FACILITY		**PR#:**
PROJECT		
ADDRESS		

MECHANICAL REQUIREMENTS
OAR 333-535-0300
Effective October 1, 2009

____ Schematic Design (SD) Review ____Construction Document (CD) Review

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(1) GENERAL STANDARDS:			
(a) In addition to requirements of this rule, the mechanical system serving hospitals and hospital outpatient facilities may be subject to general review for overall efficiency and life cycle cost, although no requirements will be enforced beyond those included in this rule. Recognized engineering procedures are recommended to achieve specific requirements and performance for the most economical and effective results. Different geographic areas may have climate variations and use conditions that would favor 1 system over another in terms of overall cost and efficiency. In no case shall patient care or safety be sacrificed for conservation. Construction shall comply with the Oregon Structural Specialty Code (OSSC), the Oregon Mechanical Specialty Code (OMSC), the Oregon Plumbing Specialty Code (OPSC), Oregon Fire Code (OFC), NFPA 90A, and NFPA 99 Health Care Facilities as enforced by the State Building Codes Division and Authorities having Jurisdiction. Responsibility for enforcement remains with these authorities.			
(b) The facility shall include provisions for recovery of waste cooling and heating energy (ventilation, exhaust, water and steam discharge, cooling towers, incinerators, etc.) in compliance with local codes.			
(c) Recirculating room units (such as induction units and unit ventilators) may be used in individual rooms for heating and cooling purposes. Outdoor air requirements shall be met by separate air handling systems with proper filtration, as noted in Table 3.			
(d) To reduce utility costs, facility design shall include consideration of recognized procedures such as variable air volume systems, energy recovery devices, “load shedding”, programmed controls for unoccupied periods including nights and weekends, and use of natural ventilation where site and climatic conditions permit. Systems with excessive operational and/or maintenance costs that would negate long-range energy savings should be avoided.			

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(e) To the extent possible, this rule has been written to permit maximum use of simplified systems including that for variable air volume (VAV). However, care must be taken in design to avoid possibility of large temperature differentials, high velocity supply, excessive noise and stagnation. Air supply, return and exhaust in rooms may vary in response to room load provided the total and outside air change rates stay within the limits of Table 2, Note 4. Construction drawing submissions shall include information listing the actual supply air and outside air change rates provided to the areas listed in Table 2 at maximum and minimum terminal unit settings.			
(f) To maintain asepsis control, air supply, return, and exhaust quantities should generally be controlled to ensure movement from "clean" to "less clean" areas and maintain directional air movement within the limits of Table 2, Note 2. Special considerations shall be given to sterile areas such as Operating Rooms and Delivery Rooms and Central Supply.			
(g) Variable air volume systems serving inpatient facilities or surgical outpatient facilities shall include controls or equipment necessary to ensure that minimum outside air quantities in cubic feet per minute and the resulting space pressure relationships are maintained over the range of fan operation. Examples of methods to ensure the delivery of minimum quantities of outside air include the installation of airflow monitoring stations or dedicated supply fans.			
(h) Prior to acceptance of the facility, all mechanical systems shall be tested, balanced and operated to demonstrate to the design engineer or his or her representative that the installation and performance of these systems conform to the design intent and requirements herein. Test results shall be documented for maintenance files and be available for inspection by Division's surveyors or Authorities having Jurisdiction.			
(i) Functional performance tests shall be provided for projects that include the addition or modification of major equipment and systems. These tests shall ensure that mechanical systems operate in accordance with the design intent and in compliance with requirements herein. Description of procedures and test results for each functional performance test shall be documented to demonstrate to the design engineer, or his or her representative, that systems operate in accordance with the design intent. Documentation shall be included in the maintenance files and be available for inspection by the Division's surveyors or Authorities having Jurisdiction. Functional performance tests shall be developed and performed for the following systems and system functions in hospital inpatient facilities where applicable:			

OAR Rule Section	Complied?		Comment
	Yes	No	
(A) Outdoor air ventilation system components and control modes.			
(B) Humidity control components and control modes.			
(C) Maintenance of space pressure relationships through all modes of air handling system operation.			
(D) Airborne infectious isolation and protective environment room ventilation and pressurization monitoring systems.			
(E) Smoke evacuation systems serving anesthetizing areas.			
(F) Fire/smoke damper controls.			
(G) Boiler and generator fuel oil supply transfer systems including alarms.			
(H) Laboratory hood systems.			
(j) Upon completion of the contract, the facility shall be furnished and retain on file a complete set of building drawings, manufacturers' operating, maintenance and preventive maintenance instructions, parts lists and procurement information with model numbers, and a description of the operation of each piece of equipment. Responsible operating staff persons shall also be provided with instructions in the proper operational use of systems, equipment, and controls. This information shall be available for inspection by Division's surveyors or Authorities having Jurisdiction.			
(k) If inpatient facility system modifications affect greater than 25% of the system capacity, designers shall obtain and utilize pre-renovation water/air flow rate measurements to verify that sufficient capacity is available and that renovations have not adversely affected flow rates in non-renovated areas.			
(l) Psychiatric patient room fixtures and equipment shall be tamper resistant and shall be selected to meet the requirements of the Patient and Staff Safety Assessment. Equipment shall be selected to minimize the need for maintenance within the room. Refer to OAR 333-535-0061 for additional requirements.			
(m) Identification. All piping, including heating ventilation, gas, vacuum and air conditioning (HVAC) except control line tubing, shall be color coded or otherwise marked for easy identification. Major equipment shall be labeled. All valves shall be tagged. Identification and valve schedules shall be provided to the facility for permanent record and reference.			
(2) Insulation:			
(a) Insulation shall be provided within the building to conserve energy, protect personnel, prevent vapor condensation, and reduce noise.			

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(b) Insulation on cold surfaces shall include an exterior vapor barrier. (Materials which will not absorb or transmit moisture will not require a separate vapor barrier.)			
(c) Insulation, including finishes and adhesives on the exterior surfaces of ducts, piping, and equipment, shall have a flame spread rating of 25 or less and a smoke developed rating not to exceed 50 when tested in accordance with NFPA 255.			
(d) If duct lining is used, it shall be coated and sealed and shall meet ASTM C1071. These linings, including coatings, adhesives, and insulation on pipes and ducts in building spaces, shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less when tested in accordance with NFPA 255.			
(e) No duct linings exposed to air movement shall be used in ducts, terminal boxes or other systems downstream of final filters supplying operating rooms, invasive special procedure rooms, C-section delivery rooms, post anesthesia recovery rooms, critical care, nurseries , protective environment rooms, intensive care and central supply areas. Fully encapsulated lining may be used in terminal boxes serving these areas. Sound traps or duct silencers downstream of final filters shall be al metal with no fill or shall have special coatings over such linings per ASTM C1071.			
(f) If existing lined ductwork is reworked in a renovation project, the liner seams and punctures shall be resealed, repaired and/or replaced.			
(3) STEAM AND HOT WATER SYSTEMS:			
(a) Boilers and Domestic Water Heaters. Boilers shall have the capacity, based upon the net ratings published by the Hydronics Institute to supply the normal requirements of all systems and equipment. Their number and arrangement shall accommodate facility need during time of breakdown or routine maintenance of any one boiler. The capacity of the remaining boiler(s) shall be sufficient to provide domestic hot water service for clinical, dietary, and patient use; steam for sterilization and dietary purposes; and heating for operating, delivery, labor, recovery, intensive care, nursery, emergency departments, and general patient rooms. If the domestic water heating system is independent of the building heating boilers, the domestic water heating system shall be capable of providing a back-up source of domestic hot water for clinical, dietary, and sterilizer use when the primary domestic water heating system is not operable. These requirements do not apply to outpatient facilities except outpatient surgical facilities providing invasive or anesthetizing procedures shall provide backup equipment for hot water and sterilizer needs only.			

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(b) Boiler system accessories. Boiler feed pumps, heating circulating pumps, condensate return pumps, heat exchangers, and fuel oil pumps shall be connected and installed to provide normal and standby service where back-up or standby service is required.			
(c) Valves. Supply and return mains and risers of cooling, heating and steam systems shall be valved to isolate the various sections of each system. Each piece of equipment shall be valved at the supply and return ends.			
(d) Fuel supplies. Fuel used for boiler systems serving hospital inpatient facilities that provide building heating to the areas listed in subsection (3)(a) shall include a backup on-site fuel system if the primary fuel system fuel is not stored on site. The on-site fuel storage system shall have sufficient fuel/power to operate the boiler systems for a minimum of 48 hours, or for a time period consistent with the facility emergency management plan. The on-site fuel system shall include a low level fuel sensor alarmed at a staffed location. On-site fuel systems may be combined with the emergency generator fuel systems per the requirements of NFPA 110.			
(4) AIR CONDITIONING, HEATING, AND VENTILATING SYSTEMS:			
(a) The ventilation system shall be designed and balanced to provide ventilation rates and directional flow as shown in Table 2. (See notes 2 and 4 for reduction and shutdown of ventilation systems when room is unoccupied.) The ventilation rates shown in Table 2 shall be used only as model standards; they do not preclude the use of higher rates that may be appropriate. All occupiable rooms and areas in the facility shall have provision for mechanical ventilation. Natural ventilation systems and operable windows shall be permitted to supplement mechanical ventilation where they will not adversely affect required pressure relationships, air change rates, and room temperatures. Freestanding immediate care clinics, physician's clinics, imaging facilities, outpatient physical therapy, and occupational therapy facilities that are not part of an inpatient facility are not required to meet the ventilation requirements of Table 2, except endoscopy, isolation, and bronchoscopy areas.			

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(b) Outside air ventilation intakes shall be located at least 25 feet from exhaust outlets of ventilating systems, combustion equipment stacks, medical-surgical vacuum systems, plumbing vents, cooling towers, or from areas that may collect vehicular exhaust or other noxious fumes in all inpatient areas and in outpatient areas providing invasive or anesthetizing procedures. In non-anesthetizing hospital outpatient facilities, this distance may be reduced to 10 feet. Plumbing vents that terminate above the level of the top of the air intake may be located as close as 10 feet. Outside air ventilation intakes shall be located a minimum of 25 feet from the combustion vents of rooftop air handling units, except that the clearance may be reduced to 10 feet when the vent is above the level of the intake. Outside air ventilation intakes shall be located a minimum of 6 feet from relief/economizer air outlets that do not include required building exhaust. The bottom of outside ventilation air intakes in inpatient facilities shall be located as high as practical but at least 15 feet above ground level or 3 feet above the roof level.			
(c) Fans serving exhaust systems shall be located at the discharge end of the system to limit positively pressurized ductwork within the building and shall be conveniently accessible for service. Where existing conditions prohibit fans from being located at the discharge end of the system, alternate systems may be considered provided discharge ductwork is sealed and tested per medium pressure duct requirements. Hospital outpatient facilities are not required to have exhaust fans at the discharge end of the system except endoscopy, isolation, and bronchoscopy area. Exhaust systems may be combined as necessary for efficient use of recovery devices required for energy conservation.			
(d) Exhaust systems from areas that may be contaminated shall not be combined with other exhaust systems, shall include fans located outside the buildings with outlets discharging vertically a minimum of 6 feet above the roof level, and shall be arranged to minimize recirculation of exhaust air into the building. Consideration shall be given to redundant fan systems. Contaminated exhaust ducts and discharge points shall be labeled. Contaminated areas include infectious isolation, decontamination, ETO sterilizer, non-refrigerated body holding, and bronchoscopy. Contaminated exhaust shall not be served by exhaust systems that may allow cross contamination, such as heat wheels. Where existing conditions prohibit fans from being located outside the building, alternate systems that are designed to limit cross contamination and exposure to workers and patients may be considered. (Refer to OMSC, for additional requirements.)			

OAR Rule Section	Complied?		Comment
	Yes	No	
(e) Operating and C-section delivery rooms air supply shall be from ceiling outlets near the center of the work area to effectively control air movement. Laminar flow design diffusers shall be used in operating rooms. Each operating and C-section delivery room shall have at least 2 return/exhaust air inlets located near the floor level in opposite corners of the room. (Design should consider turbulence and other factors of air movement to minimize fall of particles into wound site.) Where extraordinary procedures, such as organ transplants, may justify other special designs, the installation shall be as required to properly meet the performance needs. Special designs shall be reviewed on a case by case basis. Installation of equipment requiring service shall be kept to a minimum above operating rooms and sterile core areas. Temperature shall be individually controlled for each operating and C-section delivery room. The air handling systems for operating and C-section delivery rooms shall operate at all times.			
(f) Humidity control and smoke vent systems in inpatient facility anesthetizing areas shall be provided as required by NFPA 99, Environmental Systems Chapter. Smoke vent systems shall prevent smoke within individual anesthetizing rooms from affecting adjacent anesthetizing rooms. Adjacent rooms shall remain at a positive pressure in relationship to the areas with detected smoke. Smoke dampers shall not affect the operation of the smoke vent system.			
(g) Air supply for intensive care nurseries, airborne infectious isolation rooms, bronchoscopy treatment rooms, and rooms used for invasive procedures shall be at or near the ceiling. Return/exhaust air inlets shall be near the floor level. Special designs shall be reviewed on a case by case basis.			
(h) Each airborne infectious isolation room and protective environment room shall have a permanently installed and labeled visual mechanism to constantly monitor the pressure status to the room when occupied by a patient requiring isolation or protection. The mechanism shall continuously monitor the direction of the air flow. Audible alarms, if provided, shall include a silencing switch. Rooms with reversible airflow provisions for the purpose of switching between airborne infectious and protective environment isolation rooms are not acceptable. Rooms used for sputum induction, aerosolized pentamadine treatments, or other cough inducing treatments shall meet the requirements of Table 2 for airborne infectious isolation rooms. Protective environment rooms shall be provided with HEPA filters at 99.97 per cent efficiency (MERV 17) per Table 3. Recirculating HEPA filter units may be used in protective environment rooms, but shall not be used to meet the minimum filtering requirements of Table 3.			

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(i) The bottoms of ventilation (supply/return/ exhaust) openings shall be at least 6 inches above the floor.			
(j) Emergency waiting rooms**,** and other waiting rooms where airborne infection is a concern, as defined by the Infection Control Risk Assessment, shall have low wall return/exhaust and shall conform to the requirements of Table 2. Special designs shall be reviewed on a case by case basis.			
(k) Air handling systems in inpatient facilities shall be fully ducted except when serving non-patient care areas.			
(l) All ventilation or air conditioning systems, except individual room units serving non-critical care areas, shall be equipped with filters having efficiencies equal to, or greater than, those specified in Table 3. Where 2 filter beds are required, filter bed No. 1 shall be located upstream of the air conditioning equipment, and filter bed No. 2 shall be downstream of any cooling coils and blowers. Non-central air handling systems (individual room units) shall be equipped with filters with minimum 60 percent efficiency (MERV 11).			
(A) Where only one filter bed is required, it shall be located upstream of the air conditioning coils unless an additional pre-filter is employed.			
(B) Filter efficiencies shall be average ratings tested in accordance with American Society of Heating, Refrigeration & Air Conditional Engineering Standards 52.1 and MERV's rating shall be based on ASHRAE Standard 52-2, except as noted otherwise.			
(C) Filter frames shall be manufactured housings designed for maximum 500 FPM velocity and shall provide an airtight fit with the enclosing ductwork. All joints between filter segments and the enclosing ductwork shall be gasketed or sealed to provide a positive seal against air leakage. Filter housing blank off panels shall be permanently attached to the frame, constructed of rigid materials, and have sealing surfaces equal to or greater than the filter media installed in the filter frame.			
(D) Magnahelics or manometers shall be installed across all filter beds having a required efficiency of 75 percent (MERV 12) or more. When these filters are located remote from the air handling unit, monitoring of filter condition shall be provided in a staffed area or through the building control system.			

OAR Rule Section	Complied?		Comment
	Yes	No	
(m) Steam humidifiers shall be used for humidification. Central steam shall be used only if chemical treatment is food grade. Humidifiers shall be located to prevent moisture on filters or lined ductwork. Ductwork with duct mounted humidifiers shall be stainless steel or aluminum construction and shall have a means for water removal. An adjustable high limit humidistat shall be located downstream of the humidifier to reduce the potential for condensation inside the duct. Humidifiers shall be connected to airflow proving switches that prevent humidification unless the required volume of airflow is present. All duct takeoffs shall be sufficiently downstream of the humidifier to ensure complete moisture absorption.			
(n) Ducts and piping which penetrate construction intended for X-ray, MRI, RF, or other radiation protection shall not impair the effectiveness of the protection.			
(o) Fire and smoke dampers shall be constructed, located, activated, and installed in accordance with the requirements of NFPA 90A, NFPA 101, and OSSC. Fans, smoke dampers, and detectors shall be interconnected so that activation of dampers will not damage the ducts. Access for maintenance shall be provided at all dampers. All damper locations must be shown on drawings. When smoke partitions are required, zones for air handling systems shall be coordinated with compartmentation insofar as practical to minimize the need to penetrate fire and smoke partitions.			
(p) Systems shall be provided to exhaust chemicals and fumes that cause respiratory irritation or other hazards to workers, including laboratory processes, instrument processing rooms, radioactive processes, chemo hoods, and pharmacies. If the minimum air change standards in Table 2 do not provide sufficient air for use by hoods and safety cabinets, makeup air shall be provided to maintain the required air flow direction and to avoid depending upon infiltration from outdoors or from contaminated areas.			
(q) All laboratory and pharmacy hood systems shall meet OSMC and shall meet the following general standards.			
(A) Have an average face velocity of 75 feet to 125 feet per minute or as required by the hood manufacturer, whichever is greater;			
(B) Be connected to an exhaust system to the outside that is separate from the building exhaust system;			
(C) Have a labeled exhaust fan located at the discharge end of the system outside the building with the outlet discharging vertically a minimum of 6 feet above the roof;			
(D) Have an exhaust duct system of noncombustible corrosion-resistant materials as needed to meet the planned usage of the hood; and			
(E) Be equipped with devices and alarms to alert staff of fan shutdown or loss of airflow.			

OAR Rule Section	Complied?		Comment
	Yes	No	
(F) If equipped with HEPA filters, have a means to alert staff when filters change is required.			
(G) Each hood that processes highly infectious or radioactive materials shall have a minimum face velocity of 90 to 110 feet per minute or as required by the hood manufacturer; shall be connected to an independent exhaust system; shall have filters with a 99.97 percent efficiency (MERV 17); and shall be designed and equipped to permit the safe removal, disposal and replacement of contaminated filters. Filters shall be as close to the hood as practical to minimize duct contamination.			
(H) Hoods that process radioactive materials shall meet requirements of the Nuclear Regulatory Commission and NFPA 801 Facilities for Handling Radioactive Materials, and discharge vertically a minimum of 10 feet above the roof of the building. Radioactive isotopes used for injections, etc., without probability of airborne particulate or gases may be processed in a "clean work bench" type hood where acceptable to the Nuclear Regulatory Commission.			
(I) Duct systems serving hoods in which strong oxidizing agents (e.g., perchloric acid) are used shall be equipped with wash down facilities. Provisions shall be made for safe removal of filters during wash down operations.			
(r) Exhaust hoods in food preparation centers shall comply with NFPA 96. Dedicated kitchen hood make-up air system intakes may be a minimum of 10 feet from kitchen hood exhaust outlets. The food preparation area may have air movement "in" during cooking and hood operation for odor control. Makeup systems for hoods shall be arranged to minimize "short circuit" of air movement and to avoid reduction in air velocity at the point of contaminant capture.			
(s) The ventilation system for medical gas storage rooms shall conform to the requirements of NFPA 99.			

OAR RULE SECTION	COMPLIED?		COMMENT
	YES	NO	
(t) The space that houses ethylene oxide (ETO) sterilizers and cylinder storage shall be provided with a dedicated local exhaust system with adequate capture velocity (i.e., with a minimum capture velocity of 200 fpm) to exhaust over sterilizer door, exhaust at sterilizer drain and exhaust at the aerator and multiple load station. The exhaust shall discharge vertically a minimum of 10 feet above the roof and shall be labeled. An audible and visual alarm shall activate in the sterilizer work area and in a continuously staffed location upon loss of airflow in the exhaust system. Relief vents for safety valves shall be provided and shall terminate outside the building. Installation shall also conform to applicable standards of the sterilizer manufacturer. Testing of installations to standards of the Department of Consumer and Business Services, Oregon Occupational Safety and Health Division shall be made before routine use occurs. Such standards are provided in OAR chapter 437, division 2.			
(u) Boiler rooms shall be provided with sufficient outdoor air to maintain combustion rates and to limit workstation temperatures.			
(v) Gravity exhaust may be used, where conditions permit, for non-patient areas such as boiler rooms, central storage, etc.			
(5) Plumbing and other piping systems:			
(a) Plumbing fixtures:			
(A) All fixtures used by medical and nursing staff and all lavatories used by patients and food handlers shall be trimmed with valves that can be operated without the use of hands (single lever devices, wrist blades, sensor operated, foot pedal operated, or similar). Blade handles used for this purpose shall not exceed 5 inches in length. Standard fittings are allowable on lavatories in patient toilet rooms when a second lavatory is provided in the adjacent patient room(s). In patient care areas, faucet and water closet sensors requiring electrical energy to operate shall be connected to emergency power.			
(B) Clinical sinks shall be trimmed with valves that can be operated without hands. Single lever or wrist blade devices shall be permitted. Handles on clinical sink faucets shall be a minimum of 6 inches long.			
(b) Potable water supply systems:			
(A) Bedpan flushing devices (may be cold water) shall be provided in each inpatient toilet room, except that installation is optional in psychiatric, alcohol abuse, and other units where patients are ambulatory.			

OAR Rule Section	Complied?		Comment
	Yes	No	
(B) Water distribution systems in inpatient facilities and in outpatient surgical facilities shall be arranged to provide for continuous hot water at each hot water outlet. Piping branches from recirculating hot water system mains to individual outlets shall not exceed 30 feet for standard faucets and 10 feet for sensor operated and low flow faucets. Hot water for showers and bathing facilities shall be at appropriate temperatures for comfortable use but shall not exceed 49°C or 120°F (see Table 4).			
(c) Hot water systems: The system for heating domestic water shall have sufficient capacity to supply water at the temperatures and amounts indicated in Table 4.			
(d) Drainage Systems:			
(A) Drain lines from fixtures in which acid wastes may be poured shall be fabricated from acid-resistant material.			
(B) Sanitary and storm drainage piping shall not be installed overhead whether within the ceiling or exposed, in operating and C-section rooms, pharmacy IV admixture clean rooms, intensive care nurseries, food storage areas, central sterile supplies areas, and other sensitive areas. Where overhead drain piping is unavoidable in these areas as may occur in existing facilities special provisions, such as the use of drain pans or FM 1680 approved couplings, shall be made to protect the space below from possible leakage, condensation or dust particles. If drain pans are installed for protection, the pans shall be drained to an open site, air-gap drain and shall be labeled.			
(C) Floor drains and cleanouts shall not be installed in operating and C-section delivery rooms. Flushing rim type drains may be used in cystoscopic rooms, except as prohibited by rules for surgical facilities under OAR 333-535-0110 (3) (d). Flushing rim valves shall not be located within the cystoscopic room, but the means of actuation may be in the cystoscopic room.			
(D) Building sewers shall discharge into a community sewage system. Where such a system is not available, the facility must treat its sewage in accordance with standards of the Oregon Department of Environmental Quality and local governmental agencies having jurisdiction.			
(E) Grease interceptors for kitchens shall comply with requirements of OPSC.			
(F) Where plaster traps are used, they shall meet standards of the OPSC.			
(G) Provide traps at hot lab sinks where radioactive materials are processed.			
(H) All domestic water service mains, risers, and branch mains shall have shut off valves.			

OAR Rule Section	Complied?		Comment
	Yes	No	
(I) Drain systems for autopsy rooms shall be designed to prevent splatter or overflow onto floors, to prevent back siphonage, and for easy cleaning and trap flushing.			
(J) Where decontamination shower areas are provided, waste containment tanks shall be provided and sized in accordance with the Hospital's Emergency Management Plan. Provisions shall be made to divert or pump the waste from the tank for appropriate disposal.			
(K) Jetted tubs shall provide for removal of jets for cleaning and for the discharge of all water within piping between uses.			
(e) Nonflammable medical gas and vacuum systems: The installation of non-flammable medical gas and vacuum systems shall comply with the requirements of NFPA 99. See Table 5 for rooms that require station outlets and inlets. Installers of medical gas systems shall meet the requirements of ANSI/ASSE Standard 6010 and verification testing agencies shall meet the requirements of ANSI/ASSE Standard 6030.			
(A) Medical gas systems verification test results certifying the medical gas and vacuum system testing required in NFPA 99 shall be documented for maintenance files and be available for inspection by Division surveyors or Authorities having Jurisdiction.			
(B) When any existing medical gas or vacuum system is altered or augmented, all the new and existing components in the immediate zone or area located upstream for vacuum systems and downstream for medical gas systems of the altered section shall be tested and certified per NFPA 99 requirements.			
(C) Each space with piped anesthetic gas and any space routinely used for administering inhalation anesthesia shall be provided with a scavenging system to vent waste gases. Gases from the scavenging system shall be exhausted directly to the outside. If the medical vacuum system is used, the gas collecting system shall be arranged so that it does not interfere with the patient's respiratory system. The anesthesia evacuation system may be a dedicated exhaust fan system with monitoring and alarming through an airflow switch or other means. Separate scavenging systems are not required for areas where gases are used only occasionally such as the emergency room, offices for routine dental work, labor, delivery and recovery rooms, etc. Cautionary comments of NFPA 99 may be especially applicable when vacuum system is being considered for scavenging of anesthetic gases.			

OAR Rule Section	Complied?		Comment
	Yes	No	
(D) Medical vacuum system discharge shall be located a minimum of 25 feet from all doors, windows and other opening into the building, a minimum of 25 feet above grade, a minimum of 25 feet from medical air systems intakes, and a minimum of 10 feet from designated mechanical areas and walkways.			