U.S. Department of Veterans Affairs
Office of Construction & Facilities Management
Office of Facilities Planning
Facilities Standards Service

DESIGN ALERT

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Interstitial Space – Interim Guidance

ISSUE: Minimum requirements for Interstitial Space need to be published for implementation in the design and construction of VA projects.

DISCUSSION: This Interim Guidance provides minimum requirements for the design and construction of Interstitial Space for VA medical facilities and will be in effect until the design standard is completed and updated. Implementation of this Interim Guidance shall be in coordination with applicable national/local building codes, standards, and VA criteria.

REQUIREMENTS: See attached document entitled *Interstitial Space – Interim Guidance, October 19, 2023*.

CONTACT: Fred Lau at Fred.Lau@va.gov
Facilities Standards Service at til@va.gov

Interstitial Space – Interim Guidance

October 19, 2023

I. Introduction and Background:

This Interim Guidance provides minimum requirements for the design and construction of Interstitial Space for VA medical facilities and will be in effect until the design standard is completed and updated. Implementation of this Interim Guidance shall be in coordination with applicable national/local building codes, standards, and VA criteria.

The Interstitial Space is the unfinished or non-habitable space utilized for building service subsystems, of sufficient size to accommodate workers and permit maintenance and alteration without disruption of activities in functional spaces. The term usually refers to the portion of the service zone between the finished ceiling and the floor above. Equipment (e.g., building service equipment such as pumps, air handlers, etc.) is not to be placed within the interstitial space.

Infrastructure distribution, branches, and terminations to point of use occurs in the interstitial space. The ceiling is suspended below a shallow girder-and-beam structure rather than from a truss and is designed as a continuous platform to allow workmen to move freely over its entire surface. Minimum clearance under the beams is required to provide full headroom between beams.

The interstitial space is highly organized into reserved subzones for various services. The utilities in the area must be coordinated to provide clear access and passage for all trades, to minimize crossovers and other conflicts, for future extensions and additions, and to permit positive location of all components. While developing specific designs for the integrated subsystems, it is imperative that each decision be made in the context of its possible effects on the characteristics of all other subsystems. Early coordination is critical for an efficient and successful design. BIM modeling and associated clash detection are required to be utilized and demonstrated throughout the design process. Subzone organization of various subsystems is discussed and detailed throughout the VA Hospital Building Development Study. These examples are not intended provide a prescribed resolution to the total service module distribution challenge but attempt to show a general approach to a solution. The successful integration of the subsystem layout in a rational network depends on early study of the immediate and potential requirements for service. The general character of the service layouts needs to be developed simultaneously with structural and functional decisions. All services except gravity drains down feed into the functional zone below.

All partitions except two-hour fire partitions stop at the ceiling-platform and thus do not interrupt the service zone.

To the greatest practical extent, service drops are surface-mounted and enclosed in furred-out partition components, proprietary containers, or vertical chases or wall systems to the point of service. The interstitial space is not to be used as a plenum.

II. Design Requirements:

A. Planning and Architectural:

1. During Project Book (PB), the Architects/Engineers (AE) shall work with the VA Medical Center (VAMC) user groups to identify all areas being considered to have interstitial and co-locate departments with first and second priorities for the incorporation of interstitial space. The PB AE shall provide a cost breakout of the interstitial areas with the PB cost estimate.

2. Early planning in conceptual design shall confirm and validate all PB assumptions on the use of interstitial space and look to utilize entire floors with the interstitial departments for a cost-effective design.

3. The AE will still be responsible for using cost studies/ evaluations for projects with interstitial floors per the PG18-15.

4. Interstitial space is intended to provide increased efficiency and reduced disruption by accommodating access to infrastructure outside the patient care space. Provide interstitial space for the following departments. Unless noted otherwise, these departments have 1st priority for interstitial space.

- Cardiovascular Lab Service
- Electroencephalography Lab
- Emergency Dept. (ED)-Urgent Care Clinic (UCC)
- Intensive Care Nursing
- Magnetic Resonance Imaging
- Med-Surg Inpatient Units (2nd priority)
- Mental Health Inpatient Patient Care
- Nuclear Medicine Service
- Pathology and Lab Medicine Service
- Radiation Therapy Service
- Radiology Service
- Research and Development (Wet)[a]
- Spinal Cord Injury/Disorder Center
- Surgical and Endovascular Services

NOTE:

If Research and Development Dry Research space is adjacent to Wet Research, provide interstitial space over Dry space. If the Dry space is stacked over the Wet space, then interstitial space over the Dry space is not a priority.

5. At a minimum, provide vertical clearances as follow:

   a) 6’-0” between the top of the interstitial space floor deck and the bottom of the structural beams/girders above

   b) 2’-0” between the ceiling of the functional area below and the bottom of the interstitial space floor deck

B. Structural:

1. For load requirements, see Structural Design Manual.

C. Mechanical:

1. Mechanical system design shall comply with the VA HVAC Design Manual.
2. HVAC Systems serving the interstitial space shall be designed to achieve environmental criteria required for Air Handling Equipment Rooms.
3. Interstitial spaces may house mechanical ductwork and associate controls and appurtenances for horizontal distribution and its supporting distribution control components, such as volume control dampers and smoke detection devices. Installation of air handlers, Fans and other equipment is prohibited in within the interstitial space.

D. Lighting:

1. General lighting system design shall comply with the Lighting Design Manual (LDM) – Chapter 1 General Requirements, Chapter 2 Lighting Design Requirements.
2. Service Bay Area: Lighting system design shall comply with the LDM – Chapter 7.9 Electrical and Mechanical Rooms. The lighting requirement in this chapter is applicable for rooms dedicated for other engineered systems, as well.
3. Service Zone and Sub-zone Area - Walking Paths: Lighting system design shall comply with the Lighting Design Manual (LDM) – Chapter 5.4 Primary Corridors.
4. Service Zone and Sub-zone Area – Equipment Areas: Lighting system design shall comply with the LDM – Chapter 5.5 Secondary Corridors. Due to the location of equipment, the design does not have to conform to the Uniform Ratio required in Chapter 5.5 of the LDM.

E. Electrical:

1. Interstitial spaces may house electrical conduit and junction boxes for horizontal distribution serving zones in the occupied floors both above and below the interstitial space. Installation of electrical panel disconnects or other energy control mechanisms is prohibited within interstitial spaces.

2. At a minimum, electrical power system design shall comply with the latest NFPA 70 and the VA Electrical Design Manual.

3. Electrical room shall be located adjacent to the Functional Floor. Electrical room shall be a separate room from other engineered systems. Electrical rooms shall house normal power system and essential electrical system (EES) equipment associated with the Service Module. Size of the electrical room shall be sufficient to house all associated electrical equipment, as well as future wall/floor space reserved for future expansion. Size of electrical room's future expansion is to be determined by the Medical Center's Chief Engineer.

4. Electrical power system equipment shall be low voltage (1000V or below). Step-down transformers shall be located on the floor to ease maintenance and repair. Step-down transformers shall not be stack-mounted. If steel grate "mezzanine" level is installed in the electrical room, and the "mezzanine" is readily accessible with industrial stair, step-down transformers may be located in the "mezzanine".

F. Plumbing:

1. Interstitial spaces may house plumbing infrastructure including valves and controls lines for horizontal distribution serving zones in the occupied floors both above and below the interstitial space. Installation of pumps and other equipment is prohibited in the interstitial space.

G. Fire Protection:

1. Interstitial spaces shall comply with the requirements in (a) VA Fire Protection Design Manual, section 2.3, VA Hospital Building System (Interstitial); and (b) NFPA 101, 2021 edition, section 7.14, Normally Unoccupied Building Service Equipment Support Areas.

H. Telecommunications / Information Technology Systems

1. For cabling infrastructure requirement, see Infrastructure Standard for Telecommunications Spaces (ISTS)

2. Interstitial spaces may be used for telecommunications media pathways (campus backbone fiber, UTP copper horizontal distribution, and copper backbone, etc.). Telecommunications media shall be supported by j-hooks, basket-type cable tray, or other industry accepted support for distribution within interstitial spaces. Media shall not be attached to wire hangers or rely on piping for support.
3. Telecommunications cabling may not be installed or transit any interstitial or similar space classified as a permit-required confined space by OSHA standard 1910.146.
4. Penetrations from the interstitial space to an occupied space for telecommunications cabling shall be via UL-rated manufactured sleeves with bushing, firestop and innerduct for fiber.
5. IT equipment may not be installed in interstitial spaces.
6. Fiber transitions (such as Intermediate Cross Connects or patching fields) shall not be located within an interstitial space.
7. All interstitial spaces containing telecommunications distribution media should be scheduled for periodic rodent surveillance.

I. Electronic Security Systems (ESS)

1. Provide ESS per Physical Security & Resiliency Design Manual.

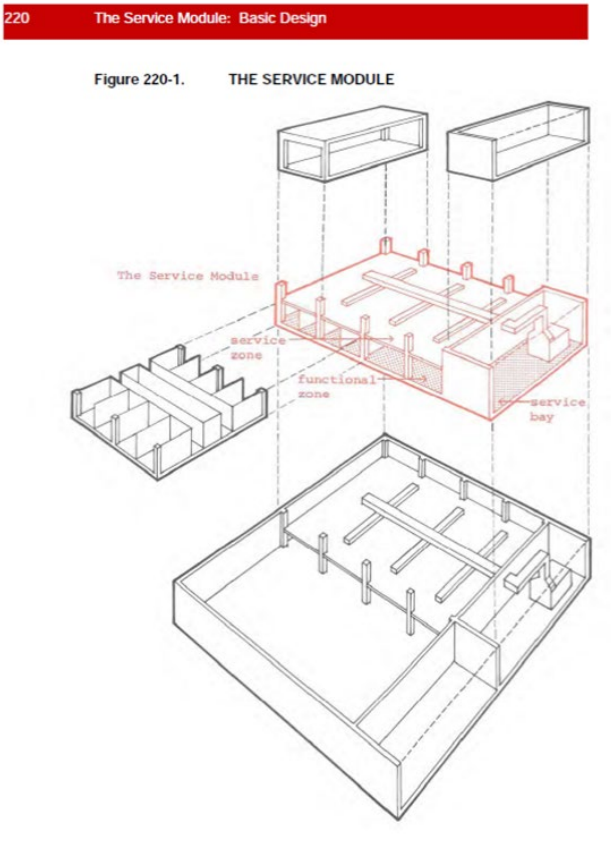
III. Glossary

Functional Space: Habitable room or area not assigned exclusively to building service equipment.

Interstitial Platform: The deck system that provides the walk-on surface for the above ceiling (interstitial) service zone; and constitutes the bottom of the two-hour separation between floors (Refer to fire test reports NBSIR 85-3158, Fire Performance of Interstitial Space Construction System; and NISTIR 5560, Fire Performance of an Interstitial Space Construction System). Platform construction is continuous across a service module, except for the service bay.

Interstitial Space: Unfinished or non-habitable space utilized for building service subsystems, of sufficient size to accommodate workers and permit maintenance and alteration without disruption of activities in functional spaces. The term usually refers to the portion of the service zone between the finished ceiling and the floor above.

Service Module: A planning module containing, and served by, an independent horizontal distribution network; typically including its own air handling unit. See image below.



Service Zone: The horizontal layer or building volume between the bottom of a finished ceiling and the top of the finished floor immediately above; and the adjoining service bay. See Interstitial Space.

Subsystem:

- A system considered as a component of a larger or more general system.
- Any component, or group of components, which has internally the characteristics of a system (e.g., the distribution components of a mechanical system).