

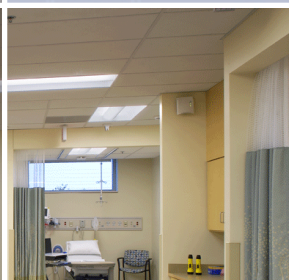
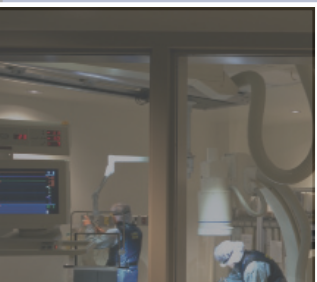


Department of  
Veterans Affairs  
*Office of Construction & Facilities Management*

# design guide

NOVEMBER 29, 2011

## CARDIOVASCULAR LABORATORY SERVICE





## CARDIOVASCULAR LABS

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## SECTION 1 - FOREWORD

### FOREWORD

The material contained in the Cardiovascular Laboratory Service Design Guide is the culmination of a coordinated effort between the Department of Veterans Affairs (VA), the Veterans Health Administration, the Office of Construction & Facilities Management, the Strategic Management Office, and the Capital Asset Management, Planning Service Group and Hellmuth, Obata & Kassabaum, P.C. The goal of this Design Guide is to maximize the efficiency of the design process for VA facilities and ensure a high level of design, while controlling construction and operating costs.

This document is intended to be used as a guide and is supplementary to current technical manuals, building codes and other VA criteria in planning Healthcare Facilities. The Design Guide is not to be used as a standard design; it does not preclude the need for a functional and physical design program for each specific project.

The Cardiovascular Laboratory Service Design Guide was developed as a design tool to assist the medical center staff, VACO Planners, and the project team in better understanding the choices that designers ask them to make, and to help designers understand the functional requirements necessary for proper operation of this procedure suite.

This Design Guide is not intended to be project-specific. It addresses the general functional and technical requirements for typical VA Healthcare Facilities. While this Guide contains information for key space types required in a Cardiovascular Laboratory Service, it is not possible to foresee all future requirements of the Procedure Suite in Healthcare Facilities. It is important to note that the guide plates are generic graphic representations intended as illustrations of VA's furniture, equipment, and personnel space needs. They are not meant to limit design opportunities.

Equipment manufacturers should be consulted for actual dimensions and utility requirements. Use of this Design Guide does not supersede the project architect's and engineers' responsibilities to develop a complete and accurate design that meets the user's needs and the appropriate code requirements within the budget constraints.

Lloyd H. Siegel, FAIA  
Director  
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## SECTION 2 - NARRATIVE

### GENERAL CONSIDERATIONS

VA operates the nation's largest healthcare system with over 5.5 million patient visits per year. While veterans' health care needs are often similar to the general population, they are also different in significant ways. For example, veterans can suffer from a higher prevalence of disabilities from traumatic injuries, post-traumatic stress disorder (PTSD) and neurological disorders. To respond to these needs, VA is in the process of developing and integrating a care delivery model focused on patient centered care specifically as it applies to veterans. This mirrors general trends in healthcare where patient centered care is part of a major understanding of how best to enhance healing and support better outcomes. To integrate knowledge derived from other industry efforts, VA is working with Planetree as a partner. Planetree's efforts are helping to lead the way to personalizing, humanizing, and demystifying the healthcare experience for patients and their families. They bring a history of integrating changes required to protocols and facilities to support patient centered care. Veteran Centered Care has been defined by VA as follows:

*A fully engaged partnership of veteran, family, and healthcare team established through continuous healing relationships and provided in optimal healing environments, in order to improve health outcomes and the veteran's experience of care.*

In addition, Veteran Centered Care is based on twelve core principles which are noted below. Although all are important parts of the VA approach to care, nine principles stand out because they can be supported directly or indirectly by facility design solutions. These nine principles are noted in bold.

#### Veteran Centered Care Core Principles

- 1. Honor the veteran's expectations of safe, high quality, accessible care.**
- 2. Enhance the quality of human interactions and therapeutic alliances.**
3. Solicit and respect the veteran's values, preferences, and needs.
4. Systematize the coordination, continuity, and integration of care.
- 5. Empower veterans through information and education.**
6. Incorporate the nutritional, cultural and nurturing aspects of food.
- 7. Provide for physical comfort and pain management.**
- 8. Ensure emotional and spiritual support.**
- 9. Encourage involvement of family and friends.**
- 10. Ensure that architectural layout and design are conducive to health and healing.**
- 11. Introduce creative arts into the healing environment.**
- 12. Support and sustain an engaged work force as key to providing veteran centered care.**

The following discussion begins with General Industry Trends followed by Veteran Centered Care Design Trends. General Industry Trends is organized around four main areas of concern: Safety and Risk Reduction, Efficiency and Flexibility, Planning that Accommodates Program Growth, and Response to Human Needs as they apply to objectives for planning and design of Cardiovascular Laboratory Service.

Veteran Centered Care Design Trends is guided by an understanding of how the nine facility linked core principles of Veteran Centered Care can strengthen VA goals for care delivery in support of better patient experiences and, ultimately, outcomes.

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## GENERAL INDUSTRY TRENDS

### 1. Safety and Risk Reduction

#### **Plan to control cross infection**

##### *Hand washing and controlled access*

To enhance infection control, ensure that hand-washing stations or hands-free automated hand-rub devices are strategically located for easy access to caregivers. Organize circulation paths so that entrances to invasive procedure rooms are from a non-public, controlled access corridor.

##### *Avoid clean/dirty circulation conflicts*

Plan procedure areas to avoid circulation conflicts between patients and service traffic and between soiled and clean areas. One way to clarify movement is to provide a public side to the procedure area from which patients and families access care, and a service side which accommodates staff work areas, and from which service traffic arrives and waste leaves.

#### **Promote staff observation of patients**

Since increased observation from staff will foster a safer environment for patients, plans should seek to provide clear visualization of patients by staff. Where Prep and Recovery are required for invasive procedures, well planned locations of nurse work areas will support this objective since caregivers will be closer to patients during pre and post procedure. Cardiovascular Laboratory Service nurse positions should be planned to observe patient waiting and travel to exam and procedure areas.

#### **Specify materials and finishes that enhance infection control**

Use materials, finishes, and casework that resist microbe growth and are easily cleaned. See PG 18-14 for specific requirements.

Specify anti-microbial materials and finishes to the greatest extent possible. Minimize seams in floor and wall finishes and at floors to walls. To limit dust accumulation, avoid horizontal surfaces which are not work surfaces. Provide storage for all unpackaged items in enclosed casework.

#### **Fully integrate Electronic Medical Records**

VA uses a system of electronic medical records and bar-coding of medications. As a key initiative to improve safe care, it is important to continue to expand the implementation of electronic medical records, and improve and strengthen protocols for their use, to achieve the most beneficial results. As all records shift to a full EHR-based system, these electronic tools reduce risk and raise efficiency. In addition to quick access to comprehensive records, including imaging and test results, and consistency of patient documentation across all services, benefits include the ability to locate nurses closer to patients and enhance opportunities for more time with patients. Space efficiency benefits include a decreased need for records storage both at departmental service locations and at central storage spaces.

**2. Efficiency and Flexibility**

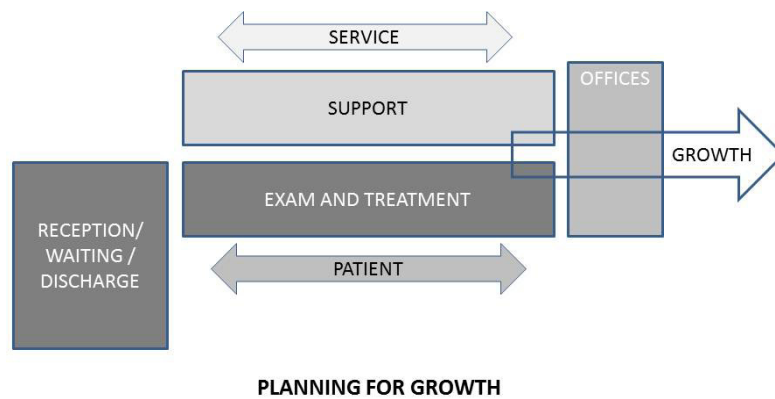
Increasing efficient operations will support VA objectives to provide quality service. Standardization of key room plans, so that items like equipment and sharps containers are always in the same location in procedure rooms, can reduce errors and speed services as staff provides care in different rooms.

Where size permits, planning of procedure areas adjacent to each other with appropriate links, will provide the opportunity to share resources among two or more services. Shared resources can include prep and recovery, waiting, linen storage, housekeeping, general storage, waste storage, and staff support areas.

**3. Planning that Accommodates Program Growth**

*Position non-clinical space for future growth*

Planning for larger scale long term growth for key program components should be identified early in the design process. Space needed to accommodate projected growth can be addressed by first identifying the ideal direction for planned growth to occur. For procedure platforms where there is often a service access corridor parallel to a patient access corridor on opposite sides of the procedure rooms, the growth direction would be in the direction of the long axis (i.e. the direction of the service and patient access corridors). At the end furthest from patient access to the procedures platform, locate “soft” or non-clinical program space, such as offices or storage, since they can most easily be relocated to permit conversion of the space to accommodate clinical growth needs.



**4. Response to Human Needs**

Patient dignity and self-determination must be accommodated while considering operational efficiencies. Patients’ vulnerability to stress from noise, lack of privacy, poor lighting, and other causes, and the subsequent harmful effects it can have on the healing process, can be addressed by facility planning and design that recognizes these issues and proactively incorporates design solutions to support dignity, privacy, acoustic control, comfort, and patient empowerment over their environment.

In addition to control of infection discussed above, to reduce stress and increase patient privacy and dignity, outpatients and inpatients should follow separate paths into the procedures area.

Service traffic should be separate from patient traffic to the greatest extent possible so that waste, equipment movement, and housekeeping traffic are, as much as possible, separate from patient pathways and use a dedicated service corridor.

Good planning and design appeal to the spirit and sensibilities of patients and care providers alike.

Opportunities exist in the design of Cardiovascular Laboratory Service areas to address the above issues and to incorporate creative solutions that enhance patient comfort and contribute to positive outcomes. A primary architectural objective should be to minimize an institutional image of healthcare facilities and to surround the patient and family members with finishes and furnishings that are familiar and comforting.

Noise reduction will reduce stress. Consider use of finishes that absorb noise such as carpet in appropriate non-clinical areas and sound absorbent ceiling tiles in appropriate clinical and non-clinical areas.

Lighting design can reduce stress. Where patients are prone, such as on stretcher travel through patient corridors, choices can include cove lighting against corridor walls to prevent patients from looking into the glare of light fixtures. Wall mounted sconces can provide a similar effect and also reduce an institutional feeling.

Patient privacy from visual intrusion can be enhanced by controlling views into procedure and exam rooms. Careful planning of door swings related to patient exam or treatment positions and use of cubicle curtains at procedure room entries and any area where undressing is required should all be considered. Privacy from noise transmission – into or out of a patients' area – can be strengthened by providing solid sided bays in areas like prep and recovery. Adding doors to prep and recovery bays so they become rooms further enhances privacy.



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## VETERAN-CENTERED CARE DESIGN TRENDS

### Safe high quality accessible care

#### *Easy access to services*

An ideal for Veteran Centered Care is point of service care where all services a patient may need on a given visit are located at or near the patient's day visit location. This ideal should be used as a guide to inform how program components could best be organized. The services to be accessed may range from exam to patient education to research linked tests, to nutrition or life style or psychological counseling.

When patients must transfer, there should be a clear and easily navigated pathway between points of service.

#### *Women Veterans' Privacy & Security*

Consideration for the privacy and security of Women Veterans will be addressed in the overall planning and design of the Cardiovascular Laboratory Service to carefully assess all spaces for these needs. Of particular concern are the exam and procedure rooms which shall include the following:

Procedure rooms where a female patient may be left unattended (i.e. to dress / undress) must have locks that can be disengaged by staff from the corridor side. Procedure rooms must be located in a space where they do not open into a public waiting room or a high-traffic public corridor. Access to hallways by patients/staff who do not work in that area should be restricted. Privacy curtains must be present and functional in procedure rooms. Privacy curtains must encompass adequate space for the healthcare provider to perform the procedure unencumbered by the curtain. A changing area must be provided behind a privacy curtain. Examination tables must be shielded from view when the door is opened. Examination tables must be placed with the foot facing away from the door. Patients who are undressed or wearing examination gowns must have proximity to women's restrooms that can be accessed without going through public hallways or waiting rooms.

Sanitary napkin and tampon dispensers and disposal bins must be available in women's public restrooms. A family or unisex restroom should be available where a patient or visitor can be assisted. Baby changing tables should be available in women's and men's public restrooms.

Waiting areas should provide a private setting for women Veterans through the use of partitions and/or furniture. Refer to VHA HANDBOOK 1330.01, Health Care Services For Women Veterans, May 21, 2010.

### Empower Veteran

#### *Patient control over their environment*

Patients in treatment often benefit from a sense of control of the process they are experiencing. One component will be the ability to control their treatment environment. In areas where patients may need to spend more than the time for a simple exam, such as prep and recovery, patient control can include noise, temperature, lighting level, levels of privacy, and access to media.

### *Access to education*

Education about a patient's health issues is an important component of clinical care leading to better outcomes. Knowledge is empowering and can enhance a patient's ability to understand reasons for and benefits of specific tests and treatment. Opportunities for patient education should be planned for easy access in settings where the patient can control privacy. These can include information kiosks in waiting areas and media outlets in prep and recovery.

### **Enhance Human Interaction / Encourage Involvement of Family and Friends**

Facility solutions that support increased interaction with caregivers and family or friends include the following:

Providing adequate space and amenities for family and friends in waiting, exam, and the procedure environment.

Providing space for a family member or friend in prep and recovery will enhance the emotional support often sought from those close to the patient.

Co-locating prep and recovery will shorten caregiver travel so that providers will be closer to patients and available for interaction about clinical or emotional needs.

### **Healing Environment**

Planning solutions should promote patient dignity and increase privacy. This will lower stress and increase comfort in support of healing and wellness. Patient space in prep and recovery should include individual rooms where appropriate or hard-sided cubicles, each with the ability for patients to control privacy and noise.

In procedure rooms, curtains or screens should be used to increase patient privacy. Patient diagnostic or treatment position should orient the patient's head toward the door, rather than his or her feet.

Reception and Waiting areas should include planning that provides different spaces for patients who seek social interaction and for those who seek more privacy. Smaller scale spaces with separations created by low partitions, furniture or planters will provide options for more privacy in these settings.

Access to nature and to daylight can lower stress. Areas for family respite should be provided in or near the procedure area. Where site, climate, and building configuration permit, access to outdoor space can serve as a welcome area for respite. In addition, planning that brings daylight, if not views, into the procedure area would be an important addition to support clinical outcomes.

One strategy to bring natural light deep into the building might be to use light shelves at the window wall that bounce light off ceilings thus delivering light deeper into the procedure arena. To the extent that this can be achieved, this more effective delivery of light can help the entire building become a light-filled facility for healing in which all users; patients, family, and staff, reap the benefits.



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Other issues specific to planning and design for Veterans' Care include the following:

**Imagery and Artwork**

Veterans' military experiences require a specific approach to the selection of imagery and artwork that is healing and restorative. Commemorative settings and iconography of national and symbolic importance help veterans recover from post-traumatic stress disorder. Units with artwork and color palettes that incorporate nature imagery that are not evocative of combat settings, and that honor veterans (e.g., photography of Mount Rushmore and national parks), can calm and restore patients. Note that nature images that may be considered restorative and healing for patients in the general public can communicate exposure and vulnerability to a veteran whose military service occurred in a similar setting (e.g. savannah or desert images).

**Veterans of Recent Conflicts**

As a result of their injuries, many veterans of recent conflicts, Operation Enduring Freedom and Operation New Dawn, suffer from multiple traumas including traumatic brain injury, post-traumatic stress disorder, spinal cord injury, and amputation. Extremity wounds are the most common injury of veterans of recent conflicts.

VA facilities require full accessibility planning in all areas including clearances, floor finishes, floor levels with ramp transfers between different levels, hardware and plumbing fixture design.

Additionally, veterans entering the system are generally younger than veterans currently utilizing VA services from previous conflicts. Planners should consider access to contemporary information technology and entertainment, and strategies which address the lifetime prognosis for veterans suffering from multiple traumas.



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## SECTION 3 - FUNCTIONAL CONSIDERATIONS

### FUNCTIONAL ORGANIZATION

A Functional Area (FA) is the grouping of rooms and spaces based on their function within a clinical service. The organization of services in this Guide follows the categories established in VA Space Planning Criteria, Chapter: 210 – Cardiovascular Laboratory Service.

This Department is organized in eight Functional Areas:

- FA 1: Reception Area
- FA 2: Non Invasive Cardiology Patient Area
- FA 3: Non Invasive Cardiology Support Area
- FA 4: Invasive Cardiology Patient Area
- FA 5: Invasive Cardiology Support Area
- FA 6: Invasive Cardiology Prep and Recovery Area
- FA 7: Staff and Administrative Area
- FA 8: Education Area

Cardiovascular Laboratories are comprised of two major exam and procedure components defined as Non Invasive and Invasive.

Non Invasive Cardiology rooms accommodate testing and diagnostic exams which require minimal preparation. Tests do not penetrate the skin or invade the body, except for minor needle punctures.

Invasive Cardiology procedure rooms accommodate invasive diagnostic tests and may accommodate therapeutic interventions as authorized on a facility basis. Procedures include use of catheters or probes which require sedation at different levels. Rooms include Cardiac Catheterization Laboratory (Cath), Procedure Room, Electrophysiology (EP), and Transesophageal Echocardiograph Room (TEE), along with associated rooms and spaces which support the procedure requirements. Procedures require specific clean accommodations and, for Cath and EP, clean and sterile accommodations including staff entry protocols similar to a surgical environment. All require specific protocols for prep and recovery.

The Functional Diagram in this section and Guide Plates, Reflected Ceiling Plans, and Room Data Sheets in Section Four, show function, flow, organization, equipment, utilities and operational concepts. They should not be interpreted as preconceived floor plans, as the diagrams do not correlate exactly to all the rooms and functions available in Space Planning Criteria, nor to those which may be required or authorized for individual projects.



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## FUNCTIONAL RELATIONSHIPS

### FA 1: Reception Area

Reception Area accommodates the initial processing and admission of all scheduled and unscheduled outpatients. These areas include registration functions, waiting, and opportunities for patient education.

The reception control area shall be strategically located to give the receptionist clear observation of waiting areas to facilitate control of outpatient traffic entering the suite and secure the department from unauthorized access. On the day of the procedure, ambulatory patients will register at the reception area. Functional considerations include location of workstation monitor screens to protect patient information, access to lockable files, and accessibility compliant work stations.

The reception control area should be organized in a way that maintains patient confidentiality. Waiting for patients and families should be organized so that separate circulation paths are provided from Waiting to Prep and Recovery for invasive procedures and from Waiting to non-invasive exam and test rooms. These pathways should also be planned to be free from service traffic as much as feasible. Outpatient circulation should be separate from inpatient circulation when both outpatients and inpatients must access Prep and Recovery or use the same exam rooms.

Waiting areas should be configured with small clusters of seating for privacy and for a less institutional environment. Veterans experiencing post-traumatic stress disorder (PTSD) prefer seating where they do not feel vulnerable from being approached from behind. Ensure that a specific complement of seats is located to support this need. The use of table lamps and appropriate furnishings and finishes allow for intimate spaces which encourage conversations and reduce stress levels in visitors.

Family waiting areas shall be located in close proximity to the exam spaces to facilitate post exam physician visits with families to discuss results and treatment options. In some instances the need to accommodate families with children may be required. This may include designating a children's area in waiting areas with appropriate furniture and content and should be addressed on a facility basis. If authorized, a Consult Room should be located adjacent to Waiting.

When possible, access to natural daylight, views of nature, and other positive distractions should be provided to improve the human experience in these spaces. While it is common practice to include television viewing capability in waiting spaces, studies have shown increased stress and blood pressure levels in persons in waiting spaces exposed to television. This should be evaluated on a project by project basis.

For smaller size services, sharing functions associated with Reception and Waiting with other similar and adjacent clinical services should be considered on a per facility basis.

**FA 2: Non Invasive Cardiology Patient Area**

The non-invasive area provides testing and exams which are generally provided to outpatients. Tests do not require special prep or recovery so that patients travel directly from Waiting to the test room and return to Reception for discharge or a follow up appointment. Aggregating the range of testing and exam rooms into a common platform for non-invasive cardiology testing supports efficient operations, including opportunities for sharing support functions and staff resources, and enhances a strong identity for the service. See Functional Diagram on page 31.

Rooms include EKG Testing, Pacemaker ICD Interrogation Room, Holter Monitor Room, Echocardiograph Room (ECHO), Stress Echocardiograph Room (Stress ECHO), Stress Testing Treadmill Room, Tilt Table Testing Room, plus a general exam room and a Muse Reading Station which support communication of test results.

The Pacemaker Interrogation Room accommodates device surveillance for Pacemaker/Implantable Cardioverter Defibrillators (ICDs), system evaluations and patient education for both inpatients and outpatients. Patients receive Pacemaker/ICD analysis and programming which may include pacemaker checks, automatic ICD checks, and remote device management checks.

Some tests, like Holter monitors, leverage technology which provides opportunities for on-site or remote location management of cardiac disorders, such as arrhythmia. In the Holter Monitor Room, monitors are fitted on patients and patients are provided with education about the removal and re-application of sensors for long-term off site monitoring.

ECHO, Stress ECHO, Stress Testing Treadmill and Tilt Table Testing rooms all test cardiac function with the patient either at rest or during active exercise. Guide Plates in this section delineate the differences in equipment required for each.

**FA3: Non Invasive Cardiology Support Area**

Support spaces include the following key rooms: Event/Holter Monitoring Work Room, Soiled Utility, Clean Utility, Equipment and Storage, Non-Invasive Cardiology Supplies. These should all be located with close adjacency to the area of the patient test and exam rooms to minimize staff travel distance when they access clean or dispose of soiled material. If the area is planned so that patients enter at one end of the test room area, consider aggregating support rooms close to the other end where service traffic can enter and will be less likely to conflict with patient traffic when delivering clean goods or removing soiled waste.



**FA4: Invasive Cardiology Patient Area**

Invasive Cardiology procedures require specific care and infection control protocols. For Invasive Cardiology areas comprised of multiple procedure rooms, protocols can be most easily supported by aggregating procedure rooms and their support spaces into a single functional area. See Functional Diagram on page 31.

To maximize operational efficiency and infection control, this area should be organized with a patient access corridor around the perimeter and a staff and service circulation zone in the core. This requires all invasive procedure rooms to have a patient entry door from the perimeter corridor and a staff and service door from the staff and service circulation zone. Contaminated waste should generally be removed through the doors into the staff and service zone and follow defined pathways to soiled holding rooms and then out of the clinical area.

**Cardiac Catheterization Laboratory; Control Room Cardiac Catheterization; Scrub / Gowning Area**

These three functional spaces must be planned as one working unit.

Cardiac Catheterization Labs have specific infection control requirements similar to operating rooms. Requirements include spaces for gowning, scrub, and entry which enable providers to travel from areas considered “dirty” to the sterile conditions required in a Cath Lab. Cath Labs require a Control Room which must provide good visibility of the patient through glazed vision panels, and accommodate video and data monitors of active procedures as well as work counters for physicians and technicians. When a separate staff and service circulation zone is included, the Control Room should have a door from the staff and service zone and a door into the Cath Lab.

The Cath Lab accommodates large heavy equipment which moves on ceiling mounted tracks into and out of position during procedures. This permits both physician access to the patient for catheter placement and removal and for imaging access at different locations on the patient. Although there may be differences among specific facilities, Cath Labs are generally organized to provide a physician work area with clear access to the patient from one side of the patient so that the physician is facing the ceiling mounted boom carrying real time video images and data on the opposite side. For direct access to the physician work area location, the patient entry door and doors from scrub/gowning and the Control Room should all be located on the same side of the Lab as the physician work area.

The visibility of the patient from the Control Room is generally provided with the patient’s feet toward the vision panels, permitting a clear view of the patient from foot to head. At some facilities physicians may request an alternative positioning which provides an angled view so that the patient’s side can be seen as well. This can be easily accommodated by locating the major equipment and its ceiling tracks about 7 degrees off a 90 degree relationship to the Control Room vision panels.

The equipment selected will affect the layout of tracks and their supporting structure above the ceiling. Cath Lab equipment is upgraded by manufacturers steadily. Although the Guide Plate in Section 4 is based on ceiling supported major equipment, specific facilities' cardiovascular services may seek different assemblages at the time of planning and design. Consider room clearances, both horizontally and vertically and live loads whether from ceiling-supported equipment or bearing on the floor.

Although Control Rooms may be combined to serve pairs of Cath Labs, this is not always viewed as a best practice since problems with a procedure in one of the Labs may affect the focus of physicians and technicians conducting a procedure in the other Lab sharing the same Control Room.

Cath Labs use fluoroscopy which requires radiation shielding of staff within the room and, based on the facility physicist's report regarding the equipment selected, generally requires radiation shielding for walls, doors and glazed openings. Staff may use a mobile shielded screen and/or lead aprons while in the room.

Primary procedural supplies shall be stored in the procedure room when possible. Adequate wall surface area is required to support the appropriate number of storage cabinets. Specific storage requirements for invasive procedure rooms are noted in Guide Plates, Room Data Sheets and Equipment Lists in Section 4.

Catheters are not reused and become bio-contaminated waste after use.

### **Procedure Room, Electrophysiology; Control Room Electrophysiology**

An electrophysiology study can include a number of invasive and non-invasive recordings of spontaneous electrical activity as well as of cardiac responses to programmed electrical stimulation. These studies are performed to assess arrhythmias and abnormal electrocardiograms, expose symptoms, evaluate risk of developing arrhythmias in the future, and design treatment. Treatment may include antiarrhythmic drug therapy as well as implantation of pacemakers and implantable cardioverter-defibrillators. The EP room can accommodate diagnostic studies as well as therapeutic interventions.

Electrophysiology (EP) rooms and their Control Rooms are organized similar to Cath Labs as described above, with regard to clean and dirty paths and a sterile environment within the room. Their organization and most of the equipment, except for specialized electrophysiology equipment, is similar to a Cath Lab.

### **Transesophageal Echocardiograph (TEE) Room; TEE Probe Storage Room**

TEE rooms use ultrasound probes inserted in the esophagus to assess cardiovascular function. Patients are lightly sedated for these diagnostic procedures. Probe sterility requires specific protocols. The door from the TEE room into the staff and service zone should provide close access to two rooms which support TEE procedures.

These include a probe wash-down room where probes are cleaned and packaged for transport to Sterile Processing Department (SPD) for decontamination and repackaging, and a TEE Probe Storage room with a dedicated door to the TEE room, in which probes are stored after return from SPD.

### **Cardiac CT / MRI**

Diagnostic information of cardiovascular function can be obtained by imaging modalities which are considered non-invasive but may require injection of agents to enhance images. Because they are non- or less invasive, they are quicker than an invasive procedure and they offer higher throughput with little or no prep or recovery time.

Although there are totally different requirements for shielding for each modality - ionizing radiation for CT and radio frequency (RF) for MRI - such spaces have been built as a shared environment with the equipment moving in and out on tracks. They may also be provided as individual spaces accommodating one or the other modality, each as authorized on a per facility basis. Each requires a control room. MRI requires specific protocols regarding control of magnetic sensitive items in or near the room. Protocols include entry controls to the room by patients, providers and service staff.

An industry trend which seeks to raise efficiency and increase flexibility, aggregates invasive cardiovascular procedures with interventional imaging into one procedural platform. These services include angiography and interventional CT scans which share similar protocols with invasive cardiovascular procedures.

### **FA 5: Invasive Cardiology Support Area**

Invasive Cardiology Support rooms include special spaces based on this service's special needs. In the organization of Invasive Cardiology, these rooms should be aggregated with easy access from the procedure rooms through a staff and service zone circulation area as described above. Rooms include an Instrument Room for storage and maintenance of Cath and TEE instruments; System Component Rooms to house the electronic system for each Cath or TEE room (these rooms should have direct access from the Control Room and may also, where possible include a door from the Cath Lab or TEE room to support technician testing and maintenance of components); Viewing Room for clinicians to view all images and data derived from procedures; a Sterile Supply Room supporting all procedure rooms; an Equipment Cleaning Room , primarily, but not exclusively, for TEE probes; a Digital Quality Control Area – PACS and a Digital Archival Storage Room – PACS, supporting the use and storage of the electronic records generated on the service; a Medication Area.

The Medication Area space may be decentralized based on program requirements for access to medication in Non-Invasive Cardiology and Prep and Recovery. . Medication for Cath Labs and EP rooms should be stored in these rooms in dedicated cabinets except for medications which are required by the pharmacist to be prepared in the Pharmacy. .

Clean and Soiled Utility Rooms shall be provided for the storage and holding of clean and soiled materials. These rooms shall be located for convenient access for staff and should be accessed from the staff and service zone circulation area.

A Housekeeping Aides Closet (HAC) with space containing a floor receptor or service sink and storage space for housekeeping supplies and equipment shall be provided.

#### **FA 6: Invasive Cardiology Prep and Recovery Area**

Prep and Recovery is the bridge for patients between public areas and the controlled environment that supports the Invasive Cardiology procedures platform. It is comprised of patient rooms or cubicles, depending on facility needs, and monitored by a nurse station. Rooms are different from cubicles because they include sliding glass doors which permit visibility with acoustic privacy.

In alignment with Veteran Centered Care objectives, while all rooms or cubicles must provide clear visualization of each patient by nursing staff, rooms, rather than cubicles, provide maximum acoustic and visual privacy and promote patient dignity more easily. Rooms and cubicles have the same dimensions and can accommodate a family member or friend, extending opportunities for human contact at both pre- and post-procedure times. In addition, physician consults on findings from procedures can be accommodated in rooms with acoustic privacy. Both rooms and cubicles can include curtains or other screening solutions which can be easily deployed across the front for visual privacy.

A Nurse Station provides positions for nurse monitoring of prep and recovery positions as well as work and charting areas. This space should be located to provide visualization of all patient positions in Prep and Recovery and permit nurses to monitor patients who may be agitated both pre- and post-procedure, and may become unstable post-procedure. Nurses also monitor patient movement to and from procedure rooms. In Prep and Recovery areas with many patient positions, to reduce nurse travel and enhance nurse visibility of patients, nurse stations may be decentralized, as long as the total program net square feet for the function is not exceeded.

The nurse station shall be configured so that the location of workstation monitor screens protects patient information from public view. To accommodate disabled staff, separate accessibility compliant and ergonomically designed work stations shall be provided. Ergonomically designed work areas should be provided for all staff to reduce staff fatigue and support peak performance.

Inpatients will generally require pre-procedure preparation in Prep and Recovery and are generally monitored in Recovery before being returned to their room. Inpatients' status may be at a higher acuity level than outpatients and may require closer observation. As noted elsewhere in this Guide, inpatient and outpatient pathways shall be separate to the greatest extent possible. For both reasons, rooms or cubicles in Prep and Recovery which are slated for inpatients pre- and post-procedure should be identified and allocated in close proximity to nurse positions.

Prep and Recovery includes support spaces within its area. These include Medication and Nourishment spaces, and Equipment Storage space. Without exceeding their programmed area, all of these may be decentralized to reduce staff travel distance. Medications are prepared outside the Procedure area and are stored for distribution in automated Pyxis units as located in the Guide Plates in Section 4 and defined in the TIL Equipment List for all Cardiovascular areas.

Clean and Soiled Utility Rooms, included in FA 5: Invasive Cardiology Support Area, should be located for easy access as part of Prep and Recovery. These may be consolidated for sharing within the service, or decentralized to shorten staff travel distance for larger services, without exceeding the total program area.

#### **FA 7: Staff and Administrative Area**

Enclosed office spaces and technician cubicles shall be provided per number and square feet authorized for the service. Key offices include those for the Chief of Cardiology, Physician Offices, and offices for the Nurse Manager and Nurse Practitioner. In addition, cubicles for nurses, administrators, and technicians are provided.

In planning for future flexibility of spaces, it is beneficial to plan for a modular (i.e. same size/same proportion) approach for offices to allow the spaces to be reallocated without significant reconfiguration. In addition, consider grouping clinician/staff offices and cubicles into team work areas to promote multidisciplinary interaction which leads to improved quality of care and efficiency of care. Access to and control of natural light should be considered in designing these spaces for staff satisfaction and stress reduction.

Administrative areas include a Conference Room which should be accessible to physicians and nursing staff and located with easy access from the procedure area and team work area. Consider co-locating the Conference Room with the same room from an adjacent similar program. The rooms may be joined with an acoustic retractable wall between them allowing for larger group meetings. The Conference Room facilitates communication within the service about issues which advance its mission. This may include learning opportunities based on cases, new technologies or new protocols for care delivery.

The Staff Lounge and Staff Locker Room are important as respite areas which reduce stress and enable staff to maintain a high level of quality service when clinics are active. The Staff Lounge shall be conveniently located to staff work areas but separate from patient areas. Provision of a separate locker room from the staff lounge is desirable for staff privacy and noise reduction. Staff toilets should be located with immediate adjacency to the staff lounge but should not open into it. These staff support functions should be considered for sharing with other adjacent services as appropriate.

**FA 8: Education Area**

Spaces for Education are required when a residency program is authorized. When authorized, they may include an Office for the Residency Program Director, cubicles for Residents, Interns, and Fellows, and a Conference/Classroom. In addition, special functional spaces – a Library and a Viewing Room – may also be authorized to further enhance the educational opportunities in the facility.

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## OTHER FUNCTIONAL CONSIDERATIONS

### General Considerations

The planning approach should locate high volume short duration services closer to patient waiting areas. This will decrease patient travel time and distance and reduce staff travel time and distances permitting more staff time with patients. Procedures with low volume or longer duration times may be further inside patient areas.

The physical design of all areas must meet patient privacy and patient rights requirements as well as employee safety and ergonomics standards as adopted by VA.

All spaces shall be designed to reduce risk of infection. The hospital's Infection Control Risk Assessment (ICRA) shall establish and review infection control measures.

### Physical Security

Security is a key objective when patients are undergoing procedures and when they are preparing or recovering from them. During procedures patients may feel vulnerable. Attention to traffic unrelated to the procedure, and the intrusion of noise unrelated to the patient's care, are issues which planning and design choices can help control.

As previously stated, exam and procedure rooms should be organized to provide entry from a controlled access corridor, limited to patients and related clinical staff. Patient positions in exam rooms and minimally invasive procedure rooms like TEE rooms should generally be located so that people entering the room approach from the patient's side with the patient's head in view.

Patients who require changing out of street clothes in an exam or testing room, such as several in Non-invasive Cardiology, should be provided with control of access, privacy, such as a lockable door, and cubicle curtains, shades or screens.

### Flexibility

The design of healthcare facilities must respond to changes in technology, changing workloads, and operational efficiency objectives. To facilitate easy, more cost effective, future adaptability, designers should consider the use of spaces of standard size and proportions to accommodate a range of related functions. Use of a standard planning module (grid) throughout a clinical procedures area is encouraged. Spaces with special requirements, special equipment, or unusual sizes should be grouped where possible and designed to accommodate change with minimal disruption to the remainder of the suite.

### Efficiency

VA is committed to efficient use of resources including energy, materials, equipment, and staff.

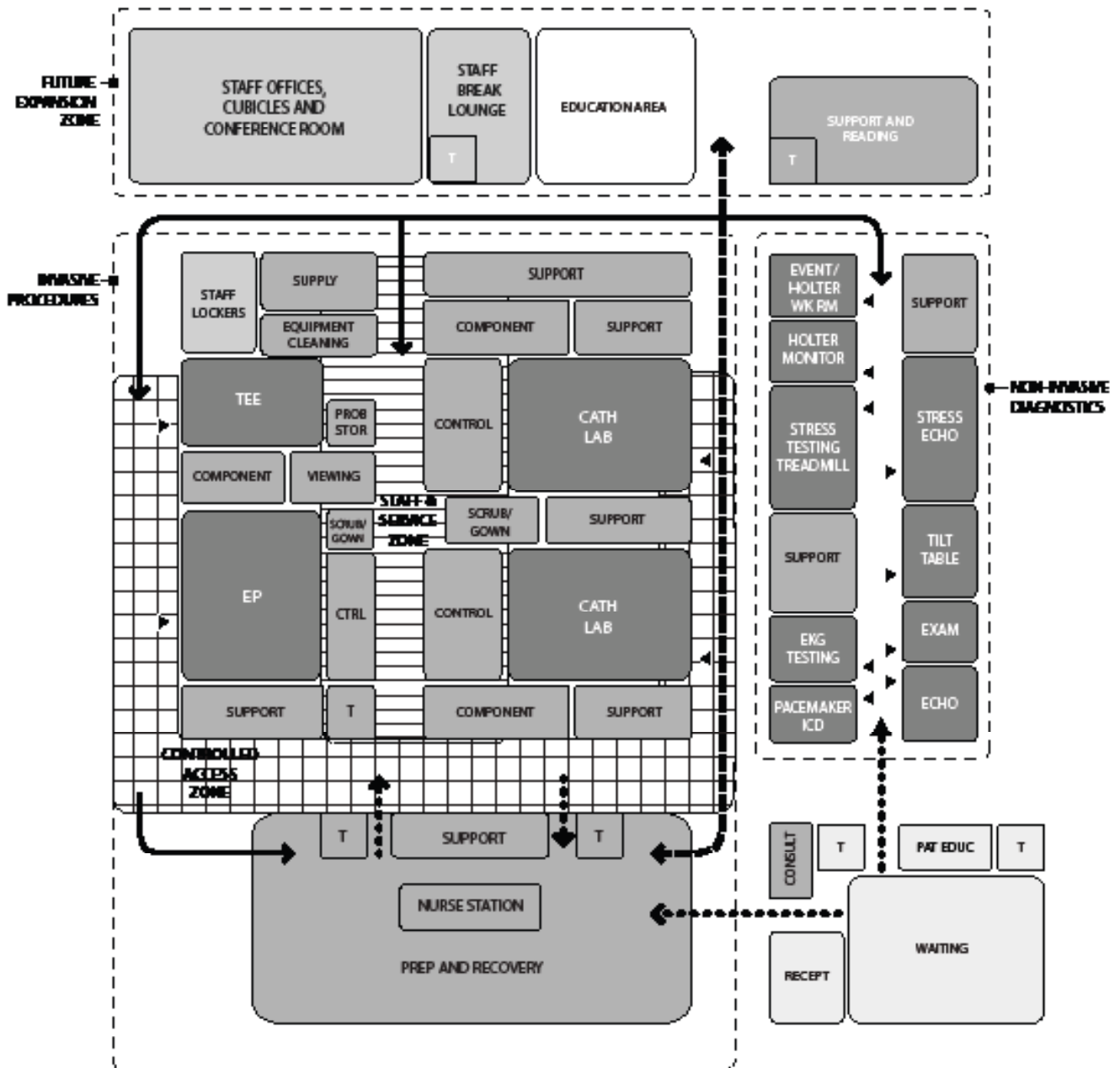
Refer to Sustainable Design and Energy Reduction Manual on VA Technical Information Library (TIL).

**Accessibility**

Accessibility is accommodated by the application of PG 18-13, VA Barrier Free Design Guide; Architectural Barriers Act Accessibility Standards (ABAAS), Appendices C and D to 36 CFR Part 1191 (adopted by GSA and supersedes Uniform Federal Accessibility Standards, UFAS); and ADA Standards for Accessible Design (28 CFR Part 36) to space and fixed equipment layouts.



FUNCTIONAL DIAGRAM



Cardiovascular Laboratory Service

LEGEND

- EXAM TESTING PROCEDURE
- PREP RECOVERY SUPPORT
- STAFF AND ADMINISTRATIVE AREA
- RECEPTION AREA
- EDUCATION AREA
- STAFF SERVICE
- OUTPATIENT
- INPATIENT
- PATIENT ENTRY



**RELATIONSHIP MATRIX**

SERVICE	RELATIONSHIP	REASONS
ICU	3	C, I
MS&N Patient Care Units	3	C, I
Patient Prep and Recovery	1	C, I
Emergency Department	3	C, I
Main Entrance	3	H
Cardiovascular Labs	N	
Endoscopy	1	A
Ambulatory Surgery/ Minor Procedure	1	A
Radiology	1	C, I
Diagnostic Testing	1	C, I
Pulmonary Clinic / Testing	1	A, G, H
Cardiology Clinic / Testing	N	
Digestive Disease Clinic/Testing	N	
Neurology Clinic/Testing	N	
Ventilator Storage	N	
Respiratory Therapy	N	
Pharmacy	5	B
Laboratory	5	B
Social Work / Case Management	5	H
PT/OT	N	
Food Service / Kitchen	5	B
Sterile Processing Department (SPD)	3	C
Staff On-Call Rooms	3	C
Linen Storage	5	B
Waste Management	5, X	B, E, F
Loading Dock	5	B, D

**LEGEND**

Relationship:

- 1. Adjacent
- 2. Close / Same Floor
- 3. Close / Different Floor Acceptable
- 4. Limited Traffic
- 5. Connection Needed
- N. Not Applicable
- X. Separation Desirable

Reasons:

- A. Common use of resources
- B. Accessibility of supplies
- C. Urgency of contact
- D. Noise or vibration
- E. Presence of odors or fumes
- F. Contamination hazard
- G. Sequence of work
- H. Patient convenience
- I. Frequent contact
- J. Need for security
- K. Closeness inappropriate
- L. Interference



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## SECTION 4 - DESIGN STANDARDS

### INTRODUCTION

This section covers technical considerations for planning and designing the Cardiovascular Laboratory Service. The discussion includes detailed technical considerations for architectural, mechanical systems, and other related components. To support this discussion, selected rooms are detailed in the form of Guide Plates. Each Guide Plate includes a floor plan, reflected ceiling plan, room data sheet, and an equipment list which provides a comprehensive overview of space planning and utility requirements and locations for the key rooms in this service.

Guide Plates for the following key rooms in this section are as follows:

EKG Testing Room (OPEC1)

Holter Monitor Room (OPHM1)

Echocardiograph Room (OPPE1)

Stress Echocardiograph Room (OPPE2)

Stress Testing Treadmill Room (OPTM1)

Tilt Table Testing Room (OPTM2)

Event / Holter Monitor Work Room (OPHM2)

Cardiac Catheterization Laboratory (XCCE1)

Control Room, Cardiac Catheterization (XCCC1)

Transesophageal Echocardiograph (TEE) Room (TRTE1)

System Component Room (XCCA1)

Recovery Room, Patient Prep (RRSS1)

Note that room dimensions on the floor plans closely approximate, but may not always reflect the exact programmed room area stated in the Space Planning Criteria, Chapter 210 Cardiovascular Laboratory Service.



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## TECHNICAL CONSIDERATIONS

### Architectural

#### *Interior Design*

Follow guidance in PG 18-10, Ambulatory Care/Outpatient Clinic / Interior Design Manual for New Construction and Renovations of Hospitals and Clinics, and PG 18-14, Room Finishes, Door and Hardware Schedule. Where a specific guide plate is not provided for a space or function in this Design Guide, refer to PG 18-14 and the general design information below. Coordinate interior / material finish selections with Interior Design and Way-finding concept developed on a per project basis.

The goal of the design is to provide an interior environment that fosters healing of both the patient's mind and body, and respects the public funding aspect of VA projects. Design concepts should be comprised of a few simple choices, appear clear to users, and provide a welcoming, calm setting. Materials that have natural origins or clear links to nature and use subtle patterns and colors rather than strong hues will support this goal. Minimal means – few rather than many colors, for example, should be used to achieve these goals.

Key functional and design considerations of finishes and materials include:

1. Durability and cleanliness
2. A timeless quality for materials and colors
3. Creation of a distinctive, clear lead for the planning and selecting of furnishings and art

Elements which create non-functional horizontal surfaces, like decorative moldings which become dirt catchers, or wall coverings that cannot be washed down, should be avoided.

#### *Way-finding*

Patients, visitors and staff need to know where they are, where their destination is, how to get there and how to return to their point of origin. In addition to signage, strategies for way-finding should be part of early design concepts and be integral with architectural planning and finish choices. In this way, way-finding can become a natural, intuitive part of the overall design. Refer to Interior Design Manual for New Construction and Renovations of Hospitals and Clinics and VA Signage Design Guide.

Examples of design strategies to achieve way-finding goals include:

- Utilize specific color, pattern, or artwork cues for different components in a unit or department  
Based on choice of color palette, public areas can be clearly differentiated from procedure areas and further differentiated from service areas. Use of artwork can signal a department entrance
- Treat corridor ends and junctures as way-finding opportunities.  
Where possible, corridor ends can be sources of daylight. Special graphic or color panels can be used to cue destination information from a distance

### *Partitions*

Partitions should generally be gypsum wallboard (GWB) on appropriately sized metal studs to accommodate different slab to slab dimensions, recessed items, and utility runs. Provide sound attenuation in accordance with PG 18-3, VA Design and Construction Procedures, Topic 11: Noise Transmission Control. Provide wall protection in accordance with the Interior Design Manual for New Construction and Renovations of Hospitals and Clinics.

Consider incorporating corner guards in corridors and other areas where the potential for wall damage from wheeled patient and cart traffic is anticipated. To reduce an institutional feeling in patient areas, corner guards should be set flush to adjacent wall surfaces, as opposed to surface mounted, and selected in a color that matches adjacent wall color. In service areas, stainless steel corner guards or guard plates can be used.

Radiation shielding may be required for procedure rooms using fluoroscopy, such as the Cardiac Catheterization Lab. Shielding requirements for thickness and locations will be determined by the facility physicist based on the specific equipment selected.

Wall finish for Cardiac Cath, EP Rooms, and TEE Rooms shall be a high build glazed special coating on GWB that provides a hard washable surface finish.

Interior glazing should be in a hollow metal frame. Both the frame and the glass may require shielding for radiation if required by the facility physicist.

### *Floors*

Floor finish for most spaces, including exam rooms, corridors and supply and storage spaces, should be a resilient tile with a 6 inch (150 mm) high rubber base. Floors in all Cardiovascular invasive procedure rooms, such as Cardiac Catheterization Labs, EP Rooms, and TEE Rooms, and their ancillary spaces, such as control and component rooms, shall be welded seam resilient flooring with integral coved base manufactured specifically for invasive healthcare settings. For all exam and testing rooms, prep and recovery rooms, clean and soiled utility rooms, sterile supply, equipment cleaning, and clean storage rooms, floor finish should be welded seam resilient flooring with integral 6 inch coved base. Floors in offices, conference rooms, and waiting areas should be carpet with a 4 inch (100 mm) high rubber base. Floors in toilet rooms should be porcelain tile with a porcelain tile base.

### *Ceilings*

In most spaces, including toilet rooms, lay-in acoustic ceiling tile should be used. Where required for sanitation or moisture resistance, such as in soiled utility rooms, acoustical ceiling tile shall have a washable sprayed plastic finish, designated as "SP" in PG 18-14.

Ceilings for Cath Labs and EP Rooms shall be designed to be integrated with unistrut tracks and equipment rails which vary with equipment choices. When ceiling tile is used, it must be scrubbable, non-textured mylar



coated tile. When gypsum board is used, as in the soffit in the Cardiac Cath Lab guide plate in this section, it shall have a high-build glazed special coating that provides a hard washable surface finish.

### *Interior Doors*

Doors should be 1-3/4 inches (44 mm) thick, solid core, flush wood doors or hollow metal doors in hollow metal frames. Hollow metal doors should be used where high impact is a concern and where fire rated doors are required. Door widths of 48 inches (1219.2 mm) are recommended for all wheeled traffic and for bariatric wheelchair access to all patient spaces.

Since a preponderance of wheel chairs and wheeled patient transport should be expected in VA facilities, consider use of doors fully clad in solid vinyl guard sheets, including vinyl clad edge strips. These will maximize protection, add durability, ease maintenance, and lessen an institutional feeling. In non-patient service areas where hollow metal doors are to have paint finish, solid vinyl kick or mop plates should be added to both sides of doors.

### *Millwork*

Key locations such as nurse stations and departmental reception points, will be well served with the use of custom millwork to respond to individual facility designs and configurations. Millwork should be used as an architectural encasement for standard modular components, such as files and storage cabinets which are listed in the Equipment List for each relevant space. Millwork would provide both the transaction surface at stand up height as well as the work counter at normal desk height for a receptionist or nursing staff.

Transaction counters should be made of solid surface materials which resist chipping and staining. Work surfaces at desk height may be constructed of solid surface materials or plastic laminate with flush let-in vinyl edges. Consider including task lighting built under the transaction counter. Coordinate locations of computers, printers, keyboards and power and data ports as required by facility needs.

### *Hardware*

Accessible type should be used throughout. Refer to VA PG 18-14, Room Finishes, Door and Hardware Schedule and PG 18-4, National CAD Standards and Details Detail 08 00 00-1.dwg for additional information. Lock mechanisms which can be disengaged by staff from the corridor side should be used for all spaces where patients may disrobe, including toilet rooms and exam and procedure rooms.

### *Security*

Partitions, doors, and hardware for Procedure Suites may have special security requirements. Refer to PG 18-3, VA Design and Construction Procedures, Topic 14: Security and latest VA directives related to safety and security for Women Veterans.

## Structural

Structural design of VA facilities shall comply with the latest editions of the following:

- Reinforced concrete design - Building Code Requirements for Reinforced Concrete (ACI Standard 318-02) and Commentary (ACI-318R-02), American Concrete Institute.
- Structural steel design - Manual of Steel Construction, Load and Resistance Factor Design, Specifications for Structural Steel Buildings, American Institute of Steel Construction, Second Edition.
- International Building Code (IBC), International Conference of Building Officials.
- VA Seismic Design Requirements (H-18-8)

In compliance with Executive Order (EO) 12699, and EO 12941, all new and existing buildings constructed or leased by the Federal Government must be seismically safe.

Equipment used for cardiac procedures often requires special structural consideration. Structural loading for the major fixed equipment and imaging equipment in Catheterization and Electrophysiology Labs may impact floor loading or framing for the floor above depending on whether the equipment selected is floor supported or ceiling hung. In addition, there is often a need for a supplementary structural framing system, such as "Unistrut", that can accommodate moving loads of a gantry assembly hung on ceiling mounted tracks.

## Equipment

Equipment Lists are provided for the Guide Plates in this section. Additional general information and guidance is available on the VA Technical Information Library (TIL). Refer to Equipment Guide List (PG-18-5) for list of equipment, furnishings and utility requirements for each space in a functional area. Refer to Equipment Reference Manual (PG-18-6) for graphic representations of each piece of equipment to be purchased and installed by the construction contractor. Refer to equipment manufacturers' data for information specific to a particular equipment item.

**PLEASE NOTE: The descriptions found in the equipment list do not match those in MIL-STD 1691, in their entirety. The JSN has been used to identify the piece of equipment however the equipment, selected for each particular project, needs to match the description found in this document in lieu of the description in MIL-STD 1691.**

## Casework

For planning and utilization concerns, casework systems with modular components will provide flexibility and durability. Casework systems should incorporate components dimensioned for ease of multiple re-use installation applications. Casework systems should be planned to avoid corner installations and filler panels.

Counters for all clinical and clinical support areas shall be made of either solid impervious resin materials per PG 18-14, which offer long-term durability, and resist chipping and staining from medical agents expected to be used in clinical environments, or, for areas where strong chemicals are used, such as Soiled Utility Rooms, seamless stainless steel counters with integral backsplash. Plastic laminate veneer materials may be used in non-clinical staff and administrative areas.

### **Information Management Systems**

Reference VA Design Guide Office of Information and Technology (OI&T) for Information Management Systems. Coordinate with local information management systems in place.

In general, ports for data access shall be distributed to all occupied spaces. Specific locations for data access will be per Guide Plates in this document and/or as required by specific project needs.

### **Heating, Ventilation and Air Conditioning**

#### *General*

Air conditioning systems will be provided to heat, cool and ventilate the Cardiovascular Laboratory Service as required to satisfy the VA design criteria. Follow criteria in the VA Technical Information Library (TIL) HVAC design manual (PG-18-10) listed on the VA web site under Office of Construction & Facilities Management (CFM). Also refer to (PG-18-1) Master Construction Specifications and (PG-18-4) Standard Details and CAD Standards for items that may apply within the Cardiovascular Laboratory Service. See Sustainable Design and Energy Reduction Manual for additional information and requirements.

The air conditioning system serving the Cardiovascular Laboratory Service shall be designed to operate in occupied/unoccupied modes to suit the applicable schedule.

#### *Room Data Sheet Criteria*

The number of occupants, air conditioning temperatures, noise criteria and room pressurization indicated on the Room Data Sheets in the Guide Plates for select rooms of this section are for the purpose of establishing general planning parameters. The design architect and engineer (A/E) shall verify the actual occupant load and air conditioning load for each specific room on each individual project. Verify equipment loads for actual equipment to be furnished within that room for the specific project. While specific outside air quantities are noted on the Room Data Sheets for each Guide Plate room, the percent of outside air shall be based on the total supply air quantities determined for each specific project.

#### *Air Quality and Distribution*

In general, clean areas shall be maintained at positive air balance and soiled areas should be maintained at negative air balance with respect to adjoining areas. Specific pressure requirements are noted on the Room Data Sheets for each Guide Plate room.

Corridors shall not be used to supply or exhaust/return air from adjacent rooms, except that they may be used to ventilate Housekeeping Aides Closets (HAC's) and small electrical or telephone closets opening directly onto them. Ex-filtration and infiltration from positive/negative pressure rooms adjacent to a corridor should be considered in balancing air flow.

The transfer air should not be more than 100 CFM (2.8m<sup>3</sup>/min) per undercut door within the Cardiovascular Laboratory Service.

Care should be taken to minimize the short circuiting of air between supply and return/exhaust openings in rooms, with careful placement of supply registers and return grills air outlets and return/exhaust air inlets. Be sure to locate supply above the patient and return closer to the door within positive air balance rooms, such as the Stress Echocardiograph Room. Cardiac Catheterization Laboratories and EP Procedure Rooms shall have positive pressurization with supply over head of the patient and low returns at the floor.

Positive pressurization and filtration of supply air is required at all locations where invasive procedures occur. Minimum air changes per hour required are noted on room data sheets in this section. Efficient filtration is critical for procedure rooms in the Cardiovascular Laboratory Service.

#### *Exhaust System*

The HVAC design shall provide for exhaust air from spaces to control the transfer of odors and provide proper room pressurization and proper air changes per hour that may be required by the VA HVAC Design Manual or code standards.

#### *Energy Conservation*

The need to conserve energy is mandated by the Federal Government by Executive Order and Federal Law. In addition, 19 Federal Agencies, including VA, have signed a Memorandum of Understanding (MOU) outlining specific goals and targets for energy conservation and sustainable design. The following references apply to VA project design, with more detailed information to be found within the HVAC Design Manual for Hospital Projects:

- Sustainable Design & Energy Reduction Manual (April 2010)
- DOE Final Rule, and Energy Policy Act (EPACT 2005)
- Energy Conservation Executive Order No. 13423 Dated January 24, 2007

#### *Mycobacterium Tuberculosis (TB)*

Centers for Disease Control (CDC) requirements for the design of public areas within buildings which accommodate mycobacterium tuberculosis patients must be addressed by architectural and mechanical disciplines. Check current requirements for transmission of mycobacterium tuberculosis and TB Criteria in the latest CDC documents. Check specific CDC requirements within the Cardiovascular Laboratory Service for the need for an isolation recovery room.

### *Seismic Requirements*

Where required, install HVAC systems with seismic provisions as outlined in the PG-18-10, HVAC Design Manual for Hospital Projects and Master Construction Specifications MCS Section 13 05 41, Seismic Restraint Requirements for Non-Structural Components.

### *Design Conditions*

Year-round Conditions: 70 F to 75 F [21 C to 24 C] and 20% to 60% RH as defined in 2008 ASHRAE Standard 170 (including amendment d). The system shall be capable of maintaining temperatures within the range during normal working conditions. The cooling load for these spaces shall be calculated to maintain 75 F [24 C] at 60% RH and the heating load shall be calculated to maintain 70 F [21 C] at 20% RH. The year-round conditions can be used for variable air volume (VAV) or constant volume (CV) systems. Year-round design conditions shall be used for all patient areas. See March 2011 HVAC Design Manual for further details.

### *Special Spaces*

The Cath and EP procedure and equipment/computer rooms may require additional cooling which should be determined on a per facility based on specific equipment manufacturers' requirements and users' needs.

Sensors in X-ray equipment are sensitive to changes in humidity. Consideration should be given to ensure that changes in RH values do not exceed +/- 10%.

The System Component Room shall have a separate, dedicated stand-alone, 24-7 A/C system sized based on the equipment sensible heat gain.

## **Plumbing**

### *General*

Plumbing Systems will be provided for the Cardiovascular Laboratory Service as required to satisfy VA design criteria. Follow criteria in VA Technical Information Library (TIL) Plumbing Design Manual (PG-18-10) listed on VA website under Office of Construction & Facilities Management (CFM). Also refer to (PG-18-1) Master Construction Specifications and (PG-18-4) Standard Details and CAD Standards for items that may apply within the Cardiovascular Laboratory Service.

### *Room Data Sheet Criteria*

The Room Data Sheets in this section indicate typical quantities of plumbing fixtures equipment as well as medical gas outlets to establish the general planning parameters for select rooms. The design architect and engineer (A/E) shall verify the exact fixtures and medical gas locations and quantities for each individual projects.

### *Water Systems*

Domestic cold and hot water shall be piped to all plumbing fixtures and equipment requiring these utilities. A hot water return system shall be provided to ensure the design temperature is met at the fixture furthest from the source.

### *Waste Water Systems*

Plumbing fixtures and drains shall be drained by gravity through sanitary waste stacks, including required vent stacks. Fixtures below gravity drain line shall be pumped as required by a duplex ejector system. Any special acidic waste should be drained through corrosion-resistant, flame-retardant piping into either a local or centralized acid dilution tank.

### *Medical Gas Systems*

Medical gas distribution is noted on guide plates for key selected rooms. The design architect and engineer (A/E) shall refer to the latest edition (2010) of the Facility Guidelines Institute (FGI) Guidelines for the Design and Construction of Healthcare Facilities for minimum quantities and locations of medical gases. Specific quantities and locations should be determined on a per project basis.

### *Seismic Requirements*

Where required, the plumbing and medical gas systems shall be installed with seismic provisions as outlined in the PG-18-10, Plumbing Design Manual for Hospital Projects and Master Construction Specifications MCS Section 13 05 41, Seismic Restraint Requirements for Non-Structural Components.

## **Electrical**

### *General*

Electrical Systems shall be provided for the Cardiovascular Laboratory Service as required to satisfy VA design criteria. Follow criteria in VA Technical Information Library (TIL) Electrical Design Manual (PG-18-10) located on VA website under Office of Construction & Facilities Management (CFM). Also refer to (PG-18-1) Master Construction Specifications and (PG-18-4) Standard Details and CAD Standards for items that may apply within the Cardiovascular Laboratory Service.

### *Lighting*

Lighting is typically provided utilizing recessed fluorescent luminaires with acrylic prismatic lenses. Recessed fluorescent fixtures with parabolic louvers may be used at the nurse station, reception, and offices to control glare on monitor screens. Consider providing under-cabinet or under-shelf fluorescent lights above the counter work surface for task lighting. In major procedure rooms like Cath Labs, EP Labs and TEE, a separate, dimmable lighting system to provide a low level of ambient lighting shall be provided. The fixtures typically used are F32T8 lamps, as the minimum acceptable efficiency lamp in compliance with the Energy Policy Act (EPACT 2005). Lamps shall not be high output, and shall have a minimum color rendering index (CRI) of 70 and a color temperature of 3500 degrees Kelvin (K). Color corrected lamps having a CRI of 85 and correlated color temperature between 5000 degrees K and 6000 degrees K shall be used for select areas (i.e., Cardiac Catheterization Lab). Low mercury fluorescent lamps should be used. Attention needs to be given to illumination as a function of reflectance off walls and ceilings, particularly with color applied, to ensure lighting levels comply with criteria.

Except for invasive procedure rooms, surface mounted fixtures may be used where existing conditions or clearances above a suspended ceiling cannot accommodate recessed fixtures.

The lighting systems shall comply with Federal energy policy, VA Energy Conservation Policy, and Sustainable Design and Energy Reduction Manual.

Lighting intensities shall conform to PG-18-10, Electrical Design Manual, Appendix, Illumination Levels, the IES Lighting Handbook and IES publication RP-29-06, Lighting for Hospitals and Health Care Facilities. Reducing patient illumination levels below established levels is not recommended. Lighting levels are noted in foot candles on Room Data Sheets for each Guide Plate room.

Lighting energy consumption can be reduced in several ways including: reducing lighting fixture count, using highly efficient fixtures, managing when lighting is used and the amount of illumination delivered, using task lighting, and selecting fixtures, lamps, and controls, such as occupancy sensors, that best meet the needs of the staff and patient occupants.

Lighting in Cardiovascular Laboratory Service shall be controlled by wall mounted switches/dimmers located at the entrance to each room. Ceiling mounted dual technology (Ultrasonic/Infrared) occupancy sensors shall be used in the EKG Testing Room, Holter Monitor Room, Echocardiograph Room, Stress Echocardiograph Room, Stress Testing Treadmill Room, and Tilt Table Testing Room.

Lighting load densities should be verified for the actual design, as they may vary depending on the room configuration, fixture types, lamps, and ballasts used.

Supply power to selected light fixtures in Cardiac Catheterization Lab, EP Procedure Room and their Control and Component Rooms Rooms, from the critical branch of the emergency power system to allow for continued operation during a power outage. For facilities that do not have emergency generators, provide selected light fixtures with battery ballast.

## **Power**

### *General*

General purpose duplex receptacles are located per regulatory requirements on each wall of a room or a space. Dedicated duplex or special receptacles are provided for select pieces of equipment; some are energized from the emergency power system to allow for continuous operation during a power outage. Emergency power outlets are shown in Guide Plate floor plans for select rooms in this section and are addressed in PG 18-10, Electrical Design Manual.

Provide dedicated duplex receptacles energized from the emergency power system in areas where crash carts are stored

*Special Purpose*

Dedicated duplex or special receptacles are provided for select pieces of equipment as follows:

*Stress Testing Treadmill Room*

- Dedicated power outlet for stress system treadmill
- Dedicated power outlet for cardiac ultrasound machine

*Stress Echocardiograph Room*

- Dedicated power outlets for emergency circuiting of power receptacles and equipment

*Event / Holter Monitor Work Room*

- Dedicated power outlet for Holter Analysis system

UPS system should be provided for the radiographic Fluoroscopy equipment in the Cardiac Catheterization Laboratory. Check manufacturers' special power requirements for all invasive procedure equipment and related electronic components. Emergency power and other special power requirements are also addressed in PG 18-10, Electrical Design Manual and on the Guide Plates and Room Data Sheets in this section.

Workstations with personal computers (PC's) are typically provided with quadruplex receptacles for the PC, monitor, and printer. Junction boxes are to be provided for equipment requiring a hardwired connection.

Per VHA Directive 2008-011, Cardiac Catheterization Labs within VA facilities are no longer designated as wet locations for electrical safety purposes and do not require isolated power systems.

*Telephone*

Telephone outlets are typically provided at each workstation or in each room. Refer to PG-18-10 for additional requirements.

*Information Technology (IT)*

Computer Data (Telecom) outlets are typically provided at each workstation or in each room. Specific locations and equipment for key rooms are noted on Guide Plates in this section.

*Nurse Call and Code One System*

The nurse call and code one systems shall be PC based, and consist of patient call stations, staff stations, duty stations, dome lights and head-end equipment located in signal closet. The actual system configuration is dependent on the overall layout of the department and should be coordinated with the functional design.

*Clock system*

Provide battery operated clocks synchronized wirelessly. Both the overall system and the specific locations will be determined on a per facility basis.



### *Television*

Television outlets are provided at selected areas as determined by function or local facilities policy.

### *Public Address*

Provide a system in accordance with Master Construction Specifications MCS Section 27 51 16, Public Address (PA) and Mass Notification Systems. The public address system is typically part of the telephone system. Speakers are generally located in corridors and public spaces. The actual system configuration will depend on the overall design layout and functional requirements. Determine whether Cardiovascular Laboratories Service will be included as part of the hospital-wide PA system or have an independent system.

## **Fire and Life Safety Systems**

### *Fire Protection/Sprinkler Systems*

Fire Protection/Sprinkler Systems shall be designed as required to meet the needs of the Cardiovascular Laboratory Service and individual rooms. Follow criteria in VA Technical Information Library (TIL) non-building specific for Fire Protection Design Manual (PG-18-10) listed on VA website under Office of Construction & Facilities Management (CFM).

See reflected ceiling plans (RCP) in this section for sprinkler head locations in key rooms.

### *Fire Alarm System*

Fire Alarm Systems shall be designed as required to meet the needs of the Cardiovascular Laboratory Service and individual rooms. Follow criteria in VA Technical Information Library (TIL) non-specific building systems manuals for Fire Protection (Fire Alarm) Design Manual (PG-18-10) listed on VA web site under Office of Construction & Facilities Management (CFM).

## **Waste Management**

Space requirements for waste holding areas will vary with the selection of waste collection and recycling methods and systems, and need to be analyzed to determine the method to be considered for new facilities or coordinated with existing facilities. While space needs are determined by VA Space Planning Criteria on a departmental basis, space provisions for waste collection need to be distributed and dedicated for a variety of uses.

### *Medical Waste*

Medical waste is generated in exam and treatment spaces as well as instrument clean up areas where it is bagged, collected and transported to the soiled utility rooms. There it is held in separate containers pending transport to the medical waste handling facility or disposal by contract.

### *General Waste*

General waste is generated in all spaces and is held in containers for collection and/or sorting.

*Recyclable Waste*

Methods for sorting, collecting, transporting and disposing of recyclable products must be specifically analyzed for each facility and location. The optional use of disposable and reusable products is an important consideration in recycling and waste disposal alternatives.

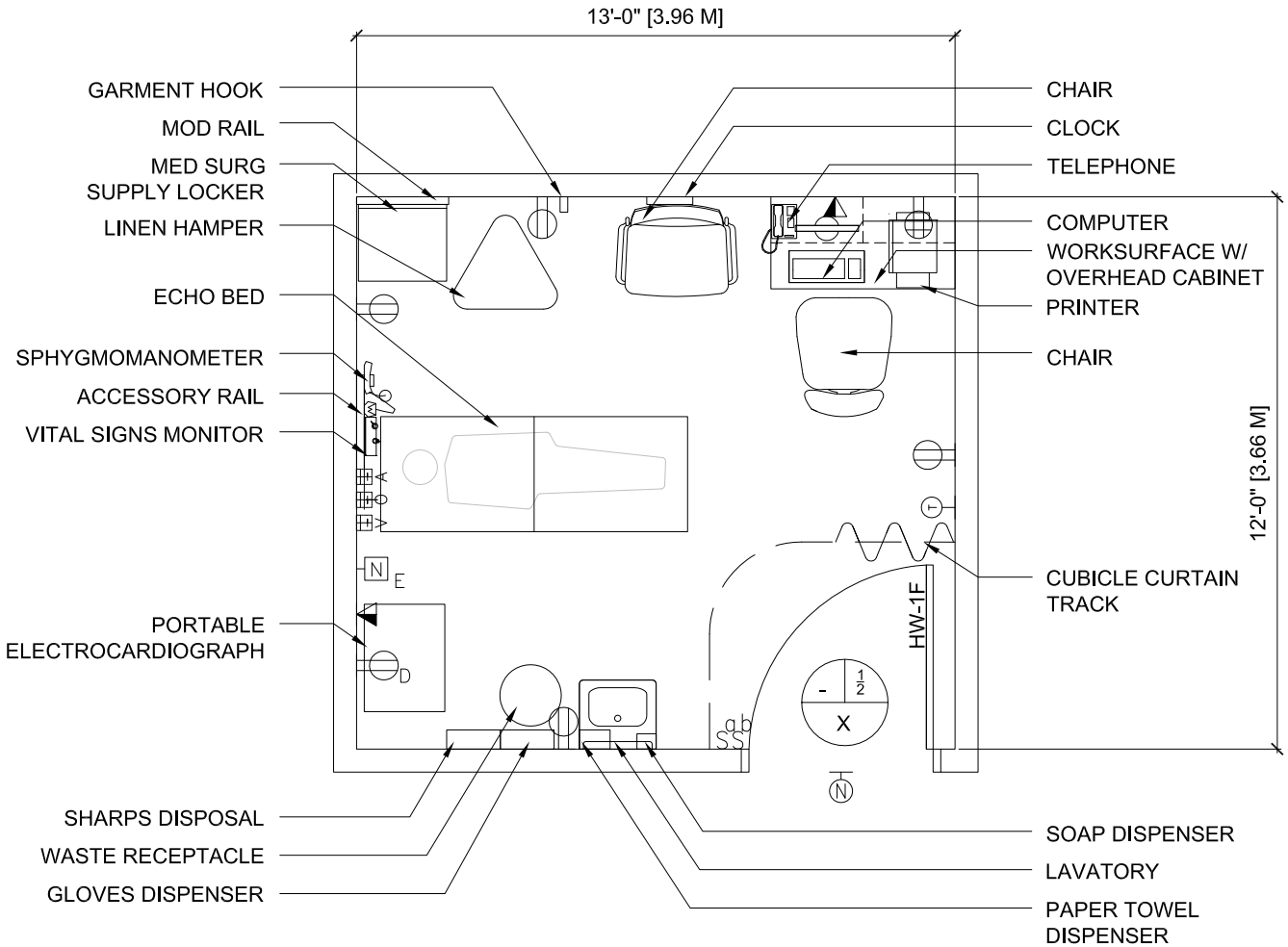
*Soiled Linen*

Soiled reusable linens may be generated in exam rooms, treatment spaces and patient and staff gowning areas. Soiled linens are collected in carts or hampers (depending on volume) and are held in soiled linen rooms or in linen carts in Soiled Utility Rooms pending transport to the laundry facility. Disposable linens are included with recyclable waste or medical waste as appropriate.

*Reusable Medical Equipment (RME)*

Reusable utensils and instruments, other than probes used in TEE Rooms, are transported to the Soiled Utility Room. They are cleaned, packaged, and collected for transport to the Sterile Processing Department. Tee Room probe protocols are discussed in Section 3 of this guide. Utensils and instruments which require sterilization prior to reuse are packaged for transport from their pre-cleaning areas to the Sterile Processing Department. Specific protocols for utensil and instrument reprocessing shall be confirmed with each individual facility.

**EKG TESTING ROOM (OPEC1)**



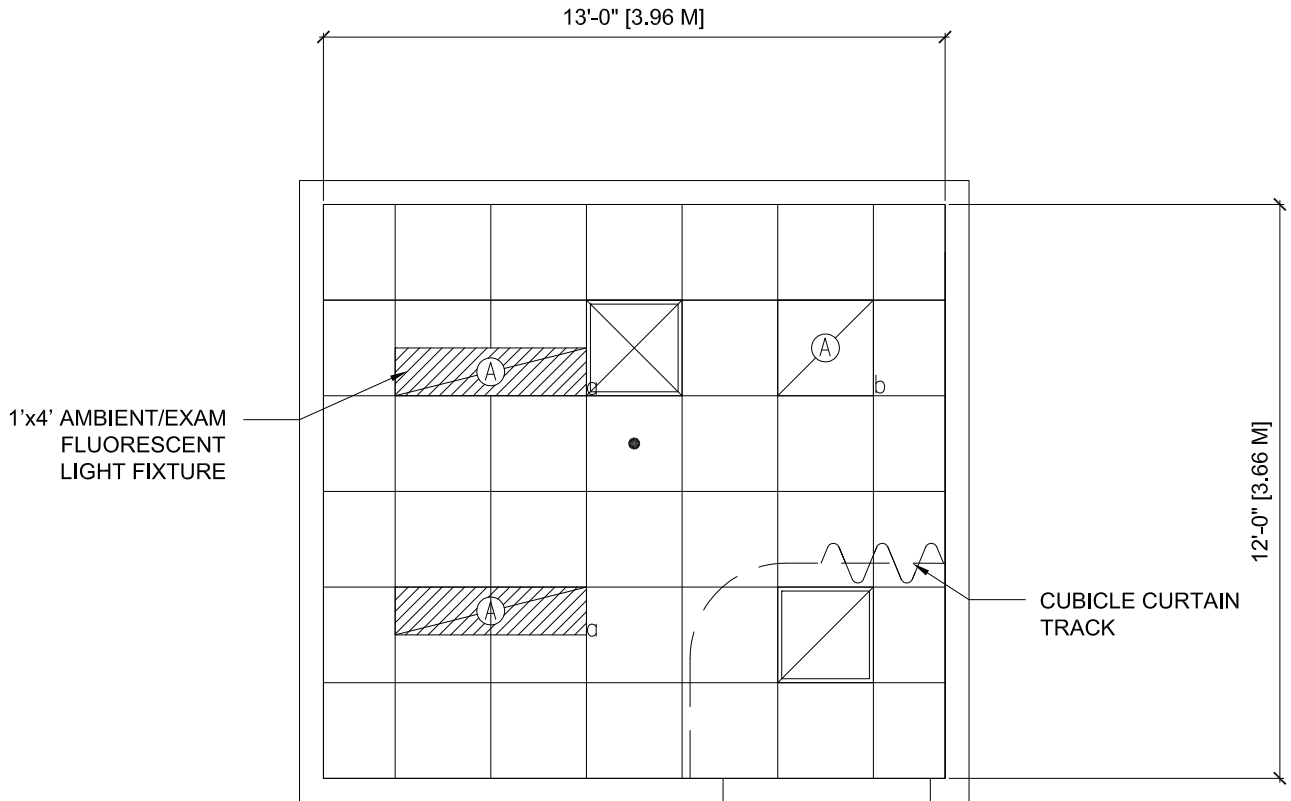
SCALE  $\frac{1}{4}" = 1'-0"$



# EKG Testing Room (OPEC1)

Cardiovascular Laboratory Service  
Floor/Equipment Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# EKG Testing Room (OPEC1)

SCALE  $\frac{1}{4}'' = 1'-0''$



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**EKG Testing Room (OPEC1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling:	AT
Ceiling Height:	9'-0"
Wall Finish:	GWB
Base:	WSF
Floor Finish:	WSF
Door:	1/2 C
Hardware:	1F

Notes:

**POWER**

General:	As Shown
Special:	As Shown
Emergency:	
Notes:	Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:	Yes
Nurse Call:	Yes
Security/Duress:	
CCTV:	
Telephone:	Yes
Pub. Address:	
Radio:	
Data:	Yes
Panic Call:	
Battery Operated Clock:	Yes
Intercom:	
Staff/Duty Station:	

**LIGHTING**

- General:
1. Two (2) of 1'x4' (300mm x 1200mm) Multi-Function Ambient/Exam Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  2. One (1) of 2'x2' (600mm x 600mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  3. Provide Ballasts Per Fixture for Desired Switching Configuration
  4. Lighting Level: 30fc
  5. Under Cabinet Light
  6. Ceiling Mounted Occupancy Sensors

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling:	75° F (24° C)
Dry Bulb Temp Heating:	70° F (21° C)
Minimum % Outside Air:	2
100% Exhaust Air:	
Noise Criteria:	NC 35
Steam:	
Relative Humidity/Cooling:	60%
Relative Humidity/Heating:	20%
Minimum Air Changes/Hr.:	8
Room Pressure:	Neutral (0)
AC Load Lights:	As Required
AC Load Equipment:	As Required
Number of People:	2 or 3
Special Equipment:	

**PLUMBING AND MEDICAL GASES**

Cold Water:	Yes
Hot Water:	Yes
Domestic Water (HWH):	Yes
Laboratory Air:	
Laboratory Vacuum:	
Sanitary/Vent:	Yes
Medical Air:	1 Outlet
Medical Vacuum:	1 Outlet
Oxygen:	1 Outlet
Nitrogen Oxide:	
Nitrogen:	
Anesthesia Evac:	
Sprinkler:	Yes
Tempered Water:	
Water Control:	Infrared Faucet

**SPECIAL EQUIPMENT**

None

<b>EKG Testing Room (OPEC1) Equipment List</b>				
<b>JSN</b>	<b>NAME</b>	<b>QTY</b>	<b>ACQ/INS</b>	<b>Description</b>
A1015	Telephone, Desk	1	VV	Telephone, desk
A1132	Rail, Accessory Mounting, Length As Required	1	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of thick extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.
E0210	Worksurface, w/ Overhead Cab, Wall Mtd, 48" W	1	VV	"THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface"

E0912	Locker, Supply, Med Surg, Wall Mtd, 23"W x 20"D	1	VV	<p>“THIS TYPICAL INCLUDES:</p> <ul style="list-style-type: none"> <li>1 Locked Storage Container</li> <li>4 Tray/Shelves</li> <li>5 Drawers, 3”H (76mm)</li> <li>2 Drawers, 6”H (152mm)</li> <li>2 Tray/Shelf Dividers</li> <li>Drawer Organizer Bins</li> </ul> <p>Consider the need for an E0921 to transport the locker from place to place.”</p>
E1500	Rail, MOD, Wall Mtd	1	VV	Wall mounted rail used for hanging (mounting) supply lockers, shelves drawers on a wall. Length as required.
F0210	Chair, Side, Without Arms	1	VV	Upholstered side chair approximately 32" high X 19" wide X 23" deep with floor glides. Seat is non-tilting and without arms.
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.

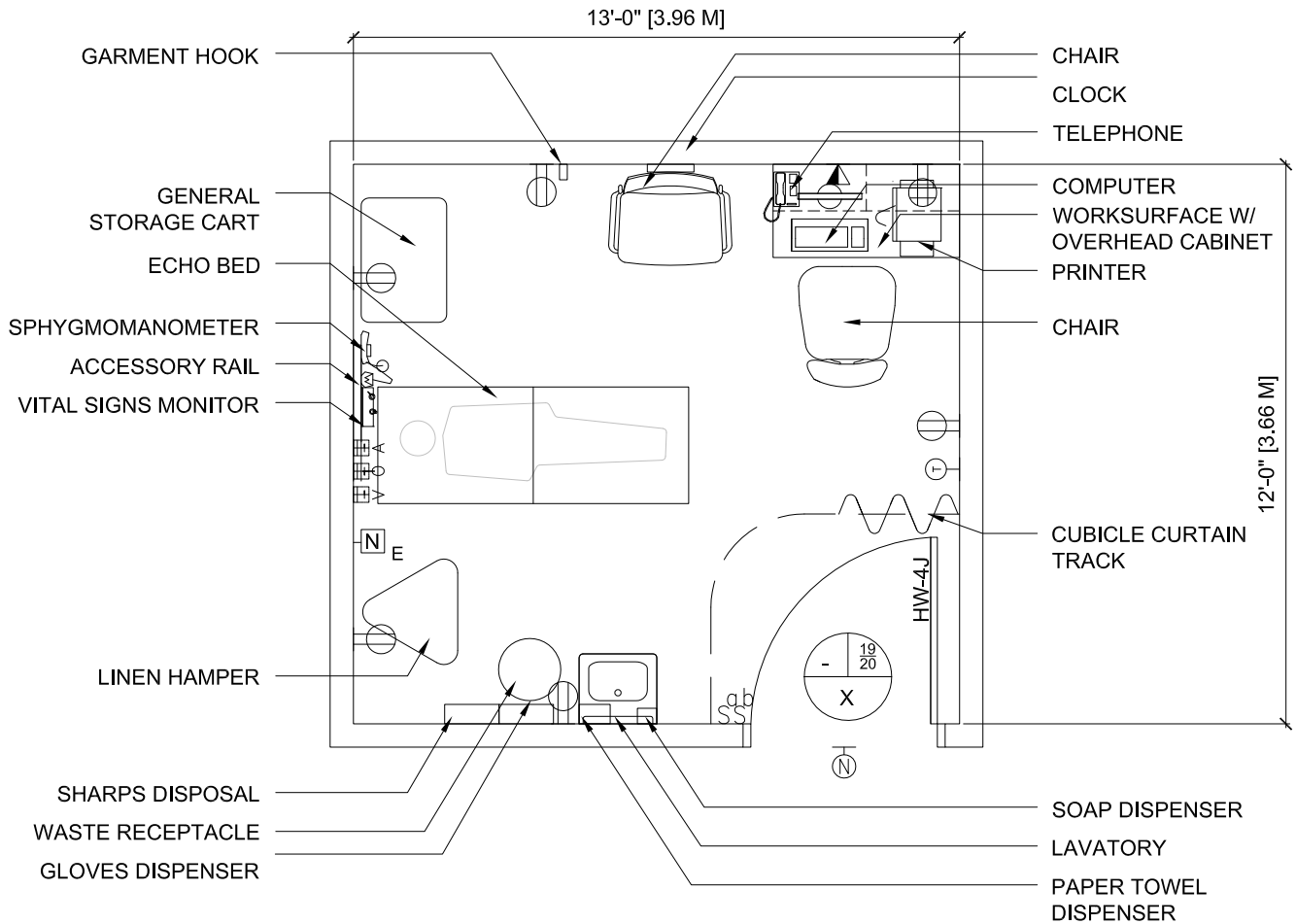
M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters.
M4100	Sphygmomanometer, Aneroid, Wall Mounted	1	VV	Aneroid sphygmomanometer. Unit is wall mounted and has large graphic dial display for easy reading from all angles. It has a 90 degree (angle) swivel and 10 degree (angle) forward tilt to reduce glare.
M4116	Monitor, Vital Signs Mobile	1	VV	Electronic sphygmomanometer. LCD displays non-invasive blood pressure, pulse rate, temperature and SpO2. Used in hospitals and clinics. Includes an optional mobile stand.
M7008	Bed, Echo, Power	1	VV	Dual power echo bed with: single pedal steering and breaking; 3-position memory hand controller; collapsible/removable safety rails; iv pole holder, head and body-positioning wedges, exam drop section with one-hand rapid release, right side sonographers' drop section with extension and exam side remote release, patient transfer system; vascular positioning; trendelenburg/reverse trendelenburg, power adjustable fowler, load capacity, 1,250 lbs.; lift capacity, 500 lbs.
M7710	Electrocardiograph, 12 Lead, Portable	1	VV	Used to detect the electrical signals associated with cardiac activity, diagnose cardiac abnormalities, determine a patients response to drug therapy and reveal trends or changes in heart function. Capable of recording two or more leads simultaneously, recording an entire 12 lead ECG in about 10 seconds. Includes of a 3.5 inch, high density, floppy disk drive for test storage. Portable.
P3100	Lavatory, Vitreous China, Slab Type	1	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.



	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.
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**HOLTER MONITOR ROOM (OPHM1)**



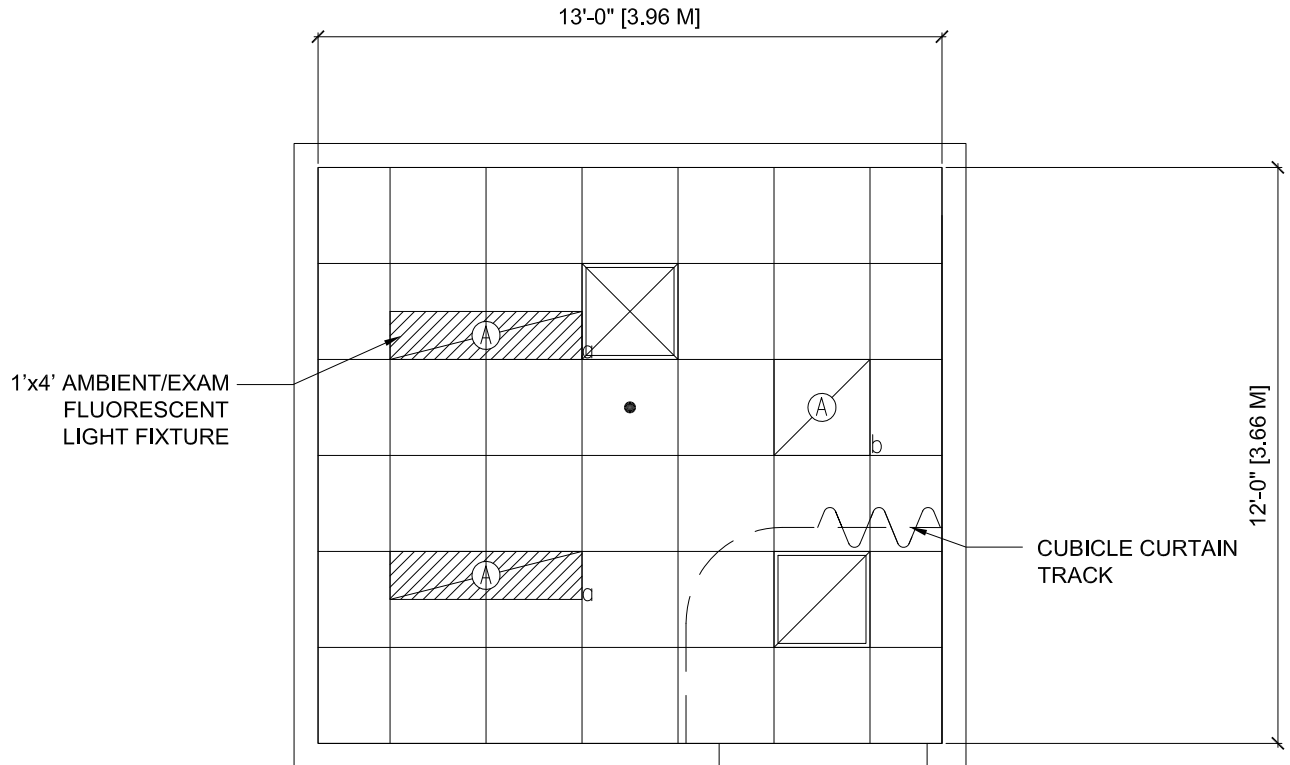
SCALE 1/4" = 1'-0"



# Holter Monitor Room (OPHM1)

Cardiovascular Laboratory Service  
Floor/Equipment Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



SCALE  $\frac{1}{4}'' = 1'-0''$



# Holter Monitor Room (OPHM1)

Cardiovascular Laboratory Service  
Reflected Ceiling Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Holter Monitor Room (OPHM1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling:	AT
Ceiling Height:	9'-0"
Wall Finish:	GWB *1
Base:	WSF
Floor Finish:	WSF
Door:	19/20 X
Hardware:	4J

Notes:  
\*1. See Design and Construction Procedures PG-18-3,  
Noise Transmission Control

**POWER**

General:	As Shown
Special:	As Shown
Emergency:	
Notes:	

**COMMUNICATIONS**

Patient Monitor:	Yes
Nurse Call:	Yes
Security/Duress:	
CCTV:	
Telephone:	Yes
Pub. Address:	
Radio:	
Data:	Yes
Panic Call:	
Battery Operated Clock:	Yes
Intercom:	
Staff/Duty Station:	

**LIGHTING**

- General:
1. Two (2) of 1'x4' (300mm x 1200mm) Multi-Function Ambient/Exam Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  2. One (1) of 2'x4' (600mm x 1200mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  3. Provide Ballasts Per Fixture for Desired Switching Configuration
  4. Lighting Level: 30fc
  5. Under Cabinet Light
  6. Ceiling Mounted Occupancy Sensors

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling:	75° F (24° C)
Dry Bulb Temp Heating:	70° F (21° C)
Minimum % Outside Air:	2
100% Exhaust Air:	
Noise Criteria:	NC 35
Steam:	
Relative Humidity/Cooling:	60%
Relative Humidity/Heating:	20%
Minimum Air Changes/Hr.:	8
Room Pressure:	Neutral (0)
AC Load Lights:	As Required

AC Load Equipment:	As Required
Number of People:	2 or 3
Special Equipment:	

**PLUMBING AND MEDICAL GASES**

Cold Water:	Yes
Hot Water:	Yes
Domestic Water (HWH):	Yes
Laboratory Air:	
Laboratory Vacuum:	
Sanitary/Vent:	Yes
Medical Air:	Yes
Medical Vacuum:	Yes
Oxygen:	Yes
Nitrogen Oxide:	
Nitrogen:	
Anesthesia Evac:	
Sprinkler:	Yes
Tempered Water:	
Water Control:	Infrared

**SPECIAL EQUIPMENT**

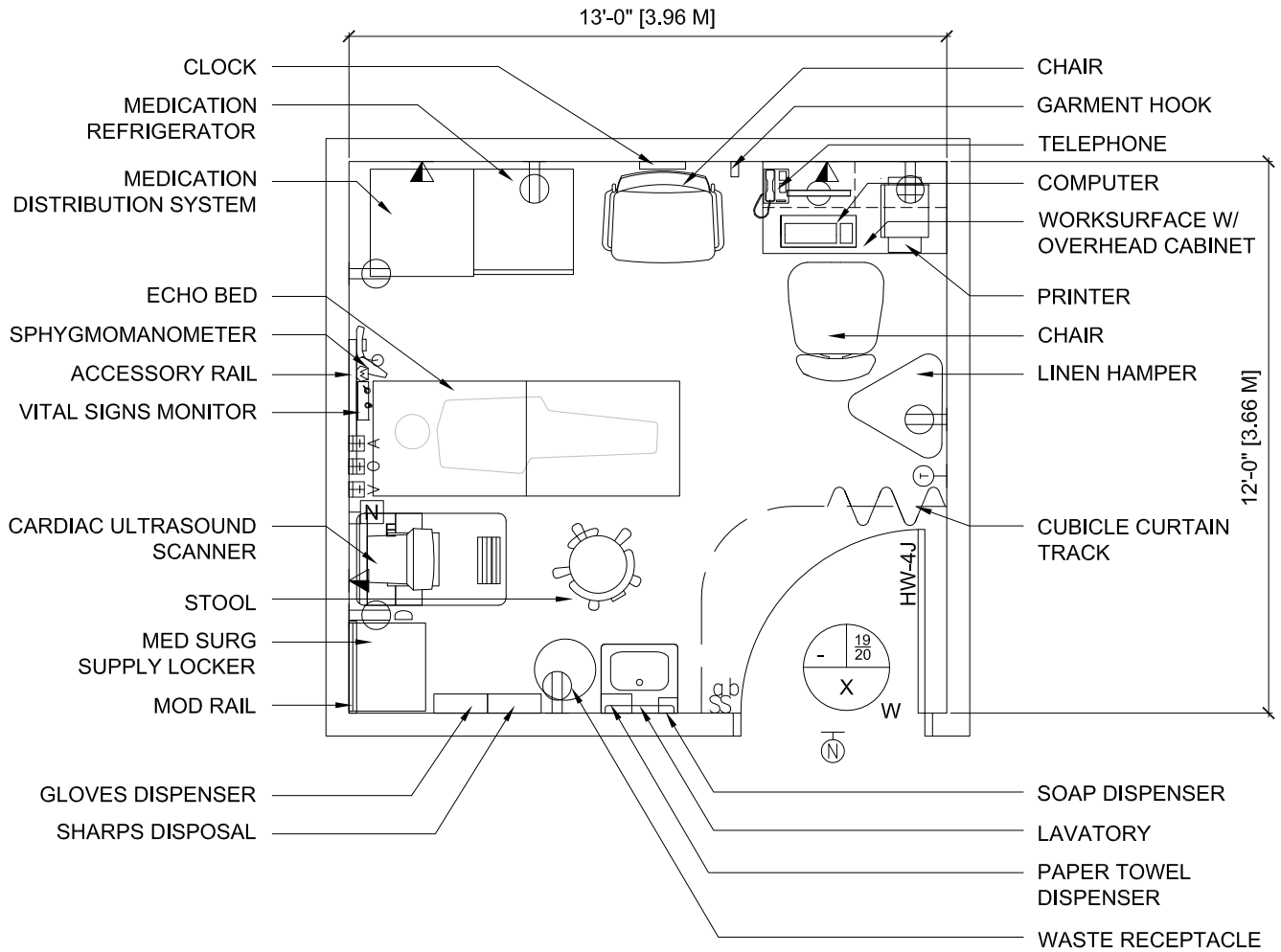
<b>Holter Monitor Room (OPHM1) Equipment List</b>				
<b>JSN</b>	<b>NAME</b>	<b>QTY</b>	<b>ACQ/INS</b>	<b>Description</b>
A1015	Telephone, Desk	1	VV	Telephone, desk
A1132	Rail, Accessory Mounting, Length As Required	1	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of thick extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.
E0210	Worksurface, w/ Overhead Cab, Wall Mtd, 48" W	1	VV	"THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface"

E0948	Cart, General Storage, Mobile, 42"H x 32"W x 22"D	1	VV	<p>“THIS TYPICAL INCLUDES:</p> <ul style="list-style-type: none"> <li>1 Cart Body, Style-A Narrow, w/Raised Edge Top</li> <li>1 Accessory Rail, Side</li> <li>2 Drawers, 3” H (76mm)</li> <li>4 Drawers, 6” H (152mm)</li> <li>Drawer Organizer Bins”</li> </ul>
F0210	Chair, Side, Without Arms	1	VV	Upholstered side chair approximately 32" high X 19" wide X 23" deep with floor glides. Seat is non-tilting and without arms.
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.

M1801	Computer, Microprocessing, w/Flat Panel Monitor	2	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters.
M4100	Sphygmomanometer, Aneroid, Wall Mounted	1	VV	Aneroid sphygmomanometer. Unit is wall mounted and has large graphic dial display for easy reading from all angles. It has a 90 degree (angle) swivel and 10 degree (angle) forward tilt to reduce glare.
M7008	Bed, Echo, Power	1	VV	Dual power echo bed with: single pedal steering and breaking; 3-position memory hand controller; collapsible/removable safety rails; iv pole holder, head and body-positioning wedges, exam drop section with one-hand rapid release, right side sonographers' drop section with extension and exam side remote release, patient transfer system; vascular positioning; trendelenburg/reverse trendelenburg, power adjustable fowler, load capacity, 1,250 lbs.; lift capacity, 500 lbs.
P3100	Lavatory, Vitreous China, Slab Type	1	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.
	Monitor, Vital Signs Mobile	1	VV	Mobile vital sign monitor with: LCD displays non-invasive blood pressure, pulse rate, SpO2, printer and mobile stand.



**ECHOCARDIOGRAPH ROOM (OPPE1)**



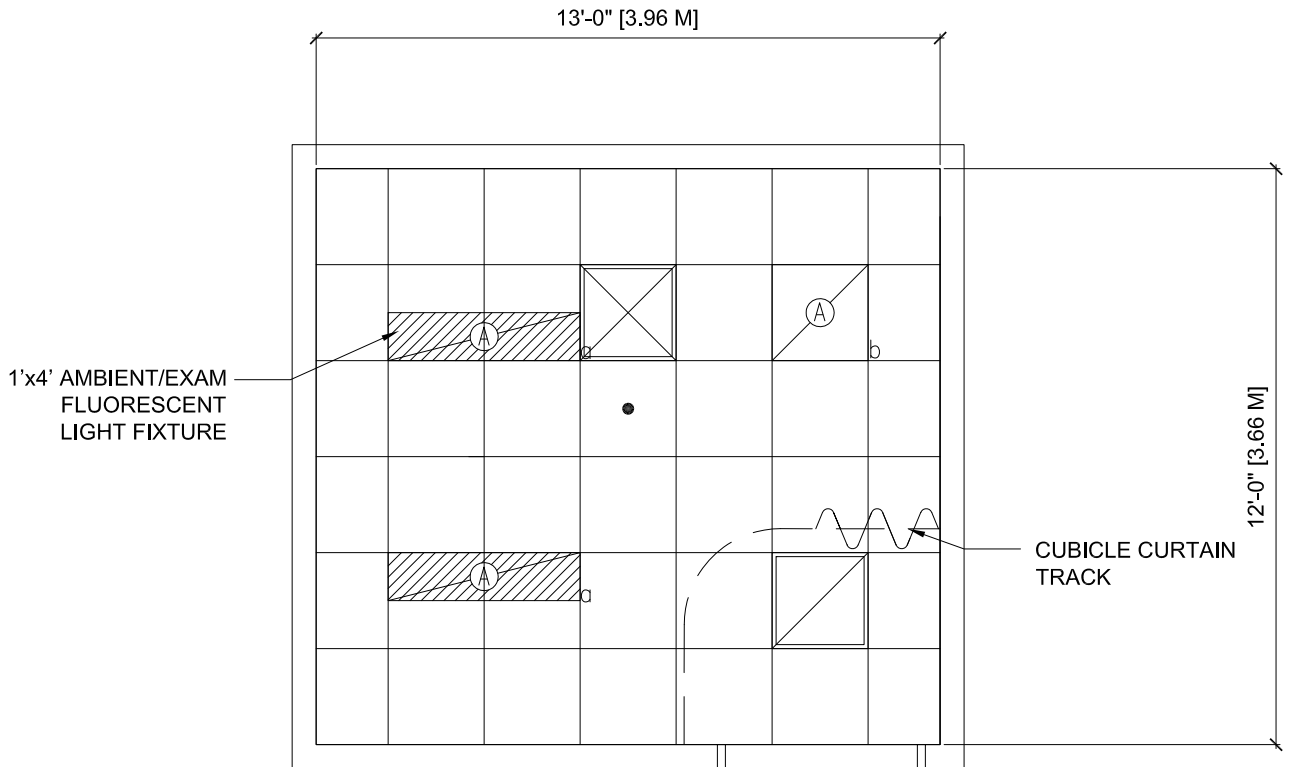
SCALE  $\frac{1}{4}" = 1'-0"$

# Echocardiograph Room (OPPE1)



Cardiovascular Laboratory Service  
Floor/Equipment Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



SCALE  $\frac{1}{4}'' = 1'-0''$

# Echocardiograph Room (OPPE1)



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Echocardiograph Room (OPPE1)**  
**Room Data Sheet**

**ARCHITECTURAL**

Ceiling:	AT
Ceiling Height:	9'-0"
Wall Finish:	GWB *1
Base:	WSF
Floor Finish:	WSF
Door:	19/20 X-W
Hardware:	4J

Notes:  
 \*1. See Design and Construction Procedures PG-18-3, Noise Transmission Control

**POWER**

General:	As Shown
Special:	As Shown
Emergency:	
Notes:	Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:	Yes
Nurse Call:	Yes
Security/Duress:	
CCTV:	
Telephone:	Yes
Pub. Address:	
Radio:	
Data:	Yes
Panic Call:	
Battery Operated Clock:	Yes
Intercom:	
Staff/Duty Station:	

**LIGHTING**

- General:
- Two (2) of 1'x4' (300mm x 1200mm) Multi-Function Ambient/Exam Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  - One (1) of 2'x2' (600mm x 600mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  - Provide Ballasts Per Fixture for Desired Switching Configuration
  - Lighting Level: 30fc
  - Under Cabinet Light
  - Ceiling Mounted Occupancy Sensors

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling:	75° F (24° C)
Dry Bulb Temp Heating:	70° F (21° C)
Minimum % Outside Air:	2
100% Exhaust Air:	
Noise Criteria:	NC 35
Steam:	
Relative Humidity/Cooling:	60%
Relative Humidity/Heating:	20%
Minimum Air Changes/Hr.:	8
Room Pressure:	Neutral (0)
AC Load Lights:	As Required
AC Load Equipment:	As Required
Number of People:	2
Special Equipment:	

**PLUMBING AND MEDICAL GASES**

Cold Water:	Yes
Hot Water:	Yes
Domestic Water (HWH):	Yes
Laboratory Air:	
Laboratory Vacuum:	
Sanitary/Vent:	Yes
Medical Air:	1 Outlet
Medical Vacuum:	1 Outlet
Oxygen:	1 Outlet
Nitrogen Oxide:	
Nitrogen:	
Anesthesia Evac:	
Sprinkler:	Yes
Tempered Water:	
Water Control:	Infrared

**SPECIAL EQUIPMENT**

### Echocardiograph Room (OPPE1) Equipment List

JSN	NAME	QTY	ACQ/INS	Description
A0919	Distribution System, Medication, Lock Assembly, Refrigerator	1	VV	Locking interface assembly between main medication distribution unit and refrigerator (Size: 7"H x 5"W x 2"D note adds 2" refrig with)
A1015	Telephone, Desk	1	VV	Telephone, desk
A1132	Rail, Accessory Mounting, Length As Required	1	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of thick extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.

E0210	Worksurface, w/ Overhead Cab, Wall Mtd, 48" W	1	VV	"THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface"
E0912	Locker, Supply, Med Surg, Wall Mtd, 23"W x 20"D	1	VV	"THIS TYPICAL INCLUDES:  1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place."
E1500	Rail, MOD, Wall Mtd	1	CC	Wall mounted rail used for hanging (mounting) supply lock- ers, shelves drawers on a wall. Length as required.
F0210	Chair, Side, Without Arms	1	VV	Upholstered side chair approximately 32" high X 19" wide X 23" deep with floor glides. Seat is non-tilting and without arms.
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examina- tions.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and tem- porarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Bat- tery operated, (batteries not included).

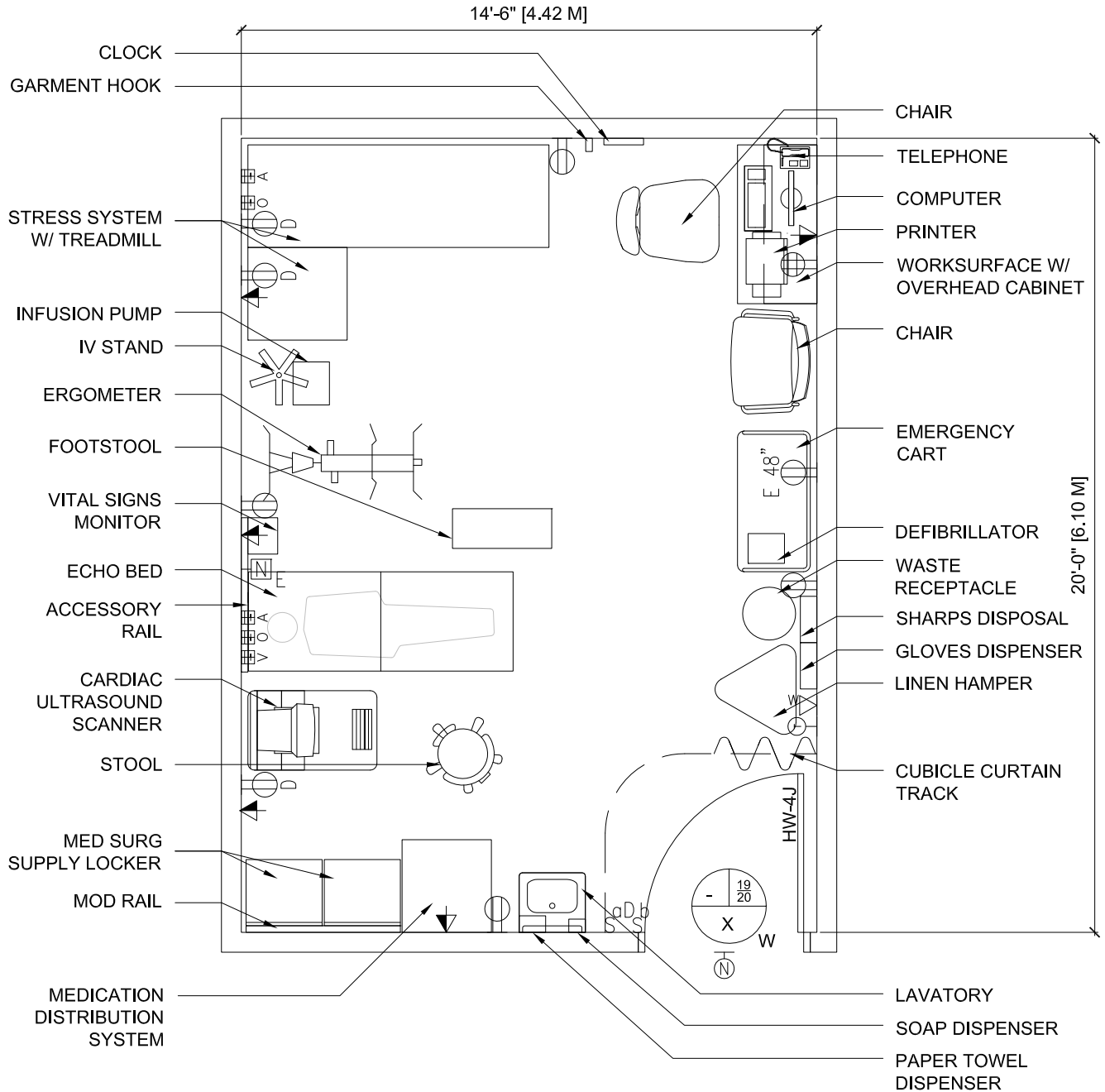
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1801	Computer, Micro-processing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters.
M3150	Distribution System, Medication, Automatic	1	VV	An automated dispensing system that provides controlled dispensing, inventory and security. Size and cost will vary dependent on number of modules selected.
M3155	Refrigerator, Undercounter w/ Med Distribution Sys. Lk	1	VV	Undercounter all-refrigerator unit with stainless steel interior and exterior, external digital display thermometer, wire adjustable shelves and medication dispensing system lock mounting plate 26W x 27.5D x 34H
M4100	Sphygmomanometer, Aneroid, Wall Mounted	1	VV	Aneroid sphygmomanometer. Unit is wall mounted and has large graphic dial display for easy reading from all angles. It has a 90 degree (angle) swivel and 10 degree (angle) forward tilt to reduce glare.

M7008	Bed, Echo, Power	1	VV	Dual power echo bed with: single pedal steering and breaking; 3-position memory hand controller: collapsible/removable safety rails; iv pole holder, head and body-positioning wedges, exam drop section with one-hand rapid release, right side sonographers' drop section with extension and exam side remote release, patient transfer system; vascular positioning; trendelenburg/reverse trendelenburg, power adjustable fowler, load capacity, 1,250 lbs.; lift capacity, 500 lbs.
P3100	Lavatory, Vitreous China, Slab Type	1	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.
X2105	Scanner, Ultrasound, Cardiac (Echo)	1	VV	High definition, diagnostic ultrasound system for Radiology, Cardiology, Vascular, ob-gyn, Perinatology, and Surgical imaging applications. The unit employs curved, phased and linear array imaging technology. The system supports colorflow, pulse, continuous wave imaging modalities. On board software measurement packages available for all imaging applications. The system is DICOM 3.0 compatible, for easy linkage to filmless image management systems and review stations. In addition, a full line of probes and conventional recording devices are available.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.
	Monitor, Vital Signs Mobile	1	VV	Mobile vital sign monitor with: LCD displays non-invasive blood pressure, pulse rate, SpO2, printer and mobile stand.

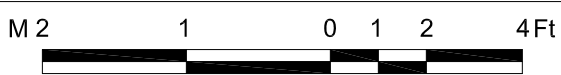




**STRESS ECHOCARDIOGRAPH ROOM (OPPE2)**

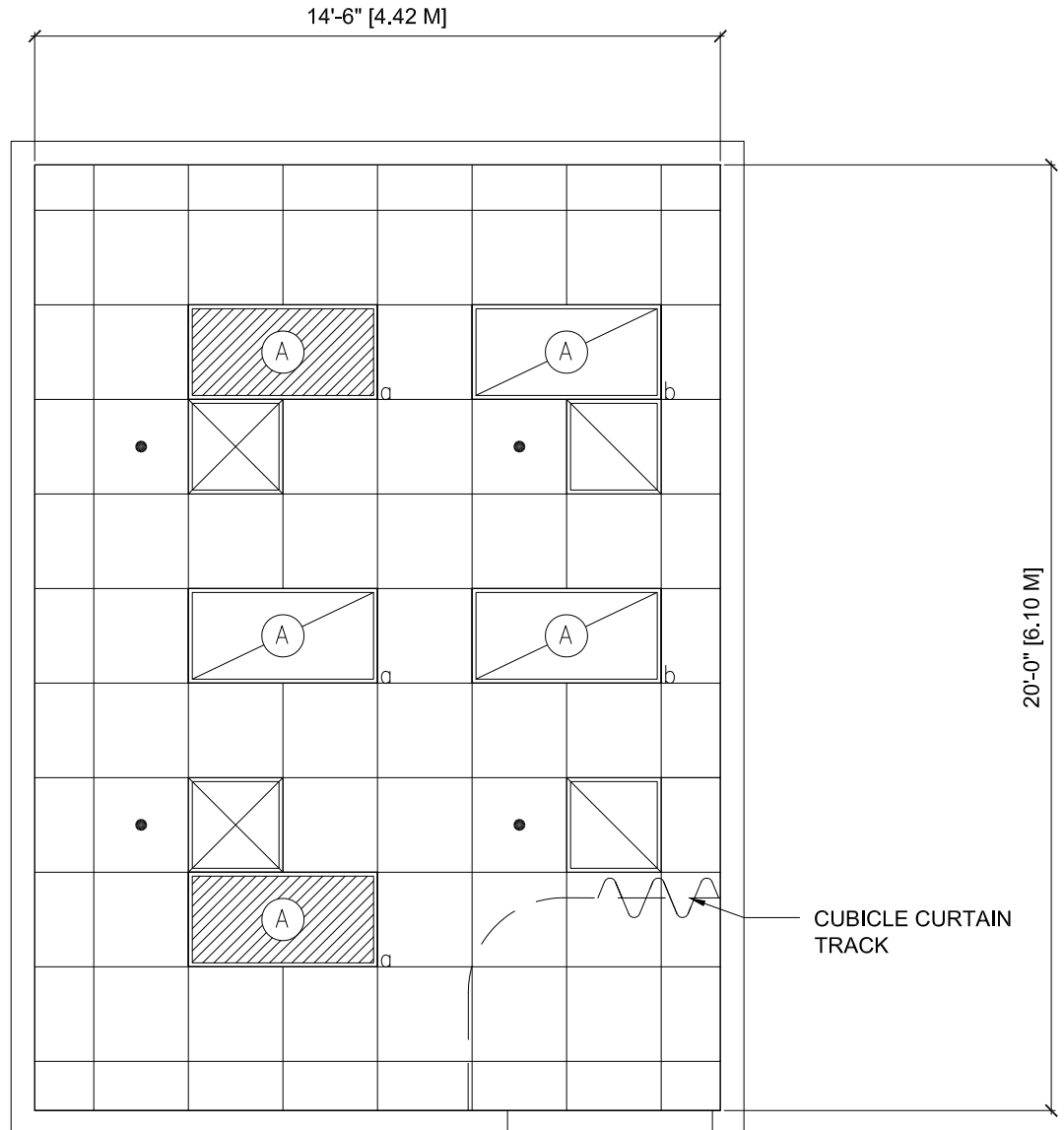


SCALE  $\frac{1}{4}" = 1'-0"$  **Stress Echocardiograph Room (OPPE2)**



Cardiovascular Laboratory Service  
Floor/Equipment Plan (290 NSF / 26.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



SCALE  $\frac{1}{4}" = 1'-0"$

# Stress Echocardiograph Room (OPPE2)



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (290 NSF / 26.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Stress Echocardiograph Room (OPPE2)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling:	AT
Ceiling Height:	9'-0"
Wall Finish:	GWB *1
Base:	WSF
Floor Finish:	WSF
Door:	19/20 X-W
Hardware:	4J

Notes:

\*1. See Design and Construction Procedures PG-18-3, Noise Transmission Control

**POWER**

General:	As Shown
Special:	As Shown
Emergency:	Yes
Notes:	Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:	Yes
Nurse Call:	Yes
Security/Duress:	
CCTV:	
Telephone:	Yes
Pub. Address:	
Radio:	
Data:	Yes
Panic Call:	
Battery Operated Clock:	Yes
Intercom:	
Staff/Duty Station:	

**LIGHTING**

- General:
1. Five (5) of 2'x4' (600mm x 1200mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  2. Provide Ballasts Per Fixture for Desired Switching Configuration
  3. Lighting Level: 50fc
  4. Under Cabinet Light
  5. Dimmable Fixtures, Three (3)
  6. Ceiling Mounted Occupancy Sensors

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling:	75° F (24° C)
Dry Bulb Temp Heating:	70° F (21° C)
Minimum % Outside Air:	2
100% Exhaust Air:	
Noise Criteria:	NC 35
Steam:	
Relative Humidity/Cooling:	60%
Relative Humidity/Heating:	20%
Minimum Air Changes/Hr.:	8
Room Pressure:	Neutral (0)
AC Load Lights:	As Required

AC Load Equipment:	As Required
Number of People:	2
Special Equipment:	

**PLUMBING AND MEDICAL GASES**

Cold Water:	Yes
Hot Water:	Yes
Domestic Water (HWH):	Yes
Laboratory Air:	
Laboratory Vacuum:	
Sanitary/Vent:	Yes
Medical Air:	2 Outlets
Medical Vacuum:	1 Outlet
Oxygen:	2 Outlets
Nitrogen Oxide:	
Nitrogen:	
Anesthesia Evac:	
Sprinkler:	Yes
Tempered Water:	
Water Control:	Infrared

**SPECIAL EQUIPMENT**

None

**Stress Echocardiograph Room (OPPE2)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A1015	Telephone, Desk	1	VV	Telephone, desk
A1132	Rail, Accessory Mounting, Length As Required	1	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.
E0210	Worksurface, w/ Overhead Cab, Wall Mtd, 48" W	1	VV	THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface"

E0912	Locker, Supply, Med Surg, Wall Mtd, 23"W x 20"D	AR	VV	THIS TYPICAL INCLUDES: 1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.
E0954	Cart, Emergency, Mobile, 66"H x 52"W x 22"D	1	VV	THIS TYPICAL INCLUDES: 1 Cart body, style-A narrow, w/raised edge top 2 Accessory rails, side 1 Accessory rail, back 1 Defibrillator tray; 1 IV pole 1 Breakaway bar 1 Flip-up shelf 1 Wastebasket 1 Oxygen tank holder 1 Electrical box-4 outlet
E1500	Rail, MOD, Wall Mtd	1	CC	Wall mounted rail used for hanging (mounting) supply lockers, shelves drawers on a wall. Length as required.
F0210	Chair, Side, Without Arms	1	VV	Upholstered side chair approximately 32" high X 19" wide X 23" deep with floor glides. Seat is non-tilting and without arms.
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.
F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse.

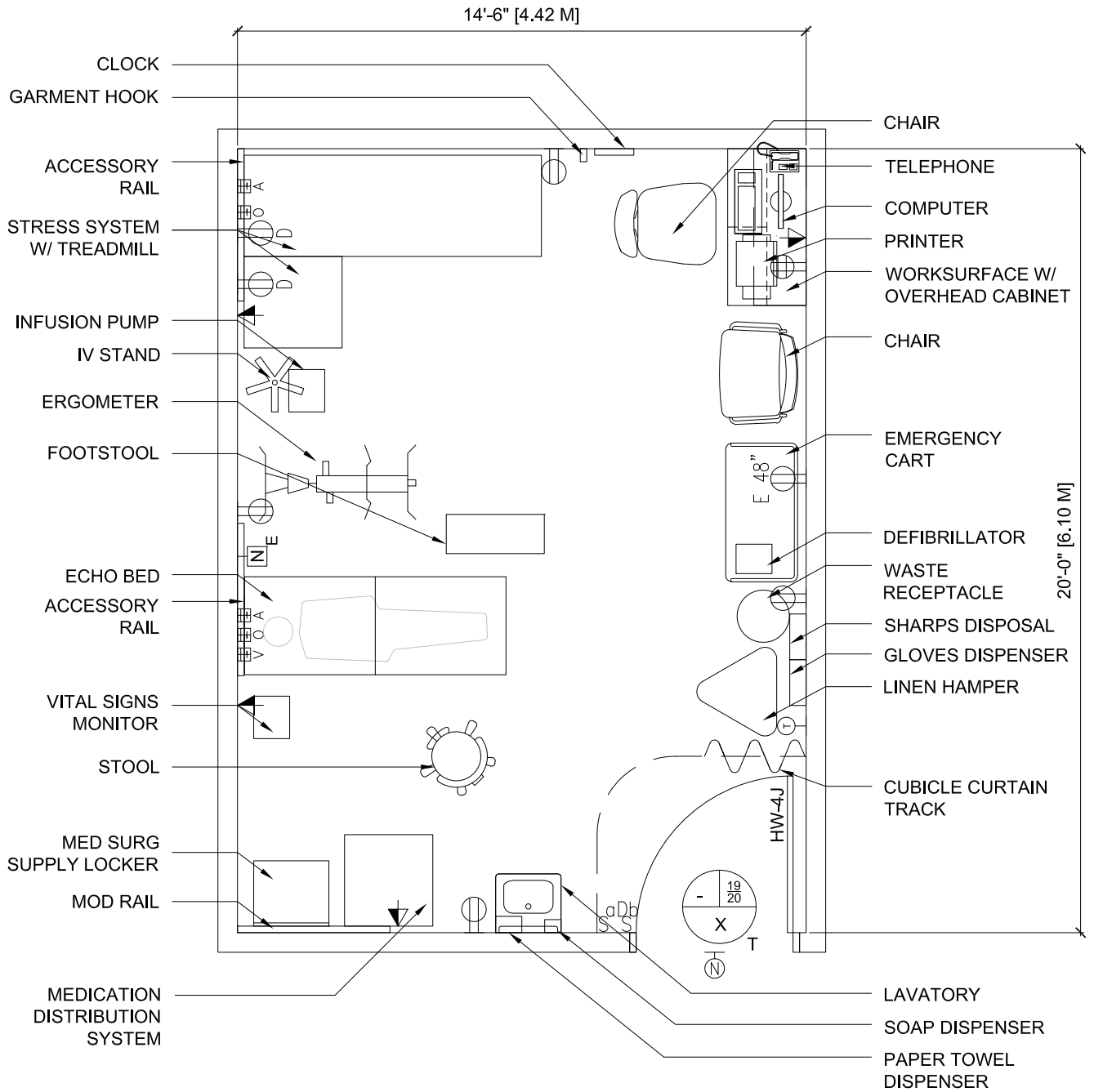
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	2	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	2	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters.
M3150	Distribution System, Medication, Automatic	1	VV	An automated dispensing system that provides controlled dispensing, inventory and security. Size and cost will vary dependent on number of modules selected.
M4255	Stand, IV, Adjustable	1	VV	Adjustable IV stand with 4-hook arrangement. Stand has stainless steel construction with heavy weight base. It adjusts from 66 inches to 100 inches and is mounted on conductive rubber, ball bearing, swivel casters. Stand is used for administering intravenous solutions.

M4266	Pump, Volumetric, Infusion, Multiple Line	1	VV	Volumetric infusion pump. Pump is self-regulating with automatic sensor and adjustable rate. Equipped with visual and audible alarms and up to 10 hour capacity battery. For the administration of a wide variety of therapeutic agents where precise control is required. Unit provides individual control to IV lines simultaneously.
M7008	Bed, Echo, Power	1	VV	Dual power echo bed with: single pedal steering and breaking; 3-position memory hand controller; collapsible/removable safety rails; iv pole holder, head and body-positioning wedges, exam drop section with one-hand rapid release, right side sonographers' drop section with extension and exam side remote release, patient transfer system; vascular positioning; trendelenburg/reverse trendelenburg, power adjustable fowler, load capacity, 1,250 lbs.; lift capacity, 500 lbs.
M7650	Defibrillator/Monitor, Acute Care	1	VV	Portable defibrillator/monitor for acute care includes biphasic defibrillator, pacing, SPO2, Interpretive 12-lead, NIBP monitoring, EtCO2 monitoring, Invasive pressure monitoring, Vital Sign monitoring, temperature probe, Fax transmission, PCMCIA Data Cards, Paddle accessories, and a color LCD.
M8133	Ergometer, Upper Body	1	VV	Ergometer for measuring upper body exertion during an exercise regimen. The unit consists of a seat and a hand crank mechanism at shoulder height. The unit is used for physical rehabilitation protocols and stress testing. The unit quantifiably measures the effort exerted by the patient.
M8185	System, Stress Exercise, w/Treadmill	1	VV	Stress exercise system with treadmill and respiratory/metabolic assessment. The system includes an ECG amplifier, chart recorder, display, console, treadmill and modules for respiratory/metabolic assessment. Used to determine patient's functional capacity, predict and diagnose cardiopulmonary and vascular diseases and for rehabilitation of patients b covering from leg injuries or other type of illness. Some vendors require a NEMA 5-20R non-locking receptacle for their treadmills.
P3100	Lavatory, Vitreous China, Slab Type	1	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.

X2105	Scanner, Ultrasound, Cardiac (Echo)	1	VV	High definition, diagnostic ultrasound system for Radiology, Cardiology, Vascular, ob-gyn, Perinatology, and Surgical imaging applications. The unit employs curved, phased and linear array imaging technology. The system supports colorflow, pulse, continuous wave imaging modalities. On board software measurement packages available for all imaging applications. The system is DICOM 3.0 compatible, for easy linkage to filmless image management systems and review stations. In addition, a full line of probes and conventional recording devices are available.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.
	Monitor, Vital Signs Mobile	1	VV	Mobile vital sign monitor with: LCD displays non-invasive blood pressure, pulse rate, SpO2,printer and mobile stand.



**STRESS TESTING TREADMILL ROOM (OPTM1)**

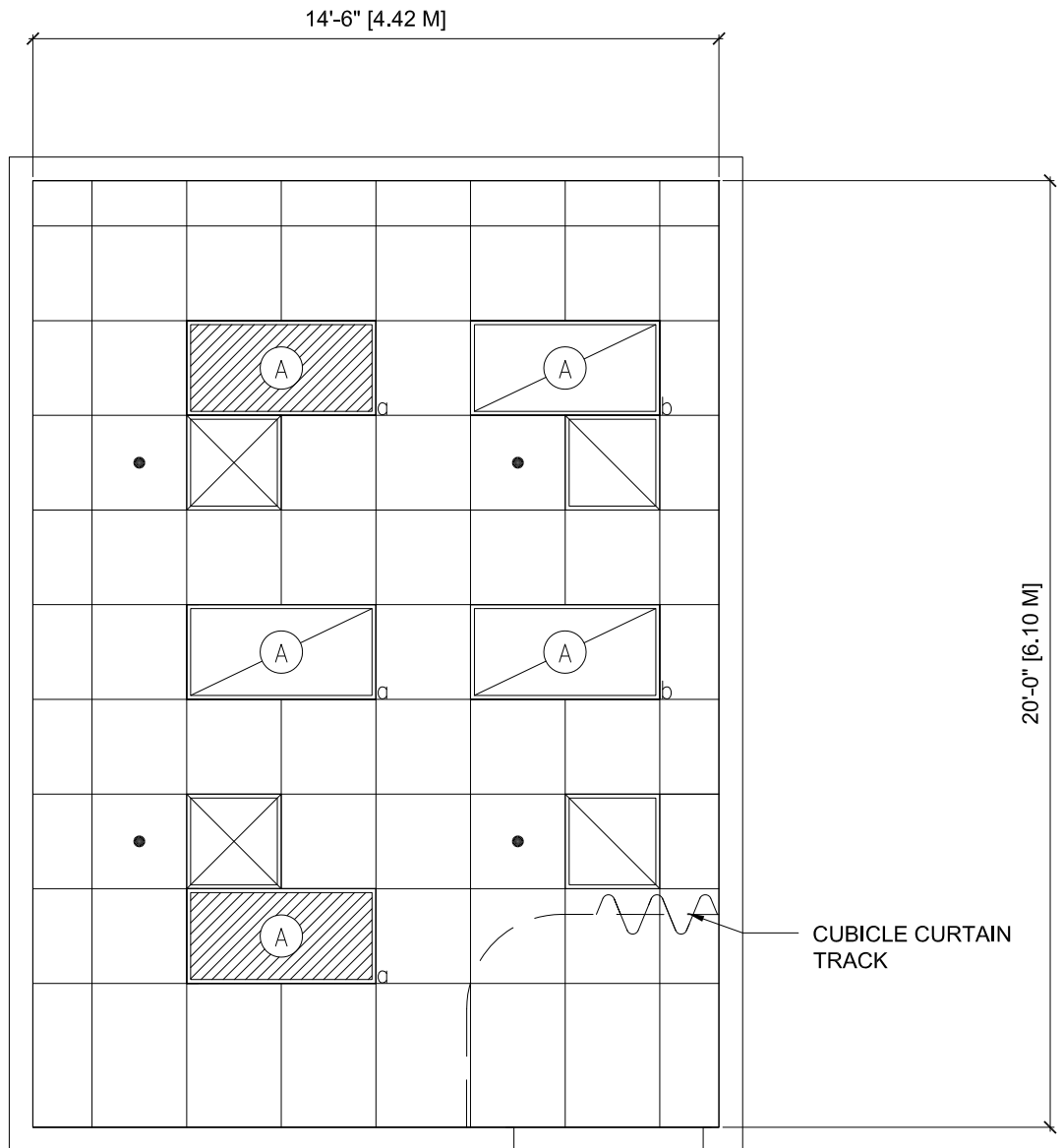


SCALE  $\frac{1}{4}" = 1'-0"$  **Stress Testing Treadmill Room (OPTM1)**



Cardiovascular Laboratory Service  
Floor/Equipment Plan (290 NSF / 26.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# SCALE $\frac{1}{4}'' = 1'-0''$ Stress Testing Treadmill Room (OPTM1)



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (290 NSF / 26.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in

**Stress Testing Treadmill Room (OPTM1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling: AT  
 Ceiling Height: 9'-0"  
 Wall Finish: GWB-W \*1  
 Base: RB  
 Floor Finish: WSF  
 Door: 19/20 X-T  
 Hardware: 4J

Notes:

\*1. See Design and Construction Procedures PG-18-3, "Noise Transmission Control"

**POWER**

General: As Shown  
 Special: As Shown  
 Emergency: Yes  
 Notes: Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor: Yes  
 Nurse Call: Yes  
 Security/Duress:  
 CCTV:  
 Telephone: Yes  
 Pub. Address:  
 Radio:  
 Data: Yes  
 Panic Call:  
 Battery Operated Clock: Yes  
 Intercom:  
 Staff/Duty Station:

**LIGHTING**

General:  
 1. Five (5) of 2'x4' (600mm x 1200mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)  
 2. Provide Ballasts Per Fixture for Desired Switching Configuration  
 3. Lighting Level: 50fc  
 4. Under Cabinet Light  
 5. Ceiling Mounted Occupancy Sensors  
 6. Three (3) Dimmable fixtures

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling: 75°F (24°C)  
 Dry Bulb Temp Heating: 70°F (21°C)  
 Minimum % Outside Air: 2  
 100% Exhaust Air:  
 Noise Criteria: NC 35  
 Steam:  
 Relative Humidity/Cooling: 60%  
 Relative Humidity/Heating: 20%  
 Minimum Air Changes/Hr.: 8  
 Room Pressure: Neutral (0)  
 AC Load Lights: As Required

AC Load Equipment: As Required  
 Number of People: 3  
 Special Equipment:

**PLUMBING AND MEDICAL GASES**

Cold Water: Yes  
 Hot Water: Yes  
 Domestic Water (HWH): Yes  
 Laboratory Air:  
 Laboratory Vacuum:  
 Sanitary/Vent: Yes  
 Medical Air: 2 Outlet  
 Medical Vacuum: 1 Outlet  
 Oxygen: 2 Outlet  
 Nitrogen Oxide:  
 Nitrogen:  
 Anesthesia Evac:  
 Sprinkler: Yes  
 Tempered Water:  
 Water Control: Infrared

**SPECIAL EQUIPMENT**

**Stress Testing Treadmill Room (OPTM1)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A1015	Telephone, Desk	1	VV	Telephone, desk
A1132	Rail, Accessory Mounting, Length As Required	2	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of thick extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.
E0210	Work surface, w/ Overhead Cab, Wall Mad, 48" W	1	VV	THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface

E0912	Locker, Supply, Med Surg, Wall Mtd, 23"W x 20"D	1	VV	THIS TYPICAL INCLUDES: 1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.
E0954	Cart, Emergency, Mobile, 66"H x 52"W x 22"D	1	VV	THIS TYPICAL INCLUDES: 1 Cart body, style-A narrow, w/raised edge top 2 Accessory rails, side 1 Accessory rail, back 1 Defibrillator tray; 1 IV pole 1 Breakaway bar 1 Flip-up shelf 1 Wastebasket 1 Oxygen tank holder 1 Electrical box-4 outlet
E1500	Rail, MOD, Wall Mtd	1	CC	Wall mounted rail used for hanging (mounting) supply lockers, shelves drawers on a wall. Length as required.
F0210	Chair, Side, Without Arms	1	VV	Upholstered side chair approximately 32" high X 19" wide X 23" deep with floor glides. Seat is non-tilting and without arms.
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.

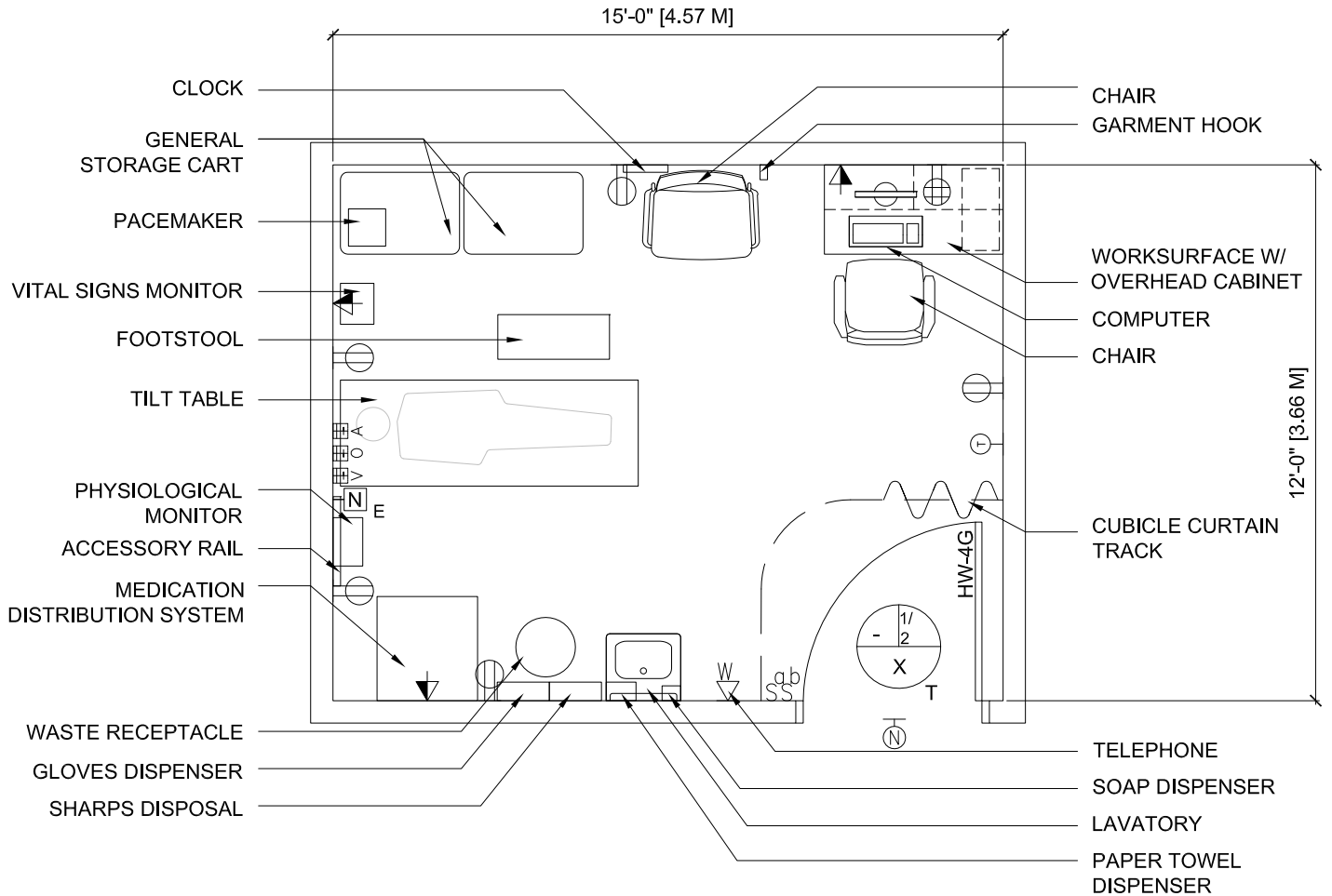
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	2	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	2	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1801	Computer, Microprocessing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters.
M3150	Distribution System, Medication, Automatic 4-Drawer	1	VV	An automated dispensing system that provides controlled dispensing, inventory and security. Size and cost will vary dependent on number of modules selected.
M4255	Stand, IV, Adjustable	1	VV	Adjustable IV stand with 4-hook arrangement. Stand has stainless steel construction with heavy weight base. It adjusts from 66 inches to 100 inches and is mounted on conductive rubber, ball bearing, swivel casters. Stand is used for administering intravenous solutions.

M4266	Pump, Volumetric, Infusion, Multiple Line	1	VV	Volumetric infusion pump. Pump is self-regulating with automatic sensor and adjustable rate. Equipped with visual and audible alarms and up to 10 hour capacity battery. For the administration of a wide variety of therapeutic agents where precise control is required. Unit provides individual control to IV lines simultaneously.
M7008	Bed, Echo, Power	1	VV	Dual power echo bed with: single pedal steering and breaking; 3-position memory hand controller; collapsible/removable safety rails; iv pole holder, head and body-positioning wedges, exam drop section with one-hand rapid release, right side sonographers' drop section with extension and exam side remote release, patient transfer system; vascular positioning; trendelenburg/reverse trendelenburg, power adjustable fowler, load capacity, 1,250 lbs.; lift capacity, 500 lbs.
M7650	Defibrillator/Monitor, Acute Care	1	VV	Portable defibrillator/monitor for acute care includes biphasic defibrillator, pacing, SPO2, Interpretive 12-lead, NIBP monitoring, EtCO2 monitoring, Invasive pressure monitoring, Vital Sign monitoring, temperature probe, Fax transmission, PCMCIA Data Cards, Paddle accessories, and a color LCD.
M8133	Ergometer, Upper Body	1	VV	Ergometer for measuring upper body exertion during an exercise regimen. The unit consists of a seat and a hand crank mechanism at shoulder height. The unit is used for physical rehabilitation protocols and stress testing. The unit quantifiably measures the effort exerted by the patient.
M8185	System, Stress Exercise, w/Treadmill	1	VV	Stress exercise system with treadmill and respiratory/metabolic assessment. The system includes an ECG amplifier, chart recorder, display, console, treadmill and modules for respiratory/metabolic assessment. Used to determine patient's functional capacity, predict and diagnose cardiopulmonary and vascular diseases and for rehabilitation of patients b covering from leg injuries or other type of illness. Some vendors require a NEMA 5-20R non-locking receptacle for their treadmills.
P3100	Lavatory, Vitreous China, Slab Type	1	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.
	Monitor, Vital Signs Mobile	1	VV	Mobile vital sign monitor with: LCD displays non-invasive blood pressure, pulse rate, SpO2, printer and mobile stand.





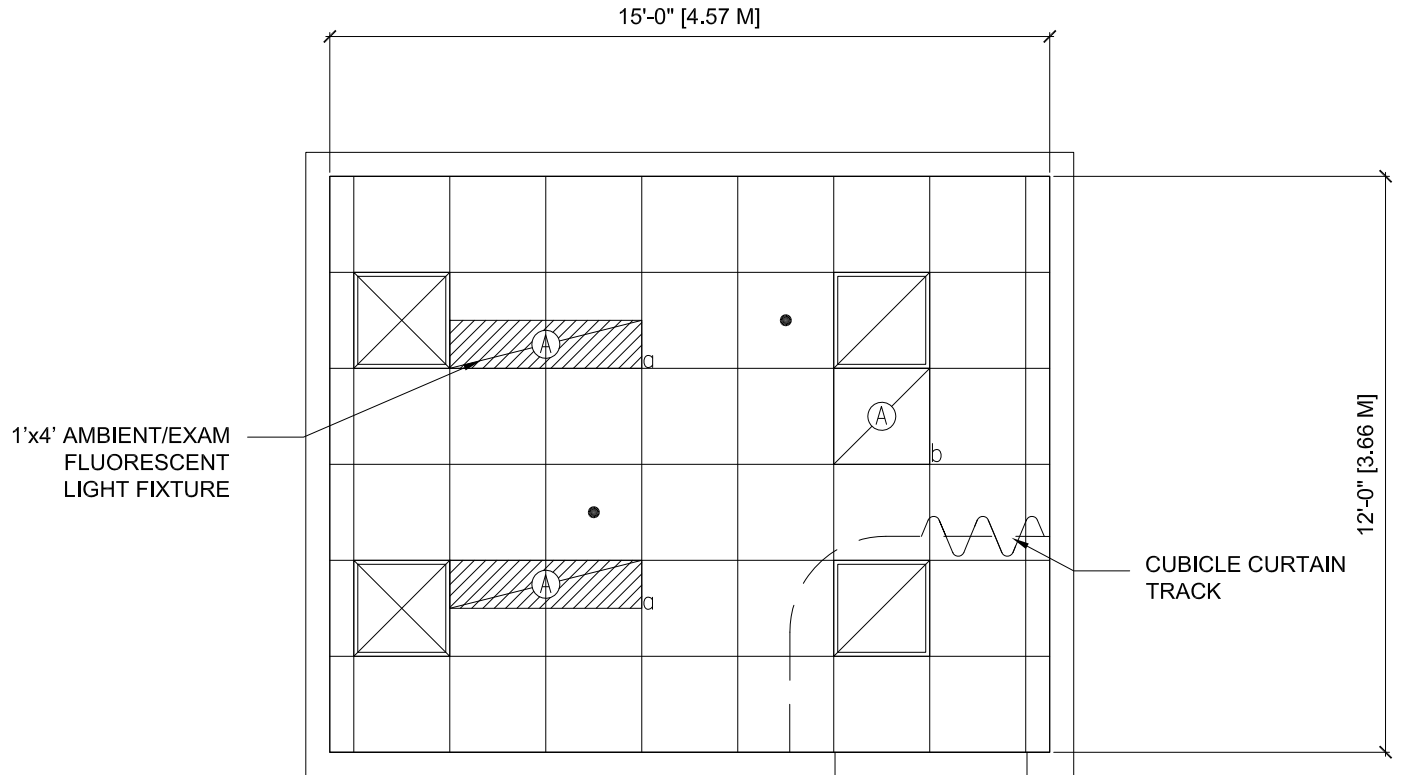
**TILT TABLE TESTING ROOM (OPTM2)**



**Tilt Table Testing Room (OPTM2)**

Cardiovascular Laboratory Service  
 Floor/Equipment Plan (180 NSF /16.7 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# Tilt Table Testing Room (OPTM2)

SCALE  $\frac{1}{4}'' = 1'-0''$



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (180 NSF /16.7 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Tilt Table Testing Room (OPTM2)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling:	AT
Ceiling Height:	9'-0"
Wall Finish:	GWB *1
Base:	RB
Floor Finish:	VCT / SVT
Door:	1/2 S-T
Hardware:	4G

Notes:

\*1. See Design and Construction Procedures PG-18-3, Noise Transmission Control

**POWER**

General:	As Shown
Special:	As Shown
Emergency:	
Notes:	Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:	Yes
Nurse Call:	Yes
Security/Duress:	
CCTV:	
Telephone:	Yes
Pub. Address:	
Radio:	
Data:	Yes
Panic Call:	
Battery Operated Clock:	Yes
Intercom:	
Staff/Duty Station:	

**LIGHTING**

- General:
1. Two (2) of 1'x4' (300mm x 1200mm) Multi-Function Ambient/Exam Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  2. One (1) of 2'x2' (600mm x 600mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  3. Provide Ballasts Per Fixture for Desired Switching Configuration
  4. Lighting Level: 30fc
  5. Under Cabinet Light
  6. Ceiling Mounted Occupancy Sensors

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling:	75° F (24° C)
Dry Bulb Temp Heating:	70° F (21° C)
Minimum % Outside Air:	2
100% Exhaust Air:	
Noise Criteria:	NC 35
Steam:	
Relative Humidity/Cooling:	60%
Relative Humidity/Heating:	20%
Minimum Air Changes/Hr.:	8
Room Pressure:	Neutral (0)
AC Load Lights:	As Required

AC Load Equipment:	As Required
Number of People:	2
Special Equipment:	

**PLUMBING AND MEDICAL GASES**

Cold Water:	Yes
Hot Water:	Yes
Domestic Water (HWH):	Yes
Laboratory Air:	
Laboratory Vacuum:	
Sanitary/Vent:	Yes
Medical Air:	Yes
Medical Vacuum:	Yes
Oxygen:	Yes
Nitrogen Oxide:	
Nitrogen:	
Anesthesia Evac:	
Sprinkler:	Yes
Tempered Water:	
Water Control:	Infrared

**SPECIAL EQUIPMENT**

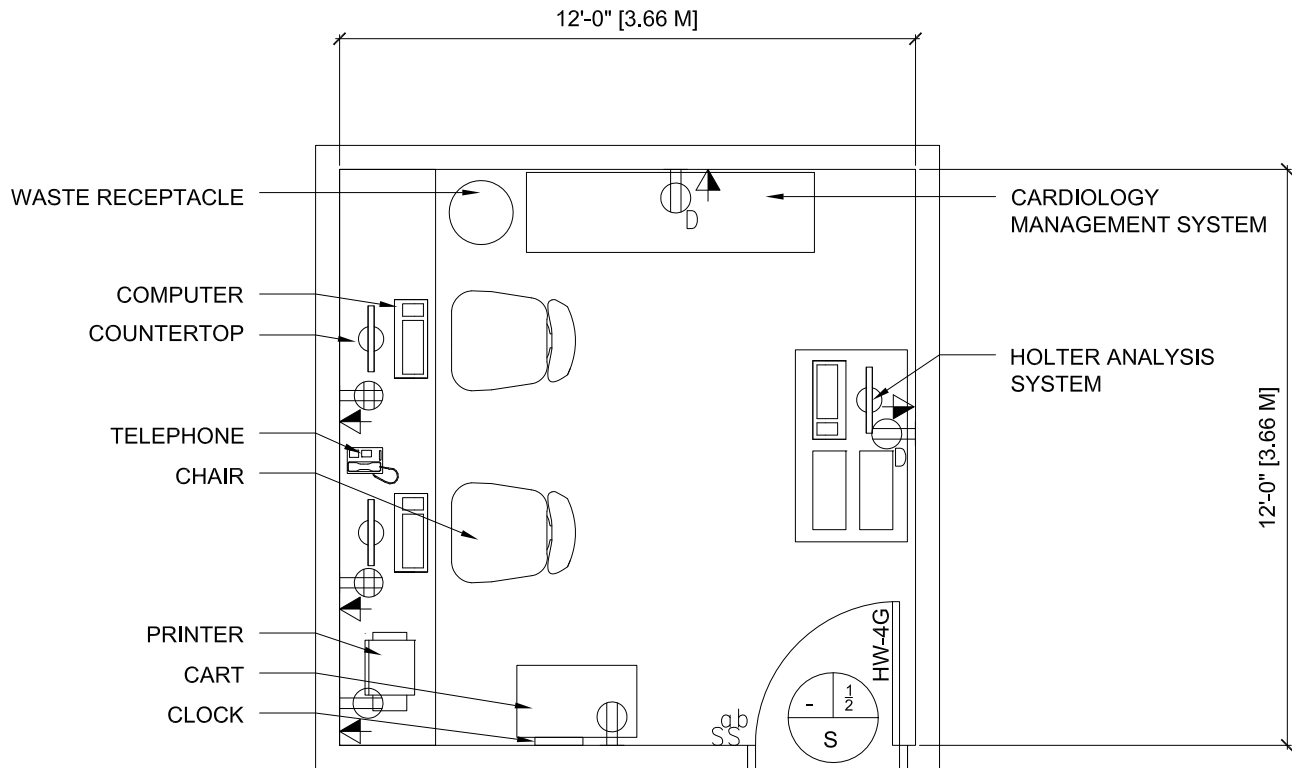
### Tilt Table Testing Room (OPTM2) Equipment List

JSN	NAME	QTY	ACQ/INS	Description
A1017	Telephone, Wall Mounted	1	VV	Telephone, wall mounted
A1132	Rail, Accessory Mounting, Length As Required	1	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	AR	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.
E0222	Worksurface, Computer, O/H Cab, Wall Mtd, 48" W	1	VV	THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Tack board 1 Cantilevered Work Surface 1 Adjustable Keyboard Tray 1 CPU Holder

E0948	Cart, General Storage, Mobile, 42"H x 32"W x 22"D	2	VV	THIS TYPICAL INCLUDES: 1 Cart Body, Style-A Narrow, w/Raised Edge Top 1 Accessory Rail, Side 2 Drawers, 3" H (76mm) 4 Drawers, 6" H (152mm) Drawer Organizer Bins
F0205	Chair, Side With Arms	1	VV	Upholstered side chair, 32" high X 21" wide X 23" deep with arms, padded seats and padded backs. Seat height is a minimum of 17". Available with or without sled base.
F0300	Chair, Task, Swivel, With Arms	1	VV	Task chair, approximately 34" H X 26" W X 22" D with adjustable arms and a five caster adjustable swivel base. Seat and back are foam padded and upholstered in woven fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.

M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1801	Computer, Microprocessing, w/Flat Panel Monitor	2	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M3150	Distribution System, Medication, Automatic 4-Drawer	1	VV	An automated dispensing system that provides controlled dispensing, inventory and security. Size and cost will vary dependent on number of modules selected.
M4116	Monitor, Vital Signs	1	VV	Electronic sphygmomanometer. LCD displays non-invasive blood pressure, pulse rate, temperature and SpO2. Used in hospitals and clinics. Includes an optional mobile stand.
M7667	Pacemaker, 2-Chamber, Temporary	1	VV	The temporary pacemaker shall be used in conjunction with a cardiac pacing lead system for temporary arterial or ventricular pacing in the clinical environment.
M7845	Monitor, Physiological, Bedside, 4 Channel	1	VV	4 channel bedside physiological monitor. The unit consist of a four-channel non-fade monochrome display monitor, an alarm system and printer-recording capabilities. The monitor has color coded controls and automatic calibration. The unit displays up to four waveforms simultaneously. The parameters to be monitored are user selectable. The monitor may be connected to a central monitoring station. The unit monitors patients in most acute care areas, step-down units, procedure rooms and emergency rooms.
M8310	Table, Tilt, Power	1	VV	Automatically or manually powered tilt exercising table. Table consists of a durable steel frame with a padded board. The inclination angle of the table surface adjusts from 0 to 90 degrees. Table includes extra wide safety straps and casters with locking brakes. Some models also have an adjustable level height feature (hi-lo). Height dimension below refers to level table; fully tilted height is 78".
P3100	Lavatory, Vitreous China, Slab Type	AR	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.

**EVENT / HOLTER MONITOR WORK ROOM (OPHM2)**



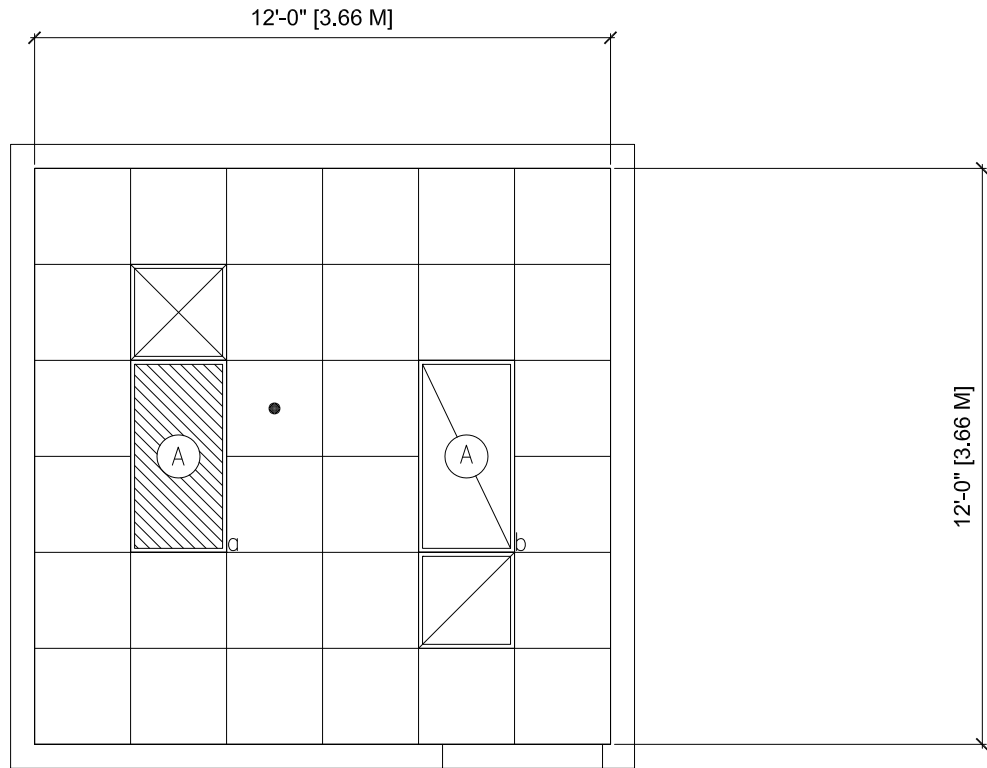
# Event / Holter Monitor Work Room (OPHM2)

SCALE  $\frac{1}{4}'' = 1'-0''$



Cardiovascular Laboratory Service  
Floor/Equipment Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# Event / Holter Monitor Work Room (OPHM2)

SCALE  $\frac{1}{4}'' = 1'-0''$



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



**Event / Holter Monitor Work Room (OPHM2)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling: AT  
 Ceiling Height: 9'-0"  
 Wall Finish: GWB  
 Base: WSF  
 Floor Finish: WSF  
 Door: 1/2 S-T  
 Hardware: 4G

Notes:

**POWER**

General: As Shown  
 Special: As Shown  
 Emergency:  
 Notes:

**COMMUNICATIONS**

Patient Monitor:  
 Nurse Call:  
 Security/Duress:  
 CCTV:  
 Telephone: Yes  
 Pub. Address:  
 Radio:  
 Data: Yes  
 Panic Call:  
 Battery Operated Clock: Yes  
 Intercom:  
 Staff/Duty Station:

**LIGHTING**

General:  
 1. Two (2) of 2'x4' (600mm x 1200mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)  
 2. Provide Ballasts Per Fixture for Desired Switching Configuration  
 3. Lighting Level: 50fc  
 4. Under Cabinet Light  
 5. Ceiling Mounted Occupancy Sensors

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling: 75°F (24°C)  
 Dry Bulb Temp Heating: 70°F (21°C)  
 Minimum % Outside Air: 2  
 100% Exhaust Air:  
 Noise Criteria: NC 35  
 Steam:  
 Relative Humidity/Cooling: 60%  
 Relative Humidity/Heating: 20%  
 Minimum Air Changes/Hr.: 8  
 Room Pressure: Neutral (0)  
 AC Load Lights: As Required  
 AC Load Equipment: As Required  
 Number of People: 2 or 3  
 Special Equipment:

**PLUMBING AND MEDICAL GASES**

Cold Water:  
 Hot Water:  
 Domestic Water (HWH):  
 Laboratory Air:  
 Laboratory Vacuum:  
 Sanitary/Vent:  
 Medical Air:  
 Medical Vacuum:  
 Oxygen:  
 Nitrogen Oxide:  
 Nitrogen:  
 Anesthesia Evac:  
 Sprinkler: Yes  
 Tempered Water:  
 Water Control:

**SPECIAL EQUIPMENT**

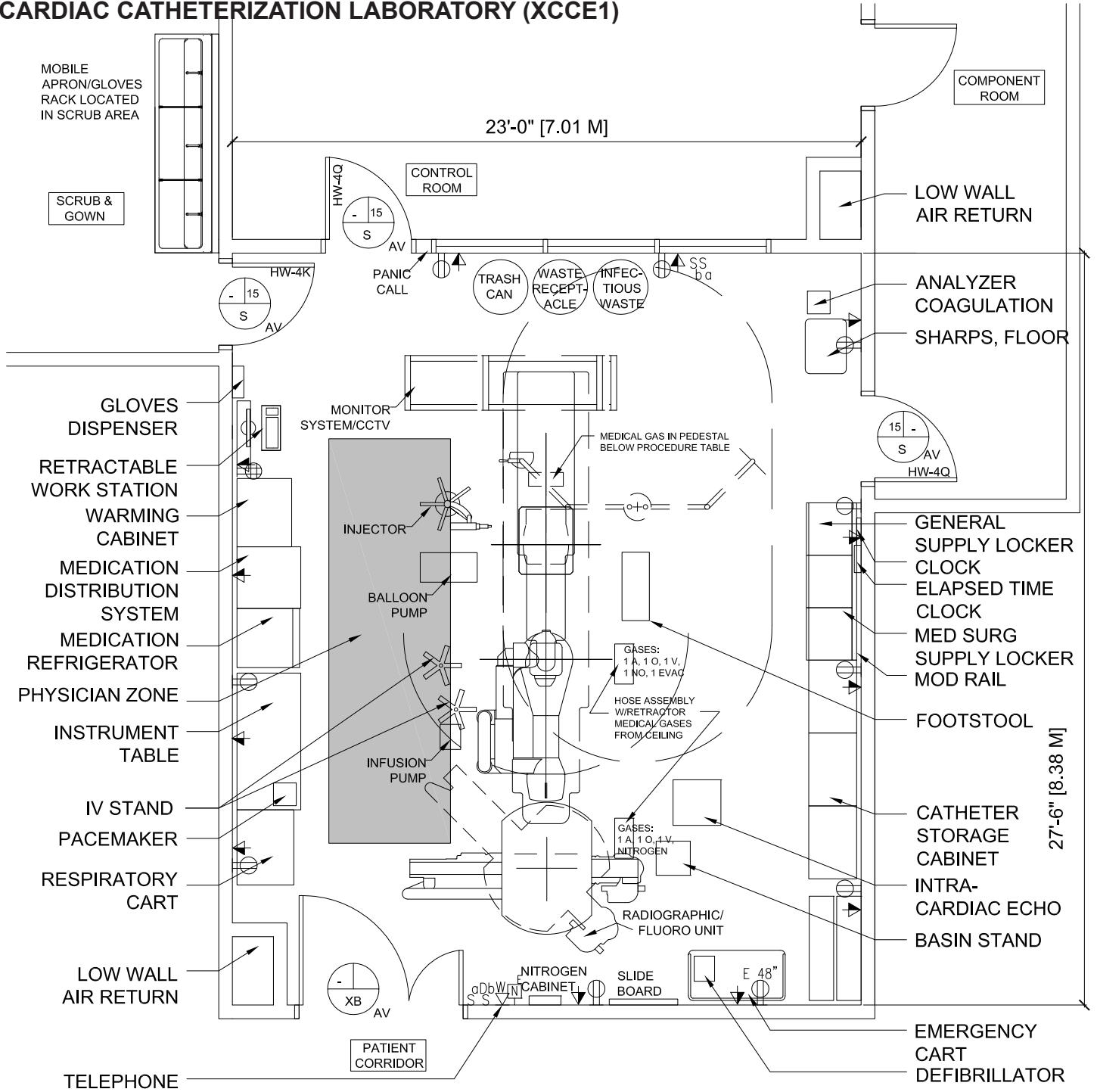
**Event / Holter Monitor Work Room (OPHM2)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A1015	Telephone, Desk	1	VV	Telephone, desk
CT030	Countertop, High Pressure Laminate	AR	CC	High pressure laminate countertop (composition of wood particle core with plastic laminate surface) having a hard smooth surface finish, standard thickness of 1", and a 4" butt backsplash/curb. Also referred to as a work surface or work top. Available in a wide choice of colors, patterns, and depths. Used in general purpose areas requiring a basic work surface arrangement, has limited heat resistance and poor chemical resistance. Pricing based upon a 24" depth.
E0976	Cart, Multipurpose	1	VV	Mobile cart with (2) adjustable wire shelves and (1) stainless steel top shelf 38"H x 30" W x 18" D
F0280	Chair, Swivel, Low Back	2	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M1801	Computer, Microprocessing, w/Flat Panel Monitor	2	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M7765	Computer Assisted Cardiology Management System	1	VV	Central processor for Computer Assisted Practice of Cardiology (CAPOC). Unit provides analysis of cardiograms from a variety of sources that are transmitted via the phone lines. Received cardiograms are analyzed, a report is formatted, and the report is transmitted back to the originating electrocardiograph unit.

M7770	Computer, Holter Monitor Analysis System	1	VV	Central processor for Computer Assisted Practice of Cardiology (CAPOC). Unit provides analysis of cardiograms from a variety of sources that are transmitted via the phone lines. Received cardiograms are analyzed, a report is formatted, and the report is transmitted back to the originating electrocardiograph unit.
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**CARDIAC CATHETERIZATION LABORATORY (XCCE1)**



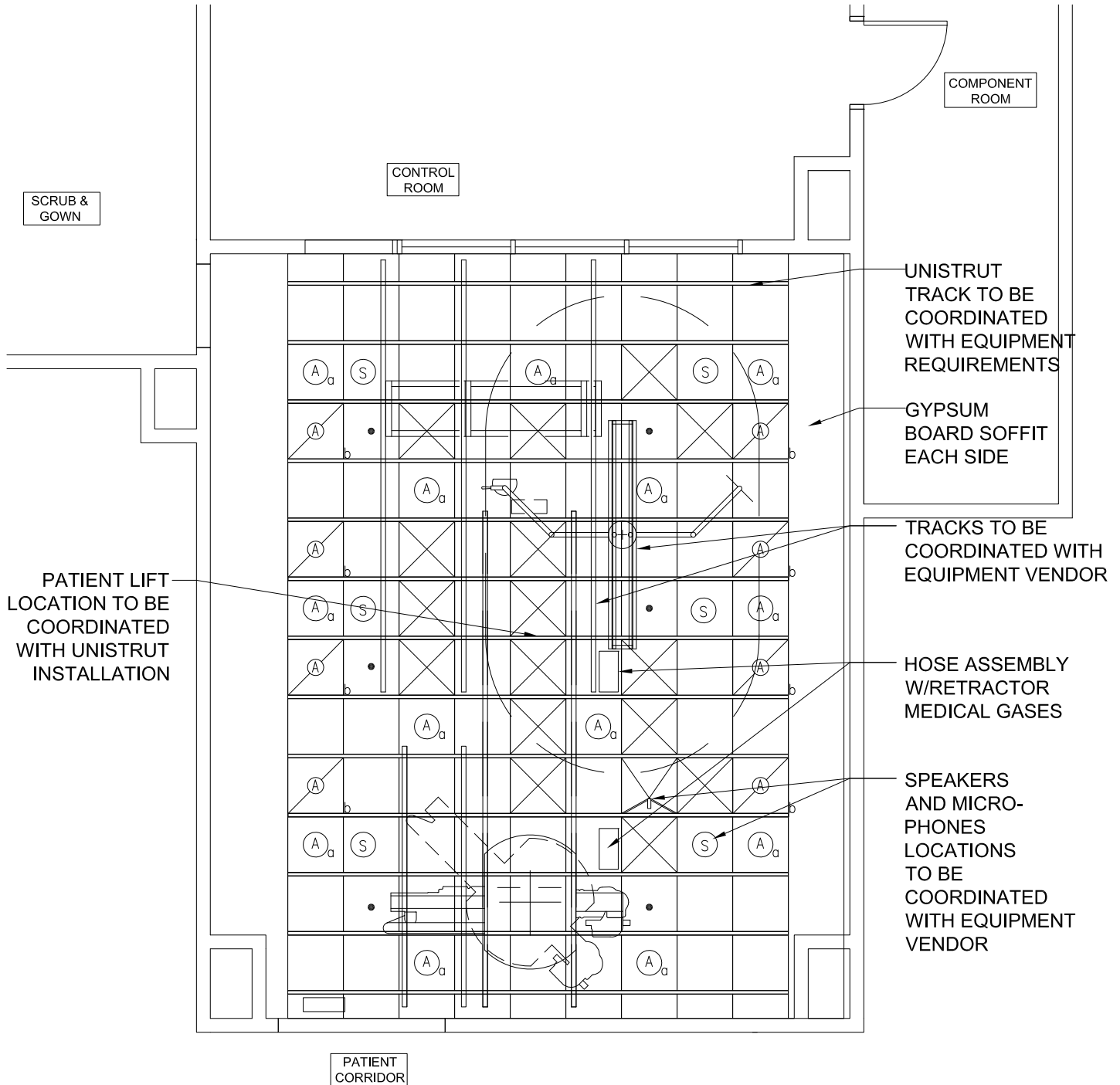
SCALE  $\frac{3}{16}'' = 1'-0''$



**Cardiac Catheterization Lab (XCCE1)**

Cardiovascular Laboratory Service  
Floor/Equipment Plan (650 NSF / 60.4 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# Cardiac Catheterization Lab (XCCE1)

SCALE  $\frac{3}{16}'' = 1'-0''$



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (650 NSF / 60.4 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Cardiac Catheterization Laboratory (XCCE1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling:	GWB (SC)
Ceiling Height:	9'-0"
Wall Finish:	GWB (SC)
Base:	WSF
Floor Finish:	WSF
Door:	1/2 XB -AV
Hardware:	4K

Notes:  
Per manufacturers requirements, Universal structural support system integrated with ceiling. Conform to selected equipment requirement loads and track locations.

**POWER**

General:	As Shown
Special:	As Shown
Emergency:	Yes
Notes:	Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:	Yes
Nurse Call:	Yes
Security/Duress:	
CCTV:	Yes
Telephone:	Yes
Pub. Address:	
Radio:	
Data:	Yes
Panic Call:	Yes
Battery Operated Clock:	Yes
Intercom:	
Electric Clock:	Yes

**LIGHTING**

- General:
1. Thirteen (13) Special Down Lights, Dimmable
  2. Eight (8) of 2'x2' (600mm x 600mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)
  3. Provide Ballasts Per Fixture for Desired Switching Configuration
  4. Lighting Level: 30/10

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling:	75° F (24° C)
Dry Bulb Temp Heating:	70° F (21° C)
Minimum % Outside Air:	3
100% Exhaust Air:	
Noise Criteria:	NC 35
Steam:	
Relative Humidity/Cooling:	60%
Relative Humidity/Heating:	20%
Minimum Air Changes/Hr.:	15
Room Pressure:	Positive (+)
AC Load Lights:	As Required

AC Load Equipment:	As Required
Number of People:	6
Special Equipment:	Special Placement of Supply and Return

**PLUMBING AND MEDICAL GASES**

Cold Water:	Yes
Hot Water:	Yes
Domestic Water (HWH):	As Required
Laboratory Air:	
Laboratory Vacuum:	
Sanitary/Vent:	Yes
Medical Air:	2 Outlet
Medical Vacuum:	2 Outlet
Oxygen:	2 Outlet
Nitrogen Oxide:	1
Nitrogen:	
Anesthesia Evac:	1
Sprinkler:	Yes
Tempered Water:	
Water Control:	

**SPECIAL EQUIPMENT**

See Equipment List: Monitoring System, Radiographic Fluoro Unit, Hose Assembly

**Cardiac Catheterization Laboratory (XCCE1)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A0919	Distribution System, Medication, Lock Assembly, Refrigerator	1	VV	Locking interface assembly between main medication distribution unit and refrigerator (Size: 7"H x 5"W x 2"D note adds 2" refrig with)
A1017	Telephone, Wall Mounted	1	VV	Telephone, wall mounted
A1130	Cabinet, Control, Nitrogen	1	CC	Nitrogen control cabinet. Unit consists of supply cut-off valve, supply pressure gauge, pressure regulator (adjustable 0 to 200 PSI), outlet pressure gauge, nitrogen outlet and connection to surgical gas column. Specify recessed or surface mounting. Designed for powering surgical pneumatic tools.
A4015	Clock, Elapsed Time, Electric	1	CC	Elapsed time digital electric clock. Single display time that can be used either as a clock or elapsed time indicator. Clock consists of buttons to set minutes, and hours for the time. For use in operating and delivery room, and medical service columns. Analog or digital displays may be provided as specified by the user.
A5111	Waste Disposal Unit, Sharps, Floor	1	VV	The unit is designed for the disposal of sharps and complies with OSHA guidelines for the handling of sharps. The cart shall be foot operated and accommodate a 12 or 18 gallon sharps container.
E0906	Locker, Supply, General, Wall Mtd, 78"H x 23"W x 20"D	2	VV	THIS TYPICAL INCLUDES: 1 Locked Storage Container 2 Tray/Shelves 1 Drawer, 3"H (76mm) 3 Drawers, 6"H (152mm) 2 Drawers, 9"H (229mm) 1 Tray/Shelf Divider Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.
E0912	Locker, Supply, Med Surg, Wall Mtd, 23"W x 20"D	1	VV	THIS TYPICAL INCLUDES: 1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.



E0954	Cart, Emergency, Mobile, 66"H x 52"W x 22"D	1	VV	THIS TYPICAL INCLUDES: 1 Cart body, style-A narrow, w/raised edge top 2 Accessory rails, side 1 Accessory rail, back 1 Defibrillator tray; 1 IV pole 1 Breakaway bar 1 Flip-up shelf 1 Wastebasket 1 Oxygen tank holder 1 Electrical box-4 outlet
E1500	Rail, MOD, Wall Mtd	AR	VV	Wall mounted rail used for hanging (mounting) supply lockers, shelves drawers on a wall. Length as required.
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F2020	Can, Trash, 44 Gallon	1	VV	Forty four (44) gallon trash can, 32" high X 24" diameter, with lid and dolly. Used to collect and transport refuse from a point of origin to point of disposal.
F2021	Can, Trash, 44 Gallon, Infecticus Waste	1	VV	Forty four (44) gallon trash can, 32" high X 24" diameter, with lid and dolly. Used to collect and transport refuse from a point of origin to point of disposal.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
L1085	Analyzer, Coagulation, Automatic	1	VV	Automatic coagulation analyzer. The unit performs on-site blood coagulation tests, prothrombin time (PT), and partial thromboplastin time (PTT) tests on whole blood or plasma samples. The analyzer employs both single and duplicating or stat testing capabilities.
M0750	Flowmeter, Air, Connect w/50 PSI Supply	2	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.

M0755	Flowmeter, Oxygen, Low Flow	2	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0765	Regulator, Vacuum	2	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1802	Work Station, Computer, Retractable, Wall Mounted	1	VV	A wall mounted retractable work station. Work station is used as a computer station in treatment rooms, exam rooms and areas where physical space is limited. To allow full mobility of monitor to allow physician to face patient while in use.
M3105	Cabinet, Warming, F/S, 1 Heated Compartment, Elect	1	CC	Freestanding, single or double door warming cabinet with 1 compartment. Compartment and exterior walls are made of stainless steel. Thick fiberglass insulation maintains the interior temperature and prevents the exterior surface from becoming too hot. Equipped with a sealing door, thermostatic temperature control, status display, heat indicating light, over temperature protection, alarms and an air circulating fan. Unit may have an optional temperature recorder. Manufacturer recommends using a fused disconnect switch in the electrical power circuit. Cabinet may also be installed in a recess. Designed for heating and storing of solutions and blankets used in patient care areas.
M3150	Distribution System, Medication, Automatic	1	VV	An automated dispensing system that provides controlled dispensing, inventory and security. Size and cost will vary dependent on number of modules selected.
M3155	Refrigerator, Undercounter w/ Med Distribution Sys. Lk	1	VV	Undercounter all-refrigerator unit with stainless steel interior and exterior, external digital display thermometer, wire adjustable shelves and medication dispensing system lock mounting plate 26W x 27.5D x 34H
M3165	Cabinet, Catheter Storage	AR	CC	A cabinet to be used for the hanging storage of catheters. Cabinet comes with adjustable laminate shelves, slide-out arms equipped with hangers to hold various size catheters, and doors. Door locks are an optional accessory.

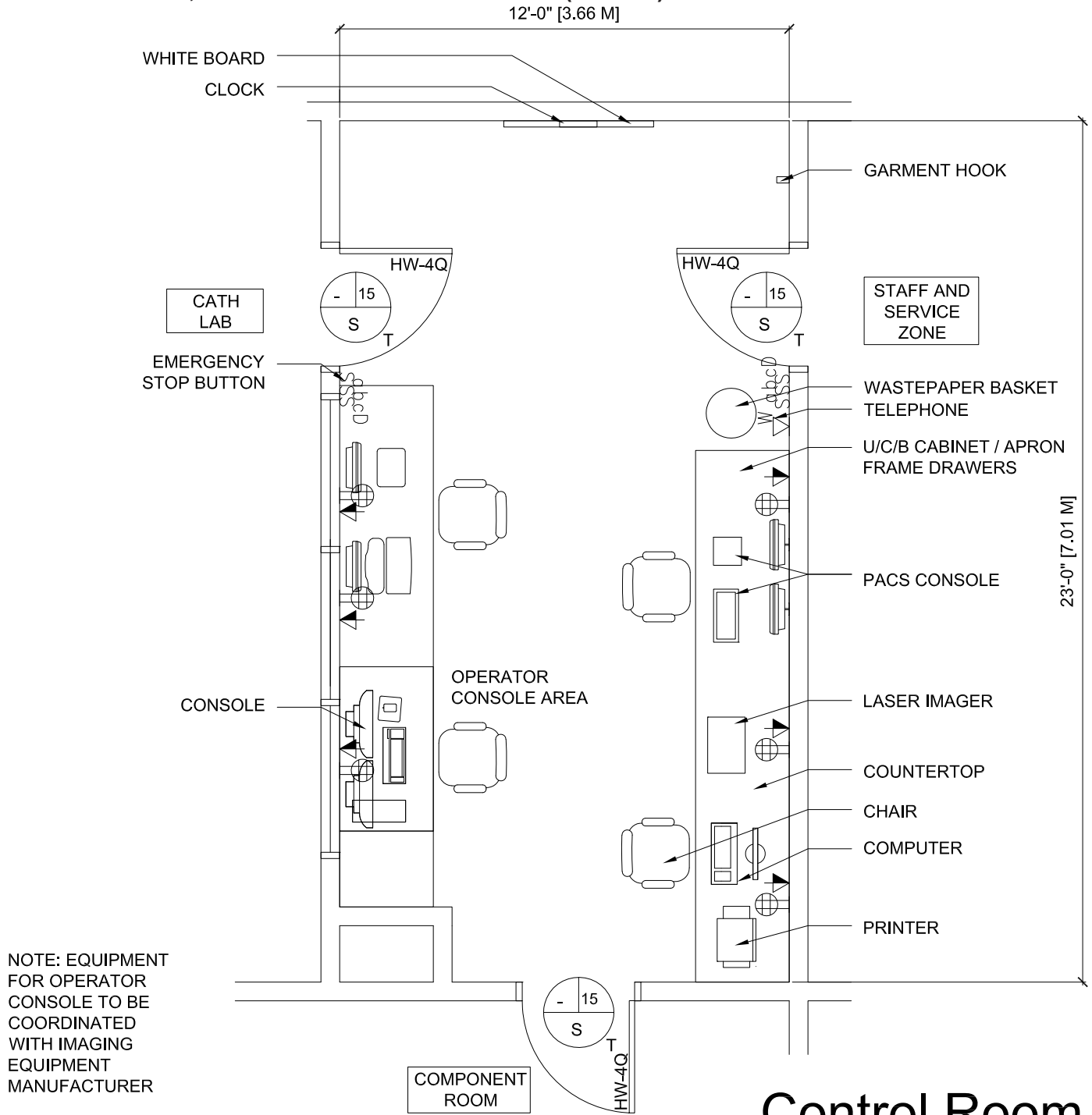
M4255	Stand, IV, Adjustable	2	VV	Adjustable IV stand with 4-hook arrangement. Stand has stainless steel construction with heavy weight base. It adjusts from 66 inches to 100 inches and is mounted on conductive rubber, ball bearing, swivel casters. Stand is used for administering intravenous solutions.
M4266	Pump, Volumetric, Infusion, Multiple Line	1	VV	Volumetric infusion pump. Pump is self-regulating with automatic sensor and adjustable rate. Equipped with visual and audible alarms and up to 10 hour capacity battery. For the administration of a wide variety of therapeutic agents where precise control is required. Unit provides individual control to IV lines simultaneously.
M4700	Transfer Device, Slide Board	1	VV	Anti-static, radiolucent, warp-resistant polyethylene semi-rigid board with (8) hand holes.
M4811	Pump, Intra-Aortic, Balloon	1	VV	Intra-aortic balloon pump. Item is used to treat cardiogenic shock resulting from extensive myocardial injury or damage. The pump shall function from line or battery power and is to be a mobile unit. It contains physiological monitoring, pacing, and pumping capabilities. It requires minimal set-up time and has immediate pumping capability. Adjustments can be accomplished without interruption of pumping. The monitor can be mounted remotely for the clinicians convenience and permits viewing of both cardio-pulmonary bypass and intra-aortic balloon pump simultaneously. The pump is designed for use in the critical care unit, operating room, cardiac cath lab and during transport.
M7650	Defibrillator/Monitor, Acute Care	1	VV	Portable defibrillator/monitor for acute care includes biphasic defibrillator, pacing, SPO2, Interpretive 12-lead, NIBP monitoring, EtCO2 monitoring, Invasive pressure monitoring, Vital Sign monitoring, temperature probe, Fax transmission, PCMCIA Data Cards, Paddle accessories, and a color LCD.
M7666	Pacemaker, 1-Chamber, Temporary	1	VV	The temporary pacemaker shall be used in conjunction with a cardiac pacing lead system for temporary arterial or ventricular pacing in the clinical environment.

M7860	Monitoring System, Cardiac Catheterization Lab	1	VV	Computerized monitoring system for use in cardiac catheterization labs and cardio-thoracic operating rooms. The system can display up to 32 different waveforms simultaneously, perform calculations of hemodynamic parameters, valve areas and cardiac output, archive procedure results and accept inputs from a variety of monitoring devices. The installed system can also include remote monitors/terminals and additional workstations and may interface with hospital-wide physiological monitoring or clinical information systems. The system includes several configurations in different locations. Database physical dimensions reflect the largest of these work centers. The estimated total 20 amp electrical requirements will be spread across several circuits in several locations. The system price varies greatly on the size and sophistication of the end user's requirements.
M8801	Cart, Respiratory	1	VV	Enameled steel; 3- drawer cart with keyless lock; 5" swivel casters; plastic top and slide thru side shelf. Approximate size 33x25x39
M8825	Table, Instrument/Dressing, CRS, approx. 60x28x34	1	VV	Instrument and dressing table. Made of corrosion resistant stainless steel with a sound deadened top. Includes guard rail, shelf and two side-by-side drawers. The table is mounted on swivel, ball-bearing casters.
M8925	Stand, Basin, CRS, Mobile, Single	1	VV	Mobile single basin stand with shelf. The stand shall be constructed of tubular stainless steel and mounted on 2" swivel casters. Shall include a shelf and an 8 quart stainless steel basin. Intended for use in ORs and treatment areas.
X3145	Screen, X-Ray, Protective, Mobile	2	VV	Mobile X-ray protective screen/barrier. The X-ray barrier provides optically-clear visibility while shielding medical personnel from scatter radiation. Its large clear Pb lead-plastic or acrylic window offers 0.5 mm lead-equivalent protection to the user's head and upper body. The unit is used for effective radiation protection of department personnel during vascular or other procedures. This unit can fit any application with its mobility. Adjustable screens are also available.

X6190	Radiographic/Fluoro Unit, Cardiac, 125kv, Digital	1	VV	This system is specifically designed to perform biplane radiographic/fluoroscopic examinations in the Cardiology Department. On-line digital cardiac image processing will provide instant availability of images for review. This units characteristics and components include 125 kW micro-processor controlled X-ray generators, C-arm and U arm with 9" multi-field Image Intensifier, integrated X-ray tube unit and cine camera. The Digital Imaging for both the AP and Lateral planes shall consists of a computer, keyboard with acquisition, viewing monitor, and slave monitor. The system shall be DICOM 3.0 compatible, for easy linkage to filmless image management systems and review stations. It is recommended that the TV monitors be ceiling suspended. System to be procured with Cardiac Cath Lab computer-ized analysis/monitoring system and to include UPS power supply.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.
	Monitor, Transport	1	VV	Compact portable patient monitor with: (4) wave LCD color display; adult/peds/neonatal patient modes; ecg/respiration; non-invasive pressure, temperature, pulse oximetry; (1) invasive pressure and recorder.
	Intracardiac Echo (ICE)	1	VV	The Intracardiac Echo (ICE) system shall provide real time visualization of intracardiac anatomy, allow for precise guidance of an ablation catheter relative to anatomical structures and assessment of catheter positioning



**CONTROL ROOM, CARDIAC CATHETERIZATION (XCCC1)**



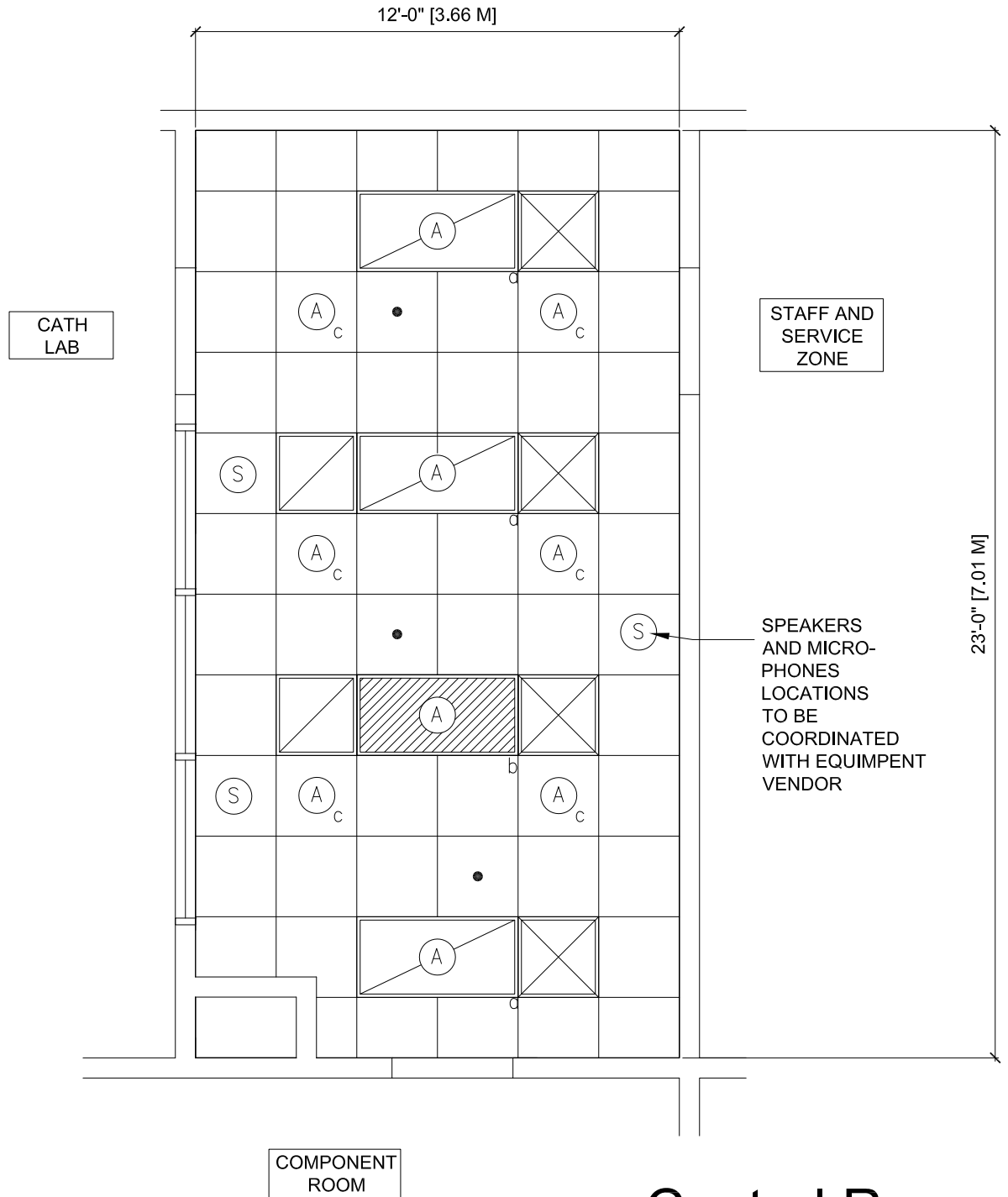
# Control Room, Cardiac Catheterization (XCCC1)

SCALE 1/4" = 1'-0"



Cardiovascular Laboratory Service  
Floor/Equipment Plan (275 NSF / 25.5 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# Control Room, Cardiac Catheterization (XCCC1)

SCALE  $\frac{1}{4}'' = 1'-0''$



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (275 NSF / 25.5 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



**Control Room, Cardiac Catheterization (XCCC1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling: AT  
 Ceiling Height: 9'-0"  
 Wall Finish: GWB  
 Base: RB  
 Floor Finish: SVT/AF  
 Door: 15 S-T  
 Hardware: 4Q

Slab Depr:  
 Notes:

**POWER**

General: As Shown  
 Special: As Shown  
 Emergency: Yes  
 Notes: Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:  
 Nurse Call:  
 Security/Duress:  
 CCTV: Yes  
 Telephone: Yes  
 Pub. Address:  
 Radio:  
 Data: Yes  
 Panic Call:  
 Battery Operated Clock: Yes  
 Intercom:  
 Staff/Duty Station:

**LIGHTING**

General:  
 Special:  
 Notes:  
 1. Four (4) of 2'x4' (600mm x 1200mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum) – three (3) in Control Room and two (2) in Scrub Room  
 2. Six (6) Down Lights, Dimmable  
 3. Provide Ballasts Per Fixture for Desired Switching Configuration  
 4. Lighting Level: 30/10fc

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling: 75° F (24° C)  
 Dry Bulb Temp Heating: 70° F (21° C)  
 Minimum % Outside Air: 2  
 100% Exhaust Air:  
 Noise Criteria: NC 35  
 Steam:  
 Relative Humidity/Cooling: 60%  
 Relative Humidity/Heating: 20%  
 Minimum Air Changes/Hr.: 6  
 Room Pressure: Neutral (0)  
 AC Load Lights: As Required  
 AC Load Equipment: As Required  
 Number of People: 4  
 Special Equipment:

**PLUMBING AND MEDICAL GASES**

Cold Water:  
 Hot Water:  
 Domestic Water (HWH):  
 Laboratory Air:  
 Laboratory Vacuum:  
 Sanitary/Vent:  
 Medical Air:  
 Medical Vacuum:  
 Oxygen:  
 Nitrogen Oxide:  
 Nitrogen:  
 Anesthesia Evac:  
 Sprinkler: Yes  
 Tempered Water:  
 Water Control:

**SPECIAL EQUIPMENT**

None

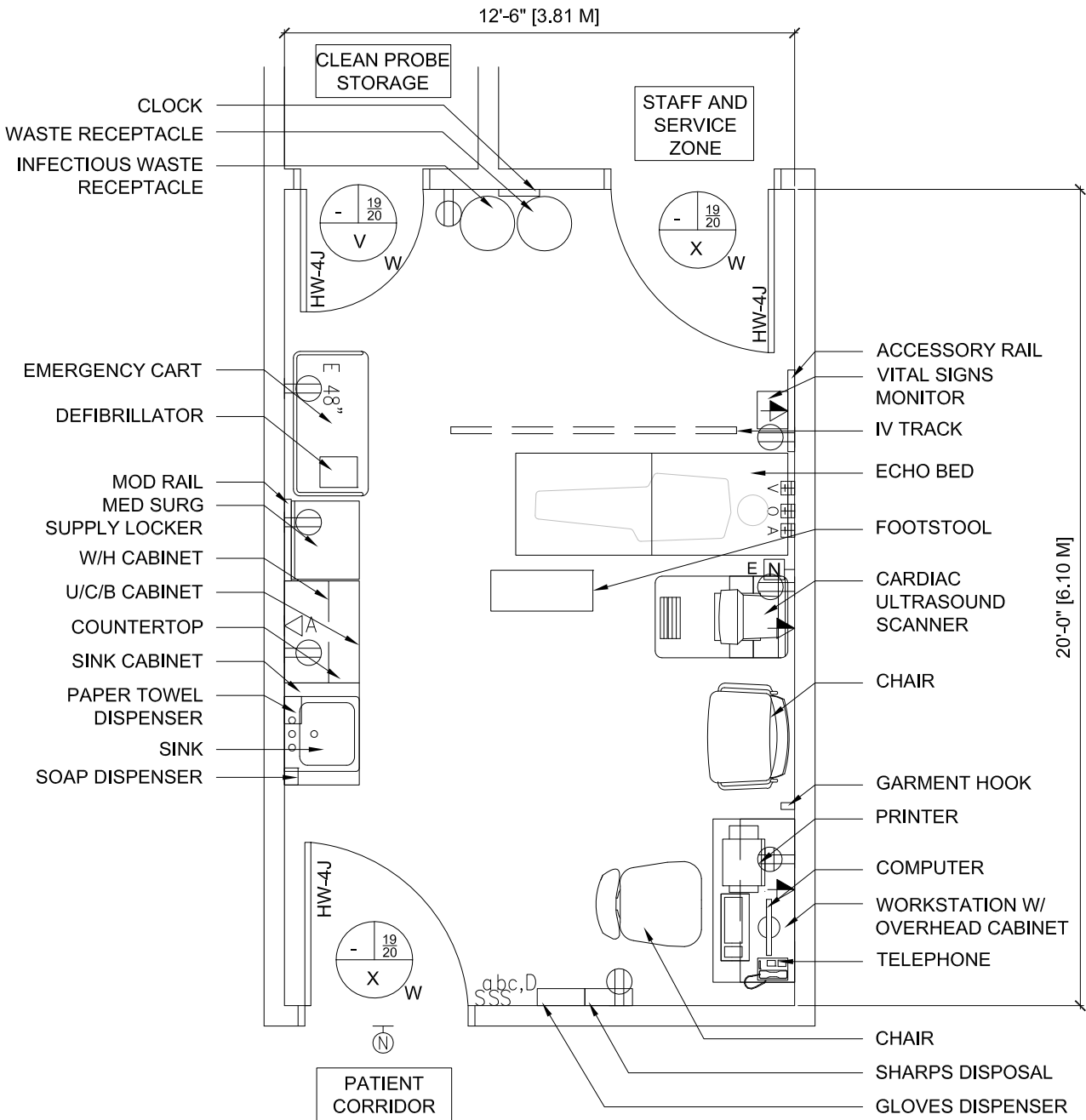
**Control Room, Cardiac Catheterization (XCCC1)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A1017	Telephone, Wall Mounted	1	VV	Telephone, wall mounted
A5145	Hook, Garment, Double, SS, Surface Mounted	AR	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A6110	Counter, Console, Communications	1	CC	Counter, console, communications. Consists of one 18" wide base cabinet with two drawers and file drawer, one 30" wide pencil drawer and one 18" wide base cabinet with four drawers. The countertop shall be a composition of wood particle core with plastic laminate surface having a hard smooth surface finish, standard thickness of 1" and a 4" butt backsplash/curb.
C0044	Frame, Apron, 1 Drawer, 4x30x22	1	CC	Apron frame with one standard drawer. Also referred to as a drawer frame or table frame. Used for a knee space as a combination frame and drawer to support a top between base cabinets or a base cabinet and a wall.
C0045	Frame, Apron, 1 Drawer, 4x36x22	2	CC	Apron frame with one standard drawer. Also referred to as a drawer frame or table frame. Used for a knee space as a combination frame and drawer to support a top between base cabinets or a base cabinet and a wall.
C06M0	Cabinet, U/C/B, 1 PBD, 2 DR, 1 File DR, 30x18x22	3	CC	Sitting height under counter base cabinet with a pullboard above two drawers and file drawer. Also referred to as a drawer cabinet.
CT030	Countertop, High Pressure Laminate	AR	CC	High pressure laminate countertop (composition of wood particle core with plastic laminate surface) having a hard smooth surface finish, standard thickness of 1", and a 4" butt backsplash/curb. Also referred to as a work surface or work top. Available in a wide choice of colors, patterns, and depths. Used in general purpose areas requiring a basic work surface arrangement, has with limited heat resistance and poor chemical resistance. Pricing based upon a 24" depth.
F0275	Chair, Swivel, High Back	4	VV	Highback contemporary swivel chair, 41" high X 23" wide X 23" deep with five (5) caster swivel base and arms. Back and seat are foam padded and upholstered with either woven textile fabric or vinyl.

F2000	Basket, Wastepaper, Round, Metal	1	VV	Round wastepaper basket, approximately 18" high X 16" diameter. This metal unit is used to collect and temporarily store small quantities of paper refuse.
F3050	Whiteboard, Dry Erase	1	CC	Whiteboard unit, approximately 36" H x 48" W consisting of a white porcelain enamel writing surface with an attached chalk tray. Magnetic surface available. Image can be easily removed with a standard chalkboard eraser. For use with water color pens. Unit is ready to hang.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M1801	Computer, Micro-processing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
X1425	Imager, Laser (1024 X 1024) (Din/PACS)	1	CC	Laser imager. An infrared laser beam is scanned across the film by a precision rotating polygon, while correcting optic focus and controlling the beam's intensity. The characteristics and components include an automatic film handling system and uses 10" X 14" IR film. It can be interfaced to additional imaging modalities with optional interface kit. For use with digital output imaging modalities.
X4112	Console, PACS, Remote View, 1k X 1k, 2 Monitors	1	CC	Two monitor remote viewing station for picture archiving and retrieval (PACS) system. This station is for use by providers inside or outside of radiology to review images. Station includes local image storage, image manipulation, and simultaneous display of multiple images on two 1024 x 1024 image display CRT's. Images are stored on a resident hard disk and roll off the disk as more recent images are sent to the station. Provider may request images from the PACS. Unit must be connected to the PACS by LAN for image and result receipt. This station is for use in areas like radiologist's offices and the E.R.. where a more comprehensive system is required. Console must be DICOM compliant. Input may be by keyboard, mouse, trackball or voice activated commands.



**TRANSESOPHAGEAL ECHOCARDIOGRAPH (TEE) ROOM (TRTE1)**



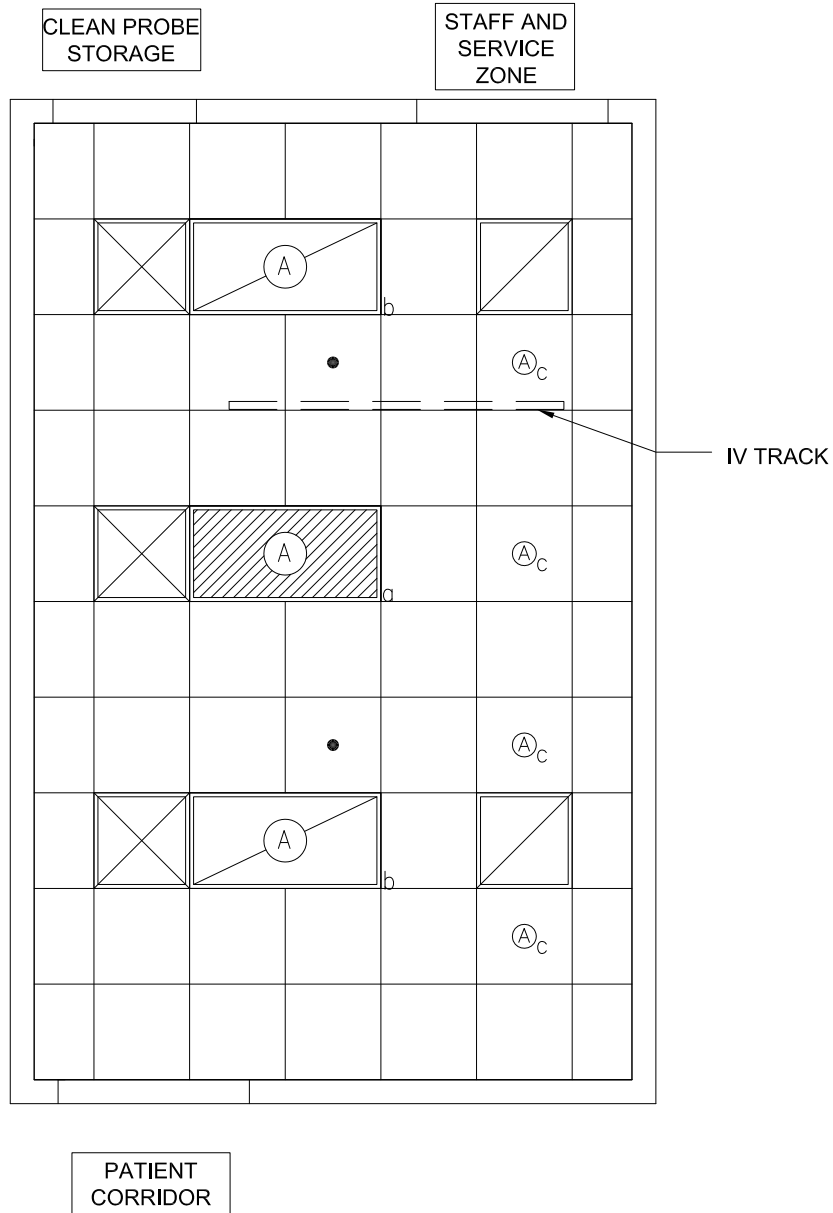
**Transesophageal Echocardiograph (TEE) Room (TRTE1)**

SCALE 1/4" = 1'-0"



Cardiovascular Laboratory Service  
Floor/Equipment Plan (250 NSF / 23.2 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



# Transesophageal Echocardiograph (TEE) Room (TRTE1)

SCALE  $\frac{1}{4}'' = 1'-0''$



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (250 NSF / 23.2 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Transesophageal Echocardiograph (TEE) Room (TRTE1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling: AT  
 Ceiling Height: 9'-0"  
 Wall Finish: GWB \*1  
 Base: WSF  
 Floor Finish: WSF  
 Door: 19/20 X-W  
 Hardware: 4J

Slab Depr:  
 Notes:  
 \*1. See Design and Construction Procedures PG-18-3,  
 "Noise Transmission Control"

**POWER**

General: As Shown  
 Special: Special Voltage as Required  
 Emergency:  
 Notes: Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor: Yes  
 Nurse Call: Yes  
 Security/Duress: Yes  
 CCTV:  
 Telephone: Yes  
 Pub. Address:  
 Radio:  
 Data: Yes  
 Panic Call:  
 Battery Operated Clock: Yes  
 Intercom:  
 Staff/Duty Station:

**LIGHTING**

Notes:  
 1. Three (3) of 2'x4' (600mm x 1200mm) Fluores-  
 cent Light Fixture, Acrylic, Prismatic Lens with F32T8  
 Lamps, 3500°K, CRI=70 (minimum)  
 2. Four (4) Down Lights, Dimmable  
 3. Provide Ballasts Per Fixture for Desired Switching  
 Configuration  
 4. Lighting Level: 30/10fc  
 5. Under Cabinet Light

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling: 75°F (24°C)  
 Dry Bulb Temp Heating: 70°F (21°C)  
 Minimum % Outside Air:  
 100% Exhaust Air:  
 Noise Criteria: NC 35  
 Steam:  
 Relative Humidity/Cooling: 60%  
 Relative Humidity/Heating: 20%  
 Minimum Air Changes/Hr.: 8  
 Room Pressure: Neutral (0)  
 AC Load Lights: As Required

AC Load Equipment: As Required  
 Number of People: 3  
 Special Equipment: Dedicated AC Unit

**PLUMBING AND MEDICAL GASES**

Cold Water: Yes  
 Hot Water: Yes  
 Domestic Water (HWH): Yes  
 Laboratory Air:  
 Laboratory Vacuum:  
 Sanitary/Vent: Yes  
 Medical Air: 1 Outlet  
 Medical Vacuum: 1 Outlet  
 Oxygen: 1 Outlet  
 Nitrogen Oxide:  
 Nitrogen:  
 Anesthesia Evac:  
 Sprinkler: Yes  
 Tempered Water:  
 Water Control: Infrared

**SPECIAL EQUIPMENT**

### Transesophageal Echocardiograph (TEE) Room (TRTE1) Equipment List

JSN	NAME	QTY	ACQ/INS	Description
A1015	Telephone, Desk	1	VV	Telephone, desk
A1132	Rail, Accessory Mounting, Length As Required	1	VV	Horizontal mounting rail will consist of lock mounting devices capable of; supporting up to 75 pounds each, being repositioned, and mounting and dismounting of equipment without the use of tools. The rail must be capable of supporting medical equipment and accessories normally found in exam or patient rooms. The rail system must be capable of mounting and dismounting equipment without leaving or creating new holes in the finished surface of the wall.
A1165	Track, IV, Ceiling Mounted, 7 Foot	1	CC	7 ft. ceiling mounted IV track. Unit consists of a straight thick anodized aluminum track. It includes a carrier with self locking hinge, hook for attaching bottle hanger, and an adjustable pendant. Designed for dispensing IV solutions.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels.
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
C03F0	Cabinet, U/C/B, 1 Shelf, 2 Half DR, 2 DO, 36x30x22	1	CC	Standing height under counter base cabinet with an adjustable shelf and two half width drawers above solid hinged doors.
C03P0	Cabinet, Sink, U/C/B, 2 Door, 30" W	1	CC	Standing height under counter base sink cabinet. 36" H x 30" W x 22" D with two solid hinged doors. Also referred to as a double-door sink cabinet. For general purpose use throughout the facility where a sink is to be used. Coordinate actual clear cabinet dimension with the actual outside dimension of sink that is specified to ensure that they are compatible.



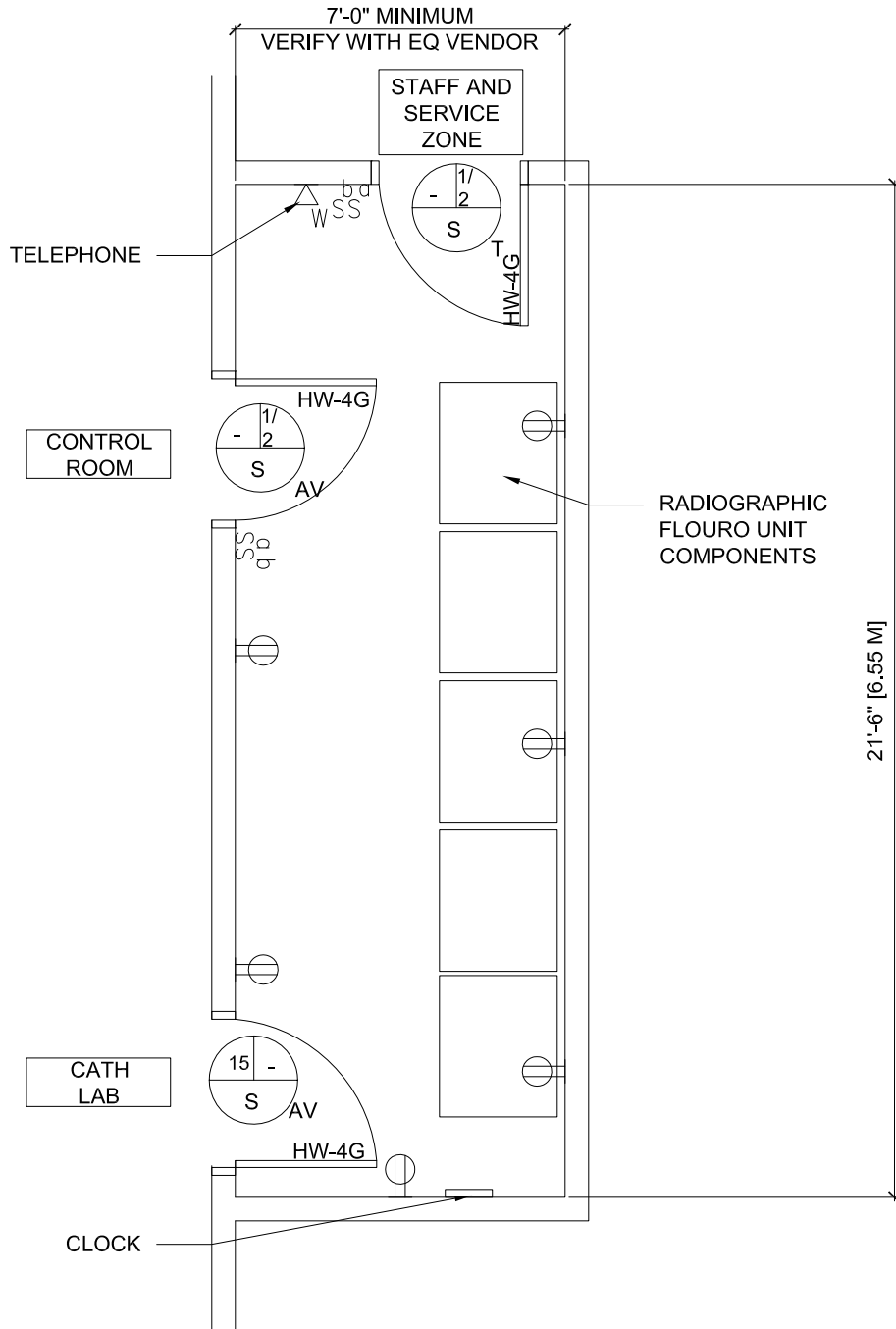
CE030	Cabinet, W/H, 2 SH, 2 GDO, Sloping Top, 38x30x13	2	CC	Wall hung cabinet with two adjustable shelves, framed-glass hinged doors, and sloping top.
CS090	Sink, SS, Single Compartment, 7.5x19x16 ID	1	CC	Single compartment stainless steel sink, drop-in, self-rimming, ledge-type, connected with a drain and provided with a mixing faucet. It shall also be provided with pre-punched fixture holes on 4" center, integral back ledge to accommodate deck-mounted fixtures, brushed/polished interior and top surfaces, and sound deadened. Recommended for use in suspended or U/C/B sink cabinets having a high plastic laminate or Chemsurf laminate countertop/work surface. Coordinate actual outside sink dimensions with the actual clear dimension of cabinet specified to ensure that they are compatible. For general purpose use throughout the facility.
CT050	Countertop, Stainless Steel	1	CC	Stainless steel countertop (composition of heavy-gauge Type No. 304 stainless steel) having a smooth satin finish and integral 4" backsplash/curb. Also referred to as a corrosion-resistant steel work surface or work top. Available in various depths. Used in areas where excellent ease of cleaning, abrasion resistance, bacteria resistance, impact resistance, load capacity and moisture resistance, are of concern.
E0210	Work surface, w/ Overhead Cab, Wall Mtd, 48" W	1	VV	THIS TYPICAL INCLUDES: 2 Vertical Hanging Strips 1 Lockable Flipper Unit 1 Shelf, Storage/Display 1 Light 1 Cantilevered Work Surface
E0912	Locker, Supply, Med Surg, Wall Mtd, 23"W x 20"D	1	VV	THIS TYPICAL INCLUDES: 1 Locked Storage Container 4 Tray/Shelves 5 Drawers, 3"H (76mm) 2 Drawers, 6"H (152mm) 2 Tray/Shelf Dividers Drawer Organizer Bins Consider the need for an E0921 to transport the locker from place to place.

E0954	Cart, Emergency, Mobile, 66"H x 52"W x 22"D	1	VV	THIS TYPICAL INCLUDES: 1 Cart body, style-A narrow, w/raised edge top 2 Accessory rails, side 1 Accessory rail, back 1 Defibrillator tray; 1 IV pole 1 Breakaway bar 1 Flip-up shelf 1 Wastebasket 1 Oxygen tank holder 1 Electrical box-4 outlet
E1500	Rail, MOD, Wall Mtd	1	VV	Wall mounted rail used for hanging (mounting) supply lockers, shelves drawers on a wall. Length as required.
F0205	Chair, Side With Arms	1	VV	Upholstered side chair, 32" high X 21" wide X 23" deep with arms, padded seats and padded backs. Seat height is a minimum of 17". Available with or without sled base.
F0280	Chair, Swivel, Low Back	1	VV	Low back contemporary swivel chair, 37" high X 25" wide X 31" deep with a five (5) caster swivel base, arms and foam padded seat and back upholstered with either woven textile fabric or vinyl.
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F0355	Footstool, Straight	1	VV	Step stool. Used to assist patients getting on and off exam or surgical tables. Fitted with electrically conductive rubber tips.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Requires the appropriate adapter for connection to the wall outlet and fitting to connect to tubing. Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.

M0755	Flowmeter, Oxygen, Low Flow	1	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Database pricing includes DISS fitting and DISS power outlet and wall adapter. Other fitting and adapter configurations are available.
M0765	Regulator, Vacuum	1	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M1801	Computer, Micro-processing, w/Flat Panel Monitor	1	VV	Desk top microprocessing computer. The unit shall consist of a central processing mini tower, flat panel monitor, keyboard, mouse and speakers.
M1825	Printer, Computer	AR	VV	High resolution computer printer with a variety of type styles and sheet/envelope feeder trays.
M7008	Bed, Echo, Power	1	VV	Dual power echo bed with: single pedal steering and breaking; 3-position memory hand controller; collapsible/removable safety rails; iv pole holder, head and body-positioning wedges, exam drop section with one-hand rapid release, right side sonographers' drop section with extension and exam side remote release, patient transfer system; vascular positioning; trendelenburg/reverse trendelenburg, power adjustable fowler, load capacity, 1,250 lbs.; lift capacity, 500 lbs.
M7650	Defibrillator/Monitor, Acute Care	1	VV	Portable defibrillator/monitor for acute care includes biphasic defibrillator, pacing, SPO2, Interpretive 12-lead, NIBP monitoring, EtCO2 monitoring, Invasive pressure monitoring, Vital Sign monitoring, temperature probe, Fax transmission, PCMCIA Data Cards, Paddle accessories, and a color LCD.
X2105	Scanner, Ultrasound, Cardiac (Echo)	1	VV	High definition, diagnostic ultrasound system for Radiology, Cardiology, Vascular, ob-gyn, Perinatology, and Surgical imaging applications. The unit employs curved, phased and linear array imaging technology. The system supports colorflow, pulse, continuous wave imaging modalities. On board software measurement packages available for all imaging applications. The system is DICOM 3.0 compatible, for easy linkage to filmless image management systems and review stations. In addition, a full line of probes and conventional recording devices are available.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.

	Waste Receptacle Step-on, Red 7 Gal	1	VV	7 Gallon steel infectious waste receptacle w/step-on lid (12x12x17)
	Monitor, Vital Signs Mobile	1	VV	Mobile vital sign monitor with: LCD displays non-invasive blood pressure, pulse rate, SpO2, printer and mobile stand.

**SYSTEM COMPONENT ROOM (XCCA1)**



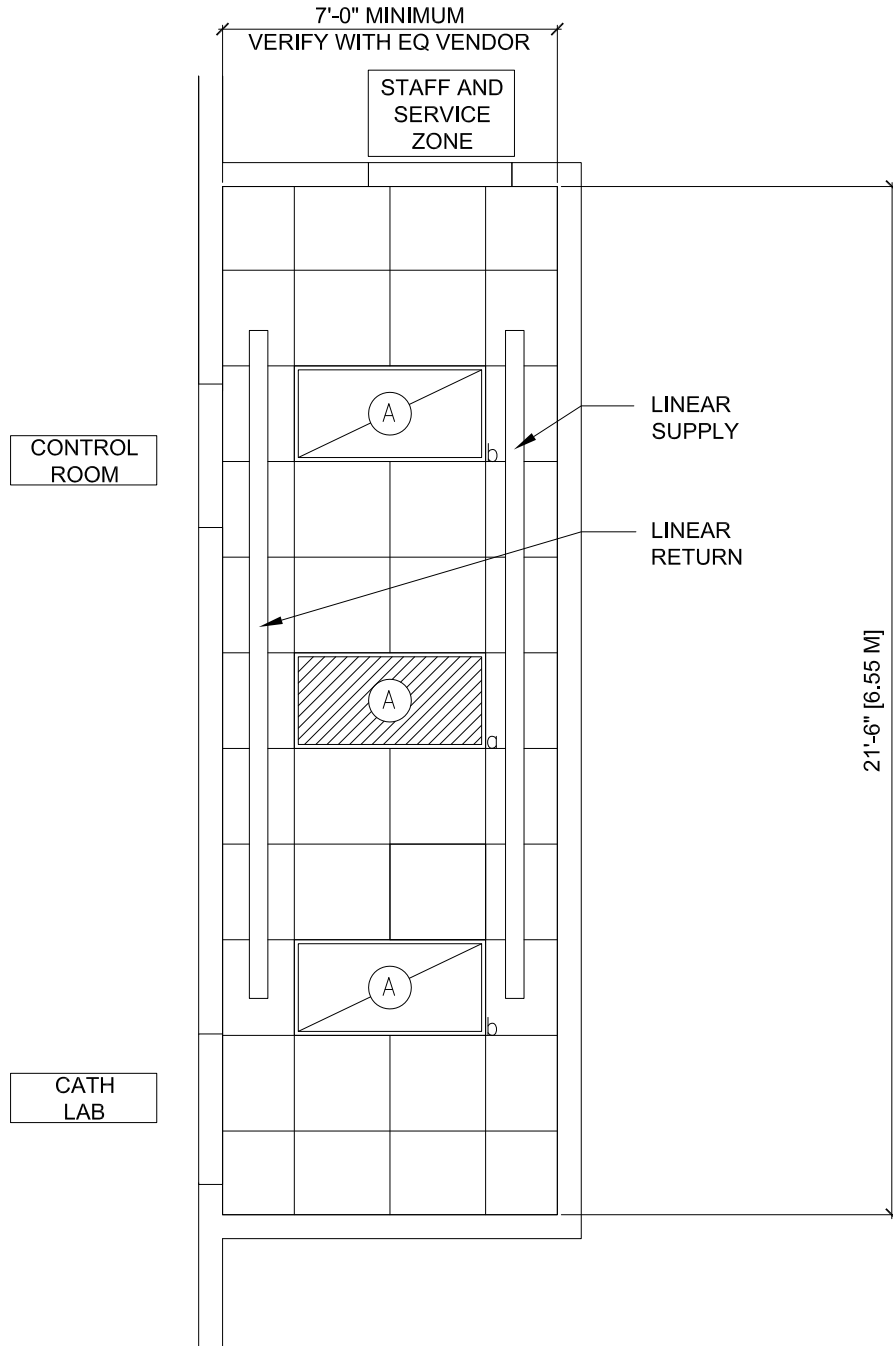
SCALE  $\frac{1}{4}" = 1'-0"$



# System Component Room (XCCA1)

Cardiovascular Laboratory Service  
Floor/Equipment Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



SCALE  $\frac{1}{4}" = 1'-0"$

# System Component Room (XCCA1)



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (150 NSF / 13.9 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**System Component Room (XCCA1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling: AT  
 Ceiling Height: 9'-0"  
 Wall Finish: GWB  
 Base: WSF  
 Floor Finish: WSF  
 Door: 1/2 S-T  
 Hardware: 4-G

Notes:

**POWER**

General: As Shown  
 Special: Special Voltage as Required  
 Emergency: Yes  
 Notes: Dedicated Power Required

**COMMUNICATIONS**

Patient Monitor:  
 Nurse Call:  
 Security/Duress:  
 CCTV:  
 Telephone: Yes  
 Pub. Address:  
 Radio:  
 Data: Yes  
 Panic Call:  
 Battery Operated Clock: Yes  
 Intercom:  
 Staff/Duty Station:

**LIGHTING**

Notes:  
 1. Three (3) of 2'x4' (600mm x 1200mm) Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)  
 2. Provide Ballasts Per Fixture for Desired Switching Configuration  
 3. Lighting Level: 50fc

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling: 75°F (24°C)  
 Dry Bulb Temp Heating: 70°F (21°C)  
 Minimum % Outside Air:  
 100% Exhaust Air:  
 Noise Criteria: NC 40  
 Steam:  
 Relative Humidity/Cooling: 60%  
 Relative Humidity/Heating: 20%  
 Minimum Air Changes/Hr.: To Meet Cooling Load  
 Room Pressure: Neutral (0)  
 AC Load Lights: As Required  
 AC Load Equipment: As Required  
 Number of People: 0  
 Special Equipment: Dedicated AC Unit

**PLUMBING AND MEDICAL GASES**

Cold Water:  
 Hot Water:  
 Domestic Water (HWH):  
 Laboratory Air:  
 Laboratory Vacuum:  
 Sanitary/Vent:  
 Medical Air:  
 Medical Vacuum:  
 Oxygen:  
 Nitrogen Oxide:  
 Nitrogen:  
 Anesthesia Evac:  
 Sprinkler: Yes  
 Tempered Water:  
 Water Control:

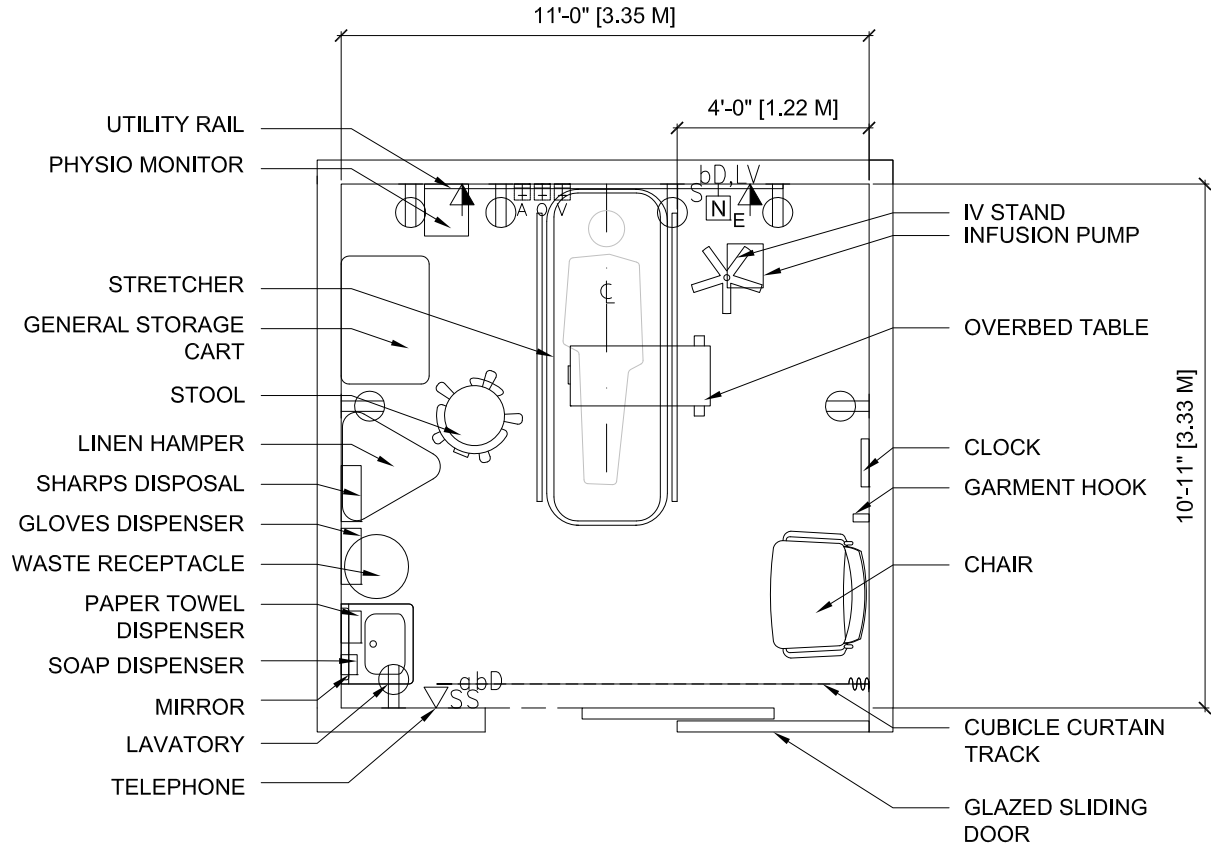
**SPECIAL EQUIPMENT**

**System Component Room (XCCA1)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A1017	Telephone, Wall Mounted	1	VV	Telephone, wall mounted
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
X6190	Radiographic/Fluoro Unit, Cardiac, 100 125 kW, Digital	1	VV	This system is specifically designed to perform biplane radiographic/fluoroscopic examinations in the Cardiology Department. On-line digital cardiac image processing will provide instant availability of images for review. This units characteristics and components include 125 kW micro-processor controlled X-ray generators, C-arm and U arm with 9" multi-field Image Intensifier, integrated X-ray tube unit and cine camera. The Digital Imaging for both the AP and Lateral planes shall consists of a computer, keyboard with acquisition, viewing monitor, and slave monitor. The system shall be DICOM 3.0 compatible, for easy linkage to filmless image management systems and review stations. It is recommended that the TV monitors be ceiling suspended. System to be procured with Cardiac Cath Lab computer-ized analysis/monitoring system and to include UPS power supply.



RECOVERY ROOM, PATIENT PREP (RRSS1)



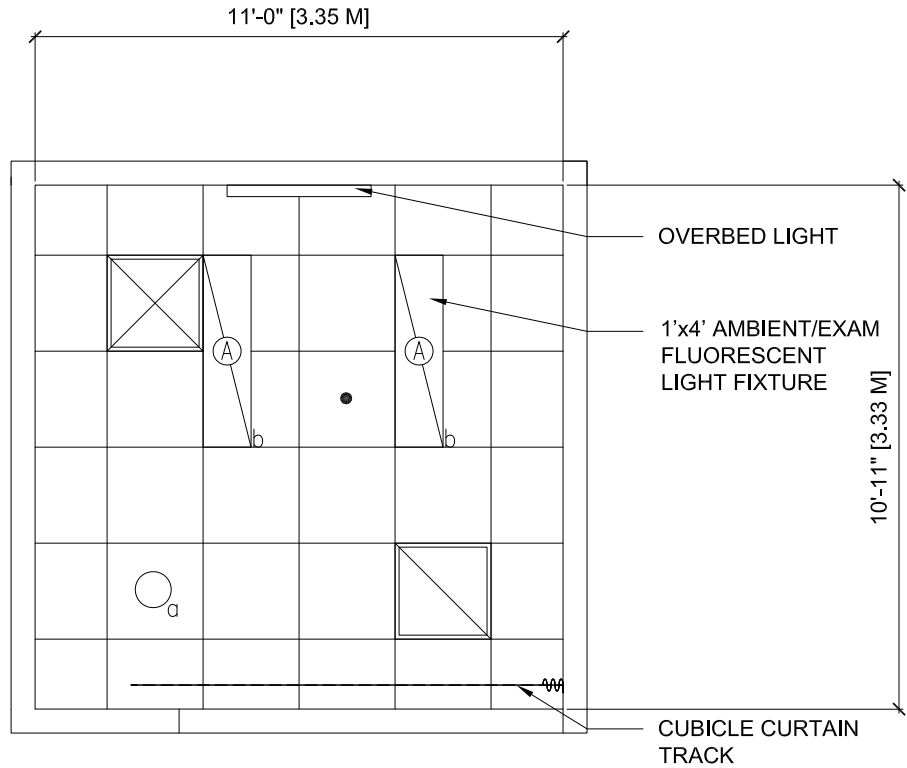
SCALE 1/4" = 1'-0"

# Recovery Room, Patient Prep (RRSS1)



Cardiovascular Laboratory Service  
Floor/Equipment Plan (120 NSF / 11.1 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.



SCALE  $\frac{1}{4}'' = 1'-0''$

# Recovery Room, Patient Prep (RRSS1)



Cardiovascular Laboratory Service  
Reflected Ceiling Plan (120 NSF / 11.1 NSM)

NOTE: Guide plates are graphical representations of selected room types, illustrating the integration of space, components, systems, and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library.

**Recovery Room, Patient Prep (RRSS1)  
Room Data Sheet**

**ARCHITECTURAL**

Ceiling: AT  
 Ceiling Height: 9'-0"  
 Wall Finish: GWB  
 Base: WSF  
 Floor Finish: WSF  
 Door: 4'-0"x7'-0", 2 panel glazed, top hung slider

Notes:  
 1. Wall protection

**POWER**

General: As Shown  
 Special:  
 Emergency:  
 Notes:

**COMMUNICATIONS**

Patient Monitor: Yes  
 Nurse Call: Yes  
 Security/Duress:  
 CCTV:  
 Telephone: Yes  
 Pub. Address:  
 Radio:  
 Data: Yes  
 Panic Call: Yes  
 Battery Operated Clock: Yes  
 Intercom:  
 Staff/Duty Station: Yes

**LIGHTING**

General:  
 1. Two (2) of 1'x4' (300mm x 1200mm) Multi-Function Ambient/Exam Fluorescent Light Fixture, Acrylic, Prismatic Lens with F32T8 Lamps, 3500°K, CRI=70 (minimum)  
 2. One (1) Down Light  
 3. Provide Ballasts Per Fixture for Desired Switching Configuration  
 4. Lighting Level: 50/10fc  
 5. Patient Control for Multi-Function and Down Light Fixtures

**HEATING, VENTILATING AND AIR CONDITIONING**

Dry Bulb Temp Cooling: 75° F (24° C)  
 Dry Bulb Temp Heating: 70° F (21° C)  
 Minimum % Outside Air: 2  
 100% Exhaust Air:  
 Noise Criteria:  
 Steam:  
 Relative Humidity/Cooling: 60%  
 Relative Humidity/Heating: 20%  
 Minimum Air Changes/Hr.: 6  
 Room Pressure: Neutral (0)  
 AC Load Lights: As Required  
 AC Load Equipment: As Required  
 Number of People:  
 Special Equipment:

**PLUMBING AND MEDICAL GASES**

Cold Water: Yes  
 Hot Water: Yes  
 Domestic Water (HWH): Yes  
 Laboratory Air:  
 Laboratory Vacuum:  
 Sanitary/Vent: Yes  
 Medical Air: 1 Outlet  
 Medical Vacuum: 3 Outlets  
 Oxygen: 2 Outlets  
 Nitrogen Oxide:  
 Nitrogen:  
 Anesthesia Evac:  
 Sprinkler: Yes  
 Tempered Water:  
 Water Control: Infrared Sensor

**SPECIAL EQUIPMENT**

**Recovery Room, Patient Prep (RRSS1)  
Equipment List**

JSN	NAME	QTY	ACQ/INS	Description
A1017	Telephone, Wall Mounted	1	VV	Telephone, wall mounted
A1066	Mirror, Float Glass, With SS Frame, 36x18	1	CC	A high quality 1/4" polished float glass mirror 36X18, framed in a one-piece, bright polished, stainless steel channel frame with 90° mitered corners. All edges of the mirror are protected by absorbing filler strips. Mirror has a galvanized steel back with integral horizontal hanging brackets and wall hanger for concealed mounting.
A1107	Rail System , Utility, Gas and Electric	1	CC	The headwall rail system shall consist of three horizontal rails mounted to the patient room headwall to provide utilities and patient services; to support ancillary equipment and to include gas and vacuum. The rail system must be capable of quickly adding or relocating medical gases services and be able to accept new equipment, provide physical support to equipment, brackets, shelves and other patient support items.
A5075	Dispenser, Soap, Disposable	1	VV	Disposable soap dispenser. One-handed dispensing operation. Designed to accommodate disposable soap cartridge and valve.
A5080	Dispenser, Paper Towel, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, single-fold, paper towel dispenser. Dispenser features: tumbler lock; front hinged at bottom; and refill indicator slot. Minimum capacity 400 single-fold paper towels..
A5108	Waste Disposal Unit, Sharps	1	VV	A container with wall mounting brackets for collecting and transporting syringes and other sharps for decontamination and disposal. Available in 2 gallon and 8 gallon with locking rotor. Complies with OSHA regulations for handling sharps.
A5145	Hook, Garment, Double, SS, Surface Mounted	1	CC	A surface mounted, satin finish stainless steel, double garment hook. Equipped with a concealed mounting bracket that is secured to a concealed wall plate.
A5180	Track, Cubicle, Surface Mounted, With Curtain	1	CC	Surface mounted cubicle track, with curtain. Track constructed of extruded aluminum. Equipped with self lubricating carriers, beaded drop chain hooks, and flame resistant curtain. To include removable end caps. Designed to be suspended around patient areas where privacy is needed.

E0949	Cart, General Storage, Mobile with Keyless Lock, 42"H x 32"W x 22"D	1	VV	THIS TYPICAL INCLUDES: 1 Cart Body, Style-A Narrow, w/Raised Edge Top 1 Accessory Rail, Side 2 Drawers, 3" H (76mm) 4 Drawers, 6" H (152mm) Drawer Organizer Bins and Keyless Lock
F0306	Chair, Bariatric	AR	VV	Upholstered side chair approximately 34 1/2" high X 31 1/2" wide X 20" deep with floor glides. Seat is non-tilting.
F0340	Stool, Self Adjusting	1	VV	Self adjusting stool. Consists of a foam padded upholstered seat with attached foot rest for added comfort. Mounted on swivel casters. Designed for doctor's use during examinations.
F2017	Waste Receptacle, 24 Gal	1	VV	Rectangular steel waste receptacle with step-on lid and 24 gallon capacity. The receptacle is used to collect and temporarily store small quantities of paper refuse.
F3200	Clock, Battery, 12" Diameter	1	VV	Clock, 12" diameter. Round surface, easy to read numbers with sweep second hand. Wall mounted unit for use when impractical to install a fully synchronized clock system. Battery operated, (batteries not included).
M0750	Flowmeter, Air, Connect w/50 PSI Supply	1	VV	Air flowmeter. Unit has a stainless steel needle valve with clear flowtube for connection to 50 PSI air outlet from central pipeline system. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0755	Flowmeter, Oxygen, Low Flow	2	VV	Oxygen flowmeter. Consists of a clear crystal flowtube calibrated to 3.5 or 8 LPM depending on manufacturer. For oxygen regulation in hospital settings. Flowmeter to be provided with appropriate adapter fitting and outlet Database prices reflect fittings with an attached DISS power outlet. Other outlet and adapter configurations are available.
M0765	Regulator, Vacuum	3	VV	Vacuum pressure regulator for connection to central piped vacuum system. Standard display scale is graduated at least from 0 to 200 mm Hg of vacuum. Displays on specialized regulators may cover other vacuum ranges. Regulator type (continuous, intermittent, continuous/intermittent, surgical, pediatric, thoracic, etc.) as required.
M3070	Hamper, Linen, Mobile, w/Lid	1	VV	Mobile linen hamper with hand or foot operated lid. Made of heavy tubular stainless steel with heavy gauge welded steel platform. Holds 25" hamper bags. Mounted on ball bearing casters.

M4255	Stand, IV, Adjustable	1	VV	Adjustable IV stand with 4-hook arrangement. Stand has stainless steel construction with heavy weight base. It adjusts from 66 inches to 100 inches and is mounted on conductive rubber, ball bearing, swivel casters. Stand is used for administering intravenous solutions.
M4266	Pump, Volumetric, Infusion, Multiple Line	1	VV	Volumetric infusion pump. Pump is self-regulating with automatic sensor and adjustable rate. Equipped with visual and audible alarms and up to 10 hour capacity battery. For the administration of a wide variety of therapeutic agents where precise control is required. Unit provides individual control to IV lines simultaneously.
M4665	Stretcher, Recovery, Surgical	1	VV	Recovery/surgical stretcher. Strong I-beam construction type unit. The height is adjustable with manual backrest and crank operated knee gatch. Stainless or painted steel top and chassis. Features 8" or 10" conductive casters, with lock and brake, folding, tuck-away chrome side-rails and IV stand and a flame retardant antibacterial mattress. Designed for operating room transport or recovery applications.
M7040	Table, Overbed	1	VV	Overbed table. Adjustable height table constructed of heavy gauge steel. Mounted on 2" diameter twin swivel casters with bumper caps. Table top is constructed with a high pressure plastic laminated surface that resists chipping, scratching, and staining. It includes a vanity tray and a mirror. Table is designed for use over bed, wheelchair or large chair.
M7435	Light, Overbed, Direct And Indirect	1	CC	Overbed patient room light which provides direct light for patient activity and indirect light for patient examination. The indirect portion of the light can be flipped down or redirected to provide dual intensity direct lighting. Unit is fully enclosed and is available in varying lengths. Some units feature a controlled power shut off to the light and patient bed when bumped by any item. Unit is designed to be wired directly to a junction box in the wall, a headwall service rail or patient service column. Dimensions are for a three foot light.
P3100	Lavatory, Vitreous China, Slab Type	1	CC	Wall mounted, slab type, vitreous china, lavatory (approximate bowl size 7"x15"x10") with: faucet holes on 4" centers; gooseneck spout; wrist blade handles; and grid strainer.
	Dispenser, Glove, Triple	1	VV	Triple glove box holder constructed of formed stainless steel for horizontal or vertical mounting.

	Monitor, Physiological, Bedside, 6 Channel	1	VV	6 channel bedside physiological monitor. The unit consist of a sixchannel non-fade monochrome display monitor, an alarm system and printer-recording capabilities. The monitor has color coded controls and automatic calibration. The unit displays up to six four waveforms simultaneously. The parameters to be monitored are user selectable. The monitor may be connected to a central monitoring station.
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












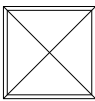
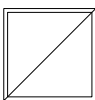






**GUIDE PLATE SYMBOLS LEGEND**

SYSTEM	DESCRIPTION OF SYMBOLS	SYMBOL	
Wiring devices switches	BLANK = SINGLE POLE 3 = THREE-WAY D = DIMMER LV= LOW VOLTAGE LM= LOW VOLTAGE MASTER PB= PUSH BUTTTON STATION T = TIMER OPERATED X = EXPLOSION PROOF	2 = DOUBLE POLE 4 = FOUR-WAY K = KEY OPERATED L = LOCK P = WITH PILOT LIGHT RC= REMOTE CONTROL WP= WEATHER PROOF Mo= OCCUPANCY SENSOR	S <sub>2</sub>
	Single pole switch		S
	Single pole switch - suffix of "a", "b", or "c" indicates separate control of fixture(s) with same designation		S <sup>a</sup>
	Door switch		
	Emergency power off (EPO) push button		
Lighting Fixtures	2'x2' (600mm x 600mm) fluorescent fixture		
	1'x4' (300mm x 1200mm) fluorescent fixture		
	2'x4' (600mm x 1200mm) fluorescent fixture		
	Wall-mounted fluorescent fixture		
	2'x2' (600mm x 600mm) fluorescent fixture- emergency power		
	2'x4' (600mm x 1200mm) fluorescent fixture- emergency power		
	Wall-mounted fluorescent fixture-emergency power		
	Under-cabinet light fixture		
	Wall-mounted light fixture-type as noted		
	Ceiling mounted light fixture-type as noted		
	Emergency recessed light fixture		
	Recessed light fixture		

SYSTEM	DESCRIPTION OF SYMBOLS	SYMBOL
Wiring devices receptacles	Duplex receptacle, NEMA 5-20R-20 amp-mounted 18" (450mm) A.F.F. Unless otherwise noted	
	Duplex receptacle, NEMA 5-20R-20 amp-mounted above counter top/counter top back splash	
	Duplex receptacle, Dedicated	
	Duplex receptacle with ground fault interrupter, NEMA 5-20R- 20 amp-mounted 18" (450mm) A.F.F. Unless otherwise noted	
	Duplex receptacle with ground fault interrupter, NEMA 5-20R- 20 amp-mounted above counter top/counter top back splash	
	Weatherproof while in use duplex receptacle with GFI, NEMA 5-20R-20 amp-mounted 18" (450mm) A.F.F. Unless otherwise noted	
	Quadruplex outlet, NEMA 5-20R-20 amp-mounted 18" (450mm) A.F.F. Unless otherwise noted.	
	Quadruplex outlet, NEMA 5-20R-20 amp-mounted above counter top/counter top back splash	
	Quadruplex outlet with ground fault interrupter, NEMA 5- 20R- 20 amp-mounted 18" (450mm) A.F.F. Unless otherwise noted	
	Quadruplex outlet with ground fault interrupter, NEMA 5-20R- 20 amp- mounted above counter top/counter top back splash	
	Duplex receptacle on emergency power, NEMA 5-20R-20 amp-mounted 18" (450mm) A.F.F. unless otherwise noted	
	Quadruplex receptacle, NEMA 5-20R-20 amp- emergency power	
	Special receptacle of the type required	
	Single receptacle, NEMA 5-20R-20 amp	
	Single receptacle, NEMA 5-20R grounding type	
	Electrical surface mounted multi-outlet raceway assembly, NEMA 5-20R receptacles at 2'-0" (600mm) intervals, single or multiple channel as required- mounted 12" (300mm) above counter.	
Junction box - purpose and location as noted		

SYSTEM	DESCRIPTION OF SYMBOLS	SYMBOL
Auxiliary Systems	Telephone data outlet-mounted 18" (450mm) A.F.F. unless otherwise noted	
	Telephone data outlet-mounted above counter top/counter top back splash	
	Wall-mounted telephone outlet-mounted 48" (1200mm) A.F.F. unless otherwise noted	
	Video outlet type as noted in equipment list	
	Speaker-ceiling mounted	
	Intercom outlet	
	Nurse call dome light-ceiling mounted	
	Nurse call dome light-wall mounted	
	Nurse call duty station	
	Emergency nurse call	
	Nurse call staff station	
	Volume control-wall mounted	
	Security/duress-alarm button wall mounted	
	Junction box-purpose and location as noted	
Mechanical	Room thermostat-mounted 5'-0" (1520mm) A.F.F.	
	Room humidistat-mounted 5'-0" (1520mm) A.F.F.	
	Supply	
	Return	
Plumbing	Medical gas outlet (letter designates service)	
	Sprinkler	



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## SECTION 5 - APPENDIX

### TECHNICAL REFERENCES

The references listed below are comprised of both a summary of current relevant VA standards and criteria followed by a summary of current industry standards, all of which have guided the information in this Cardiovascular Laboratory Service Design Guide. The Design Guide refers to the sources throughout the text when information is more detailed or extensive than would be appropriate to be included in this guide. VA sources can be accessed on VA website.

#### VA Standards and Criteria

VA Space Planning Criteria Chapter 212

Accessibility and Barrier-Free Design Guide PG-18-13

Design and Construction Procedures H-18-3

Equipment Information PG-18-5

Master Construction Specifications PG-18-1

Standard Details PG-18-4

Room Finishes, Door and Hardware Schedule PG-18-14

Seismic (Structural) Design Requirements H-18-8

Signage Design Guide

Space Planning Criteria PG-18-9

Sustainable Design and Energy Reduction Manual April 2010

VA Technical Criteria (PG-18-10 Design Manuals) pertaining to Architectural,

Interior Design, HVAC, Plumbing, and Electrical Ambulatory Care/Outpatient Clinic/Interior Design Manual for New Construction and Renovations of Hospitals and Clinics

Design Guide Office of Information and Technology (OI&T) for Information Management Systems Physical Security Design Manual (Final Draft)

Emergency Power & Water Supply During Natural Disasters, Phase 2

VA Fire Protection Design Manual 2009

Energy Conservation (EPACT 2005 and DOE – Final Rule)

Energy Conservation (Executive Order No. 13423 Dated January 24, 2007: Strengthening Federal Environmental, Energy, and Transportation Management)

Memorandum of Understanding (MOU): Federal Leadership in High Performance and Sustainable Buildings.

Commissioning Guidelines (issuance pending)

#### Industry Standards and Criteria

ADA Standards for Accessible Design 2010

International Building Code, 2009

NFPA 101, 2009

FGI Guidelines for Design and Construction of Health Care Facilities - 2010

**ABBREVIATIONS & ACRONYMS**

<b>-A-</b>		EHR	Electronic Health Record
A	Air, Medical	EKG	Electrocardiogram
ABAAS	Architectural Barriers Act Accessibility Standards	EO	Executive Order
AC	Air Conditioning	EP	Electrophysiology
ACI	American Concrete Institute	EPACT	Energy Policy Act
ADA	Americans with Disabilities Act of 1990	EQ	Equipment
A/E	Architect/Engineer	<b>-F-</b>	
AF	Access Flooring	F	Fahrenheit or Filter
AIA	American Institute of Architects	FA	Functional Area
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers	FC	Footcandle
AT	Acoustical Ceiling Tile	FGI	Facilities Guidelines Institute
<b>-B-</b>		<b>-G-</b>	
<b>-C-</b>		GFI, GFCI	Ground Fault Circuit Interrupter
C	Celsius	GSA	General Services Administration
CAB	Cabinet	GWB	Gypsum Wall Board System
CAD	Computer Aided Drafting	<b>-H-</b>	
CCTV	Closed Circuit Television	HAC	House Keeping Aides Closet
CDC	Centers for Disease Control	HIPAA	Health Insurance Portability and Accountability Act of 1996
CFM	Construction & Facilities Management or Cubic Feet per Minute	Hr	Hour
CRI	Color Rendering Index	HVAC	Heating, Ventilation and Air Conditioning
CT	Computed Tomography	<b>-I-</b>	
CV	Constant Volume	IBC	International Building Code
<b>-D-</b>		ICD	Implantable Cardioverter Defibrillators
DEPT	Department	ICRA	Infection Control Risk Assessment
DGSF	Department Gross Square Feet	ICU	Intensive Care Unit
DOE	Department of Energy	IES	Illuminating Engineering Society
DNSF	Department Net Square Feet	IT	Information Technology
DNTG	Department Net-to-Gross	<b>-J-</b>	
DWG	Drawing	<b>-K-</b>	
<b>-E-</b>		K	Kelvin (degrees)
ECHO	Echocardiograph	<b>-L-</b>	

		RB	Resilient Base
<b>-M-</b>		RCP	Reflected Ceiling Plan
M	Meters	RF	Radio Frequency or Rubber Flooring
MCS	Master Construction Specifications	RH	Relative Humidity or Right Hand
MIN	Minimum	RME	Reusable Medical Equipment
MM	Millimeters		
MOU	Memorandum of Understanding	<b>-S-</b>	
MRCP	Magnetic Resonance Cholangiopancreatography	SC	Special Coating
MRI	Magnetic Resonance Imaging	SP	Sprayed Plastic Finish
MS&N	Medical Surgical and Nursing	SPD	Sterile Processing Department
		SS	Stainless Steel
		SVT	Solid Vinyl Floor Tile (Luxury Vinyl Tile)
<b>-N-</b>			
NEMA	National Electrical Manufacturers Association	<b>-T-</b>	
NFPA	National Fire Protection Association	TB	Tuberculosis or Through Bolt or Towel Bar
NSF	Net Square Feet	TEE	Transesophageal Echocardiograph Room
NSM	Net Square Meters	TIL	Technical Information Library
<b>-O-</b>			
O	Oxygen	<b>-U-</b>	
OI&T	Office of Information & Technology	UFAS	Uniform Federal Accessibility Standard
OND	Operation New Dawn		
OSHA	Occupational Safety and Health Administration	<b>-V-</b>	
OT	Occupational Therapy	V	Vacuum
		VA	Veteran's Administration] or Volt Ampere
<b>-P-</b>		VACO	Veteran's Affairs Central Office
PA	Public Address	VAV	Variable Air Volume
PC	Personal Computer or Piece or Polycarbonate or Portland Cement	VCT	
PG	Program Guide or Page	<b>-W-</b>	
PMS	Public Messaging System	W	Watts, Waste or Workload (input data statements)
PRB	Profile Base	WM	Wall-Mounted
PSG	Polysomnography	WSF	Welded Seam Sheet Flooring
PT	Physical Therapy		
PTSD	Post Traumatic Stress Disorder	<b>-X-</b>	
<b>-Q-</b>		<b>-Y-</b>	
		<b>-Z-</b>	