**SECTION 01 35 33**

**INTERIM INFECTION CONTROL MEASURES (IICM)**

**Spec Writer:** This section required for ALL University of Iowa Hospitals & Clinics projects.

**Spec Writer:** Select project classification. Coordinate and select temporary partition type. Coordinate partition type with Section 01 50 13 Construction Facilities and Temporary Controls.

**Spec Writer:** Coordinate demolition and construction activities in adjacent areas – especially where access to ceiling areas is required.

**Spec Writer:** If there is a need for Work outside of the Primary Containment Area, then denote the area(s) as Secondary Areas and proper Class on the drawings.

Spec Writer: The Design Professional will develop, with UIHC, an approved detailed IICM plan for the work area, including barrier placement, barrier construction, HVAC isolation details, and NAM (Negative Air Machine) requirements for inclusion in the Bid package. This IICM plan must be approved by the UIHC ICRA Committee.

**PART 1 - GENERAL**

1.1 QUALITY ASSURANCE

**Spec Writer:** Select applicable class from the following:

**NOTE: All projects inside UIHC Facilities with proximity to patient and/or staff areas will be a Class III or Class IV.**

A. The Owner has designated this project to require Interim Infection Control Measures – Class

 **[ I ] [ II ] [ III ] [ IV ]**.

B. Healthcare-associated infections of immuno-compromised patients, staff and visitors may be caused by exposure to airborne contaminates.

 1. Construction, renovation and repair activities may generate suspended fungal spores and/or bacterial contaminants from dust, debris and earthwork excavation dust.

 2. Fungal spores can be carried by air currents to remote locations within a facility.

 3. Control of airborne contaminates in smoke, construction dust, debris and excavation dust as required by this Section is imperative.

C. Interim Infection Control Measures (IICM) shall provide an appropriate level of safety when there are conditions that increase the risk of healthcare-associated infections.

 D. The Owner may provide baseline particle counts and conduct periodic air sampling of protection areas during construction to monitor effectiveness of IICM.

E. The Contractor shall comply with applicable codes and use installation procedures and methods that satisfy applicable code requirements and procedures.

F. The Contractor shall verify the maintenance of negative air pressure in containment area relative to protection areas on a continuous basis by use of differential pressure monitors.

G. If the Contractor fails to maintain infection control procedures:

 1. The Owner may issue written warning or Non-conformance Notice.

 2. The Contractor shall correct non-conformance immediately.

 3. If situation is not corrected within eight (8) hours of receipt of warning or Non-conformance Notice, the Owner will have cause to stop Work as provided in Contract Documents at no additional cost to the Owner.

 4. Failure of the Contractor to correct deficiencies may result in corrective action taken by the Owner and deducting all cost associated with from Contract Amount.

H. If mold or asbestos are discovered during construction operations, the Contractor shall stop work immediately in the area and notify the Owner’s Representative.

 I. The Owner’s Representative shall be notified daily (within the first hour of work) of all sick employees working on the project. Employees that are sick (such as diarrhea, upper respiratory infection and fever) and working, shall wear personal protective equipment (PPE) such as a surgical mask.

1.2 DEFINITIONS

 A. Airborne contaminant producing activities include, but are not limited to:

 1. Demolition and removal of walls, floors, ceilings, and other finish materials.

 2. Demolition of plumbing, mechanical and electrical systems and equipment.

 3. Finish operations such as sanding, painting, and application of special surface coatings.

 4. All other construction activity that may generate dust, smoke or fumes.

B. Primary Containment Area: The largest area of project work around which temporary dust partitions are built.

C. Secondary Containment Area: Areas of Work within the Protection Area outside of the Primary Containment Area that requires a form of dust control.

D. Protection Areas: Interior occupied areas within facilities, which are adjacent to a Primary Containment Area, either occupied or used for passage, as well as areas connected to construction area by mechanical system air intake, exhaust and ductwork.

 E. Preparation Area: specific area located as designated by the Owner’s Representative for donning and removing protective clothing prior to entering the Containment Area.

1.3 SUBMITTALS

A. Project Information:

1. Submit drawings indicating Work areas and procedure for containment of airborne contaminants for the Owner's review and approval.

 a. Indicate locations of temporary enclosures, barriers, isolation vestibules, negative air machines, exhaust fans, capped ductwork and airflow direction indicator.

 b. Drawings shall indicate, as a minimum, containment areas, protection areas, enclosure types, vestibules, location of negative air machines, capped ductwork.

 2. Specific means and methods of achieving and maintaining control of airborne contaminants during construction for Owner’s review and approval.

 3. Submit Daily inspection reports, noting employees that are ill, on a weekly basis to the Owner’s Representative.

 4. Submit copy of HEPA/ULPA vacuum DOP (Dispersed Oil Particulate) test conducted by an independent testing agency, dated within the past six (6) months.

**PART 2 - PRODUCTS**

2.1 MATERIALS

1. HEPA/ULPA, Ultra-Low Penetration Air vacuum cleaners:

 1. HEPA/ULPA vacuum shall trap 99.999% of particles 0.12 microns and larger. Vacuum shall have a minimum air flow of 90 cfm.

 2. Acceptable products:

 a. ISC Sales "Minuteman Model CRV - 99.999%"

1. Nilfisk Advance
2. Pro-Team "Vacer HEPA/ULPA Vacuum"
3. Design Professional approved equivalent
4. Polyethylene: 6 mil or 8 mil thick reinforced laminated polyethylene film; shall meet requirements of NFPA 701 large scale flammability test and ASTM E84 Class A.

 1. Include compatible fire retardant tape.

 2. Acceptable products:

 a. Tri Synergy Flexible Film "Surface Cover" (tel: 800.446.6076).

1. American Cover "Surface Cover" (tel: 800.747.6095).
2. Reef Industries “Griffolyn Type 55 FR” (tel: 800.231.6074).
3. Design Professional approved equivalent
4. Adhesive-Faced Contamination Control Mats (sticky walk-off mats):

 1. Size of mats shall be the width of the opening and 30” (minimum) depth.

 2. Acceptable products:

 a. ASG "Walk-off Mats" (tel: 216.486.6163).

 b. Controlled Environment Equipment "Cleanline Sticky Mat" (tel: 800.569.5444).

1. Liberty Industries "Tacky Mat" (tel: 800.246.7483).
2. Curtain Wall Company "CleanStep" tacky mats (tel: 800.424.8251)
3. Design Professional approved equivalent
4. Negative Air Machine: A machine with a fan or blower, typically with HEPA/ULPA filters, which is able to negatively pressurize a room or area for a continuous period of time. Provide unit sized to meet room requirements. If unit does not exhaust air to the outside of the building, provide additional carbon filtering.

 1. Units shall include prefilters, final filters, HEPA/ULPA-filters and filter static pressure gauges.

 2. HEPA/ULPA filters shall be 99.997% efficient at 0.3 micron particle size.

 3. Acceptable manufacturers:

1. Abatement Technologies
2. Phoenix
3. Dri-Eaz
4. Micro-Trap, Inc.
5. Control Resource System Inc
6. NIKRO Industries, Inc.
7. Design Professional approved equivalent.
8. Zipper Lock Entrance:

 1. Fire retardant, reinforced vinyl construction with reinforced stitching. Acceptable products:

1. Curtain Wall Company "Dust-Door" (tel: 800.424.8251)
2. Pro Venture Inc “Zip-Up” (tel: 978.744.5000)
3. Design Professional approved equivalent

 F. Temporary Prefabricated Enclosure Units:

 1. Provide the enclosure with an inspection window and pressure differential porthole.

 2. Acceptable products:

 a. Fiberlock Technologies “Kontrol Kube” with frame #6440, enclosure #6442, wheel base platform #6443 and Milfish 87 cfm vacuum device and manometer.

 b. Specialty Tool Manufacturing “MCU – Quick Wall Mobile Containment Unit”; provide with HEPA/ULPA vacuum connection (tel: 888.718.3878).

 c. Mintie Technologies “ECU EnteRoom Envelope”

 d. Design Professional approved equivalent

 G. Airflow Direction Indicator:

 1. Acceptable products:

 a. Airflow Direction Inc. “ADI-69-V-N” (tel: 888.334.4545)

 b. Austin Ventrues “Model LN102” (tel: 909.043.8172)

 c. Design Professional approved equivalent

 H. Dust Catching Device:

 1. Disposable, dry, electrostatic cloths or mitts for dust removal.

 2. Disposable, wet cloths, presoaked with cleaning solution, for dust removal.

 3. Acceptable products:

 a. Proctor & Gamble “Swiffer Dry”, “Swiffer Mitt” or “Swiffer Wet”

 b. Reckitt Benckiser “Mop & Glo”

 c. S.C. Johnson & Sons “Pledge Grab It”

 d. Design Professional approved equivalent.

**PART 3 - EXECUTION**

3.1 GENERAL

NOTE: All barriers visible to patients and/or the general public shall be hard painted barriers.

 A. The Owner’s Representative will make regular visits to the project site to ensure compliance

of policy. The Owner reserves the right to inspect the work at any time to verify that the

Contractor is complying with these infection control requirements.

B. Notify the Owner’s Representative at least fourteen (14) calendar days prior to preparing a containment area or starting work activity outside of the containment area or in Owner occupied spaces.

C. Instruct the Contractor’s personnel to refrain from tracking dust into adjacent areas or

 opening windows or doors that would allow airborne contaminants into adjacent hospital

 areas.

D. For exterior work, direct exhaust from equipment away from building air intakes, windows and doors. Ensure that filters on building air intakes are operational and protected from excessive quantities of airborne contaminants.

E. Workers shall wear clean clothing and footwear.

F. Disposable protective clothing shall be replaced if torn or dirty. Washable protective clothing shall be washed when dirty or weekly, as a minimum.

3.2 CLEANING - GENERAL

 A. Maintain Containment Area free of waste materials, debris and rubbish. Maintain site in clean and orderly condition.

 B. Remove debris and rubbish from pipe chases, plenums and other closed or remote spaces, prior to enclosing the space.

 C. Clean interior areas using HEPA/ULPA vacuum prior to start of surface finishing and continue cleaning to eliminate dust.

 D. Remove waste materials, debris and rubbish from the site daily and dispose of off site.

**Spec Writer:** Edit the following classes to meet project requirements.

3.3 STANDARD OPERATION PROCEDURES FOR CLASS I AREAS

 A. Operation in Class I Areas:

 1. Execute work by methods to minimize raising dust from construction operations.

 2. Immediately replace ceiling tile displaced for visual inspection.

 3. Wet mop and/or HEPA/ULPA vacuum before leaving area.

3.4 STANDARD OPERATION PROCEDURES FOR CLASS II AREAS

 A. Preparation and Operation of Class II Areas:

 1. Water misting of work surfaces is not permitted except for cleaning debris carts and work surfaces.

 2. To contain dust and debris, duct tape doors for demolition and/or construction activities that produce large amounts of dust or utilize "work enclosures".

 3. Block off and seal HVAC supply, return and exhaust terminal, registers, grilles and diffusers in the rooms affected by construction.

 4. Masks are optional by the person doing the cutting.

 5. Holes cut or punctured in walls and partitions, ceilings, floors and doors cannot be left exposed longer than four (4) hours. If work cannot be completed within the four (4) hour time period, the holes shall be covered.

 B. Flooring removal in Class II Secondary Containment areas

 1. Construction materials and equipment shall be stored within designated areas.

 2. Only flooring area of a size that can be removed, replaced and completed in one work period shall be worked on.

 3. Removal of flooring:

 a. Vacuum carpet before removal with a HEPA/ULPA vacuum.

 b. Damp mop sheet vinyl and vinyl composition tile flooring.

 c. Use motions and methods that minimize the dispersing of dust and debris while removing flooring.

 d. HEPA/ULPA vacuum floor after removal of flooring, adhesive and leveling of area prior to installation of new flooring.

C. Clean-up of Class II areas:

 1. At the completion of the work, the following shall occur:

 a. Clean work surfaces and debris carts with water.

 b. Contain construction waste before transport in clean, tightly covered containers or sealed plastic bags.

 c. Wet mop and/or vacuum with HEPA/ULPA-filtered vacuum before leaving the work area.

 d. Remove isolation of HVAC system in areas where work is being performed.

3.5 STANDARD OPERATION PROCEDURES FOR CLASS III AREAS

 A. Preparation of Class III Areas:

 1. Refer to the drawings for location of pathways to the Containment Area. Entry and exit locations to the Containment Area shall be coordinated with the Owner’s Representative.

 2. The Contractor shall completely install all infection control measures before the balance of the Work begins. Dust barriers shall be set up around the specific areas of the project.

 a. Provide temporary barriers and ceilings to separate work areas (Containment Areas) from Owner-occupied areas (Protection Areas) and to prevent penetration of dust into Owner-occupied areas.

 b. Barriers to be constructed of temporary framing supports and fire-retardant polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces.

 c. Doors located in temporary polyethylene partitions shall be zipper type attached to the polyethylene sheet material.

 d. Seal all penetrations of the temporary partitions with duct tape as necessary to maintain the dust containment and the fire rating of the partition

 e. The dust barriers shall be partitions from the ceiling to floor, completely enclosing the Containment Area.

 f. The dust barriers shall remain around the selected construction area until that specific work has been satisfactorily completed.

 3. Provide adhesive-faced contamination control mats at the construction entry point on both sides of the temporary partition. Workers shall step on both mats when exiting a containment area. Carts shall be moved across both mats.

 4. Provide the necessary quantity of negative air machines to maintain each separate project work area at a negative pressure with respect to the patient care areas to control the spread of contaminants from the Containment Areas to adjacent Protection Areas.

 a. Negative air pressure machines equipped with high efficiency particulate (HEPA/ULPA) filters shall be used in conjunction with a sealed work area to maintain a negative pressure inside the work area relative to non-work areas.

 1) A sufficient quantity of negative pressure ventilation units equipped with filtration shall be utilized to provide one workplace air change every 15 minutes. This requirement shall apply to the removal of the dust and contaminants from the air.

 2) To calculate total air flow requirement:

 Total cubic feet/minute = volume of work area (in cubic feet)

 15 minutes

 3) To calculate the quantity of units needed for the dust control in a specific work area:

 Quantity of units needed = total cubic feet/minute

 capacity of unit in cubic feet/minute

 4) The total quantity of negative air machines required is dependent upon the total quantity of simultaneous containment areas being occupied by the Contractor. Refer to the plans to calculate the quantity of negative air machines required assuming the construction barriers indicated on the drawings.

 5) Connect the negative air machine discharge to the existing building return or exhaust system if indicated by the Mechanical Drawings.

 6) Change dust filter media as needed for the negative air machines.

 b. Make-up air for the air exhausted from the spaces shall be taken from the existing HVAC system.

 c. Negative air machines shall be connected to emergency power and run continuously.

 d. Vent negative air machines to outside by removing existing windows and replacing them with vented panels having fittings for exhaust holes.

 e. Change filters as frequently as recommended by the manufacturer for duration of Work within the Containment Area to maintain a negative pressure of 0.1 - 0.2 IN of water gauge.

 f. Negative air units shall to be DOP tested and certified prior to being placed in service, and when dropped, damaged or moved extensively.

 5. Each phase of construction shall be considered a separate area.

 6. Duct Caps: Block off all existing return, exhaust and supply air ductwork within the Containment Area by capping ducts to withstand airflow, and so they are dust tight.

 B. Operation in Class III Areas:

 1. The containment control mats shall be monitored and replaced as they become loaded with dirt.

 2. The dust partitions shall be wiped down daily with a moist cloth or dust catching device.

 3. Traffic between containment areas and protection areas shall be kept to a minimum.

 4. Keep doors into containment areas closed at all times.

 5. All vacuuming of area outside of the work area not within the barriers shall be done by the Contractor with HEPA/ULPA vacuums.

 6. All holes, pipes, conduit, punctures and exposures shall be sealed appropriately.

 7. Removal of debris from the project work areas shall be as follows:

 a. If debris is removed from the project site through an occupied Patient Care Area (Protection Area), the following procedure shall be followed:

 1) Removal of debris shall be done by the Contractor. The Contractor shall advise the Owner's Representative when there is debris to be removed. Debris shall be removed on an "as needed" basis. Transport removed material in tightly sealed, rubber tired containers provided by the Contractor to protect Protection Areas. The Owner's Representative will review the type of cart and condition of the cars proposed for use. Containers shall be fitted with clean, tight fitting plastic cover or polyethylene covers, completely sealed at perimeters by taping. Before leaving the Containment Area all containers shall be wiped or HEPA/ULPA vacuumed clean to prevent tracking of dust. The cart shall be rolled over the adhesive faced contamination control mats inside and outside the entrances.

 2) Place covers over debris boxes between periods when they are being filled.

 b. Supplies and tools shall be brought into the Containment Area in accordance with the following procedure:

 1) For tools and supplies moved to the Containment Area the following procedures shall apply:

 a) Tools and supplies shall be wiped clean or wrapped in plastic sheeting and moved by Contractor provided rubber tired carts/containers, from a staging area to the containment area (construction site).

 b) The containers shall be vacuumed with HEPA/ULPA vacuum cleaners by the Contractor prior to moving through the occupied space to the Containment Area. The Contractor shall notify the Owner's Representative of the need to move these containers through Protection Areas prior to entering the Containment Area.

 c. Tool and supply removal from the Containment Area shall follow the procedure specified for debris removal from the Containment Area.

**Spec Writer:** Delete the following two paragraphs if not required.

 8. The following procedure shall be implemented when construction personnel are required to pass through a Protection Area to enter a Containment Area:

 a. Personnel shall don protective clothing required by the Owner’s Representative within the Preparation Area before passing through Protection Areas.

 b. Protective clothing shall be removed upon entering the Containment Area and shall be stored in plastic bags.

 9. The following procedure shall be implemented when construction personnel are required to pass from a Containment Area through a Protection Area:

 a. Construction workers shall vacuum themselves with the HEPA/ULPA filtered

 vacuum cleaners. After being vacuumed the workers shall re-don protective clothing before re-entering the Protection Area.

 b. Personnel shall remove the protective clothing in the Preparation Area.

 c. All dust and debris tracked outside the Containment Area shall be vacuumed up immediately by the Contractor.

C. Flooring removal in Class III Secondary Containment areas

 1. Construction materials and equipment shall be stored within designated areas.

 2. Only flooring area of a size that can be removed, replaced and completed in one work period shall be worked on.

 3. Removal of flooring:

 a. Vacuum carpet before removal with a HEPA/ULPA vacuum.

 b. Damp mop sheet vinyl and vinyl composition tile flooring.

 c. Use motions and methods that minimize the dispersing of dust and debris while removing flooring.

 d. HEPA/ULPA vacuum floor after removal of flooring, adhesive and leveling of area prior to installation of new flooring.

D. Miscellaneous work activities which is required within existing ceiling spaces in a protection area which can be confined shall be performed as follows:

 1. Scheduled in advance and notify the Owner’s Representative at least seven (7) calendar days prior to commencing work in ceiling or interstitial spaces above Protection Areas to allow the Owner to relocate or protect occupants.

 2. Inform the Owner’s Representative so that doors to Protection spaces near ceiling work can be kept closed while Work is in progress.

 3. Cover all horizontal surfaces, except flooring, to protect from dust and debris.

 4. HEPA/ULPA vacuum the top of the ceiling system to be removed, and surrounding affected area, to remove dust prior to removal.

 5. Acoustical ceiling panels or ceiling access panels opened for investigation outside of the containment areas shall be closed when unattended.

 6. Whenever acoustical ceiling panels or access panels are opened in Protection Areas, provide a portable enclosure that encloses the ladder and seals off opening. Fit enclosure tight to ceiling.

 7. Exercise caution when handling fluids within ceiling or interstitial spaces.

 8. When working with fluids provide a watertight barrier beneath the work area to catch and retain all spillage before it reaches the ceiling below.

 9. Vacuum and clean surfaces free of dust before their removal.

 E. Cleaning Class III Areas:

 1. Clean up and disposal

 a. Barriers may not be removed from work areas until the completed project is inspected by the Owner’s Representative and thoroughly cleaned by the Contractor.

 b. Remove all debris, extra materials and equipment from the Containment Area before beginning final cleaning.

 c. Work areas shall be vacuumed with HEPA/ULPA filtered vacuums and/or wet mopped by the Contractor.

 d. When construction is complete, the temporary partitions (both sides) shall be wiped down using a moist cloth or dust catching device before removal. The partitions shall be removed carefully, rolling the inside over the outside.

 e. Clean the blockage of air vents, diffusers and registers before their removal. Then remove them.

3.6 STANDARD OPERATION PROCEDURES FOR CLASS IV AREAS

 A. Preparation of Class IV Areas:

 1. Refer to the drawings for location of pathways to the Containment Area. Entry and exit locations to the Containment Area shall be coordinated with the Owner’s Representative.

 2. The Contractor shall construct an anteroom and require all personnel and tools to pass through this room so they can be vacuumed using a HEPA/ULPA vacuum cleaner before leaving the Containment Area.

**Spec Writer:** For projects with a short duration (less than 45 days) consider using temporary partitions constructed of polyethylene and temporary supports.

 3. The Contractor shall completely install all barriers before construction begins. Dust barriers shall be set up around the specific areas of the project before the balance of the work begins.

 a. Full height, noncombustible, fire-rated construction, with minimum 1/2 inch thick fire-rated gypsum board both sides with 3-1/2 inch thick R-11 insulation or acoustical insulation to reduce noise.

 b. Use 3 inch wide drywall tape and one coat of joint compound to tightly seal top, bottom, and all seams, to prevent spread of dust to occupied areas, including above ceiling. Surfaces exposed to public view shall be painted with two (2) coats of low odor semi-gloss latex paint, color to match adjacent wall surfaces.

 c. Doors shall be 4’-0” minimum width, fire-rated, solid core wood with hollow metal frame and finish hardware, including mortise classroom lockset, door closer, four (4) heavy weight 5” x 4-1/2” ball bearing hinges, door sweep and weather-stripping to prevent flow of dust. Door and frame shall match the adjacent door and frame color/finish.

 1) Swing door into the construction area. Keep enclosure door locked during non-working hours.

 2) Three keys for emergency access shall be furnished to the Owner’s Representative or key to the Owner's existing building key system.

 d. Install an airflow direction indicator within the temporary barrier following the manufacturer’s installation procedures to indicate if improper directional airflow exists. A pressure differential meter maybe used to indicate negative pressure. Unit shall be installed adjacent to door opening.

 e. The location and details of the enclosure construction shall be as indicated on the drawings.

 f. Materials for enclosure shall be precut off-site to the greatest extent possible.

 g. No explosive or pneumatic driven fasteners will be allowed.

 h. Provide fire rated partitions and doors when required to maintain integrity of an existing rated partition, and where indicated or required by governing authorities.

 4. Provide adhesive-faced contamination control mats at the construction entry point on both sides of the temporary partition. Workers shall step on both mats when exiting a containment area. Carts shall be moved across both mats

 5. Provide the necessary quantity of negative air machines to maintain each separate project work area at a negative pressure with respect to the patient care areas to control the spread of contaminants from the Containment Areas to adjacent Protection Areas.

 a. Negative air pressure machines equipped with high efficiency particulate (HEPA/ULPA) filters shall be used in conjunction with a sealed work area to maintain a negative pressure inside the work area relative to non-work areas.

 1) A sufficient quantity of negative pressure ventilation units equipped with filtration shall be utilized to provide one workplace air change every 15 minutes. This requirement shall apply to the removal of the dust and contaminants from the air.

 2) To calculate total air flow requirement:

 Total cubic feet/minute = volume of work area (in cubic feet)

 15 minutes

 3) To calculate the quantity of units needed for the dust control in a specific work area:

 Quantity of units needed = total cubic feet/minute

 capacity of unit in cubic feet/minute

 4) The total quantity of negative air machines required is dependent upon the total quantity of simultaneous Containment Areas being occupied by the Contractor. Refer to the plans to calculate the quantity of negative air machines required assuming the construction barriers indicated on the drawings.

 5) Connect the negative air machine discharge to the existing building return or exhaust system if indicated by the Mechanical Drawings.

 6) Change dust filter media as recommended by the manufacturer for the negative air machines.

 b. Make-up air for the air exhausted from the spaces shall be taken from the existing HVAC system.

 c. Negative air machines shall be connected to emergency power and run continuously.

 d. Vent negative air machines to outside by removing existing windows and replacing them with vented panels having fittings for exhaust holes.

 e. Change filters as frequently as recommended by the manufacturer for duration of Work within the Containment Area to maintain a negative pressure of 0.1 - 0.2 IN of water gauge.

 f. Negative air units shall to be DOP tested and certified prior to being placed in service, and when dropped, damaged or moved extensively.

 6. Each phase of construction shall be considered a separate area.

 7. Duct Caps: Block off all existing return, exhaust and supply air ductwork within the

 Containment Area by capping ducts to withstand airflow, and so they are dust tight.

 B. Operation in Class IV Areas:

 1. The following procedure shall be implemented when construction personnel are required to pass through a Protection Area to enter a containment area:

 a. Personnel shall don protective clothing required by the Owner’s Representative within the Preparation Area before passing through Protection Areas.

 b. The Contractor shall provide an anteroom within the dustproof enclosure.

 c. Protective clothing shall be removed in the anteroom prior to entering the Containment Area.

 2. The following procedure shall be implemented when construction personnel are required to pass from a containment area through a protection area:

 a. Construction workers shall vacuum themselves with the HEPA/ULPA filtered

 vacuum cleaners. After being vacuumed the workers may leave the containment area (construction site) into the anteroom.

 b. Personnel shall re-don protective clothing in the anteroom before re-entering the protection area.

 c. Personnel shall remove the protective clothing in the Preparation Area.

 d. All dust and debris tracked outside the construction area shall be vacuumed up immediately by the Contractor.

 3. Supplies and tools shall be brought into the Containment Area in accordance with

 the following procedure:

 a. For tools and supplies moved to the Containment Area the following procedures shall apply:

 1) Tools and supplies shall be wiped clean or wrapped in plastic sheeting and moved by Contractor provided rubber tired carts/containers, from a staging area to the containment area (construction site).

 2) The containers shall be vacuumed with HEPA/ULPA vacuum cleaners by the Contractor prior to moving through the occupied space to the Containment Area. The Contractor shall notify the Owner's Representative of the need to move these containers through Protection Areas prior to entering the Containment Area.

 b. Tool and supply removal from the Containment Area shall follow the procedure specified for debris removal from the Containment Area.

 c. The following procedure shall be implemented when construction personnel are required to pass through a Protection Area to enter a containment area:

 1) Personnel shall don protective clothing required by the Owner’s Representative within the Preparation Area before passing through

 Protection Areas.

 2) The Contractor shall provide an anteroom within the dustproof enclosure.

 3) Protective clothing shall be removed in the anteroom prior to entering the containment area.

 d. The following procedure shall be implemented when construction personnel are required to pass from a containment area through a protection area:

 1) Construction workers shall vacuum themselves with the HEPA/ULPA filtered vacuum cleaners. After being vacuumed the workers may leave the Containment Area (construction site) into the anteroom.

 2) Personnel shall re-don protective clothing in the anteroom before re-entering the protection area.

 3) Personnel shall remove the protective clothing in the staging area.

 4) All dust and debris tracked outside the construction area shall be vacuumed up immediately by the Contractor.

E. Flooring removal in Class IV Secondary Containment areas

 1. Construction materials and equipment shall be stored within designated areas.

 2. Only flooring area of a size that can be removed, replaced and completed in one work period shall be worked on.

 3. Removal of flooring:

 a. Vacuum carpet before removal with a HEPA/ULPA vacuum.

 b. Damp mop sheet vinyl and vinyl composition tile flooring.

 c. Use motions and methods that minimize the dispersing of dust and debris while removing flooring.

 d. HEPA/ULPA vacuum floor after removal of flooring, adhesive and leveling of area prior to installation of new flooring.

 F. Clean-up of Class IV areas:

 1. Removal of debris from the project work areas shall be as follows:

 a. If debris shall be removed from the project site through an occupied Patient Care Area, the following procedure shall be followed:

 1) Removal of debris shall be done by the Contractor. The Contractor shall advise the Owner's Representative when there is debris to be removed. Debris shall be removed on an "as needed" basis. Transport removed material in tightly sealed, rubber tired containers provided by the Contractor to protect hospital areas. The Owner's Representative and PHE representative shall review the type of cart and condition of the cars proposed for use. Containers shall be fitted with clean, tight fitting plastic cover or polyethylene covers, completely sealed at perimeters by taping. Before leaving the Containment Area all containers shall be wiped or HEPA/ULPA vacuumed clean to prevent tracking of dust. The cart shall be rolled over the adhesive faced contamination control mats inside and outside the entrances. Place dust mats inside and outside of the construction site entrances and keep them cleaned.

 2) Place covers over debris boxes between periods when they are being filled.

 2. Cleaning Class IV Areas:

 a. Barriers may not be removed from work areas until the completed project is inspected by the Owner’s Representative and thoroughly cleaned by the Contractor.

 b. Remove all debris, extra materials and equipment from the Containment Area before beginning final cleaning.

 c. Work areas shall be vacuumed with HEPA/ULPA filtered vacuums and/or wet mopped by the Contractor.

 d. When construction is complete the temporary partitions shall be wiped down using a moist cloth or dust catching device before removal. The partitions shall be removed without creating additional dust in the area.

 e. Clean blockage of air vents, diffusers and registers, before removal. Then remove.

3.7 WORK ENCLOSURE OUTSIDE OF THE PRIMARY CONTAINMENT AREA (SECONDARY CONTAINMENT)

A. Whenever work is necessary outside of a containment area:

1. Work shall be scheduled in advance with the Owner’s Representative.

2. Contain work within a full height portable enclosure. Contractor may use prefabricated enclosure unit.

3. Seal opening upon entering or leaving enclosure.

4. At no time shall construction equipment or material be stored outside of the enclosure.

5. Dust tracked outside of construction area shall be cleaned up immediately.

6. The Contractor shall have necessary manpower and equipment (HEPA/ULPA filtered vacuum, dust and wet mops, brooms, buckets and clean wiping rags) to keep adjacent occupied areas clean at all times.

3.8 WORK CONFINED TO INDIVIDUAL ROOMS

A. Work activities which are required within a protection area which can be confined to individual rooms may be permitted as follows:

1. Scheduled in advance and notify the Owner’s Representative at least seven (7) calendar days prior to commencing work in the room to allow the Owner to relocate or protect occupants.

2. The room shall be treated as a containment area.

3. Keep the door to such areas closed and sealed while work is being performed.

4. Cap HVAC ductwork or seal air supply diffusers and return grills.

5. Provide negative pressure in the room by use of negative air machine.

6. Traffic between the room and adjacent areas shall be kept to a minimum.

7. Transport materials and waste into and from the room through adjacent areas by transporting in tightly covered and sealed containers or carts.

8. At no time shall construction equipment or material be stored outside the room.

9. All dust tracked outside of the room shall be cleaned up immediately.

10. Vacuum and clean surfaces free of dust after completion of the Work.

11. Have necessary manpower and equipment (HEPA/ULPA filtered vacuum, walk off mats, dust and wet mops, buckets and clean wiping rags) to keep adjacent areas clean at all times.

**END OF SECTION 01 35 33**

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