

## Table of Contents

Table of Contents.....	0
Requirements Common to All Disciplines and Projects.....	1
A. Safe Access.....	1
Roof and Building Envelope .....	1
Maintenance Access Plan for Hazardous Spaces .....	1
B. Equity .....	2
1. Accessibility and ADA Compliance .....	2
2. IT Accessibility.....	2
3. Gender Neutral.....	2
C. Coordination .....	2
D. Internet of Things (IoT) / Operational Technology (OT) and Connected Digital Systems .....	3
Background Information:.....	3
Design process and information:.....	3
E. Preferred Manufacturers.....	4
F. On Which Systems Must You Train Us?.....	5
1. Worker Safety.....	5
2. Equipment .....	5
G. What We Expect for System Redundancies.....	5
1. Research Buildings.....	5
2. Classroom / Office Buildings.....	5
H. Utility Locates .....	5
I. Commissioning.....	6
J. Major Renovations.....	6
K. Record Drawings .....	6
L. Sustainability.....	6
M. Security Assessment .....	7
N. Closeout Documents.....	7

# Requirements Common to All Disciplines and Projects

---

## A. Safe Access

### Roof and Building Envelope

All new buildings, major renovations, and roof replacements shall provide a new or updated Safe Access Plan following the [EH&S Safe Access and Maintainability Standards](#) for both roof and envelope safe access. The Safe Access Plan shall be initiated during the design of the building envelope system, and shall be submitted to the UW Facilities Safety Department and Engineering Services for review. The Safe Access Plan shall be finalized through the completion of the project design phase. All new building fall safety systems shall implement "passive fall protection" (i.e. parapets, railings, guardrails, etc) of 42" minimum and shall provide at least 12ft wide unobstructed access for a 35,000lb lift at minimum at the building exterior perimeter for envelope access. Any deviation from this standard (i.e. life lines, roof anchors, and/or davit systems) shall be submitted as part of a FDS Variance Request. Roof anchors may be required in addition to "passive fall protection" to provide over-the-side envelope access. All proposed roof anchors, davits, lifts, etc shall be included in the Safe Access Plan. Major renovations and roof replacements may require a combination of the systems noted above to provide roof and envelope safe access. All fall arrest and safe access design shall adhere to the Fall Protection Program Manual PDF on the [EH&S Fall Protection webpage](#).

Coordinate building envelope maintenance equipment with UW Facilities Equipment Operations Shop: including but not limited to swing stage anchors/loads and fall arrest anchors, etc. at pre-design or like phase to accommodate equipment that is often used to drive around the building to perform maintenance.

### Maintenance Access Plan for Hazardous Spaces

Do not install equipment in difficult to access locations. If unavoidable, the installation of equipment in challenging-to-access spaces (such as atria, high ceiling areas, or confined spaces) must have a "maintenance access plan" included in the design documents and details. The plan must be reviewed and approved by the maintenance and repair staff at ES and UW shops.

The plan should note at minimum the following: potential hazards, hazardous areas and a plan to mitigate safety risks in these areas, tasks to be performed in these areas, necessary equipment, and the responsible party for purchasing and storing equipment. A JHA template must be filled out before ordering equipment, with the Shop responsible for maintenance, and submitted with Closeout Documents. A link to access and download the JHA template can be found on this [Job Hazard Analysis site](#). Additional JHA examples can be provided upon request.

Some examples of proper safe access design:

Locate equipment and accessories above and in ceilings such that ladder placement avoids interference from casework, lab benches, sinks, adjacent walls, or lab equipment. Give consideration to ceiling tiles immovable due to sprinkler heads, light fixtures, or other ceiling mounted devices.

## B. Equity

### 1. Accessibility and ADA Compliance

Contact Engineering Services Architect

### 2. IT [Accessibility](#)

### 3. Gender Neutral

Contact Engineering Services Architect and refer to the [Gender Inclusive Restroom Guide](#).

## C. Coordination

The following are some common examples of coordination needs on a project. Please note that this list is not exhaustive, and Design and Construction Professionals shall evaluate what types of coordination may be needed on a project during the design and construction phases.

- 1. Architectural with All Trades:** e.g. envelope details and repair/replacement strategy; curtain walls containing electrical / mechanical equipment; provide base line for the City of Seattle (COS) [Building Tune-Up Ordinance](#).
- 2. Structural with All Trades:** e.g.: penetrations of structural components by other trades; fall protection; roof hoist for buildings without elevators; equipment ramps for curbs on roofs.
- 3. Civil and Mechanical:** e.g.: backwater valve required due to height of next upstream manhole; point of connection elevations for water, storm and fire protection testing.
- 4. Civil and Electrical:** e.g.: exterior gravity drainage for site features that may transmit water into a building or downstream devices.
- 5. Mechanical and Electrical:** e.g. short-circuit current ampacity rating of mechanical equipment; sizing of transformers serving devices commanded to start at the same time by building automation system; specialty fire protection systems; harmonic mitigation for systems with VFDs; floor drainage/protection for electrical rooms that may be compromised by mechanical system leakage; permanent wiring labeling; metering system accuracy from field device to the Smart Metering cloud.
- 6. Congested Spaces:** Provide “study” type building sections to illustrate how the installed work of all the disciplines fits into congested spaces. An example would be to show how the structure, fireproofing, ceiling, ductwork, cable trays, sprinkler piping, etc. fits into a lab corridor space using the available floor-to-floor height. Show how the layering of the mechanical and electrical systems are accessible for maintenance and repair, etc.
- 7. Structural, Mechanical, and Electrical:** Vibration, noise, & exhaust – Careful consideration must be taken when determining the location of equipment that produces noise, vibrations and exhaust. Products or processes that create hazardous fumes, or excessive or offensive noise may be restricted.

## D. Internet of Things (IoT) / Operational Technology (OT) and Connected Digital Systems

### Background Information:

Operational Technology (OT) is an area where facility operations and information technology meet. This is accomplished through the incorporation of digital (Information Technology) features into traditional building and utility systems. OT forms the management and monitoring backbone of facility (HVAC, lighting, etc.) and utility (metering, natural gas, etc.) systems making it a key component of those critical systems. Operational Technology allows facility professionals to monitor and reduce energy usage, control systems remotely, receive automated system alerts and much more. Due to these benefits, the rate at which OT, also called Internet of Things (IoT), devices are deployed across campus is increasing rapidly.

While these systems and devices have the potential to bring a lot of value to the UW-built environment, if they are not thoughtfully selected, procured, deployed, and managed, they can create cyber security risks at the University. In addition, there can be negative consequences for system operations and performance. As it pertains to UW Facilities - there is a specific subset of OT devices & systems that are regularly included in newer buildings (HVAC, Light, Metering, etc.). The timely and accurate configuration of these IoT/OT systems and devices is critical for the operation, monitoring, maintenance, and support of these building and utility systems.

### Design process and information:

During the design phase of capital projects, documentation to track IoT/OT building automation systems and devices shall be obtained by filling out the specified columns in the [Early Building Services \(EBS\) sheet of the UW-IT Outlet Schedule spreadsheet](#). The template linked is an example of this sheet. IP addresses for IoT/OT devices will not be issued without this information.

The EBS sheet shall be updated when IoT/OT systems and devices for buildings are introduced and added, during the design, construction, and commissioning phases of the project.

The information required in the EBS shall include the following:

- Make and model of the IoT device
- MAC address of each device.
- IP address assigned by UW Facilities OT team
- The location of each installed device, including the room number
- The location of the associated MDF or IDF room which supports the allocated network port
- Login credentials
  - Notification if device login credentials were changed from the default username/password

- Confirmation that default or changed credentials were delivered to UW Facilities OT Team
- Delivery of the manufacturer's user guide/instruction manual for the device
- Vendor job number (if it is different than the UW Facilities Project Delivery Group (PDG) number).
- BACnet Device ID\*

The following information not recorded in the EBS sheet shall also be provided:

- Securely delivered default or changed login credentials to the UW Facilities OT Team
- Signed Data Processing Agreement (DPA) for the IoT/OT system or device returned to UW Procurement (if necessary).
- A list of third-party services used by the IoT/OT system or device, and their Signed Data Processing Agreement (DPA) returned to UW Procurement (if necessary).
- General Availability / Sale (GA) date w/ OEM warranty information delivered at closing.
- The following is a list of general requirements for IoT/OT systems and devices:
  - The latest, stable and compatible firmware version for the devices must be installed.
  - The system or device being installed must be of an approved device type/model as specified in the respective UW Facilities design specifications.

\*BACnet should be disabled by default unless it is needed. If BACnet is needed, the provisioning of a BACnet Device Instance ID shall be coordinated with the UW Facilities OT Team and the UWF Environmental Control Systems Manager (ECSM) (Shop 69, 206-685-8869 or 206-543-4208)). The use of Device Instance IDs not provided through coordination with the UW Facilities OT Team and the ECSM is prohibited.

Fill out the EBS sheet of the Outlet Schedule provided by UW-IT for the information above and submit all close-out documents at the project's completion.

## E. Preferred Manufacturers

In order to predict service expectations for equipment based on changing technology and life cycle limitations, Engineering Services has summarized a [Preferred Manufacturer List](#). Manufacturer requirements for central utilities systems and UWMC are provided on the [CEUO Metering & Monitoring Specifications](#) and the [UW Medical Center specs](#) respectively.

Spare parts inventories, prior experiences of the University, and staff training on the operation and maintenance of sophisticated equipment may restrict the list of suppliers to three or less, even though more suppliers with similar equipment may exist. Typical industry standard equipment may not always be appropriate for use on University projects.

Any components or parts with lead times exceeding 8 weeks and/or requiring bulk quantity batch orders shall have additional attic stock provided per the direction of the UW FM zone manager.

## F. On Which Systems Must You Train Us?

The following are some common examples of coordination needs on a project. Please note that this list is not exhaustive, and Design and Construction Professionals shall evaluate what types of coordination may be needed on a project during the design and construction phases.

### 1. Worker Safety

- a. Access for equipment above fixed equipment/furniture – demonstrate with equipment used for installation.
- b. Contractor Lockout Tagout Procedures
- c. Removal of large or heavy equipment through designed pathways.
- d. Sampling of structural design elements – e.g. removal of rooftop membrane and heavy equipment mounted on the roof; fall protection pull test; fall protection means for future PV installations.

### 2. Equipment

- a. Demonstrate equipment location as-builts – fire dampers; room lighting controllers; critical BAS sensors
- b. Demonstrate baseline Building Tune-Up verification.
- c. Building Automation System
- d. Lighting Control System

## G. What We Expect for System Redundancies

### 1. Research Buildings

- a. Redundant mechanical and electrical equipment
- b. Redundant sources to meet UW lockout / tagout requirements

### 2. Classroom / Office Buildings

- a. Ability to meet mechanical and electrical programming needs for each department.
- b. Redundant sources to meet UW lockout / tagout requirements

## H. Utility Locates

All projects are to include drawing and specification notes to indicate that the Contractor shall notify the Utility Notification Center (811) at least two (2) to ten (10) full working days before digging. See Section N. Ground Disturbance and Utility Locates in the [Civil Design Standards](#) for the process overview and instruction.

Note that the University maintains records online for designers to research the University utility system at their leisure and generally from their office. This is intended to limit the use of the 811

system for design purposes. See the “Record Drawings” section below for an explanation of this system and how to gain access.

## I. Commissioning

Commissioning plans must include all items to be commissioned, with all systems and equipment requiring verification listed. The Commissioning plan must be submitted to and approved by Engineering Services prior to the first inspection. The commissioning agent shall share the functional performance test scripts with ES prior to execution. ES must receive invitations to witness all performance tests along with respective maintenance shops, with a minimum of 1 week notice. See respective discipline-specific commissioning requirements (i.e. Mechanical, Electrical, Life Safety Alarm Systems, etc.).

## J. Major Renovations

Include an evaluation for building system renovation projects which describes the condition of the building systems, variances from present codes, and identifies spare system capacity or system deficiencies and opportunities for improving energy efficiency. The design team’s mechanical, electrical, civil, structural, and architectural disciplines participate jointly in this evaluation.

The abandonment of existing equipment and material in place is not acceptable. Remove all decommissioned equipment and components.

## K. Record Drawings

The University maintains a record drawing system, [Docfinity](#), that documents the overall utilities, as-built drawings of the individual systems, and building connection points, just to name a few. This record drawing library can be accessed online, and access to this system is granted through the UW Project Manager for the duration of individual projects.

Engineering Services can assist with navigation of DocFinity. Contact the UW PM for access rights to the drawings needed.

## L. Sustainability

The University of Washington is a leader in sustainability and committed to implementing best practices through environmentally responsible construction for every new building and major capital renovation, projects greater than \$5M. The UW Green Building Standard was established and the following performance requirements were developed for the facilities.

- LEED Gold certified is the minimum target using the most current LEED standard.
- Design to reduce energy use with a minimum threshold of 15% more efficient than local city code.
- Using current code as a baseline, design to achieve at least 50% reduction for indoor and outdoor potable water use.

- Additional energy performance criteria can be found under the Energy Conservation and other discipline sections of the Design Standard.
- All appliances (clothes washers, dishwashers, ice makers, refrigerators, etc.) should be energy star rated.

The University is committed to sustainability at a leadership and policy level as stated in the following -

- [Climate Action Plan](#), 2009
- [Executive Order No.13](#), 2012
- [Campus Master Plan](#), 2019
- [Sustainability Action Plan](#), 2020
- [STARS Reporting](#) Ongoing (*developed by the national Association for the Advancement of Sustainability in Higher Education*)
- [Salmon-Safe](#) standards

The State of Washington established greenhouse gas (GHG) emission reduction goals for state agencies, and requires GHG reduction by 15% from 2005 levels by 2020; and reduction by 45% from 2005 levels by 2030. The University also participates in, or is a member of a variety of organizations. Please refer to the following website for more information:

<https://green.uw.edu/dashboard/awards>, which design should take into consideration. For more information about what organizations' designs should be in alignment, please contact UW Sustainability ([sustainability@uw.edu](mailto:sustainability@uw.edu)), or a University Representative.

## M. Security Assessment

Prior to design of a project, the UW Owner's Representative and Design Team shall reach out to UW Police at [uwpolice@uw.edu](mailto:uwpolice@uw.edu) to do a project security assessment (see below) to incorporate into the scope of the project. Any items not included in the scope of work should be sent to [uwf-am-pm@uw.edu](mailto:uwf-am-pm@uw.edu)

UWPD Project Security Assessments include but are not limited to -

- Project security elements of the design (CPTED review; Crime Prevention Through Environmental Design)
- Identify available security and safety integration elements (i.e. security detection and alerting devices; and/or security cameras, and/or security barriers, etc..)
- Identifying available safe-locations, able to meet criteria as Safe Room(s) and/or Safe Haven status.

## N. Closeout Documents

At the end of a project, ensure that the documents in the Project Closeout Documents Checklist are submitted within one month of substantial completion.