

## **MINNEAPOLIS VA MEDICAL CENTER DESIGN STANDARDS**

The product names specified in this Design Standard shall be used as reference only. Specific products listed in this standard are only indicative of the quality expected unless noted as a sole source item. All products equal in quality and providing the best value to the VAMC will be considered.

### **1. General Design Standards**

- 1.1. Use locally modified specification section 010000.
- 1.2. Use latest version of VAMC Master Specifications at:  
<http://vaww.va.gov/facmgt/standard/specifications.asp>
- 1.3. Use latest version of state approved code.

### **2. Civil Design Standards**

### **3. Landscape Design Standards**

#### **3.1. Design Principles**

##### **3.1.1. General**

- 3.1.1.1. Prior to developing the site planting plan, the landscape architect shall perform a detailed site analysis and preliminary concept plan of the entire project.
- 3.1.1.2. All landscape plans shall be integrated with the surrounding or existing landscape.
- 3.1.1.3. Landscape contractor shall perform landscape establishment procedures for a period of at least 120 days from the completion of the entire project.

##### **3.1.2. Vegetation**

- 3.1.2.1. Improve and protect the soil with organic and inert mulches.
- 3.1.2.2. Use low-water plant materials whenever possible.
- 3.1.2.3. Specify proper maintenance procedures
- 3.1.2.3.1. Seed Mix – 27% creeping red fescue, 27% perennial rye, 46% Kentucky bluegrass

##### **3.1.3. Irrigation**

- 3.1.3.1. Existing irrigation system extends around VAMC to the fire lane.
- 3.1.3.2. Include irrigation system for any trees, shrubs, and plants that extend beyond the fire lane.
- 3.1.3.3. Employ water efficient irrigation systems that match existing.
- 3.1.3.4. Specify proper maintenance procedures.

#### **3.2. Materials and Equipment**

- 3.2.1. **Vegetation:** Use Minnesota hardy trees, shrubs, and plants.
- 3.2.2. **Herbicides:** All inert material areas shall be treated with an approved pre-emergent herbicide prior to the completion of the project. All noxious weeds shall be eliminated with an approved contact herbicide prior to completion of the landscape portion of the contract.
- 3.2.3. **Guarantees**

- 3.2.3.1. Vegetation:** All plant material shall be guaranteed for a period of at least 120 days from the completion of the entire project.
- 3.2.3.2. Irrigation Materials:** All irrigation materials, workmanship, and controller elements shall be guaranteed for a period of at least one year following project acceptance by the Minneapolis VAMC Contracting Officer.

#### **4. Architectural Design Standards**

##### **4.1. Design Principles**

###### **4.1.1. General**

- 4.1.1.1.** Use permanent, low-maintenance exteriors that are compatible with the surrounding structures.
- 4.1.1.2.** Design building such that the exterior contributes to the overall harmony of the campus. Some repetitive, common architectural elements should tie all buildings together.
- 4.1.1.3.** Design with full consideration of ADA requirements.

###### **4.1.2. Life Cycle Costs**

- 4.1.2.1.** Consider life cycle cost in all aspects of design and construction.
- 4.1.2.2.** Reduce labor-intensive maintenance procedures.
- 4.1.2.3.** Use energy efficient design practices, materials, and equipment.

###### **4.1.3. Design Elements**

- 4.1.3.1.** Do not let mechanical systems, service areas, and dumpster locations become form givers. Design these features to blend in with the building architecture.
- 4.1.3.2.** Do not use roof-mounted equipment.
- 4.1.3.3.** Screening of mechanical or service equipment is required. Screening shall match exterior of new building.
- 4.1.3.4.** Do not paint new buildings or use materials that require regular restorative maintenance.
- 4.1.3.5.** Exterior signage shall match Minneapolis VAMC standard.

###### **4.1.4. Interior Design Standards**

- 4.1.4.1.** Employ the use of modular cabinetry and/or casework in exam rooms, reception areas, administrative areas, and work stations. Avoid the use of permanent fixtures.
- 4.1.4.2.** Employ the use of durable materials that can be restored by cleaning, such as ceramic tile, vinyl wall-covering, and laminated or solid plastics.
- 4.1.4.3.** In areas where carpeting is appropriate, consider use of carpet tile.
- 4.1.4.4.** Ensure walls are finished with paint or durable vinyl wall-covering.
- 4.1.4.5.** Avoid flooring that requires the regular application of coatings such as wax and varnish.
- 4.1.4.6.** IPC hand rails with rigid wall sheeting shall be installed in corridors and wherever necessary in patient areas.
- 4.1.4.7.** Specify draperies and/or cubicle curtains in areas where privacy is required.

- 4.1.4.8. Interior signage shall match Minneapolis VAMC standard. See Appendix A.

## 4.2. Materials and Equipment

- 4.2.1. **Roofs:** Flat roofs – Duralast, or approved equal.
- 4.2.2. **Ceiling Tile:** Armstrong #755B Fissured 24"x48"x5/8" White or approved equal, Armstrong #756 24"x24"x5/8"
- 4.2.3. **Ceiling Grid: Chicago Metallic** 211-209, 229-1420-01H, or approved equal.  
Please note that the previous building standard, Chicago Metallic 521 Series, is no longer available.
- 4.2.4. **Walls and Framing:**
  - 4.2.4.1. **Gypsum Board:** Type X, 5/8"-minimum thickness.
  - 4.2.4.2. **Studs:** Steel, 20 gauge, 16" O.C.
  - 4.2.4.3. **Sound Proofing:** Acoustiblok 3mm (1/8") thick.
  - 4.2.4.4. **Baby Changing Stations: Koala Bear Kare**, P/N – 10721, phone – 1888-733-3456
- 4.2.5. **Door Frames:** Mesker welded door frames equal Rabbit.
- 4.2.6. **Doors:** Plain Sliced Red Oak finish doors. No side lites.
- 4.2.7. **Doors:**
  - 4.2.7.1. 42" wide to accommodate larger wheelchairs in clinics or patient care areas
  - 4.2.7.2. 48" wide in bariatric areas
  - 4.2.7.3. 36" wide in all other areas
- 4.2.8. **Door Operators:** To be provided by carpentry shop.
- 4.2.9. **Door Closers:** LCN #4041 with or without hold open.
- 4.2.10. **Door Electronic Hold Open:** LCN Sentronic 120V
- 4.2.11. **Exit Device:** Von Duprin, or approved equal.
- 4.2.12. **Interior Hardware:** All interior hardware shall be consistent.
- 4.2.13. **Lock Sets: Schlage** L series mortise lock sets. (L9010: Non-Keyed Passage, L9040: Non-Keyed Privacy, L9050P: Keyed Offices, L9070: Keyed Classrooms, L9080P: Keyed Storerooms) with **Best** 6-pin cores, keyway "J or K," Lever=03, Finish=626, Rose=B, **Best** Mortise Cylinder 1E74-C265-RP3 with 626 cylinder.
- 4.2.14. **Swing Auto Door Operators:** Horton, or approved equal.
- 4.2.15. **Sliders:** Habco Gyrotech, or approved equal.
- 4.2.16. **Paint: Walls: Sherwin Williams**, or approved equal.  
**Flooring**, except B-70 warehouse: **Sherwin Williams** Armor Seal Floor Plex 7100, partA-B70A400, Part B- B70V400, 1 oz. black, 4/32 blue.
- 4.2.17. **Guarantees:**
  - 4.2.17.1. All materials and labor shall be guaranteed for at least one year following project acceptance by the Minneapolis VAMC Contracting Officer.
  - 4.2.17.2. Roofs shall be guaranteed, with consequential damages included, for a minimum of 15 years following project acceptance by the Minneapolis VAMC Contracting Officer.

## 5. Mechanical Design Standards

## **5.1. Design Principles**

### **5.1.1. General**

- 5.1.1.1.** Design analysis shall include: list of applicable codes, detailed cooling and heating calculations, personnel loads, lighting loads, equipment loads, system static pressure loss calculations (air handler selection), head loss calculations (pump sizing), detailed equipment selection, and applicable cutsheets.
- 5.1.1.2.** Minimum outdoor air requirements for ventilation shall meet ASHRAE Standard 62.
- 5.1.1.3.** Use ducted supply and return air systems with variable air volume boxes wherever possible.
- 5.1.1.4.** When units are set outdoors, do not run ductwork up building walls or across roofs.

### **5.1.2. Maintenance Requirements**

- 5.1.2.1.** An appropriately sized, well-lighted mechanical room shall be provided in new buildings.
- 5.1.2.2.** Install air handling units in equipment rooms where possible. If air handling units are installed overhead, provide a working level platform with suitable working space and access ladders or stairs. Ensure clearances are provided for filter servicing, fan shaft and coil removal, tube pulling and cleaning, and similar work. Locate maintenance access over in areas that minimize interference with occupants.
- 5.1.2.3.** All water-cooled/supplied equipment shall have isolation valves installed for maintenance.
- 5.1.2.4.** All water-cooled equipment must have a strainer installed that matches VAMC bench stock. Contact the A/C shop for more information.
- 5.1.2.5.** Clearances surrounding all mechanical equipment shall be clearly shown on drawings and adequate on all sides to allow maintenance, repair, and replacement of equipment.
- 5.1.2.6.** Provide a suitably thick concrete floor, separate from equipment pads, on the interior of any equipment enclosure. Provide equipment pads eight inches wider than the equipment in all directions, except the compressor side. On the compressor side, provide equipment pad 36 inches wider than the equipment. For chillers, the equipment pad shall be 36" wider than the equipment on all sides.
- 5.1.2.7.** Provide hose bibbs near all new tower for maintenance personnel.
- 5.1.2.8.** Provide 120/220-volt convenience outlets in close proximity to mechanical equipment.

### **5.1.3. Energy Savings Considerations**

- 5.1.3.1.** Install building automation system direct digital controls on all large HVAC/R equipment to incorporate energy-saving cycles. Controls should interface with existing Metasys building automation system.
- 5.1.3.2.** Employ the use of economizer air cycles wherever possible.
- 5.1.3.3.** Use high-efficiency motors for all applications 2 hp and greater.
- 5.1.3.4.** Install variable frequency drives (VFDs) on all motors that have varying demand.

## 5.2. Materials and Equipment

### 5.2.1. HVAC System.

- 5.2.1.1. **VAV Boxes:** Titus VAV boxes with Johnson Control Inc. control valves, or approved equal.
- 5.2.1.2. **Ceiling Supply Diffusers:** Tuttle and Bailer fixed pattern diffusers, or approved equal.
- 5.2.1.3. Ductwork: Spiral. Insulate exteriors of supply and return. Exhaust ductwork not insulated.
- 5.2.1.4. Dampers: Stand off lever.
- 5.2.1.5.

### 5.2.2. Plumbing

- 5.2.2.1. Patient Room, Staff, and Public Sink Faucets – T&S paddle hand. Do NOT install automatic water sensor faucets in patient care areas, where instruments will be washed, or exam rooms.
- 5.2.2.2. Doctors' Offices: T&S foot valves, wall mounted.
- 5.2.2.3. Laboratories: T&S water savers, foot valves.
- 5.2.2.4. **Flushometers:** Sloan Royal 1.6 gpf or less.
- 5.2.2.5. **Urinals:** Sloan Royal 1.0 gpf or less.
- 5.2.2.6. **Showers:** American Standard, or approved equal.
- 5.2.2.7. .5" – 2" Water Valves: Ball, full port 600 wog **Walworth, Apollo**, or approved equal.
- 5.2.2.8. 2" – 6" Water Valves: Gate, butterfly, 150 psi min., **Walworth, Apollo**, or approved equal.
- 5.2.2.9. 3" – 6" Water Valves: **Pro Press**, Victaulic, or approved equal.
- 5.2.2.10. .5" – 2" Steam Valves: Ball valves, full port, WSP 300 psi.
- 5.2.2.11. 2" – 12" Steam Valves: Gate valves or gear-actuated ball valves, WSP 300 psi, **Walworth** or approved equal.
- 5.2.2.12. **Steam Traps:** Dunham Bush, Hoffman, or approved equal.
- 5.2.2.13. Domestic Water Line (Interior): Schedule 40 Galvanized for 6" and above.

### 5.2.3. General

- 5.2.3.1. **Controls:** Johnson Controls Inc. – Direct Digital Controls
- 5.2.3.2. Thermostats: Electronic thermostat with pre-set adjustment range. **Johnson Controls Inc.** to interface with existing Metasys building automation system.
- 5.2.3.3. **Variable Frequency Drives:** ABB, or approved equal.
- 5.2.3.4. **Air Compressors:** Atlas Copco, or approved equal.
- 5.2.3.5. **Hose Bibbs:** Woodford Hose Bibb Co. model #65 up to 24" wall thickness.

- 5.2.4. **Guarantees:** All materials and labor shall be guaranteed for at least one year following project acceptance by the Minneapolis VAMC Contracting Officer.

## 6. Fire Protection Design Standards

### 6.1. Design Principles

- 6.1.1. **General:** Fire protection design shall be completed by a licensed fire protection engineer. Accurate as-built wiring diagrams shall be provided before final

acceptance. Any upgrades to the system shall be designed with the intent of using a central computer with annunciating maps.

## **6.2. Materials and Equipment**

### **6.2.1. Sprinklers**

### **6.2.2. Quick response, semi-recessed heads.**

### **6.2.3. Fire Alarm:**

**6.2.3.1. Control Panel:** Gamewell FCI, E3 Series

**6.2.3.2. Keypad Display:** Gamewell FCI, LCD-3

**6.2.3.3. Interface Main Board:** Gamewell FCI, ILI-MB-E3 Series

**6.2.3.4. Power Supply:** Gamewell FCI, PM-9

**6.2.3.5. Addressable Switch Module:** Gamewell FCI, ASM-16

**6.2.3.6. Network Repeater:** Gamewell FCI, RPT-E3

**6.2.3.7. Digital Alarm Communicator Transmitter:** Gamewell FCI, DACT-3

**6.2.3.8. Command Center Voice Gateway:** Gamewell FCI, INI-VG

**6.2.3.9. Amplifier:** Gamewell FCI, AM-50

**6.2.3.10. Cabinets:** Gamewell FCI, E3 Series

**6.2.3.11. Broadband:** Gamewell FCI, E3 Series Broadband

**6.2.3.12. Intelligent Network Command Center:** Gamewell FCI INCC

**6.2.3.13. Intelligent Network Transponder:** Gamewell FCI, INX

**6.2.3.14. PC-based Graphic User Interface:** Gamewell FCI, Focal Point Graphic Workstation

**6.2.3.15. Smoke Sensor:** Gamewell FCI Gamewell FCI, Velociti Series ASD-PL2F

**6.2.3.16. Thermal Sensor:** Gamewell FCI, Velociti Series ATD-L2F

**6.2.3.17. Duct Sensor:** Gamewell FCI, Velociti Series ADPF

**6.2.3.18. Beam Smoke Sensor:** Gamewell FCI, Velociti Series ABD-RT2F

**6.2.3.19. Manual Pull Station** Gamewell FCI MS-7AF

**6.2.3.20. Addressable Monitor Module:** Gamewell FCI, Velociti Series AMM-2F

**6.2.3.21. Addressable Monitor Module:** Gamewell FCI, Velociti Series AMM-4F

**6.2.3.22. Addressable Output Relay Control Module:** Gamewell FCI, Velociti Series AOM-2SF

**6.2.3.23. Addressable Output Relay Supervised Control Module:** Gamewell FCI, Velociti Series AOM-2RF

**6.2.3.24. Isolator Module (Style 7):** Gamewell FCI System Sensor M500X

**6.2.3.25. Relay Output Module, Multi-Mod:** Gamewell FCI Velociti Series MM0-6RF

**6.2.3.26. Input Monitor Module, Multi-Mod 10:** Gamewell FCI Velociti Series MMI-10F

**6.2.3.27. Power Supplies and Battery Chargers** Gamewell FCI HPF24S8

**6.2.3.28. Speakers and Strobes:** Gamewell FCI SpectrAlert Advance Indoor Notification Appliances

**6.2.3.29. Speakers and Strobes:** Gamewell FCI SpectrAlert Selectable Outdoor Notification Appliances

**6.2.3.30. Bells:** Gamewell FCI Series MB Motor Bells

### **6.2.4. Pumps and Risers**

**6.2.5. Guarantees:** All materials and labor shall be guaranteed for at least one year following project acceptance by the Minneapolis VAMC Contracting Officer.

## **7. Medical Gas Design Standards**

### **7.1. Design Principles**

**7.1.1.** Master alarm panels are located in the Energy Center and Bldg 70, Telephone Operator Room.

### **7.2. Materials and Equipment**

**7.2.1. Panels:** Amico, or approved equal.

**7.2.2. Guarantees:** All materials and labor shall be guaranteed for at least one year following project acceptance by the Minneapolis VAMC Contracting Officer.

## **8. Electrical Design Standards**

### **8.1. Design Principles**

#### **8.1.1. General**

**8.1.1.1.** Design analysis shall include: Short-circuit and fault calculations study, voltage drop analysis study, load calculations, coordination analysis, and foot-candle analysis (lighting).

**8.1.1.2.** All new electrical service shall enter through a mechanical/electrical room.

#### **8.1.2. Lighting**

**8.1.2.1.** Install energy efficient fluorescent lighting whenever possible.

**8.1.2.2.** Install motion control in areas where lighting is not required on a continuous basis throughout the work day. For example; conference rooms and classrooms.

**8.1.2.3.** Use incandescent lighting in areas that require dimming capability.

**8.1.2.4.** Install timers with contactors on outdoor area lighting rather than photocells.

**8.1.2.5.** Install timers on interstitial lighting.

#### **8.1.3. Switchboards/Distribution Panels/Circuits**

**8.1.3.1.** Breakers: Minimum breaker size = 20 amps.

**8.1.3.2.** Branch Circuits: Multiwire branch circuits are not allowed. A multiwire branch circuit is defined in article 100 of NFPA 70.

**8.1.3.3.** Circuit Identification: All circuits and circuit modifications shall be legibly identified as to its clear, evident, and specific purpose or use. The identification shall include sufficient detail to allow each circuit to be distinguished from all others. The identification shall be included in a circuit directory that is located on the face or inside of the panel door in the case of a panelboard, and located at each switch on a switchboard.

**8.1.3.4.** Outlet Identification: All outlets shall be labeled with applicable panel number and circuit number.

**8.1.3.5.** Disconnecting Means: Shall be labeled with applicable equipment description and feeder. For example, "Steam press agitator, 402-7-6A9, Fed from MCC 7A6."

- 8.1.3.6. Arc Flash Labeling: All newly installed equipment that has an arc flash hazard (such as panels, disconnects, motor control centers, and automatic transfer switches) shall be labeled with the actual hazard level the equipment is capable of producing. For example; “WARNING – ARC FLASH PPE REQUIRED – Available incident energy is 19 CAL/CM2.” A danger label applied by the manufacturer is not sufficient.
- 8.1.3.7. Cables, Low Voltage (600 Volts and Below):
- 8.1.3.8. In the Hospital Bldg 70:
  - 208/120 Phase A (Black) Phase B (Blue) Phase C (Red)
  - 480/277 Phase A (Yellow) Phase B (Brown) Phase C (Orange)
- 8.1.3.9. Out Building: Contractor to verify and match existing colors per phase.
  - 208/120 Typical is Black, Red, Blue
  - 480/277 Typical is Brown, Orange, Yellow.

## 8.2. Materials and Equipment

- 8.2.1. **Automatic Transfer Switches:** ASCO, or approved equal. Designer will size and specify recommended series. Minneapolis VAMC will specify accessories.
- 8.2.2. **Generators:** Caterpillar, or approved equal. Designer will size based on project requirements. Minneapolis VAMC will specify accessories including; alarms, gauges, readings, etc.
- 8.2.3. **Electrical Distribution Panelboards:** Cutler-Hammer, or approved equal. Front shall be hinged to box with standard door opening over interior. No toggled, screwed or clipped panel doors are acceptable.
- 8.2.4. **Lighting:**
  - 8.2.4.1. **Fixtures:** Lithonia, or approved equal.
  - 8.2.4.2. **Ballasts:** Advance T-8 ballast, or approved equal. Ballasts shall be industry standard, low watt, high-efficiency, tandem-wired.
  - 8.2.4.3. **Lamps:** General Electric, or approved equal.
  - 8.2.4.4. Reflectors: Energy Solutions, model number, K24WRD2232, or approved equal.
  - 8.2.4.5. Average Rated Life: >20,000 hours.
  - 8.2.4.6. Color Temperature: General patient areas, offices, and administrative areas: 4100. Specialty medical areas such as surgery, dental, etc. shall be as described by A-E or project specifications.
- 8.2.5. **Standard Parking Lot Lighting:**
  - 8.2.5.1. Lighting: Arm-mounted luminaire for high intensity discharge lamps up to 1000 watts. Existing luminaires are single assembly, 250 watt, 277 volt, and required pole top tenon. **Gardco** model EH19-1-VS-250-HPS-277-BRA, or approved equal.
  - 8.2.5.2. Anchor Base Poles: Spun-tapered seamless 6063 alloy, aluminum tubing, and heat-treated. Anchor base telescopes the pole shaft and is circumferentially welded at both the top and bottom. All hardware including, screws, nuts, and bolts shall be stainless steel. Standard



finish is brushed aluminum. **Lithonia** RTA-39-10G-T20-DDB, or approved equal.

**8.2.6. High Security Parking Lot Lighting**

**8.2.6.1. Floodlighting:** **Hubbell** (4) MVK-1000H-268-L-SSS-30-50-7-TA-DB-THB-41 with lamps, or approved equal.

**8.2.6.2. Anchor Base Poles:** One-piece construction, square straight steel shaft, with galvanized anchor bolts and template. **Hubbell** SSS-30-50-7-TA-DB-THB41, or approved equal. Ensure tenon is included.

**8.2.7. Exit Signs:** **Gilbert LED**, or approved equal.

**8.2.8. Switches:** Ivory rocker style with stainless steel plate rated for 20A.

**8.2.9. Receptacles:** Polarized, duplex, hospital grade, rated for 20A, 125V, ivory with stainless steel plate.

**8.2.10. Wiring:** Minimum wire size shall be No. 12 AWG. Copper only.

**8.2.10.1. Indoor Applications:** THHN insulation rated for 600V and 75°C.

**8.2.10.2. Outdoor or Damp Applications:** XHHW or THWN insulation rated for 600V and 75°C.

**8.2.11. Conduit**

**8.2.11.1. Minimum size conduits;**

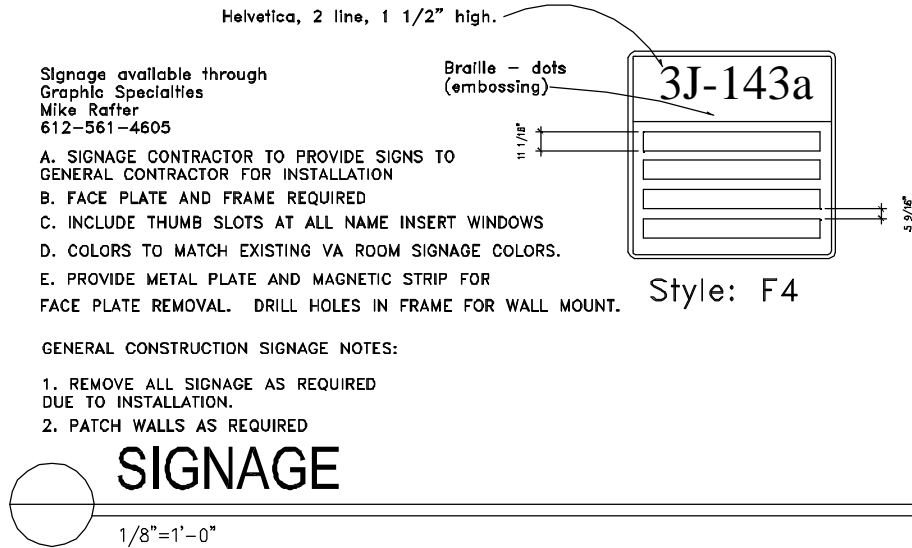
**8.2.11.1.1** Conduits from an electrical panel to the first junction box shall be minimum  $\frac{3}{4}$ " diameter.

**8.2.11.1.2** Conduits serving power and lights, except where connected to the panel as mentioned in 8.2.11.1.1 above, shall be minimum  $\frac{1}{2}$ " diameter.

**8.2.11.1.3** Conduits serving all other (phone and data) shall be minimum  $\frac{3}{4}$ " diameter.

**8.2.11.2** Raceway systems shall be installed as far as practically possible before changing over to HCF cable (Health Care Facility cable which is typically a green jacketed MC or AC).

**8.2.12. Guarantees:** All materials and labor shall be guaranteed for at least one year following project acceptance by the Minneapolis VAMC Contracting Officer.



## Appendix A: Interior Signage Requirement