorted, damaged or opened prior to installation will be rejected.

1.5 STORAGE

- A. Store materials in weathertight and dry storage facility.
- B. Protect from damage from handling, water, and temperature.

1.6 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - D4078-02 (2008).....Water Emulsion Floor Finish
 - E648-10.....Critical Radiant Flux of Floor Covering Systems
Using a Radiant Energy Source
 - E662-09.....Specific Optical Density of Smoke Generated by
Solid Materials
 - E1155-96 (R2008).....Determining Floor Flatness and Floor Levelness
Numbers
 - F510-93 (R 2008).....Resistance to Abrasion of Resilient Floor
Coverings Using an Abrader with a Grit Feed
Method
 - F710-08.....Preparing Concrete Floors to Receive Resilient
Flooring
 - F1066-04 (R2010).....Vinyl Composition Floor Tile
 - F1344-10.....Rubber Floor Tile
- C. Resilient Floor Covering Institute (RFCI):
 - IP #2.....Installation Practice for Vinyl Composition Tile
(VCT)
- D. Federal Specifications (Fed. Spec.):
 - SS-T-312.....Tile Floor: Asphalt, Rubber, Vinyl and Vinyl
Composition

PART 2 - PRODUCTS

2.1 GENERAL

- A. Furnish product type, materials of the same production run and meeting following criteria.
- B. Use adhesives, underlayment, primers and polish recommended by the floor resilient material manufacturer.
- C. Critical Radiant Flux: 0.45 watts per sq. cm or more, Class I, per ASTM E 648.
- D. Smoke density: Less than 450 per ASTM E662.

2.2 VINYL COMPOSITION TILE

- A. ASTM F1066, Composition 1, Class 2 (through pattern), 300 mm (12 inches) square, 3 mm (1/8 inch) thick.
- B. Color and pattern uniformly distributed throughout thickness.
- C. Basis of Design: SEE SPEC SECTION 09 06 00, SCHEDULE FOR FINISHES.

2.4 ADHESIVES

- A. Comply with applicable regulations regarding toxic and hazardous materials Green Seal (GS-36) for commercial adhesive.
- B. Use low-VOC adhesive during installation. Water based is preferred over solvent based adhesives.

2.5 PRIMER (FOR CONCRETE SUBFLOORS)

- A. As recommended by the adhesive and tile manufacturer.

2.6 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide cementitious products with latex or polyvinyl acetate resins in the mix.
- B. Determine the type of underlayment selected for use by the condition to be corrected.

2.7 POLISH AND CLEANERS

- A. Cleaners RFCI CL-1.
- B. Polish: ASTM D4078.

2.7 TRANSITIONS STRIPS

- A. Resilient Edge Strip or Reducer Strip: Fed. Specs. SS-T-312, Solid vinyl.
- B. As specified in Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

2.8 FEATURE STRIPS

- A. Use same material as floor tile.
- B. Sizes and shapes as shown.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Maintain temperature of materials a minimum of 22 °C (70 °F,) for 48 hours before installation.
- B. Maintain temperature of rooms where work occurs between 21 °C and 27 °C (70 °F and 80 °F), for at least 48 hours, before, during and after installation.
- C. Do not install flooring until building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured.

3.2 SUBFLOOR PREPARATION

- A. Verify that concrete slabs comply with ASTM F710. At existing slabs, determine levelness by F-number method in accordance with ASTM E1155. Overall value shall not exceed FF30/FL20
- B. Correct conditions which will impair proper installation.
- C. Fill cracks, joints and other irregularities in concrete with leveling compound:
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joints.
- D. Clean floor of oil, paint, dust, and deleterious substances: Leave floor dry and cured free of residue from existing curing or cleaning agents.
- E. Concrete Subfloor Testing:

Determine Adhesion and dryness of the floor by bond and moisture tests as recommended by RFCI manual MRP.
- F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allows easy removal of tile.
- G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the tile or adhesive manufacturers.
- H. Preparation of existing installation shall include the removal of existing resilient flooring and existing adhesive. Do not use solvents to remove adhesives.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions for application and installation unless specified otherwise.
- B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.
- C. Tile Layout:
 - 1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.
 - 2. No tile shall be less than 150 mm (6 inches) and of equal width at walls.
 - 3. Place tile pattern in the same direction; do not alternate tiles.
- D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.
- E. Application:
 - 1. Apply adhesive uniformly with no bare spots.

- a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.
 - b. More than 5 percent of the joints not touching will not be accepted.
2. Roll tile floor with a minimum 45 kg (100 pound) roller. No exceptions.
3. The Contracting Officer may have test tiles removed to check for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tile for broken removed tile.
- F. Installation of Edge and Transitions Strips:
 1. Locate edge and transitions strips under center line of doors unless otherwise shown.
 2. Set resilient edge and transitions strips in adhesive.
 3. Where tile edge is exposed, butt edge strip to touch along tile edge.

3.4 CLEANING AND PROTECTION

- A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.
- B. Keep traffic off resilient material for a minimum 72 hours after installation.
- C. Clean and polish materials in the following order:
 1. For the first two weeks sweep and damp mopped only.
 2. After two weeks, scrub resilient materials with a minimum amount of water and a mild detergent. Leave surface clean and free of detergent residue.
 3. Apply polish to the floors in accordance with the polish manufacturer's instructions.
- D. When construction traffic occurs over tile, cover resilient materials with reinforced kraft paper properly secured and maintained until removal is directed by Contracting Officer. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particle board over paper, secured and maintained until removal is directed by Contracting Officer.
- E. When protective materials are removed and immediately prior to acceptance, replace any damage tile, re-clean resilient materials, lightly re-apply polish and buff floors.

3.6 LOCATION

- A. Unless otherwise specified or shown, install tile flooring, on floor under areas where casework, millwork furniture and other equipment occurs, except where mounted in wall recesses.

B. Extend tile flooring for room into adjacent closets and alcoves.

- - - E N D - - -

SECTION 09 67 23.40
RESINOUS POURED IN PLACE RESILIENT FLOORING (RES-1)

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies resinous, poured in place resilient urethane flooring with integral cove base specifically designed for sterile fields and clean room type spaces.

1.2 RELATED WORK

- A. Concrete and Moisture Vapor Barrier: Section 03 30 00, CAST-IN-PLACE CONCRETE.
- B. Refer to drawings for location of products specified in this section.
- C. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Floor Drains: Division 22, PLUMBING.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product to be provided.
 - 2. Application and installation instructions.
 - 3. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices.
- C. Qualification Data: For Installer.
- D. Sustainable Submittal:
 - 1. Product data for field applied, interior, paints, coatings, and primers, include printed statement of VOC content indicating compliance with environmental requirements.
- E. Samples:
 - 1. Each color and texture specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Submit samples for verification. Colors, patterns, and other visual characteristics that do not match the products specified as "Basis of Design" may result in rejection or changes to other finish materials. Changes required to ensure consistency and compatibility of finish materials shall not be cause for changes to the contract sum or the contract schedule.
 - 3. Printed color charts or other reproductions will not be acceptable.

4. For each (color and texture) resinous flooring system required, 6 inches (152 mm) square, applied to a rigid backing by installer for this project.
 5. Sample showing construction from substrate to finish surface in thickness specified and color and texture of finished surfaces. Finished flooring must match the approved samples in color and texture.
- F. Shop Drawings: Include plans, sections, component details, and attachment to other trades. Indicate layout of the following:
1. Patterns.
 2. Edge configuration.
- G. Certifications and Approvals:
1. Manufacturer's certification of material and substrate compliance with specification.
 2. Manufacturer's approval of installer.
 3. Contractor's certificate of compliance with Quality Assurance requirements.
- H. Warranty: As specified in this section.

1.4 QUALITY ASSURANCE

- A. Manufacturer Certificate: Manufacturer shall certify that a particular resinous flooring system has been manufactured and in use for a minimum of five (5) years.
- B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this project for a minimum period of five (5) years, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
 2. Contractor shall have completed at least ten (10) projects of similar size and complexity. Include list of at least five (5) projects. List must include owner (purchaser); address of installation, contact information at installation project site; and date of installation.
 3. Installer's Personnel: Employ persons trained for application of specified product.

C. Source Limitations:

1. Obtain primary resinous flooring materials including primers, resins, hardening agents, grouting coats and finish or sealing coats from a single manufacturer.
2. Provide secondary materials, including patching and fill material, joint sealant, and repair material of type and from source recommended by manufacturer of primary materials.

D. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and establish quality standards for materials and execution.

1. Apply full-thickness mockups on 48 inch (1200 mm) square floor area selected by VA COR.
 - a. Include 48 inch (1200 mm) length of integral cove base.
2. Approved mockups not damaged during the testing may become part of the completed work if undisturbed at time of Substantial Completion.
3. Sign off from VA Contracting Officer's Representative (COR) on texture for slip resistance and cleanability must be complete before installation of flooring system.

E. Pre-Installation Conference:

1. Convene a meeting not less than thirty days prior to starting work.
2. Attendance:
 - a. Contractor
 - b. VA COR
 - c. Manufacturer and Installer's Representative
3. Review the following:
 - a. Environmental requirements
 - 1) Air and surface temperature
 - 2) Relative humidity
 - 3) Ventilation
 - 4) Dust and contaminants
 - b. Protection of surfaces not scheduled to be coated
 - c. Inspect and discuss condition of substrate and other preparatory work performed
 - d. Review and verify availability of material; installer's personnel, equipment needed
 - e. Design and patterns and edge conditions.

- f. Performance of the coating with chemicals anticipated in the area receiving the resinous (urethane and epoxy mortar/cement) flooring system
 - g. Application and repair
 - h. Field quality control
 - i. Cleaning
 - j. Protection of coating systems
 - k. One-year inspection and maintenance
 - l. Coordination with other work
- F. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of resinous flooring systems.
- G. Contractor Job Site Log: Contractor shall document daily; the work accomplished environmental conditions and any other condition event significant to the long term performance of the urethane and epoxy mortar/cement flooring materials installation. The Contractor shall maintain these records for one year after Substantial Completion.

1.5 MATERIAL PACKAGING DELIVERY AND STORAGE

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.
- B. Protect materials from damage and contamination in storage or delivery, including moisture, heat, cold, direct sunlight, etc.
- C. Maintain temperature of storage area between 60 and 80 degrees F (15 and 26 degrees C).
- D. Keep containers sealed until ready for use.
- E. Do not use materials beyond manufacturer's shelf life limits.
- F. Package materials in factory pre-weighed and in single, easy to manage batches sized for ease of handling and mixing proportions from entire package or packages. No On site weighing or volumetric measurements are allowed.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.
2. Concrete substrate shall be properly cured per referenced section 03 30 00, CAST-IN-PLACE CONCRETE. Standard cure time a minimum of 30 days. A vapor barrier must be present for concrete subfloors on or below grade.
 - a. Resinous flooring applications where moisture testing resulting in readings exceeding limits as defined in this specification under part 3, section 3.4, paragraph B, shall employ an multiple component 15 mil thick system designed to suppress excess moisture in concrete.
 - b. Application at a minimum thickness of 15 mils, over properly prepared concrete substrate as defined in section 3.4.
 - c. Moisture suppression system must meet the design standards as follows:

Property	Test	Value
Tensile Strength	ASTM D638	4,400 psi
Volatile Organic Compound Limits (V.O.C.)	EPA & LEED	25 grams per liter
Permeance	ASTM E96 @ 16mils/ 0.4mm on concrete	0.1 perms
Tensile Modulus	ASTM D638	1.9X10 ⁵ psi
Percent Elongation	ASTM D638	12%
Cure Rate	Per manufacturer's Data	4 hours Tack free with 24hr recoat window
Bond Strength	ASTM D7234	100% bond to concrete failure

- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

1.7 WARRANTY

- A. Work subject to the terms of the Article "Warranty of Construction" FAR clause 52.246-21.
- B. Warranty: Manufacture shall furnish a single, written warranty covering the full assembly (including substrata) for both material and workmanship for an extended period of three (3) full years from date of installation, or provide a joint and several warranty signed on a single document by manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of three (3) full years from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

1.8 APPLICABLE PUBLICATIONS

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. ASTM Standard C722-04 (2012), "Standard Specification for Chemical-Resistant Monolithic Floor Surfacing," ASTM International, West Conshohocken, PA, 2006, DOI: 10.1520/C0722-04R12, www.astm.org.
 - 1. Specification covers the requirements for aggregate-filled, resin-based, monolithic surfacings for use over concrete.
- C. American Society for Testing and Materials (ASTM):
 - C722-04(2012).....Standard Specification for Chemical-Resistant Monolithic Floor Surfacing
 - D638 (2010).....Tensile Properties of Plastics
 - D1308 (2007).....Effect of Household Chemicals on Clear and Pigmented Organic Finishes
 - C423 (2009).....Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - D2240 (2010).....Rubber Property-Durometer Hardness
 - D2794 (2010).....Resistance of Organic Coatings to the Effects of Rapid Deformation Impact
 - D4060 (2010).....Abrasion Resistance of Organic Coatings by the Taber Abraser
 - D4259 (2012).....Abrading Concrete to alter the surface profile of the concrete and to remove foreign materials and weak surface laitance
 - D7234 (2012) Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers

E96/E96M (2012).....Water Vapor Transmission of Materials

F970 (2011).....determining the recovery properties of
resilient floor covering after long-term
indentation test

F1869 (2011).....Measuring Moisture Vapor Emission Rate of
Concrete Subfloor Using Anhydrous Calcium
Chloride

F1914 (2011).....Short-term indentation and residual indentation
of resilient flooring, when subjected to
concentrated loads.

F2170 (2011).....Determining Relative Humidity in Concrete Floor
Slabs Using in situ Probes

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION FOR RES-1 (POURED IN PLACE RESILIENT)

A. System Descriptions:

1. Monolithic, multi-component urethane chemistry resinous flooring system. Multi step concrete sealing primer with resilient poured in place urethane resin base, decorative aggregates, High performance polyaspartic undercoats, and High performance aliphatic polyurethane low VOC sealers.

B. Products: Subject to compliance with applicable fire, health, environmental, and safety requirements for storage, handling, installation, and clean up.

C. System Components: Verify specific requirements as systems vary by manufacturer. Verify build up layers and installation method. Verify compatibility with substrate. Use manufacturer's standard components, compatible with each other and as follows:

1. Primers:

- a. Resin: epoxy.
- b. Formulation Description: (2) two component, 100 percent solids..
- c. Application Method: Squeegee and roller.
- d. Thickness of coat(s): 4-6mil.
- e. Number of Coats: (1) one.

2. Mortar (Base):

- a. Resin: Epoxy.
- b. Formulation Description: (3) three component, 100 percent solids.
- c. Application Method: Metal Trowel.

- 1) Thickness of coat: Approximately nominal 3/16" inch.
- d. Aggregate: Pigmented Blended aggregates to achieve aesthetics, and design requirements.
3. Undercoat:
 - a. Resin: Aliphatic Poly-aspartic Urethane.
 - b. Formulation Description: Clear, multi-component, 100% solids.
 - c. Application Method: Notched squeegee and Back roll
 - d. Number of Coats: One.
4. Grout Coat:
 - a. Resin: Epoxy.
 - b. Formulation Description: (2) two component, 100 percent solids.
 - c. Type: Pigmented.
 - d. Number of Coats: One.
5. Sealer coat:
 - a. Resin: Aliphatic polyurethane.
 - b. Formulation Description: (2) two component, waterborne, flat, aliphatic polyurethane topcoat.
 - c. Type/Finish: Clear flat.
 - d. Thickness of coat(s): 2-3mil.
 - e. Number of Coats: (2) two.
- D. System Characteristics:
 1. Color and Pattern: As selected by COR from manufacturer's standard colors.
 2. Integral cove base: 25.4 mm (1 inch) radius epoxy mortar cove keyed into concrete substrate and or resinous flooring mortar system. No fillers integral cove base must be troweled in place with specified resinous mortar base. Base shall be 152 mm (6 inches) high.
 4. Flooring systems used in sterile fields, operating suites, procedure rooms, or clean room spaces must comply with resistance to VHP processes, and exhibit betadyne staining resistance. Written published documentation of compliance is to be submitted during bid process. Failure to submit will result in disqualification of bid.
 5. Temperature Range: Systems vary by manufacturer; approximate range from a minimum of 45 to 150 degrees F.
- E. Physical Properties:
 1. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:

2. Compressive Strength: 10,000 psi after 7 days per ASTM C 579.
3. Tensile Strength: 1,750 psi per ASTM C 307.
4. Flexural Strength: 4,000 psi per ASTM C 580.
5. Water Absorption: 0.2% per ASTM C 413.
6. Impact Resistance: > 160 in. lbs. per ASTM D 2794.
7. Hardness: 85 to 90, Shore D per ASTM D 2240.

F. Chemical Resistance in accordance ASTM D1308, no effect to the following exposures:

1. Acetic acid (5%)
2. Ammonium hydroxide (10%)
3. Citric Acid (50%)
4. Fatty Acid
5. Motor Oil, 20W
6. Hydrochloric acid (20%)
7. Sodium Chloride
8. Sodium Hypochlorite (10%)
9. Sodium Hydroxide (30%)
10. Sulfuric acid (25%)
11. Urine, Feces
12. Hydrogen peroxide (10%)

2.2 SUPPLEMENTAL MATERIALS

- A. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service or joint conditioned indicated.
- B. Waterproofing Membrane: Flexible urethane membrane with 200% elongation. Formulation description only if application is above grade.
- C. Sloping Medium: (3) three component, trowelable epoxy grout.
- D. Crack Isolation Membrane: Type recommended or produced by manufacturer of resinous flooring for conditions.
- E. Anti-Microbial Additive: Incorporate anti-microbial chemical additive to prevent growth of most bacteria, algae, fungi, mold, mildew, yeast, etc.
- F. Patching and Fill Material: Resinous product of or approved by resinous coating manufacturer for application indicated. Resinous based materials only. Cementitious or single component product are not expectable.
- G. Moisture Mitigation: (3) three component, polymer modified, cementitious, osmotic pressure resistant grout.

2.3 BASE CAP STRIP

- A. Zinc cove strip.
- B. Shape for 2mm depth of base material, "J" or "L" configuration.
- C. Finish:
 - 1. Finish exposed surfaces in accordance with NAAMM Metal Finishes Manual.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where monolithic resinous system with integral base is to be installed with the VA COR.
- B. Moisture Vapor Emission Testing: Perform moisture vapor transmission testing in accordance with ASTM F1869 to determine the MVER of the substrate prior to commencement of the work. See section 3.4, 3.

3.2 PROJECT CONDITIONS

- A. Maintain temperature of rooms (air and surface) where work occurs, between 70 and 90 degrees F (21 and 32 degrees C) for at least 48 hours, before, during, and 24 hours after installation. Maintain temperature at least 70 degrees F (21 degrees C) during cure period.
- B. Maintain relative humidity less than 75 percent.
- C. Do not install materials until wet construction is complete, dry, and cured.
- D. Maintain proper ventilation of the area during application and curing time period.
 - 1. Comply with infection control measures of the VA Medical Center.

3.3 INSTALLATION REQUIREMENTS

- A. The manufacturer's instructions for application and installation shall be reviewed with the VA COR for the seamless resinous flooring system with integral cove base.
- B. Substrate shall be approved by manufacturer's technical representative.

3.4 PREPARATION

- A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.
- B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Prepare concrete substrates as follows:
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - a. Comply with manufacturer's written instructions.
 2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
 3. Verify that concrete substrates are dry.
 - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. MVT threshold for monolithic resinous flooring shall not exceed 3 lbs/1000 square feet (0.0001437 kPa) in a 24 hour period.
 - c. When MVT emission exceeds this limit, apply manufacturer's recommended vapor control primer or other corrective measures as recommended by manufacturer prior to application of flooring or membrane systems.
 - d. Perform in situ probe test, ASTM F2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
 - e. Provide a written report showing test placement and results.
 4. Verify that concrete substrates have neutral Ph and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for flooring manufacturer recommended joint fill material, and concrete crack treatment.
- F. Prepare wall to receive integral cove base:

1. Verify wall material is acceptable for resinous flooring application, if not, install material (e.g. cement board) to receive base.
2. Fill voids in wall surface to receive base, install undercoats (e.g. water proofing membrane, and/or crack isolation membrane) as recommended by resinous flooring manufacturer.
3. Install base prior to flooring if required by resinous flooring manufacturer.
4. Grind, cut or sand protrusions to receive base application.

3.5 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
 - a. Apply joint sealant to comply with manufacturer's written recommendations.
- B. Apply Primer: over prepared substrate at manufacturer's recommended spreading rate for all areas to receive integrated cove base.
- C. Apply cove base: Trowel to wall surfaces at a 25.4 mm (1 inch) radius, before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, and troweling, sanding, and top coating of cove base. Round internal and external corners.
- D. Apply metal trowel single mortar coat in thickness indicated for flooring system. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.
- E. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.6 TOLERANCE

- A. From line of plane: Maximum 3 mm (1/8 inch) in total distance of flooring and base. Broadcast resinous flooring system will contour substrate. Deviation and tolerance are subject to concrete tolerance.
- B. From radius of cove: Maximum of 3 mm (1/8 inch) plus or 1.6 mm (1/16-inch) minus.

3.7 ENGINEERING DETAILS

- A. Chase edges to "lock" the flooring system into the concrete substrate along lines of termination.
- B. Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
- C. Treat floor drains by chasing the flooring system to lock in place at point of termination.
- D. Treat control joints to bridge potential cracks and to maintain monolithic protection. Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
- E. Discontinue Resinous floor system at vertical and horizontal contraction and expansion joints by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.8 CURING, PROTECTION AND CLEANING

- A. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process.
- B. Close area of application for a minimum of 24 hours.
- C. Protect resinous flooring materials from damage and wear during construction operation.
 - 1. Cover flooring with kraft type paper.
 - 2. Optional 6 mm (1/4 inch) thick hardboard, plywood, or particle board where area is in foot or vehicle traffic pattern, rolling or fixed scaffolding and overhead work occurs.
- D. Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer.

- - - E N D - - -

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
RESINOUS POURED IN PLACE RESILIENT FLOORING

VAMC BALTIMORE, MD
JUNE 8, 2016
09 67 23.40- 14

SECTION 09 68 00
CARPETING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section specifies carpet, adhesives, and other items required for complete installation.

1.2 RELATED WORK

- A. Resilient wall base and transition strips: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.
- B. Refer to drawings for location of products specified in this section.
- C. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 QUALITY ASSURANCE

- A. Carpet installed by mechanics certified by the Floor Covering Installation Board.
- B. Certify and label the carpet that it has been tested and meets criteria of CRI IAQ Carpet Testing Program for indoor air quality.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data:
 - 1. Manufacturer's catalog data and printed documentation stating physical characteristics, durability, resistance to fading and flame resistance characteristics for each type of carpet material and installation accessory.
 - 2. Manufacturer's printed installation instructions for the carpet, including preparation of installation substrate, seaming techniques and recommended adhesives and tapes.
 - 3. Manufacturer's certificate verifying carpet containing recycled materials include percentage of recycled materials as specified.
- C. Samples:
 - 1. Carpet: "Production Quality" samples 300 x 300 mm (12 x 12 inches) of carpets, showing quality, pattern and color specified.
- D. Shop Drawings: Installers layout plan showing seams and cuts for sheet carpet and carpet module.
- E. Maintenance Data: Carpet manufacturer's maintenance instructions describing recommended type of cleaning equipment and material, spotting and cleaning methods and cleaning cycles.

1.5 DELIVERY AND STORAGE

- A. Deliver carpet in manufacturer's original wrappings and packages clearly labeled with manufacturer's name, brand, name, size, dye lot number and related information.
- B. Deliver adhesives in containers clearly labeled with manufacturer's name, brand name, number, installation instructions, safety instructions and flash points.
- C. Store in a clean, dry, well ventilated area, protected from damage and soiling. Maintain storage space at a temperature above 16 degrees C (60 degrees F) for 2 days prior to installation.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Areas in which carpeting is to be installed shall be maintained at a temperature above 16 degrees C (60 degrees F) for 2 days before installation, during installation and for 2 days after installation. A minimum temperature of 13 degrees C (55 degrees F) shall be maintained thereafter for the duration of the contract. Traffic or movement of furniture or equipment in carpeted area shall not be permitted for 24 hours after installation. Other work which would damage the carpet shall be completed prior to installation of carpet.

1.7 WARRANTY

- A. Carpet and installation subject to terms of "Warranty of Construction" FAR clause 52.246-21, except that warranty period is extended to two years.

1.8 APPLICABLE PUBLICATIONS

- A. Publication listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American National Standards Institute (ANSI):
ANSI/NSF 140-10.....Sustainable Carpet Assessment Standard
- C. American Association of Textile Chemists and Colorists (AATCC):
AATCC 134-11.....Electric Static Propensity of Carpets
- D. American Society for Testing and Materials (ASTM):
ASTM D1335-05.....Tuft Bind of Pile Yarn Floor Coverings
ASTM D3278-96 (R2004)...Flash Point of Liquids by Small Scale Closed-Cup Apparatus
ASTM D5116-10.....Determinations of Organic Emissions from Indoor Materials/Products
ASTM D5252-05.....Operation of the Hexapod Tumble Drum Tester
ASTM D5417-05.....Operation of the Vettermann Drum Tester

ASTM E648-10.....Critical Radiant Flux of Floor-Covering Systems
Using a Radiant Heat Energy Source

E. The Carpet and Rug Institute (CRI):

CRI 104-11.....Installation of Commercial Carpet

PART 2 - PRODUCTS

2.1 CARPET

A. Physical Characteristics:

1. Carpet free of visual blemishes, streaks, poorly dyed areas, fuzzing of pile yarn, spots or stains and other physical and manufacturing defects.
2. Manufacturers standard construction commercial carpet:
 - a. Modular Tile: 610 mm (24 inches) square tile.
3. Provide static control to permanently control static build upto less than 2.0 kV when tested at 20 percent relative humidity and 21 degrees C (70 degrees F) in accordance with AATCC 134.
4. Pile Height: Maximum 5.3 mm (0.208 inch).
5. Pile Fiber: Nylon with recycled content 25 percent minimum branded (federally registered trademark).
6. Pile Type: Tufted.
7. Backing materials: Fiberglass reinforced thermoplastic composite or manufacturer's unitary backing designed for glue-down installation using recovered materials.
8. Appearance Retention Rating (ARR): Carpet shall be tested and have the minimum 3.5-4.0 Severe ARR when tested in accordance with either the ASTM D 5252 (Hexapod) or ASTM D 5417 (Vettermann) test methods using the number of cycles for short and long term tests as specified.
9. Flammability and Critical Radiant Flux Requirements:
 - a. Class I: Not less than 0.45 watts per square centimeter when tested in accordance with ASTM E 648.
 - b. Smoke Density: Less than 450 when tested in accordance with ASTM E662.
10. Density: Average Pile Yarn Density (APYD):
 - a. Corridors, lobbies, entrances, common areas or multipurpose rooms, open offices, waiting areas and dining areas: Minimum APYD 6000.
 - b. Other areas: Minimum APYD 4000.
11. VOC Limits: Use carpet and carpet adhesive that comply with the following limits for VOC content when tested according to ASTM D 5116:
 - a. Carpet, Total VOCs: 0.5 mg/sq.m x hr.

- b. Carpet, 4-PC (4-Phenylcyclohexene): 0.05 mg/sq.m x hr.
- c. Carpet, Formaldehyde: 0.05 mg/sq.m x hr.
- d. Carpet, Styrene: 0.4 mg/sq.m x hr.
- e. Adhesive, Total VOCs: 10.00 mg/sq.m x hr.
- f. Adhesive, Formaldehyde: 0.05 mg/sq.m x hr.
- g. Adhesive, 2-Ethyl-1-Hexanol: 3.00 mg/sq.m x hr.
- B. Shall meet platinum level of ANSI/NSF 140.
- C. Style, Texture, and Color:
 - 1. CPT-1: SEE SECTION 09 06 00, SCHEDULE FOR FINISHES.

2.2 ADHESIVE AND CONCRETE PRIMER

- A. Waterproof, resistant to cleaning solutions, steam and water, nonflammable, complies with air-quality standards as specified. Adhesives flashpoint minimum 60 degrees C (140 degrees F), complies with ASTM D 3278.
- B. Seam Adhesives: Waterproof, non-flammable and non-staining.

2.3 LEVELING COMPOUND (FOR CONCRETE FLOORS)

- A. Provide Portland cement bases polymer modifier with latex or polyvinyl acetate resin manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- B. Determine the type of underlayment selected for use by condition to be corrected.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Examine surfaces on which carpeting is to be installed.
- B. Clean floor of oil, waxy films, paint, dust and deleterious substances that prevent adhesion, leave floor dry and cured, free of residue from curing or cleaning agents and existing floor finish materials.
- C. Correct conditions which will impair proper installation, including trowel marks, pits, dents, protrusions, cracks or joints.
- D. Fill cracks, joints depressions, and other irregularities in concrete with leveling compound.
 - 1. Do not use adhesive for filling or leveling purposes.
 - 2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.
 - 3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joint lines.
- E. Test new concrete subfloor prior to adhesive application for moisture and surface alkalinity per CRI 104 Section 6.3.1 or per ASTM E1907.

3.2 CARPET INSTALLTION

- A. Do not install carpet until work of other trades including painting is complete and dry.
- B. Install in accordance with CRI 104 direct glue down installation.
 - 1. Comply with indoor air quality recommendations noted in Section 6.5.
 - 2. Maintain temperature in accordance with Section 15.3.
- C. Secure carpet to subfloor of spaces with adhesive applied as recommended by carpet manufacturer.
- D. Follow carpet manufacturer's recommendations for matching pattern and texture directions.
- E. Cut openings in carpet where required for installing equipment, pipes, outlets, and penetrations.
 - 1. Bind or seal cut edge of sheet carpet and replace flanges or plates.
 - 2. Use additional adhesive to secure carpets around pipes and other vertical projections.
- F. Carpet Modules:
 - 1. Install per CRI 104, Section 13, Adhesive Application.
 - 2. Lay carpet modules with pile in same direction unless specified otherwise in finish drawings or Section 09 06 00, SCHEDULE FOR FINISHES.
 - 3. Install carpet modules so that cleaning methods and solutions do not cause dislocation of modules.
 - 4. Lay carpet modules uniformly to provide tight flush joints free from movement when subject to traffic.

3.3 PROTECTION AND CLEANING

- A. Remove waste, fasteners and other cuttings from carpet floors.
- B. Vacuum carpet and provide suitable protection. Do not use polyethylene film.
- C. Do not permit traffic on carpeted surfaces for at least 48 hours after installation. Protect the carpet in accordance with CRI 104.
- D. Do not move furniture or equipment on unprotected carpeted surfaces.
- E. Just before final acceptance of work, remove protection and vacuum carpet clean.

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CARPETING

VAMC BALTIMORE, MD
JUNE 8, 2016
09 68 00-6

SECTION 09 91 00
PAINTING

PART 1-GENERAL

1.1 DESCRIPTION

- A. Section specifies field painting.
- B. Section specifies prime coats which may be applied in shop under other sections.
- C. Painting includes shellacs, stains, varnishes, coatings specified, and striping or markers and identity markings.

1.2 RELATED WORK

- A. Shop prime painting of steel and ferrous metals: Division 05 - METALS, Division 08 - OPENINGS, Division 10 - SPECIALTIES, Division 11 - EQUIPMENT, Division 12 - FURNISHINGS, Division 13 - SPECIAL CONSTRUCTION, Division 21 - FIRE SUPPRESSION, Division 22 - PLUMBING, Division 23 - HEATING, VENTILATION AND AIR-CONDITIONING, Division 26 - ELECTRICAL, Division 27 - COMMUNICATIONS, and Division 28 - ELECTRONIC SAFETY AND SECURITY sections.
- B. Refer to drawings for location of products specified in this section.
- C. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
Before work is started, or sample panels are prepared, submit manufacturer's literature, the current Master Painters Institute (MPI) "Approved Product List" indicating brand label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI "Approved Product List" where applicable is acceptable.
- C. Sample Panels:
 - 1. After painters' materials have been approved and before work is started submit sample panels showing each type of finish and color specified.
 - 2. Panels to show color: Composition board, 100 by 250 by 3 mm (4 inch by 10 inch by 1/8 inch).

3. Panel to show transparent finishes: Wood of same species and grain pattern as wood approved for use, 100 by 250 by 3 mm (4 inch by 10 inch face by 1/4 inch) thick minimum, and where both flat and edge grain will be exposed, 250 mm (10 inches) long by sufficient size, 50 by 50 mm (2 by 2 inch) minimum or actual wood member to show complete finish.
4. Attach labels to panel stating the following:
 - a. Federal Specification Number or manufacturers name and product number of paints used.
 - b. Product type and color.
 - c. Name of project.
5. Strips showing not less than 50 mm (2 inch) wide strips of undercoats and 100 mm (4 inch) wide strip of finish coat.
- D. Manufacturers' Certificates indicating compliance with specified requirements:
 1. Manufacturer's paint substituted for Federal Specification paints meets or exceeds performance of paint specified.
 2. Epoxy coating.

1.4 DELIVERY AND STORAGE

- A. Deliver materials to site in manufacturer's sealed container marked to show following:
 1. Name of manufacturer.
 2. Product type.
 3. Batch number.
 4. Instructions for use.
 5. Safety precautions.
- B. In addition to manufacturer's label, provide a label legibly printed as following:
 1. Federal Specification Number, where applicable, and name of material.
 2. Surface upon which material is to be applied.
 3. If paint or other coating, state coat types; prime, body or finish.
- C. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.
- D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.
- B. American Conference of Governmental Industrial Hygienists (ACGIH):

ACGIH TLV-BKLT-2012.....Threshold Limit Values (TLV) for Chemical
Substances and Physical Agents and Biological
Exposure Indices (BEIs)

ACGIH TLV-DOC-2012.....Documentation of Threshold Limit Values and
Biological Exposure Indices, (Seventh Edition)

C. Master Painters Institute (MPI):

No. 45-12.....Interior Primer Sealer

No. 46-12.....Interior Enamel Undercoat

No. 47-12.....Interior Alkyd, Semi-Gloss, MPI Gloss Level 5 (AK)

No. 50-12.....Interior Latex Primer Sealer

No. 51-12.....Interior Alkyd, Eggshell, MPI Gloss Level 3

No. 52-12.....Interior Latex, MPI Gloss Level 3 (LE)

No. 53-12.....Interior Latex, Flat, MPI Gloss Level 1 (LE)

No. 54-12.....Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)

No. 77-12.....Epoxy Cold Cured, Gloss (EC)

No. 95-12.....Fast Drying Metal Primer

No. 101-12.....Epoxy Anti-Corrosive Metal Primer

No. 114-12.....Interior Latex, Gloss (LE) and (LG)

No. 139-12.....Interior High Performance Latex, MPI Gloss Level 3
(LL)

No. 140-12.....Interior High Performance Latex, MPI Gloss Level 4

No. 141-12.....Interior High Performance Latex (SG) MPI Gloss
Level 5

D. Steel Structures Painting Council (SSPC):

SSPC SP 1-04 (R2004)....Solvent Cleaning

SSPC SP 2-04 (R2004)....Hand Tool Cleaning

SSPC SP 3-04 (R2004)....Power Tool Cleaning

PART 2 - PRODUCTS

2.1 MATERIALS

A. Identity markers options:

1. Pressure sensitive vinyl markers.
2. Snap-on coil plastic markers.

B. Interior Primer Sealer: MPI 45.

C. Interior Enamel Undercoat: MPI 47.

D. Interior Alkyd, Semi-Gloss (AK): MPI 47.

E. Interior Latex Primer Sealer: MPI 50.

F. Interior Latex, MPI Gloss Level 3 (LE): MPI 52.

G. Interior Latex, Flat, MPI Gloss Level 1 (LE): MPI 53.

H. Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE): MPI 54.

- I. Epoxy Cold Cured, Gloss (EC): MPI 77.
- J. Fast Drying Metal Primer: MPI 95.
- K. Epoxy Anti-Corrosive Metal Primer: MPI 101.
- L. Interior latex, Gloss (LE) and (LG): MPI 114.
- M. Waterborne Galvanized Primer: MPI 134.
- N. Interior High Performance Latex, MPI Gloss Level 3 (LL): MPI 139.

2.2 PAINT PROPERTIES

- A. Use ready-mixed (including colors), except paints requiring specified additives.
- B. Where no requirements are given in the referenced specifications for primers, use primers with pigment and vehicle, compatible with substrate and finish coats specified.

2.3 REGULATORY REQUIREMENTS/QUALITY ASSURANCE

- A. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction.
 - 1. Volatile Organic Compounds (VOC): VOC content of paint materials shall not exceed 10g/l for interior latex paints/primers and 50g/l for exterior latex paints and primers.
 - 2. Lead-Base Paint shall not be used.
 - 3. Asbestos: Materials shall not contain asbestos.
 - 4. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc-chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.
 - 5. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.
 - 6. Use high performance acrylic paints in place of alkyd paints, where possible.
 - 7. VOC content for solvent-based paints shall not exceed 250g/l and shall not be formulated with more than one percent aromatic hydro carbons by weight.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of painting materials.
 - 1. Take necessary precautions to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.

2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at end of each days work.

B. Atmospheric and Surface Conditions:

1. Do not apply coating when air or substrate conditions are:
 - a. Less than 3 degrees C (5 degrees F) above dew point.
 - b. Below 10 degrees C (50 degrees F) or over 35 degrees C (95 degrees F), unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
2. Maintain interior temperatures until paint dries hard.
3. Apply only on clean, dry and frost free surfaces.
4. Varnishing:
 - a. Apply in clean areas and in still air.
 - b. Before varnishing vacuum and dust area.
 - c. Immediately before varnishing wipe down surfaces with a tack rag.

3.2 SURFACE PREPARATION

- A. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified with no overlays.

B. General:

1. Remove prefinished items not to be painted such as lighting fixtures, escutcheon plates, hardware, trim, switchplates, outlets covers and similar items for reinstallation after paint is dried.
2. Remove items for reinstallation and complete painting of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
3. See other sections of specifications for specified surface conditions and prime coat.
4. Clean surfaces for painting with materials and methods compatible with substrate and specified finish. Remove any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

C. Wood:

1. Sand to a smooth even surface and then dust off.
2. Sand surfaces showing raised grain smooth between each coat.
3. Wipe surface with a tack rag prior to applying finish.
4. Surface painted with an opaque finish:
 - a. Coat knots, sap and pitch streaks with MPI 36 (Knot Sealer) before applying paint.
 - b. Apply two coats of MPI 36 (Knot Sealer) over large knots.

5. After application of prime or first coat of stain, fill cracks, nail and screw holes, depressions and similar defects with wood filler paste. Sand the surface to make smooth and finish flush with adjacent surface.
6. Before applying finish coat, reapply wood filler paste if required, and sand surface to remove surface blemishes. Finish flush with adjacent surfaces.

D. Ferrous Metals:

1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 (Hand Tool Cleaning) and SSPC-SP 3 (Power Tool Cleaning). Exception: where high temperature aluminum paint is used, prepare surface in accordance with paint manufacturer's instructions.
3. Fill dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to have semi-gloss or gloss finish with TT-F-322D (Filler, Two-Component Type, For Dents, Small Holes and Blow-Holes). Finish flush with adjacent surfaces.
 - a. This includes flat head countersunk screws used for permanent anchors.
 - b. Do not fill screws of item intended for removal such as glazing beads.
4. Spot prime abraded and damaged areas in shop prime coat which expose bare metal with same type of paint used for prime coat. Feather edge of spot prime to produce smooth finish coat.
5. Spot prime abraded and damaged areas which expose bare metal of factory finished items with paint as recommended by manufacturer of item.

E. Gypsum Board:

1. Remove efflorescence, loose and chalking plaster or finishing materials.
2. Remove dust, dirt, and other deterrents to paint adhesion.
3. Fill holes, cracks, and other depressions with CID-A-A-1272A [Plaster, Gypsum (Spackling Compound) finished flush with adjacent surface, with texture to match texture of adjacent surface. Patch holes over 25 mm (1-inch) in diameter as specified in Section for plaster or gypsum board.

3.3 PAINT PREPARATION

- A. Thoroughly mix painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. Do not thin unless necessary for application and when finish paint is used for body and prime coats. Use materials and quantities for thinning as specified in manufacturer's printed instructions.
- C. Remove paint skins, then strain paint through commercial paint strainer to remove lumps and other particles.
- D. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer. Tinting shall not be done in the field.

3.4 APPLICATION

- A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, apply paint in three coats; prime, body, and finish. When two coats applied to prime coat are the same, first coat applied over primer is body coat and second coat is finish coat.
- C. Apply each coat evenly and cover substrate completely.
- D. Allow not less than 48 hours between application of succeeding coats, except as allowed by manufacturer's printed instructions, and approved by Contracting Officer's Technical Representative.
- E. Finish surfaces to show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.
- F. Apply by brush or roller. Spray application is not permitted.
- G. Do not paint in closed position operable items such as access doors and panels, window sashes, overhead doors, and similar items except overhead roll-up doors and shutters.

3.5 PRIME PAINTING

- A. After surface preparation prime surfaces before application of body and finish coats, except as otherwise specified.
- B. Spot prime and apply body coat to damaged and abraded painted surfaces before applying succeeding coats.
- C. Additional field applied prime coats over shop or factory applied prime coats are not required.
- D. Wood and Wood Particleboard:
 - 1. Use same kind of primer specified for exposed face surface.
 - a. Interior wood except for transparent finish: MPI 45 (Interior Primer Sealer) or MPI 46 (Interior Enamel Undercoat), thinned if recommended by manufacturer.
 - b. Transparent finishes as specified under Transparent Finishes on Wood.

E. Metals except boilers, incinerator stacks, and engine exhaust pipes:

1. Steel and iron: MPI 95 (Fast Drying Metal Primer). Use MPI 101 (Cold Curing Epoxy Primer) where MPI 77 (Epoxy Cold Cured, Gloss (EC)) finish is specified.
2. Zinc-coated steel and iron: MPI 134 (Waterborne Galvanized Primer).
3. Aluminum scheduled to be painted: MPI 95 (Fast Drying Metal Primer).

G. Gypsum Board:

1. Surfaces scheduled to have MPI 53 (Interior Latex, Flat), MPI Gloss Level 1 (LE)), MPI 52 (Interior Latex, MPI Gloss Level 3 (LE)), MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)), MPI 114 (Interior Latex, Gloss (LE) and (LG)) finish: Use MPI 53 (Interior Latex, MPI Gloss Level 3 (LE)), MPI 52 (Interior Latex, MPI Gloss Level 3 (LE)), MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)), MPI 114 (Interior Latex, Gloss (LE) and (LG)) respectively.
2. Primer: MPI 50 (Interior Latex Primer Sealer) except use MPI 45 (Interior Primer Sealer) in shower and bathrooms.
3. Use MPI 101 (Cold Curing Epoxy Primer) for surfaces scheduled to receive MPI 77 (Epoxy Cold Cured, Gloss (EC)) finish.

3.6 INTERIOR FINISHES

A. Apply following finish coats over prime coats in spaces or on surfaces specified in Section 09 06 00, SCHEDULE FOR FINISHES.

B. Metal Work:

1. Apply to exposed surfaces.
2. Omit body and finish coats on surfaces concealed after installation except electrical conduit containing conductors over 600 volts.
3. Ferrous Metal, Galvanized Metal, and Other Metals Scheduled:
 - a. Apply two coats of MPI 47 (Interior Alkyd, Semi-Gloss (AK)) unless specified otherwise.

C. Gypsum Board:

1. General use: One coat of MPI 45 (Interior Primer Sealer) or MPI 46 (Interior Enamel Undercoat) plus one coat of MPI 139 (Interior High Performance Latex, MPI Gloss level 3 (LL)).
2. Toilet rooms, clean utility rooms and locker rooms: One coat of MPI 45 (Interior Primer Sealer) or MPI 46 (Interior Enamel Undercoat) plus one coat of MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)) or MPI 114 (Interior Latex, Gloss (LE) and (LG)).

E. Masonry and Concrete Walls:

1. Over MPI 4 (Interior/Exterior Latex Block Filler) on CMU surfaces.
2. Two coats of MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)) or MPI 114 (Interior Latex, Gloss (LE) and (LG)).

F. Wood:

1. Sanding:
 - a. Use 220-grit sandpaper.
 - b. Sand sealers and varnish between coats.
 - c. Sand enough to scarify surface to assure good adhesion of subsequent coats, to level roughly applied sealer and varnish, and to knock off "whiskers" of any raised grain as well as dust particles.
2. Sealers:
 - a. Apply sealers specified except sealer may be omitted where pigmented, penetrating, or wiping stains containing resins are used.
 - b. Allow manufacturer's recommended drying time before sanding, but not less than 24 hours or 36 hours in damp or muggy weather.
 - c. Sand as specified.

3.7 REFINISHING EXISTING PAINTED SURFACES

- A. Clean, patch and repair existing surfaces as specified under surface preparation.
- B. Remove and reinstall switch plates, cover plates, signs, light fixtures, toilet accessories, equipment, and similar items as specified under surface preparation.
- C. Remove existing finishes or apply separation coats to prevent non compatible coatings from having contact.
- D. Patched or Replaced Areas in Surfaces and Components: Apply spot prime and body coats as specified for new work to repaired areas or replaced components.
- E. Except where scheduled for complete painting apply finish coat over plane surface to nearest break in plane, such as corner, reveal, or frame.
- F. Refinish areas as specified for new work to match adjoining work unless specified or scheduled otherwise.
- G. Coat knots and pitch streaks showing through old finish with MPI 36 (Knot Sealer) before refinishing.
- H. Sand or dull glossy surfaces prior to painting.
- I. Sand existing coatings to a feather edge so that transition between new and existing finish will not show in finished work.

3.8 PAINT COLOR

- A. Color and gloss of finish coats is specified in schedule below. Refer to drawings for location of each color and gloss.
- B. For additional requirements regarding color see Articles, REFINISHING EXISTING PAINTED SURFACE and MECHANICAL AND ELECTRICAL FIELD PAINTING SCHEDULE.
- C. Coat Colors:
 1. Color of priming coat: Lighter than body coat.
 2. Color of body coat: Lighter than finish coat.

3. Color prime and body coats to not show through the finish coat and to mask surface imperfections or contrasts.
- D. Painting, Caulking, Closures, and Fillers Adjacent to Casework:
 1. Paint to match color of casework where casework has a paint finish.
 2. Paint to match color of wall where casework is stainless steel, plastic laminate, or varnished wood.
- E. Paint Color and Gloss Schedule:
 1. Refer to Section 09 06 00, SCHEDULE FOR FINISHES, for paint colors.
 2. Location of paint colors is shown on the drawings.
 - a. Wall surfaces in areas subject to high amounts of moisture (sterile processing, decontamination, showers and similar): glossy.
 - b. Metal, wood and areas subject to limited amounts of moisture (toilet rooms, kitchen and similar): Semi-gloss.
 - c. Offices and other areas not subject to moisture or requiring regular cleaning: flat.

3.9 MECHANICAL AND ELECTRICAL WORK FIELD PAINTING SCHEDULE

- A. Field painting of mechanical and electrical consists of cleaning, touching-up abraded shop prime coats, and applying prime, body and finish coats to materials and equipment if not factory finished in space scheduled to be finished.
- B. Paint various systems specified in Division 02 - EXISTING CONDITIONS, Division 21 - FIRE SUPPRESSION, Division 22 - PLUMBING, Division 23 - HEATING, VENTILATION AND AIR-CONDITIONING, Division 26 - ELECTRICAL, Division 27 - COMMUNICATIONS, and Division 28 - ELECTRONIC SAFETY AND SECURITY.
- C. Paint after tests have been completed.
- D. Omit prime coat from factory prime-coated items.
- E. Finish painting of mechanical and electrical equipment is not required when located in interstitial spaces, above suspended ceilings, in concealed areas such as pipe and electric closets, pipe basements, pipe tunnels, trenches, attics, roof spaces, shafts and furred spaces except on electrical conduit containing feeders 600 volts or more.
- F. Omit field painting of items specified in paragraph, Building and Structural WORK NOT PAINTED.

3.10 BUILDING AND STRUCTURAL WORK FIELD PAINTING

- A. Painting and finishing of interior and exterior work except as specified under paragraph 3.11 B.
 1. Painting and finishing of new work including colors is specified in Section 09 06 00, SCHEDULE FOR FINISHES. Location of paints is indicated on the drawings.
 2. Painting of ferrous metal and galvanized metal.

B. Building and Structural Work not Painted:

1. Prefinished items:

- a. Casework, doors, elevator entrances and cabs, metal panels, wall covering, and similar items specified factory finished under other sections.
- b. Factory finished equipment and pre-engineered metal building components such as metal roof and wall panels.

2. Finished surfaces:

- a. Hardware except ferrous metal.
- b. Anodized aluminum, stainless steel, chromium plating, copper, and brass, except as otherwise specified.
- c. Signs, fixtures, and other similar items integrally finished.

3.11 FIRE AND SMOKE PARTITIONS

- A. Identify partitions above ceilings on both sides of partitions except within shafts in letters not less than 64 mm (2 1/2 inches) high.
- B. Stenciled message: "SMOKE BARRIER" or, "FIRE BARRIER" as applicable.
- C. Locate not more than 6100 mm (20 feet) on center on corridor sides of partitions, and with a least one message per room on room side of partition.
- D. Use semigloss paint of color that contrasts with color of substrate.

3.12 PROTECTION CLEAN UP, AND TOUCH-UP

- A. Protect work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.
- B. Upon completion, clean paint from hardware, glass and other surfaces and items not required to be painted of paint drops or smears.
- C. Before final inspection, touch-up or refinished in a manner to produce solid even color and finish texture, free from defects in work which was damaged or discolored.

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VAMC BALTIMORE, MD
JUNE 8, 2016
09 91 00-12

SECTION 09 96 59
HIGH-BUILD GLAZED COATINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Section includes surface preparation and application of high-performance seamless glazed wall coating system designed to provide a glazed tile like finish.
- B. Wall systems consist of multi component epoxy and or urethane resins, primer base and finishing coats.

1.2 RELATED WORK

- A. Refer to drawings for location of products specified in this section.
- B. Colors, patterns, textures, and products specified in Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data:
 - 1. Description of each product to be provided.
 - 2. Application and installation instructions.
 - 3. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices.
- C. Sustainable Submittal:
 - 1. Product data for field applied, interior, paints, coatings, and primers, include printed statement of VOC content indicating compliance with environmental requirements.
- D. Samples:
 - 1. Each color and texture specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Samples for verification: For each (color and texture) resinous wall/ceiling system required, 6 inches (152 mm) square, applied to a rigid backing by installer for this project.
- E. Test Reports: Reports of tests certifying compliance with requirement specified.
- F. Warranty: As specified in this section.

1.4 QUALITY ASSURANCE

- A. Manufacture Certificate: Manufacture shall certify that a particular resinous coating for wall/ceiling system has been in use for a minimum of five years.
- B. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
 - 1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
- C. Installer Qualifications: Engage an installer who is certified in writing by resinous product manufacturer, who is experienced in applying resinous coating for wall/ceiling systems similar in material, design, and extent to those indicated for this project for a minimum period of 5 years, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous coating for wall/ceiling manufacturer.
- D. Source Limitations:
 - 1. Obtain resinous coating materials including primers, resins, hardening agents, grouting coats and finish or sealing coats from a single manufacturer.

1.5 MATERIAL PACKAGING DELIVERY AND STORAGE

- A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number, date of manufacture and mixing/thinning instructions.
- B. Protect materials from damage and contamination in storage or delivery, including moisture, heat, cold, direct sunlight, etc.
- C. Maintain temperature of storage area between 60 and 80 degrees F (15 and 26 degrees C).
- D. Keep containers sealed until ready for use.
- E. Do not use materials beyond manufacturer's shelf life limits.
- F. Package materials in factory pre-weighed and in single, easy to manage batches sized for ease of handling and mixing proportions from entire package or packages.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous wall/ceiling manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous wall/ceiling applications.
1. Maintain material and substrate temperature between 65 and 85 degrees F (18 and 30 degrees C) during resinous wall/ceiling application and for not less than 24 hours after application.

1.7 WARRANTY

- A. Warranty: Manufacture shall furnish a single, written warranty covering the full assembly (including substrata) for both material and workmanship for a extended period of (3) full years from date of installation, or provide a joint and several warranty signed on a single document by manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (3) full years from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

1.8 APPLICABLE PUBLICATIONS

- A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM): Chemical Resistance in accordance ASTM D1308 - 02(2007) "Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes". ASTM International, West Conshohocken, PA, 2006, DOI: 10.1520/D1308-02R07, www.astm.org. No effect to the following exposures:
1. Acetic acid (5%)
 2. Ammonium hydroxide (10%)
 3. Citric Acid (50%)
 4. Fatty Acid
 5. Motor Oil, 20W
 6. Hydrochloric acid (20%)
 7. Sodium Chloride
 8. Sodium Hypochlorite (10%)
 9. Sodium Hydroxide (30%)
 10. Sulfuric acid (25%)
 11. Urine, Feces

12. Hydrogen peroxide (10%)

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION (GLAZED COATING) - PNT-8

- A. Water Based Epoxy resinous wall system includes: High performance, high solids, high gloss pigmented wall system consisting of two component epoxy primers, and base coats. Formulated for long service, cures to a hard tile like finish.
- B. System Characteristics.
 - 1. Color and pattern: As indicated in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Overall System Thickness: 8-10 mils.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Primers, Sealers: 200 g/L.

2.2 ACCESSORY MATERIALS

- A. Patching and Fill Material: Resinous product of or approved by resinous manufacturer for application indicated.

PART 3 - EXECUTION

3.1 GENERAL

- A. All materials, preparation and workmanship shall conform to requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (MPI) (hereafter referred to as the MPI Painting Manual) as issued by the local MPI Accredited Quality Assurance Association having jurisdiction.

3.2 PREPARATION OF SURFACES

- A. Patch surfaces as required for receiving glazed coating. Fill masonry block and make surfaces smooth and free of voids and pinholes. Assure surfaces are clean, dry, well cured, sound and free of ridges and depressions.
- B. Previous Coatings: Remove flaking, scaling or unsound coatings. Sand sound previous coatings to remain, with medium sand paper to eliminate gloss and provide tooth.
- C. Remove or protect items not requiring coating.

3.3 APPLICATION

- A. Finish Film Thickness: Apply materials at not less than the manufacturer's recommended spreading rate.
- B. On previously coated surfaces, apply one base coat and one finish coat.
- C. On bare gypsum board plaster apply one primer coat, one base coat and one finish coat.
- D. In rooms or spaces shown or specified to have glazed coating, apply the glazed coating to surfaces behind casework and equipment, except behind those items built into wall recesses.
- E. Make edges of glazed coatings sharp and clean without overlapping adjoining other materials or colors.
- F. Apply glazed coating in the following areas:
 - 1. Decontamination
 - 2. Clean Prep
 - 3. Sterile Storage
 - 4. Locker Rooms

3.4 CURING, PROTECTION AND CLEANING

- A. The condition and preparation requirements for all surfaces shall be in accordance with MPI Painting Manual requirements.
- B. Cure resinous materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process.
- C. Close area of application for a minimum of 24 hours.
- D. Protect resinous materials from damage and wear during construction operation.
- E. Protect work of other trades against damage resulting from glazed coatings work.
- F. Touch up damaged coating surfaces before final acceptance.

3.5 FINISH, COLOR, GLOSS / SHEEN

- A. Unless otherwise noted, all painting work shall be in accordance with MPI Grade finish requirements.

- - - END - - -

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
HIGH-BUILD GLAZED COATINGS

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JUNE 8, 2016
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**SECTION 10 21 13
TOILET COMPARTMENTS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies solid polyethylene toilet partitions, and urinal screens.

1.2 RELATED WORK

- A. Color of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Grab bars and toilet tissue holders: Section 10 28 00, TOILET, BATH, AND LAUNDRY ACCESSORIES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - 1. Submit samples for verification. Colors, patterns, and other visual characteristics that do not match the products specified as "Basis of Design" may result in rejection or changes to other finish materials. Changes required to ensure consistency and compatibility of finish materials shall not be cause for changes to the contract sum or the contract schedule.
 - 2. Printed color charts or other reproductions will not be acceptable.
 - 3. 150 mm (six-inch) square of partition panel.
- C. Manufacturer's Literature and Data: Specified items indicating all hardware and fittings, material, finish, and latching.
- D. Shop Drawings: Construction details at 1/8 full size scale or larger, showing installation details, anchoring and leveling devices.
- E. Manufacturer's certificate, attesting that zinc-coatings conform to specified requirements.

1.4 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. Commercial Item Descriptions (CID):
 - A-A-60003 Partitions, Toilet, Complete

PART 2 - PRODUCTS

2.1 TOILET PARTITIONS:

- A. High density polyethylene (HDPE): Homogeneous panels with color through entire 25 mm (1 inch) thickness; water resistant; graffiti resistant; non-absorbent; contain a minimum 30 percent post-consumer recycled plastic; Class A flame spread rating.
- B. Conform to Fed. CID A-A-60003, except as modified herein.
- C. Fabricate to dimensions shown or specified.
- D. Toilet Enclosures:
 - 1. Type 1, Style C (overhead braced).
 - 2. Reinforce panels shown to receive toilet tissue holders or grab bars.
 - 3. Upper pivots and lower hinges adjustable to hold doors open 30 degrees.
 - 5. Latching devices and hinges for compartments accessible to persons with disabilities shall comply with ADA requirements.
 - 6. Keeper:
 - a. U-slot to engage bar of throw latch.
 - b. Combined with rubber bumper stop.
 - 7. Wheelchair Toilets:
 - a. Upper pivots and lower hinges to hold out swinging doors in closed position.
 - b. Provide U-type doors pulls, approximately 100 mm (four inches) long on pull side.
 - 8. Finish:
 - a. Wall panels, pilasters, doors and screens: Manufacturer's standard smooth finish with rounded edges rounded to 6 mm ($\frac{1}{4}$ inch) radius.
- E. Urinal Screens:
 - 1. Type III, Style E (wall hung).
 - a. High density polyethylene (HDPE): Homogeneous panels with color through entire 25 mm (1 inch) thickness; water resistant; graffiti resistant; non-absorbent; contain a minimum 30 percent post-consumer recycled plastic; Class A flame spread rating.
 - b. With integral flanges and continuous, full height wall anchor plate.
 - c. Option: Full height U-Type bracket.

- d. Wall anchor plate drilled for 4 anchors on both sides of screen.
2. Screen 600 mm (24 inches) wide and 1060 mm (42 inches high).
3. Manufacturer's standard smooth finish with rounded edges rounded to 6 mm (¼ inch) radius.

2.2 HARDWARE

A. Hinges:

1. 203 mm (8 inches) long, fabricated from heavy-duty extruded aluminum with bright dip anodized finish, wrap-around flanges, adjustable on 30-degree increments, through bolted to doors and pilasters with stainless steel, Torx head sex bolts.
2. Hinges operate on field-adjustable nylon cams, field adjustable in 30 degree increments.

B. Door Strike and Keeper:

1. 152 mm (6 inches) long, fabricate from heavy-duty extruded aluminum with bright dip anodized finish, with wrap-around flanges secured to pilasters with stainless steel tamper resistant Torx head sex bolts.
2. Bumper: Extruded black vinyl.

C. Latch and Housing:

1. Heavy-duty extruded aluminum.
2. Latch housing: Bright dip anodized finish.
3. Slide bolt and button: Black anodized finish.

D. Coat Hook/Bumper:

1. Combination type, chrome plated Zamak.
2. Equip out-swinging doors with second door pull and door stop.

E. Door Pulls; Chrome plated Zamak.

2.3 FASTENERS

- A. Partition Fasteners: CID A-A-60003.
- B. Use toggle bolts, CID A-A-60003, for anchoring to hollow masonry or stud framed walls.
- C. Fasteners that are exposed to view shall be tamperproof.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. Install in rigid manner, straight, plumb and with all horizontal lines level.
2. Conceal evidence of drilling, cutting and fitting in finish work.
3. Use hex-bolts for through-bolting.

4. Adjust hardware and leave in freely working order.
5. Clean finished surfaces and leave free of imperfections.

B. Panels and Pilasters:

1. Support panels, except urinal screens, and pilaster abutting building walls near top and bottom by stirrup supports secured to partitions with through-bolts.
2. Secure stirrups to walls with two suitable anchoring devices for each stirrup.
3. Secure panels to faces of pilaster near top and bottom with stirrup supports, through-bolted to panels and machine screwed to each pilaster.
4. Secure edges of panels to edges of pilasters near top and bottom with "U" shaped brackets.
5. Where overhead braced, secure pilasters to building walls by headrails clamped on or set into top of each pilaster.
 - a. Secure clamps to pilasters with two through-bolts to each clamp.
 - b. When headrails are set into pilasters, through-bolt them to the pilasters.
 - c. Support headrails on wall flange fittings secured to building walls with minimum of two anchor bolts to each flange fitting.

C. Urinal Screens:

1. Anchor urinal screen flange to walls with minimum of four bolts both side of panel.
2. Space anchors at top and bottom and equally in between.

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SECTION 10 26 00
WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies wall guards (crash rails or bumper guards), handrail/wall guard combinations, corner guards and stainless steel and vinyl high impact wall covering.

1.2 RELATED WORK

- A. Structural steel corner guards: Section 05 50 00, METAL FABRICATIONS.
- B. Armor plates and kick plates not specified in this section: Section 08 71 00, DOOR HARDWARE.
- C. Color and texture of aluminum and resilient material: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: Show design and installation details.
- C. Manufacturer's Literature and Data:
 - 1. Handrail/Wall Guard Combinations.
 - 2. Wall Guards.
 - 3. Corner Guards.
 - 4. High Impact Wall covering
- D. Test Report: Showing that resilient material complies with specified fire and safety code requirements.

1.4 DELIVERY AND STORAGE

- A. Deliver materials to the site in original sealed packages or containers marked with the name and brand, or trademark of the manufacturer.
- B. Protect from damage from handling and construction operations before, during and after installation.
- C. Store in a dry environment of approximately 21° C (70 degrees F) for at least 48 hours prior to installation.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A167-99(R2009).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

- B221-08.....Aluminum and Aluminum-Alloy Extruded Bars, Rods,
Wire, Shapes, and Tubes
- D256-06.....Impact Resistance of Plastics
- D635-06.....Rate of Burning and/or Extent and Time of
Burning of Self-Supporting Plastics in a
Horizontal Position
- E84-09.....Surface Burning Characteristics of Building
Materials
- C. The National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500-06.....Metal Finishes Manual
- D. National Fire Protection Association (NFPA):
80-10.....Standard for Fire Doors and Windows
- E. Society of American Automotive Engineers (SAE):
J 1545-05.....Instrumental Color Difference Measurement for
Exterior Finishes.
- F. Underwriters Laboratories Inc. (UL):
Annual Issue.....Building Materials Directory

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A167, Type 302B.
- B. Aluminum Extruded: ASTM B221, Alloy 6063, Temper T5 or T6.
- C. Resilient Material:
 - 1. Extruded and injection molded acrylic vinyl or extruded polyvinyl chloride meeting following requirements:
 - a. Minimum impact resistance of 1197 ps (25 ft lbs per sq.ft) when tested in accordance with ASTM D256 (Izod impact, ft.lbs. per inch notch).
 - b. Class 1 fire rating when tested in accordance with ASTM E84, having a maximum flame spread of 25 and a smoke developed rating of 450 or less.
 - c. Rated self extinguishing when tested in accordance with ASTM D635.
 - d. Material shall be labeled and tested by Underwriters Laboratories or other approved independent testing laboratory.
 - e. Integral color with all colored components matched in accordance with SAE J 1545 to within plus or minus 1.0 on the CIE-LCH scales.
 - f. Same finish on exposed surfaces.

2.2 CORNER GUARDS

- A. Resilient, Shock-Absorbing Corner Guards: Surface mounted type of 30 mm (1-1/4 inch radius) or 6 mm 1/4-inch corner) formed to profile shown.

1. Snap-on corner guard formed from resilient material, minimum 2 mm (0.078-inch) thick, free floating on a continuous 1.6 mm (0.063-inch) thick extruded aluminum retainer. Provide appropriate mounting hardware, cushions and base plates as required.
2. Provide factory fabricated end closure caps at top and bottom of surface mounted corner guards.
3. Flush mounted corner guards installed on any fire rated wall shall maintain the fire rating of the wall. Provide fire test of proposed corner guard system to verify compliance.
 - a. Where insulating materials are an integral part of the corner guard system, the insulating materials shall be provided by the manufacturer of the corner guard system.
 - b. All exposed metal in fire rated assemblies shall have a paintable finish.

B. Stainless Steel Corner Guards: Fabricate of 1.6 mm (0.0625-inch) thick stainless steel. Form guards of dimensions and to contour shown.

2.3 WALL GUARDS AND HANDRAILS

A. Resilient Wall Guards and Handrails:

1. Handrail/Wall Guard Combination: Snap-on covers of resilient material, minimum 2 mm (0.078-inch) thick, shall be free-floated on a continuous, extruded aluminum retainer, minimum 1.8 mm (0.072-inch) thick, anchored to wall at maximum 760 mm (30 inches) on center.
2. Wall Guards (Crash Rails): Snap-on covers of resilient material, minimum 2.8 mm (0.110-inch) thick, shall be free-floated over 50 mm (two-inch) wide aluminum retainer clips, minimum 2.3 mm (0.090-inch) thick, anchored to wall at maximum 600 mm (24 inches) on center, supporting a continuous aluminum retainer, minimum 1.6 mm (0.062-inch) thick; or, shall be free-floated over a continuous extruded aluminum retainer, minimum 2.3 (0.090-inch) thick anchored to wall at maximum 600 mm (24 inches) on center.
3. Provide handrails and wall guards (crash rails) with prefabricated and closure caps, inside and outside corners, concealed splices, cushions, mounting hardware and other accessories as required. End caps and corners shall be field adjustable to assure close alignment with handrails and wall guards (crash rails). Screw or bolt closure caps to aluminum retainer.

B. Aluminum Wall Guards: Extruded aluminum, closed tubular bumper assembly mounted on wall brackets as shown.

1. Provide wall bumper with factory fabricated end closure caps, and inside and outside corner assemblies, concealed splice plates, and other accessories standard with the manufacturer.

2. Fabricate tubular wall guards from material with a nominal wall thickness of 6 mm (0.250-inch), form grooves for and provide two strips of continuous polyvinyl chloride cushion bumper inserts.
 3. Fabricate adjustable wall brackets from aluminum having a nominal wall thickness of 5 mm (0.20-inch). Fasten bumper to brackets with 6 mm (1/4-inch) diameter aluminum or stainless steel bolts with locknuts.
- C. Stainless Steel Wall Guards: Construct wall guard, including brackets, of minimum 4.75 mm (0.1875-inch) thick stainless steel to design shown.

2.4 HIGH IMPACT WALL COVERING

- A. Vinyl acrylic or polyvinyl chloride: Resilient material minimum 6mm (0.06 inch) thick designed specially for interior use.
- B. Stainless steel wall panels: Provide stainless steel wall panel systems that include panels, outside corners and inside corners. Panel system shall include stainless steel panels that have recessed overlap joints that maintain panel flatness and minimizes panel protrusion.
1. Stainless Steel - Type 430 or type 304 (.type 304 conforms to NSF Standard 51).
 2. Panel Size: Custom, Maximum 4' x 8'
 3. Panel Thickness: 18 gauge .
 4. Inside and Outside Corners: 50 mm (2 inch) x 50 mm (2 inch), 16 gauge. Maximum Height 96", edges shall have an 11° taper.
 5. Attachment: Adhesive.
- C. Coordinate with door protection material and supplier for proper fit, installation and color.
- D. Provide adhesive as recommended by the wall covering manufacturer.

2.5 FASTENERS AND ANCHORS

- A. Provide fasteners and anchors as required for each specific type of installation.
- B. Where type, size, spacing or method of fastening is not shown or specified, submit shop drawings showing proposed installation details.

2.6 FINISH

- A. In accordance with NAAMM AMP 500 series.
- B. Aluminum: Concealed aluminum: Mill finish as fabricated, uniform in color and free from surface blemishes.
- C. Stainless Steel: NAAMM finish Number 4.
- D. Resilient Material: Embossed texture and color in accordance with SAE J 1545 and as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

PART 3 - INSTALLATION

3.1 RESILIENT CORNER GUARDS

- A. Install corner guards on walls in accordance with manufacturer's instructions.

3.2 STAINLESS STEEL CORNER GUARDS

- A. Mount guards on external corners of interior walls, partitions and columns as shown.
- B. Where corner guards are installed on walls, partitions or columns finished with plaster or ceramic tile, provide continuous 16 gage perforated, galvanized Z-shape steel anchors welded to back edges of corner guards expansion bolted to concrete or masonry with four 9.5 mm (3/8-inch) diameter bolts, spaced 400 mm (16 inches) on centers. Coat back surfaces of corner guards, where shown, with a non-flammable, sound deadening material. Corner guards shall overlap finish plaster surfaces.
 - 1. Where corner guards are installed on gypsum board, clean surface and anchor guards with a neoprene solvent-type contact adhesive specifically manufactured for use on gypsum board construction. Remove excess adhesive from around edge of guard and allow to cure undisturbed for 24 hours.

3.3 STAINLESS STEEL WALL GUARDS

- A. Space brackets at not more than three feet on centers and anchor to the wall in accordance with manufacturer's installation instructions.

3.4 STAINLESS STEEL WALL PROTECTION PANELS

- A. General: Locate the wall panels as indicated on the approved detail drawing for the appropriate substrate and in compliance with the IPC installation instructions. Install wall panels level and plumb at the height indicated on the drawings. Complete installation with inside and outside corners.
- B. Panels: Panels shall be adhered with field applied heavy duty adhesive.
- C. Corner Guards: Adhesive mount - Corner guards shall be adhered with field applied heavy duty adhesive and foam tape.
- D. Edge finish: Edges shall be finished with color-matched caulk.

3.5 DOOR, DOOR FRAME PROTECTION AND HIGH IMPACT WALL COVERING

- A. Surfaces to receive protection shall be clean, smooth and free of obstructions.

- B. Install protectors after frames are in place but preceding installation of doors in accordance with approved shop drawings and manufacturers specific instructions.
- C. Apply with adhesive in controlled environment according to manufacture's recommendations.
- D. Protection installed on fire rated doors and frames shall be installed according to NFPA 80 and installation procedures listed in UL Building Materials Directory; or, equal listing by other approved independent testing laboratory establishing the procedures.

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SECTION 10 28 00
TOILET, BATH, AND LOCKER ROOM ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies manufactured items usually used in dressing rooms, toilets, baths, locker rooms and at sinks in related spaces.
- B. Items Specified:
 - 1. Grab Bars
 - 2. Shower curtain rods
 - 3. Coat hooks
 - 4. Frameless mirror units
 - 5. Toilet seat cover dispenser
 - 6. Solid phenolic lockers

1.2 RELATED WORK

- A. Coat hooks mounted on toilet compartment doors: Section 10 21 23, TOILET COMPARTMENTS.
- B. Color of finishes: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: For each product specified. Include installation and mounting details and support (anchorage) details for grab bars.
- C. Manufacturer's Literature and Data:
 - 1. All accessories specified.
 - 2. Show type of material, gages or metal thickness in inches, finishes, and when required, capacity of accessories.
- D. Manufacturer's Certificates:
 - 1. Stainless Steel finish as specified.

1.4 QUALITY ASSURANCE

- A. Each product shall meet, as a minimum, the requirements specified, and shall be a standard commercial product of a manufacturer regularly presently manufacturing items of type specified.
- B. Each accessory type shall be the same and be made by the same manufacturer.
- C. Each accessory shall be assembled to the greatest extent possible before delivery to the site.
- D. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

1.5 PACKAGING AND DELIVERY

- A. Pack accessories individually to protect finish.
- B. Deliver accessories to the project only when installation work in rooms is ready to receive them.
- C. Deliver inserts and rough-in frames to site at appropriate time for building-in.
- D. Deliver products to site in sealed packages of containers; labeled for identification with manufacturer's name, brand, and contents.

1.6 STORAGE

- A. Store products in weathertight and dry storage facility.
- B. Protect from damage from handling, weather and construction operations before, during and after installation in accordance with manufacturer's instructions.

1.7 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A167-99(R2009).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 - A176-99(R2009).....Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip
 - A269-10.....Seamless and Welded Austenitic Stainless Steel Tubing for General Service
 - A312/A312M-09.....Seamless and Welded Austenitic Stainless Steel Pipes
 - A653/A653M-10.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - B221-08.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
 - B456-03(R2009).....Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium
 - C1036-06.....Flat Glass
 - C1048-04.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
 - F446-85(R2009).....Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area.
- C. The National Association of Architectural Metal Manufacturers (NAAMM):
 - AMP 500 Series.....Metal Finishes Manual
- D. American Welding Society (AWS):

D10.4-86 (R2000).....Welding Austenitic Chromium-Nickel Stainless
Steel Piping and Tubing

E. Federal Specifications (Fed. Specs.):

FF-S-107C (2).....Screw, Tapping and Drive

WW-P-541E(1).....Plumbing Fixtures (Accessories, Land Use) Detail
Specification

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum: ASTM B221, alloy 6063-T5 and alloy 6463-T5.

B. Stainless Steel:

1. Plate or sheet: ASTM A167, Type 302, 304, or 304L, except ASTM A176
where Type 430 is specified, 0.0299-inch thick unless otherwise
specified.

2. Tube: ASTM A269, Alloy Type 302, 304, or 304L.

C. Stainless Steel Tubing: ASTM A269, Grade 304 or 304L, seamless or
welded.

D. Stainless Steel Pipe: ASTM A312; Grade TP 304 or TP 304L.

E. Steel Sheet: ASTM A653, zinc-coated (galvanized) coating designation
G90.

F. Glass:

1. ASTM C1036, Type 1, Class 1, Quality q2, for mirrors.

2. ASTM C1048, Kind FT, Quality q3 where tempering is specified.

2.2 FASTENERS

A. Exposed Fasteners: Finish to match adjacent surface.

B. Concealed Fasteners: Steel, hot-dip galvanized (except in high moisture
areas such as showers or bath tubs use stainless steel).

C. Toggle Bolts: For use in hollow masonry or frame construction.

D. Hex bolts: For through bolting on thin panels.

E. Expansion Shields: Lead or plastic as recommended by accessory
manufacturer for component and substrate for use in solid masonry or
concrete. Use only where toggle bolts cannot be used.

F. Screws:

1. ASME B18.6.4.

2. Fed Spec. FF-S-107, Stainless steel Type A.

G. Adhesive: As recommended by manufacturer for products to be joined.

2.3 FINISH

A. In accordance with NAAMM AMP 500 series.

B. Anodized Aluminum:

1. AA-C22A41 Chemically etched medium matte, with clear anodic coating, Class I Architectural, 0.7-mil thick.
- C. AA-M32 Mechanical finish.
 1. Chromium Plating: ASTM B456, satin or bright as specified, Service Condition No. SC2.
 2. Stainless Steel: NAAMM AMP 503, finish number 4.
 3. Ferrous Metal:
 - a. Shop Prime: Clean, pretreat and apply one coat of primer and bake.
 - b. Finish: Over primer apply two coats of alkyd or phenolic resin enamel, and bake.

2.4 FABRICATION - GENERAL

- A. Welding, AWS D10.4.
- B. Grind dress, and finish welded joints to match finish of adjacent surface.
- C. Form exposed surfaces from one sheet of stock, free of joints.
- D. Provide steel anchors and components required for secure installation.
- E. Form flat surfaces without distortion. Keep exposed surfaces free from scratches and dents. Reinforce doors to prevent warp or twist.
- F. Isolate aluminum from dissimilar metals and from contact with building materials as required to prevent electrolysis and corrosion.
- G. Hot-dip galvanized steel, except stainless steel, anchors and fastening devices.
- H. Shop assemble accessories and package with all components, anchors, fittings, fasteners and keys.
- I. Key items alike.
- J. Provide templates and rough-in measurements as required.
- K. Round and deburr edges of sheets to remove sharp edges.

2.5 GRAB BARS

- A. Fed. Spec WW-P-541/8B, Type IV, bars, surface mounted, Class 2, grab bars and ASTM F446.
- B. Fabricate of stainless steel:
 1. Stainless steel: Grab bars, flanges, mounting plates, supports, screws, bolts.
- C. All mounting hardware shall be concealed.
- D. Bars:
 1. Fabricate from 38 mm (1-1/2 inch) outside diameter tubing.
 - a. Stainless steel, minimum 1.2 mm (0.0478 inch) thick.
 2. Fabricate with length as indicated on drawings and with ends turned towards walls.
- E. Flange for Concealed Mounting:

1. Minimum of 2.65 mm (0.1046 inch) thick, approximately 75 mm (3 inch) diameter by 13 mm (1/2 inch) deep, with provisions for not less than three set screws for securing flange to back plate.
2. Insert grab bar through center of the flange and continuously weld perimeter of grab bar flush to back side of flange.

F. Back Plates:

1. Minimum 2.65 mm (0.1046 inch) thick metal.
2. Fabricate in one piece, approximately 6 mm (1/4 inch) deep, with diameter sized to fit flange. Provide slotted holes to accommodate anchor bolts.
3. Furnish spreaders, through bolt fasteners, and cap nuts, where grab bars are mounted on metal stud partitions.

2.6 SHOWER SEATS

- A. Folding seat, spring loaded, with reversible frame for left- or right-handed installation and complying with.
 1. Capacity: 160 kg (350 pounds).
- B. Seat: Solid phenolic with integral drainage slots.
- C. Frame: Tubular type 304, 18-8 stainless steel.
 1. Thickness: Minimum 1.6 mm (16 gauge).
 2. Size: 30 mm (1 1/4 inch square).
 3. Mounting flanges, guide brackets, and base plates: Type 304, 18-8 stainless steel plate, thickness as recommended by seat manufacturer.
- D. Backing Plate: Concealed galvanized steel sheet backing plate, minimum 2 mm (14 gauge) thick.

2.7 SHOWER CURTAIN RODS

- A. Stainless steel tubing, ASTM A569, minimum 1.27 mm (0.050 inch) wall thickness, 32 mm (1 1/4 inch) outside diameter.
- B. Flanges, stainless steel rings, 66 mm (2 5/8 inch) minimum outside diameter, with 2 holes opposite each other for 6 mm (1/4 inch) stainless steel fastening bolts. Provide a set screw within the curvature of each flange for securing the rod.

2.8 COAT HOOKS

- A. Fabricate hook units of stainless steel, using 6 mm (1/4 inch) minimum thick stock, with edges and corners rounded smooth to the thickness of the metal, or 3 mm (1/8 inch) minimum radius.
- B. Fabricate each unit as a double hook on a single shaft, integral with or permanently fastened to the wall flange, provided with concealed fastenings.
- C. When attached to in-swing toilet compartments doors use rubber-tipped stop to prevent door from hitting adjacent toilet compartment.

2.9 LOCKERS

A. General:

1. Material: Solid phenolic with high pressure melamine finish surface as integral part of core material.
2. Construction: Mortise and tenon joints.
 - a. Fire Rating: Class A per ASTM E84.
 - b. Top, bottom and shelves: 10 mm (3/8 inch).
 - c. Sides 8 mm (5/16 inch).
 - d. Back: 6 mm (1/4 inch).
 - e. Shelf: 10 mm (3/8 inch) x (4 inches) deep, full width of cabinet.
3. Finishes:
 - a. Exterior: Refer to Section 09 06 00, SCHEDULE FOR FINISHES.
 - b. Interior: White.
4. Hinges: Stainless steel, continuous.
5. Locks: Digital combination locks with pull.
6. Number Plates: Laser etched on acrylic plate.
7. Base: 102 mm (4 inches).
8. Finished ends where exposed to view.
9. Coat hooks: Stainless steel, 3 per locker.
10. Trim: Match adjacent surfaces to fill voids between lockers and adjacent construction.
11. Basis of design: Solid Phenolic Lockers manufactured by Summit Lockers, Inc.

B. 2-Tier Lockers:

1. Overall height: 1829 mm (72 inches)
2. Width: 305 mm (12 inches)
3. Depth: 457 mm (18 inches)

2.10 FRAMELESS MIRRORS

A. ASTM C 1036 and 1503.

B. Mirror Glass:

1. Minimum 6 mm (1/4 inch) thick.
2. Set mirror in a protective vinyl glazing tape.
3. Use tempered glass.

C. Back Plate:

1. Fabricate backplate for concealed wall hanging of either zinc-coated, or cadmium plated 0.9 mm (0.036 inch) thick sheet steel, die cut to fit face of mirror frame, and furnish with theft resistant concealed wall fastenings.
2. Use set screw type theft resistant concealed fastening system for mounting mirrors.

D. Mounting:

1. Clip fasteners designed to support mirror tight to wall.
2. Designed to retain mirror with concealed set screw fastenings.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before starting work notify Contracting Officer's Representative (COR) in writing of any conflicts detrimental to installation or operation of units.
- B. Verify with the COR the exact location of accessories.

3.2 INSTALLATION

- A. Set work accurately, in alignment and where shown. Items shall be plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.
- B. Toggle bolt to steel anchorage plates in frame partitions or hollow masonry.
- C. Install accessories in accordance with the manufacturer's printed instructions and ASTM F446.
- D. Install accessories plumb and level and securely anchor to substrate.
- E. Install accessories in a manner that will permit the accessory to function as designed and allow for servicing as required without hampering or hindering the performance of other devices.
- F. Position and install dispensers, and other devices in countertops, clear of drawers, permitting ample clearance below countertop between devices, and ready access for maintenance as needed.
- G. Align mirrors, dispensers and other accessories even and level, when installed in battery. When mirrors are surrounded by ceramic tile, install additional backing so that mirror is flush with tile.
- H. Install accessories to prevent striking by other moving, items or interference with accessibility.

3.3 SCHEDULE OF ACCESSORIES

- A. As indicated on Drawings.

3.4 CLEANING

- A. After installation, clean as recommended by the manufacturer and protect from damage until completion of the project.

- - - E N D - - -

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
TOILET, BATH, AND LOCKER ROOM ACCESSORIES

VAMC BALTIMORE, MD
JUNE 8, 2016
10 28 00-8

SECTION 11 40 00
FOODSERVICE EQUIPMENT

PART 1 - GENERAL CONDITIONS

1.1 GENERAL CONDITIONS

- A. AIA General Conditions, Document A201, Supplementary Conditions, and General Specifications apply to work in this section.
- B. Wherever the term "Architect" is used in AIA Document A201, the term "Consultant" shall be inferred for this section of the work.
- C. All trades shall review and be bound by all documents of all sections.

1.2 DEFINITIONS

- A. All references to "KEC" shall mean the Kitchen Equipment Contract(or), which shall perform as a subcontractor. The KEC shall provide all work under a contract to the General Contractor (GC), who shall not include work or equipment specified in this section elsewhere under the General Contract, except as is required for final connection and access of equipment.
- B. All references to "Fabricator" shall mean the Foodservice Equipment Custom Fabricator, which shall perform as a subcontractor to the KEC, and shall construct any custom fabricated equipment for the section, and may also install all KEC equipment per Article 1.8. et.al.
- C. All references to "Manufacturer" shall mean established, recognized business entities normally engaged in the manufacture of standard equipment models, cataloged, advertised, and referenced in proprietary descriptive literature, with or without the availability of options, accessories, or elective modifications. The term "Fabricator" shall not be construed to mean comparable or acceptable as an alternate to a "Manufacturer" except as specifically allowed in an item specification. Fabricated equipment shall not be substituted for manufactured equipment.
- D. All references to the "Owner" shall mean the Owner, Company of the Owner, its agents, successors and assigns, or its designated representatives, the Architect or Foodservice Consultant hereinafter termed "Consultant."
- E. The term "NIKEC" shall mean "Not In Kitchen Equipment Contract" but does not further express responsibility without specific reference.
- F. Terms suggesting gender are interpreted to mean a person or entity of neutral being and number to include plurality.

1.3 WORK INCLUDED

- A. The KEC shall provide all labor and materials, equipment, and services necessary for completion of all foodservice equipment-related work indicated on the drawings or herein specified, or both. Written specifications, including Standard Details and Special Details, supersede drawings prepared or approved by the Consultant. Work shall include the provision, setting for hook-up, testing, calibration,

starting up, demonstration, and warranting of all foodservice items, to the satisfaction of the Owner.

- B. The KEC shall locate, identify, install, and prepare for final connection Owner's equipment indicated as "existing." "Existing" is interpreted as being "as-is" with no KEC obligation to repair or refurbish equipment other than replacement of materials damaged by the KEC, or as required to prepare for connection to utility rough-ins, except as specifically directed.

1.4 WORK NOT INCLUDED

- A. All mechanical and electrical services and components required for the operation of any equipment shall be the responsibility of the GC; NIKEC. The GC shall rough-in all utilities and extend services from rough-in locations to all connections or cut-in points on the foodservice equipment and make all final connections, including any cutting-in or welding required, providing all unscheduled materials.
- B. Masonry bases and slab depressions shall be formed and cast by the GC per a base form layout plan prepared by the KEC and approved by the Owner.
- C. All mechanical runs, interconnecting piping or electrical service between equipment system components, refrigeration, ventilation, waste disposal, steam generating systems, plumbing fixtures, area floor drains, floor sinks, and trench drains, shall be provided by the GC; NIKEC, unless otherwise specified.
- D. Refer to Project Base Building General Conditions and Specifications.

1.5 APPROVAL OF SUBSTITUTIONS

- A. In the event that the KEC desires to request approval of substitute material, product, article, process, or item of equipment in lieu of that which is specified, the KEC shall submit a written request at the time of submitting Bid, setting forth the proposed substitution in detail, including an itemized analysis of the addition or deduction in the amount of the contract, if any, which will result if the substitution is approved. Wherever such proposed substitution will involve or require changes or modification to any element of the project or item of equipment, the KEC shall submit detailed drawings showing all proposed or required changes or modifications. If the proposed substitution is approved, changes, modifications, and work related thereto shall not be undertaken prior to the approval of such drawings by the Consultant and Owner.
- B. Requests for substitutions shall be accompanied by bidder affidavit that the proposed substitution meets contract requirements, with particular reference to design, quality, durability, performance characteristics, utility requirements, method of installation, and all specific features of the make and model originally specified (or its later improved version) including special features and/or options as enumerated in the itemized specifications, and methods of attachment or connection to related elements of the work.
- C. The KEC shall reimburse the Owner or the GC at cost for any expenses incurred in accommodating any approved substitutions on the site or in any project documents.

1.6 SUBMISSIONS

- A. All KEC submittals shall be of the exact same dimensions as the project construction drawings, including any and all shop drawings generated by manufacturers.
- B. Reproduction of drawings prepared by the Consultant will not be accepted, unless the KEC approves and accepts in writing, any consultant-prepared rough-in drawings, assumes responsibility for the consultant prepared drawings, and agrees to provide the contract equipment in complete conformity therewith.
- C. Any or all factory cut sheets issued by the Owner for information prior to bidding are not included in the bid or contract documents and are to be disregarded in all respects. Copying and submittal of any brochure or project manual cut sheets issued or released by the Consultant, in lieu of a KEC's own original work, is not acceptable. The process of search, assembly, and consideration of a submittal serves as one of the validating activities of the KEC, that confirms its understanding of the contract.
- D. Within 30 days of the award of the contract and Notice to Proceed by the A/E, the KEC shall furnish to the Owner two (2) sets of prints and one (1) set of reproducible prints of shop drawings of all custom fabricated equipment, fully detailed and dimensioned, drawn to 3/4"=1'-0" scale or larger, against available field or plan dimensions. Critical or hold-to dimensions shall be indicated. After approval by the Owner, the KEC shall within 30 days provide to the A/E eight sets of corrected prints and one set of corrected reproducibles.
- E. Within 30 days of the award of the contract and Notice to Proceed by the A/E, the KEC shall furnish to the Owner two (2) sets of prints and one (1) set of reproducible prints of rough-in drawings for venting, plumbing, and electrical services required by all foodservice equipment of any nature listed in the contract documents, fully detailed and dimensioned, drawn 1/4"=1'-0" scale or larger, against available field or plan dimensions. Critical or hold-to dimensions shall be indicated. After approval by the Owner, the KEC shall within 15 days provide to the A/E eight sets of corrected prints and one set of corrected reproducibles.
- F. Within 30 days of the award of the contract and notice to proceed by the A/E, the KEC shall furnish to the Owner a Schedule of Values, which shall be an itemized list of equipment with quantities, corresponding prices, and all other charges prorated for each item of equipment provided or handled by the KEC.
- G. Other submittals by the KEC within thirty (30) days of award of the Contract and Notice to Proceed, include:
 - 1. Equipment Brochures - six bound, item number-ordered and indexed copies of factory issued data sheets for all items the KEC intends to provide under the kitchen equipment contract (aka KEC), including descriptive and utility data inserts for each custom-fabricated item, for approval by the Owner. Rejected submissions shall be corrected and returned by the KEC within 15 days of return.

2. Factory-authorized repair agency lists - six bound, manufacturer-indexed lists for each item of equipment provided by the KEC with all addresses and telephone numbers of factories and service agencies; to be used by the Owner only after expiration of the Contractor's one-year warranty.
 3. Maintenance Manuals - three bound copies, with all standard parts lists, wiring diagrams, exploded parts views, and operations and repair manuals for each item of equipment provided by the KEC, including all components and sub-assemblies.
 4. Warranties - a single, bound, item-number - ordered book of certificates of warranty for all factory-manufactured items of equipment and subcomponents of fabrication, including the Contractor's statement certifying its acceptance of its obligation for one year full parts and labor provision.
- H. Within 30 days of the award of the contract and Notice to Proceed by the Owner, the KEC shall furnish to the Owner shop, production, or manufacturer's drawings for all non-standard or component systems, including walk-in refrigeration panel and/or piping systems, hoods, ventilators, custom fabricated, and modular equipment. KEC shall provide all factory plans, elevations and load data deemed necessary for permitting by any respective code authorities.
- I. Samples - the KEC shall provide, only when requested by the Owner for its approval, in a timely manner details, samples, mock-ups, sections of equipment, hardware, assemblies, finishes, and methods of joining, fastening, or finishing.
- J. It is the ultimate responsibility of the contractor to provide all items as specified in the contract documents. During the submittal review process, failure of the Consultant to note specific items that do not comply, does not grant permission for the contractor to change the specifications, drawings or deviate from the scope of work therein.

1.7 PROCUREMENT

- A. The KEC shall procure and ship to the jobsite or its own facility, all KEC items and pay for same, including purchase, freight, handling, storage, and insurance. The Owner may order any equipment items to be delivered on an expedited basis or to its own facility. The KEC shall be bondable and shall indemnify the Owner against loss of any goods or funds for the purchase of equipment or services under the KEC; see 1.17 damage or loss.
- B. The KEC and installer may be the same entity, and may fabricate all items of custom-design in its own facility and shall not subcontract any items for fabrication without the express, written consent of the Owner. The Owner reserves the right to inspect any equipment at its place of manufacture or fabrication, prior to shipment, at its own expense.

1.8 INSTALLATION

- A. The KEC shall install all items of foodservice equipment or other items specifically furnished under the KEC and make ready for final connection to utilities by the respective trades on the jobsite.

Installation shall include erection of walk-in coolers and freezers, hanging in place all ventilation canopies and SS duct risers exposed to view, and setting of each item of equipment, complete, assembled, leveled, fastened together, trimmed, sealed, and ready for final connection, but shall not include any materials to connect, or resetting of equipment dislocated during connection or during any other work by other trades, or reworking of any nature as a result of work or damage by other trades. Provide and install permanently-placed equipment using concealed "Z-clips" or stabilizing angle attachments whether the equipment is custom fabricated or manufacturer's standard models, and seal with clear silicone sealant.

- B. Debris, crating materials, and handling devices shall be removed by the KEC to avoid accumulation and maintain a safe, orderly worksite. Work rules shall conform to the base building standards.
- C. The provision and cost of any required rigging shall be by the KEC, as well as replacement or repair of any work by other trades damaged by the KEC.
- D. All trim shall be furnished and installed at no charge to the Owner. The KEC shall provide SS angle, channel, or other shapes, to close any crevices between any fixed-in-place equipment and any adjacent work up to 2" wide; the GC shall furr-in any gaps 2" or greater, including closure to the ceiling line for hoods, walk-in refrigerated panel systems, chases, control panels or as specified. Refrigeration panel trim may be of the same material, pattern, and finish as the panel.
- E. Refer to the Section 114000 General Specifications for each utility, mechanical, and refrigeration application

1.9 CODES AND REGULATIONS

- A. The KEC shall furnish all equipment manufactured or fabricated under this section to meet all of the requirements and bear the seal of:
 - 1. The county and municipality building, health, and fire department codes having jurisdiction over the jobsite, in addition to the following:
 - 2. The National Sanitation Foundation (NSF);
 - 3. The applicable Building Code current edition;
 - 4. The BOCA Code current edition;
 - 5. The Uniform Mechanical Code (UMC) current edition;
 - 6. The NFPA Bulletin 30, 50, 74, and 96, current edition;
 - 7. The applicable UL Listing for grease extraction, fire suppression, electrical components, and wiring;
 - 8. The requirements of the Building and Construction Trades, per the base building contract.

1.10 SEISMIC RESTRAINTS

- A. The KEC will be required to install items in these contract documents according to the "SMACNA Guidelines for Seismic Restraint of Kitchen Equipment."

The KEC will be responsible for:

1. Identifying items subject to displacement or toppling on its submittal drawings, Plans, Elevations, and Sections.
 2. Showing required SMACNA methods of restraint on its submittal drawings.
 3. Referencing the appropriate detail(s).
- B. If no SMACNA detail exists for a particular situation, the KEC is responsible for preparing and obtaining approval for all special attachment details:
1. Detail must be prepared by a licensed engineer and accompanied by the supporting calculations used in the design.
 2. KEC is responsible for ensuring that the restraint design is appropriate to the building's structural conditions and the surfaces to which the equipment will be secured.

1.11 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

- A. The KEC or any subcontractor to the KEC shall not commence any work on the project without evidencing to the Owner's satisfaction, proof of insurance required under this paragraph, in the amounts expressed, unless superseded by the Project Base Building General Requirements:
1. Workmen's Compensation - statutory coverage;
 2. Public Liability and Property Damage - \$1,000,000;
 3. Subcontractor's Insurance - same as KEC;
 4. Vehicle Liability Insurance - \$500,000/\$1,000,000;
 5. Scope of Coverage - the result of all insurance shall be that the Owner shall not suffer damage or loss as the result of any occurrence, action, or inaction, on the part of the KEC or any of its subcontractors, in execution of any work under this section.
 6. The KEC shall exercise due diligence in doing its work and in its conduct of business.
- B. Additional Indemnity - the KEC or others in the employ of the KEC, shall hold the Owners safe and harmless against any and all liens, claims, lawsuits, actions, costs, counsel fees, expenses, damages, strikes, judgments, or decrees, by reason of any person or property being injured, damaged, or compromised by the KEC or others working in any capacity for the KEC under this section, whether by negligence, omission, overt act, non-performance, or lack of due diligence.

- C. The KEC shall regard all contract documents, submittals, project notes, correspondence, and any other information related to the work as confidential and proprietary data, and shall not transmit, convey or make available any such data to any entity that is not necessary for execution of a specific section of the work. The business of the Owner is confidential and shall be treated as such by the KEC, including obligation for discretion and confidentiality.
- D. The KEC shall issue any project data prior to, during, and after completion of the work, exclusively on a "need to know" basis to entities as approved in writing by the Owner. Dissemination of project data is strictly forbidden at risk of severe penalty under law.
- E. The KEC shall not disclose specifications, details, or the contract price, schedule of values, or individual pricing on any KEC equipment, except as necessary for execution of its contract obligations.

1.12 PERMITS AND REGULATIONS

- A. The KEC shall procure and pay for all permits and licenses necessary for execution of its specific work.
- B. General building permits and general mechanical, electrical, plumbing, and occupancy permits are not required of the KEC.

1.13 CORRECTION OF WORK

- A. All work and materials, whether or not incorporated into other work; and all methods of construction, including methods of manufacture or assembly, shall at all times be subject to the inspection of the Owner, who shall be the ultimate judge of the quality and acceptability of the work, materials, installation, and methods of construction for its intended purpose. Any work not approved shall be immediately removed or reworked, replaced, reconstructed, corrected, or made acceptable to the Owner.
- B. Rejected work not made acceptable shall be at the option of the Owner, due notice given and expired, replaced with acceptable work or materials, with all costs attendant thereto charged against the KEC. Rejected work may not at the option of the KEC be deleted from the KEC.

1.14 KEC TITLE TO MATERIALS

- A. No materials or supplies for the work shall be purchased by the KEC or any subcontractor subject to any lien or chattel mortgage or under any condition of sale by which an interest is retained by any Seller.
- B. The KEC warrants that he has perfect title to all materials and equipment provided by him or used in execution of the work, free from all encumbrance.

1.15 WARRANTIES

- A. The KEC warrants:
 - 1. Its goods and materials to be free of defects in materials or workmanship for a period of one year from date of acceptance by the Owner, including all parts and labor. Additional warranties

as are standard issue by certain manufacturers may be imposed and the KEC may not limit warranty by explicit or implied exception;

2. That it is fiscally solvent, experienced in the work for which it is engaged, that it is competent and qualified to execute the work, and will place supervision of the contract under an identified, key employee from which all trades may receive timely data and remedial response;
 3. That it is familiar with all applicable Federal, State, and local codes and ordinances regulating the type of work, and shall engage or appoint only employees who are skilled and well-qualified to do the work.
 4. That temporary and permanent work under the contract shall be secure and workmanlike, to suit the intended purpose, and that such work shall not harm, endanger, or damage persons or property;
 5. That it has carefully examined the plans, has satisfied itself as to the exact interpretation and intent thereof, has included all costs, and does fully understand the materials, construction methods, worksite access, and specifications, and intends to fully complete the work as documented;
 6. That it recognizes the openings and apertures through which equipment and assemblies must pass for access and installation, approaches for delivery, and has anticipated all rigging, surface protection, and will not compromise work by other trades.
 7. That it accepts the project schedule and has made all concessions and provisions in its bid to accommodate all dates expressed.
- B. The KEC shall initiate manufacturers' and its own warranties upon acceptance of the work or its first use in production of food for human consumption in commercial food service.
- C. The KEC shall provide a Contractor's Warranty for all items furnished under the KEC, providing one full year replacement and repair service for defective materials or workmanship, including labor, separate and apart from any retail manufacturer's warranty, commencing upon acceptance or Owner's first use of KEC equipment for commercial foodservice production. The KEC has no obligation regarding existing or vendor-furnished equipment.
- D. The KEC shall receive and perform all proper requests for work under the KEC warranty, and refer the Owner to service agencies only after expiration of the contractor's warranty.

1.16 PATENTS

- A. The KEC shall hold harmless and save the Owner and its officers, consultants, and employees from liability of any nature or kind, including costs and expenses for or on account of any copyrighted, patented, or unpatented invention, process, trademark, design, device, material, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the contract documents. If the KEC has information that the process or article specified is an

infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner in writing. The contract price shall include all royalties or cost arising from the use of any or all of the above which are, in any way, involved in the contract.

1.17 DAMAGE OR LOSS

- A. Responsibility shall rest with the KEC for any damage and/or loss of goods incurred prior to Owner's acceptance, except that it may pass liability to the GC through a separate instrument if approved by the Owner.

In the absence thereof, such items that become lost, stolen, or damaged in transit or in any other way from any cause, shall be immediately replaced by identical items of same source or manufacture, or repaired to a condition that is accepted by the Owner, by the KEC at the KEC's expense.

- B. The KEC shall hold the Owner harmless from loss of any funds disbursed for draws, down payments, deposits, shipping, or other procurement expenses, as a result of or through deceit, fraud, theft, embezzlement, insolvency, or bankruptcy, regardless of bonding. Stockholders of the KEC firm shall be individually liable to the Owner for any and all specific losses.

1.18 USE OF PREMISES AND REMOVAL OF DEBRIS

- A. The KEC undertakes at its own expense;

1. To avoid damage to all persons and property, and conduct its business activities in a workman- like manner, with due diligence.
2. To store its apparatus, equipment, materials, and supplies in an orderly manner upon the site, not to unduly interfere with the progress of work by others;
3. To place on the worksite only materials and equipment as may be adequately accommodated for security, fastening, erection, fire safety, or hook-up in a reasonable working period;
4. To frequently clean up debris resulting from its work, to present a neat, safe, and workmanlike site condition, and to remove its debris, leaving the worksite broom clean at the end of every workday. No flammable or combustible materials shall be allowed to accumulate on the jobsite.
5. Final cleaning activities required of the KEC is limited to wiping down all exposed surfaces of the equipment furnished under the KEC, and application of protective cardboard, heavy brown paper, or leaving fabricator's protective film in place, on any flat, horizontal surfaces subject to abuse, use as walk-on scaffolding, or other damage.

KEC shall wipe out all equipment interiors, having set-up all interior supports, racks, and shelves, and remove packing materials. KEC shall blow out all accumulated dust and debris from general contract activities, fabrication, finishing,

fastening, and installation inside equipment bodies and cavities. Final cleaning prior to use in demonstrations where food is to be consumed, or preparation of food for service, shall be by Owner or Operator; NIKEC.

6. To determine and conform to the jobsite access, parking, and vehicle restrictions specified for the Project.
7. To effect the cutting, patching, fitting, and trimming of all KEC equipment and work as required to make it acceptable and to conform to site conditions, plans, and specifications, and without the consent of the Owner, not to cut into or remove any work by others. Any field cutting, joining, or patching shall be shop quality, and fully finished, regained, and made acceptable to the Owner at no additional expense to the Owner;
8. To perform and coordinate its work with the other trades on the site to maintain the Project Schedule, promote an orderly work flow, and minimize lost time for any trade due to misdirected or uncoordinated work.
9. To determine and adhere to all work safety and personnel conduct standards established for the project.

1.19 MUTUAL RESPONSIBILITY OF CONTRACTORS

- A. All trades, contractors, and subcontractors shall work together on the worksite. If, through lack of due diligence or negligent acts by the KEC, or any other subcontractor to the KEC, any other contractor shall suffer loss or incur damages on the worksite, the KEC agrees to settle mutual obligations with any such other contractor or subcontractor by agreement through binding arbitration as its first course of adjustment.
- B. The KEC shall maintain timely, complete and accurate provision and exchange of information with all parties to the project.

1.20 EXTRA WORK MAY BE ORDERED

- A. The Owner may order extra work or make changes by altering, adding to, or deleting from, the Work, with the Contract Sum being adjusted accordingly on a pro-rata basis. All work of the nature bid upon shall be paid for at the price stipulated in the Contract, and no claims for extra cost shall be allowed unless the work changes are in writing, evidencing supplier price increases, or by a Change Order Proposal, accepted by the Owner.
- B. The Schedule of Values required of the KEC shall be the basis for extra compensation as well as for any deletions.

1.21 CLAIMS FOR EXTRA COST

- A. Written orders for extra work, or a Change Order, shall be required to substantiate all claims for extra compensation. Any work attempted or accomplished without prior authorization shall be considered as having been done under the original or existing contract documents, at no added cost to the Owner. Extra work shall be paid for as agreed between the Owner and KEC per the Schedule of Values or subsequent, duly prepared and executed change orders.

- B. Where applicable, the KEC shall furnish bills, time records, invoices, vouchers, or other certified documents, to evidence claims for extra costs and expenses and to validate the basis for compensation.

1.22 CONSULTANT AUTHORITY

- A. The Consultant as an Owner's Agent shall determine the value, amount, quality, and fitness of equipment, materials, or features provided or work proposed or performed under this section. Wherever a discrepancy occurs, the KEC shall provide the greater of quantity, quality, or value.
- B. The estimations and decisions of the Consultant shall be final and conclusive. Should any dispute arise from interpretation of the documents, the Consultant's decision shall be a precedent to the KEC's receiving any contract price adjustment for work performed.
- C. The Consultant shall decide the meaning, intent, or definition of any portion of the plans as it affects the Foodservice Equipment Contract.
- D. The Owner has the ultimate right to gauge acceptability of the work.

1.23 RIGHT OF THE OWNER TO TERMINATE THE KEC

- A. The Owner, upon violation of any part of the KEC by the KEC, may order the GC to terminate the KEC with ten (10) calendar days written notice to the KEC, containing specific reasons for termination and directives to effect required cures for deficiencies. If at the expiration of twenty (20) calendar days after notice of the violations, acceptable cures have not been achieved, the Owner may at its option terminate the KEC.
- B. The Owner shall serve any notices to the last known address of the GC. Unfinished work of the KEC may be affected and the cost thereof charged back against any funds due to the GC.

1.24 SITE COORDINATION

- A. The KEC shall provide an experienced representative on the site during any periods of KEC activity, to coordinate with other trades and assist in proper access, handling, trim, roughing-in, or hook-up of the equipment.
- B. The KEC shall make available to the trades all installation manuals, wiring diagrams, schematic diagrams, typical parts lists, or other data commonly packed or crated with shipped items, by collecting such, item number marking same, and giving same to the GC site superintendent for record and holding; this activity being separate and apart from Submittal requirements.
- C. The KEC shall provide the consultant no less than ten days' written notice of commencement of any scheduled installation, start-up, or demonstration activities.

1.25 FIELD DIMENSIONS AND CONDITIONS

- A. All sizes and dimensions given or derived on drawings are as accurate as can be determined prior to construction. The KEC shall field check all dimensions that affect the work.
- B. The KEC shall not order large items, walk-in coolers and freezers, hoods, and etc., before verifying field dimensions and access.
- C. The KEC shall verify all provisions for remote system component installation, utility services, and interconnection routing, including waste handling, refrigeration, water, and ventilation systems. Source water quality, pressure, and temperature, gas service nature, steam pressure and condensate provisions, and site electrical characteristics shall all be verified by the KEC prior to the commencement of any work on the project.
- D. Where obstructions or variance is discovered, the KEC shall exercise due diligence and give timely written notice to the GC, and proceed to facilitate completion of the work by provision of equipment that accommodates the field conditions.
- E. The KEC shall coordinate any headers or wall blocking required for the installation of kitchen equipment. Wall or ceiling mounted shelves and racks shall be capable of supporting not less than 50 lbs./LF.

1.26 CHANGES IN WORK IN PROGRESS

- A. The Owner may issue a Change Order to require the KEC to modify the nature of the work; its size, shape, quantity, features, phasing, and timing. The KEC shall receive no additional compensation where a change does not affect the delivery schedule/price, quantity, quality, or features of the work.
- B. Any changes affecting the contract sum must be agreed upon in writing prior to the commencement of any work or such will be deemed to have been done under the tenets of the existing contract.

1.27 START-UP REGULATION, TESTING, DEMONSTRATION, AND APPROVAL

- A. The KEC shall start-up all equipment, regulate, calibrate, and test all items and systems, and generally evidence to the Owner's satisfaction that all items are sound, operational, and provided as specified.
- B. The KEC shall order and pay for all inspections or tests by regulatory authorities who challenge the suitability of equipment provided under their jurisdiction.
- C. The KEC shall leave in place protective covering on exposed stainless steel, glass, or other surfaces until immediately prior to removal by the KEC for final inspection and general cleaning.
- D. Final cleaning and sterilizing prior to use of equipment in food production shall be by the Owner; NIKEC.
- E. The Owner shall grant final approval of all equipment after all deficiencies on the final punch list prepared by the Consultant have been satisfactorily cured or remedies opted.

- F. The KEC shall schedule demonstrations of all Class 2, 3 and 4 equipment by Factory Authorized Demonstrators, at times convenient to the Owner. Notice shall be given to the Foodservice Consultant of the demonstration schedule. Demonstration shall include competent instruction in the use, cleaning, repair, and maintenance of the equipment.
1. Class 1 - Equipment that requires no demonstration. Written instructions will suffice (i.e., roll warmers, toasters, racks, refrigerators, etc.).
 2. Class 2 - Equipment that is easy to understand and quickly demonstrated by a Factory Authorized Demonstrator (i.e., ranges, slicers, disposers, etc.)
 3. Class 3 - Complex equipment which requires more in-depth knowledge of assembly, operation, maintenance or cleaning. (i.e., steam equipment, multi-tank dish washers, fryer batteries, etc.).
 4. Class 4 - High technology equipment or systems that require extensive training, or for which demonstrations are factory-required. (i.e., cook-chill systems, conveyor ovens, etc.)
- G. The KEC shall not demonstrate any existing or vendor-furnished equipment.
- H. The costs of start-up and Factory Authorized Demonstration shall be included in the cost of each item of equipment.
- I. Re-demonstration of any equipment during the warranty period shall be charged to the Owner at cost. High-quality video taped demonstrations will be acceptable as Factory Authorized Demonstrations if the media is provided to and remains with the Owner indefinitely.

1.28 OVERTIME WORK

- A. The cost of all overtime work required by the KEC to meet the Owner's schedule due to KEC negligence shall be borne by the KEC.
- B. Overtime work required by no fault of the KEC, authorized by a properly executed Change Order with records for extra time charges, shall be reimbursed without mark-up to the contractor.

PART 2 - GENERAL SPECIFICATIONS

2.1 UTILITY SERVICE REQUIREMENTS - ELECTRICAL

- A. The KEC shall furnish all self-contained equipment completely interwired to a single point of connection near the rough-in point indicated on the rough-in plan. Fabricated items shall have service extended to junction boxes mounted on equipment where accessible and non-obstructive. Electrical receptacles mounted on fabricated equipment shall be provided mounted and pre-wired to a junction box by the KEC. All pre-wiring in custom-fabricated equipment shall be tagged for easy identification on the site, including equipment item number, rough-in stub number, and power characteristics.
- B. Manufactured components mounting into assemblies may require the GC to connect directly from field stubs to wiring or terminal blocks

provided by the manufacturer. GC shall provide all required conduit, wiring, fittings, and any quick-disconnects.

- C. KEC shall confirm the power characteristics of all equipment designated as "Existing."
- D. Final connection of all equipment to field stubs shall be by the GC; NIKEC, including all non-scheduled materials to do so. Interwiring of components for systems, such as waste disposers or systems, walk-in refrigeration units, ice making, fire suppression, and ventilation systems, shall be by GC; NIKEC. The KEC shall provide complete factory schematic wiring diagrams for any such systems and provide field assistance in interconnecting multiple components.
- E. The GC shall provide 3-wire, grounded electrical circuits and common wall and floor mounted outlets for single phase equipment. The GC shall hold floor receptacles to a maximum +6" AFF clear overhead dimension to avoid equipment base structures, unless specified otherwise. The KEC shall provide to the GC a NEMA schedule of all plugs and receptacles for equipment to coordinate cords and caps for plug-connected devices.
- F. The KEC shall install or mount, and wire all controls and heating elements shipped loose with equipment. GC shall make final connection of the completed equipment to the utility rough-ins providing all non-scheduled materials required. Final assemblies shall conform to all aspects of the project standards for quality and workmanship.
- G. All electrically heated equipment shall be provided with pilot lights, thermostats, and junction boxes for final connection. Heating elements and controls shall be accessible for connection and replacement, and shall be of such manufacture as to be readily available in the jobsite locality.
- H. All wiring shall be concealed and conducted in only rigid or armored conduit. Visible conduit shall be chrome plated, steel, or SS tubing. Conduit shall be secured at points of connection and intermediate points to prevent loosening with use of the equipment. Hollow steel structures may be used as conduit if wiring is provided in NEC armored cable, with proper fittings, grommets, and connectors. All wiring shall be accessible for replacement.
- I. The KEC shall furnish the initial switch on each motor-driven or heated appliance, and any other switch, relay, starter, or disconnect shall be by the GC.
- J. All equipment shall be new, of manufacturer's most current model and production, and furnished with all standard motors, timers, cut-outs, fuses, switches, and components.
- K. Wiring diagrams shall be applied to motor covers or other accessible locations for reference. Motors and appliance data plates shall be legible and located where visible and accessible.
- L. The KEC shall remove and repair or replace any device or assembly that exhibits excessive noise, vibration, wobble, or relay noise, static, or inconsistency that may indicate a possible manufacturing or assembly defect.

- M. All electrical components shall be UL Listed and all wiring shall meet NEC and applicable project standards. Enclosures, wiring, and controls shall be consistent with the use zones in which operation is intended, such as wet working or cleaning areas, explosive atmospheres, or corrosive chemical, grease, or food exposure areas. The finish and composition of any materials used shall be resistant to normal industry, heavy duty abrasion, impact, chemicals, and moisture, for the full warranty period.
- N. Any cover plate shall match the material and finish to which it is applied.
- O. All switches and controls shall be easily identified as to equipment controlled, and multiple switch assemblies shall have deeply engraved phenolic label nameplates permanently adhesive-applied adjacent thereto, for identification. Controls and calibrations shall be identified by molded, or abrasive or chemical-engraved area on the body metal of the equipment. The KEC shall submit a sample of the proposed identification system for Owner's approval.
- P. All fire suppression systems shall be provided with microswitches to be used by the GC to shut down the power supply or combustible fuels to cooking equipment located under the ventilators, to connect to a fire alert system, or to control fans, blowers, or dampers, per the A/E design and specifications. The GC shall mount and wire any electrical gas line solenoid valves and electrical remote fire system manual release stations.
- Q. Switches and controls shall be recessed or provided with a SS guard to prevent damage to bodies, knobs, stems, switches, lights, or labels, by carts or other traffic. Show locations on all shop drawings. All drop-in or slide-in mounted equipment components with loose controls shall be provided with NEC-Approved millwork or casework mounting bezels and wiring kits.
- R. Mounting and final connection of vendor-furnished equipment shall be by Vendor.

2.2 UTILITY SERVICE REQUIREMENTS - PLUMBING

- A. Water inlets shall be located above the positive water level in all areas. Wherever a submerged inlet can occur, the GC shall provide and mount an approved vacuum breaker, bleeder valve, or backflow preventer.
- B. All water or drain lines and fittings that are subject to freezing conditions shall be heat-traced and insulated.
- C. Wherever the work is visible, the GC shall use SS tubing or chromed piping and fittings, free of tool scars, exhibiting no more than two exposed pipe threads. Any damaged materials shall be replaced by the respective contractor.
- D. Waste drain lines from fabricated equipment shall be conducted to drains by the GC, from drain tailpieces and wastes, or common drain manifolds with accessible hand valves on fabricated equipment, provided by the KEC.

- E. All faucets, pre-rinses, and drain fittings shall be furnished by the KEC, with mounting and hook-up by the GC. Fixtures shall be manufacturer's or fabricator's shop standard where not specified or clarified by standard details; submit for approval by Owner. Fixtures delivered for installation which are not approved or are deemed unacceptable by the Owner shall be replaced with units of acceptable durability, features, and parts availability.
- F. Fixtures shall meet or exceed the standards of T & S Brass and Bronze Corp., Chicago Faucet Co., Standard-Keil Hardware Manufacturing Co., or Component Hardware Group. All fittings and components are subject to all provisions of the contractor's warranty.
- G. The KEC shall provide suitable, accessible pipe slots and chases through equipment for placement and conducting of utility services by the GC without cutting of the equipment. Any sitework performed shall be shop quality.
- H. Final connection and interconnection of all equipment and components not so specified, and provision of non-scheduled materials shall be by the GC; NIKEC. GC shall provide any conduit for the installation of beverage systems.
- I. All horizontal piping shall be kept at the highest level to facilitate cleaning. The GC shall extend utilities from rough-ins to points of connection after equipment is set in place. KEC shall seal equipment after final connection.
- J. The GC shall provide the first 15'-0" of drain lines for steamers of metal composition to withstand high-temperature water or condensate discharge of boilers or cabinets.
- K. All wall hung hand lavatories, soap and towel units, janitorial sinks, floor sinks, floor trench drains, and service bibbs shall be by GC, unless specified otherwise (verify item specifications).
- L. The GC shall not locate any floor sink or funnel floor drain in the footprint of any steamer or tight-connect the drain line of any steamer compartment, steam generator, or manifold drain.
- M. All gas-fired equipment shall be AGA-Approved and provided with 100% safety pilot lights. Any electric ignition devices or high-heat sensors shall be UL Listed and AGA-Approved.
- N. All mobile equipment shall be provided with quick-disconnects for gas-fired equipment that shall be UL Listed and AGA-Approved, of correct length, mounted and reinforced per manufacturer's directives. Devices shall be Hansen, Dormont, Greitzer, or approved equal.
- O. All steam-fired equipment shall be ASME-Approved where applicable, and provided with proper temperature/pressure relieving valves. Boilers or pressure vessels for operation at pressures above 40 PsiG shall be provided with certification of testing.
- P. A beverage system conduit shall be a continuous shaft, provided by the GC in a continuous run from source to stub out, using radius bends of not less than 12". Conduit material shall be PVC for non-rated spaces, and cast iron pipe (CIP), pneumatic tubing or EMT where rated plenums are traversed. Rated slabs may be penetrated using fire stop

devices or installation methods, with or without conduit. Short runs in non-rated spaces may be made without conduit.

- Q. The GC shall provide pull boxes or conduit/CIP fittings and plugs every 50'-0" of run, after two 90-degree elbows, and at each tee, or severe direction change. Provide with pull lines. Beverage system providers shall install all beverage (beer, soda, juice, glycol, chilled water) line bundles, and run all gas (CO2, nitrogen, compressed air) lines and wire all valves, soda guns, and beer towers and run all related drains to suitable drain fixtures.

2.3 UTILITY SERVICE - KITCHEN VENTILATION AND FIRE SUPPRESSION

- A. The GC shall provide and install all equipment and components to all exhaust and make-up air hoods and canopies, starting from the outlet/inlet collar to the point of discharge/inlet, including all fans, ducts, curbs, disconnects, starters, heaters, thermostats, cutting-in and welding. GC shall schedule all work.
- B. The KEC shall provide and hang each hood or canopy in place, providing all hanging materials, level, secure, and ready for final connection by the GC. Flue risers/duct extensions by the KEC shall be fully welded 18 gauge Type 304, #4 finish stainless steel extended to 6" above the ceiling line and provided with a 2" stand-off stainless steel trim collar.
- C. Indirect/direct flue risers for equipment not requiring mechanical exhaust fans shall be provided with an air-gap or draft induction connection where necessary for proper function. Vents or self-exhausting units shall be provided with a tight duct connection. Procurement Contractor shall verify requirements with specific manufacturers.
- D. Dryers or self-exhausting equipment shall be provided with an all-metallic, non-flexible, tight duct connection leading to the exterior of the building or approved duct space. Excessive duct runs or multiple elbows in ducts shall be avoided; verify with equipment manufacturers.
- E. The KEC shall provide all ventilator light fixtures mounted and pre-wired to top-mounted junction boxes for final connection or interconnection by the GC. Exposed conduit in canopies will be rejected. The KEC shall furnish each fixture with appropriate bulbs.
- F. Static pressures indicated are as measured at fixture collars and do not allow for added duct resistance.
- G. All ventilation assemblies shall conform to all current requirements of NFPA Bulletin 96, standards 13 or 17A where applicable; Uniform Mechanical Code, BOCA, and shall be UL Listed as grease extraction devices where applicable. All exhaust assemblies shall be fully welded, liquid tight, slope back to the fixture served. Condensate hoods shall have a rigid drain line to an open site drain.
- H. Ventilation assemblies furnished in sections shall not have interior bulkheads between sections in the exposed capture plenum.
- I. Fire suppression systems shall be factory-installed in all ventilators with ignition hazards, providing duct, plenum, and surface protection,

where required. Every system shall be certified to the State Fire Marshall's Office, Bureau of Insurance Services. KEC shall provide to the GC gas shut-off valves for installation on gas drops. GC shall extend service through the valve(s) to served equipment. KEC shall connect valve(s) to the fire suppression system to shut-off gas upon fire suppression system discharge. All exposed piping shall be chrome-plated, not sleeved or enameled.

- J. Where a water mist fire protection system is required, provide a Grinnell patented nozzle fire suppression system, UL-Listed category VNSY, with SS Control Cabinet, surface-mounted, pre-piped, containing all valves and fittings, solenoid valves, pressure gauge, pressure switch, battery back-up system, and status lights. Piping between the control cabinet and hood nozzles shall be by fire system installer. The fire suppression system shall include nozzles in the proper heat range for the appliances and areas protected. A basket type coarse line strainer shall be provided by the system installer in an easily accessible location on the inlet piping ahead of the control cabinet. The system shall be sized by the approved manufacturer, using a supply line providing up to the specified total nozzles, with a minimum pressure of 40 PsiG (175 PsiG maximum) at the control cabinet. Connection of a 120V 20A separately-fused service and wiring between the control cabinet terminal block, NO/NC microswitch, and shunt trip panel(s), hood fan and blower control panel, duct collar dampers, local or remote alarm systems, or building monitors shall be by the respective trade, not by the fire system installer, who shall provide technical assistance to the electrician.
- K. Activation of any fire protection system shall automatically shut off all required energy sources.

2.4 GENERAL AND UTILITY REQUIREMENTS - REFRIGERATION

- A. The KEC shall provide in all bids and performance of work the furnishing of complete refrigeration systems, capable of performing at the specified temperatures under heavy duty usage conditions, including but not limited to:

All compressors, mounting racks, pads, roof pans, weather covers, low-ambient controls, coils, vibration eliminators, oil separators, indicator sight glasses, service nipples, expansion valves, filters, thermostats, controls, line driers, timers, refrigeration grade 95/5 solder, piping runs with as few joints as possible, light fixtures, heated pressure relief ports, and assembly or erection of all components, ready for final electrical connection and interconnection of components by the GC.

- B. All compressors shall be furnished by the KEC with four-year extended full replacement warranties, and factory warranty, for a total of five years. All refrigerators and systems shall be provided with a one year, full parts and labor warranty, with 24-hour, call-in service agency.
- C. All refrigeration piping shall conform to ASRE Standard of the Board of Fire Underwriters, and all local codes.
- D. The KEC shall verify and communicate to the GC locations of all remote condensing units or fan coil units that require piping, glycol or condensing unit fluid cooling connections, and/or electrical service,

and requirements for interwiring of any heaters, controls, warning devices, or racks.

- E. KEC shall mount all fan coils, refrigerant piping, coil drain lines with appropriate heat trace tapes and insulation, thermostat and thermometer bulbs with shields, and mounting of interior light fixtures. GC shall provide and connect any required fluid cooling piping to and from condensing units, and all electrical final connections, interconnections between freezer or refrigerator condensing unit timers and controls to electric defrost coils, and wiring between junction boxes of light fixtures and switches of walk-in cabinets.
- F. In the absence of bidding information that confirms the relative placement of evaporators and condensing units, the KEC shall allow in its proposal the provision of refrigeration piping up to 200' horizontal and 20' vertical differential between system components, regardless of line or circuit routes.
- G. Without further specification, walk-in cooler/freezer cabinets shall be provided with safety door hardware, piston-action door closers, anti-sweat perimeter and threshold heaters, heated pressure relief ports, and exterior thermometers. Interior lighting shall be door panel type with shielded incandescent bulbs and pilot door switch. Provide one light fixture for every 100 SF of cabinet or part thereof, to be located per submittal.
- H. The KEC shall furnish a functioning refrigeration system to provide and maintain the following temperatures:
 - 1. Walk-in Freezer -10°F
 - 2. Walk-in Lo-Temp Freezer -25°F
 - 3. Walk-in Cooler +35°F
 - 4. Prepared Inventory Refrigerator +30°F
 - 5. Undercounter Refrigerator +38°F
 - 6. Undercounter Freezer - 0°F
 - 7. Reach-in Manufactured Refrigerator +35°F
 - 8. Reach-in Manufactured freezer - 0°F
 - 9. Salad Bar or Sandwich Unit +40°F
- I. After the GC has completed electrical connections in the walk-in coolers and freezers, the KEC shall fill the interior voids of junction boxes, conduits, and other panel penetrations with non-conductive expanding foam sealant insulation to completely block all air movement through all such spaces.
- J. The KEC shall verify refrigeration system sizing and assure adequate air movement or coolant provisions, drainage, and access for maintenance and repair. All built-in condensing units shall be mounted on slide-out supports.
- K. The KEC shall run, insulate, and heat trace (freezers only), all drain lines, using enameled, rigid copper pipe, forming traps/air gaps over accessible open site drains.
- L. The KEC shall erect all pre-fabricated walk-in cooler and freezer cabinets, install floor panels or insulation, and provide technical assistance to the GC for utility connections.

- M. Cooler/freezer floors of pre-fabricated cabinets shall be NSF-approved and provided with adhesive-applied non-slip aggregate coated strips, 2" wide on 6" centers, spanning each walk way, including any ramps. Where specified, floors for heavy traffic shall be capped with 1/8" diamond tread aluminum plate, over plywood-reinforced SS floor panels. Where cabinets are erected over insulated slabs provided by the GC, the GC shall install a floor surface as specified by the A/E; NIKEC. KEC shall verify and coordinate to deliver a level, flush threshold, regardless of floor system.
- N. Pre-fabricated cabinets shall be 4" foamed-in-place polyurethane insulated, with metal interior and exterior panel surfaces as specified. Structures shall include no wood. Panel seams shall be self-gasketing, and further sealed by the KEC to eliminate all air leaks. Doors shall be self-closing, and fully gasketed. Insulation values shall be (cured) U .0295 and R 34 for 4" panels. Flame spread rating shall be NTE 25 and smoke development NTE 500.
- O. General specifications for prefabricated walk-in panel and built-up refrigeration systems also apply to all factory and custom-fabricated refrigeration units.

2.5 MILLWORK

- A. All millwork items in the foodservice work zone area shall be fabricated and installed by the GC, who shall coordinate all work, field dimensions, and setting in of KEC-furnished items. The Owner and KEC shall approve all shop drawings.
- B. Millwork shall be fully laminated 3/4" thick, A/B exterior glue, softwood plywood. Dimension lumber framing is not acceptable. Drawer liners and backs shall be 5/8" kiln dried hardwood. All units shall have finished backs and shall be mounted without exposed fasteners.
- C. Plastic laminate shall be 1/16" thick, high-pressure phenolic resin with pattern selected by Owner. Only 1/16" horizontal grade shall be used where exposed to view or wear. All exposed surfaces shall be laminated, including shelf bottoms and ends. Unexposed surfaces may be laminated with a neutral color cabinet liner. Adhesives shall be non-flammable solvent contact cement. Fasteners, splines, and alignment pins shall be minimized and not visible.
- D. Fasteners used in field joints shall not be exposed, and be of non-corroding, metallic composition. All field joints shall be splined, drawn tight, and sealed with clear silicon rubber (GE 801 Hi-Heat Range). All plastic laminate patterns shall applied to run parallel to the longest dimension of the panel. All intersecting patterns shall be mitered. Glue lines shall be trimmed and cleaned. Edges shall be beveled, and overlapped to prevent seepage of liquids between laminates and backing material.
- E. All contractors shall cut all of their own utility routes through millwork, leaving no penetration burrs or splintering, and providing grommets. All top cutouts for installation of drop-in components shall be by the KEC. Cut-outs for removable components shall be self-edged to match the panel penetrated. Fabricate all units with scribe panels for an acceptable, close fit-up.

- F. KEC shall provide all NEC Millwork Approved, recessed control mounting bezels appropriate for the locations of the switches, thermostatic controls, and pilot lights of all foodservice equipment.
- G. Millwork drawings by the Architect or Consultant are for guide purposes. The Fabricator shall submit shop drawings for approval by the Owner.

2.6 MATERIALS

- A. Stainless steel (termed SS) shall be Type 304, 18-8, chrome-nickel, extra low non-magnetic, austenitic, corrosion-resisting, alloy steel. Sheets shall be all new material, flat, and free from all warps, buckles, and surface flaws and imperfections.
- B. Galvanized iron (GI) shall be ARMCO or USRM iron or an approved grade of copper-bearing steel, hot-dip coated in pure zinc. Sheets shall be fully galvanized, and free of warps, buckles, surface blemishes, runs, checks, or oxidation. Sprayed-on coatings will be rejected (see 2.8.B. Finishes).
- C. All metal shall be true US Standard gauge after working. Unless specifically approved in writing, no gauge less than 20 shall be incorporated into any fabrication:

10 GAUGE	0.1406"	16 GAUGE	0.0625"
12 GAUGE	0.1094"	18 GAUGE	0.0500"
14 GAUGE	0.0781"	20 GAUGE	0.0375"
- D. Metals and other material found to be not in compliance with specifications or manufacturer's details shall be rejected and removed from the jobsite and replaced by approved materials meeting the General Specifications.
- E. Structural steel shall consist of angles, channels, straps, bars or other shapes, galvanized, ductile in quality, and free of surface imperfections and corrosion.
- F. All tubing shall be seamless, true gauge, and uncrimped, whether used for structure, support, or conduit.
- G. Black iron (BI) or ferrous metal used in canopy ducting shall be minimum 16 GAUGE, fully welded at all joints and seams, and properly insulated as required by applicable code, and meet the requirements of NFPA Bulletin 96, current issue. Ductwork and insulation is NIKEC, except where noted.
- H. White metal (castings and components) shall consist of corrosion-resistant alloy containing not less than 30% nickel. All castings shall be rough ground, polished, and buffed to a bright lustre, free from all pits, burrs, or imperfections. Aluminum and plastic castings will be rejected.

2.7 FABRICATION

- A. Standard Details provided by the Consultant shall be followed closely in bidding and preparation of fabrication shop drawings. Detail plates commonly refer to other detail plates, and if the KEC discovers the absence of or conflict with any other detail plate, it shall

assume to correct or clarify any missing information before progressing with any of the work.

- B. All items of custom fabricated equipment shall be constructed in the same factory and shall be similar in construction details, materials, methods, and appearance to similar types of items so fabricated under this contract.
- C. Each item of fabricated equipment shall include all customary reinforcing, bracing, and welding with the proper number and spacing of uprights and cross members for strength, per Standard Details, Supplementary Details, or Custom Details. Where standard sheet sizes will permit, the tops of all tables, shelves, exterior panels of cabinet type fixtures, and all doors and drainboards shall be constructed of a single sheet of metal. Except where required to be removable, all flat surfaces shall be secured to vertical and horizontal bracing members by welding or other approved means to eliminate all buckle, warp, rattle, and wobble.
- D. Suitable pipe slots shall be provided on fabricated equipment, as required, to accommodate service and utility lines and mechanical connections. These slots shall be of adequate size and shall be neatly made with turned up edges all around to eliminate cutting or defacing of equipment on the job. Cabinet bases shall be provided with an inner panel duct at the ends or rear of the cabinet allowing adequate space to conceal vertical piping. Such work, when performed at the job site, shall be of the same quality as similar work performed in the shop.
- E. All exposed surfaces shall be free from bolt and screw heads. When bolts are required, they shall be machine thread of concealed type and be of similar composition as the metal to which they are applied. Where bolt or screw threads on the interior of fixtures are visible or may come into contact with hands or wiping cloths, they shall be capped with a stainless steel acorn nut and stainless steel lock washer.
- F. Where screw threads are not visible or readily accessible, they shall be assembled with stainless steel lock washers and nuts. Wherever bolts or screws are welded to the underside of trim or tops, the reverse side of the weld shall be finished uniformly with the adjoining surfaces. Depressions at these points shall not be acceptable.
- G. Rivets shall not be permitted in any location.
- H. All welding shall be the heliarc method with welding rod of the same composition as the sheets or parts welded. Welds shall be complete, strong, and ductile with excess metal ground off and joints finished smooth to matching adjoining surfaces. Welds shall be free of mechanical imperfections such as gas holes, pits, cracks, etc. and shall be continuously welded so that the fixtures shall appear as one piece construction. Butt welds made by spot solder and finished by grinding shall not be acceptable.
 - 1. Spot welds shall have a maximum spacing of 3". Tack welds shall be of at least 1/4" length of welding material at a maximum space of 4" from center to center. Weld spacing at the ends of the

channel battens shall not exceed 2" centers. All pan corners shall be fully welded.

2. In no case shall soldering be considered as a replacement for welding, nor shall any soldering operation be done where dependence is placed on stability and strength of the joint or the joint is exposed to foods or moisture.
 3. Fixtures shall be shop fabricated in one piece and shipped to the job completely assembled wherever possible. Equipment too large to transport or enter the building as one piece shall be constructed so that the field joints can be welded at the job site.
 4. All exposed joints shall be ground flush with adjoining material and finished to harmonize therewith. Whenever material has sunk or been depressed by welding operation, such depression shall be suitably hammered and peened flush with the adjoining surface and finished. The grain of rough grinding shall be removed by successive fine polishing operations.
 5. All unexposed welded joints on galvanized steel undershelves of tables or counters in stainless steel construction shall be suitably coated at the factory with an approved cold galvanizing coating.
 6. After galvanized steel members have been welded, all welds and areas where galvanizing has been damaged shall have a zinc dust coating applied in conformance with U.S. Government Military Specification Number MILP-26915.
- I. Butt joints and contact joints, wherever they occur, shall be drawn tight and secured and shall not require a filler. Wherever breaks occur, they shall be free of undue extrudence and shall not be flaky, scaly, or cracked. Where such breaks do not mar the uniform surface appearance of the material, all such marks shall be removed by suitable grinding, polishing, and finishing. Wherever sheared edges occur, they shall be free of burrs, fins, and irregular projections and shall be finished to obviate all danger of cutting or laceration.
- J. The grain of polishing shall run in the same direction on all horizontal and on all vertical surfaces of each item of fabricated equipment except in the case where the finish of the horizontal sections of each shall terminate in a mitered edge. Where sinks and adjacent drainboards are equipped with backsplashes, the grain of polishing shall be consistent in direction throughout the length of the backsplash and sink compartment.
- K. Component parts, whether fabricated by KEC or purchased for building into the fabricated equipment, shall conform to the following:
- Bolts, screws, nuts and washers shall be of steel with machine thread, except where brass or stainless steel is fastened, in which case they shall be of brass or stainless steel respectively. Where dissimilar metals are fastened, bolts, screws, nuts and washers shall be of the higher grade metal. The spacing and extent of bolts and screws shall be such as to ensure suitable fastening and prevent buckling of the metals fastened. Such fasteners shall be minimized in use and concealed wherever possible.

2.8 FINISHES (FINISHING)

- A. Stainless steel shall be polished and uniformly grained to a #4 commercial finish. Polishing grain shall run in the same direction on equipment, wherever possible, with the longer direction. All metal sheets and cutouts shall be deburred before working, and all equipment shall have no burrs after installation. Overground, hollow ground, or scored surfaces, seams, corners, or other features will be rejected.
- B. Exposed galvanized surfaces shall not be painted. Any areas where galvanizing has been lost or damaged in working shall be recoated with ARMO Zinc-Grip or Rust-Oleum 2185 zinc rich, self-priming, cold galvanizing coating. Remove all machine oils or foreign material before recoating or final painting if specified.
- C. All equipment bodies shall be free of debris, dust, grit, oil, wraps, burrs, spelter, burns, autographs, and all shop markings to be accepted.

2.9 WORKMANSHIP

- A. Each item of equipment shall be constructed in a workmanlike manner including all reinforcing, bracing, and welding or fastening, grinding, polishing, and final finishing. All work shall be of highest standards to the industry.
- B. Pipe slots and chases shall be provided where needed in all fabricated equipment for use by the GC in connecting utilities. Access shall be cut by KEC and all work shall be shop quality, ground, deburred, and restored.
- C. Exposed fasteners shall be minimized, used only when necessary and where approved, and shall only be type 300 SS, tight-fitting, oval head, machine thread screws or bolts, drilled and tapped, into metal of suitable gauge. Self-tapping or plated fasteners, open or aluminum rivets, or other light gauge fastening, or without proper backup support or fishplates, will be rejected.
- D. Knuckle joints will be accepted where approved, in writing, but minimized, drawn tight, fastened, silicone sealed, and NSF-approved.
- E. Solder, lead, Bondo, resin, or any other material except sound deadening or insulating, will be rejected.
- F. All equipment shall be sealed to permanently placed adjacent equipment and dissimilar construction. Provide and install such equipment using concealed "Z-clips" or stabilizing angle attachments whether the equipment is custom fabricated or manufacturer's standard models, and seal with clear silicone sealant. Patching of any nature will be rejected. The KEC shall provide and install equipment and assemblies with a minimum-tolerance, close, tight fit-up, per field conditions. Silicone sealed joints exceeding 1/4" at any point will be rejected. Trim is not an acceptable substitute for accuracy in sizing custom-fabricated equipment or assemblies.
- G. All SS work surfaces of all equipment shall be provided with sound-deadening complete fillet or coating with an NSF-approved mastic to a

minimum thickness not less than 1/8" as measured at any point.
Deadening tape alone is insufficient.

- H. All lenses used in fabrication shall be plate glass with SS or metal guarded or protected edges. No Lexan, acrylic plastic, or other such products shall be accepted, even if components of commercially-manufactured systems.

2.10 WELDING

- A. All welding shall join similar metals with rods of the same metal content. Welding shall be electric arc type with argon or inert gas shielding to prevent oxidation of the welds. All exposed welds shall be ground flat and regrained to match adjacent areas.
- B. Worked surfaces that are distorted shall be peened to the original level, ground, and regrained, maintaining true gauge.
- C. Joints of dissimilar metals shall be termed brazed and such joints shall be by a high-heat process using copper-bearing or brass composition rods in unexposed and non-food contact areas.
- D. Soldering and filleting will be rejected.
- E. Ductwork shall be fully welded 16 GA ferrous metal or 18 GA SS, by GC except where specified otherwise.

PART 3 - DIRECTIVES AND REQUIREMENTS

3.1 COORDINATION DIRECTIVES

- A. The KEC shall review all drawings pertaining to the project regarding condition and equipment to be furnished under this section, including access, construction, electrical, mechanical, plumbing, and control systems, and details as prepared by the Consultant and all other parties to the project. The KEC shall not order any equipment until it has obtained exact dimensions for all work. The cost of correcting an oversight or premature commencement of any work shall not be charged to the Owner. The KEC shall verify, furnish and install all equipment in accordance with the site conditions and all aspects of utilities roughed-in to the foodservice areas.
- B. The KEC shall not attach any nameplates of any nature to any equipment, except as may be provided on factory-made equipment by manufacturers. If inventory tags are made available to the KEC by the Owner for application, the KEC shall so tag equipment in places requested by the Owner, and an accurate record of serial and/or model numbers matching the equipment shall be provided to the Owner, coordinated with the purchase specifications and schedule of values.
- C. The KEC shall attend construction and progress meetings and conferences on a regular basis when requested to so do, and maintain a correspondence record of all matters and contacts pertaining to the project, and tender such data and documents available to the Owner upon request.
- D. The KEC shall make the GC aware of the exact scope of work stated herein and proposed by the KEC in its bid, and fully list any and all exceptions to the Bidding Documents in its tender. Failure to submit

in writing at the time of bidding any exceptions to the bidding documents will block any remedy at any time after acceptance of the Kitchen Equipment Contract.

- E. The KEC shall establish and confirm the rigging, hoisting, or access schedule with the GC, for any components too large to fit through the available doors, corridors, angled passageways, elevators, landings, or stairwells.
- F. The GC and KEC shall coordinate, work out, agree to, and execute all work required to complete the section work, without omission of any activities necessary for timely, accurate, and complete performance.
- G. The GC shall be ultimately responsible for the performance of the KEC and for the execution all work specified under Section 114000 - Foodservice Equipment.

3.2 SPECIAL DIRECTIVES

- A. Channel bases for equipment shall be set in place on the structural slab for imbedded installations, or on the finished floor for equipment setting by the KEC, then sealed if the face of the base is to be the final finish or if a finish is specified to be applied thereto.
- B. Pigmented sealant will be rejected and all metals and finishes shall be cleaned with solvent before any sealants are applied to assure bonding. Extruded sealant shall be cut away and cleaned with solvent. Sealing shall be done after equipment has been connected and started up. Installation and silicone bonds are subject to all tenets of the warranty.
- C. Mounting and final connection of vendor-furnished equipment is NIKEC.
- D. Unless specified otherwise, GC shall furr-in hoods, coolers, or chases to the ceiling.
- E. KEC shall coordinate with other trades on the site to assure that equipment, finishes, aluminum, stainless steel, decorative finishes, and electrical components are not damaged by acid or harsh chemical floor or tile treatment.

PART 4 - ITEM SPECIFICATIONS

4.1 INCLUSIVE TERMS

- A. All items of equipment listed in the contract documents shall be furnished in strict accordance therewith, which shall indicate options and accessories, in addition to all standard parts, fittings, inserts, and features, that are commonly furnished by the manufacturer with each item without need of mention.
- B. The KEC shall provide all parts, components, or accessories normally required for equipment to function properly or be operated by the User.
- C. All references expressed on Standard Details, Special Details, Elevations, or Item Specifications shall be followed by the KEC.

4.2 EXCLUSIVE TERMS

- A. Features, finishes, accessories, or parts standardly provided with items of equipment may be deleted by the KEC only if expressly deducted, deleted, or excluded in the item specifications.
- B. The KEC shall not provide pots, pans, hand tools, can openers, utensils, loose cutting boards, s/s steam table or sandwich unit inserts, salad bar vessels, bowls, covers, dish racks, or flatware containers/cylinders, except where directed to do so in the item specifications.
- C. The KEC shall not provide menu, poster, pricing, or directive system components, removable floor mats, floor maintenance equipment, hoses, garbage cans, or utility carts, except where directed to do so in the item specifications.

4.3 GENERAL TERMS

- A. All work shall conform to the General Conditions and Specifications of the Contract.
- B. The bidding documents and the General Conditions and Specifications of the Contract, are job-specific. The Owner shall not consider the GC/KEC's failure to read, question, or understand Parts 1 through 4 and any other bidding document as a defense or mitigating justification for non-compliance with the contract documents.
- C. Language, terms, and references used in the contract documents shall be interpreted as being construed in jargon commonly used in the foodservice industry. It is incumbent on the bidder/KEC to base its work on verified project data. Any information referred or inferred in the documents, but as may be missing, unclear or not fully understood by the bidder, must be questioned, qualified, or challenged in writing prior to the bid agreement, or the KEC shall be bound by the interpretation of the partial information by the Owner.

4.4 KITCHEN EQUIPMENT

- A. The following item specifications are only a part of the Section 114000 - Foodservice Equipment bidding documents, and each proposal shall incorporate all parts of the whole of the bidding documents. No other agreements, understandings, or conditions are imposed or are in effect regarding the obligations of any party to the resultant contract between the Owner and any Offeror.
- B. GC/Foodservice equipment provider shall review the architectural finish schedules, elevations, and plans, to determine the nature, manufacturer, color, and surface style of all finishes on Foodservice Equipment.

ITEM	01	Exhaust Hood (Group) Control Panel	QTY	Lot
MANUFACTURER	Generic			
MODEL	Generic			
FEATURES	- Relocate control panel.			

ITEM	02	Refrigerated Equipment Base	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	03	Char Broiler	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	04	Griddle	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	05	Range with Oven	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	05.1	Salamander (Broiler)	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	06	Spare Number	QTY	
ITEM	07	Convection/Microwave Oven	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	08	Juice Dispenser	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing. - Relocate where shown on plan.		
ITEM	09	Prep Table	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	10	Overshelves	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		

ITEM	10.1	Heat Lamps	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	11	Data Printers	QTY	3
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	12	Conveyor Toaster	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing.		
		- Relocate where shown on plan.		
ITEM	13	Carving Station	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	14	Mobile Base Warmer	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	15	Hot Food Tables	QTY	2
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	16	Refrigerated Assembly Table	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	17	Work Table	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	18	Induction Base Heater	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		

ITEM	19	Tabletop Convection Plate Heater	QTY	2
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	20	Dome Cover Caddy	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	21	Base Caddy	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Mobile - no utilities required.		
ITEM	22	Tray Dispensers	QTY	3
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Mobile - no utilities required.		
ITEM	23	Starter Station	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Mobile - no utilities required.		
ITEM	24	Flatware Caddy	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Mobile - no utilities required.		
ITEM	25	Spare Number	QTY	
ITEM	26	Ice Cream Cup Cabinet	QTY	1
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing in place.		
ITEM	27	Tray Delivery Carts	QTY	6
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Mobile - no utilities required.		
ITEM	28	Soiled Ware Carts	QTY	10
	MANUFACTURER	Generic		
	MODEL	Generic		
	FEATURES	- Existing - no utilities required.		

ITEM	29	Beverae Station	QTY	1
MANUFACTURER	Generic			
MODEL	Generic			
FEATURES	<ul style="list-style-type: none"> - Unit existing; relocate where shown on plan. - Add drip tray, draining to floor drain. - Refer to Standard Detail 1.16. 			
ITEM	30	Coffee Brewer	QTY	1
MANUFACTURER	Generic			
MODEL	Generic			
FEATURES	<ul style="list-style-type: none"> - Existing, relocate where shown on plan. 			
ITEM	31	Air Curtain Refrigerator	QTY	3
MANUFACTURER	Generic			
MODEL	Generic			
FEATURES	<ul style="list-style-type: none"> - (2) units existing in place. - (1) new unit to match existing units in manufacturer, model number, and all options. 			
ITEM	32	Juice System and Cart	QTY	1
MANUFACTURER	Generic			
MODEL	Generic			
FEATURES	<ul style="list-style-type: none"> - Item by Vendor. - Existing in place. 			
ITEM	33	Countertop Freezer	QTY	1
MANUFACTURER	Summit			
MODEL	SCFU386			
FEATURES	<ul style="list-style-type: none"> - Manufacturer's standard unit. 			
ITEM	34-36	Spare Numbers	QTY	
ITEM	37	Countertop Steamer	QTY	1
MANUFACTURER	EmberGlo			
MODEL	ES5PBS			
FEATURES	<ul style="list-style-type: none"> - Manufacturer's standard unit. 			
ITEM	38	Table	QTY	1
MANUFACTURER	Eagle Group			
MODEL	T2448STE			
FEATURES	<ul style="list-style-type: none"> - Sound deaden top per General Specifications; tacky tape is not acceptable. 			
ITEM	39	Reach-In Refrigerators	QTY	2
MANUFACTURER	Generic			
MODEL	Generic			
FEATURES	<ul style="list-style-type: none"> - Existing in place. 			
ITEM	40+	Spare Numbers	QTY	

IMPROVE SPD/N&FS KITCHEN EFFICIENCY
100% CONSTRUCTION DOCUMENTS SUBMISSION
FOODSERVICE EQUIPMENT

VAMC BALTIMORE, MD
JUNE 8, 2016
11 40 00-32

SECTION 11 70 00
MISCELLANEOUS MEDICAL EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTIONS

- A. This section specifies submittal, coordination, and installation requirements miscellaneous medical equipment, accessories, and appliances shown on the Equipment Schedule but not specified elsewhere.
- B. Owner furnished equipment, whether new or relocated, will be installed by the Owner's separate contractor. The General Contractor shall work closely with the Owner and the Owner's separate contractor to coordinate delivery, rough-in, and access to the site of the work.

1.2 DEFINITIONS

- A. The definitions below apply to this Section of the specifications and this project only.
 - 1. Accessories: Toilet accessories and wall/floor/door protection items.
 - 2. Appliances: Residential type refrigerators, freezers, microwaves, dishwashers, cooktops or ovens
 - 3. Automated Endoscopic Re-Processor (AER): Automated washing unit that uses water and EPA-approved high level disinfectants to clean and high level disinfect immiscible, flexible endoscopes.
 - 4. Cart Washer: An automated washing unit that uses high-temperature water and detergent to clean and high-level disinfect carts and equipment.
 - 5. Detergent Dispensing System: A mechanical system that dispenses measured doses of detergent or other chemicals directly to washer disinfectors and cart washers.
 - 6. Endoscope Drying Cabinet: Freestanding cabinet used to dry endoscopes with forced, filtered air within the cabinet, as well as through the channels of the scopes.
 - 7. Equipment Drying Cabinet: Freestanding cabinet used to dry equipment with forced, filtered air and variable temperature settings. There are single door and pass-thru units available.
 - 8. Foodservice Equipment: Equipment used for preparation or distribution of food or for cleaning and storing foodservice equipment, dishes, and utensils.

9. Medical Equipment: Equipment used for cleaning, washing, processing, sterilizing, packaging, storing, medical and surgical devices and the equipment that is used to transport and store those devices. Medical equipment may be anchored to the floor or wall and may have utility connections including steam and medical gas.
10. Steam Sterilizer: A machine used to sterilize instruments and equipment by subjecting them to high-pressure steam up to 275°F. Sterilizers are available in both cart-loading and floor-loading models. They can be either freestanding or recessed, with single or double doors (pass-thru). Steam sterilizers are also known as autoclaves.
11. Ultrasonic Cleaner: A mechanical system that uses sound waves, water and detergent to loosen soil from instruments. Both countertop and floor units are available.
12. Washer/Disinfector: An automated washing unit that uses high-temperature water and detergent to clean and high-level disinfect instruments and trays.
 1. Cube Model - Single chamber washer/disinfector.
 2. Tunnel Model - Multiple chamber washer/disinfector.
13. Water Treatment System: A mechanical system for use with steam sterilizers, washer/disinfectors and cart washers, that decreases the contaminants in the municipal water to reduce boiler scaling and instrument spotting.

1.3 RELATED WORK

- A. DIVISION 22 - PLUMBING: Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING; Section 22 05 23, GENERAL DUTY VALVES FOR PLUMBING PIPING; Section 22 07 11, PLUMBING INSULATION; Section 22 11 0, FACILITY WATER DISTRIBUTION; Section 22 40 00, PLUMBING FIXTURES; Section 22 62 00, VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES; and Section 22 63 00, GAS SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES.
- B. DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING: Section 23 05 10, COMMON WORK RESULTS FOR BOILER PLANT AND STEAM GENERATION; Section 23 05 11, COMMON WORK RESULTS FOR HVAC; Section 23 05 41, NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT; Section 23 05 93, TESTING, ADJUSTING, AND BALANCING FOR HVAC; Section 23 09 23, DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC: Remote monitoring of the Steam Sterilizers.

C. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: Electrical Connections.

1.4 PERFORMANCE REQUIREMENTS

- A. Contractor furnished equipment shall have built-in monitoring for timed cycles, and control devices for temperature and pressure. Equipment shall have a printer, either integrated or remote, for recording cycle time, temperature, and pressure.
- B. Manufacturer safeguards must be provided with the equipment to protect the operator from harm during normal operation of the equipment.
- C. As needed in the application, provide a means of preventing accidental tampering with cycle times and parameters, via electric or physical safeguards.
- D. Provide water use reduction cycles and features where available. For instance, equipment utilizing steam should scavenge steam instead of wasting cold water to condition hot water/steam prior to entering drains.
- E. Provide energy use reduction cycles and features where available.
- F. ASTM A 167 for stainless steel, alloy 304.
- G. ASTM E 84 method of test for burning characteristics of building materials.
- H. ASTM C 209 testing for percent of water absorption by volume.
- I. ASTM C 177 testing for thermal conductivity.

1.5 QUALITY CONTROL

- A. Mechanical, electrical, and associated systems shall be safe, reliable, efficient, durable, easily and safely operable, maintainable, and accessible. Such equipment shall be appropriately protected from failures due to moist environments, as appropriate to use.
- B. Standard Products: Material and equipment shall be the standard products of the selected manufacturer, and they should be regularly engaged in the manufacture of such products for at least 3 years. The design, model and size of each item shall have been in satisfactory and efficient operation in a similar installation environment (e.g. laboratory setting, or an animal facility) on at least three installations for approximately three years. However, digital electronics devices, software and systems such as controls, instruments, computer work stations, shall be the current generation of technology and basic design at the time of purchase, which has a proven satisfactory service record of at least three years.

- C. All items furnished shall be free from defects that would adversely affect the performance, maintainability and appearance of individual components and overall assembly.
- D. Multiple Units: When two or more units of materials or equipment of the same type or class are required, these units shall be products of one manufacturer.
- E. Nameplates: Nameplate bearing manufacturer's name or identifiable trademark shall be securely affixed in a conspicuous place on equipment, or name or trademark cast integrally with equipment, stamped or otherwise permanently marked on each item of equipment.
- F. Installer Qualifications: For sterilizers, installer is authorized representative of sterilizer manufacturer and employs factory-trained personnel to install sterilizers. For other equipment, installer shall be licensed as may be necessary by regulatory organizations. For all equipment, installer shall meet the qualifications of ANSI/ASSE Standard 6010.
- G. Steam Sterilizers: Comply with the most current version of ANSI/AAMI ST8.

1.6 SUBMITTALS

- A. Submit in accordance with specification Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data: Include the following:
 - 1. Illustrations and descriptions of laboratory washing, cleaning, filling, drying, sterilizing, and sanitizing equipment.
 - 2. Optional auxiliary equipment and controls.
 - 3. Catalog or model numbers for each component.
 - 4. Accessories and optional features which enhance equipment performance or operation.
 - 5. Utility requirements.
 - 6. Control wiring diagrams.
 - 7. Installation Manuals
- C. Shop Drawings: Show details of fabrication, installation, rough-ins for Contractor-furnished and Owner-furnished equipment, adjoining construction, coordination with mechanical and electrical work, anchorage, and other work required for complete installation.
- D. Field Test Reports: Provide certification reports from accredited service technicians or installers.

- E. Operating Instructions: Comply with requirements in specification Section 01 00 00, GENERAL REQUIREMENTS.
- F. As is appropriate (e.g. animal rack and cage washers), a statement regarding proper placement, configuration, and installation of exhaust ductwork to prevent condensation from cooling moist air from entering back into equipment.

1.7 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American National Standards Institute/Association for the Advancement of Medical Instrumentation (ANSI/AAMI):
ST8-2008.....Hospital Steam Sterilizer, 3rd edition

1.8 WARRANTY

- A. Comply with FAR clause 52.246-21 in all areas except for warranty period, which shall be no less than three years for all equipment.

1.9 GUARANTEE PERIOD SERVICES

- A. Engage factory-trained authorized manufacturers' representatives to perform maintenance service on equipment during guarantee period.
 - 1. Maintenance Service:
 - a. Inspection of equipment at regularly scheduled intervals as defined by the manufacturer.
 - b. Testing, cleaning, adjusting, repairing, and furnishing and installing replacement components as required to maintain equipment in reliable working condition.
 - 2. Maintenance service does not include cleaning, adjusting, repairing, furnishing and installing replacement components required because of improper use.

PART 2 - PRODUCTS

2.1 EQUIPMENT - REFER TO EQUIPMENT SCHEDULE ON DRAWINGS

- A. Owner Furnished Equipment: Owner furnished equipment will be as shown on the equipment schedule.
- B. Contractor Furnished Equipment: Manufacturers and model numbers shown on the equipment schedule are basis of design. Contractor shall provide equipment shown or an equivalent piece of equipment that meets all of the specifications, functional characteristics, appearance, and other salient features of the product listed.

2.2 STERILIZER-ENCLOSURE PANELS (MODULAR WALLS)

A. Design and custom fabricate to conceal from view body, wiring, piping, and other appurtenances, and to confine water vapor, gases, and heat in the enclosed area:

1. Size panels and support members to extend from floor to finished ceiling. Design partition system to accommodate a variety of panel widths to fill in between equipment, adjacent walls, floors, and ceilings.
2. Stainless steel non-progressive, demountable partition systems for concealing body, piping, wiring, and other equipment appurtenances related to infection control equipment. The partitions also provide for confining excessive equipment heat and vapor to the enclosure area.
3. Finished wall appearance shall compliment the equipment and adjacent structural surfaces.
4. The system panels shall not require studs for assembly and each panel shall be independently removable. Openings shall be coordinated with equipment shop drawings for panel openings.
5. Partition panels, vents, and doors shall be of the non-progressive type, capable of being removed and/or relocated without disturbing other panels.

B. Panels: Fabricate panels of not less than 1.27 mm (0.050-inch) thick stainless steel, with corners welded. Insulate with 13 mm (1/2-inch) moisture-resistant, sound-deadening, material bonded to surface of back side.

1. All insulation used on panels shall be certified as having a flame spread of 25 or less and a smoke developed rating of 50 or less per ASTM E 84. The standard insulation thickness shall be 1/2 inch (13 mm). Insulation water absorption shall be 0.2 percent or less by volume per ASTM C 209. Thermal conductivity of the insulation shall be 0.27 Btu in./h ft² degrees F (W/m K), or less. Apply insulation to the backside of the panel.
2. Insulation adhesive shall be certified as having a flame spread of 25 or less and a smoke developed rating of 50 or less per ASTM E 84. The system shall be designed as a formed skin panel with flush #4 brush metal on the finished side and insulation and joints restricted to the back service side only. Formed surface skins shall be optionally available for the service side of the system, offering

an appearance equal to the #4 brush finished side, and with no fasteners showing. Panel-to-panel fastening hardware shall be of a type which require no tools for operation and are not visible from the finished front of the system.

C. Support Columns: Fabricate of not less than 1.52 mm (0.060 inch) thick, stainless-steel tubing, not less than 38 mm (1-1/2 inches) square, with mounting plates welded to top and bottom.

1. Location: At each side of doors and at each vertical panel extending from floor to finished ceiling.

D. Louvers: Stainless steel, located in panels and with minimum clear opening area equal to 76 sq. mm/mm (3 sq. in./in.) as indicated in the documents.

E. Canopies: Stainless steel, located as indicated in the documents.

1. Securely attach canopies to modular wall panels to produce a tight fit.

2. Join canopies, front and side panels by welding. Fabricate of same material and finish as modular wall panels.

3. Apply moisture- and corrosion-resistant coating on interior surfaces.

4. Type: Sloping.

5. Overhang: Overhang sterilizer doors a minimum of 305 mm (12 inches).

6. Coordination with Air-Intake: Include air-intake opening in modular wall panel within canopy, sized to meet airflow requirements indicated on drawings.

F. Louvered Doors: Fabricated from not less than 9.65 mm (0.38 inch) thick stainless steel; double pan construction; with internal stiffeners and sound-deadening insulation.

1. Equip door with heavy-duty hinges and locks.

2. Center louvers and locate them within 152 mm (6 inches) of bottom of doors.

3. Size louvers to produce clear opening of not less than 25 sq. mm/mm (1 sq. inch/inch) of sterilizer or aerator width.

4. Equip with spring-hinged, non-louvered, access doors at wall openings above rack return conveyor.

G. Scribe Strips: Stainless-steel closures to fit assembly to wall or ceiling.

1. Maximum Width: 102 mm (4 inches). Use panels to close spaces greater than 102 mm (4 inches).

- H. Finish: No. 4 finish (bright, directional polish) complying with NAAMM's "Metal Finishes Manual for Architectural and Metal Products." Finish after welding.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install units in accordance with manufacturer's documented instructions.
- B. Coordinate installation with related mechanical, plumbing and electrical work. Provide cutouts and openings for mechanical, plumbing and electrical work as indicated or as required by trades involved.

3.2 TESTING AND CERTIFICATIONS

- A. Field test installed equipment after water and steam systems are pressurized for proper operation.
 - 1. Operate each unit for six hours through repeated full cycles. During and after testing, there shall be no evidence of leaks, overheating, electrical failure, or other symptoms of failure.
 - 2. For units that fail testing, make adjustments and corrections to installation, or replace equipment, and repeat tests until equipment complies with requirements.
- B. Where applicable, installer shall provide certificate of compliance and/or documented cycle records validating the activation and ready-for-use status of the equipment.

3.3 PROTECTING AND CLEANING

- A. Protect equipment from dirt, water, and chemical or mechanical injury during storage, installation, and throughout the duration of the construction period.
- B. At the completion of work, clean equipment as required to produce ready-for-use condition.

3.4 DEMONSTRATION AND TRAINING:

- A. Instruct personnel and transmit operating instructions in accordance with requirements in specification Section 01 00 00, GENERAL REQUIREMENTS.
- B. Training must be provided by the manufacturer, or manufacturer certified instructors.
- C. Orientation and Training on all equipment to be provided to a minimum of two owner designated personnel per equipment item/system and shall certify their operational competency.

3.5 COMMISSIONING

- A. Provide commissioning documentation in accordance with the requirements of Section 23 08 00 - COMMISSIONING OF HVAC SYSTEMS for all inspection, start up, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.
- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to Section 23 08 00 - COMMISSIONING OF HVAC SYSTEMS and related sections for contractor responsibilities for system commissioning.

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UPGRADE AND RENOVATE OPERATING ROOM SUITE
100% CONSTRUCTION DOCUMENTS SUBMISSION
MISCELLANEOUS MEDICAL EQUIPMENT

VAMC BALTIMORE
JUNE 8, 2016
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