Planning, Design and Construction Guidelines
For University of Missouri Health Care Facilities

Review Date: 11/07/2018

This document is supplemental to the UM Consultant Procedures and Design Guidelines. It is not intended to duplicate or conflict with UM standards unless standards are being exceeded.
Forward

MU Health Care (MUHC) is the health care component of the University of Missouri’s Columbia campus. It is a health care delivery system consisting of multiple Columbia-based hospitals and offsite clinics distributed across the regional service area. It includes the following:

- University Hospitals (UH)
- Missouri University Psychiatric Hospital (MUPC)
- Missouri Orthopedic Institute (MOI)
- Women and Children’s Hospital (WCH)
- 62 offsite clinics

MU Healthcare is accredited by the Centers for Medicare and Medicaid Services through DNV –National.

University Hospital, the system’s core hospital, is a level I trauma center primarily serving Missouri residents. It was originally constructed in 1956. Subsequent building projects have continued and are still ongoing. A master facility planning process was set in motion in 2017. It will continue to 2018 to provide a framework for future growth and development along with reallocation of resources to meet the future health care needs of the community.

Over the years a collective body of information, lessons learned, and technological development has generated a need for guidance in present and future projects. These Guidelines reflect the collective knowledge gathered from the organization’s management staff and front line trades people.
It has been observed that to effectively manage operations and maintain a high level of service, standardization of certain building materials and systems (e.g., door hardware, automatic doors, fire alarms, HVAC equipment, and Building Automation, etc.) has become essential. The intent is to establish preferred vendors with whom MUHC has had positive results and to set up processes to review and approve any and all substitutions or alternative bids in order to maintain control over all products being installed within MUHC facilities. There are very few situations that require a need for a sole sourced product.

This document outlines information that should be used to establish basis of design for MU Health Care Facilities, which frequently differ from the typical campus facilities covered by the UM CPDG.

The 2014 Guidelines for Design and Construction of Hospitals and Outpatient Facilities (Facility Guidelines Institute, 2014) is referenced as minimum recommendations for the Hospital standards specified in this document. A more complete list of codes and standards that are enforced can be found at the University of Missouri Facilities Planning and Development website.

MUPC (Missouri University Psychiatric Care) projects additionally require compliance with the Design Guide for the Built Environments of Behavioral Health Facilities Edition 3.0 distributed by the National Association of Psychiatric Health Systems (www.naphs.org).

Guidelines that follow have been organized per CSI MasterFormat Divisions. They reference Products and Materials, but also reference some requirements for Submittals, Quality Assurance and Execution. Per University of Missouri guidelines, project specifications shall follow CSI MasterFormat conventions unless approved otherwise by the Owner’s Representative.
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DIVISION 1 – General Requirements

General

A. All domestic water, power, chilled water and steam is provided from the MU’s utility (CF Energy Management) for UH, MOI, and MUPC facilities. All other facilities are supplied through municipal providers.

B. Project design and material selection shall follow best practices and life cycle cost value per UM Consultant Procedures and Design Guidelines (CPDG).

C. Design decisions that don’t meet these or University of Missouri – Facilities Planning and Development (UM FPD) guidelines shall be reviewed, evaluated for impact to the total project and approved in writing by Owner’s Representative and MUHC Engineering Services.

D. Each Project shall be evaluated to determine need for 3rd party commissioning.

E. Access to electrical and mechanical rooms shall be located outside sterile areas.

F. All equipment shall be made accessible for maintenance whether floor or ceiling mounted.

G. Utilize universal room design so that items such as thermostats, light switches, etc. are installed in the same place on each unit and in like rooms.

H. Pressure dependent rooms to be appropriately sealed (penetrations, between walls and deck, etc) and shall pass a door blower test in construction prior to acceptance.

I. Coordinate room numbering with MU Health Care. Room numbering shall follow MUHC/MU room numbering guidelines. Numbering strategy shall be established at DD and be carried throughout the project. Numbering Approval shall be by MU Health Care.

J. Use of open water features as an indoor design element is prohibited.

K. Room names and numbers, and column lines and their designations, shall appear on all floor and partial floor plans as they appear on architectural drawings.

L. Floor and partial plans shall include graphic scales, north arrows and key plan.

DIVISION 2 – Existing Conditions

A. It is the consultant’s responsibility to confirm that documents produced accurately reflect actual conditions to avoid unforeseen conditions which may result in construction change orders.

02 4000 Demolition

1. Remove all abandoned and permanently disconnected items. Do not abandon in place.
2. Terminate all MEP utilities per UM System requirements.
3. Airborne construction dust containment control from ceiling to deck:
   a. If not feasible/possible to extend partition to deck, extend and seal tight 6-mil
      fire retardant polyethylene listed by Fire Underwriter’s Laboratories, Griffolyn
      #T55R or Star-Tex of Lakeville, MN 55044 with Griffolyn Fire retardant tape, or
      approved equal, from ceiling to deck.

4. Contamination control mats outside of dust enclosures:
   a. Tacky Mat 800030 (high tack) by Liberty Industries, 133 Commerce Street,
      East Berlin, Connecticut, 06023, 1-800-828-5656
   b. Owner approved equal.

02 8000 Facility Remediation
1. Asbestos removal - All flooring testing positive for Asbestos Containing Materials (ACM)
   (floor tiles, seamless flooring, fill and adhesives) needs to be abated and prepped as
   follows:
      a. Remove all floor tiles, sheet goods and/or adhesives containing ACM.
      b. Abate the floor finish as prescribed by MU Environmental Health and Safety
         (EH&S)
      c. Following abatement of ACM, allow floor substrate to dry and test for PH and
         relative humidity compliance with manufacturer’s requirements prior to
         installation of adhesives and new flooring materials.
      d. Remove any debris and residual materials

DIVISION 3 – CONCRETE

General

A. Interior floor expansion joints shall support heavy wheeled equipment and provide a
   smooth transition.

B. Cast in place sleeves should be installed and sealed at through floor penetrations. Top of
   sleeve at 1” AFF.

C. The finish and slope of concrete surfaces shall match project scope and function (i.e. Slope
   to floor and shower drains, etc.)

D. When installing a mud slab for future use, provide troweled finish with sealer.

E. Provide waterproof wall protection in the janitor’s (ESC) closets around the mop sink and
   sealed to the floor. In lieu of concrete sealer, include a waterproof type of floor.

03 3006 Waterproofing Admixture for Cast-in-Place Admixture

A. Add Thorobond water-based polyvinyl acetate (PVA) (Thoro Acryl 60) bonding agent when
   bonding to existing concrete
DIVISION 4 – MASONRY

A. Special brick / block shapes should be avoided. Selected material should be readily available, not special order.

B. Use quick release weeps so water escapes from cavity wall quickly. Do not use rope weeps.

DIVISION 5 – METALS

A. Install steel backing, 20 gauge, at 10 inches above floors along all corridors, handrails, cabinetry, and any wall hung items exceeding 20 pounds, including but not limited to monitors, televisions, and baby changing.

DIVISION 6 – WOODS, PLASTICS & COMPOSITES

A. Install ¾” fire-rated plywood on all four walls of Communications rooms and ensure fire rating label of plywood is not obscured. See MU Telecommunications Construction Standards for more information.

B. Particle board shall not be installed in any wet locations or high traffic areas.

06 4100 Architectural Wood Casework

CABINETS:

Refer to Quick Reference Guide for Vertical and Horizontal Surface Materials required for various room types

1. Quality Standard: AWI Custom
2. Wood-look Laminate: Typical Grain Direction to be Vertical
3. Reveal overlay construction?
4. Adjustable shelving shall be 24” deep for distribution management system in clean utility rooms or PAR storage.
5. Infection Control standards do not allow base cabinets under sinks to be used for storage. To insure against this, and to meet ADA requirements, cabinet construction under sinks shall be removable plywood apron panels mounted with Z-clips or screws. In public restrooms, design is to accommodate shallow-bowl sinks and ADA guidelines. In exam rooms and nurses’ stations, design is to accommodate deep-bowl stainless sinks.
6. Cabinet doors are to have PVC edge banding (self-edging not acceptable).
7. Cabinet door hardware for all areas to be 5-knuckle hinges.
8. Provide plastic laminate sloped top on upper cabinets or plastic laminate filler panel between top of upper cabinet and ceiling to minimize collection of dust and debris.

Countertops:

1. Plastic Laminate Application: Fabricate using 2 layers of ¾” plywood (not MDF) covered with HPDL
2. Vinyl Countertop Edge: PVC tee-molding to match thickness of countertop, color as scheduled
3. Solid Surface Application: Substrate: ½” Plywood covered with ½” thick solid surface (typical)
4. Solid Surface Material
   a. Preferred materials: See Finishes Legend

Desk height built-in work surfaces:

1. No built-in base cabinets or pencil drawers.
2. Mobile file cabinets and pencil drawers will be supplied by Owner.
3. Grommet placement and installation will be by Owner after construction is complete.
   a. Alternate: Place countertop 1.5” – 2” from back wall to accommodate wire management.
4. Clear space beneath workspace: 27-1/2” minimum to 30” maximum height (to accommodate standard Owner-furnished file cabinets and meet ADA Guidelines). Verify FFE heights with MUHC Engineering Services/Planning, Design & Construction Staff

Hardware:

1. Cabinet door hinges: 5-knuckle hinges
2. Countertop supports to be surface-mounted Rakks #EH1824FM (18x24) or #EH1818FM (18x18), or approved equal.
3. Drawer and Door pulls: U-shaped wire pulls, 4” centers
4. Drawer Slides:
   a. Regular: 100-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both


Locks:

1. Cabinet Locks – CompX National Stock Locks – Master Keyed to E041A
2. Ives Elbow Catches IV2-A92

Miscellaneous:

1. Peg board: only nonporous products - plastic or polypropylene

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

A. Fire Stopping: A certified fire stopping contractor shall be provided on all projects that require installation of fire stopping materials. Utilize UL approved designs with wall mounted, self-adhesive labels. Acceptable manufacturers are 3M, Hilti and STI.

B. Roofing System basis of design is Garland Modified Bitumen or equal. Consultant shall specify which system – number of ply and type of cap sheet/ warranty/cold applied/ etc.

C. Address snow and ice conditions above entrances and walkways.

D. Verify the need for window washing davits or anchors on roof

E. Locate roof mounted equipment away from roof edge per Occupational Safety and Health Administration (OSHA). If equipment is closer to edge than allowed, provide guard rails.

07 8000 Fire and Smoke Protection

A. Cable/conduit penetrations at rated walls – EZ-Path by STI

B. Fire Proofing: installer must be a trained, certified fire proofing expert using the proper UL listed assembly for each penetration through each type of rated wall assembly.

C. All Smoke and/or Fire barriers shall be labeled above ceiling height every 10’.

DIVISION 8 – OPENINGS

General

A. Provide clear access for wheelchair bound users at all doors. Doors shall be minimum 3’-8”.
B. All openings in rooms designed for negative or positive pressure shall seal when closed. Install automatic door bottoms or sweeps when appropriate.

C. Fire and smoke doors shall meet NFPA 80 Standards.

D. Door and frame assembly rating tags shall be visible and not hidden by applied hardware.

E. Entrance vestibules shall be designed to minimize air exchange and accommodate electronic locking. Air curtains with heaters may need to be incorporated in some locations such as at main entrances and loading docks to minimize air infiltration.

F. Sliding doors /ICU Doors- specify sliding door frames to be same size as finished wall so the gypsum wall board is not exposed to damage.

G. Provide Steel backing for door stops.

08 0671 Door Hardware

H. All exterior doors that have electronic access control shall have a key override.

I. Audible door hold open alarms that sound after 15 seconds on all exterior doors that are not used by the general public.

J. Install heavy duty low power door operators on all main lobby public bathrooms. Also any doors leading from waiting areas into clinical areas should be evaluated for inclusion of a power operator.

K. Install "Kill Switch" on all Auto Doors (Power Off switch).

L. Power from "Life Safety" Circuit for all egress auto doors.

M. Card Readers to be installed at all Soiled and Clean Utility, Med Rooms, Staff Locker/Break Rooms. No Mechanical Key Pad Locks to be used.

N. Closers: Only LCN brand allowed. UL listed and fire rated where required. Model number LCW4040XP is the standard.

O. Handles: Lever Style 14 (Curved Return) and Rose Style D (3-1/2" Convex)

P. Hinges: Install continuous hinges on all fire, corridor and exterior doors.

Q. Doorstops: Use of 90 degree door stops into patient rooms shall be discussed during design as they don't typically allow good wheelchair or bed access.

R. Locks:
   1. New and Existing Construction:
      a. To match existing key system, all locksets and cylinders shall be Best 93K series.
      b. Any lock used must accept Best 7 Pin Core
c. Finish: 626 finish unless matching different existing finish.

d. For aluminum storefront-type doors: Prefer Preferred Adams Rite Deadlocks/Deadlatches with key cylinders that will accept Best 7 pin cores

2. Electric Strikes: Von Duprin or Folger Adams. Strikes must be 24V.

3. Panic Devices: Von Duprin


5. New Construction: Enhanced Keyway: The “enhanced keyway” is the newer Best lock cylinder that takes the longer key and is raised slightly in the lockset, as differentiated from the traditional Best keyway on which the patent was allowed to expire.

6. Privacy lock sets shall have a slotted override button.

7. Locksets are always installed by contractor and uncombinated cores turned over to MUHC key shop for keying.

08 1000 Doors and Frames

08 1423 Clad Wood Doors

For MUHC Clinics:

1. Eggers Industries Wood doors, stained.
2. Plain Sliced Vertical Graining.
3. Species and stain colors as approved by UMHC Engineering Services/PD&C

For UH, WCH, MOI and MPC Hospital spaces:

1. Marshfield-Algoma Durable/Rhino Doors™.
2. Finishes and colors as approved by MUHC Engineering Services/PD&C.

Rated doors:

1. All rated doors shall have the rating label clearly visible and not painted.
2. Do not use rated doors in walls that don’t require rating. If rated doors are used, rating labels must be removed.
3. Installation Tolerances for Smoke Partition Doors and Fire Doors must meet NFPA 80.

Tolerances:

Positive Latching:

Not more than 1/8" gap between the face of the door and jambs (Top and Sides)
Not more than 1/8" between face of door and stop
Self-Closing
Maximum of 3/4 " gap at bottom of door to finish floor
Meeting Edges of pair of doors:
1/8" on wood doors
1/8" +/- 1/16” on steel doors

Smoke Resistant Doors (Patient Room Doors and other non-rated doors):

Same as above wood doors, except deviation of +/- 1/16" from 1/8"
Door and Frame Assemblies:
1. New doors must be installed in new frames. Use of existing frames with new doors will not likely produce installation that complies with required tolerances.
2. Use of existing doors will require custom field-scribing to set required tolerances.
3. Paint and primer for metal doors is to be water based and meet all other requirements as listed in the UM Consultant Procedures and Design Guidelines.

Door widths:
1. All doors for patient traffic shall be 44” wide minimum
2. All new patient room doors to be 60” wide (double-leaf 42/18)

Door Frames:
1. Only Welded Hollow Metal Frames are to be used in new wall construction.
2. Knock-down frames are acceptable in existing walls when installing new door and frame. If door is wider than 36”, welded frame is preferred.
3. All new frames for fire doors shall be welded, securely anchored and grouted in plumb and level.
4. Fire rating on jambs shall have the label clearly visible and not painted.

Sliding Glass/Aluminum Storefront type doors (ICU/CCU):
1. Isolation rooms (negative pressure) and Protective Environment rooms (positive pressure) require smoke and draft seals on doors.

08 5000 Windows (Replacement)
1. WCH: Non-operable thermally broken insulated units with Low E coated tinted glass.
2. University Hospital: EFCO Low ‘E’ double pane

DIVISION 9 – FINISHES

General

A. Avoid finishes that are costly to maintain or repair.

B. Epoxy Adhesive shall be used under sheet vinyl in patient rooms under bed location across entire length of room due to small wheels moving/rolling the material.

C. Terrazzo may be considered for main lobbies, cafeteria, etc. due to durability and ease of cleaning.

D. Seal completely against wall assemblies that butt into window assemblies to prevent transfer of sound.

E. Design rooms and spaces with high STC Partitions where sensitive information is being exchanged.

F. Window sills shall be solid surface.
G. See Finishes Quick Reference Guides in appendices for more information.

09 0561 Flooring Preparation

1. Apply Acrylic 60 bonding agent tinted with red paint colorant to the floor and allow to dry tack free. Surface of floor should appear red when dry.
2. Apply 2 or more layers of Ardex feather finish until floor surface is level and smooth for the new flooring
3. Hand scrape of light sand Ardex feather finish to recommended smoothness for type of flooring to be installed
4. If red bonding agent appears during sanding, stop work and apply more Ardex to achieve a level and uniform floor finish

09 2216 Non-Structural Metal Framing

1. Typical partition walls are to extend to deck and be sound insulated to reduce sound transmission between walls, based on Facilities Guidelines Institute’s “Design Criteria for Minimum Sound Isolation Performance Between Closed Rooms” and “Design Criteria for Speech Privacy for Enclosed Rooms and Open Spaces.” recommendations.
2. At wall and window “T” junctions, sound transmission shall not be less than the STC of the wall.

09 3000 Tiling

Ceramic Tile:

1. Wet walls of Toilet and Shower rooms in WCH and University Hospital are to receive tile from floor to 84” AFF minimum
2. Preferred Vendors: Crossville Ceramics, Dal-Tile, American Olean
3. Contractor to provide 5 to 10% attic stock, to be determined at project’s final review.

09 5000 Ceilings

09 5100 Acoustical Ceilings:

1. 2x2 standard
2. No reveal
3. Preferred Vendors:
   a. USG Ceilings Rockface Climaplus
   b. Armstrong Ultima #1910 or Cirrus series
4. Damp or wet areas shall be WR gypsum board or moisture resistant ceiling panels.
5. Ceiling tiles are not required to be antimicrobial unless specifically requested for project by UMHC.
6. Contractor to provide 5 to 10% attic stock, to be determined at project’s final review.

09 6000 Flooring

09 6500 Resilient Flooring:

1. Sheet vinyl, 6’ or wider
2. Welding rod to match colors selected
3. Preferred vendors:
   a. Teknofloor Seamless
   b. Mannington Flooring Assurance II (Standard for Restrooms)
4. Contractor to provide 5 to 10% attic stock, to be determined at project’s final review.
5. For all renovated areas scheduled to receive resilient flooring, where walls or plumbing are being demolished or re-worked, skim coat underlayment for resilient flooring product with Ardex, feather finish
6. Adhesive: Epoxy adhesive in patient room bed zone
7. Luxury Vinyl Tile:
8. Preferred Vendor: Amtico Planks or Tiles

09 6813 Carpet Tile:
1. Specify Carpet Tile only; Squares or planks. No broadloom.
2. Face Fiber must be Type 6,6 Nylon for known stain resistance
3. Preferred Manufacturers: (These manufacturers are on University of Missouri Buying Contracts, allowing ease of ordering as well as discounted pricing when additional carpet is needed)
   a. Mannington Commercial
   b. Mohawk/Lees
4. All patterns, colors, and designs to be approved by MUHC PD&C Designers.
5. Contractor to provide 5 to 10% attic stock, to be determined at project’s final review.
6. Walk-off carpet tile at all public entries
   a. Preferred manufacturer: Mannington Entryway Systems, e.g. Recourse II and Take Back (6.6 Nylon)

Resilient Base:
1. Preferred: Johnsonite Tightlock or Johnsonite Millwork Reveal.
2. See Finish Legend.

09 7000 Wall Finishes
09 7200 Wall Coverings:
1. Type II with high tensile and tear strength.
2. Wall vinyl on exterior walls to be micro vented.
3. Patterns or designs to be reasonably patchable
4. Contractor to provide 5 to 10% attic stock, to be determined at project’s final review.

09 9000 Painting and Coating:
1. Utilization of different pigments by different paint manufacturers results in unreliability of color matching. The frequency of required paint patching at UMHC demands that the manufacturer and colors originally specified and approved by UMHC be provided by the Contractor with no substitution.
2. UMHC has determined its preferred paint and coating manufacturer to be Sherwin Williams Paints.
3. Submit actual painted samples of all specified colors. Submission of manufacturers’ fan-deck or color chips not acceptable.
4. “Submit two paper “draw-down” samples, 8-1/2” x 11” in size, for each color specified. Where sheen is specified, submit samples only in that sheen.”

DIVISION 10 – SPECIALTIES

10 1424 Signage
1. Room signage and wayfinding signage shall be coordinated by MUHC PDC Staff. It is provided by MU Health Care.
2. Coordinate room numbering with MU Health Care.
   a. Room numbering shall follow MUHC/MU Alpha/numeric room numbering guidelines.
   b. Numbering strategy shall be established at DD and be carried throughout the project.
   c. Example (P0000)
      i. Prefix to be the building code designation
      ii. First number to indicate the floor level
      iii. Next three numbers for specific room on floor up to 999.
   d. Approval shall be by MU Health Care.
3. Include required signage and decals to meet fire department requirements, i.e. roof access points, hydrants, numbered exterior doors visible with light reflective material that is 4” wide minimum

10 2113 Plastic Toilet Compartments
1. Bobrick DuraLine Series
   Compact Laminate Solid Core Construction
   Laminate Clad
   Floor-Mounted, Overhead Braced.
   Minimum 36” wide doors

10 2123 Cubicle Curtain track:
1. On The Right Track (No Substitutions Allowed)
   Extruded Aluminum, White Baked Enamel
   Standard Concealed Stainless Steel hardware
   UMHC Designers to specify cubicle curtain fabrics

10 2800 Toilet, Bath and Laundry Accessories
1. CFCI (Contractor Furnished, Contractor Installed) The following items are typically by Contractor and must be specified. See Finish Legend in Appendix for preferred or required manufacturers.
   a. Partially recessed Automatic Paper Towel Dispensers
   b. Mirror over sink
   c. Grab bars
   d. Personal Shelf
   e. Toilet paper dispenser
f. Sanitary napkin disposal (as requested)
g. Towel bars
h. Individual robe hooks (as requested)
i. Specimen pass thru (as requested)

2. OF/CI (Owner Furnished/Contractor Installed) The following items are typically by Owner but must be accommodated in the design process. See Finish Legend for preferred or required manufacturers.
   a. Soap dispensers
   b. Alcohol dispensers.
   c. Sharps boxes
   d. Glove dispensers
   e. Surface mounted towel dispensers
   f. Multi-hook coat hooks – Wood flip hook Espresso or Natural by Organizeit.com
   g. Marker/bulletin boards/signage
   h. Pharmaceutical waste

3. Grab bars and other accessories exposed to frequent cleaning shall be Powder Coated clear or color to prevent chemical rusting.

4. Public restrooms shall utilize ADA accessible, flip-down grab/support bar on the off-wall side of the toilet.

5. Ensure that all shower seats are rated to accommodate patient weight requirements and that the supports/ blocking behind the wall will support/exceed the rating of the seats.

6. Placement of robe/towel hooks in patient rooms should be without sharp edges and placed high enough to prevent patient safety hazard (i.e. catching shoulder or IV tubing on hook). Standard is the pulldown hooks for “organize it” .com. Ensure hooks meet ADA requirements.

DIVISION 11 – EQUIPMENT

General: All fixed equipment must be accessible by maintenance on all sides for service. Minimum clearance shall be 24”.

11 7000 Healthcare Equipment
   1. Monitor/Keyboard channel mounting system: GCX Instrument Mounting System WC-0002 x length or equal
   2. Headwalls and Rail: Hospital Systems Inc. (HIS)
   3. Technology Wall Station Mounting System: Human Scale V6 or V7

DIVISION 12 – FURNISHINGS

General
   1. Seal all wooden casework edges including the wood that sits on the floor.
   2. Verify where sloped upper cabinet tops should be installed vs. full height PLAM soffits when needed.
   3. All transaction counters shall be solid surface.
4. All work surfaces in Lab areas shall be epoxy resin or equal, no plastic laminate.
5. Interior Plantings are by MUHC. Design and installation considerations for MUHC personnel are included in Appendix A.

12 0000 Furnishings
All furniture to be specified and procured by UMHC Designers

12 2000 Window Treatments
12 2400 Window Shades:
1. Preferred: Chain-driven or motorized mesh roller shades. Manufacturer to be as approved through current University of Missouri Purchasing Agreements
2. Openness factor of 3% required to provide adequate privacy after dark with the lights on in the room and prevent glare on computer screens.
3. Patient rooms require dual shades with black out.

DIVISION 13 – SPECIAL CONSTRUCTION
See UM Consultant Procedures and Design Guidelines. All design guidelines posted are applicable.

DIVISION 14 – CONVEYING EQUIPMENT
A. Otis Elevator is the basis of design for all elevator services. For all other design information, see UM Consultant Procedures and Design Guidelines.

DIVISION 21 – FIRE SUPPRESSION
A. System is to be a “Fully Sprinklered” system.
   1. Quick response and must be an engineered and certified system, as per definitions in NFPA 13.
   2. Concealed sprinklers shall be installed in all spaces with finished ceilings.

B. All test ports to run to drain capable of handling the flow. (Low point drain). If no drain is available, run to outside building per code. If this occurs on the MU main campus, approval by Engineering Services is required.

C. CPVC Piping is not allowed.

D. Flex heads are not allowed.

DIVISION 22 – PLUMBING
See UM Consultant Procedures and Design Guidelines. All design guidelines posted are applicable. Information below supplements and supersedes information provided in Division 22 of those documents.
22 0100 Plumbing System Design

A. All valves shall be tagged and a valve schedule shall be provided. Valve tag numbering shall follow UMHC standard and start with the next number in the valve tag list. Consultant shall coordinate numbering with the MUHC Plumbing Trades Supervisor.

B. No plumbing piping shall be exposed overhead where dust accumulation could occur that could create food contamination or patient exposure.

C. UMHC prefers the top of the water closet seat to be at maximum ADA height AFF.

D. Trap primers must be adjustable for variable water pressures. 75 psi is the typical system pressure (to be confirmed during design).

E. Faucet stems shall have ceramic seats. Chicago Faucets preferred manufacturer.

F. Sanitary drain double Y connections shall be offset where two drains come together.

G. Where low flow or water conservation type fixtures are used, the engineering design shall match the reduced water flow with drain pipe installation so as to produce proper drainage. No double combinations are to be installed opposite one another to prevent formation of blockages (sanitary wipes, cloths, etc.).

H. All new construction shall provide hose bibs at accessible points on the exterior of the building and shall be able to produce a minimum of 80 psi.

I. Provide hose bibs for all roof mounted equipment that requires water for cleaning and/or general maintenance.

J. RO/DI systems: to avoid unnecessary shutdowns, coordinate startup to prevent down time due to requirement for sanitization of system.

K. Ice machines are Owner Furnished, contractor installed (OFCI). Installation shall meet manufacturer’s required clearances for air cooled units. Minimum clearances shall be 6” on each side and 12” on the top.

L. Drinking water fountains must meet occupant code and are to be integrated units – no separate condensing units. Use independent filtering if entire building is not filtered.

M. Piping and fittings: all pipe used on UMHC projects shall be stored in a clean manner so as to prevent any contamination (including but not limited to: sand, dirt, rock, cans, pests, etc.) of pipe or duct prior to installation. Owner reserves the right to reject any materials not conforming to this practice.

22 0553 Identification for Plumbing Piping and Equipment

A. All piping except control line tubing shall be identified.
B. ASME A13.1-2007 (R2013) references the technical definitions, color standards and color tolerances set forth in the American National Standards Institute (ANSI)/National Electrical Manufacturers Association (NEMA) Z535.1-2006 (R2011) Safety Colors. The color shades suggested are intended to give the highest level of recognition to employees with both normal and color-deficient vision.

1. Matrix:
   a. Domestic Water Piping: Blue (Background) – White (Letters)
   b. Sanitary Waste, Vent and Storm Drainage Piping: Black (Background) – White (Lettering)
   c. Medical Gas Systems: Yellow (Background) – Black (Letters)
   d. Oxygen: Green (Background) – White (Letters)

22 3000 Plumbing Equipment

A. Cleanouts
   1. Acceptable manufacturers
      a. Mifab
      b. Jay R. Smith
      c. Watts
   2. Cleanouts above floor grade are to have easy access
   3. None located in the ceiling servicing, minimum of 1 foot above finished floor.

B. Medical Gas Outlets
   1. WCH - Beacon Medaes Gemini III
   2. University Hospital - Oxiequip by Hospital Systems

C. Water Heater – Electric:
   1. Standard water heaters are steam fired. Use of electric water heaters in design requires approval of Owner’s Representative.
   2. Acceptable manufacturers:
      a. A. O Smith
      b. Hesco, Inc.
      c. State Industries
      d. Rheem/Rudd

22 4000 Plumbing Fixtures

A. Faucets
   1. Preferred Vendors:
      a. Chicago Faucets
      b. Zurn
   2. Faucets intended for staff and patient use shall contain antimicrobial laminar flow aerators.
   3. Hard wired in off-site buildings (facilities with no generators)
   4. Battery operated inside the hospitals (facilities with generators)

B. Hot Water Recirculating Pump
1. Preferred Vendors:
   c. Bell & Gossett
   d. Armstrong
   e. Aurora

C. Lavatories - in countertops
   1. 19” x 19” x 10” deep stainless steel bowl for Procedure, Soiled/Clean Utility, and Med Room.

D. Lavatories - Wall hung
   1. Appropriate blocking required to support weight.

E. Shower valves (thermostatic and/or pressure balancing type)
   1. Preferred manufacturers
      a. Leonard
      b. Simmons
      c. Lawler
F. Thermostatic Mixing Valves
   1. Preferred manufacturers
      a. Simmons
      b. Holly
      c. Lawler
      d. Powers
      e. Leonard

G. Water Closets
   1. Preferred manufacturers
      a. American Standard
      b. Kohler
      c. Crane
   2. Floor Mount only.
   3. Bottom discharge preferred. Floor mount rear discharge may be considered for specific applications.
   4. Auto Flush Valves:
      a. Hard wired in off-site buildings (facilities with no generators)
      b. Battery operated inside the hospitals (facilities with generators)

22 6000 Medial Air, Gas and Vacuum

A. Medical Piping and Pipe Line Components (No Substitutions)
   1. WCH: Beacon / Medaes
   2. UH Campus: Allied Health Products, Chemetron Division (Oxiquip)

DIVISION 23 – HEATING VENTILATION AND AIR CONDITIONING

See UM Consultant Procedures and Design Guidelines. All design guidelines posted are applicable. Information below supplements and supersedes information provided in Division 23 of those documents.

General

A. Per FGI Guidelines for Construction of Hospitals and Outpatient Facilities (FGI), if renovation efforts result in system modifications that “affect greater than 10% of the system capacity, designers shall utilize pre-renovation water/air flow rate measurements in the affected zones to verify that sufficient capacity is available and that renovations have not adversely affected flow rates in non-renovated areas.”

B. Ventilation and space-conditioning requirements shall follow ASHRAE 170 unless specific policies have been put in place by MUHC/MU FPD to allow alternate practice.

C. Consultants shall consider appropriate redundancy for each project and shall coordinate/confirm redundancy design intent with MU Health Care.
D. Maintain a minimum access area of 24 inches around all above ceiling mounted equipment. Approval for any variance to this requirement by MUHC.

E. Equipment placement in critical areas shall be coordinated and approved early in design. Reduce or eliminate above ceiling HVAC equipment in critical areas such as: Operating Rooms, Cath Labs, and Procedure Rooms.

F. Duct or AHU humidifier installations shall include doors/access with view panel or window.

G. All cooling coils shall incorporate UV lamps to inhibit biological growth on coils. UV lamps shall be encapsulated.

H. Gages and devices shall be labeled to indicate normal range of operation.

I. The A/E shall include in the General Notes section of the Drawings a note stating “No mechanical piping or HVAC duct (except where used for stairwell pressurization purposes) shall penetrate through fire resistance rated exit enclosures (stairwells and exit passageways)”. 

J. Refrigerants used in any equipment must be EPA approved and not scheduled to be phased out of production within the next five years.

K. Where dampers and/or their housings are installed below 8’ in a finished space or mechanical room, protect the exposed corners in order to avoid sharp edges that may cause injury.

L. Isolation Room Exhaust:
   1. Grilles are to be located within 6” of the floor and behind the bed.
   2. Power for the exhaust system must be accessible to staff (Key switch, knob).
   3. Monitoring devices are required to verify the pressure differential (Negative/neutral)
   4. Shall meet all ACH requirements and all applicable codes.

M. Smoke and fire damper locations shall appear on a dedicated drawing layer. Record Drawings shall include separate Fire and Smoke Damper drawing that shows locations of fire and/or smoke dampers and details.

N. Construction and record documents shall include a drawing or matrix detailing VAV connections to occupancy sensors.

23 0513 Common Motor Requirements for HVAC Equipment

A. All electric motors must have shaft grounding straps when used with VFD.

B. Acceptable Manufacturers:
   1. Baldor
   2. Toshiba
3. World Wide
4. Reliance
5. Weg

23 0593 Testing, Adjusting and Balancing

A. TAB is by Owner.

B. TAB During Construction: First choice is to have TAB provided by MU Campus Facilities Energy Management (EM). For TAB provider other than EM, PM and MUHC shall work together to select consultant that is best suited to meet project needs.

C. Testing for current (preconstruction) performance prior to system modification is required during project evaluation and/or design. It will be performed by Owner for every project to confirm there is adequate air capacity to support the future or existing project program. This is required even if there is no anticipated increased load on the air handling system to confirm the system still has adequate capacity to support existing programs. Consultant shall inform PM of any specific information that needs to be captured for their use.

D. Pressure critical spaces such as OR’s shall have a blower door pressure test that shows room has met acceptable level of tightness before substantial completion is granted. This shall occur late enough in construction that the test can be successfully completed but early enough that corrections can be made without impacting project schedule.

23 0700 Mechanical Systems Insulation:

A. Ductwork Insulation
   1. No exposed insulation inside duct work.
   2. Flexible elastomeric may be approved inside return air boots in plenum spaces with approval of MUHC Planning, Design and Construction.

23 0800 Commissioning of HVAC Systems

A. Commissioning shall be performed by a 3rd party Commissioning agent contracted by Owner on every project that installs major HVAC equipment.

23 2100 Building Hydronic Piping and Pump Systems

A. Dielectric Waterways are the preferred method to isolate dissimilar piping materials per UM Consultant Procedures and Design Guidelines.

23 2200 Steam and Condensate Piping and Pump Systems

A. Condensate returns shall be pumped back to make-up water system and not to waste.

B. Thermometers:
1. Provide adjustable angle, industrial thermometers with 9” scales, cast aluminum cases, and chrome plated brass separable sockets

C. Chemical Water Treatment Products (WCH Only):
   1. Garrett Callahan
   2. Nalco

D. Boilers:
   1. Flow Meter
   2. Acceptable Vendors:
      a. Fluid Components International
      b. American Meter

23 3000 HVAC Air Distribution

A. Duct Labeling:
   1. Ductwork shall be labeled with flow direction and type (general exhaust, contaminated exhaust, kitchen hood exhaust, supply, outside air, return, etc.).
   2. Labeling shall be placed every 15 feet, within 5 feet of all elbows and tees, and on both sides of a wall penetration within 3 feet of the penetration.
   3. Labeling shall include source equipment information (AHU#, EF-, etc.).
   4. Labeling shall be installed on each floor of duct risers, mechanical rooms and locations where multiple duct systems share a location or identification is ambiguous.

B. Access doors shall be provided where duct mounted devices will require periodic inspection, maintenance or cleaning. Including but not limited to Humidifiers, Motorized Dampers, Return/Exhaust VAVs, Fire/Smoke dampers, Air Measuring Stations and MRI waveguides. A clear path to access doors must be maintained.

C. Unassembled ductwork: Occasionally ductwork may be shipped unassembled. This duct shall be kept covered and cleaned at the site as it is erected.

D. Duct fabrication labels shall be placed on duct exterior only. No paper identification labels shall be inside the duct.

E. All ductwork, fittings, VAV’s etc. shall be palletized and shrink wrapped for delivery to the jobsite.

F. Where dampers and/or their housings are installed below 8’ in a finished space or mechanical room, protect the exposed corners in order to avoid sharp edges that may cause injury.

G. Shipping:
   1. All ductwork and accessories shipped from fabrication shop(s) shall be shipped in an enclosed trailer or enclosed truck to protect the ductwork from damage, dirt, and moisture during transit to the jobsite.
2. Shop fabricated ductwork and fittings shall ship to the site completely assembled and both ends sealed with an adhered protective covering (hairnets are not acceptable).

3. Cursory cleaning shall take place when any foreign substance is noted.

H. Handling:

1. When moving or unloading ductwork, ductwork shall not be placed on the ground.

2. Ductwork shall be placed directly in storage vans or within the building as it is unloaded, no exceptions.

3. Ductwork shall be moved on carts or dollies.

4. Ductwork that is wrapped shall not be dragged across the floor as it can damage the seals.

I. Installation and Final Clean:

1. Ductwork systems shall be installed at the site to maintain “shop” or “mill” (free of mill oil) conditions. The ductwork shall be cleaned as necessary to maintain these conditions.

2. Cleaning shall be performed using a 20% Isopropyl Alcohol to wipe down all interior surfaces upon installation.

3. Interior surfaces must be dust free and exterior surfaces must be free of foreign substances.

4. Cover all ends of installed ductwork at the end of each workday, or when work is suspended for any length of time, i.e. breaks, lunch, etc.

5. At the end of the workday, Contractor is to insure all ends are covered on both stored and installed ductwork.

6. If installed prior to roofing, protect ductwork from water infiltration.

J. Storage:

1. Ductwork that is delivered to the site shall be installed as soon as possible.

2. Care shall be taken to schedule only enough material on site for the immediate workload.

3. Ductwork stored on site must be in enclosed vans or inside the building at least 4” above the floor to avoid damage from weather or spills.
4. Openings shall be covered.

K. Owner reserves the right to reject any materials if contractor isn’t conforming to practices for keeping materials free of dirt and contamination.

L. Support: “clutcher” type duct supports are prohibited without prior approval from MUHC Health Facilities Managing Engineer.

M. Fire and/or smoke dampers:
   1. Dampers must have a test switch installed as an assembly by the manufacturer located at damper for testing purposes. This switch will drop the signal from the fire alarm system shutting the damper down.
   2. Dampers require access panels 18” x 18” to access damper for repairs or required testing. All fire/smoke dampers will need to have easy access, above ceiling with no obstructions.
   3. All walls deemed as integral to Life Safety shall be clearly marked on the Mechanical drawings in addition to the Life Safety drawing sheets for clarity and reference for the respective tradesmen.

N. Labeling: All ducts shall be labeled every 15 feet, within 5 feet of all elbows and tees, and on both sides of a wall penetration within 3 feet of the penetration.

23 3600 Air Terminal Units

1. VAV terminal units shall be equipped with controls from the factory, completely sealed and shall not be opened until they are installed and ductwork connected. Terminal units are to be protected even if installed.
   a. Controllers for UH campus equipment shall be JCI.
      i. If MU Energy Management is performing controls installation, the JCI controllers shall be ordered by Energy Management and installed by their personnel. Confirm strategy during design.
   b. Controllers for WCH equipment shall be Siemens.

2. Air Terminal Units: 2 pass heat coils to be considered during design for operating rooms, trauma rooms and burn treatment areas. Verify with UMHC.

3. Acceptable manufacturers
   c. Titus (Basis of design)
   d. Trane
   e. Price

23 3700 Air Outlets and Inlets

1. Air outlets should be installed with filter media or blanked off (as directed by the Owner’s Representative).

2. Return air shall not be activated until all dust generating activities are complete. Temporary duct modifications, manual damper settings or overrides on control systems may be required. If return air must be activated prior to completion, upon approval by the Construction Manager, install filter media on return duct openings.
3. Discuss type of return grilles to be used for each project. Egg crate grilles have been a past standard but have proven to be difficult to clean.
4. Metal elbows shall be installed at each diffuser.

23 7000 Air Handling Units

1. All air handlers shall be assigned an equipment tag. Equipment numbering shall follow UMHC standard and start with the next number in the AHU equipment list. Consultant shall coordinate numbering with the MUHC Mechanical Trades Supervisor. In no instance other than new or fully renovated facilities shall air handler equipment tag numbering start with a number “1”.
2. Use of roof mounted equipment shall be approved by MU Health Care.
3. Air Handling Units (including their respective mechanical equipment rooms) and rooftop units are to be inspected for dirt/debris prior to any filter installation/start-up and shall be cleaned as necessary. Use 10% Isopropyl Alcohol solution to wipe down the inside surfaces of the air handlers.
4. Basis of Design units for air handlers serving critical spaces shall be fan-array type with N+1 fan redundancy. Unit shall meet required capacity with one fan off line. Each fan in the array shall be served by a dedicated VFD.
   a. Basis of design shall be MarCraft, FanWall or Ventrol.
5. Air handling Units shall be draw-through.
6. Location of coil relative to fan shall avoid moisture carryover and biological growth in filters.
7. Elimination of moisture carryover from coils shall be included in design.
8. Design shall consider means of dehumidification/dew point control. Reheat coil, separate desaturation coil, or other means approved by MUHC shall be discussed during design and approved by MUHC.
9. UV or other MUHC approved disinfection strategy shall be included.
10. Steam coils are expressly prohibited.
11. AHU manufacturer’s representative shall be onsite during installation/assembly of equipment
12. AHU or duct airflow measurement devices must employ vortex shedding technology. VAVs are excluded from this requirement.
13. Computer Room Air Conditioning Unit (Liebert Basis of Design, alternate Stultz):
   a. All cooling equipment shall be accessible for maintenance and be dedicated to the specialty data room.
   b. Service access panels installed per manufacturer specification

DIVISION 25 – BUILDING AUTOMATION SYSTEM

UH Campus (MOI, MUPC, TH, and UPMB) utilizes Johnson Control (JCI) Metasys®. All controllers and thermostats are provided by the Owner.

WCH utilizes Siemens. There is no plan to change the WCH BAS system to JCI at this time.

For additional guidelines, see UM Consultant Procedures and Design Guidelines, Division 23.
DIVISION 26 – ELECTRICAL

A. Avoid lighting fixtures that are costly to maintain or repair.

B. All lighting fixtures must be placed so that they are easily accessible for future maintenance. If placement of fixtures will require anything other than a standard 12 foot ladder, placement will need to be approved by MU Health Care.

C. Indirect recessed perforated basket type fixtures must be LED, and either Focal Point or Metalux. (Lithonia and Williams perforated baskets tend to be disorienting and nauseating to patients with astigmatism).

D. All walls deemed as integral to Life Safety shall be clearly marked on the Electrical drawings in addition to the Life Safety drawing sheets for clarity and reference for the respective tradesmen.

E. Preferred Vendor: Focal point Indirect Troffer Lighting with infection control baffles

F. Under cabinet lights: LED hard wired. Included and located only as requested by User/Client group. Coordination of power connection shall be included as a detail in the project drawings and confirmed with manufacturer prior to completion of 50% CD Review.

G. Ballasts shall not be self-diagnostic.

H. Exit lighting shall be LED, edge-lit type. Confirm manufacturer and model with MUHC.

260519 Low Voltage Electrical Power Conductors and Cables:

A. CONDUCTORS:

1. Provide 98% conductivity copper conductors with 600-volt insulation

2. For conductors No. 10 AWG, provide stranded type THWN-2 or THHN, unless approved by UMHC Engineering Services department. For conductors No. 12 AWG, provide type THWN-2 or THHN solid.

3. For conductors No. 14 AWG and smaller, provide stranded type THHN.

4. Per UM Consultant Procedures and Design Guidelines, aluminum conductors are prohibited.

5. MC Cable must be hospital grade and is only allowed for lighting whips (5’ or less; above ceiling only). Any other use must be approved in writing during design. Construction documents must specifically state approved use of MC cable and state “prohibited” if product is not allowed in the project.

260533 Raceway and Boxes for Electrical Systems:

1. Standardized Color Coding of Conduit

   a. Red = Life Safety Branch
   b. Orange = Critical Branch
   c. Yellow = Equipment Branch
   d. Red Conduit with Red J-boxes = Fire Alarm
261300 Medium Voltage Switchgear

1. EXTRA MATERIALS
   a. Provide spare parts as recommended by manufacturer and as indicated on the drawings
   b. Provide a complete set of spare fuses of all sizes and ratings used in the switchgear
   c. Provide fuse cabinet

2. PRODUCTS
   a. Acceptable manufacturers
   i. Square D
   ii. General Electric
   iii. Eaton

3. EXECUTION
   b. Install required safety labels including arc flash requirements

262300 Low Voltage Switchgear:

1. Square D Switchgear is the Basis of Design.

262400 Switchboards, Panelboards and Motor Control Centers:

1. Panelboard assembly shall be enclosed in a locking steel cabinet. The size of the wiring gutters shall be in accordance with UL Standard 67. Fronts shall have door with matching trim, be of code gauge full finished steel with rust inhibiting primer and baked enamel finish. Assembly shall have swing fronts.

262726 Wiring Devices:

1. Install Hospital grade tamper resistant receptacles in all patient care areas including corridors, waiting rooms and therapy or play areas.

262923 Variable Frequency Motor Drives:

1. Starter Indicator lights/operating signals shall include the following at a minimum:
   a. Power on
   b. Zero speed
   c. Enabled
   d. Over temperature
   e. Current limit
   f. Under voltage
   g. Over voltage
   h. Over current
   i. % Speed
   j. % Load

2. Drives must have by-pass feature or be redundant. Preference is redundant drives if space is available. Confirm with owner during design.
263200 Packaged Generator Assemblies

A. Remote radiators for emergency generators are prohibited without prior approval from MUHC.

263600 Transfer Switches:

1. General Transfer Switch Product Requirements:
   i. Motor Loads: For switches that serve motor loads, furnish closed transition transfer switch with in-phase monitor (make-then-break)

2. Products:
   a. Acceptable manufacturer: Russelectric

DIVISION 27 – COMMUNICATIONS

A. CAT 6A cable will be supplied by Owner, installed by Contractor.
   1. Typically include 3 drops per outlet.
   2. Termination will be by Owner.
B. Nurse Call System will be by Owner.
   1. Rauland Responder 5
C. All walls deemed as integral to Life Safety shall be clearly marked on the Communications drawings in addition to the Life Safety drawing sheets for clarity and reference for the respective tradesmen.
D. See MU Telecommunications Construction Standards for sizes, configuration, and where to locate IT closets.

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

Miscellaneous

A. Cameras shall be mounted on the interior of all exit doors so that pedestrians entering the building can be identified. Cameras shall be mounted on the exterior in such a way that all entry points can be monitored either from a distance looking back at the entry point or from the building looking covering the exit.

B. Any rooms that have regulatory items such as pharmacy drugs, telecom equipment, cash, nuclear products, high value items, high danger items, and high voltage works, shall have electronic access control with a manual key override. Cameras facing the outside of the door where these valuables, critical infrastructure items, or dangerous items are housed to monitor those items and, depending on the value or item being protected, a camera inside the room with a 360 degree view inside the room.
C. Any rooms that have critical infrastructure items, fire pumps, dialysis water preparations, emergency generators, water sources that could be contaminated, etc., should have access control with manual key override, electronic access, cameras, and alarms.

D. Place outside cameras at strategic locations such as license plate cameras, vehicle entry points, or access to the building. The quantity and position of cameras will be dependent upon the site plan and specific layout of the grounds.

E. Suggestion for very high risk areas is an intercom that can be accessed by dispatch so they can hear what is going on inside the room or building in the event of an alarm depending on the risk or value of what is inside the area.

Card Access
A. Access Card control system is On Guard coordinated with Security.
B. Card readers should be located within reach of the door pull, except at power operated openings.
C. Per Division 8, all exterior doors that have electronic access control shall have a key override.

28 3100 Fire Detection and Alarm
A. WCH has a Notifier system.
B. UH Campus has a Siemens Building Automatic system.
C. Other sites: depending upon needs. Coordinate with MUHC.
D. Fire service devices – Exit signs/strobes must be visible at all times and may not be obscured by signage, window treatments, projection screens, monitors, etc.
E. Security Concerns: To prevent abduction, all access points to infant and pediatric care departments (including the Birthing Center) must be controlled with security devices. Specific examples include:
   1. Elevator vestibules with card access and a push button at the Nurse station to allow visitors to enter and depart. 24 volt system
   2. Stair doors locked down and accessed by either a card/proximity reader or push button at Nurse Station. 24 volt system. All of the system shall meet NFPA 101 19.2.2.2.5
      i. If nursing station is not able to take immediate response, delayed egress locks will be required. Approval by AHJ is required.
   3. The use of an intercom and/or digital camera remote locations to view potential visitors, doctors, etc.

DIVISION 31 – EARTHWORK
A. See UM Consultant Procedures and Design Guidelines. All design guidelines posted are applicable. Information below supplements and supersedes information provided in Division 31 of those documents.
B. All removed top soil is to be stock piled at owner direction, with balance transferring to owner upon project completion.

DIVISION 32 – EXTERIOR IMPROVEMENTS

See UM Consultant Procedures and Design Guidelines. All design guidelines posted are applicable. Information below supplements and supersedes information provided in Division 32 of those documents.

A. All parking lots will be designed to facilitate snow removal.

B. All paved surfaces shall be designed for proper slope and fall to carry water away to storm basins and away from pedestrian walk access.

C. All pedestrian pathways shall meet ADA.

D. Need sleeves under walks and roads for future development such as power/ signs /sprinklers to minimize number of roads or sidewalk cuts. Irrigation sleeves will be a minimum of 4” in diameter.

E. All new construction shall provide hose bibs at accessible points on the exterior of the building and shall be able to produce a minimum of 80 psi.

F. Functional irrigation shall be required in all landscaped areas and appropriately sized based on industry standards. Equipment shall be owner provided and owner installed.

G. Disturbed grass or planted areas shall be repaired by Owner (MUHC or MU Landscape Services). Funding for repairs will be by the project.
   1. PM shall modify special conditions in Division 1 to fit project parameters.

DIVISION 33 – UTILITIES

See UM Consultant Procedures and Design Guidelines. All design guidelines posted are applicable.
APPENDIX A: ADDITIONAL DOCUMENTATION REQUIREMENTS

A. The Design Consultant is responsible to create and include a LIFE SAFETY PLAN (LSP) in the drawing set of the Contract Documents along with an ALSM (Alternate Life Safety Measures Plan) for the entire project. The LIFE SAFETY PLAN must indicate all fire rated partitions and assemblies, structural component ratings, smoke compartments, means of egress travel distances and exits. The LIFE SAFETY PLAN should include the following General Notes:

1. All penetrations (new or existing) shall be sealed at all times, except when actively working with the penetration. Existing unsealed penetrations, once encountered, shall be sealed immediately with the appropriate fire/smoke stopping material. Coordinate the sealing method, whether temporary or permanent, with the Owner’s Representative.

2. Existing exits must remain accessible. Clear paths of travel to exits must be maintained within the construction limits. Contractor is to coordinate with Owner’s Representative to maintain proper exit signage throughout construction.

3. Each smoke and/or fire rated partition shall be stenciled with 4 inch letters directly above ceiling tile so as to identify rated construction upon lifting of ceiling tiles. Walls are to have stenciled fire ratings at eight foot increments horizontally.

B. The Design Consultant is responsible to create and include an INFECTION CONTROL PLAN (ICP) in the drawing set of the Contract Documents. The INFECTION CONTROL PLAN should indicate locations and configurations of temporary dust and containment partitions, specifying in detail the type of construction for each partition and the path of debris removal to the exterior of the building. The following notes are to appear with the INFECTION CONTROL PLAN:

1. Dust Seal Partitions General Notes:
   a. The Contractor is responsible to confine dust and debris to within the dust partition enclosure. There shall be NO visible dust or debris outside of the dust partitioned area. If Contractor is unable to maintain a dust and debris free area outside of dust-partition enclosure, more extensive measures will be required at the Contractors expense. The following General Notes further indicate required measures.
   b. Precut materials for dust partitions in unoccupied areas.
   c. Construct dust partitions of non-combustible gypsum board on one side of metal studs. Tape all joints and intersections with existing walls, decks and ceilings to prevent the spread of dust. Extend dust-seal partitions from the floor through the suspended ceiling, to the underside of the floor deck above. At temporary walls that intersect existing finished walls, tape joint at the existing wall to seal the dust partition to the existing wall.
   d. Fire-retardant polyethylene may be used only when approved by the Owner’s Representative where above-ceiling conditions are confirmed to prelude construction of a gypsum board partition tight to the deck.
As directed by Project Manager for dust partitions in prominent public view, include the following:

e. Construct dust partition using vinyl covered gypsum board on the public side and install temporary vinyl base to match existing.

As directed by Project Manager for dust partitions required to be fire rated, include the following:

a. Construct dust partition as a 1 hr fire rated partition with rated door assemblies to maintain integrity of an existing rated partition. As deemed appropriate for each area and supporting Project Construction Risk Assessment. (PCRA)

b. Provide 3’-0” minimum width access door of solid core wood with metal frame and hardware, including closer and gasketed threshold, tightly weather stripped to prevent flow of dust. Swing door into construction area. Keep enclosure locked during working and non-working hours. Key into Hospitals system as indicated by Owner’s Representative.

c. Maintain the integrity of dust-partition enclosures throughout the project. Verify penetrations and joints are continuously sealed. Keep all doors and windows closed. In the event of a breach of a dust partition enclosure, make immediately repairs and remediate dust and debris.

d. Periodically HEPA vacuum inside the dust-partition enclosure (or as otherwise directed in the ICRA/IICM), and provide and maintain contamination control mats outside each dust-seal enclosure entry. Continuously monitor and immediately clean up dust tracked from demolition and construction areas into occupied areas of the building. Wipe transport cart wheels clean and cover cart debris each time the cart exits the dust partitioned work zone.

e. Upon construction completion and after final cleaning, remove dust-seal enclosure material from work area and properly dispose of as debris. Minimize the spread of dirt and debris.

C. The Mechanical Engineering Consultant is responsible to include the following additional Infection Control notation on Mechanical Drawings of the Contract Documents:

a. All air duct covers and HVAC equipment seals are to remain intact throughout dust generating construction. Immediately notify Owner’s Representative of any observed penetrations in the duct covers or breaks in HVAC equipment seals.

b. Seal all HVAC return inlets in work areas with plastic sheeting and tape to prevent contaminants from entering the building’s air system. Any existing return and exhaust air systems that must be cut and capped shall be capped outside of the construction area.
c. Coordinate with Owner’s Representative before using existing HVAC supply air systems for temporary heating and cooling. In no case shall supply air fans serving occupied areas of the building be shut down without Owner’s written approval. Openings in ductwork remaining within the construction area shall be sealed. Measures for maintaining proper building pressurization in all areas during construction shall be included in design.

d. HVAC systems designated with particle filters shall not be operated without filters in place.
APPENDIX B: MUHC INTERIOR PLANTING REQUIREMENTS

GENERAL WORK INCLUDED:

1. Planters are typically funded from the Furniture Budget.
2. Maintenance is on contract in Environmental Services.
3. Design of planters shall include ready access to water.
4. Placement of planters and plants shall take into consideration the location of HVAC diffusers and drafts/winds from exterior doors.
5. All live plants shall have access to natural light or provision made for artificial light. If neither is available and where access is a problem, artificial plants will be used. Fire rated.
6. All interior planters shall be lined as to be water tight.

QUALITY ASSURANCE:

1. All plant materials shall comply with State and Federal laws relating to inspection for disease and insect control.
2. Qualification of Personnel
   a. Use adequate numbers of skilled workmen trained and experienced in the work and familiar with requirements and methods needed for performance of the work.
   b. At all times during planting operations, have on the site a person in a supervisory capacity who is knowledgeable in horticultural practices.

SUBMITTALS, INSPECTIONS, AND APPROVAL:

1. All materials shall be approved by the Landscape Architect or Owner.
2. Approval shall be either at the origin, by representative sample or photograph, at the option of the Landscape Architect or Owner.
3. At the origin of plant materials, trees, and other plants shall be approved and/or tagged by the Landscape Architect or Owner.
4. Substitutions
   a. Submit samples for approval of any materials which may be suggested for substitution. Substitutions shall be of equal quality and value to the material specified.
5. Store all materials in locations as to prevent loss, damage, deterioration, or contamination.

EXECUTION:

1. Planting Bed Preparation
   a. Filter fabric: Lay specified filter fabric over drainage layer to separate from soil mix, overlap four (4) inches at sides of planters. If planter is large enough to require seams in filter fabric, overlap filter fabric 4” and tape the seam continuously with duct tape. Punch for siphon tube where indicated.
PLANTING:

1. Move plants and soil materials into building by wheel barrows, dollies, and other small, approved pneumatic tired vehicles. Provide protection from point of entry to planter being planted to prevent damage to floor. All vehicles being used must be approved by the Owner and Landscape Architect.

PROVISIONAL ACCEPTANCE:

1. The date of Provisional Acceptance will constitute:
   a. The beginning date for the guarantee period
   b. The beginning date for the specified maintenance period
APPENDIX C: MUHC GROUNDS EXTERIOR PLANTING REQUIREMENTS

GENERAL WORK INCLUDED:

1. Sodding and seeding of exterior areas disturbed by construction.
2. Work is typically funded by the construction project that caused the disturbance.
3. Typically performed by MUHC or MU Landscape Services.

SODDING:

1. Furnish all labor, materials, tools, equipment, and services for sodding, as indicated, in accordance with provisions of contract documents.
2. Location of work: Establish sodding on areas indicated, which are not occupied by other planting or construction. Seed disturbed areas outside limits of construction.
3. Any Seeded area will use the following seed mix breakdown: [need breakdown]
4. All sod areas must be free of netting.
5. Completely coordinate with work of other trades.

QUALITY ASSURANCE:


SUBMITTALS:

1. Project Information:
   a. Certificates for sod stating botanical and common names and percentages of each species percentage of purity.
   b. Sod labeled in accordance with ASPA-01 and equaling or exceeding specification requirements.
   c. Fertilizer indicating chemical analysis.
   d. Copies of invoices for fertilizer used on project, indicating grade furnished, to determine total quantity applied.

2. Contract Closeout Information:
   a. Maintenance data.

PRODUCT DELIVERY, STORAGE, AND HANDLING:

1. Protect sod from drying out.
2. Deliver fertilizer to site in original unopened containers, labeled with manufacturers’ chemical analysis.

JOB CONDITIONS:

1. Perform sodding during conditions conducive to successful results.
   a. Provide proper and adequate protection.
   b. Do not lay on dried-out soil.
   c. Do not place dried-out sod.
   d. Do not lay when temperature is below 32 degrees F.
   e. Do not lay on frozen soil.
   f. Do not place frozen sod.
   g. Lay within 24 hours of stripping.
2. Actual dates for sodding will vary depending on construction schedule and pending weather conditions. Notify Architect of anticipated dates for doing work at least 30 days in advance.

WARRANTY:

1. Remove and replace dead or dying sod during one year from substantial completion.
2. Replacement materials and methods identical to original.

PRODUCTS/MATERIALS:

1. Establish a smooth, healthy, uniform close stand of sod.
2. Materials:
   a. Turf grass Sod:
      i. Certified Approved Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
   b. Turfgrass Species: Sod of grass species as follows:
      i. Fine leaf Fescue Blend
         a) Not less than 95 percent germination.
         b) Not less than 85 percent pure seed.
         c) Not more than 0.5 percent weed seed.
3. Thickness of Cut: turf grass sod shall be machine cut at uniform soil thickness of 0.60 inch, plus or minus 0.25 inch, at the time of cutting. Measurement for thickness shall exclude top growth and thatch.
4. Pad Size: Individual pieces of turf grass sod shall be cut to the supplier’s standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus 0.5 inch on width and plus or minus five percent on length. Broken pads and torn or uneven ends will not be acceptable.
5. Strength of Turf Sod Sections: Standard size sections of turf grass sod shall be strong enough that it can be picked up and handled without damage.
6. Moisture Content: Turf grass sod shall not be harvested or transplanted when its moisture content (excessively dry or wet) may adversely affect its survival.
7. Mowing Height: Before harvesting, the turf grass shall be mowed uniformly at a height of 2 to 2.5 inches.
8. Time Limitations: Turf grass sod shall be harvested, delivered and installed/transplanted within a period of 24 hours, unless a suitable preservation method is approved prior to delivery. Turf grass sod not transplanted within this period shall be inspected and approved by the inspecting officer or his representative prior to its installation.
9. Thatch: Turf grass sod shall be relatively free of thatch, up to 0.5 inch allowable (uncompressed).
10. Diseases, Nematodes and Insects: Turf grass sod shall be reasonably free of diseases, nematodes and soil-borne insects. Specific nursery and/or plant materials laws may require that all sod entering inter-state commerce be inspected and approved for sale. The inspections and approval must be made by the appropriate government representative of the agriculture department or office of entomologist.
**Fertilizer**

Commercial fertilizer analysis will be based upon a current soil nutrient test, meetings applicable requirements of State and Federal Law.

**Water for Planting Purposes**

1. Supplied by Owner.
2. Provide equipment necessary to transport water from source to required locations.
3. Lay out temporary watering system and arrange watering schedule to avoid walking over muddy and newly sodded areas.
4. Prevent puddling and water erosion and displacement of sod. Mow sod as soon as there is enough top growth to cut with mower set at recommended height for principal species and before height exceeds 3 IN.
5. Repeat mowing as required to maintain height.
6. Do not delay mowing until grass blades bend over and become matted.
7. Do not mow when grass is wet.
8. Time initial and subsequent mowing as required to maintain height of 2-1/2 to 3 IN.
9. Remove no more than one-half grass leaf surface at any time. Re-sod bare, dead or dying areas using same materials specified.

**Soil Requirements**

1. All sodded areas, shrub beds, tree plantings, and parking lot islands, will be excavated of fill dirt and back filled with dry screened topsoil.
2. All topsoil will be approved and initialed by MUHC Grounds Department Supervisor.
3. Topsoil will be back filled at the following depths:
   a. Sod areas: Minimum 4” depth
   b. Shrub Beds: Minimum 18” depth
   c. Tree Plantings: Minimum 36” depth
   d. Parking lot Islands Minimum 36” depth

**PLANT MATERIAL SELECTION AND QUALITY CONTROL:**

All submittals of plant material shall be reviewed and approved by the MUHC Grounds Supervisor at design phase and at project implementation. Plant quality shall be consistent and is subject to approval by the supervisor. Work shall be inspected during and at final turnover to determine compliance with specifications. Inspection will be done by MUHC Grounds Department.
# Health Care

## APPENDIX D: INTERIOR FINISHES QUICK REFERENCE GUIDES

### Quick Reference Guide by Type of Space for Typical Finish Requirements in Healthcare Facilities

<table>
<thead>
<tr>
<th>TYPE OF SPACE</th>
<th>Walls Actual ln sq ft</th>
<th>Floors</th>
<th>Base</th>
<th>Ceiling</th>
<th>Lighting</th>
<th>Window Trims</th>
<th>Wall Protection</th>
<th>Accessories Furnished/Installed</th>
<th>Built-In Casework</th>
<th>Cabinets &amp; Fixtures</th>
<th>Upper</th>
<th>Base</th>
<th>Top</th>
<th>Cubicle</th>
<th>Misc. Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager’s Office</td>
<td>100-120</td>
<td>VWC-1 P-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>LT-3</td>
<td>WT-1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Open Office Areas</td>
<td>100 per person</td>
<td>P-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>LT-3</td>
<td>WT-4</td>
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<td>NA</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Exam &amp; Treatment Rooms</td>
<td>120-170</td>
<td>VWC-1 P-1</td>
<td>SV-1 B-2</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>LT-10</td>
<td>WT-1 or WT-3</td>
<td>NA</td>
<td>NA</td>
<td>15,16,17,18,19,20</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>CC-1</td>
<td>CC-2</td>
</tr>
<tr>
<td>Patient Rooms (single occupancy)</td>
<td>200-250</td>
<td>VWC-1 P-1</td>
<td>SV-1 B-2</td>
<td>CLG-1</td>
<td>LT-10, LT-12, LT-14</td>
<td>WT-1 or WT-3</td>
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<td>NA</td>
<td>NA</td>
<td>3a, 10, 16, 13, 10, 10, 20</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>PLT-1/ SST-1</td>
<td>CC-1</td>
<td>CC-2</td>
</tr>
<tr>
<td>Patient Restrooms</td>
<td>70-100</td>
<td>P-1</td>
<td>B-2</td>
<td>CLG-1</td>
<td>LT-14, LT-24</td>
<td>WT-1</td>
<td>SEE WALLS</td>
<td>1-5, 8, 12(7), 16</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Conference Rooms</td>
<td>15 per person</td>
<td>VWC-1 P-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>WT-1</td>
<td>WT-4</td>
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<td>8b, 10 (IF SINK), 16, 18</td>
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<td>PLC-1</td>
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<tr>
<td>General Waiting Rooms</td>
<td>15 per person</td>
<td>VWC-1 P-1</td>
<td>B-1</td>
<td>CLG-1</td>
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<td>WT-1</td>
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<td>PLC-1</td>
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<tr>
<td>Departmental Waiting Rooms</td>
<td>15 per person</td>
<td>VWC-1 P-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>WT-1</td>
<td>WT-4</td>
<td>NA</td>
<td>18</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Public Restrooms</td>
<td>15 per person</td>
<td>VWC-1 P-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>LT-25</td>
<td>WT-1</td>
<td>SEE WALLS</td>
<td>1-7, 9, 16, 17</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Call Rooms</td>
<td>150-200</td>
<td>P-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>LT-4</td>
<td>WT-1</td>
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<td>18</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>NA</td>
<td>NA</td>
<td>WATER COOLER</td>
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<tr>
<td>Corridors</td>
<td>6-12’ width based on occupancy</td>
<td>VWC-1 P-1</td>
<td>B-1</td>
<td>B-2</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>WT-1</td>
<td>VARIES: REVIEW W/PM</td>
<td>NA</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Break Rooms/Doctor’s Charting</td>
<td>15 per person</td>
<td>B-1</td>
<td>B-1</td>
<td>CLG-1</td>
<td>LT-1</td>
<td>WT-1</td>
<td>WT-1</td>
<td>NA</td>
<td>8b, 15, 16, 18</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Clean, Meds &amp; Soiled</td>
<td>150-200</td>
<td>P-1</td>
<td>B-1</td>
<td>CLG-2</td>
<td>LT-1</td>
<td>WT-1</td>
<td>WP-3</td>
<td>VARIES: REVIEW W/PM</td>
<td>PLC-1</td>
<td>PLC-1</td>
<td>SST-1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Janitors**, Electrical, Mechanical &amp; Data</td>
<td>100-150</td>
<td>P-1</td>
<td>B-1</td>
<td>CLG-3</td>
<td>LT-26</td>
<td>** WP-3</td>
<td>NA</td>
<td>** WP-3</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Non-Operating Procedure Rooms where Anesthetizing occurs</td>
<td>150-250</td>
<td>P-4</td>
<td>B-3</td>
<td>CLG-4</td>
<td>LT-16</td>
<td>WT-1</td>
<td>VARIES: REVIEW W/PM</td>
<td>8b, 15, 16, 17, 18, 19</td>
<td>PLC-1/ SSC-1</td>
<td>PLC-1/ SSC-1</td>
<td>PLT-1/ SST-1</td>
<td>CC-1</td>
<td>CC-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Procedure rooms where Anesthetizing occurs</td>
<td>200-400</td>
<td>P-4</td>
<td>B-3</td>
<td>CLG-4</td>
<td></td>
<td>WT-1</td>
<td>WP-3</td>
<td>8b, 19, 20</td>
<td>PHC-17 SSC-1</td>
<td>PHC-17 SSC-1</td>
<td>PHC-17 ST-1</td>
<td>SST-2</td>
<td>NA</td>
<td>NA</td>
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<td>Spaces not noted above: Reference FGI-2014</td>
<td>FGI-2014</td>
<td>TBD</td>
<td>TBD</td>
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<td>NA</td>
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</tbody>
</table>

* - Standard How All Locations = CS-1, DL-1, HDW-1,
<table>
<thead>
<tr>
<th>Walls:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>P-1</td>
<td>Sherwin Williams Semi-Gloss paint on walls (MP1-GL5 finish is required) for durability and durability scrub cycles, Level 5 Drywall finish</td>
</tr>
<tr>
<td>P-2</td>
<td>Sherwin Williams Eggshell paint on walls (MP1-GL3 finish is required); Level 4 Drywall Finish</td>
</tr>
<tr>
<td>P-3</td>
<td>Sherwin Williams Semi-Gloss paint on metal trim (MP1-GL5 finish is required) for durability and durability scrub cycles, Level 3 Drywall Finish</td>
</tr>
<tr>
<td>P-4</td>
<td>Epoxy Coating. (MP1-GL5 finish is required)</td>
</tr>
<tr>
<td>CT-1</td>
<td>Ceramic Tile - large format with minimal grout lines on wet walls</td>
</tr>
<tr>
<td>WVC-1</td>
<td>Type II vinyl wall covering on one accent wall</td>
</tr>
<tr>
<td>Flooring</td>
<td></td>
</tr>
<tr>
<td>CPT-1</td>
<td>Mannington or Mohawk/Lee's carpet tile (squares or planks)</td>
</tr>
<tr>
<td></td>
<td>Fiber shall be Dupont type, 3.8 solution-dyed fiber, as part of manufacturer’s standard product line</td>
</tr>
<tr>
<td>LVT-1</td>
<td>Luxury Vinyl Tile - Antypo preferred</td>
</tr>
<tr>
<td>SJ-1</td>
<td>Standard seamless vinyl - Tekston preferred</td>
</tr>
<tr>
<td>SJ-2</td>
<td>Mannington Assurance II - slip resistant (All Restrooms)</td>
</tr>
<tr>
<td>SJ-3</td>
<td>Altro Aquarius 3mm safety flooring for wet environments</td>
</tr>
<tr>
<td>WOT-1</td>
<td>Walk-off Tile</td>
</tr>
<tr>
<td>T-1</td>
<td>Troweled Epoxy</td>
</tr>
<tr>
<td>T-2</td>
<td>Terrazzo</td>
</tr>
<tr>
<td>Base</td>
<td></td>
</tr>
<tr>
<td>B-1</td>
<td>Preference: Johnsonite Tightlock or Millwork/Reveal, or equal</td>
</tr>
<tr>
<td>B-2</td>
<td>Standard - Johnsonite Millwork/Reveal or equal</td>
</tr>
<tr>
<td>B-3</td>
<td>Standard - Johnsonite Tight-lock base or equal</td>
</tr>
<tr>
<td>Ceilings</td>
<td></td>
</tr>
<tr>
<td>CLG-1</td>
<td>2x2 non-regular acoustical tile, 15/16&quot; grid; NRC shall be 76 or greater (Armstrong Ultima preferred)</td>
</tr>
<tr>
<td>CLG-2</td>
<td>Mylar or Ceramic Faced Mosaic / Sag resistant 2x2 tile w/15/16&quot; grid (Armstrong preferred)</td>
</tr>
<tr>
<td>CLG-3</td>
<td>Mold and water resistant 5/8&quot; type &quot;X&quot; Gypsum Board w/access panels</td>
</tr>
<tr>
<td>Luminaires</td>
<td></td>
</tr>
<tr>
<td>ALL LED</td>
<td>We need more specificity (i.e., preferred refs) nothing spec’d for Op and Procedure Rms. Emergency power? Espee Lighting?</td>
</tr>
<tr>
<td>LT-1</td>
<td>Metalux Encounter 2x2</td>
</tr>
<tr>
<td>LT-2</td>
<td>Focal Point 2x2</td>
</tr>
<tr>
<td>LT-3</td>
<td>Metalux Encounter 2x4</td>
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<td>LT-4</td>
<td>Focal Point 2x4</td>
</tr>
<tr>
<td>LT-5 to 8</td>
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</tr>
<tr>
<td>LT-9</td>
<td>Recessed Down, Round 8&quot;</td>
</tr>
<tr>
<td>LT-10</td>
<td>Recessed Down, Square</td>
</tr>
<tr>
<td>LT-11</td>
<td>Recessed Exam</td>
</tr>
<tr>
<td>LT-12</td>
<td>Bed Ambient/Exam</td>
</tr>
<tr>
<td>LT-13</td>
<td>NOT USED</td>
</tr>
<tr>
<td>LT-14</td>
<td>Night Light</td>
</tr>
<tr>
<td>LT-15-18</td>
<td>NOT USED</td>
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