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671-11-712  
Nuclear Medicine Relocation  
Audie Murphy Memorial Veterans Hospital  
San Antonio, Texas

SECTION 02 85 00

INFECTION CONTROL

PART 1 GENERAL

1.1 DEFINITIONS

Construction Type A - Inspection and Non-Invasive Activities. Includes, but is not limited to: removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet; painting (but not sanding); wall covering; electrical trim work; minor plumbing; and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.

Construction Type B - Small scale, short duration activities that create minimal dust. Includes, but is not limited to: installation of telephone or computer cabling; access to pipe chase spaces; cutting of walls or ceilings where dust migration can be controlled.

Construction Type C - Any work, which generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies. Includes, but is not limited to: sanding of walls for painting or wall covering; removal of floor coverings, ceiling tiles and casework; new wall construction; minor ductwork or electrical work above ceilings; major cabling activities; and any activity which cannot be completed within a single work shift.

Construction Type D - Major demolition and construction projects. Includes, but is not limited to: activities that require consecutive work shifts; require heavy demolition or removal of a complete ceiling system; and new construction.

Group 1 Lowest Risk Patient Risk Group - Office areas

Group 2 Medium Risk Patient Risk Group - Cardiology, Echocardiography, Laboratories, Nuclear Medicine, Physical Therapy, Radiology/MRI, Respiratory Therapy

Group 3 Medium-High Risk Patient Risk Group - Emergency Room, Day Surgery, Pharmacy, Endoscopy

Group 4 Highest Risk Patient Risk Group - 4B (Hem/Onc Unit), Operating Rooms/Sterile Processing, Cardiac Catheterization & Angiography Areas, Dialysis, ICU/CCU/CVT/CVT-I, Med/Surg Nursing Units, Post-Anesthesia Care Units.

HEPA - High Efficiency Particulate Air

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Level of Infection Control - Class I, II, III or IV, as determined from the IC Matrix

1.2 DESCRIPTION

The purpose of the infection control procedures are to minimize the risk of infection during construction by maintaining the integrity of the environment, and controlling the spread of dust.

The following Infection Control Matrix defines the matrix of precautions to be implemented for construction, demolition and renovation. Matching the planned construction type with the patient risk group on the matrix defines the minimum level of infection control required (Class I, II, III or IV).

<u>Risk Level</u>	<u>Construction Activity</u>			
	<u>Type A</u>	<u>Type B</u>	<u>Type C</u>	<u>Type D</u>
Group 1 Lowest Risk	Class I	Class II	Class II	Class III/IV
Group 2 Medium Risk	Class I	Class II	Class III	Class IV
Group 3 High Risk	Class II	Class II	Class III/IV	Class IV
Group 4 Highest Risk	Class II	Class III/IV	Class III/IV	Class IV

Class I:

1. Execute work by methods to minimize raising dust and fumes from interior and exterior construction operations.
2. Water mist work surfaces to control dust
3. Immediately replace a ceiling tile displaced for visual inspection
4. Use travel routes that minimize exposure of patients to construction workers, materials, tools, and equipment.
5. Schedule utility interruptions during periods of low hospital activity.

Class II: In addition to precautions for Class I:

1. Provide active means to prevent airborne dust from dispersing into the atmosphere.
2. HEPA vacuum upper surfaces of ceiling tiles prior to removal
3. Seal unused doors with duct tape
4. Block off and seal air vents
5. Place adhesive walk-off mats at entrances and exits of work areas.
6. Seal or isolate HVAC system in areas where work is being performed.
7. HEPA vacuum work surfaces and containers before removing from the work area.
8. HEPA vacuum worker clothing, tools, materials and equipment before leaving the work area.

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Class III: In addition to the precautions for Class I and II:

1. Install critical barriers at all openings to the work area
2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system.
3. Maintain negative air pressure within the work site utilizing HEPA-equipped air filtration units.
4. Seal holes, pipes, conduits and punctures within the work area using fire-safe, impermeable materials.
5. Construct anteroom contiguous to the work area and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving the work site.
6. Contain construction waste before transport in tightly covered containers
7. Cover transport receptacles or carts. Tape covering to container to seal all joints.
8. Do not remove barriers from the work area until the completed project is thoroughly cleaned by the VA's Environmental Services Department and inspected by the VA.

Class IV: In addition to precautions for Class I, II and III:

1. No work is permitted in areas occupied by patients.
2. All personnel entering the work site are required to wear head covers, shoe covers, and overalls. Head covers, shoe covers, and overalls must be changed within the anteroom each time the worker exists the work area.

Conduct work by implementing the appropriate level of infection control as required or as noted herein.

### 1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only.

#### SD-06 Test and Inspection Reports

Air sampling results  
Infection Control Compliance Checklists  
Logs of negative pressure measurements for work site;

#### SD-07 Certificates

Employee training;

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VAMC Infection Control Construction Permits; G

1.4 QUALITY ASSURANCE

1.4.1 Qualifications

- A. 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 an appendix Section 01 00. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to 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.
  2. Certification that the contractor has a medical program that addresses tuberculosis. The medical program shall include written assurance that each employee has no active tuberculosis. All contract employees assigned to the work site shall have a pre-placement tuberculin screening within 90 days prior to assignment to the worksite as recommended by the Center for Disease Control (CDC). This can be the CDC two-step skin testing or a Food and Drug Administration (FDA) approved blood test. Employees manifesting positive screening reactions to the tuberculin shall be examined per current CDC guidelines prior to working on VHA property. If the employee is found without evidence of active (infectious) pulmonary tuberculosis (TB), a statement documenting examination by a physician must be on file with the employer (construction contractor), noting that the employee with a positive tuberculin screening test is without evidence of active (infectious) pulmonary TB. If the employee is found with evidence of active (infectious) pulmonary TB, the employee would require treatment with a subsequent statement as outlined above before being allowed to return to work on VHA property.
- B. Medical center Infection Control personnel will 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 Resident Engineer and VAMC Infection Control personnel will 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.

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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.

### 1.5 EQUIPMENT

Fire retardant polyethylene  
HEPA filtered vacuum  
HEPA filtered negative air machine  
Duct tape  
Framing and other materials necessary to isolate the work area  
Power equipment that generates dust must have dust collection equipment attached.

### 1.6 PROJECT/SITE CONDITIONS

#### 1.6.1 Existing Conditions

Perform work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition or better as determined by the Contracting Officer.

### 1.7 SEQUENCING AND SCHEDULING

All work will be coordinated with the hospital infection control office, facility director, safety department, security office and work will not commence until the Infection Control Construction Permit has been approved by VAMC for that specific work area, including designation of the pre-determined debris removal routes.

Any issue that could have impact on VAMC operations must be reported to the VAMC project representative before commencement. This would include containment breeching, loss of negative pressure, releases of dust/debris into uncontrolled interior building areas or other issues that could affect infection control procedures.

Work phasing and breakout of specific work areas shall be in coordination with the Contracting Officers needs and the General Contractor's schedule and not adversely affect the operations of the VAMC in any way.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

### 3.1 PREPARATION

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Obtain an Infection Control Construction Permit prior to performing any work of construction types A through D as defined above. Removal of a single ceiling tile in a suspended acoustic ceiling for observation purposes only does not require an infection control construction permit.

Existing air handling ductwork, supply and return grills shall be isolated using air tight seals.

Elevator use must be coordinated with facilities and must not impact VAMC operations. Time and dates of waste load must be identified each day.

### 3.2 ERECTION

Install impervious barriers from floor to ceiling and wall to wall to seal work areas from non-work areas. When work is in an area designated for Class IV protection, double impervious barriers shall be used.

Impervious barriers shall be constructed of non-combustible or fire retardant materials. Barriers shall be minimum one-hour rated construction. Fire retardant polyethylene may be used for impervious (dust) barriers that remain in place for not more than 72 hours. Construct all other barriers of gypsum board (flame spread rating of 25 or less in accordance with ASTM E84) on both sides of metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Wood framing is not allowed. At door openings, use Class C ¾ hour fire/smoke rated doors and frames with closers.

Critical barriers are to be installed on all doors and windows and other entrances to the work area.

Seal all holes, chases, pipe cavities and other perforations before commencing work. Sealants shall be non-flammable material.

Create a negative pressure work area by installing HEPA filtered negative air machines within the work area to remove dust particles from the air and exhaust to the outside.

Maintain negative pressure of at least -0.02 inches water in all work areas and document compliance.

Construct an entry/exit chamber for decontaminating people and equipment leaving the work area. A HEPA vacuum is required to remove dust from equipment and people leaving the site. Disposable PPE shall be removed prior to exiting the entry/exit chamber.

Adhesive Step-off pads at least 24"x36" are to be located at the exit of the work area before entering the occupied areas of the VAMC.

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Vacuum the top surfaces of ceiling tiles using a HEPA vacuum prior to removal of ceiling tiles.

Elevators or stairwells within the work area must be isolated with impervious barriers.

Activities such as cutting, demolishing, and other large dust generating activities shall have work surfaces water-misted prior to impact.

Where powered equipment that generates dust will be utilized, such equipment shall have dust collection equipment attached.

Provide active means to prevent airborne dust from dispersing into the atmosphere.

### **3.3 FIELD QUALITY CONTROL**

#### **3.3.1 Inspection**

Conduct daily infection control inspections using the VAMC Infection Control Compliance Checklist. Daily inspections shall also be conducted on days when no construction activity is performed. Submit compliance checklist not more than 1 work day after completing an inspection.

Continuously monitor negative pressure levels. Document negative pressure levels at the start of work each day and at 4 hour intervals during each work day. Maintain a written log of negative pressure levels measured to include date and time of the measurement. Submit written log of negative pressure levels weekly and not more than 1 work day after completing the last log entry.

All barriers and HEPA filtered negative pressure are to remain in place until clearance has been obtained from VAMC representatives. This could include the IC Department, Safety Department, and Environmental Services Department.

#### **3.3.2 Tests**

VAMC representatives may conduct sampling for dust, mold spores and surface contamination. Sampling may be conducted for dusts outside the work area to assess impact.

### **3.4 CLEANING AND DISPOSAL**

The construction area and adjacent areas are to be kept in a clean and sanitary manner, using damp methods and HEPA filtered vacuuming.

Dry sweeping shall not be allowed.

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Any dust tracked outside of the barriers must be removed immediately and as it accumulates.

Surfaces are to be cleaned daily or more frequently if needed with VAMC approved cleaning products.

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.

There shall be no standing water in the work area. All accidental spills must be cleaned up immediately and wet porous material removed within one hour.

All barriers are to be removed carefully to minimize the spread of contaminants.

Waste is to be removed in clean air tight covered containers and transported from the work area by a pre-determined route during off-peak hours. Such designated debris removal routes shall be cleaned by damp-mop and/or HEPA filtered vacuuming prior to being returned to patient/staff use.

For work performed exterior to the building envelope, no debris/waste movement shall be allowed through the building interior spaces.

**Final Cleanup:**

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.

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.

All new air ducts shall be cleaned prior to final inspection.

-- End of Section --