

Beamline Enabling -Phase 3

Construction Documents November 17, 2023

Synchrotron Drive Ithaca, NY 14853

Project Number # 21198.02

DRAWING LIST

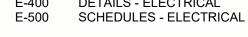
GENERAL G-000 COVER SHEET G-001 CODE COMPLIANCE PLANS & DETAILS

STRUCTURAL S-001 STRUCTURAL GENERAL NOTES, FRAMING PLANS & DETAILS

STRUCTURAL GENERAL NOTES, FRAMING PLANS & DETAILS						
ARCHITECTURAL						
GENERAL NOTES AND LEGENDS FIRST FLOOR PLAN SECOND FLOOR PLAN ENLARGED PLAN & INT ELEVATIONS - PRIMARY PLATFORM ENLARGED PLAN & DETAILS - BEAMLINE PENETRATION						
ROTECTION						
GENERAL NOTES & SYMBOL LIST - FIRE PROTECTION FIRST FLOOR PLAN - FIRE PROTECTION SECOND FLOOR PLAN - FIRE PROTECTION						
BING						
GENERAL NOTES, SYMBOLS LIST, DETAILS & SCHEDULES - PLUMBING FIRST FLOOR - PLUMBING SECOND FLOOR PLAN - PLUMBING						
ANICAL						
GENERAL NOTES AND SYMBOLS LIST- HVAC FIRST FLOOR PLAN - PIPING SECOND FLOOR PLAN - PIPING SCHEMATICS, DETAILS AND SCHEDULES - HVAC						

ELECTRICAL

- E-000 GENERAL NOTES & SYMBOLS LIST ELECTRICALE-111 FIRST FLOOR PLAN POWERE-112 SECOND FLOOR PLAN POWER
- E-112 SECOND FLOOR PLAN POWER E-121 FIRST FLOOR PLANS - LIGHTING
- E-121 FIRST FLOOR PLANS LIGHTING E-131 FIRST FLOOR PLAN - FIRE ALARM
- E-141 FIRST FLOOR PLAN CABLE TRAY E-142 SECOND FLOOR PLAN - CABLE TRAY
- E-200 DETAIL AND ENLARGED PLANS #1 E-201 DETAIL AND ENLARGED PLANS #2
- E-202 DETAIL AND ENLARGED PLANS #3 E-300 POWER ONE-LINE DIAGRAM
- E-301 FIRE ALARM RISER DIAGRAM E-400 DETAILS - ELECTRICAL





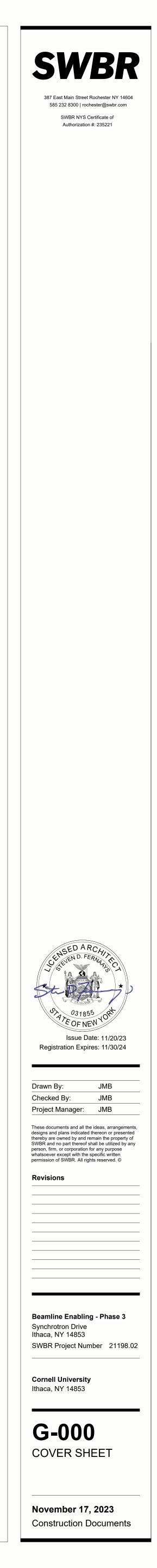
MEP Consultant:

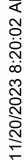
M/E Engineering 300 Trolley Blvd Rochester, NY 14606 585 288 5590

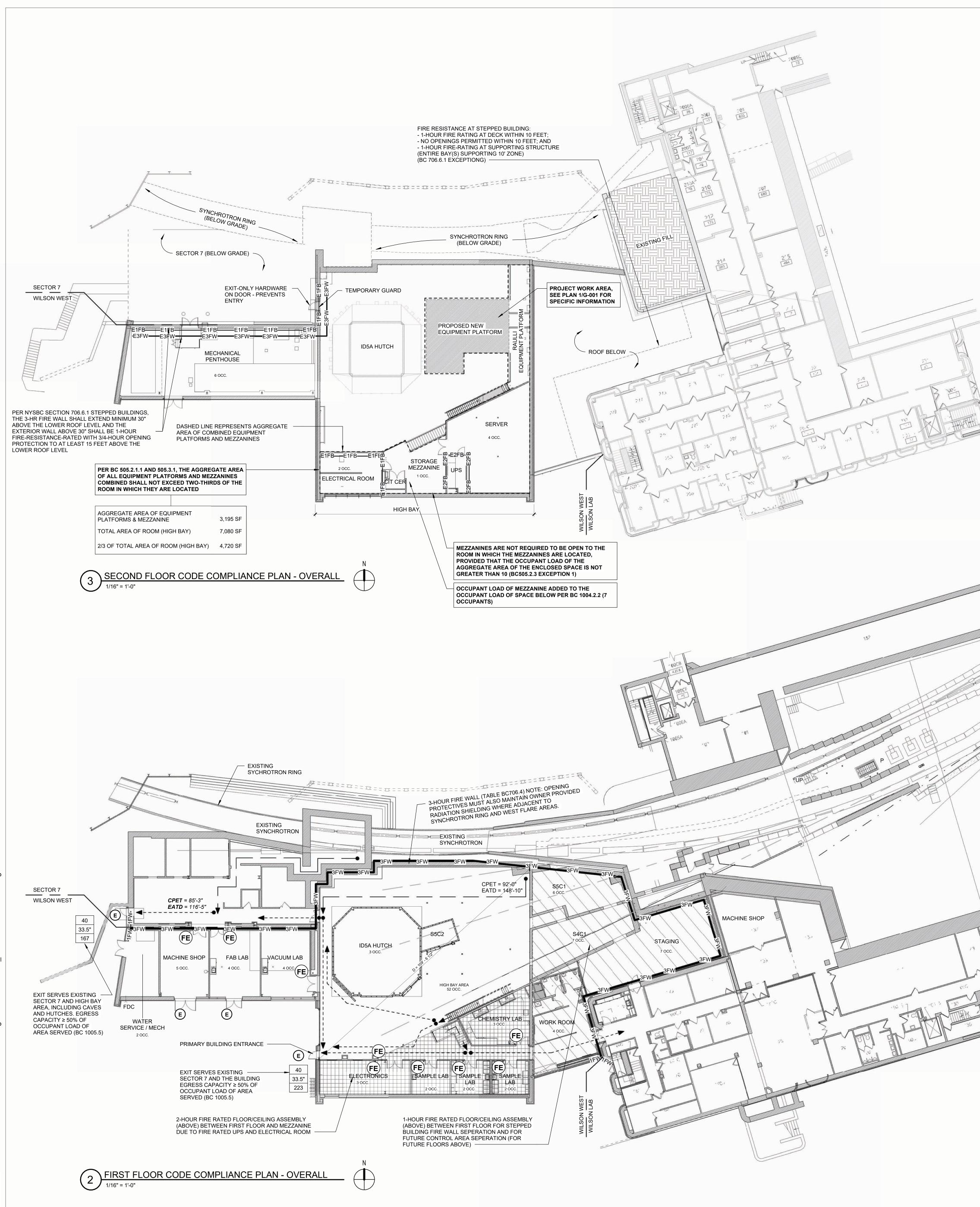


Architect

SWBR 387 East Main Street Rochester, NY 14604 585 232 8300 rochester@swbr.com







FIRE-RESISTANT CONSTRUCTION LEGEND				
DESCRIPTION	PLAN DESIGNATION			
FIRE WALL	2FW			
FIRE BARRIER (HORIZONTAL EXIT, INCIDENTAL USE/HAZARD, OCCUPANCY SEPARATION)	1FB			
SHAFT ENCLOSURE (FIRE BARRIER AT STAIR OR MECHANICAL SHAFT)	1SE 1SE 2SE 2SE 2SE			
FIRE PARTITION (CORRIDOR WALL)				
PRESUMED EXISTING FIRE-RATED ASSEMBLIES	PREFIX E. SEE NOTE 1			

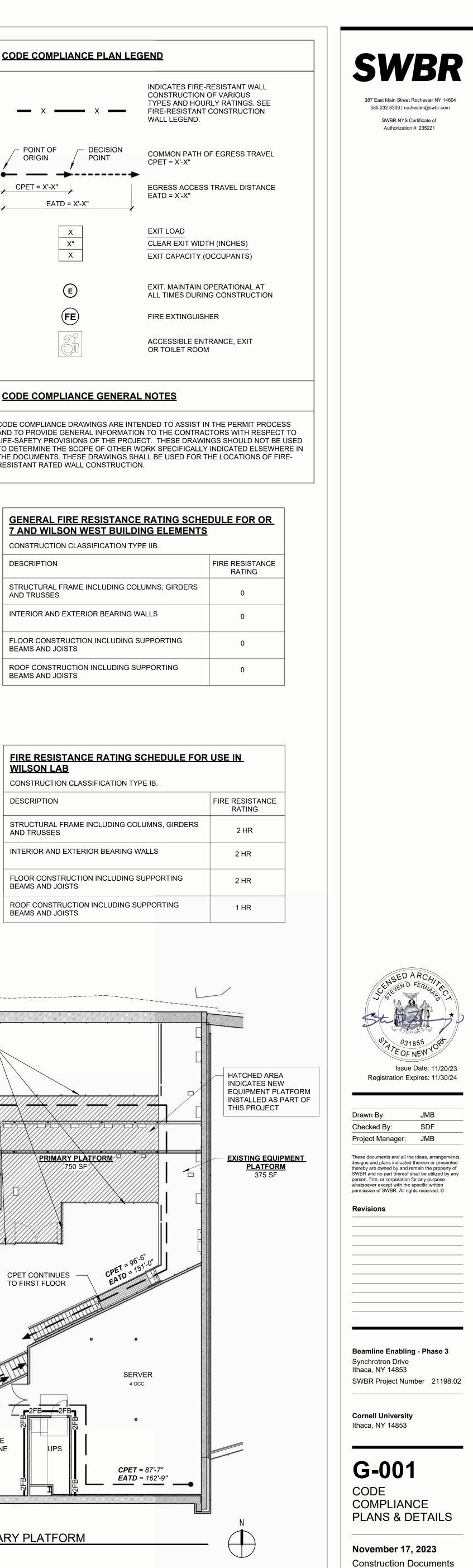
NOTES:

- 1. WHEN THE PREFIX "E" IS INDICATED ON THE CODE COMPLIANCE FLOOR PLAN, IT DENOTES EXISTING WALL CONSTRUCTION WITH A PRESUMED FIRE-RESISTANCE RATING OF THE TYPE INDICATED, AS SHOWN ON RECORD DRAWINGS PROVIDED BY THE OWNER. THE ACTUAL CONDITIONS IN THE FIELD HAVE NOT BEEN VERIFIED TO CONFIRM COMPLIANCE. NEW PENETRATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL LISTED THROUGH-PENETRATION FIRE STOP SYSTEMS FOR THE HOURLY RATING INDICATED.
- 2. FIRE-RESISTANT WALL CONSTRUCTION SHALL BE PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING AS FOLLOWS:
- LOCATED IN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACE • INCLUDE LETTERING NO LESS THAN 3" IN HEIGHT WITH A MINIMUM 3/8" STROKE
- IN A CONTRASTING COLOR • LOCATED WITHIN 15 FEET OF THE END OF EACH WALL AND AT INTERVALS NOT
- EXCEEDING 30 FEET MEASURED HORIZONTALLY • WORDING SHALL IDENTIFY THE TYPE OF FIRE-RESISTANT WALL CONSTRUCTION,
- OPENINGS AND PENETRATIONS"
- 3. PENETRATIONS THROUGH FIRE-RESISTANT CONSTRUCTION SHALL BE BUILT IN ACCORDANCE WITH U.L. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS. SEE CODE COMPLIANCE PLAN FOR FIRE-RATED PARTITIONS LOCATIONS.

CODE COMPLIANCE PLAN GENERAL NOTES

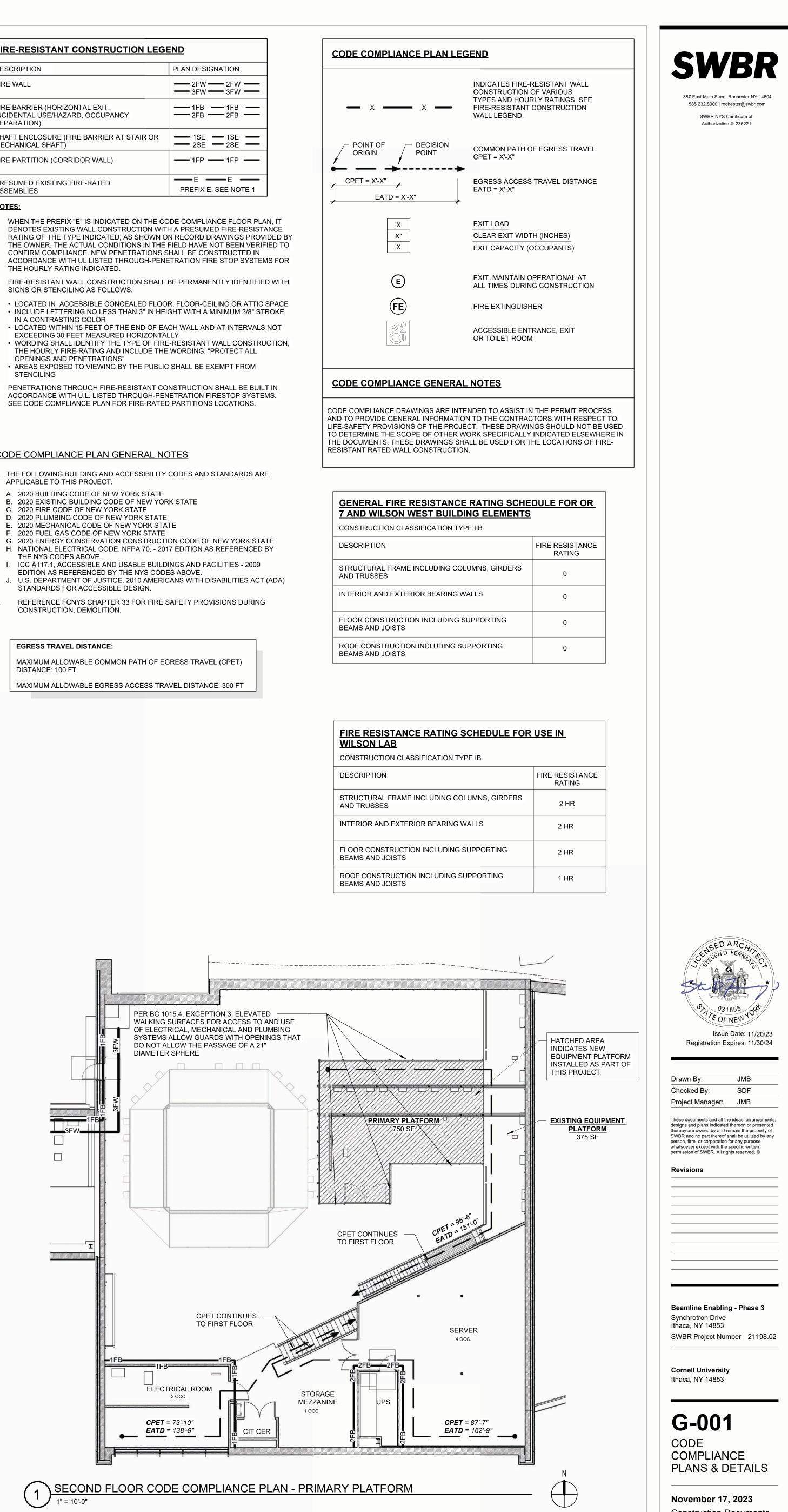
1. THE FOLLOWING BUILDING AND ACCESSIBILITY CODES AND STANDARDS ARE

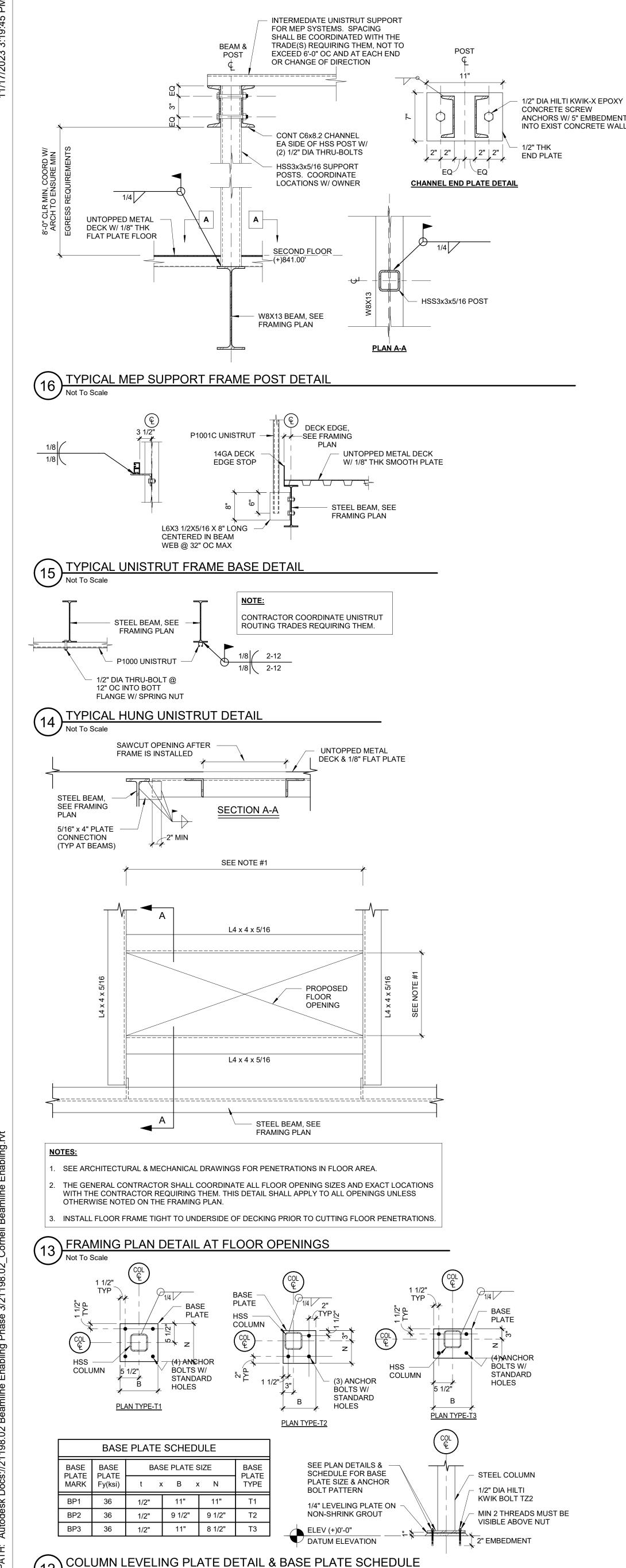
- A. 2020 BUILDING CODE OF NEW YORK STATE
- C. 2020 FIRE CODE OF NEW YORK STATE
- . 2020 MECHANICAL CODE OF NEW YORK STATE
- G. 2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE
- THE NYS CODES ABOVE. I. ICC A117.1, ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES - 2009
- REFERENCE FCNYS CHAPTER 33 FOR FIRE SAFETY PROVISIONS DURING CONSTRUCTION, DEMOLITION.



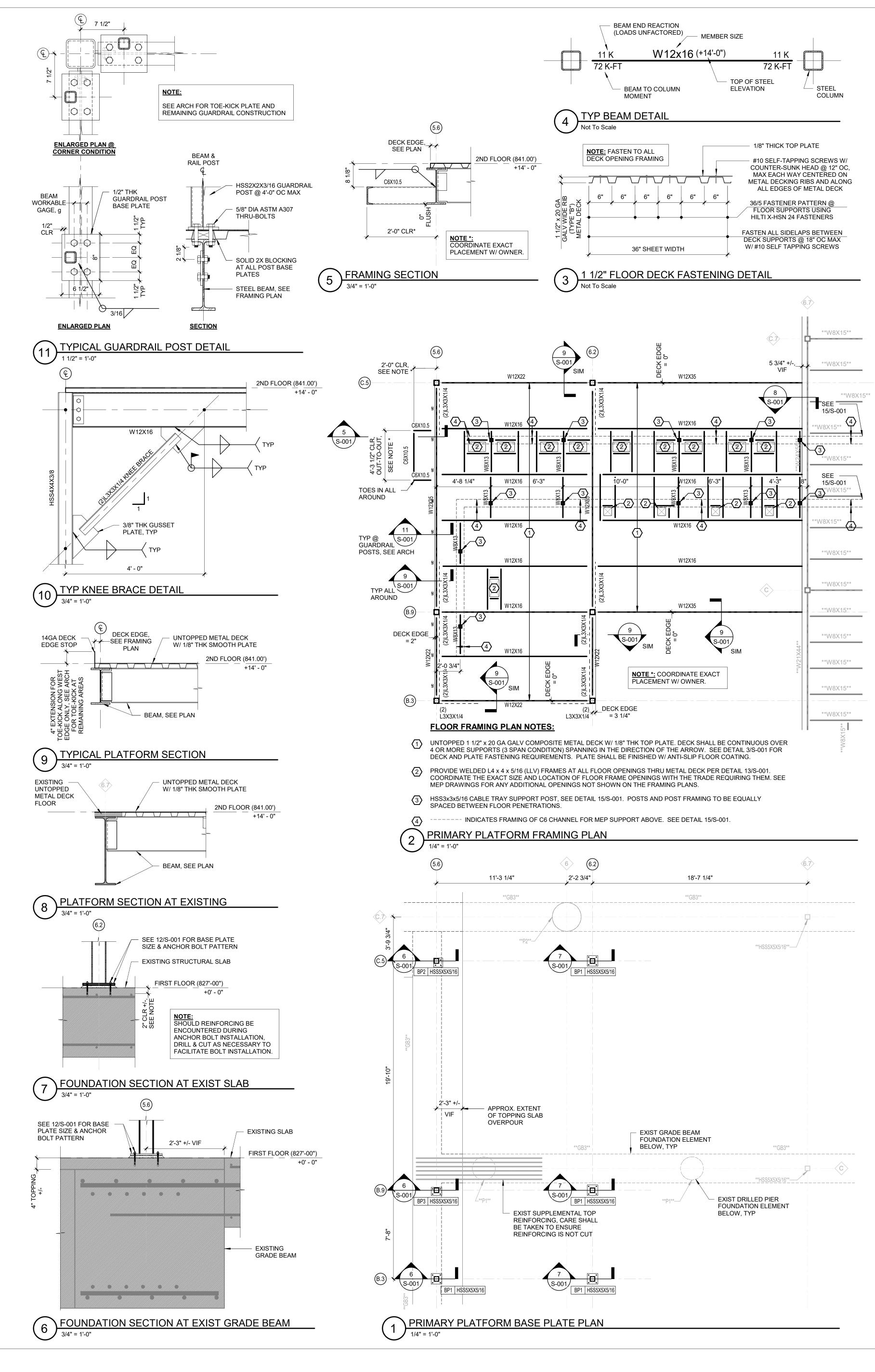
DESCRIPTION	FIRE RESIST RATING
STRUCTURAL FRAME INCLUDING COLUMNS, GIRDERS AND TRUSSES	0
INTERIOR AND EXTERIOR BEARING WALLS	0
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOISTS	0
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOISTS	0

DESCRIPTION	FIRE RESISTA RATING
STRUCTURAL FRAME INCLUDING COLUMNS, GIRDERS AND TRUSSES	2 HR
INTERIOR AND EXTERIOR BEARING WALLS	2 HR
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOISTS	2 HR
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOISTS	1 HR





Not To Scale



GENERAL STRUCTURAL NOTES:

- 1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS, DIMENSIONS, ELEVATIONS, AND PLUMBNESS OF EXISTING CONSTRUCTION AS SHOWN AND IMMEDIATELY REPORT TO THE ARCHITECT ANY DISCREPANCIES OR OMISSIONS PRIOR TO CONSTRUCTION OR FABRICATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ACCURATELY DETERMINE THE ACTUAL DIMENSIONS ELEVATIONS, AND PLUMBNESS OF EXISTING WORK.
- ALL EXISTING CONSTRUCTION ADJACENT TO NEW WORK IS TO BE ADEQUATELY SUPPORTED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY NEW OR EXISTING WORK DAMAGED WHILE WORK IS IN PROGRESS TO THE SATISFACTION OF THE ARCHITECT
- THE CONTRACTOR SHALL COORDINATE THE LOCATION AND SIZE OF ALL MECHANICAL EQUIPMENT AND ANY FLOOR PENETRATIONS THAT THEY MIGHT REQUIRE WITH THE FRAMING PLANS. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF LOCATIONS AND OPERATING WEIGHTS OF ALL SUCH EQUIPMENT FOR REVIEW. SUPPLEMENTAL FRAMING MAY BE REQUIRED. THE CONTRACTOR SHALL PROVIDE ANGLE FRAMES FOR OPENINGS PER THE CONSTRUCTION DOCUMENTS.
- 4. THE MECHANICAL UNIT SUPPORT FRAMING WAS DESIGNED TO SUPPORT A SPECIFIC UNIT WHICH MAY OR MAY NOT BE THE ACTUAL UNIT SUPPLIED DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL DIMENSIONS WITH THE ACTUAL UNIT SUPPORT REQUIREMENTS AND SHALL INFORM THE ARCHITECT OF ANY REQUIRED MODIFICATIONS PRIOR TO FABRICATION.
- CONTRACTOR IS RESPONSIBLE TO COORDINATE REQUIRED SPECIAL INSPECTIONS WITH THE PROJECT SPECIAL INSPECTOR. THE PROJECT STATEMENT OF SPECIAL INSPECTIONS IS LOCATED AS AN ATTACHMENT TO SECTION 014000 OF THE PROJECT MANUAL.
- 6. SCOPE OF WORK IS DESIGNED TO MEET THE REQUIREMENTS OF THE 2020 BUILDING CODE OF NEW YORK STATE. DESIGN LOADS FOR THIS STRUCTURE ARE AS FOLLOWS: **DESIGN CRITERIA:**

FLOOR LOAD: 1 1/2" UNTOPPED METAL DECK. FLOORING (1/8" STL PLATE). CEILING ... M & E.. MISC ..

LIVE LOAD (SECOND FLOOR) EARTHQUAKE DESIGN DATA

RISK CATEGORY..

SEISMIC IMPORTANCE FACTOR	1.0
MAPPED SPECTRAL RESPONSE ACCELERATIONS, S _s	0.208g
S ₁	0.058g
SOIL SITE CLASS	C
SPECTRAL RESPONSE COEFFICIENT, SDS	0.174g
SPECTRAL RESPONSE COEFFICIENT, SD1	0.081g
SEISMIC DESIGN CATEGORY	A
BASIC SEISMIC FORCE RESISTING SYSTEM	STRUC
	SPECIF

DESIGN BASE SHEAR ... SEISMIC RESPONSE COEFFICIENT, Cs **RESPONSE MODIFICATION FACTOR. R.**

STRUCTURAL STEEL NOTES:

ANALYSIS PROCEDURE ..

- ALL STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN STRICT ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS.
- ALL STRUCTURAL STEEL SHAPES SHALL CONFORM TO ASTM A992, GRADE 50 UNLESS NOTED OTHERWISE. STEEL PLATES SHALL CONFORM TO ASTM A36. STEEL TUBE SECTIONS SHALL CONFORM TO ASTM A500, GRADE C. STEEL PIPE SECTIONS SHALL CONFORM TO ASTM A501 OR ASTM A53, TYPES E OR S, GRADE B.
- ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER ASTM F3125 GRADE A325 TYPE N HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. ALL STANDARD BEARING, TENSION, OR COMBINED SHEAR-TENSION CONNECTIONS SHALL BE INSTALLED TO A "SNUG TIGHT" CONDITION UNLESS LOOSENING OR FATIGUE DUE TO VIBRATION OR LOAD FLUCTUATIONS ARE PRESENT. ALL OTHER CONNECTIONS SHALL BE TIGHTENED TO WITHIN 70% OF THEIR SPECIFIED MINIMUM TENSILE STRENGTH. THE CONTRACTOR SHALL USE INDICATOR WASHERS, LOAD INDICATOR BOLTS, OR STANDARD BOLTING WITH FIELD TESTING TO VERIFY PROPER INSTALLATION. TURN OF THE NUT METHOD IS ACCEPTABLE. NO FIELD BURNING OF HOLES WILL BE PERMITTED. LOAD INDICATOR BOLTS SHALL BE TIGHTENED UNTIL THE SPLINED END SNAPS OFF.
- 4. ALL CONNECTIONS IN STEEL FRAMING SHALL BE DESIGNED FOR AN END REACTION EQUAL TO ONE HALF (1/2) OF THE AISC ALLOWABLE UNIFORM LOAD CAPACITY FOR THE BEAM OR REACTION, IF NOTED, ON THE PLANS.
- THE FABRICATOR IS RESPONSIBLE FOR AND SHALL CERTIFY TO THE ADEQUACY OF ANY CONNECTIONS DESIGNED BY THE FABRICATOR TO THE PERFORMANCE STANDARDS ESTABLISHED IN THE CONTRACT DOCUMENTS. THE FABRICATOR SHALL SUBMIT CALCULATIONS TO THE ENGINEER USED IN THE DESIGN OF SUCH CONNECTIONS. IF UNACCEPTABLE TO THE ENGINEER, THE FABRICATOR SHALL MODIFY THE CONNECTION DESIGNS UNTIL ACCEPTANCE BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- 6. THE FABRICATOR MAY CERTIFY THE ADEQUACY OF CONNECTIONS BY STATING THAT THE SUPPLIED CONNECTIONS WERE PRE-ENGINEERED CONNECTIONS TAKEN FROM THE AISC MANUAL OF STEEL CONSTRUCTION, VOLUME I AND II, AISC PUBLICATION "ENGINEERING FOR STEEL CONSTRUCTION" AND/OR AISC PUBLICATION "DETAILING FOR STEEL CONSTRUCTION" WHILE NOTING ANY EXCEPTIONS.
- 7. THE FABRICATOR SHALL SUBMIT CALCULATIONS FOR THE DESIGN OF ANY CONNECTIONS THAT ARE NOT PRE-QUALIFIED IN THE ABOVE REFERENCED AISC PUBLICATIONS.
- 8. ALL WELDS SHALL BE MADE IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE AWS, USING E70 ELECTRODES. PROVIDE FIELD TOUCH-UP PAINT TO MATCH SHOP-APPLIED PRIMER WHERE PAINT HAS BEEN BURNED OFF.
- 9. THE CONTRACTOR SHALL COORDINATE THE LOCATION AND SIZE OF ALL MECHANICAL EQUIPMENT, AND ANY FLOOR PENETRATIONS THAT THEY MIGHT REQUIRE, WITH THE FRAMING PLANS. THE CONTRACTOR SHALL PROVIDE ANGLE FRAMES FOR OPENINGS PER THE CONSTRUCTION DOCUMENTS.
- 10. SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL STEEL AND METAL DECK. ALLOW SUFFICIENT TIME FOR REVIEW AND APPROVAL BY THE ENGINEER TO BE COMPLETED PRIOR TO BEGINNING FABRICATION.
- 11. ALL STRUCTURAL STEEL SHALL RECEIVE ONE SHOP COAT OF PRIMER COMPATIBLE WITH FINISH COATING, UNLESS OTHERWISE NOTED. FINISH COATING COLOR TO BE SELECTED BY OWNER. STRUCTURAL POST-INSTALLED ANCHOR NOTES:
- 1. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES OR APPROVED EQUIVALENT AND INSTALLED IN ACCORDANCE WITH THEIR RESPECTIVE ICC-ES REPORT AND MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS:

APPLICATION	ANCHORING SYSTEM	ICC-ES REPORT
ANCHORAGE TO CONCRETE	HILTI HY 200 ADHESIVE	ESR-3187
	HILTI RE 500 V3 ADHESIVE	ESR-3814
	HILTI KWIK BOLT TZ	ESR-1917
	HILTI KWIK HUS EZ	ESR-3027
	HILTI HSL-3	ESR-1545
	HILTI HDA	ESR-1546

- 2. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT INCLUDING AN ICC-ES REPORT SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE, SEISMIC USE, LOAD RESISTANCE, INSTALLATION CATEGORY, IN-SERVICE TEMPERATURE, INSTALLATION
- TEMPERATURE, ETC. 3. AS PER OSHA 29 CFR 1926.1153, DRILLED HOLES FOR POST INSTALLED ANCHORS SHALL BE INSTALLED USING HILTI SAFE SET INSTALLATION WHICH CONSISTS OF DRILLING WITH A CODE APPROVED HILTI HOLLOW DRILL BIT ATTACHED TO A HILTI VACUUM SO NO FURTHER HOLE CLEANING IS REQUIRED FOR THREADED RODS AND/OR REBAR. IF A HILTI HIT-Z ROD IS USED WITH HY 200 ADHESIVE, NO HOLE CLEANING IS REQUIRED FOR BASE MATERIAL TEMPERATURES ABOVE 41 F. ALTERNATE OPTION IS DRILLING HOLES WITH AN APPROVED DUSTLESS SYSTEM AND THEN CLEANING HOLES WITH WIRE BRUSH AND COMPRESSED AIR THROUGH APPROVED ADAPTER THAT CAPTURES ALL DUST INTO A HEPA FILTERED VACUUM.
- 4. ADHESIVE ANCHORS INSTALLED IN A HORIZONTALLY OR UPWARDLY INCLINED ORIENTATION INTO CONCRETE AND SUPPORTING A SUSTAINED TENSION LOAD SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER. INSTALLER SHALL BE CERTIFIED THROUGH THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM OR APPROVED EQUAL.
- 5. CONTRACTOR SHALL ARRANGE FOR AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ON-SITE ANCHOR INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. CONTRACTOR SHALL SUBMIT DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL INSTALLING ANCHORS HAVE RECEIVED THE REQUIRED TRAINING PRIOR TO THE COMMENCEMENT OF WORK.
- 6. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
- 7. CONTINUOUS OR PERIODIC SPECIAL INSPECTION FOR POST INSTALLED ANCHORS SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 4.3/4.4 OF THE ICC-ES REPORT FOR THE INDIVIDUAL ANCHOR. SPECIAL INSPECTOR SHALL BE NOTIFIED PRIOR TO COMMENCEMENT OF WORK TO COORDINATE INSPECTION EFFORTS.

PSF

PSF

5 PSF

2 PSF

15 PSF

5 PSF

125 PSF

1 KIP

0.058

30

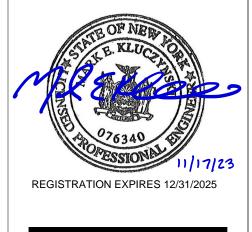
SEISMIC RESISTANCE

STRUCTURAL STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR

EQUIVALENT LATERAL FORCE



387 East Main Street Rochester NY 14604 585 232 8300 | rochester@swbr.com SWBR NYS Certificate of Authorization #: 235221



Drawn Bv: Checked By: Project Manager: JMB

These documents and all the ideas, arrangements designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. @

LDCO

MEK

Revisions

Beamline Enabling - Phase 3 Synchrotron Drive Ithaca, NY 14853 SWBR Project Number 21198.02

Cornell University lthaca, NY 14853

S-001 STRUCTURAL GENERAL NOTES FRAMING PLANS & DETAILS

GENERAL NOTES

- 1. ALL GENERAL NOTES PERTAIN TO ALL ARCHITECTURAL (A-SERIES) DRAWINGS IN THIS SET. 2. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH SITE CONDITIONS AS THEY MAY AFFECT CARRYING OUT THE WORK. THE CONTRACTOR SHALL INVESTIGATE, VERIFY, AND BE RESPONSIBLE FOR ALL CONDITIONS OF THE PROJECT. EXISTING CONDITIONS ARE BASED UPON INFORMATION TAKEN FROM EXISTING SURVEYS, DRAWINGS, AND LIMITED FIELD INVESTIGATIONS.
- 4. "TYPICAL" DETAILS MAY NOT NECESSARILY BE REFERENCED ON THE DRAWINGS. DETAILS LABELED OF "TYPICAL DETAILS."
- 5. NOTES ON DRAWINGS SHALL APPLY TO ALL SIMILAR CONDITIONS WHETHER REPEATED OR NOT.
- 7. USE OF THE WORD "VERIFY" POINTS OUT A SITUATION WHICH MUST BE CONFIRMED PRIOR TO PROCEEDING WITH THE WORK, FABRICATION OF EQUIPMENT, OR ORDERING MATERIAL. NOTIFY THE ARCHITECT OF ANY DISCREPANCIES DISCOVERED.
- FLUSH FINISH SURFACE.
- 9. DO NOT SCALE THE DRAWINGS. WRITTEN DIMENSIONS SHALL GOVERN. SHOULD DIMENSIONS BE MISSING OR CONFLICTING, NOTIFY ARCHITECT PRIOR TO PROCEEDING WITH THE RELATED WORK. DIMENSIONS ARE NOT ADJUSTABLE UNLESS NOTED WITH A +/- SYMBOL. ONLY NORMAL INDUSTRY NOTED AS "CLEAR" SHALL MAINTAIN THE FULL- SPACE INDICATED WITHOUT ENCROACHMENT.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL TRADES AND THE PREVENTION OF CONFLICT AMONG THE TRADES.
- DURING CONSTRUCTION FOR THEIR WORK SCOPE. 12. THE CONTRACTOR SHALL TAKE CARE TO MAINTAIN EXISTING FIRE PROTECTION OF STRUCTURAL
- PROTECTED STRUCTURAL MEMBERS OR BUILDING COMPONENTS.
- COMPLIANCE PLANS FOR LOCATIONS OF FIRE-RESISTANT CONSTRUCTION.
- FLOOR/CEILING ASSEMBLIES SHALL BE SEALED WITH UL LISTED THROUGH-PENETRATIONS FIRE STOP APPLICATION BASED ON THE TYPE OF ASSEMBLY AND TYPE OF PENETRATING ELEMENT.
- SHALL NOT PENETRATE MORE THAT 1 FLOOR ASSEMBLY.
- AND PATCHING COMPOUND TO PRODUCE A FLUSH SMOOTH CONDITION. TROWEL MATERIAL FOR A MINIMUM DISTANCE OF 2 FEET FROM A FEATHER EDGE CONDITION UP TO A MAXIMUM SINGLE LAYER LAYERS, SCORING PREVIOUS LAYER, UP TO A MAXIMUM THICKNESS OF 1".
- NOT SHOWN ON THE ARCHITECTURAL NOR THE STRUCTURAL DRAWINGS. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE DRAWINGS. THE LOOSE LINTEL SCHEDULE CAN BE USED FOR LINTEL SIZING WHEN THE LOADING CONDITIONS ARE SATISFIED, AS DESCRIBED IN NOTE #9 IN LOOSE LINTEL SCHEDULE.
- CONSTRUCTION, INCLUDING MECHANICAL, PLUMBING, AND ELECTRICAL, SHALL BE PATCHED, AND REPAIRED TO RESTORE SURFACES TO THE ORIGINAL CONDITION AFTER INSTALLATIONS OF OTHER WORK. SEE DEMOLITION PLANS AND FLOOR PLANS AND THEIR ASSOCIATED GENERAL AND KEYNOTES FOR ADDITIONAL INFORMATION.

REPORT ANY DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL SITE CONDITIONS TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

3. ALL WORK AND MATERIAL SHALL BE REGARDED AS NEW UNLESS SPECIFICALLY INDICATED AS "EXISTING" OR (E) ON THE DRAWINGS AND DESCRIBED WITHIN THE SPECIFICATIONS.

"TYPICAL" ON THE DRAWINGS APPLY IN SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. SUCH DETAILS APPLY WHETHER OR NOT DETAILS ARE REFERENCED AT EACH LOCATION. NOTIFY ARCHITECT FOR CLARIFICATIONS REGARDING APPLICABILITY

6. SHOULD ANY OF THE GENERAL NOTE'S CONFLICT WITH ANY DETAILS OR INSTRUCTIONS ON THE DRAWINGS OR IN THE SPECIFICATION, THE STRICTEST PROVISION SHALL GOVERN.

8. THE TERM "ALIGN" REFERS TO LOCATING DIFFERENT COMPONENTS OF CONSTRUCTION TO PROVIDE A

STANDARD TOLERANCES ARE ACCEPTABLE DEVIATIONS FROM DIMENSIONS INDICATED. ALL DIMENSIONS

11. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING AND SHORING REQUIRED

ELEMENTS. REPLACE FIREPROOFING AND SEALANTS TO ORIGINAL STATE WHERE DISTURBED BY CONSTRUCTION AND WHERE CONNECTIONS OF NEW CONSTRUCTION MUST INTERFACE WITH EXISTING

13. ALL PENETRATIONS AT SMOKE AND FIRE-RATED WALLS, FLOORS, OR CEILINGS SHALL BE PROTECTED, SEALED, OR DAMPERED USING CODE APPROVED METHODS, MATERIALS, AND INSTALLATION. SEE CODE

14. ALL PENETRATIONS AND JOINTS IN FIRE-RESISTANT WALL ASSEMBLIES AND FIRE-RESISTANT SYSTEMS OR FIRE-RESISTANT JOINT SYSTEMS WHICH ARE THE MOST APPROPRIATE FOR THE SPECIFIC

15. PENETRATIONS THROUGH NON-FIRE RESISTANT RATED HORIZONTAL ASSEMBLIES, NOT PROTECTED BY A SHAFT ENCLOSURE, SHALL HAVE ITS ANNULAR SPACE FILLED WITH NON-COMBUSTIBLE MATERIAL TO PREVENT THE PASSAGE OF FLAME, SMOKE FUMES AND HOT GASES. NONCOMBUSTIBLE PENETRATING ITEMS SHALL NOT PENETRATE MORE THAN 3 FLOOR ASSEMBLIES. COMBUSTIBLE PENETRATING ITEMS

16. WHERE DIFFERENT FLOORING MATERIALS MEET, AND A SPECIFIC TRANSITION DETAIL IS NOT INDICATED, PREPARE SUBSTRATE WITH A TRANSITION HEIGHT BUILD UP USING THROWABLE LEVELING APPLICATION THICKNESS OF 1/2". FOR APPLICATIONS THICKER THAN 1/2", PLACE MATERIAL IN SUCCESSIVE

17. CONTRACTOR TO PROVIDE ALL INTERIOR LINTELS AT ALL MASONRY OPENINGS EXCEEDING 16" WIDE INCLUDING. BUT NOT LIMITED TO, DOORS, WINDOWS, F.E.C.S, DUCTS ETC. SEE STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE, LINTEL LOCATIONS FOR PLUMBING, ELECTRICAL AND MECHANICAL WORK ARE

18. ALL EXISTING WORK (CEILINGS, FLOOR, WALLS, PARTITIONS, FINISHES ETC.) DISTURBED BY NEW

Drawing symbols

Drawing symbols			
View title	Exterior elevation 1	001) OR (100 A	Door numbers
Title	Elevation no. 2 A-XXX 4	001	Window type
SCALE: X"=1'-0"	Drawing no. 3	101	Room number
Building / wall section cut	Interior elevations 1	1	Revision
Detail no. Viewing direction	Elevation no. 2 A-XXX 4	C12 OR	C12 A Partition type
Drawing no.	Drawing no. 3		Plan key note
Detail section cut	Structural grid 1 2	1	Demolition key note
Detail no. Viewing direction	A	8'-0" AFF	Ceiling type and height
A-XXX DRAWING NO.			
Detail - blow up	Accessibility V/HAU		
A-XXX	Visual / hearing accommodation unit		
Drawing no.	Accessible unit		

Material symbols

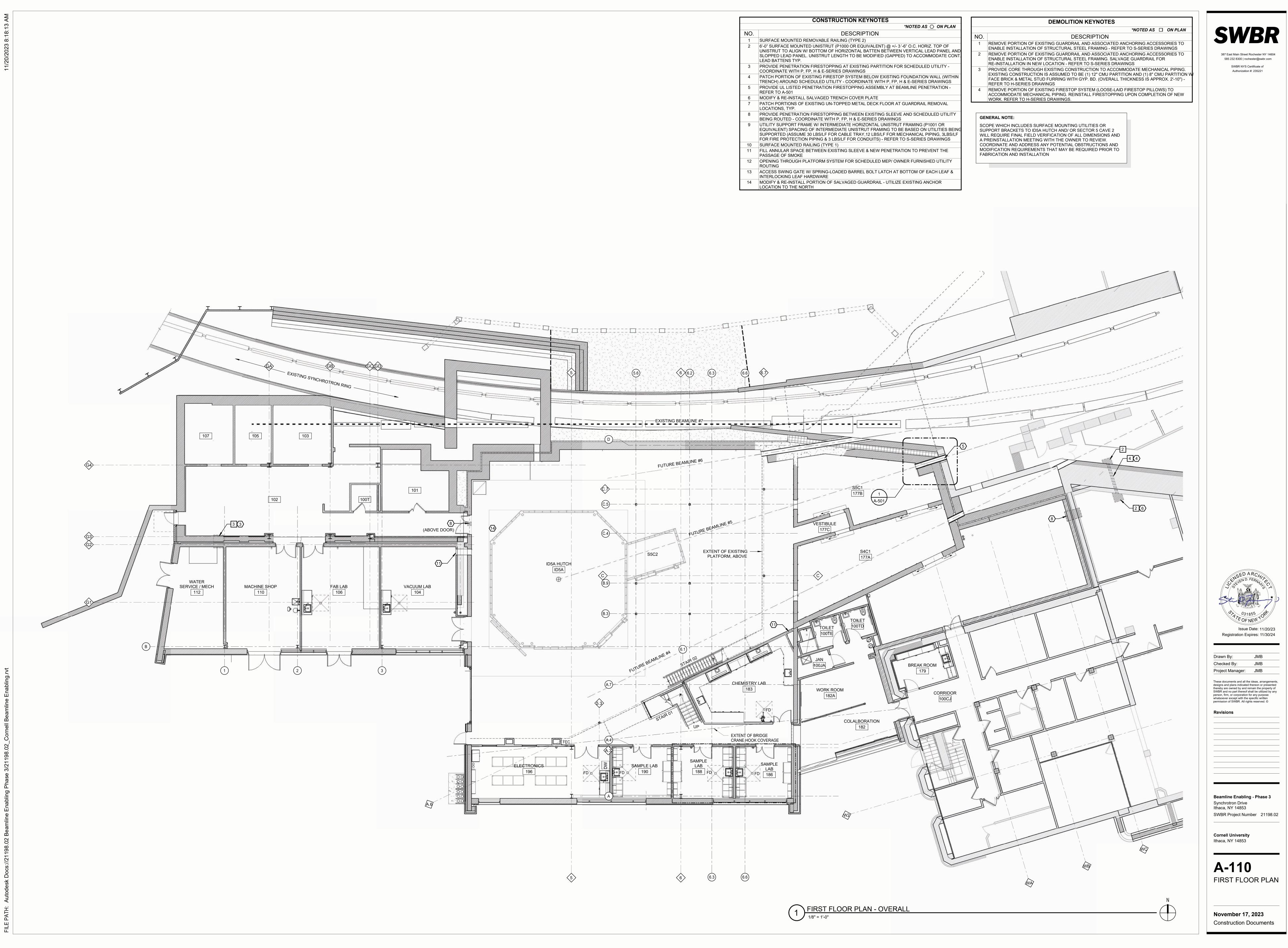
	Undisturbed earth		Steel - large scale (Other metals as noted)		Batt insulation		
	Gravel or crushed stone or select granular fill		Steel - small scale (Other metals as noted)		Rigid insulation		
1.11.	Stone	X	Wood framing (continuous)		Wood blocking (intermittent)		
	Concrete		Finish wood		Top soil		
	Concrete masonry unit		Plywood		Impermeable backfill		
	Brick		Gypsum, sand, mortar		Satisfactory soil backfill		

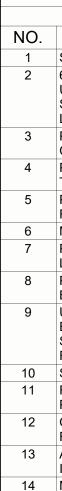
Architectural / Structural abbreviations

r		1					
AB	Anchor bolt	DWV	Drainage waste & vent	LH	Left hand, Latent heat	RF	Resilient flooring
A/C	Air condition(ing) (ed)	DWG	Drawing	LGMF	Light gage metal framing	RFG	Roofing
ACC ACCU	Accessible	DWL E	Dowel East	LIN LKR	Linear Locker	RH RM	Right hand, Roof hatch
ACCO	Air cooled condensing unit American Concrete Institute	EA	Each	LKR	Live load	RIVI	Room Rough opening
ACT	Acoustical ceiling tile	EBCNYS	Existing Building Code of New York State	LLH	Long leg horizontal	ROW	Right of way
ACM	Asbestos containing material	EC	Electrical contractor	LLV	Long leg vertical	RTU	Roof top unit
	Acoustical panel	EF	Each face	LOC	Location	RV	Roof vent
ACS PNL	Access panel	EIFS	Exterior insulation and finish system	LRFD	Load & resistance factor design	RWB	Rubber wall base
ADDL ADJ	Additional Adjustable, adjacent	EJ ELAS	Expansion joint Elastomeric	LT LTG	Light Lighting	S SAB	South Sound attenuation batts
ADH	Adhesive	EL	Elevation	LWC	Light-weight concrete	SAD	Sanitary
AFF	Above finished floor	ELEC	Electric(al)	MACH	Machine	SC	Solid core, Shading coefficient
AGGR	Aggregate	ELEV	Elevator	MAINT	Maintenance	SCHED	Schedule
AHU	Air handling unit	EM	Entry mat, Expanded metal	MAS	Masonry	SEAL	Sealer on floor (finish)
AISC AISI	American Institute of Steel Construction American Iron and Steel Institute	EMER ENCL	Emergency Enclosure	MATL MAX	Material Maximum	SECT SF	Section Square foot, Safety factor
ALT	Alternate	ENGR	Engineer	MAX	Mechanical contractor	SFI	Spray foam Insulation
ALUM	Aluminum	EOS	Edge of slab	MCB	Metal corner bead	SFRM	Sprayed fire-resistive
ANOD	Anodized	EP	Electric panel	MDO	Medium density overlay		Material
APPROX	Approximate	EQ	Equal	MDF	Medium density fiberboard	SGT	Structural glazed tile
ARCH	Architect(ural)	EQUIP	Equipment	MECH	Mechanical	SHT	Sheet
ARD ASD	Auxillary roof drain Allowable stress design	ES ETC	Emergency shower Et cetera	MEP MEZZ	Mechanical, electrical, plumbing and fire protection Mezzanine	SHR SIM	Shower Similar
ASTM	American Society for Testing and Materials	ETR	Existing to remain	MFR	Manufacturer	SOG	Slab on grade
AWP	Acoustical wall panel	EW	Each way	MH	Manhole	SP	Standpipe, Sump pit
AWS	American Welding Society	EWC	Electric water cooler	MM	Millimeter	SPA	Spaces
BAT	Batten	EXIST	Existing	MIFRC	Mastic/intumescent fire-resistive coating	SPKR	Speaker
B/B	Back to back Base board	EXC	Excavation, Excavate	MIN	Minimum	SPEC	Specification
B BD BCNYS	Base board Building Code of New York State	EXP EXT	Expand, Expansion Exterior, External, Extinguisher	MISC MLWK	Miscellaneous Millwork	SQ SRD	Square Secondary roof drain
BITUM	Bituminous	F/F	Face to face	MO	Masonry opening	SS	Service sink
BD	Board	FAAP	Fire alarm annunciator panel	MRK BD	Marker board	SSM	Solid surface material
BLDG	Building	FACP	Fire alarm control panel	MTD	Mounted	SSP	Stainless steel pipe
BLKG	Blocking Beam Benchmark	FD	Floor drain	MTL	Metal	SST	Stainless steel
BM BOT	Beam, Benchmark Bottom	FDTN FE	Foundation Fire extinguisher	MULL N	Mullion North	ST STA	Stain Station
BR	Bedroom	FEC	Fire extinguisher cabinet	NAT	Natural	STA	Sound transmission class
BRG	Bearing	FHC	Fire hose cabinet	NCOMBL	Noncombustible	STD	Standard
BRZ	Bronze	FIN	Finish(ed)	NIC	Not in contract	STIFF	Stiffener
BSMT	Basement	FIXT	Fixture	NO OR #	Number	STL	Steel
BTWN	Between	FLASH	Flashing	NOM	Nominal	STOR	Storage
BUR BW	Built up roofing Both ways	FLEX FLOUR	Flexible Fluorescent	NORM NRC	Normal Noise reduction coefficient	STR STRUCT	Straight, Stringers Structural
CCTV	Closed circuit television	FLG	Flooring, flange	NTS	Not to scale	SUSP	Suspended
CAB	Cabinet	FO	Finished opening	NWC	Normal weight concrete	SV	Sheet vinyl
CB	Catch basin, Corner bead	FP	Fire protection, Fireproof	0/0	Out to out	SY	Square yard
CH BD	Chalkboard	FRTW	Fire retardant treated wood	OA	Overall, Outside air	T	Tread
CEM CF	Cement Contractor furnished	FT FTG	Foot, Feet	OC OD	On center	T/	Top of
CFMF	Cold-formed metal framing	FTR	Footing Finned tube radiation	OD OF/CI	Outside diameter Owner furnished, Contactor installed	T&B T&G	Top and bottom Tongue and groove
CF/CI	Contractor furnished/ Contractor installed	FURN	Furnace, Furniture, Furnish	OF/OI	Owner furnished, Owner installed	TEL	Telephone
CF/OI	Contractor furnished/ Owner installed	FUT	Future	OFD	Overflow drain	THRES	Threshold
CG	Corner guard	FWC	Fabric wall covering	OFF	Office	TEMP	Temporary
CH	Coat hook	GA	Gage	OH	Opposite hand	TER	Terrazzo
CI CIP	Cast iron Cast in place, Cast iron pipe	GAL GALV	Gallon Galvanized	OH DR OPNG	Overhead (coiling) door	THK TK BD	Thick(ness) Tack board
CJ	Control joint	GALV	Grab bar	OPNG	Opening Opposite	TMPD	Tempered
CL	Centerline	GC	General contract(or)	OPT	Optional, Optimum	TOC	Top of concrete
CLG	Ceiling	GFRC	Glass fiber reinforced concrete	OZ	Ounce	TOM	Top of masonry
CLO	Closet	GFRG	Glass fiber reinforced gypsum	PA	Public address	TOPO	Topography, Topographic
CLR	Clear, Color	GL	Glass, Ground level	PBD	Particleboard	TOS	Top of steel
CLSM CMT	Controlled Low-Strength Material Ceramic mosaic tile	GL BLK GLU LAM	Glass block Glued laminated beam	PC PCC	Plumbing contractor, Portland cement Precast concrete	TOW TPD	Top of wall Toilet paper dispenser
CMU	Concrete masonry unit	GR	Grade, Gross	PCT	Porcelain ceramic tile	TSTAT	Thermostat
CNTR	Counter	GWT	Glazed wall tile	PED	Pedestal	TV	Television
CO	Cleanout, Cased opening, Company	GYP	Gypsum	PEND	Pendant	TYP	Typical
COL	Column	GYP BD	Gypsum board	PER	Period	U	Heat transfer coefficient
CONC CONF	Concrete Conference	GYP PLAS	Gypsum plaster Hose bibb	PERF PGBD	Perforated	UC	Undercut
CONF	Connect(ion)	HC	Hose blbb Hollow core. Hose cabinet	PGBD PL	Peg board Plate, Property line	UCL UGND	Under cabinet lighting Underground
CONSTR	Construction	HCP	Handicapped	PLF	Ponds per linear foot	UH	Unit heater
CONT	Continue(ous)	HDW	Hardware	PLAM	Plastic laminate	UL	Underwriter's laboratories
CONTR	Contract(or)	HDWD	Hardwood	PLAS	Plaster	UNEX	Unexcavated
COORD	Coordinate	HM	Hollow metal	PLB	Plumbing	UNFIN	Unfinished
CPT CSJ	Carpet Construction joint	HO HORIZ	Hold open Horizontal	PLYWD PNL	Plywood Panel	UON UTIL	Unless otherwise noted Utility
CSK	Counter sunk	HP	High point, Horsepower	POL	Polished	UV	Unit ventilator
CT	Ceramic tile, Count, Current transformer	HR	Hour	PORC	Porcelain	VARN	Varnish(ed)
CTR	Center	HSS	Hollow structural section	POS	Positive, Position	VB	Vinyl base
CW CU	Cold water piping, Casement window Cubic	HT	Height	PPT	Pressure-preservative treated	VCT	Vinyl composition tile
CUH	Cubic Cabinet unit heater	HTG HTR	Heating Heater	PR PREFAB	Pair Prefabricate	VENT VERT	Ventilation Vertical
CUYD	Cubic yard	HVAC	Heating, ventilating and air conditioning	PREFIN	Prefinish	VERT	Vestibule
D	Deep, Depth	HW	Hot water	PREP	Preparation	VIF	Verify in field
D	Penny (nail)	HYD	Hydrant	PROJ	Project	VIN	Vinyl
db DBL	Bar diameter Double	ID IN	Inside diameter	PROJ SCR PSF	N Projection screen	VOL VR	Volume Vapor retarder
DEFS	Double Direct-applied exterior finish system	IN	Inches Included	PSF	Pounds per square foot Pounds per square inch	VR VT	Vapor retarder Vinyl tile
DEG	Degree	INCAND	Incandescent	PT	Paint, Post tension	V SHT	Vinyl sheet
DEMO	Demolition	INFO	Information	PTN	Partition	VWC	Vinyl wall covering
DEPT	Department	INSUL	Insulation	PVC	Polyvinyl chloride (plastic)	W	West
DET DF	Detail Drinking fountain	INTERM	Intermediate	PVG QT	Paving Quarry tile	W/ WC	With Water closet, Wall covering
DF DIA OR ø	Drinking fountain Diameter	INT JAN	Interior Janitor	QTR	Quarry tile Quarter	WC W/O	Water closet, Wall covering Without
DIA OK Ø	Diagonal, Diagram	JST	Joist	QTY	Quantity	WD	Wood
DIM	Dimension	JT	Joint	R	Riser, Radius, Thermal resistance	WDW	Window
DIFF	Diffuser	KIP	1000 Pounds	RB	Rubber base, Resilient base	WF	Wide flange
DIR	Direction	KIT	Kitchen	RCP	Reinforced concrete pipe, Reflected ceiling plan	WD GD	Wood guard
DISP DIV	Dispenser Division	KO KPL	Knockout Kick plate	RD REC	Roof drain, Road Recessed	WH WI	Water heater
DIV	Damp proofing	L	Liter, Angle	REC	Recessed Refrigerator	WM	Wrought iron Wire mesh
DL	Dead load	LAM	Laminate(d)	REFL	Reflect	WP	Waterproofing, Working point
DN	Down	LAU	Laundry	REG	Register, Regulation	WR	Water repellent, weather resistant
DO	Ditto	LAV	Lavatory	REINF	Reinforced	W RECPT	Waste receptacle
DR DS	Door, Drive Downspout	LB LBL	Pound Label	REQD RESIL	Required Resilient	WSCT WT	Wainscot Weight, Watertight, Water table
DS DW	Dishwasher	LBL	Label	RESIL	Revision	WWF	Weight, Watertight, Water table Welded wire fabric
		LF	Linear feet (foot)			х	Ву
						YD	Yard

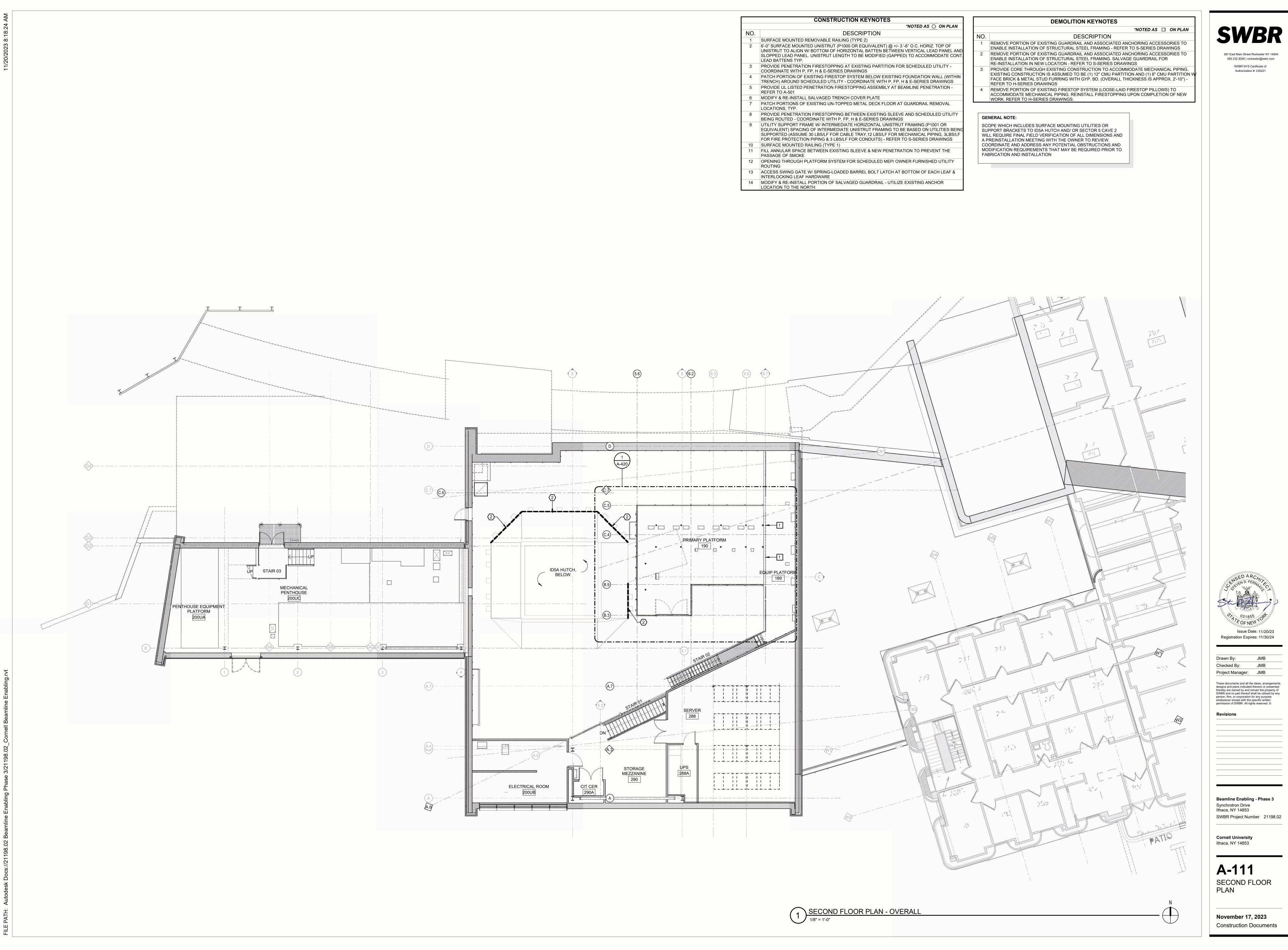
	Spray foam Insulation
	Sprayed fire-resistive
	Material Structural glazad tile
	Structural glazed tile Sheet
	Shower
	Similar
	Slab on grade
	Standpipe, Sump pit Spaces
	Speaker
	Specification
	Square
	Secondary roof drain Service sink
	Solid surface material
	Stainless steel pipe
	Stainless steel Stain
	Station
	Sound transmission class
	Standard
	Stiffener
	Steel Storage
	Straight, Stringers
Т	Structural
	Suspended
	Sheet vinyl Square yard
	Tread
	Top of
	Top and bottom
	Tongue and groove Telephone
	Threshold
	Temporary
	Terrazzo
	Thick(ness) Tack board
	Tempered
	Top of concrete
	Top of masonry
	Topography, Topographic Top of steel
	Top of wall
	Toilet paper dispenser
	Thermostat
	Television Typical
	Heat transfer coefficient
	Undercut
	Under cabinet lighting Underground
	Unit heater
	Underwriter's laboratories
	Unexcavated
	Unfinished Unless otherwise noted
	Utility
	Unit ventilator
	Varnish(ed)
	Vinyl base Vinyl composition tile
	Ventilation
	Vertical
	Vestibule
	Verify in field Vinyl
	Volume
	Vapor retarder
	Vinyl tile
	Vinyl sheet Vinyl wall covering
	West
	With
	Water closet, Wall covering
	Without Wood



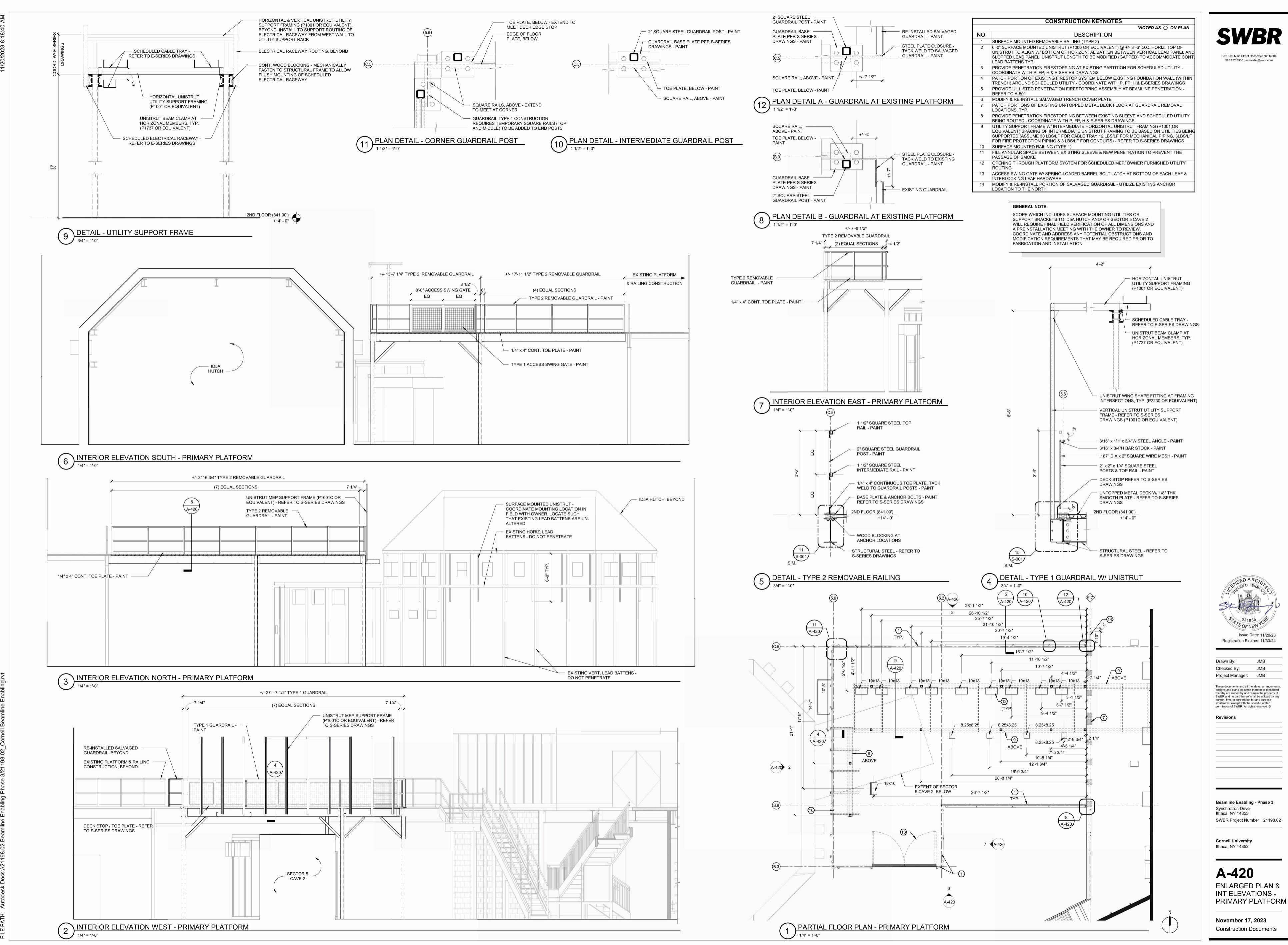


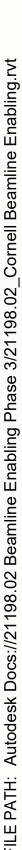


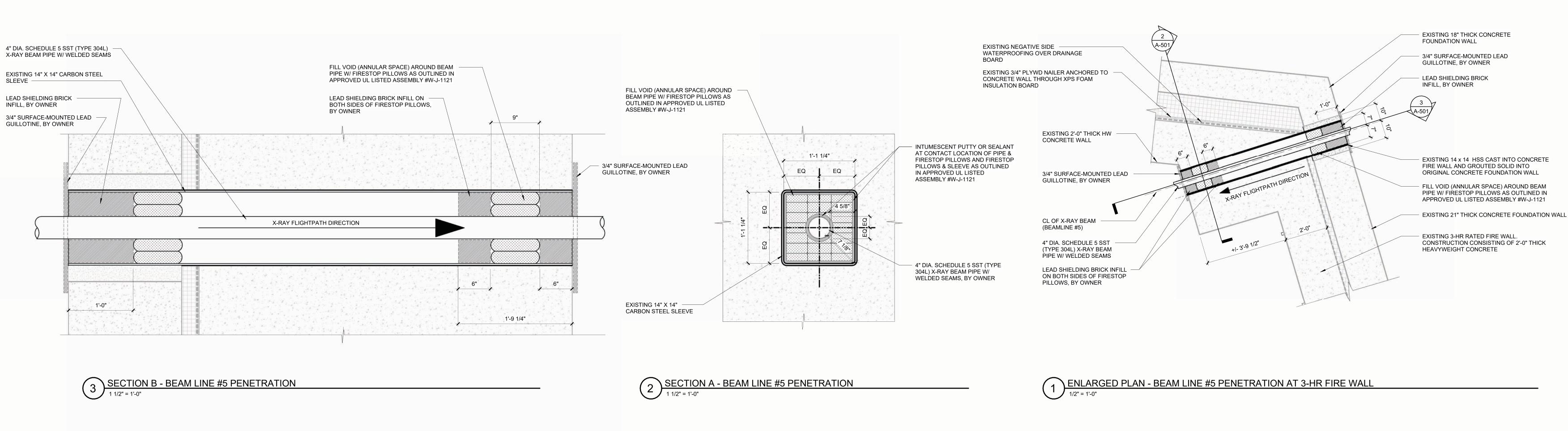


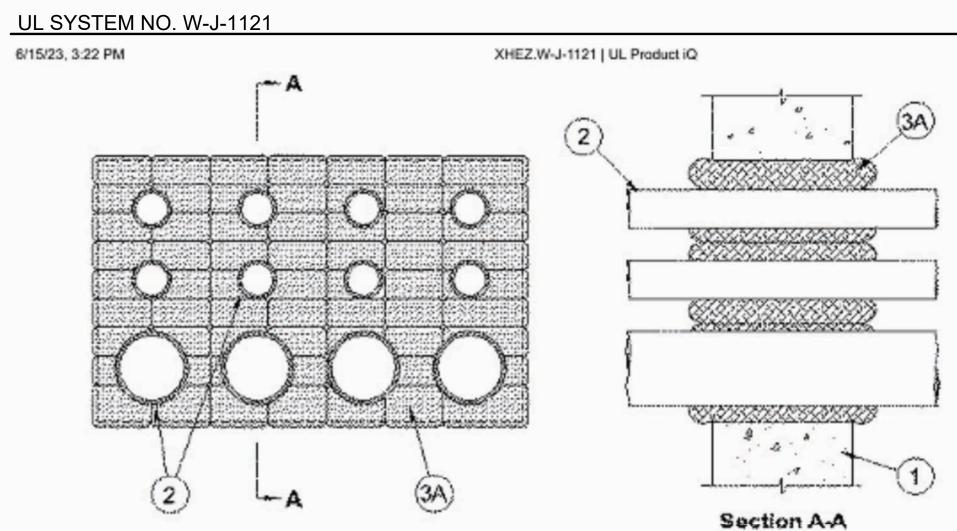


NO.	
1	S
2	610
	L
3	F
4	F
5	F
6	ſ
7	F
8	
9	F E E F
10	S
11	F
12	(F
13	/
14	N









1. Wall Assembly — Min 7-5/8 in. (194 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete wall assembly. Wall may also be constructed of any UL Classified Concrete Blocks*. For 3 hr F and FH Ratings, max area of opening is 312 sq in. (0.20 m²) with a max height of 12 in. (305 mm). For 4 hr F and FH Ratings, max area of opening is 240 sq in. (0.15 m²) with a max height of 10 in. (254 mm).

See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Through Penetrants — One or more metallic pipes, conduits or tubing to be installed concentrically or eccentrically within the firestop system. For 1 hr, 2 hr and 3 hr fire rated walls the annular space between the metallic pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 6 in. (152 mm). For 4 hr fire rated walls the annular space between the metallic pipes, conduits or tubes and the periphery of the opening shall be min 1 in. (25 mm) to max 4 in. (102 mm). The annular space between the metallic pipes, conduits or tubing shall be min 1/2 in. (13 mm) to max 4 in. (102 mm). Metallic pipes, conduits or tubing to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes may be used:

B. Iron Pipes - Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.

A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipes.

- C. Conduit Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit, steel electrical metallic tubing (EMT)) or nom 2
- in. (51 mm) diam (or smaller) flexible steel conduit.

3. Firestop System — The firestop system shall consist of the following:

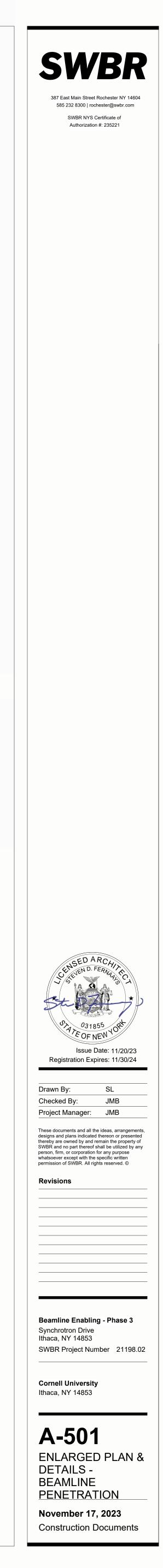
A. Fill, Void or Cavity Material* - Pillows - Max 9 in. (229 mm) long by 6 in. (152 mm) wide by 3 in. (76 mm) thick plastic covered intumescent pillows. Pillows to be installed lengthwise through the opening and positioned to extend equally in both directions from the approximate centerline of the wall. Pillows tightly packed (min 30 percent compression) into opening to fill the annular space between the through penetrants and between the through penetrants and the periphery of the opening.

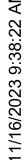
SPECIFIED TECHNOLOGIES INC — SpecSeal Firestop Pillows

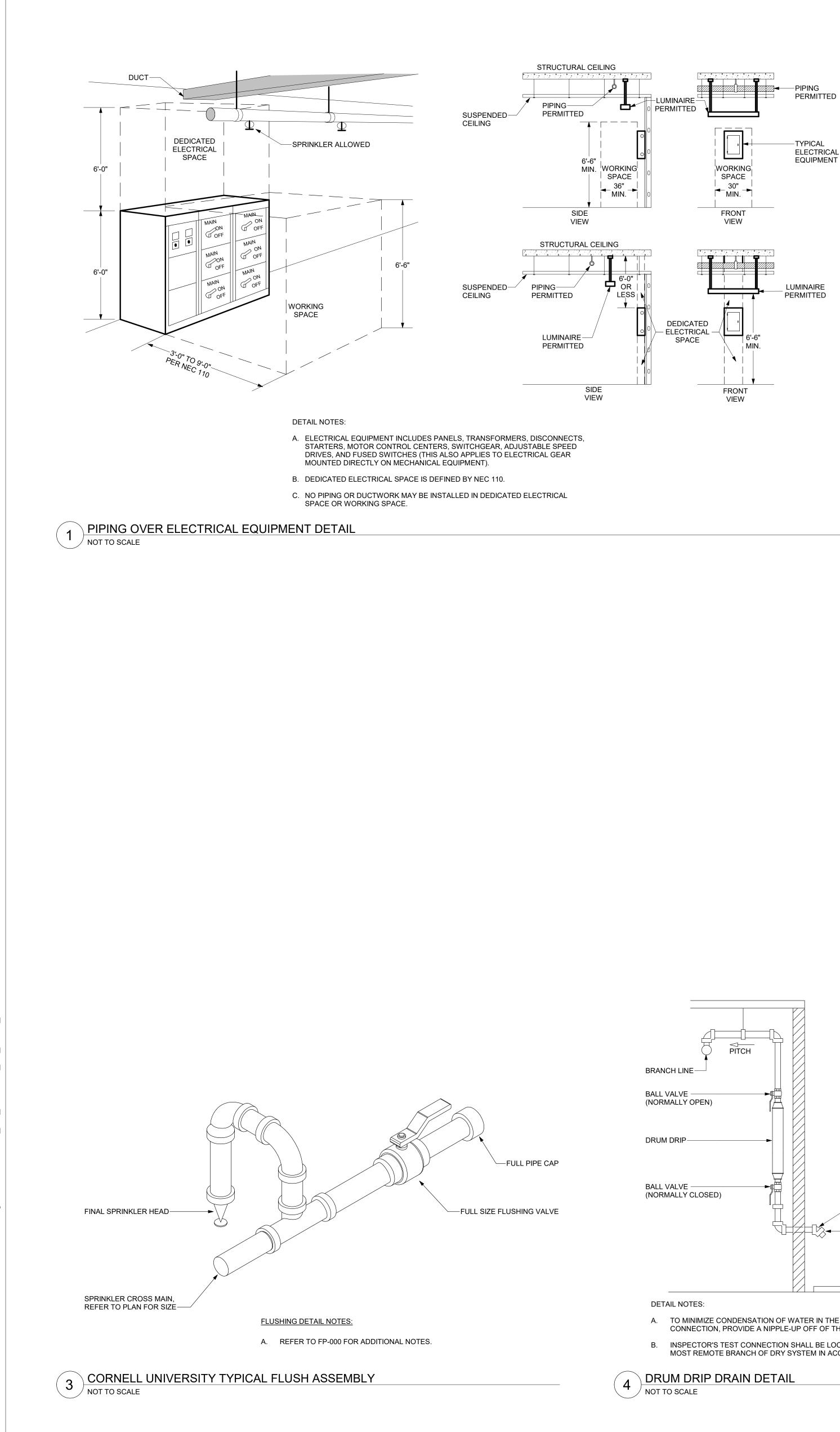
2/3

B. Fill, Void or Cavity Material* - Putty or Sealant - (Not Shown) - At point contact locations between through penetrant and periphery of opening, min 1/2 in. diam bead of fill material applied at metallic penetrant/concrete wall interface on both sides of wall assembly. For 4 hr F and FH Ratings a nom 3/16 in. (5 mm) thick band of putty with a width equal to the thickness of the wall assembly shall be applied around each pipe, conduit or tube within the wall

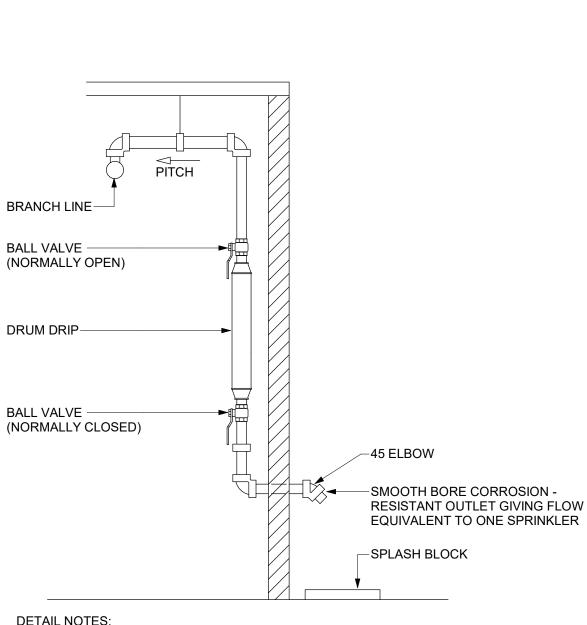
https://iq.ulprospector.com/en/profile?e=175528

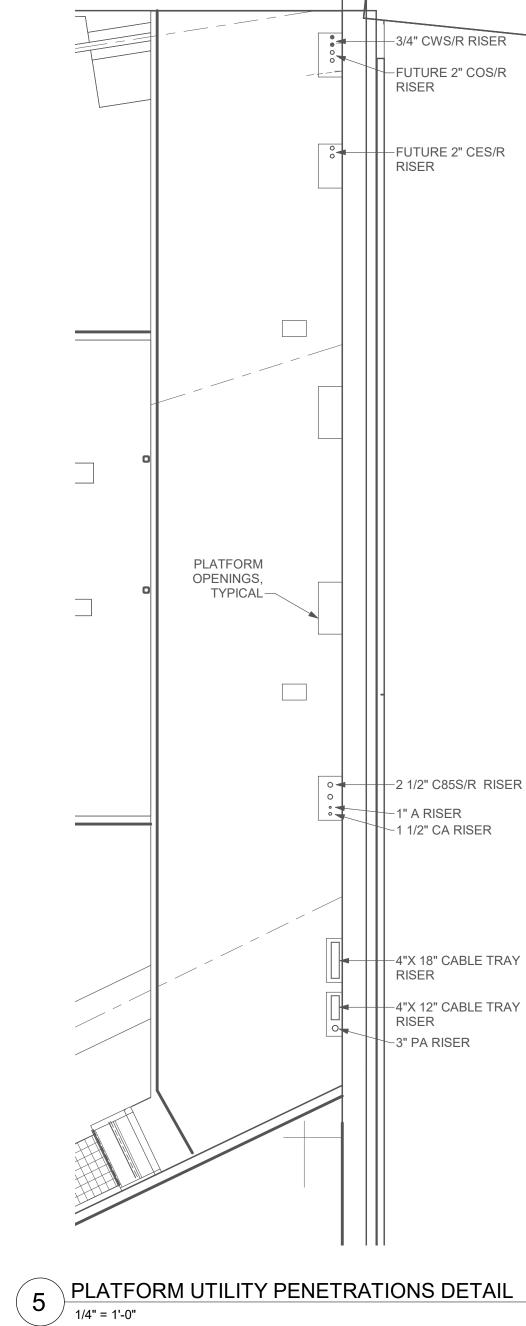






- B. INSPECTOR'S TEST CONNECTION SHALL BE LOCATED AT HYDRAULICALLY MOST REMOTE BRANCH OF DRY SYSTEM IN ACCORDANCE WITH NFPA 13.
- A. TO MINIMIZE CONDENSATION OF WATER IN THE DROP TO THE TEST CONNECTION, PROVIDE A NIPPLE-UP OFF OF THE BRANCH LINE.





PIPING IDENTIFICATION LABEL DETAIL / NOT TO SCALE

DETAIL NOTES:

- C. PROVIDE LABELS IN LARGE SPACES ON MAXIMUM 20' CENTERS FOR EVERY PIPE UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS. D. LABELS TO BE LOCATED IN AN EASILY VISIBLE LOCATION AS THEY
- A. PROVIDE A PIPE LABEL FOR EACH PIPE FUNCTION. B. PROVIDE AT LEAST ONE LABEL ON EACH PIPE FOR EVERY ROOM THE PIPE PASSES THROUGH.

WOULD NORMALLY BE SEEN. IE. ON THE BOTTOM HALF OF PIPES

E. LABELS SHALL BE, COLOR CODED, PRE-PRINTED, SELF ADHESIVE VINYL.

IN THE AIR AND ON THE TOP HALF OR SIDES OF PIPES MOUNTED LOW.

F. SEE SPECIFICATION FOR OTHER REQUIREMENTS AND LIST OF PIPE FUNCTIONS.

-PIPE FUNCTION LABEL

FIRE PROTECTION

-FLOW DIRECTION LABEL. PROVIDE 360

AND MATCHING THE FLOW DIRECTION

DEGREE WRAP OVERLAPPING BOTH

ENDS OF THE PIPE FUNCTION LABEL

OF THE PIPE CONTENTS.

GENERAL NOTES:

- A. THESE NOTES ARE APPLICABLE TO THE FULL SET OF CONTRACT DRAWINGS.
- PROVIDE A COMPLETE FIRE PROTECTION SPRINKLER SYSTEM FOR THE SPACES INDICATED IN COMPLIANCE WITH 2020 NEW YORK STATE BUILDING CODE, NFPA 13, FM GLOBAL, CORNELL UNIVERSITY DESIGN STANDARDS, AND THE AUTHORITY HAVING JURISDICTION. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED, REFER TO SPECIFICATIONS AND DRAWING NOTES. THE CONTRACTOR SHALL CONFIRM ALL PIPE SIZES BY HYDRAULIC CALCULATIONS. THERE SHALL BE NO DECREASE IN PIPE SIZES UNLESS DIRECTED BY ENGINEER.
- C. THE PLANS ARE DIAGRAMMATIC AND INDICATE ONLY THE GENERAL ARRANGEMENT OF PIPING, SPRINKLERS AND EQUIPMENT. ALL MAINS, BRANCH LINES, SPRINKLERS, EQUIPMENT AND SYSTEM COMPONENTS SHALL BE PROVIDED. THE PLANS ARE NOT INTENDED TO SHOW EVERY ITEM OF WORK OR EQUIPMENT. THE CONTRACTOR SHALL FURNISH AND INSTALL ANY COMPONENT NECESSARY TO COMPLETE THE SYSTEM IN ACCORDANCE WITH THE BEST PRACTICE OF THE TRADE, NFPA AND THE AHJ WITHOUT ADDITIONAL COST.
- DRAWINGS DO NOT INDICATE ALL OFFSETS, CHANGES IN ELEVATION, ETC. WHICH MAY BE REQUIRED. THE CONTRACTOR SHALL MAKE SUCH CHANGES IN PIPING AND LOCATION OF EQUIPMENT, ETC. TO ACCOMMODATE WORK, OBSTACLES, AND WORK OF OTHER CONTRACTORS.
- INSTALL EQUIPMENT AND PIPING TO AVOID INTERFERENCE WITH THE OPERATION, SERVICE, AND MAINTENANCE OF EQUIPMENT. ALL NEW PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS SHALL BE
- PROVIDED BY THIS CONTRACTOR FOR INSTALLATION OF FP SYSTEMS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, PIPING, ETC., UNLESS OTHERWISE SHOWN ON THE ARCHITECTURAL DRAWINGS. THIS CONTRACTOR SHALL UTILIZE SLEEVES, FIRESTOPPING SYSTEM, AND A SHIELDING SYSTEM AS DIRECTED BY THE ARCHITECT OF RECORD AND CORNELL UNIVERSITY.
- G. ALL PENETRATIONS THROUGH NON-RATED WALLS SHALL BE SLEEVED AND SEALED WITH A NON-HARDENING SEALANT ON BOTH SIDES OF THE WALL.
- H. INSTALL TAMPER SWITCHES AND LOCKS FOR ALL FIRE PROTECTION VALVES. ALL SHUTOFF VALVES SHALL BE CHAINED AND LOCKED IN THE OPEN POSITION.
- DISPOSE OF ALL WASTE MATERIALS CAUSED BY WORK OF THIS CONTRACTOR. LEGALLY DISPOSE ALL MATERIALS TO A LOCATION OFF SITE.
- COORDINATE AND SCHEDULE WORK AND SHUTDOWNS WITH THE OWNER AND OTHER TRADES PRIOR TO CONSTRUCTION.
- MAINTAIN SERVICE CLEARANCES OF ALL EQUIPMENT. ADVISE OTHER TRADES OF THE REQUIRED SERVICE CLEARANCES FOR SPRINKLER EQUIPMENT.
- L. LABEL ALL PIPING, SHUT OFF VALVES AND TEST CONNECTIONS.
- ARRANGE WET AND PRE-ACTION SPRINKLER SYSTEMS TO DRAIN BACK TO A LOW B. M. POINT DRAIN VALVE. WHERE NOT POSSIBLE PROVIDE AUXILIARY DRAINS IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13.
- N. ALL COSTS FOR CUTTING, PATCHING, AND PAINTING OF EXISTING WALLS, CEILINGS AND FLOORS TO ACCOMMODATE THE INSTALLATION OF WORK SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR UNLESS INDICATED OTHERWISE. MATERIALS FOR RESTORATION OF EXISTING SURFACES SHALL MATCH THE EXISTING SURFACES.
- THIS CONTRACTOR IS RESPONSIBLE FOR ALL PATCHING OF EXISTING OR NEW 0. FIRE PROOFING WHICH IS DISTURBED OR REMOVED DURING THE COURSE OF ANY DEMOLITION OR INSTALLATION OF WORK THAT IS PART OF THIS CONTRACT.
- P. DO NOT DRILL, CORE OR CUT ANY PORTION OF EXISTING COLUMNS, BEAMS, JOISTS OR ANY OTHER STRUCTURAL COMPONENT.
- Q. PRIOR TO CUTTING, DETERMINE THE LOCATION OF PROPOSED OPENINGS SUCH THAT NO PORTION OF EXISTING BEAMS OR JOISTS WILL BE ALTERED IN ANY WAY.
- R. PAINT ALL EXPOSED PIPING TO MATCH CEILING.
- S. PROVIDE WIRE CAGES ON ALL SPRINKLERS IN ELECTRICAL ROOMS.

FIRE PROTECTION SYMBOL LIST SYMBOL DESCRIPTION HHH EXISTING WORK TO BE REMOVED ---OR/⁄/ POINT OF CONNECTION - 64 POINT OF DISCONNECTION Μ NTS NOT TO SCALE EXISTING ABOVE FINISHED FLOOR AFF AUTHORITY HAVING JURISDICTION AHJ FLUSHING CONNECTION EXISTING PIPING – (E) ——— NEW PIPING ---- PA ------- PRE-ACTION MAIN/BRANCH PIPING (PA) FP — FP — FIRE PROTECTION PIPING (FP) S WET SPRINKLER MAIN/BRANCH PIPING (S) ____D ____ SPRINKLER DRAIN PIPING (D) ELBOW DOWN _____ SHUT-OFF VALVE WITH TAMPER SWITCH (TS) ELBOW UP ____0 BOTTOM/TEE CONNECTION ______ TOP TEE CONNECTION ____U____ PIPE CONTINUATION _____ FLUSHING CONNECTION UPRIGHT SPRINKLER • PENDENT SPRINKLER __**ī**___ DRAIN VALVE -ELECTRIC ALARM BELL DRAWING KEYNOTE DEMOLITION/REMOVAL KEYNOTE HEAT DETECTOR FOR ACUATION OF PRE-ACTION SYSTEMS H

FLUSHING NOTES:

- A. FLUSHING FULL-PORT BALL VALVES SHALL BE PROVIDED ON UNDERGROUND MAINS (INSIDE THE BUILDING) AND ABOVE-GROUND MAINS, CROSS-MAINS, BRANCH LINES AND RUN OUTS OF NEW SPRINKLER SYSTEMS (WET AND DRY), TO FACILITATE ANY FUTURE PERIODIC INTERNAL INSPECTIONS, OBSTRUCTION INVESTIGATIONS AND AS-NEEDED FLUSHING WORK.
- VALVES SHALL BE SIZED PER NFPA 25, IN ORDER TO OBTAIN THE NFPA REQUIRED MINIMUM VELOCITY OF 10 FT/S FOR ANY GIVEN PIPE SIZE. AS AN ALTERNATIVE TO THE HYDRAULIC CALCULATION VALVE SIZING METHOD, THE FOLLOWING SIZING RULES CAN BE APPLIED:
- 1-INCH THRU 2 1/2-INCH PIPE: LINE-SIZE FULL-PORT BALL VALVE - 3-INCH PIPE: ONE (1) 2 1/2-INCH BALL VALVE
- 4-INCH PIPE: TWO (2) 2 1/2-INCH BALL VALVES - 6-INCH PIPE: THREE (3) 2 1/2 INCH BALL VALVES - 8-INCH PIPE: FOUR (4) 2 1/2 INCH BALL VALVES

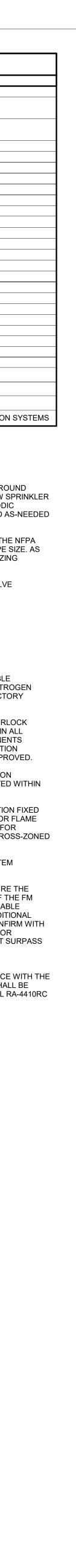
PRE-ACTION GENERAL NOTES:

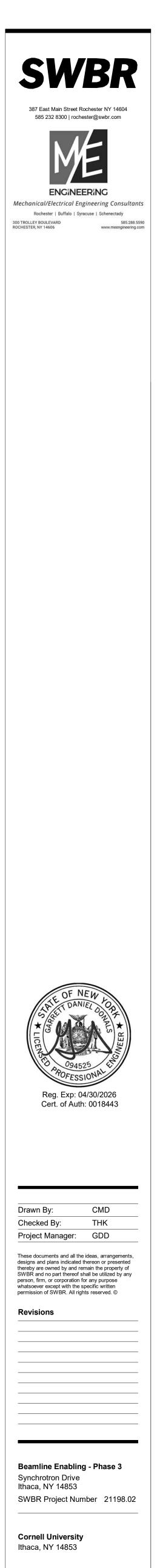
- THE CABINET ASSEMBLY SHALL CONTAIN A PREACTION DOUBLE INTERLOCK SYSTEM, ELECTRIC RELEASE COMPLETE WITH NITROGEN GENERATOR SYSTEM, PRE-ASSEMBLED, PRE-WIRED AND FACTORY TESTED.
- B. CABINET SHALL INTEGRATE A SELF-CONTAINED DOUBLE INTERLOCK PREACTION SYSTEM, ELECTRIC RELEASE, AND SHALL CONTAIN ALL HYDRAULIC, PNEUMATIC DEVICES, AND ELECTRICAL COMPONENTS REQUIRED FOR THE CONTROL OF A SELF-CONTAINED PREACTION SYSTEM. ALL COMPONENTS SHALL BE UL LISTED AND FM APPROVED.
- C. NITROGEN GENERATION SYSTEM SHALL INCLUDE A CORROSION INHIBITING SYSTEM COMPLETE WITH CONTROL PANEL LOCATED WITHIN THE CABINET.
- D. PROVIDE FIXED-TEMPERATURE, RATE OF RISE, OR COMBINATION FIXED TEMPERATURE/RATE OF RISE DETECTION DEVICES. SMOKE OR FLAME DETECTORS SHALL NOT BE USED. SINGLE -ZONE CIRCUITRY FOR DETECTION AND ACUATION DEVICES SHALL BE PROVIDED. CROSS-ZONED CIRCUITS ARE NOT ACCEPTABLE.
- E. REFER TO SPECIFICATION FOR COMPLETE PRE-ACTION SYSTEM REQUIREMENTS.
- PROVIDE HEAT DETECTORS COMPATIBLE WITH PANEL. ENSURE THE SPACING OF HEAT DETECTORS DOES NOT EXCEED ONE-HALF THE FM APPROVED LINEAR DETECTOR SPACING OR THE FULL ALLOWABLE SPRINKLER SPACING, WHICHEVER IS GREATER. ASSURE ADDITIONAL HEAT DETECTORS WILL NOT SURPASS PANEL CAPACITY. CONFIRM WITH MANUFACTURER AND PROVIDE DOCUMENTATION TO E.O.R. FOR COMPATIBILITY AND CAPACITY OF HEAT DETECTORS. DO NOT SURPASS FM 5-48 SPACING REQUIREMENTS FOR HEAT DETECTORS.
- REMOTE ANNUCIATOR(S) SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURES INSTRUCTIONS. COMMUNICATION WIRES SHALL BE SHIELDED AS REQUIRED. BASIS OF DESIGN IS POTTER MODEL RA-4410RC

2 1/2" C85S/R RISER

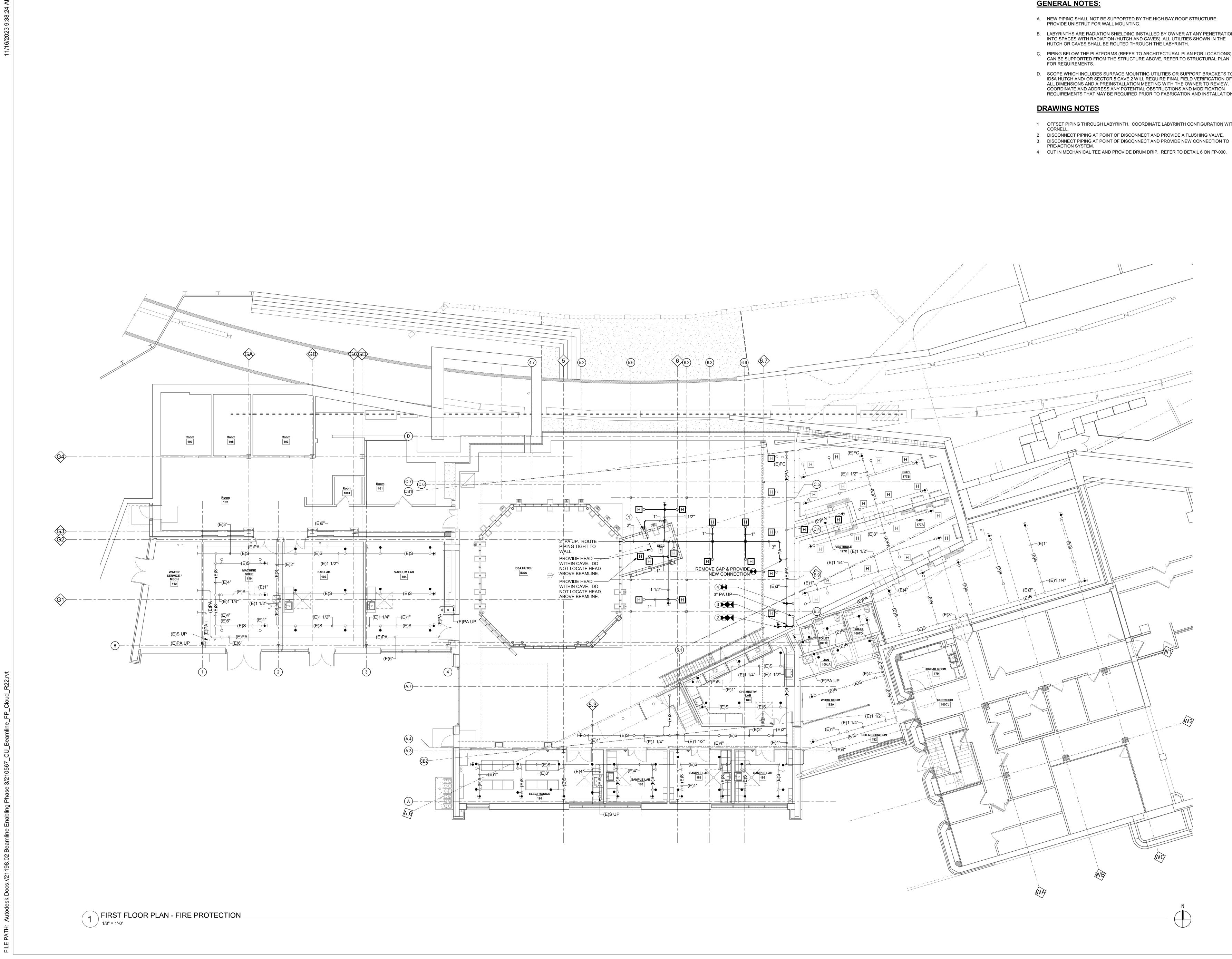
4"X 18" CABLE TRAY

4"X 12" CABLE TRAY -3" PA RISER





FP-000 GENERAL NOTES & SYMBOL LIST - FIRE PROTECTION



GENERAL NOTES:

- A. NEW PIPING SHALL NOT BE SUPPORTED BY THE HIGH BAY ROOF STRUCTURE.
- B. LABYRINTHS ARE RADIATION SHIELDING INSTALLED BY OWNER AT ANY PENETRATION INTO SPACES WITH RADIATION (HUTCH AND CAVES). ALL UTILITIES SHOWN IN THE
- C. PIPING BELOW THE PLATFORMS (REFER TO ARCHITECTURAL PLAN FOR LOCATIONS) CAN BE SUPPORTED FROM THE STRUCTURE ABOVE, REFER TO STRUCTURAL PLAN
- D. SCOPE WHICH INCLUDES SURFACE MOUNTING UTILITIES OR SUPPORT BRACKETS TO ID5A HUTCH AND/ OR SECTOR 5 CAVE 2 WILL REQUIRE FINAL FIELD VERIFICATION OF ALL DIMENSIONS AND A PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION REQUIREMENTS THAT MAY BE REQUIRED PRIOR TO FABRICATION AND INSTALLATION.

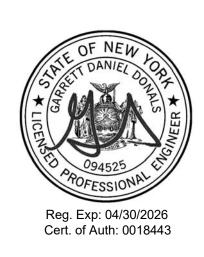
- 1 OFFSET PIPING THROUGH LABYRINTH. COORDINATE LABYRINTH CONFIGURATION WITH



387 East Main Street Rochester NY 14604 585 232 8300 | rochester@swbr.com



Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 585.288.5590 www.meengineering.com 300 TROLLEY BOULEVARD ROCHESTER, NY 14606



CMD Drawn Bv: THK Checked By: Project Manager: GDD

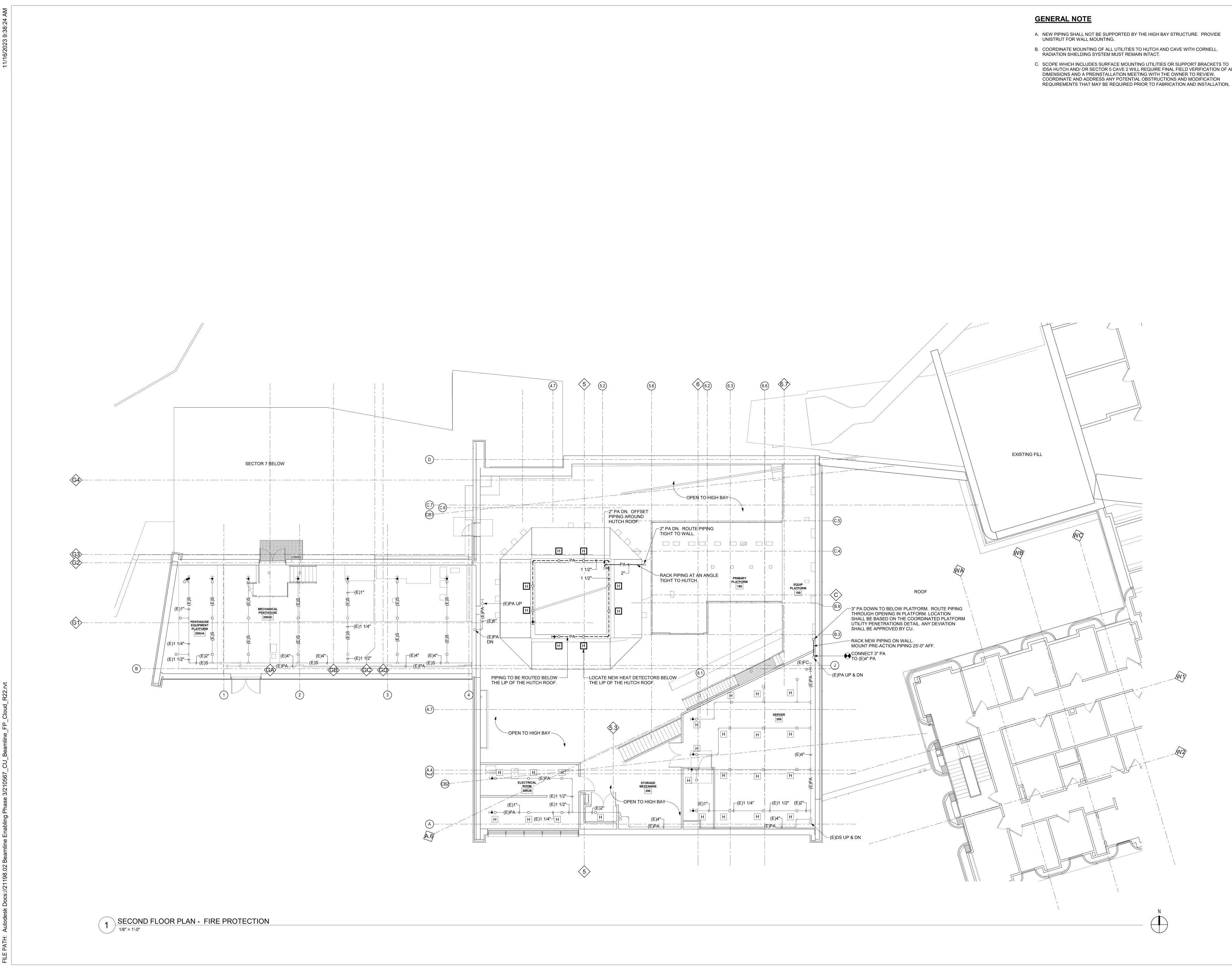
These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

Cornell University lthaca, NY 14853





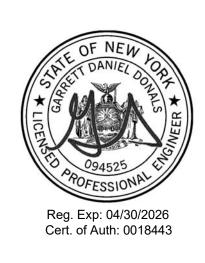
- A. NEW PIPING SHALL NOT BE SUPPORTED BY THE HIGH BAY STRUCTURE. PROVIDE
- C. SCOPE WHICH INCLUDES SURFACE MOUNTING UTILITIES OR SUPPORT BRACKETS TO ID5A HUTCH AND/ OR SECTOR 5 CAVE 2 WILL REQUIRE FINAL FIELD VERIFICATION OF ALL DIMENSIONS AND A PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION



585 232 8300 | rochester@swbr.com



Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 300 TROLLEY BOULEVARD 585.288.5590 ROCHESTER, NY 14606 www.meengineering.com



Drawn By: CMD THK Checked By: Project Manager: GDD

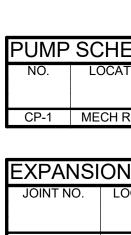
These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

Revisions _____

Beamline Enabling - Phase 3 Synchrotron Drive Ithaca, NY 14853 SWBR Project Number 21198.02

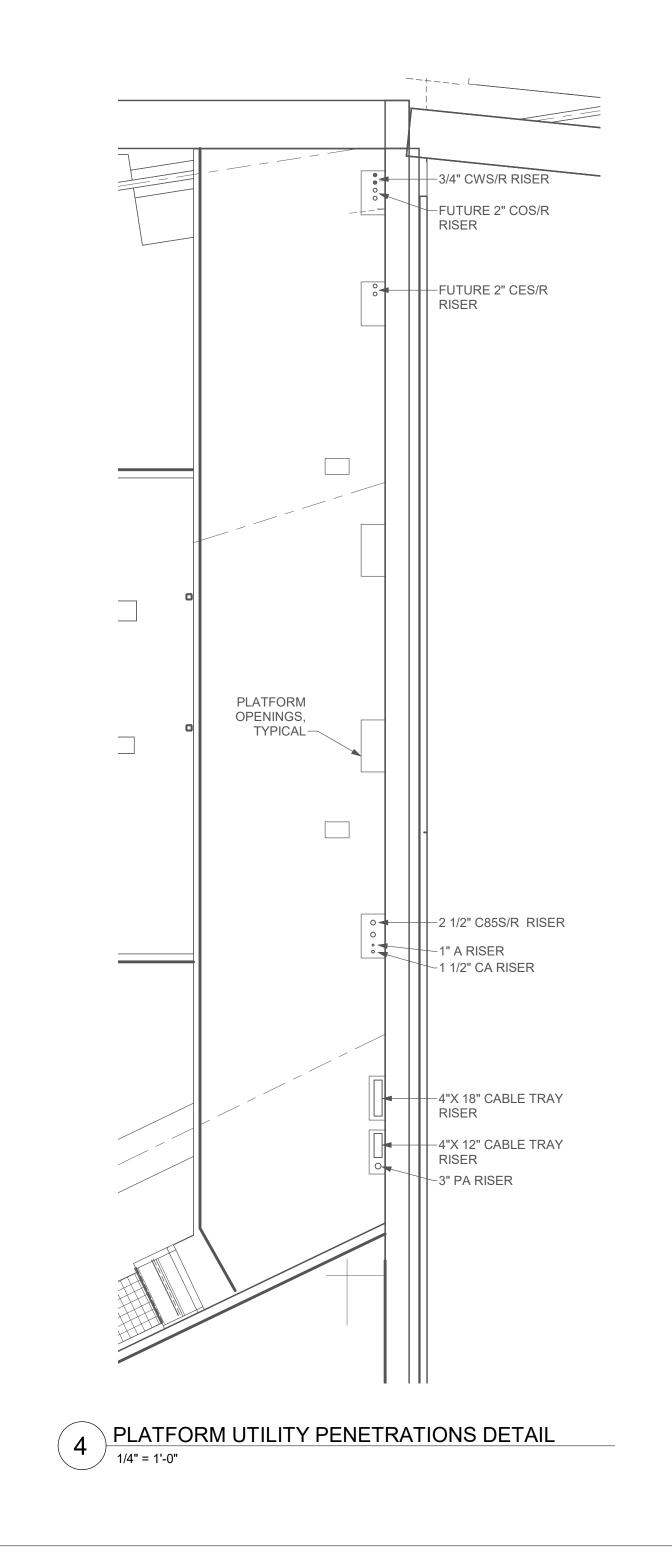
Cornell University Ithaca, NY 14853

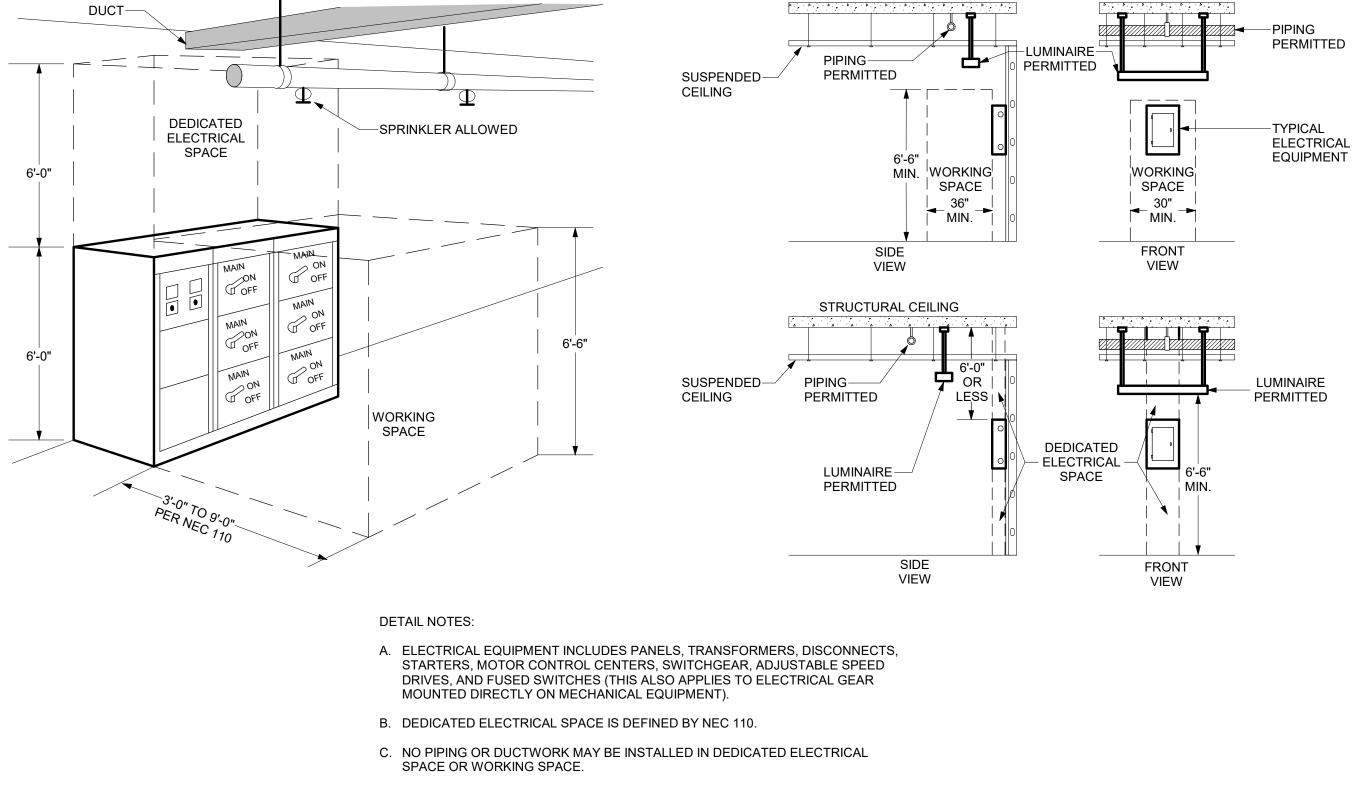
FP-112 SECOND FLOOR PLAN - FIRE PROTECTION



EJP-2 FIRS REMARKS: EXPANSION PIPE SIZE

NOTE





STRUCTURAL CEILING

EDUL	.E								
ATION	SERVICE	GPM	HEAD FT	MOTOR				TYPE	DESIGN MAKE
			WATER	HP	VOLTAGE	PHASE	RPM		
ROOM	INDIRECT WASTE	-	-	1/30	115	1	-	DRAIN	LIBERTY MODEL LC-20

N JOINT	SCHEDULE - PI	PING										
OCATION	TYPE	APPLICATION	MATERIAL	LINE	MAX.	MIN.	MAX.	MINIMUM	MINIMUM	TOTAL	MANUFACTURER & MODEL NO.	REMARKS
				SIZE	PRESS.	TEMP.	TEMP.	COMPRESSION	EXTENSION	AXIAL		
					(PSIG).	(DEG. F)	(DEG. F)	TRAVEL	TRAVEL	MOVEMENT		
RST FLOOR	CLEAN AIR	-	SS HOSE, CARBON STEEL NIPPLE	1"	400 @ 250 DEG. F	-	-	4	4	4	MASON VMN	1, 2
RST FLOOR	CLEAN AIR	-	SS HOSE, CARBON STEEL NIPPLE	1"	400 @ 250 DEG. F	-	-	4	4	4	MASON VMN	1, 2

1. PROVIDE DELEGATED DESIGN FOR ANCHORS AND GUIDES. 2. PROVIDE CONNECTIONS FOR STAINLESS STEEL TUBING.

N COMPENSATOR PIPE GUIDE S	CHEDULE
MAX. DISTANCE FROM EXPANSION COMPENSATOR	MAX DISTANCE FROM FIRST GUIDE TO SECOND
TO FIRST GUIDE	GUIDE

1. EACH EXPANSION COMPENSATOR TO HAVE FOUR (4) GUIDES, TWO (2) UPSTREAM AND TWO (2) DOWNSTREAM.

PIPING OVER ELECTRICAL EQUIPMENT DETAIL

3

NOT TO SCALE

GENERAL NOTES:

- A. THESE NOTES ARE APPLICABLE TO THE FULL SET OF CONTRACT DOCUMENTS.
- B. EXISTING CONDITIONS ARE TAKEN FROM FIELD OBSERVATIONS AND PRIOR CONSTRUCTION DOCUMENTS WHEN AVAILABLE. THE LOCATIONS SHOWN MUST BE CONSIDERED APPROXIMATE. OTHER SUCH WORK MAY EXIST, HOWEVER, LOCATION AND SIZE ARE NOT PRESENTLY KNOWN. IT IS STRONGLY ENCOURAGED TO VISIT SITE PRIOR TO BID TO REVIEW EXISTING CONDITIONS AND CONFIRM SCOPE OF WORK.
- WHEN EXISTING CONSTRUCTION IS DAMAGED DURING WORK BY THIS CONTRACTOR, REPAIR AND/OR REPLACE WITH SIMILAR MATERIALS AS MUCH AS POSSIBLE, SUBJECT TO ARCHITECTS APPROVAL.
- D. DISPOSE OF ALL DEMOLITION AND/OR OTHER WASTE MATERIALS CAUSED BY WORK OF THIS CONTRACTOR. LEGALLY DISPOSE ALL MATERIALS TO A LOCATION OFF SITE.
- E. COORDINATE AND SCHEDULE WORK AND SHUTDOWNS WITH THE OWNER AND OTHER TRADES PRIOR TO DEMOLITION.
- F. ALL EXISTING PIPING TO REMAIN SHALL BE RECONNECTED TO ACTIVE SERVICE PIPING.
- G. ALL PIPING TO BE REMOVED, SHALL BE REMOVED BACK TO ACTIVE PIPING AND CAPPED. VALVE AND CAP ALL WATER PIPING. REMOVE ALL INACTIVE PIPING UNLESS NOTED.
- H. ALL PIPING TO BE REMOVED AND LOCATED WITHIN A WALL TO REMAIN MAY BE ABANDONED IN PLACE UNLESS NOTED. REMOVE PIPING BACK TO BEHIND THE FINISHED WALL SURFACE AND CAP. PATCH HOLES IN EXISTING CONSTRUCTION LEFT BY THE REMOVAL
- OF PIPING OR EQUIPMENT WITH MATERIALS TO MATCH EXISTING CONSTRUCTION. MAINTAIN FIRE/SMOKE RATING.
- DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO: PIPING, VALVES, FIXTURES, EQUIPMENT, HANGERS, SUPPORTS, AND INSULATION EXCEPT ASBESTOS.
- K. REMOVE EXISTING CONSTRUCTION IN THE WAY OF NEW WORK. PROTECT BUILDING AND FURNISHINGS FROM DAMAGE.
- WHERE NEW WORK IS TO BE INSTALLED ABOVE AN EXISTING CEILING, PROVIDE FOR THE REMOVAL OF THE CEILING. UPON COMPLETION OF WORK, REPAIR ALL DAMAGED CEILING SURFACES, REPLACE ALL DAMAGED TILES.
- M. SLEEVE AND SEAL ALL WALL AND FLOOR PENETRATIONS. PROVIDE FIRESTOPPING FOR ALL PENETRATIONS.
- N. MAINTAIN SERVICE CLEARANCES OF ALL EQUIPMENT. ADVISE OTHER TRADES OF THE REQUIRED SERVICE CLEARANCES. O. PROVIDE FOR THE DRAINING AND REFILLING OF PIPING SYSTEMS,
- INCLUDING AIR REMOVAL, RESETTING OF FLUSH VALVES, FLUSHING SYSTEMS OF DIRT AND SCALE CAUSED BY SHUTDOWNS AND STARTUPS.
- P. REFER TO EQUIPMENT/ FIXTURE SCHEDULE FOR FINAL CONNECTION SIZES.
- Q. PROVIDE CLEANOUTS AT THE BASE OF ALL STORM, SANITARY AND WASTE STACKS.
- R. PITCH 4" AND LARGER SANITARY AND WASTE PIPING AT 1/8" PER FOOT UNLESS OTHERWISE NOTED. FOR SANITARY AND WASTE PIPING 3" AND SMALLER PITCH AT 1/4" PER FOOT UNLESS OTHERWISE NOTED.
- S. COORDINATE LOCATION AND ELEVATION OF STORM AND SANITARY LATERALS AND WATER SERVICE WITH THE SITE CONTRACTOR. NO ALLOWANCE WILL BE MADE FOR ADDITIONAL COSTS DUE TO THE CONTRACTORS FAILURE TO COORDINATE TERMINATION POINTS. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR THE FINAL CONNECTION TO THE SITE UTILITIES.
- T. MINIMUM SIZE OF WASTE PIPING BELOW SLAB SHALL BE 3" EXCEPT PIPING SERVING FLOOR DRAINS SHALL BE 4". MINIMUM SIZE OF VENT PIPING BELOW SLAB SHALL BE 2".

CLEAN AIR TUBING PREPARATIONS:

- 1. REMOVE MANUFACTURER ENDS IF DAMAGED IN TRANSPORT.
- 2. ISOPROPYL-SOAKED RAG PUSHED THROUGH ENTIRETY OF TUBING.
- 3. COVER ENDS AFTER CLEANING UP UNTIL FINAL INSTALLATION. (OPEN PIPE ENDS SHOULD BE PROTECTED ON DISTRIBUTION TIE-IN SIDE AS WELL.).
- 4. SYSTEM REQUIRES PURGING BY CUSTOMER AFTER ANY MODIFICATIONS (8HR).

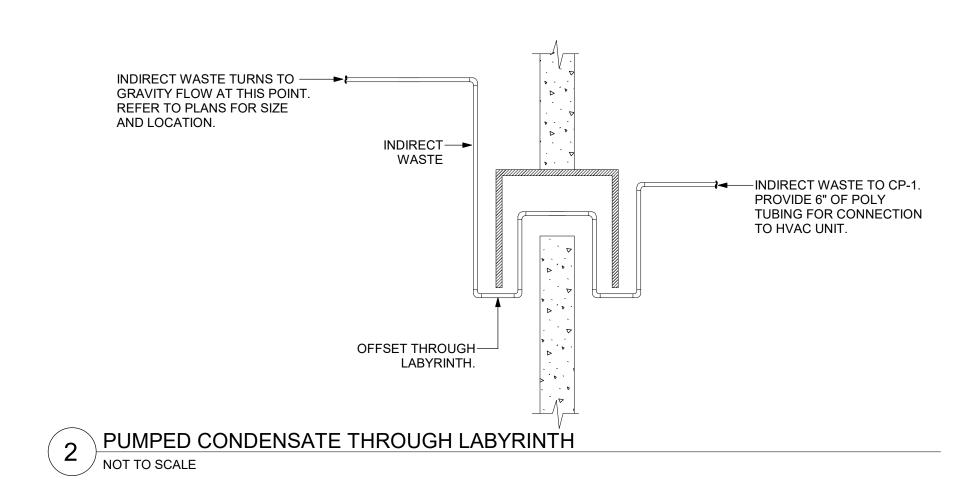
		TION L	ABEL
	DOMESTIC COLD WATER		
	FLOW DIRECTION LABEL. PF	-	

DEGREE WRAP OVERLAPPING BOTH ENDS OF THE PIPE FUNCTION LABEL AND MATCHING THE FLOW DIRECTION OF THE PIPE CONTENTS.

DETAIL NOTES:

- A. PROVIDE A PIPE LABEL FOR EACH PIPE FUNCTION.
- B. PROVIDE AT LEAST ONE LABEL ON EACH PIPE FOR EVERY ROOM THE PIPE PASSES THROUGH.
- PROVIDE LABELS IN LARGE SPACES ON MAXIMUM 20' CENTERS FOR
- EVERY PIPE UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS.
- D. LABELS TO BE LOCATED IN AN EASILY VISIBLE LOCATION AS THEY WOULD NORMALLY BE SEEN. IE. ON THE BOTTOM HALF OF PIPES
- IN THE AIR AND ON THE TOP HALF OR SIDES OF PIPES MOUNTED LOW. E. LABELS SHALL BE, COLOR CODED, PRE-PRINTED, SELF ADHESIVE VINYL.
- F. SEE SPECIFICATION FOR OTHER REQUIREMENTS AND LIST OF PIPE FUNCTIONS.

> PIPING IDENTIFICATION LABEL DETAIL / NOT TO SCALE



$\boldsymbol{\boldsymbol{\longleftarrow}}$	POINT OF CONNECTION
	POINT OF DISCONNECTION
NTS	NOT TO SCALE
(E)	EXISTING
(ETR)	EXISTING TO REMAIN
AFF	ABOVE FINISHED FLOOR
BFF	BELOW FINISHED FLOOR
VTR	VENT THRU ROOF
GC	GENERAL CONTRACTOR
MC	MECHANICAL CONTRACTOR
PC	PLUMBING CONTRACTOR
EC	ELECTRICAL CONTRACTOR
—— (E) ——	EXISTING PIPING
	NEW PIPING LOCATED ABOVE FLOOR/SLAB
	NEW PIPING LOCATED BELOW FLOOR/SLAB
•	COLD WATER PIPING (CW)
	HOT WATER PIPING (HW)
	HOT WATER RECIRCULATING PIPING (HWR)
—— WT ——	TEMPERED HOT WATER PIPING (TW)
—— TWR ——	TEMPERED HOT WATER RETURN PIPING (TWR)
——W——	WATER SERVICE - EXTERIOR
DI	DEIONIZED WATER PIPING (DI)
—— DIR ——	DEIONIZED WATER RETURN PIPING (DIR)
—— NP ——	NON POTABLE WATER
SAN	SANITARY SEWER PIPING
LW	
IW	INDIRECT WASTE PIPING (IW) VENT PIPING
<u> </u>	LAB VENT PIPING (AV)
ST	STORM WATER SEWER PIPING (ST)
ST(2)	SECONDARY STORM WATER SEWER PIPING (ST)
G	NATURAL GAS PIPING (G)
CA	WW COMPRESSED AIR PIPING (CA)
—— WCA——	W COMPRESSED AIR PIPING (WCA)
—— A ——	CLEAN AIR PIPING (A)
—— PD ——	PUMP DISCHARGE
	ELBOW DOWN
	45°OFFSET
0	ELBOW UP BOTTOM/TEE CONNECTION
	TOP TEE CONNECTION
	"P" TRAP
	PIPE CONTINUATION
	CAP OR PLUG
φ	DECK PLATE CLEANOUT (DPCO)
c_	WALL PLATE CLEANOUT (WPCO)
	CLEANOUT (CO)
O	FLOOR DRAIN (FD) / FLOOR SINK (FS)
O	ROOF DRAIN
<u></u>	WALL HYDRANT (WH) / HOSE BIBB (HB)
	STRAINER
Μ	WATER METER
Ţ	SHUT OFF VALVE
	BALANCING VALVE
	PRESSURE REDUCING VALVE
	RELIEF VALVE PIPE ANCHOR
	PIPE ANCHOR PIPE GUIDE
	UNION
	BACKFLOW PREVENTER (BFP)
•••	SHOCK ABSORBER (SA)
	RECIRCULATION PUMP
	THERMOMETER
- - ->	PRESSURE GAUGE
	TRAP PRIMER (TP)
(X)	DRAWING KEYNOTE
X	DEMOLITION/REMOVAL KEYNOTE

PIPE RISER CALLOUT

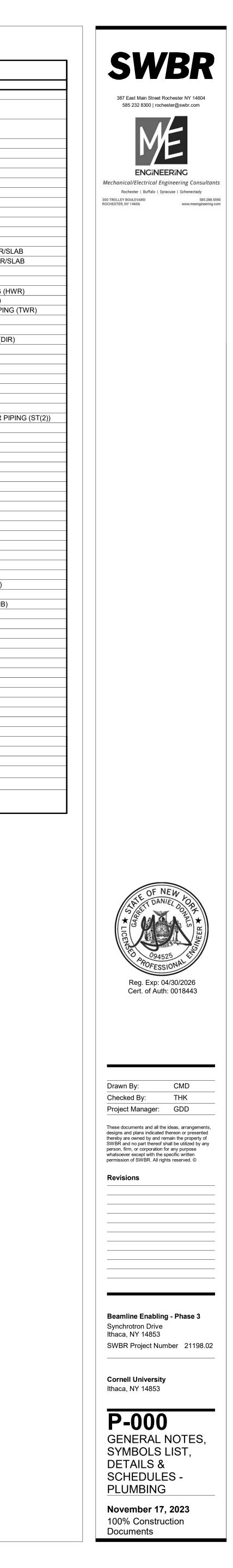
PLUMBING SYMBOL LIST

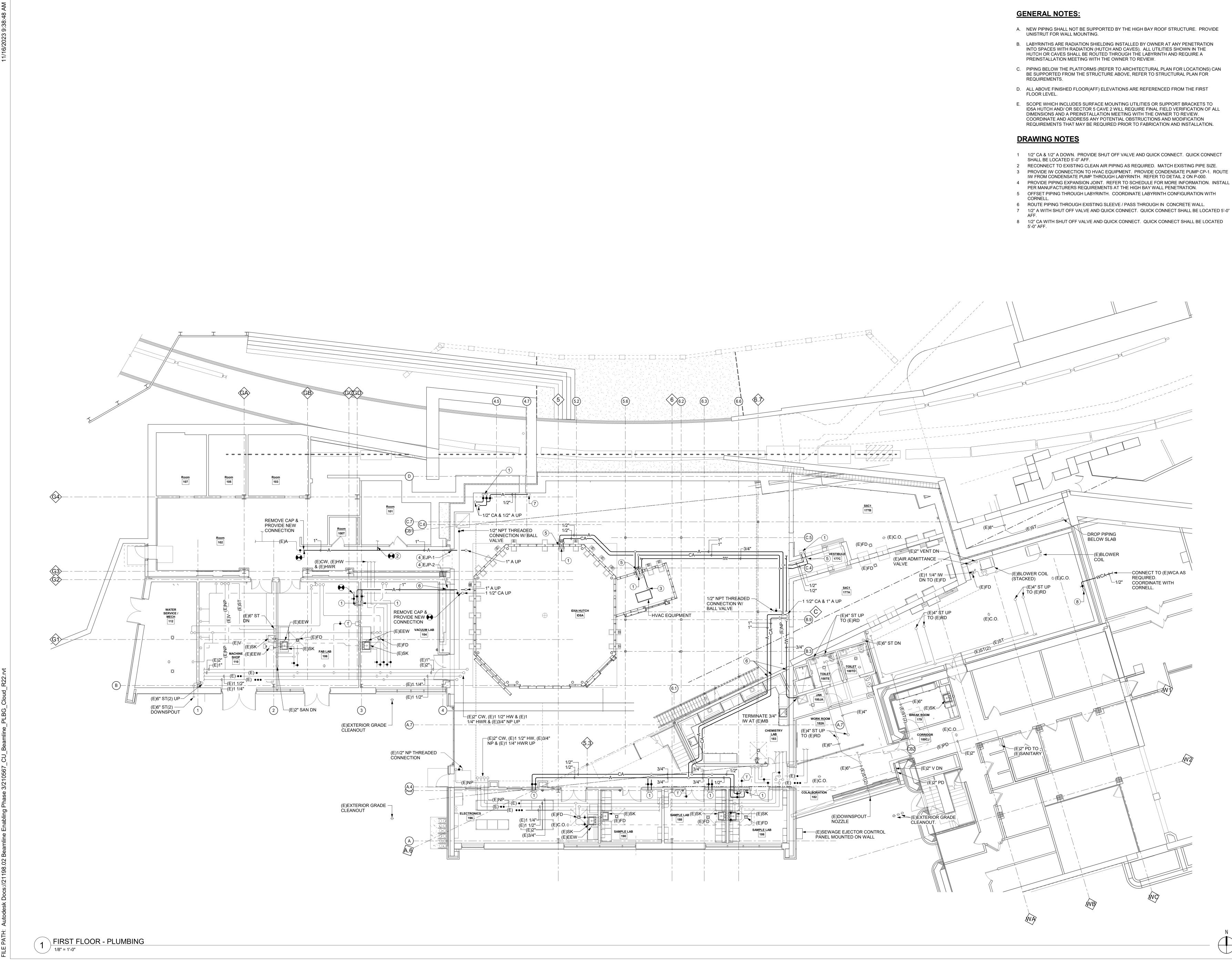
EXISTING WORK TO BE REMOVED

POINT OF CONNECTION

DESCRIPTION

SYMBOL





- INTO SPACES WITH RADIATION (HUTCH AND CAVES). ALL UTILITIES SHOWN IN THE HUTCH OR CAVES SHALL BE ROUTED THROUGH THE LABYRINTH AND REQUIRE A
- BE SUPPORTED FROM THE STRUCTURE ABOVE, REFER TO STRUCTURAL PLAN FOR
- E. SCOPE WHICH INCLUDES SURFACE MOUNTING UTILITIES OR SUPPORT BRACKETS TO ID5A HUTCH AND/ OR SECTOR 5 CAVE 2 WILL REQUIRE FINAL FIELD VERIFICATION OF ALL DIMENSIONS AND A PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION REQUIREMENTS THAT MAY BE REQUIRED PRIOR TO FABRICATION AND INSTALLATION.

- 1 1/2" CA & 1/2" A DOWN. PROVIDE SHUT OFF VALVE AND QUICK CONNECT. QUICK CONNECT
- 2 RECONNECT TO EXISTING CLEAN AIR PIPING AS REQUIRED. MATCH EXISTING PIPE SIZE.
- 4 PROVIDE PIPING EXPANSION JOINT. REFER TO SCHEDULE FOR MORE INFORMATION. INSTALL
- 5 OFFSET PIPING THROUGH LABYRINTH. COORDINATE LABYRINTH CONFIGURATION WITH
- 7 1/2" A WITH SHUT OFF VALVE AND QUICK CONNECT. QUICK CONNECT SHALL BE LOCATED 5'-0"



387 East Main Street Rochester NY 14604 585 232 8300 | rochester@swbr.com



Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 585.288.5590 www.meengineering.com 300 TROLLEY BOULEVARD ROCHESTER, NY 14606



Drawn By: CMD THK Checked By: Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

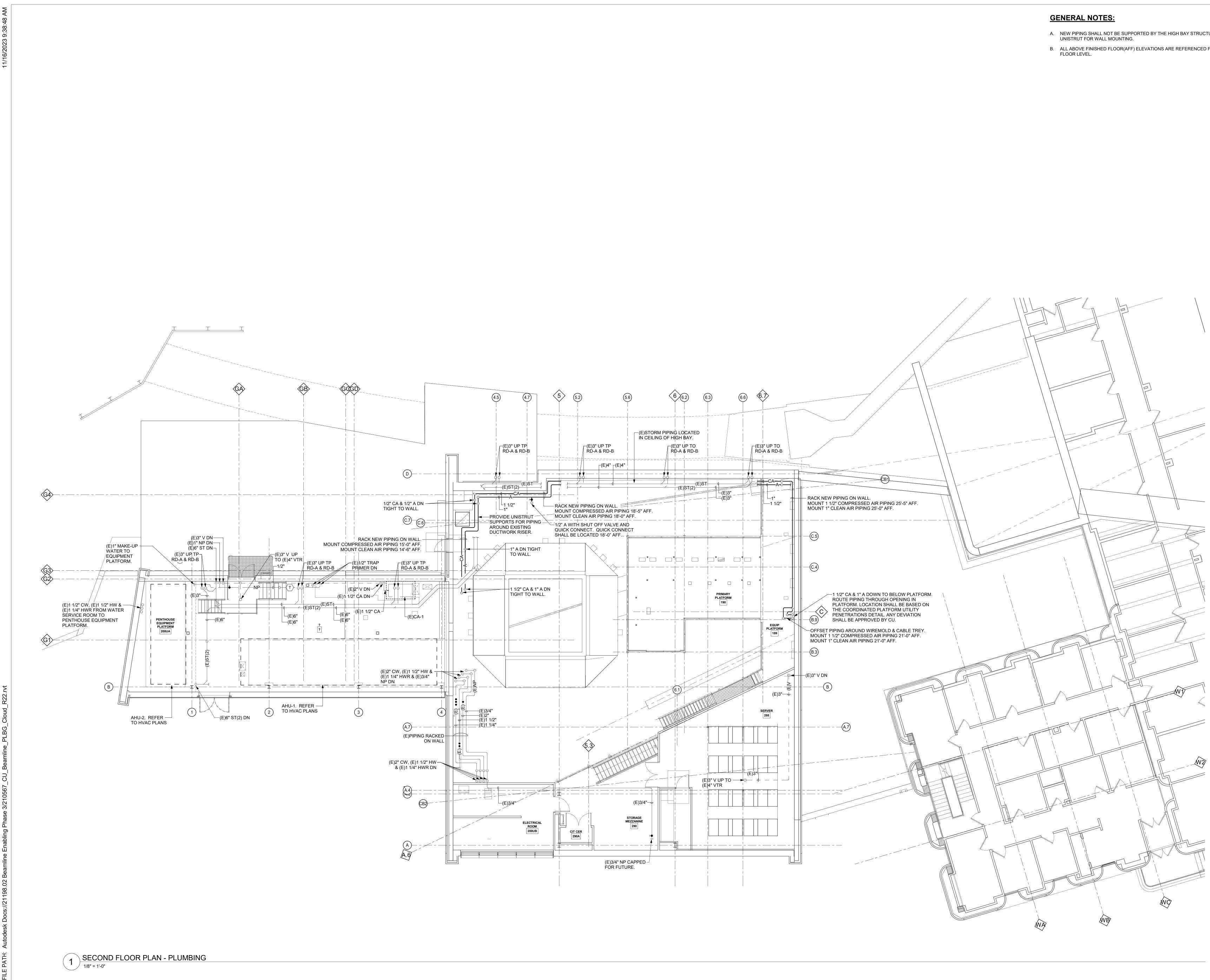
Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

Cornell University lthaca, NY 14853



 \square



- A. NEW PIPING SHALL NOT BE SUPPORTED BY THE HIGH BAY STRUCTURE. PROVIDE
- B. ALL ABOVE FINISHED FLOOR(AFF) ELEVATIONS ARE REFERENCED FROM THE FIRST





Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 300 TROLLEY BOULEVARD ROCHESTER, NY 14606 585.288.5590 www.meengineering.com



Drawn By: CMD Checked By: THK Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

Revisions

Beamline Enabling - Phase 3 Synchrotron Drive Ithaca, NY 14853 SWBR Project Number 21198.02

Cornell University Ithaca, NY 14853



N

SYMBOL	DESCRIPTION		DESCRIPTION
	EXISTING WORK TO BE REMOVED		CHILLED WATER SUPPLY
		CWR	CHILLED WATER RETURN
	POINT OF CONNECTION	C85S	CESR85 SUPPLY
	POINT OF DISCONNECTION	C85R	CESR85 RETURN
		CES	CHESS EXP WATER SUPPLY
\mathbf{x}	DRAWING KEYNOTE	CER	CHESS EXP WATER RETURN
			CHESS OPT WATER SUPPLY
X	DEMOLITION KEYNOTE	COR	CHESS OPT WATER RETURN HOT WATER SUPPLY
MBH	THOUSAND BTU/HOUR	HW8	HOT WATER RETURN
NTS	NOT TO SCALE		TRIPLE DUTY VALVE
(E)	EXISTING		GLOBE VALVE
(L)	ACOUSTIC THERMAL LINING - 1-1/2" THICK	ē	BALL VALVE
(2L)	ACOUSTIC THERMAL LINING - 2" THICK		GATE VALVE
(DBL)	DOUBLE WALL LINED DUCT	Ř	CONTROL VALVE
FPM CFM	FEET PER MINUTE CUBIC FEET PER MINUTE		THREE WAY CONTROL VALVE
AFF	ABOVE FINISHED FLOOR		CHECK VALVE
AD	ACCESS DOOR	×	BALANCING VALVE
W/W	WALL TO WALL	ılı	
G.C.	GENERAL CONTRACTOR		BUTTERFLY VALVE
M.C.	MECHANICAL CONTRACTOR		RELIEF VALVE
P.C.	PLUMBING CONTRACTOR		PRESSURE REDUCING VALVE
E.C.		[PRESSURE/TEMPERATURE TEST PLUG
N.O. N.C.		`	
N.C.	NORMALLY CLOSED FLEXIBLE DUCTWORK		DOUBLE LINE PIPE OR ROUND DUCT CONTINUED
AxB			DOUBLE LINE RECTANGULAR
FO	DUCT SECTION - FLAT OVAL (FO)	7	DUBLE LINE RECTANGULAR DUCT CONTINUED
(1 40"		_►	AIR FLOW
9 12"	ROUND DUCT - IN INCHES	X	PIPE ANCHOR
	DUCT SECTION - SUPPLY		
			EXPANSION COMPENSATOR WITH GUIDES
	DUCT SECTION - RETURN		PRE-FAB EXPANSION LOOP
A			STRAINER
В	WIDTH A x DEPTH B		PRESSURE GAUGE
			THERMOMETER
	TRANSITION SQUARE TO ROUND		UNION
· R	RISE IN DUCT - IN DIRECTION OF AIRFLOW	↑ V	AIR VENT
· D	DROP IN DUCT - IN DIRECTION OF AIRFLOW	■ FT ■ TD	FLOAT & THERMOSTATIC TRAP THERMODYNAMIC TRAP
		■ 15 ■ BT	BUCKET TRAP
N / 1 24x12 UP	SUPPLY DUCT TURNING UP OR DOWN		DIRECTION OF FLOW
N 24x12 UP			REDUCER
	RETURN DUCT TURNING UP OR DOWN		CAP OR PLUG
^ /─_ 6" BOOT ≥	SUPPLY/RETURN		ELBOW DOWN
\mathbf{X}	RECTANGULAR MAIN	· · · · · · · · · · · · · · · · · · ·	ELBOW UP
₹ 14x8	RECTANGULAR BRANCH	AAD	BOTTOM TAP AUTOMATIC AIR DAMPER
∿_т <i>_</i> − 6" ВООТ		FD	FIRE DAMPER
	SUPPLY/RETURN	· SD	SMOKE DAMPER
TAP	RECTANGULAR MAIN ROUND BRANCH	BDD	BACK DRAFT DAMPER
	ROUND BRANCH	FC	FLEX CONNECTOR - DUCTWORK
		M	MOTORIZED DAMPER
∞ TEE	SUPPLY/RETURN ROUND MAIN	BG	BLAST GATE
14"	ROUND BRANCH		
		SD	
	SUPPLY/RETURN		FLEXIBLE CONNECTOR - PIPING
	ROUND MAIN ROUND BRANCH	<u></u>]	DRAIN VALVE WITH HOSE CONNECTION, CAP AND CHAIN
• 14"		H	HUMIDISTAT
		Ś	TEMPERATURE SENSOR
	MITERED ELBOW WITH TURNING VANES	N	NITROGEN DIOXIDE SENSOR
		©	CARBON DIOXIDE SENSOR
		© G	CARBON MONOXIDE SENSOR GAS SENSOR
X	SUPPLY DIFFUSER, REGISTER OR GRILLE	(T)	PNEUMATIC THERMOSTAT
		T E	LINE VOLTAGE THERMOSTAT
	RETURN REGISTER	T G S G	THERMOSTAT/SENSOR WITH GUARD
	EXHAUST GRILLE		AIR TERMINAL UNIT TAG (OPTION 2)
		AB	A = UNIT NO.
	FIN TUBE RADIATION	C C	B = MAXIMUM CFM C = MINIMUM CFM
	VALANCE		
	RADIANT CEILING PANEL	DSD	DUCT SMOKE DETECTOR
			REGISTER, GRILLE OR DIFFUSER TAG
🕞 VAV-X-XX	AIR TERMINAL UNIT AND TAG (OPTION 1)	A B	A = TYPE
	· · · · ·	C	B = NECK SIZE C = CFM
	AIR TERMINAL UNIT WITH FACTORY		
VAV-X-XX	ATTENUATOR (OPTION 1)	FT-A B	FT-A = TYPE
┢═╛ [╋] ┉┯┈╸		C	
	LAB AIR VALVE	D	C = ENCLOSURE LENGTH D = GPM
			RADIANT CEILING PANEL TAG
A	VALANCE TAG A = TYPE	A B	A = TYPE
B	B = COIL SIZE	C	B = LENGTH C = GPM
С	C = COOLING GPM		

SYMBOL DESCRIPTION IF 1/- IN MUNIT (GENERAL) SIGLE PORT SENSOR IM AMAGE MUTIT (GENERAL) IM AMAGE MUTIT IM MUTIT IM MUTIT IM <t< th=""><th></th><th>CONTROLS SCHEMA</th><th>ATIC SY</th><th>/MBOL LIST</th></t<>		CONTROLS SCHEMA	ATIC SY	/MBOL LIST
B B	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
Bit Control (SENERAL) Etit Control (SENERAL) JAPO ANALOG INPUT (SENERAL) Sie Electroneumonia JAPO FILL ANALOG INPUT (SENERAL) Sie Electroneumonin JAPO				SINGLE POINT SENSOR
ANALOS INTU (SENERAL) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Seneral) Image: Control (Senera) <		BINARY OUTPUT (GENERAL)	СТ	CURRENT TRANSDUCER
No. ANACCO CUTUR (CENERAL) Image: Constraint of the constraint		ANALOG INPUT (GENERAL)		
I AMA-CO POINT L CLETTRICAL INTERFACE BV BMACY VALUE Sign TARTISTOP BV AMA-CO POINT Sign TARTISTOP AV AMA-CO SHIPIT Sign OPENICIOSE AV AMA-CO SHIPIT Sign PHAGI SDABLE A AMA-CO CUTULI Sign PHAGI SDABLE I HERMOWELL ThERMOWELL ThERMOWELL B ELECTRIC ACTUATOR Sign PHAGI SDABLE EI ELECTRIC ACTUATOR Sign PHAGI SDABLE EI ELECTRIC ACTUATOR Sign SOLENDO WALVE EI ELECTRIC CLEATRICE SOLENDO WALVE Solendo MARVE EI FILLON ACTUATOR FILLON ACTUATOR Solendo MARVE EI FILLON AC	<u>AO</u>	ANALOG OUTPUT (GENERAL)		
Image: Construct of the construction of the	↑	BINARY POINT	 	TRANSDUCER
BIT BITALISTOP BIT BITALISTOP BITALISTOP Sign STATISTOP AND ANALOG VALUE AD HERMOWELL AD HERMOWEL AD HADDIFER BERLAY STATUS STATUS ADDIFERDISTIC EXTRANCE MOTOR ADDIENTIC ANDIEL ORDER BERLAY STATUS STATUS ADDIENTIC ANDIEL ORDER MOTOR FULLATIC CONTROL DAMPER BELAY STATUS STATUS ADDIENTIC ANDIENDIE STATUS ADDIENTIC EXTRUNC STATUS A				
AV ANALOG OFFICIT OPENAL OSE AI ANALOG OFFICIT EXALLEDISABLE AI ANALOG OFFICIT EXALLEDISABLE AI ANALOG OFFICIT EXALLEDISABLE AI ANALOG OFFICIT EXALLEDISABLE AI ANALOG OFFICIT EXALLEDISALE AI ANALOG OFFICIT EXALLEDISALE II THERMOWELL III MARD WREE INTERACE III ELECTRICAL CATUATOR EXALLEDISALE IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	BI	BINARY INPUT	S S	START/STOP
AO ANALOG CUTPUT FILME FORSAULT L THERMONNELL Image of the second		ANALOG VALUE	%	OPEN/CLOSE
L THERMOWELL Image: Constraint of the con			ED	ENABLE/DISABLE
A. ARM PRELAMITE CONTROL E ELECTRIC ACTUATOR PREJAMITE CONTROL III HUMDIFER CENTROL PREJAMITE CONTROL III HUMDIFER DESPERSION GRID PREJAMITE CONTROL III HUMDIFER DESPERSION GRID PREJAMITE CONTROL III HUMDIFER DESPERSION GRID PREJAMITE CONTROL VALVE CAWAY) III RELAY IIII DESPERSION CRID PREJAMITE CONTROL VALVE CAWAY) IIII RELAY IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	IJ	THERMOWELL		HARD WIRE INTERFACE
Image: Second	A	ALARM	, í A	
Image: Part of the second se				
Humonier Konstruction Humonier Humonier Humonier Humonier R ReLAY Sistaus Solenoid Valve No File M Relay Sistaus Solenoid Valve M Relay M File M File M File M File M File M Motor M File M Motor M Motor M Butterer volation M Marchance M Marchance M Marchance M Marchance M Humonity Sensor M File M Humonity Sensor M File M Humonity Sensor M File M Humonity Sensor M Humonity Sensor <td< td=""><td></td><td></td><td></td><td>VALVE (2-WAY)</td></td<>				VALVE (2-WAY)
Image: Section of the section of t		FREEZE-STAT		
HUMDIFIER DISPERSION GRID SI SOLENOID VALVE R RELAY THERMISTATIC EXPANSION S STATUS AUTOMATIC AR DAMPER W FLOW METER AUTOMATIC AR DAMPER W NOTOR N BUTTERFLY CONTROL DAMPER W FLOW METER PIEUMATIC AR DAMPER W AUTOMATIC AR DAMPER PIEUMATIC AR DAMPER W HUMDIFY ENSOR N BUTTERFLY CONTROL DAMPER W HUMDITY SENSOR RA RETURN AR W HUMDITY SENSOR RA RETURN AR W HUMDITY SENSOR RA SUPPLY AR V TEMPERATURE SENSOR SA SUPPLY AR V TEMPERATURE SENSOR SA SUPPLY AR V TEMPERATURE SENSOR SE SUPPLY AR V CARBON MONXED SENSOR SE SUPPLY AR SSACE SENSOR WITH SETPOINT SE SUPPLY AR SSACE SENSOR WITH SETPOINT SE SUPPLY AR SSACE SENSOR WITH SETPOINT SE SUPPLY AR SSACE SENSOR WITH SEENSOR WITH SE SUPPLY AR SSACE SENSOR WITH SEENSOR WITH SE SUPPLY AR SSACE SENSOR WITH SEENSOR FIL ER BANK SE SSACE SENSO	H	HUMIDIFIER	E	
R ReLAY IS STATUS IS STATUS IN FLOW METER IN MOTOR IS STATUS IS STATUS IN MOTOR IS STATUS IN MOTOR IS STATUS IS STATUS IS FLOW METER IS STATUS IS STATUS IS STATUS IS STATUS IS STATUS IS STATUS IS AVERAGING SENSOR IS AVERAGING SENSOR IS AVERAGING SENSOR IN INTELLAST IN INTELEVATION	~~~	HUMIDIFIER DISPERSION GRID		
IS STATUS AUTOMATC AR DAMPER (M) FLOW METER AUTOMATC AR DAMPER (M) MOTOR AUTOMATC AR DAMPER (M) BTU ENERGY METER	R	RELAY	F 1	
Image: Constraint of the second se	S	STATUS	< ⊗	
Image: Constant of the second secon			++++++	(PARALLEL BLADE)
Image: Station BTU ENERCY METER Image: Station PNEUMATC ACTUATOR Image: Station AR FLOW MEASURING Image: Station Image: Station Image: Station Image: Station Averaging Sensor Image: Station Image: Station Image: Station Image: Station Averaging Sensor Image: Station Image: Station Image: Station Image: Station Averaging Sensor Image: Station Image: Station Image: Station Image: Station Image: Station Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station Image: Station<			· · · · · · · · · · · · · · · · · · ·	
Image: Station AR FLOW MEASURING Image: Station Image: Station Image: Station AR FLOW MEASURING Image: Station Image: Station Image: Station Averaging Sensor An Tepretarture Construct Are Source Image: Station Averaging Sensor Averaging Sensor Image: Station Rate: Station Rate: Station Image: Station Station Station Image: Station Rate: Station Station Image: Station Station Station		MOTOR	•	BUTTERFLY CONTROL DAMPER
E STATION CONTROL AR SOURCE A VERAGING SENSOR EA CONTROL AR SOURCE V INUDITY SENSOR FA V INUDATY SENSOR FA V IDUCT MOUNTED) FA V IDUCT MOUNTED) FA V IDUCT MOUNTED) FA V IDUCT MOUNTED) FL V CARBON IDIXIDE SENSOR SP V CARBON INDXIDE SENSOR SMOKE CONTROL FAN COV CARBON MONOXIDE SENSOR SMOKE CONTROL FAN V SPACE SENSOR WITH SETPOINT EF V SPACE SENSOR WITH OCCUPANCY SMOKE CONTROL FAN V SPACE SENSOR WITH ANONOFF SA V SPACE SENSOR WITH ANONOFF SA V SPACE SENSOR WITH ANONOFF SA V ROOM TEMPERATURE SENSOR WITH MASUAL SPEED V ROOM TEMPERATURE SENSOR WITH VARIABLE FREQUENCY DRIVE V ROOM TEMERATURE SENSOR WITH<		BTU ENERGY METER		PNEUMATIC ACTUATOR
L OMMON AN BUCKLE 2 AVERAGING SENSOR DA V TEMAUSTAR V TEMAUSTAR V TEMPERATURE SENSOR V CABBON INONCE SENSOR V CABBON INONCE SENSOR V SARCE SENSOR WITH SETPOINT ADUSTMENT S SPACE SENSOR WITH OCCUPANCY OVERIDE V REACE SENSOR WITH AN ONOFF V SEPACE SENSOR WITH AN ONOFF V ROOM TEMPERATURE SENSOR WITH ADUSTMENT V ROOM TEMPERATURE SENSOR V ROO			(A)	
V HUMDITY SENSOR (DUCT MOUNTED) RETURN AR V HUMDITY SENSOR (DUCT MOUNTED) F.A. RETURN AR V FUMPERATURE SENSOR (DUCT MOUNTED) F.C. F.A.L. V CARBON DONORDE SENSOR (DUCT MOUNTED) F.C. F.A.L. V CARBON MONORDE SENSOR (DUCT MOUNTED) SF. SUPLY FAN V CO CARBON MONORDE SENSOR (DUCT MOUNTED) SF. SUPLY FAN V CO CARBON MONORDE SENSOR (DUCT MOUNTED) SF. SUPLY FAN V SOBACE SENSOR WITH SETPOINT ADJUSTMENT SF. SUPLY FAN S SPACE SENSOR WITH OCCUPANCY OVERRUE FILTER BANK SASE MOUNTED PUMP S SPACE SENSOR WITH VISUAL DISPLAY BASE MOUNTED PUMP BASE MOUNTED PUMP S SPACE SENSOR WITH VICH SED ADJUSTABLE SPEED DRIVE S SWITCH MON TEMPERATURE SENSOR WITH PLANSHOR SWITCH BASE COULARY OVERRUE COULING COLL S NOOM TEMPERATURE SENSOR WITH PAN ONOFF SWITCH SED COULING COLL MOUNTED) S OCCUPANCY OVERRUE WED VARIABLE FREQUENCY DRIVE SEC S OCCUPANCY OVERRUE SED COULING COLL SEC S OCCUPANCY OVERRUE SED SEC SEC	5			
V (DUCT MOUNTED) SA SUPPLY AIR V TEMERATURE SENSOR (DUCT OR PIPE MOUNTED) F.A.LAST Q CARBON MONOXIDE SENSOR (DUCT MOUNTED) (SE) SUPPLY FAN Q SA SPACE SENSOR WITH SETPOINT AUJUSTICHT (SE) SUPPLY AIR FAN Q SPACE SENSOR WITH VISUAL DISPLAY (SE) BASE MOUNTED PUMP Q SOPACE SENSOR WITH FAN ONVOFF (N ILNE PUMP Q ROOM TEMPERATURE SENSOR WITH ADDUSTABLY (ADUUSTABLE SPEED DRIVE Q ROOM TEMPERATURE SENSOR WITH FAN ONVOFF SWITCH (ADUUSTABLE SPEED DRIVE Q ROOM TEMPERATURE SENSOR WITH FAN ONVOFF SWITCH (ADUUSTABLE SPEED DRIVE Q ROOM TEMPERATURE SENSOR WITH FAN ONVOFF SWITCH (ADUUSTABLE SPEED DRIVE Q ROOM TEMPERATURE SENSOR WITH FAN ONVOFF SWITCH (ADUUSTABLE SPEED DRIVE Q ROOM TEMPERATURE SENSOR	5			
V IQUCT OR PIPE MOUNTED) F.O. FAIL OPEN CO CARBON DIOXDE SENSOR (QUCT MOUNTED) (SE) SUPPL'Y FAN CO CARBON MONOXIDE SENSOR (QUCT MOUNTED) (SE) SUPPL'Y FAN So SPACE SENSOR WITH SETPOINT (QUCT MOUNTED) (SE) SMOKE CONTROL FAN So SPACE SENSOR WITH OCCUPANCY (SE) FILTER BANK So SPACE SENSOR WITH VISUAL DISPLAY (SE) BASE MOUNTED PUMP So SPACE SENSOR WITH FAN ON/OFF (SE) IN LINE PUMP So SPACE SENSOR WITH VISUAL DISPLAY (SE) BASE MOUNTED PUMP So SPACE SENSOR WITH FAN ON/OFF (SE) IN LINE PUMP So SPACE SENSOR WITH FAN ON/OFF (SE) IN LINE PUMP So SOOM TEMPERATURE SENSOR WITH COCUPANCY OVERNOE (ASD) ADJUSTABLE SPEED DRIVE So NOOM TEMPERATURE SENSOR WITH FAN ON/OFF SWITCH (ASD) (ADJUSTABLE) (SE) So ROOM TEMPERATURE SENSOR WITH FAN ON/OFF SWITCH (SE) (COLING COIL (MAUL MOUNTED) M MOISTURE SENSOR (FE) (COLING COIL (MAUL MOUNTED) (MAUL MOUNTED) IM	H/	(DUCT MOUNTED)	SA	SUPPLY AIR
Image: Control Family interpretation of the second control family interpretating second control family interpretation of th				
V CARBON MONOXIDE SENSOR (DUCT MOUNTED) SC SMOKE CONTROL FAN Image: Control of Control o			SF	SUPPLY FAN
Image: Construction of the set of			sc	SMOKE CONTROL FAN
(S) ADJUSTMENT EARADISTAINT OCCUPANCY EARADISTAINT PAN (S) SPACE SENSOR WITH OCCUPANCY IFILTER BANK FILTER BANK (S) SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP (S) SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP (S) SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP (S) SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP (S) SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP (S) SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP (S) ROOM TEMPERATURE SENSOR WITH ADJUSTABLE SPEED DRIVE (S) ROOM TEMPERATURE SENSOR WITH VARIABLE FREQUENCY DRIVE (C) ROOM TEMPERATURE SENSOR WITH (FE) HEAT IRCCOVERY COIL (B) OCCUPANCY OVERRIDE (C) HEAT IRCCOVERY COIL (B) MOISTURE SENSOR (FI) HEAT IRCCOVERY COIL (B) MOISTURE SENSOR (FI) HEAT IRCCOVERY COIL (E) ROOM TEMPERATURE SENSOR (FI) HEAT IRCCOVERY COIL (B) MOISTURE SENSOR (FI) HEAT IRCCOVERY COIL (B) ROOM TEMPERATURE SENSOR (FI) <t< td=""><td>СО</td><td></td><td>RF</td><td>RETURN AIR FAN</td></t<>	СО		RF	RETURN AIR FAN
SPACE SENSOR WITH OCCUPANCY OVERRUE FILTER BANK Image: Space Sensor WITH VISUAL DISPLAY EASE MOUNTED PUMP Image: Space Sensor WITH FAN ON/OFF SWITCH EASE MOUNTED PUMP Image: Space Sensor WITH FAN ON/OFF SWITCH EASE MOUNTED PUMP Image: Space Sensor WITH FAN ON/OFF SWITCH EASE MOUNTED PUMP Image: Space Sensor WITH FAN ON/OFF SWITCH EASE MOUNTED PUMP Image: Space Sensor WITH FOR ON/OFERATURE SENSOR WITH FOR ON/OFERATURE SENSOR WITH FOR ON/OFERATURE SENSOR WITH FINAL ON/OFERATURE SENSOR Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR WITH FINAL ON/OFERATURE SENSOR HEAT RECOVERY COIL Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR HEAT RECOVERY COIL Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR HEAT RECOVERY COIL Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR HEAT RECOVERY COIL Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR HEAT RECOVERY COIL Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR HIP Image: Space Sensor Space Sensor WITH FINAL ON/OFERATURE SENSOR HIP Image: Space Sensor Space Sensor Switch HIP HIGH Level Switch Image: Space Sensor Swit	(SA)		(EF_	EXHAUST AIR FAN
Stack Sensor WITH VISUAL DISPLAY Base Mounted PUMP S SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP S SPACE SENSOR WITH FAN ON/OFF IN LINE PUMP S SWITCH ADJUSTABLE SPEED DRIVE S ROOM TEMPERATURE SENSOR WITH OCCUPANCY OVERRIDE ADJUSTABLE SPEED DRIVE S ROOM TEMPERATURE SENSOR WITH VISUAL DISPLAY VARIABLE FREQUENCY DRIVE S COOLING COIL IM S ROOM TEMPERATURE SENSOR WITH VISUAL DISPLAY IM S ROOM TEMPERATURE SENSOR WITH VISUAL DISPLAY IMEAT RECOVERY COIL S ROOM TEMPERATURE SENSOR IM S OCCUPANCY SENSOR IM IMEAT RECOVERY COIL S OCCUPANCY SENSOR IMA HEAT RECOVERY COIL IM MOISTURE SENSOR IMA REFRIGERANT R134a SENSOR (WALL MOUNTED) IFE FLOW SENSOR <t< td=""><td></td><td>SPACE SENSOR WITH OCCUPANCY</td><td></td><td></td></t<>		SPACE SENSOR WITH OCCUPANCY		
Image: Stratule sensor with FAN ON/OFF Image: Stratule sensor with FAN ON/OFF Image: Stratule sensor with the problem of the sensor with the problem of the sensor with the problem of the sensor with the sensor the sensor the sensor the sensor with the sensor with the s				
(S) SWITCH IN LINE PUMP Image: Construct and the sensor with accurrent accurrent accurrence sensor with accurrence sensor accondence accurrence sensor accurrence sensor accurrence s				BASE MOUNTED PUMP
Image: Sensor With Occupancy Override Image: Sensor	Ś	SWITCH		IN LINE PUMP
Image: Second temperature sensor with visual display Image: Sensor with visual display </td <td>(SA)</td> <td></td> <td>ASD</td> <td>ADJUSTABLE SPEED DRIVE</td>	(SA)		ASD	ADJUSTABLE SPEED DRIVE
Image: Source of the sensor with visual display Image: Source of the sensor with visual display Room temperature sensor with visual display Image: Source of the sensor with visual display Image: Source of the sensor with visual display Image: Source of the sensor visual display Image: Source of the sensor visual display Image: Source of the sensor visual display Image: Source of the sensor visual display Image: Source of the sensor visual display displa	© <u>_</u>		VFD	VARIABLE FREQUENCY DRIVE
VISUAL DISPLAY Image: Constraint of the sensor with FAN ONOF SWITCH Image: Constraint of the sensor with fan Sensor with FAN ONOF SWITCH Image: Constraint of the sensor with FAN ONOF SWITCH Image: Constraint of the sensor with FAN ONOF SWITCH Image: Constraint of the sensor with FAN ONOF SEnsor with FAN ONOF SENSOR Image: Constraint of the sensor with FAN ONOF SENSOR with FAN ONOF SENSOR Image: Constraint of the sensor with FAN ONOF SENSOR with FAN ONOF SENSOR Image: Constraint fan ONOF SENSOR with FAN ONOF SENSOR with FAN ONOF SENSO			C	COOLING COIL
Image: Construction of the sensor with provide sensor p			H	
OS OCCUPANCY SENSOR C HEAT RECOVERY COL M MOISTURE SENSOR GAS BURNER → PROBE SENSOR R134a→ REFRIGERANT R134a SENSOR FS FLOW SENSOR HI HIGH LEVEL SWITCH ES END SWITCH LOW LEVEL SWITCH ES END SWITCH LOW LOW LEVEL SWITCH ES END SWITCH LOW VENTURI AIRFLOW CONTROL SM MANUAL SWITCH IIII VENTURI AIRFLOW CONTROL P PRESSURE SWITCH IIIII VENTURI AIRFLOW CONTROL V DIFFERENTIAL STATIC PRESSURE TRANSMITTER RD ROTATION DETECTOR V PRESSURE TRANSMITTER IIIII REFRIGERAND IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	(F)			
M MOISTURE SENSOR GAS BURNER ● PROBE SENSOR REFRIGERANT R134a SENSOR (WALL MOUNTED) FS FLOW SENSOR HI F FLOW SENSOR HI F FLOW SWITCH LOW ES END SWITCH LOW SM MANUAL SWITCH III P PRESSURE SWITCH IIII P PRESSURE SWITCH IIII P PRESSURE SWITCH MS MOTOR STARTER MS MOTOR STARTER P PRESSURE SWITCH MS P PRESSURE SWITCH MS P PRESSURE SWITCH MS MOTOR STARTER RD ROTATION DETECTOR P PRESSURE TRANSMITTER SD SMITCH OR RELAY CS CURRENT SENSOR V FLOW TRANSMITTER SC P PRESSURE TRANSMITTER SC SP FLOW TRANSMITTER SC V PRESSURE TRANSMITTER	OS	OCCUPANCY SENSOR		HEAT RECOVERY COIL
→ PROBE SENSOR REFRIGERANT R134a SENSOR FS FLOW SENSOR HI HIGH LEVEL SWITCH FS FLOW SWITCH LOW LOW LEVEL SWITCH ES END SWITCH LOW LOW LEVEL SWITCH SM MANUAL SWITCH IIII VENTURI AIRFLOW CONTROL VALVE MANUAL SWITCH IIIII VENTURI AIRFLOW CONTROL P PRESSURE SWITCH IIIII TRANSFORMER P PRESSURE SWITCH IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	M	MOISTURE SENSOR		GAS BURNER
FS FLOW SENSOR (WALL MOUNTED) F FLOW SWITCH HIGH LEVEL SWITCH ES END SWITCH LOW LOW LEVEL SWITCH SM MANUAL SWITCH IIII VENTURI AIRFLOW CONTROL P PRESSURE SWITCH IIIII ROTATION DETECTOR P PRESSURE SWITCH IIIII ROTATION DETECTOR P DIFFERENTIAL STATIC PRESSURE TRANSMITTER IIIII ROTATION DETECTOR P ELECTRIC/PNEUMATIC SWITCH OR RELAY IIIII SMOKE DETECTOR P PRESSURE TRANSMITTER IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				REFRIGERANT R134a SENSOR
F FLOW SWITCH ES END SWITCH ES END SWITCH SM MANUAL SWITCH P PRESSURE SWITCH DIFFERENTIAL STATIC MMS PRESSURE SWITCH MMS MOTOR STARTER MMS PRESSURE SWITCH MMS MOTOR STARTER MMS PRESSURE SWITCH MMS MOTOR STARTER RD ROTATION DETECTOR SMOKE DETECTOR P PRESSURE TRANSMITTER PE PNEUMATIC/FLECTRIC SWITCH OR RELAY CS CV FLOW TRANSMITTER PC PRESSURE TRANSMITTER P SSC VP PRESSURE TRANSMITTER VP DEWPOINT SENSOR (DUCT MOUNTED) VP DEWPOINT SENSOR (DUCT MOUNTED) STATIC PRESSURE SENSOR NETWORK COMMUNICATION INTERFACE POINT VMOD NETWORK COMMUNICATION INTERFACE POINT STATIC PRESSURE SENSOR V VICT MOUNTED) V VICT MOUNTED) V VICT MOUNTED) V VICT MOUNTED)	FS	FLOW SENSOR		
ES END SWITCH LOW LOW LEVEL SWITCH ES END SWITCH IIII VENTURI AIRFLOW CONTROL VALVE P PRESSURE SWITCH IIII VENTURI AIRFLOW CONTROL P PRESSURE SWITCH IIII VENTURI AIRFLOW CONTROL P PRESSURE SWITCH IIII VENTURI AIRFLOW CONTROL P PRESSURE SWITCH IIII WANDAL SWITCH P PRESSURE SWITCH IIII RO P PRESSURE TRANSMITTER RD ROTATION DETECTOR P PREUMATIC/ELECTRIC SD SMOKE DETECTOR SWITCH OR RELAY CS CURRENT SENSOR P PRESSURE TRANSMITTER MOD MODULATING P PRESSURE TRANSMITTER SC SPEED COMMAND P PRESSURE SENSOR AOM ADDRESSABLE OUTPUT MODULE (FIRE ALARM INTERFACE) PP DEWPOINT SENSOR (DUCT MOUNTED) IIIQUID IMMERSION TEMPERATURE SENSOR P STATIC PRESSURE SENSOR (DUCT MOUNTED) IIIQUID IMMERSION TEMPERATURE SENSOR P CONDENSATE SENSOR (DUCT MOUNTED) IIIQUID IMMERSION TEMPERATURE SENSOR P CONDE	F	FLOW SWITCH	HI	HIGH LEVEL SWITCH
Image: Signal in Control Signal in Control Signal in Control Signal in Control Control Signal in Control Control Signal in Control Contrecontro Contrect Control Control Control Control Contro			LOW	LOW LEVEL SWITCH
Image: Signal in the second				
Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: Static pressure sensor (DUCT MOUNTED) Image: St	M	MANUAL SWITCH		
Image: Differential static pressure switch Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure transmitter Image: Differential static pressure sensor (Duct mounted) Image: Differential static pressure transmitter Image: Differential sensor (Duct mounted) Image: Differential static pressure sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) Image: Differential sensor (Duct mounted) <	Р	PRESSURE SWITCH		
Image: Differential static pressure transmitter RD ROTATION DETECTOR Image: Differential static pressure transmitter SD SMOKE DETECTOR Image: Differential static pressure transmitter SD SMOKE DETECTOR Image: Differential static pressure transmitter CS CURRENT SENSOR Image: Differential static pressure transmitter MOD MODULATING Image: Differential static pressure transmitter SC SPEED COMMAND Image: Differential static pressure sensor (DUCT MOUNTED) Network communication interface) Network communication interface point Image: Differential static pressure sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential sensor (DUCT MOUNTED) Image: Differential senser Image: Differential sensor (DUCT MO				MOTOR STARTER
Image: Stratic Presentation Stratic Presentation Image: Stratic Presentation Stratic Pres		DIFFERENTIAL STATIC	RD	ROTATION DETECTOR
PNEUMATIC/ELECTRIC CS CURRENT SENSOR SWITCH OR RELAY MOD MODULATING FLOW TRANSMITTER MOD MODULATING P PRESSURE TRANSMITTER SC SPEED COMMAND DP DEWPOINT SENSOR (DUCT MOUNTED) AOM ADDRESSABLE OUTPUT MODULE (FIRE ALARM INTERFACE) SP STATIC PRESSURE SENSOR (DUCT MOUNTED) COM INTERFACE POINT SP STATIC PRESSURE SENSOR (DUCT MOUNTED) T LIQUID IMMERSION TEMPERATURE SENSOR SP CONDENSATE SENSOR (DUCT MOUNTED) T LIQUID IMMERSION TEMPERATURE SENSOR SIGNAL IN OUT ELECTRIC TO PNEUMATIC TRANSDUCER RH RELATIVE HUMIDITY SENSOR SIGNAL IN OUT ELECTRIC TO PNEUMATIC SWITCH FZ LOW LIMIT TEMPERATURE SWITCH		ELECTRIC/PNEUMATIC	SD	SMOKE DETECTOR
Flow TRANSMITTER MOD MODULATING P PRESSURE TRANSMITTER SC SPEED COMMAND DP DEWPOINT SENSOR (DUCT MOUNTED) AOM ADDRESSABLE OUTPUT MODULE (FIRE ALARM INTERFACE) SP STATIC PRESSURE SENSOR (DUCT MOUNTED) COM NETWORK COMMUNICATION INTERFACE POINT SP STATIC PRESSURE SENSOR (DUCT MOUNTED) T LIQUID IMMERSION TEMPERATURE SENSOR V CONDENSATE SENSOR T LIQUID IMMERSION TEMPERATURE SENSOR V CONDENSATE SENSOR T LIQUID IMMERSION TEMPERATURE SENSOR SIGNAL IN AIR IN OUT ELECTRIC TO PNEUMATIC TRANSDUCER FZ LOW LIMIT TEMPERATURE SWITCH		PNEUMATIC/ELECTRIC	CS	CURRENT SENSOR
P FLOW TRANSMITTER P PRESSURE TRANSMITTER P PRESSURE TRANSMITTER DP DEWPOINT SENSOR (DUCT MOUNTED) ADDRESSABLE OUTPUT MODULE (FIRE ALARM INTERFACE) DP DEWPOINT SENSOR (DUCT MOUNTED) AOM ADDRESSABLE OUTPUT MODULE (FIRE ALARM INTERFACE) SP STATIC PRESSURE SENSOR (DUCT MOUNTED) COM NETWORK COMMUNICATION INTERFACE POINT SP STATIC PRESSURE SENSOR (DUCT MOUNTED) IQUID IMMERSION TEMPERATURE SENSOR V CONDENSATE SENSOR IQUID IMMERSION TEMPERATURE SENSOR V CONDENSATE SENSOR IQUID IMMERSION TEMPERATURE SENSOR V ELECTRIC TO PNEUMATIC TRANSDUCER FZ LOW LIMIT TEMPERATURE SWITCH			MOD	MODULATING
Image: Static Pressure Sensor (DUCT MOUNTED) ADDRESSABLE OUTPUT MODULE (FIRE ALARM INTERFACE) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Pressure Sensor (DUCT MOUNTED) Image: Static Presstresensor (DUCT MOUNTED) Image:		FLOW TRANSMITTER		
DP DEWPOINT SENSOR (DUCT MOUNTED) Image: Constant of the sense of the sens	P	PRESSURE TRANSMITTER		
SP STATIC PRESSURE SENSOR (DUCT MOUNTED) Image: Composition of the sensor C CONDENSATE SENSOR Image: Composition of the sensor SIGNAL IN AIR IN OUT ELECTRIC TO PNEUMATIC TRANSDUCER RH SIGNAL IN AIR IN SIGNAL IN ELECTRIC TO PNEUMATIC SIGNAL IN ELECTRIC TO PNEUMATIC SWITCH FZ			AOM	(FIRE ALARM INTERFACE)
(DUCT MOUNTED) Image: Condensate sensor C CONDENSATE SENSOR SIGNAL IN OUT ELECTRIC TO PNEUMATIC TRANSDUCER SIGNAL IN OUT ELECTRIC TO PNEUMATIC SWITCH			СОМ	
CONDENSATE SENSOR Relative humidity sensor SIGNAL IN ELECTRIC TO PNEUMATIC AIR IN ELECTRIC TO PNEUMATIC SIGNAL SWITCH SWITCH			T	
SIGNAL IN AIR IN ELECTRIC TO PNEUMATIC TRANSDUCER RELATIVE HUMIDITY SENSOR SIGNAL IN AIR IN ELECTRIC TO PNEUMATIC TRANSDUCER FZ LOW LIMIT TEMPERATURE SWITCH SWITCH		CONDENSATE SENSOR		
AIR IN Electric to pneumatic SIGNAL IN ELECTRIC TO PNEUMATIC SIGNAL SWITCH SWITCH			KH	RELATIVE HUMIDITY SENSOR
ELECTRIC TO PNEUMATIC Signal SWITCH			FZ	
				SWITCH
		SWIICH		

GENERAL NOTES:

- A. REFER TO STRUCTURAL AND ARCHITECTURAL PLAN DETAILS FOR DUCTWORK AND SHIELDING.
- SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. C. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED
- D. ALL MATERIAL AND EQUIPMENT SHALL BE NEW.
- AND NATIONAL CODES.
- FLOORS AND ROOFS NECESSARY FOR INSTALLATION OF MECHANICAL SYSTEMS. DO NOT DRILL, CORE OR CUT ANY PORTION OF COLUMNS, BEAMS, JOISTS OR BRIDGING RIBS.
- WITHIN THE PIPING SYSTEMS THAT COULD ACCUMULATE OR TRAP AIR PREVENTING PROPER OPERATION OF THE SYSTEMS. DRAINS SHALL BE PROVIDED AT ALL LOW POINTS WITHIN THE PIPING SYSTEMS TO FACILITATE DRAINING OF THE SYSTEM COMPLETELY.
- ALL ROOM TEMPERATURE SENSORS WITH THE ARCHITECT/ENGINEER. THE DEVICES WHEN LOCATED ON COMMON WALLS. THE MOUNTING HEIGHT FOR ALL TEMPERATURE SENSORS SHALL BE 48 IN. TO TOP OF THE COVER.
- INSTALLATION OF MECHANICAL SYSTEMS INCLUDING, BUT NOT LIMITED TO, RATED WALLS SHALL BE SEALED WITH A NON-HARDENING SEALANT ON BOTH SIDES OF WALL PENETRATION TO REDUCE NOISE TRANSMISSION.
- PREINSTALLATION MEETING WITH THE OWNER TO REVIEW.
- K. SCOPE WHICH INCLUDES SURFACE MOUNTING UTILITIES OR SUPPORT BRACKETS TO

INSTALLATION.

UTILITY PENETRATION REQUIREMENTS TRHOUGH CAVE, HUTCH, AND WALLS WITH

B. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS

DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND ALL DIMENSIONS BEFORE FABRICATION.

E. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTRUCTION AND LOCAL, STATE, F. MECHANICAL CONTRACTOR SHALL PROVIDE ALL PENETRATIONS THROUGH WALLS,

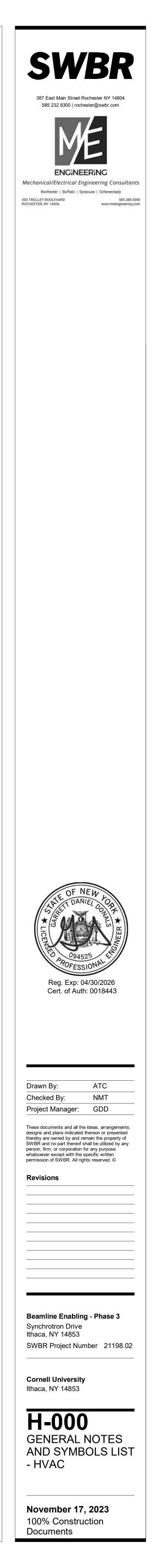
G. IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL AIR VENTS OR DRAINS FOR THE INSTALLATION OF THE PIPING SYSTEMS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AIR VENTS AT ALL SYSTEM HIGH POINTS AND AT AREAS

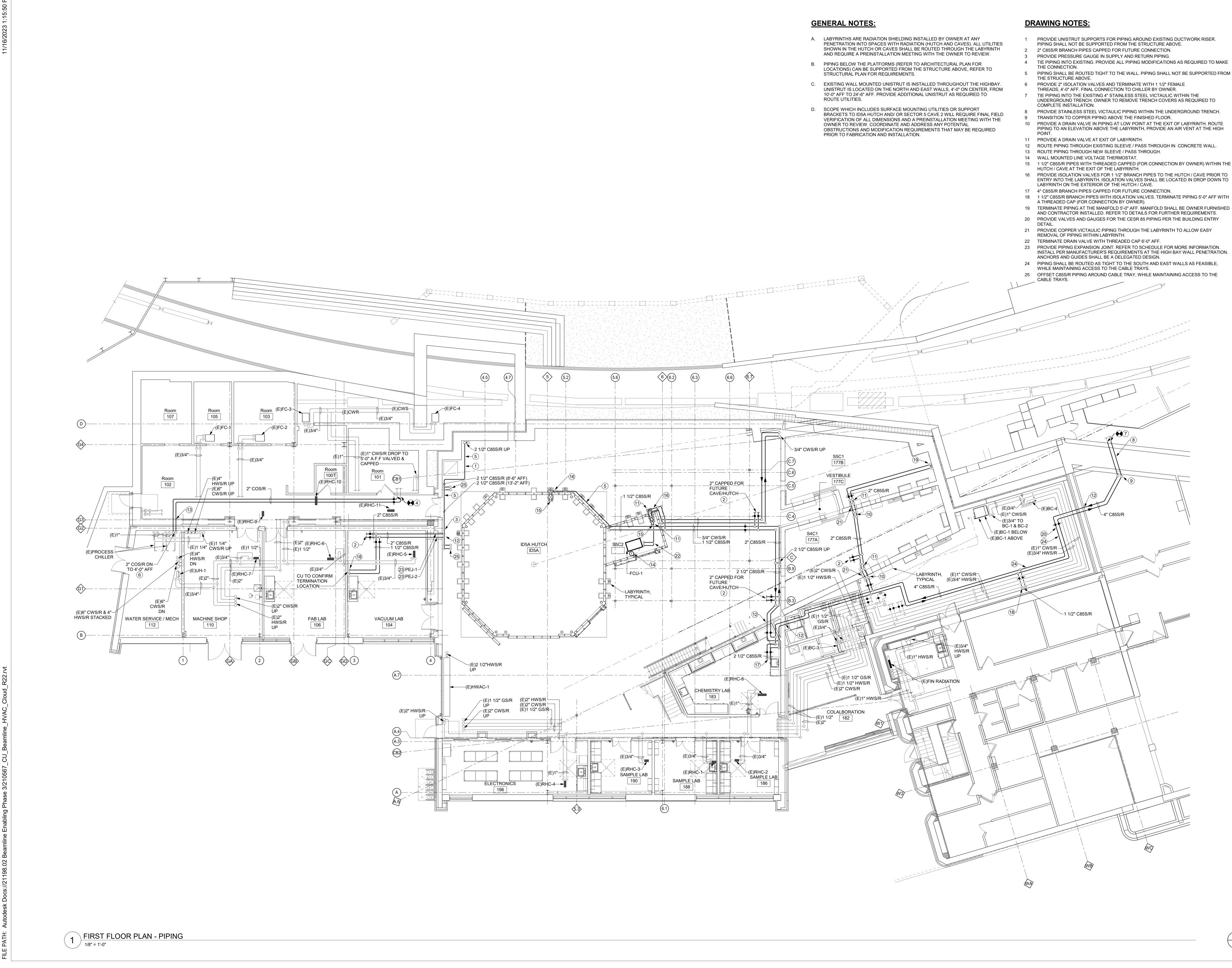
H. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE LOCATIONS OF CONTRACTOR SHALL SCHEDULE A WALK THROUGH WITH THE ARCHITECT/ENGINEER TO LOCATE SENSOR LOCATIONS PRIOR TO INSTALLATION. THE TEMPERATURE SENSORS SHALL BE INSTALLED IN ALIGNMENT WITH ELECTRICAL, FIRE, AND OTHER

I. ALL PENETRATIONS THROUGH WALLS, FLOORS AND ROOFS SHALL BE PROVIDED FOR EQUIPMENT, DUCTWORK, PIPING, ETC. ALL PENETRATIONS THROUGH RATED WALLS AND FLOORS SHALL BE FIRE/SMOKE STOPPED. ALL PENETRATIONS THROUGH NON

J. LABYRINTHS ARE RADIATION SHIELDING INSTALLED BY OWNER AT ANY PENETRATION INTO SPACES WITH RADIATION (HUTCH AND CAVES). ALL UTILITIES SHOWN IN THE HUTCH OR CAVES SHALL BE ROUTED THROUGH THE LABYRINTH AND REQUIRE A

ID5A HUTCH AND/ OR SECTOR 5 CAVE 2 WILL REQUIRE FINAL FIELD VERIFICATION OF ALL DIMENSIONS AND A PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION REQUIREMENTS THAT MAY BE REQUIRED PRIOR TO FABRICATION AND





- PROVIDE UNISTRUT SUPPORTS FOR PIPING AROUND EXISTING DUCTWORK RISER.
- 4 TIE PIPING INTO EXISTING. PROVIDE ALL PIPING MODIFICATIONS AS REQUIRED TO MAKE
- PIPING SHALL BE ROUTED TIGHT TO THE WALL. PIPING SHALL NOT BE SUPPORTED FROM
- TIE PIPING INTO THE EXISTING 4" STAINLESS STEEL VICTAULIC WITHIN THE UNDERGROUND TRENCH. OWNER TO REMOVE TRENCH COVERS AS REQUIRED TO
- 10 PROVIDE A DRAIN VALVE IN PIPING AT LOW POINT AT THE EXIT OF LABYRINTH. ROUTE

- 15 1 1/2" C85S/R PIPES WITH THREADED CAPPED (FOR CONNECTION BY OWNER) WITHIN THE 16 PROVIDE ISOLATION VALVES FOR 1 1/2" BRANCH PIPES TO THE HUTCH / CAVE PRIOR TO
- 18 1 1/2" C85S/R BRANCH PIPES WITH ISOLATION VALVES. TERMINATE PIPING 5'-0" AFF WITH
- 19 TERMINATE PIPING AT THE MANIFOLD 5'-0" AFF. MANIFOLD SHALL BE OWNER FURNISHED
- 20 PROVIDE VALVES AND GAUGES FOR THE CESR 85 PIPING PER THE BUILDING ENTRY
- 21 PROVIDE COPPER VICTAULIC PIPING THROUGH THE LABYRINTH TO ALLOW EASY
- 23 PROVIDE PIPING EXPANSION JOINT. REFER TO SCHEDULE FOR MORE INFORMATION. INSTALL PER MANUFACTURER'S REQUIREMENTS AT THE HIGH BAY WALL PENETRATION. 24 PIPING SHALL BE ROUTED AS TIGHT TO THE SOUTH AND EAST WALLS AS FEASIBLE,
- 25 OFFSET C85S/R PIPING AROUND CABLE TRAY, WHILE MAINTAINING ACCESS TO THE

SWBR 387 East Main Street Rochester NY 14604



Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 300 TROLLEY BOULEVARD ROCHESTER, NY 14606 585.288.5590 www.meengin



Drawn By: ATC NMT Checked By: Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

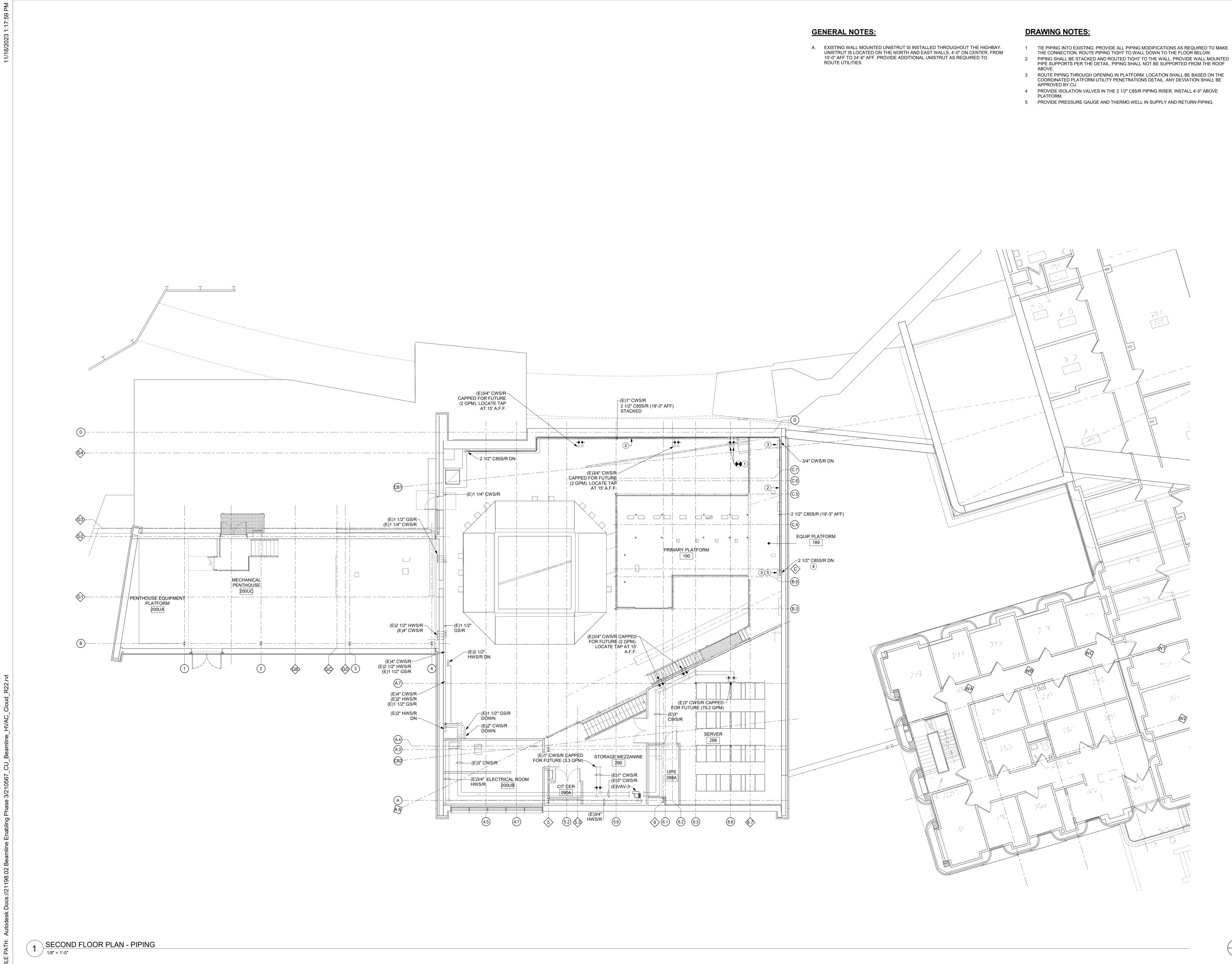
Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

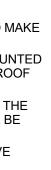
Cornell University lthaca, NY 14853

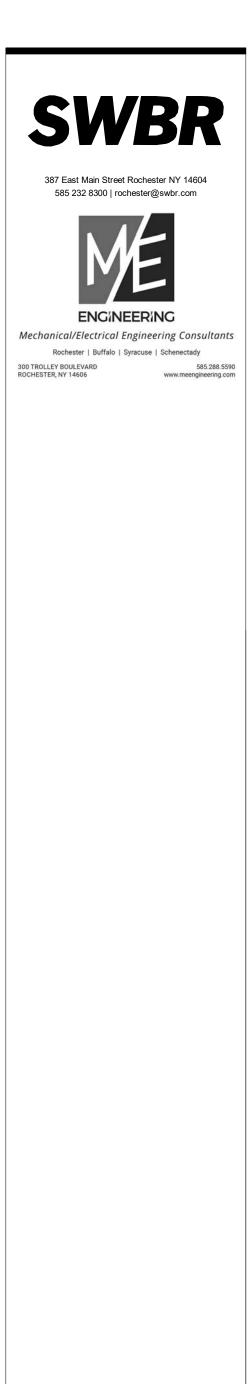






- 1 TIE PIPING INTO EXISTING. PROVIDE ALL PIPING MODIFICATIONS AS REQUIRED TO MAKE THE CONNECTION. ROUTE PIPING TIGHT TO WALL DOWN TO THE FLOOR BELOW.
- PIPE SUPPORTS PER THE DETAIL. PIPING SHALL NOT BE SUPPORTED FROM THE ROOF
- 3 ROUTE PIPING THROUGH OPENING IN PLATFORM. LOCATION SHALL BE BASED ON THE COORDINATED PLATFORM UTILITY PENETRATIONS DETAIL. ANY DEVIATION SHALL BE
- 4 PROVIDE ISOLATION VALVES IN THE 2 1/2" C85/R PIPING RISER. INSTALL 4'-0" ABOVE
- 5 PROVIDE PRESSURE GAUGE AND THERMO WELL IN SUPPLY AND RETURN PIPING.







Drawn By: ATC NMT Checked By: Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

Cornell University Ithaca, NY 14853





EXPANSIC	ON COMPENSATOR PIPE GUIDE	SCHEDULE
PIPE SIZE	MAX. DISTANCE FROM EXPANSION COMPENSATOR TO FIRST GUIDE	MAX DISTANCE FROM FIRST GUIDE TO SECOND GUI
2"	8"	2'-4"

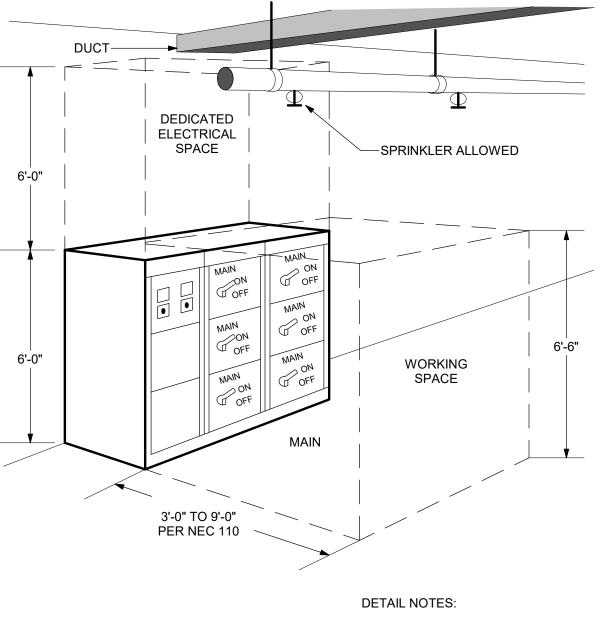
NOTE: EACH EXPANSION COMPENSATOR TO HAVE FOUR (4) GUIDES, TWO (2) UPSTREAM AND TWO (2) DOWNSTREAM.

EQUIPMENT PRE-PURCHASED BY OWNER FOR INSTALLATION BY CONTRACTOR

UNIT NO.	LOCATION	TYPE	AIR SIDE	COOLING C	OIL			
			AIR	CAPACITY	EAT (DE	G. F)	WATER	WATE
			FLOW	TOTAL	DB	WB	FLOW	P.D.
			(CFM)	(MBH)			(GPM)	(Ft. HI
FCU-1	HUTCH	HORZ. EXPOSED	270	8.5	75	63	1.8	3.98

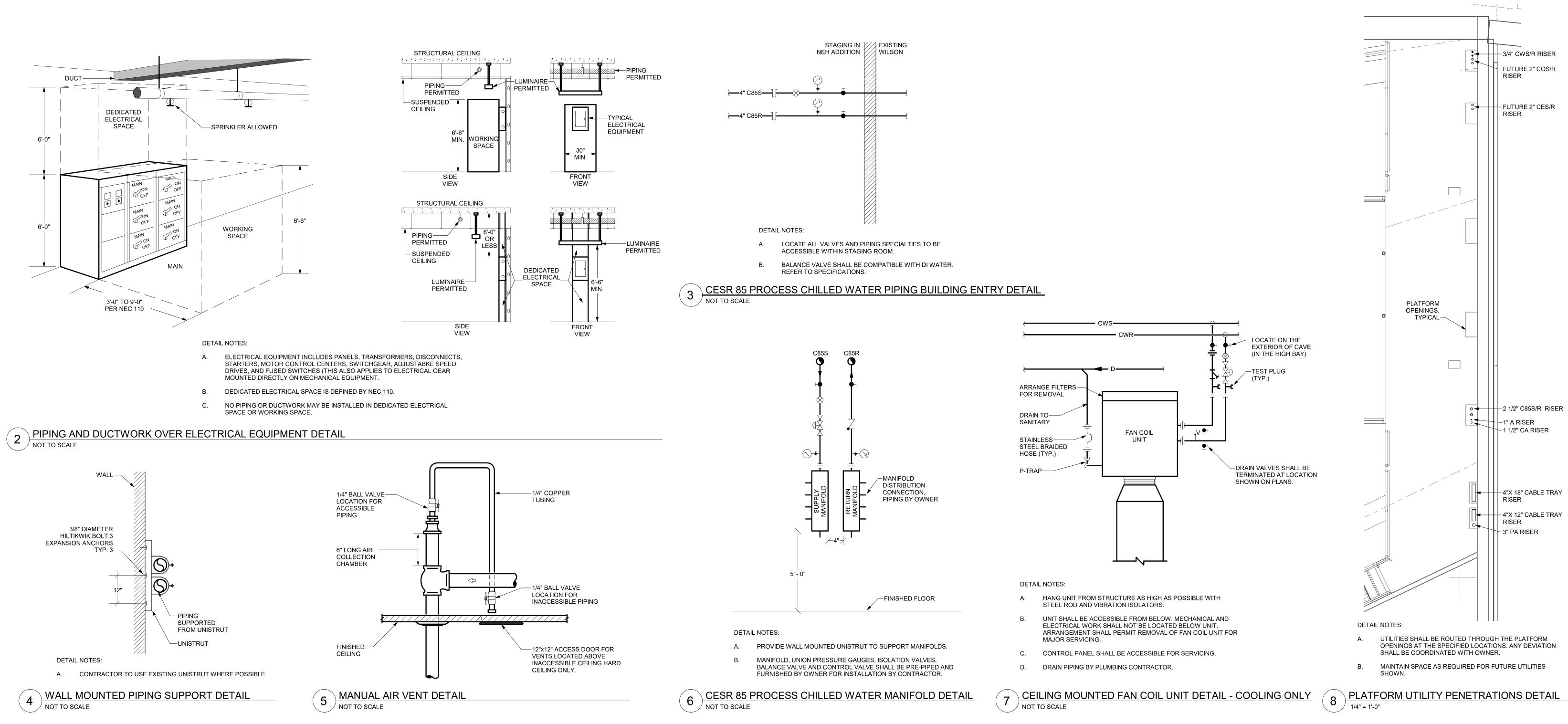
POINT SCHEDULE			
POINT SCHEDULE	-		
		HARDWAF	RE POINTS
EQUIPMENT	BI	во	AI
FCU CONDENSATE OVERFLOW SWITCH	Х		

CAVE COOLING ONLY FAN COIL UNIT CONTROL SCHEMATIC AND SYSTEM SUMMARY Not To Scale



MOUNTED DIRECTLY ON MECHANICAL EQUIPMENT.



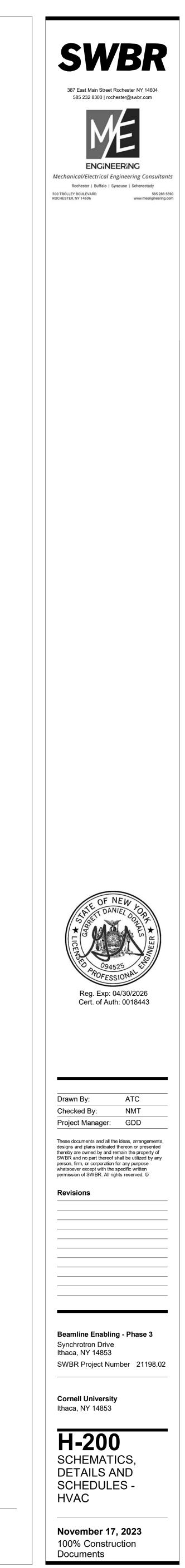


DE			

EXPANS	ION JOINT	SCHEDULE	- PIPING										
JOINT NO.	LOCATION	TYPE	APPLICATION	MATERIAL	LINE SIZE	MAX. PRESS. @ 250 DEG. F (PSIG)	MIN. TEMP. (DEG. F)	MAX. TEMP. (DEG. F)	MINIMUM COMPRESSION TRAVEL	MINIMUM EXTENSION TRAVEL	TOTAL AXIAL MOVEMENT	MANUFACTURER & MODEL NO.	REMARKS
PEJ-1	VACUUM LAB	CHILLED WATER	NESTED	SS HOSE, CARBON STEEL NIPPLE	2	460	45	120	4	4	4	MASON VMN	1,2
PEJ-2	VACUUM LAB	CHILLED WATER	NESTED	SS HOSE, CARBON STEEL NIPPLE	2	460	45	120	4	4	4	MASON VMN	1,2

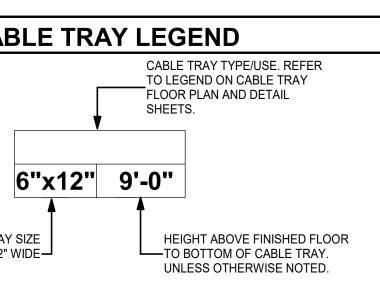
REMARKS: PROVIDE DELEGATED DESIGN FOR ANCHORS AND GUIDES.
 REQUIRED AT BUILDING EXPANSION JOINT.

		TYPE	AIR SIDE AIR	COOLING CO		F)	WATER	WATER	ENT. WATER	LVG. WATER	FAN MO ROWS VOLTS	TOR	MANUFACTURER & MODEL No.	REMARKS			
			FLOW (CFM)	TOTAL (MBH)	DB	WB	FLOW (GPM)	P.D. (Ft. HD)	TEMP. (DEG. F)	TEMP. (DEG. F)							
FCU-1	HUTCH	HORZ. EXPOSED	270	8.5	75	63	1.8	3.98	47	56.4	115	1	CHILTRIX CXI85				
															İ		
															i		
															L		
											COOLIN						
								ADI			COOLIN	IG COIL		-LOC	AL CONTROL		
								≜ BI			COOLIN		1	$\uparrow \checkmark$	AL CONTROL		
								∎ ∎ HI		RA					AL CONTROL		
								CONDENSAT	Ξ	RA	COOLIN		SA	$\uparrow \checkmark$	AL CONTROL		
									Ē	RA			SA	$\uparrow \checkmark$	AL CONTROL		
								CONDENSAT	Ξ	RA			SA	$\uparrow \checkmark$	AL CONTROL		
NT S		=						CONDENSAT	Ξ	RA			SA	$\uparrow \checkmark$	AL CONTROL		
NT S	SCHEDULE						HARDW	CONDENSATE OVERFLOW	<u>=</u>	RA				$\uparrow \checkmark$	AL CONTROL		
INT S	CHEDULE	EQUIPMENT				ВІ	HARDW	CONDENSAT	AO AV	RA BV SC	FAN		SOFTWARE POINTS	$\uparrow \checkmark$	AL CONTROL	SHOWN ON GRAPHIC	

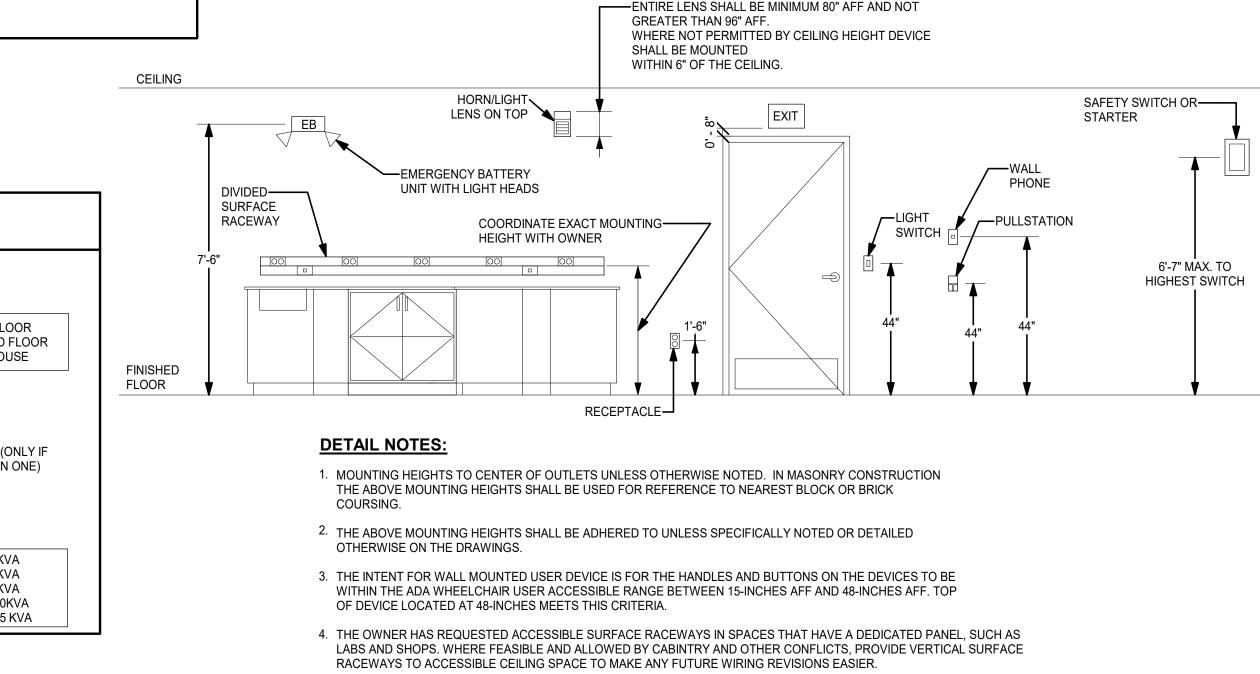


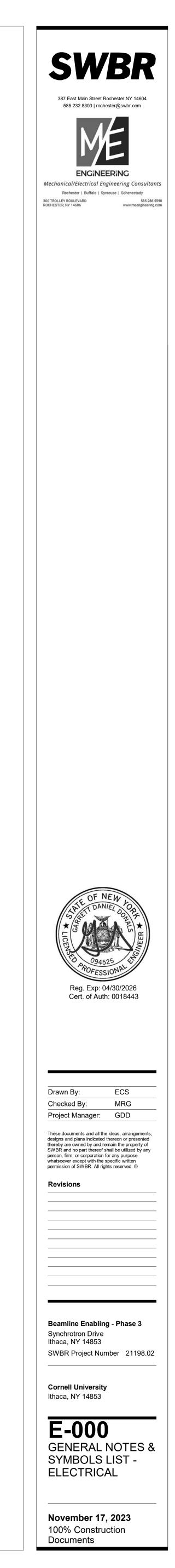
	BASIC MATERIALS AND METHODS		COMMUNICATIONS	F	POWER DISTRIBUTION AND CONTROL		ONE LINE DIAGRAM SYMBOLS	CABLE TRA	_		GENERAL NOTES: (A	APPLY TO ALL DR.	AWINGS):
	HOME RUN TO PANELBOARD. LETTERS/NUMBERS	DIDF	DATA INTERMEDIATE DISTRIBUTION FRAME			╵─╲╓╌╟╵	FUSED DISCONNECT SWITCH	Г	CABLE TRAY TYPE TO LEGEND ON CA FLOOR PLAN AND SHEETS.	BLE TRAY	A. SLEEVE AND SEAL ALL WALL AND FLO FIRE-RATED PENETRATIONS. UTILIZE PENETRATIONS. PROVIDE ACOUSTIC.	REMOVABLE FIR	ESTOPPING MATERIAL AT CABLE TRAY
LP-404	INDICATE PANEL. NUMBERS INDICATE CIRCUITS. NUMBER OF ARROWS EQUALS NUMBER OF CIRCUITS. CIRCUIT SHALL BE 20 AMP, 120 VOLT, 2 #12, 1 #12		DATA MAIN DISTRIBUTION FRAME		208Y/120 VOLT PANELBOARD.		THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER				ALL FIRE RATINGS SHALL BE MAINTAI B. MAINTAIN SERVICE CLEARANCES OF		
	EG., IN "C, UNLESS NOTED OTHERWISE. BRANCH CIRCUIT WIRING SIZE AND NUMBER TO MATCH HOMERUN. REFER TO SPEC'S FOR RACEWAY TYPE.	DMDF			480Y/277 VOLT PANELBOARD.		TRANSFORMER, REFER TO SCHEDULE FOR SIZE	6"x12"	9'-0"		C. COORDINATE EXACT LOCATION OF A EXISTING CONDITIONS PRIOR TO COM		ITES, EQUIPMENT AND DEVICES WITH
	SOLID HALF ARROW(S) INDICATES 120 VOLT CIRCUIT TO SINGLE POLE CIRCUIT BREAKER(S), UNLESS NOTED	∇	EXISTING COMMUNICATIONS OUTLET TEL/DATA DROP:			3	AND TYPE	CABLE TRAY SIZE		FINISHED FLOOR	D. MINIMUM CONDUIT SIZE SHALL BE 3/4		
	OTHERWISE.	▼	4"x4"x2.50" BOX WITH A 1-GANG MUD RING & FACEPLATE WITH DUPLEX DESIGN. 1" CONDUIT EXTENDED TO NEAREST		DISTRIBUTION PANELBOARD. DISCONNECT SWITCH	_	GROUND CONNECTION	6"DEEP BY 12" WIDE	UNLESS OTHEF		E. PROVIDE NYLON PULLSTRING IN ALL F. FIRE ALARM SIGNALING APPLIANCES	SHALL BE MOUN	
	SOLID FULL ARROW(S) INDICATES 208 VOLT CIRCUIT TO MULTI-POLE CIRCUIT BREAKER, UNLESS NOTED OTHERWISE.		CABLE TRAY IN CORRIDOR (UNLESS OTHERWISE NOTED) FOR DATA/VOICE. TERMINATE CONDUIT AT J HOOK IN CORRIDOR WITH CONDUIT BUSHING. PULL (2) CAT 6 CABLE,		A: 100A, 480V		FEEDER DESIGNATION. REFER TO FEEDER SCHEDULE				G. CIRCUITING TO DEVICES/EQUIPMENT	SHALL BE 2-#12	AWG & 1-#12EG (MULTIPLE HOME RUNS
	OPEN HALF ARROW(S) INDICATES 277 VOLT CIRCUIT TO SINGLE POLE CIRCUIT BREAKER(S), UNLESS NOTED		TERMINATE AT PATCH PANEL IN BDF. W - SINGLE GANG BACK BOX WITH MUD RING AND 1"	D	FUSED DISCONNECT SWITCH	• р ст	CURRENT TRANSFORMER				UNLESS OTHERWISE NOTED. ALL CIR SHALL NOT SHARE NEUTRALS).		
	OTHERWISE.		CONDUIT EXTENDED TO NEAREST CABLE TRAY IN CORRIDOR (UNLESS OTHERWISE NOTED) FOR DATA/VOICE. PROVIDE WALL TELEPHONE PLATE WITH STATION SET MOUNTING	Image: Second se	COMBINATION FUSED DISCONNECT SWITCH AND MAGNETIC STARTER	r 	LIGHTNING ARRESTOR				H. PROVIDE CONDUIT/WIRING (CIRCUITI DEVICES/EQUIPMENT. CONNECT TO (
⊳	OPEN FULL ARROW(S) INDICATES 480 VOLT CIRCUIT TO MULTI-POLE CIRCUIT BREAKER, UNLESS NOTED OTHERWISE.		PINS, AND WALL MOUNT AT 46"AFF. PROVIDE (1) CAT 6 CABLE TO BDF. DDC - SINGLE GANG BOX WITH BLANK COVER PLATE.	\bigcirc	MOTOR CONNECTION. REFER TO ELECTRICAL EQUIPMENT AND CONTROL SCHEDULE FOR SIZE						I. ALL WORK AND MATERIALS SHALL BE EDITION OF NFPA CODES, AS CITED E CODE OF NEW YORK STATE AND COF	BY THE FIRE COD	E OF NEW YORK STATE, BUILDING
(E)	EXISTING TO REMAIN - INDICATES EXISTING ITEM SHALL REMAIN. MAINTAIN EXISTING ELECTRICAL CONNECTIONS		PROVIDE 3/4"C STUBBED TO ACCESSIBLE CEILING SPACE ABOVE. DDC ALARM WIRING BY DIV 23.	Þ	MOTORIZED DAMPER CONNECTION		POTENTIAL TRANSFORMER				J. ALL CONDUITS AND SUPPORTS SHAL K. PROVIDE PULLBOX FOR EVERY 180 D		
	UNLESS OTHERWISE NOTED.		C - CAMERA, COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS.		CONTACTOR		SURGE PROTECTION DEVICE. SUBSCRIPT INDICATES TYPE				 K. PROVIDE PULLBOX FOR EVERY 180 D OF BENDS FOR POWER CONDUITS. L. ALL ELECTRICAL DEVICES (RECEPTAGE) 		
R)	EXISTING TO BE RELOCATED - INDICATES EXISTING ITEM SHALL BE RELOCATED. DISCONNECT AND REMOVE, REINSTALL AT NEW LOCATION AND RECONNECT ITEM AS		TV - COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL DRAWINGS.	СВ	ENCLOSED CIRCUIT BREAKER	E ° N	AUTOMATIC TRANSFER SWITCH				ALIGNED HORIZONTALLY AND VERTIC	CALLY. CONTRAC HITECT AND ENG	TOR TO SCHEDULE AND COORDINATE
			CP: CAMPUS PHONE: CONTRACTOR SHALL PROVIDE 3/4" EMT CONDUIT AS PATHWAY. CORNELL WILL PROVIDE AND INSTALL DEVICE AND WIRING.		COMPLETE ELECTRICAL CONNECTION						M. ALL EXISTING DEVICES CIRCUITED TO UPDATED LABELS.	D PANELS BEING	RENAMED SHALL BE PROVIDED WITH
, M M	EXISTING ELECTRICAL WIRING, EQUIPMENT OR DEVICE, DASHED LIGHT IS EXISTING TO BE REMOVED OR RELOCATED		BP: BEAM PHONE: CONTRACTOR SHALL PROVIDE 3/4" EMT CONDUIT AS PATHWAY. CORNELL WILL PROVIDE AND	<u>ф</u>	TO EQUIPMENT	G	GENERATOR				N. PROVIDE ALL PATHWAYS AND BACK E ANOTHER CONSULTANT.	BOXES AS CALLE	D FOR ON AV DRAWINGS PROVIDED BY
. 0	EXISTING ELECTRICAL WIRING, EQUIPMENT OR DEVICE, SOLID LIGHT IS EXISTING TO REMAIN		INSTALL DEVICE AND WIRING.		LUMINAIRES	EGAP	EMERGENCY GENERATOR ANNUNCIATOR PANEL						IN SERVICE WITH CIT OPERATIONS AT (607)2
0	HEAVY SOLID IS NEW	WAP	WAP - WIRELESS ACCESS POINT WALL MOUNT AT 90"AFF 4"x4"x2.25" BOX WITH DOUBLE GANG PLASTER RING. 1" EMT CONDUIT EXTENDED TO NEAREST CABLE TRAY IN		CEILING MOUNTED LUMINARIE. UPPERCASE LETTERS INDICATE FIXTURE TYPE ON LUMINAIRE SCHEDULE,	RTSA	REMOTE TRANSFER SWITCH ANNUNCIATOR PANEL				P. ALL OUTLETS WITHIN 6' OF SINK EDGI Q. A MINIMUM CONDUIT SIZE OF 3/4" SHA		
, ₩ ∽			CORRIDOR (UNLESS OTHERWISE NOTED). PROVIDE TWO (2) CAT 6A CABLES. TERMINATE IN BDF AND 6-8" PIGTAIL WITHOUT FACEPLATE.	Ad									
3)	REFERENCE TO DRAWING NOTE		CEILING MOUNT: MOUNT AT HEIGHT PER PLANS.	Ad P Q	WALL MOUNTED LUMINARIE. UPPERCASE LETTERS INDICATE FIXTURE TYPE ON LUMINAIRE SCHEDULE, LOWER CASE LETTER INDICATE LIGHTING ZONE		NON-FUSED DISCONNECT SWITCH						
3		EM	TYPICAL EMERGENCY PHONE OUTLET LOCATION. PROVIDE 4"x4" BACKBOX WITH A SINGLE GANG		LUMINAIRE CONNECTED TO LIFE SAFETY EMERGENCY	-	GENERAL DEMOLITION N	OTES: (APPLY TO ALL DRAWINGS):			ABBREVIATIONS		ABBREVIATIONS
0	JUNCTION BOX SPECIAL PURPOSE RECEPTACLE, PROVIDE PROPER		MUD RING AND (1) 3/4" CONDUIT TO ACCESSIBLE CEILING SPACE. PROVIDE (1) CAT 6 CABLE TO BDF. COORDINATE FINAL LOCATION WITH THE OWNER PRIOR TO INSTALLATION.		POWER STRIP LUMINAIRE		A. WHEN EXISTING CONSTRUCTION, WHICH IS TO REM DEMOLITION AS A RESULT OF THE CONTRACTOR'S REPLACED WITH SIMILAR OR LIKE MATERIALS, AS M	WORK, IT SHALL BE REPAIRED AND/OR		ABBREV.	DESCRIPTION	ABBREV.	DESCRIPTION
D	VOLTAGE, CLASS, CURRENT RATING AND NEMA CONFIGURATION AS REQUIRED BY BRANCH CIRCUIT AND/OR MATCH CAP ON EQUIPMENT BEING FURNISHED				WALL MOUNTED EMERGENCY LUMINAIRE	_	OWNERS APPROVAL. B. THE CONTRACTOR IS RESPONSIBLE FOR THE REM			A.F.F. A.F.G.	ABOVE FINISHED FLOOR ABOVE FINISHED GRADE	KW. LTG.	KILOWATT LIGHTING
	BY OTHERS. PROVIDE CORD AND CAP. SUBSCRIPTS INDICATE TYPE: A: NEMA 6-20R	ANT	DAS ANTENNA ELECTRIC POWER TRANSFER		WITH BATTERY PACK	_	CONSTRUCTION IN THE WAY OF NEW WORK. PROT C. COORDINATE PHASING OF WORK WITH OWNER'S F			A. AUTO.	AMPERE	M.C.B. M.L.O.	MAIN CIRCUIT BREAKER MAIN LUG ONLY
	B: NEMA L6-20R C: NEMA L21-30R D: NEMA 15-30R	EPT	CARD READER, REFER TO DETAIL		CEILING MOUNTED EXIT LUMINAIRE	_	D. COORDINATE ALL SHUTDOWNS WITH UNIVERSITY I SHUTDOWNS SHALL BE SCHEDULED THROUGH CU			BSMT.	BASEMENT BREAKER	MICRO	MICROWAVE NIGHT LIGHT
	E: NEMA 15-20R WO: WELDING OUTLET - RS333472		DOOR CONTACT	Ø	WALL MOUNTED EXIT LUMINAIRE		NOTICE BEFORE WORK IS TO BE STARTED. E. EXISTING CONDITIONS ARE TAKEN FROM FIELD OB DOCUMENTS WHEN AVAILABLE AND ARE NOT GAR.			CLG.	CEILING	PNL.	PANEL
	DUPLEX RECEPTACLE, 20 AMP, 125 VOLT				TRACK LIGHTING		SITE AND IDENTIFY EXISTING CONDITIONS AND DIF WORK. NO COMPENSATION WILL BE GRANTED FOR WITH SITE CONDITIONS THAT ARE VISIBLE OR REAL	FICULTIES THAT WILL AFFECT THE DEMOLITION R ADDITIONAL WORK CAUSED BY UNFAMILIARITY		CONTR. CONT.	CONTRACTOR CONTACTOR	PH. P.C.	PHASE PLUMBING CONTRACTOR
₽ [′]	SUBSCRIPTS INDICATE TYPE: G - GROUND FAULT INTERUPT OC - OVER COUNTER	P	PROJECTOR - (1) DUPLEX AND (1) TEL/DATA DROP.	Ļ	SINGLE HEAD POLE MOUNTED LUMINAIRE		THIS CONTRACTOR SHALL PARTICIPATE IN SURVEY CONTRACTOR SHALL DISCONNECT AND CAP ALL S SERVICES WHICH NORMALLY ARE INCLUDED IN HIS	Y OF THE EXISTING ELECTRICAL SYSTEMS. THE SERVICE LINES TO BE DISCONNECTED FOR THOSE		C DP	CAMERA DISTRIBUTION PANEL	PV P.	POWER VENTILATOR POLE
	UC - UNDER THE COUNTER WP - WEATHER PROOF TP - TAMPER PROOF	S	CEILING MOUNTED SPEAKER: CONTRACTOR SHALL PROVIDE 3/4" EMT CONDUIT AS PATHWAY. CORNELL WILL PROVIDE AND INSTALL DEVICE AND WIRING.	Ţ	DOUBLE HEAD POLE MOUNTED LUMINAIRE	_	TAKEN TO AVOID CREATING HAZARD OR CAUSING DEVICES TERMINATIONS, JUNCTION BOXES AND W	DISRUPTION IN ADJOINING AREAS. NOT ALL /IRING HAVE BEEN SHOWN.		DN.	DOWN	REFRIG. SP.	REFRIGERATOR
	P - CEILING PROJECTOR, MOUNT IN PROJECTOR MOUNTING PLATE USB - INTEGRAL USB CHARGER		CAMERA - PROVIDE 1" CONDUIT TO CABLE TRAY WITH (1)	Ľ		_	F. REFER TO PLUMBING CONTRACT DRAWINGS AND S LOCATIONS OF ALL PLUMBING EQUIPMENT BEING A DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY 1	ABANDONED OR REMOVED, WHICH WILL REQUIRE		EA. E.C.	EACH ELECTRICAL CONTRACTOR	SP. SPEC.	SPECIFICATION
/	RM - RADIATION MONITORING GFCI DUPLEX RECEPTACLE 20 AMP, 125 VOLT		CAT6A CABLE TO TEL/DATA CLOSET 11061. MODEL: AXIS CAMERA P3228-LVE	Σ	CEILING MOUNTED AREA-OF-RESCUE LUMINAIRE			NNECTED FROM SERVICE DURING THE HOURS THE		ELEC. EMERG.	ELECTRIC EMERGENCY	SW. TV	SWITCH TELEVISION
<u> </u>			FIRE ALARM	Ą	WALL MOUNTED AREA-OF-RESCUE LUMINAIRE		CONTRACTOR IS WORKING, AT THE DISCRETION O REPRESENTATIVE, BUT MUST BE OKACED BACK ON IN WRITING.			EM. EWC	EMERGENCY ELECTRIC WATER COOLER	T.B.B. T.T.C.	TELEPHONE BACKBOARD TELEPHONE TERMINAL CABINET
	QUAD RECEPTACLE 20 AMP, 125 VOLT	S	SMOKE DETECTOR		ACCESS CONTROL	_ 7	ALONG WITH ALL FEEDERS AND CONDUITS BACK T	CES WITHIN DEMOLITION AREA SHALL BE DEMOLISHED TO POINT OF SOURCE UNLESS OTHERWISE NOTED. S SHALL BE DISCONNECTED AND REMOVED UNLESS		EXIST. F.A.	EXISTING FIRE ALARM	TYP. U.L.	TYPICAL UNDERWRITER'S LABORATORY
3 a,b,c	TOGGLE SWITCH, VOLTAGE AS INDICATED ON FIXTURE SCHEDULE, SUBSCRIPTS INDICATE TYPE: 2 - TWO POLE SWITCH 3 - THREE WAY SWITCH	F	MANUAL PULL STATION	SYMBOL	DESCRIPTION	-				F.A.C.P.	FIRE ALARM CONTROL PANEL	V.	VOLT
	4 - FOUR WAY SWITCH M - MONENTARY CONTACT K - KEY OPERATED	F	ALARM SIGNAL, HORN AND STROBE, SHALL BE WHITE DEVICE	ICM	INTERCOM MASTER STATION	-	PRIOR TO DEMOLITION.			F.A.T.C. FCU	FIRE ALARM TERMINAL CABINET FAN COIL UNIT	WP 4 W.	WEATHERPROOF WIRE
	a,b,c - SWITCHING DESIGNATIONS NUMBER OF LETTERS EQUALS NO. OF GANGED SWITCHES V - VACANCY SENSOR	FA	ALARM SIGNAL, STROBE, SHALL BE WHITE DEVICE	ICS	INTERCOM SUB STATION	_	CIRCUITS, CONDUITS AND FEEDERS PASSING THROOR NOT SHOWN).	· · · · · · · · · · · · · · · · · · ·		FZ (3) GRS.	FIRE ZONE (3) GALVANIZED RIGID STEEL	3P.15A. OC	P = POLE A = AMPERE MOUNTED OVER COUNTER HEIGHT
	VD - VACANCY SENSOR, DIMMER SWITCH VDS - VACANCY SENSOR, DUAL SWITCHED WP - WEATHERPROOF	Н	RATE-OF-RISE HEAT DETECTOR	IPS		_	 ALL EXISTING CONDUTTS STUBBED THROUGH FLOC OR REQUIRED TO BE REUSED, SHALL BE CUT OFF K. IN ANY AREA REQUIRING THE PERFORMANCE OF A 			GND. G.C.	GROUND GENERAL CONTRACTOR	UC UV	MOUNTED UNDER COUNTER HEIGHT
\rightarrow	DIMMER - SHALL BE COMPATIBLE WITH FIXTURES PROVIDED.	RTS	REMOTE DUCT SMOKE DETECTOR TEST INDICATOR	DPS	DOOR POWER SUPPLY ELECTRIC DOOR STRIKE	_	CAREFULLY REMOVE AND STORE ANY OR ALL ELE	CTRICAL ITEMS IN PATH OF WORK, REINSTALLING AND ANCE WITH THE PLANS AND/OR AS DIRECTED AFTER		GEN.	GENERATOR	WG	WIRE GUARD
S	CEILING MOUNTED OCCUPANCY SENSOR	SD	SMOKE DAMPER CONNECTION		DOOR CONTACT	_	L. DISCONNECT, MAKE SAFE AND REMOVE ALL TEMP	ORARY AND ABANDONED WIRE WITHIN THE SPACE.		G.F.C.I. H.V.A.C.	GROUND FAULT CIRCUIT INTERRUPTER HEATING, VENTILATING AND AIR CONDITIONING	EHP	VANDAL PROOF POLYCARBONATE GU
R	CORD REEL	TS	TAMPER SWITCH CONNECTION	ACP	ACCESS CONTROL PANEL	_	AND REMOVED COMPLETELY BACK TO THE PANEL BRANCH CIRCUIT WIRING TO ANY AREAS WICH ARE	F DEMOLITION SHALL BE DISCONNECTED, MADE SAFE BOARD. THE CONTRATOR SHALL NOT ABANDON E TO REMAIN BUT ARE AFFECTED BY THE DEMOLITION		HP.	HORSEPOWER	EF CUH	EXHAUST FAN CABINET UNIT HEATER
<u>ر</u>	CORD DROP	FS	FLOW SWITCH CONNECTION	P	PANIC BUTTON	_	OR NEW CONSTRUCTION. N. DISCONNECT AND REMOVE PANEL, FEEDERS AND PRIOR TO THE START OF DEMOLITION, CONTRACT	BRANCH CIRCUITS BACK TO POINT OF SOURCE OR SHALL FIELD VERIFY ALL BRANCH CIRCUITS AND		XMFER C.T.	TRANSFORMER CABLE TRAY	UH WAP	UNIT HEATER WIRELESS ACCESS POINT
- U I				ER	EMERGENCY DOOR RELEASE	_	MAINTAIN THOSE CIRCUITS THAT EXTEND OUTSIDE	E OF THE SCOPE OF WORK.					
	DOOR HOLD	STX	SMOKE DETECTOR, BEAM TYPE TRANSMITTER		KEVDAD		O. AFTER RENOVATING EXISTING ELECTRICAL WORK					1	
H	DOOR HOLD	STX		K	KEYPAD BIOMETRIC READER	_		PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE					
₩ ●	DOOR HOLD PUSH BUTTON	SRX	SMOKE DETECTOR, BEAM TYPE RECEIVER	K BR ED			 REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC 	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND				1	
►)]	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS.			BR ED KS	BIOMETRIC READER		REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE					
э Э Д	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR	SRX	SMOKE DETECTOR, BEAM TYPE RECEIVER	BR ED KS CR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER		 REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN 	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE			ENTIRE LENS S GREATER THAI WHERE NOT PE SHALL BE MOU	N 96" AFF. ERMITTED BY CE	M 80" AFF AND NOT ILING HEIGHT DEVICE
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR	SRX FSD	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY	BR ED KS CR PR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER		 REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN 	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE	CEILING		GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T	N 96" AFF. ERMITTED BY CE INTED	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER	SRX FSD DSD	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR	BR ED KS CR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER		 REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN 	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE	CEILING	EB	GREATER THAI WHERE NOT PE SHALL BE MOU	N 96" AFF. ERMITTED BY CE INTED	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR	SRX FSD DSD FACP	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE		 REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN 	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE	•		GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T LENS ON TOP	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD 8AT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP	SRX FSD DSD FACP FAAP	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE		REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE	CEILING DIVIDI SURF. RACE	ACE	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	ILING HEIGHT DEVICE
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD 8AT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX	SRX FSD DSD FACP FAAP	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR		REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR.	DIVIDI SURF	ACE	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD 8AT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (1) 1-1/2" CONDUIT FOR AV TO ACCESSIBLE CEILING.	SRX FSD DSD FACP FAAP	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO DETAIL SHEETS FOR INSTALLATION DETAILS.	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR PANELBOARD AND G LSP - LIFE SAFETY LRP - LEGALLY REQUIRED OSP - OPTIONAL STANDBY #1		ID TRANSFORMER	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR.	DIVIDI SURF	ACE	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD 8AT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (1) 1-1/2" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. SURFACE METAL RACEWAY, WIREMOLD G4000. RACEWAY SHALL BE MOUNTED "OVER COUNTER" UNLESS OTHERWISE NOTED.	SRX FSD DSD FACP FAAP EM	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO DETAIL SHEETS FOR INSTALLATION DETAILS. FIRE ALARM HORN/SPEAKER	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR PANELBOARD AND G	1 - FIF 2 - SE	REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR.	DIVIDI SURF	ACE	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD BAT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (1) 1-1/2" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. SURFACE METAL RACEWAY, WIREMOLD G4000. RACEWAY SHALL BE MOUNTED "OVER COUNTER" UNLESS OTHERWISE NOTED. DOOR CONTACT	SRX FSD DSD FACP FAAP EM EM EM EM	SMOKE DETECTOR, BEAM TYPE RECEIVER SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO DETAIL SHEETS FOR INSTALLATION DETAILS. FIRE ALARM HORN/SPEAKER SPRINKLER PRE-ACTION RELEASE PANEL ZONE ADDRESSABLE MODULE	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR PANELBOARD AND G LSP - LIFE SAFETY LRP - LEGALLY REQUIRED OSP - OPTIONAL STANDBY #1 P - NORMAL LP - LIGHTING PANEL	1 - FIF 2 - SE	REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T ID TRANSFORMER RST FLOOR COND FLOOR	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR.	DIVIDI SURF. RACE 7'-6"	ACE	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD 8AT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (1) 1-1/2" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. SURFACE METAL RACEWAY, WIREMOLD G4000. RACEWAY SHALL BE MOUNTED "OVER COUNTER" UNLESS OTHERWISE NOTED.	SRX FSD DSD FACP FAAP EM EM EM EM	SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO DETAIL SHEETS FOR INSTALLATION DETAILS. FIRE ALARM HORN/SPEAKER SPRINKLER PRE-ACTION RELEASE PANEL	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR PANELBOARD AND G LSP - LIFE SAFETY LRP - LEGALLY REQUIRED OSP - OPTIONAL STANDBY #1 P - NORMAL LP - LIGHTING PANEL L - 208Y/120 VOLT H - 480Y/277 VOLT	1 - FIF 2 - SE P - PE	ID TRANSFORMER REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T ID TRANSFORMER RST FLOOR COND FLOOR ENTHOUSE NTITY (ONLY IF REMAINING AND NEW EQUIPMENT WILL OPERATE FEASIBLE	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR. RMER LEGEND I - FIRST FLOOR 2 - SECOND FLOOR P - PENTHOUSE TE 1 1 QUANTITY (ONLY IF	Tinished	ACE	GREATER THAN WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP -EMERGENCY BATTERY UNIT WITH LIGHT HEADS COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI HEIGHT WITH OWNER HEIGHT WITH OWNER DOI DOI DOI DOI HEIGHT WITH OWNER HEIGHT WITH OWNER COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOI DOI DOI DOI DOI HEIGHT WITH OWNER HEIGHT WITH OWNER DOI DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI DOI DOI HEIGHT WITH OWNER COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOI DOI DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI DOI DOI DOI DOI DOI DOI DOI DOI HEIGHT WITH OWNER DOI DOI DOI DOI DOI HEIGHT WITH CHART	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING.	
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD BAT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (1) 1-1/2" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. SURFACE METAL RACEWAY, WIREMOLD G4000. RACEWAY SHALL BE MOUNTED "OVER COUNTER" UNLESS OTHERWISE NOTED. DOOR CONTACT	SRX FSD DSD FACP FAAP EM EM EM EM	SMOKE DETECTOR, BEAM TYPE RECEIVER SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO DETAIL SHEETS FOR INSTALLATION DETAILS. FIRE ALARM HORN/SPEAKER SPRINKLER PRE-ACTION RELEASE PANEL ZONE ADDRESSABLE MODULE	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR PANELBOARD AND G USP - LIFE SAFETY LRP - LEGALLY REQUIRED OSP - OPTIONAL STANDBY #1 P - NORMAL LP - LIGHTING PANEL L - 208Y/120 VOLT	1 - FIF 2 - SE P - PE	ID TRANSFORMER REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T ID TRANSFORMER RST FLOOR COND FLOOR TX - TRANSFORMER NTITY (ONLY IF E THAN ONE) REMOVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE COND FLOOR TTHOUSE	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR. RMER LEGEND 1 - FIRST FLOOR 2 - SECOND FLOOR P - PENTHOUSE	Tinished	ED-ACE WAY DOO DOO DETAIL I 1. MOUNTIN	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP -EMERGENCY BATTERY UNIT WITH LIGHT HEADS COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOCUMENT COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOCUMENT COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOCUMENT RECEPTACLE GIELESS OTHERWISE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE	N 96" AFF. ERMITTED BY CE INTED 'HE CEILING. EXIT	ILING HEIGHT DEVICE
	PUSH BUTTON LAB BENCH RECEPTACLES. VARIOUS CONFIGURATIONS. FLOOR BOX. SHALL BE WIREMOLD RFB4E_OG, UNLESS OTHERWISE INDICATED. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (2) 1" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. MAG LOCK DAYLIGHT SENSOR POKE THROUGH - WIREMOLD 8AT SERIES. PROVIDE (1) 3/4" CONDUIT FOR POWER TO TWO DUPLEX RECEPTACLES, (1) 1" CONDUIT FOR FUTURE DATA DROP AND (1) 1-1/2" CONDUIT FOR AV TO ACCESSIBLE CEILING. COVER PER ARCHITECT. SURFACE METAL RACEWAY, WIREMOLD G4000. RACEWAY SHALL BE MOUNTED "OVER COUNTER" UNLESS OTHERWISE NOTED. DOOR CONTACT UNDERGROUND MAN HOLE	SRX FSD DSD FACP FAAP EM EM EM EM	SMOKE DETECTOR, BEAM TYPE RECEIVER SMOKE DETECTOR, BEAM TYPE RECEIVER FIRE ALARM SHUT DOWN RELAY DUCT SMOKE DETECTOR FIRE ALARM CONTROL PANEL FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATION PANEL EMERGENCY PHONE: INTERIOR LOCATIONS EMERGENCY PHONES PROVIDED BY ELECTRICAL CONTRACTOR. REFER TO DETAIL SHEETS FOR INSTALLATION DETAILS. FIRE ALARM HORN/SPEAKER SPRINKLER PRE-ACTION RELEASE PANEL ZONE ADDRESSABLE MODULE	BR ED KS CR PR ELR	BIOMETRIC READER EXIT DEVICE SWITCH KEY SWITCH CARD READER PROXIMITY READER ELECTRIC LATCH RELEASE REQUEST TO EXIT SENSOR PANELBOARD AND G LSP - LIFE SAFETY LRP - LEGALLY REQUIRED OSP - OPTIONAL STANDBY #1 P - NORMAL LP - LIGHTING PANEL L - 208Y/120 VOLT H - 480Y/277 VOLT	1 - FIF 2 - SE P - PE	ID TRANSFORMER REMAINING AND NEW EQUIPMENT WILL OPERATE F P. PROVIDE TEMPORARY HEAT DETECTORS IN AREAS DURING CONSTRUCTION. COORDINATE WITH FIRE Q. REFER TO HVAC CONTRACT DRAWINGS AND SPEC LOCATIONS OF ALL HVAC EQUIPMENT BEING ABAN DE-ENERGIZATION, REMOVAL AND BLANK-OFF BY T ID TRANSFORMER RST FLOOR COND FLOOR ENTHOUSE NTITY (ONLY IF REMAINING AND NEW EQUIPMENT WILL OPERATE FEASIBLE	PROPERLY. S WHERE SPRINKLERS ARE REMOVED FROM SERVICE PROTECTION CONTRACTOR. CIFICATIONS FOR EXACT QUANTITIES AND IDONED OR REMOVED, WHICH WILL REQUIRE THE CONTRACTOR. RMER LEGEND I - FIRST FLOOR 2 - SECOND FLOOR P - PENTHOUSE TE 1 1 QUANTITY (ONLY IF	Tinished	ED ACE WAY DOI DOI DOI DOI DOI DOI DOI DOI DOI DOI	GREATER THAI WHERE NOT PE SHALL BE MOU WITHIN 6" OF T HORN/LIGHT LENS ON TOP -EMERGENCY BATTERY UNIT WITH LIGHT HEADS COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOCUMENT COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOCUMENT COORDINATE EXACT MOUNTING HEIGHT WITH OWNER DOCUMENT RECEPTACLE GIELESS OTHERWISE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE	N 96" AFF. ERMITTED BY CE INTED HE CEILING.	ILING HEIGHT DEVICE

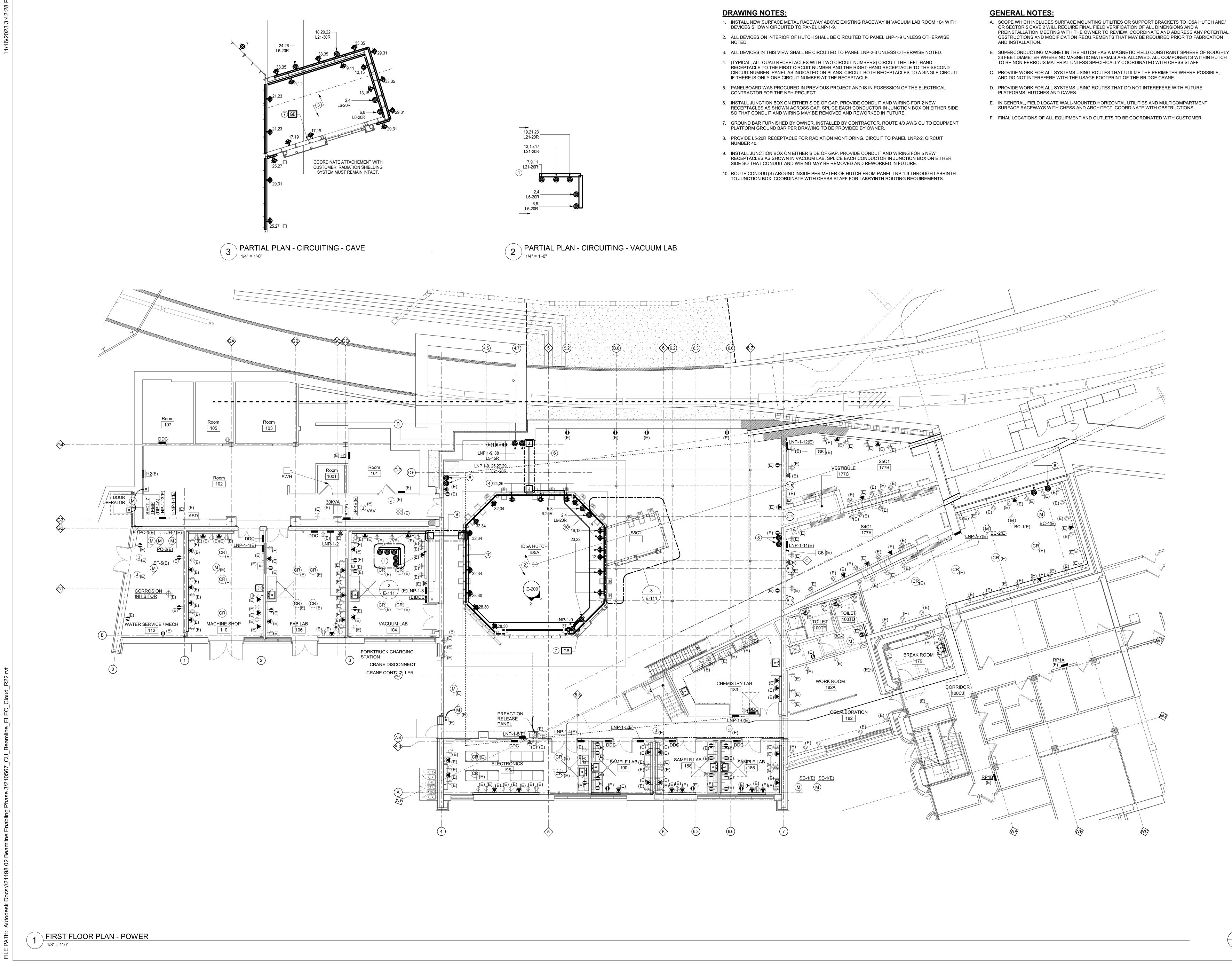
PANELBOAR	RD AND GEAR L	EGEND	TRANSFORMER	LEGEND
LSP - LIFE SAFETY LRP - LEGALLY REQUIRED OSP - OPTIONAL STANDBY #1 P - NORMAL LP - LIGHTING PANEL		1 - FIRST FLOOR 2 - SECOND FLOOR P - PENTHOUSE	TX - TRANSFORMER	1 - FIRST FLO 2 - SECOND F P - PENTHOUS
L - 208Y/120 VOLT H - 480Y/277 VOLT E - EMERGENCY POWER N - NORMAL POWER	HELSP-1-1	QUANTITY (ONLY IF MORE THAN ONE)	EOSTX-75-1-	1QUANTITY (OM MORE THAN C 30 - 30 KVA 45 - 45 KVA 75 - 75 KVA 150 - 150KV 225 - 225 K

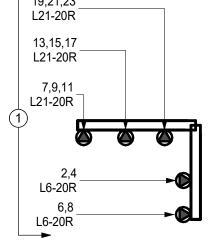












- A. SCOPE WHICH INCLUDES SURFACE MOUNTING UTILITIES OR SUPPORT BRACKETS TO ID5A HUTCH AND/ OR SECTOR 5 CAVE 2 WILL REQUIRE FINAL FIELD VERIFICATION OF ALL DIMENSIONS AND A PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION REQUIREMENTS THAT MAY BE REQUIRED PRIOR TO FABRICATION
- 33 FEET DIAMETER WHERE NO MAGNETIC MATERIALS ARE ALLOWED. ALL COMPONENTS WITHIN HUTCH TO BE NON-FERROUS MATERIAL UNLESS SPECIFICALLY COORDINATED WITH CHESS STAFF.
- C. PROVIDE WORK FOR ALL SYSTEMS USING ROUTES THAT UTILIZE THE PERIMETER WHERE POSSIBLE, AND DO NOT INTEREFERE WITH THE USAGE FOOTPRINT OF THE BRIDGE CRANE.
- D. PROVIDE WORK FOR ALL SYSTEMS USING ROUTES THAT DO NOT INTEREFERE WITH FUTURE
- E. IN GENERAL, FIELD LOCATE WALL-MOUNTED HORIZONTAL UTILITIES AND MULTICOMPARTMENT SURFACE RACEWAYS WITH CHESS AND ARCHITECT; COORDINATE WITH OBSTRUCTIONS.
- F. FINAL LOCATIONS OF ALL EQUIPMENT AND OUTLETS TO BE COORDINATED WITH CUSTOMER.





ENGINEERING Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 300 TROLLEY BOULEVARD ROCHESTER, NY 14606 585.288.5590 www.meengin



Drawn Bv ECS MRG Checked By Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

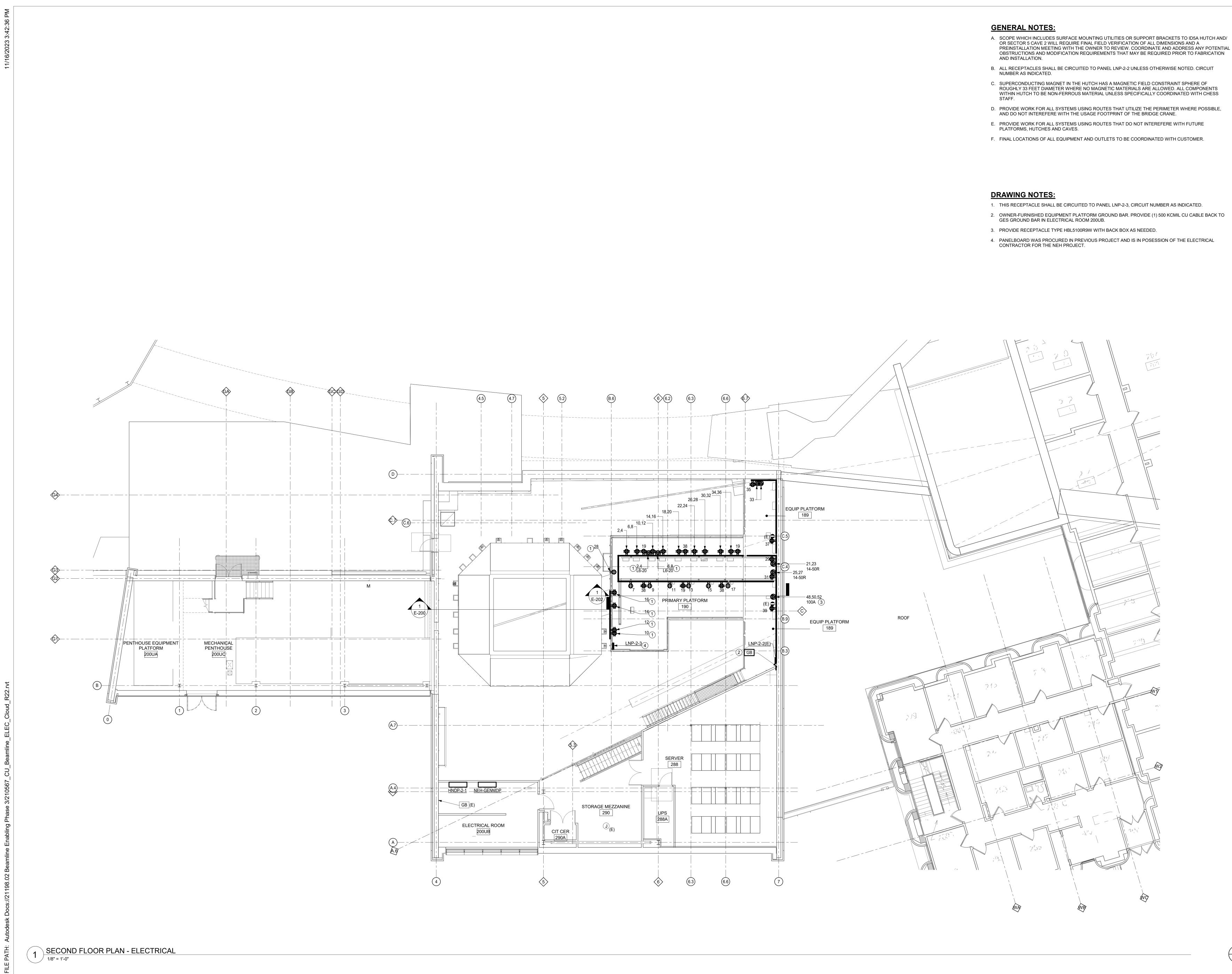
Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

Cornell University lthaca, NY 14853







- OR SECTOR 5 CAVE 2 WILL REQUIRE FINAL FIELD VERIFICATION OF ALL DIMENSIONS AND A PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION REQUIREMENTS THAT MAY BE REQUIRED PRIOR TO FABRICATION
- B. ALL RECEPTACLES SHALL BE CIRCUITED TO PANEL LNP-2-2 UNLESS OTHERWISE NOTED. CIRCUIT NUMBER AS INDICATED. C. SUPERCONDUCTING MAGNET IN THE HUTCH HAS A MAGNETIC FIELD CONSTRAINT SPHERE OF
- ROUGHLY 33 FEET DIAMETER WHERE NO MAGNETIC MATERIALS ARE ALLOWED. ALL COMPONENTS WITHIN HUTCH TO BE NON-FERROUS MATERIAL UNLESS SPECIFICALLY COORDINATED WITH CHESS
- AND DO NOT INTEREFERE WITH THE USAGE FOOTPRINT OF THE BRIDGE CRANE. E. PROVIDE WORK FOR ALL SYSTEMS USING ROUTES THAT DO NOT INTEREFERE WITH FUTURE
- F. FINAL LOCATIONS OF ALL EQUIPMENT AND OUTLETS TO BE COORDINATED WITH CUSTOMER.

- 4. PANELBOARD WAS PROCURED IN PREVIOUS PROJECT AND IS IN POSESSION OF THE ELECTRICAL



ENGINEERING Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 585.288.5590 www.meengineering.com 300 TROLLEY BOULEVARD ROCHESTER, NY 14606

Reg. Exp: 04/30/2026 Cert. of Auth: 0018443

Drawn By: ECS MRG Checked By: Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

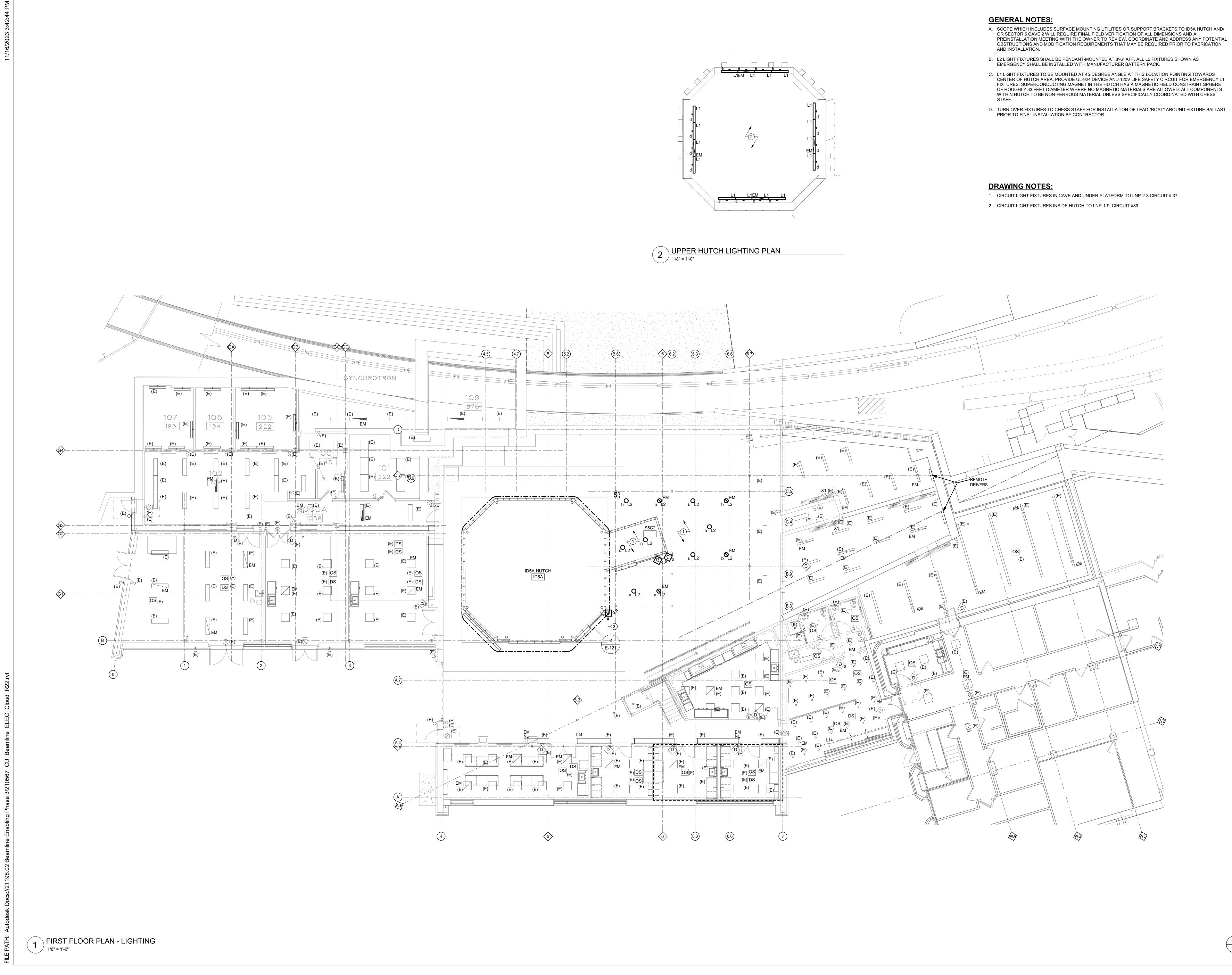
Revisions

Beamline Enabling - Phase 3 Synchrotron Drive Ithaca, NY 14853 SWBR Project Number 21198.02

Cornell University Ithaca, NY 14853











Drawn By: ECS MRG Checked By: Project Manager: GDD

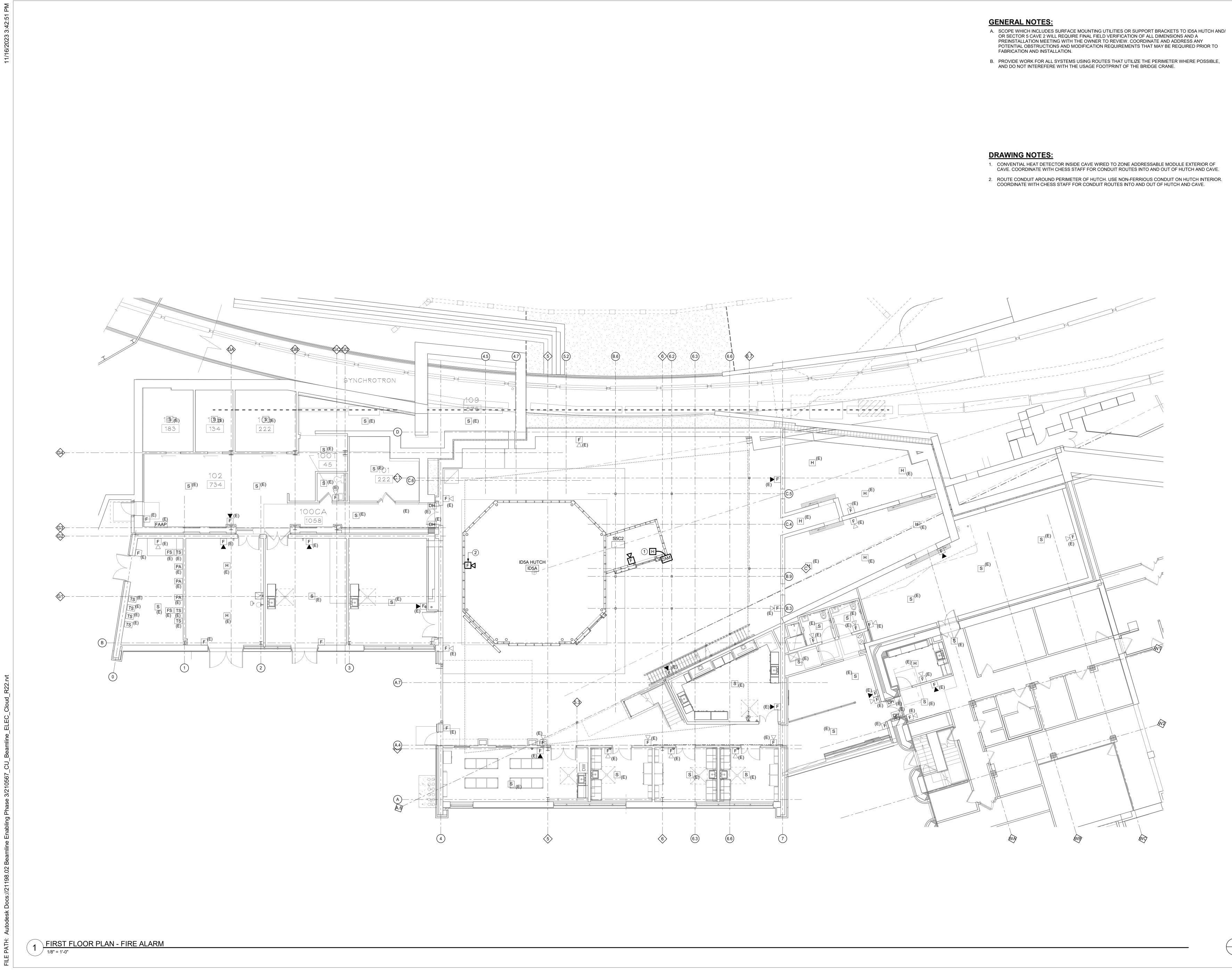
These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

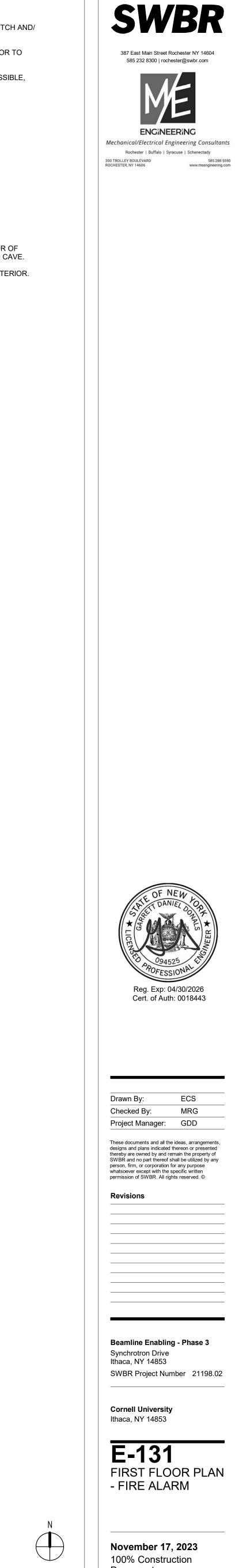
Cornell University lthaca, NY 14853



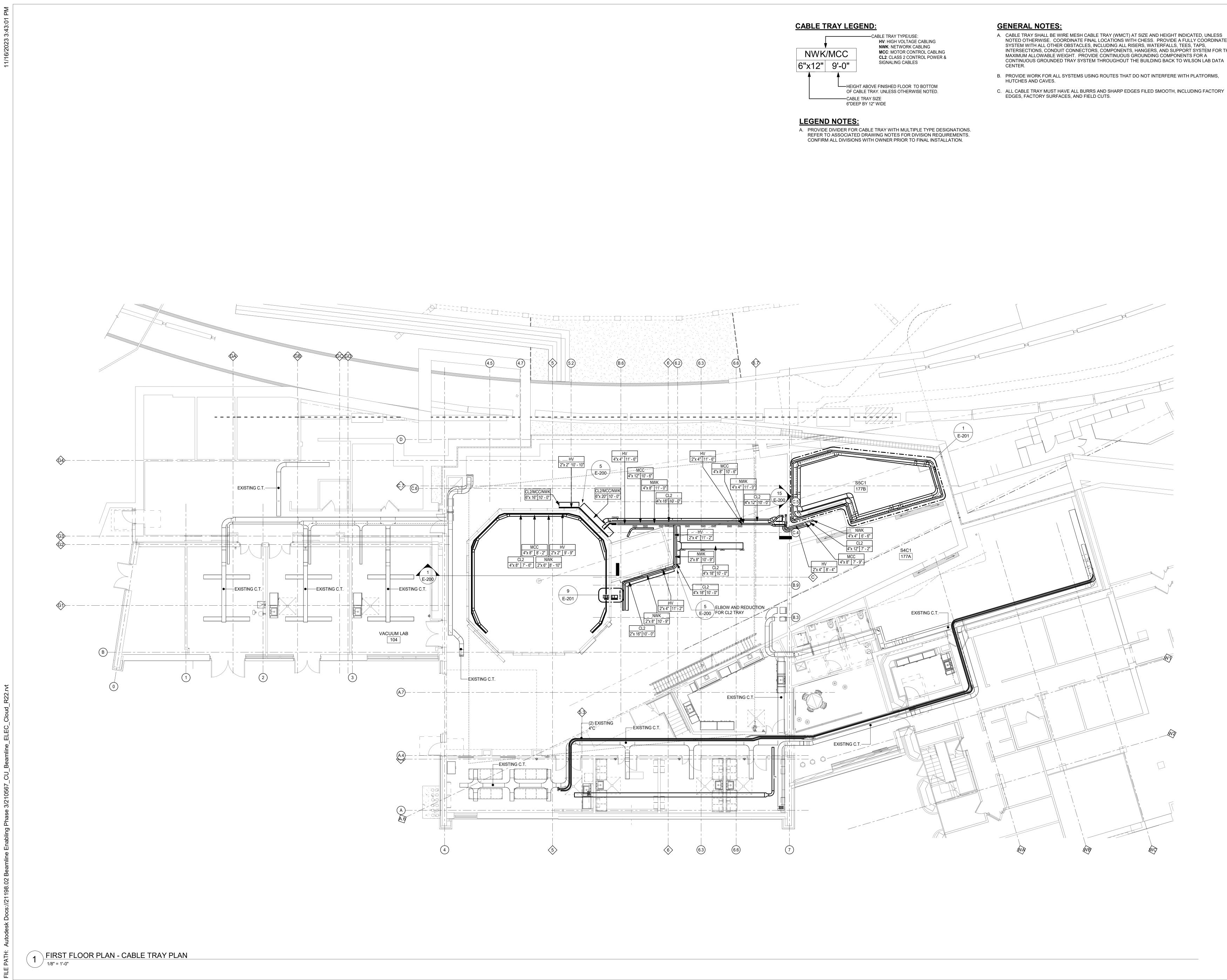


- PREINSTALLATION MEETING WITH THE OWNER TO REVIEW. COORDINATE AND ADDRESS ANY POTENTIAL OBSTRUCTIONS AND MODIFICATION REQUIREMENTS THAT MAY BE REQUIRED PRIOR TO
- B. PROVIDE WORK FOR ALL SYSTEMS USING ROUTES THAT UTILIZE THE PERIMETER WHERE POSSIBLE, AND DO NOT INTEREFERE WITH THE USAGE FOOTPRINT OF THE BRIDGE CRANE.

- CAVE. COORDINATE WITH CHESS STAFF FOR CONDUIT ROUTES INTO AND OUT OF HUTCH AND CAVE.



Documents



- NOTED OTHERWISE. COORDINATE FINAL LOCATIONS WITH CHESS. PROVIDE A FULLY COORDINATED SYSTEM WITH ALL OTHER OBSTACLES, INCLUDING ALL RISERS, WATERFALLS, TEES, TAPS, INTERSECTIONS, CONDUIT CONNECTORS, COMPONENTS, HANGERS, AND SUPPORT SYSTEM FOR THE MAXIMUM ALLOWABLE WEIGHT. PROVIDE CONTINUOUS GROUNDING COMPONENTS FOR A CONTINUOUS GROUNDED TRAY SYSTEM THROUGHOUT THE BUILDING BACK TO WILSON LAB DATA
- B. PROVIDE WORK FOR ALL SYSTEMS USING ROUTES THAT DO NOT INTERFERE WITH PLATFORMS,
- C. ALL CABLE TRAY MUST HAVE ALL BURRS AND SHARP EDGES FILED SMOOTH, INCLUDING FACTORY







Drawn By: ECS MRG Checked By: Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

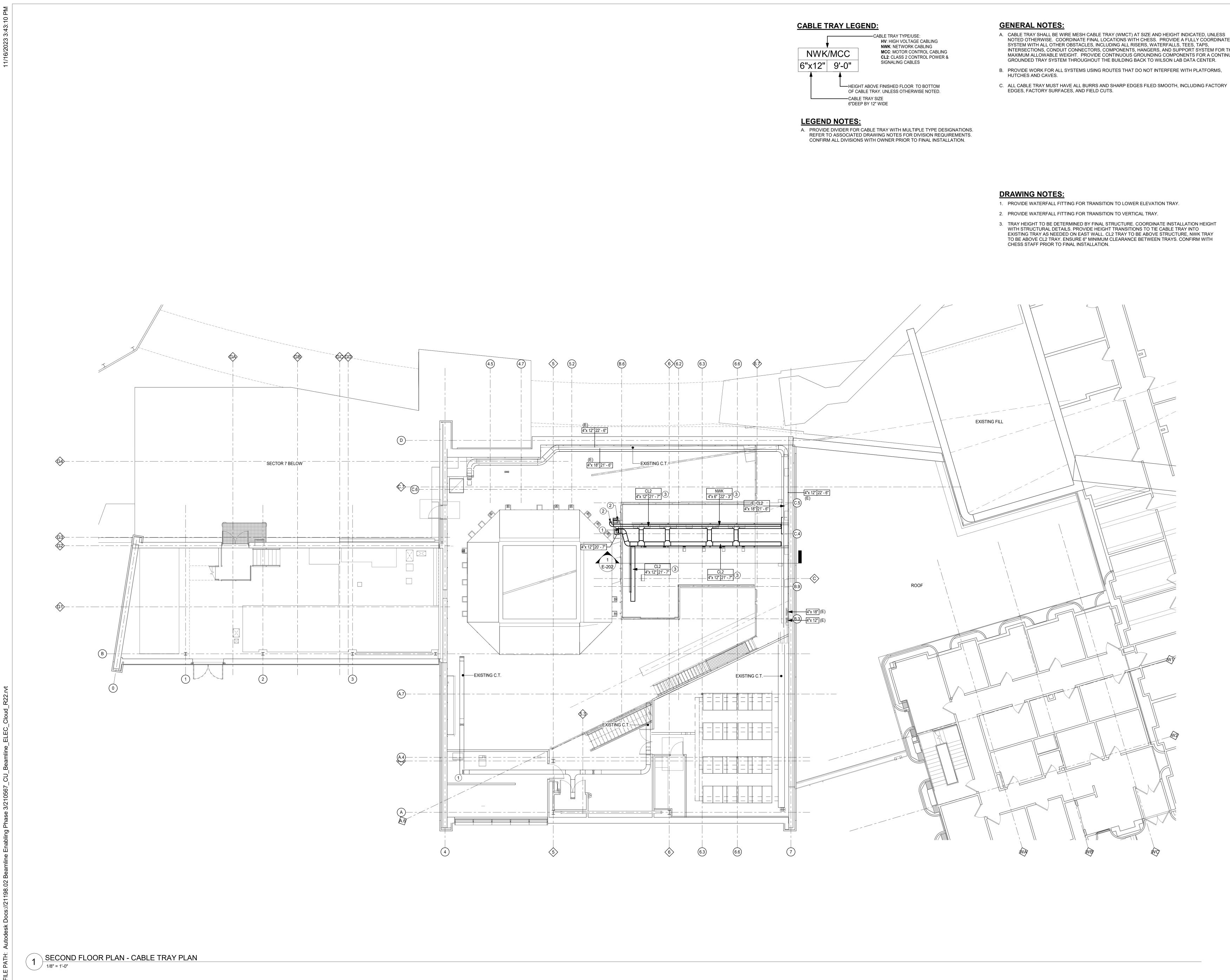
Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

Cornell University lthaca, NY 14853







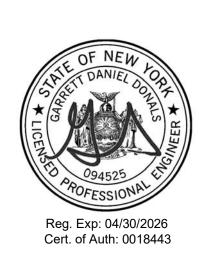
- NOTED OTHERWISE. COORDINATE FINAL LOCATIONS WITH CHESS. PROVIDE A FULLY COORDINATED SYSTEM WITH ALL OTHER OBSTACLES, INCLUDING ALL RISERS, WATERFALLS, TEES, TAPS, INTERSECTIONS, CONDUIT CONNECTORS, COMPONENTS, HANGERS, AND SUPPORT SYSTEM FOR THE MAXIMUM ALLOWABLE WEIGHT. PROVIDE CONTINUOUS GROUNDING COMPONENTS FOR A CONTINUOUS GROUNDED TRAY SYSTEM THROUGHOUT THE BUILDING BACK TO WILSON LAB DATA CENTER.
- B. PROVIDE WORK FOR ALL SYSTEMS USING ROUTES THAT DO NOT INTERFERE WITH PLATFORMS,
- C. ALL CABLE TRAY MUST HAVE ALL BURRS AND SHARP EDGES FILED SMOOTH, INCLUDING FACTORY

- 3. TRAY HEIGHT TO BE DETERMINED BY FINAL STRUCTURE. COORDINATE INSTALLATION HEIGHT WITH STRUCTURAL DETAILS. PROVIDE HEIGHT TRANSITIONS TO TIE CABLE TRAY INTO EXISTING TRAY AS NEEDED ON EAST WALL. CL2 TRAY TO BE ABOVE STRUCTURE, NWK TRAY









Drawn By: ECS MRG Checked By: Project Manager: GDD

These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

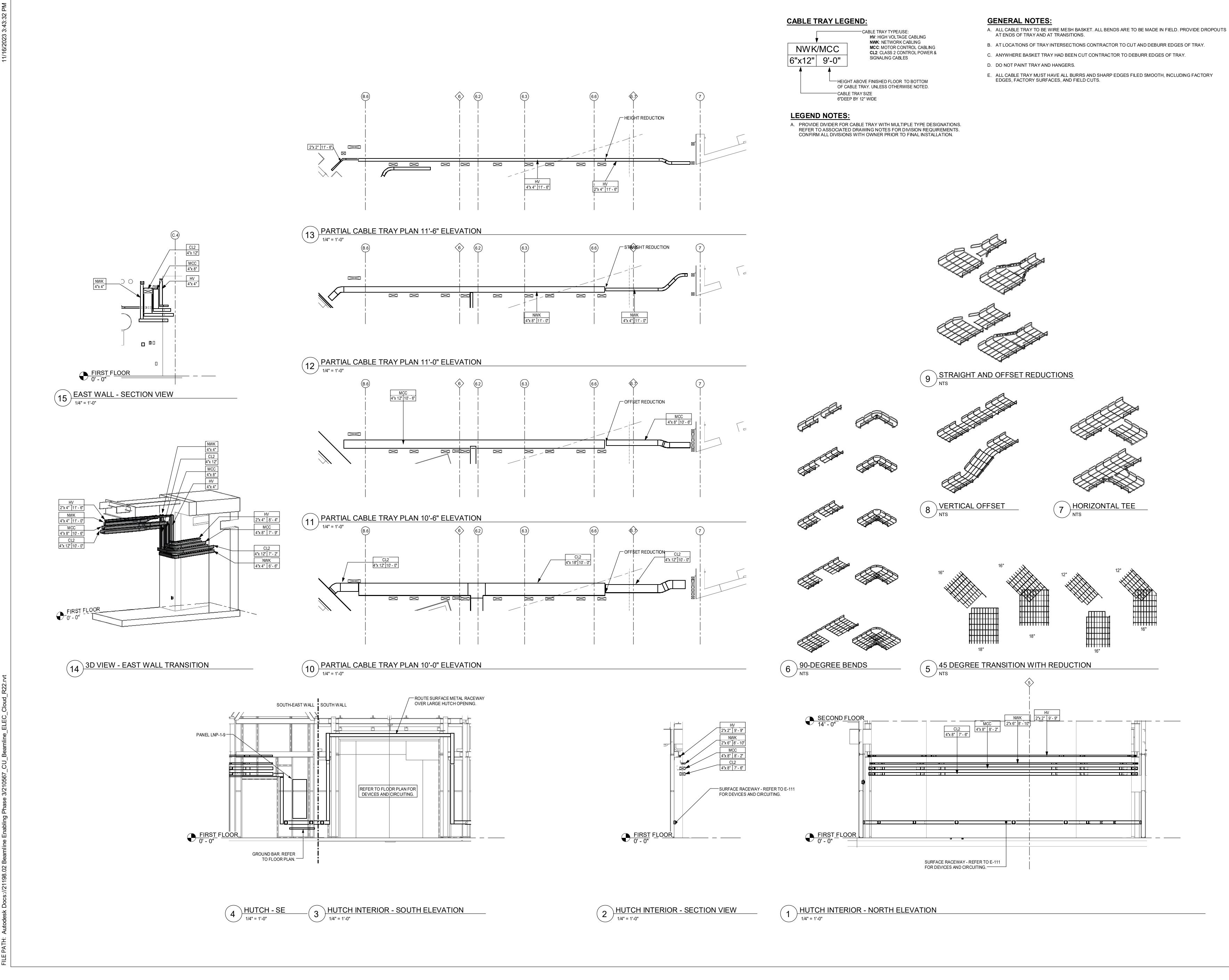
Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

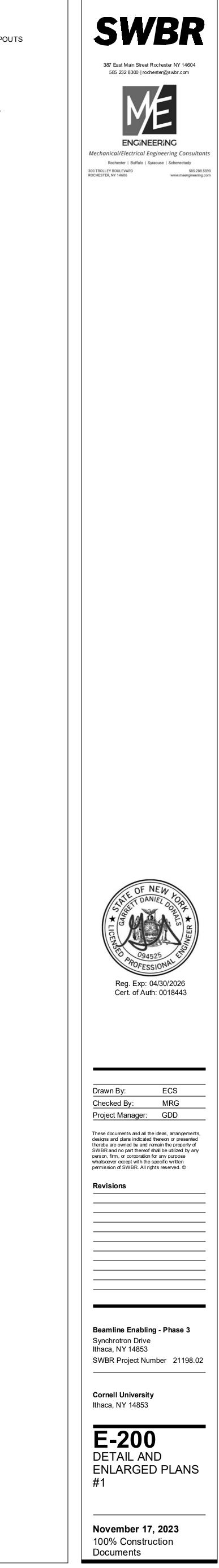
Cornell University lthaca, NY 14853

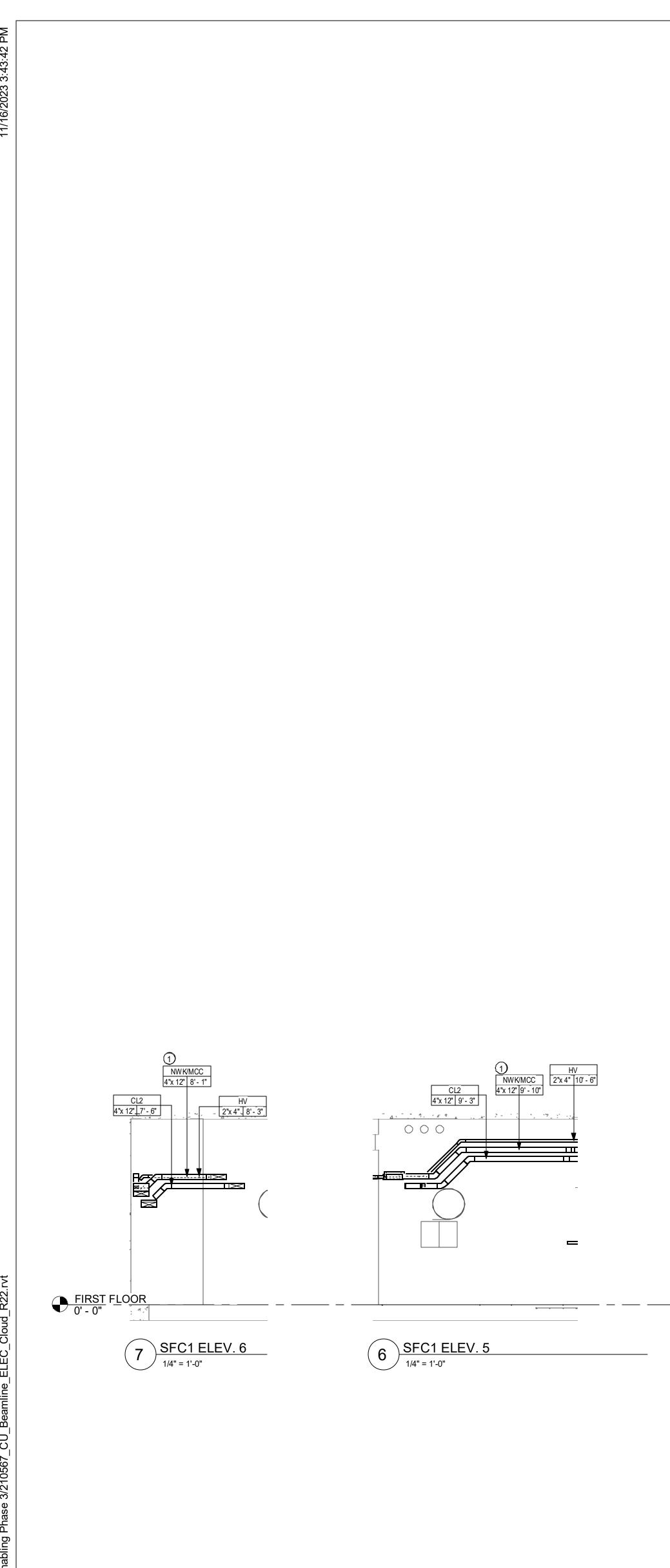


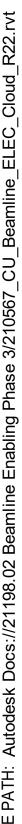




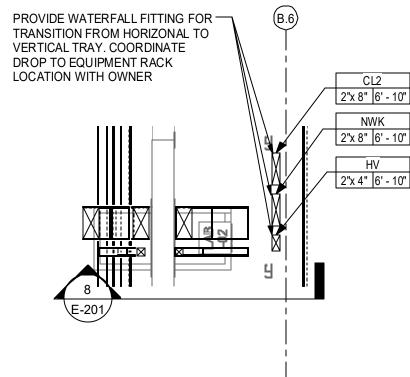
- B. AT LOCATIONS OF TRAY INTERSECTIONS CONTRACTOR TO CUT AND DEBURR EDGES OF TRAY.
- C. ANYWHERE BASKET TRAY HAD BEEN CUT CONTRACTOR TO DEBURR EDGES OF TRAY.



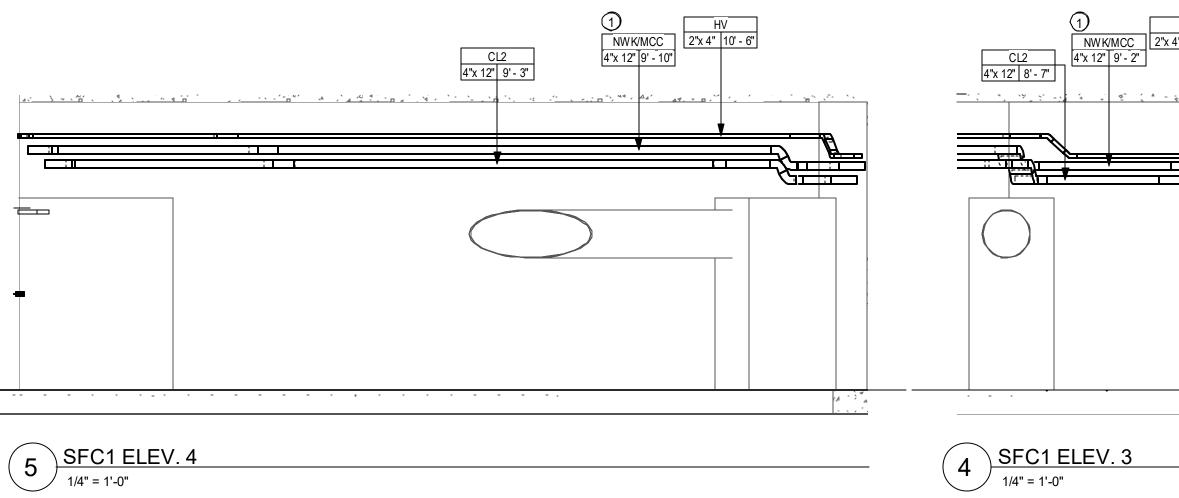




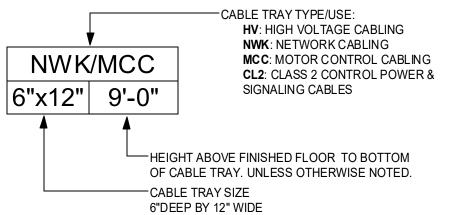
LEGEND NOTES:



9 FIRST FLOOR - CABLE TRAY DETAIL PLAN 1/2" = 1'-0"



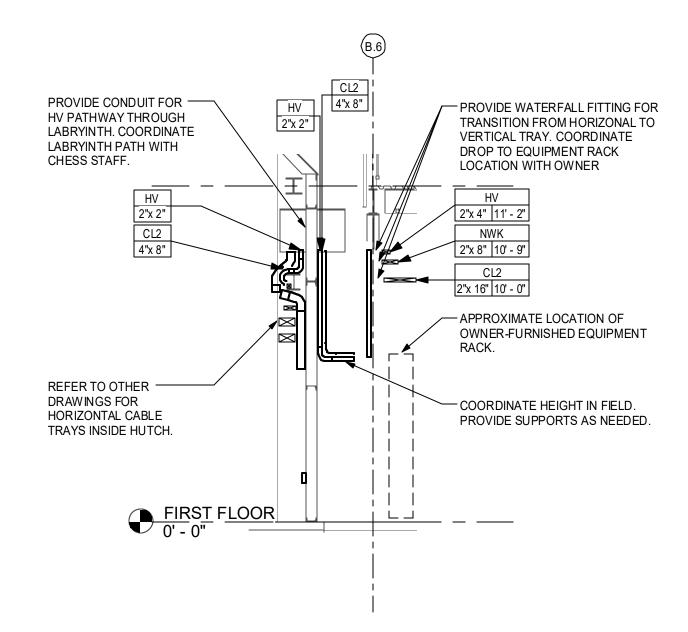




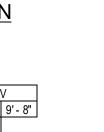
A. PROVIDE DIVIDER FOR CABLE TRAY WITH MULTIPLE TYPE DESIGNATIONS. REFER TO ASSOCIATED DRAWING NOTES FOR DIVISION REQUIREMENTS. CONFIRM ALL DIVISIONS WITH OWNER PRIOR TO FINAL INSTALLATION.

GENERAL NOTES:

- A. ALL CABLE TRAY TO BE WIRE MESH BASKET. ALL BENDS ARE TO BE MADE IN FIELD. PROVIDE DROPOUTS AT ENDS OF TRAY AND AT TRANSITIONS.
- B. AT LOCATIONS OF TRAY INTERSECTIONS CONTRACTOR TO CUT AND DEBURR EDGES OF TRAY.
- C. ANYWHERE BASKET TRAY HAD BEEN CUT CONTRACTOR TO DEBURR EDGES OF TRAY.
- D. DO NOT PAINT TRAY AND HANGERS.
- E. ALL CABLE TRAY MUST HAVE ALL BURRS AND SHARP EDGES FILED SMOOTH, INCLUDING FACTORY EDGES, FACTORY SURFACES, AND FIELD CUTS.



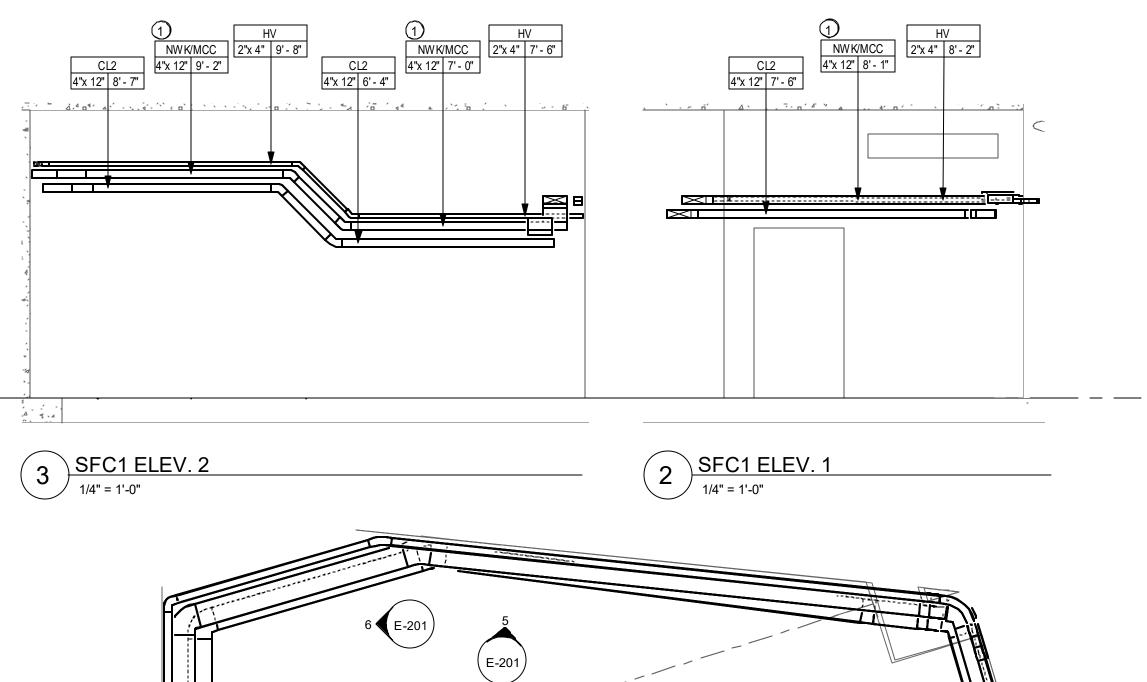




8 SE HUTCH LABRINTH SECTION VIEW 1/4" = 1'-0"

(E-201)

1 FIRST FLOOR ENLARGED CABLE TRAY PLAN - SFC1



S5C1

4"x 12" 8' - 7 4"x 12" 9' - 2"

2"x 4" 9' - 8"



WORK CLOSELY WITH CHESS STAFF TO DEFINE ROUTING OF

TRAYS IN SECTOR 5 CAVE 1.

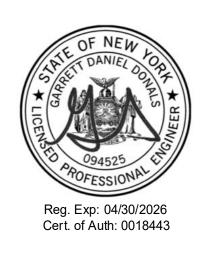
1/4" = 1'-0"







Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 300 TROLLEY BOULEVARD ROCHESTER, NY 14606 585.288.5590 www.meengineering.com



Drawn By: ECS MRG Checked By: Project Manager: GDD

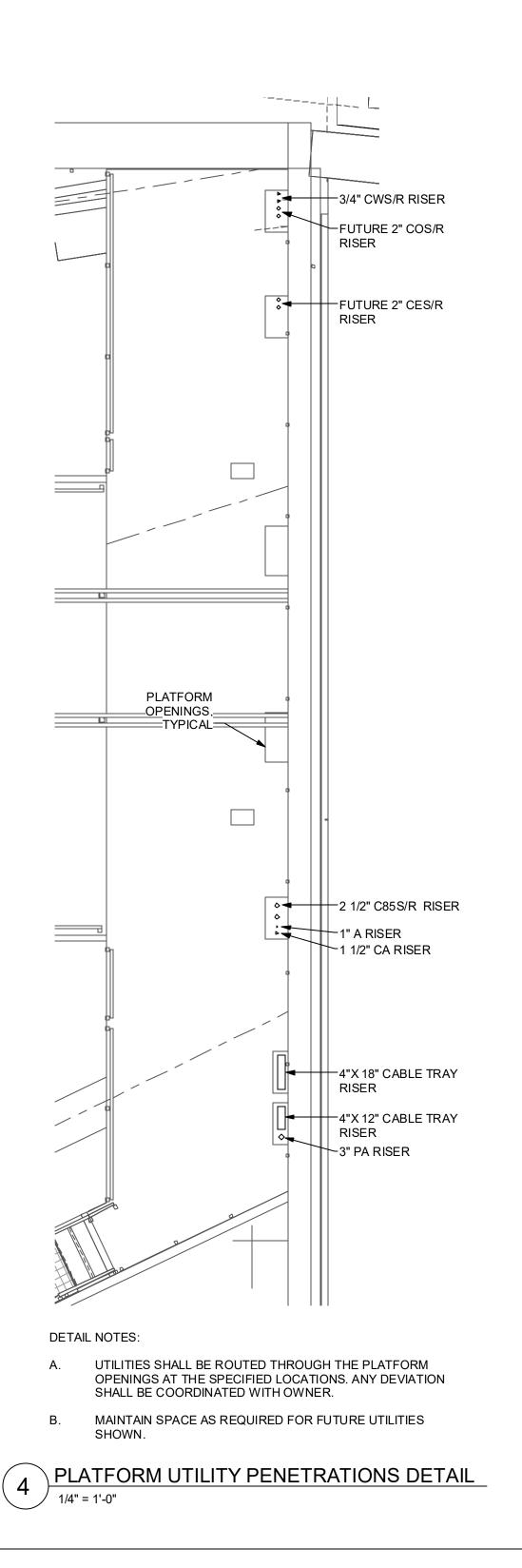
These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

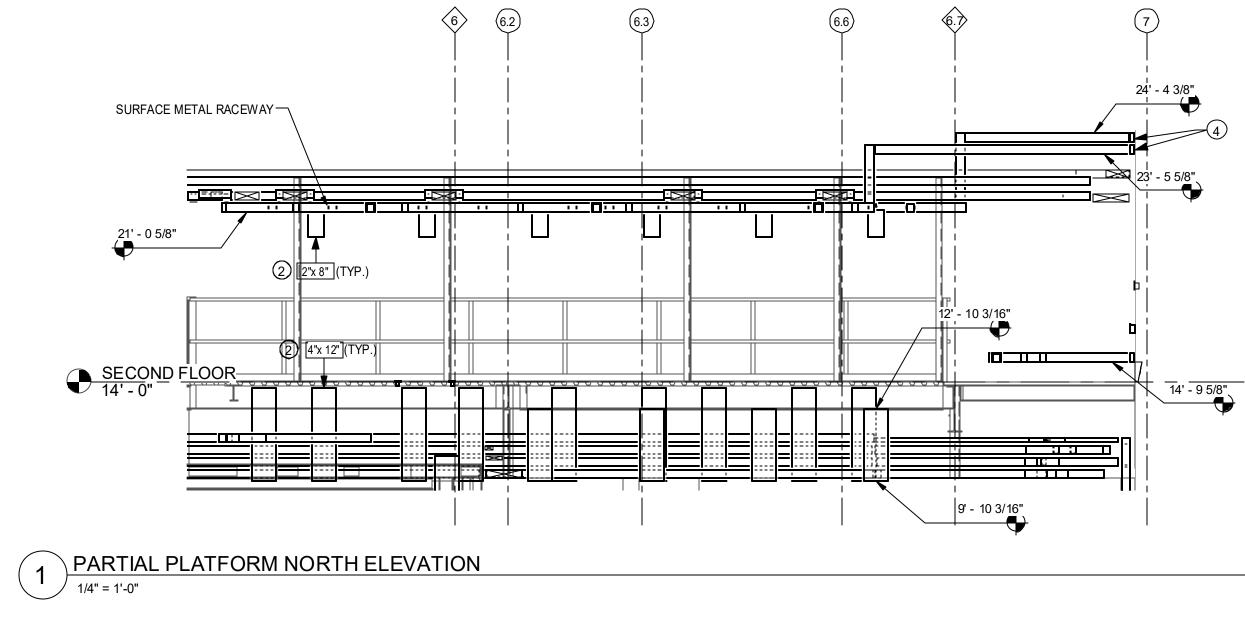
Revisions

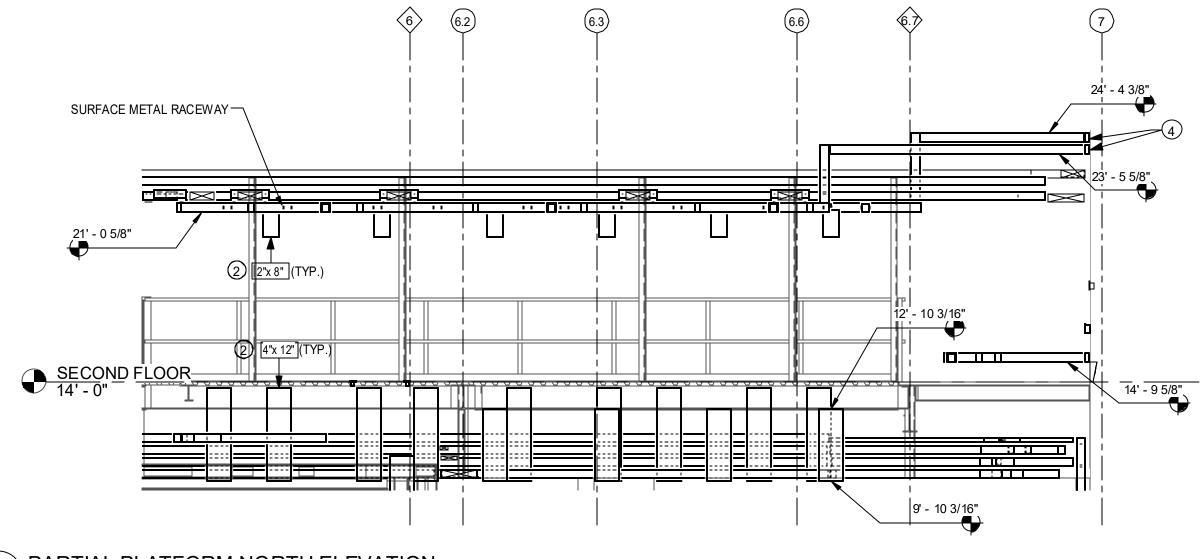
Beamline Enabling - Phase 3 Synchrotron Drive Ithaca, NY 14853 SWBR Project Number 21198.02

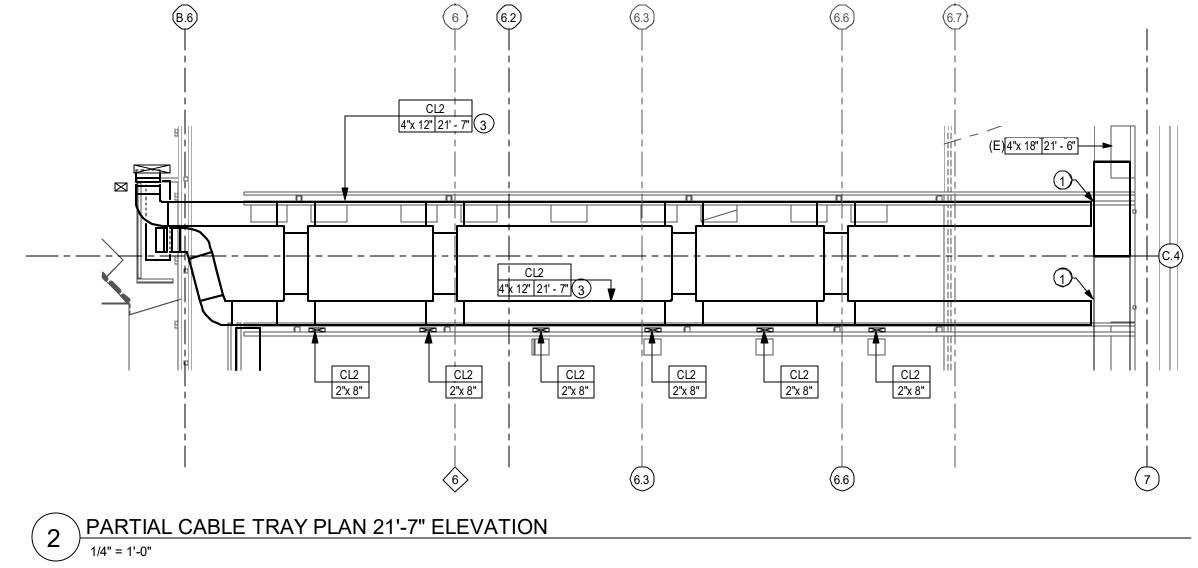
Cornell University lthaca, NY 14853

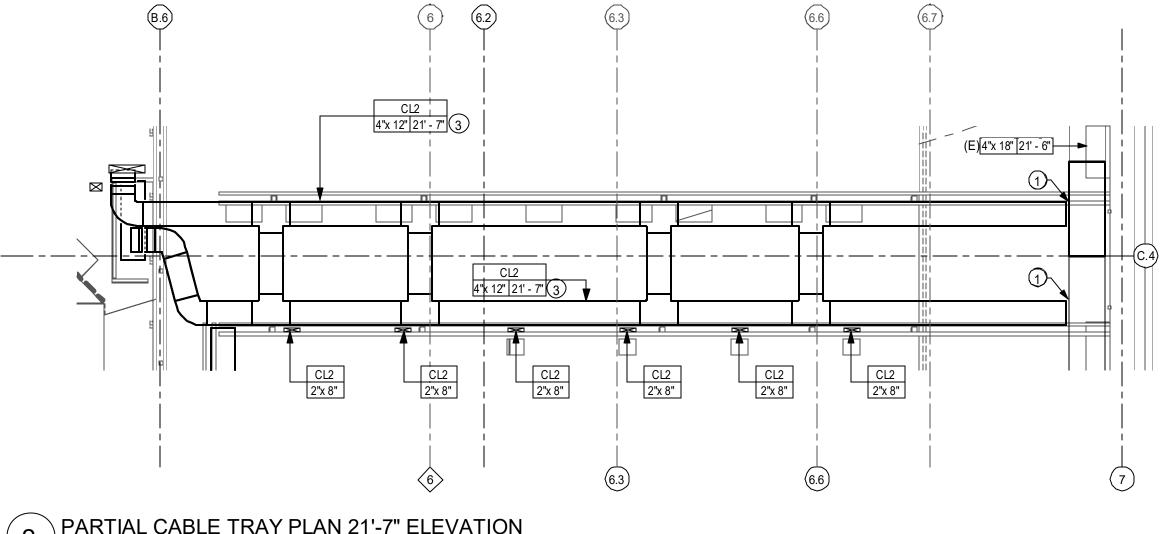
E-201 DETAIL AND ENLARGED PLANS #2



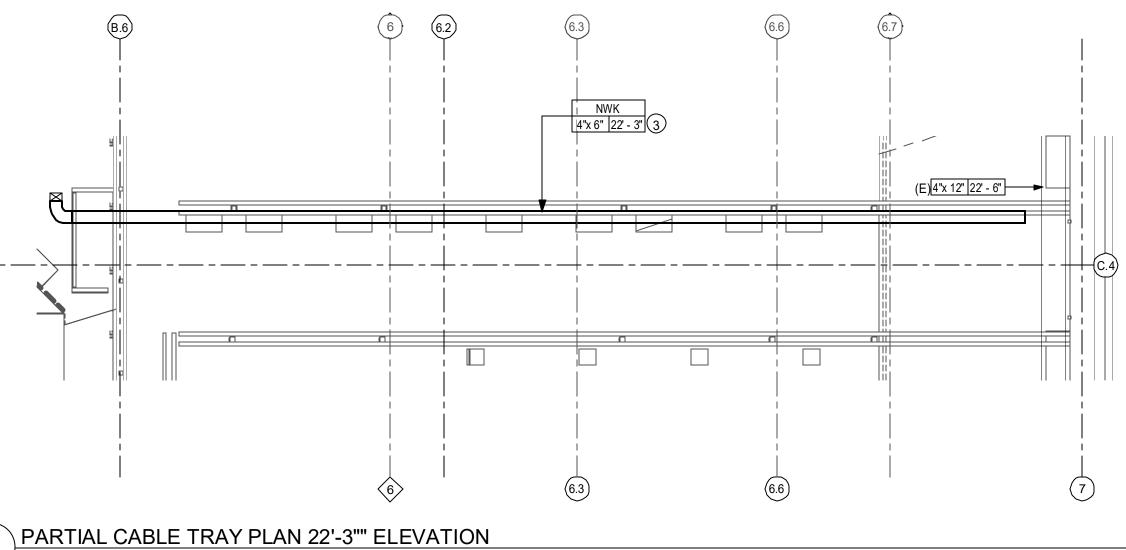




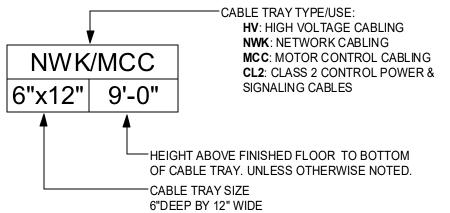








CABLE TRAY LEGEND:



LEGEND NOTES:

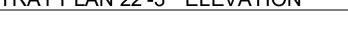
A. PROVIDE DIVIDER FOR CABLE TRAY WITH MULTIPLE TYPE DESIGNATIONS. REFER TO ASSOCIATED DRAWING NOTES FOR DIVISION REQUIREMENTS. CONFIRM ALL DIVISIONS WITH OWNER PRIOR TO FINAL INSTALLATION.

GENERAL NOTES:

- A. ALL CABLE TRAY TO BE WIRE MESH BASKET. ALL BENDS ARE TO BE MADE IN FIELD. PROVIDE DROPOUTS AT ENDS OF TRAY AND AT TRANSITIONS.
- B. AT LOCATIONS OF TRAY INTERSECTIONS CONTRACTOR TO CUT AND DEBURR EDGES OF TRAY.
- C. ANYWHERE BASKET TRAY HAD BEEN CUT CONTRACTOR TO DEBURR EDGES OF TRAY.
- D. DO NOT PAINT TRAY AND HANGERS.
- E. ALL CABLE TRAY MUST HAVE ALL BURRS AND SHARP EDGES FILED SMOOTH, INCLUDING FACTORY EDGES, FACTORY SURFACES, AND FIELD CUTS.

DRAWING NOTES:

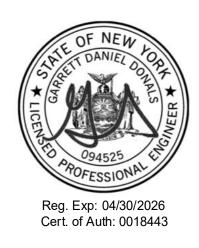
- 1. CUT EXISTING/PREVIOUS PROJECT CABLE TRAY AS NEEDED TO TIE IN NEW SECTIONS AND EXTENSIONS. 2. COORDINATE VERTICAL SECTIONS OF WIREWAY WITH OWNER EQUIPMENT AND PLATFORM PENETRATIONS.
- 3. TRAY HEIGHT TO BE DETERMINED BY FINAL STRUCTURE. COORDINATE INSTALLATION HEIGHT WITH STRUCTURAL DETAILS. PROVIDE HEIGHT TRANSITIONS TO TIE CABLE TRAY INTO EXISTING TRAY AS NEEDED ON EAST WALL. CL2 TRAY TO BE ABOVE STRUCTURE, NWK TRAY TO BE ABOVE CL2 TRAY. ENSURE 6" MINIMUM CLEARANCE BETWEEN TRAYS. CONFIRM WITH CHESS STAFF PRIOR TO FINAL INSTALLATION.
- 4. WIREWAY HEIGHT DETERMINED BY COORDINATING WITH OTHER SERVICES. ROUTE HIGH ALONG WALL TO PANEL AND TERMINATE AT PANELBOARD LNP-2-2.







Mechanical/Electrical Engineering Consultants Rochester | Buffalo | Syracuse | Schenectady 300 TROLLEY BOULEVARD ROCHESTER, NY 14606 585.288.5590 www.meengineering.com



ECS Drawn By: MRG Checked By: Project Manager: GDD

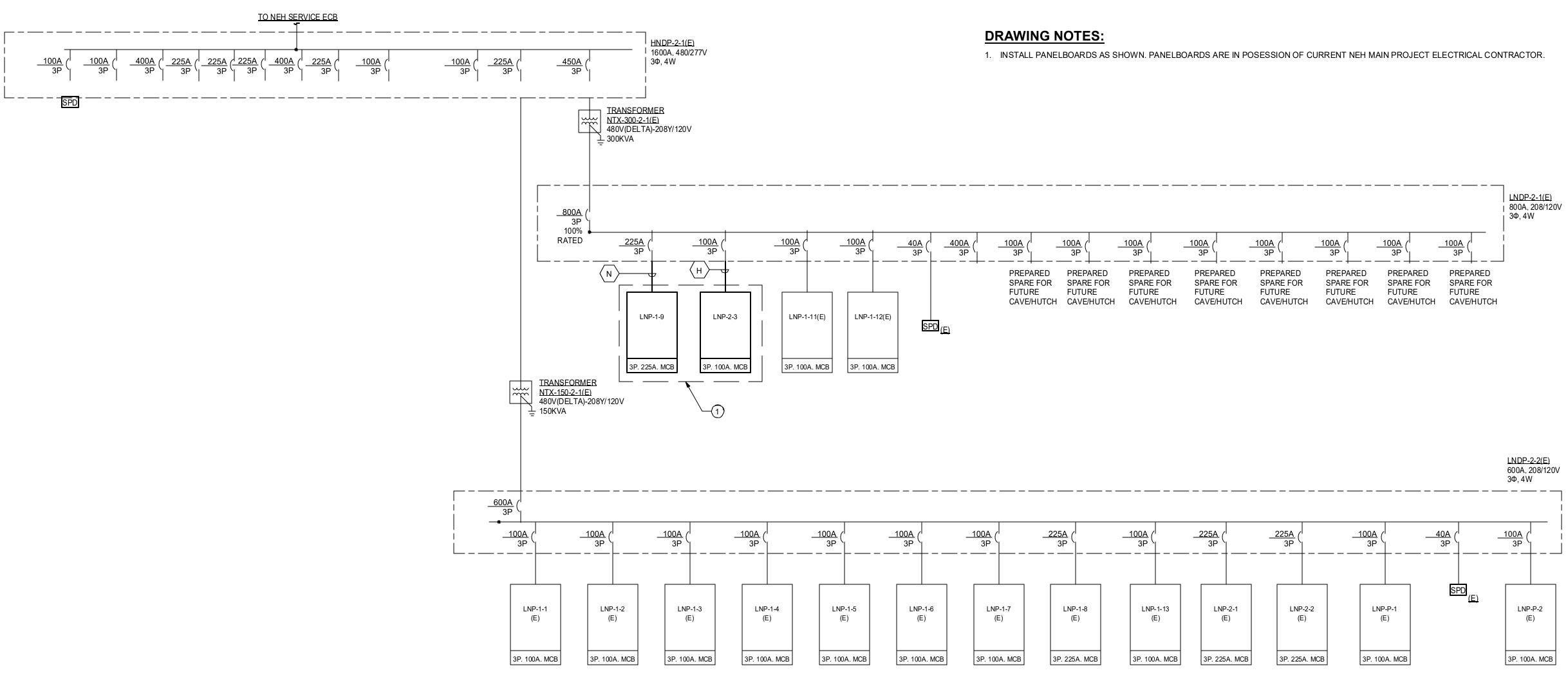
These documents and all the ideas, arrangements, designs and plans indicated thereon or presented thereby are owned by and remain the property of SWBR and no part thereof shall be utilized by any person, firm, or corporation for any purpose whatsoever except with the specific written permission of SWBR. All rights reserved. ©

Revisions

Beamline Enabling - Phase 3 Synchrotron Drive lthaca, NY 14853 SWBR Project Number 21198.02

Cornell University lthaca, NY 14853

E-202 DETAIL AND ENLARGED PLANS #3



NORMAL POWER ONE-LINE DIAGRAM - NEW

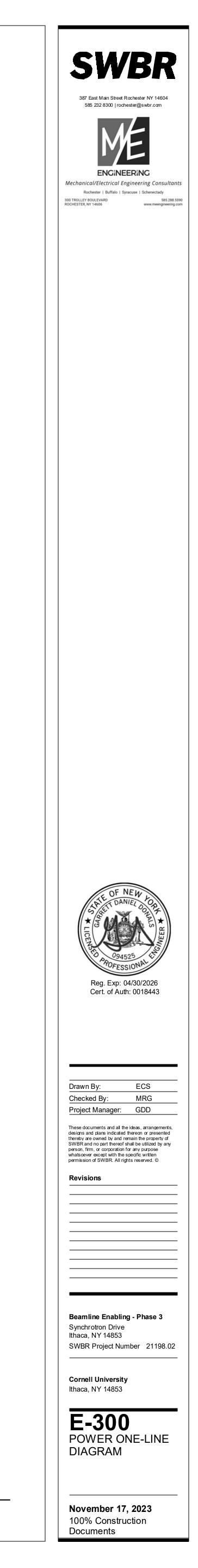
	1		COPF	PER FEEDI	ER SIZE SC	HEDULE	E (600V)			
0.000	EQUIF	3-WI PMENT GRC	re feede Junding C		OR (EGC)	EQUIF	4-WII PMENT GRC	re feede Unding (OR (EGC)
OCPD RATING	IDENT.	NUMBER OF SETS	WIRE SIZE	EGC	EMT CONDUIT	IDENT.	NUMBER OF SETS	WIRE SIZE	EGC	EMT CONDUI
20	A1	1	12	12	3/4"	Α	1	12	12	3/4"
25,30	B1	1	10	10	3/4"	В	1	10	10	3/4"
35,40	C1	1	8	10	3/4"	С	1	8	10	3/4"
45	D1	1	6	10	3/4"	D	1	8	10	3/4"
50,60	E1	1	6	10	3/4"	E	1	6	10	1"
70,80	F1	1	4	8	1"	F	1	4	8	1 1/4"
90	G1	1	3	8	1"	G	1	3	8	1 1/4"
100	H1	1	2	8	1 1/4"	н	1	2	8	1 1/4"
110	11	1	2	6	1 1/4"	I	1	2	6	1 1/4"
125	J1	1	2	6	1 1/4"	J	1	1	6	1 1/2"
150	K1	1	1/0	6	1 1/2"	К	1	1/0	6	1 1/2"
175	L1	1	2/0	6	1 1/2"	L	1	2/0	6	2"
200	M1	1	3/0	6	2"	М	1	3/0	6	2"
225	N1	1	4/0	4	2"	N	1	4/0	4	2 1/2"
250	01	1	4/0	4	2"	0	1	250	4	2 1/2"
300	P1	1	300	4	2 1/2"	Р	1	350	4	2 1/2"
350	Q1	1	400	3	2 1/2"	Q	1	500	3	3"
400	R1	1	500	3	2 1/2"	R	1	600	3	3 1/2"
450	S1	1	600	2	3"	S	2	4/0	2	2 1/2"
500	T1	2	4/0	2	2"	Т	2	250	2	2 1/2"
600	U1	2	300	1	2 1/2"	U	2	350	1	2 1/2"
700	V1	2	400	1/0	2 1/2"	V	2	400	1/0	3"
800	W1	2	600	1/0	2 1/2"	W	2	600	1/0	4"
1000	X1	3	400	2/0	2 1/2"	Х	3	500	2/0	3"
1200	Y1	3	600	3/0	3"	Y	4	400	3/0	3"
1600	Z1	4	600	4/0	3"	Z	5	500	4/0	3"
2000	AA1	5	600	250	3"	AA	6	500	250	3"
2500	BB1	6	600	350	3"	BB	7	600	350	4"
3000	CC1	8	500	400	3"	СС	8	600	400	4"
4000	DD1	10	600	500	3"	DD	11	600	500	4"
5000	EE1	12	600	700	4"	EE	14	600	700	4"
6000	FF1	15	600	800	4"	FF	16	600	800	4"
5000 6000 NOTES:	EE1 FF1 WHERE EGC OF	12 15 MULTIPLE	600 600 SETS ARE INDICATE	700 800 SPECIFIE D IN EACH	4" 4" D, PROVID	EE FF E PHASE CONDU	14 16 E, NEUTRAL JCTORS AN	600 600 (IF REQUI	700 800 RED), ANI	4" 4"

A 3-WIRE FEEDER IS (2) PHASE CONDUCTORS AND (1) NEUTRAL CONDUCTOR WHEN PROTECTED BY A 2-POLE OCPD. A 4-WIRE FEEDER IS (3) PHASE CONDUCTORS & (1) NEUTRAL CONDUCTOR. A 5-WIRE FEEDER IS (3) PHASE CONDUCTORS & (2) NEUTRAL CONDUCTORS.

2 COPPER FEEDER SCHEDULE

GENERAL NOTES: A. PROVIDE 2 HR RATED FEEDERS FOR ALL LIFE SAFETY BRANCH CIRCUITING. TYPE MI OR EQUAL.

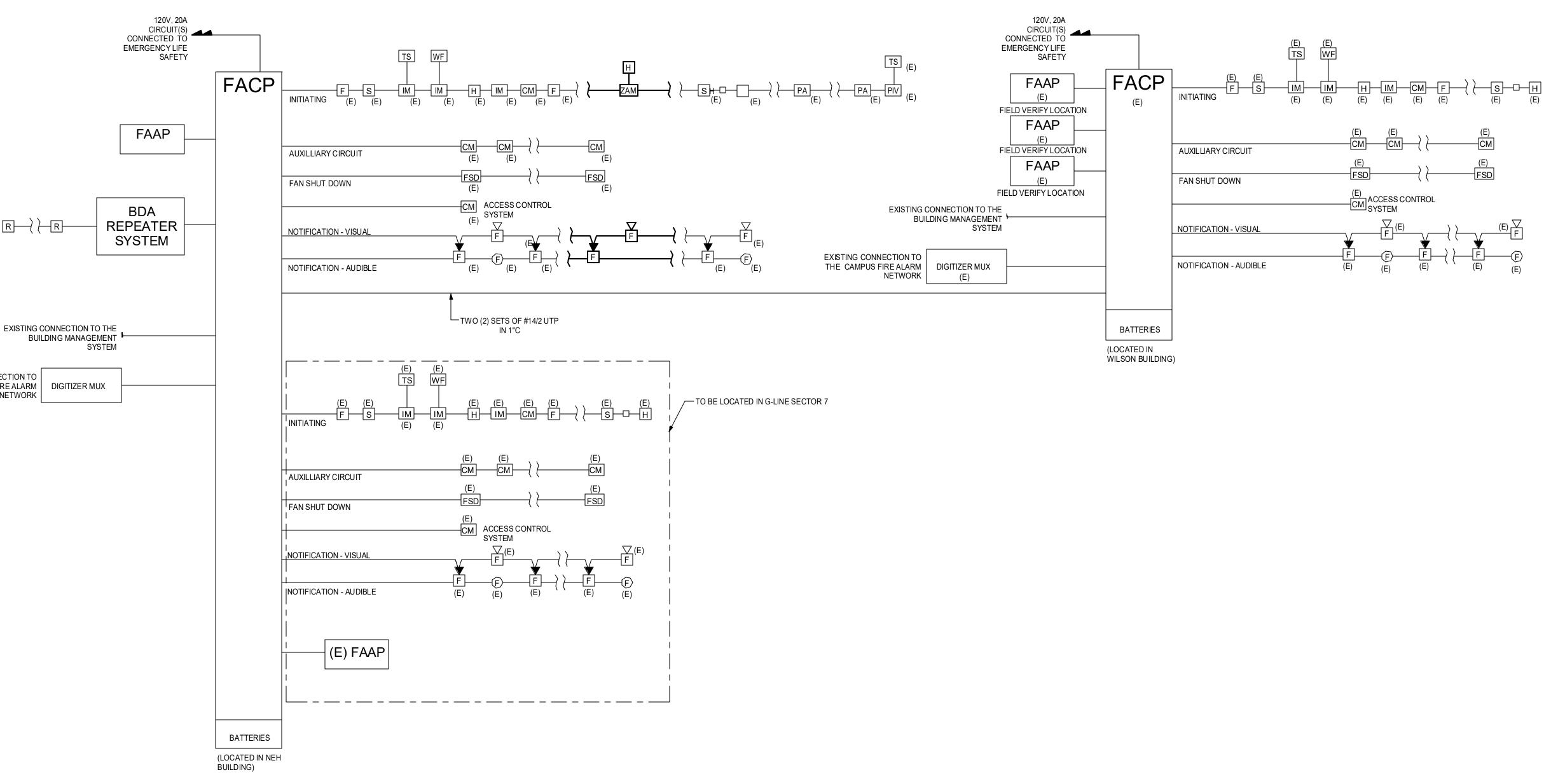
										3Ф, 4W — — — — — —
(<u>_100A</u> (3P	<u>–100A</u> (3P	<u>_100A</u> (3P	<u>–225A</u> (3P	<u>100A</u> (3P (<u>_225A</u> (3P	<u>_225A</u> (3P	<u>100A</u> (3P (<u>—40A</u> (3P (<u>100A</u> (
· ·										
									SPD (E)	
P-1-4 (E)	LNP-1-5 (E)	LNP-1-6 (E)	LNP-1-7 (E)	LNP-1-8 (E)	LNP-1-13 (E)	LNP-2-1 (E)	LNP-2-2 (E)	LNP-P-1 (E)		LNP-P-2 (E)
0A. MCB	3P. 100A. MCB	3P. 100A. MCB	3P. 100A. MCB	3P. 225A. MCB	3P. 100A. MCB	3P. 225A. MCB	3P. 225A. MCB	3P. 100A. MCB		3P. 100A. MCB



 $\mathbb{R} \longrightarrow \mathbb{R} \longrightarrow \mathbb{R}$

EXISTING CONNECTION TO THE CAMPUS FIRE ALARM DIGITIZER MUX NETWORK

- ADDITIONAL DETECTORS WHERE REQUIRED.
- WIRING IN A COMMON CONDUIT.
- I. TRANSPOSING OR CHANGING COLOR CODING OF WIRES IS NOT PERMITTED. ALL CONDUCTORS IN CONDUIT CONTAINING MORE THAN ONE WIRE SHALL BE LABELED ON EACH END AND IN JUNCTION BOXES WITH "E-Z MARKERS".
- OPPOSITE ITS TERMINAL.
- K. ALL WIRING SHALL BE CHECKED AND TESTED TO ENSURE THAT THERE ARE NO GROUNDS, OPENS, OR SHORTS.



FIRE ALARM GENERAL NOTES:

A. ALL FIRE ALARM WORK SHALL BE PER CORNELL FIRE ALARM GUIDELINES.

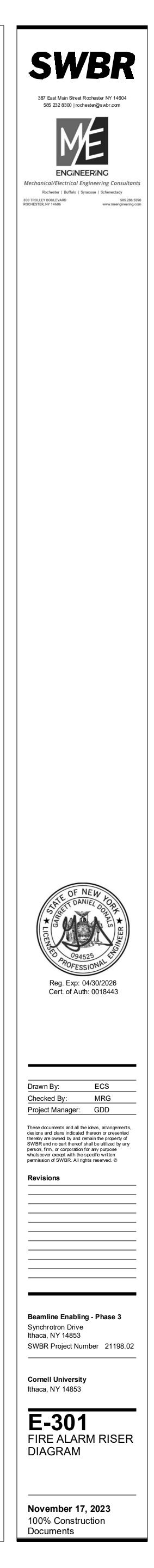
B. DEVICES SHOWN ARE DIAGRAMMATIC ONLY. FOR EXACT LOCATIONS AND QUANTITIES SEE FLOOR PLANS. C. ALL FIRE ALARM SYSTEM RACEWAY SIZES AND CIRCUITRY REQUIREMENTS SHALL BE IN ACCORDANCE WITH EQUIPMENT MANUFACTURERS RECOMMENDATIONS AND ALL CODES THAT MAY APPLY.

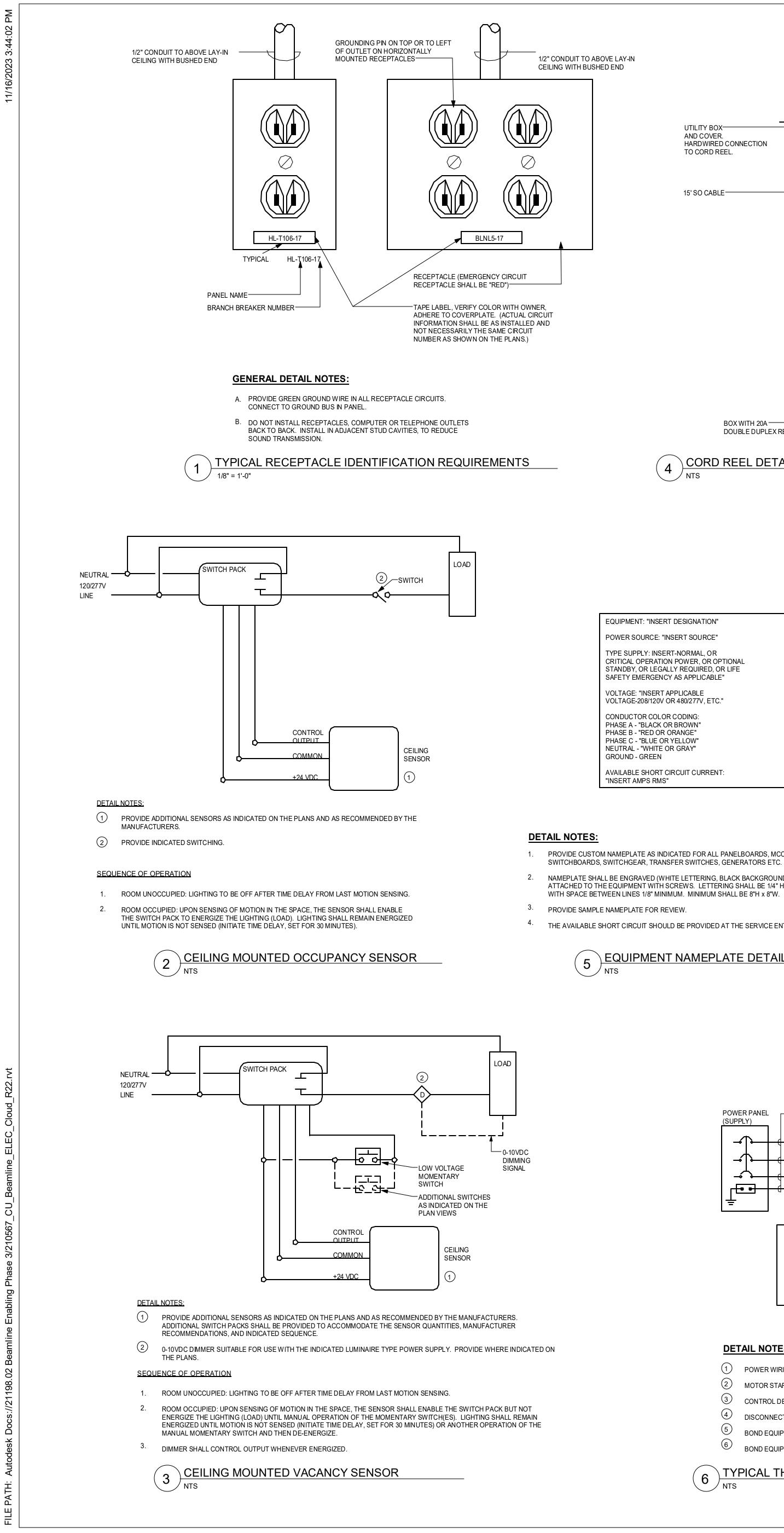
- D. CABLING MUST BE UNIQUELY IDENTIFIED AND LABELED, AND A PERMANENT, ACCURATE RECORD OF THE IDENTIFICATION AND USE OF EACH CABLE MUST BE MADE AT THE TIME OF INSTALLATION. LABELING IS TO BE DONE WITH PERMANENT MARKERS ON CLEAR MYLAR TAPE. THE TAPE SHALL BE LONG ENOUGH SO WHEN WRAPPED AROUND THE CABLE IT WILL WRAP OVER ITSELF, PROTECTING THE WRITING.
- E. FACP AND OTHER PANELS SHALL BE MOUNTED WITH CLEARANCES FOR OBSERVATION AND TESTING. THE FACP SHALL BE MOUNTED SO THAT THE LCD DISPLAY IS BETWEEN 60" AND 68" (EYE LEVEL). F. SPACE DETECTORS IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDED DISTANCE. PROVIDE
- G. ALL LOW VOLTAGE FIRE ALARM CIRCUITS MAY OCCUPY A COMMON CONDUIT. RUN AC POWER AND CONTROL WIRING (FAN SHUTDOWN, ETC.) IN SEPARATE CONDUIT. DO NOT RUN WITH ANY OTHER FIRE ALARM SYSTEM
- H. ALL CONDUIT, MOUNTING BOXES AND PANELS SHALL BE HUNG AND FASTENED WITH FITTINGS TO ENSURE POSITIVE GROUNDING THROUGHOUT THE ENTIRE SYSTEM. THE FACP SHALL BE MOUNTED USING VERTICAL STEEL CHANNEL SUPPORTS AS A STAND OFF.
- J. CONDUCTORS IN CABINETS SHALL BE FORMED AND HARNESSED SO THAT EACH DROPS OFF DIRECTLY
- FIRE ALARM RISER DIAGRAM NEW

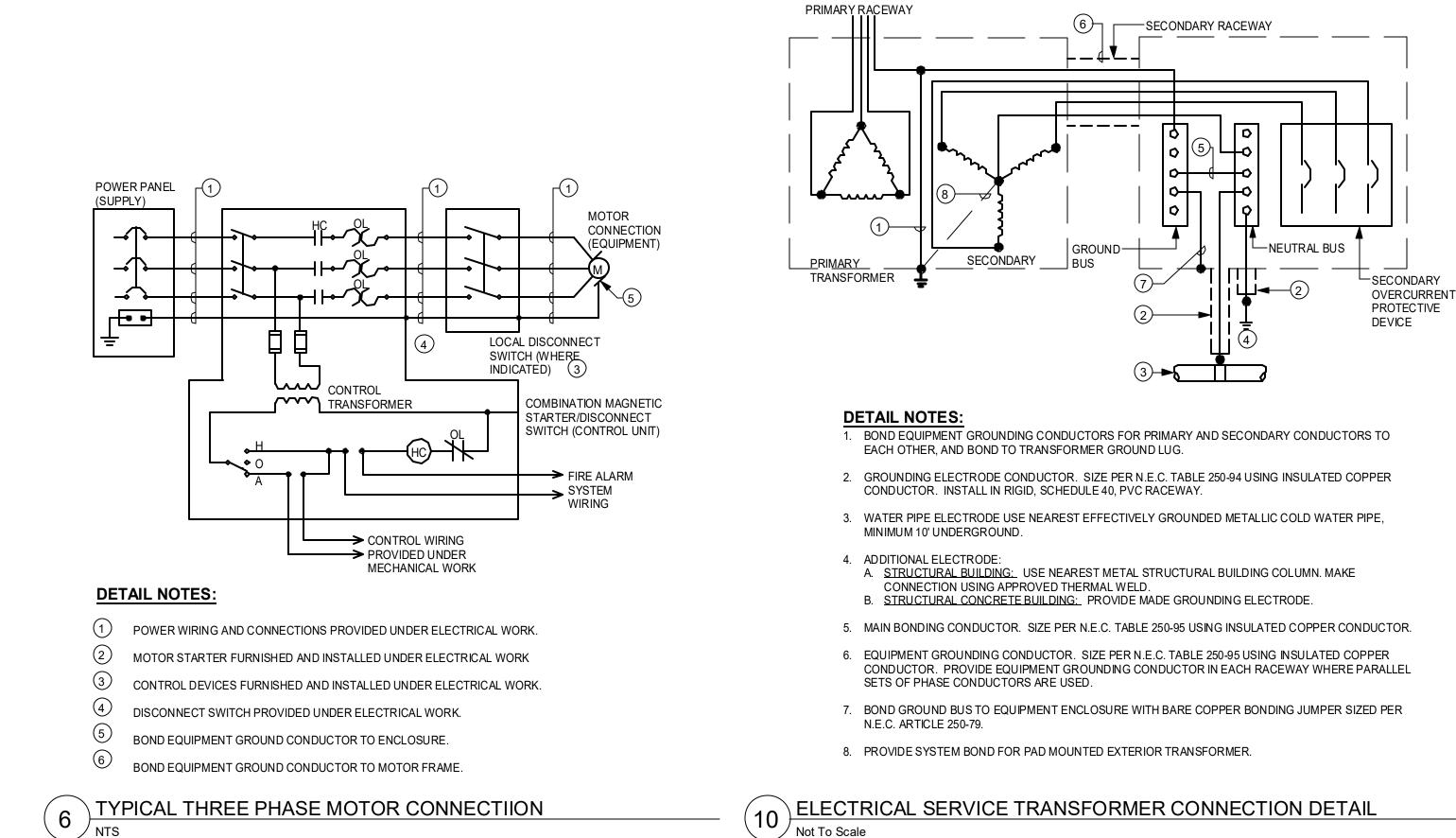
- L. WIRING COLOR CODES SHALL BE CONSISTENT THROUGHOUT THE SYSTEM AND SHALL ALLOW FOR EASY IDENTIFICATION OF INITIATING, INDICATING AND AUXILIARY CONTROL CIRCUITS.
- M. THE FIRE ALARM RISER DENOTES THE GENERAL ARRANGEMENT OF THE SYSTEM WITH TYPICAL DEVICES AND MINIMUM QUANTITIES OF TERMINAL CABINETS & POWER BOOSTERS. PROVIDE ADDITIONAL TERMINAL CABINETS, BOOSTERS, ETC. AS REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
- N. ALL FIRE ALARM SYSTEM JUNCTION BOXES SHALL BE PAINTED RED WITH STENCIL LETTERING INDICATING "FIRE ALARM SYSTEM".
- O. WIRING INDICATED ON THE RISER DIAGRAM IS DIAGRAMMATIC ONLY. IT IS NOT INTENDED TO INDICATE ROUTING OR QUANTITY OF WIRES REQUIRED. PROVIDE WIRING FOR A COMPLETE SYSTEM AS REQUIRED BY SYSTEM MANUFACTURER. P. PROVIDE CONTROL RELAY MODULES FOR HEAT DETECTORS LOCATED IN ELEVATOR MACHINE ROOMS AND ELEVATOR
- HOIST WAYS FOR SHUNT TRIP CONTROL OF THE DISCONNECT SWITCHES SERVING THE ELEVATORS. PROVIDE ALL INTERCONNECTING WIRING, ADDRESSABLE MODULES, ETC. Q. A MINIMUM OF (4) FOUR PROGRAMMABLE FUNCTION SWITCHES SHALL BE LOCATED AT THE MAIN FACP AND
- ANNUNCIATOR (S). R. THE FOLLOWING SHALL BE CAPABLE OF BEING DISABLED FROM THE FACP: ALL HORNS, STROBES, DOOR HOLDERS,
- ELEVATORS, AND FAN SHUTDOWN. S. THE FACP SHALL BE PROVIDED WITH A MINUMUM OF TWO FREE EXPANSION CARD BAYS FOR FUTURE EXPANSION.
- T. ALL ADDRESSABLE INITIATING CIRCUITS SHALL HAVE A MINIMUM OF AT LEAST 30% SPARE CAPACITY PER LOOP AND
- FLOOR. U. ALL FACP OR AUXILLARY NAC OUTPUT CIRCUITS SHALL HAVE AT LEAST 30% SPARE OUTPUT POWER FOR FUTURE
- EXPANSION. ALL NOTIFICATION APPLIANCES SHALL BE ADRESSABLE. V. ALL DEVICES LOCATED ABOVE CEILINGS SHALL HAVE A REMOTE LED INDICATOR MOUNTED ON THE WALL AT EYE LEVEL
- AS NEAR AS POSSIBLE BELOW THE DEVICE AND LABELED ACCORDINGLY. W. AUDIO AND VISUAL SIGNAL DEVICES TO BE ON SEPERATE CIRCUITS TO ALLOW AUDIO DEVICES TO BE SILENCED WHILE
- VISUAL DEVICES (STROBES) CONTINUE TO FLASH. X. PROVIDE SYNCRHONIZATION OF ALL NEW STROBES.

DETAIL GENERAL NOTES:

- A. PROVIDE NEW POINT ADDRESSABLE FIRE ALARM CONTROL PANEL (FACP) WITH VOICE EVACUATION SYSTEM CAPABLITIES IN TOWER FIRE COMMAND CENTER TO ALLOW FOR INSTALLATION OF NEW SPEAKER NOTIFICATION DEVICES IN RENOVATION AREAS. ALL EXISTING NOTIFICATION, INTIATING, FAN SHUTDOWN AND AUXILIARY CIRCUITS SHALL BE EXTENDED AND CONNECTED TO NEW FIRE ALARM CONTROL PANEL.
- B. ALL CABLING SHALL BE AS REQUIRED BY THE SYSTEM MANUFACTURER AND CORNELL FIRE ALARM GUIDELINES. ROUTE 24VDC POWER WITH ALL INITIATION CIRCUITING. TYPICAL UNLESS OTHERWISE INDICATED.
- C. PROVIDE LINE ISOLATORS ON INITIATING DEVICE CIRCUITS ALLOWING NO MORE THAN 30 DEVICES TO BE EFFECTED IN THE EVENT OF A WIRING FAULT (TYPICAL).
- D. FIRE ALARM CIRCUIT WIRING EXTENDING BACK TO THE MAIN FIRE ALARM CONTROL PANEL. ALL WIRING SHALL BE CLASS "A" UOI.
- E. RISER DIAGRAM IS DIAGRAMMATIC AND DOES NOT SHOW ALL DEVICES. REFER TO FLOOR PLANS FPR TYPES, LOCATIONS AND QUANTITIES OF DEVICES.







5 EQUIPMENT NAMEPLATE DETAIL / NTS

PROVIDE SAMPLE NAMEPLATE FOR REVIEW. THE AVAILABLE SHORT CIRCUIT SHOULD BE PROVIDED AT THE SERVICE ENTRANCE

SWITCHBOARDS, SWITCHGEAR, TRANSFER SWITCHES, GENERATORS ETC. NAMEPLATE SHALL BE ENGRAVED (WHITE LETTERING, BLACK BACKGROUND) AND ATTACHED TO THE EQUIPMENT WITH SCREWS. LETTERING SHALL BE 1/4" HIGH

PROVIDE CUSTOM NAMEPLATE AS INDICATED FOR ALL PANELBOARDS, MCC'S,

CONDUCTOR COLOR CODING: PHASE A - "BLACK OR BROWN" PHASE B - "RED OR ORANGE" PHASE C - "BLUE OR YELLOW" NEUTRAL - "WHITE OR GRAY" GROUND - GREEN AVAILABLE SHORT CIRCUIT CURRENT: "INSERT AMPS RMS"

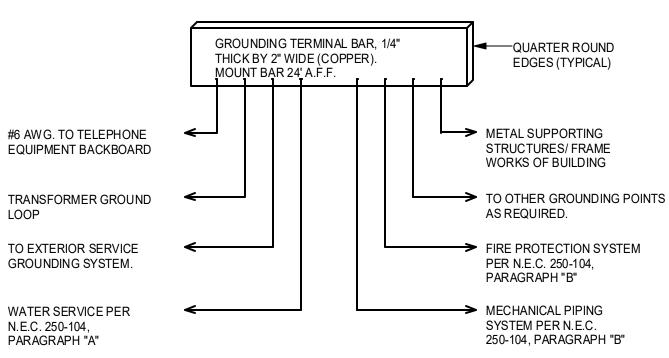
STANDBY, OR LEGALLY REQUIRED, OR LIFE SAFETY EMERGENCY AS APPLICABLE" VOLTAGE: "INSERT APPLICABLE VOLTAGE-208/120V OR 480/277V, ETC."

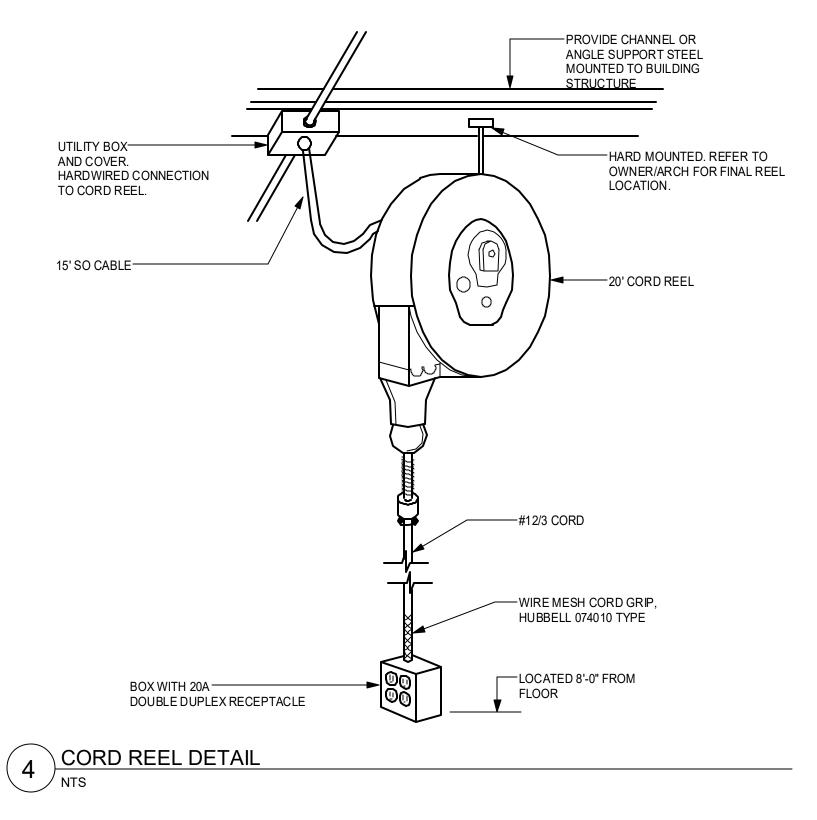
EQUIPMENT: "INSERT DESIGNATION" POWER SOURCE: "INSERT SOURCE" TYPE SUPPLY: INSERT-NORMAL, OR CRITICAL OPERATION POWER, OR OPTIONAL

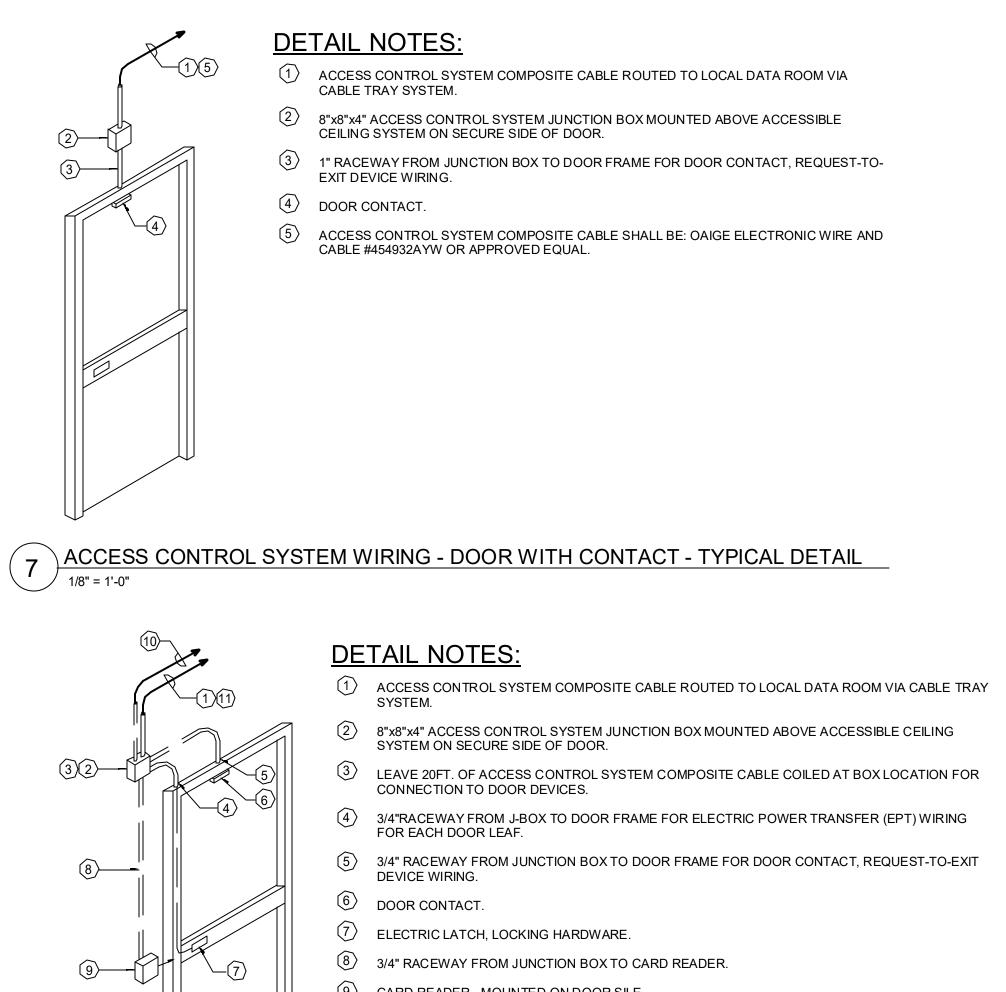


A. ALL GROUND CONDUCTORS SHALL BE #4/0 BARE STRANDED COPPER INSTALLED IN A 1" PVC CONDUIT

DETAIL NOTES:

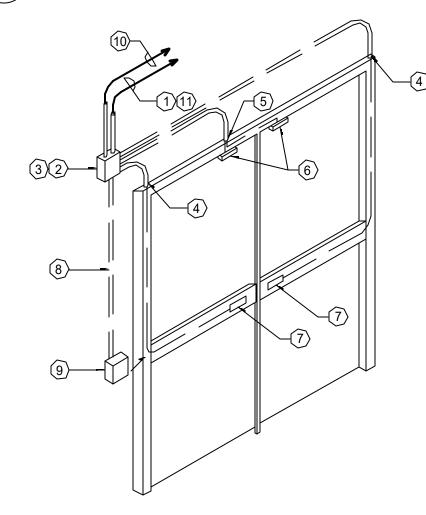






- (9) CARD READER MOUNTED ON DOOR SILE.
- 120 VOLT POWER SOURCE FROM LOCAL EMERGENCY POWER PANELBOARD. ACCESS CONTROL SYSTEM COMPOSITE CABLE SHALL BE: PAIGE ELECTRONIC WIRE AND CABLE #454932AYW OR APPROVED EQUAL.

ACCESS CONTROL SYSTEM WIRING - SINGLE DOOR - TYPICAL DETAIL 9 1/8" = 1'-0"



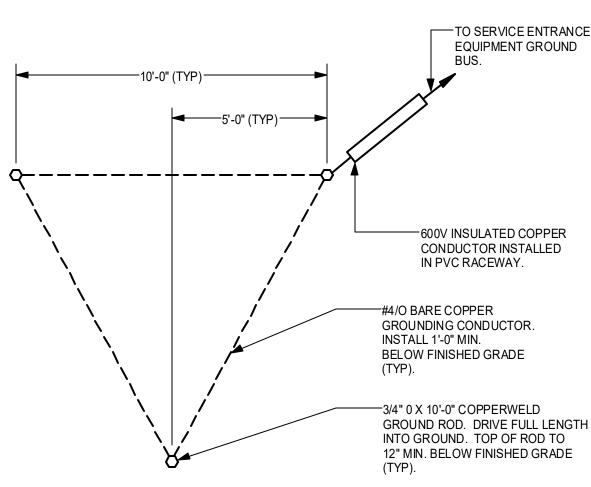
DETAIL NOTES:

- (1) ACCESS CONTROL SYSTEM COMPOSITE CABLE ROUTED TO LOCAL DATA ROOM VIA CABLE TRAY SYSTEM.
- (2) 8"x8"x4" ACCESS CONTROL SYSTEM JUNCTION BOX MOUNTED ABOVE ACCESSIBLE CEILING
- SYSTEM ON SECURE SIDE OF DOOR. (3) LEAVE 20FT. OF ACCESS CONTROL SYSTEM COMPOSITE CABLE COILED AT BOX LOCATION
- FOR CONNECTION TO DOOR DEVICES.
- (4) 3/4"RACEWAY FROM J-BOX TO DOOR FRAME FOR ELECTRIC POWER TRANSFER (EPT) WIRING FOR EACH DOOR LEAF.
- (5) 3/4" RACEWAY FROM JUNCTION BOX TO DOOR FRAME FOR DOOR CONTACT, REQUEST-TO-EXIT DEVICE WIRING.
- 6 DOOR CONTACT FOR EACH DOOR LEAF.
- ELECTRIC LATCH, LOCKING HARDWARE. ELECTRIC STRIKES SHALL AND NOT PART OF THE HARDWARE.
- (8) 3/4" RACEWAY FROM JUNCTION BOX TO CARD READER.
- (9) CARD READER MOUNTED ON DOOR SILE.

CABLE #454932AYW OR APPROVED EQUAL.

- (10)120 VOLT POWER SOURCE FROM LOCAL EMERGENCY POWER PANELBOARD.
- ACCESS CONTROL SYSTEM COMPOSITE CABLE SHALL BE: PAIGE ELECTRONIC WIRE AND

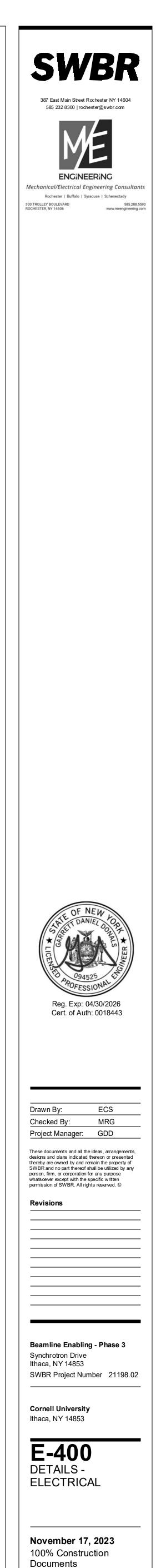
ACCESS CONTROL SYSTEM WIRING - DOUBLE DOOR - TYPICAL DETAIL 8 1/8" = 1'-0"



DETAIL NOTES:

- A. AT POINT OF ENTRANCE TO FACILITY, PROVIDE SOLDER BLOCK IN GROUNDING ELECTRODE CONDUCTOR. SEAL CONDUIT TO CONDUCTOR 100% WATERPROOF. B. GROUNDING ELECTRODE CONDUCTOR SHALL BE:
- MINIMUM SIZE 2/O COPPER FOR 400A SERVICE. 2. SIZE 4/0 FOR OVER 400A SERVICE.
- C. PROVIDE ADDITIONAL RODS AND INTERCONNECTIONS AS NECESSARY TO OBTAIN SPECIFIED OR UTILITY MAXIMUM RESISTANCE TO GROUND WHICHEVER IS LESS.

(11) ELECTRODE GROUND GRID / 1/8" = 1'-0"



		ELECTRIC E	QUIPME	NT AN		ROL S	CHEDUI	LE				ECB EN F FU	D WITH BYPAS CLOSED CIRCU	JIT BREAK		IU INTE M MUL NF NON	WITH REDUI	R ASD					В.	ERAL NOTES ATIONS FOR RS AND DISC ER SIZED PE IES OF FIRE DWN ON THE	REQUIREM DNNECTIN R HP RATIN			
		EQUIPMENT						PO	WER SOURCE,	PROTECTION & WIRING			N	IOTOR CON	ITROLLER] [DISCON	NECTING	MEANS			CONNEC	TIONS		EQUIF	PMENT
ITEM ID	NAME	ROOM LOCATION	HP	ĸw	AMPERAGE	PHASE	VOLTAGE	SOURCE	OCPD RATING	WIRING FROM SOU EQUIPMENT V CONTROLLER / DISCO MEANS	IA NNECTING	MANUAL OTOR STARTER WITH RELAY	MOTOR STARTER COMBINATION MAGNETIC STARTER AND SAFETY SWITCH	ADJUSTABLE SPEED DRIVE	PACKAGED CONTROL UNIT	NEMA ENCLOSURE TYPE	LOCATION	SAFETY SWITCH	SAFETY SWITCH AMPERE RATING	FUSE/CB AMPERE RATING	NEMA ENCLOSURE TYPE	LOCATION	FIRE ALARM SHUTDOWN	FIRE ALARM DUCT DETECTOR(S)		TEMPERATURE CONTROL		ITEM ID
										PHASE GROUND	CONDUIT	≥																
FCU-1	FAN COIL UNIT	HUTCH			0.2	1	120	LNP-2-3	20/1	2#12 1#12	3/4"				X		AU	Y	30	NF	1	AU						FCU-1

		WW_CH.I)5	.B′	1 (LNP-1-9)
		Fed from WV	V_RM	1205.	B2.1,3,5 225A
		225A MCB, 20)8/12	0V P	anelboard, 10kA
		Feeders: 4-4	/0 &	1-#4	Eq.Gr. Length:
		S5	Huto	ch Int	erior
#	Α	Description	#	Α	Description
1			2		End Station Turbo Controller RM104
0				20	2P/3W L6-20R
3	30	SPARE	4		2 recp: one N. Wall Center S5 hutch & one in vac lab
5			6		End Station Turbo Controller RM104
				20	2P/3W L6-20R
7		ACP 600 Rough Pump - RM 104	8		2 recp: one N. Wall Center S5 hutch & one in vac lab
9	20	3P/5W L21-20R	10	20	(2 recp) Load Lock Turbo Upsteam E. Wall
11			12	20	(2 recp) Optics Turbo Upstream E. Wall
13	20	ACP 600 Rough Pump - RM 104 3P/5W L21-20R	14	20	Magnet Rotation Station Vac Pump Upstream/Large GV Differential Pump Upstream – 2 receptacles, NE Wall
15		51/500 121-2010	16	20	E Quad Receptacles
17			18	20	E Quad Receptacles
19			20	20	E & SE Quad Receptacles
21	20	ACP 600 Rough Pump - RM 104 3P/5W L21-20R	22	20	E & SE Quad Receptacles
23			24	20	N & NE Quad Receptacles
25			26	20	N & NE Quad Receptacles
27	15	Cryo VTI Pump 3P/5W L5-15R	28	20	SW & W Quad Receptacles
29			30	20	SW & W Quad Receptacles
31	20	Cryo conv. Outlet Bridge	32	20	W & NW Quad Receptacles
33	20	Bridge receptacles (FUTURE)	34	20	W & NW Quad Receptacles
35	20	Bridge receptacles (FUTURE)	36	20	Helium Bath Pump dedicated receptacle
37	20	Dedicated quad @ door of hutch Station	38	-	Blank
39	20	Lighting	40	-	Blank
41	120	Eiger 2x 4M Detector (FUTURE)	42	-	Blank

LUMINAIRE SCHEDULE										
TYPE	DESCRIPTION	MFR. & CATALOG No.	LAMP	VOLTAGE/BALLAST	MOUNTING	UNIT WATTS	REFERENCE NOTES			
L1	4' LED VAPOR TIGHT FIXTURE.	PLT #PLT-90092	LED 4000K	120-277V	SURFACE	45	1			
L2	ROUND LED LOW-BAY CANOPY LIGHT	#MCP03-45-27V-40K-WD-LB- X	LED 4000K	120-277V	PENDANT	45	1			
		É	ND OF SCHEDU	LE						

REFERENCE NOTES:

1. REFER TO FLOOR PLANS FOR MOUNTING INFORMATION.

		WW_CH.S5Ca	ave	e2	B1 (LNP-2-3)
		Fed from WW_	RM2	205.	B2.7,9,11 100A
		100A MCB, 208/	120	VΡ	anelboard, 10kA
		Feeders: 4-#2	& 1-	#8	Eq.Gr. Length:
		WW CHESS Eq	uipn	nent	: Platform, East
#	Α	Description	#	Α	Description
1			2		S5C2 Turbo Pump 1,
3	30	SPARE	4	20	2P/3W I6-20R 19" rack right of door & S5C2 Vac Rack on equip platform
5			6		S5C2 Turbo Pump 1,
7	20	Flexure Amplifier, Outside Hutch 5 North side	8	20	
9	20	S5 Cave2 N. Wall Receptacles	10	20	S5C2 Rough Pump straight blade, 20A, 4.1A (2 recp) on Equipment Platform
11	20	S5 Cave2 N. Wall Receptacles	12	20	S5C2 Rough Pump straight blade, 20A, 4.1A (2 recp) on Equipment Platform
13	20	S5 Cave2 E. Wall Receptacles	14	20	Detector Control 120v - on equip platform
15	20	S5 Cave2 E. Wall Receptacles	16	20	Magnet Control Rack - on equip platform
		S5 Cave2 S. Wall Receptacles	18		3P/5W 121 30P N exterior S5C ave2
_		S5 Cave2 S. Wall Receptacles	20	30	3P/5W, L21-30R N. exterior S5Cave2 General Use
21		S5 Cave2 W. Wall Receptacles	22		
-		S5 Cave2 W. Wall Receptacles	24	20	1P/3W L6-20R N. exterior S5Cave2
		User station E. Wall Receptacles	26		General Use
27	20	User station E. Wall Receptacles	28	20	Radiation Monitor
29	20	User station/S5 Cave2 Exterior S & E Receptacles	30	40	Magnet Control Rack - on equip platform,
31	20	User station/S5 Cave2 Exterior S & E Receptacles	32		14-50R
33	20	S5 Cave2 Exterior E. & N. Wall Receptacles	34	-	Blank
35	20	S5 Cave2 Exterior E. & N. Wall Receptacles	36	-	Blank
37	20	Cave2 & Under Platform Lighting	38	-	Blank
39	-	Blank	40	-	Blank
41	-	Blank	42	-	Blank
1					

		Fed from WW_RM205	5.B3.2	26,28	,30 225A
		225A MCB, 208/120\	/ Pan	elboa	ard, 10kA
		Feeders: 4-4/0 & 1-	#4 Eq	.Gr.	Length:
		WW CHESS Equipment	Platf	orm,	West Wall
#	A	Description	#	A	Description
1			2	20	Hutch 5 Motor Rack, quad
3	30	SPARE	4	20	Hutch 5 Motor Rack, quad
5			6	20	S5 Hutch Vac Rack, quad
7	20	S5 Cryo Controls PLC Cabinet	8	20	S5 Hutch Vac Rack, quad
9	20	S5 Hutch EPS PLC Cabinet	10	20	S5C2 Vac Rack, quad
11	20	S5 Magnet PPS Cabinet	12	20	S5C2 Vac Rack, quad
13	20	S5 Wilson West PLC Cabinet	14	20	S5C2 Motor Rack, quad
15	20	S5Cave EPS Cabinet	16	20	S5C2 Motor Rack, quad
17	20	S5 PPS Cabinet	18	20	Network Equip Rack, quad
19	20	conv. Receptacles @ Racks 5-20R	20	20	Network Equip Rack, quad
21	40	CHESS Cryo Rec. 1, 14-50R	22	20	WW_R2 Future, quad
23			24	20	WW_R2 Future, quad
25	40	CHESS Cryo Rec. 2, 14-50R	26	20	WW_R1 Future, quad
27	70		28	20	WW_R1 Future, quad
29	20	CHESS Cryo Rack Power, quad	30	20	S5C1 Motors Rack, quad
31	20	CHESS Cryo Rack Power, quad	32	20	S5C1 Motors Rack, quad
33	20	N. DCM Pump, 2 dedicated 120v Recp.	34	20	S5C1 Vac Rack, quad
35	20	Quad @ N. DCM pump	36	20	S5C1 Vac Rack, quad
37	20	East Wall Platform Conv. Recp - GFI	38	20	conv. Receptacles @ Racks, quad
39	20	East Wall Platform Conv. Recp - GFI	40	20	Radiation Monitors
41	20	Cryo oxygen sensors LOCATION?	42		
43		-	44	100	Welding Outlet 1st Floor East Wall
45	100	Welding Outlet 1st Floor West Wall	46		
47		·······	48		
49	20	East Wall 1st Floor Conv. Recp - GFI	50	100	Welding Outlet 2nd Floor East Wall HBL5100R9W
51	20	N. Wall 1st Floor Conv. Recp - GFI	52		
53	20	W. Wall 1st Floor Conv. Recp - GFI	54	-	Blank
55	-	Blank	56	-	Blank
57	-	Blank	58	-	Blank

PANELBOARD SCHEDULE REFERENCE NOTES:

CIRCUIT PATH THROUGH WM 1 - NOTE CONNECT WM1 & WM2 ON WEST SIDE WM1 RUNS FROM SOUTH SIDE OF EQUIPMENT RACK.

CIRCUIT PATH THROUGH WM 2 - NOTE CONNECT WM1 & WM2 ON WEST SIDE. WM2 RUNS FROM NORTH SIDE OF EQUIPMENT RACK.

3. CIRCUIT PATH THROUGH WM 3. WM3 RUNS ALONG HIGH BAY WALL.

4. (6) TOTAL RADIATION MONTORING RECEPTACLES. REFER TO DRAWING NOTE 8 ON SHEET E-111.

