

Appendix A – Clinical Facilities with Negative Pressure Rooms

I. General

- A. The room shall be completely sealed (walls, ceiling, light fixtures, etc.)
- B. The room shall have full height partitions that are sealed “deck to deck” at the top and bottom. It shall be interior to the facility (i.e., not in a perimeter location with windows or outside walls).
- C. Wall gaskets shall be provided for all light switches, power receptacles, and data drops (T-stats and fire alarm devices are not to have gaskets).
- D. Level five finished walls as defined by the Gypsum Association (GA 214-10) and incorporated into ASTM C 840 with semi-gloss finish paint shall be provided.
- E. Acoustical ceiling tiles shall be non-perforated and cleanable such as Armstrong vinyl Clean Room VL ceiling tiles. Gypsum board ceilings will be considered if they are finished to the wall standards and there are no above ceiling items that require access. Access panel should be avoided. Where unavoidable, they shall be sealed with latex vinyl adhesive caulk and painted.
- F. VCT flooring shall be provided.
- G. All plumbing and other piping penetrations associated with the fixture itself shall be sealed at the wall(s).
- H. Accessories and/or wall furnishings (such as white boards, posters, etc.) shall be avoided unless affixed using non-penetrating methods such as “double sided” tape.
- I. The door shall be sealed to the frame utilizing non-pervious and cleanable edge seals or weather stripping.
- J. The door shall have an automatic closer.

II. HVAC

- A. Doors shall have static sweeps unless an undercut is deemed appropriate for makeup air purposed; however, the undercut shall not be greater than ½” above the finished floor. The mechanical designer shall ensure there is sufficient makeup air available for transfer from the corridor. Where an undercut is incorporated (i.e. not door sweep), visual airflow aids are required such as Davis “Air-Flow Tels” 950. Provide three (3) equally spaced along the bottom of the door with the tips 1/8” above the finished floor. Refer to paragraph B below for additional makeup air information.
- B. If makeup air is required beyond what a door undercut will provide, the approach is to be from an adjacent return air plenum. The makeup air shall be introduced into the room via an air device similar to the supply air device and immediately adjacent to it.

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It shall communicate with the plenum other than directly above the room and be connected via rigid ductwork with a barometric backdraft damper. The duct shall be sealed where it penetrates the room's full height partitions. The mechanical designer shall ensure there is sufficient makeup air for transfer from the plenum.

- C. The exhaust shall be directly to the outdoors.
- D. The room air shall be continuously exhausted during business hours.
- E. There shall be a redundant exhaust fan. If the building has an automation system, the fans shall be programmed to operate in a lead/lag fashion where the lag fan will automatically operate upon the lead fan failure. The fans' daily operational schedule shall be adjustable by the building operators through the automation system.
- F. The exhaust fans shall be direct drive and be on generator power.
- G. Unless the designer can establish a roof mounted location where exhaust can be discharged straight up and away from building elements, and at high velocity, the exhaust air shall be routed through a HEPA filter assembly. The HEPA filter assembly shall be located in an easily accessible location, such as elevated on a flat portion of the roof and shall incorporate differential pressure monitoring. In all cases, the discharge shall be directed away from the building and not near any air intake sources such as windows, doors, louvers, etc. per local building code requirements. It should be noted that a HEPA filter assembly may be required regardless of the intended discharge condition and will need to verify this with the BDCD Project Manager during design.
- H. Round exhaust ductwork is preferred. In rectangular ducts, turning vanes are to be avoided and specify standard or long radius elbows (inside mitered elbows are unacceptable).
- I. Provide permanent (stenciled) warning signs every six (6) feet on both sides of horizontal exhaust ductwork and labeled "NEGATIVE PRESSURE EXAM RM EXHAUST". The lettering shall be 2" high. Airflow direction arrows shall also be provided of the same size on either end of the warning labels. Vertical ducts shall be labeled similarly, but on ALL sides for potentially exposed to view such as if a drywall chase were to be removed.
- J. There shall be a minimum of 2 outside air changes per hour.
- K. There shall be a minimum of 12 total room air changes per hour.
- L. The minimum pressure differential (with door closed) shall be 0.01" water column with respect to immediately adjacent areas and as measured at the room's door. (Room shall not exceed -0.02" water column.) It is recommended that measures (VFDs, speed

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controller(s), volume dampers, etc.) be incorporated for adjusting and setting of the airflow to achieve the pressure differential.

- M. Adjacent to the door, specify electronic monitoring of airflow utilizing Siemens SRCM Room Pressure Monitor 547-323A 9 and tap plates) with a 45 second delay (adjustable) to prevent nuisance alarms. Specify a Siemens remote annunciator module (547-199) with acknowledged switch to be tied into the pressure monitor and located in a conspicuous location where operational staff normally reside, such as behind a reception desk.
- N. When there is a building automation system, the room pressure monitor shall be tied into it for monitoring, trending/logging, and alarming. Where possible, an alarm condition will send emails to the building's operation's staff alerting them to the problem.
- O. The airflow path within the room is to be "top down" and maximized such that it flows from behind where the health care worker would normally position their self to behind the patient examination area. This is generally thought of as flowing diagonally from the door side of the room to the wall opposite the door.
- P. The exhaust air shall be captured through a wall grille centered 18" above the finished floor. The A/E shall specify a clear wall cavity of sufficient size to house the required ductwork. The supply air shall be located in the ceiling and be via a register or diffuser.
- Q. It is preferred that the room be serviced by a constant volume system. When there is a VAV system, a dedicated shut-off VAV box shall supply constant airflow (i.e. the VAV box shall be programmed and balanced such that the minimum airflow shall match the maximum airflow.
- R. Light fixtures shall not have return air "slots" nor other openings that allow air passage other than what is factory standard and for cooling and ventilation of the fixture itself.