

# FY12 FACILITY IMPROVEMENTS:

REPAIR AND REPLACEMENT OF MULTIPLE AREAS  
WITHIN VA ECHCS MEDICAL CENTER

DESIGN SPECIFICATIONS



U.S. DEPARTMENT OF VETERAN AFFAIRS

VA ECHCS MEDICAL CENTER (MS FMS/138)

Denver, Colorado

Project No. : 554-12-803

Prepared By: Anisa Jones

**DEPARTMENT OF VETERANS AFFAIRS  
VHA MASTER SPECIFICATIONS**

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**SECTION 00 01 15**  
**LIST OF DRAWINGS**

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

Drawing No.	Title
	FY12 FACILITY IMPROVEMENTS
G1001	GENERAL INDEX
	<b>ARCHITECTURAL</b>
A100	LOCATION PLANS FOR 4 <sup>TH</sup> AND 5 <sup>TH</sup> FLOOR BATHROOM SHOWER SEAT WORK
A101	4 <sup>TH</sup> AND 5 <sup>TH</sup> FLOOR BATHROOM SHOWER SEAT DEMOLITION PLAN
A102	4 <sup>TH</sup> AND 5 <sup>TH</sup> FLOOR BATHROOM SHOWER SEAT ARCHITECTURAL PLAN
A103	5C107-1 FLOOR PLAN
A104	2C129 EAST AND WEST FLOOR PLAN
A105	CARD READERS MED/SUPPLY FLOOR PLAN
A106	EMERGENCY DEPARTMENT FLOOR PLAN
A107	FIRM C 8C137 FLOOR PLANS
A108	2C109 FLOOR PLAN
A109	BLDG 24 FLOOR PLANS
A110	1C100C FLOOR PLANS
A111	130-38 FLOOR PLANS

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**SECTION 00 11 21**  
**REQUEST FOR PROPOSAL TO DESIGN BUILD**  
**B23 CORRECTIONS**  
554-12-803  
FY12 IMPROVEMENTS

**A. PART I - GENERAL**

**A1. Scope of Contract**

Provide all labor, materials, tools and equipment, and design-build services necessary for design and construction of a project described here in other specific tasks as further defined by this request for proposal (RFP). See scope of work in Design Analysis (attached) for project specifics.

**A2. Definitions**

- A. Design-Build (DB) as defined by the Department of Veterans Affairs (VA) is the procurement by the Government, under one contract, with one firm or joint venture (JV) for both design and construction services for a specific project.
1. Contracting Officer: The services to be performed under this contract are subject to the general supervision, direction, control and approval of the Contracting Officer.
  2. Project Manager: The Contracting Officer's representative, also known as the COTR, responsible for administering contracts under the immediate direction of the Contracting Officer.
  3. Resident Engineer: The Contracting Officer's authorized representative, also known as the COTR, at the construction site. When more than one Resident Engineer is assigned to a construction project one is designated as being in-charge and is called the "Senior Resident Engineer". The Resident Engineer is responsible for protecting the Government's interest in the execution of the construction contract work. His duties include surveillance of all construction work to assure compliance with the contract documents, interpretation of the contract documents, approval of changed work, approval of all submittals, samples, shop drawings, etc. The Resident Engineer may issue change orders to the Contractor within the limitations set forth in his delegation of authority from the Contracting Officer.
  4. Design Build Contract: This term, as used herein, refers to the Contract(s) to perform the design and construction of the project.
  5. Contractor: This term, as used herein, refers to the contractor under this contract or the DB team.

6. AE: This term, as used herein, refers to the Architect-Engineer firm(s) that are a part of the DB team, also referred to as DB/AE.
7. RFP/AE: The firm(s) directly hired by the VA for the preparation of the RFP Documents and to provide other technical assistance to the VA.

**B. PART II - RESPONSIBILITIES**

**B1. VA Team**

- A. The VA team consists of the Contracting Officer and COTR.

**B2. Design-Build Team:**

- A. The DB team includes all J/V partners, consultants and sub contractors to the one firm. The DB team shall provide Architectural and Engineering disciplines for the preparation of construction documents, and construction contractor capabilities for construction of the project.
- B. If the DB Team A/E and contractor are a J/V (not one and the same firm) engineering and other technical consultants shall be subcontractors of the J/V Architect - not the Design-Build construction contractor or sub contractors. If the DB Team A/E and contractor are one and the same firm (not a J/V) those consultants shall be subcontractors of DB firm not the construction subcontractors.
- C. The RFP documents are intended to define existing conditions, certain required items, and design parameters to be included in the project. It is the DB Team's responsibility to complete the documents and construction in a manner consistent with the intent of the RFP documents within the required time period (contract length).

**C. PART III - PROPOSAL REQUIREMENTS**

**C1. General**

- A. Proposals shall be based on solicitation documents issued for RFP. Proposals will be in the format stipulated elsewhere in this section.
- B. Proposals shall be received on/before specified by CO.
- C. Submit sealed offers to:

1. US Postal Service Deliveries:

Adrian Blackman, Contracting Officer  
Office of Facilities Management  
Department of Veterans Affairs  
4100 E. Mississippi Avenue  
Glendale, Colorado 80246  
; OR

2. Commercial Delivery Services / Hand Carry (Monday- Friday, 7:30 am to 4:30 PM):

Adrian Blackman, Contracting Officer  
Office of Facilities Management

Department of Veterans Affairs  
4100 E. Mississippi Avenue  
Glendale, Colorado 80246

**D. PART IV - POST AWARD REQUIREMENTS**

**D1. Construction Document Preparation:**

A. Design Review Submissions:

1. The Design-Build Team A/E (DB A/E) shall prepare and submit complete construction documents for review and approval by the VA in accordance with standard professional practice, the Department of Veterans Affairs RFP (VA RFP), and prevailing codes.
2. All submission packages will be reviewed at (65%) and (95%) completion stages. The (95%) review submission packages will incorporate the final review comments from the (65%) review. If any package is not complete for the required stage a post review may be required the cost of which will be borne by the DB Team.
3. Each review submission package shall include 3 hard copy sets and 1 set on CD-ROM. Provide two half-size sets and 1 full size set of drawings. The package will include an index of drawings (by sheet number and title) and specifications (by section number and title) submitted. The packages will be distributed to the VA Project Manager.

B. Design Review Meetings:

1. A review meeting to resolve design issues will be held for each design review package submitted. The meeting will include discussion of VA comments on functional relationships and technical peer review comments (by others).
2. Participants will include VA Staff and DB team members as appropriate for the specific package to be reviewed and others. The DB team members will each allow for (2) hours for each design review meeting. DB team management will be present at each review meeting.
3. The DB team shall allow a minimum of five (5) working days for each review cycle. A cycle includes:
  - a. The VA's receipt of the design review submission package.
  - b. The review meeting.
  - c. DB teams receipt of comments from the VA, either electronically, by fax, or by hard copy delivery.
4. Coordination of the review meeting schedules will be the responsibility of the VA Project Manager (for the VA) and the DB Team Project Manager (for the DB Team). See section I. Quality Assurance/Quality Control.

## C. Electronic Media:

1. Design review submission drawings and final Construction Document submission drawings will be executed in electronic format AutoCAD version 2010.
2. Design review submission specifications and other 8 1/2 by 11 formatted material and final Construction Document submission specifications and other 8 1/2 by 11 formatted material will be executed in electronic format Microsoft Office 2007.
3. The construction record drawings shall be completed in AutoCAD version 2010 and pdf versions will be required.
4. Construction shop drawings are not required to be completed in AutoCAD.

## D. Professional Licensing:

1. The DB A/E who prepares the construction documents shall be a professional architect or engineer licensed in the state in which the design work is completed.
2. The professional seal indicating such license by the state shall appear on the final construction documents. The architect whose seal is shown will be known as the Architect of Record. The DB A/E shall certify compliance with the VA RFP and all applicable codes.

## E. Approved Construction Documents:

1. The final construction document submission package will be submitted by the DB team for approval by the VA after completion of the 95% review cycle for the final package to be submitted by the DB team. The VA will have 5 days to take approval action.
2. The final construction documents submission package will include a full set of construction documents including all disciplines/packages.
3. The final construction documents submission package will incorporate all VA supplied comments from the earlier 65% and 95% submission package reviews and will comply with the VA RFP.
4. If the final construction documents submission package is not complete a post submittal may be required the cost of which will be borne by the DB Team.
5. The approved final construction documents include such details that the project can be constructed and will be used for construction of the project.
6. See PART IV, D2 CONSTRUCTION PERIOD SUBMITTALS for Approved Construction Document distribution.

- F. Construction Drawing Preparation - Mandatory material and equipment schedules and details may be indicated either on the drawings or in the specifications, at the option of the DB team. The construction drawings shall include a coordinated set of the following \*:
1. Architectural drawings including floor plans, reflected ceiling plans, door schedules and details, window schedules and details, room finish schedules, and other details.
  2. Fire protection drawings as needed.
  3. Plumbing drawings including floor plans, riser diagrams equipment schedules, plumbing fixture schedules, and details, including general notes.
  4. HVAC drawings including floor and roof plans, one-line flow diagrams, equipment schedules, and details, including general notes and all related calculations.
  5. Electrical drawings including demolition plans, site and floor plans (power, lighting, and other systems), one-line diagrams, panel schedules, equipment schedules, light fixture schedules and details.
  6. Asbestos abatement drawings including site demolition plans and floor plans indicating asbestos abatement method.
- G. Construction Specifications - Project specifications shall include specifications for all products, materials, equipment, methods, and systems shown on the construction drawings in accordance with standard professional practice and the VA RFP. The specification submitted for review shall include:
1. The name of the manufacturer, the product name, model number, or other identification as appropriate to clearly identify the product that will be used in the construction of the project;
  2. Other data as appropriate to clearly identify the product that will be used in the construction of the project i.e. shop drawings, product data, and samples as required by the VA RFP documents; and
  3. The required stamp of the licensed architect or engineer of record will be considered as certification of compliance with the RFP requirements.
- H. Design Requirements - Compliance with codes and standards.
1. Project design shall be in compliance with applicable standards and codes described in VA Program Guides and design materials included or referenced in the solicitation materials.
  2. See Section E. Approved Construction documents, above, for required inclusion of design review comments.

3. The DB team shall provide prompt, written notification to the Contracting Officer concerning conflicts with, or recommended deviations from codes, laws, regulations, standards, and opinions of review officials as described above. No work altering the scope of this contract shall be undertaken prior to receipt of written approval from the Contracting Officer.

I. Quality Assurance/Quality Control:

1. To reduce design errors and omissions, the DB team shall develop and execute a QA/QC plan that demonstrates the project plans and specifications have gone through a rigorous, thorough review and coordination effort.
2. Within 2 weeks of receipt of Notice to Proceed, the DB Team will submit a detailed QA/QC plan describing each QA/QC task that will be taken during the development of the various design submission packages and the name of the DB Team member responsible for QA/QC.
  - a. Upon its completion each task shall be initialed and dated by the responsible DB Team member.
  - b. A 100% completed QA/QC plan shall be submitted with the final construction document submission package.

**D2. Construction Period Submittals**

- A. The DB contractor shall distribute a total of 3 sets and one electronic copy (in CAD and PDF format) of the approved construction documents prepared by the DB Team to the VA and RFP AE, as directed by the VA Project Manager.
- B. Other submittals - The DB team shall submit test results, certificates, manufacturer's instructions, manufacturers field reports, etc. as required by the VA RFP specifications, to the VA R/E.
- C. Project record drawings - The DB team will maintain a set of construction documents (field as-built drawings) to record actual construction changes during the construction process as required by the RFP specifications. The project record drawings will be available for review by the VA Resident Engineer at all times.
- D. Shop drawings and submittals - The DB A/E shall check government furnished and/or the DB construction contractor's shop drawings, detail drawings, schedules, descriptive literature and samples, testing labor-laboratory reports, field test data and review the color, texture and suitability of materials for conformity with the RFP Documents and construction documents. The DB A/E shall recommend approval, disapproval, or other suitable disposition to the VA RE. The VA RE will have final approval authority. The DB AE shall evaluate the submittals with reference to any companion submittals that constitute a system.

When necessary, the DB A/E will request the DB Construction Contractor to submit related components of a system before acting on a single component. Should this procedure be inappropriate, the DB A/E shall review all prior submittals for related components of the system before acting on a single component. The DB A/E may be required to hold joint reviews with the VA technical staff and /or the RFP AE on complicated system submittals. The DB A/E shall notify the VA Resident Engineer (RE) in writing of any and all deviations from the requirements of the construction documents that he has found in the submittals.

**D3. Project Close-Out**

The DB team shall comply with the requirements in the "General Conditions", Section 010000, for submission of final RFP as built drawings, manuals, and other documents as noted. Required as built drawings and specifications will be submitted in the same format required for the construction documents.

**D4. Site Visits and Inspections**

During the construction period the DB A/E shall make weekly visits to the project site when requested by the Resident Engineer (RE). The Resident Engineer (RE) may also request visits for special purposes. Only registered architects and engineers thoroughly familiar with the project may make these site visits. The Resident Engineer (RE) has the prerogative to determine the professional discipline(s) required for any visit. The DB A/E shall observe the construction, advise the Resident Engineer of any deviations or deficiencies or solutions to issues discussed. A site inspection report which includes the purpose of the inspection, items reviewed, deficiencies observed, recommendations and additional actions required, shall be furnished to the Resident Engineer (RE) within three work days following the site visit date.

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**SECTION 01 00 00  
GENERAL REQUIREMENTS**

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**SECTION 01 00 00  
GENERAL REQUIREMENTS**

**1.1 GENERAL INTENTION**

- A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for B23 CORRECTIONS PROJECT as required by drawings and specifications.
- B. Visits to the site by Bidders may be made only by appointment with the Medical Center Engineering Officer.
- C. N/A
- D. N/A
- E. 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.
- F. Prior to commencing work, general contractor shall provide proof that a OSHA certified "competent person" (CP) (29 CFR 1926.20(b)(2)) will maintain a presence at the work site whenever the general or subcontractors are present.
- G. Training:
  - 1. All employees of general contractor or subcontractors shall have the 10-hour and Superintendent shall have 30-hour OSHA certified Construction Safety course.
  - 2. Submit training records of all such employees for approval before the start of work.

**1.2 STATEMENT OF BID ITEM(S)**

**Scope of Work**

The contractor shall provide all technical design services including architectural, mechanical, electrical plumbing and interior design as well as construction services including labor, tools, equipment and materials required to complete the following VA scope requirements:

***Bariatric Shower Seating:***

Contractor to remove the existing shower seating in select patient rooms, demolish damaged ceramic tiles (app 5 sqf in each) and install new tiles to match existing finishes. The patient areas include rooms 5B131, 5C120, 5C121 and 5C126. Also, in patient rooms 5D106A, 4D114A and 4D122A, the contractor shall remove the existing shower seating, demolish damaged ceramic

tiles (app 5 sqf in each), install new tiles to match existing and purchase and install new hospital grade bariatric shower seating rooms with the required concealed backing. Replace water resistant drywall at selective demolition locations.

*Phasing: Contractor to only take one patient room on one floor out of service at a time. Provide a 7 day notice to COTR so coordination and patient relocation can be made with nursing staff.*

**5c107 Bathroom Shower Fix:**

Contractor to repair plumbing issues in 5c107 bathroom shower. Shower is currently inoperable. Contractor will remove tile as needed to access plumbing piping (approximately 16 sqf). Contractor to remove and install new shower fixtures. Contractor to paint, patch and repair drywall and ceramic tile as needed. Match existing finishes. Coordinate plumbing work with VA FMS plumbers.

*Phasing: Work to be completed during business hours.*

**2c100 and 2c129 Kitchen Area ADO:**

Contractor to install a new automatic door opener (ADO) at kitchen door entrances from both the east and west directions. Contractor to design, purchase, coordinate and install new equipment and related electrical work. Contractor to paint, patch and repair concrete and drywall wall areas impacted by the new equipment installation. Contractor to modify door hardware and install new as needed to accommodate new ADO door function.

*Phasing: Work to be completed during business hours.*

**Card Readers Supply/Storage Rooms:**

Contractor to purchase and install new HID card readers in supply/storage rooms including rooms 5A135B, 4B138A, 5C104, 173-38, 4D129 and 5D129. Contractor to coordinate all work with VA Police and FMS electricians. Card readers shall read PIV badges as well as interface with current VA Lenel card reader system. Contractor to modify door hardware and doors and install new to accommodate card reader function. Hardware may include, but is not limited to electrical strikes. Contractor to patch, paint and repair areas impacted by construction.

*Phasing: Work to be completed during business hours. Any work deemed disruptive by staff shall be completed after hours.*

**Emergency Department Security Enforcement:**

Contractor to install new ballistic paneling and windows in interview rooms 1A120A, 1A120B, 1A120C and 1A120D. Contractor to install approximately 150 sqf feet of wall paneling in each room and provide reinforcement necessary to accommodate additional load. Contractor to replace each existing interview room window with new ballistic window. Contractor to modify door hardware to provide new privacy lock sets.

Contractor to install new ballistic paneling and windows in nurse triage rooms 1A115 and 1A116. Contractor to install approximately 32 sqf of wall paneling in each room and provide structural reinforcement necessary to accommodate additional load. Contractor to replace existing shared window with new ballistic window.

Contractor to install new ballistic automatic sliding door in corridor C1A8A. Remove existing sliding door. Reinforce wall to accommodate additional load imposed by the ballistic door. Contractor to coordinate electrical and functional requirements with VA Police and FMS electricians.

*Phasing: Work to be completed during business hours. Any work deemed disruptive by staff shall be completed after hours. Phase work as to only take one interview or nurse triage room out of service at a time as not to disrupt business operations.*

**8c137 Firm C Reconfiguration:**

Contractor to reconfigure 8C137 Check-In desk to provide an additional ADA work space/counter for administrative staff. Work includes removing the reception area's south-west entry door and providing a new entry (including door and hardware, etc) on the west facing concrete wall. Contractor to provide new built-in ADA work surface/counter, wall, ceiling, flooring work, patching and painting and roll down lockable metal gate. Contractor to install new data and electrical ports. Contractor to also coordinate installation of new duress button. Contractor to make fire sprinkler modifications if sufficient coverage is not accomplished. Coordinate communication and power efforts with VA OIT and VA electricians and duress button with VA Police and BioMedical Engineering. Contractor to provide manpower to move furniture and equipment to temporary location where staff will be working and will provide manpower to relocate items to 8c137 upon completion of construction work.

Contractor to install a new 5'x 2' (approximate) partition gypsum wall between windows 1 and 2 to minimize privacy and noise issues. Contractor to patch and paint as needed. Match existing finishes.

*Phasing: Work to be completed during business hours except for new entry door on the west wall shall be performed on the weekend because of noise concerns.*

**2C109 Bathroom ADO:**

Contractor to install a new automatic door opener (ADO) at 2C109 bathroom door. Contractor to design, purchase, coordinate and install new equipment and related electrical work. Contractor to coordinate electrical and power requirements with VA FMS electricians. Contractor to paint, patch and repair drywall wall areas impacted by the new equipment installation. Contractor to modify door hardware and install new hardware as needed to accommodate new ADO function.

*Phasing: Work to be completed during business hours.*

**Bldg 24 Modifications:**

Contractor to remove existing door, frame, hardware, etc between rooms 61 and 62 and install new complete wall. Contractor to repair, patch and paint. Contractor to provide services to relocate furniture and equipment that will result from room modification after construction is complete.

Contractor to remove existing plexi glass window and patch, paint and repair framing. Contractor to install new roll down lockable metal gate. Demolish and reconfigure wall as needed to accommodate

new gate. Modify sprinkler system as needed to accommodate new gate. Coordinate all related work, such as ceiling work, etc.

*Phasing: Work to be completed during business hours*

**Pharmacy Modifications:**

Contractor to provide new gypsum board wall partition in 1c100C. Configure wall at the appropriate height as to minimize modifications to the lighting and HVAC systems. Contractor to patch, repair and paint new and existing areas (only affected by construction) and install new wall base. Contractor to provide manpower to move VA equipment and furniture to reconfigure room as a result of new wall construction. Contractor to provide one new electrical outlets and one new data/voice outlets and will coordinate work and requirements with VA OIT and FMS electricians. Contractor to make modifications to the sprinkler system to provide sufficient coverage if affected by new wall construction.

*Phasing: Work to be completed during business hours.*

**130-38 Shower Modifications:**

Contractor to modify shower flooring to prevent water run-off into areas in bathroom. Contractor to demolish approximately 1" of concrete floor (app. 20 sqf area), pour new concrete flooring and slope new concrete floor to drain. Contractor to repair and replace existing tile affected by the demolition and install new tile at the base of the shower accommodate new flooring. Install a new drain and new plastic liner for waterproofing.

*Phasing: Work to be completed during business hours.*

**Design Criteria**

Contractor shall determine phasing to ensure the least disruptive construction schedule and design the work accordingly:

- Specifications will be developed using the standard VA specifications. Additional VA design criteria can be obtained at <http://www.cfm.va.gov/TIL/>.
- The drawings shall be produced using industry standard details and VHA CADD Deliverable Guidelines, on a VA provided title block. All drawings will be standard, scaled, e-size (30" x 42") drawings or half size drawings. Contractor will be provided with architectural background drawings in AutoCAD 2010. Design/Build A/E shall confirm in the field, actual as-built conditions.
- Contractor to provide phasing and coordination on any utility shutdowns.
- Contractor is responsible for survey of existing conditions. Any drawings provided shall be used only as a guide and all information must be confirmed by Design/Build A/E.

- Contractor to stamp drawings as to which review (65%, 95%, or Construction). Also, note on review drawings "NOT FOR CONSTRUCTION"

#### **Design Codes and Standards**

Contractor must complete design drawings in accordance with the most current edition of the following codes:

- VA PG-18-1, Master Construction Specifications (<http://www.cfm.va.gov/til/spec.asp>)
- VA PG -18-3 VA Design and Construction Procedures
- VA PG-18-4 Standard Details
- VA PG-18-10 VA Design Manuals
- VA PG-18-15 A/E Submission Requirements
- National Fire Protection Association Codes (NFPA)
- VA HVAC Design Criteria and Electrical Design Manual
- International Building Code (IBC)
- OSHA Standards
- National Electrical Code (NEC)
- EPA
- ASHRAE
- And all other application industry codes and VA requirements

#### **Environmental Assessment**

Dependent upon discovery of Lead based paint or Asbestos containing materials during construction, the construction contractor is required to stop all work and contact the COTR if any are discovered or suspected.

#### **Asbestos Survey and Analysis**

It is not presumed that the flooring contains ACM, but immediately notify the VA COTR in the event that ACM is discovered during demolition.

#### **Hazardous Waste**

Hazardous waste brought onto site shall be listed on a Hazardous Waste Inventory form and submitted to COTR prior to construction. Hazardous materials shall be properly disposed of off VA Medical Center property.

#### **NEPA Compliance**

NEPA requires an Environmental Impact Analysis (EIA) to be performed during planning phase of construction projects. The results of the EIA are as follows: Categorical Exclusion (CATEX): *"Construction within 5 foot line of the facility consistent with present use."*

#### **ICRA**

An ICRA is an Infection Control Risk Assessment. A preliminary assessment was performed dated 2.4.11. Refer to drawings and technical specifications to determine risk

level and appropriate measures. The use of construction barriers, plastic, will be required through each phase.

A dust permit will be required. However, temporary dust partitions and hard wall barriers will be created to ensure no cross-contamination between area of work and the VA Medical Center.

#### **ILSM**

An ISLM is an Interim Life Safety Measure will be put in place by the Safety department prior to commencement of work. The use of construction barriers, plastic, will be required through each phase. Ensure appropriate measures such as directional and informational signage are utilized.

### **1.0 List/Description of Bid Items and associated completion times**

All construction services shall be completed in 190 calendar days from receipt of Notice to Proceed (the performance period shall not include the lead time for equipment).

Design services will be completed in 10 weeks.

Construction services will be completed in 17 weeks.

#### **Phasing and Scheduling of Bid Items:**

Design time allotted to be as following:

- VA receives 65% working drawings and specifications  
4 weeks
- Comments by VA back to Contractor 5 weeks
- VA receives 95% working drawings and specifications  
7 weeks
- Comments by VA back to Contractor 8 weeks
- VA receives 100% working drawings and specifications  
10 weeks
- Construction Period Begins 10 weeks
- Construction Period Ends 27 weeks

Multiple phases will be required during this project to ensure staff can continue operations during business hours.

Work shall be performed during business hours, 7:30a - 4:00p. All work considered disruptive to staff, will be performed after business hours.

Reference Design Analysis for more details.

**1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR**

- A. AFTER AWARD OF CONTRACT, three (3) sets of specifications and drawings will be furnished. Provide 2 ½ sizes and 1 full size set as well as electronic (in CAD 2010 and PDF). These drawings and specifications will consist of those returned by prospective bidders.
- B. Additional sets of drawings may be made by the Contractor, at Contractor's expense, from electronic media furnished by Issuing Office. Such sepia prints shall be returned to the Issuing Office immediately after printing is completed.

**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. There will be a \$250 charge for each badge not returned at the completion of the contract.
  - 2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 3 days notice to the Contracting Officer so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
  - 3. No photography of VA premises is allowed without written permission of the Contracting Officer. Photos of patients will not be permitted under any circumstance.
  - 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. Guards: N/A
- D. Key Control:
  - 1. The General Contractor shall be provided key cores from VA locksmith for use in hard wall construction barrier doors.

2. The General Contractor shall turn over all construction lock cylinders to the VA locksmith upon completion of work. See Section 08 71 00, DOOR HARDWARE and coordinate.

3. There is a fee of \$250 for each lost key not returned. Higher level keys may have a higher fee if lost based on security and cost to re-key.

E. Document Control:

1. 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.

2. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".

F. Motor Vehicle Restrictions

One (1) parking permit will be issued to Contractor under each contract 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):

E84-2008.....Surface Burning Characteristics of Building Materials

2. National Fire Protection Association (NFPA):

10-2006.....Standard for Portable Fire Extinguishers

30-2007.....Flammable and Combustible Liquids Code

51B-2003.....Standard for Fire Prevention During Welding, Cutting and Other Hot Work

70-2007.....National Electrical Code

241-2004.....Standard for Safeguarding Construction, Alteration, and Demolition Operations

3. Occupational Safety and Health Administration (OSHA):

29 CFR 1926.....Safety and Health Regulations for Construction

B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Project Engineer/COTR and Facility Safety Manager for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors

beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the Project Engineer/COTR that individuals 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. Temporary Construction Partitions:
  - 1. Install and maintain temporary construction partitions to provide smoke-tight separations between construction areas and adjoining areas. Construct partitions of plastic zip wall barriers or gypsum board or treated plywood (flame spread rating of 25 or less in accordance with ASTM E84) on both sides of fire retardant treated wood or metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install Class C, ¾ hour fire/smoke rated doors with self-closing devices.
  - 2. Install fire-rated temporary construction partitions as shown on drawings to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings enclosures.
  - 3. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials in accordance with Section 07 84 00, FIRESTOPPING.
- F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Project Engineer/COTR and facility Safety Manager.
- H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Project Engineer/COTR.

- I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.
- J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- K. Standpipes: N/A
- L. Sprinklers: Install, test and activate new automatic sprinklers prior to removing existing sprinklers.
- M. 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 Project Engineer/COTR and facility Safety Manager. 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 Project Engineer/COTR.
- N. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Project Engineer/COTR and facility Safety Manager.
- O. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Project Engineer/COTR. Obtain permits from facility Safety Manager Officer at least 48 hours in advance.
- P. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Project Engineer/COTR and facility Safety Manager.
- Q. 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.
- R. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily. Do not overfill dumpsters.
- S. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

- T. If required, submit documentation to the Project Engineer/COTR that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

#### **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.
- D. Working space and space available for storing materials shall be as determined by the Project Engineer/COTR. Contractor to move, relocate, store all items within work areas as directed by Project Engineer/COTR and VA staff.
- G. Phasing:  
Contractor to phase laboratories, according to staff needs. Contractor, PROJECT ENGINEER/COTR and staff will determine suitable phasing plan during design of project.  
Disruptive work will be performed after hours or on weekends.  
Coordinate off-hours schedule with PROJECT ENGINEER/COTR 2 weeks prior to start of work.

H. Building 23 will be occupied during performance of work, but immediate area of alterations will be vacated.

Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.

I. Construction Fence: N/A

J. When a building is turned over to Contractor: N/A

K. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Project Engineer/COTR.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of Project Engineer/COTR. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without the Medical Center Director's prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, 27 05 11 REQUIREMENTS FOR COMMUNICATIONS INSTALLATIONS and 28 05 11, REQUIREMENTS FOR ELECTRONIC SAFETY AND SECURITY INSTALLATIONS for additional requirements.
2. Contractor shall submit a request to interrupt any such services to Project Engineer/COTR, in writing, 48 hours in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.
3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least

- inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the Project Engineer/COTR.
  5. In case of a contract construction emergency, service will be interrupted on approval of Project Engineer/COTR. Such approval will be confirmed in writing as soon as practical.
  6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.
- L. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.
- M. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.
  2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the Project Engineer/COTR.
- N. Coordinate the work for this contract with other construction operations as directed by Project Engineer/COTR. 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 Project Engineer/COTR areas of buildings and furnish a report, signed by all parties involved. This report shall list by rooms and spaces:

1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout / affected areas of building.
  2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.
  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 Project Engineer/COTR.
- 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 Project Engineer/COTR, 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 "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).
- C. Re-Survey: Thirty days or other suitable time frame before expected partial or final inspection date, the Contractor and Project Engineer/COTR together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:
1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.
- D. Protection: Provide the following protective measures:
1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
  2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
  3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed,

floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

#### **1.8 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 as specified per drawings. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to Project Engineer/COTR and Facility ICRA team 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 Project

Engineer/COTR. 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 Project Engineer/COTR. 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 fire-rated 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 Project Engineer/COTR 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 Project Engineer/COTR 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. Reserved items which are to remain property of the Government are identified by attached tags and noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items where directed by Project Engineer/COTR.
- 2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.

3. Items of portable equipment and furnishings located in rooms and spaces in which work is to be done under this contract shall remain the property of the Government. When rooms and spaces are vacated by the Department of Veterans Affairs during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.

**1.10 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.
- D. Refer to FAR clause 52.236-7, "Permits and Responsibilities," which is included in General Conditions. A National Pollutant Discharge Elimination System (NPDES) permit is required for this project. The Contractor is considered an "operator" under the permit and has

extensive responsibility for compliance with permit requirements. VA will make the permit application available at the (appropriate medical center) office. The apparent low bidder, contractor and affected subcontractors shall furnish all information and certifications that are required to comply with the permit process and permit requirements. Many of the permit requirements will be satisfied by completing construction as shown and specified. Some requirements involve the Contractor's method of operations and operations planning and the Contractor is responsible for employing best management practices. The affected activities often include, but are not limited to the following:

- Designating areas for equipment maintenance and repair;
- Providing waste receptacles at convenient locations and provide regular collection of wastes;
- Locating equipment wash down areas on site, and provide appropriate control of wash-waters;
- Providing protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials; and
- Providing adequately maintained sanitary facilities.

#### **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 Project Engineer/COTR. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Project Engineer/COTR before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (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 indicated on drawings and which are not scheduled for discontinuance or abandonment.

- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2).

**1.12 PHYSICAL DATA**

**1.13 PROFESSIONAL SURVEYING SERVICES**

**1.14 LAYOUT OF WORK**

**1.15 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 Project Engineer/COTR's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings (one hard copy and one electronic) to the Project Engineer/COTR within 15 calendar days after each completed phase and after the acceptance of the project by the Project Engineer/COTR.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

**1.16 USE OF ROADWAYS**

- A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Project Engineer/COTR, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.
- B. When new permanent roads are to be a part of this contract, Contractor may construct them immediately for use to facilitate building operations. These roads may be used by all who have business thereon within zone of building operations.
- C. When certain buildings (or parts of certain buildings) are required to be completed in advance of general date of completion, all roads leading thereto must be completed and available for use at time set for completion of such buildings or parts thereof.

**1.17 PROJECT ENGINEER/COTR'S FIELD OFFICE****1.18 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT**

- A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to compliance with the following provisions:
1. Permission to use each unit or system must be given by Project Engineer/COTR. If the equipment is not installed and maintained in accordance with the following provisions, the Project Engineer/COTR will withdraw permission for use of the equipment.
  2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.
  3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
  4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
  5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
  6. All components of heat production and distribution system, metering equipment, condensate returns, and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government. Boilers, pumps, feedwater heaters and auxiliary equipment must be operated as a complete system and be fully maintained by operating personnel. Boiler water must be given complete and continuous chemical treatment.
- B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.

C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

**1.19 TEMPORARY USE OF EXISTING ELEVATORS**

A. Contractor will be allowed use of B23 Elevator.

**1.20 TEMPORARY USE OF NEW ELEVATORS**

**1.21 TEMPORARY TOILETS**

A. Contractor is allowed use of public restroom facilities. Ensure facility is kept clean after each use.

**1.22 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. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

C. N/A

D. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:

1. Obtain heat by connecting to Medical Center heating distribution system.

a. Steam is available at no cost to Contractor.

E. 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.
- F. 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 Project Engineer/COTR's discretion) of use of water from Medical Center's system.
- G. Steam: Furnish steam system for testing required in various sections of specifications.
1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.
  2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at Project Engineer/COTR's discretion), of use of steam from the Medical Center's system.
- H. Fuel: Natural and LP gas and burner fuel oil required for boiler cleaning, normal initial boiler-burner setup and adjusting, and for performing the specified boiler tests will be furnished by the Government. Fuel required for prolonged boiler-burner setup, adjustments, or modifications due to improper design or operation of boiler, burner, or control devices shall be furnished by the Contractor at Contractor's expense.

### **1.23 NEW TELEPHONE EQUIPMENT**

### **1.24 TESTS**

- A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.
- B. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.
- C. Mechanical and electrical systems shall be balanced, controlled and coordinated. A system is defined as the entire complex which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions

for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a complex which involves several components of different disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.

- D. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonably short period of time during which operating and environmental conditions remain reasonably constant.
- E. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

#### **1.25 INSTRUCTIONS**

- A. Contractor shall furnish Maintenance and Operating manuals and verbal instructions when required by the various sections of the specifications and as hereinafter specified.
- B. Manuals: Maintenance and operating manuals (four copies each) for each separate piece of equipment shall be delivered to the Project Engineer/COTR coincidental with the delivery of the equipment to the job site. Manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment, component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.
- C. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed instructions to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at

the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the Project Engineer/COTR and shall be considered concluded only when the Project Engineer/COTR is satisfied in regard to complete and thorough coverage. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the Project Engineer/COTR, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

#### **1.26 GOVERNMENT-FURNISHED PROPERTY**

#### **1.27 RELOCATED // EQUIPMENT // ITEMS //**

- A. Contractor shall disconnect, dismantle as necessary, remove and reinstall in new location, all existing equipment and items indicated by Project Engineer/ Research personnel during construction or otherwise shown to be relocated by the Contractor.
- B. Perform relocation of such equipment or items at such times and in such a manner as directed by the Project Engineer/COTR.
- C. Suitably cap existing service lines, such as steam, condensate return, water, drain, gas, air, vacuum and/or electrical, whenever such lines are disconnected from equipment to be relocated. Remove abandoned lines in finished areas and cap as specified herein before under paragraph "Abandoned Lines".
- D. Provide all mechanical and electrical service connections, fittings, fastenings and any other materials necessary for assembly and installation of relocated equipment; and leave such equipment in proper operating condition.
- E. Contractor shall employ services of an installation engineer, who is an authorized representative of the manufacturer of this equipment to supervise assembly and installation of existing dental equipment, required to be relocated.
- F. All service lines such as noted above for relocated equipment shall be in place at point of relocation ready for use before any existing equipment is disconnected. Make relocated existing equipment ready for operation or use immediately after reinstallation.

**1.28 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT**

**1.29 CONSTRUCTION SIGN**

**1.30 SAFETY SIGN**

**1.31 CONSTRUCTION DIGITAL IMAGES**

**1.32 FINAL ELEVATION DIGITAL IMAGES**

**1.33 HISTORIC PRESERVATION**

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

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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 D/B Architect-Engineer, and action thereon will be taken by PROJECT ENGINEER/COTR on behalf of the Contracting Officer.
- 1-6. Upon receipt of submittals, D/B 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 therefore by Contracting Officer, adjustment in contract

price and time will be made in accordance with Articles titled CHANGES (FAR 52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.

- 1-8. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and D/B 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 required by Section 09 06 00, SCHEDULE FOR FINISHES, in double units. Submit other 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, emailed or hand delivered 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. N/A

- D. 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.
- E. Approved samples will be kept on file by the Project Engineer/COTR at the site until completion of contract, at which time such samples will be delivered to Contractor as Contractor's property. Where noted in technical sections of specifications, approved samples in good condition may be used in their proper locations in contract work. At completion of contract, samples that are not approved will be returned to Contractor only upon request and at Contractor's expense. Such request should be made prior to completion of the contract. Disapproved samples that are not requested for return by Contractor will be discarded after completion of contract.
- F. 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 D/B Architect-Engineer under one cover.
- 1-10. Samples, shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to

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Anisa Jones, Project Engineer/COTR  
Facilities Management Service (FMS)

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Denver VA Medical Center  
1055 Clermont St

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Denver, CO 80220

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**SECTION 01 42 19  
REFERENCE STANDARDS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

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

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

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

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

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

DEPARTMENT OF VETERANS AFFAIRS  
Office of Construction & Facilities Management  
Facilities Quality Service (00CFM1A)  
425 Eye Street N.W, (sixth floor)  
Washington, DC 20001  
Telephone Numbers: (202) 632-5249 or (202) 632-5178  
Between 9:00 AM - 3:00 PM

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

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

AA Aluminum Association Inc.

<http://www.aluminum.org>

AABC Associated Air Balance Council  
<http://www.aabchq.com>

AAMA American Architectural Manufacturer's Association  
<http://www.aamanet.org>

AAN American Nursery and Landscape Association  
<http://www.anla.org>

AASHTO American Association of State Highway and Transportation Officials  
<http://www.aashto.org>

AATCC American Association of Textile Chemists and Colorists  
<http://www.aatcc.org>

ACGIH American Conference of Governmental Industrial Hygienists  
<http://www.acgih.org>

ACI American Concrete Institute  
<http://www.aci-int.net>

ACPA American Concrete Pipe Association  
<http://www.concrete-pipe.org>

ACPPA American Concrete Pressure Pipe Association  
<http://www.acppa.org>

ADC Air Diffusion Council  
<http://flexibleduct.org>

AGA American Gas Association  
<http://www.aga.org>

AGC Associated General Contractors of America  
<http://www.agc.org>

AGMA American Gear Manufacturers Association, Inc.  
<http://www.agma.org>

AHAM Association of Home Appliance Manufacturers  
<http://www.aham.org>

AISC American Institute of Steel Construction  
<http://www.aisc.org>

AISI American Iron and Steel Institute  
<http://www.steel.org>

AITC American Institute of Timber Construction  
<http://www.aitc-glulam.org>

AMCA Air Movement and Control Association, Inc.  
<http://www.amca.org>

ANLA American Nursery & Landscape Association  
<http://www.anla.org>

ANSI American National Standards Institute, Inc.  
<http://www.ansi.org>

APA	The Engineered Wood Association <a href="http://www.apawood.org">http://www.apawood.org</a>
ARI	Air-Conditioning and Refrigeration Institute <a href="http://www.ari.org">http://www.ari.org</a>
ASAE	American Society of Agricultural Engineers <a href="http://www.asae.org">http://www.asae.org</a>
ASCE	American Society of Civil Engineers <a href="http://www.asce.org">http://www.asce.org</a>
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers <a href="http://www.ashrae.org">http://www.ashrae.org</a>
ASME	American Society of Mechanical Engineers <a href="http://www.asme.org">http://www.asme.org</a>
ASSE	American Society of Sanitary Engineering <a href="http://www.asse-plumbing.org">http://www.asse-plumbing.org</a>
ASTM	American Society for Testing and Materials <a href="http://www.astm.org">http://www.astm.org</a>
AWI	Architectural Woodwork Institute <a href="http://www.awinet.org">http://www.awinet.org</a>
AWS	American Welding Society <a href="http://www.aws.org">http://www.aws.org</a>
AWWA	American Water Works Association <a href="http://www.awwa.org">http://www.awwa.org</a>
BHMA	Builders Hardware Manufacturers Association <a href="http://www.buildershardware.com">http://www.buildershardware.com</a>
BIA	Brick Institute of America <a href="http://www.bia.org">http://www.bia.org</a>
CAGI	Compressed Air and Gas Institute <a href="http://www.cagi.org">http://www.cagi.org</a>
CGA	Compressed Gas Association, Inc. <a href="http://www.cganet.com">http://www.cganet.com</a>
CI	The Chlorine Institute, Inc. <a href="http://www.chlorineinstitute.org">http://www.chlorineinstitute.org</a>
CISCA	Ceilings and Interior Systems Construction Association <a href="http://www.cisca.org">http://www.cisca.org</a>
CISPI	Cast Iron Soil Pipe Institute <a href="http://www.cispi.org">http://www.cispi.org</a>
CLFMI	Chain Link Fence Manufacturers Institute <a href="http://www.chainlinkinfo.org">http://www.chainlinkinfo.org</a>
CPMB	Concrete Plant Manufacturers Bureau <a href="http://www.cpm.org">http://www.cpm.org</a>

CRA California Redwood Association  
<http://www.calredwood.org>

CRSI Concrete Reinforcing Steel Institute  
<http://www.crsi.org>

CTI Cooling Technology Institute  
<http://www.cti.org>

DHI Door and Hardware Institute  
<http://www.dhi.org>

EGSA Electrical Generating Systems Association  
<http://www.egsa.org>

EEI Edison Electric Institute  
<http://www.eei.org>

EPA Environmental Protection Agency  
<http://www.epa.gov>

ETL ETL Testing Laboratories, Inc.  
<http://www.etl.com>

FAA Federal Aviation Administration  
<http://www.faa.gov>

FCC Federal Communications Commission  
<http://www.fcc.gov>

FPS The Forest Products Society  
<http://www.forestprod.org>

GANA Glass Association of North America  
<http://www.cssinfo.com/info/gana.html/>

FM Factory Mutual Insurance  
<http://www.fmglobal.com>

GA Gypsum Association  
<http://www.gypsum.org>

GSA General Services Administration  
<http://www.gsa.gov>

HI Hydraulic Institute  
<http://www.pumps.org>

HPVA Hardwood Plywood & Veneer Association  
<http://www.hpva.org>

ICBO International Conference of Building Officials  
<http://www.icbo.org>

ICEA Insulated Cable Engineers Association Inc.  
<http://www.icea.net>

\ICAC Institute of Clean Air Companies  
<http://www.icac.com>

IEEE Institute of Electrical and Electronics Engineers  
<http://www.ieee.org>

IMSA International Municipal Signal Association  
<http://www.imsasafety.org>

IPCEA Insulated Power Cable Engineers Association

NBMA Metal Buildings Manufacturers Association  
<http://www.mbma.com>

MSS Manufacturers Standardization Society of the Valve and Fittings Industry Inc.  
<http://www.mss-hq.com>

NAAMM National Association of Architectural Metal Manufacturers  
<http://www.naamm.org>

NAPHCC Plumbing-Heating-Cooling Contractors Association  
<http://www.phccweb.org.org>

NBS National Bureau of Standards  
 See - NIST

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

NEC National Electric Code  
 See - NFPA National Fire Protection Association

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

RIS Redwood Inspection Service  
See - CRA

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

SCMA Southern Cypress Manufacturers Association  
<http://www.cypressinfo.org>

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

IGMA Insulating Glass Manufacturers Alliance  
<http://www.igmaonline.org>

SJI Steel Joist Institute  
<http://www.steeljoist.org>

SMACNA Sheet Metal and Air-Conditioning Contractors  
National Association, Inc.  
<http://www.smacna.org>

SSPC The Society for Protective Coatings  
<http://www.sspc.org>

STI Steel Tank Institute  
<http://www.steeltank.com>

SWI Steel Window Institute  
<http://www.steelwindows.com>

TCA Tile Council of America, Inc.  
<http://www.tileusa.com>

TEMA Tubular Exchange Manufacturers Association  
<http://www.tema.org>

- TPI Truss Plate Institute, Inc.  
583 D'Onofrio Drive; Suite 200  
Madison, WI 53719  
(608) 833-5900
- UBC The Uniform Building Code  
See ICBO
- UL Underwriters' Laboratories Incorporated  
<http://www.ul.com>
- ULC Underwriters' Laboratories of Canada  
<http://www.ulc.ca>
- WCLIB West Coast Lumber Inspection Bureau  
6980 SW Varns Road, P.O. Box 23145  
Portland, OR 97223  
(503) 639-0651
- WRCLA Western Red Cedar Lumber Association  
P.O. Box 120786  
New Brighton, MN 55112  
(612) 633-4334
- WWPA Western Wood Products Association  
<http://www.wwpa.org>

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