01.38 - Infection Control Risk Assessment (ICRA) for Healthcare Construction Renovation and Demolition Policy

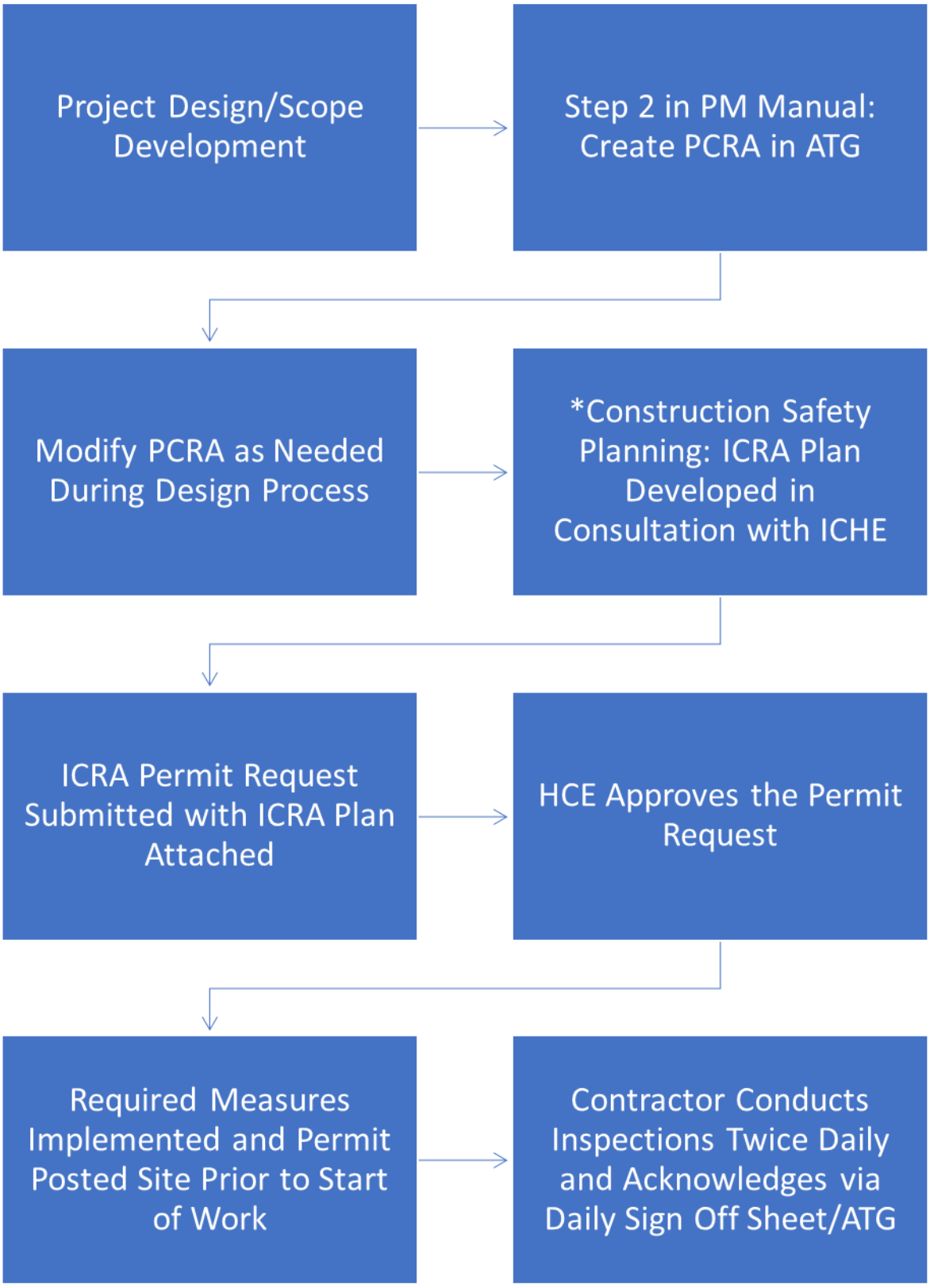
Purpose	To provide patient and employee safety guidelines in relation to construction and renovation activities in health care settings. The recommendations below are based on the American Society for Health Care Engineering (ASHE) ICRA 2.0 recommendations.
Audience	The following guidelines are for all UTMB and contract employees involved in hospital construction, renovation, and demolition, including but not limited to: Business Operations and Facilities including Environmental Health & Safety, Facilities Design and Construction, and Property Services, Healthcare Epidemiology and Infection Control, Nursing, and Health System Leadership
Infection Control Risk Assessment (ICRA)	A. A Preconstruction Risk Assessment (PCRA; Policy 08.01.17) will be performed to determine the need for an Infection Control Risk Assessment (ICRA) prior to planning for any renovation, construction, or demolition project in or near any UTMB Healthcare facility (Appendix A & Appendix B). B. Activities limited to above ceiling will follow Policy 08.01.23 “Above Ceiling Work Policy”. Following the Above Ceiling Work Risk Matrix, Class I, II & III permits are excluded from requiring an ICRA plan and must follow predetermined precautions (Appendix C). C. Activities that require class 1 and 2 precautions, although may not require an ICRA, must follow the required standard mitigation measures found in Appendix D. D. An ICRA plan will be required for precautions class 3 and above at the time of the ICRA permit submission unless otherwise approved by a representative from ICHE (Appendix E). E. The Institutional Master specifications must be reviewed and be in accordance with the most up-to-date Healthcare Construction, Renovation, and Demolition policy. F. The ICRA must be reviewed and approved by representatives from the Department of Healthcare Epidemiology (ICHE) a minimum of 7-10 days prior to the anticipated start date. G. An ICRA approval for emergent work will be prioritized following notification to an ICHE representative. H. Multiple-phase projects with varying precaution risk levels will require different permits for each phase. I. At a minimum, safety mitigation measures identified in the risk matrix (Appendix F) will be required to ensure patient, staff, visitor, and contractor safety. If necessary, ICHE will communicate any additional required measures. J. Only authorized persons will be allowed to enter the construction zone.

	K. Signage must direct pedestrian traffic away from construction areas. L. Compliance with ICRA safety precautions must be verified and documented twice daily. During time periods when no work is occurring, the area must be documented as “Made Safe”. M. After completion of renovation/construction, all water pipes in renovation/construction areas will be adequately flushed, as indicated by the water quality plan.
Special Patient Considerations	A. Patients should be transported to areas in the hospital where they have diagnostic or therapeutic procedures by routes that minimize their exposure to construction sites. B. Immunocompromised patients 1) Prior to any construction/renovation or cable pulls the Nurse Manager of the unit will be notified by the construction manager or permit authorizing individuals that approve Above Ceiling Work Permits. 2) Prior to the initiation of the work the patients on the unit will be assessed by the Nurse Manager. 3) Patients who have severe congenital or acquired immune deficiency (e.g., organ transplantation, chemotherapy for cancer, advanced HIV, severe immune suppressive therapy, severe neutropenia) must be moved to the opposite wing of the hospital or another floor prior to the initiation of the work. Opinion from infection control or infectious disease physician may be sought to help assess the immune suppression status. 4) If the patients cannot be moved because of bed capacity or illness, the renovations will be postponed.
Education and Accountability	A. ICRA permits must be posted at the jobsite or carried by facility and contractor personnel while performing work. B. Facility and contract workers should be educated about: 1) Infectious hazards they may encounter during the renovation/construction at the pre-construction conference conducted by Business Operations and Facilities (BOF). 2) The various infection control precaution classes and quality assurance measures prior to the start of work. C. Individual worker(s) and subcontractor(s) education will be provided by the general contractor and must be aligned with UTMB policies and procedures. D. Contractor education must be documented and completed annually.

Monitoring for Contamination	Monitoring for contamination/infection during and after renovation/construction. A. The following quality assurance measures may be taken as deemed appropriate by the Department of Healthcare Epidemiology for activities class 3 and above: 1) Air cultures 2) Particulate data 3) Water samples B. Continuous surveillance for infections related to renovation/construction will be done as deemed appropriate by the Department of Healthcare Epidemiology. Criteria for acceptable air quality in different types of patient care units are as follows: 1) Medical/Surgical patient care units a) Total spore counts ≤ 15 spores per cubic meter of air. b) Total pathogenic spore counts≤ 3 spores per cubic meter of air. (i) *Aspergillus* species (ii) *Zygomycete* species (iii) *Fusarium* species 2) Intensive care units, transplant units, oncology units a) Total spore counts ≤ 15 spores per cubic meter of air. b) No spores of pathogenic fungal species 3) Operating rooms a) Total spore counts ≤ 3 spores per cubic meter of air. b) No spores of pathogenic fungal species
Policies and Related Documents	1. Policy 08.01.17 – Preconstruction Risk Assessment Procedure (Environmental health & Safety) 2. Policy 08.01.23 – Above Ceiling Work Policy (Environmental Health & Safety) 3. Master Specifications Section 010112 – Indoor Air Quality (Business Operations and Facilities)
References	1. American Society of Healthcare Engineers (ASHE). 2022. *Matrix of Precautions for Construction, Renovation and Operations*. Chicago: ASHE. 2. Bartley JM. APIC State-of-the Art Report: The role of infection control during construction in health care facilities. Am J Infect Control 2000; 28:156-169. 3. Cheng S M, Streifel A J. Infection control considerations during construction activities: land excavation and demolition. Am J Infect Control 2001; 29: 321-328. 4. The American Institute of Architects. Guidelines for design and construction of hospital and health care facilities. Washington, D.C. 2001, pp15-17. 5. Chang CC, Cheng AC, Devitt B, et al. Successful control of an outbreak of invasive aspergillosis in a regional hematology unit during hospital construction works. J. Hosp Infect 2008; 69:33-38. 6. Loo V G, Bertrand C, Dixon C, et al. Control of construction-associated nosocomial aspergillosis in an antiquated hematology unit. Infect Control Hosp Epidemiol 1996; 17: 260-364.

Appendix A: Project Permitting Process Map

*If multiphase, process restarts here for each phase.



Appendix B: Pre-Construction Risk Class Determination

Project Type			
Level 1 Activity	**Level 2 Activity**	**Level 3 Activity**	**Level 4 Activity**
Inspections and non-invasive activities including but not limited to:	Small-scale, short duration activities that is limited to one to three shifts and create minimal dust and debris. Includes but is not limited to:	Large-scale, longer duration activities that create a moderate amount of dust and debris. Includes but is not limited to:	Major demolition and construction activities. Includes but is not limited to:
❑ Inspections above ceiling that create minimal to no dust limited to 1 ceiling tile per 50 square feet (12.5 tiles) ❑ Minor repair, painting, or minor patching ❑ Minor electrical work, plumbing, similar work with little or no drilling, cutting, or other dust-raising activity ❑ Opening into chases and concealed spaces ❑ Normal maintenance activity	❑ Installation of electrical and computer cabling ❑ Working in chases and concealed spaces ❑ Working above ceiling (prolonged inspections, repair of firewalls/barriers installation of conduit and/or cabling) ❑ Replacing finishes ❑ Carpet removal ❑ Wall covering removal ❑ Cutting plaster and drywall, sanding and other dust making activity within a room or other controlled area ❑ Opening not exceeding 2 to 5 ceiling tile per 50 square feet (12.5 tiles)	❑ Removing floor coverings ❑ Sanding plaster walls ❑ Wall demolition and construction ❑ Duct work ❑ Major ceiling work ❑ Major demolition of areas, particularly those open to patient care areas ❑ Work on HVAC systems that release dust ❑ Usually more than three consecutive days work	❑ Removal or replacement of building system component(s) ❑ Removal/installation of drywall partitions ❑ Invasive large-scale new building construction ❑ Renovation work in two or more rooms

Patient Risk Group			
Risk Level A (Low Risk)	**Risk Level B (Medium Risk)**	**Risk Level C (Medium to High Risk):**	**Risk Level D (Highest Risk):**
❑ Soiled/Decontamination Rooms ❑ Service areas (i.e., loading dock) Below areas **Not** located on Clinical Units and/or **Not** adjacent to Risk D areas: ❑ Office areas ❑ Public hallways and gathering areas ❑ Bathrooms or locker rooms ❑ Mechanical and electricals rooms ❑ EVS closets	❑ Outpatient clinics (except oncology and surgery) ❑ All other patient care areas unless listed in Risk Level C or D	❑ Emergency department ❑ Medical/Surgical units ❑ Day Surgery ❑ PACU ❑ Labor and Delivery ❑ Newborn Nursery ❑ Pediatrics ❑ Geriatrics ❑ Employee Health ❑ Pharmacy (general work zone) ❑ Medication rooms ❑ Clean utility/supply rooms ❑ Diagnostic imaging/Radiology/MRI/Nuclear Medicine ❑ Echocardiography ❑ Laboratory	❑ All ICU's ❑ NICU ❑ Labor and Delivery OR ❑ Transplant units ❑ Burn units ❑ Oncology units ❑ Dialysis units ❑ All Operating Rooms and restricted areas ❑ Cardiac catheterization and angiography areas ❑ Endoscopy/Bronchoscopy areas ❑ Pharmacy compounding rooms ❑ Procedural Sterile Storage ❑ Sterile Processing Rooms ❑ Oncology and Transplant clinics

	Risk Level A	Risk Level B	Risk Level C	Risk Level D
Level 1 Activity	I	II	II	III
Level 2 Activity	I	II	III	IV
Level 3 Activity	I	III	IV	V
Level 4 Activity	III	IV	V	V

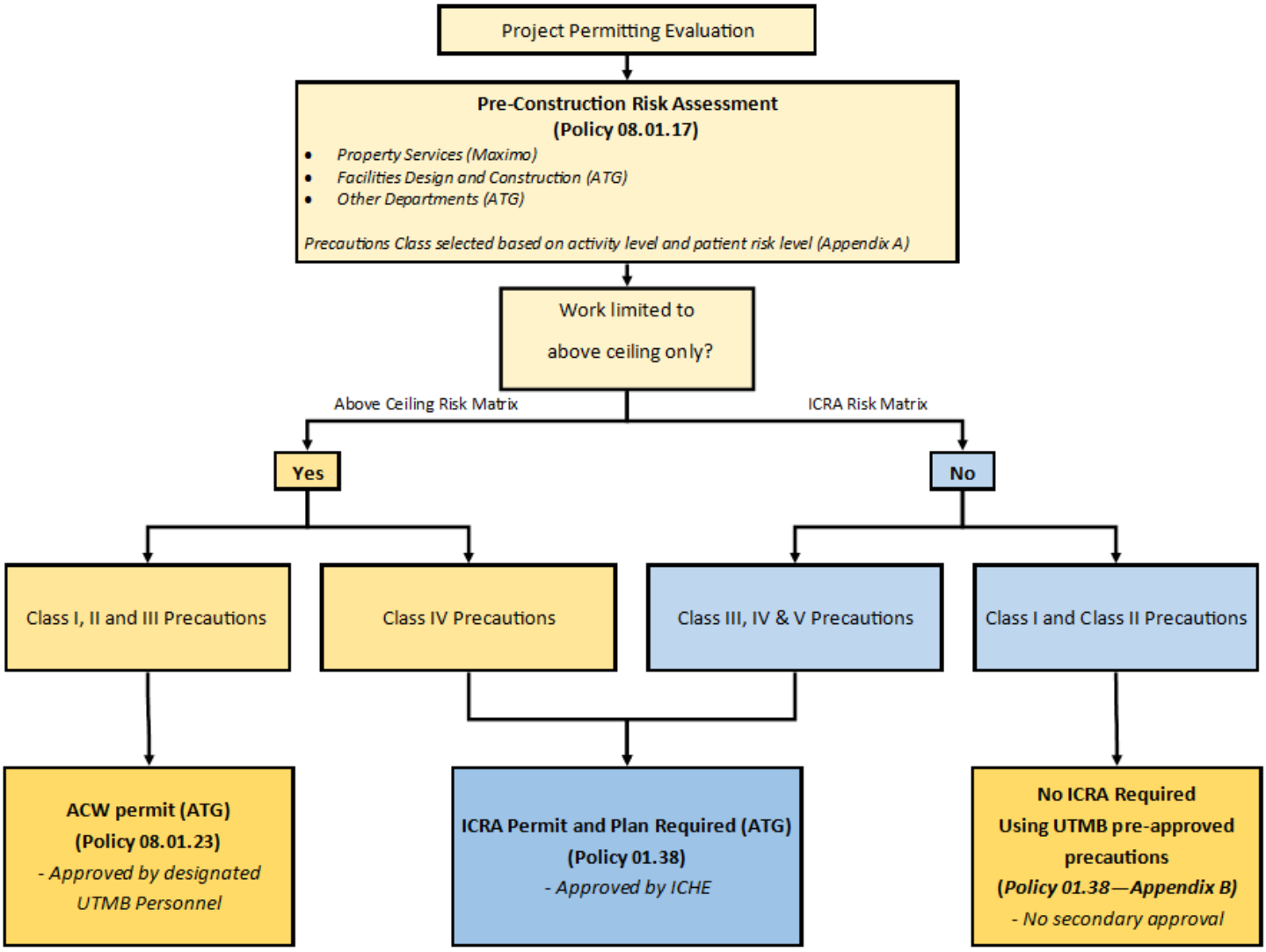
Class precautions III or greater require an ICRA plan attached to the ICRA permit submission

Minimum Required Infection Control Precautions by Class | Before and During Work Activity

Class of Precautions	Mitigation Activities (Performed Before and During Work Activity)
Class I	1. Perform non-invasive work activity as to not block or interrupt patient care. 2. Perform non-invasive work activities in areas that are not directly occupied with patients. 3. Perform non-invasive work activity in a manner that does not create dust. 4. Immediately replace any displaced ceiling tile before leaving the area and/or at end of non-invasive work activity.
Class II	1. Perform only limited dust work and/or activities designed for basic facilities and engineering work. 2. Perform limited dust and invasive work following standing precautions procedures approved by the organization. 3. This Class of Precautions must never be used for construction or renovation activities.
Class III	1. Provide active means to prevent airborne dust dispersion into the occupied areas. 2. Means for controlling minimal dust dispersion may include hand-held HEPA vacuum devices, polyethylene plastic containment, or isolation of work area by closing room door. 3. Remove or isolate return air diffusers to avoid dust from entering the HVAC system. 4. Remove or isolate the supply air diffusers to avoid positive pressurization of the space, 5. If work area is contained, then it must be neutrally to negatively pressurized at all times (-0.02 WC). 6. Seal all doors with tape that will not leave residue. 7. Contain all trash and debris in the work area. 8. Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. 9. Install an adhesive (dust collection) mat at entrance of contained work area based on facility policy. Adhesive mats must be changed routinely and when visibly soiled. 10. Maintain clean surroundings when the area is not contained by damp mopping or HEPA vacuuming surfaces.
Class IV	1. Construct and complete critical barriers meeting NFPA 241 requirements including: Barriers must extend to the ceiling or, if ceiling tile is removed, to the deck above, and all penetrations through the barrier shall meet the appropriate fire rating requirements. 2. All (plastic or hard) barrier construction activities must be completed in a manner that prevents dust release. Plastic barriers must be effectively affixed to ground and ceiling and secure from movement or damage. Apply tape that will not leave a residue to seal gaps between barriers, ceiling, or floor. 3. Seal all penetrations in containment barriers, including floors and ceiling, using approved materials (UL schedule firestop if applicable for barrier type). 4. Containment units or environmental containment units (ECUs) approved for Class IV precautions in small areas totally contained by the unit and that has HEPA-filtered exhaust air. 5. Remove or isolate return air diffusers to avoid dust entering the HVAC system. 6. Remove or isolate the supply air diffusers to avoid positive pressurization of the space. 7. Negative airflow patterns must be maintained from the entry point to the anteroom and into the construction area. The airflow must cascade from outside to inside the construction area. The entire construction area must remain negatively pressurized at -0.02 WC. 8. Maintain negative pressurization of the entire workspace by use of HEPA exhaust air systems directed outdoors. Exhaust discharged directly to the outdoors that is 25 feet or greater from entrances, air intakes and windows does not require HEPA-filtered air. 9. If exhaust is directed indoors, then the system must be HEPA filtered. Prior to start of work, HEPA filtration must be verified by particulate measurement as no less than 99.97% efficiency and must not alter or change airflow/pressure relationships in other areas. 10. Exhaust into shared or recirculating HVAC systems, or other shared exhaust systems (e.g., bathroom exhaust) is not acceptable. 11. Install device on exterior of work containment to continually monitor negative pressurization. To ensure proper pressure is continuously maintained, it is recommended that the device(s) have a visual pressure indicator. 12. Contain all trash and debris in the work area.

	13. Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. 14. Worker clothing must be clean and free of visible dust before leaving the work area. HEPA vacuuming of clothing or use of cover suits is acceptable. 15. Workers must wear shoe covers prior to entry into the work area. Shoe covers must be changed prior to exiting the anteroom to the occupied space (non-work area). Damaged shoe covers must be immediately changed. 16. Install an adhesive (dust collection) mat at entrance of contained work area based on facility policy. Adhesive mats must be changed routinely and when visibly soiled. 17. Consider collecting particulate data during work to monitor and ensure that contaminants do not enter the occupied spaces. Routine collection of particulate samples may be used to verify HEPA filtration efficiencies.
Class V	1. Construct and complete critical barriers meeting NFPA 241 requirements including: Barriers must extend to the ceiling, or if ceiling tile is removed, to the deck above, and all penetrations through the barrier shall meet the appropriate fire rating requirements. 2. All (plastic or hard) barrier construction activities must be completed in a manner that prevents dust release. Plastic barriers must be effectively affixed to ground and ceiling and secure from movement or damage. Apply tape that will not leave a residue to seal gaps between barriers, ceiling, or floor. 3. Seal all penetrations in containment barriers, anteroom barriers, including floors and ceiling using approved materials (UL schedule firestop if applicable for barrier type). 4. Construct anteroom large enough for equipment staging, cart cleaning, workers. The anteroom must be constructed adjacent to the entrance of construction work area. 5. Personnel will be required to wear disposable coveralls at all times during Class V work activities. Disposable coveralls must be removed before leaving the anteroom. 6. Remove or isolate return air diffusers to avoid dust entering the HVAC system. 7. Remove or isolate the supply air diffusers to avoid positive pressurization of the space. 8. Negative airflow patterns must be maintained from the entry point to the anteroom and into the construction area. The airflow must cascade from outside to inside the construction area. The entire construction area must remain negatively pressurized at -0.02 WC. 9. Maintain negative pressurization of the entire workspace using HEPA exhaust air systems directed outdoors. Exhaust discharged directly to the outdoors that is 25 feet or greater from entrances, air intakes and windows does not require HEPA-filtered air. 10. If exhaust is directed indoors, then the system must be HEPA filtered. Prior to start of work, HEPA filtration must be verified by particulate measurement as no less than 99.97% efficiency and must not alter or change airflow/pressure relationships in other areas. 11. Exhaust into shared or recirculating HVAC systems, or other shared exhaust systems (bathroom exhaust) is <u>not acceptable</u>. 12. Install device on exterior of work containment to continually monitor negative pressurization. To ensure proper pressure is continuously maintained, it is recommended that the device(s) have a visual pressure indicator. 13. Contain all trash and debris in the work area. 14. Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. 15. Worker clothing must be clean and free of visible dust before leaving the work area anteroom. 16. Workers must wear shoe covers prior to entry into the work area. Shoe covers must be changed prior to exiting the anteroom to the occupied space (non-work area). Damaged shoe covers must be immediately changed. 17. Install an adhesive (dust collection) mat at entrance of contained work area based on facility policy. Adhesive mats must be changed routinely and when visibly soiled. 18. Consider collecting particulate data during work to monitor and ensure that contaminants do not enter the occupied spaces. Routine collection of particulate samples may be used to verify HEPA filtration efficiencies.

Appendix C: Permitting Evaluation Flow Chart



Appendix D: Class I and Class II Precautions

The following precautions must be strictly adhered to for projects where an ICRA or Above Ceiling Permit is not required.

1. Protect patient care areas from activity or close access to the work area.
2. Minimize dust and dirt.
3. Keep the work area clean.
4. If removing ceiling tiles, replace promptly, before leaving the area unattended and/or at the end of work activity
5. Food is prohibited in work areas.
6. Tools and parts shall be covered, except when in use.
7. Use a clean tightly covered container to remove debris, when applicable.
8. HEPA vacuum or damp wipe and mop work areas at end of day when work is complete.
9. Upon completion of work, clean all surfaces with hospital-approved disinfectant.

Appendix E: ICRA Plan Template

Part 1: Project Management

Infection Control Risk Assessment	Project Name/Number:		
	ICRA Number:		
Location of Work Activity		Project Start Date:	
Estimated Duration		Completion Date:	
UTMB Project Manager		Contact Information:	
Superintendent		Contact Information:	
Foreman/Supervisor		Contact Information:	
After hours contact		Contact information:	

Part 2: Scope of Work in Primary Area

Project Area:			Unit:	
Precautions Class:			All Impacted Room Number(s):	
Anteroom Requirements and Dimensions:			Area of contained job site (m^3):	
Specific types of activity included in project:	❑ HVAC ❑ Drywall ❑ Flooring ❑ Foundation ❑ Above Ceiling	❑ Room pressurization ❑ Plumbing ❑ Electrical ❑ Noise ❑ Vibrations ❑ Data	Anticipated level of dust production	❑ Low (i.e., electrical socket) ❑ Medium (i.e., flooring) ❑ High (i.e., cutting sheet rock/dry wall)
HEPA Vacuum brand and care requirements:	*Brand: (recommended brands include Nilfisk, Global Industrial, and Nikro)* *Care requirements:*			
Air Scrubber Brand(s) and Air Flow/Cubic feet per meter (CFM):	*Brand:* *Air flow/CFM:* *Maintenance requirements (per manufacturer's recommendations):* *Date of most recent HEPA filter validation:*			
Expected Air Scrubber requirements:				

Part 3: Surrounding Areas

Unit Below:	Unit Above:	Unit Lateral:	Unit Behind:	Unit in Front:
Risk Group:	Risk Group:	Risk Group:	Risk Group:	Risk Group:
Contact:	Contact:	Contact:	Contact:	Contact:
Phone:	Phone:	Phone:	Phone:	Phone:
Additional Controls: ☐ Noise ☐ Vibration ☐ Dust control ☐ Ventilation ☐ Pressurization ☐ Vertical Shafts ☐ Elevators/Stairs **Systems impacted:** ☐ Data ☐ Mechanical ☐ Med Gases ☐ Hot/Cold Water	**Additional Controls**: ☐ Noise ☐ Vibration ☐ Dust control ☐ Ventilation ☐ Pressurization ☐ Vertical Shafts ☐ Elevators/Stairs **Systems impacted:** ☐ Data ☐ Mechanical ☐ Med Gases ☐ Hot/Cold Water	**Additional Controls**: ☐ Noise ☐ Vibration ☐ Dust control ☐ Ventilation ☐ Pressurization ☐ Vertical Shafts ☐ Elevators/Stairs **Systems impacted:** ☐ Data ☐ Mechanical ☐ Med Gases ☐ Hot/Cold Water	**Additional Controls**: ☐ Noise ☐ Vibration ☐ Dust control ☐ Ventilation ☐ Pressurization ☐ Vertical Shafts ☐ Elevators/Stairs **Systems impacted:** ☐ Data ☐ Mechanical ☐ Med Gases ☐ Hot/Cold Water	**Additional Controls**: ☐ Noise ☐ Vibration ☐ Dust control ☐ Ventilation ☐ Pressurization ☐ Vertical Shafts ☐ Elevators/Stairs **Systems impacted:** ☐ Data ☐ Mechanical ☐ Med Gases ☐ Hot/Cold Water

Noise & Vibration Mitigation Strategies

- ☐ Use diamond drills instead of powder-actuated fasteners.
- ☐ Schedule noise-making periods with adjacent spaces.
- ☐ Use beam clamps instead of shot.
- ☐ Prefab where possible.
- ☐ Use tin snips to cut metal studs instead of using a chop saw.
- ☐ Install metal decking with vent tabs, then use cellular floor deck hangers.
- ☐ Consider compression style fittings instead of soldering, brazing, or welding.
- ☐ Wet core drill instead of dry core or percussion.
- ☐ Instead of jackhammering concrete, use wet diamond saws.
- ☐ Use HEPA vacuums instead of standard wet/dry vacuums.
- ☐ Use mechanical joining system sprinkler fittings instead of threaded.
- ☐ Where fumes are tolerated, use chemical adhesive remover (flooring glue) instead of mechanical.
- ☐ To remove flooring, consider abrasive blasting instead of using a floor scraper.
- ☐ Use electric sheers instead of reciprocating saw for ductwork cutting.
- ☐ Install exterior man/material lifts.

Ventilation & Pressurization Mitigation Strategies

- ☐ HEPA to exterior.
- ☐ Install temporary ductwork.
- ☐ Utilize temporary HVAC equipment.
- ☐ Vacate the area.
- ☐ Install temporary partitions.
- ☐ Use carbon filtration to filter odors.

Impact to Other Systems Mitigation Strategies

- ☐ Schedule outages.
- ☐ Provide temporary systems.
- ☐ Back-feed electricity or medical gases.

Part 4: Project Phasing

Dates *(Start-End)*	Phase name	Location(s) *(Room #)*	Area (m^3)		Patient Risk Group		Type of Activity	Class Precautions
				○	Type A: Low Risk	○	Level 1: Non-invasive	I II III IV V
				○	Type B: Medium Risk	○	Level 2: Small-scale, short duration	I II III IV V
				○	Type C: Medium to High Risk	○	Level 3: Large-scale, longer duration	I II III IV V
				○	Type D: High Risk	○	Level 4: Major demolition, construction	I II III IV V

Part 5: Preconstruction Air Quality

Room Number	Area Description	Date Sample Collected	Air Culture Results	Date Sample Collected	Particulate Count

Part 6: Preconstruction Water Quality

Room Number	Chlorine meter required? (Y/N)	Chloroform count	PH	Water Temperature	Flushing schedule

Part 7: Mitigation Activities Approaching Project Turnover

Class of Precautions	Mitigation Activities (Performed upon Completion of Work Activity)
Classes I, II and III	Cleaning: 1. Clean work areas including all environmental surfaces, high horizontal surfaces, and flooring materials. 2. Check all supply and return air registers for dust accumulation on upper surfaces as well as air diffuser surfaces. HVAC Systems: 1. Remove isolation of HVAC system in areas where work is being performed. Verify that HVAC systems are clean and operational. 2. Verify the HVAC systems meet original airflow and air exchange design specifications.
Classes III, IV and V	Class III (Level 3 Activities only), IV, and V precautions require inspection and documentation for downgraded ICRA precautions. Construction areas must be inspected by an infection preventionist or designee and engineering representative for discontinuation or downgrading of ICRA precautions. Work Area Cleaning: 1. Clean work areas including all environmental surfaces, high horizontal surfaces, and flooring materials. 2. Check all supply and return air registers for dust accumulation on upper surfaces as well as air diffuser surfaces. Removal of Critical Barriers: 1. Critical barriers must remain in place during all work involving drywall removal, creation of dust and activities beyond simple touch-up work. The barrier may NOT be removed until a work area cleaning has been performed. 2. All (plastic or hard) barrier removal activities must be completed in a manner that prevents dust release. Use the following precautions when removing hard barriers: i. Carefully remove screws and painter tape. ii. If dust will be generated during screw removal, use hand-held HEPA vacuum. iii. Drywall cutting is prohibited during the removal process. iv. Clean all stud tracks with HEPA vacuum before removing outer hard barrier. v. Use a plastic barrier to enclose the area if dust could be generated. Negative Air Requirements: 1. The use of negative air must be designed to remove contaminants from the work area. 2. Negative air devices must remain operational at all times at a minimum of -0.02 WC and in place for a period after completion of dust creating activities to remove contaminants from the work area and before removing critical barriers. HVAC systems: 1. Upon removal of critical barriers, remove isolation of HVAC system in areas where work is being performed. 2. Verify that HVAC systems are clean and operational. 3. Verify the HVAC systems meet original airflow and air exchange design specifications.

Part 8: Room Turnover Template

Suggested Turnover Sequence for Medium/High-Risk Areas	
Construction Clean	Including:
	Remove HVAC Filters or plastic from over HVAC and damp clean to ensure the cleanliness of supply and return/exhaust grills
	Clean ceiling tiles and grid with disinfectant and with a HEPA vacuum. Cleaning of all fire sprinklers and detection devices must be coordinated with Environmental Health & Safety.
	Water flush
	Clean floor, walls, and other affected surfaces with disinfectant and with HEPA vacuum
Terminal clean with bleach - EVS	
Remove Negative pressure set up; maintain HEPA air scrubber and barriers: Switch out to clean HEPA air scrubber	Grouped together
Air balancing	
Punch out items	
Terminal clean with bleach - EVS	No activity permitted in space following Terminal Clean
ICHE – Inspection and/or Air cultures (if applicable)	
Barrier removal once Air Cultures cleared by ICHE	
Terminal clean prior to occupancy - EVS	

Appendix F: Safety Mitigation Options

Asterisked items must be included in drawings and ICRA Plan during ICRA permit submission.

Minimum Safety Measures:

- ❑ ICRA Permit posted at the job site or immediately available.
- ❑ Separate patient care areas from activity or close access to work area.
- ❑ Minimize dust and dirt.
- ❑ Keep work area clean.
- ❑ If removing ceiling tiles, replace promptly.
- ❑ Food prohibited in work area.
- ❑ Use clean tightly covered container to remove debris, when applicable. For large projects, wipe cart clean prior to leaving work area and before re-entering hospital after dumping (may require keeping cleaning supplies at dock).
- ❑ HEPA vacuum or damp wipe and mop work areas at end of day and when work is complete.
- ❑ Upon completion of work, clean all surfaces with hospital approved disinfectant.

Equipment and Supplies:

- ❑ Remove all equipment and material from room prior to work.
- ❑ Cover material and equipment in room prior to work.

Containment:

- ❑ Close door to work area – the room will serve as containment, seal doors with tape*.
- ❑ Seal doors and/or enclose work area with approved mobile containment.
- ❑ Seal doors and/or enclose work area with approved HEPA filtered mobile containment.
- ❑ Seal doors and/or enclose work area with approved fire-retardant polyethylene*.
- ❑ Seal doors and/or enclose work area with approved fire-retardant wall board*.
- ❑ Install plastic sheeting above the ceiling up to the ceiling deck.
- ❑ All penetrations (e.g., pipes, conduit, holes) in the construction area must be sealed to prevent migration of dust (if fire rated separation, must be sealed with equivalent material).
- ❑ All reusable containment materials and equipment must be clean prior to installation and clearance samples.

Anteroom:

- ❑ No anteroom required.
- ❑ Vestibule or anteroom required*.
- ❑ Vestibule or anteroom required with negative pressure to corridor (HEPA unit within Anteroom)*.
- ❑ Construct anteroom large enough for equipment staging, cart cleaning, workers. The anteroom must be constructed adjacent to entrance of construction work area*.

Dust Control within Anteroom:

- ❑ HEPA vacuum in anteroom with MERV 17 filter (vacuum clothing, equipment, and carts before entering public space).
- ❑ Wet rags/wipes available to wipe down equipment, carts, and materials before leaving work zone.
- ❑ Use sticky walk off mats at the exit of the job site, being careful not to create a public trip hazard.
- ❑ Wet mats for dust control with clean drying mat.

HVAC Protection and Pressure Management:

- ❑ Manometer not required.
- ❑ Manometer required and must alarm visually and audibly if pressure falls below the required level.
- ❑ Negative pressure must be maintained at -0.02-inch water column (WC). (STOP WORK if falls below -0.01 WC).
- ❑ Localized negative pressure with directional air flow in relation to worksite entrance as approved by Healthcare Epidemiology*.
- ❑ HEPA unit must be exhausted outdoors*.
- ❑ HEPA unit exhausts indoors*.
- ❑ Place MERV 14 filter over return duct and return *plenum* and MERV 8 filter exhaust air; Filter media pad over supply (required for all sheetrock removal and installation).
- ❑ Remove or isolate return air diffusers to avoid dust entering the HVAC system.
- ❑ Remove or isolate the supply air diffusers to avoid positive pressurization of the space.
- ❑ Isolate HVAC system by placing plastic or other solid material over supply and return as specified by ICHE.
- ❑ Exhaust into shared or recirculating HVAC systems, or other shared exhaust systems (e.g., bathroom exhaust) is not acceptable.

Dust Control and Terminal Cleaning:

- ❑ Use water mist to minimize dust when applicable (i.e., when cutting tile).
- ❑ Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area.
- ❑ Worker clothing must be clean and free of visible dust before leaving the work area.
- ❑ Daily contractor clean required in adjacent areas with hospital-approved disinfectants.
- ❑ Terminal clean required at end of project.
- ❑ Clearance samples required prior to project or phase close out.
    - o Healthcare Epidemiology must be notified when work is complete, and area has been disinfected before collecting clearance samples.

PPE:

- ❑ None required.
- ❑ Booties are required prior to entry and exiting (shoes covers must be changed each time the worker exits the work area; stored in anteroom and off floor).

- ❑ Bunny suits, booties and hair bonnet/ hat cover required and available while dusty tasks are being performed (Stored in anteroom and off floor).
- ❑ Bunny suits, booties and hair bonnet/ hat cover required and available for duration of project (Stored in anteroom and off floor).
- ❑ Space in anteroom for donning, doffing and storage of required PPE.

Special Considerations:

- ❑ Elevator shaft access shall be sealed if located in areas undergoing construction/renovation.
- ❑ Pneumatic tube system ports will be sealed in areas undergoing construction/renovation.