

Window Replacement Buildings 1 and 17

Project No. 595-13-111

At

**Veterans Affairs Medical Center
Lebanon, Pennsylvania**



Submitted To:

**U.S. Department of Veterans Affairs
Veterans Affairs Medical Center
1700 S. Lincoln Avenue
Lebanon, Pennsylvania**

Submitted by:

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SECTION 00 01 15
LIST OF DRAWING SHEETS
The Drawings listed below accompanying this
Specification form a part of the Contract.

DRAWING INDEX

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3	01-AS-100	BUILDING 1 - USE DIAGRAMS
4	01-AS-101	BUILDING 1 - GROUND FLOOR PLAN
5	01-AS-102	BUILDING 1 - FIRST FLOOR PLAN
6	01-AS-103	BUILDING 1- SECOND FLOOR PLAN
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24	17-AS-121	BUILDING 17- FIFTH FLOOR PLAN
25	17-AS-122	BUILDING 17- WEST AND NORTH EXTERIOR ELEVATIONS
26	17-AS-123	BUILDING 17- EAST AND SOUTH EXTERIOR ELEVATIONS
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28	17-AS-125	BUILDING 17 - WINDOW ELEVATIONS
29	17-AS-126	BUILDING 17 - WINDOW DETAILS #1
30	17-AS-127	BUILDING 17 - WINDOW DETAILS #2
31	01/17-AS-128	PROJECT PHASING

SCHEDULE OF MATERIAL SUBMITTALS													PROJECT NUMBER 542-06-107		PROJECT TITLE: REPAIR CONCRETE WALKWAYS			SOLICITATION / CONTRACT NO.			
(To be completed by Project Engineer)													(To be completed by Contract Administrator)								
LINE NUMBER	ITEM OR DESCRIPTION OF ITEM, CONTRACT REFERENCE, TYPE OF SUBMITTAL	NUMBER OF COPIES REQUIRED										REQUIRED SUBMISSION DATE	DATE RECEIVED IN CONTRACTING	DATE TO AE AND ENGINEERING	RETURN SUSPENSE DATE	SUBMITTAL NUMBERS	DATE CONTRACTOR NOTIFIED		CONTRACTOR RESUBMITTAL	FINAL APPROVAL	REMARKS
		CERTIFICATION OF COMPLIANCE	SHOP DRAWINGS	SAMPLES	COLOR SELECTION	MANUFACTURER'S RECOMMENDATION	MANUFACTURER'S WARRANTY	CATALOG DATA	OPERATING INSTRUCTIONS	SCHEDULES, LISTINGS, REPORTS, PLANS	TECHNICAL DATA						TEST REPORTS	FIELD REPORTS			
		1	Small Business Subcontracting Plan; Section 00-72-00; 1.15													3			14 days prior to work		
2	Construction Security Plan Section 01-00-00; 1.4									3			14 days prior to work								
3	Fire Safety Plan, Section 01-00-00; 1.5.B									3			14 days prior to work								
4	As-Built Drawings, Section 01-00-00; 1.15	2											14 days prior to work								
5	Photographs, Section 01-00-00; 1.31										3		14 days prior to work								
6	NVLAP Lab Certification, Section 01-45-09; 1.3	3											14 days prior to work								
7	Earthwork Field Density Tests, Section 01-45-09; 3.1									3			14 days prior to work								
8	Asphalt aggregate maximum density at optimum moisture content, Section 01-45-09; 3.4										3		14 days prior to work								
9	Earthwork Field Density Tests, Section 01-45-09; 3.4.A										3		14 days prior to work								
10	Asphalt Temperature Tests, Section 01-45-09; 3.B.2										3		14 days prior to work								
11	Concrete Certification, Section 01-45-09; 3.6.5	3											14 days prior to work								
12	Concrete Delivery Tickets, Section 01-45-09; 3.6.B	3											14 days prior to work								
13	Concrete Slump Tests, Section 01-45-09; 3.6.B										3		14 days prior to work								
14	Concrete Air Content, Section 01-45-09; 3.6.B										3		14 days prior to work								
15	Concrete Compression Tests, Section 01-45-09; 3.6.C										3		14 days prior to work								
16	Steel Reinforcing, Section 01-45-09; 3.9									3			14 days prior to work								
17	Environmental Protection Plan, 01-57-19; EP-4									3			14 days prior to work								
18	Construction Debris Report, 01-74-19; 1.7									3			14 days prior to work								
19	Earthwork Crushed Stone/Select Fill, 31-20-11; 1.5									3			14 days prior to work								
20	Compaction Methods, 31-20-11; 1.5									3			14 days prior to work								
21	Seed Mix, 31-20-11; 1.5									3			14 days prior to work								
22	Fertilizer, 31-20-11; 1.5									3			14 days prior to work								
23	Fill Test Results, 31-20-11; 1.5									3			14 days prior to work								
24	Expansion Joint Filler, 32-05-23, 1.6	3								3			14 days prior to work								
25	Sealing Compund, 32-05-23, 1.6	3								3			14 days prior to work								
26	Reinforcement, 32-05-23, 1.6	3								3			14 days prior to work								
27	Curing Materials, 32-05-23, 1.6	3								3			14 days prior to work								
28	Job Mix Formula, 32-05-23, 1.6.C.1												14 days prior to work								

[illegible]

20	1.3 B		5										30 days prior to work							
	Finish Carpentry 06-20-00																			
21	1.3B		5										30 days prior to work							
22	1.3C			5									30 days prior to work							
23	1.3D	5											30 days prior to work							
24	1.3E							5					30 days prior to work							
25	1.3F							5					30 days prior to work							
	Joint Sealants 07-92-00																			
26	1.4B								5				30 days prior to work							
27	1.4C			5									30 days prior to work							
28	1.4D							5					30 days prior to work							
	Aluminum Windows 08-51-13																			
29	1.6B		5										30 days prior to work							
30	1.6C							5					30 days prior to work							
31	1.6D	5											30 days prior to work							
32	1.6E								5				30 days prior to work							
33	1.6F			5									30 days prior to work							
	Detention Window Screens 08-56-66																			
34	1.4B			5									30 days prior to work							
35	1.4C		5										30 days prior to work							
36	1.4D	5											30 days prior to work							
37	1.4E							5					30 days prior to work							
	Glazing 08 80 00																			
38	1.5B	5											30 days prior to work							
39	1.5C							5					30 days prior to work							
40	1.5D							5					30 days prior to work							
41	1.5E			5									30 days prior to work							
42	1.5F								5				30 days prior to work							
	Gypsum Plastering 09-23-00																			
43	1.4B		5										30 days prior to work							
44	1.4C							5					30 days prior to work							
45	1.4D	5											30 days prior to work							
46	1.4E			5									30 days prior to work							
	Gypsum Board 09-29-00																			
47	1.3B							5					30 days prior to work							
48	1.3C		5										30 days prior to work							
49	1.3D											5	30 days prior to work							
	Ceramic/Porcelain Tiling 09-30-13																			
50	1.3B			5									30 days prior to work							
51	1.3C							5					30 days prior to work							
52	1.3D	5											30 days prior to work							
	Acoustical Ceilings 09-51-00																			
53	1.3B			5									30 days prior to work							
54	1.3C							5					30 days prior to work							
55	1.3D	5											30 days prior to work							
	Vinyl-Coated Fabric Wall Coverings 09-72-16																			
56	1.3B			5									30 days prior to work							
57	1.3C	5											30 days prior to work							
58	1.3D							5					30 days prior to work							
	Painting 09-91-00																			
59	1.2B							5					30 days prior to work							
	Chain Link Fences and Gates 32-31-13																			
60	1.4A.1							5					30 days prior to work							

61	1.4A.2	5											30 days prior to work								
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Schedule of Material Submittals Template, Feb 05 (SAF/AQCP)

SECTION 01 00 00
GENERAL REQUIREMENTS

1.1 GENERAL INTENTION

- A. Contractor shall completely prepare site for building operations, including removal and replacement of existing windows in Building 1 and Building 17 as shown on drawings, and furnish labor and materials and perform work for Window Replacement Buildings 1 and 17 as required by drawings and specifications.
- B. A site visit will be held on the date and time specified in the solicitation, see FAR 52.236-27 (SITE VISIT, CONSTRUCTION) in "Instructions, Conditions and Other Statements to Bidders/Offerors".
- C. Offices of DCS Infrastructure, LLC, 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 a OSHA designated "competent person" (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present.
- F. Training:
 - 1. All employees of general contractor or subcontractors shall have the 10-hour or 30-hour OSHA Construction Safety course.
 - 2. Submit training records of all such employees for approval before the start of work.
- G. [VHA Directive 2011-36](#), Safety and Health during Construction, dated 9/22/2011 in its entirety is made a part of this section.

1.2 STATEMENT OF BID ITEM(S)

- A. CONTRACT LINE ITEM (CLIN) 0001, BASE BID, GENERAL CONSTRUCTION: Work includes general construction, removal and replacement of windows in Building 1 and Building 17 to include repairing all finishes damaged in the process in VA Medical Center, Lebanon, PA.

Base Bid

Building 1 and Building 17.

Bid deduct #1

Omit all work on Building 17.

Bid deduct #2

Omit all work on Building 1.

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

- A. AFTER AWARD OF CONTRACT, (3) sets of specifications and drawings will be furnished by COR.
- B. Additional sets of drawings may be made by the Contractor, at Contractor's expense, from electronic files furnished by Issuing Office.

1.4 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

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

B. Security Procedures:

- 1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
- 2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 business days notice to the Contracting Officer so that security and 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 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. Document Control:

- 1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of "sensitive information".

2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
3. All 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.

D. 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.

1.5 FIRE SAFETY

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

1. American Society for Testing and Materials (ASTM):
E84-2009.....Surface Burning Characteristics of Building
Materials
2. National Fire Protection Association (NFPA):
10-2010.....Standard for Portable Fire Extinguishers
30-2008.....Flammable and Combustible Liquids Code
51B-2009.....Standard for Fire Prevention During Welding,
Cutting and Other Hot Work
70-2011.....National Electrical Code
101-2012.....Life Safety Code
241-2009.....Standard for Safeguarding Construction,
Alteration, and Demolition Operations
3. Occupational Safety and Health Administration (OSHA):
29 CFR 1926.....Safety and Health Regulations for Construction
4. [VHA Directive 2005-007](#)

- B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to COR for review for compliance with [VHA Directive 2005-007](#), NFPA 101 and NFPA 241. Prior to beginning work, all employees of the contractor and/or any subcontractors 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. Provide documentation to the COR that all construction workers have undergone contractor's safety briefing.
- C. 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.
- D. 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).
- E. 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 COR. 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.
- F. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day.
- G. Smoking: Smoking is prohibited in and adjacent to construction areas inside existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited except in designated smoking rest areas.
- H. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- I. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

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. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- C. The Contractor shall, under regulations prescribed by the 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)

- D. Working space and space available for storing materials shall be as determined by the COR and as noted on drawings.
- E. Workmen are subject to rules of Medical Center applicable to their conduct.
- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others.
 - 1. Do not store materials and equipment in other than assigned areas.
 - 2. 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.

- G. Phasing: To insure such executions, Contractor shall furnish the COR with a schedule of approximate 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 dates to insure accomplishment of this work in successive phases mutually agreeable to Medical Center Director, COR and Contractor as follows:
- H. Phasing Plan for Building 1 and Building 17 and notes:

Building #1

Phasing Plan A - Contractor to complete work starting on the 6th floor and going in a counter clockwise direction. A maximum of two patient beds per floor are to be disturbed during each phase. Contractor is permitted to work on all floors simultaneously. Work must be completed in a phase before the next phase can begin, per floor. The benefit to this phasing option is that only one area will be disturbed at a time. The downside to this phasing option is that the length of time for the whole project will increased.

Phasing Plan B - Using a hanging scaffold, phases will be executed in a vertical arrangement going in a counterclockwise direction from the Northwest corner of the building. The building is 6 stories high, so each phase will consist of replacing six windows in vertical alignment. The benefit to this phasing option is that there is no need to erect a working scaffold from the ground up. The downside to this method is that one window on each floor will be disturbed during each phase, causing an increase in the coordination aspect of the project.

Phasing Plan C - Using a scaffold constructed on each face of the building, windows are to be replaced in sections not to exceed two hospital beds per phase. This arrangement will allow a face by face window replacement scheme starting at the Northwest corner, and continuing in a counterclockwise direction. The benefit to this phasing option is that the speed of the project will be increased, due to the exterior scaffolding erected for multiple phases at a time. The downside to this method is the visual implications and cost to erect the scaffolding.

Building #17

Phasing Plan A - Contractor to complete work starting on the 5th floor and going in a counter clockwise direction. Contractor is permitted to work on all floors simultaneously. Work must be completed in a phase before the next phase can begin, per floor. The benefit to this phasing option is that only one area will be disturbed at a time. The downside to this phasing option is that the length of time for the whole project will increased.

Phasing Plan B - Using a hanging scaffold, phases will be executed in a vertical arrangement going in a counterclockwise direction from the Northwest corner of the building. The building is 5 stories high, so each phase will consist of replacing five windows in vertical alignment. The benefit to this phasing option is that there is no need to erect a working scaffold from the ground up. The downside to this method is that one window on each floor will be disturbed during each phase, causing an increase in the coordination aspect of the project.

Phasing Plan C - Using a scaffold constructed on each face of the building, windows are to be replaced in sections. This arrangement will allow a face by face window replacement scheme starting at the Northwest corner, and continuing in a counterclockwise direction. The benefit to this phasing option is that the speed of the project will be increased, due to the exterior scaffolding erected for multiple phases at a time. The downside to this method is the visual implications and cost to erect the scaffolding.

GENERAL CONSTRUCTION PHASING NOTES

1. All construction work on building #1 will be split on a 30% - 70% scale. This means 30% of the work will be on straight time and 70% of the work will be second shift, nights and weekends. Straight time is 7:00AM to 4:30PM, Monday through Friday. Second shift is 4:31 to 10:00PM. Monday through Friday. Weekends are from 8:00 AM to 4:30 PM Saturday and Sunday. No holiday work will be allowed.
2. All of building 17 construction work will be on second shift and weekends. Second shift is 4:31 to 10:00PM Monday through Friday.

- Weekends are from 8:00 AM to 4:30 PM Saturday and Sunday. No holiday work will be allowed.
3. Contractor to submit a phasing plan (construction schedule for the entire scope of work) to VA COR, (7) calendar days after signing of contract for written approval by COR.
 4. In building #1 contractor will limit the bed disturbance to (2) beds per floor per day. If work on multiple floors will occur per day, then (2) beds per floor, per day may be disturbed.
 5. Contractor to provide written notice to COR (14) calendar days in advance of the upcoming phase of work to allow VA time to notify personnel and remove any furniture from work space.
 6. COR has the right to change this phasing schedule at any given time at no additional cost to the VA.
- I. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.
- J. 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 in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by both, to the Contracting Officer. This report shall list by rooms and spaces:
1. Existing condition and access to windows, walls and other affected surfaces of building.
 2. Existence and conditions of items such as equipment, venetian blinds, shades, etc., required by drawings to remain.
 3. Shall note any discrepancies between drawings and existing conditions at site.
 4. 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. Provided the contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "CONTRACT CHANGES - SUPPLEMENT (JUL 2002)" (VAAR 852.236-88) AND "CHANGES" (FAR 52.243-4).

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, 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 walls, window units, ledges 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 INFECTION PREVENTION MEASURES

A. Implement the requirements of VAMC's Infection Control Risk Assessment (ICRA) team. ICRA Group may monitor dust in the vicinity of the construction work and require the Contractor to take corrective action immediately if the safe levels are exceeded.

B. Establish and maintain a dust control program as part of the contractor's infection preventive measures in accordance with the guidelines provided by ICRA Group or as specified here. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to COR and Facility ICRA team, if required, for review for compliance with contract

requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

1. All personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the medical center.

C. Medical center Infection Control personnel shall monitor for airborne disease (e.g. aspergillosis) as appropriate during construction. A baseline of conditions may be established by the medical center prior to the start of work and periodically during the construction stage to determine impact of construction activities on indoor air quality. In addition:

1. The RE and VAMC Infection Control personnel shall review pressure differential monitoring documentation to verify that pressure differentials in the construction zone and in the patient-care rooms are appropriate for their settings. The requirement for negative air pressure in the construction zone shall depend on the location and type of activity. Upon notification, the contractor shall implement corrective measures to restore proper pressure differentials as needed.
2. In case of any problem, the medical center, along with assistance from the contractor, shall conduct an environmental assessment to find and eliminate the source.

D. In general, following preventive measures shall be adopted during construction to keep down dust and prevent mold.

1. Dampen debris to keep down dust and provide temporary construction partitions in existing structures where directed by COR. Blank off ducts and diffusers to prevent circulation of dust into occupied areas during construction.
2. Do not perform dust producing tasks within occupied areas without the approval of the COR. For construction in any areas that will remain jointly occupied by the medical Center and Contractor's workers, the Contractor shall:
 - a. Provide dust proof two-hour temporary drywall construction barriers to completely separate construction from the operational areas of the hospital in order to contain dirt debris and dust. Barriers shall be sealed and made presentable on hospital occupied side. Install a self-closing rated door in a metal frame, commensurate with the partition, to allow worker access. Maintain negative air at all times. A fire retardant polystyrene, 6-mil

thick or greater plastic barrier meeting local fire codes may be used where dust control is the only hazard, and an agreement is reached with the COR and Medical Center.

- b. HEPA filtration is required where the exhaust dust may reenter the breathing zone. Contractor shall verify that construction exhaust to exterior is not reintroduced to the medical center through intake vents, or building openings. Install HEPA (High Efficiency Particulate Accumulator) filter vacuum system rated at 95% capture of 0.3 microns including pollen, mold spores and dust particles. Insure continuous negative air pressures occurring within the work area. HEPA filters should have ASHRAE 85 or other prefilter to extend the useful life of the HEPA. Provide both primary and secondary filtrations units. Exhaust hoses shall be heavy duty, flexible steel reinforced and exhausted so that dust is not reintroduced to the medical center.
- c. Adhesive Walk-off/Carpet Walk-off Mats, minimum 600mm x 900mm (24" x 36"), 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.
- d. 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 they are created. Transport these outside the construction area in containers with tightly fitting lids.
- e. 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.
- f. Using a HEPA vacuum, clean inside the barrier and vacuum ceiling tile prior to replacement. Any ceiling access panels opened for investigation beyond sealed areas shall be sealed immediately when unattended.

- g. 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.
 - h. 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.
 - E. Final Cleanup:
 - 1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
 - 2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
 - 3. All new air ducts shall be cleaned prior to final inspection.

1.9 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. All window frames and glass to be recycled according to GEMS specifications. Contractor to provide a credit cost in bid submission for recycled items.
- B. Contractor to supply VA with 10% Attic Stock of exterior pre-set panning, interior covers and cover clips. This supply will be used if room purposes become modified in the future and covered windows need to be uncovered.

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

- A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

- C. Refer to Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS, for additional requirements on protecting vegetation, soils and the environment. Refer to Articles, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

1.11 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 workmen 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 "CONTRACT CHANGES - SUPPLEMENT (JUL 2002)" (VAAR 852.236-88) AND "CHANGES" (FAR 52.243-4).

1.12 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.

1.13 USE OF ROADWAYS

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the COR, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

1.14 TEMPORARY 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 COR will ascertain that elevators are in proper condition. Contractor may use elevators in Building No.1 for daily use. 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.

1.15 TEMPORARY TOILETS

- A. Contractor may have for use of Contractor's workmen, such toilet accommodations as may be assigned to Contractor by Medical Center.

Contractor shall keep such places clean and be responsible for any damage done thereto by Contractor's workmen. Failure to maintain satisfactory condition in toilets will deprive Contractor of the privilege to use such toilets.

1.16 AVAILABILITY AND USE OF UTILITY SERVICES

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The 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. Electricity (for Construction and Testing): Furnish all temporary electric services.
 - 1. Obtain electricity by connecting to the Medical Center electrical distribution system. The Contractor shall meter and pay for electricity required for electric cranes and hoisting devices, electrical welding devices and any electrical heating devices providing temporary heat. Electricity for all other uses is available at no cost to the Contractor.
- C. 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.

1.17 TEMPORARY RELOCATED EQUIPMENT OR ITEMS

- A. Contractor shall disconnect, dismantle as necessary, remove and reinstall in same location, all existing equipment and items required to be moved to perform necessary work for the Contract as shown to be relocated by the COR.
- B. All furniture shall be removed by VA. Contractor to remove all other items necessary to complete project and return same items to original location when finished.
- C. Perform temporary relocation of such equipment or items at such times and in such a manner as directed by the COR.
- 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.

1.18 PHOTOGRAPHIC DOCUMENTATION

A. During the construction period through completion, provide photographic documentation of construction progress and at selected milestones including electronic indexing, navigation, storage and remote access to the documentation, as per these specifications. The commercial photographer or the subcontractor used for this work shall meet the following qualifications:

1. Demonstrable minimum experience of three (3) years in operation providing documentation and advanced indexing/navigation systems including a representative portfolio of construction projects of similar type, size, duration and complexity as the Project.
2. Demonstrable ability to service projects throughout North America, which shall be demonstrated by a representative portfolio of active projects of similar type, size, duration and complexity as the Project.

B. Photographic documentation elements:

1. Each digital image shall be taken with a professional grade camera with minimum size of 6 megapixels (MP) capable of producing 200x250mm (8 x 10 inch) prints with a minimum of 2272 x 1704 pixels and 400x500mm (16 x 20 inch) prints with a minimum 2592 x 1944 pixels.
2. Indexing and navigation system shall utilize actual AUTOCAD construction drawings, making such drawings interactive on an on-line interface. For all documentation referenced herein, indexing and navigation must be organized by both time (date-stamped) and location throughout the project.
3. Documentation shall combine indexing and navigation system with inspection-grade digital photography designed to capture actual conditions throughout construction and at critical milestones. Documentation shall be accessible on-line through use of an internet connection. Documentation shall allow for secure multiple-user access, simultaneously, on-line.
4. As-built finished conditions of the interior of each building including floors, ceilings and walls shall be documented at certificate of occupancy or equivalent, or just prior to occupancy, or both, as directed by the COR. Overlapping photographic techniques shall be used to insure maximum coverage. Indexing and navigation accomplished through interactive architectural drawings.

5. Miscellaneous events that occur during any Contractor site visit, or events captured by the Department of Veterans Affairs independently, shall be dated, labeled and inserted into a Section in the navigation structure entitled "Slideshows," allowing this information to be stored in the same "place" as the formal scope.
 6. Customizable project-specific digital photographic documentation of other details or milestones. Indexing and navigation accomplished through interactive architectural plans.
 7. In event a greater or lesser number of images than specified above are required by the COR, adjustment in contract price will be made in accordance with clause entitled "CONTRACT CHANGES - SUPPLEMENT (JUL 2002)" (VAAR 852.236-88) AND "CHANGES" (FAR 52.243-4).
- C. Images shall be taken by a commercial photographer and must show distinctly, at as large a scale as possible, all parts of work embraced in the picture.
- D. Coordination of photo shoots is accomplished through COR. Contractor shall also attend construction team meetings as necessary. Contractor's operations team shall provide regular updates regarding the status of the documentation, including photo shoots concluded, the availability of new Progressions or Exact-Built viewable on-line and anticipated future shoot dates.
- E. Contractor shall provide all on-line domain/web hosting, security measures, and redundant server back-up of the documentation.
- F. Contractor shall provide technical support related to using the system or service.
- G. Upon completion of the project, final copies of the documentation (the "Permanent Record") with the indexing and navigation system embedded (and active) shall be provided in an electronic media format, typically a DVD or external hard-drive. Permanent Record shall have Building Information Modeling (BIM) interface capabilities. On-line access terminates upon delivery of the Permanent Record.

1.19 FINAL ELEVATION DIGITAL IMAGES

- A. A minimum of four (4) images of each elevation shall be taken with a minimum 6 MP camera, by a professional photographer with different settings to allow the COR to select the image to be printed. All images are provided to the RE on a CD.

1.20 VA TRIRIGA CPMS

VA contractors, selected by award to perform work, are required to get access to the VA TRIRIGA CPMS. The TRIRIGA CPMS is the management and

collaborative environment that the VA uses for all Major, Minor and Non-Recurring Maintenance (NRM) projects within the Office of Construction & Facilities Management (CFM), Veterans Health Administration (VHA), National Cemetery Administration (NCA), and the Veterans Benefits Administration (VBA).

The contractor is solely responsible for acquiring access to the VA TRIRIGA CPMS.

To gain access to the VA TRIRIGA CPMS the contractor is encouraged to follow the licensing process outline as specified below:

- A. Requirement: TRIRIGA is the management and collaborative environment that VA uses for all construction projects. VA requires its contractors to procure TRIRIGA access as part of the cost of performance for a VA construction related contract.

- B. Access Request and Payment can be made through the following URL

<https://valicensing.oncfi.com/>

Inquiries or to request additional services, contact the following:

Craig Alsheimer, Federal Account Manager

Computerized Facility Integrations, LLC

18000 West Nine Mile Road

Suite 700

Southfield, MI 48075

Email: calsheimer@gocfi.com

Phone: 248-557-4234 Extension 6010; 410-292-7006

- C. Process:

1. Once the contractor has been notified by VA of the award and a unique contract number, the contractor can enter a request for access to TRIRIGA at URL <https://valicensing.oncfi.com/>
2. CFI will process the request for access and payment. CFI will create the USER ID and a password. Security provisions required to align the contractor to the Contract Number will be entered and an email will be generated and submitted to the requestor.
3. CFI will also provide standard terms and conditions related to the transaction and use agreement.

LEBANON VAMC
CONSTRUCTION, RENOVATION AND
MAINTENANCE INFECTION PREVENTION PROGRAM

PURPOSE

Minimization of the risk for patient acquisition of Healthcare Associated Infections (HAIs) as may result when fungi or bacteria are dispersed into the air via dust or water aerosolization during any construction, renovation, or maintenance activities in or near the Lebanon Veterans Affairs Medical Center (LVAMC).

GUIDELINES

Construction, renovation, and maintenance activities have become ever present at health care facilities in support of continuous change as advances are incorporated into the delivery of medical care. LVAMC must remain occupied to provide uninterrupted care during these activities.

This guide outlines LVAMC's program to establish preventive practices in effort to reduce HAIs associated with these activities.

The Infection Control (IC) and Engineering Departments, Project Managers, Contracting Officer's Representative (COR) and Contractors are responsible to integrate infection prevention and environmental control principles, outlined in this guide, throughout the planning, managing, active phase, through to the completion of each project. This process is identified as the Infection Control Risk Assessment (ICRA).

ICRA development will be accomplished through a multidisciplinary collaborative process. Engineering and IC will have continuous involvement in ICRA assessment and reassessment, with subsequent revisions, as the fluidity of the construction project dictates. The Engineering Department, COR and Construction Safety Committee (CSC) will participate in monitoring and validating ICRA compliance. This policy applies to all LVAMC owned buildings and will be referred to for guidance by LVAMC leased Community Based Outpatient Clinics.

I. GENERAL DEFINITIONS

- A. **Contractor:** For the purposes of this guide, "Contractor" is defined as the General Contractor, Prime Contractor, Sub Contractor, Tradesmen, Mechanics, Apprentices, Laborers, Original Equipment Manufacturer Technicians, and includes LVAMC employees performing these tasks, et. al
- B. **Cleaning Company (CC):** A company or division that can demonstrate competence and displays experience cleaning in an institutional environment, preferably the health care setting. The CC's services may be arranged by the Contractor or LVAMC and will be specified in contract.
- C. **Engineering Department:** LVAMC Engineering Department. This includes the appropriate Maintenance division, Operations, Planning, Construction, and Safety.
- D. **Infection Control (IC):** LVAMC's Infection Control Department consisting of the Infection Preventionist (IP), Multi-drug Resistant Organism Prevention Coordinator (MPC) or their designee.
- E. **Infection Control Risk Assessment (ICRA):** The process of determining the potential risk of transmission of various air and waterborne biological contaminants in the facility during construction, renovation, and maintenance activities.
- F. **Infection Control Risk Assessment Tool (ICRA):** The ICRA Tool is used to provide guidance for the minimum required environment infection control precautions through the identification of Construction Activity Types (**Table 1**) and Risk Groups (**Table 2**). The ICRA matrix combines this data to accurately identify a Classification Level "Class" (I -IV)(**Table 3**) while noting additional possible infection control issues and requirements. The identified ICRA Classification Level (**Table 4**) then designates what environmental infection control precautions need to be instituted *prior* to the commencement of operations. The ICRA Tool (*Appendix A*) is to be completed for all new construction and major renovations to patient care areas.

- G. **Contracting Officer's Representative (COR):** For the purposes of this guide, "COR" is defined as the individual responsible for oversight of the project construction, renovation, or maintenance activity. This may include the Engineer, Contracted Project Manager, Consulting Project Manager, Facilities Associate Director, Facilities Project Coordinator, Facilities Maintenance Supervisor, Facilities Operations Supervisor, LVAMC Information Technology (IT) Cabling Manager/Supervisor, et. al.
- H. **ICRA Teams:** The Primary ICRA Team includes the COR, IC and if identified, the Contractor and User group. The Ad hoc ICRA Team members may include the Design Professionals, Safety Department representatives, LVAMC Environmental Management Services (EMS), Engineering, Operations, Risk Management, Patient Safety, extended user group members, and others.

II. DEFINITIONS OF CONSTRUCTION ACTIVITY TYPE

- A. **Table 1** determines the construction activity type. Activity types are defined by the amount of dust that is generated, the potential for dust and water aerosolization, duration of activity, and the amount of shared HVAC systems.

Table 1: Construction Activity Type Definitions

TYPE A	Inspection And Non Invasive Activities Includes, but is not limited to: <ul style="list-style-type: none">• Opening of a single ceiling tile for visual inspection or tile replacement.• Painting (but not sanding)• Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection
TYPE B	Small Scale, Short Duration Activities Which Create Minimal Dust Includes, but is not limited to: <ul style="list-style-type: none">• Opening of no more than one ceiling tile per 10 tiles• Installation of telephone and computer cabling• Access to mechanical chase or shaft spaces• Cutting of walls or ceiling where dust migration can be controlled• Minor renovation of existing space• Wet sanding of walls• Floor covering removal (without sanding or grinding)
TYPE C	Work That Generates A Moderate To High Level Of Dust Includes, but is not limited to: <ul style="list-style-type: none">• Dry sanding of walls• Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework)• Wall demolition or new wall construction• Minor duct work, plumbing work, or electrical work above ceilings (not including system demolition or installation)• Moderate renovation of existing space• Major cabling pulling activities, multiple rooms/lines where multiple access points are needed• Any activity which requires construction of a barrier that does not qualify as Type D• Floor covering removal (with sanding or grinding)

TYPE D	<p>Major Demolition And Major Construction Projects</p> <p>Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Activities which require the closure of a unit/wing or relocation of an entire patient area • Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system • Demolition of major fixed building components, assemblies, fit-out elements, or structural elements • New construction located in close proximity (as determined by the ICRA team) of the hospital building • Outdoor construction of new structures located in close proximity (as determined by the ICRA team) to existing patient care facility • Excavation activities within close proximity (as determined by the ICRA team) of hospital building.
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III. DEFINITIONS OF INFECTION CONTROL RISK GROUPS

Identify Risk Group (**Table 2**) Risk Groups have been classified by IP. Contact IP (Ext. 5452) for further specialized identification or clarification.

Table 2: Risk Group Identification







GROUP 1	GROUP 2	GROUP 3	GROUP 4
<p>Mechanical Spaces: Areas not directly adjacent to patient care.</p> <p>Engineering Environmental Management Services (EMS) Office Areas: Areas <u>not</u> attached to or adjoining patient care areas, used for patient interviews, evaluations or</p>	<p>Out Patient Units:</p> <ul style="list-style-type: none"> • Primary Care Spaces • Specialty Clinic Spaces • Community Based Out Patient Clinics (CBOC's) 	<p>In Patient Units:</p> <ul style="list-style-type: none"> • 1-2A • 1-3A • 1-3B • 1-4A • 1-4B • 1-5 • Emergency Dept. • Radiology/MRI/CT • Nuclear Medicine • Cafeteria/Kitchen • Laboratories • Oncology • Central Sterile Supply 	<p>Surgical/Medicinal:</p> <ul style="list-style-type: none"> • ICU/SICU • OR/ASU/Endoscopy • PACU • Sterile Processing Services (SPS) • Pharmacy

examinations. Public corridors: Spaces <u>not on or</u> <u>directly attached</u> <u>to</u> patient units or treatment locations.			
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IV. INFECTION CONTROL RISK ASSESSMENT MATRIX

Data obtained from Construction Type (**Table 1**) and Risk Group (**Table 2**) are inputted into ICRA matrix (**Table 3**) to identify the ICRA Classification Level (Class).

Table 3: ICRA Matrix

Risk Level "Group" 	1	2	3	4
Construction Activity "TYPE" 	ICRA CLASS    			
A	I	I	I	III
B	II	II	III	III/IV
C	II	III	III/IV	III/IV
D	III/IV	IV	IV	IV

V. DEFINITIONS OF ICRA CLASSIFICATIONS "CLASS"

The identified ICRA Classification "CLASS" Level designates minimum environmental infection control precautions to be instituted **prior** to the commencement of construction operations and adjusted as when project circumstances dictate.

Table 4: ICRA Class Infection Control precaution requirements

<p>CLASS I</p>	<p><i>Involved in minor demolition, in maintenance or remodeling.</i></p>	<ol style="list-style-type: none"> 1. Execute work to minimize the rise of dust from construction operation. 2. Immediately replace any ceiling tile displaced for inspection.
<p>CLASS II</p>		<ol style="list-style-type: none"> 1. Provides active means to prevent air-borne dust from dispersing into atmosphere (surrounding environment.) 2. Water mist work surface to control dust while cutting 3. Seal unused doors with duct tape. 4. Block off and seal duct vents. 5. Wipe surfaces with disinfectant. 6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area. 9. Remove or isolate HVAC system in area where work is being performed.
<p>CLASS III</p>		<ol style="list-style-type: none"> 1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. <u>Complete all critical barriers or implement control cube method before construction begins.</u> 4. <u>Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</u> 5. Remove or isolate HVAC systems in area where work is being performed. 6. Do not remove barriers from work site until complete and project is thoroughly cleaned by EMS. 7. Vacuum work with HEPA filtered vacuum. 8. Wet mop with disinfectant. 9. Remove barrier material carefully to minimize spreading of dust and debris associated with construction. 10. Contain construction waste before transport in tightly covered

	containers. 11. Cover transport receptacles or cart and tape covering in place.
CLASS IV	[same as Class III plus three more items.] 13. Seal holes, pipes, conduits and penetrations appropriately. 14. Construct anteroom & require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving worksite or they can wear cloth or paper coveralls that are removed each time they leave the work site. 15. <u>Wear shoe covers when within entering work site.</u>
Additional Requirements:	

VI. PERFORMANCE REQUIREMENTS

- A. Infection control is critical in all areas of the health care facility. Construction, renovation, and maintenance activities causing disturbance of existing dust, or creating new dust, must be conducted in tight enclosures to prevent any flow of particles into patient areas.
- B. **Prior** to initiation of any construction, renovation, or maintenance activities, the contractor's on-site management team shall view IC precautions and rationale. Contractors who perform their work exclusively outside (e.g. landscape, snow removal, etc.) are exempt from this requirement.
- C. Engineering or IC may enhance performance requirements designated on ICRA forms as conditions warrant. These modifications do not negate the intent of this guide.

VII. SUBMITTALS

- A. The Contractor will provide LVAMC Engineering Division a listing of product data for products that will be used during construction to ensure evaluation during the ICRA. Submittals will be identified in the LVAMC bid documents, under Special Requirements, to ensure all bidders are aware of the requirements of this guide.



VIII. PRODUCTS AND MATERIALS

- A. Barrier types must be constructed with the following materials/specifications and comply with National Fire Protection Association (NFPA) standards.
1. Fire retardant polyethylene barrier (minimum 6-mil thickness.)
Used solely as an IC barrier.
 2. Gypsum wall board.
 3. Fire rated reinforced plastic fiberglass (similar to Fire-X Glass board).
 4. Masonite (must be painted with fire resistant paint [Flame Control Coatings, #320A or equivalent] prior to entering the building).
 5. Other fire resistive materials to be specified prior to completion of ICRA Work Permit.
- B. Bleach: Contains the active ingredient sodium hypochlorite and is designated as effective water based disinfectant. To obtain solution strength for effective disinfection mixture, 1 part bleach is mixed in 10 parts water (equivalent to 1¼ cups of bleach in one gallon of water.) Mixture must be made fresh every 24 hours in a clean container. Commercially available products (e.g. Clorox Clean-Up) have an extended shelf life and may be used if within the labeled expiration date.
- C. Carpet Vacuum: Nobles Ultra-glide 18" w/ dual motors and HEPA filters, or an equivalent commercial grade carpet vacuum cleaner. An equivalent vacuum must have HEPA filters.
- Nobles Ultra-glide 18" w/dual motors
(HEPA Filters ordered as option)

- D. HEPA Vacuum: A Dayton "shop style" vacuum, or equivalent, with a HEPA filter cartridge filter capable of 99.97% filtration @ 0.5 microns, similar to Dayton part # 4TB93. This filter shall be used in conjunction with a dust collection pre-filter bag for fine particles and dust, similar to Dayton part # 1UG85.

Dayton Shop Vacuum

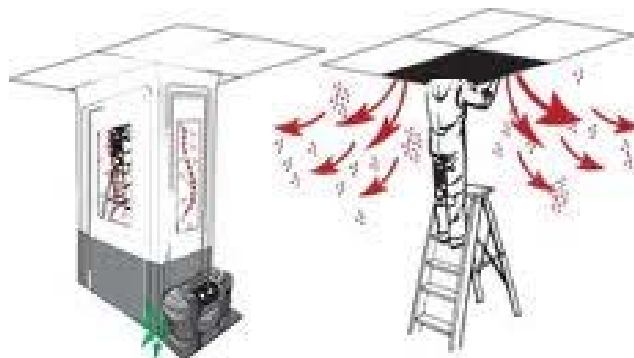


Dayton part# 4TB93

Dayton part#
1UG85



- E. Control Cube: Portable Ceiling Access Module, such as "Kontrol Kube Mobile Containment Solution" with heavy duty vinyl enclosure as manufactured by Fiberlock Technologies, Inc. or equivalent.



Kontrol Kube Containment System w/example of operation

- F. Door types (as specified in the ICRA work permit):

1. Solid core wood door in wood or metal frame.
2. Metal door in metal frame.

3. Zipper door in polyethylene, or an overlapped polyethylene entrance.
 4. Masonite doors may be used if painted with fire resistant paint (Flame Control Coatings, #320A or equivalent) prior to entering the building.
- G. Exhaust Hoses: Heavy duty, flexible steel reinforced, ventilation blower hose manufactured by Federal Hose Mtg. Co. or equivalent.



Flexible Steel Reinforced ventilation
blower hose w/attachments

- H. Negative Air Machine: HEPA filter equipped negative air machines that provide roughing filters, primary filters, and HEPA final filters, with a rating of 200 to 2000 cubic feet per minute (CFM). HEPA filters to be a minimum of 99.97 % efficient. The HEPA filter will be factory scan tested and factory accepted after manufacture. Scan testing should be in accordance with Section 6.2 of IEST -RP-CC034.1 Type C. No leaks greater than 0.01 of the upstream concentration at rated capacity of 2,000 CFM . Initial clean resistance shall be no more than 1.35" W. C. @ 2,000 CFM (for 2000 CFM machines). Common supplier is Airborne Contamination Identification Associates, Abatement Technologies.

Abatement Technologies
Negative Air Machine



- I. Negative Air Fan: A high air flow, high static pressure, unfiltered, smoke ejector style fans equivalent to Super Vac P164S, 16" Smoke Ejector Fan.



Super Vac P164S, 16" Smoke Ejector Fan

- J. Walk-Off Mats (adhesive): Provide minimum size mats of 18 inches x 24 inches such as those manufactured by 3M or equivalent.



Adhesive Walk-Off
Mat by 3-M

- K. Walk-Off Mats (other): Carpet, carpet squares, etc. can be moistened with bleach solution and used to prevent premature loading of the adhesive walk off mats and the tracking of dust from the work zone.

IX. BARRIERS AND DOORS

- A. An existing door may be acceptable as the ICRA barrier for work projects which can be contained in the room. This will be based on the existing room construction, construction activity type, and risk group.

- B. Barriers that may be specified:

1. A polyethylene barrier, with an overlapping entrance flap or zipper, may be placed between the door and the construction site.
2. An anteroom immediately outside the work zone entrance.

3. Barriers may be required to contain the ceiling envelope, chases, interstitial spaces, etc.
 4. Other barrier methods as determined during the ICRA process.
- C. Plastic barriers may be adhered to metal studs using spray adhesive, double face tape, sheet metal screws etc.
- D. Drywall barriers will have the joints and screws covered or sealed.
- E. Overlapping polyethylene flaps that are used as the entrance to the work site must overlap a minimum of 2 feet.
- F. If a hinged door is used for the barrier entrance, a large (2000 CFM) negative air machine shall be used to ensure 100 feet per minute of air flow into the work zone with the door open. This requirement may be modified for very small rooms or if overlapped polyethylene is used in conjunction with the hinged door.
- G. Anterooms (double entrance openings) may be required. Anterooms serve as an airlock and PPE donning area. The air lock function requires that only one door be allowed open at a time. Exceptions are made for the delivery of large materials. Both doors open at one time should be minimized. The anteroom is to be kept clean and tidy. Cleaning products and materials (bleach, wipes, shop vac, mops, etc.) will be kept in the anteroom.

X. INFECTION CONTROL PROCEDURES - GENERAL

- A. Facilities and IC will be notified at the beginning of the planning or design phase of all projects to issue initial ICRA concerns.
- B. Post awarding of contract, ICRA will be conducted by and ordered in the following steps.
1. COR, IC in collaboration with the ICRA team will evaluate the project to determine its ICRA classification rating by delineating construction activity type, risk group, and classification level. Accurate determination of ICRA requirements will be achieved through the solicitation of the Ad Hoc ICRA Team, as necessary,

with complete review of project's design, scope of work, along with subsequent impact to surrounding locations and utility systems.

2. ICRA team will develop ICRA permit (*Attachment A*).
3. COR and IC will retain copy of ICRA.
4. COR is responsible for obtaining the ICRA work permit prior to commencing work, ensure its posting post at all work zone entrances, and for communicating the ICRA requirements to all affected persons.
5. ICRA may be revised throughout all stages of the project, as conditions warrant.

C. LVAMC facilities employees will follow ICRA precautions for Level I and II projects without a formal ICRA assessment or work permit.

1. Projects indicating classification level III - IV will require obtaining an ICRA work permit from IC and facilities manager.

D. HVAC Design General Requirements

1. The purpose is to have easy to follow summaries to assist all involved to better understand the design intent, during all phases of the project, and to establish a record for future operations and initial reference for maintenance. Showing transfer air on a complicated duct drawing does not work well. The concept is similar to having simple Life Safety Plans for accurate and quick understanding. All drawing sets shall include:

- a. Coordinated single line diagrams with both existing and new work as applicable.
- b. Clear delineation between demolition, existing to remain, and new work on plans and riser diagrams.
- c. Plans shall be the basic floor plan (clearly identifying all room names/use, not just numbers) with easily recognizable

tags for any room that is not neutral pressurization. The tag would indicate airflow direction (e.g. + and - or POS and NEG) and airflow (cfm).

- d. Overall building airflow showing interrelationships of air handling units, exhaust fans, duct risers and mains, primary dampers with air balance/pressure relationships.
- e. Overall building hydronic and steam systems showing interrelationship of main heating/cooling plant equipment or central utility source, heat exchangers, pumps, pipe risers and mains, primary isolation and control valves.
- f. Connected and cumulative design capacities and flow rates which can be toggled on during design phase for review purposes and off if desired for final construction documents.
- g. Areas with special pressure relationship requirements that must be properly controlled, the **design professionals** shall include plans in the construction set of drawings showing simplified pressure relationships and tabular summaries of overall air balance for each pressure controlled space with summaries of system airflows.
- h. Table indicating system level summaries of airflows per floor (e.g. system SA max/min, system RA max/min.), General Lab Exhaust (max/min), Fume Hood Exhaust (max/min), General Exhaust, Transfer Air (including intended source - adjacent system), and any other special exhaust systems.

- 2. HVAC registers and vents within the construction area shall be capped unless specifically approved by the COR or IC. The method for capping shall be dust tight and shall withstand the static air pressure.

- E. Contractors are responsible for providing the manpower and equipment (including negative air machines, ICRA barrier materials, etc) for meeting the design and intent of the ICRA requirements.

1. Depending on the scope of work, the phase of the work, and the location of the exhaust, unfiltered negative air fans may be permitted.
 2. Negative air machines may be connected to normal or emergency power and shall run continuously. Critical areas may require the negative air machine be connected to emergency power only.
 3. Should a negative air machine be incorporated to exhaust air into a HVAC return air or exhaust air duct, the COR, IP, and the HVAC Department will review the installation prior to connection.
 4. The negative air machine testing will be performed by the LVAMC HVAC Department or Biomedical Engineering.
 5. When negative air pressure is required, Contractors will verify the presence of negative air pressure IAW **Negative Pressure Monitoring Guide** (*Appendix C*), and post the **Negative Air Pressure Verification Log** (*Appendix B.*) Appropriate log entries shall be completed prior to the beginning of every work shift.
- F. Contractors are responsible for maintaining their equipment including the replacement of the HEPA and other filters as per manufacturer's recommendations and the LVAMC HVAC Department HEPA filter maintenance program.
1. HEPA Filter Maintenance includes:
 - a. The HEPA filter in the negative air machine will be tested upon new installation into the machine and at least semi-annually thereafter. More frequent testing may be required as determined necessary during the ICRA process
 - b. Certification stickers with the date of the testing shall be visible on the machine.

- c. The filter efficiency testing requirement may be relaxed if the machine is exhausted directly to the outside and is not within close proximity to an air intake or a public walkway.
 - d. A particle counter meter will certify a 99.0% reduction at the .5 micron setting on the particle counter.
- G. Contractors are responsible to ensure the ICRA barriers are maintained for the duration of the project; the doors are working and latching properly, doors are kept closed, all seams and joints resealed, negative air is maintained, etc.
 - 1. The Contractor will inspect the barrier at the beginning of each work shift.
 - 2. Barriers shall be required at elevator shafts or stairways that are within the work zone.
 - 3. Barrier effectiveness shall be monitored and barriers repaired or improved as necessary to prevent dust and debris from escaping the work zone.
 - 4. Penetrations (pipe, conduit, cable, etc.) in the ICRA barrier or existing walls used as barriers are to be sealed.
 - 5. Control Cube usage is delineates following criteria:
 - a. Will be vacuumed from the inside of the cube prior to opening the door zipper.
 - b. If negative air is required, a certified negative air machine will be used.
 - 6. Work performed outside the regular ICRA barrier may be performed in a temporary barrier; a Control Cube, a polyethylene enclosure erected around the opening, or other methods approved during the ICRA determination. Upon completion of the work the area inside the barrier must be cleaned prior to removal.

7. Investigations may require the opening of ceiling tiles or access panels outside the ICRA barrier. The ceiling tile or access panels shall be replaced immediately upon completion of the investigation and when unattended. Control cubes or other interventions may be required for accessing these spaces.
- H. The Contractor will arrange for or provide the manpower and equipment (cleaning supplies, dust mops, wet mops, brooms, buckets, bleach, etc.) or ongoing and timely (normally daily) cleaning in the work zone, anteroom, and as necessary adjacent areas to prevent the accumulation of dust and debris. The following cleaning requirements are to be followed by contractors:
 1. Contractors and materials are not to be transported using patient transport designated elevators.
 2. Workers are to be free of dust prior to exiting the work zone. If used, coveralls are to be removed in the work zone just before entering the anteroom. Vacuuming of clothing may be done in the work zone or the anteroom. Booties are to be removed in the anteroom.
 3. Vacuuming is to be done using a HEPA filtered vacuum.
 4. Workers shall clean shoes, equipment, transport carts, transport cart wheels etc. with bleach solution to prevent dust from being tracked outside the work zone. Any dust tracked outside of the work zone shall be immediately removed.
 5. Transport receptacles, carts, toolboxes, equipment, etc. are to be free of dust.
 6. Debris removed from the work zone shall be in tightly covered containers and transported following the designated route as identified during the ICRA determination.
 7. Adhesive walk off mats shall be kept clean and changed daily or more often to remain effective. Bleach solution moistened carpets, carpet squares, etc. may be used to prevent premature loading of the adhesive mats.

XI. INFECTION CONTROL RISK ASSESSMENT (ICRA) PERMIT

- A. LVAMC can perform and post "self-evaluation" ICRA Permit (*Attachment A*) for Class I & II level work.
- B. An IC approved ICRA Permit (*Attachment A*) is required for Level III and Level IV work and may be required for Level II work at the discretion of COR and/or IC.
- C. The COR or IC may add additional details (scope descriptions, interventions, egress designations, unique interventions necessary for a specific job, etc.) in the 'Additional Requirements' section.
- D. The ICRA Permit form and the listed interventions may be modified as deemed necessary.
- E. The IC will prepare the permit and then release it to the COR.
- F. The COR will review the permit with the contractor and obtain his signature. The signed ICRA permit will be placed in the engineering project file and posted at all accesses to the construction site for the duration of the project.
- G. Contractors shall adhere to all precautions listed for class levels indicated and notations listed in the 'Additional Requirements' section, and if applicable.

XII. INFECTION CONTROL PROCEDURES -IMPLEMENTATION

- A. Following is the typical sequence for the implementation of the Infection Control Procedures:
 - 1. The COR and 'User Department' will arrange for the relocation of supplies, equipment, furniture, etc. from the work zone before the temporary barriers are installed.
 - 2. Exterior window seals and building penetrations must be assured to minimize infiltration of outside contaminants when the work zone is under negative pressure.

3. The contractor will install and run the negative air machine in the work zone location prior to any barrier construction.
4. The ICRA Permit will indicate if a temporary polyethylene barrier is to be erected prior to the construction of the ICRA barrier and if it shall be dust tight.
5. The contractor will install the ICRA barrier using approved materials and following the requirements of the ICRA Permit.
6. The anteroom will be constructed to maintain airflow from the clean side through the anteroom and into the work zone.
7. The contractor will arrange for the installation of negative pressure monitoring device, if required by ICRA Permit.
8. Upon completion of the barrier, the Contractor will verify acceptable negative pressure.

XIII. INFECTION CONTROL PROCEDURES -COMPLETION

- A. Following is the typical sequence for the completion of the Infection Control Procedures.
 1. The COR will verify that utility and mechanical systems are commissioned and/or functioning per designated specifications.
 2. Following the removal of all contractor equipment and supplies, contractor provided cleaning can be performed. After all cleaning is completed; the contractor will flush all plumbing systems by opening all water fixtures (hot and cold) to run continuously for fifteen minutes and flushing every toilet/urinal at least three times. Plumbing systems distal to plumbing construction will have Heterotrophic Plate Count (HPC) and Legionella testing samples obtained.
 3. Following plumbing flush, barrier pre-removal cleaning will be performed. This includes the cleaning of the entire work zone,

ICRA barrier, HVAC covers, and the outside of the negative air machine(s) with its associated ducting.

4. After all cleaning is completed, the COR or designee will inspect the entire work zone to ensure cleaning was in compliance to designated standards.
5. Covers on HVAC **supply** ducting will then be removed with the HVAC system initiated to observe performance. If this action produces any dust or dirt, pre-removal barrier cleaning and inspection will be repeated.
6. HVAC return air covers can then be removed for full HVAC system operation.
7. ICRA barriers can now be carefully removed as to prevent contamination of adjacent areas.
8. Minimization of dust aerosolization during barrier removal can be achieved by lightly spraying the polyethylene barrier with appropriate strength bleach solution.
9. Polyethylene barriers will be rolled or folded 'on itself' to inhibit the creation of as little dust as possible.
10. Barrier debris shall be placed in a sealed or covered container for transport.
11. Barrier post-removal cleaning will be performed immediately following the ICRA barrier removal. This cleaning is to remove all dust and debris generated during the barrier removal.
12. Barrier post-removal cleaning will be inspected and approved by the COR or designee.
13. Negative air machine(s) can now be removed. Dust or dirt generated by its removal shall be removed by contractor using a HEPA filtered vacuum system.

14. HVAC system airflow will be balanced as per designated specifications.
15. If air sampling is **not** required:
 - a. The COR will notify the user group when the barrier post-removal cleaning has been approved so they may take possession of the space.
 - b. If the space is used for patient occupancy or exam/treatment, following the installation of all furniture, durable medical equipment and supplies, the COR or Service/Care Line Manager will arrange for LVAMC to do the occupancy cleaning using the standard protocol for the service line.
 - c. If greater than three calendar days has elapsed since the plumbing was flushed, all fixtures (hot and cold) will be turned on for fifteen minutes and toilets flushed at least three times.
 - d. The Department Manager will notify admissions after inspection and approval of space cleaning.
16. If air sampling **is** required:
 - a. HVAC system must be fully operational with all air diffusers and return air portals uncovered. Negative air machine is removed with exhaust portal secured. Particle counts will be obtained by qualified personnel (e.g., consultant).
 - b. Particle counts verifying that HVAC system diffusers are filtering air IAW required specifications will let COR proceed to secure the space, undisturbed for an overnight period.
 - c. Repeated particle counts along with microbial air samples will be obtained the following business day. IC will review microbial and particle count results with recommendations to

the COR pertaining to air quality acceptability standards and space occupation.

- d. Spaces used for patient occupancy or exam/treatment will be cleaned following the installation of all furniture, durable medical equipment and supplies. The COR or Service/Care Line Manager will arrange for LVAMC to do the 'occupancy cleaning' using the standard protocol for the service line.
- e. The Department Manager will notify admissions after inspection and approval of space cleaning.

XIV. PRECAUTIONS BY CLASSIFICATION LEVELS (*Refer to Table 4*)

A. Classification (Class) I - IV precaution responsibilities of COR and/or contractor:

1. Class I Infection Control Precautions:

- a. An ICRA Work permit is not required; however COR may complete if desired.
- b. Identify when Class I precautions apply per Tables 1, 2 and 3. If unclear, they are to consult with IC.
- c. Verify that Class I precautions are maintained and adhered to for all projects for which they are responsible.
- d. Refer to ICRA Permit *Table 4* for specific precautions.

2. Class II Infection Control Precautions:

- a. An ICRA Work Permit is not required, however the COR may complete one if desired.
- b. Identify when Class II precautions apply per Tables 1, 2 and 3. If unclear, they are to consult with IC.

- c. Verify that Class I and II precautions are maintained and adhered to for all projects for which they are responsible.
- d. Refer to ICRA Permit, *Table 4* for specific precautions.

3. Class III Infection Control Precautions:

- a. Required to complete an ICRA.
- b. Identify when Class III precautions apply per Tables 1, 2 and 3. If unclear, they are to consult with IC.
- c. Verify that Class I, II and II precautions are maintained and adhered to for all projects for which they are responsible.
- d. Refer to ICRA Permit, *Table 4* for specific precautions.

4. Class IV Infection Control Precautions:

- a. Required to complete an ICRA.
- b. Identify when Class IV precautions apply per Tables 1, 2 and 3. If unclear, they are to consult with IC.
- c. Verify that Class I, II, III and IV precautions are maintained and adhered to for all projects for which they are responsible.
- d. Upon completion of the major dust generating demolition/construction activities, the coveralls and shoe cover requirements may be removed.
- e. Refer to ICRA permit, *Table 4* for specific precautions.

B. Additional precautions for specific highest risk locations (ORs, Sterile Processing etc.):

1. All tools (equipment, ladders, carts, etc.) brought into these areas must be pre-cleaned by wiping with a disinfectant cloth (hospital approved Cavi-Wipe or proper strength bleach solution) until they are dust and dirt free.
2. Contractors will change into scrub suits if working in the OR Suite or Sterile Processing.
3. Work must be scheduled through the department Nurse Manager or their designee by the COR.
4. Work done above ceilings or work that creates any dust or water aerosolization must be contained utilizing a fabricated containment structure or 'Kontrol Cube' utilizing a certified HEPA negative air machine.

XV. ENVIRONMENTAL MONITORING

- A. Requirements for air sampling will be noted on ICRA, as determined by the COR, Safety Department, and/or IC.
- B. The ICRA permit will indicate if a negative air pressure continuous recording device (chart recorder) or other visual indicator is required. The COR will document the presence of negative pressure on the Negative Air Pressure Verification Log (*Appendix B*) only after visual confirmation of negative pressure in the designated space.
- C. LVAMC may choose to independently monitor air quality throughout the project.

XVI. COMMISSIONING

- A. Commissioning is a quality process used to validate, and document that facilities and component infrastructure systems are planned, constructed, installed, tested, and can meet operational standards as per intended design or performance expectations.

1. Acceptance criteria for mechanical systems shall be specified in the design specifications.
2. Crucial ventilation specifications for air balance and filtration shall be verified before owner acceptance. Ventilation deficiencies shall not be accepted.
3. Acceptance criteria for local exhaust systems dealing with hazardous agents shall be specified and verified. Ventilation deficiencies shall not be accepted.
4. Areas requiring special ventilation (e.g. surgical services, protective environments, airborne infection isolation rooms, laboratories, and local exhaust systems for hazardous agents) shall be recognized as required mechanical systems that ensure infection control.
5. Refer to Facilities Guidelines Institute (FGI) 2010. Guidelines for Design and Construction of Health Care Facilities, Chicago, IL: ASHE (American Society for Healthcare Engineering) of the American Hospital Association; Section - Planning, Design, and Construction/Commissioning.

**XVII. FACILITIES DEPARTMENT AND CONTRACTOR INFECTION CONTROL
EDUCATION**

- A. ICRA education shall be performed prior to the individual beginning work.
- B. All Contractors and CORs shall attend ICRA training. Contractors who perform their work exclusively outside (e.g. landscaping, snow removal etc.) are exempt from this requirement. The COR for these exempt contractors must make them aware that they are not to enter the building with soiled clothing or shoes.
- C. Contractors performing very short term or emergency work may be excused from the training requirement. These untrained contractors shall be escorted by an ICRA trained individual. The escort must assume the responsibility that the untrained contractor will follow all provisions

of the policy. Approval for using non-ICRA trained contractors must be approved by the COR.

- D. The education session will be offered in video format or by an IC approved recorded presentation. A written test will be administered to ensure the pertinent Terminal Course Objectives (TCO's) have been learned. These TCO's include:

1. Why dust control is important.
2. Types of work that will most likely generate dust.
3. Preventions used to reduce the spread of dust and the aerosolization of water.
4. Define "ICRA".
5. Identify where the ICRA Permit should be posted.
6. List the four 'Class' levels of infection control preventions.
7. Identify on a sample ICRA permit the 'Class Level' of the project and where to find the specific preventions designated in each class they are required to follow.

- E. Contractors who complete the training will receive a certification sticker or card. Training indicated by issued sticker/card will be valid for one year. Training certification must be carried by the contractor while on site.

- F. ICRA recertification training will be completed annually.

XVIII. ENFORCEMENT

- A. The COR, IC, and Engineering Department will ensure compliance with this guide. They have the authority to stop all work if there is immediate risk to patients, staff, or the public.
- B. The COR will perform daily inspection of ICRA barriers within the work zone.

- C. The COR will immediately address ICRA non-compliance issues to contractor verbally with follow-up written documentation. The details of the deficiencies will be sent to IC and the Facilities/Engineering Departments with placement in the project file.
- D. ICRA non-compliance issues will be reviewed and discussed at project and construction meetings to identify possible causes and process improvement measure to delineate repeated infractions.

XIX. CLEANING SPECIFICATIONS FOR POST CONSTRUCTION/RENOVATION CLEANING

- A. The Contractor will arrange for post construction/renovation cleaning, utilizing a professional Cleaning Company (CC) that has experience and demonstrated competence in cleaning institutional environments, preferably healthcare.
- B. The designated CC will furnish labor and supplies for all cleaning services required during assigned construction and renovation projects.
- C. All CC workers will be required to adhere to applicable LVAMC guidelines including not working while ill. This is to be enforced by the CC's management.
- D. Two Step Cleaning Requirements:
 - 1. Barrier Pre-Removal Cleaning:
 - a. Clean inside the project area with the barrier in position.
 - i. HEPA vacuum all horizontal and vertical surfaces, including the barrier and the inside of the metal stud tracks. If work was performed above an existing suspended ceiling, vacuum the top of the ceiling tiles.
 - ii. Completely clean inside of the barrier, to include the interior portion of the barrier using solutions previously designated, removing all dust, dirt, debris, and grime from all surfaces located within the project area.

- b. Clean, without removal of, supply and return ventilation covers that are isolating HVAC system.
- c. Clean the outside of the negative air machine and its attached exhaust ducting from machine to exhaust portal.
- d. Clean all flooring and apply floor finishes as prescribed by the manufacturer of the product and/or LVAMC's EMS department.
- e. The barrier pre-removal cleaning will be inspected and approved by the COR.
- f. In event HVAC ventilation supply and exhaust portal cover removal or system operational testing produces any dust or dirt, barrier pre-removal cleaning and inspection will be repeated.
- g. The COR will give approval for the removal of the ICRA barrier.

2. Barrier Post-Removal Cleaning:

- a. Prior to removal of the barrier, the contractor may lightly mist the barrier, with appropriate percentage bleach solution, to prevent residual dust from aerosolizing during the barrier removal.
- b. The Contractor will remove the barrier.
- c. The cleaning will be completed to remove any dirt generated during barrier removal. Cleaning encompasses all surfaces in the same room of barrier location and adjacent areas possibly affected areas.
- d. The negative air machine and its associated hardware may be removed once initial barrier post-removal cleaning is complete.

- e. The contractor is responsible to HEPA vacuum any dust or debris generated by removal of the negative air machine. Final barrier post-removal cleaning will then be performed to eliminate all dust that resettles on any horizontal surfaces in or adjacent to previous barrier location.
- f. Final barrier post-removal cleaning will be inspected and approved by the COR.

E. Specific Cleaning Expectations:

- 1. When complete, all surfaces should have a "white glove" finish.
- 2. Clean all ceiling, lights, and ceiling diffusers and grills.
- 3. Clean all walls, from top to bottom, including vents, trim, recessed spaces and other detail in walls, including built-in cabinets and drawers.
- 4. Clean the blinds and windows.
- 5. Clean all horizontal surfaces (equipment, TV, computers, phones, furniture, desks, countertops, lodges, sills, and rails, door jambs, handles, crevices, etc.).
- 6. Clean all cove base, floor tile, sheet vinyl, and carpeting.
- 7. Clean bathroom in sequence going from toilet, to shower/tub, to sink, to floor.
- 8. Clean shower using friction to remove all visible stains, grime, rust, and soap scum.

F. Cleaning Products:

- 1. All cleaning products are to be consistent with cleaning supplies used by LVAMC.
- 2. Products for specific equipment must also be of approved type as specified by the original equipment manufacturer.
- 3. Contact the EMS Chief for a current list of approved products.

G. Carpet Cleaning Equipment:

1. Carpet shampooing equipment must be a type using steam or hot water extraction.
2. Vacuums must be equipped with brushes and HEPA filters.

H. Products currently used by the Lebanon VAMC EMS can be found in SOP 22-2011.

XX. PROJECT SPECIFIC NOTES:

A. Comments from Infectious Control:

B. 2 beds down/floor is acceptable -focus must be to minimize dust by use of appropriate negative air, barrier use, ventilation isolation and tack mats.

C. Terminal room cleaning and use of barrier protection on all items that will remain in the room during demolition (ie lifts and medical gas boards).


D. Also proper covered containment for removal of debris.

E. Use of dedicated entry/exit to unit preferred.

F. Because contract workers will be in patient care areas where Airborne Infection Isolation Rooms (AII Rooms) are used, they shall have documentation of tuberculosis screening - screen should be done 90 calendar days before start of project.

APPENDIX A – ICRA TOOL

Pre-construction Risk Assessment Lebanon VA Medical Center			
Location of Construction:		Project Start Date:	
Contracting Officer Technical Representative:		Estimated Duration:	
Contractor Performing Work:		Permit Expiration Date:	
Contractor's Supervisor:		Telephone:	
Description of project/work activity:			
Construction Activities - The following projects do not require completion of the Pre-construction risk assessment form:			
<input type="checkbox"/> Repair medical gas outlet. <input type="checkbox"/> Air balance readings. <input type="checkbox"/> Check air-conditioning. <input type="checkbox"/> Replace light bulb. <input type="checkbox"/> Check or replace electric outlet. <input type="checkbox"/> Paint and wallpaper in business offices and non-patient areas. <input type="checkbox"/> Paint in patient room if closed for painting and less than 3 sq.ft. of wall needs patched. Filter for room unit changed after painting. <input type="checkbox"/> Installation of soap dispenser/needle box/paper towel holder in patient room. <input type="checkbox"/> Repair of window blind. <input type="checkbox"/> Ceiling tile replacement for areas less than 10 2 X 2 tiles, if not in business offices and non-patient areas. <input type="checkbox"/> Minimum repair of nurse call system/TV/Bed/Telephone.		<input type="checkbox"/> Ceiling tile replacement for area less than 5 2 X 2 tiles in a patient area if patient is out of the immediate area and clean up can be accomplished before patient returns. <input type="checkbox"/> Unstop sink/commode with no water on floor. <input type="checkbox"/> Unstop commode when water on floor requires maintenance to have Housekeeping clean area immediately. <input type="checkbox"/> Intermediate jobs that create a moderate amount of dust inside room and is made negative by use of HEPA-equipped unit with minimum 10 ACH, and all air discharged outside, HEPA unit must run 2 hours after completion of job and Housekeeping must clean room before unit is removed from room. All work and use of HEPA unit must be documented and copy forward to Infection Control and Safety. NOTE: all duct vents to be sealed off during work!	
Y	N	NA	Environment
			Will there be noise generated that will impact a department adjacent to, above, or below the construction area?
			<ul style="list-style-type: none"> If so, these departments must be notified.
			<ul style="list-style-type: none"> How are you going to keep the noise level below 60 dBA?
			Will there be strong odors generated that will impact a department adjacent to, above, or below the construction area?
			<ul style="list-style-type: none"> How are you going to ensure that the odor does not migrate to the adjacent occupancies?
			Will there be vibration generated that will impact a department adjacent to, above, or below the construction area?
			<ul style="list-style-type: none"> If so, these departments must be notified each time this type of work will be performed.
			<ul style="list-style-type: none"> How are you going to ensure that the vibrations do not impact work activities of the adjacent occupancies?
			Will the COR ensure that Emergency Procedures in place and posted on each job for accidental events that could greatly impact Patient Care or Life Safety to the facility? Included in these procedures are such things as:
			<ul style="list-style-type: none"> Emergency telephone numbers of key departments.
			<ul style="list-style-type: none"> A plan that describes where main valves, switches, and controls are for the area in case of an emergency.
			<ul style="list-style-type: none"> A plan for unexpected outages.
			Are any of the following environmental hazards present?
			<ul style="list-style-type: none"> Will hazardous chemicals be used on this project? Contractor will be required to keep a paper copy of all pertinent Material Safety Data Sheets on site.
			<ul style="list-style-type: none"> Is asbestos or lead abatement required on this job? If so, notify Safety and Maintenance at the activation.
			<ul style="list-style-type: none"> Will there be hot work done on this project? If there are, then a hot work permit must be posted on the job site. All hot work must have a fire watch assigned to each area while

		the hot work is being performed.
		<ul style="list-style-type: none"> Will there be a Confined Space Entry required on this project? If so, the Lebanon VAMC confined space entry program must be followed.
		Utilities - Planned Outages
		Will any of the following systems be out of service at any time during the project?
		<ul style="list-style-type: none"> Fire alarm (if out for more than 4 hours, Interim Life Safety Measures must be implemented.) Sprinkler (If out for more than 4 hours, Interim Life Safety Measures must be implemented.) Electrical Domestic water Oxygen Medical Gas Steam Sewage HVAC
		Develop of list of shutoff valves that may need to be closed immediately in the event that a utility pipe is broken. Show or describe location of the valve and areas disrupted by the closure. Share list with contractor and shop foremen.
		Insert in the list here:
		Interim Life Safety Measures (ILSMs)
		Objective: To protect occupants during periods when <i>Life Safety Code</i> is not met or during periods of construction.
		Will there be any work that will require activation of the Interim Life Safety Measures during this project? If so, insert pertinent information into the Interim Life Safety Measure form on the share and advise the Safety Officer.
		Some things that will cause ILSM's to be implemented are but not limited to:
		<ul style="list-style-type: none"> Any construction that impacts an EXIT or stairs, Any construction that impacts major breaches in a fire or smoke wall, Taking the main fire protection system out of service (sprinkler), Taking the main fire alarm system out of service, Taking the 'area' fire or fire alarm systems out of service for more than 4 hours within a 24-hour period.
		Can the need for an ILSM be eliminated or mitigated by design or phasing?
		Infection Control Risk Assessments (ICRAs)
		Objective: To protect occupants from infectious conditions during periods of construction. The Lebanon VAMC is considered a low risk facility for the transmission of Tuberculosis. However contract employees working in an area where there is known TB, or those working on local exhaust ventilation (or within 25 feet of a labeled biohazard exhaust vent), airborne isolation room, ED, OR or patient treatment room will be required to provide proof of TB testing in accordance with VHA Directive 2011-036 ..
		Will there be any work that will require activation of the Infection Control Risk Assessment during this project? If so, consult with Infection Control Practitioner for implementing an ICRA.
		<div style="text-align: center;">  ICRA Form </div>

			Can the need for an ICRA be eliminated or mitigated by design or phasing?
			Additional Safety Concerns
			Will construction affect exit routes from occupied areas adjacent to construction site?
			Will project affect traffic patterns in area? <i>If yes, explain plan.</i>
			The following must be completed prior to any construction activities.
			• Separation wall must be constructed prior to project beginning.
			• Fire protection systems must remain intact.
			• Provide extra fire extinguishers in work areas.
			• Maintain exit lights in work area.
			• Maintain negative air in construction area (24/7) through duration of project.
			• There cannot be any return air from within the construction area to the rest of the building.
			• Redirect exiting not to go through construction area.
			• Put signs on doors into construction area "Construction Area Do Not Enter".
			• Maintain daily logs and keep a current Hot Work Permit.
			• Place sticky mats at doors exiting construction area.
			• All debris removal must be by covered cart.
			• Maintain clean and orderly work area on a daily basis.
			• How will this project affect the departments above, below and adjacent to this project?
			Flooding Mitigation
			Are there any active wet piping systems within the construction area? If so, develop a list of shutoff valves noting exact location of valve and who is authorized to close them and share list with those authorized to shutoff valves.
			Security Issues
			Objective: To ensure the construction work site is kept secure to prevent patients and employees from entering these areas at all times of the day.
			Are there any security vulnerabilities? How they will addressed?
			Will any keys be issued to the contractor gain access to their workspace(s) and how will the space be secured?
			Are there any areas of contractor's work site(s) not requiring to be secured 24/7? If so, where?
			Are construction cores required? If so, where?
			Are there any security phasing issues?
			Any chance of a construction worker being locked in a space without means of emergency exiting?

ATTACHMENT A

ICRA PERMIT

Infection Control Risk Assessment (ICRA)				Lebanon VA Medical Center			
Construction Location:		Bldg.#/Section:		Project Start Date:			
Project Title/#:				Est. Duration:			
COR/Supervisor:		Initial:	Date:	WK Phone#:			
Infection Preventionist:		Initial:	Date:	Cell Phone #:			
TYPE A	Inspections and Non-Invasive Activities. Includes, but is not limited to, removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet, painting but not sanding wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.	GROUP 1	<ul style="list-style-type: none"> Mechanical Spaces: Areas not directly adjacent to patient care. Engineering Environmental Management Services (EMS) Office Areas: Areas not attached to or adjoining patient care areas, used for patient interviews, evaluations or examinations. Public corridors: Spaces not on or directly attached to patient units or treatment locations. 				
		GROUP 2	<ul style="list-style-type: none"> Out Patient Units: <ul style="list-style-type: none"> ➤ Primary Care Spaces ➤ Specialty Clinic Spaces ➤ Community Based Out Patient Clinics (CBOC's) 				
TYPE B	Small scale, short duration activities which create minimal dust. Includes, but is not limited to, installation of telephone and computer cabling, access to chase spaces, cuffing of walls or ceiling where dust migration can be controlled. Floor covering removal (<i>without</i> sanding or grinding).	GROUP 3	<ul style="list-style-type: none"> In Patient Units: <ul style="list-style-type: none"> ➤ 1-2A , 1-3A, 1-3B, 1-4A, 1-4B, 1-5 ➤ Emergency Dept. ➤ Radiology/MRI/CT ➤ Nuclear Medicine ➤ Cafeteria/Kitchen ➤ Laboratories ➤ Oncology ➤ Central Sterile Supply 				
TYPE C	Any work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies. Includes, but is not limited to, sanding of wall for painting or wallcovering, removal of floorcoverings, ceiling tiles and casework, new wall construction, minor ductwork or electrical work above ceilings, major cabling activities, and any activity which cannot be completed within a single work shift. Floor covering removal (<i>with</i> sanding or grinding).	GROUP 4	<ul style="list-style-type: none"> Surgical/Medical: <ul style="list-style-type: none"> ➤ ICU/SICU ➤ OR/ASU/Endoscopy ➤ PACU ➤ Sterile Processing Services (SPS) ➤ Pharmacy 				
		Risk Level "GROUP" →		1	2	3	4
TYPE D	Major demolition and construction projects. Includes, but is not limited to, activities which require consecutive work shifts, require heavy demolition or removal of a complete ceiling system, and new construction.	Construction Activity ↓ "TYPE"		CLASS			
		A	I	I	I	III	
		B	II	II	III	III / IV	
		C	II	III	III / IV	III / IV	
		D	III / IV	IV	IV	IV	
1. Execute work to minimize the rise of dust from construction operation. 2. Immediately replace any ceiling tile displaced for visual inspection.			<i>Involving minor demolition in maintenance or remodeling.</i>			CLASS I	
1. Provides active means to prevent air-borne dust from dispersing into the atmosphere. 2. Water mist work surface to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal duct vents. 5. Wipe surfaces with disinfectant.			6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area. 9. Remove or isolate HVAC system in area where work is being performed.			CLASS II	
1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Remove or isolate HVAC systems in area where work is being performed.			6. Do not remove barriers from work site until complete & project is thoroughly cleaned by EMS. 7. Vacuum work with HEPA filtered vacuum. 8. Wet mop with disinfectant. 9. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 10. Contain construction waste before transport in tightly covered containers. 11. Cover transport receptacles or cart and tape covering.			CLASS III	
12. Seal holes, pipes, conduits and penetrations appropriately. 13. Construct anteroom & require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving worksite or they can wear cloth or paper coveralls that are removed each time they leave the work site. 14. Wear shoe covers when within entering work site.			<i>[same as Class III plus these three items.]</i>			CLASS IV	
Additional Requirements: <div style="text-align: center; margin-top: 10px;">01 00 00 - 54</div>							
Permit requested by:		Date:		Permit authorized by:			

PROGRAM

DAILY NEGATIVE AIR PRESSURE VERIFICATION LOG

[illegible]

The COR is responsible to have the completed logs retrieved from the work zones and filed in the project file. The chart should be indicating **negative** pressure of at least **-0.010 W.C.** in reference to surrounding location.

APPENDIX C

Negative Pressure Monitoring Guide for Construction Projects

1. The following note is contained in the specification for this project. If you need to locate it, it is typically in the 01 01 11 Medical Center Requirements section of the specifications, but also could be located in the General Requirements.

All major areas of construction are to be kept under negative pressure at all times during construction as required by the Infection Control Risk Assessment (ICRA). The contractor shall supply, maintain and keep in operation, as many negative air machines as required to keep the construction area under 0.010 inch water column negative pressure. A gauge to monitor and record the negative pressure in the construction area at all times during the construction period including non-working hours will be required to be installed by the contractor. The contractor is to supply the COR with the Negative pressure records from the gauge on a weekly basis. The contractor will document the visual inspection of negative pressure on a negative air pressure verification located directly outside the construction area at the start of each work shift.

2. The following guide will assist you in meeting this section of the specification.
 - a. All projects are required to maintain a negative pressure of 0.010 inches of water at a minimum, at **ALL** times, without exception. This means negative air pressure is required 24/7 until your project is completed. You will need to download weekly readings from the device and provide a written report to the COR. Most of these devices allow you to download the data onto a thumb drive with electronic transmission of results (e.g. email) to the COR an acceptable alternative.
 - b. Before every work shift, the pressure must be noted on the negative air verification log (*Appendix B.*) If the pressure is less than .010 inches of water, measurements must be taken to establish that level of negative pressure before work can begin on that shift.

c. Below is an example of negative air pressure gauge that is acceptable to use. The cost is \$888. This model is not required to be used, and other gauges can be used as long as it has the following features:

- i. Battery Powered
- ii. Constantly monitors and records negative pressure
- iii. Records weekly negative pressure information that can be downloaded and printed
- iv. Has a visible display



Abatement Technologies Negative Pressure Gauge



Typical set up for an analog negative pressure gauge (*Please note, it is not the correct gauge for 24/7 monitoring.*) The gauge can be attached to wall, outside of the space under negative pressure, with the sensor tube secured appropriately. The daily negative air pressure verification log (*Appendix B*) should be mounted next to the gauge.



Negative pressure gauge sensor tube can be taped under the door to provide continuous monitoring of compartment negative pressure.

Window Replacement Buildings 1 and 17

Lebanon VAMC, Lebanon, PA

Project # 595-13-111

[illegible]

Window Replacement Buildings 1 and 17
Lebanon VAMC, Lebanon, PA

Project # 595-13-111

REMARKS *(Continue on reverse, if necessary)*

SIGNATURE OF RESIDENT ENGINEER

VA Form 08-6131 Apr - 75

GENERAL - INTERIM LIFE SAFETY MEASURES (ILSM)

Contractor's Daily Monitor

Replacement of Windows Building 1 and 17

Objective: To implement activities to protect occupants during periods when a building does not meet the applicable provisions of the *Life Safety Code®*.

Submit original copy of form to the COR by first workday of following month.

Ensure that all construction staff is aware of what to do in event of a fire. RACE – Rescue, Alarm, Confine, Extinguish. <i>Initiate alarm by pulling nearest pull box at the stairwell & call 272-6621, ext. 4999.</i>																						Month/Year: COR:																								
Inspect & document daily to ensure that:										✓	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
<ul style="list-style-type: none"> escape routes are maintained for construction workers at all times, and the means of exiting construction areas 																																														
<ul style="list-style-type: none"> temporary construction partitions are maintained smoke-tight and the wall(s) are built of noncombustible or limited combustible materials that will not contribute to the development or spread of fire 																																														
<ul style="list-style-type: none"> exterior areas/roadways near construction site remain accessible and unobstructed within 20 feet of building for emergency services such as Fire Department, police etc. 																																														
<ul style="list-style-type: none"> storage, housekeeping, and debris-removal practices for building's flammable and combustible fire load are kept to the lowest feasible level 																																														
<ul style="list-style-type: none"> adjacent occupied corridor & fire exit to stairwell are kept clear at all times 																																														
<ul style="list-style-type: none"> no smoking occurs. <i>Only allowed in designated smoking shelters.</i> 																																														
Initials:																																														
Person(s) responsible for daily monitoring: _____ Name & Initials _____ Name & Initials										Comments:																																				

END SECTION 01 00 00

SECTION 01 01 11

MEDICAL CENTER REQUIREMENTS

PART 1 GENERAL

1.1 GENERAL INTENTION

- A. This section pertains to station policy for construction projects performed at the Veterans Affairs Medical Center, Lebanon, Pennsylvania. Safety and health concerns are taken seriously at this facility. Both our staff and yours are expected to adhere to the strictest requirements. This is exceedingly important, since we must be primarily concerned for the safety of our patients. In this regard, OSHA Standards may protect worker safety and health, but they have minimal benefit for protecting the safety and health of our patients, due primarily to their differing medical conditions. Please review this information as orientation with your personnel performing work on site.
- B. Our medical center is committed to addressing those construction, protection and occupancy features necessary to minimize danger to life from fire, smoke, fumes and panic. The level of safety is achieved by the combination of prevention, protection, egress and other features. The level of life safety from fire is defined through requirements directed at: prevention, detection, control of development, confinement of effects, extinguishment, provision of refuge/evacuation and staff reaction. This medical center provides its minimum level of life safety by extensively applying the aforementioned measures using a defense in place strategy. This strategy recognizes that our patients are both incapable of self-preservation and difficult to move, particularly vertically to other floors or to the exterior of the buildings. When any of the life safety measures are compromised by construction, an alternate or interim life safety measure must be put in place to maintain the level of safety required by NFPA 101, Life Safety Code.

1.2 REQUIREMENTS

- A. Site Security:
1. Secure all areas of work including, but not limited to construction sites, attics, crawl spaces, mechanical and electrical rooms against entry of unauthorized individuals including patients. Erection of a non-flammable partition to secure the job site may be required. Close all windows at the end of each workday.
 2. Notify the Contracting Officers Technical Representative (COR) for permission to work after hours and weekends.

3. All contractor and subcontractor employees shall obtain from the VA Police Department an ID badge, and shall always prominently wear it.

B. Key Security:

1. The contractor will not be issued more than required sets of keys to complete this project.
2. The contractor's set(s) of keys will contain only those keys that the COR can issue without breaching the security of other areas of the medical center.
3. If the contractor loses a key, all areas that are keyed to that key will be rekeyed at the contractor's expense and all new keys required to be issued will be completed at the contractor's expense.

C. General Safety:

1. Follow all safety, fire safety and health requirements as per CFR 29, Subtitle B, Chapter XVII (OSHA), Part 1926 including the submission of a Safety/Fire Safety Plan.
2. Maintain safety in the construction site/area in accordance with the provisions of the contract, which includes the OSHA Regulations, National Electrical Code NFPA 70, and NFPA 101, Life Safety Code.
3. Work in a safe manner and take all proper precautions while performing your work. Extra precautions shall be taken when working around persons occupying the building during construction. Submit a Coredrilling & Firestopping Permit, supplied by the government for all penetrations. Take precautions when coredrilling to protect persons and structural integrity of the building. Firestop all penetrations before the end of the workday. All Firestop material shall be RED in color.
4. All ceiling tile must be replaced whenever the work site is left unattended. If tiles are broken, the broken tile must be replaced before the end of the day. This applies to all areas outside of areas closed and labeled as a construction area.

5. Make safety inspections and submit weekly, on government supplied form, directly to Project Coordinator.
6. Provide Personal Preventive Equipment (PPE) for your employees.
7. Post appropriate signs in specific hazardous areas.
8. Keep tools, ladders, etc. away from patients to prevent injuries.

D. Safety Inspections:

Safety inspections of all contract operations will be performed on a regular frequency by the professional Occupational Safety & Health Staff at this facility. Written reports of unsafe practices or conditions will be reported to the Contracting Officers Technical Representative (COR) and Contracting Officer for immediate attention and resolution.

E. Fire Alarms:

1. The fire alarm system connects all buildings at this facility, and is activated by various heat, duct, manual pull stations and smoke sensors. Manual pull stations are provided on each ward. Please survey the area in which you are working to locate the manual pull stations.
2. If in the event of a fire alarm sounding, you are instructed to remain in your area, unless medical center personnel (Safety, Nursing or Engineering) instruct otherwise, or unless a fire situation is in your area, in which case you should immediately evacuate.
3. The medical center operates an extensive patient evacuation program. A total of approximately 15-20 personnel initially respond to all alarms. Historically, false alarms are caused by contractors generating dust or other disturbances of sensors. When working in an area producing dust, you will cover all alarms with covers provided by Engineering Service. These covers will be removed at the end of the work shift, upon leaving the area after dust has settled.
4. If an alarm is determined by the COR to have been activated by contractor's work other than from or resulting in a fire situation, the contractor will be charged \$300 per occurrence.

5. Any work involving the fire protection systems will require written permission to proceed from the COR.

DO NOT tamper with or otherwise disturb any fire alarm system components without prior written permission.

F. Hazardous Materials:

1. Many of the operations you are scheduled to perform may involve the use of hazardous materials. Prior to locating hazardous materials on site, all Material Safety Data Sheets will be submitted through the COR for evaluation by the Facility Industrial Hygienist.
2. Storage of hazardous materials within buildings will be minimal with only enough on hand to perform daily work tasks. Flammable materials will either be removed from buildings at the end of the work shift or stored in approved flammable storage containers.
3. Care must be taken to assure adequate ventilation to remove vapors from hazardous materials in use. Many of the patients being cared for in the facility are susceptible to environmental contaminants, even when odors seem minimal. The more effective method to reduce complaints is to close the work area and use adequate ventilation.

G. Airborne Dust and Fume Control During Construction:

1. Generation of dust is of major concern within staff and especially patient-occupied areas. Dust can be generated by either manual or mechanical cutting, sanding or drilling on surfaces. Where operations involve techniques, which may generate dust, all efforts will be directed at reducing airborne generated dust to the lowest level feasible. This may be accomplished by a number of methods. These include misting the area with water or use of tools attached to high efficiency particulate air (HEPA) filtering vacuums. Where large amounts of materials may be disturbed resulting in airborne dust, establishment of full ceiling to floor plastic barriers may be required.
2. Generation of metal fumes is also a concern to hospital patients and staff. Fumes generated as a result of welding, brazing, soldering

and cutting must be controlled through the use of spot ventilation or fume extractors. If fumes are captured and filtered through HEPA filtered fume extractors, exhaust can be returned directly into the work area. Unfiltered fume, like those collected by spot ventilators, shall be exhausted directly to the outside through exterior building openings. In addition to ventilation requirements, arc welding operations shall be shielded by noncombustible or flameproof screens to protect employees and patients from the direct rays of the arc.

3. If waste chutes are used to facilitate disposal of construction debris from upper building floors, cover all waste receptacles and dumpsters to help contain dust. Additionally, cover all waste receptacles during brisk wind conditions to prevent debris from littering the medical center grounds.
4. Classification of Jobs.
 - a. All jobs shall be classified and carried out per the Infection Control Risk Assessment (ICRA), Section 01 00 00 of these specifications.
 - b. Prior to the start of construction, the contractor shall require all employees and subcontractors to view a training video entitled "Infection Control During Construction" by HCPro (www.hcmarketplace.com) or an approved equal training video. Contractor shall provide written documentation to COR that all construction personnel have viewed the training video. The written documentation shall include the names of all personnel, their signatures and dates when the training video was offered and viewed.
5. All major areas of construction are to be kept under negative pressure at all times during construction as required by the ICRA. The contractor shall supply, maintain and keep in operation, as many negative air machines as required to keep the construction area under 0.010 inch water column negative pressure. A gauge to monitor and record the negative pressure in the construction area at all times during the construction period including non-working hours will be required to be installed by the contractor. The contractor is to supply the COR with the Negative pressure records from the gauge on a

weekly basis. The contractor will document the visual inspection of negative pressure on a negative air pressure verification located directly outside the construction area at the start of each work shift.

H. Asbestos Containing Materials:

1. Due to the age of many of our buildings, many still contain asbestos containing materials (ACM). Primary ACM uses in the medical center include floor tile, mastic, piping and HVAC insulation. The medical center has performed comprehensive asbestos surveys and has identified accessible ACM. Some areas contain damaged asbestos and should not be accessed without prior abatement.
2. The most common type of ACM insulation you may encounter includes thermal system insulation (TSI) and floor tile. ACM TSI is generally covered with a cloth wrap or lagging, and the asbestos substrate generally appears white in color. **DO NOT SAND, DRILL, GOUGE OR OTHERWISE DISTURB THIS TYPE OF INSULATION.** Contractors disturbing or releasing asbestos containing materials will be liable for all damages and clean up costs.
3. In most cases where disturbance of asbestos is likely or necessary, it has been addressed in the contract. If not, please contact the COR or Industrial Hygienist to make necessary arrangements for removal.
4. Asbestos insulation has been identified on elbows between fiberglass piping insulation as patching materials among the fiberglass insulation. Fiberglass insulation used in this facility is usually yellow or pink in color, wrapped either by cloth or paper lagging.
5. To protect and ensure all your employees are aware that asbestos containing materials have been used in the construction of this facility, you are required to have them review this section and complete the awareness statement included as Attachment A. Once this document has been signed by all employees, forward to the COR for documentation.

6. A complete assessment of asbestos materials and conditions are available for viewing by contacting the facility Industrial Hygienist at extension 4008. Prior to performing work above any ceiling or starting in a new area, consult with the COR concerning existing conditions of ACM.
7. Some of the areas in the facility are identified as restricted areas due to condition of ACM. These are readily labeled. **DO NOT ENTER THESE AREAS** unless first contacting the COR. Entry requirements to these areas are awareness of the hazards, proper protective clothing (coveralls and respirators) and personal monitoring in accordance with OSHA requirements.
8. All contractor and subcontractor employees shall read and sign the Notification of Asbestos (attachment A) kept by the project Superintendent.

I. Environmental Protection:

1. It may help you to be aware of the seriousness, which the environmental protection requirements of each contract are regarded. Adherence to these requirements are subject to continuing scrutiny from the community and backed by severe penalties, such as fines and incarceration. These environmental requirements will be strictly enforced.
2. **NO** hazardous materials will be disposed of on government property. All waste will be hauled off-site or disposed in contractor owned and operated waste removal containers.
3. A copy of all waste manifests for special or hazardous wastes will be forwarded to the COR. Environmental requirements will be strictly enforced.

J. Permit Required Confined Spaces:

1. Contractors performing work on this facility will follow all requirements outlined in OSHA Standards for working in confined spaces. There are numerous permits required for confined spaces on this facility. These spaces have been identified. Some spaces have been posted, but the majority have not due to their configuration. A

complete listing of these areas is located in the Engineering Service and Safety Office.

2. Confined spaces are areas which are large enough to be entered, but have limited egress/exit potential and are not designed for permanent human occupancy. If you encounter any space which meets this definition or if it is a suspected confined space, please contact the COR for a listing of these spaces.
3. Contractors performing work in confined spaces are responsible for compliance with all applicable standards and regulations.

K. Housekeeping:

1. Protect patients and VA personnel in occupied areas from the hazards of dust, noise, construction debris and material associated with a construction environment.
2. Keep work area clear, clean and free of loose debris, construction materials and partially installed work, which would create a safety hazard or interfere with VA personnel duties and traffic.
3. Wet mop occupied areas and remove any accumulation of dust/debris from cutting or drilling from any surface at the end of each work day.
4. Make every effort to keep dust and noise to a minimum at all times. Take special precautions to protect VA equipment from damage, including excessive dust.
5. Access to mechanical and electrical devices and equipment should be free of debris and material at all times. This is required to ensure access to existing systems in the event of an emergency.
6. Clean area free of all construction debris and dust upon completion of demolition and/or renovation.
7. During construction operations, keep existing finishes protected from damage. Cover and protect all carpets during construction. Any carpets or surfaces damaged, as a result of construction activities, will be replaced at the contractor's expense.

L. Utilities:

1. Maintain existing utility services for this Medical Center at all times in accordance with the contract provisions.

M. Hot Work Permits:

1. Any hot work operations including cutting, welding, thermal welding, brazing, soldering, grinding, thermal spraying, thawing pipes or any other similar activity will require a Hot Work Permit to be obtained by the contractor from the Facility Safety Manager. The contractor will be responsible for conforming to all Medical Center regulations, policies and procedures concerning Hot Work Permits as outlined below:
 - a. Prior to the performance of hot work in patient-occupied buildings, a request for a Hot Work Permit will be made to the Facility Safety Manager.
 - b. The Facility Safety Manager will inspect the area and ensure that the requirements of NFPA 241 and OSHA Standards have been satisfied. The Hot Work Permit will be granted and will be posted in the immediate area of the work.
 - c. The Hot Work Permit will apply only to the location identified on the permit. If additional areas involve hot work, additional permits must be requested.
 - d. Upon completion of all hot work, the Facility Safety Manager will be notified by the responsible individual to perform a re-inspection of the area.
 - e. In all other areas not occupied by patients, the supervisor will inspect the hot work area for compliance with NFPA 241 and OSHA Standards. Copies of the request form and permit are available from the Facility Safety Manager.
2. Do not use any of the extinguishers in the medical center for standby purpose while conducting hot work. Contractors are required to supply

their own Class ABC extinguishers. Medical center extinguishers are only to be used in the event of a fire.

N. Emergency Medical Services:

Emergency medical services are available for contractors at this facility. For medical emergencies, dial 4999 when inside any building. Report the nature of the emergency and location. The operator will determine whether to dispatch in-house personnel or outside emergency assistance based on the nature of the emergency.

O. Use of Government Owned Material and Equipment:

Use of government owned material and equipment is PROHIBITED.

P. Superintendent Communications and Responsibilities:

1. At all times during the performance of this contract, the Contractor's Superintendent is to be available by telephone (portable cellular phone). At the beginning of the contract and prior to beginning any construction, provide the Contracting Officer with the telephone number for the superintendent.
2. The Contractor's Superintendent shall post pertinent information at each job site for the benefit of the construction workers and for communicating with Medical Center Staff. A 2'x 4' construction board shall be placed at the job site entrance in accordance with recommendations set forth by The Joint Commission, as illustrated on the sample Attachment D.
3. Prior to the start of work of any contractor or subcontractor employee, they shall read, review with the superintendent, and sign the Orientation of Construction Workers.
4. The Contractors Superintendent shall inspect and document on the Interim Life Safety Measures daily monitoring form the requested data.
5. The Contractors Superintendent shall maintain copies of all forms required by this specification section at the job site and shall be provide to the COR on request.

Q. Parking:

1. Contractor employees shall be assigned parking spaces by COR. Spaces may not be in the immediate area of the construction site.
2. It is the responsibility of the contractor to barricade parking spaces when not in use.

R. Traffic:

1. Traffic hazards are minimal at this facility. Drivers should be particularly concerned with pedestrian traffic.
2. Seat belt use is mandatory on the station.
3. Federal police officers maintain a 24 hour patrol of the area and have state and federal enforcement authority.
4. Contractor is to have all deliveries made via the State Drive Entrance to the medical center. No deliveries will be allowed from the Lincoln Avenue Entrance (Main Entrance).

S. Contractor's Trailers:

Contractor's trailers shall be located within the lay down area assigned. All utility connections to the trailer shall be located underground and installed at the contractor's expense. Their removal is required upon completion of the contract, unless approved by the COR to leave in place.

T. Smoking:

1. No smoking is permitted at the Lebanon VAMC except inside designated smoking shelters
2. If any contractor's or subcontractor's employee is found smoking in an unauthorized area, the contractor will be charged \$200 for the first occurrence and \$500 for every occurrence thereafter. The employee is subject to a \$50 fine.

3. All contractor and subcontractor employees shall read and sign the Notification of Smoking Policy (attachment B) kept by the project Superintendent

U. Contractor shall comply with all applicable elements of the National Fire Protection Association (NFPA) Standard 241. This standard addresses:

1. Temporary Construction, Equipment and Storage
 - a. Temporary offices and sheds
 - b. Temporary enclosures
 - c. Equipment
2. Processes and Hazards
 - a. Hot work operations including thermic welding
 - b. Temporary heating equipment
 - c. Smoking
 - d. Waste disposal
 - e. Flammable and combustible liquids
 - f. Explosive materials
3. Utilities
 - a. Electrical - temporary wiring (branch circuits, lighting and removal)
4. Fire Protection
 - a. VA's responsibility for fire protection
 - b. Site security
 - c. Fire alarm reporting
 - d. Access for fire fighting
 - e. Stand pipes
 - f. First-aid fire equipment
5. Construction Safeguards
 - a. Scaffolding, shoring and forms
 - b. Construction material and equipment storage
 - c. Roofing operations
 - d. Permanent heating equipment
 - e. Utilities
 - f. Fire cutoffs
 - g. Fire protection during construction - water supply, sprinkler protection and stand pipes
6. Demolition Safeguards

- a. Special precautions
 - b. Temporary heating equipment
 - c. Smoking
 - d. Demolition using explosives
 - e. Utilities
 - f. Fire cutoffs
 - g. Fire protection during demolition
7. Underground Operations
- a. Special precautions
 - b. Equipment and storage requirements
 - c. Electrical

V. Construction or Demolition Fire Safety Program:

1. A program shall be developed with the following elements addressed:
- a. Good housekeeping
 - b. On-site security
 - c. Preservation of existing systems during demolition
 - d. Rapid communication

W. Contractor Life Safety Smoke Barrier Responsibilities:

The contractor shall assume full responsibility for compliance to all applicable regulations pertaining to NFPA 101 with respect to medical center building smoke barriers and corridor walls. Maintain the integrity of floor slabs and fire/smoke walls by fire stopping all holes and penetrations before the end of each workday.

X. Enforcement:

The COR on this project is designated as the person responsible for ensuring that the Safety/Fire Safety Plan is carried out to the completion of the project and has the authority to enforce the provisions of this specification section and other applicable fire protection standards.

Y. Submittals:

1. Within ten working days after the Notice to Proceed, submit a Safety/Fire Safety Plan for Architect-Engineer and VA review.

2. Submit Material Safety Data Sheets for all chemicals and hazardous materials to be used on the project prior to location and use on the job site.
3. Submit Contractor Asbestos Awareness Statements and Notification of Smoking Policy for all persons working on the site prior to commencing work.
4. Submit Weekly Construction Site Inspection Report. The contractor must submit along with each Wednesday's daily log, a completed and signed, government supplied, Construction Site Inspection Report.
5. To expedite project actions, the use of certain government forms is required. During the pre-construction conference, the following forms, but not limited to, will be supplied to the contractor: Daily Logs, Weekly Safety Inspection Report, Hot Work Permit, Excavation Permit, Variance Request, Coredrilling and Firestopping Permit, Construction Progress Graph, Submittal Transmittal Letter, Proposal Cost Breakdown Summary, Construction Contractor Invoice, Construction Payment Worksheet, Project Specified Training Log, Contract Progress Report, WH-347 Payroll and Request for Information(RFI).
6. Submit a signed and dated "Orientation of Construction Workers" (Attachment C) for each worker on the project.
7. Prior to final inspection of the project, submit a master list of equipment installed as part of this project. Provide information (model number, serial number, item description and manufacturer) for the following: fan coil units, HVAC roof top units, ice machines, pumps, fire alarm systems, energy management system and nurse call system.

END OF SECTION 01 01 11

Attachment A

CONTRACTOR/SUBCONTRACTOR/EMPLOYEE
NOTIFICATION OF ASBESTOS

THE DEPARTMENT OF VETERANS AFFAIRS MEDICAL CENTER LOCATED IN LEBANON, PENNSYLVANIA WAS CONSTRUCTED DURING A PERIOD WHEN ASBESTOS WAS COMMONLY USED IN BUILDING MATERIALS.

THE MEDICAL CENTER HAS COMPLETED A SURVEY FOR ASBESTOS. ALL BUILDINGS CONTAIN SOME TYPE OF ASBESTOS (I.E., STEAM LINES, FLOOR TILES, CRAWLSPACES, ETC.).

IF YOU OR YOUR EMPLOYEE ENCOUNTERS SUSPECTED FRIABLE ASBESTOS OR CONDITIONS THAT MAY CAUSE SUSPECTED ASBESTOS TO BECOME FRIABLE, NOTIFY THE COR IMMEDIATELY.

WHEN WORKING IN AREAS THAT ARE SUSPECTED OF HAVING ASBESTOS, RELOCATE EMPLOYEES AND PATIENTS FROM THE AREA UNTIL WORK IS COMPLETED.

IF THERE ARE ANY QUESTIONS, PLEASE FEEL FREE TO CONTACT THE PROJECT COORDINATOR AT EXT. 4720.

THANK YOU FOR YOUR ASSISTANCE.

PLEASE SIGN AND DATE AS ACKNOWLEDGEMENT OF THE ABOVE INFORMATION.

CONTRACTOR/SUBCONTRACTOR EMPLOYEE SIGNATURE:

EMPLOYEE NAME

CONTRACTOR/SUBCONTRACTOR

DATE:

CONTRACTOR / SUBCONTRACTOR / EMPLOYEE

Attachment B

NOTIFICATION OF SMOKING POLICY

7 Prohibit Smoking

The Department of Veterans Affairs' smoking policy is for the safety and protection of its patients, visitors and employees.

Smoking is prohibited:

- In all buildings and grounds of the medical center, except inside designated Smoking Shelters.

Smoking material litter is prohibited anywhere in the medical center and on its grounds, except when properly deposited in a safe receptacle. This material shall be out of sight.

VA Police are authorized to issue \$50.00 citations to the person for any smoking violations. The employer of the person will be charged \$200.00 for the first occurrence and \$500.00 for every occurrence thereafter.

If there are any questions, please contact the COR. Thank you for your assistance.

Sign and **date** acknowledgment of the above information.

Contractor / Subcontractor Employee Signature:

Employee Name	Date	Contractor / Sub

This policy is consistent with the
Joint Commission Accreditation of Healthcare Organizations

VA MEDICAL CENTER
LEBANON, PA

Attachment C

ORIENTATION OF CONSTRUCTION WORKERS

Objective: To ensure a safe and healthful environment in the worksite and the adjacent areas.

Expectations (areas within and outside construction sites):

- Acquire and wear ID badge at all times.
- Read and sign asbestos and prohibit smoking attachments.
- Keep access points (doors, etc.) secured to prevent injury of patients, staff or visitors and/or theft of property.
- When working outside the primary construction site, keep tools and materials under control. No tools/material shall be left unattended.
- Firestop/seal all penetrations of fire/smoke walls and floor slabs with approved material. No penetrations shall be left overnight for next shift or some time in future.
- Use pilot-hole technique or another absolute method in determining location of coredrilling. No coredrilling through webs, beams, columns, etc.
- In finished areas, close ceilings (reset tile in grid) before leaving area for more than 15 minutes. No ceiling shall be left open overnight.
- Prevent dust and odors from migrating into adjacent areas.
- Keep unattended carts out of stairwells and corridors to prevent obstruction of evacuation in the event of an emergency.
- Request Hot Work Permit in advance of soldering, welding, etc.
- Smoke only beyond the limits marked on sidewalk outside buildings. No smoking in the construction worksites indoors.
- Maintain integrity of fire doors to ensure closing and latching of doors for controlling spread of smoke. No propping, chocking or tying doors open.
- Know where the Material Safety Data Sheets are kept for access of information regarding the hazards of substances being used.
- Know the locations of local shutoff valves of water systems (domestic & sprinkler) to ensure quick response in the event of a pipe break. Prime contractor will determine who has a need to know.
- Secure compressed gas cylinders to adjacent structure using chain or other stabilizing methods.

- Secure equipment by using lockout / tagout method. Note: No equipment shall be shutdown without the VA Electrical Foreman's okay.

Dust Generating Activities

- **Follow** the Infection Control Risk Assessment (ICRA) protocol.
- **Keep** space under negative pressure.
- **Use** sticky mats at point of exit.
- **Protect** property from damage (dirt, grime, breakage).
 - **Remove** items from space.
 - **Cover** remaining items to protect from dust, i.e. protecting carpeting.

Contractor / Sub

Employee Name

Date

Prime Contractor: Have employee sign and give a copy of this page to employee and to the VA to attached to Daily log

Construction Board 2'x 4' plywood posted at each contracted construction site.

*A COMPREHENSIVE METHOD OF ORGANIZING INFORMATION FOR CONSTRUCTION WORKERS AND
FOR COMMUNICATING
WITH STAFF AND PATIENTS*

General		Specific	
Contractor's Safety Plan & Copy of Spec Section	List & Location of Shutoff Valves Serving Piping Systems within the Construction Site	Active Hot Work Permits	Active Requests for Interruption
General ILSM Daily Monitor	General ICRA for Project Duration	Updates/Cha nges ILSM's	Updates/Cha nges ICRA's

END OF SECTION 01 01 11

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

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

to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled "CHANGES" (FAR 52.243-4) and "CONTRACT CHANGES - SUPPLEMENTAL (JUL 2002) (VAAR 852.236-88) of the GENERAL CONDITIONS.

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

- C. If submittal samples have been disapproved, resubmit new samples as soon as possible after notification of disapproval. Such new samples shall be marked "Resubmitted Sample" in addition to containing other previously specified information required on label and in transmittal letter.
 - D. Approved samples will be kept on file by the 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.
 - E. Submittal drawings (shop, erection or setting drawings) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.
 - 1. For each drawing required, submit one legible photographic paper or vellum reproducible.
 - 2. Reproducible shall be full size.
 - 3. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
 - 4. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate approval or disapproval stamp.
 - 5. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
 - 6. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.
 - 7. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.
- 1.10 At the time of transmittal to the Architect-Engineer, the Contractor shall also send a copy of the complete submittal directly to the COR.

- 1.11 Samples for approval shall be sent to Architect-Engineer, in care of
COR, VA Medical Center, DCS Infrastructure LLC, 3249 Route 112, Building
4, Suite 1B, Medford, NY 11763.

END OF SECTION 01 33 23

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. This schedule shall be supplied by the Contractor to the VA before commencing work.

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 Calendar 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 Contracting Officer; 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 45 calendar days after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; three blue line 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 Contracting Officer. The contractor shall make a separate written detailed request to the Contracting Officer identifying these date constraints and secure the Contracting Officer's written approval before incorporating them into the network diagram. The Contracting Officer'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. 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 14 calendar days after the joint review, the Contractor shall revise and shall submit three blue line 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 Contracting Officer. The revised submission will be reviewed by the Contracting Officer 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 approximately 80 work activities/events.

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 Contracting Officer 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. 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.

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. Contracting Officer'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. 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, or building, to another area, floor, or building, for at least five trades who are performing major work under this contract.
 3. Break up the work into activities/events of a duration no longer than 20 work days each or one reporting period, except as to non-construction activities/events (i.e., procurement of materials, delivery of equipment) 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 Contracting Officer 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 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 83 (PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS (INCLUDING NAS)). 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 Contracting Officer'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, RE office representatives, and all subcontractors needed, as determined by the SRE, 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 should 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 manpower 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. Schedule variation will be required based on the needs and requirements of the VA at no additional cost to the VA.
- C. 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 Contracting Officer for approval.

- D. Contracting Officer'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.
- E. 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 (Contract Changes - Supplemental (JUL 2002)), and will be based on the complexity of the revision or contract change, man hours expended in analyzing the change, and the total cost of the change.
- F. The cost of revisions to the Project Schedule not resulting from contract changes or VA requirements and needs 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 Contracting Officer'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 Contracting Officer will within a reasonable time after receipt of such justification and supporting evidence, review the facts and advise the Contractor in writing of the Contracting Officer'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 (Contract Changes - Supplemental (JUL 2002)). 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.

END OF SECTION 01 32 16.15

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

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

1.2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS FPMR PART 101-29)

- 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

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

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

AA	<u>Aluminum Association Inc.</u>
AAMA	<u>American Architectural Manufacturer's Association</u>
ACI	<u>American Concrete Institute</u>
AGC	<u>Associated General Contractors of America</u>
AISC	<u>American Institute of Steel Construction</u>
AISI	<u>American Iron and Steel Institute</u>
AITC	<u>American Institute of Timber Construction</u>
ANSI	<u>American National Standards Institute, Inc.</u>
ASTM	<u>American Society for Testing and Materials</u>
AWS	<u>American Welding Society</u>
BHMA	<u>Builders Hardware Manufacturers Association</u>
BIA	<u>Brick Institute of America</u>
CISCA	<u>Ceilings and Interior Systems Construction Association</u>
CRSI	<u>Concrete Reinforcing Steel Institute</u>
EPA	<u>Environmental Protection Agency</u>
ETL	<u>ETL Testing Laboratories, Inc.</u>
GANA	<u>Glass Association of North America</u>

GA	<u>Gypsum Association</u>
GSA	<u>General Services Administration</u>
ICBO	International Conference of Building Officials (No working link available at this time)
NAAMM	<u>National Association of Architectural Metal Manufacturers</u>
NBS	National Bureau of Standards See - NIST
NEC	National Electric Code See - NFPA National Fire Protection Association
NFPA	<u>National Fire Protection Association</u>
NIH	<u>National Institute of Health</u>
NIST	<u>National Institute of Standards and Technology</u>
NWDA	<u>Window and Door Manufacturers Association</u>
OSHA	<u>Occupational Safety and Health Administration</u> <u>Department of Labor</u>
IGMA	<u>Insulating Glass Manufacturers Alliance</u>
SSPC	<u>The Society for Protective Coatings</u>
SWI	<u>Steel Window Institute</u>
UBC	The Uniform Building Code See ICBO

END OF SECTION 01 42 19

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SECTION 01 52 00
CONSTRUCTION FACILITIES

PART 1-GENERAL

1.1 SECTION INCLUDES

- A. Temporary sanitary facilities
- B. Contractor's field office
- C. Storage and parking areas
- D. Enclosed storage and shops
- E. Protective barricades and safety precautions
- F. Temporary fencing
- G. Security

1.2 MEASUREMENT AND PAYMENT

- A. Separate measurement or payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered to be included with the related item of work in the Bid Schedule of the Bid Form, or incidental to the Work.

1.3 GOVERNING LAWS

- A. Temporary facilities shall be in compliance with applicable federal, state, county, municipal, and local utility laws, rules, and regulations. Nothing in these Contract Documents shall be construed to permit work not conforming with such codes and regulations.

1.4 TEMPORARY SANITARY FACILITIES

- A. Provide adequate temporary toilet conveniences, washing facilities, and drinking water for the use of all employees and persons engaged on or about the Work, including Subcontractors and their employees. Drinking water shall be potable, and drinking water facilities shall be clean and sanitary.
- B. Locate sanitary facilities where approved by authorities having jurisdiction and maintain in a clean and sanitary condition during the course of the Work. Keep such facilities adequately supplied with toilet paper, paper toweling, paper cups, and related supplies as required.

- C. At completion of the Work, sanitary facilities shall be properly disinfected and all evidence of same removed from the site.

1.5 CONTRACTOR'S FIELD OFFICE

- A. The Contractor shall provide and maintain, in good condition, on the site or near the site as approved by the Engineer, a temporary field office of suitable size for construction administrative operations and consultations with representatives of the District.
- B. The Contractor's field office shall contain a complete set of Contract Documents.
- C. The Contractor shall make arrangements and pay all costs, including service and toll charges, until Substantial Completion of the Work, for temporary telephone service in the temporary field office, for use by the Contractor and Subcontractors, for purposes related to the Work.
- D. If no Engineer's field office is required, the Contractor's field office shall include the following for the exclusive use of the Engineer:
 - 1. A minimum 30 inches by 60 inches metal table with four chairs.
 - 2. A lockable metal two drawer filing cabinet. Furnish the Engineer with two sets of keys. The contractor shall not retain any key to this cabinet.

1.6 STORAGE AND PARKING AREAS

- A. The Contract Drawings may indicate work areas available to the Contractor for storage of materials and for parking of construction equipment. If so indicated, these areas will be provided to the Contractor for the durations indicated in the Contract Specifications. Additional work and storage space, if required, shall be provided by the Contractor at Contractor's expense.
- B. The Contractor shall provide parking facilities for the Contractor's personnel, Subcontractors, supplier's delivery vehicles, and authorized visitors. Off-site parking facilities

(if any) shall not impair or interfere with existing community parking and traffic conditions, regulations, and restrictions.

1.7 ENCLOSED STORAGE AND SHOPS

- A. The Contractor shall provide all temporary storage and shop rooms that may be required at the jobsite for safe and proper storage of tools, materials, and equipment. Construct such rooms only in locations indicated or as approved by the Engineer, and so as not to interfere with the proper installation and completion of other work.
- B. Remove such rooms within three calendar days of receipt of notices from the COR that removal is necessary, and incur all expenses for such removal.
- C. Storage of gasoline or similar fuels shall conform to NFPA regulations and local fire department regulations and shall be confined within definite boundaries apart from buildings as approved by the COR and the jurisdictional fire marshal.

1.8 PROTECTIVE BARRICADES AND SAFETY PRECAUTIONS

- A. Construct and maintain barricades, lights, shoring, and warning signs as required by Federal and State safety ordinances and as required to protect the District's property from injury or loss and as necessary for the protection of the public and adjacent properties. Provide walks around obstructions made in a public place for prosecuting the Work. Leave all protection in place and maintain until removal is authorized.
- B. Guard and protect all workers, pedestrians, and the public from excavations, construction equipment, obstructions, and other dangers with adequate railings, guard rails, temporary walks, barricades, warning signs, directional signs, overhead protection, planking, decking, danger lights, and other suitable safeguards.
- C. Flaggers shall be provided to direct or divert pedestrian or vehicular traffic when necessary.

1.9 TEMPORARY FENCING

- A. The Contractor shall furnish, construct, maintain, and later remove temporary fencing around the jobsite perimeter as indicated.
- B. Except as otherwise specified herein, temporary fencing shall conform to Specifications Section 32 31 13 - Chain Link Fences and Gates.
- C. Used materials may be employed for temporary fencing, provided such used materials are good, sound, and are suitable for the purpose intended.
- D. Fencing materials may be commercial quality, provided the dimensions and sizes of said materials are equal to, or greater than, the dimensions and sizes indicated in Specifications Section 32 31 13 - Chain Link Fences and Gates. Additional fencing options include the following:
 - 1. Posts may be either metal or wood.
 - 2. Galvanizing and painting of steel items will not be required.
 - 3. Treating wood with wood preservatives will not be required.
 - 4. Concrete footings for metal posts will not be required, except where portable footings are required for temporary anchorage of posts.
- E. Temporary fencing that is damaged from any cause during the progress of the Work shall be repaired or replaced by the Contractor at no additional cost to the District.
- F. When no longer required for the Work, temporary fencing shall be removed. Removed fencing and related materials shall become the property of the Contractor and shall be removed from the jobsite, except as otherwise provided herein.
- G. Holes caused by the removal of temporary fences shall be properly filled to match adjacent surfaces.

1.10 Scaffolds

- A. Scaffolds must be designed, built, inspected, and tagged by trained, competent persons in accordance with the latest OSHA requirements. Carefully plan each application to ensure that scaffolds are used where required and that scaffolds conform to the applicable scaffold erection requirements. Lean-to scaffolds and make-shift platforms are prohibited.
- B. Do not use scaffolds for storing materials except for those being used while on the scaffold. Place material over cross members. Do not allow tools, material, or debris to accumulate on scaffolds. Adequately design scaffolds to carry, without failure, 4 times the maximum intended load in addition to the weight of the scaffold. Never overload a scaffold.
- C. Scaffold or staging more than 10 feet above the ground or floor, suspended from an overhead support, or erected with stationary supports, must have standard guardrails and toe boards properly attached. Guardrails shall be 2x4 inches, or the equivalent, a minimum of 36 inches and a maximum of 42 inches high, with a mid-rail, when required. Supports shall be at intervals not to exceed 8 feet. Toe boards shall be a minimum of 4 inches in height. Scaffolds with any dimension of less than 45 inches must be equipped with outriggers and standard guard rails when the working platform is at a height of four feet or higher.
- D. Ensure that the footing or anchorage for scaffolds is level, sound, rigid, and capable of carrying the intended maximum load without settling or displacement. Do not use any unstable objects such as concrete blocks, barrels, boxes, or loose material to support scaffolds or planks. Wire, synthetic, or fiber rope used with scaffolds must be capable of supporting at least 6 times the rated load and should be inspected before each use.
- E. Mobile scaffolds must be equipped with outriggers and lock casters. Guard mobile scaffolds with standard railing, regardless of height. Mobile scaffolds must not be constructed or used where there is a change of elevation in the floor level. Moving a mobile scaffold

with personnel on it must be performed in accordance with the latest OSHA requirements.

1.11 SECURITY

- A. The Contractor shall provide for security of the Work and the Jobsite until final inspection and Acceptance of the Work. Storage areas shall be suitably fenced and lighted and routinely patrolled by security guards.
- B. The District assumes no responsibility for protection of structures and finished work or for loss of materials and equipment from the time that Contract operations have commenced until Acceptance of the Work.
- C. If watchman service is deemed necessary by the Contractor, such protection shall be provided by the Contractor, and all costs therefore shall be paid for by the Contractor.
- D. Damaged, lost, or stolen materials and equipment, whether or not stored or already installed, shall be replaced by the Contractor with new specified materials and equipment, including reinstallation where applicable, at no additional cost to the District.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 CLOSEOUT

- A. Upon completion of the Work, or prior thereto when required by the Engineer, remove temporary facilities' structures and installation from the District's property.
- B. Return exterior areas utilized for temporary facilities to their original, natural state or, when called for on the Contract Documents, complete such areas as indicated.

END OF SECTION 01 52 00

SECTION 01 56 00
TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

1.2 SECTION INCLUDES

- A. Temporary construction barriers, enclosures and passageways.
 - 1. Dust and debris barriers.
 - 2. Security barriers.
 - 3. Temporary chain link fencing.
 - 4. Covered passageways.
- B. Protection of completed Work.
- C. Removal of construction facilities and temporary controls.

1.3 RELATED SECTIONS

- A. Section 01 52 00-Construction Facilities

1.4 CODES AND REGULATIONS

- A. NFPA 101 Life Safety Code Comply with 2012 Edition; Protection of Pedestrians During Construction or Demolition.
- B. Fire Regulations: Comply with requirements of fire authorities having jurisdiction, including 2012NFPA 1 Fire Code during performance of the Work.
- C. Safety Regulations: Comply with requirements of all applicable Federal, State and local safety rules and regulations. Contractor shall be solely responsible for jobsite safety.
- D. Barricades and Barriers: As required by governing authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas and adjacent to embankments and excavations for protection of workers and the public.

1.5 PROTECTION OF EXISTING CONDITIONS

- A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings: Protect existing, adjacent facilities from damage, including soiling and debris accumulation.
- B. Protection of Existing Furniture, Fixtures and Equipment: As applicable, provide temporary enclosures, barriers and covers to protect existing furniture, fixtures and equipment remaining in Project area during construction.

1.6 MAINTENANCE OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

- A. Maintenance: Use all means necessary to maintain temporary barriers and enclosures in proper and safe condition throughout progress of the Work.
- B. Replacement: In the event of loss or damage, promptly restore temporary barriers and enclosures by repair or replacement at no change in the Contract Sum or Contract Time.

1.7 TEMPORARY BARRIERS, ENCLOSURES AND PASSAGEWAYS

- A. Temporary Barriers, General: Provide temporary fencing, barriers and guardrails as necessary to provide for public safety, to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
 - 1. Refer to temporary fencing and phasing plan in the Drawings. Comply with requirements indicated.
 - 2. Note requirements for continued occupancy and use of existing buildings and site area during construction.
 - 3. Comply with applicable requirements of 2012 NFPA 101 Life Safety Code and authorities having jurisdiction, including industrial safety regulations. Review requirements with VA Representative.
 - 4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting.
 - 5. Paint temporary barriers and enclosures with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard.
 - 6. Where appropriate and necessary, provide warning lighting, including flashing red or amber lights.
- B. Temporary Chain-Link Fencing: Provide temporary portable chain-link fencing with windscreen.
 - 1. Portable Chain-Link Fencing: Minimum 2-inches (50-mm) 11-gauge, galvanized steel, chain-link fabric fencing; minimum 8-feet (2.4m) high with galvanized steel pipe posts; minimum 2-3/8-inches (60-mm) OD line posts and 2-7/8-inches (73-mm) OD corner and pull posts, with 1-5/8-inches (42-mm) OD top and bottom rails.
 - a. Provide concrete or galvanized steel bases for supporting posts.

- b. Provide protective barriers at bases to prevent tripping by pedestrians.
- 2. Windscreen on Chain-Link Fencing: For screening of construction activities from view, equivalent to the following:
 - a. Windscreen fabric: Closed mesh weave of 30 warp by 16 fills per square inch.
 - 1) Fiber: 5.6 ounce per square yard polypropylene fiber.
 - 2) Shade factor: 78 percent.
 - 3) Tensile strength: 360 pounds for warp and 190 pounds for fill, when tested according to ASTM D1682, grab method.
 - 4) Tear strength: 110 pounds for warp and 70 pounds for fill, when tested according to ASTM D2263, trapezoidal method.
 - b. Fabric fabrication:
 - 1) Reinforce hems and seams with 2-3/4 inch black polypropylene folded binding tape, with tensile strength of 300 pounds.
 - 2) Provide center reinforcing tape in addition to reinforced perimeter hems and panel seams.
 - 3) Sew hems and seams with UV light resistant polyester thread.
 - 4) Provide 9/32-inch brass grommets spaced at 12-inches on center in perimeter hems and center reinforcing tape.
 - c. Secure windscreen to fence at all grommets.
 - d. Locate windscreen on outside of fence.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Covered Passageways: Erect a structurally adequate, protective covered walkways for passage of persons along adjacent passageways.
 - 1. Coordinate installation details with VA requirements for continuing operations in adjoining facilities.
 - 2. Review design and details with VA Representative.
 - 3. Comply with applicable regulations of authorities having jurisdiction.
 - 4. Construct covered walkways using scaffold or shoring framing.
 - 5. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.

6. Extend back wall beyond the structure to complete enclosure fence.
 7. Paint and maintain in a manner as directed by VA's Representative.
- E. Temporary Wood Fencing: Erect a structurally adequate, protective wood fencing in compliance with California Building Code (CBC) Chapter 33, Section 3303.7-Pedestrian Protection. Wood fencing shall be provided as required by Table 332-A.
1. Materials: As required by CBC Section 3303.7.
 2. Finishes: As acceptable to VA Representative. Fence where exposed to public view shall receive minimum of one coat wood primer and one coat semi-gloss paint, color(s) as directed by VA Representative.
- F. Temporary Closures: Provide temporary closures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate closures with ventilating and material drying or curing requirements to avoid dangerous conditions and effects such as mold.
 2. Vertical openings: Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
 3. Horizontal openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framing construction.
 4. Install tarpaulins securely using wood framing and other suitable materials.
 5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use fire-retardant-treated material for framing and main sheathing.
- G. Temporary Partitions: Erect and maintain temporary partitions and temporary closures to limit dust and dirt migration, including migration into existing facilities, to separate areas from fumes and noise and to maintain fire-rated separations.
1. Fire-rated temporary partitions: Maintain fire-rated separations, including corridor walls and occupancy separations, by construction of stud partitions with gypsum board faces.
 - a. Construction details shall comply with recognized time-rated fire-resistive construction. Typically, 1-hour rated

- partitions shall be 2X4 wood studs at 16-inches on center or 3-1/2 inch metal studs at 1-inches on center, with 5/8-inch thick Type X gypsum board at both faces, with joints filled, taped and topped.
- b. Seal partition perimeters with acceptable fire stopping and smoke seal materials.
 - c. Construct fire-rated temporary partitions whenever existing time-rate fire-resistive construction is removed for 12 hours or more.
- H. HVAC Protection: Provide dust barriers at HVAC return grilles and air inlets to prevent spread of dust and clogging of filters.
- I. Temporary Floor Protection: Protect existing floors from soiling and damage.
- 1. Cover floor with 2 layers of 3-mil (0.07mm) polyethylene sheets, extending sheets 18 inches (460 mm) up the side walls.
 - 2. Cover polyethylene sheets with 3/4 inch (19-mm) fire-retardant plywood.
 - 3. Provide floor mats to clean dust from shoes.
- J. Landscape Barriers: Provide barriers around trees and plants designated to remain.
- 1. Locate barriers as directed outside of drip lines of trees and plants.
 - 2. Protect entire area under trees against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.
 - 3. Contractor shall pay all costs to restore trees and plants within barriers that are damaged by construction activities. Restoration shall include replacement with plant materials of equal quality and size. Costs shall include all fines, if any, levied by authorities having jurisdiction.
- K. Barricades, Warning Signs and Lights, General: Comply with standards and code requirements for erection of structurally adequate barricades. Paint barricades with appropriate colors, graphics and warning signs to inform personnel and the public. Where appropriate and needed provide lighting, including flashing red or amber lights.
- L. Guard Rails: Provide guard rails along tops of embankments and excavations. Along public walkways and areas accessible by the

public, adjoining excavations, provide guardrails in addition to fencing.

1. Guardrails shall be substantially and durably constructed of lumber, firmly anchored by posts embedded in concrete, and complying with Code requirements for temporary barriers.
2. Guardrails shall comply with dimensional requirements and accommodate loads as prescribed by NFPA 101 Life Safety Code for permanent guardrails.

M. Security Closures and Lockup: Provide substantial temporary closures of openings in exterior surfaces and interior areas as appropriate to prevent unauthorized entrance, vandalism, theft and similar violations of security. Provide doors with self-closing hardware and locks.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

N. Weather Closures: Provide temporary weather-tight closures at exterior openings to prevent intrusion of water, to create acceptable working conditions, to protect completed Work and to maintain temporary heating, cooling and ventilation. Provide access doors with self-closing hardware and locks.

O. Temporary Access, Passage and Exit Ways: Construct temporary stairs, ramps, and covered walkways, with related doors, gates, closures, guardrails, handrails, lighting and protective devices, to maintain access and exit ways to existing facilities to remain operational.

1. Design and location of temporary construction shall be by Contractor, subject to review by VA's Representative and authorities having jurisdiction.
2. Provide temporary lighting, illuminated interior exit signage, non-illuminated directional and instructional signage, and temporary security alarms for temporary exits and exit passageways.
3. Temporary measures shall suit and connect to existing building systems, and shall be approved by VA's Representative and authorities having jurisdiction.

1.8 PROTECTION OF INSTALLED WORK

- A. Protection of Installed Work, General: Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- B. Protective Coverings: Provide protective coverings at walls, projections, jambs, sills, and soffits of openings as necessary to prevent other than normal atmospheric soiling.
- C. Traffic Protection:
 - 1. Protect finished floors, stairs and other surfaces from traffic, soiling, wear and marring.
 - 2. Provide temporary covers of plywood, reinforced kraft paper or temporary rugs and mats, as necessary. Temporary covers shall not slip or tear under normal use.
 - 3. Prohibit traffic and storage on waterproofed and roofed surfaces and on landscaped areas.
 - 4. Protect newly fine graded, seeded and planted areas with barriers and flags to designate such areas as closed to pedestrian and vehicular traffic.

1.9 REMOVAL OF TEMPORARY BARRIERS AND ENCLOSURES

- A. Removal of Temporary Barriers and Enclosures: Unless otherwise mutually agreed by VA's Representative and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review. Coordinate removal with requirements specified in Section 01 52 00-Construction Facilities, and Section 01 56 00-Temporary Barriers and Enclosures.
- B. Cleaning and Repairs: Clean and repair damage, soiling and marring caused by installation or use of temporary barriers and enclosures.

PART 2 - PRODUCTS

Not applicable to this Section

PART 3 - EXECUTION

Not applicable to this Section

END OF SECTION 01 56 00

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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 leaves, tree trimmings, ashes, and waste materials resulting from construction or maintenance and repair work.
 - 3. Sediment: Soil and other debris that has been eroded and transported by runoff water.
 - 4. Solid Waste: Rubbish, debris, garbage, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities.
 - 5. Surface Discharge: The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "water of the United States" and would require a permit to discharge water from the governing agency.
 - 6. Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass and crockery, metal and lumber scrap, tin cans, and bones.

7. Sanitary Wastes:

- a. Sewage: Domestic sanitary sewage and human and animal waste.
- b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

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 COR to discuss the proposed Environmental Protection Plan and to develop mutual understanding relative to details of environmental protection. Not more than 20 calendar days after the meeting, the Contractor shall prepare and submit to the Contracting Officer for approval, a written and/or graphic Environmental Protection Plan including, but not limited to, the following:
 - a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.
 - b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site.
 - c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
 - d. Description of the Contractor's environmental protection personnel training program.
 - e. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, noise control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

- f. Methods for protection of features to be preserved within authorized work areas including trees, shrubs, vines, grasses, ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, and archeological and cultural resources.
 - g. Procedures to provide the environmental protection that comply with the applicable laws and regulations. Describe the procedures to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures as described in the Environmental Protection Plan.
 - h. Permits, licenses, and the location of the solid waste disposal area.
 - i. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials. Include as part of an Erosion Control Plan approved by the District Office of the U.S. Soil Conservation Service and the Department of Veterans Affairs.
 - j. Environmental Monitoring Plans for the job site including land, water, air, and noise.
 - k. Work Area Plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas. This plan may be incorporated within the Erosion Control Plan.
- 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. Protection of Landscape: Protect trees, shrubs, vines, grasses, land forms, and other landscape features shown on the drawings to be preserved by marking, fencing, or using any other approved techniques.
 - a. Box and protect from damage existing trees and shrubs to remain on the construction site.
 - b. Immediately repair all damage to existing trees and shrubs by trimming, cleaning, and painting with antiseptic tree paint.
 - c. Do not store building materials or perform construction activities closer to existing trees or shrubs than the farthest extension of their limbs.
 3. 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.
 4. Store chemical waste away from the work areas in corrosion resistant containers and dispose of waste in accordance with Federal, State, and local regulations.
 5. Handle discarded materials other than those included in the solid waste category as directed by the COR.
 6. Recycle all window frames and glass removed during demolition phase per GEMS specifications.
- C. Protection of Water Resources: Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters and sewer systems. Implement management techniques to control water pollution by the listed construction activities that are included in this contract.
1. Washing and Curing Water: Do not allow wastewater directly derived from construction activities to enter water areas. Collect and place wastewater in retention ponds allowing the suspended material to settle, the pollutants to separate, or the water to evaporate.

2. Control movement of materials and equipment at stream crossings during construction to prevent violation of water pollution control standards of the Federal, State, or local government.
 3. Monitor water areas affected by construction.
- D. Protection of Fish and Wildlife Resources: Keep construction activities under surveillance, management, and control to minimize interference with, disturbance of, or damage to fish and wildlife. Prior to beginning construction operations, list species that require specific attention along with measures for their protection.
- E. Protection of Air Resources: Keep construction activities under surveillance, management, and control to minimize pollution of air resources. Burning is not permitted on the job site. Keep activities, equipment, processes, and work operated or performed, in strict accordance with the State of Pennsylvania 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 at all times, including weekends, holidays, and hours when work is not in progress.
 2. Particulates Control: Maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause a hazard or a nuisance. Sprinklering, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods are permitted to control particulates in the work area.
 3. Hydrocarbons and Carbon Monoxide: Control monoxide emissions from equipment to Federal and State allowable limits.
 4. Odors: Control odors of construction activities and prevent obnoxious odors from occurring.
- F. Reduction of Noise: Minimize noise using every action possible. Perform noise-producing work in less sensitive hours of the day or week as directed by the 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 6:00 p.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):

EARTHMOVING		MATERIALS HANDLING	
TRUCKS	75	PNEUMATIC TOOLS	80
GENERATORS	75	SAWS	75
COMPRESSORS	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.

END OF SECTION 01 57 19

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SECTION 01 81 11
SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

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 with 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": <http://www.ftc.gov/policy/federal-register-notice/guides-use-environmental-marketing-claims-green-guides>
- 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. 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.

2. 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
 3. Composite Wood and Agrifiber Binders: Submittals for all composite wood and agrifiber products (including but not limited to particleboard, wheatboard, strawboard, agriboard products, engineered wood components, solid-core wood doors, OSB, MDF, and plywood products) must include manufacturer's product data verifying
 4. Gypsum Wall Board: Provide manufacturer's cut sheets or product data verifying that all gypsum wallboard products are moisture and mold-resistant.
 5. 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 calendar 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 calendar 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 calendar 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 calendar 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 calendar 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.
- 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 and the Construction Quality Manager.

- 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.
 - 1. Extruded polystyrene insulation (XPS) and closed-cell spray foam polyurethane insulation shall not be manufactured with hydro-chlorofluorocarbon (HCFC) blowing agents.
- B. 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. The materials in the following list must contain the minimum recycled content indicated:

Category	Minimum Recycled Content
Compost/mulch	100% post-consumer
Asphaltic Concrete Paving	25% post-consumer
Cast-in-Place Concrete	6% pre-consumer
CMU: Gray Block	20% pre-consumer
Steel Reinforcing Bars	90% combined
Structural Steel Shapes	90% combined
Steel Joists	75% combined
Steel Deck	75% combined
Steel Fabrications	60% combined
Steel Studs	30% combined
Steel Roofing	30% post-consumer
Aluminum Fabrications	35% combined
Rigid Insulation	20% pre-consumer
Batt insulation	30% combined

C. 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>

END OF SECTION 01 81 11

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.
- B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.
- C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:
 - 1. Waste Management Plan development and implementation.
 - 2. Techniques to minimize waste generation.
 - 3. Sorting and separating of waste materials.
 - 4. Salvage of existing materials and items for reuse or resale.
 - 5. Recycling of materials that cannot be reused or sold.
- D. At a minimum the following waste categories shall be diverted from landfills:
 - 1. Soil.
 - 2. Inerts (eg, concrete, masonry and asphalt).
 - 3. Clean dimensional wood and palette wood.
 - 4. Green waste (biodegradable landscaping materials).
 - 5. Engineered wood products (plywood, particle board and I-joists, etc).
 - 6. Metal products (eg, steel, wire, beverage containers, 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 01 00 00, GENERAL REQUIREMENTS.

1.3 QUALITY ASSURANCE

- A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:
 - 1. Excess or unusable construction materials.
 - 2. Packaging used for construction products.
 - 3. Poor planning and/or layout.
 - 4. Construction error.
 - 5. Over ordering.
 - 6. Weather damage.
 - 7. Contamination.
 - 8. Mishandling.
 - 9. Breakage.
- B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.
- C. Contractor shall develop and implement procedures to 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 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, 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.
- B. U.S. Green Building Council (USGBC):
 - LEED Green Building Rating System for New Construction

1.7 RECORDS

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 COLLECTION

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

3.2 DISPOSAL

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

3.3 REPORT

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

Department of Veterans Affairs
Washington, DC 20420

VA DIRECTIVE 0063
Transmittal Sheet
October 17, 2011

WASTE PREVENTION AND RECYCLING PROGRAM

1. REASON FOR ISSUE: This directive establishes Department of Veterans Affairs (VA) waste prevention and recycling program policy supplementing the waste prevention and recycling policies contained in VA Directive 0057, VA Environmental Management Program.

2. SUMMARY OF CONTENTS/MAJOR CHANGES: This directive outlines the policies, principles, and other key elements necessary to facilitate VA's continual improvement of management and performance with respect to prevention, management and reporting of waste and recycling.

3. RESPONSIBLE OFFICE: Assistant Secretary for Management (004), Office of Asset Enterprise Management (044), Green Management Program Service (044E).

4. RELATED DIRECTIVE: VA Directive 0057, VA Environmental Management Program, dated January 15, 2010.

5. RELATED HANDBOOK: VA Handbook 0063, Waste Prevention and Recycling Program Handbook.

CERTIFIED BY:

**BY DIRECTION OF THE SECRETARY
OF VETERANS AFFAIRS:**

/s/

Roger W. Baker

Assistant Secretary for

Management Information and Technology

/s/

W. Todd Grams

Executive in Charge, Office of

and Chief Financial Officer

Distribution: Electronic Only

WASTE PREVENTION AND RECYCLING PROGRAM

1. PURPOSE

a. The mission of the Department of Veterans Affairs (VA) is to fulfill President Lincoln's promise "to care for him who shall have borne the battle, and for his widow and his orphan" by serving and honoring the men and women who are America's Veterans. The goal of the Green Management Program Service within VA's Office of Asset Enterprise Management (OAEM) is to keep our promises to Veterans through a sustainable approach to operations that makes more resources available for Veterans' care. The purpose of this directive is to support and expand the programmatic policies of VA Directive 0057, VA Environmental Management Program; VA Directive 0064, Environmental Management Systems; and VA Handbook 0064, Environmental Management Systems Procedures. This directive establishes VA policy, roles, and responsibilities with respect to waste prevention and recycling in support of the mission and goal.

b. VA will make every effort to ensure environmental compliance is optimized through robust environmental management systems (EMS), with the ultimate goal of becoming a fully sustainable organization. All VA facilities are required to be covered by an EMS in accordance with VA Directive 0057, VA Directive 0064, and VA Handbook 0064.

c. This directive establishes policies for VA Administrations and staff offices for implementing the environmental compliance requirements of VA Directive 0057 as it relates to waste prevention and recycling. This directive is also designed to facilitate the development of uniform internal procedures for waste prevention and recycling across the Department. Specific procedures are found in VA Handbook 0063, Waste Prevention and Recycling Program.

2. SCOPE

The provisions of this directive apply to all VA Administrations and staff offices, including those located in leased space. Each Administration and staff office shall ensure that all subordinate organizations are aware of and comply with this directive.

3. POLICY

VA will ensure that it meets or exceeds the requirements of all applicable executive orders and Federal, state, and local environmental laws and regulations. It is VA policy to reduce, reuse, and recycle materials and waste, and to maintain life-cycle cost-effective waste prevention and recycling programs to the maximum extent practicable. VA Administrations and staff offices may retain and use revenue generated by waste prevention and recycling programs at their respective facilities in accordance with applicable laws and regulations. See VA Handbook 0063, Sec. 3(g).

4. RESPONSIBILITIES

VA recognizes that achieving successful environmental programs depends on the efforts of every VA employee. VA is actively working to ensure that every person is aware of his or her role in the success of environmental efforts. This section outlines the responsibilities and business processes for staff offices/officials.

a. Assistant Secretary for Management. The Assistant Secretary for Management establishes the overall policy and guidelines to implement environmental programs within the Department, and is specifically responsible for:

(1) Monitoring VA's activities to implement waste prevention and recycling;

(2) Executing programs and reporting progress to the Secretary of Veterans Affairs, Chairman of the Council on Environmental Quality (CEQ), Federal Environmental Executive of the Office of the Federal Environmental Executive (OFEE), Director of the Office of Management and Budget (OMB), Administrator of the U.S. Environmental Protection Agency (EPA), and other applicable entities;

(3) Establishing a cross-functional, Department-wide VA Environmental Management Task Force, with appropriate representatives necessary to expeditiously meet the waste prevention and recycling goals; and

(4) Requesting sufficient funds to ensure Department-wide implementation of waste prevention and recycling programs, including but not limited to funding for Administration and staff office environmental staff.

b. Director of OAEM. The Director of OAEM as the VA Senior Sustainability Officer (SSO) is responsible for:

(1) Overseeing the development and implementation of procedures and processes related to waste prevention;

(2) Working with counterparts in other VA organizations to ensure waste prevention and recycling issues are addressed in all programs;

(3) Resolving policy differences among organizations regarding environmental compliance issues, strategies, or procedures as they relate to waste prevention and recycling;

(4) Developing and issuing guidance to ensure Department-wide compliance with waste prevention and recycling policies;

(5) Preparing Departmental waste prevention and recycling reports in accordance with applicable Federal environmental laws, regulations, executive orders, and VA directives;

(6) Measuring Department-wide waste prevention and recycling and coordinating the annual reporting submission to CEQ, OFEE, OMB, EPA, and other applicable entities; and

(7) Conducting oversight activities to ensure that VA implements an effective waste prevention and recycling program and makes continual improvements to address enforcement actions and related audit findings.

c. Under Secretaries, Assistant Secretaries, and Other Key Officials. Under Secretaries, Assistant Secretaries, and Other Key Officials are responsible for:

(1) Establishing overall policy and guidelines to implement waste

prevention and recycling programs within their management areas consistent with this directive and VA Directive 0057;

(2) Ensuring that waste prevention and recycling programs conform to the policies and goals of this directive, and are developed and routinely evaluated, and that there are formal processes in place for identifying and correcting program issues;

(3) Ensuring that measures for successful implementation of waste prevention and recycling programs are included in performance standards and performance evaluations of senior Administration and staff office officials and other personnel, as appropriate;

(4) Requesting sufficient funds in Administration and staff office budgets to staff and support positions and all programs related to waste prevention and recycling;

(5) Informing the VA SSO of the status of their Administration's or staff office's waste prevention and recycling programs as requested or required.

(6) Ensuring appropriate and sufficient staffing and resources to support the work of the VA Environmental Management Task Force and implement the waste prevention and recycling policies and goals of this directive.

(7) Ensuring acquisition, construction, and logistics staff incorporate waste prevention and recycling policies into contracts, specifications, and training as applicable.

(8) Meeting regular reporting requirements and responding to information requests requested from CEQ, OMB, OFEE, EPA, OAEM, and other entities regarding reports on waste prevention and recycling;

(9) Conducting oversight activities to ensure that facilities have effective waste prevention and recycling programs;

(10) Providing internal policy and guidance to the respective Administration or staff office, which may include Administration-level handbooks or facility-specific guidance;

(11) Ensuring qualified staff support (such as trained environmental management service staff or Green Environmental Management Systems (GEMS) coordinators and their counterparts in other Administrations and staff offices) is available and known to each facility to support management in implementing waste prevention and recycling policies;

(12) Providing all personnel (including contracting officer technical representatives) with guidance and training on waste prevention and recycling; and

(13) Ensuring that each facility has appropriate staffing to support and execute these policies including, but not limited to:

(a) A full-time, dedicated Recycling Coordinator at each Veterans Health Administration medical center/health care system;

(b) A full time or collateral-duty Recycling Coordinator at each Veterans Benefits Administration Area Office; and

(c) A full-time or collateral-duty Recycling Coordinator at each National Cemetery Administration Memorial Service Network.

5. REFERENCES

a. Public Laws, Regulations, and Executive Orders. There are a multitude of environmental regulations and requirements that apply to facilities, operations, and locations within VA. A complete listing of all the applicable environmental regulations is too expansive to enumerate here. The three most pertinent are the Code of Federal Regulations, Title 29, Labor; Title 40, Protection of the Environment; and Title 49, Transportation. Federal laws and regulations are available through web-based resources such as Government Printing Office (GPO) Access, <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=%2Findex.tpl>. Hardcopies are available from the GPO. State and local regulations are typically available through state and local environmental agencies.

(1) Pollution Prevention Act of 1990, 42 U.S.C. §13101 et seq. and

subsequent amendments, which establish policy to reduce the amount of pollution through cost-effective changes in production, operation, and raw materials use. The amendments modified the reporting provisions under the Toxic Chemical Release Reporting rules to include detailed information and trends on quantities of chemicals released to the environment that were not treated on site or off site; quantities of chemicals used for energy recovery on site and off site; quantities of chemicals recycled on site and off site; quantities of chemicals treated on site and off site; and quantities of chemicals released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes.

(2) Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. §6901 et seq. (1976) and subsequent amendments, which give EPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non- hazardous solid wastes.

(3) Public Law 103-329. Section 608 authorizes Federal agencies to receive and use funds resulting from the sale of materials recovered through recycling or waste prevention program.

(4) Federal Acquisition Regulation. From the definition in the regulation itself..."1.101 Purpose. The Federal Acquisition Regulations System is established for the codification and publication of uniform policies and procedures for acquisition by all executive agencies. The Federal Acquisition Regulations System consists of the Federal Acquisition Regulation (FAR), which is the primary document, and agency acquisition regulations that implement or supplement the FAR. The FAR System does not include internal agency guidance of the type described in 1.301 (a)(2)." The complete FAR is accessible at:

http://acquisition.gov/far/current/html/52_301Matrix.html

(5) Executive Orders. The executive orders (EOs) with significant implications to environmental management and compliance in effect (at the time this directive was drafted) are EOs 13423 and 13514. A complete list of all environmental EOs is too expansive to be included herein. A

complete listing of EOs can be found through the National Archives accessible at: <http://www.archives.gov/federal-register/executive-orders/disposition.html>.

b. VA and VHA Directives.

(1) VA Directive 0057, VA Environmental Management Program, January 2010. This directive establishes VA environmental policies. Its purpose is to set forth a comprehensive Department-wide environmental management policy to comply with Federal mandates and achieve internal goals. It is intended to provide direction to Administrations and staff offices developing and administering their specific environmental programs. The directive establishes policy in the areas of environmental compliance, green purchasing, chemicals management and pollution prevention, electronics stewardship, waste prevention and recycling, and environmental management systems. It also includes reporting requirements and roles and responsibilities.

(2) VA Directive 0062, Environmental Compliance Management,

(3) VA Handbook 0062, Environmental Compliance Management,

(4) VHA Directive 2006-001, "Accounting for Recycling Revenue at VHA Facilities."

6. DEFINITIONS

The following definitions are extracted from the EO 13423 Implementing Instructions.

a. Acquisition. The acquiring of supplies and services as defined in Part 2 of the FAR.

b. Facility. Any building, installation, structure, land, or real property that is owned or operated by, or constructed or manufactured and leased to, an Administration or staff office, as well as any fixture. This term includes a group of facilities at a single or multiple location(s)

managed as an integrated operation, as well as government-owned contractor-operated facilities.

c. **Pollution prevention.** This includes "source reduction" as defined in the Pollution Prevention Act of 1990 (42 U.S.C. 13102), and other practices that reduce or eliminate the creation of pollutants through (1) increased efficiency in the use of raw materials, energy, water, or other resources, or (2) the protection of natural resources by conservation.

d. **Recycling.** The series of activities, including collection, separation, and processing, by which products or other materials are recovered from the solid waste stream for use in the form of raw materials in the manufacture of new products other than fuel for producing heat or power by combustion.

e. **Waste management.** The collection, transport, processing, recycling or disposal, and monitoring of waste materials. The term usually relates to materials produced by human activity and to activities undertaken to reduce their effect on human health and the environment. Waste management is also carried out to recover still-useful resources. Waste management can involve solid, liquid, or gaseous or radioactive or mixed substances.

f. **Waste prevention.** An activity that prevents waste at its source, which includes reducing the amount of material used and/or the toxicity of the material used to accomplish any task; reuse of a product in its original form; and use of repairable, refillable, or durable products that result in a longer useful life.

END OF SECTION 01 74 19

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SECTION 01 81 11
SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

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 with 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":
<http://www.ftc.gov/policy/federal-register-notice/guides-use-environmental-marketing-claims-green-guides>
- 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. 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.

2. 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
 3. Composite Wood and Agrifiber Binders: Submittals for all composite wood and agrifiber products (including but not limited to particleboard, wheatboard, strawboard, agriboard products, engineered wood components, solid-core wood doors, OSB, MDF, and plywood products) must include manufacturer's product data verifying
 4. Gypsum Wall Board: Provide manufacturer's cut sheets or product data verifying that all gypsum wallboard products are moisture and mold-resistant.
 5. 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 calendar 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 calendar 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 calendar 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 calendar 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 calendar 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.
- 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 and the Construction Quality Manager.

- 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.
 - 1. Extruded polystyrene insulation (XPS) and closed-cell spray foam polyurethane insulation shall not be manufactured with hydro-chlorofluorocarbon (HCFC) blowing agents.
- B. 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. The materials in the following list must contain the minimum recycled content indicated:

Category	Minimum Recycled Content
Compost/mulch	100% post-consumer
Asphaltic Concrete Paving	25% post-consumer
Cast-in-Place Concrete	6% pre-consumer
CMU: Gray Block	20% pre-consumer
Steel Reinforcing Bars	90% combined
Structural Steel Shapes	90% combined
Steel Joists	75% combined
Steel Deck	75% combined
Steel Fabrications	60% combined
Steel Studs	30% combined
Steel Roofing	30% post-consumer
Aluminum Fabrications	35% combined
Rigid Insulation	20% pre-consumer
Batt insulation	30% combined

C. 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>

END OF SECTION 01 81 11

SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies demolition and removal of existing windows and frames from building 1 and building 17 and debris from project demolition and construction.

1.2 RELATED WORK:

- A. Safety Requirements: GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Reserved items that are to remain the property of the Government:
Section 01 00 00, GENERAL REQUIREMENTS.
- C. Environmental Protection: Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.
- D. Construction Waste Management: Section 017419 CONSTRUCTION WASTE MANAGEMENT.
- E. Infectious Control: Section 01 00 00, GENERAL REQUIREMENTS, Article 1.8, 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. Maintain fences, barricades, lights, and other similar items around exposed excavations until such excavations have been completely filled.
- D. Provide enclosed dust chutes with control gates from each floor to carry debris to truck beds and govern flow of material into truck. Provide overhead bridges of tight board or prefabricated metal construction at dust chutes to protect persons and property from falling debris.
- E. 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.

- F. In addition to previously listed fire and safety rules to be observed in performance of work, include following:
1. Wherever a cutting torch or other equipment that might cause a fire is used, provide and maintain fire extinguishers nearby ready for immediate use. Instruct all possible users in use of fire extinguishers.
 2. Keep hydrants clear and accessible at all times. Prohibit debris from accumulating within a radius of 4500 mm (15 feet) of fire hydrants.
- G. 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 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.
- H. The work shall comply with the requirements of Section 01 57 19, TEMPORARY ENVIRONMENTAL CONTROLS.
- I. The work shall comply with the requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article 1.8 INFECTION PREVENTION MEASURES.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 DEMOLITION:

- A. Completely demolish and remove buildings and structures, including all appurtenances related or connected thereto, as noted below:
1. As required for installation of new utility service lines.
 2. To full depth within an area defined by hypothetical lines located 1500 mm (5 feet) outside building lines of new structures.
- 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 be hauled to VA specified disposal site for recycling and all profits from sale of metals shall become property of VA. Materials that are located beneath the surface of the surrounding ground more than 1500 mm (5 feet), or materials that are discovered to be hazardous, shall be handled as unforeseen. The removal of hazardous material shall be referred to Hazardous Materials specifications.
- 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:

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 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.

END OF SECTION 02 41 00

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SECTION 02 42 00
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related sections include the following:
 - 1. Division 01 Section "General Requirements - Temporary Facilities and Controls."

1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations and clearing debris including soil, vegetation, and rocks are not to be included.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Collect, reprocess and reuse of materials diverted or recovered from solid waste stream.
- E. Salvage: Recovery of demolition or construction materials from existing buildings or construction sites and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction materials from existing buildings or construction sites and subsequent incorporation into the Work.

1.4 PERFORMANCE GOALS

- A. General: Develop waste management plan that results in end-of-project rates for salvage/recycling of 50 (75) percent by weight of total waste generated by the Work.

1.5 SUBMITTALS

- A. Waste Management Plan: Submit 3 copies of plan within 14 calendar days of date established for commencement of the Work.
- B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit 2 copies of report. Include separate reports for demolition and construction waste. Include the following information:
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste salvaged, both estimated and actual in tons or cubic yards.
 - 5. Quantity of waste recycled, both estimated and actual in tons or cubic yards.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons or cubic yards.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- C. Waste Reduction Calculations: Before request for Substantial Completion, submit 2 copies of calculated end-of-project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licenses to accept them. Include manifests, weight tickets, receipts, and invoices.

1.6 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: LEED Accredited Professional by U.S. Green Building Council, or person familiar and experienced with LEED construction waste management requirements.

- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section. Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification, waste reduction plan, and cost/revenue analysis. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses and telephone numbers.
 - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses and telephone numbers.

4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 5. Disposed materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number for each landfill and incinerator facility.
 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.
- D. Plan for and describe the means for securing waste containers from unauthorized users.
- E. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
1. Total quantity of waste.
 2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
 3. Total cost of disposal (with no waste management).
 4. Revenue from salvaged materials.
 5. Revenue from recycled materials.
 6. Savings in hauling and tipping fees by donating materials.
 7. Savings in hauling and tipping fees that are avoided.
 8. Handling and transportation costs. Include cost of collection containers for each type of waste.
 9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS
(Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by Owner. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with Division 01 Section "Temporary Facilities and Controls", for operation, termination, and removal requirements.
 2. Observe and follow site measures that prevent cross-contamination of waste. Cross-contamination could render some portion of waste to be non-recyclable, thereby disqualifying the Project from earning LEED Credit MR 2, and the exemplary performance credit of diverting 95% of waste from landfill.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project. The Construction Superintendent may perform the role of the Waste Management Coordinator.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at the Project site.
1. Distribute waste management plan to everyone concerned within three calendar days of submittal return.
 2. Distribute waste management plan to entities upon execution of their contracts. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct Waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
1. Clean salvage items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until installation.
 4. Protect items from damage during transport and storage.
 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and

miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project Site.

C. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area off-site designated by Owner.
5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closes, leave door hardware attached to doors.

3.3 RECYCLING DEMOLITION AND CONTRUCTION WASTE, GENERAL

A. General:

1. Recycle paper and beverage containers used by on-site workers.
2. Concrete, masonry, or asphalt crushed and reused are to be identified and include in calculations.
3. Exclude hazardous waste from calculations.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.

5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Site-Clearing Wastes: Chip brush, branches, and trees on-site.

1. Comply with requirements in Division 2 Section "Exterior Plants" for use of chipped organic waste as organic mulch.

C. Wood Materials:

1. Clean Cut-offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust; Bag sawdust that does not contain painted or treated wood.
 - a. Comply with requirements in Division 2 Section "Exterior Plants" for use of clean sawdust as organic mulch.

D. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.

1. Clean Gypsum board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

E. Metals: Separate metal by type or to meet requirements of recycling receiver or processor.

3.5 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow excessive on-site accumulation of waste materials.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Coordinate with each product manufacturer for take-back programs. Set aside scrap to be returned to manufacturer for recycling into new product.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION 02 42 00

Department of Veterans Affairs

VA DIRECTIVE 0063

Washington, DC 20420

Transmittal Sheet
October 17, 2011

WASTE PREVENTION AND RECYCLING PROGRAM

1. REASON FOR ISSUE: This directive establishes Department of Veterans Affairs (VA) waste prevention and recycling program policy supplementing the waste prevention and recycling policies contained in VA Directive 0057, VA Environmental Management Program.
2. SUMMARY OF CONTENTS/MAJOR CHANGES: This directive outlines the policies, principles, and other key elements necessary to facilitate VA's continual improvement of management and performance with respect to prevention, management and reporting of waste and recycling.
3. RESPONSIBLE OFFICE: Assistant Secretary for Management (004), Office of Asset Enterprise Management (044), Green Management Program Service (044E).
4. RELATED DIRECTIVE: VA Directive 0057, VA Environmental Management Program, dated January 15, 2010.
5. RELATED HANDBOOK: VA Handbook 0063, Waste Prevention and Recycling Program Handbook.

CERTIFIED BY: BY DIRECTION OF THE SECRETARY OF VETERANS AFFAIRS:

/s/

Roger W. Baker
Assistant Secretary for
Information and Technology

/s/

W. Todd Grams
Executive in Charge, Office of Management
and Chief Financial Officer

Distribution: Electronic Only

WASTE PREVENTION AND RECYCLING PROGRAM

1. PURPOSE

- a. The mission of the Department of Veterans Affairs (VA) is to fulfill President Lincoln's promise "to care for him who shall have borne the battle, and for his widow and his orphan" by serving and honoring the men and women who are America's Veterans. The goal of the Green Management Program Service within VA's Office of Asset Enterprise Management (OAEM) is to keep our promises to Veterans through a sustainable approach to operations that makes more resources available for Veterans' care. The purpose of this directive is to support and expand the programmatic policies of VA Directive 0057, VA Environmental Management Program; VA Directive 0064, Environmental Management Systems; and VA Handbook 0064, Environmental Management Systems Procedures. This directive establishes VA policy, roles, and responsibilities with respect to waste prevention and recycling in support of the mission and goal.
- b. VA will make every effort to ensure environmental compliance is optimized through robust environmental management systems (EMS), with the ultimate goal of becoming a fully sustainable organization. All VA facilities are required to be covered by an EMS in accordance with VA Directive 0057, VA Directive 0064, and VA Handbook 0064.
- c. This directive establishes policies for VA Administrations and staff offices for implementing the environmental compliance requirements of VA Directive 0057 as it relates to waste prevention and recycling. This directive is also designed to facilitate the development of uniform internal procedures for waste prevention and recycling across the Department. Specific procedures are found in VA Handbook 0063, Waste Prevention and Recycling Program.

2. SCOPE

The provisions of this directive apply to all VA Administrations and staff offices, including those located in leased space. Each Administration and staff office shall ensure that all subordinate organizations are aware of and comply with this directive.

3. POLICY

VA will ensure that it meets or exceeds the requirements of all applicable executive orders and Federal, state, and local environmental laws and regulations. It is VA policy to reduce, reuse, and recycle materials and waste, and to maintain life-cycle cost-effective waste prevention and recycling programs to the maximum extent practicable. VA Administrations and staff offices may retain and use revenue generated by waste prevention and recycling programs at

their respective facilities in accordance with applicable laws and regulations. See VA Handbook 0063, Sec. 3(g).

4. RESPONSIBILITIES

VA recognizes that achieving successful environmental programs depends on the efforts of every VA employee. VA is actively working to ensure that every person is aware of his or her role in the success of environmental efforts. This section outlines the responsibilities and business processes for staff offices/officials.

a. Assistant Secretary for Management. The Assistant Secretary for Management establishes the overall policy and guidelines to implement environmental programs within the Department, and is specifically responsible for:

- (1) Monitoring VA's activities to implement waste prevention and recycling;
- (2) Executing programs and reporting progress to the Secretary of Veterans Affairs, Chairman of the Council on Environmental Quality (CEQ), Federal Environmental Executive of the Office of the Federal Environmental Executive (OFEE), Director of the Office of Management and Budget (OMB), Administrator of the U.S. Environmental Protection Agency (EPA), and other applicable entities;
- (3) Establishing a cross-functional, Department-wide VA Environmental Management Task Force, with appropriate representatives necessary to expeditiously meet the waste prevention and recycling goals; and
- (4) Requesting sufficient funds to ensure Department-wide implementation of waste prevention and recycling programs, including but not limited to funding for Administration and staff office environmental staff.

b. Director of OAEM. The Director of OAEM as the VA Senior Sustainability Officer (SSO) is responsible for:

- (1) Overseeing the development and implementation of procedures and processes related to waste prevention;
- (2) Working with counterparts in other VA organizations to ensure waste prevention and recycling issues are addressed in all programs;
- (3) Resolving policy differences among organizations regarding environmental compliance issues, strategies, or procedures as they relate to waste prevention and recycling;

- (4) Developing and issuing guidance to ensure Department-wide compliance with waste prevention and recycling policies;
- (5) Preparing Departmental waste prevention and recycling reports in accordance with applicable Federal environmental laws, regulations, executive orders, and VA directives;
- (6) Measuring Department-wide waste prevention and recycling and coordinating the annual reporting submission to CEQ, OFEE, OMB, EPA, and other applicable entities; and
- (7) Conducting oversight activities to ensure that VA implements an effective waste prevention and recycling program and makes continual improvements to address enforcement actions and related audit findings.

c. Under Secretaries, Assistant Secretaries, and Other Key Officials. Under Secretaries, Assistant Secretaries, and Other Key Officials are responsible for:

- (1) Establishing overall policy and guidelines to implement waste prevention and recycling programs within their management areas consistent with this directive and VA Directive 0057;
 - (2) Ensuring that waste prevention and recycling programs conform to the policies and goals of this directive, and are developed and routinely evaluated, and that there are formal processes in place for identifying and correcting program issues;
 - (3) Ensuring that measures for successful implementation of waste prevention and recycling programs are included in performance standards and performance evaluations of senior Administration and staff office officials and other personnel, as appropriate;
 - (4) Requesting sufficient funds in Administration and staff office budgets to staff and support positions and all programs related to waste prevention and recycling;
 - (5) Informing the VA SSO of the status of their Administration's or staff office's waste prevention and recycling programs as requested or required.
 - (6) Ensuring appropriate and sufficient staffing and resources to support the work of the VA Environmental Management Task Force and implement the waste prevention and recycling policies and goals of this directive.
 - (7) Ensuring acquisition, construction, and logistics staff incorporate waste prevention and recycling policies into contracts, specifications, and training as applicable.
-

- (8) Meeting regular reporting requirements and responding to information requests requested from CEQ, OMB, OFEE, EPA, OAEM, and other entities regarding reports on waste prevention and recycling;
- (9) Conducting oversight activities to ensure that facilities have effective waste prevention and recycling programs;
- (10) Providing internal policy and guidance to the respective Administration or staff office, which may include Administration-level handbooks or facility-specific guidance;
- (11) Ensuring qualified staff support (such as trained environmental management service staff or Green Environmental Management Systems (GEMS) coordinators and their counterparts in other Administrations and staff offices) is available and known to each facility to support management in implementing waste prevention and recycling policies;
- (12) Providing all personnel (including contracting officer technical representatives) with guidance and training on waste prevention and recycling; and
- (13) Ensuring that each facility has appropriate staffing to support and execute these policies including, but not limited to:
 - (a) A full-time, dedicated Recycling Coordinator at each Veterans Health Administration medical center/health care system;
 - (b) A full time or collateral-duty Recycling Coordinator at each Veterans Benefits Administration Area Office; and
 - (c) A full-time or collateral-duty Recycling Coordinator at each National Cemetery Administration Memorial Service Network.

5. REFERENCES

- (a) Public Laws, Regulations, and Executive Orders. There are a multitude of environmental regulations and requirements that apply to facilities, operations, and locations within VA. A complete listing of all the applicable environmental regulations is too expansive to enumerate here. The three most pertinent are the Code of Federal Regulations, Title 29, Labor; Title 40, Protection of the Environment; and Title 49, Transportation. Federal laws and regulations are available through web-based resources such as Government Printing Office (GPO) Access, <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=%2Findex.tpl>.

Hardcopies are available from the GPO. State and local regulations are typically available through state and local environmental agencies.

- (1) Pollution Prevention Act of 1990, 42 U.S.C. §13101 et seq. and subsequent amendments, which establish policy to reduce the amount of pollution through cost-effective changes in production, operation, and raw materials use. The amendments modified the reporting provisions under the Toxic Chemical Release Reporting rules to include detailed information and trends on quantities of chemicals released to the environment that were not treated on site or off site; quantities of chemicals used for energy recovery on site and off site; quantities of chemicals recycled on site and off site; quantities of chemicals treated on site and off site; and quantities of chemicals released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes.
- (2) Resource Conservation and Recovery Act of 1976 (RCRA), 42 U.S.C. §6901 et seq. (1976) and subsequent amendments, which give EPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes.
- (3) Public Law 103-329. Section 608 authorizes Federal agencies to receive and use funds resulting from the sale of materials recovered through recycling or waste prevention program.
- (4) Federal Acquisition Regulation. From the definition in the regulation itself..." 1.101 Purpose. The Federal Acquisition Regulations System is established for the codification and publication of uniform policies and procedures for acquisition by all executive agencies. The Federal Acquisition Regulations System consists of the Federal Acquisition Regulation (FAR), which is the primary document, and agency acquisition regulations that implement or supplement the FAR. The FAR System does not include internal agency guidance of the type described in [1.301\(a\)\(2\)](#)." The complete FAR is accessible at:
<https://www.acquisition.gov/far/loadmainre.html>.
- (5) Executive Orders. The executive orders (EOs) with significant implications to environmental management and compliance in effect (at the time this directive was drafted) are EOs 13423 and 13514. A complete list of all environmental EOs is too expansive to be included herein. A complete listing of EOs can be found through the National Archives accessible at:
<http://www.archives.gov/federal-register/executive-orders/disposition.html>.

(b) VA and VHA Directives.

(1) VA Directive 0057, VA Environmental Management Program, January 2010. This directive establishes VA environmental policies. Its purpose is to set forth a comprehensive Department-wide environmental management policy to comply with Federal mandates and achieve internal goals. It is intended to provide direction to Administrations and staff offices developing and

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administering their specific environmental programs. The directive establishes policy in the areas of environmental compliance, green purchasing, chemicals management and pollution prevention, electronics stewardship, waste prevention and recycling, and environmental management systems. It also includes reporting requirements and roles and responsibilities.

(2)VA Directive 0062, Environmental Compliance Management,

(3)VA Handbook 0062, Environmental Compliance Management,

(4)VHA Directive 2006-001, "Accounting for Recycling Revenue at VHA Facilities."

6. DEFINITIONS

The following definitions are extracted from the EO 13423 Implementing Instructions.

a. Acquisition. The acquiring of supplies and services as defined in Part 2 of the FAR.

b. Facility. Any building, installation, structure, land, or real property that is owned or operated by, or constructed or manufactured and leased to, an Administration or staff office, as well as any fixture. This term includes a group of facilities at a single or multiple location(s) managed as an integrated operation, as well as government-owned contractor-operated facilities.

c. Pollution prevention. This includes "source reduction" as defined in the Pollution Prevention Act of 1990 (42 U.S.C. 13102), and other practices that reduce or eliminate the creation of pollutants through (1) increased efficiency in the use of raw materials, energy, water, or other resources, or (2) the protection of natural resources by conservation.

d. Recycling. The series of activities, including collection, separation, and processing, by which products or other materials are recovered from the

solid waste stream for use in the form of raw materials in the manufacture of new products other than fuel for producing heat or power by combustion.

e. Waste management. The collection, transport, processing, recycling or disposal, and monitoring of waste materials. The term usually relates to materials produced by human activity and to activities undertaken to reduce their effect on human health and the environment. Waste management is also carried out to recover still-useful resources. Waste management can involve solid, liquid, or gaseous or radioactive or mixed substances.

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f. Waste prevention. An activity that prevents waste at its source, which includes reducing the amount of material used and/or the toxicity of the material used to accomplish any task; reuse of a product in its original form; and use of repairable, refillable, or durable products that result in a longer useful life.

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION:

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

1.2 RELATED WORK:

A. Gypsum sheathing: Section 09 29 00, GYPSUM BOARD.

1.3 SUBMITTALS:

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Shop Drawings showing framing connection details, fasteners, connections and dimensions.

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 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 Forest and Paper Association (AFPA):
National Design Specification for Wood Construction
NDS-05.....Conventional Wood Frame Construction
- C. American Institute of Timber Construction (AITC):
A190.1-07.....Structural Glued Laminated Timber
- D. 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
B18.6.4-98(R2005).....Thread Forming and Thread Cutting Tapping Screws
and Metallic Drive Screws

E. American Plywood Association (APA):

E30-07.....Engineered Wood Construction Guide

F. American Society for Testing And Materials (ASTM):

A47-99(R2009).....Ferritic Malleable Iron Castings

A48-03(R2008).....Gray Iron Castings

A653/A653M-10.....Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process

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

D143-09.....Small Clear Specimens of Timber, Method of Testing

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

G. Federal Specifications (Fed. Spec.):

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

H. Commercial Item Description (CID):

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

I. Military Specification (Mil. Spec.):

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

J. Truss Plate Institute (TPI):

TPI-85.....Metal Plate Connected Wood Trusses

K. 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. Structural Members: Species and grade as listed in the AFPA, National Design Specification for Wood Construction having design stresses as shown.
- C. Lumber Other Than Structural:
 - 1. Unless otherwise specified, species graded under the grading rules of an inspection agency approved by Board of Review, American Lumber Standards Committee.
 - 2. Framing lumber: Minimum extreme fiber stress in bending of 1100.
 - 3. 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.
- D. 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.
- E. Moisture Content:
 - 1. At time of delivery and maintained at the site.
 - 2. Boards and lumber 50 mm (2 inches) and less in thickness: 19 percent or less.
 - 3. Lumber over 50 mm (2 inches) thick: 25 percent or less.
- F. Fire Retardant Treatment:
 - 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.
- G. Preservative Treatment:
 - 1. Do not treat Heart Redwood and Western Red Cedar.

2. Treat wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including framing of open roofed structures; sills, sole plates, furring, and sleepers that are less than 600 mm (24 inches) from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members used in connection with roofing and flashing materials.
3. Treat other members specified as preservative treated (PT).
4. Preservative treat by the pressure method complying with ASTM D1760, except any process involving the use of Chromated Copper arsenate (CCA) for pressure treating wood is not permitted.

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.
- C. Sheathing:
 1. APA rated Exposure 1 or Exterior; panel grade CD or better.
 2. Wall sheathing:
 - a. Minimum 9 mm (11/32 inch) thick with supports 400 mm (16 inches) on center and 12 mm (15/32 inch) thick with supports 600 mm (24 inches) on center unless specified otherwise.
 - b. Minimum 1200 mm (48 inches) wide at corners without corner bracing of framing.

2.3 STRUCTURAL-USE PANELS

- A. Comply with APA.
- B. Bearing the mark of a recognized association or independent agency that maintains continuing control over quality of panel which identifies compliance by end use, Span Rating, and exposure durability classification.
- C. Wall and Roof Sheathing:
 1. APA Rated sheathing panels, durability classification of Exposure 1 or Exterior Span Rating of 16/0 or greater for supports 400 mm (16 inches) on center and 24/0 or greater for supports 600 mm (24 inches) on center.
- D. Subflooring:
 1. Under finish wood flooring or underlayment:
 - a. APA rated sheathing panels, durability classification of Exposure 1 or Exterior.
 - b. Span Rating of 24/16 or greater for supports 400 mm (16 inches) on

2. Under resilient floor or carpet.

- a. APA rated combination subfloor-underlayment grade panels, durability classification of Exposure 1 or Exterior T and G.
- b. Span Rating of 16 or greater for supports 300 mm (16 inches) on center and 24 or greater for supports 600 mm (24 inches) on center.

E. Underlayment:

- 1. APA rated Exposure 1.
- 2. Minimum 6 mm (1/4 inch) thick or greater over subfloor.

F. Wood "I" Beam Members:

- 1. Size and Shape as shown.
- 2. Cambered and marked "Top up".
- 3. Plywood webs: PS-1, minimum 9 mm (3/8 inch) thick, unless shown otherwise.
- 4. Flanges: Kiln dried stress rated dense lumber minimum 38 mm (1-1/2 inch) thick, width as shown.
- 5. Plywood web fitted into flanges and joined with ASTM D2559 adhesive to form "I" beam section unless shown otherwise.

G. Laminated Veneer Lumber (LVL):

- 1. Bonded jointed wood veneers with ASTM D2559 adhesive.
- 2. Scarf jointed wood veneers with grain of wood parallel.
- 3. Size as shown.

2.4 ROUGH HARDWARE AND ADHESIVES:

A. Anchor Bolts:

- 1. ASME B18.2.1 and ANSI B18.2.2 galvanized, 13 mm (1/2 inch) unless shown otherwise.
- 2. Extend at least 200 mm (8 inches) into masonry or concrete with ends bent 50 mm (2 inches).

B. 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.

C. Washers

- 1. ASTM F844.
- 2. Use zinc or cadmium coated steel or cast iron for washers exposed to weather.

D. Screws:

- 1. Wood to Wood: ANSI B18.6.1 or ASTM C1002.
- 2. Wood to Steel: ASTM C954, or ASTM C1002.

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 weather and on roof blocking.
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. Conform to applicable requirements of the following:

1. AFPA National Design Specification for Wood Construction for timber connectors.
2. AITC Timber Construction Manual for heavy timber construction.
3. AFPA WCD-number 1, Manual for House Framing for nailing and framing unless specified otherwise.
4. APA for installation of plywood or structural use panels.
5. ASTM F 499 for wood underlayment.
6. TPI for metal plate connected wood trusses.

B. 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 specified in nailing schedule. 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. For sheathing and subflooring, select length of nails sufficient to extend 25 mm (1 inch) into supports.
 - d. 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.
 - e. Use 16 penny or larger nails for nailing through 50 mm (2 inch) thick lumber.

- f. Select the size and number of nails in accordance with the Nailing Schedule except for special nails with framing anchors.
- g. Nailing Schedule; Using Common Nails:
 - 1) Joist bearing on sill or girder, toe nail three-8d or framing anchor
 - 2) Bridging to joist, toe nail each end two-8d
 - 3) Ledger strip to beam or girder three-16d under each joint.
 - 4) Subflooring or Sheathing:
 - a) 150 mm (6 inch) wide or less to each joist face nail two-8d.
 - b) Subflooring, more than 150 mm (6 inches) wide, to each stud or joint, face nail three-8d.
 - c) Plywood or structural use panel to each stud or joist face nail 8d, at supported edges 150 mm (6 inches) on center and at intermediate supports 250 mm (10 inches) on center. When gluing plywood to joint framing increase nail spacing to 300 mm (12 inches) at supported edges and 500 mm (20 inches) o.c. at intermediate supports.
 - 5) Sole plate to joist or blocking, through sub floor face nail 20d nails, 400 mm (16 inches) on center.
 - 6) Top plate to stud, end nail two-16d.
 - 7) Stud to sole plate, toe nail or framing anchor. Four-8d
 - 8) Doubled studs, face nail 16d at 600 mm (24 inches) on center.
 - 9) Built-up corner studs 16d at 600 mm (24 inches) (24 inches) on center.
 - 10) Doubled top plates, face nails 16d at 400 mm (16 inches) on center.
 - 11) Top plates, laps, and intersections, face nail two-16d.
 - 12) Continuous header, two pieces 16d at 400 mm (16 inches) on center along each edge.
 - 13) Ceiling joists to plate, toenail three-8d or framing anchor.
 - 14) Continuous header to stud, four 16d.
 - 15) Ceiling joists, laps over partitions, face nail three-16d or framing anchor.
 - 16) Ceiling joists, to parallel rafters, face nail three-16d.
 - 17) Rafter to plate, toe nail three-8d. or framing anchor. Brace 25 mm (1 inch) thick board to each stud and plate, face nail three-8d.
 - 18) Built-up girders and beams 20d at 800 mm (32 inches) on center along each edge.
- 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.
- 7. Installation of Timber Connectors:
 - a. Conform to applicable requirements of the NFPA National Design Specification for Wood Construction.
 - b. Fit wood to connectors and drill holes for fasteners so wood is not split.
- C. Set sills or plates level in full bed of mortar on masonry or concrete walls.
 - 1. Space anchor bolts 1200 mm (4 feet) on centers between ends and within 150 mm (6 inches) of end. Stagger bolts from side to side on plates over 175 mm (7 inches) in width.
 - 2. Use shims of slate, tile or similar approved material to level wood members resting on concrete or masonry. Do not use wood shims or wedges.
 - 3. Closely fit, and set to required lines.
- D. Cut notch, or bore in accordance with NFPA Manual for House-Framing for passage of ducts wires, bolts, pipes, conduits and to accommodate other work. Repair or replace miscut, misfit or damaged work.
- E. 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.

F. Partition and Wall Framing:

1. Use 50 mm by 100 mm (2 inch by 4 inch) studs spaced 400 mm (16 inches) on centers; unless shown otherwise.
2. Install double studs at openings and triple studs at corners.
3. Installation of sole plate:
 - a. Anchor plates of walls or partitions resting on concrete floors in place with expansion bolts, one near ends of piece and at intermediate intervals of not more than 1200 mm (4 feet) or with power actuated drive pins with threaded ends of suitable type and size, spaced 600 mm (2 feet) on center unless shown otherwise.
 - b. Nail plates to wood framing through subfloor as specified in nailing schedule.
4. Headers or Lintels:
 - a. Make headers for openings of two pieces of 50 mm (2 inch) thick lumber of size shown with plywood filler to finish flush with face of studs or solid lumber of equivalent size.
 - b. Support ends of headers on top of stud cut for height of opening. Spike cut stud to adjacent stud. Spike adjacent stud to header.
5. Use double top plates, with members lapped at least 610 mm (2-feet) spiked together.
6. Install intermediate cut studs over headers and under sills to maintain uniformity of stud spacing.
7. Use single sill plates at bottom of opening unless shown otherwise. Toe nail to end stud, face nail to intermediate studs.
8. Install 50 mm (2 inch) blocking for firestopping so that maximum dimension of any concealed space is not over 2400mm (8 feet) in accordance with NFPA Manual for House Framing.
9. Install corner bracing when plywood or structured use panel sheathing is not used.
 - a. Let corner bracing into exterior surfaces of studs at an angle of approximately 45 degrees, extended completely over walls plates, and secured at bearing with two nails.
 - b. Use 25 mm by 100 mm (1 inch by 4 inch) corner bracing.

G. Sheathing:

1. Use plywood or structural-use panels for sheathing.
2. Lay panels with joints staggered, with edge and ends 3 mm (1/8 inch) apart and nailed over bearings as specified.
3. Set nails not less than 9 mm (3/8 inch) from edges.
4. Install 50 mm by 100 mm (2 inch by 4 inch) blocking spiked between joists, rafters and studs to support edge or end joints of panels.
5. Match and align sheathing which is an extension of work in place to existing.

END OF SECTION 06 10 00

SECTION 06 20 00
FINISH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies exterior and interior millwork used in conjunction with the patching of the existing head, jamb and sill areas damaged due to window and door removal.
- B. Items specified.
 - Sills
 - Wall Paneling
 - Base

1.2 RELATED WORK

- A. Fabricated Metal brackets:
Section 08 51 13 Aluminum Windows.
- B. Framing, furring and blocking: Section 06 10 00, ROUGH CARPENTRY.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
 - 1. Millwork items - Half full size scale for sections and details 1:50 (1/4-inch) for elevations and plans.
 - 2. Show construction and installation.
- C. Samples:
Plastic laminate finished plywood or particleboard, 150 mm by 300 mm (six by twelve inches).
- D. Certificates:
 - 1. Indicating 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
 - 3. Electrical components

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 weather tight well ventilated structures or in space in existing buildings designated by COR. Store at a minimum temperature of 21⁰C (70⁰F) for not less than 10 calendar days before installation.
- C. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

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 the basic designation only.
- B. American Society of Testing and Materials (ASTM):
 - A36/A36M-08.....Structural Steel
 - A53-07.....Pipe, Steel, Black and Hot-Dipped Zinc Coated,
Welded and Seamless
 - 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
 - E84-09.....Surface Burning Characteristics of Building
Materials
- C. American Hardboard Association (AHA):
 - A135.4-04.....Basic Hardboard
- D. Builders Hardware Manufacturers Association (BHMA):
 - A156.9-03.....Cabinet Hardware
 - A156.11-04.....Cabinet Locks
 - A156.16-02.....Auxiliary Hardware
- E. Hardwood Plywood and Veneer Association (HPVA):
 - HP1-09.....Hardwood and Decorative Plywood
- F. National Particleboard Association (NPA):
 - A208.1-99.....Wood Particleboard
- G. American Wood-Preservers' Association (AWPA):

- AWPA C1-03.....All Timber Products - Preservative Treatment by
Pressure Processes
- H. Architectural Woodwork Institute (AWI):
- AWI-99.....Architectural Woodwork Quality Standards and
Quality Certification Program
- I. National Electrical Manufacturers Association (NEMA):
- LD 3-05.....High-Pressure Decorative Laminates
- J. U.S. Department of Commerce, Product Standard (PS):
- PS20-05.....American Softwood Lumber Standard
- K. Military Specification (Mil. Spec):
- MIL-L-19140E.....Lumber and Plywood, Fire-Retardant Treated
- L. 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 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.

E. Use edge grain Wood members exposed to weather.

2.2 PLYWOOD

A. Softwood Plywood:

1. Prod. Std.
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 or B-C.
6. Other: As specified for item.

B. Hardwood Plywood:

1. HPVA: HP.1
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.
 - b. Use Type II (interior) Sound Grade veneer for paint finish.
4. On Outside of Building:
 - a. Use Type I, (exterior) A Grade veneer for natural or stained and varnish finish.
 - b. Use Type I, (exterior) Sound Grade veneer for paint finish.
5. Use plain sliced red oak unless specified otherwise.

2.3 PARTICLEBOARD

- A. NPA A208.1
- 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.

2.4 PLASTIC LAMINATE

- A. NEMA LD-3.
- B. Exposed decorative surfaces including countertops, both sides of cabinet doors, and for items having plastic laminate finish. General Purpose, Type HGL.
- C. 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.
- D. Backing sheet on bottom of plastic laminate covered wood tops: Backer, Type HGP.
- E. Post Forming Fabrication, Decorative Surfaces: Post forming, Type HGP.

2.5 BUILDING BOARD (HARDBOARD)

- A. ANSI/AHA A135.4, 6 mm (1/4 inch) thick unless specified otherwise.
- B. Perforated hardboard (Pegboard): Type 1, Tempered perforated 6 mm (1/4 inch) diameter holes, on 25 mm (1 inch) centers each way, smooth surface one side.
- C. Wall paneling at gas chain rack: Type 1, tempered, Fire Retardant treated, smooth surface on side.

2.6 ADHESIVE

- A. For Plastic Laminate: Fed. Spec. A-A-1936.
- B. For Interior Millwork: Unextended urea resin, unextended melamine resin, phenol resin, or resorcinol resin.
- C. For Exterior Millwork: Unextended melamine resin, phenol resin, or resorcinol resin.

2.7 STAINLESS STEEL

ASTM A167, Type 302 or 304.

2.8 ALUMINUM CAST

ASTM B26

2.9 ALUMINUM EXTRUDED

ASTM B221

2.10 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. Galvanized where specified.
2. Use galvanized coating on ferrous metal for exterior 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. Steel Channel Frame window anchoring.
2. Edge Strips Moldings:
 - a. Driven type "T" shape with serrated retaining stem; vinyl plastic to match plastic laminate color, stainless steel, or 3 mm (1/8 inch) thick extruded aluminum.
 - b. Stainless steel or extruded aluminum channels.
 - c. Stainless steel, number 4 finish; aluminum, mechanical applied medium satin finish, clear anodized 0.1 mm (0.4 mils) thick.
3. Rubber or Vinyl molding
 - a. Rubber or vinyl standard stock and in longest lengths practicable.
 - b. Design for closures at joints with walls and adhesive anchorage.
 - c. Adhesive as recommended by molding manufacturer.
4. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

2.11 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. Exterior treated or untreated finish lumber and trim 100 mm (4 inches) or less in nominal thickness: 15 percent.
 - 3. Moisture content of other materials shall be in accordance with the standards under which the products are produced.

2.12 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.

2.13 PRESERVATIVE TREATMENT

Wood members and plywood exposed to weather or 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.

- A. Use Grade A, exterior plywood for treatment.

2.14 FABRICATION

A. General:

1. Except as otherwise specified, use AWI Custom 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 sills.
 - d. Use backing sheet on concealed large panel surface when decorative face does not occur.

B. Folding Shelves: Dressing (Make-Up) Type B Counter and Counter Shelf Type A.

1. Use red oak back stop and mounting strips.
2. Fabricate fold down shelf with plastic laminate finish over core.
3. Use hardwood mounting strip at wall behind folding shelf bracket in thickness to permit shelf to fold down without interfering with back stop. Secure to back stop.

C. Wall Paneling:

1. Fire Retardant Treated
2. Hardwood plywood
 - a. Vertical V-grooved planked.

- b. Thickness: 19 mm (3/4 inch) unless shown otherwise.
 - c. Prefinished.
 - d. Use full height panels where possible without end joints.
- 3. Solid hardwood.
 - a. White oak or red oak, number one common grade.
 - b. Tongue and groove, including end matched.
 - c. Thickness: Not less than 19 mm (3/4 inch).
 - d. Random Lengths not less than 600 mm (24 inches), 57 mm (2-1/4 inches) wide.
- 4. Trim and base:
 - a. Quarter round at ceiling and vertical edge.
 - b. Two-member base as shown.
- 5. Use nominal one by 100 mm (4 inches) softwood furring strips.

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 calendar 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. Secure trim with fine finishing nails, screws, or glue as required.
 - 3. Set nails for putty stopping. Use washers under bolt heads where no other bearing plate occurs.
 - 4. Seal cut edges of preservative and fire retardant treated wood materials with a certified acceptable sealer.
 - 5. Coordinate with plumbing and electrical work for installation of fixtures and service connections in millwork items.
 - 6. Plumb and level items unless shown otherwise.

7. Nail finish at each blocking, lookout, or other nailer and intermediate points; toggle or expansion bolt in place where nails are not suitable.
8. Exterior Work: Joints shall be close fitted, metered, tongue and grooved, rebated, or lapped to exclude water and made up in thick white lead paste in oil.

B. Wall Paneling:

1. Solid hardwood boards

- a. Install 25 by 75 mm (1 by 3 inch) furring strips on 400 mm (16 inch) centers horizontally between top and bottom strips. Secure to each stud with two screws.
 - b. Install paneling laid vertically with end joints staggered between adjacent boards.
 - c. Tightly butt joints and blind nail each board at each furring strip.
2. Install edge trim and base as shown, use solid wood members of same species as wall paneling.

3. Plywood paneling:

- a. Install 25 by 75 mm (1 by 3 inch) furring strips horizontally, under end joints of plywood and 300 mm (16 inches) on center between end strips. Install cross furring strips centered vertically at side joints of plywood paneling less than 13 mm (1/2 inch) thick. Secure to each stud with two screws.
- b. Install panels with long edge vertically and end joints aligned where exposed to view.
- c. Align V-grooves where end joints meet and maintain continuity of pattern.
- d. Apply adhesive to each furring strip so that panel is bonded to furring strip in continuous bead of adhesive in accordance with adhesive manufacturers specifications.
- e. Nailing:
 - 1) Nail in V-grooves to horizontal furring strips and at panel edges and within 25 mm (1 inch) of ends except within 50 mm (2 inches) of end when panel end abutts other surfaces. Do not space nails in V-grooves over 150 mm (6 inches), on center.
 - 2) Nail ungrooved panels at 400 mm (16 inches) centers to horizontal furring strips between end or edge nails. Set nails

and fill hole with filler to match wood panel for panels thicker than 13 mm (1/2 inch).

- 3) Use colored nails matching panel finish for prefinished panels or panels less than 13 mm (1/2 inch) thick.

C. Install with butt joints in straight runs and miter at corners.

END OF SECTION 06 20 00

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SECTION 07 27 29
FOAMED-IN-PLACE AIR BARRIERS

PART 1-GENERAL

1.1 APPLICABLE PUBLICATIONS

- A. CAN/ULC-S710.1-05: Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam, Part 1: Material Specification.
- B. CAN/ULC-S710.2-05: Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam, Part 2: Application

1.2 DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 00 00.
- B. Store Products in a dry and adequately ventilated area, with an ambient temperature maintained between 0 degrees C and 32 degrees C (32 degrees F and 90 degrees F).
- C. Keep containers tightly closed when not in use.
- D. Protect containers from damage.
- E. Keep Products away from direct sunlight.
- F. Do not incinerate aerosol canisters.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Apply foamed-in-place air barriers when ambient air temperature is greater than -3 degrees C, 25 degrees F and less than 44 degrees C, 120 degrees F.

PART 2 - PRODUCTS

2.1 ACCESSORIES

- A. Foamed-in-Place Sealant - Low Pressure Type: semi-flexible soft, single-component polyurethane sealant, to CAN/ULC-S710:1; and having the following properties:
 - 1. Core Density (ASTM D 1622): 1.7 pcf (27.24 kg/m3)
 - 2. Fire Resistance (ASTM E84): Flame spread=10, Smoke Developed = 20.
 - 3. Color: Yellow.
 - 4. Cure Time: approximately 12 hours.
 - 5. Tack-free Time: 6-9 minutes.
 - 6. Applicator: Gun or straw applied.
 - 7. Manufacturer's and Product Name: GREAT STUFF PRO Window & Door Insulating Foam Sealant by Dow Chemical Canada ULC.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Apply foamed-in-place air barrier sealants in strict accordance with manufacturer's installation guidelines.

- B. Conform to CAN/ULC-S710.2
- C. Avoid overfilling restricted spaces.
- D. Apply low pressure foamed-in-place sealant in gaps and cracks adjacent to door and window frames, up to a maximum gap width of 3 inches (75 mm).

3.2 JOINT SEALANT BACKING:

- A. General: Provide sealant backings of material and type that are non-staining; 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:
- C.1. Type C: Closed-cell material with a surface skin.
- D. 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.

3.3 CLEANING

- A. Clean overspray from adjacent surfaces and ensure a suitable substrate for subsequent work.

END OF SECTION 07 27 29

SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION:

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. Glazing: Section 08 80 00, GLAZING.
- B. 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. Product Testing: Obtain test results from a qualified testing agency based on testing current sealant formulations within a 12-month period.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021.
 - 2. Test elastomeric joint sealants for compliance with requirements specified by reference to ASTM C920, and where applicable, to other standard test methods.
 - 3. Test other joint sealants for compliance with requirements indicated by referencing standard specifications and test methods.
- D. 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 under following conditions:
 - a. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 °C (40 °F).
 - b. 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 5° C (40° F) or less than 32° C (90° 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):
- C509-06.....Elastomeric Cellular Preformed Gasket and Sealing Material.
 - C612-04.....Mineral Fiber Block and Board Thermal Insulation.
 - C717-07.....Standard Terminology of Building Seals and Sealants.
 - C834-05.....Latex Sealants.
 - C919-02.....Use of Sealants in Acoustical Applications.
 - C920-05.....Elastomeric Joint Sealants.
 - C1021-08.....Laboratories Engaged in Testing of Building Sealants.
 - C1193-05.....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.
 - E84-08.....Surface Burning Characteristics of Building Materials.
- C. Sealant, Waterproofing and Restoration Institute (SWRI).
The Professionals' Guide

PART 2 - PRODUCTS

2.1 SEALANTS:

- A. S-1:
- 1. ASTM C920, polyurethane or polysulfide.
 - 2. Type M.
 - 3. Class 25.

4. Grade NS.
 5. Shore A hardness of 20-40
 - B. S-2:
 1. ASTM C920, polyurethane or polysulfide.
 2. Type M.
 3. Class 25.
 4. Grade P.
 5. Shore A hardness of 25-40.
 - C. S-3:
 1. ASTM C920, polyurethane or polysulfide.
 2. Type S.
 3. Class 25, joint movement range of plus or minus 50 percent.
 4. Grade NS.
 5. Shore A hardness of 15-25.
 6. Minimum elongation of 700 percent.
 - D. S-4:
 1. ASTM C920 polyurethane or polysulfide.
 2. Type S.
 3. Class 25.
 4. Grade NS.
 5. Shore A hardness of 25-40.
 - E. S-5:
 1. ASTM C920, polyurethane or polysulfide.
 2. Type S.
 3. Class 25.
 4. Grade P.
 5. Shore hardness of 15-45.
 - F. S-6:
 1. ASTM C920, silicone, neutral cure.
 2. Type S.
 3. Class: Joint movement range of plus 100 percent to minus 50 percent.
 4. Grade NS.
 5. Shore A hardness of 15-20.
 6. Minimum elongation of 1200 percent.
 - G. S-7:
 1. ASTM C920, silicone, neutral cure.
 2. Type S.
 3. Class 25.
-

4. Grade NS.
5. Shore A hardness of 25-30.
6. Structural glazing application.

H. S-8:

1. ASTM C920, silicone, acetoxycure.
2. Type S.
3. Class 25.
4. Grade NS.
5. Shore A hardness of 25-30.
6. Structural glazing application.

I. S-9:

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.

J. S-10:

1. ASTM C920, coal tar extended fuel resistance polyurethane.
2. Type M/S.
3. Class 25.
4. Grade P/NS.
5. Shore A hardness of 15-20.

K. S-11:

1. ASTM C920 polyurethane.
2. Type M/S.
3. Class 25.
4. Grade P/NS.
5. Shore A hardness of 35 to 50.

L. S-12:

1. ASTM C920, polyurethane.
2. Type M/S.
3. Class 25, joint movement range of plus or minus 50 percent.
4. Grade P/NS.
5. Shore A hardness of 25 to 50.

2.2 CAULKING COMPOUND:

- A. C-1: ASTM C834, acrylic latex.
- B. C-2: One component acoustical caulking, non drying, non hardening, synthetic rubber.

2.3 COLOR:

- A. Sealants used with exposed masonry shall match color of mortar joints.
- B. Sealants used with unpainted concrete shall match color of adjacent concrete.
- C. Color of sealants for other locations shall be light gray or aluminum, unless specified otherwise.
- D. Caulking shall be light gray or white, unless specified otherwise.

2.4 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.

2.5 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.

2.6 PRIMER:

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

2.7 CLEANERS-NON POUROUS SURFACES:

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. Finish paving or floor joints flush unless joint is otherwise detailed.
9. Apply compounds with nozzle size to fit joint width.
10. 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.

5. Control Joints: Before control joints are installed, apply sealant in back of control joint to reduce flanking path for sound through control joint.

3.6 FIELD QUALITY CONTROL:

A. Field-Adhesion Testing: Field-test joint-sealant adhesion to joint substrates as recommended by sealant manufacturer:

1. Extent of Testing: Test completed elastomeric sealant joints as follows:
 - a. Perform 10 tests for first 300 m (1000 feet) of joint length for each type of elastomeric sealant and joint substrate.
 - b. Perform one test for each 300 m (1000 feet) of joint length thereafter or one test per each floor per elevation.

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.

3.8 LOCATIONS:

A. Exterior Building Joints, Horizontal and Vertical:

1. Metal to Metal: Type S-1, S-2
2. Metal to Masonry or Stone: Type S-1
3. Masonry to Masonry or Stone: Type S-1
4. Stone to Stone: Type S-1
5. Cast Stone to Cast Stone: Type S-1
6. Threshold Setting Bed: Type S-1, S-3, S-4
7. Masonry Expansion and Control Joints: Type S-6
8. Wood to Masonry: Type S-1

B. Metal Reglets and Flashings:

1. Flashings to Wall: Type S-6
2. Metal to Metal: Type S-6

C. High Temperature Joints over 204 degrees C (400 degrees F):

1. Exhaust Pipes, Flues, Breech Stacks: Type S-7 or S-8

D. Interior Caulking:

1. Typical Narrow Joint 6 mm, (1/4 inch) or less at Walls and Adjacent Components: Types C-1, C-2 and C-3.

2. Perimeter of Doors, Windows, Access Panels which Adjoin Concrete or Masonry Surfaces: Types C-1, C-2 and C-3.
3. Joints at Masonry Walls and Columns, Piers, Concrete Walls or Exterior Walls: Types C-1, C-2 and C-3.
4. Perimeter of Lead Faced Control Windows and Plaster or Gypsum Wallboard Walls: Types C-1, C-2 and C-3.
5. Exposed Isolation Joints at Top of Full Height Walls: Types C-1, C-2 and C-3.
6. Exposed Acoustical Joint at Sound Rated Partitions Type C-2.
7. Concealed Acoustic Sealant Type S-4, C-1, C-2 and C-3.

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SECTION 08 51 13
ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Aluminum windows of type and size shown, complete with hardware, related components and accessories.
- B. Types:
 - 1. Projected
 - 2. Fixed
 - 3. Psychiatric Security Window
- C. Glazing:
 - 1. Insulated Low-E glass at exterior
 - 2. 1" blinds with limited access or custodial only operated tilt mechanism where indicated. Tilt mechanism shall allow operation without removal of the access panel
 - 3. Interior access panel with anti-tamper hardware and should not be removable with standard tools, coins or bent wire devices
- D. Integral Security Screens (where required)
 - 1. Integral security screen shall consist of a sub-frame permanently fixed to the window framing members, and an operable main frame with a perforated galvanealed sheet metal panel or stainless steel wire in-fill as indicated.

1.2 DEFINITIONS

- A. Accessories: Mullions, casings, closures, trim, moldings, panning systems, sub-sills, clips anchors, fasteners, weather-stripping, insect screens, and other necessary components required for fabrication and installation of window units.
- B. Uncontrolled Water: Water not drained to the exterior, or water appearing on the room side of the window.

1.3 RELATED WORK

- A. Glazing: Section 08 80 00, GLAZING and 08 56 66 DETENTION WINDOW SCREENS.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Protect windows from damage during handling and construction operations before, during and after installation.
- B. Store windows under cover, setting upright.
- C. Do not stack windows flat.
- D. Do not lay building materials or equipment on windows.

1.5 QUALITY ASSURANCE

- A. Approval by contracting officer is required of products or service of proposed manufacturers and installers.
- B. Approval will be based on submission of certification by Contractor that:
 - 1. Manufacturer regularly and presently manufactures the specified windows as one of its principal products.
 - 2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items.
- C. Provide each type of window produced from one source of manufacture.
- D. Quality Certified Labels or certificate:
 - 1. Architectural Aluminum Manufacturers Association, "AAMA label" affixed to each window indicating compliance with specification.
 - 2. AAMA "Authorization of Product Certification" Certificates in lieu of label with copy of current test report from an independent testing laboratory indicating that windows to be provided comply with specified requirements and AAMA 101/I.S.2 for type of window specified.

1.6 SUBMITTAL

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
 - 1. Minimum of 1/2 full scale types of windows on project.
 - 2. Identifying parts of window units by name and kind of metal or material, show construction, locking systems, mechanical operators, trim, installation and anchorages.
 - 3. Include glazing details and standards for factory glazed units.
- C. Manufacturer's Literature and Data:
 - 1. Windows
 - 2. Sash locks, keepers, and keys
 - 3. Security Screens
- D. Certificates:
 - 1. Certificates as specified in paragraph QUALITY ASSURANCE.
 - 2. Indicating manufacturers and installers qualifications.
 - 3. Manufacturer's Certification that windows delivered to project are identical to windows tested.

4. Security screen manufacturer must submit qualifying test report from an AAMA accredited test Laboratory attesting that units comply with SMA 6001-2002.

E. Test Reports:

Copies of test reports as specified in paragraph QUALITY ASSURANCE.

- F. Samples: Provide 150 mm (six-inch) length samples showing finishes, specified.

1.7 WARRANTY

Warrant windows against malfunctions due to defects in thermal breaks, hardware, materials and workmanship, subject to the terms of Article "WARRANTY OF CONSTRUCTION", FAR clause 52.246-21, except provide 10 year warranty period.

1.8 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 of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
- 90.1-07.....Energy Standard of Buildings
- C. American Architectural Manufacturers Association (AAMA):
- 101/I.S.2/A440-08.....Windows, Doors, and Unit Skylights
- 501.8-12....."Standard Test Method for Determination of Resistance to Human Impact of Window Systems Intended for Use in Psychiatric Applications"
- 505-09.....Dry Shrinkage and Composite Performance Thermal Cycling Test Procedures
- 2605-05.....Superior Performing Organic Coatings on Architectural Aluminum Extrusions and Panels
- TIR-A8-08.....Structural Performance of Poured and Debridged Framing Systems
- D. American Society for Testing and Materials (ASTM):
- A653/A653M-09.....Steel Sheet, Zinc Coated (Galvanized), Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-dip Process
- E 90-09.....Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

- E. National Fenestration Rating Council (NFRC):
 - NFRC 100-10.....Determining Fenestration Product U-Factors
 - NFRC 200-10.....Determining Fenestration Product Solar Heat
Gain Coefficient and Visible Transmittance at
Normal Incidence
- F. National Association of Architectural Metal Manufacturers (NAAMM):
 - AMP 500-06.....Metal Finishes Manual

PART 2- PRODUCTS

2.1 MATERIALS

- A. Aluminum Extrusions; Sheet and Plate: AAMA 101/I.S.2.
- B. Sheet Steel, Galvanized: ASTM A653; G90 galvanized coating.
- C. Weather-strips: AAMA 101/I.S.2; except leaf type weather-stripping is not permitted.
- D. Security Screening:
 - 1. Stainless Steel wire cloth woven from 0.7 mm diameter Type 302 or 304 stainless steel wire, woven 12 mesh, double crimped.
 - 2. Sheet steel ASTM A653/A653M.
- E. Fasteners: AAMA 101/I.S.2. Screws, bolts, nuts, rivets and other fastening devices to be non-magnetic stainless steel.
 - 1. Fasteners to be concealed when window is closed.
 - 2. Stainless steel self tapping screws may be used to secure Venetian blind hanger clips, vent guide blocks, friction adjuster, and limit opening device.
 - 3. Attach locking and limit devices to windows with concealed fasteners.
- F. Weather-strips: AAMA 101/I.S.2.
- G. Hardware:
 - 1. Locks: Two position locking bolts or cam type locks with a single point control located not higher than five feet from floor level, tamperproof custodial where indicated. Fastenings for locks and keepers shall be concealed or nonremovable.
 - 2. Locking Device Strikes: Locate strikes in frame jamb. Strikes shall be adjustable for locking tension.
 - 3. Fabricate hinges of noncorrosive metal. Hinges to be fully concealed when vent is closed. Surface mounted hinges will not be accepted.

4. Guide Blocks: Fabricate guide blocks of injection molded nylon.
Install guide block fully concealed in vent/frame sill.
5. Design operating device to prevent opening with standard tools, coins or bent wire devices.
6. Design interior access panel with non-removable fasteners and secured to prevent opening or removal with standard tools, coins or bent wire devices.

2.2 THERMAL AND CONDENSATION PERFORMANCE

- A. Condensation Resistance Factor (CRF): Minimum CRF of 54.
- B. Thermal Transmittance:
 1. Maximum U value class for fixed windows area: 30 ($U=0.30$).
 2. Maximum U value class for operable window vents: 40 ($U=0.40$), or as required by ASHRAE 90.1.
- C. Solar Heat Gain Coefficient (SHGC): SHGC shall comply with State or local energy code requirement.

2.3 FABRICATION

- A. Fabrication to exceed or meet requirements of Physical Load Tests, Air Infiltration Test, and Water Resistance Test of AAMA 101/I.S.2.
- B. Glazing:
 1. Factory glazed.
 2. Glazing in accordance with Section 08 80 00, GLAZING.
 3. Windows insulated glass must be reglazable without dismantling sash framing at the primary insulated glass unit. Access panel shall be removable for reglazing.
 4. Design rabbet to suit glass thickness and glazing method specified.
 5. Re-glazable from interior except where not accessible.
 6. Provide removable glazing beads. Glazing beads shall not be removable with standard tools, coins or bent wire devices and without removing access panel.
- C. Trim and Panning:
 1. Trim includes casings, closures, and panning. Note: Flange frames that force glass to exterior plane of existing window frame shall not be permitted. Panning system shall position exterior pane of glass no less than 3" recessed from exterior plane of panning.
 2. Fabricate trim and casing shapes shown of aluminum not less than 1.6 mm (0.062 inch) thick and not less than 0.078" if panning is more than 2" deep

3. Extruded or formed sections, straight, true, and smooth on exposed surfaces.
4. Exposed external corners mitered and internal corners coped; fitted with hairline joints.
5. Except for strap anchors, provide reinforcing for fastening near ends and at intervals not more than 305 mm (12 inches) between ends.
6. Design to allow unrestricted expansion and contraction of members and window frames.
7. Secure to window frames with acceptable anchors, machine screws or expansion rivets and as recommended based on substraight and structural calculations.
8. Exposed screws, fasteners or pop rivets are not acceptable on exterior of the casing or trim cover system.

D. Thermal-Break Construction:

1. Manufacturer's Standard.
2. Low conductance thermal barrier.
3. Capable of structurally holding sash in position and together.
4. All Thermal Break Assemblies (Pour & Debridge, Insulbar or others) shall be tested as per AAMA TIR A8 and AAMA 505 for Dry Shrinkage and Composite Performance.
5. Location of thermal barrier and design of window shall be such that, in closed position, outside air shall not come in direct contact with interior frame of the window.

E. Mullions: AAMA 101.

F. Insect Screens:

1. AAMA 101/I.S.2.
2. Aluminum screen cloth.

2.4 PROJECTED WINDOWS

- A. AAMA 101/I.S.2/A440-08; Type: C-AW80.
- B. AAMA certified product to the AAMA 101/I.S.2. - 97 standard.
- C. Frame and vent shall each not be less than 3-1/2" in depth,
- D. Minimum extrusion wall thickness of 0.125" of all vent frame and perimeter frame members
- E. Operation:
 - a. Hopper vents: Project-in from top and slide up from bottom.
 - b. Operation of hopper windows shall be controlled by a window key to match the existing campus window key if possible.

- c. Multi-point lock mechanism controlled from single point or handle.

2.5 FIXED WINDOWS

- A. AAMA 101/I.S.2/A440-08; Type: F-AW80.
- B. AAMA certified product to the AAMA 101/I.S.2/A440-08 standard.
- C. Frame and vent shall each not be less than 3-1/2" in depth,
- D. Minimum extrusion wall thickness of 0.125" of all vent frame and perimeter frame members

2.6 PSYCHIATRIC SECURITY WINDOWS (Where indicated on drawings)

- A. AAMA 501.12 Simulated Human Impact Tests:
Conduct tests in general accordance with aama standard 501.8 "standard test method for determination of resistance to human impact of window systems intended for use in psychiatric applications", to simulate a purposeful shoulder impact from the interior, on representative test unit, reflecting the full range of energy absorption variables on the project. Test units shall be representative of windows on the project in details of frame connections, glazing, and anchorage.
 - a. Test units shall be a minimum of 4'-0" x 6'-0" or the largest size in which compliance is sought, whichever is greatest.
 - b. Meeting rails and mullions to be used on the project shall be incorporated in test units, and similarly tested at maximum and minimum unsupported span.
 - c. Interior of each test unit shall be impacted as per the referenced AAMA standard with a lead shot impactor delineated in the standard. The impactor shall be swung from a vertical height sufficient to generate a 2000 ft-lb of impact, directed at center-of-glass, midpoint between locks, and lower jamb locking point, one each respectively.
 - d. At the conclusion of impact testing, the window shall remain intact as a barrier to egress.
 - B. AAMA 1101/I.S.2/A440-08; Type: C-AW80.
 - C. AAMA certified product to the AAMA 101/I.S.2/A440-08 standard.
 - D. Frame and vent shall each not be less than 3-1/2" in depth,
 - E. Minimum extrusion wall thickness of 0.125" of all vent frame and perimeter frame members
-

F. Operation:

G. Casement vents

- (a) Hardware to be custodial or supervisory-operated and include:
 - a. Multi-point lock bars with "capture" keyed actuators and keepers
 - b. 4-bar casement hinges
 - c. GEM Tubular key lock
 - d. Sash snubbers

2.7 GLAZING

- A. All units shall be factory glazed
- B. All lites to be 1/4" clear tempered
- C. Insulated glass shall have Low E coating on the #2 surface equivalent to PPG Solarban 60, Cardinal 272 or Viracon VE1 2M.
 - a. Argon fill
- D. Interior access panel shall be 1/4" tempered

2.8 SECURITY SCREEN

- A. Exterior security screen to be full configuration and be operable.
Screen main frame to be of mitered construction and contain a noise reduction gasket to prevent rattle between main frame and sub frame, frame members and tie bar to have a hollow, with .078 nominal wall thickness. Screen to lock in a closed secure position by means of a single point release lock.
- B. In-Fill Woven Wire Fabric: In-fill shall be 0.028 stainless steel 12 x 12 black powder coat finished mesh. Non painted mesh is not acceptable. Each edge of screen to have a 1/2" 90 degree bends. Full screens may require two pieces of screen mesh.
- C. Limit Device: An adjustable arm made of galvanized steel shall be located at the head to limit the screen from swinging open past 90° from the manufacturer, field adjustment shall be possible to accommodate existing conditions.
- D. Tie-bar (when used) to be coped to fit tightly within frame at each end and be attached with mechanical gussets.
- E. Screen in-fill to be held in place
 - a. Woven Wire Fabric - with extruded retainers fastened through the retainer and in-fill into the frame with #10 stainless steel zinc coated screws a minimum of every 4". Retainers shall have a minimal wall thickness of .062" and contain a cover plate that

conceals all fasteners. Retainer and cover are to be black in color to match in-fill.

F. Locks shall be factory installed and shipped as part of the complete screen unit.

G. Security screens must be factory attached to the window by window manufacturer.

2.9 FINISH

A. Application: on clean extrusions free from serious surface blemishes; on exposed surfaces visible when installed product's operating sash are closed.

B. Coating: PPG Duranar™ with resin containing 70% fluoropolymer; thermosetting; alternative finishes will not be acceptable.

C. Quality standard: conforming to AAMA 2605-05, including 10 years Florida exposure and 4000 hours humidity tests.

D. Pretreatment: five-stage; zinc chromate conversion coating.

E. Application: electrostatic spray and oven bake by approved applicator.

F. Coating quantity: minimum one primer coat and one color coat.

G. Dry film thickness: minimum 1.2 mils on exposed surfaces, except inside corners and channels.

H. Color: chosen from manufacturer's standards.

PART 3 - EXECUTION

3.1 PROTECTION (DISSIMILAR MATERIALS): AAMA 101/I.S.2.

3.2 INSTALLATION, GENERAL

A. Install window units in accordance with manufacturer's specifications and recommendations for installation of window units, hardware, operators and other components of work.

B. Where type, size or spacing of fastenings for securing window accessories or equipment to building construction is not shown or specified, use expansion or toggle bolts or screws, or as best suited to construction material.

1. Provide bolts or screws minimum 6 mm (1/4-inch) in diameter.

2. Sized and spaced to resist the tensile and shear loads imposed.

3. Do not use exposed fasteners on exterior, except when unavoidable for application of hardware.

4. Provide non-magnetic stainless steel Phillips flat-head machine screws for exposed fasteners, where required, or special tamper-proof fasteners.
5. Locate fasteners to not disturb the thermal break construction of windows.
 - A. Set windows plumb, level, true, and in alignment; without warp or rack of frames or sash.
 - B. Anchor windows on four sides with anchor clips or fin trim.
- C. Do not allow anchor clips to bridge thermal breaks.
- D. Make connections to allow for thermal and other movements.
- E. Do not allow building load to bear on windows.

Use manufacturer's standard clips at corners and not over 600 mm (24 inches) on center or as required per structural calculations.
- F. Sills and Stools:
 1. Set in bed of mortar or other compound to fully support, true to line shown.
 2. Do not extend sill to inside window surface or past thermal break.
 3. Leave space for sealants at ends and to window frame unless shown otherwise.
- G. Replacement Windows:
 1. Do not remove existing windows until new replacement window and security screen is available, ready for immediate installation.
 2. Remove existing work carefully; avoid damage to existing work to remain.
 3. Meet all infection control and containment requirements during removal and installation process, including cleanup and debris removal.
 4. Perform all other operations as necessary to prepare openings for proper installation and operation of new units.
 5. Do not leave openings uncovered at end of working day, during precipitation or temperatures below 16 degrees C (60 degrees F.).
- H. Wedge fiberglass insulation between new window and existing construction, filling voids and penetrating beyond window frame's thermal barrier. Compress fiberglass per manufactures recommendations. Install foam type backer rod in all masonry cavities to stop the circulation of air from masonry cavity to the window frames all sides, top and bottoms.

3.3 MULLIONS CLOSURES, TRIM, AND PANNING

- A. Cut mullion full height of opening and anchor directly to window frame on each side.
- B. Closures, Trim, and Panning: External corners mitered and mechanically fastened with concealed stainless steel fasteners. Interior trim corners coped, fitted with hairline, tightly closed joints.
- C. Secure to concrete or solid masonry with expansion bolts, expansion rivets, split shank drive bolts, or powder actuated drive pins, and as recommended per structural calculations.
- D. Toggle bolt to hollow masonry units. Screwed to wood or metal.
- E. Fasten except for strap anchors, near ends and corners and at intervals not more than 300 mm (12 inches) between.
- F. Seal units following installation to provide weathertight system.

3.4 ADJUST AND CLEAN

- A. Provide final field adjustment of ventilating sash and hardware to provide tight fit at contact points, and at weather-stripping for smooth operation and weathertight closure.
- B. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes.
- C. Remove excess glazing and sealant compounds, dirt, and other substances.
- D. Lubricate hardware and moving parts as recommended by manufacturer.
- E. Clean glass promptly after installation of windows. Remove glazing and sealant compound, dirt and other substances.
- F. Except when a window is being adjusted or tested, keep locked in the closed position during the progress of work on the project.

3.5 FIELD TESTING

- A. Air leakage test shall be conducted per AAMA 502 at a static pressure of 6.24 psf. The maximum allowable air infiltration shall not exceed .15 cfm/sq ft., 1.5 times the laboratory allowable.
- B. One of each window type to be tested or as selected by owner.
- C. Select test units as directed by the owner's representative and use an AAMA accredited laboratory provided by the owner or contractor.
- D. Test installed units in conformance with AAMA 502-08 for air and water infiltration with the window manufacturer, contractor, A/E, and owner present.
- E. Testing to occur with first window of each type of window product installed.

- F. Water penetration shall be conducted at a static test pressure of 8 psf. No water penetration shall occur as defined in AAMA 502.
- G. If testing fails, conduct diagnostic evaluation in accordance with AAMA 511. Retest failed specimen and test (3) additional specimens of the same type of window.

3.6 OPERATION DEVICES

- A. Provide wrenches, keys, or removable locking operating handles, as specified to operate windows.
- B. Provide window key for hopper windows to match existing campus window key if possible.
- C. Provide 25 maintenance or window washer operating handles.

END OF SECTION 08 51 13

SECTION 08 56 66
DETENTION WINDOW SCREENS

PART 1 - GENERAL

1.1 DESCRIPTION

Detention and protection screens consist of a sub-frame, main frame with wire cloth and support assembly, detention lock and bolt, hinges and all fittings and anchors required.

1.2 RELATED WORK

- A. Section 08 51 13, ALUMINUM WINDOWS.
- B. Section 09 06 00, FINISHES.

1.3 MANUFACTURERS QUALIFICATIONS

- A. Sole Source Manufacturer shall be Kane Manufacturing Corporation, 515 N. Fraley St./ Kane, PA 16735 Phone (800) 952-6399.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Samples: One completely finished detention screen as specified. Upon approval, screen may be installed on the job.
- C. Shop Drawings: Complete details (1/2 full scale), showing details of construction and anchorage, relation to details of the windows and clearances required and window operators.
- D. Manufacturer's Certificates:
 - 1. Indicating manufacturer's qualification specified.
 - 2. Indicating wire screen cloth meets the requirements specified.
- E. Manufacturer's Literature and Data:
 - 1. Detention Screen.
 - 2. Protection Screen.

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 the basic designation only.
- B. American Society for Testing and Material:
 - A653/A653M-10.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.

PART 2 - PRODUCTS

2.1 WIRE CLOTH

Stainless steel wire cloth woven from 0.7 mm (0.028-inch) diameter Type 302 or 304 stainless steel wire, woven 12 mesh, double crimped.

2.2 SHEET STEEL

ASTM A653/A653M

2.3 FABRICATION

- A. Make screens units without muntins and design to be mounted flush with trim, frame or wall face.
- B. Fabricate scribe members from 1.5 mm (0.0598-inch) thick sheet steel and install at head and jambs of openings.
- C. Where lightproof shade occurs, limit swing of screen to 90 degrees.
- D. Frames: Weld corners of fixed and hinged frames continuously. Outside reinforcements or projections will not be permitted. Dress weld smooth so as to be inconspicuous. Round exposed edges and corners.
- E. Drill and tap fixed frames for adjustment against scribe members. Drill head rail of hinged frames on room side for installation of shade brackets. Locate holes on center line of rail, 38 mm (1-1/2 inches) outside edges of stiles.
- F. Reinforce frames lighter than 2.5 mm (0.105-inch) thick steel at locks and hinges with steel plates not less than 5 mm (3/16-inch) thick.
- G. Provide rubber cushion plugs (bumpers) on lock between fixed and hinged frames. Locate bumpers 150 mm (6-inches) from top and bottom on side of frame where lock bolts or slides occur.
- H. Secure one piece metal tubular sleeve within hinged frame of units, to provide for passage of window operator crankshafts and crank handles specified in window specifications. Size internal diameter of sleeves to give a 3 mm (1/8-inch) clearance for socket and of crank handles. Flare sleeves uniformly (but not cut) at free end and to clear crankshafts when frame is swung open. Secure sleeves by either spot welding or concealed screws. Grind end of sleeve flush with frame. Round exposed edges of drilled hole in frame and dress smooth. Clearance between free end of sleeve and interior surface of frame (fixed or movable) may not exceed 1 mm (1/32-inch.)

2.4 DETENTION WINDOW SCREENS - 12 GAUGE STEEL FRAMES

- A. Main Frame shall be of open box channel design, measuring 5/8" [15.875 mm] X 1-3/8" [34.925mm] x 2-1/2" [63.5] x 1-5/16" [33.3375] x 5/8" [15.875] and formed of 12-gauge steel. The corners of the main frame shall be notched for self-aligning and robotically welded.
- B. Braces shall be furnished when required. They shall be of open box channel design, measuring 5/8" [15.875] x 1-1/32" [26.19375] x 2-1/2" [63.5] x 1-1/32" [26.19375] x 5/8" [15.875] and formed of 12-gauge steel.

- C. Concealment plates, measuring 2-5/16" [58.7375] and formed of 12-gauge steel shall be applied to the back of the main frame (and brace if furnished) to conceal the locking mechanism and retain the infill. The concealment plates shall be attached to the main frame along the inner and outer edges by screws. Inner screws shall be #10 x ½" tamper-resistant. TORX pan head sheet metal screw, and penetrate the concealment plate, infill, and main frame approximately 4" [101.6] on center. The outer screws shall be #10-24 x ½" Phillips flat head thread cutting screw u/c, on center no less than 8" [203.2] but no more than 12" [304.8], with exception of smaller screens.

2.5 SUB-FRAME

- A. The sub-frame shall be of channel design, measuring ¾" [19.05] x 1-7/16" [36.5125] x 1-7/16" [36.5125] and formed of 12-gauge steel on all sides. The corners of the sub-frame shall be notched for self-aligning and robotically welded on both sides to provide a rigid frame within which the main frame operates.

2.6 FINISH

- A. All interior and exterior surfaces of the main frame, sub-frame and concealment plates shall be thoroughly cleaned in a 5-step bonderizing process. The surfaces shall receive an electrostatically applied thermoplastic, polyester powder coating (2.5 mil min. thickness), which shall be applied and baked to a hard mar-resistant finish.
- B. The infill shall be thoroughly cleaned in a 5-step bonderizing process. An electrostatically applied black, thermoplastic, polyester powder coating (2.5 mil min. thickness) shall be applied and baked to a hard mar-resistant finish.

2.7 INFILL

Wire Cloth: Wire cloth shall be woven 12-mesh to the inch from .028-inch diameter Type 304 stainless steel wire and double crimped.

2.8 INFILL ATTACHMENT

- A. The wire cloth shall be folded 90 degrees on the edges and held securely in place by means of a removable concealment plate of 12-gauge steel and #10 x ½" tamper-resistant TORX pan head sheet metal screws.
- B. TORX tamper-resistant screws shall penetrate the infill, concealment plate, and the main frame approximately 4" [101.6] on center. Phillips flathead screws shall penetrate the concealment plate and main frame along the outer edge.

2.9 HARDWARE

- A. Each screen shall be provided with two or more concealed 13-gauge, stainless steel hinges with ¾" [6.36] diameter hardened, loose stainless

steel pins and integral compression guards. Hinges shall be spaced at a maximum of 24" [609.6] on center.

- B. Each screen shall include adjustment screws (1/4"-20 x 3/4" Phillips pan head thread cutting screw and 16-gauge 1-3/16" [30.1625] x 3/4" [19.05] steel scribes shall be supplied at the head and jam if required.
- C. Each screen shall come fully assembled and tested from the factory for operation.
- D. Make provisions to insure that the bit key can not be removed except when the bolts are in a locked (extended) position. Locks shall be keyed alike. Design locks so as to be operated by existing attendant's key established for the VA Medical Center.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Drill, tap or cut metal window trim and other materials as required for proper installation of screen units.
- B. Install screen units that can be readily removed without damage to new or existing work and to effectively exclude insects.
- C. Secure screen units to metal window with steel case hardened machine screws, spaced at approximately 375 mm (15 inches) on centers.
- D. Provide screw fastenings of type, size and head as recommended by manufacturer of screen units.
- E. Anchor screen units to wood with stainless steel flathead wood screws at sill and stainless steel round head wood screws at head, mullions and jambs. Toggle bolts may be used if they do not interfere with sash balances or weights at jambs or mullions.

END OF SECTION 08 56 66

SECTION 08 80 00
GLAZING

PART 1 - GENERAL

1.1 DESCRIPTION

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. Section 08 51 13, ALUMINUM WINDOWS
2. Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 LABELS

A. Temporary labels:

1. Provide temporary label on each light of glass 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 is approved by 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. Building Enclosure Vapor Retarder and Air Barrier:

1. Utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
2. Maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.

B. 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 applicable code.
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. Certificate on shading coefficient.
 2. Certificate on "R" value when value is specified.
- 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. Glazing cushion.
 5. Sealing compound.
- E. Samples:
 1. Size: 150 mm by 150 mm (6 inches by 6 inches).
 2. Reflective glass.
- 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. Treat security glazing as fragile merchandise, and packaged and shipped in export wood cases with width end in upright position and blocked together in a mass. Storage and handling shall comply with Manufacturer's directions and as required to prevent edge damage or other damage to glazing resulting from effects of moisture, condensation, temperature changes, direct exposure to sun, other environmental conditions, and contact with chemical solvents.
2. 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.
3. 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.
4. 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.
5. Protect "Constant Temperature" units including every unit where glass sheet is directly laminated to or directly sealed with metal-tube type spacer bar to polycarbonate sheet, from exposures to ambient temperatures outside the range of 16 to 24 C, during the fabricating, handling, shipping, storing, installation, and subsequent protection of glazing.

1.7 PROJECT CONDITIONS

Field Measurements: Field measure openings before ordering glass products. Contractor to be responsible for proper fit of field measured products. Contractor to field verify all window conditions and dimensions prior to submitting shop drawings.

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.
 3. Polycarbonate to remain clear and ultraviolet light stabilized for 5 years.
 4. Insulating plastic to not have more than 6 percent decrease in light transmission and be ultraviolet light stabilized for 10 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):
- C542-05.....Lock-Strip Gaskets
- C716-06.....Installing Lock-Strip Gaskets and Infill
Glazing Materials.
- C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants
- C864-05.....Dense Elastomeric Compression Seal Gaskets,
Setting Blocks, and Spacers
- C920-11.....Elastomeric Joint Sealants
- C964-07.....Standard Guide for Lock-Strip Gasket Glazing
- C1036-06.....Flat Glass
- C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated
and Uncoated Glass.
- C1376-10.....Pyrolytic and Vacuum Deposition Coatings on
Flat Glass
- D635-10.....Rate of Burning and/or Extent and Time of
Burning of Self-Supporting Plastic in a
Horizontal Position
- D4802-10.....Poly (Methyl Methacrylate) Acrylic Plastic
Sheet
- E2190-10.....Insulating Glass Unit

- D. Commercial Item Description (CID):
 - A-A-59502.....Plastic Sheet, Polycarbonate
- E. Code of Federal Regulations (CFR):
 - 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; 2010
- 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.
- B. Clear Glass:
 - 1. Thickness, 1/4".
- C. low emissivity (Low E)coated glass:
 - 1. ASTM C1036, Type I, Class 2, Quality q3.
 - 2. Color: Clear
 - 3. Thickness, 1/4".
- D. Low-E Tempered Glass:
 - 1. ASTM C1048, Kind FT, Condition C, Type I, Class 1, Quality q3 with low emissivity pyrolytic coating having an E of 0.15.
 - 2. Apply coating, as indicated.
 - 3. Thickness 1/4".

2.2 INSULATING GLASS UNITS

- A. Provide factory fabricated, hermetically sealed glass unit consisting of two panes of glass separated by a dehydrated air space and comply with ASTM E2190.
- B. Assemble units using glass types specified:
- C. Sealed Edge Units (SEU):
 - 1. Insulating Glass Unit Makeup
 - a. Outboard Lite
 - 1. Glass type: Low E
 - 2. Glass Tint: cLEAR

3. Nominal Thickness: 1/4"
4. Glass Strength: (Annealed, Heat-Strengthened, Tempered)
5. Coating Orientation: (Surface #2)
- b. Spacer
 1. Nominal Thickness: 1/2"
 2. Gas Fill: (90% Argon)
- c. Inboard Lite
 1. Glass Type: Clear
 2. Glass Tint: Clear
 3. Nominal Thickness: 1/4"
 4. Glass Strength: (Annealed, Heat-Strengthened, Tempered)
2. Performance Characteristics (Center of Glass)
 - a. Visible Transmittance: 70%
 - b. Visible Reflectance: 12%
 - c. Winter U-factor (U-value): .25
 - d. Shading Coefficient (SC): .45
 - e. Solar heat Gain Coefficient (SHGC): .40
3. Glass shall be annealed, heat strengthened or tempered as required by codes, or as required to meet thermal stress and wind loads.
4. Glass heat-treated by horizontal (roller hearth) process with inherent roller wave distortion parallel to the bottom edge of the glass as installed when specified.
- D. Psychiatric Impact Interior Polycarbonate
 1. 1/2" Clear Polycarbonate Sheffield Plastics Makralon 15 or equal as confirmed in impact test report.
- E. FEU Clear Glass.
 1. Interior and exterior panes, ASTM C1036, Type I, Class 1, Quality q3, 3 mm (1/8 inch) thick.
 2. Thickness, 11 mm (7/16 inch) minimum.

2.3 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. Lock-Strip Glazing Gaskets: ASTM C542, shape, size, and mounting as indicated.

G. 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.

H. Structural Sealant: ASTM C920, silicone acetoxo cure:

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

I. Neoprene, EPDM, or Vinyl Glazing Gasket: ASTM C864.

1. Channel shape; flanges may terminate above the glazing channel or flush with the top of the channel.

2. Designed for dry glazing.

J. 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. 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. 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 spline 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 - WET METHOD (SEALANT AND GASKET BEAD GLAZING AT INSULATED UNITS)

- A. Factory applied back bead of silicone glazing sealant on glazing leg.
- 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 glazing stops which incorporate flexible gaskets.
- E. Trim protruding tape edge.

3.6 INSTALLATION - DRY MARINE GLAZED METHOD (MARINE GLAZING AT SECONDARY PANEL ONLY)

- A. Cut glazing gasket channel to length; install on glazing pane.
- B. Install secondary sash frame assembly without displacing glazing gasket channel.
- C. Install corner fasteners.

3.7 INSTALLATION - WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

- A. Cut glazing tape to length and set against permanent stops, 5 mm (3/16 inch) below sight line. Seal corners by butting tape and dabbing with butyl sealant.
- B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- C. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.
- D. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to achieve full contact at perimeter of pane or glass unit.
- E. Install removable stops, with spacer strips inserted between glazing and applied stops, 6 mm (1/4 inch) below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.
- F. Fill gap between glazing and stop with silicone type sealant to depth equal to bite of frame on glazing, but not more than 9 mm (3/8 inch) below sight line.
- G. Apply cap bead of silicone type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.8 INSTALLATION - WET METHOD (SEALANT AND SEALANT)

- A. Place setting blocks at 1/4 points and install glazing pane or unit.
- B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.
- C. Fill gaps between glazing and stops with silicone type sealant to depth of bite on glazing, but not more than 9 mm (3/8 inch) below sight line to ensure full contact with glazing and continue the air and vapor seal.

- D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.9 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 sealant type sealant (if required to meet impact requirement at Psychiatric units) to depth equal to bite on glazing, to uniform and level line.
- F. Trim protruding tape edge.

3.10 INSTALLATION - INTERIOR WET METHOD (COMPOUND AND COMPOUND)

- A. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 600 mm (24 inch) centers, kept 6 mm (1/4 inch) below sight line.
- B. Locate and secure glazing pane using glazers' spring wire clips.
- C. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.11 REPLACEMENT AND CLEANING

- A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by Resident Engineer.
- 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.

3.12 PROTECTION

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

3.13 GLAZING SCHEDULE

A. GL-1 Typical None-Security Windows (Triple Glazed)

Exterior Insulating Glass

A. Exterior Lite: 1/4" Low E Clear

B. Interior Lite: 1/4" Clear

Interior Access Panel

A. 1/4" Clear

END OF SECTION 08 80 00

SECTION 09 06 00
SCHEDULE FOR FINISHES

SECTION 09 06 00-SCHEDULE FOR FINISHES

VAMC:	Lebanon, PA
Location:	Lebanon, PA
Project no. and Name:	595-13-111
Submission	50% Design Submission
Date:	April 11, 2014

SECTION 09 06 00
SCHEDULE FOR FINISHES

PART I - GENERAL

1.1 DESCRIPTION

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

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

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.

1.4 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. MASTER PAINTING INSTITUTE: (MPI)
 - 2001.....Architectural Painting Specification Manual

PART 2- PRODUCTS

2.1 DIVISION 08 - OPENINGS

A. SECTION 08 51 13, ALUMINUM WINDOWS

Type	Finish	Glazing	Manufacturer	Mfg. Color Name/No.
Fixed	Clear Anodized .215 Class 1 Acid Etched	¼" Clear Annealed with Low "E" Hard Coat on Surface #2 of Outer Light	Graham Manufacturing	Model Series 6800, tripled glazed window with blind & fixed window interior side and integrated security screen.
Projected	Clear Anodized .215 Class 1 Acid Etched	¼" Clear Annealed with Low "E" Hard Coat on Surface #2 of Outer Light	Graham Manufacturing	Model Series 6800, tripled glazed window with blind & fixed window interior side and integrated security screen.

B. SECTION 08 80 00, GLAZING

Glazing Type	Manufacturer	Mfg. Color Name/No.
	Graham Manufacturing	Tinted heat absorbing or light reducing glass and reflective (metallic coated) as designed by Manufacturer.

2.2 DIVISION II - EQUIPMENT

A. SECTION 08 56 66, DETENTION AND PROTECTION SCREENS

Type	Material	Finish Color
Open Box Channel Design	12 Gauge Steel	Match New Window Frames

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SECTION 09 23 00
GYPSUM PLASTERING

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies metal and gypsum lathing and gypsum plaster in conjunction with the patching of the existing head, jamb and sill areas damaged due to window and door removal.

1.2 RELATED WORK

- A. Gypsum backing board on multi-layer systems: Section 09 29 00, GYPSUM BOARD.

1.3 TERMINOLOGY

- A. Definitions and description of terms shall be in accordance with ASTM C11, C841, and C842 and as specified.
- B. Underside of Structure Overhead: In spaces where steel trusses or bar joists are shown, the underside of structure overhead is the underside of the floor or roof construction supported by beams, trusses, and bar joists.
- C. Self-furring Lath: Metal plastering bases having dimples or crimps designed to hold the plane of the back of the lath 6 to 10 mm (1/4 to 3/8 inch) away from the plane of the solid backing.
- D. Solid Backing or Solid Bases: Concrete, masonry, sheathing, rigid insulation, and similar materials to which plaster is directly applied.
- E. Wet Areas: Areas of a building where cyclic or continuous exposure to very humid or wet conditions, or in which a dew point condition may occur in the plaster. Dew point conditions occur frequently in such areas as laundries, natatoriums, cart and dish washing spaces, hydrotherapy, kitchens, bathing or shower rooms and similar areas.

1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Shop Drawings:
 - 1. Details of floating interior angle unrestrained construction.
 - 2. Details of assembly and anchorage of lath and accessories.
- C. Manufacturers' Literature and Data:
 - 1. Accessories for plaster, each type.
 - 2. Metal plaster bases, each type.
 - 3. Fasteners.
 - 4. Bonding compounds, including application instructions.

5. Admixtures, including mixing and application instructions.

D. Manufacturers certificates:

1. Gypsum plaster.
2. Keene's cement.

E. Samples: Accessories for plaster, each type, not less than 150 mm (six inches) long.

Panel showing finish coat, 24 by 24 (inches).

1.5 DELIVERY, STORAGE, AND PROTECTION

ASTM C841 and C842.

1.6 PROJECT CONDITIONS

Maintain work areas at a minimum temperature of 13°C (55°F) for not less than one week prior to application of plaster, during application of plaster and until plaster is completely dry.

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 basic designation only.

B. American Society for Testing And Materials (ASTM):

A641-03.....Zinc-Coated (Galvanized) Carbon Steel Wire

C11-07.....Terminology Relating to Gypsum and Related
Building Materials and Systems.

C28-00 (R2005).....Gypsum Plasters

C35-01 (R2005).....Inorganic Aggregates For Use in Gypsum Plaster

C61-00.....Gypsum Keene's Cement

C206-03.....Finishing Hydrated Lime

C472-99 (R2004).....Physical Testing of Gypsum, Gypsum Plaster and
Gypsum Concrete

C631-95 (R2004).....Bonding Compounds for Interior Gypsum
Plastering

C841-03.....Installation of Interior Lathing and Furring

C842-05.....Application of Interior Gypsum Plaster

C847-06.....Metal Lath

C1002-04.....Steel Self-Piercing Tapping Screws for the
Application of Gypsum Panel Products or Metal
Plaster Bases to Wood Studs or Steel Studs

D3678-97 (R2001).....Rigid Poly (Vinyl Chloride) (PVC)
Interior-Profile Extrusions

C. Commercial Item Description (CID):

A-A-55615.....Shield, Expansion; (Wood Screw and Log Bolt
Self Threading Anchor)

PART 2 - PRODUCTS

2.1 PLASTERING BASES (LATH)

A. Expanded Metal:

ASTM C847, except as modified by ASTM C841 and this specification.

B. Gypsum Lath:

1. 10 mm (3/8 inch) thick.
2. Type X for fire rated assemblies.

2.2 GYPSUM PLASTERS

A. Base and Finish coats ASTM C28 and ASTM C842, except as otherwise specified.

1. Compressive strength of base coat for high-strength gypsum and Keene's cement finish coat plaster; 25 Mpa (2800 psi) when tested in accordance with ASTM C472.
2. Compressive strength of finish coat (when fully dry) of high-strength gypsum plaster; 35 Mpa (5,000 psi) when tested in accordance with ASTM C472.

B. Keene's Cement for Finish Coats: ASTM C61.

2.3 LIME

ASTM C206, Type S.

2.4 AGGREGATES

- A. ASTM C35, natural sand, except grade aggregates in accordance with "TABLE 1", except sand for Keene's Cement Finish Coat, 100 percent passing a No. 30 sieve.
- B. Vermiculite and perlite aggregates are not permitted, except where required for fire rated assemblies.

2.5 BONDING COMPOUND (FOR INTERIOR WORK)

ASTM C631, except water re-emulsifiable compound is prohibited.

2.6 ACCESSORIES FOR GYPSUM PLASTER

ASTM C841.

2.7 FASTENERS

- A. Tie wire, screws, clips, and other fasteners ASTM C841, except as otherwise specified.
- B. Fasteners for securing metal plastering bases shall have heads, or be through washers large enough to engage two strands of the metal plastering base.

- C. For fire rated construction type and size as used in fire rated test.
- D. Screws: ASTM C1002.
- E. Expansion Shields: CID A-A-55615, of the Type and Class applicable.

PART 3 EXECUTION

3.1 APPLYING LATH BASES

- A. In accordance with ASTM C841, except as otherwise specified or shown.
- B. Use metal plastering bases where plaster is required on partitions, ceilings and furring, where required for setting ceramic tile in adhesive on gypsum plaster.
 - 1. Where plaster is required on solid bases, metal plastering bases are not required, unless shown on the drawings.
 - 2. Form true surfaces, straight or in fair curves where shown, without sags or buckles and with long dimension of lath at right angles to direction of supports.
 - 3. Shape lathing to within 19 mm (3/4 inch) of finished profiles of irregular surfaces.
 - 4. Lath for ceiling construction shall terminate at casing bead (Floating Angle Construction) where butting into or penetrated by walls, columns, beams, and similar elements.
- C. Gypsum lath may be used in lieu of metal lath for gypsum plaster only on straight flat surfaces of partitions and walls, and on furring, except for lathing in wet areas and as a base for marble finishes.
- D. Installing Metal Plastering Bases:
 - 1. Select type of metal plastering base to conform to Table 1 of ASTM C841, except as otherwise specified.
 - 2. Where metal plastering bases are required over solid backing, use self-furring, zinc-coated (galvanized) metal plastering base, with vapor permeable backing.
 - 3. Attach self-furring metal lath directly to masonry and concrete with hardened nails, power actuated drive pins, or other approved fasteners. Locate fasteners at the dimples or crimps only.
 - 4. Where metal plastering bases are required over steel columns, use self-furring, diamond mesh, expanded metal lath.
 - 5. Rib lath shall not be used, except 10 mm (3/8 inch) rib lath may be used above ceramic tile wainscots where the finish above the wainscot is required to finish flush with the tile face.

6. Metal plastering bases shall not be continuous through expansion and control joints, but shall terminate at each side of the joint.

3.2 SURFACE PREPARATION OF SOLID BASES

- A. Prepare and condition in accordance with ASTM C842, except as otherwise specified.
- B. Surface of masonry and concrete shall be straight and true so that maximum variation in plane does not exceed 6 mm (1/4 inch), 3 mm (1/8 inch) plus, 3 mm (1/8 inch) minus), in 3 m (10 feet), non-accumulative.
- C. Form ties and other metal projections shall be cut back to slightly below the surface.
- D. Projections shall be removed and depressions, holes, cracks and similar voids shall be filled flush with patching compound compatible with the substrate and plaster, within the tolerance, specified in ASTM C842.
- E. Clean existing concrete surfaces specified to receive plaster to ensure mechanical key as specified in ASTM C842.
- F. Condition new or existing concrete surfaces specified to receive plaster by applying bonding compound as specified in ASTM C842.
- G. Condition existing masonry surfaces (solid backing) specified to receive plaster by applying metal plastering base as specified in ASTM C842.

3.3 INSTALLING PLASTERING ACCESSORIES

- A. Install accessories in accordance with ASTM C841, except as follows:
 1. Set plastering accessories plumb, level and true to line, neatly mitered at corners and intersections, and securely attach to supporting surfaces as specified for metal lath.
 2. Install in one piece, within the limits of the longest commercially available lengths.
 3. Wood plugs are not acceptable anchorage for fasteners.
- B. Corner Beads: Install at all vertical and horizontal external plaster corners, as required to establish grounds, and where shown.
- C. Strip Lath:
 1. Install metal lath strips centered over joints between dissimilar materials, such as clay tile, brick, concrete masonry units, concrete, and metal and gypsum lath, where both such surfaces are required to be plastered and are in contact with each other in same plane, except where expansion joints and casing beads are required.
 2. Wire tie, staple, screw, or nail strip lath to base along both edges at not over 150 mm (6 inches) on centers.

3. Reinforce gypsum lath at corners of openings, at internal corners, and at chases and similar breaks in continuity in accordance with ASTM C841.

D. Casing Beads:

1. Install casing beads at locations where plaster terminates against other materials.
2. Where shown.
3. Where plaster terminates against trim of steel frames and trim of other materials and equipment, except where trim overlaps plaster.
4. Where plaster for new walls or furring (vertical or horizontal) terminates against existing construction.
5. Around perimeter of openings for recessed casework and equipment, except where edge is covered by flanges. Locate to conform to dimensions shown on approved shop drawings.
6. Both sides of expansion and control joints, unless shown otherwise.
7. Install casing beads where ceilings butt into or are penetrated by walls, columns, beams, and similar elements so as to provide floating angle (unrestrained) construction in accordance with ASTM C841.

E. Cornerites:

1. Install at interior corners of walls, partitions, and other vertical surfaces to be plastered, except where metal lath is carried around angle.
2. Fasten only as necessary to retain position during plastering.
3. Omit cornerites at junction of new plastered walls with existing plastered walls.
4. Where metal plastering bases are specified not to be carried around internal angles, and at locations where casing beads are specified and shown.

F. Control Joints:

1. Where control joints are placed paralleled to framing members, install joints within 100 mm (4 inches) of framing member.
2. Install control joints only to the edges of abutting sheets of lath so that the lath is not continuous or tied across joint.
3. Extend control joints the full width and height of the wall or length of soffit/ceiling plaster membrane.

3.4 GYPSUM PLASTER APPLICATION

- A. Proportion, mix, and apply plaster in accordance with ASTM C842.
- B. Thickness of Plaster: ASTM C842, except as follows:
 - 1. Where greater thickness is shown.
 - 2. Where thickness is required to match existing.
 - 3. On metal plaster base 19 mm (3/4 inch), except where greater thickness is required for fire rated construction
 - 4. Apply finish coats to a uniform thickness of approximately 2 mm (1/16 inch) with not more than 3 mm (1/8 inch) thickness at any point.
- C. Cut 2 mm (1/16 inch) deep V-joint in finish coat of plaster adjacent to metal door frames and wherever plaster finishes flush with other materials, except where casing beads are required. Omit 2 mm (1/16 inch) deep V- joint on walls and partitions where plaster is recessed back from face of door frames, or similar conditions.
- D. Plaster shall have a smooth-trowel finish unless specified or shown otherwise.
- E. Finish Coat Locations:
 - 1. Gypsum lime-putty finish: Use for all walls and ceilings not required to have Keene's cement or high-strength gypsum plaster.
 - 2. Keene's cement or high-strength gypsum plaster finish: Use for walls and ceilings in locker rooms, toilets, and scheduled areas.
 - 3. High-strength gypsum plaster finish: Use for walls in all Psychiatric Bedrooms, Psychiatric Day Rooms, and Corridors and Passages in connection therewith.
- F. Provide base and finish coats of plaster on walls, partitions, furring, and ceilings where plaster is shown on drawings and scheduled in the room finish schedule, except as follows:
 - 1. Apply base coats of plaster, without finish coat, to portion of metal stud partitions extending above suspended or furred ceilings to underside of structure overhead.
 - 2. In locations other than those noted above, plaster including finish coat is not required on partition surfaces to extend more than 100 mm (four inches) above suspended ceiling.
 - 3. Plaster is required for patching existing plaster surfaces that extend above ceilings where holes occur or penetration openings occur.

- G. Apply base coats of plaster, without finish coat, to metal stud partitions in pipe basements; pipe spaces; electric closets; back of casework units and equipment mounted in wall recesses; in spaces where exposed walls are designated, and in spaces where no finish number is shown or scheduled.
- H. Omit plaster on masonry and concrete surfaces in following location:
 - 1. Elevator and dumbwaiter hoistways.
 - 2. Soffits of concrete stairs unless otherwise shown.
 - 3. Back of marble wall finish.
 - 4. Back of casework units and equipment mounted in wall recesses.
- I. Apply finish coat of plaster on walls and partitions after installation of wainscot in rooms and spaces where other finishes are required such as ceramic tile or marble. Extend all coats of plaster behind adhesive applied ceramic tile scheduled to be applied over gypsum plaster.

3.5 GROUTING HOLLOW METAL DOOR FRAMES

Solidly fill heads and jambs of hollow metal frames in metal stud plaster partitions with plaster grout of same mix used for base coats.

3.6 PATCHING

- A. After all work (except painting) is finished, point around all trim, frames, and similar items.
- B. Patch damaged new plaster to match previously applied plaster in color and texture.
- C. Sanding plaster is prohibited.
- D. Patch, alter and replace existing plaster surfaces as required to complete work:
 - 1. Repair and patch damaged and defective nondecorated smoke barrier, fire rated, and sound rated plaster construction to maintain the integrity of the smoke barrier, fire rated, and sound rated construction.
 - 2. Patch holes or openings 13 mm (1/2 inch) or less in diameter, or equivalent size, with patching plaster. Repair holes or openings over 13 mm (1/2 inch) diameter, or equivalent size, with same materials used in construction so as to provide fire protection equivalent to the fire rated construction and STC equivalent to the sound rated construction and construction that will not permit the passage of smoke.

3.7 UNACCESSIBLE CEILINGS

At Mental Health and Behavioral Nursing Units, areas accessible to patients and not continuously observable by staff (e.g., patient bedrooms, day rooms), ceilings should be a solid material such as gypsum plaster. This will limit patient access. Access doors are needed to access electrical and mechanical equipment above the ceiling. These doors should be locked to prevent unauthorized access and secured to ceiling using tamper resistant fasteners.

END OF SECTION 09 23 00

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SECTION 09 29 00
GYPSUM BOARD

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies installation and finishing of gypsum board.

1.2 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).

1.3 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, each type
- C. Shop Drawings:
 - 1. Typical gypsum board installation, showing corner details, edge trim details and the like.
 - 2. Typical fire rated assembly and column fireproofing, indicating details of construction same as that used in fire rating test.
- D. Test Results:
 - 1. Fire rating test, each fire rating required for each assembly.

1.4 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

In accordance with the requirements of ASTM C840.

1.5 ENVIRONMENTAL CONDITIONS

In accordance with the requirements of ASTM C840.

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):

- 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
- E84-08.....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 (16 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.

- E. Gypsum cores shall contain a minimum of 95 percent post industrial recycled gypsum content. Paper facings shall contain 100 percent post-consumer recycled paper content.

2.2 GYPSUM SHEATHING BOARD

- A. ASTM C1396, Type X, water-resistant core, 16 mm (5/8 inch) thick.
- B. ASTM C1177, Type X.

2.3 ACCESSORIES

- A. ASTM C1047, except form of 0.39 mm (0.015 inch) thick zinc coated steel sheet or rigid PVC plastic.
- B. Flanges not less than 22 mm (7/8 inch) wide with punchouts or deformations as required to provide compound bond.

2.4 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.

2.5 FINISHING MATERIALS AND LAMINATING ADHESIVE

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.

PART 3 - EXECUTION

3.1 GYPSUM BOARD HEIGHTS

- A. Extend all layers of gypsum board from floor to underside of structure overhead on following partitions and furring:
 - 1. Two sides of partitions:
 - a. Fire rated partitions.
 - b. Smoke partitions.
 - c. Sound rated partitions.
 - d. Full height partitions shown (FHP).
 - 2. One side of partitions or furring:
 - a. Inside of exterior wall furring or stud construction.
 - b. Room side of room without suspended ceilings.

- c. Furring for pipes and duct shafts, except where fire rated shaft wall construction is shown.
- 3. Extend all layers of gypsum board construction used for fireproofing of columns from floor to underside of structure overhead, unless shown otherwise.
- B. In locations other than those specified, extend gypsum board from floor to heights as follows:
 - 1. Not less than 100 mm (4 inches) above suspended acoustical ceilings.
 - 2. At ceiling of suspended gypsum board ceilings.
 - 3. At existing ceilings.

3.2 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:
 - 1. For single-ply construction, use perpendicular application.
 - 2. For two-ply assemblies:
 - a. Use perpendicular application.
 - b. Apply face ply of gypsum board so that joints of face ply do not occur at joints of base ply with joints over framing members.
- G. Walls (Except Shaft 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 except gypsum board shall be applied vertically over "Z" furring channels.
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. For three-ply gypsum board assemblies, apply plies in same manner as for two-ply assemblies, except that heads of fasteners need only be driven flush with surface for first and second plies. Apply third ply of wallboard in same manner as second ply of two-ply assembly, except use fasteners of sufficient length enough to have the same penetration into framing members as required for two-ply assemblies.
 7. No offset in exposed face of walls and partitions will be permitted because of single-ply and two-ply or three-ply application requirements.
 8. Installing Two Layer Assembly Over Sound Deadening Board:
 - a. Apply face layer of wallboard vertically with joints staggered from joints in sound deadening board over framing members.
 - b. Fasten face layer with screw, of sufficient length to secure to framing, spaced 300 mm (12 inches) on center around perimeter, and 400 mm (16 inches) on center in the field.
 9. 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. At both sides of expansion and control joints unless shown otherwise.
 - b. Where gypsum board terminates against dissimilar materials and at perimeter of openings, except where covered by flanges, casings or permanently built-in equipment.
 - c. Where gypsum board surfaces of non-load bearing assemblies abut load bearing members.
 - d. Where shown.

3.3 INSTALLING GYPSUM SHEATHING

- A. Install in accordance with ASTM C840, except as otherwise specified or shown.
- B. Use screws of sufficient length to secure sheathing to framing.
- C. Space screws 9 mm (3/8 inch) from ends and edges of sheathing and 200 mm (8 inches) on center. Space screws a maximum of 200 mm (8 inches) on center on intermediate framing members.
- D. Apply 600 mm by 2400 mm (2 foot by 8 foot) sheathing boards horizontally with tongue edge up.
- E. Apply 1200 mm by 2400 mm or 2700 mm (4 ft. by 8 ft. or 9 foot) gypsum sheathing boards vertically with edges over framing.

3.4 CAVITY SHAFT WALL

- A. Coordinate assembly with Section 06 10 00 Rough Carpentry, for erection of framing and gypsum board.
- B. Conform to UL Design No. U438 or FM WALL CONSTRUCTION 1-1/2HR (Nonbearing for two-hour fire rating. Conform to FM WALL CONSTRUCTION 1-1/2HR (Non-loadbearing) for one-hour fire rating where shown.
- C. Cut coreboard (liner) panels 25 mm (one inch) less than floor-to-ceiling height, and erect vertically between J-runners on shaft side.
 1. Where shaft walls exceed 4300 mm (14 feet) in height, position panel end joints within upper and lower third points of wall.

2. Stagger joints top and bottom in adjacent panels.

D. Gypsum Board:

1. Two hour wall:

- a. Erect base layer (backing board) vertically on finish side of wall with end joints staggered. Fasten base layer panels to studs with 25 mm (one inch) long screws, spaced 600 mm (24 inches) on center.
- b. Use laminating adhesive between plies in accordance with UL or FM if required by fire test.
- c. Apply face layer of gypsum board required by fire test vertically over base layer with joints staggered and attach with screws of sufficient length to secure to framing staggered from those in base, spaced 300 mm (12 inches) on center.

2. One hour wall with one layer on finish side of wall: Apply face layer of gypsum board vertically. Attach to studs with screws of sufficient length to secure to framing, spaced 300 mm (12 inches) on center in field and along edges.

3. Where coreboard is covered with face layer of gypsum board, stagger joints of face layer from those in the coreboard base.

E. Treat joints, corners, and fasteners in face layer as specified for finishing of gypsum board.

F. Elevator Shafts:

1. Protrusions including fasteners other than flange of shaft wall framing system or offsets from vertical alignments more than 3 mm (1/8-inch) are not permitted unless shown.
2. Align shaft walls for plumb vertical flush alignment from top to bottom of shaft.

3.5 FINISHING OF GYPSUM BOARD

- A. Finish joints, edges, corners, and fastener heads in accordance with ASTM C840. Use Level 4 finish for all finished areas open to public view.
- 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.

3.6 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.

END OF SECTION 09 29 00

SECTION 09 30 13
CERAMIC/PORCELAIN TILING

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies ceramic, porcelain and quarry tile, marble thresholds and window stools used in conjunction with the patching of the existing head, jamb and sill areas damaged due to window and door removal.

1.2 RELATED WORK

- A. Sealing of joints where specified: Section 07 92 00, JOINT SEALANTS.
- B. Plastering: Section 09 23 00, GYPSUM PLASTERING

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples:
 - 1. Base tile, each type, each color, each size.
 - 2. Porcelain tile, each type, color, patterns and size.
 - 3. Wall (or wainscot) tile, each color, size and pattern.
 - 4. Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, color, and size.
- C. Product Data:
 - 1. Ceramic and porcelain tile, marked to show each type, size, and shape required.
 - 2. Chemical resistant mortar and grout (Epoxy and Furan).
 - 3. Dry-set Portland cement mortar and grout.
 - 4. Fasteners.
- D. Certification:
 - 1. Master grade, ANSI A137.1.
 - 2. Manufacturer's certificates indicating that the following materials comply with specification requirements:
 - a. Chemical resistant mortar and grout (epoxy and furan).
 - b. Modified epoxy emulsion.
 - c. Commercial Portland cement grout.
 - d. Cementitious backer unit.
 - e. Dry-set Portland cement mortar and grout.
 - f. Elastomeric membrane and bond coat.

- g. Reinforcing tape.
- h. Latex-Portland cement mortar and grout.
- i. Leveling compound.
- j. Organic adhesive.
- k. Waterproof isolation membrane.
- l. Factory mounted tile suitability for application in wet area specified under 2.1, A, 3 with list of successful in-service performance locations.

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):
 - A10.20-05.....Safety Requirements for Ceramic Tile, Terrazzo, and Marble Works
 - A108.1A-05.....Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar
 - A108.1B-05.....Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with dry-Set or latex-Portland Cement Mortar
 - A108.1C-05.....Contractors Option; Installation of Ceramic Tile in the Wet-Set method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-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
- A108.8-05.....Installation of Ceramic Tile with Chemical
Resistant Furan Resin Mortar and Grout
- A108.10-05.....Installation of Grout in Tilework
- A108.11-05.....Interior Installation of Cementitious Backer
Units
- A108.13-05.....Installation of Load Bearing, Bonded,
Waterproof Membranes for Thin-Set Ceramic Tile
and Dimension Stone
- A118.1-05.....Dry-Set Portland Cement Mortar
- A118.3-05.....Chemical Resistant, Water Cleanable Tile-
Setting Epoxy and Water Cleanable Tile-Setting
and Grouting Epoxy Adhesive
- A118.4-05.....Latex-Portland Cement Mortar
- A118.5-05.....Chemical Resistant Furan Mortars and Grouts for
Tile Installation
- A118.6-05.....Standard Cement Grouts for Tile Installation
- A118.9-05.....Cementitious Backer Units
- A118.10-05.....Load Bearing, Bonded, Waterproof Membranes for
Thin-Set Ceramic Tile and Dimension Stone
Installation
- A136.1-05.....Organic Adhesives for Installation of Ceramic
Tile
- A137.1-88.....Ceramic Tile
- C. American Society For Testing And Materials (ASTM):
 - A185-07.....Steel Welded Wire Fabric, Plain, for Concrete
Reinforcing
 - C109/C109M-07.....Standard Test Method for Compressive Strength
of Hydraulic Cement Mortars (Using 2 inch. or
[50-mm] Cube Specimens)
 - C241-90 (R2005).....Abrasion Resistance of Stone Subjected to Foot
Traffic
 - C348-02.....Standard Test Method for Flexural Strength of
Hydraulic-Cement Mortars

- C627-93(R2007).....Evaluating Ceramic Floor Tile Installation
Systems Using the Robinson-Type Floor Tester
- C954-07.....Steel Drill Screws for the Application of
Gypsum Board on Metal Plaster Base to Steel
Studs from 0.033 in (0.84 mm) to 0.112 in (2.84
mm) in thickness
- C979-05.....Pigments for Integrally Colored Concrete
- C1002-07.....Steel Self-Piercing Tapping Screws for the
Application of Panel Products
- C1027-99(R2004).....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
- C1127-01.....Standard Guide for Use of High Solids Content,
Cold Liquid-Applied Elastomeric Waterproofing
Membrane with an Integral Wearing Surface
- C1178/C1178M-06.....Standard Specification for Coated Glass Mat
Water-Resistant Gypsum Backing Panel
- D4397-02.....Standard Specification for Polyethylene
Sheeting for Construction, Industrial and
Agricultural Applications
- 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.
 - 2. Quarry Tile: Abrasive grains uniformly embedded in face at rate of approximately 7.5 percent of surface area.
- 6. 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.
- B. Unglazed Ceramic Mosaic Tile: Nominal 6 mm (1/4 inch) thick with cushion edges.
- C. Unglazed Quarry Tile: Nominal 13 mm (1/2 inch) thick, square edges.
- D. Glazed Wall Tile: Cushion edges, glazing, as specified in Section 09 06 00, SCHEDULE FOR FINISHES.
- E. Porcelain Paver Tile: Nominal 8 mm (5/16 inch) thick, with cushion edges. Porcelain tile produced by the dust pressed method shall be made of approximately 50% feldspar; the remaining 50% shall be made up of various high-quality light firing ball clays yielding a tile with a water absorption rate of 0.5% or less and a breaking strength of between 390 to 400 pounds.
- 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 overflow ledges, shower curbs, and seats.
3. Use trim shapes sizes conforming to size of adjoining field wall tile including existing spaces.
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.
 - j. For quarry tile work, use cove and bullnose shapes as applicable.
 - k. Provide cove and bullnose shapes for stools, saddles, where shown, and required to complete tile work.

2.2 CEMENTITIOUS BACKER UNITS

- A. Use in showers or wet areas.
- B. ANSI A118.9.
- C. Use Cementitious backer units in maximum available lengths.
- D. Backer unit meet or exceed the following additional physical properties:

<u>Property</u>	<u>Test Method</u>	<u>Value</u>
Water absorption	ASTM C948	Less than 20 percent by weight

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 A118.4.
- 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

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. Portland Cement Mortar: ANSI A108.1.
- C. Latex-Portland Cement Mortar: ANSI A118.4.
 - 1. For wall applications, provide non-sagging, latex-Portland cement mortar complying with ANSI A118.4.
 - 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.
- D. Dry-Set Portland Cement Mortar: ANSI A118.1. For wall applications, provide non-sagging, latex-Portland cement mortar complying with ANSI A118.4.
- E. Organic Adhesives: ANSI A136.1, Type 1.
- F. Chemical-Resistant Bond Coat:
 - 1. Epoxy Resin Type: ANSI A118.3.
 - 2. Furan Resin Type: ANSI A118.5.

G. Elastomeric Waterproofing Membrane and Bond Coat:

1. TCA F122-02.
2. ANSI A118.10.
3. One component polyurethane, liquid applied material having the following additional physical properties:
 - a. Hardness: Shore "A" between 40-60.
 - b. Elongation: Between 300-600 percent.
 - c. Tensile strength: Between 40-60 psig.
 - d. No volatile compounds.
4. Coal tar modified urethanes are not acceptable.

H. 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.

B. White Portland Cement Grout:

1. ANSI A118.6.
2. Use one part white Portland cement to one part white sand passing a number 30 screen.
3. Color additive not permitted.

C. Dry-Set Grout: ANSI A118.6 color as specified.

D. Latex-Portland Cement Grout: ANSI A118.6 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.

E. Chemical-Resistant Grout:

1. Epoxy grout, ANSI A118.3.

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.
 - 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. Notch thresholds to match profile of door jambs.
- C. Window Stools:
 - 1. Group A or B.
 - 2. Polished finish on exposed faces.
 - 3. Size and thickness as shown.

2.10 WATER

Clean, potable and free from salts and other injurious elements to mortar and grout materials.

2.11 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 calendar 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 calendar 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 500 (1/4 inch in 10 feet) from required elevation where Portland cement mortar setting bed is used.
 - 2. Not more than 1 in 1000 (1/8 inch in 10 feet) where dry-set Portland cement, and latex-Portland cement mortar setting beds and chemical-resistant bond coats are used.
- B. Variation in Plane of Wall Surfaces:
 - 1. Not more than 1 in 400 (1/4 inch in eight feet) from required plane where Portland cement mortar setting bed is used.
 - 2. Not more than 1 in 800 (1/8 inch in eight feet) where dry-set or latex-Portland cement mortar or organic adhesive setting materials is used.

3.3 SURFACE PREPARATION

- A. Cleaning New Concrete or Masonry:
 - 1. Chip out loose material, clean off all oil, grease dirt, adhesives, curing compounds, and other deterrents to bonding by mechanical method, or by using products specifically designed for cleaning concrete and masonry.
 - 2. Use self-contained power blast cleaning systems to remove curing compounds and steel trowel finish from concrete slabs where ceramic tile will be installed directly on concrete surface with thin-set materials.
 - 3. Steam cleaning or the use of acids and solvents for cleaning will not be permitted.

B. 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
 - c. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.
3. Apply patching and leveling compound to concrete and masonry wall surfaces that are out of required plane.
4. 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.

C. 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 200 (1/16 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 calendar 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.

E. Cleavage Membrane:

1. Install polythene sheet as cleavage membrane in depressed slab when waterproof membrane is not scheduled or indicated.
2. Turn up at edge of depressed floor slab to top of floor.

F. Walls:

1. In showers or other wet areas cover studs with polyethylene sheet.
2. Apply patching and leveling compound to concrete and masonry surfaces that are out of required plane.

3. 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.
4. Apply metal lath to framing in accordance with ANSI A108.1:
 - a. Use fasteners specified in paragraph "Fasteners." Use washers when lath opening is larger than screw head.
 - b. Apply scratch and leveling coats to metal lath in accordance with ANSI A108.1.C.
 - c. Total thickness of scratch and leveling coats:
 - 1) Apply 9 mm to 16 mm (3/8 inch to 5/8 inch) thick over solid backing.
 - 2) 16 mm to 19 mm (5/8 to 3/4 inch) thick on metal lath over studs.
 - 3) Where wainscots are required to finish flush with wall surface above, adjust thickness required for flush finish.
 - d. Apply scratch and leveling coats more than 19 mm (3/4 inch) thick in two coats.

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.
2. Remove existing concrete fill or topping to structural slab. Clean and level the substrate for new setting bed and waterproof membrane or cleavage membrane.
3. Where new tile bases are required to finish flush with plaster above or where they are extensions of similar bases in conjunction with existing floor tiles cut channel in floor slab and expose rough wall construction sufficiently to accommodate new tile base and setting material.

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 A108.11 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 calendar 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. Secure thresholds and stools in position with minimum of two stainless steel dowels.
- B. Set in dry-set Portland cement mortar or latex-Portland cement mortar bond coat.
- C. Set threshold to finish 12mm (1/2 inch) above ceramic tile floor unless shown otherwise, with bevel edge joint top flush with adjacent floor similar to TCA detail TR611-02.

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. Installing Mortar Beds for Floors:

1. Install mortar bed to not damage cleavage or waterproof membrane; 32 mm (1-1/2 inch) minimum thickness.
2. Install floor mortar bed reinforcing centered in mortar fill.
3. Screed finish to level plane or slope to drains where shown, float finish.
4. For thin set systems cure mortar bed not less than seven calendar days. Do not use curing compounds or coatings.
5. For tile set with Portland cement paste over plastic mortar bed coordinate to set tile before mortar bed sets.

D. Setting Beds or Bond Coats:

1. Where recessed or depressed floor slabs are filled with Portland cement mortar bed, set ceramic mosaic floor tile in either Portland cement paste over plastic mortar bed or latex-Portland cement mortar over cured mortar bed except as specified otherwise, ANSI A108-1C, TCA System F121-02 or F111-02.
2. Use quarry tile in chemical-resistant bond coat.
 - a. Portland cement paste over plastic mortar bed. ANSI A108.1A.
 - b. Dry-set Portland cement mortar over cured mortar bed. ANSI A108.1B.
3. Pools Holding Water: ANSI A108. 1C. Do not use Latex Portland cement mortar.
4. Set wall tile installed over concrete or masonry in dry-set Portland cement mortar, or latex-Portland cement mortar, ANSI 108.1B.and TCA System W211-02, W221-02 or W222-02.
5. Set wall tile installed over concrete backer board in latex-Portland cement mortar, ANSI A108.1B.
6. Set wall tile installed over Portland cement mortar bed on metal lath base in Portland cement paste over plastic mortar bed, or dry-set Portland cement mortar or latex-Portland cement mortar over a cured mortar bed, ANSI A108.1C, TCA System W231-02, W241-02.
7. Set tile over concrete in therapeutic pools in Portland cement paste or dry set Portland cement mortar, ANSI A108.1C, TCA System S151-02
8. Set tile installed over gypsum board and gypsum plaster in organic adhesive, ANSI A108.4, TCA System W242-02.
9. Set trim shapes in same material specified for setting adjoining tile.

E. 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. Align new tile work scheduled for existing spaces to the existing tile work unless specified otherwise.
2. Set tile firmly in place with finish surfaces in true planes. Align tile flush with adjacent tile unless shown otherwise.
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 and partitions, including pilasters, furred areas, and freestanding columns from floor to ceiling, or from floor to nominal wainscot heights shown with tile.
 - b. Finish reveals of openings with tile, except where other finish materials are shown or specified.
 - c. At window openings, provide tile stools and reveals, except where other finish materials are shown or specified.

- d. 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.
 - c. Make joints in quarry tile work not less than 6 mm (1/4 inch) nor more than 9 mm (3/8 inch) wide. Finish joints flush with surface of tile.
 - d. Make joints in Paver tile, porcelain type; maximum 3 mm (1/8 inch) wide.
- 11. Back Buttering: For installations indicated below, obtain 100 percent mortar coverage by complying with applicable special requirements for back buttering of tile in referenced ANSI A108 series of tile installation standards:
 - a. Tile wall installations in wet areas, including showers, tub enclosures, laundries and swimming pools.
 - b. Tile installed with chemical-resistant mortars and grouts.
 - c. Tile wall installations composed of tiles 200 by 200 mm (8 by 8 inches or larger).
 - d. Exterior tile wall installations.

3.8 CERAMIC TILE INSTALLED WITH PORTLAND CEMENT MORTAR

- A. Mortar Mixes for Floor, Wall And Base Tile (including Showers): ANSI A108.1.except specified otherwise.
- B. Installing Wall and Base Tile: ANSI A108.1, except specified otherwise.
- C. Installing Floor Tile: ANSI A108.1, except as specified otherwise.
Slope mortar beds to floor drains a minimum of 1 in 100 (1/8 inch per foot).

3.9 PORCELAIN TILE INSTALLED WITH LATEX PORTLAND CEMENT BONDONG MORTAR

Due to the denseness of porcelain tile use latex Portland cement bonding mortar that meets the requirements of ANSI A118.4. Bonding mortars shall be mixed in accordance with manufacturer's instructions. Improper liquid ratios and dwell time before placement of bonding mortar and tile shall affect bond.

3.10 THIN SET CERAMIC AND PORCELAIN TILE INSTALLED WITH DRY-SET PORTLAND CEMENT AND LATEX-PORTLAND CEMENT MORTAR

- A. Installation of Tile: ANSI A108.5, except as specified otherwise.
- B. Slope tile work to drains not less than 1 in 100 (1/8 inch per foot).

3.11 THIN SET CERAMIC AND PORCELAIN TILE INSTALLED WITH ORGANIC ADHESIVE

Installation of Tile: ANSI A108.4.

3.12 THIN SET CERAMIC AND PORCELAIN TILE INSTALLED WITH CHEMICAL-RESISTANT BOND COAT

- A. Epoxy Resin Type: Install tile in accordance with Installation of Tile with Epoxy Mortar; ANSI A108.6.
- B. Furan Resin Type: Proportion, mix and place in accordance with the manufacturer's printed instructions. Set tile in accordance with ANSI A108.8.

3.13 CERAMIC AND PORCELAIN TILE INSTALLED WITH ELASTOMERIC BOND COAT

- A. Surface Preparation: Prepare surfaces as specified in paragraph 3.3G
- B. Installation of Elastomeric Membrane: ANSI A108.13 and TCA F122-02.
 - 1. Prime surfaces, where required, in accordance with manufacturer's instructions.
 - 2. Install first coat of membrane material in accordance with manufacturer's instructions, in thickness of 0.75 to 1.3 mm (30 to 50 mils).
 - 3. Extend material over flashing rings of drains and turn up vertical surfaces not less than 100 mm (four inches) above finish floor surface.
 - 4. When material has set, recoat areas with a second coat of elastomeric membrane material for a total thickness of 1.3 to 1.9 mm (50 to 75 mils).
 - 5. After curing test for leaks with 25 mm (one inch) of water for 24 hours.
- C. Installation of Tile in Elastomeric Membrane:
 - 1. Spread no more material than can be covered with tile before material starts to set.
 - 2. Apply tile in second coat of elastomeric membrane material in accordance with the coating manufacturer's instructions in lieu at aggregate surfacing specified in ASTM C1127. Do not install top coat over tile.

3.14 GROUTING

A. Grout Type and Location:

1. Grout for glazed wall and base tile, paver tile and unglazed mosaic tile: Portland cement grout, latex-Portland cement grout, dry-set grout, or commercial Portland cement grout.
2. Grout for quarry tile floor and base:
 - a. Grout for floors of walk-in refrigerated rooms: Epoxy grout.
 - b. Therapeutic pool areas: Portland cement grout.
 - c. Grout for Kitchens:
 - 1) Chemical-resistant grout as specified and recommended by manufacturer of bond coat.
 - 2) Epoxy grout designed for equivalent heat resistance to furan resin grout may be used for furan resin grout.
3. Grout for tile of therapeutic pools: Portland cement grout.

B. Workmanship:

1. Install and cure grout in accordance with the applicable standard.
2. Portland Cement grout: ANSI A108.10.
3. Epoxy Grout: ANSI A108.6.
4. Furan and Commercial Portland Cement Grout: ANSI A108.8 and in accordance with the manufacturer's printed instructions.
5. Dry-set grout: ANSI A108.5.

3.15 MOVEMENT JOINTS

- A. Prepare tile expansion, isolation, construction and contraction joints for installation of sealant. Refer to Section 07 92 00, JOINT SEALANTS.
- B. TCA details EJ 171-02.
- C. At expansion joints, rake out joint full depth of tile and setting bed and mortar bed. Do not cut waterproof or isolation membrane.
- D. Rake out grout at joints between tile, service sink, at toe of base, and where shown not less than 6 mm (1/4 inch) deep.

3.16 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.

3.17 SEALANT

- A. Apply grout manufacturers approved sealant on standard, sanded or unsanded Portland cement grout, latex-modified, cementitious sanded or unsanded grout. Apply sealant on interior or exterior installations
- B. Apply sealant 48 hours after grouting. Keep sealed grout dry for at least 12 hours or as instructed by manufacturer.

3.18 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.

3.19 TESTING FINISH FLOOR

- A. Test floors in accordance with ASTM C627 to show compliance with codes 1 through 10.

END OF SECTION 09 30 13

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1- GENERAL

1.1 DESCRIPTION

- A. Metal ceiling suspension system for acoustical ceilings.
- B. Acoustical units.
- C. Adhesive application.
- D. Construction items noted above are used in conjunction with the patching of the existing head, jamb and sill areas damaged due to window and door removal.

1.2 RELATED WORK

- A. Color, pattern, and location of each type of acoustical unit - match existing.

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. Colored markers for units providing access.
- C. Manufacturer's Literature and Data:
 - 1. Ceiling suspension system, each type, showing complete details of installation, including suspension system specified to match existing.
 - 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-03.....Zinc-coated (Galvanized) Carbon Steel Wire

A653/A653M-07.....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-coated (Galvannealed) by the Hot-Dip Process

C423-07.....Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

C634-02 (E2007).....Standard Terminology Relating to Environmental Acoustics

C635-04.....Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings

C636-06.....Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels

E84-07.....Surface Burning Characteristics of Building Materials

E119-07.....Fire Tests of Building Construction and Materials

E413-04.....Classification for Rating Sound Insulation.

E580-06.....Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint

E1264-(R2005).....Classification for Acoustical Ceiling Products

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.
 - c. Fire resistant plastic (glass fiber) having a flame spread and smoke developed rating of not more than 25 when tested in accordance with ASTM E84.
 - 2. Use same construction for cross runners as main runners. Use of lighter-duty sections for cross runners is not acceptable.
 - 3. Use aluminum suspension in kitchens and aluminum or fire resistant plastic in toilets adjacent to shower areas, hydrotherapy, and swimming pools.
- 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 unless specified otherwise in Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Concealed grid suspension system for support of mineral base acoustical tile:
 1. Concealed grid upward access suspension system to provide an initial opening of 300 mm by 600 mm (12 by 24 inches) and for removal of adjacent runners and tile without the use of special tools, and without damage to suspension system and acoustical tile.
 2. Minimum flange width of 22 mm (7/8 inch) except for access hook and angle.
 3. Minimum flange width of 11 mm (7/16 inch) for access hook and angle.
- D. Suspension system for support of Metal Type V, VI, and VII tiles: Concealed grid type having runners designed for the snap-in attachment of metal tile (pans).

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 WIRE

- A. ASTM A641.
- B. For wire hangers: Minimum diameter 2.68 mm (0.1055 inch).
- C. For bracing wires: Minimum diameter 3.43 mm (0.1350 inch).

2.4 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. Nailing type option for wood forms:
 - a. Upper portion designed for anchorage in concrete and positioning lower portion below surface of concrete approximately 25 mm (one inch).
 - b. Lower portion provided with not less than 8 mm (5/16 inch) hole to permit attachment of hangers.
 3. 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.
- D. Tile Splines: ASTM C635.

2.5 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

2.6 ADHESIVE

- A. ASTM D1779, having flame spread index of 25 or less when tested in accordance with ASTM E84.
- B. Developing minimum strength of 7 kg/m² (one psi) of contact surface 48 hours after installation in temperature of 21 °C (70 °F).

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.
 7. Lay-in panels: Sizes as shown, with square edges.
 8. Tile for concealed grid upward access system: Optional 300 by 300 or 300 by 600 mm (12 by 12 or 12 by 24 inch) size.
 - a. Cross score 300 by 600 mm (12 by 24 inch) tile to simulate 300 by 300 mm (12 by 12 inch) tile edges.
 - b. Provide tile with square edges and joints as required to suit suspension and access system.
 9. Perforated metal facing (pan); tile or panels:
 - a. Tiles: Size of units optional, 300 by 300, 300 by 600, 300 by 900, and 300 by 1200 mm (12 by 12, 12 by 24, 12 by 36, and 12 by 48 inches). Cross score units larger than 300 by 300 mm (12 by 12 inches) to simulate 300 by 300 mm (12 by 12 inch) units. Use beveled edge units. Design joints for snap-in attachment to suspension system.
 - b. Panels: Sizes as shown with flat panel with square edges to finish flush with exposed grid suspension system.
 - c. Sound absorbent element; either non-sifting mineral wool or glass fiber (free of formaldehyde) of density and thickness to provide specified noise reduction coefficient. Enclosure sound absorbent elements within plastic envelopes.
 - d. Support sound absorbent elements on wire spacer about 6 mm (1/4 inch) high. Fit both the sound absorbent element and the spacer into the unit.
 10. Adhesive applied tile: 300 by 300 mm (12 by 12 inch) size, having square edges.
- B. Type III Units - Mineral base with water-based painted finish less than 10 g/l VOC, Form 2 - Water felted, minimum 16 mm (5/8 inch) thick. Mineral base to contain minimum 65 percent recycled content.
- C. Type IV Units - Mineral base with membrane-faced overlay, Form 2 - Water felted, minimum 16 mm (5/8 inch) thick. Apply over the paint coat on the face of the unit a poly (vinyl) chloride overspray having a flame spread index of 25 or less when tested in accordance with ASTM E84.
- D. Type VII Units - Perforated aluminum facing (pan) with mineral or glass fiber base backing.
1. Fabricated from aluminum sheets not less than 0.635 mm (0.025 inch) thick.
 2. Apply two coats of baked-on enamel finish, free from gloss or sheen, on face and flanges.
-

- E. Type III-A Units - Mineral base with painted finish.
 - 1. Form 1, modular, cast or molded.
 - 2. Minimum NRC of 0.75.
 - 3. Minimum thickness of 19 mm (3/4 inch) and weight of 4.9 Kg/sq m (one pound per square foot).

2.8 ACCESS IDENTIFICATION

- A. Markers:
 - 1. Use colored markers with pressure sensitive adhesive on one side.
 - 2. Make colored markers of paper or plastic, 6 to 9 mm (1/4 to 3/8 inch) in diameter.
- B. Use markers of the same diameter throughout building.
- C. Color Code: Use following color markers for service identification:

Color.....	Service
Red.....	Sprinkler System: Valves and Controls
Green.....	Domestic Water: Valves and Controls
Yellow.....	Chilled Water and Heating Water
Orange.....	Ductwork: Fire Dampers
Blue.....	Ductwork: Dampers and Controls
Black.....	Gas: Laboratory, Medical, Air and Vacuum

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 symmetrically about center lines of each room or space unless shown otherwise on reflected ceiling plan.
- C. Moldings:
 - 1. Install metal wall molding at perimeter of room, column, or edge at vertical surfaces.
 - 2. Install special shaped molding at changes in ceiling heights and at other breaks in ceiling construction to support acoustical units and to conceal their edges.
- 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 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 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 four 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. Attach hangers to bottom chord of bar joists or to carrying channels installed between the bar joists when hanger spacing prevents anchorage to joist. Rest carrying channels on top of the bottom chord of the bar joists, and securely wire tie or clip to joist.

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 lay-in 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. Tile in concealed grid upward access suspension system:
 - 1. Install acoustical tile with joints close, straight and true to line, and with exposed surfaces level and flush at joints.
 - 2. Make corners and arises full, and without worn or broken places.
 - 3. Locate acoustical units providing access as specified under Article, ACCESS.
- D. Adhesive applied tile:
 - 1. Condition of surface shall be in accordance with ASTM D1779, Note 1, Cleanliness of Surface, and Note 4, Rigidity of Base Surface.
 - 2. Size or seal surface as recommended by manufacturer of adhesive and allow to dry before installing units.
- E. Markers:
 - 1. Install markers of color code specified to identify the various concealed piping, mechanical, and plumbing systems.
 - 2. Attach colored markers to exposed grid on opposite sides of the units providing access.
 - 3. Attach marker on exposed ceiling surface of upward access acoustical unit.

3.4 CLEAN-UP AND COMPLETION

- A. Replace damaged, discolored, dirty, cracked and broken acoustical units.
- B. Leave finished work free from defects.

END OF SECTION 09 51 00

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SECTION 09 72 16
VINYL-COATED FABRIC WALL COVERINGS

PART 1 - GENERAL

1.1 DESCRIPTION

Section specifies vinyl coated fabric wall covering and installation.

1.2 RELATED WORK

- A. Color, pattern, type, direction of hanging and areas to receive wall covering: match existing

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Samples:
 - 1. Each type and pattern as specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Size: Full width of mill run.
- C. Manufacturer's Certificates:
 - 1. Compliance with CFFA W-101D.
 - 2. Wall covering manufacturer's approval of adhesive.
- D. Manufacturer's Literature and Data:
 - 1. Primer and adhesive.
 - 2. Installation instructions.
 - 3. Maintenance instructions, including recommended materials and methods for maintaining wall covering with precautions in use of cleaning material.

1.4 QUALITY ASSURANCE

- A. Finish one complete space with each type (color and pattern) of wall covering showing specified colors and patterns.
- B. Use approved sample spaces as a standard for work throughout the project.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver in original unopened containers bearing the manufacturer's name, brand name, and product designation.
- B. Store in accordance with manufacturer's instructions.
- C. Handle to prevent damage to material.

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. Chemical Fabrics and Film Association, Inc., (CFFA):
 - Document 2575-96.....Vinyl Coated Fabric Wall covering
- C. American Society for Testing and Materials (ASTM)
 - G21-96 (R2002).....Determining Resistance of Synthetic Polymeric
Materials to Fungi

PART 2 - PRODUCTS

2.1 VINYL COATED FABRIC WALLCOVERING

- A. Comply with CFFA-2575.
- B. Fungi Resistance: ASTM G21, rating of 0.
- C. Factory-applied clear delustered polyvinyl-fluoride (PVF) coating:
 - 1. Minimum 0.0125 mm (1/2 mil) thickness.
 - 2. Do not include PVF coating weight in minimum total weight.
 - 3. Fire hazard classification with PVF coating: Class A unless specified otherwise.

2.2 ADHESIVE

- A. Use only water-based adhesive having volatile organic compounds not more than 50 g/l.
- B. Vermin and mildew resistant.

2.3 EDGE GUARDS OR TRIM

- A. "J" shape with groove to receive the wall covering.
- B. Concealed edge feathered, not less than 19 mm (3/4 inch) wide.
- C. Designed for adhesive attachment.
- D. Use anodized extruded aluminum.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Temperatures:
 - 1. Do not perform work until surfaces and materials have been maintained at minimum of 60 °F. for three calendar days before work begins.
 - 2. Maintain minimum temperatures of 60 °F. until adhesives are dried or cured.
- B. Lighting:
 - 1. Do not proceed unless a minimum lighting level of 15 candlepower per square foot occurs.
 - 2. Measure light level at mid-height of wall.
- C. Ventilation:

1. Provide uniform continuous ventilation in space.
 2. Ventilate for a time for not less than complete drying or curing of adhesive.
- D. Protect other surfaces from damage which may be caused by this work.
- E. Remove waste from building daily.

3.2 SURFACE CONDITION

- A. Inspect surfaces to receive wall coverings to assure that:
1. Patches and repairs are completed.
 2. Surface are clean, smooth and prime painted.
- B. Do not proceed until discovered defects have been corrected by other trades and surfaces are ready to receive wall covering.
- C. Carefully remove electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings and fastenings, prior to starting work.
- D. Carefully store items for reinstallation.
- E. Install Edge Guard or Trim:
1. Locate where shown or specified.
 2. Run edge guards from top of base to ceiling or wainscot cap in continuous length.
 3. Run wainscot cap trim level unless shown otherwise.
 4. Install as specified by manufacturer of edge guard or trim, in adhesive.
 5. Smooth adhesive edge. Do not leave adhesive exposed to view.
 6. Leave ready to receive wall covering.

3.3 APPLICATION OF ADHESIVE

- A. Mix and apply adhesives in accordance with manufacturer's directions.
- B. Prevent adhesive from getting on face of wall covering.
- C. Apply adhesive to wall covering back.

3.4 WALLCOVERING INSTALLATION

- A. Use wall covering of same batch or run in an area. Use fabric rolls in consecutive numerical sequence of manufacture.
- B. Install material completely adhered, smooth, clean, without wrinkles, air pockets, gaps or overlaps.
- C. Extend wall covering continuous behind non-built-in casework and other items which are close to but not bolted to or touching the walls.
- D. Install wall covering before installation of resilient base. Extend wall covering not more than 6 mm (1/4 inch) below top of resilient base.

- E. Install panels consecutively in order in which they are cut from the roll including filling spaces above or below windows, doors, or similar penetrations.
- F. Do not install horizontal seams.
- G. Except on match patterns, hang fabric by reversing alternate strips, except as recommended by the manufacturer.
- H. Cutting:
 - 1. Cut on a work table with a straight edge.
 - 2. Joints or seams that are not cut clean are unacceptable.
 - 3. Trim additional selvage to achieve a color and pattern match at seams. Overlapped seams are not allowed.
 - 4. Do not double cut seams on wall unless specified.
 - 5. If double cutting on the wall is necessary, place a three inch strip of Type I wall covering under pasted edge.
 - a. Do not cut into wall surface.
 - b. After cutting, remove strip and excess adhesive from seam before proceeding to next seam.
 - c. Smooth down seam in adhesive for tight bond and joint.
- I. Trim strip-matched patterns, which are not factory pre-trimmed.
- J. Inside Corners:
 - 1. Wrap wall covering around corner.
 - 2. Do not seam within 50 mm (2 inches) of inside corners.
 - 3. Double cut seam.
- K. Outside Corners:
 - 1. Wrap wall covering around corner.
 - 2. Do not seam within 150 mm (6 inches) of outside corners.
 - 3. Double cut seam.

3.5 PATCHING

- A. Replace surface damaged wall covering in a space as specified for new work:
 - 1. Replace full height of surface.
 - 2. Replace from break in plane to break in plane when same batch or run is not used. Double cut seams.
 - 3. Adjoining differential colors from separate batches or runs are not acceptable.
- B. Correct loose or raised seams with adhesives to lay flat with tight bonded joint as specified for new work.

3.6 CLEANING AND INSTALLING TEMPORARY REMOVED ITEMS

- A. Remove adhesive from wall covering as work proceeds.
- B. Remove adhesives where spilled, splashed or splattered on wall coverings or adjacent surfaces in a manner not to damage surface from which it is removed.
- C. Reinstall previously removed electrical outlet and switch plates, mechanical diffusers, escutcheons, registers, surface hardware, fittings and fastenings.

END OF SECTION 09 72 16

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SECTION 09 91 00
PAINTING

PART 1-GENERAL

1.1 DESCRIPTION

- A. Section specifies field painting.
- B. Painting includes coatings specified.

1.2 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.

1.3 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).

1.4 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-2008.....Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs)
ACGIH TLV-DOC-2008.....Documentation of Threshold Limit Values and Biological Exposure Indices, (Seventh Edition)
- C. American National Standards Institute (ANSI):
A13.1-07.....Scheme for the Identification of Piping Systems
- D. American Society for Testing and Materials (ASTM):
D260-86.....Boiled Linseed Oil
- E. Commercial Item Description (CID):
A-A-1555.....Water Paint, Powder (Cementitious, White and Colors) (WPC) (cancelled)
A-A-3120.....Paint, For Swimming Pools (RF) (cancelled)
- F. Federal Specifications (Fed Spec):
TT-P-1411A.....Paint, Copolymer-Resin, Cementitious (For Waterproofing Concrete and Masonry Walls) (CEP)
- G. Master Painters Institute (MPI):
No. 43-07.....Interior Satin Latex, MPI Gloss Level 4
No. 44-07.....Interior Low Sheen Latex, MPI Gloss Level 2
No. 45-07.....Interior Primer Sealer
No. 47-07.....Interior Alkyd, Semi-Gloss, MPI Gloss Level 5 (AK)
No. 49-07.....Interior Alkyd, Flat, MPI Gloss Level 1 (AK)
No. 50-07.....Interior Latex Primer Sealer
No. 51-07.....Interior Alkyd, Eggshell, MPI Gloss Level 3
No. 52-07.....Interior Latex, MPI Gloss Level 3 (LE)
No. 53-07.....Interior Latex, Flat, MPI Gloss Level 1 (LE)
No. 114-07.....Interior Latex, Gloss (LE) and (LG)
No. 138-07.....Interior High Performance Latex, MPI Gloss Level 2 (LF)
No. 139-07.....Interior High Performance Latex, MPI Gloss Level 3 (LL)
No. 140-07.....Interior High Performance Latex, MPI Gloss Level 4
- H. 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. Interior Satin Latex: MPI 43.
- B. Interior Low Sheen Latex: MPI 44.
- C. Interior Primer Sealer: MPI 45.
- D. Interior Enamel Undercoat: MPI 47.
- E. Interior Alkyd, Semi-Gloss (AK): MPI 47.
- F. Interior Alkyd, Gloss (AK): MPI 49.
- G. Interior Latex Primer Sealer: MPI 50.
- H. Interior Alkyd, Eggshell: MPI 51
- I. Interior Latex, MPI Gloss Level 3 (LE): MPI 52.
- J. Interior Latex, Flat, MPI Gloss Level 1 (LE): MPI 53.
- K. Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE): MPI 54.
- L. Interior latex, Gloss (LE) and (LG): MPI 114.
- M. Exterior Latex, High Gloss (acrylic) (AE): MPI 119.
- N. Interior High Performance Latex, MPI Gloss Level 2(LF): MPI 138.
- O. Interior High Performance Latex, MPI Gloss Level 3 (LL): MPI 139.
- P. Interior High Performance Latex, MPI Gloss Level 4: MPI 140.
- Q. Interior High Performance Latex (SG), MPI Gloss Level 5: MPI 141.

2.2 PAINT PROPERTIES

- A. 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:
 - a. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
 - b. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of

residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.

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. Do not paint in direct sunlight or on surfaces that the sun will soon warm.
 4. Apply only on clean, dry and frost free surfaces except as follows:
 - a. Apply water thinned acrylic and cementitious paints to damp (not wet) surfaces where allowed by manufacturer's printed instructions.
 - b. Dampened with a fine mist of water on hot dry days concrete and masonry surfaces to which water thinned acrylic and cementitious paints are applied to prevent excessive suction and to cool surface.

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, 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. Gypsum Plaster and 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. Mix two component and two part paint and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions unless specified otherwise.
- E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

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.
- E. Finish surfaces to show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.
- F. Apply by brush, roller or spray, except as otherwise specified.
- G. Do not spray paint in existing occupied spaces unless approved by Contracting Officer, except in spaces sealed from existing occupied spaces.
 - 1. Apply painting materials specifically required by manufacturer to be applied by spraying.
 - 2. In areas, where paint is applied by spray, mask or enclose with polyethylene, or similar air tight material with edges and seams continuously sealed including items specified in WORK NOT PAINTED, motors, controls, telephone, and electrical equipment, fronts of sterilizes and other recessed equipment and similar prefinished items.
- H. 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 except for exterior exposed steel apply an additional prime coat.
- D. Prime rebates for stop and face glazing of wood, and for face glazing of steel.
- E. Gypsum Board and Hardboard:
 - 1. 1. Surfaces scheduled to have MPI 53 (Interior Latex, Flat), MPI Gloss Level 3 LE)) finish: Use MPI 53 (Interior Latex, MPI Gloss Level 3

(LE))MPI 52 (Interior Latex, MPI Gloss Level 3 (LE) (Interior Latex, Semi-Gloss, MPI Gloss Level 3 (LE)) respectively.

2. Primer: MPI 50(Interior Latex Primer Sealer) except use MPI 45 (Interior Primer Sealer), MPI 46 (Interior Enamel Undercoat) in shower and bathrooms.

3.6 INTERIOR FINISHES

A. Gypsum Board:

1. One coat of MPI 45 (Interior Primer Sealer) plus one coat of MPI 139 (Interior High Performance Latex, MPI Gloss level 3 (LL)).
2. Two coats of MPI 138 (Interior High Performance Latex, MPI Gloss Level 2 (LF)).
3. One coat of MPI 45 (Interior Primer Sealer) plus one coat of MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 3 (LE)) or MPI 114 (Interior Latex, Gloss (LE) and (LG)).
4. One coat of MPI 45 (Interior Primer Sealer) plus one coat of MPI 48 (Interior Alkyd Gloss (AK)).

3.7 REFINISHING EXISTING PAINTED SURFACES

- A. Clean, patch and repair existing surfaces as specified under surface preparation.
- B. Remove and reinstall 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. Sand or dull glossy surfaces prior to painting.
- H. 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. 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.

B. 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.

3.9 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.

APPENDIX

Paint or coating Abbreviation

Alkyd Flat Ak (MPI 49)

Alkyd Gloss Enamel G (MPI 48)

Alkyd Semigloss Enamel SG (MPI 47)

Latex Emulsion LE (MPI 53, flat/MPI 52, eggshell/MPI 54, semigloss/MPI 114, gloss Level 6

Latex Flat LF (MPI 138)

Latex Gloss LG (MPI 114)

Latex Semigloss SG (MPI 141)

Latex Low Luster LL (MPI 139)

END SECTION 09 91 00

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 DESCRIPTION

This work consists of all labor, materials, and equipment necessary for furnishing and installing chain link fence, gates and accessories in conformance with the lines, grades, and details as shown.

1.2 RELATED WORK

A. Temporary Construction Fence: Section 01 00 00, GENERAL REQUIREMENTS.

1.3 MANUFACTURER'S QUALIFICATIONS

Fence, gates, and accessories shall be products of manufacturers' regularly engaged in manufacturing items of type specified.

1.4 SUBMITTALS

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

1. Manufacturer's Literature and Data: Chain link fencing, gates and all accessories.
2. Manufacturer's Certificates: Zinc-coating complies with complies with specifications.

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 the basic designation only.

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

A121-07.....Metallic Coated Carbon Steel Barbed Wire
A392-07.....Zinc-Coated Steel Chain-Link Fence Fabric
A817-07.....Metal-Coated Steel Wire for Chain-Link Fence
Fabric and Marcellled Tension Wire
C94/C94M-07.....Ready-Mixed Concrete
F567-07.....Installation of Chain-Link Fence
F626-(R2003).....Fence Fittings
F900-05.....Industrial and Commercial Swing Gates
F1043-06.....Strength and Protective Coatings on Metal
Industrial Chain-Link Fence Framework

F1083-08.....Pipe, Steel, Hot-Dipped Zinc-Coated
(Galvanized) Welded, for Fence Structures.

C. Federal Specifications (Fed. Spec.):

FF-P-110J.....Padlock, Changeable Combination

PART 2 - PRODUCTS

2.1 GENERAL

Materials shall conform to ASTM F1083 and ASTM A392 ferrous metals, zinc-coated; and detailed specifications forming the various parts thereto; and other requirements specified herein. Zinc-coat metal members (including fabric, gates, posts, rails, hardware and other ferrous metal items) after fabrication shall be reasonably free of excessive roughness, blisters and sal-ammoniac spots.

2.2 CHAIN-LINK FABRIC - VINYL COVERED CHAIN LINK FENCING

ASTM A392 9 gauge wire woven in a 50 mm (2 inch) mesh. Top and bottom selvage shall have twisted and barbed finish. Zinc-coating weight shall be 570 grams/m² (2.0 ounces per square foot).

2.3 POST, FOR GATES AND FENCING

ASTM F1083, Grade SK-40A, round, zinc-coated steel. Dimensions and weights of posts shall conform to the tables in the ASTM Specification. Provide post braces and truss rods for each gate, corner, pull or end post. Provide truss rods with turnbuckles or other equivalent provisions for adjustment.

2.4 TOP RAIL

ASTM F1083, Grade SK-40A, round, zinc-coated steel. Dimensions and weights of posts shall conform to the tables in the ASTM Specification; fitted with suitable expansion sleeves and means for securing rail to each gate, corner, and end posts.

2.5 BOTTOM TENSION WIRE

ASTM A817 and ASTM F626, zinc-coated, having minimum coating the same as the fence fabric.

2.6 ACCESSORIES

Accessories as necessary; caps, rail and brace ends, wire ties or clips, braces and tension bands, tension bars, truss rods, and miscellaneous accessories conforming to ASTM F626.

2.7 GATES

ASTM F900, type as shown. Gate framing, bracing, latches, and other hardware zinc-coating weight shall be the same as the FABRIC. Gates less than 2400 mm (8 feet) wide shall have truss rods or intermediate braces. Attach gate fabric to the gate frame by method standard with the manufacturer, except that welding will not be permitted. Arrange latches for padlocking so that padlock will be accessible from both sides of the gate regardless of the latching arrangement. When required, extend each end member of gate frame sufficiently above the top member or provide three strands of barbed wire in horizontal alignment with barbed wire strands on the fence.

Provide two 4'-0" wide x 6'-0" high aluminum or steel sliding gate frames with heavy duty aluminum track supported by two sealed stainless steel gate trucks on temporary fencing erected for Contractors storage area. Gate trucks shall be bolted to two truck hanger brackets which are bolted to mounting posts. Bottom of gate to be kept true and straight with bottom roller gate guides. Temporary gates to be operated manually.

2.8 GATE HARDWARE

- A. Manufacturer's standard products, installed complete. The type of hinges shall allow gates to swing through 180 degrees, from closed to open position. Hang and secure gates in such a manner that, when locked, they cannot be lifted off hinges.
- B. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger bar. Keepers shall consist of a mechanical device for securing the free end of the gate when in full open position.
- C. Provide padlocks for gates and chains that are securely attached to the gate or gate post.

2.9 PRIVACY SLATS IN ALL FENCEING

Provide vinyl privacy slats in all chain link fencing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install fence by properly trained crew, on previously prepared surfaces, to line and grade as shown. Install fence in accordance with

ASTM F567 and with the manufacturer's printed installation instructions, except as modified herein or as shown. Maintain all equipment, tools, and machinery while on the project in sufficient quantities and capacities for proper installation of posts, chain links and accessories.

3.2 EXCAVATION

Excavation for concrete-embedded items shall be of the dimensions shown, except in bedrock. If bedrock is encountered before reaching the required depth, continue the excavation to the depth shown or 450 mm (18 inches) into the bedrock, whichever is less, and provide a minimum of 50 mm (2 inches) larger diameter than the outside diameter of the post. Clear loose material from post holes. Grade area around finished concrete footings as shown and dispose of excess earth as directed by the COR.

3.3 POST SETTING

Install posts plumb and in alignment. Set post in concrete footings of dimensions as shown, except in bedrock. Thoroughly compact concrete so as it to be free of voids and finished in a slope or dome to divert water running down the post away from the footing. Straight runs between braced posts shall not exceed 150 m (500 feet). Install posts in bedrock with a minimum of 25 mm (one inch) of non-shrinking grout around each post. Thoroughly work non-shrinking grout into the hole so as to be free of voids and finished in a slope or dome. Cure concrete and grout a minimum of 72 hours before any further work is done on the posts.

3.4 POST SETTING IN STRUCTURES

Install post in retaining walls, curbs, concrete slabs, or similar construction in proper size galvanized pipe sleeves set into the concrete or built into the masonry as shown. Set sleeves plumb and 13 mm (1/2 inch) above the finished structure. Fill space solidly between sleeve and post with non-shrinking grout, molten lead, or sulphur, and finish to divert water running down the post away from the post base.

3.5 POST CAPS

Fit all exposed ends of post with caps. Provide caps that fit snugly and are weathertight. Where top rail is used, provide caps to

accommodate the top rail. Install post caps as recommended by the manufacturer and as shown.

3.6 SUPPORTING ARMS

Design supporting arms, when required, to be weathertight. Where top rail is used, provide arms to accommodate the top rail. Install supporting arms as recommended by the manufacturer and as shown.

3.7 TOP RAILS

Install rails before installing chain link fabric. Provide suitable means for securing rail ends to terminal and intermediate post. Top rails shall pass through intermediate post supporting arms or caps as shown. The rails shall have expansion couplings (rail sleeves) spaced as recommended by the manufacturer. Where fence is located on top of a wall, install expansion couplings over expansion joints in wall.

3.8 BOTTOM TENSION WIRE

Install and pull taut tension wire before installing the chain-link fabric.

3.9 ACCESSORIES

Supply accessories (posts braces, tension bands, tension bars, truss rods, and miscellaneous accessories), as required and recommended by the manufacturer, to accommodate the installation of a complete fence, with fabric that is taut and attached properly to posts, rails, and tension wire.

3.10 FABRIC

Pull fabric taut and secured with wire ties or clips to the top rail and bottom tension wire close to both sides of each post and at intervals of not more than 600 mm (24 inches) on centers. Secure fabric to posts using stretcher bars and ties or clips.

3.11 GATES

Install gates plumb, level, and secure for full opening without interference. Set keepers, stops and other accessories into concrete as required by the manufacturer and as shown. Adjust hardware for smooth operation and lubricate where necessary.

3.12 REPAIR OF GALVANIZED SURFACES

Use galvanized repair compound, stick form, or other method, where galvanized surfaces need field or shop repair. Repair surfaces in accordance with the manufacturer's printed directions.

3.13 FINAL CLEAN-UP

- A. Remove all debris, rubbish and excess material grounds where temporary fencing was supplied for this scope of work.
- B. Remove all fencing, posts, gates, concrete forms, etc. where temporary fencing was supplied. Repair all landscaping, walls, curbs, concrete slabs or similar where fencing was temporarily erected.

END OF SECTION 32 31 13