

## CHAPTER 210: CARDIOLOGY SERVICE

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## 1 PURPOSE AND SCOPE

This document outlines Space Planning Criteria for Chapter 210: Cardiology Service, non-invasive services. It applies to all medical facilities in Department of Veterans Affairs (VA).

## 2 DEFINITIONS

Blood Gas Analysis: A test which analyzes arterial blood for oxygen, carbon dioxide, and bicarbonate content in addition to blood pH. It is used to test the effectiveness of respiration.

Cardiac Stress Test: A cardiac stress test is a medical test performed to evaluate the ability for arterial blood flow to the myocardium (heart muscle) to increase during the stress of physical exercise, compared to blood flow while at rest. As an exercise test, results also reflect overall physical fitness. This test is ordered as a screening procedure for heart disease. It takes approximately 30 minutes, usually including 6-9 minutes of treadmill walking. Electrodes are placed on the chest so that the EKG is monitored during the entire exam, while the physician monitors the patient's blood pressure.

Cardiac Stress Test – Nuclear: This test follows the same procedure as the Cardiac Stress Test, with the addition of a nuclear scan. To scan the heart with a nuclear camera, a small amount of nuclear substance is injected into the patient, which acts as a tracer. This allows the tracking of blood cells as they circulate from the arteries to the heart muscle. Nuclear images are taken with a nuclear medicine camera after the exercise phase as well as at rest for comparison.

Cardiology: The study of the heart and its functions.

Echocardiogram (ECHO): A diagnostic test which uses ultrasound waves to make images of the heart chambers, valves, and surrounding structures. It can measure cardiac output and is a sensitive test for pericarditis and inflammation around the heart.

Electrocardiogram (EKG): A test that records the electrical activity of the heart, shows abnormal rhythms (arrhythmias or dysrhythmias), and detects heart muscle damage.

Holter Monitor: A device which measures the heart rhythm during a 24 hour period of time while the patient records their symptoms and activities in a diary. A small portable EKG device is worn by the patient. After the test is complete, a correlation is made between the symptoms (or activities) recorded and the EKG pattern that was obtained simultaneously.

Non-Invasive Cardiology: Procedures that do not penetrate the skin or invade the body, except for minor needle punctures. Non-Invasive procedures include EKG, Holter Monitoring, Echocardiography, Vascular Testing, Ultrasound, and Nuclear Cardiology.

Pacemaker Implants: An “artificial pacemaker” is a small, battery-operated device that helps the heart beat in a regular rhythm. Some devices are permanent (internal) and some are temporary (external).



Picture Archiving and Communication System (PACS): The digital capture, transfer, and storage of diagnostic images. A PACS system consists of: workstations for interpretation, image/data producing modalities, a web server for distribution, printers for file records, image servers for information transfer and holding, and an archive of off-line information. A computer network is needed to support digital imaging devices.

Provider: An individual who examines, diagnoses, treats, prescribes medication and manages the care of patients within his or her scope of practice as established by the governing body of a healthcare organization.

Tilt Table Test: A test which involves placing the patient on a table with a foot-support. The table is tilted in various directions and the blood pressure and pulse are measured and symptoms are recorded with the patient in diverse positions.

Ultrasound: High frequency sound waves which are utilized to determine the size and shape of organs based on the differential rates of reflection. In addition, images can be observed in real time to reveal motion, and can include coloration of arterial and venous blood flow.

### **Space Planning / SEPS**

Accessible: A site, building, facility, or portion thereof that complies with provisions outlined in the Architectural Barriers Act of 1968 (ABA).

Architectural Barriers Act (ABA): A set of standards developed to ensure that all buildings financed with federal funds are designed and constructed to be fully accessible to everyone. This law requires all construction, renovation, or leasing of sites, facilities, buildings, and other elements, financed with federal funds, to comply with the Architectural Barriers Act Accessibility Standards (ABAAS). The ABAAS replaces the Uniform Federal Accessibility Standards (UFAS).

Average Length of Encounter (ALoE): Averaged length of time, in minutes, a patient spends in an Exam / Treatment Room interacting with a provider and the clinical support team. It is accounted from room “set-up” to “clean-up” by staff. This metric is used to determine the number of annual patient / provider encounters that take place in an Exam / Treatment Room which, in turn, is used to calculate the number of Exam / Treatment Rooms needed in a facility based on projected annual workload. The ALoE is determined with VHA SME input during a PG-18-9 clinical chapter revision / update.

Average Length of Stay (ALoS): The average number of days a patient Veteran stays in an inpatient care unit. The ALoS is used to calculate the number of patient bedrooms for a specialty by dividing the site’s projected workload by the ALoS.

Building Gross (BG) Factor: A Factor applied to the sum of all the Departmental Gross Square Footage (DGSF) in a project to determine the Building Gross Square Footage. This factor accounts for square footage used by the building envelope, structural systems, horizontal and vertical circulation including main corridors, elevators, stairs and escalators, shafts, and mechanical spaces. The Department of Veterans Affairs has set this factor at 1.35 and included guidance in case of variance when developing a Program for Design (PFD) in SEPS.



Clinic Stop: Per these criteria, a clinic stop is the workload unit of measure for space planning. Clinic Stops are codified by VSSC, when applicable, they are referenced by number in the calculation of workload driven patient care spaces in this document.

Department Net to Gross (DNTG) Factor: A parameter, determined by the VA for each clinical and non-clinical department PG-18-9 space planning criteria chapter, used to convert the programmed Net Square Feet (NSF) area to the Department Gross Square Feet (DGSF) area.

Encounter: An interaction between a patient Veteran and a VA provider or providers in an Exam Room / Treatment Room / Consultation Room / Procedure Room, spaces where a patient Veteran received clinical care.

Full-Time Equivalent (FTE): A staffing parameter equal to the amount of time assigned to one full time employee. It may be composed of several part-time employees whose combined time commitment equals that of one full-time employee (i.e., 40 hours per week).

Functional Area (FA): The grouping of rooms and spaces based on their function within a clinical service or department.

Functional Area Criteria Statement (FACS): A verbalized mathematical / logical formulation assigned to a FA incorporating answers to Input Data Statements (IDSs) to determine the condition for providing the rooms / spaces listed in the FA in the baseline space program or Program for Design (PFD) for a project. Certain rooms / spaces may or may not have additional conditions.

Input Data Statement(s): A question or set of questions designed to elicit information about the healthcare project to generate a Program for Design (PFD) based on the parameters set forth in this set of documents. This information is processed through mathematical and logical operations in the VA Space and Equipment Planning System (SEPS).

JSN (Joint Schedule Number): A unique five alpha-numeric code assigned to each content item in the PG-18-5 Standard. JSNs are defined in DoD's Military Standard 1691 and included in SEPS Content Table.

Net Square Feet / Net Square Meters (NSF/NSM): The area of a room or space derived from that within the interior surface of the bounding walls or boundaries.

Patient Unique: (or Unique Patient), A Veteran patient counted as a unique in each division from which they receive care. Patient Uniques are included in the Registry for a VA Medical Center.

Program for Design (PFD): A project specific itemized listing of the spaces, rooms, and square foot area required for the proper operation of a specific service / department, and the corresponding area for each. PFDs are generated by SEPS based on the PG-18-9 Standard.



PG-18-9: A Department of Veterans Affairs' Program Guide for the Space Planning Criteria Standard use to develop space planning guidance for the planning, design, and construction of VA healthcare facilities; a Program Guide (PG) that provides space planning guidance for VA Medical Centers (VAMCs) and Community Bases Outpatient Clinics (CBOCs). PG-18-9 is organized by chapters, as of September 2021 there are 56 clinical and non-clinical PG-18-9 chapters; they are implemented and deployed in SEPS so that space planners working on VA healthcare projects can develop baseline space programs.

PG-18-5: A Department of Veterans Affairs' Equipment Guidelist Standard for planning, design, and construction of VA healthcare facilities; a Program Guide (PG) that lists assigned room contents (medical equipment, furniture, and fixtures) to each room in PG-18-9. PG-18-5 follows PG-18-9's chapter organization and nomenclature.

PG-18-12: A Department of Veterans Affairs' Design Guide Standard for planning, design and construction of VA healthcare facilities, a Program Guide (PG) that provides design guidance for VA Medical Centers (VAMCs) and Community Bases Outpatient Clinics (CBOCs). The narrative section details functional requirements and the Room Template section details the planning and design of key rooms in PG-18-9. Not all PG-18-9 chapters have a corresponding PG-18-12 Design Guide; one Design Guide can cover more than one PG-18-9 chapter.

Provider: An individual who examines, diagnoses, treats, prescribes medication, and manages the care of patients within his or her scope of practice as established by the governing body of a healthcare organization.

Room Area: The square footage required for a clinical or non-clinical function to take place in a room / space. It takes into account the floor area required by equipment (medical and non-medical), furniture, circulation, and appropriate function / code-mandated clearances. Room area is measured in Net Square Feet (NSF).

Room Code (RC): A unique five alpha-numeric code assigned to each room in the PG-18-9 Standard. Room Codes in PG-18-9 are unique to VA and are the basis for SEPS's Space Table for VA projects.

Room Criteria Statement (RCS): A mathematical / logical formulation assigned to each room / space included in PG-18-9 incorporating answers to Input Data Statements (IDSs) to determine the provision of the room / space in the baseline space program or Program for Design (PFD) for a project.

Room Efficiency Factor: A factor that provides flexibility in the utilization of a room to account for patient delays, scheduling conflicts, and equipment maintenance. Common factors are in the 75% to 85% range. A room with 80% room efficiency provides a buffer to assume that this room would be available 20% of the time beyond the planned operational practices for this room. This factor may be adjusted based on the actual and/or anticipated operations and processes of the room/department at a particular facility.



SEPS: Acronym for Space and Equipment Planning System which produces equipment lists and Program for Design for a healthcare project based on specific information entered in response to Input Data Questions.

SEPS Importer: A style-based format developed to allow upload of RCSs and IDSs to SEPS to implement and operationalize space planning criteria in PG-18-9 in the SEPS digital tool. This format establishes the syntax used in the RCSs and allows the use of Shortcuts. Shortcuts allow developers of space planning criteria statements to simplify RCSs making full use of their logical and mathematical functionality. A shortcut can refer to an RCS, a room in any FA or a formula. Shortcuts are [bracketed] when used in FAs and RCSs and are listed along with their equivalences at the end of the Space Planning Criteria section.

Space Planning Concept Matrix (SPCM): A working document developed during the chapter update process. It lists all the rooms organized by Functional Area and establishes ratios between the directly and the indirectly workload driven rooms for the planning range defined in this document. The matrix is organized in ascending workload values in ranges reflecting existing facilities and potential future increase. Section 5 of this document Space Planning Criteria reflects the values in the SPCM.

Stop Code: A measure of workload including clinic stops forecasted by the Office of Policy and Planning (OPP) for all Strategic Planning Categories at Medical Center and Outpatient Clinic levels.

Telehealth: The use of technology, such as computers and mobile devices, to manage healthcare remotely. It includes a variety of health care services, including but not limited to online support groups, online health information and self-management tools, email and online communication with health care providers, remote monitoring of vital signs, video, or online doctor visits. Depending on the concept of operations for this space, it may be equipped as an exam room or as a consult room with video/camera capability.

Utilization Rate: A factor used in the calculation of a directly workload-driven room throughput. It represents, in a percent value, the room is idle based on the planning assumptions. For example, if a directly workload-driven room is available for use 8 hours a day, the Utilization Rate represents the assumed time it will be actually be used, an 85% utilization rate indicates, for planning purposes, the room will be used 6.8 hours a day. An additional directly workload-driven room will be provided in the calculation once the previous room has reached 100% utilization. The utilization Rate is embedded in the Room Throughput value calculated in Section 3 of this document.



VA Room Family (VA RF): An organizational system of rooms / spaces grouped by function, a 'Room Family'. There are two "Orders" in the VA RF: Patient Care and Patient Care Support; Patient Care features four sub-orders: Clinical, Inpatient, Outpatient and Residential Clinical. There are also four sub-orders in the Patient Care Support order: Building Support, Clinical Support, Staff Support and Veteran Support. Each room in a Family has a unique Room Code and NSF assigned based on its Room Contents and function which correspond to the specific use of the room. The same RC can be assigned to different Room Names with the same function in this document and can be assigned an NSF that varies based on the PG-18-5 Room Contents assigned to the room.

VA Technical Information Library (TIL): A resource website maintained by the Facilities Standards Service (FSS) Office of Construction and Facilities Management (CFM) containing a broad range of technical publications related to the planning, design, leasing, and construction of VA facilities. VA-TIL can be accessed at: <https://www.cfm.va.gov/TIL/>

Workload: Workload is the anticipated number of procedures, clinic stops, clinic encounters etc. that is processed through a department/service area. The total workload applied to departmental operational assumptions will determine overall room requirements by modality.

Workstation: Area outfitted with equipment and furnishings, typically allocated 56 NSF each. Managers and other staff with no direct reports as well as part-time, seasonal, and job-sharing staff may qualify for a workstation. Such environments are particularly conducive to team-oriented office groupings. These environments work best when they have access to conference and small group meeting spaces.

### 3 OPERATING RATIONALE AND BASIS OF CRITERIA

- A. Space planning criteria included in this Standard have been specifically developed for this Department / Service in a Department of Veterans Affairs healthcare facility based on established VHA policy and guidelines to define the scope of services provided for the veterans existing workload demand as well as that in the foreseeable future. Rooms and Functional Areas are provided based on research of clinical and non-clinical activities performed in this Department.
- B. Development / update of VA's Program Guide (PG) standards is a research based effort executed with participation of VHA Subject Matter Experts (SMEs), VA-Construction and Facilities Management Office (CFM) professional staff and specialty consultants hired for the task. These space planning standards are based on current applicable VHA policies and guidelines, established and/or anticipated best practice standards, and latest medical technology developments. Workload metrics were tailored to satisfy current and anticipated veteran workload demand.





- C. The space planning component of PG-18-9 is based on the Space Planning Concept Matrix (SPCM) which lists all the rooms organized by Functional Area and assigns room quantity (Q) and area (NSF) for a series of ranges corresponding to the smallest to the largest department for this service in the VA healthcare system in incremental size; each range corresponds to a workload parameter which determines the number and area of each directly workload-driven room. The rest of the rooms in the range i.e., waiting, storage, staff workstations, etc. are determined by ratios to the resulting number of or NSF of the workload-driven rooms.
- D. Sections 4 and 5 of these space planning standards as well as the PG-18-5 standard are implemented in the Space and Equipment Planning System (SEPS) and hosted at the MAX.gov website so planners working on VA Construction projects can develop single or multi-department projects based on these -PG-18-9- and the PG-18-5 standards. Output from SEPS is through Space and Contents Reports; the Space Report is the Program for Design (PFD), the Content Report is the Project Room Contents (PRC). Inclusion of a Functional Area as well as Room quantity (Q) and determination of the room area (NSF) in the PFD is based on the projected Workload input which triggers calculations included in the Room Criteria Statements (RCSs). The RCSs are placed immediately after each room name, room code and baseline area (NSF). The PRC list the medical equipment, furniture and fixtures associated to each Room Code in the project. The PFD & PRC are the baseline requirements for the planning phase of a VA project based on a site's projected workload for the target planning year. This chapter's corresponding PG-18-12, Design Guide -if available- is intended for use during the design phase of the project.
- E. Space Planning parameters and metrics in this document are based on the Cardiology Service Space Planning Criteria Matrix (SPCM) developed as the basis for this chapter. The Cardiology Service SPCM lists all the spaces a VA Cardiology Service site would require; the quantity and NSF for each room is calculated based on the Cardiology Service projected workload. The SPCM is organized in 20 ranges as follows:
1. Ranges 1 to 5: EKG Stop Code 107 between 1,440 and 24,000 annual clinic stops (in increments of 4,800)
  2. Ranges 6 to 10: Cardiology Stop Code 303 between 640 and 10,665 annual clinic stops (in increments of 2,133)
  3. Ranges 11 to 15: Pacemaker Stop Code 311 between 960 and 16,000 annual clinic stops (in increments of 3,200)
  4. Ranges 16 to 20: Cardiac Stress Stop Code 334 between 384 and 6,400 annual clinic stops (in increments of 1,280)

This way all current VA Cardiology Service sites are covered, the upper ranges are calculated for future facilities in case a higher projected workload or FTE positions authorized than those at the present time for Cardiology Service.





- F. The SPCM metrics are translated into one (or more) Room Criteria Statement (RCS) for each room in Section 5 of this document. The SPCM Planning Range, the maximum number of directly workload-driven exam rooms -all specialties- in this document is 20. If a project shall require provision of workload driven rooms above the maximum range value) refer to CFM for guidance. Rooms in this space planning document are organized in 5 Functional Areas (FAs).
- G. Based on its intended function, each room / space is assigned a:
  - 1. Room Name (RN),
  - 2. Room Code (RC),
  - 3. Room Area, the Net Square Feet (NSF) and its corresponding “soft metric” Net Square Meters (NSM),
  - 4. Unique Room Criteria Statement(s) (RCSs) correlated to answers to Input Data Statements (IDSs), and
  - 5. Room Comment as needed.
- H. The Room Codes included in this chapter stem from the VA Room Family. A unique support space, that may have variable are, is assigned a unique Room Code and adopts the square footage, as needed, correlated to the room contents assigned which in turn correspond to the range for those rooms. A unique clinical space or a direct clinical support room, i.e., control room, system components room, etc. typically does not feature variable NSF. Patient Care room names for rooms unique to this chapter end in “, Cardio Svc”. Patient Care Support room names end in “, Bldg Sprt”, “Clncl Sprt”, “Stff Sprt”, or “, Vet Sprt”, correlating to Building, Clinical, Staff or Veteran Support room families.
- I. Section 5, Sub-Section F lists the SEPS Importer Shortcuts used for implementation of Sections 4 & 5 in SEPS. These shortcuts are inserted into the Room Criteria Statement (RCS) for each room which upon upload into the Space and Equipment Planning System (SEPS) allowing planners developing VA healthcare projects to determine quantity and square footage of each room by performing mathematical or logical calculations. Shortcuts refer Input Data Statements (IDSs), Rooms or calculation parameters stemming from the SPCM.
- J. SEPS is accessible to government healthcare planners and private sector consultants working on VA HC projects during their Period of Performance (PoP) through the MAX.gov website; government provided Training is a requisite for access.
- K. SEPS incorporates a Net-to-Department Gross factor (NTDG) factor of **1.50** for Cardiology Service and a Building Gross factor of 1.35 in the space calculation to generate the Department Gross Square Feet (DGSF) and the Building Gross Square Feet (BGSF) respectively for the project based on the aggregate resulting Net Square Feet (NSF) for each range. Planners can adjust the BGSF factor in SEPS; the NTDG factor is fixed.
- L. Refer to the chapter corresponding PG-18-5 Equipment Guidelist for the Room Content assignment for each room during the planning phase of a project.



- M. Refer to the chapter corresponding PG-18-12: Design Guide, if available, during the planning and design phases of a project. Not all PG-18-9 clinical chapters have a corresponding PG-18-12 document, please refer to the VA-TIL.
- N. The space planning and design Program Guides: PG-18-9, PG-18-5, and PG-18-12 are available at the [Department of Veterans Affairs Office of Construction and Facilities Management \(CFM\) Technical Information Library \(TIL\)](#) website.

#### 4 INPUT DATA STATEMENTS (IDS)

- A. How many annual EKG clinic stops (Stop Code 107) are projected? (W) (Values: 1,440 to 24,000)
- B. How many annual Cardiology clinic stops (Stop Code 303) are projected? (W) (Values: 640 to 10,665)
- C. How many annual Pacemaker clinic stops (Stop Code 311) are projected? (W) (Values: 960 to 16,000)
- D. How many annual Cardiac Stress Test clinic stops (Stop Code 334) are projected? (W) (Values: 384 to 6,400)

#### 5 SPACE PLANNING CRITERIA

For functional descriptions of key spaces refer to the Design Guide for Cardiovascular Laboratory Service.

##### A. FA 1: RECEPTION AREA

- 1. **Cardio Svc Waiting, Bldg Sprt (SB002) ..... 45 NSF (4.2 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is 1
  - b. Provide one at 100 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 2
  - c. Provide one at 130 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 3
  - d. Provide one at 170 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 4
  - e. Provide one at 215 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 5
  - f. Provide one at 260 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 6
  - g. Provide one at 290 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 7
  - h. Provide one at 330 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 8
  - i. Provide one at 370 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 9
  - j. Provide one at 415 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 10
  - k. Provide one at 465 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 11
  - l. Provide one at 520 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 12
  - m. Provide one at 530 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 13
  - n. Provide one at 540 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 14
  - o. Provide one at 575 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 15
  - p. Provide one at 615 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 16
  - q. Provide one at 640 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 17
  - r. Provide one at 675 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 18
  - s. Provide one at 695 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 19
  - t. Provide one at 720 NSF if [Exam / Procedure / Testing Rooms (of all types)] is 20



The Non-Invasive Cardiology Exam / Procedure / Testing Rooms (of all types) are:  
EKG Testing Room, Cardio Svc,  
Exam Room, Cardio Svc,  
Pacemaker ICD Interrogation Room, Cardio Svc,  
Stress Testing Treadmill Room, Cardio Svc

- 2. Cardio Svc Reception, Clncl Sprt (SC183) ..... 85 NSF (7.9 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide one at 260 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15*
  - c. *Provide one at 385 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*

Allocated NSF accommodates two Receptionist FTEs, patient privacy area, and circulation.

- 3. Cardio Svc Patient Check-in Kiosk, Clncl Sprt (SC165) ..... 55 NSF (5.2 NSM)**
- a. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 15*
  - b. *Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*

Allocated NSF accommodates two display kiosks, patient privacy area and circulation.

- 4. Cardio Svc Patient Education Workstation, Clncl Sprt (SC170) ..... 40 NSF (3.8 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15*
  - c. *Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*

This space is intended to be used for medical information resource material for patients and visitors. Locate accessible to waiting.

- 5. Cardio Svc Visitor Toilet, Bldg Sprt (SB191) ..... 60 NSF (5.6 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 20*

Allocated NSF accommodates one accessible toilet @ 25 NSF, one wall-hung lavatory @ 12 NSF, ABA clearances, and circulation. One for male and one for female.



**B. FA 2: CARDIOLOGY PATIENT AREA**

- 1. EKG Testing Room, Cardio Svc (CCD01) .....150 NSF (14.0 NSM)**
  - a. Provide one if [annual EKG clinic stops (Stop Code 107) projected] is between 1,440 and 4,800
  - b. Provide two if [annual EKG clinic stops (Stop Code 107) projected] is between 4,801 and 9,600
  - c. Provide three if [annual EKG clinic stops (Stop Code 107) projected] is between 9,601 and 14,400
  - d. Provide four if [annual EKG clinic stops (Stop Code 107) projected] is between 14,401 and 19,200
  - e. Provide five if [annual EKG clinic stops (Stop Code 107) projected] is between 19,201 and 24,000
  
- 2. Exam Room, Cardio Svc (CCD06) .....120 NSF (11.2 NSM)**
  - a. Provide one if [annual Cardiology clinic stops (Stop Code 303) projected] is between 640 and 2,133
  - b. Provide two if [annual Cardiology clinic stops (Stop Code 303) projected] is between 2,134 and 4,266
  - c. Provide three if [annual Cardiology clinic stops (Stop Code 303) projected] is between 4,267 and 6,399
  - d. Provide four if [annual Cardiology clinic stops (Stop Code 303) projected] is between 6,400 and 8,532
  - e. Provide five if [annual Cardiology clinic stops (Stop Code 303) projected] is between 8,533 and 10,665
  
- 3. Pacemaker ICD Interrogation Room, Cardio Svc (CCD11) .....120 NSF (11.2 NSM)**
  - a. Provide one if [annual Pacemaker clinic stops (Stop Code 311) projected] is between 960 and 3,200
  - b. Provide two if [annual Pacemaker clinic stops (Stop Code 311) projected] is between 3,201 and 6,400
  - c. Provide three if [annual Pacemaker clinic stops (Stop Code 311) projected] is between 6,401 and 9,600
  - d. Provide four if [annual Pacemaker clinic stops (Stop Code 311) projected] is between 9,601 and 12,800
  - e. Provide five if [annual Pacemaker clinic stops (Stop Code 311) projected] is between 12,801 and 16,000
  
- 4. Holter Monitor Room, Cardio Svc (CCD16) .....150 NSF (14.0 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15
  - c. Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20



- 5. Echocardiograph Room, Cardio Svc (CCD21) .....150 NSF (14.0 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15
  - c. Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20
- 6. Stress Echocardiograph Room, Cardio Svc (CCD26) .....300 NSF (27.9 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15
  - c. Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20
- 7. Stress Testing Treadmill Room, Cardio Svc (CCD31) .....300 NSF (27.9 NSM)**
  - a. Provide one if [annual Cardiac Stress Test clinic stops (Stop Code 334) projected] is between 384 and 1,280
  - b. Provide two if [annual Cardiac Stress Test clinic stops (Stop Code 334) projected] is between 1,281 and 2,560
  - c. Provide three if [annual Cardiac Stress Test clinic stops (Stop Code 334) projected] is between 2,561 and 3,840
  - d. Provide four if [annual Cardiac Stress Test clinic stops (Stop Code 334) projected] is between 3,841 and 5,120
  - e. Provide five if [annual Cardiac Stress Test clinic stops (Stop Code 334) projected] is between 5,121 and 6,400
- 8. Tilt Table Testing Room, Cardio Svc (CCD36) .....180 NSF (16.8 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20
- 9. Cardio Svc Consult Room, Clncl Sprt (SC271) .....120 NSF (11.2 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 20
- 10. Echocardiograph Reading Room, Cardio Svc (CCD46) .....160 NSF (14.9 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 15
  - b. Provide one at 200 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20



- 11. EKG Reading Room, Cardio Svc (CCD51) .....120 NSF (11.2 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
- 12. Cardio Svc Patient Toilet, Bldg Sprt (SB201)..... 60 NSF (5.6 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10*
  - b. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20*

Allocated NSF accommodates one accessible toilet @ 25 NSF, one accessible wall-hung lavatory @ 13 NSF, ABA clearances, and circulation.

**C. FA 3: CARDIOLOGY SUPPORT AREA**

- 1. Cardio Svc Clean Utility Room, Lgstcs Svc (SB737) ..... 80 NSF (7.5 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide one at 100 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15*
  - c. *Provide one at 120 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*
- 2. Cardio Svc Soiled Utility Room, Lgstcs Svc (SB743) ..... 100 NSF (9.3 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide one at 120 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15*
  - c. *Provide one at 140 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*
- 3. Cardio Svc Event / Holter Monitor Workroom, Cardio Svc (CCD56) .....160 NSF (14.9 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide one at 240 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 10*
  - c. *Provide one at 320 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 15*
  - d. *Provide one at 400 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*





- 4. Storage Room, Cardio Svc (CCD61) .....120 NSF (11.2 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide one at 160 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 10
  - c. Provide one at 200 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 15
  - d. Provide one at 240 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20
  
- 5. ICD Equipment Storage Room, Cardio Svc (CCD71) .....120 NSF (11.2 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide one at 160 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 10
  - c. Provide one at 200 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 15
  - d. Provide one at 240 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20
  
- 6. Equipment Storage Room, Cardio Svc (CCD81) .....160 NSF (14.9 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5
  - b. Provide one at 200 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 10
  - c. Provide one at 240 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 15
  - d. Provide one at 280 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20
  
- 7. Cardio Svc Crash Cart Alcove, Clncl Sprt (SC052)..... 20 NSF (1.9 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20
  
- 8. Cardio Svc Wheelchair / Stretcher Alcove, Bldg Sprt (SB252)..... 50 NSF (4.7 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20





9. **Cardio Svc Housekeeping Aides Closet (HAC), Bldg Sprt (SB244).... 60 NSF (5.6 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10*
  - b. *Provide one at 80 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20*

**D. FA 4: STAFF AND ADMINISTRATIVE AREA**

1. **Cardio Svc Cardiovascular Service Chief Office, Stff Sprt (SS204) ..... 100 NSF (9.3 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 20*
2. **Cardio Svc Service Chief Visitor Waiting, Bldg Sprt (SB003) ..... 80 NSF (7.5 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 20*
3. **Cardio Svc Administration Support Workstation, Stff Sprt (SS218) ..... 56 NSF (5.3 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10*
  - b. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20*
4. **Cardio Svc Physician Workstation, Stff Sprt (SS218) ..... 56 NSF (5.3 NSM)**
  - a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 2*
  - b. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 3 and 4*
  - c. *Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 5 and 6*
  - d. *Provide four if [Exam / Procedure / Testing Rooms (of all types)] is between 7 and 8*
  - e. *Provide five if [Exam / Procedure / Testing Rooms (of all types)] is between 9 and 10*
  - f. *Provide six if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 12*
  - g. *Provide seven if [Exam / Procedure / Testing Rooms (of all types)] is between 13 and 14*
  - h. *Provide eight if [Exam / Procedure / Testing Rooms (of all types)] is between 15 and 16*
  - i. *Provide nine if [Exam / Procedure / Testing Rooms (of all types)] is between 17 and 18*
  - j. *Provide ten if [Exam / Procedure / Testing Rooms (of all types)] is between 19 and 20*



- 5. Cardio Svc Nurse Manager Office, Stff Sprt (SS204) ..... 100 NSF (9.3 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20
- 6. Cardio Svc Nurse Practitioner Workstation, Stff Sprt (SS218) ..... 56 NSF (5.3 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 3 and 6
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 7 and 10
  - c. Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 14
  - d. Provide four if [Exam / Procedure / Testing Rooms (of all types)] is between 15 and 18
  - e. Provide five if [Exam / Procedure / Testing Rooms (of all types)] is between 19 and 20
- 7. Cardio Svc Nurse Workstation, Stff Sprt (SS218) ..... 56 NSF (5.3 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 4
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 5 and 8
  - c. Provide three if [Exam / Procedure / Testing Rooms (of all types)] is between 9 and 12
  - d. Provide four if [Exam / Procedure / Testing Rooms (of all types)] is between 13 and 16
  - e. Provide five if [Exam / Procedure / Testing Rooms (of all types)] is between 17 and 20
- 8. Cardio Svc Technician Workstation, Stff Sprt (SS218) ..... 56 NSF (5.3 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20
- 9. Cardio Svc Administration Workstation, Stff Sprt (SS218) ..... 56 NSF (5.3 NSM)**
  - a. Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10
  - b. Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20



- 10. Cardio Svc Staff Conference Room, Educ Svc (SS101).....240 NSF (22.3 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide one at 300 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 15*
  - c. *Provide one at 500 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 16 and 20*

Allocated NSF accommodates six conference chairs @ 7.5 NSF each, two 5'-0" x 2'-0" tables at 10 NSF each, one credenza @ 8 NSF, and circulation; total six people.

- 11. Cardio Svc Copy / Supply Room, Stff Sprt (SS272)..... 80 NSF (7.5 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10*
  - b. *Provide one at 100 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20*

- 12. Cardio Svc Staff Toilet, Bldg Sprt (SB191) ..... 60 NSF (5.6 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 5*
  - b. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 6 and 20*

Allocated NSF accommodates one accessible toilet @ 25 NSF, one wall-hung lavatory @ 12 NSF, ABA clearances, and circulation.

**E. FA 5: EDUCATION AREA**

- 1. Cardio Svc Residency Director Office, Stff Sprt (SS204) ..... 100 NSF (9.3 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 20*
- 2. Cardio Svc Intern / Fellow Workstation, Stff Sprt (SS217) ..... 48 NSF (4.5 NSM)**
- a. *Provide two if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10*
  - b. *Provide four if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20*
- 3. Cardio Svc Resident Conference Room, Educ Svc (SS101) .....240 NSF (22.3 NSM)**
- a. *Provide one if [Exam / Procedure / Testing Rooms (of all types)] is between 1 and 10*
  - b. *Provide one at 300 NSF if [Exam / Procedure / Testing Rooms (of all types)] is between 11 and 20*

Allocated NSF accommodates six chairs @ 7.5 NSF each, two tables at 10 NSF each, one credenza @ 8 NSF, and circulation; total six people.



## **F. SEPS IMPORTER SHORTCUTS**

The following shortcuts are used in the Room Criteria Statements in the Non-Invasive Cardiology Functional Areas. These shortcuts are used during upload of this document into the Space and Equipment Planning System (SEPS) software during implementation of the space planning parameters contained herewith to allow for mathematical or logical calculations to be performed. Input Data Statements (IDSs), Rooms or a partial calculation formula can have a shortcut.

1. *Exam / Procedure / Testing Rooms (of all types):* [EKG Testing Room, Cardio Svc (CCD01)] + [Exam Room, Cardio Svc (CCD06)] + [Pacemaker ICD Interrogation Room, Cardio Svc (CCD11)] + [Stress Testing Treadmill Room, Cardio Svc (CCD31)]
2. *annual EKG clinic stops (Stop Code 107) projected:* [How many annual EKG clinic stops (Stop Code 107) are projected?]
3. *annual Cardiology clinic stops (Stop Code 303) projected:* [How many annual Cardiology clinic stops (Stop Code 303) are projected?]
4. *annual Pacemaker clinic stops (Stop Code 311) projected:* [How many annual Pacemaker clinic stops (Stop Code 311) are projected?]
5. *annual Cardiac Stress Test clinic stops (Stop Code 334) projected:* [How many annual Cardiac Stress Test clinic stops (Stop Code 334) are projected?]

## **6 PLANNING AND DESIGN CONSIDERATIONS**

- A. Consider grouping clinician workspaces into a team room for multidisciplinary interaction.
- B. Separation of inpatient and outpatient traffic should be considered to the greatest extent possible. Provide Reception Check-in for outpatient separate from inpatient circulation when both patient types utilize the same departmental facilities.
- C. Standardization of rooms and modular design should be considered to allow flexibility to adapt to new technologies and respond to changes in patient volumes.
- D. Connection to ancillary services, such as lab and pharmacy, should be considered.
- E. The waiting room should be connected to the patient entrance corridor and be under the visual control of Reception / Check-in. This space can be shared between adjacent services where appropriate.
- F. Design should accommodate patient privacy and confidentiality in all areas, and in reception and patient care areas in particular. This includes visual and auditory considerations.
- G. Where possible, the department should be configured to limit the mix of patient and service functions, and to maintain clear separation of clean and dirty functions to avoid cross contamination. For example, Clean and Soiled Utility rooms can be located at alternate ends of a department.



- H. Corridors should be designed to a minimum of 8 feet clear width to accommodate passage of equipment or beds and two stretchers and/or wheelchairs. In non-patient areas and outpatient clinical spaces, corridors may be a minimum of 5 feet in clear width.
- I. Administration and support areas should be located and designed to maximize staff and space efficiency, and reduce staff travel distances.
- J. Plan for locating high volume services closer to patient waiting or building access points to decrease patient travel time/distance and increase staff responsiveness. Services with longer duration procedure times or low volume generation can be less centrally located.
- K. Sharing of patient and staff support areas among adjacent services should be considered for efficient utilization of staff. For example, centralized check-in/check-out can reduce the total number of FTE's required to provide this function over multiple service lines.
- L. During design, NSF for Staff Lounge and Lockers may be combined with an adjacent department(s).
- M. Verify room sizes and equipment layouts with equipment vendors prior to finalizing room layouts.
- N. Refer to Department of Veterans Affairs (VA) Office of Construction and Facilities Management Technical Information Library ([www.cfm.va.gov/til/](http://www.cfm.va.gov/til/)) for additional technical criteria.
- O. Refer to Design Guide for Cardiovascular Laboratory Service for a detailed discussion of functional and design considerations.



**7 FUNCTIONAL RELATIONSHIPS**

Relationship of Cardiology Service to services listed below:

**TABLE 1: FUNCTIONAL RELATIONSHIP MATRIX**

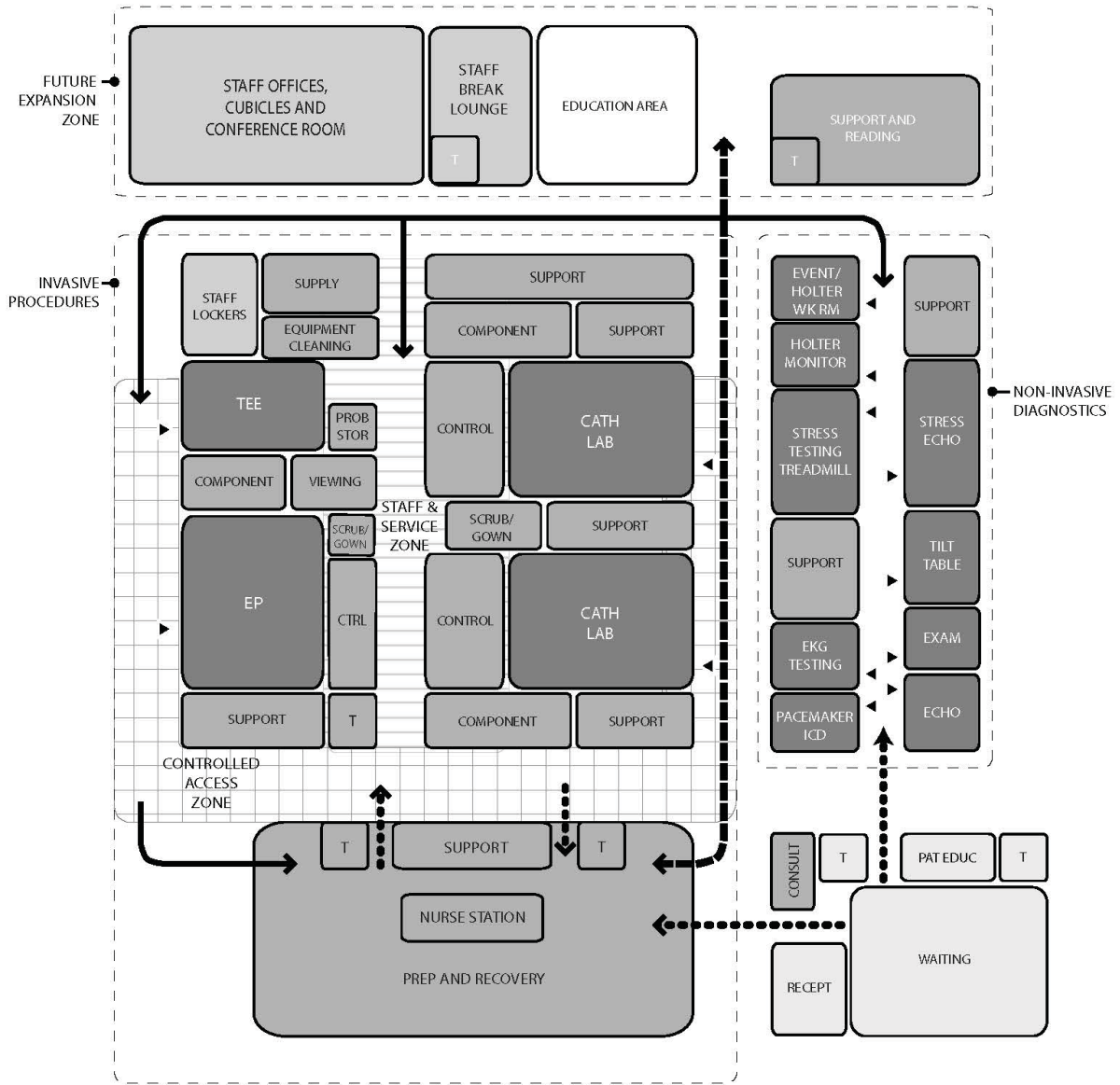
SERVICES	FUNCTIONAL RELATIONSHIP
CLNCL: Clncl Svc Adm: Hospital Medicine	2
OP: CBOP: Patient Care	2
BLDG SPRT: ENG: Engineering Service (all specialties)	3
BLDG SPRT: Logstcs Svc: Warehouse	3
CLNCL: Imgng Svcs: Radiography	3
CLNCL SPRT: EMS: Production	3
CLNCL SPRT: OIT: Telecommunications	3
CLNCL: Emergency	3
CLNCL: Imgng Svcs: Computed Tomography (CT)	3
CLNCL: Imgng Svcs: Magnetic Resonance Imaging (MRI)	3
STFF SPRT: Education: Nursing Training	3

**Legend:**

1. High
2. Moderate
3. Minimal



**8 FUNCTIONAL DIAGRAM**



**LEGEND**

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

