Hilo Medical Center We Care for Our Community Policy and Procedure	Subject / Title: **CONSTRUCTION AND RENOVATION**	Policy No.: 800-125-30 Origination Date: 2/02 Last Revision Date: 8/07 Last Review Date: 8/07 By: John Halloran, RN, BSN, CIC Infection Control Director Name and Title
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Support Area Responsibilities – See Related Policies

1. Summary of work: contractor use of premises, Hilo Medical Center occupancy.

2. Construction Facilities and Temporary controls: construction cleaning.

3. Minor Demolition for Remodeling

I. PURPOSE:

This policy will outline infection control measures that will be implemented during all phases of renovation or construction that take place at Hilo Medical Center (HMC).

This policy will provide the occupants of all buildings with an environment that is safe from environmental hazards including potential nosocomial infections during all phases of renovation or construction.

Implementation of this policy will be a joint effort of the Environment of Care Committee (EOC), Infection Control Department, and the Maintenance Department.

II. POLICY:

A. The Environment of Care Committee and Infection Control Department will review all construction or renovation projects in the planning phases and throughout the project. This will include but is not be limited to:

   1. Number and placement of isolation rooms.
   2. Air handling systems.
   3. Number and placement of hand washing facilities.
   4. Staff and patient traffic patterns during the duration of the project.
   5. Relocation decisions regarding patient care areas, storage areas, etc.
   6. Water supply and plumbing.
   7. Waste containment, transport and disposal.
   8. Selection of finishes and surfaces that can be effectively cleaned (in clinical areas).
   9. Accommodation of personal protective equipment.
   10. Storage of moveable modular equipment.

B. Maintenance Department will keep the EOC Committee and the Infection Control Department informed of all locations of renovation and construction.

C. An **Infection Control Risk Assessment (ICRA)** (Appendix A) will be completed prior to any construction or renovations.

D. All class III and above construction or renovation project will require an **Infection Control Construction Permit** (Appendix B).

E. All construction workers, including subcontractors, must follow the infection control procedures described in this policy.

III. DEFINITIONS

A. CONSTRUCTION ACTIVITY TYPES

The construction activity types are defined by the amount of dust that is generated, the duration of the activity, and the amount of shared Heating, Ventilation, & Air Conditioning (HVAC) systems. Contact HMC's EOC Committee and Infection Control Department if any activity is questionable under these guidelines.

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

2. **Type B**: Small scale, short duration activities which create minimal dust.
   Includes, but is not limited to, installation of telephone and computer cabling, access to chase spaces, cutting of walls or ceiling where dust migration can be controlled.

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

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

B. DEFINITIONS OF INFECTION CONTROL RISK GROUPS

GROUP 1 LOWEST	GROUP 2 MEDIUM	GROUP 3 MEDIUM HIGH	GROUP 4 HIGHEST
1) Office areas 2) Floor B2	1) At patient care units (example: Cardiac Rehab, PVI, Neurophysiology)	1) Emergency Room 2) Radiology/MRI 3) Post-anesthesia Care units 4) Labor and Delivery 5) Newborn Nurseries 6) Pediatrics 7) Day Surgery 8) All other Intensive Care Units 9) Nuclear Medicine 10) Admission/Discharge area 11) PT – tank areas 12) Cafeteria 13) Echocardiography 14) Pump team 15) Laboratories	1) THI Clinic (Transplant) 2) Operating Rooms; Sterile Processing 3) Cardiovascular Recovery I 4) Labor and Delivery Operating Rooms 5) Cardiac Catheterization & Angiography Areas 6) Outpatient areas 7) Dialysis and Transplant Units 8) Oncology 9) Transplant 10) Cardiology 11) Anesthesia and Pump areas 12) All endoscopy areas 13) Pharmacy Admixture

C. CONSTRUCTION ACTIVITY/ INFECTION CONTROL MATRIX

1. If not shown on the drawing, determine the level of infection control classification necessary for the work by matching the construction activity with the designated risk group in the matrix below. Provide the associated infection control procedures.

CONSTRUCTION ACTIVITY→ RISK LEVEL ↓	TYPE "A"	TYPE "B"	TYPE "C"	TYPE "D"
Group 1	**I**	**II**	**II**	**III/IV**
Group 2	**I**	**II**	**III**	**IV**
Group 3	**I**	**III**	**III/IV**	**IV**
Group 4	**III**	**III/IV**	**III/IV**	**IV**

D. PERFORMANCE REQUIREMENTS

1. **Infection control is critical in all areas of all facilities. Construction activities causing disturbance of existing dust, or creating new dust, must be conducted in tight enclosures cutting off any flow of particles into patient areas.**

2. HMC requires all subcontractors, sub-subcontractors, material suppliers, vendors, employees, or agents to be bound by these same requirements. Before any construction on site begins, the contractor's on-site management team shall attend a

mandatory meeting held by HMC's EOC members, for instruction on precautions to be taken.

3. HEPA equipped air filtration machines shall provide air flow into the construction area not less than 100 FPM at barricade entrances with doors fully open. HEPA equipped air filtration machines shall be connected to normal power and ganged to a single switch for emergency shutoff and shall run continuously.

4. The HMC's EOC or Infection Control Departments may modify performance requirements for certain activities. Any modifications made by HMC's personnel do not relieve the contractor of compliance with proper infection control procedures.

IV. QUALITY CONTROL

A. The HMC's Infection Control Department will monitor dust counts in vicinity of construction work on an as needed basis. Whenever safe levels are exceeded, the contractor will be notified to correct conditions immediately.

B. All work shall be stopped on the project whenever a hazardous infection control deficiency exists.

C. The contractor shall take immediate action to correct all deficiencies.

D. Failure of the contractor to correct such deficiencies will result in corrective action taken by HMC and deducting all costs from the contract.

V. INFECTION CONTROL PERMIT

A. An infection control permit is required for Class III or higher procedures and any activity in a Group 4 Infection Control Group. Refer to shaded area on Construction Activity/Infection Control Matrix.

B. When required, obtain infection control permit from the HMC's EOC Committee before beginning any demolition or construction work.

VI. PRODUCTS and MATERIALS

A. Sheet Plastic: Fire retardant polystyrene, 6-mil thickness.

B. Barrier Doors: Solid core wood in metal frame, painted.

C. HEPA-Equipped Air Filtration Machines: Industrial grade that can filter 300 to 800 cubic feet/minute (provide HEPA filter, primary and secondary filters).

D. Exhaust Hoses: Heavy duty, flexible steel reinforced.

E. Adhesive Walk-Off Mats: Provide minimum size mats of 24 inches x 36 inches.

F. Disinfectant: HMC approved disinfectant or equal.

VII. BARRIERS

A. Closed door with masking tape applied over the frame and door is acceptable for projects which can be contained.

B. Construction, demolition, or reconstruction not capable of containment within a single room must have the following barriers erected:

1. Airtight plastic barrier that extends from floor to ceiling. Seams must be sealed with duct tape to prevent dust and debris from escaping.

2. Drywall barriers erected with joints covered or sealed to prevent dust and debris from escaping.

3. Seal all penetrations in existing barrier airtight.

4. Barriers at penetration of ceiling envelops, chases and ceiling spaces to stop movement of air and debris.

5. Anteroom or double entrance openings that allow workers to remove protective clothing or vacuum off existing clothing.

6. At elevator shafts or stairways within the field of construction.

7. Overlapping flap minimum two feet wide at polyethylene enclosures for personnel access.

VIII. INFECTION CONTROL PROCEDURES

10.1 GENERAL

A. Maintain manpower and equipment including dust mops, wet mops, brooms, buckets, and clean wiping rags for cleaning fine dust from floors and adjacent occupied areas.

B. Contain work areas outside of construction barriers, including spaces above ceilings, with full height polyethylene sheet barrier, tightly taped.

C. Clean up dust tracked outside of construction area immediately.

10.2. IMPLEMENTATION

A. Temporary construction barriers and closures above ceilings shall be dust tight.

B. Removal of debris shall be in tightly covered containers.

C. Adhesive mats or carpets at barricade entrances and in the anteroom shall be kept clean and changed daily, or as necessary, to prevent accumulation of dust.

D. Any dust tracked outside of barrier shall be removed immediately. Cleaning outside barrier to be by HEPA filtered vacuum or damp mop.

E. Any ceiling access panels opened for investigation beyond sealed areas shall be replaced immediately when unattended.

F. Block off all existing ventilation ducts within the construction area. Method of capping ducts shall be dust tight and withstand airflow.

G. When openings are made into existing ceilings, use Control Cube or provide polystryrene enclosure around ladder sealing off opening, fitted tight to ceiling and floor. Provide thorough cleaning of existing surfaces which become exposed to dust.

H. Removal of construction barriers and ceiling protection shall be done carefully. Vacuum and clean all surfaces free of dust after the removal.

I. When access panels are opened in occupied areas for work above ceilings, use polyethylene enclosure around ladder sealing off opening, fitted tight to ceiling and floor.

J. All vacuuming outside areas not under negative pressure to be done with a certified HEPA filtered vacuum.

K. Construct anteroom to maintain negative airflow from clean area through anteroom and into work area.

10.3 RESPONSIBLITIES: GENERAL and by ACTIVITY CLASS

A. The contractor is responsible for obtaining the infection control permit from the HMC's EOC Committee prior to commencing construction.

B. The HMC's EOC Committee and Infection Control Department will evaluate every work order. They reserve the right to add requirements to a project on an individual basis.

C. The HMC's EOC Committee will make periodic visits to work site to ensure compliance of policy.

D. Class I

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

2. Immediately replace any ceiling tile displaced for visual inspection.

3. Refer to procedures on Minor Disruption for Remodeling and procedures for Construction Facilities and Temporary Controls.

4. Cleanup and disposal in accordance with defined procedures on Cleanup and Disposal.

E. Class II

1. Provide active means to prevent air-borne dust from dispersing into atmosphere.

2. Water mist work surfaces to control dust while cutting.

3. Seal unused doors with masking tape.

4. Block off and seal air vents.

5. Wipe work surfaces with disinfectant.

F. Class III

1. Obtain infection control permit from HMC's EOC Committee before construction begins.

2. Isolate HVAC system in area where work is being done to prevent contamination of duct system.

3. Complete all critical barriers before construction begins.

4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.

5. Contain construction waste before transport in tightly covered containers.

6. Cover transport receptacles or carts; tape covers.

7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work areas.

8. Place dust mat at entrance and exit of work area.

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

G. Class IV

1. Obtain infection control permit from the HMC's EOC Committee before construction begins.

2. Isolate HVAC system in area where work is being done to prevent contamination of duct system.

3. Complete all critical barriers or implement control cube method before construction begins.

4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.

5. Seal holes, pipes, conduits, and punctures appropriately with appropriate fire-rated sealant.

6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using an HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.

7. Provide adhesive walk-off mats at entrance to work area within the anteroom. Replace used mats with new mats in accordance with manufacturer's recommendations.

8. Do not remove barriers from work area until completed project is inspected each by the HMC's EOC Committee or Infection Control Department and thoroughly cleaned by the HMC's Environmental Services Department.

9. Vacuum work area with HEPA filtered vacuums.

10. Wet mop area with disinfectant.

11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with the construction.

12. Contain construction waste before transport in tightly covered containers.

13. Cover transport receptacle or carts. Tape covering.

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

10.4 ENVIRONMENTAL MONITORING

A. The contractor is responsible for maintaining equipment and replacement of HEPA and other filters in accordance with manufacturer's recommendations.

B. The HMC's EOC Committee and Infection Control Department will perform field inspection and testing.

C. HMC's personnel will monitor air quality throughout project as needed.

10.5 ENFORCEMENT

A. For breach of this infection control policy, HMC will stop the work of the project and the contractor shall pay for all associated costs incurred by HMC as well as for correction for the work.

B. The HMC's EOC Committee, and Infection Control Department will record the following:

1. Document each violation with photographs.
2. Extract Contractor or Department information from the work log.
3. Maintain a record of all infection control violations.

C. Violations of infection control policies may affect the status as a responsible contractor for bidding future work.

Appendix A
850-125-30B
Appendix B

Infection Control Construction Permit	
	Permit No:
Location of Construction:	Project Start Date:
Project Coordinator	Estimated Duration:
Contractor Performing Work	Permit Expiration Date:
Supervisor:	Telephone:

YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity			GROUP 1: Least Risk
		TYPE B: Small scale, short duration, moderate to high levels			GROUP 2: Medium Risk
		TYPE C: Activity generates moderate to high levels of dust, requires greater 1 work shift for completion			GROUP 3: Medium/High Risk
		TYPE D: Major duration and construction activities requiring consecutive work shifts			GROUP 4: Highest Risk

CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection.	3. Minor Demolition for Remodeling
CLASS II	1. Provides active means to prevent air-borne dust from dispersing into atmosphere 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Wipe surfaces with disinfectant.	6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area. 9. Remove or isolate HVAC system in areas where work is being performed.
CLASS III Date Initial	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Do not remove barriers from work area until complete project is thoroughly cleaned by Env. Services Dept.	6. Vacuum work with HEPA filtered vacuums. 7. Wet mop with disinfectant 8. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 9. Contain construction waste before transport in tightly covered containers. 10. Cover transport receptacles or carts. Tape covering. 11. Remove or isolate HVAC system in areas where work is being performed.
Class IV Date Initial	1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Seal holes, pipes, conduits, and punctures appropriately. 6. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.	7. All personnel entering work site are required to wear shoe covers 8. Do not remove barriers from work area until completed project is thoroughly cleaned by the Environmental Service Dept. 9. Vacuum work area with HEPA filtered vacuums. 10. Wet mop with disinfectant. 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 12. Contain construction waste before transport in tightly covered containers. 13. Cover transport receptacles or carts. Tape covering. 14. Remove or isolate HVAC system in areas where is being done.

Additional Requirements:

_____ Date Initials 12 Hour uninterrupted exchange required	_____ Exceptions/Additions to this permit Date Initials are noted by attached memoranda
Permit Request By:	Permit Authorized By:
Date:	Date:

Infection Control Program
Construction Rounds Compliance Monitor

Review Date: _____ Observed by: _____

LOCATION	STANDARDS	NOT MET	RESPONSIBLE PERSON and COMMENTS
	Contractors Wearing Required Identification		
	Construction Personnel Wearing required PPE (e.g., hardhat, protective eyewear, footwear)		
	Air Pressure Barriers Active (e.g., negative pressure maintained, exhaust fans functioning, air quality adequate, no excess fumes/vapors)		
	Contractors Following Safe Work Practices (e.g., observe for trip and fall hazards, ladder safety, smoking rules met)		
	Walk-Off Mats Clean & Adequate to contain Construction Dust)		
	Construction Barriers Appropriate for Patient Population (sealed plastic with overlay, plywood barrier with door, closed patient doors etc.)		
	Construction Area Secure (e.g., barriers adequate to prevent entry of unauthorized persons, vermin, etc.)		
	Patient Care Equipment & Items Removed from Construction Area		
	Construction entry & Adjacent Areas Free of Dust & Debris		

LOCATION	STANDARDS	NOT MET	RESPONSIBLE PERSON and COMMENTS
	Construction Carts Covered During Transport of Materials		
	Construction Personnel & Materials Transported on Dedicated Elevators (e.g., non-patient use elevators)		
	Materials Utilized are Fireproof (e.g., as required for project)		
	Ceiling Tiles Replaced When space Above Ceiling Not Being Accessed (if occupied area, adjacent patient room doors are closed)		
	Additional Comments and Observations		

Appendix B

Infection Control Construction Permit

	Permit No:
Location of Construction:	Project Start Date:
Project Coordinator	Estimated Duration:
Contractor Performing Work	Permit Expiration Date:
Supervisor:	Telephone:

YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity			GROUP 1: Least Risk
		TYPE B: Small scale, short duration, moderate to high levels			GROUP 2: Medium Risk
		TYPE C: Activity generates moderate to high levels of dust, requires greater 1 work shift for completion			GROUP 3: Medium/High Risk
		TYPE D: Major duration and construction activities requiring consecutive work shifts			GROUP 4: Highest Risk

CLASS I	3. Execute work by methods to minimize raising dust from construction operations. 4. Immediately replace any ceiling tile displaced for visual inspection.	4. Minor Demolition for Remodeling
CLASS II	10. Provides active means to prevent air-borne dust from dispersing into atmosphere 11. Water mist work surfaces to control dust while cutting. 12. Seal unused doors with duct tape. 13. Block off and seal air vents. 14. Wipe surfaces with disinfectant.	15. Contain construction waste before transport in tightly covered containers. 16. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 17. Place dust mat at entrance and exit of work area. 18. Remove or isolate HVAC system in areas where work is being performed.
CLASS III Date Initial	4. Obtain infection control permit before construction begins. 5. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 6. Complete all critical barriers or implement control cube method before construction begins. 6. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 7. Do not remove barriers from work area until complete project is thoroughly cleaned by Env. Services Dept.	12. Vacuum work with HEPA filtered vacuums. 13. Wet mop with disinfectant 14. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 15. Contain construction waste before transport in tightly covered containers. 16. Cover transport receptacles or carts. Tape covering. 17. Remove or isolate HVAC system in areas where work is being performed.
Class IV Date Initial	7. Obtain infection control permit before construction begins. 8. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 9. Complete all critical barriers or implement control cube method before construction begins. 10. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 11. Seal holes, pipes, conduits, and punctures appropriately. 12. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site.	15. All personnel entering work site are required to wear shoe covers 16. Do not remove barriers from work area until completed project is thoroughly cleaned by the Environmental Service Dept. 17. Vacuum work area with HEPA filtered vacuums. 18. Wet mop with disinfectant. 19. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 20. Contain construction waste before transport in tightly covered containers. 21. Cover transport receptacles or carts. Tape covering. 22. Remove or isolate HVAC system in areas where is being done.

Additional Requirements:

_____ Date Initials 12 Hour uninterrupted exchange required	_____ Exceptions/Additions to this permit Date Initials are noted by attached memoranda
Permit Request By:	Permit Authorized By:
Date:	Date:

Infection Control Program
Construction Rounds Compliance Monitor

Review Date: _____ Observed by: _____

LOCATION	STANDARDS	NOT MET	RESPONSIBLE PERSON and COMMENTS
	Contractors Wearing Required Identification		
	Construction Personnel Wearing required PPE (e.g., hardhat, protective eyewear, footwear)		
	Air Pressure Barriers Active (e.g., negative pressure maintained, exhaust fans functioning, air quality adequate, no excess fumes/vapors)		
	Contractors Following Safe Work Practices (e.g., observe for trip and fall hazards, ladder safety, smoking rules met)		
	Walk-Off Mats Clean & Adequate to contain Construction Dust)		
	Construction Barriers Appropriate for Patient Population (sealed plastic with overlay, plywood barrier with door, closed patient doors etc.)		
	Construction Area Secure (e.g., barriers adequate to prevent entry of unauthorized persons, vermin, etc.)		
	Patient Care Equipment & Items Removed from Construction Area		
	Construction entry & Adjacent Areas Free of Dust & Debris		

LOCATION	STANDARDS	NOT MET	RESPONSIBLE PERSON and COMMENTS
	Construction Carts Covered During Transport of Materials		
	Construction Personnel & Materials Transported on Dedicated Elevators (e.g., non-patient use elevators)		
	Materials Utilized are Fireproof (e.g., as required for project)		
	Ceiling Tiles Replaced When space Above Ceiling Not Being Accessed (if occupied area, adjacent patient room doors are closed)		
	Additional Comments and Observations		