010000-H: ARCHITECTURAL GENERAL DESIGN GUIDELINES

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INTRODUCTION TO DESIGN GUIDELINES

Background: The University of Michigan Architecture, Engineering and Construction Department (AEC) maintain general and technical guidelines for the design of University of Michigan facilities, posted on their website. The technical sections are formatted with the six-digit Construction Specifications Institute (CSI) Master Format.

UMHHC Guidelines: Shares many of the AEC guidelines. However, due to the clinical, regulatory and maintenance needs of health care facilities, UMHHC Facilities Planning and Development (FPD) have some unique design guidelines. These are presented with CSI six-digit identifier with the suffix “H”.

UMHHC FPD Website: The Design Guidelines adopted by UMHHC area listed on the FPD website. Where the AEC guideline is adopted, clicking on the title from the FPD website will open the appropriate AEC document, maintained on their website. Unique UMHHC guidelines have the suffix “H”, and clicking the link will open the UMHHC guideline. Note in some cases the “H” document replaces the AEC document, while in other cases the AEC guideline is adopted with unique information contained in a supplemental “H” document.

Applicability: The University of Michigan Hospitals and Health Centers (UMHHC) Design Guidelines are applicable to all new buildings owned and operated by UMHHC, and to renovations projects within owned and operated buildings.

Offsite: In general, guidelines refer to inpatient and outpatient facilities on the main medical center campus including the Wall Street area, and the East Ann Arbor campus. Where guidelines refer to “offsite” exceptions, this refers to UMHHC owned facilities that are away from the main campuses.

Leased Facilities: When the facility to be designed is to be leased by UMHHC, review the requirements with the assigned UMHHC Design Manager and FPD team, as well as the building owner’s representative.

BUILDING CODE OCCUPANCY CLASSIFICATIONS

Current building codes recognize several classifications of occupancies that may apply to patient care and staff areas within UMHHC Facilities.

“Inpatient” “I-2” in the Michigan Building Code and “Health Care Facilities” in the Life Safety Code, NFPA 101. These facilities are designed for the treatment of patients who may be incapable of self-preservation, for longer than 24 hours.
“Ambulatory Health Care” All outpatient facilities should be designed to meet “Ambulatory Health Care” codes, as some UMHHHC outpatient facilities render, or accept the care of, individuals incapable of self-preservation. This also allows the treatment type to change over time, which might otherwise trigger an occupancy change. Exceptions to this Policy shall be reviewed and approved by the Director of Facilities, UMHHHC. Please give further attention to General Policy Paper “Facility Requirements for New and Existing Ambulatory Health Care Occupancies”.

“Business” Occupancies should only be considered for office functions, unless specifically directed by UMHHHC.

EXTERIOR ENCLOSURE

All new construction or renovations projects that replace or impact the exterior enclosure (such as roof replacement or modifications, exterior wall and glazing systems) should follow the AEC Special Instructions to Designers 4.2 “Building Envelope” guideline. This document provides guidance during design and construction to control water, temperature and air movement in the completed building.

Investigation Phase: UMHHHC Design Manager will include within project budgets sufficient funds for design reviews and construction observation per the Exterior Envelope guideline. These will be separate line items, not included in the construction estimate.

Design Review: Per the guideline, a Building Envelope Specialist (BES) will be engaged by the Owner. The BES will be a third party to review construction documents, specifications and detailing of the exterior enclosure. Exterior enclosure design must ensure that the performance of concealed materials (including flashing, insulation, adhesives, etc.) match the intended lifespan of the exterior enclosure.

Construction Observation: Per the guideline, a BES will be engaged for daily observation of the installation of materials that will be hidden from view in the final structure. Workmanship is key to a successful exterior enclosure, ongoing observation of construction activities must be included in the project budget. No exterior enclosure materials should be concealed without observation by the BES.

ACOUSTICAL DESIGN

In patient care areas, acoustical privacy is required. Patient sleeping rooms, exam rooms, consultation rooms, toilet rooms and similar areas should be designed to meet the following code and guidelines.

“2007 Minimum Design Standards for Health Care Facilities in Michigan” is the current code for Inpatient and Ambulatory Care facilities that are regulated by the State.

Table 1, (page 92) “Sound Transmission Limitations in General Hospitals and Outpatient Facilities” list the code minimum STC for partitions and floors.

For example, partitions are required be rated as follows:

- Patient Room (exam, treatment, consultation, sleeping) to another Patient Room, 45 STC
- Public Space to Patient Room (exam, treatment, consultation, sleeping) 55 STC
- Service Areas (kitchens, machine rooms, etc. with high noise) to patient room 65 STC
- Patient Room access corridor to Patient Room 45 STC.

Note that the STC ratings are for the entire partition as a whole, floor to structure above. If the partition type changes above the ceiling, the detailing must be such that the overall minimum STC is met between occupied spaces.

BUILDING ENTRANCE DESIGN

All building entrances should consider Michigan’s harsh and variable weather conditions. Covered entrances and internal vestibules should be provided. Vestibules should be adequately sized and shaped
to reduce the impact of wind on building occupants. An ideal vestibule floor plan would include adequate length that doors might not be open at the same time, include a right angle perhaps a third set of doors. The fire suppression system should be designed to withstand extreme cold. Built in entrance walk off mats should be provided, the first approximately 12 feet with a design to scrape off and capture dirt, salt, snow and water, and the second at least 12 feet with a stiff finishing mat.

**Public entrances** should be obvious to people approaching the building, and sited to provide covered drop off from vehicles. Automated entrance doors and barrier free access are required, and supplemental heat should be considered at patient entrances. Adequate space for the storage of wheelchairs, stretchers, oxygen tanks and other equipment should be provided. Provisions for entrance attendant(s) and/or security staff should be planned. Seating for patients waiting for a ride should be provided, with a view of approaching vehicles.

**Staff entrances** should be away from public entrances and delivery entrances, have adequate lighting, clear sight lines with no hiding spots and be barrier free. Cardreaders and security telephones are typically provided.

**Service entrances** should be located away from public and staff entrances, and have adequate staging area for materials being delivered, and for materials awaiting pickup. Adequate space for delivery vehicles to enter, maneuver and exit should be provided. Dumpsters for standard waste should be readily accessible, as well as recycling containers, hazardous materials containers, dirty linen, lab specimens. If loading dock(s) are provided, dock levelers and seals should be provided. A signaling system that deliveries have arrived is needed. Provide an indoor room for the unpacking of deliveries, as corrugated cardboard boxes and other shipping materials cannot be brought into clinical or clean storage areas.

**FACILITY OPERATIONS**

**Maintenance:** Building design should include access doors, removable panels and operational clearances to permit the servicing and replacement of building equipment and major medical equipment. It should be possible to complete routine preventive maintenance without impacting ongoing operations or extraordinary effort.

Fixtures, accessories, and interior surface selection should be selected to be durable and easily cleanable with standard products. Stock items and standard colors are desirable to allow future replacement and patching. Custom materials and color selections should be avoided. Typically there is very limited storage space available for “attic stock”.

Water resistant wall surface materials should be selected wherever plumbing fixtures are installed.

**Environmental Services:** Facility design shall incorporate adequate space for janitorial and cleaning equipment, stocks of paper products and cleaning products. Provide adequate space distributed throughout the building, as well as at the service entrance, for linen, supplies and food service. Provide adequate space throughout the building, as well as at the service entrance, for trash, hazardous waste, recycling, soiled linen holding, etc.

**Staff Support Spaces:** Appropriate spaces shall be provided for staff member’s personal belongings to be stored securely. Appropriate space should be planned for staff breaks and meals, lactation spaces, clothing change spaces, and restroom facilities.

**FLEXIBLE DESIGN**

Facilities should be designed for maximum practical flexibility. Design facilities with “lean” principles to standardize work, and minimize staff travel and “hunting” time. Patient treatment and staff spaces should be standardized to the greatest extent possible to allow flexible use of the space over time. Where appropriate, full scale mock ups of spaces should be reviewed with all stakeholders.
Built in casework should be limited as much as possible. Where systems furniture can be used, it often provides greater flexibility. In staff and service areas, consider the use of open shelving instead of enclosed upper cabinets.

**INFECTION CONTROL**

**Investigation and Design:** During the investigation and design process of clinical areas, the department’s UMHHC Infection Control and Epidemiology (ICE) professional should be included within the team of stakeholders. If the project contains any clinical space, the design guideline 5.13 “UMHHC - Healthcare Procedure Room Infection Control Types and Requirements” provides guidance on the requirements for all types of procedure rooms, operating rooms to exam rooms.

**Construction:** For construction projects within existing clinical facilities, the ICE professional will prepare an Infection Control Risk Assessment (ICRA), to cover the construction requirements for enclosure, ventilation, and construction activities to minimize risk to patients.

**SAFETY AND SECURITY**

**Safe Patient Handling and Movement:** During the investigative phase of clinical projects, an Ergonomics Specialist from UMHHC Safety Management will work with the clinical staff to determine what, if any, equipment or special design modifications are required to be included within the construction project.

**Workplace safety:** UMHHC Safety Management team members will be a part of the design team, reviewing planned potentially hazardous chemicals for eyewash and ventilation requirements, staff ergonomics, appropriate fire extinguisher types, etc.

**Patient Safety:** UMHHC Clinical Affairs will be a stakeholder for clinical areas, championing safety for patients. Refer to 5.15 "UMHHC - Patient and Staff Protection: Falls, Bariatrics, Low Vision, Ergonomics”.

**Construction Safety:** UMHHC Safety Management team members will be a part of the construction team, conducting safety training, observing construction work, and reviewing the installation of required fire rated assemblies. Phasing, temporary facilities, appropriate separation of the construction area, and protection of adjacent ongoing operations must be considered in occupied buildings.

**Security Services** is a key member of the design team. The design of facilities must consider the security of staff, patients, visitors and property. Security includes clear sight lines, limiting hiding spots and good lighting, as well as mechanical and electronic door hardware, panic buttons, communication and security devices, and cameras.

**WAYFINDING**

Facility design should consider how patients, visitors and staff will find their way to the facility, into the facility, and travel throughout the facility. Obvious entrances, visual cues, landmarks, pathways, lighting and clear sight lines will make wayfinding signage supplemental.

**Investigation:** FPD’s wayfinding coordinator should help develop the wayfinding budget.

**Construction:** Assist as needed with temporary signage, maps and directions during construction.

**Activation:** Permanent wayfinding will include signage, landmarks, updated maps and directions, and building directories.