UNIVERSITY OF CALGARY | CAMPUS SECURITY

5.19 ELECTRONIC SECURITY SYSTEMS

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5.19.1 Electronic Security Systems (ESS) Overview

5.19.1.1 Executive Summary

APPLICABILITY:

This standard document, as a complement to applicable codes and standards, is applicable to all University of Calgary spaces and construction projects, whether new construction or renovation, both for the main campus and all facilities.

INTRODUCTION:

The University of Calgary is committed to the enhancement of public safety, quality of life, and providing an environment conducive to quality education, individual privacy, diversity, and freedom of expression. Accordingly, as part of a complete security system, the University has elected to utilize Physical and Electronic Security Systems (ESS) to support public safety through monitoring and control for chosen buildings and spaces throughout University facilities. Any diversion of security technologies for purposes other than those listed herein would undermine the acceptability of these resources for critical safety goals and is therefore strictly prohibited.

PURPOSE:

The purpose of this policy is to provide stakeholders and those involved in the design and construction of projects at the University, whether new construction or renovations, guidelines for the selection, design, and installation of Physical and Electronic Security Systems to comply with the requirements of the University. Further, this standard is intended to formalize procedures around ownership and costs, and for the installation, monitoring, storing, and dissemination of ESS data. The existence of this policy does not imply or guarantee that University ESS will be monitored in real time twenty-four (24) hours a day, seven (7) days a week.

APPLICATION:

The University recognizes the need to protect property and persons who work, occupy, or visit University facilities, while also facilitating access by authorized persons to buildings, spaces, and assets or equipment. In light of this recognition, the University uses Physical and Electronic Security Systems and procedures to facilitate controlled access while also providing for control and monitoring of access to authorized parties by integrating the best practices of electronic safety and security with state-of-the-art technology.

The purpose of CCTV surveillance at the University is three-fold: First, to promote a safe environment by deterring criminal acts; second, to assist in the identification of individuals who commit damage to University property; and third, to assist law enforcement in the investigation of any crime that may be depicted. Video monitoring for security purposes will be conducted in a professional, ethical, and legal manner. Personnel involved in active video monitoring will be appropriately trained in the responsible use of this technology:

1. *Academic Use.* This standard does not apply to legitimate academic use of video cameras and/or other electronic security systems monitoring for educational purposes.
2. *Private Video Cameras.* This standard does not apply to private video cameras owned and operated by members of the campus community.
3. *Law Enforcement Surveillance.* This standard does not apply to cameras and/or other electronic security systems monitoring used covertly by law enforcement for criminal surveillance.
4. *Unrelated to Surveillance.* This policy does not apply to video cameras and/or other electronic security systems monitoring that is specifically used or established for reasons unrelated to surveillance

activity, including without limitation remote monitoring of facilities construction to ascertain project progress, campus public relations initiatives or videotaping of athletic events for any purpose.

5.19.1.2 System Overview

Across its multiple campuses and properties, the University has implemented Genetec Security Centre for all aspects of Electronic Security, and with additional applications and integrations for specific functions.

5.19.1.3 System Capabilities

As a unified security system, Genetec Security Centre as implemented by the UofC currently serves:

- Video Surveillance (CCTV)
- Access Control (ACS)
- Intrusion Alarms (IAS)
- Duress Alarm Systems (DAS) / Panic Alarm
- Intercoms, help/security phones, other one and two-way communications, including SIP-protocol
- Forensic analytics for investigation purposes
- Edge-based analytics with plugins for system-based object classification in real-time and for forensics
- License Plate Recognition (LPR)
- Multiple first and third-party integrations, and event-to-action integrations between core systems
- Context-based actions (Genetec Threat Levels)
- Automation (Mission Control)
- Other functionalities available include:
    - Pedestrian/vehicle physical (gate) controls
    - Perimeter Detection (radar, thermal, other)
    - Integration of other buildings systems (i.e. Elevator Control, Destination Dispatch)

5.19.2 ESS General Requirements

5.19.2.1 Related Standards & Applicable codes

1. University of Calgary - All design and construction activities shall fully comply with all applicable University of Calgary Standards, as well as all applicable codes, standards, and guidelines referenced therein. The current versions of UofC Standards shall be obtained from the UofC Facilities website. (http://ucalgary.ca/facilities/facilities-development/design-standards)
2. University of Calgary Residence Services Electronic Card Access (ECA) Requirements
3. University of Calgary Door Hardware Standard – U of C Design Standards Section 5.5 "Doors & Hardware" (Latest Version)
4. Canadian Standards Association (CSA International)

a. CSA C22.1, Canadian Electrical Code, Part 1, Current Edition.

5. Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
6. IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

5.19.2.2 FOIP / Privacy

FOIP (Freedom of Information and Protection of Privacy). Any questions related to privacy and FOIP shall be addressed to the ESS Program Manager or Project Manager.

5.19.2.3 Coordination Requirements

During the design of each project, it is the responsibility of the Project Engineer to gather and coordinate the functional requirements of ESS with both the space owner/operator, and Campus Security. Such coordination shall include an assessment of which of the full features and functionalities of the ESS and UofC-approved devices are required. This assessment must consider the operational needs of the space and space user, but also which of the available features and functionalities Campus Security requires to be implemented.

5.19.2.4 Documentation Requirements

While University of Calgary Standards and the specification and contract documents for each project dictate minimum documentation requirements, it is the responsibility of the design engineer and contractor/installer to consult with the assigned UofC Project Manager, Campus Security, Facilities and IT for complete requirements regarding documentation required for each project which includes ESS, including but not limited to as-built drawings, completed commissioning documentation (using commissioning templates provided by the University), and operations & maintenance documentation.

These details, and others as may be required by Campus Security, will be incorporated into the UofC master ESS database, owned by Campus Security.

1. Locations (Building, Location)
2. Equipment / Device Details (location, label, associated controller or panel, device manufacturer and model number, firmware version) for all master and sub panels, and all connected devices.
3. Device specifications shall include manufacturer, model, specific features (optional features, camera lens, housing, etc.)
4. Contractor details and install date.
5. Warranty details (project warranty, and hardware manufacturer warranty)
6. IT connectivity details (how/where each device connects to UofC IT infrastructure)

All such documentation shall be prepared by the contractor/installer and reviewed by the Project Engineer for compliance with all applicable University Standards and project specifications, in hard/soft copy in accordance with University Standards. At project completion, copies of this documentation shall be provided to the University Records Management Department and Campus Security; Campus Security shall be provided with all documentation.

5.19.2.5 Project Costs

For all new construction, renovations, and modification (moves, adds, and changes) projects, all costs related to the ESS applicable to the project shall be borne by the project. In addition to hardware/devices and

required infrastructure, such costs will include all components required to provide a complete and functional system, and to incorporate all new/modified provisions into the campus wide UofC ESS. The portion of project costs dictated by these standards and Campus Security will be a cost to the project. Where Campus Security approves a request for additional scope beyond the requirements of this standard, the associated additional costs will be borne by the business unit. These include, but may not be limited to:

Software licenses, Maintenance/support agreement (Campus-wide ESS) – where the incorporation of new/modified ESS devices in a project necessitate the purchase of additional ESS licenses and related maintenance/support, associated costs shall be borne by the project. Security will dictate these costs to the project in accordance with established unit prices. The minimum duration of such licenses, and maintenance/support agreement shall be one (1) year from system turnover or substantial completion. Generally, and unless an alternate device specification has been approved by Security in accordance with this standard, this includes all costs associated with analytics.

a. Software licenses, Maintenance/support agreement (Campus-wide ESS) – where the incorporation of new/modified ESS devices in a project necessitate the purchase of additional ESS licenses and related maintenance/support, associated costs shall be borne by the project. Security will dictate these costs to the project in accordance with established unit prices. The minimum duration of such licenses, and maintenance/support agreement shall be one (1) year from system turnover or substantial completion. Generally, and unless an alternate device specification has been approved by Security in accordance with this standard, this includes all costs associated with analytics.
b. Software licenses, Maintenance/support agreement (Project-specific ESS) – in addition to costs related to the campus-wide ESS per the item above, all ‘soft’ costs related specifically to a project shall be borne by the project, including costs related to purchasing extended licensing and/or maintenance/support for some/all portions of installed or modified ESS components if/as directed by Security. The minimum duration of such licenses, and maintenance/support agreement shall be a minimum of one (1) year from system turnover or substantial completion. Generally, and unless an alternate camera or device specification has been approved by Security in accordance with this standard, this includes all costs associated with analytics.
c. Warranty (Campus-wide ESS) – where additional costs are incurred by Security related to the campus-wide ESS to incorporate the ESS components related to a specific project, those costs shall be borne by the project. Security will dictate these costs to the project in accordance with established unit prices. The minimum duration of the warranty, including equipment and labour, shall be a minimum of one (1) year from system turnover or substantial completion.
d. Warranty (Project-specific ESS) – in addition to costs related to the campus wide ESS per the item above, all warranty costs related specifically to a project shall be borne by the project, including costs related to purchasing extended warranty on some/all portions of installed or modified ESS components if/as directed by Security. The minimum duration of the warranty, including equipment and labour, shall be a minimum of one (1) year from system turnover or substantial completion.
e. Warranty (All) – In all ESS component warranties, Security shall be included / named such that warranty support can be initiated and obtained by Security at any point during the warranty period, and any/all associated additional costs shall be borne by the project.
f. Campus-wide ESS Storage – All costs related to storage required to store ESS data related to a project shall be borne by the project. Security will dictate these costs to the project in accordance with established unit prices.
g. Where not already part of the/a project, other infrastructure required to provide a complete installation and as included herein, i.e. Power, UPS, Grounding/Bonding.
h. Freight and shipping.

i. Installation.

j. Setup/configuration/programming, both of campus-wide ESS and project-specific ESS.

k. Labeling of devices/equipment.

l. Labeling of equipment includes equipment which include batteries (ACS cabinets, UPS, other), where the install date shall be labeled on the exterior of the equipment/enclosure, 'Install date: YYYY/MM/DD' or similar, so that an appropriate replacement date can be planned.

m. Preparation, printing/plotting, and binding (as applicable) of turn over documentation in accordance with this standard.

n. Any change in exchange rates (for hardware or other items purchased from outside of Canada) that may impact previously established unit prices.

o. Changes in unit prices, where unit prices previously established by Security may have changed.

p. And any/all labour related to the foregoing.

5.19.2.6 Responsibility / Ownership

Responsibility / Ownership – With respect to all hard (equipment, devices, and similar) and soft (data, licenses, warranty, maintenance agreements/responsibilities, and similar) components of ESS installed and in use at UofC properties and facilities, the following shall apply:

a. Ownership (ESS components) – Immediately following turnover of installed/modified ESS components, ownership of all components (hardware, software, licenses, maintenance/support agreement(s), warrant(ies)) that make up the complete ESS installation shall be turned over to Security, and Security shall be henceforth responsible for those components.

b. Ownership (Data) – In all cases, all data (video data, meta data, etc) related to the CCTV system shall belong, and be managed and controlled by, Security. Security shall be responsible for the data in all respects, including but not limited to: monitoring, control, playback, dissemination, storage, providing access/viewing to others, and destruction, in accordance with applicable UofC policies and standards. Access (viewing, playback, or similar) of any video data shall be only with the approval of Security.

c. Classification (Video) – Classification of all video data, with respect to privacy or other considerations, shall be the responsibility of Security, and all such classifications shall be made in compliance with applicable UofC policies and standards.

5.19.2.7 Variances

ESS design standards and approved equipment as presented in included appendices have been tested and vetted to generally meet the ESS functional requirements of the UofC in most situations and applications. Where the Project Engineer feels that deviation from these standards and/or approved hardware/devices/application are necessary to meet the functional intent of these standards, such deviation or variance shall be coordinated with Campus Security during design.

Campus Security shall have the final authority to approve or deny any variance from this design standard.

5.19.3 Access Control Systems (ACS) Specific Requirements

5.19.3.1 ACS Design / Technical Requirements

The requirements as outlined in this section define minimum functional requirements of all provided and installed parts of the ACS, whether for new construction or modifications to existing buildings or spaces. All ACS applications shall be submitted through ARCHIBUS and reviewed by the Proposal Assessment Group and Campus Security. Should the application proceed, then the installation shall be fully coordinated with the Facilities Lockshop, Campus Security, and the designated ACS system provider prior to ordering of materials/equipment to implementation.

It is the responsibility of the Project Manager to ensure that Campus Security, IT/Telecom, and the Facilities Lockshop are consulted throughout all stages of planning and implementation of all electronic access control.

The substitution or alteration of design and/or technical requirements outlined herein shall only be made with approval of Campus Security and the Facilities Lockshop.

All supplied equipment shall carry CSA/UL or equivalent approval(s), where appropriate, noting that some devices (peripherals and some end devices) typically have no listing or labels unless designated for and used in ULC certified installations. If uncertain whether a specific device type, outside of the attached list of approved hardware, requires CSA/UL certifications, contact Campus Security.

For additional information on ACS requirements please review appendices.

5.19.3.2 ACS FUNCTIONAL REQUIREMENTS

The functional requirements of each ACS are those which affect the overall function of the system within a facility, building, or space, or the interconnection of same into the University-wide ESS.

1. Whether under power or not, no device shall prevent egress through a door located in the exiting path from a room or building.
2. Unless otherwise approved or directed by Campus Security, the card access system shall be installed on all building perimeter doors, roof access doors and hatches and other critical equipment room doors as directed by Campus Security/FMD Lockshop.
3. It is the intent and preference of the UofC that each building have a single ACS master panel. Alternate design / installation approaches, for any reason, shall be coordinated with / reviewed and approved by UofC Facilities prior to installation. The contractor shall bear all costs related to modifying or otherwise remediating installations which do not follow this design approach, or that are not fully functional as determined by UofC Facilities, and/or where prior approval by UofC Facilities of any deviation in design or installation is not received prior to installation.
4. Reference Appendix A – ECA / ACS Requirements by Room Type for a list of doors/portals where access control shall be provided or is not required and consult with Campus Security where requirements may be unclear.
5. Each building shall have a minimum of one exterior door fitted with a mechanical key override that allows access to the building, regardless of the state of the electronic access system. This door must allow direct access to the Master Panel of the building. Key access shall comply with University standards, and shall be coordinated with Facilities Lockshop.

All controlled doors / portals shall be equipped with a pre-alarm function that sounds a local alarm within 2 minutes of a forced and/or propped door condition. Within a further 1.5 minutes following the local alarm, the ACS shall activate an alarm in the Campus Security Operations Centre.

5.19.3.3 ACS Equipment & Device Requirements

The following outline requirements specific to ACS devices and equipment, and related equipment and infrastructure, including equipment performance and functional requirements, as well as installation, testing, labelling, commissioning, and documentation.

Where several items below are not exclusive to ACS (i.e. requirements related to conduit, device rough-in, wiring terminations, or similar), these are included for clarity and to supplement other University Standards.

5.19.3.4 ACS CABINETS / ENCLOSURES

1. All cabinets are to have tamper switches installed and operational. Tamper switches must be connected to the first device on each panel and connected to an input. Panel tampers can be connected in “series “when additional cabinets are located beside each other.
2. All cabinets are to be hinged from the right or left side of cabinets. Hinging upward or downward will not be accepted.
3. All cabinets used are to be key lockable, and all shall use the same key. Any cabinet used mounting ACS equipment, including all power supply cabinets, to be of keyed alike. Coordinate specific keying requirements with Facilities Lockshop.
4. All cabinets shall be provided with a panel schedule on the inside of the hinged panel enclosure (in a plastic pouch), listing devices connected to each controller input/output, and shall be updated with each addition or revision.

5.19.3.5 ACS CONTROLLERS

1. In all installations, whether a new installation or modification of an existing installation, it is the responsibility of the installer to ensure that the cabinet and enclosure can fully accommodate all ACS hardware while complying with applicable requirements for physical workspace, cable management, termination, labeling, and ventilation.

5.19.3.6 ACS DEVICES

1. In all ACS installations, Electromagnetic Locks (Mag Locks) of any kind shall not be used without prior approval from Campus Security and Facilities Lockshop. Refer to FMD design standards on locks and locking hardware for electrical locking hardware standards.
2. Where Electromagnetic Lock are approved for installation, the installation shall fully comply with section 3.4.6.16 of the current/applicable Alberta Building Code (ABC), including blue pull stations, manually operable switch (key-switch), and signage. Also, all doors with a magnetic lock shall on fire alarm, unless otherwise directed or approved by the Authority Having Jurisdiction (AHJ), per section 1.1.4.4 and applicable codes.
3. Proximity Card Readers – ICT Multi-Technology Card Readers (with integral keypad where required/directed) are the standard and shall be used in all installations, unless otherwise approved by Campus Security and Facilities Lockshop, i.e. due to mounting restrictions or different functional or

performance requirements. UofC standard products include standard and mullion-mount versions, with or without keypad.

4. Request to Exit (REX) - Kantech T-REX model are the standard and shall be used in all installations unless otherwise approved by Campus Security and Facilities Lockshop

5.19.3.7 ACS ANCILLARY REQUIREMENTS (POWER, UPS, GROUNDING/BONDING)

1. Regardless of whether a building has a backup generator or other backup power source, all ACS equipment, panels and devices shall be protected by an Uninterrupted Power Supply (UPS). Such UPS shall fully comply with UofC Design Standards, Section 5.17.11 "Clean Power Supplies". Unless otherwise approved or directed by Campus Security and Facilities Lockshop, only hardware that is intended or allowed to release on power failure e.g., Electromagnetic locks and delayed egress devices are exempted. It is the responsibility of the installer to ensure that each UPS is sized to carry the full load of all connected ACS equipment, panels, and devices, plus minimum 25% spare capacity, and that provided UPS come with minimum one year manufacturer's warranty.
2. Where a provided UPS does not fit in the existing/provided ACS cabinet or enclosure, it is acceptable to mount the UPS on a shelf or other suitable support suitable for the size and weight, provided that the mounting location is accessible and adjacent to the fed ACS cabinet or enclosure, and the UPS is securely mounted. Where UPS fit into the associated ACS cabinet or enclosure, this is preferable, provided has adequate ventilation.
3. Where a building has a backup generator or other suitable backup power source with sufficient spare capacity, each UPS provided for ACS equipment shall be fed from the backup source.
4. Doors that are not required to be released on fire alarm must be bypassed on the lock power supply so that they function normally during fire alarm events.

5.19.3.8 ACE INSTALLATION, TESTING, COMMISSIONING, LABELING

1. All enclosures containing ACS panels/controllers shall be installed in Telecom Rooms or Electrical rooms (with permission from Facilities Maintenance) in areas that are easily accessible and at an acceptable working height without the use of ladders and/or sitting on the floor. Adequate space must be allowed for the installation and maintenance of this equipment, when locating equipment careful consideration should also be made for future additions to the system. The exact locations of all such equipment shall be coordinated by the contractor/integrator with IT, Campus Security, and Facilities Lockshop.
2. ACS enclosures and other ACS equipment shall **NOT** to be installed in Caretaking or similar spaces due to risk of exposure to dust, dirt, and/or moisture or other liquids.
3. ACS enclosures and other ACS equipment shall NOT be installed in elevator machine rooms without approval of the Facilities Lockshop.
4. There is to be no equipment mounted on the doors of ACS enclosures / cabinets in any circumstances. The doors are to have a separate ground attached to the main cabinet to maintain continuity of the grounding system.
5. Door naming convention – refer to Appendix C.
6. All ACS controlled doors shall be clearly labeled using a "P-Touch" labeling system. Labels shall be 18mm high X the length required to fit the door designation. All text shall be a minimum of 6mm high. The label shall clearly indicate the door designation using white text on dark colored doors and black

text on light colored doors. Labels shall be positioned 25mm down from the top and 200mm in from the leading edge of the door leaf. All labels shall be placed on the locked side of the door, adjacent to the hinge. Door designations shall be determined by Campus Security.

7. All ACS card readers shall be labeled as outlined herein.
8. All doors must be clearly identified on the controller panel itself with a “P-Touch” label on the controller.
9. As part of the commissioning process cabinets to be labeled and notification signage to be applied to all cabinets indicating that they are to notify Campus Security (at 403-220-5333) prior to entering and after exiting the cabinets. Contact UofC Facilities for required labelling. Facilities Lockshop should be notified for consultation at start up and upon substantial completion of installation. No installation should be considered complete until these tasks have been completed.
10. A commissioning form (available from Campus Security) per door is to be filled out by the contractor/integrator upon completion of all ACS installations and shall be submitted to both Campus Security and to Facilities Lockshop. When work is completed on a new installation a final site meeting/inspection with a member of the Facilities Lockshop will occur as a part of the commissioning process.
11. In all installations, each door or portal shall be separately connected to the ACS. Banks or groups of doors and/or other portals shall not be listed as a single door/portal.
12. All wiring shall be concealed in EMT, cable tray or inside doorframes and walls. Exposed wiring, where necessary and approved, shall not be accessible to the public.
13. All wiring shall be of continuous length (no splices) and shall be of gauge and construction as per manufacturer’s installation instructions.
14. All terminations of wires at the device ends shall be completed with solder and heat shrink or compression connectors.
15. All cable terminations located at the panel end shall be as follows:
    - Devices requiring external power shall be connected to the terminal block.
    - Devices with direct signal (no power requirement – i.e., door position switches) shall be wired direct to the panel.
16. All Cabling shall have a service loop incorporated in the cable run located inside the panel.
17. Cables shall be terminated as follows:
    - An input device that is connected to the panel and does not require additional power may be connected to the panel without terminal strips. There must be a minimum of 1m slack cable at the panel end of the run. Devices that fall under this category include Door Position Switches and Card Readers.
    - Any cable that is interrupted by a control relay, fire alarm relay, input signal and aux. power on the same cable or, multiple devices that are powered by the same power supply, may be terminated directly or on terminal strips then jumpered to the various panel locations. Devices that fall under this category include Latch retraction or Exit delay devices, Magnetic Locks, Electric Strikes, Exit Detectors, Blue Lights (panic buttons) and Door Hold Opens.

5.19.3.9 Common Door / Portal Types

The following outline requirements for common door or portal types only, and then only typical device requirements for common applications. It is the responsibility of University Project Manager and/or Owner's Representative to identify all doors in a project for which atypical requirements apply, and to facilitate the coordination of detailed ACS requirements in all such cases with Campus Security, Risk Management, Safety Services (if applicable), Facilities Lockshop, and IT/Telecom. Certain door configurations may require Fire Department approval, including doors with readers on both sides, and doors that may impede egress from areas, or similar. If Fire Department approval is required, the Project Manager shall submit a plan to UofC's Risk Management, who will coordinate with the Fire Department and obtain their approval in writing prior to any work beginning on such doors.

All electrified and mechanical door hardware must meet UofC Standards as per 5.5.2 Hardware.

It is the responsibility of the Project Engineer and installer for each project to ensure that all requirements are fully met for both typical and atypical applications, and the project shall bear all associated costs.

Refer to Appendix A for sketches of Common Door/Portal applications.

ACCESS CONTROL DEVICE MOUNTING HEIGHTS		
Device Type (or similar)	**Typical Height (See Note 1)**	**Handicap Areas (See Notes 1, 2)**
Card Reader / Keypad	1067mm (42")	1067mm (42")
Intercom	1350mm (54")	1220mm (48")
Panic exit device (pull station or push button)	1350mm (54")	1220mm (48")
Biometric Device (Iris Scanner, Vascular Scanner)	1350mm (54")	1220mm (48")

Notes:
1. All heights listed are unless specifically noted otherwise on drawings, and/or approved by UofC Project Manager.
2. Handicap Areas are identified by UofC Project Manager, and/or on drawings.
3. All dimensions are from finished floor to device centreline, unless specifically noted or approved otherwise.

INDIVIDUAL DOOR TYPES AND STANDARDS	
TYPE A: Strictly Emergency (Fire) Exit	
Uses: Fire stairwell or exterior fire exit doors. *This door is locked at all times and used for emergency exiting only. This door is not intended for access and egress through this door is intended for emergency situations only.*	- Signed as "Emergency Exit Only" door - Panic exit device on door, with integral REX installed. - Door Position Switch - T-Rex / Piezo (REX functionality shall be disabled through software) - No pull on the exterior of the door

INDIVIDUAL DOOR TYPES AND STANDARDS	
TYPE A (ALTERNATE): Strictly Emergency (Fire) Exit	**ALTERNATE / LEGACY – To be used on new installations only where directed/approved by Campus Security.**
Uses: Fire stairwell or exterior fire exit doors. *This door is locked at all times and used for emergency exiting only. This door is not intended for access and egress through this door is intended for emergency situations only.*	- Signed as "Emergency Exit Only" door - Panic exit device on door. - Door Position Switch - T-Rex / Piezo (REX functionality may be disabled through software) - No pull on the exterior of the door
TYPE B: Exit Only Door	
Uses: interior or exterior door that remains locked at all times, has a panic bar for release on the interior but has no handle/pull on the exterior. *This door is not intended for access but provides for unrestricted egress.*	- Mechanical Locking Device - Door Position Switch - T-Rex / Piezo
TYPE C: Control Door	
Uses: interior or exterior door that automatically locks/unlocks following a predetermined (programmed) time schedule. *This door can be locked/unlocked on demand.*	- Electric Locking Device (electric strike is standard, Maglock only on approval) - REX provided by Exit device or T-REX device. - Electronic Hold Opens (in selected locations) - Automatic Door Interface / Handicap Door Operator (in selected locations) - Door Position Switch - T-Rex / Piezo - Power Transfer - Double doors require Center Mullion - Scheduled locking times

INDIVIDUAL DOOR TYPES AND STANDARDS	
TYPE D: Card Reader Door	
Uses: interior or exterior door equipped with a proximity chip card reader. *A valid U of C credential can be used to unlock the door during scheduled "locked" hours.* *Applications include, but not limited to:* • *designated building perimeter access points* • *interior building access points* • *mechanical, electrical, telecom and elevator-machine rooms* • designated washroom doors (previously designated as Type E, type which is now discontinued).	- Electric Locking Device (electric strike is standard, Maglock only on approval) - REX provided by Exit device or T-REX device. - Electronic Hold Opens (in selected locations) - Automatic Door Interface (in selected locations) - Door Position Switch - Manual key override standard. - T-Rex / Piezo - Power Transfer - Double doors require Center Mullion - Card Reader – shall be placed 1 meter above the finished floor in close proximity to the subject door. Location of card reader should be within 1 to 2 meters of the door handle. - Most exterior and selected interior doors shall be equipped with a Help Phone and Blue Light, as determined by Campus Security. - Card readers shall be mounted on the Help Phone plate. - The card reader shall be the Slim Line model suitable for mounting on the Help Phone plate. Where there is no Help Phone, the standard reader shall be used. - Card Reader / Help Phone shall be located in "line of sight" of existing Campus Security CCTV camera (where possible). - Blue Light shall be positioned to maximize visibility.
TYPE E: Not Used	
TYPE F: Roof Access doors	
Man door used to enter/exit roofs.	- Proximity Card Reader on both interior and exterior side of door. - Roof side card reader to be used as rex only. - Electric strike. - Schlage L9080 Storeroom lock secure side is to be building side with free egress from roof side, W/Override cylinder by UofC lockshop. - Door position contact. - New signage on BOTH sides of doors reflecting proper procedure to avoid false alarms.

INDIVIDUAL DOOR TYPES AND STANDARDS	
Type G: Overhead Doors	
Uses: loading dock and garage bay overhead doors. These doors are normally manually operated and must be manually locked and unlocked at the pre-designated time.	- Signage Required "Alarmed Door" – (see sample at Bio Loading Dock for exact wording) - Door Position Switch - Local Alarm – Peizo / horn
Type H: Alarm Doors	
Uses: For use on roof access hatches and selected critical equipment room doors as directed by Campus Security.	- Signage Required "Alarmed Door – Contact Campus Security at 403-220-5333 prior to entering" - Door Position Switch

5.19.4 Closed Circuit Television (CCTV) Specific Requirements

5.19.4.1 Camera Types / Specifications

Accepted CCTV camera specifications will be reviewed from time to time by University of Calgary Security, and may be revised as required. The following outline current camera specifications for commonly used camera applications – general requirements. Final approval of CCTV camera specifications for all projects, and any deviation from the following, shall be at the sole discretion of University of Calgary Security, to ensure compatibility with existing CCTV systems and infrastructure.

Camera Type	Required Specifications (Minimum)	Required Housing(s)	Installation
Indoor Fixed View:	Minimum 2MP (1920 x 1080) at 30ips, H.264 Video Encoding, 100 dB Dynamic Range, PoE (IEEE 802.3af), Network Protocol IPv4, 3mm-9mm Lens, onboard analytics, to accommodate minimum 32GB MicroSD Class 10 removable memory card.	According to application – In Ceiling, Pendant & Vandal-Resistant Surface Mount	Yes
Outdoor – Fixed View	Minimum 2MP (1920 x 1080) at 30ips, H.264 Video Encoding, 100 dB Dynamic Range, PoE (IEEE 802.3af), Network Protocol IPv4, 3mm-9mm Lens, onboard analytics, to accommodate minimum 32GB MicroSD Class 10 removable memory card.	According to application –Pendant & Vandal-resistant surface mount	Yes
Indoor PTZ:	Minimum 2MP (1920 x 1080) at 30ips, H.264 Video Encoding, 80 dB Dynamic Range, PoE (IEEE 802.3af), Network Protocol IPv4, 20x Optical Zoom, onboard analytics, to accommodate minimum 128GB MicroSD Class 10 removable memory card.	According to application –In Ceiling, Pendant, & Surface Mount (Ceiling)	Yes

Outdoor PTZ:	Minimum 2MP (1920 x 1080) at 30ips, H.264 Video Encoding, 80 dB Dynamic Range, PoE (IEEE 802.3af), Network Protocol IPv4, 30x Optical Zoom, Weatherproof housing c/w heater, onboard analytics, to accommodate minimum 128GB MicroSD Class 10 removable memory card.	Pendant, Surface (Ceiling)	Yes

For other camera types that are required as part of a specific project or phase, and that are not included in the foregoing, specifications of the camera shall be approved by UofC Campus Security prior to purchase.

Unless otherwise approved in writing by UofC Campus Security prior to purchase, for each project, phase, or building, all cameras and associated accessories shall be of one manufacturer and shall not be mixed. Substitution of any common camera type shall only be allowed with the prior written approval of ESS Campus Security.

For all outdoor cameras: If suitable camera(s) with PoE power source (IEEE 802.3af, or 802.3at where applicable/available) compatible heaters are not available, it is the responsibility of the project to provide suitable power to applicable cameras.

All supplied equipment shall carry CSA/UL or equivalent approval(s), where appropriate, noting that some devices (peripherals and some end devices) typically have no listing or labels unless designated for and used in ULC certified installations. If uncertain whether a specific device type, outside of the attached list of approved hardware, requires CSA/UL certifications, contact Campus Security.

For more information on CCTV requirements, please see Appendices.

5.19.4.2 Camera Placement

The quantity and specific placement of CCTV cameras will vary with each project, and due to several variables, including:

1. Area of concern / interest – in the placement of each camera, this is the first and fundamental consideration, i.e., what specifically is to be viewed or recorded.
2. Camera function – Recognition vs. identification – is the intended function of a camera to identify the presence of a person, vs. the ability to recognize a face, unless otherwise directed by the ESS Program Manager or applicable Project Manager. In general, it is the intention/requirement of the University of Calgary to identify the presence of a person or persons, but not facial recognition. Camera specifications can/will be modified as required for those circumstances where facial recognition is required.
3. Level of risk / security – in most cases, a minimal number of cameras may be required to cover points of entry or similar. However, in other cases, additional cameras may be required – areas of higher risk (i.e., where money and or valuable assets are present).
4. Access / Serviceability – For future maintenance and access to cameras, placement of each shall take into consideration the ease of future access.

In consultation with UofC Security, the following are intended to provide a minimum of coverage of typical areas. Security shall have final say with regards to the placement and view of each camera. At a minimum for

interior spaces, it is intended that a single camera will be provided to cover each point of entry or exit and common areas, with final quantity and placement of cameras to be tailored to each location and application.

1. *Public Areas:* Except where approved by Security, camera placement shall generally be restricted to public areas and areas commonly used by University community groups. These include, but are not limited to, the following:
    a. Hallways and common / circulation areas
    b. Points of entry/exit (i.e., public entrances, vestibules)
    c. Elevator lobbies
    d. Elevator cabs (as directed by Security) complete with suitable housing
    e. Retail areas, including vending machines and similar
    f. Areas where money is handled (cash handling, ATMs, and similar)
    g. Dining facilities
    h. Laboratories (Special circumstances/requirements only)
    i. Library interiors
    j. Building exteriors – points of entry/exit – cameras typically mounted at roof level or high on exterior walls
    k. Loading docks / shipping & receiving areas (interior and exterior as applicable)
    l. Malls, sidewalks, and other pedestrian walkways
    m. Parking areas (surface and underground), including points of entry/exit, and pay points
    n. Alleys, service drives, streets
    o. Athletic fields, audience seating

2. *Private Areas:* Subject to direction / approval by Security, video monitoring is limited to those areas where individuals would not have a reasonable expectation of privacy. Accordingly, except where specifically directed or approved by Security, video surveillance shall not be approved in the following locations:
    a. Residence or similar – living spaces
    b. Public restrooms – toilet stalls / urinals
    c. Locker / changing spaces (where showering or disrobing is routine)
    d. Individual offices (exceptions to include with occupant's permission, and if the space is subject to exceptions such as handling money, documents or supplies).

3. *Residential Housing:* Security shall ensure that camera positions and views of residential housing (both on and off campus) are limited, and that any such views are no better than what is available with unaided vision. Furthermore, the view of a residential housing facility must not violate the reasonable expectation of privacy in that area.
4. Where the placement of a camera may impact privacy, Security shall advise applicable departments on the appropriate application of surveillance technologies.

5.19.4.3 Other Considerations

When selecting locations for CCTV cameras, a range of considerations will affect the performance of each camera. While it remains the responsibility of the design engineer and installer to ensure the overall function of each camera to achieve the intended function, field of view, and video quality, the design engineer and installer shall consult University of Calgary Security with respect to the following:

1. Privacy – Where there is the reasonable probability that the placement of a CCTV camera could provide a privacy concern, either for the University community or those outside of the University (i.e., adjacent properties), it is the responsibility of the design engineer and installer to ensure that applicable University guidelines with respect to privacy are met.
2. Masking – Through configuration on the VMS, it is possible to 'mask' some portions of areas/images viewable by a CCTV camera. In so doing, it is possible to define a virtual space that will not be viewable or recorded. Masking of an area, or portion thereof, will only be added on approval or at the direction of Campus Security.
3. Lighting – Performance of CCTV cameras are reliant on sufficient lighting, both in quality, levels, and interference or glare (i.e., sunlight or point sources). It is the responsibility of the design engineer and installer to ensure that lighting affecting the performance of each camera is taken into account, and that cameras suitable for each application are selected to ensure their acceptable performance.
4. Required Infrastructure – For each CCTV camera, a variety of infrastructure is required to achieve proper function. It is the responsibility of the design engineer and installer to ensure that all such infrastructure is provided as part of the project, including but not limited to: power (availability, reliability / stability, source type, voltage), ITS (network connectivity, both in horizontal and backbone) with sufficient performance and bandwidth to support the projected bandwidth required by added/installed CCTV and other ESS devices.
5. Equipment Room / Space Requirements – Rooms or spaces which will house ESS equipment shall comply, at a minimum, with all requirements as outlined in UofC Design Standards, in particular UofC IT standards. This includes room/space location, size, layout, clearances between and around equipment, wall/ceiling/roof penetrations, cabling pathways, grounding/bonding, space/equipment protection (i.e., fire detection and alarm, pre-action sprinkler system, and similar), power/UPS.
6. Mounting – Camera placement and mounting requirements.
7. Vandalism – Where vandalism to the camera is a concern, the design engineer and installer shall consult with Security with respect to camera specifications (i.e., placement, housing type).

5.19.5 Duress Alarm (DA) Specific Requirements

Duress Alarm (also known as Panic Alarm) systems are generally utilized where there is a perceived or known risk to occupants, and where initiating an appropriate response to an incident may not otherwise be possible. Common uses include areas where members of the public are served and there may be money or items of value present, or where visitors to or clients to the space may present a risk to staff for any reason, or where there is other reason to believe staff or occupants may be subject to risk and may need to summon help.

For more information on requirements please see Appendices.

5.19.5.1 Application

For maximum effectiveness, the design and implementation of a Duress Alarm system must be as simple as possible, tailoring the device selection and placement to provide ready access to occupants in a time of need.

No grandfathering – Note that, once this standard has been fully adopted and published, any/all existing systems which are currently known and monitored by the UofC will be reviewed and assessed with respect to modifications that will be required to bring them in compliance with this standard, or modification to put those systems in a standalone operating mode with required operational/procedural changes and training for staff, or decommissioning of those systems. Systems found to be non-compliant will require modification as directed by Campus Security, at the cost of the system owner/operator.

Components of a Duress Alarm system can or will include:

a. **Keypad**, typically alphanumeric – how the user interacts locally with the alarm system. Through the keypad one can arm/disarm the system, acknowledge/silence an alarm, program the system and devices, and activate/deactivate connected devices. Keypads shall, at minimum, be capable of accepting unique user codes for each authorized user, have an LCD display to display zone status, alarm audit trail, and LEDs or equivalent to show power, trouble, and armed status.

b. **Activation buttons** – a variety of styles are available, but the UofC commonly uses a ‘hold up’ style latching button, where a single action initiates an alarm, but a key or other device is required to deactivate that device. Buttons can be wired or wireless (requiring additional care and tracking to avoid loss, and to ensure they are functional when needed), or fobs which can be worn on the person.

c. **Visual annunciation** – typically a blinking or rotating blue beacon, which can be mounted where it is visible to occupants and visitors to the space, or where additional discretion may be warranted, where it is visible only to staff.

d. **Audible annunciation** – often a piezo alarm or horn, with adjustable volume. Placement considerations similar to those of visual beacons should be considered.

It must be understood that UofC Campus Security receives calls varying in nature, ranging from genuine threats and security incidents that could present a risk to responders, to spills and reports of strange smells. It must be understood that response times, the physical capabilities of responders, and the resources and equipment available to responding Campus Security staff, will vary widely. UofC Campus Security is not an armed response force. Especially when Campus Security Dispatch and responders do not have additional situational awareness of what is happening currently within a space where an alarm has been initiated, this can present a significant risk to the responder, and to staff and occupants in the event of a serious situation, given potential additional delays in an appropriate type and level of response.

Therefore, while a Duress Alarm system can be monitored or integrated to the UofC ESS, it will almost exclusively be installed as standalone and not centrally monitored.

Only with prior consultation and written approval by Campus Security, given prior to design and installation of a Duress Alarm system, will Campus Security allow a system to be integrated and centrally monitored. Beyond the basic requirements of the Duress Alarm system itself, Campus Security will dictate additional requirements (i.e., camera coverage) that must be provided to assist with response.

More commonly, systems will be installed standalone, with the appropriate visual and audible annunciation where staff who are commonly present during normal business will recognize an alarm and can inform appropriate next steps. Specifics of the response scenario(s) will be coordinated with, and communicated by Campus Security, but will commonly include:

a. On alarm initiation – Staff who are familiar with the space, and should generally be aware of or have access to information regarding who is present where the alarm was initiated, and what they are doing, who else may be present, can assess the situation and make a determination whether it is most appropriate that they call Campus Security, 911, or other services, so that the most appropriate and timely response can be provided. In the event of a false alarm, staff should document the incident and coordinate with the system owner to deactivate the alarm, depending on the initiation type (i.e., latching button).

Whereas push buttons to initiate an alarm will commonly and optimally be placed near where staff would typically be sitting or stationed during 'business as usual', and while they should be hidden from direct view, it is still possible to initiate a false alarm, including bumping a button. Alarm assessment and response testing should therefore include false alarm scenarios.

Where a system is integrated with and being monitored by the UofC ESS, Campus Security will coordinate with the space owner/operator for regular testing of the system and connected devices, typically completed monthly. Where a system is operated standalone, it is the responsibility of the system owner to regularly test and maintain the system to ensure that it is fully functional in a time of need. Regardless, the system owner should maintain records of regular testing and maintenance.

5.19.5.2 Design Requirements

The design of a Duress Alarm system must include a needs analysis with the system owner/operator. Not only to gather information regarding where initiating and annunciating devices can be best located, but also where operations or anticipated situations will help in selection of the appropriate type of devices (wireless button for mobile furniture vs. wired for longer term reliable operation, latching hold up style button vs. other).

While installing the system and all connected devices wired together is optimal, there are times where it is infeasible or cost prohibitive, including retrofit applications, or where there is a mobile (body worn) need for initiating devices.

Depending on the nature of the space and operation, careful consideration should be given to the visibility and audibility of annunciation devices, whether there is value or the need in having those in view of visitors and the public, or keeping them out of sight and earshot, such that alarms can be assessed and response coordinated without prior knowledge of the person(s) presenting a risk to themselves or others.

Push buttons and other initiating devices will commonly and optimally be placed near where staff would typically be sitting or stationed during 'business as usual' but should be hidden from view where possible.

Visual and/or audible annunciators should commonly be located remote from the initiating device, to limit knowledge to the person perceived to present a risk when an alarm is initiated.

Per the recommended standalone operation summarized herein, and subject to the specific operational requirements of each system, a duress alarm system commonly include and should consider:

a. Keypad (alphanumeric) – at a location that is commonly occupied by staff during normal operations, especially where the system is installed and operates standalone, so that the person can assess alarms and initiate a call to appropriate responders, also communicate with staff as necessary. Access by the public to the keypad should be limited where possible. It should be ensured that the keypad is installed within arm's reach of a phone or other communication device, such that staff, while calling for assistance, can readily communicate pertinent details being displayed or communicated. The keypad will also be used for arming/disarming system, programming, and other local functions.

b. Visual annunciation – beacon or similar, to inform space occupants/owners of an alarm.

c. Audible annunciation – typically a horn or speaker, some audible annunciation is also possible with the keypad.

d. CCTV camera – where privacy concerns can otherwise be satisfied, having real-time view of some/all areas covered by a Duress Alarm system provides significant additional situational awareness, and can improve response.

5.19.5.3 Other Considerations

As with all systems, the design and installation of these devices/system must consider and allow for the implementation, programming, configuration, and (where applicable and approved by Campus Security) the integration of the following, both to meet the functional needs of the device or system owner (where approved by the UofC Campus Security), and/or as directed by UofC Campus Security to fully serve their functional requirements:

a. **Analytics** – Object classification and other (both at the edge, and centrally where connected to the UofC ESS), this may also include motion / audio detection for automatic activation or similar,

b. **Event to Action** – When the device is activated (manually or automatically), one or multiple events to action configurations within Genetec Security Centre may be needed. Note that this may include or instead be an automation of a SOP (standard operation procedure, aka workflow) within Mission Control.

5.19.5.4 Signage

Where a Duress Alarm system is approved to be installed with central monitoring by Campus Security, the details of alarm initiation and response protocol(s) appropriate to the space and anticipated operations will be coordinated and documented in SOPs (Standard Operating Procedures). An example of a Panic Button Quick Guide that may be provided to system owners for reference and/or display is included below:

CAMPUS SECURITY – 403 220 5333

PANIC ALARM QUICK GUIDE

If alarm is activated:

1. Campus Security Officers will set up perimeter near Admin offices.
2. Security Dispatcher will call back panic button owner and ask:
    a. Your full name
    b. Your position
    c. A series of "closed" questions
3. If alarm is confirmed as genuine, Dispatcher will alert 9-1-1 and/or direct assigned Security officers to enter offices.

5.19.6 Intrusion Alarm (IA) Specific Requirements

An Intrusion Alarm system is a system whose function is to monitor and detect unauthorized entry to, movement within, or exit from a space or building. Whether operated standalone, integrated with the UofC ESS, or otherwise monitored, the system's function is detection and notification in the event of a security event.

5.19.6.1 Application

Components of an Intrusion Alarm system can or will include:

a. **Keypad**, typically alphanumeric – how the user interacts locally with the alarm system. Through the keypad one can arm/disarm the system, program the system and devices, and activate/deactivate connected devices. Keypads shall, at minimum, be capable of accepting unique user codes for each authorized user, have an LCD display to display zone status, alarm audit trail, and LEDs or equivalent to show power, trouble, and armed status.

b. **Motion detectors** – these devices work in collaboration with the security control panel and can initiate the activation of alarms, lights / beacons, cameras, audio or other devices.

c. **Glass break detectors** – a sensor that detects the sound of breaking glass for initiation of an alarm.

d. **Door contacts** – devices detect when a door, window, or other entry point opens or closes.

Note that the UofC Campus Security should be involved throughout the design of any intrusion system to ensure that UofC standards are met, in particular with respect to whether a system is operated standalone (local annunciation only), is to be integrated with the UofC ESS for central monitoring or monitored by a third party.

Given inherent limitations in responding to alarms across UofC campuses and properties, and the risk to staff responding to unknown circumstances, Campus Security will only approve and allow for central monitoring on the UofC ESS in specific circumstances. For the safety of Campus Security staff and other responders, where a system is to be monitored for alarm and response, Campus Security will provide specific requirements around camera and/or other coverage that will be required as part of the system installation.

Where a system is integrated with and being monitored by the UofC ESS, Campus Security will coordinate with the space owner/operator for regular testing of the system and connected devices, typically completed monthly. Where a system is operated standalone or with monitoring by others, it is the responsibility of the system owner to regularly test and maintain the system. Regardless, the system owner should maintain records of regular testing and maintenance.

5.19.6.2 Design Requirements

While there is no 'typical' intrusion alarm system, given their nature, the design is generally straight forward. Depending on the layout of the space and the content and other furniture therein, and the level of detection required (i.e., lower or lesser coverage for a space holding less valuable or critical items or materials, vs. materials of high value that may warrant more robust coverage) will typically inform the placement of detection/initiating devices, keypad/controls, and annunciation devices. At minimum, a design will typically include:

a. Keypad (alphanumeric) – one each outside and inside primary entry to the space, for arming/disarming system, programming, and other local function. While a keypad for programming is still required, in some cases it may be preferable or required to install a card reader or similar

inside/outside the space entry, allowing for arm/disarm with an ACS credential. Other options include a combination card reader and keypad where a PIN may be required for additional security.

b. Visual annunciation – beacon or similar, to inform space occupants/owners of an alarm,

c. Audible annunciation – typically a horn or speaker, some audible annunciation is also possible with the keypad.

5.19.6.3 Other Considerations

As with all systems, the design and installation of these devices/system must consider and allow for the implementation, programming, configuration, and (where applicable) the integration of the following, both to meet the functional needs of the device or system owner (where approved by the UofC Campus Security), and/or as directed by UofC Campus Security to fully serve their functional requirements:

a. **False alarms** – The design, installation, configuration, and programming of each Intrusion system shall include configuring and tuning the system for sensitivity, environment, and the application so as to prevent false alarms. For reliability, false alarm prevention is as important as detection.

b. **Analytics** – Object classification and other (both at the edge, and centrally where connected to the UofC ESS), this may also include motion / audio detection for automatic activation or similar,

c. **Event to Action** – When the device is activated (manually or automatically), one or multiple events to action configurations within Genetec Security Centre may be needed. Note that this may include or instead be an automation of a SOP (standard operation procedure, aka workflow) within Mission Control.

5.19.7 Intercom / Help Phone Specific Requirements

Intercoms, Video Intercoms, and/or Help or Security Phones may be used for a variety of reasons and may serve multiple functions. At their most basic, these types of devices are selectively located to provide two-way audio communication, and where appropriate, camera coverage of the area directly in front of the device.

5.19.7.1 Application

With the UofC ESS, these types of communication devices should typically be IP, powered via POE, and use the SIP communication protocol. Under certain circumstances, i.e., where it would be cost prohibitive to provide wired IP and POE infrastructure, other wired solutions (analog or fiber optic) may be selected, or possibly wireless if unswitched power is available but wired communication is not feasible.

5.19.7.2 Design Requirements

Locations for intercoms or video intercoms may be as directed by Campus Security but will typically include major interior/exterior points of entry to a building or space, or areas of public congregation such as elevator lobbies. Other locations will typically be as directed due to specific concerns, such as parking pay stations.

Prior to selecting a location for a communication device, the designer shall consider:

a. Infrastructure needs – how to cost effectively get IP/POE connectivity to the device.

b. Device selection and placement – choosing the appropriate device for the location (weather, moisture) and for other environmental considerations (direct sunlight, wind),

c. Mounting details and height – especially where the device is to be mounted to an existing structure, surface, or pole, careful consideration must be given not only to mounting and backing, weight, penetrations, and routing of cabling, but also weight and potential impact from wind or other environmental factors,

d. Colour, finish, and signage – depending on the functional intent of the device (i.e., help phone vs. security phone vs. other), the designer shall coordinate with Campus Security to ensure that the colour and finish of the device are appropriate and in line with current UofC standards, and that the appropriate signage for public awareness is installed where required. For intercoms / video intercoms, the UofC has the ability to listen to and record audio and video (where included as a function of the intercom) both in real-time on demand, and in response to initiation of the device via the push button or other means.

5.19.7.3 Other Considerations

As with all systems, the design and installation of these devices/system must consider and allow for the implementation, programming, configuration, and (where applicable) the integration of the following, both to meet the functional needs of the device or system owner (where approved by the UofC Campus Security), and/or as directed by UofC Campus Security to fully serve their functional requirements:

a. **Analytics** – Object classification and other (both at the edge, and centrally where connected to the UofC ESS), this may also include motion / audio detection for automatic activation or similar,

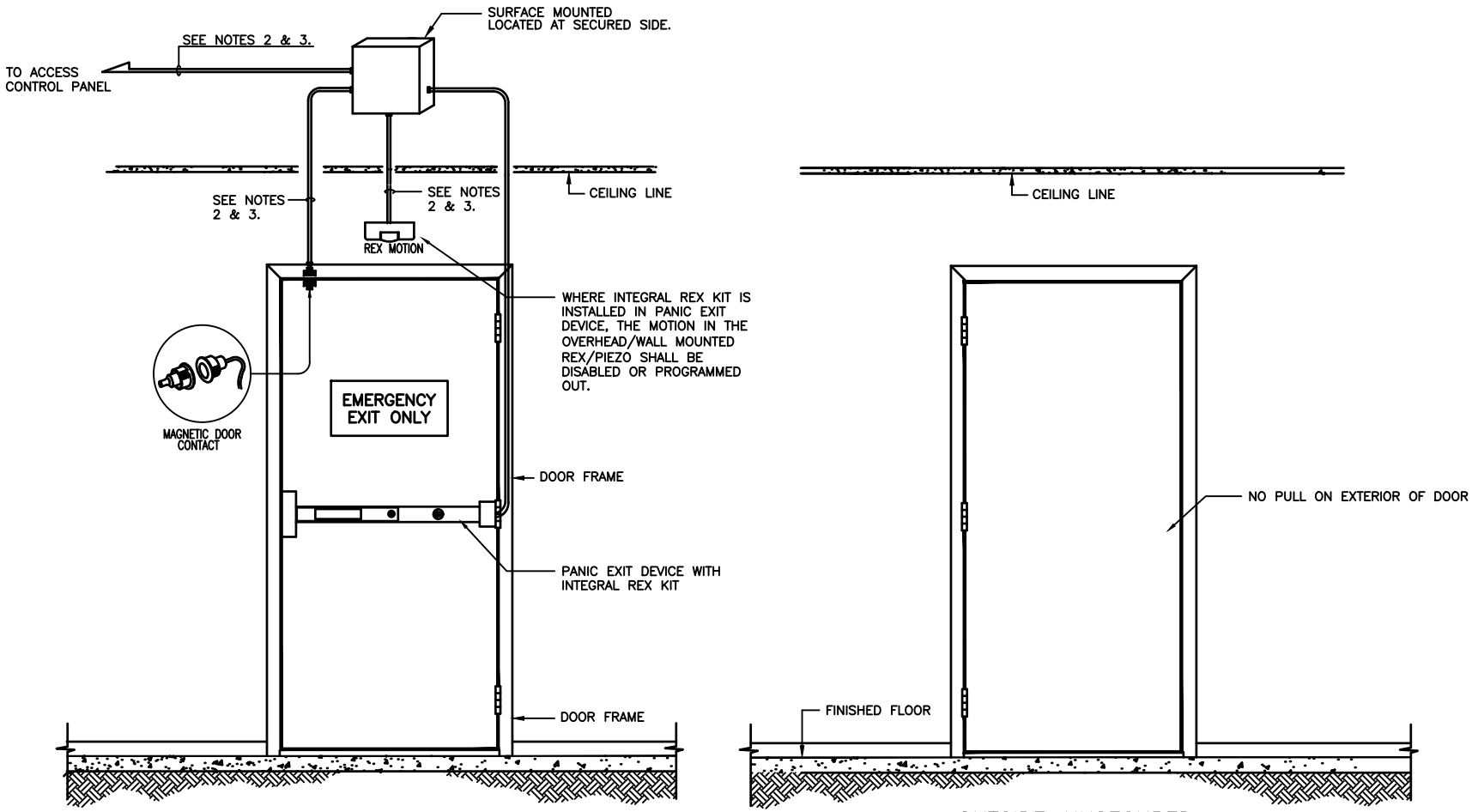
b. **Event to Action** – When the device is activated (manually or automatically), one or multiple events to action configurations within Genetec Security Centre may be needed. Note that this may include or instead be an automation of a SOP (standard operation procedure, aka workflow) within Mission Control.

Revision History

Revision Date	Version	Description
October 2023	1.0	Complete overhaul of previous 5.19 Access Control and CCTV design standard

Appendix A

ECA/ACS Common Door/Portal Sketches



DOOR TYPE A: STRICTLY EMERGENCY (FIRE) EXIT

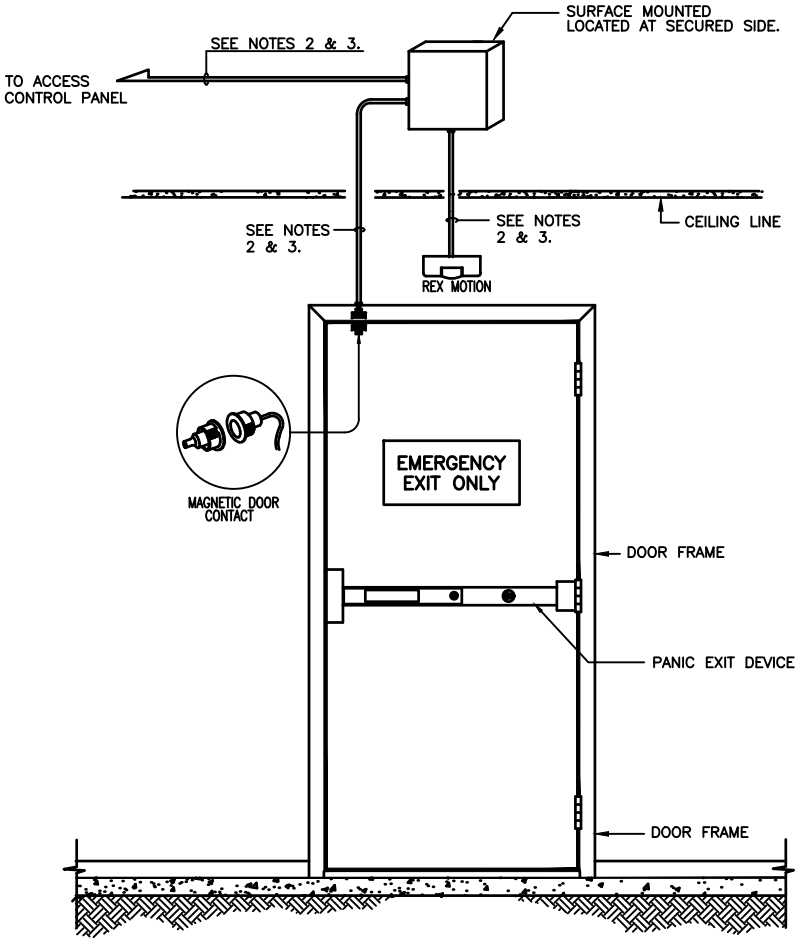
GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

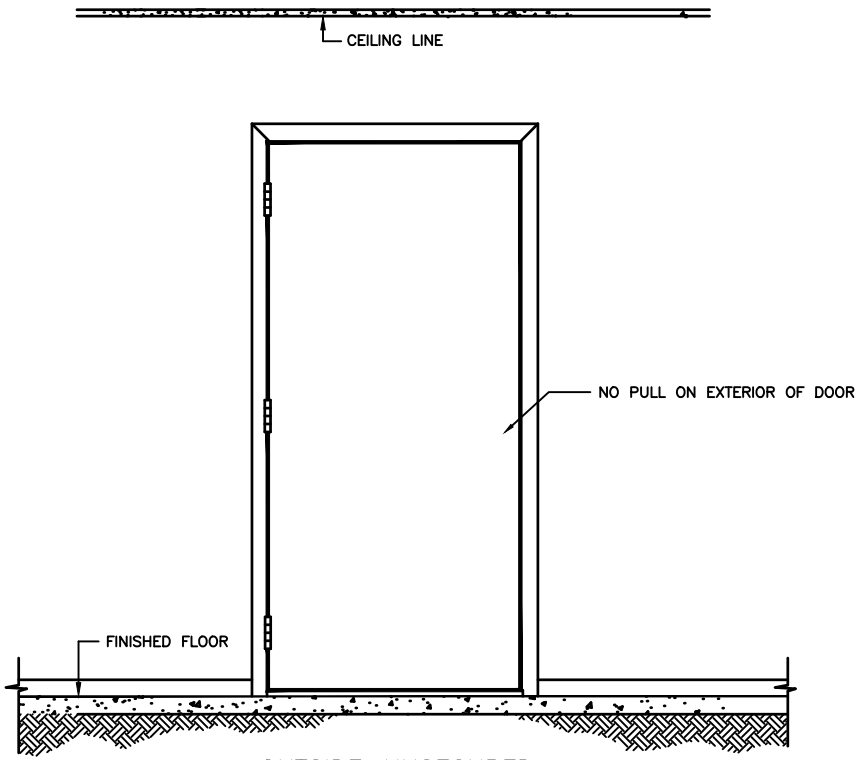
REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE A:
STRICTLY EMERGENCY (FIRE) EXIT

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE A	Rev.



INSIDE–SECURED



OUTSIDE–UNSECURED

NOTE: THIS VERSION OF DOOR TYPE A DETAIL (OVERHEAD REX/PIEZO AND WITHOUT REX IN CRASH BAR) IS A LEGACY / ALTERNATE DETAIL, TO BE USED IN LIEU OF THE CURRENT DOOR TYPE A DETAIL WHERE APPROVED/DIRECTED BY CAMPUS SECURITY.

DOOR TYPE A: STRICTLY EMERGENCY (FIRE) EXIT

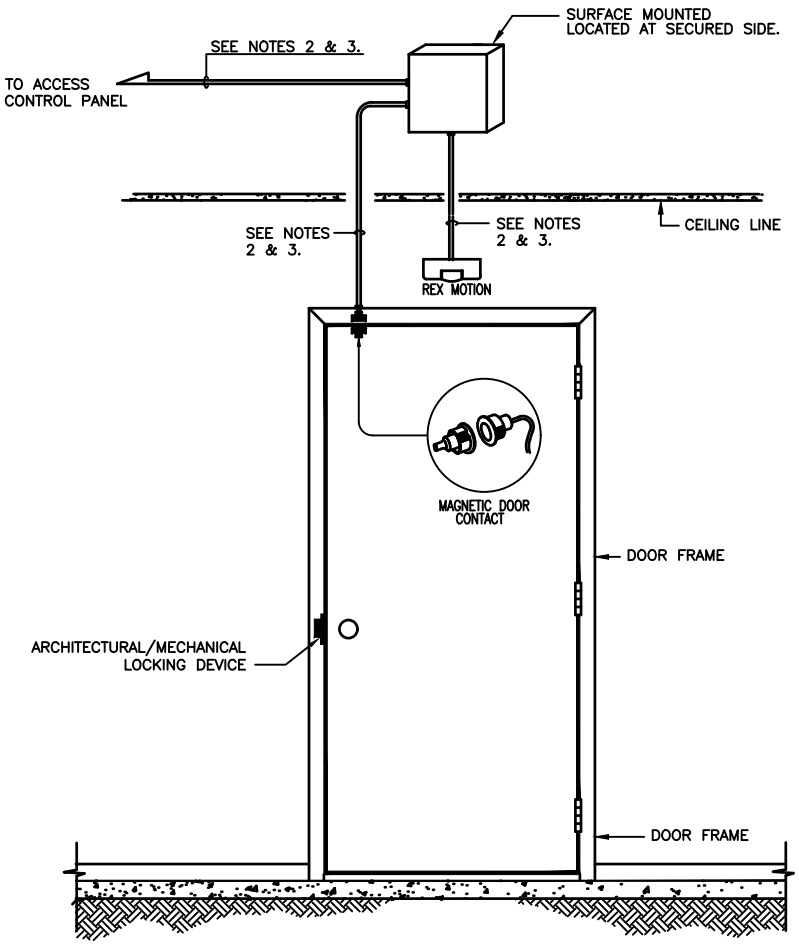
GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

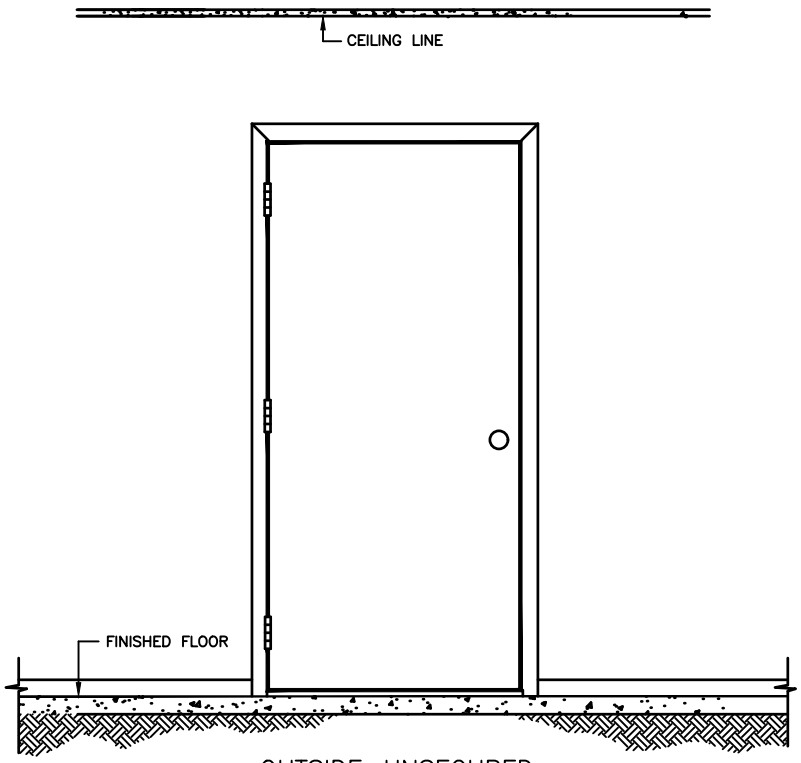
REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE A (ALTERNATE):
STRICTLY EMERGENCY (FIRE) EXIT

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE A (ALTERNATE)	Rev.



INSIDE–SECURED



OUTSIDE–UNSECURED

DOOR TYPE B: EXIT ONLY DOOR

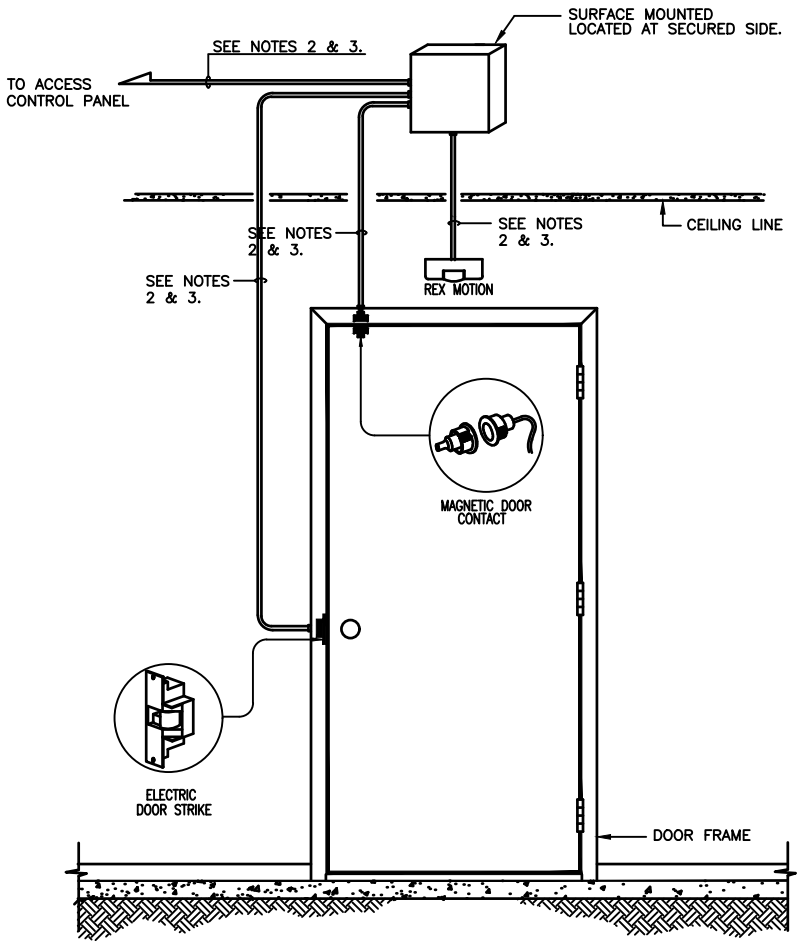
GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

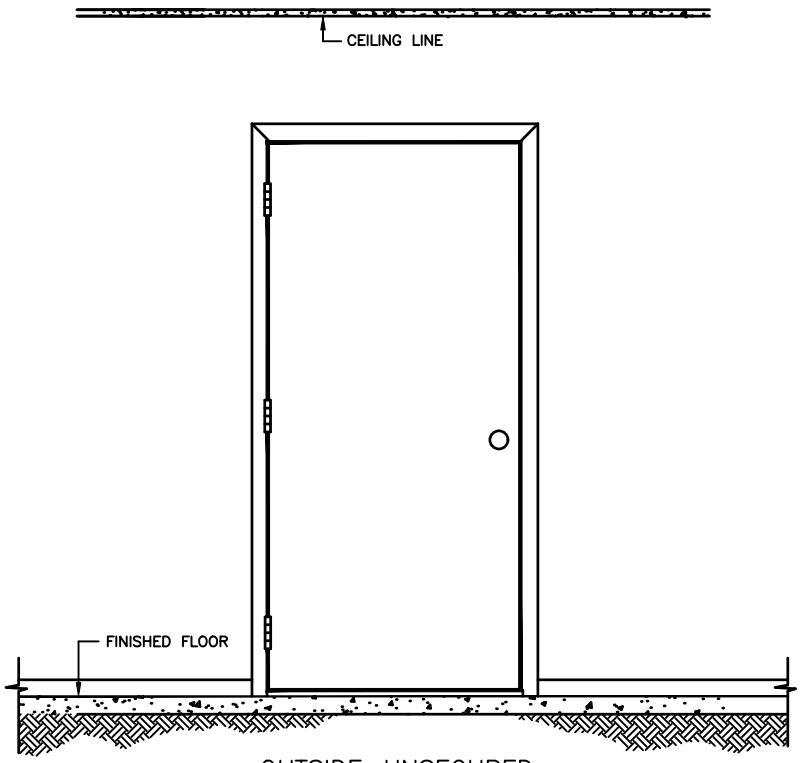
REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE B:
EXIT ONLY DOOR

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE B	Rev.



INSIDE–SECURED



OUTSIDE–UNSECURED

DOOR TYPE C: CONTROL DOOR

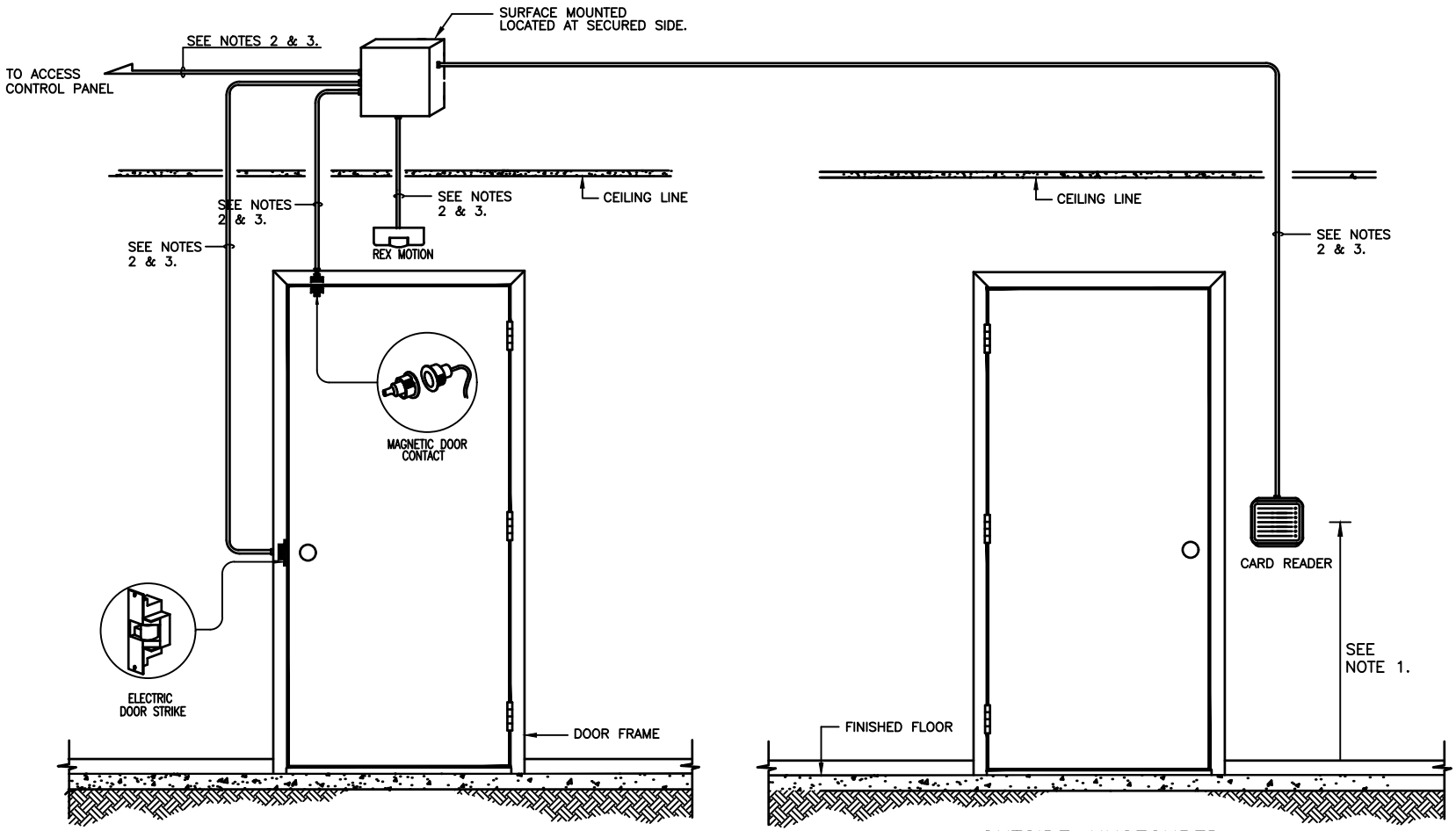
GENERAL NOTES:
1. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
2. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE C:
CONTROL DOOR

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE C	Rev.



DOOR TYPE D: CARD READER/WASHROOM DOOR

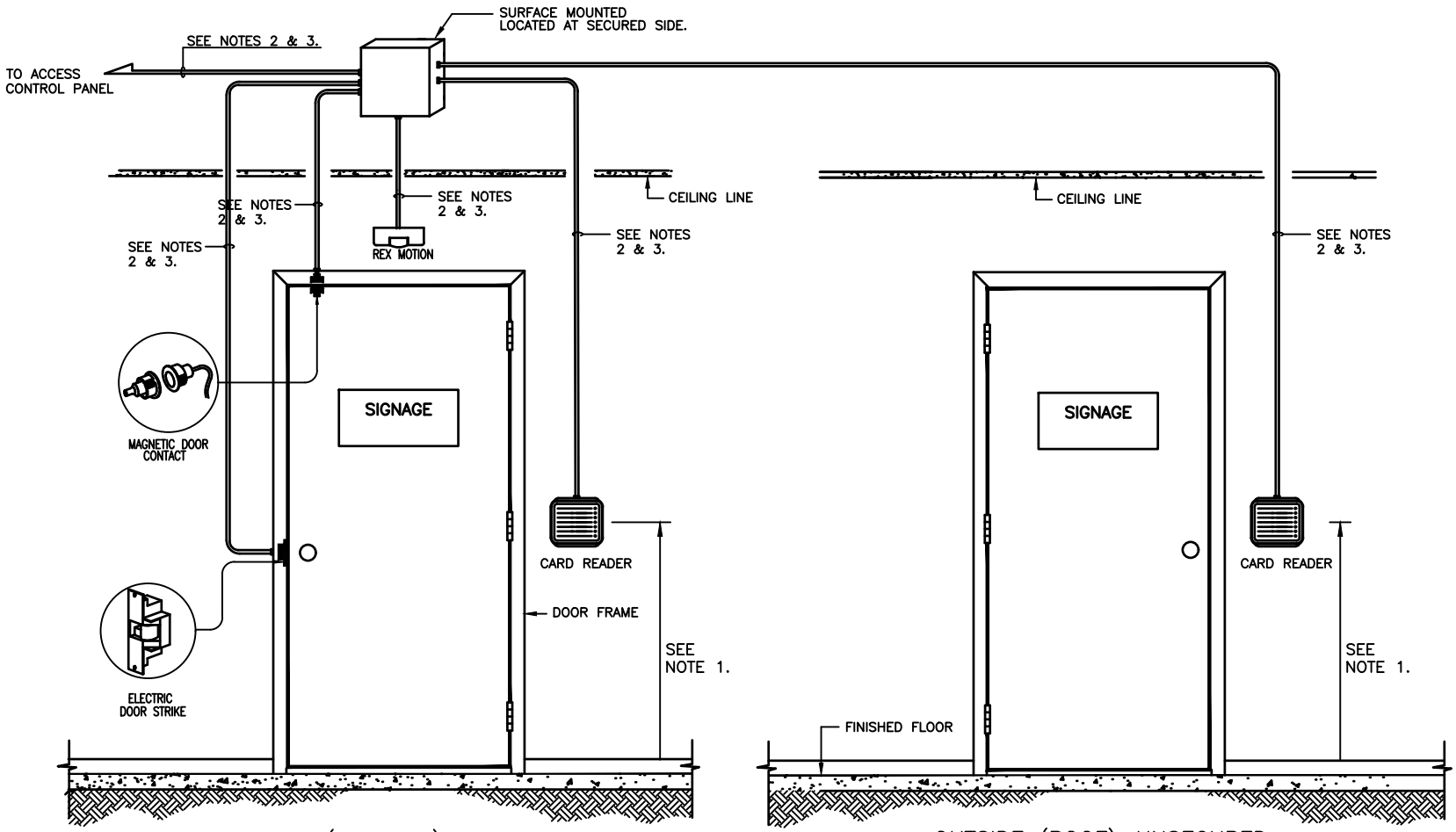
GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE D:
CARD READER DOOR

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE D	Rev.



INSIDE (INTERIOR)–SECURED

OUTSIDE (ROOF)–UNSECURED

DOOR TYPE F: ROOF ACCESS DOOR

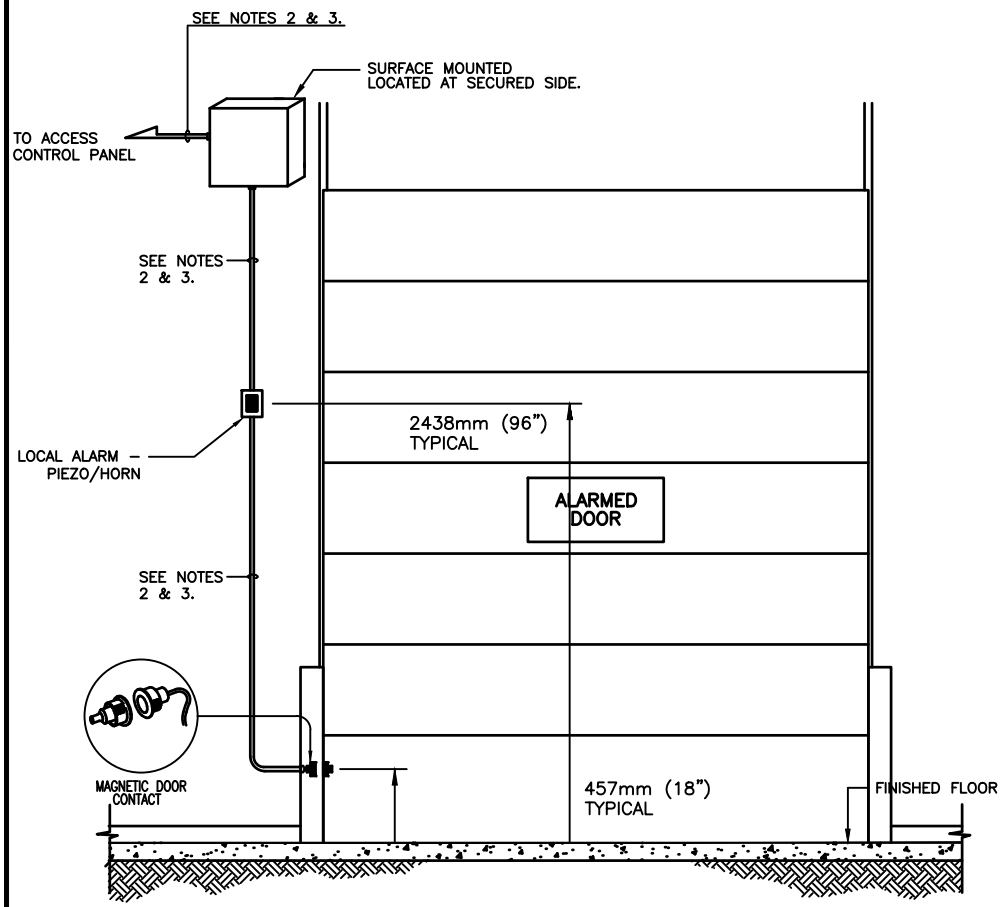
GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

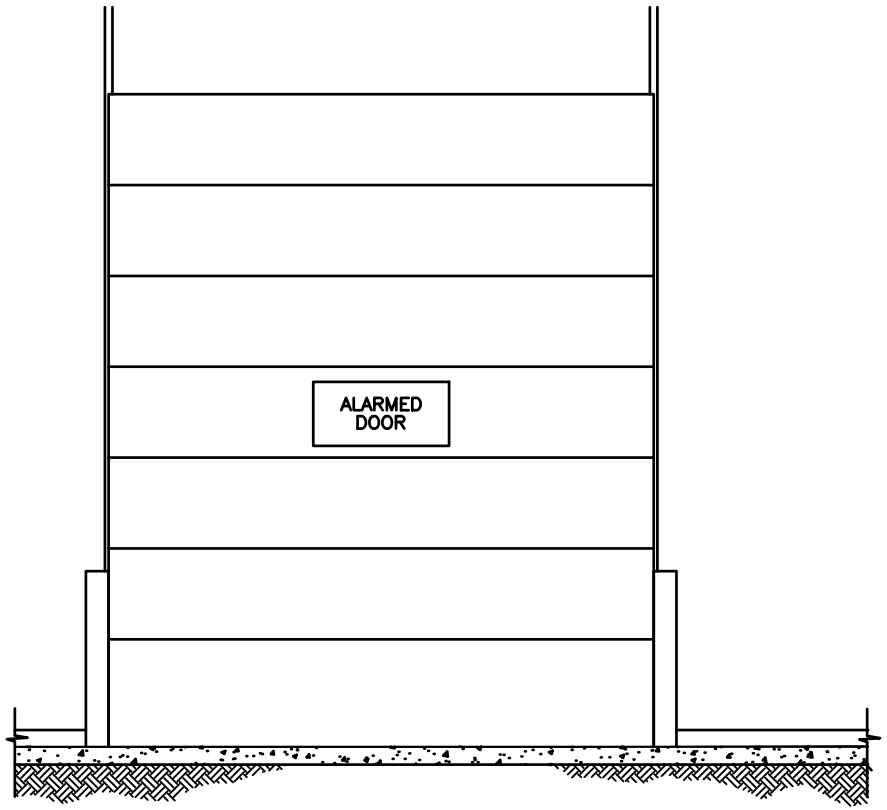
REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE F:
ROOF ACCESS DOOR

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE F	Rev.



INSIDE–SECURED



OUTSIDE–UNSECURED

DOOR TYPE G: OVERHEAD DOOR

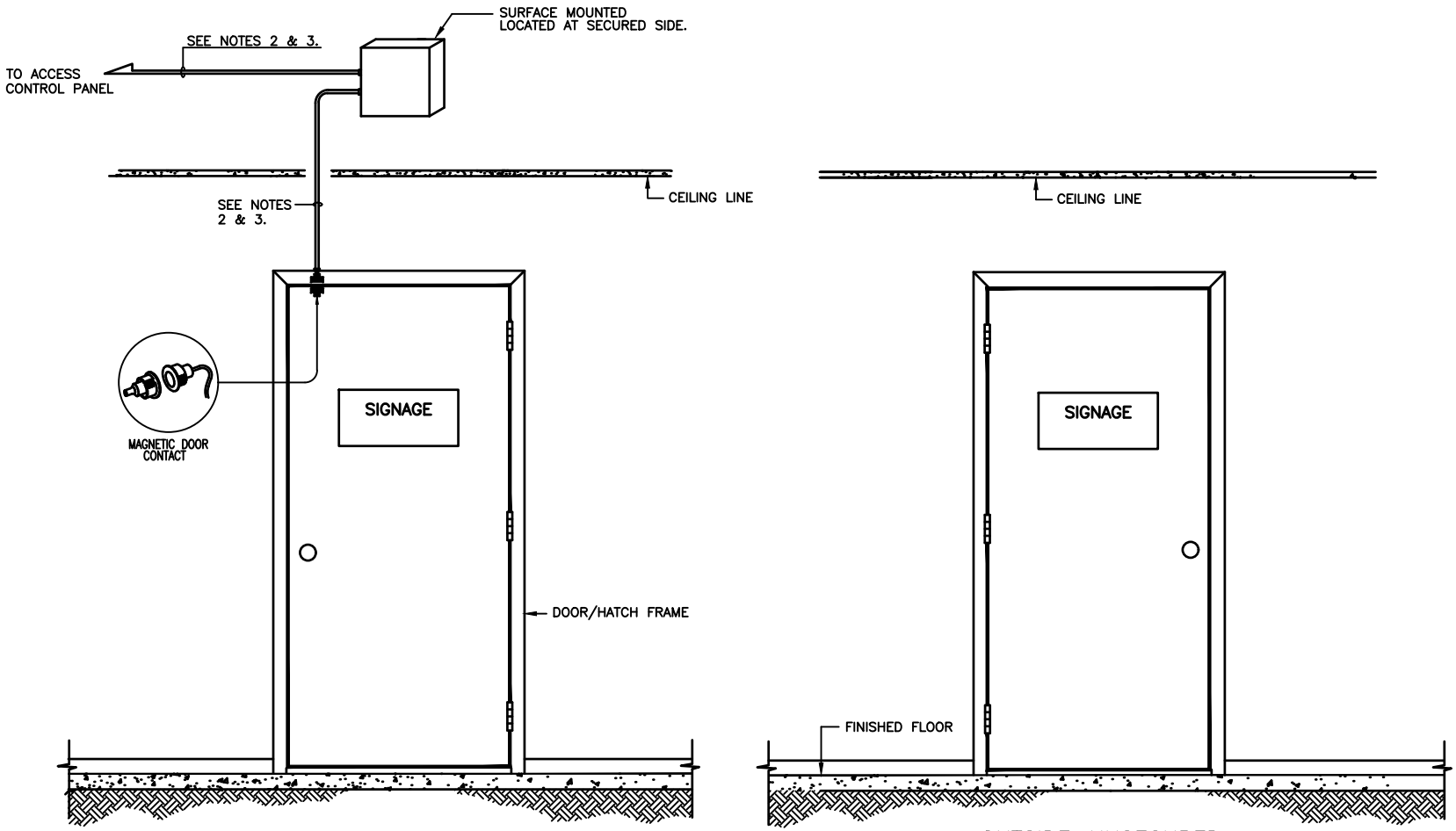
GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE G:
OVERHEAD DOOR

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE G	Rev.



INSIDE–SECURED

OUTSIDE–UNSECURED

DOOR TYPE H: ALARM DOOR

GENERAL NOTES:
1. DEVICE MOUNTING HEIGHTS – REFER TO ACCESS SYSTEM DESIGN STANDARD.
2. ALL CONDUIT SHALL BE MINIMUM 21mmC (3/4"), OR LARGER WHERE REQUIRED TO ACCOMMODATE WIRING.
3. WIRING REQUIREMENTS SHALL BE AS PER APPLICABLE ACCESS SYSTEM MANUFACTURER'S INSTALLATION DETAILS, UNLESS OTHERWISE APPROVED BY UofC PROJECT MANAGER / LOCKSHOP.

UNIVERSITY OF CALGARY

REV.	ISSUED FOR

UofC ACS STANDARD
DOOR TYPE H:
ALARM DOOR

PROJ. No.: N/A	
DATE: 10/05/2023	
SCALE: N.T.S.	
DES: SJ	DWN: SM
DWG. No. TYPE H	Rev.

Appendix B

ESS Device Labelling Standard

Version 1.0, October 2023

Appendix B

University of Calgary ESS Device Labeling Convention (excludes ACS labeling)

Note: UofC owns and maintains a master ESS device database. Labels for all added/deleted/moved/changed ESS devices shall be coordinated with Campus Security so that the master database and other technical documentation can be updated accordingly, including additional details as outlined by Campus Security.

Labels of all ESS devices (excluding ACS) shall adhere to the following labeling convention (this example is based on an Intercom or Video Intercom):

In building:

- **AAAA - #### - INT/INTV - ##**
    - AAAA = Building / Area – two, three, or four letter designation assigned by UofC (i.e. MSC =MacEwan Student Centre), examples include:
        - MSC – MacEwan Student Centre
        - MS – Math Sciences
        - And so on, for buildings / areas with official designations.
    - #### - Level / Area – two-four alphanumeric characters indicating level/area:
        - 01 – Main Floor
        - 02 – 13, etc. – Second Floor, etc.
        - ROOF – Roof
        - B1 – Basement Level 1
        - B2 – Basement Level 2
        - P1 – Parkade Level 1
        - P2 – Parkade Level 2
        - EXT – Exterior (at ground level), on or in close proximity to designated/noted building.
        - MEZZ – Mezzanine (where other descriptions not applicable, i.e. 2nd floor)## - Sequential numbering of cameras within designated area. Could be three digits if/whenrequired.
    - INT (Intercom) / INTV (Video Intercom)
    - ## (Optional text) - where there is more than a single intercom in a space (larger open areas)

  i.e. EEEL-123-INTV -> EEEL building, room 123, video intercom (if single)

On building exterior:

- **EEEL-EXT-INTV-NW-ENTRANCE**

Away from building:

- **BI-SITE-INTV-SE-LRT-ENTRANCE**

Other location scenarios (in this case, a CCTV camera):

- Parking Lots (i.e. PL # 10) – to follow ‘PL’, then the lot #, i.e. ‘PL-10-01’, indicating Parking Lot (PL), 10 (lot # 10), camera # 01

Physical Labels:

All installed ESS devices (including cameras) shall be labeled with permanently affixed labels attached to the housing/mount as follows:

- Indoor – Embossed adhesive plastic labels, black text on white/clear, 6mm high letters.
- Outdoor – Size 4 lamicoids, black core, white face, lettering accurately aligned and engraved into core mechanically attached (to housing/base) with self-tapping screws (minimum two screws per lamicoid).

For all labels, the text is to include a minimum of the Device ID (‘Camera ID’ from master CCTV camera list), i.e. ‘EEEL-ROOF-01’

Appendix C

ACS Labelling Standard

Version 1.0, October 2023

Appendix C
University of Calgary ACS Door/Device Labeling Standard

Note: UofC owns and maintains a master ESS device database, which includes ACS controllers and other connected devices. Labels for all added/deleted/moved/changed ESS devices shall be coordinated with Campus Security so that the master database and other technical documentation can be updated accordingly, including additional details as outlined by Campus Security.

For the purposes of ACS, doors are labeled as follows. Note that this convention generally and typically applies, but there are exceptions. Prior to installation, programming, and labeling of devices, door labels should be coordinated and confirmed with the applicable UofC Project Manager:

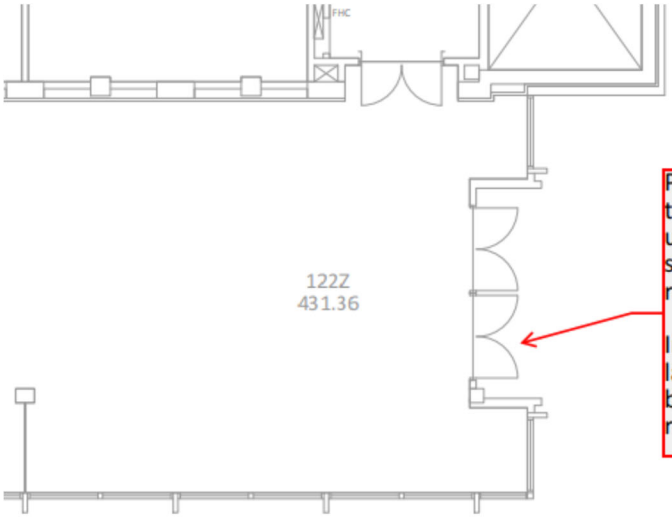
Door and ACS device labeling should include the following, with the first three-character groupings being mandatory, and up to seven total character groups in some specific situations. Even where some or all optional character groups are used, the three leading character groupings match the labeling standards used throughout the UofC:

SH	-	**109Z**	-	A/B/C/D	-	E	-	OH	-	**FUNCTION**	-	LEVEL
(1)		(2)		(3)		(4)		(5)		(6)		(7)

Label portion legend / explanation:

1) Building Acronym (Mandatory) (2 character or other as per current UofC facilities / building labeling)
2) Door Label (Mandatory) - Door label per existing UofC labeling standards.
3) Door/Leaf Label (Mandatory where applicable) – see below for labeling guidelines for a bank or group of doors.
4) E = Exterior (Mandatory where applicable) - for exterior doors only, E shall be included to highlight that door is exterior. Not required / to be included for interior doors, i.e. 'I'
5) OH = Over Head Door (Mandatory where applicable) - to help system users more readily recognize that a referenced door is an Over Head door.
6) Security Function (Mandatory) = Where a door is connected to Genetec, each label shall include the following to highlight the security function/functionality of the door: ES = Electric Strike (controlled, unlock available, override available), CB = Crash Bar (typically an emergency exit), ML = Mag Lock (controlled), DS = Monitored only / Door Position Switch.
7) Level (Optional, Mandatory in noted situations) - Where the door # of a door and the physical level do not match (i.e. if door 109Z were on the 'Ground' floor vs Main vs. Lower vs. other as is defined in the building itself), this field shall be used and the actual level of the floor included for clarity.

Door labeling – groups or banks of doors:
Where a door is part of group of doors (as defined by UofC Architectural standards), and whether all doors within a group or bank of doors is being installed with electrified hardware for control and/or monitoring (which will typically be the case), the following still typically applies, per UofC Architectural standards. Doors are generally labeled based upon the direction of travel (from unsecure side to secure side, or from outside to inside), and from left to right, and based upon the room/space ID for the space being entered into. Note that there are exceptions to this rule (i.e. a vestibule with an outer and inner set of doors, they may be labeled based upon the interior space beyond the vestibule). To avoid conflict or confusion, prior to installation, programming, and labeling of devices, door labels should be coordinated and confirmed with the applicable UofC Project Manager.



Per Architectural Door Numbering standards, and for the purposes of ACS, doors are generally labeled based upon the direction of travel (from unsecure side to secure side, or from outside to inside), and from left to right, and based upon the space being entered into.

In this case therefore, the bank of four doors would be labeled as SS-122Z-A (left most door moving towards building), SS-122Z-B, and so on, or all four could be referenced as SS-122Z-A/B/C/D

Appendix D

ESS Approved Hardware List

Version 1.0, October 2023

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3				
Item Model	**Mfgr**	**Item Description**	**Incl. in Ext. Warranty/SLA**	**Comments / Reference Notes (Legend at bottom)**
AXIS - Q SERIES				
Q6100-E	Axis Communications	Q6100-E Q61 Series 20MP 360° PTZ IP Camera, 2.8mm Lens	X	(1)
Q6010-E	Axis Communications	In/Outdoor 360 MULTI-Sensor Compatible w/Q60/Q61 PTZ's	X	(1)
Q6135-LE	Axis Communications	HW, Camera - 2MP PTZ, Outdoor, 30X Zoom, high speed	X	(1)
Q6075-E	Axis Communications	Q6075-E Q60 Series HDTV 1080p Outdoor PTZ Network Camera, 40x Optical Zoom	X	(1)
AXIS - P SERIES				
P3245-LV	Axis Communications	P3245-LV P32 Series 1080p HDTV Fixed Dome IR WDR IP Camera, 3.4-8.9mm Lens (Replaces P3225-LV)	X	(1)
P3265-LVE	Axis Communications	P3265-LVE P32 Series 2MP Outdoor Vandal Resistant Fixed Dome IR WDR IP Camera, 3.4-8.9mm Varifocal Lens	X	(1)
P3807-PVE	Axis Communications	HW, Camera - 8.3MP, 180 Multi-Sensor, In/Outdoor, flush, with analytics	X	(1)
P3715-PLVE	Axis Communications	2x2 MP dual sensor multidirectional camera with 360° IR	X	(1)
P3727-PLE	Axis Communications	P3727-PLE P37 Series 4x2MP Indoor/Outdoor Multidirectional Fixed Dome 360° Panoramic IR WDR IP Camera, 3-6mm Varifocal Lens	X	(1)
P5655-E	Axis Communications	P5655-E HDTV 1080p PTZ WDR IP Camera, 32x Optical Zoom	X	(1)
P9106-V	Axis Communications	P9106-V Series 3MP vandal resistant corner mount camera with brushed steel housing	X	(1)
AXIS - M SERIES				
M5525-E	Axis Communications	HW, Camera - PTZ, Indoor, Surface, 10x Zoom, with analytics	X	(1)
BOSCH - 7000 SERIES				
NIN-71122-F1	Bosch	HW, Camera - 180, Indoor, with analytics	X	(1)
NIN-70122-F0A	Bosch	HW, Camera - 360, Indoor, with analytics	X	(1)
NIN-70122-F0A	Bosch	HW, Camera - 360, Outdoor, with analytics	X	(1)
BOSCH - 6000 SERIES				
NIN-63023-A3S	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Indoor, in ceiling, with analytics	X	(1)
NIN-63023-A3S	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Indoor, surface, with analytics	X	(1)
NIN-63023-A3S	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Indoor, pendant, with analytics	X	(1)

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3				
Item Model	**Mfgr**	**Item Description**	**Incl. in Ext. Warranty/SLA**	**Comments / Reference Notes (Legend at bottom)**
NIN-63023-A3S	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Outdoor, surface, with analytics	X	(1)
NDS-6004-F180E	Bosch	NDS-6004-F180E Flexidome IP Panoramic 6000 12MP Outdoor/Indoor Fixed Dome Camera, 180-Degree IP66	X	(1)
NFN-60122-F0	Bosch	HW, Camera - Fixed IP Panoramic 360 Lens, Indoor with analytics	X	(1)
BOSCH - 5000 SERIES				
NII-50022-A3	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Indoor, in ceiling, motion/detection/audio	X	(1)
NII-50022-A3	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Indoor surface, motion/detection/audio	X	(1)
NII-50022-A3	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Indoor, pendant motion/detection/audio	X	(1)
NII-50022-A3	Bosch	HW, Camera - Fixed Varifocal, smoked dome, Outdoor, surface, motion/detection/audio	X	(1)
NDE-8503-RT	Bosch	NDE-8503-RT Flexidome IP Starlight 8000i 6MP Fixed Dome Camera, HDR 12-40mm PTRZ IP66	X	(1)
NDE-8503-RT	Bosch	NDE-8503-RT Flexidome IP Starlight 8000i 6MP Fixed Dome Camera, HDR 12-40mm PTRZ IP66	X	(1)
NDE-8503-RT	Bosch	NDE-8503-RT Flexidome IP Starlight 8000i 6MP Fixed Dome Camera, HDR 12-40mm PTRZ IP66	X	(1)
NDE-8503-RT	Bosch	NDE-8503-RT Flexidome IP Starlight 8000i 6MP Fixed Dome Camera, HDR 12-40mm PTRZ IP66	X	(1)
NDE-8503-RT	Bosch	NDE-8503-RT Flexidome IP Starlight 8000i 6MP Fixed Dome Camera, HDR 12-40mm PTRZ IP66	X	(1)
AVIGILON CCTV CAMERAS				
2.0C-H5A-DC1	Avigilon	2.0 MP (1080p) WDR, LightCatcher, Day/Night, In-Ceiling Dome, 3.3-9mm f/1.3 P-iris lens, Next-Generation Analytics	X	(1)
2.0C-H5A-DO1	Avigilon	2.0 MP (1080p) WDR, LightCatcher, Day/Night, Outdoor Dome, 3.3-9mm f/1.3 P-iris lens, Next-Generation Analytics	X	(1)
2.0C-H5A-PTZ-DC36	Avigilon	H5A, 2MP 36x In-Ceiling PTZ Dome	X	(1)
2.0C-H5A-PTZ-DP36	Avigilon	H5A, 2MP 36x Pendant PTZ Dome	X	(1)
9C-H4A-3MH-180	Avigilon	3x 3 MP, WDR, LightCatcher, 4mm, Camera Only	X	(1)
9C-H4A-3MH-270	Avigilon	3x 3 MP, WDR, LightCatcher, 2.8mm, Camera Only	X	(1)
12C-H4A-4MH-360	Avigilon	4x 3 MP, WDR, LightCatcher, 2.8mm, Camera Only	X	(1)
GENETEC - CCTV - LICENSE PLATE RECOGNITION & RELATED				
GSC-FreeFlow-1LOT	Genetec	Free Flow one Parking Lot Connection (one required per LPR camera)		(1)

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3				
Item Model	**Mfgr**	**Item Description**	**Incl. in Ext. Warranty/SLA**	**Comments / Reference Notes (Legend at bottom)**
AU-K-V-BS590-LC	Genetec	Black AutoVu SharpV Camera Kit 590nm illuminator (one per LPR camera)	X	(1)
GSC-FreeFlow-1LOT	Genetec	AutoVu Camera Cable, special connector & Lead Kit (one per LPR camera)	X	(1)
GSC-FreeFlow-1LOT	Genetec	SW SMA for 1 AutoVu Fixed Camera Connection 5 years (one per LPR camera)		(1)
DF-2053-7-R/G	Daktronics	DataMaster LED Space Availability Display - single line, 7" letters	X	(1)
DF-2052-5X2-R/G	Daktronics	DataMaster Tower LED Space Availability Display - 2 Lines, 5" letters	X	(1), (9)
DF-2052-5X3-R/G	Daktronics	DataMaster Tower LED Space Availability Display - 3 Lines, 5" letters	X	(1), (9)
DF-2052-5X4-R/G	Daktronics	DataMaster Tower LED Space Availability Display - 4 Lines, 5" letters	X	(1), (9)
DF-2052-7X2-R/G	Daktronics	DataMaster Tower LED Space Availability Display - 2 Lines, 7" letters	X	(1), (9)
DF-2052-7X3-R/G	Daktronics	DataMaster Tower LED Space Availability Display - 3 Lines, 7" letters	X	(1), (9)
DF-2052-7X4-R/G	Daktronics	DataMaster Tower LED Space Availability Display - 4 Lines, 7" letters	X	(1), (9)
DF-2052/2053-WARRANTY	Warranty - Daktronics	Maintenance and Warranty (5 years) of Daktronics displays, by Integrator (price per display)	X	(1)
GSC-FreeFlow-1LOT	Genetec	MLPR GSC AutoVu Managed Service 2.0 1 year		(1)
GSC-FreeFlow-1LOT	Genetec	MLPR GSC AutoVu Managed Service 1 Patroller Connection - 1 Yr		(1)
GSC-FreeFlow-1LOT	Genetec	MLPR Permit Zone configuration services for AutoVu mobile city (one time cost)		(1)
GSC-FreeFlow-1LOT	Genetec	MLPR AutoVu Sharp X University Dual Base Kit Mobile LPR, per application	X	(1)
GSC-FreeFlow-1LOT	Genetec	MLPR Mapping License including data for North America, per application		(1)
GSC-FreeFlow-1LOT	Genetec	AutoVu University system Professional Services (one time cost)		(1)
GSC-FreeFlow-1LOT	Genetec	MLPR GSC AutoVu Managed Service Upgrade to Pay-by-Plate Multi for 1 yr, per application		(1)
GSC-FreeFlow-1LOT	Genetec	MLPR Advanced Swap Service upgrade from return and repair service		(1)
MLPR-WARRANTY	Warranty - Genetec MLPR	MLPR, per application, Maintenance and Warranty (5 years) by Integrator		(1)
AXIS - VIDEO / VoIP INTERCOM				
I8016-LVE	Axis Communications	I8016-LVE 5MP IR Compact Network Video Intercom	X	(1)
TI8602	Axis Communications	TI8602 Indoor/Outdoor Wall Mount for Video Intercoms		(1)

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3				
Item Model	**Mfgr**	**Item Description**	**Incl. in Ext. Warranty/SLA**	**Comments / Reference Notes (Legend at bottom)**
5E-01337001	Axis Communications	2N IP FORCE - 1 BTN + HD CAM		(1)
	ASM Manufacturing	Custom manufactured Intercom pedestal		(1) - price incl. supply & install
CCTV - OTHER CAMERAS & COMPONENTS				
GSC-FreeFlow-1LOT	Genetec	Mobile GPS/WiFi Camera c/w single charging station	X	(1)
GSC-FreeFlow-1LOT	Genetec	Mobile Camera Docking Charging Station (10 devices)		(1)
BOSCH INTRUSION ALARM				
GSC-1AP-BOSCH	BOSCH	Bosch G Series Intrusion Panel Connection	X	(1)
B8512G	BOSCH	Intrusion Panel - Bosch G - Series 99 Points	X	(1)
B8103	BOSCH	Commercial Enclosure (White)		
B920	BOSCH	2 Line Alpha Numeric Keypad (SD12)	X	(1)
B426	BOSCH	Conettix IP Ethernet Interface	X	(1)
184RS-12W	BOSCH	Door Position Switch	X	
Panic Buttons / Alarm Hardware				
EN1210W	INOVONICS	Inovonics EN1210W EchoStream Door, Window Transmitter with Reed Switch	X	
EN5040	INOVONICS	HI PWR REPEATER W/BACKUP BATT	X	
CM-3130R		PUSH/PULL BUTTN,N/O,MAINTAINED	X	
EN4216MR	INOVONICS	Inovonics EN4216MR EchoStream 16-Zone Multi-Condition Receiver with Relays	X	(1)
EN1235DF	INOVONICS	Inovonics EN1235DF EchoStream Double-Button Fixed Position Hold Up Transmitter, Black	X	
DS-ENKITSDI2	BOSCH	Bosch P105F ENKIT-SDI2 SDI2 Inovonics Wireless Interface and Receiver Kit	X	(1)
ED-52BN540WH		Blue Rotating Beacon	X	
HUB2A		HOLDUP LATCHNG DPDT W/3 SOL TM	X	
MISCELLANEOUS ACCESSORIES				
Micro SD HC	Kingston	HW, Accessory - 32GB MicroSD Card, Class 10 SD		

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3				
Item Model	**Mfgr**	**Item Description**	**Incl. in Ext. Warranty/SLA**	**Comments / Reference Notes (Legend at bottom)**
Micro SD 128	Kingston	HW, Accessory - 128GB SDHC SD Card, Class 10 SD		
T8134	Axis Communications	Axis T8134 MIDSPAN 60W		
PB-NPD6001B	BOSCH	HIGH POE MIDSPAN		
ER1500C	Nitek	Nitek ER1500C IP over Coax Extender Receiver		
LABOUR & MISC MATERIALS **This section includes installation scenarios covered under UofC unit pricing.**				
		Interior Camera Installation Fixed No Mount		(4)
		Interior Camara Installation Fixed Ceiling/Wall/DropDown/Recessed		(4)
		Interior Camera Installation PTZ Ceiling/Wall/DropDown/Recessed		(4)
		Exterior Camera Installation Fixed No Mount		(4)
		Exterior Camara Installation Fixed Ceiling/Wall/DropDown		(4)
		Exterior Camera Fixed Corner/Parapet		(4), (5)
		Exterior Camera Fixed Pole - excludes pole, includes all mounting hardware, modifications		(4)
		Exterior Camera Installation PTZ		(4)
		Exterior Camera Installation PTZ Corner/Parapet		(4), (5)
		Exterior Camera PTZ Pole - excludes pole, includes all mounting hardware, modifications		(4)
		21mm Conduit infrastructure, device rough-in & cabling (Cat. 6), interior		(7)
		21mm Conduit infrastructure, device rough-in & cabling (Cat. 6A), interior		(7)
		21mm Conduit infrastructure, device rough-in & cabling (Cat. 6), exterior		(7)
		21mm Conduit infrastructure, device rough-in & cabling (Cat. 6A), exterior		(7)
		27mm Conduit infrastructure, device rough-in & cabling (Cat. 6), interior (as/where required by Voice & Data Standard)		(7)
		27mm Conduit infrastructure, device rough-in & cabling (Cat. 6A), interior (as/where required by Voice & Data Standard)		(7)
		27mm Conduit infrastructure, device rough-in & cabling (Cat. 6), exterior (as/where required by Voice & Data Standard)		(7)
		27mm Conduit infrastructure, device rough-in & cabling (Cat. 6A), exterior (as/where required by Voice & Data Standard)		(7)
		Cabling only (Cat. 6) - conduit infrastructure and device rough-in by others, interior		(7)

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3				
Item Model	**Mfgr**	**Item Description**	**Incl. in Ext. Warranty/SLA**	**Comments / Reference Notes (Legend at bottom)**
		Cabling only (Cat. 6A) - conduit infrastructure and device rough-in by others, interior		(7)
		Cabling only (Cat. 6) - conduit infrastructure and device rough-in by others, exterior		(7)
		Cabling only (Cat. 6A) - conduit infrastructure and device rough-in by others, exterior		(7)
		Per Device cost for Intrusion Alarm cabling		
		Camera demolition - price varies according to conditions, quantity, etc.		(7)
		Intrusion system - per device cabling (only), excludes conduit		
		Recommission all Legacy Intrusion Points		
WARRANTY & INTEGRATOR SLA				
		Base Warranty/SLA		Incl. in device pricing herein.
		Extended Warranty/SLA 5 year		
ACS				
SY-CLOUDLINKG2	Genetec	Intelligent System Controller	X	
IN-PRTSEXBTB	ICT	Multi-Technology Card Reader - ICT tSec Standard size	X	
IN-PTEXKPBTB	ICT	Multi-Technology Card Reader - ICT tSec Standard size with Keypad	X	
IN-PRXTSPBTB*	ICT	Multi-Technology Card Reader - ICT tSec mullion reader	X	
IN-PTSSTDBTB*	ICT	Multi-Technology Card Reader - ICT tSec mullion reader with keypad	X	
184RS012W	General Electric	Door Monitoring Hook Up, 1" position switch short lead	X	
T-REX.XL	Kantech	Request To Exit Sensor w/Tamper	X	
Hub2A	United Security Products	Holdup/Panic Latching DPDT Button - Under Desk or Wall	X	
SY-LP1502	Mercury	Mercury Intelligent Controller, Linux Based, 8In/4Out/2Rd	X	
SY-MR52-S3	Mercury	Mercury MR52 2-reader interface module Series 3	X	
SY-MR16IN-S3	Mercury	Mercury MR16IN 16-input Monitor Module Series 3	X	
SY-MR16OUT-S3	Mercury	Mercury MR16IN 16-output Monitor Module Series 3	X	

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List
Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3

Item Model	Mfgr	Item Description	Incl. in Ext. Warranty/SLA	Comments / Reference Notes (Legend at bottom)
SY-6APS-B-NA-Kit	Genetec	6A Power Supply Fused	X	
FPV104-D8E1	Life Safety Power	Life Safety Power Supply for Strike Voltages/Mag Voltages Fused	X	
J7-150BCDP6M	Life Safety Power	Life Safety Power c/w Large Enclosure 30X23X6.5 - 8 Door	X	
J7-122C2D8M2	Life Safety Power	Life Safety Power c/w Large Enclosure 36X30X6.5 - 8 Door	X	
KT-BATT-12	Kantech	Battery 12V 7Ah	X	
0E-PPS1640CA	W Box Technologie	Transformer Plug in 16VAC/40VA	X	
CP1000AVRLCD	Cyber Power	UofC UPS	X	
MNT	HDTk	Wall Mount Shelf for UPS		
ACS - MISC				
Labor - Electrified Hardware		Electrified Locking Device Termination		
Conduit / Cabling		Per Entrance Unit Price		
Labor		Decommissioning - 1 ACS Door		
Labor - Existing Reader		Card Reader Termination		
Labor - Existing DPS		Door Monitoring Hood Up/Termination of Existing		
Labor - Existing REX		Request to Exit Re-Terminate - Recommission		
Labor - Programming		Labor For Program Reader		

NOTES LEGEND

(1) - UofC unit pricing includes labour per device, including integrator's shop time to prep/configure device - IP/MAC address, adding camera to camera list, etc. Excludes all other labour listed elsewhere (i.e. memory card)

(4) - Flat rate camera install per application is inclusive of all require mounting hardware/accessories, labour, x-rays, scans, firestop, patching, coring, etc. to make a complete install. Excludes Integrator's shop labour (camera config.), conduit & cable, camera label.

(5) - Excludes roof penetration, as scope of work for each roof penetration varies by location and existing condition. Project-specific pricing to include and breakout roof penetration-related costs.

(7) - Where applicable, price for camera label, conduit & cable, or cabling only (conduit & rough-in by others), and camera demolition, are a flat rate / unit price per camera.

(9) - For tower-style space availability displays, unit pricing includes displays only. Mounting structure onto/into which displays are to be installed are not included, and must be designed/priced separately to match the application needs.

Electronic Security Systems (ESS) Projects - ESS Approved Hardware List

Note: This version is derived from 2017ICA0088 APPENDIX "D - 1", ICA Amendment 3

Item Model	Mfgr	Item Description	Incl. in Ext. Warranty/SLA	Comments / Reference Notes (Legend at bottom)

Appendix E

ESS Glossary

Appendix E
University of Calgary ESS Glossary

ACS	Access Control System
AI	Artificial Intelligence - hardware/software to analyze data.
ALPR	Automatic License Plate Recognition (synonymous with LPR)
ANALYTICS	Software/hardware automated analysis of data, generally for object or other classification.
API	Application Programming Interface - computing interface which defines interactions between multiple otherwise incompatible software applications.
Broadcast	Point to all communications - a single source is sent to 'all' potential destinations. Typically not used in ESS.
CCTV	Closed Circuit Television - Video Surveillance
Cloud	Remotely located subscription storage solution (i.e. Amazon, Microsoft, or similar)
DAS	Duress Alarm System, aka Panic Alarm System
DAS	Direct Attached Storage (storage device, connected directly to server/workstation)
DVR	Digital Video Recorder (smaller applications, dedicated storage device connected directly to server/workstation)
ECS	Emergency Communication System (generally two-way emergency communications)
Edge	'At the edge' – typically refers to a function or feature that exists in / is performed by the device. Example – camera with analytics built into the camera (vs. at the server)
ESS	Electronic Security System(s)
Facial Identification	Identify presence of a person's face (but not the ability to uniquely identify the person)
Facial Recognition	Uniquely identify the person
FOIP	Freedom of Information and Protection of Privacy Act
H.264	Video compression technology
H.265	Video compression technology (generation beyond H.264)
IAS	Intrusion Alarm System
LPR	License Plate Recognition
MALPR	Mobile Automatic License Plate Recognition (synonymous with MLPR)
MLPR	Mobile License Plate Recognition (commonly mounted on vehicle)
MN	Mass Notification (generally one way emergency communications)
Multicast	Point to multipoint communications - a single source / stream sent to multiple destinations, typically managed by either source device (i.e. camera) or network switch (Layer 3)
NAS	Network Attached Storage (smaller applications, appliance located on network)
NVR	Network Video Recorder (dedicated appliance/server located somewhere on network)
PA	Public Address (typically for mass or area one-way communication or announcements)

QOS	Quality Of Service - ability to manage / prioritize which signals/data get priority, in terms of network bandwidth
SAN	Storage Area Network (often a number of dedicated appliances/servers for the purpose of storage of large amount of data)
SDK	Software Development Kit - software tools provided to create framework for communication between otherwise incompatible software applications.
SIP	Session Initiation Protocol - supports real-time voice, video, and messaging
SLA	Service Level Agreement
SMA	Service Maintenance Agreement
SOP	Standard Operating Procedure - Pre-defined/planned step-by-step procedure to accomplish task.
UI	User Interface (i.e. monitor, keyboard, mouse / joystick)
Unicast	Point to point communication - every destination requires a separate stream of data, increasing network traffic and computer processing load.
Varifocal	Applicable to camera lenses, denoting a lens that allows multiple focusing distances for coverage of near, intermediate, and far vision, versus a specific lens focal length selected for a single or limited area view.
VMS	Video Management System (software/servers managing CCTV)
WDR	Wide Dynamic Range - ability to quickly and effectively manage views with wide variety of light levels.

Appendix F

ECA Requirements by Room Type

Version 1.0, October 2023

Appendix F
ECA Requirements by Room Type

Type	Sub Type	Description	Definition	Approved for ECA?
Classroom Facilities 10000			This category includes rooms used primarily for lecture and seminar-style group instructional and also includes supporting rooms that serve this instruction	Y
	11000	Theatre	Tiered or sloped-floor lecture theatres, lecture rooms, lecture demonstration rooms, and classrooms - Scheduled.	Y
	12000	Classroom	Flat-floored lecture rooms, classrooms, seminar rooms, and tutorial rooms - Scheduled.	Y
	13000	Telecom Classroom	A room equipped with telecommunications to be used for instruction	Y
	14000	Private Corridor - Instructional	A corridor serving an instructional space only, not available for public circulation.	(Note 1)
	10080	Instructional Service space	Examination rooms, projection rooms, preparation rooms, closets, storage rooms and other related areas.	(Note 1)
	10081	Instructional Service - examination room	Dedicated examination rooms which support instructional space and activities.	Y
	10082	Instructional Service - projection room	Dedicated projection rooms which support instructional space and activities.	Y
	10083	Instructional Service - closets and storage	Dedicated closets and storage spaces which support instructional space and activities.	N
	10089	Instructional Service - other	Other Instructional Service Space.	Y
Teaching Laboratories 20000			These spaces are characterized by special purpose equipment, furnishing and/or specific room configuration which ties instructional activities to a particular curriculum component, discipline or group of closely related disciplines.	Y
	21000	Instructional laboratory Dry - scheduled	Specially-designed teaching laboratories primarily used for scheduled instruction such as special subject rooms, computer labs, instructional shops, drafting, art, dance and music studios, music practice rooms, language laboratories, athletic facilities. Dry is defined as rooms with fixed casework, benches, sink and some ventilation.	Y
	21001		Specially-designed teaching laboratories primarily used for scheduled instruction in a particular subject (Nt otherwise listed in another sub-type). Examples would include anthropology lab, electrical engineering, etc.	Y
	21002		Specially-designed teaching laboratories primarily used for scheduled instruction, utilizing computer workstations for all or most students.	Y
	21003		Specially-designed teaching laboratories primarily used for scheduled instruction such as instructional shops, drafting laboratories, or arts studios.	Y

	21004	Specially-designed teaching laboratories used as dance or music studios, primarily used for scheduled instruction.	Y
	21005	Specially-designed teaching laboratories used as music practice space, primarily used for scheduled instruction.	Y
	21006	Specially-designed teaching laboratories used as language laboratories, primarily used for scheduled instruction.	Y
	21007	Specially-designed teaching laboratories used as interview rooms, primarily used for scheduled instruction.	Y
	21008	Specially-designed teaching laboratories used as observation rooms (mainly with two-way mirrors), primarily used for scheduled instruction.	Y
	21009	Gymnasia which are primarily used for scheduled instruction.	Y
	21089	Dry labs that are not outlined by other descriptions	Y
	21101	Specially designed teaching laboratories primarily used for scheduled instruction utilizing computing workstations for all or most students.	Y
Instructional Laboratory Dry - unscheduled 22000	22000	Includes general workrooms, studios and other special-purpose faculties generally used for informal or irregularly scheduled instruction, or for practice. N hazardous materials or chemicals are used. Dry is defined as rooms with fixed casework, benches, sink and some ventilation.	Y
	22001	Specially-designed teaching laboratories not primarily used for scheduled instruction in a particular subject (Nt otherwise listed in another sub-type). Examples would include anthropology lab, electrical engineering, etc.	Y
	22002	Specially-designed teaching laboratories not primarily used for scheduled instruction, utilizing computer workstations for all or most students.	Y
	22003	Specially-designed teaching laboratories not primarily used for scheduled instruction such as instructional shops, drafting laboratories, or arts studios.	Y
	22004	Specially-designed teaching laboratories used as dance or music studios, not primarily used for scheduled instruction.	Y
	22005	Specially-designed teaching laboratories used as music practice space, not primarily used for scheduled instruction.	Y
	22006	Specially-designed teaching laboratories used as language laboratories, not primarily used for scheduled instruction.	Y
	22007	Specially-designed teaching laboratories used as interview rooms, not primarily used for scheduled instruction.	Y
	22008	Specially-designed teaching laboratories used as observation rooms (mainly with two-way mirrors), not primarily used for scheduled instruction.	Y
	22089	Dry labs that are not outlined by other descriptions	Y

	23000		Specially-designed teaching laboratories primarily used for scheduled instruction; these spaces contain fume hoods, safety appliances (shower or eye wash) and analytical equipment with potentially hazardous conditions.	Y
	20080		Areas that serve one or more labs as an extension of lab activity. Includes control booths, projection rooms, coatrooms, preparation, observation rooms, closets, materials storage, balance, cold rooms, dark rooms, supply, printer and other areas that primarily serve instructional laboratories.	Y
	20081		Closets, storage and supply areas that serve one or more labs as an extension of lab activity.	N
	20082		Observation spaces (primarily with two-way mirrors) that serve one or more labs as an extension of lab activity.	Y
	20083		Cold rooms or walk-in refrigerators that serve one or more labs as an extension of lab activity.	N
	20084		Area of lab near entrance used to decontaminate shoes. Usually a walk through station with a cleaning liquid.	N
	20085		Space adjacent to/near a lab that is used for prepping materials to be used in a wet/dry lab	N
	20086		Space adjacent to/near a lab that is a central location for specialized equipment	(Note 1)
	20089		Rooms which serve Undergrad Instructional spaces, other than those specified above. E.g. projection rooms, dark rooms, etc.	(Note 1)
	24000			
	24001		Animal quarters for larger animals housed outside of buildings, serving graduate instructional needs.	(Note 1)
	24002		Animal care rooms for smaller animals housed within buildings, serving graduate instructional needs.	Y
	24080		Rooms which serve graduate instruction with animals.	Y
	25000		Greenhouse for instructional purposes	
	25001		Greenhouse space under glass, used for instructional purposes.	N
	25002		Growth chamber space used for instructional purposes.	N
	26000		A corridor serving an instructional laboratory space only, not available for public circulation.	Y
	27000			
	27001		A washroom attached/associated with a laboratory, not for public use.	N
	27002		A change room attached/associated with a laboratory, not for public use.	(Note 1)
	27003		A shower attached/associated with a laboratory, not for public use. Include decontamination shower stations within labs.	N
	27004	Instructional Laboratory - Foot Wash	A foot washing/decontaminating station attached/associated with a lab.	N
Research: Laboratories, shops, and other dedicated research space 30000			Areas used primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose	
	31000	Research/Nnclass Laboratory Dry	Area used by faculty or graduate students primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose. Dry is defined as labs with fixed casework, benches, sink and some ventilation	Y

31001	Area assigned to a single Primary Investigator and used by faculty or graduate students primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose. Dry is defined as labs with fixed casework, benches, sink and some ventilation.	Y
31002	Area assigned to multiple Primary Investigators and used by faculty or graduate students primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose. Dry is defined as labs with fixed casework, benches, sink and some ventilation	Y
32000	Area used by faculty or graduate students primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose. Wet is defined as Labs that contain fume hoods, safety appliances (shower or eye wash) and analytical equipment with hazardous conditions.	Y
32001	Area assigned to a single Primary Investigator and used by faculty or graduate students primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose. Wet is defined as Labs that contain fume hoods, safety appliances (shower or eye wash) and analytical equipment with hazardous conditions.	Y
32002	Area assigned to multiple Primary Investigators and used by faculty or graduate students primarily for laboratory experimentation, research or training in research methods; or professional research and observation; or structured creative activity with a research purpose. Wet is defined as Labs that contain fume hoods, safety appliances (shower or eye wash) and analytical equipment with hazardous conditions.	Y
30080	Rooms that directly serve one or more research laboratories as an extension of activities in the room.	N
30081	Closets, storage and supply areas that serve one or more labs as an extension of lab activity.	N
30082	Observation spaces (primarily with two-way mirrors) that serve one or more labs as an extension of lab activity.	(Note 1)
30083	Cold rooms or walk-in refrigerators that serve one or more labs as an extension of lab activity.	N
30084	A server room that supports a specific research project or research initiatives	Y
30085	Space adjacent to/near a lab that is used for prepping materials to be used in a wet/dry lab	(Note 1)
30086	Space adjacent to/near a lab that is a central location for specialized equipment	(Note 1)
30089	"Dry" rooms which serve research laboratory spaces, other than those specified above. E.g. projection rooms, dark rooms, etc.	(Note 1)
30090	A workshop dedicated to servicing research activity	(Note 1)
30091	A workshop dedicated to servicing research activity	(Note 1)
	A space that directly serves a shop facility as an extension of the activities in that space.	(Note 1)
33000		
33001	Animal quarters for larger animals housed outside of buildings, serving research needs.	(Note 1)

	33002	Animal care rooms for smaller animals housed within buildings, serving research needs	Y
	35000	Greenhouse for research purposes	
	35001	Greenhouse space under glass, used for research purposes.	N
	35002	Growth chamber space used for research purposes	N
	36000	Clinical facilities primarily used for research including human and animal subjects	
	36001	A room equipped with one or more beds and used for patient care	(Note 1)
	36002	A room that directly serves one or more patient bedrooms as an extension of the activities in those spaces	(Note 1)
	36003	A room containing patient bath and toilet facilities.	N
	36004	A room used for surgery.	(Note 1)
	36005	A space that directly serves a surgery room as an extension of the activities in that facility.	(Note 1)
	36006	A space used for examinations, diagnosis, consultation, or treatment.	(Note 1)
	36007	A space that directly serves a Treatment/Examination Clinic room as an extension of the activities in those spaces.	(Note 1)
	36008	A space used to provide diagnostic support services to an entire health care facility.	(Note 1)
	36009	A space that directly serves a diagnostic service laboratory as an extension of the activities in that facility.	(Note 1)
	36010	A room specially equipped to house a medical x-ray machine or other medical scanning device	(Note 1)
	36011	A room or area used by nurses or other patient care staff who are supervising or administering health care services.	(Note 1)
	36012	A space that directly serves one or more nurse station as an extension of the activities in those spaces.	(Note 1)
	36013	A room used centrally to store health care supplies in a health care facility.	(Note 1)
	36014	A space used by the public to await admission, treatment, or information within a health care facility.	N
	36015	A room or quarters used by health care staff to rest or sleep while on call to assigned duties within a health care facility.	Y
	36016	A space that directly serves as a staff on-call room as an extension of the activities in that facility.	(Note 1)
	36017	Administrative offices which serve clinical operations	Y
	36089	A space related to Clinical Research which does not fit into pre-defined space categories.	(Note 1)
	37000	A corridor serving a research laboratory space only, not available for public circulation.	Y
	38000	Facilities attached/associated with a research laboratory, not for public use.	
	38001	A washroom attached/associated with a laboratory, not for public use.	N
	38002	A change room attached/associated with a laboratory, not for public use.	(Note 1)
	38003	A shower attached/associated with a laboratory, not for public use. Include decontamination shower stations within labs.	N
	38004	Research Laboratory - Foot Wash	A foot washing/decontaminating station attached/associated with a lab, not for public use.	N

Academic, Research and Related Office 40000			Office facilities are individual, multi-personal or workstation spaces specifically assigned for academic and research staff and academic department leadership, including academic department direct administration. Space assigned to affiliated agencies or institutes that are linked to institution core instruction or research function should be included	
	41000	Faculty Offices	Single or multiple-occupancy academic appointments and academics with administrative appointments, with rank up to and including department chairs, deans, vice deans and associated deans, visiting professors, lectures, emeriti professors, sessional staff, etc.	
	41001		An environment comprised of systems furniture used for academic appointments and academics with administrative appointments, with rank up to and including department chairs, deans, vice deans and associated deans, visiting professors, lectures, emeriti professors, sessional staff, etc.	Y
	41002		A workspace completely enclosed with walls and a door used for academic appointments and academics with administrative appointments, with rank up to and including department chairs, deans, vice deans and associated deans, visiting professors, lectures, emeriti professors, sessional staff, etc.	Y
	42000		Principal investigators to accommodate their research support staff (includes post-doctoral fellows, research associates, non academic staff, professional academic staff and technicians requiring offices who support the research of a faculty member as principal investigator). Includes offices and office support space for research activities paid from restricted funds. Excludes graduate students included in 43000	Y
	42001		An environment comprised of systems furniture used for principal investigators to accommodate their research support staff (includes post-doctoral fellows, research associates, non academic staff, professional academic staff and technicians requiring offices who support the research of a faculty member as principal investigator). Includes offices and office support space for research activities paid from restricted funds.	Y
	42002		A workspace completely enclosed with walls and a door used for principal investigators to accommodate their research support staff (includes post-doctoral fellows, research associates, non academic staff, professional academic staff and technicians requiring offices who support the research of a faculty member as principal investigator). Includes offices and office support space for research activities paid from restricted funds.	Y
	43000		Single or multiple-occupancy rooms allocated by a unit to graduate students for study and to graduate and undergraduate students in their capacity as tutors, teaching or research assistants.	
	43001		An environment comprised of systems furniture used for single-occupancy rooms assigned by a unit to graduate students for study and to graduate and undergraduate students in their capacity as tutors, teaching or research assistants.	Y
	43002		An environment comprised of systems furniture used for multiple-occupancy rooms which are assigned by the department to graduate students for study and to graduate and undergraduate students in their capacity as tutors, teaching or research assistants.	Y

	43003		A workspace completely enclosed with walls and a door used for single-occupancy rooms assigned by a unit to graduate students for study and to graduate and undergraduate students in their capacity as tutors, teaching or research assistants.	Y
	43004		A workspace completely enclosed with walls and a door used for multiple-occupancy rooms which are assigned by the department to graduate students for study and to graduate and undergraduate students in their capacity as tutors, teaching or research assistants.	Y
	44000		Nn-research administrative and support staff, including demonstrators, technicians, office administrative staff, other professional staff, and clerical support staff to academic departments. Includes offices for departmental administrative and support staff paid from operating funds.	
	44001		An environment comprised of systems furniture assigned by a unit to non-research administrative and support staff in academic departments.	Y
	44002		A workspace completely enclosed with walls and a door assigned by a unit to non-research administrative and support staff in academic departments.	Y
	40080		Rooms directly serving office space in this category (both research and academic support space) such as meeting rooms, computer rooms not for student study, file rooms, vaults, photocopy, waiting and reception areas, interview rooms, storage areas, private toilets, lunchrooms, and private departmental lounges.	
	40081		Conference/meeting rooms serving office space in this category.	Y
	40082		Computer workstations not intended for instructional or student study use, serving office space in this category.	Y
	40083		Photocopy and document assembly area serving office space in this category, including associated document assembly space.	Y
	40084		Storage, file rooms or vaults serving office space in this category.	(Note 1)
	40085		Lunchrooms, lounges, or kitchens and lunchrooms for staff, serving office space in this category.	N
	40086		Reception areas/waiting rooms, e.g. with public seating.	N
	40087		A server room that supports a specific faculty or department	Y
	40089		Other spaces serving as support for office space in this category, not otherwise defined above.	(Note 1)
	45000		A rest room which can only be accessed through a private (assigned) area, e.g. a rest room attached to a private office, or restricted with key or card access from public use.	N
	46000	Private Corridor	A corridor that is allocated to a specific academic department	(Note 1)
Administrative Office and related 50000			Administrative office and related facilities are individual or multi-person workstation spaces specifically assigned to staff in central administration units, non-academic service units and student support service units of the institution.	
	51000	Administrative Office areas	Single or multiple-occupancy rooms for executives and administrative staff. Excludes Deans, Associate or Vice Deans and their immediate support personnel.	
	51001		An environment comprised of systems furniture assigned to staff in a non-academic unit.	Y
	51002		A workspace completely enclosed with walls and a door assigned to staff in a non-academic unit.	Y

	50080		Rooms directly serving office space, meeting rooms, special reference libraries, file rooms, vaults, photocopy rooms, interview rooms, storage areas, private toilets, lunch rooms and private departmental lounges	(Note 1)
	50081		Conference/meeting rooms serving office space in this category.	Y
	50082		Computer workstations not intended for academic, research, instructional or student study use, serving office space in this category.	Y
	50083		Storage, file rooms or vaults serving office space in this category.	(Note 1)
	50084		Photocopy and document assembly rooms serving office space in this category, including associated document assembly space.	Y
	50085		Lunchrooms, lounges, or kitchens and lunchrooms for staff, serving office space in this category.	N
	50086		Reception areas/waiting rooms, e.g. with public seating.	N
	50087		A server room that supports a specific department/ unit	Y
	50089		Other spaces serving as support for office space in this category, not otherwise defined above.	(Note 1)
	52000		A rest room which can only be accessed through a private (assigned) area, e.g. a rest room attached to a private office, or restricted with key or card access from public use.	N
	53000	Private Corridor	A corridor that is allocated to a specific administrative department	(Note 1)
Library and Study 60000			Library and study space may not all be enclosed in a library facility. These areas include stack areas, digital information access terminal areas, processing rooms and study rooms, study service areas, breakout rooms and more informal commons available for student study.	
	61000	Library Collection - University Library	Stack & Storage areas for books, archives, maps, documents, records, tapes, slides, micro materials, periodicals, electronic volumes, and music scores.	
	61001		Typically not available to the public. High density storage of printed material. Example: Rolling shelves that can be compressed	Y
	61002		Standard Library Shelving	(Note 1)
	62000		Office and related areas for library administration, library support staff and systems technical support space	
	62001		An environment comprised of systems furniture for library support staff and systems technical support space	Y
	62002		A workspace completely enclosed with walls and a door for library support staff and systems technical support space	Y
	63000		Catalogue area, circulation desk, processing areas, bookbinding and repair areas, acquisitions, cataloging work areas and service space.	Y
	64000		Reading rooms, study carrel and study areas available to general university population and located within the university's library systems.	Y
	64001		Enclosed reading rooms, available to the general university population and located within the university's library systems.	Y

	64002	Study stations (such as carrels or chairs) in areas open to general circulation (but not amid library stacks), available to the general university population and located within the university's library systems.	(Note 1)
	64003	Bookable breakout rooms, collaboration rooms, presentation practice rooms, etc. that are under university administration	Y
	64099	Other study spaces available to the general university population and located within the university's library systems.	(Note 1)
	65000	Rooms available for students for study which are not part of a library, including reading rooms, study carrels, open computing space, open-stack reading rooms and other study areas. May be located in academic or other non-library departments.	(Note 1)
	65001	Enclosed reading rooms located in academic departments or other non-library departments.	Y
	65002	Study carrels in areas open to general circulation (but not amid library stacks), located in academic departments or other non-library departments.	(Note 1)
	65004	Bookable breakout rooms, collaboration rooms, presentation practice rooms, etc. not within the library system	Y
	65005	Spaces designed for exclusive use by a specific student cohort, which may include space for study, lockers, and recreation.	Y
	65099	Other study spaces located in academic departments or other non-library departments.	(Note 1)
	66000	A rest room which can only be accessed through a private (assigned) area, e.g. a rest room attached to a private office, or restricted with key or card access from public use.	N
	67000	A corridor allocated to the library.	(Note 1)
Athletic Facilities 70000		Areas used by students, staff or the public for athletic or physical education and/or wellness activities	(Note 1)
	71000	Gymnasia, dance studios, swimming pools, basketball, handball and squash courts, combative rooms, ice rinks, indoor tracks, indoor rifle and archery ranges, and activity areas including those within field houses.	(Note 1)
	71001	Spaces housing weight and exercise machines, areas used primarily for organized non-academic fitness classes (e.g. yoga, aerobics).	(Note 1)
	71002	Gymnasia.	(Note 1)
	71003	Includes squash, racquet and handball courts.	(Note 1)
	71004	Includes dance studios not primarily used for instruction.	(Note 1)
	71005	Swimming pools and the rooms in which they are housed (including deck space), but not attendant mechanical spaces or adjacent locker rooms or shower/change facilities.	Y
	71006	Ice rinks and the rooms in which they are housed, but not attendant mechanical spaces or adjacent locker rooms or shower/change facilities.	(Note 1)
	71007	The actual area of an indoor track only, not including any adjacent space and not the area of the room in which the track is housed.	(Note 1)

	71008	Rifle or archery ranges and the rooms in which they are housed, but not attendant mechanical spaces or adjacent locker rooms or shower/change facilities.	(Note 1)
	71099	Other athletic activity areas not specified above, including those within field houses.	(Note 1)
	72000	All permanent seating and observation areas in gymnasia, swimming pools, field houses, ice rinks, and other indoor activity areas.	(Note 1)
	73000	Areas directly serving athletic facilities the above such as locker rooms, shower rooms, washrooms, etc.	(Note 1)
	73001	Includes male locker and change rooms.	Y
	73002	Includes female locker and change rooms.	Y
	73003	Locker and change rooms open to people of all genders.	Y
	73004	Male washrooms associated with athletic facilities (i.e. in change rooms or locker rooms).	N
	73005	Female washrooms associated with athletic facilities (i.e. in change rooms or locker rooms).	N
	73006	Washrooms associated with athletic facilities, open to people of all genders (i.e. in change rooms or locker rooms).	N
	73007	Male showers associated with athletic facilities (i.e. in change rooms or locker rooms).	N
	73008	Female showers associated with athletic facilities (i.e. in change rooms or locker rooms).	N
	73009	Showers associated with athletic facilities, open to people of all genders (i.e. in change rooms or locker rooms).	N
	73089	Other service spaces not specified above which serve athletic facilities (e.g. coaches' rooms, other).	(Note 1)
	74000	Ancillary areas directly serving the above such as equipment supply rooms and rooms serving athletic facilities	(Note 1)
	74001	Rooms that store extra equipment that is used for athletic activities, or equipment that is used in athletic facilities	(Note 1)
	74002	Storage space for chlorine intended for use in aquatic facilities.	(Note 1)
	74003	Other service spaces not specified above which serve athletic facilities (e.g. coaches' rooms, other).	(Note 1)
	76000	A corridor allocated to the athletic department	(Note 1)
Farm/Field Facilities 80000		Areas such as: barns or similar structures used for animal shelter, or for handling, storage and/or protection of products, materials, supplies, vehicles or implements.	(Note 1)
	81000	Barn structures and field service areas.	(Note 1)
Central Support Services 90000		Assigned space that supports a number of physical and logistical services essential to the operation of the institution but not directly involved in a public service, program delivery or research role	Y
	91000	A space used as a data or telecommunications centre with applications that are broad eNugh to serve the overall administrative or academic primary equipment needs of a central group of users, department, college, school, or entire institution.	Y
	91001	A central data centre that supports the university's administrative and academic needs	Y
	91002	A telecom room that supports the university's administrative and academic needs	Y
	91003	A server room that supports the university's administrative and academic needs	Y

91004	A room dedicated to storing and distributing Com Media equipment throughout buildings.	Y
91090	A space that directly serves a central computer or telecommunications facility as an extension of the activities in that facility.	Y
92000	Central and regional printing and duplicating shops, central receiving areas, university mail rooms, laundry and drying rooms located in a central laundry, and technical service repair areas.	Y
92001	Central and regional printing and duplicating shops.	Y
92002	Central receiving areas, for goods and mail.	Y
92003	Central laundry room to provide laundry services to the university as a whole.	Y
92099	Other central service areas which provide general services to the university as a whole, not otherwise specified in this document.	(Note 1)
92080	A storage space that directly serves a central services facility as an extension of the activities in that facility.	Y
93000	Shops and storage areas for carpentry, plumbing, painting, electrical and other trades, lunch and change rooms for maintenance and custodial staff, garages for maintenance vehicles and all grounds equipment, greenhouses and related areas and garages for storage and repair of vehicles and boats.	Y
93001	Shops and storage areas for carpentry, plumbing, painting, electrical and other trades, not primarily used to support instruction or research.	Y
93003	Garages for the maintenance of vehicles and grounds equipment, and garages for storage and repair of vehicles and boats	Y
93004	Greenhouses which are not primarily used in support of instruction or research.	N
93099	Other areas which support facilities operations or maintenance, not otherwise specified in this document.	(Note 1)
93080	A space that directly serves a shop facility as an extension of the activities in that space.	(Note 1)
93081	Lounges, lunch rooms, change rooms and other such spaces for maintenance and custodial staff.	(Note 1)
93082	A storage space that directly serves a shop facility as an extension of the activities in that space.	(Note 1)
94000	A space or building that is used to store equipment or materials and that serves multiple space use categories, organizational units, or buildings.	(Note 1)
94080	A space that directly serves a central storage facility as an extension of the activities in that facility	(Note 1)
95000	A covered area of a platform used to load or off-load goods or materials that are to be transported elsewhere within a reasonable amount of time such that the platform is not considered as a storage location. Only the length and width of the platform's covered area is to be included in the inventory. If the platform is internal to the building line, that area of the platform covered by the floor immediately above is to be included in the inventory.	Y
96000	A centralized facility used for the storage of materials planned for future use or distribution that are considered hazardous by the physical, chemical, biological, or radioactive nature of the materials.	Y
96080		Y
97000	Small storage areas distributed throughout the institution used for temporary storage of hazardous or toxic waste materials as defined, classified, and controlled under government environmental regulations.	Y

	97080	Small storage areas distributed throughout the institution used for temporary storage of hazardous or toxic waste materials as defined, classified, and controlled under government environmental regulations.	Y
Assembly and Exhibition 100000		These are clearly established areas that are available for the institution's internal and external constituencies, but not directly linked to a program or research function	
	101000	Theatres, auditoria, concert halls, chapels and convocation halls and ancillary areas such as checkrooms, coat rooms ticket booths, concession booths, dressing & projection rooms, storage and control rooms	(Note 1)
	101001	Theatres, auditoria and concert halls not primarily used for instruction.	(Note 1)
	101002	Chapels and other spaces primarily used for religious worship	(Note 1)
	101099	Other spaces used for assembly, which do not relate primarily to instructional or research activities.	(Note 1)
	101080	Assembly service area that directly services assembly facilities	(Note 1)
	101081	Booths that provide direct ticket sales for assembly facilities.	Y
	101082	Dressing and change rooms which serve assembly facilities.	(Note 1)
	101083	Projection and control rooms which serve assembly facilities.	Y
	101084	Storage space which serves assembly facilities	N
	101089	Other spaces used for assembly, which do not relate primarily to instructional or research activities.	(Note 1)
	102000	Museums, art galleries, other exhibition areas, greenhouses used for display only, and supporting areas.	(Note 1)
	102090	Area which directly services Exhibition Facilities	(Note 1)
Student and Staff Housing 110000		All residential space owned or leased by the institution	(Note 1)
	111000	A residential room for one or more individuals typically furnished with bed(s), wardrobe(s), closet(s), desk(s), and chair(s), without an internally connected bath or toilet.	Y
	112000	A residential set of rooms for one or more individuals typically furnished with bed(s), wardrobe(s), closet(s), desk(s), and chair(s), with an internally connected bath or toilet.	Y
	112001	Bedroom or bedroom area in a student suite.	Y
	112002	Private bathroom attached to a residential suite, for the use of occupants of that suite only.	N
	112003	A closet for storage not located within the bedroom. (Closets within the bedroom are included in the bedroom area)	N
	113000	A toilet or bathroom intended only for the occupants of the residential facilities, rather than for the public. These are common toilet/bath facilities for residents.	N
	113001	A toilet or bathroom intended only for the occupants of the residential facilities that is universally accessible. Special equipment such as change tables, lowered sinks for wheel chair access and larger stalls are examples of what would be in an accessible washroom.	N
	113002	A toilet or bathroom intended only for the occupants of the residential facilities with standard equipment.	N
	113080	A room that directly serves the occupants of sleep/study rooms.	(Note 1)
	113081	Laundry room that services the dormitory.	Y
	113089	A room that directly serves the occupants of sleep/study rooms.	(Note 1)

	114000	Lounges available to residents only in residential buildings. Does not include private kitchens or other areas accessed through a private suite.	(Note 1)
	115000	A complete living unit, with private cooking facilities, that is not a separate structure.	Y
	115001	Bedroom or bedroom area in a residential suite.	(Note 1)
	115002	A full kitchen including a stove, sink and fridge	N
	115003	An area including a sink, microwave and fridge, but is not considered a full kitchen.	N
	115004	Private bathroom attached to a residential suite, for the use of occupants of that suite only.	N
	115005	A closet for storage not located within the bedroom. (Closets within the bedroom are included in the bedroom area)	N
	115006	An area within the apartment used as a living room. Does not include kitchenette or kitchen area. Usually differentiated by flooring type	N
	115080	A room or area that directly serves an apartment or group of apartments as an extension of the activities in that facility.	N
	116000	A full kitchen including a stove, sink and fridge located in a common area	N
	117000	An area including a sink, microwave and fridge, but is not considered a full kitchen that is located in a common area	N
	118000	Study room in a dormitory building that services only the residents within the building.	Y
	119000	A complete living unit, with private cooking facilities, that is a separate structure. Should include fraternity and sorority houses only if owned or controlled by the institution.	Y
	119080	Single or multiple-occupancy Staff Housing service area that supports the staff living space	Y
Ancillary Operations 120000		These areas are allocated to revenue generating operations that serve the internal and external constituencies of the institution	(Note 1)
	121000	Day Care Facility	Y
	122000	Day Care Service room area directly serving the Day Care Facility	N
	123000	Space used to sell products or services, exclusively or primarily for the university population. Includes university Bookstore.	Y
	123080	Space used to directly service Merchandising space	(Note 1)
	124000	Dining rooms, cafeterias, snack bars, coffee shops, vending machine and other refreshment areas primarily used for food service	(Note 1)
	124100	Area designated for sitting and eating	N
	124200	A small food facility that doesn't include a kitchen or full scale production of food, i.e. Coffee shop, snack bar or other refreshment areas	Y
	124080	Kitchen, servery, all food preparation areas, dishwashing areas, refrigeration and freezer rooms, kitchen storage rooms, receiving areas, refuse areas and staff lunch, locker and private washrooms	(Note 1)
	124081	All dedicated food preparation areas, e.g. kitchens, bar area and serveries	(Note 1)
	124082	Walk-in refrigerator or freezer spaces.	N

	124083	Private washrooms serving only food facilities service areas	N
	124084	Storage for food that is not stored in cold rooms.	N
	124089	Other food facilities service areas, including dishwashing areas, storage rooms, receiving areas, refuse areas, and staff lunch and locker spaces.	(Note 1)
	125000	Room used in the production, distribution and storage of instruction media providing campus-wide rather than exclusively departmental services. non instructional.	Y
	125080	Service area that directly serves Media Production room	(Note 1)
	126000	A revenue generating small lockable closet or compartment, typically as one of a number placed together for public or general use. Lockers in labs/classrooms that are used for single class instruction (i.e.. locker in a lab that people only use when they have scheduled lab times) are not included.	Y
	127000	Conference rooms that are for revenue generation	Y
	127080	Service area supporting revenue-generating conference rooms.	(Note 1)
	128100	A space used for examinations, diagnosis, consultation, or treatment.	(Note 1)
	128180	A space that directly serves a Treatment/Examination Clinic room as an extension of the activities in those spaces.	(Note 1)
	128200	Administrative offices which serve clinical operations	Y
	128300	A room used centrally to store health care supplies in a health care facility.	Y
	128400	A space used by the public to await admission, treatment, or information within a health care facility.	N
	129000	A room available for rental by the university community or the public. Includes sleeping area and private restroom.	Y
Student Community 130000		Institutions allocate a portion of assignable space to enable students to meet personal and civic growth objectives and to create a community of learners within the post-secondary institution.	(Note 1)
	131000	Office and support space for student government, publications, and clubs.	Y
	132000	Bowling alleys, pool and billiard, cinemas, television, chess, video, card playing, music listening, hobby, storage and equipment issue rooms and pubs.	(Note 1)
	132080	A space that directly serves a recreation facility as an extension of the activities in that facility.	(Note 1)
	133000	General lounge space and kitchenettes, whether for students, faculty, or administrative staff, lounges in residences if available to non-residents, and lounges in faculty clubs, including related service space.	(Note 1)
Unclassified/Transitional space 140000		The space inventory will include temporary classifications for areas that are in the development or transition phase, and are out of service for a period sufficiently long to have an impact on program/service delivery.	(Note 1)
	141000	Spaces which would require long lead time and extensive work to make them available for occupancy such as those left unfinished at the time of construction or those undergoing major repairs or reNvations, i.e. large areas of the building being out of service for many months. Will have an effect on program/service delivery.	(Note 1)

	142000	All potentially assignable areas in new buildings, shell space, or additions to existing buildings not completely finished at the time of the inventory.	(Note 1)
	143000	Rooms available for assignment to a department but unassigned at the time of inventory.	(Note 1)
Parking 150000		Stand-alone parkades, attached parkades, and parking areas within building envelopes are part of Gross Floor Area and should be reported in this category. If the parking floor contains allocations for other uses, these should be reported in appropriate classifications based on actual space use. Surface parking lots are considered part of site and are not included within the scope of this inventory project.	(Note 1)
	151000	Stand-alone/attached parkades and parking areas within building envelopes which are part of the Gross Floor Area. If the parking floor contains allocation for other uses this should be reported in appropriate classifications based on the actual space use.	(Note 1)
	152000	Underground parking areas within a building envelopes which are part of the Gross Floor Area. If the parking floor contains allocation for other uses the should be reported in appropriate classifications based on the actual space use.	(Note 1)
	150080	Service spaces which directly serve parking operations. Include parking kiosks.	(Note 1)
Clinical Facilities 160000		Clinical Facilities primarily used for Instruction including human and animal subjects	(Note 1)
	161100	A room equipped with one or more beds and used for patient care.	(Note 1)
	161180	A room that directly serves one or more patient bedrooms as an extension of the activities in those spaces.	(Note 1)
	161200	A room containing patient bath and toilet facilities.	N
	162100	A room used for surgery.	(Note 1)
	162180	A space that directly serves a surgery room as an extension of the activities in that facility.	(Note 1)
	162200	A space used for examinations, diagnosis, consultation, or treatment.	(Note 1)
	162280	A space that directly serves a Treatment/Examination Clinic room as an extension of the activities in those spaces.	(Note 1)
	162300	A space used to provide diagnostic support services to an entire health care facility.	(Note 1)
	162380	A space that directly serves a diagnostic service laboratory as an extension of the activities in that facility.	(Note 1)
	162400	A room specifically equipment to house a medical x-ray machine or other medical scanning device.	(Note 1)
	163100	A room or area used by nurses or other patient care staff who are supervising or administering health care services.	(Note 1)
	163180	A space that directly serves one or more nurse station spaces as an extension of the activities in those spaces.	(Note 1)
	163200	A room used centrally to store health care supplies in a health care facility.	Y
	163300	A space used by the public to await admission, treatment, or information within a health care facility.	N
	163400	A room or quarters used by health care staff to rest or sleep while on call to assigned duties within a health care facility.	(Note 1)

	163480		A space that directly serves as a staff on-call room as an extension of the activities in that facility.	(Note 1)
	163500		Administrative offices which serve clinical operations.	Y
	163600	Clinc - Other	Space allocated to a clinic that is not classified by other space types	(Note 1)
Structural Area Z10000			That portion of the gross floor area, which cannot be put to used because of the presence of structural features of the building. It is the remainder of the gross area, after assignable and non-assignable, that cannot be occupied or put to use because of structural features	N
		Columns	Interior columns.	N
		Shafts	Mechanical Shafts.	N
			This is the sum of areas on each floor required for physical access to subdivisions of space whether physically bounded by partitions or not	
		Building Link/Tunnel	A covered and walled connecting passageway for people to pass over or under the ground to gain access to another facility.	(Note 1)
	Z21100		A covered and walled connecting passageway for people to pass over ground to gain access to another facility.	(Note 1)
	Z21200		A covered and walled connecting passageway for people to pass under the ground to gain access to another facility.	(Note 1)
	Z22000		The structural shaft built to accommodate one or more elevator cabs. The entire cross-sectional shaft area is to be inventoried at each floor level through which it passes.	N
	Z23000		A moving passageway that carries passengers from one floor level to another, or along a level path over some distance. For a ramped escalator, the floor area taken by the entire length of each escalator at the lowest level is recorded at that floor level. The area of each floor penetrated by that escalator is inventoried on each of those floors.	N
	Z24000		A circulation area used to transition from the floor's external entrance to internal circulation space, to pass from one corridor to another, or to move to a different level such as a lobby area outside an elevator bank. Although a lobby may have some limited seating furniture, it is designed more for passing through (or having standing conversations) than for sitting and relaxing.	Y
	Z25000		Areas between sets of doors as one enters/exits a building.	N
	Z26000		A covered passageway or ramped area available to the general public, whether walled or not, to transport people or things from one location to another. The use of phantom walls is recommended to identify portions of passageways on the same floor level that may represent differing purposes, e.g., a main corridor versus a side corridor, or differing maintenance needs, e.g., terrazzo flooring versus carpeted flooring.	(Note 1)
	Z27000		The covered internal or external space dedicated to provide non-mechanically assisted passage from one floor level to another. In an enclosed stairway, the cross-sectional area of the stairwell is inventoried at each floor through which it passes. In an unenclosed stairway, only that area beneath the stairway structure that is not accessible or has less than a 3-foot ceiling height is included.	(Note 1)

Mechanical Area Z30000			This is the sum of areas on each floor designed to house mechanical equipment and utility services including utility tunnels	(Note 1)
	Z31000		All boiler rooms, refrigeration plant, electrical transformer stations, compressing stations, water treatment facilities, incinerator, distribution systems, and their support areas servicing more than one building or the entire campus.	N
	Z32000		Mechanical spaces, and incinerator serving one building.	N
	Z33000		Electrical spaces, and incinerator serving one building.	N
	Z34000		A large tower or structure typically attached to a utility plant through which water is circulated to lower its temperature by partial evaporation.	N
	Z35000		Tunnels that connect service areas, usually not open for public access.	(Note 1)
Building Service Area Z40000			The sum of all building service areas including janitorial spaces, bathrooms, etc.	(Note 1)
	Z41000		A small area or closet that houses limited quantities of custodial supplies for daily use by custodial staff.	N
	Z42000		A space dedicated for use by janitorial staff. It may include a changing area, clothes lockers, shower facility, eating and relaxing space, a desk for completing paperwork, a sink room for wet mop activities, or a temporary trash collection area for nonhazardous waste materials.	N
	Z43000		All rest room (toilet) facilities.	N
	Z43001		Public Rest Room for males, typically with capacity greater than 1. May include (but does not ONLY include) accessible facilities.	N
	Z43002		Public Rest Room for females, typically with capacity greater than 1. May include (but does not ONLY include) accessible facilities.	N
	Z43003		Public Rest Room for a single occupant only, open to people of all genders. Typically accommodates accessibility requirements (such as a wheelchair or a personal assistant), and may have additional features such as a security call button/phone, infant change table, etc.	N
	Z44000		A space for the temporary storage of nonhazardous waste awaiting disposal or removal.	N
	Z45000		A space for temporary storage of recyclable materials.	N
	Z46000	Fuel Room	Fuel Room	(Note 1)

Note 1: The addition of ECA on these door types requires permission from U of C Security after consultation with Campus Planning and Campus Architecture. An ARCHIBUS work request must be submitted to begin the approval process.