# EXHIBIT C: The Ohio State University Building Design Standards

THE OHIO STATE UNIVERSITY

# Building Design Standards

for Architects
and Engineers

Prepared by

**The Ohio State University**
**Facilities Operations and Development**

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## Part 1: Conceptual Design Guidelines

### 1.1 Introduction

Campus buildings contribute to the accomplishment of the University's academic mission in two important ways: First, of course, they provide enclosed, comfortable, spaces that serve activities ranging from generating steam to teaching philosophy -- spaces that serve the practical, as well as the intellectual and emotional, needs of students, faculty, staff, and visitors. Second, the University's buildings create a campus that is the setting for a unique academic community--a campus that also must serve practical, intellectual, and emotional needs.

The Framework Plan (http://pare.osu.edu/framework), Design Guidelines for Buildings and Landscape (http://fod.osu.edu/sites/default/files/buildings-landscape.pdf) and their interpretation by Planning and Real Estate (PARE), offer direction for the development of the campus as a whole and the "Building Design Standards" guide architectural details and specifications. The conceptual design, which is focused in the schematic design process, falls between master planning and architectural detailing. Responsibility for schematic design direction rests with PARE, including the University Architect (UA) and University Landscape Architect (ULA) with input from professional designers from Architect/Engineer (A/E) firms and Facilities Operations and Development, together with members of the Project Planning Team.

The architectural program of requirements for each project reflects the point of view of both the user and the university as a whole. While the user's requirements will vary significantly from unit to unit, there are overall university-wide issues that must be considered in the design of all buildings and landscapes. A summary of these issues serves as a general guide for conceptual design at The Ohio State University.

There is remarkable agreement among lay persons and professional architects regarding the world's best campuses and the characteristics that contribute to this ranking. These characteristics, from which the conceptual guidelines were derived, fall generally into categories that (1) reinforce the sense of academic community; (2) support the process of learning; and (3) enhance the sense of heritage and tradition.

### 1.2 Guidelines That Reinforce the Sense of Academic Community.

In 1991, President E. Gordon Gee challenged The Ohio State University to "get back to the very nature of what a university must be: an intellectual community ... where each person is equally a teacher and a learner." As the physical setting for the University, the campus plays an essential role in creating this academic community. The principles presented in the - Framework Plan, together with the following guidelines, are directed toward the reinforcement of this sense of academic community.

- **Establish a harmonious balance of unity and diversity**
  The best campuses offer both a unity that reinforces the sense of academic community and a diversity that reflects an inexhaustible diversity of disciplines, activities, and cultures. On these campuses one has the sense that never in a lifetime of experiencing the place would you discover all that it has to offer.

- Design each component first as both an integral part of the campus and an individual entity. See Chapter 4, "Policies, Design Principles, and Review Procedures," in Volume II: Long Range Concept Plan of the Campus Master Plan.

- **Provide an integrated network of campus places and pathways**
  Campus places, rather than buildings, are the most memorable components of the University. These places cannot be created by simply accepting what is "left over" between buildings; they must be consciously developed as outdoor rooms. The role that buildings play in creating this network of campus places and their connecting pathways is addressed primarily in the - Framework Plan; however, this role must also be considered in the architectural design process; especially the early schematic design phase.

  - Locate and design facilities to complement and enhance the use of existing designated open, green spaces

  - Consider the design of each building and the design of its surrounding paths, landscape, views, etc. to be part of the same process

  - Recognize the major entrances and public spaces of campus buildings as part of the network of campus paths and places

- **Provide for change**
  The task of creating the campus is never finished; change is an on-going condition at a viable university. The campus and its buildings must embrace new demands and must be capable of meeting demands for minor renovations and additions as well major buildings and groups of buildings.

  - Design all buildings to be "complete" at all stages and, at the same time, to be capable of flexibly accommodating additions and renovations

- **Provide an accessible and safe campus that gives priority to the pedestrian**
  The academic community must provide convenient and safe access to all facilities for all persons. It should also provide an environment that minimizes pedestrian and vehicular conflicts and, at the same time, accommodates necessary functions of service, parking, etc. In addition to the following guidelines, the plans, principles, and policies of the - Framework Plan provide direction for accessibility and pedestrian priority.

  - Design parking garages, surface parking lots, and service areas that contribute to the overall unity of the campus and minimize the imposition of these functions

  - Incorporate integrated access and usability for individuals with disabilities into initial design considerations

  - Consider the possibility of informal monitoring of interior and exterior public

paths and gathering places in the layout of building spaces and corridors- Consider opportunities for combining parking structures, service areas, etc. with other functions to minimize the impact of these necessary utilitarian facilities

- **Establish campus boundaries that serve the overlapping interests and needs of the University and the surrounding communities**
  The academic community of the University extends beyond the borders of the campus. The University plays a critical role in establishing the quality of life in the surrounding neighborhoods. The best campuses have boundaries that recognize the overlapping social, aesthetic, and functional interests of the University and its urban neighbors.

  - Recognize the paths, views, circulation patterns, and activities of the surrounding community to be among the design parameters for all facilities located on or near campus boundaries

### 1.3 Guidelines that Support the Process of Learning

The best campuses stimulate self-questioning and discovery; serve as learning tools, provide places for meeting and exchange of ideas; and provide places for private study and meditation--they celebrate the process of learning. The following architectural guidelines direct the design of buildings that support the process of learning.

- **Design buildings and campus places that celebrate learning**
  Academic communities that, in President Gee's words "vibrate with a passion for learning," must celebrate the learning experience.

  - Incorporate literal and symbolic aspects of University disciplines into the design of interior and exterior campus places.

  - Design each learning space as a unique environment that confirms each assembly of persons as a special event that is not quite like any other on campus. While there may be occasions when special funds are available to enhance these unique environments, in most cases the challenge, of course, is to provide this environment with little or no additional cost. Designers are encouraged to consider provisions for incorporating permanent or rotating art and other exhibits as well as incorporating aspects of University disciplines (as suggested above) in the architectural ornament of the room: wood carved quotations or scenes on doors, friezes, wainscots, etc.

- **Design buildings and campus places to encourage informal learning**
  Learning is not limited to formal gathering in classrooms, auditoriums, and laboratories. Learning takes place anywhere and everywhere on the campus. Some of the most productive, often interdisciplinary, learning experiences are neither planned nor anticipated. The campus and its buildings must provide places that invite these informal scholarly exchanges which lead to the "collaborations and structure required for new knowledge."[1]

- Design building corridors and campus paths that encourage and support interdisciplinary, chance meetings and ad hoc discussions.- Design building corridors and related campus paths that permit, where appropriate, observation of, or participation in, on-going learning activities.

- Locate and design cafes, restaurants, vending areas, copy centers, etc. in conjunction with major circulation paths and, where appropriate, provide for both interior and exterior activities.

- Locate programmed galleries, museums, and exhibition spaces, as well as selected learning spaces in conjunction with major campus places and paths to permit "students, faculty, staff, and visitors to be engaged in the intellectual life of the University"[2] beyond the classroom.

- Design selected learning spaces (classrooms, studios, etc.) that support informally monitored gatherings of small groups for study and discussion when the space is not formally scheduled.

- **Design building and campus places that support individual study and meditation.**
  The campus must offer places to be alone, to think, to meditate. No two persons are like; some wish to be alone in a crowd, others to be alone with their thoughts. The campus must permit each person to find her or his own place.

  - Provide -- without compromising safety -- interior and exterior places that encourage and support individual study and meditation.

### 1.4 Guidelines That Enhance the Sense of Heritage and Tradition

The best campuses remind residents and visitors of the academic lineage of the University. They commemorate the significant persons and events of the academic disciplines of the University and of the University itself. The following guidelines are directed toward the enhancement of a sense of historical continuity, of heritage and tradition, that is a basic ingredient of a community of scholarly inquiry. These guidelines overlap and reinforce the guidelines for supporting the learning process.

- **Reflect the heritage of the academic disciplines, as well as the persons and the events, central to the academic mission of the University.**

  - Incorporate, in the design of major public interior and exterior paths and places, features that commemorate contributions of academic disciplines, their founders, and their distinguished scholars.

  - Incorporate, in the design of major public interior and exterior paths and places, features that commemorate contributions of faculty, alumni, and staff of The Ohio State University.

- **Provide historic continuity**
  As the University grows the campus and its buildings should present a rich

integration of new and old. Students, faculty, staff, and visitors should be reminded that they are part of a dynamic institution that is built upon the earlier contributions of many persons. This historical continuity is readily perceived when selected

buildings and landscapes from former periods are retained for continued service or when their location and appearance are preserved in their replacements.

- Design building renovations to preserve the essential architectural character and institutional history of historic buildings.

- Incorporate reminders of historic buildings and events within the design of new campus facilities--especially when historic buildings or the location of memorable events are involved.

[1] E. Gordon Gee, "From Vision to Action," A presentation to the University Senate, March 2, 1991, p. 2.
[2] Gee, "Vision," 1991, p. 8.
End of Section

# 00 00 00 PROCESSING THE WORK

## 00 00 10. UNIVERSITY INVOLVEMENT

### 00 00 11. UNIVERSITY PLANNING PROCESS:

The University Capital Improvements process involves the participation of many University agencies. For help in understanding the earlier planning process and its role in the subsequent planning events, the Architect/Engineer (A/E) should contact the University Project Manager.

### 00 00 12. ARCHITECT/ENGINEER'S RESPONSIBILITY TO THE UNIVERSITY ARCHITECT:

Project planning is a cooperative procedure involving many persons within the University yet, during design and processing of documents, the A/E, as the agent of the University, will be required to work directly with the University Architect for authoritative answers on all design matters and those involving coordination with the university. The University Architect will review major design issues for its practicality, aesthetics, campus planning impacts and cost effectiveness. The Design Guidelines for Buildings and Landscape (https://fod.osu.edu/sites/default/files/buildings-landscape.pdf) will guide design decisions.

### 00 00 13. THE PROGRAM OF REQUIREMENTS

Is prepared in cooperation with the Using Agency concerned and with advice from other university agencies. The Program of Requirements is the single written source of information concerning the scope of the project and the detailed requirements to be achieved by the project. It is essential, at the very beginning of the design process that the A/E, seeks clarification from the University Architect regarding any question generated from its study of these Building Design Standards or the POR. All variations from these Building Design Standards shall be documented according to the process provided on the Building Design Standards web page, fod.osu.edu/resources/. When appropriate the University Architect will refer these questions to the Project Planning Team for resolution and response. Program changes will not be accepted solely upon request of the Using Agency's representatives.

.1 DESIGN WITHIN AVAILABLE FUNDS: A construction/renovation budget is developed for each project that establishes the maximum funds available for construction. The A/E shall continually monitor program requirements and cost estimates to assure that the project is designed within the available funds and does not deviate from the quality standards established in these Building Design Standards. Estimates of costs shall be projected to the proposed date for receipt of bids.

Should the A/E have doubts about satisfying at least priorities 1 and 2 of the POR, s/he must inform the University Architect without delay. Should the lowest bona fide bids for the construction of the project exceed the Fixed Limit of Construction Cost, the A/E will

be required to assist in bringing the project back within the funds available. This may require modifying the drawings and specifications for the project without additional charges as per the contract for services with the university.

.2 ADD-ALTERNATES: The university prefers to avoid deduct-alternates unless circumstances justify their use and special permission is obtained from the University Architect. Carefully selected add-alternates are desirable to obtain the maximum number of priority 3 items and to fully utilize the available funds. Add-alternates must be items which can be added to the "base bid" design without causing major changes in the "base bid" design package.

.3 OHIO STATE BRAND GUIDELINES: The A/E and the university's ~~planning~~ project team shall reference the Ohio State Brand Guidelines website (brand.osu.edu/) as it may apply to the project.

**00 00 14. THE PROJECT SITE:**

The selected site for the project is described in the POR . The University Framework Plan, Landscape Master Plan, and District Plans, which have been adopted by the Board of Trustees, include design and development guidelines that provide a diagrammatic framework for land use, circulation, parking, landscape design, and building placement. Information about those plans is available on the The Ohio State University Master Planning website (https://pare.osu.edu). For most sites, there are area-specific guidelines that are applicable to defined sectors of the campus and provide the A/E with guidance concerning the development of the project site. The A/E shall visit the site prior to the Initial Planning Conference in order to understand the limitations and opportunities at the site and to formulate any questions about site conditions and the application of design and development guidelines. The A/E is free to suggest modifications as long as suggested rearrangements clearly adhere to plan principles and guidelines. The A/E is encouraged to retain a professional landscape architect and/or a physical planner for the purpose of dealing with site issues. The use of the services of a professional landscape architect will be required when the university determines that those services are needed to fulfill project requirements.

**00 00 15. CONFERENCES:**

.1 INITIAL PLANNING CONFERENCE: Immediately after the A/E has been confirmed by the University, the University Project Manager will schedule a meeting for the purpose of discussing the University Conceptual Guidelines and general requirements of the program and procedures for expediting the A/E's work. The University will be represented by the ~~Official Planning Committee~~ project team. It is MANDATORY that the A/E's professional consultants, (including his fire protection, plumbing, HVAC, elevator, and electrical consultants) attend this conference.

.2 ADDITIONAL CONFERENCES: Additional conferences will be held to (1) discuss and clarify ways in which the University's Conceptual Guidelines relate to the project, (2) to clarify the Program of Requirements, (3) to review and discuss the A/E's evaluation of achievability of priority 1 and 2 requirements within budget constraints and to assist in

definition of alternates, which will become an important component of the construction documents.
Participants in these conferences are named in the Program of Requirements. All conferences will be scheduled by the University Project Manager.

.3 BASIC SECURITY PLANNING CONFERENCE: The A/E and the Project Manager shall consult with the Department of Public Safety to determine the specific security requirements for the project. Refer the BDS Appendix Y. Included the agreed upon security requirements in the POR.

.4 CONFERENCE MEMORANDA: The A/E is responsible for the proper recording of the business content of all conferences. Within seven days following any conference, copies of a memorandum, containing a complete summation of decisions and actions and affecting the project, shall be delivered ~~to the University Project Manager for distribution to all OSU conferees.~~ via university's project management software. ~~Copy quantity for the University will be determined by adding three copies to the number of OSU participants in the meeting.~~ The A/E will deliver memoranda copies to all conferees other than university participants.

.5 FORMAT FOR MEMORANDA: Memoranda shall be numbered in consecutive order. Summations shall be in outline form with numbered paragraphs and alphabetical sub-paragraphs. Although statements should be brief, each statement shall convey the entire message and shall clearly state the problem or directed decision. All pertinent information shall be provided in the statement: one word statements, and terse phrases and clauses should be avoided.

**00 00 16. DESIGN STAGES:**

During the planning period the A/E is required to make submittals ~~of three stages of the project development~~ which coincide with the A/E scope of services and contractual agreement for fee payment. The main ~~three~~ stages are:

.1 SCHEMATIC DESIGN DOCUMENT STAGE.
GENERAL NOTE: During the early stages of the Schematic Design development, the A/E is required to consult with the University Architect and University Engineer to review conceptual solutions. The material can be in "sketch form" showing possible design solutions that can be expanded upon during the development of the final schematic submittal. More than one study will be required for review. The purpose of these "mini design sessions" is to assist the A/E in the development of an acceptable final schematic design submittal. If this procedure is not followed, there are strong possibilities that the formal schematic design submittal will be disapproved by the University.

.2 DESIGN DEVELOPMENT DOCUMENT STAGE.

.3 CONSTRUCTION DOCUMENT STAGE.

**00 00 17. SCHEMATIC DESIGN DOCUMENT STAGE:**

.1 SUBMITTAL shall consist of:

.1.1 A site plan, showing adjacent buildings, existing and proposed contours, and existing sewers and other utilities. Refer to Paragraph 00014 for requirements relative to sitting of the project. If a project involves any site improvements, the site plan shall be based on a surveyed base map.

.1.2 All floor plans - For each room or space, identify with Program of Requirements Room Name and Program of Requirements Item Number. Also see 00041.8.

.1.3 All elevations.

.1.4 A section through the entire building selected to best show the relationships of architectural and engineering features.

.1.5 Equipment and furniture layouts for all floors.

.1.6 A Database file which compares the Assignable Square Footage (ASF) of the Program of Requirements to that of the Schematic Design Document. This submittal must be in the following format:

Title Block
Project Name:
Project Number:
Project total gross square feet (GSF):

| Column | Column Header |
|---|---|
| 1 | PoR Item Number |
| 2 | PoR Room Name |
| 3 | PoR Priority |
| 4 | PoR Number of Rooms |
| 5 | PoR ASF |
| 6 | Schematic Design Number of Rooms |
| 7 | Schematic Design ASF |
| 8 | PoR/Schematic Design ASF Difference |
| 9 | Comments |

This file should also contain a subtotal by Program Item Number Group (e.g. all spaces under Program Item Number 1.0 would be subtotaled.) A project total ASF should also be included (totals all Program Item # Group ASFs).

.1.7 Tabulation of floor areas, cubic contents, and a construction cost estimate shall be provided in both hardcopy and electronic format (Microsoft Excel). Show estimated cost per square foot and per cubic foot. Indicate new construction costs, remodeling costs, including major and minor areas of remodeling, with approximate areas. Coordinate with Program of Requirements item numbers. Tabulations may be combined. Also see 00013.

.1.8 An outline specification, indicating materials, and types of construction. Include a description of each plumbing, HVAC, fire protection, and electrical system design concepts, a one-line diagram of the electrical service (if applicable) and a narrative description of the design criterion for the noise and vibration control for these systems.

.1.9 Schematic models usually are not required, but study models might be considered for submittal at this stage, if unusual conditions suggest that study models might aid in the review of the drawings.

.1.10 A letter describing conceptual design element life cycle analysis shall be submitted.

.1.11 Ohio State Green Build and Energy Policy #3.10
~~(http://fod.osu.edu/proj_del/index.htm)~~
https://ap.osu.edu/sites/default/files/310_green-build-energy.pdf

Provide a narrative description and score card of the proposed building envelope and HVAC/Electrical/Plumbing system modification options to show compliance with Policy #3.10.

.1.12 HVAC schematic one-line flow diagrams for the air systems, hydronic systems, and steam systems.

.1.13 Provide and updated Schedule of Values( SOV), in CSI format Level 2 or 4 as required by the Authority Having Jurisdiction (AHJ)

.1.14 Any BIM requirements (state here; otherwise this added section is not required)

.1.15 Environmental Assessment, if applicable (state here; otherwise delete)

**00 00 18. DOCUMENTS REVIEW:**

A conference will be held to review documents at this stage. Prior to printing the documents for distribution, the A/E shall review one complete set of documents with the University Project Manager to verify that submittal contains sufficient information for review process. When documents are deemed acceptable, the University Project Manager will provide the A/E with a listing of quantity of documents required to be provided by the A/E for distribution. List will consist of full sets for certain participants and partial sets or individual sheets for others with specialized interest in the project.

At least seven workdays will be required for review by the recipients prior to the scheduled meeting. See 00015 regarding memoranda. More review time may be required for larger and/or more complex projects.

After the documents have been received and distributed, the University Project Manager will schedule the review conferences and obtain approval signatures of the persons named in the Program of Requirements.

**00 00 19. APPROVAL SIGNATURES:**

Signatures of University officials following the words "Approved by" or "Examined by" do not express approval of technical sufficiency nor accuracy of the information shown, but do signify that the Project as shown and described by the documents generally conforms to the Program of Requirements, adequately responds to the Conceptual Design Guideline and that the estimated cost of the project is within available funds.

**00 00 20. ROOM NUMBER ASSIGNMENTS:**

Follow e-builder process for room number assignment and signage coordination. ~~ADDITIONAL PRINTS: After schematic drawings have been approved, two prints of each floor plan shall be furnished to the University Project Manager for submittal to Facility Planning for assignment of room numbers. The University Project Manager will return one print, with required room numbering, to the A/E for use in transmitting room numbers to the project drawings. Refer to Paragraph 00041.8.~~

**00 00 21. DESIGN DEVELOPMENT DOCUMENT STAGE:**

DRAWINGS AND Project Manual shall be prepared in conformance with Section 153.50 and 153.52 of the Ohio Revised Code. The A/E shall work with the University Project Manager ~~(PM)~~ to identify the appropriate submittal content and timing for the formal University wide review. Refer to the Review Process Summary at: http://fod.osu.edu/project-delivery The Ohio State University requires separate documents to be prepared for each of the following: General; Plumbing; HVAC (Heating, Ventilating, and Air Conditioning); Fire Protection; and Electrical. [Documents may be combined when permitted by Ohio law and approved by the University Engineer.] Drawings for this submittal should be progress prints made from partially finished construction document drawings. The Project Manual shall include a draft of Divisions 00 and 01 and the outline specifications shall be updated in accordance with comments received at the conference for review of schematics. It is recommended to start the Construction Document submittal at this time. Provide an updated SOV for this submittal. Additionally, provisions for first phase VE, if so required, to be included and reconciled with the university and maintaining authority. A quantity take off detailed estimate of cost (Level 2 or 3 as determined by the university's Project Manager) shall be included in this submittal and it shall be provided in ~~both hardcopy and~~ electronic format (Microsoft Excel). Square foot and lump sum estimates are not acceptable.

.1 SUBMITTAL shall consist of:

.1.1 Site plans showing adjacent buildings, proposed site improvements, existing and proposed contours, existing and proposed sewers and other utilities. Provide separate site plans for General Construction; Plumbing; Heating, Ventilating, and Air Conditioning; and Electrical Work.

.1.1.1 When a site survey has been made by a professional surveyor, a facsimile of the surveyor's drawing must be included with the site plan prepared by the A/E. This survey plan sheet size should be the same as

other sheets in the set; if surveyor's drawing is too large, a reduction in scale will be required.

.1.1.2 Profiles of proposed utilities and cross sections of the proposed site grades shall be included if applicable.

.1.1.3 Hydraulic: A stormwater management calculation package shall be submitted with appropriate sketches and drawings. It shall also include the following items:
• Signed and sealed stormwater calculations
• Drainage area map with onsite and offsite areas delineated
• Major Flood Routing and Ponding Limits Maps
• Soils map
• Curve number determination, any calculation of composite curve numbers, and appropriate sketches for all proposed storm and/or sanitary sewers.
The stormwater management calculations should meet or exceed the requirement of the City of Columbus Stormwater Drainage Manual, or local municipality stormwater requirements where required.

.1.1.4 Geotechnical Report and Pavement Design Calculations.

• Any applicable permits, including but not limited to, City of Columbus, ODOT, ODNR, FEMA, and US Army Corp of Engineers

.1.2 Site landscaping development plan, prepared by a Landscape Architect when project includes substantial site work.
- ADA~~?~~ (details, grading to avoid bird baths, etc.)

.1.3 All floor plans, showing vertical pipe and duct spaces, structural columns, and principal architectural and engineering features. If sheet size is sufficient, each sheet shall contain a schedule of floor, ceiling, and wall finishes for the floor shown on that sheet. Include Program of Requirements Item Numbers, Room Names and Assigned Room Numbers. Also see 00041.8.
- BIM model and virtual walkthrough~~?~~

.1.4 A roof plan showing all slopes; key reference roofing high point, valley and drain elevations (altitudes referenced to project benchmark); roof drains; penetrations; walkways; large piping; air ducts; fans; condensers; roof structures; equipment screens, ladders, fall protection, lightning protection, green rooftop solar, blue roof considerations, plaza, etc. and sections/details.

.1.5 Elevation drawings of every exterior side of each structure showing materials, features, openings, floor and roof lines, grade lines, footings and everything exposed to view above eaves or parapets. Visual screening of roof mounted clutter or equipment is required.

.1.6 Longitudinal and cross sections through the building, selected to best show the relationships or architectural and engineering features.

.1.7 Equipment and furniture layouts for all floors.

.1.8 Live loads for floors must be shown on plans.

.1.9 Fire Protection: Provide current hydrant flow test data and, if applicable, the fire pump sizing and selection data and equipment room layout.

.1.10 Plumbing system floor plans showing equipment, fixtures, Drain Waste Vent piping, domestic water piping and gas piping (if applicable). Provide design calculations for sanitary, natural gas loads and domestic cold/hot water systems.

.1.11 HVAC system major design calculations.

.1.11.1 HVAC system equipment room locations; showing equipment major piping and ductwork sized for all floors in the building shall be submitted.

.1.11.2 Provide THERMAL STRESS ANALYSIS for the steam and condensate piping systems, as well as campus chilled water piping distribution in accordance with ASME B31.1 Power Piping Design and Fabrication and the OBC Pressure Piping Systems Code. Provide piping isometric diagrams with pipe lengths and node location identifiers shown for cross reference with the calculations. Note all assumed design criteria and pipe material selection, diameter and schedule. Results shall show the different modes of operation: pressure, pressure and temperature, pressure, temperature and weight. Also provide results for cold and hot pipe configurations if needed.

.1.11.3 HVAC heat loss and heat gain calculations for building and/or HVAC system loads: Provide a summary of zone loads, central air handling system loads and hydronic system loads showing a breakdown of internal, envelope and ventilation loads. Note all assumed design criteria.

.1.11.4 HVAC outside air ventilation and minimum supply air quantity calculations for each air handling system to show compliance with ASHRAE Standard 62.1-_2013 (or current edition).

.1.11.5 HVAC schematic one-line flow diagrams for the air systems, hydronic systems, and steam systems.

.1.12 A Database file which compares the assignable square footage (ASF) of the Program of Requirements to that of the Schematic Design Document and the Design Development Document. This submittal must be in the following format:

Title Block
Project Name:
Project Number:
Project total gross square footage (GSF):

| Column | Column Header |
|---|---|
| 1 | PoR Item Number |

2 PoR Room Name
3 PoR Priority
4 PoR Number of Rooms
5 PoR ASF
6 Schematic Design Number of Rooms
7 Schematic Design ASF
8 PoR/Schematic Design ASF Difference
9 Comments
10 Design Development Number of Rooms
11 Design Development Room Number(s)
12 Design Development ASF
13 PoR/Design Development ASF Difference
14 Comments

This file should also contain a subtotal by Program Item Number Group (e.g. all spaces under Program Item Number 1.0 would be subtotaled). A Project total ASF should also be included (totals from all Program Item # Group ASFs).

.1.13 Ohio State's Green Build and Energy Policy #3.10 and Life-Cycle Cost Analysis: Provide updated narrative descriptions of proposed building envelope and HVAC/Electrical/Plumbing system options to show compliance with Policy #3.10. The backup documentation and calculation requirements for these building system options are outlined in the BDS Appendix C – 1.2. Policy 3.10 Energy Compliance Documentation Submittal Requirements." The life-cycle cost analysis shall be prepared pursuant to Sections 123.001, 153.01, 153.04, and 153.10 of the Revised Code of the State of Ohio and in accordance with rules adopted under Chapters 3781 and 4101.

.1.14 Electrical submittal shall include:

.1.14.1 Electrical system showing fixtures and equipment.

.1.14.2 Riser diagram indicating connections and wiring to main switch, distribution, power and lighting panels.

.1.14.3 Panel and switch schedule.

.1.14.4 Information regarding clearances between high voltages and low voltage circuits and distances from transformers, other equipment and buildings.

.1.14.5 Electrical system major design calculations and analysis of loads including short circuit calculations, photometric calculations, voltage drop calculations for service entrance, service drop and secondary conductors, demand factors used, calculations determining load availability of existing transformer and capacity to accommodate additional load.

.1.14.6 Fire alarm system riser diagram and function matrix.

.1.14.7 Lighting fixture quantities, including foot candle levels, shall be included. Submit lighting fixture catalog cuts and lamp catalog cuts including lamp life and unit costs per lamp.

***Commentary:*** *The University reserves the right to prohibit use of any fixtures, based on lamp life or lamp cost.*

.1.15 Structural engineering calculations to analyze and check the load carrying capacities of various structural members.

.1.16 Environmental Abatement

.1.17 BIM deliverable at DD

**00 00 22. CONSTRUCTION DOCUMENT STAGE:**

.1 SUBMITTAL: The expectation for the Construction Document (CD) phase submittal is for the University to receive Drawings and a Project Manual that are 100% complete and ready to be issued for bidding.

.2 During the review interval, any changes required by Facilities Operations and Development, the Industrial Compliance Division, or other State Agencies, must be made, preferably not by Addenda.

.3 CODE INFORMATION: On the title sheet of the drawings and on the title page of the Project Manuals, show the Ohio Building Code (OBC) "updated through" date that was used for design, use group classification, type of construction classification and the area of each floor.

.4 A Database file which compares the assignable square footage (ASF) of the program of requirements to that of the Schematic Design Document, the Design Development Document, and the Construction Document. This submittal must be in the following form at:

Title Block
Project Name:
Project Number:
Project total gross square footage (GSF):

| Column | Column Header |
|---|---|
| 1 | PoR Item Number |
| 2 | PoR Room Name |
| 3 | PoR Priority |
| 4 | PoR Number of Rooms |
| 5 | PoR ASF |
| 6 | Schematic Design Number of Rooms |
| 7 | Schematic Design ASF |
| 8 | PoR/Schematic Design ASF Difference |
| 9 | Comments |
| 10 | Design Development Number of Rooms |

11 Design Development Room Number(s)
12 Design Development ASF
13 PoR/Design Development ASF Difference
14 Comments
15 Construction Document Number of Rooms
16 Construction Document Room Number(s)
17 Construction Document ASF
18 PoR/Construction Document ASF Difference
19 Comments

This file should also contain a subtotal by Program Item Number Group (e.g. all spaces under Program Item Number 1.0 would be subtotaled). A Project total ASF should also be included (totals from all Program Item # Group ASFs).

.5 ADDITIONAL SUBMITTALS:

.5.1 RENDERINGS, as required by the A/E's contract.

.5.2 A physical or electronically generated MODEL shall be submitted at this stage, if required by the A/E's contract.

.5.3 Electronic Submittal ~~Two copies~~ OF CIVIL, STRUCTURAL, HVAC, PLUMBING, FIRE PROTECTION AND ELECTRICAL DESIGN CALCULATIONS shall be furnished to assist University personnel in review of the documents. As a minimum, this should include the final updated calculations of all calculations required in the Design Development submittal, including the finalized THERMAL STRESS ANALYSIS modeling.

.5.4 An updated detailed quantity estimate of cost showing final square foot and all material quantities shall be submitted in both hardcopy and electronic format (Microsoft Excel). All labor and material should be broken out separately

.5.5 Ohio State's Green Build and Energy Policy #3.10 and Life-Cycle Cost Analysis: Provide updated and final narrative descriptions of the Building envelope and HVAC/Electrical/Plumbing systems to show compliance with Policy #3.10, including final HVAC schematic one-line flow diagrams for the air systems, hydronic systems and steam systems. Provide backup calculations for these building envelope and system configurations.

**00 00 23. DOCUMENT REVIEW: See 00018.**

.1 Review of construction document submittal will require approximately ten work days or more, depending upon the complexity of the project and quantity of documents.

~~After approval is received from planning participants, the University Project Manager will obtain necessary signatures on the drawing cover sheet.~~

~~Signed cover sheets will be returned to the A/E to secure the approval and seals of the Industrial Compliance Division and State Board of Health.~~

.2 REVIEW COMMENTS: At the time of, or prior to, issuance of the last Addendum during the bidding period, the A/E shall advise the University Project Manager in writing that all comments, changes, etc., resulting from document review by the Industrial Compliance Division, Fire Marshal, University, and other agencies having review authority, have been incorporated into the construction contract documents. In the case of the exceptions, the A/E must indicate date, meeting, item, etc. involved in the resolution. Following receipt and approval of the responses to the review comments, the A/E shall submit ~~three copies~~ an electronic copy of the revised documents for review by Facilities Design and Construction.

## 00 00 30. DESIGN

### 00 00 31. UNIVERSITY ARCHITECT'S INVOLVEMENT IN THE DESIGN PROCESS:

The A/E is required to involve the University Architect in the entire design process. The University Architect is as interested in the response to the Conceptual Design Guidelines as the solution of the specific problem needs stated in the Program of Requirement. It is especially important that the A/E understand the high priority that the University places upon the role of each facility in the creation of the overall campus. No building will be permitted to be designed in isolation. All buildings contribute to the achievement of overall University goals and, as a result, they will be different from buildings designed for other sectors of our society.

The A/E is expected to confer with the University Architect often, especially during the early conceptual design phase. Submission of a detailed, final, schematic design without prior review may result in rejection of the entire preliminary submittal and require complete redesign. The University Architect shall be the final design jurist.

### 00 00 32. QUALITY DESIGN:

Unless otherwise stated in the POR, buildings shall be designed as quality institutional buildings and heavy duty components shall be selected and specified to provide maximum life cycle usefulness. The requirement that the project be designed within available funds is not a license to design short life-cycle, speculative-type construction or to specify inferior or inappropriate materials.

### 00 00 33. USE OF PROFESSIONAL CONSULTANTS:

On all architectural and engineering projects for which enclosed structures are designed, the services of licensed professional architects and engineers are always required for the Architectural, Structural, Civil, Plumbing, HVAC, Fire Protection, and Electrical design. Sprinkler consultant must be capable of hydraulic design. On major projects, the services of other licensed professional specialists (Landscape, Acoustic, Food Service, etc.) might be required, as determined by the complexity of the project. The A/E shall

closely supervise work done by ~~his professionals~~ their consultant, whether "in-house" or independent, to assure coordination of all parts of the total project. The University Architect reserves the right to direct the work of professionals through the A/E.

.1 TOPOGRAPHIC SURVEYS AND SOILS ANALYSIS REPORTS: Is the responsibility of the A/E to accomplish. Costs of these services will be paid from the Project funds on an actual cost basis without fee mark-up. Any available record drawings from previous projects or the Utility Atlas maintained by Facilities Operations and Development will be made available. The University cannot warrant that information shown on record drawings is correct; therefore, the A/E must supplement this information with field surveys and measurements. The A/E is responsible for the accuracy of information shown on the contract drawings. See Appendix E for survey requirements.

**00 00 34. DESIGN FOR CONSERVATION OF ENERGY:**

Ohio State's Green Build and Energy Policy 3.10: The University is dedicated to the principle of conserving energy. University personnel will scrutinize proposed construction for means of reducing not only initial cost of energy consuming equipment, but also long-range operating costs. The A/E must work in harmony with its consultants to design new buildings and to remodel existing buildings to make the most efficient use of building materials and energy sources available. ~~Also see Divisions 21-28 Facility Services – Document Requirements and Appendices for the requirements related to Policy #3.10.~~

.1 DESIGN OF HVAC AND ELECTRICAL SYSTEMS: Consideration must be given to building utilization by planning for conservation of energy during summer and winter vacations and for other periods of minimum occupancy. Research laboratories, spaces for animals, and other spaces which might require operation 24 hours a day must be serviced by systems separate from systems for offices, which might require operation for only 8 hours a day, and classrooms, which may be shut down during summer and vacation periods.

.1.1 PROVISIONS FOR ALTERNATE SOURCES OF ENERGY: Of extreme importance is the capability of using alternate sources of energy. If gas-fired boilers are installed, the facilities must be provided with standby equipment for use of other fuels or sources of energy.

~~.1.2 LIGHTING SYSTEMS are considered a source of heat to supplement heating requirements and recovery systems shall be provided wherever practicable.~~

.1.2 WINDOW BLINDS AND SHADES are considered to have a significant affect to HVAC and lighting conditions in a building. Automatic window blind and shade controls shall be provided wherever practicable to support and enhance energy efficiency for building systems.

.2 LIFE-CYCLE COST ANALYSIS: The A/E shall submit to the University a life-cycle cost analysis, which has been prepared in cooperation with his Architectural, HVAC and Electrical consultants. The analysis shall be prepared pursuant to Sections 123.001, 153.01, 153.04, and 153.10 of the Ohio Revised Code and in accordance with rules

adopted under Chapters 3781 and 4101. The Life Cycle Cost Analysis shall be included with the submittal addressing Ohio State's Green Build and Energy Policy #3.10.

**00 00 35. NOISE AND VIBRATION CONTROL:**

Noise and vibration in terms of emission control and transmission control is the combined responsibility of the A/E and its consultants and must be considered in the design of every building, or space, even though specific requirements might not be stated in the POR. Three principle considerations which must be given to noise and vibration control are:

.1 NOISE CONTROL TO PROVIDE FOR MAXIMUM USEFULNESS OF THE FACILITY by keeping levels of sound within ranges which are conducive to study and work or other uses for which the facility is designed.

.2 NOISE CONTROL IN COMPLIANCE WITH OSHA REQUIREMENTS for the health and safety of building occupants; control shall be for all areas of the facility, including equipment rooms, boiler rooms, PRV stations, and fan rooms. Set a maximum acceptance level of 85 dBA for new equipment.

.3 VIBRATION CONTROL to limit sound produced by equipment and for protection of the equipment and the building structure.

.4 RANGES OF SOUND CONTROL LIMITS required for indoor design are shown in the Appendix J. These standards must be followed.

.4.1 CONTROL OF BUILDING EQUIPMENT (HVAC, ELECTRICAL, ETC.): Special attention shall be given to proximity by keeping noise producing equipment removed as far as possible from areas requiring low sound levels. Refer to Division 22, 23, and 26 for specific means of reducing noises from these sources.

.5 TESTS: A post-construction sound test shall be specified to prove the integrity of sound control where control is critical, and on a random sampling basis in other areas if deemed necessary. Specifications shall require that noise tests to be performed with a Type 1 precision sound level meter complying with ANSI - Standard S1.4-1983.

**00 00 36. PLANNING FOR SERVICE AREAS:**

Required, but not necessarily identified in the program. All service rooms or areas (i.e., custodial closets, trash rooms, maintenance control rooms, equipment rooms, mail rooms, etc.) shall be adequately ventilated, by natural or mechanical means (especially if human occupancy is required),The A/E shall work with appropriate stakeholders to ensure that the following areas are properly incorporated into the design:

.1 CUSTODIAL SPACES: For new buildings on the Columbus Campus, provide the following custodial spaces; for regional campuses, consult the Director of Building Services at the campus involved; requirements might differ from those specified herein.

.1.1 CUSTODIAL EQUIPMENT STORAGE ROOM: shall be strategically located on all floors throughout the building for the storage of custodial cleaning equipment. Minimum size of 55 gross square feet (GSF) is required. Provide one room per 22,000 gross square feet. One room can serve two floors, if 22,000 square feet is the limit and an elevator is convenient to the closet. Locate to avoid moving equipment long distances. Typical equipment and sizes are, but not limited to:

.1.1.1 Mopping cart: 2 feet x 6 feet
.1.1.2 Trash cart (6 bushel): 2 feet x 3 feet
.1.1.3 Vacuum, carpet (upright): 2 feet x 1 foot
.1.1.4 Backpack Vacuum: 3feet x 4 feet
.1.1.5 Floor machine (buffer) - 2 feet x 4 feet or larger

.1.2 CUSTODIAL WET CLOSET: Provide one strategically located room per 22,000 gross square feet and at least one room per floor. These closets may be combined with custodial equipment storage rooms. Each closet shall be equipped with a floor sink, shelving, and mop holders. Each closet to be Minimum size of 60 gross square feet and shall contain the following, but not limited to:

.1.2.1 ~~32-inch x 32-inch or 30-inch x 24-inch commercial floor-mounted mop sink basin with drop-front styling with stainless steel cap and maximum curb height of 4 inches. Shall also include integral stainless steel floor drain assembly and strainer plate (*see* Div. 22 40 00.3.2 – "Plumbing Fixtures"), with two-sided stainless steel splash catcher/wall-guard panels~~.
Mop sinks shall be commercial precast terrazzo or molded stone with floor-mounted sink basin and drop-front styling with stainless steel cap and maximum curb height of 4 inches. Shall also include integral stainless steel floor drain assembly and strainer plate with two-sided stainless steel splash catcher/wall guard panels. See the link for additional information on mop sinks https://fod.osu.edu/sites/default/files/div_22.pdf

.1.2.2 Hot and cold wall-mounted service-type Bibb faucet with 6 inch spout centered over floor-mounted mop sink basin with isolation ball valves and integral vacuum breaker, heavy-duty mop bucket hangers (wall clips) and a minimum hose length of 4 feet.

.1.2.3 Three or more dry mop and dust mop hooks or clips installed 6 feet above finish floor on wall away from floor-mounted mop sink basin.

.1.2.4 Three or more wet mop hooks or clips installed 6 feet above finish floor on wall away from floor-mounted mop sink basin.

.1.2.5 Pad/brush holder.

.1.2.6 Step ladder - 1 foot x 2 feet

.1.2.7 Vacuum, (wet or dry): 3 feet x 4 feet with wall space and wall-mounts for OSI-compliant backpack vacuums.

.1.2.8 Shelving - 1 foot deep, and at least 15 lineal feet of adjustable shelving with bottom shelf at least 4 inches off finish floor.

.1.2.9 Minimum of 2 duplex GFI electrical outlets located approximately 2 feet above finish floor on wall(s) away from the water supply.

.1.3 CUSTODIAL RECEIVING AND STORAGE ROOM near a loading dock, or near an elevator on the lowest floor for bulk storage of custodial supplies, may require limited shelving. The room shall be at least 80 gross square feet to serve a building size up to 45,000 gross square feet, 100 square feet to serve a building over 45,000 gross square feet up to 130,000 gross square feet, and 140 gross square feet to serve a building having over 130,000 gross square feet.

.1.4 DRY TRASH ROOM shall open directly onto a loading dock, and to an inside corridor. Hot water, cold water, and floor drains shall be provided in each trash room which serves a kitchen facility. Trash rooms shall be of fireproof construction and ~~shall be~~ protected with sprinklers. The room shall have a minimum size of 100 gross square feet to serve a building size up to 45,000 gross square feet, 120 gross square feet to serve a building over 45,000 square feet up to 130,000 gross square feet, and 160 gross square feet to serve a building having over 130,000 gross square feet.

.1.5 WET WASTE OR HAZARDOUS WASTE ROOM of 60 gross square feet minimum must be provided for chemistry or similar laboratory facilities. If required by the building usage, the room shall be located directly off the loading dock and from a corridor. The room shall be fireproof and provide other protection as determined by the nature of the waste material.

.1.6 ADDITIONAL REQUIREMENTS for custodial spaces are as follows:

.1.6.1 Doors shall swing out into the corridor with no automatic closure devices, and shall be at least 36 inches wide (40 inches is preferable) to permit the free movement of custodial carts, cleaning machines and janitorial equipment.

.1.6.2 Custodial Wet Closets shall have exposed concrete or painted drywall ceiling, hardened smooth concrete floor, and washable hard smooth finish on concrete block walls. Provide glazed tile walls at floor-mounted mop sink basin.

.1.6.3 Finishes in other custodial spaces shall be similar to those for Custodial Wet Closets.

.1.6.4 Provide ventilation and negative air pressure that includes separate outside exhausting and no air recirculation, designed to achieve an exhaust rate of 1 CFM/SF and a minimum of 5 Pa when the doors are closed and 1 Pa when the doors are open.

.1.6.5 Lighting shall be a minimum of 75 footcandles, mounted flush in ceiling, and shall be controlled by Occupancy Sensors which utilize a 180 degree field of view.

.1.6.6 No Custodial rooms shall contain telephone switchgear, elevator panels, electric panels, metering devices or similar equipment.

.1.7 FACILITIES MAINTENANCE CONTROL ROOM: The location of the control room shall be determined with input from all appropriate stakeholders. The minimum size of the room shall be 80 square feet to serve a building size up to 80,000 gross square feet, 100 square feet to serve a building over 80,000 square feet up to 175,000 gross square feet, and 160 square feet to serve a building having over 175,000 gross square feet..

.1.7.1 CONTENTS of the room shall include at least the following:

.1.7.1.1 Plan rack to hold a full set of record drawings.

.1.7.1.2 Chair and desk or table.

.1.7.1.3 Telephone.

.1.7.2 EQUIPMENT such as telephone switchgear, elevator panels, electrical panels, metering devices or similar equipment, shall not be located in this room.

.2 MAIL ROOM: The A/E shall provide a primary Mail Room for US Mail and University Mail delivery and distribution adjacent to the building entrance or loading dock for each new building or building renovation. Room size shall be applicable to the number of departments serviced in the building and volume of delivery. Minimum room size shall be 100 square feet. Secondary Mail Rooms on upper floors may be required for applicable mail distribution.

.3 EQUIPMENT ROOMS: Transformers, boilers, pumps, tanks, heat exchangers, and other large equipment shall be located to permit easy servicing, operation and removal. Provide adequate circulation areas around equipment, including valves and accessory piping. Plans and elevations, at a scale of not less than ¼" = 1' - 0", shall be prepared for each room, to show that adequate circulation areas are provided.

.3.1 TELEPHONE AND DATA COMMUNICATIONS EQUIPMENT ROOMS

.3.1.1 MAIN DISTRIBUTION FRAME (MDF): Provide a dedicated room, having 100 square feet minimum. No other services shall be included in this room. Provide appropriate electric receptacles, lighting and empty conduits. Locate near the point where main communication services enter the building and access directly from a corridor with an outswing door. This room is to accommodate fiber optic cables, CATV, and telephone services connections. Refer to APPENDIX M: THE OHIO STATE UNIVERSITY COMMUNICATIONS WIRING STANDARD for details.

.3.1.2 INTERMEDIATE DISTRIBUTION FRAME (IDF) : Provide a dedicated room having 64 square feet minimum to house distribution equipment for that floor. Provide conduit risers to the MDF, electric receptacles and lighting. Access directly from a corridor with an outswing door. No other service shall be included in this room. Refer to APPENDIX M: THE OHIO STATE UNIVERSITY COMMUNICATIONS WIRING STANDARD for details.

.3.2 PROTECTION FROM FLOODING:

.3.2.1 Electrical switchgear, panels, substations, chillers, pumps, tanks compressors, and similar items of equipment shall be placed on raised concrete pads. Pads shall be a minimum of 4 inches high to aid housekeeping and protect equipment.

.3.3 ACCESS TO EXISTING, NEW, OR TEMPORARY UTILITY CONTROL DEVICES, valves, switches, manholes, etc. shall be maintained throughout the course of construction.

.4 LOADING DOCKS: ~~Provide a loading dock at each new building or major renovation. Provide the loading dock with three slots, one for deliveries, one for recyclable dumpster, and one for non-recyclable dumpster. A three-slot loading dock is especially important for buildings designed for extensive turnover of Users, extensive 'churn' of (relatively) short-term research projects, etc. Doors shall be at least 9'-0" wide and should be 12'-8" minimum on center when multiple doors are used. A 12" thick pavement slope is a serious concern relative to drainage and to truck bed floor/building floor/canopy relationship. Loading docks shall be at the same elevation as a floor of the building and shall be either 44 inches minimum to 46 inches maximum above the adjacent pavement or shall be provided with a load leveler. Verify height requirements with the University Project Manager; a different dock height might be required if step van vehicles, only, are used. Loading docks must not be located at or near fresh air intakes for buildings. Unless this is done, the exhaust from idling vehicles will be drawn into buildings and expose inhabitants to toxic airborne contaminants~~. Design for the following conditions unless this requirement is waived by the University Architect. Provide a loading dock at each new building or major renovation to dock space. Design interior space with three slots; one for deliveries, one dumpster for recyclables, and one dumpster for non-recyclable at grade in front of the loading dock to allow dumpsters to be serviced by front-loading packer trucks with a turning radius of 5o ft. and overhead clearance of 14 ft. Provide 3-phase power to the dumpster area to accommodate future need for either a trash compactor or vertical balers.

A minimum of one door from the building to the loading dock shall be at least 9'-0" wide and should be a minimum 12'-8" on center when multiple doors are used if the design includes outdoor recycling containers. Provide a concrete pad 12" thick of sufficient length to accommodate the approach for waste hauling vehicles. Pavement slope is a serious condition relative to drainage and the truck bed floor/building or floor/canopy relationship. Loading docks shall be at the same elevation as a floor of the building and shall be a minimum of 44 – 46" above adjacent pavement or shall be provided with a

load leveler. Verify height requirements with the University Project Manager, a different dock height may be required if step van vehicles only are used. To prevent building inhabitants from being exposed to toxic airborne contaminants from idling vehicles, loading docks should not be located near the building fresh air intakes.

.5 TRASH DUMPSTER: The University desires to screen trash dumpsters and provide a safe efficient work place for its employees. Design for the following conditions unless this requirement is waived by the University Architect: Provide interior space for two dumpsters (one for recyclables, and one for non-recyclables) at grade in front of the loading dock with 12-foot roll-up doors to allow a 'packer' truck to retrieve, empty and replace the dumpsters within the space. Provide a concrete pad 12" thick of sufficient length to accommodate a 36' long packer truck making the retrieval and replacement of the dumpsters. Provide 3-phase power to the dumpster area to accommodate future need for either a trash compactor or vertical bailers. In addition to screening, the intent of this requirement is to allow recyclables and trash to be deposited in the dumpsters from the loading truck in a sheltered environment. Typical 8-yard dumpster sizes are: 82" (Length) x80" (Width) x76" (height). Separation clearance between the dumpsters and the screen is 30". Typical 20-yard roll-off box is 96" wide.

.5.1 Construction sites: Include sufficient space and annotate on the site drawings for contractors to provide dedicated dumpsters, minimum one for recyclables and one for non-recyclables.

.6 PIPE SPACES: Pipe spaces shall be of width required for servicing of piping, but minimum clear width shall be 2-feet 0-inches. Provide access doors with lockset. When in exposed locations, access doors and hardware shall be designed to match doors and hardware for adjacent areas.

.7 SERVICE SPACE ACCESS: Access to any service space shall be provided to the appropriate service provider (i.e. Facilities Operations and Development, Medical Center Operations, regional campus facility maintenance provider, etc.)

## 00 00 37. FURNITURE, FIXTURES AND EQUIPMENT (FF&E)

.1 LEED POLICIES: The University promotes energy efficient green design, construction and building operations. Where possible, FF&E are to be selected and specified following the United States Green Building Council LEED (Leadership in Energy and Environmental Design) Green Building Rating System® consensus-based national standard for developing high-performance, sustainable buildings. Refer to the website:http://www.usgbc.org . This includes LEED for Commercial Interiors (LEED-CI) which addresses the specifics of tenant space in office, retail, and institutional buildings.

.2 DESIGNS: The process of planning, design, specification and installation of FF&E is an integral part of the planning, design and construction of a project. The A/E and their team of specialists, including professional interior design services, shall be responsible for the planning, design and specification of all FF&E that is associated with a project. The University Project Manager will be responsible for directing and coordinating interior design services by the A/E.

The A/E shall provide ample seating (construction or fixed equipment) as part of the architectural design for corridors, lobbies and other areas immediately outside classrooms and other areas of assembly.

The A/E shall not design custom construction or millwork in places where there is a probability for equipment or function change as it increases future University costs for these changes. The A/E shall instead use flexible FF&E. Typical proposed substitutions are desks, counters and other office equipment areas. All proposals for custom construction or millwork are to be reviewed and approved by the University Architect prior to final development of the Construction Documents.

.3 CATEGORIES: FF&E is categorized as Fixed Equipment or Movable Equipment. Refer to Division 10 SPECIALTIES, Division 11 EQUIPMENT and Division 12 FURNISHINGS for details.

.3.1 FIXED EQUIPMENT is generally defined as any manufactured product that is attached or requires significant structural or construction coordination in a building. Fixed Equipment is acquired through one or more of the construction contracts and is funded within the project construction budget. In some cases, the University may choose to purchase Fixed Equipment for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase. The
Construction Documents must include all services and construction coordination for the installation of this equipment.

.3.2 MOVABLE EQUIPMENT is generally defined as any smaller, loose products that are acquired by the University. Movable Equipment purchases utilize a fund allocation within the total project funds but independent of the construction budget. Using specifications developed by the A/E, the University will procure movable equipment by means of a bid process or by using pre-bid University or State contracts.

.3.2.1 TECHNOLOGY EQUIPMENT: Technology equipment is a sub category of the Movable Equipment noted above. The cost of technology planning, design and specification for classrooms, auditoriums, and department classroom meeting space is also included in this budget. The University Project Manager will contract and oversee the technology design process.

The timing for technology design must coincide with the development of Construction Documents and prior to bidding. The A/E must be involved in this design as they are responsible for the coordination of all services, structural support, blocking, riser diagrams, power, data locations and required HVAC needs for the Equipment.

Typically, movable equipment funding allocations are provided for new building construction projects but not for remodeling/renovation projects.

**00 00 38. MISCELLANEOUS DESIGN REQUIREMENTS:**

The following requirements are of a general nature and do not fit into any particular CSI division. Requirements pertaining to particular materials or work are given in the appropriate CSI division in PARTS TWO, THREE, FOUR, and FIVE, of this Building Design Standard.

.1 TEMPORARY EGRESS: Building addition and expansion projects which involve eliminating or closing an existing required means of egress shall be provided with a temporary means of egress accessible to individuals with disabilities. Ohio State's Public Safety must review and approve any suggested temporary egress concepts.

.2 STAIR DESIGN: Conform to applicable Ohio Building Code provisions.

.3 FLOOR LOADS: Design floor loads shall accommodate all live and dead loads including concentrated loads from fixed and movable equipment. Conform to the Ohio Building Code requirements, except that design live floor loads shall be at least 100 pounds per square foot. Identify floor live loads for each room or space on each floor plan drawing.

.4 LINES OF SIGHT INTO TOILETS shall positively be broken. Location of mirrors and reflected images shall be checked by the A/E. Direct or reflected sight lines into dressing rooms or toilets are prohibited.

.5 CORRIDOR DOORS: Doors on opposite sides of corridors shall be offset to prevent direct view from one room to another. Classroom and laboratory room doors opening into corridors shall be recessed the width of the door to eliminate corridor obstructions.

.6 RECESSES shall be provided for drinking fountains and telephones. The recesses shall be finished with glazed structural tile, ceramic tile, glazed concrete block, or concrete block finished with a paint which will withstand repeated scrubbings.

.7 EXTERIOR DOORS, except those designed with hardware for emergency exit only, shall be protected by canopies and wing walls; or, doors shall be recessed.

.8 HVAC IN REMODELING PROJECTS: Spaces between floor construction and suspended ceilings shall not be crowded with equipment of such size that the equipment cannot be serviced and effectively insulated for noise control. In lieu of such installations, properly insulated floor spaces, of a size which will accommodate equipment, shall be provided.

.9 CONNECTION TO EXISTING UTILITIES: Refer to FACILITY SERVICES, Section 3, for instructions regarding design and installation of both temporary and permanent connections to existing utilities (i.e., steam, condensate return, heating hot water supply and return, chilled water supply and return, domestic hot water, gas, cold water, alarm systems, emergency electric, electric, etc.) Also see 01 51 00 and 33 00 00.

.9.1 CONNECTIONS TO CITY OF COLUMBUS UTILITIES: In the university's campus peripheral areas where connections are being made directly to City of Columbus Utility Division water and sewer mains all City utility rules and ordinances shall apply. Expect system capacity charges, which are based on

water line sizes, for domestic water, fire service lines, and sanitary sewer connections. Expect to have to run separate domestic water and fire suppression lines from the public right-of-way to the building. In addition there will be tap (inspection) fees and meter charges. If a building has been demolished on the site, credits will be applied based on the size of the previous services. The A/E shall as a part of the design process deal directly with the City Division of Water and Division of Sewerage and Drainage, presenting for their approval site utility drawings. Allow a number of weeks for this process. (Start as early as possible and don't expect special treatment for University projects). Any documents shared and/or approved by the City of Columbus shall be provided to the University Engineer. Construction Documents must make clear to the bidders what City fees and charges to anticipate as some of these charges may be significant.

Before stormwater management plans are finalized for site drainage, including roof drains, the Stormwater Office of the City of Columbus Division of Sewerage and Drainage must approve them. Any approval documents from the City of Columbus shall be provided to the University Engineer. Flow control measures may be required. Meeting the requirements of the City may have unexpected financial impact so contact with the Stormwater Office must be made during the design development process.

.9.2 CONNECTIONS TO UNIVERSITY WATER DISTRIBUTION SYSTEM: The Ohio State University master meters water from the City of Columbus Utilities Division Department. All City system capacity charges for water and sewer service have been satisfied for connections to the University water system. All the City requires, for record purposes, is a utility site plan showing water and sewer connections. This site plan shall be submitted to Ohio State's Facilities Operations and Development; and Water Resources Engineer in Facilities Operation and Development Energy Services and Sustainability Office at the bid document stage. The Water Resource Engineer, or representative, will inspect both water and sewer taps. All water outages should be coordinated a minimum of 14 days prior with the University's Facilities Operation and Development MEP Office. ~~Utilities Division for transmittal at the bid document stage. The Utilities Division as part of the University's design approval process shall approve water and sewer tap locations. During construction a two-week notice to arrange utility outages is required as the outage may be disruptive to normal university functions. There are not tap (inspection) charges to the project for making connections; however, the contractor(s) will be expected to pay for the Utilities Division staff time for utility outages to benefit the project. Water taps will be inspected by OSU Utilities Division and sewer taps by a civil engineer from Facilities Operations and Development.~~

.10 ROOF-MOUNTED EQUIPMENT: Refer to BDS Divisions 21 – 28 FACILITY SERVICES – Document Requirements, FS-3.16 _ _ Roof-Mounted Equipment, Flashing and Roof Penetrations. Also note that pitch pans or pitch pockets are prohibited.

.11 ROOF STRUCTURES AND ROOFTOP EQUIPMENT SCREENS: Finish materials and colors are subject to the approval of the University Architect.

.12 WOMEN'S TOILET ROOMS: Increase the proportion of water closets and lavatories for women beyond OBC requirements. The number of water closets will vary according to specific projects, up to a fixture ratio of 1/3 men to 2/3 women for building populations where occupancy is expected to be split 50% men, 50% women for the next 20 years. Confirm this with the University Architect prior to schematic document review.

.13 LACTATION/WELLNESS ROOMS: All new and major renovated buildings will include at least one lactation room. Each facility will include - enough area to accommodate appropriate furniture (e.g. a lounge chair with tablet), counter space with sink, microwave, power and data outlets, coat rack/hooks, goose neck type faucet, sink deep enough to wash bottles and pump parts, paper towel dispenser, trash can, soap dispenser, full length mirror, bulletin board, walls minimum STC 45 sound rating, electrical outlet above work surface for pump and accessories, clear knee space beneath the desk height table/counter, and a Schlage L Series mortise indicator lock part # L9440 06N L283-722.

.14 EMPLOYEE TOILET ROOMS: It is University policy to avoid providing separate toilet rooms for students and employees.

.15 FAMILY OR ASSISTED-USE ~~TOILET~~ RESTROOM: Provide one family or assisted-use restroom ~~toilet~~ (gender-inclusive ~~neutral~~) ~~room~~ in all new buildings, and, when feasible, existing buildings. Room size shall meet ADA requirements with provisions for one water closet, ~~one urinal,~~ one lavatory, ~~and a~~ diaper changing station, and a Schlage L Series mortise indicator lock part # L9440 06N L283-722. Location should be adjacent to either entrance or elevator lobby on the ground floor.

.16 PROVISION FOR ADDITIONAL FLOORS: All structures must be designed to accommodate the addition of two floors in the future unless this requirement is waived by The University Architect. Notations on the structural and foundation drawings must show allowable future loadings.

.17 University facilities are intended to last as long as the university. Therefore, buildings and structures should be designed last beyond 100 years.

.17.1 Some facilities, such as barns and other temporary structures, are not required to be designed to last beyond 100 years. However, the A/E shall ensure that the structure will last its intended/design life span.

.18 LOUVERS for air distribution systems shall be specified in Division 23, door louvers in Division 8, all others in Division 10.
https://fod.osu.edu/sites/default/files/div_23.pdf
https://fod.osu.edu/sites/default/files/div_08.pdf
https://fod.osu.edu/sites/default/files/div_10.pdf

.19 THREADING OF PIPE: The threading of cast iron or ductile iron pipe is prohibited. Call attention to this in applicable specification sections.

.20 WARRANTIES, OPERATION AND MAINTENANCE MANUALS: Within 60 days after (Temporary or Permanent/Final) Certificate of Occupancy, submit warranties, instruction sheets, catalog data, and final shop drawings electronically following the ebuilder requirements. Provide full information (trim sheets and log sheets) defining all conditions, quantities of refrigerant, pressures, temperatures, etc. during the testing operations of each piece of equipment.

.21 INFILTRATION: Shall meet or exceed the code requirements of the Ohio Building Code. Compliance with overall air leakage requirement shall be determined by calculations using certified data furnished by the manufacturers or suppliers of doors, windows, and wall materials supplemented by calculations using the crack method given in the ASHRAE Handbook of Fundamentals at the appropriate prevailing design wind conditions for the area of application.

.22 RESTRICTED LOCATION: Operating equipment other than sump pumps shall not be located below the published 500-year FEMA flood plain elevation for hydraulically connected facilities.

***Commentary:*** *"hydraulically connected" is intended to mean facilities that are connected to other building/facilities or the Olentangy Rive by tunnels, drain pipes, conduit, etc.*

## 00 00 40. PREPARATION OF DOCUMENTS

### 00 00 41. DRAWINGS AND PROJECT MANUAL:

Shall be prepared in conformance with Section 153.50 and 153.52 of the Ohio Revised Code. The Ohio State University requires separate documents to be prepared for each of the following: General; Plumbing; HVAC (Heating, Ventilating, and Air Conditioning); Fire Protection; and Electrical. [Documents may be combined when permitted by Ohio law and approved by the University Engineer.]

As a flagship institution, The Ohio State University recognizes its responsibility to provide sustainability leadership by adopting business practices that reduces energy consumption. Therefore the Green Build and Energy policy ~~available on the project delivery website.~~ ~~http://fod.osu.edu/project -delivery~~ https://fod.osu.edu/sustainability/projects-and-services/green-building has been developed and shall be incorporated into the building process as applicable.

Drawings and Project Manual documents shall follow all applicable guidelines as referenced in the Electronic Drawing Naming Requirements: https://fod.osu.edu/sites/default/files/electronic_drawing_naming_req.doc available on the Project Delivery Website: ~~fod.osu.edu/project-delivery/~~

The A/E is required to submit a completed Design Review Acceptance form, available on the Project Delivery Website: https://fod.osu.edu/sites/default/files/0200_design_review_acceptance.doc for every phase of the project.

.1 MATERIALS: Schematic design and design development sketches and drawings ~~may~~ shall be submitted electronically for review ~~may be prepared electronically and presented on tracing paper, and submitted on bond paper for review~~. ~~Design development drawings may be prepared electronically and presented on tracing paper, submitted on bond paper for review.~~

.2 SHEET SIZES: The 36 by 24 inch size is preferred. Authorization must be obtained from the University Architect for use of other sheet sizes.

.3 COVER SHEETS, properly identified as to which submittal is being made, shall be provided on each submittal of drawings. ~~Cover sheets for schematic, design development and construction document submittals may be made on paper~~. The project numbers assigned by the university shall appear on cover sheets. See 00022.3 for code information to be included on the drawing cover sheet. Obtain sample sheet from the University Project Manager. See https://fod.osu.edu/resources and also Appendix F for examples of desired Title Sheet.

~~APPENDIX F~~

.4 TITLE SHEET AND TITLE BLOCK STANDARD DRAWINGS: These Title Sheet and Title Block standard drawings are to be utilized on all projects for Facilities Operations and Development.

~~Signature blocks to be included should be verified with the Project Manager for the specific project.~~

~~Please follow the links below to download the files:~~

~~.4 SIGNATURE SPACES shall be provided on the cover sheet for each submittal. The University Project Manager will obtain the required signatures. For construction documents, the University Project Manager will return the signed cover sheet to the A/E prior to the printing of bid sets.~~

~~.4.1 PROJECT PRESENTED ON NOT MORE THAN FIVE DRAWING sheets may be presented with the project title on sheet 1. A space for signatures must be provided on EACH of the five sheets.~~

.5 TITLE BLOCKS shall be drawn in the lower right-hand corner of each drawing sheet. The project number, assigned by the University, in addition to the A/E's job number, shall appear in the title blocks. See Appendix F for example of desired title block.

.6 SHEET NUMBERS: Use P, H, F, E, etc. Do not use "M" (Mechanical) for Plumbing, HVAC, or Fire Protection.

.7 DRAWINGS FOR REMODELING PROJECTS: Two drawings of each floor plan are required: One drawing is to show existing construction and demolition; the second is to show the new construction and existing construction which is to remain. When sheet size permits, the two plans shall be drawn on the same sheet, for easy comparison of

the two. This requirement applies to the floor plans for all submittals and all divisions of the work. Show existing room numbers on the demolition drawings.

~~APPENDIX Z~~

.8 BUILDING INFORMATION MODELING (BIM)

.8.1 The Architect/Engineer (A/E), or Contractor shall meet, for projects four million dollars or greater, the BIM Project Delivery Standards (BIM PDS)

.8.2 Project Delivery Standards http://fod.osu.edu/sites/default/files/ohio-state_bim_pds.pdf

.8.3 Execution Plan http://fod.osu.edu/sites/default/files/ohio-state_bim_ep.pdf

.8.4 Video Training - #2 Project Delivery Standards
http://www.youtube.com/watch?v=BQJwL8wp2Hw

**00 00 42. PROJECT MANUAL:**

.1 PRINTING AND BINDING: The A/E is advised to run only the number of copies required for review purposes. SETS FOR BIDDING PURPOSES SHOULD BE MADE ONLY AFTER ALL REVIEW CORRECTIONS HAVE BEEN MADE. Generally, follow instructions in the Ohio Facilities Construction Manual.

.1.1 COVER SHEETS

.1.1.1 The ~~University Project Manager~~ A/E will furnish sample printed front covers for the construction document Project Manual. ~~The A/E shall duplicate the paper quality, printing colors, styles and format, fill in all~~ The cover shall include all required titles, names, information and shall provide matching back covers of the same size paper quality and color as the front cover samples. In binding the finished books, both front and back covers shall be doubled at the binding edge and folded over screw-post type fasteners.

.1.2 BINDERS: Screw-type binding posts are required. ~~For schematic and design development submittals, these binders may be exposed~~; For construction document submittals, any binder used must be covered as indicated above. Roll-form plastic binders and ACCO clips are prohibited. Submittals for schematic design and design development phases shall be made electronically.

.2 OUTLINE PROJECT MANUAL: Submit outline of Division 00 and the specifications with schematic drawings; update this Project Manual for submission with design development drawings.

.2.1 Outline specifications are among the most important documents to be submitted. It is by these specifications that the University Planning Committee determines the acceptability of material and construction proposed by the A/E.

.2.2 Outline specifications should contain a brief, complete description of the entire project and should explain how the total work will be accomplished.

.2.3 The technical sections should be in outline form to serve as a guide in writing the construction document specifications. Information contained in these sections should be concise, but must name the materials, give locations (since the drawings, at this time, are not developed to the point that locations of materials are shown), indicate method of construction or installation, and indicate the finish of the completed installation.

.2.3.1 DO NOT write lengthy installation details and DO NOT write outline specifications as though instructing a contractor what to furnish and how to install the specified materials; save these details for the construction documents. Use of the past participle form of verbs to describe materials in place is preferred. Terse sentences, clauses, or phrases should be used as in the following example: “Corridor Partitions: Full height construction, 8x8x16-inch non-load-bearing concrete units laid in running bond with type N mortar.

.3 CONSTRUCTION DOCUMENT PROJECT MANUAL:

.3.1 SOLICITATION: Follow sample form provided by the Contract Administrator. The time for receipt of bids will be established by the University in cooperation with the University Architect. All copies issued must show this information. Charges for the non-refundable cost of documents will be as stated in the SOLICITATION.

.3.2 DIVISION 00 DOCUMENTS: Obtain the most recent edition from the Contracts Administrator. Refer to the Table of Contents for proper order.

.3.3 NUMBERING OF ITEMS: In order to distinguish CSI divisions in the specifications from divisions of the work, use Arabic numerals for CSI divisions.

.3.4 WAGE RATES: Wage rates shall be bound into each set of Project Manuals as a part of the General Conditions.

.3.5 SUPPLEMENTARY CONDITIONS: The A/E is cautioned to study the General Conditions plus Supplementary Conditions before beginning the preparation of Project Manual and to refer to them constantly throughout the writing of specifications. Particular attention should be paid to standardized or computerized specifications written by outside firms, who are employed to write technical sections, to ascertain that nothing contained in those specifications disagrees with provisions in the General Conditions or these supplements. Complete coordination of all Construction Documents is the responsibility of the A/E.

.3.5.1 ARTICLES WHICH REQUIRE SPECIAL ATTENTION

ART. 4 DEFINITIONS, ITEM 4: The A/E shall name itself and shall list its business address.

ART. 5 CUTTING AND PATCHING: A/E to make certain that cutting and patching instructions are consistent.

ART. 12 PROJECT SIGN: Signs are required. Specifications for the sign should be made a part of the section entitled TEMPORARY FACILITIES. The PM shall consult with the University's Signage Coordinator (SC) and submit a sign request form https://fod.osu.edu/make-request

ART. 14 GUARANTEE/WARRANTY: There are exceptions to the one year guarantee period. Items for which longer guarantee periods are required are indicated in PART TWO of these guides. The University Architect will indicate any other portions of the work on which a longer guarantee period is desired.

.3.6 GENERAL CONDITIONS:

.3.6.1 ARTICLES WHICH MAY REQUIRE SPECIAL ATTENTION

SHOP DRAWINGS: Explicit instructions for these submittals, as well as for submittals of samples, if different, should be given in the section entitled SAMPLES AND SHOP DRAWINGS in Division 01.

CLEANING UP: Additions and modifications to this article, if lengthy, should be made in the section entitled CLEANING UP in Division 01.

JOB MEETINGS: Detailed instructions, if different, for scheduling meetings, keeping of records, and distribution of minutes of such meetings should be given in the section entitled SCHEDULES AND REPORTS in Division 01. In writing this section, amplify the provisions stated but DO NOT change the intent of the article.

PAYROLL SUBMITTALS AND WAGE DETERMINATION: For projects in which Federal funds are involved, wage scales must be obtained from the U.S. Department of Labor. For State projects, wage scales must be obtained from the State of Ohio, Department of Commerce, Industrial Compliance Division. Ascertain, from the date on the wage scales received, that the schedule of wages will be applicable during the bidding period. Update the schedule by addenda, as required during the bidding period.

UTILITY SERVICE INTERUPTION AND COORDINATION WITH UNIVERSITY OPERATIONS: The bidders shall be cautioned that the

university will probably schedule interruption of services at times other than contractor's normal working hours and only designated university personnel are authorized to interrupt services. Frequently, outages are schedule between semesters to reduce disruption of classes.

PENETRATION OF FLOORS AND OF FIRE-RATED WALLS: Penetration by pipes, ducts, conduit, etc. is prohibited, unless openings are appropriately fire-stopped by fire dampers, or sealing of voids with fireproof materials. Fire-rated walls or floors must not have the rating reduced by penetrations or reduction of thickness. Precautions must be used by contractors when coring or making penetrations to ensure that the cored material does not drop to the floor below and cause accident or injury.

.3.7 TECHNICAL SECTIONS:

.3.7 .1 SPECIFICATION FORMAT: The division numbers used in PART FOUR of this publication generally conforms to the Construction Specifications Institute Masterformat 2004.

.3.7 .2 NUMBERING SYSTEM: Division numbers used in preparation of specifications shall generally conform to the CSI Format. Section numbers may be as listed in the format or sections may be numbered consecutively by either the number or the letter designations. Within the sections, the A/E may, as he chooses, use a decimal numbering system, as used in this publication, or an alphanumerical system to designate articles, paragraphs, and subparagraphs. Do not number each line. Written material shall be organized within each article so that related thoughts are grouped under one designation, either a number or a letter, in logical sequence. DO NOT number or letter each separate sentence or thought.

.3.7 .3 MATERIALS AND EQUIPMENT: Specify by performance specifications or by manufacturers' model numbers. If manufacturers' model numbers are used, name three or more manufacturers whose products are equal or superior in:

| | |
|---|---|
| Appearance | Function |
| Quality | Operation |
| Design | Service Life |

State that the drawings and specifications are based on the first product named and that the contractor must make all changes required to accommodate products of other manufacturers. The A/E is responsible for insuring that all brands specified are compatible with the basic building design insofar as size, weight, and services and that brands specified are truly equal or superior in properties listed above.

.3.7 .4 COMPUTERIZED OR STANDARDIZED SPECIFICATIONS:

The A/E is cautioned that computerized specifications must be edited to suit the requirements of the project being specified. The plea that this mandatory editing and rewording of the A/E's "standard" specifications will result in excessive costs or delays in producing the construction document submittals will not be considered as warranting publication of a specification which does not fit the work. Computerized specifications must be printed on letter size paper.

.3.7 .5 PROHIBITED WORDAGE: The following words, phrases, and clauses are expressly prohibited:

.3.7 .5.1 The note "by others". These words must not be used, either on the drawings or in the specifications. In lieu of these words, name the specific contractor or agent.

.3.7 .5.2 The word "Owner". The State is the owner of a project under construction and remains the owner until completion or later, when the University becomes the owner. Since the University becomes the ultimate owner, use the word "University" in lieu of "Owner".

.3.7 .5.3 The words "Using Agency" or "User". The University ~~Architect~~ Project Manager acts in behalf of ALL University agencies including the using agency to see that requirements of the University are satisfied. The A/E is responsible only to the University Project Manager ~~Architect~~, not to the "using agency", "user", or other university agencies.

.3.7 .5.4 The words "This Contractor shall . . ." to begin instructions to a contractor. These words are redundant since instructions are directed to a single prime contractor and it should be obvious to which contractor the instructions are directed.

.3.7 .5.5 The words "alternate" or "substitute" to indicate an "option". The word "alternate" should be used only for alternative work which is specified in the technical sections of the specifications and must be included in the bidders' proposals. The word "option" should be used to indicate items for which the contractor may make a choice without affecting the contract.

.3.7 .5.6 The word "mechanical" when referring to the Plumbing Contract, the Fire Protection Contract, or the HVAC Contract, or when referring to any of the contractors for these divisions of the work. The applicable word "plumbing", "fire protection", or "heating, ventilating, and air conditioning" must be used when making these references. On drawings, avoid using "mechanical" to describe pipe or duct chases, HVAC equipment rooms, electric equipment rooms, etc.

.3.7 .5.7 The words “comparable” or “equal” or “similar.” Be specific.

.3.7 .5.8 The phrase “latest edition” when referring to a code or any trade, technical, federal, military, or other “standard” specification is prohibited. The A/E must list the code or standard by name and number and indicate the date of the edition, as well as the latest revisions thereto. Referenced dates must be those in effect at time of plan approval.

END OF PROCESSING THE WORK

~~**PART TWO PROVISIONS FOR CONTRACT ADMINISTRATION**~~

## 01 00 00. GENERAL REQUIREMENTS

## 01 11 00. SUMMARY OF THE WORK

01 11 13. A GENERAL DESCRIPTION of all elements of the project, including exterior work and any other related work, is required. This description, though brief, should be complete enough to indicate the full scope of work in each contract so that prospective bidders can decide whether or not they wish to bid on the project. The use for which the project is being built should be explained. Some parts of this description can be copied from the Program of Requirements.

01 11 16. ITEMS FURNISHED BY THE UNIVERSITY: If the University furnishes items to be installed by any of the contractors, list the items and briefly indicate the work required of each contractor. Do not give detailed installation instructions; save details for the applicable section of the specifications.

## 01 12 00. MULTIPLE CONTRACT SUMMARY

01 12 13. LIST THE SEPARATE CONTRACTS under which the work will be accomplished and outline the scope of work included in each contract. Generally, there will be four separate contracts on major projects: General Construction, Plumbing, HVAC, and Electrical. Combine Fire Protection work with Plumbing. Consult the University Architect regarding desirability of separate contracts for Landscaping, Specialized Equipment, Carpet, Laboratory Equipment, Theater Equipment, Temperature Controls, and other work.

01 12 19. WORK ON OTHER PROJECTS: If other work, outside the scope of contracts for this project, will be performed simultaneously with the work on this project, explain how contractors must cooperate with outside contractors and with the University to avoid interference with each other's work.

01 14 00. WORK RESTRICTIONS: Fully describe all job conditions that will affect phasing and scheduling of the work. Particular attention must be given to scheduling remodeling work in buildings that will remain in operation during remodeling. Examples of some problems encountered are:

.1 PROVIDING AND MAINTAINING MEANS OF INGRESS AND EGRESS: Temporary entrances and exits must meet code requirements.

.2 MAINTAINING SECURITY: Areas that are being operated by the Using Agency must be secured from the construction area and vice versa.

.3 USE OF DOCKING FACILITIES: Sometimes these facilities must be shared between the University and the contractors.

.4 STORING OF CONSTRUCTION MATERIALS: If adequate areas cannot be provided, delivery schedules will be affected.

.5 SCHEDULING FOR MOVES BY THE USING AGENCY: If remodeled spaces must be ready for use or vacated by certain dates, name the spaces and give the dates.

.6 MAINTAINING SERVICES: These requirements should be detailed in the section entitled, TEMPORARY FACILITIES AND CONTROLS.

.7 DUST CONTROL AND NOISE CONTROL: Temporary partitions required for control of dust and noise should be shown on the drawings. Construction of these partitions may be specified in the section entitled, TEMPORARY FACILITIES AND CONTROLS or in the section in which the partition materials are specified. Refer to paragraph 01 56 16 of these guides.

## 01 21 00. ALLOWANCES

.1 RESTRICTED USE: Allowances are generally prohibited, however, if circumstances warrant, the University Project Manager will approve the use of allowances for certain items.

01 21 16. CONTINGENCY ALLOWANCE FOR HARDWARE: Refer to Division 08.

## 01 23 00. ALTERNATES

01 23 01. TITLE OF SECTION FOR SPECIFICATIONS: Although the CSI format also lists this title as "ALTERNATIVES", it is required that the title, "ALTERNATES" be used in order to be consistent with State documents in which the word "alternate" is used.

.1 DEFINITION: Refer to paragraph 0042.3.6.5.5 for instructions in use of the word "alternate".

01 23 02. PURPOSE OF ALTERNATES: A limited number of alternates may be used as a means of ensuring base bids within the available construction funds. The Architect/Engineer (A/E) shall consult the University Architect regarding priority of alternates. Additive alternates shall be used in preference to deductive alternates. See 00013.2.

01 23 03. DESIGNATIONS for alternates shall be:

G-1, G-2, etc. for the General Contract.
P-1, P-2, etc. for the Plumbing Contract.
H-1, H-2, etc. for the Heating, Ventilating, and Air Conditioning Contract. (Do not use the letter "M" to designate this series.)
E-1, E-2, etc. for the Electric Contract.

Alternates for other separate contracts should be listed by consecutive numbers prefixed by the letters used on the drawings to designate the contract.

01 23 04. COORDINATION OF ALTERNATES: Care must be exercised to coordinate Plumbing, HVAC, and Electrical alternates with General Contract alternates, with each other, and to list alternates in consecutive order; when possible, alternates which are contingent upon one another should be given the same number, as: G-2, P-2, H-2, and E-2. Awards of alternates must be in priority sequence. Therefore, Alternate 1 is priority 1; Alternate 2 is priority 2; etc.

## 01 31 00. PROJECT MANAGEMENT AND COORDINATION

01 31 19. PROJECT MEETINGS

.1 PRECONSTRUCTION MEETING: The University Project Manager will schedule and furnish the agenda for a preconstruction meeting after award of contract; attendance will be required for the A/E and successful bidders. Among items to be discussed are provisions specified in this division of the specifications.

.2 PROGRESS MEETING: Include the following in the specifications; edit and revise to suit job conditions. The General Contractor shall schedule a weekly job progress meeting with other prime contractors and major subcontractors and shall notify the A/E of the time and place of the meeting. Subsequent meetings shall be held on the same day and hour of the week for the duration of the construction period; except, upon instructions of the A/E, the scheduled meetings may be increased or decreased as required by the progress of the work. Notes shall be taken by the A/E on discussions and decisions made at each meeting. Typed copies of the notes shall be distributed to all concerned parties~~.; two copies shall be furnished to the University Architect.~~

2.1 Invite FOD building envelope engineer to the project meetings for observation of subgrade, wall envelope installations (air barrier, opening flashings and perimeter sealants), roofing, roof flashings and coping installations. Whether or not the engineer makes the project meetings, all meeting minutes regarding the building envelope shall be forwarded to FOD building envelope engineer.

## 01 32 00. CONSTRUCTION PROGRESS DOCUMENTATION

01 32 33. CONSTRUCTION PHOTOGRAPHS: The A/E/CM/DB shall furnish digital photographs that show progress, work that is concealed, problem areas, etc. At the completion of the project the A/E/CM/DB shall provide the university with all construction photographs in electronic format following Ohio State's Project Closeout Standards.

.1 PHOTOS: Provided photos of below grade thru-wall penetration sealants, perimeter drain tile, foundation waterproofing and drainage mat installation (progress photos). Inspections by Facility Operations building envelope engineer prior to backfilling. Provide envelope enclosure photos of wall vapor barriers, opening flashings, roofing and flashings, and all exterior wall sealants.

## 01 33 00. SUBMITTAL PROCEDURES

.1 CONSTRUCTION SCHEDULE: Include the following paragraph (or a paragraph similarly worded) in the specifications: The final schedule, bearing the approval signature of all prime contractors, shall be submitted in quadruplicate and electronically to the A/E. Following approval by the university, copies of the final schedule shall be distributed to all interested parties. Tentative dates for interruption of utility services shall be incorporated.

.2 PROJECT INSPECTION REPORTS: Instruction for preparation and submittal of these reports will be given at the preconstruction meeting.

01 33 13. CERTIFICATION REQUIRED FROM SUPPLIERS AND INSTALLERS: The following is a list of certifications and other submittals required, in addition to guarantees, to assure quality materials or workmanship, or both. For some of these requirements, correct wording of articles, to be incorporated in the technical sections, is provided in these guides. Also see 01 70 00.

.1 GENERAL CONSTRUCTION:

| | | |
|---|---|---|
| Sewers | - | Test approvals from City of Columbus or other controlling governmental agency |
| Reinforcing steel | - | Mill certificate |
| Insulating concrete | - | Manufacturer's certificate roof decks |
| Structural steel | - | Erector's affidavit frame |
| Face Bricks | - | Results of efflorescence tests |
| Masonry Restoration | - | Experience record of contractor or subcontractor doing the work |
| Steel joists | - | Manufacturer's certificate |
| Metal decking | - | Manufacturer's certificate |
| Sealants | - | Experience record of contractor or subcontractor doing the work |
| Metal Windows | - | Performance reports |
| Reflective | - | Performance reports insulating glass |
| Finish Hardware | - | Inspection by an Architectural Hardware Consultant |
| Fire-rated ceiling | - | Certification by installer |
| Carpeting materials | - | Test reports and manufacturer's certificate |
| Non-standard | - | Test reports and resilient floor manufacturer's certificate materials |
| Painting | - | Statements by paint manufacturer and applicator |
| Fire-resistive | - | Manufacturer's certificate coatings |
| Laboratory equipment* | - | Financial statement of manufacturer, experience qualifications |
| Library equipment* | - | Financial statement of manufacturer, experience qualifications |
| Kitchen equipment* | - | Financial statement of manufacturer, experience and qualifications |

| | | |
|---|---|---|
| Radiation protection | - | Qualifications of installer |
| Elevators | - | Maintenance Service, certificate of Inspection |

* Laboratory Equipment, Library Equipment, and Kitchen Equipment will be included in General Contract unless directed otherwise by the University Project Manager.

.2 PLUMBING:

| | | |
|---|---|---|
| Soil, waste, and vent piping | - | Inspection certificate |
| Underground service piping | - | Test reports |
| Interior piping | - | Test reports |
| Welders | - | Copy of certification |
| Water lines | - | Sterilization test report and a pressure test report |
| Gas service and interior piping | - | Test reports and recording line charts for purging and pressure |
| Gas distribution lines | - | Training certifications for all covered tasks performed, pressure test charts, material test records, and per Division 33 |

.3 FIRE PROTECTIONS:

| | | |
|---|---|---|
| Fire department | - | Certification that pipe threads and connections are suitable for use with local hydrants and fire department equipment |
| Inspection | - | National Automatic Sprinkler agreement and Fire Control Association standard inspection and maintenance form |
| Fire lines and fire pumps | - | Test reports |
| Welders | - | Copy of certification |
| System | - | Fire Marshal's certification of inspection and acceptance |

.4 HEATING, VENTILATING, AND AIR CONDITIONING:

| | | |
|---|---|---|
| Balancing of air and water systems | - | Balance reports |
| Boilers | - | Tests for safety and function, inspection and other certificates |

| | | |
|---|---|---|
| Refrigerant lines | - | Proof of testing in compliance with USASI Standard, copies of certifications of refrigerant technicians, and reports |
| Fan ratings | - | Test performance seals, performance curves |
| Air, water, and steam lines | - | Test reports, weld NDT reports, hydro reports |
| Welders | - | Copy of certification, copy of procedure certification. |
| Chilled water | - | Pressure and weld /fusion test records, water treatment report, material test records, and per Division 33 |

.5 ELECTRIC:

| | | |
|---|---|---|
| Primary cable installations | - | Testing per Division 33 |
| Cable splicing | - | proof of skill requirements per Division 33 |

01 33 23. SHOP DRAWINGS AND SAMPLES: A separate section is required. This section should be written to include submittals for all prime contracts so that no separate section or article need be written in the specifications for these contractors; however, each section in the technical provisions should contain a reference to this section together with a list of items for which shop drawings or samples are required. Additionally, this section should specify a reasonable timeframe, based on contract date and project timeline, to ensure that submittals are submitted and reviewed minimizing schedule impacts. Attention should be called to the fact that this section is a supplement to the General Conditions. Require that a handwritten signature of the contractor is required, in addition to their stamp of approval.

.1 DRAWINGS REQUIRING CHECKING BY CONSULTANTS: The A/E shall determine the requirements for submittal of drawings pertaining to work done by consultants ~~and shall stipulate the number of copies required; two copies of approved drawings are required for resubmittal to the University.~~

.2 SAMPLES: After consultation with the University Project Manager, the A/E shall indicate the items for which samples are required and shall stipulate the number of each required. Samples and color chips must be approved by the University Project Manager.

.2.1 SAMPLES FOR INCLUSION IN THE WORK: If samples are expensive or are complete assemblies suitable for inclusion in the work, e.g., precast concrete panels, locksets and door closers, laboratory or other equipment, state that approved samples may be installed in the work, provided the location of these items is made known to the A/E.

.3 MODELS AND PATTERNS: Specifications for ornamental work which requires models or patterns, shall specifically stipulate that models and patterns become the property of the university after the ornamental work has been installed.

## 01 35 00. SPECIAL PROCEDURES

01 35 23. OWNER SAFETY REQUIREMENTS: To ensure student, faculty, staff and visitor safety and the continuity of university services, each construction project shall review construction risks (see FOD Construction Risk Assessment Process Guidelines at fod.osu.edu. Once on the website, do a file search with the name of the documents by clicking the search magnifying-glass icon at the upper right hand corner of the screen). If enhanced risk mitigation requirements are identified, they shall be specified and may include components like 1) Enhanced Emergency Call List, 2) Utility shut off plan, 3) Enhanced Excavation Permit 4) Stock repair parts.

01 35 43. HAZARDOUS MATERIALS PROCEDURES: Refer to Appendix V for information regarding hazardous materials. Also refer to Section 02 82 00 Hazardous Materials and Asbestos Remediation. The University Project Manager shall be notified **IMMEDIATELY** of Contractor's intent to handle materials that are considered hazardous such as asbestos, mercury, flammable fuels, explosive chemicals, PCBs, etc.

**01 35 43 .1 SAFETY HEALTH & ENVIRONMENT (See APPENDIX V)**
https://fod.osu.edu/sites/default/files/app_V_06Fin.doc

**01 40 00 RECYCLING OF CONSTRUCTION / DEMOLITION WASTE:** The General Contractor is responsible for construction/demolition waste recycling on the job site, and the university requires all trash dumpsters used for construction debris be located on concrete pads. Refer to Sections 32.13.10 Rigid Paving and 32.13.13 Concrete Paving. The university requires any project with a total cost above 1 million dollars to have a recycling Waste Management Plan that encompasses the university goal of diverting a minimum of 50% (by weight or volume) of construction/demolition waste from a landfill. The Contractor is responsible for submitting the waste management plan to the University Project Manager prior to implementing the plan. A final report shall be submitted to the University Project Manager at the completion of the project and shall indicate how much construction waste has been diverted to recycling by weight or volume and also the amount of waste that was delivered to the landfill. Contractor shall include dates, weight tickets, receipts & invoices in final submittal. For more detailed information and available forms please visit:
http://www.fod.osu.edu/resources

**01 43 00. QUALITY ASSURANCE:** Field services provided by manufacturer's representative to assure the quality of construction before and during the execution of the work for building envelope components (roofing, cladding, window curtain walls and entry door systems)."

**01 45 00. QUALITY CONTROL:** Periodic building envelope inspections by third party engineering to observe below grade construction waterproofing, exterior wall envelope and roofing enclosures with monthly report of observations. Reports to include photographs of essential components and locations that are not accessible at conclusion of project. Reports to be part of record documentation at close of project."

01 45 10. SERVICES BY SPECIALISTS: In addition to the field supervision and inspections required by the A/E's contract and by State agencies, the following services by specialists will be required on major projects. Fees for specialists' services will be handled by the A/E as a reimbursable expense. While these services will be performed, the A/E shall supervise the specified operations; the specialist shall furnish required reports directly to the A/E and the University Project Manager. Details of the type of services required, methods of investigation, frequency of investigations or tests, number and type of reports required, and method of payment for specialists' services shall be included in the applicable technical sections of the specifications. Unless expressly exempted by the university, the following services shall be performed by qualified independent testing agencies:

.1 GENERAL CONSTRUCTION:

Soils compaction tests
Piling and caissons, inspections and tests
Concrete sampling and tests
Sound transmission tests
Radiation testing

.2 PLUMBING CONSTRUCTION:

Supervision of purging of gas piping
Sterilization of water piping
Testing of completed installations prior to inspection by the State Fire Marshal or his designated representative.

.3 HVAC CONSTRUCTION:

Systems balancing
Soil corrosion analysis for cathodic protection
Pressure test for leaks by gas utility company
Pressure test, weld inspection per applicable codes for steam, heating hot water, condensate, etc.
Pressure test, weld/fusion inspection per applicable codes for chilled water

.4 ELECTRIC CONSTRUCTION:

Testing of communications systems
Testing of signaling systems
Testing of fire protection equipment and alarm system
Testing of Distributed Generation safety systems to prevent unsafe parallel operation

.5 SPECIALIZED SYSTEMS:

Cranes and lifting systems: load test and certified inspection

**01 50 00. TEMPORARY FACILITIES AND CONTROLS** – ~~Note overlapping of Special Conditions and Division 01 in State Architect's Handbook.~~

.1 ACCESS TO FACILITIES: While The Ohio State University is a publicly owned institution, its function and facilities are dedicated to serve specific operations and programs. Therefore, contractor personnel may be barred from using existing toilet, food service, or other facilities.

.2 UTILIZATON OF EXISTING HVAC EQUIPMENT DURING CONSTRUCTION: The utilization of existing HVAC equipment for temporary heating and cooling during construction requires written approval from the University Project Manager after consultation with University Engineer. It is the A/E's responsibility to determine if this is necessary prior to the final CD submittal and all details for use shall be included in the CD phase documents. If equipment is approved for use during construction, it is the Contractor's responsibility to completely maintain the equipment during construction and submit written reports to the University Project Manager to show that maintenance has been performed. The Contractor shall provide filters for air handling units with a minimum efficiency of 30% prior to construction and shall perform proper cleaning of equipment after construction is complete. Contractor shall replace filters with new after construction is complete and verify that all equipment is in proper working condition. If repairs are required, it is the Contractor's responsibility to perform those repairs. If approval is not granted by the University Engineer then it is the A/E's responsibility to provide instructions to the appropriate Prime Contractor in the Bid Documents of alternative means for temporary heating & cooling.

.3 UTILIZATION OF NEW HVAC EQUIPMENT DURING CONSTRUCTION: The Utilization of new HVAC equipment for temporary heating and cooling during construction requires written approval from the University Project Manager after consultation with University Engineer. If approval is granted the A/E must provide the following requirements to the appropriate Prime Contractor in the Bid Documents.

.3.1 One year Contractor labor and material warranty on equipment starts after the Certification of Contract Completion has been issued by the Contracting Authority.

.3.2 One year Factory Warranty, or the extended Warranty Period as indicated in the Project Manual, on equipment starts after the Certification of Contract Completion has been issued by the Contracting Authority.

.3.3 Contractor is responsible for proper maintenance and cleaning of the equipment during construction and providing the entire HVAC system in "like new" condition before receipt of the Certification of Contract Completion. Any damages or repairs of the equipment during construction are the responsibility of the Contractor.

01 51 00. TEMPORARY UTILITIES: Requirements are generally as stated in the General Conditions with modifications regarding payment for water, fuel, and power consumed. Contractors must arrange for and pay for all temporary utilities required for execution of the work. Specifications shall be written to stress this point. The Ohio State University owns and operates the utilities throughout most of the Columbus campus. Peripheral areas and regional campus buildings may have service connections directly from the public utilities. The A/E will determine type and scope of each utility needed during construction document phase and, after discussion with The Department of Facilities Operations and Development, provide engineering and specific direction (including metering) to the contractors in the project specifications and on the drawings regarding the arrangement for such utilities. **Note: stating to provide temporary service will not be acceptable**

.1 UTILITY COMPANY INSTALLATIONS: Plans for running temporary lines through university property shall be reviewed by the A/E in conference with the University Engineer and Ohio State Energy Partner (OSEP).

.2 CONNECTIONS TO EXISTING UTILITIES: If connections to University utilities are permitted, the A/E shall obtain drawings of existing utilities and shall consult the University Engineer and OSEP regarding services available and points of connections to services. All services shall be metered through meters furnished by the contractors and the university shall be reimbursed for water, fuel, and power consumed The specifications shall contain instructions to the contractors to make requests for these services through the University Engineer and by completing the form, UTILITY SERVICE REQUEST http://www.fod.ohio-state.edu/sites/defualt/files/request.doc obtained from the Department of Facilities Operations and Development, 2003 Millikin Road, Columbus, Ohio 43210.

**OARDC:** A request to mark OARDC utility locations will be made by the Contractor by calling the OARDC Facilities Service Department at 330-263-3915. Contractor's name and phone number; the name of the person making the request; the project name and number; location of the area to be marked and the name of the Project Manager will be provided. After receipt of this information a work order will be issued. The utilities will be marked within 72 hours of the call, excluding weekends and University holidays. All costs shall be borne by the Contractor. For those are public utilities on and around the OARDC campus that may not be known to and will not be marked by University

personnel. Contact the Ohio Utility Protection Service (811 or 1-800-362-2764; http://www.oups.org) for the location of these public utilities.

**OARDC:** There is no cost for use of water and/or electricity related to the project execution.

.2.1 Temporary connections to the university primary electrical distribution system (construction power) shall meet the applicable sections of Division 33 and the FOD Primary Electric Service Policy (found at https://fod.osu.edu/sites/default/files/primary_electrical_service.pdf) and subject to the associated inspection requirements of the Primary Service Connect Checklist (found at https://www.osu.edu/sites/default/files/primary_electrical_service_construction_power.pdf)

**OARDC :** The interruption, disconnection, reconnection, reduction or curtailment of any existing services shall not be undertaken without minimum prior notice of two (2) weeks and shall be coordinated with the OARDC Facilities Services Department at 330-263-3915. This work may be performed during normal working hours, holidays and weekends or as directed by the Facilities Services Department, but shall always be scheduled to minimize the effect of these shutdowns with other facilities on campus.

The appropriate Contractor involved with the utility shutdown shall, at the beginning of the construction period, enter into a contract with the OARDC Facilities Services Department for this work. The appropriate Contractor shall determine the number of times, the types and length of shutdown required for connections to that utility. Costs, if any, shall be borne by the Contractor.

.2.2 Temporary connections to the university domestic water system, including fire hydrants, shall be approved by FOD Operations Jeff Mullins in the MEP Shop at (614) 688-4027 , mullins.279@osu.edu Hose connections to fire hydrants are prohibited between October 15 and April 15 unless special arrangements for freeze protection have been approved by FOD Operations. A meter and backflow preventer are required on such connections

.2.3 The use of HVAC systems during building finishing activities shall require inspection and commissioning of mechanical system components, metering and controls equipment. FOD/OSEP ~~FOD Utilities~~ shall approve the use of steam and/or chilled water to HVAC systems supplied from the ~~FOD's~~ central/regional steam and/or chilled water plants,

.3 COST: Costs for providing temporary services shall be included in the contractors' bids. Specifications shall clearly identify each contractor's responsibility for the

installation of service lines and payment for services, whether services are furnished by the utility company or by the university.

.3.1 GENERAL CONTRACTOR shall pay for water, steam, fuel for heat, and electric power consumed.

.3.2 PLUMBING CONTRACTOR shall install and maintain water supply lines and make changes in lines as necessitated by conditions at the site.

.3.3 HVAC CONTRACTOR shall install and maintain heating systems and make changes as required.

.3.4 ELECTRICAL CONTRACTOR shall install and maintain electrical installations and make changes as required.

.4 DURATION OF SERVICES: The specifications shall clearly identify each contractor's responsibility for providing continuous utility services until date of final acceptance or Substantial Completion (whichever comes first) including operation of permanent equipment and services.

**01 52 00. CONSTRUCTION FACILITIES:**

01 52 13. FIELD OFFICES AND SHEDS: Each prime contractor shall provide and maintain a clean, weather tight office at the site suitable for his own use, and for use of ~~his~~ subcontractors. All expenses including the installation cost, and the use of telephone, heat, light, water, and janitor service shall be borne by the contractor.

.1 GENERAL CONTRACTOR'S OFFICE shall be of size suitable for the use of the contractor, ~~his~~ subcontractors, the University Project Manager and the A/E's representative. Office shall be heated, lighted, have doors with locks, and private line telephone service. One space in the office shall be provided for use of the A/E's representative; space shall be equipped with plan table, filing cabinet, and other necessary communication equipment ~~telephone~~. The General Contractor or his authorized agent shall be present at the office, or elsewhere on the site, at all times while the work is in progress.

**01 54 00. CONSTRUCTION AIDS**

01 54 13. TEMPORARY ELEVATORS:

.1 ONE NEW ELEVATOR may be used for construction purposes. Facilities shall be made available to all contractors and subcontractors; all costs associated with use shall be assigned to the General Contractor. Written arrangements must be made with the University Project Manager and must include:

Installation of protective covering of car interior, doors and entrance.

Weekly cleaning and servicing by the elevator installer at the Contractor's expense.

Complete restoration of all elevator system components to like new condition ready for turnover to the university.

The repair and warranty period required by the contract will not be diminished by authorizing this use.

.2 EXISTING ELEVATORS shall not be used during construction without permission of the University Architect. Refer to Division 14 for conditions governing this use.

.3 PROTECTIVE PADS and hooks for hanging the removable pads shall be furnished and installed in the elevator which is most suitable for furniture and equipment moving for use by the University.

01 54 16. TEMPORARY HOISTS:

.1 HOISTS: Specify that the General Contractor furnish hoisting facilities and that these facilities be made available to other contractors and to subcontractors. Other prime contractors may furnish facilities to suit their needs if suitable arrangements cannot be made with the General Contractor. Provide for hoisting of workers as well as materials and equipment if it will be cost effective.

## 01 55 00. VEHICULAR ACCESS AND PARKING

.1 CONSTRUCTION AREA MAINTENANCE AND ACCESS: If existing streets and roads on campus must be used, a detailed plan of the routes to be used must be worked out in cooperation with University personnel. The final approved plan shall be shown on the project drawings, and specifications must stipulate that no other streets and roads be used.

.2 CLEAN-UP ENFORCEMENT: Specifications shall contain provisions that Contractors must remove mud and spillage from public and university streets without delay. Failure to clean streets promptly could result in streets being cleaned by the university or other public agency at the Contractor's expense.

.3 REPAIRS OF DAMAGES TO FACILITIES: Specifications shall also contain provisions that damage to roads or other facilities on university property, resulting from hauling, storage of materials, or other activities in connection with the work, shall be repaired or replaced, at no expense to the university, by the Contractor causing the damage. Repairs or replacement shall be made to the satisfaction of the University ~~Architect~~ Project Manager.

.4 MAINTENANCE OF TRAFFIC FLOW:

.4.1 PLANNING FOR TEMPORARY CONTROL: The ~~University Police~~ Department of Public Safety must be notified at least two weeks in advance

of any anticipated work affecting traffic flow via a Plan Ahead request (https://dps.osu.edu/planahead). To assure maintenance of flow and to safeguard all parties involved in planning temporary routing, a field inspection should be made jointly by the A/E, the University Project Manager, and Contractor personnel prior to performing any work that would interrupt normal traffic patterns. Rerouting of traffic shall be planned as to route and direction, in cooperation with the University Department of Public Safety and as approved by the University ~~Architect~~ Project Manager.

.4.2 CONTRACTOR'S RESPONSIBILITIES: The contractor, whose work requires interruption of traffic, shall be required to post signs in all affected areas, in sufficient numbers and with appropriate messages, to warn motorists entering the construction zone and to alleviate conflicts and confusion among motorists or pedestrians at intersections, crossings, turns, and other obstructions to normal traffic flow. Temporary signs shall be as shown in the Ohio Manual of Uniform Traffic Control Devices for Streets and Highways, Ohio Department of Transportation. Temporary lanes shall be well marked, and obstructions, barriers, lane changes, or detours shall be indicated by appropriate signage at each point of potential confusion, as well as at each change in direction of a temporary route. The university Police Division shall be notified in advance of the anticipated time of return to normal traffic patterns. Upon completion of construction affecting streets or traffic flow, but before temporary control devices and lane markings are removed, the area shall be restored to receive traffic in the normal pattern. the university Police Division shall be notified of the actual time of completion of restoration.

.4.3 PROVISIONS FOR SPECIAL DUTY POLICE OFFICERS: If it is evident that traffic will become hazardous or restricted in any manner, uniformed traffic control ~~special duty police~~ officers must be provided by and at the contractor's expense. These officers shall be employed by contacting the University Department of Public Safety at least two weeks before officers' services are required. The contractor shall also forward a copy of the request to the University Project Manager. Specifications should be written to alert contractors to the possibility that special duty police officers might be needed at times other than, or in addition to, the contractor's normal work hours.

.5 PARKING: Parking at regional campuses is subject to regulations established by university authorities at the particular campus. At the Columbus campus, employees of contractors and subcontractors must secure parking permits from the CampusParc and must park cars in areas assigned to them. Parking on streets or in restricted areas is prohibited. At the beginning of the work, each contractor shall report to the CampusParc the approximate number of parking permits which will be required for all employees, including employees of subcontractors. Each contractor shall provide the University Project Manager with a copy of the letter of application for parking permits.

**OARDC:** Parking for employees of Contractors and subcontractors must be arranged with the University Project Manager and must park in areas assigned to them. Parking on streets or in restricted areas is prohibited. Purchase of parking permit is not required.

## 01 56 00. TEMPORARY BARRIERS AND ENCLOSURES

.1 INGRESS AND EGRESS FOR BUILDINGS: During joint occupancy of buildings, entrances and exits for public use must be provided to meet code requirements. At least one ingress and egress and path of travel that is accessible to individuals with disabilities must be maintained to all user occupied portions of the building. Any closure of a building entrance or exit must be approved by the University Department of Public Safety.

.2 SIDEWALK BARRICADES: Provide a detail for sidewalk barricades as required to discourage pedestrian traffic. The barricades are to be at least 42 inches high and of suitable width to completely obstruct passage beyond on the closed sidewalk. The barricade shall consist of: a rigid frame with a 2X6 wooden toe board affixed approximately one inch above the sidewalk across the entire width, cross bracing to hold the barricade in place, and orange safety fencing affixed to the frame. Specify/detail a sign stating “SIDEWALK CLOSED” affixed to the structure. Signage must meet all applicable ADA requirements.

01 56 16. NOISE AND DUST CONTROL: In occupied buildings the A/E shall indicate areas for which noise and dust control must be provided and shall specify methods of control. If details of installations are involved, specify these in the applicable sections of the technical specifications. The General Contractor or Lead Contractor shall install barriers indicated by the A/E and shall provide other dust control barriers as required by construction operations.

01 56 26. TEMPORARY FENCE: A 6 ft. high fence with gates shall be erected around the project site. Fence and location shall be subject to the approval of the University Project Manager. Show fence location on drawings.

.1 Usually a heavy woven steel wire fence on steel posts is sufficient; however, where appearance is a consideration, a privacy type fence might be required, provided the budget permits such construction. Fence screening is required unless approved by the University Landscape Architect.

.1.1 Fence screening is to be black, open mesh fabric made of polypropylene and providing a minimum of 80% shading. Fabric is to be installed on the inside of the fence.

.2 Barbed wire used on any part of the fence is prohibited.

.3 'No Trespassing' signs, which meet OSHA requirements, shall be specified.

.4 WEED CONTROL: Specify that the General Contractor must cut the weeds inside the construction fence as often as necessary to maintain a neat appearance at the project site.

01 56 36. TEMPORARY SECURITY ENCLOSURES:

.1 BUILDING SECURITY: During construction, one exterior door of any enclosed structure shall be provided with a lockset with a university security core. The General Contractor shall obtain security core from and return same to the University ~~Architect~~ Project Manager.

.2 FENCE GATES: Except during working hours, gates shall be kept locked by the General Contractor at all times.

One gate shall be double locked with a university security padlock and the contractor's padlock in a manner that will allow access by unlocking either padlock. Other prime contractors may install their own padlocks if it is determined that they will require access to the area at time other than regular working hours. The university security padlock shall be obtained from, and returned to, the University ~~Architect~~ Project Manager.

01 56 39. TREE AND PLANT PROTECTION: Refer to Division 31.

**01 57 00. TEMPORARY CONTROLS:**

1. AIR POLLUTION NUISANCES PROHIBITED: The General Contractor or the Lead Contractor shall provide controls to prevent air pollution. In accordance with all federal and state codes, and the Ohio Administrative Code 3745-15-07 (Environmental Protection Agency, Chapter 3745-15, General Provisions on Air Pollution Control, paragraph-07, most current version) the emission or escape into the open air from any source or sources whatsoever, of smoke, ashes, dust, dirt, grime, acids, fumes, gases, vapors, odors, or any other substances or combinations of substances, in such manner or in such amounts as to endanger the health, safety or welfare of the public, or cause unreasonable injury or damage to property, is hereby found and declared to be a public nuisance. It shall be prohibited for any person to cause, permit or maintain any such public nuisance.

2. RESTRICTIONS OF EMISSIONS OF FUGITIVE DUST: The General Contractor or the Lead Contractor shall provide controls to prevent fugitive dust. In accordance with all federal and state codes, and the Ohio Administrative Code 3475-17-08 (Environmental Protection Agency, Chapter 3745-17, Particulate Matter Standards, paragraph-08, most current version), fugitive dust cannot be emitted from any source without taking reasonably available control measures to prevent it from becoming airborne. “Reasonably available control measures”

means the control technology which enables a particular fugitive dust source to achieve the lowest particulate matter emission level possible and which is reasonably available considering technological feasibility and cost-effectiveness. These measures shall include but not be limited to:

2.1 The use of water or other suitable dust suppressant chemicals for the control of fugitive dust from the demolition of existing buildings or structures, construction operations or the grading of roads or the clearing of land;

2.2 The periodic application of asphalt, oil, water, or other suitable dust suppression chemicals on dirt or gravel roads or parking lots, and other surfaces which can cause emissions of fugitive dust;

2.3 The covering, at all times, of open bodied vehicles, when transporting materials that are likely to become airborne;

2.4 The paving of roadways and the maintaining of roadways in a clean condition; and

2.5 The prompt removal, in such a manner as to minimize or prevent resuspension, of earth or other material from paved streets onto which earth or other material has been deposited by trucking or earth-moving equipment or erosion by water or other means.

01 57 13. TEMPORARY EROSION AND SEDIMENT CONTROL:

1 OHIO EPA PERMIT for NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES): The A/E shall obtain this permit. Any construction activity that disturbs one or more acre of total land is required to obtain a National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP) from the Ohio Environmental Protection Agency (Ohio EPA).

2. OHIO EPA NOTICE OF INTENT (NOI) AND STORM WATER POLLUTION PREVENTION PLAN (SWP3): If a NPDES Permit is required, the A/E shall prepare and submit a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWP3) to the Ohio EPA. The SWP3 is to be prepared in compliance with current provisions of the Ohio Water Pollution Control Act (Ohio Revised Code, Title LXI (sixty-one) Water Supply - Sanitation - Ditches, Chapter 6111 Water Pollution Control, most current version) and CGP. The NOI and SWP3 shall be reviewed and approved by the University Engineer and the Office of Environmental Health and Safety before submittal to the Ohio EPA. A copy of the NOI, SWP3 and letter from Ohio EPA granting permit coverage shall be maintained at the construction site for the duration of the project. Copies are to be made available to Ohio EPA upon request.

2.1 The NOI and SWP3 shall be prepared and submitted to Ohio EPA in a timely manner, at least 21 days prior to beginning any site work. Allow adequate time for Ohio EPA approval.

3. COMPLIANCE WITH STORM WATER POLLUTION PREVENTION PLAN (SWP3): The General Contractor or Lead Contractor must maintain all erosion control practices in strict accordance with the SWP3 at all times throughout the site work. Representatives of the University, as designated by the University Project Manager, will make weekly inspections to assure compliance with the SWP3.

4. TEMPORARY EROSION CONTROL: The General Contractor or the Lead Contractor shall place temporary erosion and sediment control measures to minimize adverse impacts to storm water runoff. These control measures include the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, catch basin/curb inlet protection, and slope drains, among other control devices or methods. These measures are to be coordinated with permanent erosion control features and plant materials. The selected control measures must also comply with appropriate provisions and plans in the City of Columbus, Division of Sewerage and Drainage Erosion and Sediment Control Regulation. Any plantings or mulches must also comply with all University Standards and be reviewed for prior approval by the University Landscape Architect.

5. SILT FENCE: The manufacturer's recommendation shall be followed with regard to shipping, handling, storage, installation, and protection from direct sunlight. The geotextile will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, storage, or installation. Each roll shall be labeled or tagged to provide product identification.

5.1 The post spacing shall be as recommended by the manufacturer. The spacing of the posts shall be adjusted such that some of the posts are located at the low points along the fence line. At joints, the overlap shall be nailed or similarly fastened to the nearest post with a lath.

6. STRAW BALES AND STRAW WATTLES: Straw bales and wattles shall be embedded and staked as shown in the SWP3. Adjacent bales or wattles shall be chinked to eliminate gaps between the bales or wattles. Bales shall be placed such that bindings are parallel to and not in contact with the ground.

7. TEMPORARY SILT DITCH: Construct a temporary ditch in relatively rolling areas where, in the judgment of the A/E, adjacent property may be damaged from sheet-type soil erosion. This special ditch is not intended to carry large volumes of water but to catch sediment from runoff. Construct silt checks within the ditch or at the outlet. Construct the special ditch according to the SWP3 at locations designated by the A/E.

8. TEMPORARY SEEDING AND PROTECTION: Before ordering, obtain the review and prior approval from the University Landscape Architect for any seed before use. Promptly perform the work of temporary seeding and protection to prevent visible erosion. Protect all seeded areas with mulch that precludes siltation. Perform temporary seeding and protection under the following conditions:

    8.1 When it is impractical to bring an area to final line, grade, and finish so that permanent seeding protection work can be performed without subsequent serious disturbance by additional grading.

    8.2 When soil erosion occurs, or it is considered to be a potential problem, on areas where construction operations are temporarily suspended.

    8.3 When an immediate cover would be desirable to minimize erosion, siltation, or pollution.

    8.4 On temporary roadways that are expected to remain in place for longer than 30 days and that are constructed of erodible materials.

9. TEMPORARY MULCH: Before ordering, obtain the review and prior approval from the University Landscape Architect for any mulch before use. When temporary seeding and protection would be required, but the time of exposure is 30 days or less, perform temporary mulching to prevent visible erosion. Place temporary mulch to an approximate 2-inch loose depth and apply tackifier.

10. CATCH BASIN/CURB INLET PROTECTION: Install and maintain catch basin or curb inlet protection on all existing inlets/basins receiving runoff from disturbed areas. All protection must be suitable for minimizing infiltration of silt into storm inlets as specified by the A/E and in the SWP3. The protection must be installed and maintained in accordance with the manufacturer's instructions.

11. TEMPORARY DRAINAGEWAYS: As erodible areas are exposed, construct temporary drainageways where needed to divert runoff from erosive soil areas to the silt traps or checks or silt ditches. Construct interceptor ditches or silt fences at the top of cut slopes when beginning excavation. Construct surface ditches, roadside ditches, and flumes to carry runoff from the site at the earliest possible time during the grading work.

    11.1 When needed, use pipe as liners for these temporary drainageways. The A/E will approve the type and location of the drainageways as well as the need for a liner. Install the pipe liner according to the Plans and Standard Drawings. Use pipe of any substantial type or material for overflow pipe in the construction of temporary silt basins and for flumes. When fill slopes have been constructed to such a stage that protection of the face of the slope from runoff is necessary, construct a temporary earth mound ditch or silt fence at the outer edge of the shoulder along the top of the embankment as directed by the A/E. Construct the ditch to form an earth

mound on the embankment side of the ditch and carry runoff from the roadway along the shoulder to the flumes and roadside ditches. Use temporary berm ditches at the top of fill slopes after completing the permanent seeding and protection work and until beginning the surface operations. Stabilize the ditch and mound by spraying with asphaltic material when deemed necessary.

12. CONSTRUCTION ENTRANCES. All ingress and egress points for construction vehicles (construction entrances) are to be constructed in accordance with the City of Columbus, Division of Sewerage and Drainage Erosion and Sediment Control Regulation.

## 01 60 00. PRODUCT REQUIREMENTS

## 01 66 00. PRODUCT STORAGE AND HANDLING REQUIREMENTS

.1 TRANSPORTATION AND HANDLING: Although scheduling of deliveries is the responsibility of the contractors, the A/E shall, by visual observation and by checking the contractor's estimates for partial payments, control deliveries to assure that storage spaces are not unduly encumbered with materials which cannot be installed in the work within a reasonable time. The General Conditions provide for payment for materials properly stored and insured at off-site locations.

.2 STORAGE AND PROTECTION: Specify that each contractor shall provide suitable weathertight storage sheds of sufficient size to hold materials required on the site at one time, for storage of materials which might be damaged by the weather. Outdoor storage of materials shall be confined to the areas within the construction fence.

Temporary structures shall be painted with at least one coat of paint; color shall be approved by the University Architect. No signs except small identification signs are permitted on sheds. Indoor storage shall be confined to unused spaces in the building. Corridors, stairs, and other public spaces shall not be used for storage. Special care must be exercised to protect electrical and HVAC equipment.

.3 STORAGE OF UNIVERSITY EQUIPMENT: Prior to completion of a building, large rooms at, or near, grade level with docking facility access shall be made available to the University for the secure storage of equipment. Details shall be arranged with the University Project Manager.

## 01 70 00. EXECUTION AND CLOSEOUT REQUIREMENTS

## 01 71 23. FIELD ENGINEERING

.1 LAYOUT DATA: A licensed engineer or surveyor shall be employed to layout structure coordinates, site improvements, and utilities, to determine all lines and elevations, and to verify same from time to time as the work progresses.

.2 GRADE LINES, LEVELS, AND BENCH MARKS shall be established and maintained by the General Contractor.

.3 BUILDING LAYOUT DATA: The General Contractor shall provide and maintain well-built batter boards at corners of buildings. As work progresses, he shall establish bench marks at each level and shall establish exact locations of partitions on rough floors as guides to all trades.

01 71 33. PROTECTION OF ADJACENT CONSTRUCTION

.1 ROOF PROTECTION: Specify that the Contractor shall provide protection for any roof area(s) that will be affected by the project. Protection shall consist of using ½-inch thick plywood with foam board attached. The composite board shall be laid with the foam towards the roof surface and shall be arranged to protect the roof from falling objects…i.e. hand tools, power hand tools and material. The protective covering shall be secured in a non-destructive fashion (i.e. weighted down) to avoid dislocation in inclement weather. This protection shall not relieve the Contractor from responsibility to repair any damage to the roof resulting from his work.

## 01 77 00. CLOSEOUT PROCEDURES

.1 CLEANING: The A/E should review Article 26 of the General Conditions to determine whether or not this subject is adequately covered; some amplification might be required. Contractor to clean all debris from roofing and flashing installation.

## 01 78 00. CLOSEOUT SUBMITTALS:

01 78 23. OPERATION AND MAINTENANCE DATA: Detailed requirements should be stipulated in the appropriate sections of the specifications. For items of General Construction, specify that information for care and maintenance be furnished for any item requiring more than ordinary custodial care. For mechanized equipment and electrical equipment, specify that operation manuals be provided in electronic Adobe Acrobat PDF format, and for special equipment stipulate that, in addition to operation manuals, the original equipment manufacturer provide demonstrations and operating instructions by factory trained employees to designated university personnel who will be operating the equipment. The following are merely suggestions for the kind of data which might be required. Also see 01 79 00. Provide electronic copies to the FOD envelope engineer along with care and maintenance for windows, storefronts, roofing and flashing.

.1 GENERAL CONSTRUCTION:

| Item | Data Required |
|---|---|
| Simulated masonry | Surface treatment |
| Cut stone | Damp proofing treatment |
| Glue-laminated wood | Finishes |
| Wood shingles and shakes | Preservative treatment |
| Fluid applied roofing | Instructions for patching |
| Single-ply membrane roofing | Maintenance and repair instructions |
| Aluminum, bronze, and S.S. Doors and windows | Care of finishes |
| Electronic locking systems | Wiring diagrams and operating instructions |
| Special flooring | Finishes and maintenance data |
| Chalkboards | Cleaning instructions |
| Motor-operated chalkboards | Wiring diagrams and operating instructions |
| Pedestrian control devices | Wiring diagrams |
| Sun control devices | Wiring diagrams |
| Equipment | Wiring diagrams and any special instructions required |
| Special Construction | Systems diagrams and any special instructions required |
| Elevators and hoists | Operating and maintenance instructions |

.2 PLUMBING:

| Item | Data Required |
|---|---|
| Piping systems | Printed diagrams - valve tag directory |
| Pumps, controls, and special systems | Wiring diagrams, operating instructions, parts lists, testing procedures |

.3 HEATING, VENTILATING, AND AIR CONDITIONING:

| Item | Data Required |
|---|---|
| Control systems | Printed diagrams and operating instructions |
| Valves | Type-written valve tag directory |
| Pumps, controls, and special systems | Wiring diagrams, operating instructions, parts lists, testing procedures |

.4 ELECTRIC:

| Item | Data Required |
|---|---|
| Communications systems | Point-to-point wiring diagrams and instruction manuals |

| | |
|---|---|
| Motor control centers | Overload heater charts |
| Equipment | Operating instructions |
| Fire alarm systems | Point-to-point wiring diagrams |
| | Product Data Sheets |

.5 OPERATION AND MAINTENANCE MANUALS: The A/E shall review the contractor's submittals of manuals for correctness and sufficiency of data and, after approving the contents and format, provide to the university in electronic format.

.5.1 FORMAT FOR MANUALS: Manuals shall consist of manufacturers' typed or printed operation instructions and maintenance data, shop drawings and catalog cuts, and other data listed herein, in electronic format following the university's Project Closeout Standards (https://fod.osu.edu/sites/default/files/project_closeout_standards.pdf).

01 78 36. AFFIDAVITS, AND GUARANTEES: In addition to the standard forms required by the contract documents, the following are required. When statements applying to these requirements are provided in these guides, the statements (or paragraphs similarly worded) shall be included in the specifications. The A/E can save a duplication of work at time of completion of construction if the specifications writer prepares a list of required affidavits, bonds, and guarantees as the specifications are prepared. Also see 01 33 13.

.1 AFFIDAVITS

| | | |
|---|---|---|
| Carpeting materials | - | Installer attests that correct materials were installed |
| Non-standard resilient | - | Installer attests that correct floor Materials were installed. |

.2 EXTENDED GUARANTEES

| | | |
|---|---|---|
| Roofing | - | 10 year maintenance guarantee |
| Flashing and sheet metal work | - | 10 year maintenance guarantee |
| Membrane waterproofing | - | 3 year maintenance guarantee |
| Sealants | - | 5 year guarantee |
| Silicone Sealants | | 20 year warranty |
| Metal windows | - | 2 year guarantee for windows/5 year guarantee for weatherstripping |
| Wood laminated plastic faced doors | - | Lifetime guarantee |
| Tinted glass and insulating glass | - | 10 year guarantee |
| Chalkboards | - | 20 year guarantee |
| Water chillers and air cooled condensers | - | 5 year guarantee |

gasketing of vertical systems
gasketing of vertical systems – 10 years warranty
on all wall cladding types (marble, metal Panel, glazing, etc.)

01 78 38. INSPECTIONS: Procedures shall be as outlined in the article entitled Construction and Closeout in the General Conditions

Inspection by the Authority Having Jursidiction (AHJ) is required before obtaining new utility services including electric, gas, steam, chilled water or domestic cold water. For connection to campus systems follow procedures in the Utility Service Connection and Inspection Standards (http://fod.osu.edu/sites/default/files/utility_service.pdf) and the Primary Electric Service Procedure (http://fod.osu.edu/sites/default/files/primary_electrical_service.pdf). When applicable, contractors are to complete the requirements in the utility inspection checklists before requesting a substantial completion inspection.

.1 All subgrade plaza deck enclosures and green roof installations shall be inspected by third party engineering. Include water testing and photos of waterproofing systems before waterproofing system is covered and any field changes to rectify testing failures to be noted in closeout document.

01 78 39. PROJECT RECORD (AS BUILT) DOCUMENTS:

.1 CONTRACTORS' RESPONSIBILITIES: These are stipulated in the General Conditions.

.1.1 AS-BUILT DOCUMENTS shall be made available for review during weekly progress meetings. The in-progress as-built documents shall be neatly and accurately marked to reflect the actual construction of the project in relation to the work that had been completed to the date of the meeting. The Contractor shall provide the A/E with the final and complete as-built documents upon final completion of the work.

.1.2 OPERATION AND MAINTENANCE MANUALS shall be made available for review during weekly progress meetings. The manuals shall be submitted

as equipment and systems are installed and prior to Demonstration and Training. Submittals shall include electronic Adobe Acrobat PDF format.

.1.3 Building Information Modeling (BIM): The Contractor shall meet, for projects four million dollars or greater, the BIM Project Delivery Standards (BIM PDS).

.1.4 Closeout Standards: The Contractor shall meet the university's Project Closeout Standards (https://fod.osu.edu/sites/default/files/project_closeout_standards.pdf).

.2 ARCHITECT/ENGINEER'S RESPONSIBILITIES: The A/E shall revise the construction documents in electronic format throughout the construction phase to accurately record the project's "as-built" condition. Identify the addenda, bulletin, change order, alternate, etc. for each item. Submit the revised electronic files as described in the university's Project Closeout Standards for review. Make any additional modifications and submit the electronic files. Also provide a copy of the specifications and general conditions modified by the addition of each accepted addenda, alternate, each accepted bulletin and change order and identification of the brands of materials which were accepted when choices were available to the contractors along with supporting electronic files. The University Closeout Coordinator/Project Manager will distribute this material to FOD Operations, the building project, and the FITS Archive Data Manager.

.2.1 ELECTRONIC FILE SUBMITTALS shall be presented in a logical manner with appropriate directory and subdirectory structures; as described in the university's Project Closeout Standards (https://fod.osu.edu/sites/default/files/project_closeout_standards.pdf)

.2.2 DATA NOT IN ELECTRONIC FORMAT, but part of the final document submittal, (i.e. details that are 'sticky-backed' onto the plotted sheets), shall be noted in the electronic files completely, including a description of the drawing(s) and scanned in Adobe Acrobat PDF format.

.2.3 Building Information Modeling (BIM): The Architect/Engineer shall meet, for projects four million dollars or greater, the BIM Project Delivery Standards (BIM PDS).

.2.4 Closeout Standards: The Architect/Engineer shall meet the university's Project Closeout Standards (https://fod.osu.edu/sites/default/files/project_closeout_standards.pdf).

.3 SUBMITTAL SHALL CONSIST OF: A database file which compares the Program of Requirements Assignable Square Footage to that of the Schematic Design Document, the Design Development Document, the Construction Document, and the As-Built Document.

This submittal must be in the following format:

TITLE BLOCK
Project Name:
Project Number:
Project total gross square footage (GSF):

| Column # | Column Header |
|---|---|
| 1 | PoR Item Number |
| 2 | PoR Item Name |
| 3 | PoR ASF |
| 4 | Schematic Design ASF |
| 5 | PoR/Schematic Design ASF Difference |
| 6 | Design Development Room Number |
| 7 | Design Development ASF |
| 8 | PoR/Design Development ASF Difference |
| 9 | Construction Document Room Number |

| Column # | Column Header |
|---|---|
| 10 | Construction Document ASF |
| 11 | PoR/Construction Document ASF Difference |
| 12 | As-Built Room Number |
| 13 | As-Built ASF |
| 14 | PoR/As-Built ASF Difference |
| 15 | Comments |

This file should also contain a subtotal by Program Item Number Group (e.g. all spaces under Program Item Number 1.0 would be subtotaled). A Project total ASF should also be included (totals all Program Item # Group ASFs).

.4 REQUEST FOR A/E'S FINAL PAYMENT: After the corrected electronic drawings have been reviewed and accepted by the University Project Manager ~~Architect~~ and FITS Archive Data Manager. Final payment of fees will not be approved until acceptable documents are received.

## 01 79 00. DEMONSTRATION AND TRAINING

.1 Specify that training is to be done by the original equipment manufacturer. (See Appendix T for a sample specification for system training). Training by the contractor or sales personnel is prohibited.

.2 Training shall be identified separate from “start-up and check-out” in the specifications.

.3 Specify that training shall be scheduled through the University Project Manager.

.4 Training shall include all materials; i.e. OEM manuals, books, plans, and specifications necessary for equipment troubleshooting and maintenance by in-house maintenance department, as appropriate.

.5 Specify that the OEM shall provide labor for miscellaneous support during the warranty term.

END OF DIVISION 01- GENERAL REQUIREMENTS

## 02 00 00. EXISTING CONDITIONS

## 02 30 00. SUBSURFACE INVESTIGATION

.1 Architect/Engineer RESPONSIBILITIES: The Architect/Engineer shall direct and provide site or subsurface investigation judged necessary in accordance with the Architect/Engineer's Agreement for professional services. This will include contacting Environmental Health and Safety within Facilities Operations and Development for any university records of site hazards, investigative work and surveyor reports, testing laboratories (including test borings), soil analysis (including load bearing capabilities) and related site analysis. Submit two copies of any site investigative reports to the University Architect. Also see (33 40 00).

.2 INFORMATION TO BE INCLUDED IN CONTRACT DOCUMENTS: Show all boring locations, cross sections and soil conditions. Also show all: existing conduits, drains, utility lines, sewers, tunnels, cables, trees, paving, walks, foundations and other objects or obstructions, whether in use or abandoned. State that information is for contractor's use and that in no way shall the University be held responsible for accuracy of the information.

.3 PROTECTION OF EXISTING LANDSCAPING: Protect all trees, walks, and planted areas during subsurface investigations. All existing site elements shall be left in their original condition. See section (32 10 00) for minimum design standards for paved areas. Coordinate all work with Facilities Operations and Development.

.4 PREPARATION OF PLANS FOR BORINGS: In the preparation of plans for boring locations, the Architect/Engineer shall study plans of existing underground utilities and shall locate borings to avoid these utilities. Maps showing underground installations are available for review upon request from Facilities Operations and Development.

## 02 40 00. DEMOLITION AND STRUCTURE MOVING

.1 STRUCTURE DEMOLITION: All foundations and basement slabs of structures shall be fully removed. A variance may be requested for special conditions.

## 02 44 00. EQUIPMENT MOVING

.1 RELOCATED EQUIPMENT: Special concern shall be taken with equipment relocated from existing installations for reinstallation. Establish schedule for removal and reinstallation through the University Project Manager. Identify a single contractor to be solely responsible for removal, disposal, re-installation and follow-up. Relocation of existing equipment shall include:

.1.1 Disconnecting and moving to new location.

.1.2 Restoration and capping of utilities at the old location.

.1.3 Specify that the contractor record existing piping arrangements to facilitate reinstallation.

1.4 The contractor shall be required to replace unsalvageable piping, ductwork, and wiring, and furnish any new piping, ductwork, and wiring as required to complete reinstallation, without additional cost to the University.

.1.5 The contractor is to provide a separate container for the recycling of paper, cardboard, and wood products.

## 02 82 00. HAZARDOUS MATERIALS AND ASBESTOS REMEDIATION

.1 HAZARDOUS MATERIALS AND ASBESTOS REMEDIATION: Federal and state regulations require that a thorough asbestos survey be completed for all renovation and demolition projects regardless of project size or age of the building. Ohio regulations require that these surveys be performed by person(s) certified by the Ohio EPA as an Asbestos Hazard Evaluation Specialist. For buildings which have a baseline asbestos survey report on file, the scope of work for the project shall be reviewed by an Asbestos Hazard Evaluation Specialist to determine whether or not the existing asbestos data adequately covers the project. The findings of this review shall be documented in writing. If the baseline asbestos survey report is determined to be insufficient for the project, a supplemental asbestos survey is required. Should asbestos-containing materials be disturbed during any renovation repair or demolition, the asbestos-containing materials must be properly removed and disposed of at an approved landfill by an Ohio-licensed Asbestos Hazard Abatement Contractor. All other hazardous materials to be impacted by renovations or demolitions shall be removed from the site and recycled or disposed of in accordance with applicable federal, state, and local regulations by properly trained and qualified contractors. Examples of hazardous materials in addition to asbestos include, but are not limited to: poly-chlorinated biphenyls (PCB) {Note: PCB building materials, such as exterior sealant shall not be tested for and assumed as PCB-containing when the date of installation is known to be between 1950's and 1970's.}, mercury containing components, tritium, and lead sheeting.

.1.1 The purpose of this building design standard is to provide the Architect/Engineer (A/E) with guidance in developing specifications to ensure that any asbestos or other hazardous materials testing documentation and abatement work is performed by a qualified and certified Environmental Consultant EC and licensed abatement contractor in compliance with all applicable regulations. The University's Office of Environmental Health and Safety (EHS) is responsible for managing the University's asbestos and for compliance with federal and state

regulations. EHS maintains a historical listing of sampling for asbestos in all University buildings throughout Ohio and must be contacted for direction with asbestos issues.

All repairs, renovations, or demolitions involving asbestos shall be performed in accordance with applicable federal, state and local regulations. In addition, Ohio State requires compliance with the following requirements:

a. At a minimum, final visual and air clearance inspections are required for the following projects:

i. Removal of 50 square feet/linear feet or greater of non-friable and/or friable asbestos materials. A variance may be requested from EHS for special circumstances.

ii. Removal of greater than 3 square feet/linear feet of non-friable or friable asbestos materials in sensitive areas (e.g. student housing/dorms, medical center facilities, etc.). A variance may be requested from EHS for special circumstances.

b. The University requires the Environmental Consultants (EC) to have a minimum of two (2) years of experience preparing abatement, drawings, designs and technical specifications and shall be certified by the Ohio EPA as an "Asbestos Hazard Abatement Project Designer". A project design shall be prepared for large and complex abatement projects such as those involving removal of greater than 160 linear feet or 260 linear feet of friable asbestos material, major fiber releases responses, multiple phases, special circumstances (elevator shafts, occupied areas, etc.). Please contact EHS for guidance.

c. The University requires the EC performing hazard materials assessments to have a minimum of two (2) years of experience performing asbestos surveys or asbestos material sampling. The EC performing asbestos confirmation surveys, including but not limited to obtaining bulk samples and quantification of ACMs shall be certified by the Ohio EPA as an "Asbestos Hazard Evaluation Specialist". The EC shall provide an electronic and hard copy of all Hazard Materials Assessment reports to EHS prior to the start of renovation or demolition activities.

d. The University requires the EC shall act as the University's compliance agent and be responsible for confirmation of asbestos-containing materials (ACMs), preparation of asbestos abatement technical specifications and drawings.EC shall assist in the Bidding Phase, review of submittals and RFI's, provide periodic inspections or full-time oversight, final visual inspections and clearance air testing services and provide all close-out documents required for the abatement within renovation or demolition project areas. The EC shall also clarify the working relationship and expectations of the abatement contractor, (EHS), and all other participants.

e. The University requires the EC performing monitoring, periodic observations or inspections, final visual inspections and clearance air testing to have a minimum of two (2) years of experience performing these tasks. The EC shall

be certified by the Ohio EPA to perform each asbestos-related activity being performed. The EC shall have experience performing work with State Agencies; University settings and or City Municipalities and shall provide substantial documentation on at least three projects of similar scope and extent.

f. The University requires of the EC the following when performing hazardous materials inspections or assessments:

1. Daily Phase Contrast Microscopy (PCM) air sampling to be conducted during bulk sampling of building materials. All PCM air data results are to be included with inspection or assessment reports.

2. Prepare a report for each asbestos assessment performed in accordance with Ohio EPA regulations.

3. In addition to the Ohio EPA report requirements, each report shall include a current copy of the applicable Ohio State building floor plan(s) with current space ID's used for all references to room(s) or spaces within the building.

4. Materials confirmed to contain 1% or less asbestos by PLM point counting procedures, shall be treated as an asbestos-containing material and removed by an Ohio-licensed Asbestos Hazard Abatement Contractor as such; however, disposal of materials containing 1% or less asbestos may be disposed of in accordance with applicable federal and state regulations. The contractor shall notify the receiving landfill that the materials contain 1% or less asbestos.

5. The EC shall not rely on historical Ohio State sampling data or sampling data collected by Ohio State or other consultants as a basis for classifying a suspect material as a non-asbestos-containing material. The EC is expected to support a materials non-asbestos containing material status with their own sampling data. Homogenous areas of building material which have been historically confirmed to be an asbestos-containing material shall not be refuted as non-asbestos containing material with additional sampling, unless:

    a. Historical samples were not point counted when permitted under NESHAP or,
    b. The EC uses their professional judgement to determine that a material is a non-asbestos containing material. The rationale and justification of this determination shall be clearly described in the written survey report.

6. All suspect building materials (including but not limited to newly installed materials, ceiling tiles, gypsum board, etc.) shall be sampled and analyzed utilizing Polarized Light Microscopy (PLM).

7. The EC shall utilize the current Ohio State report and database upload template when preparing baseline building survey reports. The individual locations and quantities for all identified or assumed asbestos materials shall be included.

8. The EC shall notify EHS electronically prior to commencement of any environmental-related survey or inspection work at Ohio State owned or leased buildings, regardless of client.

g. The University requires of the EC the following when performing on-site monitoring:

(1) Ensure that the environmental abatement contractor is performing all work in compliance with all applicable federal, state, and local regulations; including, but not limited to: EPA, OSHA, and the Ohio EPA.

(2) Primary calibration source shall be calibrated on an annual basis.

(3) Secondary calibration sources shall be calibrated quarterly.

(4) Environmental, ambient, area, and clearance samples shall be analyzed on a daily basis. The microscopist needs to participate in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Program (PAT) program for fiber counting and analyze air samples via the National Institute of Occupational Safety and Health (NIOSH) 7400 method. In addition, the microscopist shall have completed the NIOSH 582 Equivalent course training.

(5) Ensure that all air samples are collected within the breathing zone at an approximate 45-degree angle. All pumps shall be connected to electric via a Ground Fault Circuit Interrupter (GFCI), which should be directly connected to the electric source.

(6) Provide daily access to a daily logs / field notes, air data, and inspection forms.

(7) Contact Ohio State EHS immediately should any regulatory agencies visit the project site.

(8) A written report shall be prepared for each clearance inspection. The report shall include a written description of the clearance activities, details of the abatement contractors scope of work, a completed Ohio State "Asbestos Activity Visual Clearance Form", copies of the laboratories and consultants qualifications, a current Ohio State building floor plan depicting the locations of abatement work, sampling log(s), chain-of custody form(s), and a copy of the signed laboratory report(s).

h. The University requires of the EC the following when preparing closeout documentation. Review all environmental contractor closeout documents, which at minimum should include the documents listed in paragraph 4.8.

(1) Include the following documents within the closeout documents: a field report summarizing a description of the project and the hazardous materials abated, copy of the specifications / drawings, daily logs, inspection forms, and air data.

(2) Combine contractor documents with environmental consultant documents and submit copies to EHS electronically. A hard copy of the original signed landfill receipt must be submitted to EHS. Submit closeout documents to Ohio State within a timely manner of receiving signed landfill receipt.

.2 REGULATORY CONFORMANCE: When hazardous material work is involved, specifications must require conformance to all pertinent provisions of Federal, State of Ohio, and Local laws, codes, rules and regulations for removal or control of asbestos. These provisions include, but are not limited to:

.2.1 U.S. EPA National Emission Standards for Hazardous Air Pollutants (NESHAP); Asbestos: 40CFR (Code of Federal Regulations), Part 61, Subparts A and M).

.2.2 U.S. Department of Labor Occupational Safety and Health Administration (OSHA) Asbestos standards: 40 CFR Part 29, Section 1910.10001 (General Industry) and 1926.1101 (Construction).

.2.3 U.S. EPA, "Guidance for Controlling Asbestos-Containing Materials in Buildings" (the "Purple Book").

.2.4 ANSI Practices for Respiratory Protection (ANSI Z88-2-1969) and OSHA Personal Protection Equipment Standard: 29 CFR 1910 Subpart 1.

.2.5 U.S. EPA Comprehensive Environment Response, Compensation and Liability Act (CERCLA): 40 CFR 763.117 and .302.

.2.6 U.S. Department of Transportation: 49 CFR 171 and 172.

.2.7 Ohio EPA Asbestos Emission Control Rules: Ohio Administrative Code 3745-20.

.2.8 Ohio EPA Asbestos licensing Rules: Ohio Administrative Code 3745-22 and Ohio Revised Code Chapter 3710.

.3 QUALIFICATIONS FOR ASBESTOS ABATEMENT CONTRACTORS: Prior to bidding, contractors and/or subcontractors involved in hazardous materials abatement work shall be required to meet the following minimum requirements: These requirements and the documentation specified in .3.3 will be reviewed by University staff in determining whether the Abatement Contractor is acceptable to work on University projects:

.3.1 Required Certifications and Licenses

.3.1.1 The Asbestos Abatement Contractor shall be licensed by the Ohio EPA to perform asbestos abatement activities as required by state regulations.

.3.1.2 The Asbestos Abatement Contractor's Supervisor shall be certified by the Ohio EPA as an Asbestos Hazard Abatement Specialist.

.3.1.3 Each of the Asbestos Abatement Contractor's employees, including full-time employees, temporary employees and contract labor, shall be certified by the Ohio EPA as either an Asbestos Hazard Abatement Worker or as an Asbestos Hazard Abatement Specialist.

.3.2 Required Experience

.3.2.1 The Asbestos Abatement Contractor shall have a minimum of two (2) years of experience in asbestos and hazardous materials abatement projects.

.3.2.2 The Asbestos Abatement Contractor shall have experience performing work in similar settings and shall provide substantial documentation summarizing these projects including the project location, duration, scope of work, monitoring, documents, client contact information and any additional information requested.

.3.2.3 The Asbestos Abatement Contractor shall have experience on at least three projects of a similar scope and extent.

.3.3 The Asbestos Abatement Contractor shall report any Public Health Emergency Violations issued by state regulatory agencies within the past two (2) years and not have any previous unresolved or pending Public Health Emergencies.

.3.4 The Asbestos Abatement Contractor shall provide the following documents prior to the post-bid review meeting:

.3.4.1 References from previous projects:

a. Previous experience on at least three projects of a similar nature (such as pipe, ceiling, boiler insulation, etc.) and extent shall be documented.

b. Three to five references specific to the Contractor's proposed Supervisor for this project.

c. Each reference to include contact information and phone number for the Owner, Architect, Construction Manager, and Subcontractors.

d. Provide documentation of the project location, duration, scope of work, and client contact information.

e. Verification of years of experience in asbestos abatement projects, both for the contractor and for the supervisor.

f. Photocopies of Ohio EPA certifications for each of the Contractor's employees to be used on this project.

g. Positive identification via photocopies of valid driver's license or by other means as specifically approved by the Environmental Consultant for each of the Contractor's employees to be used on this project.

.3.4.2 Resume of proposed Supervisor for the project.

.3.4.3 Summary of current abatement projects. Include contract value and completion dates.

.3.4.4 Summary and background of any EPA violations over the past 7 years; as well as a statement as to how the violations were resolved (if applicable).

.3.4.5 Summary and background of any Ohio EPA or ODH violations over the past 7 years; as well as a statement as to how the violations were resolved (if applicable).

.3.4.6 Summary and background of any OSHA violations over the past 7 years; as well as a statement as to how the violations were resolved (if applicable).

.3.4.7 Copy of license to conduct asbestos hazard abatement activities.

4 GENERAL REQUIREMENTS – In addition to complying with all applicable federal, state and local regulations, the contractor shall:

.4.1 The contractor of a successfully bid project shall submit an asbestos abatement plan to EHS for review and to the EC for approval prior to commencing the work. The asbestos abatement plan shall have detailed written operating procedures describing control and removal techniques in accordance to applicable federal, state and local regulations.

4.2 Except for emergencies, the contractor shall electronically submit a notification form to EHS a minimum of five (5) business days prior to starting the abatement on-site. For emergency projects, the contractor shall electronically submit a notification form to EHS as soon as possible.

4.3 The contractor shall notify EHS immediately should any regulatory agencies visit the project site.

4.4 The contractor shall ensure that a competent person remain outside of the work area during abatement activities. A minimum of one person meeting the qualifications described above for supervisor shall be present on site at all times during any abatement work or activities and be able to communicate effectively with the workers and all governing authorities.

Except in the case of an emergency, anyone entering an asbestos abatement work area, which is an OSHA-defined “regulated area,” shall have received a minimum of 2-hour asbestos awareness training consistent with OSHA requirements. Anyone entering “regulated areas” shall wear appropriate personal protective equipment.

4.5 Except where materials have been assumed to be asbestos-containing, the contractor shall maintain a copy of the asbestos survey onsite at all times. The contractor shall also maintain a copy of their contracted scope of work. The EHS or EPA notifications do not satisfy this requirement.

4.6 The contractor shall ventilate all air-filtration devices (AFD) to the exterior of the building. The preferred procedure is to direct the exhaust ~~out of window~~ to the outside atmosphere, where exhaust air is unlikely to reenter the building. Care should be utilized to exhaust air away from areas of pedestrian traffic or other occupied areas. If this is not feasible due to the project conditions, submit alternative procedure to EHS or EC if applicable for approval.

Exhaust from AFDs shall not be directed into the airspace above a dropped ceiling or into existing laboratory hood ventilation.

4.7 The Asbestos Hazard Abatement Specialist (Supervisor) shall conduct a final visual inspection and ensure that all visible dust, specified asbestos and suspect and confirmed asbestos debris has been successfully removed and disposed of properly upon completion of the project.

4.8 The contractor shall include the following as part of the closeout documents: Completed Ohio State "Asbestos Abatement Closeout Checklist Form", Asbestos Abatement Project Field Report, daily logs, sign-in sheets, contractor license, BWC certificate, liability insurance certificate, supervisor and worker submittals (training certificate, Ohio EPA certification, medical (no social security information or HIPAA protected information), fit test) safety data sheets, personal air sample data, notifications (EPA and Ohio State EHS), third-party consultant final air clearance report (if performed), waste manifest and signed landfill disposal receipt, and original signed waste manifest.

## .5 ABATEMENT DESIGN SPECIFICATIONS

.5.1 The EC should download and review the Abatement Design Checklist for use in preparing the Abatement Technical Specifications for each project.

5.1.1 The Abatement Design Checklist can be downloaded from the EHS website. Go to http://www.ehs.osu.edu and click on the "Resources" tab and search "abatement design checklist" in the "Keyword" field.

END OF DIVISION 02 – EXISTING CONDITIONS

## 03 00 00. CONCRETE

.1 Minimum Standards to comply to: City of Columbus Construction and Material Specifications Item 511 for Concrete for Structures and Item 450 for Rigid Pavements.

.2 STRUCTURAL DESIGN OF SLABS: Consideration shall be given in the design of floor and roof slabs to provide exposed construction which can be used as finished ceilings insofar as practicable. Such construction, however, shall be planned only if requirements for limits in heat losses and for noise control can be met.

.3 DESIGN OF CONCRETE FOOTINGS: Bottoms of footings for exterior foundations should be at least 3'-0" below finish grade.

.4 Concrete mix designs shall be included in the shop drawings submission and submitted a minimum of 30 days prior to first concrete placement.

.5 Unprocessed bank run materials shall not be used in any concrete mix.

.6 All footing steps shall not exceed 2 feet for every 4 feet length of foundation walls.

.7 All earth-formed excavations shall be to a tolerance +6 inches.

.8 All construction joints below grade shall have water stops.

.9 All slab-on-grade control joints spacing shall be limited to a maximum spacing of 15 feet and the length should not exceed 1.5 times the width.

## 03 30 00. CAST-IN-PLACE CONCRETE

.1 ON-SITE SUPERVISION: The Architect/Engineer (A/E) or his approved representative shall observe the placing of all concrete and shall report non-compliance with specifications and drawings to the University Project Manager.

.2 TESTS: A minimum of 4 test cylinders prepared in accordance with ASTM C495 shall be taken during each day's placement. Tests should be based on quantity of concrete being placed. Tests shall be made by a testing laboratory employed and approved by the A/E. The cost of these tests will be reimbursed by the University. Written reports of the tests shall be sent directly to the A/E, with a copy to the University Project Manager. Laboratory shall make tests for wet density, dry density, and compressive strength of each specimen.

.3 MISCELLANEOUS REQUIREMENTS:

.3.1 INTERIOR BUILDING CONCRETE: Specify a mix which will give compressive strength of not less than 3,500 psi in 28 days; except that 1,500 psi concrete may be specified for filling over-excavations for footings.

.3.2 EXTERIOR CONCRETE: An approved air-entraining admixture shall be used for all concrete exposed to weather. Minimum strength shall be 4000 psi. Aggregate for exterior concrete exposed to view shall be washed crushed limestone only.

.3.3 INTEGRAL FINISH shall be specified for all floors. No separate topping.

.3.4 HARDENER TREATMENT: All finished floors that will be left exposed shall receive hardener treatment. Verify that the hardener used is compatible with the finish material curing requirements as listed by the manufacturer.

.3.5 PROTECTION FOR NOSINGS on concrete steps shall be provided by rounded cast nosing with non-slip surface. Nosing reinforcing to be epoxy coated.

.3.6 NON-SLIP SURFACING: Ramps, treads, and platform of stairs shall have non- slip surface when not covered with finish flooring materials.

.3.7 Minimum 10mil Vapor Barrier is required for Slabs on Grade.

.3.8 Post-tensioned concrete is prohibited in occupied structures.

.3.9 The minimum concrete protection for reinforcement as defined by ACI 318 shall be increased by 25% to ensure the minimum cover is maintained.

.3.10 CURING COMPOUND CAPABILITY: Curing compound manufacturer is to provide certification that their product is compatible with the resilient flooring or carpet adhesive scheduled for the space.

.3.11 Concrete is to be placed and consolidated at air temperatures between 40 and 85 degrees Fahrenheit for the first 72 hour period after placement. If these temperatures are unable to be maintained, ACI 305 and ACI 306 must be followed

.3.12 If the main structural element of a building is to be concrete, the University requires construction to be a Cast-in-Place concrete structure. The use of Precast, Prestressed, Post Tensioned concrete construction methods for structures require written approval from the university Engineer.

.3.13 CONCRETE MIX DESIGN: All specified grades in the construction document shall require the concrete mix to be proportioned on the basis of field experience or trial mixtures as defined in ACI 318.

## 03 33 00. ARCHITECTURAL CAST-IN-PLACE CONCRETE

.1 SPECIFICATIONS shall meet current standard specification for architectural concrete as published by the American Concrete Institute.

.2 A DETACHED SAMPLE PANEL ~~4 feet by 8 feet~~ of adequate size based on the project's visual and performance mock-up goals shall be erected at the site when cast-in-place architectural concrete is to be used. Panel shall be protected from construction operations, but shall be left exposed to the elements. Apply curing

compound if specified for the final product Panel shall be left in place until the University Architect has approved all architectural concrete.

## 03 34 00. LOW DENSITY CONCRETE

.1 ROOF FILL: Lightweight concrete for roof fill shall be made with expanded shale aggregate. For consideration of other materials, the A/E shall submit his recommendation with complete back-up documentation to the University Project Manager for the UA and UE's acceptance. ~~University Engineer~~

## ~~03 34 10. INSULATING CONCRETE ROOF DECKS:~~

~~Concrete shall have the following characteristics: Wet Density: 40-60 lbs. per cu. ft. Dry Density: 20-30 lbs. per cu. ft. Compressive Strength: 125-225 psi~~

## 03 35 43 POLISHED CONCRETE FINISHING

.1 Coordinate polished concrete finishing with Section 03 30 00 work. Floor flatness and floor levelness requirements are more stringent for this type of work and must be coordinated with the Structural Engineer.

.2 SAMPLE PANEL: A designated 50 sq. Ft. sample panel shall be used to demonstrate polished concrete finishing materials, equipment, and application methods. Retain acceptable sample panel during construction as a standard to judge complete work. Undamaged areas may remain as part of the completed work.

## 03 37 00. CURING COMPOUNDS

.1 Require a manufacturer's certification that the compounds used for architectural concrete are non-yellowing and non-staining. Compound must be applied to sample panels.

## 03 40 00. PRECAST CONCRETE

.1 ~~If approval was granted by the University Engineer to use precast concrete the following design standards are to be followed.~~ Using precast concrete requires approval from University Engineer.

## 03 41 00 PRECAST STRUCTURAL CONCRETE

.1 Base design and specifications on recommendations of the American Concrete Institute, ASTM tests and the Precast/Prestressed Concrete Institute (PCI). All structural precast shall have bonded strains.

## 03 41 10. PRECAST CONCRETE PANELS

.1 Base design and specifications on recommendations of the American Concrete Institute, ASTM tests and the Precast/Prestressed Concrete Institute (PCI).

## 03 41 13. PRECAST CONCRETE HOLLOW CORE PLANKS

.1 Use minimum 2 inches of concrete topping slab with 1.5 pounds per cubic foot of fibrillated polypropylene fibrous reinforcing for floor slabs.

.2 Plank design shall include consideration of the relative perceptibility of floor vibrations based on the use of the space.

.3 Verify that standard camber in plank is accurate for anticipated dead load deflection and that any residual camber does not significantly affect serviceability.

.4 Differential camber between adjacent precast planks shall be limited to 3/8 inches

## 03 45 00. ARCHITECTURAL PRECAST CONCRETE

.1 Follow the design and specification recommendations of the Precast/Prestressed Concrete Institute (PCI) for architectural precast concrete.

.2 Installer and Fabricator to be PCI-certified.

.3 Field-construct mock-ups for each finish color and texture variations.

.4 Field quality control, Special Inspection and testing by agency under University contract.

## 03 52 00. LIGHTWEIGHT CONCRETE ROOF INSULATION

.1. INSULATING CONCRETE ROOF DECKS: Concrete shall have the following characteristics:

Wet Density: 40-60 lbs. per cu. ft.
Dry Density: 20-30 lbs. per cu. ft.
Compressive Strength: 125-225 psi

END OF DIVISION 03 – CONCRETE

## 04 00 00. MASONRY

## 04 00 03. GENERAL PROVISIONS

.1 SPLIT COURSING: Only full coursing will be permitted at the head of any type of opening.

.2 OVERHUNG MASONRY: Construction where the masonry units are suspended using mechanical devices, or where the units extend beyond lower courses and mechanical support devices are required, are not to be used. Buildings being renovated/restored, which have such overhung structures, shall be examined for safety and a report of condition provided.

.3 USE OF INK MARKING PENS ON SURFACES of any kind of material is prohibited. Experience has shown that such marks bleed through paint and other finishes.

.4 ACID FOR MASONRY CLEANING: The cleaning solution must be included in applicable sections of the Specifications. Type of solution shall be approved by the University Architect's Office.

.5 BRICK SURFACE TREATMENT: Treating of brick surface with stain or other surface treatment or simulation to obtain a color blend is prohibited.

## 04 01 20. MASONRY RESTORATION AND CLEANING

.1 EXPERIENCE CLAUSE: A 10-year experience record of the subcontractor is required. Include the following paragraph in the specifications.

CERTIFICATION OF EXPERIENCE: Work shall be performed by experienced and skilled mechanics. The General Contractor shall furnish evidence that the subcontractor for restoration work has been engaged in the business of masonry restoration for a period of at least 10 consecutive years prior to the date of these specifications. Evidence or certification of experience shall be in letter form which, in addition to statement of experience, shall contain a list of at least five projects of comparable size and complexity which have been satisfactorily completed, a statement that proper equipment is available for use, and a statement that the work will be under the direct supervision of skilled mechanics only.

## 04 05 13. MORTAR

.1 MORTAR FOR LAYING MASONRY: May be ready-mixed or job mixed. Specify by types listed in ASTM C-270. Do not specify mortar, which may corrode steel

reinforcement or structure.

.2 POINTING MORTAR:

.1.1 Natural colored mortar shall be used unless otherwise directed for new building.

.1.2 Pointing mortar for clay facing tile masonry shall be made with white silica sand and white portland cement. See 04 21 00

.1.3 See 04 21 13.3 when mortar matching is required.

.1.4 Non-staining mortar shall be used for stonework. See 04 40 20.1.3.

## 04 05 19. MASONRY ANCHORAGE AND REINFORCING

.1 WALL TIES for masonry veneer or facing to metal stud wall back-up shall be stainless steel. Stainless steel bolts and nuts and stainless steel washers may be used. Sheet metal screws and similar attachments are not acceptable. Verify the need for seismic clips and anchoring for masonry veneer. Also see 04 04 20.1.1.1 for stone work requirements. Preferred limited use of masonry veneer on metal studs to 18 inches min above grade or to match existing construction.

.2 JOINT REINFORCEMENT: Wire mesh type is prohibited. Trussed type is preferred over ladder type. Provide ladder type joint reinforcement at vertically reinforced masonry walls and truss type in non-reinforced walls. Also see 04 21 00.1.

.3 VENEER ANCHORS: Provide engineered calculations for masonry anchors where the distance from the exterior face of the stud to the interior face of the masonry exceeds 4-1/2 inches. Calculations shall indicate compliance with ACI 530 and the Ohio Building Code and be stamped by a registered Ohio professional engineer.

## 04 05 23. MASONRY ACCESSORIES

.1 WEEP HOLES: Stamped aluminum, plastic and polymer mesh type louvered vents of size to fit full-height head joints in brickwork are preferred over treated sash cord or rope. ~~If cord or rope is specified, they shall be cotton cord or rope, and the material shall be left in place and cut off flush with the joint.~~ Artificial fiber ropes, such as nylon or polypropylene, are prohibited.

Mortar Net or a comparable mortar collection product shall be added at the base of the veneer and single wythe concrete masonry walls to prevent clogged weep holes.

.2 PLUG ANCHORAGE by use of wood or plastic is prohibited.

## 04 20 00. UNIT MASONRY

## 04 21 00. CLAY FACING TILE:

Select quality ceramic glaze, 8 W series.

.1 REINFORCEMENT: Structural facing tile partitions shall be reinforced every second course with approved joint reinforcement.

## 04 21 13. BRICK MASONRY:

Color and blend of face brick shall generally be specified to match brickwork in a specific adjacent building. Consult the University Architect regarding this requirement.

.1 EFFLORESCENCE TEST FOR FACE BRICK: Submit to the University Architect manufacturer's certification that bricks show no efflorescence when tested in accordance with ASTM Method C67.

.2 SAMPLE PANEL: Include the following paragraph in the specifications:

SAMPLE PANEL: Before starting work, build one sample panel for inspection and approval. Build panel on a firm foundation, in location indicated by the A/E. Panel shall be F-shaped, with long side a minimum of 5 feet 4 inches long by 3 feet 4 inches high, with one corner return at least 2 feet long and with one intersecting 6 inch thick concrete block wall 2 feet long. Construct long side and return of 8 inch concrete block and face brick. Panel shall show color range and texture of masonry units, bond, mortar joints, and workmanship. Completed masonry work in the building shall be equal to that shown in the approved panel. Do not remove panel until masonry work is completed or until removal is authorized.

.3 MATCHING MORTAR: If adjacent mortar is to be matched, samples of the original mortar are to be taken from the joints and analyzed for aggregate content, binder material, overall coloration, and other applicable characteristics. A 3 foot sample area of masonry joint is to be installed to demonstrate the color, texture, and tooling for approval by the A/E and the University Architect.

.4 COURSING: Brick shall be laid with modular coursing, three courses to 8 inches, unless otherwise required to match existing coursing.

.5 DESIGN: Face brick elevations shall include structural considerations for division of such elevations into panels to accomplish structural support of the brick face and expansion joints for control of thermal expansion damage. Designs, which include brick roof construction, shall not be used.

.6 NON-STANDARD BRICK is prohibited.

## 04 22 00. CONCRETE UNIT MASONRY:

Concrete block shall be used wherever feasible for interior wall finish. ASTM tests shall be indicated on all materials used below per Ohio Building Code requirements.

.1 CINDER BLOCK: The use of cinder block is prohibited.

.2 CONCRETE BLOCK, TYPES AND USES:

.2.1 LOAD-BEARING - normal weight, standard size.

.2.2 NON-LOAD-BEARING - lightweight, made with expanded shale aggregate and of standard size.

.2.3 EXPOSED EXTERIOR - washed crushed limestone coarse aggregate and washed limestone sand, only, shall be used.

## 04 40 00. STONE

## 04 40 20. CUT STONE:

.1 LIMESTONE: Buff Indiana Oolitic limestone shall be used, except where other types might be required to match existing stone.

.1.1 BACKS AND BONDING FACES shall be damp proofed with a water barrier as recommended by the Indiana Limestone Institute of America, Inc.

.1.2 LIMESTONE SHALL BE NO CLOSER THAN 4-INCHES TO GRADE, when adjacent to lawns and planting areas.

.1.3 SEALANT: Use a two-component, non-staining urethane elastomeric joint sealant for pointing stonework. Specify products that do not require priming of joint surfaces.

.1.4 ANCHORS, DOWELS, AND OTHER ACCESSORIES used in setting stone shall be stainless steel.

.1.5 HANDLING, PROTECTION, AND INSTALLATION shall comply with the recommendations of the Indiana Limestone Institute.

.2 MARBLE: Marble shall be domestic. Edges of marble window stools shall be eased.

.3 GRANITE: Granite shall be domestic. Granite may be specified for exterior stair treads when heavy traffic is anticipated.

.4 Provide field-construct mock-ups for each finish, color, and texture variation of stone, marble, and granite.

**04 42 00 Exterior Stone Cladding**

.1 PROHIBITED: Soft stone cladding from grade up to 36" above grade along paved walkways and drives due to snow salt melting deteriorating wall surfaces.

END OF DIVISION 04 - MASONRY

## 05 00 00. METALS

## 05 10 00. STRUCTURAL METAL FRAMING

.1 GENERAL PROVISIONS: Use of ink marking pens on surfaces of any kind of materials is prohibited. Experience has shown that such marks bleed through paint and other finishes. Also prohibited are any marking devices that would leave residual material on metal surfaces, such as ink, wax-based or felt markers.

.2 POWER OR POWDER DRIVEN ANCHORS: Refer to Appendix V Section 01 35 23 Safety Health & Environment 1.6 USE OF POWER ACTUATED FASTENER TOOLS.

## 05 12 00. STRUCTURAL STEEL

.1 Include a complete section in the specifications for this part of the work, in addition to the Structural Consultant notes on the drawings. The Architect/Engineer is responsible for complete coordination of statements in the specifications and the notes on drawings.

.2 PROVISIONS FOR VERTICAL EXPANSION: In buildings designed for future vertical expansion, structural steel shall be erected within tolerances stipulated in the AISC Code of Standard practice.

.3 AFFIDAVIT FROM ERECTOR: The General Contractor shall be required to provide an affidavit, at the completion of the job, to the effect that the structural steel frame is plumb and level within the normal tolerances specified in the applicable code.

.4 RECORD OF ERECTION: The General Contractor shall provide a certified survey by a registered Civil Engineer showing the exact location of the centers and elevations of the columns at their topmost level, exactly as installed. This information shall be incorporated into the "record" drawings.

.5 HANGER RODS: Support shall have a minimum of double nuts and with burr threads.

.6 VIBRATION: Floor design shall include consideration of the relative perceptibility of floor vibrations based on the use of the space.

.7 CAMBER: Verify that the design camber is accurate for the anticipated dead load deflection and that any residual camber does not significantly affect serviceability.

.8 All steel members exposed to weather shall be hot-dipped galvanized.

.9 Obtain written approval from structural engineer of record for any beam web penetrations that are not shown on the construction documents. All web penetrations shall be recorded in the record documents and as builts.

.10 Design in accordance with Applicable edition of the AISC Manual of Steel Construction

## 05 20 00. METAL JOISTS

.1 MANUFACTURER'S CERTIFICATE of compliance with Steel Joist Institute (SJI) Specifications is required.

.2 PRIME COAT AND TOUCH-UP PAINTING will be considered adequate for joists, except where subjected to moisture or where exposed to view. Asphalt coatings are not permitted on metal joists that are to remain exposed and receive painted finish.

.3 Design in accordance with the SJI Standard Specification and Load Tables

## 05 30 00. METAL DECKING

.1 MANUFACTURER'S CERTIFICATE of compliance with Steel Deck Institute Specifications is required as a submittal to the A/E for review and approval during the construction of the project.

.2 PRIME COAT AND TOUCH-UP PAINTING will be considered adequate for metal deck, except where subjected to moisture or where exposed to view.

.3 Design in accordance with the latest edition of the SDI Design Manual.

.4 Design deck as diaphragm in accordance with the latest SDI Diaphragm Design Manual.

## 05 40 00. COLD-FORMED METAL FRAMING

.1 A manufacturer's certificate of compliance with American Iron & Steel (AISI) specification SG02-1 North American Specification for the Design of Cold-Formed Steel Structural/Members and SG-973 Cold-Formed Steel Design Manual is required as a submittal to the A/E for review and approval during the construction of the project.

.2 COLD-FORMED METAL STUD SYSTEM: Studs and furring strips shall be spaced 16 inches on center, maximum.

.3 For projects over $200,000 Engineering Responsibility: Prepare shop drawings, design calculations and data by a qualified professional engineer. A professional engineer who is registered in the state of Ohio.

.4 Deflection Criteria: L/600 for exterior brick veneer, maximum 3/8 inch over full live and dead loads.

.5 Interior loads: minimum 40 pounds per square foot on all horizontal surfaces.

.6 CONNECTIONS: Welding is prohibited

.7 BRIDGING: If only one face of the wall is sheathed then provide bridging at 48 inches on center, minimum.

## 05 50 00. METAL FABRICATION

.1 GALVANIZING REQUIREMENTS: All ferrous metals in exterior assemblies or exterior walls to be hot dipped galvanized after fabrication.

.2 MISCELLANEOUS METAL FRAMING FOR ELECTRICAL SUPPORT SYSTEMS: If electrical equipment is attached to support framing, the Electric Contractor shall provide in their bid the work associated with coordinating and installing adequate framing for all electrical equipment that is attached to and supported by the metal framing. See Facility Services-3.15.

.3 LINTELS FOR PLUMBING, HVAC, AND ELECTRICAL INSTALLATIONS: Specify that the General Contractor furnish lintels for all openings through walls when openings are shown on the architectural or structural (General Contract) drawings. Note all such lintels and openings to require coordination of work and exact locations, by affected contractors. All such plumbing, HVAC, electrical, and sprinkler openings must be coordinated and shown on the Architectural and/or Structural Drawings.

.4 FASTENERS: All fasteners in exterior assemblies or exterior walls to be stainless steel

## 05 51 00. METAL STAIRS

.1 STAIR TREADS FOR PUBLIC-ACCESS STAIRWAYS shall be concrete with cast metal nosings. Nosings shall be shaped to a radius; square nosings are prohibited.

**STUDENT LIFE:** Metal stairs shall be stainless steel in high traffic or high visibility areas with concrete stair treads and cast metal nosing.

.2 STAIR TREADS FOR ROOF ACCESS, EQUIPMENT ROOM ACCESS, AND LADDERS shall be metal with each tread to be the full width of the stair or ladder. Alternating treads are prohibited.

.3 A MANUFACTURER'S CERTIFICATE of compliance with the Architectural Products Division of the National Association of Architectural Metal Manufacturer's AMP 510 Metal Stairs Manual materials, construction and installation specification is required as a submittal to the A/E for review and approval during the construction of the project

.4 Metal pan stair treads and landings filled with concrete, terrazzo, etc. shall be prohibited for exterior stairs. Special permission from the University Engineer is required for use of metal pan stair treads and landings for interior main entry stairs.

## 05 52 00 METAL RAILINGS (PIPE AND TUBE)

.1 Face mount handrails along ramps and elevated walking surface instead of core drilling mounts to prevent concrete blowouts of edge drilling mounts.

## 05 53 00. GRATINGS

.1 Ferrous gratings shall be hot-dip galvanized and designed to support a minimum live load of 100 pounds per square foot. Galvanized hardware cloth shall be installed under all areaway gratings.

.2 A MANUFACTURER'S CERTIFICATE of compliance with ANSI/NAAMM National Association of Architectural Metal Manufacturer's MGB531 Metal Bar Grating Manual materials, construction and installation specification is required.

END OF DIVISION 05 – METALS

## 06 00 00. WOOD, PLASTIC, AND COMPOSITES

## 06 00 03. GENERAL PROVISIONS

.1 USE OF INK MARKING PENS ON SURFACES of any kind of materials is prohibited. Experience has shown that such marks bleed through paint and other finishes.

.2 ANCHORAGES: POWER OR POWDER DRIVEN ANCHORS: Refer to Appendix V Section 01 35 23 Safety Health & Environment 1.6 USE OF POWER ACTUATED FASTENER TOOLS.

## 06 05 73. WOOD TREATMENT

.1 PROTECTION AGAINST DECAY: Wood used in conjunction with roofing installations, canopy structures, and wood which is installed in contact with concrete or masonry shall be pressure treated with an approved preservative to meet American Wood Preservers Association (AWPA) Standards. Other installations shall receive prime coats suitable for finishes specified as soon as installations are completed. Back prime where dampness or warping is anticipated. Wood preservatives containing arsenic such as Chromated Copper Arsenate (CCA) for exterior construction above ground or in ground contact or fresh water is generally prohibited unless the treated materials meet EPA regulatory requirements of structural members.

***Commentary:*** *Structural posts of "post frame" type construction in agricultural applications may be CCA treated wood. Fasteners in CCA treated wood shall be hot dipped galvanized or stainless steel.*

.2 The minimum chemical retention (lbs / cubic foot) for wood above ground is to be 0.25, for wood in contact with the ground or fresh water immersion is 0.40, and wood in the ground (structural) 0.60.

.3 After cutting treated lumber, the cut end is to be retreated. Fire retardant treated wood products: Contractor shall adhere to all manufacturer's instructions and limitations for cutting and ripping to maintain product rating.

.4 All wood blocking, sawn lumber and plywood shall be fire resistant treated.

.5 All fasteners that contact treated wood (including fire retardant treated wood products) shall be hot dipped galvanized or stainless steel.

.6 FIRE RETARDANT TREATED WOOD: Prevent exposure to precipitation during shipping, storage, and installation.

## 06 10 00. ROUGH CARPENTRY

.1 WOOD FRAMING: Stud and furring strip shall be fire resistant treated and spaced 16 inches on center, maximum.

.2 WOOD BLOCKING: All wood blocking shall be fire resistant treated.

.3 Fire retardant treated wood products: Contractor shall adhere to all manufacturer's instructions and limitations for cutting and ripping to maintain product rating.

## 06 13 00. HEAVY TIMBER

.1 TIMBER TRUSSES: With the shop drawings, a complete design analysis of structural components shall be submitted. Data shall bear the seal and signature of a professional engineer, registered in Ohio, attesting that the design of trusses meets requirements of the Ohio Building Code (OBC) and design loadings.

## 06 17 00. SHOP-FABRICATED STRUCTURAL WOOD

.1 WOOD TRUSSES: Same as 06 13 00.1.above.

## 06 20 00. FINISH CARPENTRY

~~.1 MATERIALS AND FABRICATION: Conform to Architectural Woodwork Institute specifications for Custom quality work.~~

## 06 22 00. MILLWORK

.1 MATERIALS AND FABRICATION: Refer to the Architectural Woodwork Institute "Quality Standards", latest edition. Use "Custom Grade" for standard finish carpentry and millwork components, trim and paneling. Use "Premium Grade" for unique and special projects or features within a project.

.1.1 Do not deliver finish carpentry and millwork until the building is enclosed and weatherproof, wet work in the space is completed and dry, the HVAC system is operating and maintaining temperatures and relative humidity at occupancy levels for the remainder of the construction period. Humidity levels shall be maintained between 25 to 55 percent unless specifically directed otherwise. ~~The Space in which millwork is to be installed needs to be engineered with appropriate humidity controls to maintain optimum relative humidity of 25-55%.~~

.1.2 Wood for architectural use needs moisture content within the optimum range of 5-10%.

.1.3 Condition finish carpentry and millwork materials to average prevailing humidity in installation areas for a minimum of 24 hours unless a longer conditioning time is recommended by the manufacturer.

.2 LUMBER MATERIALS: Comply with AWI Quality Standards "Lumber" section.

Ease edges of lumber less than 1 inch thick to 1/16 inch radius and edges of lumber greater than 1 inch thick to 1/8 inch radius.

.3 SHEET MATERIALS: Comply with AWI Quality Standards "Sheet Products" section.

.4 HIGH PRESSURE PLASTIC LAMINATE: NEMA LD3.

Horizontal Surfaces: HGS, 0.048 inch nominal thickness.
Vertical Surfaces: VGS, 0.28 inch nominal thickness.
Laminate Backer: BKL, 0.020 inch nominal thickness.

.5 SITE TOLERANCES

.5.1 Maximum variation from true position: 1/16 inch.
.5.2 Maximum offset from true alignment with abutting materials: 1/32 inch.

.6 FACTORY FINISHING: Factory finish wood millwork items unless otherwise required to meet project conditions. Comply with AWI Quality Standards "Finishing" section.

## 06 40 00. ARCHITECTURAL WOODWORK

.1 CASEWORK AND CABINET WORK: Materials and fabrication shall conform to Architectural Woodwork Institute specifications for "Premium Grade" work. Written certification is required from the fabricator that Architectural Woodwork materials, construction and installation comply with the specified standards.

.1.1 Do not deliver finish carpentry and millwork until the building is enclosed and weatherproof, wet work in the space is completed and dry, the HVAC system is operating and maintaining temperatures and relative humidity at occupancy levels for the remainder of the construction period. Humidity levels shall be maintained between 25 to 55 percent unless specifically directed otherwise. ~~The Space in which Architectural Woodwork is to be installed needs to be engineered with appropriate humidity controls to maintain optimum relative humidity of 25-55%.~~

.1.2 Wood for architectural use needs moisture content within the optimum ranges of 5-10 percent.

.1.3 Condition finish carpentry and millwork materials to average prevailing humidity in installation areas for a minimum of 24 hours unless a longer conditioning time is recommended by the manufacturer.

.1.4 DOOR AND DRAWER FRONT STYLE: Flush overlay.

.1.5 1MM Edgebanding on all shelf edges. All cut substrate edges to be sealed regardless of whether they are visible after installation. This includes bottom edges to prevent absorption from spills. Sealing requirement shall prevent moisture penetration and leave the edge cleanable.

.2 SURFACE DEFINITIONS:

.2.1 Cabinet doors and drawers shall have plastic laminate applied to "Exposed" and "semi-exposed" surfaces.

2.1.1 Exposed Exterior Surfaces: Defined as all exterior surfaces exposed to view, including the following:

a. All surfaces visible when doors and drawers are closed, including knee spaces.
b. Underside of wall hung cabinet bottoms more than 40 inches above the floor and cabinet bottoms behind light valances and bottom edge of light valances.
c. Cabinet tops under 80 inches above the finished floor or if 80 inches and over and visible from an upper building level or floor.
d. Visible front edges of stretchers, ends, divisions, tops, bottoms, shelves, and nailers.
e. Sloping tops of cabinets that are visible.
f. Casework surfaces visible after installation with doors and drawers closed. Wall hung cabinet bottoms more than 40 inches above the floor. Visible members in open cases or behind clear glass doors.

2.1.2 Exposed Interior Surfaces: Defined as all interior surfaces exposed to view in open casework or behind transparent doors, including the following:

a. Shelves, including edgebanding.
b. Divisions and partitions.
c. Interior face of ends (sides), and bottoms, including pull-outs. Also interior surfaces of cabinet top members 36 inches or more above the finished floor.
d. Interior face of door and applied drawer fronts.

2.1.3 Semi-Exposed Surfaces to be Finished as Exposed: Defined as those interior surfaces only exposed to view when doors or drawers are opened, including
a. Shelves and edgebanding.
b. Divisions.

c. Interior face of ends (sides), and bottoms, including a bank of drawers. Also interior surfaces of cabinet top members 36 inches or more above the finished floor.
d. Drawer sides, subfronts, backs, and bottoms.
e. The underside of cabinet bottoms between 24 inches and 42 inches above the finished floor.

.2.2 Remaining Concealed Surfaces of the cabinet shall be considered "Semi-Exposed".

2.2.1 Concealed Surfaces to be Finishes as Semi-Exposed: Sleepers, web frames, dust panels, and other surfaces not visible after installation.

**Wexner Medical Center:** All interior joints and exposed edges shall be sealed. All core surfaces and edges shall be finished, exposed core materials are prohibited. Coordinate with Wexner Medical Center planner for cabinet locations that require sealant (food service areas).

.3 HIGH PRESSURE PLASTIC LAMINATE: NEMA LD3.

Horizontal Surfaces: HGS, 0.048 inch nominal thickness.
Vertical Surfaces: VGS, 0.28 inch nominal thickness.
Laminate Backer: BKL, 0.020 inch nominal thickness.

.4 CABINET FINISHES: Wood grain veneer direction shall be vertical. Horizontal grain may be used in special locations determined by the University. Back side of doors to match face laminate.

.4.1 Plastic Laminate Casework:
a. Exposed Exterior Surfaces: High pressure plastic laminate.
b. Exposed Interior Surfaces: High pressure plastic laminate. Open cabinets may be wood grain melamine to match wood grain plastic laminate.
c. Semi-Exposed Surfaces Finished as Exposed: High pressure plastic laminate.
d. Concealed Surfaces Finished as Semi-Exposed: Low pressure plastic laminate or melamine.
e. Exposed Edges: Extruded PVC, convex shaped, smooth finish. Doors and drawers edging shall be 3 mm thick. Cabinet face edging shall be 1 mm thick.
f. Concealed Edges: Minimum low pressure plastic laminate or melamine or same material as panel surface.

.4.2 Wood Casework:
a. Exposed Exterior Surfaces: Wood veneer.
b. Exposed Interior Surfaces: Wood veneer to match Exposed Exterior Surface.
c. Semi-Exposed Surfaces Finished as Exposed: Wood veneer that is compatible with Exposed Exterior Surfaces.

d. Concealed Surfaces Finished as Semi-Exposed: Wood, manufacturer's option.
e. FACTORY FINISHING: Factory finish wood cabinet items unless otherwise required to meet project conditions. Comply with AWI Quality Standards "Finishing" section.
f. Edges: Wood to match Exposed Exterior Surfaces.

.5 MOCK UP: Provide mock ups of typical base cabinet, wall cabinet, and countertop, including backsplash, hardware, finishes, and plumbing accessories.

5.1 Retain mock ups: during construction in an undisturbed condition as a standard for judging completed work. Accepted in-field mock ups that have not been damaged may remain as part of the final work.

.6 CABINET HARDWARE: Stainless steel, No. 4 finish.

.6.1 Hinges: Five-knuckle hinges with hospital tip at clinical / patient care areas and other high use spaces. Concealed hinges can be used in more specialty areas. Verify with the university.

**Wexner Medical Center:** Premium grade concealed hinges to be used for public-facing casework.

.6.2 Pulls: Pulls shall meet ADAAG. Back mounted, solid metal only, no plated pulls accepted.

**Wexner Medical Center**: Style to be directed by OSUWMC
For public areas: https://www.mockett.com/dp128.html
For clinical areas: https://www.mockett.com/dp57.html.

.6.3 Adjustable Shelf Supports: Side-mounted system using multiple holes for pin supports and coordinated self-rests, polished chrome finish, with 1 inch spacing adjustments Screw shelf to pin.

.6.4 Drawer Slides: Steel, 2-section type with nylon, ball bearing rollers for standard drawers and 3-section full extension drawer slides with ball bearings and nylon rollers for file drawers. Slide lengths and ratings shall suit particular applications Self-closing.

6.5 Plastic access grommets for wiring; - verify size from IT – they usually want the 3" hole, which accommodates plugs up to 2-3/4". https://www.mockett.com/grommets-wire-management/round-plastic-grommets/xg.html.

6.6 Plastic grille vents for IT equipment:3-7/8" air vent grommet with ZG1 liner https://www.mockett.com/grommets-wire-management/air-vent-grilles/plastic/zgavg2.html; https://www.mockett.com/zg1.html; 2-9/32" and EDPAD1 liner https://www.mockett.com/edpavg2.html; https://www.mockett.com/edpad1.html

**Wexner Medical Center:** Consult OSUWMC Space and Facilities Planning for hardware selection.

.7 COUNTERTOPS Provide drip edge routing at underside of countertop to prevent spills from flowing into base cabinets. Post-formed roll-up lip counter edges are not preferred.

.7.1 Provide 14-gauge Type 316 stainless steel countertops. Edges to be 1-1/2" double turn-down. Substrate to be Type 430 stainless steel hat channels. All exposed edges to be enclosed, welded, ground smooth. All Exposed surfaces to be polished to a #4 finish.no preferred

## 06 61 16. SOLID SURFACE FABRICATIONS

.1 MATERIALS AND FABRICATION: Most solid surface materials expanded approximately 1/32 inch for every 12 inches of material. Allow for appropriate expansion space. If solid surface is in a location that receives direct sunlight, an increase in potential expansion should be anticipated.

.1.1 UNDERLAYMENT: All horizontal solid surface shall have an underlayment of plywood or MDF. Particleboard as an underlayment is prohibited. Use moisture resistant underlayment when a sink or other source of water/moisture is present.

a. Ladderback Underlayment: Use a ladderback design wherever the surface will be exposed to heat exceeding 175 degrees F. Ladderback design shall be in accordance with the solid surface manufacturer's recommendations.
b. Solid Underlayment: Typical in all other locations.
c. Adhere solid surface to the underlayment with 100 percent silicone adhesive.
d. When using 1/2 inch thick solid surface, use 1 inch underlayment. Thinner underlayment may be used, however span capabilities will be reduced.

.1.2 FRONT EDGES: Stacked edge is preferred, unless the solid surface product choice requires a dropped edge. Ease edges.

.1.3 BACK SPLASH and SIDE SPLASH: Separate from countertop with clear silicone sealant at all edges. Ease top and side edges. Square edge where splashes meet countertop.

.1.4 OPEN FRONT INSTALLATIONS:

a. Provide continuous wall ledger.
b. Provide stacked front edge.
c. Provide continuous front structural member if possible. When a front structural support is not used, space supports at minimum 2'-8" on center for countertops not scheduled for exceptional heavy loads. Space supports at 2'-0" on center for countertops with known heavy loads.
d. Mechanically fasten countertop to support brackets (screws up through the bracket into underlayment).

.1.5 COUNTERTOPS: Provide drip edge at underside of countertop to prevent spills from flowing into base cabinets. Roll up lip counter edges no preferred.

2 FABRICATOR/INSTALLER: Approved by the solid surface manufacturer with not less than 3 years documented experience in fabrication installation of solid surface components of the type required for the project.

.3 WARRANTY: Manufacturer's 10 year warranty against defects in material. Warranty shall provide material and labor to repair or replace defective materials.

.4 DEMONSTRATION: Provide a Commercial Care and Maintenance video and review maintenance procedures and warranty details to the University Project Manager at project completion.

**Wexner Medical Center:** Request through University Project Manager for a copy of the Interior Finish Schedule for approved manufacturer, type, and color.

**Wexner Medical Center:** Demonstration deliverables to be provided to "Wexner Medical Center Environmental Services and Facilities Operations".

END OF DIVISION 06 – WOOD AND PLASTIC

## 07 00 00. THERMAL AND MOISTURE PROTECTION

.1 TEST REPORT: Submit documentation that materials are an acceptable component of an NFPA 285 approved system. Work shall be coordinated with the sections the comprise the exterior wall assembly to ensure a complete NFPA 285 approved system. (List each section as applicable to the project).

.2 NFPA 285 COMPLIANCE: Include the following as part of "Quality Assurance" in each specification section affected by NFPA 285 assembly systems: The basis of design products specified in each section that includes exterior wall assembly materials shall be selected because they constitute an approved NFPA 285 tested assembly, which requires coordination with other sections affected by NFPA 285 testing. Using products other than the basis of design requires documentation by the Contractor that the installed system is a tested and approved NFPA 285 design.

## 07 10 00. DAMPPROOFING AND WATERPROOFING

.1 Calculations and diagrams shall be provided to demonstrate that the dew point of all foundations/roofs/walls with waterproofing falls on the outside of the building's waterproofing membrane. The A/E shall be responsible to demonstrate where the condensation will occur and substantiate that the wall is able to dry when the condensation vaporizes and will not become entrapped in the building cavity / assembly.

## 07 11 00. DAMPPROOFING

~~FOUNDATION WATERPROOFING: Shall be provided at all below grade vertical and horizontal surfaces.~~

.1 EXPOSED BITUMINOUS TYPE: Shall not be allowed on surfaces of exterior walls and walls below grade.

.2 Allowed at exterior site walls retaining earth higher than the adjacent walking surface. Exterior surfaces of interior wythe in cavity walls. Interior masonry surfaces at wet locations.

## 07 12 00. WATERPROOFING

.1 FOUNDATION WATERPROOFING: Shall be provided at all below grade vertical and horizontal surfaces.

.2 HORIZONTAL WATERPROOFING: The following are minimum requirements to assure adequately designed waterproof floors for machine and equipment rooms

and other areas subject to flooding from equipment failure or seepage from exterior sources.

3. DRAWINGS shall fully detail the installation of the membrane. Continuous membrane risers shall be provided above the finished floor surface at vertical walls, pads, curbs, pipes, and ducts through the slab. All floor penetrations must be sleeved to a height of 4" above the finished floor. Risers shall be at least as high as the lowest curb and shall be bonded to the vertical surface. Concrete foundation walls around elevator pits and around basements, from grade to footings, shall be treated with membrane waterproofing. When elevators open into mechanical rooms and other areas subject to flooding, opening sills must be 4" above the finished floor to keep flood water out of elevator shaft. A concrete ramp shall be constructed from the elevator door sill to the floor level.

.4 SPECIFICATIONS shall provide for a heavy duty, permanent waterproofing type of membrane capable of adjusting to building movements without breaking the membrane seal. When rubber or plastic membranes are specified, a five (5)-year experience clause with written documentation by the installer shall be required in the specification. The Contractor's submittal shall be required to be provided to the A/E during the construction phase.

.5 TIMING OF INSTALLATIONS: When surface applied membrane waterproofing is specified, the specification must prohibit scheduling of installation until after the major work of all other trades has been completed. Inaccessible surfaces under equipment and housing foundations, pads, and curbs shall be waterproofed in advance of floor areas. Surface membrane must be protected until acceptance of the space by the University. Surface applied membrane, except under equipment, must be accessible for repair.

.6 TESTING: Specifications shall provide for the testing of waterproofed membrane floors by flooding. Floors shall be filled with water to within 1/4 in. of top of lowest curb for a period of 6 hours and closely inspected for leaks; tests shall be witnessed by designated representatives of the University. The test shall not relieve the contractor of maintaining a leak free floor until the end of the warranty period.

.7 MAINTENANCE GUARANTY: The General Contractor, manufacturer and installing subcontractor shall furnish a written three (3) year guaranty on the complete membrane waterproofing installation. Submit the guaranty in triplicate. The guaranty shall begin when the space is completed and accepted for use by the University.

The guaranty shall cover, at no cost to the University, all labor and materials required for repair or replacement to correct leaks, faulty materials or workmanship.

.8 TYPES: Sheet or Fluid-Applied Membrane Waterproofing at exterior decks, concrete slabs on grade, and foundation walls and footings; and Bentonite Waterproofing at exterior decks, and foundation walls and footings

**07 19 00 WATER REPELLENTS:**

Water repellent coatings on exposed surfaces of exterior – concrete block, and precast concrete shall be coated with a penetrating clear, colorless, non-gloss, non-yellowing, non-staining, mildew-resistant, breathing type, non-vapor barrier, water-based water repellent applied by an applicator experienced with the material applied. The product shall include a ten (10)-year warranty and will be vapor permeable to allow moisture to escape from inside of the wall.

Water repellent coatings on brick, limestone and sandstone are prohibited for all buildings where the wall system is a mass masonry system.

**07 20 00. THERMAL PROTECTION.**

1 Types: Board type under slabs-on-grade, on foundation walls, and in exterior cavity walls; Acoustical blanket type in interior partitions.

**07 22 00. ROOF DECK INSULATION:**

All insulating materials, including cant strips and tapered edge strips, shall be non-hygroscopic. Wood fiber composite insulation is prohibited. A suitable cover board as recommended by the National Roofing Contractors Association (NRCA) shall be installed over all polyisocyanurate type insulation board. Compatibility with roofing materials or separation is mandatory for wood, treated wood, fibrous materials, insulation, etc. See 07 50 10.5. and 07 50 10.6.

.1 Fire resistance rated polysocyanurate roofing board insulation shall use non-halogenated flame retardants.

.2 Provide thermal insulation to meet current applicable energy codes. If physical limitations inhibit providing insulation thickness to meet code, provide the university with a variance report stating the limitations and the A/E's opinion of cost to overcome them.

3. Insulation shall be provided in a minimum of 2 layers. Board joints shall be staggered between layers.

4. Provide insulation materials and insulation fastening in accordance with the primary membrane material manufacture's latest printed instructions and recommendations, and is accordance with FM Approval Standards.

## 07 24 00. EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS):

These materials are not allowed for use on University projects without the express written consent of the University Architect.

## 07 26 00 VAPOR RETARDERS

.1 Roofing systems shall consider including Class I vapor retarders (0.1 perms or less) based on a careful and comprehensive analysis of the roofing assembly. Completely seal all penetrations, tears, openings, and punctures that may occur during construction. Provide transition material to bridge and seal adjacent air barrier materials.

## 07 27 00 AIR BARRIERS

The airtight components of the building enclosure and the joints, junctures and transitions between materials, products, and assemblies forming the air-tightness of the building enclosure are called "the air barrier system". Services include coordination between the trades, the proper scheduling and sequencing of the work, preconstruction meetings, inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and enclosure commission agents.

.1 Connections to Adjacent Materials: Provide transition material to bridge and seal the following air leakage pathways and gaps:

a. Connections of the walls to the roof air barrier.

b. Connections of the walls to the foundation air barrier.

c. Seismic and expansion joints.

d. Openings and penetrations of window frames, storefront, curtain wall, louvers and doors.

e. Barrier precast concrete and other envelope systems.

f. Floors over unconditioned space.

g. Piping, conduit, duct and similar penetrations.

h. Masonry ties, screws, bolts and similar penetrations.

i. All other air leakage pathways in the building envelope.

.2 Performance Requirements

A. Compliance Alternatives:

a. Materials: materials used for the air barrier system in the opaque envelope shall have an air permeance not to exceed 0.004 cfm/ft2 under a pressure differential of 0.3 in. water (1.57 psf) (0.02 L/s.m2 @ 75 Pa) when tested in accordance with ASTM E 2178. Or,

b. Assemblies of materials and components: shall have an air permeance not to exceed 0.04 cfm/ft2 under a pressure differential of 0.3 in. water (1.57psf) (0.2 L/s.m2 @ 75 Pa) when tested in accordance with ASTM E 2357. Or:

c. The entire building: The air leakage of the entire building shall not exceed 0.4 cfm/ft2 under a pressure differential of 0.3 in. water (1.57psf) (2.0 L/s.m2 @ 75 Pa) when tested according to ASTM E 779.

.3 Require letter from primary air barrier material manufacture indicating approval of transition materials and accessories that are proposed to be used for that manufacturer's material. The contractor is required to submit to A/E during the construction phase.

.4 Require statement from the primary air barrier material manufacturer that the materials used in their air barrier assembly which will be used to adhere to the underlying substrate are chemically compatible to the substrate material. The contractor is required to submit to A/E during the construction phase.

.5 Preconstruction Meeting: Convene a minimum of two weeks prior to commencing Air Barrier Work. Agenda shall include, at a minimum, construction and testing of mock-up, sequence of construction, coordination with substrate preparation, air barrier materials approval for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction and chemical/fire safety plans. Attendance is required by representatives of related trades including covering materials, substrate materials and adjacent materials.

.6 Field Quality Assurance: Do not cover the air barrier assembly until it has been inspected, tested and accepted. Air barrier assembly shall not be covered up until it has been thoroughly observed for general conformance with the project construction documents and authorization is granted by the A/E to proceed with covering up the work completed. If appropriate, university to engage air barrier inspection and testing service agencies, including independent testing laboratories, that specialize in the type of air barrier system inspections and tests to be performed.

.7 Material Warranty: Provide primary material manufacturer's standard product warranty, for a minimum three (3) years from date of Substantial Completion.

,8 Subcontractor (certified by Manufacturer) Installation Warranty: Provide a two (2) year installation warranty from date of Substantial Completion, including all accessories and materials of the air barrier assembly, against failures including loss of air tight seal, loss of watertight seal, loss of attachment, loss of cohesion/adhesion and failure to cure properly.

## 07 31 00. SHINGLES AND ROOFING TILES

## 07 31 13. ASPHALT ROOF SHINGLES

.1 ASPHALT ROOF SHINGLES: Specify only wind resistant type 280# or greater. Fire-resistant rating shall be UL Class A. Install shingles and roofing tiles per requirements of the OBC and manufacturer's maximum recommended quality standards for the deck to be roofed. The shingle installation shall conform to the National Roofing Contractors (NRCA) Steep Roofing Manual recommendations. Sheet metal shingle flashing installations for asphalt roof shingle projects shall conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACCNA) Architectural Sheet Metal Manual recommendations.

**OARDC:** The use of 240# asphalt singles that meet ASTM D3161 and ASTM D7158, Class F (110 MPH) or higher wind speed ratings is permitted.

.2 Use of pneumatic powered nails or staples is prohibited.

**OARDC: T**he use of staples is prohibited but pneumatic roofing nailing per the project specifications and the requirements of Appendix V- Safety health and Environment is permitted.

.3 Warranty of shingles shall be a minimum of 30 years and applicator's warranty shall be for Two (2) years.

.4 Shingle underlayment shall be an Ice/Water Guard type self–adhering underlayment, with coverage based on roofing assembly permeability requirements. 15# and 30# felt are prohibited.

## 07 31 26. SLATE SHINGLES

.1 Slates shall be natural slate; artificial slate is **prohibited**. Underlayment shall be an Ice/Water Guard-type self-adhering underlayment, with coverage based on roofing assembly permeability requirements. The shingle installation shall conform to the National Roofing Contractors (NRCA) Steep Roofing Manual

recommendations. Sheet metal shingle flashing installation for slate shingles shall conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACCNA) Architectural Sheet Metal Manual recommendations.

## 07 32 13 CLAY ROOFING TILES

.1 Tiles shall be clay only. Underlayment shall be an Ice/Water Guard-type self-adhering underlayment, with coverage based on structural assembly permeability requirements. The roofing tile installation shall conform to the National Roofing Contractors Association (NRCA) Steep Roofing Manual recommendations. Sheet metal shingle flashing installation for a clay tile installation shall conform to the Sheet Metal and Air Conditioning Contractors National Association, Inc (SMACCNA) Architectural Sheet Metal Manual recommendations.

## 07 40 00. PREFORMED ROOFING AND SIDING PANELS

.1 Preformed roofing panels underlayment shall be an Ice/Water Shield type self-adhering underlayment, 30 mils thick Butyl self-adhering underlayment, and shall be temperature rated to 300 degree F, with coverage based on roofing assembly permeability requirements. 15# and 30# are prohibited. Acceptable types of preformed roofing and siding materials and finishes are metal materials with a natural finish (copper) or (stainless steel), anodized finish (aluminum) or painted finish (aluminum or steel).

.2 PREFORMED WALL AND ROOF PANELS: Finish materials and colors for roof structures and rooftop equipment screens are subject to the approval of the University Architect.

.3 Shop Drawings for detailed connections, anchorage, connections, joint sealants, joint gasketing, flashing and mounting substrate to be submitted to Facility Operations Envelope Engineer for review.

.4 Manufacturer's Field Inspection Report: Within 48 hours, state what was observed and what changes, if any, were requested or required.

.5 Prefer 'open' systems versus 'closed' gasketed systems for composite metal panel wall systems.

## 07 50 00. MEMBRANE ROOFING

## 07 50 10. GENERAL REQUIREMENTS:

.1 DESIGN REQUIREMENTS FOR MEMBRANE ROOFING: Roof decks must be built with a slope of at least 1/4 in. per ft. toward drains. Dead level roofs are prohibited. Use of Emergency relief drains is prohibited. Scupper openings shall be provided through parapet walls complying with all applicable requirements of the OBC in lieu of relief drains. Ensure that drains are truly at low points of roofed area. Install "crickets or saddles" to divert water flow around curbs so as to avoid interference with designed drainage system. “Crickets and saddles” shall be installed behind curbs with a dimension of 24 inches or greater measured perpendicular to the slope of the roof. "Crickets and saddles" shall have a slope of at least 1/2 in. per ft. Reroofing projects will require individual assessment for design to provide adequate drainage slope. Ballasted roofs are not preferred.

.2 OBSERVATION OF INSTALLATION BY UNIVERSITY PERSONNEL: The University shall be given 2 weeks advance notice of intent to start installation of roofing materials. Designated University personnel must be permitted to perform a pre-installation inspection of roofing materials and equipment, to be present throughout roofing installation to observe installation techniques for compliance with specifications and to participate in final inspection. Questionable installations will be brought to the attention of the Architect/Engineer (A/E) who shall take immediate action to ~~correct~~ document corrections of any deficiencies in materials or installation. Failure of Ohio State personnel to call attention to deficiencies shall not relieve the contractor of responsibilities stipulated in the Maintenance Guaranty.

.2.1 CUTTING OF TEST PANELS: The University reserves the right to cut test panels from the finished roof in order to determine that minimum requirements have been met. The roofer shall repair, at his own expense, the roof where test panels were taken.

.3 COORDINATION OF INSTALLATIONS: The roofer shall install all flashings and insulation required to make a complete waterproof installation. For this reason, it is preferred that specifications for roofing, insulation, flashing, and sheet metal work be combined into one section. Although certain counter flashings or similar materials may be provided by other contractors, the roofer shall be made responsible for their proper installation. Also see BDS Divisions 21-28 Facility Services-Document Requirements 3.16 (Roof Mounted Equipment, Flashing and Roof Penetrations).

.4 <u>Observation of Installation by University Personnel: Representatives from Facility Operations Roofing and Envelope Engineering shall be notified of roofing schedule and perform periodic installation inspections.</u>

.4 GUARANTY: Insert the following paragraphs in the specifications:

.4.1 ROOFING AND FLASHING GUARANTY: The manufacturer(s) of materials used shall furnish a written twenty (20) year guaranty on the complete roof installation. Submit the guaranty in triplicate. The guaranty shall begin when the project is completed and accepted by the University.

.4.2 GREEN ROOF WARRANTY: Manufacturer's single-source written twenty (20) year warranty on the full green roof assembly. Submit the warranty in triplicate. The warranty shall begin when the project is completed and accepted by the University.

.4.3 The general contractor and the roofing subcontractor shall furnish a two (2) year maintenance warranty on the total roofing system. The guaranty shall cover, at no cost to the University, all labor and materials required to repair or replace roofing, flashings, sheet metal and copings as necessary to fully correct leaks, faulty workmanship or defective materials.

.5 STORAGE OF MATERIALS: Roofing felts, membranes and insulation are to be stored in a dry trailer or inside a dry building. Exterior storage on skids or tarpaulin coverage is unacceptable. Asphalt or coal tar pitch may be stored outside if kept under a tarpaulin or plastic film.

.6 WET MATERIALS: Roofing felts or insulation which became wet before or after installation must be removed and replaced. Wet materials shall not be dried and reused. Wetted membrane materials must be thoroughly evaluated to determine the effect on adhesion, lap seals or blister potential. Remove any such material if there is any possibility of failure.

.7 CLEAN UP: Emphasize that debris not be allowed to accumulate on roof during construction. All debris shall be totally removed at completion of project. The contractor shall provide final cleaning of roof membrane to sufficiently remove traffic marks and unsightly blemishes from the surface of the roof to the satisfaction of the A/E and University. The contractor shall provide adequate protection to new roof surface to prevent excessive traffic marks and unsightly blemishes during the course of construction.

.8 VAPOR RETARDER: Review the structure's winter interior relative humidity and the relative humidity of the structural roof deck with roof manufacturer to determine if a vapor retarder is required as part of the total roof system.

.9 Roofing systems shall consider including Class I vapor retarders (0.1 perms or less) based on a careful and comprehensive analysis of the roofing assembly. Completely seal all penetrations, tears, openings, and punctures that may occur

during construction. Provide transition material to bridge and seal adjacent air barrier materials.

**07 51 00. BUILT-UP BITUMINOUS ROOFING:**

No less than four (4) ply construction may be specified. Conform strictly with the manufacturer's recommendations for installation. A fume control system approved by the University architect/engineer project representative is required.

.1 REQUIREMENT: No less than UL Class A external fire exposure, and Class 90 wind uplift. FM Class I construction.

**07 52 00 MODIFIED BITUMENINOUS MEMBRANE ROOFING:**

Systems composed of at least two plies, one of which can be a heavy base sheet, are preferred. Mineral (granule) surface weathering is preferred.

**07 53 00. ELASTOMERIC MEMBRANE ROOFING:**

See 07 54 00 for recommended membrane roofing systems. Other types allowed with written approval are: Ethylene Propylene Diene Monomer (EPDM). No ballasted roof systems permitted.

**07 54 00 THERMOPLASTIC MEMBRANE ROOFING:**

Thermoplastic Polyolefin (TPO), DuPont Elvaloy Ketone Ethylene Ester (KEE), Polyvinyl Chloride (PVC) roofing systems with heat welded seams are recommended. - No ballasted roof systems permitted.

~~.1 MODIFIED BITUMEN SHEET ROOFING: Systems composed of at least two plies, one of which can be a heavy base sheet, are preferred. Mineral (granule) surface weathering is preferred. (~~moved to 07 52 00 above~~)~~

~~.2 CLEAN UP: Emphasize that debris not be allowed to accumulate on roof during construction. All debris shall be totally removed at completion of project. (~~moved to 07 50 00 above~~).~~

**07 56 00 FLUID-APPLIED ROOFING:**

Not permitted. However, liquid-applied reinforced polymeric membranes may be approved on a case by case basis.

## 07 60 00. FLASHING AND SHEET METAL

## 07 60 10. GENERAL REQUIREMENTS:

.1 FLASHING GUARANTY requirements apply to this work. Note that curb heights must comply with manufacturer's requirements for warranty of roofing systems. Refer to paragraph 07 50 10.4.

.1.1 Minimal height for flashing not less than 8", prefer 12".

.1.2 The building facade materials, penthouse door sills, etc. shall not obstruct access to roofing terminations or flashing termination. Access shall be maintained for future maintenance and replacement of the roofing system.

.2 PLUG ANCHORAGE: Use of wood, or plastic is prohibited.

.3 FASTENERS: For preservative-treated and fire retardant-treated lumber, and High Humidity Area fasteners shall be stainless-steel connectors and fasteners (Type 304 or 316 stainless steel), copper or silicone bronze fasteners. Mechanically galvanized fasteners and connectors are prohibited. Fastener metal type for flashings shall match the flashing metal type. Expansion type fasteners are prohibited for use in stone and brick. Fasteners in masonry shall be installed in the mortar joints, or where required to be in the masonry unit, shall be drilled and set in epoxy.

3.1 Provide a single layer of Ice/Water Guard type self-adhering underlayment preformed underlayment between treated wood products and metal surfaces.

.4 METAL FLASHING: Copper, soft temper stainless steel, terne coated type 304 or 316 stainless steel, T-Z Alloy coated copper, and stainless steel. Lead-coated copper is approved for use where it replaces historic lead-coated copper materials. Minimum weight per square foot for copper flashing systems shall be per Revere Copper Products, Inc. Copper and Common Sense - Current Edition recommendations. Factory fabricated flashings of these materials is acceptable. No aluminum or galvanized steel shall be used.

.5 PITCH PAN OR POCKETS: Use of pitch pans or pockets only if approved by the University Architect. Items penetrating roofing must be flashed with sheet metal secured with stainless steel clamps or with box curbs welded, or otherwise secured, to the penetrating items. See flashing materials above for acceptable metals.

.6 FLASHING AND SHEET METAL: Fabrication and installation conform to the latest edition of Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) Architectural Sheet Metal Manual

recommendations. Copper, when used, to conform to SMACNA and to the latest edition of Revere Copper Products, Inc. Copper & Common Sense recommendations. Compatible fasteners shall be matched with the flashing material. No fastener shall be approved that will promote staining or galvanic action.

.7 No power or powder driven tools to be used unless approved for use by the Office of Environmental Health and Safety -. See Appendix V: 01 35 23 – 1.6.

.8 ROOF PROTECTION: See 01 71 33.1 ROOF PROTECTION

**07 70 00. ROOF AND WALL SPECIALTIES AND ACCESSORIES:**

.1 GUTTERS AND DOWNSPOUTS: Copper, stainless steel, or baked enamel steel. No aluminum or galvanized steel shall be used. All gutters and downspouts shall be of seamless construction with exception of expansion joints where required. Where available manufacture preformed shapes, parts and fittings shall be required in lieu of field fabricated.

.2 FASCIAS AND GRAVEL STOPS: Aluminum, copper, stainless steel, or baked enamel coated steel.

**07 72 00. ROOF ACCESSORIES:**

.1 ROOF WALKWAYS: Provide per roof system manufacturer's specifications.

.2 ROOF HATCHES: Roof hatches shall have guardrails with spring loaded swing gates. Where roof edge does not provide passive fall protection hatches shall be minimum 10'-0" from the edge of the roof and shall open towards the interior of the roof.

.3 CURBS AND EQUIPMENT SUPPORTS UNITS: Curbs are to match footprint of mechanical equipment and be flashed into roofing on all sides.

.4 ELECTRIC FIELD VECTOR MAPPING (EFVM): Specify an EFVM system for all approved green roof assemblies.

**07 75 00 LIGHTNING PROTECTION**

.1 Refer to Division 26 for Lightning Protection requirements.

## 07 81 00 APPLIED FIREPROOFING

.1 QUALITY ASSURANCE:

A. Installer Qualifications: Engage an experienced installer certified, licensed, or otherwise qualified by the sprayed fire-resistive materials manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its sprayed fire-resistive material products to the Contractor or to an installer engaged by the Contractor does not in itself confer qualification on the buyer.

1. Industry standard installation requirements such as NFCA – 100, "Standard Practice For The Application of Spray-Applied Fire Resistive Materials (SFRMs)

B. Single-Source Responsibility: Obtain spray-applied fire resistive materials from a single manufacturer for each different product required.

C. Provide fireproofing products containing no detectable asbestos as determined according to the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.

1. Spray-applied fire resistive materials shall be free of all forms of asbestos and asbestos contamination, including actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite.

2. Manufacturer shall provide Certification that products supplied are 100% asbestos-free.

D. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Test and inspect as required by the Ohio Building Code, 1704.12.

E. Surfaces to be protected shall meet applicable requirements for application and adhesion characteristics.

F. Protect all architectural finishes from over spray.

G. Sealer for Spray Applied Fire Resistive Materials: Transparent-drying, water-dispersible, tinted protective coating recommended in writing by manufacturer of spray applied fire resistive materials.

.2 INFORMATION SUBMITTALS

A. Product certificates.

B. Evaluation / special inspection reports.

C. Field quality-control reports.

D. Include the above A., B., & C. items in the Operations & Maintenance Manuals in electronic format. Also, provide copies to the Office of Environmental Health and Safety (EHS).

.3 REPLACEMENT OF EXISTING ASBESTOS CONTAINING SPRAY APPLIED FIRE RESISTIVE MATERIALS:

A. Replacement fireproofing materials to be a light blue color to easily be identified and differentiated from the remaining spray applied fire resistive materials.

B. Replacement spray applied fire resistive materials are required to be compatible with existing conditions.

C. Following abatement use a lock down agent that is UL Classified for use with the replacement fireproofing.

D. Identification Labeling:

a. Label the remaining asbestos containing fireproofing “ACM.”

b. Label the new non-asbestos containing fireproofing “Non-ACM”

.4 Existing Areas Scheduled for Renovation: Contractor shall confirm existing fireproofing type and provide new fireproofing to match, unless the existing fireproofing contains asbestos.

***Commentary:***
*There is no UL assembly that uses two types of fireproofing as an acceptable assembly (i.e., GCP Monokote and Cafco). Existing fireproofing in buildings which need repair due to renovation work or new construction must be tested by the contractor and new fireproofing matching existing installed.*

## 07 90 00. JOINT PROTECTION

### 07 90 10. GENERAL REQUIREMENTS:

The following conditions shall be included in the specifications:

.1 GUARANTY: Provide written guaranty that the sealant manufacturer, General Contractor and sealant installer jointly guarantee to replace, at no cost to the University, any or all joints which fail to establish and maintain airtight and watertight continuous sealed joints without staining or deteriorating joint substrates within:

a. 20 - years after acceptance for silicone building sealants.

***Commentary:*** *A 5- year guarantee is acceptable when the 20 – year guarantee would add additional project costs. In either case require that adhesion pull tests be performed.*

b. 5 years after acceptance for polyurethane sealants.

.2 QUALIFICATIONS OF APPLICATOR: Sealants shall be applied by specialists in the application of sealants; minimum 5 years experience required. Applicator is subject to the A/E's approval.

.3 RESPONSIBILITY FOR SATISFACTORY APPLICATION: Inspect work of other trades prior to application of sealing material. If any joint or space cannot be put into proper condition to receive the material by specified methods, immediately notify the A/E in writing, or assume responsibility for and rectify unsatisfactory results from improper application.

.4 TIME AND TEMPERATURE REQUIREMENTS: Apply sealants as late as possible in the construction, preceding painting, and following cleaning operations. Do not apply sealants when air temperature is below 40 degrees F.

.5 MOCK-UPS: Provide field-construct, onsite and in-place mock-ups for each joint type.

.6 DO NOT SAY ‘CAULK’ OR ‘CAULKING’ NOR USE THOSE MATERIALS.

## 07 92 00. JOINT SEALANTS

.1 INTERIOR: Use acrylic type suitable for application of paint.

.2 EXTERIOR: Use of silicone sealant is preferred, where applicable based on material types over polyurethane sealants. Prior to construction, require manufacturer’s compatibility and adhesion test results for exterior elastomeric joint sealants on building materials which are subject to significant movement.

.3 Below Grade: Use swellable or polyurethane sealants around all below grade, thru-wall piping penetrations and/or penetration waterstops for penetrations and foundation construction joints.

***Commentary****:*
*It is recommended that the A/E review SMACNA ARCHITECTURAL SHEET METAL MANUAL (CURRENT EDITION) Appendix M GENERAL GUIDE TO JOINT SEALANTS FOR ARCHITECTS, Appendix A Sample Specification Information, Appendix B Relevant Standards and Appendix C Additional Resources.*

END OF DIVISION 7 - THERMAL AND MOISTURE PROTECTION

## 08 00 00. OPENINGS

## 08 00 03. GENERAL PROVISIONS

## 08 00 10. EXTERIOR DOORS

ALL EXTERIOR DOORS Shall be metal, existing historical buildings are to be reviewed on a case by case basis (e.g. but not limited to, Orton Hall, Hayes Hall, Hale Hall, Pomerene Hall, Hamilton Hall, etc.), and be equipped with pull handles per 08 70 30.3 and overhead surface mount door stops.

ALL EXTERIOR DOORS shall have a structurally supported slab landing outside extending for 60 inches minimum perpendicular to doorway and 18 inches minimum parallel to doorway (beyond latch side).

## 08 00 20. MULTIPLE EXTERIOR DOORS

Shall have fixed mullion separations except that at least one pair of doors shall have a removable mullion for equipment access. Also see 08 70 30.6.

REMOVABLE MULLIONS: A minimum of one pair of exterior double doors shall have a keyed, removable mullion with lock strike unless approval is given by the University Architect to deviate from this requirement. The keyed removable mullion shall accept the approved cylinders per section 08 71 90.4.

## 08 00 30. DOORS FOR USE BY PERSONS WITH DISABILITIES.

.1 One door at each primary point of ingress and egress shall be equipped with a power door operator unless the entrance is not accessible.

.2 Refer to 08 72 00, confer with the Facilities Operations and Development's ADA Coordinator on Power Door Operators.

.3 Revolving doors at entrances, darkrooms and other restrictive locations require provision for alternative means of access.

## 08 00 40. LABELED CONSTRUCTION AND LABELS

Shall be provided where required by the building code. Refer to Ohio State signage standards for approved signage.

## 08 00 50. TRASH ROOM DOORS

Shall be no less than 3'6" wide.

08 00 60. USE OF INK MARKING PENS ON SURFACES of any kind of materials is prohibited. Experience has shown that such marks bleed through paint and other finishes.

08 00 70. POWER OR POWDER DRIVEN ANCHORS refer to Appendix V Section 01 35 23 Safety Health & Environment 1.6 USE OF POWER ACTUATED FASTENER TOOLS -

08 00 80. DEMOLITION / REMODELING: Lock and door hardware removals shall be coordinated with Facilities Operations and Development's Lock & Key Services. All cylinders and cores removed shall remain the property of The Ohio State University, and are to be returned to FOD's Lock & Key Services.

**Wexner Medical Center**: All cylinders and cores removed shall remain the property of The Ohio State University, and are to be returned to The Medical Center Lockshop.

## 08 10 00. DOORS AND FRAMES

## 08 11 13. HOLLOW METAL DOORS AND FRAMES

.1 EXTERIOR DOORS shall be not less than Extra Heavy Duty Grade III, 16-gauge hot dipped zinc-coated steel sheets (Galvannealed) meeting ASTM A653, zinc-iron alloy-coated, with A60 coating. The top channel of each metal door shall be turned web up, to avoid a dirt pocket or moisture trap. Full glazed doors shall have 12-inch bottom rails. "High Frequency" hinge preparation and reinforcement is required. Provide thermal-rated assemblies at exterior doors. Provide thermally broken door and frame in addition to being insulated.

.2 INTERIOR DOORS shall be not less than Grade II, 18-gauge metal. Full glazed doors shall have ~~12~~ 10-inch bottom rails.

~~.3 ACCESS DOORS shall be provided at plumbing chases, building equipment maintenance corridors, interstitial spaces, and in ceiling areas. Coordinate with Plumbing, HVAC and Electrical Contractors. Access door locking devices shall be equipped with approved cylinders per 08 71 90.3 and 08 71 90.4 and accept Stanley Security Solutions small format 7-pin interchangeable core. Following approval by FOD's Lock & Key Services of the final keying schedule, Stanley Security Solutions will combinate permanent cores, cut, and tag one key per core and deliver cores and keys directly to FOD's Lock & Key Services for installation. The type of access doors are to be reviewed and approved by Facilities Design and Construction. The supplying contractor of the cylinder and lock cores shall provide their contact name, address, phone number with the product submittal and a copy shall be provided by the A/E to FOD's Lock & Key Services.~~

~~.3.1 The Architect/Engineer (A/E) shall place in the specifications that the Contractor supplying the Access Doors shall enter into an agreement with Facilities Operations and Development's (FOD's) Lock & Key Services to install the final cores during the construction period. Provide an allowance for this work after consulting with FOD's Lock & Key Services for current/project charges per core (approximately 1/10 hour per core at the University's current Skilled Craft Rate.)~~

.3 HOLLOW METAL FRAMES shall be one-piece, welded frames of not less than 16-gauge hot dipped zinc-coated steel sheets (Galvannealed) meeting ASTM A653, zinc-iron alloy-coated, with A60 coating for interior doors. Frames in interior walls through 8-inch thickness shall be full width of wall. Knock-down frames are generally prohibited; however, such frames may be used in movable partitions. In remodeling work, permission will be granted by the University Architect to use knock-down frames if conditions justify their use. Frames for exterior doors shall be one-piece, welded frames of 14-gauge or heavier metal. All entrance door frames shall be heavily reinforced at hinge, strike and closer locations for "High Frequency" use. Frames shall have a hot dipped zinc coating. Apply bituminous coating to backs of all exterior frames and those that are filled with mortar, grout or plaster. Fill space between frames and masonry or concrete with mortar. All non-grouted frames shall be acoustically insulated with batt or foam insulation at acoustically rated wall assemblies.

## 08 11 16. ALUMINUM DOORS AND FRAMES

.1 Aluminum doors and frames shall be factory finished.

## 08 14 00. WOOD OR PLASTIC LAMINATE FACED WOOD DOORS

.1 All wood doors shall be at least 1-3/4" thick to accommodate mortise locks. Interior wood doors shall be not less than Custom Grade. Use "Premium Grade" for unique and special projects or features within a project.

08 14 10. GUARANTEE: Interior doors, except some fire rated doors, shall be flush type, solid core, hardwood, with lifetime guarantee. Guarantee shall include removal, new door finishing, and hanging of doors at no cost to the University.

## 08 14 20. FIRE RATED DOORS

.1 2 hr. (120-minute), 1-1/2 hr. (90-minute), 3/4 hr. (45-minute) and 20-minute doors must have a U.L. label per NFPA Pamphlet 80.

.2 MINERAL CORE LABELED DOORS ARE PROHIBITED because the narrow rails and stiles, required to obtain U.L. approval, are expected to reduce the service life and security of these doors in rigorous service.

***Commentary:*** *Obtain University approval for the use of mineral core labeled doors when Masonite Architectural (formerly Marshfield/Algoma) Blocking Configuration #11 full width top and bottom rails and exit device blocks are specified.*

08 14 30. WOOD VENEERS: Judicious selection of face veneers shall be exercised. The contractor shall be required to make a grain selection, prior to placing wood doors in the more prominent or public places, subject to the approval of the Architect/Engineer (A/E). Wood doors in, or adjacent to, wood paneling will have veneers to match the paneling.

**Wexner Medical Center:** Approvals in addition to the A/E will also include Medical Center Space and Facilities Planning for wood grain and orientation.

## 08 30 00. SPECIAL DOORS

.1 ACCESS DOORS shall be provided at plumbing chases, building equipment maintenance corridors, interstitial spaces, and in ceiling areas. Coordinate with Plumbing, HVAC and Electrical Contractors. Access door locking devices shall be equipped with approved cylinders per 08 71 90.3 and 08 71 90.4 and accept ~~Stanley~~ Best Access Security Solutions small format 7-pin interchangeable core. Following approval by FOD's Lock & Key Services of the final keying schedule, Best Access Security Solutions will combinate permanent cores, cut, and tag one key per core and deliver cores and keys directly to FOD's Lock & Key Services for installation. The type of access doors is to be reviewed and approved by Facilities Design and Construction. The supplying contractor of the cylinder and lock cores shall provide their contact name, address, phone number with the product submittal and a copy shall be provided by the A/E to FOD's Lock & Key Services.

.1.1 The Architect/Engineer (A/E) shall place in the specifications that the Contractor supplying the Access Doors shall enter into an agreement with Facilities Operations and Development's (FOD's) Lock & Key Services to install the final cores during the construction period. Provide an allowance for this work after consulting with FOD's Lock & Key Services for current/project charges per core (approximately 1/10 hour per core at the University's current Skilled Craft Rate.)

..2~~1~~ ACCESS DOORS TO MACHINE AND EQUIPMENT SPACES shall be hollow metal doors in 4-sided steel frames, minimum size 2'-0" by 4'-0". All access doors locking devices shall be equipped with cylinders per 08 71 90.3 and 08 71 90.4 and accept Best Access Security Solutions small format 7-pin interchangeable core. Following approval by FOD's Lock & Key Services of the final keying schedule, Best Access Security Solutions will combinate permanent cores, cut, and tag one key per core and deliver cores and keys directly to FOD's Lock & Key Services for installation.

**Wexner Medical Center:** Following approval by The Medical Center Lockshop of the final keying schedule, Best Access Security Solutions will combinate permanent cores, cut, and tag one key per core and deliver cores and keys directly to The Medical Center Lockshop for installation. Locking devices to accept Best Access Security Solutions (Dorma Kaba) 7-pin SFIC core.

.2.1 The Architect/Engineer (A/E) shall place in the specifications that the Contractor supplying the Access Doors shall enter into an agreement with Facilities Operations and Development's (FOD's) Lock & Key Services to install the final cores during the construction period. Provide an allowance for this work after consulting with FOD's Lock & Key Services for current/project charges per core (approximately 1/10 hour per core at the University's current Skilled Craft Rate.)

**Wexner Medical Center:** The Architect/Engineer (A/E) shall place in the specifications that the Contractor supplying the Access Doors shall enter into an agreement with The Medical Center Lockshop to install the final cores during the construction period. Provide an allowance for this work after consulting with The Medical Center Lockshop for current/project charges per core (approximately 1/10 hour per core at the University's current Skilled Craft Rate.)

## 08 40 00. ENTRANCES, STOREFRONTS, AND CURTAIN WALLS

## 08 42 00. ENTRANCES

.1 All doors shall be equipped with top and bottom rails and door stiles with the following minimum dimensions:
Dimensions of components shall be at least:
Metal thickness - 1/8 inch
Head rail size - 6-1/2 x 1-3/4 or 6 x 2 inches
Stile size - 5-1/2 x 1-3/4 or 5 x 2 inches
Bottom rail size - 12-1/2 x 1-3/4 or 12 x 2 inches
Hardware reinforcement - 1/4 inch thick metal material

.2 Doors shall be fully glazed. Glass for exterior doors and all sidelights shall be ¼-inch thick laminated fully tempered insulated glass units.

.3 Doors may have a mid-rail located at the center of the exit device.

.4 ENTRANCE FRAMES:
Dimensions of components shall be at least:
Metal thickness - 1/8 inch
Head size - 4-1/2 x 1-3/4 or 4 x 2 inches

Jamb size - 4-1/2 x 1-3/4 or 4 x 2 inches
Hardware reinforcement - 1/4 inch thick metal material

**08 50 00. WINDOWS**

.1 DESIGN FOR ENERGY CONSERVATION: Refer to PART TWO, paragraph 00034, 07 27 00, and Divisions 21-28 Facility Services – Document Requirements PART FOUR, FS-6. When practical, windows shall be provided with operable vent sections to obviate for the need conditioned air. All aluminum windows shall have a thermal break and be certified and labeled with AAMA certification, existing historical buildings with steel windows are to be reviewed on a case by case basis (e.g. but not limited to, Orton Hall, Hayes Hall, Hale Hall, Pomerene Hall, McCracken Power Plant, Faculty Club, Ramseyer Hall, Stillman Hall, etc.).

08 50 10. CUSTOM WINDOWS: The following requirements shall be included in the specifications:

.1 PERFORMANCE REQUIREMENTS: The manufacturer shall submit copies of reports of tests made on previously manufactured windows of the same type to be furnished for this project, made or witnessed by an independent testing laboratory and showing conformance to the following performance standards. The Contractor shall submit to the A/E during the construction phase.

.1.1 Air infiltration of an assembled sash and frame shall not exceed 0.15 cubic feet per minute, per foot of sash perimeter, when the window is subjected to a static pressure equivalent to a wind velocity of 50 miles per hour.

.1.2 There shall be no apparent water leakage to the interior side of the window when tested for fifteen minutes with water spray at a rate of five gallons per square foot per hour under a pressure equivalent to a wind velocity of 50 miles per hour.

.1.3 All aluminum windows shall have a thermal break and be certified and labeled with AAMA certification. Aluminum windows shall be not less than Architectural Grade.

.2 WINDOW GLAZING METHOD: Windows shall preferably be designed for glazing from inside only; for other methods of glazing, confer with the University Architect.

.3 DESIGN: Avoid sliding and double-hung sash; use -awning and types with compression gaskets.

.4 GUARANTEE: Provide a written guarantee that all parts of the installation will meet specified performance requirements and will be free from defects in materials and workmanship for a period of five years following acceptance.

Weatherstripping shall be guaranteed for a period of five years. Guarantee shall certify that all work is in accordance with the Contract Documents and shall contain a statement that, should any defects develop during the guarantee period, caused by improper workmanship or materials, such defects will be repaired or windows will be replaced at no expense to the University.

.5 TESTING: Field testing of non-standard installed windows may be required by the University.

.6 CLAD WINDOWS (clad with vinyl or aluminum on the exterior) are prohibited unless special permission is received from the University Architect in writing.

.7 Provide transition material to bridge and seal the air leakage pathways and gaps between window frames, storefront, curtain wall and adjacent materials to form an "air barrier system". See Building Design Standards 07 27 00 Air Barriers for additional information.

## 08 60 00. ROOF WINDOWS AND SKYLIGHTS

.1 SKYLIGHTS are prohibited unless special permission is received from the University Architect in writing.

## 08 70 00. HARDWARE

08 70 10. SPECIFICATIONS FORMAT: It is preferred that this section include all items of finish hardware, including items listed in the CSI MASTERFORMAT, with the exception of window operators, which shall be included with section in which windows are specified. Such a format will facilitate the writing of hardware specifications in the form usually used by Architectural Hardware Consultants.

.1 **Wexner Medical Center:** CONTACT INFO
Bill Weimer BSEE, CWTS – ASSA ABLOY Door Security Solutions
Phone = (502) 680-4510
Email = William.weimer@assabloy.com
It is the responsibility of the Architect working with Bill to coordinate all specified hardware to meet applicable building codes, life safety codes, third party certifications and ADA requirements.

.2 **Wexner Medical Center:** KEY QUANTITY
Provide the following minimum number of keys:
Change Keys per Cylinder: Two (2)
Master Keys (per Master Key Level / Group): Five (5)
Construction Keys (when required): Ten (10) cylinder needs to be SFIC capable.

Construction Keying: Provide construction master keyed cylinders

**08 70 20. PROHIBITED MATERIALS AND INSTALLATIONS:**

.1 THRESHOLDS RAISED ABOVE FLOOR LEVELS at doors to trash and receiving rooms and over 1/2-inch high at doors along routes that are otherwise accessible or those intended for use of persons with disabilities.

.2 FLOOR MOUNTED DOORSTOPS.

.3 DOORKNOBS OR LEVERS CONTAINING LOCK CORES OR KEYING DEVICES.

**OARDC:** OARDC permits cylinder locksets with integral cores in accepted interior locations. Consult with the Project Manager and OARDC for the acceptable locations.

.4 FLOOR CLOSERS AND CLOSERS CONCEALED IN DOOR HEADS.

.5 DOOR CLOSERS WITH INTEGRAL SMOKE DETECTORS: Smoke detection systems must be made a part of the documents for Fire Detection and Alarm per 28 31 00.

.6 ALL CONCEALED VERTICAL ROD EXIT DEVICES. Surface mount vertical rods, less bottom rods, are permitted only with approval of Facilities Operations and Development's (FOD) Lock & Key Services and only on openings when typically held open and automatically released upon fire alarm.

**Wexner Medical Center:** ALL SURFACE MOUNTED AND CONCEALED VERTICAL ROD EXIT DEVICES unless approval is received from Medical Centers' Facilities Services Office.

.7 PASSIVE INFRARED (PIR) MOTION DETECTORS at door location for request to exit on alarmed doors.

.8 SECTIONAL TRIM on mortise locksets.

.9 All electrified vertical rod exit devices.

.10 All sliding doors and "Pocket doors."

.11 All doors and hardware not specifically prohibited or approved in these standards shall be submitted to Facilities Operations and Development's Lock & Key Services for approval prior to being specified.

.12 Roller Latches.

## 08 70 30. GENERAL REQUIREMENTS:

.1 ALLOWANCE: Consult the University Architect regarding provisions for a contingency allowance to cover items inadvertently omitted in hardware schedules. Provisions for this allowance might be particularly desirable for remodeling projects in which some existing hardware is scheduled for reinstallation. Allowance stipulated shall not exceed 1/2 of 1 percent of the estimated cost of contract subdivision for finish hardware. Permission to specify this allowance shall in no way relieve the Architect/Engineer (A/E) of responsibility to furnish a complete and accurate hardware schedule.

.2 HARDWARE FOR ENTRANCE DOORS: All hardware for such doors shall be furnished by the hardware supplier. Weather seals for aluminum entrance doors shall be provided by the door supplier. With the exception of hardware furnished and installed by the door manufacturer, all hardware for such doors shall be furnished under this section. Specify that hardware supplier furnish, to the door manufacturer, templates or the actual items of hardware for which cutouts and signage are required.

.2.1 All exterior doors shall have full perimeter weather seals, including door sweeps.

.3 PULLS: Bases for grips shall project straight out, perpendicular to face of door. No curved bases.

.4 QUALITY AND DESIGN: Hardware must be adequate for the intended use and must satisfy code requirements, but shall not be excessively sophisticated or unnecessarily expensive. Specifications for finish hardware shall be reviewed with the University Architect, the using agency, and Facilities Operations and Development's Lock & Key Services prior to completion of construction documents. Make submittal at a time that will allow for adequate review and for making required changes before final printing.

.5 STANDARDS AND APPROVED EQUALS: For each item, specify and schedule products of one manufacturer as the standard and, whenever possible, name two other manufacturers whose products are PROVEN equal.

.5.1 A complete list of items proposed as the standards, together with manufacturers' names and with the names of manufacturers whose products are proposed as equals must be included in the outline specifications for the Basic Submittal (A/E's Design Development Project Hardware Submittal). Approval of the items must be obtained before their inclusion in the hardware schedule in final documents.

.6 REMOVABLE MULLIONS: A minimum of one pair of exterior double doors shall have a keyed, removable mullion with lock strike unless approval is given by the University Architect to deviate from this requirement. The keyed removable mullion shall accept the approved cylinders per section 08 71 90.4, also see 08 00 20.

.7 A COORDINATION MEETING for the electrical contractor and the hardware supplier is required prior to the creation of shop drawings on projects that require card readers or similar electronic access devices.

.8 **Wexner Medical Center:** ARCHITECTURAL SEALS
Smoke Labeled Gasketing: Assemblies complying with NFPA 105
Fire Labeled Gasketing: Assemblies complying with NFPA 80
Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

Manufacturers
National Guard Products
Pemko Products
Reese Enterprises, Inc.

## 08 71 00. FINISH HARDWARE WARRANTY

A. Manufacturer's Warranty:
1. Closers: Ten years
2. Exit Devices: Three years
3. Mortise locksets & Cylinders: Three years
4. All other Hardware: Two years

08 71 10. BUTTS: Five-knuckle, wrought-steel. Specify ball bearing butts for doors equipped with closers. Butts shall be heavy duty, with 4 bb for exterior doors and interior doors over 3 feet wide; use standard weight butts with 2 bb for interior doors up to 3 feet wide. Specify non-bb for all doors without closers.

.1 STAINLESS STEEL BUTTS must be used on exterior doors. Continuous stainless steel hinges may also be used, except at security/electrified doors.

**Wexner Medical Center:** Hinges:
ANSI/BHMA A156.1 certified hinges with number of hinge knuckles and other options as specified in the Door Hardware Set.
Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
Manufacturers:
McKinney Products
Hager Companies
Stanley

08 71 20. LOCKS: Locksets and latchsets shall be heavy duty mortise type with hinged, anti–friction, ¾ inch throw latchbolt with anti-friction piece made of self lubricating stainless steel. Deadbolt function shall be 1-inch projection

with two hardened steel roll pins. All locksets and latchsets must conform to ANSI A156.13, Series 1000, Operational Grade 1 and Security Grade 2 and be listed by UL. All locksets are to be supplied by the same manufacturer.

**OARDC:** OARDC requires mortise locksets on exterior and higher security doors and will permit cylinder locksets with integral cores in accepted interior locations. Consult with the Project Manager and OARDC for the acceptable locations.

.1 FUNCTIONS: Unless instructed otherwise by the University Architect, select locksets and latchsets having the following functions. Specifications or door schedules shall show both the Building Hardware Manufacturers Association (BHMA) and the manufacturer's numbers to aid checking of documents and reduce the opportunity for error in function.

| | Door Location or Usage | BHMA No. | Function |
|---|---|---|---|
| .1.1 | High Security outside outside outside and outside and key bolt. | F12 | Latch bolt by lever either side unless lever locked by stop button; when lever locked, latch bolt by key lever inside; dead bolt by key turnpiece inside; continuous turn of retracts both latch and dead |
| .1.2 | Normal Office outside outside outside and deadlocks latch | F04 | Latch bolt by lever either side unless lever locked by stop button; when lever locked, latch bolt by key lever inside; auxiliary latch bolt. |
| .1.3 | Private Office Door, Mechanical rigid; latch deadlocks | F07 | Latch by lever inside and key Equipment outside; outside lever Rooms, Storage auxiliary Closets latch bolt. |
| .1.4 | Classroom Door unless outside lever locked, inside; | F05 | Latch bolt by lever either side lever is locked by key outside; inside always free; when outside lever is latch bolt by key outside and lever auxiliary latch deadlocks latch bolt. |
| .1.5 | Communicating Doors | F01 | Latch bolt by lever either side. |
| .1.6 | Pipe Chase inside will retract levers. | * | *Classroom Function Deadbolt By key outside; turnpiece dead bolt but will not project it; no |

| | | | |
|---|---|---|---|
| .1.7 | Outside Entrance Door Key | ** | ** Verify function with FOD Lock & Services; Outside by key only; pull handle outside with no thumb piece; panic bar with dogging by keyed cylinder; latch bolt, no vertical rod. |
| .1.8 | Bath/Privacy<br>by inside<br>To unlock emergency button, access | F22 | Latchbolt retracted by lever - from either side unless outside is locked turn piece. Operating inside lever- or closing door unlocks lever-. from outside, remove insert emergency turn (furnished) in hole and rotate. |
| | **Wexner Medical Center:** | | |
| | Institutional Bath/Privacy | F26 | |

.1.9 Lever Handles shall be wrought brass, bronze or stainless steel of simple design, heavy duty, and must have inside lever handle secured in place by a dowel screw and the outside lever handle (secure side) pinned to the spindle.

.1.10 Acceptable lever lock sets are:

| Manufacturer | Series | Lever Style |
|---|---|---|
| Best Access Systems | 35H | 15J or 3J |
| Schlage | L9000 | 06N or 03N |
| Marshall Best | RW | S or T |

Best 35H Series is available to Ohio State University. No substitutions / No equals.

**Wexner Medical Center:**

| | | |
|---|---|---|
| Sargent | 8200 | LNJ (New)<br>CEJ (Retrofit)<br>ALP (Patient room)<br>BHW (Behavioral Health) |
| Corbin Russwin | ML2000 | LSB Trim (New)<br>LSM (Retrofit)<br>BHWW (Behavioral Health) |

These come in pushbutton, classroom, storeroom, and passage set functionality

All shall be mortise type. All finishes shall be 630.

***Commentary:*** *All 3 locks can also be ordered as bathroom locks. All 3 can be ordered with deadbolts.*

.1.11 Acceptable Classroom Pool lock set and core are: No substitutions/No equals

Manufacturer:
Schlage LSeries Mortise Indicators: L9056; Cylinder GD (Everest 29 SFIC); Lever Style 06N or 03N; Finish 626; L283-711 Escutcheon locked/unlocked indicator on the inside (thumb turn side) of door; ADA thumb turn L583-363. Install thumb turn unlocked in the vertical (12 o'clock) position and locked at 90 degrees (3 o'clock) position.

Schlage Core: 80-037 626 for a combinated core

08 71 30. CLOSERS: Acceptable closers are: No substitutions/No equals

LCN 4000 series,
~~Stanley D4550 series,~~
~~Sargent 421 series~~

**Wexner Medical Center**:
Sargent 351 Series

Closers shall be surface mounted, with full rack and pinion hydraulic action. Specify very heavy-duty type with broad range of adjustments permitting adjustment of door. Open pressure of 8 pounds to 15 pounds. Covers shall be of clean line design with lacquer finish and shall be type that DOES REQUIRE removal to make adjustments.

.1 INSTALLATION: Closers for interior doors shall be installed on room side of doors and shall not be visible from corridors, lobbies, and other public spaces.

.2 Acceptable NON-ELECTRIFIED exit devices are: No substitutes/No equals.

| Manufacturer | Series | Trim |
|---|---|---|
| Von Duprin | 98/99 rim type<br>9927 LBR only<br>(see 08 70 20.6) | Exterior – 990 DT or NL<br>Interior – 996L<br>(06 or 03 lever) |
| Precision | Apex 2000 rim type | Exterior – 1703A or 1702A<br>Interior – 4903A or 4908A |

**Wexner Medical Center**:
Sargent 80 Series ETJ Trim Manufacturing

**Wexner Medical Center:** Von Duprin Trim 03 Only; Precision exterior and interior levers shall be C levers

08 71 50. STOPS: Wall mounted convex rubber bumpers, with concealed fasteners. Provide noncombustible blocking in wall as required for bumper installation

.1 OVERHEAD STOPS AND HOLDERS: Size as recommended by the manufacturer. Degree of opening, as determined by building conditions. Stops required on all exterior doors.

.2 **Wexner Medical Center**:
Manufacturers:
Burns Manufacturing
Rockwood Products
Trimco

08 71 60. FLUSH BOLTS: Specify extension type, top and bottom; avoid the use of vertical bars, either concealed or exposed. Minimum ½-inch diameter rods of, brass, bronze, or stainless steel with minimum 12-inch long rod for doors up to 7'-0" in height. Provide 1-inch minimum throw for all dead bolts. Auto flush bolts to be used only with approval of Facilities Operations and Development's Lock & Key Services. Not to be used on the centrally supported Alarm and Card Access Management Systems (ACAMS) monitored doors.

.1 **Wexner Medical Center:** SURFACE BOLTS: ANSI/BHMA A156.3 and A156.16, Grade 1, Certified

Manufacturers
Rockwood Products
Trimco
Ives

08 71 70. KICK PLATES: Plastic laminate, stainless steel and bronze kick plates are acceptable for wood doors. Omit on steel and aluminum doors.

08 71 80. FINISHES: Closers shall be finished to suit room décor. For all other hardware, specify US-10 or US-26D. Other finishes may be used only where necessary to match materials to which hardware is applied.

**Wexner Medical Center:** Standard" 32D Finish on all Mortise locks and exit device trims. Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

08 71 90. KEYING: Include the following paragraph in the specifications:

**Wexner Medical Center:** Approved keys are: ~~Stanley~~ Best Coremax Keys. No Substitutions

1AM1ML11KS716KS800 – ML1 Keyway

1AM1MJ11KS716KS800 – MJ1 Keyway
1AM1MM11KS716KS800 – MM1 Keyway
1AM1MK11KS716KS800 – MK1 Keyway
Precut on the coremark of The Medical Center Lockshop choosing.

Approved cores are: ~~Stanley~~ Best Coremax cores. No substitutions / No equals:

1CM7MM11626 – MM1 Core
1CM7ML11626 – ML1 Core
1CM7MK11626 – MK1 Core
1CM7MJ11626 – MJ1 Core
Prepinned by ~~Stanley~~ Best on the coremark of Access Control's choosing

All finishes shall be 630, 626 may be used only if 630 is unavailable.

Approved Keybox(s) are: Global Facilities Management System (GFMS). No substitutions/ No equals:

Size and need to be determined by Wexner Medical Center security management team.
Associated interior panel must be specified to accept the 7-pin SFIC's.
Shall have a magnetic card reader installed on exterior of box. Provide emergency power and data to keybox locations.

.1 LOCKING DEVICES shall be equipped with approved cylinders per 08 71 90.3 and 08 71 90.4 and accept ~~Stanley~~ Best Access Security Solutions small format 7-pin interchangeable core. For security while the building is under construction the exterior doors locks shall be equipped with temporary keyed brass construction cores furnished and installed by the General Contractor. The GC is to provide (5) five master keys and one change key for the construction cores to be delivered to FOD's Lock and Key Services through the University's Project Manager. The GC shall install the disposable black plastic construction cores that come with the locks, as the interior door locking devices are installed. Following approval by Facilities Operations and Development's (FOD's) Lock & Key Services and the Using Agency of the final keying schedule, ~~Stanley~~ Best Access Security Solutions will combinate permanent cores, cut, and tag one key per core and deliver cores and keys directly to FOD's Lock & Key Services for installation by FOD's Lock & Key Services in exchange for temporary cores removed by FOD's Lock & Key Services and returned to the General Contractor.

.1.1 For Regional Campus projects: Locking Devices shall be equipped and keyed as stated in 08 71 90.1 with the following revisions:

a. The temporary keys are to be delivered to the Regional Campus through the Project Manager.

b. Following approval by the Regional Campus with consultation with Facilities Operations and Development's (FOD's) Lock & Key Services and the Using Agency of the final keying schedule, ~~Stanley~~ Best Access Security Solutions will combinate permanent cores, cut, and tag one key per core and deliver cores and keys directly to the Regional Campus for installation by the Regional Campus in exchange for temporary cores removed by the Regional Campus and returned to the General Contractor. The cost for cores and keys is the responsibility of the General Contractor.

***Commentary:*** *Regional Campus consultation with Facilities Operations and Development's Lock & Key Services is for the purpose of maintaining a central data base for keying and provide general support to the Regional Campuses.*

c. **OARDC:** Interchangeable cores for OARDC projects are to be BEST, 6-pin, "A" keyway by ~~Stanley~~ Best Access Security Solutions. No Substitutions.

d. **OARDC:** Master and change (core) keys for OARDC projects are to be delivered as un-cut key blanks directly to OARDC Facilities Services.

.2 The Architect/Engineer (A/E) shall place in the specification that the Hardware Contractor shall enter into an agreement with Facilities Operations and Development's (FOD's) Lock & Key Services to install the final cores during the construction period. Provide an allowance for this work after consulting with FOD's Lock & Key Services for current/projected charges per core (approximately 1/10 hour per core at the University's current Skilled Craft Rate).

.2.1 For Regional Campus projects the Architect / Engineer (A/E) shall place in the specification that the Hardware Contractor shall enter into an agreement with the Regional Campus to install the final cores during the construction period. Provide an allowance for this work after consulting with the Regional Campus for current/ projected charges per core (approximately 1/10 hour per core at the University's current Skilled Craft Rate).

**OARDC:** Final cores installed for OARDC projects will be installed at no cost by OARDC's Facilities Services.

.3 CYLINDERS FOR MISCELLANEOUS LOCKS: Approved cylinders per 08 71 90.4 shall accept ~~Stanley~~ Best Access Security Solutions small format 7-pin interchangeable core.

.4 Approved cylinders are: No substitutions/No equals

| | |
|---|---|
| Best ~~Stanley~~ Access Security Solutions | 1E7 Series |
| Arrow | 16CR |
| Falcon | C Series |
| Marshall Best | MBS-IC (M or R) 726D |

**Wexner Medical Center:** Approved Cynlinders
Sargent - 70-43-26D
Corbin Russwin - 1040-112-626-7
~~Stanley~~ Best - 1E74C191RP3626

08 71 95. COORDINATORS

**Wexner Medical Center:** ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

Manufacturers:
Rockwood Products
Trimco
Ives

08 71 99 **WEXNER MEDICAL CENTER:** DOOR HARDWARE REFERENCE SPECIFICATION – ALL NEW CONSTRUCTION AND RENOVATION PROJECTS:

PART 1 -- GENERAL

1.1 PURPOSE

a) This document serves as the Wexner Medical Center Facilities Design Guide for door hardware, keying, and other Div 08 items. This is the guideline to follow for new building and renovation projects to provide a required level of quality and performance. The products listed in this section are limited and shall be specified. In the event that acceptable alternates are allowed, they must be specifically listed within each applicable section in this document.

b) For consistency across all projects, and detailed access control/electrified hardware coordination; architects are asked to reach out to the below individual for all Div 08 specifications, substitution requests, and submittal reviews.

Bill Weimer BSEE, CWTS – ASSA ABLOY Door Security Solutions
Phone = (502) 680-4510
Email = william.weimer@assaabloy.com

c) It is the responsibility of the Architect in working with Bill to coordinate all specified hardware to meet applicable building codes, life safety codes, third party certifications and ADA requirements.

## 1.2 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

## 1.3 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Medical Center Lockshop/Access Control via registered mail or overnight package service. Instructions for delivery to the Medical Center Lockshop/Access Control shall be established at the "Keying Conference".

## 1.4 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

## 1.5 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

# PART 2 - PRODUCTS

## 2.1 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
    a. Exterior Doors: Heavy weight, Stainless Steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

2. Hinge Options: Comply with the following:

    a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

3. Cam Lift Hinges: Where specified provide hinges that move the door up and then lower it to create a tight seal when the door is closed.

4. Manufacturers:

   a. McKinney Products
   b. Hager Companies
   c. Ives
   d. Stanley

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:

   a. McKinney Products
   b. Hager Companies
   c. Pemko Products
   d. Ives

B. Power Transfer Devices: Concealed Electrical Power Transfer Devices are preferred method over electric hinges.

1. Manufacturers: For CEPT devices – new construction projects
   a. Securitron EL-EPT Series
   a. Von Duprin - EPT Series

2. Manufacturers: For electrified hinges – retrofit projects where applicable
   a. McKinney – QC Series (ELynx)
   b. Ives – CON (Allegion Connect)

## 2.2 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

5. Manufacturers:

   a. Rockwood Products
   b. Trimco

c. Ives

B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.

1. Manufacturers:

a. Rockwood Products
b. Trimco
c. Ives

## 2.3 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years of experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored-Lock Type: Medical Center does not accept Cylindrical/Bored Locks or tubular deadbolts.
4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
5. Keyway: 7-Pin SFIC for all areas

C. Permanent Cores: Final cores to be installed by Medical Center Lockshop/Access Control unless otherwise noted. Small Format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinder housings, locks.

1. Manufacturers:
   a. ~~Stanley~~ Best Cormax
   b. No Substitution.

D. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): TBD Per Project by Medical Center Lockshop/Access Control

E. Construction Keying: Provide construction master keyed cylinders.

G. Electronic Key Management System:
1. Size and need to be determined by OSUWMC security management team

2. Associated interior panel must be specified to accept the 7-pin SFIC
3. Shall have magnetic card reader installed on exterior of box
4. Data Drop required by Div 27 and Emergency Power by Div 16
5. Manufacturers:
    a. Global Facilities Management System
    b. No Substitution

## 2.4 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, , All Mortise Lock Finishes are to be 32D not 26D. Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:

    a. Sargent Manufacturing - 8200 Series - LNJ Trim (New Construction) – use "CEJ" escutcheon trim instead of roses for all retrofit projects
    b. ~~Stanley~~ Best - 35H -3H Trim (the 35H is available only to Ohio State University) – use "3M" escutcheon trim instead of roses for all retrofit projects
    c. Corbin Russwin – ML2000 – LSB Trim (New Construction) – use "LSM" escutcheon trim instead of roses for all retrofit projects

## 2.5 PATIENT ROOM MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, All Mortise Lock Finishes are to be 32D not 26D. Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:
    a. Sargent Manufacturing – 8200 Series – ALP Trim
    b. Corbin Russwin – ML2000 Series – HPSK Trim
    c. No Substitution

## 2.6 BEHAVIORAL HEALTH MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, All Mortise Lock Finishes are to be 32D not 26D. Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:

    a. Sargent Manufacturing - 8200 Series - BHW Trim
    b. Corbin Russwin – ML2000 Series – BHSS Trim

c. No Substitutions
a) Must have tamper proof screws installed on all exposed holes

## 2.7 BATTERY POWERED STAND ALONE/WIRELESS ACCESS CONTROL LOCKING DEVICES

A. *** Battery powered stand-alone locksets or exit trim devices are not permitted *** Any request for devices or applications on projects must have written approval by Medical Center Lockshop/Access Control.

B. Offline Access Control Cabinet Locks: cabinet lock with keypad.

1. CompX Reg-M-V-3
   a. M(anual tailpiece)
   b. V(ertical) or R(ight) or L(eft)
   c. The last part of the number designates tailpiece length – order as needed
2. Locks come preprogrammed with a random access code, marked in packaging for the end user.
3. Documentation for programming shall be provided to the Medical Center Lockshop/Access Control
4. Master code to be programmed by the Medical Center Lockshop/Access Control
5. Substitutions or equals accepted.
6. Any furniture or storage unit locks shall be mechanical key
7. *** Any electronic furniture or cabinet lock requires OSUWMC access control acceptance before proceeding ***

## 2.8 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor. In behavioral health sites, all vertical rods shall be concealed.

7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.

8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

9. Rail Sizing: Provide exit device rails factory sized for proper door width application.

10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Manufacturers:

    a. Von Duprin – 98/99 Series – 03 Trim
    b. Sargent Manufacturing - 80 Series – ETJ Trim
    c. ~~Stanley~~ Precision - Apex 2000 Series – C Trim

## 2.9 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of

application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

   a. LCN – 4000 Series
   b. Sargent Manufacturing (SA) - 351 Series.
   c. Norton 410 Series

## 2.10 AUTOMATIC SWING DOOR OPERATOR ---

A. Model: Besam SW200i low energy automatic door operator (Basis of Design):

B. Stanley Magic Force

1. Configuration: Operator to control single swinging doors and pairs of swinging doors as indicated on the drawings and specified below:

a. Traffic Pattern: Two way.

2. Automatic Operator: Electro-mechanical, non-handed operator, powered by 24 volt, 1/4 hp motor. Operator shall be adjustable to compensate for different manual push forces as required.
   a. Automatic operator shall be capable of operating and controlling up to a 700 pound (317.5 kg) door, 48 inches (1219 mm) in width.
   b. Overhead Concealed Mounted Operator:
      1) Side Access Operator Housing: Operator is contained in a 6 inch (152.4 mm) x 6 inch (152.4 mm) high side access, extruded aluminum housing with a hinged cover.
      2) Overhead Concealed Mounted Housing: Mounted between door jambs, continuous for full width of door.
      3) Center Pivoted Door Connecting Hardware: Overhead concealed mounted operators to have a cast steel arm from the operator, concealed mounted to the top edge of the swing door.
   c. Operator can be field upgraded to a full energy operator by the addition of the required safety sensors, and guard rails to comply with ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.
   d. Electrical Characteristics: Maximum power consumption is 300 watts (2.5 amps at 120 VAC), 50/60hz, built-in thermal overload protection.
3. Operator Interface:
   a. Safety Sensor Integration for overhead presence safety device and door mounted reactivation safety sensors.

## 2.11 AUTOMATIC SLIDING DOOR OPERATORS

A. Model: Besam SL Series sliding automatic doors. (Basis of Design):
   1. Aluminum doors and frames with sidelites and active door leaves.
   2. Overhead concealed, electro-mechanical, microprocessor controlled, sliding door operator.
   3. Operator housing, guide system and door carriers.
   4. Non-shedding type weather-stripping.

B. Stanley Dura-Glide 3000 Series

C. Sliding Automatic Entrance Doors Configuration:
   1. Single slide, full breakout, door system.
      a. Configuration: Single slide, two equal panel unit with one operable leaf and one sidelite.
      b. Traffic Pattern: Two-way.
      c. Emergency Breakaway Capability: Sliding leaf and sidelite.
      d. Mounting: Overhead header installed between jambs.

## 2.12 ELECTRIC STRIKES

A. Manufacturers

1. Von Duprin - 6210 series
2. HES – 1500/1600 Series

## 2.13 REX MOTION SENSORS

A. Manufacturers –
   1. Bosch DS160
   2. Alarm Controls SREX-100
   3. Securitron XMS

## 2.14 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

   1. Manufacturers:

      a. Burns Manufacturing
      b. Rockwood Products
      c. Trimco

## 2.15 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

   1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products
2. Pemko Products
3. Reese Enterprises, Inc.

## 2.16 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

## 2.17 FINISHES

A. Standard: 32D Finish on all Div 08 hardware items where applicable, where not applicable use 26D. Mortise locks and exit devices trims. Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

## PART 3 - APPLICATIONS

### 3.1 OPENINGS - GENERAL PROVISIONS

A. Lock sets / Handle sets
   1. Storeroom (ANSI BHMA F07) – common applications
      a. Janitor Closets
      b. Mechanical Rooms
      c. Electrical Rooms
   2. Classroom (ANSI BHMA F05) – common applications
      a. Conference Rooms
   3. Office (ANSI BHMA F04) – common applications
      a. Offices
      b. Shared Workspaces
   4. Bathroom/Privacy Locks (F26 for institutional privacy)
      a. Bathrooms – Single Use not community bathrooms
      b. Lactation Rooms
   5. Passage (ANSI BHMA F01)
      a. Community Use bathrooms
      b. Patient Rooms
   6. Electrified Locks
      a. Card Reader Doors
      b. Fail Secure

B. Cylinders
   1. Sargent – 70-43-26D
   2. Corbin Russwin – 1040-112-626-7
   3. ~~Stanley~~ Best – 1E74C191RP3626
   4. Schlage – 80-108 626
   5. No substitutions or equals

C. Finish
   1. All finishes shall be 630/32D. In cases where 630/32D finish is unavailable, 626/26D is acceptable.

D. Lockers – Used in Division 10
   1. Free Hanging Locks
      a. MasterLock MA-1525-CD-V64MK
   2. Built in Locks
      a. MasterLock MA-1630-CD-F205MK (right handed)
      b. MasterLock MA-1631-CD-F205MK (left handed)
   3. The codes shall come in excel and be provided to the OSUMC Lock Shop for logging
   4. No substitutions or equals

E. Electric panels / Access Panels
   1. Lock on panel's door shall be compatible with our ~~Stanley~~ Best 7 Pin SFIC.

F. Padlocks
1. All padlocks shall be compatible with our ~~Stanley~~ Best 7 Pin SFIC
2. Shackle length shall be 1 ½"
3. Shackle diameter shall be ¼"
4. ~~Stanley~~ Best 11B722L626
5. No Substitutions no equals

G. Glass Doors
1. All shall be specified in such a way that the glass door patch fittings only accept one of the 3 mortise locks previously listed. The glass door and patch fittings shall be precut to match.

H. Renovation Projects
1. Projects that replace doors shall follow these design standards and not match existing unless the existing hardware in the building matches these design standards

## 3.2 DOORS AND FRAMES

### A. HOLLOW METAL DOORS AND FRAMES

1. EXTERIOR DOORS shall be not less than 16-gauge hot dipped zinc-coated steel sheets (Galvannealed) meeting ASTM A653, zinc-iron alloy-coated, with A60 coating. The top channel of each metal door shall be turned web up, to avoid a dirt pocket or moisture trap. Full glazed doors shall have 12-inch bottom rails. "High Frequency" hinge preparation and reinforcement is required.

2. INTERIOR DOORS shall be not less than 18-gauge metal. Full glazed doors shall have 12-inch bottom rails.

3. ACCESS DOORS shall be provided at plumbing chases, building equipment maintenance corridors, interstitial spaces, and in ceiling areas. Coordinate with Plumbing, HVAC and Electrical Contractors. Access door locking devices shall be equipped with approved cylinders per these standards and accept Best small format 7-pin interchangeable core.

    a. The Architect/Engineer (A/E) shall place in the specifications that the Contractor supplying the Access Doors shall coordinate with the Ohio State Medical Center Access Control Dept. to install the final cores during the construction period.

4. HOLLOW METAL FRAMES shall be one-piece, welded frames of not less than 16-gauge hot dipped zinc-coated steel sheets (Galvannealed) meeting ASTM A653, zinc-iron alloy-coated, with A60 coating for interior doors. Frames in interior walls through 8-inch thickness shall be full width of wall. Knock-down frames are generally prohibited; however, such frames may be

used in movable partitions. In remodeling work, permission will be granted by the University Architect to use knock-down frames if conditions justify their use. Frames for exterior doors shall be one-piece, welded frames of 14-gauge or heavier metal. All entrance door frames shall be heavily reinforced at hinge, strike and closer locations for "High Frequency" use. Frames shall have a hot dipped zinc coating.

B. ALUMINUM DOORS AND FRAMES

1. Aluminum doors and frames shall be factory finished.

C. WOOD OR PLASTIC LAMINATE FACED WOOD DOORS

1. All wood doors shall be at least 1-3/4" thick to accommodate mortise locks.

D. FIRE RATED DOORS

1. 2 hr. (120-minute), 1-1/2 hr. (90-minute), 3/4 hr. (45-minute) and 20-minute doors must have a U.L. label per NFPA 80.

2. MINERAL CORE LABELED DOORS ARE PROHIBITED because the narrow rails and stiles, required to obtain U.L. approval, are expected to reduce the service life and security of these doors in rigorous service.

E. WOOD VENEERS: Judicious selection of face veneers shall be exercised. The contractor shall be required to make a grain selection, prior to placing wood doors in the more prominent or public places, subject to the approval of the Architect/Engineer (A/E). Wood doors in, or adjacent to, wood paneling will have veneers to match the paneling.

F. SPECIAL DOORS

1. ACCESS DOORS TO MACHINE AND EQUIPMENT SPACES shall be hollow metal doors in 4-sided steel frames, minimum size 2'-0" by 4'-0". All access doors locking devices shall be equipped with cylinders per these design standards and accept the Best small format 7-pin interchangeable Cormax core. Following approval by access control of the final keying schedule, contractor to deliver cores and keys directly to Medical Center's access control dept. for installation.

2. The Architect/Engineer (A/E) shall place in the specifications that the Contractor supplying the Access Doors shall coordinate with the Ohio State

Medical Center Access Control Dept. to install the final cores during the construction period.

G. ALL EXTERIOR DOORS shall be metal, either Hollow Metal or Aluminum depending on building function, etc…

H. MULTIPLE EXTERIOR DOORS shall not have fixed or removable mullions. Vertical Rods are required.

I. DOORS FOR USE BY PERSONS WITH DISABILITIES.

1. One door at each primary point of ingress and egress shall be equipped with a power door operator unless the entrance is not accessible.

2. Confer with the Facilities Operations and Development's ADA Coordinator on Power Door Operators.

J. TRASH ROOM DOORS shall be no less than 3' 6" wide.

K. DEMOLITION / REMODELING: Lock and door hardware removals shall be coordinated with Access Control. All cylinders and cores removed shall remain the property of The Ohio State University Medical Center, and are to be returned to Lock & Key Services.

## 3.3 POWER DOOR OPERATORS

A. POWER DOOR OPERATORS providing access for individuals with disabilities may be surface mounted. Concealed operators are not permitted. All operator switches providing access for individuals with disabilities shall be 6 inches in diameter with the handicapped logo.

B. ELECTRIC OPERATOR SWITCHES may be wall-mounted or post-mounted, and are required to be wired to the door operator. Wireless switches are not permitted.

C. INSTALLATION AND EQUIPMENT shall be provided by a manufacturer's authorized and trained distributor. Final connection between equipment and the wiring system to be made by or under the direct supervision of the manufacturer's authorized and trained distributor.

D. OPERATOR SYSTEM - As approved by Facilities Operations and Development's ADA Coordinator.

E. MAINTENANCE MANUALS in triplicate shall be provided to Facilities Operations and Development showing templates, wiring diagrams and full maintenance instructions.

F. AUTOMATIC RESET is required. If the door is locked or if door encounters an obstacle when the operator is activated, the operator system will do one of the following:

1. Continue to push gently on the door until the time delay period expires, then close.

2. Sense the resistance, shut off power and close.

G. OPERATOR SYSTEMS shall have:

1. Adjustable time delay period (opening time plus hold-open time) shall be approximately 20 seconds, adjustable from at least 40 seconds to 7 seconds minimum.

2. Adjustable opening speed (time from activation until door is fully open) shall be approximately 7 seconds, adjustable from at least 11 seconds to 5 seconds minimum.

3. Slow closing speed of approximately 7 seconds. Adjustability is desirable but not mandatory.

4. Full compliance with ANSI/BHMA A156.10 and Ohio Building Code.

5. Weatherproof controls and circuitry.

6. Low voltage current from operators to controls.

7. Easy manual door operation. In event of power failure or pedestrian impatience, pressure on strike side of door equal to that required to open a conventional 36" wide door with closer shall be adequate to open the door manually. Maximum of 15lbs. Opening pressure.

8. Easy access for maintenance. Access covers, if provided, must also have vandal resistant screw attachment.

9. Operation must be smooth and quiet.

10. Closer shall be spring type which functions with power on or off.

11. The Architect/Engineer (A/E) shall review the manufacturer's door weight limits.

## 08 72 00. POWER DOOR OPERATORS

.1 POWER DOOR OPERATORS providing access for individuals with disabilities may be surface mounted. Concealed operators are not permitted. All operator switches providing access for individuals with disabilities shall be 6 inches in diameter with the handicapped logo.

.2 ELECTRIC OPERATOR SWITCHES may be wall-mounted or post-mounted, and are required to be wired to the door operator. Wireless switches are not permitted.

.3 INSTALLATION AND EQUIPMENT shall be provided by a manufacturer's authorized and trained distributor. Final connection between equipment and the wiring system to be made by or under the direct supervision of the manufacturer's authorized and trained distributor.

.4 OPERATOR SYSTEM - As approved by Facilities Operations and Development's ADA Coordinator.

.5 MAINTENANCE MANUALS in triplicate shall be provided to Facilities Operations and Development showing templates, wiring diagrams and full maintenance instructions.

.6 AUTOMATIC RESET is required. If the door is locked or if door encounters an obstacle when the operator is activated, the operator system will do one of the following:

.6.1 Continue to push gently on the door until the time delay period expires, then close.

.6.2 Sense the resistance, shut off power and close.

.7 OPERATOR SYSTEMS shall have:

.7.1 Adjustable time delay period (opening time plus hold-open time) shall be approximately 20 seconds, adjustable from at least 40 seconds to 7 seconds minimum.

.7.2 Adjustable opening speed (time from activation until door is fully open) shall be approximately 7 seconds, adjustable from at least 11 seconds to 5 seconds minimum.

.7.3 Slow closing speed of approximately 7 seconds. Adjustability is desirable but not mandatory.

.7.4 Full compliance with ANSI/BHMA A156.10 and Ohio Building Code.

.7.5 Weatherproof controls and circuitry.

.7.6 Low voltage current from operators to controls.

.7.7 Heavyduty "supermarket" quality.

.7.8 Easy manual door operation. In event of power failure or pedestrian impatience, pressure on strike side of door equal to that required to open a conventional 36" wide door with closer shall be adequate to open the door manually. Maximum of 15lbs. Opening pressure.

.7.9 Easy access for maintenance. Access covers, if provided, must also have vandal resistant screw attachment.

.7.10 Operation must be smooth and quiet.

.7.11 Closer shall be spring type which functions with power on or off.

.7.12 Approved Power Door Operators are: No substitutions/No Equals

| | |
|---|---|
| LCN | 4600 Series and 9500 Series |
| Nabco | GT8710 Series |
| ~~Stanley~~ | ~~D4990 Series~~ |

The Architect/Engineer (A/E) shall review, verify and confirm the adequacy of the manufacturer’s automatic closure door weight limits.

08 73 00. PROVISIONS FOR NOISE CONTROL: Refer to PART ONE and to the Program of Requirements for possible special requirements. On machine room doors and other doors where excessive noise is anticipated, weatherstripping at heads and jambs and surface applied automatic door bottoms shall be specified.

08 74 00. ACCESS CONTROL and ALARM MONITORING SYSTEM (ACAMS) – Doors, Frames and Hardware

.1 All card reader and/or electrically unlocked or monitored doors shall be equipped with Request to Exit functions and latchbolt monitoring integral to the door hardware. Door position switches required for each door.

.2 Card reader and/or electrically unlocked doors shall be operated as pairs where applicable.

.3 Wiring in door frames shall be in conduit from the transfer hinge location to a junction box external to the frame for connection to the Access Control and Alarm Monitoring System (ACAMS).

.4 Hardware equipped with a cylinder/core shall be installed such that the key retracts the latch only and the key action will not permit the door hardware to remain in an unlocked condition.

.5 Doors with electrified exit devices shall utilize Von Duprin EPT- 10 power transfer hinges. No substitutions/No equals.

.6 All hardware under this section to be installed per manufacturers specifications. Failure to follow specifications will result in door hardware and security system malfunctions. Door hardware, electrical, and security contractors shall coordinate the installation and adjustment of door hardware components to perform as part of an integrated Access Control and Alarm Monitoring System.

.7 DOOR APPLICATION / HARDWARE REQUIREMENTS Access Control and Alarm Monitoring System (ACAMS) Doors

.7.1 Exterior Doors with exit devices: Exit devices shall be equipped with electric latch retract, cylinder dogging, pull handle (no thumb latch), request to exit, fully adjustable latchbolt monitoring, door position switches.

.7.2 Interior Doors with exit devices: Exit devices shall be equipped with electric latch retract or electrically unlocking (fail secure) lever trim, request to exit, fully adjustable latchbolt monitoring, door position switches.

.7.3 Fire Exit Doors: Fire Exit - doors with exit devices-fail safe electric trim with request to exit, fully adjustable latchbolt monitoring, and door position switches.

.7.4 Fire exit doors with mortise lock-fail safe, (Temperature control module where required by manufacturer) request to exit, latchbolt monitoring, door position switches.

.7.5 Mortise Lock Doors: Fail Secure, request to exit, latchbolt monitoring, door position switches.

.7.6 Power Transfer Hinges: Exit Devices - Von Duprin EPT-10, No substitutions/No equals. Mortise Locks - wired ball bearing transfer hinges.

.7.7 Delayed Egress Devices: Von Duprin 99 Series Chexit devices, No substitutions / No equals. Interior doors - Lever trim. Exterior doors - Exit only function.

.7.8 Power Supplies: Per manufacturer's specifications.

.7.9 Auto opener/card reader operated door: Access system shall enable outside button upon authorized card swipe as determined by the Access Control and Alarm Monitoring System (ACAMS). A successful card swipe shall not automatically energize the automatic opener. The interior button shall remain active at all times and provide a request to exit signal to the ACAMS system as well as initiate the auto opener. There shall be a delay in the auto opener activation such that the door hardware latches are retracted fully before the auto opener begins the door open cycle.

.7.10 Prohibited Hardware

.7.10.1 No Vertical Rod hardware to be utilized on any Access Control and Alarm Monitoring System (ACAMS) operated or monitored door.

.7.10.2 No electric strikes.

.7.10.3 No magnetic locks.

.7.10.4 No PIR request to exit.

.8 ELECTRICALLY LOCKING / UNLOCKING DOOR HARDWARE- ACCESS CONTROL and ALARM MONITORING SYSTEM (ACAMS)

.8.1 Approved exit devices with integrated request to exit, and fully adjustable latchbolt monitoring switches: No substitutions/No equals

Von Duprin RXLXEL99L-NL rim exit device (latch retract)
Von Duprin RXLXE99L-NL rim exit device (electric trim)

.8.2 Approved delayed egress exit devices – Von Duprin CX99 Chexit.
No substitution/No equals.

The door position switch is to be wired to the device, and the device alarm output connected to the Alarm and Card Access Management System (ACAMS).

.8.3 Approved mortise locks without integrated card reader,
No substitutions/No equals.

Best 35HW7EWEU(15 or 3)J626IDHLS
Best 35HW7EWEL(15 or 3)J626IDHLS
Schlage XL12-245 L9080EU with Latch Monitoring
Schlage XL12-246 L9080EL with Latch Monitoring
(15 or 3) above denotes lever style
BEST 35H Series is available only to Ohio State University.
No substitutions / No equals.

**Wexner Medical Center:** uses electrified handsets. These shall be:
Sargent RX-8271-12V LNJ 32D (new install)
Sargent RX-8271-12V CEJ 32D (retrofit)

Sargent RX-8271-12V BHW 32D (behavioral health)
Corbin Russwin ML20906 LSB 630 SEC CL6 M91 (new install)
Corbin Russwin ML20906 LSM 630 SEC CL6 M91 (retrofit)
Corbin Russwin ML20906 BHWW 630 SEC CL6 M91 (behavioral health)
No subs or equals.

8.4 Approved mortise locks with integrated card reader,
No substitutions / No equals.

Best 35HW7EEU(15 or 3)MS626 IDH MAX
Best 35HW7EEL(15 or 3)MS626 IDH MAX
(15 or 3) above denotes lever style
BEST 35H Series is available only to Ohio State University.
No substitutions/No equals.

08 75 00 BATTERY POWERED STAND-ALONE LOCKS

..1 Approved Exit Device Card Reader
Best B.A.S.I.S. V EX Trim Series Dual Validation (15 or 3 lever style)
Part number varies based on exit device manufacturer
No substitutions / No equals

**Wexner Medical Center:** WMC does not allow Offline/Standalone / or Wi-Fi card readers.

Wexner Medical Center: Offline/Standalone Wi-Fi Sargent Locks

Sargent Passport 1000 P2 Mortise lock that includes:
No substitutions / No equals
Magnetic stripe reader
HID multiclass SE
No Keypad (unless otherwise noted)
Power shall be provided by battery.
DHCP support shall be provided

.2 Approved Mortise Lock Keypad
Best EZ Series Keypad 35HZ7EV15(or 03) KPSTK626 (Keypad w/ 15 or 3 lever style)
No substitutions / No equals

**Wexner Medical Center:**
Accessories

Door contacts
Central Magnetic Contacts 1078/1076 Series
Request to Exit motion detectors
Bosch DS 160

Electric strike
Von Duprin 6210
HES 1500 Series
Delayed Egress "Rocking" Electromagnetic Locks
All delayed egress "Rocking" electromagnetic lock mounting fasteners shall be installed with locktite applied by the installer.
Schlage 490DEP
Electromagnetic Lock
All electromagnetic lock mounting fasteners shall be installed with locktite applied by the installer
Schlage Magforce 490+ Series
Panic Buttons
Honeywell 269R surface mounted with recessed switch
Emergency release for automatic doors
Securitron EEB2 30 second delay exit button
Rex Motion Sensors
Bosch DS1260

.3 Approved Exit Device Keypad
Best EZ Exit Hardware Trim
Part number varies based on exit device manufacturer (15 or 3 lever style)
No substitutions / No equals

.4 **Wexner Medical Center**:
Wireless Access Control Cabinet Locks: cabinet lock with keypad
CompX Reg-M-V-3
M(anual tailpiece)
V(ertical) or R(ight) or L(eft)
The last part of the number designates tailpiece length – order as needed
Locks come preprogrammed with a random access code, marked in packing for the end user
Documentation for programming shall be provided to the OSUMC Lock Shop
Master code to be programmed by the OSUMC Lock Shop
No Substitutions or equals accepted.

08 76 00 900mhz Wireless Locks (in lieu of offline locks: these locks are not for alarm monitoring purposes)

.1 Schlage AD-400-MS-70-MS-RHO-626-BD-(Lock Handing)-4B-09-663-10-072-134. No substitutions / No equals

.2 Other required items are referenced in Division 28 of the Building Design Standards

## 08 80 00. GLAZING

08 80 10. DESIGN FOR ENERGY CONSERVATION: Refer to PART ONE, paragraph 00030.

08 80 14. WIRED GLASS: Wired glass is not allowed. Substitute InfernoLite FRP 200 and 400 by Globe Amerada, PyroEdge and Pyrobel by Interedge Technologies, SuperLite I and SuperLite I-XL by SAFTI Division of O'Keefe's Inc. and FireLite and Pilkington Pyrostop by Technical Glass Products.

08 80 22. LAMINATED FULLY TEMPERED GLASS: Glass for exterior aluminum and stainless steel doors shall be 1/4 inch thick laminated fully tempered glass insulated units.

.1 LAMINATED FULLY TEMPERED GLASS: Glass for interior doors with vision panels and all sidelights shall be ¼-inch thick laminated fully tempered glass.

.2 LAMINATED FULLY TEMPERED GLASS: Glass for guardrails and balusters shall be ½-inch thick laminated fully tempered glass. The laminate shall be SentryGlas Ionoplast Interlayers, minimum 60 mil thickness. The choice of other thicknesses is dependent on structural design loads. SentryGlas product performance type is dependent on specific application requirements. PVB (Polyvinyl Butyral) laminate interlayers are prohibited for guardrails and balusters. Products equivalent or of superior quality, strength, resistance, durability, and safety over that prescribed by this standard are acceptable.

08 82 30. INSULATING GLASS: The following paragraph shall be included in the specifications; edit the heading to apply to the particular type of glass specified.

.1 INSULATING AND REFLECTIVE INSULATING GLASS, GUARANTEE: Provide manufacturer's written guarantee that, for ten years from date of building completion, a replacement will be provided for any unit which develops edge separation or other defects which materially obstruct vision through the glass or safety or affects the insulating qualities; except, that guarantee shall not cover glass breakage from physical abuse, earthquake, storm, or similar causes.

.2 PARTIAL SHADING OF INSULATING GLASS can cause stress breakage. Manufacturers consider this to be a design error and will not replace glass broken by temperature differential stresses. Avoid partial shading of large panes.

08 83 00. MIRROR GLASS: Framed mirrors for toilet and shower rooms shall be included in Division 10. Large mirrors unframed, or in custom made frames, shall be included in this division.

END OF DIVISION 08 - OPENINGS

## 09 00 00. FINISHES

## 09 00 03. GENERAL PROVISIONS

**.1** DESIGNS: All materials, colors, finishes, product specifications, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

**Wexner Medical Center:** When applicable to Ohio State Wexner Medical Center (WMC) buildings review and approval of materials, colors, finishes, product specifications, applications and details shall be the responsibility of WMC Space and Facilities Planning.

All materials shall meet or exceed the Ohio Building Code (OBC) and University use requirements for the area. All interior finishes shall be of Class A Fire Rated Material.

In remodeled areas, all material patches shall blend as close as possible. Complementary colors and patterns are to match the existing materials so they do not appear patched. Testing is required for asbestos and lead paint in older finishes of a suspect nature. This is important whenever surfaces are to be patched and repaired.

.2 LEED POLICIES: The University promotes energy efficient green design, construction and building operations. Whenever possible, materials are to be selected and specified following the United States Green Building Council LEED (Leadership in Energy and Environmental Design) Green Building Rating System® consensus-based national standard for developing high-performance, sustainable buildings. Refer to the website: http://www.usgbc.org/.

.3 DESIGNS: For sound control requirements for products and materials included in Division 09, refer to ,DIVISION 00, PART 2: PROCESSING ~~THE WORK, paragraphs 00035, .1 through .5.~~

**Wexner Medical Center**: The A/E shall consult FGI Guidelines for appropriate finish selections. The A/E to review compatibility of finishes selected with Medical Center cleaning / sanitizer products.

## 09 01 00. MAINTENANCE OF FINISHES

.1 DESIGNS: The A/E shall specify only finishes that require little maintenance and can be easily maintained by the University.

**Wexner Medical Center:** Buildings finishes shall be reviewed and tested by WMC Facilities Operations and Environmental Services prior to acceptance into

Construction Documents.

## 09 05 00. COMMON WORK RESULTS FOR FINISHES

## 09 05 61.13 MOISTURE VAPOR EMISSION CONTROL

.1 DESIGNS: Moisture vapor emission control requirements shall be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 MOISTURE VAPOR EMISSION CONTROL: A fluid applied membrane forming system that controls the moisture vapor emission rate of high moisture interior concrete to prepare it for floor covering installation. Install system according to ASTM F3010 to produce a uniform monolithic surface free of surface deficiencies, including but not limited to, pin holes, fish eyes, and voids.

.2.1 Performance Characteristics:

a. Water Vapor Transmission: ASTM E96, maximum 0.03 perm.
b. Tensile Bond Strength: ASTM D7234, greater than 200 psi with failure in the concrete.

2.2 Preinstallation Testing:

a. Alkalinity Testing: ASTM F710 pH testing, install system when pH readings are between 7.0 and 8.5 pH.
b. Moisture Testing: Perform minimum three tests in each 200 sq.ft. test area. Evenly space test areas.
    1) Anhydrous Calcium Chloride Test: ASTM F1869, install system where concrete substrate moisture vapor emission exceeds 3 lb. of water/1000 sq.ft. in 24 hours.
    2) Internal Relative Humidity Test: ASTM F2170, in situ probes, install system where concrete substrates show relative humidity level greater than 75 percent.

.3 Protect installed moisture vapor emission control system from damage, wear, dirt, dust and other contaminants before floor covering installation. Do not allow subsequent pre-installation examination and testing for floor covering installation to damage, puncture, or otherwise impair the moisture vapor emission control system membrane.

## 09 06 00. SCHEDULES FOR FINISHES

.1 DESIGNS: The A/E shall clearly note all finishes and their extent of coverage on the drawings and specifications using room finish schedules and include notations on elevations and details.

## 09 06 90. SCHEDULES FOR PAINTING AND COATING

1. COATINGS SCHEDULE: The A/E shall prepare a schedule listing all surfaces in generic terms, all coating or finish operations, the types of finish materials and the number of coats of each material.

## 09 08 00. COMMISSIONING OF FINISHES

.1 RESILIENT FLOORING: Immediately prior to final inspection, resilient flooring and base shall be cleaned as per the manufacturer's recommended guidelines and ready for final finishes. The Contractor shall finish the floor using the manufacturers or University provided waxes.

**Wexner Medical Center:** Buildings waxes are not typically required. If a floor finish is required the contractor shall verify with WMC Environmental Services the type of finish and the manufacturer's recommended installation prior to application.

.2 CARPETS: Immediately prior to FF&E installation, all carpeted areas shall be cleaned and vacuumed of all construction debris and made ready for installation of FF&E. The Contractor shall clean and vacuum.

## 09 20 00. PLASTER AND GYPSUM BOARD

## 09 21 13. PLASTER ASSEMBLIES

~~.1 DESIGNS: The use of plaster for ceilings and of stucco for exterior finish, including canopy soffits, is prohibited without written permission of the University Architect; however, these materials may be used for patching existing plastered surfaces. The Associate may request permission to use these materials in limited areas, only if the situation is unique and architecturally demanding.~~

## 09 21 16. GYPSUM BOARD ASSEMBLIES

DESIGNS: ~~For sound control requirements, refer to PART ONETWO, paragraph~~ Preferred staggered stud assemblies with insulation for acoustical concerns.

Provide moisture resistant gypsum wallboard system at all walls with sinks and/or toilets; and return walls for minimum of 4 feet.

CONSTRUCTION: No gypsum board product is to be used as blocking to support casework, door frames, or other woodwork.

.1 GYPSUM BOARD SYSTEM STANDARDS:

1. Application and Finishing: Comply with Gypsum Association GA-216 "Recommended Specifications for Application and Finishing of Gypsum Board.
2. Levels of Finish: Comply with Gypsum Association GA-214 "Recommended Levels of Finish for Gypsum Board, Glass Mat and Fiber-Reinforced Gypsum Panels".
3. Metal Framing Systems: Comply with ASTM C 754.

SOURCE LIMITATIONS: Provide products manufactured within the United States from materials free of sulfur, formaldehyde or other deleterious chemicals. Natural gypsum ore shall be mined in North America. Synthetic (byproduct) gypsum shall be pure calcium sulfate from domestic sources.

FIRE RESISTANCE RATINGS: Where required by project conditions, provide materials and construction which are identical to those of assemblies whose fire resistance rating has been determined by ASTM E 119 by a testing and inspection organization acceptable to authorities having jurisdiction.

1. Provide fire resistance rated assembles identical to those indicated by reference to GA File No's in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.

ENVIRONMENTAL CONDITIONS:

1. Establish and maintenance environmental conditions for application and finishing of gypsum board in accordance with ASTM C 840 and the gypsum board manufacturer's recommendations.
2. Minimum Room Temperatures: Maintain indicated temperatures for at least 48 hours before application and continuously after, until drying is complete.
    a. Non-adhesive attachment of gypsum board to framing: Minimum 40 degrees F.
    b. Adhesive attachment and finishing of gypsum board: Minimum 50 degrees F.

NON-LOADBEARING FRAMING SYSTEM COMPONENTS: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf as a minimum standard. Review framing requirements with the gypsum board manufacturer and revise as needed to accommodate project conditions.

1. Gauge: Minimum 20 gauge.
2. Spacing: 16 inches on center.

GYPSUM BOARD: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; edges tapered.

1. Mold Resistance: Score of 10 when tested in accordance with ASTM D3273.
2. Fire-Rated Assemblies: Use board type required by indicated tested assembly. I no tested assembly is indicated, use Type X board, UL or WH listed.

3. Thickness: 5/8 inch thick, unless indicated otherwise.

ABUSE RESISTANT GYPSUM BOARD: High traffic areas determined by the University.
1. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
2. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
5. Type: Fire resistance rated Type X, UL or WH listed.
6. Thickness: 5/8 inch.
7. Edges tapered.

IMPACT RESISTANT GYPSUM BOARD: High traffic areas determined by the University.
1. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
2. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Hard Body Impact: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
6. Type: Fire resistance rated Type X, UL or WH listed.
7. Thickness: 5/8 inch.
8. Edges tapered.

ACOUSTICAL GYPSUM-BASED PANEL: For use in STC rated assemblies in areas requiring increased acoustical performance as determined by the University.
1. Perforated non-fire rated gypsum panels with acoustically transparent scrim complying with ASTM C1396 Non-Type X.
2. Core Hardness: Meets or exceeds 11 in accordance with ASTM C473 B.
3. Flexural Strength: Parallel not less than 46 lbf, and perpendicular not less than 147 lbf in accordance with ASTM C473
4. Nail Pull Resistance: Not less than 87 lbf in accordance with ASTM C473 B.
5. Thickness: 5/8 inch.
6. Edges tapered.

ANCHORAGES: Ceiling suspension systems shall be secured to the structure

ACOUSTIC INSULATION: Unfaced blanket/batt insulation produced by combining mineral fibers with formaldehyde free thermosetting resins to comply

with ASTM C 665; Type 1, Class A. Maximum flame spread and smoke developed values of 25 and 50 respectively.

FINISHING: Finish gypsum board in accordance with levels defined in GA-214 and as scheduled below:

1. Level 0: Temporary partitions and surfaces to be finished in a later bid package.
2. Level 3: Concealed panels and fire-rated partitions that are not exposed to view.
3. Level 4: Exposed to view walls and ceilings, unless specifically required to be Level 5.
4. Level 5: Walls and ceilings to receive wall covering, environmental graphics, gloss paint, dark accent paint, or specialty paint finishes, paperless mold and moisture resistant panel surfaces exposed to view, large expanses of daylit walls, and other specialty areas indicated in the Finish Schedule.

TOLERANCES:

1. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

## 09 30 00. TILING

.1 DESIGNS: Ceramic floor and wall tile or other suitable solid surface material approved by the University Architect, is required for all restrooms, shower rooms, food preparation, food serving and other common areas where water and food is present.

All floor tiles shall be non-slip and rated for heavy duty use.

For designs where floor and wall tile indicate a pattern of colors, details shall be clearly detailed on the Construction Drawings using specific tile sizes, dimensions and details of all surfaces to receive tile.

Designs of ceramic “mosaics” shall include specific tile sizes and detailed drawings showing extent or complexity of patterns.

All floor tile grout shall be sealed. In frequently wet areas such as shower and pools areas, floor and wall grout shall be sealed.

Provide cementitious backer units for application area of tile in wet areas including shower and steam rooms.

Provide marble threshold in door frames at tile locations; match width of frame.

**Wexner Medical Center:** Floor and wall grout shall be epoxy and a sealer is not

required. Floor and wall tile to be porcelain, unless matching existing ceramic.

.2 Refer to Section 09 05 61.13 Moisture Vapor Emission Control for concrete testing and performance requirements of a moisture vapor emission control system before start of tile flooring installation.

.3 INSTALLATION GUIDELINES; Refer to the most current version of the Tile Council of North America (TCNA) "Handbook for Ceramic, Glass, and Stone Tile Installation" for industry guidelines related to tile materials and installation methods.

.2.1 When accent tile differs in thickness from field tile, vary setting bed thickness so tiles are flush from one type to the next.

.2.2 LARGE FORMAT TILE; Install with random or 33 percent offset.

**Wexner Medical Center:** See Wexner Medical Center Material Color Schedule for approved tile and grout manufacturer, type, and color.

.4 TOLERANCES: Wall and floor surfaces shall be true to plane and fall within a maximum tolerance variation as follows:

.3.1 Walls: 1/8 inch in 8 feet.
.3.2 Floors: 1/8 inch in 10 feet.

## 09 50 00. CEILINGS

.1 DESIGNS: All ceilings shall be designed to be easily accessible for maintenance and other access needs such as technology installations. A single type of ceiling tile, tile size and suspension system shall be used throughout a building to minimize maintenance and repair costs. Limited exceptions to this are special feature areas or specialized function areas where no accessibility is required. The use of 3 foot tile and other non-standard tile sizes is prohibited.

Fire code gypsum board or fire rated acoustic tile with rated suspension assembly shall be used for fire-rated ceilings.

**Wexner Medical Center:** See Interior Finish Schedule for approved ceiling panel and grid manufacturer, type, and color.

.2 INSTALLATION TOLERANCES

.2.1 Maximum variation from flat and level surfaces: 1/8 inch in 10 feet.
.2.2 Maximum variation from plumb of grid members caused by eccentric loads: 2 degrees.

## 09 51 00. ACOUSTICAL CEILINGS

.1 DESIGNS: Mineral fiber lay-in type acoustic ceilings shall be specified. Panels shall be a minimum of 5/8 inch thick and maximum panel size shall be 24 inches x 48 inches or 24 inches x 24 inches. A single type and size of acoustic ceiling panel shall be consistent throughout a building for maintenance purposes.

Other size panel sizes and materials proposed are subject to review and approval by the University Architect.

~~For design requirements relative to sound control, refer to PART ONE paragraph 00035.~~

## 09 53 00. ACOUSTICAL CEILING SUSPENSION ASSEMBLIES

.1 DESIGNS: Ceiling suspension assemblies shall be supported directly from the building structure and shall be supported at all four corners of fluorescent light fixtures. Ceilings shall not be supported from ductwork, electrical conduit, heating or plumbing lines, and vice versa. Each utility system and the ceiling grid system shall be a separate installation and each shall be independently supported from the building structure. Where interferences occur, provide trapeze type hangers or other suitable supports for each system. Locate hangers and supports where they will not interfere with access to mixing boxes, fire dampers, valves, and other appurtenances requiring servicing.

The requirements for independent supports for ceiling grid systems shall be repeated in the applicable sections of the specifications. If patented ceiling suspension systems are required for plaster, gypsum board, and acoustic ceilings, a separate section may be written for the systems; or each separate system may be specified in the section for the particular ceiling material, at the option of the A/E; however, it is preferred that suspension systems for acoustic ceilings be specified with the ceiling materials to avoid divided responsibilities.

Stainless steel hanger wires must be specified for canopy suspension systems and for other systems in locations subject to moisture penetration or condensation.

**Wexner Medical Center:** Provide non-ferrous aluminum grid and suspension materials in MRI areas.

.2 SEISMIC RESTRAINTS: Includes seismic clips designated to secure acoustical panels in place during a seismic event, perimeter stabilizers designed to accommodate seismic forces, and compression struts designed to accommodate seismic forces.

.2.1 Delegated Design Submittal: Include design calculations for seismic

restraints, including analysis data signed and sealed by the qualified professional engineer responsible for their reparation.

.2.2 Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

.3 ANCHORAGES: ~~Power and powder-driven anchors are prohibited and shall be noted in the specifications. Refer to Appendix V Safety Health & Environment Article 1.6, paragraphs A through D~~. Ceiling suspension systems shall be secured to the structure with toggle, molly bolts, self-drilling anchors, cast-in inserts, or bolts in expansion shields. The use of wood, lead, or plastic plug anchors is also prohibited.

.4 CLEAN ROOM GASKETS; Provide gasketing and related tapes, seals, and retention clips designed to seal out foreign material and maintain positive pressure in clean rooms.

## 09 60 00. FLOORING

.1 DESIGNS: A/E selections shall be based on extra heavy duty commercial grade flooring, rated for intended use by the manufacturer. Custom materials and colorations are prohibited as they increase later costs for repair and renovations. Specify designs for visually impaired where applicable. Specify designs for static dissipation requirements where applicable.

All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

In some cases, the University may choose to purchase Flooring for a project. In these cases, the cost of Flooring is moved from Construction funds to Equipment funds for the purchase. Design of spaces, door clearances and scheduling of the work where Flooring is required must provide for these installations, whether Flooring is provided by the Contractor or by the University.

The A/E shall provide detailed specifications of at least one selected product and two additional products which are acceptable equals in material construction and color for bidding.

The A/E shall specify products that can be obtained and installed by Contractors of an established firm, experienced in the installation of the specified product. The specifications shall request Contractors to have completed at least three projects of equal size, material and complexity to verify experience.

.2 INSTALLATION CONDITIONS: The A/E shall specify critical Flooring Substrate Conditions appropriate to the material specified. The A/E shall include standard

testing methods for determining Relative Humidity in concrete flooring, Moisture Vapor Emission Rate of concrete subfloor. The A/E shall outline Contractor responsibility for conducting the tests prior to installation.

.3 Refer to Section 09 05 61.13 Moisture Vapor Emission Control for concrete testing and performance requirements of a moisture vapor emission control system before start of resilient flooring installation.

**Wexner Medical Center:** See Interior Finish Schedule for approved flooring manufacturers, types, and colors.

## 09 65 00. RESILIENT FLOORING

## 09 65 13. RESILIENT BASE AND ACCESSORIES

09 65 13.13 RESILIENT BASE

.1 MATERIALS: Base to be 1/8 inch thick, rounded top edge and 4-inch minimum height. Specify straight wall base for carpeted areas and coved wall base with toe for resilient flooring areas. Specify that internal and external corners be formed on the job with joints a minimum of 18 inches from corners. Terminal ends of base shall be beveled and toes rounded. Color to be integrated with the material. Material can be vinyl or rubber per Architect's (project) specification. Use of coiled rolls is preferred.

**Wexner Medical Center:** Standard is a 6-inch-high base.

.2 WARRANTIES: Meet or exceed 5 year material warranty.

09 65 13.23 RESILIENT STAIR TREADS AND RISERS

.1 MATERIALS: Color integrated treads and risers, vinyl or rubber. Slip resistant and easily maintainable. Use stair tread nose filler to fill nosing substrates that do not conform to tread contours. Install to produce a flush joint between units.

Comply with ASTM F2169 Group 2 designation and provide stair treads with a contrasting color for the visually impaired that is either the same materials as the tread or an abrasive material.

**Wexner Medical Center:** Resilient treads and risers are required for inpatient facilities. Resilient treads and risers are preferred for outpatient, but not required.

.2 WARRANTIES: Meet or exceed 5 years material warranty.

09 65 16. RESILIENT SHEET FLOORING

.1 MATERIALS: Commercial grade, high performance homogeneous sheet flooring. Seams to be heat welded, when possible. Use standard 4 inch high cove base at wall. A 6 inch high flash coving may be specified to enhance hygienic qualities. Where applicable, manufacturers to provide stain resistance test data, coefficient of friction ratings (wet and dry), load bearing capacity and other standardized test data as may apply.

**Wexner Medical Center:** Heat weld seams in patient care areas. Use flooring manufacturer's recommended high peel and shear strength adhesive to prevent flooring failures under patient beds and other heavy-duty use areas.

Overall Nominal Thickness: .080 inches

Reference Specs: Meets or exceeds ASTM F-1913; Type II, Grade 1 for vinyl sheet flooring without a backing.

Fire Test Data: Meets ASTM E-648 (Critical Radiant Flux) / ASTM E-662 (Smoke Density)

Static Load Limit: ASTM F-970 250 PSI (Std.), 700 PSI

Slip-Retardant Performance: ASTM D-2047 James Test; Exceeds ADA recommendation.

Traffic Performance: Rated for extra heavy commercial traffic.

Recycled Vinyl Content to be 10% or greater.

.2 WARRANTIES: Meet or exceed 5 years material warranty.

09 65 16.13 LINOLEUM FLOORING

.1 MATERIALS (SHEET): Homogeneous linoleum sheet floor covering made of primarily natural materials consisting of linseed oil, wood flour, rosin binders and dry pigments mixed and calendared using a two-layered process onto a jute backing including a strong, durable primer and a top layer. ~~Seams shall be heat welded.~~

Reference Specs: Meets or exceeds ASTM F2034 for Linoleum Sheet Flooring.

Overall nominal thickness: 0.100 inches.

Static Load Limit: 450 pounds per square inch.

Traffic Performance: Rated for extra heavy commercial traffic.

Recycled content: 45% or greater Post-Industrial Recycled Content.

**Wexner Medical Center:** Heat weld seams in patient care areas. Use flooring manufacturer's recommended high peel and shear strength adhesive to prevent flooring failures under patient beds and other heavy duty use areas. Consult FGI guidelines for rooms to receive heat welded seams. If heat weld is not required, use Net Fit seams.

.2 MATERIALS (TILE): Homogeneous linoleum tile floor covering shall be made of primarily natural materials consisting of linseed oil, wood flour, rosin binders and dry pigments mixed and calendared using a two-layered process) onto a polyester back. Standard sizes no customs.

Reference Specs: Meets or exceeds ASTM F2195 for Linoleum Tile

Static Load Limit 1500 pounds per square inch

Traffic Performance: Rated for extra heavy commercial traffic.

Recycled content: 45% or greater Post Industrial Recycled Content.

.3 WARRANTIES: Meet or exceed 5 years material warranty.

09 65 19. RESILIENT TILE FLOORING

.1 MATERIALS: Vinyl Composition Tile, 1/8 inch thick, thru-pattern or thru-chip construction and meets the requirements of the ADA for static coefficient of friction when installed in accordance with manufacturer's guidelines, waxes and coatings. Recycle content (post-consumer and post-industrial waste) minimum 10%. Resilient tile is prohibited next to urinals. Specify standard tile sizes.

Static load limit: 75 PSI
Flooring Radiant Panel Test: Passes
Flame Spread: Passes

The A/E may propose resilient materials other than vinyl composition tile that are advantageous to the project. Approval of the University Architect is required prior to specifying such materials.

Acceptable material quality: equal or better than Armstrong Excelon Vinyl Composition Tile.

.2 WARRANTIES: Meet or exceed 5 years material warranty.

**09 66 00. TERRAZZO FLOORING**

.1 MATERIALS: Terrazzo floors separated from the structural slab by a sand cushion are preferred. Approximately 2-3/4 inches shall be allowed from rough

slab to finish floor.

.2 DESIGNS: Architect shall define surface finish level for grit polishing for each mixture. Precast cove base shall be used when applicable. Floor grinding shall be held min 8" off walls and cove base. hand detail grinding tools shall be used within 8" of walls and cove base to prevent defects of overgrinding and gouging, Floor drains in areas to receive terrazzo shall be slightly recessed in a min 3'x3' square or radial sump formed in the terrazzo for existing conditions or coordinated with concrete slab if new construction. The terrazzo contractor shall coordinate and install to ensure drains are at the lowest point .

.3 QUALIFICATIONS: Installer to be certified by the National Terrazzo and Mosaic Association.

.4 Refer to Section 09 05 61.13 Moisture Vapor Emission Control for concrete testing and performance requirements of a moisture vapor emission control system before start of terrazzo flooring installation.

09 66 23. RESINOUS MATRIX TERRAZZO FLOORING

.1 DESIGNS: If design conditions, or budget, dictate thin set method of installation, marble chip or ceramic granule toppings may be installed with chemical matrix or with cement matrix chemically bonded to the substrate, only when such methods and materials are approved by the University Architect.

**Wexner Medical Center:** See Interior Finish Schedule for approved terrazzo mix types and colors.

.2 Work shall be performed in accordance with the National Terrazzo and Mosaic Association Inc. (NTMA).

.2.1 Manufacturer Qualifications: Minimum five years of documented experience and an associate member firm of the NTMA.
.2.2 Installer Qualifications: Minimum five years of documented experience, approved by the matrix manufacturer, and a Contractor member of the NTMA.

.3 INSTALLATION TOLERANCES

.3.1 Maximum variation from flat surface: 1/8 inch in 10 feet.
.3.2 Maximum variation from level (except surfaces sloping to drain): 1/8 inch.

.4 ACCENT STRIPS: Stainless steel, No. 4 satin finish.

## 09 67 00 FLUID APPLIED RESINOUS FLOORING (EPOXY)

.1 MATERIALS: Acceptable material quality: equal or better than

Steri-Seal HC Epoxy Coating System by Dudick, Inc.

System: a moisture-tolerant primer and one or two coats of low odor epoxy coating to achieve protection for concrete and other substrates. provides high film integrity, and excellent chemical resistance required for prolonged substrate protection.

.2 SUBMITTALS: Specify submittals with Manufacturer's data and layout of areas to be be finished. Specify sample materials/colors submittal for approval.

.3 INSTALLATIONS:

SURFACE PREPARATION - Concrete: Concrete must be prepared mechanically to remove the surface laitance. Oils, grease or other contaminants must be removed prior to surface preparation. Concrete must be free of curing compounds and form release agents. Surface texture should be similar to 60-80 grit sandpaper or the visual standard, CSP-3 from the International Concrete Repair Institute. The prepared surface should have a nominal tensile strength of 250 PSI per ASTM D7234. All concrete substrates must be checked for moisture prior to product application using the Plastic Sheet Test, ASTM D4263 or specified method. Additional surface preparation will be required if a 60-80 grit texture is not achieved and the surface laitance not completely removed with the first mechanical preparation procedure.

CMU: CMU surfaces to be lightly abrasive blasted to clean CMU block and to provide a 60-80 grit sandpaper texture of the mortar joints. Care must be taken not to damage CMU. Wall Boards: Consult Manufacturer for preparation methods. Mechanical preparation removes laitance, exposing honeycombs or voids beneath the surface that must be filled with compatible filler such as Dudick Scratch-Coat.

ENVIRONMENTAL CONDITIONS Temperature of the concrete substrate must be between 50ºF and 110ºF. Relative humidity must not exceed 90%. Substrate temperature must be 5ºF above the Dew Point.

FLOOR TOPPING APPLICATION Spray or roller apply one or two coats @ 10-12 mils WFT each coat. Allow sufficient dry time between coats. Roller application may leave a high texture finish. Consult manufacturer for spray equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

## 09 67 23 FLUID APPLIED RESINOUS NITROGEN RESISTANT FLOORING

.1 MATERIALS: Acceptable material quality: equal or better than Shock Crete HD Coating System by Dudick, Inc.

System: a 1/4" – 3/8" thick, selfpriming, aggregate filled, polyurethane floor topping as manufactured by Dudick, Inc. Application shall be according to the

manufacturer's recommendations.

.2 SUBMITTALS: Specify submittals with Manufacturer's data and layout of areas to be be finished. Specify sample materials/colors submittal for approval.

.3 INSTALLATIONS:

SURFACE PREPARATION: Concrete must be prepared mechanically to remove surface laitance. Oils, grease or other contaminant must be removed prior to surface preparation. Concrete must free of curing compounds and form release agents. Surface texture should be similar to 40-60-grit sandpaper or the visual standard, CSP-5 from the International Concrete Repair Institute with exposed pea gravel. The prepared surface should have a nominal tensile strength of 250 PSI per ASTM D-4541. All concrete substrates must be checked for moisture prior to product application using the Plastic Sheet Test, ASTM D-4263. Additional surface preparation will be required if a 40-60 grit texture with exposed pea gravel is not achieved and the surface laitance not completely removed with the first mechanical preparation procedure.

ENVIRONMENTAL CONDITIONS: Temperature of the material and concrete substrate must be between 50ºF and 90ºF. Consult Manufacturer for temperatures below 50°F. Relative humidity must not exceed 90%. Substrate temperature must be 5ºF above the Dew Point.

FLOOR TOPPING APPLICATION Spray or roller apply one or two coats @ 10-12 mils WFT each coat. Allow sufficient dry time between coats. Roller application may leave a high texture finish. Consult manufacturer for spray equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

## 09 68 00. CARPET TILE ~~CARPETING~~

~~.1 MATERIALS: Acceptable material quality: equal or better than Dupont Antron Legacy nylon and Antron Lumena nylon.~~

~~Yarn: 100% first quality, bulk continuous filament nylon type 6, 6 offering a construction and performance standards testing program by fiber producer. The fiber shape to have a maximum Modification Ratio of 1.5 for soil release capabilities. The fiber identification is to AATCC 20. Static Control: By permanent means (i.e. antistatic filaments) and without chemical treatment, static generation below 3.5 kilovolts under standard conditions of 65 F and 20% relative humidity. Electrostatic Propensity (Static delayed signal): AATCC 134.~~

~~Construction: tufted or woven, level or multi-level loop pile with maximum height variation of 1/32 inch.~~

~~Dye Method: Meets or exceeds Stain Resistance specification with greater than 5 years on the floor performance history.~~

~~Pile Weight: minimum 24 oz/yd$^2$~~

~~Primary Backing: polypropylene or non-woven~~

~~Secondary Backing: to provide permanent moisture barrier~~

~~Resistance to Delamination: ASTM D3936 minimum 3.0 lbs/inch~~

~~Tuft Bind: ASTM D1335 minimum 20 lbs~~

~~Pile density 36 x face weight/finished pile HEIGHT: minimum 5800~~

~~Flammability – Must pass Methenamine Pill test (DOC FF1-70). Meet Flooring Radiant Panel Test – Class 1. NBS Smoke Chamber – must meet or exceed 350 or less in flaming mode.~~

~~Colorfastness to Light: AATCC 16E, 200 AFU, International Gray Scale for Color Change rating min 3-4.~~

~~Colorfastness to atmospheric contaminants: AATCC 164(ozone) & AATCC 129 (oxides of nitrogen) for 2 cycles, International Gray Scale for Color Change rating min. 3-4.~~

~~Stain Resistance - AATCC 138 for 5 washings to simulate removal of topical treatments by hot water extraction, followed by: AATCC 175, minimum level 8 using AATCC Red Dye 40 Scale with greater than 5 years on the floor performance history.~~
~~Soil Resistance: An average of 3 fluorine analyses (AATCC 189) of a single composite sample to be a minimum of 500 ppm fluorine by weight when new and 400 ppm fluorine by weight after 2 AATCC 171 (HWE) cleanings.~~

~~Coloration: Color hue and values to be in optimum light reflectance rating for soil hiding enhancement.~~

~~Appearance Retention - Vetterman Drum Test ASTM D5417 for 22,000 cycles. This is a minimum rating of 3.0 using CRI TM-101 Reference Scale. Testing without underpad or brushing.~~

~~Indoor Air Quality - maximum 0.5 mg/m$^2$hr total VOC emission, ASTM D5116~~
~~Warranty: Must meet or exceed 10 year warranty.~~

~~.2 SUBMITTALS: Specify shop drawing submittals with seam layouts for approval. Specify sample materials submittal for approval.~~

~~.3 INSTALLATIONS: In normal installations, carpet shall be glued to the substrate with no cushion or pad using premium quality waterproof non-flammable adhesive.~~

~~For exceptional instances requiring carpet installation over padding, the cushion or pad shall be factory applied and an integral part of the product. Use high density sponge rubber carpet cushion equal to or better than Tred-Mor flat profile carpet cushion as manufactured by SCI (Sponge-Cushion, Inc.) with minimum specifications for extra heavy commercial and institutional traffic.~~

~~.4 RECLAMATION: Designate Reclamation Program or agency firm providing used carpet recycling. Reclamation agency and carpet remover shall certify in writing that used carpet was removed and recycled in accordance with Reclamation Program.~~

~~Adhesive removal Solvents must comply with Carpet and Rug Institute Publication 104.~~

.1 MATERIALS: Acceptable material quality: equal or better than Dupont Antron Legacy nylon and Antron Lumena nylon.

Yarn: 100% first quality, bulk continuous filament nylon type 6 or 6.6 offering a construction and performance standards testing program by fiber producer. The fiber shape to have a maximum Modification Ratio of 1.5 for soil release capabilities. The fiber identification is to AATCC 20. Static Control: By permanent means (i.e. antistatic filaments) and without chemical treatment, static generation below 3.5 kilovolts under standard conditions of 65 F and 20% relative humidity. Electrostatic Propensity (Static delayed signal): AATCC 134.

Construction: tufted or woven, level or multi-level loop pile with maximum height variation of 1/32 inch.

Dye Method: Meets or exceeds Stain Resistance specification with greater than 5 years on the floor performance history.

Pile Weight: minimum 24 oz/yd$^2$

Primary Backing: polypropylene or non-woven

Secondary Backing: to provide permanent moisture barrier

Resistance to Delamination: ASTM D3936 minimum 3.0 lbs/inch

Tuft Bind: ASTM D1335 minimum 20 lbs

Pile density 36 x face weight/finished pile HEIGHT: minimum 5800

Flammability – Must pass Methenamine Pill test (DOC FF1-70). Meet Flooring Radiant Panel Test – Class 1. NBS Smoke Chamber – must meet or exceed 350 or less in flaming mode.

Colorfastness to Light: AATCC 16E, 200 AFU, International Gray Scale for Color Change rating min 3-4.

Colorfastness to atmospheric contaminants: AATCC 164(ozone) & AATCC 129 (oxides of nitrogen) for 2 cycles, International Gray Scale for Color Change rating min. 3-4.

Stain Resistance - AATCC 138 for 5 washings to simulate removal of topical

treatments by hot water extraction, followed by: AATCC 175, minimum level 8 using AATCC Red Dye 40 Scale with greater than 5 years on the floor performance history.
Soil Resistance: An average of 3 fluorine analyses (AATCC 189) of a single composite sample to be a minimum of 500 ppm fluorine by weight when new and 400 ppm fluorine by weight after 2 AATCC 171 (HWE) cleanings.

Coloration: Color hue and values to be in optimum light reflectance rating for soil hiding enhancement.

Appearance Retention - Vetterman Drum Test ASTM D5417 for 22,000 cycles. This is a minimum rating of 3.0 using CRI TM-101 Reference Scale. Testing without underpad or brushing.

Indoor Air Quality - maximum 0.5 mg/$m^2$hr total VOC emission, ASTM D5116
Warranty: Must meet or exceed 10-year warranty.

**Wexner Medical Center:** Carpet tile only; unless advance permission to specify broadloom is granted by the University Architect. See Interior Finish Schedule for approved carpet manufacturers, types, and colors.

.2 SUBMITTALS: Specify shop drawing submittals with seam layouts for approval. Specify sample materials submittal for approval.

.3 INSTALLATIONS: In normal installations, carpet shall be glued to the substrate with no cushion or pad using premium quality waterproof non-flammable adhesive.

For exceptional instances requiring carpet installation over padding, the cushion or pad shall be factory applied and an integral part of the product. Use high density sponge rubber carpet cushion equal to or better than Tred-Mor flat profile carpet cushion as manufactured by SCI (Sponge-Cushion, Inc.) with minimum specifications for extra heavy commercial and institutional traffic.

.4 Refer to Section 09 05 61.13 Moisture Vapor Emission Control for concrete testing and performance requirements of a moisture vapor emission control system before start of carpet flooring installation.

.5 RECLAMATION: Designate Reclamation Program or agency firm providing used carpet recycling. Reclamation agency and carpet remover shall certify in writing that used carpet was removed and recycled in accordance with Reclamation Program.

Adhesive removal Solvents must comply with Carpet and Rug Institute Publication 104.

## 09 70 00. WALL FINISHES

.1 DESIGNS: A/E selections shall be based on extra heavy duty commercial wall finish, rated for intended use by the manufacturer. Custom materials and colorations are prohibited as they increase later costs for repair and renovations.

All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

The A/E shall provide detailed specifications of at least one selected product and two additional products which are acceptable equals in material construction and color for bidding.

The A/E shall specify products that can be obtained and installed by Contractors of an established firm, experienced in the installation of the specified product. The specifications shall request Contractors to have completed at least three projects of equal size, material and complexity to verify experience.

**Wexner Medical Center:** See Interior Finish Schedule for approved carpet manufacturers, types, and colors.

## 09 72 00. WALL COVERINGS

.1 MATERIALS: Materials must conform to ASTM E-84 and OBC. Research code carefully to determine class of fire and smoke resistance required for the specific application.

Vinyl wall covering must satisfactorily pass ASTM F793, Category V, Type II, meeting Type II performance levels for vinyl coated wall covering as defined by FS CCCW-408C, and CFFA Quality Standards for vinyl coated fabric wall covering.

Use a new blade for each cut.

.2 SUBSTRATE: Level 5 finish as specified in Section 09 21 16. If applied to masonry add gypsum board on furring.

No vinyl wall covering shall be installed on the interior side surface of exterior walls.

## 09 90 00. PAINTING AND COATING

.1 DESIGNS: Painting shall be in compliance with Master Painters Institute (MPI) Standards and comply with Lake Michigan Air Directors Consortium (LADCO) VOC requirements as a minimum. LEED project requirements will take precedence over LADCO VOC requirements.

https://www.ppgpaints.com/products/ecological-solutions/government-regulations/ladco

Wherever possible, select products having low or no VOCs or odors.

Provide SDS for each product to Ohio State-EHS

Paints shall be applied using appropriate techniques to reduce the number of VOCs released into the air.

.2 OCCUPIED AREAS: Whenever possible and feasible, restrict painting to those times when the building is unoccupied. Notify building occupants of the scheduled application timeframe so they are aware of the work and can make other occupancy arrangements if chemically sensitive. Employ sufficient amounts of local exhaust ventilation to keep the build-up of odors and toxic compounds within the building to a minimum.

.3 WOOD DOORS: Wood doors are to be specified as factory finished in Section 08 14 16. If a door needs to be field cut, then seal cut edges and surfaces with minimum two coats of varnish or appropriate sealer.

09 91 13 EXTERIOR PAINTING

.1 SURFACE PREPARATION

GALVANIZED SURFACES TO BE PAINTED: Remove surface contamination and oils and wash with non-petroleum based solvents. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods. Apply coat of etching primer.

CORRODED STEEL AND IRON SURFACES TO BE PAINTED: Prepare using at least SSPC-SP 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

UNCOATED STEEL AND IRON SURFACES TO BE PAINTED: Remove oil, grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Cleaning methods shall comply with Steel Structures Painting Council recommendations. Prime paint entire surface; spot prime after repairs.

SHOP-PRIMED STEEL SURFACES TO BE FINISH PAINTED: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Cleaning methods shall comply with Steel Structures Painting Council recommendations. Prime bare steel surfaces. Re-prime entire shop-primed item.

EXTERIOR WOOD TO RECEIVE OPAQUE FINISH: Remove dust, grit, and

foreign matter. Sand surfaces exposed to view and dust off. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

09 91 23. INTERIOR PAINTING

.1 SURFACE PREPARATION

When painting building interior subgrade stone and brick masonry foundation walls, provide vapor permeable paint (silicate emulsion paint), as approved by the university, to facilitate thru-wall drying as originally designed. When a perimeter drywall finish is desired on perimeter subgrade spaces of university buildings constructed prior to 1950, provide top and bottom cavity venting to allow for thru-wall drying. Consult facility operations envelope engineer or technical service group prior to the preparation of construction documents.

CONCRETE AND UNIT MASONRY SURFACES TO BE PAINTED: Remove efflorescence, chalk, dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry. If hardeners or sealers were used to improve curing, use mechanical methods to prepare surface.

GYPSUM BOARD SURFACES TO BE PAINTED: Remove dust, dirt, loose and other foreign material. Fill hairline cracks, holes and other minor defects with filler compound. Spot prime defects after repair. Sand smooth.

PLASTER SURFACES TO BE PAINTED: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

CONCRETE FLOORS AND TRAFFIC SURFACES TO BE PAINTED: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

GALVANIZED SURFACES TO BE PAINTED: Remove surface contamination and oils and wash with non-petroleum based solvents. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods. Apply coat of etching primer.

CORRODED STEEL AND IRON SURFACES TO BE PAINTED: Prepare using at least SSPC-SP 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

UNCOATED STEEL AND IRON SURFACES TO BE PAINTED: Remove oil, grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale

are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Cleaning methods shall comply with Steel Structures Painting Council recommendations. Prime paint entire surface; spot prime after repairs.

SHOP-PRIMED STEEL SURFACES TO BE FINISH PAINTED: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Cleaning methods shall comply with Steel Structures Painting Council recommendations. Prime bare steel surfaces. Re-prime entire shop-primed item.

INTERIOR WOOD ITEMS TO RECEIVE OPAQUE FINISH: Wipe off dust and grit prior to priming. Sand surfaces exposed to view and dust off. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

.2 APPLICATIONS:

~~TOP AND BOTTOM EDGES OF WOOD DOORS shall be sealed after fitting and finished with at least two coats of varnish or paint.~~

~~TOPS AND BOTTOMS OF METAL DOORS shall be painted with the same materials and number of coats as used on the door faces.~~

DRY FILM THICKNESSES shall be specified for all coats of paint on metals.

ACCENT COLORS: If it is anticipated 5% or more of the scheduled finishes will be in accent colors, attention should be called to this fact. Estimated percentage of accent colors should be given as an aid to bidders in preparation of bids. A statement should be made to the effect that the information given in no way restricts the A/E in his final selection of colors.

COLOR CODING FOR PIPING: Include finish painting of insulated and uninsulated piping in the General Construction Documents and include color banding of finished piping in the appropriate locations. See Divisions in the Facilities Services Subgroup.

INTERIOR WOODWORK: Painted finish -- primer and 2 coats semi-gloss latex enamel.

METAL DOORS AND FRAMES: Shop coat, touch up and two coats semi-gloss enamel. Tops and bottoms of metal doors shall be painted with the same materials and number of coast as used on the door faces.

NEW GYPSUM WALLBOARD: Spackle as required, primer and 2 coats semi-gloss latex enamel.

EXISTING PREVIOUSLY PAINTED GYPSUM WALLBOARD OR PLASTER: Primer and 1 coat semi-gloss latex enamel or semi-gloss latex. If surface is poor, remove finish to substrate, repair and finish the same as new gypsum wallboard or plaster.

INTERIOR CONCRETE OR CONCRETE BLOCK (Unpainted): 1 coat self-sealing heavy filler-type primer and 2 coats semi-gloss latex. For laboratories requiring chemical resistance, replace the latex paint with water-based epoxy two-component finish.

For corridors or abuse areas, replace the semi-gloss alkyd or latex paint with high gloss alkyd enamel.

**Wexner Medical Center:** See Interior Finish Schedule for approved paint manufacturers, types, and colors.

All painting shall be in compliance with Master Painters Institute (MPI) standards.

Whenever possible select products having low or no VOC's or odors. Use paints having low VOC's that meet EPA and consensus industry requirements. Substitute water-based products where possible.

Provide SDS for each product to Ohio State-EHS

Whenever possible and feasible restrict painting to those times when the building is unoccupied.

Paints should be applied using appropriate techniques to reduce the amount of volatiles released into the air.

Sufficient amounts of local exhaust ventilation should be employed to keep the buildup of odors and toxic compounds within the building to a minimum.

The building occupants should be notified a minimum of 72 hours before the scheduled application so they are aware of the work and can make other occupancy arrangements if chemically sensitive.

## 09 93 00. STAINING AND TRANSPARENT FINISHING

.1 SURFACE PREPARATION

INTERIOR WOOD ITEMS TO RECEIVE TRANSPARENT FINISH: Wipe off dust and grit prior to sealing. Sand surfaces exposed to view and dust off. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

EXTERIOR WOOD TO RECEIVE TRANSPARENT FINISH: Remove dust, grit, and foreign matter. Sand surfaces exposed to view and dust off. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.

.2 APPLICATIONS:

INTERIOR WOODWORK: Natural finish -- stain, 2 coats sanding sealer, 2 coats semi-gloss varnish. If polyurethane varnish is used, delete sanding sealer.

~~TOP AND BOTTOM EDGES OF WOOD DOORS shall be sealed after fitting and finished with at least two coats of varnish or paint~~.

TOP AND BOTTOM EDGES OF WOOD DOORS shall be sealed after fitting and finished with at least two coats of varnish or paint.

**Wexner Medical Center:**
PPG Break-Through V50-410 or V70-610 Series for Satin or Gloss finish, coordinate gloss level specified with Wexner Medical Center Planner.

EXTERIOR WOOD PLATFORMS OR BENCHES: Use Behr plus 10 Solid Color Stain or approved equal in accordance with manufacturer's directions.

## 09 96 00. HIGH PERFORMANCE COATINGS

09 96 43. FIRE RETARDANT COATINGS

.1 INSTALLATIONS: Materials shall be applied by applicators franchised and approved by manufacturers of materials approved for use. General Contractor shall furnish the manufacturer's certification that materials delivered to the project meet requirements specified. Certification shall be countersigned by the General Contractor, who shall assume the responsibility of complying with the manufacturer's specifications. Materials and application equipment shall be of type approved by the manufacturer. A/E shall coordinate sufficient labeling of surfaces that are protected with fire retardant coatings to sufficiently communicate extents for future maintenance and renovations.

09 96 53. ELASTOMERIC COATINGS

.1 INSTALLATIONS: If coatings specified can be applied with equipment ordinarily used by painters, these coatings may be specified in the section entitled, PAINTING.

## 09 97 00. SPECIAL COATINGS

09 97 23. CONCRETE AND MASONRY COATINGS

.1 DESIGNS: HVAC Equipment Room and other Service Room floors in all buildings shall be completely sealed from water and moisture penetration to the floors below.

**END OF DIVISION 09 - FINISHES**

## 10 00 00. SPECIALTIES

## 10 00 03. GENERAL PROVISIONS

.1 Refer to PART TWO, paragraph 00037, Fixtures, Furniture and Equipment (FF&E)

.2 DESIGNS: The Architect/Engineer (A/E) shall provide layouts of all Specialties to determine function and space use for the project. Submittals are required as outlined in the Architect/Engineer (A/E) Agreement for Basic Services.

.3 CONSTRUCTION COORDINATION: The A/E shall clearly define Contractor responsibilities relative to receiving, storage and installing all items in this Division.
The A/E is to locate and coordinate all blocking, support and services for installation of all items in this Division.

## 10 10 00. INFORMATION SPECIALTIES

## 10 11 00. VISUAL DISPLAY SURFACES

.1 WARRANTIES: Lifetime warranty required and shall indicate that under normal usage and maintenance, porcelain enamel steel chalkboards and markerboards and glass markerboards are guaranteed for the life of the building.

.2 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.3 Manufacturer shall have a minimum of 5 years' experience in the manufacture of visual display boards.

### 10 11 13.13 FIXED CHALKBOARDS

.1 BUDGET ALLOCATIONS: Fixed classroom and public chalkboards shall be considered Fixed Equipment and are funded within the Construction Budget.

.2 MATERIALS AND CONSTRUCTION: Chalkboards shall be porcelain enamel steel and shall be manufactured in accordance with Porcelain Enamel Institute's specification. Porcelain enamel finish shall be fusion bonded to a 24 gauge steel substrate at temperature necessary to reduce steel and porcelain stresses and achieve superior enamel bond and hardness.

.2.1 Face Sheet: 24 gauge steel.

.2.2 Core Material: ¼" hardboard, 7/16"MDF or 3/8" particle board.

.2.3 Panel Backing: Aluminum foil (0.005 inch thick) or sheet (0.014 inch thick)* moisture barrier.

.2.4 Laminations: Moisture resistant hot type neoprene contact adhesive to both surfaces with minimum of 80% coverage. Laminations shall be made by face sheet manufacturer.

.3 TRAY: Standard continuous, solid box type aluminum tray with ribbed section and injection molded end closures.

.4 MAP RAIL: Standard continuous, 2" map rail with cork insert and end stops at the top of each board. Furnish (4) map hooks every eight feet.

## 10 11 13.43 PORTABLE CHALKBOARDS

.1 REQUIREMENTS: Warranty, Selection Approval, Materials and Construction same as indicated for Fixed Chalkboards.

.2 BUDGET ALLOCATIONS: Portable ~~Office~~ Markerboards are considered Movable Equipment and acquired by the university utilizing a fund allocation within the total project funds but independent of the Construction Budget.

.3 MATERIALS AND CONSTRUCTION: Chalkboards shall match and coordinate with the design intent of the Construction Documents and Movable Equipment design. In general, they shall be porcelain enamel steel and required durability is same as for pool classroom use.

## ~~10 11 16. MARKERBOARDS~~

~~.1 WARRANTIES: Lifetime warranty required and shall indicate that under normal usage and maintenance, porcelain steel and glass boards are guaranteed for the life of the building.~~

~~.2 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.~~

## 10 11 16.13 FIXED MARKERBOARDS

.1 BUDGET ALLOCATIONS: Fixed Classroom and public Markerboards shall be considered Fixed Equipment and are funded within the Construction Budget.

.2 MATERIALS AND CONSTRUCTION:

.2.1 Porcelain Enamel Steel Markerboard

.2.1.2 Face Sheet: 24 gauge steel

.2.1.3 Core Material: ¼" hardboard, 7/16"MDF or 3/8" particle board

.2.1.4 Panel Backing: Aluminum foil (0.005 inch thick) or sheet (0.014 inch thick)* moisture barrier.

.2.1.5 . Laminations: Moisture resistant hot type neoprene contact adhesive to both surfaces with minimum of 80% coverage. Laminations shall be made by face sheet manufacturer.

.2.1.6 Accessories

.2.1.6.1 TRAY: Standard continuous, solid box type aluminum tray with ribbed section and injection molded end closures.

.2.1.6.2 MAP RAIL: Standard continuous, 2" map rail with cork insert and end stops at the top of each board. Furnish (4) map hooks every eight feet.

.2.2 Glass Board Markerboard

.2.2.1 Tempered low iron safety writing glass minimum thickness 1/4 inch for heavy-duty use. Polished edges. Back painted.

.2.2.1.1 MAGNETIC BOARDS: Magnetic glass markerboards shall have magnetic backing permanently adhered to the back of the glass.

.2.2.2 Non-staining and non-ghosting writing surface

.2.2.3 Mounting – Heavy-duty aluminum cleating on back side (invisible) or stainless steel stand-offs.

.2.2.4 Accessories: Trays and marker holders by same manufacture. Installation to be securely mounted to wall.

.2.2.4.1 MAGNETIC BOARDS: Provide one set of rare earth magnets for each magnetic glass markerboard installed.

**Need product cuts for Wexner Medical Center specific products and requirements**

.2.3 GLASS-LIKE POLYMER BLEND MARKERBOARD

.2.3.1 Optically clear, polymer blend with a non-staining and non-ghosting writing surface and opaque color backer.

.2.3.1 Shatterproof

.2.3.3 Magnetic

.2.3.4 Mounting – heavy duty manufacturer Z clip system

**Need product cuts for Wexner Medical Center specific products and requirements**

10 11 16.43 PORTABLE MARKERBOARDS

.1 REQUIREMENTS: Warranty, Designs, Materials and Construction same as indicated for Fixed Markerboards.

.2 BUDGET ALLOCATIONS: Portable Markerboards are considered Movable Equipment and acquired by the university utilizing a fund allocation within the total project funds but independent of the Construction Budget.

.3 MATERIALS AND CONSTRUCTION: Markerboards shall match and coordinate with the design intent of the Construction Documents and Movable Equipment design. In general, they shall be porcelain enamel steel and required durability is same as for pool classroom use.

10 11 16.53 ELECTRONIC MARKERBOARDS

.1 BUDGET ALLOCATIONS: Electronic Markerboards are considered technology equipment and acquired by the university as Movable Equipment. Conduits, power, data, blocking and other support for technology however, shall be designed and funded within the Construction Budget.

.2 CONSTRUCTION COORDINATION: Necessary power, data, blocking and other support for technology equipment shall be included in the Construction Documents.

10 11 23. TACKBOARDS

.1 DESIGNS: In public corridors and lobbies, the A/E shall make provisions for tack board and display areas as required by the project and integrated into the architectural design of the building. Typically, small tack boards are located outside each classroom, office, conference room and other areas of assembly for general memos and other information. Large tack boards and displays are located in public areas. Coordinate room signage, donor plaques, artwork and other graphics if they are scheduled to be in the same location.

All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

10 11 23.13 FIXED TACKBOARDS

.1 BUDGET ALLOCATIONS: Fixed Classroom and public Tackboards are considered Fixed Equipment and are funded within the Construction Budget.

.2 MATERIALS AND CONSTRUCTION: Tackboards shall be vinyl fabric faced, fabric faced, integral colored cork, or natural cork laminated to 1/2" thick mineral fiber board. Provide fabric and tackable core with flame-spread rating of 25 or less when tested according to ASTME-84.

Wexner Medical Center: Verify proper tackboard finish in each space (i.e., no fabric or vinyl faced tack boards in patient care areas).

10 11 23.43 PORTABLE TACKBOARDS

.1 BUDGET ALLOCATIONS: Portable tackboards are considered Movable Equipment and acquired by the university utilizing a fund allocation within the total project funds but independent of the Construction Budget.

.2 MATERIALS AND CONSTRUCTION: Tackboards shall match and coordinate with the design intent of the Construction Documents and Movable Equipment design. In general, they shall be vinyl fabric face, fabric faced, integral colored cork, or natural cork laminated to 1/2" thick mineral fiber board and required durability is same as for classroom pool use. Provide fabric and tackable core with flame-spread rating of 25 or less when tested according to ASTME-84.

10 11 33. HORIZONTAL SLIDING VISUAL DISPLAY UNITS

.1 BUDGET ALLOCATIONS: Fixed Research Classroom Horizontal Sliding Visual Display Units shall be considered Fixed Equipment and are funded within the Construction Budget.

.2 HORIZONTAL SLIDING PANELS: Fabricate panels from manufacturer's standard chalkboard, markerboard, and tackboard components as identified above. Provide panels that operate smoothly under manual activation without vibration or chatter

.2.1 Identify back panel surface and sliding panel surfaces.

.2.2 Identify number and type of sliding panels and tracks.

.2.3 Sliding Hardware: Overhead extruded aluminum track with nylon ball-bearing rollers and channel shaped bottom guides.

10 11 43. VISUAL DISPLAY WALL PANELS

.1 DESIGNS: Visual display walls are considered Fixed Equipment and shall be included in the Construction Documents.

.2 OUTLETS: All power, data and accessory outlets furnished by the manufacturer shall be the same type and quality as those specified in Division 26 of the Construction Documents and conform to current OBC. Note limitations regarding conduit types and sizes.

## 10 12 00. DISPLAY CASES

.1 DESIGNS: In public corridors and lobbies, the A/E shall make provisions for display cases as required by the project. These display areas shall be integrated into the architectural design of the building.

All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Built in Display Cases are considered Fixed Equipment and shall be included in the Construction Documents.

## 10 13 00. DIRECTORIES

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Building and floor directories are considered Fixed Equipment and included as Signage in the Construction Documents. See Signage for further information.

.3 QUANTITIES: Each building shall have at least one primary directory in the main entrance of the building to serve the entire building. Secondary directories on each floor may be required depending on the complexity of the building.

.4 **Wexner Medical Center**: Contact the Wexner Medical Center signage coordinator for all Medical Center signage requirements inclusive of budget.

## 10 14 00. SIGNAGE

.1 DESIGNS: The University has a standardized system for all campus signage. The A/E shall consult with the University Signage Coordinator (SC) to outline sign requirements, based on Appendix S, and submission of a sign request form (https://fod.osu.edu/make-request).

.2 During the DD Phase the A/E shall provide floor plans to Facilities Information Technology Services (FITS) for assignment of room numbers.

.3 The A/E shall provide the SC floor plans with room assignments.

.4 The A/E shall place in the specifications that the Contractor shall enter into an agreement with UniPrint to make and install all project signage required by code and outlined in the university signage standards. The A/E shall provide an allowance in the Project Manual for signage after consulting with the SC to outline sign requirements. The Contractor shall coordinate the signage installation by UniPrint with project work schedule and inspections.

.5 For Regional Campus projects: The A/E shall place in the specification that the Contractor shall enter into an agreement with UniPrint to make and install all signage required by code and outlined in the university signage standards. The A/E shall provide an allowance in the Project Manual for signage after consulting with the SC to outline sign requirements. The Contractor shall coordinate the signage installation by the Regional Campus with project work schedule and inspections.

.6 **Wexner Medical Center**: Contact the Wexner Medical Center Signage Coordinator for all Medical Center signage requirements inclusive of budget. Most Medical Center interior signage is owner provided, owner installed.

.7 BUDGET ALLOCATIONS: All signage is considered Specialty items or Fixed Equipment and shall be included in the construction Documents unless otherwise directed by the University Project Manager See Appendix S for University Signage Standards.

## 10 14 16. PLAQUES

.1 DESIGNS: Each new or renovated building shall have at least one Building Memorial Plaque and may have numerous Donor Recognition plaques or areas of Donor recognition. Consult with the University Project Manager for details applicable to each project.

.2 BUILDING MEMORIAL PLAQUE: For new and renovated buildings, the A/E shall make provisions for a wall area in the main lobby or in the vestibule to the main lobby to be used for installation of a 12-inch x 18-inch bronze memorial plaque.

The wall area shall be architecturally designed to provide an aesthetic setting for the plaque and shall be adequately lighted. Consult with the University Architect if the plaque is to be part of the Construction Documents or will be provided by the University at a future date. The A/E shall provide adequate blocking or other materials to support the Plaque as part of the Construction Documents.

.3 DONOR RECOGNITION AND ROOM PLAQUES: The A/E shall be aware of and make provisions (space, applicable blocking, utilities and lighting) in the building for donor recognition areas and room plaques. Donor recognition items and the design of donor recognition graphics are funded outside the project budget. The University Architect is responsible for directing the design and installation of donor recognition.

.4 LEED RECOGNITION BUILDING PLAQUES: Use the ST-87 or ST87s approved by the University.

***Commentary:*** *See the Student Union's LEED signs for examples of an approved Plaque.*

.5 **Wexner Medical Center:** Contact the Wexner Medical Center signage for all Medical Center signage coordinator requirements inclusive of budget. Most Medical Center interior signage is owner provided, owner installed.

## 10 18 00. INFORMATION KIOSKS

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Information Kiosks are considered Fixed Equipment and included as Signage in the Construction Documents. See Signage for further information.

## 10 21 00. COMPARTMENTS AND CUBICLES

10 21 11 COMMERCIAL TOILET ACCESSORIES: One per toilet compartment for individuals with disabilities: Georgia Pacific #56784A or #56790; One per standard toilet compartment: Georgia Pacific #56744s (quad dispenser)

10 21 12 PAPER TOWEL DISPENSERS: Available from XPEDX, 1-800-669-7101(no substitutions): Two (2) per toilet room: Kimberly-Clarke Automatic Hands-Free Roll Towel #D9706 Smoked Gray

## 10 21 13. TOILET COMPARTMENTS

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

Materials: Galvannealed Metal toilet partitions and urinal screens preferred, other materials used only with prior approval. Powder coat painted finish.

**Wexner Medical Center:** Solid phenolic toilet partitions and urinal screens preferred, other materials used only with prior approval.

Anchors and fasteners: Vandal type screw anchors, toggle bolts, hollow wall anchors or other approved type to suit construction on which items are hung. Wood, lead and plastic plugs are prohibited. Consider using additional transom supports for ceilings over 9'-0" with ceiling mounted partitions.
Door latches and pulls: Specify slide latches and pulls for out-swinging doors.

.2 STANDARD STALL: Ceiling hung partition systems. Spacing shall be 3 feet. o.c. Depth shall be 5 feet. Include proper structure to prevent racking. Partition system to be no-peek. Include occupancy indicators on the outside face of doors, integral with locking mechanism.

.2.1 Doors and Panels: 1 inch thick.

.2.2 Pilasters: 1-1/4 inch thick

**Wexner Medical Center:** Phenolic toilet compartment panel dimensions:

.2.1 Doors: 3/4 inch thick.

.2.2 Panels: 1/2 inch thick.

.2.3 Pilasters: 3/4 inch thick.

.3 STANDARD URINAL SCREEN: Wall hung with two panel brackets and floor-to-ceiling vertical upright consisting of pilaster anchored to floor and ceiling.

.3.1 Panels: 1 inch thick.

.3.2 Pilasters: 1-1/4 inch thick.

**Wexner Medical Center**: Phenolic urinal screen panel dimensions:

.3.1 Panels: 1/2 inch thick.

.3.2 Pilasters: 3/4 inch thick.

.4 ADAAG COMPLIANT TOILET PARTITIONS: Standard ceiling mounted partitions. All toilet stalls designated usable by individuals with disabilities shall be 60"x60".

4.1 The water closet must be located 18 inches from the wall or partition. A fraction of 1/4 inch either way is an approved installation tolerance. A memorandum describing any departures for ADAAG and/or University standards for accessibility shall be included with the Construction Documents and a copy provided to the ADA Coordinator for the University.

10 21 23. CUBICLES

10 21 23.13 CUBICLE CURTAINS

.1 DESIGNS: All fabrics shall be rated for extra heavy duty commercial use and conform to current OBC.

.2 BUDGET ALLOCATIONS: Curtains are considered Movable Equipment and are acquired by the university utilizing a fund allocation within the total project funds but independent of the Construction budget.

.3 CUBLICLE CURTAINS: Curtains shall be made from the same dye lot and meet ASTM E84 Class A requirements and be flameproofed in accordance with NFPA 701. Size curtains 20 percent wider than track length. **Terminate curtain 12 inches** above finished floor. Consult Ohio State FOD for University Campus standard.

**Wexner Medical Center**: Size contains minimum 20% wider than track length. Curtain to be fabricated in 6-foot wide sections, joined by snaps at vertical seams. Fabric to be treated with anti-microbial, water-resistant finish. Terminate curtain 12-inches above finished floor. Mesh to have split flex-on rings to attach to offset track.

.3.1 Washability Standards: Comply with International Fabricare Institute Commercial Laundry Test.

.3.1.1 Colorfastness shall average Class 4 after 100 cycles and meet or exceed shrinkage requirements for ANSI performance for woven drapery fabric

3.1.2 Fabric shall be washable with water temperatures to 160 degrees F. in low alkaline detergent.

.3.2 Lightfastness: Meet AATCC Method IGA-72, N.A.F.M. requirements of 40 hours, Class 5.

.3.3 OPEN MESH CLOTH: Open weave, flameproof, same color as curtain .Finished and hemmed mesh dimensions shall be 22 inches high x length of curtain.

10 21 23.16 CUBICLE TRACK AND HARDWARE

.1 DESIGNS: All track and hardware proposed shall be rated for extra heavy duty commercial use and approved by the University for use.

1.1 Necessary blocking, support and services for installation of the Equipment shall be included in the Construction Documents.

**Wexner Medical Center:** See Interior Finish Schedule for approved manufacturer, type, and color.

**Wexner Medical Center:** Track to be offset style. Coordinate with Ohio State Wexner Interior Design Planner for coordination of blocking.

.2 BUDGET ALLOCATIONS: Track and Hardware is considered as part of the Movable equipment purchase. Exceptions to this are instances where powered hardware is required. Powered hardware is considered Fixed Equipment and shall be provided in the Construction Documents.

## 10 22 00. PARTITIONS

10 22 19. DEMOUNTABLE PARTITIONS

.1 DESIGNS: Demountable partitions are considered Fixed Equipment and shall be included in the Construction Documents.

.2 OUTLETS: All power, data and accessory outlets furnished by the manufacturer shall be the same type and quality as those specified in Division 26 of the Construction Documents and conform to current OBC. Note limitations regarding conduit types and sizes.

10 22 33 ACCORDION FOLDING PARTITIONS

.1 DESIGNS Avoid using in rooms with floor level changes. Avoid using floor tracks. Avoid using as a fire exit. A/E to provide STC performance rating.

10 22 39 FOLDING PANEL PARTITIONS

.1 DESIGNS/ Avoid using in rooms with floor level changes. Avoid using floor tracks. Avoid using as a fire exit. A/E to provide STC performance rating.

## 10 26 00 WALL AND DOOR PROTECTION

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 PERFORMANCE CRITERIA, GENERAL:

.2.1 Impact Strength: Protection products and assemblies shall have been successfully tested for conformance to applicable provisions of ASTM D256 and/or ASTM F476.

.2.2 Chemical and Stain Resistance: Protection products and assemblies shall have chemical and stain resistance conforming to applicable provisions of ASTM D543.

2.3 Fungal Resistance: Protection products and assemblies shall pass ASTM G21 testing.

.3 PERFORMANCE OF INSTALLED ASSEMBLIES:

.3.1 Bumper Rails, Metal Crash Rails, Protective Corridor Handrails:

3.1.1 Support vertical live load of 100 lb/lineal ft with deflection not to exceed 1/50 of span between supports.

.3.1.2 Resist lateral force of 250 lbs at any point without damage or permanent set.

.3.2 Corner Guards (Flush Mounted and Surface Mounted) Bumper Rails, Metal Crash Rails, Protective Corridor Handrails:

.3.2.1 Resist lateral force of 100 lbs at any point without damage or permanent set.

.4 HIGH IMPACT WALL COVERING; Vertical butt joints finished with color matched joint sealant and manufacturer's standard top molding, matching high impact wall covering color.

**Wexner Medical Center**: High impact wall covering shall be 0.060 thick in all locations. See Interior Finish Schedule for approved manufacturers, types, and colors.

## 10 28 00. TOILET, BATH AND LAUNDRY ACCESSORIES

### 10 28 13. TOILET ACCESSORIES

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

1.1 The University has selected standard products for use. All proposals shall require approval of the University Architect prior to finalization of the Construction Documents. Refer to responsibility matrix for OP/CP and OI/CI.

.2 BUDGET ALLOCATIONS: Toilet Accessories are considered Fixed Equipment and shall be included in the Construction Documents.

**Wexner Medical Center:** See Interior Finish Schedule for approved manufacturers, types, and colors.

### 10 28 13.13 COMMERCIAL TOILET ACCESSORIES

Refer to responsibility matrix for OP/CP and OI/CI.

.1 TOILET TISSUE HOLDERS Available from XPEDX, 1-800-669-7101 (no substitutions):

One (1) per toilet compartment for individuals with disabilities: Continental Dual #830,

One (1) per standard toilet compartment: Kimberly-Clarke # 09686.

.2 PAPER TOWEL DISPENSERS Available from XPEDX, 1-800-669-7101 (no substitutions): Two (2) per toilet room:

Kimberly-Clarke Automatic Hands Free Roll Towel #D9706 Smoked Gray; with optional pushbutton lock feature; mounting heights: Men=44", Women=40" (floor to bottom of cabinet). Maximum height reach of 48" to operable parts for front approach.

.3 SOAP DISPENSERS (no substitutions): Furnished by the Facilities Operations and Development Operations department University. Coordinate with the University Project Manager. Note that there is a 4-week lead time.

.4 SANITARY NAPKIN DISPENSER (no substitutions):

One (1) per Women's toilet room:

Hospital Specialty Company K-20H Free; Available from Cottingham Paper Company, 614-294-6444.

SANITARY NAPKIN RECEPTACLE (no substitution): One (1) per each two (2) Women's toilet compartments:

Rochester Midland #60 white, sanifloor napkin & tampon disposal unit and five (5) liners.

.5 GARMENT HOOKS: Each toilet stall shall have a garment hook. The hooks shall be mounted on the partition; hooks in stalls for use by individuals with disabilities shall be on the partition, reachable from the water closet and approximately 48 in. maximum above the floor. Hook can incorporate door bumper hook.

.6 SHELVES: Each toilet room shall have a shelf for books, purses, etc. Shelf height shall be 40" min and 48" max above the floor.

.7 MIRRORS: Specify framed mirrors without shelves. If possible, locate mirrors on walls opposite lavatories. Specify long mirrors, for use by persons with disabilities, with bottom 2 ft. above floor and with top located at 74 inches minimum above the floor. Check and coordinate mirror locations to prevent image reflection through room entrances.

.8 DIAPER CHANGING STATION (Assembly areas opened to the public) Specify one Diaper Deck* for diaper changing for each toilet room.

## 10 40 00. SAFETY SPECIALTIES

.1 EMERGENCY SHOWERS AND EYE WASHES – The locations of these safety devices should be within 50 feet or 10 seconds of a chemical or biological substance deemed hazardous. The use of the latest ANSI Z358 standard for these safety devices should be specified. ANSI requires the water to be tepid and/or tempered. The devices should not be obstructed or be located near other hazards such as electrical outlets and panels.

**Wexner Medical Center**: See Emergency Eyewash Guidelines https://fod.osu.edu/sites/default/files/appendix_mc_b.pdf

## 10 43 00. EMERGENCY AID SPECIALTIES

10 43 16. FIRST AID CABINETS

/.1 DESIGNS: First Aid cabinets shall be furnished and installed by the General Contractor and shall be OSHA approved and sized to the using population.

The quantity, selection and locations of First Aid Cabinets are subject to the review and approval of the University Project Manager and designated university personnel.

10 43 17. AED CABINETS

.1 DESIGNS: Provide semi-recessed cabinets with maximum projection of 4" to meet ADA.

## 10 44 00. FIRE PROTECTION SPECIALTIES

10 44 13. FIRE EXTINGUISHER CABINETS

.1 DESIGNS: All portable fire extinguishers and non-valve cabinets shall be furnished and installed by the General Contractor. All portable fire extinguishers and components shall conform with National Fire Protection Association (NFPA) Pamphlet 10, latest edition. Each extinguisher shall be approved by Underwriter's Laboratory (UL) and bear their label.

**STUDENT LIFE**: Fire extinguisher cabinets shall have solid door, with no glass or lock.

An acceptable means of identifying fire extinguisher location must be done by an arrow type sign. See Appendix A, a-1-6.5 of NFPA pamphlet 10.

CABINETS: Painted steel, flanged recessed (similar to fire hose cabinets), lockable and comparable to the preferred Model 2409 Series, Duo Panel Break Glass style of cabinet manufactured by Larsen's Manufacturing Co.. Cabinet internal dimensions shall be not less than 9.5" wide, 6.5" deep, and 24" high. Lock shall be Alike-Keyed Standard Key Cam Lock with Model #CH751 key. Verify door thickness. Finish: Bright Chrome. The full fire rating and acoustical rating of the structure walls must be maintained.

SECURITY CONCERN AREAS: Provide each locked, tempered glass fronted fire equipment cabinet with a knocker or other glass breaking mean. Review with FOD's Fire System Shop and PM. Attach knocker in a manner that will allow breaking of glass without removing knocker.

***Commentary**: In areas where fire extinguisher cabinet security is not required solid doors, with no glass or lock are acceptable. Consider using metal wall brackets for mounting fire extinguishers at back-of-house service areas.*

Refer to NFPA pamphlet 10, chapters 2, 3, and 4. Chapter 2 is used to determine the classification of potential fires and the rating or relative fire extinguishing effectiveness of various types of extinguishers. Chapter 3 assists in selection of extinguishers which is dependent upon the character of anticipated fires, property

construction and occupancy, the vehicle or hazard to be protected, ambient temperature conditions, and other factors. The maintenance of extinguishers is determined by Chapter 4.

.2 APPROVALS: The selection and locations of fire extinguishers are subject to the review and approval of the University Architect and designated university personnel. Extinguishers meeting the described requirements, including those manufactured by Fire Chief, Kidde, and General, will be considered for acceptance.

.3 CONSTRUCTION COORDINATION: Penetration of walls by cabinets or other penetrations, unless openings and voids are sealed with fireproof materials, is prohibited. Fire-rated walls must not have the rating reduced by penetrations or reduction of thickness.

10 44 16. FIRE EXTINGUISHERS

.1 DESIGNS: All fire extinguishers are to be complete, tested, certified, ready for use, and conform to the following:

CARBON DIOXIDE EXTINGUISHERS: Red enameled-steel or aluminum equipped with valve, discharge hose and horn, squeeze-grip lever, and mounting bracket, if not cabinet installed. Minimum rating 5 BC.

. MULTI-PURPOSE EXTINGUISHERS: Red enameled-steel, pressurized type equipped with pressure gauge, discharge nozzle, squeeze-grip lever, and mounting bracket, if not cabinet installed. These extinguishers are dry chemical for Class A, B, and C fires. Minimum rating 4A 60 BC.

SPECIAL EXTINGUISHERS: Fully equipped types for use on the specific Class D combustible metal hazards and Class K Food Service Operations.

For computer rooms, expensive laboratory installations and similar locations, which must be protected from damage, ~~provide Halon 1211 with at least 9 lbs. 1A 10BC rating.~~ Halotron I type extinguishers with at least 5 lbs. 5B:C rating.

## 10 50 00. STORAGE SPECIALITES

10 51 13 METAL LOCKERS

.1 DESIGN: Coordinate lock mechanism for patient lockers with department.

.2 METAL LOCKERS: Factory assembled, edges finished smooth. Baked enamel finished interior and exterior surfaces. Where ends or sides are exposed, provide flush panel closures. Provide filler strips where needed, securely attach to lockers. Provide sloped tops at non-recessed lockers.

.3.1 Body and Shelves: Minimum 24 gauge.

.3.2 Base: Minimum 20 gauge, 4 inches high.

.3.3 Door Frame: Minimum 16 gauge.

.3.4 Doors, Channel Style: Minimum 16 gauge

.3.5 Doors, Sandwich Style: Minimum 18 gauge outer face and minimum 20 gauge interior face, intermediate stiffener ribs, with recessed for operating handle and locking device.

.3.6 Sloped Top: Minimum 20 gauge, closed ends.

.3.7 Trim: Minimum 20 gauge.

.3 **Wexner Medical Center** LOCKS: Codes shall be provided in Excel format and provided to the Wexner Medical Center Lock Shop for logging.

.3.1 Built in locks: Provide as needed based on the swing of the locker door.
a. Right Handed: Master Lock MA-1630-CD-F205MK.
b. Left Handed: Master Lock MA-1631-CD-F205MK

3.2 Combination locks: Master Lock MA-1525-CD-V64MK padlock with key control feature.

## 10 51 23 PLASTIC-LAMINATE-CLAD LOCKERS

.1 DESIGN: Coordinate lock mechanism for patient lockers with department.

.2 PLASTIC-LAMINATE-CLAD LOCKERS:

.2.1 Locker Exterior: NEMA LD3 plastic laminate, 0.030 inch vertical grade.

.2.2 Locker Interior: High density particle board core with high-impact abrasion resistant, melamine.

.2.3 Shelves: High density industrial grade particle board core, abrasion resistant melamine.

.2.4 Locker Frame: Exposed edges of locker case and shelves faced with 0.5 minimum PVC. Seal interior butt joints of shelves and dividers.

.2.5 Locker Doors: Exterior and interior shall be NEMA LD3 plastic laminate, 0.030 inch vertical grade. All four door edges trimmed in matching 0.5 mm PVC with radiused corners.

.2.6 Filler and Trim: Match locker exterior.

**Wexner Medical Center** Wilsonart 7946-38 (Brazilwood) with white melamine interior

.3 **Wexner Medical Center** LOCKS: Codes shall be provided in Excel format and provided to the Wexner Medical Center Lock Shop for logging.

.3.1 Built in locks: Provide as needed based on the swing of the locker door.
a. Right Handed: Master Lock MA-1630-CD-F205MK.
b. Left Handed: Master Lock MA-1631-CD-F205MK

3.2 Combination locks: Master Lock MA-1525-CD-V64MK padlock with key control feature.

## 10 55 00. POSTAL SPECIALTIES

.1 DESIGNS: The A/E shall provide a primary Mail Room for US Mail and university mail delivery and distribution adjacent to the building entrance or loading dock for each new building or building renovation. Room size shall be applicable to the number of departments serviced in the building and volume of delivery. Minimum room size shall be 100 square feet. Secondary Mail Rooms on upper floors may be required for applicable distribution.

Postal facilities, serviced by the U.S. Postal Service, are subject to inspection and approval by the Customer Service Section of the U.S. Postal Service. during the planning process and arrange for examination of construction documents for conformance to regulations and inspection of the installation(s) during construction.

All Postal product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Unless otherwise noted, Postal Mail Room and Distribution Equipment is considered Fixed Equipment and shall be included in the Construction Documents.

3 CONSTRUCTION COORDINATION: The A/E is to coordinate all requirements and services leading to Postal Equipment locations on the Construction Drawings. Penetration of walls or floors by chutes and boxes, unless openings

and voids are sealed with fireproof materials, is prohibited. Fire-rated walls or floors must not have the rating reduced by penetrations or reduction of thickness.

10 55 13. CENTRAL MAIL DELIVERY BOXES

.1 INDIVIDUAL MAIL BOXES: Located at the Mail Room. U.S. Postal Standard Equipment sizes. Unless otherwise stipulated in the Program of Requirements, one box shall be provided for each faculty/staff member in the building. Boxes shall be installed for loading from inside Mail Area and unloading from corridor. Mailboxes corridor door locks shall be fitted with Best cylinders, keyed to the university keying system. Fronts of boxes shall be numbered in sequence determined by the university. Rear of each box shall be provided with label holder, or equivalent, for identification. **Custom Millwork mail sorter boxes are prohibited.**

.2 DEPARTMENTAL MAIL BOXES: Located at the Mail Room. U.S. Postal Standard Equipment sizes. Unless otherwise noted in the Program of Requirements, one Department Box shall be provided for each Department. Size boxes for Department volume needs. Boxes shall be installed for loading from inside the Mail Room and unloading from the corridor. Corridor door locks shall be fitted with Best cylinders, keyed to the university keying system. Front of boxes shall be numbered in sequence determined by the University. Rear of box shall be provided with label holder, or equivalent for identification. **Custom Millwork mail sorter boxes are prohibited.**

.3 MOVABLE EQUIPEMENT SORT MODULES: For open mail distribution in secure department areas, adjustable Movable Equipment open mail sorters may be used for each faculty/staff member. Only adjustable mail system equipment which utilizes standard, legal and oversize shelf dividers suited for common sizes of mail shall be considered. **Custom millwork mail sorter units are prohibited.**

10 55 16. MAIL COLLECTION BOXES

.1 U.S. POSTAL SERVICE STANDARD BOX: One standard wall-mounted box, officially approved by the U.S. Postal Service, shall be installed at a first floor Mail Room or in the main lobby or entrance way of each building. All regulation markings shall be provided. This box must be located within 100 feet of an entrance at which the Postal vehicle can be parked. Locks must conform to Postal Regulations. Depending upon who picks up the mail, a campus key may be provided.

## 10 56 00. STORAGE ASSEMBLIES

10 56 13. METAL STORAGE SHELVING

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents. The building design and Construction Documents must include all structural requirements, services and construction coordination for the installation of this equipment.

.2 BUDGET ALLOCATIONS: Metal Storage Shelving shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases, the university may choose to purchase Metal Storage Shelving for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

10 56 26. MOBILE STORAGE SHELVING

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents. The building design and Construction Documents must include all structural requirements, services and construction coordination for the installation of this equipment.

.2 BUDGET ALLOCATIONS: Mobile Storage Shelving shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases, the University may choose to purchase Mobile Storage Shelving for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

## 10 57 00. WARDROBE AND CLOSET SPECIALTIES

10 57 13. HAT AND COAT RACKS

.1 DESIGNS: Wall and door mounted coat hooks and all blocking shall be included in the Construction Documents for offices and conference areas.

.2 CONSTRUCTION COORDINATION: With the exception of wall and door mounted coat hooks, other Accessory items may be provided by the University. A list of university furnished items will be submitted to the A/E for appropriate Construction Document coordination of blocking or placement. Rough layouts,

showing the placement of all accessories, must be submitted with the schematic and design development submittals.

## 10 80 00 OTHER SPECILITIES

## 10 82 00. GRILLES AND SCREENS

10 82 13. EXTERIOR GRILL**E**S AND SCREENS

.1 DESIGNS: Louvers and vents for air distribution systems should be specified in Division 23. The HVAC Contractor shall be required to furnish and install all interior louvers and vents. If such items are an integral part of the exterior design of a building and are not connected directly to an air distribution system, specify in Section 08 91 00 Louvers that the General Contractor shall purchase and install them. Provide drainable louvers for all exterior locations.

**END OF DIVISION 10 - SPECIALTIES**

## 11 00 00. EQUIPMENT

## 11 00 03. GENERAL PROVISIONS

.1 Refer to Division 00 PROCESSING THE WORK, PART TWO – THE DESIGN PROCESS, paragraph 00037, Furniture, Fixtures and Equipment (FF&E)

.2 DESIGNS: The A/E shall provide layouts of both Movable and Fixed Equipment identified in the Program of Requirements (POR) to ascertain function and space usage for the project. Submittals are required as outlined in the Architect/Engineer (A/E) Agreement for Basic Services.

The A/E shall specify all utility fittings and fixtures for equipment equal to that specified for the Divisions for Facilities Services Subgroup.

The A/E shall specify that all Automatic Shut-off Valves have a 10 year written warranty.

.3 CONSTRUCTION COORDINATION: The A/E shall clearly define contractor responsibilities relative to receiving, storage and installing. Installation is to include any hook-up required.

The A/E is to locate and coordinate all blocking, support and services for installation of all items in this Division.

## 11 01 92 FALL PROTECTION (ROOFS)

### Part I – GENERAL

.1.1 ***Commentary**:*

*.1.1.1 The intent of this standard is to ensure the safety of all authorized university employees performing work on roofs at the university and provide a safe work area.*

*.1.1.2 It is the intent of the university to not use mechanical attachment points, cables, or any other device that requires certification.*

*.1.1.3 A more permanent passive means of fall protection to prevent a fall is preferred. Such means include parapet walls and guardrail systems.*

.1.2 REFERENCES

.1.2.1 ANSI A10.32-2004 Fall Protection Systems for Construction and Demolition Operations

.1.2.2 ANSI Z359.0-2007 Definitions and Nomenclature Used for Fall Protection and Fall Arrest

.1.2.3 OSHA 29 CFR PART 1910 Subpart D Walking and Working Surfaces

.1.2.4 OSHA 29 CFR PART 1910 Subpart I Personal Protective Equipment

.1.2.5 OSHA 29 CFR PART 1926 Subpart M Fall Protection

.1.3 DEFINITIONS

.1.3.1 Fall Protection – Any equipment, device or system that prevents an accidental fall from elevation or that mitigates the effect of such a fall.

.1.3.2 Fall Arrest System – The equipment components that are configured to arrest (stop) a free-fall.

.1.3.3 Travel (Fall) Restraint System – A device or devices (e.g. a lanyard short enough) that limits travel to prevent a user's center of gravity from reaching a fall hazard.

.1.3.4 Safe Work Zone – The area of a roof demarcated to indicate that work can safely be performed without the use of fall protection.

**Part II – PRODUCTS**

.2.1 To ensure the safety of authorized Ohio State employees working on roofs, the design team is to generate a design & drawings for:

.2.1.1 Establishing a safe work environment

.2.1.2 A method of performance of the most work with the least impact to workers

.2.1.3 A method to perform all maintenance items required on the particular roof.

.2.1.4 Fall protection system requiring minimum maintenance, no annual certification, and least aesthetic impact to the building,

.2.1.5 The use of mechanical anchor points or horizontal life lines are to be used only with the concurrence of the Project Manager, TSG, Operations, and EHS.

***Commentary:*** *the following approaches can be considered in order of preference:*

.1 A 42" parapet is to be around the perimeter of the roof.

.2 A 42” guardrail - is to be around the perimeter of the roof.

.3 A “Safety Line” of a different color than the roof is to be installed 10’ from all edges of the roof defining a “Safe Work Zone” which the workers must remain within. All equipment and roof drains must be able to be maintained within the Safe Work Zone.

.4 If the roof edge requires maintenance, it must be accessed from a bucket truck or other means from the ground.

.5 If any work on a roof is required outside the “Safe Work Zone”, an outside contractor, responsible for their own fall protection, is to be called for the investigation and repair.

.2.2 SIGNAGE

2.2.1 Following the University’s Signage Standards, a laminated sign shall be posted on all entry points to the roof reinforcing safe work practices.

***Commentary:***
*As an example: “No university employee is permitted outside the Safe Work Zone. If work is required outside the Safe Work Zone, a contractor is to be hired.”*

.2.2.2 A laminated roof plan is to be posted adjacent the above signage illustrating the Safe Work Zone which the university authorized worker must remain within.

.2.4 OTHER ROOF HAZARDS

.2.4.1 Any roof opening has a potential for causing falls, trips or hazards from objects falling through the opening.

.2.4.2 Openings including skylights and small openings shall be protected by use of guardrails, covers, or other fall protection measures as appropriate.

.2.4.3 Roof hatches shall be protected by guardrails with a safety swing gate.

.2.4.4 Additional locations that shall be designed to include fall protection measures as an essential part of the design include catwalks, areas above dangerous equipment, and hoist areas. Refer to OSHA regulations for additional details.

.2.4.5 Toe-boards shall be provided where appropriate as a protection from falling objects

.2.4.6 Ladders: provide guardrails, safety swing gate and platforms as required to provide a safe pathway from the roof edge for a minimum distance of six (6) feet.

## 11 10 00. VEHICLE AND PEDESTRIAN EQUIPMENT

## 11 13 00. LOADING DOCK EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

~~Dock doors shall be at least 9'-0" wide and should be 12'-8" minimum on center when multiple doors are used. Pavement slope is a serious concern relative to drainage and to truck bed floor/building floor/canopy relationship. Loading docks shall be at the same elevation as a floor of the building and shall be either 44 inches minimum to 46 inches maximum above the adjacent pavement or shall be provided with a load leveler. Check height requirements with the University Architect; a different dock height might be required if step van vehicles, only, are used. Loading docks must not be located at or near fresh air intakes for buildings. Unless this is done, the exhaust from idling vehicles will be drawn into buildings and expose inhabitants to toxic airborne contaminants.~~

.2 BUDGET ALLOCATIONS: All Loading Dock Equipment is considered Fixed Equipment and acquired through one or more of the Construction contracts within the project budget

## 11 14 00. PEDESTRIAN CONTROL EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

If the Program of Requirements calls for pedestrian control but does not detail the requirements for pedestrian control, the University Project Manager will consult the using agency and the Department of Public Safety and will indicate the kind of control devices required.

Control devices shall be planned to provide ample room for the passage of wheelchairs and crutches. The University Architect and ADA Coordinator will review these devices for clearances per ADA requirements.

.2 CONSTRUCTION COORDINATION: The A/E is to coordinate all Pedestrian control devices that are used in conjunction with electronic security systems. Installations will require close coordination with electrical installations.

## 11 20 00. COMMERCIAL EQUIPMENT

## 11 21 00. MERCANTILE AND SERVICE EQUIPMENT

11 21 23. VENDING EQUIPMENT

.1 DESIGNS: Vending equipment will be provided under separate contracts with a franchisee. All required power, data, plumbing, lighting and planning for these services shall be a part of the Construction Documents.

## 11 24 00. MAINTENANCE EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents. The A/E shall be alerted to plan for the storage and service needs of all equipment within maintenance rooms.

.2 BUDGET ALLOCATIONS: Fixed maintenance equipment will be acquired through one or more of the Construction contracts within the project budget. Movable service maintenance equipment for a project is acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

## 11 26 00. UNIT KITCHENS

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Fixed Unit Kitchens shall be considered Fixed Equipment and are funded within the Construction Budget.

## 11 28 00. OFFICE EQUIPMENT

.1 Refer to DIVISION 00 PROCESSING THE WORK, PART TWO – THE DESIGN PROCESS, paragraph 00037, Furniture, Fixtures and Equipment (FF&E) and Division 12 Furnishings.

## 11 29 00. POSTAL, PACKAGING AND SHIPPING EQUIPMENT

.1 Refer to Division 10 Specialties and Division 12 Furnishings.

.2 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.3 BUDGET ALLOCATIONS: Fixed Postal and Shipping Equipment shall be considered Fixed Equipment and are funded within the Construction Budget. Movable Postal and Shipping Equipment is considered Movable Equipment and acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

## 11 50 00. EDUCATIONAL AND SCIENTIFIC EQUIPMENT

## 11 51 00. LIBRARY EQUIPMENT

11 51 19. BOOK THEFT PROTECTION EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Theft Protection and security equipment items shall be considered Fixed Equipment and are funded within the Construction Budget.

11 51 23. LIBRARY STACK SYSTEMS

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents. The Building Design and Construction Documents must include all structural requirements, services and construction coordination for the installation of this equipment.

.2 BUDGET ALLOCATIONS: Library Stack Systems shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases, the university may choose to purchase Library Stack Systems for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

11 51 23.13 METAL LIBRARY SHELVING

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents. The building design and construction documents must include all structural

requirements, services and construction coordination for the installation of this equipment.

The University has selected standard products for use. All proposals shall require approval of the University Architect prior to finalization of the Construction Documents.

.2 BUDGET ALLOCATIONS: Metal Library Shelving shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases, the University may choose to purchase Metal Library Shelving for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

## 11 52 00. AUDIO VISUAL EQUIPMENT

.1 DESIGNS: Audio-Visual equipment is considered Technology. Both Fixed and Movable Technology design and specifications may be provided by the university through separate Contracts. The timing for technology design must coincide with the development of Construction Documents prior to bidding. The A/E must be involved in the development of the technology design and be responsible for the coordination of equipment locations, required blocking and other construction needs, required power, data and associated services to this equipment.

.2 BUDGET ALLOCATIONS: Audio-Visual Equipment shall be considered Fixed Equipment or Movable Equipment.

.2.1 FIXED EQUIPMENT: Examples of Fixed Audio-Visual Equipment are motorized projection screens and projector lifts which need to be provided and installed by a General Contractor.

.2.2 MOVABLE EQUIPMENT: Examples of Movable Equipment are projectors, speakers, equipment racks, rack equipment and podiums.

.3 CONSTRUCTION COORDINATION: The A/E is to coordinate all required power and services leading to Fixed and Movable Audio-visual locations on the Construction Drawings. Provide detailed riser diagrams and special attention to ceiling mounted projectors locations, equipment rack locations, and podium locations. The ceiling projector pole mount and location will be furnished by the university for Construction Contractor installation.

## 11 52 13. PROJECTION SCREENS

.1 DESIGNS: The University will provide detailed specifications for all classroom and conference room projection screens.

.2 MOTORIZED AND RECESSED SCREENS: All motorized and recessed ceiling screens will be considered Fixed Equipment and provided as part of the Construction Documents.

.3 WALL MOUNTED PROJECTION SCREENS: All classroom and conference room projection screens will be considered Fixed Equipment and provided as part of the Construction Documents.

.4 Refer to https://fod.osu.edu/sites/default/files/projection_screen_procedures_0.pdf

## 11 53 00. LABORATORY EQUIPMENT

.1 Refer to Appendix W for Laboratory equipment details. https://fod.osu.edu/sites/default/files/app_W_06Fin.doc

.2 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.3 BUDGET ALLOCATIONS: Unless otherwise noted, all Laboratory equipment items shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases the university may choose to purchase metal Laboratory shelving for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

## 11 55 00. PLANETARIUM EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Unless otherwise noted, all Planetarium equipment shall be considered Fixed Equipment and are funded within the Construction Budget.

## 11 56 00. OBSERVATORY EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Unless otherwise noted, all Observatory equipment shall be considered Fixed Equipment and are funded within the Construction Budget.

## 11 60 00. ENTERTAINMENT EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: Unless otherwise noted, all Entertainment Equipment shall be considered Fixed Equipment and are funded within the Construction Budget. Exceptions to this are smaller Movable Equipment items which will be purchased by the university as Movable Equipment.

## 11 65 00. ATHLETIC AND RECREATIONAL EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 BUDGET ALLOCATIONS: All Athletic and Recreational Equipment shall be considered Fixed Equipment and are funded within the Construction Budget. Exceptions to this are smaller Movable Equipment items which are acquired by the university utilizing a fund allocation within the total project funds but independent of the Construction budget.

## 11 70 00. HEALTHCARE EQUIPMENT

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect and the Wexner Medical Center stakeholders prior to the final development of the Construction Documents. Coordination and documentation of building utilities, support systems, blocking and structural support systems are the responsibility of the A/E.

The A/E shall provide layouts of both Movable and Fixed Equipment identified in the Program of Requirements (POR) to ascertain function and space usage for the project. Submittals are required as outlined in the Architect/Engineer (A/E) Agreement for Basic Services.

.2 BUDGET ALLOCATIONS: All Healthcare Equipment shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases, the university may choose to purchase Healthcare Equipment for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

.3 Smaller Movable Equipment items are considered movable equipment and are acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

.4 **Wexner Medical Center**: Smaller Movable Medical Equipment items are considered minor medical equipment and are acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

END OF DIVISION 11 - EQUIPMENT

## 12 00 00. FURNISHINGS

## 12 00 03. GENERAL PROVISIONS

.1 Refer to Division 00 PART TWO, paragraph 00037, Fixtures, Furniture and Equipment (FF&E)

.2 DESIGNS: The Architect/Engineer (A/E) shall provide layouts of both Movable and Fixed Furnishings identified in the Program of Requirements (POR) to determine function and space usage for the project. Submittals are required as outlined in the A/E Agreement for Basic Services.

.3 CONSTRUCTION COORDINATION: The A/E is to coordinate all required power voice and data services leading to Fixed and Movable Furnishings locations on the Construction Drawings. Provide any details and drawings necessary for critical dimensions and locations of furnishings.

The A/E is to locate and coordinate all blocking, support and services for installation of all items in this Division.

## 12 20 00. WINDOW TREATMENTS

.1 DESIGNS: The A/E shall locate and specify treatment to all windows applicable to the building design and functions. All windows treatment, interior and exterior, is integral to the energy management of the building, the control of light and comfort of the occupants. All proposed manufacturer products and hardware must be rated for extra heavy duty commercial use.

.2 APPROVALS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.3 CONSTRUCTION COORDINATION: The building design and Construction Documents must include all structural requirements, blocking, services and construction coordination for the installation of Window Treatment.

## 12 21 00. WINDOW BLINDS

.1 BUDGET ALLOCATIONS: Window Blinds shall be considered Fixed Equipment and are funded within the Construction Budget. In some cases, the University may choose to purchase Window Blinds for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

.2 MOCK-UP: Before blind installation, prepare a mock-up for each project condition and type of blind to verify selections and establish application quality standards. Keep and maintain mock-ups during construction in an undisturbed condition as a standard for judging completed Work. Accepted mock-ups in an undisturbed condition at the time of Project Completion may become part of the final Work.

.3 Do not install blinds directly into window framing systems.

## 12 22 00. CURTAINS AND DRAPERIES

.1 BUDGET ALLOCATIONS: Curtain and Draperies shall be considered Movable Equipment and are acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

.2 All curtains and draperies shall be Class A Fire Rated.

## 12 23 00. INTERIOR SHUTTERS

.1 BUDGET ALLOCATIONS: Interior Shutters shall be considered Fixed Equipment and are funded within the Construction Budget.

## 12 24 00. WINDOW SHADES

.1 BUDGET ALLOCATIONS: Window Shades shall be considered Fixed Equipment and funded within the Construction Budget. In some cases, the University may choose to purchase Window Shades for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

.2 MOCK-UP: Before window shade installation, prepare a mock-up for each project condition and type of window shade to verify selections and establish application quality standards. Keep and maintain mock-ups during construction in an undisturbed condition as a standard for judging completed Work. Accepted mock-ups in an undisturbed condition at the time of Project Completion may become part of the final Work.

.3 ROLLER SHADES: Fabric roller shade systems shall be complete with mounting brackets, roller tubes, hembars, hardware and accessories.

.3.1 Fabric Flammability: Pass NFPA 701 large and small tests.

.3.2 Fabric Fungal Resistance: No growth when tested according to ASTM G21.

3.3 Hembar: Designed for weight requirements and adaptation to uneven surfaces and to maintain bottom of shade straight and flat. Double wrap fabric covered bottom bar, flat profile with closed ends.

3.4 Shadecloth to be channel mounted to the shade tube. Do not use adhesives or tape.

3.5 Shadecloth to be fire rated.

.4 SHADECLOTH GUIDELINE APPLICATION: Shadecloth and other window coverings directly affect the HVAC efficiency and overall comfort of a space (brightness and glare). Some projects will require a minimum shading coefficient or solar factor by the mechanical engineer. Primary considerations for shadecloth application are:

- SHADING COEFFICIENT (percentage of solar heat through a combination of glass and specific shadecloth. Light colors have a lower shading coefficient and lower heat gain than dark colors).
- SOLAR OPTICAL PROPERTIES (used to calculate the shading coefficient with glass and shadecloth combination)
- VISIBLE LIGHT TRANSMITTANCE (DAYLIGHT). Glare and brightness control is a primary consideration.
- OPENNESS FACTOR (DENSITY) of the shadecloth weave.
- COLOR of the shadecloth will directly affect the Shading Coefficient, brightness and glare. Light colors are more reflective with lower heat gain and shading coefficient but with higher percentage of daylight and solar transmittance. Light colors are brighter when sunlit which causes high surface brightness. Light colors are difficult to see through. Dark colors are viewable through the shadecloth to the outside. Dark colors absorb light and heat and are less energy efficient. Dark colors lower surface brightness and provides glare free environments. Medium value colors minimize excessive contrast in a room and reduces eye strain.

The OPENESS FACTOR (OF) is a key element to consider once a shadecloth has met shading coefficient requirements.

OF at 0% – Privacy and room darkening (Opaque). Example - MechoShade ThermoVeil 0700 Series (Budget Vinyl) and MechoShade Midnight Blackout 0200 Series

OF at 1% - Privacy at night (Translucent shadecloth). Example - MechoShade ThermoVeil 0900 series

OF at 2% - Visible Light Transmittance is 100%>80%. Example – MechoShade EuroTwill 6200 Series

OF at 3% - Visible Light Transmittance is 90%>60%. Example – MechoShade ThermoVeil 1500 Series and EuroTwill 6000 Series.

OF is 5% - Visible Light Transmittance is 50%>35%. Example – MechoShade ThermoVeil 1300 Series

OF is 8% - Visible Light Transmittance is 30%>22%.

OF is 15% - Visible Light Transmittance is 20% or less.

.5 Provide a 25 Year non-depreciating limited warranty on roller shade hardware, chain and shadecloth.

**WEXNER MEDICAL CENTER:** See Interior Finish Schedule for approved manufacturer, type, and color.

## 12 25 00. WINDOW TREATMENT OPERATING HARDWARE

.1 CONSTRUCTION COORDINATION: Necessary power, electrical controls and other devices for installing and operating window treatment shall be included in the Construction

.2 MOTORIZED SHADE SYSTEMS: Provide the services of the manufacturer's authorized representative to perform system startup.

.3 DEMONSTRATION: Demonstrate operation and maintenance of window shade system to University's designated personnel.

.4 TRAINING: Train University's designated personnel on operation and maintenance of system.

.4.1 Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

.4.2 Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the University.

## 12 30 00. CASEWORK

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details for manufactured casework are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

The A/E shall specify all utility fittings and fixtures for Casework equal / compatible to that specified for the Plumbing, HVAC, Electrical and Data Communications for outlets, hook-ups or tie-in connections.

.2 BUDGET ALLOCATIONS: Casework shall be considered Fixed Equipment and funded within the Construction Budget.

.3 MOCK UP: Provide mock ups of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.

3.1 Retain mock ups: during construction in an undisturbed condition as a standard for judging completed work. Accepted mock ups that have not been damaged may remain as part of the final work.

.4 ASSEMBLY: Factory assembled casework items for delivery to site in units easily handled and to permit passage through building openings.

4.1 STRUCTURAL PERFORMANCE: Manufactured casework shall safely support the following minimum loads.

a. Base Units: 500 lbs/lineal ft across the cabinet ends.

b. Suspended Units: 300 lbs static load.

c. Drawers: 125 lbs .

d. Hanging Wall Cases: 300 lbs.

e. Shelves: 100 lbs minimum. Verify project requirements to determine if heavier weights are anticipated.

4.2 SEISMIC PERFORMANCE: Determine project specific seismic requirements. If the project is located in a seismic area, review the building code and ASCE/SE17 and coordinate seismic requirements with the Structural Engineer.

a. The drawings shall designate earthquake spectral response acceleration, short period (Sds) for the project.

b. Identify Component Importance Factor: Typically 1.0 or 1.5.

**Wexner Medical Center:** Exposed core on any casework component is not permitted. Apply joint sealant to interior seams and joints. All cabinet hardware is to be stainless steel, No. 4 satin finish. Hospital tip 5-knuckle hinges shall be used in clinical areas and other high use spaces. Concealed hinges may be used in specialty areas.

## 12 32 16 MANUFACTURED PLASTIC LAMINATE CLAD CASEWORK

.1 DESIGNS: Refer to Section 06 40 00 Architectural Woodwork - Casework and Cabinet Work for countertop requirements. Match hardware description and HPL requirement from Section 06 40 00 Architectural Woodwork casework description.

.2 MANUFACTURED PLASTIC LAMINATE CLAD CASEWORK: Solid wood and wood panel construction, each unit shall be self-contained and not dependent on adjacent units or building structure for rigidity; in sizes necessary to avoid field cutting except for scribes and filler panels. Include adjustable levelers for base cabinets.

2.1 Edgebanding: 3mm extruded PVC on all cabinet faces, edge of drawers and doors.

2.2 Secure wall and floor cabinets to concealed blocking at gypsum board assemblies.

2.3 Fasten cabinets to wall substrates, with fasteners spaced not more than 16 inches on center. Bolt adjacent cabinets together with joints flush, tight, and uniform.

a. Where base cabinets are installed away from wall substrates, anchor to floor at toe space at not more than 24 inches on center and at sides of cabinets with not less than two fasteners per side.

2.4 Wall Cabinets: Fasten to hanging strips and/or wall substrates. Fasten each cabinet through back, near top, at not less than 16 inches on center.

2.5 Countertops: Install countertops furnished for field installation in one true plane with ends abutting at hairline joints with no raised edges.

.3 MODULAR CASEWORK: If manufactured modular casework is the preferred product versus fixed manufactured casework, additional coordination may be required with other specification sections. These sections include, but are not limited to:

.2.1 Solid surface or plastic laminate countertops.

.2.2 Solid surface or stainless steel sinks.

.2.3 Countertop brackets.

.2.4 Blocking.

.4 PERFORMANCE CHARACTERISTICS FOR MODULAR CASEWORK: Modular casework shall be designed to withstand 24/7 usage in typical healthcare clinical spaces.

3.1 Testing:

a. Product is tested and complies with UL 1286 Standard for Safety of Office Furnishings, (including the flammability requirement of):

1) Flame Spread Index less than 200.

2) Smoke Developed Index less than 450 (unless labeled "smoke developed index over 450").

b. Worksurfaces meet or exceed ANSI/BIFMA X5.5 Desk Products requirements.

c. Lifetime warranty that product is free from defects in materials and workmanship (includes shipping, parts and labor for the repair or replacement of defective item).

3.2 Face of all cabinets shall be plastic laminate. Interior of all open cabinets shall be plastic laminate to match face.

3.3 Interior of cabinets to be white melamine*.

3.4 Fabricator must be able to provide millwork soffits

3.5 Edge-banding: 3mm on all cabinet faces, edge of drawers and doors.

3.6 End panels of cabinets shall be finished with the same laminate finish as the face to enable the casework to be relocated easily.

3.7 Hardware to be similar in quality, finish and function to hardware specified in Section 06 41 00.

3.8 Cabinets and drawers may require silicone sealant at seams for vermin protection. Selected product must be able to provide this feature

3.9 Panels shall be constructed with medium density M-2 grade particleboard and comply with ANSI 208.1 and ASTM D1037. Panels are 3/4 inch or 1 inch nominal finished thickness and feature balanced construction to prevent bowing or warping. Melamine or laminate is applied to both faces. The melamine or laminate is permanently attached and reinforced under pressure to the wood core.

3,10 High-Pressure Laminate (HPL) worksurfaces are constructed of a medium density M-2 grade particleboard core covered with HPL on the top and a laminate backer sheet on the bottom. Worksurfaces are 1-3/16 inch nominal finished thickness and feature balanced construction to prevent bowing or warping. The HPL is permanently attached and reinforced under pressure to the wood core. A 3mm plastic edgeband is applied to exposed side and rear edges of the worksurface and 3mm edgeband to the front (user) edge to prevent any outgassing from exposed particleboard.

3.11 Silicone bumpers required on all cabinets and doors, unless another acceptable product provides similar soft close mechanism.

3.12 Coordinate locks with University requirements.

**WEXNER MEDICAL CENTER;** See Material Color Schedule for approved plastic laminate manufacturers, types, and colors. Obtain the schedule through University Project Manager.

## 12 35 53 LABORATORY CASEWORK

## 12 40 00. FURNISHINGS AND ACCESSORIES

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Contract Documents.

The A/E shall specify all utility fittings and fixtures for Furnishings equal / compatible to that specified for the Plumbing, HVAC, Electrical and Data Communications for outlets, hook-ups or tie-in connections.

.2 BUDGET ALLOCATIONS: Furnishings shall be considered Movable Equipment and acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

.3 CONSTRUCTION COORDINATION: Necessary structural support, power, data, utilities and other support for Furnishings and Accessories shall be included in the Construction Documents.

## 12 48 00. RUGS AND MATS

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

.2 Preferred no nosing strips at carpet stair locations.

.3 All rugs and mat shall be Class A Fire Rated.

### 12 48 13. ENTRANCE FLOOR MATS AND FRAMES

.1 DESIGNS: At entrance doors to buildings, entrance floor mats shall be in recessed frames wherever possible.

.2 BUDGET ALLOCATIONS: Recessed Entrance floor mats and frames shall be considered Fixed Equipment and funded within the Construction Budget.

.3 ENTRANCE FLOOR GRILLES: Recessed extruded aluminum grille assembly with nominal 1 inch wide tread strips running perpendicular to traffic flow, slots between treads, and perimeter frame forming sides of recess; grille hinged for access to recess. Capable of supporting a rolling load of 500 lbs. without permanent deformation or noticeable deflection.

.4 CARPET TREAD ROLL-UP LINKED MAT: Exposed hinge rail connectors with carpet meeting CRI standard for good indoor air quality. Capable of supporting a rolling load of 350 lb./wheel (load applied to a solid 5 inch x 2 inch polyurethane wheel, 1,000 passes without damage).

.5 WALK-OFF CARPET TILE: Specified in Section 09 68 00 Carpeting.

12 48 53. RUGS

.1 BUDGET ALLOCATIONS: Loose rugs shall be considered Movable Equipment and acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction Budget.

## 12 49 00. WASTE AND RECYCLING RECEPTORS

Ohio State will design waste infrastructure that supports the collection for the university's waste streams and the zero-waste goal. The Ohio State University will offer receptors for the following materials:

Trash: All materials not suitable for recycling, composting (when available), or special handling. ·

Recycling: All materials accepted by local recycler. See the comprehensive list of accepted items: https://fod.osu.edu/sites/default/files/what_can_i_recycle_-_comprehensive_list.pdf

Shredding: For WMC and other areas of campus that handle confidential documents, all paper must be placed in the shredding bin. For precautionary purposes, all paper- standard or confidential- must be shredded in these locations.

Compost: All materials accepted by local organics recycling facility. The accepted materials may vary by location, dependent on if the location has a pulper, shredder, or toter collection system. Project Manager must coordinate with FOD to arrange composting signage.

Pairing
For every trash bin, there should be a recycling bin next to it. If the space includes composting, a composting receptacle must be placed on the right of the

recycling. When possible, bins should attach to one another to discourage separation. Bins should always be available and accessible.

Standard Waste Bin
The standard indoor waste bin is 30-gallon side-by-side with 2 large (17-13/16" W x 26-3/8" H) display panels and 2 (9.3" W x 26-3/8" H) display panels. Display panel designs can be received through contacting recycle@osu.edu.
Lids will correspond to the stream. Trash and compost lids will be "funnel" style and open. Recycling lids will be restrictive "single stream" style, with slot and hole. Recycling lids will have small sticker matching display panel.

Designer Bin
For highly visible locations, Ohio State allows for variation from the standard bin. Bins must adhere to Ohio State's color palette and must equipped with header board for display panel above waste opening. Recycling bins must have restrictive "single stream" style lid. Contact FOD for details.

To decrease contamination, no bins will be labeled with only "trash," "recycling," or "compost." Contact recycle@osu.edu for signage.

Custom Bin
Custom bins and built-in casework containing bins are strongly discouraged. Preference is to maintain continuity of containers/signage across the University and provide flexibility for potential operational changes.

Placement Guidelines
All fire codes, ADA, standards and guidelines for Ohio State must be met. Facility managers should work with FOD for guidance on placement.

## 12 50 00. FURNITURE

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Contract Documents.

The A/E shall specify all utility fittings and fixtures for Furniture equal / compatible to that specified for the Plumbing, HVAC, Electrical and Data Communications for outlets, hook-ups or tie-in connections.

.2 BUDGET ALLOCATIONS: Furniture shall be considered Movable Equipment and acquired by the University utilizing a fund allocation within the total project funds but independent of the Construction budget.

.3 CONSTRUCTION COORDINATION: The A/E shall plan and include required structural support, power, data, utilities and other support for Furniture in the Construction Documents.

## 12 60 00. MULTIPLE SEATING

.1 DESIGNS: All product specifications, accessory items, colors, finishes, applications and details are to be reviewed and approved by the University Architect prior to the final development of the Construction Documents.

The A/E shall specify all utility fittings and fixtures for ~~Furniture~~ Multiple Seating equal / compatible to that specified for the Plumbing, HVAC, Electrical and Data Communications for outlets, hook-ups or tie-in connections.

In areas of assembly, the A/E shall show generic seating layouts, demonstrating seating volumes, aisle dimensions etc. as required for Schematic and Design Development Submittals. All seating layouts shall conform to current Ohio Building Code requirements.

.2 BUDGET ALLOCATIONS: Unless otherwise noted, Multiple Seating shall be considered Fixed Equipment and funded within the Construction Budget. In some cases, the University may choose to purchase Multiple Seating for a project. In these cases, the cost of the equipment is moved from Construction funds to Equipment funds for purchase.

.3 CONSTRUCTION COORDINATION: Necessary structural support, power, data, utilities and other support for Multiple Seating shall be included in the Construction Documents.

Detailed shop drawings and field verification required from the Manufacturer prior to approval and installation.

## 12 61 00. FIXED AUDIENCE SEATING

.1 MATERIALS AND CONSTRUCTION: The A/E shall indicate complete specifications showing manufacturer, product number, materials and details from a selected product and at least two additional manufacturers, product numbers, materials and details showing equal compatibility.

The University has selected standard products for use. All proposals shall require approval of the University Architect prior to finalization of the Construction Documents.

.2 FOLDING TABLET ARMS: Unless otherwise noted by the University, all auditorium and lecture hall seating are required to have articulating one motion tablet arms.

Tablet construction to be laminated birch plywood core with finished birch or permanent/integral edges and laminated on both sides with plastic laminate. PVC "T" or self-edges are not acceptable. Tablet arms are to be full size without curves and indents that reduce useable work surface. The minimum tablet arm size is to be a rectangular shape 143 square inches or more with no cutouts within the rectangle. Ten to twelve percent (10-12%) of the tablet arms are to be left-handed. Left-handed seats shall be located to avoid interference with right-handed tablets. Provide clearance of 8” or more from top of seat to underside of tablet arm when open.

.3 SEAT AND BACK: Chair back and seat shall be two part (separate) construction. All components including upholstery shall be easily field replaceable. Provide gravity seat and articulating back. Provide minimum of 23” seat width on center and 18” seat depth. Provide minimum back height of 35” from seat. Upholstery fabric to be a minimum 200,000 double rubs composed of nylon or nylon blend.

.4 ARM CAPS/ARMRESTS: Arm caps and armrests shall be finished wood or molded polyurethane material. Plastic laminate and upholstered armrests are prohibited. Provide minimum arm rest width of 2”.

.5 MOUNTING: Specify only beam or riser mounted applications to facilitate maintenance. Newly constructed facilities shall be planned accordingly.

.6 WARRANTIES AND GUARANTEE: Specify that the manufacturers guarantee the product and carry a minimum of 5 year complete warranty on all components. Throughout this five year period, the product will not show signs of excessive wear or deterioration or experience failure of any item material, construction or finish or the manufacturer shall promptly repair or replace equipment showing defects of material at no cost to the University.

## 12 93 00. SITE FURNISHINGS

12 93 13. BICYCLE RACKS:

The following is the basis of design. Final A/E selections shall be reviewed by the University Landscape Architect for final approval.

.1 DuMor, Model: #83-00G galvanized loop, S-1 Embedment, 2-3/8” O.D. x 11-gauge wall galvanized steel tube as supplied by Service Supply, LTD. Columbus, OH, 614-861-3681.

.2 DERO BIKE RACK CO., Hoop Bike Rack, Schedule 40 pipe, galvanized finish, in-ground mount, 42 Northern Stacks Drive, Suite 100, Minneapolis, MN 55421, 1-888-337-6729. FAX 612-331-2731, Website: www.dero.com

## 12 93 23. TRASH RECEPTORS

.1 PLAZA STYLE TRASH RECEPTORS:

The following is the basis of design. Final A/E selections shall be reviewed by the University Landscape Architect for final approval.

DuMor, inc. Model 157-32-25BT (side loading), 32 gallon litter receptacle, color: Black supplied by Service Supply, LTD. Columbus, OH, 614-861-3681.

## 12 93 43. SITE SEATING AND TABLES

.1 PLAZA STYLE BENCH:

The following is the basis of design. Final A/E selections shall be reviewed by the University Landscape Architect for final approval.

DuMor, inc. Model 93-60, 6 foot long metal bench, color: Black. Supplied by Service Supply LTD., Alan Kletecka, Columbus, OH, 614-861-3681.

.2 PLAZA STYLE PICNIC TABLE:

The following is the basis of design. Final A/E selections shall be reviewed by the University Landscape Architect for final approval.

Dumor #63-303-4 (or 3 for ADA accessible)/S-5 Picnic Table surface mount, Color: black. Supplied by Service Supply, LTD. Columbus, OH, 614-861-3681.

.3 PARK STYLE PICNIC TABLE:

Use only for repair / replacement after review with the University Landscape Architect.

Harvest Picnic Table, Model 2107X/RW, 84” x 233” x 30”(h) table with exposed aggregate finish and redwood bench assembly, as supplied by Aerocrete dba Architectural Precast 5660 Limaburg Road, Burlington, KY 41005-9398, 1-800-542-1738..

Concrete Pad, Model #9000, 8’ x 9’ x 4’ Concrete pad, as supplied by Aerocrete dba Architectural Precast 5660 Limaburg Road, Burlington, KY 41005-9398, 1-800-542-1738.

END OF DIVISION 12 - FURNISHINGS

## 13 00 00. SPECIAL CONSTRUCTION

## 13 34 00. PRE-ENGINEERED STRUCTURES

.1 ENGINEERING DATA REQUIRED: An analysis of framing and structural components is required. Data shall bear the seal and signature of a professional architect or engineer, registered in Ohio, attesting that the structures meet requirements of the specifications and comply with requirements of the OBC. Copies of this data shall be submitted to the University Architect.

## 13 42 00. BUILDING MODULES AND COMPONENTS

## 13 42 73 INTEGRATED INTERIOR MODULES

### 13 42 73.15 INTEGRATED CEILING ASSEMBLIES

.1 COORDINATION OF INSTALLATION: It is preferred that integrated ceilings be made a part of the General Contract and the General Contractor be required to coordinate the complete installation, including the work of the HVAC and Electrical Contractors. If the A/E feels that such ceilings should be installed by either of the other contractors, he should discuss the matter with the University Architect during the review conference for Design Development submittal. The A/E's HVAC and electrical consultants shall be present at this discussion.

## 13 49 00. RADIATION PROTECTION

.1 DESIGN: Materials, thicknesses, and configurations for radiation protection shall be based on the radiation protection design and report prepared by the University's radiation health physicist. Materials and construction, including lead thickness, joints and fasteners, shall maintain continuity of radiation protection at all joints and in all directions equivalent to materials specified and locations indicated.

Materials and construction shall comply with applicable recommendations of the National Council on Radiation Protection and Measurements Reports No 147 and 151. Installation shall be in strict adherence with manufacturer's requirements and approved shop drawings.

1.1 NCRP Report 147 Structural Shielding Design for Medical X-Ray Imaging Facilities

1.2 NCRP Report 151 Structural Shielding Design and Evaluation for Megavoltage X and Gamma-Ray Radiotherapy Facilities

.1.3 RADIATION PROTECTION SURVEY: A radiation protection survey shall be performed by or under the direction of a qualified expert (see paragraph 1.3.2 below). The survey will consist of an inspection to verify that barriers are properly placed, contiguous, and free of voids and defects, and an evaluation of shielding adequacy to verify that barriers adequately attenuate exposures in nearby occupied areas.

.1.3.1 If the survey reveals deficiencies, additional shielding or modifications of equipment and procedures are required. If supplementary shielding is required, a survey shall be performed after its installation. A survey shall also be made after any change that might significantly reduce the level of radiation protection.

.1.3.2 A qualified expert is a medical physicist or medical health physicist who is competent to design radiation shielding in medical x-ray imagining facilities. The qualified expert is a person who is certified by the American Board of Radiology, American Board of Medical Physics, American Board of Health Physics, or the Canadian College of Physicists in Medicine.

.2 MATERIAL STANDARDS AND INSTRUMENTATION: Materials and equipment shall conform to applicable recommendations of the National Council on Radiation Protection and Measurements Reports No. 102, 145, and 148, and shall be furnished and installed in accordance with the Code of Federal Regulations, Department of Health, Education, and Welfare (FDA Division). Installation shall be in strict adherence with manufacturer's requirements and approved shop drawings.

| NCRP Report No. | Title |
|---|---|
| 102 | Medical X-Ray, Electron Beam and Gamma Ray Protection for Energies to 50 MeV (Equipment, Design, Performance, and Use)<br>**Report 102 Supersedes Report 33** |
| 145 | Radiation Protection in Dentistry<br>**Report 145 Supersedes Report 35** |
| 148 | Radiation Protection in Veterinary Medicine<br>**Report 148 Supersedes Report 36** |

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**Per NRCP, Report 34 was superseded by Report 49. Report 49 then had parts superseded by Report 147 and certain others of Report 49 by Report 151.**

When planning a structure containing facilities in which radioactive materials are to be used, such as laboratories or certain hospital rooms, the following references should be consulted:

Brodsky, A., Determination of facilities, equipment, and procedures requires for various types of operations, in "Handbook of Radioactive Nucleides", Wanh Y., Ed. CRC Press, Boca Raton, FL 1969, pp. 664-710.

.2 MATERIAL STANDARDS AND INSTRUMENTATION: (Cont'd)

Brodsky, A., Determining industrial hygienics requirements for installations using radioactive materials, in Handbook of Laboratory Safety", 2nd ed., Steere, NV, ED. Chemical Rubber Company, Cleveland, OH, 1971, pp. 482-502.

U.S. Nuclear Regulatory Commission, Regulatory Guides 1.86 and B.23 (Since they address surface contamination limits).

International Atomic Energy Agency - Safety Series books

No. 91982, Basic Safety Standards for Radiation Protection

No. 381973, Radiation Protection Procedures.

These references, and others are available for review at the Ohio State University Office of Radiation Safety, B-042 Graves Hall 333 W. 10th Avenue (614-292-0122). A/Es are encouraged to contact radiation safety officer here if there are any questions about facility suitability.

.3 RADIATION EQUIPMENT SURVEY AND TESTING: After the X-ray equipment has been installed and placed in operating condition, a radiation survey shall be performed by a qualified expert as recommended by NCRP. After radioactive material containment facilities are placed in operating condition, air flow rates shall be measured by a qualified expert (see paragraph 1.1.3.2 above) at all intakes and exhaust points of the ventilation system affected.

.4 LISTING REQUIRED: The University Office of Radiological Health and Safety has the responsibility of registering all sources of radiation generated by an electronic product, subject to Radiation Control for Health and Safety Act of 1968. A listing of all such devices, as well as all radioactive materials specified in the contract

documents, shall be submitted by the A/E to the University Architect with those documents. A/E shall coordinate prior to stakeholder's review for proper signage requirements using Ohio State signage standards. Devices include, but are not necessarily limited to:

lasers and maser
radar
microwave generators
electron microscopes
infrasonic, sonic, and ultrasonic generators
X-ray generators and accelerators
electron welders
diatherapy units
infrared and ultra-violet sources
TV sets (of the projection type only)

END OF DIVISION 13 - SPECIAL CONSTRUCTION

Summary: Application Application Part 3 of 17 - Exhibit C (Part 1 of 8) electronically filed by Ms. Kari D Hehmeyer on behalf of Alexander, Trevor Mr. and THE OHIO STATE UNIVERSITY