

Western Illinois University Design Guidelines

Introduction

A university campus poses a unique opportunity for any design professional. The balance between student, faculty, and staff needs, when weighed against life-cycle costs, operating budgets, and the maintainability of a quality campus environment can be perilous for those who are unprepared.

This document is intended to convey to architects, engineers, and design professionals the needs of the students, faculty, and staff at Western Illinois University; as well as the requirements for construction, renovation, documentation, building systems, and landscaping.

It is our goal to achieve a LEED Silver design when constructing new facilities, or undertaking any significant renovation. Projects must be commissioned to ensure that all systems function as designed, interact properly with systems within the building, with additional systems throughout campus, and communicate effectively to the end users.

Western Illinois University Facilities Management is committed to reviewing this document in it's entirety on a yearly basis to make changes as necessary.

Western Illinois University defines its design priorities in terms of plans and specifications which accomplish the following:

Meet the University program requirements incorporating information and technology into a functional learning environment while complying with state and federal codes and laws. We must recognize that changing curricula, new methods of teaching, and the modification of spaces, are frequent occurrences in a University environment. Flexibility should be considered in any design so as to accommodate change and future growth. A sound, functional, and maintainable plan is an important factor when obtaining a solution to building program requirements. Careful planning and preparation of space relationships must occur with users prior to design.

Result in long-lived, low-maintenance buildings and landscapes free of structural, material, and operating defects. The information presented in this document is based upon University experience with materials and construction methods which have resulted in the fewest problems in operation and maintenance. A consistent use of materials and equipment throughout

campus limits the range of maintenance and cleaning support products, and reduces the number of parts and materials which must be maintained in inventory for repairs.

Provide a high degree of energy efficiency. Energy conservation must be given special consideration with regard to University building systems and equipment. We expect buildings to be healthy environments; therefore, they should comply with ASHRAE's recommended Indoor Air Quality Standards.

Create attractive buildings and landscapes within the context of existing University architecture. The exterior design of the buildings and landscapes are expected to be compatible with the campus as a whole. Exterior materials, as well as the building and landscape form, should be examined carefully to ensure compliance with the requirements of the project and the Design Guidelines. All major renovations and new construction shall include landscaping within the project budget. (See Landscaping Guidelines attached to this document.)

Use State of Illinois and locally created funds judiciously with an emphasis on life cycle costs. Selections of materials and equipment must be made considering the information above and the expected service during each component's life, and therefore shall be institutional grade. New materials and products, when proven sound, may justify deviation from these guidelines. (The basis for these guidelines are derived from the philosophy of experimenting with known products when absolutely necessary, however, avoids pioneering.)

Promote environmental and social responsibility. It is the goal of Western Illinois University to achieve **LEED Silver design** when constructing new facilities, or undertaking any significant renovation of existing buildings.

Building Program

For each capital renewal or major capital project, Western Illinois University will provide the design professionals with a copy of the scope statement, applicable user program information, and user input relative to recommended space types, uses, and sizes, etc. The typical project will include the following:

Scope Statement: This document is prepared to propose legislative-funded projects to the Illinois Board of Higher Education within the Resource Allocation and Management Plan (RAMP). If locally funded, a similar document may be prepared based upon a predetermined program. An appropriate programming study is a requirement in order to adequately fund any new project.

Background and Qualification: This will identify a potential need for major renovation or new construction and will show that the existing facility and/or space is inadequate when benchmarked against other institutions and departmental requirements.

Estimate: It is essential that appropriate research is completed by the design professionals based upon the following information: use, intended location, benchmarking with other institutions with similar projects, decisions with consulting architects or other institutions with similar projects, discussions with consulting design professionals as to expected costs, and provision for escalation so that a true time value of money can be projected.

Estimates are to include required asbestos abatement, applicable site work/landscaping, fixed equipment, movable equipment, and/or any other equipment required to maintain the facility, CDB Administration overhead (if legislative funded), Architecture/ Engineering (if legislative funded) and any and all utility infrastructure necessary to support the building up to and including high voltage electrical, steam, water, sewer, gas, fiber optic & telecommunications, etc.

After the project is funded, it is the responsibility of the design professional to design within the obtained funding limit.

Estimates are also to be provided to the University by the design professional at the 50% and 75% design submittals. This will help assure the University of the validity of the original estimate and allow them to modify project scope as needed.

User Vision Statements and Space Requirements: The WIU Project Manager will obtain from the users these documents and provide them to the design professional. The vision statement shall be a narrative of what departments or programs will occupy the space, special considerations, and suggested space requirements.

Detailed Functional Relationships: Identify the individual spaces for each user group including essential functional relationships between the different occupants and spaces. During the course of programmatic phase of the design, it is the responsibility of the design professional to determine any potential conflicts and make recommendations for resolution.

Owner's Project Requirements (O.P.R.): Using the Western Illinois University Design Guidelines the owner with the assistance of the design professional shall develop the O.P.R. including, but not limited to, the following items:

1. Introduction
2. Overview
3. Project Description
4. Objectives
5. Budget and Schedule
6. Commissioning Process – Commissioning Plan, Schedule, and Systems to be commissioned
7. Key Requirements – Sustainability, Efficiency, Training, and Warranty Information
8. Functional Uses
9. Occupancy Schedule

10. General Criteria
11. MEP Criteria
12. Fire Protection
13. Technology Criteria
14. Envelope Criteria
15. Applicable Codes and Standards

Design Technology: The design professional is to utilize the latest design technology including, but not limited to, Building Information Modeling (B.I.M), Newforma, AutoCAD, Autodesk Revit, SketchUp, etc.

Design Submittals: For each stage of design submittal to the University, the design professional must follow the review checklist included in the appendix of this document.

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I. General Requirements

The intention of the following section is to convey to design professionals the expectations of contractors prior to, during, and after construction by WIU. The information below outlines the requirements for information including, but not limited to, site and material protection, testing, document requirements (closeout, and operations and maintenance), payment and schedule procedures, standards, and training. It is the expectation of WIU that the design professional will incorporate these requirements into the project manual for the project at hand.

A. PROJECT PROCEDURES

1. The WIU project manager will be the sole source of contact between WIU, the design professionals, and the contractors working on the project. All submittals/shop drawings are to be submitted electronically, and all emails are to include the WIU project number, project name, and CSI division number along with the email subject.
2. The project manager in charge of the project, or their designee, shall be the only person from WIU to select colors, material finishes, or provide information, direction and coordination to the design professional(s), and/or contractor(s) as needed.
3. Work by the contractor is to be scheduled so as not to interfere with University operations when possible. If conflict is unavoidable, provide project manager a minimum of 72 hours notice.
4. The design professional and contractor should fully describe any special procedures or scheduling issues. This may include coordination of work with academic calendar, University use of premises, special hours of work, or coordination with other contractors.
5. Building elevators are NOT to be used during construction unless permission is obtained from the project manager. Any and all damage done to the elevator as a result of use by the contractor shall be repaired at the contractor's expense. Protection of the elevators will be the general contractor's responsibility.
6. Construction parking permits can be obtained at the University Office of Public Safety (OPS). The project manager, in conjunction with OPS, will designate contractor parking and staging areas. These locations are to be designated prior to the bid process, and noted on the bid documents. These locations may be modified or relocated at the discretion of WIU upon input from the contractor. A minimum number of contractor day to day vehicles, and or personal vehicles, will be allowed inside site fencing. Depending on site congestion, remote parking may be provided by WIU encouraging the contractors to carpool to the construction site.
7. For renovation of spaces which will remain occupied by WIU, keys are to be obtained from OPS on a daily basis, and returned at the end of every working day. For renovations where the University will not be occupying the space, the contractors can sign-out keys for a long-term basis. The contractor will be responsible for these keys in either case, and will be responsible for all replacements and re-coring as the result of a lost key (or keys).

8. It will be the contractor's responsibility to completely familiarize themselves with all contract documents, to attend any mandatory pre-bid site visits, and submit timely RFI's in the event of questions or concerns.

B. DESIGN REVIEW

1. The design professional shall meet or exceed the outlined in-house document review process and expectations: WIU will follow similar format to CDB (Capital Development Board) Review Checklist. (Example included at the end of this section.) Minimum of 2 weeks for owner review • Intervals of owner review (75%, 100%, Bid Documents). Deliverables (Owner's Manual, Plans, Cost Estimate).

C. PROJECT MEETINGS - WIU expects all project meetings to be structured and well organized by all parties.

1. It must be made clear to any and all contractors, assigned and/or subcontractors, that a representative with detailed knowledge of the project at hand, capable of making decisions for that contractor, must attend every required meeting.
2. The design professional and general contractor shall list all project meeting dates anticipated or required during the pre-construction meeting – albeit weekly, bi-weekly, monthly, etc. Include a location for the meetings, and agree upon a scheduled time with the general contractor and all assigned and/or subcontractors.
3. The general contractor will be required to provide agenda items at each meeting. Assigned and/or subcontractors will be responsible to provide their own agenda items to the general contractor to be added to the agenda prior to the agreed upon meeting time.
4. The design professional shall specify the following minimum pre-installation notification, to be scheduled the same day of construction meetings. It is the responsibility of the general contractor to insure that the appropriate subcontractor is in attendance at these required pre-installation meetings.
 - a) Concrete formwork, placing and backshoring.
 - b) Waterproofing
 - c) Mortar / Masonry
 - d) Flashing
 - e) Roof material installation
 - f) Entrance and window installation
 - g) Sealant
 - h) Vapor barrier
 - i) Sprinkler

- j) Ductwork
- k) Painting

D. SUBMITTALS

1. WIU project manager, design professional, and general contractor shall agree upon the requirements and procedures for all submittals such as shop drawings, samples, and brochures during the pre-construction meeting. Include the number of submittals required and preferred electronic format.
2. Contractors are responsible for preparing complete submittals containing all required information, including lead times and coordination with subcontractors, so that the project manager and design professional can make an informed and timely decision. Incomplete submittals are cause for rejection.
3. Contractor is responsible to maintain a file at job site for review of all MSDS information as well as a copy of all submittals, shop drawings, samples, and any other information pertaining to the job.
4. All operating manuals are to be given to the project manager immediately upon approval by the design professionals. This will allow WIU time to become familiar with the items in the project, and allow them to begin planning for scheduled maintenance.

E. SUBSTITUTIONS

1. Prior to bid opening: The Owner will consider written requests to amend the bidding documents to add products not specified provide such requests are received at least 5 calendar days prior to bid opening date. Requests received after that time will not be considered. Contractor to ensure specified materials are available prior to bidding the project.
2. With bid: A bidder may propose substitutions with this bid. Owner's representative will review proposed product substitution list of low bidder and recommend approval or rejection prior to award of contract.
3. After award of contract: No substitutions will be considered after Notice of Award except under one or more of the following conditions:
 - a) Substitutions required for compliance with final interpretations of code requirements or insurance regulations.
 - b) Unavailability of specified products, though no fault of Contractor.
 - c) Subsequent information discloses inability of specified product to perform properly or to fit in designated space.

- d) Manufacturer/fabricator refusal to certify or guarantee performance of specified product as required.
4. When a substitution would be substantially to Owner's best interests.

F. ALLOWANCES

1. Each allowance shall be for a defined quantity with a clear definition of allowance total cost and method of calculation. Allowances are to include alternates per trade, per alternate.

G. UNIT COSTS: The design professional shall include unit prices with regards to the following:

1. The design professional shall include a contract line item(s) for potential unit price costs to insure upfront agreed-upon price for unforeseen conditions.
2. The design professional shall provide approximate quantities for unit price items when known.
3. The contractor overhead, profit, and other project expenses must be included within the unit prices.

H. PAYMENT AND PROGRESS

1. The design professional shall specify the format for the construction schedule. Preferably a Gantt chart illustrating critical path and all significant milestones, including material delivery. Schedule is to be updated and provided to the project manager and design professional every two weeks unless otherwise agreed upon during the pre-construction meeting. The general contractor is responsible for coordinating all information from assigned and/or subcontractors and compiling the information in the Gantt chart. Payment will be withheld if updated schedules are not provided within the agreed upon timeframe.
2. Each contractor must submit a schedule of values to the project manager and design professional prior to receiving an initial payment. Schedule of values must be broken by labor and materials, per trade, per item of work for the entire job to the satisfaction of the WIU project manager and the design professional.
3. Each request for payment shall include the following:
 - a) Original Contract Sum
 - b) Net change by Change Orders
 - c) Contract Sum to Date

- d) Total Completed & Stored
 - e) Retainage
 - f) Total Earned Less Retainage
 - g) Less Previous Payments
 - h) Current Payment Due
 - i) Balance to Finish, including Retainage
 - j) AIA G703 format to be included with each pay app.
4. Project manager and design professional may require photographic documentation of construction progress and stored materials prior to approving applications for payment.
 5. All applications for payment must include all lien waivers, and all required by Illinois procurement including, but not limited to, payroll information.

I. LIQUIDATED DAMAGES

1. WIU may employ the use of liquidated damages provisions, if and only if, project schedule overrun will cause measurable, monetary losses to the University. Calculations should be made according to a percentage of the actual damages incurred by WIU, provided by the project manager.

J. PAY/PROGRESS MEETING FORMAT

1. General contractors shall conduct each pay progress meeting, take minutes of the meeting, and type and distribute the minutes of each meeting to all included parties within 5 working days of the meeting.
2. Introductions of new persons attending the meeting.
3. Set date of the next pay/progress meeting
4. Review minutes of previous meetings
5. Discussion of new business:
 - a) Project manager
 - b) Design professional
 - c) Contractors
 - d) Other.
6. Submittal Schedule
 - a) Shop drawing and submittal log (copy of projects to date log should be attached to agenda)

- b) Review of key building component status by contractor(s) (resubmittals, long lead components or need to expedite, etc.)
7. Change Orders, Request for Proposal, and anticipated Change Orders:
- a) Review change order log by number and issue as to what action has taken place by contractor.
 - b) Review all contract changes. If no changes have occurred, state such.
 - c) Delivery Problems: Report by contractor
8. Project Schedule: Only after 4, 5, and 6 have been discussed can Item 7 be considered. The schedule needs to be revised per the specification.
9. Unresolved Issues:
- a) Request for Information by contractors: State each RFI received and the status.
 - b) Other
10. Provide field bulletins written by the on-site observer from the design professional.
11. Progress report from each contractor.
- a) Past 30 day period progress
 - b) Expected next 30 day period progress
12. Contract Status:
- a) Review of applications for payment. Contract dollars approved thru this pay request less retainage in row and column format by contractor. Identify Pay, Request Number, net change orders approved, current contract amount, retainage, current paid amount, and any other column you believe is necessary.
13. Discussion of pre-installation items (as needed.) All contractors and subcontractors related to pre-installation meetings must be in attendance.
14. Miscellaneous Discussion
15. General contractor will distribute minutes of each meeting within (5) working days. The assigned and/or subcontractors, design professionals, and WIU project manager will have five (5) working days to reply in the event that the minutes of the meeting contain an error, discrepancy, or inaccurate information.

K. REFERENCE STANDARDS

1. See appendix E for all codes adopted by Western Illinois University.

2. State and Federal codes and laws will be followed.

L. SHOP DRAWINGS

1. For each shop drawing required, ten (10) working days are required for the project manager's and design professional review.
2. Design professional shall coordinate any and all color selections with the project manager prior to sending approved shop drawings or documentation to the contractor. A finalized keyed color board shall be provided to the project manager identifying all material and color selections proposed as part of the 95% review meeting. The project manager will have the option to review and accept or reject these samples base on feedback from the owner and user groups associated with the project.
3. Physical manufacturer samples are to be provided to the project manager for review and acceptance or rejection. Print-out copies are NOT acceptable.

M. QUALITY CONTROL & COMMISSIONING

1. Quality assurance testing shall be indicated in each project manual division when necessary defining the testing method, test frequency, test pass/fail tolerance, and action required for failed tests.
2. Tests for quality assurance conducted during the project shall be the responsibility of the contractor required to perform each specified item of work. Responsibilities should include:
 - a) Hiring a third party testing firm to conduct tests.
 - b) Coordinating the test schedule with assigned and or subcontractors.
 - c) Coordinating the test schedule to make sure the project manager and design professional can be on site if they so desire.
 - d) Financial responsibility of all required tests, as well as any retesting as a result of initial tests finding noncompliance with contract documents.
 - e) In some instances, when installed equipment involves specifically or uniquely developed University procedures, the University will closely coordinate initial compliance tests performed by the contractor or it's designee. These may include certain electrical interconnects, HVAC controls, elevators, and all Heating Plant equipment, etc. Design professionals will be notified by the University if any such tests are anticipated during the project programming phase.
3. Testing company shall distribute copies of the test directly to the project manager, design professional, and the contractor. Copies of the information are not to be given to the contractor for distribution to the project manager and design professional.

4. Specify that no rejected materials shall be incorporated into the work. All rejected materials shall be immediately removed from the site at no expense to WIU.
5. Commissioning – Each point in the system shall be tested for both hardware and software functionality, and interaction with other systems as needed. In addition, each mechanical and electrical system will be tested against the appropriate sequence of operation specified in the project manual. Successful completion of the system test shall constitute the beginning of the warranty period. A written report will be submitted to the project manager indicating that the installed system functions in accordance with the plans and specifications.

N. TEMPORARY FACILITIES

1. All major construction projects, or as otherwise directed by the University, shall have at least one web camera installed and maintained by the general contractor for the duration of the project. Coordinate the location and LAN connection with WIU Project Manager and uTech.
2. The design professional shall define the responsibility of each contractor and describe each relevant area including but not limited to:
 - a) Site security (if needed), lighting and security of materials, pedestrian accommodations (lighting, walkway, etc).
 - b) Traffic control
 - c) Temporary utilities: water, electricity, toilets, steam, fuel,
 - d) Field office and temporary utility hookup.
 - e) Temporary heat (installation, operation and maintenance, and removal)
 - f) Temporary enclosures for safety, security, thermal, and dust.
 - g) Protection of new and existing roofs
 - h) The entire perimeter of the project site, including immediate staging area, must be protected by a metal chain link fence installed in six (6) foot panels. A continuous roll-type fence is not acceptable due to the fact that emergency services would not be able to quickly remove panels as needed in the event of an emergency. It will be the responsibility of the coordinating contractor to erect, and maintain this fence for the duration of the project. Only after obtaining written approval from the Project Manager and the Design Professional shall the fence be taken down and removed from the job site.
 - i) Site maintenance/control of erosion, weeds, snow, debris, etc. It is the contractor's responsibility to maintain the construction site to be free of weeds, tall grass, including daily removal of refuse, empty pallets, packing materials, etc. It is critical that the general contractor removes debris, mow, and maintains the job site on all major holiday weekends and University event weekends including but not limited to 4th of July, graduation, student move in, homecoming, Thanksgiving, Christmas, Easter, and Memorial Day.

- j) The coordinating contractor will be responsible for mowing the grass inside the site perimeter (inside the fence) for the duration of the project. Frequency of the mowing and weed-eating will be such that the grass inside the fence is approximately the same height as the grass outside the fence, maintained by WIU. Use of any type of weed-killer (roundup or similar chemical) to kill the grass is unacceptable.
- k) Complex Landscape Maintenance issues within the project boundaries, such as tree removal, spraying of herbicides, fertilizing, etc., unless otherwise specified, will be accomplished by the WIU Landscape Maintenance Department in coordination with the contractor when deemed necessary.
- l) Any remote area on campus (parking lot, field, etc.) which not immediately connected to the job site, where material is being stored, and/or staged shall have a chain link fence.
- m) Upon completion of the project, remove temporary fencing, debris, waste containers, job trailers, storage containers, and any and all temporary structures associated with construction. Restore any surrounding pavement and landscaping affected by construction or construction activities to its original condition to the satisfaction of the project manager.

O. TRAINING

1. All required training including, but not limited to, electrical, mechanical, hydraulic, electronic, and software systems and use shall be specified per division in the project manual. Training shall occur for day and night shift personnel separately (one session for day shift, one session for night shift), and shall be coordinated with the project manager and the design professional.
2. The project manager will require five to ten working days notice prior to proposed training date to coordinate with appropriate University trades.
3. Each session shall be no longer than 3 hours without a break, no more than 6 hours of instruction per day/shift. All training sessions need to be video recorded and a copy sent to the project manager for review by the university at a later date.
4. O&M Manuals: Contractors shall provide three (3) English language hard copies, and one PDF format digital copy of any and all operating and maintenance manuals within 30 days of shop drawing approval including, but not limited to, parts manuals, complete parts breakdown, manufacturer's sequence of operations, and installation and operation specifications, immediately after approval of shop drawings and prior to energizing system controllers.
5. The operation and maintenance manuals shall contain all information necessary for the operation, maintenance, replacement, installation, and parts procurement for the entire system. This documentation shall include specific part numbers, software versions, and dates. A complete recommended spare parts inventory list shall be included with the lead time and expected frequency of use of each part clearly identified.

P. CONTRACT CLOSEOUT

1. The contractor shall provide a letter to the WIU project manager and design professional indicating they have reviewed work and feel that it is ready for substantial completion inspection. An additional letter requesting final inspection shall be provided by the contractor when punch list is complete.
2. The design professional shall specify format and number of copies for as-built drawings.
3. Contractor shall provide to the project manager one (1) hard copy and one PDF format digital copy for each of the as-built drawings prior to receipt of final payment.
4. Contractor shall provide the project manager with three (3) hard copies and one PDF format digital copy for each of the following: all guarantees, warranties.
5. The design professional shall provide as-built documents in digital format (AutoCAD) following project punch list completion and testing. (Version of AutoCAD for the information being provided to be dictated by the version of AutoCAD the University is using at the time of project completion.)
6. New equipment must be conditioned according to manufacturer's recommendations prior to start up. Final Project Approval: Projects will be finally accepted, regardless of the funding source, after the design professional and WIU project manager have assured all trades punch list items have been satisfactorily completed. A copy of the official punch list with the design professional and WIU project manager's initials with the approval date will be placed in the project file. Final payment will be made after the above has been completed.

Q. UNIVERSITY RULES

1. Contractors shall observe all University rules (no smoking anywhere on WIU property, parking restrictions, traffic control, etc.)
2. Contractors may not use any University equipment or material.
3. Contractors are NOT to use any WIU dumpsters for any reason.
4. See Tree Protection in WIU Landscaping Standards for further detail.

II. LEED

The intention of the following section is to convey to design professionals the expectations by WIU with regard to environmentally responsible design achieved through the attainment of LEED goals. Regardless of the level of LEED targeted in any project (LEED Silver being the minimum) the prerequisites and credits outlined from LEED 2009 shall be designed into each project for WIU. It is the expectation of WIU that the design professional will incorporate these requirements into the project manual, and project prints, for the project at hand.

A. SUSTAINABLE SITES

1. The design professional shall specify in the project manual that the general contractor shall create and implement an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project in conformance with LEED 2009 Prerequisite 1, Construction Activity Pollution Prevention, under the division of Sustainable Sites.
2. The design professional shall Conduct a Phase I Environmental Site Assessment (as described in ASTM E1527-05) to determine whether environmental contamination exists at the site. If contamination suspected conduct a Phase II environmental Site Assessment (as described in ASTM E1903-97, 2003) in conformance with LEED 2009 Prerequisite 2, Environmental Site Assessment, under the division of Sustainable Sites.
3. The design professional shall make every effort to design the site, when applicable or feasible, to reduce the heat islands' to minimize the impact on microclimates and human wildlife habitats in conformance with LEED 2009 Credit 7.1 , Heat Island Effect - Nonroof, under the division of Sustainable Sites. (The University understands that this will not always be possible.)
4. The design professional shall design roofs and roofing systems to reduce the heat islands' to minimize the impact on microclimates and human wildlife habitats in conformance with LEED 2009 Credit 7.2 , Heat Island Effect - Roof, under the division of Sustainable Sites.
5. The design professional shall design the building to minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction, and reduce development impact from lighting on nocturnal environments in conformance with LEED 2009 Credit 8, Light Pollution Reduction, under the division of Sustainable Sites.

B. WATER EFFICIENCY

1. Water use design for new construction or a building remodel shall conform to LEED 2009 prerequisite 1, Water Use Efficiency, under the division of Water Efficiency. Employ a strategy that in aggregate use 20% less water than the water use baseline calculated for the building.
2. Landscape irrigation is not to be designed into a project unless it is required to maintain an athletic playing field or practice field. In the event irrigation is used for this purpose, irrigation design shall conform to LEED 2009 credit 1, Water Efficient Landscaping, under the division of Water Efficiency.

C. ENERGY AND ATMOSPHERE

1. All energy related systems shall be installed, calibrated, and perform according to the owner's project requirements, basis of design, and construction documents according to LEED 2009 prerequisite 1, Fundamental Commissioning of Building Energy Systems, under the division of Energy and Atmosphere.
2. Design for new construction or a building remodel shall establish a minimum level of energy efficiency for the proposed building systems to reduce environmental and economic impacts associated with excessive energy use and shall conform to LEED 2009 prerequisite 2, Minimum Energy Performance, under the division Energy and Atmosphere.
3. Chlorofluorocarbon (CFC)-based refrigerants in new building construction heating, ventilating, air conditioning and refrigerant (HVAC & R) is prohibited. A comprehensive CFC phase-out plan will be put in place when reusing any existing HVAC & R and shall conform to LEED 2009 prerequisite 3, Fundamental Refrigerant Management, under the division of Energy and Atmosphere.

D. MATERIAL AND RESOURCES

1. The design professional shall specify 10 to 20 percent of the materials with pre-consumer and/or postconsumer recycled content in conformance with LEED 2009 credit 4, Recycled Content, under the division of Material and Resources.
2. The design professional shall specify building materials and/or products that have been extracted, harvested, as well as manufactured within 500 miles of the project site for a minimum of 10 to 20 percent of the project in conformance with LEED 2009 credit 5, Regional Materials, under the division of Material and Resources.
3. The design professional shall specify rapidly renewable building materials for a minimum 2.5% of the total value of all building materials and products used in the project based on cost, in

conformance with LEED 2009 credit 6, Rapidly Renewable Materials, under the division of Material and Resources.

4. The design professional shall specify the use of a minimum of 50% (based on cost) of wood-based materials and products that are certified in accordance with the Forest Stewardship Council principles and criteria, for wood building components in conformance with LEED 2009 credit 7, Certified Wood, under the division of Material and Resources.

E. INDOOR ENVIRONMENTAL QUALITY

1. The design professional shall design the building and building systems to establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants in conformance with LEED 2009 prerequisite 1, Minimum Indoor Air Quality Performance, under the division of Indoor Environmental Quality.
2. The design professional shall design the building and building systems to eliminate exposure of building occupants, indoor surfaces and ventilation air distribution systems to environmental tobacco smoke (ETS) in conformance with LEED 2009 prerequisite 2, Environmental Tobacco Smoke (ETS) Control, under the division of Indoor Environmental Quality.
3. The design professional shall design the building and building systems to provide classrooms that are quiet so that teachers can speak to the class without straining their voices and students can effectively communicate with each other and the teacher in conformance with LEED 2009 prerequisite 3, Minimum Acoustical Performance, under the division of Indoor Environmental Quality.
4. The design professional shall design a permanent monitoring systems to ensure that ventilation systems maintain design minimum requirements in conformance with LEED 2009 Credit 1, Outdoor Air Delivery Monitoring, under the division of Indoor Environmental Quality.
5. The contractor shall develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy to reduce IAQ quality problems resulting from construction or renovation, and promote the comfort and well being of construction workers and building occupants in conformance with LEED 2009 Credit 3.1 , Construction Indoor Air Quality Management Plan – During Construction, under the division of Indoor Environmental Quality.
6. The contractor shall develop an indoor air quality (IAQ) management plan and implement it after all finish systems have been installed and the building has been completely cleaned before occupancy to reduce IAQ quality problems resulting from construction or renovation, and promote the comfort and well being of construction workers and building occupants in conformance with LEED 2009 Credit 3.2 , Construction Indoor Air Quality Management Plan – Before Occupancy, under the division of Indoor Environmental Quality.
7. The design professional shall specify that all adhesives and sealants used in the interior of the building (i.e. inside of the weatherproofing system and applied on site) must conform to LEED 2009 Credit 4.1, Low-Emitting Materials – Adhesives and Sealants, under the division of Indoor Environmental Quality.

8. The design professional shall specify that all paints and coating used in the interior of the building (i.e. inside of the weatherproofing system and applied on site) must conform to LEED 2009 Credit 4.2, Low-Emitting Materials – Adhesives and Sealants, under the division of Indoor Environmental Quality.
9. The design professional shall specify that all woods and agrifiber products used in the interior of the building (i.e. inside of the weatherproofing system and applied on site) must contain no added urea-formaldehyde resins in conform to LEED 2009 Credit 4.4, Low-Emitting Materials – Composite Wood and Agrifiber, under the division of Indoor Environmental Quality. (The University recognizes that this guideline may cause problems in chemistry and specialty science labs, and encourages the design professional to bring this to their attention.)
10. The design professional shall specify, and use as the basis of design, all gypsum board, insulation, acoustical ceiling systems, and wall coverings installed in the building interior must be in conformance with LEED 2009 Credit 4.6, Low-Emitting Materials – Ceiling and Wall Systems, under the division of Indoor Environmental Quality.
11. The design professional shall design to minimize and control the entry of pollutants into buildings and later cross-contamination of regularly occupied areas in conformance with LEED 2009 Credit 5, Indoor Chemical and Pollution Source Control, under the division of Indoor Environmental Quality.
12. The design professional shall provide individual lighting controls for a minimum of 90% of the building occupants to enable adjustments to suit the individual task needs and preferences in conformance with LEED 2009 Credit 6.1 , Controllability of Systems - Lighting, under the division of Indoor Environmental Quality.
13. The design professional shall make every effort to design, when applicable or feasible, to provide the building occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied area of the building in conformance with LEED 2009 Credit 8.1 , Daylight and Views - Daylight, under the division of Indoor Environmental Quality. (The University understands that this will not always be possible.)
14. The design professional shall design to reduce the presence of mold through preventative design and construction measures in conformance with LEED 2009 Credit 10, Mold Prevention, under the division of Indoor Environmental Quality.

F. INNOVATION AND DESIGN

1. The design professional shall have at least one LEED Accredited Professional as a principal participant of the project team in conformance with LEED 2009 Credit 2, LEED Accredited Professional, under the division of Innovation and Design.

III. Civil

The following information is provided as a general guideline in establishing site selection, civil engineering design, and site construction requirements. Western Illinois University landscaping is to follow sustainable practices that utilize native planting that will reduce maintenance and upkeep requirements.

A. ENVIRONMENTAL SITE ASSESSMENT

1. See Environmental Site Assessment in the LEED division of these guidelines for requirements.

B. EROSION CONTROL

1. See Construction Activity Pollution Prevention in the LEED division of these guidelines for requirements.

C. SITE PROTECTION

1. See General Requirements Section I.N.2 – Temporary Facilities.

D. SUBSURFACE INVESTIGATIONS

1. Utility Locates Outside of the Building Line follow the guidelines below:
 - a) Project manager will provide the design professional with access and information to the WIU GIS information regarding utility locates. Some of this information has been located real-time in the field and is very accurate; some locations have been approximated from drawings with an unknown degree of accuracy.
 - b) The design professional will show such approximate utility locations on a site plan and other relevant plans as appropriate. The owner assumes no responsibility for actual locations of existing utilities.
 - c) The design professional and contractor will provide project manager with record documents for their use.
 - d) With 48 hour notice, the WIU Facilities Management, in conjunction with local utilities, will assist the contractor with approximate layout of utility locations. Subsequently, the contractor will be responsible to maintain approximate locations.
 - e) Contractor will be responsible to disconnect, remove, cap, continue service or relocate all utility distribution systems necessary to perform the scope of work within the contract documents. Capping of any utility will be made as close to the main as possible following all applicable code requirements.

- f) Existing utilities shall be protected by the Contractor. All damages incurred as a result of the Contractor's operation shall be repaired in accordance with the applicable code, at the Contractor's expense, and to the satisfaction of the Owner. The contractor will note all such work on as-built construction site drawings.
- g) In the event an unknown utility is discovered, the contractor shall contact the project manager to coordinate the recording of this information in the WIU GIS system.
- h) Design professionals shall "pothole" only utilities that may conflict with their design and record elevations to insure accurate design.

2. Utility Locates Inside the Building Envelope follow the guidelines below:

- a) The design professional will be provided owner record documents for their use. The owner assumes no responsibility for actual locations of existing utilities. The design professional will locate utilities on the appropriate plans, and on a general plan if multiple trades may encounter utilities.
- b) Contractor will be responsible to locate disconnect, remove cap, continue service, or relocate utility distribution systems required to perform the scope of work within the contract documents. Capping of any utility will be made as close to the main as possible following all applicable code requirements.
- c) Existing utilities shall be protected by the Contractor. All damages incurred as a result of the Contractor's operation shall be repaired in accordance with the applicable code, at the Contractor's expense, and to the satisfaction of the Owner.
- d) The contractor will note all such work on as built construction site drawings.
- e) The contractor shall contact the WIU project manager whenever they encounter any unforeseen utility, or any utility not otherwise noted on the plans and specifications.
- f) The contractor will notify the owner when utilities have been located and the area for demolition or construction has been laid out. A walk through will be scheduled with the affected department representative and the WIU project manager to observe and voice concerns.

3. J.U.L.I.E (Joint Utility Locating Information for Excavators)

- a) Locating of campus utilities is REQUIRED by law when excavating for any reason per J.U.L.I.E.
- b) The general or coordinating contractor is responsible for contacting J.U.L.I.E. for utility locate information.
- c) Owner will not contact J.U.L.I.E. for the contractor.
- d) Contractor is to follow the J.U.L.I.E. handbook for notices, dig tolerances, utility colors, etc.
- e) The design professional shall specify for the contractor to include trace wiring on all appropriate underground utility installations as required.
- f) Contractor shall include warning tape for all utilities.

E. LANDSCAPING

1. Contractor is to refer to the WIU Landscaping Guidelines, (Section VIII of this document), for information including, but not limited to, earthwork, tree protection, topsoil, mulch, site clearing, excavation, root protected zones, fill soil, damages to trees, landscape plant material, and planting schedule. See Landscape appendix.

F. ROADWAYS, PARKING LOTS, AND WALKWAYS

1. General

- a) Design sidewalks minimum of 6" thick
- b) Terraces and patios are to support all snow removal equipment.
- c) Minimum sidewalk width shall be 8 feet unless otherwise approved by WIU project manager.
- d) Concrete hardscape shall have a Solar Reflectance Index (SRI) of at least 29.
- e) Avoid surface drainage of storm water sheeting across sidewalks.
- f) Minimum strength shall be 4000 PSI
- g) All sidewalks, ramps, and other paved exterior walking surfaces shall be concrete broom finish (picture-frame with 4" edger) and must be slip resistant.
- h) Service drives shall have a minimum inside radius of 35 feet.
- i) Deformed reinforcement bar shall be epoxy coated after being manufactured at the factory for Division 03 applications.
- j) Maximum slope for earth berms is 3:1 (horizontal to vertical)
- k) Temperature, rainfall, snowfall, and solar angles should be considered in building design.
- l) New PCC parking lots and PCC parking lot replacements should include a surface application of a non-toxic hydrophobic treatment - Epicuro Chem-Crete Pavix CCC100 is preferred.

2. Concrete Requirements – Reinforced Concrete

- a) For exposed concrete features including but not limited to exterior stairs, exterior walls, curbs, and loading docks all reinforcing steel shall be epoxy-coated: ASTM A 775
- b) Welded wire fabric shall be shipped flat.
- c) All reinforcement shall be placed on chairs located at the appropriate depth and interval within the slab, and tied in place prior to the placement of concrete. Concrete bricks may be used in lieu of chairs, only in slab on grade applications, and only at the discretion of the design professional and the project manager. Lifting the wire fabric or rebar mat into place as concrete is being placed is unacceptable and will be removed and replaced at

the expense of the contractor. Slabs to be pinned a minimum of 12" into each slab between pours.

- d) Fiber reinforcement may be used in lieu welded wire fabric at the discretion of the University. GCP Applied Technologies, Strux 90/40, is the preferred material at a 3 to 5 lbs/cu. yd. addition rate.
- e) The design professional shall specify the required clear space between the reinforcing bars and concrete surfaces in all applications.
- f) It is preferred that concrete cast-in-place retaining walls in highly visible areas shall not be designed to be plain concrete but rather should have a form-liner look to resemble limestone. Stained concrete, exposed aggregate or other various textures may also be desirable in these applications depending on the location. The design professional shall consult with the university project manager for final approval.

3. Cast-in-Place Concrete

- a) Fly ash in concrete mix is NOT allowed unless approved by WIU project manager.
- b) The design professional shall specify the following for each concrete mix design application:
 - (1) Aggregate envelope
 - (2) Aggregate gradation
 - (3) Aggregate characteristics (size consistent with reinforcing spacing, absence of iron for exposed locations and reactivity potential, etc)
 - (4) Slump – Design professional shall specify slump for each different mix design and application.
 - (5) Compressive strength requirements; Design professional shall specify the strength requirements of each different mix design and application.
 - (6) Air entrainment percentage (if any)
 - (7) Workability requirements
 - (8) Add mixtures (to be approved by project manager relative to appropriate mix design)
 - (9) Cement type: i.e. I, II, III, etc. (Portland cement only for each mix design and application)
- c) Design professionals shall locate and provide for all mechanical piping sleeves to avoid structural steel and steel imbeds. Coordinate with all contractors during construction.
- d) Conduit poured in concrete deck is to be avoided.
- e) Specify ¼" per foot minimum slope-to-drain on concrete slabs with floor drains.
- f) Specify all floor drains will have seal collars
- g) When surface is exposed to view, all holes and voids shall be filled, and all fins and protrusions shall be removed.
- h) Specify all finishes and tolerances for level, plumb, and slopes.

- i) Specify placement, curing, form removal, shoring, etc., to achieve University requirements for levelness and flatness.
- j) Specify placement of control joints, construction joints, and expansion joints.
- k) Design professional shall specify the number of test cylinders required for each specific mix design and application. Specification shall include duration required to achieve specific PSI (i.e. 7 day, 14 day, 28 day break, etc.)
- l) Contractor shall be responsible for all required testing per design professional, and will provide test results directly to the project manager.

4. Concrete Curing

- a) Specify concrete curing requirements that meet or exceed the current building code adopted by University.
- b) Specify both cold and hot weather requirements for placement and curing of concrete.
- c) Form removal: Specify, for each structural type of cast-in-place concrete, the strengths required before removal of formwork is allowed and specify how these strengths are to be determined. Specify shoring requirements if applicable.
- d) Form release agent shall be environmentally friendly.

5. Precast Concrete – Cast Stone

- a) The manufacturer of the precast, prestressed concrete shall submit structural calculations to the design professional for approval by a structural engineer.
- b) The manufacturer of the precast concrete/cast stone shall provide actual 6"x 6" mock up samples to the design professional and project manager for approval.
- c) Cast stone is to be used in lieu of any decorative sedimentary stone (if envisioned by the design professional) at ground level up to 6 feet in height. Cast stone is preferred over sedimentary stone as window sills in all locations.

6. Brick paver

- a) Brick paver shall be Paveloc manufactured, Holland style with color blend 2 red, charcoal, buff.
- b) Retaining wall stone should be dry-stack. Limestone wall stone is available from Weber Stone. The top layer of stone is to be secured to the course below (methods including but not limited to pinning, adhesive, mortar, etc.)

G. SANITARY SEWERS & STORM DRAINAGE

1. See Appendix E, Construction Codes (WIU F.P.&C. Adopted 8-10-2016)

IV. Architectural

The intent of the following section is to convey to design professionals the University's expectations and requirements for new and renovated facilities with regard to occupancy, function, aesthetics, conformity with the University Master Plan, and maintainability. The information below outlines the requirements for items including, but not limited to, classrooms, office and meeting space, residential environments, kitchen and dining facilities, laboratories, special use areas, as well as non-assigned and support space. Western Illinois University Facilities will be designed per 2010 Accessibility Standards, (Federal Law) and 1997 Illinois Accessibility Code and/or latest adopted edition and shall adhere to Universal Design principals.

A. IMPACT ON SURROUNDING ENVIRONMENT

1. Review and Approval: Each new construction, building modification, grounds improvement or demolition project must be reviewed with regard to its impact upon its surrounding environment. Approval is required prior to detailed planning and construction. Typical areas of concern and recommendations are addressed within the below categories.
2. Aesthetics: Consideration shall be given, not only to the appearance of a project itself, but also to the impact it will have on the overall appearance of the surrounding areas. This applies to modifications to existing facilities as well as to new facilities.
 - a) The appearance of new facilities shall be appropriate for immediate and entire campus architectural context.
 - b) Finish color and material added to the exterior of facilities should blend with the existing color palette.
 - c) Projects relating or directly pertaining to additions and projections from existing facilities should be contextual with the project structure and surrounding architectural entities.
 - d) Outdoor equipment (e.g. air conditioning units, emergency generators, transformers, etc.) installed should be placed in remote/less traveled pedestrian, bicycle or vehicular traveled paths/areas/surfaces. If roof level units are necessary or only area available (e.g. unavoidable) for placement CAREFUL consideration shall be given from ground level, (especially main traffic routes) as well as upper levels of facilities within the visual path of the project. The installation of screening (e.g. walls, fencing, landscaping, etc.) maybe necessary at grade or roof level, depending on site lines of the installation.
 - e) Additional items for consideration will be gathered during the design process with an extensive collaboration of the project's Design Team and tutelage through Western Illinois University's Project Manager.
 - f) The design professional must conform to the WIU Visual Identity Guidelines. This ensures the success of WIU's visual identity through consistency of use.
 - (1) University Purple – Pantone 2607 or Sherwin William paint "Dewberry SW6552"
 - (2) University Gold – Pantone 116 or Sherwin William paint "Gold Finch SW6905"

B. GENERAL DESIGN CRITERIA

1. Non- Programmed Space Requirements:

- a) Congregational Spaces: Western Illinois University strongly encourages the use of informal congregational spaces indoors and outdoors, to facilitate impromptu as well as planned meetings by occupants or by the larger campus community. It is understood that not all projects budgets or existing space constraints allow for such spaces to be incorporated into design. However, every effort should be made by design professionals to consider these areas in the design and allow for future development of these areas.
- b) Corridors: Appropriate exiting requirements, drinking fountains, permanent benches (if needed), and other public facilities should be included to serve the occupants.
- c) Public Restrooms: Any pipe space (chase) located behind toilets shall be 3'-0" clear and shall be readily accessible with a minimum of 2'-0" x 7'-0" full walk through door. Include lighting and a separate 120- volt duplex receptacle in each pipe space. Install hand dryers in all washrooms.
- d) Gender Neutral Restroom: The design professional shall include a minimum of one (1) ADA compliant Gender Neutral restroom, labeled **Restroom** per academic building or one (1) every other floor in buildings four stories tall or taller. Note: It is preferred that the Gender Neutral Restrooms and Lactation/Family Rooms alternate locations near plumbing-code required restrooms. Example: Gender Neutral Rooms would be located on floors 2 and 4 near the main restrooms in an academic building, while Lactation/Family rooms would be located on floors 1 and 3.
 - (1) Gender Neutral Restroom location(s) in residence hall shall be jointly decided on by University Housing and Dining, Facilities management, and the design professional.
- e) Lactation Room: In compliance of the Nursing Mothers in the Workplace Act, Public Act 92-0068, Western Illinois University is committed to the adoption and implementation of providing a Lactation Room in any new building or heavy renovation project on campus. At a minimum, the design professional shall follow the guidelines below:
 - (1) The design professional shall design a minimum 10' x 10' lockable private room (not a toilet stall or public restroom) in close proximity to the work area, where an employee can express her milk in privacy. This room will have its own ADA compliant restroom.
 - (2) The room should be able to accommodate a chair and small refrigerator, and have accessible electrical outlets for an electrical breast pump, and potentially a small table.
 - (3) There should be a minimum of one (1) Lactation Room/Family Room per academic building, or one every other floor in a building four stories tall or taller.

- f) Custodian Closet: These spaces must be kept separate from mechanical, electrical, and telecommunication spaces. Provide at least one (1) 150 net assignable square feet custodian closet per each 25,000 gross square feet (if new building is less than 25,000 gross square feet provide one (1) 150 net assignable square feet custodian space minimum). Provide at least one custodian closet on each floor of the building near an elevator. Each custodial space shall be equipped with a 4"x 4" curb-type floor sink, hose bibs, four (4) mop clips, hot and cold water at the sink, five (5) four-foot long wire shelves, two (2) 120v electrical outlet. A dedicated cold water line with a double check with atmospheric vent, and hose bib connect for chemical dilution system. The ceiling height in all custodian closets shall not be less than 7'-0". (Note: telecommunications devices, switch cabinets, phone terminal punch blocks, pipe chases, and duct-work are not to be placed within, or run through, custodian closets.) This area is to be fully air conditioned and ventilated.
- g) Maintenance Storage: Provide a storage space of approximately 1/100th the gsf of the building (in a 100,000 gsf building, an area of 1000 gsf should be designed). At minimum, 100 gsf must be included for storage of maintenance items for the building such as extra floor tile, lights, stepladder, etc. This room cannot be within a mechanical room. Provide a floor drain. Do not provide sink, floor sink, or other plumbing this area. This area is to be fully air conditioned and ventilated
- h) Elevators: Elevator(s) to be installed per the latest edition of Safety Codes for Elevators and Escalators. Size these capable of using an emergency medical gurney.
- i) Waste Disposal: Confer with project manager on whether facility will be served with a hydraulic compactor, dumpster, recycling container, etc. Location and sufficient size should be coordinated with other building services such as loading docks, emergency generators, etc., shall be placed in a discrete area of the facility, and shall be properly screened with walls, landscaping, or other components and design strategies. Biological waste (sharps, etc.) and chemical waste materials require special consideration in specific buildings where they occur (Beu Health Center, Currens Hall, Waggoner Hall, Physical Plant, and buildings having photography labs). Provide, as a minimum, utilities required to support the items listed above for future installation.
- j) Dock/Service: All areas must be appropriate for deliveries considering the building size and equipment. All buildings are to have a dock accessible for truck deliveries.
- k) Data/Telecommunication Closets: Locate telecommunication, computing fiber, and branch electrical panel boards within their own telecommunication and data closet. Provide adequate clearance around equipment. Provide adequate cooling to keep equipment within a manufacturer's recommended tolerances. Any new construction or renovation shall include connecting into the existing University technology loop within the project budget. See uTech Guidelines attached to this document.
- l) Codes and Legal Compliance: All designs will meet applicable trade and building codes in addition to the Americans with Disabilities Act (ADA).
- m) Existing Utilities: No structure will be placed over existing utilities. If, however, placement of a structure over existing utilities is unavoidable, the project manager will provide direction to the design professional with regard to relocation or abandonment of utility

lines and services affecting a proposed building site. The project manager will provide direction to the design professional on locations of tie-ins for all new utility services to new and existing buildings.

- n) Mechanical Penthouses: Roof penthouses are acceptable as long as WIU trade personnel do not have to go outside to gain access to this space. Design professionals shall observe all relative codes and manufacturer maintenance recommendations with regard to clear space around machinery during design.
- o) Mezzanines: Mezzanines are acceptable within the design provided that any new replacement mechanical units can fit through an access door without the need to be dismantled. Wall modifications (knockout wall or partial demolition) are unacceptable as means of replacement. Design with use of a coiling door is acceptable.
- p) Mechanical equipment: Components with a tube bundle or coil must be situated with the mechanical space in such a way that the tube bundle(s) or coil(s) can be easily removed and replaced without demolition or partial demolition of a building structure, demolition or partial disassembly of adjacent mechanical or electrical components. Design professionals shall observe all relative codes and manufacturer maintenance recommendations with regard to clear space around machinery during design.
- q) Security: For all new construction and renovation projects, the design professional shall design all buildings to incorporate a security camera system to monitor entrances/exits and all main occupied areas. Cameras to send data to the central University system. Coordination with OPS (Office of Public Safety), University Technology, and WIU Physical Plant is essential.
- r) Access Control: For all new construction and renovation projects, the design professional shall design all exterior entrances to buildings to have electronic access control connected to the central University system (C-Board). In addition to other "important" spaces to have access control please include the following: technology rooms, mechanical rooms, electrical rooms, money storage etc.
- s) Utilities: The design professional shall design all new construction and renovation projects to connect into existing utilities, including but not limited to, technology, steam, and electrical.
- t) The design professional shall provide the most up to date design necessities offered by the CDB (Capital Development Board). Projects administered by the CDB shall include all design objectives required for the building to operate properly, including but not limited to, phones, telecommunications, technology, fixed and movable equipment, furniture, sidewalks, landscaping, site lighting, emergency assistance lighting and communication, parking, etc.
- u) For all new construction and renovations, the design professional shall design a space for vending machines. There should be 2 locations large enough to accommodate a minimum of two (2) machines each, to be placed side by side, (4) total. Locations shall be approved by WIU. The design professional shall include the necessary infrastructure to include independent electrical circuits, data lines, and cold water line stubs at each location for different vending needs in the future.

2. General Classroom Design Criteria Requirements

- a) Classroom environments need to be a space that is lecturer-flexible and student friendly. This includes attention to future curriculum changes, changes in pedagogy, use of visual displays, orientation of the room to take advantage of natural lighting, and minimizing acoustical effects within the space, neighboring spaces, foyers, and mechanical systems.
- b) Construction materials need to be chosen based upon durability, cleanability, and acoustical properties. Acoustical treatment is especially important with seating greater than 75 students.
- c) All classrooms are to be designed as electronic classrooms. Infrastructure should include concealed 1 ½" EMT conduit, mounting location, and 110v electrical for teaching station and projector (standard ceiling mount projector or short-throw projector) based upon existing preferred equipment selections. See project manager for equipment details. Whiteboards may be used in lieu of projector screens depending on University Needs.
- d) White marker boards are required. Do not use chalkboards. Placement is to be at the front (lecture) of the room. Sidewall locations may be necessary (Project manager and design professionals will determine this per user information). Boards are to have a cork tack strip along the top edge and spring clips.
- e) Provide one Bulletin board that is a minimum of nine square feet within each classroom on the sidewall near the exit/entrance.
- f) Window Coverings: Provide durable, room darkening blinds for windows located in electronic classrooms. Window coverings are to be selected with respect to window operation (if applicable) Horizontal operating windows are to have horizontal louver blinds. 1" aluminum, horizontal window blinds are required in most applications unless blackout shades are necessary for the teaching application (vinyl or plastic window blinds are not allowed). Blackout shades are acceptable upon approval by the project manager. Vertical blinds are not allowed.
- g) Every classroom is to include one clock with 120v wired outlet. Preferred clock to be Primex Analog Clock, XR series - Model number to be #14155 (12.5" Black clock) #14163 (16" black clock) or #14164 (black dual-sided) as appropriate for the space. Clocks must connect wirelessly to the WIU Primex clock system.

3. General Office Guidelines - The following are guidelines of recommended square footage for office space that need to be allocated when programming either for a complete remodel or renovation.

- a) President – 400 ASF
- b) Vice President(s) – 300 ASF
- c) Dean(s) – 185 ASF
 - (1) Athletic Director
- d) Associate/Assistant Dean(s) – 160 ASF
- e) Associate/Assistant Vice Chancellor(s) – 160 ASF
- f) Director(s) – 135 ASF

- (1) Head Coach
- (2) Assistant Athletic Director
- g) Assistant Director(s) – 135 ASF
- h) Faculty (Chair) – 135 ASF
- i) Faculty – 120 ASF
- j) Music Faculty – 180 ASF
- k) Adjunct Faculty (over .5 FTE) – 40 ASF
- l) Teaching Assistant(s) – 60 ASF
- m) Graduate Assistant(s) – 30 ASF
- n) Professional Staff – 120 ASF
 - (1) Assistant Coach
- o) Manager/Supervisor – 120 ASF
- p) Technical/Paraprofessional Staff – 100 ASF
- q) Secretarial/Clerical – 80 ASF
- r) Student Worker – 30 ASF

C. FINISH/ROUGH CARPENTRY

1. See the LEED section of these Design Guidelines, under the division Material and Resources, for specifications regarding Forest Stewardship Council percentages required, and wood and agrifiber products and their urea- formaldehyde content.
2. Specify grade and species of all permanent lumber per approval from the project manager.
3. Specify moisture content of all permanent lumber to be 15% average, and not to exceed 19%. Grade to be #2 or better.
4. Specify or require and approve a nailing Schedule.
5. Specify finish grade for all plywood
6. Require a grade stamp on all wood brought to the construction site for structural use.
7. Wood Treatment: Specify only screws or bolts for use with treated wood. Screws or bolts must be unaffected by treatment chemicals and corrosion resistive.

D. BUILDING ENVELOPE

1. Exterior Wall
 - a) Back-up wall system should be either regular weight 8" CMU (preferred) or 16 gage 6" steel stud wall.
 - b) In all types of exterior construction, provide code required fire separation between floors.
 - c) Exterior Insulation Finish Systems, and stucco or stucco-like systems, are to be discouraged. The University will only allow the design professional to use these types of systems after an extensive discussion weighing pros and cons.
 - d) R-Values need to meet or exceed applicable codes.
 - e) Coordinate any and all sealant and mortar color with WIU Project Manager.

2. Exterior Mock Up Wall
 - a) See Structural Section A.1 “Masonry Requirements”

3. Glass Curtain Wall
 - a) Maintain a minimum of 1” air space or as recommended by glass manufacturer between spandrel glass and insulation.
 - b) Insulation should not be placed directly against glass spandrel panels.
 - c) Establish thermal breaks to reduce condensation on cold surfaces.
 - d) Use a self-weeping curtain wall grid system (Kawneer Insulclad 560 series, or YKK equivalent preferred) to vent moisture build-up in the wall cavity.

4. Metal Panel Curtain Wall
 - a) Locate the insulation horizontally between stainless steel wall ties directly anchored to back-up wall with stainless steel fasteners, and provide 1” minimum clear space between inside material face and the exterior surface of the insulation board.
 - b) Abut the Extruded Polystyrene (XPS) Insulation board joints tightly-thickness and size of foam board to be specified by the design professional to meet appropriate R values.
 - c) Seal joints per manufacturer’s recommendation.
 - d) Install metal panels per manufacturer’s recommendations. Metal Panel Curtain Walls are not to be installed below ten feet above final exterior finish grade.

5. Masonry Wall/Masonry Veneer
 - a) Install air/vapor barrier to masonry backup wall. Locate insulation horizontally between stainless steel wall ties directly on the backup wall with stainless steel fasteners, and provide 1” minimum clear space between inside brick face and the exterior surface of the insulation board.
 - b) Abut the Extruded Polystyrene (XPS) Insulation board joints tightly – thickness and size of foam board to be specified by the design professional to meet appropriate R values. Seal joints per manufacturer’s recommendations.
 - c) Install mortar netting, synthetic mesh material at the wall base or support angle with dovetail shape and 90% open weave, and plastic weeps (cotton weeps are not allowed)

6. Steel Stud/Masonry Veneer
 - a) Install Georgia-Pacific DensGlass material, or approved equal (install per manufacturer’s recommendations) directly to metal studs.
 - b) Locate insulation horizontally between stainless steel wall ties directly on the back-up wall with stainless steel fasteners, and provide 1” minimum clear space between inside brick face and the exterior surface of the insulation board.
 - c) Abut the Extruded Polystyrene (XPS) Insulation board joints tightly – thickness and size of foam board are to be specified by the design professional to meet appropriate R values. Seal joints per manufacturer’s recommendations.
 - d) Install mortar netting, synthetic mesh material at the wall vase or support angle with dovetail shape and 90% open weave, and plastic weeps (cotton weeps are not allowed).

- e) Install fiberglass batt insulation in the stud cavities to provide a complete thermal, moisture, and air barrier wall system to meet appropriate R values. Rockwool insulation is also acceptable.
- f) Spray foam insulation may be acceptable in lieu of fiberglass insulation at the approval of the Project Manager.

7. Stone Curtain Wall

- a) Anchor stone to back-up wall per manufacturer's recommendations.
- b) Locate insulation horizontally between stainless wall ties, directly on the back-up wall using stainless steel fasteners and provide 1" minimum clear space between inside face of stone panels and the exterior surface of the insulation board.
- c) Abut the Extruded Polystyrene (XPS) insulation board joints tightly – thickness and size of foam board to be specified by the design professional to meet appropriate R values.
- d) Install mortar netting, synthetic mesh material at the wall base or support angle with dovetail shape and 90% open weave, and plastic weeps (cotton weeps are not allowed).
- e) Establish thermal breaks to reduce condensation on cold surfaces.
- f) Cast stone is to be used for all window sills, wall caps, and decorative stone at finished grade level. Use of limestone in the previously mentioned locations is not allowed. Use of limestone is to be discouraged in other locations, but will be considered by the University.

8. Pre-engineered metal structures

- a) Morton, Butler, and Star would be considered acceptable manufacturers.
- b) Other manufacturers would be reviewed, considered, and approved or rejected by FM.

E. ADHESIVES AND SEALANTS

1. General

- a) All adhesives and sealants used on the interior of the building (inside the weatherproofing system and applied on site) shall comply with LEED 2009 Credit 4.1, Low-Emitting Materials – Adhesives and Sealants (See LEED section of these guidelines.)

F. ROOFING

1. General

- a) Use roofing materials with a solar reflectance index (SRI) equal to or greater than the values defined in the LEED 2009 credit 7.2 under the division of Sustainable Sites (See LEED section of these guidelines.)

2. Roof Warranty

- a) Specify a 20 year roof warranty minimum
- b) A/E to obtain approved manufacturers from W.I.U.

3. General Requirements

- a) Specify 60 mil E.P.D.M. minimum on roofs or approved equal. – 90 mil E.P.D.M is preferred. 45 mil E.P.D.M. is not allowed.
- b) Black E.P.D.M. roofing is preferred. WIU may allow light colored roofing (white, tan, or gray) at the discretion of the when it is in their best interest to do so.
- c) Ballasted roofing is not allowed
- d) Preferably fully adhered – Mechanical fasteners are discouraged but will be considered during design. If mechanical fasteners are used they are to be fastened to first layer only. Coordinate with WIU Project Manager.
- e) Roofs shall not have any flat spots except where required at drain sumps. All slopes shall be at least $\frac{1}{4}$ " per foot. Building design shall ensure that no flat spots occur on the roof due to camber of structure or location of mechanical units.
- f) Specify on-site storage requirements of roof materials (tarp and pallet).
- g) Verify walkway location with the University.
- h) Roof blocking wood shall be treated, or redwood.
- i) Installer must be a firm with a minimum of 3 years experience installing manufacturer's system.
- j) Roof flashing height shall be a minimum of 12" above top of roof membrane.
- k) New through wall flashing should be installed at appropriate height.
- l) Installation of a vegetative roof is acceptable, provided that it is a tray-type, which can be removed for inspection and investigation by maintenance staff if a leak occurs.

4. Flashing and Sheet Metal

- a) Specify gauge, Specify whether galvanized pre-painted, or prefinished steel, anodized aluminum, or stainless steel.
- b) Termination bars are to be secured a minimum of 6"-8" on center. All termination bars are to be covered with counter-flashing.
- c) Require isolation of dissimilar metals.
- d) Specify that no fasteners penetrate through horizontal surfaces of parapet flashing.
- e) Prior flashing is to be removed and old flashing joints are to be tucked or patched prior to new roof insulation.
- f) If the installation of a new roof places the membrane above the original through-wall flashing, the existing flashing is to be removed and new flashing installed at the appropriate height above the new roof membrane and insulation. If this is not practical, the design professional shall discuss alternatives with the project manager during design. Take care not to install flashing above the masonry weeps.

5. Joint Sealers

- a) Specify the minimum and maximum depth and width for each sealant application.
- b) Installer must be a firm with a minimum of 5 years of prior experience specializing in installing sealants.
- c) Installer's qualifications to be approved by WIU.

- d) Sealant shall be compatible with the backup material. Back-up material shall be non-gassing (polyethylene not allowed), non-staining, and non-oily.
- e) Specify that sealant primer is required at all exterior sealant applications.
- f) Specify maximum and minimum temperature requirements for installation.
- g) Specify bond breaker where appropriate.
- h) Emseal Emshield Expansion Joints and Pre-Compressed Sealants are preferred in building expansion joint locations.

G. DOORS, WINDOWS, CURTAIN WALLS, AND GLASS

1. Hollow Metal (Steel) Doors and Frames

- a) Specify only standard door sizes. If standard sizes are not possible, obtain approval from the project manager during design.
- b) Exterior doors shall be Steel Door Institute (SDI) Level 3 minimum. 16 gauge minimum, polyurethane core, hot dipped zinc coated G90. SDI Model 2 seamless edge. Interior doors: SDI Level 3 minimum. 16 gauge. One piece honeycomb or polystyrene cores. SDI Model 2. Seamless edge at high abuse doors.
- c) Exterior frames: SDI Level 4, 14 gauge zinc coated G90. Interior frames: SDI level 3, 16 gauge.
- d) Steel frames are preferred and shall be factory pre-assembled with mitered fully welded joints ground smooth and delivered to the job site with spreaders. If knock-down and two-piece frames are unavoidable, specification must require quality standards for securing and finishing these frames.
- e) All fire-rated doors and frames shall bear the UL label Class ABC as noted in the schedule.
- f) Shop priming is required; Factory or shop painting if preferred.
- g) All primers shall be applied uniformly. Inside, outside, and under removable stops and trim.
- h) All frames shall be delivered prior to masonry construction.
- i) Specify seamless end channel closure pieces at door heads.
- j) All frames shall be grouted full with Portland cement.
- k) All exterior door frames shall have a bituminous coating inside the frame, or approved equal.
- l) Install entryways and mechanical spaces with removable mullions to aid in moving and hauling.
- m) All frames shall have welded face seams that is ground and dressed smooth that meet all ADA requirements. Consult with WIU Project Manager for additional information on sustainable/energy efficient request and options.

2. Flush bolts, Push/Pulls, Kick plates, Stops (Flat good items)

- a) Include the following manufacturers below:

- (1) Hager
 - (2) Ives
 - (3) McKinney
 - (4) NGP
 - (5) Rockwood
 - (6) Trimco
3. Weather seals and Thresholds
- a) Include the following manufacturers below:
 - (1) Hager
 - (2) McKinney
 - (3) NGP
 - (4) Pemko
 - (5) Zero
4. Aluminum Storefront Hardware
- a) All Cylinders, Locks, Closers, Exit Devices, and Electromechanical Hardware for Aluminum Storefront shall match the Manufactures and Types listed in this standard.
 - b) Substitutions or Alternates not permitted unless approved by WIU.
5. Wood Doors – Non-Fire Rated and 20 Minute Doors minimum standards
- a) Conform to WMDA Standards
 - b) 1 ¾" Thick, Interior Flush, Bonded Core.
 - c) Duty Level: Extra Heavy Duty unless otherwise specified to allow heavy duty.
 - d) Facing: Veneer species, cut, (AA, A, B) Grade, (Running/Center) balance, (Slip/Book/Random) will be by the direction of WIU project manager for each project.
 - e) At additions or remodels, match existing
 - f) Matching: All pairs of doors shall have matching veneer. Set matching shall be under the direction of WIU project manager.
 - g) Vertical Edges: Hardware to match face.
 - h) Finishing: Factory finished. Verify with WIU project manager for remodel and addition projects.
6. Fire Rated Doors
- a) Doors shall comply with the same levels as non-rated doors.
 - b) WIU project manager shall decide if hardware blocking reinforcements are preferred over through-bolting.
 - c) Consult with WIU project manager for additional information on sustainable request and options.
 - d) All fire rated doors to have self closing devices

- e) Pairs of fire rated doors to have door coordinating devices where appropriate.
 - f) Fire doors that will primarily be in the open position will have electromagnet retainers (hold open devices) which are tied into the fire alarm system and release when the system is activated.
 - g) No lettering or signage to be affixed to a fire rated door.
 - h) Include the following Manufacturers below:
 - (1) Algoma Hardwoods, Inc – Algoma, WI.
 - (2) Eggers Industries, Architectural Door Div. Neenah – WI.
 - (3) Graham Manufacturing Corp. Mason City – IA.
 - (4) Marshfield Company, Marshfield, WI.
 - (5) VT Industries, Holstein, IA.
7. Door Hardware Butt Hinges
- a) Include the following manufacturers:
 - (1) Hager
 - (2) Ives
 - (3) McKinney
 - (4) Stanley
8. Continuous Hinges - Continuous hinges are required at all exterior and high traffic areas.
- a) Include the following manufacturers:
 - (1) McKinny
 - (2) Pemko
 - (3) Select
 - (4) Roton
9. Locks and Latches
- a) Mortise Locks – Include the following manufacturers and respective catalog numbers below:
 - (1) Best – 44H Series x trim design
 - (2) Corbin Russwin – ML2000 Series x trim design
 - (3) Sargent – 8200 Series x trim design
 - (4) Yale – 8800 Series x trim design
 - b) Grade 1 Cylindrical Locks – Include the following manufacturer and respective catalog numbers below.
 - (1) Best – 93K Series x 14D
 - (2) Corbin Russwin – CL3300 Series x PZD
 - (3) Sargent – FW-10 Line x LP
 - (4) Yale – 5400LN Series x PB
 - c) Product notes and applications: Cylindrical locks to be used as standard of quality for all projects. Mortise locks to be used when exiting door is to remain and upgrading existing locks to lever handle and key system is necessary. All cylinders and locking devices shall accept the 7 pin “Best” brand small format interchangeable core.

- d) All classrooms need to be intruder style locksets.
- e) Each building on campus should be equipped with a “Knox Box” mounted to the building in the event there is an emergency keys are available.

10. Cylinders and Keying

- a) Furnish selected locks with construction keying for use during the construction period.
- b) Final cores shall be combined 7-pin SFIC Best Coremax Patented Keying System to match existing Best Key System.
- c) Contact WIU Project Manager and WIU Locksmiths as to how the cores are to be combined.
- d) Provide 1 cut key and 2 key blanks per core
- e) Contact WIU Project Manager for final core delivery instructions.

11. Exit Devices

- a) Include the following manufacturers and respective catalog numbers below:
 - (1) VonDuprin – 99 Series, 996L trim
 - (2) Corbin Russwin – ED5000 Series x N9000 series trim
 - (3) Precision – Epex series x V3900A trim
 - (4) Sargent – 80 Series, FW-ETL Trim
 - (5) Horton 7100 Easyswing
- b) Product notes and applications:
 - (1) Single Doors: Use rim exit device
 - (2) Pairs of Doors: Rim exit devices with keyed removable mullion are preferred.
 - (3) If vertical rod exit device must be used, contact WIU project manager for prior approval. Less bottom rod is preferred where possible (except at exterior and secure locations)
 - (4) Cylinder dogging at all non-fire rated doors.

12. Aluminum Entrances and Windows

- a) All aluminum windows and entrances shall be “institutional” grade with Kawneer Insulclad series 560 as the basis of design. YKK is also an acceptable manufacturer.
- b) Shop drawings shall detail all frame section components and show elevations, dimensions, and details of all entrances and windows including descriptions of metal finishes, glazing, and sealant material. Contractor is responsible for proper dimensions of rough and masonry openings.
- c) Verify that window openings are thermal broke, sill is flashed to exterior, flashing is end dammed, and that wall conditions do not short circuit thermal break of installed window.
- d) Doors and frames shall be shop mortised and reinforced per hardware manufacturer's templates for specified hardware items.
- e) Weather-stripping for exterior doors shall be continuous at head jambs and door bottoms.
- f) Care shall be exercised during handling and installation to prevent damage to finishes throughout the project so that the work shall be free of scratches, dents, and

deformations. Units with any such damages or defects shall be replaced at no expense to WIU.

- g) Glazing units shall be provided according to manufacturer's recommendation for sealants and edge clearances.
- h) All window and entrance frames shall be of thermal break construction, EXCEPT jambs of doors.
- i) All glazing including spandrel glass shall be double pane insulated, low E glass. Design professional shall install laminate safety glass where required: Project manager may request safety glass installation at specific locations otherwise not required by code during the design.
- j) The entrance contractor shall furnish and supply all isolation, caulking, and sealant materials required to caulk all joints between entrance frames and other construction to provide a completely thermally broken, weather tight installation.
- k) Thresholds shall be set in double bed of sealant.
- l) Require cleaning after installation of all frames, glass, adjacent masonry, etc. Remove misplaced sealants, other materials, and stain.
- m) Specify that window frame exterior is to be anchored to the building.
- n) Have manufacturer submit a cutaway sample of the frame section and anchoring to be used.
- o) Finish shall be anodized aluminum from manufacturer's standard colors only. Physical samples of construction and finish are to be approved by the project manager prior to acceptance.
- p) If masonry construction is required, one window (a minimum 3 square feet) will be required to be installed within the mockup.
- q) Bottom of window rough opening shall be a minimum of 8" above grade, slabs on grade, or other horizontal surface.
- r) Shop drawings shall detail all frame section components and show elevations, dimensions, and details of all entrances and windows, including description of metal finishes, glazing, and sealant material. Contractor installing the system is responsible for proper dimensions of rough and masonry openings.
- s) If unitized construction, the components need to be factory glazed of the largest possible assembly size.

13. Warranty

- a) Aluminum Window Warranty: Submit a written warranty, executed by the window manufacturer, agreeing to repair or replace window units that fail in materials or workmanship within the specified warranty period. Failures include, but are not necessarily limited to: Structural failures including excessive deflection, excessive leakage, or air infiltration.

H. FINISHES

For each type of finish work, specify minimum and maximum requirements of substrate and ambient conditions including, but not limited to, temperature and moisture requirements. A/E firm and contractors are required to submit physical color samples on the actual material being used. Printed color selections on paper will not be accepted.

1. Floor – Flooring material shall be robust, slip resistant, long-life materials requiring minimal annual maintenance. The following materials are preferred at the locations listed below.
 - a) Entry – Terrazzo, granite tile, marble tile
 - b) Walk off mats – Architectural preferred system is “Pedimat” brand entrance mats with metal strips. If this jeopardizes a LEED credit, hog hair matting can be used.
 - c) Lobby and Public Area – Terrazzo, granite tile, marble tile
 - d) Stairwells and Corridors – Terrazzo in high traffic decorative areas. Exposed concrete in back-of-house and emergency egress areas.
 - e) Restrooms – Terrazzo or ceramic tile. Sealed concrete will be considered in back-of-house areas.
 - f) Laboratories – exposed concrete, rubber, or any materials which will be resistive to specific laboratory activities i.e. chemical lab, physics lab, animal science lab, machining lab, etc.
 - g) Mechanical Storage or Custodial – Sealed concrete or non slip epoxy coating.
 - h) Classroom and Lecture Halls – Rubber floor tile, carpet, or carpet tile are acceptable. Project manager will provide design professional with current WIU carpet standard.
 - i) Computer Labs - Carpet or carpet tile. Project manager will provide design professional with current WIU carpet standards.

2. Ceiling Systems
 - a) No concealed spline grid systems are allowed.
 - b) Acoustical Ceiling Grid and Panel System. Acceptable manufacturers are
 - (1) Armstrong/Celotex (preferred)
 - (2) Chicago Metallic Corporation
 - (3) USG Interiors/DXL
 - c) Grid System – Size for 5 times the design load indicated in ASTM C635, Table 1, and Direct Hung. (T-Bar Face Width: 15/16”) white preferred
 - d) Panels
 - (1) Size: 24”x24”
 - (2) Minimum thickness: 5/8”
 - (3) Edge Type:
 - (a) Tegular - Use in public spaces, lobbies, classrooms, corridors office suites, etc.
 - (b) Plain - back-of-house spaces (if required), individual offices, other.
 - (4) Light Reflectance: LR-1; 75% min.

(5) Color – Manufacturer’s white – preferred

3. Telephone and Data Rooms

- a) See Western Illinois University uTech Guidelines attached to this document.

4. Restrooms and Shower Facilities

- a) All toilet partitions are to be ceiling mounted
- b) See ceiling finishes (this section) for recommended 2’x2’ ceiling in restrooms only.
- c) Walls to be painted drywall or 4”x4” ceramic wall tile placed in a random pattern
- d) See flooring finishes (this section) for recommended material
- e) All toilet fixtures and lavatories to be wall mounted
- f) Flush valves and faucets to be touch-less
- g) Restrooms should have a minimum of one 2’x3’ mirror per lavatory
- h) Soap dispensers will be provided by W.I.U. for installation by contractor
- i) All restrooms will be equipped with the appropriate number of hand dryers – no paper towel dispensers to be installed.
- j) See W.I.U for current toilet paper dispenser make and model.
- k) Shower head height to be a minimum of 6’-6” at point of water being released.
- l) All interior shower surfaces to be solid surface material. No ceramic tile installed in showers
- m) In Residence Hall group shower areas each shower stall should have its own 3’x3’ changing area.
- n) Ceiling in shower area should be a hard plaster ceiling – no ceiling tile.
- o) The design professional shall design the shower curtain height to be a maximum size of 72” (6’-0”x6’-0”). The curtain rod shall be a maximum height of 74” above fixed floor (a.f.f.). Coordinate with WIU Project Manager.
- p) Solid surface material is recommended for all showers. It may be necessary to have battens placed over vertical seams due to extreme temperatures during summer months while resident halls are not occupied. Transolid is not an acceptable manufacturer.
- q) Precast shower receptors are to be prefabricated, terrazzo receptor complete with integral drain. WIU is open to design professional’s recommendations regarding precast shower receptors.

5. Furnishings

- a) All signage shall comply with ADA and the University Standards.
- b) Copies of University Signage Standards may be found in the WIU Signage Appendix attached to this document.
- c) Each building lobby or main entrance to every building is to have one “lobby” indoor bin. Preferred manufacturer is Max-R, Oxford 32 gallon top load double unit with vail top, restrictive opening, engraved text, logo, and recycling symbol. As an alternative if additional recycling units are necessary they are available.

- d) Each office complex and most indoor area recycling bins must be blue, have a mixed recycling restrictive opening, and be at least 23 gallon (32 gallons are required for high traffic areas) and must accompany each trash bin.
6. Materials and Color - The following materials and colors need to be selected in coordination with the W.I.U. Project Manager. Please keep in mind that these selections may require presentation to members of the University Administration and the public depending on size and scope of the project.
- a) Exterior walls
 - b) Major roofs
 - c) Gutters and downspouts
 - d) Glazing
 - e) Windows and Doors
 - f) Use of W.I.U School Colors
 - g) Stone Veneers and Granite
 - h) Precast Concrete

I. HAZARDOUS MATERIAL

The Facilities Management Office of Environmental Health, Safety, and Regulatory Compliance will work with the design professionals during project programming to assist in identification of known existing hazards that may be present at existing campus work sites. Determinations will be made during programming whether further design professional or lab analysis is warranted. Scope of remediation work or disposal activities will be determined and any responsibility for environmental risk mitigation to be accomplished by University forces, prior to or during the construction work will be identified for the design professional.

Any environmental work scope not to be accomplished by University forces will be included in the scope of the project such that the design professional will specify the work to employ best engineering practices and shall conform with all Federal, State, and Local regulatory compliance regulations and laws.

The contractor shall immediately notify the University project manager regarding any unknown conditions or assumed demolition and removal of fluorescent lamps, possible PCB containing ballasts, Asbestos Containing Materials, or other suspected or known special wastes encountered by a contractor, and that were not previously identified in the contract documents as a specific responsibility of the contractor or the University.

The design professional shall include in its specifications any relevant environmental regulatory compliance requirements assumed by the contractor during its work that include but are not limited to relevant licensing or permitting requirements, spill prevention plans, site stormwater management, etc.

1. Spill Prevention
 - a) Refer to W.I.U. Contingency Plan for solid waste management
 - b) Refer to W.I.U. Spill Prevention and Control and Countermeasures (SPCC) Plan
2. PCB Ballast
 - a) PCB ballasts shall be placed in UN approved 55 gallon drums for disposal and shipped on a hazardous waste manifest. The lid on the drum shall be secured unless actively adding to the drum. A ballast is considered to be a PCB ballast if the label says it is or if there is no determination on the label that the ballast has PCB content.
 - b) Non-PCB ballasts will have "Non-PCB Ballasts" written on the ballasts. Non-PCB ballasts should be placed in a separate UN approved drum for recycling.
3. Fluorescent tubes containing mercury
 - a) The following procedure is to be used for 4 and 8 foot fluorescent bulbs, high intensity discharge bulbs (mercury bulbs), and U-Tubes.
 - b) Bulbs should be placed in manufactured boxes
 - c) A universal waste label shall be placed on the outside of the box listing content and date.
 - d) When not actively putting bulbs in the box, the lid shall be closed and sealed.
 - e) Keep the box inside and away from any water.
 - f) EHS does approve of the use of a fluorescent bulb crusher. Crushed bulbs will be placed in UN approved 55 gallon drums for disposal and shipped with a Universal waste label.
4. Asbestos
 - a) A/E firms and all contractors are responsible to comply with all applicable regulations and obtain the required permits for the removal of asbestos containing material following the Illinois Environmental Protection Agency, Illinois Department of Public Health, Illinois Department of Labor, and the Illinois Department of Transportation regulations.
 - b) Western Illinois University will make available Building Asbestos Management Plans to assist with identification of all asbestos containing material in planned renovation and demolition work.
 - c) Western Illinois University will provide an Asbestos Project Manager for all demolition and renovation projects where asbestos containing materials are to be abated as part of the project.
 - d) It is the contractor's responsibility to hire a third party asbestos air monitoring firm (approved by WIU) to conduct air sampling during any demolition or renovation work where asbestos containing material (ACM) will be disturbed.
5. Lead Paint
 - a) Contractors involved in any renovation, repair, and painting activities that disturb lead based paint are required to follow the Environmental Protection Agency (EPA's) Renovation, Repair and Painting Final Rule: Published April 22, 2008, under the authority of the Toxic Substance Control Act (section 402(c)(3) of (TSCA).
 - b) Training providers must be accredited

- c) Renovators must be certified
- d) Renovators and dust sampling technicians must be trained and certified.
- e) Non-certified workers must work under and be trained on the job by a certified renovators.
- f) Work practices must be followed for work covered by the rule.
- g) Renovators must educate owners/occupants (Module 3).

J. CONVEYING SYSTEMS

Elevator capacity shall be oversized to accommodate movement of an emergency medical gurney, equipment furnishings, etc. Western Illinois University's product preference includes Kone, Thyssenkrupp, or approved other.

1. Hydraulic Passenger Elevator Requirements: Sump pump pit and sump pump provided by the contractor in each elevator pit
2. Light in pit and plug in. Style to be make, model, and manufacture listed. Two 4' fluorescent light fixtures specified for damp locations with impact resistant locking cover are preferred in this location.
3. Gate valve in pit and in equipment room.
4. Scavenger oil return temperature
5. Tank heater to maintain oil temperature
6. Inside car doors must be brushed stainless steel finish
7. Inside car walls must be vandal resistant finish; Brushed stainless or plastic laminate will be accepted.
8. Emergency stop switch, inspection switch, and if independent switch, all should be keyed to W.I.U. Best lock system.
9. Light rays and mechanical safety edges replaced with mass detectors with key on and off in car operating panel manufacture key switch.
10. All guides are to be roller guides; shoe guides are not allowed.
11. No drop ceilings with panels in cars in Residence Halls. Fluorescent fixtures with vandal resistant covers are required. Drop ceilings in cars are acceptable in academic buildings.
12. Rubber Floor covering required within the car.
13. Emergency hall door opening device on every floor
14. Diagnostic tools to be provided with any new installation, and if possible, microprocessor language compatible with existing equipment so our diagnostic tools will work.
15. The elevator traveling cable shall include cable to support current university-recommended camera technology.

V. Structural

The intention of the following section is to convey to design professionals the expectations and requirements of new and renovated facilities with regard to occupancy, use, and maintainability. The information below outlines the requirements for items including, but not limited to, masonry selection and use, mockup size and shape, mockup details, as well as building envelope requirements.

A. MASONRY

1. Masonry Requirements – The design professional shall specify all mortar performance characteristics and ASTM criteria pertinent to the specific project. Construction of the building exterior will not be allowed to commence unless all aspects of the mock-up wall are inspected and approved by the design professional and the WIU Project Manager. Mock-up walls will be constructed as needed at the general contractor's expense until all aspects of the mock-up wall are approved. The mock-up wall is to be maintained in tact on the jobsite until the project reaches substantial completion.
 - a) Require a mock-up wall: one free standing (6'x6' minimum area) of the brick wall for each type of backup wall to be built.
 - b) Each different type of backup wall will include one 3 square foot minimum window detail.
 - c) Details shall include, but not be limited to, the following:
 - (1) Through wall flashing
 - (2) Wall ties
 - (3) Insulation
 - (4) Mortar netting
 - (5) Reinforcing
 - (6) Control joints (with sealant color)
 - (7) Inside and outside corners
 - (8) End dams
 - (9) Weeps
 - (10) Stone detail (if needed)
 - (11) Lintel detail
 - (12) Mortar finish
 - (13) 2'x2' window with all associated details
 - d) Lintel details and end dams are to be left exposed for inspection by the WIU Project Manager and design professional prior to completing the face construction of the mock-up wall.
 - e) Sample will be used to determine workmanship performance of all components. Owner reserves the right to waive the backup wall.
 - f) Per the project structural engineer's recommendation, specify building expansion joints and expansion joints between all new and existing structures.
 - g) Require control joints at maximum of 30 linear feet of wall and at lintelled openings. Control joints to be placed at 10 linear feet either side of corners.

- h) Locations of all expansion joints are to be shown on the plans, and the intervals for expansion joints are to be denoted in the project manual.
- i) 1" to 2" minimum air space between face brick and cavity insulation.
- j) Cavity shall be unobstructed, free from mortar droppings. Specify the use of mortar netting within the cavity.
- k) Specify that masonry wall shall be cleaned after the work is complete. Masonry cleaning procedures need to be specified so that cleaning shall not diminish the appearance or weather resistance of the building exterior.
- l) Specify hot and cold weather requirements for brick including not less than 48 hours cure at no less than 40 degrees and block including not less than 24 hours cure at no less than 40 degrees. Calcium chloride mixtures are not acceptable in cold weather applications.
- m) Specify plastic 1 ½" X 3 ½" plastic weep inserts with attached cotton weep. Final color of insert to be selected and approved by WIU.
- n) Specify thru-wall flashing and show details for each location.
- o) Brick veneer shall pass freeze-thaw pre-qualification testing prior to being specified and included in contract documents.
- p) Verify all expansion and contraction influences on wall section.
- q) All concrete block shall be specified by performance, not by manufacturing process, unless a compelling argument is presented to and endorsed by the WIU Physical Plant.
- r) Specify full head and bed joints.
- s) Specify any imbeds, style, material, and interval.

B. FOUNDATIONS

1. General Information

- a) The design professional shall design the subsurface based on a current geotechnical investigation form soil profiles, design parameters, compaction requirements, and foundation design options.
- b) Where concrete duct banks, steam tunnels, and other concrete structures join foundation walls, steel pints for reinforcing steel anchoring will be attached to the foundation walls through use of epoxy capsules.

C. PRECAST CONCRETE DESIGN CRITERIA

1. General Information

- a) The design professional shall specify allowable deflections to be used in the design of any panel to maintain the integrity of the panel.
- b) All panels will be designed with adequate structural integrity to permit handling, transportation, storage, and erection.
- c) Waterproofing materials are discouraged on new precast concrete surfaces unless they are to be placed below grade.

VI. Mechanical

The intent of this section is to convey to design professionals the expectations and requirements of new and renovated facilities with regards to mechanical systems and maintainability. The information herein outlines the requirements for items including, but not limited to, mechanical systems, operations startups, indoor air quality standards, valve types and uses, etc. Western Illinois University (WIU) wishes to have mechanical systems consistent with all applicable codes and standards. The overall goal for the mechanical systems is to achieve comfort with sustainable and efficient operations while designing for ease of maintenance with high quality products. Institutional grade products and systems shall be used providing a longer dependable life. WIU may make exceptions to these guidelines on a per project basis as we understand that each project presents different challenges that are difficult to foresee and plan accordingly. Owner's Project Requirements (OPR) should adhere to these guidelines and outline methods for startup, commissioning, and training for operation.

A. GENERAL MECHANICAL SYSTEMS – Relevant to all divisions in this section

1. Per LEED section of these guidelines (Section 3a, LEED 2009 prerequisite 1, Fundamental Commissioning of Building Energy Systems, under the division of Energy and Atmosphere) commissioning shall occur on all projects regardless of size, and shall encompass all mechanical systems. See Mechanical Appendix for details.
2. The design professional shall use WIU specifications and standards as they are available. See Mechanical Appendix.
3. The design professional shall avoid untested and/or experimental products. Proven technology shall be the standard; however we are willing to entertain recommendations from the design professional if the situation is warranted or presents itself. For this reason, life cycle cost analysis shall be applied to all major components of any system. This allows a true comparison of total cost of ownership.
4. The design professional shall consider life cycle costs of various design configurations during design. Life cycle costs can explore between low initial costs and long-term cost savings, identify the most cost-effective system for a given use, and determine how long it will take for a system to "pay back" its incremental costs.
5. Mechanical HVAC building systems are not to be used during construction and/or remodeling. Contractors shall supply their own heating, cooling, and ventilation specified by the design professional in the project manual. Systems are not to be started until the site has been cleaned and the WIU Project Manager, design professional, and general contractor have agreed that the project has reached the point of substantial completion. See LEED sections 5.e and 5.f. in this document.
6. All mechanical equipment and components shall be designed for removal (when required) without disrupting any other equipment including but not limited to electrical systems, plumbing systems, mechanical systems, etc. See Architectural Section B.1.n.

7. The design professional shall design so there is absolutely no piping, conduit, or ductwork on the roof unless no other viable option exists. Exceptions to this must be approved by the WIU Project Manager.
8. Equipment rooms on the roof (penthouses) shall be accessible from inside the building. WIU will not allow the construction of penthouses which can only be accessed by first going onto a roof. See Architectural Section B.1.I this document.
9. Exhaust fans shall be the only mechanical equipment allowed to be placed on the roof of a building. Exception would be if there is a small local HVAC need (eg. small dx unit). Cooling towers shall be placed on grade relative to the mechanical room elevation. WIU will consider installation of a cooling tower on a building roof if no other option is available.
10. All mechanical equipment overflows and system-drains on roof-mounted equipment shall be piped directly to the nearest roof drain.
11. Proper metering shall be supplied during renovation or construction. Meters shall have the capability of communicating with the existing WIU BAS system for control and monitoring. Required meters include, but are not limited to, the following: domestic water, domestic hot water, condensate return, building system makeup (chilled and hot), cooling tower makeup, cooling tower blow down, etc. All meters shall be piped with a bypass and proper valving to permit systems to run normally while replacing or repairing the existing meter. Suggest sub metering when possible.
12. All equipment pads for mechanical and electrical equipment shall be poured portland cement and shall be a minimum of 4" thick – Grout and mortar housekeeping pads will not be accepted.

B. HVAC

1. The design professional shall design all systems to comply with, or exceed, applicable ASHRAE standards.
2. Manufacturer representative shall be present at startup of all mechanical equipment. Mechanical contractor is responsible for coordinating all start up procedures regardless of who procures mechanical equipment.
3. System Startup – Once punch list items have been satisfied, (all connections made, all surfaces cleaned, all components in place, etc) contractor shall notify WIU Project Manager as well as any manufacturer's representative of the scheduled startup time. All parties shall be in attendance and final commissioning shall take place at an agreed upon time. All parties involved are expected to have a thorough knowledge of how the relative systems are to function and communicate prior to system startup.
4. Use gravity drains at all possible locations.
5. All control, change over, and isolation valves shall be located for serviceability from the floor. Maximum height of 5'-0" shall be maintained. When this is not feasible; service platform, catwalk, or proper chain wheels shall be implemented.
6. The design professional shall indicate required clearances for serviceability on all drawings with dashed lines. Service area shall comply with codes and manufacturer's recommendations. These areas are to be noted on all coordination drawings.

7. With permission of the WIU Project Manager only, elevators shall be made available for contractor use and shall be returned to pre-existing condition provided the equipment does not exceed operating capacity.
8. The design professional shall include a plan for removal of all equipment and shall be clearly marked. Coordinate with structural design to add lifting beams as required to remove or replace heavy mechanical equipment.
9. Avoid all “odd” or “uncommon” sizes and types of components. (e.g. 3 ½ and 5 inch pipe sizes, valves, etc.)
10. Include pressure gauges, thermometers, as well as components to monitor pressure and temperature on BAS in all vital locations including, but not limited to: intake air, outside air, discharge air return air, conditioned space (where any duct splits off the main duct) before and after heat exchangers and chillers (both evaporator and condenser water for chiller), before and after hydronic pumps and strainers, etc.
11. All hydronic pumps shall be installed in a location that is easily accessible for maintenance and repair personnel.
12. All hydronic and air system balancing shall be performed by the appropriate contractor in accordance with system commissioning.
13. **Warranty – Contractor shall warrant all mechanical systems, components, and controls for a minimum of 2 years from the date of substantial completion.** Warranty shall be unconditional and include material, labor, and response within 24 hours of notification. Also included shall be any necessary revisions to software as required to provide a complete and workable system consistent with the design intent and the Sequence of Operations this section.

C. WATER DISTRIBUTION

1. Variable speed electric chillers are to be used at all locations. Life cycle cost analysis should be completed for chillers in conjunction with various system options to determine the best choice.
2. HFC refrigerants are the primary type of acceptable refrigerants. The preference will go toward chillers with lower refrigerant and oil levels. Refrigerants are to be approved by WIU Project Manager for Physical Plant review prior to design.
3. Chillers larger than 100 tons shall be water cooled. Exceptions may be made at the discretion of the WIU Project Manager. All condensing units and cooling towers shall have 110V power and water available for cleaning and maintenance purposes.
4. Chilled water systems shall be insulated with Rubatex closed cell foam pipe insulation. Heating system shall be fiberglass pipe insulation. Steam lines shall be insulated with mineral wool or fiberglass pipe insulation. All pipe insulation shall be of an appropriate thickness for economic feasibility and energy conservation.
5. Provide N+1 redundancy for equipment providing building utility service including, but not limited to the following: chilled water pumps, heating hot water pumps, heating hot water converters, and domestic
6. hot water converters for buildings with the demand to require such, etc.

7. Hydronic heating shall be provided via shell and tube heat exchangers utilizing campus steam where available.
8. Sufficient unions and flanges shall be provided to permit the removal of equipment including, but not limited to, heat exchangers, valves, meters, coils, etc. The design professional shall design so that there is minimal pipe removal.
9. A minimum of 2 inch clearance shall be provided between insulated piping and other piping, structural members, and other obstructions.
10. Provide automatic air vents with the ability to be manually opened at all high points in the system. Provide drain valves at all low points. Eccentric reducers shall be used to maintain top of pipe level.
11. Air and solid separators shall be used in all closed loop systems (chilled and heating systems). Separators shall be installed in manufacturer's recommended location, which is most commonly the highest temperature and lowest pressure.
12. All coils shall be L or K copper. Large drain down tees shall be included in the bottom of all coils and all secondary drains shall be properly installed in cooling coils. Coils shall have drip pans large enough to handle maximum amount of condensate. Pans shall have at least a $\frac{1}{4}$ inch/foot slope to drain and pans shall be constructed of non-corrosive material. Drains shall not be less than 1 inch in diameter. Coils shall be sized according to the system requirements and shall be sized for maximum efficiency while fin spacing is a maximum of 12 fin/inch. All chilled water coils shall be completely drainable.
13. Variable Frequency Drive (VFD) shall be used on all pumps as a dual function: a soft start and for flow control – variable flow wherever possible.
14. All pumps shall be 1800 rpm unless specific needs justify other speeds. Pumps shall be sized for 20% greater flow than is needed allowing for a variable flow system to be used and would allow for both an increase and decrease in flow if needed. All pump motors shall be NEMA premium efficiency; these efficiencies depend on the motor size.
15. All hydronic systems shall be equipped with the proper strainer on the suction side of the pump. Suction diffusers with strainers built in are acceptable.
16. For closed and open loop systems, provide effective chemical water treatment to minimize effects of oxidation, scale, and other typical contaminants.
17. A pot feeder shall be included for each individual system to be treated. See Mechanical Appendix for details.
18. All cooling tower piping (evaporator piping) shall be schedule 80 PVC or approved equal. All exterior PVC shall be UV resistant as well as having an approved coating of paint for additional protection.
19. Cooling towers shall be completely constructed of non-corrosive material i.e. (stainless steel, Fiberglass Reinforced Polyester (FRP), etc.). Cooling towers shall have fans with direct mounted motors which are mounted in the dry air stream. When this is not the case, the motor and any drive train components shall have appropriate protection from the moist air stream. Cooling towers which have top mounted drive trains shall be equipped with ladders, service platforms, catwalks, and properly designed hoists shall be provided for safe removal of drive train. Cooling tower shall have a high velocity (>5 fps) water flow through basin, when a high

velocity flow through basin is not provided a “sweeper” piping system along with all hardware and software needed to be completely automated. See Mechanical Appendix for details.

20. Cooling towers shall always be placed at a higher elevation than the pump serving the cooling tower.
21. All cooling tower piping and cooling tower makeup water lines shall be sloped appropriately back to the equipment room for proper drainage and freeze protection.
22. All valves used for isolation and change-over purposes (any valve that will be either on or off) shall be stainless steel ball valves. Valves used for modulating purposes (bypass valves, control valves, etc. –valves that will most nearly never be 100% on or off) shall be high performance (double offset) butterfly valves or globe valves. All control actuators shall be electronic and sized appropriately for the correct torque specifications based on size of valve, flow rate, and pressure.
23. Perimeter radiant heating shall be supplied for increased comfort and backup heating.

D. AIR DISTRIBUTION

1. Air handling units (AHU's) shall be configured as to abide by the guidelines outlined in this document, consistent with good engineering practices, zoned in a practical manner to facilitate convenient building operation, performance, and shutdown procedures. HVAC systems shall use a practical quantity of AHU's placed in a centralized location as feasibly possible. AHU's shall be variable air volume (VAV).
 - a) Chemical Laboratories: 100% outside air, single duct, variable air volume, central AHU's with single duct VAV boxes with hot water reheat coils. Exhaust ducts for labs with corrosive discharge materials shall be stainless steel.
 - b) Classroom: Single duct, variable air volume, central AHU's with single fan powered VAV boxes with hot water reheat coils with approval as needed.
 - c) Residence Halls: Single duct, variable air volume, central AHU's with single fan powered VAV boxes with hot water reheat coils with approval as needed and zoned for individual living suite control.
2. Utilize 100% outside air units to pre-treat the ventilation air prior to delivery to main AHU's.
3. Exhaust energy recovery units shall be pursued as long as feasible and shall not exceed 50,000 CFM.
4. Building air intakes shall be placed as high as feasibly possible to prevent contamination in the intake stream. Exhaust systems shall be designed with consideration to not only the building on which is being designed, but surrounding buildings as well. Exhaust plume must escape boundary layer. Exhaust fans shall be high velocity vertical discharge.
5. VFD's shall be used for fan static pressure control.
6. High velocity round ductwork shall be used whenever possible.
7. VAV boxes shall be used where appropriate and shall have inconspicuous labeling. All VAV boxes should be placed in a location which is advantageous to service (ie. areas less prone to having furniture placed below).

8. AHU's shall not be placed outside or at any location where a freeze hazards exist.
9. Preheat coils shall be placed in such a way as to have the highest freeze protection.

E. CONTROLS

1. All building controls shall communicate with the existing BAS on campus.
2. WIU utilizes the BACnet communications protocol. Any specified equipment functionality must be able to be controlled directly via BACnet communication. Communication protocol converters that limit functionality and/or control are not permitted.
3. Controls shall be Direct Digital Control (DDC) and shall operate in conjunction with existing pneumatic controls that have not been changed out in existing buildings.
4. Sequence of operations shall be project specific and shall be such that the equipment efficiency is maximized while maintaining simplicity for operating engineers.
5. Project plans shall clearly outline sequence of operations. All controls in the building shall be clearly labeled for building change over, emergency operation, and strategies to ease the confusion of building operations.
6. VFD's shall be controlled by the BAS whenever possible.
7. In hydronic heating systems the VFD shall be controlled to supply the needed flow through the last coil in the "circuit" while achieving the needed pressure drop with the control valve at least 95% open. For each preceding coil the control valve shall modulate accordingly to achieve the needed flow. In an N+1 pumping situation, the lead pump shall be used until the flow rate exceeds its maximum efficiency. At that point the lag pump shall be started and the lead pump shall reduce operation, and both pumps shall run together to reach the highest efficiency point possible.
8. For chilled water and cooling tower pump operation the VFD shall be controlled by BAS in conjunction with the chiller to utilize the variable speed properties of the pumps. Flow shall be controlled similar to hydronic heating with the exception that the chiller and cooling tower will be included in the control scheme. Depending on the loads of the chiller and cooling tower, the pumps may be turned down or up. (If the chiller is under little load and needs to run harder to reach maximum efficiency the chiller shall produce colder water and the pumps shall be turned down accordingly. A similar strategy shall be incorporated with the cooling-tower, often known as chiller tower optimization).
9. For AHU's the VFD shall be controlled by BAS and set to maintain a set-point pressure and shall be incorporated with intake, exhaust, and makeup air dampers. Both intake and exhaust fans shall be controlled in conjunction with each other considering building pressure.

F. SYSTEM PIPING

1. Schedule 80 pipe and nipples shall be used on all condensate piping. Schedule 40 is required for steam lines and when budget allows schedule 80 is preferred. Any piping 2" or larger shall be welded.

2. Vent all pressure relief valves and condensate vents through the roof of the building, or in a route otherwise approved by FM.
3. Grade-8 bolts shall be used on all condensate and steam lines.
4. Flexatall type gaskets shall be used on all flanged pipe connections on condensate and steam. Anti-seize and Teflon tape shall be used on all steam and condensate threaded joints. NO Teflon pipe dope.
5. Teflon tape and Teflon dope on all chilled and hot water screwed joints.
6. Boylston Pressure Reducing Valves (PRV's) shall be the basis of design on all steam supply lines.
7. Proper expansion joints and loops shall be used for the piping material and temperatures encountered. When possible, expansion loops are preferred. This also applies to all system plumbing.
8. High pressure condensate lines shall be ASTM A106B compatible.
9. All condensate return pumps shall be sized with the proper vent to ensure proper steam and condensate separation and minimal carryover. Mechanical steam-powered pumps shall be implemented when there is ample steam supply and is the preferred method of condensate return.
10. All piping 4 inch and larger shall be hung or mounted individually. Piping smaller than 4 inch can be hung together provided that hangers, fasteners, etc. are sized appropriately according to seismic requirements, and ample space is provided for service to each individual pipe.
11. There shall be no direct buried steam, steam related piping, or building system piping including hot and chilled water. Piping shall at least be in a shelled underground piping system. The preferred method for underground piping is a shallow tunnel or walk through tunnel.
12. Do not use dissimilar piping material. When not possible or when not feasible, dielectric unions shall be used anywhere dissimilar piping materials are used.
13. Ball valves are the preferred valve for shut-off and isolation valves. If a butterfly valve is specified by a design professional, at a minimum it must be a double off-set with a stainless steel lug and a replaceable Teflon seat.
14. See Mechanical Section 7.j-n "Domestic Plumbing" - this also applies to System Piping.

G. DOMESTIC PLUMBING

1. Vent piping may be solid PVC. Foam core PVC pipe is not allowed.
2. Water supply lines shall be copper – shall be "L" thickness.
3. All subsurface drainage pipe is to be perforated SDR35 in lieu of black plastic drainage tile.
4. All material, fittings, valves, and valve schedules shall be reviewed with the Project Manager and WIU Mechanical Maintenance staff prior to finalizing bid documents.
5. Proper expansion joints and loops shall be used for the piping material and temperatures encountered. When possible, expansion loops are preferred. This also applies to all system piping.
6. Provide drains and proper ventilation for all custodian/storage closets.
7. All restrooms shall have at least one floor drains.

8. Exposed piping is to be avoided in finished areas.
9. Proper backflow devices are to be used and shall be certified by installing contractor upon substantial completion.
10. Water line connections over 2 inches shall be tinned before soldering.
11. All piping shall be properly marked showing the direction of flow and what is contained within. Markings shall be placed so that maintenance personnel can read at least one of the markings.
12. Valves shall have limited-access and not placed where unqualified personnel can operate them. Valves are to be easily accessible for qualified personnel. Maximum height of 5'-0" shall be maintained. The use of catwalks, service platforms, or valve hammer chain wheels may need to be implemented.
13. Below-slab piping, and other instances where replacing pipe requires substantial disruption for other systems, or the building structure, shall require corrosion-resistant piping. Chemical laboratory waste lines shall be chemical resistant.
14. Any mechanical equipment supply or return line subject to freezing shall be properly sloped to an equipment room for proper drainage. It is the contractor's responsibility to freeze-protect any lines prior to turning the building over to WIU.
15. Code violations which are located during the warranty period shall be repaired at the expense of the contractor responsible for the installation, and at no cost to WIU.

H. FIRE PROTECTION

1. Obtain local fire chief's approval at 50%, 75%, and 100% submittal phases. Invite local fire chief to be present at substantial completion inspection walk through.
2. When a fire sprinkler system is designed, prior to the project being sent for bid, the plans should be submitted to our insurance agency the office of the Vice President for Administrative Services for input.
3. Sprinkler heads and pipes shall be concealed in all spaces with the exception of mechanical storage and general back of house spaces. Consult WIU Project Manager and Physical Plant Mechanical Maintenance staff for sprinkler head type.
4. Plastic piping is required.
5. Size sprinkler mains and fire pumps appropriately for the system requirements.
6. Sprinkler heads may be located on architectural reflected ceiling plans only in spaces that are architecturally sensitive. The design professional shall note these spaces during review of coordination drawings and conduct pre-installation meetings with the appropriate fire protection sub-contractor with these spaces in mind.
7. Show stand pipes, test headers, fire department connection valves, water flow indicators, and cross mains on the drawings. The design professional is to provide notes on the drawings for any special conditions, Siamese connection detectors, OS & Y valves, and fire pumps.
8. Install fire extinguishers as required.

VII. Electrical

The intention of the following section is to convey to design professionals the expectations and requirements of new and renovated facilities with regard to Electrical equipment. Engineering and design for electrical will incorporate inventive technology while still achieving sustainability, dependability, and limit maintenance issues. The information below outlines the requirements for items including, but not limited to, high voltage specifications, equipment layout, material preferences, lighting requirements, etc.

A. GENERAL REQUIREMENTS

1. All work to be designed and installed to meet or exceed the most recent version of the National Electric Code.
2. All equipment will be UL approved and “Energy Star” labeled when applicable.
3. All switchgear, medium and low voltage will be accessible from both front and rear of the equipment (no front-access-only equipment) unless otherwise specified and approved by WIU project manager.
4. Short circuit (fault) / arc flash analysis will be done on all new construction and major renovations. All gear will be labeled and all calculations will be provided to WIU project manager by the design professional.
5. Harmonic analysis will be performed on all designs that anticipate non-linear loads or when known harmonic causing devices are to be used. This analysis will be performed by the design professional.
6. Electrical equipment will be designed and installed so that equipment can be removed and replaced without the following:
 - a) Disrupt reasonable building operations; classes, normal office hours, faculty and staff work, etc.
 - b) Making modifications to existing walls and structure.
 - c) Making modifications to the equipment including, but not limited to, disassembly and reassembly by the contractor, being shipped to the site in pieces to be assembled in its final location, etc.
7. All buildings are required to be metered. Major electrical feeds will be sub metered separately from the main building meter. Meters need to be compatible with existing metering software. See WIU project manager for requirements.
8. All equipment will be selected with low Total Harmonic Distortion
9. All conductors will be copper. No aluminum conductors will be allowed.
10. Contractor is required to test and supervise initial operation of all equipment and provide commissioning by the manufacturer of the equipment if requested by WIU project manager.

11. All Exit signs in a building need to be Luminous Egress (red is preferred over green)
12. Prior to any medium or high voltage electrical shutdown WIU Project Manager is to fill out the “Electrical Building Shutdown Notification Form” prior to any work being completed. This form needs to be coordinated with contractors involved in the shutdown and approved by Facilities Management Electrical Engineer.

B. EMERGENCY POWER

1. All buildings are required to have emergency generators. Generators are to be sized to include the minimum of life safety requirements, building automation (BAS) systems, and other items critical to building operations and instructional support needs (science lab refrigerators and freezers, etc.) Coordinate with WIU electrical engineer and project manager.
2. All life safety devices are required to be wired to a separate panel that includes only life safety circuits. This includes buildings that do not utilize a building generator.
3. Building generator will be designed to accommodate future load and at least 20% spare capacity.
4. Generators will be diesel with a belly tank design or unless otherwise specified and approved by WIU. Tank size will be dependent upon application and needs to be reviewed and approved by the design professional and WIU.

C. INTERIOR AND EXTERIOR LIGHTING

1. Lighting is to meet or exceed the latest IESNA Standards.
2. Lighting drawings will show luminaries, circuit numbers, and control wiring. Lighting drawings will be on their own separate print within the electrical section of the project blueprints.
3. Classroom lighting shall allow for areas where projector screens, televisions, etc. are located to be controlled separately so as not to diminish picture quality. These lights need to have the capability of being independently dimmed or turned off.
4. The design professional shall use energy efficient lights and fixtures in all locations when possible.
5. The design professional shall use a style of light bulb already incorporated in the WIU inventory whenever possible. See electrical appendix.
6. LED lighting is preferred in all new installations
7. Fluorescent bulbs and ballasts shall meet the following criteria:
 - a) CRI of 80 or higher
 - b) Correlated color temperature (CCT) of 3500K
 - c) Exterior and gymnasium lighting will have a CCT of 4100K
 - d) Ballast is to be electronic rapid start and operate at 42KHz or higher
 - e) Ballast sound rating should be ‘A’ or greater.
8. Incandescent bulbs will not be used except in specialized cases that are approved by WIU project manager.

9. All Exit signs shall comply with UL924. Exit signs should be a LED light source and use 5 watts or less. They need to be white or polished aluminum face with red lettering and shall have a warranty or a minimum of 5 years. Exit signs shall have metal housing – plastic housings are not acceptable.
10. All exit signs are to be installed on emergency generator power. It is not required to incorporate a battery backup when emergency generator power is available. Batteries will have a run time of a minimum of 90 minutes.
11. The design professional shall place fixtures so that maintenance can be easily performed with safe working conditions.
12. No fixture shall require the use of a ladder over 12' unless otherwise specified and approved by WIU project manager. If a height greater than 12' is unavoidable, an alternative access to the lighting is required (i.e. elevated walkway, adjustable height hanger, etc).
13. All occupied exterior spaces shall have a minimum foot candle reading of .4.
14. The design professional shall design exterior lighting fixtures to match current WIU specified fixtures (See Electric appendix).
15. All exterior light fixtures are to have a luminary life expectancy greater than 50,000 hours.
16. All exterior lights shall be controlled by latitude based time clocks; no photo cells.
17. Buildings are not to be illuminated with exterior lighting. See LEED Requirements, this document, Section A, paragraph E, regarding LEED credit 8, Light Pollution Reduction.
18. Motion sensors are to be utilized where possible. Exceptions are emergency lighting, mechanical rooms, exterior lights, and gymnasiums.
19. Motion sensors need to be adjustable for individual sensitivity for each type of sensing technology and must have the option to be wired as an "occupancy or vacancy" sensor and have an override option with a test feature. Occupancy sensors shall "fail ON".
20. All sensors need to have adjustable time limits. Time should be adjustable between 10 and 30 minutes. Sensors that utilize adaptive time adjusting are preferred. The default time should be 20 minutes.
21. The design professional shall keep the assortment of light fixtures and bulbs to a minimum throughout design.
22. Emergency lighting will be connected to the emergency generator and will not be equipped with battery backup except where generator power is not available.

D. FIRE ALARM / DETECTION SYSTEMS

1. WIU is sole sourced to Simplex-Grinnell
2. The design professional shall design a system that meets or exceeds the latest NFPA code.
3. The panel design is to incorporate 20% spare capability for adding more signaling or alarm sensing devices.
4. All designs need to incorporate programming and commissioning by Simplex-Grinnell.
5. All initiating devices are required to be addressable.
6. The design professional shall design the fire alarm system to be tied into the existing campus monitoring loop located at the Office of Public Safety.

7. The design professional shall design the system so that upon completion of installation the Office of Public Safety shall have the ability to individually monitor the initiating device points.
8. The design professional shall include mass notification into the Simplex-Grinnell system with regard to installation in residence halls and other locations as specified by the WIU project manager.
9. Commissioning shall follow NFPA 3 recommended practices.

E. MEDIUM VOLTAGE

1. All medium voltage systems will be designed for 12.47KV but operated at 4.16KV unless otherwise specified by WIU electrical engineer.
2. Electrical loops will be designed with redundancy and allow loops to connect and disconnect from each other without having to shut down campus buildings (i.e. load break/make switches).
3. All medium voltage utilities are to be located underground in concrete encased duct bank. Duct bank shall be designed with a minimum of two (2) spare conduits.
4. WIU reserves the option to inspect/modify, all final cable terminations.
5. New electrical services on campus will be designed so that all power will be metered by one of the two main electrical meters located at the electrical switch yard.
6. If a new electrical service is needed but is impractical (location prohibits) to extend the University's electrical loop, a campus meter will be installed and tied into the University's electrical metering server.
7. Electrical rooms having medium voltage, NEMA Type 1 equipment shall be designed to meet the following characteristics:
 - a) Be fire rated for a minimum of 2 hours.
 - b) The room is dedicated to electrical equipment only.
 - c) Only dry type equipment is used.
 - d) No storage shall be allowed in electrical room.
 - e) No sprinklers shall be installed in electrical rooms where medium voltage, NEMA Type 1 equipment is used and that meet all aforementioned criteria.

F. LOW VOLTAGE

1. Transformers will be oversized for the building in which they will be installed to accommodate future growth.
2. Transformers will be k-rated on current/design loads as well as expected future growth.
3. Panel boards need to be sized for 20% ampacity and allow for an additional 20% extra pole spaces.
4. Circuit panels need to allow for at least 25% extra pole spaces.
5. All panel boards will include a typed breaker schedule and include calculated connection loads.
6. There will be no load centers.
7. Conduits will be sized no smaller than $\frac{3}{4}$ " unless used for control wiring.

8. Neutral wire will be sized no smaller than the corresponding phase wire. Oversized neutrals will be used where excessive harmonics are generated.
9. The design professional shall install 20 amp wall outlets with ground fault for use by building service equipment. Coordinate with WIU Project Manager/Building Service Superintendent.

G. ACCESS CONTROL

1. Any and all access control systems shall be designed to interface solely with CBord, CS Gold software.
2. The design professional shall design access systems with the least number of components, and the least modifications to the door and adjacent walls. All components to be Power over Ethernet (PoE) or hardwired. No battery operated components.
3. See WIU project manager for access requirements at all exterior building entry doors, secure areas, stair towers, technology and communication rooms, mechanical, and office suites.
4. The design professional shall coordinate access control systems with the appropriate entities.

H. Clocks

1. Preferred clocks campus wide to be Primex Analog Clock, XR series - Model number to be #14155 (12.5" Black clock) #14163 (16" black clock) or #14164 (black dual-sided) as appropriate for the space. Clocks must connect wirelessly to the WIU Primex clock system.

I. DESIGN PLANS

1. Construction and Demolition details need to be on separate drawings.
2. Drawings need to show conduit and conductor size, number wires, homeruns, and circuit numbers for all feeders, outlets, and equipment.
3. All drawings shall have an electrical legend
4. Installers will label J Boxes with the corresponding circuits that run through that J-Box.
5. Outlets will be labeled to indicate what circuit and panel that it is being fed by.

VIII. Landscaping Guidelines

The following section will convey to design professionals the University's expectations for existing and proposed landscapes and site improvements. The following information provides requirements for earthwork, tree and landscape protection, landscape materials, damages and other costs, planting, and site furnishings.

A. GENERAL REQUIREMENTS

1. The design professional shall coordinate with the University the location of sprinklers and security lighting.
2. Require a warranty that all new plant material shall be maintained for a complete cycle of the seasons (no less than one year). All defective material shall be replaced and ALL new material shall also be warranted for an additional complete cycle of the season (no less than one year).
3. The design professional shall discuss with the University the watering requirements as an additional project cost. There will be a minimum ninety (90) day watering for turf (seed/sod) required.
4. WIU is committed to sustainable landscaping and prefers low maintenance native plant species where possible. No irrigation (other than athletic fields), and organic fertilizers to be specified.
5. After new construction or renovation, it shall be expected to design landscaping and site work to a new level of excellence. The site should be restored better than the existing condition, including turf areas.

B. EARTHWORK

1. Define requirements for excavation depth and extent, fill, backfill, compaction, and surface drainage.
2. Use recommendations of the soils engineer.
3. Require that the contractor provide notice three (3) working days in advance to fill, backfill, and compaction operations.
4. Treat all foundations with termiticides, minimum of 10 year warranty
5. All prints will clearly show the location of buried utilities as known to WIU. Coordinate with WIU GIS Center and Project Manager.
6. It will be the responsibility of the contractor to locate and establish the position of all utilities prior to any excavation work.
7. Provide for restoration or repair of damaged grounds, hardscapes, and plant life.

C. GENERAL TREE PROTECTION

1. Western Illinois University has many valuable and, in some cases, irreplaceable trees and plantings throughout campus. It is the intent of this University to strictly interpret and enforce these Tree Protection Guidelines at all times.
2. RESPONSIBILITIES
 - a) The General Contractor shall notify the WIU Project Manager a minimum of 15 working days in advance of beginning construction. After notification, WIU personnel will trim and prune all vegetation, as necessary, within the proposed construction site. Additional trimming shall be the Contractor's responsibility, with written permission from the WIU Project Manager and WIU Landscape Maintenance Department.
 - b) Unless specific tree protection drawings are included in the project documents, a site meeting is required. Immediately after award of the Contract, the General Contractor shall request the site meeting with the WIU Project Manager and WIU Tree Surgeon. The purpose of the meeting shall be to establish the conditions of all existing trees to be preserved or relocated.
 - c) The design professional shall coordinate with the WIU Landscape Maintenance Department after they conduct a tree inventory within the project limits that will determine the following: tree species, their relative health, pruning needs, those worthy of protection measures, those not worthy for protection, those that should be considered for removal, and other special tree concerns. Copies of the inventory shall be distributed to the General Contractor and WIU Project Manager within 10 working days of the site meeting. Failure to call for said meeting implies acceptance by the General Contractor of trees to be preserved in their existing condition.
 - d) The General Contractor is responsible for erecting all tree protection shown or noted on project construction documents or discussed in meetings and conferences. Tree protection shall be installed by the General Contractor during mobilization and immediately prior to moving other equipment and material onto the construction site. Failure of the General Contractor to expeditiously erect all documented tree protection or other protection deemed necessary during the preconstruction conference or the conference noted in item C above, will likely result in the WIU Project Manager enforcing a delay upon the General Contractor until such deficiencies are rectified.
 - e) As tree protection is deemed part of contractor mobilization, customary and reasonable payments for contractor mobilization may be delayed by the Owner until Owner is satisfied that all necessary tree and other protections documented in the contract documents, and those determined necessary in meetings are satisfactorily erected and any noted deficiencies are remedied by the General Contractor
 - f) The General Contractor shall immediately notify the WIU Project Manager of any tree damage within the project limits.
 - g) The General Contractor shall furnish, install, and remove tree fencing in the length and type specified in accordance with the plans and these special provisions.

- h) The design professional shall show on all prints tree protection fences expanding out to each tree's drip line.
- i) The design professional shall include in plans and specifications that tree protection must be in place before ANY work begins, during mobilization.

D. SUBMITTALS

1. Product Data: For each type of product indicated.
2. Tree Pruning Schedule: Written schedule from Arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
 - a) Species and size of tree.
 - b) Location on site plan. Include unique identifier for each.
 - c) Reason for pruning
 - d) Description of pruning to be performed
 - e) Description of maintenance following pruning
3. Qualification Data: For qualified Arborist and tree service firm
4. Certification: From Arborist, certifying that the trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
5. Maintenance Recommendations: From Arborist, for care and protection of trees affected by construction during and after completing the work.
6. Existing Conditions: Documentation of existing trees and plants indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
 - a) Use sufficiently detailed photographs or videotape
 - b) Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain

E. QUALITY ASSURANCE

1. General Responsibility: The General Contractor shall be directly responsible for protection and welfare of existing trees within the Contract Limits until the project is completed and accepted by the Project Manager. The General Contractor shall erect and remove all required tree and planting protection barriers consistent with the details provided in this specification. No work, except that which is approved by the WIU Project Manager, will be started by the Contractor, a Subcontractor or any Utility Company until all barriers are in place.
2. Qualifications of Personnel: Trimming shall be performed only by an ISA (International Society of Arboriculture) certified arborist and in compliance with the most current revision of ANSI A300 standards For Tree Care Operations. The Contractor shall provide at least one person, approved by the WIU Project Manager, who shall be present at all times during tree protection and trimming operations, who shall be thoroughly familiar with the type of work involved, and who shall direct all protection and trimming work.

3. Arborist Qualifications: Arborist as certified by International Society of Arboriculture (ISA); and Licensed Arborist in jurisdiction where the project is located.
4. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified Arborist to Project site during execution of the Work.

F. MATERIALS

1. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch (25 mm) in diameter; and free of weeds, roots, and toxic and other non-soil materials.
2. Obtain topsoil only from well drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes. The design professional shall require that soil testing is done at the contractor's expense. If topsoil is to be re-used from the construction site, it must be piled and stored separately.
3. Soil tests are required and should be submitted to the Landscape Maintenance Department for review and approval.
4. Organic Mulch: Mulch shall be hardwood chips or shreds with no component larger than 6" in length and 3" in width. It shall be composted to the degree that it is no longer green and does not rob nitrogen from the soil. The mulch shall not contain chemicals or substances harmful to plant life.
5. Sod: Sod should be weed-treated field sod of predominantly Kentucky Bluegrass. Sod shall be reasonably free of stones, crab grass, noxious weeds and other objectionable plants. Sod grown on highly organic matter will not be acceptable. Sod needs to be installed so that the surrounding grass seeded areas are graded flush with the top of the installed sod.
6. Protection Zone:
 - a) Fencing: Fencing fixed in position and meeting one of the following requirements.
 - (1) Type 1 Fence: Standard fencing to be used unless otherwise specified in Contract documents: (6' steel T-posts (4' above grade, 2' below grade) @ 8' centers. Fence should be a high visibility orange plastic (chain link style) safety fence 48" high attached with a minimum of 4 nylon ties evenly spaced on post.
 - (2) Type 2 Fence: 9' steel posts (6' above grade, 3' below grade) @ 10' centers. Chain link fabric fence, 72" high attached to posts with wire ties on 2' centers.
 - (3) Type 3 Fence: 7' steel T-posts (5' above grade, 2' below grade) @ 8' centers. High visibility orange plastic (chain link style) safety fence 48" high attached to posts one foot above grade with nylon ties on 2' centers.
 - (4) Type 4 Fence: (Trunk Protection if required) Wrap trunk with High visibility orange plastic (chain link style) safety fence. Secure minimum 2"x6"x8' boards adjacent to each other with 6 gauge wire.

- b) Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed ASTM D 448, Size 24, with 90 to 100 percent passing a 2 1/2 inch (63mm) sieve and not more than 10 percent passing a 3/4" (19mm) sieve.
- c) Filter Fabric: Manufacturer's standard, woven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

G. EXECUTION

1. During construction the General Contractor shall take all necessary precautions, as outlined herein, to protect the existing trees and plants from injury or death. Protection shall be given to the roots, trunk, and foliage of all existing trees to remain.
2. Trees, subject to the provisions of this Section, which have been injured as a result of the Contractor's operations, shall be repaired immediately, at the Contractor's expense, by an approved, certified arborist. Repair shall include removal of rough edges and sprung bark and severely injured branches as directed by the WIU Project Manager or his/her designated representative.
3. Tree protection fencing shall be installed for the protection of existing trees to be preserved. No construction, demolition, or work of any nature will be allowed within the fenced area without prior written approval by the WIU Project Manager.
4. Approval by the WIU Project Manager for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees and plants.
5. The site surface drainage patterns shall not be altered within the Protected Root Zone (PRZ).
6. The General Contractor shall not alter the existing water table within the Protected Root Zone (PRZ).
7. The General Contractor shall take measures to maintain healthy living conditions for existing trees to be preserved. Such measures shall include, but not be limited to, periodic washing of leaves for the removal of dust, irrigation, etc.
8. The General Contractor shall not permit the following within the Protected Root Zone (PRZ) of any tree to be preserved:
 - a) Storage or parking of automobiles or other vehicles.
 - b) Stockpiling of building/construction materials or refuse of excavated materials.
 - c) Use of trees as support posts, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions.
 - d) Dumping of poisonous materials on or around trees and roots. Such material includes but is not limited to paint, petroleum products, contaminated water, or other deleterious materials.
 - e) Cutting of tree roots by any construction activity without written approval by the Project Manager.
 - f) Damage to trunk, limbs, or foliage caused by maneuvering vehicles or stacking material or equipment too close to the tree.

- g) Compaction of the root area by movement of vehicles or equipment and/or storage of earth, aggregate, or construction supplies.
- h) Damage to root system from flooding, erosion, and excessive wetting and drying resulting from dewatering and other operations.

H. SITE CLEARING

1. Clearing within a site zone containing protected trees shall be accomplished by cutting unwanted trees and brush at the existing ground line. If excavation is necessary, roots must be protected or pruned in accordance with these specifications.

I. EXCAVATION AROUND TREES

1. Excavation within the protected root zone shall be done only where absolutely necessary and with written permission of the WIU Project Manager. The WIU Project Manager shall not give permission for open excavation within the Protected Root Zone when boring/tunneling will accomplish the same goal and where cost or conveniences are the only factors.
2. Where isolated or limited earth excavation for new construction is required within the protected root zone, hand excavation shall be employed to minimize damage to root systems. Roots larger than 2" in diameter shall be pruned by a certified arborist and only with prior written approval of the WIU Project Manager. Main lateral roots and taproots shall not be cut.
3. When machine excavation or trenching of earth must occur in the Protected Root Zone, with prior written approval of the WIU Project Manager, the tree roots shall be pruned, by a certified Arborist, prior to excavation using a large concrete saw or earth saw to a minimum depth of 2'-0".
4. Replacement of Existing Structures or Pavement: The General Contractor shall carefully remove existing structures or pavement within the Protected Root Zone to prevent root damage. If roots larger than 2" in diameter are encountered the General Contractor shall immediately notify the WIU Project Manager. The WIU Project Manager shall notify the WIU Tree Surgeon, who shall determine whether pruning shall be in accordance requirements.
5. Exposed roots shall not be allowed to dry out or freeze before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be packed with wet peat moss or four layers of wet, untreated burlap and temporarily supported and protected from damage until covered with backfill. The cover over the roots shall be wetted to the point of runoff daily.

J. VEHICLES ON PROTECTED ROOT ZONES

1. Vehicles may not be driven on any Protected Root Zone or landscaped planting beds without written approval of the WIU Project Manager. Vehicles found in violation may be issued parking citations and/or towed at the contractor's expense.

2. The General Contractor shall, prior to driving on any Protected Root Zone or landscaped planting beds, protect these areas by placing mulch to a thickness designated by the WIU Project Manager. The minimum thickness shall be 8". The WIU Project Manager may revoke this permission at any time if he/she determines or believes that the root system is being damaged.

K. FILL SOIL

1. Fill soil, excluding topsoil derived from the project location, must be tested to insure the soil is free of contaminants or toxins harmful to plant life. A copy of the test results must be provided to the WIU Project Manager and approved prior to placement of the soil. Soil test will determine requirements for topsoil additives or amendments. Soil obtained from the same source shall have one test for every 200 cubic yards. Soil obtained from different sources shall have at least one test per source area.
2. Fill should contain low levels (less than 20%) of clay and shall have a minimum organic matter content of four percent (4%) and pH should be 6.0-7.0.
3. Fill shall not be placed on the Protected Root Zone without written permission of the WIU Project Manager.

L. DAMAGE TO TREES

1. A certified arborist shall direct repair of trees damaged by construction operations. Repairs shall be made promptly after damage occurs to prevent progressive deterioration of damaged trees.
2. Damage to existing tree crowns or roots over 1" in diameter shall be immediately reported to the WIU Project Manager in writing and, at the direction of the WIU Tree Surgeon, repaired immediately at the General Contractor's expense by a certified arborist.

M. DAMAGES AND OTHER COSTS

1. Trees and shrubs which are deemed protected in this work that have been severely damaged or destroyed by the Contractor's operation shall be replaced by the Contractor with a like species or another species approved by the WIU Project Manager and Landscape Maintenance Department.
2. The Contractor shall be held liable for the difference in value between the replacement tree and the original tree. The Contractor may also be held monetarily responsible for trees, shrubs and other campus plants that are damaged through its negligence, or by accident, whether or not it had been determined previously that these plants were to receive protective measures.
3. The Contractor is responsible for all of its activities while present on campus including plant protection not previously required or approved by the Owner whenever the Contractor should

be able to determine within reason that additional plant protection is required because of its activities.

4. At the Owner's Approval a Contractor may install additional protection not previously required by the Owner. The value of the original tree shall be set in accordance with the latest revision of the "Guide for Establishing Values of Trees and Other Plants" by the International Society of Arboriculture (ISA). The owner has the right to withhold payment in amounts estimated to cover damages by the Contractor if said damages have not been appropriately addressed.
5. Removal of trees from any project site is to be replaced at a 2:1 ratio using the following cost schedule: Any tree that is to be removed is to be replaced at the contractor's expense at a current market value of \$180.00 per inch caliper. Replacement for value or shrubs, vines, and perennials shall be assessed at three times the current market cost of plant material.

N. LANDSCAPE PLANT MATERIALS & PLANTING

In season seeding dates are April 1 through June 1 and August 15 through October 1. Seeding outside of these dates listed require prior approval from the Landscape Maintenance Department and is at the contractor's expense to re-install if final product does not meet final approval. Seeding outside the dates listed above should be with a rye grass seed mix for faster germination. The design professional shall specify that the contractor is required to water for a minimum of 90 days for grass establishment after the seeding is complete. After seeding is completed, straw netting/matting is required to be applied throughout or alternatively straw mulches and crimped or hydro seeding. Method to be used needs to be approved by Landscape Maintenance. Once the grass is established and is approved by the WIU Project Manager and the WIU Landscape Maintenance Department. The contractor will then receive notification from the WIU Project Manager to remove the netting within 4 business days.

1. Schedule: Turf mixes for WIU Campus:
 - a) Sunny Areas:
 - 24.45% Merit Kentucky Bluegrass
 - 19.96% Crest Kentucky Bluegrass
 - 19.78% Touchdown Kentucky Bluegrass
 - 19.6% Parade Kentucky Bluegrass
 - 14.71% Futura 2000 Ryegrass Blend
 - b) Shady Areas:
 - 24.5% Jasper Creeping Red Fescue
 - 24.5% Victory Chewings Fescue
 - 14.73% Fiesta Perennial Ryegrass
 - 14.73% Merit Kentucky Bluegrass
 - 9.82% Spartan Hard Fescue
 - 4.93% Touchdown Kentucky Bluegrass
 - 4.92% American Kentucky Bluegrass

2. Plant Material Specifications

- a) Balled and Burlapped Stock (B&B) to be exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 (American Nursery and Landscape Association, American Standard for Nursery Stock) for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum laced as recommended by ANSI Z60.1.
- b) Container-grown stock is to be healthy, vigorous, well-rooted exterior plants growing in a container with a well established root system reaching sides of the container and maintaining a shape and protect root mass during shipping. They should be sized according to ANSI Z60.1 for type and size of exterior plant requirements.
- c) Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide a well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- d) Foliage of plants shipped during growing season (i.e. April through October) MUST be completely protected from deciscatioin by wind-proof tarps or enclosed.
- e) Any substitutions must be noted and approved BEFORE delivery of any plant material.

O. APPROVED TURF INSTALLATIONS

Turf installations shall meet the following criteria as determined by the Design Professional:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding ninety (90) percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

P. SITE FURNISHINGS

(benches, trash/recycling receptacles, ash urns, bike racks, picnic tables, exterior lights)

1. Bicycle paths and racks must be considered in sidewalk and building development. Approved rack design example is located west of the Student Recreation Center.
2. Fixed objects (concrete benches, tables, etc.) must be designed and located for ease of maintenance and snow removal.
3. Space for waste disposal receptacles should be in the service or loading dock areas, with easy access for contractor's truck.
4. The site furnishings listed below are campus standards:

- a) DuMor Bench 6' recycled plastic slat "redwood" color, bronze powdercoat frame # 57-60 pl
- b) DuMor Ash urn recycled plastic slat "redwood" color, bronze powdercoat frame #123-00
- c) DuMor Table bronze powdercoat #126-20
- d) DuMor bicycle rack, bronze # 83-00 s-2
- e) Landscape Forms bollard, annapolis style
- f) Outdoor trash units -- standard 38 gallon recycle/trash unit (unless designated an extreme high traffic area and then 45 gallon units required) Max-R is the preferred manufacturer, Verde Side Load Reverse Vail Double with engraved recycling symbol and institution logo.



IX. Plaque Guidelines

The following section will convey to design professionals the University's expectations for building plaques and the dedication building plaque.

A. GENERAL REQUIREMENTS

1. Plaques mounted in building corridors adjacent to a classroom, office, or office suit entry door, other than those required by the Americans with Disabilities Act (ADA) shall be a standard plaque size no larger than 8"x10". Limit one per classroom, office, or office suite to be located in the building corridor.
2. The metal plate of the plaque (if any) shall be brushed aluminum finish (preferred), or bronze, each with black lettering. An aluminum or bronze metal plate where the lettering and image (if any) is reversed in a black overlay is also acceptable. A cast-metal plaque is acceptable. In the event that a cast metal plaque is used, the lettering shall be the color of the metal (bronze or aluminum) and that background shall be black. Color logos are acceptable per University Identity Standards.
3. The mounting board of the plaque (if any) shall be dark in color: black, or walnut (if wood). Solid wood plaques with no metal which have been engraved or laser carved shall be walnut color, or similar dark-stained wood.
4. Combinations of any of the plaques listed in the line items two and three are acceptable.
5. All plaque locations shall be approved by Physical Plant.
6. All plaque designs are to be approved by the Physical Plant and University Relations.
7. All plaques shall be installed by the Physical Plant.
8. It will be the responsibility of the requesting department to pay for the installation of each plaque (it is preferred that plaques be grouped for installation to simplify the scheduling of a carpenter.)

B. APPROVED PLAQUE EXAMPLES



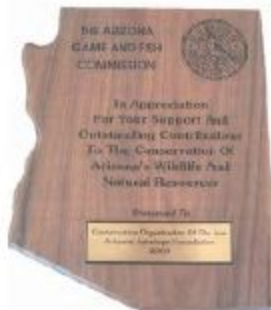
Metal plate with
walnut board



Metal plate with
dark board (reversed)



Cast-metal with
dark background

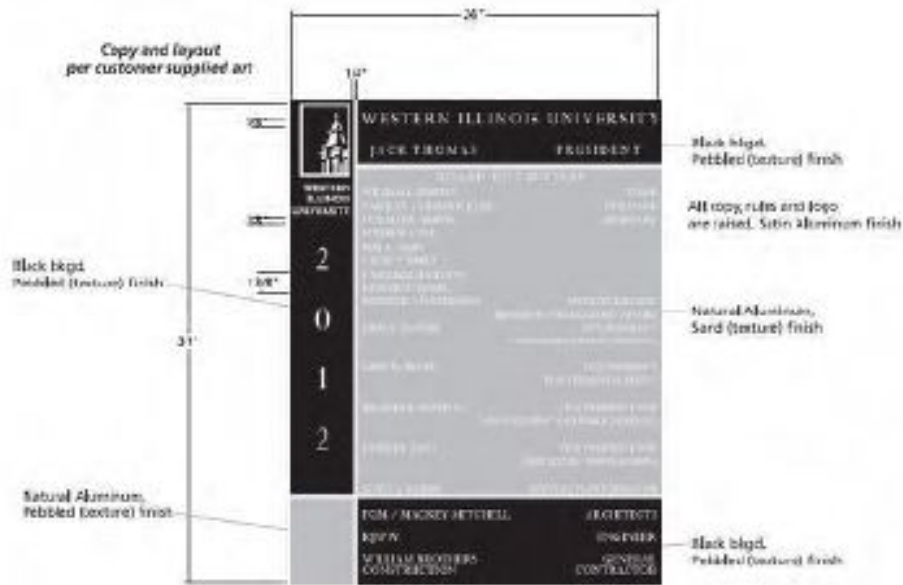


Walnut board with
Bronze plaque

C. DEDICATION BUILDING PLAQUE

1. After the construction of a new building on campus, there shall be a cast aluminum dedication building plaque furnished and installed by the General Contractor.
2. The dedication plaque is a cast aluminum plaque 24"x31" with a black background and pebbled (textured) finish.
3. All copy, rules and logo are raised, Satin Aluminum Finish. Typestyle shall be "Perpetua Regular".
4. WIU Sherman Hall Bell Tower Logo to be located in upper left and corner of plaque.
5. Final design is to be approved by the WIU Project Manager before install.
6. Type should include the following:
 - a) President of Western Illinois University
 - b) Board of Trustee Members
 - c) Provost and Vice President for Academic Affairs
 - d) Vice President for Administrative Services
 - e) Vice President for Student Services

- f) Vice President for Advancement and Public Services
- g) Vice President for Quad Cities and Planning
- h) Facilities Management Director
- i) Design Architect(s)
- j) Engineer
- k) General Contractor



X. Signage Guidelines

The following section will convey to design professionals the University's expectations for interior and exterior signage requirements.

A. EXTERIOR SIGNAGE REQUIREMENTS

1. Each building on the campus of Western Illinois University is required to have at least one exterior building sign placed outside of the building. The design professional shall include an exterior building sign as part of the contractor's expense for any new construction. The sign must be easily visible to all pedestrian and vehicle traffic.
2. Standard panel size for exterior building signs is 60" x 38". Panels are 0.090" aluminum faces.
3. Exterior building sign will be accommodated with (2) 1 ½" half round aluminum posts.
4. All signs should be mounted in a cylindrical concrete footing approximately 42" below grade.
5. WIU logo and logotype applied from [V1] Avery A6470 Berry vinyl. Vinyl is to be reversed cut to allow panel color to show through.
6. Panel and posts to have [P1] SC-906 painted finish – cool gray.
7. Any text is to have modified Perpetua Std. copy from applied [V2] 225-12 black vinyl.
8. See WIU Project Manager for additional details.



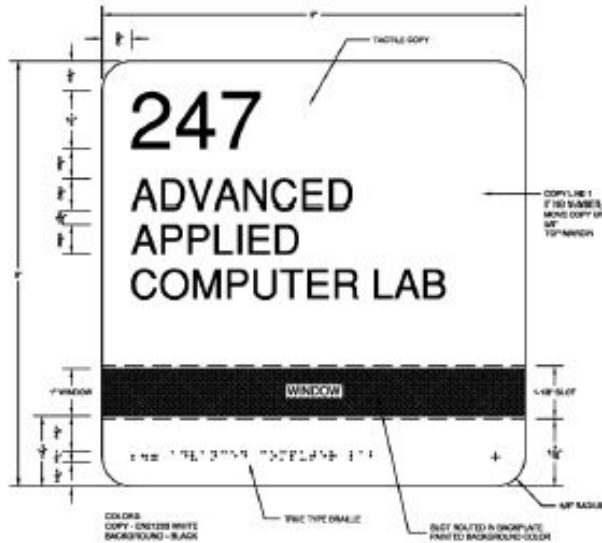
B. INTERIOR SIGNAGE REQUIREMENTS

1. GENERAL MATERIAL REQUIREMENTS:
 - a) Signs shall be cast acrylic sheet. Cast methyl methacrylate monomer plastic opaque sheet in colors and finishes as selected by the design professional and WIU Project Manager.
 - b) Plastic laminate: High-pressure plastic laminate engraving stock with face and core piles in contrasting colors, in finishes and color combinations as selected by WIU Project Manager from manufacturer's standards.
2. Fabrication
 - a) Raised copy signs shall conform to tactile sign requirements of ADA and ANSI A117.1. Letters and numbers shall be raised a minimum of 1/32"; upper case characters used exclusively; typeface shall be Sans Serif or Simple Serif type lettering, accompanied with Grade 2 Braille. Raised characters shall be between 5/8" and 2" in height.
 - b) Pictograms shall be accompanied by equivalent verbal description placed directly below the pictogram, accompanied by Grade 2 Braille. Border dimension of pictogram field shall be a minimum of 6".
3. Unframed Panel Signs; Room Identification
 - a) Provide unframed panel signs with square edges mechanically and smoothly finished; corners shall be rounded to manufacturer's standard radius.
 - b) Room identification signs shall have bottom insert sized as shown on signage schedule, with a .080 matte clear acrylic laminated to a .030 vinyl filler.
 - c) Unframed panel signs shall be approximately 3/16" thick.
 - d) Identification panel sign sizes with raised copy shall be 6"x9" or 9"x9" with bottom insert as required.

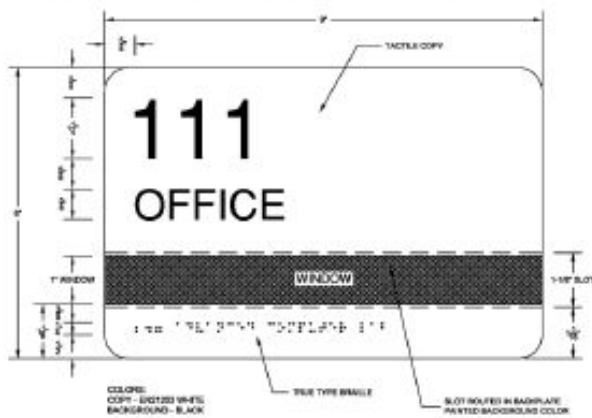
Sign Type 1B (6"x9" ID Plaque with No Insert)



Sign Type 1C.1 (9"x9" ID Plaque with 1 Insert)



Sign 1C (9"x6" ID Plaque with 1 Insert)



4. Acceptable Products

- a) Subject to compliance with requirements specified, provide signs from one of the following manufacturers:

Manufacturer	Identification Signs	Directional Signs
Andco Industries	PME 1000 Series	800-8 Series
ASI Sign System	Intouch Series	SPC Series
Nelson Harkin	TS 250	IS 100
Spanjer Brothers	Special MIS	Subsurface Sign
Poblocki & Sons	TT410 TufTac	SWP, NGA 16-PA18

5. Installation

- a) Install panel signs level, plumb and at heights indicated, with surfaces free from distortions or other defects in appearance.
- b) Mounting location and height of panel signs shall be as follows:
- (1) Identification signs and exterior signs shall comply with ADA Guidelines 4.30.6 – Mounting Location and Height
 - (2) Directional signs shall be mounted in locations and at height as directed by the design professional.
- c) Install panel signs with adhesive or other system recommended by manufacturer and applicable to specific project conditions.

6. Cleaning and Protection

- a) At completion of installation, clean soiled surfaces in accordance with manufacturer's instructions.
- b) Protect units from damage until acceptance by WIU Project Manager.

7. Schedules

- a) Signage scheduled shall be as shown similar to the following:

Room/Area	Sign Type	Text -- line 1/line 2	Quantity
01	1B	RECEPTION	2
02	--	--	--

Appendix

The following items will be considered a part of this document. It is the design professional's responsibility to make sure that they are in possession of the most recent versions of the documents listed below.

1. The most recent Section 16742 WIU LAN Standards,
2. Western Illinois University Construction Codes
3. FP&C Review Comments