SINCLAIR hille architects

Addendum #3

Project Name:	Concordia STEM Seward, NE
Project No.:	16022-05
Date Issued:	May 11, 2018
Bid Date:	Thursday, May 17, 2018

This Addendum is issued to all known bidders before receipt of proposals. This Addendum is to authorize the use of the following information in preparing proposals for the above named project. The bidder **must** enter the number of this Addendum on the **Proposal Sheet.**

GENERAL QUESTIONS AND CLARIFICATIONS

ADD 3-1. Energy Recovery Coil Plenum Corrosion Coating

Question: *Do the corrosion coating requirements set forth in section 230860 for the exhaust fan bypass plenum apply to the energy recovery coil plenum?*

Response: The housing and filter rack shall comply with the construction requirements of section 230782 with the exception that the double wall construction shall have R=13 and foam injected panels. The coil housing shall be of double wall construction with galvanized steel coated exterior with foam injected panels and stainless steel interior liner and drain pan. The coil shall be coated with electrofin coating for corrosion resistance and the coil casing shall be of stainless steel construction which is resistant to the effects of acids, alkalis, and solvents.

ADD 3-2. Ducted Fan Coil Unit Filters

Question: *Ducted fan coil units are indicated as being supplied with a filter and filter frame. Is it the intent the FCU manufacturer provide the filter and filter frame?*

Response: That is the intent. At the discretion of the Mechanical Contractor the filter and frame may be provided by the Mechanical Contractor in lieu of being provided by the FCU manufacturer. This is a scope item the Mechanical Contractor may choose to manage differently. The requirement to provide the filter and filter frame is not relieved if it is not provided by the FCU manufacturer in which case it will be at the discretion of the Mechanical Contractor who shall provide or furnish and install.

ADD 3-3. Greenhouse Glazing

Question: *As much as I have seen, it looks like for glazing it is called to have 5/16" fully tempered lapped glass. Can you confirm if there is any tint or is it to remain clear? The greenhouse specification does not clarify.*

Response: Assume that the glazing is clear, with no tint.

ADD 3-4. Greenhouse Growth Lights

Question: *In the specification it references growth lights except there is no specification clarifying what specific lights are required. Are these to be included with the greenhouse assembly?*

Response: We had been working with Amy Bentz with Nexus Greenhouse Systems and at the time the drawings were released, we had not yet received any information specific to the growth lights. The "greenhouse package" should include the growth lights as part of their package. We have attached to this addendum the lighting information for the growth lights that was forwarded to us by Amy.

MODIFICATIONS TO THE DRAWINGS

ADD 3-5. Refer to Sheet A600:

- Sheet Note 8 has been added to the Sheet Specific Notes
- Detail G15; Locks have been graphically added to the cabinets and Sheet Note 8 has been placed on the elevation.
-

ADD 3-6. Refer to Sheet A601:

- Wording for Sheet Note 4 has been modified to the following:

  NOTE 4 ALL CABINETS ARE TO BE LOCKABLE

- Detail D7; Locks have been graphically added to the cabinets.
- Detail A7; Locks have been graphically added to the cabinets.
- Detail A1; Locks have been graphically added to the cabinets and Sheet Note 4 has been placed on the elevation.
- Detail G16; Locks have been graphically added to the cabinets and Sheet Note 4 has been placed on the elevation.
- Detail G13; Locks have been graphically added to the cabinets and Sheet Note 4 has been placed on the elevation.

ADD 3-7. Refer to Sheet A702B:

- Sheet Notes 6 & 7 added to indicate locations of paint colors in Collaboration 228

ADD 3-8. Drawing M200A.1. Added keynote to data center to clarify refrigerant pipe routing requirements between rooftop condensers and data center in-row cooling equipment.

ADD 3-9. Drawing M220A.1. Added keynote to data center rooftop condensing units to clarify refrigerant pipe routing requirements between rooftop condensers and data center in-row cooling equipment.

ADD 3-10. Drawing M220A.2. Added keynote to data center rooftop condensing units to clarify refrigerant pipe routing requirements between rooftop condensers and data center in-row cooling equipment.

ADD 3-11. P&ID M500. Updated cooling coil and energy recovery condensate drain pipes on roof to copper. Removed insulation from all interior condensate drain pipes. Updated insulation to F3 on all energy recovery pipes.

ADD 3-12. P&ID M501. Updated cooling coil and energy recovery condensate drain pipes on roof to copper. Removed insulation from all interior condensate drain pipes. Updated insulation to F3 on all energy recovery pipes.

ADD 3-13. P&ID M502. Updated cooling coil condensate drain pipe on roof to copper. Removed insulation from all interior condensate drain pipes.

ADD 3-14. P&ID M503. Updated cooling coil condensate drain pipe on roof to copper. Removed insulation from all interior condensate drain pipes.

ADD 3-15. P&ID M504. Updated energy recovery condensate drain pipe on roof to copper. Removed insulation from all interior condensate drain pipes. Updated insulation to F3 on all energy recovery pipes.

ADD 3-16. P&ID M505. Updated insulation to F3 on all energy recovery pipes.

ADD 3-17. Drawing P101A.2. All condensate drain pipe tags updated from “CD” to “COND”.

ADD 3-18. Drawing P102A.2. Updated cooling coil condensate drain pipe from RTU-003 on roof to copper. All condensate drain pipe tags updated from “CD” to “COND”.

ADD 3-19. Drawing P102B.3. All condensate drain pipe tags updated from “CD” to “COND”.

ADD 3-20. Drawing P103B.3. Updated cooling coil and energy recovery condensate drain pipes from RTU-001A, RTU-001B, RTU-002, and EF-001/002/003 ERS Plenum on roof to copper. All condensate drain pipe tags updated from “CD” to “COND”.

ADD 3-21. Drawing P700. Modified plumbing equipment schedule to reflect changes to CP-001 and CP-002 as reflected in 230540 data sheets.

ADD 3-22. Drawing E100B.3 Added three way switching to Utility room 014.

ADD 3-23. Drawing E101A.1, E101A.2. Modified lighting in room 151A.

ADD 3-24. Drawing E101B.3 Added three way switching to Future Lab room 126.

ADD 3-25. Drawing E102B.2 Moved Master switch from back of General Chemistry 232 to front.

ADD 3-26. Drawing E102B.3 Moved Master switch from back of General Chemistry 232 to front.

ADD 3-27. Drawing E200A.1. Floor boxes in M Conf 035 shall be Type B instead of Type A. Route 2-1” conduits in concrete instead of 1-1” conduit.

ADD 3-28. Drawing E200A.1. Provide a duplex receptacle (LPP-1E/46) for ceiling mounted projector in C.S. Lab 033. Projector is located in southwest corner of room near door into Room 064A.

ADD 3-29. Drawing E200B.1. Main Level furniture was turned off. Motorized shade switches were moved to the proper level. Switch was added for Mechanically operated sliding whiteboard

ADD 3-30. Drawing E200B.2. Floor box type “B: in General biology 024 shall be on LPP-1A/20.

ADD 3-31. Drawing E200B.2. Floor box type "B" in Ecology/Ag 025 shall be on LPP-1A/20. Power was added for powered door openers in Vestibule 026.

ADD 3-32. Drawing E200B.3, E203B.3, and E500 for Lab Exhaust Fans EF-001, EF-002, EF003. Provide a NEMA 3R, 100 amp, 3 pole non-fusible disconnect switch with electrical interlock on roof by exhaust fan. Provide a variable frequency drive (with dV/dT filter) and locate drive in Utility Room 014 by VFD's for Pumps P001 & P002. Electrical interlock will disable VFD when the disconnect switch is turned off. Provide VFD cable and interlock wiring from VFD to disconnect switch.

ADD 3-33. Drawing 200B.3. Adjusted wall mounted receptacles in Gross Anatomy 021. Moved electrical equipment mounted on north wall 18" to the east. Changed CP-001 from 480v. to 120v. circuit.

ADD 3-34. Drawing E201A.1. Provide ceiling mounted receptacle (LPP-2E/40) for ceiling mounted projector in Lecture 151A. See drawing T101A for projector location.

ADD 3-35. Drawing E201B.1. Power connection was added for mechanically operated sliding whiteboard. Power was added for powered door openers in Vestibule 100.

ADD 3-36. Drawing E202A.2. Provide a fusible disconnect switch (NEMA 3R Housing) for condensing units CU-012, CU-013, CU014, CU-015, and CU-016 instead of a non-fusible disconnect switch. Fuse Switch per manufacturer's recommendation.

ADD 3-37. Drawing E202A.2 CU-010, and CU-011. Disconnect switch shall have NEMA 3R housing. Fuse switch as recommended by manufacturer.

ADD 3-38. Drawing E203B.3 CU-001, CU-002, and CU-003. Disconnect switch shall have NEMA 3R housing. Fuse switch as recommended by manufacturer.

ADD 3-39. Drawing E203B.3. Provide a fusible disconnect switch (NEMA 3R Housing) for condensing units CU-004, CU-005, CU006, CU-007, and CU-008 instead of a non-fusible disconnect switch. Fuse Switch per manufacturer's recommendation.

ADD 3-40. E700 Light Fixture Schedule Remarks. A fixture disconnect can be supplied instead of a fuseholder.

ADD 3-41. T001 has been re-issued to reflect the following modifications:

- Added Push Plate (Called Door Switch in Specs) symbol
- Added Request-to-Exit Button symbol

ADD 3-42. T100A has been re-issued to reflect the following modifications:

- Added Single Door Detail Callout
- Added Double Door Detail Callout
- Added Request-to-Exit Button to Door 048.2
- Added Request-to-Exit Button to Door 045.1
- Added Request-to-Exit Button to Door 066.1
- Added Request-to-Exit Button to Door 033.1

ADD 3-43. T100B has been re-issued to reflect the following modifications:

- Added Single Door Detail Callout
- Added Double Door Detail Callout

- Added Push Plate to Door 026.2
- Added Detail Callout to Door ST05.1
- Added Request-to-Exit Button to Door 020.1
- Added Request-to-Exit Button to Door 022.1
- Added Request-to-Exit Button to Door 016.1
- Added Request-to-Exit Button to Door 024.1
- Added Request-to-Exit Button to Door 025.1
- Added Request-to-Exit Button to Door 009.1
- Added Request-to-Exit Button to Door 013.1

ADD 3-44. T101B has been re-issued to reflect the following modifications:

- Added Single Door Detail Callout
- Added Push Plate to Door 100.2
- Added Request-to-Exit Button to Door 130.1
- Added Request-to-Exit Button to Door 129.1
- Added Request-to-Exit Button to Door 128.1
- Added Request-to-Exit Button to Door 127.1
- Added Request-to-Exit Button to Door 126.1
- Added Request-to-Exit Button to Door 124.1
- Added Request-to-Exit Button to Door 122.1

ADD 3-45. T102B has been re-issued to reflect the following modifications:

- Added Single Door Detail Callout
- Added Request-to-Exit Button to Door 229.2
- Added Request-to-Exit Button to Door 231.1
- Added Request-to-Exit Button to Door 232.2
- Added Request-to-Exit Button to Door 234.1
- Added Request-to-Exit Button to Door 236.1
- Added Request-to-Exit Button to Door 213.1
- Added Request-to-Exit Button to Door 212.1
- Added Request-to-Exit Button to Door 226.1
- Added Request-to-Exit Button to Door 227.1
- Added Request-to-Exit Button to Door 225.1
- Added Request-to-Exit Button to Door 233.1

ADD 3-46. T402 has been re-issued to reflect the following modifications:

- Replaced Door Detail 4
- Replaced Door Detail 5

MODIFICATIONS TO THE SPECIFICATIONS

ADD 3-47. Specification Section 230500_PSAT Chart: Modify Piping System Application Table. Replace Table.

ADD 3-48. 230540_Centrifugal Pump_DS_CP-001. Changed hot water return recirculation pump model for VE effort.

ADD 3-49. 230540_Centrifugal Pump_DS_CP-002. Changed distilled water recirculation pump model for VE effort.

ARCHITECTURAL PRIOR APPROVALS / SUBSTITUTIONS

ADD 3-50. The manufacturers listed herein will be considered approved for bidding. However, the proposed substitution must meet the intent of the specifications and will be subject to shop submittal approval during construction. Burden of Proof is on Proposer. Bidders shall bear all responsibility for coordinating and performing related changes in the Work necessitated by such substitution and include such costs in the Bid:

Specification Section	Manufacturer / Proposed Product
a. 075323 – EPDM Roofing	Johns Manville
b. 095113 – Acoustical Ceiling Tile APC-1	USG Mars 87200
c. 095113 – Acoustical Ceiling Tile APC-2	USG Mars 89600
d. 095113 – Acoustical Ceiling Tile APC-3	USG Halcyon Canopies 99156
e. 095113 – Acoustical Ceiling Tile Grid	USG Donn DX/DXL
f. 096413 – Resilient Base and Accessories	Mohawk Stair Treads

ADD 3-51. The following substitutions have **NOT** been approved for use on this Project:

a. 097700 – Interior Wood Cladding System — Armstrong WoodWorks Linear Veneer

Reason: Product submitted does not appear to have the same aesthetic look as the specified product and literature submitted does not appear to indicate that product can meet the acoustical rating recommended by our acoustical consultant which is to be an NRC >0.80.

MECHANICAL PRIOR APPROVALS / SUBSTITUTIONS

ADD 3-52. The manufacturers listed herein will be considered approved for bidding. However, the proposed substitution must meet the intent of the specifications and will be subject to shop submittal approval during construction. Burden of Proof is on Proposer. Bidders shall bear all responsibility for coordinating and performing related changes in the Work necessitated by such substitution and include such costs in the Bid:

Specification Section	Manufacturer / Proposed Product
b. 230540 - Pumps	Bell & Gossett, Grundfos – Vertical Multistage Pump in lieu of Vertical Dual Arm Inline Pump.

ATTACHMENTS

ADD 3-53. The following attachments are included as part of this addendum:

Attachment	Description	# of Pages
• 131230	Greenhouse Growth Lights	3
• 230500	PSAT Chart	1
• 230540-A	Centrifugal Pump DS – CP-001	2
• 230540-B	Centrifugal Pump DS – CP-002	
• A600	Replacement Sheet	1

• A601	Replacement Sheet	1
• A702B	Replacement Sheet	1
• M200A.1	Replacement Sheet	1
• M220A.1	Replacement Sheet	1
• M220A.2	Replacement Sheet	1
• M500	Replacement Sheet	1
• M501	Replacement Sheet	1
• M502	Replacement Sheet	1
• M503	Replacement Sheet	1
• M504	Replacement Sheet	1
• M505	Replacement Sheet	1
• P101A.2	Replacement Sheet	1
• P102A.2	Replacement Sheet	1
• P102B.3	Replacement Sheet	1
• P103B.3	Replacement Sheet	1
• P700	Replacement Sheet	1
• E100B.3	Replacement Sheet	1
• E101A.1	Replacement Sheet	1
• E101A.2	Replacement Sheet	1
• E101B.3	Replacement Sheet	1
• E102B.2	Replacement Sheet	1
• E102B.3	Replacement Sheet	1
• E200A.1	Replacement Sheet	1
• E200B.1	Replacement Sheet	1
• E200B.2	Replacement Sheet	1
• E200B.3	Replacement Sheet	1
• E201A.1	Replacement Sheet	1
• E201B.1	Replacement Sheet	1
• E202A.2	Replacement Sheet	1
• E203B.3	Replacement Sheet	1
• E500	Replacement Sheet	1
• E700	Replacement Sheet	1
• T001	Replacement Sheet	1
• T100A	Replacement Sheet	1
• T100B	Replacement Sheet	1
• T101B	Replacement Sheet	1
• T102B	Replacement Sheet	1
• T402	Replacement Sheet	1

End of Addendum #3

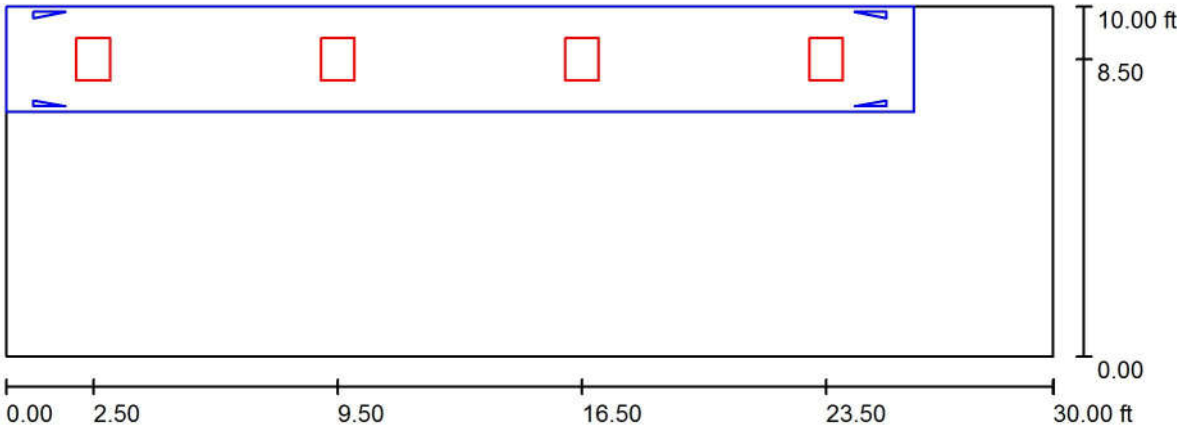
04 / 26 / 2018

PARsource Lighting Solutions

2249 South McDowell Ext.
Petaluma,CA 94954

Operator Jud McCall
Telephone 855-727-5483 Office / 214-629-6116 Direct
Fax 877-262-6050
e-Mail sales@parsource.com

Bench Area of 30 x 10 GH / Floor plan



Scale 1 : 66

No.	Pieces	Description
1	4	PARsource 1000W, 240v Electronic attached HID Light System

BALLAST: Item Code: GLE120A with 8ft power cord and 6-15 Plug and 2 C-brackets
REFLECTOR: Item Code: GLX55032A
LENS: Item Code: n/a
LAMP Type: HPS : Item Code:BUSD1AG
*The spectrum was not provided so HPS lamps were used for this design.
*See drawing for placement of lights.
*Fixtures are mounted to a strut (supplied by others) 9 ft above the ground.
*The fixtures are oriented perpendicular to the length of the house/bench.
*Crop plus bench height was not provided so calculations are based on a 3.25 ft lighting plane.
*Bench or bed placement/meaurements were was not provided and placement is estimated.
*The crop was not provided so an average light need crop was used in the calculations.
*Lighting levels were identified using DLI calculations based on regional winter light
*The regional light was figured at 7 moles per day for the winter months.
*The supplemental light is calculated to provide approx 14 moles per day for a 16 hour duration.
*Voltage was not specified so drawing is identified as 240v. Other voltage options available.

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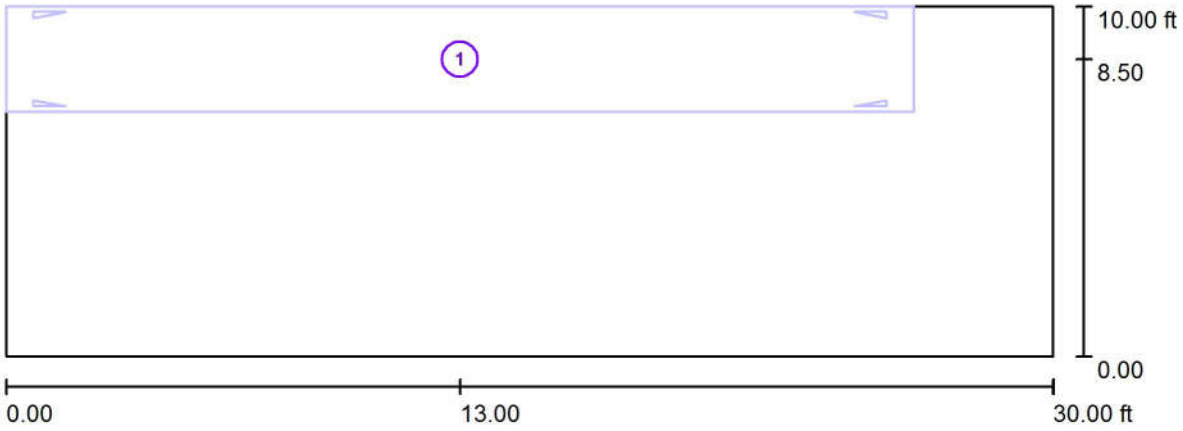
Bench Area of 30 x 10 GH / Objects (layout plan)



Scale 1 : 66

Object parts list

No.	Pieces	Designation
1	1	Bench 26 x 3?

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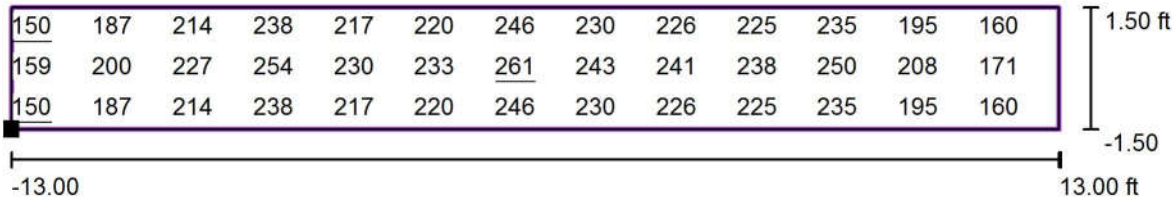
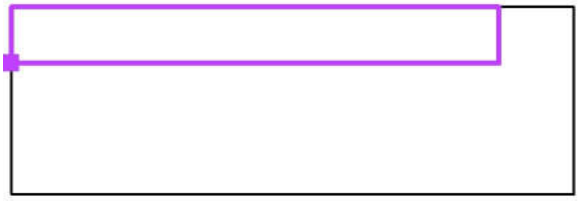
Bench Area of 30 x 10 GH / Calculation Grid 1 / Value Chart (E, Perpendicular)



Values in umol/s, Scale 1 : 57

Not all calculated values could be displayed.

Position of surface in room:
Marked point: (0.000 ft, 7.000 ft, 3.250 ft)



Grid: 26 x 3 Points

E_{av} umol/s	E_{min} umol/s	E_{max} umol/s	u0	E_{min} / E_{max}
215	150	261	0.70	0.58

The values shown in this report are a result of precision calculations based on precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice, the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

Service	Description	Piping Spec Data Sheet				Insulation Spec Data Sheet					Ref. Code	Max Oper. Temp. (°F)	Max Oper. Pressure (psig)	Flushing, Cleaning, & Testing	Test Pressure (psig)	Validation	Passivation	Notes/Comments
		Spec	Spec (CRB)	Material	Elastomer Type	Spec	Spec (CRB)	Material	Jacket	Index Temp. (°F)								
ERWR	Energy Recovery Water Return - Outdoors	CS03	CS03	Carbon Steel		F3.	F3.	Rigid Fiberglass Pipe Insulation	PVC	40 - 60	ASME 31.9	56	30	Water	100	N	N	2" and larger
ERWS	Energy Recovery Water Supply - Outdoors	CS03	CS03	Carbon Steel		F3.	F3.	Rigid Fiberglass Pipe Insulation	PVC	40 - 60	ASME 31.9	42	60	Water	100	N	N	2" and larger
ERWR	Energy Recovery Water Return - Indoors	CS03	CS03	Carbon Steel		F4.	F4	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	40 - 60	ASME 31.9	56	30	Water	100	N	N	2" and larger
ERWS	Energy Recovery Water Supply - Indoors	CS03	CS03	Carbon Steel		F4.	F4	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	40 - 60	ASME 31.9	42	60	Water	100	N	N	2" and larger
CS	Clean Steam	SS01	SS01	316L SS		F3.	F3.	Rigid Fiberglass Pipe Insulation	PVC	251 - 350	ASME 31.3 - Cat. D	275	30	DI Water	150	Y	Y	Diaphragm valves PTFE for final installation; Radial diaphragm valves Parylene treated EPDM
CSC	Clean Steam Condensate	SS12	SS12	316L SS		F3.	F3.	Rigid Fiberglass Pipe Insulation	PVC	251 - 350	ASME 31.3 - Cat. D	275	5	DI Water	100	Y	Y	Diaphragm valves PTFE for final installation; Radial diaphragm valves Parylene treated EPDM
SCW	Soft Domestic Cold Water	CU01	CU01	Copper		F4.	F4.	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	41 - 60	ASME 31.9	80	80	Water	125	N	N	
COND	Condensate Drain Non Acidic - Inside Building	CU01	CU01	Copper		NA.	NA.	N/A	N/A	N/A	ASME 31.9	150	5	Water	100	N	N	
COND	Condensate Drain Non Acidic - Outside Building	CU01	CU01	Copper		E1.	E1.	Closed Cell Elastomeric Pipe	Aluminum	41 - 60	ASME 31.9	150	5	Water	100	N	N	
COND	Condensate Drain Acidic - Outside building	PV34	PV34	CPVC		E1.	E1.	Closed Cell Elastomeric Pipe	Aluminum	41 - 60	ASME 31.9	140	5	Water	100	N	N	Where indicated on drawings
COND	Condensate Drain Acidic - Inside building	PV34	PV34	CPVC		NA.	NA.	N/A	N/A	41 - 60	ASME 31.9	140	5	Water	100	N	N	Where indicated on drawings. Provide plenum rated wrap where indicated on drawings.
DW	Distilled Water	PV12	PV12	Polyvinylidene Flouride		F4.	F4.	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	41 - 60	ASME 31.9	80	80	Water	125	N	N	
ICW	Industrial Cold Water	CU01	CU01	Copper		F4.	F4.	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	41 - 60	ASME 31.9	80	80	Water	125	N	N	
SHW	Soft Domestic Hot Water	CU01	CU01	Copper		NA.	NA.	N/A	N/A	N/A	ASME 31.9	140	80	Water	125	N	N	
SHWR	Soft Domestic Hot Water Return	CU01	CU01	Copper		NA.	NA.	N/A	N/A	N/A	ASME 31.9	140	80	Water	125	N	N	
NG	Natural Gas	CS03	CS03	Carbon Steel		NA.	NA.	N/A	N/A	N/A	ASME 31.9	85	10	Air	100	N	N	Epoxy Paint outdoors
SW	Storm Drain	CI33	CI33	Cast Iron		F4.	F4	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	40 - 60	Plumbing Code	85	5	Water	Per Code	N	N	Insulate the piping from the roof drain including the roof drain body, the drop from the body to the horizontal run, and all horizontal piping to and including the first down turn elbow.
OSW	Storm Drain	CI33	CI33	Cast Iron		F4.	F4	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	40 - 60	Plumbing Code	85	5	Water	Per Code	N	N	Insulate the piping from the roof drain including the roof drain body, the drop from the body to the horizontal run, and all horizontal piping to and including the first down turn elbow.
TW	Tepid Water	CU01	CU01	Copper		F4.	F4.	Rigid Fiberglass Pipe Insulation	Kraft Paper/Aluminum Foil/PVC Fitting Covers	N/A	ASME 31.9	85	80	Water	125	N	N	
W	Sanitary Waste	CI32	CI32	Cast Iron		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	Below Grade
W	Sanitary Waste	CI33	CI33	Cast Iron		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	Above Grade
W	Sanitary Waste - Non return air plenums	PV31	PV31	PVC		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	
V	Sanitary Vent - Non return air plenums	PV31	PV31	PVC		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	Below Grade, Above Grade
W	Sanitary Waste - Return Air Plenums	CI33	CI33	Cast Iron		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	Above Grade
V	Sanitary Vent - Return Air Plenums	CI32	CI32	Cast Iron		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	
PD	Pumped Discharge	PV01	PV01	Copper		NA.	NA.	N/A	N/A	N/A	Plumbing Code	140	5	Water	Per Code	N	N	Install with fire resistant wrap where piping is routed within return air plenum.
VAC	Vacuum	CU01	CU01	Copper		NA.	NA.	N/A	N/A	N/A	Plumbing Code	85	100	Air	125	N	N	
RL	Refrigerant Liquid	CU03	CU03	Copper		E1.	E1.	Closed Cell Elastomeric Pipe Insulation	N/A	N/A	ASME 31.9	250	350	Air	400	N	N	
RS	Refrigerant Suction	CU03	CU03	Copper		E1.	E1.	Closed Cell Elastomeric Pipe Insulation	N/A	N/A	ASME 31.9	250	350	Air	400	N	N	
RHR	Refrigerant Heat Recovery	CU03	CU03	Copper		E1.	E1.	Closed Cell Elastomeric Pipe Insulation	N/A	N/A	ASME 31.9	250	350	Air	400	N	N	

SECTION 230540 – CENTRIFUGAL PUMP CP-001

Description:	**Centrifugal Pump (Domestic Hot Water Circulator)**		Equipment No.:	**CP-001**	
Layout Drawing No.:	**P-200B.3**				
P&I Diagram No.:	**N/A**				
Enclosure:					
DESCRIPTION					
				Quantity:	**1**
Manufacturer:	**Bell & Gossett**	Model No.:	**Series PL-55B**	Size:	**2/5HP**
SERVICE CONDITIONS AND PERFORMANCE REQUIREMENTS					
Fluid Pumped:	**Domestic Hot Water**	Capacity:		**18 GPM**	
Avg. Fluid Temp.:	**140 deg. F**	Discharge Pressure:			
Specific Gravity @ Pt.:	**VS***	Suction Pressure:			
Viscosity:	**0.467 Cp**	Total Dynamic Head:		**21 Ft.**	
Solids in Liquid:	**None**	Vapor Pressure @ Pt.:		**VS***	
Size of Solids:	**N/A**	NPSH Available:		**N/A**	
Installed Elevation	**500 Ft. Abv. Sea Level**	NPSH Required:		**VS***	
Impeller: Size:	**VS * inches**	Type:		**VS ***	
Efficiency: Design:	**VS * %**	Minimum:		**%**	
Brake HP: Design:	**VS * BHp**	Maximum:		**BHp**	
Motor Electrical Characteristics:	**120 Volt, 1 Phase, 60 Hz**		Enclosure:		
Motor:	**VS***				
Minimum Motor Horsepower:	**2/5 Hp**	Motor RPM:		**1750**	
Actual Motor Horsepower:	**2/5 Hp**	Power Cord:		**VS***	
Min. Motor Efficiency:	**NEMA Premium**	Actual Motor Eff.:		**VS * %**	
CONSTRUCTION					
Casing:	**Lead-Free Bronze**	Gland:		**MFG's Standard**	
Impeller:	**304 Stainless Steel**	Pump Gaskets:		**MFG's Standard**	
Shaft:	**420 Stainless Steel**	Passivation Required:		**No**	
Bearings:	**MFG's Standard**	Electropolish Required:		**No**	

VS * - Vendor/Manufacturer to Supply Information

SEALS

Seal Type (MFG'S Model):	**Mechanical**	Seal Design Pressure:	**125 psig**
Total Pump Weight:	**VS * Lbs.**	Seal Design Temperature:	**225 deg. F**

CONNECTIONS

Suction			Discharge			Drain		
Size:	Rating:	Type:	Size:	Rating:	Type:	Size:	Rating:	Type:
1-1/2"	N/A	**NPT**	**1-1/2"**	N/A	NTP	**1-1/2"**	**125 Lb.**	**N/A**

REMARKS:
Provide lead-free potable water product with aquastat and clip on temperature sensor.

VS * - Vendor/Manufacturer to Supply Information

SECTION 230540 – CENTRIFUGAL PUMP CP-002

Description:	**Centrifugal Pump (Distilled Water)**		Equipment No.:	**CP-002**	
Layout Drawing No.:	**P-200B.3**				
P&I Diagram No.:	**N/A**				
Enclosure:					
DESCRIPTION					
				Quantity:	**1**
Manufacturer:	**Bell & Gossett**	Model No.:	**Series 3530 1x1-1/4x6**	Size:	**4.75**
SERVICE CONDITIONS AND PERFORMANCE REQUIREMENTS					
Fluid Pumped:	**Distilled Water**	Capacity:	**20 GPM**		
Avg. Fluid Temp.:	**70 deg. F**	Discharge Pressure:			
Specific Gravity @ Pt.:	**VS***	Suction Pressure:			
Viscosity:	**VS***	Total Dynamic Head:	**68 Ft.**		
Solids in Liquid:	**None**	Vapor Pressure @ Pt.:	**VS***		
Size of Solids:	**N/A**	NPSH Available:	**N/A**		
Installed Elevation	**500 Ft. Abv. Sea Level**	NPSH Required:	**VS***		
Impeller: Size:	**VS * inches**	Type:	**VS ***		
Efficiency: Design:	**VS * %**	Minimum:	**%**		
Brake HP: Design:	**VS * BHp**	Maximum:	**BHp**		
Motor Electrical Characteristics:	**480 Volt, 3 Phase, 60 Hz.**	Enclosure:			
Motor:	**VS***				
Minimum Motor Horsepower:	**1 Hp**	Motor RPM:	**3500**		
Actual Motor Horsepower:	**1 Hp**	Power Cord:	**VS***		
Min. Motor Efficiency:	**NEMA Premium**	Actual Motor Eff.:	**VS * %**		
CONSTRUCTION					
Casing:	**Lead-Free Bronze**	Gland:	**MFG's Standard**		
Impeller:	**304 Stainless Steel**	Pump Gaskets:	**MFG's Standard**		
Shaft:	**420 Stainless Steel**	Passivation Required:	**No**		
Bearings:	**MFG's Standard**	Electropolish Required:	**No**		
SEALS					
Seal Type (MFG'S Model):	**Mechanical**	Seal Design Pressure:	**125 psig**		
Total Pump Weight:	**VS * Lbs.**	Seal Design Temperature:	**225 deg. F**		

VS * - Vendor/Manufacturer to Supply Information

CONNECTIONS

Suction			Discharge			Drain		
Size:	Rating:	Type:	Size:	Rating:	Type:	Size:	Rating:	Type:
1-1/2"	N/A	**NPT**	**1-1/2"**	N/A	NTP	**1-1/2"**	**125 Lb.**	**N/A**

REMARKS:
Provide lead-free potable water product with aquastat and clip on temperature sensor.

VS * - Vendor/Manufacturer to Supply Information

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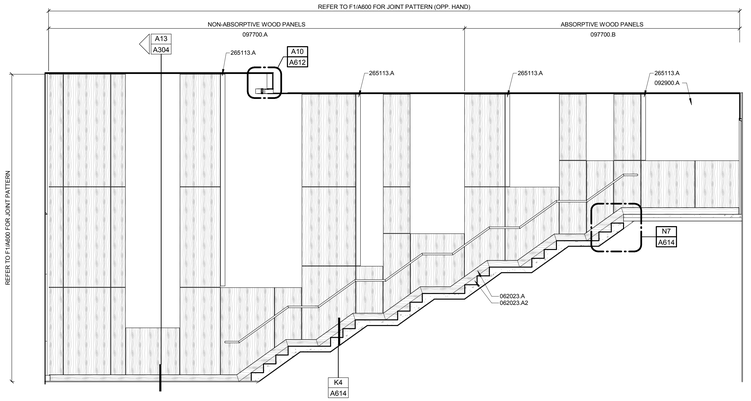
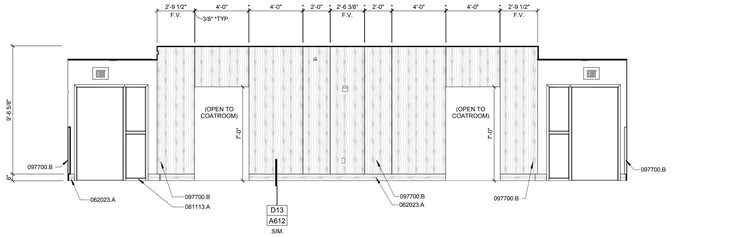


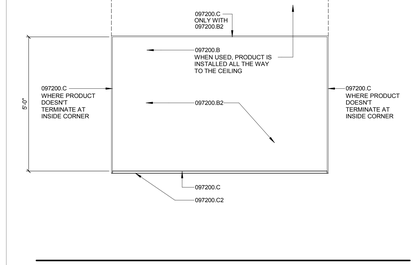
L1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH WALL OF LECTURE HALL - SIM. OPP HAND TO SOUTH WALL



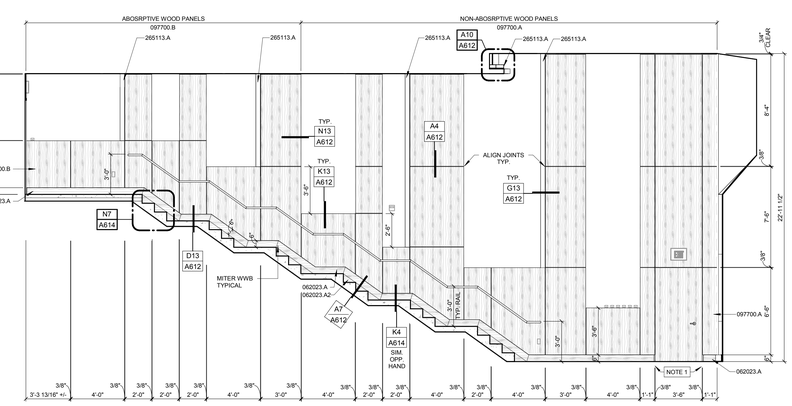
L8 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST WALL OF LECTURE HALL



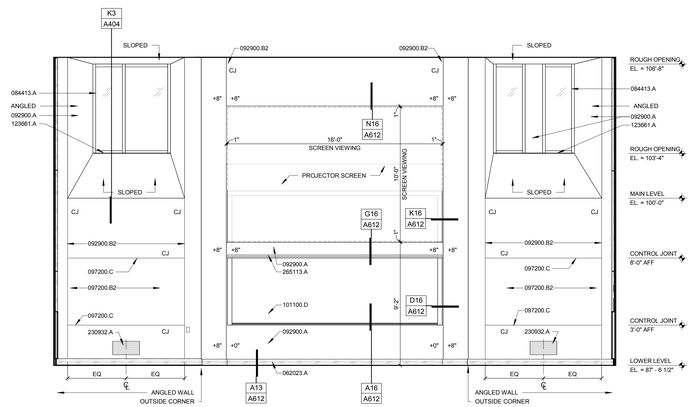
L15 INTERIOR ELEVATION

SCALE: 1/2" = 1'-0" APPLIED WRITABLE SURFACE



F1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" SOUTH WALL OF LECTURE HALL

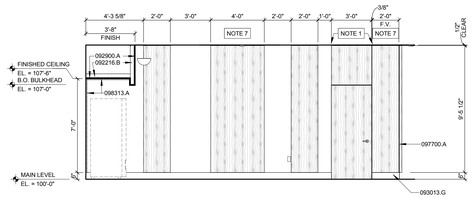


A1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST WALL OF LECTURE HALL

G8 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH WALL OF LOBBY

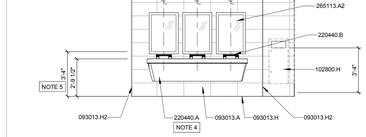


D8 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST WALL OF VENDING

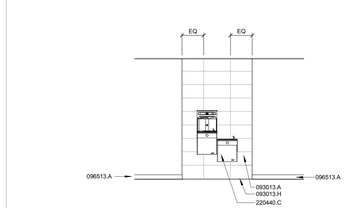
A8 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" SOUTH WALL OF LOBBY



G15 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" COPY 132 LOOKING NORTH



D15 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" DRINKING FOUNTAINS, TYP.

A15 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" LAVATORIES, TYP.

KEYNOTE LEGEND

062023.A	WWB-1: SOLID PROFILED WOOD WALL BASE – MAPLE – REFER TO DETAIL A13/A612
062023.A2	SOLID WOOD WALL BASE STAIR PROFILE EXTENSION – MAPLE – REFER TO DETAIL A7/A612
064116.A	PLASTIC-LAMINATE-FACED BASE CABINET – 24" DEEP – PROVIDE ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
064116.A6	PLASTIC-LAMINATE-FACED BASE CABINET – 24" DEEP – FOUR DRAWER UNIT
064116.C2	PLASTIC-LAMINATE-FACED UPPER CABINET – 14" DEEP – PROVIDE ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
064116.D	PLASTIC-LAMINATE-FACED MAILBOX ASSEMBLY
081113.A	HOLLOW METAL FRAME
081713.A	INTEGRATED METAL DOOR OPENING ASSEMBLY
084413.A	6" DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
092216.B	3 5/8" METAL STUDS
092900.A	5/8" TYPE X GYPSUM WALLBOARD – REFER TO SPECIFICATIONS FOR FURTHER DIRECTION REGARDING SPECIFIC LOCATION OF VARIOUS TYPES OF WALLBOARD
092900.B2	METAL CONTROL JOINT – IDENTIFIED IN DRAWINGS WITH A "CJ" IN CEILING PLANS AND ELEVATIONS – IDENTIFIED WITH TRIANGLE IN FLOOR PLANS
093013.A	CT-1: 12x24 CERAMIC WALL TILE – INSTALLED IN A HORIZONTALLY STACKED BOND PATTERN AT RESTROOM LAVATORY WALLS AND DRINKING FOUNTAIN WALLS
093013.C	CT-3: 12x24 PORCELAIN WALL TILE – INSTALLED AT RESTROOM WALLS
093013.G	CT-7: 6x12 PORCELAIN WALL TILE COVED BASE
093013.H	TS-1: STAINLESS STEEL COVED TILE TRANSITION STRIP
093013.H2	TS-2: STAINLESS STEEL STRAIGHT-EDGE OUTSIDE CORNER TILE TRANSITION STRIP
096513.A	4" RESILIENT BASE
097200.B	PRESENTATION DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
097200.B2	DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
097200.C	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
097200.C2	EXTRUDED ALUMINUM MARKER TRAY WITH PLASTIC END CAPS – 16" LONG, COORDINATE EXACT LOCATION WITH OWNER IN THE FIELD
097700.A	WD-1: WOOD PANEL SYSTEM – NON-ACOUSTICAL
097700.B	WD-2: WOOD PANEL SYSTEM – ACOUSTICAL
098313.A	1" THICK SOUND-ABSORBING WALL PANEL – SURFACE APPLIED
101100.D	10'-0"H x 16'-0"W MOTOR OPERATED WALL MOUNTED VERTICAL SLIDING MARKERBOARD / SLATEBOARD COMBINATION UNIT – WITH (1) 5'-0" x 16'-0" OPERABLE MARKER BOARD AND (1) 5'-0" x 16'-0" FIXED SLATEBOARD BACK PANEL
102800.H	SEMI-RECESSED WASTE RECEPTACLE
123623.13.B	1 1/2" THICK PLASTIC LAMINATE CLAD COUNTERTOP WITHOUT BACKSPLASH
123661.A	1/2" THICK SOLID SURFACE WINDOW SILL WITH 3/8" OVERHANG FROM FACE OF WALL TYPICAL – RADIUS EXPOSED EDGE – (SS-1)
220440.A	3-PERSON LAVATORY ASSEMBLY – REFER TO PLUMBING DRAWINGS
220440.B	ALL-IN-ONE WASHBAR (CLEAN, RINSE, DRY) – REFER TO PLUMBING DRAWINGS
220440.C	ELECTRIC WATER COOLER WITH BOTTLE FILLING STATION – REFER TO PLUMBING DRAWINGS
230830.A	ELECTRIC BASEBOARD HEATER – REFER TO MECHANICAL DRAWINGS
230932.A	MECHANICAL LOUVER – REFER TO MECHANICAL DRAWINGS
265113.A	INTERIOR LIGHTING – REFER TO ELECTRICAL
265113.A2	26"x37" BACKLIT MIRROR ASSEMBLY – REFER TO ELECTRICAL

SHEET A600 SHEET SPECIFIC NOTES

NOTE 1	INTENT IS FOR PANEL TO ALIGN WITH OUTSIDE EDGE OF DOOR OPENING.
NOTE 2	ALIGN WITH OUTER FACE OF WOOR PANEL ON ADJACENT WALL
NOTE 3	ALIGN WITH FACE OF WALL RETURN
NOTE 4	PROVIDE STRUCTURAL STEEL SUPPORT PER MANUFACTURER REQUIREMENTS
NOTE 5	BOTTOM EDGE OF REFLECTIVE AREA TO BE 3'-4" A.F.F.
NOTE 6	INTENDED DONOR WALL INSTALLATION AREA. COORDINATE BLOCKING AND WOOD PANELING DESIGN & INSTALLATION TO ACCOMMODATE.
NOTE 7	POTENTIAL SIGNAGE AREA. COORDINATE BLOCKING AND WOOD PANELING DESIGN AND INSTALLATION TO ACCOMMODATE.
NOTE 8	ALL CABINETS ARE TO BE LOCKABLE

DESIGN ARCHITECT:
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PROJECT ARCHITECT:
David E. Dudek

REVISION SCHEDULE:	
3/29/18	ADD #5
05/11/2018	Addendum #5

DRAWN BY: BEL
ISSUED: April 30, 2018

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Interior Elevations

SHA PROJECT NO. 16022

A600

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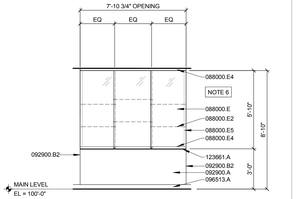
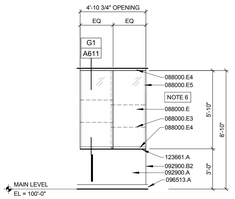
K1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH WALL OF COLAB 202



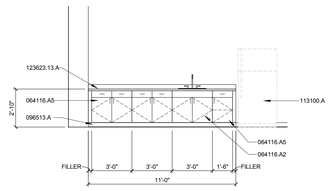
G1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WALL DISPLAY CASES AT 128



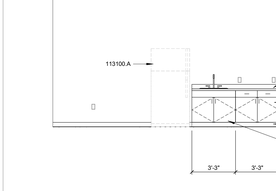
G4 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WALL DISPLAY CASES AT 131



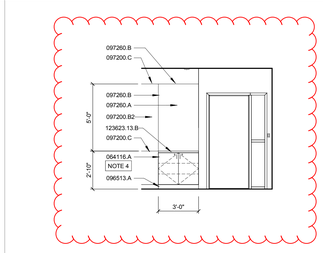
G7 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH WALL OF BREAK ROOM 131



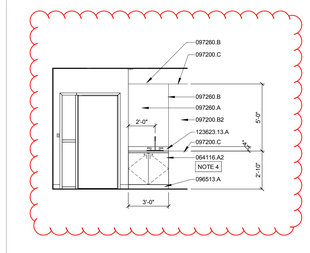
G10 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST WALL OF CATERING KITCHEN 204



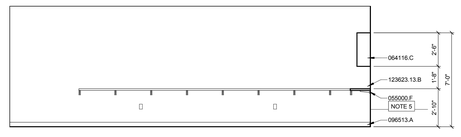
G13 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" TYPICAL CLASSROOM MILLWORK



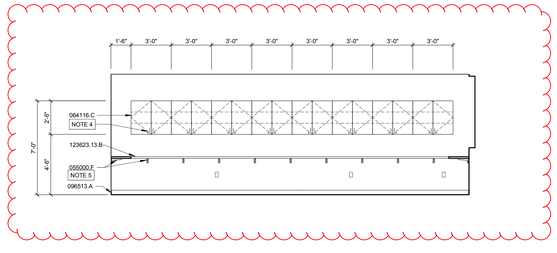
G16 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" TYPICAL CLASSROOM MILLWORK WITH SINK



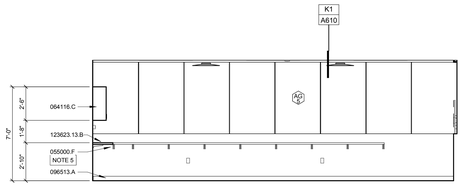
D1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST ELEVATION - CS LAB 033



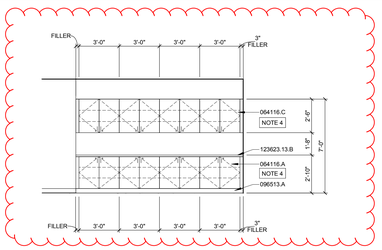
D7 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" NORTH ELEVATION - CS LAB 033



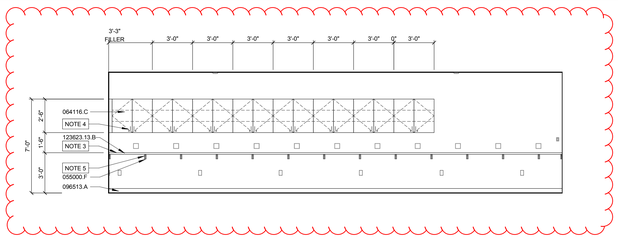
D13 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST ELEVATION - CS LAB 033



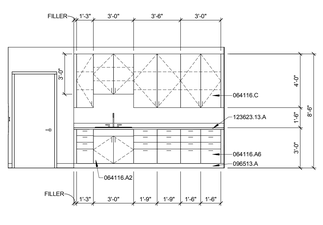
A1 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST WALL OF CLASSROOM 150



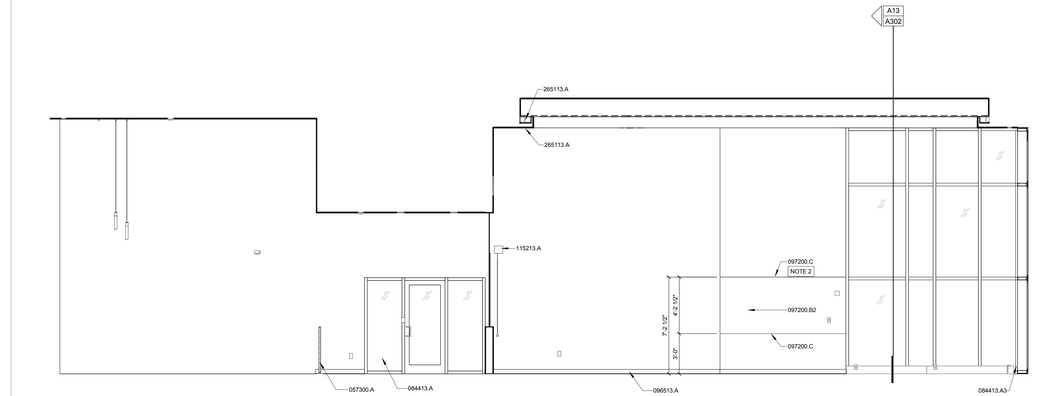
A7 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" EAST WALL OF CS LAB 045



A13 INTERIOR ELEVATION

SCALE: 1/4" = 1'-0" WEST WALL OF WORKROOM 048



KEYNOTE LEGEND

055000.F	COUNTER SUPPORT BRACKET – BASIS-OF-DESIGN: HAFELE HEBGO 287.44.443
057300.A	INTERIOR CABLE RAIL GUARDRAIL ASSEMBLY DESIGNED BY FABRICATOR TO ACCOMMODATE CODE REQUIRED LOADING – REFER TO DETAIL K10/A614
064116.A	PLASTIC-LAMINATE-FACED BASE CABINET – 24" DEEP – PROVIDE ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
064116.A2	PLASTIC-LAMINATE-FACED SINK BASE CABINET – 24" DEEP
064116.A5	PLASTIC-LAMINATE-FACED BASE CABINET – 24" DEEP – SINGLE DRAWER UNIT WITH ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
064116.A6	PLASTIC-LAMINATE-FACED BASE CABINET – 24" DEEP – FOUR DRAWER UNIT
064116.C	PLASTIC-LAMINATE-FACED UPPER CABINET – 12" DEEP – PROVIDE ADJUSTABLE SHELVING WHERE GRAPHICALLY INDICATED
081713.A	INTEGRATED METAL DOOR OPENING ASSEMBLY
084413.A	6" DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
084413.A2	7.5" DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
084413.A3	10.5" DEEP GLAZED ALUMINUM CURTAIN WALL ASSEMBLY
088000.E	MG-2: 5/16" TEMPERED SLIDING GLASS DOORS
088000.E2	LG-2: 9/16" LAMINATED 3'-6" L x 3'-2" D SEMI-OPAQUE GLASS SHELVES – COORDINATE GLASS OPACITY SELECTION WITH ARCHITECT – VERIFY SHELF SIZE WITH CLEARANCES REQUIRED FOR CABLE SYSTEM
088000.E3	LG-2: 9/16" LAMINATED 2'-3" L x 14" D SEMI-OPAQUE GLASS SHELVES – COORDINATE GLASS OPACITY SELECTION WITH ARCHITECT – VERIFY SHELF SIZE WITH CLEARANCES REQUIRED FOR CABLE SYSTEM
088000.E4	BOHLE ROBUSTUS FITTINGS SYSTEM: DUAL TRACK, VERSION C WITH NO VERTICAL JAMB EXTRUSIONS, FLUSH PULLS ON ENDS, AND LOCKS
088000.E5	CABLE SUPPORTS WITH CABLE COUPLER AT TOP AND CABLE COUPLER / TENSIONER WITH ANCHOR PLATE AT BOTTOM. SHELVES HELD BY SIDE CLAMP GRIPPERS. BASIS OF DESIGN: GRIPLOCK
092900.A	5/8" TYPE X GYPSUM WALLBOARD – REFER TO SPECIFICATIONS FOR FURTHER DIRECTION REGARDING SPECIFIC LOCATION OF VARIOUS TYPES OF WALLBOARD
092900.B2	METAL CONTROL JOINT – IDENTIFIED IN DRAWINGS WITH A "CJ" IN CEILING PLANS AND ELEVATIONS – IDENTIFIED WITH TRIANGLE IN FLOOR PLANS
096513.A	4" RESILIENT BASE
097200.B2	DRY ERASE MAGNETIC WALLCOVERING ASSEMBLY
097200.C	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
097260.A	TACKABLE WALLCOVERING ASSEMBLY
097260.B	EXTRUDED ALUMINUM J-CAP ACCESSORY TRIM
097700.A	WD-1: WOOD PANEL SYSTEM – NON-ACOUSTICAL
113100.A	REFRIGERATOR – PROVIDED AND INSTALLED BY OWNER
115213.A	PROJECTION SCREEN – COORDINATE INSTALLATION AND REQUIREMENTS OF SCREEN WITH SUPPLIER PRIOR TO INSTALLATION OF CEILING ASSEMBLY
123623.13.A	1 1/2" THICK PLASTIC LAMINATE CLAD COUNTERTOP WITH 4" HIGH LAMINATE CLAD BACKSPLASH
123623.13.B	1 1/2" THICK PLASTIC LAMINATE CLAD COUNTERTOP WITHOUT BACKSPLASH
123661.A	1/2" THICK SOLID SURFACE WINDOW SILL WITH 3/8" OVERHANG FROM FACE OF WALL TYPICAL – RADIUS EXPOSED EDGE – (SS-1)
265113.A	INTERIOR LIGHTING – REFER TO ELECTRICAL

SHEET A601 SHEET SPECIFIC NOTES

NOTE 1 INTENT IS FOR PANEL TO ALIGN WITH OUTSIDE EDGE OF DOOR OPENING.

NOTE 2 ALIGN WITH TOP OF CURTAIN WALL MULLION

NOTE 3 18" DEEP COUNTERTOP

NOTE 4 ALL CABINETS ARE TO BE LOCKABLE

NOTE 5 INSTALL STEEL ANGLE SURFACE BRACKET SUPPORTS 32" O.C. TYP. COORDINATE WITH STUDS BEHIND

NOTE 6 RECESSED DISPLAY AREA TO BE FINISHED W/ GYP. BD. (PAINT) ON WALLS AND CEILING

REVISION SCHEDULE:

1	ADDENDA #1 09.11.2018
2	ADDENDA #2 09.13.2018
3	ADDENDA #3 09.17.2018
4	ADDENDA #4 09.19.2018
5	ADDENDA #5 09.21.2018

DESIGN ARCHITECT:
Daniel J. Geasey
PROJECT ARCHITECT:
David E. Dukes
DRAWN BY:
MW
ISSUED:
April 30, 2018

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Concordia University
STEM Building

Interior Elevations

SHA PROJECT NO. 16022

A601

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A1 UPPER LEVEL REFLECTED CEILING PLAN - AREA B

SCALE: 1/8" = 1'-0"

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KEYNOTE LEGEND

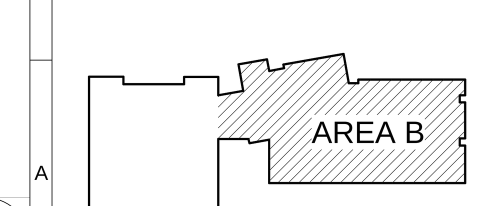
083113.A	RECESSED FLUSH DRYWALL ACCESS DOOR – 18"x18" – COORDINATE LOCATION WITH SURROUNDING MECHANICAL WORK
083113.B	FIRE-RATED FLUSH DRYWALL ACCESS DOOR – 18"x18" – COORDINATE LOCATION WITH SURROUNDING MECHANICAL WORK
092900.B2	METAL CONTROL JOINT – IDENTIFIED IN DRAWINGS WITH A "CJ" IN CEILING PLANS AND ELEVATIONS – IDENTIFIED WITH TRIANGLE IN FLOOR PLANS
097200.A	WALL COVERING
115313.A	FUME HOOD – REFER TO LABORATORY PLANS
122113.A	HB-1: 1" MANUALLY OPERATED HORIZONTAL METAL LOUVER BLIND – BETWEEN (INSIDE) JAMB INSTALLATION
122413.A	RS-1: SINGLE ROLLER MANUALLY OPERATED SHADE ASSEMBLY (3% OPEN) WITH PRE-FINISHED ALUMINUM FASCIA TO MATCH STOREFRONT OR CURTAINWALL ASSEMBLIES OR CLEAR ANODIZED TO MATCH ALL-GLASS ASSEMBLIES
122413.A3	RS-1A: SINGLE ROLLER MANUALLY OPERATED SHADE ASSEMBLY (3% OPEN) RECESSED INTO CEILING ASSEMBLY
122413.C	RS-3: SINGLE ROLLER MOTORIZED SHADE ASSEMBLY (3% OPEN)
282300.A	SECURITY CAMERA – REFER TO TECHNOLOGY DRAWINGS

SHEET A702B SHEET SPECIFIC NOTES

NOTE 1	PLACE GRID AND LIGHT SO THAT LIGHT IS CENTERED IN CORRIDOR, TYP.
NOTE 2	ALIGN EDGE WITH EDGE OF SOFFIT BEYOND
NOTE 3	PROVIDE (2) BLINDS. DIVISION OF BLINDS TO CORRESPOND WITH CENTER OF ONE OF THE VERTICAL MULLIONS IN THE STOREFRONT OR CURTAINWALL ASSEMBLY.
NOTE 4	CURTAINWALL FRAMES TYPES CW14 AND CW15 SHALL HAVE A TOTAL OF (3) SHADES AND (3) ASSOCIATED MOTORS. EACH SHADE WILL REQUIRE A HORIZONTAL MULLION. COORDINATE BREAK IN SHADES WITH VERTICAL WINDOW MULLIONS.
NOTE 5	SPECIAL ARTWORK INSTALLATION AREA. COORDINATE REQUIREMENTS WITH OWNER. MAY REQUIRE POWER AND DATA CONNECTIONS.
NOTE 6	BULKHEAD PAINTED PNT-1
NOTE 7	CEILING OF COLLABORATION POD TO BE PNT-7

REFLECTED CEILING PLAN LEGEND

- GYPSUM WALLBOARD CEILING/SOFFIT/BULKHEAD - PAINT FINISH
- APC CEILING 1
- APC CEILING 2
- WOOD PANEL CEILING
- METAL CONTROL JOINT
- CAN LIGHT - REFER TO ELECTRICAL
- 2X4 LIGHT - REFER TO ELECTRICAL
- LINEAR SLOT LIGHT - REFER TO ELECTRICAL
- SUPPLY DIFFUSER - REFER TO MECHANICAL
- LINEAR SUPPLY DIFFUSER - REFER TO MECHANICAL
- RETURN DIFFUSER - REFER TO MECHANICAL
- EXHAUST GRILLE - REFER TO MECHANICAL
- EXIT LIGHT - REFER TO ELECTRICAL
- SPEAKER - REFER TO ELECTRICAL
- DETECTOR - REFER TO ELECTRICAL
- OCCUPANCY SENSOR - REFER TO ELECTRICAL
- SPRINKLER HEAD - REFER TO MECHANICAL FOR COMPLETE LAYOUT. LOCATIONS ONLY SHOWN IN CEILINGS THAT REQUIRE AESTHETIC CONSIDERATION.



PROJECT KEY PLAN

REVISION SCHEDULE:
05/11/2018 - Addendum #3

DESIGN ARCHITECT: Daniel J. Grasso
PROJECT ARCHITECT: David E. Quade
DRAWN BY: KNT, DEQ
ISSUED: April 30, 2018

ARCHITECT DAVID E. QUADE A-3466 4-30-18 STATE OF NEBRASKA

5/9/2018 1:12:25 PM

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Upper Level Reflected Ceiling Plan - Area B

SHA PROJECT NO. 16022

A702B

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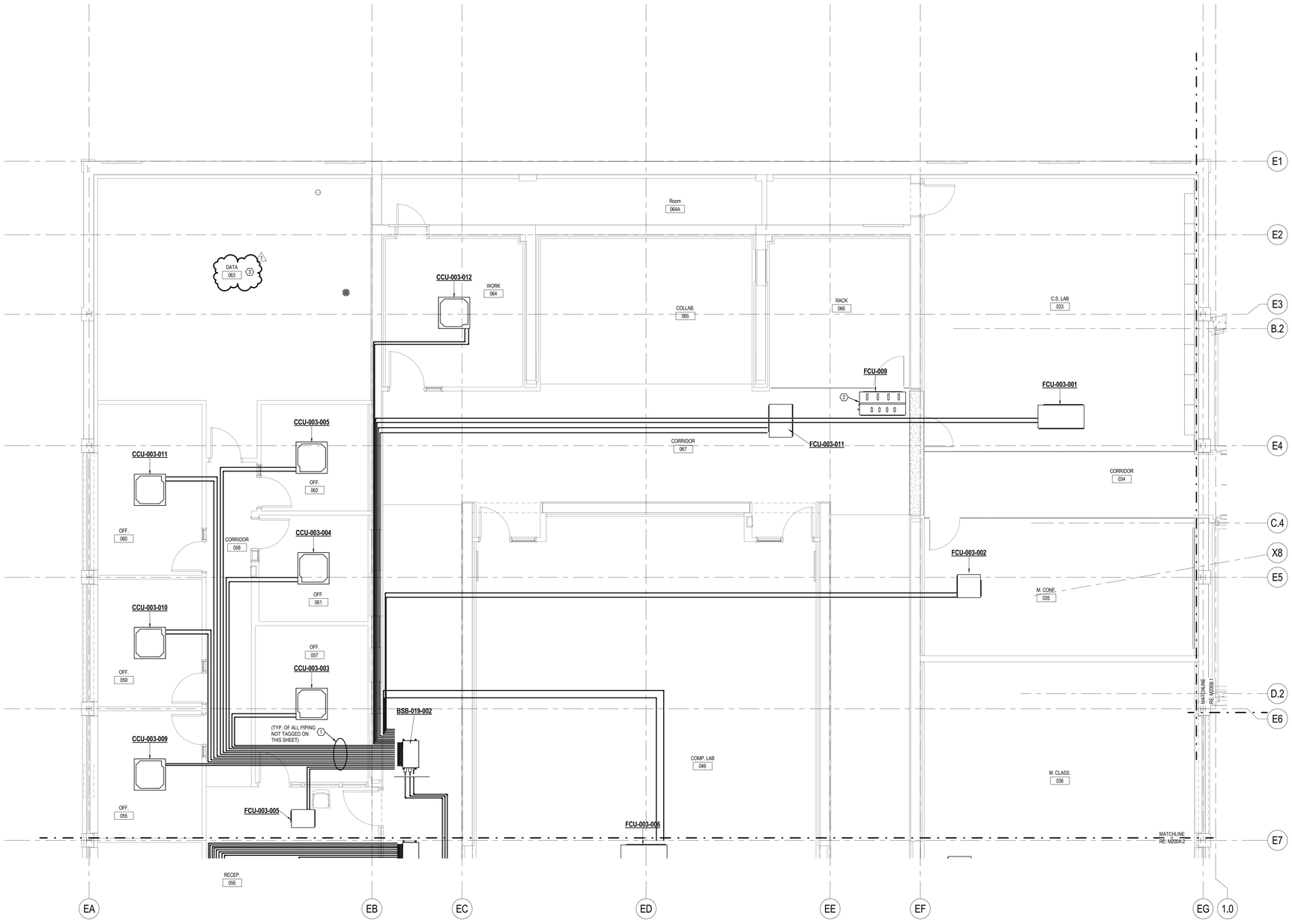
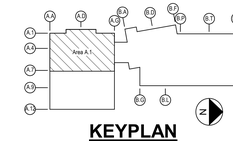


1 Lower Level Mechanical Utilities Piping Plan - Area A.1
1/4" = 1'-0"



KEYPLAN

GENERAL NOTES

1. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
2. ELEVATIONS NOTED ARE FROM 0'-0" ABOVE FINISHED FLOOR.
3. DO NOT SCALE DRAWINGS.
4. COORDINATE PIPING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE ALL SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION.
5. VALVES SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION. VALVES INSTALLED IN INTERSTITIAL LEVELS SHALL BE ACCESSIBLE FROM EQUIPMENT PLATFORMS, ACCESS LEVELS, CONCRETE FLOORS, OR WALKABLE CEILING AREAS. PROVIDE AND LOCATE ACCESS PANELS IN NON ACCESSIBLE CEILINGS AND WALLS FOR PROPER MAINTENANCE ACCESS TO VALVES AND ACCESSORIES. COORDINATE LOCATIONS WITH OTHER TRADES. SEE ARCHITECTURAL SPECIFICATIONS FOR ACCESS PANEL REQUIREMENTS.
6. FOR PIPING PENETRATIONS, PIPING CONTRACTOR IS RESPONSIBLE FOR MAINTAINING INTEGRITY OF RATED ASSEMBLIES. PROVIDE U.L. FIRESTOP SYSTEMS WHERE REQUIRED. COORDINATE WITH ARCHITECT IF NEEDED.
7. FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
8. HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
9. INSTALL PIPING COMPONENTS AND ACCESSORY MATERIALS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
10. SLOPE ALL PIPING PER P&IDS AND AS NOTED ON PLANS. SEE PIPING SPECIFICATIONS FOR MINIMUM SLOPE REQUIREMENTS.
11. FOR PIPING SYMBOLS AND ABBREVIATIONS, RE: M-0.00.
12. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).

SHEET NOTES

1. REFRIGERANT PIPING SHOWN FOR GENERAL ROUTING. VRV SYSTEM MANUFACTURER TO PROVIDE REFRIGERANT PIPING SIZES REQUIRED.
2. ROUTE REFRIGERANT PIPING FROM FCU TO ASSOCIATED CU LOCATED ON THE ROOF. PIPING SHALL BE ROUTED CONCEALED IN WALLS AND CEILING PLENUMS IN FINISHED AREAS.
3. ROUTE REFRIGERANT PIPING, CONCEALED IN WALLS AND ABOVE CEILINGS, BETWEEN THE ROOF MOUNTED CONDENSING UNIT AND THE IN-ROW COMPUTER ROOM CONDITIONING UNIT LOCATED IN THE DATA ROOM. IN-ROW CONDITIONING UNIT TO BE PROVIDED BY OTHERS WITH PIPING AND UTILITIES HANDLED BY THE MECHANICAL AND ELECTRICAL CONTRACTORS.

REVISION SCHEDULE:

0	04/20/2018	Contract Documents
1	05/11/2018	Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
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DESIGN ENGINEER:
ISSUED: APRIL 20, 2018

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Lower Level Mechanical Utilities Piping Plan - Area A.1

SHA PROJECT NO. 16022

M200A.1

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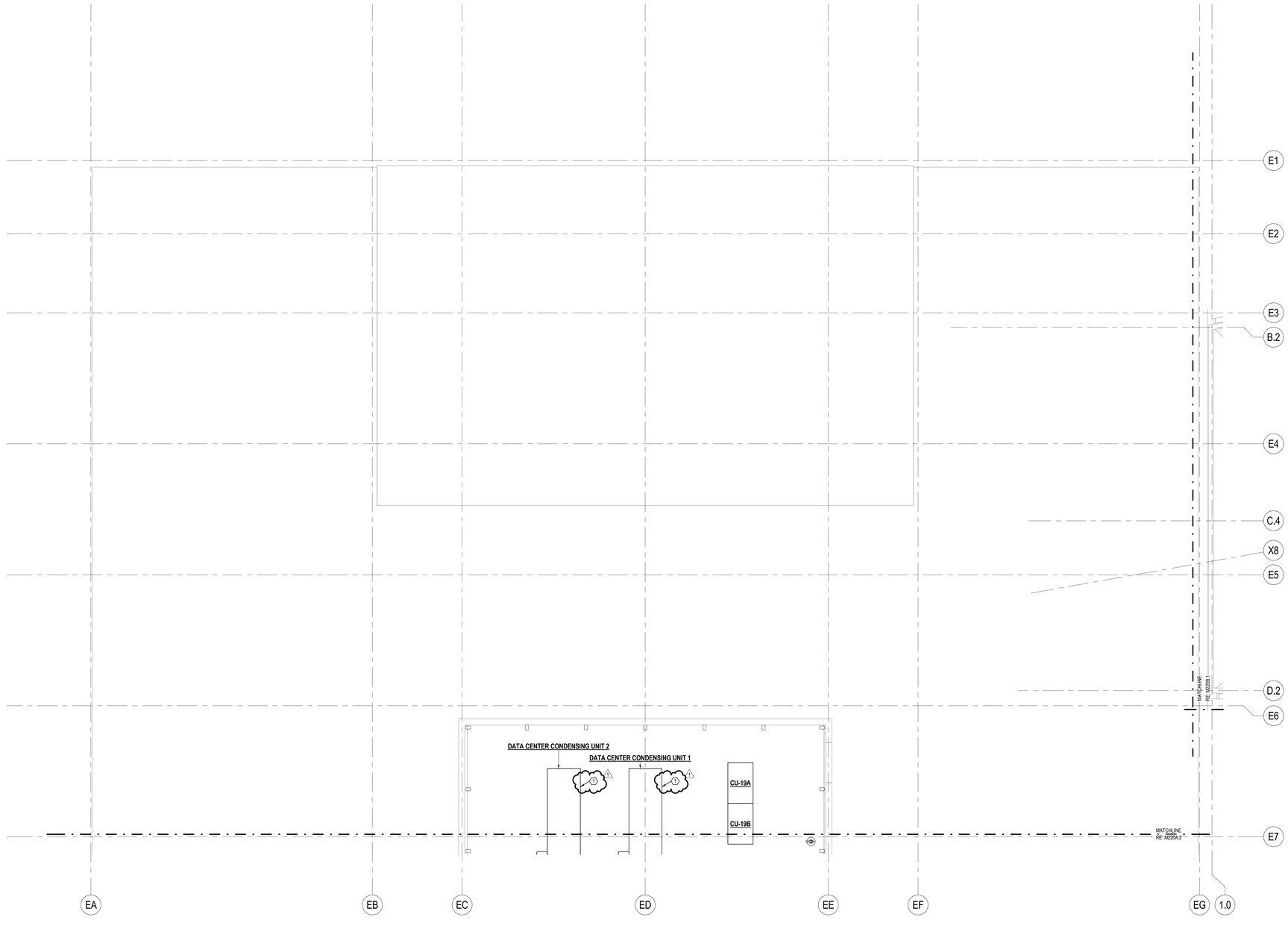

1 Roof Mechanical Utilities Piping Plan - Area A.1
1/4" = 1'-0"

GENERAL NOTES

1. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
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4. COORDINATE PIPING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE ALL SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION.
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7. FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
8. HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
9. INSTALL PIPING COMPONENTS AND ACCESSORY MATERIALS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
10. SLOPE ALL PIPING PER P&IDS AND AS NOTED ON PLANS. SEE PIPING SPECIFICATIONS FOR MINIMUM SLOPE REQUIREMENTS.
11. FOR PIPING SYMBOLS AND ABBREVIATIONS, RE: M-0.00.
12. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).

SHEET NOTES

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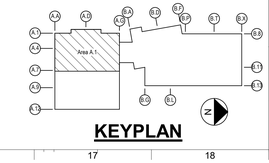

KEYPLAN

REVISION SCHEDULE:

0	04/20/2018	Contract Documents
1	05/11/2018	Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: LK
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AS NOTED
ISSUED: APRIL 20, 2018

9/11/2018 9:23:02 AM

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Roof Mechanical Utilities Piping Plan - Area A.1

SHA PROJECT NO. 16022

M220A.1

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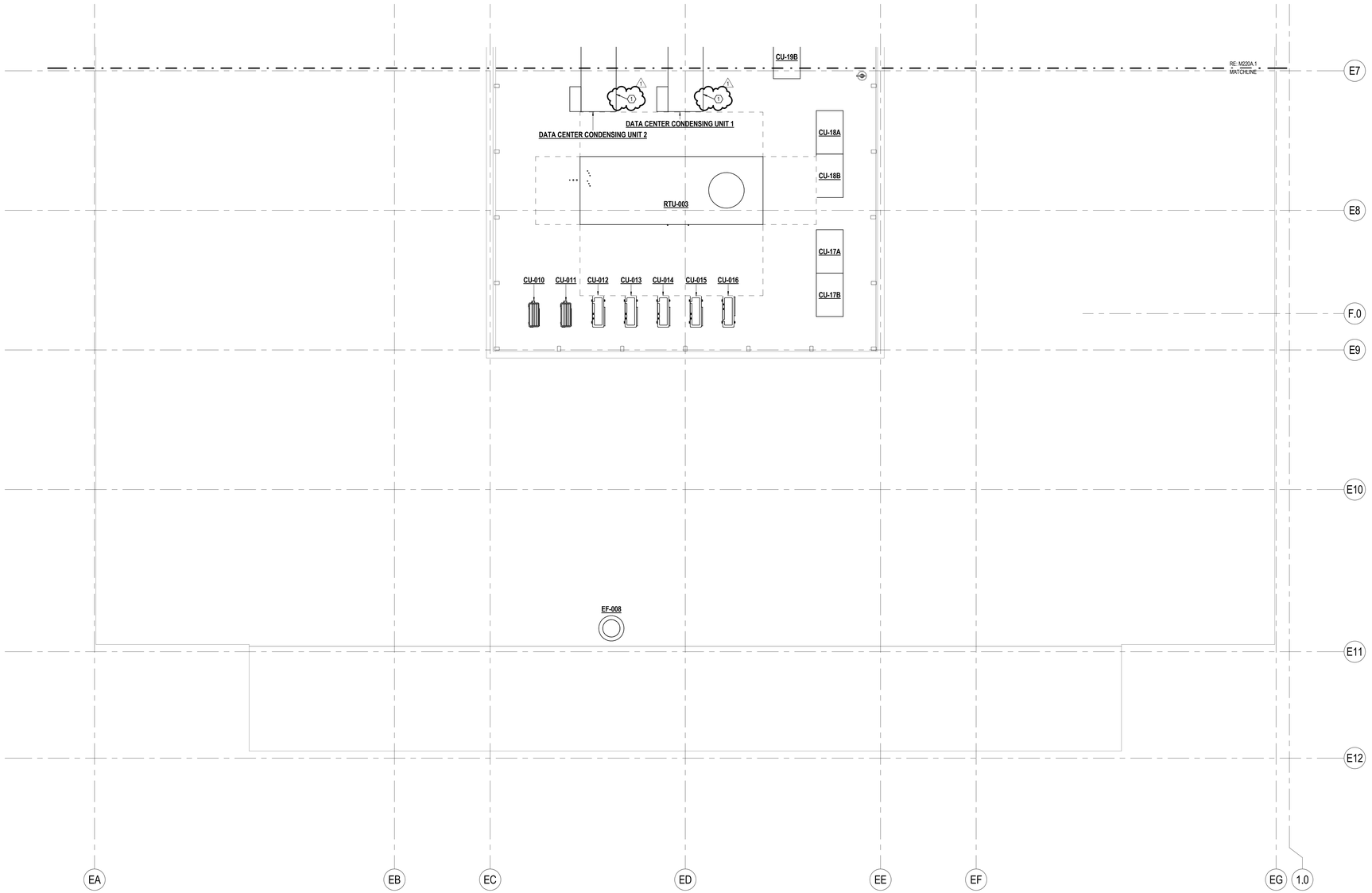

1 Roof Mechanical Utilities Piping Plan - Area A.2
1/4" = 1'-0"

GENERAL NOTES

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9. INSTALL PIPING COMPONENTS AND ACCESSORY MATERIALS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
10. SLOPE ALL PIPING PER P&IDS AND AS NOTED ON PLANS. SEE PIPING SPECIFICATIONS FOR MINIMUM SLOPE REQUIREMENTS.
11. FOR PIPING SYMBOLS AND ABBREVIATIONS, RE: M-0.00.
12. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).

SHEET NOTES

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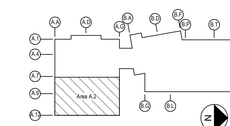

KEYPLAN

REVISION SCHEDULE:

0	04/20/2018	Contract Documents
1	05/11/2018	Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: LK
DESIGN ENGINEER:
AS
ISSUED: APRIL 20, 2018

9/11/2018 9:23:56 AM

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Roof Mechanical Utilities Piping Plan - Area A.2

SHA PROJECT NO. 16022

M220A.2

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GENERAL NOTES

1. PROVIDE ACCESS DOORS OR PANELS SO THAT EVERY COMPONENT IS SERVICEABLE.

P&ID NOTES

1. HEAT TRACE PIPE, INCLUDING VALVES, FITTINGS, P TRAP, AND ALL OTHER EXTERIOR COMPONENTS UP TO PENETRATION INTO BUILDING.
2. ROUTE CONDENSATE INSIDE BUILDING TO MOP SINK IN UPPER LEVEL JANITOR'S CLOSET. TERMINATE WITH CODE REQUIRED AIR GAP. SLOPE DRAIN PIPE A MINIMUM OF 1/8" PER FOOT.
3. SMOKE DETECTOR SHALL BE FURNISHED BY RTU MANUFACTURER, INSTALLED BY MECHANICAL CONTRACTOR AND POWERED BY ELECTRICAL CONTRACTOR. INTEGRATE WITH BUILDING FIRE ALARM. DETECTOR SHALL BE MOUNTED IN THE ROOF CURB, WITH ACCESS PROVIDED EITHER THROUGH THE BOTTOM OF THE AIR HANDLING UNIT OR THROUGH THE SIDE OF THE CURB.
4. PROVIDE AERCO ACID CONDENSATE NEUTRALIZATION KIT (MODEL #89025-2, QUANTITY OF 2) IN ACID WASTE CONDENSATE DRAIN PIPE FROM GAS-FIRED HEATER. THE TWO KITS SHALL BE INSTALLED CONNECTED IN SERIES. INSTALL IN DRAIN PIPE INSIDE BUILDING IN LOCATION INDICATED ON PLUMBING PLAN DRAWINGS.
5. TEMPERATURE AND HUMIDITY TRANSMITTING STATION FOR OUTSIDE AIR CONDITIONS. STATION SHALL TRANSMIT INFORMATION TO BMS FOR INCOMING OA CONDITIONS FOR RTU-001A, RTU-001B, AND RTU-002.

DESIGN ARCHITECT:

PROJECT ARCHITECT:

REVISION SCHEDULE:

0. 04/30/2018 - Contract Documents
1. 05/11/2018 - Addendum 3

DRAWN BY: DK

DESIGN ENGINEER: MS

ISSUED: APRIL 30, 2018

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RTU-001A GENERATION P&ID

SHA PROJECT NO. 173322

M500

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GENERAL NOTES

1. PROVIDE ACCESS DOORS OR PANELS SO THAT EVERY COMPONENT IS SERVICEABLE.

P&ID NOTES

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DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: DK

DESIGN ENGINEER: MS

ISSUED: APRIL 30, 2018

REVISION SCHEDULE:

0. 04/30/2018 - Contract Documents
1. 05/11/2018 - Addendum 3

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Concordia University STEM Building

RTU-001B
GENERATION P&ID

SHA PROJECT NO. 173322

M501

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1. HEAT TRACE PIPE, INCLUDING VALVES, FITTINGS, P TRAP, AND ALL OTHER EXTERIOR COMPONENTS UP TO PENETRATION INTO BUILDING.
2. ROUTE CONDENSATE INSIDE BUILDING TO MOP SINK IN UPPER LEVEL JANITOR'S CLOSET. TERMINATE WITH CODE REQUIRED AIR GAP. SLOPE DRAIN PIPE A MINIMUM OF 1/8" PER FOOT.
3. SMOKE DETECTOR SHALL BE FURNISHED BY RTU MANUFACTURER, INSTALLED BY MECHANICAL CONTRACTOR AND POWERED BY ELECTRICAL CONTRACTOR. INTEGRATE WITH BUILDING FIRE ALARM. DETECTOR SHALL BE MOUNTED IN THE ROOF CURB, WITH ACCESS PROVIDED EITHER THROUGH THE BOTTOM OF THE AIR HANDLING UNIT OR THROUGH THE SIDE OF THE CURB.
4. PROVIDE AERCO ACID CONDENSATE NEUTRALIZATION KIT (MODEL #89025-2, QUANTITY OF 2) IN ACID WASTE CONDENSATE DRAIN PIPE FROM GAS-FIRED HEATER. THE TWO KITS SHALL BE INSTALLED CONNECTED IN SERIES. INSTALL IN DRAIN PIPE INSIDE BUILDING IN LOCATION INDICATED ON PLUMBING PLAN DRAWINGS.
5. RELIEF DAMPER LOCATED ON SIDE OF UNIT, SHOWN HERE ON END FOR CLARITY PURPOSES.

REVISION SCHEDULE:

0	04/30/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: DK

DESIGN ENGINEER: MS

ISSUED: APRIL 30, 2018

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Concordia University STEM Building

RTU-002
GENERATION P&ID

SHA PROJECT NO. 173322

M502

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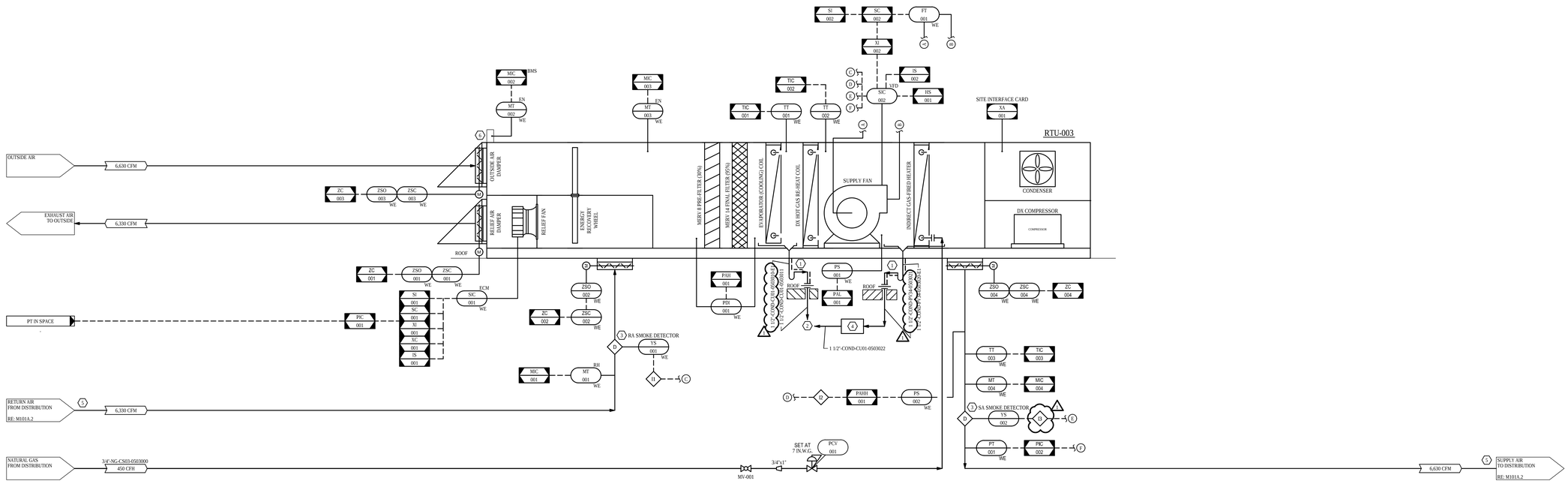

GENERAL NOTES

1. PROVIDE ACCESS DOORS OR PANELS SO THAT EVERY COMPONENT IS SERVICEABLE.

P&ID NOTES

1. HEAT TRACE PIPE, INCLUDING VALVES, FITTINGS, P TRAP, AND ALL OTHER EXTERIOR COMPONENTS UP TO PENETRATION INTO BUILDING.
2. ROUTE CONDENSATE INSIDE BUILDING TO MOP SINK IN MAIN LEVEL JANITOR'S CLOSET. TERMINATE WITH CODE REQUIRED AIR GAP. SLOPE DRAIN PIPE A MINIMUM OF 1/8" PER FOOT.
3. SMOKE DETECTOR SHALL BE FURNISHED BY RTU MANUFACTURER, INSTALLED BY MECHANICAL CONTRACTOR AND POWERED BY ELECTRICAL CONTRACTOR. INTEGRATE WITH BUILDING FIRE ALARM. DETECTOR SHALL BE MOUNTED IN THE ROOF CURB, WITH ACCESS PROVIDED EITHER THROUGH THE BOTTOM OF THE AIR HANDLING UNIT OR THROUGH THE SIDE OF THE CURB.
4. PROVIDE AERCO ACID CONDENSATE NEUTRALIZATION KIT (MODEL #89025-2) IN ACID WASTE CONDENSATE DRAIN PIPE FROM GAS-FIRED HEATER. INSTALL IN DRAIN PIPE INSIDE BUILDING IN LOCATION INDICATED ON PLUMBING PLAN DRAWINGS.
5. RTU-003 SHALL SUPPLY CONSTANT VOLUME VENTILATION AIR AT ROOM NEUTRAL CONDITIONS. ROOMS VENTILATED BY RTU-003 SHALL BE COOLED/HEATED BY LOCAL VRV EQUIPMENT. VRV SYSTEM, INCLUDING ALL NECESSARY EQUIPMENT, PIPING, AND FITTINGS SHALL BE DESIGNED AND INSTALLED IN THE FIELD PER RECOMMENDATIONS FROM VRV SYSTEM MANUFACTURER. FOR ADDITIONAL INFORMATION REGARDING RTU-003 VENTILATION AIR DISTRIBUTION, REFER TO PLAN DRAWINGS.
6. TEMPERATURE AND HUMIDITY TRANSMITTING STATION FOR OUTSIDE AIR CONDITIONS. STATION SHALL TRANSMIT INFORMATION TO BMS FOR INCOMING OA CONDITIONS FOR RTU-003.

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: DK

DESIGN ENGINEER: MS

ISSUED: UPDD_30_2018

REVISION SCHEDULE:

0. 04/30/2018 - Contract Documents
1. 05/11/2018 - Addendum 3

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RTU-003 GENERATION P&ID

SHA PROJECT NO. 173322

M503

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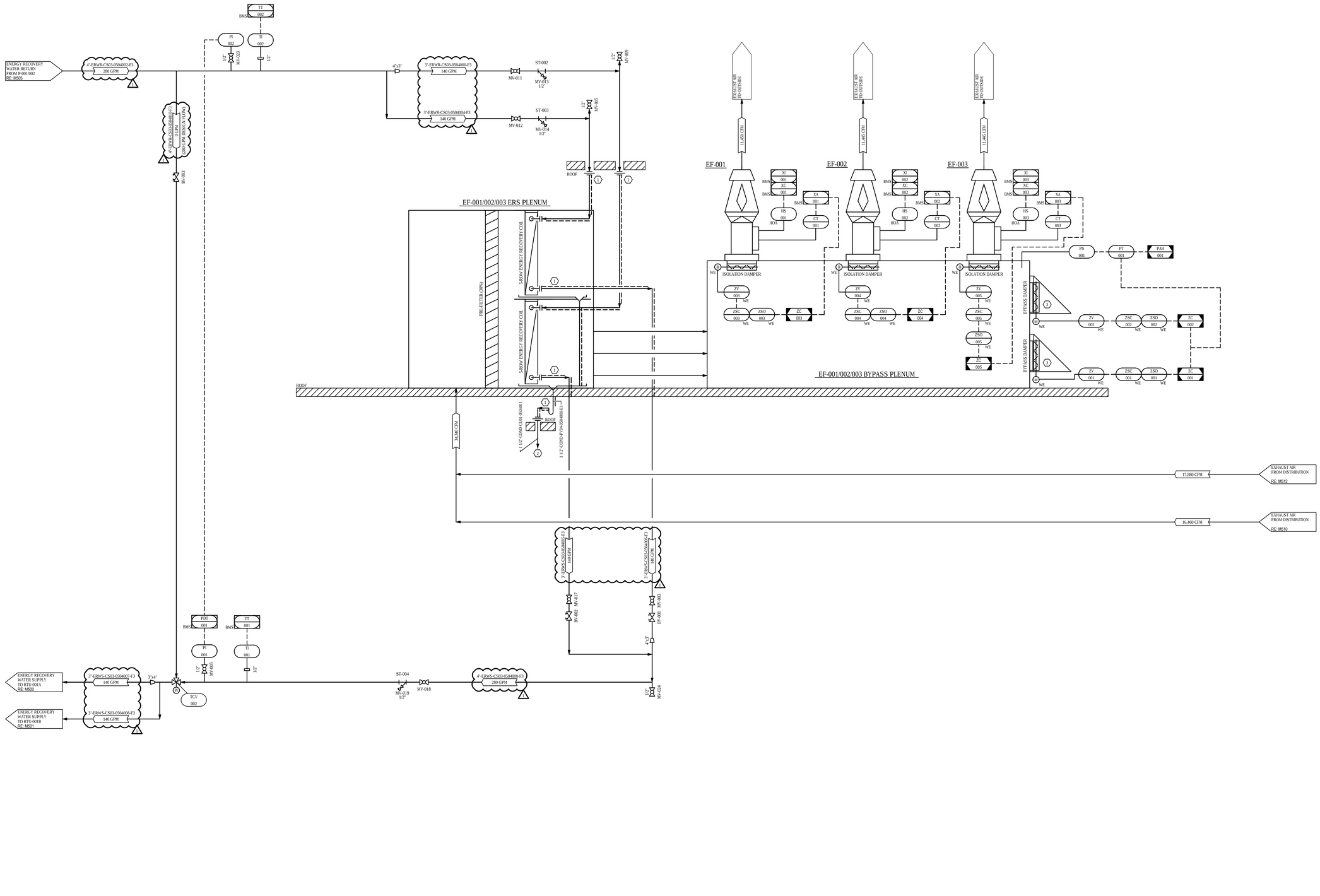
GENERAL NOTES

1. PROVIDE ACCESS DOORS OR PANELS SO THAT EVERY COMPONENT IS SERVICEABLE.

P&ID NOTES

1. HEAT TRACE PIPE, INCLUDING VALVES, FITTINGS, P TRAP, AND ALL OTHER EXTERIOR COMPONENTS UP TO PENETRATION INTO BUILDING.
2. ROUTE CONDENSATE INSIDE BUILDING TO MOP SINK IN MAIN LEVEL JANITOR'S CLOSET. TERMINATE WITH CODE REQUIRED AIR GAP. SLOPE DRAIN PIPE A MINIMUM OF 1/8" PER FOOT.
3. BYPASS DAMPERS LOCATED ON OPPOSITE SIDES OF PLENUM. SHOWN HERE ON SAME SIDE FOR CLARITY PURPOSES. REFER TO PLAN DRAWINGS.



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DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: DK

CHECKED BY: JN

DESIGN ENGINEER: JN

ISSUED: APRIL 30, 2018

REVISION SCHEDULE:

0	04/30/2018 - Contract Documents
1	05/11/2018 - Addendum 3

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EF-001/002/003 GENERATION P&ID

SHA PROJECT NO. 173322

M504

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GENERAL NOTES

1. ALL CONTROL DEVICES AND SENSORS NOT INDICATED WITH W.E. (WITH EQUIPMENT) SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR. STARTUP SHALL BE COORDINATED WITH EQUIPMENT MANUFACTURER, CONTROLS CONTRACTOR AND MECHANICAL CONTRACTORS.
2. PROVIDE INTERFACE TO CONTROL SYSTEM SUCH THAT OWNER COULD MONITOR HVAC EQUIPMENT REMOTELY. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THIS REQUIREMENT.
3. 30% PROPYLENE GLYCOL BY VOLUME.

P&ID NOTES

1. 100% PROPYLENE GLYCOL.
2. MANUAL PROPYLENE GLYCOL FILL FOR ENERGY RECOVERY WATER.
3. LOCAL START/STOP MOTOR CONTROLLER.
4. ROUTE TO NEAREST MOP SINK OR FLOOR DRAIN AND TERMINATE WITH CODE APPROVED AIR GAP. SLOPE DRAIN PIPE A MINIMUM OF 1/8" PER FOOT.

REVISION SCHEDULE:

0	04/05/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: DK

DESIGN ENGINEER:

ISSUED: APRIL 30, 2018

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ENERGY RECOVERY SYSTEM GENERATION P&ID

SHA PROJECT NO. 173322

M505

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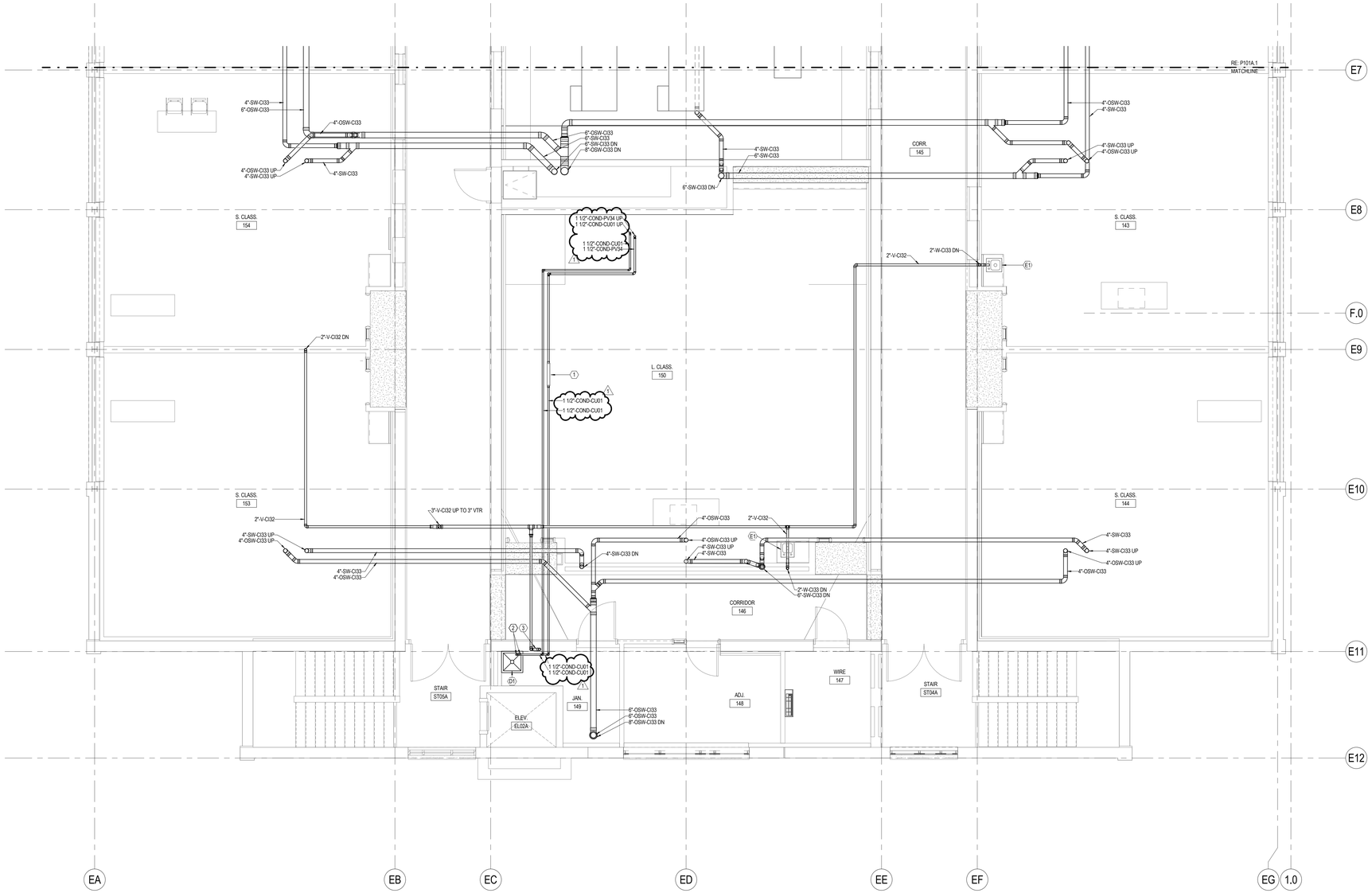


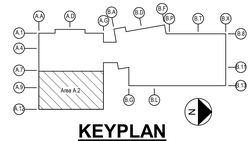
1 Main Level Plumbing Waste & Vent – Area A.2
1/4" = 1'-0"

GENERAL NOTES

1. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
2. INVERT ELEVATIONS NOTED ARE IN REFERENCE TO FINISHED FLOOR ELEVATIONS. LOWER LEVEL FINISHED FLOOR IS 0'-0".
3. DO NOT SCALE DRAWINGS.
4. COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION. COORDINATE UNDERGROUND PIPING WORK WITH SITE / CIVIL, AND UTILITY DRAWINGS PRIOR TO STARTING WORK.
5. FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
6. HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
7. FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
8. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).
9. SLOPE WASTE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT UNLESS NOTED OTHERWISE. SLOPE WASTE PIPING 4" AND LARGER AT 1/8" PER FOOT UNLESS NOTED OTHERWISE. SLOPE VENT PIPING TO DRAIN TOWARDS THE DRAINAGE RISER UNLESS NOTED OTHERWISE.
10. THE PLUMBING PLANS ARE TO A GREAT EXTENT SCHEMATIC IN NATURE AND THE INFORMATION PRESENTED IS AS EXACT AS COULD BE SECURED FROM SITE VISITS. THE CONTRACTOR SHALL OBTAIN EXACT LOCATIONS, MEASUREMENTS, LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS. ACCURACY OF THE EXISTING INFORMATION IS NOT GUARANTEED.

SHEET NOTES

1. NEUTRALIZATION KIT. REFER TO M503 FOR MORE INFORMATION. ROUTE CONDENSATE IN CU01 AFTER KIT.
2. CONDENSATE FROM RTU-003. TERMINATE ABOVE FLOOD RIM OF MOP SINK.
3. CONNECT VENT LINE A MINIMUM OF 6" ABOVE MOP SINK.



KEYPLAN

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: RPJ
DESIGN ENGINEER: AEA
ISSUED: APRIL 20, 2018

REVISION SCHEDULE:
0 04/20/2018 - Contract Documents
1 05/11/2018 - Addendum 3

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Main Level Plumbing Waste & Vent – Area A.2

SHA PROJECT NO. 16022

P101A.2

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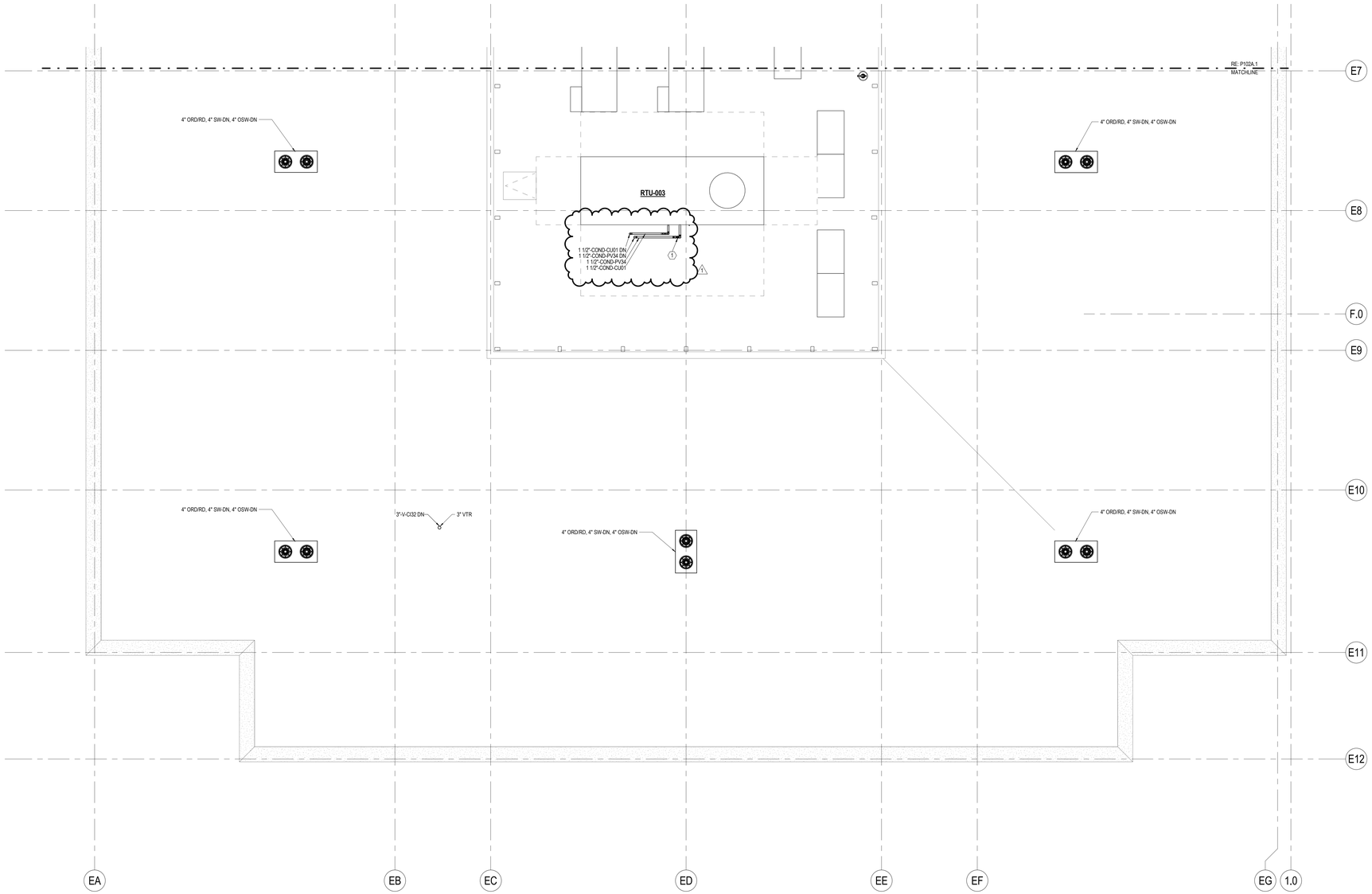
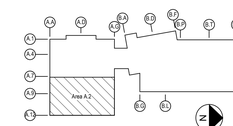


1 Roof Level Plumbing Waste & Vent – Area A.2
1/4" = 1'-0"



KEYPLAN

GENERAL NOTES

1. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
2. INVERT ELEVATIONS NOTED ARE IN REFERENCE TO FINISHED FLOOR ELEVATIONS. LOWER LEVEL FINISHED FLOOR IS 0'-0".
3. DO NOT SCALE DRAWINGS.
4. COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION. COORDINATE UNDERGROUND PIPING WORK WITH SITE / CIVIL, AND UTILITY DRAWINGS PRIOR TO STARTING WORK.
5. FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
6. HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
7. FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
8. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.)
9. SLOPE WASTE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT UNLESS NOTED OTHERWISE. SLOPE WASTE PIPING 4" AND LARGER AT 1/8" PER FOOT UNLESS NOTED OTHERWISE. SLOPE VENT PIPING TO DRAIN TOWARDS THE DRAINAGE RISER UNLESS NOTED OTHERWISE.
10. THE PLUMBING PLANS ARE TO A GREAT EXTENT SCHEMATIC IN NATURE AND THE INFORMATION PRESENTED IS AS EXACT AS COULD BE SECURED FROM SITE VISITS. THE CONTRACTOR SHALL OBTAIN EXACT LOCATIONS, MEASUREMENTS, LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS. ACCURACY OF THE EXISTING INFORMATION IS NOT GUARANTEED.

SHEET NOTES

1. REFER TO P600-03 FOR TRAP SIZING DETAIL.

DESIGN ARCHITECT:	REVISION SCHEDULE:
PROJECT ARCHITECT:	0 04/20/2018 - Contract Documents
DRAWN BY: RPJ	1 05/11/2018 - Addendum 3
DESIGN ENGINEER: AEA	
ISSUED: APRIL 20, 2018	

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Engr. Proj. No: 17039

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Roof Level Plumbing Waste & Vent – Area A.2

SHA PROJECT NO. 16022

P102A.2

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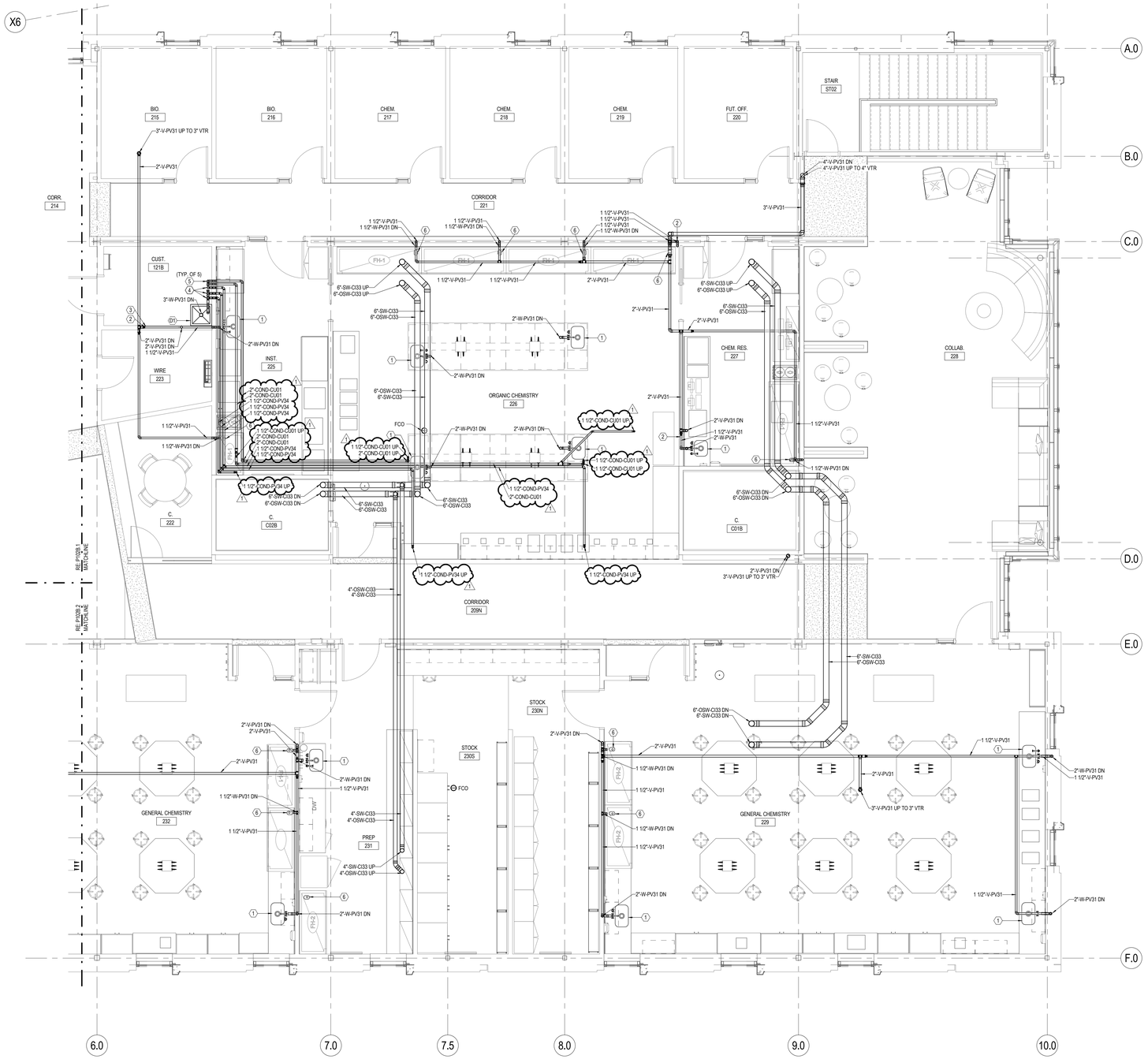

1 Upper Level Plumbing Waste & Vent – Area B.3
1/4" = 1'-0"

KEYPLAN

GENERAL NOTES

1. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
2. INVERT ELEVATIONS NOTED ARE IN REFERENCE TO FINISHED FLOOR ELEVATIONS. LOWER LEVEL FINISHED FLOOR IS 0'-0".
3. DO NOT SCALE DRAWINGS.
4. COORDINATE PLUMBING INSTALLATION WITH ALL OTHER TRADES PRIOR TO INSTALLATION. COORDINATE SERVICES WITHIN WALLS WITH ELECTRICAL PANELS, UTILITY STATIONS, LOW WALL RETURNS, ETC. COORDINATE CONNECTION SIZES AND LOCATIONS WITH APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION. COORDINATE UNDERGROUND PIPING WORK WITH SITE / CIVIL, AND UTILITY DRAWINGS PRIOR TO STARTING WORK.
5. FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
6. HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
7. FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
8. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).
9. SLOPE WASTE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT UNLESS NOTED OTHERWISE. SLOPE WASTE PIPING 4" AND LARGER AT 1/8" PER FOOT UNLESS NOTED OTHERWISE. SLOPE VENT PIPING TO DRAIN TOWARDS THE DRAINAGE RISER UNLESS NOTED OTHERWISE.
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SHEET NOTES

1. PLUMBING FIXTURE SPECIFIED IN THE CASEWORK PACKAGE.
2. CONNECT VENT LINE A MINIMUM OF 6" ABOVE SINK.
3. CONNECT VENT LINE A MINIMUM OF 6" ABOVE MOP SINK.
4. NEUTRALIZATION KIT. REFER TO M500, M501, AND M502 FOR MORE INFORMATION. COMBINE TO A SINGLE 2" LINE AND ROUTE CONDENSATE IN CU01 AFTER KIT.
5. CONDENSATE FROM RTU-001A, RTU-001B, RTU-002, AND EF-001/002/003 ERS PLENUM. TERMINATE ABOVE FLOOR RIM OF MOP SINK.
6. CUP SINK PROVIDED WITH FUME HOOD. REFER TO LABORATORY CASEWORK PACKAGE.

REVISION SCHEDULE:

0	04/20/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: RPJ
DESIGN ENGINEER:
CHECKED: AEC
ISSUED: APRIL 20, 2018

9/11/2018 9:23:24 AM

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Concordia University
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Upper Level Plumbing Waste & Vent – Area B.3

SHA PROJECT NO. 16022

P102B.3

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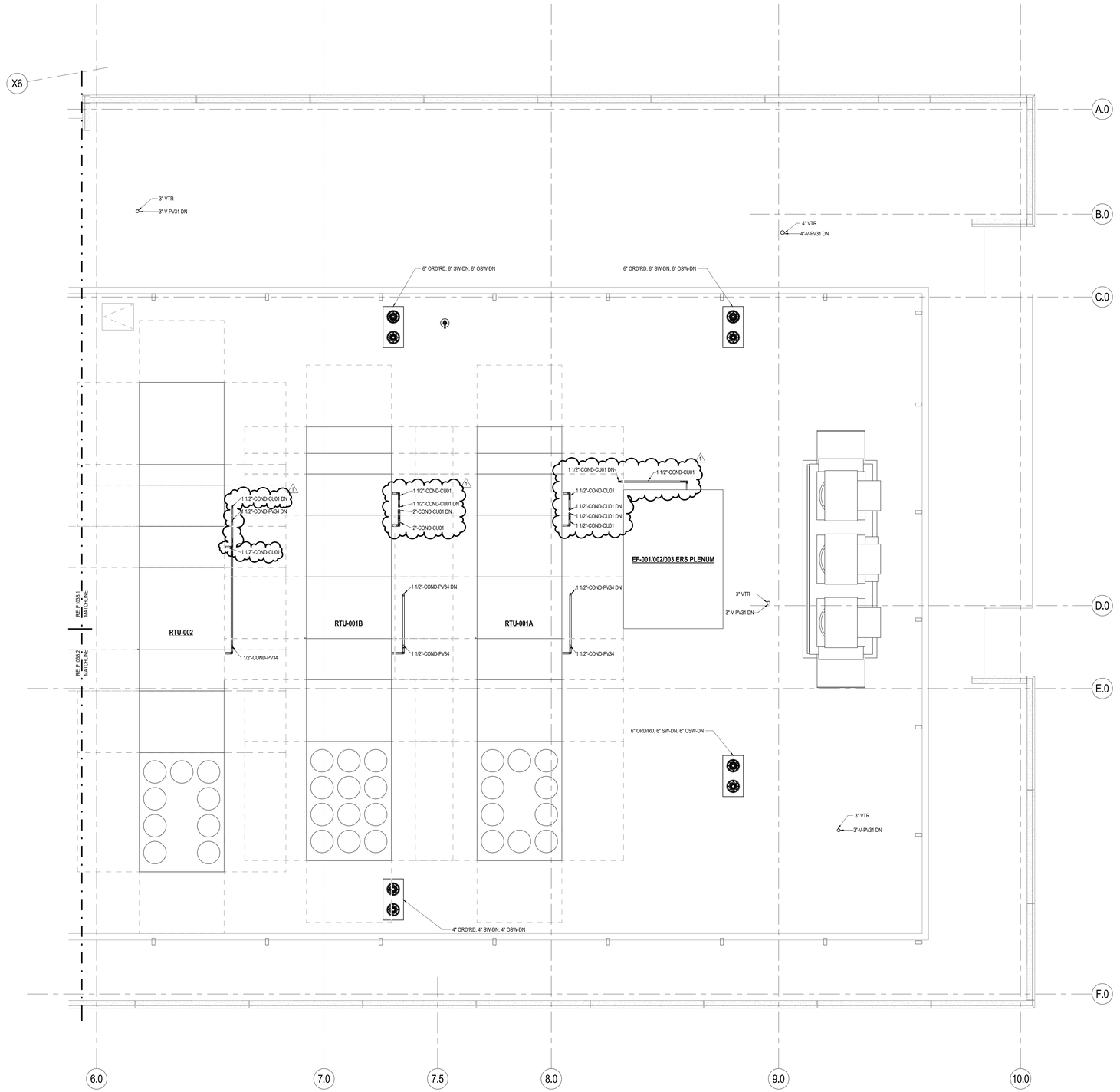

1 Roof Level Plumbing Waste & Vent – Area B.3
1/4" = 1'-0"

GENERAL NOTES

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5. FIELD VERIFY CONDITIONS (TIE-INS, INTERFERENCES, ETC.) PRIOR TO STARTING WORK. NOTIFY CONSTRUCTION MANAGER IMMEDIATELY OF ANY DISCREPANCIES WITH PLANS.
6. HANDLE MATERIAL DEBRIS IN AN EFFORT TO AVOID ANY DISRUPTIONS OF ONGOING BUILDING OPERATIONS. CLEAN PROJECT SITE DEBRIS AT THE END OF EACH WORK DAY.
7. FOR PLUMBING SYMBOLS AND ABBREVIATIONS, RE: M0000.
8. SEE SPECIFICATIONS, DETAILS, AND SCHEDULES FOR ADDITIONAL REQUIREMENTS (INSULATION, HANGERS, IDENTIFICATION, EQUIPMENT, TESTING, ETC.).
9. SLOPE WASTE PIPING 2-1/2" AND SMALLER AT 1/4" PER FOOT UNLESS NOTED OTHERWISE. SLOPE WASTE PIPING 4" AND LARGER AT 1/8" PER FOOT UNLESS NOTED OTHERWISE. SLOPE VENT PIPING TO DRAIN TOWARDS THE DRAINAGE RISER UNLESS NOTED OTHERWISE.
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REVISION SCHEDULE:

0	04/20/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: RPJ
DESIGN ENGINEER:
ISSUED: APRIL 20, 2018

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Concordia University

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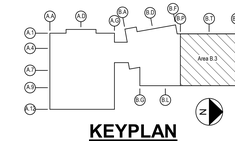
Roof Level Plumbing Waste & Vent – Area B.3

SHA PROJECT NO. 16022

P103B.3



KEYPLAN

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PLUMBING EQUIPMENT SCHEDULE

UNIT NO.	EQUIPMENT	MANUFACTURER & MODEL. NO.	LOCATION	SERVICE	TYPE	CAPACITY (GAL)	ELECTRICAL			OPERATING WEIGHT (LBS)	REMARKS
							V/PH/HZ	HP	KW		
WH-001	TANK TYPE WATER HEATER	A.O. SMITH BTH-400(A)	MECHANICAL 013	DOMESTIC HOT HEATER	NATURAL GAS	119	120/1/60	1/4	VS*	855	STORAGE TYPE NATURAL GAS WATER HEATER WITH 399,900 BTU/HR INPUT. STORAGE RECOVERY TIME OF 460 GPH @ 100° F.
WS-001	WATER SOFTENER	CULLIGAN HI-FLO Xn-150-2	MECHANICAL 013	SOFTENED WATER	ELECTRIC	110 GAL	120/1/60	N/A	N/A	550	TWO-TANK SOFTENER SKID WITH BRINE TANK. NORMAL FLOW RATE OF 148 GPM WITH A PEAK FLOWRATE OF 216 GPM. SOFTENER CAPACITY IS 1,800,000 GRAINS.
WD-001	WATER DISTILLER	DURASTILL 4280	MECHANICAL 013	DISTILLED WATER	ELECTRIC	80 GAL	208/3/60	1/20	5	765	COMMERICIAL WATER DISTILLER. 42 GALLONS PER DAY WITH 80 GALLON STORAGE TANK. 304 SS DISTILLER CABINET.
VAC-001	VACUUM PUMP	POWEREX LCPDT0502	MECHANICAL 013	CENTRAL VACUUM SYSTEM	ELECTRIC	58 SCFM	460/3/60	5	VS*	1,900	DUPLEX LABORATORY CLAW VACUUM PACKAGE WITH HMI/PBMI
ET-001	EXPANSION TANK	AMTROL ST-12	MECHANICAL 013	DOMESTIC HOT WATER	-	4.4	N/A	N/A	N/A	9	MAXIMUM WORKING PRESSURE : 150 PSI. MAXIMUM TEMPERATURE 240° F COMMERICAL. BUTYL DIAPHRAGM, FOR PERMANENT SEPARATION OF AIR AND WATER, WITH NO WATERLOGING.
ET-003	EXPANSION TANK	AMTROL AX-15(V)	MECHANICAL 013	DISTILLED WATER	-	8	N/A	N/A	N/A	45	MAXIMUM WORKING PRESSURE : 150 PSI. MAXIMUM TEMPERATURE 200° F COMMERICAL. HEAVY DUTY BUTYL/EPDM DIAPHRAGM, FOR PERMANENT SEPARATION OF AIR AND WATER, WITH NO WATERLOGING.
CP-001	CIRCULATING PUMP	BELL & GOSSETT PL-55B	MECHANICAL 013	DOMESTIC HOT WATER	ELECTRIC	-	120/1/60	2/5	VS*	VS*	REFER TO 230540
CP-002	CIRCULATING PUMP	BELL & GOSSETT SERIES 3530 1x1-1/4x6	MECHANICAL 013	DISTILLED WATER	ELECTRIC	-	460/3/60	1	VS*	VS*	REFER TO 230540
SP-001	ELEVATOR SUMP PUMP	LIBERTY PUMP	ELEVATOR PIT	WASTE WATER	ELECTRIC	-	120/1/60	1/2	VS*	VS*	25 GPM, OIL-SENSING. REFER TO 230540.

PLUMBING FIXTURE & BRANCH SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	MODEL	DRAIN - WASTE - SOIL - VENT					COLD WATER		HOT WATER		NOTES
				TRAP	ARM	VERT.	HORIZ.	VENT	SUPPLY	BRANCH	SUPPLY	BRANCH	
A1	ADA SINK SYSTEM, WALL-HUNG, INFRARED WASHBAR, INSULATE SUPPLY AND WASTE PIPING WITH PLUMBEREX TRAP GEAR, INSTALL WITH PROVIDED VALVE ASSEMBLE, DRYER AND SOAP DISPENSER INTEGRAL TO WASH BAR AT EACH STATION.	BRADLEY:	#VERGE WASHBAR	1 1/2	1 1/2	1 1/2	2	1 1/2	3/8	1/2	3/8	1/2	SET OUTLET TEMPERATURE TO 105°F.
B1	WATER CLOSET,1.6 GPF FLUSHOMETER TOILET SYSTEM WITH EVERCLEAN. WALL-MOUNTED ELONGATED FLUSHOMETER VALVE TOILET, VITREOUS CHINA, HIGH EFFICIENCY, LOW CONSUMPTION, HET (HIGH EFFICIENCY TOILET), SELF-CLEANING PISTON FLUSH VALVE, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED. #5901.100SS SEAT WITH OPEN FRONT AND SELF-SUSTAINING CHECK HINGE. HANDICAP	AMERICAN STANDARD: AMERICAN STANDARD:	#3351.660 AFWALL MILLENIUM #6065.161.002 SELECTRONIC	INT.	4	4	4	2	1	1 1/4	-	-	-
B2	WATER CLOSET,1.6 GPF FLUSHOMETER TOILET SYSTEM WITH EVERCLEAN. WALL-MOUNTED ELONGATED FLUSHOMETER VALVE TOILET, VITREOUS CHINA, HIGH EFFICIENCY, LOW CONSUMPTION, HET (HIGH EFFICIENCY TOILET), SELF-CLEANING PISTON FLUSH VALVE, MECHANICAL, OVERRIDE BUTTON, BATTERY OPERATED. #5901.100SS SEAT WITH OPEN FRONT AND SELF-SUSTAINING CHECK HINGE.	AMERICAN STANDARD: AMERICAN STANDARD:	#3351.660 AFWALL MILLENIUM #6065.161.002 SELECTRONIC	INT.	4	4	4	2	1	1 1/4	-	-	-
C1	URINAL , 0.125 GPF EXPOSED TOP SPUD. WALL MOUNTED, VITREOUS CHINA, ULTRA HIGH EFFICIENCY, FLUSH VALVE, SELF-CLEANING PISTON, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED. HANDICAP	AMERICAN STANDARD: AMERICAN STANDARD:	#6590.525 WASHBROOK FLOWISE #6063.013 FLUSH VALVE	INT.	2	2	2	1 1/2	3/4	1	-	-	-
C2	URINAL , 0.125 GPF EXPOSED TOP SPUD. WALL MOUNTED, VITREOUS CHINA, ULTRA HIGH EFFICIENCY, FLUSH VALVE, SELF-CLEANING PISTON, MECHANICAL OVERRIDE BUTTON, BATTERY OPERATED.	AMERICAN STANDARD: AMERICAN STANDARD:	#6590.525 WASHBROOK FLOWISE #6063.013.002 FLUSH VALVE	INT.	2	2	2	1 1/2	3/4	1	-	-	-
D1	24"X24"X12" SERVICE BASIN, TERRAZZO, STAINLESS STEEL CAPS ON CURBS, FAUCET WITH VACUUM BREAKER, WALL BRACE AND PAIL HOOK, MOP BRACKET AND FLAT STAINLESS STEEL STRAINER.	FIAT:	#TSB 100-830AA	3	3	3	3	1 1/2	1/2	1/2	1/2	1/2	-
E1	STAINLESS STEEL SINK, SINGLE COMPARTMENT, COUNTER TOP. 18 GAUGE, 304 STAINLESS STEEL SINK WITH SOUND DAMPENING UNDERCOATING. DECK MOUNTED FAUCET WITH 9-1/4" SWING SPOUT, 1.5 GPM PRESSURE COMPENSATING AERATOR, AND WING HANDLES.	ELKAY: CHICAGO FAUCET:	#LR2219 "LUSTERTONE" #201-AE35-1000ABCP	1 1/2	1 1/2	1 1/2	2	1 1/2	3/8	1/2	3/8	1/2	-
E2	STAINLESS STEEL SINK, DOUBLE COMPARTMENT, COUNTER TOP. 18 GAUGE, 304 STAINLESS STEEL SINK WITH SOUND DAMPENING UNDERCOATING. WALL MOUNTED FAUCET WITH 30" HOSE, 1.6 GPM PRESSURE COMPENSATING AERATOR, AND LEVER HANDLES.	ELKAY: ELKAY FAUCET:	#DLR3322121 #LK943C	1 1/2	1 1/2	2	2	1 1/2	3/8	1/2	3/8	1/2	-
E3	STAINLESS STEEL SINK, SINGLE COMPARTMENT, COUNTER TOP, WITH MANUAL STYLE FAUCET, WRIST BLADE HANDLES, 1.5 GPM AERATOR.	ELKAY: CHICAGO FAUCET:	#LRAD221960 "LUSTERTONE" #WBD-DB6AE35-317AB	1 1/2	1 1/2	1 1/2	2	1 1/2	3/8	1/2	3/8	1/2	-
E4	WALL HUNG 14 GAUGE, TYPE 304 STAINLESS STEEL, SINGLE 10.5" DEEP COMPARTMENT, REAR CENTER DRAIN. BACK MOUNT FAUCET WITH GOOSE NECK SPOUT.	ELKAY : CHICAGO FAUCET:	#EWS2520W4C #445-GN2AE35ABCP	2	2	2	2	1 1/2	3/8	1/2	3/8	1/2	-
E5	FREE STANDING STAINLESS STEEL, DOUBLE BOWL SINK WITH INTEGRAL DRAINBOARDS ON LEFT AND RIGHT. PUNCH FAUCET HOLES IN THE FIELD AS COORDINATED WITH FUACETS. FAUCET SPECIFIED IN THE CASEWORK PACKAGE	ELKAY:	#SS8236LR	2	2	2	2	1 1/2	3/8	1/2	3/8	1/2	-
F1	TWO LEVEL BARRIER-FREE 18 GAUGE STAINLESS STEEL WATER COOLER WITH BOTTLE FILLING STATION, FILTER SYSTEM, CHILLING CAPACITY OF 8.0 GALLONS PER HOUR OF 50°F DRINKING WATER, BASED UPON 80°F INLET WATER AND 90°F AMBIENT.	ELKAY:	#LZSTLR8WSVRSK	1 1/4	1 1/4	1 1/4	2	1 1/4	3/8	1/2	-	-	-
FD-1	FLOOR DRAIN WITH SEDIMENT BUCKET AND NICKEL BRONZE TOP (MECHANICAL AREAS)	JAY R. SMITH:	#2630 SERIES	2,3,4	2,3,4	2,3,4	2,3,4	2,3,4	-	-	-	-	-
HB	HOSE BIBB , FROST-PROOF AUTOMATIC SELF-DRAINING WALL HYDRANT. BRASS VACUUM BREAKER.	WATTS	#FHB-2	-	-	-	-	-	1/2	1/2	-	-	-
WH	FREEZE PROOF WALL HYDRANT	ZURN:	#Z1300	-	-	-	-	-	1/2	1/2	-	-	-
FPRH	FREEZE PROOF, AUTOMATIC DRAINING ROOF HYDRANT WITH DUAL CHECK BACKFLOW PREVENTER PROTECTION AND 3/4" FEMALE HOSE THREAD INLET	WOODFORD:	#SRH-MS	-	-	-	-	-	3/4	-	-	-	REFER TO PLANS FOR BRANCH SIZES.
ORD/RD	COMBINATION ROOF DRAIN WITH OVERFLOW. CAST IRON BODY WITH CAST IRON DOME.	ZURN	#ZC163	-	-	-	-	-	-	-	-	-	-
RD	ROOF DRAIN. CAST IRON BODY WITH CAST IRON DOME.	ZURN	#ZC100	-	-	-	-	-	-	-	-	-	-

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REVISION SCHEDULE:

0	04/20/2018	Contract Documents
1	05/04/2018	Addendum 1
2	05/09/2018	Addendum 2
3	05/11/2018	Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: RPJ
DESIGN ENGINEER:
CHECKED:
ISSUED: APRIL 20, 2018

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Plumbing Schedules

SHA PROJECT NO. 16022

P700

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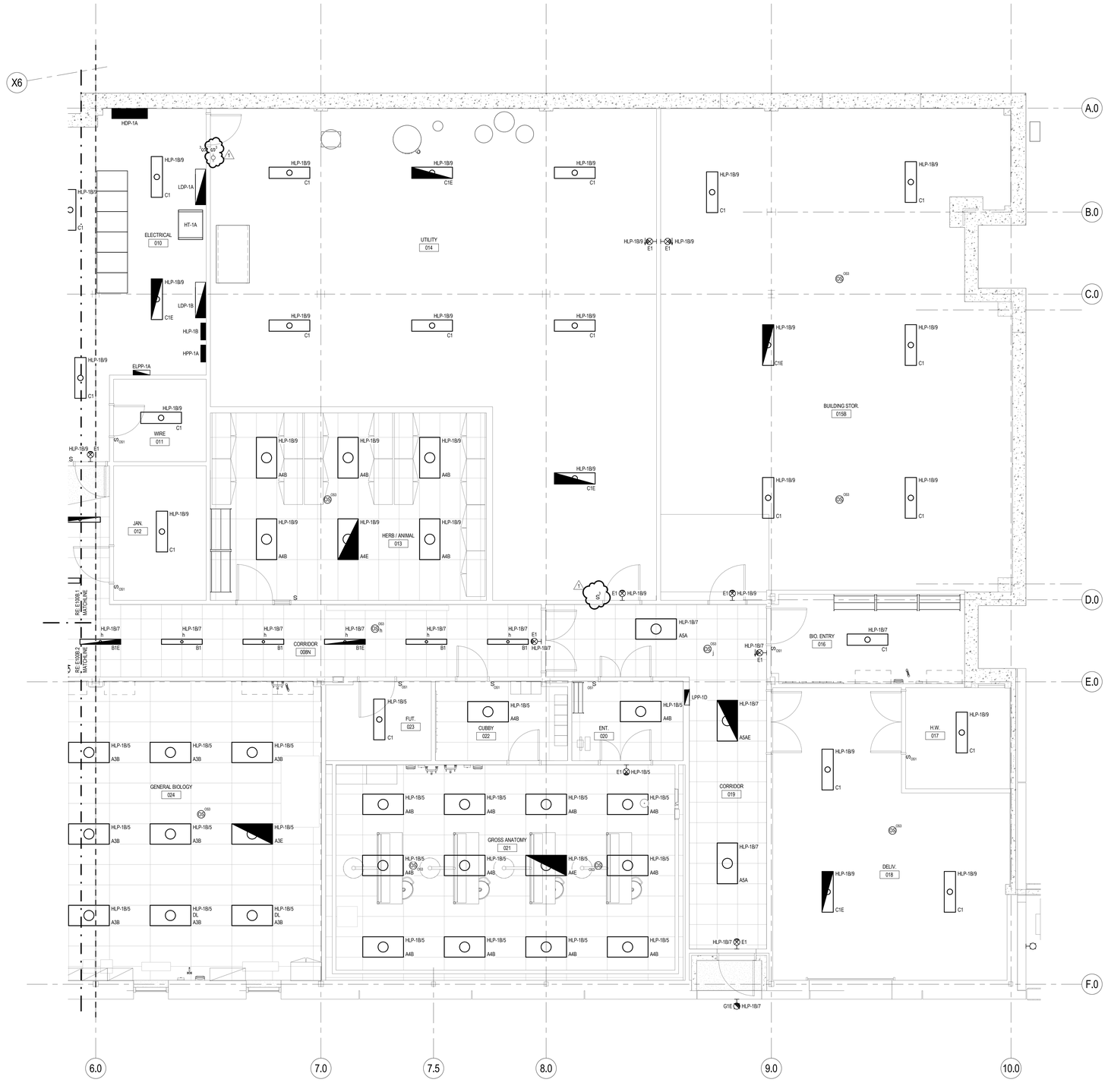
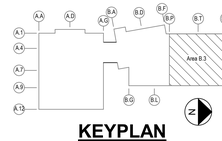


1 Lower Level Lighting Plan – Area B.3
1/4" = 1'-0"



GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIRE WALL LOCATIONS.
3. EMERGENCY AND NORMAL LIGHTING CONDUCTORS SHALL NOT BE INSTALLED IN THE SAME RACEWAY. EMERGENCY CIRCUIT JUNCTION BOXES SHALL BE MARKED "EP" WITH THE PANEL AND CIRCUIT NUMBER INDICATED.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL LIGHTING FIXTURES AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.

REVISION SCHEDULE:
0 04/20/2018 - Contract Documents
1 05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PWP
DESIGN ENGINEER:
ISSUED: APRIL 20, 2018

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Lower Level Lighting Plan – Area B.3

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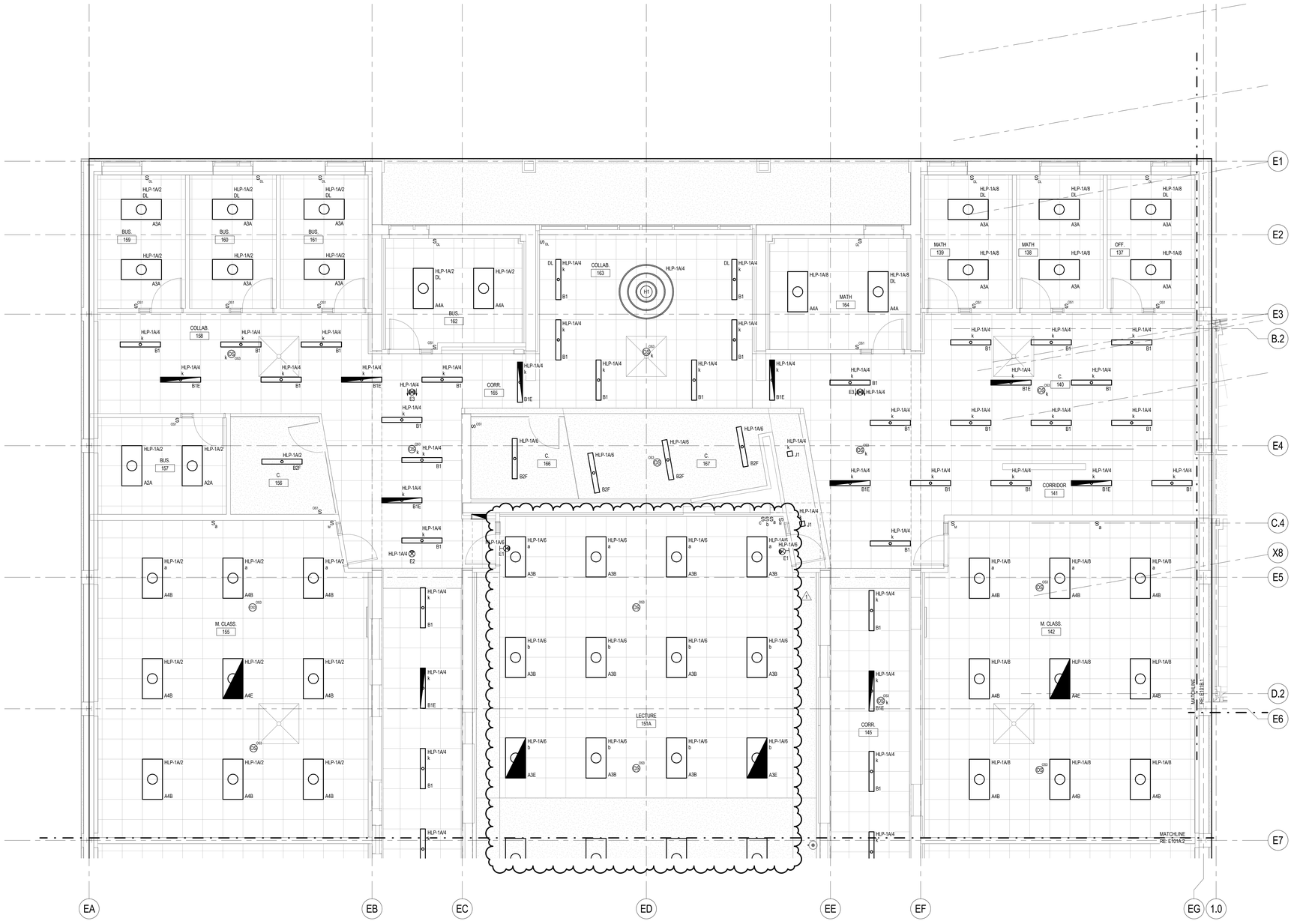
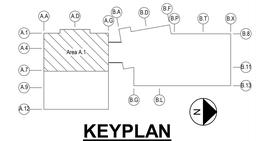


1 Main Level Lighting Plan – Area A.1
1/4" = 1'-0"



KEYPLAN

GENERAL NOTES

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DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: PWP
DESIGN ENGINEER:
ISSUED: APRIL 20, 2018

REVISION SCHEDULE:

0	04/19/2018 - Contract Documents
1	05/11/2018 - Addendum 3

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Concordia University
STEM Building

Main Level Lighting Plan – Area A.1

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E101A.1

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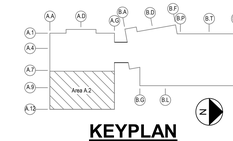
1 Main Level Lighting Plan – Area A.2
1/4" = 1'-0"



KEYPLAN

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REVISION SCHEDULE:
0 04/18/2018 - Contract Documents
1 05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
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ISSUED: APRIL 20, 2018

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Main Level Lighting Plan – Area A.2

SHA PROJECT NO.: 16022

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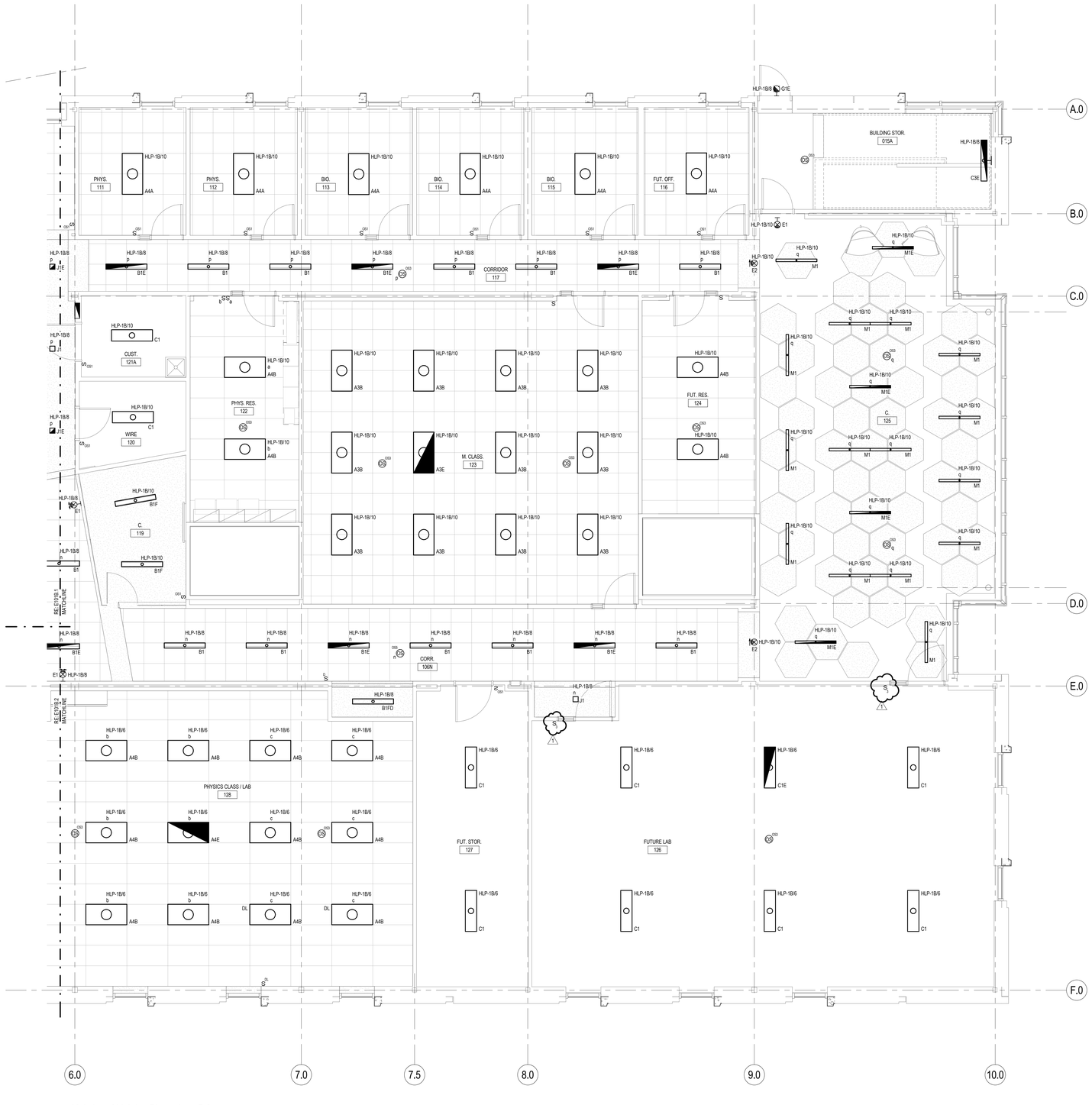

1 Main Level Lighting Plan – Area B.3
1/4" = 1'-0"

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REVISION SCHEDULE:

0	04/20/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: PWP
DESIGN ENGINEER: EBC
ISSUED: APRIL 20, 2018

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Main Level Lighting Plan – Area B.3

SHA PROJECT NO. 16022

E101B.3

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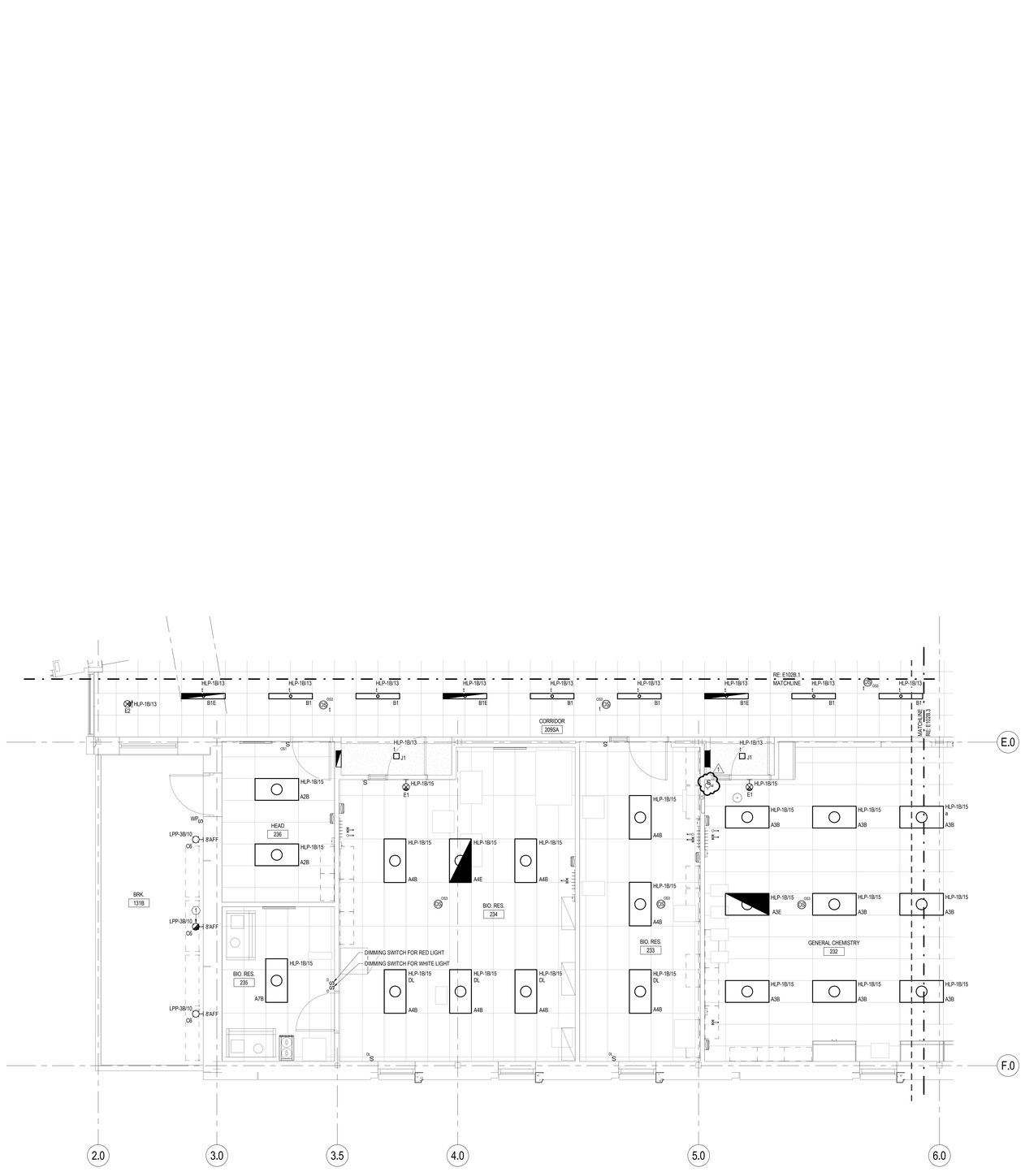

1 Upper Level Lighting Plan – Area B.2
1/4" = 1'-0"

GENERAL NOTES

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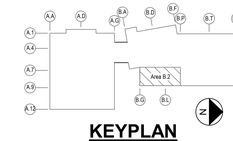
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL LIGHTING FIXTURES AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.

SHEET NOTES

1 LIGHT FIXTURE TO HAVE A REMOTE BODINE EMERGENCY BALLAST INSTALLED.



KEYPLAN

REVISION SCHEDULE:
0 04/20/2018 - Contract Documents
1 05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PVP
DESIGN ENGINEER:
ISSUED: APRIL 20, 2018

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Concordia University
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Upper Level Lighting Plan – Area B.2

SHA PROJECT NO. 16022

E102B.2

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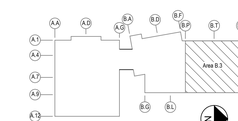
1 Upper Level Lighting Plan – Area B.3
1/4" = 1'-0"



KEYPLAN

GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIRE WALL LOCATIONS.
3. EMERGENCY AND NORMAL LIGHTING CONDUCTORS SHALL NOT BE INSTALLED IN THE SAME RACEWAY. EMERGENCY CIRCUIT JUNCTION BOXES SHALL BE MARKED "EP" WITH THE PANEL AND CIRCUIT NUMBER INDICATED.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL LIGHTING FIXTURES AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.

REVISION SCHEDULE:

0	04/20/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: PVP
DESIGN ENGINEER: MJC
ISSUED: APRIL 20, 2018

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Engr. Proj. No: 17039

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Upper Level Lighting Plan – Area B.3

SHA PROJECT NO. 16022

E102B.3

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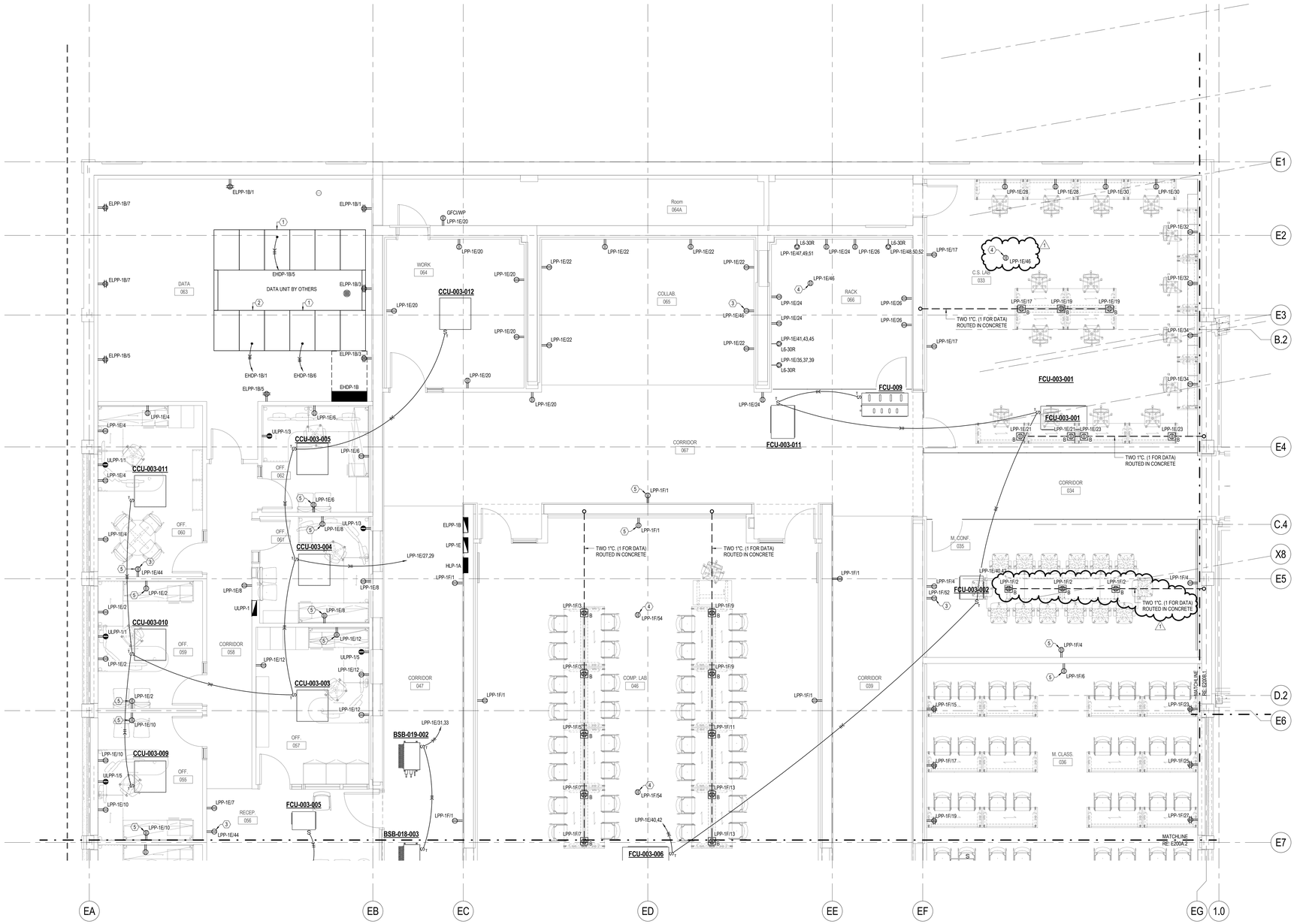
GENERAL NOTES

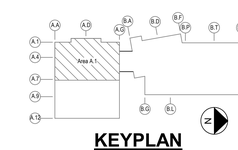
1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL EQUIPMENT AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1. IN-ROW COOLING UNIT. 480V.-3PH.-36.9MCA. 50MOP. COORDINATE LOCATION AND CONNECTION WITH SUPPLIER.
2. UPS FURNISHED AND INSTALLED BY OTHERS. 480V-3PH.-40KW. COORDINATE LOCATION AND CONNECTION WITH SUPPLIER.
3. RECEPTACLE FOR WALL MOUNTED TELEVISION TO BE MOUNTED IN AUDIO/VISUAL BOX. REFERENCE ME GROUP DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT OF BOX.
4. CEILING MOUNTED RECEPTACLE FOR CONNECTION TO PROJECTOR. REFERENCE ME GROUP DRAWINGS FOR EXACT LOCATION OF PROJECTOR.
5. PROVIDE OUTLET BACKER PAD SIMILAR TO KINETICS NOISE CONTROL ISOBACKER OR APPROVED EQUAL. INSTALL ON BACK OF BOX PER MANUFACTURERS INSTALLATION INSTRUCTIONS.



1 Lower Level Power Plan – Area A.1
1/4" = 1'-0"



REVISION SCHEDULE:
0 04/19/2018 - Contract Documents
1 05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PWP
DESIGN ENGINEER: EMC
ISSUED: APRIL 20, 2018

PROJECT CONSULTANTS

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Lower Level Power Plan – Area A.1

SHA PROJECT NO. 16022

E200A.1

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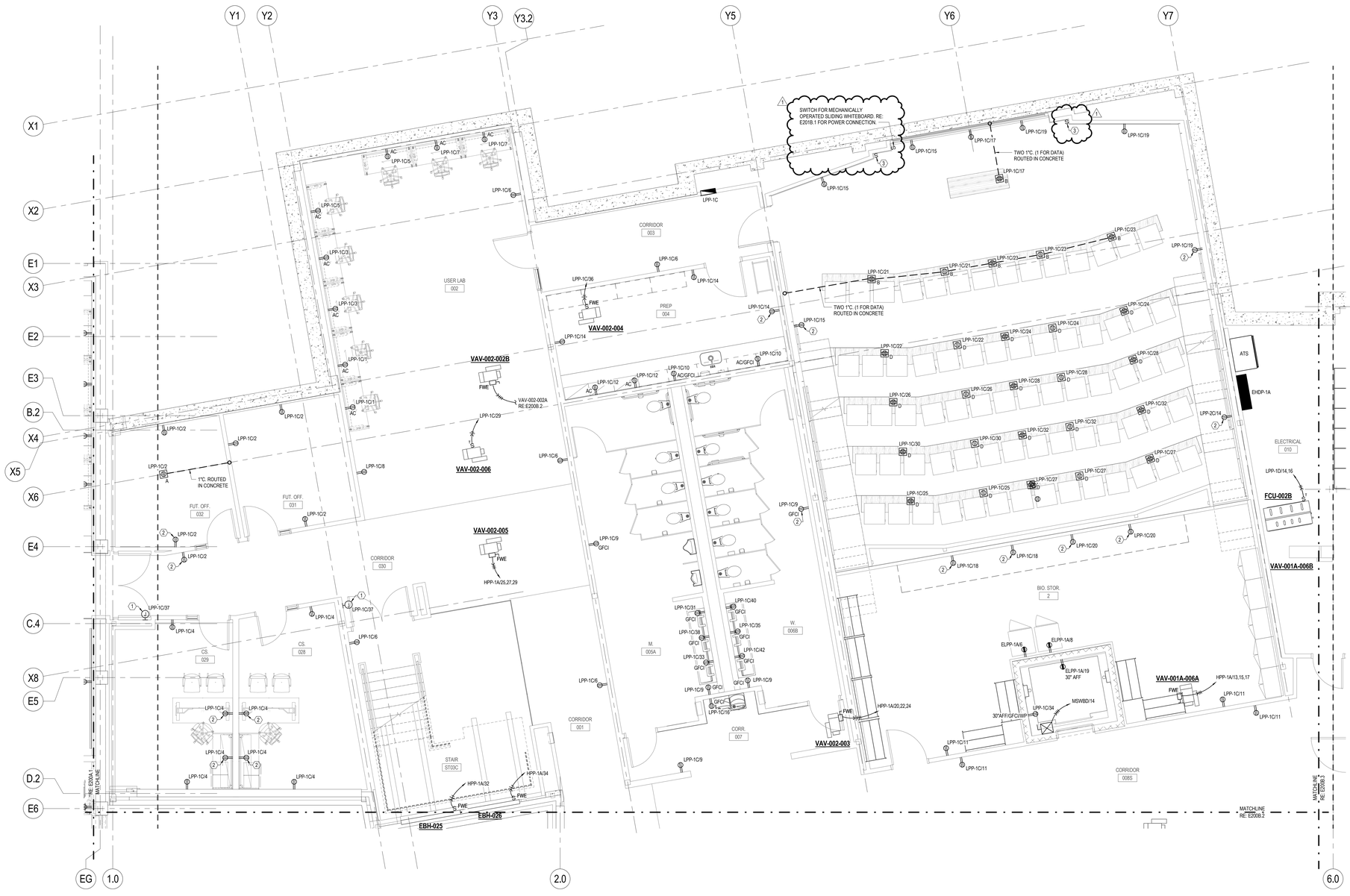

1 Lower Level Power Plan – Area B.1
1/4" = 1'-0"

GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL EQUIPMENT AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1 POWER CONNECTION FOR DOOR HOLD OPEN DEVICES. SEE SPECIAL SYSTEMS PLANS FOR EXACT LOCATIONS.
2 PROVIDE OUTLET BACKER PAD SIMILAR TO KINETICS NOISE CONTROL ISOBACKER OR APPROVED EQUAL. INSTALL ON BACK OF BOX PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
3 JUNCTION BOX AND SWITCH FOR POWER CONNECTION TO MOTORIZED SHADES.

DESIGN ARCHITECT:
PROJECT ARCHITECT:
REVISION SCHEDULE:
0 04/25/2018 - Contract Documents
1 05/11/2018 - Addendum 3
DRAWN BY: PVP
DESIGN ENGINEER: RJO
ISSUED: APRIL 26, 2018

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Lower Level Power Plan – Area B.1

SHA PROJECT NO. 16022

E200B.1

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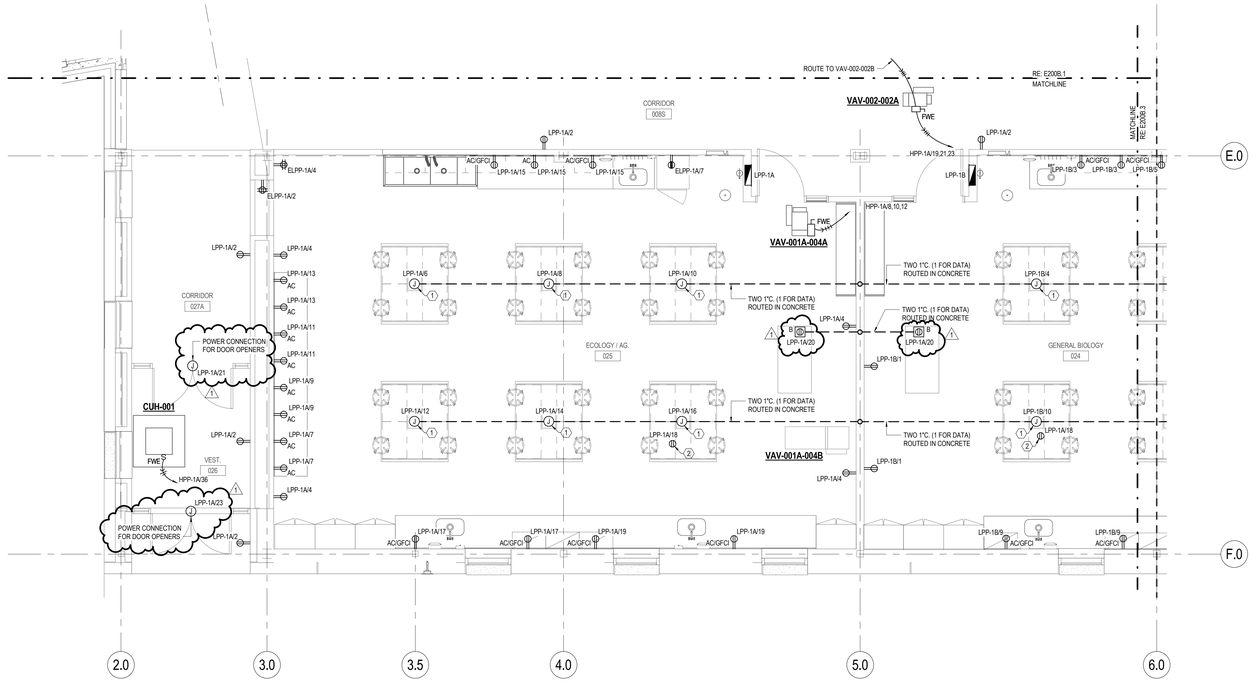
GENERAL NOTES

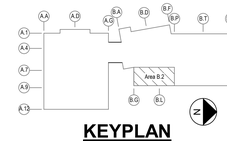
1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL EQUIPMENT AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1. POWER CONNECTION TO RECEPTACLES LOCATED IN LAB BENCH. CORE DRILL FLOOR WHERE NEEDED.
2. CEILING MOUNTED RECEPTACLE FOR CONNECTION TO PROJECTOR. REFERENCE ME GROUP DRAWINGS FOR EXACT LOCATION OF PROJECTOR.



1 Lower Level Power Plan – Area B.2
1/4" = 1'-0"



KEYPLAN

REVISION SCHEDULE:		
0	04/20/2018 - Contract Documents	
1	05/11/2018 - Addendum 3	

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PVP
DESIGN ENGINEER: EBG
ISSUED: APRIL 20, 2018

ERIC B. GUNDERSON E-12828 REGISTERED PROFESSIONAL ENGINEER

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Concordia University
STEM Building

Lower Level Power Plan – Area B.2

SHA PROJECT NO. 16022

E200B.2

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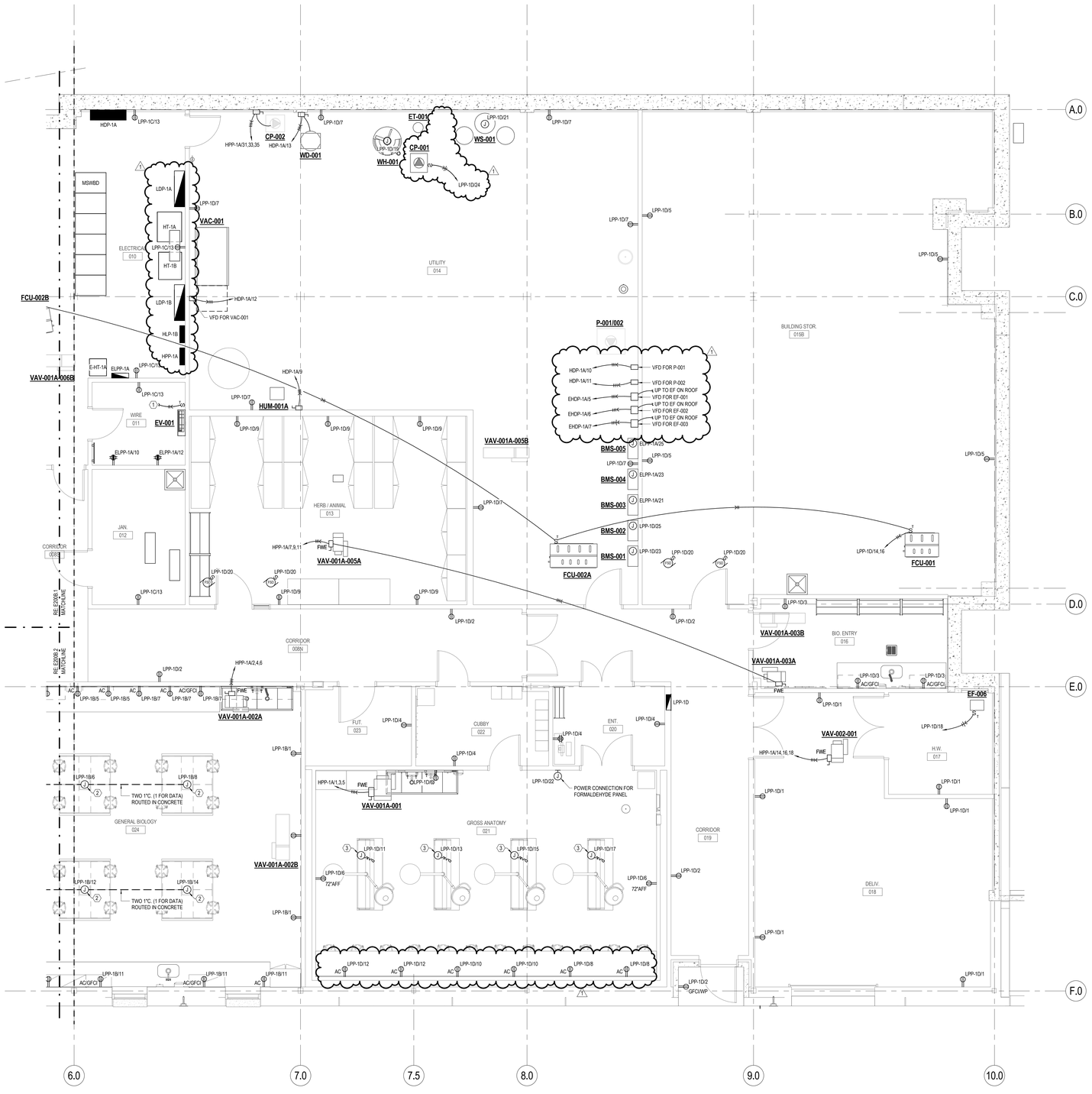

1 Lower Level Power Plan – Area B.3
1/4" = 1'-0"

GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL EQUIPMENT AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1. EVAPORATOR FED THROUGH CONDENSING UNIT CU-001 ON ROOF. RE: E203B.3. INSTALL PER MANUFACTURER INSTRUCTIONS.
2. POWER CONNECTION TO RECEPTACLES LOCATED IN LAB BENCH. CORE DRILL FLOOR WHERE NEEDED.
3. POWER CONNECTION FOR CORD DROP.

KEYPLAN

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: PVP
DESIGN ENGINEER: MEP
ISSUED: APRIL 20, 2018

REVISION SCHEDULE:

0	04/20/2018 - Contract Documents
1	06/11/2018 - Addendum 3

PROJECT CONSULTANTS

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Concordia University
STEM Building

Lower Level Power Plan – Area B.3

SHA PROJECT NO. 16022

E200B.3

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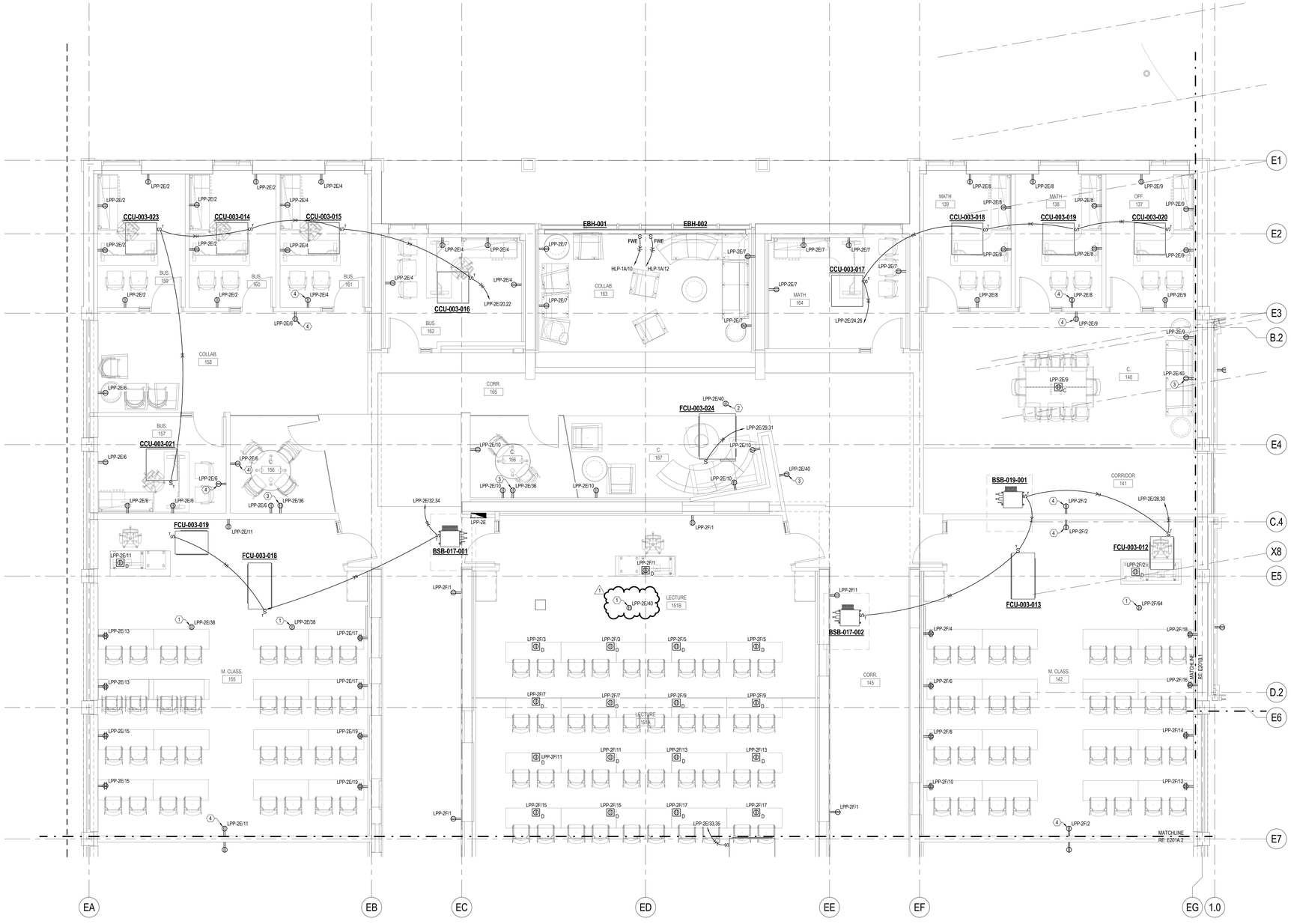
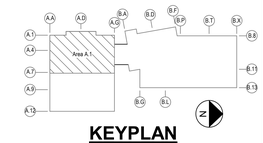


1 Main Level Power Plan – Area A.1
1/4" = 1'-0"



GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL EQUIPMENT AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1. CEILING MOUNTED RECEPTACLE FOR CONNECTION TO PROJECTOR. REFERENCE ME GROUP DRAWINGS FOR EXACT LOCATION OF PROJECTOR.
2. POWER CONNECTION FOR TICKER TAPE AT BULKHEAD.
3. RECEPTACLE FOR WALL MOUNTED TELEVISION TO BE MOUNTED IN AUDIOVISUAL BOX. REFERENCE ME GROUP DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT OF BOX.
4. PROVIDE OUTLET BACKER PAD SIMILAR TO KINETICS NOISE CONTROL ISOBACKER OR APPROVED EQUAL. INSTALL ON BACK OF BOX PER MANUFACTURERS INSTALLATION INSTRUCTIONS.

DESIGN ARCHITECT:

PROJECT ARCHITECT:

REVISION SCHEDULE:

0	04/18/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DRAWN BY: PWP
DESIGN ENGINEER: EBH
ISSUED: APRIL 20, 2018

PROJECT CONSULTANTS
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Main Level Power Plan – Area A.1

SHA PROJECT NO. 16022

E201A.1

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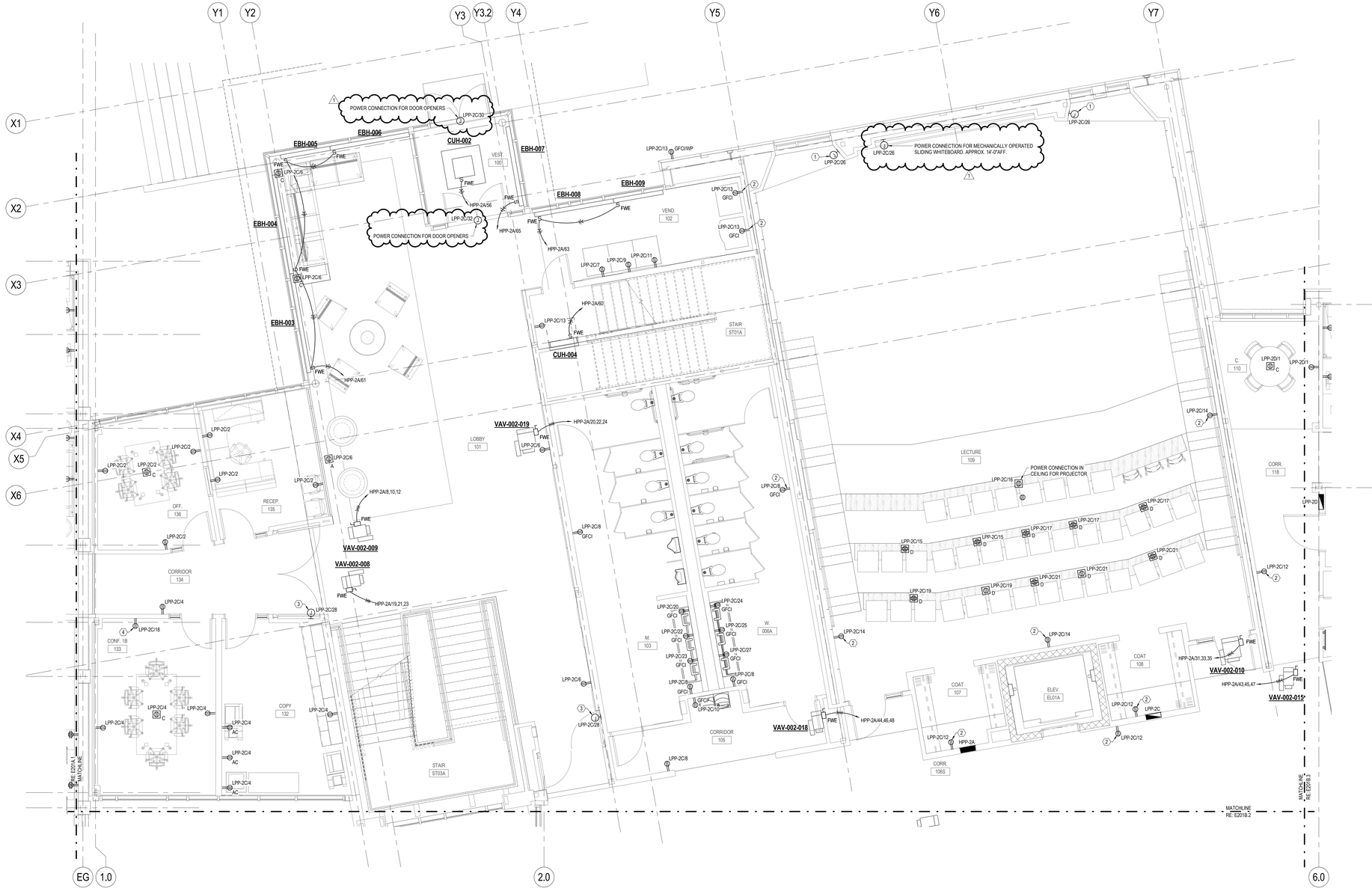
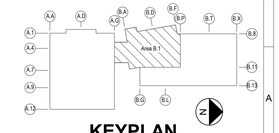


1 Main Level Power Plan – Area B.1
1/4" = 1'-0"



GENERAL NOTES

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2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
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7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1. JUNCTION BOX AND SWITCH FOR POWER CONNECTION TO MOTORIZED SHADES.
2. PROVIDE OUTLET BACKER PAD SIMILAR TO KINETICS NOISE CONTROL ISOBACKER OR APPROVED EQUAL. INSTALL ON BACK OF BOX PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
3. POWER CONNECTION FOR DOOR HOLD OPEN DEVICES. SEE SPECIAL SYSTEMS PLANS FOR EXACT LOCATIONS.
4. RECEPTACLE FOR WALL MOUNTED TELEVISION TO BE MOUNTED IN AUDIO/VISUAL BOX. REFERENCE ME GROUP DRAWINGS FOR EXACT LOCATION AND MOUNTING HEIGHT OF BOX.

REVISION SCHEDULE:

0	04/20/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PVP
DESIGN ENGINEER:
ISSUED: APRIL 20, 2018

PROJECT CONSULTANTS
CLARK, RICHARDSON AND BISKUP CONSULTING ENGINEERS, P.C.
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Main Level Power Plan – Area B.1

SHA PROJECT NO. 16022

E201B.1

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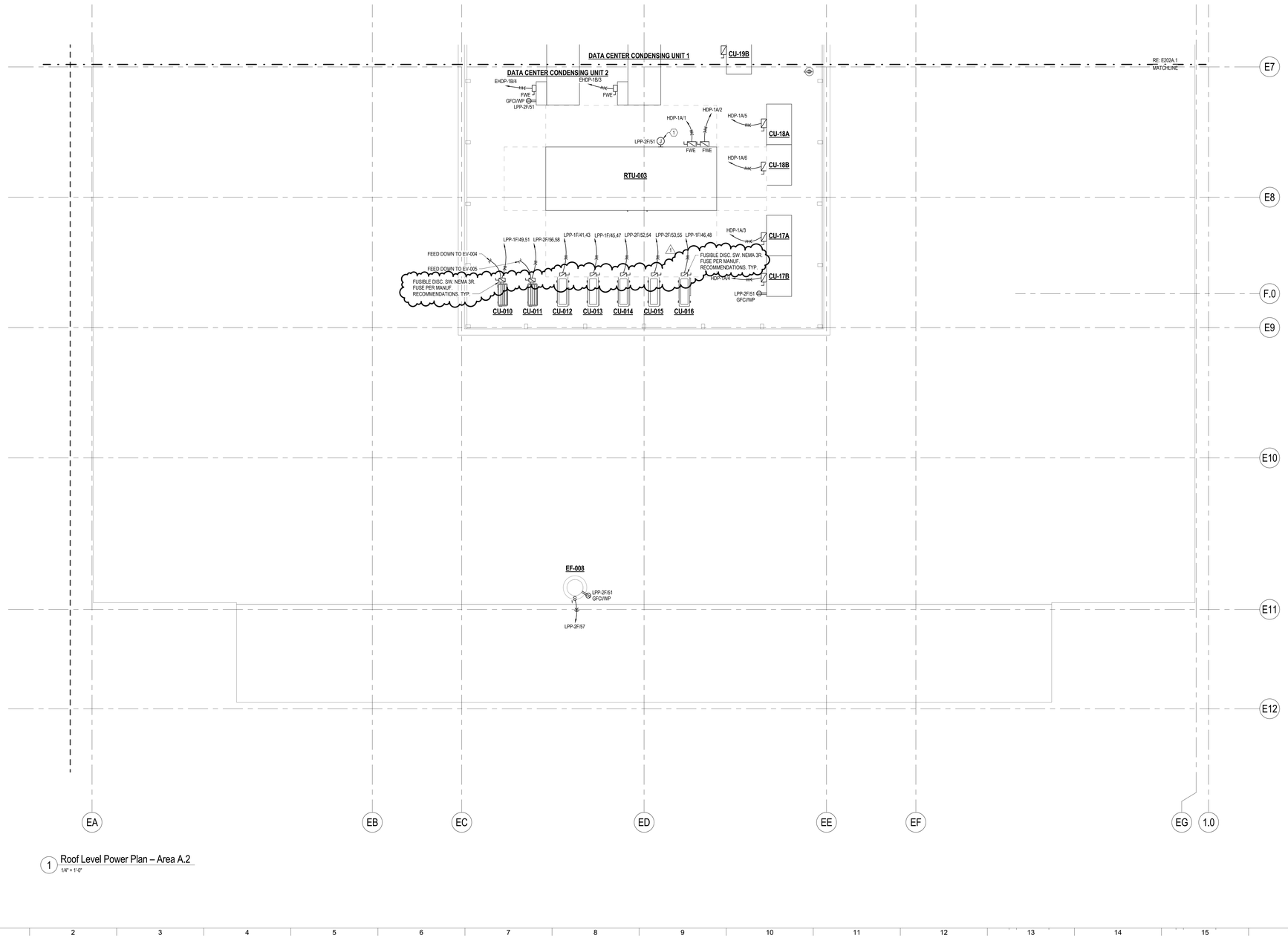
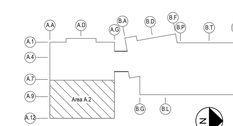


1 Roof Level Power Plan – Area A.2
1/4" = 1'-0"



KEYPLAN

GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
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5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1 JUNCTION BOX FOR POWER CONNECTION TO AHU LIGHTING & RECEPTACLES.

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PWP
DESIGN ENGINEER: EBG
ISSUED: APRIL 30, 2018

REVISION SCHEDULE:
0 04/19/2018 - Contract Documents
1 05/11/2018 - Addendum 3

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Roof Level Power Plan – Area A.2

SHA PROJECT NO. 16022

E202A.2

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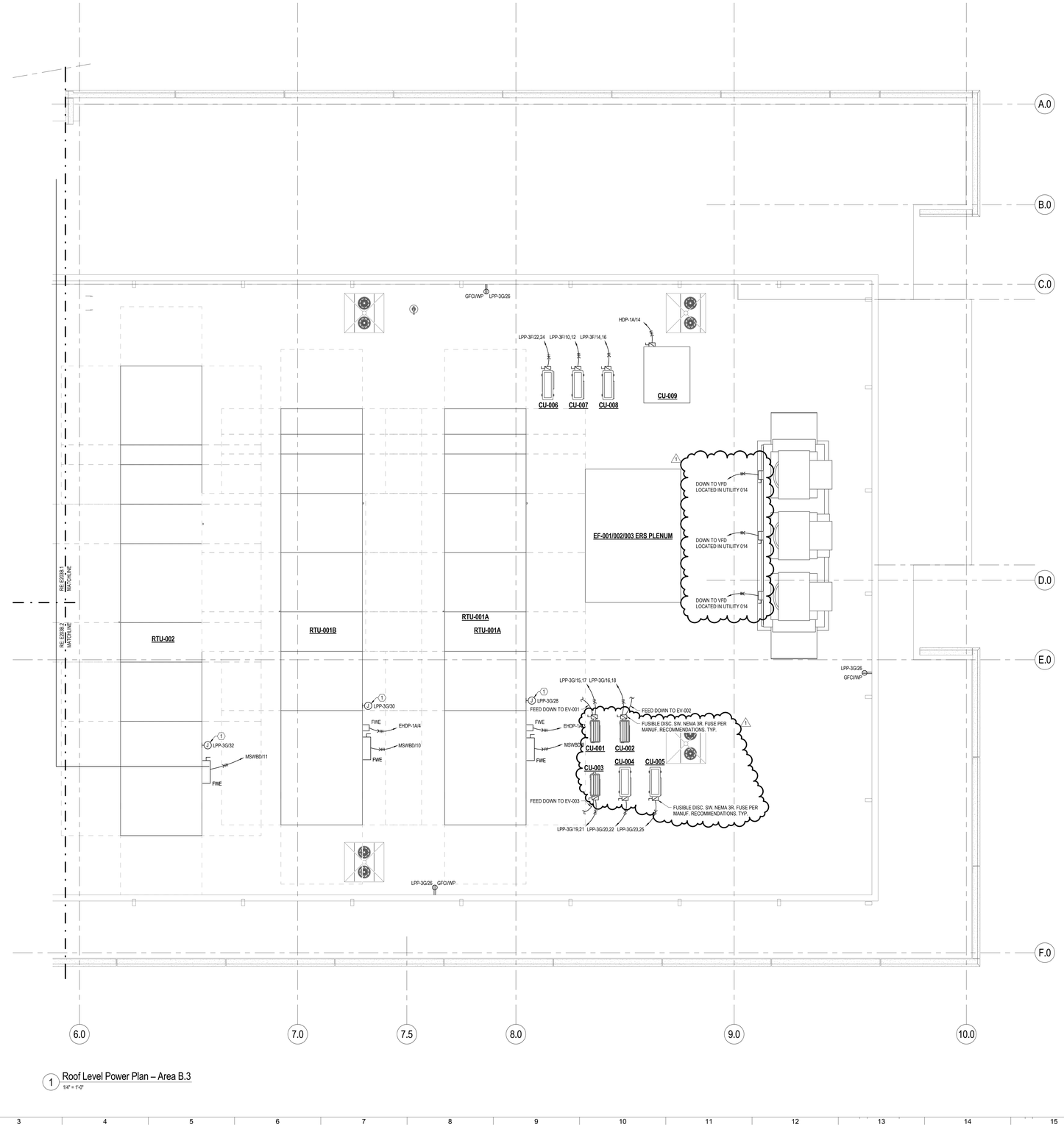


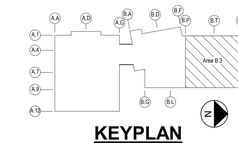
1 Roof Level Power Plan – Area B.3
1/4" = 1'-0"

GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES SHOWN IN THIN/LIGHT LINEWEIGHT ARE EXISTING TO REMAIN OR WORK BY OTHERS. ALL ITEMS SHOWN IN BOLD/DARK LINEWEIGHT ARE NEW WORK.
2. PROVIDE UL LISTED THRU PENETRATION FIRESTOP SYSTEM FOR FIRE RATED WALL PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR FIREWALL LOCATIONS.
3. SEE SINGLE LINE DIAGRAM AND PANEL SCHEDULES FOR FEEDER AND BRANCH CIRCUIT SIZES NOT SHOWN ON FLOOR PLANS.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL EQUIPMENT AND DEVICES WITH ALL TRADES PRIOR TO ROUGH-IN AND INSTALLATION.
5. GFCI RECEPTACLES SHALL NOT BE WIRED AS FEED-THRU DEVICES.
6. PROVIDE NEW TYPE-WRITTEN PANELBOARD DIRECTORIES FOR ANY AND ALL PANELBOARDS MODIFIED DURING THIS SCOPE OF WORK.
7. REFERENCE SHEET E000 FOR FLOOR BOX SCHEDULE.

SHEET NOTES

1 JUNCTION BOX FOR POWER CONNECTION TO AHU LIGHTING & RECEPTACLES.



KEYPLAN

DESIGN ARCHITECT:

PROJECT ARCHITECT:

DRAWN BY: PWP
DESIGN ENGINEER:
ISSUED: APRIL 30, 2018

REVISION SCHEDULE:
0 04/19/2018 - Contract Documents
1 05/11/2018 - Addendum 3

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Roof Level Power Plan – Area B.3

SHA PROJECT NO. 16022

E203B.3

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SURGE PROTECTOR

MAIN SWITCHBOARD "MSWBD", 3000AMP, 277/480V., 3PH, 4 WIRE, 65,000 AIC

UTILITY PROVIDED 480Y/277V, 3PH, 4W TRANSFORMER

4"C PER UTILITY SPECIFICATIONS

49,755A

POWER LOGIC POWER MONITOR

3000AF 3000AT LSIG GFP

BONDING JUMPER G N

#4/0 GND.

EIGHT SETS OF 4#500KCMIL, IN 4"C. WITH TWO SPARE 4" CONDUITS.

CONNECTION TO BUILDING STEEL

CONNECTION TO GROUND RING

6' MINIMUM

EXOTHERMIC WELD, TYPICAL

3/4"x10' GROUND ROD, TYP.

COLD WATER SERVICE

TWO SETS OF 4#500KCMIL, #1/0 GROUND IN 3-1/2"C. WITH TWO SPARE 4" CONDUITS AND ONE SPARE 1" CONDUIT. INSTALL ADDITIONAL 1-1/2" CONDUIT FOR GENERATOR PANEL INSTALLATION.

GENSET SIZING CONDITIONS
1. SITE ALTITUDE = 1500 FEET
2. SITE TEMPERATURE = 40°C
3. MAX. ALTITUDE TEMP. = 125°C
4. MAXIMUM SKVA = 1210
5. PEAK VOLTAGE DIP = 25%
6. PEAK FREQUENCY DIP = 10%

#1/0 GROUND

800A

350KW/437.5KVA, 277/480V, 3PH., 4W OPTIONAL STAND-BY GENERATOR WITH 500 GALLON BELLY TANK

800A, 3P., 480/277V, 4 POLE AUTO-TRANSFER SWITCH

43,752A

804

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
800A 3P	300A 3P	400A 3P	250A 3P	400A 3P	400A 3P	100A 3P	100A 3P	300A 3P	350A 3P	350A 3P	125A 3P	400A 3P	70A 3P					SPACE SPACE SPACE SPACE
804	303	403	254	404	404	104	104	303	403	403		404	073					
			26.284A	24.119A	26.643A	5.618A	26.850A	18.634A	23.199.4A	23.359.5A			12.438A					
								FWE	FWE	FWE			FWE					
			250A MLO PANEL BOARD HPP-1A	400A MLO PANEL BOARD HPP-2A	400A MLO PANEL BOARD HPP-3A	100A MLO PANEL BOARD HLP-1A	100A MLO PANEL BOARD HLP-1B	238.9MCA RTU-001A	242.7MCA RTU-001B	301.3MCA RTU-2			40 ELEVATOR					
			ELECTRIC HEAT MAIN LEVEL	ELECTRIC HEAT MAIN LEVEL	ELECTRIC HEAT UPPER LEVEL	LIGHTING EXISTING BUILDING	LIGHTING NEW BUILDING											

DISTRIBUTION PANEL "EHDP-1A" 800AMP, 277/480V., 3PH, 4W, 42,000 AIC

40,480A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
200A 3P	70A 3P	50A 3P	50A 3P	70A 3P	70A 3P	70A 3P	60A 3P	30A 3P	30A 3P	20A 3P				
											SPARE	SPARE	SPARE	SPACE SPACE SPACE

204 | 073 | 053 | 073 | 073 | 073

15,874.5A

E-HT-1 45kVA 480Δ-208Y/120V 3Ø, 4W

#6 GND. TO BLDG. STEEL

150A MCB PANEL BOARD ELPP-1A — NEW BUILDING

100A MLO PANEL BOARD ELPP-1B — EXISTING BUILDING

4#1/0, 1#6G. IN 1-1/2"C.

5,256A | 5,099A | 5,107A

VFD FWE | VFD FWE | VFD FWE

NEMA 3R 3P 100A | NEMA 3R 3P 100A | NEMA 3R 3P 200A

PROVIDE dv/dT FILTERS

PROVIDE ELECTRICAL INTERLOCK IN DISCONNECT SWITCH TO DISABLE VFD WHEN DISC. SW. IS TURNED OFF. PROVIDE VFD CABLE AND INTERLOCK WIRING FROM VFD TO DISCONNECT SWITCH.

25 SF RTU-001A | 25 SF RTU-001B | 40 LAB EXHAUST FAN EF-001 | 40 LAB EXHAUST FAN EF-002 | 40 LAB EXHAUST FAN EF-003

DISTRIBUTION PANEL "EHDP-1B" 200AMP, 277/480V., 3PH, 4W, 35,000 AIC

10,770A

200A 3P

1	2	3	4	5	6	7	8	9	10
80A 3P	20A 1P	15A 3P	15A 3P	50A 3P	50A 3P	20A 3P			
	LIGHTING						SPARE	SPACE	SPACE SPACE

054 | 103 | 013 | 013 | 053 | 053

9,388A

UPS BY OTHERS

064

19,351A

60A MCB UPS PANEL BOARD ULDP-1

NEMA 3R 30A 3P — DATA CENTER CONDENSING UNIT #1 6.5MCA

NEMA 3R 30A 3P — DATA CENTER CONDENSING UNIT #2 6.5MCA

7121.5A — 60A 3P — DATA CENTER IN-LINE COOLING UNIT #1 36.9MCA

7121.5A — 60A 3P — DATA CENTER IN-LINE COOLING UNIT #2 36.9MCA

40,832A MT-1A 1125KVA 480Δ-208Y/120V 3Ø, 4W

2 SETS OF 4# 350KCMIL, 1#2/0 GND. IN 3"C.

#2/0 GND. TO BLDG. STEEL

SURGE PROTECTOR

9,848A

600A 3P

DISTRIBUTION PANEL "LDP-1A" 600AMP, 120/208V., 3PH, 4W, 35,000 AIC

1	2	3	4	5	6	7	8	9	10	11	12	13
150A 3P	150A 3P	100A 3P	150A 3P	150A 3P	150A 3P	150A 3P	150A 3P	150A 3P	150A 3P	150A 3P	150A 3P	150A 3P
					SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE

154 | 154 | 104 | 154 | 154

4#2/0, 1#6G. IN 2"C.

225A MLO PANEL BOARD LPP-1A — ECOLOGY LAB LOWER LEVEL

104 — 100A MLO PANEL BOARD LPP-1B — FUTURE BIO LOWER LEVEL

225A MLO PANEL BOARD LPP-2A — PHYSICS LAB MAIN LEVEL

104 — 100A MLO PANEL BOARD LPP-2B — PHYSICS LAB MAIN LEVEL

100A MLO PANEL BOARD LPP-3A — ORGAN CHEM. UPPER LEVEL

225A MLO PANEL BOARD LPP-3B — BIO RES. UPPER LEVEL

104 — 100A MLO PANEL BOARD LPP-3C — A&P BIOCHEM. UPPER LEVEL

225A MLO PANEL BOARD LPP-3D — GENERAL CHEM. UPPER LEVEL

104 — 100A MLO PANEL BOARD LPP-3E — GENERAL CHEM. UPPER LEVEL

DISTRIBUTION PANEL "HDP-1A" 400AMP, 277/480V., 3PH, 4W, 65,000 AIC

42,284.5A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16-18	
70A 3P	30A 3P	25A 3P	25A 3P	40A 3P	40A 3P	25A 3P	25A 3P	25A 3P	15A 3P	30A 3P	30A 3P	20A 3P	20A 3P	25A 3P	70A 3P	SPACE
073	033	033	033	043	043	033	033	033	013	033	033	023	023	033	073	
FWE	FWE	NEMA 3R 30AS 3P 25AF	NEMA 3R 30AS 3P 25AF	NEMA 3R 60AS 3P 40AF	NEMA 3R 60AS 3P 40AF	NEMA 3R 30AS 3P 25AF	NEMA 3R 30AS 3P 25AF	NEMA 3R 30AS 3P 25AF	30A 3P	VFD FWE	VFD FWE	VFD FWE	5,625A NEMA 3R 30A 3P	NEMA 3R 30AS 3P 25AF	100AS 70AF 3P	
50.7MCA CKT #1	26.1MCA RTU-3 CKT #2	CU-17A VRV SYSTEM	CU-17B VRV SYSTEM	CU-18A VRV SYSTEM	CU-18B VRV SYSTEM	CU-19A VRV SYSTEM	CU-19B VRV SYSTEM	HUM-001A 7.5KW	P-001	P-002	VAC-001	WD-001 5KW	CU-009	FCU-010		

41,856A

HT-1B 225kVA 480Δ-208Y/120V 3Ø, 4W

3 SETS OF 4#350KCMIL, 1#2/0 GND. IN 3"C.

#2/0 GND. TO BLDG. STEEL

SURGE PROTECTOR

8,361A

800A 3P

DISTRIBUTION PANEL "LDP-1B" 800AMP, 120/208V., 3PH, 4W, 35,000 AIC

1	2	3	4	5	6	7	8	9	10
225A 3P	100A 3P	150A 3P	225A 3P	225A 3P	225A 3P	100A 3P	150A 3P		
							SPACE	SPACE	SPACE

224 | 104 | 154 | 224 | 4#300KCMIL, 1#4G. IN 2-1/2"C. | 4#300KCMIL, 1#4G. IN 2-1/2"C. | 4#2, 1#6G. IN 1-1/2"C. CONDUIT ACCOUNTED FOR IN THE CONDUITS RUNNING FROM ATS TO GENERATOR

4#3/0, 1#6G. IN 2"C. | 4#3/0, 1#6G. IN 2"C.

225A MLO PANEL BOARD LPP-1C — OFFICE LOWER LEVEL

100A MLO PANEL BOARD LPP-1D — OFFICE LOWER LEVEL

225A MLO PANEL BOARD LPP-2C — OFFICE MAIN LEVEL

104 — 100A MLO PANEL BOARD LPP-2D — OFFICE MAIN LEVEL

225A MLO PANEL BOARD LPP-3F — OFFICE UPPER LEVEL

154 — 150A MLO PANEL BOARD LPP-3G — OFFICE UPPER LEVEL

225A MLO PANEL BOARD LPP-1E — EXISTING BUILDING LOWER LEVEL

150A MLO PANEL BOARD LPP-1F — EXISTING BUILDING LOWER LEVEL

225A MLO PANEL BOARD LPP-2E — EXISTING BUILDING MAIN LEVEL

150A MLO PANEL BOARD LPP-2F — EXISTING BUILDING MAIN LEVEL

100A MLO PANEL BOARD LPP-G — GENERATOR PANEL

PANEL SUPPLIED WITH GENERATOR AND CONNECTED BY CONTRACTOR

SINGLE CONDUCTOR FEEDER SCHEDULE

3Ø, 3-WIRE + GROUND CIRCUITS				3Ø, 4-WIRE + GROUND CIRCUITS			
WIRE SYMBOL	OVERCURRENT DEVICE AMP RATING	CONDUIT AND CONDUCTORS	EQUIPMENT GROUND CONDUCTOR	WIRE SYMBOL	OVERCURRENT DEVICE AMP RATING	CONDUIT AND CONDUCTORS	EQUIPMENT GROUND CONDUCTOR
013	15	3/4"C (3)#12	#12	014	15	3/4"C (4)#12	#12
023	20	3/4"C (3)#12	#12	024	20	3/4"C (4)#12	#12
033	30,25	3/4"C (3)#10	#10	034	30,25	3/4"C (4)#10	#10
043	40,35	3/4"C (3)#8	#10	044	40,35	3/4"C (4)#8	#10
053	50,45	3/4"C (3)#6	#10	054	50,45	3/4"C (4)#6	#10
063	60	3/4"C (3)#6	#10	064	60	3/4"C (4)#6	#10
073	70	1"C (3)#4	#8	074	70	1"C (4)#4	#8
083	80	1-1/4"C (3)#3	#8	084	80	1-1/4"C (4)#3	#8
093	90	1-1/4"C (3)#3	#8	094	90	1-1/4"C (4)#3	#8
103	100	1-1/4"C (3)#2	#8	104	100	1-1/4"C (4)#2	#8
123	125,110	1-1/4"C (3)#2	#6	124	125,110	1-1/4"C (4)#2	#6
153	150	1-1/2"C (3)#1/0	#6	154	150	1-1/2"C (4)#1/0	#6
173	175	1-1/2"C (3)#2/0	#6	174	175	2"C (4)#2/0	#6
203	200	2"C (3)#3/0	#6	204	200	2"C (4)#3/0	#6
223	225	2"C (3)#4/0	#4	224	225	2-1/2"C (4)#4/0	#4
253	250	2"C (3)#4/0	#4	254	250	2-1/2"C (4)#4/0	#4
303	300	2-1/2"C (3)300KCMIL	#4	304	300	2-1/2"C (4)300KCMIL	#4
403	400,350	3"C (3)500KCMIL	#2	404	400,350	3-1/2"C (4)500KCMIL	#2
503	500,450	(2) 2"C (3)#4/0	#2	504	500,450	(2) 2-1/2"C (4)#4/0	#2
603	600	(2) 2-1/2"C (3)300KCMIL	#1	604	600	(2) 3"C (4)300KCMIL	#1
703	700	(2) 2-1/2"C (3)350KCMIL	#1/0	704	700	(2) 3"C (4)350KCMIL	#1/0
803	800	(2) 3"C (3)500KCMIL	#1/0	804	800	(2) 3-1/2"C (4)500KCMIL	#1/0
1003	1000	(3) 3"C (3)500KCMIL	#2/0	1004	1000	(3) 3-1/2"C (4)500KCMIL	#2/0
1203	1200	(4) 3"C (3)350KCMIL	#3/0	1204	1200	(4) 3"C (4)350KCMIL	#3/0
1603	1600	(5) 3"C (3)500KCMIL	#4/0	1604	1600	(5) 3-1/2"C (4)500KCMIL	#4/0
2003	2000	(6) 3"C (3)500KCMIL	250KCMIL	2004	2000	(6) 3-1/2"C (4)500KCMIL	250KCMIL
2503	2500	(7) 3"C (3)500KCMIL	350KCMIL	2504	2500	(7) 3-1/2"C (4)500KCMIL	350KCMIL
3003	3000	(8) 3"C (3)500KCMIL	500KCMIL	3004	3000	(8) 3-1/2"C (4)500KCMIL	500KCMIL
4003	4000	(11) 3"C (3)500KCMIL	500KCMIL	4004	4000	(11) 3-1/2"C (4)500KCMIL	500KCMIL
5003	5000	(12) 3"C (3)600KCMIL	600KCMIL	5004	5000	(12) 4"C (4)600KCMIL	600KCMIL

PERFORM FINAL VERIFICATION W/APPROVED CABLE & CONDUIT TYPES WHERE APPLICABLE. FEEDERS FOR OC DEVICES RATED 800A & BELOW USE NEC 240.4(B).

E L PP-3A

- E = EMERGENCY; U = UPS
- H = 277/480 VOLTAGE; L = 120/208 VOLTAGE
- D = DISTRIBUTION; L = LIGHTING; P = POWER; T = TRANSFORMER
- SEQUENTIAL LETTER
- 1 = LOWER LEVEL; 2 = MAIN LEVEL; 3 = UPPER LEVEL
- P = PANELBOARD

HDP/LDP/EHDP PANELS SHALL BE SQUARE D TYPE I-LINE OR APPROVED EQUAL.

HPP/HLP PANELS SHALL BE SQUARE D TYPE NF OR APPROVED EQUAL.

LPP/ULPP PANELS SHALL BE SQUARE D TYPE NQ OR APPROVED EQUAL.

REVISION SCHEDULE:

0	04/19/2018 - Contract Documents
1	05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PWP
DESIGN ENGINEER: RJO
ISSUED: APRIL 30, 2018

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Concordia University

STEM Building

Standby and Normal Electrical Riser Diagram

SHA PROJECT NO. 16022

E500

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PANELBOARD: ELPP-1A

MAIN RATING: 225 A **MCB RATING:** 150 A **VOLTAGE:** 208/120V 3Φ 4W
MAIN TYPE: MCB **WIRES:** 4 **MOUNTING:** SURFACE
ENCLOSURE: NEMA 1 **LOCATION:** ELECTRICAL 010 **SUPPLY FROM:** E-HT-1A
MINIMUM AIC RATING: 10,000 **NEUTRAL RATING:** 100.00% **FEED THRU LUGS:**

NOTE	CKT	DESCRIPTION	WIRES	COND	AMP	P	A	A	B	B	C	C	P	AMP	COND	WIRES	DESCRIPTION	CKT	NOTE
	1						2.83	0.36					1	20	3/4"	2#12, 1#12G.	RECEPTACLE - AQUARIUM	2	
	3	PANELBOARD ELPP-1B	SEE ONE-LINE DIAGRAM		100	3			1.75	0.36			1	20	3/4"	2#12, 1#12G.	RECEPTACLE - AQUARIUM	4	
	5										1.75	1.00	1	20	3/4"	2#12, 1#12G.	REFRIGERATOR - BIO. STOR. 2B	6	
	7	REFRIGERATOR - ECOLOGY / AG. 025	2#12, 1#12G.	3/4"	20	1	1.00	1.00					1	20	3/4"	2#12, 1#12G.	REFRIGERATOR - BIO. STOR. 2B	8	
	9	REFRIGERATOR - A&P / MICRO. 213	2#12, 1#12G.	3/4"	20	1			1.00	0.36			1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 011	10	
	11	REFRIGERATOR - BIO. / GEN. 212	2#12, 1#12G.	3/4"	20	1					1.00	0.36	1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 011	12	
	13	REFRIGERATOR - PREP 205	2#12, 1#12G.	3/4"	20	1	1.00	0.36					1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 120A	14	
	15	REFRIGERATOR - PREP 231	2#12, 1#12G.	3/4"	20	1			1.00	0.36			1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 120A	16	
	17	REFRIGERATOR - BIO. RES. 234	2#12, 1#12G.	3/4"	20	1					1.00	0.36	1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 223	18	
	19	SUMP PUMP SP-01	2#12, 1#12G.	3/4"	20	1	1.18	0.36					1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 223	20	
	21	BMS-003 - UTILITY 014	2#12, 1#12G.	3/4"	20	1			1.00	0.00			1	20	--	--	SPARE	22	
	23	BMS-004 - UTILITY 014	2#12, 1#12G.	3/4"	20	1					1.00	0.00	1	20	--	--	SPARE	24	
	25	BMS-005 - UTILITY 014	2#12, 1#12G.	3/4"	20	1	1.00	0.00					1	20	--	--	SPARE	26	
	27	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	28	
	29	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	30	
	31	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	32	
	33	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	34	
	35	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	36	
	37	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	38	
	39	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	40	
	41	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	42	
						TOTAL KVA:	9.08 kVA		5.83 kVA		6.47 kVA								
						TOTAL AMPS:	77 A		49 A		55 A								

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Power	3000 VA	100.00%	3000 VA	TOTAL CONNECTED KVA:	21.38 kVA
RECEPTACLE	18376 VA	77.21%	14188 VA	TOTAL ESTIMATED DEMAND KVA:	17.19 kVA
				TOTAL CONNECTED CURRENT:	59 A
				TOTAL ESTIMATED DEMAND CURRENT:	48 A

PANELBOARD: ELPP-1B

MAIN RATING: 100 A **MCB RATING:** **VOLTAGE:** 208/120V 3Φ 4W
MAIN TYPE: MLO **WIRES:** 4 **MOUNTING:** RECESSED
ENCLOSURE: NEMA 1 **LOCATION:** CORRIDOR 047 **SUPPLY FROM:** ELPP-1A
MINIMUM AIC RATING: 10,000 **NEUTRAL RATING:** 100.00% **FEED THRU LUGS:**

NOTE	CKT	DESCRIPTION	WIRES	COND	AMP	P	A	A	B	B	C	C	P	AMP	COND	WIRES	DESCRIPTION	CKT	NOTE
	1	RECEPTACLES - DATA 063	2#12, 1#12G.	3/4"	20	1	0.72	0.36					1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 147	2	
	3	RECEPTACLES - DATA 063	2#12, 1#12G.	3/4"	20	1			0.72	0.36			1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 147	4	
	5	RECEPTACLES - DATA 063	2#12, 1#12G.	3/4"	20	1					0.72	0.36	1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 041	6	
	7	RECEPTACLES - DATA 063	2#12, 1#12G.	3/4"	20	1	0.72	0.36					1	20	3/4"	2#12, 1#12G.	RECEPTACLE - WIRE 041	8	
	9								0.33	0.00			1	20	--	--	SPARE	10	
	11	SPECIAL RECEPTACLE - FIB. 038	3#10, 1#10G.	3/4"	30	3					0.33	0.00	1	20	--	--	SPARE	12	
	13						0.33	0.00					1	20	--	--	SPARE	14	
	15								0.33	0.00			1	20	--	--	SPARE	16	
	17	SPECIAL RECEPTACLE - FIB. 038	3#10, 1#10G.	3/4"	30	3					0.33	0.00	1	20	--	--	SPARE	18	
	19						0.33	0.00					1	20	--	--	SPARE	20	
	21	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	22	
	23	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	24	
	25	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	26	
	27	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	28	
	29	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	30	
	31	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	32	
	33	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	34	
	35	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	36	
	37	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	38	
	39	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	40	
	41	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	42	
						TOTAL KVA:	2.83 kVA		1.75 kVA		1.75 kVA								
						TOTAL AMPS:	24 A		15 A		15 A								

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE	6320 VA	100.00%	6320 VA	TOTAL CONNECTED KVA:	6.32 kVA
				TOTAL ESTIMATED DEMAND KVA:	6.32 kVA
				TOTAL CONNECTED CURRENT:	18 A
				TOTAL ESTIMATED DEMAND CURRENT:	18 A

PANELBOARD: ULPP-1

MAIN RATING: 100 A **MCB RATING:** 60 A **VOLTAGE:** 208/120V 3Φ 4W
MAIN TYPE: MCB **WIRES:** 4 **MOUNTING:** RECESSED
ENCLOSURE: NEMA 1 **LOCATION:** CORRIDOR 058 **SUPPLY FROM:**
MINIMUM AIC RATING: 22,000 **NEUTRAL RATING:** 100.00% **FEED THRU LUGS:**

NOTE	CKT	DESCRIPTION	WIRES	COND	AMP	P	A	A	B	B	C	C	P	AMP	COND	WIRES	DESCRIPTION	CKT	NOTE
	1	RECEPTACLE - OFFICE 059/060	2#12, 1#12G.	3/4"	20	1	0.36	0.54					1	20	3/4"	2#12, 1#12G.	RECEPTACLE - OFFICE 049/050/054	2	
	3	RECEPTACLE - OFFICE 061/062	2#12, 1#12G.	3/4"	20	1			0.36	0.36			1	20	3/4"	2#12, 1#12G.	RECEPTACLE - OFFICE 052/053	4	
	5	RECEPTACLE - OFFICE 055/057	2#12, 1#12G.	3/4"	20	1					0.36	0.00	1	20	--	--	SPARE	6	
	7	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	8	
	9	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	10	
	11	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	12	
--	13	SPACE	--	--	--	--	0.00	0.00					--	--	--	--	SPACE	14	--
--	15	SPACE	--	--	--	--			0.00	0.00			--	--	--	--	SPACE	16	--
--	17	SPACE	--	--	--	--					0.00	0.00	--	--	--	--	SPACE	18	--
--	19	SPACE	--	--	--	--	0.00	0.00					--	--	--	--	SPACE	20	--
--	21	SPACE	--	--	--	--			0.00	0.00			--	--	--	--	SPACE	22	--
--	23	SPACE	--	--	--	--					0.00	0.00	--	--	--	--	SPACE	24	--
						TOTAL KVA:	0.90 kVA		0.72 kVA		0.36 kVA								
						TOTAL AMPS:	8 A		6 A		3 A								

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
RECEPTACLE	1980 VA	100.00%	1980 VA	TOTAL CONNECTED KVA:	1.98 kVA
				TOTAL ESTIMATED DEMAND KVA:	1.98 kVA
				TOTAL CONNECTED CURRENT:	5 A
				TOTAL ESTIMATED DEMAND CURRENT:	5 A

PANELBOARD: HLP-1A

MAIN RATING: 100 A **MCB RATING:** **VOLTAGE:** 480/277V 3Φ 4W
MAIN TYPE: MLO **WIRES:** 4 **MOUNTING:** RECESSED
ENCLOSURE: NEMA 1 **LOCATION:** CORRIDOR 047 **SUPPLY FROM:** MSWBD
MINIMUM AIC RATING: 14,000 **NEUTRAL RATING:** 100.00% **FEED THRU LUGS:**

NOTE	CKT	DESCRIPTION	WIRES	COND	AMP	P	A	A	B	B	C	C	P	AMP	COND	WIRES	DESCRIPTION	CKT	NOTE
	1	LOWER LEVEL LIGHTING - SOUTH	2#12, 1#12G.	3/4"	20	1	0.64	1.76					1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - SOUTH	2	
	3	LOWER LEVEL LIGHTING - CORRIDORS	2#10, 1#10G.	3/4"	20	1			1.46	2.23			1	20	3/4"	2#10, 1#10G.	MAIN LEVEL LIGHTING -CORRIDORS	4	
	5	LOWER LEVEL LIGHTING - MIDDLE	2#12, 1#12G.	3/4"	20	1					1.47	1.68	1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - MIDDLE	6	
	7	LOWER LEVEL LIGHTING - NORTH	2#12, 1#12G.	3/4"	20	1	1.63	1.64					1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - NORTH	8	
	9	CUH-005	2#12, 1#12G.	3/4"	20	1			3.32	3.74			1	15	3/4"	2#12, 1#12G.	EBH-001	10	
	11	CUH-006	2#12, 1#12G.	3/4"	20	1					3.32	3.74	1	15	3/4"	2#12, 1#12G.	EBH-002	12	
	13	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	14	
	15	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	16	
	17	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	18	
	19	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	20	
	21	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	22	
	23	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	24	
	25	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	26	
	27	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	28	
	29	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	30	
	31	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	32	
	33	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	34	
	35	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	36	
	37	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	38	
	39	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	40	
	41	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	42	
						TOTAL KVA:	5.68 kVA		10.67 kVA		10.22 kVA								
						TOTAL AMPS:	21 A		41 A		39 A								

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	12458 VA	125.00%	15573 VA	TOTAL CONNECTED KVA:	26.55 kVA
Motor	14127 VA	106.62%	15062 VA	TOTAL ESTIMATED DEMAND KVA:	30.60 kVA
				TOTAL CONNECTED CURRENT:	32 A
				TOTAL ESTIMATED DEMAND CURRENT:	37 A

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	TYPE	LENS/OPTICS	MOUNTING	MANUFACTURER	CATALOG NUMBER	EQUIVALENT	INPUT WATTS	VOLTAGE	REMARKS
A1	2'x4' EDGELIT LED TROFFER	3900LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-39-C-UNV-L840-HCD-1	WILLIAMS	32 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A2A	2'x4' EDGELIT LED TROFFER WITH 3500K LEDS	4500LUMEN 3500K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-45-C-UNV-L835-HCD-1	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A2B	2'x4' EDGELIT LED TROFFER WITH 4000K LEDS	4500LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-45-C-UNV-L840-HCD-1	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A2BF	2'x4' EDGELIT LED FLANGED TROFFER WITH 4000K LEDS	4500LUMEN 4000K 82CRI	NONE	FLANGED	METALUX	24SR-LD2-45-C-UNV-L840-HCD-1-DF-24-W	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A2D	2'x4' EDGELIT LED DIMMABLE TROFFER	4500LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-45-C-UNV-L840-HCD-1	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A2DE	2'x4' EDGELIT LED DIMMABLE EMERGENCY TROFFER	4500LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-45-C-UNV-EL14W-L840-HCD-1	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A2E	2'x4' EDGELIT LED EMERGENCY TROFFER	4500LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-45-C-UNV-EL14W-L840-HCD-1	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A3A	2'x4' EDGELIT LED TROFFER WITH 3500K LEDS	5300LUMEN 3500K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-53-C-UNV-L835-HCD-1	WILLIAMS	43 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A3B	2'x4' EDGELIT LED TROFFER WITH 4000K LEDS	5300LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-53-C-UNV-L840-HCD-1	WILLIAMS	43 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A3D	2'x4' EDGELIT LED DIMMABLE TROFFER	5300LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-53-C-UNV-L840-CD-1	WILLIAMS	43 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A3E	2'x4' EDGELIT LED EMERGENCY TROFFER	5300LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-53-C-UNV-EL14W-L840-HCD-1	WILLIAMS	43 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A4A	2'x4' EDGELIT LED TROFFER WITH 3500K LEDS	6400LUMEN 3500K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-64-C-UNV-L835-HCD-1	WILLIAMS	56 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A4B	2'x4' EDGELIT LED TROFFER WITH 4000K LEDS	6400LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-64-C-UNV-L840-HCD-1	WILLIAMS	56 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A4E	2'x4' EDGELIT LED EMERGENCY TROFFER	6400LUMEN 4000K 82CRI	NONE	LAY-IN GRID	METALUX	24SR-LD2-64-C-UNV-EL14W-L840-HCD-1	WILLIAMS	56 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A5A	2'x4' LAY-IN STATIC LED TROFFER WITH 3500K LEDS	3500LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	RECESSED	WILLIAMS	50G-S-24-L35-835-F-AF12125-DRV-UNV	LITHONIA	34 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A5AE	2'x4' LAY-IN STATIC LED EMERGENCY TROFFER WITH 3500K LEDS	3500LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	RECESSED	WILLIAMS	50G-S-24-L35-835-F-AF12125-EM/10W-DRV-UNV	LITHONIA METALUX	34 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT (1)
A5B	2'x4' LAY-IN STATIC LED TROFFER WITH 4000K LEDS	3500LUMEN 4000K 82CRI	0.125" OPAL ACRYLIC	RECESSED	WILLIAMS	50G-S-24-L35-840-F-AF12125-DRV-UNV	LITHONIA METALUX	34 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A6B	2'x2' EDGELIT LED FLANGED TROFFER WITH 4000K LEDS	5300LUMEN 4000K 82CRI	NONE	LAY-IN GRID	WILLIAMS	22SR-LD2-29-C-UNV-L840-CD-1	LITHONIA METALUX	24 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
A7B	2'x4' LED DIMMING TROFFER WITH 4000K RED/WHITE LEDS	11344LUMEN 4000K 82CRI	NONE	LAY-IN GRID	KENALL	CSEDI-24-23R/90L-40K8-277-AF-PAH-FS		116 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B1	4"x4' RECESSED SLOT LED TROFFER WITH FLUSH SATIN LENS	2500LUMEN 3500K 82CRI	ACRYLIC LENS	LAY-IN GRID	FOCAL POINT	FSM4L-FL-625LF-35K-1C-UNV-LD1-G1-WH-4'0"	WILLIAMS LUMENWERX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B1E	4"x4' RECESSED SLOT LED EMERGENCY TROFFER WITH FLUSH SATIN LENS	2500LUMEN 3500K 82CRI	ACRYLIC LENS	LAY-IN GRID	FOCAL POINT	FSM4L-FL-625LF-35K-1C-UNV-LD1-G1-EM-WH-4'0"	WILLIAMS LUMENWERX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B1F	4"x4' RECESSED FLANGED SLOT LED TROFFER WITH FLUSH SATIN LENS	2500LUMEN 3500K 82CRI	ACRYLIC LENS	FLANGED	FOCAL POINT	FSM4L-FL-625LF-35K-1C-UNV-LD1-XF2-TF-WH-4'0"	WILLIAMS LUMENWERX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B1FD	4"x4' RECESSED FLANGED SLOT LED TROFFER WITH FLUSH SATIN LENS	2500LUMEN 3500K 82CRI	ACRYLIC LENS	FLANGED	FOCAL POINT	FSM4L-FL-625LF-35K-1C-UNV-LD1-G1-TF-WH-4'0"	WILLIAMS LUMENWERX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B1FE	4"x4' RECESSED FLANGED SLOT LED EMERGENCY TROFFER WITH FLUSH SATIN LENS	2500LUMEN 3500K 82CRI	ACRYLIC LENS	FLANGED	FOCAL POINT	FSM4L-FL-625LF-35K-1C-UNV-LD1-XF2-TF-EM-WH-4'0"	WILLIAMS LUMENWERX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B2	4"x4' RECESSED SLOT LED TROFFER WITH FLUSH SATIN LENS	4000LUMEN 3500K 82CRI	ACRYLIC LENS	LAY-IN GRID	FOCAL POINT	FSM4L-FL-1000LF-35K-1C-UNV-LD1-G1-WH-4'0"	WILLIAMS LUMENWERX	46 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B2E	4"x4' RECESSED SLOT LED TROFFER WITH FLUSH SATIN LENS	4000LUMEN 3500K 82CRI	ACRYLIC LENS	LAY-IN GRID	FOCAL POINT	FSM4L-FL-1000LF-35K-1C-UNV-LD1-G1-EM-WH-4'0"	WILLIAMS LUMENWERX	46 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B2F	4"x4' RECESSED SLOT LED FLANGED TROFFER WITH FLUSH SATIN LENS	4000LUMEN 3500K 82CRI	ACRYLIC LENS	FLANGED	FOCAL POINT	FSM4L-FL-1000LF-35K-1C-UNV-LD1-XF2-TF-WH-4'0"	WILLIAMS LUMENWERX	46 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B3	11'-6" COVE MOUNTED LED FIXTURE	4800LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	CONTINUOUS COVE	WILLIAMS	CX-C-11'6"-L4-835-0-D-AMW-DRV-277	LITHONIA PRUDENTIAL	40 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B4	20'-6" COVE MOUNTED LED FIXTURE	8550LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	CONTINUOUS COVE	WILLIAMS	CX-C-20'6"-L4-835-0-D-AMW-DRV-277	LITHONIA PRUDENTIAL	72 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B5D	9'-0" COVE MOUNTED LED FIXTURE	5850LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	CONTINUOUS COVE	WILLIAMS	CX-C-9'0"-L6-835-0-D-AMW-DIM-277	LITHONIA PRUDENTIAL	32 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B6	23'-6" COVE MOUNTED LED FIXTURE	9800LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	CONTINUOUS COVE	WILLIAMS	CX-C-23'6"-L4-835-0-D-AMW-DRV-277	LITHONIA PRUDENTIAL	83 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B7	U SHAPED COVE MOUNTED LED FIXTURE	16125LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	CONTINUOUS COVE	FOCAL POINT	FSM4L-FL-375LF-35K-1C-UNV-LD1-XF2-WH-7'x29'x7'	LITHONIA LUMENWERX	162 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
B8	U SHAPED COVE MOUNTED LED FIXTURE					PART OF B8 LIGHT FIXTURE		0 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
C1	4' CHAIN HUNG INDUSTRIAL LED FIXTURE WITH WIRE GUARD	6300LUMEN 4000K 82CRI	WIREGUARD	CHAIN HUNG	WILLIAMS	80-4-L63-840-WG-8011-DRV-UNV	LITHONIA METALUX	52 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
C1E	4' CHAIN HUNG INDUSTRIAL LED EMERGENCY FIXTURE WITH WIRE GUARD	6300LUMEN 4000K 82CRI	WIREGUARD	CHAIN HUNG	WILLIAMS	80-4-L63-840-EM/10W-WG-8011-DRV-UNV	LITHONIA METALUX	52 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
C3E	4' WALL MOUNTED LED EMERGENCY FIXTURE	3200LUMEN 3500K 82CRI	ACRYLIC DIFFUSER	WALL MOUNTED 7'-0"AFF	WILLIAMS	WMAUD-4-L32-840-D-AF-EM/10W-DRV-UNV	LITHONIA METALUX	81 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
C4E	4' LINEAR IN-WALL RECESSED EMERGENCY FIXTURE	3000LUMEN 3500K 80CRI	ELLIPTICAL FILM	RECESSED MOUNTED 7'-0"AFF	LUMENWERX	INWALWRD-A10-LED-80-750-35-4'-277-EM-DTR-W-FU	NONE	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
C5	26" WALL MOUNTED LED FIXTURE WITH MIRROR	1200LUMEN 4000K 82CRI	NONE	WALL MOUNTED	LUMIDESIGN	CLARA-26.00x37.00-ADA	LITHONIA	20 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
C6	VAPORTIGHT LED LIGHT FIXTURE	600LUMEN 4000K 74CRI	FROSTED GLASS	WALL MOUNTED 36"AFF	LITHONIA	OLVTWM	HUBBELL PHOENIX	15 W	120 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
D1	8" DIAMETER ROUND RECESSED HIGH OUTPUT LED DOWNLIGHT	12000LUMEN 3500K 80CRI	BLACK SPECULAR	RECESSED	PORTFOLIO	LD8A-2-D010TE-ER8A-120-8-35-8LW0-B-HB26	WILLIAMS	141 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
D1E	8" DIAMETER ROUND RECESSED HIGH OUTPUT LED EMERGENCY DOWNLIGHT	12000LUMEN 3500K 80CRI	BLACK SPECULAR	RECESSED	PORTFOLIO	LD8A-2-D010TE-IEM14-ER8A-120-8-35-8LW0-B-HB26	WILLIAMS	141 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
E1	WALL MOUNTED EDGE LIT LED EXIT SIGN WITH GREEN LETTERING	LED	GREEN LED	WALL MOUNT 7'-0"AFF OR 6" ABOVE DOOR	WILLIAMS	EXIT/EL/RECESSED-SF-G-CP-AN-EM-SDT-WM	LITHONIA EATON	5 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
E2	CEILING MOUNTED EDGE LIT SINGLE FACE EXIT SIGN WITH GREEN LETTERING	LED	GREEN LED	CEILING MOUNT	WILLIAMS	EXIT/EL/RECESSED-SF-G-MP-AN-EM-SDT	LITHONIA EATON	5 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
E3	CEILING MOUNTED EDGE LIT DOUBLE FACE EXIT SIGN WITH GREEN LETTERING	LED	GREEN LED	CEILING MOUNT	WILLIAMS	EXIT/EL/RECESSED-DF-G-MP-AN-EM-SDT	LITHONIA EATON	5 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G1	MINI WALLPACK SURFACE MOUNTED LED LIGHT FIXTURE WITH PHOTOCELL	800LUMEN 5000K 70CRI	POLYCARBONATE	WALL MOUNTED 9'-10"AFF	WILLIAMS	WPM-L8-750-PC-DRV-277	LITHONIA BROWNLEE	11 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G1E	MINI WALLPACK SURFACE MOUNTED LED LIGHT FIXTURE W/PHOTOCELL AND EMERG. DRIVER	LED 5000K 70CRI	POLYCARBONATE	WALL MOUNTED 9'-10"AFF	WILLIAMS	WPM-L8-750-PC-EM/10W/BBU-DRV-277	LITHONIA BROWNLEE	11 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G3	15' POLE MOUNTED LED PARKING LUMINAIRE WITH PHOTOCONTROL	LED		POLE MOUNTED	MCGRAW-EDISON	GLEON-AE-04-LED-E1-T4W-BZ-P POLE-SSS-5-A-15-F-2	WILLIAMS	213 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G4	42" HIGH PEDESTRIAN LED BOLLARD	LED		GRADE	US ARCHITECTURAL LIGHTING	BRA8-LED-IL-36LED-NW-277-GI-RAL-8019-T	WILLIAMS INTRIGUE LIGHTING	16 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G5	9.5" ROUND LED STEPLIGHT	674LUMEN 4000K 80CRI	SEMI-SPECULAR	RECESSED	WILLIAMS	SR-G-L7-FTG-DBZ-277	LITHONIA COLE LIGHTING	22 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G6	6" DIAMETER ROUND RECESSED LED DOWNLIGHT	3600LUMEN 4000K 80CRI	CLEAR ACRYLIC	RECESSED	WILLIAMS	L60-L50C-840-CS-W-AC-CAL-WET/CC-DRV-277	LITHONIA PORTFOLIO	51 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
G6E	6" DIAMETER ROUND RECESSED LED EMERGENCY DOWNLIGHT	3600LUMEN 4000K 80CRI	CLEAR ACRYLIC	RECESSED	WILLIAMS	L60-L50C-840-CS-W-EM/12W-AC-CAL-WET/CC-DRV-277	LITHONIA PORTFOLIO	51 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H1	DOS CASCADE CIRCULAR DIRECT/INDIRECT WHITE LED CHANDELIER	3000K LEDS	OPAL ACRYLIC	PENDANT	DELRAY LIGHTING INC.	UDCC-234-S-W30-SREM-SS	NONE	117 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H2	UNO GYROSCOPE CIRCULAR DIRECT/INDIRECT WHITE LED CHANDELIER	3000K LEDS	OPAL ACRYLIC	PENDANT	DELRAY LIGHTING INC.	UCG-568-S-W30-CREM	NONE	80 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H3	SPECIALTY CHANDELIER (11 LED DROPS OF DIFFERENT LENGTH)	12 VOLT, 3000K 80CRI	CLEAR ACRYLIC	SURFACE MOUNTED	TECH LIGHTING	CANOPY = 700FJRD11-T-S-LED, DROPS = FU-C-S-LED, TRANSFORMER = 700AT150T277	NONE	150 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H4E	18" SQUARE SURFACE MOUNTED LED EMERGENCY LIGHT FIXTURE	3950LUMEN 3500K 82CRI	ACRYLIC	SURFACE	ASL LIGHTING	CCS37-38-3500K-L18-30-DV-FCU-EMG	NONE	64 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H5	8' LONG LINEAR CANOPY MOUNT LED FIXTURE WITH REMOTE POWER SUPPLY	6314LUMEN 3500K	FROSTED ACRYLIC	CANOPY MOUNTED	SPI LIGHTING	SLWS-101-L115W-SMB-24VDC-8'-MCS-012-AN04-PS WITH 24VDC LOW VOLTAGE TRANSFORMER	NONE	115 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H6DE	4"x4' RECESSED SLOT LED RECESSED DIMMING EMERGENCY TROFFER	3000LUMEN 3500K 80CRI	ACRYLIC LENS	RECESSED	LUMENWERX	VIA4WD-HLO-LED-80-750-35-4FT-277-D-1-4EB-DMF-W-FU	LITHONIA METALUX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H7D	4"x8' RECESSED SLOT LED RECESSED DIMMING TROFFER	6000LUMEN 3500K 80CRI	ACRYLIC LENS	RECESSED	LUMENWERX	VIA4WD-HLO-LED-80-750-35-8FT-277-D-1-DMF-W-FU	LITHONIA METALUX	50 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H7DE	4"x8' RECESSED SLOT LED RECESSED DIMMING EMERGENCY TROFFER	6000LUMEN 3500K 80CRI	ACRYLIC LENS	RECESSED	LUMENWERX	VIA4WD-HLO-LED-80-750-35-8FT-277-D-1-8EB-DMF-W-FU	LITHONIA METALUX	50 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H8	4" ROUND MEDIUM CYLINDER LED TRACK HEAD	2056LUMEN 3500K 82CRI	34 DEGREE FLOOD	COVE MOUNTED	AMERILUX	SPEQ-M-A17-26-WT-TN2-277-FL-40-ND	NONE	26 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H9	8'-0" COVE MOUNTED LED FIXTURE	3752LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	COVE MOUNTED	PRUDENTIAL	MIC-LED35-LO-8-SC-UNV-SUR1-YGW-ND	WILLIAMS	37 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H10	9'-0" COVE MOUNTED LED FIXTURE	4221LUMEN 3500K 82CRI	0.125" OPAL ACRYLIC	CONTINUOUS COVE	PRUDENTIAL	MIC-LED35-LO-R9-SC-UNV-SUR1-YGW-ND	WILLIAMS	42 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H11D	4"x38" RECESSED SLOT LED RECESSED DIMMING TROFFER	3000LUMEN 3500K 80CRI	ACRYLIC LENS	RECESSED	LUMENWERX	VIA4WD-HLO-LED-80-750-35-38"-277-1-W-FU	LITHONIA METALUX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
H12D	4"x40" RECESSED SLOT LED RECESSED DIMMING TROFFER	3000LUMEN 3500K 80CRI	ACRYLIC LENS	RECESSED	LUMENWERX	VIA4WD-HLO-LED-80-750-35-40"-277-1-W-FU	LITHONIA METALUX	25 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
J1	4" SQUARE RECESSED LED DOWNLIGHT	1000LUMEN 3500K 80CRI	SEMI-SPECULAR	RECESSED	DMF LIGHTING	DRDH-N-DRD2M-10O-10-9-35-DRD2T-S-JD-S-WH	WILLIAMS	13 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
J1D	4" SQUARE RECESSED LED DIMMING DOWNLIGHT	1000LUMEN 3500K 80CRI	SEMI-SPECULAR	RECESSED	DMF LIGHTING	DRDH-N-DRD2M-10O-10-9-35-DRD2T-S-JD-S-WH	WILLIAMS	13 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
J1E	4" SQUARE RECESSED LED DOWNLIGHT AND EMERGENCY DRIVER	1000LUMEN 3500K 80CRI	SEMI-SPECULAR	RECESSED	DMF LIGHTING	DRDH-N-DRD2M-10EMS-10-9-35-DRD2T-S-JD-S-WH	WILLIAMS	13 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
J2	4" SQUARE RECESSED LED DOWNLIGHT	1000LUMEN 3500K 80CRI	SEMI-SPECULAR	RECESSED	DMF LIGHTING	DRDH-N-DRD2M-10O-10-9-35-DRD2T-S-JD-S-WH	WILLIAMS	13 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
J2E	4" SQUARE RECESSED LED EMERGENCY DOWNLIGHT	1000LUMEN 3500K 80CRI	SEMI-SPECULAR	RECESSED	DMF LIGHTING	DRDH-N-DRD2M-10O-10-9-35-DRD2T-S-JD-S-WH	WILLIAMS	13 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
M1	4' LINEAR LED PENDANT UP/DOWNLIGHT FIXTURE	1600UP/2400DN LUMEN 3500K 82CRI	ACRYLIC DIFFUSER	PENDANT AT 8'-0"AFF	WILLIAMS	AX2-UD-4-L16U-835-L24D-835-S-AC/S48-DRV-UNV	LITHONIA LUMENWERX	48 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT
M1E	4' LINEAR LED PENDANT UP/DOWNLIGHT FIXTURE WITH EXTERNAL EM BALLAST	1600UP/2400DN LUMEN 3500K 82CRI	ACRYLIC DIFFUSER	PENDANT AT 8'-0"AFF	WILLIAMS	AX2-UD-4-L16U-835-L24D-835-S-AC/S48-DRV-UNV	LITHONIA LUMENWERX	48 W	277 V	SUPPLY WITH EXTERNAL FUSEHOLDER OR FIXTURE DISCONNECT

PANELBOARD: HLP-1B

MAIN RATING: 100 A **MCB RATING:** **VOLTAGE:** 480/277V 3Φ 4W
MAIN TYPE: MLO **WIRES:** 4 **MOUNTING:** SURFACE
ENCLOSURE: NEMA 1 **LOCATION:** ELECTRICAL 010 **SUPPLY FROM:** MSWBD
MINIMUM AIC RATING: 35,000 **NEUTRAL RATING:** 100.00% **FEED THRU LUGS:**

NOTE	CKT	DESCRIPTION	WIRES	COND	AMP	P	A	A	B	B	C	C	P	AMP	COND	WIRES	DESCRIPTION	CKT	NOTE
	1	LOWER LEVEL LIGHTING - OFFICES/RR	2#12, 1#12G.	3/4"	20	1	1.10	0.87					1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - OFFICE/RR	2	
	3	LOWER LEVEL LIGHTING - LOBBY/COR.	2#12, 1#12G.	3/4"	20	1			0.70	1.44			1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING -...	4	
	5	LOWER LEVEL LIGHTING - LABS	2#12, 1#12G.	3/4"	20	1					2.31	2.27	1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - LABS	6	
	7	LOWER LEVEL LIGHTING - CORRIDOR	2#12, 1#12G.	3/4"	20	1	0.81	1.50					1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - CORRIDOR	8	
	9	LOWER LEVEL LIGHTING -...	2#12, 1#12G.	3/4"	20	1			1.54	2.20			1	20	3/4"	2#12, 1#12G.	MAIN LEVEL LIGHTING - BIO OFFICES	10	
	11	UPPER LEVEL LIGHTING -...	2#12, 1#12G.	3/4"	20	1					2.30	2.04	1	20	3/4"	2#10, 1#10G.	UPPER LEVEL LIGHTING - LABS/RR	12	
	13	UPPER LEVEL LIGHTING - CORRIDOR	2#12, 1#12G.	3/4"	20	1	1.28	2.34					1	20	3/4"	2#10, 1#10G.	UPPER LEVEL LIGHTING -...	14	
	15	UPPER LEVEL LIGHTING - LABS	2#10, 1#10G.	3/4"	20	1			2.49	1.38			1	20	3/4"	2#10, 1#10G.	UPPER LEVEL LTG. - LECTURE HALL	16	
	17	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	18	
	19	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	20	
	21	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	22	
	23	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	24	
	25	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	26	
	27	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	28	
	29	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	30	
	31	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	32	
	33	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	34	
	35	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	36	
	37	SPARE	--	--	20	1	0.00	0.00					1	20	--	--	SPARE	38	
	39	SPARE	--	--	20	1			0.00	0.00			1	20	--	--	SPARE	40	
	41	SPARE	--	--	20	1					0.00	0.00	1	20	--	--	SPARE	42	
						TOTAL KVA:	7.84 kVA		9.68 kVA		8.91 kVA								
						TOTAL AMPS:	28 A		36 A		33 A								

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Lighting	26399 VA	125.00%	32999 VA	TOTAL CONNECTED KVA:	26.40 kVA
Other	0 VA	0.00%	0 VA	TOTAL ESTIMATED DEMAND KVA:	33.00 kVA
Altro	0 VA	0.00%	0 VA	TOTAL CONNECTED CURRENT:	32 A
				TOTAL ESTIMATED DEMAND CURRENT:	40 A

OCCUPANCY SENSOR SCHEDULE

TYPE	DESCRIPTION	COVERAGE/LOAD	MANUFACTURER	MODEL
OS1	PASSIVE INFRARED LINE VOLTAGE WALL SWITCH OCCUPANCY SENSOR	20'x25', LINE VOLTAGE, 0-1200 WATT	WATT STOPPER	PW-301
OS2	PASSIVE INFRARED LINE VOLTAGE DIMMING WALL SWITCH OCCUPANCY SENSOR	20'x25', LINE VOLTAGE, 0-1200 WATT	WATT STOPPER	PW-100D-W
OS3	DUAL TECHNOLOGY LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSOR	36' ROUND, LOW VOLTAGE	WATT STOPPER	DT-305
OS4	ULTRASONIC LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSOR	40' SQUARE, LOW VOLTAGE	WATT STOPPER	W-2000A
OS5	ULTRASONIC LOW VOLTAGE CEILING MOUNTED HALLWAY OCCUPANCY SENSOR	80'x10' RECTANGLE, LOW VOLTAGE	WATT STOPPER	W-2000H
OS6	PASSIVE INFRARED LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSOR	30'x30' ROUND, LOW VOLTAGE	WATT STOPPER	LMPC-100-5

FIXTURE SCHEDULE NOTES

1. PROVIDE ALL LUMINAIRE MOUNTING ACCESSORIES AS NEEDED TO ACCOMMODATE EACH FIXTURE, INCLUDING BUT NOT LIMITED TO STRUCTURAL INSTALLATIONS, CEILING TYPES, ETC.
2. REFER TO FLOOR PLANS FOR NUMBER OF FACES, DIRECTIONAL ARROWS, AND MOUNTING TYPE OF EXIT SIGNS.
3. PROVIDE NECESSARY MOUNTING OPTIONS FOR INSTALLATION IN SPECIFIED CEILING TYPE. REFER TO ARCHITECTURAL PLANS, SCHEDULES, AND SPECIFICATIONS FOR CEILING CHARACTERISTICS.

REVISION SCHEDULE:
0 04/18/2018 - Contract Documents
1 05/11/2018 - Addendum 3

DESIGN ARCHITECT:
PROJECT ARCHITECT:
DRAWN BY: PWP
DESIGN ENGINEER: EBS
ISSUED: APRIL 30, 2018

PROFESSIONAL ENGINEER ERIC STEWART E-12593 STATE OF NEBRASKA

PROJECT CONSULTANTS
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Electrical Schedules

SHA PROJECT NO. 16022

E700

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COMMUNICATIONS SYMBOLS:

NOTE: THIS IS A MASTER SYMBOLS LIST. ALL SYMBOLS, ABBREVIATIONS, ETC. MAY NOT NECESSARILY BE USED ON ALL DRAWINGS.

- # — WALL MOUNTED DATA OUTLET, 18" AFF, UNO. HUBBELL RACO 4" SQUARE, 3 1/2" DEEP BOX PN 255 AND 256. INSTALL 1" CONDUIT FROM BACK BOX TO 3" INTO ACCESSIBLE LOCATION AFC, WITH TERMINAL CONDUIT BUSHING. SUBSCRIPT INDICATES NUMBER OF RJ45 DATA OUTLETS IN FACEPLATE. PROVIDE 10' SERVICE LOOP AT CEILING.
- #/# — WALL MOUNTED DATA/VOICE OUTLET, 18" AFF, UNO. HUBBLE RACO 4" SQUARE, 3 1/2" DEEP BOX PN 255 AND 256. INSTALL 1" CONDUIT FROM BACK BOX TO 3" INTO ACCESSIBLE LOCATION AFC, WITH TERMINAL CONDUIT BUSHING. SUBSCRIPT INDICATES NUMBER OF RJ45 DATAOUTLETS IN FACEPLATE, SECOND # IS PRESENT, THE SECOND # IS TELEPHONE OUTLET. PROVIDE 10' SERVICE LOOP AT CEILING.
- WAP — PLENUM-MOUNTED DATA OUTLET FOR WIRELESS ACCESS POINT, SEE DETAIL 6 ON T401. PROVIDE 20' SERVICE LOOP AT CEILING. 4-11/16" SQUARE x 2-1/8" DEEP BACK BOX INSTALLED IN PLENUM, WITH (1) RJ45 OUTLET, UNO, WIRELESS ACCESS POINT INSTALLED FLUSH WITH CEILING, ON OCCUPIED SIDE.

SECURITY SYMBOLS:

NOTE: THIS IS A MASTER SYMBOLS LIST. ALL SYMBOLS, ABBREVIATIONS, ETC. MAY NOT NECESSARILY BE USED ON ALL DRAWINGS.
SECURITY SCOPE IS LIMITED TO INFRASTRUCTURE ONLY, NO EQUIPMENT IS INCLUDED IN SCOPE.

- WALL MOUNTED FIXED CAMERA INFRASTRUCTURE. PROVIDE BACK BOX FOR ROUGH-IN AND 1" CONDUIT BACK TO ACCESSIBLE CEILING. REFER TO DETAILS FOR MORE INFORMATION ON MOUNTING TYPES. CAT 6 WITH 20' SERVICE LOOP.
- CEILING MOUNTED DOME CAMERAINFRASTRUCTURE. PROVIDE BACK BOX FOR ROUGH-IN AND 1" CONDUIT BACK TO ACCESSIBLE CEILING. CAT 6 WITH 20' SERVICE LOOP.
- CR — CARD READER INFRASTRUCTURE. PROVIDE BACK BOX FOR ROUGH-IN AND 1" CONDUIT BACK TO POWERED JUNCTION BOX. CAT 6A TO DOOR CONTROL LOCATION COORDINATED WITH OWNER.
- DRB — SECURITY DOOR RELEASE BUTTON INFRASTRUCTURE. COORDINATE INSTALLATION LOCATION WITH OWNER.
- PP — PUSH PLATE INFRASTRUCTURE. PROVIDE BACK BOX FOR ROUGH-IN AND 1/2" CONDUIT BACK TO DOOR CONTROLLER.
- RB — REQUEST-TO-EXIT BUTTON INFRASTRUCTURE. PROVIDE BACK BOX FOR ROUGH-IN AND 1/2" CONDUIT BACK TO DOOR CONTROLLER.

AUDIOVISUAL SYMBOLS:

NOTE: THIS IS A MASTER SYMBOLS LIST. ALL SYMBOLS, ABBREVIATIONS, ETC. MAY NOT NECESSARILY BE USED ON ALL DRAWINGS.

- PROJ — CEILING MOUNTED PROJECTOR OUTLET, INCLUDES 4 DATA. COORDINATE EXACT LOCATION / DISTANCE FROM SCREEN WITH AV INSTALLER.
- AV — A/V FLOOR BOX, COORDINATE WITH POWER / E-SERIES SHEETS. COMBINED BOX WITH AV, DATA, AND POWER. NUMBER ADJACENT REPRESENTS QUANTITY OF DATA DROPS. FOLLOW INSTRUCTIONS OUTLINED FOR COMMUNICATIONS DROPS. AV CONFIGURATION DETERMINED BY OWNER. COORDINATE INSTALLATION WITH FURNITURE SYSTEMS AND DISPLAY EQUIPMENT/HARDWARE.
- AUDIOVISUAL INPUT WALL PLATE, 4-11/16" SQUARE x 2-1/2" DEEP BACK BOX WITH 2 DEVICE RAISED RING. 1-1/4" CONDUIT TO DISPLAY / PROJECTOR LOCATION. CONFIGURATION DETERMINED BY OWNER. MOUNTING HEIGHTS AS NOTED. COORDINATE INSTALLATION WITH FURNITURE SYSTEMS AND DISPLAY EQUIPMENT/HARDWARE.
- F — AV FUTURE INPUT. 4-11/16" SQUARE x 2-11/2" DEEP BACK BOX WITH 2-DEVICE RAISED RING. 1-1/4" CONDUIT TO DISPLAY / PROJECTOR LOCATION. SHIELDED CAT 6 INSTALLED FROM THIS LOCATION TO PROJECTOR, TERMINATED TO PLATE LABELED "AV TO PROJECTOR"
- TV WALL BOX, FSR PWB-250 COMBINED AV, TELECOM, POWER BACKBOX. SEE DETAIL 10 ON T401. NUMBER ADJACENT REPRESENTS QUANTITY OF DATA DROPS, FOLLOW INSTRUCTIONS OUTLINES FOR COMMUNICATIONS DROPS. CONFIGURATION DETERMINED BY OWNER. COORDINATE INSTALLATION WITH FURNITURE SYSTEMS AND DISPLAY EQUIPMENT/HARDWARE.
- C — AV SYSTEM CONTROL, LOW-VOLTAGE RING, COORDINATE SIZE WITH OWNER / AV INSTALLER, WITH 1" CONDUIT TO DISPLAY / PROJECTOR LOCATION. INSTALLED AT SWITCH HEIGHT, WITH 1" CONDUIT TO ACCESSIBLE CEILING. INSTALL DATA DROP AT TERMINATION OF CONDUIT IN CEILING PLENUM, USE WAP DETAIL 6 ON T401, WITH NO SERVICE LOOP REQUIREMENT.
- SIGNAL FLOW SHEET AND CALLOUT REFERENCE

ABBREVIATIONS:

AC	ABOVE COUNTER (MOUNT 6" ABOVE COUNTER)
ACR	ATTENUATION-TO-CROSSTALK RATIO
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJACENT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APC	ANGLE PHYSICAL CONNECTOR
ASTM	AMERICAN SOCIETY FOR TESTING & MATERIALS
AWG	AMERICAN WIRE GAUGE
BCT	BONDING CONDUCTOR FOR TELECOMMUNICATIONS
BER	BUILDING ENTRANCE ROOM
BET	BUILDING ENTRANCE TERMINAL
BFF	BELOW FINISHED FLOOR
BICSI	BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL
BMS	BUILDING MANAGEMENT (AUTOMATION) SYSTEM
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
C	CONDUIT
CAT	CATEGORY
CATV	COMMUNITY ANTENNA TELEVISION (CABLE TELEVISION)
CBN	CONDUIT BONDING NETWORK
CCTV	CLOSED CIRCUIT TELEVISION
CD	CAMPUS DISTRIBUTOR
CFCI	CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED
CLG	CEILING
COAX	COAXIAL CABLE
DA	DISTRIBUTION AMPLIFIER
dB	DECIBEL
dBmV	DECIBEL REFERENCED TO 1 MILLIVOLT
DM	DIGITALMEDIA (CRESTRON)
DTP	DIGITAL TWISTED PAIR (EXTRON)
DSP	DIGITAL SIGNAL PROCESSOR
(E)	EXISTING
EDA	EQUIPMENT DISTRIBUTION AREA
EF	ENTRANCE FACILITY
EIA	ELECTRONICS INDUSTRIES ASSOCIATION
ELFXT	EQUAL LEVEL FAR-END CROSSTALK
EMI	ELECTROMAGNETIC INTERFERENCE
EMT	ELECTRICAL METALLIC TUBING
ER	EQUIPMENT ROOM
ETR	EXISTING TO REMAIN
FCC	FEDERAL COMMUNICATIONS COMMISSION
FD	FLOOR DISTRIBUTOR
FEXT	FAR-END CROSSTALK
FOMM	FIBER OPTIC MULTMODE
FOSM	FIBER OPTIC SINGLEMODE
FOTP	FIBER OPTIC TEST PROCEDURE
FPD	FLAT PANEL DISPLAY
FREQ	FREQUENCY
GE	GROUNDING EQUALIZER
GND	GROUND
HC	HORIZONTAL CROSS-CONNECT
HDA	HORIZONTAL DISTRIBUTION AREA
HZ	HERTZ
ICC	INTERMEDIATE CROSS-CONNECT
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IG	ISOLATED GROUND
ISO	INTERNATIONAL STANDARDS ORGANIZATION
ISP	INSIDE CABLE PLANT
IT	INFORMATION TECHNOLOGY
LAN	LOCAL AREA NETWORK
LC	LUCENT CONNECTOR
Mbps	MEGABITS PER SECOND
MC	MAIN CROSS-CONNECT
MDA	MAIN DISTRIBUTION AREA
MHz	MEGAHERTZ
MIC	MICROPHONE
MM	MULTIMODE
MTD	MOUNTED
MTP	MULTI-FIBER TERMINATION PUSH-ON
NEC	NATIONAL ELECTRIC CODE, NFPA 70
NESC	NATIONAL ELECTRIC SAFETY CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N/C	NOT IN CONTRACT
N/O	NORMALLY OPEN
N/C	NORMALLY CLOSED
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED AND CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED AND OWNER INSTALLED
OH	OVERHEAD
OLTS	OPTICAL LOSS TEST SET
OSHA	OCCUPATIONAL SAFETY AND HEALTH ASSOCIATION
OSP	OUTSIDE CABLE PLANT
OTDR	OPTICAL TIME DOMAIN REFLECTOMETER
PDU	POWER DISTRIBUTION UNIT
PJ	PROJECTOR
PNL	PANEL
PoE	POWER OVER ETHERNET
PoE+	POWER OVER ETHERNET PLUS
PR	PAIR
RFI	RADIO FREQUENCY INTERFERENCE
RGB	RACK GROUNDING BUSBAR
RU	RACK UNIT (1.75")
QTY	QUANTITY
SEF	SERVICE ENTRANCE FACILITY
SC	SUBSCRIBER CONNECTOR
SM	SINGLE MODE
STP	SHIELDED TWISTED PAIR
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TEBC	TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR
TEMP	TEMPORARY
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TGMB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TO	TELECOMMUNICATIONS OUTLET
TR	TELECOMMUNICATIONS ROOM
TSP	TELECOM SERVICES PROVIDER
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
W/	WITH
W/O	WITHOUT
WAO	WORK AREA OUTLET
WAP	WIRELESS ACCESS POINT
WP	WEATHERPROOF
WT	WEIGHT
XC	CROSS-CONNECT
ZDA	ZONE DISTRIBUTION AREA

GENERAL NOTES:

1. DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS ON ARCHITECTURAL DRAWINGS AND IN FIELD PRIOR TO COMMENCEMENT OF WORK.
2. REFER TO ALL ARCHITECTURAL/ELECTRICAL/STRUCTURAL/CIVIL AND MECHANICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
3. FINAL CONNECTIONS TO EQUIPMENT SHALL BE IN ACCORDANCE WITH MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS, AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
4. WORK, MATERIALS, AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE, AND NATIONAL CODES AND ORDINANCES.
5. PROVIDE PERMITS AND INSPECTIONS REQUIRED.
6. SYSTEM SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.
7. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT, OR INSTALLATION METHODS.
8. ALL SYSTEMS SHALL BE COMPLETE AND FULLY OPERATIONAL.
9. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
10. PROVIDE RECORD DRAWINGS TO ARCHITECT/ENGINEER. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION, OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
12. VERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING, AND RACEWAY SYSTEMS PRIOR TO TRENCHING. PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION, SUPPORTS, SERVICE FEEDERS (CONDUIT AND/OR WIRE), PULLBOXES, TRANSFORMERS PADS, SAW CUTTING AND PATCHING, CONCRETE/PAVING, ETC. REQUIRED. BACKFILL TRENCHES TO 90% COMPACTION AND PATCH TO MATCH EXISTING. CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY DRAWINGS AND REQUIREMENTS.
13. THE DATA GIVEN ON THE DRAWING IS AS EXACT AS COULD BE SECURED. THE CONTRACTOR SHALL OBTAIN EXACT LOCATION, MEASUREMENTS, LEVELS, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT THE WORK TO THE ACTUAL CONDITIONS AT THE PROJECT SITE.
14. VERIFY EXACT LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
15. ROUTE ALL WIRE AND CONDUIT CONCEALED, FOR ALL SYSTEMS, UNLESS NOTED OTHERWISE.
16. ACCURATE RECORDS OF WORK MODIFICATIONS (AS-BUILTS) SHALL BE KEPT DAILY.
17. THE COMPLETED INSTALLATION SHALL BE IN ACCORDANCE WITH ALL ENGINEERING REQUIREMENTS, THE OWNERS DESIGN CRITERIA, UTILITY COMPANY REQUIREMENTS, APPLICABLE INDUSTRY STANDARDS OF GOOD PRACTICE AND SAFETY AND THE MANUFACTURER'S STRICTEST RECOMMENDATIONS FOR EQUIPMENT AND PRODUCT APPLICATION AND INSTALLATION.

GENERAL INFRASTRUCTURE NOTES:

1. IF THE ENCLOSURE, BOXES AND CABINETS SPECIFIED ARE NOT PROVIDED FROM THE MANUFACTURER WITH THE REQUIRED KNOCKOUTS FOR THE SPECIFIED CONDUIT, FIELD CUT ALL REQUIRED KNOCKOUTS TO TERMINATE THE QUANTITY AND SIZE OF THE SPECIFIED CONDUITS.
2. MAINTAIN MAXIMUM SEPARATION BETWEEN AV SYSTEM CONDUIT AND ALL POWER CONDUIT.
3. INSTALL NYLON PULL STRINGS IN ALL CONDUIT.
4. INSTALL ALL CONDUIT IN A CONCEALED FASHION. SURFACE MOUNTED CONDUIT WILL NOT BE ACCEPTED UNLESS SPECIFICALLY IDENTIFIED IN THE DRAWINGS.
5. COVER ALL INSTALLED JUNCTION BOXES AND MUD RINGS WITH BLANK COVER PLATES.
6. ALL CONDUIT SHALL BE A MINIMUM DIAMETER OF 3/4" UNLESS NOTED OTHERWISE.
7. ALL CONDUIT SHALL BE THIN-WALL EMT UNLESS NOTED OTHERWISE. CONDUIT SIZES AND TERMINATION SHALL BE AS NOTED ON THE TECHNOLOGY INFRASTRUCTURE DRAWINGS.
8. MAXIMUM OF TWO 90-DEGREE BENDS OR 50 LINEAR FEET BETWEEN PULL BOXES. ADDITIONAL PULL BOXES NOT SHOWN ON DRAWINGS MAY BE REQUIRED. CONDUIT ROUTING IS AT THE ELECTRICAL CONTRACTOR'S DISCRETION.
9. MOUNT BOXES ON WALLS AT THE HEIGHTS NOTED ON THE TECHNOLOGY INFRASTRUCTURE DRAWINGS. IF ELECTRICAL BOXES ARE AT SIMILAR BUT DIFFERENT HEIGHTS, MOUNT BOXES TO MATCH ELECTRICAL BOX HEIGHTS (18" AFF OR 48" AFF, ETC.), DIMENSIONS SHOWN ON THESE DRAWINGS ARE TO THE CENTER OF BOX UNLESS OTHERWISE NOTED.
10. PROVIDE NYLON BUSHINGS ON ALL CONDUIT STUBS AND NON-TERMINATED CONDUIT ENDS.

GENERAL AV INSTALLATION NOTES:

1. INSTALL ALL EQUIPMENT IN COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS, SEISMIC CODES, AND INDUSTRY ACCEPTED RIGGING PRACTICES. SUPPORT EQUIPMENT WEIGHT FROM STRUCTURE ABOVE CEILINGS. DURING THE SUBMITTAL PROCESS, PROVIDE SHOP DRAWINGS WHICH DETAIL PROPOSED MOUNTING FOR ALL SUCH EQUIPMENT.

GENERAL GROUNDING NOTES:

1. ISOLATE EQUIPMENT FROM CONDUIT AND BUILDING STEEL.
2. GROUND COMMUNICATIONS SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH ANSI-TIA-EIA-607 GROUNDING STANDARD AND APPLICABLE NEC REQUIREMENTS.
3. ALL RACKS, METALIC BACKBOARDS, CABLE TRAYS, SPLICE CASES, ETC. IN A TECHNICAL EQUIPMENT SPACE (EITHER RESIDING IN OR ENTERING/EXITING) SHALL BE GROUNDED TO THEIR RESPECTIVE GROUND SYSTEM USING A #6 AWG (MINIMUM) COPPER BONDING CONDUCTOR.
4. ALL GROUND WIRES USED FOR TECHNICAL SYSTEM GROUNDING SHALL BE IDENTIFIED AT THEIR TERMINATION POINTS WITH GREEN WRAP/TAPE. THESE GROUNDS SHALL BE LABELED/IDENTIFIED AS "TECHNICAL POWER SYSTEM GROUND".

GENERAL FIRESTOPPING NOTES:

1. CONDUIT, CABLES, AND RACEWAYS MAY PASS THROUGH FIRE RATED FLOORS OR WALLS. PROVIDE THROUGH-PENETRATION FIRE STOPS TO RESTORE THE FLOOR/WALL TO THE ORIGINAL FIRE RATED INTEGRITY. THESE FIRESTOP SYSTEMS SHALL BE WATERPROOF.
2. FIRE STOP SYSTEMS SHALL BE CLASSIFIED TO ASTM E814 (UL1479) AND SHALL BE APPROVED BY A QUALIFIED PROFESSIONAL ENGINEER (P.E.), LICENSED IN THE STATE WHERE THE WORK IS TO BE PERFORMED. A DRAWING SHOWING THE PROPOSED FIRE STOP SYSTEM, STAMPED/EMBOSSED BY THE P.E., SHALL BE PROVIDED TO THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLING THE FIRE STOP SYSTEMS.
3. THE FIRE STOP SYSTEM SHALL COMPLY WITH THE NEC AND NFPA 101- LIFE SAFETY CODE AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE LOCAL INSPECTION AUTHORITIES (AUTHORITY HAVING JURISDICTION) PRIOR TO CABLE SYSTEM ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE FIRE RATING OF ALL WALLS AND FLOORS HAVING CABLING PENETRATIONS. COORDINATE SEALANT INSTALLATION WITH WORLD OF OTHER TRADES. REFER TO GENERAL ELECTRICAL SPECIFICATION SECTIONS FOR FURTHER MATERIAL AND INSTALLATION REQUIREMENTS. COORDINATE INSTALLATION WITH GENERAL CONTRACTOR.

STANDARD MOUNTING HEIGHTS:

STANDARD MOUNTING HEIGHTS OF WALL DEVICES, UNLESS NOTED OTHERWISE ON DRAWINGS.
ALL HEIGHTS ARE TO CENTERLINE OF DEVICE, UNLESS NOTED OTHERWISE.
ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER MOUNTING HEIGHTS INDICATED ON TECHNOLOGY DRAWINGS.

DATA OUTLETS	18"
VOICE OUTLETS	18"
TV/DISPLAY OUTLETS	84"
AV INPUT PLATES	18"
SWITCHES AND CONTROLS	48"
INTERCOM STATIONS	48"
CLOCKS	90"
FIXED CAMERAS	10'-0"
CARD READERS	48"

RESPONSIBILITY MATRIX:

COMPONENT:	CONTRACTOR TEAM	OWNER
BACK BOXES, CONDUIT, AND PATHWAY FOR ALL LOW-VOLTAGE SYSTEMS	X	
CABLE TERMINATIONS/PUNCHDOWNS AT DROPS AND PATCHBAY	X	
WORK AREA OUTLETS / FACEPLATES	X	
TELECOM GROUNDING	X	
AUDIOVISUAL CABLING (HDMI, VGA, ETC.)		X
AUDIOVISUAL EQUIPMENT (LOUDSPEAKERS, AMPLIFIERS, MICROPHONES, ETC.)		X
ELECTRONIC SECURITY CABLING & PATHWAY	X	
CARD ACCESS AND KEYPADS		X
SECURITY CAMERAS (CCTV)		X
CABLE TRAYS / J-HOOKS	X	
WIRELESS ACCESS POINT EQUIPMENT		X
WIRELESS ACCESS POINT ROUGH-IN	X	
PHONES		X
COMPUTERS / SERVERS		X

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REVISIONS:
1. Addendum 3 05/11/2018

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PROJECT MANAGER:
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DRAWN BY:
Author
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April 30,2018

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LEGEND & SYMBOLS

SHA PROJECT NO. 16022

T001

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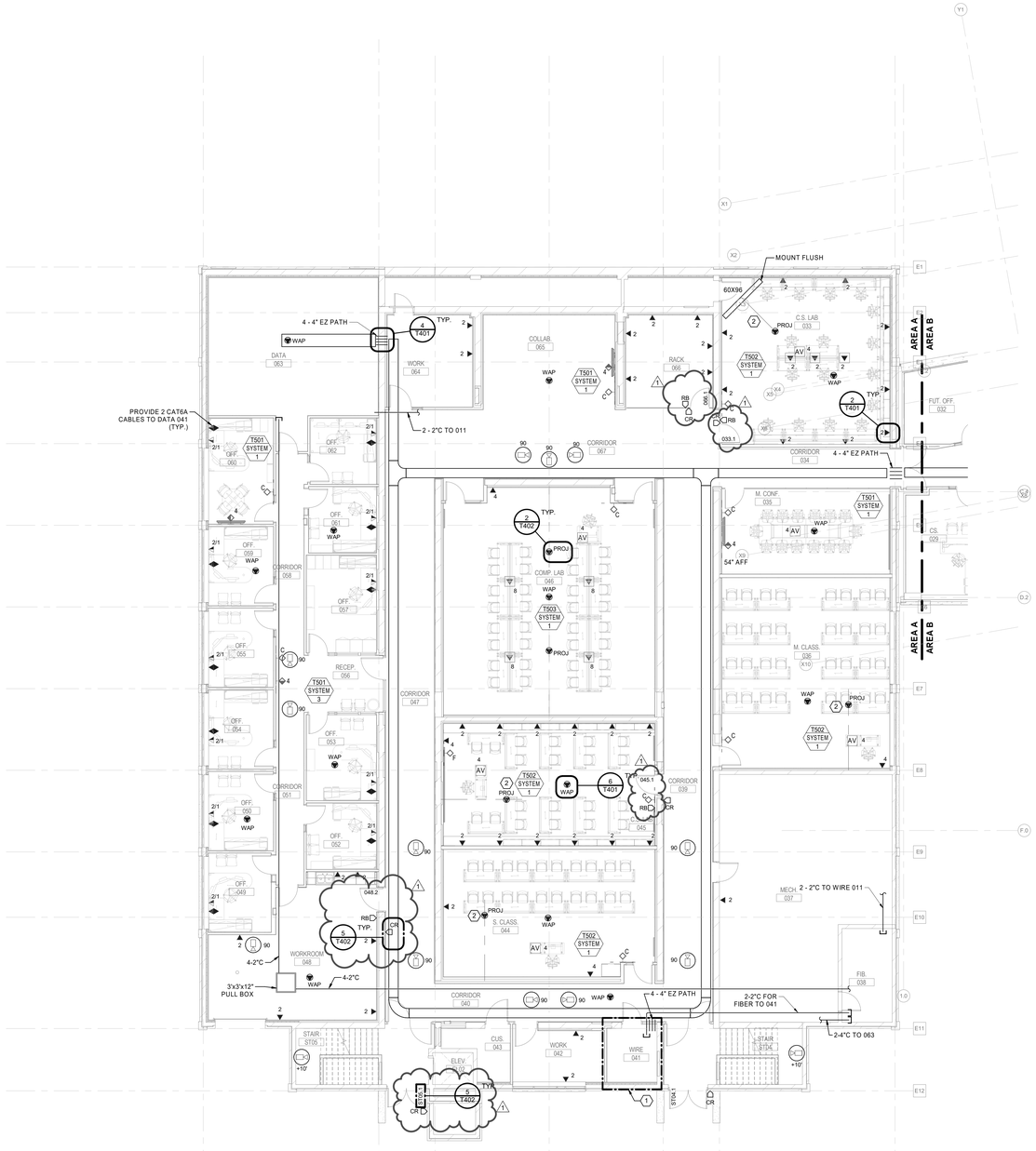
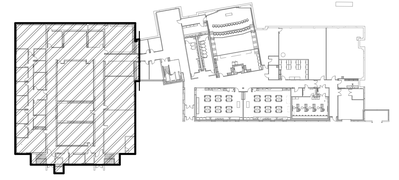


1 TECHNOLOGY - LOWER LEVEL FLOOR PLAN - AREA A

SCALE: 1/8" = 1'-0"



KEY PLAN

GENERAL NOTES (THIS SHEET)

1. TELECOM COMPONENTS SHALL BE PANDUIT.
2. DATA CABLE SHALL BE CAT6. DATA CABLE TO WAP SHALL BE CAT6A.

KEY NOTES (THIS SHEET)

1. PROVIDE 3/4" FIRE RATED PLYWOOD WITH 2 COATS OF WHITE PAINT ON ALL SIDES FROM 6" AFF TO 8'-6" AFF ON ALL WALLS IN THIS ROOM.
2. PROVIDE 4 DATA CABLES TO PROJECTOR LOCATION.
   1 CAT6 CABLE FOR PROJECTOR
   1 CAT6 CABLE FOR APPLE TV
   1 CAT6 CABLE FOR OTHER STREAMING DEVICE
   1 CAT6 CABLE FOR TV WITH 25' SERVICE LOOP.

CABLES INDICATED ON THIS SHEET SHALL BE ROUTED TO WIRE 041.

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REVISIONS:
1. Addendum 3 05/11/2018

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PROJECT ENGINEER:
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TECHNOLOGY - LOWER LEVEL FLOOR PLAN - AREA A

SHA PROJECT NO. 16022

T100A

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   1 CAT6 CABLE FOR PROJECTOR
   1 CAT6 CABLE FOR APPLE TV
   1 CAT6 CABLE FOR OTHER STREAMING DEVICE
   1 CAT6 CABLE FOR TV WITH 25' SERVICE LOOP.

CABLES INDICATED ON THIS SHEET SHALL BE ROUTED TO WIRE 011.

3'x3'x12" BOX WITH PLYWOOD LINER ON TOP INSIDE OF BOX. CONDUITS SHALL ENTER/EXIT ON CORNERS OF BOX.

4 - 4" EZ PATH

4 - 4" EZ PATH

2 - 2"C TO FIBER 038. PROVIDE STANDARD PULLBOX EVERY 360° OF BENDS.

KEY PLAN

1 TECHNOLOGY - LOWER LEVEL FLOOR PLAN - AREA B

SCALE: 1/8" = 1'-0"

REVISIONS:	
1. Addendum 3	05/11/2018

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PROJECT ENGINEER: Scott Koetzer
DRAWN BY: JS, RG
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TECHNOLOGY - LOWER LEVEL FLOOR PLAN - AREA B

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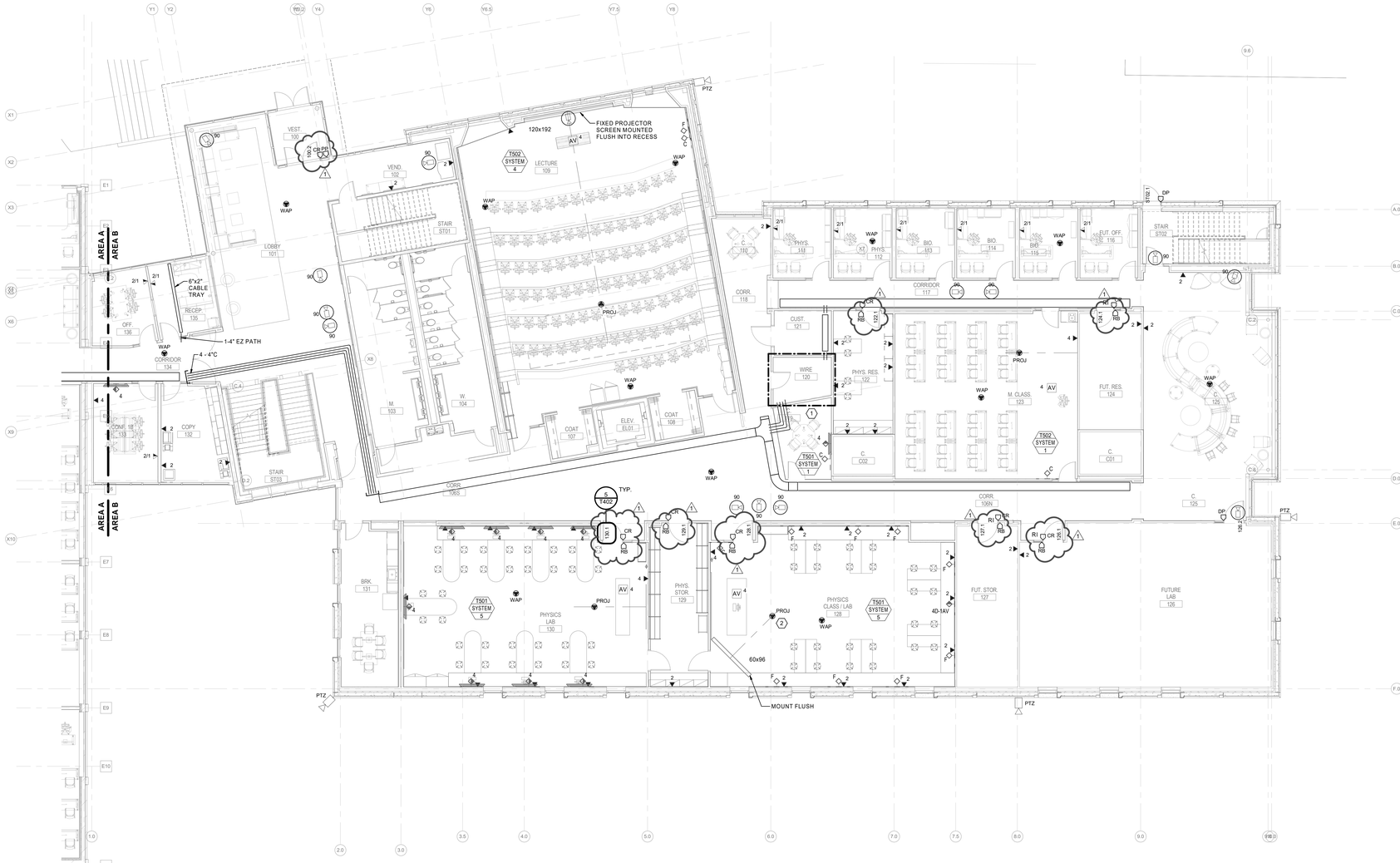

KEY PLAN

1 TECHNOLOGY - MAIN LEVEL FLOOR PLAN - AREA B

SCALE: 1/8" = 1'-0"

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   1 CAT6 CABLE FOR OTHER STREAMING DEVICE
   1 CAT6 CABLE FOR TV WITH 25' SERVICE LOOP.

CABLES INDICATED ON THIS SHEET SHALL BE ROUTED TO WIRE 120.

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BID BOOKS:
1. Addendum 3 05/11/2018

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PROJECT ARCHITECT:
Scott Koetzer
DRAWN BY:
Author
ISSUED:
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TECHNOLOGY - MAIN LEVEL FLOOR PLAN - AREA B

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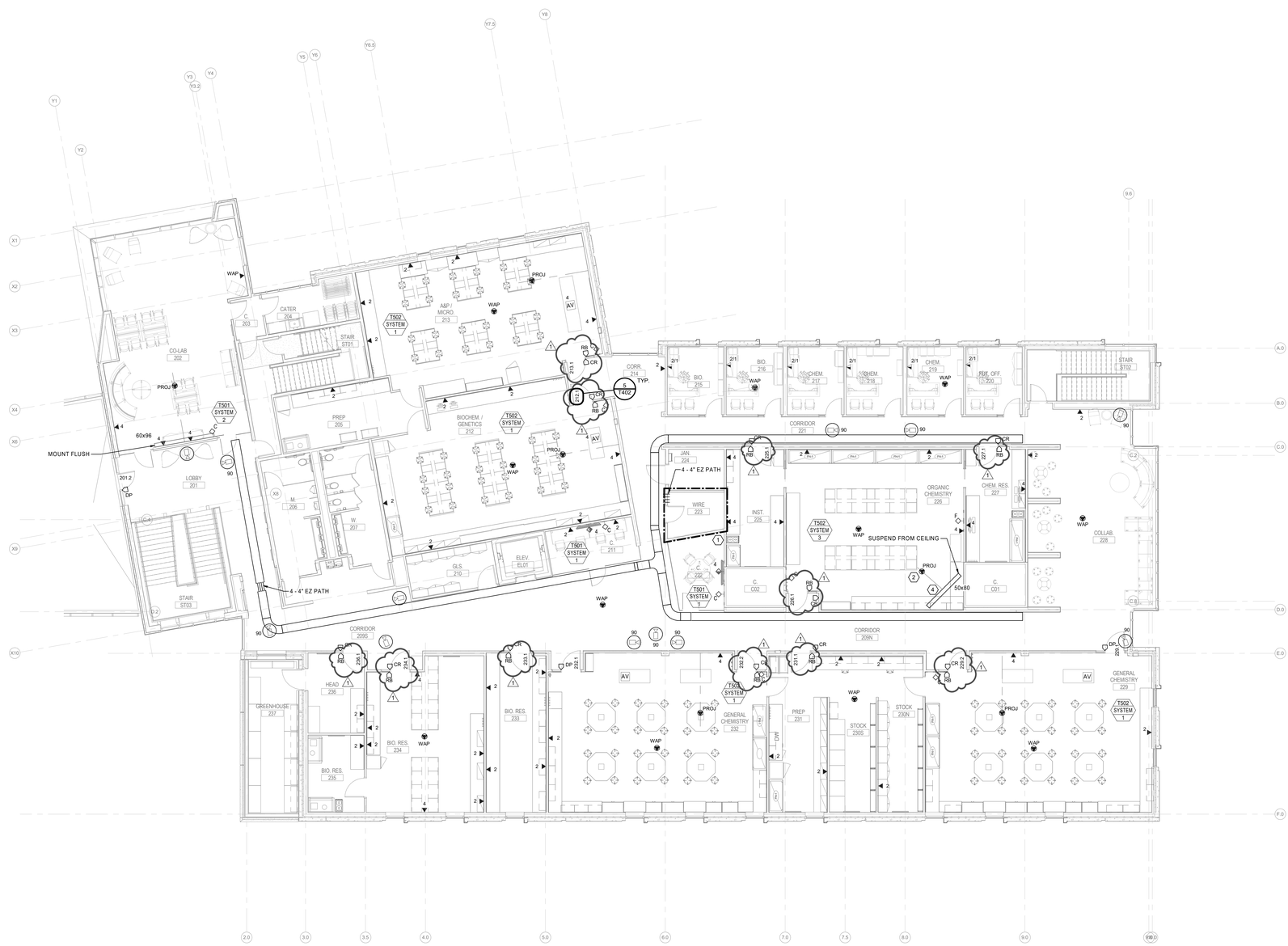
   1 CAT6 CABLE FOR PROJECTOR
   1 CAT6 CABLE FOR APPLE TV
   1 CAT6 CABLE FOR OTHER STREAMING DEVICE
   1 CAT6 CABLE FOR TV WITH 25' SERVICE LOOP.
3. PROVIDE DATA TO ROOF MOUNTED REPEATER TOWER. COORDINATE LOCATION WITH OWNER.
4. PROJECTION SCREEN TO BE MOUNTED ~6" FROM CEILING TO TOP OF PROJECTION SCREEN CASE AND CLEAR OF COUNTERTOP BELOW.

CABLES INDICATED ON THIS SHEET SHALL BE ROUTED TO WIRE 223.



1 TECHNOLOGY - UPPER LEVEL FLOOR PLAN - AREA B

SCALE: 1/8" = 1'-0"

BY	DIGNS:
1	Addendum 3 05/11/2018

DESIGN ENGINEER: Scott Koetzer
PROJECT ARCHITECT: Scott Koetzer
DRAWN BY: JS, BG
ISSUED: April 30, 2018

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TECHNOLOGY - UPPER LEVEL FLOOR PLAN - AREA B

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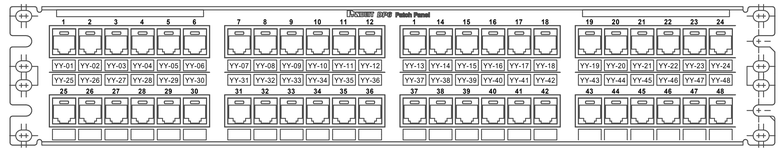
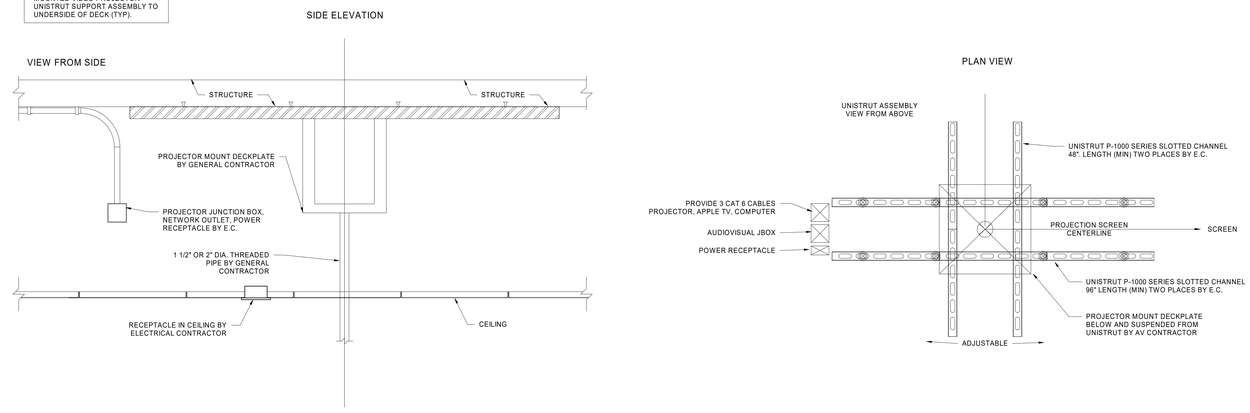


KEY:
YY = 2 DIGIT PATCH PANEL IDENTIFIER

1 DP6 PATCH PANEL DETAIL

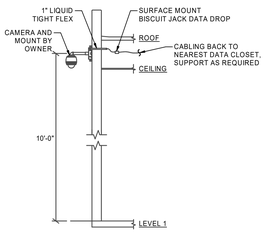
SCALE: 1/8" = 1'-0"

METHOD FOR INSTALLING CEILING MOUNTED VIDEO PROJECTOR. UNISTRUT SUPPORT ASSEMBLY TO UNDERSIDE OF DECK (TYP).



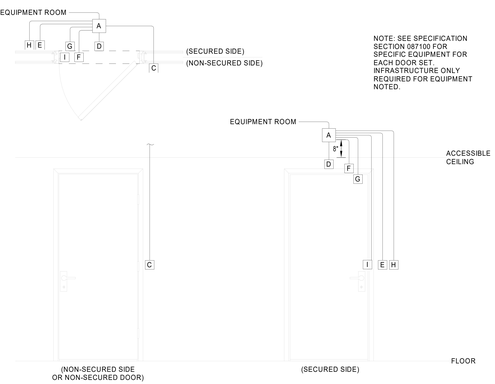
2 PROJECTOR MS3 MOUNT

SCALE: N.T.S.



3 EXTERIOR WALL SECURITY CAMERA DETAIL1

SCALE: N.T.S.

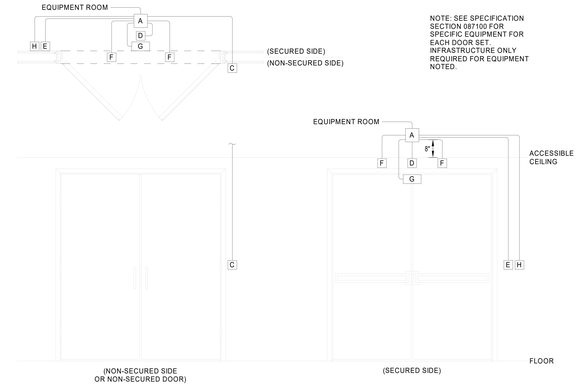


SYMBOL	EQUIPMENT DESCRIPTION	QTY	INFRASTRUCTURE/ SPECIFICATIONS
A	DOOR CONTROLLER	1	1" C TO NEAREST TELECOM WIRING ROOM
C	CARD READER	***	1/2" C TO [A]. SEE FLOOR PLANS FOR LOCATION
D	REQUEST TO EXIT- MOTION	1	1/2" C TO [A]
E	REQUEST TO EXIT- BUTTON	***	1/2" C TO [A]. SEE FLOOR PLANS FOR LOCATION
F	RECESSED DOOR CONTACT	2	MOUNTED IN DOOR JAM
G	MAGNETIC DOOR LOCKS	1	1/2" C TO [A]
H	PUSH PLATE	***	1/2" C TO [A] - SEE FLOOR PLANS FOR LOCATION
I	ELECTRIC STRIKE	***	THRU DOOR FRAME, 1/2" C TO [A]

*** QUANTITY AS INDICATED ON PLANS

4 ACCESS CONTROL INFRASTRUCTURE DETAIL - DOUBLE DOOR

SCALE: N.T.S.



SYMBOL	EQUIPMENT DESCRIPTION	QTY	INFRASTRUCTURE/ SPECIFICATIONS
A	DOOR CONTROLLER	1	1" C TO NEAREST TELECOM WIRING ROOM
C	CARD READER	***	1/2" C TO [A]. SEE FLOOR PLANS FOR LOCATION
D	REQUEST TO EXIT- MOTION	1	1/2" C TO [A]
E	REQUEST TO EXIT- BUTTON	***	1/2" C TO [A]. SEE FLOOR PLANS FOR LOCATION
F	RECESSED DOOR CONTACT	2	MOUNTED IN DOOR JAM
G	MAGNETIC DOOR LOCKS	1	1/2" C TO [A]
H	PUSH PLATE	***	1/2" C TO [A]. SEE FLOOR PLANS FOR LOCATION

*** QUANTITY AS INDICATED ON PLANS

5 ACCESS CONTROL INFRASTRUCTURE DETAIL - SINGLE DOOR

SCALE: 1/2" = 1'-0"

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REVISIONS:
1. Addendum 3 05/11/2018

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TECHNOLOGY DETAILS

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