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.

00 00 13.1 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:

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<thead>
<tr>
<th>Column</th>
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<td>PoR Item Number</td>
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<td>PoR Room Name</td>
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<td>Schematic Design ASF</td>
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<td>8</td>
<td>PoR/Schematic Design ASF Difference</td>
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<td>9</td>
<td>Comments</td>
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</tbody>
</table>

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)

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
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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:

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<td>Project Name:</td>
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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 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: 3 feet 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](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 outswinging 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 50 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 scrubblings.

.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_08.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: fed.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