



CONSTRUCTION, RENOVATION, AND MAINTENANCE INFECTION CONTROL PROGRAM	Policy Number: III-14
Infection Prevention Manual	Effective: July 2019

PURPOSE

To minimize the risk for acquisition of healthcare associated infections (HAIs) to patients that may result when fungi or bacteria are dispersed into the air via dust or water aerosolization during construction, renovation, or maintenance activities in or near the Penn State Health Milton S. Hershey Medical Center complex.

POLICY STATEMENT

Construction, renovation, and maintenance activities have become common in health care facilities to support continuous change and advances in the delivery of medical care. PSHMC must remain occupied and continue to provide care during these activities.

This policy outlines PSHMC's program for prevention of HAIs associated with these activities. The Infection Prevention (IP) and Facilities Departments, Project Managers, and Contractors are responsible to integrate the infection prevention and control principles in this policy throughout the planning, managing, and completion of each project. This process is identified as the Infection Control Risk Assessment (ICRA).

There will be a multidisciplinary, collaborative process for ICRA development. Facilities and IP will have continuous involvement in the assessment, revision, monitoring, and compliance with the ICRA.

This policy applies to all PSHMC-owned buildings. This policy will be used as a guideline in Penn State College of Medicine (PSCOM) buildings and PSHMC leased clinics. Depending on the proximity to critical areas of PSHMC, this policy may be required in PSCOM buildings. This determination will be made by Facilities and IP.

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I. GENERAL DEFINITIONS

- A. Contractor: For the purposes of this policy “Contractor” is defined as the General Contractor, Prime Contractor, Sub Contractor, Tradesmen, Mechanics, Apprentices, Laborers, and Original Equipment Manufacturer Technicians, and includes PSHMC employees performing these tasks, et. al.
- B. Cleaning Company (CC): A company or division that can demonstrate competence and experience cleaning in an institutional environment, preferably healthcare. The CC services may be arranged by the Contractor or PSHMC.
- C. Facilities Department: The Facilities at PSHMC. This includes the appropriate division; Maintenance, Operations, Planning and Construction, and Safety.
- D. Infection Prevention (IP): PSHMC’s Infection Prevention Department or their designee.
- E. Infection Control Risk Assessment (ICRA): The process of determining the potential risk of transmission of various air and waterborne biological contaminants in the facility during construction, renovation, and maintenance activities. This will be a multidisciplinary, collaborative process that evaluates Construction Activities Types and Risk Groups to determine a Classification Level. See [TABLE 1: Construction Activity TYPE Definition Guideline Grid](#), [TABLE 2: Risk Group Grid](#), [TABLE 3: ICRA Classification Level Grid](#)
- F. Infection Control Risk Mitigation Recommendations (ICRMR): The ICRMR is a tool used to identify Construction Activity Types, Risk Groups, and the resulting ICRA Classification (Level I – IV). It also identifies other infection control issues and requirements. The ICRMR form is to be completed for all new construction and major renovation of patient rooms, and patient exam or treatment rooms. Refer to [Appendix C](#).
- G. ICRA Teams: The Primary ICRA Team includes IP and the Project Manager and if identified, the Contractor and User group. The Ad Hoc ICRA Team members may include the Design Professionals, Safety Department representatives, PSHMC Facilities Maintenance and Operations, Health Physics, Risk Management, Epidemiology, extended user group members, and others.
- H. ICRA Work Permit: The ICRA Work Permit is the form used to communicate the required infection control interventions. It identifies the Construction Activity Type, the Risk Group, and the resulting ICRA Classification (Level I – IV). Refer to [Appendix A](#).
- I. Owner: The Penn State Health Milton S. Hershey Medical Center/Penn State College of Medicine.
- J. Project Manager (PM): For the purposes of this policy “Project Manager” is defined as the individual responsible for oversight of the project construction, renovation, or maintenance activity. This may include the Facilities Project Manager, Contracted Project Manager, Consulting Project Manager, Facilities Associate Director, Facilities Project

Coordinator, Facilities Maintenance Supervisor, Facilities Operations Supervisor, PSHMC Information Technology (IT) Cabling Manager/Supervisor, et. al.

II. DEFINITIONS OF CONSTRUCTION ACTIVITY TYPE

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

Contact Facilities or IP if any activity is questionable under these guidelines.

TABLE 1: Construction Activity TYPE Definition Guideline Grid

Type A	<p>Inspection and non-invasive activities Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Opening of a single ceiling tile for visual inspection or tile replacement. • Painting (but not sanding) • Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection
Type B	<p>Small scale, short duration activities which create minimal dust Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Opening of no more than one ceiling tile per 10 tiles • Installation of telephone and computer cabling • Access to mechanical chase or shaft spaces • Cutting of walls or ceiling where dust migration can be controlled • Minor renovation of existing space • Wet sanding of walls
Type C	<p>Work that generates a moderate to high level of dust Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Dry sanding of walls • Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework) • Wall demolition or new wall construction • Minor duct work, plumbing work, or electrical work above ceilings (not including <u>system</u> demolition or installation) • Moderate renovation of existing space • Major cabling pulling activities, multiple rooms/lines where multiple access points are needed • Any activity which requires construction of a barrier that does not qualify as Type D
Type D	<p>Major demolition and major construction projects Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Activities which require the closure of a unit/wing or relocation of an entire patient area • Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system • Demolition of major fixed building components, assemblies, fit-out elements, or structural elements • New construction located in close proximity (as determined by the Primary ICRA team) of the hospital building • Outdoor construction of new structures located in close proximity (as determined by the Primary ICRA team) to existing patient care facility • Excavation activities within close proximity (as determined by the Primary ICRA team) of hospital building

III. DEFINITIONS OF INFECTION CONTROL RISK GROUPS

Determine the Risk Group using Table 2

The Risk Groups have been classified by IP. Contact IP if a group is not identified.

TABLE 2: Risk Group Grid

Low Risk	Medium Risk	High Risk	Highest Risk
<ul style="list-style-type: none"> • College mechanical spaces • College of Medicine labs (including BL3 Labs; CG6727 and CG6765) • College of Medicine areas not directly adjacent to patient care areas. See Note 1 • Office areas not attached to or adjoining patient care areas or used for patient interviews, exams, or evaluations • Public corridors and spaces not on or directly attached to patient units or treatment locations. <p>Examples: COM Crescent ASB offices BMR offices Basic Science Exterior grounds Hospital & Clinics' mechanical spaces</p>	<ul style="list-style-type: none"> • Admissions • Cardiac Rehab • Clinical Laboratories, (except Microbiology and Virology) • DME Room - Dirty • Echocardiography • Main Kitchen • Neurophysiology • Off site outpatient clinics • Orthotics/Prosthetics • Outpatient Rehab • Physical Therapy • Preadmissions • 30 and 35 Hope Drive office areas. See Note 2 • UPC-I and UPC-II clinics not listed under "High" or "Highest" risk groups • Patient care areas not listed under "High" or "Highest" 	<ul style="list-style-type: none"> • Apheresis Lab • Blood Bank • Breast Center/Clinic • Cafeteria • Central Processing - Dirty • Clin Labs Microbiology Lab • Clin Labs Virology Lab • DME Room –Clean • Emergency Department • HVOC • Lab collection areas • Labor & Delivery • Laundry Storage CG633 • Newborn Nursery • Nuclear Medicine • Outpatient Surgery • Orthopaedics • Pharmacy – locations that do not prepare intravenous meds • PACU • Postpartum • Pulmonary Care • Radiology/MRI/CT/ Ultrasound • Respiratory Care • Same Day Unit • Supply & Distribution • 30 & 35 Hope Drive patient treatment areas • UPC-I ENT clinic 	<ul style="list-style-type: none"> • Bronchoscopy Lab • Cancer Institute • CVOU • Central Processing - Clean • C-Section Rooms • Cardiac Cath/EP Lab • Dialysis Center • Endoscopy • Fertility processing • Fertility procedure • GYN/ONC • HVPCU, HVICU, HVIMCU, HVOU • Interventional Radiology • MICU, MIMCU • NICU • NSICU • Pediatric Heme/Onc • Pediatric Acute Care • PICU, PIMCU • Pharmacy – locations that prepare intravenous meds • PSCI • Radiation Therapy • SAICU, SIMCU • Surgery/OR • Sterile Processing • UPC-II Pediatric Clinic • UPC-II Pulmonary Function • UPC-II Plastics Clinic • UPC-II Surgical Specialties • 3 SAW • 3MBS, 3MBE*, 3MBW • 4MBS, 4MBE, 4MBW • 5MBS, 5MBE, 5MBW • 6MBS, 6MBE, 6MBW • 7MBN, 7MBS, 7MBE, 7MBW

*Key: "3MBE": 3rd floor, Main Building, East Wing

Note 1: "College of Medicine areas directly adjacent to patient areas" will be evaluated considering the adjacent Infection Control Risk Group.

Note 2: 30 Hope Drive is the building that was new in 2008. 35 Hope Drive was formerly referred to as 'Cherry Drive clinics'.

IV. INFECTION CONTROL RISK ASSESSMENT INTERVENTION MATRIX

Use the criteria identified in Table 1 (Construction Type) and Table 2 (Risk Group) In Table 3 to identify the ICRA Classification Level.

TABLE 3: ICRA Classification Level Grid

CONSTRUCTION ACTIVITY→	TYPE A	TYPE B	TYPE C	TYPE D
RISK GROUP ↓	ICRA Level↓:	ICRA Level↓:	ICRA Level↓:	ICRA Level↓:
Low Risk	I	II	II	III or IV
Medium Risk	I	II	III	IV
High Risk	I	III	III or IV	IV
Highest Risk	III	III or IV	III or IV	IV

V. PERFORMANCE REQUIREMENTS

- A. Infection control is critical in all areas of the facility. Construction, renovation, and maintenance activities causing disturbance of existing dust, or creating new dust, must be conducted in tight enclosures to prevent any flow of particles into patient areas.
- B. The Owner requires all Contractors to be bound by the requirements of this policy. Before any construction, renovation, or maintenance activities begin, the contractor’s on-site management team shall attend a meeting held by the PM for reviewing infection control precautions and rationale and Owner rules and regulations. Contractors who perform their work exclusively outside (e.g., landscape contractors, snow removal contractors, etc.) are exempt from this requirement.
- C. Facilities or IP may modify performance requirements and ICRA forms as required or as conditions warrant. These modifications may not negate the intent of this policy.

VI. SUBMITTALS

- A. The Contractor will provide the PM or IP with a list of product data for products used in the ICRA Program if different from what is identified in this policy.
- B. Policy III-14 will be identified in the Owners bid documents, under Section F, General Conduct of the Work and Special Requirements, to ensure all bidders are aware of the requirements of this policy.

VII. PRODUCTS AND MATERIALS

- A. Barrier types: Fire retardant polyethylene, usually 6-mil thickness, gypsum wall board, fire rated fiberglass reinforced plastic (similar to Fire-X Glassboard), plywood and Masonite (must be painted with fire resistant paint (Flame Control Coatings, #320A or similar) prior to entering the building), and/or other fire resistive materials as specified in the ICRA Work Permit.
- B. Bleach: A water based disinfectant with the active ingredient sodium hypochlorite. Solution strength normally 1 part bleach in 10 parts water (1 $\frac{3}{4}$ cups of bleach in one gallon of water). Must be made fresh every 24 hours. Commercially prepared products similar to 'Clorox Clean-Up' solution has an extended shelf life and may be used if within the expiration date. Refer to the container for the expiration date.
- C. Carpet Vacuum: Nobles Ultra-glide 18" w/ dual motors and HEPA filters, or an equivalent commercial grade carpet vacuum cleaner. An equivalent vacuum must have HEPA filters.
- D. Control Cube Portable Ceiling Access Module, "Kontrol Kube Mobile Containment Solution" with heavy duty vinyl enclosure as manufactured by Fiberlock Technologies, Inc. 150 Dascomb Road, Andover MA 01010 or similar.
- E. Door types: Solid core wood door in wood or metal frame, metal door in metal frame, zipper door in polyethylene, or an overlapped polyethylene entrance as specified in the ICRA Work Permit. Masonite doors may be used if painted with fire resistant paint (Flame Control Coatings, #320A or similar) prior to entering the building.
- F. Exhaust Hoses: Heavy duty, flexible steel reinforced; Ventilation Blower Hose, WPG as manufactured by Federal Hose Mtg. Co Painsville, OH 44077 or similar.
- G. HEPA Vacuum: A 'shop style' vacuum with a HEPA filter cartridge filter at 99.97% filtration @ 0.5 microns, similar to Dayton part # 4TB93. This filter shall be used in conjunction with a dust collection pre-filter bag for fine particles and dust, similar to Dayton part # 1UG85.
- H. Negative Air Machine: HEPA filter equipped negative air machines that provide roughing filters, primary filters, and HEPA final filters, with a rating of 200 to 2000 cubic feet per minute (CFM). HEPA filters to be a minimum of 99.97% efficient. The HEPA filter will be factory scan tested and factory accepted after manufacture. Scan testing should be in accordance with Section 6.2 of IEST-RP-CC034.1 Type C. No leaks greater than 0.01 of the upstream concentration at rated capacity of 2,000 CFM. Initial clean resistance shall be no more than 1.35" W. C. @ 2,000 CFM (for 2000 CFM machines). Supplier: Airborne Contamination Identification Associates, Abatement Technologies, or similar.
- I. Negative Air Fan: A high air flow, high static pressure, unfiltered, smoke ejector style fans. Model: SuperVac P164S, 16" Smoke Ejector Fan, or similar.
- J. Walk-Off Mats (adhesive): Provide minimum size mats of 18 inches x 24 inches as manufactured by 3M, St. Paul, MN 55144 or similar.
- K. Walk-Off Mats (other): Carpet, carpet squares, etc. moistened with bleach solution used to prevent premature loading of the adhesive walk off mats and the tracking of dust from the work zone.

VIII. BARRIERS AND DOORS

- A. An existing door may be acceptable as the ICRA barrier for work projects which can be contained in the room. This will be based on the existing room construction, construction activity type, and risk group.
- B. Barriers that may be specified:
 - 1. A polyethylene barrier, with an overlapping entrance flap or zipper, may be placed between the door and the construction site.
 - 2. An anteroom immediately outside the work zone entrance.
 - 3. Barriers may be required to contain the ceiling envelope, chases, interstitial spaces, etc.
 - 4. Other barrier methods as determined during the ICRA process.
- C. Plastic barriers may be adhered to metal studs using spray adhesive, double face tape, sheet metal screws, etc.
- D. Drywall barriers will have the joints and screws covered or sealed.
- E. Overlapping polyethylene flaps that are used as the entrance to the work site must overlap a minimum of 2 feet.
- F. If a hinged door is used for the barrier entrance, a large (2000 CFM) negative air machine shall be used to ensure 100 feet per minute of air flow into the work zone with the door open. This requirement may be modified for very small rooms or if overlapped polyethylene is used in conjunction with the hinged door.
- G. Anterooms (double entrance openings) may be required. Anterooms serve as an airlock and PPE donning area. The air lock function requires that only one door be allowed open at a time. Exceptions are made for the delivery of large materials. Both doors open at one time should be minimized. The anteroom is to be kept in a clean and tidy manner. Cleaning products and materials (bleach, wipes, shop vac, mops, etc.) will be kept in the ante room.
- H. Refer to [Appendix G](#) for examples of Barrier Types
- I. Refer to [Appendix H](#) for examples of Door Types

IX. INFECTION CONTROL PROCEDURES – GENERAL

- A. Facilities and IP will be notified at the beginning of the planning or design phase of the project.
- B. To determine the ICRA requirements, the Primary ICRA Team, and as necessary the Ad Hoc ICRA Team, will review the project Scope of Work, design, surrounding locations, and the impact on utility systems. Construction Activity Type, Risk Group, and Classification Level will be assigned.
- C. The ICRA may be revised throughout all stages of the project, as conditions warrant.

- D. The Primary ICRA team is responsible for developing the ICRA and addressing non-compliance to the ICRA.
- E. Ad Hoc ICRA team members are responsible for collaborating with the Primary ICRA team when their expertise is required.
- F. The PM will evaluate every project to determine its ICRA Classification rating. The PM and IP will evaluate every Level III and Level IV project.
- G. The Facilities Maintenance and Operations employees will follow ICRA interventions for Level I and II projects on a routine basis without a formal ICRA assessment or Work Permit. For Level III and Level IV projects they must obtain an ICRA Work Permit from the PM or IP.
- H. If the negative air machine is to be exhausted into a HVAC return air or exhaust air duct, the PM, IP, and the PSHMC HVAC Department will review the installation prior to connection.
- I. The Contractor is responsible for obtaining the ICRA Work Permit prior to commencing work, to post it at the work zone entrance, and for communicating the ICRA requirements to all affected persons.
- J. Contractors are responsible for providing the manpower and equipment (including negative air machines, ICRA barrier materials, etc.) for meeting the design and intent of the ICRA requirements.
- K. Contractors are responsible for maintaining their equipment including the replacement of the HEPA and other filters as per manufacturer's recommendations and the Owner's HVAC Department HEPA filter certification program.
- L. HEPA Filter Certification program includes:
 - 1. The HEPA filter in the negative air machine will be certified upon new installation into the machine and at least semi-annually thereafter. More frequent certification may be required as determined necessary during the ICRA process.
 - 2. Certification stickers with the date of the certification shall be visible on the machine.
 - 3. The filter efficiency certification requirement may be relaxed if the machine is exhausted directly to the outside and is not within close proximity to an air intake or a public walkway.
 - 4. The negative air machine certification will be performed by the Owner's HVAC Department at no charge to the Contractor.
 - 5. The Owner's particle counter meter will certify a 99.0% reduction at the .5 micron setting on the particle counter.
 - 6. Negative air machines removed from the campus shall be recertified upon their return.
- M. Depending on the scope of work, the phase of the work, and the location of the exhaust, unfiltered negative air fans may be permitted.

- N. Contractors are responsible to ensure the ICRA barriers are maintained for the duration of the project; the doors are working and latching properly, doors are kept closed, all seams and joints are sealed, negative air is maintained, etc. The Contractor will inspect the barrier at the beginning of each work shift.
- O. When negative air pressure is required, Contractors will verify the presence of negative air, and complete the [Negative Air Pressure Verification Log \(Appendix B\)](#). This shall be done at the beginning of every work shift.
- P. The Contractor will arrange for or provide the manpower and equipment (cleaning supplies, dust mops, wet mops, brooms, buckets, bleach, etc.) for ongoing and timely (normally daily) cleaning in the work zone, ante room, and as necessary adjacent areas to prevent the accumulation of dust and debris.
- Q. Penetrations (pipe, conduit, cable, etc.) in the ICRA barrier or existing walls used as barriers are to be sealed.
- R. Barriers shall be required at elevator shafts or stairways that are within the work zone.
- S. Investigations may require the opening of ceiling tiles or access panels outside the ICRA barrier. The ceiling tile or access panels shall be replaced immediately upon completion of the investigation and when unattended. Control cubes or other interventions may be required for accessing these spaces.
- T. Work performed outside the regular ICRA barrier may be performed in a temporary barrier; a Control Cube, a polyethylene enclosure erected around the opening, or other methods approved during the ICRA determination. Upon completion of the work the area inside the barrier must be cleaned prior to removal. If a Control Cube is used it shall be vacuumed from the inside of the cube prior to opening the door zipper.
- U. If a Control Cube is required to have negative air, a certified negative air machine will be used.
- V. Negative air machines may be connected to normal or emergency power and shall run continuously. Critical areas may require the negative air machine be connected to emergency power only.
- W. Barrier effectiveness shall be monitored and barriers repaired or improved as necessary to prevent dust and debris from escaping the work zone.
- X. HVAC registers and vents within the construction area shall be capped unless specifically approved by the PM or IP. The method for capping shall be dust tight and shall withstand the static air pressure.
- Y. Cover or contain materials for transport.
- Z. Transport receptacles, carts, toolboxes, equipment, etc. are to be free of dust.
- AA. Debris removed from the work zone shall be in tightly covered containers and transported following the designated route as identified during the ICRA determination.
- BB. Contractors and materials are not to use patient transport designated elevators.

- CC. Contractors are required to be free of dust prior to exiting the work zone. If used, coveralls are to be removed in the work zone just before entering the ante room. Vacuuming of clothing may be done in the work zone or the anteroom. Booties are to be removed in the ante room.
- DD. Adhesive walk off mats shall be kept clean and changed daily or more often to remain effective. Bleach solution moistened carpets, carpet squares, etc. may be used to prevent premature loading of the adhesive mats.
- EE. The Contractor shall clean shoes, equipment, transport carts, transport cart wheels, etc. with bleach solution to prevent dust from being tracked outside the work zone.
- FF. The Contractor is required to immediately clean up any dust tracked outside of the work zone.
- GG. All vacuuming is to be done using a HEPA filtered vacuum.

X. INFECTION CONTROL RISK ASSESSMENT (ICRA) WORK PERMIT

- A. A written [ICRA Work Permit \(Appendix A\)](#) is required for Level III and Level IV work and may be required for Level II work at the discretion of IP or the PM.
- B. A written [Infection Control Risk Mitigation Plan \(ICRMR\) \(Appendix C\)](#) is required for all new construction and major renovation of patient rooms, and patient exam or treatment rooms.
- C. The ICRA Work Permit form and the listed interventions may be modified as deemed necessary.
- D. When appropriate IP will assign a permit number to the Work Permit, and then will release it to the PM.
- E. The PM will issue the Work Permit to the contractor and obtain his signature. The signed Work Permit will be placed in the Facilities project file. Upon request a copy of the signed work permit will be provided to IP.
- F. A signed copy of the ICRA Work Permit will be displayed at the job site prior to beginning work and will be displayed for the duration of the project.
- G. The PM or IP may add additional details (scope descriptions, interventions, egress designations, unique interventions necessary for a specific job, etc.) in the ‘Additional Comments or Requirements’ section.
- H. Contractors shall adhere to the interventions listed and the interventions for the previous levels, the ‘Additional Comments or Requirements’ section, and if applicable the [Supplemental Infection Control Interventions \(Appendix E\)](#).

XI. INFECTION CONTROL PROCEDURES – IMPLEMENTATION

Following is the typical sequence for the implementation of the Infection Control Procedures:

- A. The PM and User Department will arrange for the relocation of supplies, equipment, furniture, etc. from the work zone before the temporary barriers are installed.

- B. Exterior window seals and building penetrations must be assured to minimize infiltration of outside contaminants when the work zone is under negative pressure.
- C. The Contractor will install and run the negative air machine in the work zone location prior to any barrier construction.
- D. The ICRA Work Permit will indicate if a temporary polyethylene barrier is to be erected prior to the construction of the ICRA barrier and if it shall be dust tight.
- E. The Contractor will install the ICRA barrier using approved materials and following the requirements of the ICRA Work Permit.
- F. The anteroom will be constructed to maintain airflow from the clean side through the anteroom and into the work zone.
- G. The ICRA Work Permit will indicate if a negative pressure monitoring device is required. The Contractor will arrange for its installation.
- H. Upon completion of the barrier, the Contractor will verify acceptable negative pressure.

XII. INFECTION CONTROL PROCEDURES - COMPLETION

Following is the typical sequence for the completion of the Infection Control Procedures. Refer to [Appendix D](#).

The PM will verify that utility and mechanical systems are commissioned and/or functioning per specifications.

- A. Following the removal of all contractor equipment and supplies and the completion of the contractor cleaning, the contractor will flush all plumbing by turning on all fixtures for five minutes and flushing the toilets several times.
- B. Following the flushing of the plumbing, the pre-barrier removal cleaning will be performed. Pre-barrier removal cleaning includes cleaning the entire work zone, the ICRA barrier, the HVAC covers, and the outside of the negative air machine and duct.
- C. Following the pre-barrier removal cleaning, the cleaning will be inspected by IP or the PM or designee.
- D. The HVAC supply and return covers will be removed and the HVAC air restored. The supply air cover will be removed before the return air cover is removed. If this action produces any dust or dirt, the pre-barrier removal cleaning and inspection will be repeated.
- E. The removal of the ICRA barriers shall be done carefully to prevent contamination of adjacent areas.
- F. To minimize dust aerosolization during barrier removal, the polyethylene may be lightly sprayed with a bleach solution.

- G. The contractor shall roll or fold the polyethylene in on itself creating as little dust as possible.
- H. The barrier debris shall be placed in a covered or sealed container for transport.
- I. The post-barrier removal cleaning will be performed immediately following the ICRA barrier removal. This cleaning is to remove dust and debris generated during the barrier removal.
- J. The negative air machine will be removed.
- K. Any dust or dirt generated by the removal of the negative air machine will be HEPA vacuumed by the Contractor or CC.
- L. The HVAC system will be balanced.
- M. The post-barrier removal cleaning will be inspected and approved by IP or the PM or designee.
- N. **If air sampling is not required:**
 - 1. IP or the PM will notify the user group when the post-barrier removal cleaning has been approved and they may take possession of the space.
 - 2. If the space is used for patient occupancy or exam/treatment and following the installation of all furniture, durable medical equipment, and supplies, the PM or Department Manager will arrange for HMC to do the Occupancy Cleaning using the standard protocol for the user Department.
 - 3. If greater than three days has elapsed since the plumbing was flushed, all fixtures will be turned on for five minutes and toilets flushed several times.
 - 4. The Department Manager will inspect and approve the cleaning and will notify Admissions.

If air sampling is required:

- 1. After the HVAC system is running, the negative air machine is removed. Prior to the user moving any supplies, furniture, or equipment into space particle counts will be obtained by qualified personnel (e.g., consultant).
- 2. If the particle counts verify that the air supplied from the diffusers is being filtered as expected IP will close the area so that it is undisturbed overnight.
- 3. Microbial air samples and particle counts will be collected the following business day.
- 4. IP will review microbial results and particle counts and when determined to be acceptable will notify the PM that the space may be occupied.
- 5. If the space is used for patient occupancy or exam/treatment and following the installation of all furniture, durable medical equipment, and supplies, the PM or Department Manager will arrange for HMC to do the Occupancy Cleaning using the standard protocol for the Department.

6. The Department Manager will inspect and approve the cleaning and will notify Admissions.

XIII. INTERVENTIONS BY CLASSIFICATION LEVELS

Refer to [Appendix A](#)

A. Level I to Level IV Interventions

1. Level I - Infection Control Interventions:

- a. An ICRA Work Permit is not required, however the PM may complete one if desired.
- b. The PM or Contractor are responsible for identifying when Level I interventions apply per the [Tables 1, 2](#) and [3](#). If unclear, they are to consult with IP.
- c. The PM or Contractor are to verify that Level I interventions are maintained for all projects for which they are responsible.
- d. Refer to [ICRA Work Permit, Appendix A](#) for specific interventions.

2. Level II - Infection Control Interventions:

Must adhere to all Level II interventions in addition to the Level I interventions:

- a. An ICRA Work Permit is not required, however the PM may complete one if desired.
- b. The Contractor and PM are responsible for identifying when Level II interventions apply per [Tables 1, 2](#) and [3](#). If unclear, they are to consult with IP.
- c. Refer to [ICRA Work Permit, Appendix A](#) for specific interventions.

3. Level III - Infection Control Interventions:

Must adhere to all Level III interventions in addition to Level II and Level I interventions:

- a. The PM and IP are required to complete an ICRA.
- b. Refer to [ICRA Work Permit, Appendix A](#) for specific interventions.

4. Level IV - Infection Control Interventions:

Adhere to all Level IV interventions in addition to the Level III, Level II, and Level I interventions:

- a. The PM and IP are required to complete an ICRA.
- b. The PM and IP are required to complete an ICRMR for all new construction and major renovation of patient rooms and patient exam or treatment rooms.
- c. Upon completion of the major dust generating demolition/construction activities, the coveralls and shoe cover requirements may be removed.

- d. Refer to [ICRA Work Permit, Appendix A](#) for specific interventions.
- B. Additional interventions for specific highest risk locations (ORs, Sterile Processing, Bone Marrow Transplant [BMT] areas, etc.)
1. If the work takes place within an OR suite, the Contractor must adhere to the [Supplemental Infection Control Interventions \(Appendix E\)](#). The Supplemental Infection Control Interventions may be applied to other highest risk areas (Sterile Processing, Bone Marrow Transplant, etc.) as determined necessary by the Primary ICRA Team.
 2. All tools, equipment, ladders, carts, etc. brought into these areas must be pre-cleaned by wiping with a disinfectant cloth (hospital approved sani-wipes or bleach solution) until they are dust and dirt free.
 3. Contractors will change into scrub suits if working in the OR Suite or Sterile Processing.
 4. All work to be done within these locations must be scheduled by the PM with the Nurse Manager or their designee.
 5. All work done above ceilings or work that creates any dust or water aerosolization must be done within a containment or Control Cube utilizing a certified HEPA negative air machine.

XIV. ENVIRONMENTAL MONITORING

- A. PM, Safety Department, and/or IP will determine when air sampling is necessary. This will be noted on the ICRA Work Permit.
- B. The ICRA Work Permit will indicate if a negative air pressure continuous recording device (chart recorder) or other visual indicator is required. The Contractor will document the visual confirmation of negative pressure on the [Negative Air Pressure Verification Log \(Appendix B\)](#).
- C. The Owner may choose to monitor air quality throughout the project.
- D. The PM or Contractor may be required to complete the daily checklist "[Daily Construction - Infection Control Interventions Compliance Monitor](#)" (Appendix F).

XV. COMMISSIONING

- A. Commissioning is a quality process used to achieve, validate, and document that facilities and component infrastructure systems are planned, constructed, installed, tested, and are capable of being operated and maintained in conformity with the design intent or performance expectations.
- B. Acceptance criteria for mechanical systems shall be specified in the Design Specification.
- C. Crucial ventilation specifications for air balance and filtration shall be verified before owner acceptance.
- D. Areas requiring special ventilation (such as surgical services, protective environments, airborne infection isolation rooms, laboratories, and local exhaust systems for hazardous agents) shall be

recognized as requiring mechanical systems that ensure infection control. Ventilation deficiencies shall not be accepted.

- E. Acceptance criteria for local exhaust systems dealing with hazardous agents shall be specified and verified.
- F. Refer to Facilities Guidelines Institute (FGI). 2010. *Guidelines for Design and Construction of Health Care Facilities*. Chicago, IL: ASHE (American Society for Healthcare Engineering of the American Hospital Association). Section - Planning, Design, and Construction/Commissioning.

XVI. FACILITIES DEPARTMENT AND CONTRACTOR INFECTION CONTROL EDUCATION

- A. All Contractors and PMs shall attend ICRA training. Contractors who perform their work exclusively outside (e.g., landscape contractors, snow removal contractors, etc.) are exempt from this requirement. The PM for these exempt contractors must make them aware that they are not to enter the building with soiled clothing or shoes.
- B. ICRA education shall be performed prior to the individual beginning work.
- C. Contractors performing very short term or emergency work may be excused from the training requirement. These untrained contractors shall be escorted by an ICRA trained person. The escort then assumes the responsibility that the untrained Contractor follows all provisions of the policy. Approval for using non-ICRA trained contractors must be approved by the PM.
- D. The education session will be offered in lecture format or by an IP approved recorded presentation.
- E. Contractors who complete the training will receive a certification sticker or card. This sticker/card will be valid for one year. It must be carried by the Contractor while on site.
- F. This education shall be repeated annually.
- G. A written test will be administered to ensure the pertinent points have been learned. Examples:
 - 1. Why dust control is important.
 - 2. Types of work that will generate dust.
 - 3. Interventions used to reduce the spread of dust and the aerosolization of water.
 - 4. Define "ICRA".
 - 5. Identify where the ICRA Work Permit will be posted.
 - 6. List four classification levels of infection control interventions.
 - 7. Identify on a sample ICRA Work Permit the intervention level of the project and where to find the specific interventions they are to follow.

XVII. ENFORCEMENT

- A. The PM, IP, and Facilities Department will ensure compliance with this policy. They have the authority to stop all work if there is immediate risk to patients, staff, or the public.
- B. Individuals without a valid training sticker/card may be asked to leave the facility.
- C. The Daily Construction – [ICRA Compliance Monitor form \(Appendix F\)](#) may be used to document inspections of the ICRA barriers and the work zone.
- D. Non-compliance will be addressed immediately through verbal communication and later through written documentation. The details of the infraction will be sent to the PM, IP, and the Facilities Department and will be placed in the project file. Infractions will be reviewed and discussed at project and construction meetings.
- E. Violations of this policy may affect the status as a qualified contractor for bidding future work.
- F. The PM will notify the appropriate Associate Director of Facilities if the contractor has repeated infractions.

XVIII. WATER INCURSION GUIDELINES

- A. Refer to [Facilities Policy # 40-16, "Water Incursion Check List Procedure"](#)

XIX. REFERENCES

Facilities Guidelines Institute (FGI). 2010. *Guidelines for Design and Construction of Health Care Facilities*. Chicago, IL: ASHE (American Society for Healthcare Engineering of the American Hospital Association. Section - Planning, Design, and Construction/Commissioning.

[CDC Guidelines for Environmental Infection Control in Health-Care Facilities, 2003.](#)

APPROVALS

	Name	Title	Date
Authorized:	Cynthia Whitener, MD	Chair, Infection Control Committee, Hospital Epidemiologist	07/30/2019
Approved:	Patty Hnatuck, MT(ASCP), CIC, FAPIC	Infection Prevention Coordinator	07/30/2019

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revised: 08/09

revised: 09/11

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Associate Director of Facilities Maintenance

Director of Safety

APPENDIX A of CONSTRUCTION, RENOVATION, AND MAINTENANCE INFECTION CONTROL PROGRAM

Infection Control Risk Assessment WORK PERMIT																																			
Permit #:		Prepared by:		Telephone:																															
Project # and Location:			Project Start Date:																																
Project Manager & Telephone:			Estimated Duration:																																
Contractor Performing work:			Permit Expiration Date:																																
Contractor Supervisor & Cell Phone:																																			
YES	RISK Level	YES	Construction Activity TYPE																																
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	Medium Risk Area		TYPE B: Small scale, short duration, minimal levels of dust																																
	High Risk Area		TYPE C: Activity generates moderate to high levels of dust.																																
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	ICRA containment Barrier type:
	ICRA containment Door type:
	Ante-room (yes/no):
	Size of HEPA negative air machine and to where it will be exhausted:
	Will a continuous read negative air pressure monitor (chart recorder) be used?

All Infection Control Interventions for the assigned classification levels will be implemented in addition to the previous interventions.

LEVEL I	<ol style="list-style-type: none"> Execute work by methods to minimize raising dust from construction operations. Immediately replace any ceiling tile displaced for visual inspection. 	<ol style="list-style-type: none"> All policies & procedures for renovation/construction/maintenance will be followed. Contractor is educated before the start of the project about the importance of adhering to Infection Control measures. When complete immediately clean up any dirt or debris.
LEVEL II	<ol style="list-style-type: none"> Provide active means to prevent air-borne dust from dispersing into atmosphere, which may include the use of a Control Cube. Water mist work surfaces to control dust while cutting. Seal unused doors with masking tape. Block off and seal air vents. Doors and windows within the work zone to remain closed at all times except during ingress/egress. 	<ol style="list-style-type: none"> Place adhesive mat at entrance and exit of work area as necessary. Cover transport receptacles or carts. Contain construction waste before transport in tightly covered containers. Use designated removal route/elevators for removal of debris. Wet mop and/or vacuum with HEPA filtered vacuum at end of job or end of work shift. Area to be free of dust and or debris.
LEVEL III	<ol style="list-style-type: none"> Isolate HVAC system in area where work is being done to prevent contamination of duct system. Maintain until barrier is removed at completion of project. Designate entry and exit traffic pattern, unauthorized personnel are not permitted to enter work zone, traffic control signs placed. Complete all critical barriers or implement control cube method before construction begins. Will stay in place until IC or PM authorizes removal. Maintain negative pressure within work site and utilize HEPA equipped negative air machines. Both will be maintained until project & terminal cleaning are completed and IC authorizes removal. Air pressure to be monitored & documented at least daily. Adhesive mats placed at all entrances & exists of work area. 	<ol style="list-style-type: none"> The contractor will maintain the construction zone in a clean manner. The area will be hepa-vacuumed or damp mopped daily or more often as necessary to minimize dust. Daily cleanup of debris, material and waste shall be completed. Adhesive mats monitored & changed on a regular basis so that they remain effective. Any dust or construction debris tracked outside of the work area will be promptly cleaned. Terminal cleaning will be performed following protocol. The terminal cleaning will be inspected by the Owner prior to the authorization for the barrier removal. Air samples may be performed following IC/Safety protocol. Barriers will be removed carefully to minimize spreading of construction dust and debris.
LEVEL IV	<ol style="list-style-type: none"> Seal all holes, pipes and conduits penetrations in work area. Construct anteroom for staging of equipment & donning of coveralls. Workers will wear coveralls in work area. Upon completion of major dust generating activities, coverall requirement is removed. Coveralls are removed in work zone before entering anteroom. Any residual dust left on workers shall be removed by vacuum. Shoe covers will be worn by workers and removed in the ante room when exiting area. 	<ol style="list-style-type: none"> All renovation, construction, maintenance & tool carts leaving area must be covered & the wheels wiped down with a bleach solution. Environmental Health Service (EHS) or a contract cleaner will vacuum or damp mop the area outside the work zone and adjacent areas.

ADDITIONAL COMMENTS OR REQUIREMENTS:

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Work Permit released and authorized by:	Date:
Issued to Project Manager:	Date:
Issued to Contractor (print name and signature)	Date:

APPENDIX B of
CONSTRUCTION, RENOVATION, AND MAINTENANCE
INFECTION CONTROL PROGRAM

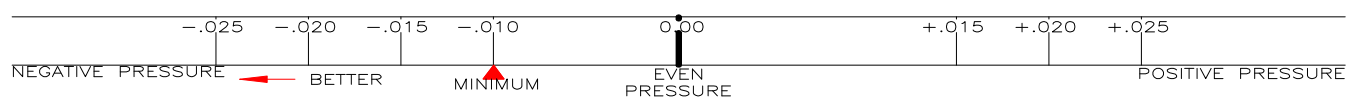
NEGATIVE AIR PRESSURE VERIFICATION LOG

Project Number: _____ Location: _____

Date	Time	Signature of persons who verified the work zone under negative pressure and ICRA Barrier is in good repair		If repairs were necessary, record here the action taken and the name of the person who made the repairs	
		Contractor, prior to start of each work shift	Project Manager, Safety, Infection Prevention	Action	Name

The Project Manager is responsible to have the completed logs retrieved from the work zone and filed in the HMC Project file.
 Typical setup of the chart recorder: The chart recorder is in the clean (positive pressure) area with the sensor tube in the construction (negative pressure) area. The sensor tube is to be connected to the top (+ High) port on the chart recorder. The chart should be indicating negative pressure.
 The work zone negative pressure to surrounding locations shall be at least $-.010''$ W.C.

Pressure relationship illustration:



APPENDIX C of
CONSTRUCTION, RENOVATION, AND MAINTENANCE
INFECTION CONTROL PROGRAM

Penn State Health Milton S. Hershey Medical Center
Infection Control Risk Assessment Matrix (ICRA) and
Infection Control Risk Mitigation Recommendations (ICRMR)

Project #: _____

ICRMR #: _____

Date: _____

Brief description of project scope:

Step One:

Indicate the Construction Project Activity **TYPE**:

Type A	<p>Inspection and non-invasive activities Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Opening of a single ceiling tile for visual inspection or tile replacement. • Painting (but not sanding) • Wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection
Type B	<p>Small scale, short duration activities which create minimal dust Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Opening of no more than one ceiling tile per 10 tiles • Installation of telephone and computer cabling • Access to mechanical chase or shaft spaces • Cutting of walls or ceiling where dust migration can be controlled • Minor renovation of existing space • Wet sanding of walls
Type C	<p>Work that generates a moderate to high level of dust Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Dry sanding of walls • Cutting of walls, removal of drywall or building finish components where work is limited to one room or suite (including removal of floor coverings, ceiling tiles, and casework) • Wall demolition or new wall construction • Minor duct work, plumbing work, or electrical work above ceilings (not including <u>system</u> demolition or installation) • Moderate renovation of existing space • Major cabling pulling activities, multiple rooms/lines where multiple access points are needed • Any activity which requires construction of a barrier that does not qualify as Type D
Type D	<p>Major demolition and major construction projects Includes, but is not limited to:</p> <ul style="list-style-type: none"> • Activities which require the closure of a unit/wing or relocation of an entire patient area • Demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system • Demolition of major fixed building components, assemblies, fit-out elements, or structural elements • New construction located in close proximity (as determined by the Primary ICRA team) of the hospital building • Outdoor construction of new structures located in close proximity (as determined by the Primary ICRA team) to existing patient care facility • Excavation activities within close proximity (as determined by the Primary ICRA team) of hospital building

Step Two:

Indicate the **Risk level** for the job location. If more than one risk level is identified, select the higher risk level:

Low Risk	Medium Risk	High Risk	Highest Risk
<ul style="list-style-type: none"> • College mechanical spaces • College of Medicine labs (including BL3 Labs; CG6727 and CG6765) • College of Medicine areas not directly adjacent to patient care areas. See Note 1 • Office areas not attached to or adjoining patient care areas or used for patient interviews, exams, or evaluations • Public corridors and spaces not on or directly attached to patient units or treatment locations. <p>Examples: COM Crescent ASB offices BMR offices Basic Science Exterior grounds Hospital & Clinics' mechanical spaces</p>	<ul style="list-style-type: none"> • Admissions • Cardiac Rehab • Clinical Laboratories, (except Microbiology and Virology) • DME Room - Dirty • Echocardiography • Main Kitchen • Neurophysiology • Off site outpatient clinics • Orthotics/Prosthetics • Outpatient Rehab • Physical Therapy • Preadmissions • 30 and 35 Hope Drive office areas. See Note 2 • UPC-I and UPC-II clinics not listed under "High" or "Highest" risk groups • Patient care areas not listed under "High" or Highest" 	<ul style="list-style-type: none"> • Apheresis Lab • Blood Bank • Breast Center/Clinic • Cafeteria • Central Processing - Dirty • Clin Labs Microbiology Lab • Clin Labs Virology Lab • DME Room –Clean • Emergency Department • HVOC • Lab collection areas • Labor & Delivery • Laundry Storage CG633 • Newborn Nursery • Nuclear Medicine • Outpatient Surgery • Orthopaedics • Pharmacy – locations that do not prepare intravenous meds • PACU • Postpartum • Pulmonary Care • Radiology/MRI/CT/ Ultrasound • Respiratory Care • Same Day Unit • Supply & Distribution • 30 & 35 Hope Drive patient treatment areas • UPC-I ENT clinic 	<ul style="list-style-type: none"> • Bronchoscopy Lab • Cancer Institute • CVOU • Central Processing - Clean • C-Section Rooms • Cardiac Cath/EP Lab • Dialysis Center • Endoscopy • Fertility processing • Fertility procedure • GYN/ONC • HVPCU, HVICU, HVIMCU, HVOU • Interventional Radiology • MICU, MIMCU • NICU • NSICU • Pediatric Hem/Onc • Pediatric Acute Care • PICU, PIMCU • Pharmacy – locations that prepare intravenous meds • PSCI • Radiation Therapy • SAICU, SIMCU • Surgery/OR • Sterile Processing • UPC-II Pediatric Clinic • UPC-II Pulmonary Function • UPC-II Plastics Clinic • UPC-II Surgical Specialties • 3SAW • 3MBS, 3MBE*, 3MBW • 4MBS, 4MBE, 4MBW • 5MBS, 5MBE, 5MBW • 6MBS, 6MBE, 6MBW • 7MBN, 7MBS, 7MBE, 7MBW

*Key: "3MBE": 3rd floor, Main Building, East Wing

Note 1: "College of Medicine areas directly adjacent to patient areas" will be evaluated considering the adjacent Infection Control Risk Group.

Note 2: 30 Hope Drive is the building that was new in 2008. 35 Hope Drive was formerly referred to as 'Cherry Drive clinics'

Step Three:

Match the Risk Group and the Construction Type to identify the ICRA Classification Level. Indicate the ICRA Level.

CONSTRUCTION ACTIVITY→	TYPE A	TYPE B	TYPE C	TYPE D
RISK GROUP ↓	ICRA Level↓:	ICRA Level↓:	ICRA Level↓:	ICRA Level↓:
Low Risk	I	II	II	III or IV
Medium Risk	I	II	III	IV
High Risk	I	III	III or IV	IV
Highest Risk	III	III or IV	III or IV	IV

Step Four:

Identify the areas surrounding the project area and the risk level for that location.
If more than one risk level is identified, select the higher risk level.

<i>Unit Below</i>	<i>Unit Above</i>	<i>Lateral</i>	<i>Lateral</i>	<i>Behind</i>	<i>Front</i>
<i>Risk Group:</i>	<i>Risk Group:</i>	<i>Risk Group:</i>	<i>Risk Group:</i>	<i>Risk Group:</i>	<i>Risk Group</i>

Step Five:

Identify the specific site of activity eg. patient room, corridor, medication room.

Step Six:

Identify issues related to HVAC, plumbing, and electrical in terms of the probability of unplanned outages that will impact patient care.

Step Seven:

Water Incursion: Indicate potential risk of water damage outside construction zone:

Step Eight:

Identify ICRA containment measures:

Wall type:

Ante-room (yes/no):

Door Type:

Size of HEPA negative air machine:

Will a continuous read negative air pressure monitor (chart recorder) be used?

Frequency of manual verifications and documentation of negative air:

HVAC. Describe local or system isolation of work site:

If temporary ventilation or humidification is necessary, how will this be accomplished:

Step Nine:

Work Hours: Will the work be done during non-patient care hours?

What shifts will the majority of the work be done?

Step Ten:

Has Infection Control been consulted on the design as it relates to:

Clean and Soiled Utility rooms:

Hand washing sinks:

Support services space:

Isolation (positive pressure) rooms:

Negative pressure rooms:

Wall and floor coverings:

Ceiling type:

Step Eleven:

Other construction and containment issues to be discussed with the construction team:

Maintenance of barriers during project:

Maintaining a clean job site daily:

Only HEPA filtered 'shop style' vacuums may be used:

Proper cleaning and removal of barriers at completion of project:

Cleaning protocol:

Commissioning Protocol:

APPENDIX D of
CONSTRUCTION, RENOVATION, AND MAINTENANCE
INFECTION CONTROL PROGRAM

**Cleaning Specifications for PSHMC
Post Construction, Renovation Cleaning**

- A. Responsibility: The Contractor will arrange for post construction/renovation cleaning, utilizing a professional Cleaning Company (CC) who can demonstrate competence and experience cleaning in an institutional environment, preferably healthcare.
- B. Scope of Work: The CC will furnish labor and supplies for cleaning services for construction and renovation projects. It is expected that the CC will use only those workers who have demonstrated competence and have experience cleaning in an institutional environment, preferably healthcare.
- C. HMC Policies: all CC workers will be required to adhere to applicable hospital policies including not working at PSHMC while ill (refer to Hospital policy HR-22HAM and Infection Control policy VI-2). This is to be enforced by the management of the CC.
- D. Cleaning Requirements: Provide a Two Step Clean:
 - 1. **Pre Barrier Removal Cleaning:**
 - a. Clean inside the project area with the barrier in position. First, HEPA vacuuming of all horizontal and vertical surfaces, including the barrier and the inside of the metal studs and track. If work was performed above an existing suspended ceiling, vacuum the top of the ceiling tiles. Second, completely clean the inside of the barrier – all dust, dirt, debris, and grime must be cleaned from all surfaces located within the project area.
 - b. Clean the covers that are isolating the HVAC system.
 - c. Clean the outside of the negative air machine and its exhaust duct.
 - d. Clean all flooring and apply floor finishes as prescribed by the manufacturer of the product and/or HMC EHS department.
 - e. The pre-barrier removal cleaning will be inspected and approved by IP or the PM
 - f. Remove the covers from the HVAC system and restore the HVAC air. If this action produces any dust or dirt, the pre-barrier removal cleaning and inspection will be repeated.

g. IP or the PM will give approval for the removal of the ICRA barrier.

2. **Post Barrier Removal Cleaning:**

- a. Prior to removal of the barrier, the Contractor may lightly mist the barrier with bleach solution to prevent residual dust from aerosolizing during the barrier removal.
- b. The Contractor will remove the barrier. The Post Barrier Removal Cleaning will be completed to remove any dirt generated when the barrier was removed. This includes all surfaces in the same room, the location of the barrier, and/or other affected areas. Additionally, if dust has resettled on horizontal surfaces, these surfaces shall be re-cleaned.
- c. Once the Post Barrier Removal Cleaning is complete the Contractor will remove the negative air machine.
- d. The Contractor is responsible to HEPA vacuum any dust or debris generated by removal of the negative air machine.
- e. The post-barrier removal cleaning will be inspected and approved by IP or the PM

E. Steps, Perform in Sequence:

1. Pre barrier removal: HEPA vacuum all horizontal and vertical surfaces. This is to remove the construction dust and debris. During this step no dry sweeping, dry mopping, or dry dusting may occur.
2. All surfaces including walls, lights, trim, cove base etc. must be cleaned of dust, grime, etc. using a general cleaning agent. Cleaning solutions must be changed frequently so that the solution does not leave a film when it dries (due to an overburden of dust and dirt in the solution).
3. All surfaces will be wiped again with a cleaner/disinfectant and allowed to air dry so the disinfectant has the required time to be effective. Cleaning solutions must be changed frequently so that the solution does not leave a film when it dries (due to an overburden of dust and dirt in the solution). (Both the second and third step may be done using the same cleaner/disinfectant product).
4. Clean and finish all flooring using manufacturer and HMC recommended products.

F. Specific Cleaning Expectations: When complete, all surfaces should have a “white glove” finish.

1. Clean all ceiling, lights, and ceiling diffusers and grills

2. Clean all walls, from top to bottom, including vents, trim, recessed spaces and other detail in walls, and built-in cabinets.
3. Clean the blinds and windows.
4. Clean the inside all cabinets and drawers.
5. Clean all horizontal surfaces (equipment, TV, computers, phones, furniture, desks, countertops, ledges, sills, hand or guard rails, door jambs, handles, crevices, etc.).
6. Clean all cove base, floor tile, sheet vinyl, and carpet.
7. Clean bathroom in sequence going from toilet, to shower/tub, to sink, to floor.
8. Clean shower/tub using friction to remove all visible stains, grime, rust, and soap scum.

G. Cleaning Products:

1. All cleaning products are to be the same as used by HMC's Environmental Health Services Department. Products must also be of the same product type as specified by the original equipment manufacturer.
2. Contact the EHS Manager or Supervisor at 717-531-8839 for a current list of approved products.

H. Carpet Cleaning Equipment:

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

Products currently used by PSHMC Environmental Health Service (EHS).

This list is current as of 9/2011. Contact the EHS Manager or Supervisor at 717-531-8839 for a current list of products.

Hard Surfaces: (S.C. Johnson products)

1. Crew toilet bowl cleaner - toilets
2. Regency – for stainless steel
3. Glance – window cleaner
4. Crew Klein and Shine – multi surface cleaner
5. Shine Up – furniture polish
6. Crew Tile and Grout rejuvenator – tile and grout
7. UHS – floor cleaner
8. Virex – disinfectant cleaner
9. Crew Crème Cleanser – hard surfaces
10. General Purpose Spotter

Carpets: (S.C. Johnson products)

1. Extraction cleaner
2. Extraction rinse
3. General purpose spotter
4. Heavy duty Pre spray

Hard Floors: (Johnson Wax products)

1. Faststrip – for stripping
2. UHS – for scrubbing floors, then refinish
3. Revive – for scrubbing floors, then buffing
4. High Mileage – floor finish

General:

1. Microfiber (electro-static) dusting cloth. Rubbermaid Products
2. Microfiber flat mop. Rubbermaid Products
3. String mop with new or freshly laundered mop heads.
4. Clorox Clean-up. The Clorox Company

Equipment:

1. Carpet Vacuum: Nobles Ultraglide 18" w/ dual motors and HEPA filters or equivalent.
2. Hot water Extraction/Shampooer: Nobles Strive carpet extractor or equivalent.

APPENDIX E of
CONSTRUCTION, RENOVATION, AND MAINTENANCE
INFECTION CONTROL PROGRAM

SUPPLEMENTAL INFECTION CONTROL INTERVENTIONS

For Project #: _____ **Start date:** _____

Renovation activities can cause environmental disturbances of dust, which can lead to increased Aspergillus counts in the air and increased risk for Aspergillus infections in high-risk patients. In addition, the dust disturbances in the OR complex by renovation activity, increased traffic and contractor staff in the restricted areas may increase bacterial and other fungal content in the air. If not contained this disturbance could possibly increase the risk for surgical site infections. In an effort to minimize and contain the dust, and lessen the possibility of worker microbial contamination during renovation work in the OR, Infection Prevention is requiring that the following interventions are initiated and maintained until the completion of the project.

1. All Contractor and Sub-contractor personnel working on site, for any amount of time must receive ICRA training prior to their first work shift. Documented ICRA training (within the last year) at HMC can be accepted.
2. Scrub suits must be worn while working in the OR. The HMC Project Manager will coordinate arrangements for issuing of scrubs to the workers. Workers will change into scrubs in the OR locker room, and must be put on in place of workers clothing, they are not to go over clothing. All hair must be covered with a cap, or hood in the case of facial hair. Booties will be worn to cover work shoes. If the worker leaves the OR and goes to any dirty areas (other construction areas, basement, vehicles to get additional equipment, etc.) they must put on new scrubs prior to returning to the OR.
3. Upon entering the work site within the OR complex workers must put on coveralls that will be removed within the anteroom prior to exiting back into the OR complex halls. A clean supply must be available at the entrance to each work area.
4. Booties will be put on over shoes to enter OR complex and removed in work area. Prior to leaving work area clean booties will need to be put back on to enter back into OR complex. A clean supply must be available at entrance to each work area.
5. To erect a barrier within the OR complex a temporary plastic barrier must be first established using extension poles and fire retardant plastic. To remove barriers post work a temporary barrier must again be established and the permanent barrier removed within the temporary barrier.

6. All moveable carts and supplies must be removed from any OR site where work is to be done. No supplies may be left on counter tops. It will be specified in the ICRA if supplies may remain in cabinets that are sealed with tape.
7. If supplies and equipment are not moved when contractors arrive to begin work or building of barrier, the Project Manager must be notified since no work may begin until all designated equipment and supplies are removed from the area.
8. Control cubes may not be set up immediately next to carts containing clean supplies/equipment or OR case carts. These items will need to be relocated by Nursing Personnel.
9. Construction workers entrance will be determined based on location of work and may change throughout project. It will be via the most direct route into work area. **For this job – workers to use the _____ entrance.**
10. Workers should minimize the number of times they must enter and exit the work area and travel through the OR complex. **At no time should workers travel into the OR complex that is not in their immediate work area or an egress path.**
11. Egress for materials and debris will be determined based on location of work and may change throughout project. It will be via the most direct route into work area and closest exit for removing debris to outside while minimizing travel through patient care areas of the hospital.
12. Only HEPA filtered negative air machines which were certified by HMC may be used within the OR complex.
13. Workers to verify negative air in the work site and or control cube prior to start of their work shift, and if negative air is lost during the course of the shift, workers must immediately stop work until negative air is reestablished.
14. Workers to verify that barriers are intact and or control cube is fully extended to ceiling and zipped closed prior to start of their work shift. If there is barrier failure at any time during the work shift, work must stop until barrier failure is corrected.
15. Care must be taken to track no dust out of worksite.
16. Dust will be controlled as much as possible in the work area by vacuuming as generated, etc.
17. Workers are responsible that any of their personal equipment/tools brought into the OR area must be free of all visible dust and or debris before taking into the OR complex.

18. All equipment brought into the OR area must be clean and wiped with disinfectant before entering area. At no time should dirty equipment or carts be moved through the OR complex or in/out of the work zone.
19. All cubes or equipment carts must have clean exteriors (free of dust that can disperse into air) and covered when moving through halls.
20. Contain construction waste before transporting through OR halls in covered containers.
21. Should debris or dust be tracked outside of work area it must be immediately cleaned up, using either a HEPA-vac or damp mop – this is the responsibility of the worker/contractor who creates the dirt.
22. Using a dry broom to sweep dust will aerosolize dust into the air and should not be used within the OR complex; instead damp mops, damp rags and or HEPA-vacuums must be used to clean up dust.
23. Any work done within the OR complex that will create vibration must be prearranged by the Project Manager.

I have read and understand the above OR, Infection Control Interventions. I will be responsible to see that all of our workers and subcontract workers will follow these precautions.

Contractor, site supervisor

Date

APPENDIX F of
CONSTRUCTION, RENOVATION, AND MAINTENANCE
INFECTION CONTROL PROGRAM

**CONSTRUCTION - INFECTION CONTROL INTERVENTIONS
COMPLIANCE MONITOR**

DATE: _____ TIME: _____ PROJECT #: _____

PROJECT MANAGER: _____

CONTRACTOR: _____

OBSERVATIONS BY:

Name _____	Initials _____
Name _____	Initials _____
Name _____	Initials _____

INFECTION CONTROL INTERVENTION	Met	Not Met	N/A	Verbal Notification Given To, Corrective Action Taken, Other Comments.
HEPA Vacuum, coveralls, booties, cleaning supplies available at the work zone entrance.				
Construction barriers intact, no visual evidence of dust escaping the work zone				
Traffic restricted to construction personnel and traffic control signs posted and intact				
Construction personnel using designated entrance/exits and are following designated travel routes				
Walk off adhesive mats clean & adequate to contain construction dust				
Negative air machine running, ducting intact, filters certified as necessary – no excess fumes/vapor				
Negative air pressure maintained & documented				

INFECTION CONTROL INTERVENTION	Met	Not Met	N/A	Verbal Notification Given To, Corrective Action Taken, Other Comments.
All windows closed behind barrier. Debris chute (if applicable) closed if not in use				
HVAC vents remain isolated and sealed off				
Daily cleaning of the work zone. Ante Room clean. Entrance/exit & adjacent areas free of dust & debris				
Carts covered during transport of debris and materials				
Workers removing coveralls in work zone before entering anteroom. Workers removing booties in ante room.				
Negative air fans working properly. No dust accumulation at exhaust location				
No signs of water leakage				
No signs of vermin – insects, birds, mice, squirrels				
No food trash found in work zone, or cavities in the work zone				
All workers Safety and ICRA trained				
Other observed or reported problems:				

APPENDIX G of CONSTRUCTION, RENOVATION, AND MAINTENANCE INFECTION CONTROL PROGRAM

Examples of Barrier Types

	<p>B-1</p> <p>DESCRIPTION: SINGLE LAYER 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING, HUNG FROM CEILING WITH THE FOLLOWING CLIPS: POLY-HANGER CLIP #3, PART #55084 (OR EQUAL) OR POLY-HANGER CLIP #4, PART #55085 (OR EQUAL)</p>		<p>B-2</p> <p>DESCRIPTION: SINGLE LAYER 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING, HUNG FROM CEILING, TAPED AT TOP, BOTTOM AND SIDEWALLS.</p>		<p>B-3</p> <p>DESCRIPTION: SINGLE LAYER 6 MIL. FLAME RESISTANT POLYETHYLENE HUNG FROM "ZIP" POLES. CLIPPED AT TOP.</p>
	<p>B-4</p> <p>DESCRIPTION: SINGLE LAYER 6 MIL. FLAME RESISTANT POLYETHYLENE HUNG FROM "ZIP" POLES. TAPED AT TOP AND BOTTOM.</p>		<p>B-5</p> <p>DESCRIPTION: METAL STUDS WITH 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING ON POSITIVE PRESSURE SIDE OF BARRIER. TAPED AT TOP, BOTTOM AND SIDES.</p>		<p>B-6</p> <p>DESCRIPTION: METAL STUDS AT 24" O.C. WITH 6 MIL. FLAME RESISTANT POLYETHYLENE ON BOTH SIDES. TAPED AT TOP, BOTTOM AND SIDEWALLS.</p>
	<p>B-7</p> <p>DESCRIPTION: METAL STUDS AT 24" ON CENTER MAXIMUM WITH 1/2" GYPSUM WALL BOARD ATTACHED WITH SCREWS ON ONE SIDE. OTHER SIDE 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING. TAPED AT TOP, BOTTOM AND SIDEWALLS.</p>		<p>B-8</p> <p>DESCRIPTION: BELOW CEILING - METAL STUDS AT 24" ON CENTER WITH 1/2" GYPSUM WALL BOARD ON ONE SIDE. ON OPPOSITE SIDE, 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING TAPED AT TOP, BOTTOM AND SIDEWALLS. ABOVE CEILING - 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING ON OPPOSITE SIDE, SUPPORTED BY METAL STUDS. TAPED AT TOP AND SIDEWALLS.</p>		<p>B-9</p> <p>DESCRIPTION: METAL STUDS WITH 1/2" GYPSUM WALL BOARD ON BOTH SIDES. TAPED ALL JOINTS IN GYPSUM WALL BOARD. SEAL AT TOP, BOTTOM AND SIDEWALLS. NOTE: USE FIRE RESISTANT WHERE REQUIRED BY CODE.</p>
	<p>B-10</p> <p>DESCRIPTION: METAL STUDS WITH 1/2" GYPSUM WALL BOARD ON OUTER SIDE AND FIRE RESISTANT POLYETHYLENE ON INNER SIDE. TAPE ALL JOINTS IN GYPSUM WALL BOARD. SEAL AT TOP, BOTTOM AND SIDEWALLS. MINIMUM 36" SOLID WOOD DOOR IN A METAL FRAME OR METAL DOOR IN A METAL FRAME. FRAME TO HAVE STOPS AND FRAME TO BE SEALED TO BARRIER WALL. HARDWARE MUST FUNCTION PROPERLY. NOTE: USE FIRE RESISTANT WHERE REQUIRED BY CODE.</p> <p>NOTE: SWING OF DOORS MAY BE REVERSED AS REQUIRED BY THE PROJECT.</p>		<p>B-11</p> <p>DESCRIPTION: METAL STUDS WITH 1/2" GYPSUM WALL BOARD ON OUTER SIDE AND FIRE RESISTANT POLYETHYLENE ON INNER SIDE. TAPE ALL JOINTS IN GYPSUM WALL BOARD. SEAL AT TOP, BOTTOM AND SIDEWALLS. MINIMUM 36" SOLID WOOD DOOR IN A METAL FRAME OR METAL DOOR IN A METAL FRAME. FRAME TO HAVE STOPS AND FRAME TO BE SEALED TO BARRIER WALL. HARDWARE MUST FUNCTION PROPERLY. NOTE: USE FIRE RESISTANT WHERE REQUIRED BY CODE.</p> <p>NOTE: SWING OF DOORS MAY BE REVERSED AS REQUIRED BY THE PROJECT.</p>		

This drawing contains information intended for a specific project and is not to be used for any other project without the express written consent of the provider. It is the responsibility of the user to ensure that the information is not used for any other project.

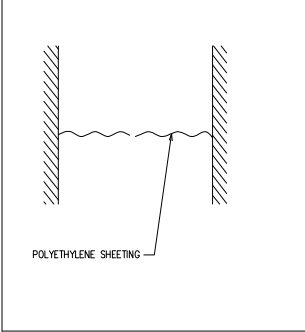
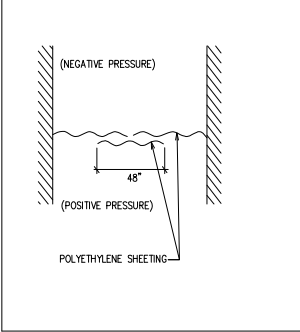
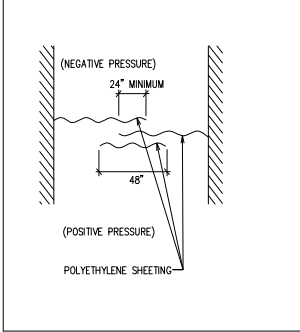
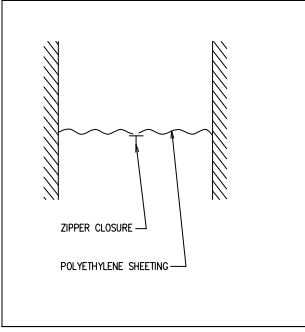
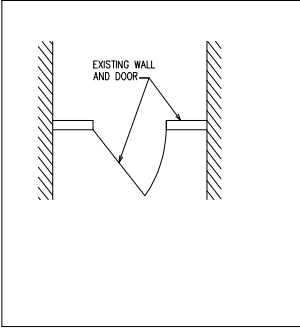
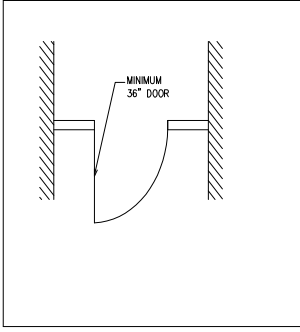
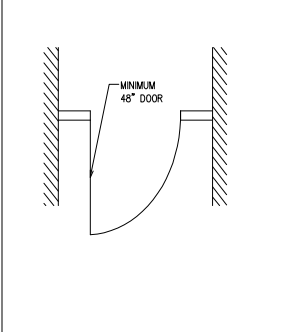
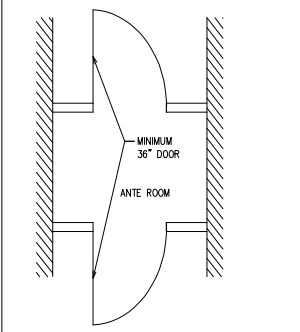
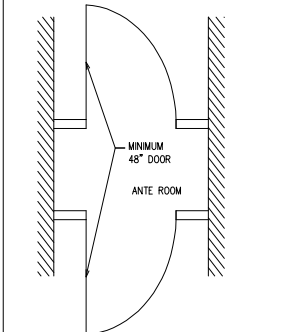
PENNSYLVANIA
 MILITON S. HERSHEY, MEDICAL CENTER
 HERSHEY, PA 17033
 Space Planning - Facilities Planning & Construction

DATE 04-22-2008

SCALE NOT TO SCALE
 DWN BY SDD
 SHEET NO. 1 OF 1
 ICRA BARRIER WALLS

APPENDIX H of CONSTRUCTION, RENOVATION, AND MAINTENANCE INFECTION CONTROL PROGRAM

Examples of Door Types

	<p>D-1</p> <p>DESCRIPTION: HANGING 6 MIL. FIRE RESISTANT POLYETHYLENE SHEETING; SLIT IN MIDDLE AS REQUIRED FOR ACCESS.</p>		<p>D-2</p> <p>DESCRIPTION: HANGING 6 MIL. FIRE RESISTANT POLYETHYLENE SHEETING; SLIT IN MIDDLE AS REQUIRED FOR ACCESS. SLIT COVERED BY 48" WIDE PIECE OF SHEETING, PLACED ON SIDE OF BARRIER WITH POSITIVE PRESSURE.</p>		<p>D-3</p> <p>DESCRIPTION: HANGING 6 MIL. FIRE RESISTANT POLYETHYLENE SHEETING; OVERLAP SHEETS IN MIDDLE AS REQUIRED FOR ACCESS. OPENING COVERED BY 48" WIDE PIECE OF SHEETING, PLACED ON SIDE OF BARRIER WITH POSITIVE PRESSURE.</p>	<p>This drawing contains information intended for a specific project and is not to be used for any other project without the written consent of the appropriate authority. It is the responsibility of the user to ensure that the information is used in accordance with the applicable regulations and standards. All materials and construction shall be per local building codes.</p> <p style="text-align: center;">PENNSYLVANIA MILTON S. HERSHEY MEDICAL CENTER HERSHEY, PA 17033 Space Planning - Facilities Planning & Construction</p>
	<p>D-4</p> <p>DESCRIPTION: SINGLE LAYER OF 6 MIL. FLAME RESISTANT POLYETHYLENE SHEETING WITH A ZIPPER CLOSURE.</p>		<p>D-5</p> <p>DESCRIPTION: EXISTING HINGED WOOD OR METAL DOOR, CONTIGUOUS WITH EXISTING WALL. HARDWARE MUST FUNCTION PROPERLY.</p> <p>(D-5 SHALL BE USED WHEN AN EXISTING WALL / DOOR ASSEMBLY IS USED AS THE INFECTION CONTROL BARRIER)</p>		<p>D-6</p> <p>DESCRIPTION: MINIMUM 36" SOLID WOOD DOOR IN A METAL FRAME OR METAL DOOR IN A METAL FRAME. FRAME TO HAVE STOPS AND FRAME TO BE SEALED TO BARRIER WALL. HARDWARE MUST FUNCTION PROPERLY.</p> <p>NOTE: SWING OF DOORS MAY BE REVERSED AS REQUIRED BY THE PROJECT.</p>	
	<p>D-7</p> <p>DESCRIPTION: MINIMUM 48" SOLID WOOD DOOR IN A METAL FRAME OR METAL DOOR IN A METAL FRAME. FRAME TO HAVE STOPS AND FRAME TO BE SEALED TO BARRIER WALL. HARDWARE MUST FUNCTION PROPERLY.</p> <p>NOTE: SWING OF DOORS MAY BE REVERSED AS REQUIRED BY THE PROJECT.</p>		<p>D-8</p> <p>DESCRIPTION: MINIMUM 36" SOLID WOOD DOOR IN A METAL FRAME OR METAL DOOR IN A METAL FRAME. FRAME TO HAVE STOPS AND FRAME TO BE SEALED TO BARRIER WALL. HARDWARE MUST FUNCTION PROPERLY.</p> <p>NOTE: SWING OF DOORS MAY BE REVERSED AS REQUIRED BY THE PROJECT.</p>		<p>D-9</p> <p>DESCRIPTION: MINIMUM 48" SOLID WOOD DOOR IN A METAL FRAME OR METAL DOOR IN A METAL FRAME. FRAME TO HAVE STOPS AND FRAME TO BE SEALED TO BARRIER WALL. HARDWARE MUST FUNCTION PROPERLY.</p> <p>NOTE: SWING OF DOORS MAY BE REVERSED AS REQUIRED BY THE PROJECT.</p>	
<p>ICRA BARRIER DOORS</p> <p>SHEET NO. 2 OF 2 DWN BY SDD SCALE NOT TO SCALE DATE 04-22-2008</p>						