

CHAPTER 230: ENGINEERING SERVICE

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1. PURPOSE AND SCOPE

This document provides Space Planning Criteria for Engineering Service Chapter 230 as it applies to all medical facilities at the Department of Veterans Affairs (VA).

Engineering Service is responsible for improving, maintaining, and operating the medical center physical plant and equipment, and for construction projects. The following services are provided by Engineering Service: Interior Design, Biomedical Repair, Carpentry, Air Conditioning, Plumbing, Electrical, Painting,

Mechanical, Masonry, Grounds Maintenance, and Locksmithing.

2. DEFINITIONS

Space Planning / SEPS

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.

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.

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.

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-18-5: 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-18-9: 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-18-12: 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.

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.



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 IDs 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.

VA Room Family (VA RF): An organizational system of rooms / spaces grouped by function, a 'Room Family'. There are two "Orders" in the VARF: 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.

3. OPERATING RATIONALE AND BASIS OF CRITERIA

- A. Space Planning parameters and metrics in this document are based on the Engineering Service Space Planning Criteria Matrix (SPCM) developed as a basis for this chapter. The SPCM lists all the spaces a VA Engineering Service site would require; the quantity and NSF for each room is calculated based on the number of FTE positions assigned to each of the following specialties / ranges:



- B. The SPCM is organized in fifty-three ranges as follows:
 - 1. Interior Design, 8 ranges based on number of ID FTE positions (based on ID Staffing Tool),
 - 2. Biomedical Repair, Carpentry, Air Conditioning, Plumbing, Electrical, Painting, Mechanical, Masonry, Grounds Maintenance, Locksmithing, and Multi-Specialty based on the number of FTE positions authorized, 4 ranges each specialty.
- C. The Quantity (Q) and are (NSF) values included in the SPCM are reflected in the Room Criteria Statements, placed immediately below each room name, room code and NSF/NSM, for each room in Section 5 of this document. The number of Engineering Service FTE positions authorized is included in the Input Data Statement in Section 4. Both Sections are implemented in the Space Planning and Equipment System (SEPS) software accessible through the MAX.gov website. Planners programming a VA Engineering Service project shall develop a baseline Program for Design (PFD) in SEPS.
- D. SEPS incorporates a Net-to-Department Gross (NTDG) factor of **1.30** for Engineering Service and a Building Gross (BG) factor of 1.35 in the space calculation. These factors generate the Department Gross Square Feet (DGSF) and the Building Gross Square Feet (BGSF) for the project based on the aggregate resulting Net Square Feet (NSF) for all Departments included. Planners can adjust the BGSF factor in SEPS; the NTDG factor is fixed.
- E. 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.
- F. Engineering Service is responsible for construction projects and for improving, maintaining, and the operating the Medical Center's physical plant and equipment. The Department is organized with an Office of the Chief of Engineering Service and six (6) other sections: Interior Design, Biomedical Engineering. maintenance and repair; operations; projects (construction); and safety, industrial hygiene, and fire protection.

4. INPUT DATA STATEMENTS (IDS)

- A. Is a Biomedical Repair Shop authorized? (M)
 - 1. How many Biomedical Research Technician FTE positions are authorized? (S) (Values: 1 to 6)
- B. Is a Carpentry Shop authorized? (M)
 - 1. How many Technical Carpentry Shop FTE positions are authorized? (S) (Values: 1 to 10)
- C. Is an Air Conditioning Shop authorized? (M)
 - 1. How many Technical Air Conditioning Shop FTE positions are authorized? (S) (Values: 1 to 10)
- D. Is a Plumbing Shop authorized? (M)
 - 1. How many Technical Plumbing Shop FTE positions are authorized? (S) (Values: 1 to 14)



- E. Is an Electrical Shop authorized? (M)
 - 1. How many Technical Electrical Shop FTE positions are authorized? (S) (Values: 1 to 14)
- F. Is a Paint Shop authorized? (M)
 - 1. How many Technical Paint Shop FTE positions are authorized? (S) (Values: 1 to 8)
- G. Is a Mechanical Shop authorized? (M)
 - 1. How many Technical Mechanical Shop FTE positions are authorized? (S) (Values: 1 to 10)
- H. Is a Mason Shop authorized? (M)
 - 1. How many Technical Mason Shop FTE positions are authorized? (S) (Values: 1 to 6)
- I. Is a Grounds Maintenance Shop authorized? (M)
 - 1. How many Technical Grounds Maintenance Shop FTE positions are authorized? (S) (Values: 1 to 12)
- J. Is a Locksmith Shop authorized? (M)
 - 1. How many Locksmith FTE positions are authorized? (S) (Values: 1 to 4)
- K. Is a Multi-use Shop authorized? (M)
 - 1. How many Multi-use Shop Technical FTE positions are authorized? (S) (Values: 1 to 6)
- L. How many Interior Design (IT) FTE positions (based on the ID Staffing Tool) are authorized? (S) (Values: 1 to 6)
- M. How many Engineering Clerical FTE positions are authorized? (S) (Values: 1 to 4)
- N. How many Industrial Hygienist FTE positions are authorized? (S) (Values: 1 to 2)
- O. How many Project Engineer FTE positions are authorized? (S) (Values: 1 to 4)
- P. How many Technical FTE positions are authorized? (S) (Values: 1 to 6)
- Q. How many Driver Dispatch FTE positions are authorized? (S) (Values: 1 to 2)
- R. How many Shop Supervisor FTE positions are authorized? (S) (Values: 1 to 4)
- S. How many Trainee FTE positions are authorized? (S) (Values: 1 to 6)
- T. How many Draftsman FTE positions are authorized? (S) (Values: 1 to 4)
- U. How many Engineering Technician FTE positions are authorized? (S) (Values: 1 to 4)
- V. What is the total NSF of this Facility? (Misc) (Values: 5,000 to 400,000)

5. SPACE PLANNING CRITERIA

A. FA 1: RECEPTION AREA

- 1. **Eng Svc Waiting, Stff Sprrt (SS222)..... 80 NSF (7.5 NSM)**
 - a. *Provide one if [total FTE positions authorized] is between 1 and 6*
 - b. *Provide one at 100 NSF if [total FTE positions authorized] is between 7 and 24*
 - c. *Provide one at 120 NSF if [total FTE positions authorized] is between 25 and 48*
 - d. *Provide one at 140 NSF if [total FTE positions authorized] is between 49 and 72*
 - e. *Provide one at 160 NSF if [total FTE positions authorized] is between 73 and 96*
 - f. *Provide one at 180 NSF if [total FTE positions authorized] is between 97 and 120*
 - g. *Provide one at 200 NSF if [total FTE positions authorized] is between 121 and 144*
 - h. *Provide one at 240 NSF if [total FTE positions authorized] is between 145 and 184*



Allocated space accommodates three standard chairs @ 9 NSF each, one bariatric chair @ 14 NSF, one accessible space @ 10 NSF, and circulation; total five people.

2. Eng Svc Reception, Stff Sprt (SS221) 56 NSF (5.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 1 and 72*
- b. *Provide two if [total FTE positions authorized] is between 73 and 184*

Allocated NSF accommodates one Receptionist FTE, patient privacy area, and circulation.

3. Eng Svc Visitor Toilet, Bldg Sprt (SB191) 60 NSF (5.6 NSM)

- a. *Provide one if [total FTE positions authorized] is between 1 and 72*
- b. *Provide two if [total FTE positions authorized] is between 73 and 184*

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

B. FA 2: ADMINISTRATIVE AND OPERATIONS AREA

1. Eng Svc Chief Office, Stff Sprt (SS204) 100 NSF (9.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 1 and 184*

2. Eng Svc Assistant Chief Office, Stff Sprt (SS204) 100 NSF (9.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 9 and 184*

3. Eng Svc Fire and Safety Specialist Workstation, Stff Sprt (SS218)... 56 NSF (5.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 1 and 72*
- b. *Provide two if [total FTE positions authorized] is between 73 and 184*

All Engineering and Fire Safety Publications to be maintained in this workspace.

4. Eng Svc Industrial Hygienist Workstation, Stff Sprt (SS218) 56 NSF (5.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 1 and 72*
- b. *Provide two if [total FTE positions authorized] is between 73 and 184*

5. Eng Svc Project Engineer Workstation, Stff Sprt (SS218) 56 NSF (5.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 9 and 40*
- b. *Provide two if [total FTE positions authorized] is between 41 and 72*
- c. *Provide three if [total FTE positions authorized] is between 73 and 104*
- d. *Provide four if [total FTE positions authorized] is between 105 and 136*
- e. *Provide five if [total FTE positions authorized] is between 137 and 168*
- f. *Provide six if [total FTE positions authorized] is between 169 and 184*

6. Eng Svc Clerk Workstation, Stff Sprt (SS218)..... 56 NSF (5.3 NSM)

- a. *Provide one if [total FTE positions authorized] is between 1 and 32*
- b. *Provide two if [total FTE positions authorized] is between 33 and 112*
- c. *Provide three if [total FTE positions authorized] is between 113 and 184*



- 7. Eng Svc Staff Conference Room, Educ Svc (SS101)240 NSF (22.3 NSM)**
a. Provide one if [total FTE positions authorized] is between 1 and 32
b. Provide one at 300 NSF if [total FTE positions authorized] is between 33 and 112
c. Provide one at 500 NSF if [total FTE positions authorized] is between 113 and 184

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

- 8. Drafting Room, Eng Svc (SB301)200 NSF (18.6 NSM)**
a. Provide one if [total FTE positions authorized] is between 1 and 32
b. Provide one at 400 NSF if [total FTE positions authorized] is between 33 and 112
c. Provide one at 600 NSF if [total FTE positions authorized] is between 113 and 184

This room provides space for one Draftsman, plan storage, layout table, Computer workstation and Plotter / Printer.

- 9. Eng Svc Staff Breakroom, Stff Sprt (SS262)120 NSF (11.2 NSM)**
a. Provide one if [total FTE positions authorized] is between 1 and 5
b. Provide one at 140 NSF if [total FTE positions authorized] is between 6 and 16
c. Provide one at 160 NSF if [total FTE positions authorized] is between 17 and 36
d. Provide one at 180 NSF if [total FTE positions authorized] is between 37 and 56
e. Provide one at 200 NSF if [total FTE positions authorized] is between 57 and 76
f. Provide one at 220 NSF if [total FTE positions authorized] is between 77 and 96
g. Provide one at 240 NSF if [total FTE positions authorized] is between 97 and 116
h. Provide one at 260 NSF if [total FTE positions authorized] is between 117 and 136
i. Provide one at 280 NSF if [total FTE positions authorized] is between 137 and 156
j. Provide one at 300 NSF if [total FTE positions authorized] is between 157 and 184

- 10. Eng Svc Staff Toilet, Bldg Sprt (SB191) 60 NSF (5.6 NSM)**
a. Provide one if [total FTE positions authorized] is between 1 and 5
b. Provide two if [total FTE positions authorized] is between 6 and 36
c. Provide three if [total FTE positions authorized] is between 37 and 76
d. Provide four if [total FTE positions authorized] is between 77 and 116
e. Provide five if [total FTE positions authorized] is between 117 and 184

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

C. FA 3: ENGINEERING CONTROL CENTER

- 1. Control Center, Eng Svc (SB316)160 NSF (14.9 NSM)**
a. Provide one if [total FTE positions authorized] is between 1 and 16
b. Provide one at 200 NSF if [total FTE positions authorized] is between 17 and 56
c. Provide one at 240 NSF if [total FTE positions authorized] is between 57 and 96
d. Provide one at 280 NSF if [total FTE positions authorized] is between 97 and 136
e. Provide one at 320 NSF if [total FTE positions authorized] is between 137 and 184

This area houses the computer and control system that controls and monitors the HVAC system, emergency generators, and selected systems and equipment. H- 08-3,



the Department of Veterans Affairs Construction Standard 688-1, “Engineering Control Center” applies. If toilet facilities (Water closet and Lavatory: (50 NSF) are not conveniently available then the toilet facility will be included in the 300 NSF.

D. FA 4: INTERIOR DESIGN (ID) AREA

- 1. ID Supervisor Office, Stff Sprt (SS204) 100 NSF (9.3 NSM)**
 - a. *Provide one if [Interior Design (IT) FTE positions authorized] is between 1 and 8*
- 2. Interior Designer Workstation, Stff Sprt (SS218)..... 56 NSF (5.3 NSM)**
 - a. *Provide one per each [Interior Design (IT) FTE positions authorized]*
- 3. ID Support Assistant Workstation, Stff Sprt (SS218) 56 NSF (5.3 NSM)**
 - a. *Provide one if [Interior Design (IT) FTE positions authorized] is between 1 and 4*
 - b. *Provide two if [Interior Design (IT) FTE positions authorized] is between 5 and 8*
- 4. ID Conference Room, Educ Svc (SS101)120 NSF (11.2 NSM)**
 - a. *Provide one if [Interior Design (IT) FTE positions authorized] is between 1 and 2*
 - b. *Provide one at 240 NSF if [Interior Design (IT) FTE positions authorized] is between 3 and 5*
 - c. *Provide one at 300 NSF if [Interior Design (IT) FTE positions authorized] is between 6 and 8*
- 5. ID Library Samples / Workroom, Eng Svc (SB311)240 NSF (22.3 NSM)**
 - a. *Provide one if [Interior Design (IT) FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 300 NSF if [Interior Design (IT) FTE positions authorized] is between 5 and 8*
- 6. ID Furniture Warehouse / Storage Room, Eng Svc (SB313)1,000 NSF (92.9 NSM)**
 - a. *Provide one if [Facility Total NSF] is between 1 and 500,000*
 - b. *Provide one at 2,000 NSF if [Facility Total NSF] is between 500,001 and 1,000,000*
 - c. *Provide one at 3,000 NSF if [Facility Total NSF] is between 1,000,001 and 1,500,000*
 - d. *Provide one at 4,000 NSF if [Facility Total NSF] is between 1,500,001 and 2,000,000*
 - e. *Provide one at 5,000 NSF if [Facility Total NSF] is between 2,000,001 and 2,500,000*
 - f. *Provide one at 6,000 NSF if [Facility Total NSF] is between 2,500,001 and 3,000,000*



E. FA 5: BIOMEDICAL ENGINEERING REPAIR SHOP

FA Condition: [*Is a Biomedical Repair Shop authorized?*]

- 1. Eng Svc Biomedical Engineer Workstation, Stff Sprt (SS218)..... 56 NSF (5.3 NSM)**
 - a. *Provide two if [Biomedical Research Technician FTE position authorized] is between 1 and 4*
 - b. *Provide four if [Biomedical Research Technician FTE position authorized] is between 5 and 8*
 - c. *Provide six if [Biomedical Research Technician FTE position authorized] is between 9 and 12*
 - d. *Provide eight if [Biomedical Research Technician FTE position authorized] is between 13 and 16*

- 2. Receiving / Cleaning Room, Eng Svc (SB318) 100 NSF (9.3 NSM)**
 - a. *Provide one if [Biomedical Research Technician FTE position authorized] is between 1 and 4*
 - b. *Provide one at 140 NSF if [Biomedical Research Technician FTE position authorized] is between 5 and 8*
 - c. *Provide one at 180 NSF if [Biomedical Research Technician FTE position authorized] is between 9 and 12*
 - d. *Provide one at 200 NSF if [Biomedical Research Technician FTE position authorized] is between 13 and 16*

This area provides space where equipment can be broken down and cleaned, and where new medical equipment can be inspected.

- 3. Biomedical Equipment Repair Room, Eng Svc (SB321).....400 NSF (37.2 NSM)**
 - a. *Provide one if [Biomedical Research Technician FTE position authorized] is between 1 and 4*
 - b. *Provide one at 550 NSF if [Biomedical Research Technician FTE position authorized] is between 5 and 8*
 - c. *Provide one at 700 NSF if [Biomedical Research Technician FTE position authorized] is between 9 and 12*
 - d. *Provide one at 850 NSF if [Biomedical Research Technician FTE position authorized] is between 13 and 16*

This function is divided into a mechanical repair area and an electronic repair area. A large amount of testing equipment is required on work benches.



- 4. Biomedical Equipment Storage Room, Eng Svc (SB327) 100 NSF (9.3 NSM)**
 - a. *Provide one if [Biomedical Research Technician FTE position authorized] is between 1 and 4*
 - b. *Provide one at 200 NSF if [Biomedical Research Technician FTE position authorized] is between 5 and 8*
 - c. *Provide one at 300 NSF if [Biomedical Research Technician FTE position authorized] is between 9 and 12*
 - d. *Provide one at 400 NSF if [Biomedical Research Technician FTE position authorized] is between 13 and 16*

This area provides for storage of special spare parts and for equipment awaiting repair.

F. FA 6: SHOP AREA

1. Carpentry

Floor Mounted Tools / Equipment Shop, Eng Svc (SB341)500 NSF (46.5 NSM)

- a. *Provide one if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 1 and 4*
- b. *Provide one at 650 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 5 and 8*
- c. *Provide one at 800 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 9 and 12*
- d. *Provide one at 950 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 13 and 16*

This area provides space for large size tools and equipment that are normally mounted to the floor.

2. Carpentry Workbench / Worktable Shop, Eng Svc (SB342)200 NSF (18.6 NSM)

- a. *Provide one if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 1 and 4*
- b. *Provide one at 400 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 5 and 8*
- c. *Provide one at 600 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 9 and 12*
- d. *Provide one at 750 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 13 and 16*

This area normally contains wall benches, freestanding worktables, bench mounted tools, equipment, and devices necessary for a wide variety of tasks associated with maintenance and repair of the physical plant and grounds.



- 3. Carpentry Storage Room, Eng Svc (SB351)250 NSF (23.3 NSM)**
- a. *Provide one if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 500 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 750 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 1,000 NSF if [Carpentry Shop is authorized] and [Technical Carpentry Shop FTE positions authorized] is between 13 and 16*

This area provides storage of a 30 day supply of equipment, parts, supplies, and tools. Special heavy duty tools, machines, materials for recurring maintenance, and testing equipment must be maintained to minimize “down time”.

- 4. Air Conditioning**
- Floor Mounted Tools / Equipment Shop, Eng Svc (SB357)300 NSF (27.9 NSM)**
- a. *Provide one if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 420 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 540 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 660 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 13 and 16*

- 5. Air Conditioning**
- Workbench / Worktable Shop, Eng Svc (SB358)400 NSF (37.2 NSM)**
- a. *Provide one if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 550 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 700 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 850 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 13 and 16*

- 6. Air Conditioning Storage Room, Eng Svc (SB367)250 NSF (23.3 NSM)**
- a. *Provide one if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 450 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 650 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 850 NSF if [Air Conditioning Shop is authorized] and [Technical Air Conditioning Shop FTE positions authorized] is between 13 and 16*



7. Plumbing

Floor Mounted Tools / Equipment Shop, Eng Svc (SB374)200 NSF (18.6 NSM)

- a. *Provide one if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 1 and 4*
- b. *Provide one at 300 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 5 and 8*
- c. *Provide one at 400 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 9 and 12*
- d. *Provide one at 500 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 13 and 16*

8. Plumbing Workbench / Worktable Shop, Eng Svc (SB375)400 NSF (37.2 NSM)

- a. *Provide one if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 1 and 4*
- b. *Provide one at 500 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 5 and 8*
- c. *Provide one at 600 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 9 and 12*
- d. *Provide one at 700 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 13 and 16*

9. Plumbing Storage Room, Eng Svc (SB384)200 NSF (18.6 NSM)

- a. *Provide one if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 1 and 4*
- b. *Provide one at 400 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 5 and 8*
- c. *Provide one at 600 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 9 and 12*
- d. *Provide one at 800 NSF if [Plumbing Shop is authorized] and [Technical Plumbing Shop FTE positions authorized] is between 13 and 16*

10. Electrical

Floor Mounted Tools / Equipment Shop, Eng Svc (SB391)150 NSF (14.0 NSM)

- a. *Provide one if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 1 and 4*
- b. *Provide one at 250 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 5 and 8*
- c. *Provide one at 350 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 9 and 12*
- d. *Provide one at 450 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 13 and 16*



- 11. Electrical Workbench / Worktable Shop, Eng Svc (SB392)400 NSF (37.2 NSM)**
 - a. *Provide one if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 500 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 600 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 700 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 13 and 16*

- 12. Electrical Storage Room, Eng Svc (SB401)250 NSF (23.3 NSM)**
 - a. *Provide one if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 350 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 450 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 500 NSF if [Electrical Shop is authorized] and [Technical Electrical Shop FTE positions authorized] is between 13 and 16*

- 13. Painting**
 - Floor Mounted Tools / Equipment Shop, Eng Svc (SB407) 80 NSF (7.5 NSM)**
 - a. *Provide one if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 140 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 200 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 260 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 13 and 16*

- 14. Painting Workbench / Worktable Shop, Eng Svc (SB408)400 NSF (37.2 NSM)**
 - a. *Provide one if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 500 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 600 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 700 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 13 and 16*



- 15. Painting Storage Room, Eng Svc (SB417) 100 NSF (9.3 NSM)**
- a. *Provide one if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 200 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 300 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 400 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 13 and 16*

Store flammables products in this room.

- 16. Painting Shop, Eng Svc (SB424).....500 NSF (46.5 NSM)**
- a. *Provide one if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 650 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 800 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 950 NSF if [Paint Shop is authorized] and [Technical Paint Shop FTE positions authorized] is between 13 and 16*

This area provides a control and isolated area for paint work.

17. Mechanical

- Floor Mounted Tools / Equipment Shop, Eng Svc (SB425)300 NSF (27.9 NSM)**
- a. *Provide one if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 420 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 540 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 680 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 13 and 16*

- 18. Mechanical Workbench / Worktable Shop, Eng Svc (SB426).....400 NSF (37.2 NSM)**
- a. *Provide one if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 540 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 680 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 820 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 13 and 16*



- 19. Mechanical Storage Room, Eng Svc (SB435) 100 NSF (9.3 NSM)**
- a. *Provide one if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 160 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 220 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 280 NSF if [Mechanical Shop is authorized] and [Technical Mechanical Shop FTE positions authorized] is between 13 and 16*
- 20. Masonry Workbench / Worktable Shop, Eng Svc (SB443)400 NSF (37.2 NSM)**
- a. *Provide one if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 540 NSF if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 680 NSF if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 720 NSF if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 13 and 16*
- 21. Masonry Storage Room, Eng Svc (SB452) 100 NSF (9.3 NSM)**
- a. *Provide one if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 200 NSF if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 300 NSF if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 400 NSF if [Mason Shop is authorized] and [Technical Mason Shop FTE positions authorized] is between 13 and 16*
- 22. Grounds Maintenance
Workbench / Worktable Shop, Eng Svc (SB458)400 NSF (37.2 NSM)**
- a. *Provide one if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 520 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 640 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 780 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 13 and 16*



- 23. Grounds Maintenance Storage Room, Eng Svc (SB467)400 NSF (37.2 NSM)**
- a. *Provide one if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 550 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 700 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 950 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 13 and 16*
- 24. Grounds Maintenance**
- Covered Storage Room, Eng Svc (SB474)400 NSF (37.2 NSM)**
- a. *Provide one if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 500 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 600 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 700 NSF if [Grounds Maintenance Shop is authorized] and [Technical Grounds Maintenance Shop FTE positions authorized] is between 13 and 16*
- 25. Locksmithing**
- Workbench / Worktable Shop, Eng Svc (SB475)160 NSF (14.9 NSM)**
- a. *Provide one if [Locksmith Shop is authorized] and if [Locksmith FTE positions are authorized] is between 1 and 16*
- 26. Locksmithing Storage Room, Eng Svc (SB477)120 NSF (11.2 NSM)**
- a. *Provide one if [Locksmith Shop is authorized] and if [Locksmith FTE positions are authorized] is between 1 and 16*
- 27. Multi-use Shop**
- Floor Mounted Tools / Equipment, Eng Svc (SB478)350 NSF (32.6 NSM)**
- a. *Provide one if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 1 and 4*
 - b. *Provide one at 500 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 5 and 8*
 - c. *Provide one at 650 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 9 and 12*
 - d. *Provide one at 800 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 13 and 16*



- 28. Multi-use Workbench / Worktable Shop, Eng Svc (SB479).....450 NSF (41.9 NSM)**
 - a. Provide one if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 1 and 4
 - b. Provide one at 650 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 5 and 8
 - c. Provide one at 850 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 9 and 12
 - d. Provide one at 1,000 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 13 and 16

- 29. Multi-use Storage Room, Eng Svc (SB481)250 NSF (23.3 NSM)**
 - a. Provide one if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 1 and 4
 - b. Provide one at 350 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 5 and 8
 - c. Provide one at 450 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 9 and 12
 - d. Provide one at 550 NSF if [Multi-use Shop is authorized] and [Multi-use Shop Technical FTE positions authorized] is between 13 and 16

G. FA 7: SHOP SUPPORT AREA

- 1. Eng Svc Shop Staff Breakroom, Stff Sprt (SS262).....120 NSF (11.2 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 5
 - b. Provide one at 160 NSF if [total FTE positions authorized] is between 6 and 16
 - c. Provide one at 200 NSF if [total FTE positions authorized] is between 17 and 36
 - d. Provide one at 240 NSF if [total FTE positions authorized] is between 37 and 56
 - e. Provide one at 280 NSF if [total FTE positions authorized] is between 57 and 76
 - f. Provide one at 320 NSF if [total FTE positions authorized] is between 77 and 96
 - g. Provide one at 360 NSF if [total FTE positions authorized] is between 97 and 116
 - h. Provide one at 400 NSF if [total FTE positions authorized] is between 117 and 136
 - i. Provide one at 440 NSF if [total FTE positions authorized] is between 137 and 156
 - j. Provide one at 480 NSF if [total FTE positions authorized] is between 157 and 184

- 2. Eng Svc Shop Female Staff Locker Room, Stff Sprt (SS232)..... 60 NSF (5.6 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 5
 - b. Provide one at 80 NSF if [total FTE positions authorized] is between 6 and 16
 - c. Provide one at 100 NSF if [total FTE positions authorized] is between 17 and 36
 - d. Provide one at 120 NSF if [total FTE positions authorized] is between 37 and 56
 - e. Provide one at 140 NSF if [total FTE positions authorized] is between 57 and 76
 - f. Provide one at 180 NSF if [total FTE positions authorized] is between 77 and 96
 - g. Provide one at 200 NSF if [total FTE positions authorized] is between 97 and 116
 - h. Provide one at 220 NSF if [total FTE positions authorized] is between 117 and 136
 - i. Provide one at 240 NSF if [total FTE positions authorized] is between 137 and 156
 - j. Provide one at 260 NSF if [total FTE positions authorized] is between 157 and 184



Provide locker space only for those FTEs without assigned office or workspace. For less than five FTE combine Locker Room facilities with adjacent department or sum in chapter 410.

- 3. Eng Svc Shop Male Staff Locker Room, Stff Sprt (SS241) 60 NSF (5.6 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 5*
 - b. Provide one at 80 NSF if [total FTE positions authorized] is between 6 and 16*
 - c. Provide one at 100 NSF if [total FTE positions authorized] is between 17 and 36*
 - d. Provide one at 120 NSF if [total FTE positions authorized] is between 37 and 56*
 - e. Provide one at 140 NSF if [total FTE positions authorized] is between 57 and 76*
 - f. Provide one at 180 NSF if [total FTE positions authorized] is between 77 and 96*
 - g. Provide one at 200 NSF if [total FTE positions authorized] is between 97 and 116*
 - h. Provide one at 220 NSF if [total FTE positions authorized] is between 117 and 136*
 - i. Provide one at 240 NSF if [total FTE positions authorized] is between 137 and 156*
 - j. Provide one at 260 NSF if [total FTE positions authorized] is between 157 and 184*

- 4. Eng Svc Shop Staff Toilet, Bldg Sprt (SB191) 60 NSF (5.6 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 5*
 - b. Provide two if [total FTE positions authorized] is between 6 and 56*
 - c. Provide three if [total FTE positions authorized] is between 57 and 120*
 - d. Provide four if [total FTE positions authorized] is between 121 and 184*

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

- 5. Eng Svc Shop Female Staff Shower, Bldg Sprt (SB173) 60 NSF (5.6 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 16*
 - b. Provide two if [total FTE positions authorized] is between 17 and 56*
 - c. Provide three if [total FTE positions authorized] is between 57 and 96*
 - d. Provide four if [total FTE positions authorized] is between 97 and 184*

- 6. Eng Svc Shop Male Staff Shower, Bldg Sprt (SB184) 60 NSF (5.6 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 16*
 - b. Provide two if [total FTE positions authorized] is between 17 and 56*
 - c. Provide three if [total FTE positions authorized] is between 57 and 96*
 - d. Provide four if [total FTE positions authorized] is between 97 and 184*

- 7. Multi-use Flammables Storage Room, Eng Svc (SB482)..... 100 NSF (9.3 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 32*
 - b. Provide one at 140 NSF if [total FTE positions authorized] is between 33 and 112*
 - c. Provide one at 160 NSF if [total FTE positions authorized] is between 113 and 184*

- 8. Eng Svc Housekeeping Aides Closet (HAC), Bldg Sprt (SB244) 60 NSF (5.6 NSM)**
 - a. Provide one if [total FTE positions authorized] is between 1 and 5*
 - b. Provide one at 80 NSF if [total FTE positions authorized] is between 6 and 32*
 - c. Provide two at 60 NSF if [total FTE positions authorized] is between 33 and 112*
 - d. Provide two at 80 NSF if [total FTE positions authorized] is between 113 and 184*



H. SEPS IMPORTER SHORTCUTS

The following shortcuts are used in the Room Criteria Statements in the Engineering Service 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. *total FTE positions authorized*: [How many Biomedical Research Technician FTE positions are authorized?] + [How many Technical Carpentry Shop FTE positions are authorized?] + [How many Technical Air Conditioning Shop FTE positions are authorized?] + [How many Technical Plumbing Shop FTE positions are authorized?] + [How many Technical Electrical Shop FTE positions are authorized?] + [How many Technical Paint Shop FTE positions are authorized?] + [How many Technical Mechanical Shop FTE positions are authorized?] + [How many Technical Mason Shop FTE positions are authorized?] + [How many Technical Grounds Maintenance Shop FTE positions are authorized?] + [How many Engineering Clerical FTE positions are authorized?] + [How many Industrial Hygienist FTE positions are authorized?] + [How many Project Engineer FTE positions are authorized?] + [How many Technical FTE positions are authorized?] + [How many Driver Dispatch FTE positions are authorized?] + [How many Shop Supervisor FTE positions are authorized?] + [How many Trainee FTE positions are authorized?] + [How many Draftsman FTE positions are authorized?] + [How many Engineering Technician FTE positions are authorized?] + [How many Multi-use Shop Technical FTE positions are authorized?] + [How many Interior Design (IT) FTE positions (based on the ID Staffing Tool) are authorized?] + [How many Locksmith FTE positions are authorized?]
2. *Biomedical Repair Shop is authorized*: [Is a Biomedical Repair Shop authorized?]
3. *Biomedical Research Technician FTE position authorized*: [How many Biomedical Research Technician FTE positions are authorized?]
4. *Carpentry Shop is authorized*: [Is a Carpentry Shop authorized?]
5. *Technical Carpentry Shop FTE positions authorized*: [How many Technical Carpentry Shop FTE positions are authorized?]
6. *Air Conditioning Shop is authorized*: [Is an Air Conditioning Shop authorized?]
7. *Technical Air Conditioning Shop FTE positions authorized*: [How many Technical Air Conditioning Shop FTE positions are authorized?]
8. *Plumbing Shop is authorized*: [Is a Plumbing Shop authorized?]
9. *Technical Plumbing Shop FTE positions authorized*: [How many Technical Plumbing Shop FTE positions are authorized?]
10. *Electrical Shop is authorized*: [Is an Electrical Shop authorized?]
11. *Technical Electrical Shop FTE positions authorized*: [How many Technical Electrical Shop FTE positions are authorized?]
12. *Paint Shop is authorized*: [Is a Paint Shop authorized?]
13. *Technical Paint Shop FTE positions authorized*: [How many Technical Paint Shop FTE positions are authorized?]



14. *Mechanical Shop is authorized:* [Is a Mechanical Shop authorized?]
15. *Technical Mechanical Shop FTE positions authorized:* [How many Technical Mechanical Shop FTE positions are authorized?]
16. *Mason Shop is authorized:* [Is a Mason Shop authorized?]
17. *Technical Mason Shop FTE positions authorized:* [How many Technical Mason Shop FTE positions are authorized?]
18. *Grounds Maintenance Shop is authorized:* [Is a Grounds Maintenance Shop authorized?]
19. *Technical Grounds Maintenance Shop FTE positions authorized:* [How many Technical Grounds Maintenance Shop FTE positions are authorized?]
20. *Locksmith Shop is authorized:* [Is a Locksmith Shop authorized?]
21. *Multi-use Shop is authorized:* [Is a Multi-use Shop authorized?]
22. *Multi-use Shop Technical FTE positions authorized:* [How many Multi-use Shop Technical FTE positions are authorized?]
23. *Interior Design (IT) FTE positions authorized:* [How many Interior Design (IT) FTE positions (based on the ID Staffing Tool) are authorized?]
24. *Locksmith FTE positions are authorized:* [How many Locksmith FTE positions are authorized?]
25. *Facility Total NSF:* [What is the total NSF of this Facility?]

6. PLANNING AND DESIGN CONSIDERATIONS

1. Administrative offices / workspaces should be in proximity to the main hospital administration complex. (Different floors are acceptable).
2. Shop areas should be located adjacent to the loading dock and accessible to interior transport system. If not adjacent to the dock, then a double exterior opening door should be considered. Access is needed to move lengths of pipe and large sheets plywood and sheetrock.
3. The engineering control room (ECC) shall be totally enclosed, air conditioned, and designed acoustically to provide an ambient noise level of not more than 50 Decibels. The control room shall be located so that visual surveillance of both the water chilling equipment and boiler plant equipment can be maintained. If this is not feasible, then the control room shall be located to provide visual surveillance of the water chilling equipment (or as recommended by the Engineering Officer).
4. A vacuum system is required for the equipment utilized in carpentry work. A fume hood is required where welding is accomplished.
5. Individual shops may be combined to form larger shops, or all shops may be combined into one large shop area. Shop storage areas may be combined.
6. The workspace for the Biomedical Engineer may be located either with the biomedical Engineering shop or in the administrative office area.



7. If an automatic transport system (ATS) is planned for the medical center, then an ATS repair shop is required. The ATS shop should consist of a test track, workbench area, and a battery recharging area. Space must be determined on a project by project basis.
8. Refer to Department of Veterans Affairs (VA) Office of Construction and Facilities Management Technical Information Library (www.cfm.va.gov/til/) for additional technical criteria.



7. FUNCTIONAL RELATIONSHIPS

TABLE 1: FUNCTIONAL RELATIONSHIP MATRIX

SERVICES	FUNCTIONAL RELATIONSHIP
BLDG SPRT: Logstcs Svc: Loading Dock	2
BLDG SPRT: Logstcs Svc: Warehouse	2
CLNCL: Dntl Svc: Dental Treatment	2
CLNCL: Dntl Svc: Dental Surgery	2
CLNCL: Dntl Svc: Dental Laboratories	2
CLNCL: GI-Endoscopy	2
CLNCL: Imgng Svcs: Radiography	2
CLNCL: Imgng Svcs: Breast Imaging	2
CLNCL: Imgng Svcs: Ultrasound	2
CLNCL: Imgng Svcs: MRI	2
CLNCL: Imgng Svcs: Bone Densitometry	2
CLNCL: Imgng Svcs: Computed Tomography (CT)	2
CLNCL: Imgng Svcs: Magnetic Resonance Imaging (MRI)	2
CLNCL: Imgng Svcs: Nuclear Medicine (NM)	2
CLNCL: Imgng Svcs: PET/CT	2
CLNCL: Imgng Svcs: PET/MRI	2
CLNCL: Path Svc: Clinical Pathology	2
CLNCL: Path Svc: Anatomical Pathology	2
CLNCL: Path Svc: Autopsy	2
CLNCL: Pulm Svc: Pulmonary / Respiratory Care	2
CLNCL: Pulm Svc: Bronchoscopy	2
CLNCL: Radiation Therapy	2
OP: CBOP: Logistics	2
CLNCL SPRT: R&D: Biomedical Laboratory	2
CLNCL SPRT: R&D: Veterinary Medical Unit	2
CLNCL SPRT: SP Svc: Sterilization	2
IP: SCI: AT	3
OP: CBOP: Laboratory	3
OP: CBOP: Imaging	3
BLDG SPRT: EMS: Lockers	3
BLDG SPRT: EMS: Breakrooms	3
BLDG SPRT: EMS: Toilets	3
CLNCL SPRT: R&D: Clinical Services	3
CLNCL SPRT: SP Svc: Decontamination	3
CLNCL SPRT: SP Svc: Scope Processing	3
VET SPRT: F&N Svc: Main Kitchen: Receiving	3

- Legend:**
1. High
 2. Moderate
 3. Minimal



8. FUNCTIONAL DIAGRAM

