

Sample Cost Analysis:

ROOM FINISH SCHEDULE											
ROOM NO.	ROOM NAME	FLOOR	BASE	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING	NOTES		
				MATERIAL	MATERIAL	MATERIAL	MATERIAL	MATERIAL	FINISH	HEIGHT	
A800	DINING	XACT	B1	PT-1	PT-1		PT-1	E-MWC	PT-1	9'-0"	
A802	CONFERENCE	XACT	B1	PT-1	PT-1		PT-1	E-MWC	PT-1	9'-0"	
A804	ACTIVE FILE STORAGE	XACT	B1	PT-1	PT-1		PT-1	E-MWC	PT-1	9'-0"	
A806	SOCIAL/LOBBY	XACT	B4	PT-1	PT-1		PT-1	E-MWC	PT-1	9'-0"	
A808	SWIM	VT-3	B4	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-2	9'-0"	
A807A	SWIM 5	VT-3	B4	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-2	9'-0"	
A807B	SWIM 6	VT-3	B4	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-2	9'-0"	
A807H	TOLLET	VT-3	B1	E-GWB	E-GWB	E-GWB	E-GWB	E-MWC	PT-2	9'-0"	
A808	EDM7	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-2	9'-0"	
A809	EDM6	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-2	9'-0"	
A810	DATA SAMPLE COLLECTION	VT-2	B4	E-GWB	E-GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A81A	BREAK ROOM	VT-2	B4	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A81B	OFFICE	VT-2	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	OFFICE	VT-2	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82B	OFFICE	VT-2	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A84	ARCHIVE STORAGE	VT-1	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A85	WORKSTATIONS	VT-1	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A86	WORKSTATIONS	VT-1	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A87A	PHARMACY OFFICE	VT-2	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A87B	PHARMACY OFFICE	VT-2	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A880	PHARMACY STORAGE	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A88A	PHARMACY FULL PREP	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A88B	PHARMACY PREP	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82	MEDIA DISTRIBUTION	VT-3	B1	GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A821	ACCESSIBLE TOILET	VT-3	B1	GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	ACCESSIBLE TOILET	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	INFUSION SUITE	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	NURSES STATION	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	NURSEMENT/OPEN	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	EXAM 1	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82B	EXAM 2	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	EXAM 3	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82B	COUGH CABINETS	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A827	COFFEE ELECTRIC/CAM/CLOSET	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82A	VITALS	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82B	VITALS	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82H	PATIENT EDUCATION	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A82H	PATIENT WAITING	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A830	RECEPTION	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	
A830	RECEPTION	VT-3	B1	E-GWB	GWB	E-GWB	E-GWB	E-MWC	PT-3	9'-0"	

Sample Room Finish Schedule. Graphic courtesy of the Department of Veterans Affairs.

DESIGN PRINCIPLES

Sample wall and ceiling material diagram:



Wall and Ceiling Materials
Purpose: Create colored plans by room for floor, wall and ceiling materials.

Audience: This is a good graphic way to understand the distribution of materials. This is also a nice visual to share with the users to help them to understand what materials are going to be installed in what rooms.

Methods used to create these materials may include:

- *Electronic:* Adobe Photoshop, Illustrator, or InDesign; AutoCAD; Microsoft PowerPoint
- *Manual:* Printed plans colored by hand in marker or other medium and scanned for electronic archives.

VA staff participating in interior design projects project needs access to construction budgets for wall protection, lighting, and specialty millwork for every project. The designer should design to each of these budgets. Reference the Cost Estimating documents found online at <http://www.va.gov/facmgmt/cost-estimating/>.

Wall Protection:

Create wall protection type distribution plans to track how and where budget dollars are being spent.

Methods used to create these materials may include:

- *Electronic:* Adobe Photoshop, Illustrator, or InDesign; AutoCAD; Microsoft PowerPoint
- *Manual:* Printed plans colored by hand in marker or other medium and scanned for electronic archives

Ask early on in each project what the trade demands and geographical cost effects are on your project material and labor pricing. This could impact unit material cost.

Funding Structure - VA has four levels of funding construction projects. Each level is defined by size and cost. VA staff participating in interior design projects should be aware that some or all of the funding structures may be affected.

Station Level Projects - Construction, renovation or nonrecurring maintenance and repair projects where the minor improvement (MI) costs are less than \$25,000. Total project costs must be less than \$150,000. Station level projects are funded as a lump sum figure in the non-recurring maintenance program.

Wall Protection

WP02

Parts... 1. Functional handrail with attached crash rail
2. Bumper rail

The diagram shows a cross-section of a wall with a person standing next to it. The wall has a painted surface. A functional handrail is mounted on the wall, with a crash rail attached to its bottom. Below the handrail is a bumper rail, and at the very bottom is a rubber cove base. The diagram is labeled with 'Painted wall surface', 'Functional handrail', 'Crash rail', 'Bumper rail', and 'Rubber cove base'. A vertical dimension line on the left indicates a height of 32 inches from the floor to the top of the handrail.

- The patient care corridors have WP01, a functional handrail with a crash rail attached at the bottom.
- The handrail and crash rail are proposed as Wood., to provide a warm material to touch.
- The Wood finish is a natural maple to provide contrast to wall color.
- The Bumper rail located above the base, is proposed to match the base color.

*Wall protection direction.
Graphic courtesy of HOK.*

DESIGN PRINCIPLES

Non-Recurring Maintenance (NRM) - NRM projects provide for replacement or repair of major building systems, structural components of buildings and building service equipment where MI exceeds \$25,000. There is no upper cost limitation on NRM projects except that the MI must be less than \$500,000. NRM funds are a part of the Medical Care Appropriation and are allocated by the Veterans Integrated Service Network (VISN).

Minor Projects - Work that encompasses structural changes or alterations, additional space, new or expanded utilities, fixed equipment, modernization and space utilization changes to buildings, structures or grounds. Includes maintenance and repair projects where the minor improvement exceeds \$500,000. Minor funds are a specific congressional appropriation and are allocated by the VISN.

Major Projects - All projects where the estimated total project costs exceed \$7,000,000. Major projects require a line item congressional appropriation.



*SICU of the VA Jesse Brown
Medical Center, Chicago, Illinois.
Photo courtesy of the Department
of Veterans Affairs.*

DESIGN PRINCIPLES

CHECK LIST

DEPARTMENT OF VETERANS AFFAIRS Office of Facilities Management Interior Design Manual		
<i>Conceptual Design Considerations</i>		reference
	<input type="checkbox"/> Design Considerations	
1	<input checked="" type="radio"/> Design Story	
2	<input checked="" type="radio"/> Patient Profile	
3	<input checked="" type="radio"/> Demographics	
4	<input checked="" type="radio"/> Healing Environment	
5	<input checked="" type="radio"/> Physical Environment	
6	<input checked="" type="radio"/> Organizational Planning Understanding	
7	<input checked="" type="radio"/> Amenities	
8	<input checked="" type="radio"/> Wayfinding	
9	<input checked="" type="radio"/> Material Appropriateness	
10	<input checked="" type="radio"/> Budget Realism	

EMERGING HEALTHCARE DESIGN

It is important for Designers to understand the difference between design fads and trends. Design fads come and go, but trends typically surface and become new way of doing

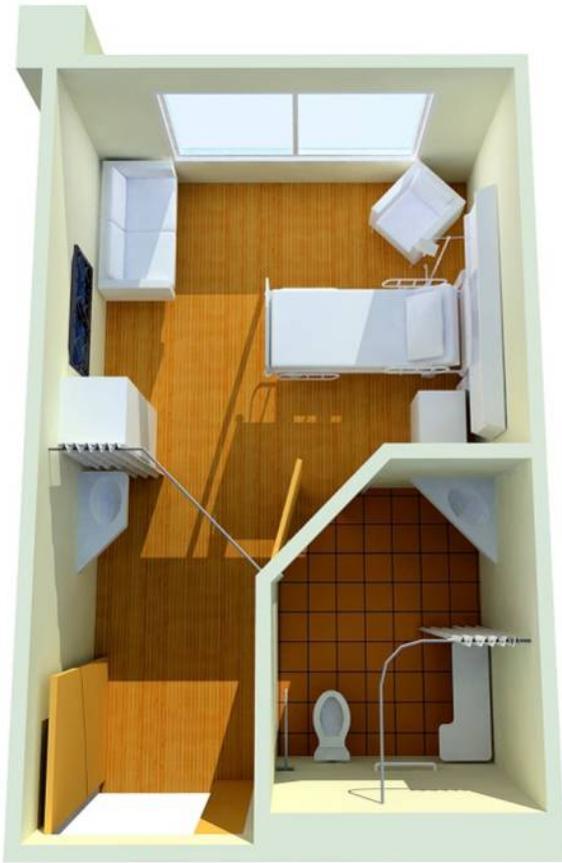
design. Healthcare trends evolve with new products and technology. This section is intended to be a “Living Document” and content should be regularly reviewed and updated as required.

FUTURE FLEXIBILITY

Acuity Adaptable Patient Rooms - A patient room that can swing from Med-Surg to ICU with minimal equipment cost and no construction.



*Intensive Care Room.
Image courtesy of Canon
Design.*



Standard Room. Image courtesy of Canon Design.

Universal Patient Rooms – A patient room that can immediately swing from Med-Surg to ICU with no equipment or construction cost.

PATIENT ROOM DESIGN

Single Patient Rooms – Single Patient Rooms have a maximum occupancy of a single patient. In 2006 VA studied the adoption of single bed patient room for all future VA construction projects. In 2007 the single bed patient room study results will be available on line. Reference <http://www.va.gov/facmgt/stand>

[ard/dg_idx.asp](http://www.aia.org/ard/dg_idx.asp). The AIA endorsement of the single handed patient room came in 2006 and the endorsement is available at www.aia.org.

Inboard versus Outboard Toilet – This refers to the location of the toilet with relation to the room. Inboard means the toilet is just inside the footprint of the room and the outboard toilet means the toilet is on the outside of the room or exterior wall. The location of the toilet affects the footprint of room, visibility into the room, and the function of the room.

Same Handed Patient Rooms – All same handed patient rooms have the same footprint and do not share plumbing or medical gas lines. Furniture and utility placement is the same in all rooms. This technique is used to reduce medical errors.

Isolation Room. Image courtesy of Canon Design.



QUALITY IMPROVEMENT (IHI)

Safety - Safety is a major concern in all healthcare facilities. Safety includes both the safety of patients and staff. One example of a patient safety concern is patients falling when getting out of bed to go to the bathroom, where most patient slips and falls occur. One example of a staff safety concern is injury at work while pushing carts or patient beds on carpeting.

VA Article Reference: The article highlighted in *Business Week's* July 17, 2006 issue, "The Best Medical Care in the US" shared some of the technology currently being used by VA.

Patient Safety - VA has many resources available on the topic of patient safety from facilities development to providing information and tools that urge veterans and their families to become part of the VA patient safety team. Reference the following web sites:

<http://www.va.gov/ncps/patients.html> and

<http://www.va.gov/ncps/vision.html>.

HIGH-PERFORMANCE HEALTHCARE FACILITIES

VA provides the same patient care services as the private sector plus more unique services not offered by the private sector. Veterans require unique patient care services including but not limited to Post Traumatic Stress Disorder (PTSD), specialty rehabilitation, comprehensive domiciliary care, spinal cord injuries, cardio

Lobby rendering. Image courtesy of Canon Design.

thoracic and homeless rehabilitation.

Staff recruitment/retention - Healthcare facilities that are partnered with a teaching and/or research component are very focused on staff recruitment and retention. These partners bring modern medicine advances, accreditations, and patients.

VA staff participating in the development of interior design projects should reference the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU) (<http://www.va.gov/facmgt/standard/etc/moufinal.pdf>). The goal and objective of the MOU was to seek, establish, and follow a common set of sustainable guiding principles for integrated design, energy performance, water conservation, indoor environmental quality, and material selection aimed at helping Federal agencies and organizations build and operate more sustainable facilities.

HOSPITAL'S MARKET COMPETITIVENESS

VA hospital market competitiveness is very different from the private sector institutions in many ways. The following is not comprehensive, but offers a sample comparison of those differences.

Reduce Operations Cost

Private Sector Response: The healthcare costs grow every year and the industry is very aware of the need to be able to pass on savings to their customers. Not-for-profit systems watch how building dollars are spent and want to build comfortable healing spaces for the least amount of money.

VA Response: "Significant changes in healthcare delivery over the past decade have created the need to revitalize and reorganize VA healthcare infrastructure to better serve the nations veterans. VA is one of the largest integrated healthcare delivery systems in the world; VA faces intuitional and cultural challenges to keep pace with the



DESIGN PRINCIPLES

demand associated with delivering care to veterans. These challenges drive the CARES process, which is the most comprehensive review of VA healthcare infrastructure



ever conducted. As such, it provides an unprecedented opportunity to enhance healthcare for veterans.” Reference CARES commission report 3 of 7 (<http://www.carescommission.va.gov/ReportFull.asp>).

Market Share

Private Sector Response: The private sector healthcare market share is very competitive. The market is affected by people, including staff, physicians, and the educated public. Competition is heightened by the demands of the educated public, patient, and family. They have choices in provider locations and self selections by patients are common.

VA Response: The number of veterans is projected to decline 16 percent by FY 2012, from approximately 25 million in FY 2002 to fewer than 21 million by FY 2012. The number of veterans enrolled in VA healthcare is projected to increase from 6 million enrollees in FY 2001 to 6.3 million by FY 2012, and then to decrease to 5.7 million by FY 2022.

Care Delivery Models

Private Sector Response: The private sector healthcare delivery model is reactive to patient illness and driven by reimbursements.

VA Response: VA maintains its leadership role and dedication to excellence in providing specialized services and groundbreaking research in such areas as treatment of spinal cord injury and rehabilitation for the blind.



CODES AND STANDARDS

HIPAA – This is the Health Insurance Portability and Accountability Act of 1996 Standard for Privacy of Individually Identifiable Health Information Federal Register-45 CFR Parts 160/164.

Designers should be aware that there are some HIPAA elements that affect the architecture. These include:

- *Physical Safeguards* - building response to patient information
- *Structural Barriers (walls)* - response to patient confidentiality between rooms
- *Sound Masking (music, white noise, baffled ceiling, or wall coverings)* – building response to patient information being over heard by others
- *Placement of Computer Screens, Printers and Faxes* – building response to patient information being visible to others
- *Storage Device* – building response to patient records being stored safely and out of reach of others
- *Disposal Programs* - building response to patient information being destroyed so not accessible to others

VA has participated in a study at the Ann Arbor Healthcare System. The objective of this study was to elicit informed input from veterans using a deliberative democracy approach. The background/rationale was: The HIPAA privacy rule went into effect in spring 2003 and

included new regulations regarding when and by whom individually identifiable health information (PHI) can be used and disclosed. Under the rule, individual authorization to access PHI is required from every study participant, even for minimal-risk research, unless three criteria are met. However, the three criteria include non-specific language, allowing wide latitude for Institutional Review Board (IRB) interpretation. For further information, reference http://www.hsrdr.research.va.gov/research/abstracts.cfm?Project_ID=2141692650&UnderReview=no.

Honor/Pride of the Military – VA staff participating in the development of interior design projects should be able to balance the honor and pride of the military while being sensitive to emotions of veterans and creating good design.

Military Images – The use of military images can be done well if the designer works with a team. For example, include PTSD staff in art selection. Their input is important because they are talking with patients. A general rule for use of military images is to avoid using images that represent acts of war.



Memorabilia Gallery, Wilkes-Barre VAMC, Wilkes-Barre, Pennsylvania. Photo courtesy of the Department of Veterans Affairs.

Dedications and Recognition Walls – VA staff participating in the development of interior design projects should help to promote local area veterans.

Quotes – Some VA facilities display these two quotes as inspiration:
“To care for him who shall have borne the battle and for his widow and his orphan”

- Abraham Lincoln, 1885

“The price of freedom is visible here”

- Unknown

TOPIC 1 – CODES, STANDARDS AND EXECUTIVE ORDERS

PURPOSE: The Public Buildings Amendment Act of 1988, Public Law (Pub. L.) 100-678 requires Federal agencies to follow national recognized "model" building codes. The Federal Participation in the Development and Use of Voluntary Standards, Office of Management and Budget (OMB) Circular A-119, requires all executive agencies to rely on voluntary standards, both domestic and international, whenever feasible, and to participate in voluntary standard bodies.

GENERAL: VA has adopted the latest edition of the following codes and standards as a minimum for all projects performed in the modernization, alteration, addition, or improvement of its real property and the construction of new structures. VA design Manuals and Master Specifications specify other codes and standards that VA follows on its projects:

- VA Directives, Design Manuals, Master Specifications, VA National CAD Standard Application Guide, and other Guidance on the Technical Information Library (TIL) (<http://www.va.gov/facmgt/standard/>).
- Occupational, Safety and Health Administration (OSHA) Standards.
- International Building Code (IBC)
- VA Seismic Design Requirements, H-18-8
- National Electrical Code (NEC)
- National Fire Protection Association (NFPA) Codes, with the exception of NFPA 5000 and NFPA 900
- National Standard Plumbing Code (NSPC)
- Safety Code for Elevators and Escalators, American Society of Mechanical Engineers (ASME) A 17.1.
- ASME Boiler and Pressure Vessel Code
- ASME Code for Pressure Piping
- Uniform Federal Accessibility Standards (UFAS) including VA Supplement, Barrier Free Design
- Building Code Requirements for Reinforced Concrete, American Concrete Institute (ACI 318 – 2) and Commentary (ACI 318 – R2)
- Manual of Steel Construction, Load and Resistance Factor Design Specifications for Structural Steel Buildings, American Institute of Steel Construction (AISC)
- Energy Code for New Federal Commercial and Multi-Family High Rise Residential Buildings: Final Rule. Mandatory for New Federal Buildings, Department of Energy (DOE) regulations, 10 Code of Federal Regulations (CFR) Parts 434 and 435.
- The Provisions for Construction and Safety Signs. Stated in 01 00 00 General Requirements (previously Section 01010) of VA Master Construction Specification.
- Greening the Government through Efficient Energy Management – Executive Order 13123.
- Greening the Government through Leadership in Environmental Management – Executive Order 13148.
- Ventilation for Acceptable Indoor Air Quality – ASHRAE Standard 62.1- 2004.
- Safety Standard for Refrigeration Systems – ASHRAE Standard 15 – 2004.
- Conflicts between Nationally Recognized and Standards and VA Requirements – Should a conflict exist between VA requirements and VA adopted nationally recognized codes and standards, the conflict shall be brought to the attention of VA. The resolution of the conflict shall be made by the authority having jurisdiction for VA to ensure a consistency system wide.

Local Codes: As an agency of the federal government, VA is not subject to local imposition of code enforcement procedures (drawing reviews, building permits, inspections, fees, etc.) It must function as the Authority Having Jurisdiction (AHJ) and thus has the responsibility to guard public health and safety through enforcing its adopted codes. However, local authorities should be notified about planned projects and given opportunity to review drawings without paying review or inspection fees.

TECHNOLOGY – Technology is constantly changing the healthcare environment. Technology is a driver for healthcare design. This is not only because the equipment changes (resulting in different spatial requirements), but also the process of patient care evolves.

VA article reference: The articles highlighted in *Time Magazine's* September 4, 2006 issue, "How VA Hospitals Became the Best" as well as in *Business Week's* July 17, 2006 issue, "The Best Medical Care in the US" shared some of the current VA technology being used.

Entertainment – Entertainment software is intended to educate or entertain customers and can provide a service such as food ordering, educational videos, or a calendar for patients and families to see when treatments are scheduled. Entertainment software can be used to provide a positive distraction for patients.

Robots – A robot is a mechanical device which performs automated physical tasks, either according to direct human supervision, a pre-defined program, or a set of general guidelines using artificial intelligence techniques. Robots are typically used to do the tasks that are too dirty, dangerous, difficult, repetitive or dull for humans. For example, VA sites may use robots for counting medication. Verify with IT any departments looking

into using this technology. Robots may affect corridor widths and floor material specifications, and may have acoustical impacts.

VA article reference: The article in *Business Week's* July 17, 2006 issue, "The Best Medical Care in the US," shared some of the current VA technology being used.

“Technology is constantly changing the healthcare environment. Technology is a driver for healthcare design.”

Television – Television is a telecommunication system for broadcasting and receiving moving pictures and sound over a distance. The industry is always changing the technology. Most VA sites offer a health care channel that patients can access on the TVs in their room. Some channels offer an educational menu that patients can use to educate themselves on their medical condition.

Computer Terminals – Computer monitor terminals can be either a flat screen monitor or the typical box terminals. For local preferences, coordinate with the IT department. The keyboard location should be coordinated with any ergonomic information the facility supports.

Mobile Technology – Computers on Wheels (COW) are the most common form of mobile technology in hospitals. Coordinate what technology the nursing and IT staffs are planning, as this may affect the planning of corridors and require an alcove for docking and electrical for charging.

Wireless Technology – The term wireless technology is generally used for mobile information technology equipment. It encompasses cellular telephones, personal digital assistants (PDAs), and wireless networking. Coordinate with the IT department



Doctor interacting with patient at Veterans Affairs North Texas Health Care System and Texas Tech Health Sciences Center School of Pharmacy in Dallas, Texas. Image courtesy of the Department of Veterans Affairs.

if wireless technology is being planned. House phones may not be required throughout staff spaces. Also understand what areas of the hospital wireless will not be available to the patients and families.

EVIDENCE-BASED DESIGN

VA staff participating in interior design projects should be familiar with the term Evidence-Based Design. Definition from the Center for Health Design: Evidence-Based Design (EBD) is the design of healthcare facilities based on researched and documented evidence and applied to the environment of care to make it more supportive of healing and well-being.

VA staff participating in interior design projects should understand the effects of Evidence-Based Design on design decisions. Healthcare environments that use research data to improve medical outcomes focus on:

- Control of one's own environment – Empowers patients to reduce stress and increase satisfaction.
- Social support – Speeds recovery with the support of loved ones
- Access to nature – Use natural light to reinforce diurnal cycles
- Use of positive distractions and elimination of environmental stressors – Use of color, art, views

VA staff participating in interior design projects should know the key players in the research of Evidence Based Design. They include The Center for Health Design, The Institute of Healthcare Improvements (IHI), The Institute of Medicine (IOM), and Pebble Partners, among others.

VA staff participating in interior design projects should know the topics of improving the hospital environment and why the project should support Evidence-Based Design. Although the premise that physical environment affects well-being reflects common sense, evidence-based design is poised to emulate evidence-based medicine.

Safety – Design to increase safety by applying the following factors:

- Reduce noise sources and improve acoustics
- Reduce the need for patient transfers
- Provide rapid access to care (e.g. reduce wait times and bottlenecks)
- Reduce likelihood of falls
- Provide intuitive wayfinding
- Ergonomics of handling patients and materials

“ VA staff participating in interior design projects should be familiar with the term Evidence-Based Design. ”

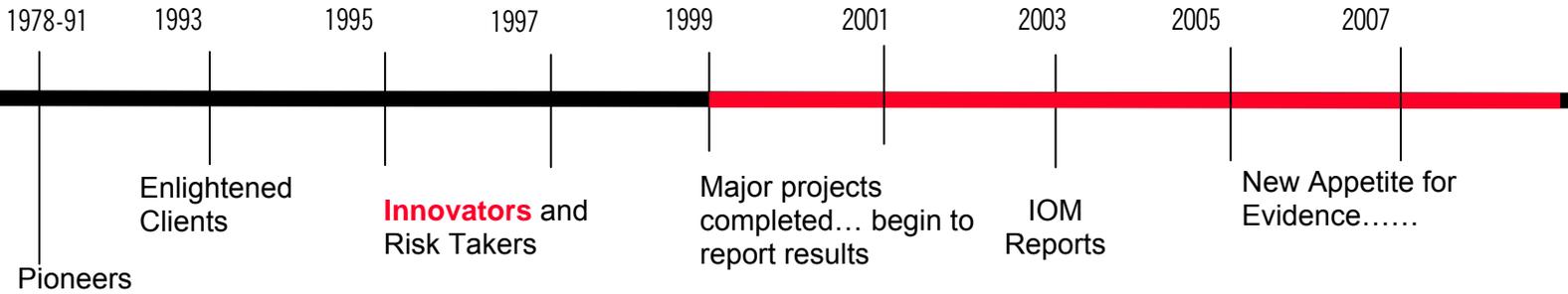
Infection Control – Design to prevent patient infections by increasing infection control measures because hospital-acquired infections, or nosocomial infections, are one of the leading causes of death in the United States, killing more Americans than AIDS, breast cancer, or automobile accidents. In 1995 alone, nosocomial infections contributed to more than 88,000 deaths (one death every six minutes) and cost \$4.5 billion. Airborne infections are transmitted when pathogens, such as Aspergillums, that survive well in the air, or dust and moisture present in healthcare facilities are released into the air. This usually happens during hospital renovation and construction activities and is due to contamination and malfunction of the hospital ventilation system. Refer to website:

www.healthdesign.org/research/reports/infections.php.

DESIGN PRINCIPLES

Minimizing Stress – Design to minimize stress and humanize the environment by applying the following factors:

- Provide control of temperature and lighting
- Give patients the ability to control social interactions and privacy
- Control smells in the environment
- Provide a safe and secure environment
- Provide a warm, friendly, relaxing environment
- Create positive distractions and escapes
- Minimize noise levels
- Provide an environment that promotes quality sleep for patients
- Provide an environment that feels close to nature with access to the outside world



- Provide access to information (health records, internet, and patient education centers)
- Provide exercise accommodations
- Create an environment that makes people want to work there

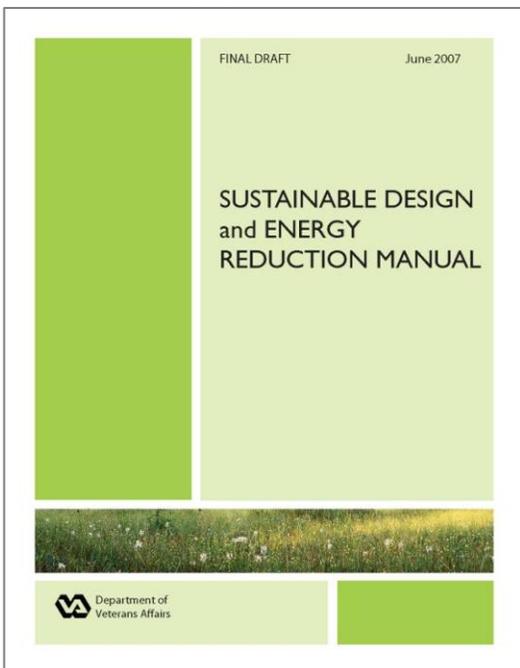
- Provide access to gardens when possible
- Increase quantity and size of windows
- Create comfortable size rooms
- Create family zones in patient rooms and on the unit
- Provide decentralized, barrier-free nursing stations

The design research and its evolution are described in a snap shot in the following timeline. Research information is available on the internet, in articles and books, and also through attending healthcare industry conferences and symposiums.

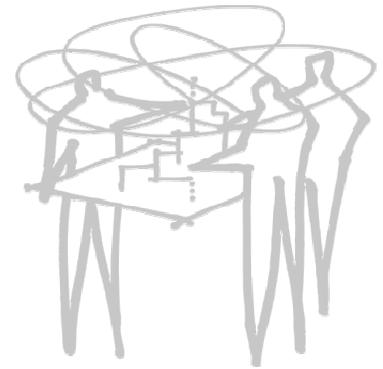
SUSTAINABILITY

All VA staff should reference the VA Sustainable Design Manual (<http://www.va.gov/facmgmt/standard/energy.asp>) to understand the goals and integrate key material elements into the Interior Design and material selection process. The following areas of sustainable design should be explored:

- Recycled Content
- Resource Reuse
- Regional Materials
- Certified Wood
- Furniture and Medical Furnishings: Resources and Reuse
- Low Emitting Materials: Adhesives and Sealants, Wall and Ceiling Finishes, Flooring Systems,
- Composite Wood and Insulation, Furniture and Medical Equipment



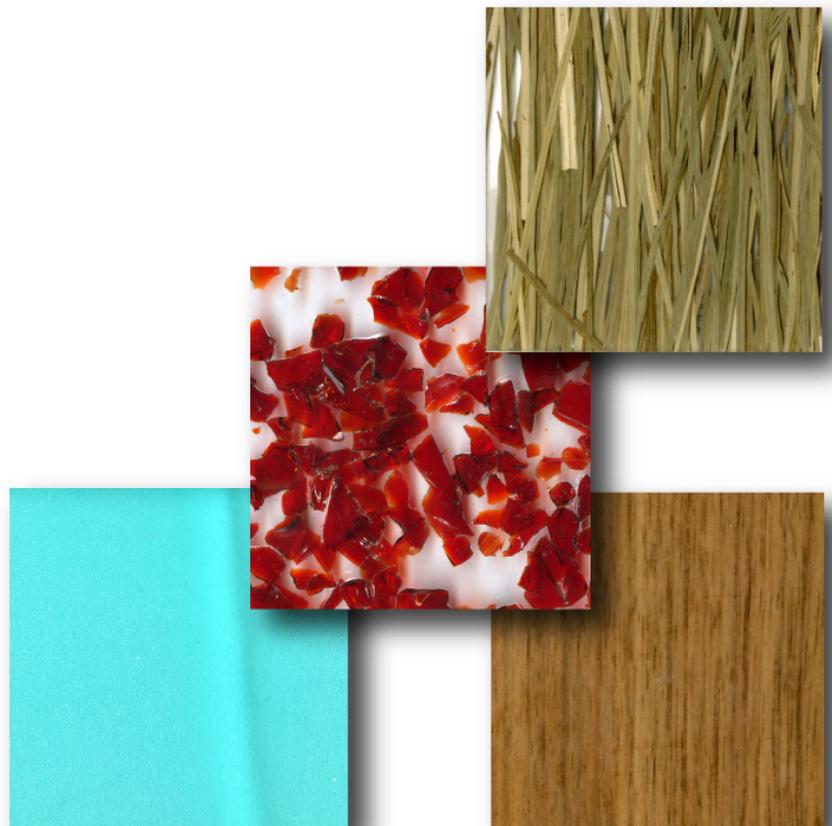
VA staff participating in the development of interior design projects should reference Executive Order 13423: Strengthening Federal Environmental, Energy, and Transportation Management (www.ofee.gov/eo/EO-13423.pdf).



COLLABORATIVE RESOURCES

VA Central Office would like all VA staff participating in the development of interior design projects to collaborate by sharing project lessons learned, both successes and failures. The VA design system consists of 109 designers at Healthcare sites across the United States. Opening dialogue between neighboring sites and/or recently opened or near future opening sites will improve design across all VA facilities.

Refer to the map on the following page for information regarding VA Interior Design staff locations.



Example of sustainable wall finishes materials by 3Form.

If you are a new interior designer or acting in the interior design role, please contact VA's Principal Interior Designer at VA Central Office to get added to the e-mail group. To reach other VA interior designers reference VA's intranet phone book at <http://vaww1.va.gov/med/directory?index.cfm>. The interior designer email group is a resource that can be used to discuss project successes and failures, experiences with vendors and/or products (both positive and negative), or to reach other VA designers to use as collaborative resources.

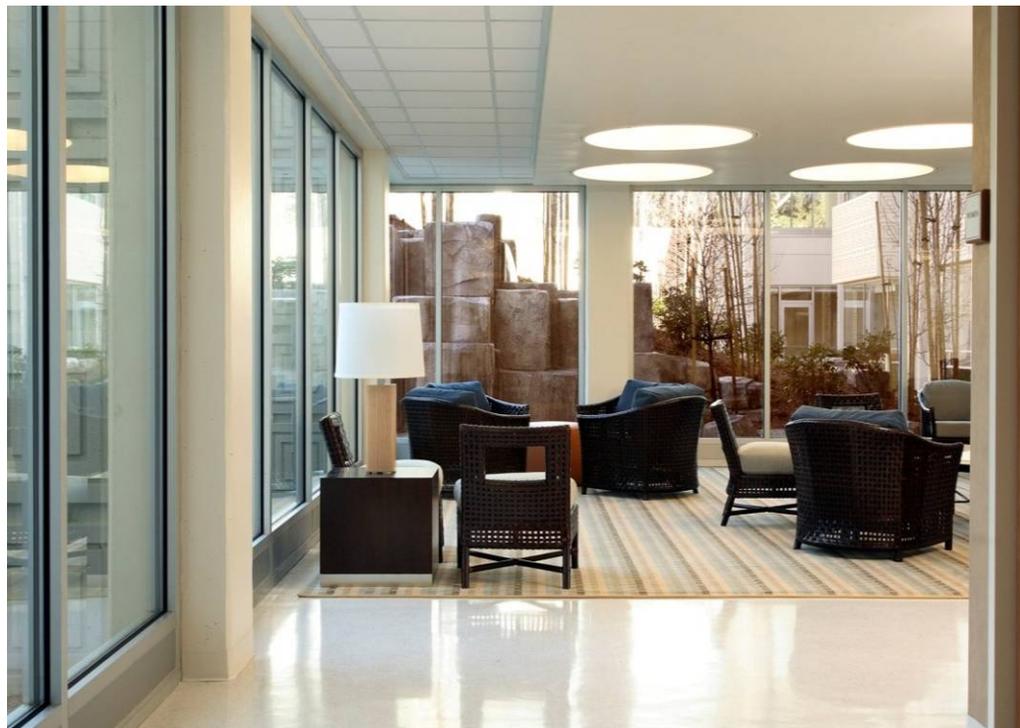
ARCHITECTURAL RULES

Architectural Rules have three core elements: the Vision and Intent Statement, the Design Concept, and the Decision Criteria. These core elements should be defined in the early stages of every design project. VA staff participating in interior design projects project should be responsible for taking the lead in coming up with the information, sharing the information with the team and user, and ultimately getting the Architectural Rules approved.

VISION AND INTENT

VA staff participating in interior design projects project should write a Vision and Intent Statement for every sizable design project. It is very important to create a sense of ownership from within the decision-making body. It minimizes personal opinions through a goal and mission driven process.

“To create a VA environment that is patient-centered, world-class, forward-looking and supportive of all veteran patients, families, care givers, and researchers.”



Evidence based design – Interaction with the outside world. Photo courtesy of HOK.

*Left:
New patient Bed Tower at the VA Jesse Brown
Medical Center, Chicago, Illinois. Image courtesy of
the Department of the Veterans Affairs.*

Sample Concepts

- Saturated color with a clean white base
 - Supported by earth-tone neutrals with organic shapes influenced by nature
 - Timeless architecture with no sense of Interior design fads

DECISION CRITERIA

Decision Criteria is the development of the five major points that all design ideas can be judged against. VA staff participating in interior design projects project should define five criteria points for every project. Each criteria point should have clear descriptions as to what the point is to achieve.

CONCEPTS

Concepts explore design ideas with different ways of executing the Vision and Intent. VA staff participating in interior design projects should provide the end user with three concepts in every sizable project. Each concept should have a descriptive title to better remember and describe the concept. The approved Concept will anchor the project and sell the final design idea. The designer should document the approved concept and share with others to build consensus and gain design understanding.

Sample Decision Criteria

- Create an Emotional Supportive Environment ...Calm, healing environment that is patient-friendly, designed to a human scale and gives the users a confident experience.
- Create a Memorable Experience ...
The use of architectural elements, finishes, imagery or plant life creates a memorable experience.
- Facilitate People Movement ...
Promote wayfinding, orientation, ease of movement, through an understanding of streets as corridors, definition of town square and destinations as arrival points.
- Create an Intuitive Orientation to Spaces ...
Providing visibility to the outside creates sense of direction.
- Establish Unique Identities ...
Out-patient facility versus hospital.
Sense of academic knowledge and strength of VA.
- Create Spaces which are Durable and Easily Maintained...
Appropriate materials palette selected.

CHECK LIST

DEPARTMENT OF VETERANS AFFAIRS Office of Facilities Management Interior Design Manual		
<i>Design Approach Check List</i>		reference
	Once the Vision and Intent, Concept and Criteria are approved, drawings need to be created to take these words and provide two or three dimensional illustrations of the Design.	
<input type="checkbox"/>	Team Structure	
<input type="checkbox"/>	Ideas & Innovation	
	Studies	
	Innovation	
<input type="checkbox"/>	Solutions & Final Presentations	
	Solution	
	Final Presentation	
<input type="checkbox"/>	Reporting & Approval Structure	
	Reporting Structure	
	Approval Structure	

DESIGN APPROACH

Once the Vision and Intent, Concept and Criteria are approved, drawings need to be created to take these words and provide two or three dimensional illustrations of the design. Three-dimensional drawings, sketches or renderings can make the design concept come to life. Some audiences may understand of the design story better with sketches/renderings and they should be developed for greater clarity in communicating the design direction.

TEAM STRUCTURE

The structure of the VA project team is important to understand. The designer or VA staff involved in the design process has a very important role on the project team. The role is different for the different project types. The following is a list of project types and the team associated with each project:

In House Project

The project team is made up of the VA Interior Designer, the Project Engineer, the Departmental User Client, and the Approving Official.

Non-Recurring Maintenance (NRM)

The project team is made up of the VA Interior Designer, the Project Engineer, the Departmental User Client, and the Approving Official.

Station Level Project

This project type may or may not include an interior designer. It is dependent on the scope and type of the project.

Minor Construction

The project team is made of the Medical Center Administration, contracted Architectural/Engineering firm, VA Interior Designer, Central Office, Resident Engineer, and the Departmental User Client.

Major Construction

The project team is made of the Medical Center Administration, contracted Architectural/Engineering firm, VA Interior Designer, Central Office Resident Engineer, and the Departmental User Client.



Senator Santorum shakes hands with the team at a groundbreaking ceremony for a major construction project at VA Pittsburgh Healthcare System, Pittsburgh, Pennsylvania. Image courtesy of the Department of Veterans Affairs.

IDEAS AND INNOVATION

VA staff participating in interior design projects should strive for innovation and the exploration of new ideas as well as look for continuing education opportunities in the healthcare and design industry. Refer to VA Design Guides (http://www.va.gov/facmgt/standard/dg_idx.asp) for additional information.

Healthcare design is becoming more sophisticated in many areas: from execution of details to application of studies and theories. Innovation requires research such as studying the availability of local materials and new execution of detail methods.

OPTIONS AND PRESENTATION

Design options should be explored as a part of the design process. Finding the best design solution requires study. VA staff participating in interior design projects project should provide two or three options in presentations. Design options may also be required to simplify design execution or cut project cost as the project progresses.

Presentations are the key to selling design ideas. VA staff participating in interior design projects project should be prepared. Refer to the Design Guides for presentation outlines. (http://www.va.gov/facmgt/standard/dg_idx.asp).

SOLUTIONS AND FINAL PRESENTATION

Solutions

A design solution is the outcome that results from exploring design options and building approval consensus.

Sample Finishes

In the final design presentation, always provide larger samples of all finish materials. Refer to the Design Guides (http://www.va.gov/facmgt/standard/dg_idx.asp) for additional information.

REPORTING AND APPROVAL STRUCTURE

Every facility interior designer must understand and follow the unique approval structure within their facility for the various project types.

Approval Structures

This refers to the audience from which approval must be obtained in order to implement the design direction. The consensus may affect final approval to implement the design direction. The consensus may affect final approval to implement. Each VA facility may have a different approval structure which may also be different from the designer reporting structure. Get document approval as final sign-off. This can be used as a reference in the future, either when the team has changed or when a working team is successful.

“ Presentations are the key to selling design ideas. ”

CHECK LIST

DEPARTMENT OF VETERANS AFFAIRS Office of Facilities Management Interior Design Manual		
<i>Architectural Rules Check List</i>		reference
	The architectural rules are intended to provide the justification of "why" decisions are made.	
<input type="checkbox"/>	Vision and Intent	
<input type="checkbox"/>	Concept	
<input type="checkbox"/>	Design Criteria	
	1	
	2	
	3	
	4	
	5	

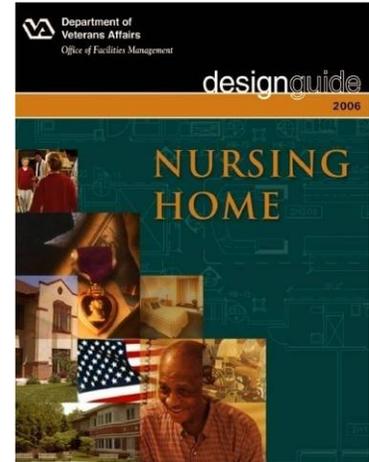
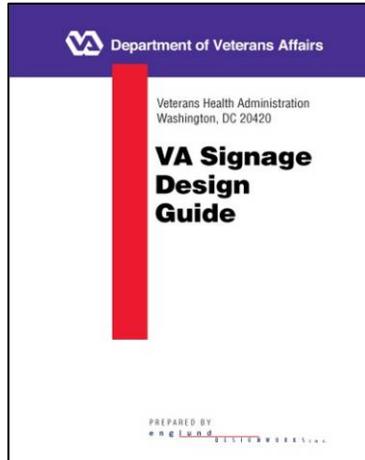
STANDARDS

DESIGN GUIDES VS. DESIGN MANUALS

Design Guides are intended to help speed the design process, control cost, avoid errors and omissions, and get value for dollars spent. The Design Guides were developed in partnership with the using service and are benchmarked with similar private sector guides. They are to be applied flexibly, not as rigid standards. Design Guides can be found in the Technical Information Library

(<http://www.va.gov/facmgt/standard/>) on the Design Guides page (http://www.va.gov/facmgt/standard/dg_idx.asp).

Design Manuals are intended to provide information relevant to specific building types. These provide information related to architecture, electrical, HVAC, plumbing, sanitary, auto transport, interior design and structural elements of each



building type. Design Manuals can be found in the Technical Information Library (<http://www.va.gov/facmgt/standard/>) on the Design Manuals page (<http://www.va.gov/facmgt/standard/manuals.asp>).

STANDARD DETAILS

Developing standard Details, presentation formats and specifications will allow more time for design. VA's standards can be found in the Technical Information Library (<http://www.va.gov/facmgt/standard/>) on the Master Specifications page (http://www.va.gov/facmgt/standard/spec_idx.asp).

KIT OF PARTS

A kit of parts should be developed for the five major building components of each project. The building components include Wall Protection, Ceilings and Fixtures, Colors, Patterns, Materials, and Casework/Millwork. These are rules that describe the feature of the building component, as well as where and when to use the component.

Wall Protection

Wall protection rules can be developed by simple line elevations along with descriptions of where and when to use them. Each elevation should display the components that make up the rule.

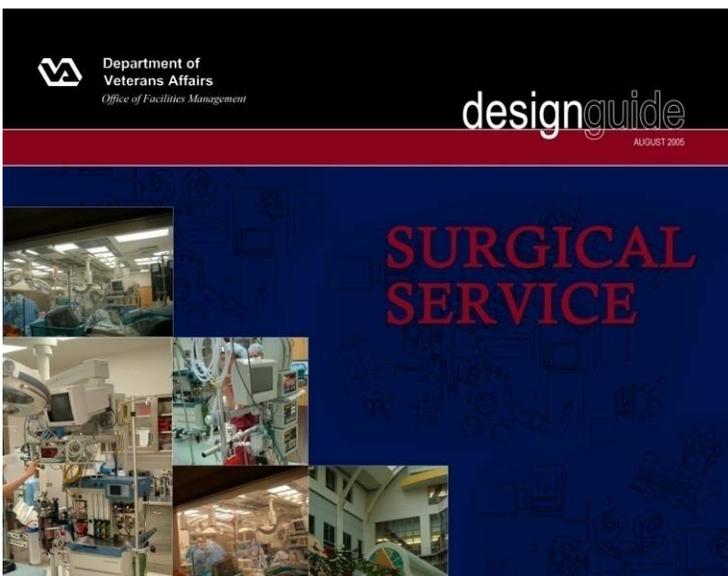
Example:

Refer to Wall and Door Protection in Division 10 - Specialties of the Master Construction Specifications (http://www.va.gov/facmgt/standard/spec_10.asp)

Refer to the Master Specifications for additional wall protection standards, Division 10 - Specialties (http://www.va.gov/facmgt/standard/spec_10.asp).

Ceilings and Fixtures

Branding ceiling and light fixture types in public, patient and staff areas can create a sense of place for all users of the buildings.



DESIGN PRINCIPLES

Lighting

Lighting needs to be functional and it should enhance the visual appeal of the built environment. Well-planned layering of ambient, task and accent lighting is critical in creating effective, efficient and aesthetically pleasing lighting. Keeping current with the fast-changing lighting technology is most important for practicing interior designers.

Example:

Public area lighting can be more decorative and can be image-building.

Patient area lighting needs to be planned with adjustability and flexibility. Patient rooms should have lighting planned for various settings. Lighting must be sufficient to allow medical exams to be performed, but a more home-like setting with dimmed light must also be an option.

Lighting in staff offices and areas needs to be functional and task-oriented.

Refer to the Master

Specifications for additional standards, Division 9 - Finishes (http://www.va.gov/facmgt/standard/spec_9.asp), and for VA's general drawing requirements, including organization, size, scales, and CAD format, see Design and Construction Procedures, Topic 2, "Drawings" (http://www.va.gov/facmgt/standard/proc_idx.asp).

Colors

Color theory is an important aspect of design for Patient Care. Understanding the



Evidence based design – lighting. Photo courtesy of HOK.

appropriateness of colors and applications and how they affect patients is vital. When selecting color for a specific design challenge VA staff participating in the development of interior design projects should consider the following elements:

- Color impact on space
- Obtaining technical knowledge
- Acknowledging personal bias
- Addressing “emotional” impact from different color combinations
- Knowing physical and psychological affects

Pattern

Pattern and texture are important in the development of the design for healthcare facilities. Patient conditions can make them sensitive to various patterns and textures. The environment should support a sense of stability and visual clarity.

Materials

Material rules can be developed by creating colored plans for floors, walls, and ceilings. These plans will define the standards for every room type in the building. The finish materials should be selected by using the following criteria:

- Meets project interior design concepts and intentions, while supporting the exterior design
- Follows application/code requirements/JCAHO
- Provides durability and maintenance
- Supports sustainability and/or evidence based design principles
- Minimizes initial costs/life cycle cost
- Refer to the Master Specifications for additional material standards, Division 9 - Finishes (http://www.va.gov/facmgt/standard/spec_9.asp), and for VA's general drawing requirements, including organization, size, scales, and CAD format, see Design and Construction Procedures, Topic 2, "Drawings" (http://www.va.gov/facmgt/standard/proc_idx.asp).

Casework, Milled and Modular

Designing casework should be a team effort between the Designer, VA staff participating in the development of interior design projects, users, engineers and architects. User input is valuable to understand the function needs of the casework. The engineer can help with understanding the maintenance and cleanability needs of the casework details. The architect will provide structural assistance.



Nursing home millwork. Photo courtesy of the Department of Veterans Affairs.

Casework (either milled or modular) has various construction types. These construction types should be coordinated with the functional location of the casework. VA staff participating in interior design projects project should study the specification sections and choose the appropriate type and each casework location and discuss with the design team.

Milled casework refers to wood veneer casework and plastic laminate casework. This type of casework construction offers more design innovation but offers very little user flexibility and is typically not reused. Refer to the Master Specifications for additional casework standards, Division 12 - Furnishings. (http://www.va.gov/facmgt/standard/spec_12.asp)

Modular plastic casework is typically more expensive than transitional milled casework, but it has many benefits that can, over the lifecycle, outweigh the initial first cost. Modular casework can be reused and is a great choice for areas that are temporary. This casework also has the flexibility of being reconfigured in the field with no construction mess.

Refer to VA's general drawing requirements, including organization, size, scales, and CAD format, see Design and Construction Procedures, Topic 2, "Drawings" (http://www.va.gov/facmgt/standard/proc_idx.asp).

Refer to Section 09 06 00 (previously Section 09050) - Interior/Exterior Finishes, Materials and Finish Schedule in Division 6 – Wood, Plastics and Composites (previously Wood and Plastic) for helpful documentation charts (http://www.va.gov/facmgt/standard/spec_6.asp).

DESIGN PRINCIPLES

Furniture/Fabric

Choosing the appropriate furniture and fabrics can be very challenging for the many healthcare environments with the many options that the product industries offer. VA staff participating in the development of interior design projects should test fabrics and ask manufacturers to provide samples for in-house testing and mock-ups.

Furniture Attributes

- Scale/Size
- Finishes
- Seat Options
- Back Height
- Style - Look and Feel
- Arm or Armless
- Weight Capacity
- Width Capacity

- Single or Double Seat
- Gang or Tantum Style

Fabric Attributes

- Moisture Barrier
- Cleanable
- Antimicrobial
- Abrasion Resistance
- Color Fastness
- Warranties
- Recycled Content / Recyclability

VA MASTER SPECIFICATIONS

VA has provided Master Specifications (http://www.va.gov/facmgt/standard/spec_idx.asp) for VA staff participating in the development of interior design projects to use as resources. There are over 319 master specifications that are used for a variety of building construction projects. These range from new medical, office, and utility buildings to cemeteries and minor renovation and remodeling jobs. These specifications are best practices which will aid VA staff participating in the development of interior design projects in the execution of their projects. All VA projects should refer to these specifications. For a complete listing of VA Master Specifications, please refer to Internal Resources section in this document.



Left and above:

Mental Health facility at VAMC Palo Alto, California. Courtesy of the Department of Veterans Affairs.

TOOLS FOR TRACKING COST

Material Disbursement

Tracking the allocation of materials throughout a space or building is important for maintenance and cost analysis. Methods include:

- Track the initial materials budget allowance by product.
- Track the installation and final product cost.
- Track the initial cost and final cost difference of each product to watch inflation and budget targets.

Cost per Square Foot

- Track project installation costs per project.
- Track the means of material constructions. This helps VA staff participating in the development of interior design projects to budget correctly for material allowances in the beginning of a project.

Life Cycle Costs

- Track the initial cost and final cost difference of each product to watch inflation and budget targets.
- Collaborate with housekeeping, maintenance, and construction and facilities management to understand cleaning, maintenance and repair costs.

TOOLS FOR TRACKING FURNITURE

Warranty

Tracking a copy of the warranty for finishes and furniture is very important to collect on the guarantee given to the purchaser by a company stating that a product is reliable and free from known defects and that the seller will, without charge, repair or replace defective parts within a given time limit and under certain conditions.

Copy Purchase Orders

Tracking a copy of the Purchase Order will give the designer the information on who supplied the product and provided specifications and quantities.

Bar Coding

Tracking furniture using bar coding equipment and scanner hardware would help VA staff participating in the development of interior design projects locate specialty furniture such as bariatric seating, office and patient care items.

PROJECT DOCUMENTATION

DOCUMENTATION

For VA's general drawing requirements, including organization, size, scales, and CAD format, see Design and Construction Procedures, Topic 2, "Drawings" (http://www.va.gov/facmgt/standard/proc_idx.asp).

For abbreviations related to finishes and doors see Room Finishes, Door and Hardware Schedule, Section I "General" (<http://www.va.gov/facmgt/standard/rooms/rooms.doc>). For other design abbreviations, see Section 1 of any of the VA Design Guides (http://www.va.gov/facmgt/standard/dg_idx.asp).

PRESENTATION

VA has provided Presentation Standards for VA staff participating in the development of interior design projects to use as resources. These standards are best practices:

- A/E Information (http://www.va.gov/facmgt/ae/des_sub.asp)
- Design and Construction Procedures (http://www.va.gov/facmgt/standard/proc_idx.asp)

DESIGN PRINCIPLES

SPECIFICATIONS

VA has provided Specification Standards for VA staff participating in the development of interior design projects to use as resources. These Standards are best practices:

- A/E Information (http://www.va.gov/facmgt/ae/des_sub.asp)
- Master Specifications (http://www.va.gov/facmgt/standard/spec_idx.asp)

DRAWINGS

VA has provided Drawing Standards for VA staff participating in the development of interior design projects to use as resources. These Standards are best practices:

- A/E Information (http://www.va.gov/facmgt/ae/des_sub.asp)
- A/E Review Checklists (http://www.va.gov/facmgt/standard/ae_checklist.asp)
- Design and Construction Procedures (http://www.va.gov/facmgt/standard/proc_idx.asp)
- National CAD Standards and Details (<http://www.va.gov/facmgt/standard/details.asp>)

RESOURCE EXAMPLES

The following list gives examples of VA projects that support the organization's strategic goals:

- Baltimore Rehabilitation and Extended Care Center, Baltimore, Maryland – Opened in August 1996
- CARES Consolidation (Ambulatory Care, Administration, Domiciliary), VAMC Pittsburgh
- New Medical Facility, Las Vegas
- New Bed Building, San Juan, Puerto Rico – Groundbreaking held in October 2006
- New Medical Center, Orlando, Florida – Concept approved in September 2006
- Operating Suite Replacement, VAMC Columbia, MO
- (200) Patient Bed Tower, VAMC Chicago - 2007
- (120) Patient Bed Gero-Psychiatric Replacement Facility, VAMC Palo Alto
- Replacement Medical Facility, VAMC Denver
- Spinal Cord Injury, Syracuse, NY – Schematic design peer review completed in October 2006
- State Veterans Home at Fitzsimmons, Aurora, Colorado – Opened in October, 2002
- Washington Veterans Home, Retsil, Washington – Opened March 2005, Achieved LEED Gold Certification



Above and right:

Washington Veterans Home. Retsil, Washington. Photos courtesy of the Department of Veterans Affairs.