SECTION 3 AD: ARCHITECTURAL DIVISION

Latest Update 8-11-17, See underlined text

PART VI: INTERIOR FINISH, ACCESSORY, AND SPECIALITY DESIGN

1. SCOPE:

1.1. This part outlines the minimum requirements for the design procedures for interior finish, accessories, and specialties, for new buildings, and repair and alteration projects for existing buildings on the UM campus.

2. UM OVERVIEW:

2.1. The mandate for cost-effective construction within public sector budgets necessitates prudent selection of materials and systems which can service the needs of the University. Further, the on-going maintenance of over four million square feet of space recommends the use of those items which have proved durable and maintainable over time, and the standardization of these materials to minimize stocking of replacements and training in their use and maintenance.

3. WOODS, PLASTICS AND CASEWORK:

3.1. Standards for Wood and Plastics:

a. **Wood:** Architectural wood work shall comply with the Standards of the Architectural Woodwork Institute (AWI) for premium grade or custom grade woodwork. Economy grade work is not acceptable except as may be specifically approved, by item, by the Office of Facilities Management.

b. **Plastics:** Plastic laminate finished work shall be in accordance with AWI (American Woodwork Institute) standards for custom or premium grade for self-edge or solid wood-edge laminate veneer, and as required herein for countertop, construction. Economy grade work is not acceptable except as may be specifically approved, by item, by the Office of Facilities Management.

c. **Particleboard:** Particleboard is not permitted for use in any application for carpentry, including cabinets, carpentry, countertops, and sheathing.

3.2. Rough Carpentry:

a. Treated lumber shall be specified to be used in damp areas, and when in contact with concrete, masonry, plaster, and when used as roof blocking. Material shall be kiln-dried to a maximum 15% for plywood and 19% for lumber moisture content after treatment. Brush coat all cuts with same preservative. All framing lumber shall be marked for type, grade, mill, and grading agency identification.

3.3. Finish Carpentry:

a. Generally, wood is not utilized for interior finishes in new construction on the UM campus. Exceptions are in the use of wood trim as paneling in Lobbies, specific rooms with public use, elevator cabs to match lobbies, and for handrails. Wood flooring has not been utilized and is discouraged. Proposed exceptions, such as general wood casing at doors and baseboards, wainscoting, ceiling panels, etc. shall be presented to the UM OFM Project Manager for determination of appropriateness. The proposed use should support requirement(s) of the program.

b. Restoration of existing structures, particularly those of historical nature, may require the replacement of deteriorated wood elements in kind. Such work must comply with current code requirements for fireproofing, hazardous materials abatement, and use of pressure-treated decay-resistant woods within masonry or damp conditions. Replacement work should replicate existing profiles and construction.

3.4. Interior Architectural Woodwork:

a. Drawings and details shall clearly define each type of interior architectural woodwork so that it is distinguished from carpentry and other types of wood work.

b. Where more than one grade of woodwork is included in the design clearly identify each grade of wood.

c. **Grade of Woodwork:** AWI standards recognize three grades of quality: premium, custom, and economy. Generally:

(1) Premium grade requires the best grade of finish materials and workmanship currently recognized. Premium grade might be specified for woodwork throughout an entire building, but it should not be specified indiscriminately. Premium should usually be specified only for selected areas or selected items that have particular architectural significance or use/durability requirements-for example public use lobbies, conference rooms, lounges, special offices or rooms, or as designated by the Office of Facilities Management or as specified in the project program.

(2) Custom grade is the accepted standards for public and institutional work, in both material and workmanship requirements. Executed with the strictest compliance with AWI, it is the standard of University work, and has been effectively used in classrooms, labs, offices, etc.

(3) **AWI Type of Cabinet Construction:** reveal overlay for standard custom grade laboratory (casework) wood cabinets.

(4) Economy grade has been found to be not sufficiently durable for long-term, public institutional use. It is not recommended for use except in projects of established limited use such as temporary relocations, etc., as approved by the UM OFM Project Manager.

d. Substantial cost differences exist between the different grades, finishes, and, for casework, different types of cabinet construction. Also, transparent finished woodwork generally is more expensive than woodwork with an opaque finish, depending not only on the species and cut of wood selected but also on the type of finish required. Consequently, determination of quality grade should be based on a careful study of design role, function, location, and finish of each woodwork item.

e. Drawings, details and elevations shall include dimensions for all elements of work including profiles of jambs, trim work, moldings and any specialized joinery.

f. **Fire Retardant Treatment:** Usually small amounts of architectural woodwork are permitted for most occupancies and spaces without requiring fire-retardant treatment. However, for many applications where woodwork (of any type) is extensive, such treatment of all or part may be required or advisable. However, use of fire-retardant wood limits choices available with respect to material and thickness as well as to treatments and finishes, particularly transparent finishes. Where fire-retardant-treated woodwork is required by Code or the University, specify a Class "A" flame spread rated vinyl polyester or varnish intumescent clear coat for stained finishes, and intumescent vinyl for opaque finishes.

g. Where fire retardant treated wood is included in the design, clearly identify the location, size, dimensions, etc.

h. Include in the specifications all non-wood materials to be furnished in the work, such as glass doors, shelving, grommets, wire ways, etc. Devices to be incorporated in the work but furnished by other trades shall be coordinated and clearly noted, such as manufactured cabinet inserts, sinks, plumbing, heating elements, lighting fixtures, electrical and signal devices, etc.

3.5. Casework:

a. **General:** Casework includes base cabinets, countertops, wall cabinets, wall shelving, reagent shelving, drawers, knee spaces, built in utility chases etc.

b. **Hardware:** Specify, cabinet hardware shall be furnished and installed by the cabinet fabricator so that a single responsibility is achieved. Pivot hinges, however, should be supplied and installed in the in the field because of their tendency to shift during setting and fitting of cabinets. The following guidelines shall be included in the contract documents:

(1) Indicate all key-locked units.

(2) All hardware shall be ADA compliant.

(3) Exposed hardware shall be finished as either brushed stainless steel or brushed chromium plate.

(4) Finish hardware for cabinets shall be installed at factory.

c. Guidelines: Casework shall reflect the following guidelines:

(1) Tops, Back and End Splashes on Wet Benches: One (1) inch thick black epoxy, or "Kemresinlite". Splashes to be bonded to top surfaces. Provide splashes at all vertical surfaces, dedicated work stations, and fume hoods. All edges to have grooved drips. Alternative, as directed, may be one (1) inch self-edged .acid resistant laboratory grade high pressure plastic laminate (HPDL) with .020 (mil/inch) BKL/HPDL backer sheet. Seal backsplashes to wall.

(2) Tops on Thirty (30) Inch High Work Stations: One (1) inch self-edged 0.039mil/in HGL/HPDL/n plywood core with .020 BKL/HPDL backer sheet on all other exposed surfaces.

(3) Cabinet Bodies: 3/4 inch thick veneer plywood with plain-sawn oak veneer except where noted (AWI premium grade) and 1/2 inch thick solid red oak banding. Floor mounted fully enclosed with toe space.

(4) Drawers Sides, Back and Front: 3/4 inch thick veneer core plywood with oak veneer or 3/4 inch thick solid oak wood.

(5) Drawer Bottoms: Minimum 3/8 inch plywood or similar material.

(6) Doors: 3/4 inch thick, plain sliced red oak veneer plywood and 1/2 inch thick solid red oak banding.

(7) Shelving: Shelving, exposed and in cabinets; 3/4 inch thick x 12 inch deep plain sliced red oak veneer core plywood banded on exposed edges with a 1/2 inch thick solid red oak banding.

(8) Reagent Shelving: One (1) inch thick plywood core, acid resistant laboratory grade PHDL self-edged all surfaces, to support minimum 50 psf. Screw mount shelves to double-track stainless steel adjustable brackets rated for two hundred (200) lb. load (including heavy duty clips). Top shelf shall be fixed no higher than 7 foot – 4 inches above floor, and no closer to ceiling than eighteen (18) inches. At reagent shelving, above lab benches, the 1/2 inch thick solid red oak band to be one (1) inch high, to provide a 1/4 inch high lip at the outside edge of the shelf. Omission of this lip shall be at the discretion of the Office of Facilities Management after consultation with the User.

(9) **Pulls or Handles:** Round pulls, 5 inches long x 2 1/2 inch deep x 5/16 inch in diameter, and shall be ADA compliant. Knobs shall not be acceptable.

(10) **Wood Grain:** Grain in adjacent panels shall be matched as to direction, color, and density. Wood grain shall be an all vertical pattern.

(11) **Drawer Slides:** Drawer slides for drawers with a depth of seven (7) inches or less shall be at minimum medium weight, full extension. Slides for drawers with a depth greater than seven (7) inches shall be heavy duty, full extension hinges, and hardware on millwork shall be commercial grade.

(12) **Pegboards:** 24 inch x 30 inch x 1 inch thick "Resistop" laboratory pegboards with thirty nine (39) polypropylene pegs each, and stainless steel drip trough and drain tube to align with sink.

(13) **Peninsula Benches:** Peninsula benches shall have adjustable reagent shelving, as above, with oak or HPDL finished casework pilaster chases for mechanical/electrical services from bench top to minimum of six (6) inches above ceiling and anchored to structural deck.

d. **Millwork:** Millwork shall be fabricated and installed so that in future renovations it can be disassembled in complete units and reinstalled.

e. **Millwork Joints:** Millwork material shall be installed with minimal joints or concealed nails and fasteners. Joint location and design, edge banding, and wood blocking, shall be installed to allow for natural wood movement and building movement.

f. **Plywood:** Plywood used for mounting of telephone and electrical equipment shall be 3/4 inch thick fire retardant plywood panels; that shall be secured sufficiently to the wall to support apparatus.

g. **Plastic Laminate Seams:** Plastic laminate seams shall be a minimum of thirty six (36) inches from a sink edge.

h. The A/E shall employ its successful experience in institutional design and construction to address the requirements of each specific project, as reviewed and approved by the University.

4. INTERIOR DOORS, HARDWARE AND SECURITY:

4.1. Interior Doors:

a. **General:** All interior doors, frames and hardware shall comply with these UM Design Standards to ensure a reliable level of quality, appearance, and operation.

b. **Security:** Security requirements shall be as directed by the Department of Public Safety and the Fire Marshall in the Department of Environmental Health and Safety.

c. **Finishes:** Interior doors to be plain sliced red oak veneer, grade 'A' select, book matched, slip matched, or balanced matched with a natural finish. For existing building, match the building standard, which may include painted doors or other veneers such as maple or rift cut red oak.

d. **Interior Door Openings:** Door openings to toilet rooms, dressing rooms, or other private areas shall be located so as to block direct views into the rooms. Doors opening to toilet rooms shall be push/pull type, not latching or locking**.**

e. **Interior Door Frames:** Interior door frames shall be specified as face welded, dressed and ground smooth hollow metal, 16 gauge at openings up to and including forty eight (48) inch width. For openings over forty eight (48) inches wide specify 14 gauge frames. For special locations, such as Animal Facilities and exterior doors, frames shall be fully (continuous) welded.

f. **Interior Doors:** Interior doors shall be specified as 1-3/4 inch structural composite core, premium grade. Provide vision lights and "half door" tempered glass view windows as appropriate, match the building standard exactly and provide profile detail. For fire-rated doors, specify continuous top blocking and lock block.

g. **Equipment Room Doors:** Doors to mechanical and electrical rooms shall be of adequate size to accommodate the installation and or removal of equipment.

4.2. Door Hardware:

a. **UM Hardware Systems:** UM, through the O&M lock shop, is required to maintain, repair, and interchange many locks, cylinders, exit devices, and assorted other items of finish hardware on an ongoing basis. In order to maximize the value and economics of a standardized hardware system, it is necessary that proprietary specifications be instituted for selected hardware items; thus, the specific items listed herein are to be considered mandatory. The A/E shall coordinate the finish hardware schedule with UM.

b. **Locks:** Mortise lock shall be used as a standard of quality for all projects. Cylinder locks shall be used only when upgrading an existing door or matching a building standard. Lock sets shall be as follows:

(1) **Mortise Lock Sets:** Specify Yale 8800 FL series, AVR trim design and 2196-6 cylinder. For existing buildings, match building standard for lever choice.

(2) **Cylinder Lock Sets:** Specify Yale 5400 LN series, AU trim design and 1210 core.

(3) **Cylinders and Keying:** Provide Yale original six (6) pin removable core cylinders and two keys for every lock, keyed to an LA keyway. Furnish construction cylinders and keying for use during the construction period. Permanent cores shall be keyed and installed by UM upon completion of the project. Keys shall be round head, with no engraving except "LA" for the keyway.

c. **Automatic Door Operators:** Automatic door operators shall be Stanley Magic Access or Stanley Magic Force for high traffic areas. The operator shall be finished to match the door frame in high profile public areas like building lobbies or reception areas. Other acceptable products are the LCN Senior Swing and Besam SW200i.

d. **Exterior Door Hardware:** For exterior door hardware include the following in the specifications:

(1) Surface mounted closures.

(2) Roton type door hinges.

(3) Inground pivot hinges are not acceptable on exterior doors.

4.3. Door Entry Security:

a. **General:** The door entry security and the campus-wide access control system shall be as defined in Section 3 ED of these Design Standards. The A/E shall coordinate all aspects of related design elements with all pertinent disciplines. Generally the University follows the following guidelines:

(1) **Electric Hardware:** For doors that require electric hardware:

a) Do not provide electric strikes.

b) Provide electric latches in door leaf with a request-to-exit relay.

c) Provide surface-mounted door loops (not power transfer hinges) for interconnecting electric latch with the door frame. Keep exposed portion of the loop within six (6) inches of the top of the door.

d) **Electrified Openings:** Doors shall be pre-wired with sufficient number of concealed wires to accommodate electric function of specified hardware. Provide Molex type standardized plug in connectors to accommodate up to twelve wires.

(2) **Stairwell and Fire Command Areas:** For doors at stairwell exits and fire command centers, provide card reader with electric mortise lock. Provide for continuous locking, except when the fire alarm system releases the lock.

(3) **Path of Egress:** For doors along the path of egress requirements, coordinate with the UM OFM Project Manager for any specific fire alarm system integration or manual release requirements.

(4) **Double Doors:** Both door, leafs are to be operable in double doors with latches symmetrical in appreance. For locations in a non-public areas where in-active leafs are desirable do not provide trim on inside and outside.

(5) **Door Contacts:** Door contacts are to be provided; provide contacts for both leafs on double doors

b. For doors also requiring auto-operators:

(1) Push plate shall be brushed #4 stainless steel with blue engraved lettering on a recessed back box.

(2) Push plates shall include a double pole double throw (DPDT) momentary-type relay output. Unit shall be hardwired back to the automatic door operator.

(3) Provide a MS Sedco 'Time Delay Module' Model # TDM for sequencing the auto operator with the electric latch.

c. For interlocking doors without auto operators:

(1) The University will use opposite doors' door contact output(s) for interlocking. Do not provide any additional "sequencers", solid-state or microprocessor timers, PLC's, etc.

d. For interlocking doors with auto-operators, include the following additional requirements

(1) The University will use the opposite doors' contact outputs for interlocking.

(2) Provide push plates with a pneumatic time delay DPDT output capability and a time delay range of two (2) to sixty (60) seconds.

(3) Provide an MS Sedco 'Time Delay Module" Model # TDM for sequencing the auto operator with the electric latch. Provide the TDM for each leaf.

e. Exterior doors designated as emergency exit only, requires the following controls:

(1) No exterior hardware to prevent use of hardware as leverage for a pry tool.

(2) Magnetic locks for strength.

(3) Door contacts for an open door alarm interconnected with the card access system shall be alarmed both local and at remote location.

f. Comply with ADA requirements when specifying frames and doors including:

(1) Push/pull resistance requirements including negative air spaces.

(2) Minimum door opening with latch side clearances.

(3) Appropriate accessible hardware.

(4) Upon completion of installation of door and hardware, the contractor shall do a final adjustment and balancing of all door closers, and test the door force(s) in the presence of the Owner.

(5) Special considerations for push/pull forces may need to be addressed at exterior doors and at stairwell doors. Coordinate with the UM OFM Project Manager.

5. GYPSUM WALL BOARD ASSEMBLIES:

5.1. Standard Gypsum Board Partitions: Generally, and unless specifically required otherwise, provide standard partitions to divide spaces constructed of 5/8 inch gypsum wall board mounted on 3 5/8 inch x 20 gauge metal studs at sixteen (16) inches o.c.

a. Acoustical insulation may be specified (scheduled) for above described "standard" partition, as function requires.

5.2. Metal Plate Reinforcing: Specify or indicate horizontal galvanized plate(s) six (6) inch width x 16 gauge x length required (in maximum unit lengths of eight (8) feet each), screw or rivet-attached to face(s) of metal studs in gypsum board partitions, to provide reinforced backing for fastening cabinet, counters, shelving units and other wall-mounted items. Coordinate plans and identify locations, extent, and height to center-line of plate(s) throughout.

5.3. Include access panels and/or doors for all concealed mechanical/electrical equipment requiring maintenance (i.e. ballasts, valves, HVAC controls, etc.)

5.4. The following rooms and spaces are generally expected to have partitions up to the underside of the deck above:

a. All fire, smoke, and/or acoustically treated partitions for all lobbies, corridors, conference rooms, x-ray rooms, MRI rooms, electron microscope rooms, laboratory research rooms, animal facilities, dark

rooms, mechanical, electrical, and communication rooms, utility shaft walls, private offices and interview rooms where required by the program, and any room without a ceiling.

5.5. Wood blocking shall not be included in the design of metal stud walls.

5.6. Where partitions are intended to be used as railing enclosures around balconies, stairs, etc. these partitions shall be designed, certified and detailed by a structural engineer to withstand the horizontal and vertical loads as required by code for railings. Studs and tracks shall be specified to be a minimum of 16 guage with attachment clips designed for the loads.

6. RESILIENT FLOORING:

6.1. **General:** UM will only accept premium commercial grade resilient flooring. Resilient flooring includes vinyl composition tile (VCT), solid vinyl tiles, vinyl sheet goods and related accessories.

6.2. Indicate on drawings the following information related to resilient flooring:

a. Location and extent of each type of resilient flooring, special patterns, borders, and cutouts.

b. Location, extent and junction details of accessories, as required.

c. Special details of installation, as required.

d. Schedule of sizes, types, colors, and patterns on a room-by-room basis.

e. Indicate direction of grain; note no 1/4 turning, unless directed by the UM OFM Project Manager.

6.3. **Attic Stock:** UM requires 5% attic stock for projects not exceeding 1,000 sq. ft. For projects 1,001 sq. ft. and above, UM requires 2% attic stock for each type, color, pattern and size installed.

6.4. **Size:** Standard size and gauge for VCT at UM is 12 inch x 12 inch x 1/8 inch. Standard size and guage for vinyl tile at UM is 18 inch x 18 inch x 1/8 inch. Standard vinyl sheet goods size and guage is 6 foot x 80-110 feet x 0.080 guage. As manufactured by Mannington, Armstrong, or Tarkett, Toli, Congoleum, Amtico International, or other approved equals.

6.5. **Underlayments:** Specify underlayments over existing wood floors or subfloors as 1/8 inch to 1/4 inch Luaun plywood; 'Masonite' is not acceptable.

6.6. **Vinyl Cove Base:** Four (4) inch high, coved over resilient flooring, toeless at carpet flooring. Colors selection is generally made from black, brown, tan, gray, or to match the floor tile color. Provide for requirement of a mock-up to verify workmanship at an inside and outside corner.

6.7. **Vinyl transition strips/reducer:** 1/8 inch or 1/4 inch gauge; color: black or brown.

6.8. In all renovation work specify that the contractor shall be responsible for removing and disposing of all tile, underlayment to be replaced, cove base and transition strips.

7. CERAMIC TILE:

7.1. General: Ceramic tile includes both glazed and unglazed tiles, mortar and grout, trim pieces, etc. used on walls and/or floors in public areas to satisfy the requirements of the project program, or as directed by the University.

7.2. Ceramic floor tile for toilet rooms shall be 2 inch x 2 inch thin set tile. Furnish cove base and bull nose corners and cap. The mortar color shall be specified to be “charcoal grey”.

7.3. Tile for walls and wainscots shall be either 2 inch x 2 inch or 4 inch x 4 inch using thin set method. Specify the appropriate mortar color for the wall tile. White may be used.

7.4. Furnish marble thresholds at entrance to rooms with ceramic tile floors. Thresholds shall have proper taper to conform to ADA standards.

7.5. Attic Stock: Provide attic stock of each type of ceramic tile. Coordinate quantities with UM.

8. CARPET:

8.1. General: The selection of carpet shall consider use, user, durability, serviceability, replacement accessibility, sustainability, and appearance. Both carpet tile and broadloom carpet are established standards at the University, as follows:

a. Carpet Tiles: Carpet tiles, either vinyl backed or fiberglass backed tiles, may be specified for general purpose carpeting and can be used in all areas such as lobbies, corridors, auditoriums, offices, and class rooms.

b. Broadloom Carpet – HP/MB: Broadloom carpet with high performance (HP) and moisture barrier (MB) backing system may be specified in all areas with light, moderate and heavy traffic areas.

c. Other Carpet Considerations: Olefin carpet may be allowed only on a case by case basis, as approved by the University. Stain resistant carpet will be used, unless otherwise approved by the University.

d. Carpet Exclusions: Carpet shall not be considered for use in server rooms or rooms with sensitive electronic equipment.

8.2. UM Cleaning Procedure: The University employs the hot water soak and extraction cleaning method, therefore all carpets shall have a moisture barrier (MB) type backing.

8.3. Moisture Barrier Carpet Backing: All carpet backing shall be the moisture barrier (MB) type, complying with the following:

a. Carpeting must not have any secondary backing post applied in the manufacturing process that could eventually delaminate through installed application.

b. Carpet backing must be impervious to moisture.

c. Carpet backing must pass the twenty four (24) hour British Spill Test.

d. Primary Backing: Synthetic woven polypropylene.

e. Secondary Backing: Synthetic woven polypropylene applied with hot melt thermoplastic or urethane emulsion rich latex may be used for carpets and cannot exceed a five (5) year life.

8.4. Attic Stock: For carpet tile, UM requires 10% of the installed total square footage for attic stock, and for broadloom carpet UM requires 5% of the installed square footage for attic stock for each type, color, pattern and size installed.

8.5. Design Considerations: The architect shall include the following design considerations:

a. Long corridors shall not be railroaded (12 foot, 12 foot) unless the carpet pattern is of such a nature that the seams will not be noticed. Approval shall be through the University.

b. The carpet selections for entrance level areas and elevator lobbies must be carefully considered. Consider borders and smaller sections of carpet, so target periodic replacement is cost effective.

8.6. Specification Requirements: The architect shall include the following information in the project specifications:

a. Warranty Performance Requirements: Specify that the contractor shall provide a five (5) year extended written warranty, co-executed by the installing subcontractor, agreeing to repair, replace, reset, or re-stretch carpeting that fails in installation materials or workmanship within the specified warranty period. In addition to others available for selected carpet, the following manufacturer product warranties are required:

(1) Against surface pile abrasive wear (fiber loss) in excess of 10% for a period of ten (10) years.

(2) Ten (10) year antistatic warranty.

(3) Backing delamination – lifetime

(4) Edge unraveling and zippering – lifetime

b. **Transition Strips:** Specify vinyl, rubber transition strips and/or thresholds where dissimilar floor surfaces such as carpet to resilient flooring, carpet to ceramic tile, ceramic tile to resilient flooring to create a finished surface devoid of tripping hazards.

c. All carpet (carpet tile, broadloom) to be direct glued. Carpet tile may be self adhesive.

d. **Adhesives:** Specify only adhesives recommended by the manufacturer of the selected carpet.

e. All carpet shall have an ASTM 648 Class 1 fire rating.

f. All carpet shall have less than 3.0 kilovolts of static at 70^0F and 20% humidify.

g. All carpet types shall be either loop or cut and loop type. Cut pile carpeting may be used in conference rooms, in borders, or in special locations as approved by the University.

h. **Yarn:** Unless an exemption is approved by the University, specify that all carpet shall be made of the following:

(1) **Yarn Dyed:** DuPont Antron or Lumena Nylon.

(2) **Solution Dyed:** DuPont 6.6 fiber.

i. **Weight:** Specify that all carpet material conform to the following:

(1) **Carpet Tiles:** 28 oz. minimum.

(2) **Broadloom:** 22 oz. for class rooms and general applications.

(3) **Special Areas:** 20 oz. for executive and special areas.

j. Specify that the carpet construction shall be type'6.6' nylon pile with a minimal face weight of twenty (20) oz. to a maximum thirty six (36) oz.

Dye method shall be solution dyed, combination solution/yarn dyed or yarn dyed as appropriate for the project.

k. Manufacturer shall provide a care and use manual for their products.

9. PAINTING:

9.1. **General:** Paint products are available in both latex water-thinned and oil alkyd-solvent-thinned types, covering the range in sheen from flat to high gloss.

9.2. **Paint Type:** Many factors must be considered in making a selection between flat and gloss sheen, between a latex and an alkyd oil paint. The following factors must be considered prior to specifying a paint finish:

a. Substrate material and surface.
b. Function and environment of the area to be finished.

c. Texture and gloss desired.

d. Washability/durability desired.

e. Abrasion resistant properties required.

f. Chemical resistance necessary.

g. Color hue and value desired.

9.3. Indicate on drawings, schedules and/or specifications the following information related to Painting:

a. Extent of surfaces to be painted.

b. Texture and gloss of finishes.

c. Colors of various finishes.

d. Number of coats.

9.4. **Finishes:** Recommended finishes for given functional spaces and/or special wall types:

a. **Offices and Corridors:**

(1) **Velvet Acrylic:** egg shell, for deeper colors and accent color, MPI 138.

(2) **Acrylic Latex:** egg shell, MPI 145X.

b. **Stairwells, Gypsum Wall Board, CMU Walls, and/or U/S Stairs When Specified:**

(1) **Latex:** semi-gloss, MPI 147X.

c. **Classrooms:**

(1) **Velvet Acrylic:** egg shell, for deeper colors and accent colors, MPI 138.

(2) **Latex:** semi-gloss, MPI 145X.

d. **Laboratories:**

(1) **Latex:** egg shell, MPI 145X.

(2) Acrylic: acrylic epoxy, single component modified when directed, MPI 115.

e. Animal Research Facilities:

(1) Acrylic: acrylic epoxy, single component modified when directed, MPI 115.

f. Rest Rooms:

(1) Latex: semi-gloss or satin, MPI 147X.

g. Janitor's Closets:

(1) Latex: semi-gloss, MPI 147X.

(2) Splash Zone: provide FRP on splash zone behind sink.

h. Wood Door and Wood Frame:

(1) Latex: semi-gloss, MPI 145X.

i. Metal Door and Window Frame:

(1) Latex: semi-gloss, MPI 145X.

j. Mechanical, Electrical and/or Data Rooms:

(1) Silthane II by Insl-X: floors only, MPI 60.

k. Exposed Piping in Stair Wells and/or Other Finished Areas:

(1) Direct to metal, MPI 153.

l. Exposed Ductwork in Finished Areas Only:

(1) Latex: egg shell**, MPI 145.**

9.5. Manufacturers, Quality Line: Specify paint materials as manufactured by Duron Paint Mfg. Co., of the top quality line for each paint type, or materials of other manufacturers equal to compliance with these requirements.

9.6. Colors: The use of manufacturer's standard colors which can be easily replicated is required for maintenance. Generally, the light reflectivity rating shall be over 60%, with the predominance of a project recommended to be in excess of 70%, to comply with cost-effective lighting design.

10. ACOUSTIC CEILING PANELS:

10.1. General: Acoustic ceiling panels used throughout the University Campus are typically either 24 inch x 48 inch x 3/4 inch, or 24 inch x 24 inch x 5/8 inch or 3/4 inch thick white faced acoustic ceiling panels with a complete metal suspension

system, furnished with a baked enamel coating for use in public spaces, offices, class rooms, laboratories, etc.

~~10.2.~~ **Vinyl Panels:** In computer rooms, animal areas, clean rooms, etc. specify 24 inch x 24 inch x 5/8 inch non perforated vinyl faced panels, manufacturer Armstrong Clean Room Mylar (1716).

10.3. All ceiling panels shall be set in a 15/16 inch white aluminum suspension grid system, narrow profile grid systems are not allowed.

10.4. **Styles:** Acoustic ceiling panel styles shall include square cut lay in or angled tegular, style. Specify ceiling tile that matches the building standard, or specify Fine Fissured by Armstrong or Astro Clima Plus by USG.

10.5. **Attic Stock:** Limit attic stock to special acoustic ceiling panels. Coordinate quantities with UM.

11. WINDOW TREATMENTS:

11.1. **General:** All exterior windows are to have window treatments, and are to be commercial grade for heavy-duty use. The selection of interior and exterior window treatment shall consider appearance, durability, and level of light control required. Both horizontal blinds and woven mesh shades are established standards at UM, as follows:

a. **Horizontal Blinds:** Manual-operated Venetian blind.

b. **Woven Mesh Shades:** Both single and dual shade systems are acceptable, depending on specific project requirements.

c. **Motor-operated Systems:** Motor-operated systems shall be used where bead chain length is excessive or not accessible, or blackout shades are required to interface with A/V equipment.

d. **Other Window Treatments:** Drapes and other type window treatments are not usual on the campus, but may be considered, as reviewed by the UM OFM Project Manager.

e. **Renovation Projects:** When installing window treatments in an existing building, treatments to match already established standard for entire building for a cohesive appearance from the exterior, unless otherwise approved by the UM OFM Project Manager.

11.2. **Horizontal Blinds:** Manually-operated Venetian blind conforming to ANSI/WCMA Standard A 100.1 for safety of corded window covering, and ASTM E84-89 for all materials.

a. **Slats:** Slats to be minimum .008 inch thick spring-tempered aluminum with crowned profile and radiused corners. Slat height shall be one (1) inch.

b. **Slat Support:** Slat support shall be woven polypropylene, ladder configuration. Lift cord shall be braided polyester/rayon, continuous loop.

c. **Color:** Color shall be selected from manufacturer's standards, and shall be factory-applied, light-colored.

d. **Headrail Housing:** Formed-steel "U" channel internally fitted with hardware, pulleys, and bearings for blind operation cross braced for rigidity. Valances are not permitted unless an integral part of headrail housing.

e. **Bottom Rail:** Formed-steel box to match slat and reinforced to prevent twisting or sagging. End caps shall be metal.

f. **Wand:** Control wand shall be transparent plastic.

g. **Blind Height:** Blind height shall not exceed twelve (12) feet and widths shall not exceed seventy two (72) inches. Division between blinds shall occur only at mullions of continuous windows or openings where more than one blind for one opening occurs.

h. **Cords:** Control wand and lift cord shall be in length sufficient for easy operation from a convenient position location shall be specified on a drawing or on a submittal for review.

i. **Installation:** Blinds shall be installed level and plumb in accordance with the manufacturer's written instructions. The installer shall ensure unencumbered operation of window sash hardware.

j. **Approved Manufacturers:** Graber, Levelor, Hunter Douglas, and Bali.

11.3. **Woven Mesh Shades:** Type of shade fabric and method of operation shall be selected to meet specific project requirements. Dual shade systems, with both shades located in the same pocket shall be used where both blackout and light filtering fabrics are required at the same location.

a. **Shade Cloth:** Shade cloths shall have no seams and hang flat without buckling or distortion. Edge, when trimmed, shall hang straight without raveling.

b. **Shade Fabrics:** Shade fabrics shall be certified by and independent testing laboratory to pass NFPA 701 and applicable code requirements. The roller shade shall be opaque and density shall suit project conditions, options include 3% open, 5% open, 8% open,13% open, and15% open.

c. **Area Coverage:** Each shade shall fully cover the opening where it occurs. Breaks between the units occur only at mullions or other defined vertical separations for continuous installation.

d. **Valances:** Valances shall be snap-on aluminum fascia or covered to match the shade cloth. Side and sill closure channels shall be provided

between shade sides and window jambs and between hem bars and sills finished to match valance.

e. **Guide Rails:** Guide rails for motorized shades shall not be used at locations with operable windows.

f. **Roller Shade Cloth:** Unguided roller shade cloth shall hang true and straight, without shifting sideways more than 1/8 inch in either direction due to warp distortion or weave design.

g. **Chain:** Chain at manual shades shall be number ten (10) stainless steel bead chain formed in a continuous loop. Chain operator shall be in length sufficient for easy operation. Plastic hem grips are not used.

h. **Support Hardware:** Shade support hardware shall be capable of supporting 150% of the full weight of each shade. Shall be adjustable for exterior of shad unit without disassembly of hardware, and shall have a built-in shock absorber system to prevent chain breakage under normal usage.

i. **Power Operators:** Control systems and components shall be approved as a system by either Underwriter Laboratories (UL) or Electrical Testing Laboratories (ETL).

j. **Motor Control System:** To be coordinated for specific project requirements and for interface with low voltage audio-visual systems.

k. **Approved Manufacturers:** MechoShade Systems, Inc., and Vimco.

11.4. **Specification Requirements:** The architect shall include the following information in the project specifications:

a. **Special Warranty Performance Requirements:** Specify that the contractor shall provide a warranty that includes the following special warranties:

(1) Tracks, gear-and-sprocket mechanism, and accessories for shades shall be warranted for five (5) years against defects in materials and workmanship which inhibit proper and intended functioning of products.

(2) Shade cloth shall not deteriorate, sag or warp and will remain fit for use for no less than ten (10) years.

b. **Installation:** The installer shall verify all field dimensions: install shades level and plumb, and ensure unencumbered operation of window sash hardware. Metal parts of shade units shall be isolated from concrete mortar to prevent galvanic action.

c. **Shop Drawings:** Specify that the manufacturers shop drawings shall include the following:

(1) Shade assembly mounting details, including wiring diagrams for motorized systems.

(2) Position of shade or blinds in relationship to glass or frame surface.

(3) Special conditions at external and internal corners.

12. TOILET ROOMS AND ACCESSORIES:

12.1. Toilet Rooms: All toilet rooms shall be handicapped accessible in accordance with ANSI A-117 and the "Americans with Disabilities Act (ADA)". All toilet rooms shall include the required number of plumbing fixtures as per the Building and State Plumbing Codes.

12.2. Toilet Room Wall Finishes: Unless otherwise approved by the UM OFM Project Manager all wall surfaces at sink locations and at water closet and urinal locations shall have a ceramic tile finish, with white grout to a height of twelve (12) inches above the highest flush valve. Wall surfaces above the ceramic tile shall be painted in accordance with the requirements of these Design Standards.

12.3. Toilet Room Ceilings: All toilet room ceilings shall be acoustical suspended ceilings to permit access to mechanical and electrical components.

12.4. Toilet Compartments: Toilet Compartments shall be selected from one of following:

a. Stainless Steel: Stainless steel shall be used only when approved by the UM Project Manager, and for locations that require a high-end look. Stainless steel wall, door, privacy panels and pilasters shall conform to ASTM A 167, Type 302/304, finished on all exposed surfaces with a No. 4 Satin Finish and have the following minimum thickness:

(1) Panels and Screens: 0.0396 inch (20 gage)

(2) Doors: 0.0336 inch (22 gage)

c. Reinforced Composite: Solid color reinforced composite toilet partitions shall be of floor mounted overhead braced design and shall be composed of dyed organic fibrous material reinforced with polycarbonate and phenolic resins between clear melamine surface sheets.

(1) Doors and Stiles: Specify 3/4 inch thickness.

(2) Panels and Screens: Specify 1/2 inch thickness.

(3) Hardware: Specify type 304 satin finished stainless steel.

(4) Fasteners: Specify either through bolted using tamper resistant (pin-in-head Torx) or shall utilize factory installed threaded inserts

(5) **Other:** Specify that all components shall be graffiti resistant (ASTM D 6578-00), impact and scratch resistant (ASTM D 2197-98(2002) and D 2794-93(1999) e1), ICC/NFPA ASTM E 84 Class B certified for flame spread and smoke generation.

(6) **LEED™ Program Contribution:** The design shall contribute to LEED™ Program points in both Materials and Resources (recycled content, local regional materials, rapidly renewable materials, and certified wood) and Indoor Environmental Quality (low emitting materials).

(7) **Warranty:** Specify a minimum ten (10) year manufacturer's warranty.

d. **Compact Laminate (formerly called solid phenolic):** Compact laminate toilet partitions shall be of floor mounted overhead braced design or ceiling hung design and shall be composed of a solid phenolic core with color and clear melamine surface sheets fused to the core.

(1) **Doors and Stiles:** Specify 3/4 inch thickness.

(2) **Panels and Screens:** Specify 1/2 inch thickness.

(3) **Hardware:** Specify type 304 satin finished stainless steel.

(4) **Fasteners:** Specify either through bolted using tamper resistant (pin-in-head Torx) or shall utilize factory installed threaded inserts.

(5) **Other:** Specify that all components shall be graffiti resistant, impact and scratch resistant, ICC/NFPA ASTM E 84 Class A certified for flame spread and smoke generation.

(6) **Warranty:** Specify a minimum ten (10) year manufacturer's warranty.

e. **Hardware:** All Hardware and accessories shall be the manufacturer's standard design, heavy duty operating hardware of chromium–plated nonferrous cast alloy unless otherwise noted above.

12.5. **Grab Bars:** Size shall be 1-1/2 inch diameter, satin stainless steel with concealed plates with no exposed fasteners. Length as required.

12.6. **Toilet/Shower Room Accessories:** The following toilet room accessories are to be specified unless specifically required otherwise by the project program:

a. **Paper Towel Dispenser:** In public rest rooms use Kimberly Clark "Sanitouch" roll type towel dispenser with one of the following finishes:

(1) In very high volume restrooms only, specify Kimberly Clark "Sanitouch" roll type towel dispenser, Number "09991" Pearl White Finish or Number "09990" Smoke Grey Finish.

(2) In all other locations (kitchens, labs, low volume single-user restrooms, convenience sinks) use Kimberly Clark "Omni" roll type towel dispenser, Number "09746" Smoke finish.

b. Break Areas and Laboratory Paper Tower Dispenser: In break areas and labs use Kimberly Clark type Omni roll towel dispenser with a number "09746" Smoke Finish.

c. Toilet Tissue Dispenser:

(1) SanJamar: Double junior jumbo roll nine (9) inch toilet tissue dispenser number "4500 TBK".

(2) Kimberly Clark: JRT junior twin roll toilet tissue dispenser number "09551" Smoke Grey finish or number "09552" White finish.

d. Soap Dispenser:

(1) Bobrick: Number "B-40" surface mounted.

e. Shelf: Heavy gage stainless steel, eight (8) inch projection, with rolled edges and concealed surface mounting anchors.

f. Framed Mirror: Size shall be 18 inches wide x 24 inches high with1/4 inch clear polished plate mirror, 20 guage galvanized steel back, stainless steel retainer angle, concealed wall hanger and theft resistant locking screws.

g. Trash Containers:

(1) Specify free standing grey molded plastic trash cans with a 23 gallon capacity, approximate size 20 inches long x 11 inches wide x 30 inches high, Rubbermaid Slim Jim Container, Model #3540.

(2) Wall mounted semi-recessed type trash containers are not acceptable to UM, and therefore shall not be considered for campus projects.

h. Hand Dryer: In public rest rooms, when approved by the UM OFM Project Manager, specify a Dyson Air Blade model ABO2 hand dryer for either, a 120 volt, single phase or 208 volt power source.

12.7. Shower Room Accessories: The following shower room accessories are to be specified unless specifically required otherwise by the project program:

a. Shower Rod and Hooks: Shower rod and hooks shall be 18 gage, 1-1/4 inch diameter, stainless steel tubing with 2-1/2 inch square mounting squares.

b. **Shower Curtain:** Size shall be 42 inch by 72 inch, opaque, matte white vinyl, .008" thick, contains antibacterial and flame retardant agents, nickel-plated brass grommets along top, one every 6", hemmed bottom and sides, equal to Bobrick "Shower Curtain, Item Number 204-2 and Hooks, Item Number 204-1."

c. **Towel/Robe Hook:** Heavy gage stainless steel with a concealed wall plate, with no exposed fasteners.

13. SPECIALITIES:

13.1. Corner Guards and Kick Plates:

a. Corner Guards: In high traffic and/or utility areas which require high durability, corners and "wing walls" shall be protected by a 2-1/2 inch x 2-1/2 inch or 4 inch x 4 inch brushed stainless steel corner guards, glue applied, no exposed screws.

b. Kick Plates: Kick plates shall be provided on doors and other locations subject to damage from regular use. Customarily, kick plates are to ten (ten) inches high for the full width of the door, or match adjacent kick plates. Armor plate shall be used on the push side of doors in Animal Facilities and at door subject to high abuse by rolling cart traffic.

14. FIRE STOPS AND SMOKE SEALS:

14.1. UM requires all fire stop and smoke seal materials for all trades to be provided by one manufacturer.

14.2. Specify fire stops and smoke seals for both new and renovation projects for all penetrations through rated assemblies, by ductwork, piping systems, electrical conduit, cable trays, architectural and structural components, etc., to maintain the rating of each assembly. Also specify that the fire stop and smoke seal material manufacturer's representative shall train the personnel of each trade on the proper installation methods. The manufacturer's representative shall also supervise the installation of the fire stop and smoke seal materials to assure compliance with the manufactures installation instructions to obtain the desired assembly rating.

14.3. Where insulation is used as part of the smoke and or firestopping specify a semi – refractory fiber board safing board insulation designed for use as a fire stop at gaps and openings in walls, edges, slabs, shaft walls, etc. to meet the UL requirements for the assembly. Specified safing insulation shall be manufactured from combing semi-refractory mineral fiber manufactured from slag with thermosetting resin binders to comply with ASTM C 612, Class 1 and 2; normal density of four (4) lb/ft^2 ; passing ASTM E 136 for combustion characteristics, "R" value of four (4) at 75^0F (23.9^0C).

END OF SECTION 3 AD - PART VI