BIM Standards for Project Records

A. Overview

1. Intent
The intention of this guide is to represent all the standards Xavier University has adopted for BIM. All architect and engineers developing BIM for XU should follow the standards within. XU has adopted BIM as a tool for project development as well as record documentation and facility management. Strict adherence to these standards will allow for the integration of BIM with Physical Plant facility management tools.

2. Building Information Modeling (BIM)
BIM is a process involving the generation and management of digital representations of physical and functional characteristics of buildings. XU has adopted Revit as the primary tool for BIM generation. Revit files contain mass amounts of building data that can be integrated with other FM tools to support management of a building asset.

At the initiation of a project, the University Project Manager will collaborate with the project A/E firms to establish a BIM execution plan with defined document deliverables. Project documentation required for assessment, review, bidding, construction, and as-built turnover is required to use Revit as the base model. Any exceptions to this rule require advanced approval by the XU project manager.

3. Getting Started
Existing Buildings
Revit current condition models exist for most of Xavier University's buildings and site plans. Before developing a new model, consultants should request a building's base file from the University Architect. New construction plans should be developed in this base model. For buildings that do not have an existing Revit base file, a new one should be created.
New Buildings
All new buildings should follow the BIM requirements referenced in this document.

4. Version and Quality Control
Current required Revit version is 2020. In order for the models to be compatible with internal systems, Xavier requires a specific version year. Any exceptions to this rule require advanced approval by the XU project manager.

Entire building should be fully modeled (not just part under construction). Exceptions to this rule may be accepted but will require advanced approval by the XU project manager.

Base file models received from the University Architects should be field verified.
These models will also include the following Area Plans that should NOT be modified: 'FM:Systems', 'FMI Interior Gross', & 'Gross Building'.

B. BIM File Types

1.   Architectural Models – Autodesk® Revit® Architecture .rvt

Models are Revit Architecture project files with Worksets enabled in order to create a central file. The Revit Architecture Model file (.rvt) contains all architectural features for a building including but are not limited to:

- Exterior Wall Systems
- Interior Wall Systems
- Fire Rated Walls
- Architectural Floor Slabs
- Roofing Systems
- Appliances & Equipment Including Owner Provided Equipment
- Reflected Ceiling Plans
- Vertical Circulation – including elevators, stairs, escalators, ramps and railings
- Doors and Door Frames
- Glazing – Windows, Interior Glazing, Curtain Wall, and Storefront
- Millwork and Casework
- Furniture
- Finishes – Including all room paint codes, flooring codes, and other finish items
- Toilets and Accessories
- Toilet Partitions
- Specialties

2.   Structural Model – Autodesk® Revit® Structure .rvt

Models are Revit Structure project files with Worksets enabled in order to create a central file. The Revit Structure Model file (.rvt) contains all structural features for a building including but are not limited to:

- Foundations
- Columns, Beams, and Joists
- Column Grid
- Brace Frames and Shear Walls
- Structural Slab
- Specialties

3.   Mechanical, Electrical, and Plumbing Model – Autodesk® Revit® MEP .rvt

Models are Revit MEP project files with Worksets enabled in order to create a central file. The Revit MEP Model file (.rvt) contains all mechanical, electrical, and plumbing features for a building including but are not limited to:

- Rain Leader with slope
- Roof Sumps (Roof Drains and Overflow Drains with slope)
- Vent with slope
- Waste Water with slope
- Domestic Cold Water

- Domestic Hot Water
- Gases
- Mechanical Ductwork
- Insulation required for MEP systems
- Duct Fittings
- Hangers
- Manual Volume Dampers and Schedules
- Motorized Dampers and Schedules
- Grilles, Registers & Diffusers
- VAV boxes with access zones and connection points
- Mechanical HVAC equipment including but not limited to AHU's, MUA's, RTU's, FCU's, EF's, Sound Attenuators, Roof curbs and their access zones.
- Backflow Preventers and Schedules
- Supply Fans, Returns Fans, and Exhaust Fans and Schedules
- Humidifiers, Thermostats, Remote Static Pressures Sensors, Humidity Sensors, Carbon Dioxide Sensors and Schedules
- Heating, Cooling and Steam Coils and Schedules
- Steam Traps (all types) and Schedules
- Condensate Receivers and Schedules
- Controls Valves (all types) and Schedules
- Steam PRVs and Schedules
- Meters (all types) and Schedules
- Boilers and Schedules
- Triple Duty Valves (all types) and Schedules
- Relief Valves (all types) and Schedules
- Air Separator (all types) and Schedules
- Expansion Tanks and Schedules
- Side Stream Filters (all types) and Schedules
- Buffer Tanks (all types) and Schedules
- Storage Tanks (all types) and Schedules
- DW Isolation Valves and Schedules
- Condensing Units and Schedules
- Valves with Valve Tags and Schedules
- Fire/Smoke Dampers
- Electrical Conduit (1" and larger)
- Raceways
- Light fixtures with space requirements
- Electrical equipment including but not limited to switch gear, power feeds, transformers, pull stations and junction boxes and their access zones.
- Generator Service Entrances
- Lighting Controls Panels and Schedules
- Major Equipment Service Disconnects and Schedules
- Occupancy Sensors and Schedules
- Lighting Timers and Schedules
- Light Contactors and Schedules
- Variable Speed Drives and Schedules

- Electrical Panels and Schedules
- Specialties
- Equipment clearances for access, service space requirements, gauge reading, valve clearances, and other operational clearances and access panels. These clearance zones should be modeled as invisible solids within the object.

4.   Life Safety and Fire Protection – Autodesk® Revit® MEP .rvt

Models are Revit MEP project files with Worksets enabled in order to create a central file. The Revit MEP Model file (.rvt) contains all life safety and fire protection features for a building including but are not limited to:

- Electrical Low Voltage Systems and Devices
    - o AV, Telecom, Cable Trays
- Fire protection
    - o Sprinkler lines larger than ¾" diameter
    - o Sprinkler heads, Fire Protection Pumps
    - o Stand pipes, wall hydrants, fire department connections, risers, tamper and flow switches, including valve clearances
- Fire Alarm and Security Systems
    - o Input devices
    - o Notification devices
    - o Associated equipment and access clearances
    - o Permanently mounted fixtures
- Energy Management System
    - o Building Automation Control Panels and Schedules
- Equipment clearances for access, service space requirements, and other operational clearances and access panels. These clearance zones should be modeled as translucent solids within the object. Clearances should not only extend outwards, but also downwards through the ceilings to ensure good coordination and future maintainability.

C. Model Structure

1. File Naming Structure

All Revit Central files will be named in accordance to Xavier University's naming convention.

'XAVIER BUILDING NAME DICIPLINE PROJECT NAME (central V20)'

Example: XAVIER ALBERS ARCH RENOVATION (central V19).

2. Model Information Requirements

The following is a summary of the items required for BIM document information. These basic guidelines have been established to create a custom plan for each individual project. The intent is for the project team to review and adapt this list for projects of all sizes, and assure consistent outcomes regardless of the complexity of the systems. Each BIM component as listed below should include the following information:

ROOM IDENTITY DATA (To be completed by AE during design phase)

- ROOM ID (NUMBER) – must follow Xavier Room Numbering Standards and match actual room number in built environment.
- NAME – space type (i.e. Office, Classroom, Restroom, etc)
- OCCUPANCY – Area Type Description: Must match format in Appendix B
- COMMENTS – Area Type Code: Must match format in Appendix B
- FLOOR FINISH
- BASE FINISH
- WALL FINISH
- CEILING FINISH

SYSTEMS & EQUIPMENT

o LOCATION

- LEVEL - Must match format: 'LEVEL- BUILDING ABBR' (example: 01-HUB)
- ROOM ID (NUMBER) – match actual room number in built environment

o CUSTOM PARAMETERS

- FM_LOCATION_ID - Must match format: 'BUILDING ABBR-ROOM NUM' (example:HUB-01)
- FM_FU_FK – Room Number match actual room number in built environment
- FC_EQ_TYPE – Equipment Type Code: Must match format in Appendix A
- FM_FC_FK – Equipment Type Description: Must match format in Appendix A
- FM_DESCRIPTION – Description of equipment
- FM_DATE_PURCH – Date of Purchase: Format: YEAR-MONTH-DAY (example: 2020-10-01)
- FM_MFG_FK – Manufacturer Name
- FM_MODEL_NO – Model Number
- FM_SERIAL_NO – Serial Number
- FM_TAG_NO – Asset Tag Number: Must match format: 3-DIGIT BUILDING ABBR_ EQUIPMENT TYPE CODE_ROOM NUMBER (If there are more than one type in the same room, add number 01, 02, 03… to the end of the Equipment Type Abbr)
  o Example: HUB-AHU01-013
- FM_VEN_FK – Vendor Name
- FM_WARRANT_EXP – Warranty Expiration Date

APPENDIX A
EQUIPMENT TYPE AND SUB TYPE CODES
(INPUT FOR FC_EQ_TYPE AND FM_FC_FK FIELDS)

Type Code	Type Description	Sub Type Code	Sub Type Description
ACOMP	Air Compressor	ACOMP-GEN	Air Compressor-Gen
ACOMP	Air Compressor	ACOMP-CONTROL	Air Compressor- Control Air
ACOMP	Air Compressor	ACOMP-DRYER	Air Compressor- Air Dryer
ACOMP	Air Compressor	ACU	Air Compressor Unit
ACOMP	Air Compressor	CAD	Compressed Air Dryer
ACOMP	Air Compressor		
ACU	Air Conditioning Unit		
ACU	Air Conditioning Unit	WAC	Window Air Conditioner
ACU	Air Conditioning Unit	CAC	Central Air Conditioner
ACU	Air Conditioning Unit	SSA	Split System Air Conditioner
ACU	Air Conditioning Unit	ACC	Air Conditioner Condenser
ACU	Air Conditioning Unit	PCS	Precision Cooling System
ACU	Air Conditioning Unit	HP	Heat Pump
AHU	Air Handling Unit	AHU-GEN	Air Handler - General
AHU	Air Handling Unit	AHU-ROOF	Air Handler - Roof Unit
AHU	Air Handling Unit	AHU-MUA	Air Handler-Make Up Air Unit
AHU	Air Handling Unit	AHU-ERV	Air Handler - Energy Recovery Unit
AHU	Air Handling Unit	AHU-SF	Air Handler, Supply Fan
AHU	Air Handling Unit	AHU-RF	Air Handler-Return Fan
AHU	Air Handling Unit	AHU-PKG	Air Handler - Package Unit
AHU	Air Handling Unit		
APP	Appliance	250-BRO	Broiler Conveyor
APP	Appliance	260-DHY	Dehydrator
APP	Appliance	200-RCPE	Robot Coupe
APP	Appliance	ICM	Ice Cream Machine
APP	Appliance	240-RIC	Reach In Cooler
APP	Appliance	200-FPT	Food Prep Table
APP	Appliance	210-BRO	Bakery Rack Oven
APP	Appliance	220-FRZ	Reach In Freezer
APP	Appliance	230-BDC	Beer Dispensing Cooler
APP	Appliance	220-TOS	Toaster
APP	Appliance	10-MICRO	Microwave
APP	Appliance	40-REEF	Refrigerator
APP	Appliance	50-STOVE	Stove
APP	Appliance	20-DISH	Dishwasher
APP	Appliance	30-DIS	Garbage Disposal
APP	Appliance	60-ICE	Ice Maker
APP	Appliance	30-STMR	Steamer

APP	Appliance	70-KET	Kettle
APP	Appliance	80-SLCR	Deli Slicer
APP	Appliance	90-OVEN	Oven
APP	Appliance	100-SKL	Skillet
APP	Appliance	110-FRY	Fryer
APP	Appliance	120-CUT	Food Cutter
APP	Appliance	130-MXR	Food Mixer
APP	Appliance	140-PRO	Food Processor
APP	Appliance	150-DIS	Food Waste Disposal
APP	Appliance	160-CAB	Food Holding Cabinet
APP	Appliance	170-PSTA	Pasta Cooker
APP	Appliance	180-WIC	Walk In Cooler
APP	Appliance	190 WIF	Walk In Freezer
APP	Appliance		
ATS	Automatic Transfer Switch		
AWP	Aerial Work Platform		
AWP	Aerial Work Platform	SML	Single Man Lift
AWP	Aerial Work Platform	SCR	Scissors Lift
AWP	Aerial Work Platform	VBL	Van Bucket Lift
BAT	Battery Back Up System		
BFP	Backflow Preventer		
BFP	Backflow Preventer	IRR	Irrigation Backflow Preventer
BFP	Backflow Preventer	ISO	Isolation Backflow Preventer
BFP	Backflow Preventer	CTM	Containment Backflow Preventer
BLR	Boiler	DWB	Domestic Hot Water Boiler
BLR	Boiler	STM	Steam Boiler
BLR	Boiler	HW	Hot Water Boiler
BLR	Boiler		
BMS	Building Management System		
BMS	Building Management System	BMSS	Siemen's BMS
BMS	Building Management System	BMST	Trane-Tracer BMS
BMS	Building Management System	BMSJC	Johnson Controls BMS
CAC	Central Air Conditioner	SS	Split System
CAC	Central Air Conditioner	PCS	Precision Cooling System
CAC	Central Air Conditioner	ACC	A/C Condensing Unit
CAC	Central Air Conditioner		
CAD	Card Access Door		
CAD	Card Access Door	ADA	Automatic Door Operator
CAU	Compressed Air Unit	AC-S	Air Conditioner Split System
CAU	Compressed Air Unit	AC-EVAP	Air Cond-Evaporative
CAU	Compressed Air Unit		
CAU	Compressed Air Unit	ACOMP	Air Compressor
CAU	Compressed Air Unit	ACOMP-CNTRL	Control Air Compressor
CAU	Compressed Air Unit	ADRY	Compressed Air Dryer
CAU	Compressed Air Unit	AC	Air Cond - Std

CAU	Compressed Air Unit	AC-PORT	Air Cond - Portable
CAU	Compressed Air Unit	AC-W	Air Cond - Window/Wall
CAU	Compressed Air Unit	AC-W-H	Air Cond & Heating Unit
CAU	Compressed Air Unit	AC-HP	Water Source Heat Pump
CAU	Compressed Air Unit	ACC	Condensing Unit/Condenser
CAU	Compressed Air Unit	HP	Heat Pump
CBC	Cardboard Compactor		
CFC	Chemical Feed Controller		
CH	Cabinet Heater		
CHLR	Chiller		
CHLR	Chiller	CHLR-R	Chiller: Reciprocating
CHLR	Chiller	CHLR-A	Chiller: Air Cooled
CHLR	Chiller	CHLR	Chiller: Centrifugal
CHLR	Chiller	CHLR-S	Chiller: Screw
CNTRL VALVE	Control Valve		
CONV	Conveyor		
CT	Cooling Tower	CTWR	Cooling Tower - Std
CT	Cooling Tower	CTWR-E	Cooling Tower - Evap
CT	Cooling Tower		
CUH	Cabinet Unit Heater		
CUH	Cabinet Unit Heater	CUH	Cabinet Unit Heater - Hot Wtr
CUH	Cabinet Unit Heater	UH-G	Cabinet Unit Heater - Gas Fired
CUH	Cabinet Unit Heater	CUH-S	Cabinet Unit Heater - Steam
CUH	Cabinet Unit Heater	UH-E	Cabinet Unit Heater - Electric
DEH	Dehumidifier		
DOOR	Door		
DOOR	Door	HFD	Hinged Fire Door
DOOR	Door	ADA	ADA Door Operator
DOOR	Door	CAD	Card Access Door
DOOR	Door	GDR	Garage Door
DOOR	Door	MDR	Man Door
DOOR	Door	ADA-CAD	ADA & Card Access Door
DOOR	Door	RFD	Rolling Fire Door
Dust Collector	Dust Collector		
DWH	Domestic Water Heater		
DWH	Domestic Water Heater	GWH	Gas Water Heater
DWH	Domestic Water Heater	EWH	Electric Water Heater
EDP	Electrical Distribution Panels	MCC	Motor Control Center
EDP	Electrical Distribution Panels	ELP	Emergency Lighting Panel
EDP	Electrical Distribution Panels	HVS	High Voltage Switch
EDP	Electrical Distribution Panels	MVS	Medium Votage Switch
EDP	Electrical Distribution Panels		
EGO	Electric Gate Opener		

EH	Electric Heater		
ELEC	Electrical	BC	Circuit Breaker
ELEC	Electrical	EP	Electrical Panel
ELEC	Electrical	PB	Panelboard
ELEC	Electrical	SUB	Substation
ELEC	Electrical	SWG	Switchgear
ELEC	Electrical	MCC	Motor Control Center
ELEC	Electrical	ATS	Automatic Transfer Switch
ELEC	Electrical	EMERG-L	Emergency Lights
ELEC	Electrical	EXIT-S	Exit Signs
ELEC	Electrical	GEN	Generator
ELEC	Electrical	L-FIXT	Light Fixture
ELEC	Electrical	MTR	Motor
ELEC	Electrical	T/S	Transfer Switch
ELEC	Electrical	TRANS	Transformer
ELEC	Electrical		
ELEV	Elevators	HCP	Handicap Elevator
ELEV	Elevators		
ELEV	Elevators	HYD	Hydraulic Elevator
ELEV	Elevators	TRAC	Traction Elevator
ELI	Emergency Lighting Inverter	LSFTY	Life Safety Equipment
ELI	Emergency Lighting Inverter		
ELP	Electrical Pit		
EMG	Emergency Generator		
EMG	Emergency Generator	LSFTY	Life Safety Equipment
EMH	Electrical Man Hole		
EML	Emergency Lighting		
EML	Emergency Lighting	LSFTY	Life Safety Equipment
E-PHONE	Emergency Phone	LSFTY	Life Safety Equipment
E-PHONE	Emergency Phone		
ERV	Energy Recovery Unit		
ERV	Energy Recovery Unit	HVAC	HVAC
EXF	Exhaust Fan	PPEXF	Plunge Pool Exhaust Fan
EXF	Exhaust Fan		
EXF	Exhaust Fan	EEF	Elevator Exhaust Fan
EXF	Exhaust Fan	AEF	Area Exhaust Fan
EXF	Exhaust Fan	RREF	Rest Room Exhaust Fan
EXF	Exhaust Fan	TREF	Trash Room Exhaust Fan
EXF	Exhaust Fan	FHEF	Fume Hood Exhaust Fan
EXF	Exhaust Fan	DEF	Dryer Exhaust Fan
EXF	Exhaust Fan	EXF	Exhaust Fan
EXF	Exhaust Fan	LDEF	Loading Dock Exhaust Fan
EXF	Exhaust Fan	KHEF	Kitchen Hood Exhaust Fan
EXF	Exhaust Fan	SEF	Smoke Evacuation Fan
EXF	Exhaust Fan	TEF	Tunnel Exhaust Fan
EXT	Expansion Tank	EXT	Expansion Tank

EXT	Expansion Tank		
FAN	FAN		
FAN	FAN	HVAC	Exhaust Fan EF
FAN	FAN	EF-KIT	Stove Hood Vented
FAN	FAN	EF-AKIT	Stove Hood Nonvented
FAN	FAN	RF	Return Fan
FAN	FAN	SF	Supply Fan
FCU	Fan Coil Unit	FCU	Fan Coil Unit Wall Mount
FCU	Fan Coil Unit	FCUC	Fan Coil Unit Ceiling Mount
FCU	Fan Coil Unit		
FH	Fume Hood		
Fire Protection	Fire Protection		
Fire Protection	Fire Protection	EXT	Fire Extinguisher
Fire Protection	Fire Protection	FA	Fire Alarm System
Fire Protection	Fire Protection	FH	Fire Hydrant
Fire Protection	Fire Protection	F-SMO	Smoke Detector
Fire Protection	Fire Protection	F-SUP	Fire Suppression Systems
Fix	Fixture	10-Bath	Bath Tub
Fix	Fixture	20-Sink	Sink
Fix	Fixture	30-Toilet	Toilet
Fix	Fixture		
FNC	Furnace		
FNC	Furnace	FURN	Furnace - Std
FNC	Furnace	FURN-BRN	Duct Furn./Burner Section
FNT	Fountain		
FNT	Fountain	FOUNT	Fountain - Exterior
FP	Fire Protection	FP	Fire Extinguisher
FP	Fire Protection	FA	Fire Alarm System
FP	Fire Protection	FH	Fire Hydrant
FP	Fire Protection	F-SUP	Fire Suppression Systems
FP	Fire Protection		
FPL	Fireplace	GFPL	Gas Fireplace
FPL	Fireplace	WBFPL	Wood Burning Fireplace
FPL	Fireplace		
FPS	Fire Protection Systems		
FPS	Fire Protection Systems	FSP	Fire System Pumps
FPS	Fire Protection Systems	FSE	Fire System Extinguisher
FPS	Fire Protection Systems	FSD	Fire System Duct Detector
FPS	Fire Protection Systems	FSU	Fire System Suppression
FPS	Fire Protection Systems	FSS	Fire System Sprinkler

FPS	Fire Protection Systems	FSM	Fire System Monitoring
FPS	Fire Protection Systems	FSH	Fire System Hydrant
FSE	Fire System Extinguishers	WFE	Water Fire Extinguisher
FSE	Fire System Extinguishers	CFE	Chemical Fire Extinguisher
FSE	Fire System Extinguishers	CO2	Carbon Dioxide Fire Extinguisher
FSE	Fire System Extinguishers		
FT	Fuel Tank		
FTR	Fin Tube Radiation		
GDR	Garage Door		
HEX	Heat Exchanger	TB	Tube Bundle Heat Exchanger
HEX	Heat Exchanger		
HEX	Heat Exchanger	P & F	Plate & Frame Heat Exchanger
HM	Humidifier		
HM	Humidifier	HUM	Humidifier
HOIST	Hoists & Cranes		
HP	Heat Pump		
HP	Heat Pump	WSHP	Water Source Heat Pump
HP	Heat Pump	VRV	Variable Refrigerant Volume
HP	Heat Pump	IND	Indoor Unit
HRS	Heat Recovery System		
HUM	Humidifier		
HVAC	HVAC	AHU-General	Air Handling Unit - General
HVAC	HVAC	ERU	Energy Recovery Unit
HVAC	HVAC	RTU	Roof Top Unit
HVAC	HVAC		
HVAC	HVAC	PAHU	Packaged Air Handling Unit
HVAC	HVAC	ACC	Air Conditioning Condensing Unit
HVAC	HVAC	WAC	Window Air Conditioning Unit
HVU	Heating and Ventilating Unit	H&V	Htg & Ventilating Unit
HVU	Heating and Ventilating Unit		
ICE	Ice Machine		
ICE	Ice Machine	ICE	Ice Machine
INT	Interior Door		
INU	Induction Unit		
IST	Ice Storage Tank	ICESTOR	Ice Storage Tank
IST	Ice Storage Tank		
KSK	KIOSK		
KTCHN	Kitchen		
KTCHN	Kitchen	COFFEE	Coffee Maker
KTCHN	Kitchen	FREEZER	Freezer - Std, Walk-in
KTCHN	Kitchen	BROIL	Broiler: Electric , Gas
KTCHN	Kitchen	CART	Cart & Shelving
KTCHN	Kitchen	CONV	Conveyor

KTCHN	Kitchen	DISH	Dishwasher
KTCHN	Kitchen	DISP	Disposal
KTCHN	Kitchen	FOODW	Food Warmer
KTCHN	Kitchen	FRYER	Gas Fryer Tube-Fired
KTCHN	Kitchen	GRID	Griddle
KTCHN	Kitchen	MWAVE	Microwave
KTCHN	Kitchen	OVEN	Oven: Std, Convection, Impinger, Microwave
KTCHN	Kitchen	OVEN-IMP	Oven: Impinger
KTCHN	Kitchen	STM-KETTLE	Steam Jacketed Kettle
KTCHN	Kitchen	STOVE	Stove
KTCHN	Kitchen	TOAST	Toaster
KTCHN	Kitchen	REFRIG-CASE	Refrigerated Case
KTCHN	Kitchen	REFRIG-TABLE	Refrigerated Pizza Table
KTCHN	Kitchen	REFRIG-WI	Walk-in Cooler
KTCHN	Kitchen	REFRIG	Refrigerator - Std, Walk-in
KTCHN	Kitchen	COFF	Coffee Maker
KTCHN	Kitchen	KITPLUM	Plumbing Equipment
LFH	Lab Fume Hood		
LGT	Light Fixtures		
LGT	Light Fixtures	HMLP	High Mast Light Pole
LGT	Light Fixtures	CHLP	Cobra Head Light Pole
LGT	Light Fixtures	SBLP	Shoe Box Light Pole
LGT	Light Fixtures	PTLP	Post Top Light Pole
LGT	Light Fixtures	WMLF	Wall Mounted Light Fixture
LGT	Light Fixtures	CMLF	Ceiling Mounted Light FIxture
LOCK	Locksmith		
LS	Life Safety	FSP	Fire System Pump
LS	Life Safety	FSM	Fire System Monitoring
LS	Life Safety	FSU	Fire System Suppression
LS	Life Safety	FSK	Fire System Sprinkler
LS	Life Safety	EMG	Emergency Generator
LS	Life Safety	FH	Fire Hydrant
LS	Life Safety	EXL	Exit Lights
LS	Life Safety	EML	Emergency Lighting
LS	Life Safety	AED	Auto Emergency Defibrillator
LS	Life Safety		
MDR	Man Door		
MECH	Mechanical		
MTR	Meter		
MTR	Meter	PRK	Parking Meter
MTR	Meter	EMET	Electric Meter
MTR	Meter	DMET	Deduct Meter
MTR	Meter	GMET	Gas Meter
MTR	Meter	WMET	Water Meter
PAC	Packaged HVAC Unit	RTU	Roof Top Unit

PAC	Packaged HVAC Unit	PMU	Pad Mounted Unit
PAC	Packaged HVAC Unit	CMP	Ceiling Mounted Packaged AC Unit
PAC	Packaged HVAC Unit		
PCS	Portable Concession Stand		
PCS	Portable Concession Stand	ACS	Athletics Concession Stand
PCU	Precision Cooling Unit	PCS	Precision Cooling System
PCU	Precision Cooling Unit	ACCU	Air Cooled Condensing Unit
PCU	Precision Cooling Unit		
PL	Pool		
PL	Pool	VLV-P	Multi Port Valve Pool
PL	Pool	Filter	Sand Pool Filter
PL	Pool	Chlor	Cal-Hypo
PL	Pool	PC	Chemical Feed Pump
PL	Pool	CC	Chemical Pump Controller
PL	Pool	PP	Pool Water Pump
PL	Pool	EM	Pool Pump Motor
PLMB	Plumbing	SWE	Swimsuit Water Extractor
PLMB	Plumbing	CB	Catch Basin
PLMB	Plumbing	DF	Drinking Fountain wall or floor mounted
PLMB	Plumbing	FD	Floor Drain
PLMB	Plumbing	SINK	Sink
PLMB	Plumbing	URINAL	URINAL
PLMB	Plumbing	WC	Toilet/Water Closet
PLMB	Plumbing	WH	Water Heater (Domestic)
PLMB	Plumbing	WHE	Electric Water Heater (Domestic)
PLMB	Plumbing	WTREAT	Water Treatment System
PLMB	Plumbing	SHWR	Shower
PLMB	Plumbing		
PPC	Plunge Pool Chilled		
PPH	Plunge Pool Heated		
PUMP	Pump		
PUMP	Pump	GLP	Geothermal Loop Pump
PUMP	Pump	GFP	Glycol Feed Pump
PUMP	Pump	PPP	Plunge Pool Pump
PUMP	Pump	SMP	Sump Pump
PUMP	Pump	SPCP	Swimming Pool Circulating Pump
PUMP	Pump	HCP	Heating & Cooling Pump
PUMP	Pump	HRP	Heat Recovery Pump
PUMP	Pump	RHP	Reheat Pump
PUMP	Pump	FSP	Fire System Pump
PUMP	Pump	PMP	Pump - General

PUMP	Pump	CWP	Chilled Water Pump
PUMP	Pump	CRP	Condensate Return Pump
PUMP	Pump	CTP	Cooling Tower Pump
PUMP	Pump	DWP	Domestic Hot Water Pump
PUMP	Pump	ILP	Ice Loop Pump
PUMP	Pump	IBP	Ice Builder Pump
PUMP	Pump	HWP	Hot Water Pump
PUMP	Pump	SSP	Sewage/Sump Pump
PUMP	Pump	HEP	Heat Exchanger Pump
PUMP	Pump	HVAC	Heating Pump
PUMP	Pump	WFP	Water Fountain Pump
RPTR	Two Way Radio Repeater		
RRM	Refrigerant Recovery Machine	RRM-22	RRM R-22
RRM	Refrigerant Recovery Machine	RRM-R-410A	RRM R-410A
RRM	Refrigerant Recovery Machine		
RRS	Rack Refrigerant System		
RRS	Rack Refrigerant System	LTRS	Low Temperature Rack System
RRS	Rack Refrigerant System	MTRS	Medium Temperature Rack System
RRS	Rack Refrigerant System	ERC	Emerson Refrigerant Controller
RTU	Roof Top Unit		
SEP	Separator		
SMH	Signaling Man Hole		
SPB	Spray Booth		
TMST	Thermostat		
TMST	Thermostat	TSTAT	Thermostat
TS	Transfer Switch		
VAULT	MEP Vault	PIT-ELEC	Electrical Pit
VAULT	MEP Vault	PIT-PIP	Piping Pit
VAULT	MEP Vault		
VAV	Variable Air Volume		
VAV	Variable Air Volume	VLV-B	Ball Valve
VAV	Variable Air Volume	VLV-BF	Butterfly Valve
VAV	Variable Air Volume	VLV-GV	Gate Valve
VAV	Variable Air Volume	VAV	VAV - Static
VAV	Variable Air Volume	VAV-FP	VAV - Fan Powered
VAV	Variable Air Volume	VAV-EL	VAV - Electric Reheat
VFD	VFD	EVFD	Exhaust Fan VFD
VFD	VFD	PVFD	Pump VFD
VFD	VFD		
VFD	VFD	RFVFD	Return Fan VFD
VFD	VFD	SFVFD	Supply Fan VFD
VFD	VFD	AHUVFD	Air Handling Unit VFD
VHB	Valve Hot Box		

VLV	Valve		
VLV	Valve	VLV	Valve
WAC	Window Air Conditioner	A/C	Air Conditioner
WAC	Window Air Conditioner		
WC	Water Cooler		
WC	Water Cooler	WCR	Water Cooler Refrigerated
WC	Water Cooler	WCH	Water Cooler Handicapped Accessible
WC	Water Cooler	HCWD	Hot & Cold Water Dispensers
WCCU	Water Cooled Condensing Unit		
WMP	Water Meter Pit		
WTS	Water Treatment System		
XFR	Electrical Transformer		

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APPENDIX B
AREA TYPE CODES AND DESCRIPTIONS
(INPUT FOR OCCUPANCY AND COMMENTS FIELDS)

Type Code	Type Description
01	Closet
02	Conference
03	Copy/Fax/Mail/File/Work Room
04	Building Services
05	Elevation
06	Entire Floor
07	Exterior
08	Food Preparation Room
10	Kitchenette/Break Room
110.01	Classroom 20-50 fixed seats, stepped
110.02	Classroom - Medium 51-100 seats stepped
110.03	Classroom - Large 101+ fixed seats, sloped
110.04	Classroom - Flat - up to 34 seats
110.05	Classroom - Sloped - up to 34 seats
110.06	Classroom - Flat - 35-50 seats
115.01	Projection Room - Classroom Service
115.02	Storage - Classroom Service
115.03	AV/Telecom/Control Room - Classroom Service
115.04	Kitchenette - Classroom Service
119	Garage
13	Mechanical Room Roof top
14	Meeting Room
15	Office-Athletics
16	Restroom
160	Forestry
161	Landscape Beds
162	Turf
163	Hardscape
164	Grounds
17	Roof
19	Storage
20	Supply Room/Closet/Storage
210.01	Lab - Painting/Drawing
210.02	Lab - Sculpture
210.03	Lab - Ceramics

210.04	Lab - Clay Mixing
210.05	Lab - Printmaking
210.06	Lab - Woodworking/Framing
210.07	Lab - Dance - oratory
210.08	Lab - TV
210.09	Lab - Math
210.10	Lab - Music
210.11	Lab - Science
210.12	Lab - Montessori
210.13	Lab - Education
210.14	Lab - Photography
210.15	Lab - Creative and Industrial
210.16	Lab - Graphic Design
210.17	Departmental Training Room - Lab
210.18	Lab - Language
210.19	Lab - Nursing
210.20	Lab - Writing
215	Material Storage - Lab
215.01	Stock Room - Lab
215.02	Kitchen - Lab
215.03	Video Observation - Lab
215.04	Telecom Control Closet - Lab
215.05	Kiln Room
215.06	Restroom - Lab, Private
215.07	Video Viewing/Editing - Lab
215.08	Video Control Room - Lab
215.09	Preparation Room - Lab
215.1	Entrance/Hall/Coat Room - Lab
215.11	Dark Room
22	Waiting Room
220.02	Lab - Music to 5 seats
220.03	Lab - Music 5-50 seats
220.04	Lab - Music Individual
220.06	Lab - TV , Open
220.07	Lab - Psychology
220.08	Lab -Computer
25	Floor
250	Lab - Research/Nonclass
26	Basement
27	Bedroom

28	Building Storage Room
29	Classroom
31	Dock
310	Office - General
310.01	Office - Administrative
310.02	Office - Faculty
310.03	Office - Adjunct
310.04	Office - Staff Administrative
310.05	Office - Staff Academic
310.06	Office - Student Administrative
310.07	Office - Student Academic
310.08	Office - Graduate/Teaching Assistant
315.01	Kitchenette/Break Room - Office
315.02	Supply Room/Closet/Storage - Office
315.03	Copy/Fax/Mail/File/Work Room - Office
315.04	Restroom - Office, Private
315.05	Waiting - Office
315.06	Restroom/ Storage - Office, Private
32	Hand Washing Sink/Mirror
33	Lab
34	Laundry Room
35	Living Rm
350.01	Conference - Small (10 seats or less)
350.02	Conference - Medium (11-30 seats)
350.03	Conference - Large (31+ seats)
350.04	Kitchenette - Conference
350.05	Storage Room - Conference
37	Recreation Room
38	Sleep/Study/Bed Room
40	Toilet/Bath
41	Trash Room
410	Departmental Study Room - Study
410.01	Lab - Writing - Study
410.02	Lab - Computer - Study
42	Vending
420	Departmental Stack
43	1st Floor
430	Open Stack Study
44	All Floors
440	Processing Room - Study

445	Material Storage - Study
445.01	Restroom - Study
445.02	Closet - Study
445.03	Locker Room - Study
445.04	Restroom - Study, Private
45	Balcony
46	Basement Floor
47	Central Supplies
48	MechRm2
49	Chair Lift
50	Coat Room
51	Costume/Scenery Shop & Storage
510.01	Rifle Range
510.02	Drill Hall
510.03	Supply Room - Armory
515.01	Weapons Room
510.05	Storage Room - Armory
510.06	Vehicle Storage - Armory
52	Dressing Room
520.01	Gym
520.02	Basketball Court
520.03	Handball Court
520.04	Weight/Exercise Room
520.05	Pool Olympic
523.01	Spectator Seating Permanent or fixed - Athletics
523.02	Spectator Seating Box's/Suite - Athletics
523.03	Spectator Seating Box's/Suite Private Restroom - Athletics
525.01	Locker Room - Athletics
525.02	Shower Room - Athletics
525.03	Dressing Room - Athletics
525.04	Equipment Room - Athletics
525.05	Material Storage - Athletics
525.06	First Aid - Athletics
525.07	Restroom - Athletics, Private
525.08	Sports Medicine - Athletics
53	Entrance
530.01	TV Studio
530.02	Studio, Radio
530.03	Sound Studio
530.04	Photography Studio

530.05	Recording/Editing room
535.01	Equipment Storage - Media Production
535.02	Engineering Maintenance Room - Media Production
535.03	Studio Control Room - Media Production
535.04	Material Storage - Media Production
535.05	Equipment Room - Media Production
54	Equipment Room
540.01	Psychology/Therapy Testing Room
540.02	Counseling Room
545	Clinic Services
55	Exam Room
550	Retail
550.01	Activities Daily Living
550.02	Learning Center
555.01	Restroom - Demonstration, Private
555.02	Material Storage - Demonstration
555.03	Workroom - Demonstration
56	Exercise/General Fitness Room
57	First Aid Room
570	Animal Quarters
575	Animal Quarters Services
58	4th Floor
580	Green House
59	Furniture Storage
60	Green Room
61	Half Floor between 1st and 2nd floors
610.01	Theater
610.02	Recital
610.03	Arena
610.04	Chapel
610.05	Dance
610.06	Archives
615.01	Coat Room - Assembly
615.02	Ticket Booth - Assembly
615.03	Dressing Room - Assembly
615.04	Projection Room - Assembly
615.05	Costume/Scenery Shop & Storage - Assembly
615.06	Multimedia/Telecom Control Room - Assembly
615.07	Makeup Room - Assembly
615.08	Property Storage - Assembly

615.09	Restroom - Assembly, Private
615.1	Furniture Storage - Assembly
615.11	Green Room - Assembly
615.12	Sacristy Baptistery - Assembly
615.13	Sound/Lighting Control Room - Assembly
62	Kitchen
620.01	Gallery
625.01	Preparation Workroom
63	Kitchenette
630.00	Cafeteria
630.01	Dining Hall
630.02	Catering
630.03	Snack Bar
630.04	Restaurant
630.05	Vending with Seating
630.06	Vending - No Seating
635.01	Kitchen/Preparation
635.02	Dishwashing
635.03	Food Serving
635.04	Dry Storage
635.05	Cold Storage
635.06	Food Serving Area
64	Laundry
640	Catwalks
65	Living Room
650.00	Lounge
650.01	Lounge - Faculty
650.02	Lounge - Student
655.01	Coat Room - Lounge
655.02	Furniture Storage - Lounge
655.03	Bathroom - Lounge, Private
66	Locker Room
660.01	Bookstore
660.02	Post Office
660.04	Bank
660.05	Concession
660.06	Central Ticket Office
660.07	Kinkos
665.01	Sorting - Merchandising
665.02	Bathroom - Merchandising, Private

665.03	Kitchenette - Merchandising
665.04	Mail Storage - Merchandising
665.05	Loading Dock - Merchandising
665.06	Dry/Cold Storage - Merchandising
67	Maintenance Room
670.01	Exercise/General Fitness Room - Recreation
670.02	Relaxation Casual - Recreation
675.01	Material Storage - Recreation
68	Multimedia/Telecom/Control Room
680.01	Meeting - Less than 100 seats
680.02	Meeting 101-200 seats
680.03	Meeting 201-300 seats
680.04	Meeting 300+ seats
685.01	Kitchenette - Meeting Room
685.02	Furniture Storage Room - Meeting Room
685.03	Multimedia/Telecom/Control Room - Meeting Room
685.04	Food Preparation Room - Meeting Room
685.05	Room Supplies - Meeting Room
686	Concourse
69	Observation Rm
70	Phone Booth
700	Vestibule
71	Prep Room
710.01	Computer - Central Computer / Telecom / Cable TV
710.02	Telecom - Central Computer / Telecom / Cable TV
710.03	Cable TV - Central Computer / Telecom / Cable TV
715.01	Paper Storage - Central Computer / Telecom / Cable TV
715.02	Tools and Parts Room - Central Computer / Telecom / Cable TV
715.03	Storage - Moveable Equipment, Central Computer / Telecom / Cable TV
72	Processing Room
720.01	Shop - Physical Plant Maintenance
720.02	Shop - Multimedia Equipment and Maintenance
725.01	Material Storage - Support Facilities
725.02	Shower Room - Support Facilities
725.03	Locker Room - Support Facilities
725.04	Locker Room - Support Facilities
73	Projection Room
730	Central Storage - Support Facilities
735	Central Storage Service - Support Facilities

74	RA Rm
740	Physical Plant - Support Facilities
740.01	Vehicle Storage - Support Facilities
745	Vehicle Storage Service - Support Facilities
75	2nd Floor
750	Central Service - Support Facilities
750.01	Printing and Duplicating
76	Shop
77	Shower Room
78	Sleep/Study
79	Sorting
80	Sound/Lighting Control Room
81	Spectator Seating Perm. or fixed
810	Patient Bedroom
815	Patient Bedroom Service
815.01	Linen Closet
82	Sports Medicine
83	Stock Room
830	Nurse Station
835	Nurse Station Service
84	Store
85	Student Information Desk
850	Treatment Room
86	Studio
860	Lab - Diagnostic Service
87	Studio Control Room
870	Central Supplies - Health Care
88	Study Room
880	Waiting - Health Care, Public
89	Suite/Boxes
90	Telethon Room
91	Testing
910.01	Sleep/Study/Bed Room - Dorm
910.02	Living Rm - Dorm
910.03	RA Rm - Dorm
910.04	Apt Hall Director
910.05	Apartment Jesuit
919.01	Toilet Or Bath in Hallway - Dorm
919.02	Toilet Or Bath Within Room or Suite - Dorm
919.03	Toilet Or Bath Within Room or Suite ADA Compliant - Dorm

92	3rd Floor
920	Sleep/Study With Toilet Or Bath
93	Ticket Booth
935	Sleep/Study Service
935.01	Trash Room - Residential
935.02	Building Services - Residential
935.03	Laundry Room - Residential
935.04	Building Storage Room - Residential
935.05	Telephone Room - Residential
935.06	Kitchen or Food Preparation - Residential
935.07	Closet - Dorm Rm
935.08	Recreation Room - Dorm
94	Toilet Or Bath
95	Toilet without Bath
950	Apartment
950.01	Apartment/Townhouse Administrative/Staff
955	Apartment/Townhouse service
955.01	Bedroom - Apartment/Townhouse
955.02	Toilet/Bath - Apartment/Townhouse
955.03	Kitchen - Apartment/Townhouse
955.04	Living Room - Apartment/Townhouse
955.05	Closet - Apartment/Townhouse
955.06	Hand Washing Sink/Mirror - Apartment/Townhouse
955.07	Mechanical Room - Apartment/Townhouse
955.08	Building Storage Room - Apartment/Townhouse
955.09	Building Services Apt/Townhouse
955.1	Mail Room - Apartment/Townhouse
955.11	Laundry Room - Apartment/Townhouse
955.12	Toilet(Public) - Apartment/Townhouse - ADA
955.13	General Storage - Apartment/Townhouse
955.14	Toilet/Bath - Apartment/Townhouse - ADA
955.15	Hall - Apartment/Townhouse
955.16	Toilet without Bath - Apartment/Townhouse
955.17	Sleep/Study - Apartment/Townhouse - ADA
955.18	Balcony - Apartment/Townhouse
955.19	Locker Room - Apartment/Townhouse
96	Vehicle Storage
97	Waiting Rm
98	Work Room
99	Workstations

AF	Athletic Field
CR	Control Room
CTR	Cell Tower
DC	Data Center
ES	Event Space
IRR	Irrigation
KB	Alteration
KC	Unfinished
PIT	Pits
PRK	Parking Lots
RD	Revit Default
ROADS	Roads
ROT	Rotunda
STR	Stairway
TRAF ISLE	Traffic Island
TUN	Tunnel
UNK	Unknown
WA	Halls/Corridors
WC	Elevator
WD	Lobby/Vestibule
WE	Loading Dock Area
XA	Closet - Building Services
XB	Building Services Supply Storage
XC	Restrooms - Building Service, Public
XD	Phone Booth - Building Service, Public
XE	Restroom - Building Service, Public ADA
XF	Restroom - Building Service, Public ADA Compliant
Y	Mechanical
YA	Mechanical Room
YB	Electrical Distribution/Panel
YC	Telecommunication Distribution Panel Closet
YD	Shaft
YF	Elevations
YR	Roofing
YS	Virtual Equipment Storage Room
YT	All Floors or Entire Floor
YU	Area Outside Building

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