

Division 28

Security Systems

DESIGN GUIDE

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Company

PREPARED FOR:



Central Washington University

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1 Preface

1.1 Introduction

- A. The Security Systems Design Guide (SSDG) is written to communicate the requirements of Central Washington University (CWU) for the design and installation of access control systems, intrusion detection systems and video surveillance systems at CWU facilities.
 - The SSDG is written for an audience of Architects, Engineers and Designers who are responsible for the design of new or remodeled facilities for CWU where security systems currently exist or will be installed.
 - It is also intended for other low voltage telecommunications Contractors installing security systems at CWU facilities.
 - This document also applies to infrastructure designed and installed by CWU staff, when a formal design is not developed.
- B. Security systems designed for CWU are expected to support and integrate voice, data, and video telecommunications with common media (fiber optic and unshielded twisted pair (UTP) copper cable).
- C. It is the responsibility of the security systems Designer to coordinate with the other Designers on a project (architectural, electrical, door hardware, etc.) to determine that other systems are both compatible with and complementary to the security systems. It is critical to coordinate between disciplines during the design phase of a project, rather than making adjustments in the field during construction.

1.2 Guiding Principles

The overall guiding principles for security systems at CWU are:

- Deter malicious acts.
- Increase safety.
- Mitigate risk.
- Prepare for emergencies.
- Strengthen tamper resistance.
- Provide content and information that has post-event evidentiary value.



1.3 Standards and Guidelines

- A. CWU subscribes to the principles and guidelines published by International CPTED Association (ICA). The ICA website (<https://cpted.net/>) states: “The international movement to reduce and prevent crime through urban design is called Crime Prevention Through Environmental Design (CPTED).” These principles are the basis of the industry standard ISO 22341:2021(en) *Security and resilience — Protective security — Guidelines for crime prevention through environmental design*. Architects and engineers designing facilities for CWU shall incorporate the CPTED principles and guidelines in each project. The 1st Generation principles of CPTED are specifically focused on architectural methods of reducing opportunities for crime.
- B. CWU has adopted ANSI/BICSI 007-2020 Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises. Architectural and engineering consultants shall design facilities for CWU that comply with ANSI/BICSI 007-2020 as well as with the requirements of this document.
- C. Compliance with the following two UL standards is also required:
 - UL 294 – The Standard of Safety for Access Control System Units
 - UL 1076 – The Standard of Safety for Proprietary Alarm Units
- D. CWU has prepared a document titled “CWUR 7-30-150 Closed Circuit Television and Cameras” discussing the University’s practices for video surveillance. The SSDG is written in compliance with this document, and any requests to depart from the SSDG (see Section 2.4.3 - Alternative Design Request (ADR)) must still comply with CWU’s practices.
- E. Security infrastructure shall fully comply with the current CWU SSDG, CWU CWU Telecommunications Design Guide (TDG), and the National Electrical Code (NEC).
- F. Security systems shall be designed for construction using materials from the current product lines of the manufacturers upon which CWU has standardized, including CBORD, Schlage, Von Duprin, Verkada, Corning, and CommScope.
- G. The Designer is required to incorporate only the manufacturers listed in this document into the design (unless otherwise directed by CWU) and to design systems that will be suitable for the use of products from these manufacturers. The construction documents shall require that the Security Integrator’s installation workmanship fully comply with the current installation requirements from the manufacturers of these products.



1.4 Document Intent

- A. The SSDG is intended to be used in conjunction with the industry standards and guidelines listed above in order to reinforce selected content as well as highlight any restrictions and/or limitations that are specific to CWU's requirements.
- B. The SSDG is not intended to serve as a master specification nor for stand-alone use on design build projects. This document should serve as a guide for making standards-compliant design decisions that, in due course, will be reflected in construction drawings and specifications for a project.
- C. Any request to deviate from the requirements of the National Electrical Code will not be accepted. The Designer shall seek approval for designs that are not consistent with CWU SSDG requirements. Requests to deviate from industry standards or CWU design solutions will be considered on a case-by-case basis by the CWU Security Systems Manager (see Section 2.4.3 - Alternative Design Request (ADR)).

1.5 Document Structure

The SSDG is organized in the following sections:

- 1. Preface
 - 2. Project Procedures
 - 3. Security Equipment
 - 4. Security Applications
 - 5. Construction Document Content
- A. The **Preface** (this section) describes this document, its intent, and its relationship to industry standards, practices, and the various audiences affected by the document. It also describes how to use this document.
 - B. The **Project Procedures** section discusses the activities that should occur during each phase of a project.
 - C. The **Security Equipment** section describes the devices that serve as components in Security systems at CWU facilities.
 - D. The **Security Applications** section describes how the components introduced in the Security Equipment section will be deployed in specific room types.
 - E. The **Construction Document Content** section describes the content that is required in a complete set of drawings and specifications.



1.6 CWU Personnel

- A. There are several defined CWU personnel roles referenced in this document. The Designer shall interact with these individuals as direct points of contact:
- **Capital Planning Director (CPD)** – overall responsibility for project management, oversight, and budget.
 - **Capital Planning Project Manager (CPPM)** – assigned by the CPD to run and manage the project and administer the budget.
 - **Electrical Power Lighting & Systems Manager (ELSM)** – assigned by the CPD to serve as the Owner’s subject matter expert for the electrical power, lighting, and systems aspects of the project.
 - **Space Allocation & Ergonomics Manager (SAEM)** – assigned by the CPD to serve as the Owner’s subject matter expert for ergonomics and be responsible for space allocation decisions in coordination with the Program representatives who will use each space.
 - **Room Numbering & Signage Manager (RNSM)** – assigned by the CPD to be responsible for room numbering and room signage for the project.
 - **Security Systems Manager (SSM)** – assigned by the CPD to serve as the Owner’s subject matter expert for the security systems for the project.
 - **University Police and Public Safety (UPPS) Representative** – assigned by the Chief of Police to serve as their representative to guide the design of security features that will function within the overall campus security plan.
 - **Information Services Manager (ISM)** – assigned by the CPD to serve as the Owner’s subject matter expert for the information technology aspects of the project, including telecommunications/ICT features.
 - **Record Drawing & Documentation Manager (RDM)** – assigned by the CPD to be responsible for managing the record drawings, as-built drawings, BIM content, and operations & maintenance (O&M) content for the project.
 - **Auxiliary Standards Manager (AUXM)** – assigned by the Director of Housing Facilities within Housing and Residence Life to serve as their representative for projects that serve their organization.



1.7 Copyright

Summit Engineering & Consulting retains the copyright for this document. Central Washington University is authorized to edit and adapt the document.

Summit Engineering & Consulting has authored similar documents for many other organizations. The document is intended (in part) to describe best practices that are found in some segments of the industry. As a result, portions of this document are similar to comparable content in documents previously prepared by Summit Engineering & Consulting for other organizations. This document does not contain any information that is proprietary or confidential to other organizations.



2 Project Procedures

The Project Procedures section contains guidelines for architects, engineers, and security systems designers regarding the procedures that CWU requires for projects that include security systems. This applies both to projects that primarily entail security work (such as campus security upgrade projects) as well as to architectural projects and other work (such as a new building or campus) that include security systems in the project.

This section is not intended to supersede the requirements in the *State of Washington Conditions of the Agreement or the Instructions for Architects and Engineers*, but rather to complement them, providing additional requirements that apply specifically to security system design projects at CWU facilities.

It is intended that the requirements in this section be considered contractually binding for professional design firms providing security design services.

2.1 Designer Qualifications

For the purposes of this document, the term “Designer” shall mean an engineering professional who is competent in the design access control systems, intrusion detection systems and video surveillance systems, and experienced with the manufacturers upon which CWU has standardized its existing systems.

It is desirable that the Designer have one or more of the following qualifications:

- Professional Engineer (P.E.) in the electrical engineering field
- RCDD certification from BICSI
- Video Security Systems Designer Level II as certified by NICET (<http://www.nicet.org>)

A competent and experienced Designer will have the following minimum qualifications:

- The Designer shall have a minimum of 5 years of experience in the design of security systems.
- Experience not directly related to the design of security systems, such as sales and/or marketing, project management, or installation experience, is not an acceptable substitute.
- The Designer shall demonstrate that they have designed or have had personal design oversight of a minimum of five projects similar in size and construction cost to the current CWU project.
- The Designer shall be independent from and unaffiliated with any manufacturer associated with the security equipment industry.
- The Designer shall be knowledgeable about the applicable industry standards. See Section 1.3 - Standards and Guidelines.

2.2 Design Review Process

As noted in Section 2.5 titled “Procedures Related to Project Phases,” the project documents will pass through the design review process at the end of each design phase



with follow-up reviews when necessary. These requirements are in addition to those contained in the *State of Washington Conditions of the Agreement and the Instructions for Architects and Engineers*.

The following steps correspond to the numbered activities shown on the Design Review Process diagram below:

Each time a review is required, the complete project documents set (drawings and specifications for all disciplines involved in the project) shall be provided to the SSM.

It is essential that adequate time be provided for the review process before proceeding to the next phase of the project. It is also important that any resulting review comments be addressed by the A&E Design Team.

The Designer shall work with the prime consultant, the CPPM, and the SSM to ensure that adequate review time is provided.

The Prime Consultant shall be responsible to determine that the review process is conducted in accordance with CWU's requirements and shall participate in the review process to determine that the review comments are satisfactorily addressed.

2.2.1 INDEPENDENT REVIEW CONSULTANT OR OWNER'S REPRESENTATIVE

CWU might elect to hire an independent review consultant or Owner's Representative to assist with the review process or other consultation on the project. This consultant will not perform any design services. All resulting direction to the Design Team shall come from the CPPM through normal channels.

2.3 General Procedures

2.3.1 PROCUREMENT AND INSTALLATION

Early in the project the Designer shall inquire with the CPPM to determine which procurement method will be used for the project and receive guidance about the project document structure and content that will be appropriate for this method.

The Designer shall also inquire about whether the security system scope of the project will be handled as a bid alternate. This is sometimes desired for budget accounting purposes and other times for bid protection purposes. It is important to consider whether the conduits and boxes to be installed by an electrician should remain in the base bid while security system wiring and equipment can be designated as an alternate bid.

2.4 Architect/Engineer Teams

It is imperative that the security design be incorporated during the preliminary architectural design phase. To accomplish this, the architects and engineers on the Design Team shall work closely with the designated SSM, ISM, and CPPM from the beginning of the project.



2.4.1 CROSS-DISCIPLINE COORDINATION

Successful security projects require frequent, thorough design coordination between the disciplines involved in the project. The Designer shall be primarily responsible to coordinate the security requirements and design features with the designs produced by the other Designers on the project.

At a minimum, the following aspects of the design shall be coordinated:

2.4.1.1 DOOR HARDWARE

- Door strikes, latch retraction features in panic bars, electrified hinges or power transfer devices, etc. need to be appropriately specified to cooperate with the access control hardware.

2.4.1.2 DOOR FRAMING AND STORE FRONT MULLIONS

- Conduits and boxes are required to route cabling to and through door frames and store front mullions to operate the door hardware and access control features at each opening.
- Card reader devices need to be coordinated with the mounting location, which can be a stud-wall location or attached to store-front mullions. Different card reader devices are intended to be used for these different mounting locations.

2.4.1.3 CEILINGS

- Ceiling-mounted motion detection sensors and video surveillance cameras, with their associated conduits, boxes, and cabling in congested areas (HVAC ductwork, plumbing, electrical, etc.).

2.4.1.4 ELECTRICAL

- Power for wall-mounted access control equipment in telecommunications rooms.

2.4.2 CAD FILES

The Designer shall coordinate with the A/E to determine that the electronic CAD files used for backgrounds for the security design are consistent with the CAD file backgrounds used by the other disciplines on the project.

2.4.3 ALTERNATIVE DESIGN REQUEST (ADR)

- A. It is not the intent of CWU to rigidly impose standards on every aspect of a design. Each design is unique and special requirements might lead to situations in which deviations from the standards are warranted.



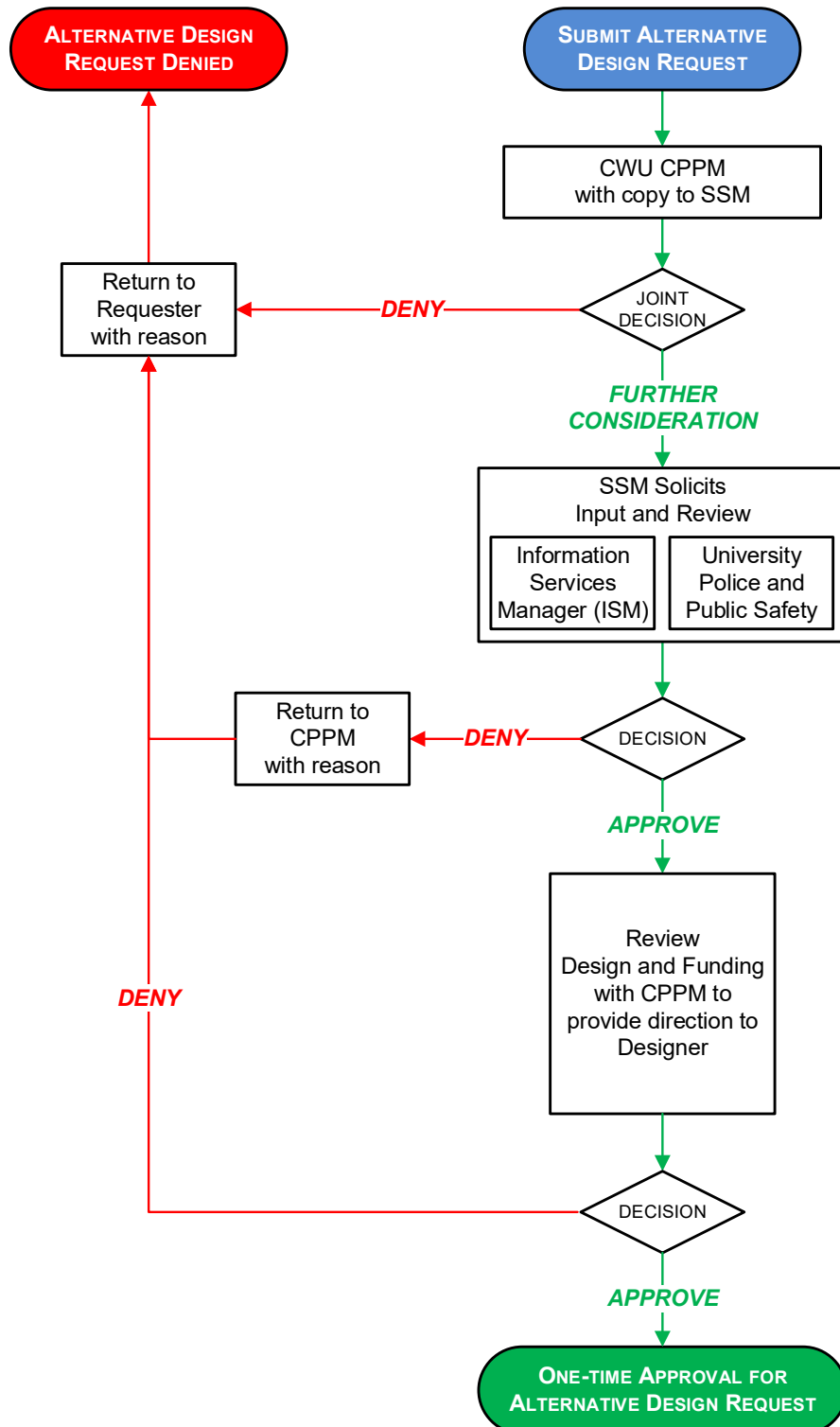
- B. This document identifies specific design solutions that are intended to meet the technical requirements at most CWU facilities. Design issues that are not consistent with the requirements in this document shall require prior approval through the CWU Alternative Design Requests (ADR) process. Requests to deviate from industry standards or CWU design solutions will be considered on a case-by-case basis. Any request to deviate from applicable code requirements or to deviate from manufacturer's warranty requirements will not be approved.
- C. If the Designer feels that a solution that deviates from a given standard is warranted, the Designer shall submit a written Alternative Design Request to CWU. The Designer may, upon written approval from CWU, incorporate the design deviation into the overall design. CWU approval is required on a project-by-project basis, and only for the designated instance(s) within that project. The Designer shall not assume that an approval for one project means that the practice is approved for use throughout that project, nor that it will necessarily be approved for a subsequent project.

The request shall include a complete description of the proposed alternative design identifying:

1. Background information;
 2. The approved design solution as described in this document or in applicable industry standards;
 3. The proposed alternative design;
 4. A list of the guidelines and standards referenced in this document with which the alternative design will not be in compliance, and the effect of non-compliance, both short- and long-term;
 5. The reason for wishing to use the alternative design.
- D. The Designer shall be responsible to determine that the ADR process is properly conducted. For projects where the Designer is not the prime consultant, the prime consultant shall also be responsible to determine that the ADR process is properly conducted, and shall participate in the process (review, acknowledge and address issues) to determine that CWU's requirements are met.



Approval Process for Alternative Design Requests





2.5 Procedures Related to Project Phases

In addition to the requirements contained in the State of Washington *Conditions of the Agreement* and the *Instructions for Architects and Engineers*, Designers of security systems for CWU facilities have the following responsibilities during each project phase:

2.5.1 SCHEMATIC DESIGN AND FIELDWORK

- A. Some projects at CWU campuses might require the Designer to conduct preliminary fieldwork to document the existing equipment, cabling, and applications into which new security systems will integrate. CWU believes that this information is vital to a successful project.

During the Schematic Design phase where field work is required, the Designer shall document the information gathered while onsite:

- Take digital photographs of existing pathways, spaces, equipment, and cabling that affect or are affected by the new project work.

- B. The Designer shall also conduct a needs analysis (involving CWU campus security personnel) to identify and describe the required features and functionality of the new security applications.

- Meet with the UPPS Representative to review the campus security plan and provide new security application features pursuant to the University's security plan objectives.

- C. The information gathered during the fieldwork, combined with the results of the needs analysis, shall be the starting point for Schematic Design of the proposed new work.

- D. Upon completion of the Schematic Design documents, the standard Design Review Process shall be conducted prior to progressing to the Design Development phase.

2.5.2 DESIGN DEVELOPMENT

- A. The Designer shall modify the design documents to address the review comments received during the Schematic Design Phase.

- B. The Designer shall meet with the CWU SSM to review the security equipment and functionality described in this document and also specified in the SSCGS to identify any changes that might have occurred since the documents were published. The design shall reflect the decisions from these discussions.



- C. Upon completion of the Design Development documents, the standard Design Review Process shall be conducted prior to progressing to the Construction Document phase.

2.5.3 CONSTRUCTION DOCUMENTS

- A. The Designer shall modify the design documents to reflect the accepted review comments received during the Design Development Phase.
- B. It is expected that the Designer will expend considerable effort coordinating details between different disciplines during the design process. Non-coordinated pathway/raceway is not acceptable to CWU.
- C. During the Construction Documents phase, the Designer shall obtain the assistance of manufacturer product representatives to review the project specification (adapted by the Designer from the CWU Audio/Visual Construction Guide Specification) to determine that the correct part numbers have been included for each product in the specification.
- D. Upon completion of the Construction Documents, the standard Design Review Process shall be conducted. The Designer shall then modify the documents to reflect the accepted review comments associated with the Construction Documents prior to the Bidding Phase.
- E. Upon completion of the Final Construction Documents, the standard Design Review Process shall be again conducted as described above. The Designer shall modify the documents to address the review comments associated with the Final Bid Documents prior to the bidding phase rather than “by addendum.”

2.5.4 BIDDING

- A. On projects where a pre-bid walkthrough is held, the Designer shall attend the walkthrough and shall discuss any materials and practice requirements that the bidders might find peculiar, or which might affect the bids if such requirements were overlooked. Noteworthy items would typically be requirements that are more restrictive than practices considered acceptable for other commercial projects. The Designer shall consider the following items for inclusion on such a list, as well as any other items applicable to the project:
 - The requirement that new security system applications shall operate similarly to other existing security applications on campus so that instructors will not require re-training to use the systems.
 - The fact that most of the materials specified for use in CWU’s security applications are not designated as “or equal, according to the judgment of



the contractor.” Any material substitutions must be approved in advance by the Designer in counsel with the CWU SSM.

- The requirement that the security system subcontractor must be pre-approved, prior to the bid, and that bids from security system subcontractors who have not been pre-approved will be designated as non-responsive.
 - The fact that CWU’s security standards and specifications are more stringent than electrical installation requirements or the specifications on many other projects.
- B. Approximately ten days prior to the date that bids are due, the Designer shall issue an addendum reiterating the requirement for security subcontractors to have been preapproved. The addendum should also list the names and contact information for any subcontractors who have been preapproved. The objective is that the bidders should receive this finalized list of preapproved subcontractors not less than one week before the bids are due.

2.5.5 CONSTRUCTION OBSERVATION

- A. The Designer shall review the Contractor’s submittals that are required by the Construction Documents. When the Contractor’s submittals include materials or methods that deviate from CWU standards, the Designer shall either:
- Reject the specific materials and methods that do not comply, when the Designer believes that they constitute undesirable solutions.
 - Pursue the ADR process to seek separate approval for each specific material and method that the Designer believes would constitute a better solution.
- B. The Designer shall visit the construction site frequently to observe the construction quality and status. The Designer shall confer with the CWU CPPM prior to proposing services for the project to determine an appropriate site-visit frequency for the project. The site visit frequency will likely change during the construction phase as the security-related activity increases and decreases.
- C. During the site visits, the Designer shall take digital photographs of existing and new pathways, spaces, and cabling, both intra-building and outside plant, that are related to the project. In particular, the Designer shall photograph infrastructure that will later be concealed during construction.
- D. It is the responsibility of the Designer to verify that the Contractor properly labels all cabling (both inside plant and outside plant) during construction. Inadequate or incomplete labeling is not acceptable.
- E. Accurate as-built drawings are considered critical for the efficient long-term operation of CWU facilities. During construction observation visits, the



Designer shall observe and report on the Contractor's progress toward staying current with the as-built drawing notations.

- F. After each construction observation visit, the Designer shall submit a written report describing the observed construction progress. Observations shall be documented in the report with annotated digital photographs and a written description of any problems, a description of the requirements in the Construction Documents, and the resolution to the issues. For each item requiring corrective attention, the report shall describe the following:
- A description of the issue
 - Applicable requirements in the Construction Documents
 - Applicable CWU standards, industry standards, and codes
 - Corrective options available to CWU
 - Designer's recommendation
- G. The Designer shall submit the construction observation reports via email to the CWU CPPM and the CWU SSM as soon as possible following each site visit. The reports shall also be reviewed at the next construction meeting. A timely report submission will aid the Designer and CWU in identifying potential problems early in the construction process.
- H. The Designer shall work with the Owner and the Security System Integrator to coordinate the required training sessions. The Designer shall attend the training sessions for each security system application help the attendees to get their questions answered.

2.5.6 POST-CONSTRUCTION

- A. The Designer shall review the Operation and Maintenance information provided by the Contractor for the security distribution system. The Designer shall verify that information is included for each component in the security system. Upon approval of the content in the Operation and Maintenance information, the Designer shall submit the information to local CWU ITS Media Staff with written documentation indicating that the Designer has reviewed the information and that it appears to meet the requirements in the Construction Documents.
- B. The Designer shall provide record drawings and record documentation to CWU (based on as-built documents that have been "red-lined" by the Contractor). Record documents shall be provided in electronic CAD format where applicable, in addition to requirements put forth by the Designer's contract with CWU.
- C. The Designer shall verify that the security contractor provides the appropriate manufacturer warranty certification documentation to CWU.



3 Security Equipment

This section defines and describes the equipment that shall be used as components in security systems for CWU. The Designer shall design these into the various applications in CWU facilities as described in Section 4. The Designer shall incorporate this content into the construction drawings and specifications.

CWU prefers to consistently use the same equipment from project to project wherever possible to optimize their spare parts management. When a component fails, it is very desirable to replace it with an identical make and model so that the system configuration will work with the replacement device. The manufacturers and equipment models for equipment currently used at CWU are referenced below in each category. The Designer shall:

- Verify that this equipment will be available at the time the building is constructed.
- If this equipment will not be available, work cooperatively with the CWU SSM to select a replacement, preferably from the same manufacturer and product family as the listed equipment.
- Design the systems using this equipment or the CWU-approved equivalent.

3.1 General

Security systems include devices and functions in three categories:

- Access Control
- Intrusion Detection
- Video Surveillance

3.2 Access Control Equipment

CWU has standardized on the CBORD Mercury solution for access control systems. All new access control installations shall implement this solution set and connect to the existing access control headend for the campus.

3.2.1 MERCURY HEADEND HARDWARE

Until the summer of 2022 CWU had standardized upon the CBORD V1000/V100 solution for its access control. However, CBORD recently announced that it is discontinuing the V1000/V100 hardware and are now only supporting the use of Mercury hardware.

As of the writing of this document, CWU has not yet implemented a Mercury hardware solution for access control on campus. Therefore, there are no examples on campus of existing practices that the Designer shall follow. Short of this, the following principles shall guide the design of the Mercury headend hardware:



- Mercury control hardware shall be mounted inside enclosures. The enclosures should be wall-mounted in a designated location in the telecommunications rooms in the building. Coordinate with the Telecommunications Designer to reserve space for the access control headend equipment.
- Provide Panduit fingerduct wireways for wire management.
- Power supply hardware can either be mounted externally to the enclosures or mounted inside the enclosures.
- All electrified locks shall be designed to default to a locked status in the event of a power outage of other failure.

The Designer shall work closely with the SSM to design a solution that is satisfactory to the University, and adjustments to these options will probably be required until the University gains satisfactory experience with options and decides to adopt them as standard practices.

3.2.1.1 ENCLOSURES

It is suggested that the enclosures provide to house the headend control hardware be sized approximately as follows:

- Large (42"x36"x8") for up to 16 doors
- Medium (36"x30"x8") for up to 12 doors
- Small (30"x24"x8") for up to 6 doors

Panels shall be sized and designed to support additional LM or MR devices that might be installed in the future. Discuss the potential for future expansion with the SSM and provide additional fingerduct to support future devices. Reserve space for additional power supply panels that will be required to support additional doors.

3.2.1.2 MERCURY LP INTELLIGENT CONTROLLERS

The Mercury LP intelligent controller boards shall be used as the first level in the access control architecture.

The LP1501 and LP1502 are probably desirable for most projects.

3.2.1.3 MERCURY MR SERIAL IO (SIO) CONTROLLERS

The second level of Mercury control architecture is the MR product line.

The MR50-S3 and MR52-S3 are probably desirable for most projects.

3.2.1.4 POWER SUPPLIES

Access control applications at CWU require the following power:

- 12VDC: LP and MR devices
- 24VDC: electric strikes and motorized latch retraction devices



For most applications, provide separate 12VDC and 24VDC power supply panels.

- 12VDC: Altronix AL1012ULXB with the PD8UL power distribution unit
- 24VDC: Altronix AL1024ULXB with the PD8UL power distribution unit
- 24VDC: Altronix AL1024ULXB with the ACM8I power distribution unit (for daisy-chaining door strikes). See Section 4.2.5.3 - Entries with Three or More Doors for more information about this application.

For very small applications requiring fewer than 8 powered devices, the Altronix EFlow104NB panel with a VR6 Voltage regulator and PDS8 power distribution unit can supply both 12VDC and 24VDC from a single panel.

Power supply panels shall be powered with a 120VAC outlet located very near to the panels. The cord-and-plug assembly shall be kept as short as practical to minimize the likelihood of inadvertent disconnection and keep the installation clean.

Power supply panels shall be located to the side of the wall field, either on the left or right side depending on space constraints and the location of a 120VAC power outlet.

3.2.1.5 PANDUIT FINGERDUCT WIREWAYS

Provide Panduit fingerduct wireways inside the enclosure to manage wire between devices and the power supplies.

Typically, 1", 2" and 3" size fingerducts are adequate for most applications.

3.2.2 LEGACY HEADEND SYSTEMS

For projects involving the minor remodel of an existing building, it is plausible that CWU might wish to preserve the existing V1000/V100 system and that a small number of additional doors might need access control. In most cases, remodel projects should be used to upgrade a legacy system to the new Mercury solution. However, the Designer shall inquire with the SSM to determine if CWU wishes to repurpose salvaged hardware for use in a case like this.

The photo below depicts the arrangement of a legacy system. Any additions to a legacy system shall follow suit.



3.2.3 CARD READERS

Access control with card readers and electrified locks are required at every exterior door except for “emergency exit only” doors. CWU uses two card readers from Schlage/Allegion:

- MTB15: For standard mounting applications with a device box (with a single gang extension ring) behind the card reader.
- MTB11: For narrow mounting applications on a door frame or storefront mullion.

3.2.4 KEYPADS

For the very rare applications requiring a keypad, CWU would use the following combination keypad/card reader device from Schlage/Allegion:

- MTKB15: For standard mounting applications with a device box (with a single gang extension ring) behind the card reader.



3.2.5 DOOR POSITION SWITCHES

Door position switches are required at every exterior door, including “emergency exit only” doors. CWU uses the following door position switch devices:

- Nascom N1178x/ST: for standard recessed mounting applications.
- Nascom SHARK/M: for steel and aluminum U-channel doors.
- Nascom N505AU series: for roll-up vehicle doors.

3.2.6 WIRE

For wiring from the doors back to the headend, CWU uses a composite cable (sometimes called a “banana cable”) with four individually-jacketed and plenum-rated cable sets:

- 18 AWG 8 Conductor Shielded
- 18 AWG 2 Conductor Unshielded
- 22 AWG 4 Conductor Unshielded
- 22 AWG 2 Conductor Shielded

This cable and functional variants are available from the following two acceptable sources:

- Lake Cable Part #: S800021021/CMP-06CAI
- Windy City Wire: FBCOMP5-OSP

Other sources might also be acceptable if their product specifications are equal or better. The Designer shall inquire with the SSM to review other source options.

3.2.7 LICENSING

CWU will provide all CBORD licensing. The contractor shall be responsible to provide the hardware, installation, and configuration of the system.

3.2.8 REQUEST-TO-EXIT DEVICES

CWU typically does not use request-to-exit (REX) devices.

3.2.9 WIRELESS ACCESS CONTROL DEVICES

Hardwired devices are required. CWU typically does not use wireless access control devices. Any application where a wireless device might be necessary must undergo the ADR process (see Section 2.4.3 – Alternative Design Request (ADR)).

3.2.10 ADA ASSIST INTEGRATION

ADA door openers and actuator buttons are used extensively at CWU facilities. Access control shall be integrated with the door openers as follows:

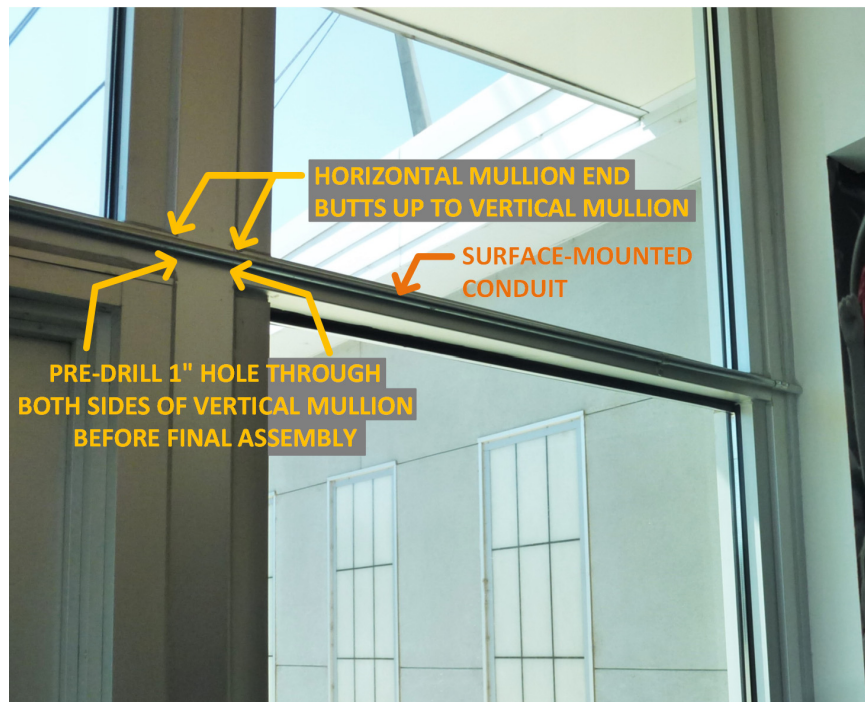


- When a door is locked (requiring a successful card read to open), suppress any ADA button press to prevent the door opener from straining against a locked strike.
- When a door is locked and a successful card read occurs, automatically actuate the associated door opener without requiring an ADA button press.

3.2.11 DOOR FRAME AND MULLION COORDINATION

The security systems Designer shall work with the architect to coordinate conduit pathway into door frames and storefront glass mullions. There are two key details needing attention:

- For double doors with a removable center mullion, do not route any wiring through the center mullion. Instead, use motorized latch retraction so that the electric strike and its wire are not needed in the center mullion. Also, door position switches shall be mounted in the permanent frame, not in the removable center mullion.
- For storefront glass applications, the contractor assembling the mullions shall drill 1" holes through all crossing mullions before final assembly. This will permit future cabling to conveniently route through the mullions, instead of requiring surface conduit. The photo below depicts where pre-drilling is required.



3.2.12 DOOR HARDWARE COORDINATION

The security systems Designer shall work with the door hardware designer to ensure that the following topics are addressed:



3.2.12.1 ELECTRIC STRIKES

Provide the HES 2005M3 SMART Pac III device to reduce current draw after the initial strike inrush current. Verify that the strike will operate with 1A or less at 24VDC.

3.2.12.2 MOTORIZED LATCH RETRACTION FOR PANIC BARS

Verify that the motorized latch retraction device will operate with 1A or less at 24VDC.

3.2.12.3 LATCHBOLT MONITOR

Verify whether latchbolt monitoring on panic bars will be used instead of door position switches.

3.2.13 VEHICLE GATES

CWU currently has very few existing vehicle gates and expects that it will be unlikely to add them in the future. However, the Designer shall inquire with the SSM whether vehicle gates and associated pedestrian gates might be required for a project, or whether gates could be added in the future.

Consideration should also be given to the possibility of providing underground conduits and junction boxes to the vicinity where vehicle and pedestrian gates might be added in the future.

3.3 Intrusion Detection Equipment

Academic buildings at CWU typically do not include intrusion detection systems. However, there are some spaces (such as museums) that contain items that are of high value or irreplaceable. Intrusion systems are used for those spaces within academic buildings.

The following are devices CWU might use in an intrusion detection system:

3.3.1 KEYPAD

See Section 3.2.4 - Keypads for information about keypads that would be used to enable and disable the alarm system.

3.3.2 DOOR POSITION SWITCHES

See Section 3.2.5 - Door Position Switches for information about door position switches that would trigger an alarm system which has not been disabled.



3.3.3 MOTION DETECTORS

CWU has not standardized on a particular manufacturer or type of motion detector.

3.3.4 GLASS BREAK DETECTORS

CWU has not standardized on a particular manufacturer or type of glass break detector.

3.3.5 VIBRATION DETECTORS

CWU has not standardized on a particular manufacturer or type of vibration detector.

3.4 Video Surveillance Equipment

CWU has standardized on the use of video surveillance equipment from Verkada. All new cameras and associated equipment shall be from Verkada.

3.4.1 CAMERAS

CWU has standardized on the use of video surveillance equipment from Verkada. All new cameras and associated equipment shall be from Verkada.

Verkada provides the following cameras that CWU has used in the past:

Camera Type	Dome	Dome	Bullet	Fisheye
Model #	CD52 (Indoor)	CD62 (Indoor)		CF81-E
Model #	CD52-E (Outdoor)	CD62-E (Outdoor)	CB61-E (Outdoor)	(Indoor & Outdoor)
Image Resolution	5 MP	4K	4K	12 MP
Zoom Lens	3x Optical & Digital Zoom	3x Optical & Digital Zoom	3x Optical & Digital Zoom	Fixed
Days of On-board Retention	30 - 365	30 - 90	30 - 90	varies
On-board Storage	256GB - 2TB	512GB - 2TB	384GB - 2TB	512GB - 2TB
Horizontal Field of View	38° to 105° (77°)	41° to 116° (92°)	43° - 95° (83°)	Horizontal FoV: 175°
Vertical Field of View	29° to 77° (68°)	23° to 62° (53°)	25° - 48° (45°)	Vertical FoV: 78°
Diagonal Field of View	48° to 126° (103°)	47° to 136° (106°)	49° - 100° (95°)	180°, 360° or 4-way

CWU is willing to use any of the camera products from Verkada that are appropriate for a particular application.



3.4.2 CAMERA MOUNTS

Verkada provides the following mounting kits:

- Verkada ACC-MNT-1 – Pendant Cap Mounting Adapter Kit
- Verkada ACC-MNT-2 – Mounting Arm Kit
- Verkada ACC-MNT-3 – Wall Mounted L-Shaped Bracket Kit
- Verkada ACC-MNT-4 – Pole Mount Adapter Kit
- Verkada ACC-MNT-5 – Mini Pendant Cap Mount Kit
- Verkada ACC-MNT-6 – Mini Camera Junction Box Kit
- Verkada ACC-MNT-7 – Angle Mount Kit for fisheye cameras
- Verkada ACC-MNT-8 – Pendant Cap Mount Kit
- Verkada ACC-MNT-9 – Pole Mount, 2nd Generation
- Verkada ACC-MNT-10 – Corner Mount

3.4.3 POE INJECTOR

CWU IS provides network switches that support POE+, and it is CWU's preference to avoid using POE injectors. However, there may be some cases where the SSM or ISM might request that POE injectors be provided.

Verkada provides the following POE+ injector:

- Verkada INJ-POE-PLUS

3.4.4 VIEWING STATION

CWU has existing viewing stations (Verkada VX51-HW) that currently meet its needs. However, CWU may request an additional viewing station under the scope of a project.

Verkada currently provides the following viewing station hardware:

- Verkada VX52-HW

3.4.5 LICENSING

CWU will provide all Verkada licensing. The contractor shall be responsible to provide the hardware, installation, and configuration of the system.



4 Security Applications

Security systems shall be designed for a variety of locations in CWU facilities. See Section 3 – Security Equipment for descriptions of the security system equipment described in each application space below.

4.1 General Requirements

4.1.1 ARCHITECTURAL

Architects and engineers designing facilities for CWU shall incorporate the CPTED principles and guidelines in each project. See Section 1.3 - Standards and Guidelines for further information.

4.1.1.1 DOORS, FRAMES, AND MULLIONS

Architects shall coordinate the work of the door hardware consultant, the access control designer, electrical power designers, and their own work to design the openings in the building.

Some door applications need pathways inside the door to route wiring.

Storefront glass applications require wiring to route through the mullions. Architectural details shall require the installer to pre-drill the mullion crossing points as shown in Section 3.2.11 – Door Frame and Mullion Coordination. Pre-drilling all crossing points will facilitate convenient future wiring applications for the life of the building, even if it is not needed on Day 1.

Architects shall work with the Room Numbering & Signage Manager (RNSM) and representatives from the CWU Lock Shop to properly number each room (and the corresponding door numbering) so that this information is accurately shown on the drawings and door hardware schedules across all disciplines.

4.1.2 DOOR HARDWARE CONSULTANT

The Door Hardware Consultant is typically responsible to specify all of the door hardware features, including electric strikes, door opening hardware (panic bars, locks, latches, motorized latch retraction), and power transfer hinges.

The Door Hardware Consultant shall work with the access control Designer to ensure that the door hardware features are properly coordinated with the access control features.

Double doors with removable center mullions shall be designed with motorized latch retraction panic bars or locksets with integrated access control (as opposed to electric



strikes) so that the wiring can be routed through the door hinge into the devices in the door. Removable center mullions shall not have any wiring routed through them.

Integrated locksets shall not be used without approval from representatives of the CWU Lock Shop.

4.1.3 ELECTRICAL

The electrical designer shall provide power circuits for the following applications, in coordination with the access control Designer:

- Power for motorized/sliding doors
- Power and buttons for ADA door opening actuators
- Power for headend power supply panels on wall in each telecommunications room

4.2 Access Control Applications

4.2.1 CBORD CONTACTS

Helpdesk

- (844) GO-CBORD

Bernie Alm

- CBORD Inside Account Representative, Sales
- (607) 330-3931
- bea2@cbord.com

Alex Johnson

- CBORD Account Manager - Integrated Security

Michael Gilbert

- CBORD Account Manager - Integrated Security

Ryan Wagner

- CBORD Account Manager - Integrated Security
- (317) 527-9475
- rpw@cbord.com

4.2.2 HEADEND ACCESS CONTROL PANELS

CWU's current intent is to mount the Mercury hardware inside control panel enclosures and mount them on walls in telecommunications rooms in coordination with the telecommunications design. The Designer shall inquire with the telecom designer and the ISM to determine the wall space that will be allocated to the access control panels.



As of the date of this writing, CWU has not yet established a standard arrangement for the Mercury-hardware based access control panels.

The Designer shall work with the SSM to design the panel layout and contents.

4.2.3 HEADEND ACCESS CONTROL PANELS

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The Designer shall work with the SSM to design the panel layout and contents.

4.2.3.1 ALTERNATIVE DISTRIBUTED ARCHITECTURE

The Mercury hardware can also be installed in a distributed architecture using CAT6A cabling and Power-over-Ethernet+ (POE+) to power the hardware and the door strikes. In this architecture, the Mercury hardware is mounted in boxes above each door. A CAT6A cable runs from the box to the patch panel in the telecommunications room in lieu of the multiconductor "banana" cable.

With the trend toward Internet-of-Things (IOT) devices, this alternative distributed architecture is likely to be the future of access control.

The Designer shall discuss this alternative with the SSM and ISM to determine whether a centralized or distributed architecture shall be used for a given project. Careful coordination with the ISM is required to ensure that sufficient network ports are provided to support this architecture, which typically requires one POE+ network port per door or per pair of doors.

4.2.4 LEGACY HEADEND WALL FIELD

As mentioned above, CBORD has recently discontinued their use of the V100/V1000 hardware. Therefore, the following headend wall field will only be used in rare situations where an existing device has been salvaged from another building and added to an existing headend application. This shall only be done under approval from the SSM.

The headend wall field shall be installed on a wall in the telecommunications room for the floor that it serves. The Designer shall work with the telecommunications designer to reserve wall space for use by the headend equipment.

The headend equipment shall be arranged as shown in the photo in Section 3.2.1 – Mercury Headend.



The Designer shall work with the electrical designer to provide a 120VAC quad power receptacle near the power supply panels.

The CBORD Mercury hardware (LP product line) requires a connection to the University's network. The Designer shall alert the ISM that a network switch port will be needed for this application. During construction, the Designer shall help coordinate the installation of the required patch cord from the CWU-provided network switch to the Mercury LP device.

Provide sufficient Altronix power supplies to support the number of CBORD devices at the headend and the number of door strikes and motorized latch retraction devices in the field.

Provide Panduit finger duct as shown in the photo in Section 3.2.1 – Mercury Headend.

The Designer shall work with the SSM and contractor during construction and commissioning to coordinate the connection to the existing campus CBORD system.

4.2.5 EXTERIOR DOORS

Full access control (electrified lock/strike or motorized latch retraction, card reader, and door position switch) shall be provided for every exterior door except:

- Doors intended only for emergency exit – provide a door position switch only.

4.2.5.1 SINGLE DOORS

The card reader, strike, and door position switch shall be wired to one side (one half) of a CBORD Mercury controller board, and be integrated with an ADA assisted opener (if one is provided) as described in Section 3.2.10 – ADA Assist Integration.

The CBORD Mercury Controller Board can support two full door applications. Therefore, two single doors can share a Mercury Controller Board.

4.2.5.2 DOUBLE DOORS

Door A – The card reader, strike and door position switch shall be wired to one side (one half) of a CBORD Mercury controller board, and be integrated with ADA assisted opener (if one is provided) as described in Section 3.2.10 – ADA Assist Integration.

Door B – Do not provide a card reader. The strike and door position switch for Door B shall be wired to the other side side of the CBORD Mercury Controller Board used for Door A.

4.2.5.3 ENTRIES WITH THREE OR MORE DOORS

Door A – The card reader, strike, and door position switch shall be wired to one set of terminals on a CBORD Mercury Controller Board, and be integrated with an ADA assisted opener (if one is provided) as described in Section 3.2.10 – ADA Assist Integration.



Doors B through X – Do not provide a card reader. The strikes and door position switches for Door B shall be wired to the other side of the CBORD Mercury Controller Board used for Door A. The strike output on the Mercury Controller Board shall be daisy-chain wired to individual relay inputs on the 24V power supply, such that each door strike will be supplied power by an individual power supply output dedicated to that door while being triggered by a single input signal from the Mercury Controller Board. The door position switches shall be wired in series (not parallel) using an external terminal strip mounted near the corresponding Mercury Controller Board, such that any door opening will break the circuit for door-open detection.

4.2.5.4 CARD READER MOUNTED ON EXTERIOR WALL

Provide a device box with a single gang extension ring on the un-secure side of the door, near the right side of the door.

Provide a standard size card reader, currently the Schlage MTB15, mounted in the device box.

4.2.5.5 CARD READER MOUNTED ON MULLION OR DOOR FRAME

Provide a narrow form-factor card reader, currently the Schlage MTB11, mounted directly onto the mullion or door frame.

Some applications may benefit from a metal shield above the card reader to provide some rain shield protection.

4.2.5.6 CARD READER MOUNTED ON BOLLARD

Provide a device box with a single gang extension ring embedded in the bollard, near the right side of the door. This bollard would also be used to host the ADA door opener button with a separate box and conduit.

Provide a 1" conduit from the device box in the bollard, routing inside the bollard, down below the concrete sidewalk, then underground into the building. Finally, route up an interior wall to an accessible ceiling, terminating in the junction box on the secure side of the door. Design a junction box location and conduit route that can be achieved with no more than 3 conduit bends and less than 50 feet of run length.

Provide a standard size card reader, currently the Schlage MTB15.

4.2.6 INTERIOR DOORS

4.2.6.1 STRIKES AND CARD READERS

Doors to the following rooms always require access control (electrified lock/strike and card reader):



- Instructional Spaces
- Office Suite Corridors (not the offices themselves)
- Spaces with high-value contents (inquire with the SSM to identify these spaces)
- Electrical Rooms
- Mechanical Rooms
- Telecommunications Rooms
- A/V Equipment Rooms

Special Applications that always require access control:

- Service Elevators
- Elevator access to rooftop or penthouse

The Designer shall work with the SSM to identify any other doors on a project that should also be provided with access control.

4.2.6.2 DOOR POSITION SWITCHES

Most interior doors do not require door position switches. Interior doors that are intended to lock and unlock automatically on schedule do not require door position switches.

However, door position switches are required at the following doors:

- Electrical Rooms
- Mechanical Rooms
- Telecommunications Rooms
- A/V Equipment Rooms
- Spaces with high-value contents (inquire with the SSM to identify these spaces)

4.2.6.3 SPECIAL CASES

The Designer shall work with the SSM to identify any other special case doors on a project that need access control. Some of these might be applications with different door types including storefront glass, solid metal, solid wood, barn doors, roll-down cage/service counters, vehicle doors, rolling/swing fence gates, etc.

4.2.7 REQUIRED ARCHITECTURE FOR CONDUITS AND BOXES

All conduits and boxes intended for use with the access control system shall be installed by the electrician according to the requirements of Division 27. The security system integrator shall not install the conduits and boxes.

Provide an 8" x 8" x 4" junction box in the ceiling on the secure side of the door. The future of access control is POE-driven door hardware (including the door strike and motorized latch retraction) via a single CAT6A cable to a controller card mounted in a box above each door. An 8" x 8" x 4" box above each door, on the secure side of the door, is required to support



this future access control system architecture, even if initially the box might not be used for this purpose.

Provide a 1" conduit from the device box for the card reader to the junction box. For card readers mounted in a mullion or door frame, this 1" conduit shall route to the mullion and can serve the door position switch also.

Provide a 3/4" conduit from the door frame or mullion to the junction box for the door position switch. This conduit is not needed if the card reader is mounted in the mullion, because the wiring for the door position switch can share the conduit with the card reader wiring.

Provide a 3/4" conduit from the door frame or mullion to the junction box for the electric strike or motorized latch retraction device.

All conduits and card reader device boxes shall be concealed inside the wall or above a ceiling. Approval from the SSM is required if a surface-mounted conduit is necessary. Any exposed conduits and boxes shall be painted to match existing surface.

Also provide a 1" conduit from the 8" x 8" x 4" junction box to the cable tray in the corridor. The composite "banana cable" can run through the cable tray back to the telecommunications room for termination on the CBORD Mercury controller board.

4.2.8 CATEGORY 6A CABLING

All Category 6A cabling intended for use with access control system shall be installed by a certified telecommunications contractor according to the requirements of Division 27. The security system integrator shall not install this cabling.

4.3 Intrusion Detection Applications

4.3.1 GENERAL

Projects at CWU requiring an alarm system for intrusion detection will be rare. However, the following functionality is desired:

- Provide a combination card reader/key-pad device.
- Enabling the alarm system:
 1. First require a valid card read before accepting key presses.
 2. Upon a validated card read, require a key code.
 3. Upon successful key code entry, secure the door strike and enable the alarm.
- Disabling the alarm system:
 1. First require a valid card read before accepting key presses.
 2. Upon a validated card read, require a key code.



3. Upon successful key code entry, disable the alarm and release the door strike.

Collaborate with the SSM and UPPS Representatives to provide security sensors to achieve the intrusion detection objectives.

4.4 Video Surveillance Applications

CWU has the following target objectives for viewing and recording surveillance video:

- Undesirable activities happening outdoors
- Threats approaching a building
- Valuables leaving a building or a room
- Undesirable activities happening in corridors and gathering spaces

The Designer shall work with the SSM and the UPPS to design video surveillance camera applications that contribute to CWU's campus security plan. Appropriate camera mounts and camera devices shall be selected for each application to achieve the desired objectives. See Section 3.4 – Video Surveillance Equipment for camera and mount options.

4.4.1 EXTERIOR CAMERAS

It is typically desirable that exterior cameras be mounted at a height in the range of X to Y feet. This range is a compromise between the following two objectives:

- High enough to reduce the risk of vandalism
- Low enough to view the faces of people in the vicinity of the camera, which might be partially obscured by hats or other obstructions.

4.4.1.1 POLE MOUNT

Always provide a 1" conduit inside every light pole, exiting the concrete base, with a capped stub near the base. The conduit shall be routed up to top of the pole to separately route low voltage wire to a camera location on top. This shall be provided even if a camera is not intended for Day 1 installation. The Designer shall work with the electrical designer to make sure that the low voltage conduit is added to the electrical details for light pole applications.

Parking lot lighting might require cameras that could be used for license plate recognition.

4.4.1.2 BLUELIGHT PHONE MOUNT

All Bluelight emergency phone stations require a camera mounting arm on the top of the device and a fisheye camera to provide a view of the scene where a person under duress might be using the emergency phone. Fiber optic cabling will be required for this application. For additional information, see the Telecommunications Design Guide.



4.4.1.3 WALL MOUNT

Cameras may be mounted on exterior walls. Fisheye cameras can be used to provide a view up to nearly 180 degrees. Dome and bullet cameras can be used for a more directional view.

4.4.1.4 PARAPET WALL MOUNT

Parapet-mounted cameras might be required for some applications. However, the parapets are often much higher than is desirable for security cameras which would provide views of the tops of heads rather than identifiable views of faces.

4.4.1.5 CEILING MOUNT AT ENTRANCE VESTIBULES

Dome cameras that are ceiling mounted inside entrance vestibules or in awnings just outside the doors can be aimed to view people approaching a building.

4.4.2 INTERIOR CAMERAS

4.4.2.1 CEILING MOUNT AT ENTRANCE VESTIBULES

Dome cameras that are ceiling-mounted inside entrance vestibules can be aimed inward to view people leaving a building who might be carrying objects of value or be accompanied by persons of interest.

4.4.2.2 T-BAR ACCESSIBLE CEILING

For T-bar accessible ceilings, cameras can be attached to the underside of the ceiling grid.

The conduit from the cable tray should terminate in a device box above the ceiling, near the desired location of the camera.

The CAT6A cable for this application shall be terminated on a jack that is mounted in a faceplate in the device box. A long patch cord (12 ft or so) can then be used to connect the camera to the jack.

This solution offers the benefit of an adjustable camera location that can be moved to optimize the desired camera angle.

4.4.2.3 HARD-LID SOLUTION

Where dome cameras are installed on hard-lid ceilings where it is not possible to access the space above the ceiling, cameras shall be mounted directly to a device box with a single gang extension ring. The box shall be mounted flush with the ceiling so that the camera mount is against the surface of the gypsum ceiling and conceals the box.



The CAT6A cable for this application shall be field connectorized with an RJ45 connector to plug directly into the camera without a faceplate, jack, or patch cord.

4.4.2.4 INTERIOR WALL MOUNT CAMERAS

Where dome cameras are installed on walls, cameras shall be mounted directly to a device box with a single gang extension ring. The box shall be mounted flush with the wall so that the camera mount is against the surface of the wall and conceals the box.

The CAT6A cable for this application shall be field connectorized with an RJ45 connector to plug directly into the camera without a faceplate, jack or patch cord.

4.4.2.5 POINT OF SALE CAMERAS

Cameras in retail applications shall be designed to have a clear view of the faces of customers as well as the countertop where transactions are conducted.

4.4.3 CONDUITS AND BOXES

All conduits and boxes intended for use with surveillance video cameras shall be installed by the electrician according to the requirements of Division 27. The security system integrator shall not install the conduits and boxes.

Provide a device box with a single gang extension ring at the location of the camera.

Provide a 1" conduit from the box to the cable tray in the corridor.

All conduits and device boxes shall be concealed inside the wall or above a ceiling. Approval from the SSM is required if a surface-mounted conduit is necessary. Any exposed conduits and boxes shall be painted to match existing surface.

4.4.4 CATEGORY 6A CABLING

All Category 6A cabling intended for use with surveillance video cameras shall be installed by a certified telecommunications contractor according to the requirements of Division 27. The security system integrator shall not install this cabling.



5 Construction Document Content

This section of the SSDG describes the content requirements that the Designer shall include when creating the Construction Documents¹. This content is in addition to the content found in some generally accepted document sets.

The documents produced by the Designer and the services provided by the Designer shall comply with the requirements in the State of Washington's Conditions of the Agreement and the Instructions for Architects and Engineers doing Business with Division of Engineering and Architectural Services. In addition to these requirements, the Designer shall also meet the requirements in this document, including the Construction Document content requirements in this section.

Construction Documents shall communicate a fully detailed and coordinated design (rather than making adjustments in the field during construction) and are expected to result in reduced construction costs and fewer change orders. The level of detail required to meet this objective might be substantially greater than some security designers may be accustomed to providing.

The Designer shall include the following content in the Construction Documents:

5.1 Plans and Drawings

5.1.1 GENERAL

The security portion of the Construction Drawing set shall include the following:

- Site Map
- Symbol Schedule
- List of Abbreviations
- Plan Sheets
- Elevation Diagrams
- Schematic Diagrams
- Construction Details

All plan sheets shall be scaled, shall indicate the scale, and shall show a north arrow. All plan sheets shall show a key plan when the building or site is too big to fit on a single sheet.

Equipment and cable identifiers shall be shown on the drawings and diagrams.

¹ As of this writing, the Conditions of the Agreement and the Instructions for Architects and Engineers Doing Business with Division of Engineering and Architectural Services (both published by the Washington State Department of General Administration) make reference to the term "Construction Drawings." However, the Manual of Practice from the Construction Specifications Institute (CSI) defines "Construction Documents" as a subset of the "Construction Documents" and indicates that drawings, specifications and other written documentation are contained within the Construction Document subset. The SSDG will use the term "Construction Documents" according to CSI's definition.



5.1.2 SITE PLAN DRAWINGS

Outdoor security applications might include:

- Outdoor video surveillance cameras

5.1.3 FLOOR PLAN AND REFLECTED CEILING PLAN DRAWINGS

- A. Scaled plan drawings shall be provided for each building, showing the security applications and cabling inside the building. These drawings shall show the following:
- Routing of new pathway to be constructed during the project.
 - The content of the drawings shall be coordinated with other disciplines and shall be representative of the complete pathway route that the Contractor shall use, rather than a schematic depiction.
 - It is expected that the Designer will expend considerable coordination effort during the design process. Non-coordinated pathway/raceway is not acceptable to CWU.
 - Approximate locations of junction boxes and conduit bends.
 - The cable quantities and the raceway at any given point in the system.
- B. Where new cabling will be pulled into existing conduits, the Construction Documents shall show the routes of each *existing* conduit. Where it is not possible to determine the routing of existing conduits, the Designer shall inform the CWU SSM and seek direction on whether to use the existing conduits or design new conduits for use on the project. Typically, such conditions are identified during the Designer's field investigation activities.

5.1.4 ELEVATION DIAGRAMS

- A. The Designer shall provide scaled wall elevation details for each location affected by the project.
- B. For remodel projects, the Designer shall produce digital photographs of each wall and ceiling depicting the existing conditions where future security equipment will be located. These photos shall be provided with the wall elevation details in the Construction Documents.
- C. The wall elevation details shall show the components that are mounted on the walls in the room including at least the following:
- Conduits and boxes
 - Access control devices
 - Video cameras
- D. The details shall depict the security materials that are listed in the specification.



5.2 Project Manual

The *Instructions for Architects and Engineers Doing Business with Division of Engineering and Architectural Services* (published by the Washington State Department of General Administration) lists requirements for the Project Manual. The *State of Washington Conditions of the Agreement* (also published by the Washington State Department of General Administration) lists additional requirements for the Designer.

The Project Manual shall contain a summary of the security work on the project, a description of the demolition requirements (if applicable), and a discussion of the utility coordination requirements.

5.2.1 SPECIFICATIONS

5.2.1.1 CWU SECURITY SYSTEMS CONSTRUCTION GUIDE SPECIFICATION

- A. The CWU Security Systems Construction Guide Specification (SSCGS) is a *guide* specification as opposed to a *master* specification. It does not include an exhaustive listing of all possible products or installation methods that could be employed in a security project.
- B. The SSCGS is an example of a specification that shall be used for a security systems upgrade project or for a new facility project. It has verbiage that identifies issues that the Designer shall consider throughout the adaptation process. The Designer shall adapt the sections in the SSCGS to the particular requirements of the given project.
- C. The Designer shall directly edit the SSCGS for use on each project. The Designer shall notify the CWU SSM where changes or additions to the specifications are desired. Edits to the documents shall be performed with the “Revision Tracking” features activated. At the various project milestones when the documents are submitted to CWU for review, the specifications shall be printed showing the revision markings.
- D. The Designer shall be responsible for adding any necessary content to the specification that is applicable to the project and not already contained in the SSCGS.
- E. Please refer to the more detailed instructions contained in the SSCGS, both in the Preface of that document as well as in the “hidden text” comments contained in the electronic files.

5.2.1.2 TYPICAL SPECIFICATION SECTIONS

There are several specification sections that are commonly used for security systems or contain content that supports security functionality.



Sections typically provided by the architect or door hardware consultant, possibly requiring Designer input:

- 087100 – Door Hardware

Sections typically provided by the Telecommunications Engineer, possibly requiring Security Systems Designer input:

- 270500 – Common Work Results for Communications
- 270526 – Grounding and Bonding for Communications Systems
- 270529 – Hangers and Supports for Communications Systems
- 270533 – Conduits and Backboxes for Communications Systems
- 270536 – Cable Trays for Communications Systems
- 271100 – Communications Equipment Room Fittings
- 271300 – Communications Backbone Cabling
- 271500 – Communications Horizontal Cabling
- 271600 – Communications Connecting Cords, Devices, and Adapters

Sections typically provided by the Security Systems Designer:

- 280500 – Common Work Results for Electronic Safety and Security
- 281300 – Security Access Control System
- 282000 – Video Surveillance

5.3 Record Drawings and Documentation

The *Instructions for Architects and Engineers Doing Business with Division of Engineering and Architectural Services* (published by the Washington State Department of General Administration) lists requirements for Record Drawings and submittals. The following requirements related to Record Drawings and submittals are **in addition** to the requirements listed in *Instructions for Architects and Engineers Doing Business with Division of Engineering and Architectural Services*:

5.3.1 RECORD DRAWING CONTENT

- The Record Drawings shall show the identifiers for the security equipment and cabling as constructed.

5.3.2 RECORD DRAWING DELIVERABLES

- One CDROM containing editable 2D AutoCAD drawings (with all xrefs bound to the drawing) of the security plans, elevations, and details, in addition to the Revit or BIM model files.
- One CDROM containing the digital photographs taken by the Designer during the project shall be delivered to CWU Facilities Planning and Construction.