



Department of
Veterans Affairs

Office of Construction & Facilities Management

2. Technical Criteria



SPINAL CORD INJURY/ DISORDERS CENTER

2. TECHNICAL CRITERIA

2.1 Codes, Standards and Executive Orders

2.1.1 National Codes and References

The Department of Veterans Affairs requires consultants to use the latest editions of codes and standards for all projects. Among the required codes and standards are:

1. VA Directives, Design Manuals, Master Specifications and other guidance in the Technical Information Library (TIL)
<http://www.va.gov/facmgt/standard>.
2. *Occupational, Safety and Health Administration (OSHA) standards.*
3. *National Fire Protection Association (NFPA) codes.*
4. *National Electrical Code (NEC).*
5. *International Building Code, 2006 Edition (IBC 2006).*
6. *National Standard Plumbing Code (NSPC).*
7. *Uniform Federal Accessibility Standards (UFAS), including Barrier Free Design Guide; A Supplement to the UFAS (DVA PG-18-13; April 2006).*
8. *Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings*, published by the American Institute of Steel Construction (AISC).
9. *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU); Executive Order 13423 – Strengthening Federal Environmental, Energy and Transportation Management; Energy Policy Act of 2005 and DOE Final Rule.*
10. *Provisions for Construction and Safety Signs*, stated in General Requirements, Section 01 00 00 of the VA Master Construction Specification.
11. *Ventilation for Acceptable Indoor Air Quality – ASHRAE Standard 62.1-2007*, published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)
12. *Safety Standard for Refrigeration Systems – ASHRAE Standard 15-2007*, published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
13. *Humidity Control Design Guide for Commercial and Institutional Buildings; Chapter 25: Eldercare Buildings - 2001*, published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

The current profiles of VA clients indicate that a high percentage of patients require assistance in activities of daily living such as toileting and showering. The VA *Barrier Free Supplement PG-18-13* establishes requirements, which differ from those of UFAS. The more stringent requirement is to be followed. It is recommended that facilities adhere to the requirements of PG-18-13, and provide accessibility in 100% of bedrooms and patient toilets designed to accommodate Spinal Cord Injury/Disorders Veterans.

Typical staff assisted activities for veterans include transportation, toileting, bathing, showering, and transfer to and from wheelchairs and beds. Frequent use of lift devices is also required.

There is departure from ADA and UFAS requirements regarding the turning space. Patients are not always successful in turning within a 5'-0" (1524 mm) diameter circle. Therefore, 5'-6" [1676 mm] minimum diameter clear area is recommended.

This Design Guide recommends departures from the ADA, UFAS, IBC, and VA PG-18-13 Barrier Free standards where indicated for SCI/D Patients, and is consistent with ADAAG 9.3.2 Equivalent Facilitation.

2.1.2 Local Codes and References

VA is not generally subject to local code enforcement procedures, such as drawing reviews, building permits, inspections, fees, etc. Therefore, the VA functions as the Authority Having Jurisdiction (AHJ) for all VA facilities and projects. State Veterans Homes (SVH) and other nursing homes serving United States Veterans are not VA facilities and must comply with local codes and enforcement procedures.

2.1.3 HIPAA

The Healthcare Insurance Portability and Accountability Act of 1996 (HIPAA) has reinforced and extended NHRA emphasis on privacy and dignity, to include audible as well as visual privacy. This is especially the case with respect to protection of each individual's medical records, private information and communications. This law protects all

conversations between patients and admission interviewers, caregivers, nurses, physicians and families. Serious breaches of those rights to privacy are subject to Federal litigation.

HIPAA currently impacts patient rooms in terms of audible privacy in standard two-person room layouts where only a cubicle curtain separates patient beds. Patient unit layouts now consider the juxtaposition of rooms and spaces, which may limit sounds of private conversations from being overheard. Planning of staff stations, reception desks, conference rooms, offices, treatment, therapy rooms and other spaces where exposed private records may be seen and conversations overheard by unauthorized persons, shall also consider privacy during design.

2.1.4 Life Safety

Spinal Cord Injury/Disorders life safety issues that require attention include evacuation standards and disaster planning such as the following:

1. *Evacuation Standards* - Horizontal evacuation plans are required for SCI/D Centers Therefore, all new SCI/D facilities must be designed at grade with direct horizontal access to the exterior.

The 2006 Edition of the IBC states that patient units may not be locked-down for any reason, regardless of the circumstances. Thus, delayed egress locking systems are not permitted in jurisdictions that have adopted IBC 2006.

2. *Disaster Planning* - Situations can arise in which there may not be any place to evacuate patients for days,

weeks, or months. In those cases, emergency power will be required to maintain food service, heating, ventilating, vertical transportation systems, and life safety systems. Also required is emergency power to ventilators and low air loss beds.

This is especially important to keep a frail or life support dependant patient population reasonably comfortable and safe. Coordinate emergency plans with the medical center.

3. *Fire Rescue & Utility Company Coordination* - In general, local fire department officials and utility companies shall be included in major design and planning projects such as an SCI/D Center. The inclusive involvement and early coordination with these organizations will enhance design development of the design decisions and will mitigate problems related to fire rescue, power, water, service and communications.

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2.2 Site Considerations

2.2.1 Introduction

Site analysis and planning are critical to the success of a project. The design team shall perform several preliminary analyses that will affect the final design of the SCI/D Center. Several site related factors required for a Spinal Cord Injury/Disorders Center are covered in this section and are to be considered as essential tools for planning the facility. Each project designer shall consider the project specifics that include, but are not limited to:

- Site Configuration and Size
- Availability of Parking adjacent to a Dedicated Entrance
- Access to VA Medical Center
- Site Topography
- Regional and Climatic Factors
- Utilities
- Outdoor Access

2.2.2 Planning

When planning a Spinal Cord Injury/Disorders Center facility,

consider that there are multiple users including the patients, staff, visitors, maintenance personnel, service providers, emergency crews and utility workers. The completed site shall include:

- Dedicated Accessible Parking for Patients
- Additional Parking for Staff and Visitors
- Access for Emergency Vehicles
- Landscape Features and Outdoor Courtyards
- Utility and Service Access

1. *Generic Site Plan* - The generic site plan provided in this section, (See Figure 2.1), depicts a hypothetical solution for a 30 bed Spinal Cord Injury/Disorders Center. The projections and assumptions for this plan are for reference purposes only, and are not meant to suggest a solution for a specific design project. Features of this generic site are similar to those mentioned in this section.

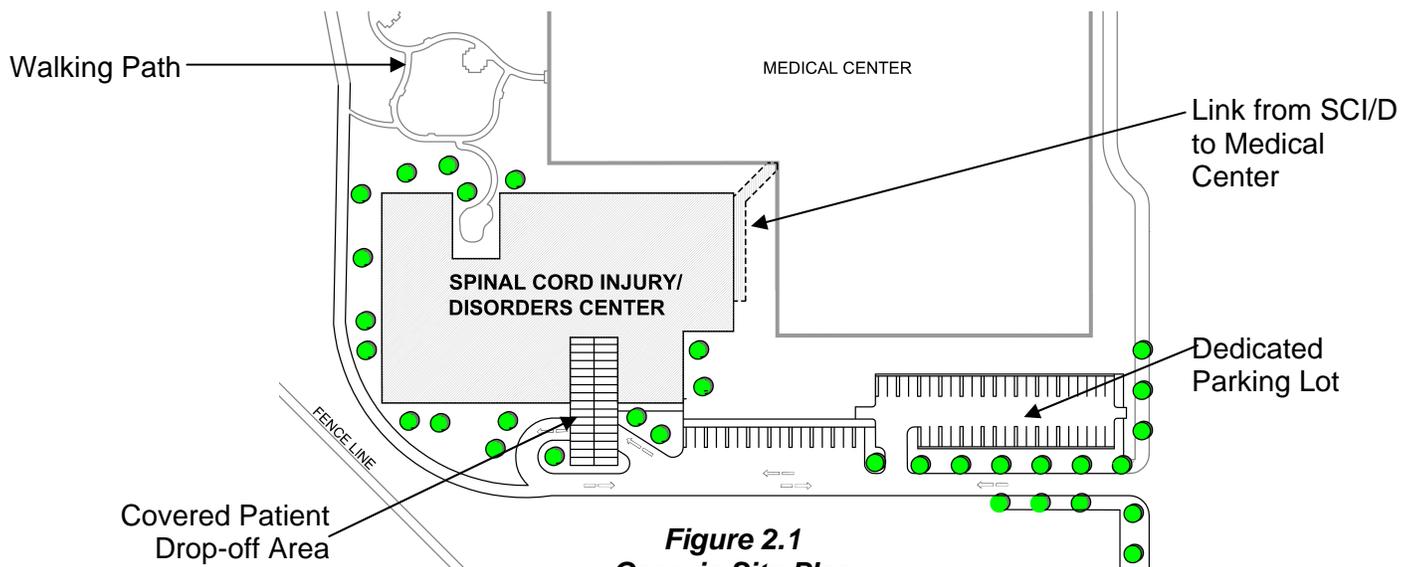


Figure 2.1
Generic Site Plan
NTS

2. *Parking* - When planning for SCI/D Center parking areas, a dedicated lot providing 1.5 spaces per bed are required. Accessible parking spaces in immediate proximity to the SCI/D Center entrance are required.

2.2.3 Topography

Topographical influences may affect the orientation of access points to the facility such as entrance, service, egress, parking, perimeter road for emergency, retaining walls, berms, landscaping and general location of the structure on the site. (See Figure 2.2). During the planning phase of the project, designers should consider the impact that site topography will have on the design.

Walks, ramps, and roadways are features that are impacted by site topography. During the initial site survey, a physical review is recommended.

Where ever possible, at grade, access to the Center is desired. On grade access is required of new SCI/D Centers

2.2.4 Zoning

Unlike many general aspects of site design, such as roadways and parking aisles, zoning is site specific. Preliminary plans shall not advance without performing a zoning analysis.

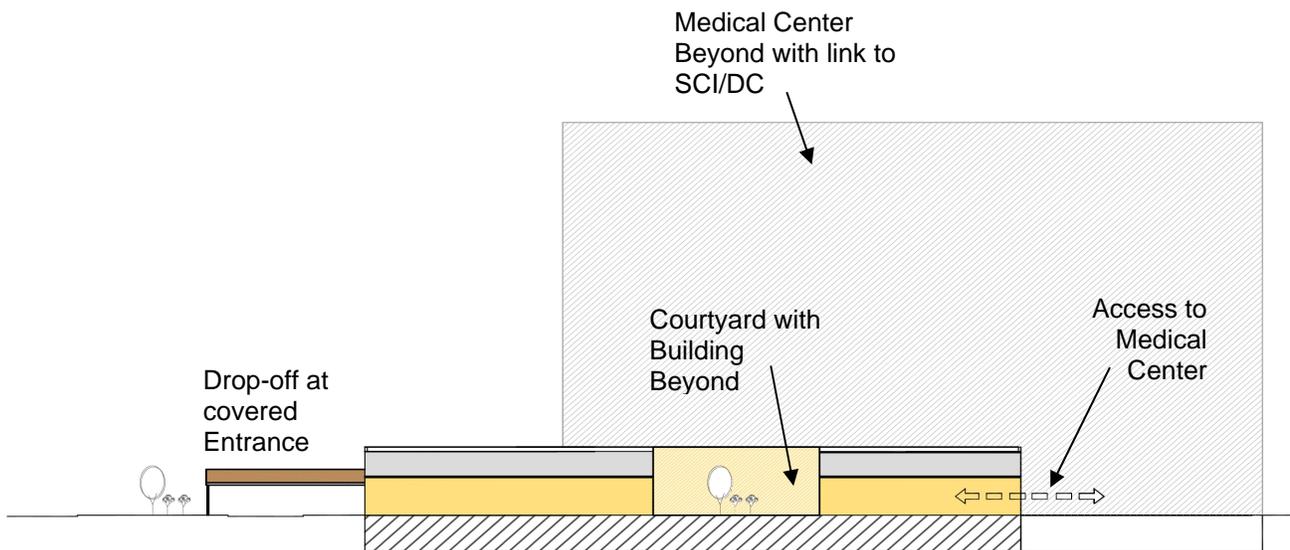


Figure 2.2
Generic Site Section: Single-level SCI/D Center with Link to Medical Center
 NTS

In the case of government-owned property, it is important to consider the zoning and adjacencies for compatibility with neighboring buildings. Factors for zoning include:

- Height
- Lot Occupancy
- Number of Stories
- Parking
- Green Space
- Historic District
- Floor Area Ratio (F.A.R.)
- Setbacks
- Use Groups

2.2.5 Medical Center Proximity

Spinal Cord Injury/Disorders Centers shall be situated directly within the proposed or existing nursing tower (preferred) or in immediate proximity to the medical center facility. SCI/D Centers must be physically connected to the VAMC by an accessible route. This proximity will allow for emergency medical support and access to diagnostic studies, surgery, and intensive care service. Site access and roadways of an adjoining existing medical center are examples where a new SCI/D may be able to utilize in-place vehicular pathways.

2.2.6 Roadways

1. *Site Access* - The location of curb cuts and aprons shall be planned in accordance with local zoning code or authority having jurisdiction.
2. *On-Site Roadways* - Width of roads shall accommodate traffic in each direction. A path from the site entrance to entry of the Center

shall be logical and easily identifiable.

3. *Parking Areas* - Site roadways to and from parking areas shall be capable of accommodating two-way traffic. Proper signage and direction arrows may enhance clarity of destinations and paths.
4. *Emergency Roadways* - Emergency access is required on the grounds of the Center. This access relates to ambulance, fire and rescue, law enforcement and other emergency related vehicles. The width of the roadway for emergency purposes shall be maintained and unobstructed at all times.

Emergency roadway design shall accommodate a fire truck and enable emergency vehicles to access the entire site around the Center. At a minimum, access to every part of the site and facility for emergency vehicles must be provided.

2.2.7 Site Signage

Locate signage on the site or along roadways for visitors, staff and service accommodations. (See Figure 2.3). Suggestions for site signage include:

- Directional Traffic (one-way)
- Restrictions
- Parking
- Deliveries
- Passenger Pick-up
- Entrance to Site
- Entrance to SCI/D Center
- Center Identification



Figure 2.3
Facility Entry Signage from Main Road
 VAMC Hines Center
 Chicago, IL

2.2.8 Shared Amenities

The nature of the site with respect to location and co-existence with other facilities could influence several aspects of SCI/D Center amenities, such as:

- Siting of Facility
- Orientation of Entrance
- Location of Services
- Access to Site
- Availability of Utilities

If physically adjoined with the Medical Center, this physical connection may require the use of a common service road or a common entrance to the site in general. Independent access to power, communications, gas, water and other utilities is preferable, thereby enabling the Center to remain on line in the event of outages in other areas on the shared campus. Emergency power provisions for the facility shall be a part of the planned program.

The advantage of sharing campus amenities include, but are not limited to:

- Access to Site
- Services and Utilities
- Possibility for Use of Existing On-Site Features
- Common Use Buildings
- Medical Facilities
- Outdoor Amenities

Many of these items translate into cost savings over the life of the facility. These and other shared amenities significantly affect project costs.

2.2.9 Utility Access

Site utilities are critical to successful operations. Among the utilities and utility related components requiring site accesses are:

- Electrical Service Transformers
- Communications Services
- Gas Lines
- Storm/Water Management
- Water and Sewer Utility
- Oil Service (if applicable)
- Emergency Power (including fuel storage)
- Power and Communications

Where possible, dual feeds for some utilities shall be provided. The most pronounced of these would be power sources. An attempt shall be made to attain feeds to the facility from different substations.



Figure 2.4
Large Courtyard for Social Gatherings
Shepherd Center
Atlanta, GA

2.2.10 Services

In a Spinal Cord Injury/Disorders Center attached to a Medical Center, building services are typically provided by the Medical Center and transported to the SCI/D Center. Services to be considered for SCI/D Centers, as referred to in this section include, but are not limited to:

- Loading Docks
- Shipping/Receiving Areas
- Morgue Service Areas
- Trash Areas
- Service Ramps
- Utility Connectors

2.2.11 Landscaping (Natural & Artificial)

While planning for the landscaping of the site, consider indigenous vegetation whether introduced or replaced because of the project. Additional considerations include requirements of a shared site or other site-specific covenants that may affect the design.

1. **Designed Features** - Artificial features that relate to the site include:
 - Trees
 - Shrubs
 - Grass
 - Gardens (See Figure 2.5)
 - Fountains
 - Fences
 - Plazas
2. **Natural Features** - Landscape features provide a major service to any site or campus (See Figure 2.4). Natural features may include:
 - Rock Outcroppings
 - Water Features (lakes, streams, ponds, etc.)
 - Large Trees
 - Fields
 - Vistas

Where possible, these features shall be considered during the building and site design phases of the project. Just as a designer considers the topography during the planning phases, so shall the natural aspects of a site be considered.



Figure 2.5
Inner Plaza for Social Gatherings
SCI/D Center
VAMC Tampa, FL

2.2.12 Covered Entry

As part of the building and site design, provisions for a covered entrance at the primary access point to the SCI/D Center are required. (See Figure 2.6).

Provide enough covered area to accommodate two vehicles, one behind the other. The width of the roadway or motor court under the covering also shall be designed to accommodate an accessible van to park at the entrance while allowing a separate vehicle to pass.

It is not uncommon for emergency vehicles to access a SCI/D Center. Therefore, height of covered entrance is to be designed to allow clearance for large emergency vehicles.

The covered entrance is also an area where visitors and patients may relax and sit. Ample space for seating and circulation shall be planned near the entrance to the SCI/D Center.



Figure 2.6
Covered Main Entrance and Drop-off
SCI/D Center
VAMC Hines, IL

2.3 Systems Criteria

2.3.1 General

All systems and infrastructure criteria shall conform to and comply with the most current version of the Department of Veterans Affairs Design Manuals, VA Design and Construction Procedures, VA Master Construction Specifications, and VA Standard Details, where applicable. Deviations from the VA guidelines may be allowed, provided prior approval is obtained from the VA CFM. Where specific VA requirements are not available or indicated in this document, design criteria from industry standards such as the National Standard Plumbing Code (NSPC), the National Fire Protection Association (NFPA), ASHRAE, National Electrical Code (NEC), DOE or similar reference guides shall be submitted to the VA for review and approval.

2.3.2 Heating, Ventilating and Air Conditioning (HVAC)

1. *Energy Economic Analysis* - The HVAC system shall be selected based on an economic analysis performed in compliance with Public Law 95-619 to determine the most cost effective system for the building over a 20-year life cycle.
2. *Energy Conservation* - Energy conservation shall be emphasized in all aspects of the building design. The building shall meet the requirements of the most current version of ASHRAE Standard 90.1 and the DOE regulations. These energy standards apply to HVAC systems as well as the building envelope, service water heating, lighting and energy management. Certification shall be provided to the VA that the building is designed in compliance with the applicable energy conservation provisions.
3. *Exterior Design Conditions* - Exterior design conditions shall be based on the most current edition of the ASHRAE Fundamentals Handbook and the VA HVAC Design Manual for Hospital Projects. Summer design conditions shall be based on the 0.4 percent dry bulb and wet bulb temperatures indicated under "Cooling db/mwb". Where cooling towers are applicable, select the cooling tower based on the wet bulb temperature indicated under "Evaporation wb/mdb". Winter design conditions shall be based on the 99.6 percent dry bulb temperature indicated under "Heating dry bulb". The A/E may recommend solutions for more severe outdoor climatic conditions for review and approval by the VA.
4. *Indoor Design Conditions* - Indoor design conditions for each space shall be maintained throughout the year. Interior design conditions for all spaces shall be maintained in accordance with the most current version of ASHRAE Standard 55 and the VA HVAC Design Manual for Hospital Projects.
5. *Supply Air Requirements* - The supply air volume shall be established to meet the cooling load requirements of the occupied space. The supply volume shall, however, be modified to meet – (a) minimum air change requirements, or (b) maintain proper space pressurization

relative to room exhaust requirements.

For all air systems, the supply air minimum airflows shall be established to maintain the minimum air change rates in accordance with the VA HVAC Design Manual. In addition, filtration shall be comprised of a minimum 30% efficient pre-filters and 85% efficient after-filters, where filter efficiencies shall be based on the most current version of ASHRAE Standard 52 and the VA HVAC Design Manual for Hospital Projects.

6. *Outdoor Air Requirements* - The HVAC design shall provide each space with not less than the minimum recommended quantity of ventilation air as indicated in the most current version of ASHRAE Standard 62. In addition to the ASHRAE Standard 62 requirements, provide the minimum air changes of outside air in accordance with the VA HVAC Design Manual for Hospital Projects.
7. *Exhaust Air Requirements* - The HVAC design shall provide exhaust air to spaces to control the transfer of odors and provide proper room pressurization. At a minimum, exhaust air and pressurization shall be provided as indicated in the VA HVAC Design Manual for Hospital Projects.
8. *Noise Criteria* - The HVAC design shall provide resulting sound levels in occupied spaces not to exceed the levels shown in the VA HVAC Design Manual for Hospital Projects.
9. *Seismic Requirements* - Where applicable, earthquake resistive

design shall comply with the most current version of VA Handbook H-18-8, Seismic Design Requirements and the International Building Code. Seismic design also shall conform to the most current versions of SMACNA guidelines.

10. *Design Features – Economizer*: Air conditioning systems shall be designed to operate below 48 degrees F (9 degrees C) outdoor air temperature without refrigeration.

Perimeter heat: Provide perimeter heat for bedrooms and other perimeter spaces as outlined in the HVAC Design Manual for Hospital Projects.
11. *Back-up Power*: Back-up power shall be provided for the following mechanical equipment/systems in accordance with NEC Article 517 and the VA Electrical Design Manual for Hospital Projects.
 - All heating water system components (pumps, condensate return pumps, boilers, etc.) where outdoor design conditions are below 20 degrees F (-6 degrees C)
 - Automatic temperature control system and components
 - Exhaust system serving the isolation suite
 - Air Handling Units
12. *Temperature Control Criteria - General*: The automatic temperature controls shall be direct digital control (DDC) with electric actuation of valves, dampers, terminal units, etc. A dedicated stand-alone building management system (BMS) or engineering control center (ECC) shall be provided. The ECC shall be

capable of being connected to an existing or future ECC at the Medical Center, if applicable.

Room Temperature Control: Provide room temperature controls as outlined in the HVAC Design Manual for Hospital Projects.

2.3.3 Plumbing

1. *Domestic Water Systems* - Water service shall be extended to the building to serve the domestic and fire protection systems. Domestic water shall be distributed to the plumbing fixtures and equipment. The system shall maintain a maximum velocity and pressure in accordance with the National Standard Plumbing Code and provide water hammer arrestors in accordance with ASSE 1010 for sealed wall installations without access panels. Size and locate arrestors per the Plumbing Drainage Institute (PDI). Provide wall hydrants on each exterior wall, not to exceed 200 feet (60 m) apart.

A domestic booster pump system shall be provided where street pressure is inadequate. Domestic booster system shall include three pumps. One pump shall be sized for one-third the total demand and the two remaining pumps shall be sized for two-thirds of the total demand. Provide alternating control for the pumps as well as a pressurized storage tank. Emergency power shall be provided for the domestic booster system.

Provide duplex shell and steam coil central water heaters, with the

capacity of generating the flow demand at 140 degrees F (60 degrees C), with each heater sized to supply 75% of the demand. The heater discharge temperature, however, shall be set for 130 degrees F (54 degrees C). A hot water re-circulating system shall be provided. The domestic water heating system also shall be in accordance with the requirements of the most current version of ASHRAE Standard 90.1.

2. *Plumbing Fixtures* - Plumbing fixture types and flow restrictors shall be in accordance with the current version of the National Standard Plumbing Code. In addition, plumbing fixtures, where required, shall comply with the current version of the Americans with Disabilities Act (ADA) and as per state and Federal requirements.
3. *Sanitary and Storm Drainage Systems* - Provide an adequate number of sanitary and storm drainage connections from the building. Provide a minimum of two connections from each building with a maximum sanitary sewer size of 12-inch (300 mm). One sanitary connection may be provided if the connection size is six-inch (150 mm) or less. Maximum allowable storm drain size is 15-inch (375 mm). Sizing shall be based on the most current version of the National Standard Plumbing Code. Kitchen waste, where applicable, shall be provided with a grease removal system.
4. *Medical Gas and Vacuum Systems* - Medical compressed air, oxygen and medical vacuum systems shall be

provided in accordance with the most current versions of NFPA 50 and 99 and the Compressed Gas Association Standards. Air, oxygen and vacuum requirements may range from 10 to 100% of the beds. Coordinate project specific requirements with the VA.

5. *Seismic Requirements* - Where applicable, earthquake resistive design shall comply with the most current version of VA Handbook H-18-8, Seismic Design Requirements and the IBC. Seismic design also shall conform to the most current versions of SMACNA guidelines.

2.3.4 Electrical

1. *Electrical Closets* - Provide separate electrical closets with clearances in accordance with the requirements of the National Electrical Code (NEC). In buildings having multiple floors, the electrical closets shall be stacked.
2. *Public Utility Requirements* - Contact servicing agencies and comply with their requirements for electric services. Make necessary submittals to utility companies for approval of equipment to be installed.
3. *Seismic Restraints* - Requirements shall be as specified by local codes and ordinances. Work shall comply with detailed provisions made by local authorities having plan check and inspection jurisdiction.
4. *Electrical System Characteristics* - Contact the local electric utility company for the type and availability of service. When possible, multiple

utility feeders from separate utility substations shall be provided for service redundancy.

Three phase, 480/277 volt or 208/120 volt secondary systems are acceptable. A utility owned, pad mounted transformer is preferred for these services. Service entrance equipment shall comply with the VA Electrical Design Manual for Hospital Projects.

5. *Back-up/Emergency Power* - A generator shall be provided as an alternate electrical source of power for use during an interruption of the normal electric supply. Where stored fuel is required, storage capacity shall permit continuous operation for at least 24 hours. VA requirements will be applicable for the appropriate storage capacity.

Generator back-up and emergency power shall be provided in accordance with the NEC, Article 517 and the VA Electrical Design Manual for Hospital Projects. Specific requirements such as the specifying of ventilators with an integral "Ventilator Failure Alarm" shall be verified with the VA on a per project basis.

6. *Lighting* - Provide lighting levels in designated spaces per Appendix A of the VA Electrical Design Manual. Use the Illuminating Engineering Society (IES) standards for all areas not covered by Appendix A. Provide high efficiency fixtures with energy saving control and switching scenarios. Closely coordinate light fixture types, layout and switching configuration/location for bedrooms,

exam room and surgery lighting. Lighting shall comply with the VA Electrical Design Manual for Hospital Projects.

7. *Receptacles* - Provide 'hospital grade' duplex-grounded receptacles. Provide no more than 6 duplex receptacles on a single circuit. Electrical receptacle cover plates or electrical supplied from the emergency system shall be distinctively colored or marked for identification. Ground fault interrupters shall comply with NFPA 70. Receptacles shall comply with the VA Electrical Design Manual for Hospital Projects .
8. *Conduits* - Conduits shall be rigid where used in damp or exposed locations, or where specifically required by the NEC. PVC conduits shall be used where routed underground. Electrical metallic tubing shall be used in dry concealed locations and in furred, ceiling spaces. Flexible conduits shall be used for final connections to recessed lighting fixtures, motor driven equipment and vibrating equipment. PVC Schedule 40 conduits shall be used for concrete encased feeders. PVC Schedule 80 conduits shall be used for direct buried branch circuits. Conduit shall not be used as a ground path; all electrical circuits shall contain a ground wire. Minimum conduit size shall be 0.5 inches (13 mm).
9. *Conductors* - Provide copper conductors with 600-volt insulation for low voltage distribution. Conductors No. 8 and larger shall be

stranded, type THWN. Smaller conductors shall be a solid type THHN/THWN. Aluminum conductors are not permitted. Conductors for use in high temperature locations shall be insulated as required by the NEC. The minimum size of power conductors shall be No. 12.

10. *Nurse Call System* - Provide a nurse call system, including a call device at each bed location. An emergency call system shall be provided at each patient toilet, bath, and shower room. This system shall be accessible to a patient lying on the floor. Alarm capabilities should include activation for patients on ventilators in pulmonary distress.

Design the emergency call system so that a call activated by a patient will initiate a signal distinct from the regular staff call system and that can be turned off only at the patient's location. The signal shall activate an enunciator panel at the staff work area or other appropriate location, and either a visual signal in the corridor or at the patient's door.

Wireless technologies for staff shall be investigated along with hard wired or integrated systems, to meet the needs of individual facilities.

11. *Prefabricated Bedside Patient Unit (PBPU)* - Provide PBPU style as required for a given bed area. All PBPU's shall be surface mounted on the patient's headwall. All installations in a one-bed room configuration shall be on the corridor side of the bed. Installations in multi-bed areas shall be between the bed

pairs when even bed quantities are provided. If an odd number of beds are provided, apply the one-bed room installation concept. All work shall comply with the VA Electrical Design Manual for Hospital Projects.

12. *Fire Alarm System* - Provide fire alarm and detection systems in compliance with NFPA 101 and NFPA 72 as well as VA Fire Protection Design Manual.

2.4 Programming And Space Criteria

The Following information is excerpted from Chapter 104 of the VA Space Planning Criteria for use in this Design Guide. For more detailed planning & programming information, please refer to the Department of Veteran's Affairs Technical Information Library (TIL) on www.va.gov/facmgt/standards the VA's website.

2.4.1 Space Listing

The Spinal Cord Injury/Disorders Center is organized in four Functional groups: A. Patient Care Units; B. Patient Care Unit Support; C. Clinics and Therapy; D. Administration. Note that all square footages included herein are indicated as net square footage (NSF) area numbers. As such, the listings of square footage and subsequent illustrations require the addition of the respective department gross square footage (DGSF) multipliers.

For the typical rooms and sizes, for each SCI/D Center type (Acute Care, Long Term Care or Free-standing Outpatient Clinics) refer to Space Allocation Matrices, located in Appendix B of this Design Guide.

Per VA Space Planning Criteria, certain patient load / workload related spaces may change in size, based on date entered into the formulas. Where shown in the Guideplates, these spaces are typically sized for optimum graphical representation and minimum dimensions / clearances are indicated.

The Guideplates shown in Chapters 3 and 4 of this Design Guide are graphical representations of selected room types that illustrate the integration of space, components, systems and equipment. They provide typical configurations and general technical guidance, and are not intended to be project specific. Specific infrastructure design requirements are contained in VA Design Manuals and Space Planning Criteria located in the VA Technical Information Library (TIL).

A. Patient Care Units

1. Acute Care One-Bed Room (BRMS1).....210 NSF (19.5 NSM)
2. Acute Care Isolation (BRIT1)/
Anteroom (BRAR1) 210 NSF (19.5 NSM)/ 75 NSF (7.0 NSM)
3. Acute Care Two-Bed Room (BRMS2).....450 NSF (41.8 NSM)
4. Patient (Litter) Bathroom (TLTS1) 120 NSF (11.2 NSM)
5. Acute Respiratory One-Bed Room (BRMS1)270 NSF (25.1 NSM)

B. Patient Care Unit Support

1. Entrance/Waiting (WRC01)	200 NSF (18.6 NSM)
2. Information Desk (RECP3)	100 NSF (9.3 NSM)
3. Consultation Room (CRA02)	100 NSF (9.3 NSM)
4. Nurse Station (NSTA1)	300 NSF (27.9 NSM)
5. Patient Charting (OFD01)	150 NSF (13.9 NSM)
6. Ward Clerk (OFA01/OFA02)	80 NSF (7.5 NSM)
7. Medication Room (MEDP1)	120 NSF (11.2 NSM)
8. Conference/Classroom (CRA02)	300 NSF (27.9 NSM)
9. Nurse Supervisor's Office (OFD01)	130 NSF (12.1 NSM)
10. Staff Lounge (SL001); or Staff Locker Room (LR001); or Staff Shower (TLTS1)	80 NSF (7.5 NSM)
11. Staff Toilet (TLTU1)/Public Toilet (TLTU1)	60 NSF (5.6 NSM)
12. Day Room/Lounge (DAYR1)	400 NSF (37.2 NSM)
13. Patient Education (OFD03)	250 NSF (23.2 NSM)
14. Multipurpose Room (XXXXC)	800 NSF (74.3 NSM)
15. Multipurpose/Activities Storage (OFD01)	100 NSF (9.3 NSM)
16. Resident Dining/Serving (FSCD1)	1600 NSF (148.6 NSM)
17. Patient Toilet (TLTU1)	60 NSF (5.6 NSM)
18. Patient Laundry (XXYYC)	100 NSF (9.3 NSM)
19. Quiet Room (OFA02)	150 NSF (13.9 NSM)
20. Visitor Lounge (WRC02)	200 NSF (18.6 NSM)
21. Nourishment Kitchen (NCWD1)	100 NSF (9.3 NSM)
22. Tubroom (PTWT1)	200 NSF (18.6 NSM)
23. Activities Coordinator Office (OFD01)	130 NSF (12.1 NSM)
24. Veterans Service Organization Office (OFA01/OFA02); or NSO-PVA Organization Office (OFA01/OFA02)	130 NSF (12.1 NSM)
25. Litter Storage (SRLW1)	300 NSF (27.9 NSM)
26. Transfer Equipment Storage (SRE01)	210 NSF (19.5 NSM)
27. Medical Equipment Storage (SRE01)	180 NSF (16.8 NSM)

28. Exam/Treatment (TRGM1).....	180 NSF (16.8 NSM)
29. Hydrotherapy (PTWT1)	380 NSF (35.4 NSM)
30. Clean Linen Holding, EMS (LCCL1).....	42 NSF (3.9 NSM)
31. On-Call Bedroom (DUTY1)/ On-Call Toilet and Shower (TLTS1)	120 NSF (11.2 NSM)/ 80 NSF (7.5 NSM)
32. Stretcher/Wheelchair Alcove (SRLW1)	40 NSF (3.7 NSM)
33. Clean Utility Room (UCCL1)/ Soiled Utility Room (USCL1).....	150 NSF (13.9 NSM)/ 120 NSF (11.2 NSM)
34. Clean Linen Storage (LCCL1)/ Soiled Linen Storage (LCSL1).....	80 NSF (7.5 NSM)/ 60 NSF (5.6 NSM)
35. Housekeeping Aides' Closet - HAC (JANC1).....	40 NSF (3.7 NSM)
36. Meditation Room (RAMR1)	150 NSF (13.9 NSM)
37. Internet Café (XXXXX)	240 NSF (22.3 NSM)
38. Patient Storage (SRPB1)	120 NSF (11.2 NSM)

C. Clinics and Therapy

1. Clinician Office(OFD01)	130 NSF (12.1 NSM)
2. Clean Utility Room (UCCL1)	120 NSF (11.2 NSM)
3. Soiled Utility Room (USCL1)	80 NSF (7.5 NSM)
4. Housekeeping Aides' Closet - HAC (JANC1).....	40 NSF (3.7 NSM)
5. Equipment Storage (SRE01).....	150 NSF (13.9 NSM)
6. Urodynamics: Cystoscopy (XDCY1)	500 NSF (46.5 NSM)
7. Urodynamics: Storage and Instrument Cleaning Room (SRS01)	400 NSF (37.2 NSM)
8. Urodynamics: Exam/Treatment Room (EXUD1).....	180 NSF (16.8 NSM)
9. Urodynamics: Recovery Room (RRSS1)	300 NSF (27.9 NSM)
10. Urodynamics: Dressing Room/Cubicle (DR001)	100 NSF (9.3 NSM)
11. Urodynamics Patient Shower (TLTS1)	80 NSF (7.5 NSM)
12. Urologist Office (OFD01)	130 NSF (12.1 NSM)
13. Urodynamics: Nurse Station (NSTA1).....	150 NSF (13.9 NSM)
14. Outpatient Urodynamics Clinic Clean Utility Room (UCCL1)	120 NSF (11.2 NSM)

15. Physical Therapy Treatment Clinic (PTES1).....	1850 NSF (171.9 NSM)
16. Kinesiotherapy Treatment Clinic (PTES1)	1250 NSF (116.9 NSM)
17. Physical Therapy/Kinesiology Therapy - 60 Beds (PTES1)	3000 NSF (278.7 NSM)
18. Physical Therapy/Kinesiology Therapy - 30 Beds (PTES1).....	1700 NSF (157.9 NSM)
19. Occupational Therapy (OTEV1).....	800 NSF (74.3 NSM)
20. Activities of Daily Living (OTDL1).....	200 NSF (18.6 NSM)
21. Home Environment Learning (XXYYC).....	660 NSF (61.4 NSM)
22. Horticulture Therapy (XXYYC)	150 NSF (13.9 NSM)
23. Therapeutic Pool (PTWT1)	2000 NSF (204.3 NSM)
24. Male Dressing Room - Pool (DR001).....	300 NSF (27.9 NSM)
25. Female Dressing Room - Pool (DR001)	230 NSF (21.4 NSM)
26. Therapist Cubicle (PTCW1)	80 NSF (7.5 NSM)
27. Pharmacy (PHOD1)	160 NSF (14.9 NSM)
28. Exam/Treatment Room (TRGS1).....	180 NSF (16.8 NSM)
29. Waiting (WRC01)/ Reception (RECP1)	320 NSF (29.8 NSM)/ 80 NSF (7.5 NSM)
30. Public Toilet (TLTU1)/Patient Toilet (TLTU1).....	60 NSF (5.6 NSM)

D. Administration

1. Public Toilet (TLTU1)	60 NSF (5.6 NSM)
2. Chief of Service Office (OFM03)	150 NSF (13.9 NSM)
3. Secretary/Waiting Office (SEC01).....	120 NSF (11.2 NSM)
4. Psychologist Office (OFDC1); or Social Worker Office (OFDC1); or Dietitian Office (OFA01/OFA02)	130 NSF (12.1 NSM)
5. Nurse Administrator Office (OFD01)/ or Physician Office (OFD01).....	130 NSF (12.1 NSM)
6. Conference Room (CRA02)	300 NSF (27.9 NSM)
7. Medical Records/QA (MRS01)	150 NSF (13.9 NSM)
8. Clerical Cubicle (OFA03).....	80 NSF (7.5 NSM)
9. Administrative Officer Office (OFA01).....	150 NSF (13.9 NSM)