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THE MUSIC ANNEX

NEW PERFORMING ARTS REHEARSAL HALL

THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ 08618

11/11/2026 4:04:29 PM Autodesk Docs://TCNJ Pavilion/2025-23304 TCNJ Pavilion.rvt

PETAR MATTIONI NO. 21AI02153500

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Project No.: 2025-23304
Issued: 11/11/2026
COVER SHEET

G001

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ABBREVIATIONS

ABOVE FINISHED FLOOR	AFF	KICK PLATE	KP
ACCESS DOOR	AD	LAMINATED	LAM
ACOUSTICAL	ACOUS	LAVATORY	LAV
ACOUSTICAL CEILING BOARD	ACB	LEAD COATED COPPER	LCC
ACOUSTIC CEILING TILE	ACT	LEFT	L
ADHESIVE	ADH	LEFT HAND	LH
ADJACENT	ADJ	LENGTH	LG
ADJUSTABLE	ADJUST	LIGHTING	LTG
AIR CONDITIONING	AC	LIGHTWEIGHT	LTWT
ALTERNATE	ALT	LIVING ROOM	LR
ALUMINUM	ALUM	LONG	LNG
ANCHOR BOLT	AB	LOUVER	LVR
ANGLE	L	LOW POINT	LP
ANODIZED	ANOD	MACHINE	MACH
APARTMENT	APT	MAINTENANCE	MAINT
ARCHITECT, ARCHITECTURAL	ARCH	MANUFACTURER	MFR
ASPHALT	ASPH	MARKER BOARD	MB
AUTOMATIC	AUTO	MASONRY	MAS
AVERAGE	AVG	MASONRY OPENING	MO
BALANCE	BAL	MATERIAL	MATL
BALLED & BAGGED	B&B	MECHANICAL	MECH
BARRIER FREE	BF	MEMBRANE	MEMB
BASEMENT	BSMT	METAL	MTL
BEAM	BM	METAL CEILING PANEL	MCP
BEARING	BRG	MEZZANINE	MEZZ
BEDROOM	BR	MINIMUM	MIN
BETWEEN	BTWN	MISCELLANEOUS	MISC
BEVELED	BEV	MODIFIED BITUMINOUS	MOD BIT
BITUMINOUS	BIT	MOLDING	MLDG
BLOCK	BLK	MOUNTED	MTD
BLOCKING	BLKG	MOVABLE	MVBL
BOARD	BD	MULLION	MULL
BY OTHERS	BO	MULTIPLE	MULT
BOTTOM	BOT.B	NATURAL	NAT
BOTTOM OF CURB	BOC	NOMINAL	NOM
BOTTOM OF STEEL	BOS	NOMINAL INSIDE DIAMETER	NID
BRACKET	BRKT	NORTH	N
BRICK	BRK	NOT IN CONTACT	NIC
BRICK COURSE	BC	NOT TO SCALE	NTS
BUILDING	BLDG	NUMBER	NOM
BUILT-UP ROOFING	BUR	OFFICE	OFF
CABINET	CAB	ON CENTER	OC
CARPET	CPT	OPENING	OPNG
CASING BEAD	CASING BD	OPPOSITE	OPP
CHALK BOARD	CB	OUNCE	OZ
CAST IRON	CI	OUTSIDE DIAMETER	OUT DIA
CEILING	CLG	OVERFLOW DRAIN	OD
CEMENT, CEMENTITIOUS	CEM	OVERALL	OA
CEMENT PLASTER	CEM.PLAS	OVERHEAD	OH
CENTER	CTR	PAINTED	PTD
CENTER LINE	CLG	PAIR	PR
CERAMIC TILE	CT	PANEL	PNL
CHANNEL	CH	PARTITION	PTN
CLEAR, CLEARANCE	CLR	PARTICLE BOARD	PART BD
CLEAR TEMPERED PLATE GLASS	CTP	PAVEMENT	PVMT
CLOSET	CLOS	PERFORATED	PERF
COLUMN	COL	PHILLIPS HEAD SCREW	PHS
COLD ROLLED CHANNEL	CRC	PHOTOVOLTAIC	PV
COMPOSITE	COMP	PLANT	PLT
COMPRESSIBLE	COMPR	PLATE	PL
CONCRETE	CONC	PLASTER	PLAS
CONCRETE MASONRY UNIT	CMU	PLASTIC LAMINATE	PLAM
CONFERENCE	CONF	PLYWOOD	PLYWD
CONSTRUCTION	CONST	POUNDS PER SQUARE FOOT	PSF
CONTINUOUS	CONT	POUNDS PER SQUARE INCH	PSI
CONTROL	CONTR	PRESSURE	PRES
CONTROL JOINT	CJ	PRESSURE TREATED	PT, PRTD
CONVECTOR	CONV	PROTECTION	PROT
CORRIDOR	CORR	QUARRY TILE	QT
COUNTER FLASHING	CTR FLASH'G	RADIUS	R, RAD
COURSE	C	RAIN WATER CONDUCTOR	RWC
CUBIC FEET	CF	RAIN WATER LEADER	RWL
DAMPPROOFING	DP	RECESSED	REC
DEPARTMENT	DEPT	RECTANGULAR	RECT
DETAIL	DTL	REFERENCE	REF
DIAGONAL	DIAG	REFRIGERATOR	REFR
DIAMETER	DIA	REINFORCING	REINF
DIFFUSER	DIFF	REINFORCING BAR	REBAR
DIMENSION	DIM	REMOVABLE	REM
DISPENSER	DISP	REQUIRED	REQD
DIVISION	DIV	REVISION, REVISED	REV
DOOR	DR	RIGHT	RT
DOUBLE	DBL	RIGHT HAND	RH
DOWN	DN	RISER	R
DRAWING	DWG	ROOF DRAIN	RD
EACH	EA	ROOFING	RFG
EAST	E	ROOM	RM
ELASTOMERIC	ELAST	ROUGH OPENING	RO
ELECTRIC, ELECTRICAL	ELEC	ROUND	RND
ELECTRIC WATER COOLER	EWC	RUBBER	RUB
ELEVATION	EL	RUBBER BASE	RB
ELEVATOR	ELEV	RUBBER NAILER FASTENING STRIP	RNFS
EMERGENCY	EMERG	SANITARY	SAN
ENCLOSURE	ENCL	SCHEDULE	SCHED
ENTRANCE	ENTR	SCORED JOINT	SCD JT
EQUAL	EQ	SEALED	SLD
EQUIPMENT	EQUIP	SECTION	SECT
EXHAUST	EXH	SHEET	SHT
EXISTING	EXIST	SIMILAR	SIM
EXPANSION JOINT	EJ	SOFTWOOD	SFTWD
EXPOSED	EXP	SOLID CORE	SC
EXTERIOR	EXT	SOUND ATTENUATION BLANKET	SAB
EXTRUSION, EXTRUDED	EXTR	SOUND TRANSMISSION CLASSIFICATION	STC
FEET	FT	SOUTH	S
FIBERGLASS	FIB	SPACES	SP
FIBERGLASS REINFORCED	FRP	SPECIFICATION	SPEC
FILLER PANEL	FP	SQUARE	SQ
FINISH	FIN	SQUARE FOOT	SQ FT
FINISH TO FINISH	FTF	STANDARDQ	STD
FIRE EXTINGUISHER CABINET	FEC	STEEL	STL
FIRERETARDANT TREATED	FTD	STAINLESS STEEL	SST
FLOOR DRAIN	FD	STORAGE	STOR
FLOOR	FL	STORM	ST
FLUORESCENT	FLUOR	STRAIGHT	STR
FOOTING	FTG	STRUCTURAL	STRUC
FOUNDATION	FDN	STUCCO	STC
FRAME	FR	SUBFLOOR	SUBFL
FULL SIZE	FS	SURFACE	SURF
FURNISH	FURN	SUSPENDED	SUSP
FURRING	FUR	SWITCH	SW
GAGE, GUAGE	GA	SYSTEM	SYS, SYST
GALLON	GAL	TACKBOARD	TB
GALVANIZED	GALV	TEMPORARY	TEMP
GENERAL CONCRETE	GC	TERRAZZO	TER
GLASS	GL	TEMPERATURE	TEMP
GLASS FIBER REINFORCED CONC	GFRC	THERMAL	THERM
GLAZE	GLZ	THRESHOLD	THRESH
GLUE LAMINATED	GLU LAM	TONGUE AND GROOVE	T & G
GRADE	GD	TOP OF BEAM	TOB
GROUND	GND	TOP OF CURB	TC
GYPSUM	GYP	TOP OF WALL	TW
GYPSUM WALLBOARD	GWB	TOP OF STEEL	TOS
HAND	HND	TREAD	T
HANDICAPPED	HCP	TREATED	TRTD
HANDRAIL	HNDRL	TYPICAL	TYP
HARDBOARD	HDBD	UNFINISHED	UNFIN
HARDWARE	HDWE	UTILITY	UTIL
HEAD	HD	UNLESS OTHERWISE NOTED	UON
HEAT	HT	VALUE	VAL
HEATING, VENTILATING AND A/C	HVAC	VENEER	VEN
HIGH	H	VENTILATING	VENT
HIGHPOINT	HPT	VERIFY IN FIELD	VIF
HIGHWAY	HWY	VERTICAL	VERT
HOLLOW CORE	HC	VINYL BASE	VB
HOLLOW METAL	HM	VINYL COMPOSITION TILE	VCT
HOLLOW STRUCTURAL SECTIONS	HSS	VOLUME	VOL
HORIZONTAL	HORZ	WAINSCOT	WA
HORSEPOWER	HP	WATER CLOSET	WC
HOUR	HR	WALL COVERING	W COV
HYDRANT	HYD	WATERPROOF	WP
INCHES	IN	WATERRESISTANT	WR
INCLUDE	INCL	WEIGHT	WT
INSIDE DIAMETER	ID	WELDED WIRE FABRIC	WWF
INSULATION	INSUL	WEST	W
INTERIOR	INT	WIDE FLANGE	WF
INVERT	INV	WINDOW	WDW
JANITOR	JAN	WITH	W/
JOINT	JT	WITHOUT	W/O
JANITOR CLOSET	JC	WOOD	WD
KILN DRIED	KD	YARD	YD
KITCHEN	KIT		
KNOCKOUT	KO		

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CODES, ALL LOCAL, STATE AND FEDERAL REGULATIONS, AND IN A PROFESSIONAL WORKMAN LIKE MANNER.
2. CONTRACTORS AND THEIR STAFF ARE CONSIDERED BY THE OWNER AND ARCHITECT, THROUGHOUT THE PREPARATION OF DOCUMENTS AND THE CONSTRUCTION SEQUENCE, TO BE KNOWLEDGEABLE PROFESSIONALS SKILLED IN THEIR TRADE, AND THAT THEY ALONG WITH THE ARCHITECT SHALL ENDEAVOR TO PRODUCE A QUALITY PRODUCT.
3. VERIFY ALL DIMENSIONS AND CONDITIONS AT THE PROJECT SITE AFFECTING THE WORK DESCRIBED ON THE DRAWINGS AND IN THE SPECIFICATIONS. BRING TO THE ATTENTION OF THE ARCHITECT ANY DISCREPANCIES WHICH MAY ALTER OR IMPEDE THE ORIGINAL OR INTENDED DESIGN.
4. OWNER WILL OBTAIN, FILE AND PAY FEES FOR ALL REQUIRED PERMITS, INSPECTIONS, AND CERTIFICATES.
5. PROVIDE ALL NECESSARY DEMOLITION OR REMOVAL OF EXISTING WORK AS REQUIRED IN CONNECTION WITH THIS PROJECT, INCLUDING SHORING, BRACING, ETC. AND LEGALLY REMOVE UNWANTED MATERIAL AND DEBRIS FROM THE SITE. PROVIDE ADEQUATE BARRICADES AND OTHER TEMPORARY PROTECTION TO PREVENT INJURY TO PERSONS.
6. DO NOT SCALE THE DRAWINGS.

GRAPHIC SYMBOLS

MATERIAL SYMBOLS

EARTH
POROUS FILL
CONCRETE MASONRY UNIT
BRICK
CONCRETE
CAST STONE
STEEL
ALUMINIUM
PLYWOOD
RIGID INSULATION
ROUGH WOOD CONTINUOUS
ROUGH WOOD INTERMITTENT
FINISHED WOOD
INSULATED METAL PANEL
GROUT
BATT INSULATION
GYPSUM WALLBOARD

ANNOTATION SYMBOLS

ROOM TAG — Room name / 101 / 150 SF
DOOR TAG — 1
CEILING HEIGHT TAG — 9'-8" A.F.F.
PARTITION TYPE TAG — T8Ja
WINDOW TAG — CW22
PANEL/GLAZING TAG — MP1
EQUIPMENT TAG — 11
KEYED NOTE — 7
MATERIAL TAG — 7
NORTH ARROW — TRUE NORTH

SECTION — 1 / A101 — Ref
ELEVATION — 1 Ref; Ref; A101; Ref; Ref 1
DETAIL OR ENLARGED PLAN CALLOUT — 1 / A101 — Ref
ELEVATION DATUM — Name Elevation
REVISION CLOUD — 22
GRID LINE — A.8
EXISTING GRID LINE — A.88

CODE NOTES

ADOPTED SUB-CODES

BUILDING SUBCODE (NJAC 5:23-3.14)
International Building Code/2021, NJ ed (IBC w/ NJ edits from 3.14)

PLUMBING SUBCODE (NJAC 5:23-3.15)
National Standard Plumbing Code/2021, NJ ed

ELECTRICAL SUBCODE (NJAC 5:23-3.16)
National Electrical Code (NFPA 70)/2020

ENERGY SUBCODE (NJAC 5:23-3.18)
International Energy Conservation Code/2021 (Low-Rise Residential)
ASHRAE 90.1-2013 (Commercial & all other Residential)

MECHANICAL SUBCODE (NJAC 5:23-3.20)
International Mechanical Code/2021

BARRIER FREE SUBCODE (Chapter 11 of IBC 2021 & NJAC 5:23-7)
ICC/ANSI A117.1-2017

USE AND OCCUPANCY CLASSIFICATION

IBC 303.4 Assembly Group A3 - Lecture Hall; unconcentrated tables & chairs.

IBC 304.1 Business Group B – Educational occupancies for students above the 12th grade including higher education laboratories.

GENERAL BUILDING HEIGHTS AND AREAS

IBC Table 504.3 Automatic — Business Group B or Assembly Group A3, Type VB Construction w/ Not Sprinklered
Allowable Building Height in Feet Above Grade Plane
Allowable Height: 40 feet
Proposed Actual Height: 23 feet

IBC Table 504.4 — Allowable Number of Stories Above Grade Plane - Business Group B
Allowable Stories: 1
Proposed Actual Stories: 1

Allowable Number of Stories Above Grade Plane - Assembly Group A3
Allowable Stories: 1
Proposed Actual Stories: 1

IBC Table 506.2 — Allowable Area Factor in Square Feet - Business Group B
Allowable Area: 9,000 SF
Proposed Actual Area: 1,560 SF

Allowable Area Factor in Square Feet - Assembly Group A3
Allowable Area: 6,000 SF
Proposed Actual Area: 1,375 SF

Total Area: 2,935 SF

IBC 508.3 Non Separated Occupancies shall be individually classifed per 302.1. Most restrictive provisions of Chapter 9 shall apply to the total non-separated occupancy area. Allowable building area and height shall be based on most restrictive allowances for the occupancy group under consideration.

TYPES OF CONSTRUCTION

IBC602.2 Types I and II. Types I and II construction are those types of construction in which the building elements listed in Table 601 are of noncombustible materials, except as permitted in Section 603 and elsewhere in this code.

IBC Table 601 Fire Resistance Rating Requirements for Building Elements (Hours)

Type VB	
Primary Structural Frame	0
Bearing Walls	
Exterior	0
Interior	0
Nonbearing Walls and Partitions	
Exterior	0
Interior	0
Floor Construction	0
Roof Construction	0

IBC Table 602 Fire Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance

Occupancy Groups A, B, E, F-2, I, R	
10' < FSD < 30'	0 hour (Type IIB and VB)

FIRE AND SMOKE PROTECTION FEATURES

IBC 705.3 Buildings on the Same Lot - For the purposes of determining the required wall and opening protection, projections and roof-covering requirements, buildings on the same lot shall be assumed to have an imaginary line between them. Where a new building is to be erected on the same lot as an existing building, the location of the assumed imaginary line with relation to the existing building shall be such that the exterior wall and opening protection of the existing building meet the criteria as set forth in Sections 705.5 and 705.8.

IBC 705.5 Fire-resistance ratings - Exterior walls shall be fire-resistance rated in accordance with Tables 601 and 602 and this section.

1006.2.1 EGRESS BASED ON OCCUPANT LOAD AND EXIT ACCESS TRAVEL DISTANCE.

Two exits or exit access doorways from any space shall be provided where the design occupant load or the exit access travel distance exceeds the values listed in Table 1006.2.1. The cummulative occupant load from adjacent rooms, areas or spaces shall be determined in accordance with section 1004.2.

Table 1017.2 Exit Access Travel Distance

Occupancy	Without Sprinkler System
A, E, F-1, M, R, S-1	200 Feet

ENVELOPE ENERGY REQUIREMENTS

The project is sited in New Brunswick, NJ in Climate Zone 4A

ASHRAE 90.1-2019

Roof: insulation above deck	R-30 c.i.
Walls above grade, steel framed	R-13 + R-7.5 c.i.
Slab-on-Grade Floors, unheated	R-15 for 24 in.
Opaque Doors	U-0.500
Windows, Metal Framing	U-0.42
Windows, Non-Metal Framing	U-0.35

PLUMBING CODE

Type of Occupancy: **Assembly A3, Lecture Halls, 100 Occupants**
Special Event is non-simultaneous with Business Use

No. Persons Each Sex	Water Closets		Lavatories		Drinking Fountain	Other
	Male	Female	Male	Female		
50 or less	1	1	1	1	1 per 500	1 Service Sink per Floor
TOTAL A3 USE REQ'D	1	1	1	1		
TOTAL PROVIDED	1 WC	1 WC	1	1	2 per ANSI 117.1	1 SERVICE SINK IN JANITOR'S CLOSET

FLOOR TOTAL
0
6
92

BUILDING CODE - OCCUPANCY							
NUMBER	NAME	AREA	FUNCTION OF SPACE	LOAD FACTOR	GROSS/NET	ROOM OCCUPANT LOAD	COMMENTS
01	VESTIBULE	95 SF	UNOCCUPIED	0		0	
02	REHEARSAL ROOM	1373 SF	LECTURE HALL	15	NET	92	
02a	AISLE	796 SF	CIRCULATION	150	GROSS	6	
03	RESTROOM VESTIBULE	71 SF					
04	RESTROOM	47 SF					
05	RESTROOM	35 SF					
06	STORAGE	15 SF					
07	JANITOR	12 SF					
08	ELEC/IT	68 SF					
						98	

SHEET INDEX

GENERAL

NUMBER	NAME
G001	COVER SHEET
G002	SYMBOLS, GENERAL NOTES, & SHEET INDEX

ARCHITECTURAL

NUMBER	NAME
A021	PARTITION TYPES
A101	FLOOR PLAN, RCP & CEILING DETAILS
A110	ROOF PLAN
A301	ELEVATIONS - EXTERIOR
A320	BUILDING SECTIONS & INTERIOR ELEVATIONS
A401	WALL SECTIONS
A402	WALL SECTIONS
A403	WALL SECTIONS
A404	WALL SECTIONS
A420	EXTERIOR PLAN DETAILS
A501	ENLARGED RESTROOM PLANS
A801	DOOR / WINDOW SCHEDULES & DETAILS
A900	FINISH PLAN & SCHEDULE

CIVIL

NUMBER	NAME
C101	EXISTING CONDITIONS / DEMOLITION PLAN
C102	DIMENSION PLAN
C103	GRADING AND UTILITY PLAN
C104	LANDSCAPE PLAN
C105	SOIL EROSION AND SEDIMENT CONTROL PLAN
C106	SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS
C107	CONSTRUCTION DETAILS

STRUCTURAL

NUMBER	NAME
S-101	FOUNDATION PLAN
S-102	ROOF FRAMING PLAN
S-201	TYPICAL DETAILS & GENERAL NOTES

MECHANICAL

NUMBER	NAME
M-001	HVAC LEGEND
M-002	HVAC SYMBOLS
M-003	HVAC SPECIFICATIONS
M-201	HVAC DUCTWORK - LEVEL 1 PLAN
M-202	HVAC DUCTWORK - LOW ROOF PLAN
M-301	HVAC PIPING - LEVEL 1 PLAN
M-501	HVAC DETAILS
M-502	HVAC DETAILS
M-601	HVAC SCHEDULES
M-602	HVAC SCHEDULES
M-801	HVAC CONTROLS LEGEND
M-802	HVAC CONTROLS
M-803	HVAC CONTROLS

ELECTRICAL

NUMBER	NAME
E-001	ELECTRICAL LEGEND
E-002	ELECTRICAL SYMBOLS
E-003	LIGHTING CONTROLS AND FIXTURE SCHEDULE
E-004	ELECTRICAL SPECIFICATIONS SHEET 1
E-005	ELECTRICAL SPECIFICATIONS SHEET 2
E-101	ELECTRICAL - SITE PLAN
E-201	POWER - LEVEL 1 PLAN
E-301	LIGHTING - LEVEL 1 PLAN
E-401	ELECTRICAL SINGLE-LINE AND SCHEDULES
E-501	ELECTRICAL DETAILS

PLUMBING

NUMBER	NAME
P-001	PLUMBING LEGEND AND GENERAL NOTES
P-200	PLUMBING - UNDERGROUND PLAN
P-201	PLUMBING - LEVEL 1 PLAN
P-301	PLUMBING - RISER DIAGRAMS
P-401	PLUMBING - SCHEDULES
P-501	PLUMBING - DETAILS SHEET

FIRE ALARM

NUMBER	NAME
FA-001	FIRE ALARM - SYMBOLS AND ABBREVIATIONS
FA-002	FIRE ALARM - NOTES & DESIGN CRITERIA
FA-003	FIRE ALARM - SPECIFICATIONS
FA-201	FIRE ALARM - LEVEL 1 PLAN
FA-202	FIRE ALARM - LOW ROOF PLAN
FA-501	FIRE ALARM- DETAILS
FA-601	FIRE ALARM - RISER DIAGRAM & MATRIX OF OPERATIONS

AUDIO VISUAL

NUMBER	NAME
AV-001	AUDIOVISUAL SYMBOLS AND ABBREVIATIONS Copy 1 Copy 1
AV-002	AUDIOVISUAL RESPONSIBILITY MATRIX
AV-201	AUDIOVISUAL - LEVEL 1 PLAN
AV-202	AUDIOVISUAL - LEVEL 1 INFRASTUCTURE
AV-401	AUDIOVISUAL - LEVEL 1 ELEVATIONS
AV-500	AUDIOVISUAL - LEVEL 1 EQUIPMENT SCHEDULE

SECURITY

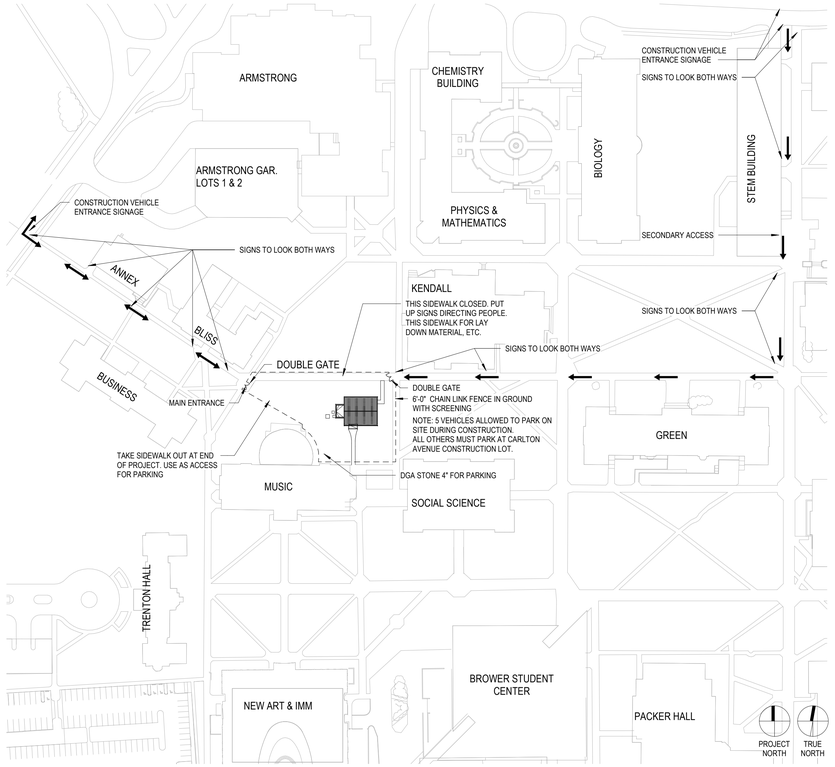
NUMBER	NAME
SE-001	SECUIRTY SYMBOLS AND ABBREVIATIONS
SE-002	SECURITY RESPONSIBILITY MATRIX
SE-201	SECURITY - LEVEL 1 PLAN

TELECOM

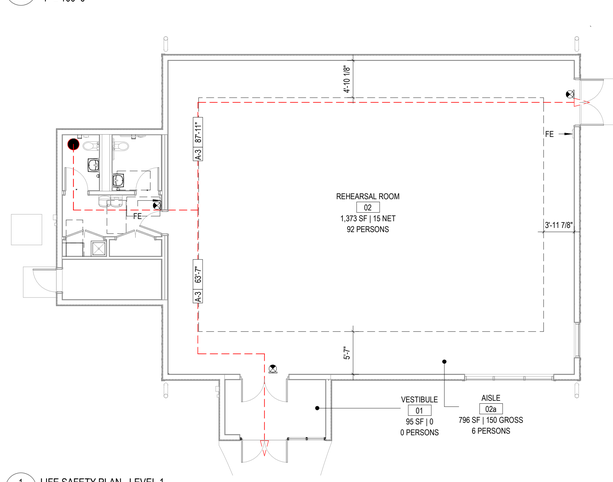
NUMBER	NAME
TC-001	TELECOM SYMBOLS AND ABBREVIATIONS
TC-002	TELECOM RESPONSIBILITY MATRIX
TC-200	TELECOM - SITE PLAN
TC-201	TELECOM - LEVEL 1 PLAN
TC-202	TELECOM - TRAY PLAN
TC-400	TELECOM - SECTION DETAILS
TC-500	TELECOM - CAMERA / ACCESS POINT

SITE PLAN GENERAL NOTES

1. SIGNS TO BE POSTED AT INTERSECTIONS & BLISS HALL FOR PEDESTRIANS TO LOOK BOTH WAYS ETC., FOR MOVING VEHICLES ON SIDEWALKS. (AT EXITS FROM BLISS HALL, ETC.)
2. CONTRACTOR IS TO PROVIDE FLAF MAN WHEN BRINGING CONCRETE TRUCKS, DELIVERY TRUCKS, ETC. DOWN SIDEWALK IN FRONT OF BLISS HALL.
3. 5 MPH LIMIT ON SIDEWALKS.
4. CONTRACTOR TO COORDINATE AS MANY DELIVERIES AS POSSIBLE BEFORE 8AM.
5. PEDESTRIANS (STUDENTS) HAVE THE RIGHT OF WAY AT ALL TIMES.
6. CONTRACTOR NEEDS TO MINIMIZE ACTIVITY ON THE WALKWAYS AS MUCH AS POSSIBLE.



2 G002 ARCHITECTURAL SITE PLAN
1" = 100'-0"



1 G002 LIFE SAFETY PLAN - LEVEL 1
1/8" = 1'-0"

EGRESS PLAN LEGEND

Room name / 101 / 150 SF | 100 GSF / 100 PERSONS — ROOM NAME; ROOM NUMBER; AREA | LOAD FACTOR; CALCULATED OCCUPANTS
DOOR 101-1 / 34"/180 / 0.21100 — COMPONENT TYPE/MARK; CLEAR WIDTH | MAX CAPACITY; WIDTH FACTOR | ACTUAL OCCUPANTS
FLOOR TOTAL / XX — TOTAL OCCUPANTS BY FLOOR
F88| 188' - 8" — EGRESS PATH MARK | LENGTH; MOST REMOTE POINT
XX — OCCUPANT QTY & DIRECTION OF TRAVEL
XX — CONVERGING OCCUPANT QTY & DIRECTION OF TRAVEL
NON-RATED
1 HR RATED
2 HR RATED
3 HR RATED
4 HR RATED
EXIT SIGN
FIRE EXTINGUISHER CABINET

THE MUSIC ANNEX

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PETAR MATTIONI NO. 21AI02153500

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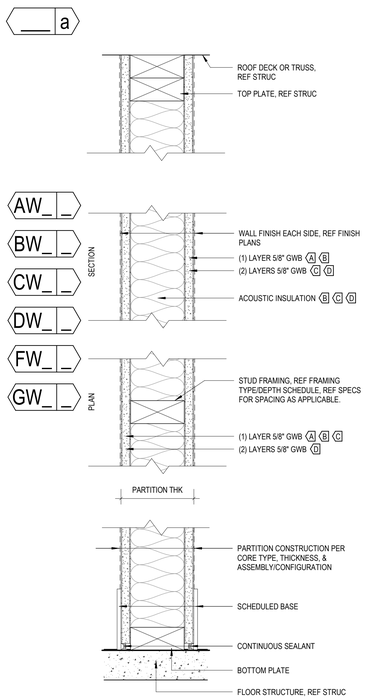
SYMBOLS, GENERAL NOTES, & SHEET INDEX

G002

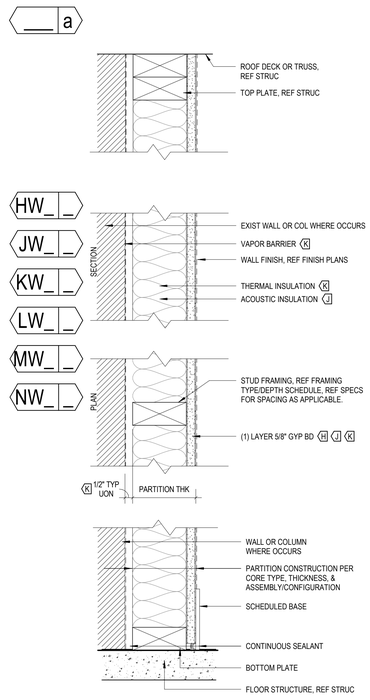
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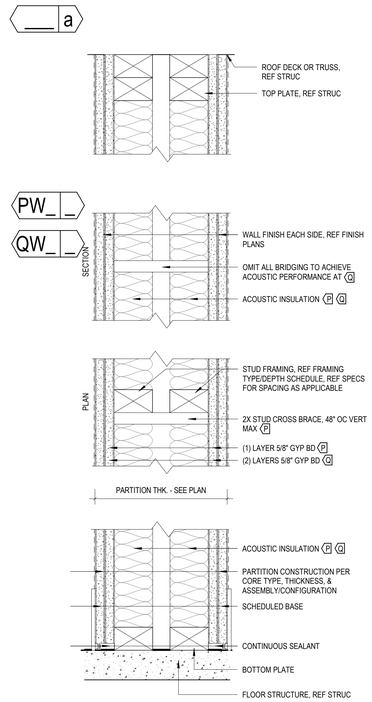
PARTITION ASSEMBLY/CONFIGURATIONS



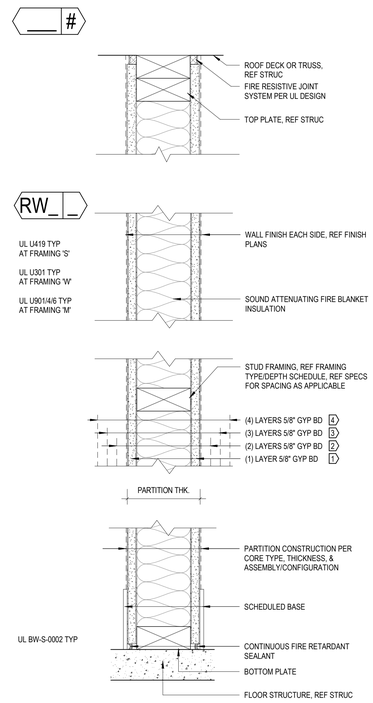
TYPE	PARTITION THICKNESS	ACOUSTIC PROPERTIES STC	NIC	ASSEMBLY
BW4	4 3/4"	45		
BW6	6 3/4"	45		
BW8	8 1/2"	45		



TYPE	PARTITION THICKNESS	ACOUSTIC PROPERTIES STC	NIC	ASSEMBLY



TYPE	PARTITION THICKNESS	ACOUSTIC PROPERTIES STC	NIC	ASSEMBLY
PW4	1'-8"	60		
QW4	10 1/2"	65		



TYPE	PARTITION THICKNESS	ACOUSTIC PROPERTIES STC	NIC	ASSEMBLY	FIRE RATING HOURS	ASSEMBLY

NOT USED

SHEET NOTES

1. REFER TO A1 SERIES FLOOR PLANS TO DETERMINE THE LOCATION AND EXTENT OF PARTITION TYPES REQUIRED.
2. PARTITION TYPES SHOWN DO NOT INCLUDE APPLIED FINISHES THAT MAY BE INDICATED IN THE FINISH SCHEDULE, OR ADDITIONAL COMPONENTS IDENTIFIED ON PARTITION TYPE SYMBOLS. THESE FINISHES AND COMPONENTS MAY INCREASE THE OVERALL THICKNESS OF PARTITIONS SHOWN.
3. WHERE A PARTITION TYPE DESIGNATION ON FLOOR PLANS IS INTERRUPTED BY DOOR OPENINGS, GLAZED PARTITIONS, OR OTHER ASSEMBLIES; CONSTRUCTION ABOVE AND BELOW, WHERE APPLICABLE, IS THE SAME AS THE PARTITION INDICATED.
4. FIRE-RATED PARTITIONS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH LISTED ASSEMBLIES NOTED ON THE FIRE-RATED TYPE DETAILS.
5. NOMINAL JOINT WIDTH, COMPRESSION AND EXTENSION OF FIRE RATED JOINT SYSTEMS SHALL ALLOW FOR ADEQUATE DEAD AND LIVE LOAD DEFLECTION OF STRUCTURE AT HEAD-OF-WALL. JOINTS SHALL NOT FULLY COMPRESS TO EDGE OF GYPSUM WALLBOARD WHEN LOADED. UL DESIGNS INDICATED IN THESE DRAWINGS ARE NOT PRESCRIPTIVE. ALTERNATE DETAILS SHALL BE SUBMITTED TO ARCHITECT FOR REVIEW.
6. COORDINATE CONSTRUCTION OF FIRE-RATED WALLS/PARTITIONS WITH DESIGN NUMBER SPECIFIED AT EACH PARTITION TYPE DETAIL.
7. FRAME AND FINISH OPENINGS FOR MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS AS REQUIRED AND AS SPECIFIED ON MECHANICAL/ELECTRICAL/PLUMBING DRAWINGS/SPECIFICATIONS.
8. ACOUSTICAL PARTITIONS SHALL BE CONSIDERED ANY PARTITIONS CONTAINING SOUND ATTENUATING OR ACOUSTICAL INSULATION.
9. MR (MOISTURE RESISTANT) GYP BOARD TO BE LOCATED IN RESTROOMS, AND ANY LOCATION NEAR A WATER SOURCE.
10. REFERENCE ELEVATIONS FOR BLOCKING TYPES AND LOCATIONS.
11. REFERENCE ELEVATIONS AND/OR FINISH PLAN FOR ALL PARTITION FINISHES.
12. STUD SPACING, GAUGE, AND FLANGE SIZE DETERMINED BY MFG SPAN TABLES.
13. AT ACOUSTICALLY-RATED PARTITIONS, ACOUSTIC BATTS TO FILL STUD CAVITIES AS SCHEDULED.

PARTITION TYPE LEGEND

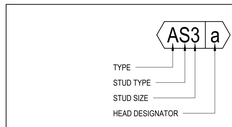


TABLE A: ASSEMBLY TYPE SCHEDULE

Finished Both Sides
A GWB
B GWB, Insulated
C (1x) GWB, Insulated, (2x) GWB
D (2x) GWB Each Side, Insulated
F
G

Finished One Side
H GWB
J GWB, Insulated
K GWB, Insulated, Vapor Barrier
L (2x) GWB, Insulated
M
N

Double/Staggered Stud
P GWB, Insulated (Plumbing Chase)
Q (2x) GWB, Insulated, Acoustic

Specialty Conditions
R Fire Rated (see no. for hours)
S Fire Rated Shaftwall
T Fire Rated Stairwall
U
V
W
X
Y
Z Unfinished/Core Exposed

TABLE B: FRAMING TYPE/DEPTH SCHEDULE

	S	C	W	M	G	P
SIZE #	MTL STUD	MTL C-H STUD	WOOD STUD	MASONRY	MTL STAGGERED STUD	MTL CHASE/ DOUBLE STUD
-	NO FRAMING					
0	7/8" FURRING	N/A	1X2 FURRING	N/A	N/A	N/A
1	1-5/8"	N/A	N/A	N/A	N/A	N/A
2	2-1/2"	2-1/2"	2X2	N/A	N/A	(2X) 2 1/2"
3	3-5/8"	N/A	N/A	N/A	2-1/2", 3-5/8" TRACK	(2X) 3-5/8"
4	4"	4"	2X4	3-5/8"	N/A	N/A
6	6"	6"	2X6	5-5/8"	3-5/8", 6" TRACK	(2X) 6"
8	8"	N/A	2X8	7-5/8"	N/A	N/A
10	10"	N/A	N/A	9-5/8"	N/A	N/A
12	N/A	N/A	N/A	11-5/8"	N/A	N/A

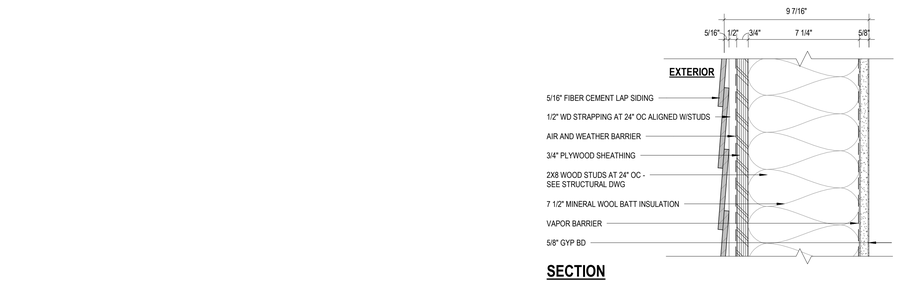
TABLE C: HEAD DESIGNATOR & FIRE RATING SCHEDULE

RATED CONDITIONS

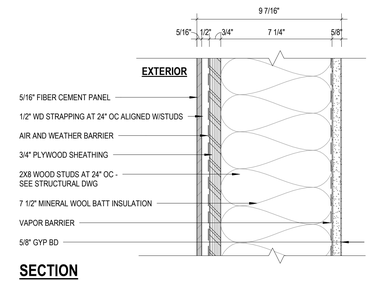
S	SMOKE PARTITION
1	1 HOUR FIRE RATED ASSEMBLY
2	2 HOUR FIRE RATED ASSEMBLY
3	3 HOUR FIRE RATED ASSEMBLY
4	4 HOUR FIRE RATED ASSEMBLY

UNRATED CONDITIONS

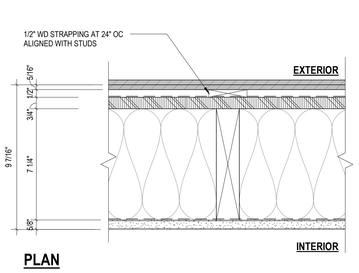
a	STUD AND FINISH EXTEND TO UNDERSIDE OF STRUCTURE ABOVE
b	STUD EXTEND TO UNDERSIDE OF STRUCTURE ABOVE, PARTIAL HEIGHT FINISHES
c	PARTIAL HEIGHT STUDS, PARTIAL HEIGHT FINISHES
d	STUD AND FINISH TO UNDERSIDE OF CEILING
e	PARTIAL HEIGHT (KNEE) WALL



SECTION

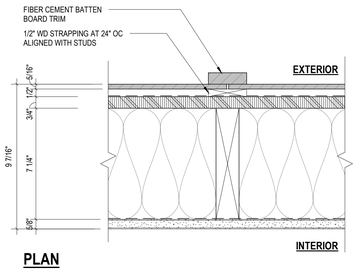


SECTION



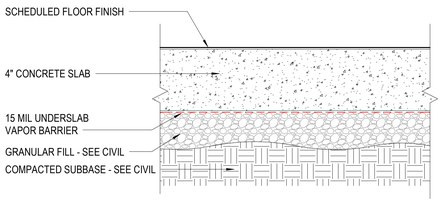
PLAN

ASSEMBLY MIN R-20



PLAN

ASSEMBLY MIN R-20



3 / A021 FA01 FLOOR ASSEMBLY
3" = 1'-0"

2 / A021 EW02 FIBER CEMENT LAP SIDING
3" = 1'-0"

1 / A021 EW01 FIBER CEMENT BOARD AND BATTEN SIDING
3" = 1'-0"

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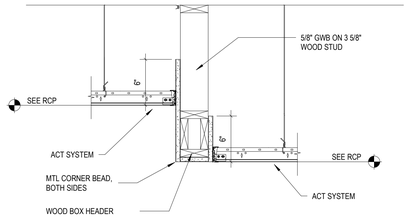
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PARTITION TYPES

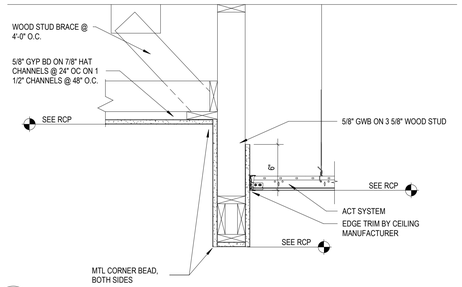
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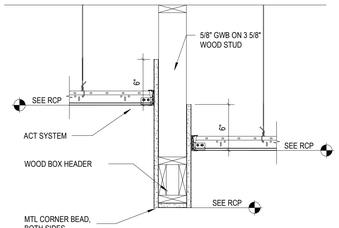
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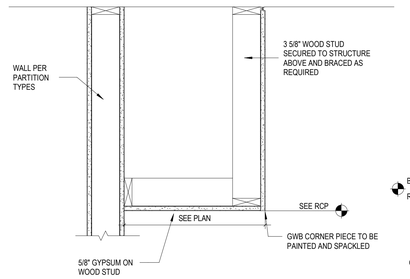
9 A101 CEILING DETAIL - CEILING TRANSITION - 3
1 1/2" = 1'-0"



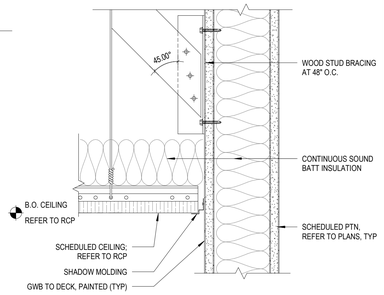
8 A101 CEILING DETAIL - CEILING TRANSITION - 2
1 1/2" = 1'-0"



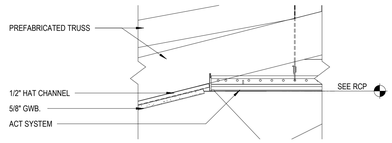
7 A101 CEILING DETAIL - CEILING TRANSITION - 1
1 1/2" = 1'-0"



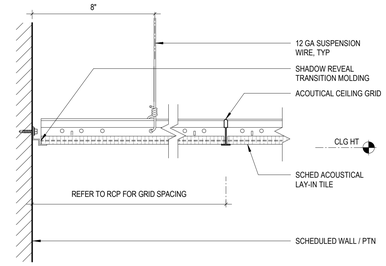
6 A101 CEILING DETAIL - GYP. SOFFIT
1 1/2" = 1'-0"



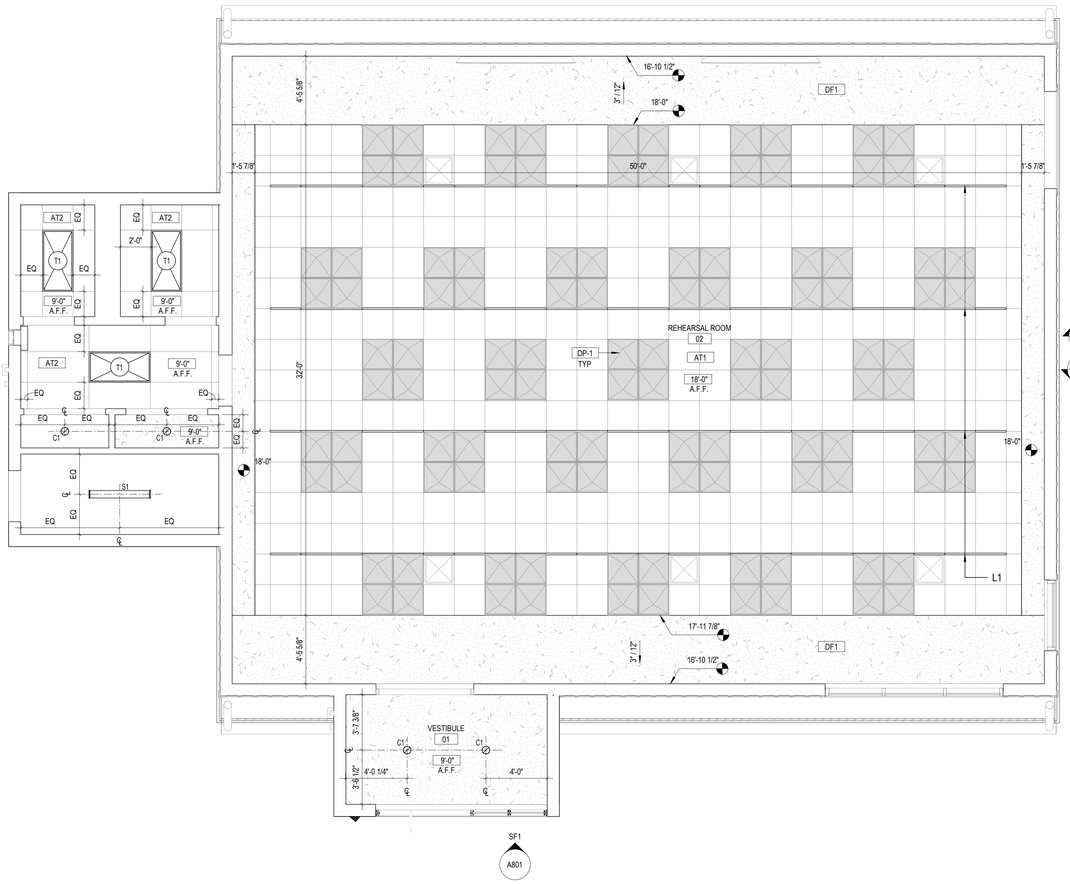
5 A101 CEILING DETAIL - ACT CEILING TERMINATION AT PARTITION
3" = 1'-0"



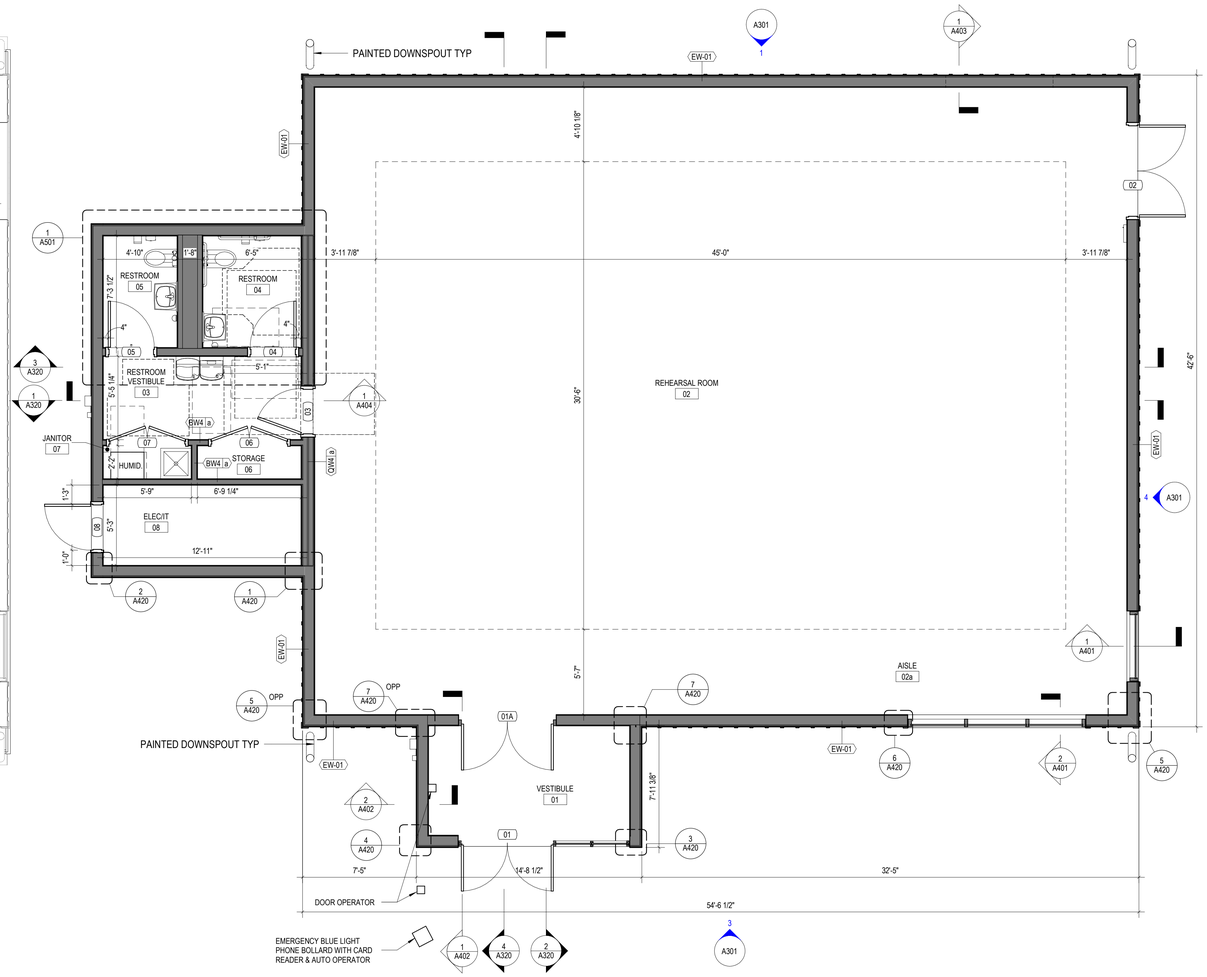
4 A101 CEILING DETAIL - GYP. TO ACT CEILING TRANSITION
1 1/2" = 1'-0"



3 A101 CEILING DETAIL - SUSPENDED ACT CEILING - SQUARE LAY-IN
3" = 1'-0"



2 A101 RCP - LEVEL 1
1/4" = 1'-0"



1 A101 BUILDING FLOOR PLAN - LEVEL 1
1/4" = 1'-0"

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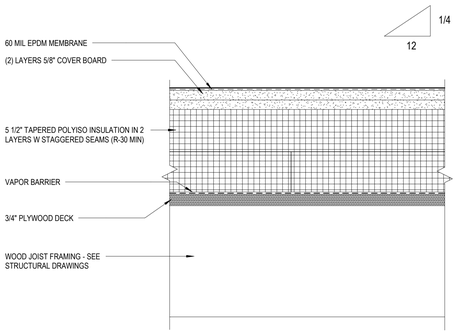
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FLOOR PLAN, RCP & CEILING DETAILS

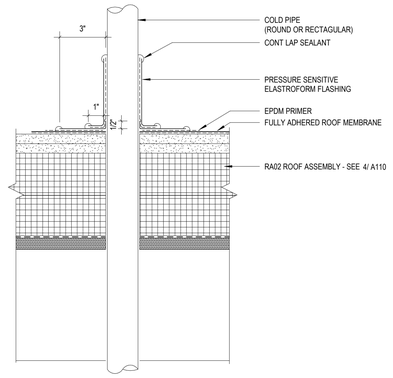
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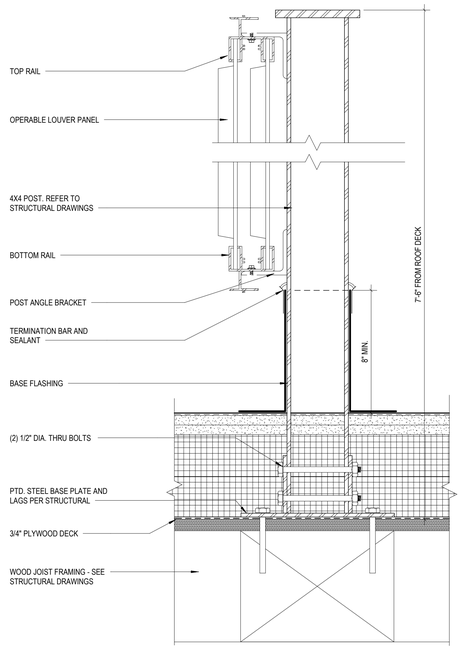
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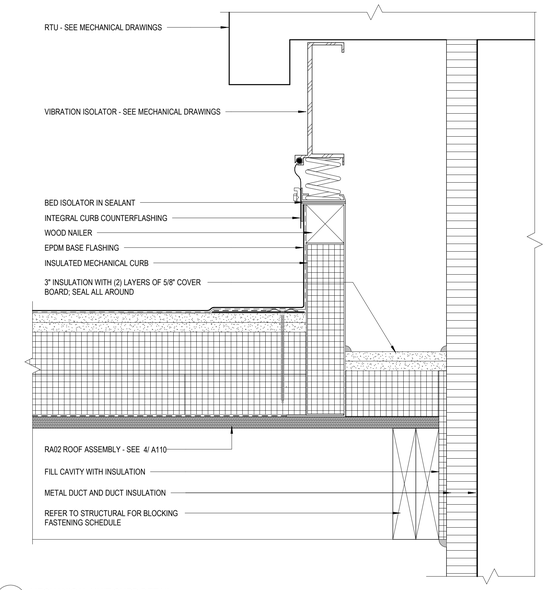
4 A110 RA02 - SINGLE PLY ROOF MEMBRANE
3" = 1'-0"



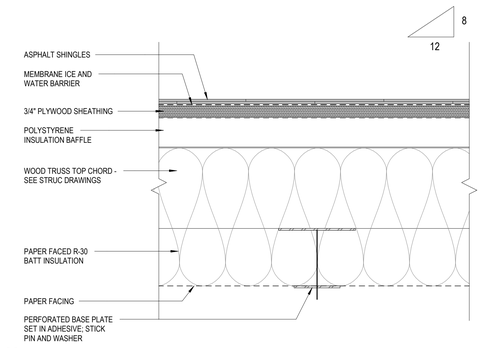
5 A110 TYPICAL PIPE SEAL AT EPDM MEMBRANE
3" = 1'-0"



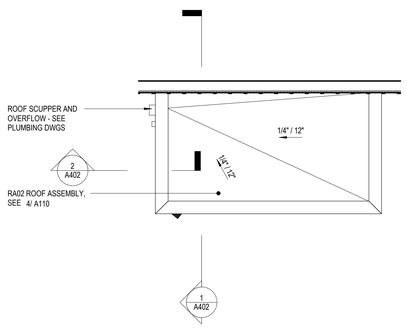
6 A110 ROOF DETAIL - ARCHITECTURAL SCREEN
3" = 1'-0"



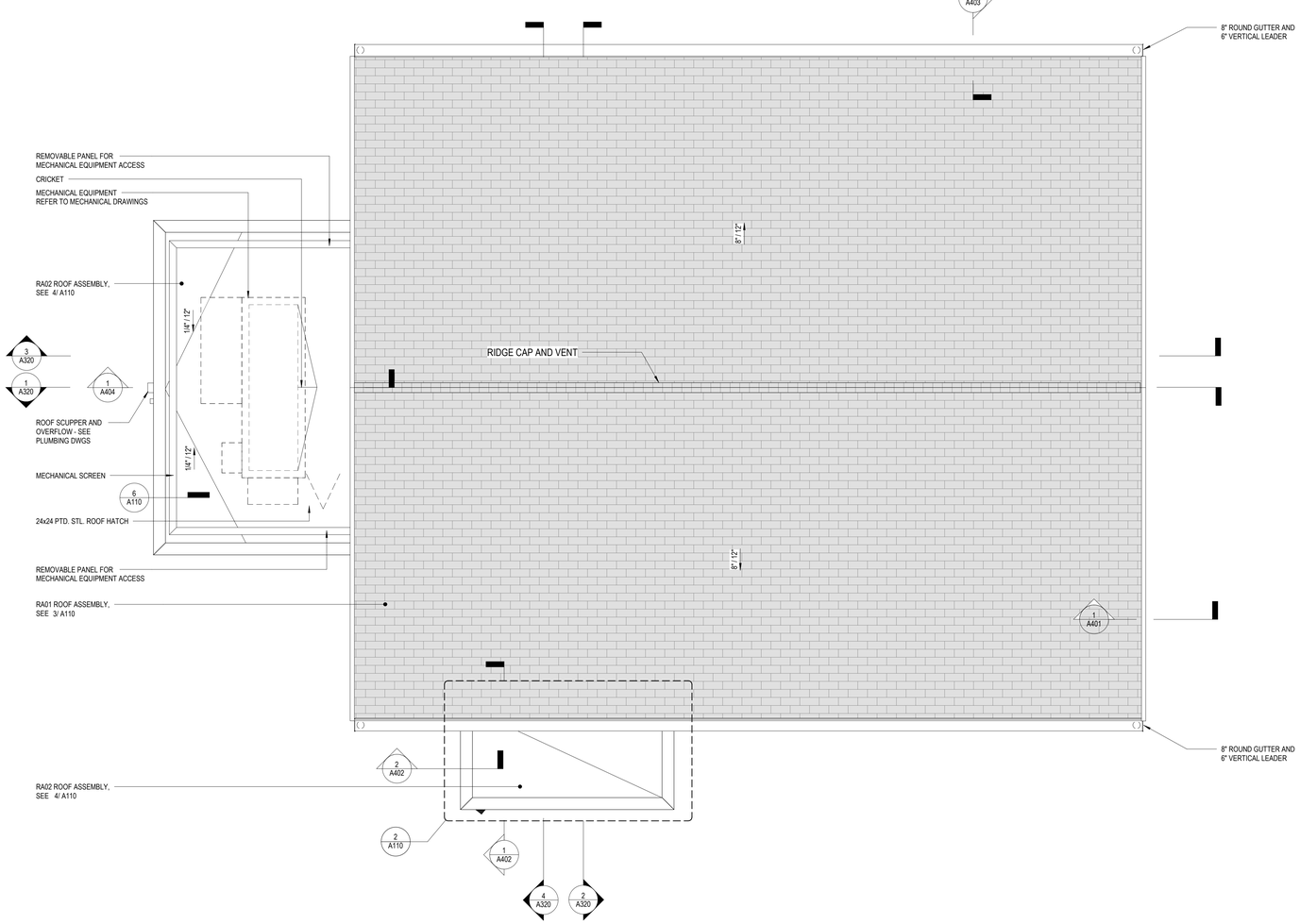
7 A110 MECHANICAL UNIT CURB DETAIL
3" = 1'-0"



3 A110 RA01 - VENTED SHINGLE ROOF ASSEMBLY
3" = 1'-0"



2 A110 VESTIBULE ROOF PLAN
1/4" = 1'-0"



1 A110 ROOF PLAN
1/4" = 1'-0"

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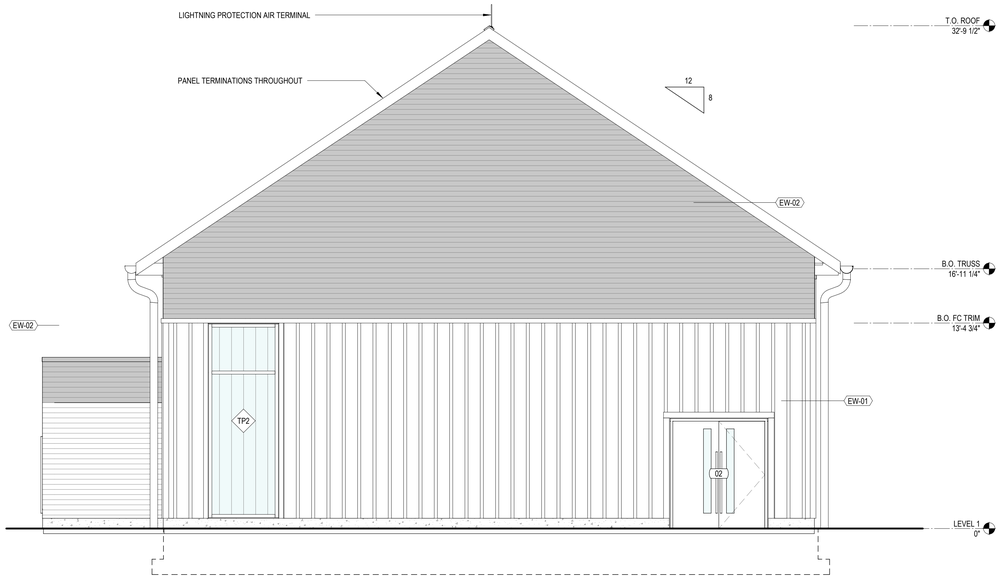
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ROOF PLAN

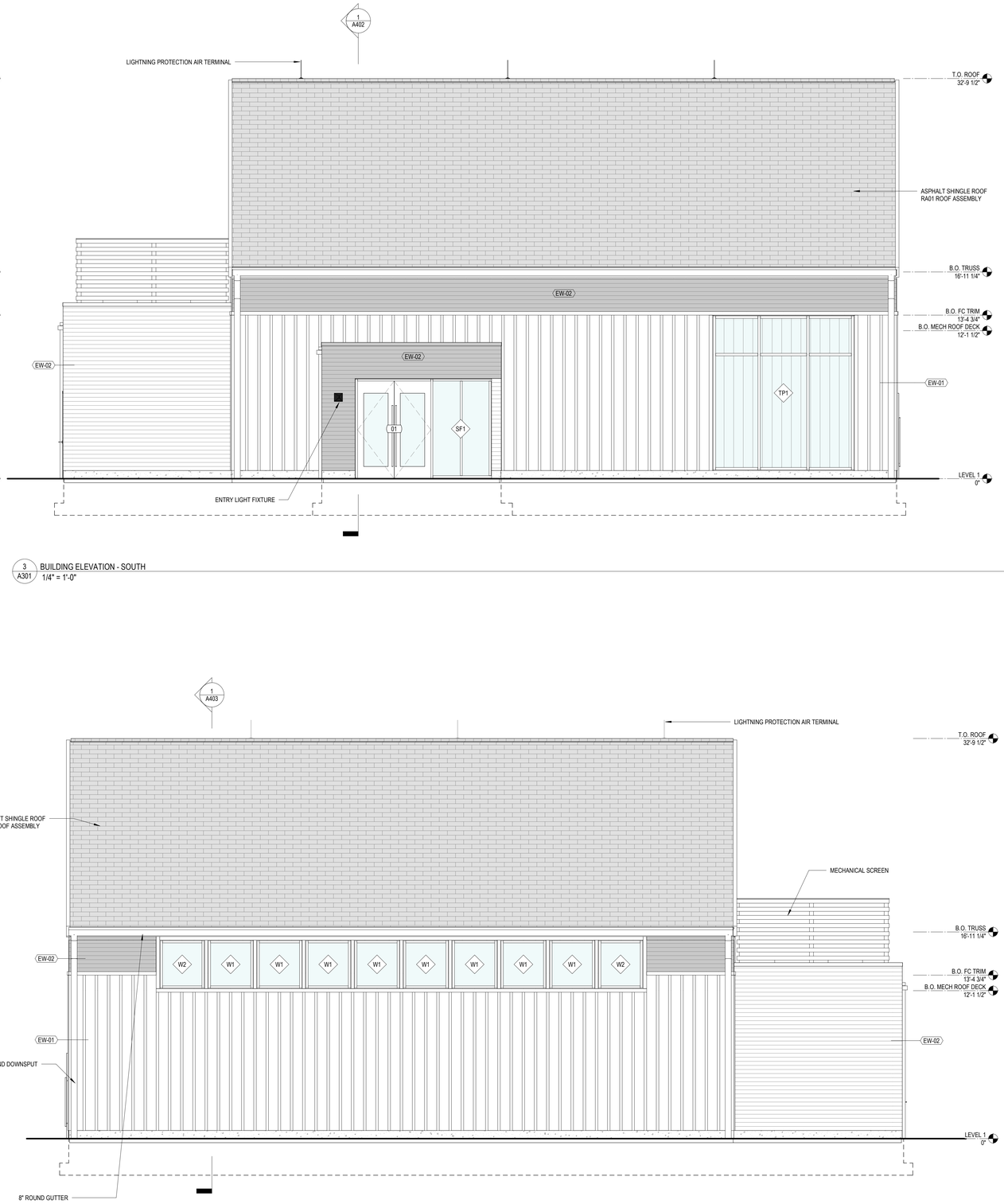
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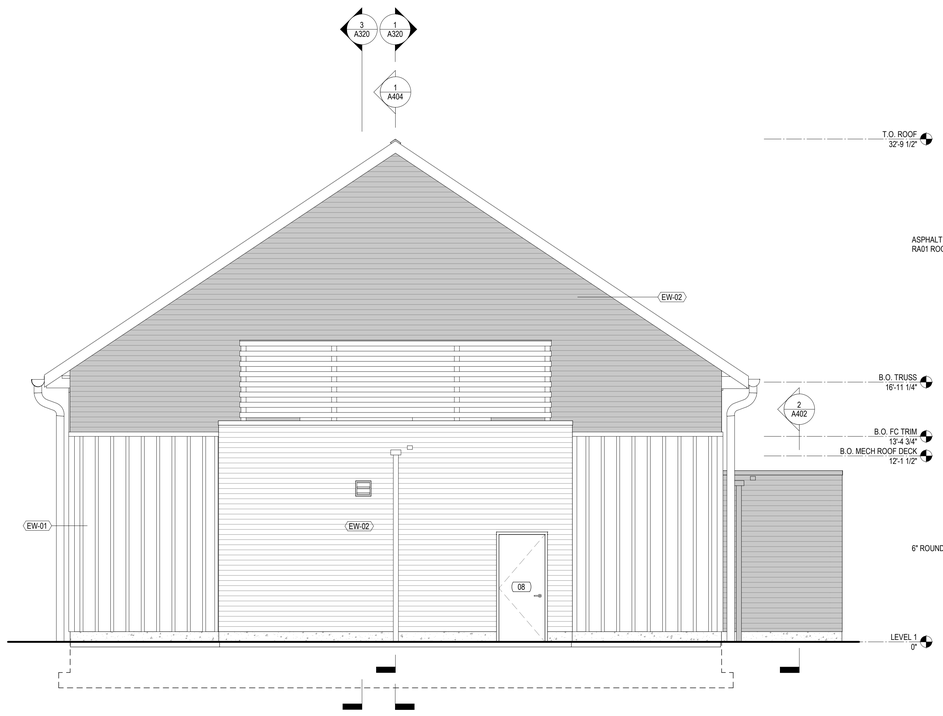
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4 A301 BUILDING ELEVATION - EAST
1/4" = 1'-0"



3 A301 BUILDING ELEVATION - SOUTH
1/4" = 1'-0"



2 A301 BUILDING ELEVATION - WEST1
1/4" = 1'-0"

1 A301 BUILDING ELEVATION - NORTH
1/4" = 1'-0"

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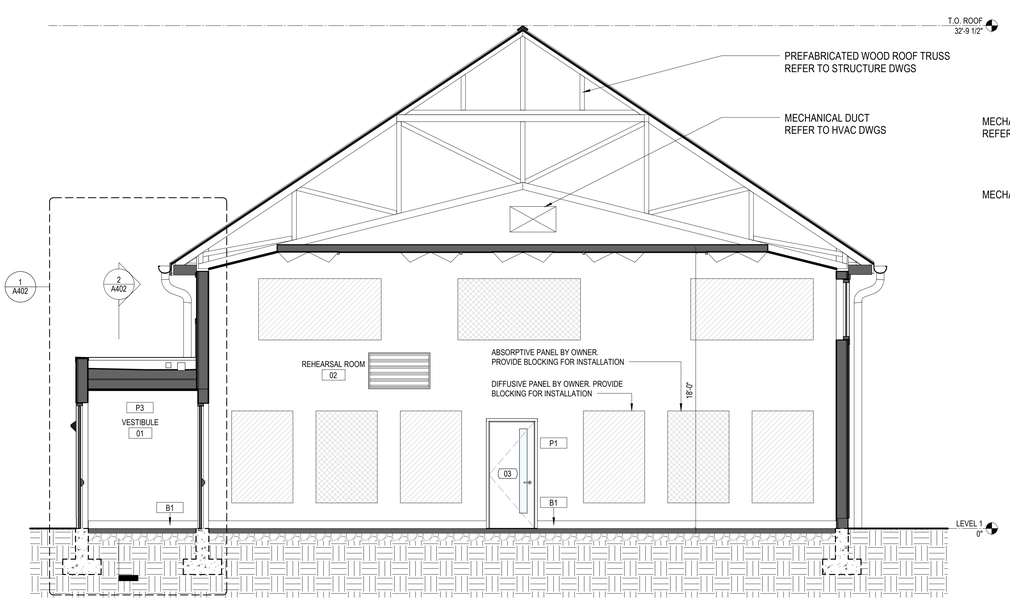
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ELEVATIONS - EXTERIOR

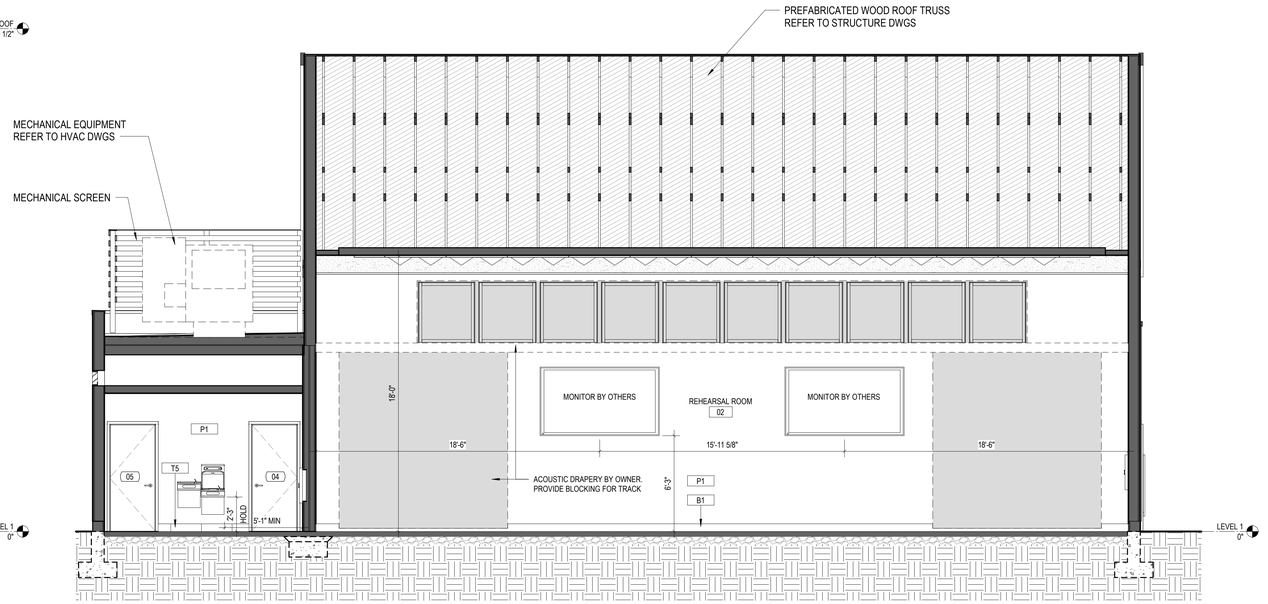
A301

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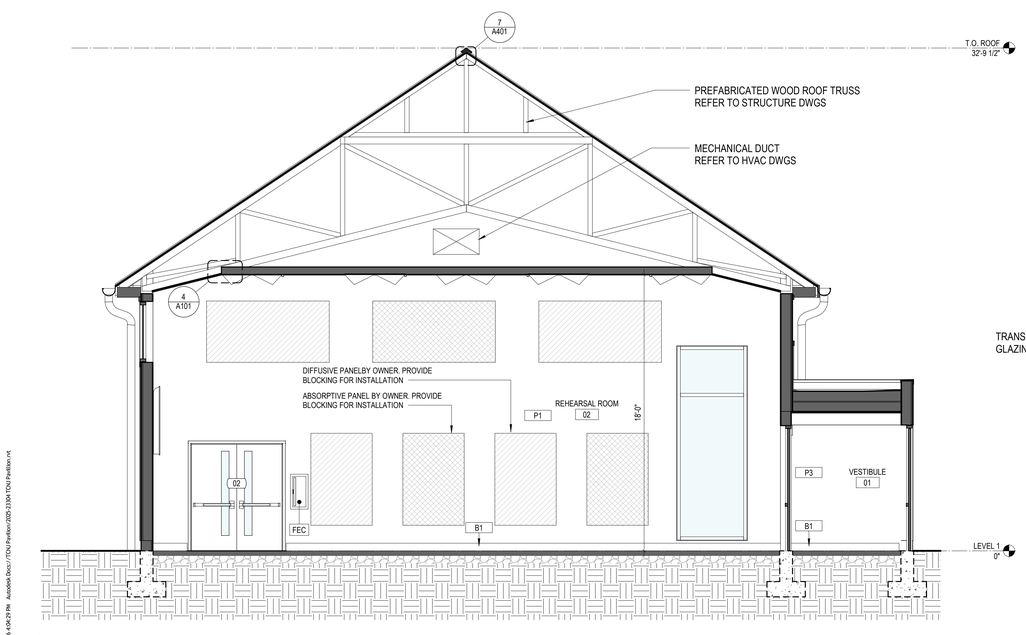
GENERAL NOTE:
ALL ACOUSTIC WALL PANELS BY OTHERS - PROVIDE FLAT STRAPPING @ 24" O.C. VERTICALLY FOR SUPPORT THROUGHOUT.



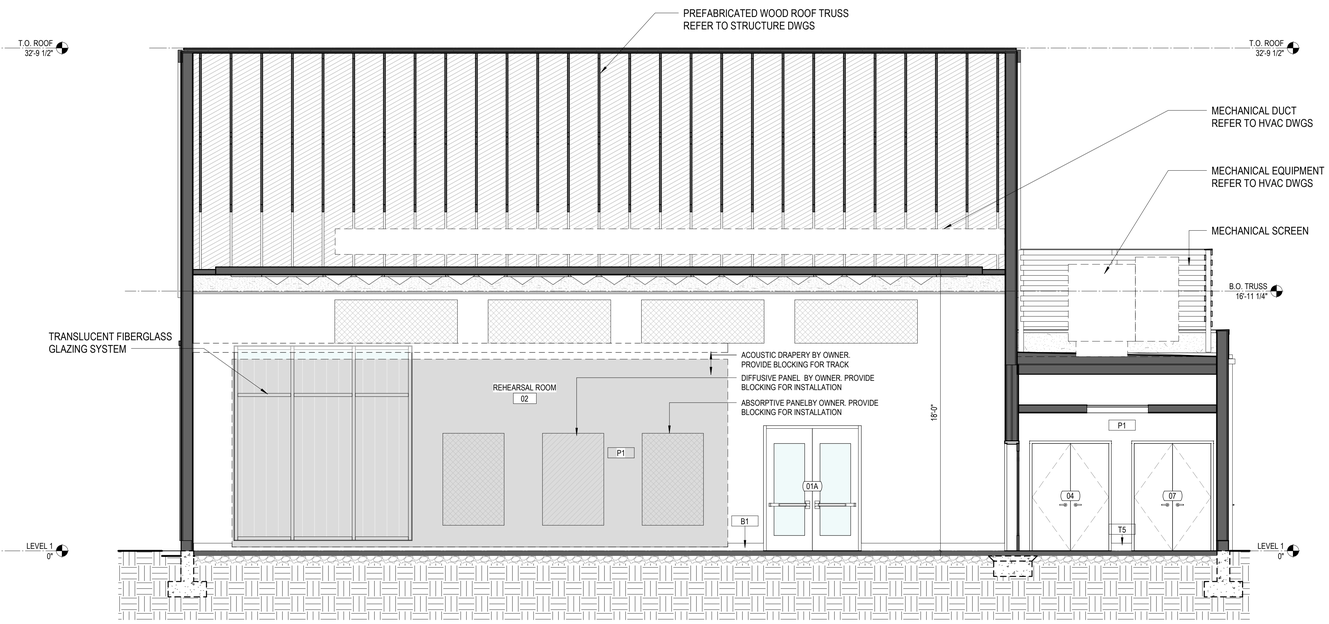
4 A320 N-S SECTION - 1
1/4" = 1'-0"



3 A320 E-W SECTION - 1
1/4" = 1'-0"



2 A320 N-S SECTION - 2
1/4" = 1'-0"



1 A320 E-W SECTION - 2
1/4" = 1'-0"

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PETAR MATTIONI NO. 21AI02153500

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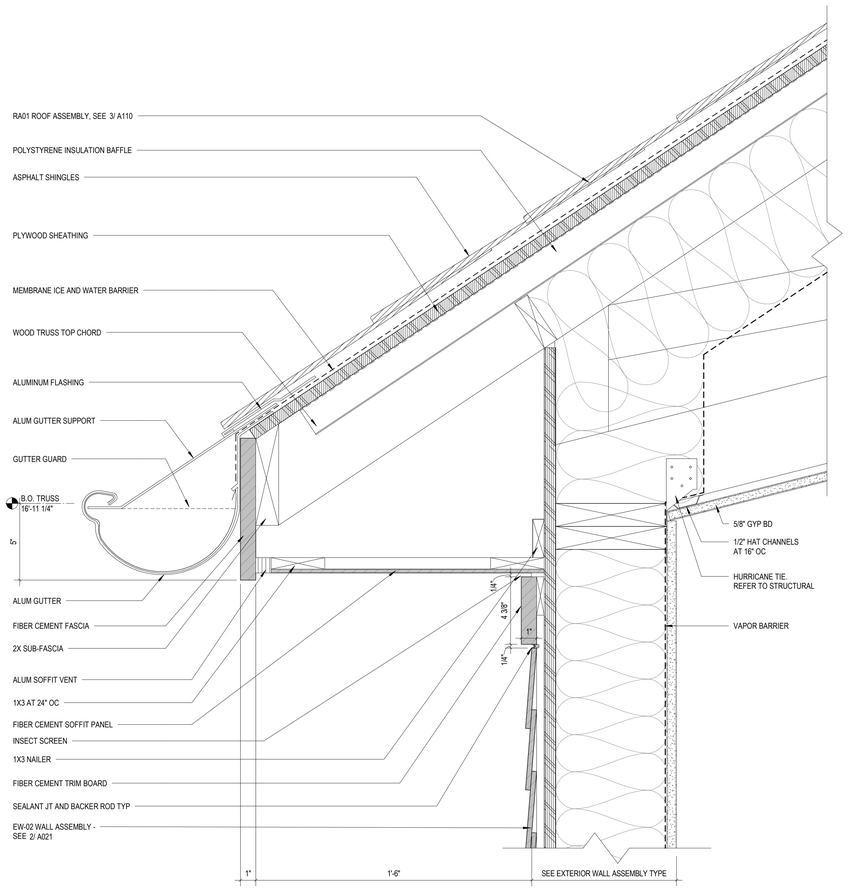
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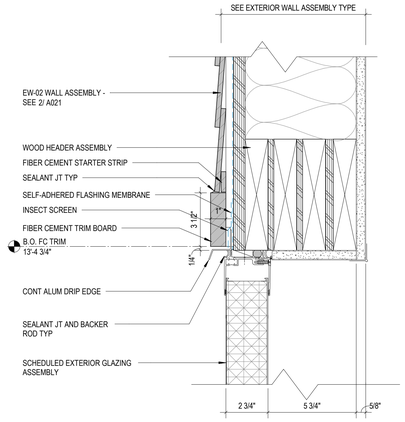
BUILDING SECTIONS & INTERIOR ELEVATIONS

A320

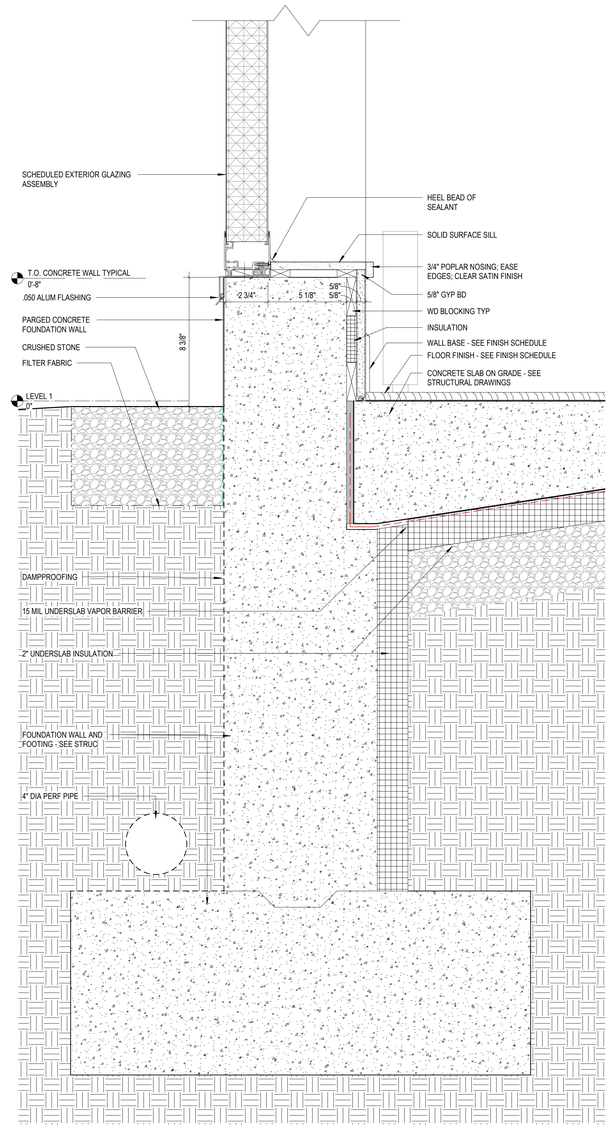
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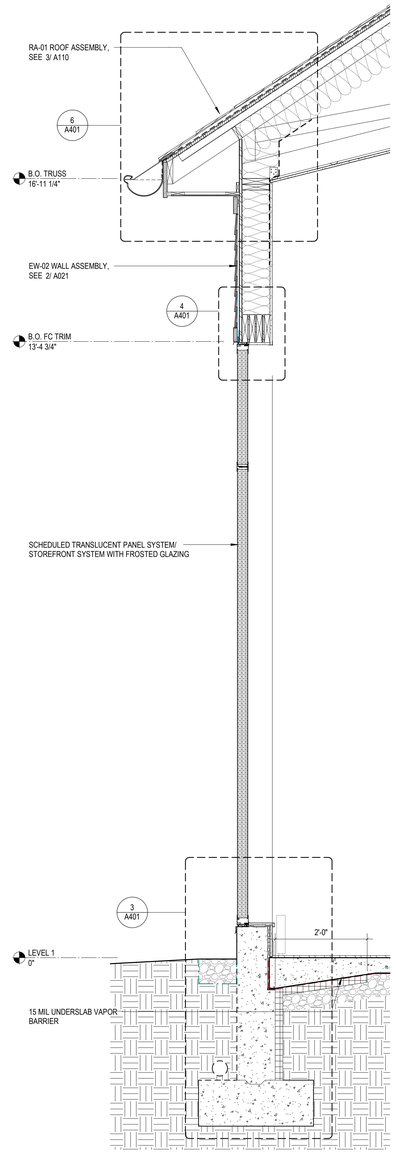
6 / A401 SECTION DETAIL AT ROOF EAVE
3" = 1'-0"



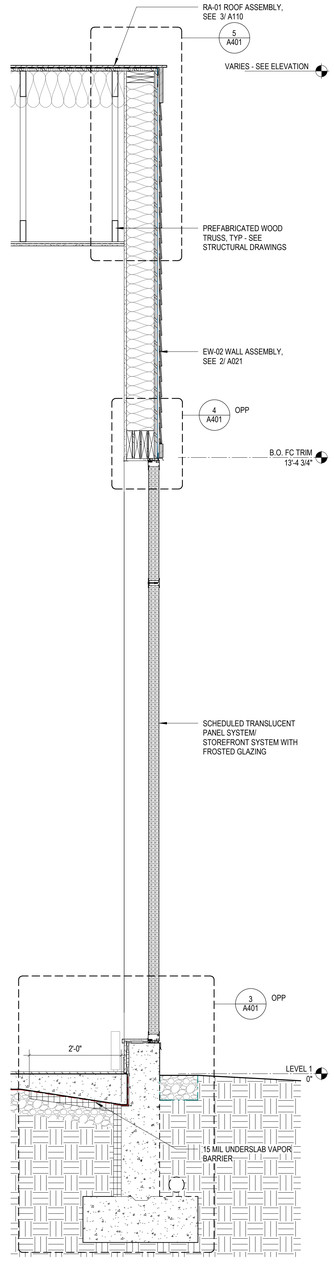
4 / A401 SECTION DETAIL AT WINDOW HEAD
3" = 1'-0"



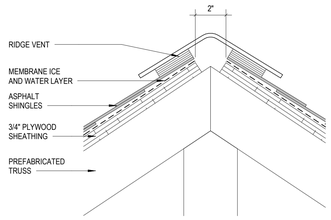
3 / A401 SECTION DETAIL AT FOUNDATION AND WINDOW SILL
3" = 1'-0"



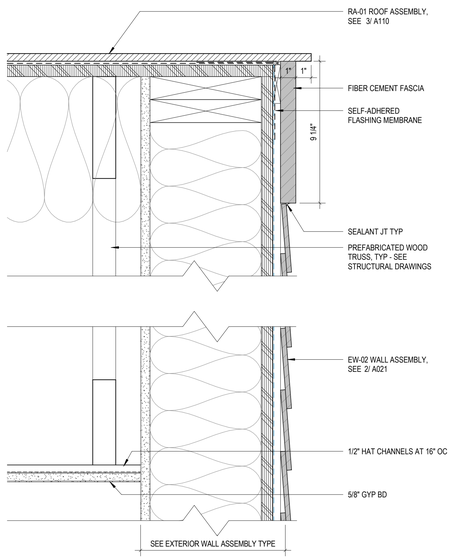
2 / A401 WALL SECTION AT POLYCARBONATE PANEL AND ROOF
3/4" = 1'-0"



1 / A401 WALL SECTION AT EAST GLAZING
3/4" = 1'-0"



7 / A401 SECTION DETAIL AT RIDGE VENT
3" = 1'-0"



5 / A401 SECTION DETAIL AT ROOF RAKE EDGE
3" = 1'-0"

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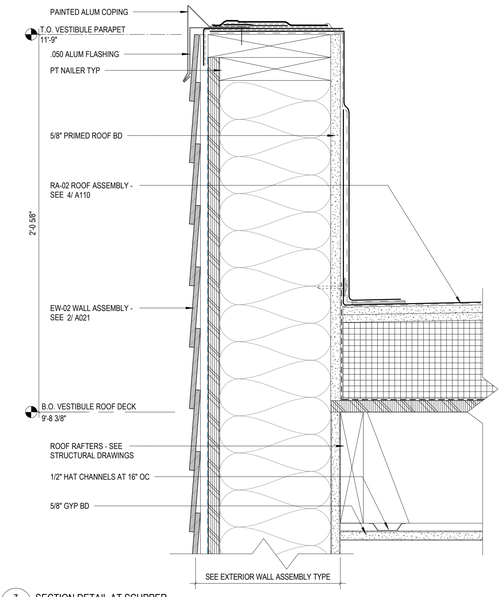
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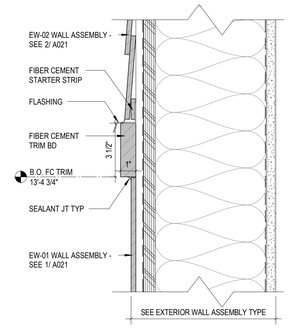
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Issued: 11/11/2026
WALL SECTIONS

A401

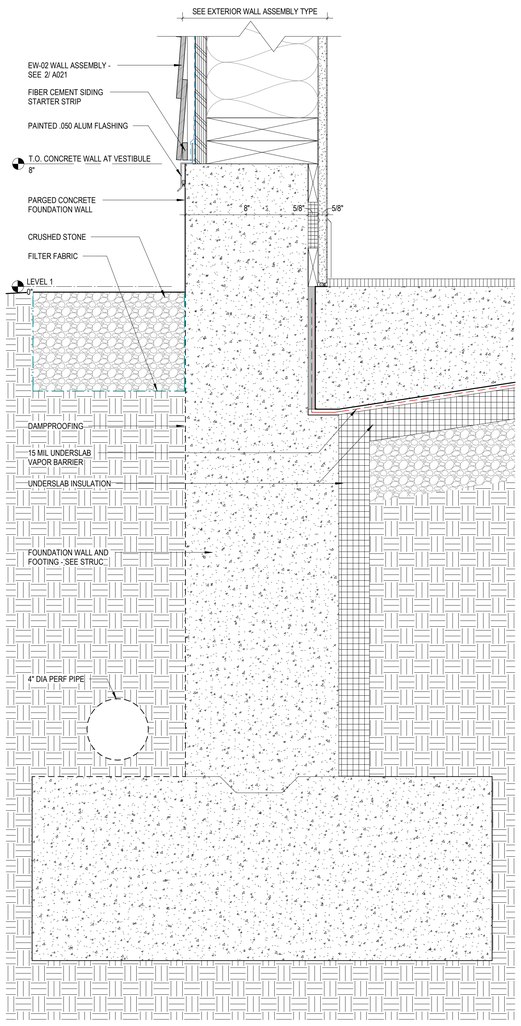
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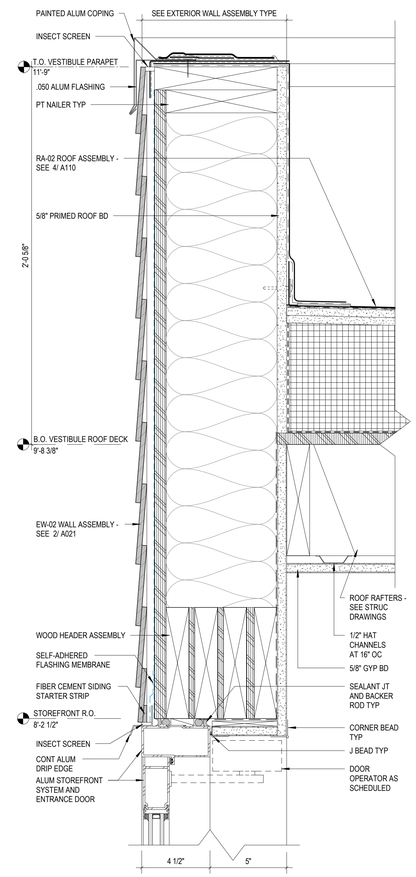
7 A402 SECTION DETAIL AT SCUPPER
3" = 1'-0"



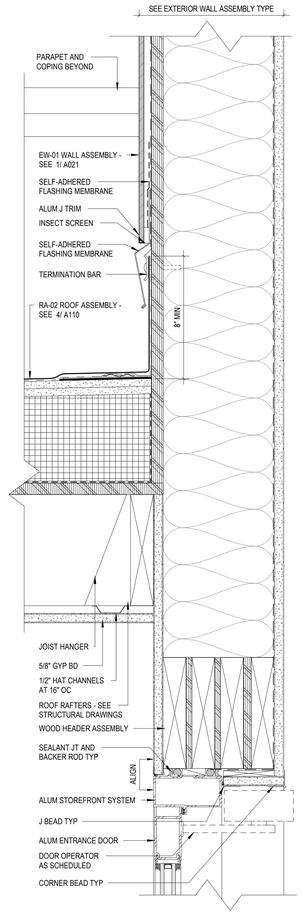
6 A402 SECTION DETAIL AT SIDING TRANSITION
3" = 1'-0"



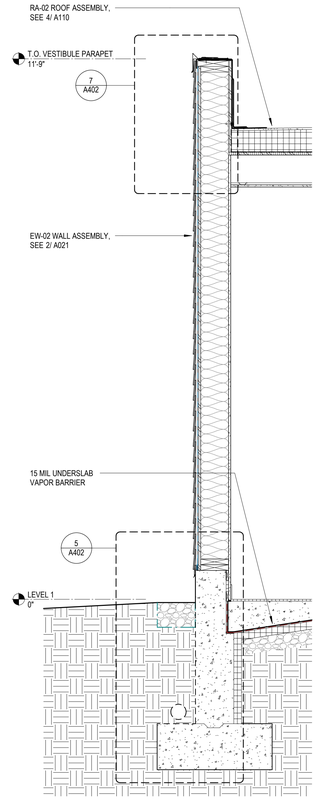
5 A402 SECTION DETAIL AT VESTIBULE FOUNDATION
3" = 1'-0"



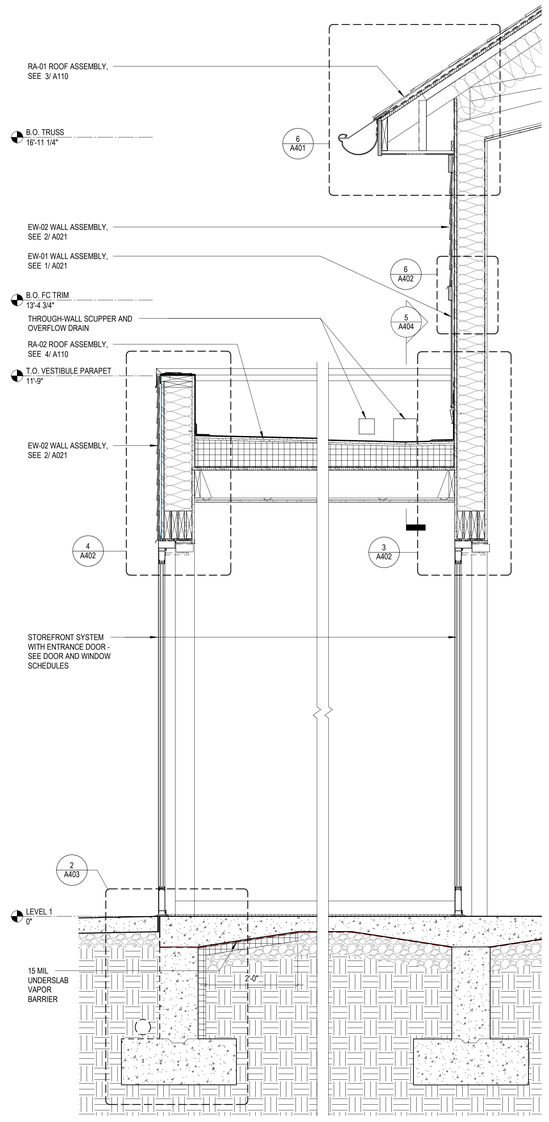
4 A402 SECTION DETAIL AT VESTIBULE PARAPET
3" = 1'-0"



3 A402 SECTION DETAIL AT VESTIBULE ROOF TRANSITION
3" = 1'-0"



2 A402 WALL SECTION AT VESTIBULE SCUPPER
3/4" = 1'-0"



1 A402 WALL SECTION AT VESTIBULE ROOF TRANSITION
3/4" = 1'-0"

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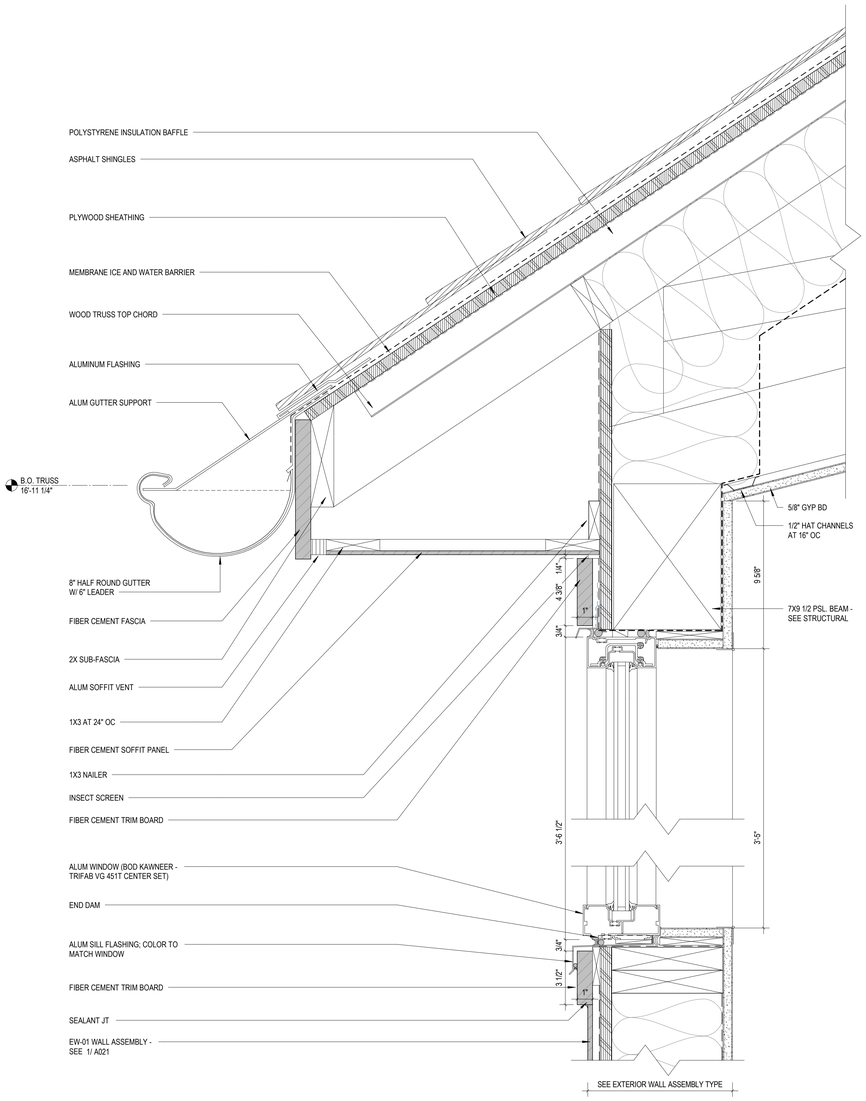
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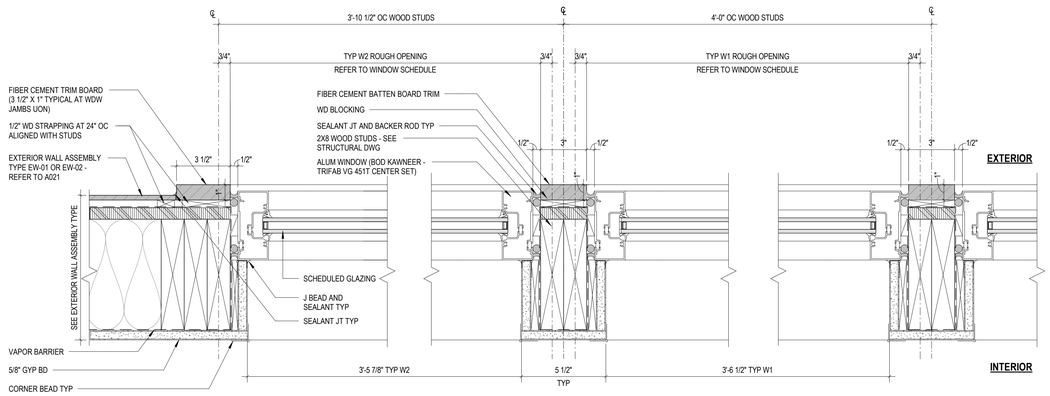
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WALL SECTIONS

A402

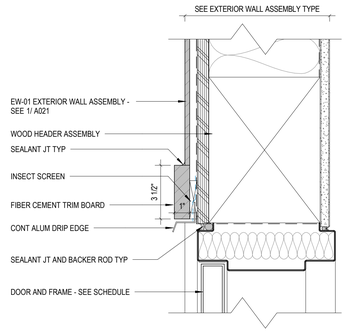
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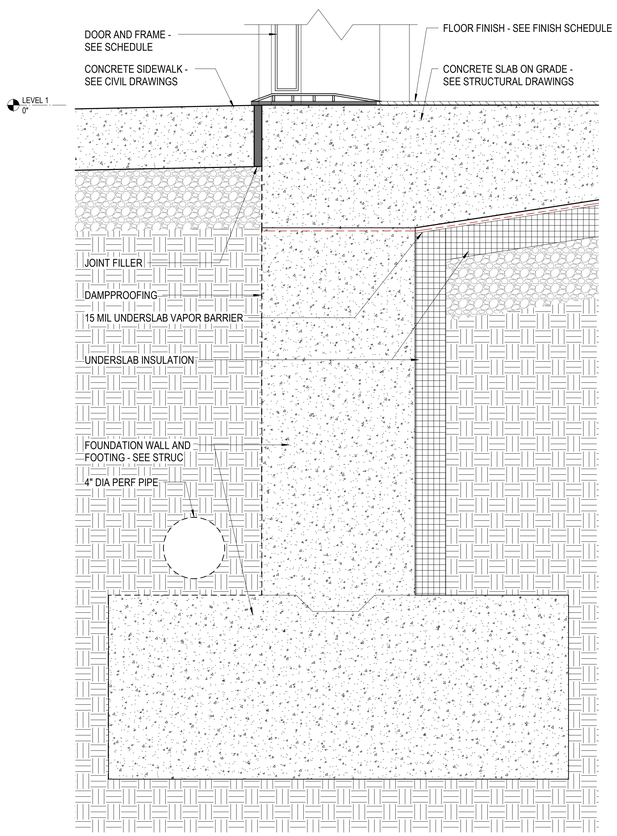
5 A403 SECTION DETAIL AT CLERESTORY WINDOW
3" = 1'-0"



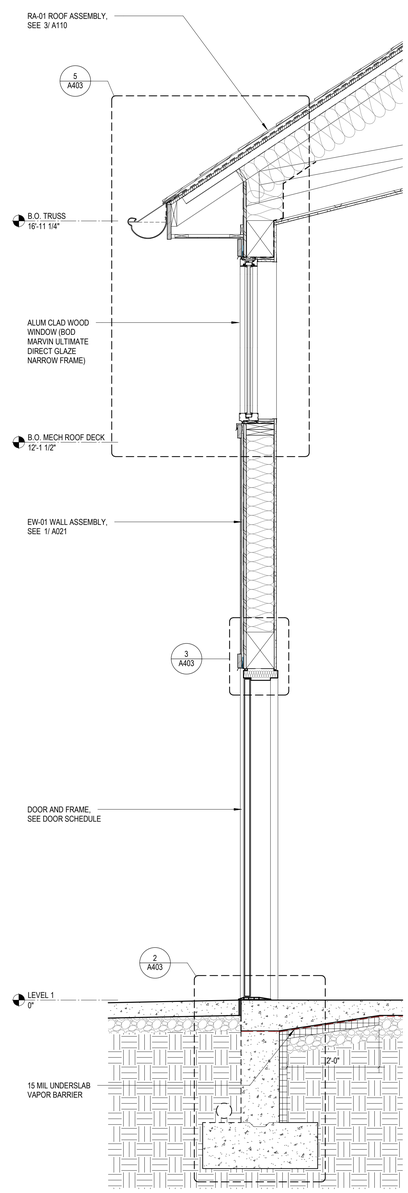
4 A403 PLAN DETAIL AT CLERESTORY WINDOW
3" = 1'-0"



3 A403 SECTION DETAIL AT HM DOOR HEAD
3" = 1'-0"



2 A403 SECTION DETAIL AT FOUNDATION AND DOOR SILL
3" = 1'-0"



1 A403 WALL SECTION AT CLERESTORY WINDOW AND DOOR
3/4" = 1'-0"

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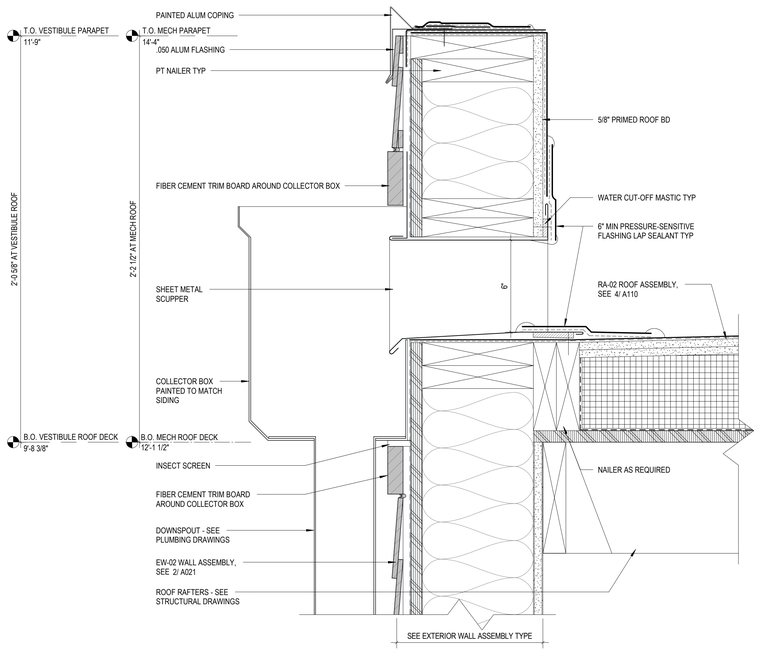
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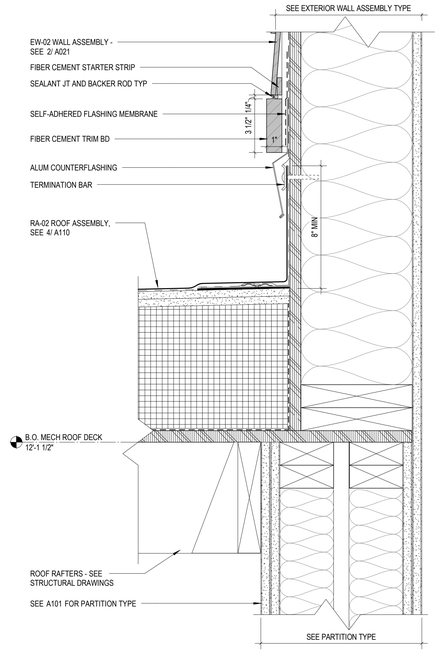
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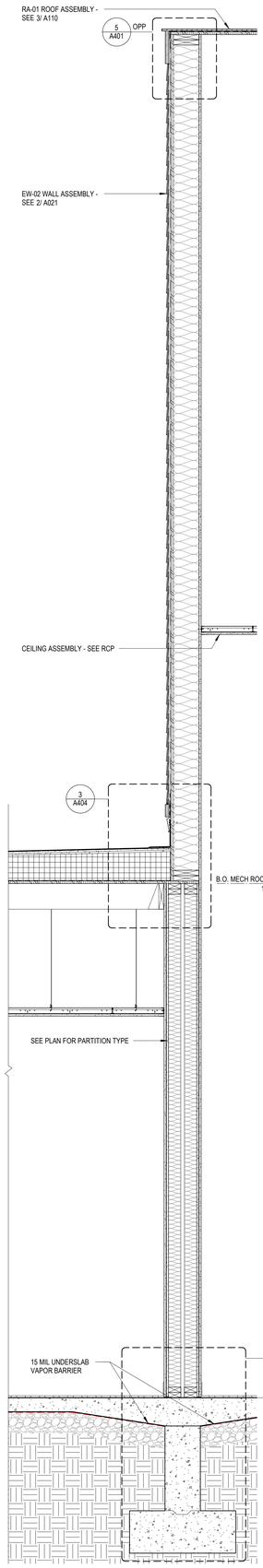
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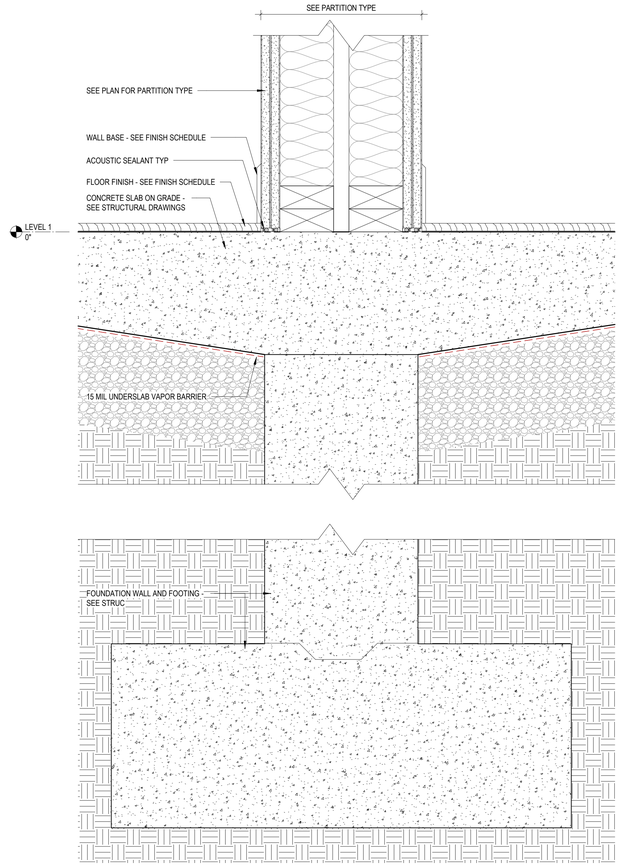
5 A404 SECTION DETAIL AT PARAPET AND SCUPPER
3" = 1'-0"



3 A404 SECTION DETAIL AT MECHANICAL ROOF TRANSITION
3" = 1'-0"



4 A404 SECTION DETAIL AT BASE OF SIDING
3" = 1'-0"



2 A404 SECTION DETAIL AT BEARING WALL FOUNDATION
3" = 1'-0"

1 A404 WALL SECTION AT MECHANICAL ROOF TRANSITION
3/4" = 1'-0"

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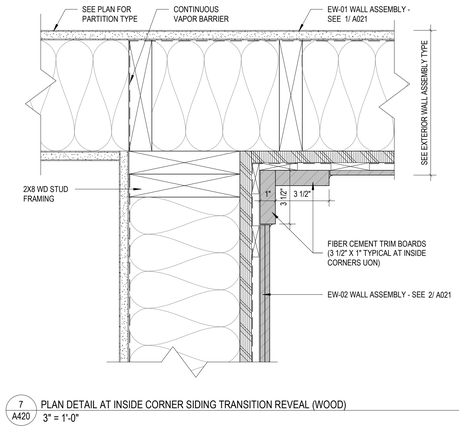
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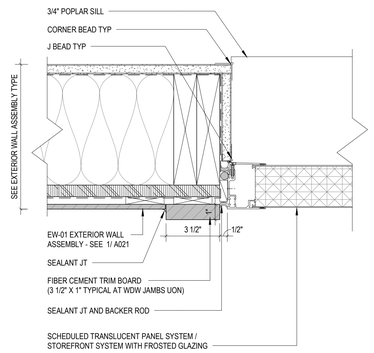
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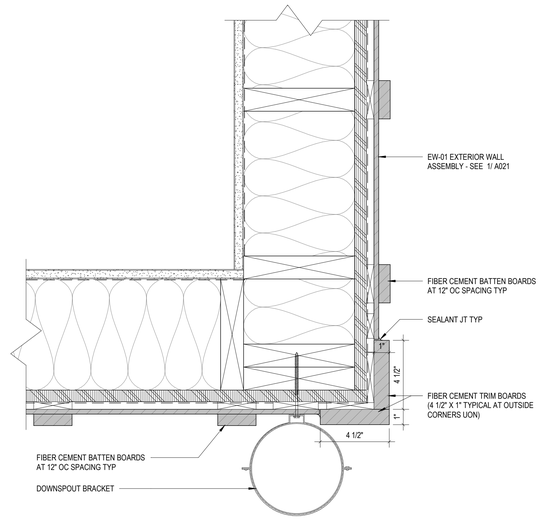
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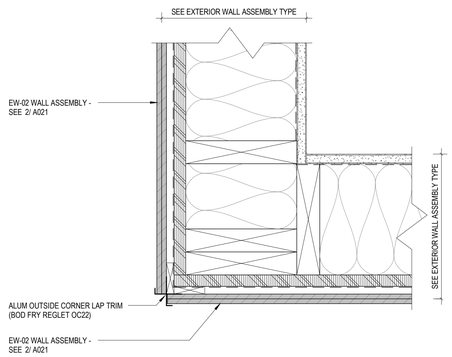
7 A420 PLAN DETAIL AT INSIDE CORNER SIDING TRANSITION REVEAL (WOOD)
3" = 1'-0"



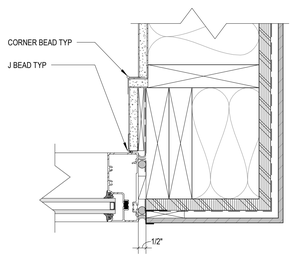
6 A420 PLAN DETAIL - TRANSLUCENT PANEL JAMB
3" = 1'-0"



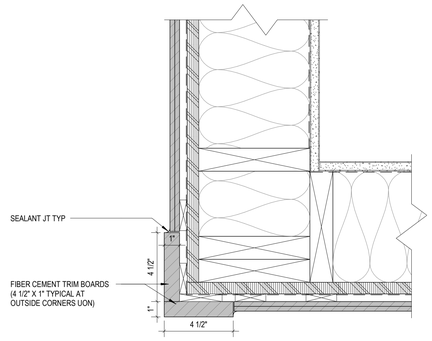
5 A420 PLAN DETAIL AT WALL ASSEMBLY EW-01 OUTSIDE CORNER
3" = 1'-0"



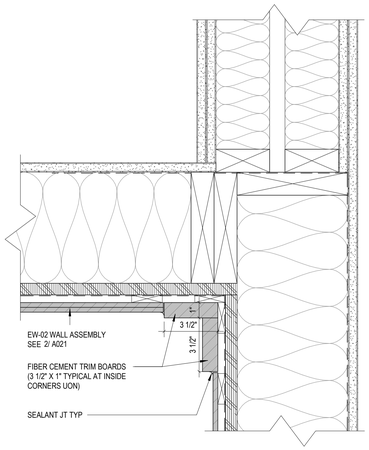
4 A420 PLAN DETAIL AT WALL ASSEMBLY EW-02 OUTSIDE CORNER (WOOD)
3" = 1'-0"



3 A420 PLAN DETAIL AT VESTIBULE STOREFRONT CORNER
3" = 1'-0"



2 A420 PLAN DETAIL AT WALL ASSEMBLY EW-02 OUTSIDE CORNER (FC)
3" = 1'-0"



1 A420 PLAN DETAIL AT INSIDE CORNER SIDING TRANSITION (FC)
3" = 1'-0"

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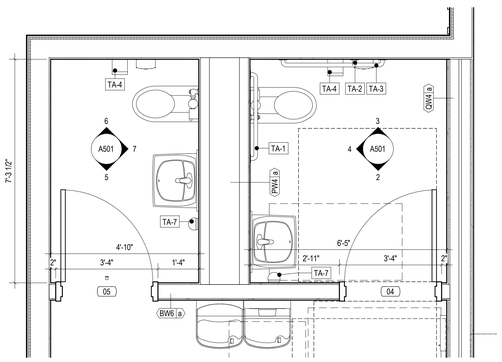
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EXTERIOR PLAN DETAILS

A420

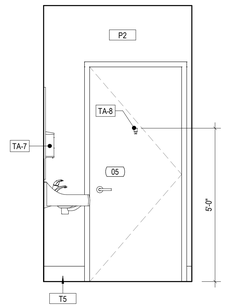
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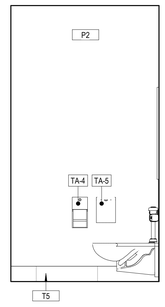


1 / A501 ENLARGED FLOOR PLAN - RESTROOMS
1/2" = 1'-0"

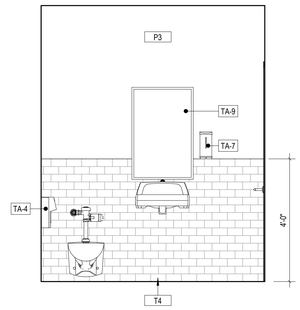
ALTERNATE:
6 - DEDUCT ALL RESTROOM WALL TILE ABOVE TILE BASE.



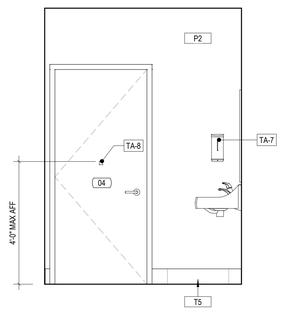
5 / A501 ELEVATION - SINGLE USER RESTROOM - NORTH
1/2" = 1'-0"



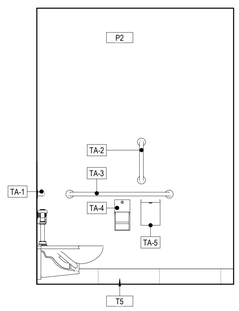
6 / A501 ELEVATION - SINGLE USER RESTROOM - SOUTH
1/2" = 1'-0"



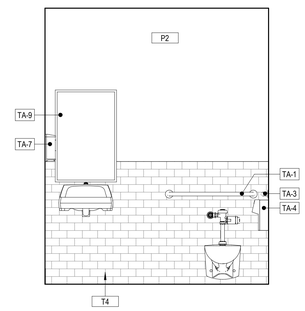
7 / A501 ELEVATION - SINGLE USER RESTROOM - EAST
1/2" = 1'-0"



2 / A501 ELEVATION - ACCESSIBLE RESTROOM - NORTH
1/2" = 1'-0"

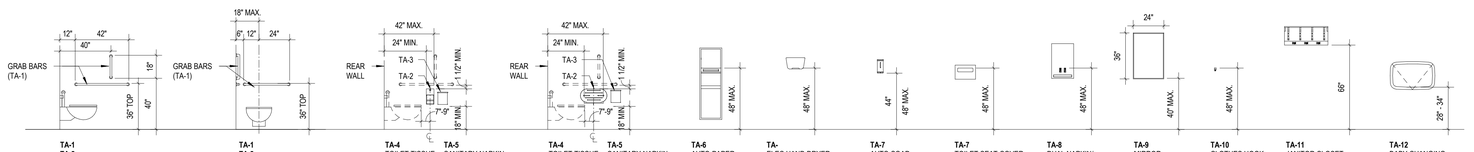


3 / A501 ELEVATION - ACCESSIBLE RESTROOM - SOUTH
1/2" = 1'-0"



4 / A501 ELEVATION - ACCESSIBLE RESTROOM - WEST
1/2" = 1'-0"

TOILET ACCESSORIES & PLUMBING MOUNTING HEIGHTS



TA-1
TA-2
TA-3
GRAB BARS AT ACCESSIBLE & AMBULATORY WC SIDE WALL

TA-1
TA-2
TA-3
GRAB BARS AT ACCESSIBLE WC REAR WALL

TA-4
TOILET TISSUE DISPENSER

TA-5
SANITARY NAPKIN DISPOSAL

TA-4
TOILET TISSUE DISPENSER (JUMBO)

TA-5
SANITARY NAPKIN DISPOSAL

TA-6
AUTO PAPER TOWEL DISPENSER & RECEPTACLE

TA-
ELEC HAND DRYER

TA-7
AUTO SOAP DISPENSER

TA-7
TOILET SEAT COVER DISPENSER

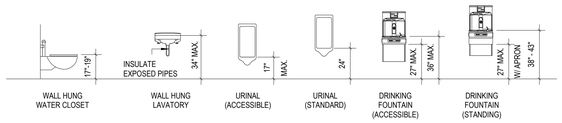
TA-8
DUAL NAPKIN/ TAMPON DISPENSER

TA-9
MIRROR

TA-10
CLOTHES HOOK

TA-11
JANITOR CLOSET SHELF/UTILITY HOOK & MOP STRIP

TA-12
BABY CHANGING STATION



WALL HUNG WATER CLOSET

WALL HUNG LAVATORY

URINAL (ACCESSIBLE)

URINAL (STANDARD)

DRINKING FOUNTAIN (ACCESSIBLE)

DRINKING FOUNTAIN (STANDING)

TOILET ACCESSORIES AND LOCKERS

TAG	DESCRIPTION	MANUFACTURER	MODEL	COMMENTS
TA-1	GRAB BAR (36")	BOBRICK	B-6806 x36	All grab bar configurations are specified using centerline to centerline dimensions.
TA-2	GRAB BAR (42")	BOBRICK	B-6806 x42	All grab bar configurations are specified using centerline to centerline dimensions.
TA-3	GRAB BAR (18")	BOBRICK	B-6806 x 18	All grab bar configurations are specified using centerline to centerline dimensions.
TA-4	BY TCNJ	American Specialties Inc.	0030	Toilet Tissue Dispenser - Surface Mount
TA-5	Sanitary Disposal	BOBRICK	B-270	
TA-7	BY TCNJ	American Specialties Inc.	0362	Soap Dispenser - Surface Mount - Automatic - Battery Powered - Satin Stainless Steel
TA-8	Clothes Hook - Satin Stainless Steel - Surface Mounted (8425)	American Specialties Inc.	8425	Clothes Hook - Surface Mount - Heavy Duty
TA-9	Bobrick B-290 2436 Welded Frame Mirror	Bobrick Washroom Equipment, Inc.	B-290 2436	Provide painted blocking above wall tile for flush condition

PAPER TOWEL DISPENSER - BY TCNJ
WASTE RECEPTACLE - BY TCNJ

NOTE: REFER TO PLUMBING DRAWINGS FOR PLUMBING FIXTURES

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PETAR MATTIONI NO. 21AI02153500

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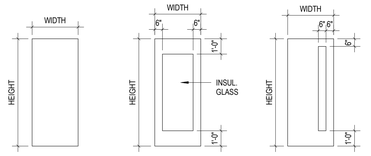
BID DOCUMENTS

Project No.: 2025-23304
Issued: 11/11/2026

ENLARGED RESTROOM PLANS

A501

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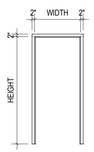
PANEL TYPE F

PANEL TYPE FG GLASS TYPE G1 UON

PANEL TYPE N GLASS TYPE G1 UON

GL3 INTERIOR ONLY

DOOR PANEL LEGEND

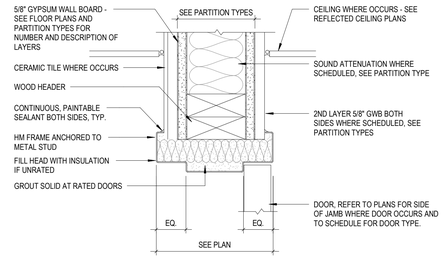


FRAME TYPE FRM-00

DOOR FRAME LEGEND

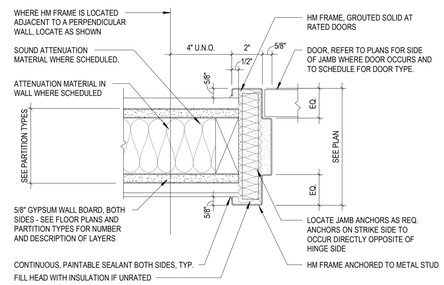
DOOR SCHEDULE

NUMBER	HEIGHT	WIDTH	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAIL HEAD	DETAIL JAMB	DETAIL SILL	FIRE RATING	HARDWARE SET	COMMENTS
LEVEL 1														
01	8'-0"	6'-0"	FG	ALUM	PVDF	FRM-00AL(CW)	ALUM	CLA					01	
01A	8'-0"	6'-0"	FG	ALUM	PVDF	FRM-00AL(CW)	ALUM	CLA					02	PROVIDE FULL ACOUSTICAL GASKETING PACKAGE
02	7'-0"	6'-0"	N	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	D	--	03	PROVIDE FULL ACOUSTICAL GASKETING PACKAGE
03	7'-0"	3'-0"	N	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	E	--	04	PROVIDE FULL ACOUSTICAL GASKETING PACKAGE
04	7'-0"	3'-0"	F	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	E	--	05	PROVIDE FULL ACOUSTICAL GASKETING PACKAGE
05	7'-0"	3'-0"	F	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	E	--	05	PROVIDE FULL ACOUSTICAL GASKETING PACKAGE
06	7'-0"	5'-0"	F	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	E	--	06	
07	7'-0"	5'-0"	F	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	E	--	07	
08	7'-0"	3'-0"	F	HM	P1	FRM-00HM1	HM	P1	HMH	HMJ	D	--	08	



HMH TYPICAL HOLLOW METAL DOOR HEAD

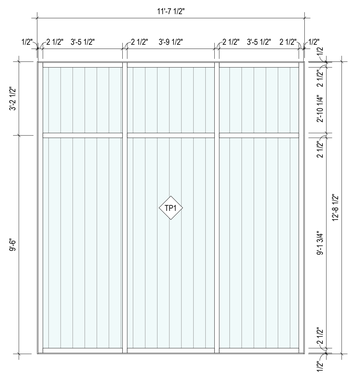
NOTE: SECURE FRAME TO FLOOR WITH NO LESS THAN TWO SUITABLE FASTENERS



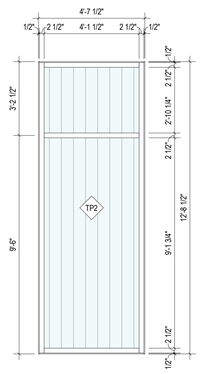
HMJ TYPICAL HOLLOW METAL DOOR JAMB

1 / A801 TYPICAL DOOR DETAILS
3" = 1'-0"

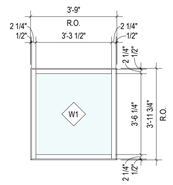
SF1 STOREFRONT TYPE - SF1
3/8" = 1'-0"



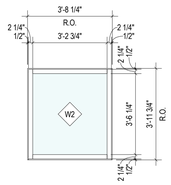
TP1 WINDOW TYPE - TP1
3/8" = 1'-0"
PL1



TP2 WINDOW TYPE - TP2
3/8" = 1'-0"
PL1



W1 WINDOW TYPE - W1
3/8" = 1'-0"
GL2



W2 WINDOW TYPE - W2
3/8" = 1'-0"
GL2

GENERAL NOTES:

1. ALL EXTERIOR GLASS UNITS SHALL BE 1" INSULATED W/ LOW-E COATING.
2. ALL EXTERIOR GLASS UNITS SHALL BE TEMPERED U.O.N.
3. REFER TO SPECIFICATIONS FOR GLAZING COLOR / TINTS.
4. FIELD VERIFY ALL DIMENSIONS PRIOR TO FABRICATION.
5. REFER TO DOOR SCHEDULE FOR OPENING DIMENSIONS.
6. IN-FILL ALL GAPS BETWEEN ROUGH-OPENING AND ASSEMBLY FRAME WITH INSULATION, TYP.
7. BED SILL FLASHING IN SEALANT, TYP.
8. ALL EXPOSED FASTENERS SHALL BE FINISH-MATCHED TO SCHEDULED FLASHING / MULLION FINISH, TYP.

EXTERIOR ASSEMBLY LEGEND:

TAG	SYSTEM TYPE	ASSEMBLY U-FACTOR	SHGC	VT	AIR LEAKAGE RATE (CFM/SF)
SF#	STOREFRONT SYSTEM B.O.D. KAWNEER 451UT	0.29	0.39	0.70	0.06 @ 6.24 PSF
TP#	TRANSLUCENT PANEL ASSEMBLY B.O.D. KALWALL LINEAR BEAM	0.29	0.30	0.37	0.01 @ 6.24 PSF
#	ENTRANCE SYSTEM (SEE DR SCHD) B.O.D. KAWNEER INSULPOR 500	.53	.20	.31	0.50 SINGLE 1.00 PAIR

GLASS TYPES:

TAG	ASSEMBLY	U-FACTOR	SHGC	VT	LSG	SYMBOL
GL1	1/4" CLEAR / 1/2" ARGON / 1/4" CLEAR B.O.D. : VITRO SOLARBAN 60	0.24	0.39	0.70	1.82	
GL2	1/4" CLEAR / 1/2" ARGON / 3/16" CLEAR / .060 PVB / 3 /16" CLEAR (1 3/16" TOTAL) B.O.D. : VITRO SOLARBAN 60 V 65	0.24	0.38	0.69	1.82	
PL1	40mm TRANSLUCENT POLYCARBONATE PANEL - OPAL IR	0.26	0.24	0.28	N/A	
GL3	1/4" CLEAR TEMPERED GLASS FOR INTERIOR DOOR	N/A	N/A	N/A	N/A	

PETAR MATTIONI NO. 21AI02153500

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BID DOCUMENTS

Project No.: 2025-23304
Issued: 11/11/2026

DOOR / WINDOW SCHEDULES & DETAILS

A801

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FINISH SCHEDULE

FLOOR

LVT-1 LUXURY VINYL TYLE
MFR: MANNINGTON
PRODUCT: AMTICO SIGNATURE COLLECTION - WOOD
COLOR: ROTTERDAMN OAK - AR0W8440
SIZE: 9" x 36"
INSTALLATION: ASHLAR
NOTES:

T1 PORCELAIN TILE
MFR: DALTILE
PRODUCT: LINDEN POINT
COLOR: GRIGIO
FINISH: MATTE
SIZE: 12" x 24"
INSTALL: ASHLAR
GROUT: LATICRETE - PERMACOLOR GROUT, COLOR TBD, 1/16" THK GROUT JOINTS
LOCATION: RESTROOMS

XF1 EPOXY FLOOR
MFR: SHERWIN WILLIAMS
PRODUCT: ARMORSEAL 8100
COLOR: CLEAR
LOCATION: REHEARSAL STORAGE, JANITORS CLOSET, ELECTRICAL

WM1 WALK-OFF MAT CARPET
MFR: MANNINGTON RUFFIAN
PRODUCT: RUFFIAN II
COLOR: BLUE BALANCE 3501
SIZE: 24" x 24"
LOCATION: VESTIBULE

BASE

B1 RUBBER BASE
MFR: ROPPE
PRODUCT: CONTOURS PROFILED WALL BASE
PROFILE:
COLOR:
SIZE: 4"
INSTALLATION:

T5 PORCELAIN TILE BASE
MFR: DALTILE
PRODUCT: LINDEN POINT
COLOR: GRIGIO
FINISH: MATTE
SIZE: 6" x 24"
GROUT: LATICRETE - PERMACOLOR GROUT, COLOR TBD, 1/16" THK GROUT JOINTS
LOCATION: RESTROOMS
NOTE: PROVIDE SCHLUTER JOLLY AT TOP OF TILE

WALL

P1 PAINT
MFR: BENJAMIN MOORE
PRODUCT: SCUFFX
COLOR: SUPER WHITE OC-152
FINISH: EGGSHELL

P2 PAINT
MFR: BENJAMIN MOORE
PRODUCT: SCUFFX
COLOR: STONE HARBOR 2111-50
FINISH: EGGSHELL

P3 PAINT
MFR: BENJAMIN MOORE
PRODUCT: SCUFFX
COLOR: VAN DEUSEN BLUE
FINISH: EGGSHELL

T4 WALL TILE
MFR: DALTILE
PRODUCT: COLOR WHEEL CLASSIC
COLOR: GALAXY 1469
FINISH: GLOSSY
SIZE: 3" x 6"
INSTALLATION: RUNNING
GROUT: LATICRETE - PERMACOLOR GROUT, COLOR TBD, 1/16" THK GROUT JOINTS
LOCATION: RESTROOMS
NOTE: PROVIDE SCHLUTER JOLLY AT TOP OF TILE AND SCHLUTER DILEX TO TRANSITION TO FLOORING

PF1 FRP PANEL
MFR: MARLITE
PRODUCT: FIBERGLASS REINFORCED PANELS - SYMMETRIX
COLOR: P100 WHITE
FINISH: SUBWAY TILE
NOTES: INSTALL IN JANITOR CLOSET UP TO 4'-0" A.F.F.

CEILING

AT1 HIGH PERFORMANCE ACOUSTICAL CEILING TILE
MFR: ARMSTRONG
PRODUCT: ARMSTRONG OPTIMA 1-1/2"
EDGE: TEGULAR
COLOR: TOFFEE CHESTNUT
GRID: PRELUDE XL 15/16"
GRID COLOR: GUN METAL GRAY

AT2 ACOUSTICAL CEILING TILE
MFR: ARMSTRONG
PRODUCT: DUNE
EDGE: LAY IN
COLOR: WHITE
GRID: PRELUDE XL 15/16"
GRID COLOR: WHITE

DF1 DRYWALL CEILING
PAINT
MFR: BENJAMIN MOORE
PRODUCT: SCUFFX
COLOR: SUPER WHITE OC-152
FINISH: FLAT

MISCELLANEOUS

DP-1 CEILING SOUND DIFFUSER
MFR: KINETICS NOISE CONTROL
REFER TO SPECIFICATIONS.

FINISH PLAN GENERAL NOTES

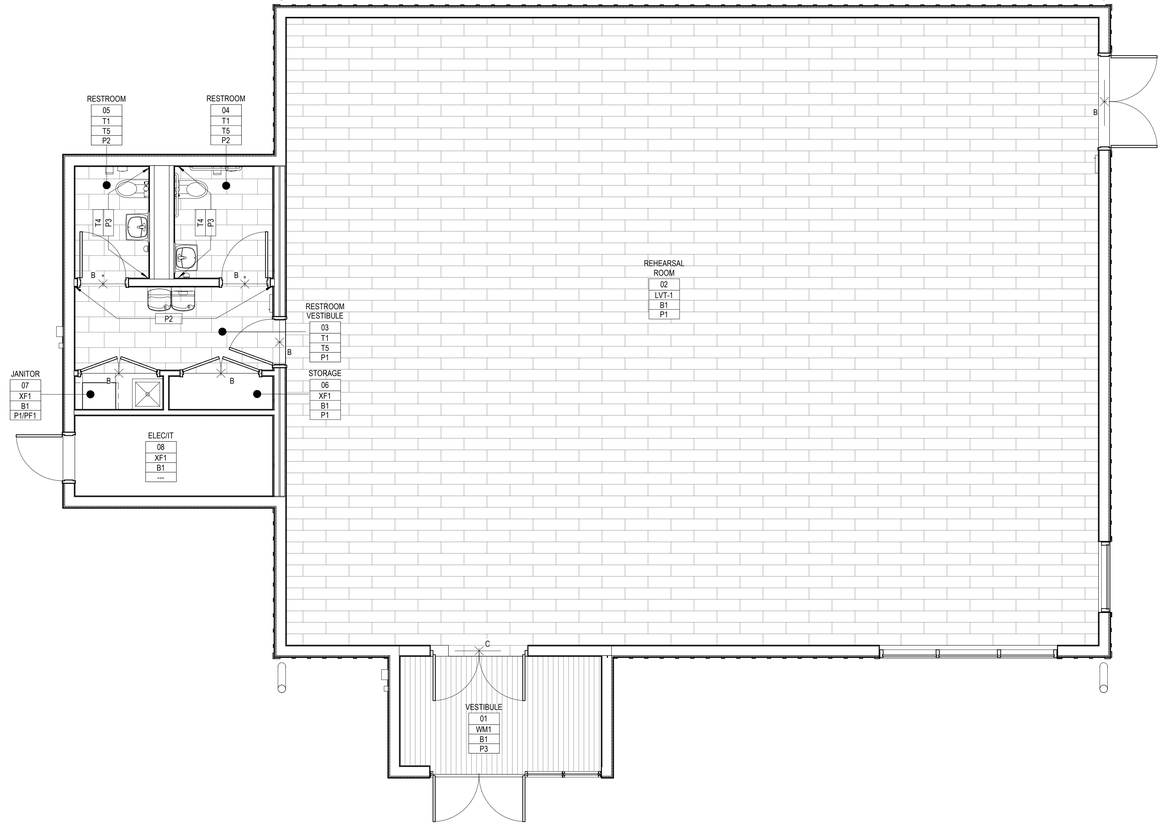
1. ALL GYP BD WALLS ARE TO RECEIVE A LEVEL 4 FINISH U.O.N.
2. REFERENCE ELEVATIONS/SECTIONS/DETAILS FOR ADDITIONAL FINISHES AND LOCATIONS.
3. ALL FLOOR SLABS ARE TO BE PROPERLY PREPARED ACCORDING TO MANUFACTURERS REQUIREMENTS PRIOR TO INSTALLATION OF NEW SCHEDULED FLOOR FINISH MATERIALS.
4. ALL FLOOR FINISH TRANSITIONS ARE TO OCCUR AT CENTERLINE OF DOOR U.O.N.
5. AVOID FLOOR FINISH SLIVERS LESS THAN 4".
6. FLOOR TILE TO BE CENTERED IN ROOM U.O.N.
7. WALL TILE GROUT JOINTS TO ALIGN WITH FLOOR TILE GROUT JOINTS WHERE POSSIBLE
8. ALL FLOOR FINISHES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. FLOORING CONTRACTOR IS RESPONSIBLE FOR INSPECTION OF SLAB CONDITION PRIOR TO FLOOR FINISH INSTALLATION.
9. CONTRACTOR TO PURCHASE AN EXCESS OF 10% OF ALL CARPET, TILE, AND RESILIENT FLOOR FINISHES FOR ATTIC STOCK.
10. REF. MEP DWGS FOR LOCATION AND SIZE OF FLOOR MOUNTED POWER/DATA RECEPTACLE.
11. INSTALL WALL BASE BEHIND ALL FREESTANDING EQUIPMENT.
12. PAINT FINISHES TO BE AS FOLLOWS:
    WALLS: EGGSHELL
    DOORS & FRAMES: SEMI-GLOSS
    CEILINGS & EXPOSED DECK/DUCTWORK/ETC.: DRYFALL

FINISH TAG ABBREVIATIONS

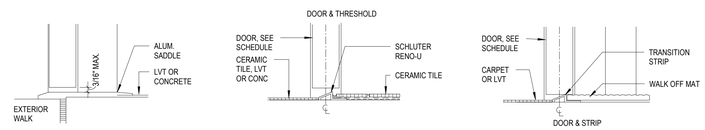
AT	ACOUSTIC TILE	S	STONE
B	RESILIENT BASE	SS	SOLID SURFACE
C	CARPET	T	TILE
CG	CORNER GUARD	U	UPHOLSTERED SYSTEM
F	FILM	W	WALLCOVERING
G	GLASS	WD	WOOD
I	INTEGRAL BASE	WM	WALK-OFF MATERIAL
L	PLASTIC LAMINATE	WT	WINDOW TREATMENT
M	METAL	XF	SPECIAL FLOOR
PF	PREFABRICATED PANEL	XB	SPECIAL BASE
P	PAINT	XW	SPECIAL WALL
RS	RESILIENT SHEET	XC	SPECIAL CEILING
RT	RESILIENT TILE		

FINISH PLAN LEGEND

	AREA NOT IN CONTRACT SCOPE
WT1	ACCENT FINISH
ROOM NAME 101 / X / X / X	FLOOR FINISH / WALL BASE / WALL FINISH
	TRANSITION IN FLOORING FINISHES. SEE SILL TYPE DETAILS ON A___.
	DIRECTION OF FLOORING INSTALL
SS1 / L1	MILLWORK FINISH: INDICATES COUNTER TREATMENT / INDICATES CABINET TREATMENT
F1	FINISH PLAN KEYNOTE



1 / A900 INTERIOR FINISH PLAN - LEVEL 1
1/4" = 1'-0"



COLORS OF REDUCING & TRANSITION STRIPS TO BE VERIFIED WITH ARCHITECT IN CONJUNCTION WITH FLOORING & BASE COLOR SELECTION.

TYPICAL DOOR SILL TYPES

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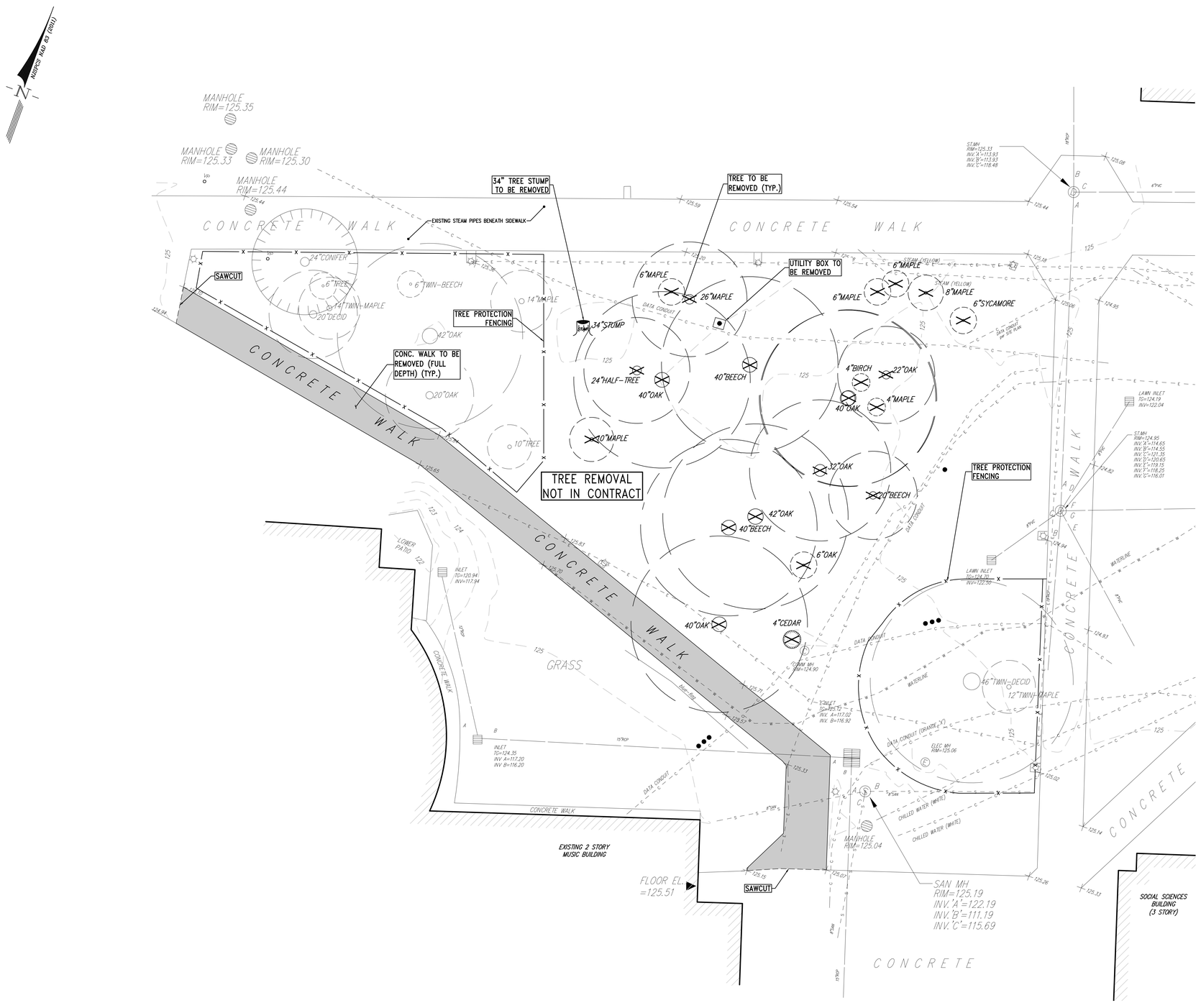
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FINISH PLAN & SCHEDULE

A900

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TREES TO BE REMOVED (NIC, BY OTHERS)

4"CEDAR
4"MAPLE
4"BIRCH
6"OAK
6" MAPLE (3)
6"SYCAMORE
8" MAPLE
10" MAPLE
20"BEECH
22"OAK
24"HALF-TREE
26"MAPLE
32"OAK
40"BEECH (2)
40"OAK (3)
42"OAK

DEMOLITION NOTES:

1. CONDUCT SELECTIVE DEMOLITION OPERATIONS AND DEBRIS REMOVAL IN A MANNER TO INSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT OCCUPIED OR USED FACILITIES. DO NOT CLOSE, BLOCK OR OTHERWISE OBSTRUCT STREET, WALKS OR OTHER OCCUPIED OR USED FACILITIES WITHOUT WRITTEN PERMISSION FROM AUTHORITIES HAVING JURISDICTION. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY GOVERNING AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE SITE WORK.
3. PROVIDE TEMPORARY BARRICADES AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT OWNER'S PERSONNEL AND GENERAL PUBLIC FROM INJURY DUE TO SELECTIVE DEMOLITION WORK.
4. PROVIDE PROTECTIVE MEASURES AS REQUIRED TO PROVIDE FREE AND SAFE PASSAGE OF OWNER'S PERSONNEL AND GENERAL PUBLIC AROUND CONSTRUCTION SITE.
5. TEMPORARY 6' HIGH CHAIN LINK FENCE WITH SCREENING TO BE PROVIDED AROUND WORK AREA FOR EACH PHASE OF CONSTRUCTION/DEMOLITION, AS DIRECTED.
6. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING, OR SUPPORT TO PREVENT UNWANTED MOVEMENT, SETTLEMENT, OR COLLAPSE OF ELEMENT TO BE DEMOLISHED, AS WELL AS FOR THE PROTECTION OF ADJACENT FACILITIES OR WORK TO REMAIN.
7. REMOVE PROTECTIONS AT COMPLETION OF PROJECT OR AT AN APPROPRIATE TIME PRIOR.
8. PROMPTLY REPAIR DAMAGES CAUSED TO ADJACENT FACILITIES BY DEMOLITION WORK AT NO COST TO OWNER.
9. MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN, KEEP IN SERVICE, AND PROTECT AGAINST DAMAGE DURING DEMOLITION OPERATIONS.
10. EXCAVATIONS WITHIN CLOSE PROXIMITY TO UNDERGROUND FACILITIES OR UTILITY POLES WILL REQUIRE PROTECTION IN AN APPROVED MANNER TO PREVENT DAMAGE OR INTERRUPTION OF SERVICE TO UNDERGROUND FACILITIES. THE COST TO PROVIDE THIS PROTECTION WILL BE BORNE BY THE CONTRACTOR.
11. ALL EXCAVATED MATERIAL WHICH IS UNSUITABLE FOR BACKFILL SHALL BE REMOVED FROM SITE AND PROPERLY AND LEGALLY DISPOSED OF BY THE CONTRACTOR. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR PROPER DISPOSAL OF THIS MATERIAL.
12. CONTRACTOR SHALL COORDINATE THE STORAGE OF SALVAGED MATERIALS WITH THE OWNER.
13. BURIED FOUNDATIONS, IF ENCOUNTERED, ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REMOVED TO 18 INCHES BELOW FINAL GRADE, OR PER SPECIFICATIONS.
14. THE REYNOLDS GROUP INC. IS NOT RESPONSIBLE FOR THE SPECIFICATIONS FOR THE REMOVAL OF ANY CONTAMINATED SOIL ENCOUNTERED DURING EXCAVATION.
15. USE WATER SPRINKLING AND OTHER SUITABLE METHODS TO LIMIT DUST AND DIRT RISING AND SCATTERING AIR TO LOWEST PRACTICAL LEVEL. COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION. DO NOT USE WATER WHEN IT MAY CREATE HAZARDOUS OR OBJECTIONABLE CONDITIONS SUCH AS ICE, FLOODING, AND POLLUTION.
16. IT IS THE INTENT TO SAVE AS MANY TREES AS POSSIBLE. THE CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO MINIMIZE ADVERSE IMPACTS ON EXISTING TREES.
17. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING THE TREE PROTECTION ZONE (TPZ) WHICH IS AN AREA RADIAL TO THE TRUNK OF A TREE IN WHICH NO CONSTRUCTION ACTIVITY SHALL OCCUR. THE "TREE PROTECTION ZONE" SHALL BE FIFTEEN (15) FEET FROM THE TRUNK OF THE TREE TO BE RETAINED OR THE DISTANCE TO THE DRIPLINE, WHICHEVER IS GREATER.
18. A FORTY-EIGHT-INCH-HIGH WOODEN SNOWFENCE MOUNTED ON STEEL POSTS, LOCATED EIGHT (8) FEET ON CENTER, PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. (SEE NOTE 17.)
19. TREES BEING REMOVED SHALL NOT BE FELLED, PUSHED OR PULLED INTO A TREE PROTECTION ZONE OR INTO TREES THAT ARE TO BE RETAINED.
20. WATER TREES AND OTHER VEGETATION TO REMAIN WITHIN LIMITS OF CONTRACT WORK AS REQUIRED TO MAINTAIN THEIR HEALTH DURING COURSE OF CONSTRUCTION OPERATIONS.
21. BURNING OR BURIAL OF REMOVED/EXCESS MATERIALS IS NOT PERMITTED ON PROJECT SITE.
22. CONTRACTOR RESPONSIBLE FOR CLEANING AND UNPLUGGING EXISTING STORM INLETS AND PIPES.
23. THE CONTRACTOR IS RESPONSIBLE TO REPAIR ALL PAVEMENT, CONCRETE WALKS, CURB, AND DRIVES DAMAGED IN THE PROCESS OF TRANSPORTING CONSTRUCTION VEHICLES AND EQUIPMENT.

EXISTING UTILITY LOCATIONS/TEST PITS:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL BURIED UTILITIES. THE UTILITIES SHOWN WERE BASED ON THE TOPOGRAPHIC SURVEY PERFORMED DPK CONSULTING, LLC, DATED 07/29/2024.
2. INFORMATION ON UTILITY COMPANY LINES IS BASED UPON GENERAL INFORMATION ONLY AS PROVIDED BY UTILITY COMPANIES. CONTRACTOR MUST CONTACT THE UTILITY MARK-OUT SERVICE, 1-800-272-1000, PRIOR TO CONSTRUCTION. IF ADDITIONAL UTILITIES ARE FOUND, OR A CONFLICT WITH PROPOSED UTILITIES ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
3. IN ADDITION TO A UTILITY MARK-OUT, THE CONTRACTOR SHALL DIG A TEST PIT AT ALL LOCATIONS WHERE PROPOSED LINES CROSS EXISTING UTILITY LINES TO VERIFY DEPTHS. THE CONTRACTOR SHALL PROVIDE THIS INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

NOTE:

CONTRACTOR TO PERFORM GROUND PENETRATING RADAR SCANS OF THE WORK AREA. A MAP SHALL BE SUBMITTED AS A SHOP DRAWING. A FIELD MARK-OUT IS ALSO REQUIRED PRIOR TO CONSTRUCTION.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

F. MITCHEL ARDMAN
N.J. PROFESSIONAL ENGINEER LIC. NO. 34317

THE MUSIC ANNEX

NEW PERFORMING ARTS REHEARSAL HALL
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The Reynolds Group Inc.

State of New Jersey
Certificate of Authorization
Number 24GA27969200
21MH00004300

F. Mitchel Ardman, P.E., P.P.
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BID DOCUMENTS

Project No.: 2025-23304
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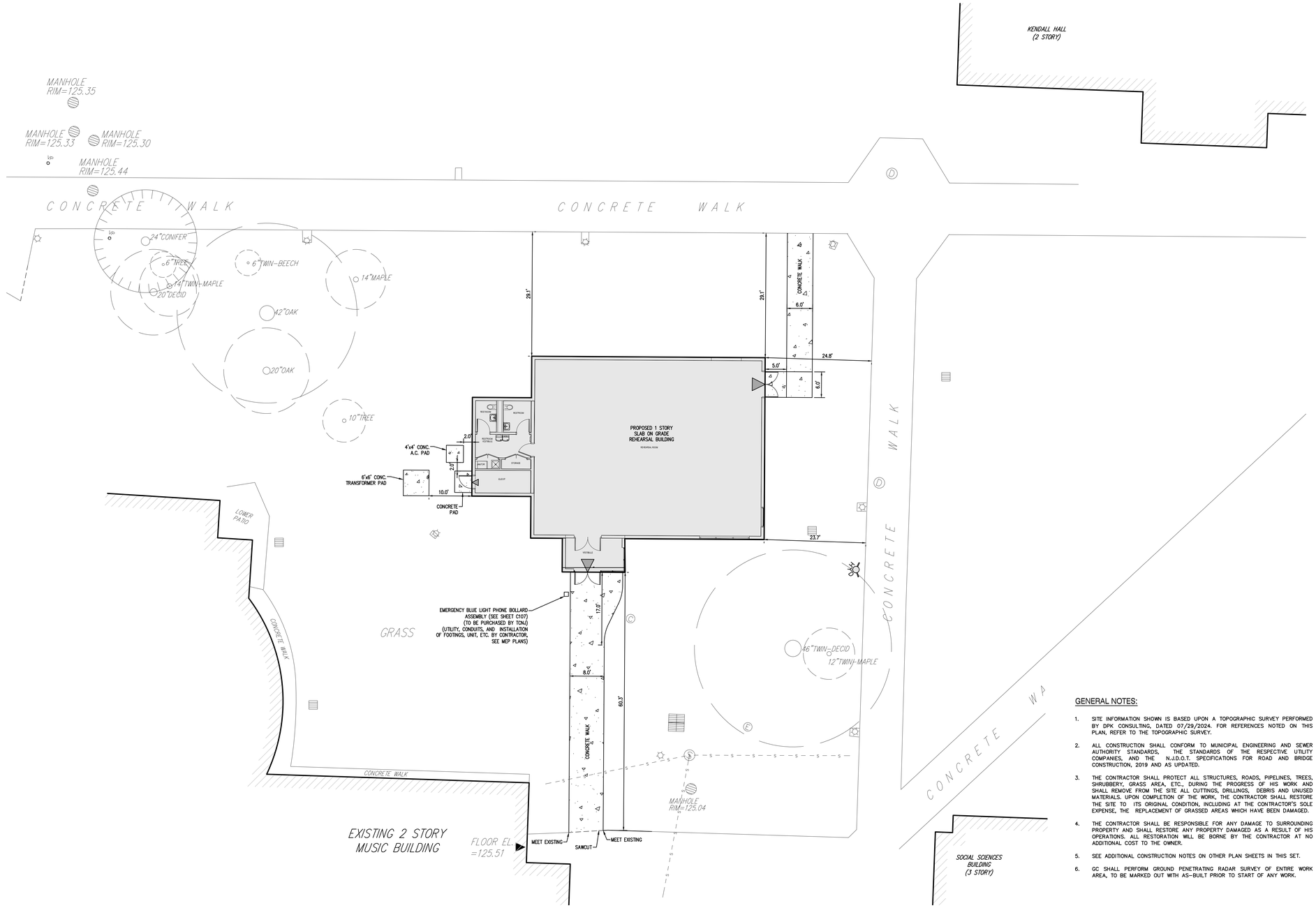
EXISTING CONDITIONS/ DEMOLITION PLAN

C101

J:\ENGINEERING PROJECTS\2025\25-026 - TCNJ PAVILION_CAD\DESIGN\25-026 BASEMAP (MS).DWG (11/11/26)

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NORTH NAD 83 (2011)



GENERAL NOTES:

1. SITE INFORMATION SHOWN IS BASED UPON A TOPOGRAPHIC SURVEY PERFORMED BY DPK CONSULTING, DATED 07/29/2024. FOR REFERENCES NOTED ON THIS PLAN, REFER TO THE TOPOGRAPHIC SURVEY.
2. ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL ENGINEERING AND SEWER AUTHORITY STANDARDS, THE STANDARDS OF THE RESPECTIVE UTILITY COMPANIES, AND THE N.J.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019 AND AS UPDATED.
3. THE CONTRACTOR SHALL PROTECT ALL STRUCTURES, ROADS, PIPELINES, TREES, SHRUBBERY, GRASS AREA, ETC., DURING THE PROGRESS OF HIS WORK AND SHALL REMOVE FROM THE SITE ALL CUTTINGS, DRILLINGS, DEBRIS AND UNUSED MATERIALS. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL RESTORE THE SITE TO ITS ORIGINAL CONDITION, INCLUDING AT THE CONTRACTOR'S SOLE EXPENSE, THE REPLACEMENT OF GRASSED AREAS WHICH HAVE BEEN DAMAGED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO SURROUNDING PROPERTY AND SHALL RESTORE ANY PROPERTY DAMAGED AS A RESULT OF HIS OPERATIONS. ALL RESTORATION WILL BE BORNE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
5. SEE ADDITIONAL CONSTRUCTION NOTES ON OTHER PLAN SHEETS IN THIS SET.
6. GC SHALL PERFORM GROUND PENETRATING RADAR SURVEY OF ENTIRE WORK AREA, TO BE MARKED OUT WITH AS-BUILT PRIOR TO START OF ANY WORK.

GRAPHIC SCALE

10 0 5 10 20 40

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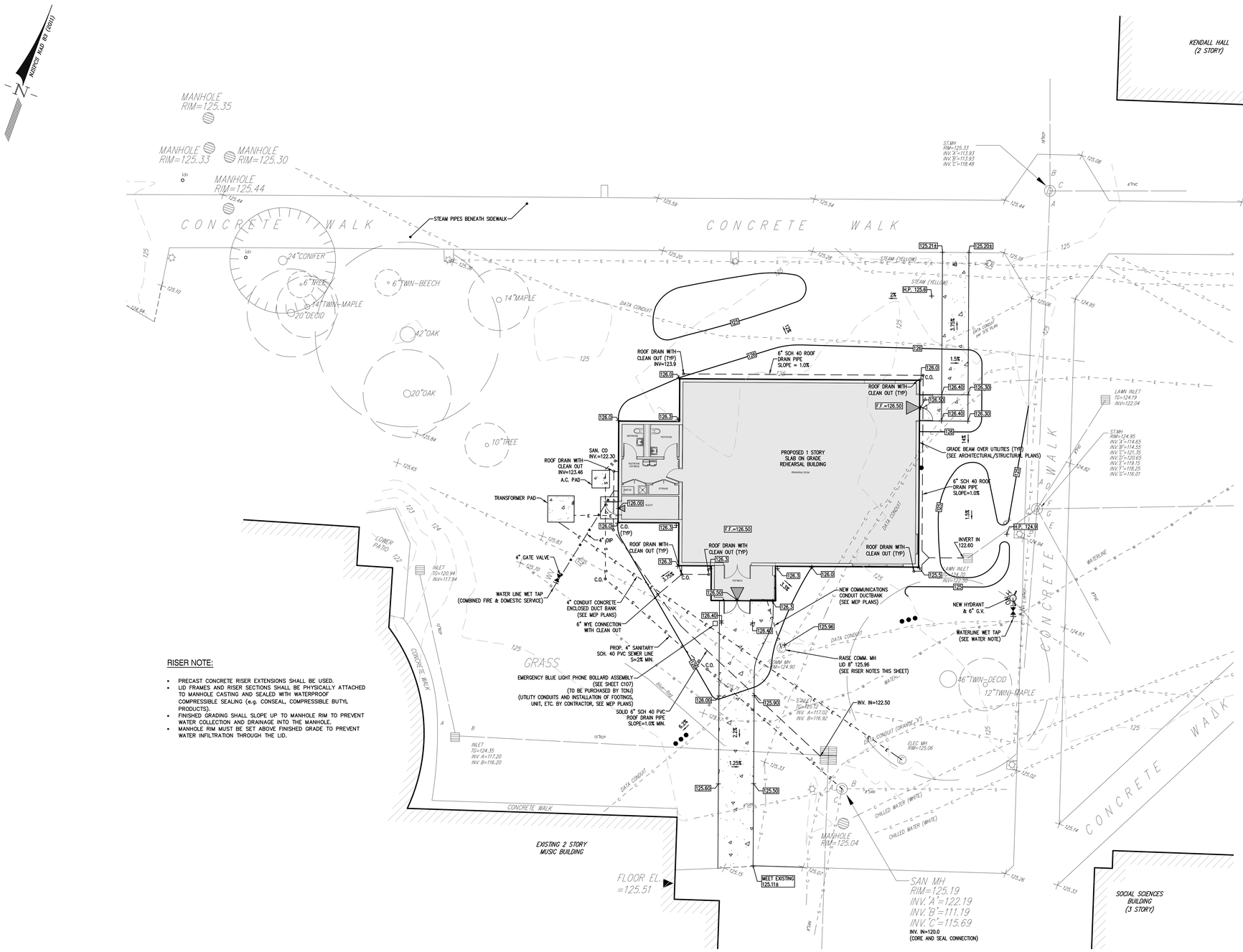
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DIMENSION PLAN

C102

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THE LINE SHOWN AT LEFT IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE. DO NOT SCALE CONTENTS OF THIS DRAWING.



GRADING AND UTILITY NOTES:

1. CONTOURS AND UTILITY INFORMATION SHOWN IS BASED UPON A TOPOGRAPHIC SURVEY PERFORMED BY DPK CONSULTING, DATED 07/09/2024. FOR REFERENCES NOTED ON THIS PLAN, REFER TO THE TOPOGRAPHIC SURVEY.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS AND INFORMATION (SIZE, DEPTH, SLOPE, ETC.) VIA TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION. LOCATIONS AND INFORMATION FROM TEST PITS SHALL BE PROVIDED TO THE OWNER AND ENGINEER IN WRITING. SHOULD ANY CONFLICTS ARISE, CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER IN WRITING. CONSTRUCTION SHALL NOT PROCEED UNTIL CONFLICT IS RESOLVED.
3. ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL ENGINEERING DEPARTMENT AND SEWERAGE AUTHORITY, THE THE STANDARDS OF THE RESPECTIVE UTILITY COMPANIES AND THE N.J.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019 AND AS UPDATED.
4. THE CONTRACTOR SHALL GRADE ALL AREAS TO PROVIDE POSITIVE SLOPE TO CATCH BASINS. LAWN AREAS SHALL BE GRADED AT A MINIMUM 2% SLOPE, AND AWAY FROM THE BUILDING. PAVEMENT AREAS SHALL HAVE A 1% MINIMUM SLOPE, UNLESS OTHERWISE NOTED.
5. ALL PROPOSED CONTOURS SHALL BE GRADED TO BLEND EVENLY WITH EXISTING CONTOURS.
6. IF SITE IS TO BE LEFT UNWORKED FOR MORE THAN 30 DAYS, THE SITE SHALL BE GRADED AND SEEDED AT THE CONTRACTORS EXPENSE.
7. ALL UTILITIES SHALL BE INSTALLED UNDERGROUND.
8. EXCAVATIONS OR TRENCHING WITHIN CLOSE PROXIMITY TO UNDERGROUND FACILITIES OR UTILITY POLES WILL REQUIRE PROTECTION IN AN APPROVED MANNER TO PREVENT DAMAGE OR INTERRUPTION OF SERVICE TO UNDERGROUND FACILITIES. THE COST TO PROVIDE THIS PROTECTION WILL BE BORNE BY THE CONTRACTOR.
9. ALL TRENCHES SHALL BE BACKFILLED WITHOUT DELAY. OPEN TRENCHES SHALL BE KEPT TO A MINIMUM. OPEN TRENCHES SHALL BE STEEL PLATED OR BARRICADED WHEN WORK IS NOT IN PROGRESS. ALL EXISTING CONTOUR LINES, PROFILES AND SPOT ELEVATIONS ARE APPROXIMATE.
10. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT IN AN APPROVED MANNER EXISTING THRUST BLOCKS WHICH ARE RESTRAINING EXISTING UTILITIES. EXISTING THRUST BLOCKS SHALL NOT BE UNDERMINED.
11. STORM & SANITARY IMPROVEMENTS SHALL BE INSTALLED BEFORE OTHER UTILITIES.
12. GAS LINE TO BUILDING TO BE INSTALLED BY UTILITY COMPANY, IF REQUIRED.
13. SANITARY SEWER MAIN SHALL BE PVC SDR-35. SANITARY SEWER LATERAL SHALL BE SCHEDULE 40 PVC WITH CLEAN OUTS AS REQUIRED BY PLUMBING CODE. ALL CLEANOUTS IN PAVED AREA TO BE CONSTRUCTED IN ACCORDANCE WITH THE 'SIGHT TEE' DETAIL.
14. THE SEWER UTILITY AUTHORITY SHALL BE NOTIFIED AT LEAST 72 HOURS PRIOR TO A CONNECTION BEING MADE TO THE EXISTING SANITARY SEWERS AND/OR MANHOLES TO SCHEDULE REQUIRED INSPECTIONS.
15. WATER LINES SHALL BE DIP, CLASS 52-CL, SIZES AS NOTED ON PLAN. ALL WATER DISTRIBUTION PIPES, VALVES, FITTINGS AND APPURTENANCES SHALL BE LEAD FREE IN ACCORDANCE TO THE LATEST SAFE DRINKING WATER ACT, NSF/ANSI 61 AND AWWA REQUIREMENTS. CONTRACTOR TO COORDINATE WITH FIRE OFFICIAL FOR APPROVED FDC. DOMESTIC LINE SHALL BE TYPE 'K' COPPER. SEE PLUMBING PLAN FOR SPLIT OF DOMESTIC/FIRE SERVICE INSIDE THE BUILDING.
16. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4 FEET OF COVER ON THE INSTALLATION OF THE NEW WATER SERVICE. THE CONTRACTOR SHALL PROVIDE MECHANICAL JOINT RETAINER GLANDS AND THRUST BLOCKS AT ALL MECHANICAL JOINT FITTINGS. CONTRACTOR SHALL REMOVE EXISTING STORM SEWER PIPING AS REQUIRED TO INSTALL NEW UTILITIES (STORM, SEWER, WATER, ETC.). ALL OPEN ENDS OF STORM PIPING ABANDONED IN PLACE SHALL BE SEALED CLOSED WITH BRICK AND MORTAR.
17. SANITARY SEWER AND WATER MAINS SHALL BE SEPARATED A MINIMUM OF 10' HORIZONTALLY. IF SUCH LATERAL SEPARATION IS NOT POSSIBLE, PIPES SHALL BE IN SEPARATE TRENCHES WITH THE SEWER AT LEAST 18" BELOW THE BOTTOM OF THE WATER MAIN. WHERE APPROPRIATE SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER SHALL BE ENCASED IN CONCRETE, OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER MAIN AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER SHALL BE PROVIDED.
18. EXISTING MAINS TO WHICH CONNECTIONS SHALL BE MADE ARE SIZED AND LOCATED IN ACCORDANCE WITH BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE PREPARED TO ACCOMMODATE CHANGES IN THE SIZE OR LOCATION BY MAINTAINING AT THE JOB SITE ADDITIONAL PIPE FITTINGS AND VALVES IN THE RANGES OF SIZES BEING USED. THIS ADDITIONAL MATERIAL SHALL BE AVAILABLE TO PREVENT DELAYS IN CONSTRUCTION.
19. STORM SEWERS SHALL BE CONSTRUCTED OF CLASS III RCP UNLESS OTHERWISE NOTED.
20. ALL CASTINGS ARE TO BE U.S. MANUFACTURE. IF OTHER THAN CAMPBELL OR NEENAH CASTINGS ARE USED, COMPLETE DATA MUST BE SUBMITTED.
21. ROOF DRAIN CONNECTIONS SHALL BE PVC, SCHEDULE 40, EXCEPT UNDER PAVEMENT WHERE PIPE COVER IS LESS THAN 18", SCH. 80 SHALL BE USED. CONTRACTOR SHALL COORDINATE CONNECTION POINTS WITH ARCH AND MECHANICAL PLANS.
22. NO PIPE, INLET, MANHOLE, CURB, CONTROL CONTROL STRUCTURE OR LOW FLOW CHANNEL SHALL BE CONSTRUCTED WITHOUT CUT SHEETS. THE CONTRACTOR SHALL ALLOW TWO WORKING DAYS TO CHECK THE PROPOSED ELEVATIONS AGAINST THOSE ON THE CUT SHEET.

RISER NOTE:

- PRECAST CONCRETE RISER EXTENSIONS SHALL BE USED.
- LID FRAMES AND RISER SECTIONS SHALL BE PHYSICALLY ATTACHED TO MANHOLE CASTING AND SEALED WITH WATERPROOF COMPRESSIBLE SEALING (e.g. CONSEAL, COMPRESSIBLE BUTYL PRODUCTS).
- FINISHED GRADING SHALL SLOPE UP TO MANHOLE RIM TO PREVENT WATER COLLECTION AND DRAINAGE INTO THE MANHOLE.
- MANHOLE RIM MUST BE SET ABOVE FINISHED GRADE TO PREVENT WATER INFILTRATION THROUGH THE LID.

WATER NOTE:

CONTRACTOR TO VERIFY EXISTING WATER LINE SIZE PRIOR TO CONSTRUCTION. PROVIDE SHOP DRAWINGS FOR 6" TAP TO FIRE HYDRANT.

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)

1 inch = 10 ft.

F. MITCHEL ARDMAN
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THE MUSIC ANNEX

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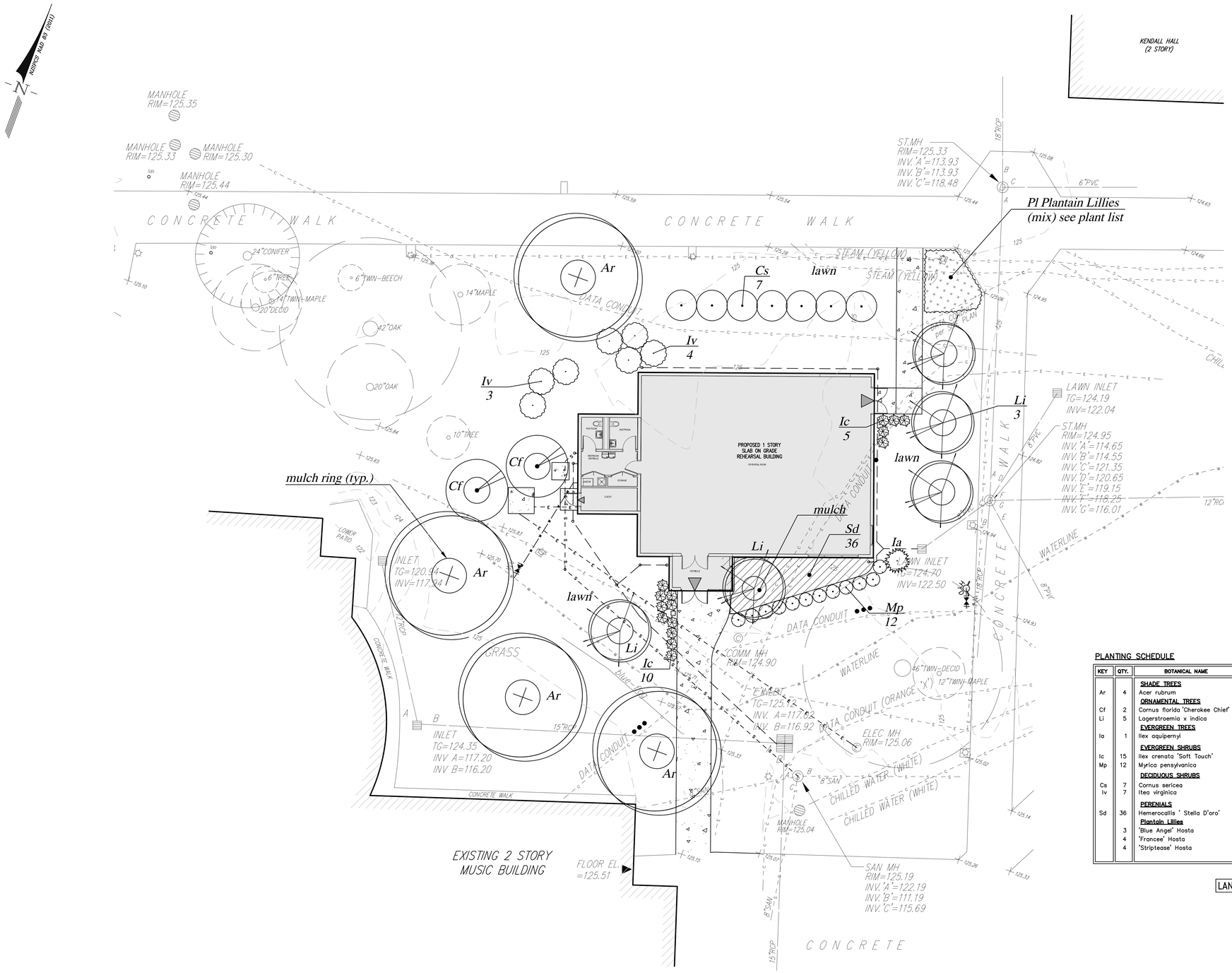
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GRADING AND UTILITY PLAN

C103

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PLANTING NOTES

1. ALL PLANT MATERIAL TO BE FIRST QUALITY, NURSERY GROWN STOCK, FREE FROM DISEASE OR OBJECTIONABLE DISFIGUREMENTS. QUALITY AND SIZE OF PLANTS, INCLUDING ROOT SIZE SHALL BE IN ACCORDANCE WITH "AMERICAN STANDARDS FOR NURSERY STOCK" ANSI Z60.1 (MOST RECENT ADDITION) AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
2. CONTRACTOR TO VERIFY ALL PLANT DISCREPANCIES INCLUDING PLANT QUANTITIES BETWEEN PLANT LIST AND PLAN. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING QUANTITY WHICH IS GREATER.
3. NO SUBSTITUTES SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
4. ALL PROPOSED PLANT MATERIAL SHALL BE BALLED AND BURLAPPED UNLESS NOTED OTHERWISE ON PLANTING SCHEDULE.
5. ALL INSTALLED PLANT MATERIALS SHALL BEAR THE SAME RELATION TO GRADE WHEN INSTALLED ON SITE AS EXISTED IN NURSERY PRIOR TO DIGGING.
6. HOLES FOR PLANT MATERIALS (B&B) SHALL BE DUG A MINIMUM OF TWICE THE BALL DIAMETER. ALL PLANTS SHALL BE LOCATED IN THE CENTER OF THEIR RESPECTIVE PITS.
7. B&B PLANTS SHALL BE HANDLED FROM THE BOTTOM OF THE ROOT BALL ONLY. PLANTS WITH BROKEN, SLIT OR DAMAGED ROOT BALLS SHALL BE REJECTED.
8. PLANTS SHALL NOT BE BOUND AT ANY TIME WITH WIRE OR ROPE AS TO DAMAGE THE BARK AND BRANCHES.
9. PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THIS IS NOT POSSIBLE THE CONTRACTOR WILL PROTECT THE STOCK THAT IS NOT PLANTED AND KEEP WELL WATERED. PLANTS SHALL NOT REMAIN UNPLANTED FOR MORE THAN A THREE DAY PERIOD AFTER BEING DELIVERED.
10. ALL STAKING AND GUYING WIRES SHALL BE FLAGGED WITH A BRIGHT REFLECTIVE MATERIAL TO WARN PEDESTRIANS
11. TOPSOIL AND SEED ALL AREAS DISTURBED BY CONSTRUCTION AND ALL LOCATIONS SHOWN AS LAWN AREAS ON PLAN.
12. ALL PLANTS SHALL BE PLANTED IN AN APPROVED BACKFILL MIXTURE THAT IS THOROUGHLY WATERED AND TAMPED AS BACKFILLING PROGRESSES. ONLY SUITABLE TOPSOIL, FREE OF DRY SOD, STIFF CLAY, LITTER ETC., SHALL BE USED FOR PLANTING
13. ALL SHRUB BEDS AND TREE SAUCERS TO BE MULCHED AS DETAILED.
14. THE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF ANY OF THE PROPOSED PLANTING MATERIAL.
15. PROVIDE SNOW/TREE PROTECTION FENCING AS REQUIRED AROUND EXISTING TREES TO BE SAVED.
16. CONTRACTOR SHALL GUARANTEE ALL PLANT MATERIAL (NOT INCLUDING LAWNS) FOR A PERIOD OF TWO (2) YEAR FROM DATE OF ACCEPTANCE.
17. AFTER THE PLANTING CONTRACTOR HAS COMPLETED THE TERMS OF HIS CONTRACT, THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL PROPOSED PLANTINGS BY PROVIDING THE CORRECT METHODS OF WEEDING, SPRAYING, WATERING, PRUNING AND FERTILIZING ACCORDING TO GOOD HORTICULTURAL PRACTICE.
18. ALL TREES TO BE BRANCHED 7' HIGH.

PLANTING SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
		SHADE TREES				
Ar	4	Acer rubrum	Red Maple	2.5–3" Cal.	B&B	As Shown
		ORNAMENTAL TREES				
Cf	2	Cornus florida 'Cherokee Chief'	Cherokee Chief Dogwood	7–8' Ht.	B&B	As Shown
Li	5	Lagerstroemia x indica	'Red Dynamite' Crape Myrtle	8–10' Ht.	B&B	As Shown
		EVERGREEN TREES				
Ia	1	Ilex aquipernyi	Dragon Lady Holly	5–6' Ht.	B&B	4' oc
		EVERGREEN SHRUBS				
Ic	15	Ilex crenata 'Soft Touch'	Soft Touch Compact Holly	24–30" Ht.	Cont.	3' oc
Mp	12	Myrica pensylvanica	Northern Bayberry	18–24" Ht.	Cont.	4' oc
		DECIDUOUS SHRUBS				
Cs	7	Cornus sericea	Redosier Dogwood	3–4' Ht.	Cont.	7' oc
Iv	7	Itea virginica	Virginia Sweetspire	2–3' Ht.	Cont.	6' oc
		PERENIALS				
Sd	36	Hemerocallis ' Stella D'oro'	Stella D'oro' Daylily	3 Gal.	Cont.	18" oc
		Plantain Lillies				
	3	'Blue Angel' Hosta		3 Gal.	Cont.	5' oc
	4	'Francee' Hosta		3 Gal.	Cont.	3' oc
	4	'Striptease' Hosta		3 Gal.	Cont.	3' oc

LANDSCAPE NOT IN CONTRACT

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
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21MH00004300

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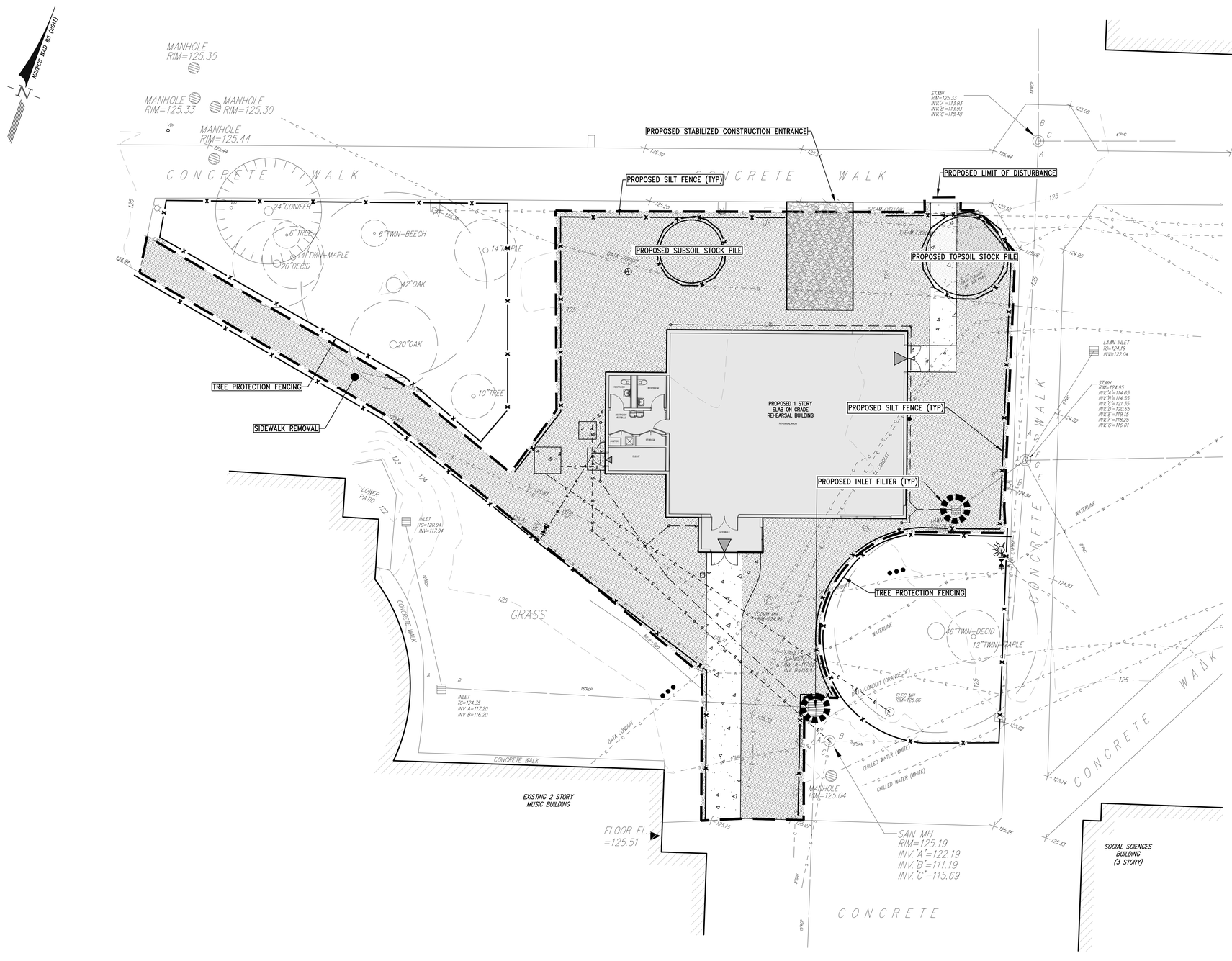
BID DOCUMENTS

Project No.: 2025-23304
Issued: 11/11/2026

LANDSCAPE PLAN

C104

a:\ENGINEERING PROJECTS\2025\25-026 - TCNJ PAVILION_CAD\DESIGN\25-026 BASEMAP (RG).DWG - (11/7/26)



THIS PLAN TO BE USED FOR SOIL EROSION AND SEDIMENT CONTROL PURPOSES ONLY. SEE SHEET C106 FOR DETAILS.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE MERCER COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED 48 HOURS PRIOR TO STARTING LAND DISTURBANCE ACTIVITY. NOTICE MAY BE MAILED, FAXED OR EMAILED TO:
   MCSCD, 590 HUGHES DRIVE, HAMILTON SQUARE, NJ 08690
   PHONE: 609-586-9603 FAX: 609-586-1117 EMAIL:Pauls1mercer@aol.com
2. IF APPLICABLE TO THIS PROJECT, THE OWNER SHOULD BE AWARE OF HIS OR HER OBLIGATION TO FILE FOR A NJPDES CONSTRUCTION ACTIVITY STORMWATER 5G3 PERMIT (NJG0088323) VIA THE NJDEP ONLINE PERMITTING SYSTEM (WWW.NJ.GOV/DEP/ONLINE) AND TO MAINTAIN THE ASSOCIATED BEST MANAGEMENT PRACTICES AND STORMWATER POLLUTION PREVENTION PLAN SELF-INSPECTION LOGBOOK ONSITE AT ALL TIMES. THIS PERMIT MUST BE FILED PRIOR TO THE START OF SOIL DISTURBANCE. THE ONLINE APPLICATION PROCESS WILL REQUIRE ENTRY OF AN SCD CERTIFICATION CODE, WHICH IS PROVIDED BY THE SOIL CONSERVATION DISTRICT UPON CERTIFICATION OF THE SOIL EROSION AND SEDIMENT CONTROL PLAN.
3. THE MERCER COUNTY SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED OF ANY CHANGES IN OWNERSHIP.
4. ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN, INCLUDING AN INCREASE IN THE LIMIT OF DISTURBANCE, WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RECERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION & SEDIMENT CONTROL STANDARDS.
5. A COPY OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON SITE AT ALL TIMES.
6. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THEIR PROPER SEQUENCE AS OUTLINED WITHIN THE SEQUENCE OF CONSTRUCTION ON THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
7. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NJ. IF LANGUAGE CONTAINED WITHIN ANY OTHER PERMIT FOR THIS PROJECT IS MORE RESTRICTIVE THAN (BUT NOT CONTRADICTORY TO) WHAT IS CONTAINED WITHIN THESE NOTES OR ON THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN, THEN THE MORE RESTRICTIVE PERMIT REQUIREMENTS SHALL BE FOLLOWED.
8. THE STANDARD FOR STABILIZED CONSTRUCTION ACCESS REQUIRES THE INSTALLATION OF A 1½" TO 2½" CLEAN STONE TRACKING PAD AT ALL CONSTRUCTION DRIVEWAYS IMMEDIATELY AFTER INITIAL SITE DISTURBANCE, WHETHER IDENTIFIED ON THE CERTIFIED PLAN OR NOT. THE WIDTH SHALL SPAN THE FULL WIDTH OF EGRESS, AND LENGTH SHALL BE 50 FT. OR MORE, DEPENDING ON SITE CONDITIONS AND AS REQUIRED BY THE STANDARD. THIS SHALL INCLUDE INDIVIDUAL LOT ACCESS POINTS WITHIN RESIDENTIAL SUBDIVISIONS. IF THE EGRESS IS TO A COUNTY ROAD, THEN A 20 FT. LONG PAVED TRANSITION SHALL BE PROVIDED BETWEEN THE EDGE OF PAVEMENT AND THE STONE ACCESS PAD.
9. A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS IN ORDER TO STABILIZE STREETS, ROADS, DRIVEWAYS AND PARKING AREAS, IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN 15 DAYS OF PRELIMINARY GRADING, PROVIDED THAT ALL OTHER REQUIREMENTS RELATED TO DETENTION BASINS, SWALES AND THE SEQUENCE OF CONSTRUCTION HAVE BEEN MET.
10. ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 14 DAYS AND NOT SUBJECT TO CONSTRUCTION ACTIVITY WILL IMMEDIATELY RECEIVE TEMPORARY STABILIZATION. IF THE SEASON PREVENTS ESTABLISHMENT OF A TEMPORARY VEGETATIVE COVER, OR IF THE AREA IS NOT TOPSOILED, THEN THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO STATE STANDARDS. SLOPED AREAS IN EXCESS OF 3H:1V SHALL BE PROVIDED WITH EROSION CONTROL BLANKETS. CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES, ROADWAY EMBANKMENTS, ENVIRONMENTALLY SENSITIVE AREAS) WILL RECEIVE TEMPORARY STABILIZATION IMMEDIATELY AFTER INITIAL DISTURBANCE OR ROUGH GRADING.
11. ANY STEEP SLOPES (I.E. SLOPES GREATER THAN 3:1) RECEIVING PIPELINE OR UTILITY INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION PROCEEDS.
12. PERMANENT VEGETATION SHALL BE SEEDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING AND TOPSOILING. ALL AGRONOMIC REQUIREMENTS CONTAINED WITHIN THE STANDARDS AND ON THE CERTIFIED PLAN SHALL BE EMPLOYED. MULCH WITH BINDER, IN ACCORDANCE WITH THE STANDARDS, SHALL BE USED ON ALL SEEDED AREAS. SAVE ALL TAGS AND/OR BAGS USED FOR SEED, LIME AND FERTILIZER, AND PROVIDE THEM TO THE DISTRICT INSPECTOR TO VERIFY THAT MIXTURES AND RATES MEET THE STANDARDS.
13. AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER, SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, THEN NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
14. DURING THE COURSE OF CONSTRUCTION, SOIL COMPACTION MAY OCCUR WITHIN HAUL ROUTES, STAGING AREAS AND OTHER PROJECT AREAS. IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING, COMPACTED SURFACES SHOULD BE SCARIFIED 6" TO 12" IMMEDIATELY PRIOR TO TOPSOIL APPLICATION. THIS WILL HELP ENSURE A GOOD BOND BETWEEN THE TOPSOIL AND SUBSOIL. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.).
15. PRIOR TO SEEDING, TOPSOIL SHALL BE WORKED TO PREPARE A PROPER SEEDBED. THIS SHALL INCLUDE RAKING OF THE TOPSOIL AND REMOVAL OF DEBRIS AND STONES, ALONG WITH OTHER REQUIREMENTS OF THE STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION.
16. IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE BURIED WITH LIMESTONE IN ACCORDANCE WITH THE STANDARD AND BE COVERED WITH A MINIMUM OF 12' OF SOIL HAVING A PH OF 5 OR MORE PRIOR TO TOPSOIL APPLICATION AND SEEDBED PREPARATION. IF THE AREA IS TO RECEIVE TREE OR SHRUB PLANTINGS, OR IS LOCATED ON A SLOPE, THEN THE AREA SHALL BE COVERED WITH A MINIMUM OF 24" OF SOIL HAVING A PH OF 5 OR MORE.
17. MULCHING TO THE STANDARDS IS REQUIRED FOR OBTAINING A CONDITIONAL REPORT OF COMPLIANCE. CONDITIONAL ROC'S ARE ONLY ISSUED WHEN THE SEASON PROHIBITS SEEDING. PERMANENT STABILIZATION MUST THEN BE COMPLETED DURING THE OPTIMUM SEEDING SEASON IMMEDIATELY FOLLOWING THE CONDITIONAL ROC, OR THE COMPLETION OF WORK IN A GIVEN AREA.
18. HYDROSEEDING IS A TWO-STEP PROCESS. THE FIRST STEP INCLUDES SEED, FERTILIZER, LIME, ETC., ALONG WITH MINIMAL AMOUNTS OF MULCH TO PROMOTE CONSISTENCY, GOOD SEED-TO-SOIL CONTACT, AND GIVE A VISUAL INDICATION OF COVERAGE. UPON COMPLETION OF THE SEEDING OPERATION, HYDROMULCH SHOULD BE APPLIED AT A MINIMUM RATE OF 1500 LBS. PER ACRE IN SECOND STEP. THE USE OF HYDRO-MULCH, AS OPPOSED TO STRAW, IS LIMITED TO OPTIMUM SEEDING DATES AS LISTED IN THE STANDARDS. THE USE OF HYDROMULCH ON SLOPED AREAS IS DISCOURAGED.
19. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ADJACENT ROADS CLEAN DURING LIFE OF THE CONSTRUCTION PROJECT. ALL SEDIMENT WASHED, DROPPED, TRACKED OR SPILLED ONTO PAVED SURFACES SHALL BE IMMEDIATELY REMOVED.
20. THE DEVELOPER SHALL BE RESPONSIBLE FOR REMEDIATING ANY EROSION OR SEDIMENT PROBLEMS THAT ARISE AS A RESULT OF ONGOING CONSTRUCTION, AND FOR EMPLOYING ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES AT THE REQUEST OF THE MERCER COUNTY SOIL CONSERVATION DISTRICT.
21. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
22. ALL DETENTION / RETENTION BASINS MUST BE FULLY CONSTRUCTED (INCLUSIVE OF ALL STRUCTURAL COMPONENTS AND LINERS) AND PERMANENTLY STABILIZED PRIOR TO PAVING OR PRIOR TO THE ADDITION OF ANY IMPERVIOUS SURFACES. PERMANENT STABILIZATION INCLUDES, BUT MAY NOT BE LIMITED TO: TOPSOIL, SEED, STRAW MULCH AND BINDERS OR EROSION CONTROL BLANKETS ON ALL SEEDING, ALL AGRONOMIC REQUIREMENTS AS SPECIFIED ON THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN, INSTALLATION OF THE OUTFLOW CONTROL STRUCTURES AND DISCHARGE STORM DRAINAGE PIPING, LOW FLOW CHANNELS, CONDUIT OUTLET PROTECTION, EMERGENCY SPILLWAYS, AND LAP RING PROTECTION.
23. THE RIDING SURFACE OF ALL UTILITY TRENCHES WITHIN PAVED AREAS SHALL BE 3/4" CLEAN STONE OR BASE PAVEMENT UNTIL SUCH TIME AS FINAL PAVEMENT HAS BEEN INSTALLED. TEMPORARY SOIL RIDING SURFACES ARE PROHIBITED.
24. ALL CONSTRUCTION DEWATERING (TRENCHES, EXCAVATIONS, ETC.) MUST BE DONE THROUGH AN INLET OR OUTLET FILTER IN ACCORDANCE WITH THE STANDARD FOR DEWATERING OR AS DEPICTED ON THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN. DISCHARGE LOCATIONS FOR THE DEWATERING OPERATION MUST CONTAIN PERENNIAL VEGETATION OR SIMILAR STABLE SURFACE.
25. ALL SWALES OR CHANNELS THAT WILL RECEIVE RUNOFF FROM PAVED SURFACES MUST BE PERMANENTLY STABILIZED PRIOR TO THE INSTALLATION OF PAVEMENT. IF THE SEASON PROHIBITS THE ESTABLISHMENT OF PERMANENT STABILIZATION, THE SWALES OR CHANNELS MAY BE TEMPORARILY STABILIZED IN ACCORDANCE WITH THE STANDARDS.
26. N.J.S.A. 4:24-39 ET SEQ. REQUIRES THAT NO CERTIFICATE OF OCCUPANCY OR TEMPORARY CERTIFICATE OF OCCUPANCY BE ISSUED BY THE MUNICIPALITY BEFORE THE PROVISIONS OF THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN HAVE BEEN SATISFIED. THEREFORE, ALL SITE WORK FOR SITE PLANS AND ALL WORK AROUND INDIVIDUAL LOTS IN SUBDIVISIONS MUST BE COMPLETED BEFORE THE DISTRICT ISSUES A REPORT OF COMPLIANCE OR CONDITIONAL REPORT OF COMPLIANCE, WHICH MUST BE FORWARDED TO THE MUNICIPALITY PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY OR TEMPORARY CERTIFICATE OF OCCUPANCY, RESPECTIVELY.

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BID DOCUMENTS

Project No.: 2025-23304
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SOIL EROSION AND SEDIMENT CONTROL PLAN

C105

J:\ENGINEERING PROJECTS\2023\23-026 - TCNJ PAVILION_CAD\DESIGN\23-026 RAKEMAP (REV).DWG-(11/11/26)

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MERCER COUNTY SOIL CONSERVATION DISTRICT PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

1. TOPSOIL STRIPPING AND STOCKPILING

A. FIELD EXPLORATION SHOULD BE MADE TO DETERMINE WHETHER QUANTITY AND/OR QUALITY OF SURFACE SOIL JUSTIFIES STRIPPING.

B. A 6-INCH STRIPPING DEPTH IS TYPICAL, BUT MAY VARY DEPENDING ON THE PARTICULAR SOIL STRUCTURE OR PRE-EXISTING USE.

C. STOCKPILES SHOULD BE LOCATED SO AS NOT TO OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE, AND SHALL BE DELINEATED ON THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN AND BE CONSTRUCTED IN ACCORDANCE WITH THE TOPSOIL STOCKPILE DETAIL.

D. STOCKPILES SHOULD BE TEMPORARILY STABILIZED ACCORDING TO THE STANDARDS.

2. SITE PREPARATION

A. INSTALL EROSION CONTROL MEASURES AND FACILITIES SUCH AS SILT FENCE, DIVERSIONS, SEDIMENT BASINS, AND CHANNEL STABILIZATION.

B. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, TACKING, AND MAINTENANCE. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING, 19-1.

3. SEEDBED PREPARATION

A. TOPSOIL REQUIRED

MIN. DEPTH: 5" (UNSETTLED)
PH: 6.0 TO 8.0
ORGANIC MATTER CONTENT: 2.75% MIN.
NITRATE N2: 50 LBS/ACRE (50% WATER INSOLUBLE)
PHOSPHOROUS: 100 LBS/ACRE
POTASSIUM: 50 LBS/ACRE

B. THE CONTRACTOR SHOULD BE AWARE OF THE POSSIBILITY, DEPENDING UPON THE SITE CONDITIONS, THAT ALL TOPSOIL MAY HAVE TO BE PROVIDED FROM AN OFF-SITE SOURCE.

C. TOPSOIL SHOULD BE HANDLED ONLY WHEN DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.

D. APPLY A UNIFORM 5 INCHES (UNSETTLED) OF TOPSOIL ON ALL DISTURBED AREAS. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING A PH OF 5.0 OR MORE AND THE TOP 5 INCHES SHALL CONFORM TO THE TOPSOIL STANDARD AND SHALL BE LIMED ACCORDING TO THE SPECIFICATIONS.

E. IF THE TOPSOIL BECOMES COMPACTED, THE SURFACE MUST BE SCARIFIED 6" TO 12" TO PROVIDE GOOD SEED-TO-SOIL BOND.

F. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS THOSE OFFERED BY RUTGERS UNIVERSITY COOPERATIVE EXTENSION. IF SOIL TESTING IS NOT FEASIBLE, FERTILIZER (10-20-10) WITH 50% WATER INSOLUBLE NITROGEN SHOULD BE APPLIED AT THE TYPICAL RATE OF 500 LBS/ACRE OR 11 LBS/1,000 SQUARE FEET.

G. APPLY LIMESTONE EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDES (PULVERIZED DOLOMITIC LIMESTONE IS PREFERRED FOR MOST SOILS SOUTH OF THE NEW BRUNSWICK - TRENTON FALL LINE) AS FOLLOWS:

SOIL TEXTURE	TONS/ACRE	LBS/1,000 SQ. FT.
CLAY, CLAY LOAM, HIGH ORGANIC	3	135
SANDY LOAM, LOAM, SILT LOAM	2	90
LOAMY SAND, SAND	1	45

H. WORK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF 4 INCHES. THE FINAL HARROWING OR DISC OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A UNIFORM, FINE SEEDBED IS PREPARED.

I. REMOVE FROM THE SURFACE ALL STONES 2 INCHES OR LARGER IN ANY DIMENSION, AND OTHER OBJECTIONABLE STONES OR DEBRIS SUCH AS WIRE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS, OR OTHER UNSUITABLE MATERIAL.

4. SEEDING

A. SELECT A SEED MIXTURE APPROVED BY THE MERCER COUNTY SCD.

B. APPLY SEED UNIFORMLY BY HAND, CYCLONES, DROP SEEDER, DRILL CULTIPACKER, OR HYDROSEEDER*. THE LATTER MAY BE JUSTIFIABLE FOR LARGE, STEEP AREAS WHERE CONVENTIONAL APPLICATIONS ARE NOT FEASIBLE. HYDROSEEDING SHALL BE A TWO-STEP PROCESS: MULCH SHALL NOT BE MIXED WITH THE SEED; THE SEED MUST BE APPLIED FIRST TO ASSURE PROPER SEED TO SOIL CONTACT. THE HYDROMULCH IS THEN SPRAYED OVER THE SEEDING. FOR OPTIMUM RESULTS, THE SEED SHOULD BE INCORPORATED INTO THE SOIL TO A DEPTH OF ¼ TO ½ INCH DEPENDING UPON SPECIES.

*THE USE OF HYDRO-MULCH, AS OPPOSED TO STRAW, IS LIMITED TO OPTIMUM SEEDING DATES AS LISTED IN THE STANDARDS.

C. AFTER SEEDING, THE SOIL SHOULD BE PACKED WITH A CORRUGATED ROLLER. WHEN PERFORMED ON THE CONTOUR, ROLLING WILL MINIMIZE SHEET EROSION AND MAXIMIZE WATER CONSERVATION.

5. MULCHING

A. UNROTTED STRAW, HAY FREE OF SEEDS, OR SALT HAY IS REQUIRED ON ALL SEEDING AT A RATE OF 1.5 TO 2 TONS/ACRE, (70 TO 90 LBS./1,000 SQUARE FEET), EXCEPT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER, THEN THE RATE OF APPLICATION IS 3 TONS PER ACRE.

B. MULCH ANCHORING SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS DUE TO WIND OR WATER. THIS MAY BE DONE ACCORDING TO THE FOLLOWING METHODS:

1. WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 LBS/ACRE APPLIED BY THE HYDROSEEDER. USE IS LIMITED TO ONLY THE OPTIMUM SEEDING SEASON.
2. SYNTHETIC OR ORGANIC BINDERS
3. PEG AND TWINE, MULCH NETTING, AND MECHANICAL CRIMPING.
4. CRIMPING REQUIRES A HIGHER MULCH RATE (3 TONS/ACRE).

NOTE:
1) ONE BALE OF HAY WEIGHS 40-60 LBS DEPENDING ON HOW IT WAS BALED.
2) 1,500 GALLON TANK OF HYDROMULCH COVERS .5 ACRES.
PLEASE NOTE: THE QUALITY OF PERMANENT VEGETATION RESTS WITH THE CONTRACTOR. THE TIMING OF SEEDING, PREPARING THE SEEDBED, APPLYING NUTRIENTS, MULCH AND OTHER MANAGEMENT ARE ESSENTIAL. THE SEED APPLICATION RATES IN TABLE 4-3 OF THE STANDARDS ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. (UP TO 50% REDUCTION IS APPLICATION RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO REQUESTING A REPORT OF COMPLIANCE FROM THE DISTRICT. THESE RATES APPLY TO ALL METHODS OF SEEDING. ESTABLISHING PERMANENT VEGETATION MEANS 80% EVENLY DISTRIBUTED VEGETATIVE COVER (OF THE SEEDED SPECIES) AND MOWED ONCE.)

6. TEMPORARY SEEDING MIXES

MIX: LATE FALL
100% CEREAL RYE
RATE: 112 LBS/ACRE

MIX: MID-SUMMER
40% PEAR MILLET
40% MILLET (GERMAN OR HUNGARIAN)
20% WEEPING LOVEGRASS
RATE: 100 LBS/ACRE

MIX: EARLY SPRING/LATE SUMMER TO EARLY FALL
100% PERENNIAL RYEGRASS
RATE: 100 LBS/ACRE

7. RECOMMENDED PERMANENT SEEDING MIXES

OPTIMUM SEEDING DATES: MARCH 1 TO MAY 15 AND AUGUST 15 TO OCTOBER 15

LAWNS - RATE 200 LBS/ACRE

MERCER CO. PREFERRED MIX FOR LAWNS AND DETENTION BASINS
70% TURF TYPE TALL FESCUE*#
20% PERENNIAL RYEGRASS
10% KENTUCKY BLUEGRASS

MIX: LAWNS - LOW MAINTENANCE, DROUGHTY & HEAVY TRAFFIC
80% TALL FESCUE TURF TYPE (LOW GROWING VARIETIES)*#
10% PERENNIAL RYEGRASS (LOW GROWING VARIETIES)

MIX: SHADE
65% HARD, CHEWINGS, OR CREEPING RED FESCUE*
20% KENTUCKY BLUEGRASS
15% PERENNIAL RYEGRASS

MIX: LAWNS - QUALITY SUN AND SHADE
20% PERENNIAL RYEGRASS
30% CHEWINGS FESCUE
35% CREEPING RED FESCUE
15% KENTUCKY BLUEGRASS

MIX: MOIST DETENTION BASIN BOTTOMS
40% FLAT PEA (WITH PROPER INOCULANT)
25% PERENNIAL RYEGRASS
25% TALL FESCUE OR STRONG CREEPING RED FESCUE
10% REDTOP

(*INCLUDE AT LEAST THREE VARIETIES IN MIX) + USE THE ABOVE MIX FOR INFREQUENT MOWING. FOR A REGULAR (EXCLUDE K-31) MOWING REGIME, SUBSTITUTE ROUGH BLUEGRASS AND/OR TALL FESCUE FOR THE FLAT PEA.

CONSERVATION PLANTINGS

MIX: RECLAMATION, EROSION CONTROL & ACID SOILS - RATE: 150 LBS/ACRE
40% SWITCHGRASS
25% SERICEA LESPEDEZA OR FLAT PEA
15% TALL FESCUE OR CREEPING RED FESCUE
15% DEERTONGUE
5% BIRDSFOOT TREFOIL

MIX: WILDLIFE HABITAT ENHANCEMENT
RATE: 100 LBS/ACRE
40% SWITCHGRASS OR COASTAL PANICGRASS
30% CANADA BLUEGRASS OR SMOOTH BROMEGRASS
10% ORCHARDGRASS
10% WHITE CLOVER
5% JAPANESE MILLET
5% BIRDSFOOT TREFOIL

MIX: WILDFLOWER MEADOW
RATE: 50 LBS/ACRE
72% HARD OR SHEEPS FESCUE
22% NORTHEAST AND-ATLANTIC WILDFLOWER MIXTURE
6% BIRDSFOOT TREFOIL

MIX: WATERWAYS & WET BASINS*
RATE: 100 LBS/ACRE
40% SWITCHGRASS
30% CANADA BLUEGRASS OR SMOOTH BROMEGRASS
15% ROUGH BLUEGRASS (SHADE) OR TALL FESCUE (OPEN)
10% ALSIKE CLOVER OR LADINO WHITE CLOVER
10% BIRDSFOOT TREFOIL OR CREEPING FOXTAIL
4% JAPANESE MILLET
1% RED TOP
(*SHOULD NOT BE MOWED LESS THAN 6 INCHES)

AREAS TO BE SCARIFIED/TILLED:

PURSUANT TO NJ SOIL EROSION AND SEDIMENT CONTROL STANDARD FOR LANDING GRADING (CHAPTER 19), THE FOLLOWING ON-SITE AREAS SHALL BE SCARIFIED/TILLED TO A MINIMUM DEPTH OF 6":

- DISTURBED AREAS OF SITE WITH CONTIGUOUS AREA > 500 SF.
- AREAS THAT WILL NOT BE IMPERVIOUS
- PERVIOUS AREA 20' OUTSIDE BUILDING WITH BASEMENT OR 12' OUTSIDE BUILDING ON SLAB.

NOTE: SCARIFICATION/TILLAGE IS NOT REQUIRED IN AREAS WITH SHALLOW BEDROCK CONDITIONS OR WHERE THERE IS A DANGER TO UNDERGROUND UTILITIES.

FOR ADDITIONAL REQUIREMENTS REGARDING SOIL COMPACTION AND TESTING, SEE SOIL COMPACTION NOTES AND SOIL DE-COMPACTION AND TESTING REQUIREMENTS.

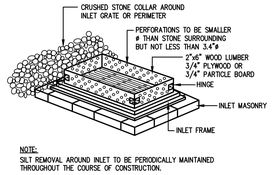
SOIL COMPACTION NOTES:

1. TO ENSURE SUBGRADE SOILS ARE FREE OF EXCESSIVE COMPACTION, DEEP SCARIFICATION/TILLAGE (MINIMUM DEPTH 6": MAXIMUM 12") SHALL BE PERFORMED BY THE CONTRACTOR PRIOR TO THE APPLICATION OF TOPSOIL AND PERMANENT SEEDING. THE AREAS OF THE SITE SUBJECT TO THIS SCARIFICATION ARE NOTED ON THE SOIL EROSION AND SEDIMENT CONTROL PLAN. NOTE THAT SCARIFICATION IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.)
2. IF THE CONTRACTOR, WITH CONSENT OF THE OWNER, ELECTS TO FOREGO SCARIFICATION OF THE SITE, THEN THE CONTRACTOR SHALL, AT HIS EXPENSE, PERFORM SOIL COMPACTION TESTING IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY. SEE CHAPTER 19 STANDARD OF LAND GRADING, IN THE ABOVE-REFERENCED MANUAL, FOR ACCEPTABLE METHODS OF TESTING AND THEIR SPECIFIC REQUIREMENTS. TWO TESTS PER ACRE MUST BE PERFORMED ON-SITE, WITH A MINIMUM OF TWO TESTS MUST BE PERFORMED FOR EVERY PROJECT.
3. IF TESTING INDICATES EXCESSIVE COMPACTION, THEN THE CONTRACTOR/OWNER SHALL EITHER PERFORM COMPACTION MITIGATION, IN ACCORDANCE WITH NJ SESC STANDARDS, OVER THE ENTIRE DISTURBED AREA (EXCLUDING EXEMPT AREAS), OR TO PERFORM ADDITIONAL TESTING TO ESTABLISH THE LIMITS OF THE EXCESSIVELY COMPACTED AREAS WHICH WOULD REQUIRE THE MITIGATION.
4. THE CONTRACTOR SHALL SUBMIT A SOIL COMPACTION MITIGATION VERIFICATION FORM TO THE DISTRICT AND COMPLY WITH ALL DISTRICT REQUIREMENTS REGARDING COMPACTION MITIGATION AND TESTING.
5. FOR COMPACTION IN STORMWATER MANAGEMENT FACILITIES, SEE BASIN COMPACTION NOTES.

CONSTRUCTION SEQUENCE

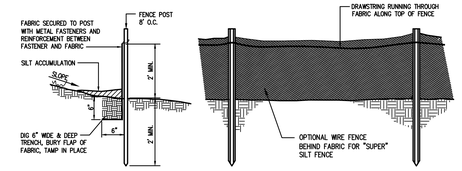
SEQUENCE #	DESCRIPTION OF CONSTRUCTION ACTIVITY	TIME (WEEKS)
1	INSTALL PERIMITER SEDIMENT BARRIER, SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE AND OTHER SOIL EROSION MEASURES INCLUDING TREE PROTECTION FENCING WHERE SHOWN ON PLANS AND MAINTAIN THROUGHOUT THE COURSE OF CONSTRUCTION.	1
2	CLEAR AND GRUB VEGETATED AREAS. STRIP TOPSOIL IN CONSTRUCTION AREAS AND STOCKPILE WHERE INDICATED ON THE PLANS. INSTALL SILT FENCE AT DOWNSLOPE OF STOCKPILE. COMMENCE PRELIMINARY GRADING OPERATIONS.	2
3	SELECTIVELY DEMOLISH CONCRETE SIDEWALK AND SITE ITEMS AS NOTED ON PLANS.	1
4	BEGIN BUILDING CONSTRUCTION.	25
5	CONSTRUCT STORMWATER CONVEYANCE SYSTEM.	1
6	PERFORM DEEP SCARIFICATION/TILLAGE (6" MIN. DEPTH) AS DESCRIBED IN SOIL COMPACTION NOTES.	1
7	CONSTRUCT SIDEWALKS, INSTALL SIGNS, COMMENCE FINAL GRADING, AND APPLY FIVE (5) INDEX OF TOPSOIL THROUGHOUT THE SITE.	2
8	INSTALL LANDSCAPING AND PERMANENTLY STABILIZE AREAS WITH VEGETATION.	1
9	WHEN SITE IS COMPLETELY AND PERMANENTLY STABILIZED, REMOVE SOIL EROSION CONTROL MEASURES.	1

NOTE:
1. THE ABOVE SEQUENCES WILL OVERLAP. EACH SEQUENCE MAY COMMENCE PRIOR TO THE COMPLETION OF THE PREVIOUS SEQUENCE. ACTUAL CONSTRUCTION TIME MAY VARY.
2. CONTRACTOR TO PROVIDE MONTHLY INSPECTION AND REPAIR OF ALL SOIL EROSION MEASURES AND SHALL PROVIDE ROAD SWEEPING AS REQUIRED OR DIRECTED BY OWNER.

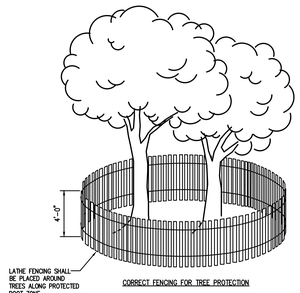


NOTE:
SILT REMOVAL AROUND INLET TO BE PERIODICALLY MAINTAINED THROUGHOUT THE COURSE OF CONSTRUCTION.

INLET SEDIMENT CONTROL STRUCTURE



SILT FENCE SEDIMENT BARRIER

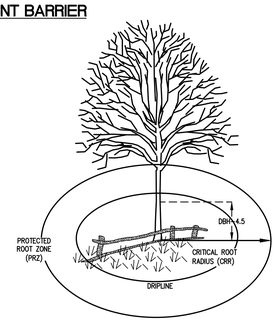


ESTIMATE A TREE'S PROTECTED ROOT ZONE (PRZ) BY CALCULATING THE CRITICAL ROOT RADIUS (CRR).

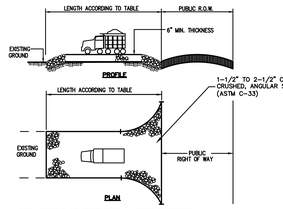
1. MEASURE THE DBH (DIAMETER OF TREE AT BREAST HEIGHT, 4.5 FEET ABOVE GROUND ON THE UPHILL SIDE OF TREE) IN INCHES.
2. MULTIPLY MEASURED DBH BY 1.5 OR 1.0. EXPRESS THE RESULT IN FEET.

DBH X 1.5: CRITICAL ROOT RADIUS FOR OLDER, UNHEALTHY, OR SENSITIVE SPECIES.

DBH X 1.0: CRITICAL ROOT RADIUS FOR YOUNGER, HEALTHY OR TOLERANT SPECIES.



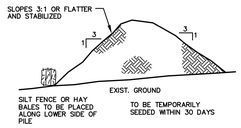
ROOT PROTECTION FENCING



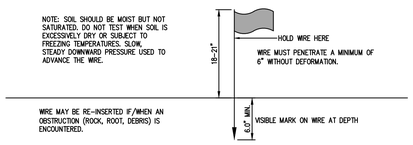
*NOTE: INDIVIDUAL LOT ACCESS POINTS MAY REQUIRE STABILIZATION THICKNESS SHOWN IS FOR STONE CONSTRUCTION ENTRANCE ONLY (TYP.)

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT.	100 FT.
2 TO 5%	100 FT.	200 FT.
>5%	ENTIRE SURFACE STABILIZED WITH HMA BASE COURSE, MIX I-2, OR AS DIRECTED BY LOCAL GOVERNMENT	

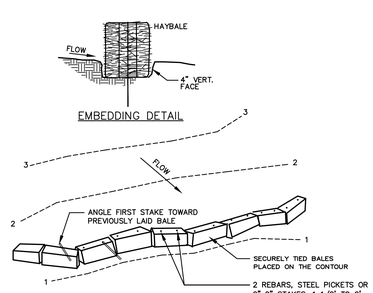
STABILIZED CONSTRUCTION ACCESS



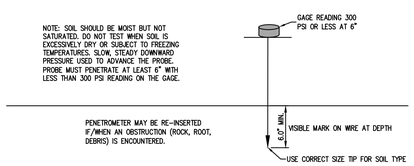
TOPSOIL STOCKPILE



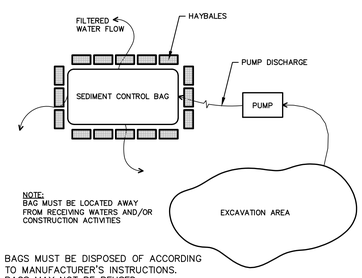
PROBING WIRE TEST-15.5 GA STEEL WIRE (SURVEY FLAG)



HAYBALE SEDIMENT BARRIER



HANDHELD SOIL PENETROMETER TEST



NOTE:
BAG MUST BE LOCATED AWAY FROM RECEIVING WATERS AND/OR CONSTRUCTION ACTIVITIES

BAGS MUST BE DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS. BAGS MAY NOT BE REUSED.

SEDIMENT CONTROL BAG FOR DEWATERING

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THE MUSIC ANNEX

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The Reynolds Group Inc.
State of New Jersey
Certificate of Authorization
Number 24GA27969200
21MH00004300
F. Mitchel Ardman, P.E., P.P.
Jeffrey D. Reynolds, P.L.A.

KSS

BID DOCUMENTS

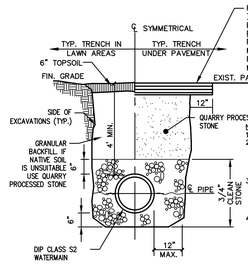
Project No.: 2025-23304
Issued: 11/11/2026

SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS

C106

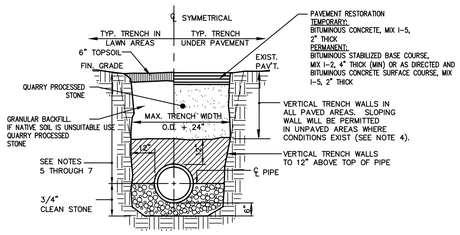
J:\ENGINEERING PROJECTS\2025\25-026 - TCNJ PAVILION_CAD\DESIGN\25-026 BASEMAP (RG).DWG (11/11/26)

THE LINE SHOWN AT LEFT IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE. DO NOT SCALE CONTENTS OF THIS DRAWING.



NOTES:
1. BACKFILL IN 12" LIFTS TO 95% PROCTOR DENSITY.
2. ALL EXCAVATION, TRENCHING, SHEETING, AND BRACING SHALL CONFORM TO THE REQUIREMENTS OF THE "CONSTRUCTION SAFETY CODE OF THE BUREAU OF ENGINEERING AND SAFETY OF THE NEW JERSEY DEPARTMENT OF LABOR AND INDUSTRY".
3. SLOPE OF THE TRENCH SHALL NOT EXCEED O.S.H.A. REQUIREMENTS WHERE SUCH SLOPE WILL CAUSE TOP WIDTH OF TRENCH TO PROTRUDE BEYOND THE ACQUIRED EASEMENT (PERMANENT PLUS TEMPORARY) THE CONTRACTOR SHALL USE SHEETING.
4. EXCAVATIONS IN EXISTING PAVED ROADWAYS SHALL BE COORDINATED WITH THE MUNICIPAL ROAD DEPARTMENT, AND ALL EXCAVATION SHALL BE PAVED WITH TEMPORARY BITUMINOUS PAVEMENT FROM THE DATE OF ORIGINAL EXCAVATION UNTIL PERMANENT PAVEMENT IS INSTALLED.

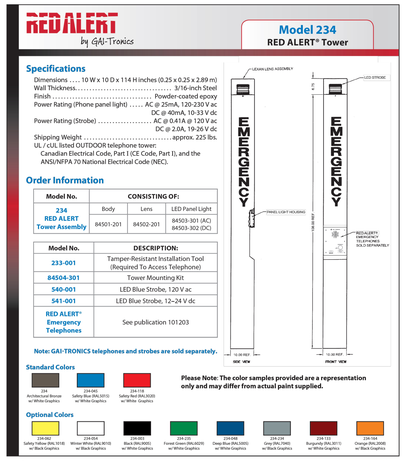
WATERMAIN TRENCH



TRENCH NOTES:
1. IF CONTRACTOR INCREASES TRENCH WIDTH, HE IS TO RECOMPUTE AND SUBMIT FOR APPROVAL BY THE ENGINEER ALL PIPE CLASSES. ANY ADDITIONAL COST NECESSITATED BY THE INCREASE IN TRENCH WIDTH IS TO BE BORNE BY THE CONTRACTOR.
2. IN PAVED AREAS, WIDTH OF PAVEMENT TO BE REMOVED SHALL BE 12" BEYOND EDGE OF TRENCH.
3. ALL EXCAVATION, TRENCHING, SHEETING AND BRACING SHALL CONFORM TO THE REQUIREMENTS OF THE "CONSTRUCTION SAFETY CODE OF THE BUREAU OF ENGINEERING AND SAFETY OF THE NEW JERSEY DEPARTMENT OF LABOR AND INDUSTRY".
4. SLOPE OF THE TRENCH SHALL NOT EXCEED O.S.H.A. REQUIREMENTS. WHERE SUCH SLOPE WILL CAUSE TOP WIDTH OF TRENCH TO PROTRUDE BEYOND THE ACQUIRED EASEMENT (PERMANENT AND TEMPORARY), THE CONTRACTOR SHALL USE SHEETING.
5. ALL TRENCHES OR DITCHES WHICH CROSS AN EXISTING STREET AND WHICH ARE DUG FOR SEWERS, WATER MAINS, GAS MAINS OR OTHER UTILITIES, INCLUDING THE HOUSE CONNECTIONS FOR THOSE UTILITIES, SHALL BE FILLED WITH QUARRY PROCESS STONE. THE STONE SHALL BE PLACED IN LAYERS NOT EXCEEDING TWELVE (12) INCHES IN DEPTH AND SHALL BE SPRINKLED WITH WATER AND MECHANICALLY COMPACTED. ALL SOFT SPOTS AND DEPRESSIONS IN A SURFACE WHICH HAS BEEN GRADED WILL BE REMOVED AND FILLED WITH STONE OF A SIZE TO BE DETERMINED BY THE TOWNSHIP ENGINEER. ALL TRENCHES WHICH ARE DUG IN A FUTURE STREET OR EXISTING R.O.W., ON WHICH NO SUBBASE OR PAVEMENT HAS BEEN CONSTRUCTED SHALL BE BACK FILLED AS INDICATED ABOVE OR MAY BE BACK FILLED WITH SUITABLE ON-SITE EXCAVATED MATERIALS OR IMPORTED FILL.
6. PRIOR TO USING ANY ON-SITE AND/OR IMPORTED SOIL MATERIALS THE CONTRACTOR OR ANY INDIVIDUAL OR FIRM SHALL EMPLOY A RECOGNIZED SOILS LABORATORY TO SECURE SOIL SAMPLES; PERFORM THE NECESSARY LABORATORY ANALYSIS AND ESTABLISH THE COMPACTION AND OTHER CRITERIA NECESSARY FOR THE PROPER PLACEMENT OF THE BACKFILL. A REPORT OF THE LABORATORY FINDINGS, INCLUDING THE COMPACTION SPECIFICATIONS, SHALL BE SUBMITTED TO THE TOWNSHIP ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING ANY BACK FILL OPERATIONS USING ON-SITE SOIL AND/OR IMPORTED SOIL MATERIALS.
7. INSTALL CLASS 52 D.I.P. WHEN DEPTH OF INSTALLATION EXCEEDS 20 FEET.
8. BACKFILL IN 12" LIFTS TO 95% PROCTOR DENSITY

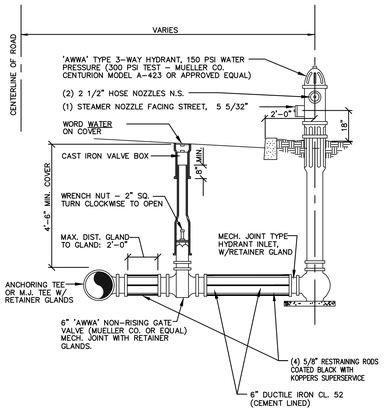
SANITARY TRENCH DETAIL

NOTE:
APPROX. 1/4" GAP BETWEEN MOUNTED POLE AND CONC. BASE.



EMERGENCY BLUE LIGHT PHONE BOLLARD BROADCAST ASSEMBLY

(TO BE SUPPLIED BY TCNJ AND INSTALLED BY GC)



TYPICAL HYDRANT INSTALLATION

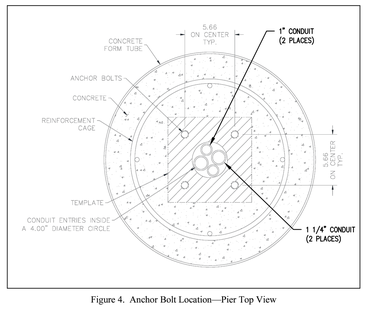


Figure 4. Anchor Bolt Location—Pier Top View

ANCHOR BOLT LOCATION - PIER TOP VIEW (EMERGENCY BLUE LIGHT PHONE BOLLARD)

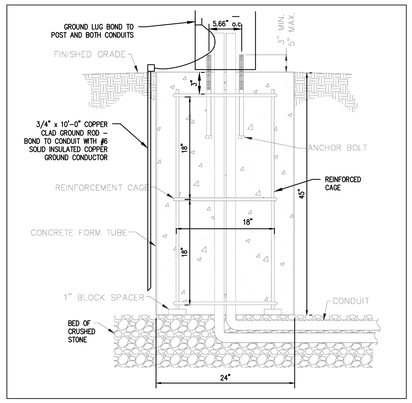
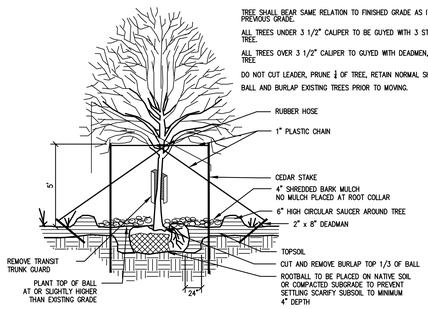


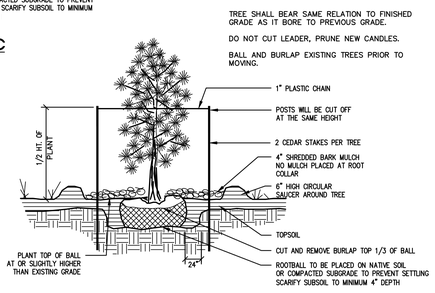
Figure 5. Concrete Pier Cross Section

EMERGENCY BLUE LIGHT PHONE BOLLARD FOOTING

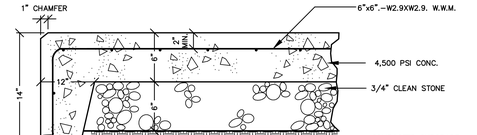
EMERGENCY BLUE LIGHT PHONE BOLLARD ITSELF WILL BE OWNER-FURNISHED, CONTRACTOR INSTALLED. THE FOOTING WILL BE CONSTRUCTED BY THE CONTRACTOR. CONTRACTOR WILL BE RESPONSIBLE FOR WIRING IN THE 120VAC COMPONENTS- STROBE AT THE TOP, DOWN-WASH LIGHT ON FRONT. COORDINATION WILL BE REQUIRED FOR FINAL ORIENTATION.



TREE PLANTING - NIC

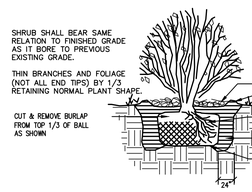


EVERGREEN TREE PLANTING - NIC



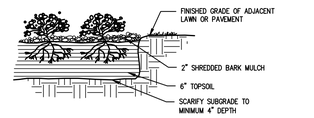
CONCRETE PAD NOTES:
1. CONCRETE TO BE NJDOT CLASS 'B', 4,500 PSI MINIMUM.
2. CONCRETE PAD TO CURE FOR A MINIMUM OF 28 DAYS PRIOR TO EQUIPMENT INSTALLATION, OR AS APPROVED BY THE ENGINEER.
3. ALL SOILS WHICH ARE ANTICIPATED TO COME INTO CONTACT WITH CONCRETE WHILE CURING ARE TO BE COMPACTED AND THOROUGHLY MOISTENED TO ABOUT 6 INCHES IN DEPTH TO AVOID ABSORPTION OF MOISTURE PRESENT IN WET CONCRETE.
4. CONCRETE IS TO BE COMPACTED BY MEANS OF AN IMMERSIBLE HIGH-FREQUENCY VIBRATOR.
5. CONTRACTOR IS TO SUPPLY AND MAINTAIN GOOD CURING CONDITIONS BY MEANS OF CURING BLANKETS, CURING COMPOUNDS OR ANOTHER APPROVED METHOD.
6. CONTRACTOR TO COORDINATE ANY CONDUIT OR OTHER APPURTENANCES NECESSARY FOR EQUIPMENT INSTALLATION PRIOR TO CONSTRUCTION OF PAD.
7. CONTRACTOR TO VERIFY SIZE OF EQUIPMENT PRIOR TO FORMING PAD.

REINFORCED CONCRETE PAD (TRANSFORMER)



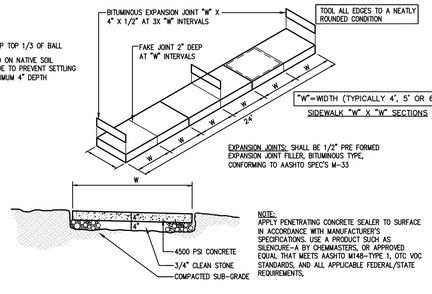
SHRUB PLANTING - NIC

N.T.S.



GROUNDCOVER PLANTING - NIC

N.T.S.



CONCRETE SIDEWALK DETAIL

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State of New Jersey
Certificate of Authorization
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21MH00004300

F. Mitchel Ardman, P.E., P.P.
Jeffrey D. Reynolds, P.L.A.

KSS

BID DOCUMENTS

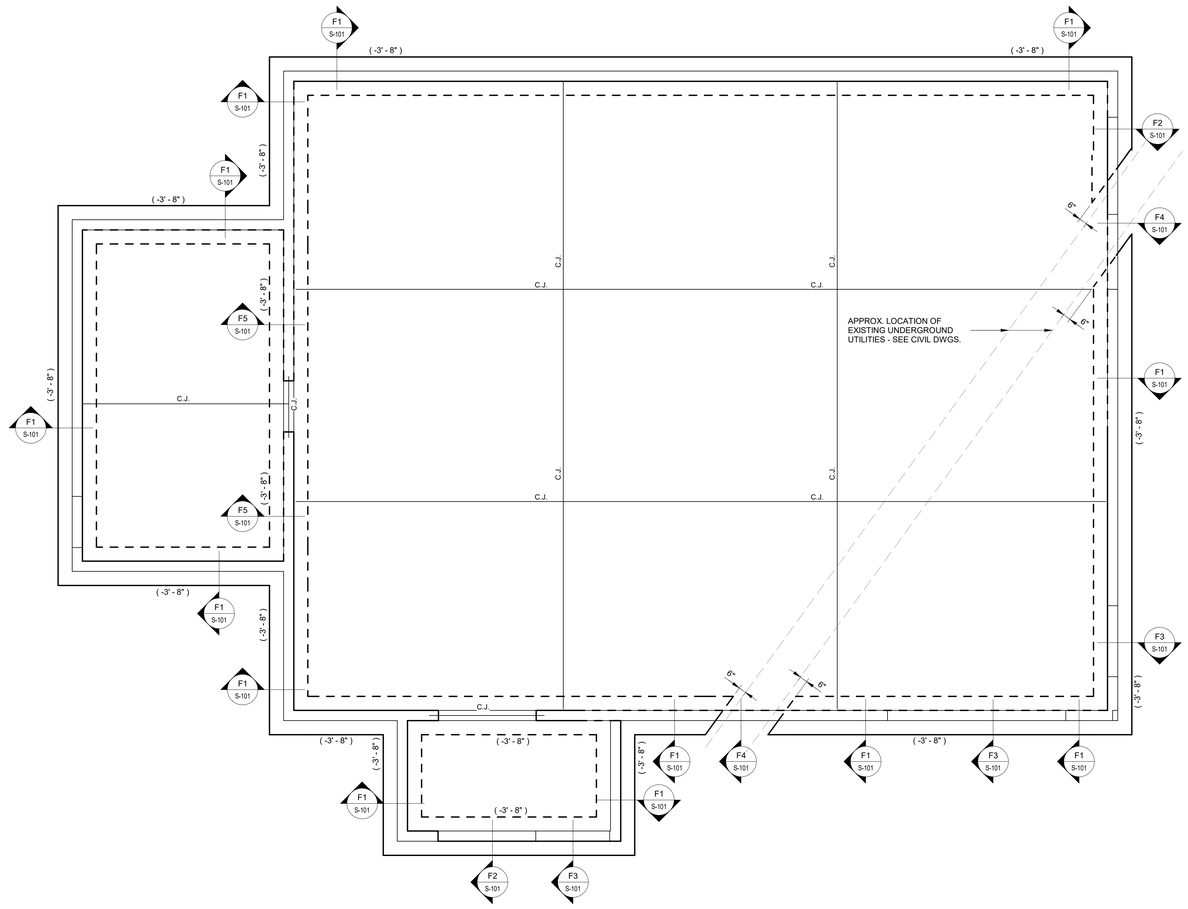
Project No.: 2025-23304
Issued: 11/11/2026

CONSTRUCTION DETAILS

C107

C:\ENGINEERING PROJECTS\2025\25-026 - TCNJ PAVILION_CAD\DESIGN\25-026 BASEMAP (REV).DWG - 11/11/26

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FOUNDATION PLAN

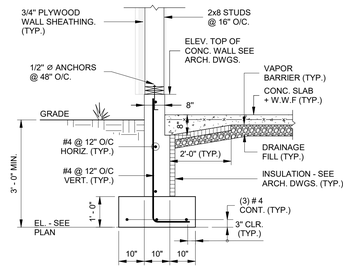
1/4" = 1'-0"

NOTES:
ELEVATION TOP OF FINISHED FLOOR SLAB: 126.00', REFERRED TO AS DATUM ELEVATION 0'-0", UNLESS NOTED OTHERWISE.
FLOOR SLAB: 4" CONC. SLAB + 6x6x-W1.4xW1.4 W.W.F. ON A VAPOR BARRIER OVER 6" MIN. DRAINAGE FILL UNLESS OTHERWISE NOTED.
ELEVATION BOTTOM OF FOOTINGS NOTED THUS ( ) ON PLAN BELOW FINISHED FLOOR DATUM ELEVATION 0'-0".
C.J. - INDICATES SLAB CONSTRUCTION OR CONTROL JOINT.
SLAB DEPRESSIONS NOTED ON PLAN - SEE ARCH. DWGS. FOR LOCATION & DIMENSIONS.
ANY PENETRATIONS IN SLAB FROM ALL TRADES TO BE FILLED WITH POLYURETHANE CAULK.

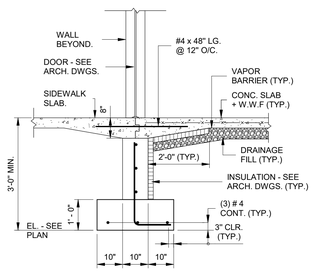
NOTE:
1. STEP ALL FOOTINGS AT ALL PIPES & CONDUITS, SEE TYPICAL DETAIL.
2. G.C. TO CONFIRM ALL LOCATIONS AND INVERTS OF PIPES WITH MECHANICAL & ELECTRICAL CONTRACTORS.
3. THE FOUNDATION DRAWINGS SHOW ONLY GENERAL LOCATIONS AND MAY NOT INCLUDE ALL PENETRATIONS. G.C. TO SEE MECHANICAL DRAWINGS FOR FULL EXTENT OF PIPE PENETRATIONS.

NOTE:
GENERAL CONTRACTOR TO LAYOUT DIMENSIONS OF COLUMN CENTERLINES AT THE BEGINNING OF THE PROJECT AND IS TO NOTIFY THE ARCHITECT AND STEEL CONTRACTOR OF ANY DEVIATIONS FROM THE CONTRACT DRAWINGS.

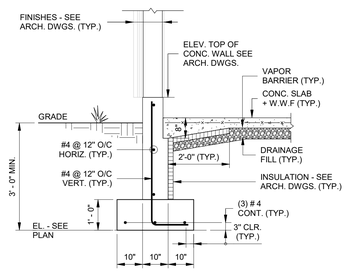
NOTE:
ELECTRICAL CONTRACTOR TO PROVIDE GROUNDING ELECTRODE SYSTEM AS REQUIRED BY NEC SECTION 250-52.a. COORDINATE LOCATION WITH GENERAL CONTRACTOR.



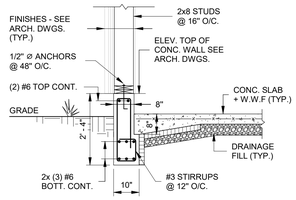
F1 FOUNDATION SECTION
1/2" = 1'-0"



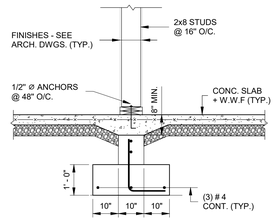
F2 FOUNDATION SECTION
1/2" = 1'-0"



F3 FOUNDATION SECTION
1/2" = 1'-0"



F4 FOUNDATION SECTION
1/2" = 1'-0"



F5 FOUNDATION SECTION
1/2" = 1'-0"

THE MUSIC ANNEX

NEW PERFORMING ARTS REHEARSAL HALL

THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ 08618

No.	Date	Description

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Philadelphia, PA 19107
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BID DOCUMENTS

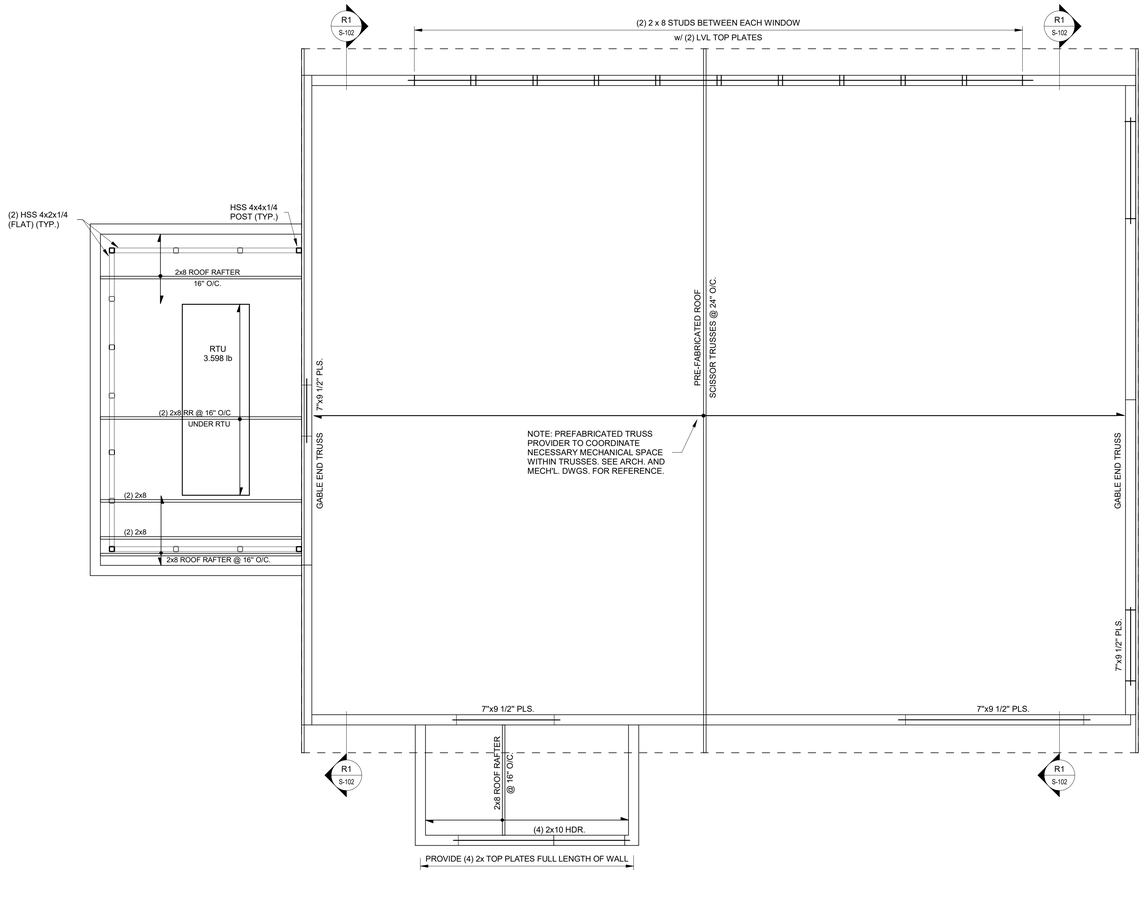
Project #: 2025-23304
Issued: 11/11/26
FOUNDATION PLAN

Harrison – Hamnett, P.C.
Consulting Structural Engineers
40 Knowles Street Pennington, New Jersey 08534
Ph: 609-818-1808 www.hhpcese.com

FORREST W. HARRISON N.J.P.E. #24GE04963200 DATE

S-101

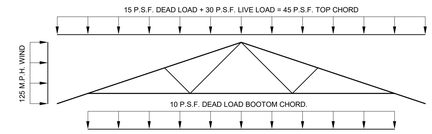
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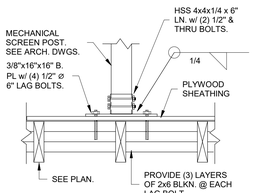
ROOF FRAMING PLAN

1/4" = 1'-0"

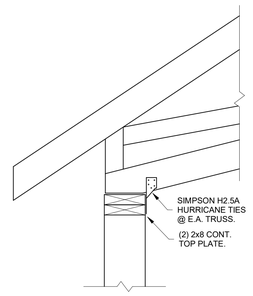
NOTES:
ELEVATION TOP OF WALL TOP PLATE ABOVE DATUM - SEE ARCH, DWGS. (TYP.)
ROOF SHEATHING: 5/8" APA RATED PLYWOOD.
ALL WOOD FRAMED WALLS TO BE 2x8 STUDS @ 16" O/C U.N.O.
COORDINATE SIZE & LOCATION OF ALL ROOF OPNGS. W/ ARCH. & MECH. DWGS.
SPACE ALL MEMBERS EQUALLY UNLESS OTHERWISE NOTED ON PLAN.
ALL CONVENTIONAL JOIST, RAFTERS AND HEADERS TO BE HEM FIR #2 GRADE OR BETTER.
ALL STUDS ARE TO BE EQUAL TO HEM FIR GRADE OR BETTER.
ALL BEARING WALLS TO HAVE A DOUBLE TOP PLATE AND DOUBLE BOTT. PLATE.
ALL ROOF RAFTERS ARE TO BE ANCHORED TO THE WALLS WITH SIMPSON STRONG'TIE H2.5 HURRICANE TIES. ALL PREFAB. TRUSSES TO HAVE (2) H2.5 HURRICANE TIES ((1) EACH SIDE OF TRUSS).
PSL - INDICATES A PARALLAM 2.OE PSL MANUFACTURED BY ILEVEL, A WEYERHAEUSER BUSINESS.
LVL - INDICATES A MICROLLAM 2.OE LVL MANUFACTURED BY ILEVEL, A WEYERHAEUSER BUSINESS.
ALL EXTERIOR WALL SHEATHING TO BE FASTENED WITH 8d COMMON NAILS AT 4" O/C PERIMETER, 12" O/C FIELD.
PROVIDE SIMPSON STRONG-TIE JOIST HANGERS, OR APPROVED EQUAL AT ALL JOISTS AND MEMBERS TOBE HUNG.
PROVIDE (1) JACK STUD & (1) KING STUD FOR OPENINGS LESS THEN 4'-0" WIDE AND (2) JACK STUDS & (2) KING STUDS FOR OPENINGS 4'-0" OR WIDER U.N.O.
TRUSS MANUFACTURER TO ACCOMMODATE FOR ALL APPLICABLE SNOW DRIFT LOAD CASES.
TRUSS MANUFACTURER TO REF. PLAN FOR ADDITIONAL DEAD LOADS REQUIREMENTS NOT SPECIFIED ON TRUSS LOADING DIAGRAM.



PREFAB. TRUSS LOADING DIAGRAM.



ROOF SCREEN DETAIL



R1 ROOF SECTION
1" = 1'-0"

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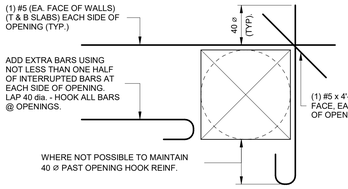
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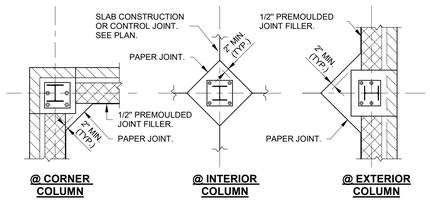
S-102

FORREST W. HARRISON N.J.P.E. #24GE04963200 DATE

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TYPICAL REINFORCING @ OPENINGS IN CONCRETE WALLS & SLABS.



TYPICAL ISOLATION JOINT DETAILS

INSPECTION AND TESTS OF CONCRETE CONSTRUCTION (REF IBC 2021 TABLE 1705.3)	
VERIFICATION AND INSPECTION TASK	INSPECTION FREQUENCY
1. INSPECTION OF REINFORCING STEEL AND PLACEMENT.	PERIODIC
2. REINFORCING BAR WELDING:	
a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706	PERIODIC
b. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"	PERIODIC
c. INSPECT ALL OTHER WELDS	
3. INSPECT ANCHORS CAST IN CONCRETE	PERIODIC
4. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS	CONTINUOUS
a. ADHESIVE ANCHORS INSTALLED HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSIONS LOADS.	CONTINUOUS
b. MECHANICAL AND ADHESIVE ANCHORS NOT DEFINED IN 4a ABOVE.	PERIODIC
5. VERIFY USE OF REQUIRED MIX DESIGN.	PERIODIC
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURES OF THE CONCRETE	CONTINUOUS
7. INSPECT CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUE.	CONTINUOUS
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	PERIODIC
9. INSPECT ERECTION OF PRE-CAST CONCRETE MEMBERS	PERIODIC
10. VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO THE REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	PERIODIC
11. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	PERIODIC

GENERAL NOTES

FOUNDATION

1. ALL FOOTINGS SHALL BEAR ON SOIL HAVING A MINIMUM SAFE BEARING CAPACITY OF 1.5 TONS PER SQUARE FOOT. CONFIRM IN FIELD PRIOR TO PLACING FOOTINGS.
2. ELEVATIONS GIVEN CORRESPOND TO THE COMPUTED BOTTOM OF FOOTINGS AND ARE MINIMUM DEPTHS WHICH ARE NOT TO BE CONSTRUED AS LIMITING IN ANY WAY THE DEPTH REQUIRED TO REACH GOOD BEARING.
3.NO FOOTINGS SHALL BE PLACED IN WATER OR ON FROZEN GROUND.
4. NO FILL OR BACKFILL SHALL BE PLACED OVER OR AGAINST WORK AT SUCH TIME OR IN SUCH A MANNER WHICH WOULD ENDANGER THE STABILITY OR OTHERWISE DAMAGE SUCH WORK.
5.EE SOILS REPORT FOR REQUIREMENTS CONCERNING PREPARATION OF SOIL FOR FOUNDATIONS.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF THE ACI BUILDING CODE.
2. ALL CONCRETE, EXCEPT SLABS ON GRADE, SHALL ATTAIN 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. ALL CONCRETE FOR SLABS ON GRADE SHALL ATTAIN 3500 PSI COMPRESSIVE STRENGTH AT 28 DAYS.

REINFORCING

1. ALL REINFORCING BAR DETAILS SHALL CONFORM TO THE LATEST ACI CODE AND DETAILING MANUAL.
2. ALL BARS SHALL BE ASTM A-615, GRADE 60.
3. WELDED WIRE FABRIC SHALL BE ASTM A-185.
4. CLEARANCE OF MAIN REINFORCING FROM ADJACENT SURFACES UNLESS SHOWN OTHERWISE SHALL BE:
   A. UNFORMED SURFACES IN CONTACT WITH GROUND OR EXPOSED TO THE WEATHER: 3"
   B. BOTTOM SURFACES OF SLABS ON GRADE: 3"
   C. FORMED SURFACES IN CONTACT WITH GROUND OR EXPOSED TO WEATHER:
      1. #5 BARS OR SMALLER: 1-1/2"
      2. BARS LARGER THAN #5: 2"
   D. EXTERIOR WALL SURFACES: 2"
   E. IN ALL CASES NOT LESS THAN THE DIAMETER OF THE BAR.
5. ALL REINFORCEMENT SHALL BE INSPECTED AND APPROVED BEFORE CONCRETE IS POURED.
6. TOLERANCES FOR PLACING REINFORCING SHALL BE:
   A. +OR- 1/4 INCH FOR MEMBERS WITH AN EFFECTIVE DEPTH OF 24 INCHES OR LESS.
   B. +OR- 1/2 INCH FOR MEMBERS WITH AN EFFECTIVE DEPTH OF MORE THAN 24 INCHES.
7. WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL BE RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. LAPS SHALL BE 40 BAR DIAMETERS. BAR LAPS MAY BE OFFSET TO AVOID CONTROL OR CONSTRUCTION JOINTS.
8. ELECTRICAL CONTRACTOR TO PROVIDE GROUNDING ELECTRODE SYSTEM AS REQUIRED BY NEC SECTION 250-52(A). COORDINATE LOCATION AND SCHEDULE WITH GENERAL CONTRACTOR.

FRAMING LUMBER

1. JOISTS AND RAFTERS SHALL BE DOUGLAS FIR NO. 2 GRADE OR BETTER AS GRADED BY WCLIB OR WWPA.
2. STUDS SHALL BE EQUAL TO HEM FIR CONSTRUCTION GRADE OR BETTER AS GRADED BY WCLIB OR WWPA.
3. ALL CONNECTORS, NAILS, LAG BOLTS, THRU-BOLTS BEING USED IN CONTACT WITH ALKALINE COPPER QUATERNARY (ACQ) TREATED LUMBER ARE TO BE HOT-DIPPED ZINC GALVANIZED, TRIPLE ZINC-COATED (ELECTROPLATED) OR STAINLESS STEEL.

PLYWOOD SHEATHING

1. ALL PLYWOOD SHEATHING SHALL COMPLY WITH APA. PLYWOOD SHALL MEET C-D INTERIOR APA, STRUCTURAL I AND II C-D INTERIOR APA, OR STRUCTURAL I AND II C-D EXTERIOR APA.
2. ROOF SHEATHING: 5/8" THICK 40/20.
3. WALL SHEATHING: 5/8" THICK 32/16.
4. ATTACHMENT TO BE IN ACCORDANCE WITH IBC2021 W/ NJ MODIFICATION REQUIREMENTS.
5. ALL PLYWOOD TO HAVE EXTERIOR GLUE.
6. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

PREFABRICATED WOOD FRAMING

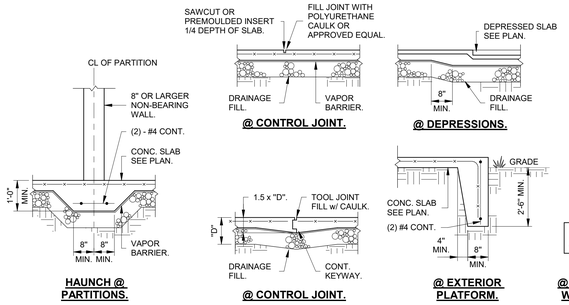
1. ALL 1.9E MICROLLAM (LVL) LUMBER AND 2.0E PARALLAM (PSL) SHALL CONFORM TO THE LATEST SPECIFICATIONS AS PREPARED BY ILEVEL, A WEYERHAEUSER BUSINESS, OR APPROVED ALTERNATE.
2. INSTALLATION TO BE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. ALL PENETRATIONS TO BE LOCATED AS PER MANUFACTURER'S RECOMMENDATIONS.
4. PROVIDE TEMPORARY BRACING AS PER MANUFACTURER'S RECOMMENDATIONS.

PREFABRICATED WOOD TRUSSES

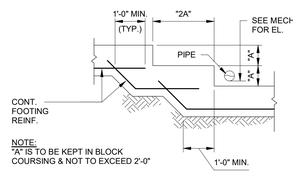
1. PREFABRICATED WOOD OR METAL TRUSSES SHALL BE DESIGNED AND MANUFACTURED BY THE TRUSS MANUFACTURER. SEE REQUIRED DESIGN LOADS ON DRAWINGS.
2. SUBMIT SIGNED AND SEALED SHOP DRAWINGS AND CALCULATIONS FOR REVIEW PRIOR TO FABRICATION OR ERECTION.
3. INSTALLATION TO BE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. BRACE TRUSSES DURING ERECTION AS PER MANUFACTURER'S RECOMMENDATIONS.

MISCELLANEOUS

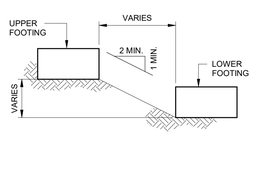
1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, SECTIONS AND ELEVATIONS ON THE JOB.
2. CONSULT THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR VERIFICATION OF LOCATION AND DIMENSIONS OF CHASES, INSERTS, OPENINGS, SLEEVES, WASHES, DRIPS, REVEALS, DEPRESSIONS, EQUIPMENT PADS AND OTHER PRODUCT REQUIREMENTS.
3. ALL WALLS SHALL BE BRACED DURING CONSTRUCTION UNTIL PERMANENTLY RESTRAINED.
4. REPRODUCTIONS OF CONTRACT DOCUMENTS ARE NOT ACCEPTABLE AS SHOP DRAWINGS AND WILL BE REJECTED.



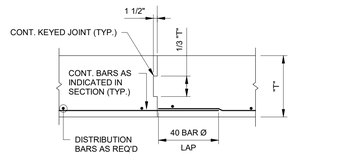
RADON TYP. SLAB ON GRADE DETAILS



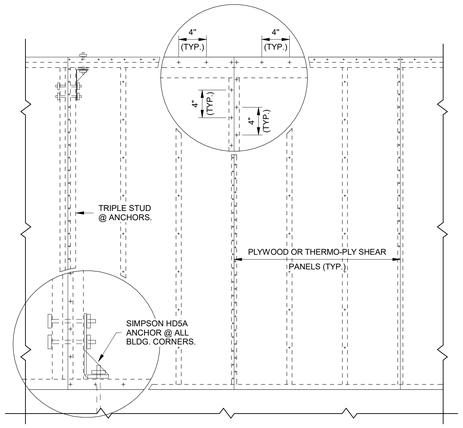
TYPICAL STEPPED FOOTING



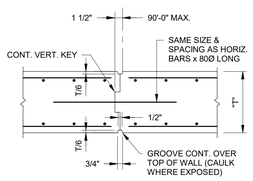
TYPICAL SLOPE BETWEEN FOOTINGS



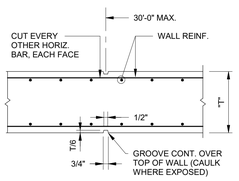
TYPICAL CONCRETE FOOTING CONSTRUCTION JOINT



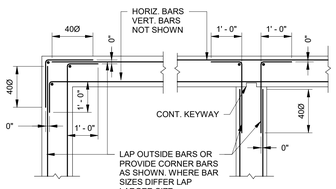
SHEAR PANEL & HOLDOWN DETAIL



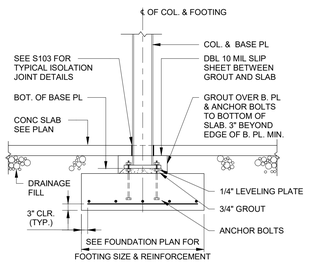
TYPICAL CONCRETE WALL CONSTRUCTION JOINT



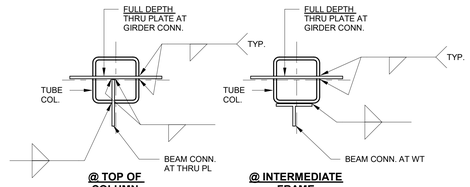
TYPICAL CONCRETE WALL CONTROL JOINT



HORIZ. REINF. IN CONC. WALLS



TYPICAL INTERIOR FOOTING



NOTE:
WHERE A SINGLE ROW OF 3/4"Ø BOLTS DOES NOT MEET THE CONNECTION REQUIREMENTS STATED IN THE GENERAL NOTES, PROVIDE A FULL DEPTH SINGLE ROW OF 1"Ø BOLTS BEFORE USING A DOUBLE ROW OF BOLTS

TYPICAL THRU PLATE DETAIL

(@ TUBE COLUMN)

ROOF LOADING SCHEDULE

DEAD LOAD:

ROOFING	3.0	P.S.F.
SHEATHING	2.0	P.S.F.
INSULATION	2.0	P.S.F.
WOOD FRAMING	2.0	P.S.F.
WOOD PRE-FAB TRUSSES	3.0	P.S.F.
MECH., ELEC.	2.0	P.S.F.
CEILING	1.0	P.S.F.
	15.0	P.S.F.

LIVE LOAD:

DESIGN LOAD	30.0	P.S.F.
GROUND SNOW LOAD (Pg)	30.0	P.S.F.
Ce = 1.0, I = 1.0, Ct = 1.0		
Pf = 0.7 x Ce x I x Ct x Pg =	21.0	P.S.F.

FLOOR LOADING SCHEDULE

DEAD LOAD:

(2) PLY STRUC-CONCRETE FLOOR	12.0	P.S.F.
CFMF	5.0	P.S.F.
MECH., ELEC.	5.0	P.S.F.
MISC.	3.0	P.S.F.
	25.0	P.S.F.

LIVE LOAD:

MECHANICAL MEZZANINE	50.0	P.S.F.
FLOOR DESIGN LOAD	50.0	P.S.F.

LATERAL LOADING SCHEDULE

WIND LOAD: IBC 2021 - ASCE 7-16

BASIC WIND SPEED = 125 M.P.H.
RISK CATEGORY - III, EXPOSURE - B
INTERNAL PRESSURE COEFF. GCpi = 0.18
COMPONENT & CLADDING

SEISMIC LOADING: IBC 2021 - ASCE 7-16

SEISMIC RISK CATEGORY - III
IMPORTANCE FACTOR (Ie) = 1.25
Ss = 0.213 S1 = 0.051
SITE CLASS - D
Sds = 0.227 Sd1 = 0.082
SEISMIC DESIGN CATEGORY - B
LIGHT FRAMED WALL SYSTEM
USING FLAT STRAP BRACING
BASE SHEAR = 7.9 KIPS
SEISMIC RESPONSE COEFFICENT (Cs) = 0.071
RESPONSE MODIFICATION FACTOR (R) = 4
EQ. LAT. FORCE PROC.

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TYPICAL DETAILS & GENERAL NOTES

S-201

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GENERIC HVAC ABBREVIATIONS (REFER TO CONTROL ABBREVIATIONS FOR ADDITIONAL NOMENCLATURE)

°F	DEGREES FAHRENHEIT	ID	INSIDE DIAMETER
°C	DEGREES CELSIUS	IN	INCHES
Ø	DIAMETER	INSUL	INSULATION
ACV	AUTOMATIC CONTROL VALVE	KW	KILOWATT
AD	ACCESS DOOR	KVA	KILOVOLT AMPERE
ADJ	ADJUSTABLE		
ADDL	ADDITIONAL	L	LENGTH
AFF	ABOVE FINISHED FLOOR	LB	POUND
AFG	ABOVE FINISHED GRADE	LAB	LABORATORY
ALT	ALTERNATE	LF	LINEAR FEET
AP	ACCESS PANEL	LVG	LEAVING
ARCH	ARCHITECT		
ATC	AUTOMATIC TEMPERATURE CONTROL	M	ONE THOUSAND
ATCC	ATC COMPRESSOR	MAX	MAXIMUM
ATCD	ATC COMPRESSOR DRYER	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
ATCR	ATC COMPRESSOR RECEIVER	MCA	MINIMUM CIRCUIT AMPERES
ATV	ATMOSPHERIC VENT	MCC	MOTOR CONTROL CENTER
AVG	AVERAGE	MECH	MECHANICAL
		MEZZ	MEZZANINE
BBD	BOILER BLOW DOWN	MERV	MINIMUM EFFICIENCY REPORTING VALUE
BDT	BLOWDOWN TANK	MFR	MANUFACTURER
BF	BOILER FEED WATER	MH	MANHOLE
BFF	BELOW FINISHED FLOOR	MIN	MINIMUM
BHP	BRAKE HORSEPOWER	MOCP	MINIMUM OVERCURRENT PROTECTION
BLDG	BUILDING	MTD	MOUNTED
BLR	BOILER	MU	MAKEUP WATER
BOD	BOTTOM OF DUCT	N/A	NOT APPLICABLE
BOP	BOTTOM OF PIPE	NC	NORMALLY CLOSED
BSMT	BASEMENT	NC	NOISE CRITERIA
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
BTUH	BRITISH THERMAL UNIT PER HOUR	NO	NORMALLY OPEN
		NO.	NUMBER
C	CONVECTOR	NOM	NOMINAL
CA	COMPRESSED AIR	NTS	NOT TO SCALE
CD	CONDENSATE DRAIN		
CF	CEILING FAN	OB	OCTAVE BAND
CL	CENTERLINE	OC	ON CENTER
CLG	CEILING	OD	OUTSIDE DIAMETER
CO	CLEAN-OUT	ODP	OPEN DRIP PROOF
COL	COLUMN	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
COMP	COMPRESSOR	OFOI	OWNER FURNISHED OWNER INSTALLED
CONC	CONCRETE	OV	OUTLET VELOCITY
CONN	CONNECTION		
CONTR	CONTRACTOR	PCF	POUNDS PER CUBIC FOOT
CORR	CORRIDOR	PD	PRESSURE DROP
CUF	CUBIC FEET	PH	PHASE
CUH	CABINET UNIT HEATER	PLBG	PLUMBING
CYL	CYLINDER	POS	PROVIDED BY OTHER SECTION(S)
		PRESS	PRESSURE
DB	DRY BULB TEMPERATURE	PRIM	PRIMARY
dBA	A-WEIGHTED DECIBEL	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
DC	DRY COOLER	PSID	POUNDS PER SQUARE INCH DIFFERENTIAL
DDC	DIRECT DIGITAL CONTROL	PSIG	POUNDS PER SQUARE INCH GAUGE
DDCFP	DIRECT DIGITAL CONTROL FIELD PANEL	PVC	POLYVINYL CHLORIDE
DIA	DIAMETER		
DIM	DIMENSION	RECT	RECTANGULAR
DN	DOWN	REP	REPRESENTATIVE
DWG	DRAWING	RET	RETURN
		REQD	REQUIRED
EA	EACH	REQS	REQUIREMENTS
EAT	ENTERING AIR TEMPERATURE	RH	RELATIVE HUMIDITY
EFF	EFFICIENCY	RM	ROOM
ECUH	ELECTRIC CABINET UNIT HEATER	RPM	REVOLUTIONS PER MINUTE
ELEC	ELECTRICAL		
ELEV	ELEVATION	SCH	SCHEDULE
EMER	EMERGENCY	SOV	SOLENOID OPERATED VALVE
EMS	ENERGY MANAGEMENT SYSTEM	SPECS	SPECIFICATIONS
ENT	ENTERING	SQ	SQUARE
EQUIP	EQUIPMENT	SQFT	SQUARE FEET
EUH	ELECTRIC UNIT HEATER	SS	STAINLESS STEEL
EXH	EXHAUST	STD	STANDARD
EXP	EXPANSION	STDBY	STANDBY
		STL	STEEL
FTR	FINNED TUBE RADIATION	SUCT	SUCTION
FCV	FLOW CONTROL VALVE	SUP	SUPPLY
FFOP	FIREFIGHTERS OVERRIDE PANEL		
FG	FIBERGLASS	TA	THROW-AWAY
FLEX	FLEXIBLE	TAV	THERMOSTATIC AIR VENT
FLR	FLOOR	TEFC	TOTALLY ENCLOSED FAN COOLED
FLROR	FLOOR DRAIN	TEL	TELEPHONE
FP	FIRE PROTECTION	TEMP	TEMPERATURE
FPM	FEET PER MINUTE	TOD	TOP OF DUCT
FT	FEET	TOP	TOP OF PIPE
FT/SEC	FEET PER SECOND	TYP	TYPICAL
FURN	FURNISHED		
FVNR	FULL VOLTAGE NON-REVERSING	UH	UNIT HEATER
G	GAS	V	VENT
GA	GAUGE	VEL	VELOCITY
GAL	GALLONS	VERT	VERTICAL
GALV	GALVANIZED	VFC	VARIABLE FREQUENCY CONTROLLER
GC	GENERAL CONTRACTOR	VTR	VENT THROUGH ROOF
GND	GROUND		
GPH	GALLONS PER HOUR	W	WIDTH
GPM	GALLONS PER MINUTE	W/	WITH
GRD	GRADE (GROUND LEVEL)	W/O	WITHOUT
GWB	GYPSUM WALL BOARD	WB	WET BULB TEMPERATURE
		WF	WIDE FLANGE
H	HEIGHT	WG	WATER GAUGE
HCPD	HANDICAPPED	WRT	WITH RESPECT TO
HD	HEAD		
HP	HORSEPOWER		
HPG	HIGH PRESSURE GAS	X	EXISTING EQUIPMENT TO BE REMOVED
HR	HOUR	XM	EXISTING EQUIPMENT TO REMAIN
HZ	HERTZ	XN	NEW LOCATION OF RELOCATED EQUIPMENT
HX	HEAT EXCHANGER	XR	EXISTING EQUIPMENT TO BE RELOCATED

AIR SYSTEM SPECIFIC ABBREVIATIONS

AC	AIR CONDITIONING	LAT	LEAVING AIR TEMPERATURE
ACC	AIR COOLED CONDENSER	LD	LINEAR DIFFUSER
ACCU	AIR COOLED CONDENSING UNIT	LUVR	LOUVER
ACD	AUTOMATIC CONTROL DAMPER	LVDR	LOUVERED DOOR
ACU	AIR CONDITIONING UNIT		
AF	AIR FOIL	OA	OUTSIDE AIR
AHU	AIR HANDLING UNIT	OAI	OUTSIDE AIR INTAKE
ALD	ACOUSTICALLY LINED DUCTWORK		
APD	AIR PRESSURE DROP	OBD	OPPOSED BLADE DAMPER
ATD	AIR TERMINAL DEVICE	OED	OPEN END DUCT
AVS	AIR VOLUME TRAVERSE STATION		
		PHC	PREHEAT COIL
BDD	BACKDRAFT DAMPER		
BI	BACKWARD INCLINED	RA	RETURN AIR
BOD	BOTTOM OF DUCT	RD	REFRIGERANT DISCHARGE (HOT GAS)
		RF	RETURN FAN
CACU	COMPUTER ROOM AIR CONDITIONING UNIT	RG	RETURN GRILLE
CC	COOLING COIL	RHC	REHEAT COIL
CD	CEILING DIFFUSER	RL	REFRIGERANT LIQUID
CFM	CUBIC FEET PER MINUTE	RLF	RELIEF
CG	CEILING GRILLE	RR	RETURN REGISTER
		RS	REFRIGERANT SUCTION
DD	DUAL DUCT SUPPLY AIR TERMINAL	RTU	ROOF TOP UNIT
DIFF	DIFFUSER	RV	ROOF VENT
DWDI	DOUBLE WIDTH DOUBLE INLET		
DWSI	DOUBLE WIDTH SINGLE INLET	SA	SUPPLY AIR
DX	DIRECT EXPANSION	SATT	SOUND ATTENUATOR
		SCR	SCREEN
EA	EXHAUST AIR	SD	SMOKE DAMPER
EF	EXHAUST FAN	SDET	SMOKE DETECTOR
EG	EXHAUST GRILLE	SEF	SMOKE EXHAUST FAN
EHC	ELECTRICAL HEATING COIL	SF	SUPPLY FAN
EPHC	ELECTRIC PREHEAT COIL		
ER	EXHAUST REGISTER		
ERHC	ELECTRIC REHEAT COIL	SG	SUPPLY GRILLE
ESP	EXTERNAL STATIC PRESSURE	SGD	SLIDE GATE DAMPER
		SM	SHEETMETAL
F	FAN	SP	STATIC PRESSURE
F&B	FACE AND BYPASS	SR	SUPPLY REGISTER
FB	FAN BOX	SWDI	SINGLE WIDTH DOUBLE INLET
FC	FORWARD CURVED	SWSI	SINGLE WIDTH SINGLE INLET
FA	FREE AREA		
FCU	FAN COIL UNIT		
FD	FIRE DAMPER (W/ ACCESS DOOR)	TE	TOILET EXHAUST
FLTR	FILTER	TF	TRANSFER FAN
FPI	FINS PER INCH	TG	TRANSFER GRILLE
FSD	COMBINATION AUTOMATIC FIRE/SMOKE DAMPER WITH ACCESS DOOR	TR	TRANSFER
		TSP	TOTAL STATIC PRESSURE
GE	GENERAL EXHAUST	UC	UNDERCUT DOOR
GH	GRAVITY HOOD		
		VD	VOLUME DAMPER
HC	HEATING COIL	VV	VARIABLE VOLUME SUPPLY AIR TERMINAL BOX
HPU	HEAT PUMP UNIT	VVE	VARIABLE VOLUME EXHAUST AIR TERMINAL BOX
HRU	HEAT RECOVERY UNIT		
HV	HEATING & VENTILATING UNIT		
HU	HUMIDIFIER	WMS	WIRE MESH SCREEN

HVAC GENERAL NOTES

GENERAL

1. HVAC GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL "M" SERIES DRAWINGS.
2. DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO INDICATE CAPACITY, SIZE, APPROXIMATE LOCATION AND GENERAL ARRANGEMENT. DETERMINE EXACT LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
3. DRAWINGS CANNOT BE FULLY AND CORRECTLY INTERPRETED WITHOUT REFERENCE TO LEGENDS, DETAILS, SCHEDULES AND SPECIFICATIONS. IT IS THE INTENT OF THE DRAWINGS TO SHOW THE INSTALLATION, AS DETAILED BY THE TYPICAL ARRANGEMENT. ITEMS SHOWN ONCE ON THE FLOOR PLANS. ELEVATIONS, DETAILS, OF DIAGRAMS MAY NOT BE REPEATED IN FULL FOR OTHER TYPICAL INSTANCES.
4. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. PROVIDE INFORMATION AND HARDWARE AS NECESSARY TO COORDINATE CONCRETE PADS AND STEEL PLATFORMS REQUIRED FOR MECHANICAL WORK.
6. COORDINATE ROOF AND WALL PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH FLASHING REQUIREMENTS. COORDINATE SLAB PENETRATIONS WITH WORK OF OTHER SECTIONS AND WITH EXISTING POST-TENSION CABLES.
7. RUN DUCTS AND PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS. ALL DUCTWORK SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO WALL AND UNDERSIDE OF BEAMS AND JOISTS.
8. INSTALL SENSORS (TEMPERATURE, HUMIDITY, CO2, THERMOSTATS) AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY ARCHITECT. MOUNTING HEIGHT AFF SHALL COMPLY WITH ADA AND SHALL BE MOUNTED LEVEL WITH ADJACENT SWITCHES (IE LIGHT SWITCHES).
9. COORDINATE WORK OF THIS SECTION WITH THAT OF OTHER SECTIONS AND WITH ALL TRADES INVOLVED. PROVIDE OFFSETS IN PIPING AND DUCTS (INCLUDING DIVIDED DUCTS) AND TRANSITIONS AROUND OBSTRUCTIONS.
10. ACCESS PANELS SHALL BE PROVIDED TO CLEAN COILS AND SERVICE DAMPERS, HEATERS, VALVES AND ALL CONCEALED MECHANICAL EQUIPMENT. PROVIDE ACCESS PANELS THROUGH BUILDING ASSEMBLIES TO SERVICE AND MAINTAIN EQUIPMENT UNLESS SUCH EQUIPMENT IS INSTALLED IN EXPOSED LOCATIONS OR ABOVE LAY-IN CEILINGS. COORDINATE THE LOCATION OF ACCESS DOORS AND PANELS AND VERIFY THE EXACT QUANTITY, SIZE, AND LOCATIONS AFTER THE SYSTEMS AND EQUIPMENT REQUIRING ACCESS HAVE BEEN INSTALLED AND PRIOR TO THE CLOSURE OF THE AFFECTED CEILINGS AND BUILDING ASSEMBLIES. MINIMUM ACCESS PANEL AND DOOR SIZE SHALL BE 18"x18" UNLESS OTHERWISE NOTED. OBTAIN APPROVAL FOR ALL PANEL LOCATIONS FROM ARCHITECT.
11. ELEMENTS OF THE WORK SHALL BE INSTALLED IN A MANNER SUCH THAT AT SUBSTANTIAL COMPLETION THE FOLLOWING ITEMS, NEW OR EXISTING SHALL BE "FULLY AND REASONABLY ACCESSIBLE": HVAC CONTROL BOXES, JUNCTION BOXES, VALVES (OF EVERY SHAPE, SORT AND FUNCTION), DDC CONTROL BOXES, ELECTRICAL PANELS, FILTERS, BELTS, WATER COILS, DISCONNECT SWITCHES, AND MAINTENANCE ACCESS ELEMENTS INCLUDING PULL SPACE.
    A. "FULLY AND REASONABLY ACCESSIBLE" SHALL BE DEFINED AS: NATIONAL ELECTRIC CODE REQUIRED CLEARANCE FOR POWERED EQUIPMENT AND CAPABLE OF BEING ACCESSED FOR SERVICE, REPAIR OR REPLACEMENT BY AN AVERAGE SIZED INDIVIDUAL (ON A LADDER IF NECESSARY) AND CAPABLE OF BEING SERVICED OR REMOVED WITHOUT REMOVING OR MODIFYING OR DISTORTING OTHER COMPONENTS OF THE WORK. THE DESIGN INTENT PROVIDES A MINIMUM 2'x2'x2' ZONE FOR MAINTENANCE.
    B. CONFLICT WITH MEETING THESE REQUIREMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IN A TIMELY MANNER AND SHALL BE CORRECTED AT NO ADDITIONAL COST.
12. SUPPORT ALL EQUIPMENT, PIPING AND DUCTWORK FROM BUILDING STRUCTURE. PROVIDE VIBRATION ISOLATION FOR ROTATING EQUIPMENT, DUCTWORK AND PIPING IN ACCORDANCE WITH THE SPECIFICATIONS. PROVIDE TO GC A LIST OF ALL WEIGHTS AND METHODS OF SUPPORT FOR COORDINATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
13. ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH NEC, AND DIVISION 26000 SPECIFICATIONS.
14. ALL MATERIALS AND EQUIPMENT SHALL BE NEW.

AIR SYSTEM SPECIFIC NOTES:

1. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. VERIFY AND PROVIDE DUCT TRANSITIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
2. SHEETMETAL FITTINGS SHOWN ARE TO BE PROVIDED. NO SUBSTITUTES SHALL BE ALLOWED WITHOUT PRIOR CONSENT FROM ARCHITECT/ENGINEER.
3. REFER TO SPECIFICATIONS FOR DUCTWORK CONSTRUCTION CLASSES, SEAL, AND LEAKAGE CLASSES.
4. EXTERIOR LOUVERS ARE INDICATED FOR COORDINATION ONLY. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONS AND EXACT LOCATIONS.
5. SMOKE DETECTORS SHALL BE FURNISHED AND WIRED TO THE FIRE ALARM SYSTEM. MOUNT THE DETECTORS IN DUCTWORK, WHERE REQUIRED BY CODE. WIRE THE DETECTORS TO THE BAS SYSTEM AND FAN STARTERS FOR SHUTDOWN.
6. SMOKE DAMPERS SHALL BE UL555S LISTED. FIRE DAMPERS SHALL BE UL555 LISTED. PROVIDE FIRE DAMPERS, SMOKE DAMPERS AND ASSOCIATED ACCESS PANELS WHERE DAMPERS ARE SHOWN ON THE DRAWINGS IN COMPLIANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES AND NFPA 90A. ACCESS DOOR DIMENSIONS SHALL MEET REQUIREMENTS OF NFPA 90A AND NFPA 90B.
7. REFER TO REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
8. INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. INCREASE SIZE FOR LINER IF APPLICABLE.
9. DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZE ARE NOMINAL. REFER TO DIFFUSER SCHEDULE FOR DUCT RUN-OUT SIZES.
10. PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND AIR HANDLING UNITS UNLESS INTERNALLY ISOLATED. ALL DUCTS TO BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
11. THE INSIDE OF DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
12. ALL RETURN AIR OPENINGS ABOVE CEILING SHALL BE PROVIDED WITH A 1/4" MESH ALUMINUM OR GALVANIZED SCREEN (80% FREE AREA MINIMUM).
13. INSULATE DUCTWORK: PERFORM TESTS BEFORE INSULATING.
14. ELBOWS IN DUCT SYSTEMS SHALL BE FULL RADIUS (CENTERLINE RADIUS = 1.5 DUCT WIDTH) WHERE SPACE PERMITS. WHERE LIMITED CLEARANCE OCCURS, PROVIDE SHORT RADIUS ELBOW WITH FULL LENGTH SPLITTER VANES PER SMACNA. MITERED (SQUARE) ELBOWS WITH TURNING VANES MAY NOT BE USED.
15. UNLESS INDICATED OTHERWISE, AND AS A MINIMUM PROVIDE 24"x24" MINIMUM SIZE CLEANOUTS IN KITCHEN EXHAUST DUCTS AT CHANGES IN DIRECTION AND BASES OF RISERS, AND EVERY 10 FEET IN STRAIGHT RUNS.
16. MANUAL DAMPERS ARE NOT SHOWN ON THE DRAWINGS IN ORDER FOR DRAWING CLARITY. PROVIDE MANUAL ADJUSTABLE DAMPERS ON EACH LOW PRESSURE SUPPLY, RETURN, AND EXHAUST DUCT TAKE OFF, AND AT EACH TAKE OFF TO REGISTERS, GRILLES, DIFFUSERS.

PIPING SYSTEM SPECIFIC NOTES:

1. VERIFY ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER CERTIFIED DRAWINGS. VERIFY AND PROVIDE FITTINGS TO TRANSITION TO FURNISHED EQUIPMENT CONNECTION SIZES. FIELD VERIFY AND COORDINATE ALL DIMENSIONS BEFORE FABRICATION.
2. ALL CONDENSATE DRAIN LINES SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, CONNECTED TO BUILDING DRAINAGE SYSTEMS. SIZE DEPTH OF TRAP FOR ASSOCIATED AIR PRESSURE DIFFERENTIAL. REFER TO DETAIL ON DRAWINGS.
3. PERFORM SPECIFIED TESTS BEFORE INSULATING PIPING.
4. PROVIDE HANGERS, CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES TO PREVENT STRESS ON PIPING.
5. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
6. PROVIDE AT LEAST THREE-ELBOW SWING FOR PIPE TAKE-OFFS TO TERMINAL EQUIPMENT AND RISERS.
7. ISOLATION VALVES IN PIPING SYSTEMS ARE NOT SHOWN ON THE PLANS (FOR CLARITY) BUT ARE REQUIRED AT ALL PIPE BRANCHES AND CONNECTIONS TO EQUIPMENT. REFER TO DETAIL SHEETS AND FLOW DIAGRAMS.
8. PITCH HYDRONIC (WATER) PIPING UPWARD IN DIRECTION OF FLOW. PITCH STEAM AND CONDENSATE PIPING DOWNWARD IN DIRECTION OF FLOW. REFER TO SPECIFICATIONS FOR REQUIRED PITCH (I.E. GRADE OR SLOPE).
9. REFER TO EQUIPMENT SCHEDULES FOR PIPE RUN-OUT SIZES TO INDIVIDUAL PIECES OF EQUIPMENT.

THE MUSIC ANNEX

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HVAC LEGEND

M-001

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EQUIPMENT TAG SYMBOLS & ABBREVIATIONS

EQUIPMENT NOT REQUIRING ELECTRIC SERVICE — TAG / NO / TAG DATA / DATA (DATA)

SEE SCHEDULE FOR PERFORMANCE REQUIREMENTS

EQUIPMENT REQUIRING ELECTRIC SERVICE — TAG / NO / TAG DATA / DATA (DATA)

EXAMPLE EQUIPMENT TAGS:

- P 1 — PUMP
- SATT 1 — SOUND ATTENUATOR
- SDET — SMOKE DETECTOR
- CP 1 — CONDENSATE PUMP
- UH 1 — UNIT HEATER
- RHC 1 / RHC 1 — REHEAT COIL
- AHU 1 — AIR HANDLING UNIT
- ACV 1 — AUTOMATIC CONTROL VALVE

PIPING LEGEND

- GATE VALVE
- BALL VALVE
- BALL VALVE WITH MEMORY STOP (BALANCING VALVE)
- BALL VALVE WITH HOSE BIBB, CAP & CHAIN (DRAIN VALVES)
- BUTTERFLY VALVE
- BUTTERFLY VALVE WITH MEMORY STOP (BALANCING VALVE)
- GLOBE VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- CHECK VALVE
- STRAINER W/BALL VALVE, HOSE BIBB & CAP (GATE VALVE FOR STEAM)
- FLOAT OPERATED VALVE
- STRAINER, DUPLEX
- ANGLE VALVE (SECTION VIEW)
- ANGLE VALVE (PLAN VIEW)
- STRAINER, BASKET TYPE W/DRAIN VALVE, HOSE BIBB & CAP
- SOLENOID VALVE
- AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR
- AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
- THREE WAY AUTOMATIC CONTROL VALVE, MODULATING ACTUATOR
- THREE WAY AUTOMATIC CONTROL VALVE, TWO POSITION ACTUATOR
- AUTOMATIC FLOW CONTROL VALVE (PRESSURE INDEPENDENT)
- COMBINATION FLOWMETER/SHUT OFF/BALANCING VALVE (CIRCUIT SETTER)
- FM — FLOW MEASURING DEVICE
- FLOW SWITCH
- SAFETY RELIEF VALVE
- UNION OR FLANGE (AS INDICATED BY PIPE SIZE - SEE SPEC.)
- BLIND FLANGE
- END CAP
- PRESSURE GAUGE WITH GAUGE CLOCK
- STEAM PRESSURE GAUGE WITH A GAUGE COCK AND COIL SYPHON
- THERMOMETER
- FLOAT & THERMOSTATIC STEAM TRAP
- INVERTED BUCKET STEAM TRAP
- THERMOSTATIC STEAM TRAP
- THERMODYNAMIC STEAM TRAP
- VACUUM BREAKER
- PRESSURE/TEMPERATURE WELL
- AUTOMATIC AIR VENT WITH ISOLATION VALVE
- MANUAL AIR VENT
- THERMOSTATIC AIR VENT (STEAM ONLY)
- REDUCER (ECCENTRIC-FLAT ON BOTTOM OR FLAT ON TOP)
- REDUCER (CONCENTRIC)
- FLEXIBLE CONNECTION
- E — EXPANSION JOINT
- PIPE GUIDE
- ANCHOR
- QUICK OPENING VALVE (USED WITH BLOW DOWN)
- QUICK CLOSING VALVE, FUSIBLE LINK (USED WITH FUELS)
- VALVE IN VERTICAL
- TOP TAKEOFF
- BOTTOM TAKEOFF
- M — WATER METER DIAL TYPE
- DIRT LEG
- CO — CLEAN-OUT FOR CONDENSATE DRAIN
- DIRECTION OF FLOW IN PIPE
- UP — PITCH PIPE UP IN DIRECTION OF FLOW
- DN — PITCH PIPE DOWN IN DIRECTION OF FLOW
- RISE (SINGLE LINE - PLAN VIEW)
- RISE (DOUBLE LINE - PLAN VIEW)
- DROP (SINGLE LINE - PLAN VIEW)
- DROP (DOUBLE LINE - PLAN VIEW)
- SUPPLY LINES (SINGLE LINE)
- SUPPLY LINES (DOUBLE LINE)
- RETURN LINES (SINGLE LINE)
- PIPE BREAK (SINGLE LINE)
- PIPE BREAK (DOUBLE LINE)
- EXISTING LINETYPE
- X—X—X OR — DEMO/EXISTING TO BE REMOVED LINETYPE
- NEW WORK LINETYPE
- FUTURE LINETYPE

FLOW DIAGRAM EQUIPMENT SYMBOLS

- HUMIDIFIER
- FILTER BANK
- HEATING COIL
- PREHEAT COIL
- REHEAT COIL
- COOLING COIL
- CABINET HEATER
- UNIT HEATER
- FINNED TUBE RADIATION
- LABORATORY HOOD (HSG / HOOD)
- SHELL AND TUBE HEAT EXCHANGER
- AIR SEPARATOR (AAV)
- BOILER
- BLOW DOWN SEPARATOR
- CONDENSATE PUMP
- CHILLER (CONDENSER / EVAPORATOR)
- PUMP
- CENTRIFUGAL FAN WITH INLET GUIDE VANES
- CENTRIFUGAL FAN
- PROPELLER FAN
- PLENUM, PLUG, OR MIXED FLOW FAN
- INLINE CENTRIFUGAL FAN
- UPBLAST PROPELLER FAN
- UPBLAST CENTRIFUGAL FAN
- ROOF FAN
- AIR VALVE
- OPPOSED BLADE DAMPER W/ TWO POSITION ACTUATOR
- OPPOSED BLADE DAMPER W/ MODULATING ACTUATOR
- PARALLEL BLADE DAMPER W/ TWO POSITION ACTUATOR
- PARALLEL BLADE DAMPER W/ MODULATING ACTUATOR
- BACKDRAFT DAMPER
- AIR TERMINAL BOX
- AIR TERMINAL BOX WITH REHEAT COIL
- PLATE AND FRAME HEAT EXCHANGER
- CHEMICAL FEED SYSTEM
- COOLING TOWER (OPEN CIRCUIT)
- COOLING TOWER (CLOSED CIRCUIT)
- FLASH TANK
- EXPANSION TANK

CALL OUT SYMBOLS

- POINT OF CONNECTION TO EXISTING
- POINT OF DISCONNECTION FROM EXISTING
- 1 / H3.1 — SECTION DESIGNATION / SHEET NUMBER
- 1 / H3.1 — DETAIL DESIGNATION / SHEET NUMBER
- 1 — REVISION NUMBER
- S/R 1 — SUPPLY OR RETURN AIR RISER DESIGNATION
- HWS 1 — PIPING SYSTEM RISER DESIGNATION
- EQUIPMENT ACCESS ZONE
- REFER TO DRAWINGS (XXX) FOR CONTINUATION
- SYMBOL DESIGNATES ASSOCIATED SYSTEM OR SERVICE (ie LPS)
- DIFFUSER, GRILLE, REGISTER LETTER DESIGNATOR (See schedule for ATD type)
- DESIGN CFM
- A(200) (200) — ALTERNATE CFM LOCATION

REFER TO CONTROLS LEGEND SHEET FOR SYMBOLS USED ON FLOOR PLANS TO INDICATE LOCATION OF TEMPERATURE SENSORS, PRESSURE SENSORS AND GAS SENSORS (E.G. CARBON DIOXIDE)

DUCTWORK

SINGLE LINE	DOUBLE LINE
EXISTING DUCT LINETYPE	
NEW DUCT LINETYPE	
HORIZONTAL OFFSET SUPPLY/RETURN /EXHAUST	
RISE/DROP — RISE OR DROP SUPPLY/RETURN/ EXHAUST	RISE/DROP
STANDARD RADIUS ELBOW (R = W) SUPPLY/RETURN EXHAUST	W, R
BULLHEAD SPLIT SUPPLY	GOOD FOR TAKEOFF TO RING DUCT
TAKEOFF TO DIFF/GRILLE W/BRANCH TAKE-OFF VOLUME DAMPER	HARD ELBOW
CEILING DUCT MTD DIFF/GRILLE W/BRANCH TAKE-OFF VOLUME DAMPER	
ACOUSTICALLY LINED DUCT	
X—X OR — EXISTING DUCT TO BE REMOVED	X—X OR
OPEN END DUCT W/VD & 1/2"x1/2" WMS	
FLEXIBLE DUCT	

SINGLE LINE	DOUBLE LINE
ROUND SUPPLY DUCT UP	
ROUND SUPPLY DUCT DOWN	
RECTANGULAR SUPPLY DUCT UP	
RECTANGULAR SUPPLY DUCT DOWN	
ROUND RETURN DUCT UP	
ROUND RETURN DUCT DOWN	
RECTANGULAR RETURN DUCT UP	
RECTANGULAR RETURN DUCT DOWN	
ROUND EXHAUST DUCT UP	
ROUND EXHAUST DUCT DOWN	
RECTANGULAR EXHAUST DUCT UP	
RECTANGULAR EXHAUST DUCT DOWN	
90° TAKE-OFF W/BRANCH TAKE-OFF VOLUME DAMPER (VD IN LOW PRESSURE SYSTEMS ONLY)	RING DUCT
BULLHEAD CONVERGE RETURN/EXHAUST W/BRANCH TAKE-OFF VOLUME DAMPER	
SIDEWALL DUCT MTD REGISTER/GRILLE W/BRANCH TAKE-OFF VOLUME DAMPER	
SUPPLY SIDEWALL LINEAR DIFFUSER (W/ 1" INTERNALLY LINED SM PLENUM) BRANCH CONN W/VD FOR EVERY 4' OF LINEAR	
SUPPLY CEILING LINEAR DIFFUSER (W/ 1" INTERNALLY LINED SM PLENUM) BRANCH CONN W/VD FOR EVERY 4' OF LINEAR	BOOT BY LD MFR

- AVS — AIR VOLUME TRAVERSE STATION
- SGD — SLIDE GATE DAMPER
- VD — MANUAL VOLUME DAMPER
- FD — SELF-CLOSING FIRE DAMPER W/ACCESS DOOR
- ACD — AUTOMATIC CONTROL DAMPER W/ACCESS DOOR
- SD — AUTOMATIC SMOKE DAMPER W/ACCESS DOOR
- FSD — COMBINATION SMOKE/FIRE DAMPER W/ACCESS DOOR
- BDD — BACKDRAFT DAMPER
- STANDARD 4-WAY BLOW SUPPLY DIFFUSER
- BLANKED FOR 3-WAY BLOW SUPPLY DIFFUSER
- OR — BLANKED FOR 2-WAY BLOW SUPPLY DIFFUSER
- BLANKED FOR 1-WAY BLOW SUPPLY DIFFUSER
- OR — ROOF EXHAUST FAN SHOWN ON ROOF
- OR — ROOF EXHAUST FAN SHOWN ON FLOOR PLAN
- UC 1/2" — UNDERCUT DOOR
- LVDR 1.5 SF — LOUVERED DOOR
- RETURN OR EXHAUST AIR FLOW
- SUPPLY AIR FLOW

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

THE COLLEGE OF NEW JERSEY
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BID DOCUMENTS

Project No 24102
Issued 11/11/2026

HVAC SYMBOLS

M-002

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I. GENERAL REQUIREMENTS

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF AIR TERMINAL DEVICES.
2. ALL MATERIALS AND EQUIPMENT SHALL BE UNUSED AND OF NEW MANUFACTURE.
3. ACCESS PANELS SHALL BE PROVIDED TO CLEAN AND SERVICE DAMPERS, HEATERS, VALVES, AND ALL CONCEALED MECHANICAL EQUIPMENT.
4. INSTALL THERMOSTATS AT MOUNTING HEIGHTS ABOVE FINISHED FLOOR IN ACCORDANCE WITH "ADA" REQUIREMENTS, OR AS DIRECTED OTHERWISE BY ARCHITECT.
5. CONTRACTOR SHALL REPORT ANY EQUIPMENT DEFICIENCIES FOUND TO THE OWNER AND THE ARCHITECT AND/OR ENGINEER.
6. WORK SHALL CONFORM TO THE CURRENT IN-FORCE EDITIONS OF THE FOLLOWING:
   a). SHEET METAL SMACNA STANDARDS.
   b). NEW JERSEY STATE BUILDING CODE.
   c). INTERNATIONAL MECHANICAL CODE (IMC).
   d). INTERNATIONAL ENERGY CONSERVATION CODE (IECC).
   e). ALL OTHER APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
   f). WORK SHALL ALSO CONFORM TO BASE BUILDING SPECIFICATIONS AND STANDARDS.
7. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
8. SUBMITTALS

   MECHANICAL CONTRACTOR SHALL SUBMIT FOR REVIEW, SHOP DRAWINGS FOR ALL MATERIAL AND EQUIPMENT, CONTRACTOR SHALL POINT OUT ANY DEVIATIONS OF THE SHOP DRAWINGS FROM THE DESIGN, SCHEDULE AT LEAST TEN WORKING DAYS EXCLUSIVE OF TRANSMITTAL TIME, FOR SUBMITTAL REVIEW. SHOP DRAWINGS MAY BE PAPER OR ELECTRONIC. ELECTRONIC SHOP DRAWINGS SHALL BE IN SEARCHABLE PDF FORMAT. IN ADDITION TO THE FOREGOING, SUBMIT PAPER SHOP DRAWINGS SHOWING THE FOLLOWING:

   a). DUCTWORK SHOP DRAWINGS AND DETAILS. THE ROUTING OF DUCTWORK ON VANDERWEIL'S DRAWINGS IS SHOWN DIAGRAMMATICALLY AND APPROXIMATELY, AS ARE THE POSITIONS OF ABOVE-THE-CEILING COMPONENTS. THE CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LOCATIONS, PROVIDING PROPER CLEARANCES, MAKING PROVISIONS FOR MAINTENANCE ACCESS, AND COORDINATING WITH COMPONENTS OF OTHER TRADES, THE STRUCTURE, AND OTHER OBSTRUCTIONS. THE DUCTWORK SHOP DRAWING SUBMITTAL SHALL BE BASED ON THIS COORDINATION EFFORT AND SHALL SHOW ALL AIR DISTRIBUTION COMPONENTS. DUCTWORK AND COMPONENTS SHALL BE DRAWN TO SCALE, AND DUCT SIZES SHALL BE INDICATED.

   b). PIPING SHOP DRAWINGS SHOWING LAYOUT, COMPONENTS, AND DETAILS.

   c). CONTROLS SHOP DRAWINGS, INCLUDING EQUIPMENT AND SYSTEM CONTROL SCHEMATICS, SEQUENCES OF OPERATIONS, LOGIC DIAGRAMS AND SYSTEM COMPONENTS INCLUDING DETAILS OF TIE-IN TO EXISTING BUILDING CONTROL MANAGEMENT SYSTEM.

14. AS-BUILT DRAWINGS

    MAINTAIN ONE SET OF PRINTS ON THE SITE AND NOTE ALL CHANGES OR DEVIATIONS FROM THE ORIGINAL DESIGN THEREON. AT THE COMPLETION OF THE PROJECT INCORPORATE ALL CHANGES INTO RECORD AS-BUILT DRAWINGS IN ELECTRONIC FORMAT AND SUBMIT CD FOR APPROVAL.

15. OPERATING AND MAINTENANCE INSTRUCTIONS

    PROVIDE THREE SETS OF MANUFACTURERS OPERATING AND MAINTENANCE INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT AND SYSTEM. COMPILE INTO THREE HARD COVER THREE RING BINDERS WITH INDEX PAGE AND INDEXING TABS. ALL NAME TAG INFORMATION SUCH AS MAKE, TYPE, SIZE, CAPACITY, SERIAL NUMBER, ETC. SHALL BE INCLUDED AS PART OF THE MANUAL.

16. MOTORS, STARTERS, AND WIRING

    PROVIDE MOTORS AND CONTROLS, AND FURNISH STARTERS FOR HVAC EQUIPMENT, EXCEPT FOR UNITS SERVED BY MCC WHICH ARE PROVIDED UNDER ELECTRIC WORK. PROVIDE CONTROL AND OTHER RELATED WIRING INCLUDING INTERLOCKS. ALL MOTORS SHALL TO BE PREMIUM EFFICIENCY. ALL THREE PHASE MOTORS SHALL BE RATED FOR INVERTER DUTY SERVICE.

17. VIBRATION ISOLATION

    PROVIDE VIBRATION ISOLATION FOR EACH PIECE OF ROTATING OR RECIPROCATING HVAC EQUIPMENT SHOWN ON THE DRAWINGS. ALL ISOLATION COMPONENTS SHALL BE SUPPLIED BY A SINGLE MANUFACTURER - MASON INDUSTRIES OR AMBER BOOTH. TYPES OF ISOLATORS, REQUIRED DEFLECTIONS, AND INSTALLATION PRACTICES SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE VIBRATION ISOLATION MANUFACTURER.

    PROVIDE VIBRATION ISOLATING ROOF CURBS WHERE INDICATED. ACCEPTABLE MANUFACTURERS ARE VIBRO-ACOUSTICS, KINETICS NOISE CONTROL, OR MASON INDUSTRIES. ISOLATORS SHALL PROVIDE A STATIC DEFLECTION OF 1".

18. SEISMIC RESTRAINTS

    PROVIDE RESTRAINTS AS REQUIRED BY CODE. FOR EACH SEISMIC RESTRAINT, PROVIDE CERTIFIED CALCULATIONS TO VERIFY ADEQUACY TO MEET THE FOLLOWING DESIGN REQUIREMENTS: ABILITY TO ACCOMMODATE RELATIVE SEISMIC DISPLACEMENTS OF SUPPORTED ITEM BETWEEN POINTS OF SUPPORT. ABILITY TO ACCOMMODATE THE REQUIRED SEISMIC FORCES. FOR EACH RESPECTIVE SET OF ANCHOR BOLTS PROVIDE CALCULATIONS TO VERIFY ADEQUACY TO MEET COMBINED SEISMIC-INDUCED SHEER AND TENSION FORCES. FOR EACH WELDMENT BETWEEN STRUCTURE AND ITEM SUBJECT TO SEISMIC FORCE, PROVIDE CALCULATIONS TO VERIFY ADEQUACY. CALCULATIONS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER WHO IS REGISTERED IN THE STATE WHERE THE WORK IS BEING PERFORMED AND HAS SPECIFIC EXPERIENCE IN SEISMIC CALCULATIONS. RESTRAINTS SHALL MAINTAIN THE RESTRAINED ITEM IN A CAPTIVE POSITION WITHOUT SHORT CIRCUITING THE VIBRATION ISOLATION.

19. HANGERS AND SUPPORTS
    a). STRUCTURAL STEEL SUPPORTS, HANGERS, ETC. SHALL BE ANGLE IRON, STEEL CHANNEL OR STEEL ROD USED WITH APPROVED CLAMPS, INSERTS, ETC. ALL SUPPORTS, HANGERS, BRACKETS, ETC... SHALL BE AS APPROVED BY THE ENGINEER. ALL HANGERS SHALL BE GALVANIZED OR PAINTED WITH TWO COATS OF RUSTOLEUM PAINT BEFORE THEIR INSTALLATION.
    b). ATTACH HANGERS AND SUPPORTS DIRECTLY ONTO THE STRUCTURE BY FIRST REMOVING EXISTING FIRE PROOFING AND AFTER SECURING THE ATTACHMENT, REPAIRING THE FIRE PROOFING TO ITS ORIGINAL CONDITION, CONTINUOUSLY OVER THE ATTACHMENT.
20. CLEANING

    ENTIRE INSTALLATION AND ALL WORK AREAS SHALL BE LEFT AS CLEAN AS NEW. CLEAN INTERNALS OF ALL DUCTWORK AND AIR HANDLING UNITS, AND REPLACE FILTERS AFTERWARDS. FLUSH AND CLEAN PIPING.

21. PUNCH LIST

    WHEN THE WORK IS NEARING COMPLETION, THE HVAC CONTRACTOR'S PROJECT EXECUTIVE OR DESIGNATED REPRESENTATIVE SHALL PHYSICALLY WALK DOWN THE INSTALLATION, EXAMINING IT IN DETAIL, AND PREPARE A PUNCH LIST CONTAINING AN ITEMIZATION OF WORK REMAINING FOR 100% COMPLETION. SUBMIT THIS TO THE ENGINEER WHO WILL THEN INSPECT THE WORK AND PREPARE THE ENGINEER'S PUNCH LIST. CONTRACTOR SHALL COMPLETE ALL PUNCH LIST ITEMS TO THE SATISFACTION OF THE OWNER AND ARCHITECT/ENGINEER.

22. START UP, TESTING, AND BALANCING
    a). START UP ALL SYSTEMS, PRESSURE TEST DUCTWORK AND PIPING, AND BALANCE SYSTEMS INCLUDING ALL REGISTERS, GRILLES, AND DIFFUSERS, TO PERFORMANCE DATA SHOWN ON PLANS, SCHEDULES, AND AS SPECIFIED.
    b). DO NOT COVER OR CONCEAL WORK BEFORE TESTING AND INSPECTION AND OBTAINING APPROVAL.
    c). LEAKS, DAMAGE AND DEFECTS DISCOVERED OR RESULTING FROM STARTUP, TESTING, AND BALANCING SHALL BE REPAIRED OR REPLACED TO LIKE-NEW CONDITION WITH ACCEPTABLE MATERIALS. TEST SHALL BE CONTINUED UNTIL SYSTEM OPERATES WITHOUT ADJUSTMENT OR REPAIR.
    d). REPORT ON REPORTING FORMS, SUBMITTED TO ARCHITECT FOR APPROVAL IN ADVANCE.
    e). SUBMIT SIX (6) COPIES OF TESTING AND BALANCING REPORTS TO ARCHITECT FOR APPROVAL.
    f). THIS CONTRACTOR SHALL FURNISH ALL TEST MEDIUMS AND DISPOSE OF ALL TEST MEDIUMS AT AN APPROVED OFF SITE LOCATION AFTER TESTING IS COMPLETE.
    g). NOTE REQUIREMENT ABOVE FOR CFM AND STATIC PRESSURE READINGS PRIOR TO DEMOLITION.
23. WARRANTY

    PROVIDE WARRANTY FOR WORK OF THIS SECTION IN WRITING FOR ONE YEAR FROM DATE OF OWNERS ACCEPTANCE OF SUBSTANTIAL COMPLETION. REPAIR OR REPLACE DEFECTIVE MATERIALS,EQUIPMENT, WORKMANSHIP AND INSTALLATION THAT DEVELOP WITHIN THIS PERIOD, PROMPTLY AND TO OWNER'S SATISFACTION AND CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER WARRANTY WITHIN CONTRACT PRICE.

II. DUCTWORK AND AIR DISTRIBUTION EQUIPMENT

1. ROUTING AND SIZING OF DUCTWORK

   REFER TO GENERAL NOTE "SUBMITTALS", FOR ROUTING. WHERE DUCT SIZES ARE NOT INDICATED, CONTRACTOR SHALL SELECT SIZES BASED ON THE CFM USING THE "LOW PRESSURE DUCT SIZING TABLE."

   LOW PRESSURE DUCT SIZING
   TABLE

Airflow (cfm)	Round Duct Size (inches)	Equivalent Rectangular Duct Sizes (inches x inches)			
80-100	6	4x8	6x6		
100-150	7	4x12	6x8		
150-200	8	6x10	8x8		
200-300	9	6x12	8x10		
300-400	10	6x16	8x12	10x10	
400-500	11	6x20	8x14	10x10	
500-600	12	6x24	8x16	10x12	
600-750	13	8x18	10x14	12x12	
750-1000	14	8x24	10x16	12x14	
1000-1200	15	8x26	10x20	12x16	14x14
1200-1400	16	8x30	10x24	12x18	14x16
1200-1700	17	10x26	12x22	14x18	16x16
1700-1900	18	10x28	12x24	14x20	16x18
1900-2200	19	12x26	14x24	16x20	18x18
2200-2500	20	12x30	14x26	16x22	18x20
2500-2800	22	12x36	14x30	16x26	18x24

2. SPECIAL DUCTWORK REQUIREMENTS
   a). INTERNAL AIR FLOW DIMENSIONS ARE SHOWN FOR DUCTS. CONTRACTOR SHALL INCREASE SIZE FOR LINER IF APPLICABLE.
   b). DIFFUSER SIZES SHOWN ARE NECK SIZES; REGISTER AND GRILLE SIZES ARE NOMINAL.
   c). PROVIDE FLEXIBLE CONNECTIONS ON ALL DUCTS CONNECTING TO FANS AND HEAT PUMPS. ALL DUCTS SHALL BE GROUNDED ACROSS FLEXIBLE CONNECTION WITH FLEXIBLE COPPER GROUNDING STRAPS.
   d). MAXIMUM LENGTH OF FLEXIBLE RUN-OUT TO DIFFUSERS SHALL BE 6'-0". PROVIDE ADDITIONAL LENGTH OF RIGID DUCT (ROUND OR RECTANGULAR) ON RUN-OUT AS REQUIRED. SAG SHALL NOT EXCEED 1/2" PER FOOT OF SPACING BETWEEN SUPPORTS.
   e). DUCTWORK SHALL NOT RUN ALONG FULL HEIGHT PARTITIONS.
   f). PATCH AND SEAL ALL EXISTING OPENINGS IN DUCTWORK NOT UTILIZED FOR NEW LAYOUT.
   g). THE INSIDE OF ALL UNLINED DUCTWORK VISIBLE THROUGH A GRILLE OR DIFFUSER SHALL BE PAINTED FLAT BLACK.
   h). WHEN SECTION OF DUCTWORK IS NOT LABELED FOR SIZE, THE LARGER SIZE INDICATED ON THE CONNECTED DUCT SHALL PREVAIL. SIZE OF DUCT RUN-OUTS TO DIFFUSER SHALL EQUAL DIFFUSER NECK SIZE.
   i). DUCT BRANCH CONNECTIONS AND TAKE OFFS SHALL BE MADE WITH 45° CONNECTION, BELLMOUTH OR CONICAL ONLY. SPIN IN COLLARS AND STRAIGHT TAPS SHALL NOT BE USED.
   j). ELBOWS AND BENDS FOR RECTANGULAR DUCTS SHALL HAVE CENTER LINE RADIUS OF 1.5 TIMES DUCT WIDTH WHEREVER POSSIBLE. WHERE CENTERLINE RADIUSIS LESS THAN 1.5 TIMES DUCT WITH, ELBOWS SHALL BE RADIUS THROAT WITH RADIUS HEEL AND FULL LENGTH SPLITTER VANES.
3. MATERIALS AND PRESSURE RATING
   a). SHEET METAL DUCTS SHALL BE CONSTRUCTED OF HOT DIPPED G90 GALVANIZED SHEET METAL UNLESS OTHERWISE SPECIFIED.
   b). ALL MEDIUM PRESSURE DUCTWORK BETWEEN MAIN SYSTEM FAN AND AIR TERMINAL DEVICE SHALL BE MINIMUM 4"(wg) PRESSURE CLASS, SEAL CLASS A, LEAKAGE CLASS 6.
   c.) ALL LOW PRESSURE DUCTWORK BETWEEN TERMINAL DEVICE AND AIR OUTLETS SHALL BE MINIMUM 2"(wg) PRESSURE CLASS. SEAL CLASS B, LEAKAGE CLASS 12.
4. FLEXIBLE DUCTWORK
   a). FLEXIBLE DUCTWORK, CONNECTING TO UNINSULATED OR UNLINED DUCT, SHALL BE VINYL COATED FIBERGLASS CLOTH 0.0057" MINIMUM THICKNESS, 25 STRANDS PER INCH MINIMUM THREAD COUNT WITH CORROSION-RESISTANT HELICAL WIRE REINFORCEMENT, AND RATED FOR 12" W.C. POSITIVE PRESSURE,
   b). RATING SHALL BE 2" W.C. NEGATIVE PRESSURE WITH A MAXIMUM VELOCITY OF 4000 FPM. FLEXDUCT MUST BE LISTED AS A CLASS 1 CONNECTOR ACCORDING TO UL 181 AND SHALL MEET THE EQUIREMENTS OF NFPA 90A - MAXIMUM ASTM E-84 FIRE HAZARD RATING. UNINSULATED FLEXIBLE DUCT SHALL BE EQUIVALENT TO FLEXMASTER TYPE 4.
   c). FLEXIBLE DUCT CONNECTED TO INSULATED OR LINED DUCT SHALL BE INSULATED WITH 1-1/2", 1/2 LB. DENSITY FIBERGLASS INSULATION AND FLAME RETARDANT (UL LISTED) VAPOR BARRIER, MEETING ASTM E-84 RATING.
5. VOLUME DAMPERS

   PROVIDE MANUAL ADJUSTABLE VOLUME DAMPERS, WITH EXTENDED MOUNT INDICATING AND LOCKING QUADRANTS ON EACH SUPPLY, RETURN, AND GENERAL EXHAUST DUCT TAKEOFF, AND AT EACH TAKEOFF TO A REGISTER, GRILLE, OR DIFFUSER (NOT ALL DAMPERS ARE SHOWN ON DRAWINGS). DAMPERS SHALL BE LOCATED AT LEAST FIVE DUCT DIAMETERS UPSTREAM OF AIR TERMINAL DEVICES OR AS FAR UPSTREAM AS POSSIBLE IN THE BRANCH DUCT OR TAKE OFF TO MINIMIZE DOWNSTREAM NOISE.

6. DIFFUSERS, REGISTERS, AND GRILLES

   PROVIDE DIFFUSERS, REGISTERS, AND GRILLES FOR SUPPLY, RETURN, AND EXHAUST OUTLETS, OF SIZE, TYPE, MATERIAL AND DESIGN SHOWN ON DRAWINGS. ACCEPTABLE MANUFACTURERS SHALL BE TUTTLE & BAILEY, ANEMOSTAT, KRUEGER, METALAIRE, OR TITUS. SOUND PRESSURE LEVELS SHALL NOT EXCEED NC 30. COLOR AND FINISH SHALL BE SELECTED BY THE ARCHITECT.

8. ACOUSTICAL SOUND LINING
   a). PROVIDE 1" THICK ACOUSTICAL LINING BY CERTAIN-TEED, KNAUF, OWENS CORNING, OR MANVILLE FOR THE FOLLOWING DUCTWORK:
      1). SUPPLY AND RETURN AIR DUCTWORK, INCLUDING PLENUMS, FOR MINIMUM OF 20 FEET FROM AIR HANDLING UNITS.
      2). ALL LOW PRESSURE DUCTWORK DOWNSTREAM OF VOLUME DAMPERS.
      3). EXHAUST DUCTWORK, INCLUDING PLENUMS, FOR MINIMUM OF 20 FEET FROM FANS.
      4). ALL TRANSFER AIR DUCTS.
      5). DUCTWORK INDICATED AS LINED ON DRAWINGS.
   b). MATERIALS AND INSTALLATION SHALL MEET THE FOLLOWING STANDARDS, AS APPLICABLE:
      1). NFPA-90A, UL723, NFPA-255; SMACNA DUCT LINER APPLICATIONS STANDARD; SMACNA MECHANICAL FASTENERS STANDARD; ADHESIVE AND SEALANT COUNCIL; ADHESIVES STANDARD FOR DUCT LINER - ASC-A-7001A; ASTM E-84 FIRE HAZARD CLASSIFICATIONS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED, AND 50 FUEL CONTRIBUTED.
      2). ACOUSTICAL LINING SHALL BE COMPOSED OF FIBERGLASS OR COTTON FIBER WITH 3-6 PCF DENSITY AND A MINIMUM RATING OF NRC 0.70.
9. DUCT SILENCERS
   a). PROVIDE PREFABRICATED DUCT SILENCERS AS SCHEDULED AND AS DESCRIBED HEREIN, AT LOCATIONS SHOWN ON DRAWINGS, BY INDUSTRIAL ACOUSTICS, UNITED SHEET METAL, VIBRO-ACOUSTICS, PRICE, SEMCO, OR TITUS. SILENCERS SHALL HAVE FLAME SPREAD/SMOKE DEVELOPED OF 25/50 ACCORDING TO ASTM E-84.
   b). MINIMUM DYNAMIC INSERTION LOSS AND MAXIMUM SELF GENERATED SOUND POWER LEVELS SHALL BE EQUIVALENT TO INDUSTRIAL ACOUSTICS TYPES "S," "MS," "ML," AND "L." MINIMUM DYNAMIC INSERTION LOSS SHALL BE AT 1000 FPM FOR HIGH PRESSURE DROP SILENCERS AND 2000 FPM FOR MEDIUM AND LOW PRESSURE DROP SILENCERS.
   c). DUCT SILENCERS SHALL BE INSTALLED WITH APPROPRIATE INLET AND OUTLET STRAIGHT LENGTH DUCT CONDITIONS TO MAINTAIN THE MANUFACTURER'S TABULATED PRESSURE DROPS, WITHOUT ADJUSTMENT FACTORS.
10. DUCT INSULATION (EXTERNAL)

    INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING. MATERIALS SHALL MEET REQUIREMENTS OF ADHESIVE AND SEALANT COUNCIL STANDARDS AND SMACNA. INSULATE (EXISTING AND NEW) SUPPLY, FRESH AIR, AND RETURN DUCTS AND PLENUMS WITH A MINIMUM OF R-6 (AS INSTALLED) INSULATION WHEN LOCATED WITHIN UNCONDITIONED SPACES AND A MINIMUM OF R-12 (AS INSTALLED) INSULATION WHEN LOCATED OUTSIDE THE THE BUILDING ENVELOPE. INSULATION SHALL BE FIBROUS GLASS DUCT WRAP, WITH FOIL KRAFT FLAME RESISTANT VAPOR BARRIER. ASTM E-84 FIRE HAZARD RATINGS SHALL BE 25 FLAME SPREAD. 50 SMOKE DEVELOPED AND 50 SMOKE CONTRIBUTED.
11. FANS

    ALL FANS SHALL HAVE THEIR AIR PERFORMANCE RATED IN ACCORDANCE WITH AMCA AND SHALL BE LICENSED TO BEAR THE AMCA SEAL. ACCEPTABLE MANUFACTURERS FOR CENTRIFUGAL FANS SHALL BE: BUFFALO, COOK, CHICAGO, TRANE, PEERLESS, OR GREENHECK. ACCEPTABLE MANUFACTURERS FOR VANE AND DUCT AXIAL FANS SHALL BE: JOY, WOODS, HERTZELL, AEROVENT, CHICAGO, OR BUFFALO. ACCEPTABLE MANUFACTURERS FOR UTILITY SETS SHALL BE: TRANE, BUFFALO, PEERLESS, COOK, GREENHECK, OR BARRY. ACCEPTABLE MANUFACTURERS OF ROOF EXHAUSTERS, TRANSFER FANS, AND CEILING EXHAUST FANS SHALL BE: PENN, GREENHECK, OR COOK.
12. ELECTRIC COILS

    PROVIDE ELECTRIC HEATING COILS BY INDEECO, Q-MARK, OR BRASCH OF CAPACITIES SHOWN ON THE SCHEDULES. COILS SHALL BE UL LISTED AND BE PROVIDED WITH REQUIRED AIR FLOW PROVING SWITCHES, THERMAL CUTOUTS, DOOR DISCONNECTS AND ALL OTHER REQUIRED SAFETY AND OPERATING CONTROLS.
13. CABINET HEATERS AND UNIT HEATERS

    PROVIDE ELECTRIC CABINET UNIT HEATERS AND UNIT HEATERS. ACCEPTABLE MANUFACTURERS ARE TRANE, MCQUAY, AAF, Q-MARK, BRASCH, OR STERLING. SEE SCHEDULES FOR REQUIRED CAPACITIES. PROVIDE THERMOSTATS AND ANY OTHER OPERATING OR SAFETY CONTROLS.
14. ELECTRIC BASEBOARD
    a). PROVIDE ELECTRIC BASEBOARD BY RUNTAL, TRANE, OR VULCAN AS INDICATED ON DRAWINGS.
    b). UNLESS INDICATED OTHERWISE ON DRAWINGS, ALL ENCLOSURES SHALL RUN THE FULL LENGTH OF CURTAINWALL.

III. HYDRONIC SYSTEMS

1. PIPING AND FITTINGS
   a). PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS INDICATED IN SCHEDULE OF PIPE AND FITTING MATERIALS. PROVIDE DIELECTRIC FITTINGS TO CONNECT DIFFERENT PIPING MATERIALS.
   b). PIPING 2-1/2 AND LARGER AND ALL DIRECT-BURIED PIPING SHALL BE WELDED STEEL. PIPING 2" AND SMALLER (EXCEPT DIRECT-BURIED PIPING) SHALL BE SCREWED STEEL OR COPPER, STEEL PIPING SHALL BE ASTM A53 OR A106, GRADE B, COPPER PIPING SHALL BE ASTM B88.
   c). SCHEDULE OF PIPE AND FITTING MATERIALS

SERVICE	PIPE MATERIAL WEIGHT	FOR TYPE OF JOINTS	FITTING MATERIAL	PRESSURE RATING PSI SWP, OR WEIGHT
CONDENSATE DRAIN	COPPER TYPE L	95/5 SOLDERED	WROUGHT COPPER	125
REFRIGERANT LINES	COPPER TYPE ACR	BRAZED	WROUGHT COPPER	500

2. VALVES AND STRAINERS
   a). VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY A SINGLE MANUFACTURER. VALVES SHALL BE AS MANUFACTURED BY APOLLO, CRANE, HAMMOND, JENKINS, STOCKHOLM OR MILWAUKEE.
   b). FOR WATER SERVICE, STRAINERS SHALL BE FULL SIZE OF EXTERNAL PIPE SIZE AND HAVE A MAXIMUM CLEAN PRESSURE DROP OF ONE PSI (FOR STEAM CONDENSATE 1/4 PSI). STRAINERS SHALL BE PER MANUFACTURER'S TABLE BY SARCO, WATTS, OR ARMSTRONG. INSTALL STRAINERS AT LOCATIONS THAT WILL ALLOW REMOVAL OF SCREENS FOR CLEANING.
3. AUTOMATIC FLOW CONTROL VALVES

   PROVIDE AUTOMATIC PRESSURE COMPENSATING FLOW CONTROL VALVES BY GRISWOLD OR AUTOFLOW WHERE INDICATED ON THE DRAWINGS. VALVES SHALL BE FACTORY SET AND SHALL AUTOMATICALLY LIMIT THE RATE OF FLOW TO REQUIRED ENGINEERED CAPACITY WITHIN ±5% ACCURACY OVER AN OPERATING PRESSURE DIFFERENTIAL OF AT LEAST 14 TIMES THE MINIMUM REQUIRED FOR CONTROL. PROVIDE GAUGE KIT VALVE MANUFACTURER FOR USE BY BUILDING OPERATING PERSONNEL.

4. COMBINATION BALANCING SHUT-OFF VALVES

   PROVIDE CALIBRATED COMBINATION BALANCING SHUT-OFF VALVES. ACCEPTABLE MANUFACTURERS SHALL BE ARMSTRONG, BELL AND GOSSET, FLOWSET, OR TACO.

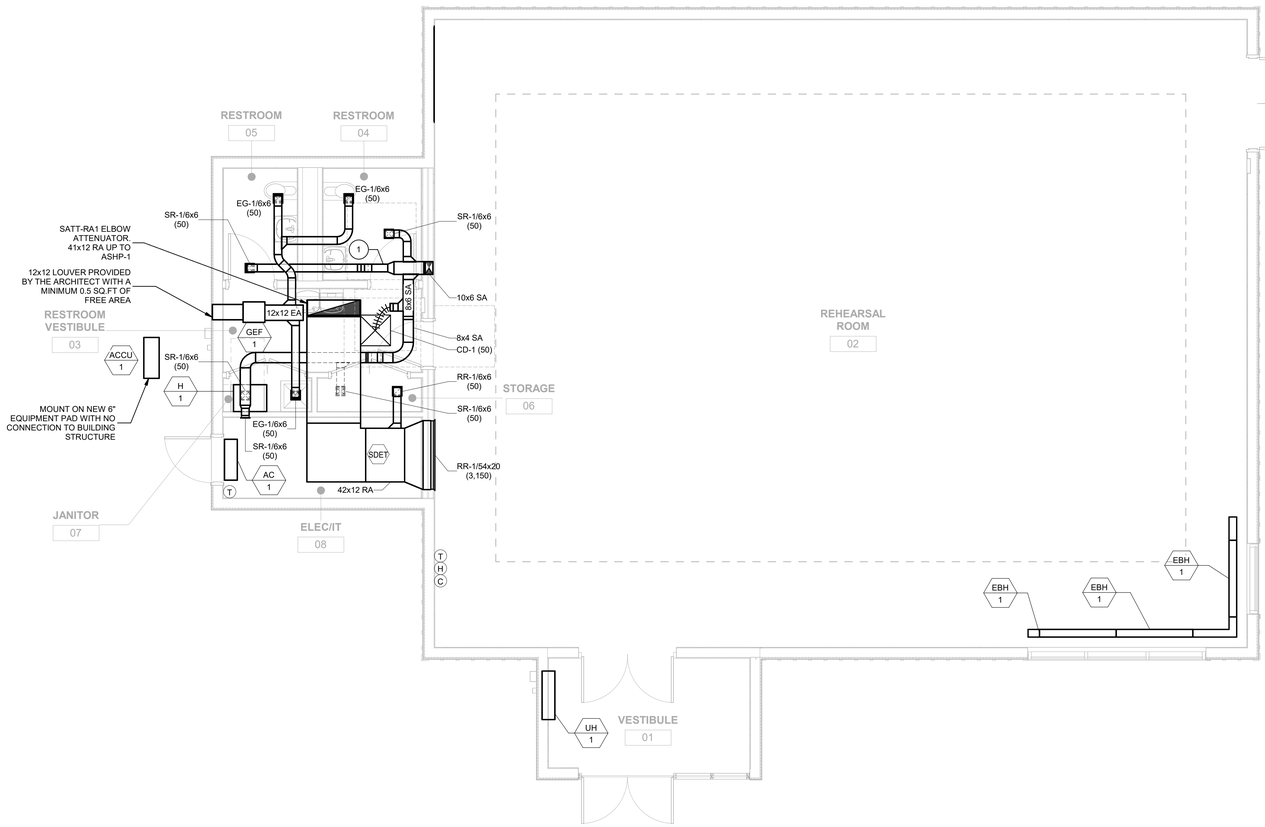
5. PIPE INSULATION
   a). COOLING COIL CONDENSATE DRAIN PIPING AND OUTDOOR COOLING TOWER DRAIN PIPING SHALL HAVE 3/4" THICK RIGID CLOSED CELL FOAM INSULATION SIMILAR TO ARMSTRONG ARMAFLEX.
   b). REFRIGERANT SUCTION LINES, REFRIGERANT HOT GAS BYPASS LINES, CONDENSATE DRAIN LINES, AND OUTDOOR REFRIGERANT LIQUID LINES SHALL BE INSULATED WITH 3/4" THICK RIGID CLOSED CELL FOAM INSULATION, ARMSTRONG RIGID ARMAFLEX, MANVILLE, OWNES CORNING, OR HALSTEAD/NOMACO (INSULTUBE), EXCEPT IN COMPUTER ROOM PLENA AND RETURN AIR PLENUM PIPING SHALL BE INSULATED WITH 3/4" FIBERGLASS PIPE INSULATION. ALL OUTDOOR PIPING SHALL BE ADDITIONALLY COVERED WITH WEATHERPROOF ALUMINUM JACKET.
6. EQUIPMENT INSULATION
   a). INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE, OR OWENS CORNING AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
   b). INSULATE THE FOLLOWING EQUIPMENT:
      1). DRAIN PANS
   c). INSULATION SHALL BE 1" THICK FIBROUS GLASS RIGID BLOCK OR SEMI-RIGID BOARD RATED FOR TEMPERATURE INTENDED. INSULATION SHALL BE FORMED OR FABRICATED TO FIT EQUIPMENT.

7. LEAK DETECTION
   a). PROVIDE A MODULAR LEAK DETECTION SYSTEM WHERE INDICATED ON PLAN. SYSTEM SHALL BE BY RAYCHEM TRACETEK OR APPROVED EQUAL.
   b). THE SYSTEM SHALL INCLUDE THE FOLLOWING:
      1). DIGITAL ALARM AND LOCATING PANEL
      2). EXTERNAL DIGITAL SENSOR INTERFACE LOCATING MODULES
      3). MODULAR WATER SENSING CABLE AND WATER DETECTION PROBES
      4). GRAPHIC DISPLAY OF SYSTEM INSTALLATION
   c). FOR OVERHEAD SUSPENDED PIPE INSTALLED IN THE MECHANICAL MEZZANINE, THE WATER SENSING CABLE SHALL BE FOUR WIRE CONSTRUCTION (TWO SENSING, ONE ALARM, AND ONE CONTINUITY) EMBEDDED IN A FLAME RETARDANT POLYMER CARRIER CORE. NO EXPOSED METAL AND SENSING WIRES COVERED IN CONDUCTIVE FLUOROPOLYMER. THE CABLE SHALL BE SUPPLIED WITH AN ABSORPTIVE SYNTHETIC FIBER BRAID THAT PROVIDES EXTRA MECHANICAL PROTECTION, DESIGNED TO WICK WATER ALONG THE CABLE, WITH A 100kg TENSILE BREAKING STRENGTH AND CAPABLE OF PROVIDING CONTINUOUS VERIFICATION OF SENSING CIRCUIT INTEGRITY AND THE PRESENCE OF WATER AT ANY POINT ALONG ITS LENGTH.
   d). ALL WATER SENSING CABLES AND PROBES SHALL BE MANAGED BY AN ALARM AND LOCATION SYSTEM COMPLETE WITH A LOCAL LEAK LOCATION ALARM WHICH LOCATES LEAKS TO WITHIN 0.5% OF SENSOR LENGTH.
   e). THE DIGITAL SENSOR INTERFACE MODULES SHALL BE CONNECTED TO THE BAS.
8. ELECTRIC STEAM GENERATOR
   a). ELECTRIC STEAM GENERATORS SHALL BE ELECTRIC RESISTIVE EVAPORATIVE STEAM HUMIDIFIERS BY DRISTEAM, ARMSTRONG, OR HERRMIDIFIER OF THE SCHEDULED CAPACITIES. UNITS SHALL BE CAPABLE OF GENERATING STEAM FROM DOMESTIC WATER SUPPLY. PROVIDE DRIP TEES AT LOW POINTS OF STEAM PIPING AND SUPPORT PIPING TO MAINTAIN A MINIMUM PITCH OF 1/8"/FT TOWARDS THE DISPERSION MANIFOLD. PROVIDE SAME-SIDE STEAM AND CONDENSATE PIPING CONNECTION AT DUCT-MOUNTED DISPERSION TUBING MANIFOLD. CONDENSATE PIPING SHALL BE SLOPED 1/4"/FT TOWARDS MOP SINK DRAIN.
   b). UNIT MATERIALS SHALL BE AS FOLLOWS:
      1). THE TANK AND HEATER PLATE SHALL BE 14-GAUGE 304-STAINLESS STEEL WITH HELI-ARC WELDED SEAMS.
      2). THE IMMERSION HEATER SHALL BE INCOLOY ALLOY-SHEATHED RESISTANCE TYPE DESIGNED FOR NO MORE THAN 91 WATTS PER SQUARE INCH.
      3). MANIFOLD TUBING AND FRAME SHALL BE 304 OR 316 STAINLESS STEEL AND TUBING HOT SURFACES IN THE AIRSTREAM SHALL BE INSULATED >= R-0.5.

IV. COOLING EQUIPMENT

1. SPLIT SYSTEM WALL MOUNTED AIR CONDITIONING UNITS
   a). PROVIDE A COMPLETE SYSTEM OF AIR CONDITIONING UNITS OF THE TYPE, CAPACITY, AND STYLE INDICATED ON THE CONTRACT DRAWINGS. AIR CONDITIONING UNITS SHALL BE AS MANUFACTURED BY TRANE, MITSUBISHI, OR LG.
   b). UNITS SHALL BE SUPPLIED WITH UL LISTINGS.
   c). UNITS SHALL BE AIR COOLED AND SHALL BE PROVIDED WITH THE FOLLOWING ACCESSORIES:
      1). FILTERS
      2). MICROPROCESSOR BASED CONTROLS WITH INTERFACE COMPATIBLE WITH BAS
      3). LOW AMBIENT CONTROL
      4). DISCONNECT SWITCH
      5). PRECHARGED REFRIGERATION LINES
      6). REMOTE TEMPERATURE/HUMIDITY SENSORS
      7). CONDENSATE PUMP
2. ROOF TOP HEAT PUMP (ASHP) UNITS
   a). PROVIDE PACKAGED ROOF TOP UNIT OF TYPE, SIZE, AND CAPACITIES SHOWN ON SCHEDULE BY VALENT OR GREENHECK. UNIT SHALL CONSIST OF A DX COIL, SUPPLY FAN, EXHAUST FAN, AIR COOLED CONDENSING FANS, CONDENSING COIL, COMPRESSOR, ENERGY RECOVERY WHEEL, AUXILLIARY ELECTRIC HEATER, 2" MERV 8 SUPPLY, RETURN, AND OUTDOOR AIR FILTERS, PIPING, CONTROLS, WIRING, AND OTHER ACCESSORIES AND APPURTENANCES NECESSARY TO PROVIDE FULLY AUTOMATIC FUNCTIONING SYSTEM.
   b). ROOF TOP UNIT SHALL BE CAPABLE OF STARTING AND OPERATING DOWN TO 0°F AMBIENT, LOW AMBIENT OPERATION SHALL BE ACCOMPLISHED BY VARYING THE SPEED OF CONDENSER FANS BASED ON SENSING OF HEAD PRESSURE IN REFRIGERANT LIQUID LINE, BY MODULATING OUTDOOR AND RECIRCULATING AIR DAMPERS, OR BY FLOODING THE CONDENSING COIL WITH LIQUID REFRIGERANT TO MAINTAIN THE DESIRED CONDENSER PRESSURE. PROVIDE TIME DELAY RELAY FOR TIMED BYPASS OF THE LOW PRESSURE SWITCH OR OTHER MEANS TO START AND RUN CONDENSING UNIT AT 0°F WITHOUT NUISANCE SAFETY TRIP UNITS. PROVIDE HOT GAS REHEAT COIL INTEGRAL TO THE UNIT FOR REHEAT WHEN UNIT IS IN DEHUMIDIFICATION MODE.
   c). INTERNAL REFRIGERANT PIPING SHALL BE ACR COPPER TUBING WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS. REFRIGERANT SHALL BE R-454B. PROVIDE INTEGRAL UNIT REFRIGERANT LE

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1 HVAC DUCTWORK - LEVEL 1 PLAN
1/4" = 1'-0"

Keynote Legend	
Key Value	Keynote Text
1	PROVIDE VOLUME DAMPERS ON ALL TAKEOFFS AND BALANCE TO CFM INDICATED.

THE MUSIC ANNEX
NEW PERFORMING ART REHEARSAL HALL
THE COLLEGE OF NEW JERSEY
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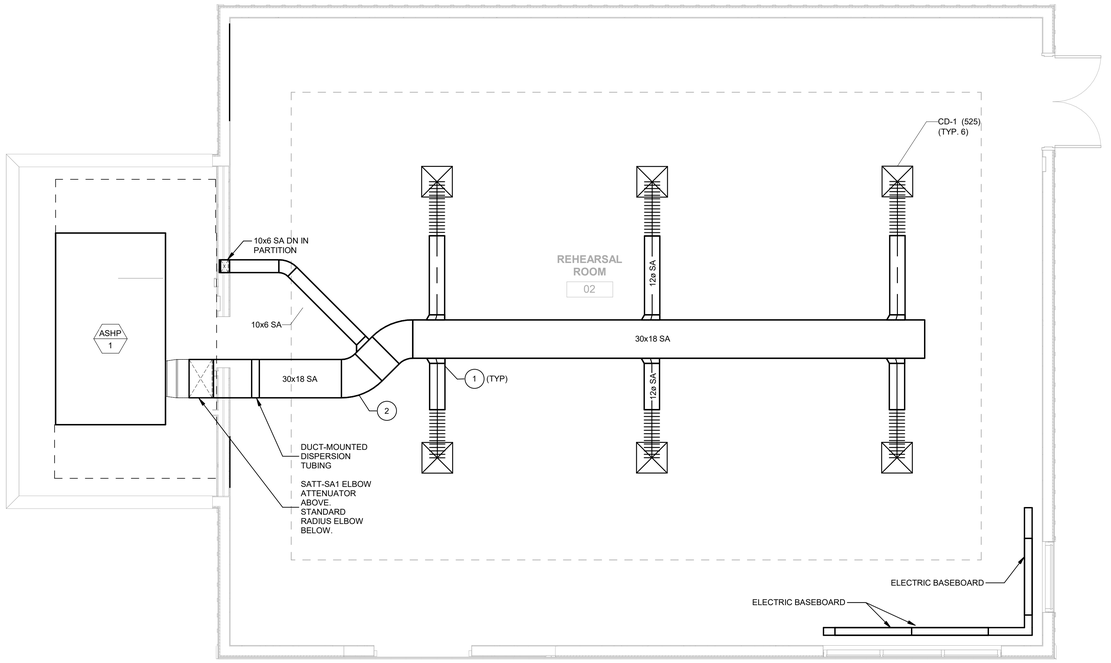
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HVAC DUCTWORK - LEVEL 1 PLAN

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1 HVAC DUCTWORK - LOW ROOF PLAN
1/4" = 1'-0"

Keynote Legend	
Key Value	**Keynote Text**
1	PROVIDE VOLUME DAMPERS ON ALL TAKEOFFS AND BALANCE TO CFM INDICATED. VOLUME DAMPERS SHALL BE LOCATED AT LEAST FIVE DUCT DIAMETERS UPSTREAM OF EACH DIFFUSER.
2	SUPPLY DUCTWORK CONSTRUCTION DOWNSTREAM OF DUCT-MOUNTED DISPERSION ASSEMBLY SECTION (REQUIRED LENGTH INDICATED BY DETAIL) SHALL BE 20 GAUGE.

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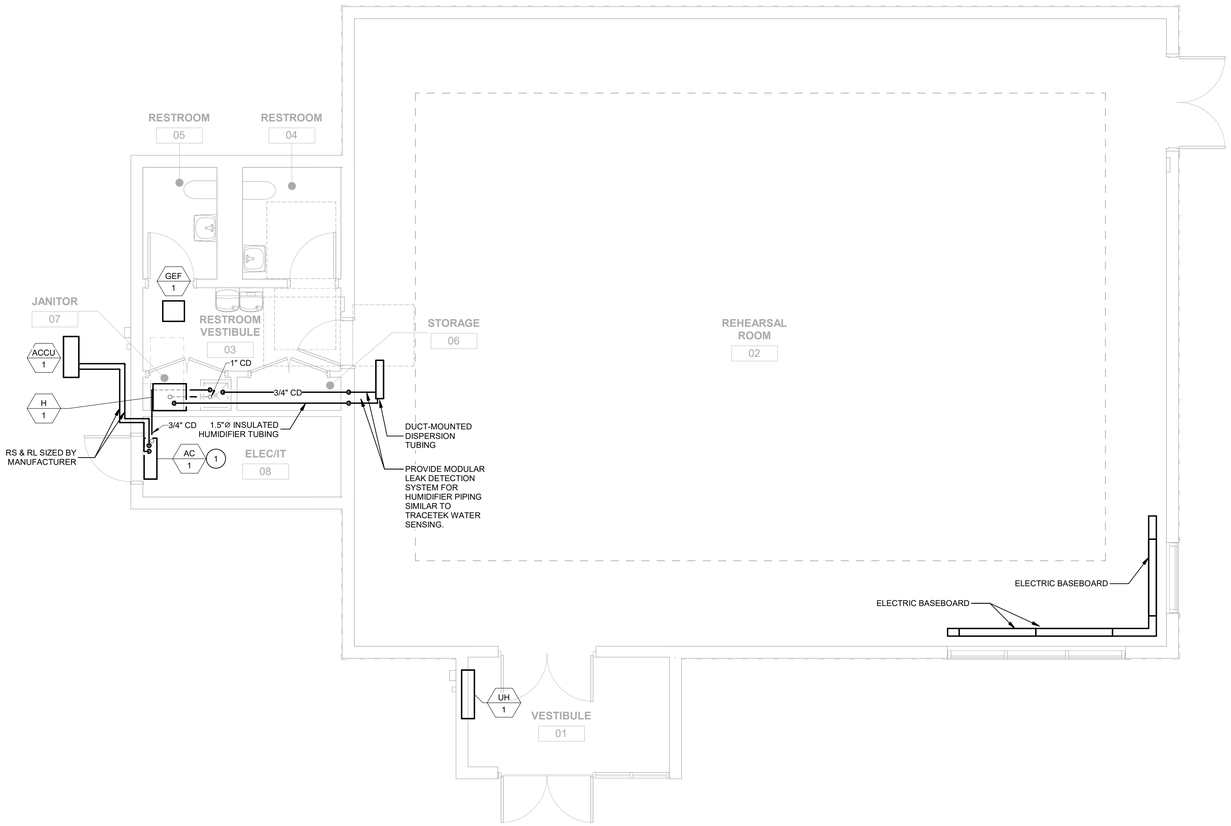
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HVAC DUCTWORK - LOW ROOF PLAN

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1 HVAC PIPING - LEVEL 1 PLAN
1/4" = 1'-0"

Keynote Legend	
Key Value	Keynote Text
1	PROVIDE CONDENSATE PUMP AND ASSOCIATED DRAIN PIPING TO NEAREST FLOOR DRAIN OR OPEN HUB CONNECTION.

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HVAC PIPING - LEVEL 1 PLAN

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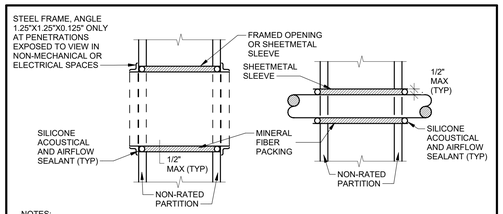
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AIRFLOW MAX (CFM)	DUCT ARRANGEMENT				
	ROUND DUCT SIZE (IN)	EQUIVALENT RECTANGULAR DUCT SIZE (IN)			
60	6	4x8			
75	6	4x8	6x6		
110	8	4x12	6x8		
160	8	6x10	8x8		
220	10	6x12	8x10		
300	10	6x16	8x12	10x10	
380	12	6x18	8x14	10x10	
500	14	6x24	8x16	10x14	
600	14	8x20	10x16	12x12	
700	14	8x22	10x18	12x14	
850	16	8x26	10x20	12x16	14x14
1000	16	8x30	10x22	12x18	14x16
1400	18	10x30	12x24	14x20	16x18
1800	20	10x38	12x30	14x26	16x22
2100	22	12x34	14x28	16x24	18x22
2500	24	12x42	14x36	16x30	18x26
3000	26	12x50	14x42	16x36	18x32

NOTES:

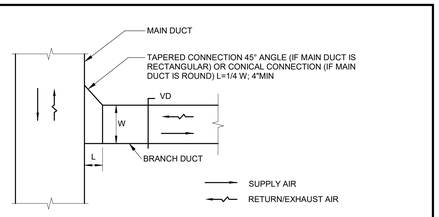
1. WHERE DUCT SIZES ARE NOT INDICATED ON PLANS, SELECT SIZE FROM TABLE BASED ON THE CFM REQUIRED; SIZES BASED ON MAXIMUM STATIC PRESSURE DROP OF 0.05 INCHES PER 100 FEET OF DUCT.

12 LOW PRESSURE DUCT SIZING TABLE
SCALE: NTS H01-001

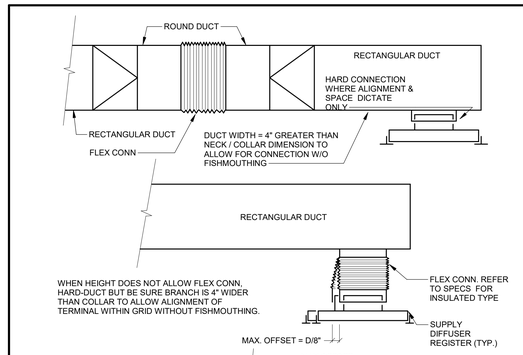


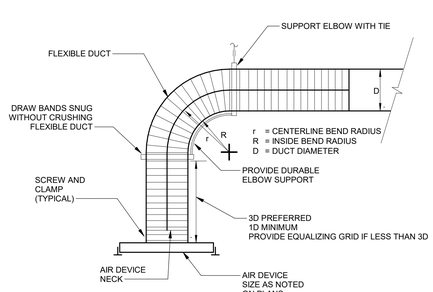
NOTES:
1. AT FIRE RATED PARTITIONS WITHOUT FIRE DAMPER, REPLACE PACKING AND SILICONE SEALANT WITH UL LISTED FIRE STOP SYSTEM. INSTALL IN ACCORDANCE WITH UL LISTING.
2. FIRE STOP DUCT PENETRATIONS THRU RATED AND NON-RATED CORRIDOR WALLS ABOVE CEILINGS.

8 DUCT PENETRATION OF FULL HEIGHT PARTITIONS
SCALE:NTS H01-013



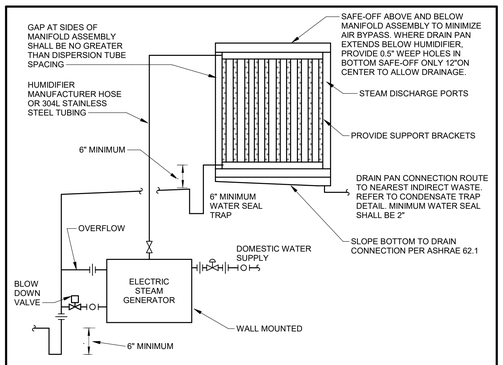
9 LOW PRESSURE BRANCH TAKE-OFFS
SCALE:NTS H01-002





NOTES:
1. DETAIL ALLOWS DUCTWORK TO BE INSTALLED BEFORE CEILING GRID THEN ALLOWS DIFFUSERS AND REGISTERS TO BE POSITIONED INTO GRID.
2. PROVIDE INSULATED TRANSITION ROUND TO SQUARE INLET DIFFUSERS.
3. SECURE FLEXIBLE DUCT TO METAIL DUCT WITH (2) STAINLESS STEEL CLAMPS OR NYLON TY-WRAPS TO INDIVIDUALLY SECURE FLEXIBLE DUCT INNER SLEEVE AND OUTER SLEEVE. WHEN INSTALLED ON INSULATED SYSTEM SEAL INSULATION JOIN WITH VAPOR BARRIER MASTIC. PROVIDE NYLON TY-WRAP TOOL OR REUSABLE SS DRAW BANDS.
4. PROVIDE DUCT MOUNTED VOLUME DAMPER. AVOID NECK DAMPERS.
5. FLEXIBLE DUCTS SHALL BEND IN ONE DIRECTION ONLY WITH A MAXIMUM CHANGE IN DIFFERENCE OF 90 DEGREES.
6. UNLESS SHOWN OTHERWISE FLEXIBLE DUCT SIZE AND COLLAR OF TAP OFF SHALL BE SAME SIZE AS DIFFUSER NECK.
7. IF RUN-OUT LENGTH REQUIRES SEGMENT OF HARD DUCT, SIZE SHALL BE SAME AS DIFFUSER NECK. RUN-OUT TO DIFFUSER SHALL BE AS STRAIGHT AS POSSIBLE.
8. INSTALL BENDS IN FLEXIBLE DUCTS WITH MINIMUM CENTERLINE RADIUS EQUAL TO 1.5 DUCT DIAMETERS (r >= 1.5 x D)
9. DO NOT EXCEED 6'-0" MAXIMUM LENGTH OF FLEX DUCT RECOMMENDED IN THE 2017 ASHRAE FUNDAMENTALS HANDBOOK. INSTALL FLEX DUCT WITH NO MORE THAN 1/2" SAG PER FOOT.

1 DIFFUSER/REGISTER DUCTWORK CONNECTIONS
SCALE: NTS H01-005



NOTES:
1. MANIFOLD ASSEMBLY ENTIRE WIDTH OF DUCT OR AHU. SPACE MANIFOLDS IN DUCT OR AHU HEIGHT AND PROVIDE SUPPORTS RECOMMENDED BY THE HUMIDIFIER MANUFACTURER. DETAIL APPLIES TO ALL MANIFOLD ASSEMBLT HUMIDIFIERS. PROVIDE NUMBER OF TUBES REQUIRED TO MAINTAIN REQUIRED DISPERSION DISTANCE.
2. PROVIDE INSULATED STAINLESS STEEL OR ALUMINUM SECTION OF DUCTWORK. BOTTOM OF DUCT SHALL BE SEAMLESS OR WELDED LIQUID TIGHT TO ACT AS A DRAIN PAN BENEATH HUMIDIFIER. WATER TIGHT SECTION SHALL COMPLY WITH ASHRAE 62.1 DRAIN PAN REQUIREMENTS WITH 2 INCH MINIMUM DEPTH. DUCT SECTION SHALL EXTEND A MINIMUM OF 2'-0" UPSTREAM AND 3'-0" LONGER THAN ACTUAL DISPERSION DISTANCE DOWNSTREAM OF HUMIDIFIER (6'-0" MINIMUM TOTAL SECTION LENGTH).
4. INSTALL CONTROL VALVE INLET STRAINER WITH BASKET SET IN HORIZONTAL PLANE.
5. PIPING AND REQUIRED APPURTENANCES MAY VARY BY MANUFACTURER. MODIFY PIPING AND PROVIDE APPURTENANCES TO BE IN COMPLIANCE WITH MANUFACTURER RECOMMENDATIONS FOR EQUIPMENT PROVIDED.

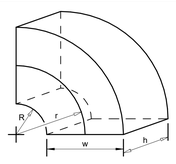
13 ELECTRIC HUMIDIFIER WITH MANIFOLD DISPERSION ASSEMBLY PIPING
SCALE: NTS H03-038

RADIUS ELBOW AND SPLITTER VANE REQUIREMENTS

r/w RATIO:	NO. OF VANES FOR 1 ELBOW:	NO. OF VANES WHEN 2 ELBOWS ARE WITHIN 2 EQUIV. DIA.:
r/w >= 1.50	0	1
1.5 > r/w >= 0.70	1	2
0.7 > r/w >= 0.60	2	3
0.6 > r/w >= 0.55	3	3

EQUIVALENT DIAMETER = (w+h)/2

NOTE: r/w = 0.5 IS A SQUARE THROAT ELBOW! HOWEVER, MINIMUM INSIDE RADIUS R SHOULD BE 2".



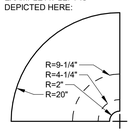
r = CENTERLINE RADIUS
R = INSIDE RADIUS
w = DUCT WIDTH
h = DUCT HEIGHT

TERMINOLOGY:

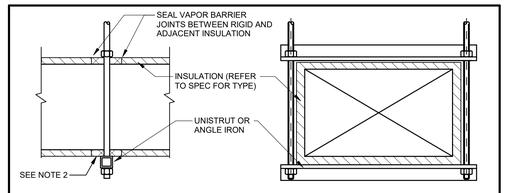
"NO. 1 OF 3" = NO. 1 VANE OF A TOTAL OF 3 VANES.

"NO. 2 OF 3" = NO. 2 VANE OF A TOTAL OF 3 VANES.

EXAMPLE AT LEFT IS DEPICTED HERE:

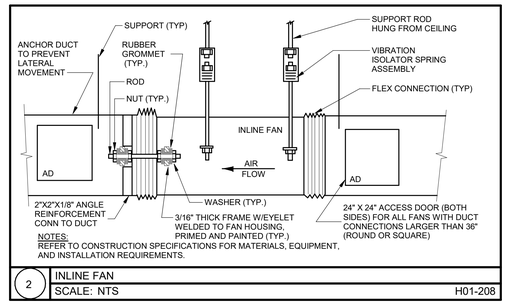


10 QUANTITY AND SPACING OF DUCT SPLITTER VANES
SCALE: NTS H01-003



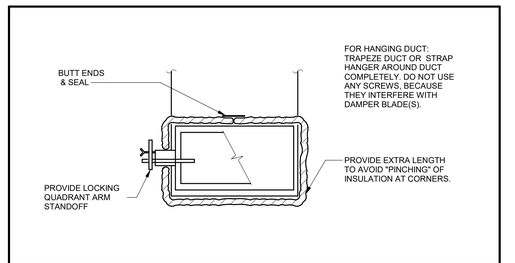
NOTES :
1. UNISTRUT, ANGLE IRON, AND RODS SHALL NOT PENETRATE THE INSULATION VAPOR BARRIER.
2. PROVIDE 6" FULL PERIMETER SECTION OF RIGID INSULATION WITH VAPOR BARRIER AT EACH UNISTRUT OR ANGLE IRON SUPPORT.

5 DUCT INSULATION DETAIL AT UNISTRUT HANGER SUPPORT
SCALE: NTS H01-033

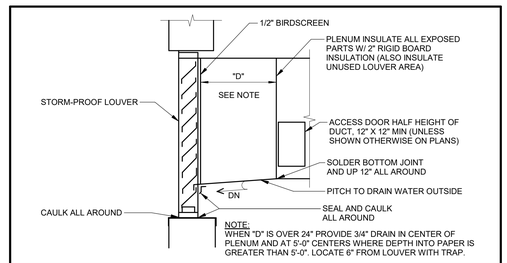


NOTES:
REFER TO CONSTRUCTION SPECIFICATIONS FOR MATERIALS, EQUIPMENT, AND INSTALLATION REQUIREMENTS.

2 INLINE FAN
SCALE: NTS H01-208

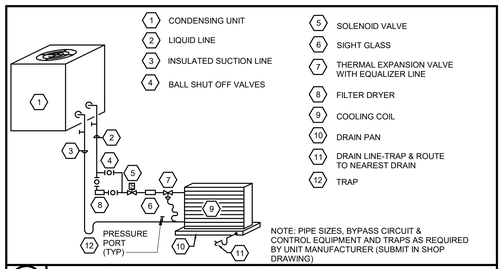


6 TYPICAL DUCT INSULATION & SUPPORTS NEAR VOLUME DAMPERS
SCALE:NTS H01-015



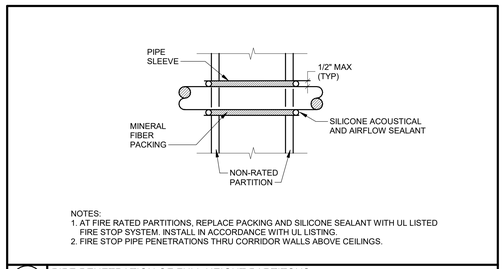
NOTE:
WHEN "D" IS OVER 24" PROVIDE 3/4" DRAIN IN CENTER OF PLENUM AND AT 5'-0" CENTERS WHERE DEPTH INTO PAPER IS GREATER THAN 5'-0". LOCATE 6" FROM LOUVER WITH TRAP.

3 LOUVER CONNECTION
SCALE: NTS H01-004



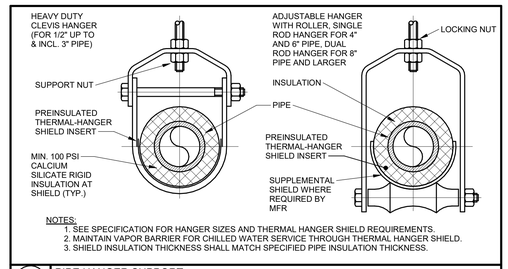
NOTE: PIPE SIZES, BYPASS CIRCUIT & CONTROL EQUIPMENT AND TRAPS AS REQUIRED BY UNIT MANUFACTURER (SUBMIT IN SHOP DRAWING)

11 REFRIGERANT PIPING COMPONENT DIAGRAM
SCALE: NTS H05-002



NOTES:
1. AT FIRE RATED PARTITIONS, REPLACE PACKING AND SILICONE SEALANT WITH UL LISTED FIRE STOP SYSTEM. INSTALL IN ACCORDANCE WITH UL LISTING.
2. FIRE STOP PIPE PENETRATIONS THRU CORRIDOR WALLS ABOVE CEILINGS.

7 PIPE PENETRATION OF FULL HEIGHT PARTITONS
SCALE:NTS H06-004



NOTES:
1. SEE SPECIFICATION FOR HANGER SIZES AND THERMAL HANGER SHIELD REQUIREMENTS.
2. MAINTAIN VAPOR BARRIER FOR CHILLED WATER SERVICE THROUGH THERMAL HANGER SHIELD.
3. SHIELD INSULATION THICKNESS SHALL MATCH SPECIFIED PIPE INSULATION THICKNESS.

4 PIPE HANGER SUPPORT
SCALE: NTS H06-07

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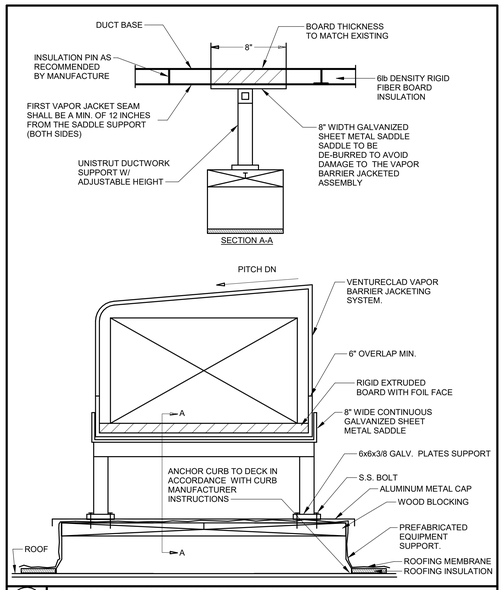
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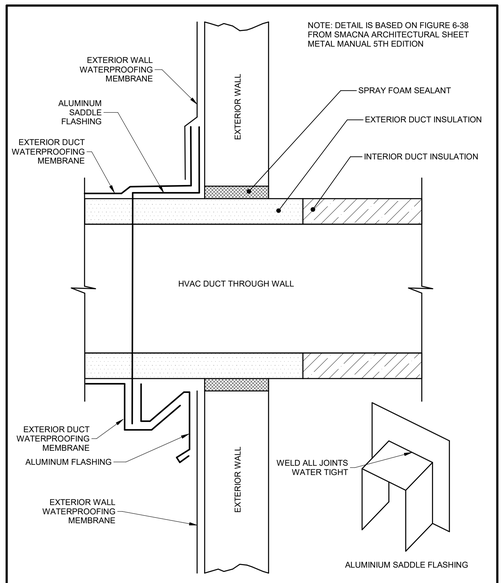
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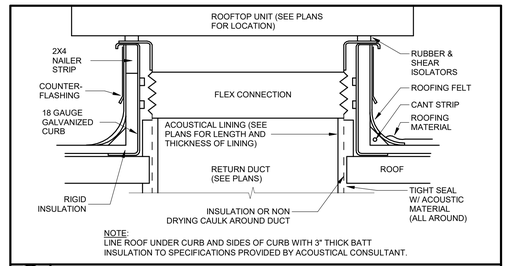
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16 EXTERIOR DUCTWORK SUPPORT AND INSULATION
SCALE: NTS H01-023



14 EXTERIOR WALL DUCT PENETRATION DETAIL
SCALE: NTS H01-106



NOTE:
LINE ROOF UNDER CURB AND SIDES OF CURB WITH 3" THICK BATT
INSULATION TO SPECIFICATIONS PROVIDED BY ACOUSTICAL CONSULTANT.

15 ROOFTOP UNIT MOUNTING W/CURB
SCALE: NTS H01-101

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THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ 08618

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Project No 24102
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HVAC DETAILS

M-502

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PACKAGED ROOFTOP AIR SOURCE HEAT PUMP

TAG	SERVICE	LOCATION	SUPPLY FAN								EXHAUST FAN								ENERGY RECOVERY WHEEL								DX COOLING COIL											DX HEATING COIL				AUXILIARY ELECTRIC HEATING COIL			ELECTRICAL		DIMENSIONS			WEIGHT (LBS)	MANUFACTURER	MODEL	NOTES
			MAX SA CFM	MIN SA CFM	MIN OA CFM	ESP (IN. W.G.)	FEG	DRIVE	MOTOR			MAX EA CFM	NORMAL EA CFM	ESP (IN. W.G.)	FEG	DRIVE	MOTOR			SUMMER PERFORMANCE				WINTER PERFORMANCE				MBH TOTAL	MBH SENS	FACE VEL (FPM)	EER	REFR. TYPE	AIR					NO. OF CIRCUITS	MBH	EADB (°F)	LADB (°F)	COP	TOTAL INPUT (kW)	EADB (°F)	LADB (°F)	FLA	V/ø/HZ	L (IN)	W (IN)	H (IN)				
									HP	V/ø/HZ	CAPACITY CONTROL						HP	V/ø/HZ	CAPACITY CONTROL	EADB (°F)	EAWB (°F)	LADB (°F)	LAWB (°F)	EADB (°F)	EAWB (°F)	LADB (°F)	LAWB (°F)						EADB (°F)	EAWB (°F)	LADB (°F)	LAWB (°F)	MAX APD (IN WG)																	
ASHP-1	PERFORMING ARTS PAVILION	LOW ROOF ABOVE BACK OF HOUSE SPACES	3,500	2,200	2,000	1.5	-	DIRECT	3	208/3/60	VFD	3,500	2,000	0.5	-	DIRECT	2	208/3/60	VFD	95	78	80	67	1	-	50.9	42.4	128	92	264	11.1	R454B	77.9	65.4	52.9	52.9	0.25	1	63.6	59	76.4	3.4	32.8	59	88.7	70.6	208/3/60	172	86	66	3600	VALENT	VXE	1

NOTES:
1. PROVIDE UNIT WITH 2" MERV 8 RETURN AIR FILTERS.
2. PROVIDE UNIT WITH ECONOMIZER FAULT DETECTION (FDD) SYSTEM TO INDICATE WHEN FREE COOLING IS AVAILABLE AND IF THE OUTSIDE AIR DAMPER AND RECIRCULATION DAMPER ARE REACTING PROPERLY.
3. PROVIDE UNIT WITH VIBRATION ISOLATING CURB PER SPECIFICATIONS.

SINGLE ZONE AIR CONDITIONING SYSTEMS

EVAPORATOR COIL UNIT																CONDENSING COIL UNIT																	UNIT				
TAG	SERVICE	LOCATION	BLOWER						COOLING						MCA	MOP	V-ϕ	TAG	LOCATION	TYPE	NOMINAL COOLING CAPACITY (MBH)	NOMINAL HEATING CAPACITY (MBH)	COOLING (EER)	HEATING (COP @47° F)	COMPRESSOR				BLOWER					ROWS	V-ϕ	AMB. (°F) MIN-MAX	MCA	MOP	MANUFACTURER	MODEL	NOTES
			CFM	QUANTITY	RPM	ESP (IN. WG)	WATTS	FLA	SENS MBH	TOTAL MBH	EAT DB (°F)	EAT WB (°F)	ROWS	FACE AREA											TYPE	RLA	REFRIGERANT	QUANTITY	CFM	RPM	ESP (IN. WG)	HP	FLA								
AC-1	ELEC/IT	WALL-HUNG	455	1	-	NA	30	-	10.6	12.0	80	67	NA	NA	1.0	-	208-1	ACCU-1	EXTERIOR GRADE	AIR-COOLED	12	-	13.4	-	INVERTER	-	R454B	1	1,590	-	NA	0.1	-	-	208-1	0-95	12	15	TRANE	MSY & MUY	ALL

NOTES:
1. PROVIDE UNIT MOUNTED FUSE DISCONNECT, REMOTE MOUNTED ROOM THERMOSTAT, AND DIGITAL CONTROLLER.
2. PROVIDE UNIT WITH MANUFACTURER'S FILTERS.
3. PROVIDE CONDENSATE PUMP AND ASSOCIATED DRAIN PIPING FOR CONDENSATE WASTE REMOVAL TO NEAREST FLOOR DRAIN.
4. PROVIDE EQUIPMENT WITH A MINIMUM SCCR RATING OF 10 kA FOR 208 / 120 V.
5. THE REFRIGERANT PIPING SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND THE SPECIFICATIONS.
6. PROVIDE WALL-MOUNTING KIT. CONDENSING UNIT TO BE MOUNTED IN THE IT ROOM AT 8'-0" A.F.F.

STEAM HUMIDIFIER SYSTEMS

TAG	SERVICE	SOURCE	DISTRIBUTION TYPE	LOCATION	QTY	TOTAL CFM	OUTDOOR AIR			ENTERING AIR			DESIRED ROOM CONDITION			HUMIDITY			AIR FLOW DIRECTION	STEAM GENERATOR V-F-HZ	FLA	MANUFACTURER	STEAM GENERATOR & DISPERSION MODELS	NOTES
							EADB (°F)	RH (%)	CFM	EADB (°F)	RH (%)	GR/LB	DB (°F)	RH (%)	GR/LB	LB/HR	LEAVING RH (%)	MAX. ABSORP. DIST. (FT)						
H-1	ASHP-1	ELECTRIC STEAM HUMIDIFIER IN JANITOR CL.	DISPERSION	ASHP-1 SUPPLY DUCTWORK	1	3,500	52.9	40	3,500	54.9	40	25.53	73	45	54.5	76.9	84.5	2.5	HORIZONTAL	208-3-60	83	DRISTEAM	RX-75-2; RAPID-SORB-1.5"	ALL

NOTES:
1. PROVIDE DOMESTIC COLD WATER TO ELECTRIC STEAM GENERATOR.
2. PROVIDE ELECTRIC MODULATING OPERATOR AND HIGH-LIMIT HUMIDISTAT.
3. PROVIDE INTEGRAL DRAIN WATER TEMPERING SO THAT DRAIN WATER TEMPERATURE WILL BE UNDER 140ºF.
4. STEAM TUBING AND CONDENSATE DRAIN PIPING TO AND FROM DISPERSION ASSEMBLY SHALL BE SLOPED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. PROVIDE A DRIP TEE AT LOW POINTS IN STEAM TUBING.
5. CALCULATED LOAD IS BASED ON WORST CASE HUMIDIFICATION REQUIREMENT DURING ECONOMIZER MODE.
6. MAINTAIN MANUFACTURER REQUIRED ABSORBTION DISTANCE DOWNSTREAM OF HUMIDIFIER.

ELECTRIC UNIT HEATERS

TAG	LOCATION	TYPE	FAN	HEATING COIL				V/ø/HZ	TOTAL AMPS	MANUFACTURER	MODEL	NOTES
			CFM	TOTAL MBH	KW	EAT (°F)	LAT (°F)					
UH-1	VESTIBULE	WALL RECESSED	175	10.2	3.0	50	90	208/1/60	14.4	TRANE	UHAA	1, 2, 3

NOTES:
1. PROVIDE WITH UNIT MOUNTED THERMOSTAT.
2. PROVIDE WITH WALL RECESS KIT.
3. PROVIDE WITH DISCONNECT SWITCH.

ELECTRIC BASEBOARD HEATER

TAG	LOCATION	NOM. WATTS PER LF	TOTAL WATTS	BTU/HR	ACTIVE LENGTH (FT.)	V/ø/HZ	ORIENTATION	DIMENSIONS			MANUFACTURER	MODEL	NOTES
								L (IN)	D (IN)	H (IN)			
EBH-1	REHEARSAL ROOM	146	733	2500	5	208/1/60	FLOOR MOUNTED PEDESTAL	60	4	10	RUNTAL	EBP	ALL

NOTES:
1. LENGTH LISTED IS MINIMUM ACTIVE LENGTH. TOTAL FINISH LENGTHS SHALL BE COORDINATED WITH FINISHED SPACE.
2. PROVIDE WITH 6" CONTROL SECTION, END CAPS, AND DISCONNECT SWITCH.

FANS

TAG	SERVICE	FAN TYPE	LOCATION	CFM	ESP (IN. WG.)	WHEEL		FAN ARR	MOTOR ARR	FAN		MIN. STATIC EFFICIENCY	MOTOR HP	MOTOR RPM	CAPACITY CONTROL	V-F-HZ	CONNECT TO STANDBY	MANUFACTURER	MODEL	NOTES
						TYPE	DRIVE			RPM	BHP									
GEF-1	GENERAL EXHAUST	HORIZ. INLINE	RESTROOM VESTIBULE	150	0.50	CENTRIFUGAL	DIRECT	9	E (BOTTOM)	1725	0.026	45%	1/8	1429	ECM	208-1-60	NO	COOK	SQN	1, 2, 3, 4

NOTES:
1. PROVIDE WITH SPRING ISOLATORS.
2. PROVIDE WITH PREMIUM EFFICIENCY MOTOR.
3. PROVIDE WITH DISCONNECT SWITCH.
4. PROVIDE WITH VARI-FLOW PRESSURE CONTROLLER AND AIR BALANCE KIT TO ALLOW MODULATION OF MOTOR RPM VIA EXTERNAL SIGNAL SPEED CONTROL.

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HVAC SCHEDULES

M-601

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DUCT MATERIALS SCHEDULE

SERVICE	SMACNA PRESSURE CLASS	MAXIMUM VELOCITY	MATERIAL	TRANSVERSE JOINTS	SMACNA CLASS		INSULATION	NOTES
					SEAL	LEAKAGE		
SUPPLY								
ASHP-1 TO VOLUME DAMPER	+4	1200	G90	TDF/TDC	A	3	SEE SCHEDULE	PROVIDE 1-1/2" ACOUSTICAL DUCT LINER TO SPECIFICATIONS LISTED ON M-003 FOR LENGTH OF DUCTWORK BETWEEN ASHP-1 TO DUCT-MOUNTED DISPERSION TUBING.
VOLUME DAMPER TO DIFFUSER	+2	800	G90	TDF/TDC	A	6	SEE SCHEDULE	
MAIN ABOVE REHEARSAL ROOM	20 GA MINIMUM	1200	G90	TDF/TDC	A	3	2"	
RETURN AND EXHAUST								
RETURN AIR PLENUM	-2	800	G90	TDF/TDC	A	6	ACOUSTICAL DUCT LINER REPLACES INSULATION	PROVIDE 1-1/2" ACOUSTICAL DUCT LINER TO SPECIFICATIONS LISTED ON M-003.
PLENUM TO ASHP INLET	-4	1200	G90	TDF/TDC	A	3	ACOUSTICAL DUCT LINER REPLACES INSULATION	PROVIDE 1-1/2" ACOUSTICAL DUCT LINER TO SPECIFICATIONS LISTED ON M-003.
EXHAUST AIR GRILLE TO EXHAUST FAN	-2	1200	G90	TDF/TDC	A	3	SEE SCHEDULE	
LOUVERS								
EXHAUST AIR DUCT FROM EXHAUST FAN TO LOUVER	-4	1500	G90	TDF/TDC	A	3	SEE SCHEDULE	

HVAC INSULATION

DUCTWORK			INDOOR			ABOVE GRADE OUTDOOR			NOTES
LOCATION	SHAPE	SERVICE	THICKNESS	TYPE(S)	JACKET	THICKNESS	TYPE(S)	JACKET	
CONCEALED FROM VIEW	ROUND/OVAL	SUPPLY, RETURN DUCT & PLENUM	1-1/2"	C	FSK	2"	D	FSK	
	RECTANGULAR	SUPPLY, RETURN DUCT & PLENUM	1-1/2"	C, D	FSK	2"	D	FSK	
		EXHAUST DUCT 10' UPSTREAM FROM PENETRATION OF BUILDING EXTERIOR	2"	C	FSK	2"	D	FSK	
EXPOSED	ROUND/OVAL	SUPPLY, RETURN, EXHAUST DUCT	1-1/2"	D	ASJ	2"	D	FSK	
	RECTANGULAR	SUPPLY, RETURN, EXHAUST DUCT	1-1/2"	D	ASJ	2"	D	FSK	
		SUPPLY, RETURN, EXHAUST PLENUM	1-1/2"	D	ASJ	2"	D	FSK	

PIPING & EQUIPMENT				INDOOR			ABOVE GRADE OUTDOOR			NOTES
LOCATION	TEMP	SERVICE	SIZE	THICKNESS	TYPE(S)	JACKET	THICKNESS	TYPE(S)	JACKET	
CONCEALED OR EXPOSED	≤ 60° F	CONDENSATE & EQUIPMENT DRAIN WATER	ALL	1"	E	ASJ	2"	E	ASJ	1
	≤ 250° F	STEAM & STEAM CONDENSATE RETURN	≤ 4"	2.5"	E	ASJ	4"	E	ASJ	1
	ALL	REFRIGERANT SUCTION & HOT GAS	ALL	1.5"	B	--	1.5"	B	--	2
	ALL	REFRIGERANT SUCTION & HOT GAS FLEXIBLE TUBING	ALL	1.5"	B	--	1.5"	B	--	2
EQUIPMENT	AIR SYSTEMS	FANS		2"	C	--	2"	D	--	

NOTES:

1. PVC FITTING COVERS ARE REQUIRED FOR ALL PIPING, CONCEALED OR EXPOSED.
2. PROVIDE GLASS-FIBER CLOTH FIELD APPLIED JACKET FOR PIPING OUTDOORS.

INSULATION TYPES:

A CELLULAR GLASS
B FLEXIBLE ELASTOMERIC
C MINERAL FIBER, BLANKET
D MINERAL FIBER, BOARD
E MINERAL FIBER, PRE-FORMED PIPE

GRILLES, REGISTERS, & DIFFUSERS

TAG	NECK SIZE / RUNOUT SIZE (IN)	FACE SIZE	SELECTION RANGE (CFM)	SERVICE	MAX AIR P.D.	MAX N.C. LEVEL	MOUNTING	ACCESSORIES	MANUFACTURER MODEL NUMBER	NOTES
CD-1	6" Ø	24x24	20-100	SUPPLY	0.1	25	LAY-IN / SURFACE MOUNT	-	TITUS - OMNI	1, 2, 3
	8" Ø		101-200		0.1	25		-		1, 2, 3
	10" Ø		201-350		0.1	25		-		1, 2, 3
	12" Ø		351-500		0.1	25		-		1, 2, 3
SR-1	SEE PLANS	MATCH NECK SIZE	SEE PLANS	SUPPLY	0.1	25	SURFACE MOUNT	-	TITUS 300RL	1, 2, 3, 4
RR-1	SEE PLANS	MATCH NECK SIZE	SEE PLANS	RETURN	0.15	25	SURFACE MOUNT	-	TITUS - 350RL	1, 2, 3, 4
EG-1	SEE PLANS	MATCH NECK SIZE	SEE PLANS	EXHAUST	0.15	25	SURFACE MOUNT	-	TITUS - 350RL	1, 2, 3

NOTES:

1. COORDINATE MOUNTINGS WITH ADJACENT TYPE OF CONSTRUCTION. COORDINATE WITH ARCHITECTURAL RCP.
2. FINISHES, COLOR, AND BORDER TYPES SHALL BE APPROVED BY THE ARCHITECT.
3. REFER TO PLANS FOR AIR QUANTITIES FOR EACH DEVICE. APPROPRIATE NECK SIZE SHALL BE PROVIDED CORRESPONDING TO SCHEDULED AIRFLOW RANGE.
4. ALL ALUMINUM CONSTRUCTION REQUIRED FOR WET LOCATIONS INCLUDING BUT NOT LIMITED TO TOILETS AND JANITOR CLOSETS.

DUCT MOUNTED SOUND ATTENUATORS

UNIT NO.	SERVICE	LOCATION	TYPE	CFM	OVERALL SIZE (IN)			FACE VELOCITY (FPM)	MAX APD (IN WG)	AIR FLOW DIRECTION	SOUND DATA																MANUFACTURER	MODEL	NOTES
					W	H	L				TESTED FACE VELOCITY (FV) (FPM)	DYNAMIC INSERTION LOSS (Db) @ FV								GENERATED NOISE (Db) @ FV										
												63 HZ	125 HZ	250 HZ	500 HZ	1K HZ	2K HZ	4K HZ	8K HZ	63 HZ	125 HZ	250 HZ	500 HZ	1K HZ	2K HZ	4K HZ	8K HZ			
SATT-SA1	SUPPLY	SEE PLANS	ELBOW	3,500	18	30	-	933	0.20	FORWARD	+1000	6	10	14	18	21	20	17	15	32	35	27	31	31	23	24	14	PRICE	ERM48/9B	ALL
SATT-RA1	RETURN	SEE PLANS	ELBOW	3,260	12	42	108	931	0.40	REVERSE	-1000	12	17	28	45	47	39	33	26	43	36	30	15	32	30	27	18	PRICE	ERM108/6B	ALL

NOTES:

1. ATTENUATOR MATERIAL TO MATCH DUCT MATERIAL.
2. SILENCER CONSTRUCTION TO MEET APPLICABLE REQUIREMENTS OF SMACNA DUCT CONSTRUCTION STANDARDS.

VENTILATION AIR CALCULATIONS

Inputs								2018 International Mechanical Code							Calculations		
Room Number	Room Name	Room Area	Room Occupancy Type	Zone Design Primary Airflow			Chair Count	Default Occupancy		Occupancy Override	Minimum Ventilation Rates				Breathing Zone Airflow	Zone Outdoor Airflow	Zone Primary Air Fraction
				Max	TURN DOWN	Min					Occupancy		Area				
		(sf)		(cfm)	%	(cfm)	(people)	(people/ 1000sf)	(people)	(people)	(cfm/person)	(cfm)	(cfm/sf)	(cfm)	(cfm)	(cfm)	(%)
		Az				Vpz			Pz		Rp	Rp*Pz	Ra	Ra*Az	Vbz	Voz	Zp
02	REHEARSAL ROOM	2,170	Music/theater/dance	3150	60%	1890	75	35	76	76	10	760	0.06	130	890	1113	0.59
03	RESTROOM VESTIBULE	70	Corridors	50	60%	30	0	0	0	0	0	0	0.06	4	4	5	0.11
04	RESTROOM	50	Occupiable storage rooms for liquids or gels	50	60%	30	0	2	0	1	5	5	0.12	6	11	14	0.28
05	RESTROOM	35	Occupiable storage rooms for liquids or gels	50	60%	30	0	2	0	1	5	5	0.12	4	9	12	0.23
06	JANITOR CL.	15	Storage rooms	50	60%	30	0	0	0	0	0	0	0.12	2	2	2	0.05
07	REHEARSAL STORAGE	15	Storage rooms	50	60%	30	0	0	0	0	0	0	0.12	2	2	2	0.05
08	ELEC/IT	70	Storage rooms	50	60%	30	0	0	0	0	0	0	0.12	8	8	11	0.21
	Totals	2,425		Total 3,450		Total 2,070	Total 75	Average (people/1000sf) 31.39	Total 76	Total 78	Average OA (cfm/person) 15	Total 770	Average OA (cfm/sf) 0.48	Total 157	Total 927	Total 1,158	Critical Zp 0.59

VENTILATION SUMMARY

System Inputs:	
System Type	Multi-Zone
Supply Type if Multi-Zone	Single Supply
Return Type if Multiple Supply	Plenum
Occupancy	76 Pz
Critical Values:	
Occupant Diversity	1.00
Uncorrected Outside Air Intake	927 cfm
Evz min	0.56
Supply Air Flow:	
Sum of the Peak	3450 cfm
Block	3500 cfm
Ventilation:	
Outside Air Required	1651 cfm
% Outside Air Required	47.2 %
Outside Air Available	**2,000** cfm
% Outside Air Available	**57.1** %

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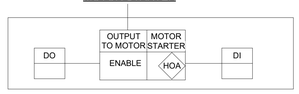
HVAC SCHEDULES

M-602

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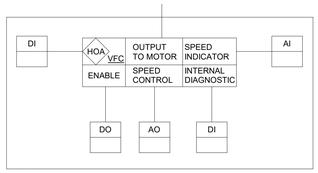
TYPICAL VARIABLE FREQUENCY CONTROLLER AND MOTOR STARTER CONTROL POINTS

MOTOR STARTER



MS SYMBOL USED TO REPRESENT MOTOR STARTER

VARIABLE FREQUENCY CONTROLLER



VFC / VFD SYMBOL USED TO REPRESENT VARIABLE SPEED CONTROLLER

VIRTUAL POINTS:

VARIABLE FREQUENCY CONTROLLER MANUFACTURER COMMUNICATION CHIP/CARD MAY BE USED IN LIEU OF ANY HARD WIRED POINTS INDICATED. COMMUNICATE THE FOLLOWING INTEGRATED POINTS TO THE BAS:

a. SPEED INDICATION
b. AUTO / OUT OF AUTO INDICATION
c. FAULT / FAULT CODE
d. MOTOR CURRENT
e. DRIVE TEMPERATURE
f. DC BUS VOLTAGE
g. POWER DEMAND (kW)

NOTES ON VARIABLE FREQUENCY CONTROLLERS:

THE HAND-OFF-AUTOMATIC SWITCH ON THE VFC SHALL PROVIDE FOR THE FOLLOWING BASIS OF CONTROL:

a. HAND POSITION: THE BAS SHALL HAVE NO CONTROL OVER THE MOTOR SPEED NOR SHALL IT BE ABLE TO START OR STOP THE MOTOR (EXCEPT FOR SAFETY PURPOSES WHERE THE MOTOR SHALL SHUT DOWN). THE MOTOR SHALL RUN UNDER SPEED CONTROL FROM THE HAND POTENTIOMETER ON THE VSD. ALL SAFETIES CONTROLLING THE SHUTDOWN SHALL BE OPERATIONAL (i.e. SMOKE DETECTORS, PRESSURE SWITCHES, ETC). TEMPERATURE AND HUMIDITY CONTROL SHALL BE AVAILABLE THROUGH THE BAS.

b. OFF POSITION: THE MOTOR SHALL BE OFF. THE BAS SHALL NOT CONTROL THE MOTOR. ALL OTHER CONTROL POINTS SHALL BE IN THEIR FAIL-SAFE POSITION.

AUTOMATIC POSITION: THE MOTOR SHALL BE CONTROLLED BY THE BAS.

ALL ELECTRICAL DISCONNECTS ON EQUIPMENT SERVED BY VARIABLE SPEED CONTROLLER SHALL HAVE A SWITCH IN THE ELECTRICAL DISCONNECT WHICH REPORTS DISCONNECT POSITION. THIS SWITCH SHALL BE IN THE PERMISSIVE CIRCUIT OF THE VARIABLE SPEED CONTROLLER.

SENSOR LEGEND

REFER TO PLANS FOR SPACE TEMPERATURE, HUMIDITY, PRESSURE AND CARBON DIOXIDE SENSORS/TRANSMITTERS INDICATED BY THE FOLLOWING SYMBOLS:

TEMPERATURE SENSOR/TRANSMITTER = (T)
HUMIDITY SENSOR/TRANSMITTER = (H)
PRESSURE SENSOR/TRANSMITTER = (P)
EQUIPMENT ALARM CABLE LOCATION = (A)
(1 CABLE WITH 8 CONDUCTORS)
CARBON DIOXIDE SENSOR = (C)
AIRFLOW DIRECTION INDICATOR = (ADI)
ALARM STROBE/HORN =

HVAC CONTROL SYSTEM NOTES - GENERAL

HVAC DDC SYSTEM GENERAL REQUIREMENTS:

1. THE DESIGN INTENT IS FOR THE DIRECT DIGITAL CONTROLS (DDC) SYSTEM TO MONITOR PRESSURES, TEMPERATURES AND FLOWS AND TO CONTROL THE VARIOUS COMPONENTS OF THE HVAC SYSTEM INCLUDING BUT NOT LIMITED TO VALVES, VARIABLE FREQUENCY CONTROLLERS (VFCS), AIR SOURCE HEAT PUMPS (ASHPS), ETC.... MONITORED DATA WILL BE USED TO ENERGIZE OR DE-ENERGIZE EQUIPMENT IN ACCORDANCE WITH THE SEQUENCES OUTLINED.
2. SEQUENCES OUTLINED (UNLESS OTHERWISE SPECIFIED) SHALL BE PERFORMED BY NETWORK CONTROLLERS, PROGRAMMABLE APPLICATION CONTROLLERS AND APPLICATION SPECIFIC CONTROLLERS CONNECTED TO A CENTRAL HONEYWELL DDC SYSTEM. SYSTEM ARCHITECTURE SHALL BE BASED ON A PEER-TO-PEER DISTRIBUTED CONTROL SYSTEM NETWORK. SYSTEM SHALL INTEGRATE OPEN COMMUNICATION PROTOCOL CONTROLLERS. ALL CONTROLLERS SHALL BE CAPABLE OF INDEPENDENT OPERATION REGARDLESS OF THE STATUS OF THE DDC SYSTEM WORKSTATION.
3. ALL HVAC EQUIPMENT SHALL BE STARTED/ENABLED AND STOPPED/DISABLED THROUGH THE DDC SYSTEM.
4. AFTER INITIAL STARTUP DDC SYSTEM SHALL AUTOMATICALLY CONTROL OPERATING MODE FOR ALL EQUIPMENT VIA PROGRAMMABLE SCHEDULES INDICATED IN INDIVIDUAL ZONE OR EQUIPMENT SEQUENCES.
5. DDC SYSTEM CONTRACTOR SHALL BE FULLY RESPONSIBLE TO PROVIDE EQUIPMENT AND PROGRAMMING NEEDED TO PERFORM ALL SEQUENCES. WHERE PACKAGED EQUIPMENT IS USED, DDC SYSTEM CONTRACTOR SHALL COORDINATE WITH THE PACKAGED EQUIPMENT CONTROL PANEL FEATURES. DDC SYSTEM CONTRACTOR MAY USE PACKAGED EQUIPMENT CONTROLLER FUNCTIONS WHERE AVAILABLE TO PERFORM SEQUENCES SUBJECT TO FULL COMPLIANCE WITH ALL SEQUENCES AND ALARM MONITORING INDICATED ON THE DRAWINGS. COMMUNICATIONS INTERFACE INCLUDING SOFTWARE BETWEEN THE DDC SYSTEM AND EACH EQUIPMENT MANUFACTURER SUPPLIED CONTROL PANEL SHALL BE PROVIDED BY THE DDC SYSTEM CONTRACTOR. DDC SYSTEM SHALL BE CAPABLE OF READING AND DISPLAYING ALL DATA (INPUT AND OUTPUT) USED BY THE EQUIPMENT MANUFACTURER CONTROL PANEL. SOFTWARE INTERFACE SHALL BE THROUGH LONMARK OR BACNET COMPLIANT OPEN PROTOCOL. PACKAGED EQUIPMENT MIGHT INCLUDE BUT IS NOT LIMITED TO:
   a. VRF SYSTEMS
   b. DX SPLIT SYSTEMS
   c. PACKAGED AIR HANDLING UNITS
6. ADDRESS IDENTIFIERS FOR ALL POINTS AND VARIABLES SHALL BE COORDINATED WITH EXISTING HONEYWELL EBI CONTROLS. POINTS AND CONTROLS DIAGRAMS SHALL BE APPROVED BY THE FACILTY OWNER.
7. ABILITY TO REVIEW ALL MEASURED DATA, CONTROL SETPOINTS AND FUNCTIONS SHALL BE PROVIDED AT DDC SYSTEM WORKSTATION AND ON LAPTOP SERVICE TOOL.
8. DDC SYSTEM CONTRACTOR SHALL PROVIDE ALL POWER WIRING AND CONNECTIONS REQUIRED TO OPERATE THE DDC SYSTEM AND ALL CONTROL COMPONENTS AND SHALL COMPLY WITH REQUIREMENTS OF DIVISION 26 SECTIONS. ELECTRICAL CIRCUITS FOR ALL CONTROLS SHALL BE DEDICATED ONLY TO THE DDC SYSTEM AND COMPONENTS. ALL WIRING FROM AND INCLUDING DEDICATED CIRCUIT BREAKERS TO THE POINT OF USE SHALL BE PROVIDED BY THIS SECTION.
   a. WHERE REQUIRED BY SPECIFICATIONS OR OTHERWISE, CONTROL SYSTEM INCLUDING HEAD END WORKSTATION SHALL BE PROVIDED WITH STANDBY POWER TO PERFORM SEQUENCES OUTLINED.
   b. CONTROL PANELS, WORK STATIONS AND HOST COMPUTERS SHALL BE WIRED TO STANDBY POWER WHEN OPERATION OF EQUIPMENT BEING CONTROLLED IS CONNECTED TO STANDBY POWER.
   c. DDC SYSTEM SHALL MONITOR GENERATOR SWITCHGEAR TO OBTAIN STATUS OF NORMAL (STREET) POWER. INPUT SHALL BE PROVIDED INDEPENDENTLY TO AT LEAST TWO NETWORK CONTROLLERS.
9. SAFETIES SHALL BE HARDWIRED TO THE CONTROLLED DEVICE UNLESS NOTED OTHERWISE.
10. INDICATED VALUES OF ALL PARAMETERS IN THE SEQUENCES (TEMPERATURES, PRESSURES, FLOW RATES, PERCENTAGES, LIMITS, DEADBANDS, ETC.) ARE NOMINAL VALUES ONLY AND SHALL BE MANUALLY ADJUSTABLE FROM THE DDC SYSTEM. SETPOINTS AND STATUS SHALL BE ADJUSTABLE GLOBALLY AS WELL AS ON AN INDIVIDUAL COMPONENT BASIS. ALL SETPOINTS, DELAYS AND OTHER PARAMETERS SHALL BE ADJUSTABLE BY THE OPERATOR THROUGH THE DDC SYSTEM WORKSTATION AND THROUGH LAPTOP SERVICE TOOL CONNECTED TO CONTROLLERS WITHOUT ANY HARDWARE OR SOFTWARE REVISIONS.
11. PROVIDE ADEQUATE DAMPING OF ALL MODULATING CONTROL LOOPS TO PREVENT HUNTING. ALL CONTROL LOOPS SHALL BE TUNED TO PROVIDE FOR STABLE OPERATION OF THE CONTROL DEVICE. LOOP TUNING MAY BE REQUIRED MULTIPLE TIMES TO STABILIZE MULTIPLE CONTROL SCENARIOS.
12. ALL EQUIPMENT CONTROLLED BY THE DDC SYSTEM SHALL BE CAPABLE OF MANUAL OPERATION THROUGH HAND-OFF-AUTOMATIC (HOA) SWITCHES LOCATED IN THE MOTOR STARTERS OR VARIABLE FREQUENCY CONTROLLERS. DDC SYSTEM SHALL INCLUDE OPTION TO MANUALLY OVERRIDE EACH AUTOMATED SEQUENCE VIA INPUT TO THE DDC SYSTEM.
13. PROVIDE MENU DRIVEN CAPABILITY TO OVERRIDE AUTOMATED START/STOP OR OPERATING MODES FOR EACH PIECE OF EQUIPMENT AT CONTROLLERS. IF A SEQUENCE IS DISABLED BY MANUAL INPUT AND THE DDC SYSTEM ATTEMPTS AN AUTOMATED CHANGE IN OPERATING MODE, AN ALARM SHALL BE INITIATED AT THE DDC SYSTEM STATING THAT THE SYSTEM WAS UNABLE TO CHANGE THE MODE DUE TO USER INPUT. WHERE APPLICABLE A MANUAL INPUT COMMAND WILL THEN BE REQUIRED FROM THE USER INSTRUCTING THE DDC SYSTEM TO START THE NEXT SEQUENTIAL PIECE OF EQUIPMENT.
14. ALL SAFETIES AND ALARMS SHALL REMAIN ACTIVE WHEN OPERATING IN MANUAL OVERRIDE MODES.
15. WHEN A UNIT IS OFF-LINE VIA THE BAS START/STOP, THE H-O-A SWITCH, THE SERVICE DISCONNECT, OR ANY OF THE SAFETIES, COMPONENTS SHALL GO TO THEIR FAIL-SAFE POSITIONS. UNLESS INDICATED OTHERWISE IN THE SEQUENCES, THE FAIL-SAFE POSITIONS ARE: ALL THE DAMPERS SHALL BE CLOSED. THE VARIABLE FREQUENCY CONTROLLERS SHALL BE OFF. THE CHILLED WATER TEMPERATURE CONTROL VALVE SHALL BE CLOSED. THE HOT WATER TEMPERATURE CONTROL VALVE SHALL BE OPEN.
16. IN THE EVENT OF A POWER OUTAGE OR UNPLANNED LOSS OF CONTROLS OR UNPLANNED EQUIPMENT SHUTDOWN, EQUIPMENT SHALL GO TO IT'S FAIL SAFE SETTINGS. IF EQUIPMENT IS DEACTIVATED DUE TO NORMAL OCCUPANCY CYCLE OR OCCUPANCY CONTROLS, FAIL SAFE SETTINGS ARE NOT REQUIRED UNLESS SEQUENCE SPECIFIES OTHERWISE.
17. WHENEVER AN ALARM IS INITIATED, THE DDC SYSTEM SHALL RETAIN IN MEMORY THE READING AND SETPOINT OF EACH ASSOCIATED DEVICE TO HELP THE OPERATOR IN ISOLATING THE CAUSE OF THE ALARM.
18. DDC SYSTEM SHALL HAVE THE ABILITY TO TEMPORARILY DISABLE ALARMS RELATED TO A PIECE OF EQUIPMENT TAKEN OFFLINE FOR MAINTENANCE.
19. IF ANY CONTROLLER OR EQUIPMENT MANUFACTURER'S CONTROL PANEL LOSES COMMUNICATION WITH THE DDC SYSTEM NETWORK, AN ALARM SHALL BE INITIATED AT THE DDC SYSTEM INDICATING THE LOCATION OF THE FAULT.
20. ALL CONTROL SYSTEM SENSORS SHALL HAVE HIGH AND LOW LIMIT SOFTWARE ALARMS TO INDICATE FAULTS. ALL ALARMS SHALL INITIATE AUDIBLE AND VISUAL ALARM AT THE DDC SYSTEM WORKSTATION AND AT THE WORKSTATION ALARM PRINTER. ALARM SHALL INDICATE TIME, DATE, SPECIFIC CONTROL POINT AND NATURE OF THE ALARM.
21. COORDINATE ALL SENSOR INSTALLATION LOCATIONS AND SUBMIT PROPOSED POSITIONS ON APPLICABLE PIPING AND DUCTWORK COORDINATION SUBMITTALS. COORDINATE AND ENSURE MANUFACTURER RECOMMENDED UPSTREAM AND DOWNSTREAM PIPE OR DUCT DIAMETERS ARE PROVIDED. SPECIAL ATTENTION IN THIS REGARD IS REQUIRED FOR FLOW MEASURING DEVICES.
22. WHERE CURRENT TRANSMITTERS ARE USED TO DETERMINE FAN OR EQUIPMENT STATUS, A BELT-OFF TEST SHALL BE PERFORMED TO DETERMINE CURRENT LOW POINT TO VERIFY STATUS.
23. ALL WALL MOUNTED TEMPERATURE OR HUMIDITY TRANSMITTERS SHALL HAVE ALL PENETRATIONS SEALED.
24. ALL CONTROL DEVICES SHALL BE INSTALLED IN SUCH A WAY TO BE ACCESSIBLE FOR MAINTENANCE AND REPAIR.
25. ALL COMMON INFORMATION (E.G. OUTSIDE AIR TEMPERATURE AND HUMIDITY) SHALL BE MEASURED IN AT LEAST (2) LOCATIONS AND COMMUNICATED TO INDEPENDENT NETWORK LEVEL CONTROLLERS.
26. UNLESS NOTED OTHERWISE THE FOLLOWING SHALL BE INITIAL SPACE TEMPERATURE AND HUMIDITY SETPOINTS:
   a. NORMALLY OCCUPIED SPACES:
      OCCUPIED COOLING 73 DEGREES F, 60% RH MAXIMUM
      OCCUPIED HEATING 68 DEGREES F, 50% RH MINIMUM
      UNOCCUPIED COOLING 80 DEGREES F, 65% RH MAXIMUM
      UNOCCUPIED HEATING 65 DEGREES F, 45% RH MINIMUM
   b. IT ROOMS:
      COOLING OR VENTILATION: 78 DEGREES F (24 HRS), 0-50% RH
      HEATING: 65 DEGREES F (24 HRS), 0-50% RH
27. REFER TO INDIVIDUAL SEQUENCES FOR ADDITIONAL VARIABLE SETPOINTS. THERMOSTATIC CONTROLS SHALL HAVE A 5 DEGREE F DEADBAND.
28. OCCUPANCY SCHEDULES:
   a. OCCUPANCY SCHEDULING SHALL BE CAPABLE OF SCHEDULING BY AREA, ZONE, GROUPS OF ZONES, INDIVIDUALLY CONTROLLED EQUIPMENT AND GROUPS OF INDIVIDUALLY CONTROLLED EQUIPMENT AND GLOBALLY.
   b. EACH SCHEDULE SHALL PROVIDE BEGINNING AND ENDING DATES AND TIMES (HOURS, MINUTES).
   c. A WEEKLY REPEATING SCHEDULE (E.G. BETWEEN 8:00 A.M. AND 6:00 P.M., MONDAY THROUGH FRIDAY) SHALL CONSTITUTE ONE SCHEDULE, NOT FIVE.
   d. DATED SCHEDULES MAY BE ENTERED ANYTIME WITHIN ONE-YEAR IN ADVANCE.
   e. DATED SCHEDULES SHALL BE SELF-DELETING WHEN EFFECTIVE DATES HAVE PASSED.
   f. WHEN A TEMPERATURE OF A ROOM, AREA OR ZONE, SCHEDULED OFF OR UNOCCUPIED, FALLS BELOW 55 F, THE SCHEDULE SHALL BE OVERRIDDEN AUTOMATICALLY, AND THE ZONE SHALL BE OVERRIDDEN TO PROVIDE MINIMUM 55 F SPACE TEMPERATURE AND AN ALARM SHALL BE INITIATED THROUGH THE DDC SYSTEM.
   g. WHEN A TEMPERATURE OF A ROOM, AREA OR ZONE, AS DESCRIBED ABOVE REACHES 55 F PLUS A DEADBAND, THE SCHEDULE IS RESUMED.
   h. LEAP YEARS SHALL BE ADJUSTED AUTOMATICALLY WITHOUT OPERATOR INTERVENTION.
   i. INITIAL SCHEDULES (COORDINATE WITH BUILDING OPERATORS):
      1. OCCUPIED 8:00 AM TO 6:00 PM MON. THRU FRI.
      2. UNOCCUPIED: ALL OTHER TIME PERIODS
29. AS A MINIMUM, ONE PROGRAMMABLE APPLICATION CONTROLLER SHALL BE PROVIDED FOR EACH AIR HANDLING UNIT.
30. HISTORIES, TRENDS AND REPORTS
   a. THE DDC SYSTEM SHALL RETAIN IN MEMORY TREND DATA SPECIFIED FOR EACH CONTROL POINT OR VARIABLE. RESOLUTION OF THIS SHALL NOT EXCEED ONE READING PER 15 SECOND INTERVAL.
   b. DDC SYSTEM SHALL RETAIN THREE YEAR (ROLLING) OF DATA FOR ALL CONTROL POINTS IN TEN MINUTE INTERVALS.
   c. USER SHALL BE ABLE TO SELECT TABULAR OR GRAPHICAL OUTPUT OF DATA. GRAPHIC DATA SHALL BE AVAILABLE IN USER SELECTABLE COLOR OR BLACK AND WHITE VERSIONS.
   d. TABULAR DATA SHALL BE MADE AVAILABLE IN COMMA SEPARATED VALUES OR IN FORMAT COMPATIBLE WITH MICROSOFT EXCEL SOFTWARE.

BAS INSTRUMENT LEGEND

	FIRST LETTER(S)		SUCCEEDING LETTER(S)		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		USERS CHOICE(*)	USERS CHOICE(*)	USERS CHOICE(*)
C	USERS CHOICE(*)			CONTROL	
D	DEWPOINT	DIFFERENTIAL		DAMPER	
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO			
G	GAS		GLASS	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE	RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE	MOMENTARY			
N	USERS CHOICE(*)		USERS CHOICE(*)	USERS CHOICE(*)	USERS CHOICE(*)
O	USERS CHOICE(*)		ORIFICE, RESTRICTION		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT (*)	INTEGRATE	INTEGRATE		
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE(*)		MULTIFUNCTION(*)	MULTIFUNCTION(*)	MULTIFUNCTION(*)
V	VIBRATION, MECH ANALYSIS			VALVE	
W	WEIGHT OR FORCE		WELL		
X	SMOKE		UNCLASSIFIED(*)	TRANSFORMER	UNCLASSIFIED(*)
Y	EVENT (STATUS)			RELAY OR COMPUTE(*)	
Z	POSITION, DIMENSION			DRIVER, ACTUATOR OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(*) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL, SEE ABBREVIATIONS AND LETTER SYMBOLS. EXAMPLE: PT=PRESSURE TRANSMITTER HS=HAND SWITCH

GENERAL INSTRUMENT/FUNCTION SYMBOLS

CONTROL DEVICE OR INSTRUMENT TAG



SYMBOL MODIFIER OR SETPOINT
DEVICE OR SENSOR TAG ID
WHEN IDENTICAL, MULTIPLE INSTRUMENTS EXIST WITHIN A LOOP, THEY ARE INDIVIDUALLY, SEQUENTIALLY NUMBERED HERE.

BAS INPUT/OUTPUT IDENTIFIER

XY X=ANALOG(A) OR DIGITAL(D)
Y=OUTPUT(O) OR INPUT(I)

MODIFIER SYMBOLS AND DESCRIPTIONS SHOWN BELOW

OC	OPEN/CLOSE
OO	ON/OFF
SS	START/STOP
AUTO	AUTO
PAL	PRESSURE ALARM LOW LIMIT
PAH	PRESSURE ALARM HIGH LIMIT
TSL	TEMPERATURE ALARM LOW LIMIT
TSH	TEMPERATURE ALARM HIGH LIMIT
MAL	MOISTURE ALARM LOW LIMIT
MAH	MOISTURE ALARM HIGH LIMIT
R	MANUAL RESET

SAMPLE DEVICE TAGS



DUCT SMOKE DETECTOR WITH AUXILIARY CONTACTS AND MANUAL RESET



HIGH & LOW MOISTURE "OUT OF RANGE" LIMITS FOR FAULTY SENSOR ALARM

PILOT LIGHT

NOTES:

1. INSTRUMENTATION IDENTIFICATION TAGS SHOWN ON THE ENCLOSED CONTROL DRAWINGS ARE INTENDED TO BE SPECIFIC FOR EACH SEQUENCE. NO ATTEMPT HAS BEEN MADE TO COORDINATE SEQUENTIAL TAGS IN ALL SEQUENCES AS THIS EFFORT WOULD NOT AID IN THE UNDERSTANDING OF THE DESIGN INTENT. THEREFORE THERE MAY BE INSTRUMENTS ON THE CONTROL DRAWINGS WHICH APPEAR TO HAVE THE SAME IDENTIFICATION NUMBER.
2. PROVIDE AND COORDINATE A COMPLETE LIST OF INSTRUMENTATION, THE ASSOCIATED IDENTIFICATION TAGS AND A CROSS REFERENCE TO BE USED IN THE BAS (BUILDING AUTOMATION SYSTEM) PROGRAM CODE.

LINETYPE LEGEND

PROCESS LINE
INSTRUMENT LINE

EQUIPMENT SYMBOLS

SYMBOL	DESCRIPTION
	CENTRIFUGAL FAN
	TUBULAR CENTRIFUGAL OR VANEAXIAL FAN
	PLUG FAN
	PROP FAN
	COIL: CC-COOLING COIL, HC-HEATING COIL, RHC-REHEAT COIL, PHC-PREHEAT COIL
	HUMIDIFIER
	FILTER BANK
	AIR FLOW STATION
MS	MOTOR STARTER
VFC / VFD	VARIABLE FREQUENCY CONTROLLER/DRIVE
ECM	ELECTRONICALLY COMMUTATED MOTOR SPEED CONTROLLER
HOA	HANDS-OFF-AUTOMATIC CONTROL STATION
	MODULATING ACTUATOR W/ PILOT POSITIONER - FAILS OPEN (PNEUMATIC ACTUATORS ONLY)
	MODULATING ACTUATOR W/ PILOT POSITIONER - FAILS OPEN (PNEUMATIC ACTUATORS ONLY)
	MODULATING ACTUATOR W/ INTEGRAL PILOT POSITIONER (PNEUMATIC ACTUATORS ONLY)
	MODULATING ACTUATOR W/O INTEGRAL PILOT POSITIONER
	MODULATING ACTUATOR W/O PILOT POSITIONER - FAILS OPEN
	MODULATING ACTUATOR W/O PILOT POSITIONER - FAILS CLOSED
	TWO POSITION ACTUATOR - FAILS LAST POSITION
	TWO POSITION ACTUATOR - FAILS OPEN
	TWO POSITION ACTUATOR - FAILS CLOSED
	BACKPRESSURE REGULATOR - SELF CONTAINED
	PRESSURE REDUCING REGULATOR - SELF CONTAINED
	TWO WAY VALVE ASSOCIATED WITH ACTUATOR - SEE DRAWINGS & SPECS FOR VALVE TYPE
	THREE WAY VALVE ASSOCIATED WITH ACTUATOR - SEE DRAWINGS & SPECS FOR VALVE TYPE
	OPPOSED BLADE DAMPER ASSOCIATED WITH ACTUATOR
	PARALLEL BLADE DAMPER ASSOCIATED WITH ACTUATOR

THE MUSIC ANNEX

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BID DOCUMENTS

Project No. 24102
Issued 11/11/2026

HVAC CONTROLS LEGEND

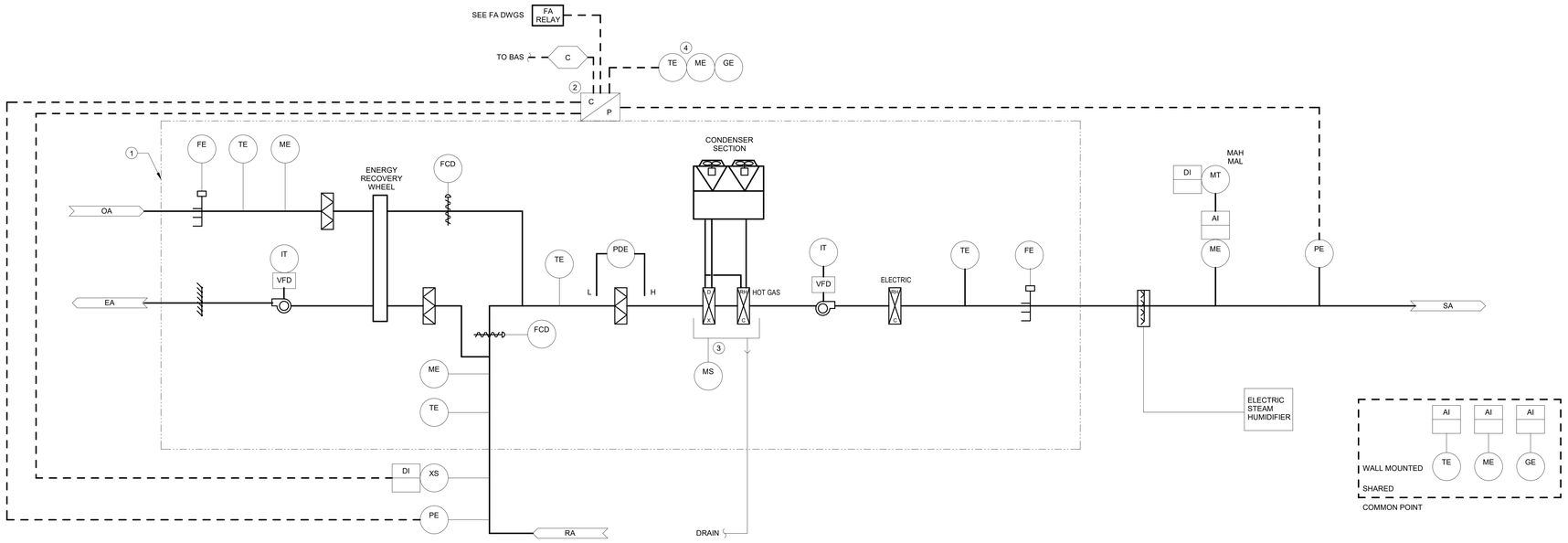
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KEYNOTES

1. PACKAGED ROOF TOP HEAT PUMP UNIT WITH PACKAGED CONTROLS
2. PROVIDE WIRING IN ACCORDANCE WITH UNIT MANUFACTURER'S INSTALLATION GUIDELINES
3. MOISTURE DETECTOR TO DE-ENERGIZE UNIT UPON DETECTION OF MOISTURE IN SECONDARY DRAIN PAN
4. LOCAL WALL-MOUNTED THERMOSAT, HUMIDISTAT, AND CO2 SENSOR



SPLIT SYSTEM AND ENERGY RECOVERY VENTILATOR SEQUENCE OF OPERATION

GENERAL

1. PROVIDE THE PACKAGED ROOF TOP AIR SOURCE HEAT PUMP WITH MANUFACTURER'S STANDARD CONTROLS (ASHP-1). REFER TO "HVAC CONTROL SYSTEM NOTES - GENERAL" ON THE CONTROLS LEGEND FOR ADDITIONAL REQUIREMENTS.
2. ASHP-1 CONSISTS OF A RETURN AIR MERV 8 FILTER SECTION, DIRECT EXPANSION COIL, HOT GAS REHEAT COIL, ELECTRIC REHEAT COIL, SUPPLY FAN ARRAY, AND RETURN AND RECIRCULATING DAMPERS.
3. EQUIPMENT SHALL BE CAPABLE OF ALL OPERATING MODES DESCRIBED IN THIS SEQUENCE, BUT THE MANUFACTURER'S STANDARD CONTROL SEQUENCE MAY DEVIATE FROM THIS ONE. INCLUDE THE EQUIPMENT MANUFACTURER'S STANDARD CONTROL SEQUENCE IN THE CONTROLS SUBMITTAL FOR APPROVAL.
4. WHEN ASHP-1 IS DE-ENERGIZED, THE FOLLOWING SHALL OCCUR:
   a. SUPPLY FAN, CONDENSER FANS, AND EXHAUST FAN IN ASHP-1 SHALL DE-ENERGIZE.
   b. OUTDOOR AIR INTAKE AND RECIRCULATING MOTORIZED DAMPERS INTEGRAL TO ASHP-1 SHALL CLOSE.
   c. THE COMPRESSOR IN ASHP-1 SHALL DE-ENERGIZE.
   d. THE ELECTRIC HEATING COIL IN ASHP-1 SHALL DE-ENERGIZE.
5. PROVIDE SPACE TEMPERATURE AND HUMIDITY SENSOR FOR BAS MONITORING.
6. MANUFACTURER'S CONTROLS SHALL ENSURE THAT SUPPLEMENTAL ELECTRIC REHEAT COIL IN ASHP-1 DOES NOT OPERATE WHEN IN COOLING MODE AND PREVENT SIMULTANEOUS HUMIDIFICATION AND DEHUMIFICATION.

RUN CONDITIONS

1. ASHP-1 SHALL BE AUTOMATICALLY OR MANUALLY ENABLED TO RUN IN OCCUPIED OR UNOCCUPIED MODE AS FOLLOWS:
   a. VIA THE BAS TIME SCHEDULE.
   b. INDEXED BY THE INTEGRAL UNIT CONTROLS.
   c. MANUALLY SELECTED BY USER FROM GRAPHIC INTERFACE.
2. WHEN ASHP-1 IS ACTIVATED, THE FOLLOWING SHALL OCCUR:
   a. THE RECIRCULATING DAMPER SHALL BE FULLY OPEN AND ENERGIZED. FULL OPEN POSITION IS DETERMINED BY THE TAB CONTRACTOR DURING BALANCING.
   b. THE SUPPLY FAN SHALL ENERGIZE.
   c. COIL CONTROL VALVES SHALL OPERATE BASED ON THE CURRENT MODE. SEE LATER SECTIONS FOR DETAILS.
   d. ONCE ASHP-1 IS OPERATING ACCORDING TO THE CURRENT MODE, THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MINIMUM OA POSITION. THE EXHAUST BACKDRAFT DAMPER SHALL OPEN, AND ONCE PROVEN OPEN, THE EXHAUST FAN AND THE ENERGY RECOVERY WHEEL SHALL ENERGIZE.

DEMAND CONTROL VENTILATION

1. DURING OCCUPIED MODE, DEMAND VENTILATION CONTROLS SHALL MONITOR SPACES WITH CO2 SENSORS.
2. WHILE SPACE CO2 CONCENTRATION IS BELOW SETPOINT DURING OCCUPIED MODE, THE DEMAND VENTILATION CONTROLS SHALL DECREASE THE OUTDOOR AIR FLOW RATE AND INCREASE THE RECIRCULATED RETURN AIR TO ASHP-1.
3. WHEN THERE IS A RISE IN SPACE CO2 CONCENTRATION ABOVE SETPOINT (900 PPM) (ADJ) THE FOLLOWING SHALL OCCUR:
   a. THE MINIMUM OCCUPIED AIRFLOW SETPOINT AT ASHP-1 SHALL FIRST BE RESET FROM THE DESIGN MINIMUM UP TO A VENTILATON OVERRIDE MAXIMUM VALUE (ADJ).
   b. UPON A CONTINUED CALL FOR VENTILATION (CONTINUED RISE IN SPACE CO2 CONCENTRATION), THEN INCREASE THE OUTDOOR AIR FLOW SET POINT FROM THE ABSOLUTE MINIMUM TO THE DESIGN MINIMUM.
2. DURING UNOCCUPIED MODE, VENTILATION SHALL BE CONTROLLED BY UNOCCUPIED MODE SPACE TEMPERATURE AND HUMIDITY SETPOINTS. THE SYSTEM MAY ENTER ECONOMIZER MODE AS DESCRIBED IN THE ECONOMIZER MODE SECTION.

ECONOMIZER MODE

1. ECONOMIZER MODE WILL BE ENABLED WHEN:
   a. THERE IS SUPPLY AIR FLOW FROM ASHP-1, HEATING IS OFF, AND THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE SET POINT AT ASHP-1 OR WHEN THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE DISCHARGE AIR TEMPERATURE SET POINT AT ASHP-1 AND THE OUTDOOR AIR HUMIDITY RATIO IS LESS THAN THE RETURN AIR HUMIDITY RATIO.
2. WHEN SYSTEM ENTERS ECONOMIZER MODE, THE FOLLOWING SHALL OCCUR:
   a. THE CONTROLLER SHALL MODULATE THE ENERGY RECOVERY WHEEL SPEED DOWN AND THEN DE-ENERGIZE IT TO ALLOW FOR FREE COOLING.
   b. THE OUTDOOR AND RETURN AIR BYPASS DAMPERS SHALL OPEN TO ALLEVIATE PRESSURE DROP THROUGH THE WHEEL.
   c. THE CONTROLLER SHALL MODULATE THE OUTSIDE AIR AND RECIRCULATED AIR AUTOMATIC CONTROL DAMPERS TO MAINTAIN THE LOWEST POSSIBLE MIXED AIR ENTHALPY WITH THE CORRESPONDING MIXED AIR TEMPERATURE NOT LESS THAN 2°F (ADJ) BELOW THE COOLING MODE DISCHARGE AIR TEMPERATURE SET POINT FROM ASHP-1.

HEATING MODE

1. HEATING MODE WILL BE ENABLED UNDER THE FOLLOWING CONDITIONS:
   a. WHEN THE MIXED AIR TEMPERATURE IS LESS THAN THE OUTSIDE AIR TEMPERATURE, COOLING IS DISABLED, THE SUPPLY FAN IN ASHP-1 HAS FLOW AND HEATING IS REQUIRED.
   b. OR THE OUTSIDE AIR TEMPERATURE IS LESS THAN 45°F (ADJ) AND THE SUPPLY FAN IS AT MINIMUM SET POINT.
   c. OR THE OUTSIDE AIR TEMPERATURE IS LESS THAN 40°F (ADJ) AND THE SYSTEM IS CALLED TO RUN.
2. THE UNIT CONTROLLER SHALL MODULATE THE AUXILLIARY ELECTRIC REHEAT COIL USING SCR CONTROL TO MAINTAIN THE SUPPLY AIR DISCHARGE SETPOINT ONLY WHEN THE HEATING PROVIDED AT THE DX AND HOT GAS REHEAT COILS IS INSUFFICIENT.

COOLING MODE

1. COOLING MODE WILL BE ENABLED WHEN THE MIXED AIR TEMPERATURE IS GREATER THAN THE OUTSIDE AIR TEMPERATURE, THE SUPPLY FAN HAS FLOW, THE HEATING MODE IS OFF, AND THE CONDENSATE SWITCH INDICATES NORMAL OPERATING CONDITIONS.
2. VARY SUPPLY FAN BETWEEN 100% AND DYNAMIC MIN OA AIRFLOW TO MAINTAIN THE SPACE TEMPERATURE SET POINT.
3. WITH SUPPLY FAN SPEED AT MINIMUM, VARY THE SUPPLY AIR TEMPERATURE TO MAINTAIN SPACE TEMPERATURE, SUBJECT TO HUMIDITY OVERRIDE. THE INITIAL DISCHARGE AIR TEMPERATURE SET POINT SHALL BE 55°F (ADJ).

DEHUMIDIFICATION MODE

1. THE RETURN AIR RH SENSOR SHALL OVERRIDE THE COOLING MODE SEQUENCE TO MAINTAIN A MAXIMUM OF 65% RH (ADJ) FOR THE AREA SERVED BY THE ASHP-1. IF RETURN AIR RELATIVE HUMIDITY IS GREATER THAN MAXIMUM SET POINT AND CURRENT RESET DISCHARGE AIR TEMPERATURE SET POINT IS ABOVE INITIAL, THEN RESET TO INITIAL DISCHARGE AIR TEMPERATURE SET POINT. IF AFTER 15 MINUTES (ADJ) RH IS STILL GREATER THAN MAXIMUM SET POINT WITH INITIAL DISCHARGE AIR TEMPERATURE SET POINT, THEN CONTINUE TO INCREMENTALLY RESET DOWN TO MINIMUM LOW OFFSET.
2. THE HOT GAS REHEAT COIL VALVE SHALL BE MODULATED BY THE UNIT CONTROLLER TO MAINTAIN THE SUPPLY TEMPERATURE SET POINT.

OPTIMAL START

1. THE SYSTEM WILL CALCULATE HOW LONG IT WILL TAKE TO RETURN FROM ITS UNOCCUPIED STATE TO ITS OCCUPIED SET POINT BASED ON THE HEATING OR COOLING CAPACITY AND THE OUTSIDE AIR TEMPERATURE. BASED ON THE OPTIMAL START ALGORITHM, THE CONTROLLER WILL START THE UNIT TO ENSURE THE DESIRED CONDITIONS ARE MET AT OCCUPANCY, BUT WILL NOT START THE UNIT MORE THAN 1 HOUR (ADJ) BEFORE A SCHEDULED OCCUPANCY.

UNOCCUPIED MODE

1. THE SET POINTS WILL BE ADJUSTED TO THE UNOCCUPIED VALUES.
2. AS LONG AS THE TEMPERATURE REMAINS BETWEEN THE UNOCCUPIED COOLING AND UNOCCUPIED HEATING SET POINTS. THE CONTROLLER WILL NOT COMMAND THE UNIT TO RUN (DE-ENERGIZE). ALL VALVES AND DAMPERS WILL RETURN TO THEIR FAIL-SAFE POSITIONS.
3. IF THE TEMPERATURE INCREASES ABOVE THE UNOCCUPIED COOLING SET POINT, THE CONTROLLER WILL ENERGIZE THE SYSTEM AS DESCRIBED IN THE RUN CONDITIONS SECTION. THE SYSTEM WILL PROVIDE COOLING AS NECESSARY UNTIL THE ZONE TEMPERATURE DECREASES BELOW THE UNOCCUPIED COOLING SET POINT BY 3°F (ADJ).
4. IF THE ZONE TEMPERATURE DECREASES BELOW THE UNOCCUPIED HEATING SET POINT. THE CONTROLLER WILL ENERGIZE THE SYSTEM AS DESCRIBED IN THE RUN CONDITIONS SECTION. THE SYSTEM WILL PROVIDE HEATING, AS NECESSARY. UNTIL THE TEMPERATURE INCREASES ABOVE THE UNOCCUPIED HEATING SET POINT BY 3°F (ADJ). NOTE ANY EXHAUST AND SUPPLY FAN CFM OFF SET WILL BE DISABLED IN THE UNOCCUPIED MODE.

HUMIDITY CONTROL

1. THE BAS SHALL MONITOR THE RETURN AIR HUMIDITY VIA THE RETURN AIR HUMIDITY SENSOR AND DISCHARGE HUMIDITY SET POINT TO MAINTAIN AN INITIAL SPACE HUMIDITY SETPOINT OF 50% (ADJ). THE ELECTRIC STEAM HUMIDIFIER SHALL BE CONTROLLED BY AN INTEGRAL UNIT CONTROLLER.
2. THE ELECTRIC STEAM HUMIDIFIER SHALL BE DISABLED WHENEVER THE RELATIVE HUMIDITY LEVEL IS ABOVE THE MAXIMUM SETPOINT OF 65% OR THE DOWNSTREAM RELATIVE HUMIDITY IN THE SUPPLY DUCT AS SENSED BY THE HIGH LIMIT SENSOR EXCEEDS 80% (ADJ).
3. UPON A DROP IN RELATIVE HUMIDITY BELOW THE RETURN AIR HUMIDITY LOW LIMIT SET POINT OF 45% FOR A PERIOD OF 5 MINUTES, THE ELECTRIC STEAM HUMIDIFIER SHALL ENERGIZE.

SAFETIES

1. THE FOLLOWING SAFETIES, EACH WITH INDIVIDUAL MANUAL RESETS, SHALL SHUT DOWN THE SYSTEM FANS AND INITIATE A SPECIFIC ALARM NOTICE AT THE BAS AFTER LISTED TIME DELAYS:
   a. SMOKE DETECTOR INDICATES THE PRESENCE OF SMOKE IN THE RETURN DUCT. THE ADDRESSABLE DUCT MOUNTED DETECTOR SHALL PROVIDE SIGNALING DIRECTLY TO THE BAS, UNIT CONTROLLER, AND THE FIRE ALARM SYSTEM. INTERFACE BETWEEN THE FIRE ALARM SYSTEM, THE UNIT CONTROLLER, AND THE BAS SHALL PROVIDE A REDUNDANT SOFTWARE SIGNAL TO ENSURE FAN SHUTDOWN, DELAY NONE.
   b. DAMPER END SWITCHS INDICATE THAT THE RECIRCULATING AND OUTDOOR AIR DAMPERS ARE NOT OPEN AND FAN IS ENERGIZED, DELAY: NONE.
   c. LEAK DETECTOR SENSOR INDICATES RISING WATER (BLOCKED DRAIN), THE UNIT SHALL DEACTIVATE, DELAY NONE.
2. THE FOLLOWING DEVICES SHALL OVERRIDE THE NORMAL OPERATING CONTROLS AND RESTRICT SET POINTS TO LIMIT INDICATED. WHEN THE BAS OVERRIDES THE NORMAL CONTROL SET POINTS, A SPECIFIC ALARM NOTICE SHALL BE INITIATED AT THE BAS:
   a. IF THE ASHP-1 DISCHARGE TEMPERATURE DROPS BELOW 40°F (ADJ), THE OA DAMPER SHALL CLOSE - DELAY NONE (ADJ) AND ALARM SHALL BE INDEXED TO THE BAS.
   b. IF THE ASHP-1 DISCHARGE TEMPERATURE DROPS BELOW 37°F (ADJ), THE UNIT SHALL DE-ENERGIZE AS DESCRIBED IN THE GENERAL SECTION - DELAY NONE (ADJ) AND ALARM SHALL BE INDEXED TO THE BAS.

ALARMS

1. THE BAS SHALL MONITOR THE ASHP-1 CONTROLLER. SPECIFIC ALARM NOTICES INCLUDE THE FOLLOWING:
   a. SUPPLY OR EXHAUST FAN IS COMMANDED TO RUN AND BAS SENSES NO STATUS - DELAY 15 SECONDS.
   b. COMPRESSOR IS COMMANDED TO RUN AND THE BAS SENSES NO STATUS - DELAY 15 SECONDS.
   c. ENERGY RECOVERY WHEEL IS COMMANDED TO RUN AND THE BAS SENSES NO ROTATION - DELAY 60 SECONDS. (ADJ)
   d. AUXILIARY ALARM CONTACTS IN THE FAN VARIABLE FREQUENCY DRIVES (VFD) INDICATE A FAILURE OF A VFD - DELAY 15 SECONDS.
   e. ANY VFD HOA SWITCH INDICATED SWITCH IS NOT IN THE AUTO POSITION - DELAY 60 SECONDS.
   f. SPACE TEMPERATURE IS ABOVE 80°F OR BELOW 65°F WHEN THE SYSTEM IS ON - DELAY 5 MINUTES.
   g. DISCHARGE STATIC PRESSURE DECREASES BELOW 1.0" (ADJ) WHEN THE SYSTEM IS ON - DELAY 10 MINUTES.
   h. FILTER DIFFERENTIAL PRESSURE AT UNITS RISES TO 0.1" BELOW DIRTY FILTER PRESSURE DROP INDICATED BY MANUFACTURER - DELAY 10 MINUTES.
   i. DAMPER (OUTDOOR AIR, RETURN AIR, BYPASS) END SWITCH DOES NOT INDICATE APPROPRIATE DAMPER POSITION - DELAY 5 MINUTES.
   j. OUTSIDE AIR MEASURING STATION INDICATES OA FLOW DEVIATES 10% OR GREATER FROM REQUIRED FLOW - DELAY 30 SECONDS
   k. ALL CONTROL SYSTEM SENSORS SHALL HAVE A HIGH AND LOW SOFTWARE ALARM LIMIT TO INDICATE TEMPERATURE/HUMIDITY PROBLEMS OR A FAULTY SENSOR.
   l. WHENEVER A UNIT IS SHUT DOWN BECAUSE OF ONE OF THE SAFETIES, THE CONTROL SYSTEM SHALL RETAIN IN MEMORY THE READING AND SET POINT OF EACH DEVICE TO HELP THE OPERATOR IN ISOLATING THE REASON FOR THE PROBLEM.

SPACE TEMPERATURE SET POINTS (ALL SET POINTS ARE ADJUSTABLE)

1. INITIAL SET POINTS ARE LISTED IN THE GENERAL SYSTEM NOTES ON M-801.

FAILURE MODE

1. ALL CONTROL PANELS AND CONTROLLERS SHALL BE PROVIDED WITH UPS OR A BATTERY BACKUP POWER SOURCE CAPABLE OF MAINTAINING CONTROL UNTIL THE UNIT PROPERLY SHUTS DOWN.
2. UPON A LOSS OF POWER, ALL DEVICES SHALL RETURN TO THEIR FAILSAFE POSITIONS. ONCE POWER IS RESTORED, THE SYSTEM SHALL RESTART AUTOMATICALLY AS DESCRIBED ABOVE FOR INITIAL STARTUP.

HISTORIES/TRENDING AND REPORTS

1. THE BAS SOFTWARE SHALL BE CAPABLE OF RECORDING AND PRODUCING REPORTS TO DOCUMENT ALL READINGS ASSOCIATED WITH EACH DEVICE SHOWN. INCLUDE GRAPHING CAPABILITY IN REPORT GENERATING SOFTWARE. DATA RECORDING SHALL BE CAPABLE OF STORING DAILY AVERAGE READINGS, WEEKLY AVERAGE READINGS, AND MONTLY AVERAGE READINGS. SOFTWARE SHALL ALSO BE CAPABLE OF REPORTING DAILY AND MONTLY HIGH/LOW PEAK ALARM READINGS. SOFTWARE SHALL BE CAPABLE OF REPORTING ALL DATA TO THE CAMPUS NETWORK SYSTEM.

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

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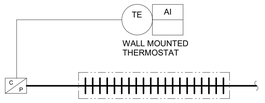
BID DOCUMENTS

Project No. 24102
Issued 11/11/2026
HVAC CONTROLS

M-802

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SEQUENCE OF OPERATION

GENERAL

1. ELECTRIC BASEBOARD WILL CONTROL TO SPACE TEMPERATURE BASED ON THE OCCUPANCY MODE SET-POINT.

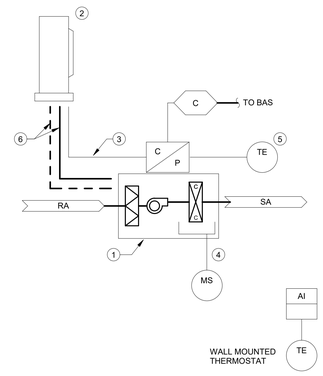
ALARMS

1. THE FOLLOWING SHALL INITIATE SPECIFIC ALARM NOTICES AT THE BAS:
   A. FAILURE TO MAINTAIN SPACE SETPOINT TEMPERATURES FOR A PERIOD OF 15 MINUTES SHALL GENERATE AN ALARM AT THE BAS.

OPERATION

1. IF THE SPACE TEMPERATURE DROPS BELOW SETPOINT AND ACU-1 IS IN HEATING MODE, ENERGIZE THE ELECTRIC BASEBOARD.
2. IF THE OA TEMPERATURE IS BELOW 35°F, ENERGIZE THE ELECTRIC BASEBOARD.

2 ELECTRIC BASEBOARD RADIATOR SEQUENCE OF OPERATION
NTS



KEYNOTES

1. PACKAGED INDOOR EVAPORATOR UNIT (NOT DUCTED)
2. OUTDOOR CONDENSING UNIT
3. PROVIDE WIRING IN ACCORDANCE WITH UNIT MANUFACTURER'S INSTALLATION GUIDELINES
4. MOISTURE DETECTOR TO DE-ENERGIZE UNIT UPON DETECTION OF MOISTURE
5. LOCAL WALL-MOUNTED THERMOSAT
6. REFRIGERANT LIQUID AND SUCTION LINES SIZED BY MANUFACTURER

SEQUENCE OF OPERATION

GENERAL

1. PROVIDE AC UNIT WITH MANUFACTURER'S STANDARD STAND-ALONE CONTROLS.
2. PROVIDE SPACE TEMPERATURE SENSOR FOR BAS MONITORING.

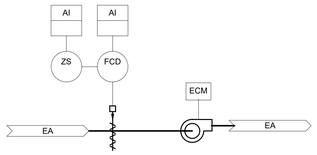
SAFETIES AND ALARMS

1. IF WATER-LEVEL MONITOR SENSES RISING WATER (BLOCKED DRAIN), THE UNIT SHALL DEACTIVATE.
2. IF SPACE TEMPERATURE RISES ABOVE 80°F (ADJUSTABLE) AN ALARM SHALL BE GENERATED THROUGH THE BAS

OPERATION

1. IF SPACE TEMPERATURE RISES ABOVE SETPOINT, THE UNIT'S PACKAGED CONTROLS SHALL ACTIVATE UNIT IN COOLING TO MAINTAIN SETPOINT.
2. IF SPACE TEMPERATURE DROPS 3°F BELOW SETPOINT, THE UNIT'S PACKAGED CONTROLS SHALL DE-ACTIVATE UNIT.

1 SINGLE ZONE AIR CONDITIONING CONTROL DIAGRAM
NTS



SEQUENCE OF OPERATION

GENERAL

1. EQUIPMENT SHALL BE PROVIDED WITH DDC CONTROLS AND INTERLOCKED WITH THE BAS.

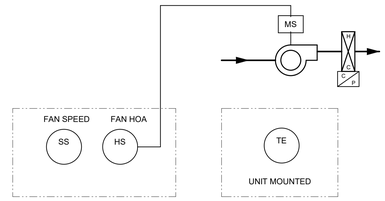
SAFETIES AND ALARMS

1. IF THE FAN IS COMMANDED ON AND IT DOES NOT ACTIVATE, AN ALARM SHALL BE GENERATED THROUGH THE BAS.

OPERATION

1. UPON A SIGNAL TO ACTIVATE FROM THE BAS, THE DAMPER SHALL OPEN. WHEN DAMPER IS PROVEN OPEN VIA END SWITCH, THE FAN SHALL ACTIVATE.
2. FAN SHALL RUN CONTINUOUSLY, AS CONTROLLED BY THE BAS.

4 GENERAL EXHAUST FANS
NTS



ELECTRIC UNIT HEATER SEQUENCE OF OPERATIONS:

1. GENERAL
   A. PROVIDE AN INTEGRAL TEMPERATURE SENSOR PER UNIT HEATER. TEMPERATURE SENSOR SHALL BE CAPABLE OF SENSING ROOM TEMPERATURE.
   B. FAN SHALL RUN ONLY DURING A CALL FOR HEATING AND SHALL OPERATE AT LOW (600 RPM) FAN SPEED.
2. SEQUENCE
   A. WHEN SPACE TEMPERATURE DROPS BELOW 50°F, UNIT FAN AND HEATING COIL SHALL ENERGIZE.
   B. WHEN SPACE TEMPERATURE RISES ABOVE 60°F, UNIT FAN AND HEATING COIL SHALL DE-ENERGIZE.
   C. WHEN SPACE TEMPERATURE DROPS BELOW 35°F, UNIT FAN AND HEATING COIL SHALL DE-ENERGIZE TO PREVENT HEATING THE VESTIBULE WHILE DOORS ARE OPEN.

3 ELECTRIC UNIT HEATER CONTROL DIAGRM
12" = 1'-0"

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HVAC CONTROLS

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ELECTRICAL ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
ACB	AIR CIRCUIT BREAKER
ADA	AMERICANS WITH DISABILITIES ACT
AF	AMP FRAME
AFC	ABOVE FINISH CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AM	AMMETER
AMP	AMPERE
ARCH	ARCHITECT
ARCS	AREA OF REFUGE COMMUNICATION SYSTEM
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
BAS	BUILDING AUTOMATION SYSTEM
BC	BRANCH CIRCUIT
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CFL	COMPACT FLUORESCENT LAMP
CIR	CIRCUIT
CL	CENTERLINE
CLF	CURRENT LIMITING FUSE
CLG	CEILING
COMM	COMMUNICATIONS
CONN	CONNECTION
CPT	CONTROL POWER TRANSFORMER
Cu	COPPER
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DN	DOWN
DISC	DISCONNECT
DIST	DISTRIBUTION
DS	DISCONNECT SWITCH
DWG	DRAWING
E	EMERGENCY
EF	EXHAUST FAN
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EO	ELECTRICALLY-OPERATED
EQPT	EQUIPMENT
EWC	ELECTRIC WATER COOLER
F	FUSE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FCB	FUSED CIRCUIT BREAKER
FDR	FEEDER
FLA	FULL LOAD AMPS
FRAP	FIRE ALARM REMOTE ANNUNCIATOR PANEL
FS	FUSED DISCONNECT SWITCH
FTL	FEED-THROUGH LUGS
FVNR	FULL-VOLTAGE NON-REVERSING
G	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFEP	GROUND FAULT EQUIPMENT PROTECTION
HACR	HEATING, AIR CONDITIONING, REFRIGERATION
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
IC	INTERRUPTING CAPACITY
ICCB	INSULATED-CASE CIRCUIT BREAKER
IG	ISOLATED GROUND
JB	JUNCTION BOX
kA	KILOAMPERE
kAIC	KILOAMPERE INTERRUPTING CAPACITY
kcmil	THOUSAND CIRCULAR MILS
kV	KILOVOLT
kVA	KILOVOLT-AMPERE
kW	KILOWATT
LA	LIGHTNING ARRESTOR
LPS	LIGHTNING PROTECTION SYSTEM
LTG	LIGHTING
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED-CASE CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MECH	MECHANICAL
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
N	NEUTRAL
NC	NORMALLY-CLOSED
NL	NIGHT LIGHT
NO	NORMALLY-OPEN
NTS	NOT TO SCALE
OC	ON-CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
P	POLE
PA	PUBLIC ADDRESS
PB	PUSHBUTTON
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL OR PANELBOARD
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PWR	POWER
RCPT	RECEPTACLE
RMC	RIGID METAL CONDUIT
RVS	REDUCED-VOLTAGE STARTER
RW	RACEWAY
SCWR	SHORT CIRCUIT WITHSTAND RATING
SEC	SECONDARY
SMR	SURFACE-MOUNTED RACEWAY
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE-POLE DOUBLE-THROW
SPST	SINGLE-POLE SINGLE-THROW
ST	SHUNT-TRIP
STBY	STANDBY
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYS	SYSTEM
T/D	TELEPHONE/DATA
TEL	TELEPHONE
TL	TWIST-LOCK
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UC	UNDERCOUNTER
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
VCB	VACUUM CIRCUIT BREAKER
VFC	VARIABLE FREQUENCY CONTROLLER
W	WATT OR WIRE
Wh	WATTHOUR
WhM	WATTHOUR METER
WM	WATTMETER
WP	WEATHER-PROOF
WT	WATER-TIGHT
XFER	TRANSFER
XFMR	TRANSFORMER
XP	EXPLOSION-PROOF

GENERAL ELECTRICAL NOTES

1. WORK SHOWN ON DRAWINGS IS NEW UNLESS NOTED OTHERWISE.
2. COMPONENTS SHOWN ON THE RISER DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
3. PROVIDE ELECTRICAL CONNECTIONS FOR EQUIPMENT SHOWN ON CONTRACT DOCUMENTS OF OTHER TRADES. REFER TO THOSE DOCUMENTS TO DETERMINE ELECTRICAL CONNECTION REQUIREMENTS AND MOUNTING LOCATIONS FOR EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.
4. REFER TO ARCHITECTURAL CONTRACT DOCUMENTS FOR PROJECT PHASING, AND FOR MOUNTING HEIGHTS AND LOCATIONS OF ELECTRICAL EQUIPMENT AND DEVICES.
5. ELECTRICAL COMPONENTS, DEVICES AND ACCESSORIES SHALL BE UL-LISTED AND LABELED.
6. COMPLY WITH NFPA 70 AND ALL OTHER APPLICABLE CODES AND STANDARDS.
7. DRAWINGS INDICATE MINIMUM REQUIRED CLEARANCES BETWEEN ELECTRICAL COMPONENTS AND EQUIPMENT, INCLUDING CLEARANCES BETWEEN ENCLOSURES, ADJACENT SURFACES AND OTHER ITEMS. COMPLY WITH INDICATED MINIMUM CLEARANCE DIMENSIONS.
8. COORDINATE LAYOUT AND INSTALLATION OF ELECTRICAL EQUIPMENT AND COMPONENTS WITH OTHER CONSTRUCTION, INCLUDING CONDUIT, PIPING, EQUIPMENT, AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.
9. BRANCH CIRCUITING HOMERUNS SHOWN ON THE DRAWINGS WITH MORE THAN 3 CURRENT-CARRYING CONDUCTORS ARE SHOWN DIAGRAMATICALLY. DO NOT INSTALL MORE THAN 3 CURRENT-CARRYING CONDUCTORS IN A RACEWAY UNLESS DONE SO STRICTLY BY THE NATIONAL ELECTRIC CODE. IN ADDITION, ALL CIRCUITS SHALL BE PROVIDED PER THE PANELBOARD SCHEDULES AND SINGLE-LINE DIAGRAMS. DO NOT USE SHARED NEUTRALS UNLESS SPECIFICALLY INDICATED.
10. OBTAIN APPROVALS FROM THE PROFESSIONAL PRIOR TO EMBEDDING ELECTRICAL CONDUITS IN FLOOR SLABS AND IN OTHER STRUCTURAL ELEMENTS. CONDUITS EMBEDDED IN FLOOR SLABS SHALL BE RUN IN MIDDLE THIRD OF SLAB THICKNESS.
11. CONDUITS AND RACEWAYS SHALL BE RUN CONCEALED; EXCEPT EXPOSED RACEWAYS AND CONDUITS ARE ACCEPTABLE WITHIN ELECTRICAL AND MECHANICAL ROOMS. RECESS-MOUNT WIRING DEVICES (RECEPTACLES, SNAP SWITCHES, DIMMING SWITCHES, ETC), AND BACKBOXES UNLESS OTHERWISE NOTED.
12. PROVIDE RECESSED PANELBOARDS WITH (4) 1-1/2" SPARE CONDUITS STUBBED UP TO 6 INCHES ABOVE FINISHED CEILING. PROVIDE PULLSTRINGS AND CAP CONDUITS.
13. RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
14. EMPTY (SPARE) CONDUIT SHALL BE DEBURRED, CLEANED, CAPPED, TAGGED, AND FURNISHED WITH PULL WIRES.
15. SUBMIT VENDOR REVIEWED AND VALIDATED LAYOUT DRAWINGS OF OCCUPANCY AND DAYLIGHT SENSORS AS PART OF OCCUPANCY AND DAYLIGHT SENSOR PRODUCT DATA SUBMITTAL PACKAGE. LOCATIONS OF SENSORS SHOWN ON THESE DRAWINGS MAY REQUIRE MODIFICATION TO MEET VENDOR-SPECIFIC REQUIREMENTS OR LIMITATIONS. SENSOR QUANTITIES SHOWN ON DRAWINGS ARE MINIMUM QUANTITIES; PROVIDE ADDITIONAL SENSORS AS REQUIRED TO ENSURE ADEQUATE COVERAGE.
16. PROVIDE AND COORDINATE WITH THE PROFESSIONAL ALL CORE DRILLS, CONDUIT SLEEVES, RISER SLEEVES AND OTHER PENETRATIONS REQUIRED TO ACCOMMODATE ROUTING OF ELECTRICAL CONDUITS, CONDUCTORS AND OTHER PATHWAY ELEMENTS .PATCH AND SEAL ALL PENETRATIONS, AND PROVIDE FIRESTOPPING AS REQUIRED. SEAL PENETRATIONS THROUGH INSULATED PARTITION WALLS WITH APPROPRIATE CAULK OR HIGH-DENSITY PUTTY, FIRE-RATED AS REQUIRED.
17. IN INSULATED PARTITION WALLS, LOCATE ELECTRICAL OUTLETS AND DEVICE BACKBOXES IN ADJACENT SPACES NO CLOSER THAN 24 INCHES APART AND IN SEPARATE STUD SPACES. UTILIZE ACOUSTICAL CAULKING TO SEAL GAPS BETWEEN OUTLET AND OTHER DEVICE BACKBOXES AND DRYWALL.
18. PROVIDE BRACING AND SUPPORTS FOR ELECTRICAL EQUIPMENT AND DEVICES. BOND AND GROUND METALLIC BRACES AND SUPPORTS.
19. PROVIDE CONCRETE HOUSEKEEPING PADS FOR FREESTANDING EQUIPMENT. MINIMUM DIMENSIONS: 4 INCHES LARGER IN BOTH DIRECTIONS THAN SUPPORTED UNIT AND AT LEAST 4 INCHES HIGH. SEE AS SERIES DRAWINGS FOR ADDITIONAL DETAILS.
20. COORDINATE LAYOUT AND INSTALLATION OF ALL ELECTRICAL WORK WITH OTHER TRADES. ASSIST IN THE PREPARATION OF COORDINATION DRAWINGS THAT ARE TO INCLUDE THE WORK OF ALL TRADES (REFER TO DIVISION 1.) MAINTAIN A SET OF UP-TO-DATE COORDINATION DRAWINGS AS CONSTRUCTION PROGRESSES.
21. MAINTAIN A CURRENT SET OF "AS-BUILT" DRAWINGS ON-SITE AS THE WORK PROGRESSES. THE DEPARTMENT OR PROFESSIONAL MAY REQUEST TO SEE THESE "AS-BUILT" DRAWINGS AT ANY TIME. PROVIDE A SET OF FINAL "AS-BUILT" DRAWINGS TO THE DEPARTMENT IN AUTOCAD FORMAT AT THE END OF THE PROJECT.
22. COORDINATE ALL ROOF PENETRATIONS WITH ROOFING CONTRACTOR.
23. COORDINATE CONDUCTOR SIZES AND QUANTITIES INDICATED WITH ASSOCIATED EQUIPMENT TERMINAL LUGS TO ENSURE COMPATIBILITY. PROVIDE LUGS TO ACCEPT CONDUCTORS INDICATED, OR UTILIZE ALTERNATE CONDUCTOR CONFIGURATION THAT IS APPROPRIATE FOR LUGS PROVIDED. ALTERNATE CONDUCTOR CONFIGURATION USED SHALL PROVIDE AN EQUAL OR GREATER CURRENT-CARRYING CAPACITY TO THAT INDICATED. REVISE ASSOCIATED CONDUIT SIZES AND QUANTITIES AS REQUIRED.
24. REFER TO THE DRAWINGS OF OTHER TRADES FOR CONDUIT, RACEWAYS, PATHWAYS, AND GROUNDING REQUIREMENTS SPECIFIC TO THOSE SYSTEMS.
25. EVERY PENETRATION (INCLUDING BUT NOT LIMITED TO DUCTS, PIPES, CONDUITS, SLEEVES, AND BOXES) THROUGH EXTERIOR WALLS AND SOFFITS MUST BE SEALED TO THE AIR BARRIER/WATER RESISTIVE BARRIER INDICATED ON THE ARCHITECTURAL DRAWINGS IN ACCORDANCE TO BARRIER MANUFACTURER INSTRUCTIONS BEFORE OVERLYING INSULATION AND CLADDING IS INSTALLED. COORDINATE ROUGH IN OF PENETRATIONS WITH CONSTRUCTION OF THE WALL.
26. PENETRATIONS FOR WIRING OF ANY TYPE THROUGH THE EXTERIOR WALL OR SOFFIT SHALL BE INSIDE WATERTIGHT RIGID METAL CONDUIT. FLEXIBLE CONDUIT PENETRATIONS THROUGH THE EXTERIOR WALL AIR BARRIER/WATER RESISTIVE BARRIER ARE NOT ALLOWED. TRANSITION FLEXIBLE CONDUIT TO RIGID METAL CONDUIT AT A BOX INSIDE OF WALL BEFORE PENETRATING THE AIR BARRIER/WATER RESISTIVE BARRIER. BARE WIRE PENETRATIONS THROUGH THE EXTERIOR WALL AIR BARRIER/WATER RESISTIVE BARRIER ARE NOT ALLOWED.
27. RECESSED LIGHT FIXTURES OR BOXES IN EXTERIOR SOFFITS SHALL HAVE AN AIR TIGHT BACK BOX SEALED TO THE AIR BARRIER/WATER RESISTIVE BARRIER INDICATED ON THE ARCHITECTURAL DRAWINGS IN ACCORDANCE TO BARRIER MANUFACTURER INSTRUCTIONS BEFORE OVERLYING INSULATION AND FINISHED SOFFIT IS INSTALLED.
28. EVERY PENETRATION (INCLUDING BUT NOT LIMITED TO DUCTS, PIPES, CONDUITS, SLEEVES, AND BOXES) THROUGH THE ROOF MUST BE SEALED WATERTIGHT TO THE ROOFING MEMBRANE INDICATED ON THE ARCHITECTURAL DRAWINGS IN ACCORDANCE TO ROOFING MANUFACTURER INSTRUCTIONS. PROVIDE SPRAY FOAM AIR DAMMING SEALANT AROUND PENETRATING ELEMENT AT EACH LAYER OF ROOF INSULATION. COORDINATE ROUGH IN OF PENETRATIONS WITH CONSTRUCTION OF THE ROOF TO ALLOW FOR AIR SEALING.
29. PENETRATIONS FOR WIRING OF ANY TYPE THROUGH THE ROOF SHALL BE INSIDE WATERTIGHT RIGID METAL CONDUIT. FLEXIBLE CONDUIT PENETRATIONS THROUGH ROOF ARE NOT ALLOWED. BARE WIRE PENETRATIONS THROUGH THE ROOF MEMBRANE ARE NOT ALLOWED.
30. MULTIPLE ROOF PENETRATIONS, INCLUDING PENETRATIONS OF OTHER TRADES WORK, SHOULD BE GROUPED TOGETHER AS MUCH AS PRACTICABLE AND ROUTED THROUGH A PIPE CURB ASSEMBLY. COORDINATE PENETRATIONS WITH OTHER TRADES AND WITH ROOFING CONTRACTOR. WHERE MULTIPLE ROOF PENETRATIONS CANNOT BE ROUTED THROUGH A CURB ASSEMBLY, ENSURE THAT ADEQUATE SPACE IS PROVIDED BETWEEN INDIVIDUAL PENETRATIONS AND ADJACENT CONSTRUCTION TO ALLOW FOR ROOF FLASHING. SEE STRUCTURAL DRAWINGS FOR ROOF PENETRATION REQUIREMENTS AND DETAILS.

FIRE ALARM NOTES

1. EXTEND CIRCUITS FROM 120-VOLT POWER CIRCUIT LOCATIONS SHOWN ON ELECTRICAL PLAN DRAWINGS TO FINAL FIRE ALARM DEVICE LOCATIONS. COORDINATE 120-VOLT POWER CIRCUIT REQUIREMENTS AND FINAL CONNECTIONS TO FIRE ALARM COMPONENTS (SUCH AS FIRE ALARM CONTROL PANELS, NAC EXTENDER PANELS, CONTROL MODULES, ETC.) WITH FIRE ALARM CONTRACTOR.
2. PROVIDE LOCKABLE CIRCUIT BREAKERS FOR 120-VOLT POWER CIRCUITS SERVING FIRE ALARM SYSTEM COMPONENTS. CLEARLY IDENTIFY EACH CIRCUIT BREAKER SERVING FIRE ALARM SYSTEM COMPONENTS AS SUCH.
3. JUNCTION BOXES SERVING FIRE ALARM POWER CIRCUITS SHALL HAVE A FACTORY-APPLIED RED COATING. JUNCTION BOXES AND CONDUIT SERVING FIRE ALARM CIRCUITS SHALL HAVE A FACTORY-APPLIED RED COATING.

FEEDER CIRCUIT SCHEDULE (600V COPPER CONDUCTORS)

3w80	1-1/4"C, 3#3 & 1#6 G	4w80	1-1/2"C, 4#3 & 1#6 G		
3w90	1-1/4"C, 3#2 & 1#6 G	4w90	1-1/2"C, 4#2 & 1#6 G		
3w100 / 3w110	1-1/2"C, 3#1 & 1#6 G	4w100 / 4w110	2"C, 4#1 & 1#6 G	5w100 / 5w110	2"C, 5#1 & 1#6 G
3w125	2"C, 3#1/0 & 1#6 G	4w125	2"C, 4#1/0 & 1#6 G	5w125	2"C, 5#1/0 & 1#6 G
3w150	2"C, 3#1/0 & 1#4 G	4w150	2"C, 4#1/0 & 1#4 G	5w150	2"C, 5#1/0 & 1#4 G
3w175	2"C, 3#2/0 & 1#4 G	4w175	2"C, 4#2/0 & 1#4 G	5w175	2-1/2"C, 5#2/0 & 1#4 G
3w200	2"C, 3#3/0 & 1#4 G	4w200	2-1/2"C, 4#3/0 & 1#4 G	5w200	2-1/2"C, 5#3/0 & 1#4 G
3w225	2-1/2"C, 3#4/0 & 1#4 G	4w225	2-1/2"C, 4#4/0 & 1#4 G	5w225	3"C, 5#4/0 & 1#4 G
3w250	2-1/2"C, 3-250kcmil & 1#3 G	4w250	3"C, 4-250kcmil & 1#3 G	5w250	3"C, 5-250kcmil & 1#3 G
3w300	3"C, 3-350kcmil & 1#3 G	4w300	4"C, 4-350kcmil & 1#3 G	5w300	4"C, 5-350kcmil & 1#3 G
3w350	4"C, 3-500kcmil & 1#2 G	4w350	4"C, 4-500kcmil & 1#2 G	5w350	4"C, 5-500kcmil & 1#2 G
3w400	4"C, 3-600kcmil & 1#2 G	4w400	4"C, 4-600kcmil & 1#2 G	5w400	4"C, 5-600kcmil & 1#2 G NOTE 5
3w450	(2) 2-1/2"C, 3#4/0 & 1#2 G	4w450	(2) 2-1/2"C, 4#4/0 & 1#2 G	5w450	(2) 3"C, 5#4/0 & 1#2 G
3w500	(2) 3"C, 3-250kcmil & 1#2 G	4w500	(2) 3"C, 4-250kcmil & 1#2 G	5w500	(2) 3"C, 5-250kcmil & 1#2 G
3w600	(2) 3"C, 3-350kcmil & 1#1 G	4w600	(2) 4"C, 4-350kcmil & 1#1 G	5w600	(2) 4"C, 5-350kcmil & 1#1 G
3w700	(2) 4"C, 3-500kcmil & 1#1/0 G	4w700	(2) 4"C, 4-500kcmil & 1#1/0 G	5w700	(2) 4"C, 5-500kcmil & 1#1/0 G
3w800	(2) 4"C, 3-600kcmil & 1#1/0 G	4w800	(2) 4"C, 4-600kcmil & 1#1/0 G	5w800	(2) 4"C, 5-600kcmil & 1#1/0 G NOTE 5
3w1000	(3) 3"C, 3-400kcmil & 1#2/0 G	4w1000	(3) 4"C, 4-400kcmil & 1#2/0 G	5w1000	(3) 4"C, 5-500kcmil & 1#2/0 G
3w1200	(4) 4"C, 3-350kcmil & 1#3/0 G	4w1200	(4) 4"C, 4-350kcmil & 1#3/0 G	5w1200	(4) 4"C, 5-400kcmil & 1#3/0 G
3w1600	(4) 4"C, 3-600kcmil & 1#4/0 G	4w1600	(4) 4"C, 4-600kcmil & 1#4/0 G	5w1600	(5) 4"C, 5-500kcmil & 1#4/0 G
3w2000	(5) 4"C, 3-600kcmil & 1-250kcmil G	4w2000	(5) 4"C, 4-600kcmil & 1-250kcmil G	5w2000	(6) 4"C, 5-500kcmil & 1-250kcmil G
3w2500	(6) 4"C, 3-600kcmil & 1-350kcmil G	4w2500	(6) 4"C, 4-600kcmil & 1-350kcmil G NOTE 5	5w2500	(8) 4"C, 5-500kcmil & 1-350kcmil G NOTE 5
3w3000	(8) 4"C, 3-500kcmil & 1-400kcmil G	4w3000	(8) 4"C, 4-500kcmil & 1-400kcmil G NOTE 5	5w3000	(9) 4"C, 5-500kcmil & 1-400kcmil G NOTE 5
3w4000	(10) 4"C, 3-600kcmil & 1-500kcmil G	4w4000	(10) 4"C, 4-600kcmil & 1-500kcmil G NOTE 5	5w4000	(12) 4"C, 5-500kcmil & 1-500kcmil G NOTE 5

NOTES:
1. WIRE AND CONDUIT TAGS REPRESENT BASE AMPACITY AND NUMBER OF WIRES (NOT INCLUDING GROUNDS.)
2. BASE AMPACITIES INDICATED ARE VALID FOR 90°C RATED COPPER CONDUCTORS (APPLIED AT THEIR 60°C RATING FOR #1AWG AND SMALLER; APPLIED AT THEIR 75°C RATING FOR #1/0AWG AND LARGER) IN 30°C AMBIENT TEMPERATURE. INCREASE WIRE AND CONDUIT SIZES TO COMPENSATE FOR LOWER TEMPERATURE RATED WIRES AND HIGHER AMBIENT TEMPERATURES.
3. INCREASE WIRE AND CONDUIT SIZES AS REQUIRED TO LIMIT VOLTAGE DROP FOR FEEDERS TO NO GREATER THAN 2% AND FOR BRANCH CIRCUITS TO NO GREATER THAN 3%. CALCULATE VOLTAGE DROP AT 70% CIRCUIT LOADING. (FOR EXAMPLE, 80-AMP CIRCUIT CONDUCTORS ARE ASSUMED TO BE CARRYING 56 AMPS.)
4. CONDUIT SIZES INDICATED ARE VALID FOR THHN/THWN AND XHHW CONDUCTOR TYPES INSTALLED IN EMT, ENT, FMC, IMC, LFMC, RMC AND RIGID PVC (SCHEDULE 80, SCHEDULE 40, TYPE A, AND TYPE EB) CONDUIT TYPES UNLESS INDICATED OTHERWISE. INCREASE CONDUIT SIZES AS REQUIRED TO COMPENSATE FOR CONDUCTOR TYPES WITH LARGER OVERALL DIAMETERS AND FOR CONDUIT TYPES WITH SMALLER INTERNAL DIAMETERS.
5. FOR CIRCUITS INDICATED, INCREASE CONDUIT SIZE TO 5-INCHES WHEN USING RIGID PVC SCHEDULE 80.
6. CONDUIT SIZES INDICATED ARE REQUIRED MINIMUM SIZES AND MAY BE INCREASED FOR LONG RUNS OR WHERE MULTIPLE BENDS ARE NECESSARY.
7. CONDUITS SMALLER THAN 3 INCHES SHALL BE UPGRADED TO THE NEXT LARGER TRADE SIZE WHEN USED FOR DIRECT-BURIED AND IN-SLAB INSTALLATIONS.
8. UPGRADE CONDUIT SIZES FOR CIRCUITS RUN IN CONCRETE-ENCASED UNDERGROUND DUCTBANKS TO THE SIZES INDICATED FOR THE DUCTBANK CONDUITS.
9. TAGS WITH ISOLATED GROUND (+IG) INDICATED SHALL INCLUDE A SEPARATE IG CONDUCTOR, SAME SIZE AS ASSOCIATED CIRCUIT GROUND CONDUCTOR, TIED TO THE IG BUS. CONDUIT SIZES INDICATED IN SCHEDULE ABOVE ARE LARGE ENOUGH TO ACCOMMODATE AN IG CONDUCTOR IN ADDITION TO CONDUCTORS SHOWN.

BRANCH CIRCUIT SCHEDULE (600V COPPER CONDUCTORS)

2w20	3/4"C, 2#12 & 1#12G	3/4"C, 2#10 & 1#10G	1"C, 2#8 & 1#8G	1"C, 2#6 & 1#6G	1-1/4"C, 2#4 & 1#4G
3w20	3/4"C, 3#12 & 1#12G	3/4"C, 3#10 & 1#10G	1"C, 3#8 & 1#8G	1"C, 3#6 & 1#6G	1-1/4"C, 3#4 & 1#4G
4w20	3/4"C, 4#12 & 1#12G	3/4"C, 4#10 & 1#10G	1"C, 4#8 & 1#8G	1-1/4"C, 4#6 & 1#6G	1-1/2"C, 4#4 & 1#4G
120V/1φ	CL ≤ 65ft	65ft < CL ≤ 105ft	105ft < CL ≤ 165ft	165ft < CL ≤ 260ft	260ft < CL ≤ 405ft
208V/1φ	CL ≤ 115ft	115ft < CL ≤ 185ft	185ft < CL ≤ 290ft	290ft < CL ≤ 450ft	450ft < CL ≤ 700ft
208V/3φ	CL ≤ 135ft	135ft < CL ≤ 215ft	215ft < CL ≤ 335ft	335ft < CL ≤ 525ft	525ft < CL ≤ 810ft
277V/1φ	CL ≤ 155ft	155ft < CL ≤ 245ft	245ft < CL ≤ 390ft	390ft < CL ≤ 600ft	600ft < CL ≤ 935ft
480V/1φ	CL ≤ 270ft	270ft < CL ≤ 430ft	430ft < CL ≤ 675ft	675ft < CL ≤ 1050ft	-
480V/3φ	CL ≤ 310ft	310ft < CL ≤ 495ft	495ft < CL ≤ 780ft	780ft < CL ≤ 1205ft	-
2w25 2w30	3/4"C, 2#10 & 1#10G	1"C, 2#8 & 1#8G	1"C, 2#6 & 1#6G	1-1/4"C, 2#4 & 1#4G	1-1/4"C, 2#2 & 1#2G
3w25 3w30	3/4"C, 3#10 & 1#10G	1"C, 3#8 & 1#8G	1-1/4"C, 3#6 & 1#6G	1-1/4"C, 3#4 & 1#4G	1-1/2"C, 3#2 & 1#2G
4w25 4w30	3/4"C, 4#10 & 1#10G	1"C, 4#8 & 1#8G	1-1/4"C, 4#6 & 1#6G	1-1/2"C, 4#4 & 1#4G	2"C, 4#2 & 1#2G
120V/1φ	CL ≤ 70ft	70ft < CL ≤ 110ft	110ft < CL ≤ 175ft	175ft < CL ≤ 270ft	270ft < CL ≤ 410ft
208V/1φ	CL ≤ 125ft	125ft < CL ≤ 195ft	195ft < CL ≤ 300ft	300ft < CL ≤ 470ft	470ft < CL ≤ 715ft
208V/3φ	CL ≤ 140ft	140ft < CL ≤ 225ft	225ft < CL ≤ 350ft	350ft < CL ≤ 540ft	540ft < CL ≤ 825ft
277V/1φ	CL ≤ 165ft	165ft < CL ≤ 260ft	260ft < CL ≤ 400ft	400ft < CL ≤ 625ft	625ft < CL ≤ 950ft
480V/1φ	CL ≤ 285ft	285ft < CL ≤ 450ft	450ft < CL ≤ 700ft	700ft < CL ≤ 1080ft	-
480V/3φ	CL ≤ 330ft	330ft < CL ≤ 520ft	520ft < CL ≤ 805ft	805ft < CL ≤ 1250ft	-
2w35 2w40	1"C, 2#8 & 1#10G	1"C, 2#6 & 1#8G	1-1/4"C, 2#4 & 1#6G	1-1/4"C, 2#2 & 1#4G	1-1/2"C, 2#1 & 1#2G
3w35 3w40	1"C, 3#8 & 1#10G	1-1/4"C, 3#6 & 1#8G	1-1/4"C, 3#4 & 1#6G	1-1/2"C, 3#2 & 1#4G	2"C, 3#1 & 1#2G
4w35 4w40	1"C, 4#8 & 1#10G	1-1/4"C, 4#6 & 1#8G	1-1/2"C, 4#4 & 1#6G	2"C, 4#2 & 1#4G	2"C, 4#1 & 1#2G
120V/1φ	CL ≤ 85ft	85ft < CL ≤ 130ft	130ft < CL ≤ 200ft	200ft < CL ≤ 310ft	310ft < CL ≤ 375ft
208V/1φ	CL ≤ 145ft	145ft < CL ≤ 225ft	225ft < CL ≤ 350ft	350ft < CL ≤ 535ft	535ft < CL ≤ 655ft
208V/3φ	CL ≤ 170ft	170ft < CL ≤ 260ft	260ft < CL ≤ 405ft	405ft < CL ≤ 620ft	620ft < CL ≤ 755ft
277V/1φ	CL ≤ 195ft	195ft < CL ≤ 300ft	300ft < CL ≤ 470ft	470ft < CL ≤ 715ft	715ft < CL ≤ 870ft
480V/1φ	CL ≤ 335ft	335ft < CL ≤ 525ft	525ft < CL ≤ 810ft	810ft < CL ≤ 1235ft	-
480V/3φ	CL ≤ 390ft	390ft < CL ≤ 605ft	605ft < CL ≤ 935ft	935ft < CL ≤ 1430ft	-
2w45 2w50	1-1/4"C, 2#6 & 1#8G	1-1/4"C, 2#4 & 1#6G	1-1/2"C, 2#2 & 1#4G	1-1/2"C, 2#1 & 1#2G	2"C, 2#1/0 & 1#1G
3w45 3w50	1-1/4"C, 3#6 & 1#8G	1-1/4"C, 3#4 & 1#6G	1-1/2"C, 3#2 & 1#4G	2"C, 3#1 & 1#2G	2"C, 3#1/0 & 1#1G
4w45 4w50	1-1/4"C, 4#6 & 1#8G	1-1/4"C, 4#4 & 1#6G	1-1/2"C, 4#2 & 1#4G	2"C, 4#1 & 1#2G	2"C, 4#1/0 & 1#1G
120V/1φ	CL ≤ 105ft	105ft < CL ≤ 160ft	160ft < CL ≤ 245ft	245ft < CL ≤ 300ft	300ft < CL ≤ 370ft
208V/1φ	CL ≤ 180ft	180ft < CL ≤ 280ft	280ft < CL ≤ 430ft	430ft < CL ≤ 520ft	520ft < CL ≤ 640ft
208V/3φ	CL ≤ 210ft	210ft < CL ≤ 325ft	325ft < CL ≤ 495ft	495ft < CL ≤ 605ft	605ft < CL ≤ 740ft
277V/1φ	CL ≤ 240ft	240ft < CL ≤ 375ft	375ft < CL ≤ 570ft	570ft < CL ≤ 700ft	700ft < CL ≤ 850ft
480V/1φ	CL ≤ 420ft	420ft < CL ≤ 650ft	650ft < CL ≤ 990ft	990ft < CL ≤ 1205ft	-
480V/3φ	CL ≤ 485ft	485ft < CL ≤ 750ft	750ft < CL ≤ 1140ft	-	-
2w60 2w70	1-1/4"C, 2#4 & 1#8G	1-1/4"C, 2#2 & 1#6G	1-1/2"C, 2#1 & 1#4G	1-1/2"C, 2#1/0 & 1#2G	2"C, 2#2/0 & 1#1G
3w60 3w70	1-1/4"C, 3#4 & 1#8G	1-1/2"C, 3#2 & 1#6G	2"C, 3#1 & 1#4G	2"C, 3#1/0 & 1#2G	2"C, 3#2/0 & 1#1G
4w60 4w70	1-1/4"C, 4#4 & 1#8G	1-1/2"C, 4#2 & 1#6G	2"C, 4#1 & 1#4G	2"C, 4#1/0 & 1#2G	2-1/2"C, 4#2/0 & 1#1G
120V/1φ	CL ≤ 115ft	115ft < CL ≤ 175ft	175ft < CL ≤ 215ft	215ft < CL ≤ 265ft	265ft < CL ≤ 320ft
208V/1φ	CL ≤ 200ft	200ft < CL ≤ 305ft	305ft < CL ≤ 375ft	375ft < CL ≤ 460ft	460ft < CL ≤ 555ft
208V/3φ	CL ≤ 230ft	230ft < CL ≤ 350ft	350ft < CL ≤ 430ft	430ft < CL ≤ 530ft	530ft < CL ≤ 640ft
277V/1φ	CL ≤ 265ft	265ft < CL ≤ 405ft	405ft < CL ≤ 500ft	500ft < CL ≤ 610ft	610ft < CL ≤ 740ft
480V/1φ	CL ≤ 465ft	465ft < CL ≤ 705ft	705ft < CL ≤ 865ft	865ft < CL ≤ 1055ft	-
480V/3φ	CL ≤ 535ft	535ft < CL ≤ 815ft	815ft < CL ≤ 995ft	995ft < CL ≤ 1220ft	-

NOTES:
1. THIS SCHEDULE DEFINES MINIMUM WIRE AND CONDUIT SIZES FOR EACH CIRCUIT TAG INDICATED. WHEREVER CIRCUIT TAGS ARE INDICATED ON DRAWINGS, DETERMINE MINI

THE LINE SHOWN AT LEFT IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE. DO NOT SCALE CONTENTS OF THIS DRAWING.

GENERAL ELECTRIC SYMBOLS

SYMBOL	DESCRIPTION
	PANELBOARD, SURFACE-MOUNTED, 208Y/120 VOLT
	PANELBOARD, RECESSED-MOUNTED, 208Y/120 VOLT
	PANELBOARD, SURFACE-MOUNTED, 480Y/277V VOLT
	PANELBOARD, RECESSED-MOUNTED, 480Y/277V VOLT
	120V, 20A CIRCUIT HOMERUN, UNLESS OTHERWISE NOTED.
NP1-2	HOMERUN TO PANEL "NP1" CIRCUIT 2.
NP1-1,3,5	HOMERUN TO PANEL "NP1" CIRCUITS 1, 3, AND 5. THIS INDICATES THREE INDIVIDUAL CIRCUITS.
NP1	DENOTES ELECTRICAL PANEL THAT SERVICES THE AREA DESIGNATED OR THE GIVEN ROOM, UNLESS INDICATED OTHERWISE.
NP1-1	DENOTES ELECTRICAL PANEL AND CIRCUIT NUMBER THAT SERVICES THE AREA DESIGNATED OR THE GIVEN ROOM, UNLESS INDICATED OTHERWISE.
2w20 OR 2w20	WIRE AND CONDUIT TAG. "2" INDICATES NUMBER OF CONDUCTORS (NOT INCLUDING GROUNDS) AND "20" INDICATES BASE AMPACITY OF CIRCUIT. REFER TO BRANCH CIRCUIT SCHEDULE AND FEEDER SCHEDULE FOR COMPLETE LIST OF WIRE AND CONDUIT TAGS.
#*	NEMA 5-20R DUPLEX RECEPTACLE. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	NEMA 5-20R DOUBLE-DUPLEX (QUAD) RECEPTACLE. "#" INDICATES CIRCUIT NUMBER, "#,#" INDICATES EACH DUPLEX ON DEDICATED CIRCUIT, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	NEMA 5-20R DUPLEX RECEPTACLE, MOUNTED ABOVE COUNTER. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	FLUSH FLOOR MOUNTED NEMA 5-20R DUPLEX RECEPTACLE. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	FLUSH FLOOR MOUNTED NEMA 5-20R DOUBLE-DUPLEX (QUAD) RECEPTACLE. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	CEILING-MOUNTED JUNCTION BOX. PROVIDE FINAL CONNECTIONS TO ASSOCIATED EQUIPMENT. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	WALL-MOUNTED JUNCTION BOX. PROVIDE FINAL CONNECTIONS TO ASSOCIATED EQUIPMENT. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#*	CEILING MOUNTED 5-20R DUPLEX RECEPTACLE. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.
#X H	SPECIAL PURPOSE RECEPTACLE. "X" INDICATES TYPE, REFER TO SPECIAL PURPOSE RECEPTACLE SCHEDULE ON THIS SHEET. "#" INDICATES CIRCUIT NUMBER, (*) INDICATES ONE OF THE CONNECTION TYPES LISTED BELOW.

DEVICE SUBSCRIPT/SUPERSCRIPT DESIGNATIONS:

+	RECEPTACLE MOUNTED AT NON STANDARD 18" AFF. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING INFORMATION.
DO	FEED FOR POWERED DOOR OPERATORS. COORDINATE FINAL MOUNTING LOCATION WITH SEC DRAWINGS.
EWC	FEEDER FOR ELECTRIC WATER COOLER. COORDINATE MOUNTING AND INSTALLATION REQUIREMENTS WITH MANUFACTURER RECOMMENDATIONS AND VENDOR PRIOR TO ROUGH-IN.
FA	FEED FOR FIRE ALARM PANELS (AND ACCESSORIES). COORDINATE EXACT LOCATION AND QUANTITY OF REQUIRED CONNECTION POINTS WITH FIRE ALARM DRAWINGS AND VENDOR.
FL	FEED FOR POWERED FAUCET / FLUSH VALVE/SOAP DISPENSER. PROVIDE FINAL CONNECTIONS TO FAUCET/FLUSH VALVE TRANSFORMERS. COORDINATE AND PROVIDE QUANTITY OF BACKBOXES REQUIRED WITH QUANTITY OF TRANSFORMERS REQUIRED. PROVIDE NEMA 5-20R RECEPTACLE AND FACEPLATE IF REQUIRED.
G	GFCI OUTLET.
MP	FEED FOR MOTORIZED PROJECTION SCREEN.
MS	FEED FOR MOTORIZED SHADE
P	FEED FOR PROJECTOR. COORDINATE FINAL MOUNTING LOCATION WITH ARCHITECTURAL DRAWINGS.
SEC	FEED FOR SECURITY PANELS. COORDINATE FINAL MOUNTING LOCATION WITH SEC DRAWINGS.
SM	SURFACE-MOUNTED DEVICE.
SPD	SURGE PROTECTIVE DEVICE TYPE RECEPTACLE. PROVIDE NEMA 5-20R DUPLEX RECEPTACLE WITH SURGE SUPPRESSOR, INDICATOR LIGHT & AUDIBLE ALARM (LEVITON 5380 OR APPROVED EQUAL)
TV	FEED FOR TELEVISION / VIDEO DISPLAY BOARD. PROVIDE 4"X4" BACKBOX AND (1) 1-1/4" EMPTY CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING. REFER TO AV/IT DRAWINGS FOR ADDITIONAL INFORMATION.
USB	USB TYPE RECEPTACLES. PROVIDE COMBINATION NEMA 5-20R (LEVITON T5837 OR APPROVED EQUAL) DUPLEX RECEPTACLE WITH TWO USB TYPE C PORTS. WHEN LOCATED ABOVE COUNTERTOPS, WIRE RECEPTACLE DOWNSTREAM FROM GFCI RECEPTACLE TO PROVIDE GFCI PROTECTION.
WD	WEATHERPROOF ENCLOSURE/COVER (SPRING LOADED LIFT COVER TYPE) FOR WASH DOWN AREAS
WP	GFCI OUTLET WITH WEATHERPROOF, LOCKABLE DIE-CAST ALUMINUM COVER.
WPI	GFCI OUTLET WITH WEATHERPROOF, LOCKABLE IN-USE COVER.

GENERAL ELECTRIC SYMBOLS

SYMBOL	DESCRIPTION
EGB	COPPER GROUND BUS. (MINIMUM GROUND BUS SIZE SHALL BE 1/4" x 4" x 48") REFER TO DETAIL 5 ON DRAWING E-501 FOR ADDITIONAL REQUIREMENTS.
	MECHANICAL EQUIPMENT TAG, REFER TO SCHEDULES ON MECHANICAL DRAWINGS FOR EQUIPMENT RATINGS AND REQUIREMENTS.
S M	FRACTIONAL HORSEPOWER MANUAL MOTOR CONTROLLER
	MOTOR. REFER TO ASSOCIATED EQUIPMENT SCHEDULE FOR HORSEPOWER RATING
VFD	VARIABLE FREQUENCY DRIVE (VARIABLE FREQUENCY CONTROLLER)
PM	POWER MONITOR (ELECTRONIC MULTI-FUNCTION MULTI-METER) WITH BAS INTERFACE. SQUARE-D PM8000 BASIS OF DESIGN.
	FUSE, RATING AND CLASS AS INDICATED
	POTENTIAL TRANSFORMER (PT)
	CURRENT TRANSFORMER (CT) WITH SHORTING BLOCK
	CURRENT TRANSFORMER (CT)
	LOW-VOLTAGE SWITCH AND FUSE
	SYSTEM GROUND OR EQUIPMENT GROUND
	FIXED-MOUNTED LOW-VOLTAGE CIRCUIT BREAKER
SA	SURGE ARRESTOR
Tx PRI xx KVA GEC SEC	POWER TRANSFORMER Tx INDICATES TRANSFORMER DESIGNATION xx kVA INDICATES TRASFORMER POWER RATING "PRI" INDICATES PRIMARY VOLTAGE "SEC" INDICATES SECONDARY VOLTAGE "GEC" INDICATES SIZE OF COPPER GROUNDING ELECTRODE CONDUCTOR OTHER RATINGS AS INDICATED ON DRAWINGS
SPD	SURGE PROTECTION DEVICE

ENCLOSED DISCONNECT SWITCH LEGEND

SYMBOL	DESCRIPTION
DSx	ENCLOSED NON-FUSED DISCONNECT SWITCH. DSx INDICATES SWITCH NUMBER; REFER TO ENCLOSED DISCONNECT SWITCH SCHEDULE BELOW FOR RATINGS. SWITCHES SHOWN ON PLANS WITHOUT SWITCH NUMBER INDICATED ARE TYPE DS2.
FSx	ENCLOSED FUSED DISCONNECT SWITCH. FSx INDICATES SWITCH NUMBER; REFER TO ENCLOSED DISCONNECT SWITCH SCHEDULE BELOW FOR RATINGS. SWITCHES SHOWN ON PLANS WITHOUT SWITCH NUMBER INDICATED ARE TYPE FS2.

ENCLOSED DISCONNECT SWITCH SCHEDULE

NON-FUSED SWITCHES				FUSED SWITCHES			
SWITCH NUMBER	RATINGS			SWITCH NUMBER	RATINGS		
	VOLTAGE	AMPERAGE	POLES		VOLTAGE	AMPERAGE	POLES
DS1	600	30	2	FS1	600	30	2
DS2	600	30	3	FS2	600	30	3
DS3	600	30	6	FS3	600	30	6
DS4	600	60	3	FS4	600	60	3
DS5	600	60	6	FS5	600	60	6
DS6	600	100	3	FS6	600	100	3
DS7	600	100	6	FS7	600	100	6
DS8	600	200	3	FS8	600	200	3
DS9	600	200	6	FS9	600	200	6
DS10	600	400	3	FS10	600	400	3
DS11	600	600	3	FS11	600	600	3
DS12	600	800	3	FS12	600	800	3

NOTES:
1. SWITCH NUMBERS ARE GENERAL DESIGNATIONS TO INDICATE SWITCH TYPE AND DO NOT INDICATE A UNIQUE IDENTIFIER. REFER TO PLAN DRAWINGS FOR QUANTITIES OF EACH SWITCH TYPE REQUIRED.
2. LOCATE DISCONNECT SWITCHES AS CLOSE AS PRACTICABLE TO EQUIPMENT SERVED, AND IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. PROVIDE FINAL CONNECTIONS TO ASSOCIATED EQUIPMENT.
3. DISCONNECT SWITCHES SHALL BE RATED FOR THE MAXIMUM AVAILABLE FAULT CURRENT, AND SHALL BE RATED IN HORSEPOWER TO MEET THE REQUIREMENTS OF THE EQUIPMENT SERVED.
4. DISCONNECT SWITCHES SHALL BE SERVICE-ENTRANCE RATED WHERE REQUIRED.
5. COORDINATE EXACT FUSE SIZE FOR FUSED DISCONNECT SWITCHES WITH THE REQUIREMENTS OF EQUIPMENT SERVED.
6. PROVIDE BUILT-IN FUSE PULLERS FOR FUSED DISCONNECT SWITCHES RATED 200A AND SMALLER.
7. PROVIDE FULLY-RATED EQUIPMENT GROUND LUGS FOR EACH DISCONNECT SWITCH.
8. PROVIDE INTEGRAL AUXILIARY CONTACTS (2 NO AND 2 NC) FOR EACH DISCONNECT SWITCH.
9. PROVIDE 100%-RATED NEUTRAL LUGS IN DISCONNECT SWITCHES FOR CIRCUITS THAT CONTAIN NEUTRAL CONDUCTORS. PROVIDE 200%-RATED NEUTRAL LUGS IN DISCONNECT SWITCHES FOR CIRCUITS THAT CONTAIN 200%-RATED NEUTRAL CONDUCTORS.
10. PROVIDE NAMEPLATE FOR EACH DISCONNECT SWITCH MOUNTED ON FRONT OF SWITCH ENCLOSURE. NAMEPLATE SHALL INDICATE SWITCH TYPE (NON-FUSED OR FUSED), EQUIPMENT SERVED AND SWITCH RATINGS (VOLTAGE, CURRENT AND POLES.)

THE MUSIC ANNEX

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BID DOCUMENTS

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Issued 10/23/2026

ELECTRICAL SYMBOLS

E-002

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SENSOR DEVICE REQUIREMENTS

1. THE LIGHTING CONTROL SYSTEM VENDOR SHALL DESIGN THE OCCUPANCY SENSOR DEVICE LAYOUTS TO PROVIDE A COMPLETE VOLUMETRIC COVERAGE OF THE SPACES IN WHICH THEY ARE LOCATED. PROVIDE PROPER NUMBER OF SENSORS AND ASSOCIATED POWER PACKS AS REQUIRED TO PROVIDE FULL COVERAGE.
2. SUBMIT VENDOR DESIGNED AND APPROVED LAYOUT DRAWINGS OF OCCUPANCY AND DAYLIGHT PHOTO SENSORS AS PART OF THE LIGHTING CONTROL SYSTEM SUBMITTAL PACKAGE. LOCATIONS OF SENSORS SHOWN ON THESE DRAWINGS IS GENERIC AND MAY REQUIRE MODIFICATION TO MEET VENDOR-SPECIFIC REQUIREMENTS OR LIMITATIONS. SENSOR QUANTITIES SHOWN ON DRAWINGS ARE MINIMUM QUANTITIES; PROVIDE ADDITIONAL SENSORS AS REQUIRED TO ENSURE ADEQUATE COVERAGE. DEVIATIONS FROM SENSOR LOCATIONS INDICATED ON DRAWINGS MUST BE APPROVED BY THE ARCHITECT.
3. LIGHTING CONTROL SYSTEM VENDOR IS RESPONSIBLE FOR SELECTING THE APPROPRIATE OCCUPANCY SENSING TECHNOLOGY (OR TECHNOLOGIES), BASED ON THEIR AVAILABLE PRODUCT OFFERING, FOR EACH ASSOCIATED SPACE TYPE AND APPLICATION. SENSING TECHNOLOGY (OR TECHNOLOGIES IF USING DUAL-TECH TYPE SENSORS) MUST PROVIDE OPTIMUM COVERAGE WITHIN ASSOCIATED COVERAGE ZONES, WHILE MINIMIZING SENSING OF OCCUPANTS OUTSIDE OF INTENDED COVERAGE ZONES. SELECT APPROPRIATE OCCUPANCY SENSOR TYPES AND ENSURE THEY ARE LOCATED TO ELIMINATE POSSIBILITY OF INTERFERENCE WITH EQUIPMENT (SUCH AS SMART WHITE BOARDS), OR ANIMALS (IN THE CASE OF VIVARIUMS FOR EXAMPLE.)
4. IN GENERAL, SPACES WITH WINDOWS TO THE EXTERIOR SHALL BE EQUIPPED WITH DAYLIGHT PHOTO SENSORS THAT ARE TIED INTO THE ASSOCIATED ROOM/SPACE CONTROLLER(S) AND CONFIGURED TO ACHIEVE DIMMING CONTROL OF LIGHTS WITHIN EACH DAYLIGHTING ZONE. CALIBRATE SYSTEM SO THAT THE PROGRAMMABLE SET-POINT VALUE IS 50 FOOT-CANDLES AT THE WORK SURFACE UNLESS OTHERWISE NOTED.
5. FIELD ADJUST OCCUPANCY SENSOR SENSITIVITIES PER MANUFACTURER'S CALIBRATION PROCEDURES TO PREVENT SENSING OCCUPANTS OUTSIDE OF INTENDED COVERAGE ZONES.

LIGHTING CONTROL SYSTEM GENERAL NOTES

1. PROVIDE A COMPLETE LIGHTING CONTROL SYSTEM THAT PERFORMS THE LIGHTING CONTROL OPERATIONS INDICATED IN THE LIGHTING CONTROL SCHEDULE. CONTROL SYSTEM COMPONENTS SHALL BE COMPATIBLE WITH THE BALLASTS AND DRIVERS PROVIDED AS PART OF THE ASSOCIATED LIGHTING FIXTURES. PROVIDE ALL NECESSARY EQUIPMENT, WIRING AND RACEWAYS FOR PROPER OPERATION OF LIGHTING CONTROLS.
2. PROVIDE DIGITAL ROOM CONTROLLER (DRC) -BASED LIGHTING CONTROL SYSTEM BY ONE OF THE FOLLOWING:
   a. ACUITY nLIGHT
   b. HUBBEL Nx
   c. LUTRON
3. INTERCONNECT LIGHTING CONTROL SYSTEM COMPONENTS, INCLUDING ROOM CONTROLLERS, SWITCHES, OCCUPANCY SENSORS, ETC. V/A HARD-WIRE CONNECTIONS.
4. PROVIDE ALL NECESSARY ROOM CONTROLLERS, DEVICES, POWER PACKS, CABLING, RACEWAYS, SOFTWARE, SYSTEM INTERCONNECTIONS AND PROGRAMMING REQUIRED OR RECOMMENDED BY THE MANUFACTURER FOR A COMPLETE LIGHTING CONTROL SYSTEM.
5. PROVIDE UL924 LISTED EMERGENCY BYPASS RELAYS/MODULES FOR CONTROLLED EMERGENCY LIGHTING CIRCUITS TO RAISE CONTROLLED EMERGENCY LIGHTS TO FULL BRIGHTNESS DURING A POWER FAILURE.
6. PROVIDE A CONTACT CLOSURE INTERFACE WITH THE FIRE ALARM SYSTEM TO RAISE CONTROLLED EMERGENCY LIGHTS TO FULL BRIGHTNESS DURING A FIRE ALARM CONDITION. COORDINATE WITH FIRE ALARM VENDOR / SUB-CONTRACTOR.
7. PROVIDE ALL NECESSARY POWER AND SLAVE PACKS REQUIRED TO CONTROL LIGHTING FIXTURES PER INDICATED CONTROL ZONES.
8. INSTALL DEVICES IN ACCORDANCE WITH MANUFACTURERS INSTALLATION AND WIRING INSTRUCTIONS.
9. COORDINATE FINAL ZONING, PRESET SCENES, PARTIAL LIGHT LEVELS AND OPERATING HOURS WITH OWNER.
10. PROVIDE INDEPENDENT-PARTY FUNCTIONAL TESTING ON ENTIRE LIGHTING CONTROL SYSTEM IN ACCORDANCE WITH 2016 ASHRAE-90.1 SECTION 9.4.3.

LIGHTING CONTROL SCHEDULE

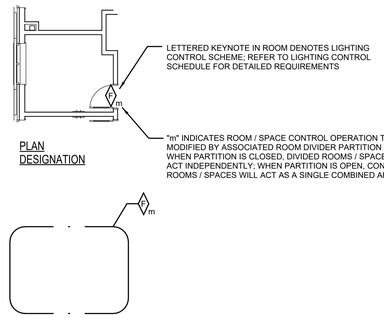
ASSOCIATED SPACE TYPES	CONTROL SCHEME	DEVICES	DESCRIPTION OF OPERATION
REHEARSAL ROOM	A	- ROOM CONTROLLER - DIMMER SWITCH -OCCUPANCY SENSOR	- AUTO ON TO 50% UPON OCCUPANCY; MANUAL ON TO 100% - MANUAL DIM/OFF VIA DIMMER SWITCH - AUTO OFF AFTER SPACE IS UNOCCUPIED FOR 20 MINUTES
CORRIDORS	C	- ROOM CONTROLLER - OCCUPANCY SENSOR	- AUTO ON TO 100% UPON OCCUPANCY - AUTO OFF AFTER SPACE IS UNOCCUPIED FOR 20 MINUTES
STORAGE	G	- ROOM CONTROLLER - SWITCH - OCCUPANCY SENSOR	- AUTO ON TO 100% UPON OCCUPANCY - MANUAL ON/OFF VIA SWITCH - AUTO OFF AFTER SPACE IS UNOCCUPIED FOR 20 MINUTES
RESTROOM	R	- ROOM CONTROLLER - SWITCH - OCCUPANCY SENSOR	- AUTO ON TO 100% UPON OCCUPANCY - MANUAL ON/OFF VIA SWITCH - AUTO OFF AFTER SPACE IS UNOCCUPIED FOR 20 MINUTES
ELEC/MECH ROOM TELECOMM ROOM JANITORS CLOSET	U	- ROOM CONTROLLER - SWITCH	- MANUAL ON / OFF VIA SWITCH
VESTIBULE	V	- ROOM CONTROLLER - OCCUPANCY SENSOR	- AUTO ON TO 100% UPON OCCUPANCY. - AUTO OFF AFTER SPACE IS UNOCCUPIED FOR 20 MINUTES.

NOTES:
1. PROVIDE ROOMS / SPACES INDICATED ABOVE AS BEING EQUIPPED WITH A "ROOM CONTROLLER" WITH A DIGITAL ROOM CONTROLLER-BASED (DRC-BASED) LIGHTING CONTROL SYSTEM CONSISTING OF ONE OR MORE DIGITAL ROOM CONTROLLERS AND ALL OTHER ASSOCIATED COMPONENTS INDICATED OR REQUIRED. ROOM CONTROLLERS SHALL BE DEDICATED TO THE SPACE CONTROLLED; EACH DRC-CONTROLLED SPACE SHALL BE EQUIPPED WITH AT LEAST ONE DEDICATED ROOM CONTROLLER.
2. ROOM CONTROLLERS, EMERGENCY SHUNT RELAY MODULES, POWER PACK MODULES AND OTHER ACCESSORY DEVICES SHALL BE INSTALLED ABOVE ACCESSIBLE CEILING AT MAIN ENTRY DOOR OF SPACES CONTROLLED; THESE DEVICES ARE NOT (OR MAY NOT) BE EXPLICITLY SHOWN ON THE LIGHTING PLAN DRAWINGS, BUT ARE REQUIRED FOR THE SYSTEM TO FUNCTION PROPERLY AND SHALL BE PROVIDED AS PART OF THIS WORK.
3. CONTROLLED EMERGENCY LIGHTING SHALL BE EQUIPPED WITH EMERGENCY SHUNT RELAYS AND DIMMER BYPASS HARDWARE TO AUTOMATICALLY BYPASS CONTROL CIRCUITRY AND FULLY ILLUMINATE EMERGENCY LIGHTS WHEN NORMAL POWER FAILS. RELAYS SHALL MONITOR LOCAL UNSWITCHED NORMAL POWER LIGHTING CIRCUIT. SHUNT RELAYS AND DIMMER BYPASS SHALL ALSO FULLY ILLUMINATE CONTROLLED EMERGENCY LIGHTS UPON ACTIVATION OF THE FIRE ALARM SYSTEM OR EMERGENCY LIGHTING TEST SWITCH. LOCATE EMERGENCY LIGHTING TEST SWITCHES IN NEAREST ELECTRICAL ROOM. LABEL EMERGENCY TEST SWITCHES APPROPRIATELY. COORDINATE REQUIRED FIRE ALARM INTERFACE WORK WITH THE FIRE ALARM SYSTEM VENDOR / SUB-CONTRACTOR.
4. REFER TO LIGHTING PLANS FOR LIGHTING CONTROL DEVICE (SWITCH/DIMMER/OCCUPANCY SENSOR/DAYLIGHT SENSOR/PARTITION SWITCH) QUANTITIES AND LOCATIONS, AND FOR NUMBER AND LAYOUT OF CONTROL ZONES FOR EACH SPACE.
5. PARTIAL LIGHT LEVELS INDICATED IN LIGHTING CONTROL SCHEDULE ARE APPROXIMATE AND SHALL BE FIELD ADJUSTED TO ENSURE APPROPRIATE LIGHT LEVELS ARE ACHIEVED IN EACH SPACE.
6. ALTHOUGH DEVICES IN LIGHTING CONTROL SCHEDULE ARE GENERALLY REFERRED TO IN SINGULAR NUMBER, MORE THAN ONE DEVICE MAY BE REQUIRED. PROVIDE QUANTITY OF DEVICES AS INDICATED ON LIGHTING PLANS OR AS REQUIRED TO ACHIEVE INDICATED FUNCTIONALITY.
7. PROVIDE ADDITIONAL (MULTIPLE) ROOM CONTROLLERS TO ENSURE THAT ASSOCIATED CONTROLLED LOAD DOES NOT EXCEED 80% OF THE LOAD-HANDLING CAPACITY OF THE ROOM CONTROLLERS CONTROLLING THE LOAD.
8. LIGHTING SYSTEM CONTROL CABLING TO BE INSTALLED IN PATHWAY DEDICATED FOR THE PURPOSE.

LIGHTING SYSTEM LEGEND

X a / a X	LIGHT FIXTURE, "X" INDICATES TYPE, REFER TO LIGHTING FIXTURE SCHEDULE
E a / a E	CONTROLLED EMERGENCY LIGHT FIXTURE.
	ILLUMINATED "EXIT" SIGN LIGHTING FIXTURE; MOUNTING, DIRECTIONAL ARROWS AND FACES AS INDICATED ON FLOOR PLANS; SHADED AREA INDICATES SIDE WITH FACE.
F	LIGHTING CONTROL SCHEME DESIGNATION, REFER TO LIGHTING CONTROL SCHEDULE
S a	SINGLE-POLE SNAP SWITCH, 120/277V "a" INDICATES ASSOCIATED SWITCH CONTROL ZONE

LIGHTING CONTROL KEYNOTE LEGEND



PLAN DESIGNATION

LETTERED KEYNOTE IN ROOM DENOTES LIGHTING CONTROL SCHEME; REFER TO LIGHTING CONTROL SCHEDULE FOR DETAILED REQUIREMENTS

"m" INDICATES ROOM / SPACE CONTROL OPERATION TO BE MODIFIED BY ASSOCIATED ROOM DIVIDER PARTITION SWITCH. WHEN PARTITION IS CLOSED, DIVIDED ROOMS / SPACES WILL ACT INDEPENDENTLY; WHEN PARTITION IS OPEN, CONJOINED ROOMS / SPACES WILL ACT AS A SINGLE COMBINED AREA.

PLAN DESIGNATION

DIGITAL LIGHTING CONTROL SYSTEM LEGEND

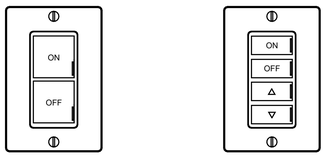
S a Bn	MANUAL LIGHTING CONTROL SWITCH, ON/OFF
D a Bn	MANUAL LIGHTING CONTROL SWITCH, ON/OFF AND DIMMING
OS b	CEILING-MOUNTED OCCUPANCY SENSOR WITH AUXILIARY RELAY FOR DRY CONTACT OUTPUT.

DEVICE SUBSCRIPT/SUPERSCRIPT DESIGNATIONS:

"Bn" DENOTES MULTIPLE BANKED SWITCHES/DIMMERS; "n" DENOTES QUANTITY
"a" INDICATES ASSOCIATED MANUAL SWITCH/DIMMER CONTROL ZONE *
"b" INDICATES ASSOCIATED OCCUPANCY/PHOTO SENSOR CONTROL ZONE *
"HB" INDICATES HIGH BAY DEVICE COVERAGE

* NOTE: IF NO DEVICE CONTROL ZONE INDICATED, DEVICE CONTROLS ALL FIXTURES WITHIN SPACE

DRC-BASED LIGHTING CONTROL SWITCH DETAILS



ON/OFF
LIGHT SWITCH

PLAN SYMBOL:
S

ON/OFF/DIMMING
LIGHT SWITCH

PLAN SYMBOL:
D

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	APPROVED EQUAL MANUFACTURERS	LAMPS	VOLT.	INPUT WATTS (W)	COLOR TEMP (K)
A	ZIP TWO LED, 50FT, 3500K, 90CRI, ZIPPER BOARD, 120" WHITE SYMMETRIC LENS, STANDARD OUTPUT, CLEAR ANODIZED FINISH. LENGTH AS INDICATED ON PLANS.	VODE	707-Z2-SL-xxFT-T1-0-RP25-AE-1-0-Z-SO-35-S3-0-WH	-	LED	MVOLT	7W/ft	3500K
AE	SAME AS TYPE A EXCEPT WITH BATTERY BACKED DRIVER. PROVIDE EMERGENCY POWER SUPPLY TO POWER ENTIRE RUN FOR 90 MINUTES AT FULL OUTPUT.	VODE	707-Z2-SL-xxFT-T1-0-RP25-AE-1-0-Z-SO-35-S3-0-WH	-	LED	MVOLT	7W/ft	3500K
B	EVO 4IN ROUND DOWNLIGHT, 80CRI, 3500K, 2000LM, WIDE DIST. CLEAR SEMI-SPEC	GOTHAM	EVO4-35/20-AR-LSS-WD-MVOLT-EZ1	-	LED	MVOLT	20	3500K
BE	SAME AS TYPE B EXCEPT WITH BATTERY BACKED DRIVER.	GOTHAM	EVO4-35/20-AR-LSS-WD-MVOLT-EZ1-ELRSD	-	LED	MVOLT	20	3500K
C	8IN OUTDOOR LED WALL SCONCE; INTEGRAL PHOTOCONTROL; INTEGRAL BATTERY BACKUP (-20 DEGREE C)	ELEGANT LIGHTING	LDOD1101	-	LED	120	9.5	3000K
D	2X4 BLT, 3300LM, CURVED RIBBED, 82CRI, 3500K	LITHONIA	2BLT4-30L-ADP-EZ1-LP835	-	LED	MVOLT	23	3500K
DE	SAME AS TYPE D EXCEPT WITH BATTERY BACKED DRIVER.	LITHONIA	2BLT4-30L-ADP-EZ1-LP835	-	LED	MVOLT	23	3500K
V	LED INDUSTRIAL STRIP; DEEP, FORMED STEEL CONSTRUCTION; WHITE FINISH; WIDE LENS; HIGH EFFICIENCY INTEGRAL ELECTRONIC DRIVER; WHITE FINISH.	LITHONIA	CLX-L248-5000LM-HEF-WDL-WD-MVOLT-GZ10-35K-90CRI-ZACVH (CLXANGBKT FOR WALL MOUNT)	-	LED	MVOLT	30	3500K
VE	SAME AS TYPE V EXCEPT WITH BATTERY BACKED DRIVER.	LITHONIA	CLX-L248-5000LM-HEF-WDL-WD-MVOLT-GZ10-35K-90CRI-PS1050	-	LED	MVOLT	30	3500K
W	WALL-MOUNTED, WET LISTED, LED WALLPACK, BUTTON PHOTOCELL.	HUBBELL	WGH-30-4K-U-S-PBT-1	-	LED	MVOLT	28	4000K
X1	UNIVERSAL INSTALLATION EDGE LIT LED EXIT SIGN; RED LETTERING; 90 MINUTE BATTERY; ARROWS AND MOUNTING AS INDICATED ON DRAWINGS	LITHONIA	EDGR-X-R--EL-SD	-	LED	MVOLT	3.8	-

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BID DOCUMENTS

Project No 24102
Issued 10/23/2026

LIGHTING CONTROLS AND FIXTURE SCHEDULE

E-003

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ELECTRICAL SPECIFICATIONS

A. GENERAL

1. FOR THE PURPOSES OF THESE CONTRACT DOCUMENTS, PROVIDE IS DEFINED AS FURNISH AND INSTALL. PROVIDE ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS IN QUANTITIES NECESSARY TO COMPLETE WORK. PROVIDE ALL INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE ELECTRICAL WORK COMPLETE AND READY FOR OPERATION, INCLUDING BUT NOT LIMITED TO, ALL NECESSARY SUPPORTS AND HARDWARE FOR MOUNTING OF ELECTRICAL EQUIPMENT.

2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEM COMPONENTS. EXACT LOCATIONS, MOUNTING HEIGHTS AND ROUTINGS SHALL BE COORDINATED WITH THE EQUIPMENT REQUIREMENTS AND ACTUAL FIELD CONDITIONS. PROVIDE INFORMATION AND COMPONENTS SHOWN ON SCHEMATIC DIAGRAMS BUT NOT SHOWN ON PLANS, AND VICE VERSA, AS IF EXPRESSLY REQUIRED ON BOTH.

3. VISIT PROJECT SITE PRIOR TO SUBMISSION OF BID, AND CAREFULLY EXAMINE SITE TO IDENTIFY EXISTING CONDITIONS AND POTENTIAL DIFFICULTIES THAT MAY AFFECT THE WORK OF THIS CONTRACT. NO ADDITIONAL COMPENSATION OR SCHEDULE EXTENSION WILL BE ALLOWED FOR ADDITIONAL WORK RESULTING FROM UNFAMILIARITY WITH PROJECT SITE CONDITIONS THAT ARE VISIBLE OR COULD REASONABLY BE CONSIDERED AS READILY APPARENT TO AN EXPERIENCED OBSERVER.

4. EXAMINE CONDITIONS UNDER WHICH WORK MUST BE PERFORMED PRIOR TO COMMENCEMENT OF WORK. REPORT ADVERSE CONDITIONS IN WRITING TO OWNER. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS INCLUDING PREPARATORY WORK DONE BY OTHERS.

5. PEFORM WORK IN SUCH A WAY THAT ADJACENT AREAS ARE NOT DISRUPTED. PROVIDE NOISE, DUST, AND DIRT CONTROL BARRIERS AS REQUIRED.

B. SCOPE OF WORK

1. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES HAVING JURISDICTION AS REQUIRED TO PERFORM WORK IN ACCORDANCE WITH ALL LEGAL REQUIREMENTS AND WITH CONTRACT DOCUMENTS.

2. PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED TO FACILITATE THE WORK OF THIS PROJECT.

3. DEMOLISH AND PROPERLY DISPOSE OF ALL EQUIPMENT, DEVICES, FIXTURES AND OTHER COMPONENTS SCHEDULED FOR DEMOLITION OR LOCATED WITHIN AREAS OF DEMOLITION. DEMOLITION WORK SHALL INCLUDE THE DISCONNECTION OF RACEWAYS AND CIRCUITING FOR EQUIPMENT SCHEDULED FOR DEMOLITION. UPDATE ELECTRICAL PANELBOARD DIRECTORIES TO REFLECT CONDITIONS AFTER COMPLETION OF DEMOLITION WORK.

4. PROVIDE SUPPLEMENTARY AND MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES AND MATERIALS OBVIOUSLY NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.

5. PROVIDE PRODUCT DATA AND SHOP DRAWING SUBMITTALS FOR REVIEW.

6. MAINTAIN RECORD DRAWING SET ON SITE AND CONTINUALLY UPDATE DRAWINGS AS WORK PROGRESSES. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.

7. PROVIDE COMPLETE LABELING AND IDENTIFICATION OF ELECTRICAL SYSTEM COMPONENTS. LABELING AND IDENTIFICATION SCHEME SHALL BE CONSISTENT WITH OWNER'S REQUIREMENTS AND IN COMPLIANCE WITH APPLICABLE CODES AND STANDARDS.

8. CONDUCT PROPER TESTING PROCEDURES FOR ALL ELEMENTS OF THE ELECTRICAL SCOPE OF WORK. CORRECT ALL DEFICIENCIES AND RETEST TO VERIFY PROPER PERFORMANCE OF ELECTRICAL SYSTEMS.

C. QUALITY ASSURANCE

1. ELECTRICAL COMPONENTS, DEVICES AND ACCESSORIES SHALL BE LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.

2. COMPLY WITH NFPA 70 AND ALL OTHER APPLICABLE CODES AND STANDARDS.

3. DRAWINGS INDICATE MAXIMUM DIMENSIONS FOR ELECTRICAL COMPONENTS AND EQUIPMENT, INCLUDING CLEARANCES BETWEEN ENCLOSURES, ADJACENT SURFACES AND OTHER ITEMS. COMPLY WITH INDICATED MAXIMUM DIMENSIONS.

D. COORDINATION

1. COORDINATE LAYOUT AND INSTALLATION OF ELECTRICAL EQUIPMENT AND COMPONENTS WITH OTHER CONSTRUCTION, INCLUDING CONDUIT, PIPING, EQUIPMENT, AND ADJACENT SURFACES. MAINTAIN REQUIRED WORKSPACE CLEARANCES AND REQUIRED CLEARANCES FOR EQUIPMENT ACCESS DOORS AND PANELS.

E. HANGERS AND SUPPORTS

1. STEEL SLOTTED SUPPORT SYSTEMS: COMPLY WITH MFMA-4, FACTORY-FABRICATED COMPONENTS FOR FIELD ASSEMBLY. METALLIC COATINGS: HOT-DIP GALVANIZED AFTER FABRICATION AND APPLIED ACCORDING TO MFMA-4. CHANNEL DIMENSIONS SELECTED FOR APPLICABLE LOAD CRITERIA.

2. CONDUIT AND CABLE SUPPORT DEVICES: STEEL AND MALLEABLE-IRON HANGERS, CLAMPS, AND ASSOCIATED FITTINGS, DESIGNED FOR TYPES AND SIZES OF RACEWAY OR CABLE TO BE SUPPORTED.

3. SUPPORT FOR CONDUCTORS IN VERTICAL CONDUIT: FACTORY-FABRICATED ASSEMBLY CONSISTING OF THREADED BODY AND INSULATING WEDGING PLUG OR PLUGS FOR NON-ARMORED ELECTRICAL CONDUCTORS OR CABLES IN RISER CONDUITS. PLUGS SHALL HAVE NUMBER, SIZE, AND SHAPE OF CONDUCTOR GRIPPING PIECES AS REQUIRED TO SUIT INDIVIDUAL CONDUCTORS OR CABLES SUPPORTED. BODY SHALL BE MALLEABLE IRON.

4. COMPLY WITH NECA 1 AND NECA 101 FOR APPLICATION OF HANGERS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AND SYSTEMS UNLESS STRICTER REQUIREMENTS ARE INDICATED.

5. MAXIMUM SUPPORT SPACING AND MINIMUM HANGER ROD SIZE FOR RACEWAY: SPACE SUPPORTS FOR EMT, IMC, AND RMC AS SCHEDULED IN NECA 1 TABLE 1 WHERE MAXIMUM SPACINGS LISTED ARE LESS THAN THOSE STATED IN NFPA 70. MINIMUM ROD SIZE SHALL BE 1/4-INCH IN DIAMETER.

6. MULTIPLE RACEWAYS OR CABLES: INSTALL TRAPEZE-TYPE SUPPORTS FABRICATED WITH STEEL SLOTTED OR OTHER SUPPORT SYSTEM, SIZED SO CAPACITY CAN BE INCREASED BY AT LEAST 25 PERCENT IN FUTURE WITHOUT EXCEEDING SPECIFIED DESIGN LOAD LIMITS. SECURE RACEWAYS AND CABLES TO THESE SUPPORTS WITH TWO-BOLT CONDUIT CLAMPS.

F. GROUNDING

1. INSULATED CONDUCTORS: COPPER WIRE OR CABLE INSULATED FOR 600 V UNLESS OTHERWISE REQUIRED BY APPLICABLE CODE OR AUTHORITIES HAVING JURISDICTION.

2. BOLTED CONNECTORS FOR CONDUCTORS AND PIPES: COPPER OR COPPER ALLOY, BOLTED PRESSURE-TYPE, WITH AT LEAST TWO BOLTS. PIPE CONNECTORS: CLAMP TYPE, SIZED FOR PIPE.

3. WELDED CONNECTORS: EXOTHERMIC-WELDING KITS OF TYPES RECOMMENDED BY KIT MANUFACTURER FOR MATERIALS BEING JOINED AND INSTALLATION CONDITIONS.

4. GROUNDING BUS: RECTANGULAR BARS OF ANNEALED COPPER, 1/4 BY 2 INCHES IN CROSS SECTION, UNLESS OTHERWISE INDICATED; WITH INSULATORS.

5. INSTALL INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.

G. RACEWAYS AND BOXES

1. RIGID METAL CONDUIT (RMC): ZINC-COATED STEEL WITH THREADED FITTINGS; COMPLY WITH ANSI C80.1

2. ELECTRICAL METALLIC TUBING (EMT): ELECTRO-GALVANIZED STEEL WITH COMPRESSION FITTINGS, EXCEPT SET-SCREW FITTINGS MAY BE USED ON TRADE SIZE 2-INCH AND LARGER; COMPLY WITH ANSI C80.3.

3. FLEXIBLE METAL CONDUIT (FMC): SPIRALLY-WOUND AND INTERLOCKED GALVANIZED STEEL; MANUFACTURED IN ACCORDANCE WITH UL 1.

4. LIQUID-TIGHT FLEXIBLE METAL CONDUIT (LFMC): FMC WITH PVC JACKET.

5. ACCEPTABLE CONDUIT AND TUBING MANUFACTURERS:

   a. AFC CABLE SYSTEMS, INC.
   b. ALLIED TUBE & CONDUIT; A TYCO INTERNATION LTG. CO.
   c. ELECTRI-FLEX CO.
   d. MANHATTAN/CDT/COLE-FLEX.
   e. O-Z GEDNEY; A UNIT OF GENERAL SIGNAL.
   f. RACO; A HUBBLE COMPANY.
   g. THOMAS & BETTS CORPORTATION.
   h. WHEATLAND TUBE COMPANY.

6. BOXES, ENCLOSURES, AND CABINETS: SHEET-METAL BOXES SHALL COMPLY WITH NEMA OS 1; CAST-METAL BOXES SHALL COMPLY WITH NEMA FB 1; ENCLOSURES AND CABINETS SHALL BE STEEL WITH MANUFACTURER'S ENAMEL FINISH INSIDE AND OUT. ACCEPTABLE MANUFACTURERS:

   a. COOPER CROUSE-HINDS.
   b. HOFFMAN.
   c. HUBBELL INCORPORATED.
   d. O-Z/GEDNEY.
   e. RACO; A HUBBELL COMPANY.
   f. ROBROY INDUSTRIES, INC.
   g. THOMAS & BETTS CORPORATION.
   h. WALKER SYSTEMS, INC.; WIREMOLD COMPANY.

7. RACEWAY APPLICATION OUTDOORS: APPLY RACEWAY PRODUCTS AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED:

   A. EXPOSED CONDUIT: RIGID STEEL CONDUIT.
   B. CONCEALED CONDUIT, ABOVEGROUND: RIGID STEEL CONDUIT.
   C. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT): LFMC.
   D. DEVICE BOXES, ABOVEGROUND: CAST METAL.
   E. BOXES AND ENCLOSURES, ABOVEGROUND: NEMA 250, TYPE 4X, 316 STAINLESS STEEL OR PAINTED MARINE-GRADE ALUMINUM, 316 STAINLESS STEEL HINGES AND HARDWARE.

8. RACEWAY APPLICATION INDOORS: APPLY RACEWAY PRODUCTS AS SPECIFIED BELOW, UNLESS OTHERWISE INDICATED:

   A. EXPOSED, NOT SUBJECT TO PHYSICAL DAMAGE: EMT.
   B. EXPOSED AND SUBJECT TO PHYSICAL DAMAGE: RIGID STEEL CONDUIT WITH CAST METAL DEVICE BOXES. INCLUDES RACEWAYS IN THE FOLLOWING LOCATIONS.
      - LOADING DOCKS.
      - MECHANICAL EQUIPMENT ROOMS UP TO 10-FEET ABOVE FINISHED FLOOR.
      - ROOFTOPS.
      - JANITOR'S CLOSETS.
      - VEHICLE BAYS.
      - PARKING GARAGES (PROVIDE PVC-COATED CONDUIT.)
   C. CONCEALED IN CEILINGS AND INTERIOR WALLS AND PARTITIONS: EMT.
   D. CONCEALED IN EXTERIOR WALLS: RIGID STEEL CONDUIT.
   E. CIRCUITS WITH OPERATING VOLTAGE GREATER THAN 600 V: RIGID STEEL CONDUIT.
   F. CONNECTION TO VIBRATING EQUIPMENT (INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, ELECTRIC SOLENOID, OR MOTOR-DRIVEN EQUIPMENT):
      - DRY LOCATIONS: FMC.
      - WET OR DAMP LOCATIONS: LFMC.
   G. DAMP OR WET LOCATIONS: RIGID STEEL CONDUIT WITH CAST METAL DEVICE BOXES.
      - IN CORROSIVE ENVIRONMENTS: USE PVC-COATED CONDUITS.
   H. BOXES AND ENCLOSURES: NEMA 250, TYPE 1, EXCEPT USE NEMA 250, TYPE 4, STAINLESS STEEL IN DAMP OR WET LOCATIONS.

9. RACEWAY FITTINGS: COMPATIBLE WITH RACEWAYS AND SUITABLE FOR USE AND LOCATION.

   a. RIGID STEEL CONDUIT: USE THREADED RIGID STEEL CONDUIT FITTINGS, UNLESS OTHERWISE INDICATED.

10. MINIMUM RACEWAY SIZE: 3/4".

H. CONDUCTORS AND CABLES

1. CONDUCTORS AND CABLES: COPPER; COMPLY WITH NEMA WC 70. CONDUCTOR INSULATION: COMPLY WITH NEMA WC 70 FOR TYPES THHN-THWN AND XHHW. FIRE-RATED CONDUCTOR INSULATION: COMPLY WITH NEMA WC 70 AND UL 2196 FOR TYPE RHH. FIRE-RATED MULTI-CONDUCTOR CABLE: COMPLY WITH NEMA WC 70 FOR MINERAL-INSULATED, METAL-SHEATHED CABLE, TYPE MI WITH GROUND WIRE. ACCEPTABLE MANUFACTURERS:

   a. AMERICAN INSULATED WIRE CORP.; A LEVITON COMPANY.
   b. DRAKA CABLETEQ USA.
   c. GENERAL CABLE CORPORATION.
   d. ROCKBESTOS-SURPRENANT CABLE CORPORATION
   e. SENATOR WIRE & CABLE COMPANY.
   f. SOUTHWIRE COMPANY.

2. CONNECTORS AND SPLICES: FACTORY-FABRICATED CONNECTORS AND SPLICES OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS FOR APPLICATION AND SERVICE INDICATED. ACCEPTABLE MANUFACTURERS:

   a. AFC CABLE SYSTEMS, INC.
   b. HUBBELL POWER SYSTEMS, INC.
   c. O-Z/GEDNEY; EGS ELECTRICAL GROUP LLC.
   d. 3M; ELECTRICAL PRODUCTS DIVISION.
   e. TYCO ELECTRONICS CORP.

3. CONDUCTORS SHALL BE SOLID FOR #10 AWG AND SMALLER; STRANDED FOR #8 AWG AND LARGER. MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG. BRANCH CIRCUITS LONGER THAN 75 FEET FOR 120-VOLTS OR 175 FEET FOR 277-VOLTS SHALL BE AT LEAST #10 AWG FROM PANEL TO LAST OUTLET.

4. WIRING METHODS: FEEDERS AND BRANCH CIRCUITS SHALL BE TYPE THHN-THWN, SINGLE CONDUCTORS IN RACEWAY, EXCEPT FOR THE FOLLOWING: UNDERGROUND FEEDERS AND BRANCH CIRCUITS SHALL BE TYPE XHHW, SINGLE CONDUCTORS IN RACEWAY; FEEDERS AND BRANCH CIRCUITS REQUIRING FIRE-RESISTANCE RATING SHALL BE 2-HOUR FIRE-RATED RHH IN RACEWAY, OR MI CABLE.

5. CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS, UNLESS OTHERWISE INDICATED.

6. MAKE SPLICES AND TAPS THAT ARE COMPATIBLE WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN UNSPLICED CONDUCTORS.

7. WIRING AT OUTLETS: INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 12 INCHES OF SLACK.

I. MEDIUM-VOLTAGE CABLES

1. CABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

   a. GENERAL CABLE TECHNOLOGIES CORPORATION.
   b. OKONITE COMPANY (THE).
   c. PRYSMIAN GROUP.
   d. SOUTHWIRE COMPANY, LLC.

2. CABLE TYPE: TYPE MV 105.

3. CONDUCTOR INSULATION: ETHYLENE-PROPYLENE RUBBER.

   a. VOLTAGE RATING: 5 KV.
   b. INSULATION THICKNESS: 133 PERCENT INSULATION LEVEL.

4. CONDUCTOR: SINGLE, ANNEALED, STRANDED COPPER, 98 PERCENT CONDUCTIVITY AT 20 DEGREES C.

5. COMPLY WITH UL 1072, AEIC CS8, ICEA S-93-639/NEMA WC 74, AND ICEA S-97-682

6. CONDUCTOR STRANDING: CONCENTRIC LAY, CLASS B.

7. SHIELDING: 5 MIL BARE UNCOATED COPPER TAPE, HELICALLY APPLIED (WITH MINIMUM 12.5 PERCENT OVERLAP) OVER SEMICONDUCTING INSULATION SHIELD.

8. CABLE JACKET: SUNLIGHT-RESISTANT PVC.

9. CABLE MUST BE MANUFACTURED NO MORE THAN 12 MONTHS PRIOR TO DELIVERY TO PROJECT SITE.

10. PROVIDE TEST TAILS FOR EACH CABLE REEL DELIVERED TO PROJECT SITE TO FACILITATE ON-REEL TESTING SPECIFIED.

11. SOLID TERMINATION MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

   a. RAYCHEM CORP.; TYCO INTERNATIONAL LTD.
   b. THOMAS & BETTS CORPORATION/ELASTIMOLD.
   c. 3M; ELECTRICAL PRODUCTS DIVISION.

12. SHIELDED-CABLE TERMINATIONS: COMPLY WITH THE FOLLOWING CLASSES OF IEEE 48. INSULATION CLASS SHALL BE EQUIVALENT TO THAT OF CABLE. INCLUDE SHIELD GROUND STRAP FOR SHIELDED CABLE TERMINATIONS.

   a. CLASS 1 TERMINATIONS: MODULAR COLD-SHRINK TYPE WITH STRESS CONTROL, NON-TRACKING TUBES, SILICON SEALING COMPOUNDS AND COMPRESSION-TYPE CONNECTOR. 3M COLD SHRINK QUICK-TERM III OR APPROVED EQUAL BY RAYCHEM OR ELASTIMOLD.

13. SEPARABLE INSULATED CONNECTORS: MODULAR SYSTEM, COMPLYING WITH IEEE 386, WITH DISCONNECTING, SINGLE-POLE, CABLE TERMINATORS AND WITH MATCHING, STATIONARY, PLUG-IN, DEAD-FRONT TERMINALS DESIGNED FOR CABLE VOLTAGE AND FOR SEALING AGAINST MOISTURE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

   a. RICHARDS MANUFACTURING CO.
   b. THOMAS & BETTS CORPORATION/ELASTIMOLD.

14. TERMINATIONS AT DISTRIBUTION POINTS: MODULAR TYPE, CONSISTING OF TERMINATORS INSTALLED ON CABLES AND MODULAR, DEAD-FRONT, TERMINAL JUNCTIONS FOR INTERCONNECTING CABLES.

15. LOAD-BREAK CABLE TERMINATORS: ELBOW-TYPE UNITS WITH 200-A-LOAD MAKE/BREAK ND CONTINUOUS-CURRENT RATING; COORDINATED WITH INSULATION DIAMETER, CONDUCTOR SIZE, AND MATERIAL OF CABLE BEING TERMINATED. INCLUDE TEST POINT ON ERMINATOR BODY THAT IS CAPACITANCE COUPLED.

16. DEAD-BREAK CABLE TERMINATORS: ELBOW-TYPE UNIT WITH 600-A CONTINUOUS-CURRENT RATING; DESIGNED FOR DE-ENERGIZED DISCONNECTING AND CONNECTING; OORDINATED WITH INSULATION DIAMETER, CONDUCTOR SIZE, AND MATERIAL OF CABLE EING TERMINATED. INCLUDE TEST POINT ON TERMINATOR BODY THAT IS CAPACITANCE OUPLED.

17. DEAD-FRONT TERMINAL JUNCTIONS: MODULAR BRACKET-MOUNTED GROUPS OF DEAD-FRONT STATIONARY TERMINALS THAT MATE AND MATCH WITH ABOVE CABLE TERMINATORS, TWO-, THREE-, OR FOUR-TERMINAL UNITS AS INDICATED; WITH FULLY RATED, INSULATED, WATERTIGHT CONDUCTOR CONNECTION BETWEEN TERMINALS AND COMPLETE WITH GROUNDING LUG. MANUFACTURER'S STANDARD ACCESSORY STANDS, STAINLESS-STEEL MOUNTING BRACKETS, AND ATTACHING HARDWARE.

   a. PROTECTIVE CAP: INSULATING, ELECTROSTATIC-SHIELDING, WATER-SEALING CAP WITH DRAIN WIRE.
   b. PORTABLE FEED-THROUGH ACCESSORY: TWO-TERMINAL, DEAD-FRONT JUNCTION ARRANGED FOR REMOVABLE MOUNTING ON ACCESSORY STAND OF STATIONARY TERMINAL JUNCTION.
   c. GROUNDING KIT: JUMPERED ELBOWS, PORTABLE FEED-THROUGH ACCESSORY UNITS, PROTECTIVE CAPS, TEST RODS SUITABLE FOR CONCURRENTLY GROUNDING THREE PHASES OF FEEDERS, AND CARRYING CASE.
   d. STANDOFF INSULATOR: PORTABLE, SINGLE DEAD-FRONT TERMINAL FOR REMOVABLE MOUNTING ON ACCESSORY STAND OF STATIONARY TERMINAL JUNCTION. INSULATORS SUITABLE FOR FULLY INSULATED ISOLATION OF ENERGIZED CABLE-ELBOW TERMINATOR.

18. TEST-POINT FAULT INDICATORS: APPLICABLE CURRENT-TRIP RATINGS AND ARRANGED FOR INSTALLATION IN TEST POINTS OF LOAD-BREAK SEPARABLE CONNECTORS, AND COMPLETE WITH SELF-RESETTING INDICATORS CAPABLE OF BEING INSTALLED WITH SHOTGUN HOT STICK AND TESTED WITH TEST TOOL.

19. TOOL SET: SHOTGUN HOT STICK WITH ENERGIZED TERMINAL INDICATOR, FAULT-INDICATOR TEST TOOL, AND CARRYING CASE.

20. ARC-PROOFING MATERIALS

   a. DESCRIPTION: FIRE RETARDANT, PROVIDING ARC FLASH PROTECTION.
   b. TAPE FOR FIRST COURSE ON METAL OBJECTS: 10-MIL-THICK, CORROSION-PROTECTIVE, MOISTURE-RESISTANT, PVC PIPE-WRAPPING TAPE.
   c. ARC-PROOFING TAPE: FIREPROOF TAPE, FLEXIBLE, CONFORMABLE, INTUMESCENT TO 0.3 INCH THICK, AND COMPATIBLE WITH CABLE JACKET.
   d. GLASS-CLOTH TAPE: PRESSURE-SENSITIVE ADHESIVE TYPE, 1 INCH WIDE.

21. SOURCE QUALITY CONTROL: TEST AND INSPECT CABLES ACCORDING TO ICEA S-97-682 BEFORE SHIPPING.

J. LIGHTNING PROTECTION SYSTEM

1. COORDINATE INSTALLATION OF LIGHTNING PROTECTION WITH INSTALLATION OF OTHER BUILDING SYSTEMS AND COMPONENTS, INCLUDING ELECTRICAL WIRING, SUPPORTING STRUCTURES AND BUILDING MATERIALS, METAL BODIES REQUIRING BONDING TO LIGHTNING PROTECTION COMPONENTS, AND BUILDING FINISHES.

2. COORDINATE INSTALLATION OF AIR TERMINALS AND OTHER LIGHTNING PROTECTION SYSTEM COMPONENTS ATTACHED TO ROOF SYSTEMS WITH ROOFING MANUFACTURER AND INSTALLER.

3. MANUFACTURERS: MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
   A. EAST COAST LIGHTNING EQUIPMENT INC.
   B. ERICO INTERNATIONAL CORPORATION.
   C. HARGER LIGHTNING AND GROUNDING.
   D. HEARY BROS. LIGHTNING PROTECTION CO. INC.
   E. INDEPENDENT PROTECTION CO.
   F. PREFERRED LIGHTNING PROTECTION.
   G. THOMPSON LIGHTNING PROTECTION, INC.
   h. WARREN LIGHTNING ROD COMPANY.

4. COMPLY WITH NFPA 780, UL 96 AND UL 96A REQUIREMENTS FOR CLASS II BUILDINGS.

5. LIGHTNING PROTECTION COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED BY A QUALIFIED TESTING AGENCY AS COMPLYING WITH UL 96, AND MARKED FOR INTENDED LOCATION AND APPLICATION.

6. AIR TERMINALS:
   A. SOLID COPPER, EXCEPT SOLID ALUMINUM MAY BE ALLOWED IN SELECT AREAS ONLY WHERE NECESSARY TO PREVENT GALVANIC CORROSION.
   B. ROUNDED "SAFETY" TIP.
   C. THREADED BASE SUPPORT.
   D. SPRING-MOUNT BASE WITH LANYARD FOR AIR TERMINALS LOCATED ON PARAPETS, ROOF EDGES AND OTHER LOCATIONS WHERE FAçADE MAINTENANCE EQUIPMENT WILL BE USED.

7. MAIN AND SECONDARY CONDUCTORS: STRANDED COPPER, EXCEPT STRANDED ALUMINUM MAY BE ALLOWED IN SELECT AREAS ONLY WHERE NECESSARY TO PREVENT GALVANIC CORROSION.

8. GROUND CONDUCTOR: STRANDED COPPER, TINNED.

9. GROUND RODS, GROUND LOOP CONDUCTORS, AND CONCRETE-ENCASED ELECTRODES: COMPLY WITH DIVISION 26 SECTION "GROUNDING AND BONDING" AND WITH STANDARDS REFERENCED IN THIS SECTION.

10. CONDUCTOR SPLICES AND CONNECTORS: COMPRESSION FITTINGS THAT ARE INSTALLED WITH HYDRAULICALLY-OPERATED TOOLS, OR EXOTHERMIC WELDS, APPROVED FOR USE WITH THE CLASS TYPE.

11. INSTALL CONDUCTORS WITH DIRECT PATHS FROM AIR TERMINALS TO GROUND CONNECTIONS. AVOID BENDS LESS THAN 90 DEGREES AND 8 INCHES IN RADIUS AND NARROW LOOPS.

12. CONCEAL CONDUCTORS WITHIN NORMAL VIEW FROM EXTERIOR LOCATIONS AT GRADE WITHIN 200 FEET OF BUILDING. COMPLY WITH REQUIREMENTS FOR CONCEALED INSTALLATIONS IN UL 96A AND NFPA 780.

13. ROOF PENETRATIONS REQUIRED FOR DOWN CONDUCTORS AND CONNECTIONS TO STRUCTURAL-STEEL FRAMEWORK SHALL BE MADE USING LISTED THROUGH-ROOF FITTING AND CONNECTOR ASSEMBLIES WITH SOLID RODS AND APPROPRIATE ROOF FLASHINGS. USE MATERIALS APPROVED BY THE ROOFING MANUFACTURER FOR THE PURPOSE. CONFORM TO THE METHODS AND MATERIALS REQUIRED AT ROOFING PENETRATIONS OF THE LIGHTNING PROTECTION COMPONENTS TO ENSURE COMPATIBILITY WITH THE ROOFING SPECIFICATIONS AND WARRANTY.

14. INSTALL CONDUIT WHERE NECESSARY TO COMPLY WITH CONDUCTOR CONCEALMENT REQUIREMENTS.

15. NOTIFY ARCHITECT AT LEAST 48 HOURS IN ADVANCE OF INSPECTION BEFORE CONCEALING LIGHTNING PROTECTION COMPONENTS.

16. ABOVEGROUND CONCEALED CONNECTIONS, AND CONNECTIONS IN EARTH OR CONCRETE, SHALL BE DONE BY EXOTHERMIC WELDS OR BY HIGH-COMPRESSION FITTINGS LISTED FOR THE PURPOSE.

17. ABOVEGROUND EXPOSED CONNECTIONS SHALL BE DONE USING THE FOLLOWING TYPES OF CONNECTORS, LISTED AND LABELED FOR THE PURPOSE: BOLTED CONNECTORS, EXOTHERMIC WELD OR HIGH-COMPRESSION FITTINGS.

18. DO NOT COMBINE MATERIALS THAT CAN FORM AN ELECTROLYTIC COUPLE THAT WILL ACCELERATE CORROSION IN THE PRESENCE OF MOISTURE UNLESS MOISTURE IS PERMANENTLY EXCLUDED FROM JUNCTION OF SUCH MATERIALS.

19. PERFORM INSPECTIONS AS REQUIRED TO OBTAIN A UL MASTER LABEL FOR SYSTEM.

K. UNDERGROUND ELECTRICAL PATHWAYS

1. CONDUIT

   a. RIGID STEEL CONDUIT: GALVANIZED, COMPLY WITH ANSI C80.1 AND UL 6.
   b. RNC: NEMA TC 2, TYPE EPC-40-PVC AND TYPE EPC-80-PVC, UL 651, WITH MATCHING FITTINGS BY SAME MANUFACTURER AS THE CONDUIT, COMPLYING WITH NEMA TC 3 AND UL 514B.
      - SOLVENTS AND ADHESIVES: AS RECOMMENDED BY CONDUIT MANUFACTURER.

2. DUCT ACCESSORIES

   a. DUCT SPACERS: FACTORY-FABRICATED RIGID PVC INTERLOCKING SPACERS, SIZED FOR TYPE AND SIZES OF DUCTS WITH WHICH USED, AND SELECTED TO PROVIDE MINIMUM DUCT SPACING INDICATED WHILE SUPPORTING DUCTS DURING CONCRETING OR BACKFILLING.
   b. UNDERGROUND LINE WARNING TAPE: COMPLY WITH UNDERGROUND-LINE WARNING TAPE SPECIFIED IN DIVISION 26 SECTION "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3. HANDHOLES FOR UNDERGROUND WIRING

   a. SIZED TO ACCOMMODATE CONDUCTORS AND ASSOCIATED CONNECTORS TO BE HOUSED; MINIMUM 24-INCHES DEEP WITH SAND OR GRAVEL FILL AT BOTTOM, FLUSH-BURIED.
   b. CONSTRUCTION: HEAVY-DUTY, TRAFFIC-RATED CONCRETE BODY WITH OPEN BOTTOM AND COVER MARKED TO INDICATE APPLICABLE SERVICE.
   c. HANDHOLES LOCATED IN AREAS SUBJECT TO DELIBERATE VEHICULAR TRAFFIC:
      - RECTANGULAR HIGH-DENSITY REINFORCED CONCRETE BODY RATED FOR DELIBERATE HEAVY VEHICULAR TRAFFIC, MINIMUM 16-INCH BY 22-INCH INTERNAL DIMENSION.
      - COMPLY WITH ASTM C 858 FOR DESIGN AND MANUFACTURING PROCESSES.
      - BOLT-DOWN GALVANIZED STEEL CHECKER PLATE SKID-RESISTANT COVER WITH STEEL FRAME.
      - AASHTO H-20 FULL-TRAFFIC RATED ASSEMBLY.
   d. HANDHOLES LOCATED IN AREAS NOT SUBJECT TO DELIBERATE VEHICULAR TRAFFIC:
      - RECTANGULAR STACKABLE POLYMER CONCRETE BODY RATED FOR NON-DELIBERATE HEAVY VEHICULAR TRAFFIC, MINIMUM 16-INCH X 22-INCH INTERNAL DIMENSION.
      - COMPLY WITH SCTE 77.
      - BOLT-DOWN POLYMER CONCRETE COVER WITH NON-SKID FINISH, RATED FOR 20,000 LBS.
      - ANSI TIER 15 RATED ASSEMBLY.
   e. COVER: WEATHERPROOF, SECURED BY TAMPER-RESISTANT LOCKING DEVICES AND HAVING STRUCTURAL LOAD RATING CONSISTENT WITH ENCLOSURE.
   f. COVER FINISH: NON-SKID FINISH SHALL HAVE A MINIMUM COEFFICIENT OF FRICTION OF 0.50.
   g. COVER LEGEND: MOLDED LETTERING, AS INDICATED FOR EACH SERVICE.
   h. CONDUIT ENTRANCE PROVISIONS: CONDUIT-TERMINATING FITTINGS SHALL MATE WITH ENTERING DUCTS FOR SECURE, FIXED INSTALLATION IN ENCLOSURE WALL.

L. IDENTIFICATION FOR ELECTRICAL SYSTEMS

1. RACEWAY IDENTIFICATION MATERIALS

   a. COMPLY WITH ANSI A13.1 FOR MINIMUM SIZE OF LETTERS FOR LEGEND AND FOR MINIMUM LENGTH OF COLOR FIELD FOR EACH RACEWAY AND CABLE SIZE.
   b. COLOR FOR PRINTED LEGEND:

2. POWER CIRCUITS: BLACK LETTERS ON AN ORANGE FIELD.

3. LEGEND: INDICATE SYSTEM OR SERVICE AND VOLTAGE, IF APPLICABLE.

   a. SELF-ADHESIVE VINYL LABELS: PRE-PRINTED, FLEXIBLE LABEL LAMINATED WITH A CLEAR, WEATHER- AND CHEMICAL-RESISTANT COATING AND MATCHING WRAPAROUND ADHESIVE TAPE FOR SECURING ENDS OF LEGEND LABEL.
   b. SNAP-AROUND LABELS: SLIT, PRE-TENSIONED, FLEXIBLE, PREPRINTED, COLOR-CODED ACRYLIC SLEEVES, WITH DIAMETER SIZED TO SUIT DIAMETER OF RACEWAY OR CABLE IT IDENTIFIES AND TO STAY IN PLACE BY GRIPPING ACTION.
   c. SNAP-AROUND, COLOR-CODING BANDS: SLIT, PRE-TENSIONED, FLEXIBLE, SOLID-COLORED ACRYLIC SLEEVES, 2 INCHES LONG, WITH DIAMETER SIZED TO SUIT DIAMETER OF RACEWAY OR CABLE IT IDENTIFIES AND TO STAY IN PLACE BY GRIPPING ACTION.
   d. SELF-ADHESIVE VINYL TAPE: COLORED, HEAVY DUTY, WATERPROOF, FADE RESISTANT; 2 INCHES WIDE; COMPOUNDED FOR OUTDOOR USE.

4. CONDUCTOR AND CABLE IDENTIFICATION MATERIALS

   a. COLOR-CODING CONDUCTOR TA

THE LINE SHOWN AT LEFT IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE. DO NOT SCALE CONTENTS OF THIS DRAWING.

ELECTRICAL SPECIFICATIONS

10. PRIMARY FUSING: DESIGNED AND RATED TO PROVIDE THERMAL PROTECTION OF TRANSFORMER BY SENSING OVERCURRENT AND HIGH LIQUID TEMPERATURE.
    a. 150-KV BIL CURRENT-LIMITING FUSES, CONFORMING TO REQUIREMENTS OF IEEE C37.47.
    b. INTERRUPTING RATING: 50,000 RMS A SYMMETRICAL AT SYSTEM VOLTAGE.
    c. FUSE ASSEMBLY: BAYONET-TYPE, LIQUID-IMMERSED, EXPULSION FUSES IN SERIES WITH LIQUID-IMMERSED, PARTIAL-RANGE, CURRENT-LIMITING FUSES. BAYONET FUSE SHALL SENSE BOTH HIGH CURRENTS AND HIGH OIL TEMPERATURE TO PROVIDE THERMAL PROTECTION TO THE TRANSFORMER.
    d. PROVIDE BAYONET FUSE ASSEMBLY WITH AN OIL RETENTION VALVE AND AN EXTERNAL DRIP SHIELD INSIDE THE HOUSING TO ELIMINATE OR MINIMIZE OIL SPILLS. VALVE SHALL CLOSE WHEN FUSE HOLDER IS REMOVED AND AN EXTERNAL DRIP SHIELD IS INSTALLED.
    e. PROVIDE A CONSPICUOUSLY DISPLAYED WARNING ADJACENT TO BAYONET FUSES, CAUTIONING AGAINST REMOVING OR INSERTING FUSES UNLESS TRANSFORMER HAS BEEN DE-ENERGIZED AND TANK PRESSURE HAS BEEN RELEASED.

11. SURGE ARRESTERS: COMPLY WITH IEEE C62.11, DISTRIBUTION CLASS; METAL-OXIDE-VARISTOR TYPE, FULLY SHIELDED, SEPARABLE-CONNECTOR TYPE, SUITABLE FOR PLUGGING INTO BUSHINGS OR CONNECTORS PROVIDED IN PRIMARY SECTION OF TRANSFORMER, CONNECTED IN EACH PHASE OF EACH INCOMING CIRCUIT AND AHEAD OF ANY DISCONNECTING DEVICE. PROVIDE BUSHINGS, INSERTS AND CONNECTOR ADAPTERS AS REQUIRED.

12. PRIMARY TERMINATIONS AND EQUIPMENT: DEAD-FRONT SEPARABLE INSULATED MEDIUM-VOLTAGE CONNECTORS, COMPLYING WITH IEEE 386.
    a. BUSHINGS: SIDE-WALL MOUNTED AND EXTERNALLY-REMOVABLE.
       • 200 A LOAD-BREAK CONNECTIONS: UNIVERSAL-TYPE BUSHING WELLS AND INSERTS.
       • 600 A DEAD-BREAK CONNECTIONS: INTEGRAL ONE-PIECE BUSHINGS.CABLE TERMINATORS: DEAD-FRONT, ELBOW-TYPE.
    b. SURGE ARRESTERS: DEAD-FRONT METAL-OXIDE-VARISTOR UNITS; ELBOW OR FEED-THRU BUSHING TYPE.
    c. PARKING STANDS: ONE FOR EACH MEDIUM-VOLTAGE BUSHING.
    d. PORTABLE INSULATED BUSHINGS: ARRANGED FOR PATCH, INSULATED, MEDIUM-VOLTAGE CABLE TERMINATORS; ONE FOR EACH PRIMARY FEEDER CONDUCTOR TERMINATING AT TRANSFORMER.
    e. PROVIDE INSULATED PROTECTIVE CAPS FOR INSULATING AND SEALING OUT MOISTURE FROM UNUSED BUSHING INSERTS AND INSULATED STANDOFF BUSHINGS

13. TANK: SEALED, WITH WELDED-ON COVER, DESIGNED TO WITHSTAND INTERNAL PRESSURE OF NOT LESS THAN 7 PSI WITHOUT PERMANENT DISTORTION AND 15 PSIG WITHOUT RUPTURE. COMPLY WITH IEEE C57.12.36.

14. ENCLOSURE INTEGRITY: COMPLY WITH IEEE C57.12.28 FOR PAD-MOUNTED ENCLOSURES THAT CONTAIN ENERGIZED ELECTRICAL EQUIPMENT IN EXCESS OF 600 V THAT MAY BE EXPOSED TO THE PUBLIC.

15. MOUNTING: AN INTEGRAL SKID MOUNTING FRAME, SUITABLE TO ALLOW SKIDDING OR ROLLING OF TRANSFORMER IN ANY DIRECTION, AND WITH PROVISION FOR ANCHORING FRAME TO PAD.

16. SOUND LEVEL SHALL COMPLY WITH NEMA TR 1 REQUIREMENTS.

17. COMPARTMENT CONSTRUCTION: DOUBLE-COMPARTMENT WITH INDIVIDUAL COMPARTMENTS FOR HIGH- AND LOW-VOLTAGE SECTIONS, FORMED BY STEEL ISOLATING BARRIERS THAT EXTEND FULL HEIGHT AND DEPTH OF COMPARTMENTS, WITH HINGED, LIFT-OFF DOORS AND THREE-POINT LATCHING, WITH A STOP IN THE OPEN POSITION AND PROVISION FOR PADLOCKING; COORDINATE DEPTH TO ACCOMMODATE HIGH- AND LOW-VOLTAGE CABLE TERMINATIONS AND ASSOCIATED EQUIPMENT, SUCH AS SURGE ARRESTERS.

18. CORROSION PROTECTION: FABRICATE BASE AND CABINETS FROM STAINLESS STEEL ACCORDING TO ASTM A167, TYPE 304 OR 304L, NOT LESS THAN NO. 13 U.S. GAGE. COAT TRANSFORMER WITH MANUFACTURER'S STANDARD GREEN COLOR COATING COMPLYING WITH REQUIREMENTS OF IEEE C57.12.28, IN MANUFACTURER'S STANDARD COLOR GREEN.

19. HIGH-VOLTAGE SECTION: DEAD-FRONT DESIGN.
    a. SEPARABLE INSULATED CONNECTORS TO TERMINATE AND CONNECT PRIMARY CABLES AND CABLE ACCESSORIES; COORDINATED WITH CABLE SIZES AND TYPES INDICATED AND COMPLYING WITH REQUIREMENTS OF DIVISION 26 SECTION "MEDIUM-VOLTAGE CABLES."
    b. ACCESS TO LIQUID-IMMERSED FUSES.
    c. DEAD-FRONT SURGE ARRESTERS.
    d. TAP-CHANGER OPERATOR.
    e. HIGH-VOLTAGE SWITCH.
    f. GROUND PAD.

20. LOW-VOLTAGE SECTION:
    a. BUSHINGS WITH NEMA TIN-PLATED SPADE TERMINALS FACTORY-DRILLED FOR TERMINATING SECONDARY CABLES; COORDINATED WITH QUANTITY OF CONDUCTORS INDICATED, AND CRIMP COMPRESSION LUGS COMPLYING WITH REQUIREMENTS OF DIVISION 26 SECTION "LOW-VOLTAGE CONDUCTORS AND CABLES." PROVIDE FACTORY-INSTALLED SPADE SUPPORTS AFFIXED TO CABINET SIDEWALLS AS REQUIRED.
    b. GROUND PAD.

21. TRANSFORMER ACCESSORIES:
    a. DRAIN AND FILTER CONNECTION.
    b. FILLING AND TOP FILTER PRESS CONNECTIONS.
    c. PRESSURE-VACUUM GAUGE.
    d. DIAL-TYPE ANALOG THERMOMETER WITH ALARM CONTACTS.
    e. MAGNETIC LIQUID LEVEL INDICATOR WITH HIGH AND LOW ALARM CONTACTS.
    f. AUTOMATICALLY RESETTING PRESSURE-RELIEF DEVICE. DEVICE FLOW SHALL BE AS RECOMMENDED BY MANUFACTURER. PROVIDE ALARM CONTACTS AND A MANUAL BLEEDER.
    g. STAINLESS-STEEL GROUND CONNECTION PADS.
    h. MACHINE-ENGRAVED NAMEPLATE, MADE OF ANODIZED ALUMINUM OR STAINLESS STEEL.
    i. SUDDEN PRESSURE RELAY FOR REMOTE ALARM OR TRIP WHEN INTERNAL TRANSFORMER PRESSURE RISES AT FIELD-SET RATE.

22. TRANSFORMERS SHALL BE SUITABLE FOR OPERATION UNDER SERVICE CONDITIONS SPECIFIED AS USUAL SERVICE CONDITIONS IN IEEE C57.12.00.

23. COMPLY WITH REQUIREMENTS FOR LABELS AND SIGNS SPECIFIED IN DIVISION 26 SECTION "IDENTIFICATION FOR ELECTRICAL SYSTEMS."
    a. HIGH-VOLTAGE WARNING LABEL: PROVIDE SELF-ADHESIVE WARNING SIGNS ON OUTSIDE OF HIGH-VOLTAGE COMPARTMENT DOORS. SIGN LEGEND SHALL BE "DANGER HIGH VOLTAGE" PRINTED IN TWO LINES OF NOMINAL 2-INCH-HIGH LETTERS. THE WORD "DANGER" SHALL BE IN WHITE LETTERS ON A RED BACKGROUND AND THE WORDS "HIGH VOLTAGE" SHALL BE IN BLACK LETTERS ON A WHITE BACKGROUND.
    b. ARC FLASH WARNING LABEL: PROVIDE SELF-ADHESIVE WARNING SIGNS ON OUTSIDE OF HIGH-VOLTAGE COMPARTMENT DOORS, WARNING OF POTENTIAL ELECTRICAL ARC FLASH HAZARDS AND APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT REQUIRED.

24. INSTALL TRANSFORMERS ON CAST-IN-PLACE CONCRETE EQUIPMENT BASES. COMPLY WITH REQUIREMENTS FOR EQUIPMENT BASES AND FOUNDATIONS SPECIFIED IN DIVISION 03 SECTION "CAST-IN-PLACE CONCRETE."
    a. TRANSFORMER SHALL BE INSTALLED LEVEL AND PLUMB AND SHALL TILT LESS THAN 1.5 DEGREES WHILE ENERGIZED.
    b. MAINTAIN MINIMUM CLEARANCES AND WORKSPACE AT EQUIPMENT ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND IEEE C2.

25. GROUND EQUIPMENT ACCORDING "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."
    a. FOR COUNTERPOISE, USE TINNED BARE COPPER CABLE NOT SMALLER THAN NO. 4/0 AWG, BURIED NOT LESS THAN 30 INCHES BELOW GRADE INTERCONNECTING THE GROUNDING ELECTRODES. BOND SURGE ARRESTER AND NEUTRALS DIRECTLY TO TRANSFORMER ENCLOSURE AND THEN TO GROUNDING ELECTRODE SYSTEM WITH BARE COPPER CONDUCTORS, SIZED AS SHOWN. KEEP LEAD LENGTHS AS SHORT AS PRACTICABLE, WITH NO KINKS OR SHARP BENDS.
    b. FENCE AND EQUIPMENT CONNECTIONS SHALL NOT BE SMALLER THAN NO. 4 AWG. GROUND FENCE AT EACH GATE POST AND CORNER POST AND AT INTERVALS NOT EXCEEDING 10 FT.. BOND EACH GATE SECTION TO FENCE POST USING 1/8 BY 1 INCH TINNED FLEXIBLE BRAIDED COPPER STRAP AND CLAMPS.
    c. MAKE JOINTS IN GROUNDING CONDUCTORS AND LOOPS BY EXOTHERMIC WELD OR COMPRESSION CONNECTOR.
    d. TERMINATE ALL GROUNDING AND BONDING CONDUCTORS ON A COMMON EQUIPMENT GROUNDING TERMINAL ON TRANSFORMER ENCLOSURE.
    e. COMPLETE TRANSFORMER TANK GROUNDING AND LIGHTNING ARRESTER CONNECTIONS PRIOR TO MAKING ANY OTHER ELECTRICAL CONNECTIONS.

26. CONNECT WIRING ACCORDING TO DIVISION 26 SECTION "LOW-VOLTAGE CONDUCTORS AND CABLES."
    a. MAINTAIN AIR CLEARANCES BETWEEN ENERGIZED LIVE PARTS AND BETWEEN LIVE PARTS AND GROUND FOR EXPOSED CONNECTIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
    b. BUNDLE ASSOCIATED PHASE, NEUTRAL, AND EQUIPMENT GROUNDING CONDUCTORS TOGETHER WITHIN TRANSFORMER ENCLOSURE. ARRANGE CONDUCTORS SUCH THAT THERE IS NOT EXCESSIVE STRAIN THAT COULD CAUSE LOOSE CONNECTIONS. ALLOW ADEQUATE SLACK FOR EXPANSION AND CONTRACTION OF CONDUCTORS.

27. TERMINATE MEDIUM-VOLTAGE CABLES IN INCOMING SECTION OF TRANSFORMERS ACCORDING TO "MEDIUM-VOLTAGE CABLES" SECTION.

28. TEST AND INSPECT ACCORDING TO ANSI C57.12.50 AND IEEE C57.12.90.

29. TESTING AGENCY: ENGAGE A QUALIFIED TESTING AND INSPECTING AGENCY TO PERFORM.

30. VOLTAGE MONITORING AND ADJUSTMENT: ONE TIME WITHIN SIX MONTHS AFTER FINAL ACCEPTANCE.

P. **PANELBOARDS AND CIRCUIT BREAKERS**

1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
    a. EATON ELECTRICAL INC.; CUTLER-HAMMER BUSINESS UNIT.
    b. SIEMENS ENERGY & AUTOMATION, INC.
    c. SQUARE D; A BRAND OF SCHNEIDER ELECTRIC.

2. ENCLOSURES: SURFACE-MOUNTED CABINETS. INDOOR DRY AND CLEAN LOCATIONS: NEMA 250, TYPE 1.

3. HINGED FRONT COVER: ENTIRE FRONT TRIM HINGED TO BOX AND WITH STANDARD DOOR WITHIN HINGED TRIM COVER.

4. FINISHES:
    a. PANELS AND TRIM: STEEL AND GALVANIZED STEEL, FACTORY FINISHED IMMEDIATELY AFTER CLEANING AND PRE-TREATING WITH MANUFACTURER'S STANDARD TWO-COAT, BAKED-ON FINISH CONSISTING OF PRIME COAT AND THERMOSETTING TOPCOAT.
    b. BACK BOXES: GALVANIZED STEEL.

5. DIRECTORY CARD: INSIDE PANELBOARD DOOR, MOUNTED IN METAL FRAME WITH TRANSPARENT PROTECTIVE COVER.

6. CIRCUIT BREAKER ARRANGEMENT: SINGLE-POLE CIRCUIT BREAKERS SHALL BE ARRANGED AS FOLLOWS: THREE-PHASE PANELS: A-B-C TOP TO BOTTOM.

7. INCOMING MAINS LOCATION: TOP AND BOTTOM.

8. PHASE, NEUTRAL, AND GROUND BUSES:
    a. MATERIAL: HARD-DRAWN COPPER OF 98 PERCENT CONDUCTIVITY
    b. EQUIPMENT GROUND BUS: ADEQUATE FOR FEEDER AND BRANCH-CIRCUIT EQUIPMENT GROUNDING CONDUCTORS; BONDED TO BOX.
    c. ISOLATED GROUND BUS: WHERE INDICATED, PROVIDE ISOLATED GROUND BUS ADEQUATE FOR BRANCH-CIRCUIT ISOLATED GROUND CONDUCTORS; INSULATED FROM BOX.
    d. EXTRA-CAPACITY NEUTRAL BUS: WHERE INDICATED, PROVIDE NEUTRAL BUS RATED 200 PERCENT OF PHASE BUS AND UL LISTED AS SUITABLE FOR NONLINEAR LOADS.

9. CONDUCTOR CONNECTORS: SUITABLE FOR USE WITH CONDUCTOR MATERIAL AND SIZES.
    a. MATERIAL: HARD-DRAWN COPPER OF 98 PERCENT CONDUCTIVITY.
    b. MAIN AND NEUTRAL LUGS: COMPRESSION OR MECHANICAL TYPE.
    c. GROUND LUGS AND BUS-CONFIGURED TERMINATORS: COMPRESSION OR MECHANICAL TYPE.
    d. FEED-THROUGH LUGS: COMPRESSION OR MECHANICAL TYPE, SUITABLE FOR USE WITH CONDUCTOR MATERIAL. LOCATE AT OPPOSITE END OF BUS FROM INCOMING LUGS OR MAIN DEVICE.
    e. SUBFEED (DOUBLE) LUGS: COMPRESSION OR MECHANICAL TYPE SUITABLE FOR USE WITH CONDUCTOR MATERIAL. LOCATE AT SAME END OF BUS AS INCOMING LUGS OR MAIN DEVICE.
    f. EXTRA-CAPACITY NEUTRAL LUGS: RATED 200 PERCENT OF PHASE LUGS MOUNTED ON EXTRA-CAPACITY NEUTRAL BUS.

10. SERVICE EQUIPMENT LABEL: NRTL LABELED FOR USE AS SERVICE EQUIPMENT FOR PANELBOARDS OR LOAD CENTERS WITH ONE OR MORE MAIN SERVICE DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES.

11. SPARE DEVICES: EACH PANELBOARD SHALL BE EQUIPPED WITH A MINIMUM OF 20 PERCENT SPARE DEVICES FOR THE CONNECTION OF FUTURE CIRCUITS, UNLESS A GREATER QUANTITY OF SPARE DEVICES ARE INDICATED ELSEWHERE.
    a. PROVIDE A MINIMUM OF ONE MATCHING SPARE DEVICE FOR EACH SIZE AND TYPE OF DEVICE PROVIDED.

12. FUTURE DEVICES: EACH PANELBOARD SHALL BE EQUIPPED WITH MOUNTING BRACKETS, BUS CONNECTIONS, FILLER PLATES, AND NECESSARY APPURTENANCES REQUIRED FOR FUTURE INSTALLATION OF THE FOLLOWING QUANTITY OF DEVICES, UNLESS A GREATER QUANTITY OF FUTURE DEVICES ARE INDICATED ELSEWHERE:
    a. DISTRIBUTION PANELBOARDS: MINIMUM 30 PERCENT.
    b. BRANCH CIRCUIT PANELBOARDS: MINIMUM 20 PERCENT.
    c. INCLUDE PROVISIONS FOR AT LEAST ONE MATCHING FUTURE DEVICE FOR EACH SIZE AND TYPE DEVICE PROVIDED.

13. PANELBOARD SHORT-CIRCUIT CURRENT RATING: FULLY RATED TO INTERRUPT SYMMETRICAL SHORT-CIRCUIT CURRENT AVAILABLE AT TERMINALS; EXCEPT SERIES-RATED EQUIPMENT IS ACCEPTABLE FOR RESIDENTIAL UNIT LOAD CENTERS.

14. SURGE SUPPRESSION: FACTORY INSTALLED AS AN INTEGRAL PART OF INDICATED PANELBOARDS, COMPLYING WITH UL 1449 SPD TYPE 1.

15. DISTRIBUTION PANELBOARDS
    a. PANELBOARDS: NEMA PB 1, DISTRIBUTION TYPE.
    b. DOORS: SECURED WITH VAULT-TYPE LATCH WITH TUMBLER LOCK; KEYED ALIKE.
    c. FOR DOORS MORE THAN 36 INCHES HIGH, PROVIDE TWO LATCHES, KEYED ALIKE.
    d. OVERCURRENT PROTECTIVE DEVICES: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.
    e. SPD: BRANCH-MOUNTED IN EACH DISTRIBUTION PANELBOARD.
    f. FACTORY-INSTALLED, INTEGRAL SPD; LABELED BY AN NRTL FOR COMPLIANCE WITH UL 67 AFTER INSTALLING SPD. MINIMUM PEAK SURGE CURRENT RATING: 200KA.
    g. DIGITAL POWER MONITOR; FACTORY-INSTALLED WITHIN DISTRIBUTION PANELBOARD WITH DISPLAY.

16. BRANCH CIRCUIT PANELBOARDS
    a. NEMA PB 1, LIGHTING AND APPLIANCE BRANCH-CIRCUIT TYPE.
    b. OVERCURRENT PROTECTIVE DEVICES: BOLT-ON CIRCUIT BREAKERS, REPLACEABLE WITHOUT DISTURBING ADJACENT UNITS.
    c. DOORS: CONCEALED HINGES; SECURED WITH FLUSH LATCH WITH TUMBLER LOCK; KEYED ALIKE.
    d. SPD: BRANCH-MOUNTED IN BRANCH-CIRCUIT PANELBOARDS INDICATED.
    e. FACTORY-INSTALLED, INTEGRAL SPD; LABELED BY AN NRTL FOR COMPLIANCE WITH UL 67 AFTER INSTALLING SPD. MINIMUM PEAK SURGE CURRENT RATING: 100KA.

17. OVERCURRENT PROTECTIVE DEVICES
    a. MOLDED-CASE CIRCUIT BREAKER (MCCB): COMPLY WITH UL 489, WITH INTERRUPTING CAPACITY TO MEET AVAILABLE FAULT CURRENTS.
    b. THERMAL-MAGNETIC CIRCUIT BREAKERS: INVERSE TIME-CURRENT ELEMENT FOR LOW-LEVEL OVERLOADS, AND INSTANTANEOUS MAGNETIC TRIP ELEMENT FOR SHORT CIRCUITS. ADJUSTABLE MAGNETIC TRIP SETTING FOR CIRCUIT-BREAKER FRAME SIZES 250 A AND LARGER.
    c. ADJUSTABLE INSTANTANEOUS-TRIP CIRCUIT BREAKERS: MAGNETIC TRIP ELEMENT WITH ADJUSTABLE TRIP SETTING. FIELD-ADJUSTABLE TRIP SETTING.
    d. ELECTRONIC TRIP CIRCUIT BREAKERS WITH RMS SENSING; FIELD-REPLACEABLE RATING PLUG OR FIELD-REPLICABLE ELECTRONIC TRIP; AND THE FOLLOWING FIELD-ADJUSTABLE SETTINGS:
       • INSTANTANEOUS TRIP.
       • LONG- AND SHORT-TIME PICKUP LEVELS.
       • LONG- AND SHORT-TIME TIME ADJUSTMENTS.
       • GROUND-FAULT PICKUP LEVEL, TIME DELAY, AND I2/T RESPONSE.
    e. CURRENT-LIMITING CIRCUIT BREAKERS: FRAME SIZES 400 A AND SMALLER; LET-THROUGH RATINGS LESS THAN NEMA FU 1, RK-5.
    f. GFCI CIRCUIT BREAKERS: SINGLE- AND TWO-POLE CONFIGURATIONS WITH CLASS A GROUND-FAULT PROTECTION (6-MA TRIP).
    g. MECHANICAL EQUIPMENT PROTECTION (GFEP) CIRCUIT BREAKERS: CLASS B GROUND-FAULT PROTECTION (30-MA TRIP).
    h. ARC-FAULT CIRCUIT INTERRUPTER (AFCI) CIRCUIT BREAKERS: COMPLY WITH UL 1699; 120/240-V, SINGLE-POLE CONFIGURATION.
    i. MOLDED-CASE CIRCUIT-BREAKER (MCCB) FEATURES AND ACCESSORIES:
       • STANDARD FRAME SIZES, TRIP RATINGS, AND NUMBER OF POLES.
       • LUGS: COMPRESSION OR MECHANICAL STYLE, SUITABLE FOR NUMBER, SIZE, TRIP RATINGS, AND CONDUCTOR MATERIALS.
       • APPLICATION LISTING: APPROPRIATE FOR APPLICATION; TYPE SWD FOR SWITCHING FLUORESCENT LIGHTING LOADS; TYPE HID FOR FEEDING FLUORESCENT AND HIGH-INTENSITY DISCHARGE (HID) LIGHTING CIRCUITS.
       • GROUND-FAULT PROTECTION: INTEGRALLY MOUNTED RELAY AND TRIP UNIT WITH ADJUSTABLE PICKUP AND TIME-DELAY SETTINGS, PUSH-TO-TEST FEATURE, AND GROUND-FAULT INDICATOR.
       • SHUNT TRIP: 120-V TRIP COIL ENERGIZED FROM SEPARATE CIRCUIT, SET TO TRIP AT 55 PERCENT OF RATED VOLTAGE.
       • UNDER-VOLTAGE TRIP: SET TO OPERATE AT 35 TO 75 PERCENT OF RATED VOLTAGE WITH FIELD-ADJUSTABLE 0.1- TO 0.6-SECOND TIME DELAY.
       • AUXILIARY CONTACTS: TWO SPDT SWITCHES WITH "A" AND "B" CONTACTS; "A" CONTACTS MIMIC CIRCUIT-BREAKER CONTACTS AND "B" CONTACTS OPERATE IN REVERSE OF CIRCUIT-BREAKER CONTACTS.
       • ALARM SWITCH: SINGLE-POLE, NORMALLY OPEN CONTACT THAT ACTUATES ONLY WHEN CIRCUIT BREAKER TRIPS.
       • HANDLE PADLOCKING DEVICE: FIXED ATTACHMENT, FOR LOCKING CIRCUIT-BREAKER HANDLE IN ON OR OFF POSITION.
       • HANDLE CLAMP: LOOSE ATTACHMENT, FOR HOLDING CIRCUIT-BREAKER HANDLE IN ON POSITION.

18. INSTRUMENTATION
    A. INSTRUMENT TRANSFORMERS: IEEE C57.13, NEMA EI 21.1, AND THE FOLLOWING:
       • POTENTIAL TRANSFORMERS: IEEE C57.13; 120 V, 60 HZ, SECONDARY; DISCONNECTING TYPE WITH INTEGRAL FUSE MOUNTINGS. BURDEN AND ACCURACY SHALL BE CONSISTENT WITH CONNECTED METERING AND RELAY DEVICES.
       • CURRENT TRANSFORMERS: IEEE C57.13; 5 A, 60 HZ, SECONDARY WITH SECONDARY SHORTING DEVICE. BURDEN AND ACCURACY SHALL BE CONSISTENT WITH CONNECTED METERING AND RELAY DEVICES.
       • VOLTAGE TRANSFORMERS: PRIMARY AND SECONDARY PROTECTION AND DISCONNECTING MEANS FOR SENSING FUNCTIONS AND CONTROL POWER.
       • VOLTAGE SENSING RELAYS: MICROPROCESSOR-BASED ANSI NO. 27/47 VOLTAGE DETECTION RELAYS FOR THREE-PHASE UNDER-VOLTAGE PROTECTION AND NEGATIVE SEQUENCE VOLTAGE PROTECTION.
    B. MULTIFUNCTION DIGITAL-METERING MONITOR (POWER MONITOR): UL-LISTED OR - RECOGNIZED, MICROPROCESSOR-BASED UNIT SUITABLE FOR THREE- OR FOUR-WIRE SYSTEMS AND WITH THE FOLLOWING FEATURES:
       • INPUTS FROM SENSORS OR 5-A CURRENT-TRANSFORMER SECONDARIES, AND POTENTIAL TERMINALS RATED TO 600 V.
       • BACK-LIGHTED LCD TO DISPLAY METERED DATA WITH TOUCH-SCREEN SELECTING DEVICE. DISPLAY FOUR VALUES ON ONE SCREEN AT SAME TIME.
       • SWITCH-SELECTABLE DIGITAL DISPLAY OF THE FOLLOWING PARAMETERS:
          1. CURRENT, PER PHASE RMS, THREE-PHASE AVERAGE AND NEUTRAL.
          2. VOLTAGE, PHASE TO PHASE, PHASE TO NEUTRAL, AND THREE-PHASE AVERAGES OF PHASE TO PHASE AND PHASE TO NEUTRAL.
          3. REAL POWER, PER PHASE AND THREE-PHASE TOTAL.
          4. REACTIVE POWER, PER PHASE AND THREE-PHASE TOTAL.
          5. APPARENT POWER, PER PHASE AND THREE-PHASE TOTAL.
          6. POWER FACTOR, PER PHASE AND THREE-PHASE TOTAL.
          7. FREQUENCY.
          8. DEMAND CURRENT, PER PHASE AND THREE-PHASE AVERAGE.
          9. DEMAND REAL POWER, THREE-PHASE TOTAL.
          10. DEMAND APPARENT POWER, THREE-PHASE TOTAL.
          11. ACCUMULATED ENERGY (MWH AND MVARH).
          12. THD, CURRENT AND VOLTAGE, PER PHASE.
       • RESET: ALLOW RESET OF THE FOLLOWING PARAMETERS AT THE DISPLAY:
          1. PEAK DEMAND CURRENT.
          2. PEAK DEMAND POWER (KW) AND PEAK DEMAND APPARENT POWER (KVA).
          3. ENERGY (MWH) AND REACTIVE ENERGY (MVARH).
       • MOUNTING: DISPLAY AND CONTROL UNIT FLUSH OR SEMI-FLUSH MOUNTED IN INSTRUMENT COMPARTMENT DOOR.
          1. INTERCONNECTION TO BUILDING AUTOMATION SYSTEM: INTEGRATE EACH SWITCHGEAR POWER MONITOR INTO THE BAS SO THAT THE PARAMETERS DESCRIBED ABOVE, INCLUDING RESETTABLE PARAMETERS, ARE AVAILABLE FOR VIEWING, RECORDING AND RESETTING VIA THE BAS.
    C. RELAYS: COMPLY WITH IEEE C37.90, TYPES AND SETTINGS AS REQUIRED; WITH TEST BLOCKS AND PLUGS.
    D. CONTROL WIRING: FACTORY INSTALLED, COMPLETE WITH BUNDLING, LACING, AND PROTECTION; AND COMPLYING WITH THE FOLLOWING:
       • FLEXIBLE CONDUCTORS FOR NO. 8 AWG AND SMALLER, FOR CONDUCTORS ACROSS HINGES AND FOR CONDUCTORS FOR INTERCONNECTIONS BETWEEN SHIPPING UNITS.
       • CONDUCTORS SIZED ACCORDING TO NFPA 70 FOR DUTY REQUIRED.

19. IDENTIFICATION
    a. PANELBOARD LABEL: MANUFACTURER'S NAME AND TRADEMARK, VOLTAGE, AMPERAGE, NUMBER OF PHASES, AND NUMBER OF POLES SHALL BE LOCATED ON THE INTERIOR OF THE PANELBOARD DOOR.
    b. BREAKER LABELS: FACEPLATE SHALL LIST CURRENT RATING, UL AND IEC CERTIFICATION STANDARDS, AND AIC RATING.
    c. CIRCUIT DIRECTORY: DIRECTORY CARD INSIDE PANELBOARD DOOR, MOUNTED IN METAL FRAME WITH TRANSPARENT PROTECTIVE COVER.
       • CIRCUIT DIRECTORY SHALL IDENTIFY SPECIFIC PURPOSE WITH DETAIL SUFFICIENT TO DISTINGUISH IT FROM ALL OTHER CIRCUITS.
    d. CIRCUIT DIRECTORY: COMPUTER-GENERATED CIRCUIT DIRECTORY MOUNTED INSIDE PANELBOARD DOOR WITH TRANSPARENT PLASTIC PROTECTIVE COVER.
       • CIRCUIT DIRECTORY SHALL IDENTIFY SPECIFIC PURPOSE WITH DETAIL SUFFICIENT TO DISTINGUISH IT FROM ALL OTHER CIRCUITS.

19. SURGE-PROTECTIVE DEVICES
    a. SPDS: LISTED AND LABELED BY UL 1449 FOURTH EDITION AS TYPE 1, INTENDED FOR USE WITHOUT NEED FOR EXTERNAL OR SUPPLEMENTAL OVER-CURRENT CONTROLS. EVERY SUPPRESSION COMPONENT OF EVERY MODE, INCLUDING N-G, PROTECTED BY INTERNAL OVER-CURRENT AND THERMAL OVER-TEMPERATURE CONTROLS. SPDS RELYING ON EXTERNAL OR SUPPLEMENTARY INSTALLED SAFETY DISCONNECTORS ARE NOT ACCEPTABLE.
    b. DESCRIPTION: IEEE C62.41-COMPLIANT, INTEGRALLY-MOUNTED WITHIN PANELBOARD COMPARTMENT, PLUG-IN, SOLID-STATE, PARALLEL-CONNECTED, MODULAR (WITH FIELD-REPLACEABLE MODULES) TYPE, WITH SINE-WAVE TRACKING SUPPRESSION AND FILTERING MODULES, SHORT-CIRCUIT CURRENT RATING COMPLYING WITH UL 1449, FOURTH EDITION, AND MATCHING OR EXCEEDING THE PANELBOARD SHORT-CIRCUIT RATING, REDUNDANT SUPPRESSION CIRCUITS WITH INDIVIDUALLY FUSED METAL-OXIDE VARISTORS, AND WITH THE FOLLOWING FEATURES AND ACCESSORIES:
       • FABRICATION USING BOLTED COMPRESSION LUGS FOR INTERNAL WIRING.
       • REDUNDANT SUPPRESSION CIRCUITS.
       • REDUNDANT REPLACEABLE MODULES.
       • LED INDICATOR LIGHTS FOR POWER AND PROTECTION STATUS.
       • AUDIBLE ALARM, WITH SILENCING SWITCH, TO INDICATE WHEN PROTECTION HAS FAILED.
       • FORM-C CONTACTS RATED AT 5 A AND 250-V AC, ONE NORMALLY OPEN AND ONE NORMALLY CLOSED, FOR REMOTE MONITORING OF SYSTEM OPERATION. CONTACTS SHALL REVERSE POSITION ON FAILURE OF ANY SURGE DIVERSION MODULE OR ON OPENING OF ANY CURRENT-LIMITING DEVICE. SPD OPERATION AND CONDITION SHALL BE MONITORED VIA THE BUILDING AUTOMATION SYSTEM.
       • SIX-DIGIT, TRANSIENT-EVENT COUNTER SET TO TOTALIZE TRANSIENT SURGES.
    c. COMPLY WITH UL 1283; EMI/RFI FILTERING WITH MINIMUM ATTENUATION OF -50DB AT 100KHZ.
    d. MCOV OF THE SPD SHALL BE AT LEAST 125 PERCENT OF THE NOMINAL ASSOCIATED SYSTEM VOLTAGE.
    e. PROTECTION MODES AND UL 1449 VPR FOR GROUNDED WYE CIRCUITS WITH 480Y/277 V AND 208Y/120 V, THREE-PHASE, FOUR-WIRE CIRCUITS SHALL NOT EXCEED THE FOLLOWING:
       • LINE TO NEUTRAL: 1200 V FOR 480Y/277 V; 700 V FOR 208Y/120 V.
       • LINE TO GROUND: 1200 V FOR 480Y/277 V; 700 V FOR 208Y/120 V.
       • NEUTRAL TO GROUND: 1200 V FOR 480Y/277 V; 700 V FOR 208Y/120 V.
       • LINE TO LINE: 2000 V FOR 480Y/277 V; 1200 V FOR 208Y/120 V

R. **WIRING DEVICES**

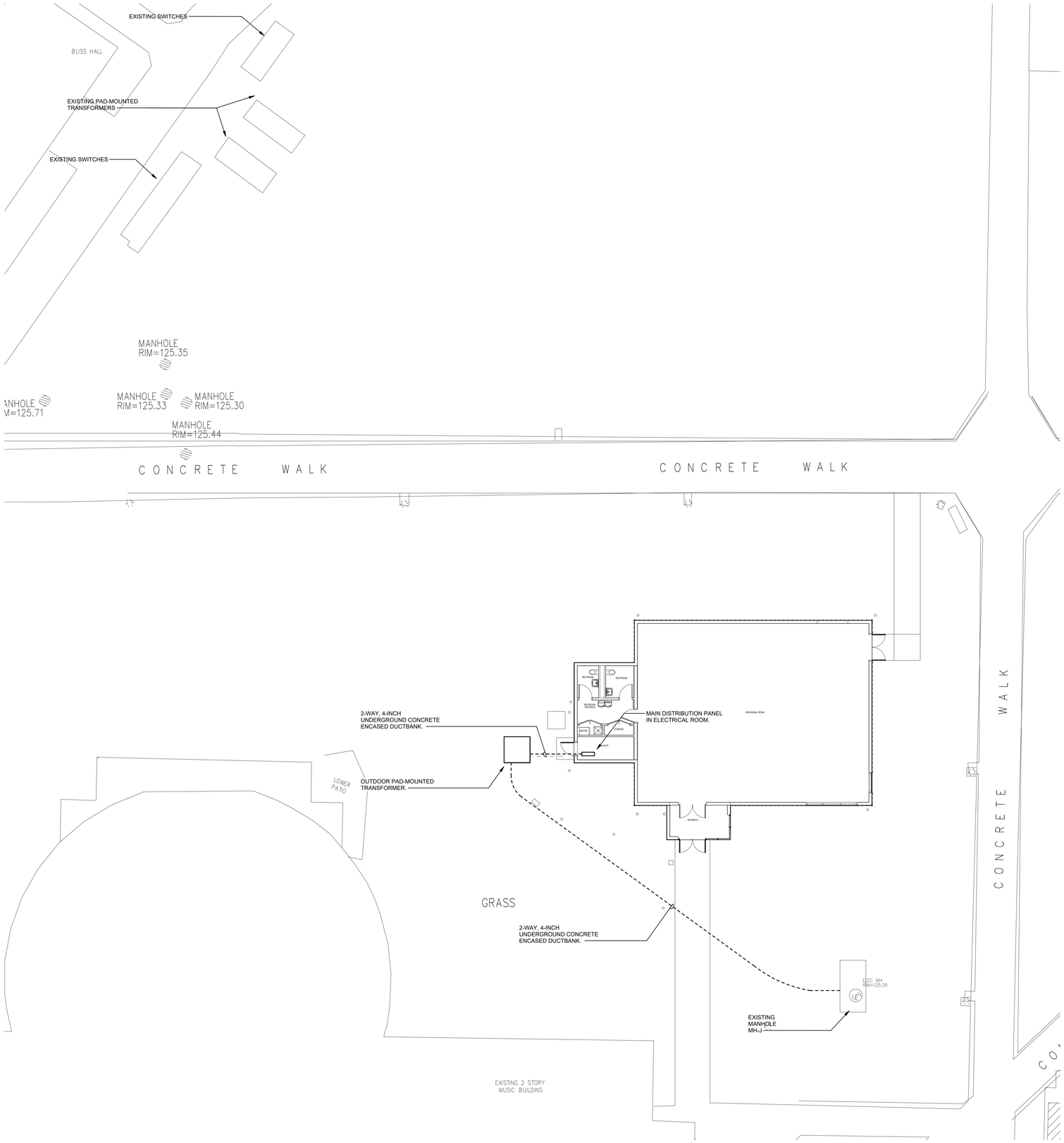
1. OBTAIN EACH TYPE OF WIRING DEVICE AND ASSOCIATED WALL PLATE THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER. UPON AVAILABILITY.

2. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:
    A. EATON WIRING DEVICES (EATON).
    B. HUBBELL INCORPORATED; WIRING DEVICE-KELLEMS (HUBBELL).
    C. LEVITON MFG. COMPANY INC. (LEVITON).
    D. PASS & SEYMOURLEGRAND; WIRING DEVICES & ACCESSORIES (PASS & SEYMOUR).

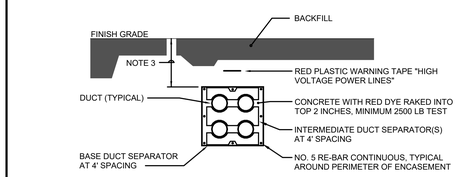
3. STRAIGHT BLADE RECEPTACLES
    A. CONSTRUCTION SPECIFICATION GRADE, DUPLEX CONVENIENCE RECEPTACLES, 125 V, 20 A, BACK AND SIDE WIRED: COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498.
       • BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PASS & SEYMOUR, CRB5362 SERIES OR COMPARABLE PRODUCT BY EATON, HUBBELL OR LEVITON.
    B. SPECIFICATION GRADE TAMPER-RESISTANT CONVENIENCE RECEPTACLES, 125 V, 20 A: COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498.
       • BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PASS & SEYMOUR, TR63 SERIES OR COMPARABLE PRODUCT BY EATON, HUBBELL OR LEVITON.

4. GFCI RECEPTACLES
    A. GENERAL DESCRIPTION: SPECIFICATION GRADE STRAIGHT BLADE, FEED-THROUGH OR NON-FEED-THROUGH TYPE, DEPENDING ON APPLICATION. COMPLY WITH NEMA WD 1, NEMA WD 6, UL 498, AND UL 943, CLASS A, AND INCLUDE INDICATOR LIGHT THAT IS LIGHTED WHEN DEVICE IS TRIPPED.
    B. DUPLEX GFCI CONVENIENCE RECEPTACLES, 125 V, 20 A:
       • BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PASS & SEYMOUR, 2097 SERIES OR COMPARABLE PRODUCT BY EATON, HUBBELL OR LEVITON.
    C. T

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1 ELECTRICAL SITE PLAN
1" = 10'-0"



NOTES:
1. PROVIDE CONDUIT SIZES, NUMBER OF WAYS, AND DUCT CONFIGURATIONS AS INDICATED ON PLANS.
2. PROVIDE A MINIMUM SPACE OF THREE INCHES BETWEEN INDIVIDUAL DUCTS, AND A MINIMUM SPACE OF THREE INCHES BETWEEN DUCTS AND CONCRETE ENVELOPMENT WALL.
3. INSTALL TOP OF DUCT BANK AT LEAST 36 INCHES BELOW FINISHED GRADE, UNLESS OTHERWISE INDICATED.
4. DUCTBANKS SHALL BE LOCATED ABOVE WATER TABLE AND BELOW STEAM LINES WHEREVER POSSIBLE.
5. PROVIDE PLASTIC PULL-LINE IN EACH UNUSED DUCT FOR FUTURE CABLE PULLS.
6. INTERFACE DUCTBANK RE-BAR WITH BUILDING FOUNDATIONS, MANHOLE AND HANDHOLE WALLS, AND CABLE VAULT WALLS TO MINIMIZE SHEARING.
7. WHEREVER POSSIBLE, CONCRETE POURS SHALL BE DONE CONTINUOUSLY ALONG ENTIRE LENGTH OF DUCTBANK RUN. IF POUR WILL BE INTERRUPTED FOR A PERIOD GREATER THAN FOUR HOURS, EXTEND RE-BAR AT LEAST SIX FEET BEYOND END OF POUR, AND UTILIZE THE RE-BAR EXTENSIONS TO TIE TWO ENDS OF CONCRETE POURS TOGETHER WHEN COMMENCING WITH POUR.
8. PROVIDE RE-BAR STAKES DRIVEN INTO THE BASE OF THE DUCTBANK TRENCH AND ASSOCIATED HOLD DOWN BARS AS REQUIRED TO PREVENT FLOTATION OF DUCTS DURING CONCRETE POUR. FLOTATION IS CAUSED BY DUCT BUOYANCY AND CHURNING OF THE CONCRETE DURING THE POUR. UTILIZE AS MANY STAKES AS REQUIRED TO ENSURE A CONSISTENT DUCTBANK PROFILE ALONG ENTIRE LENGTH OF DUCTBANK.
9. WHEN POURING CONCRETE AROUND CONDUITS, ADJUST DELIVERY CHUTE TO MINIMIZE FALL OF CONCRETE INTO TRENCH. POUR CONCRETE SLOWLY AND DISTRIBUTE EVENLY TO ENSURE SPACERS ARE NOT DISLODGED, AND CONDUITS AND RE-BAR REMAIN IN PLACE.
10. WAIT AT LEAST TWO HOURS AFTER POURING OF CONCRETE ENCASEMENT BEFORE BEGINNING BACKFILLING.
11. MAINTAIN A MINIMUM OF 12 INCH SEPARATION BETWEEN POWER DUCTS AND COMMUNICATION DUCTS, GAS AND WATER MAINS AND SEWERS.
12. MAINTAIN A MINIMUM OF 6 FEET SEPARATION BETWEEN UNDERGROUND DUCTS AND DUCTBANKS AND ANY PARALLEL STEAM LINES. UNDERGROUND CROSSINGS ABOVE AND BELOW STEAM LINES SHALL MAINTAIN A MINIMUM 24" CLEARANCE AND THE SPACE BETWEEN SHALL BE FILLED WITH FOAM GLASS INSULATION.
13. DIRECT-BURIED (NON-CONCRETE-ENCASED) DUCTBANKS SHALL COMPLY WITH REQUIREMENTS OF THIS DETAIL (TRENCHING DEPTHS, SPACERS, WARNING TAPE, ETC.) BUT SHALL NOT REQUIRE ACTUAL CONCRETE ENCASEMENT OR SUPPORTING RE-BAR.
14. CONDUITS SHALL BE STAGGERED AT MANHOLE AND VAULT ENTRANCES TO PROVIDE ADDITIONAL CLEARANCE FOR TRAINING CABLES.

E1 TYPICAL CONCRETE-ENCASED ELECTRICAL DUCTBANK DETAIL — SCALE: NTS

GENERAL SITE NOTES:

1. ELECTRICAL SITE PLAN DRAWINGS IS DIAGRAMMATIC. REFER TO CIVIL ENGINEER'S DRAWINGS FOR EXACT LOCATIONS OF NEW AND EXISTING MANHOLES, DUCTBANKS, OTHER ABOVE GROUND/UNDERGROUND STRUCTURES AND UTILITIES, FINAL DUCTBANK ROUTING, TERMINATION LOCATIONS AND REROUTING OF ANY EXISTING UTILITIES. COORDINATE DUCTBANK ROUTING WITH OTHER TRADES AND UTILITIES.
2. DUCTBANKS, CONDUIT STUB-UPS AND TERMINATION LOCATIONS ARE APPROXIMATE. COORDINATE EXACT STUB-UP AND TERMINATION LOCATIONS WITH REQUIREMENTS OF ASSOCIATED EQUIPMENT AND FINAL LAYOUTS.
3. MOUNT OUTDOOR ELECTRICAL EQUIPMENT ON MINIMUM 6-INCH STEEL REINFORCED CONCRETE PAD.

THE MUSIC ANNEX
NEW PERFORMING ART REHEARSAL HALL
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ 08618

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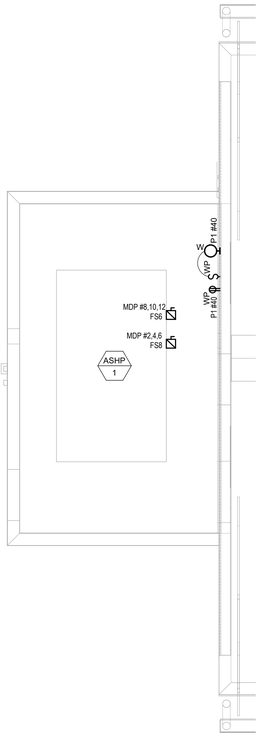
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ELECTRICAL - SITE PLAN

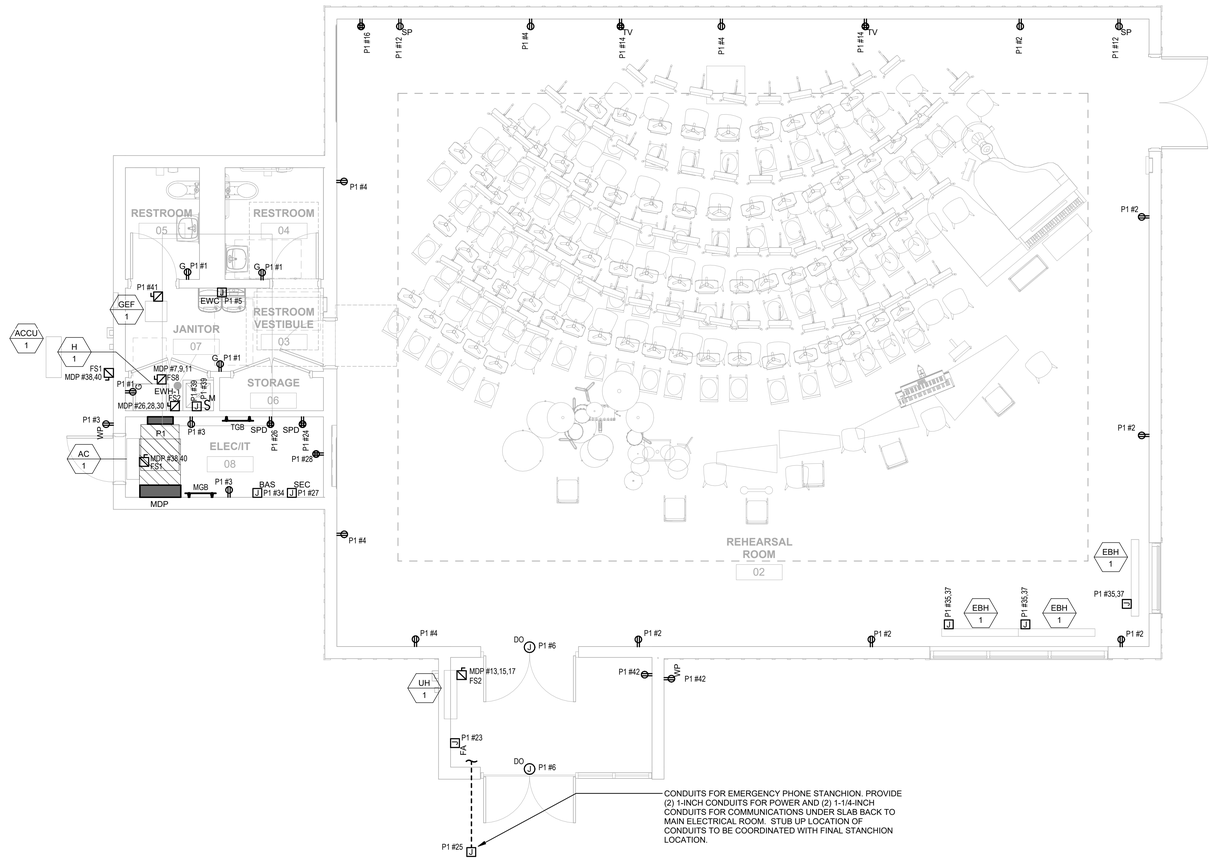
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2 ELEC POWER - ROOF
1/4" = 1'-0"



1 ELEC POWER - LEVEL 1 PLAN
1/4" = 1'-0"

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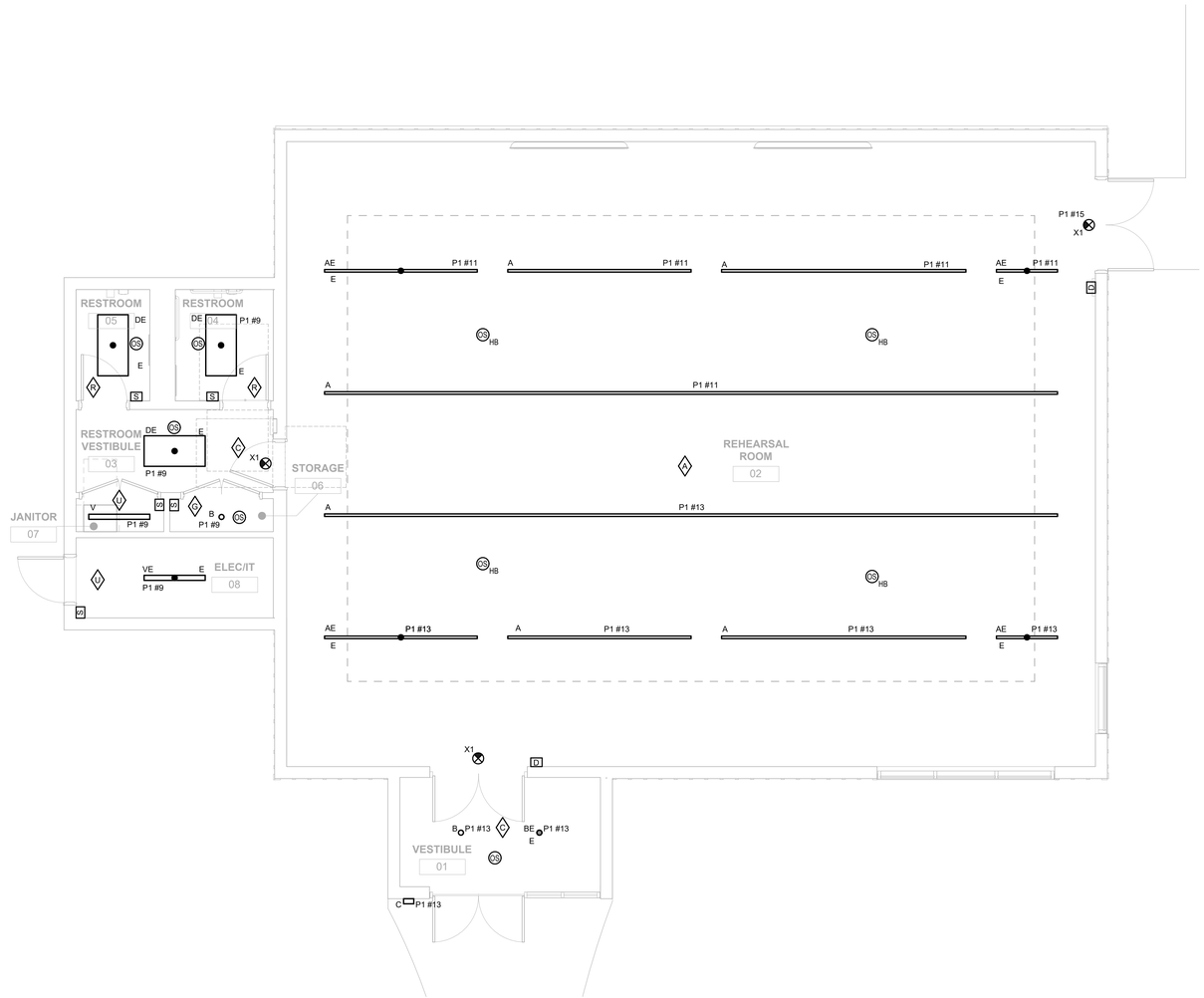
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POWER - LEVEL 1 PLAN

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1 ELEC LIGHTING - LEVEL 1 PLAN
1/4" = 1'-0"

THE MUSIC ANNEX

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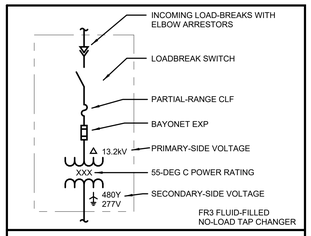
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LIGHTING - LEVEL 1 PLAN

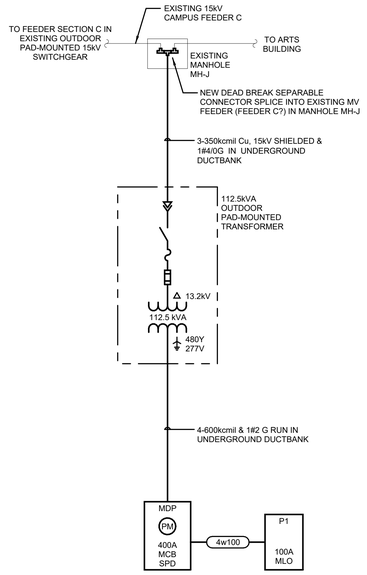
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LIQUID-FILLED DEAD-FRONT
PAD-MOUNTED TRANSFORMER LEGEND



1 POWER DISTRIBUTION SINGLE-LINE DIAGRAM
12" = 1'-0"

PANEL MDP — 208Y/120V,3PH,4W — 400A MCB

IC RATING: 22 kAIC RMS SYM — Surface

CKT	DESCRIPTION	BKR TYPE	WIRE & CONDUIT	TRIP	POLE	A (kW)		B (kW)		C (kW)		POLE	TRIP	WIRE & CONDUIT	BKR TYPE	DESCRIPTION	CKT
1						0.0	8.3										2
3	SPARE	--	--	125	3			0.0	8.3			3	125	3W125		AHU	4
5										0.0	8.3						6
7						8.3	10.7										8
9	HUMIDIFIER H-1		3W110	110	3			8.3	10.7			3	100	3W100		AHU POST HEATER	10
11										8.3	10.7						12
13						1.7	5.7										14
15	UNIT HEATER UH-1		3W20	20	3			1.7	3.7			3	100	4W100		PANEL P1	16
17										1.7	4.5						18
19						0.0	0.0										20
21	SPARE	--	--	110	3			0.0	0.0			3	100	--	--	SPARE	22
23										0.0	0.0						24
25						0.0	2.0										26
27	SPARE	--	--	100	3			0.0	2.0			3	20	3W20		INSTA HOT WATER HEATER	28
29										0.0	2.0						30
31						0.0	0.0										32
33	SPARE	--	--	20	3			0.0	0.0			3	20	--	--	SPARE	34
35										0.0	0.0						36
37	SPARE	--	--	30	2	0.0	0.0					2	30	2W30		ACCU-1/AC-1	38
39								0.0	0.0								40
41	SPACE	--	--	--	1					--	--	1	--	--	--	SPACE	42
						36.7		34.7		35.5							

PANEL OPTIONS

- ■ INTEGRAL SPD
- □ 200% RATED NEUTRAL
- □ ISOLATED GROUND BUS
- □ SUB-FEED LUGS
- □ FEED-THROUGH LUGS

BREAKER TYPE KEY

BLANK = STANDARD — L = INTEGRAL PADLOCKING...
AF = ARC FAULT — GC = GFCI
ST = SHUNT TRIP — GE = GFEP

PANEL TOTALS

TOTAL CONNECTED LOAD (kW):	106.9
DEMAND FACTOR:	100%
TOTAL DEMAND LOAD (kW):	106.9
TOTAL DEMAND CURRENT (AMPS):	297
DEMAND CURRENT x 125% (AMPS):	371

XFMR = REFER TO SINGLE-LINE DIAGRAMS FOR TRANSFORMER SIZE AND REFER TO TRANSFORMER SCHEDULE FOR PRIMARY AND SECONDARY FEEDER SIZES
SLD = REFER TO SINLE-LINE DIAGRAMS FOR FEEDER SIZES.
SPD = SURGE PROTECTION DEVICE. CIRCUIT BREAKER AND WIRE SIZES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

PANEL P1 — 208Y/120V,3PH,4W — 100A MLO

IC RATING: 22 kAIC RMS SYM — Surface

CKT	DESCRIPTION	BKR TYPE	WIRE & CONDUIT	TRIP	POLE	A (kW)		B (kW)		C (kW)		POLE	TRIP	WIRE & CONDUIT	BKR TYPE	DESCRIPTION	CKT
1	GENERAL RCPTs		2W20	20	1	0.7	1.1					1	20	2W20		GENERAL RCPTs	2
3	ELEC RM/OUTDOOR RCPT		2W20	20	1			0.5	0.9			1	20	2W20		GENERAL RCPTs	4
5	EWC-1	GC	2W20	20	1					0.4	0.4	1	20	2W20		DOOR OPERATORS	6
7	SPARE	--	--	20	1	0.0	0.0					1	20	--	--	SPARE	8
9	LIGHTING		2W20	20	1			0.2	0.0			1	20	--	--	SPARE	10
11	LIGHTING		2W20	20	1					0.7	0.6	1	20	2W20		REHEARSAL RM SPEAKERS	12
13	LIGHTING		2W20	20	1	0.8	1.1					1	20	2W20		REHEARSAL RM DISPLAYS	14
15	SPARE	--	--	20	1			0.0	0.4			1	20	2W20		TEACHING EQUIPMENT...	16
17	SPARE	--	--	20	1					0.0	0.0	1	20	--	--	SPARE	18
19	SPARE	--	--	20	1	0.0	0.0					1	20	--	--	SPARE	20
21	SPARE	--	--	20	1			0.0	0.0			1	20	--	--	SPARE	22
23	FIRE ALARM PANEL		2W20	20	1					0.2	0.4	1	20	2W20		IT CLOSET RCPT	24
25	EMERGENCY STANCHION		2W20	20	1	0.2	0.4					1	20	2W20		IT CLOSET RCPT	26
27	SECURITY PANEL		2W20	20	1			0.2	1.0			1	20	2W20		AV RACK	28
29	SPARE	--	--	20	1					0.0	0.0	1	20	--	--	SPARE	30
31	SPARE	--	--	20	1	0.0	0.0					1	20	--	--	SPARE	32
33	SPARE	--	--	20	1			0.0	0.2			1	20	2W20		BAS PANEL	34
35	ELECTRIC BASEBOARD		2W20	20	2					1.5	0.0	2	20	--	--	SPARE	36
37	HEATERS					1.5	0.0										38
39	CIRC PUMP/LEAK...		2W20	20	1			0.2	0.2			1	20	2W20		ROOF RCPT/LTG	40
41	GEF-1		2W20	20	1					0.1	0.4	1	20	2W20		EXTERIOR RCPT	42
						5.7		3.7		4.5							

PANEL OPTIONS

- □ INTEGRAL SPD
- □ 200% RATED NEUTRAL
- □ ISOLATED GROUND BUS
- □ SUB-FEED LUGS
- □ FEED-THROUGH LUGS

BREAKER TYPE KEY

BLANK = STANDARD — L = INTEGRAL PADLOCKING...
AF = ARC FAULT — GC = GFCI
ST = SHUNT TRIP — GE = GFEP

PANEL TOTALS

TOTAL CONNECTED LOAD (kW):	13.9
DEMAND FACTOR:	100%
TOTAL DEMAND LOAD (kW):	13.9
TOTAL DEMAND CURRENT (AMPS):	39
DEMAND CURRENT x 125% (AMPS):	48

XFMR = REFER TO SINGLE-LINE DIAGRAMS FOR TRANSFORMER SIZE AND REFER TO TRANSFORMER SCHEDULE FOR PRIMARY AND SECONDARY FEEDER SIZES
SLD = REFER TO SINLE-LINE DIAGRAMS FOR FEEDER SIZES.
SPD = SURGE PROTECTION DEVICE. CIRCUIT BREAKER AND WIRE SIZES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

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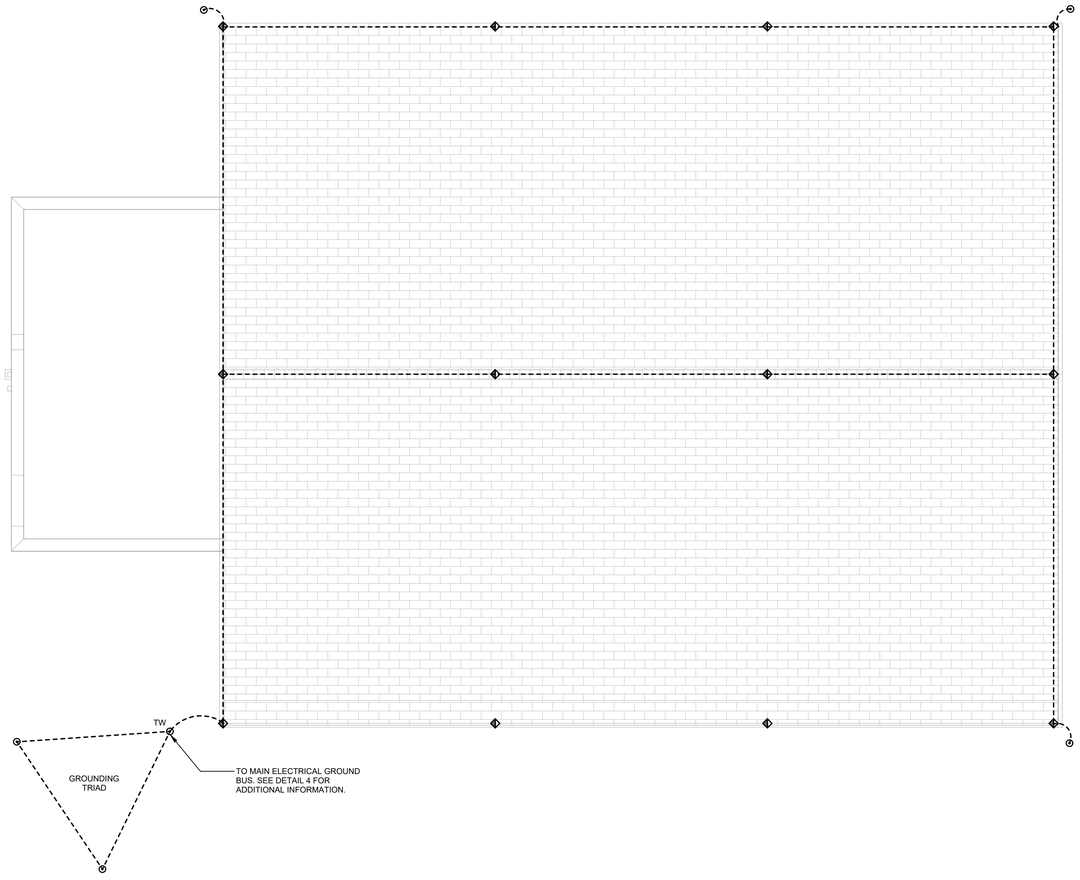
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ELECTRICAL
SINGLE-LINE AND
SCHEDULES

E-401

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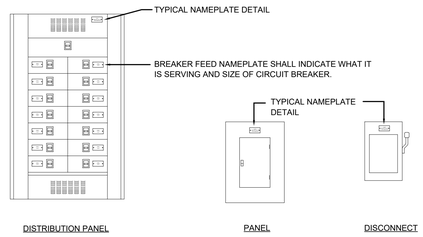
7 ELECTRICAL LIGHTNING PROTECTION detail PLAN
1/4" = 1'-0"

LEGEND

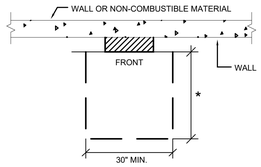
- GROUND ROD
- TW — GROUND ROD WITH INSPECTION TEST WELL
- DOWN CONDUCTOR TO GROUND ROD
- AIR TERMINAL
- LIGHTNING PROTECTION SYSTEM CONDUCTOR. #1/0 ALUMINUM CONDUCTOR.

GENERAL NOTES:

1. THE ELECTRICAL SUB-CONTRACTOR SHALL PROVIDE A COMPLETE LIGHTNING PROTECTION SYSTEM AS PER THE SPECIFICATIONS. THE ELECTRICAL SUB-CONTRACTOR SHALL RETAIN THE SERVICES OF A FIRM ACTIVELY ENGAGED IN THE INSTALLATION OF MASTER LABELED LIGHTNING PROTECTION SYSTEMS AND SHALL BE SO LISTED BY UNDERWRITERS LABORATORIES, INC.
2. THE COMPLETED SYSTEM SHALL COMPLY WITH THE LATEST EDITIONS OF THE "INSTALLATION REQUIREMENTS FOR LIGHTNING PROTECTOIN SYSTEMS, UL96A" AND THE "LIGHTNING PROTECTOIN CODE, NFPA 780."
3. ALL MATERIALS USED IN THIS INSTALLATION SHALL BE LABELED OR LISTED BY UL FOR USE IN MASTER LABELED LIGHTNING PROTECTION SYSTEM.
4. MATERIALS SHALL BE SIZED IN ACCORDANCE WITH NFPA 780 AND UL96A. CLASS I MATERIALS SHALL BE USED FOR SYSTEMS OR STRUCTURES NOT EXCEEDING 75 FEET IN HEIGHT, AND CLASS II MATERIALS SHALL BE USED FOR SYSTEMS OR STRUCTURES EXCEEDING 75 FEET ABOVE GRADE.
5. AIR TERMINALS SHALL BE PROVIDED AS TO ENCLOSE THE ENTIRE BUILDING WITHIN A ZONE OF PROTECTION. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
6. MAIN CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE SPECIFICATION AND SHALL PROVIDE A TWO-WAY PATH FROM EACH AIR TERMINAL HORIZONTALLY OR DOWNWARD TO CONNECTIONS WITH GROUND TERMINALS.
7. DOWN LEAD CONDUCTORS SHALL BE COPPER AND SHALL BE CONCEALED IN THE EXTERIOR WALL CONSTRUCTION. REFER TO SPECIFICATIONS.
8. ROOF PENETRATIONS REQUIRED FOR DOWN CONDUCTORS OR FOR CONNECTIONS TO THE STRUCTURAL STEEL FRAME SHALL BE MADE USING THRU-ROOF ASSEMBLIES WITH SOLID BARS AND APPROPRIATE ROOF FLASHING. CONDUCTORS SHALL NOT PASS DIRECTLY THROUGH THE ROOF.
9. UPON COMPLETION OF THE INSTALLATION, FURNISH A MASTER LABEL ISSUED BY UL FOR THIS SYSTEM.
10. REFER TO THE SPECIFICATION FOR ADDITIONAL REQUIREMENTS. THE EXACT LAYOUT OF THE LIGHTNING PROTECTION SYSTEM SHALL NOT BE SHOWN ON THE DRAWINGS.
11. BOND ALL ROOF LEVEL EQUIPMENT TO THE LIGHTNING PROTECTION SYSTEM.



1 TYPICAL PANEL NAMEPLATE LOCATIONS
SCALE: NONE



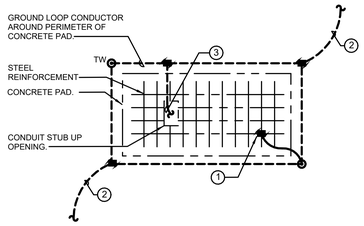
WALL MOUNTED PANELS

(INCLUDING POWER PANELS, CONTACTORS, CONTROL CABINETS, DISCONNECT SWITCHES, MOTOR STARTERS, TIME CLOCK AND SIMILAR ELECTRIC EQUIPMENT)

NOTES:

1. "*" DENOTES MINIMUM WORKING CLEARANCE (IN THE DIRECTION OF ACCESS TO LIVE PARTS) REQUIRED BY N.E.C. 110-26(a).
   - 3 FT. FOR 0-150 VOLT TO GROUND ELECTRIC EQUIPMENT
2. THE MINIMUM HEADROOM OF WORKING SPACE SHALL BE 6 1/2 FT.

2 REQUIRED CLEARANCE FOR ELECTRICAL EQUIPMENT
SCALE: NONE



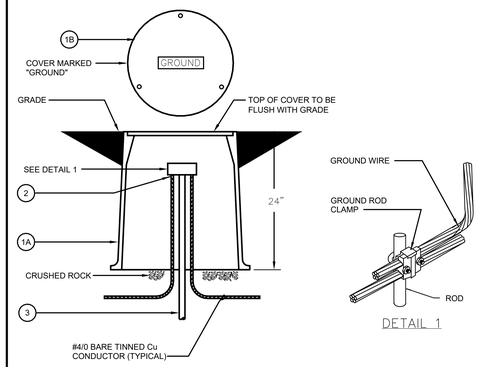
LEGEND:

- #4/0 BARE TINNED Cu CONDUCTOR
- EXOTHERMIC WELD CONNECTION
- COPPER-CLAD GROUND ROD
- TW — GROUND ROD/INSPECTION TEST WELL
- (1) BOND CONNECTION FROM GROUND LOOP CONDUCTOR TO STEEL REINFORCEMENT. IF THERE IS LESS THAN 20 FOOT OF STEEL REINFORCEMENT IN SLAB, PROVIDE 20 FEET OF #4/0 BARE TINNED Cu CONDUCTOR EMBEDDED WITHIN SLAB AND BOND TO STEEL REINFORCEMENT.
- (2) CONNECTION TO BUILDING SYSTEM GROUND SYSTEM
- (3) CONNECTION TO EQUIPMENT GROUND TERMINAL

NOTES:

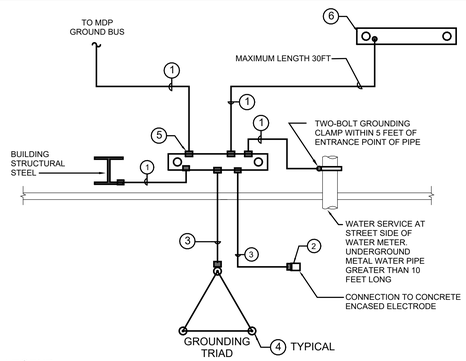
1. COORDINATE CONCRETE PAD REQUIREMENTS AND DIMENSIONS WITH PROVIDED EQUIPMENT.
2. PAD SHALL EXTEND A MINIMUM OF 1' BEYOND EQUIPMENT ENCLOSURE.
3. REFER TO STRUCTURAL, CIVIL AND ARCHITECTURAL DRAWINGS FOR CONSTRUCTION OF PAD.
4. COORDINATE EXACT CONDUIT STUB UP OPENING/ENTRANCE POINTS WITH PROVIDED EQUIPMENT.

6 TYPICAL OUTDOOR EQUIPMENT CONCRETE PAD GROUNDING DETAIL
SCALE: NONE



ITEM NUMBER	DESCRIPTION
1A&1B	TEST WELL INSPECTION HOUSING AND COVER. H20 RATED WITH SCHEDULE 80 PVC COVER MARKED "GROUND".
2	BOLTED CONNECTION
3	GROUND ROD

5 GROUND ROD TEST INSPECTION WELL
SCALE: NONE

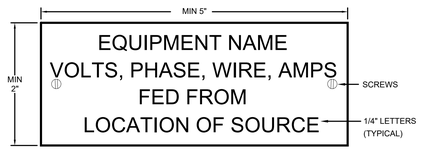


LEGEND:

- INDICATES BOLTED CONNECTION.
- INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIALS BEING JOINED.
- (1) #4/0 AWG GREEN INSULATED COPPER GROUND CONDUCTOR IN 1-1/4" CONDUIT. PROVIDE GROUNDING BUSHINGS AT EACH END OF CONDUIT AND BOND TO ASSOCIATED GROUND CONDUCTOR.
- (2) #4/0 AWG BARE TINNED Cu CONDUCTOR CONDUCTOR ENCASED IN CONCRETE.
- (3) #4/0 AWG BARE TINNED COPPER GROUND CONDUCTOR, PROVIDE 1" PVC CONDUIT SLEEVE WHEN RUNNING CONDUCTOR THROUGH EXTERIOR WALL OR FOOTINGS.
- (4) 3/4" x 10'-0" LONG COPPER-CLAD GROUND ROD.
- (5) MAIN ELECTRICAL GROUND BUS 'MGB': MINIMUM 1/4" x 4" x 24". PROVIDE PERMANENT TAG FOR EACH GROUNDING CONDUCTOR IDENTIFYING THE PARTICULAR GROUND CONNECTION. I.E. BUILDING STEEL, WATER PIPE, ETC.
- (6) TELECOMMUNICATIONS GROUND BUS (TGB): MINIMUM 4" X 20" X 1/4" WALL-MOUNTED RECTANGULAR COPPER BUSBAR, PREDRILLED FOR TWO-HOLE LUG CONNECTIONS AND LISTED FOR INTENDED USE. MOUNT BUSBAR ON 4" STANDOFFS. HARGER KIT #GBI144207MGBKT WITH MATCHING COMPRESSION LUGS (DOUBLE-LUG CONNECTORS). DO NOT OVERLAP OR DOUBLE-LOAD CONNECTIONS AT BUSBAR.
  - BOND ALL METALLIC CONDUITS, CABLE TRAYS AND SLEEVES ENTERING IT ROOM TO TGB UTILIZING #6 AWG GREEN INSULATED COPPER CONDUCTORS
  - COORDINATE FINAL LOCATION OF TGB WITH OWNER.

4 TYPICAL MAIN GROUND BUS DETAIL
SCALE: NONE

EQUIPMENT NAMEPLATE DETAIL



NOTES:

1. DESCRIPTIVE NAMEPLATES FOR EQUIPMENT AND PANELS SHALL HAVE FOUR LINES OF TEXT. THE FIRST LINE SHALL IDENTIFY THE EQUIPMENT OR PANEL NAME. THE SECOND LINE SHALL IDENTIFY VOLTAGE, AMPERAGE AND PHASE. THE THIRD LINE SHALL IDENTIFY WHERE THE EQUIPMENT OR PANEL IS SUPPLIED FROM (I.E. SOURCE OF POWER INCLUDING PANEL NAME AND CIRCUIT NUMBER). THE LAST LINE SHALL IDENTIFY WHERE THAT SOURCE OF POWER IS LOCATED (I.E. ROOM NUMBER).
2. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS. ADHESIVE CEMENT SHALL NOT BE ALLOWED.
3. NORMAL POWER NAMEPLATE TO BE 1/16" THICK PLASTIC LAMINATE. FACE SHALL BE WHITE, ENGRAVED LETTERS SHALL BE BLACK.
4. EMERGENCY POWER NAMEPLATE TO BE 1/16" THICK PLASTIC LAMINATE. FACE SHALL BE RED, ENGRAVED LETTERS SHALL BE WHITE.
5. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.

P1
208Y/120V, 3Φ, 4W, 125A
FED FROM MDP-1,3,5
LOCATED IN ELEC RM 09

EXAMPLE

3 TYPICAL NAMEPLATE DETAIL
SCALE: NONE

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

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BID DOCUMENTS

Project No. 24102
Issued 10/23/2026

ELECTRICAL DETAILS

E-501

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FIRE ALARM - DRAWING LIST

SHEET NUMBER	SHEET NAME
FA-001	FIRE ALARM - SYMBOLS AND ABBREVIATIONS
FA-002	FIRE ALARM - NOTES & DESIGN CRITERIA
FA-003	FIRE ALARM - SPECIFICATIONS
FA-201	FIRE ALARM - LEVEL 1 PLAN
FA-202	FIRE ALARM - LOW ROOF PLAN
FA-501	FIRE ALARM - DETAILS
FA-601	FIRE ALARM - RISER DIAGRAM & MATRIX OF OPERATIONS

SYMBOLS

EQUIPMENT & COMPONENTS

- ACE — ACCESSORY CABINET ENCLOSURE
- ADSP — AIR SAMPLING SMOKE DETECTOR POWER SUPPLY
- AMP — AMPLIFIER
- BATT — BATTERY CABINET
- DACR — DIGITAL ALARM COMMUNICATOR RECEIVER
- DACT — DIGITAL ALARM COMMUNICATOR TRANSMITTER
- DARR — DIGITAL ALARM RADIO RECEIVER
- DART — DIGITAL ALARM RADIO TRANSMITTER
- DCCR — DIGITAL CELLULAR COMMUNICATION RECEIVER
- DCCT — DIGITAL CELLULAR COMMUNICATION TRANSMITTER
- DGP — DATA GATHERING PANEL
- DOCS — DOCUMENT STORAGE CABINET
- MICR — EMERGENCY VOICE MICROPHONE MODULE
- EOL — END OF LINE RESISTOR
- FAA — FIRE ALARM REMOTE ANNUNCIATOR
- FACU # — FIRE ALARM CONTROL UNIT (# = NODE DESIGNATION)
- FATC — FIRE ALARM TERMINAL CABINET
- FAXC — FIRE ALARM TRANSPONDER CABINET
- FCC — FIRE COMMAND CENTER
- FFSCP — FIRE FIGHTER'S SMOKE CONTROL PANEL
- FSEA — FIRE SERVICE ACCESS ELEVATOR ANNUNCIATOR
- FSRU — FIRE SUPPRESSION RELEASING CONTROL UNIT
- FSRUc — FIRE SUPPRESSION RELEASING CONTROL UNIT (CONVENTIONAL)
- GAP — GRAPHIC ANNUNCIATOR PANEL
- HSCP — HVAC STATUS & CONTROL PANEL
- IPCR — INTERNET PROTOCOL COMMUNICATION RECEIVER
- IPCT — INTERNET PROTOCOL COMMUNICATION TRANSMITTER
- IS — ISOLATION MODULE
- JB — JUNCTION BOX
- KB — KEY BOX - FIRE DEPARTMENT
- LHCP — LINEAR HEAT DETECTOR CONTROL PANEL
- MD — MAGNETIC DOOR HOLDER
- MB — MUNICIPAL MASTER BOX
- PFSP — POST FIRE SMOKE PURGE PANEL
- PRN — PRINTER
- RAI — REMOTE ALARM INDICATOR
- RPS — REMOTE POWER SUPPLY
- RTP — ROOM TEMPERATURE SWITCH
- RTS — REMOTE TEST SWITCH AND INDICATOR
- SCIC — SMOKE CONTROL INTERFACE CABINET
- SPD — SURGE PROTECTIVE DEVICE
- WS — WORKSTATION
- WFM — WORKSTATION MONITOR
- UPS — UNINTERRUPTIBLE POWER SUPPLY

INTERFACE MODULES

- CM — CONTROL MODULE
- DM — DUAL MONITOR MODULE
- IO — COMBINATION DUAL INPUT / DUAL OUTPUT MODULE
- IR — INTERPOSING RELAY
- MM — MONITOR MODULE
- RM — RELAY MODULE

MANUAL INITIATING DEVICES AND CONTROLS

- F — FIRE ALARM MANUAL PULL STATION
- Fc — FIRE ALARM MANUAL PULL STATION (CONVENTIONAL)
- FX — MANUAL PULL STATION - FIRE SUPPRESSION SYSTEM RELEASE
- FXc — MANUAL PULL STATION (CONVENTIONAL) - FIRE SUPPRESSION SYSTEM RELEASE
- A — MANUAL PUSH BUTTON - FIRE SUPPRESSION SYSTEM ABORT
- Ec — MANUAL PULL STATION (CONVENTIONAL) - EMERGENCY ALARM (HAZMAT)

SYMBOLS

SYSTEM SPOT-TYPE FIRE DETECTORS

- BASIC SYMBOL FOR SPOT-TYPE FIRE DETECTOR - WALL MOUNT
- BASIC SYMBOL FOR SPOT-TYPE FIRE DETECTOR - CLNG MOUNT
- BASIC SYMBOL FOR SPOT-TYPE FIRE DETECTOR - W/ SOUNDER BASE
- PHOTOELECTRIC SMOKE DETECTOR
- E/O/S/R — PHOTOELECTRIC IN-DUCT SMOKE DETECTOR (E = EXHAUST; O = OUTSIDE AIR; S = SUPPLY; R = RETURN)
- E/O/S/R — PHOTOELECTRIC SAMPLING-TUBE DUCT SMOKE DETECTOR (E = EXHAUST; O = OUTSIDE AIR; S = SUPPLY; R = RETURN)
- FIXED TEMPERATURE / RATE OF RISE HEAT DETECTOR (t = ACTIVATION TEMPERATURE OF FIXED TEMP THERMAL ELEMENT)
- COMBINATION PHOTOELECTRIC SMOKE / FIXED TEMP HEAT DETECTOR (t = ACTIVATION TEMPERATURE OF THERMAL ELEMENT)
- COMBINATION PHOTOELECTRIC SMOKE / CO DETECTOR
- MULTI-CRITERIA PHOTOELECTRIC SMOKE / FIXED TEMP HEAT / CO DETECTOR (t = ACTIVATION TEMPERATURE OF THERMAL ELEMENT)
- LH — LINEAR HEAT DETECTOR (t = ACTIVATION TEMPERATURE OF FIXED TEMP THERMAL ELEMENT)

SPECIAL TECHNOLOGY FIRE DETECTORS

- BASIC SYMBOL FOR SPECIAL TECHNOLOGY FIRE DETECTOR - WALL MOUNT
- BASIC SYMBOL FOR SPECIAL TECHNOLOGY FIRE DETECTOR - CLNG MOUNT
- AS — AIR SAMPLING SMOKE DETECTOR
- AS — AIR SAMPLING TYPE DUCT DETECTOR
- CO AS — COMBINATION AIR SAMPLING SMOKE / CO DETECTOR
- H2 AS — COMBINATION AIR SAMPLING SMOKE / H2 DETECTOR
- AIR SAMPLING DETECTOR SAMPLING PORT
- BT — END-TO-END OPTICAL BEAM SMOKE DETECTOR (TRANSMITTER UNIT)
- BR — END-TO-END OPTICAL BEAM SMOKE DETECTOR (RECEIVER UNIT)
- BTR — SINGLE-END OPTICAL BEAM SMOKE DETECTOR (TRANSMITTER / RECEIVER UNIT)
- BRF — SINGLE-END OPTICAL BEAM SMOKE DETECTOR (REFLECTOR PANEL)
- UV — ULTRAVIOLET SPECTRUM FLAME DETECTOR
- IR — INFRARED SPECTRUM FLAME DETECTOR
- UVIR — COMBINATION ULTRAVIOLET / INFRARED SPECTRUM FLAME DETECTOR

CONVENTIONAL SPOT-TYPE FIRE DETECTORS

- BASIC SYMBOL FOR CONVENTIONAL FIRE DETECTOR - WALL MOUNT
- BASIC SYMBOL FOR CONVENTIONAL FIRE DETECTOR - CLNG MOUNT
- CONVENTIONAL PHOTOELECTRIC SMOKE DETECTOR
- CONVENTIONAL FIXED TEMPERATURE HEAT DETECTOR (t = ACTIVATION TEMPERATURE)

SINGLE / MULTIPLE STATION SMOKE ALARMS

- BASIC SYMBOL FOR SMOKE ALARM - WALL MOUNT
- BASIC SYMBOL FOR SMOKE ALARM - CEILING MOUNT
- SINGLE / MULTIPLE STATION SMOKE ALARM
- CO — SINGLE / MULTIPLE STATION COMBINATION SMOKE / CO ALARM

EMERGENCY RESPONDER RADIO COMMUNICATIONS ENHANCEMENT SYSTEMS

- BDA — BI-DIRECTIONAL RADIO SIGNAL AMPLIFIER
- ERCA — EMERGENCY RESPONDER COMMUNICATIONS ANNUNCIATOR
- DA — OMNI-DIRECTIONAL DONOR ANTENNA
- POWER DIVIDER
- SPLITTER

WIRED FIRE FIGHTER COMMUNICATION SYSTEMS

- FFPC — FIRE FIGHTER'S PHONE CONTROLLER / HANDSET - PRIORITY COMMAND LOCATION
- FFP — FIRE FIGHTER'S PHONE HANDSET
- FFJ — FIRE FIGHTER'S PHONE PLUG-IN PHONE JACK

EMERGENCY TWO-WAY COMMUNICATION SYSTEM

- ECC — EMERGENCY TWO-WAY COMMUNICATIONS SYSTEM CONTROL CENTER
- ECS — EMERGENCY TWO-WAY COMMUNICATIONS SYSTEM CALL STATION

SYMBOLS

NOTIFICATION APPLIANCES

- AUDIBLE HORN - WALL MOUNT
- C — AUDIBLE HORN - CLNG MOUNT
- cd — VISUAL STROBE - WALL MOUNT
- cd — VISUAL STROBE - CLNG MOUNT
- cd — COMBINATION AUDIBLE HORN / VISUAL STROBE - WALL MOUNT
- C cd — COMBINATION AUDIBLE HORN / VISUAL STROBE - CLNG MOUNT
- AUDIBLE & INTELLIGIBLE SPEAKER - WALL MOUNT
- C — AUDIBLE & INTELLIGIBLE SPEAKER - CLNG MOUNT
- cd — COMBINATION AUDIBLE & INTELLIGIBLE SPEAKER / VISUAL STROBE - WALL MOUNT
- C cd — COMBINATION AUDIBLE & INTELLIGIBLE SPEAKER / VISUAL STROBE - CLNG MOUNT
- VISUAL FLASHING BEACON
- AUDIBLE ALARM BELL

NOTIFICATION APPLIANCE ANNOTATION

- C = CEILING MOUNT
- cd = VISUAL STROBE CANDELA OUTPUT
- E = EMERGENCY ALARM
- FX = FIRE SUPPRESSION
- w = SPEAKER WATTAGE TAP

EXISTING EQUIPMENT DESIGNATIONS

- XM — EXISTING EQUIPMENT TO REMAIN. WHERE ARCHITECTURAL WORK IS REQUIRED AT DEVICE LOCATION, DISCONNECT, REMOVE AND REINSTALL DEVICE AS NECESSARY TO ACCOMMODATE ARCHITECTURAL WORK. FOR SURFACE MOUNTED RACEWAY, THIS DESIGNATION SHALL INDICATE RACEWAY AND DEVICES TO REMAIN UNLESS OTHERWISE NOTED.
- XN — EXISTING EQUIPMENT TO BE DISCONNECTED, REMOVED AND REPLACED WITH NEW. EXISTING CIRCUIT WIRING AND PATHWAY TO BE MAINTAINED AND REUSED FOR NEW EQUIPMENT CONNECTION.
- XR — EXISTING EQUIPMENT TO NEW "XL" LOCATION. CUT BACK AND/OR EXTEND EXISTING CIRCUIT WIRING AND PATHWAY AS REQUIRED SO AS TO PROVIDE A COMPLETE OPERATIONAL INSTALLATION.
- XL — EXISTING RELOCATED "XR" EQUIPMENT AT "XL" NEW LOCATION.
- XD — REMOVE EXISTING EQUIPMENT. PROVIDE NOTICE TO OWNER OF EQUIPMENT REMOVED. AS DIRECTED BY THE OWNER, BOX REMOVED EQUIPMENT AND RETURN TO THE OWNER AS SPARE INVENTORY.

GENERAL ANNOTATION

- x / dwg — SECTION NUMBER / DRAWING NUMBER
- y / dwg — ELEVATION NUMBER / DRAWING NUMBER
- z / dwg — DETAIL / PART-PLAN NUMBER / DRAWING NUMBER
- CONNECT TO EXISTING
- DISCONNECT FROM EXISTING
- ## — KEY NOTE

NOTE - NOT ALL SYMBOLS USED FOR THIS PROJECT

ABBREVIATIONS

GENERAL

Ø	DIAMETER
A	AMPERES
ACT	ACOUSTICAL CEILING TILE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHJ	AUTHORITY HAVING JURISDICTION
ARCH	ARCHITECT
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
CL	CENTER LINE
CMU	CONCRETE MASONRY UNIT
CO	CARBON MONOXIDE
COMM	COMMUNICATIONS
CONT	CONTINUATION
DWG	DRAWING
ELEC	ELECTRICAL
ELEV	ELEVATION
EMER	EMERGENCY
EX	EXISTING
FT	FEET
GALV	GALVANIZED
GND	GROUND
GWB	GYPSUM WALL BOARD
HAZMAT	HAZARDOUS MATERIAL
M	METERS
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETERS
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY
NTS	NOT TO SCALE
PES	PUBLIC EMERGENCY SERVICE
QTY	QUANTITY
SP	SINGLE PAIR
SQFT	SQUARE FEET
SQM	SQUARE METERS
TBD	TO BE DECIDED
TEMP	TEMPERATURE
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR
TYP	TYPICAL
V	VOLTS
W/	WITH
WP	WEATHER PROOF
XP	EXPLOSION PROOF

SYSTEMS, EQUIPMENT, AND MATERIALS

ACU	AUTONOMOUS CONTROL UNIT
AMP	AMPLIFIER
ASSD	AIR-SAMPLING SMOKE DETECTOR
AUX	AUXILIARY 24V POWER CIRCUIT
AVC	ANALOG VOICE CIRCUIT
BDA	BI-DIRECTIONAL AMPLIFIER
BDAA	BI-DIRECTIONAL AMPLIFIER ALARM PANEL
BMS	BUILDING MANAGEMENT / AUTOMATION SYSTEM
C	CONDUCTOR
CAX	COAXIAL CABLE
CI	CIRCUIT INTEGRITY
CND	CONDUIT
COM	NETWORK COMMUNICATION CIRCUIT
DVC	DIGITAL VOICE CIRCUIT
ECS	EMERGENCY COMMUNICATION SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE RESISTOR
ERCA	EMERGENCY RESPONDER COMMUNICATIONS ANNUNCIATOR
FACU	FIRE ALARM CONTROL UNIT
FAS	FIRE ALARM SYSTEM
FATC	FIRE ALARM TERMINAL CABINET
FMC	FLEXIBLE METALLIC CONDUIT
FMCL	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
FO	FIBER OPTIC CABLE
FPL	POWER LIMITED FIRE ALARM CABLE
FPLP	POWER LIMITED FIRE ALARM CABLE - PLENUM
FPLR	POWER LIMITED FIRE ALARM CABLE - RISER
FSRU	FIRE SUPPRESSION RELEASING UNIT
FT	FIXED TEMPERATURE
GAP	GRAPHIC ANNUNCIATOR PANEL
HLI	HIGH LEVEL INTERFACE
IDC	INITIATING DEVICE CIRCUIT
IM	INTERFACE MODULE
JB	JUNCTION BOX
MC	METAL CLAD CABLE
MD	MAGNETIC DOOR HOLD-OPEN
MFVN	MANAGED FACILITIES-BASED VOICE NETWORK
NAC	NOTIFICATION APPLIANCE CIRCUIT
POE	POWER OVER ETHERNET
PP	PROTECTED PREMISES
PRN	PRINTER
PSTN	PUBLIC-SWITCHED TELEPHONE NETWORK
RAI	REMOTE ALARM INDICATOR
RCES	RADIO COMMUNICATION ENHANCEMENT SYSTEM
ROR	RATE OF RISE
RMC	RIGID METALLIC CONDUIT
RPS	REMOTE POWER SUPPLY
RS	RELEASING SERVICE
SLC	SIGNALING LINE CIRCUIT
SPK	SPEAKER CIRCUIT
STR	STROBE CIRCUIT
TB	TERMINAL BLOCK
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR

ABBREVIATIONS

FAS INTERFACE MODULE / FIRE SUPPRESSION

FSA	FSRU COMMON ALARM OUTPUT (MM)
FSAD	FSRU CLEAN AGENT DISCHARGE OUTPUT (MM)
FSAP	FSRU CLEAN AGENT PRE-DISCHARGE OUTPUT (MM)
FSS	FSRU COMMON SUPERVISORY OUTPUT (MM)
FST	FSRU COMMON TROUBLE OUTPUT (MM)
FSWF	FSRU WATER FLOW OUTPUT (MM)
FSAI	FSRU COMMON ALARM INPUT (MM)
FSAO	FSRU COMMON ALARM OUTPUT (RM)
FSPI	FSRU CLEAN AGENT PRE-DISCHARGE INPUT (MM)
FSDI	FSRU CLEAN AGENT DISCHARGE INPUT (MM)
FSDO	FSRU CLEAN AGENT DISCHARGE OUTPUT (RM)
FSSI	FSRU COMMON SUPERVISORY INPUT (MM)
FSSO	FSRU COMMON SUPERVISORY OUTPUT (RM)
FSTI	FSRU COMMON TROUBLE INPUT (MM)
FSTO	FSRU COMMON TROUBLE OUTPUT (RM)
FWFI	FSRU WATERFLOW INPUT (MM)
FWFO	FSRU WATERFLOW OUTPUT (RM)
HPS	HIGH WATER SYSTEM PRESSURE (MM)
KMS	KEY MAINTENANCE SWITCH (MM)
LPS	LOW AIR, WATER OR CLEAN AGENT SYSTEM PRESSURE (MM)
N2B	NITROGEN GENERATOR BYPASS ALARM (MM)
N2L	NITROGEN GENERATOR LEAK MONITOR (MM)
N2P	NITROGEN GENERATOR POWER MONITOR (MM)
N2R	NITROGEN GENERATOR RUNNING (MM)
RCA	ENERGIZE CLEAN AGENT RELEASING ACTUATOR (RM)
RPA	ENERGIZE PREACTION SPRINKLER RELEASING SOLENOID (RM)
TS	SPRINKLER / STANDPIPE VALVE TAMPER SWITCH IN OFF-NORMAL POSITION (MM)
TSC	CLEAN AGENT ACTUATOR CONTROL HEAD TAMPER SWITCH IN OFF-NORMAL POSITION (MM)
WF	SPRINKLER / STANDPIPE SYSTEM WATER FLOW (MM)
WTH	FIRE WATER TANK HIGH LEVEL ALARM (MM)
WTL	FIRE WATER TANK LOW LEVEL ALARM (MM)
WTVL	FIRE WATER TANK VERY LOW LEVEL ALARM (MM)

FAS / ELECTRIC FIRE PUMP INTERFACES

FPCS	FIRE PUMP CONNECTED TO STANDBY POWER (MM)
FPFL	FIRE PUMP FAILURE (MM)
FPLT	FIRE PUMP LOW TEMPERATURE (MM)
FPPL	FIRE PUMP POWER PHASE LOSS (MM)
FPPV	FIRE PUMP POWER PHASE REVERSAL (MM)
FPRN	FIRE PUMP RUNNING (MM)
FPVB	FIRE PUMP VFD BYPASS ENGAGED (MM)
FPVF	FIRE PUMP VFD FAILURE (MM)
FPVO	FIRE PUMP VFD OVERPRESSURE (MM)

FAS / DIESEL FIRE PUMP INTERFACES

FPET	FIRE PUMP ENGINE TROUBLE (MM)
FPLF	FIRE PUMP LOW FUEL (MM)
FPLT	FIRE PUMP LOW TEMPERATURE (MM)
FPMS	FIRE PUMP MAIN SWITCH IN OFF OR MANUAL POSITION (MM)
FPRN	FIRE PUMP RUNNING (MM)

FAS / ELEVATOR INTERFACES

ELAI	ACTIVATE "FLASHING HAT" ALARM INDICATOR (RM)
ELHV	OPEN ELEVATOR HOISTWAY VENT (RM)
ELRA	RECALL CAB(S) TO ALTERNATE RECALL LEVEL (RM)
ELRP	RECALL CAB(S) TO PRIMARY RECALL LEVEL (RM)
ELSP	SHUNT ELEVATOR POWER (CM OR RM)
OEE	OCCUPANT EVACUATION ELEVATOR INTERFACE (RM)

FAS / HVAC & SMOKE CONTROL INTERFACES

@-AFL	SMOKE CONTROL FAN ID "@" AIRFLOW VERIFICATION (MM)
@-DSC	SMOKE CONTROL FAN ID "@" LOCAL POWER DISCONNECT OPEN (MM)
@-CL	DAMPER / COMPONENT ID "@" IN CLOSED POSITION (MM)
@-OP	DAMPER / COMPONENT ID "@" IN OPEN POSITION (MM)
OC-@	CLOSE DAMPER / COMPONENT ID "@" (RM)
OP-@	OPEN DAMPER / COMPONENT ID "@" (RM)
FSD / SFD	FIRE SMOKE DAMPER (RM)
SD	SMOKE DAMPER (RM)
STA-@	START HVAC / SMOKE CONTROL FAN ID "@" (RM)
STP-@	STOP HVAC / SMOKE CONTROL FAN ID "@" (RM)
XDCT	CONVENTIONAL DUCT SMOKE DETECTOR ALARM (MM)

BI-DIRECTIONAL AMPLIFIER INTERFACES

BDAC	LOSS OF AC POWER (MM)
BDAM	ANTENNA MALFUNCTION (MM)
BDAF	ACTIVE SYSTEM COMPONENT FAILURE (MM)
BDBF	BATTERY CHARGER FAILURE (MM)
BDLB	LOW BATTERY (MM)
BDSM	SIGNAL BOOSTER FAILURE (MM)

CONVENTIONAL INITIATING DEVICES

CO	CONVENTIONAL CO DETECTOR ALARM (MM)
FC	CONVENTIONAL FIRE ALARM MANUAL PULL STATION (MM)
HDA	CONVENTIONAL HEAT DETECTOR ALARM (MM)
HDF	CONVENTIONAL HEAT DETECTOR FAULT (MM)
SDA	CONVENTIONAL SMOKE DETECTOR ALARM (MM)
SDF	CONVENTIONAL SMOKE DETECTOR FAULT (MM)

FAS / OTHER SYSTEM INTERFACES

@-AT	EQUIPMENT ID "@" ACTIVATION (MM)
@-PW	EQUIPMENT ID "@" POWER OFF NORMAL (MM)
AV	OVERRIDE SOUND CONTROLS - SHUTDOWN AV SYSTEMS (RM)
BMSA	FAS COMMON ALARM TO BMS (RM)
BMSS	FAS COMMON SUPERVISORY TO BMS (RM)
BMST	FAS COMMON TROUBLE TO BMS (RM)
DR	RELEASE DOOR(S) (RM)
ECA	EMERGENCY COMMUNICATION STATION ACTIVATION (MM)
FOP	SHUT DOWN FUEL OIL PUMP(S) (RM)
GAS	DE-ENERGIZE NATURAL GAS SUPPLY SHUTOFF SOLENOID (RM)
GENF	EMERGENCY / STANDBY GENERATOR FAULT (MM)
GENR	EMERGENCY / STANDBY GENERATOR RUNNING (MM)
HDS	HIGH-DENSITY STORAGE POSITION OVERRIDE (RM)
KB	FIRE DEPARTMENT KEY BOX MONITOR (MM)
KH	KITCHEN HOOD SUPPRESSION SYSTEM DISCHARGE (MM)
LTG	OVERRIDE LIGHTING CONTROLS TO NORMAL (RM)
PASO	OVERRIDE PUBLIC ADDRESS SYSTEM - MUTE SOUND (RM)
RT	ROOM TEMPERATURE SWITCH (MM)
SECA	FAS COMMON ALARM SIGNAL TO SECURITY SYSTEM (RM)
SECS	FAS COMMON SUPERVISORY SIGNAL TO SECURITY SYSTEM (RM)
SECT	COMMON TROUBLE SIGNAL TO SECURITY SYSTEM (RM)
SM	OVERRIDE SOUND MASKING CONTROLS (RM)

SPECIAL TECHNOLOGY DETECTION

ASD1	AIR SAMPLING SMOKE DETECTION FIRE 1 (MM)
ASD2	AIR SAMPLING SMOKE DETECTION FIRE 2 (MM)
ASDF	AIR SAMPLING SMOKE DETECTOR FAULT (MM)
ASDP	AIR SAMPLING SMOKE DETECTOR PRE-ALARM (ALERT/ACTION) (MM)
ASDT	AIR SAMPLING SMOKE DETECTOR POWER SUPPLY TROUBLE (MM)
BEDA	BEAM DETECTOR ALARM (MM)
BEDT	BEAM DETECTOR TROUBLE (MM)

NOTE - NOT ALL ABBREVIATIONS USED FOR THIS PROJECT

THE MUSIC ANNEX

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BID DOCUMENTS

Project No. 24102
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FIRE ALARM - SYMBOLS AND ABBREVIATIONS

FA-001

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MODIFICATIONS TO EXISTING SYSTEMS

1. PREPARE, IN NARRATIVE AND DRAWING FORMAT AS DIRECTED BY THE AUTHORITY OF HAVING JURISDICTION, A FORMAL IMPAIRMENT PLAN.
2. COORDINATE IMPAIRMENT PLAN WITH GENERAL CONTRACTOR FOR INCORPORATION INTO THE NFPA 241 FIRE SAFETY PROGRAM PREPARED BY THE GENERAL CONTRACTOR.
3. IMPAIRMENT PLAN SHALL IDENTIFY THE BUILDING OCCUPANCY (OR VACANCY) DURING CONSTRUCTION AND NATURE OF THE SYSTEM IMPAIRMENT.
4. IMPAIRMENT PLAN SHALL IDENTIFY MAXIMUM IMPAIRMENT DURATION PERMITTED BY THE AUTHORITY HAVING JURISDICTION BEFORE ALTERNATE PROTECTION OR FIRE WATCHES ARE NECESSARY.
5. IMPAIRMENT PLAN SHALL IDENTIFY THE DURATION AND TIMING OF FIRE ALARM SYSTEM SHUTDOWNS AND RESULTANT REQUIREMENT FOR TEMPORARY PROTECTION MEASURES OR FIRE WATCHES, IF ANY.
6. IMPAIRMENT PLAN SHALL IDENTIFY THE NECESSARY PROVISIONS FOR TEMPORARY CIRCUIT CONNECTIONS TO EXISTING FIRE ALARM DEVICES AND APPLIANCES TO REMAIN IN SERVICE.
7. IMPAIRMENT PLAN SHALL IDENTIFY ADDITIONAL PROTECTION FEATURES INCLUDING FIRE WATCHES AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
8. FIRE ALARM OUTSIDE OF RENOVATION WORK AREA. INITIATING DEVICES AND NOTIFICATION APPLIANCES IN AREAS ADJACENT TO THE RENOVATION WORK AREA MUST REMAIN IN SERVICE THROUGHOUT THE DURATION OF CONSTRUCTION. PROVIDE TEMPORARY CIRCUIT CONNECTIONS AS NECESSARY TO MAINTAIN SERVICE UNTIL NEW CIRCUITS ARE COMPLETED.
9. STROBE SYNCHRONIZATION ALLOWANCE. THE FLASH PATTERN OF EXISTING STROBE NOTIFICATION APPLIANCES ADJACENT TO THE RENOVATION WORK AREA BUT OPEN TO VIEW OF NEW STROBE NOTIFICATION APPLIANCES WITHIN THE RENOVATION WORK AREA SHALL BE SYNCHRONIZED. INCLUDE A COST ALLOWANCE FOR THE REPLACEMENT OF EXISTING NOTIFICATION APPLIANCES, NEW POWER SUPPLIES, SYNC-MODULES, AND OTHER NECESSARY MODULES REQUIRED FOR SYNCHRONIZATION WHERE THE EXISTING FIRE ALARM SYSTEM IS DETERMINED IN THE FIELD TO NOT BE CAPABLE OF SYNCHRONIZATION BETWEEN EXISTING AND NEW NOTIFICATION APPLIANCES.
10. FIRE ALARM PULL BOXES WITHIN RENOVATION WORK AREA. MAINTAIN MANUAL PULL BOXES AT EXITS WITHIN AREA OF RENOVATION. REPLACE PULL BOXES WITH NEW AT THE CONCLUSION OF CONSTRUCTION.
11. FIRE ALARM NOTIFICATION APPLIANCES WITHIN RENOVATION WORK AREA. MAINTAIN NOMINAL AUDIBLE AND VISIBLE SIGNALING WITHIN THE RENOVATION WORK AREA. AT A MINIMUM, LOCATE COMBINATION AUDIBLE / VISIBLE NOTIFICATION APPLIANCES AT EACH EXIT FROM THE WORK AREA.
12. SMOKE AND HEAT DETECTORS WITHIN RENOVATION WORK AREA. PROTECT EXISTING DETECTORS TO REMAIN FROM DUST AND DEBRIS THROUGHOUT THE DURATION OF CONSTRUCTION. REPLACE DETECTORS WITH NEW AT THE CONCLUSION OF CONSTRUCTION.
13. FIRE ALARM INTERFACE MODULES WITHIN RENOVATION WORK AREA. MAINTAIN THE OPERATION OF EXISTING INPUT AND OUTPUT INTERFACE MODULES TO EXISTING EQUIPMENT THROUGHOUT THE DURATION OF CONSTRUCTION.
14. PROTECTION. PROTECT EXISTING FIRE ALARM DEVICES, APPLIANCES, AND EQUIPMENT FROM DUST, DEBRIS, PAINT, SPRAY-ON FIRE-PROOFING, AND SIMILAR THROUGHOUT THE DURATION OF CONSTRUCTION.
15. FIXED-TEMPERATURE LINEAR HEAT DETECTION. INSTALL TEMPORARY FIXED-TEMPERATURE (190°F) LINEAR HEAT DETECTION IN RENOVATION WORK AREAS WHERE THE SPRINKLER SYSTEM WILL BE IMPAIRED FOR LONGER THAN ONE (1) WORK SHIFT OR AS OTHERWISE REQUIRED BY THE AUTHORITY HAVING JURISDICTION. COORDINATE REQUIREMENTS FOR TEMPORARY LINEAR HEAT DETECTION WITH DIVISION 21 WORK. WHERE REQUIRED, INSTALL LINEAR HEAT DETECTION WITHIN EACH BEAM POCKET WITH CABLES PARALLEL TO STRUCTURAL BEAMS. LINEAR HEAT DETECTION SHALL BE SUPERVISED BY THE BUILDING FIRE ALARM SYSTEM. ACTIVATION OF THE LINEAR HEAT DETECTION SYSTEM SHALL INITIATE THE BUILDING ALARM SEQUENCE OF OPERATION.
16. PROGRAMMING. UPDATE FIRE ALARM SYSTEM PROGRAMMING AS REQUIRED TO INCLUDE NEW ADDRESSES, DELETED ADDRESSES AND SEQUENCE OF OPERATIONS CHANGES. MATCH EXISTING DEVICE ADDRESS NOMENCLATURE.
VERIFY BUILDING ROOM NAMES AND NUMBERS IN FIELD.
17. EXISTING WORK STATIONS. UPDATE PROGRAMMING AND GRAPHICS FILES OF EXISTING WORKSTATIONS AS REQUIRED TO ACCURATELY REFLECT FIRE ALARM SYSTEM MODIFICATIONS.
18. EXISTING GRAPHIC ANNUNCIATORS & SWITCHES. REPLACE EXISTIN GRAPHIC ANNUNCIATOR, OPERATOR SWITCHES, LABELS AND SIMILAR AS REQUIRED TO ACCURATELY REFLECT THE FIRE ALARM SYSTEM MODIFICATIONS.
19. EXISTING IDENTIFICATION. REPLACE EXISTING FIRE ALARM SIGNAGE, GRAPHICS, FRAMED MAPS, AND SIMILAR WITH NEW AS REQUIRED TO ACCURATELY REFLECT FIRE ALARM SYSTEM MODIFICATIONS.
20. EXISTING DOCUMENTATION. AMEND EXISTING PROPERTY RECORDS WITH SUPPLEMENTAL FIRE ALARM RECORD DOCUMENTATION INCLUDING
21. DRAWINGS AND TEST REPORTS FOR THE ALTERATION WORK PERFORMED.

DOCUMENT SUBMITTAL PROCESS

1. THE DESIGN CONTENT OF THESE DRAWINGS IS INTENDED TO SATISFY THE STATE BUILDING CODE REQUIREMENTS FOR CONSTRUCTION DOCUMENTS. WHEN STAMPED AND SEALED BY THE ENGINEER OF RECORD THEY ARE INTENDED TO BE USED AS PART OF THE BUILDING PERMIT APPLICATION ONLY.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING A COMPLETE SHOP DRAWING SUBMITTAL INCLUSIVE OF ALL INFORMATION REQUIRED BY THE STATE BUILDING CODE AND THE CONSTRUCTION DOCUMENTS. SHOP DRAWINGS REVIEWED BY THE ENGINEER OF RECORD SHALL BE USED FOR SUPPLEMENTAL FIRE PROTECTION SYSTEM INSTALLATION PERMITS OR SUBMITTALS WHERE SUCH PERMITS OR SUBMITTALS ARE REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING A COMPLETE RECORD DRAWING SUBMITTAL INCLUSIVE OF ALL FIELD CHANGES AND ALL INFORMATION REQUIRED BY THE STATE BUILDING CODE AND THE CONSTRUCTION DOCUMENTS.
4. SHOP DRAWINGS AND RECORD DRAWING SUBMITTALS SHALL BE PREPARED BY THE CONTRACTOR'S QUALIFIED ENGINEERING TECHNICIAN AND SHALL INDICATE THE TECHNICIAN'S NICET CERTIFICATION NUMBER OR PROFESSIONAL ENGINEERING SEAL & SIGNATURE AS REQUIRED BY THE CONSTRUCTION DOCUMENTS.
5. THE ENGINEER OF RECORD SHALL NOT SIGN AND SEAL SHOP DRAWING OR RECORD DRAWING SUBMITTALS PREPARED BY THE CONTRACTOR. WHERE THE AUTHORITY HAVING JURISDICTION REQUIRES SHOP DRAWING OR RECORD DRAWING SUBMITTALS TO BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, THE SUBMITTALS SHALL BE PREPARED BY A
6. QUALIFIED PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR.

INSPECTION AND TESTING

1. PREPARE A TYPEWRITTEN COMPUTER-OUTPUT TEST PLAN THAT CLEARLY ESTABLISHES THE SCOPE OF FIRE ALARM AND SIGNALING SYSTEM TESTING. INCLUDE AT A MINIMUM TESTING METHODS, PERSONNEL, DURATION, PLANNED IMPAIRMENTS, AND REQUIRED COORDINATION FOR INTEGRATED TESTING OF EMERGENCY CONTROL FUNCTION INTERFACES. COORDINATE NFPA 3 "RECOMMENDED PRACTICE FOR COMMISSIONING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS" AND NFPA 4 "STANDARD FOR INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEM TESTING" REQUIREMENTS WITH THE FIRE AND LIFE SAFETY COMMISSION AGENT (FCxA) WHERE AN FCxA IS CONTRACTED BY THE OWNER.
2. FUNCTIONAL FIELD TESTS SHALL BE WITNESSED BY THE CONSTRUCTION MANAGER (CM), THEIR DESIGNEES, AND WHEN CONTRACTED BY THE OWNER THE FIRE AND LIFE SAFETY COMMISSION AGENT (FCxA); PROVIDE NOTIFICATIONS A MINIMUM OF TWO (2) WEEKS IN ADVANCE.
3. ACCEPTANCE FIELD TESTING SHALL BE WITNESSED BY THE CM, THEIR DESIGNEES, AND AUTHORITIES HAVING JURISDICTION (AHJ); PROVIDE NOTIFICATIONS A MINIMUM OF TWO (2) WEEKS IN ADVANCE.
4. PERFORM VISUAL INSPECTIONS IN ACCORDANCE WITH FIRE ALARM SYSTEM MANUFACTURER RECOMMENDATIONS AND NFPA 72 FOR INITIAL ACCEPTANCE INSPECTIONS. CORRECT DEFICIENCIES.
5. DOCUMENT INSPECTIONS BY COMPLETING APPLICABLE SECTIONS OF THE NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT.
6. PROVIDE WRITTEN NOTIFICATIONS FOR FUNCTIONAL FIELD TESTS; INCLUDE TEST PLAN.
7. PERFORM FUNCTIONAL TESTING IN ACCORDANCE WITH ACCORDANCE WITH FIRE ALARM SYSTEM MANUFACTURER RECOMMENDATIONS NFPA 72 FOR "INITIAL ACCEPTANCE TESTING". CORRECT DEFICIENCIES. REPEAT FUNCTIONAL TESTING INCLUDING RETESTING OF UNAFFECTED COMPONENTS IN ACCORDANCE WITH NFPA 72 FOR "REACCEPTANCE TESTING".
8. REPEAT FUNCTIONAL TESTING AS REQUIRED BY THE FIRE AND LIFE SAFETY COMMISSION AGENT (FCxA) WHERE AN FCxA IS CONTRACTED BY THE OWNER.
9. DOCUMENT 100 PERCENT SATISFACTORY FUNCTIONAL TESTS BY COMPLETING REMAINING SECTIONS OF THE NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT.
10. SUBMIT NFPA 72 "STATEMENT OF COMPLETION" AND COMPLETED NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT.
11. PROVIDE WRITTEN NOTIFICATIONS FOR ACCEPTANCE FIELD TESTS; INCLUDE TEST PLAN, NFPA 72 "STATEMENT OF COMPLETION", NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT, AND NFPA 72 "SYSTEM RECORD OF COMPLETION".
12. PERFORM ACCEPTANCE FIELD TESTING. DEMONSTRATE SYSTEM OPERATION TO THE SATISFACTION OF THE AHJ. CORRECT AHJ NOTED DEFICIENCIES.REPEAT FUNCTIONAL TESTING INCLUDING RETESTING OF UNAFFECTED COMPONENTS IN ACCORDANCE WITH NFPA 72 FOR "REACCEPTANCE TESTING". AMEND NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" REPORT, AND NFPA 72 "SYSTEM RECORD OF COMPLETION".
13. PLACE SYSTEM INTO NORMAL OPERATING SERVICE WITHOUT SYSTEM FAULTS OR OUTSTANDING WORK.

GENERAL REQUIREMENTS

1. CONTRACTOR SHALL GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
2. PURPOSE OF ENGINEERING DRAWINGS. THE DRAWINGS ARE DIAGRAMMATIC. THEY ARE NOT INTENDED TO BE ABSOLUTELY PRECISE; THEY ARE NOT INTENDED TO SPECIFY OR TO SHOW EVERY REQUIRED COMPONENT OF THE SYSTEMS DESCRIBED. THE PURPOSE OF THE DRAWINGS IS TO INDICATE A SYSTEM CONCEPT, THE MAIN COMPONENTS OF THE SYSTEMS, AND THEIR APPROXIMATE GEOMETRIC RELATIONSHIPS. BASED UPON THE SYSTEMS CONCEPT, THE MAIN COMPONENTS, AND THEIR APPROXIMATE GEOMETRIC RELATIONSHIPS, PROVIDE ALL OTHER COMPONENTS AND MATERIALS NECESSARY TO MAKE THE SYSTEMS FULLY COMPLETE AND OPERATIONAL. GENERIC PERFORMANCE CRITERIA WIRING DIAGRAMS ARE REPRESENTED BY THE ENGINEERING DRAWINGS. ADAPT DIAGRAM ARRANGEMENT AS NECESSARY TO ACHIEVE SPECIFIED PERFORMANCE WITH FAS MANUFACTURER-SPECIFIC TECHNOLOGY.
3. MINIMUM PERFORMANCE REQUIREMENTS. INTERPRET DRAWING AND SPECIFICATION REQUIREMENTS THAT ARE MORE STRINGENT THAN FEDERAL, STATE, & MUNICIPAL CODE-MINIMUM AS DELIBERATELY CONSIDERED PERFORMANCE CRITERIA THAT ARE A MANDATORY PART OF THE WORK. WHERE DRAWINGS AND SPECIFICATIONS ARE SILENT ON A CODE REGULATED CONDITION, COMPLY WITH FEDERAL, STATE, & MUNICIPAL CODE-MINIMUM. COMPLY WITH NFPA STANDARD EDITIONS REFERENCED BY APPLICABLE FEDERAL, STATE, & MUNICIPAL CODES.
4. DESIGN STANDARDS. COMPLY WITH:
   - BUILDING CODE: ***2021 NEW JERSEY*** BUILDING CODE
   - FIRE / LIFE SAFETY CODE: ***2021 NEW JERSEY*** FIRE CODE
   - MECHANICAL CODE: ***2021 NEW JERSEY*** MECHANICAL CODE
   - FIRE ALARM CODE: ***2019*** NFPA 72, NATIONAL FIRE ALARM AND
   - SIGNALING CODE
   - ELECTRICAL CODE: ***2023*** NFPA 70, NATIONAL ELECTRICAL CODE
5. APPROVALS. PRODUCTS SHALL BE UL LISTED ***OR*** FM APPROVED FOR FIRE PROTECTION DUTY AND THE INTENDED SERVICE APPLICATION.
6. ALL WORK IS NEW. UNLESS SPECIFICALLY NOTED AS EXISTING, ALL COMPONENTS INDICATED BY THE DRAWINGS ARE NEW.
7. RELATED DOCUMENTS. THE NECESSARY UNDERSTANDING OF THE PROJECT SCOPE AND FIRE ALARM AND SIGNALING WORK CANNOT BE OBTAINED WITHOUT REVIEW OF ALL PROJECT DOCUMENTS. REVIEW COMPLETE PACKAGE OF PROJECT DRAWINGS, SPECIFICATIONS, AND NARRATIVES TO FULLY UNDERSTAND THE PROJECT SCOPE AND TO COORDINATE THE FIRE ALARM AND SIGNALING WORK WITH OTHER DIVISIONS.
8. GENERAL INSTALLATION. INSTALL SYSTEM IN A WORKMANLIKE FASHION AND IN A RECTILINEAR ARRANGEMENT WITH PATHWAYS, EQUIPMENT, DEVICES, AND APPLIANCE PERPENDICULAR AND PARALLEL WITH BUILDING ARCHITECTURAL AND STRUCTURAL ELEMENTS. CONDUIT SHALL BE TIGHT TO UNDERSIDE OF DECK. EXPOSED CONDUIT SHALL BE APPROVED BY THE ARCHITECT PRIOR TO INSTALLATION AND SHALL MAINTAIN NECESSARY CLEARANCES.
9. FIRE DEPARTMENT OPERATIONS. INSTALL FIRE ALARM DISPLAYS, AND CONTROLS, PRIVATE-MODE SIGNALING APPLIANCES, SIGNAGE, AND OTHER COMPONENTS REQUIRING FIRE FIGHTER PERSONNEL INTERFACE DURING EMERGENCY OPERATIONS IN READILY IDENTIFIABLE LOCATIONS, WITH ADEQUATE OPERATIONAL CLEARANCES, AND IN ACCORDANCE WITH RESPONDING FIRE DEPARTMENT STANDARD EMERGENCY OPERATIONAL PROCEDURES.
10. RACEWAY. UNLESS OTHERWISE NOTED, WIRE AND CABLE PATHWAYS SHALL BE DEDICATED CONTINUOUS METAL RACEWAY THROUGHOUT. COMPLY WITH NFPA 72 REQUIREMENTS - BOTH MANDATORY AND RECOMMENDED - FOR MINIMUM PHYSICAL SEPARATION OF SUPPLY AND RETURN PATHWAYS.CONDUIT SHALL BE MINIMUM 3/4-IN NOMINAL WITH RED MARKINGS EVERY 10-FT OR SOLID RED COLOR.
11. WIRE AND CABLE. FPL POWER-LIMITED FIRE ALARM SHALL BE CABLE RUN CONTINUOUS BETWEEN COMPONENT TERMINALS WITHOUT SPLICES. POWER LIMITED CIRCUITS SHALL NOT BE RUN IN THE SAME RACEWAY AS NON-POWER LIMITED CIRCUITS.
12. SURVIVABILITY. FIRE ALARM EQUIPMENT AND PATHWAYS SHALL BE SURVIVABLE AGAINST THE EFFECTS OF FIRE DAMAGE AS INDICATED.
13. T-TAPPING. CIRCUITS SHALL BE ARRANGED WITHOUT T-TAPS.
14. INTERFACES. DIVISION 28 WORK INCLUDES WIRING AND TERMINATIONS FROM INTERFACE MODULES TO ASSOCIATED EQUIPMENT TERMINALS. COORDINATE VOLTAGE REQUIREMENTS OF CONTROLLED EQUIPMENT WITH THE RATINGS OF THE ASSOCIATED FIRE ALARM INTERFACE MODULE. PROVIDE INTERPOSING RELAYS WHERE INDICATED OR OTHERWISE REQUIRED. UNLESS NOTED AS PERMISSIBLE FOR FAIL-SAFE CONTROL CIRCUITS, ADDRESSABLE RELAY MODULES SHALL BE LOCATED WITHIN 3-FT OF THE ASSOCIATED DEVICE OR CIRCUIT BEING CONTROLLED.
15. PRIMARY POWER SUPPLY SHALL BE FROM A SEPARATE FUSED CIRCUIT FREE FROM FAULTS INCLUDING GROUNDS, SHORTS, OPENS, STRAY VOLTAGE, OR INDUCED VOLTAGE. EACH BREAKER SHALL BE LOCKABLE AND IDENTIFIED AT BOTH THE POWER PANEL AND THE POWERED EQUIPMENT. A SURGE PROTECTIVE DEVICE SHALL BE PROVIDED FOR EACH PRIMARY POWER CIRCUIT.
16. COORDINATION. MAKE REASONABLE AND NECESSARY MODIFICATIONS IN LAYOUTS AND COMPONENT ARRANGEMENT NEEDED TO PREVENT CONFLICT WITH AND TO ACCOMMODATE OTHER DIVISIONS OF THE WORK.
17. CLEARANCES. INSTALL CONDUIT, BOXES, CABINETS, AND SYSTEM COMPONENTS TO MAINTAIN MINIMUM CLEARANCES REQUIRED TO OPERATE AND MAINTAIN FIRE ALARM AND SIGNALING EQUIPMENT; TO INSTALL, OPERATE AND MAINTAIN EQUIPMENT AND FEATURES OF OTHER DIVISIONS; TO ACCOMMODATE FINISHED CEILING HEIGHTS; AND TO MAINTAIN MAXIMUM HEADROOM IN AREAS OPEN TO STRUCTURE ABOVE.
18. PENETRATIONS. USE SPECIFIED SLEEVES, SLEEVE SEALS, AND ESCUTCHEONS AT RACEWAY PENETRATIONS. AT FIRE RESISTANCE RATED PENETRATIONS, THE PENETRATED FLOOR OR WALL, PENETRATING RACEWAY, SLEEVE OR SLEEVE SEAL, AND FIRESTOP MATERIAL AS AN ASSEMBLY SHALL COMPLY WITH A DESIGNATED UL THROUGH-PENETRATION FIRESTOP SYSTEM.
19. ACCESS TO COMPONENTS. INSTALL WALL MOUNT EQUIPMENT CABINETS WITH CONTROLS AND DISPLAYS SUCH THAT THEY ARE READILY ACCESSIBLE AND VISIBLE TO RESPONDING PERSONNEL. INSTALL EQUIPMENT TO READILY PERMIT TESTING SERVICING, AND BATTERY REPLACEMENT. INSTALL FIRE DETECTORS SUCH THAT THEY WILL BE READILY ACCESSIBLE FOR TESTING AND MAINTENANCE FROM THE FLOOR SURFACE BELOW.
20. SUPPORT. CONDUITS, CABLES, AND RACEWAY SHALL NOT BE SUPPORTED BY CEILING GRID SYSTEMS. SECURE CONDUITS, CABLES, AND RACEWAYS TO THE BUILDING STRUCTURE.
21. IDENTIFICATION. PROVIDE IDENTIFICATION AT ALL DEVICES, APPLIANCES, MODULES, AND CABINET ENCLOSURES.
22. FIRE PROTECTION DURING CONSTRUCTION. PROVIDE FIRE PROTECTION DURING CONSTRUCTION INCLUDING BUT NOT LIMITED TO SPRINKLER / STANDPIPE SUPERVISION, AUDIBLE AND VISIBLE ALARMS, AND CENTRAL STATION SUPERVISION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
23. ON-SITE AS-BUILT DOCUMENTATION. MAINTAIN COMPLETE AND SEPARATE SET OF INSTALLATION DRAWINGS ON SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL MODIFICATIONS CLEARLY AND ACCURATELY.

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BID DOCUMENTS

Project No. 24102
Issued 05/15/26

FIRE ALARM - NOTES & DESIGN CRITERIA

FA-002

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PART 1 - GENERAL

1. SUMMARY

1.1. THE WORK UNDER THIS SECTION INCLUDES ALL LABOR, MATERIALS, FEES, AND ACTIVITIES REQUIRED TO INSTALL AND / OR MODIFY, TEST, AND COMMISSION AN ADDRESSABLE FIRE ALARM AND SIGNALING SYSTEM.

2. RELATED DOCUMENTS

2.1 THE WORK REQUIREMENTS DESCRIBED WITHIN DIVISION 20 "COMMON MECHANICAL / ELECTRICAL REQUIREMENTS" FORM COMPLIMENTARY REQUIREMENTS TO THE SCOPE OF WORK OF THIS SECTION.

3. SUBMITTALS

3.1 COMPLY WITH DRAWINGS; STATE/LOCAL REGULATIONS; AND NFPA 72 "DOCUMENTATION" CHAPTER.

3.2 SUBMIT ACTION SUBMITTALS PRIOR TO APPLYING FOR AUTHORITY HAVING JURISDICTION INSTALLATION PERMITS (WHERE REQUIRED) AND SYSTEM INSTALLATION.

3.3 SUBMIT INFORMATIONAL SUBMITTALS AFTER SUCCESSFUL INITIAL SYSTEM TESTING AND PRIOR TO SCHEDULING AUTHORITY HAVING JURISDICTION FINAL APPROVAL DEMONSTRATION TESTING.

3.4 SUBMIT CLOSEOUT SUBMITTALS AS PART OF PROJECT CLOSEOUT PROCEDURE

4. ACTION SUBMITTALS

4.1 PRODUCT DATA: FOR EACH TYPE OF PRODUCT, INCLUDING FURNISHED OPTIONS AND ACCESSORIES.

4.2 SHOP DRAWINGS: FOR FIRE ALARM SYSTEM AND FIRE SAFETY CONTROL INTERFACES. INCLUDE FLOOR PLANS, RISER DIAGRAM, COMPONENT WIRING DIAGRAMS AND SEQUENCE OF OPERATIONS.

4.3 CALCULATIONS: INCLUDE VOLTAGE DROP CALCULATIONS, POWER SUPPLY AND BATTERY CALCULATIONS, AMPLIFIER LOADING CALCULATIONS, SPEAKER CIRCUIT DB LOSS CALCULATIONS AND CONDUIT FILL CALCULATIONS.

5. INFORMATIONAL SUBMITTALS

5.1 QUALIFICATION DATA: FOR QUALIFIED INSTALLER AND CERTIFIED ENGINEERING TECHNICIAN.

5.2 RECORD OF INSPECTION AND TESTING DOCUMENTATION: INITIAL ACCEPTANCE OR RE-ACCEPTANCE TESTING, USE NFPA 72 "SYSTEM RECORD OF INSPECTION AND TESTING" FORMS.

5.3 STATEMENT OF COMPLETION: WRITTEN STATEMENT THAT SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS AND TESTED IN ACCORDANCE WITH THE MANUFACTURER 'S PUBLISHED INSTRUCTIONS AND APPROPRIATE NFPA 72 REQUIREMENTS.

6. CLOSEOUT SUBMITTALS

6.1 RECORDS OF COMPLETION DOCUMENTATION: USE NFPA 72 "SYSTEM RECORD OF COMPLETION" FORMS. FOR MODIFICATIONS TO EXISTING SYSTEMS, FORMAT AS A DATED REVISION TO THE ORIGINAL RECORD OF COMPLETION.

6.2 RECORD DRAWINGS: SHOP DRAWING RE-SUBMITTAL UPDATED TO REFLECT ACTUAL FINAL SYSTEM INSTALLATION AND SEQUENCE OF OPERATION. FOR MODIFICATIONS TO EXISTING SYSTEMS, FORMAT AS A DATED REVISION TO THE ORIGINAL RECORD DRAWINGS.

6.3 DEVICE ADDRESS LIST: ORGANIZED BY SLC LOOP AND SYSTEM NODE. FOR MODIFICATIONS TO EXISTING SYSTEMS, FORMAT AS A DATED REVISION TO THE ORIGINAL DEVICE ADDRESS LIST.

6.4 OPERATION AND MAINTENANCE DATA: FOR FIRE ALARM SYSTEMS AND COMPONENTS TO INCLUDE IN EMERGENCY, OPERATION, AND MAINTENANCE MANUALS.

7. QUALITY ASSURANCE

7.1 INSTALLER QUALIFICATIONS: PERSONNEL LICENSED BY THE GOVERNING LICENSING AUTHORITY FOR THE INSTALLATION OF FIRE ALARM SYSTEMS. SUCCESSFULLY INSTALLED, TESTED, OBTAINED APPROVALS FOR, AND PUT INTO SERVICE NO LESS THAN THREE (3) FIRE ALARM SYSTEMS SIMILAR IN TYPE, SIZE, AND COMPLEXITY TO THAT OF THE WORK OF THIS SECTION.

7.2 CERTIFIED ENGINEERING TECHNICIAN QUALIFICATIONS: PERSONNEL TRAINED AND CERTIFIED BY THE FIRE ALARM SYSTEM MANUFACTURER AS AN APPROVED TECHNICIAN. SHOP DRAWINGS AND CALCULATIONS PREPARED BY PERSONNEL CERTIFIED BY NICET AS FIRE ALARM LEVEL III OR IV TECHNICIAN, OR LICENSED AS A PROFESSIONAL FIRE PROTECTION ENGINEER BY THE GOVERNING LICENSING AUTHORITY.

7.3 SOURCE LIMITATIONS FOR FIRE ALARM SYSTEM AND COMPONENTS: SINGLE VENDOR SOURCE TO PROVIDE FIRE ALARM SYSTEM COMPONENTS AND CONNECTED NON-SYSTEM COMPONENTS AS A SINGLE LISTED ADDRESSABLE FIRE ALARM AND SIGNALING SYSTEM.

7.4 MODIFICATIONS TO EXISTING SYSTEMS: COMPONENTS COMPATIBLE WITH, AND OPERATE AS AN EXTENSION OF, EXISTING SYSTEM.

7.5 PRODUCT STANDARDS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, INDICATION OF A UL PRODUCT REQUIREMENT WITHIN PART 2 SHALL BE CONSTRUED TO BE INCLUSIVE OF A CORRESPONDING FM GLOBAL APPROVED PRODUCT, WITH OR WITHOUT UL LISTING.

7.6 COORDINATION

7.6.1 COORDINATE CONSTRUCTION OPERATIONS WITH THOSE OF OTHER SECTIONS OF THE WORK AND OTHER ENTITIES TO ENSURE EFFICIENT AND ORDERLY INSTALLATION OF EACH PART OF THE WORK AND ACCESSIBILITY FOR REQUIRED MAINTENANCE, SERVICE AND REPAIR.

7.7 MAINTENANCE MATERIALS

7.7.1. FURNISH EXTRA MATERIALS THAT MATCH PRODUCTS INSTALLED AND THAT ARE PACKAGED WITH PROTECTIVE COVERING FOR STORAGE AND IDENTIFIED WITH LABELS DESCRIBING CONTENTS.

7.7.2. PROVIDE A MINIMUM ONE (1) OR 2 PERCENT OF EACH INSTALLED INITIATING AND NOTIFICATION DEVICE, WHICHEVER QUANTITY IS LARGER.

7.8. WARRANTY

7.8.1. MANUFACTURER'S WARRANTY: MANUFACTURER AGREES TO REPAIR OR REPLACE FIRE ALARM SYSTEM EQUIPMENT AND COMPONENTS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD.

7.8.2. WARRANTY EXTENT: ALL EQUIPMENT AND COMPONENTS NOT COVERED IN THE MAINTENANCE SERVICE AGREEMENT.

7.8.3. WARRANTY PERIOD: TWO (2) YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 - PRODUCTS

1. MANUFACTURERS

1.1. SUBJECT TO COMPLIANCE WITH REQUIREMENTS MANUFACTURERS SHALL MATCH EXISTING BUILDING SYSTEMS.

1.2. WHERE ADDITIONAL MANUFACTURER LISTINGS OR BASIS OF DESIGN PRODUCTS ARE INDICATED, PROVIDE PRODUCTS LISTED AND DUTY-RATED AS COMPATIBLE WITH THE SELECTED FIRE ALARM AND SIGNALING TECHNOLOGY PLATFORM.

2. PERFORMANCE REQUIREMENTS

2.1. COMPONENT PRIMARY POWER: 24-V DC, FROM PREMISES AC POWER SUPPLY. ALARM CURRENT DRAW OF COMPONENTS CONNECTED TO EACH POWER SUPPLY MODULE NO GREATER THAN 80 PERCENT OF THE POWER SUPPLY MODULE RATING.

2.2. COMPONENT STANDBY POWER: 24-V DC SUPPLY SYSTEM WITH BATTERIES, AUTOMATIC BATTERY CHARGER, AND AUTOMATIC TRANSFER SWITCH. SYSTEM OPERATION FOR:

2.2.1. NON-VOICE SYSTEMS: ***FOUR (4) HOURS*** UNDER QUIESCENT LOAD PLUS ***FIVE (5) MINUTES*** OPERATING ALL ALARM NOTIFICATION APPLIANCES. SPARE CAPACITY: 20 PERCENT.

2.3. MODIFICATION OF EXISTING SYSTEMS: MAINTAIN EXISTING SYSTEM PERFORMANCE AND SEQUENCES; MATCH EXISTING SYSTEM WIRE AND CABLE TYPES; MATCH EXISTING CIRCUIT PATHWAY PRODUCTS, NFPA CLASS AND NFPA LEVEL; MATCH EXISTING INITIATING DEVICES AND NOTIFICATION APPLIANCES.

3. FIRE ALARM CONTROL UNITS

3.1. UL 864; POWER-LIMITED, FIELD-PROGRAMMABLE, MICROPROCESSOR-BASED, MODULAR DESIGN. INTERCONNECTED POWER SUPPLIES, CIRCUIT BOARD MODULES, DISPLAYS, AND ASSOCIATED ELECTRONICS MOUNTED TO STANDARD MOUNTING CHASSIS WITHIN COMMON CONTROL UNIT CABINET ENCLOSURE. CONTROL UNIT CABINET ASSEMBLIES CONFIGURED AS CONTROL UNITS WITH INTEGRAL DISPLAY AND CONTROLS OR AS TRANSPONDER UNITS WITH SOLID DOOR AND NO LOCAL DISPLAY/CONTROLS.

4. AMPLIFIERS

4.1. UL 1711, DIGITAL, MULTI-CHANNEL, POWER-LIMITED 25 OR 70 VRMS, WITH ON-BOARD TEST SWITCHES AND INDICATORS.

5. REMOTE ANNUNCIATORS

5.1. GENERAL: DISPLAY AND CONTROLS REMOTE FROM FIRE ALARM CONTROL UNIT, INCLUDING SYSTEM STATUS INDICATION, EVENT STATUS INDICATION, MANUAL QUERY INPUTS, MANUAL PROGRAMMING INPUTS, AND MANUAL OUTPUT FUNCTIONS.

6. LOCAL OPERATING CONSOLES

6.1. GENERAL: DISPLAY AND CONTROLS REMOTE FROM EMERGENCY VOICE MESSAGING CONTROL UNIT, FOR MANUAL VOICE MESSAGING VIA PUSH-TO-TALK MICROPHONE OR SELECTIVE KEYED OPERATION OF EMERGENCY EVACUATION FUNCTIONS.

7. AMPLIFIERS

7.1. UL 1711, DIGITAL, MULTI-CHANNEL, POWER-LIMITED 25 OR 70 VRMS, WITH ON-BOARD TEST SWITCHES AND INDICATORS.

8. POWER SUPPLIES

8.1. GENERAL: SWITCHED-MODE SUPERVISED POWER SUPPLY BASE AND EXPANSION MODULES SUPPLYING REGULATED AND FILTERED 24-V DC POWER TO SYSTEM COMPONENTS, NOTIFICATION APPLIANCES, AND AUXILIARY POWER LOADS.

8.2. RPS APPLICATIONS: POWER SUPPLY MODULES AND BATTERIES MOUNTED WITHIN DISTRIBUTED REMOTE POWER SUPPLY (RPS) EQUIPMENT CABINETS TO PROVIDE SUPPLEMENTAL POWER TO CONNECTED NOTIFICATION APPLIANCE CIRCUITS AND CONNECTED AUXILIARY POWER CIRCUITS.

9. MANUAL FIRE ALARM BOXES

9.1 GENERAL: UL 38; DIE-CAST METAL HOUSING, RED FINISH, WITH MOLDED, RAISED-LETTER OPERATING INSTRUCTIONS AND "FIRE" IDENTIFICATION IN CONTRASTING COLOR; DEVICE SHALL SHOW VISIBLE INDICATION OF OPERATION. DOUBLE-ACTION, PULL-LEVER TYPE, WITH INTEGRAL OR ATTACHED ADDRESSABLE MODULE.

10. SYSTEM SMOKE DETECTORS

10.1 UL 268, PHOTOELECTRIC SPOT-TYPE WITH INSECT-SCREEN PROTECTED SENSING CHAMBER; FOR INSTALLATION IN TWIST-LOCK SYSTEM BASES.

10.2. OPERATING TEMPERATURE RANGE: 32 – 100 DEG F (0 – 38DEG C).

10.3. OPERATING HUMIDITY RANGE: 10 - 95 PERCENT RH.

10.4. SENSITIVITY RANGE: 0.2 - 3.7 PERCENT OBS/FT.

10.5. AIR VELOCITY RATING: 0 - 4,000 FPM (0 - 1220 MPM).

11. SYSTEM IN-DUCT SMOKE DETECTORS

11.1. UL 268A, PHOTOELECTRIC SPOT-TYPE SYSTEM SMOKE DETECTOR LISTED FOR INSTALLATION DIRECTLY WITHIN AIR DISTRIBUTION DUCTWORK; WITH AND WITHOUT INTEGRAL OUTPUT RELAYS.

11.2. MOUNTING: FACTORY FURNISHED MOUNTING KIT OR STANDARD ELECTRICAL RACEWAY AND BOXES AS PER DETECTOR MANUFACTURER REQUIREMENTS.

11.3. AIR VELOCITY RANGE: 0 - 4,000 FPM (0 - 1,220 MPM).

12. SYSTEM SAMPLING TUBE DUCT SMOKE DETECTORS

12.1. UL 268A, PHOTOELECTRIC SPOT-TYPE SYSTEM SMOKE DETECTOR LISTED FOR INSTALLATION WITHIN DETECTOR HOUSING MOUNTED TO EXTERIOR SURFACE OF AIR DISTRIBUTION DUCTWORK, WITH CONNECTED SAMPLING TUBES TRANSPORTING DUCTWORK AIR TO THE EXTERNAL DETECTOR SENSING CHAMBER; WITH AND WITHOUT INTEGRAL OUTPUT RELAYS.

12.2. AIR VELOCITY RANGE: 300 - 4,000 FPM (91 - 1,220 MPM).

13. SYSTEM HEAT DETECTORS

11.3. UL 521, SPOT TYPE HEAT DETECTOR ACTUATED BY EITHER A FIXED TEMPERATURE OF 135 DEG F OR A RATE OF RISE THAT EXCEEDS 15 DEG F PER MINUTE UNLESS OTHER TEMPERATURE RATING(S) ARE INDICATED ON DRAWINGS.

14. SYSTEM CARBON MONOXIDE DETECTORS

14.1. UL 2075, CARBON MONOXIDE SENSOR INTEGRAL TO FIRE DETECTOR HOUSING OR AS AN AUXILIARY DETECTOR BASE; AND PERMITTING DISTINCT ADDRESSABLE POINT IDENTIFICATION OF SMOKE ALARM AND/OR CARBON MONOXIDE ALARM AT EACH DETECTOR. AUDIBLE AND VISIBLE CO INDICATORS DISTINCT FROM SMOKE AND HEAT DETECTOR INDICATORS.

PART 2 - PRODUCTS

15. NOTIFICATION APPLIANCES

15.1. GENERAL: 24VDC; FLUSH-MOUNT, POLYCARBONATE HOUSING; AUDIBLE-ONLY, VISUAL-ONLY, OR COMBINATION AUDIO / VISUAL APPLIANCE AS INDICATED ON DRAWINGS. MOUNTING FACEPLATE FACTORY FINISH TO MATCH EXISTING BUILDING FIRE ALARM NOTIFICATION DEVICES.

15.2. ***AUDIBLE HORNS: UL 464, HORNS SHALL PRODUCE A SOUND-PRESSURE LEVEL OF 90 dBA, MEASURED 10 FEET (3 m) FROM THE HORN, USING THE CODED SIGNAL PRESCRIBED IN UL 464 TEST PROTOCOL.***

15.3. VISUAL STROBES: UL 1971, WITH CLEAR OR NOMINAL WHITE POLYCARBONATE LENS MOUNTED ON A ALUMINUM FACEPLATE. FIELD SELECTABLE CANDELA OUTPUT. FACEPLATE IDENTIFIER ("FIRE", "ALERT" OR "EMERGENCY") TO MATCH EXISTING BUILDING FIRE ALARM NOTIFICATION DEVICES.

16. ADDRESSABLE INTERFACE MODULES

16.1. GENERAL: MICROELECTRONIC INTERFACE MODULE FOR SUPERVISION AND CONTROL OF PREMISES FIRE SAFETY FUNCTIONS WITH INTEGRAL ADDRESS-SETTING MEANS, INTERNAL CODE FOR FACU IDENTIFICATION BY MODULE TYPE, AND OUTPUT CONTACT RATINGS TO MATCH CONTROLLED/SUPERVISED EQUIPMENT. OUTPUT MODULES WITH A MINIMUM OF TWO NORMALLY OPEN AND TWO NORMALLY CLOSED CONTACTS AVAILABLE FOR FIELD WIRING.

17. FAULT ISOLATION MODULES

17.1. MODULE CAPABLE OF SENSING AND AUTOMATICALLY ISOLATING SLC SHORT CIRCUIT FAULT.

18. MAGNETIC DOOR HOLDERS

18.1. DESCRIPTION: UL 228, NORMALLY POWERED HOLD OPENS, FAIL-CLOSED; EQUIPPED FOR WALL OR FLOOR FLUSH-MOUNTING AND COMPLETE WITH MATCHING DOORPLATE. FINISH MATCHING DOOR HARDWARE. ELECTROMAGNET REQUIRES NO MORE THAN 3-W TO DEVELOP 25-LBF HOLDING FORCE.

18.2. OPERATING VOLTAGE: 120-V AC.V

19. SURGE PROTECTIVE DEVICES

19.1. GENERAL: UL 497B, LISTED FOR POWER-LIMITED FIRE ALARM CIRCUIT APPLICATIONS INTENDED TO PREVENT COMPONENT DAMAGE OR NUISANCE ALARMS INDUCED BY LIGHTNING STRIKES, STRAY CURRENTS, OR VOLTAGE TRANSIENTS.

20. MAINTENANCE BYPASS SWITCHES

20.1. DESCRIPTION: KEYED OR PUSH-BUTTON OPERATED SWITCHES TO OPEN CONNECTED CIRCUITS THAT PERMIT SYSTEM TESTING WITHOUT OPERATING ASSOCIATED AUXILIARY FIRE SAFETY FUNCTIONS. ACTIVATED SWITCHES SHALL ANNUNCIATE AS A TROUBLE CONDITION AT THE FIRE ALARM CONTROL UNIT. INCLUDE TRIM PLATE WITH LED INDICATORS FACTORY-MARKED "NORMAL" AND "DISABLE".

21. WEATHERPROOF ENCLOSURE

21.1. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ENVIRORAMOUR®, WATERPROOF ENCLOSURE BY SAFETY TECHNOLOGY INTERNATIONAL (STI).

21.2. GENERAL: UL 50; NEMA-3R, 4 OR 4X, NON-METALLIC; LOCKABLE POLYCARBONATE OR FIBERGLASS ENCLOSURE. COVERS ARE LOCKABLE OR SCREW-DOWN DOOR, A/C WITH HEATER OPTION AND DUAL THERMOSTAT.

21.3. PERATING VOLTAGE: 120-V AC NOMINAL FOR A/C WITH HEATER.

22. RACEWAY & JUNCTION BOXES

22.1. ELECTRICAL METALLIC TUBING (EMT): ZINC-COATED STEEL CONFORMING O ANSI C80.3, UL STANDARD NO. 797 AND FEDERAL SPECIFICATION W-C-563; COUPLINGS: ZINC PLATED PRESSED STEEL SET SCREW OR OMPRESSION TYPE.

22.2. JUNCTION BOXES: GALVANIZED STEEL, MINIMUM 16-GAUGE WITH FACTORY APPLIED RED FINISH FOR COVER PLATES AND CONNECTORS; DIMENSIONS AS REQUIRED BY NEC OR MANUFACTURER RECOMMENDATIONS.

23. GUARDS AND SHIELDS

23.1. DESCRIPTION: WELDED WIRE MESH OF SIZE AND SHAPE FOR THE MANUAL STATION, SMOKE DETECTOR, NOTIFICATION APPLIANCE, OR OTHER DEVICE REQUIRING PROTECTION. FACTORY FABRICATED AND FURNISHED BY DEVICE MANUFACTURER.

23.2. FINISH: PAINT OF COLOR TO MATCH THE PROTECTED DEVICE.

24. WIRE & CABLE

24.1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

24.1.1. BELDEN INC.

24.1.2. SOUTHWIRE CO.

24.1.3. WEST PENN WIRE.

24.2. UL 1424, ***TYPE FLP, FPLR AND FPLP,*** POWER-LIMITED FIRE ALARM CABLE; RED-JACKETED, TWISTED-PAIR INSULATED SOLID COPPER CONDUCTOR; UNSHIELDED AND SHIELDED. USE SHIELDED WIRE SHALL ONLY AS DIRECTED BY THE FIRE ALARM MANUFACTURER REQUIREMENTS.

24.3. WIRE SIZE: MATCH EXISTING FIRE ALARM SYSTEM WIRING SIZE.

24.4. METAL CLAD (MC) CABLE: UL 1424, TYPE MC-FPLP POWER-LIMITED FIRE ALARM CABLE; JACKETED, TWISTED-PAIR SOLID COPPER CONDUCTORS WITH RED ALUMINUM INTERLOCKING OUTER ARMOR JACKET; UNSHIELDED AND SHIELDED. LOCK NUT CONNECTORS AT TERMINATION POINTS; FACTORY APPLIED TRACER IDENTIFIER ALONG THE ENTIRE LENGTH.

24.4.1. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE RED ALERT MC-FPLP CABLE, MANUFACTURED BY SOUTHWIRE CO.

24.5. MULTI-CONDUCTOR FIRE-RESISTIVE CABLE: UL 2196 FIRE RESISTIVE, TYPE FPL, POWER-LIMITED FIRE ALARM CABLE; CERAMIFIABLE SILICON INSULATION; JACKETED, SOLID COPPER CONDUCTORS; UNSHIELDED AND SHIELDED.

24.5.1. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE DURALIFE FPL FIRE RESISTIVE ALARM CABLE, MANUFACTURED BY RADIX WIRE CO.

25. FIRE ALARM TERMINAL CABINETS

25.1. ENCLOSURE: 16 GAUGE STEEL; FACTORY APPLIED RED ENAMEL FINISH; REMOVABLE HINGED DOOR WITH KEYED LOCKING LATCH; WITH EMBEDDED 1/2-INCH, 3/4-INCH, 1-INCH, 1-1/2-INCH AND 2-INCH KNOCKOUT CLUSTERS.

25.2. TERMINALS: QUICK-CONNECT WIRE TERMINATION POINTS AND INTEGRAL TEST PORT; SIZED TO ACCEPT 20 - 12 AWG AND RATED FOR 20 AMP AT 250V (CLASS B/UL) 300V (CSA).

25.3. IDENTIFICATION: MARKED " FIRE ALARM TERMINAL CABINET " IN 2-INCH WHITE FACTORY APPLIED INDELIBLE SCREENED LETTERING; FIELD IDENTIFICATION LABELS ON THE INSIDE COVER CORRESPONDING TO THE TERMINAL STRIP LABELING INSIDE THE BACK BOX.

25.3.1. BASIS-OF-DESIGN PRODUCT: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE IF-SERIES FIRE ALARM TERMINAL CABINETS, MANUFACTURED BY SPACE AGE ELECTRONICS INC.

PART 3 - EXECUTION

1. PREPARATION

1.1. PREPARE AND SUBMIT "ACTION SUBMITTALS" PRIOR TO EQUIPMENT PROCUREMENT.

2. TECHNICIAN DESIGN AND LAYOUT

2.1. ROLES AND RESPONSIBILITIES SHALL BE AS SET FORTH IN NSPE POSITION STATEMENT NO. 1749 "SFPE / NSPE / NICET JOINT POSITION OF THE ENGINEER AND THE ENGINEERING TECHNICIAN DESIGNING THE FIRE PROTECTION SYSTEM", AVAILABLE AT NSPE.ORG.

2.2. AS APPLIED TO THE WORK, THE CONTRACT DOCUMENTS HAVE BEEN PREPARED BY THE "ENGINEER" AND SHOP DRAWINGS REQUIRED BY THIS SECTION OF THE WORK ARE PREPARED BY THE "CERTIFIED ENGINEERING TECHNICIAN".

2.3. AS THE CERTIFIED ENGINEERING TECHNICIAN, PREPARE SHOP DRAWINGS INCLUDING DRAWINGS, CALCULATIONS, CERTIFICATIONS, AND STATEMENTS INDICATING SYSTEM LAYOUT, CIRCUITING, AND CAPACITIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

2.4. COMPLY WITH THE PERFORMANCE REQUIREMENTS INDICATED BY THE CONTRACT DOCUMENTS WHERE SUCH REQUIREMENTS ARE MORE STRINGENT THAN THOSE OF THE DESIGN AND INSTALLATION STANDARD(S); OTHERWISE, COMPLY WITH THE PERFORMANCE REQUIREMENTS OF THE DESIGN AND INSTALLATION STANDARD(S).

3. EXAMINATION

3.1. EXAMINE AREAS AND CONDITIONS FOR COMPLIANCE WITH REQUIREMENTS FOR VENTILATION, TEMPERATURE, HUMIDITY, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF THE WORK. VERIFY THAT MANUFACTURER'S WRITTEN INSTRUCTIONS FOR ENVIRONMENTAL CONDITIONS HAVE BEEN PERMANENTLY ESTABLISHED IN SPACES WHERE EQUIPMENT AND WIRING ARE INSTALLED, BEFORE INSTALLATION BEGINS.

3.2. CONFIRM FIRE RESISTANCE RATING OF BUILDING CONSTRUCTION REQUIRED TO PERFORM AS FIRE ALARM SYSTEM SURVIVABILITY PROTECTION BEFORE INSTALLATION.

3.3. EXAMINE DEPTH OF STUD WALLS TO VERIFY CLEARANCE FOR FLUSH-MOUNT EQUIPMENT BEFORE INSTALLATION.

3.4. EXAMINE ROUGHING-IN FOR ELECTRICAL CONNECTIONS TO VERIFY ACTUAL LOCATIONS OF CONNECTIONS BEFORE INSTALLATION.

3.5. EXAMINE PROPOSED MOUNTING LOCATIONS OF EQUIPMENT CABINETS WITH USER DISPLAYS AND/OR CONTROLS WITH THE LOCAL FIRE OFFICIAL TO VERIFY SATISFACTORY ACCESS AND EASE OF IDENTIFICATION BEFORE INSTALLATION.

3.6. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

4. EQUIPMENT INSTALLATION

4.1. COMPLY WITH THE MOST RESTRICTIVE REQUIREMENTS OF THIS SECTION AND APPLICABLE DIVISION 26 SECTIONS FOR THE INSTALLATION OF LOW VOLTAGE ELECTRICAL SYSTEMS.

4.2. COMPLY WITH NFPA 72, AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION FOR INSTALLATION AND TESTING OF FIRE ALARM EQUIPMENT. INSTALL ALL ELECTRICAL WIRING TO COMPLY WITH REQUIREMENTS IN NFPA 70 INCLUDING, BUT NOT LIMITED TO, ARTICLE 760, "FIRE ALARM SYSTEMS."

5. FIRE ALARM PATHWAY INSTALLATION

5.1. PATHWAYS FOR FIRE ALARM: THE PATHWAY SYSTEM FOR FIRE ALARM SHALL BE DEDICATED CONTINUOUS METAL RACEWAY THROUGHOUT.

5.2. COMPLY WITH DIVISION 26 FOR APPLICATION AND INSTALLATION OF EMT, IMC, RGS, FMC, AND LFMC WITH RESPECT TO ENVIRONMENTAL CONDITIONS AND RESISTANCE TO PHYSICAL DAMAGE.

5.3. MC FIRE ALARM CABLE SHALL BE PERMITTED IN PLACE OF CONTINUOUS METAL RACEWAY FOR THE FOLLOWING APPLICATIONS: ABOVE FINISHED CEILINGS.

5.4. PATHWAYS BENEATH SLAB, WITHIN SLAB, AND BURIED: COMPLY WITH DIVISION 26 FOR APPLICABLE RNC INSTALLATION REQUIREMENTS.

5.5. CLASS A AND X PATHWAYS: UNLESS GREATER DISTANCES ARE INDICATED ON THE DRAWINGS OR SPECIFICATIONS, INSTALL CLASS A AND X PATHWAYS IN COMPLIANCE WITH NFPA 72 RECOMMENDATIONS FOR MINIMUM HORIZONTAL AND VERTICAL SEPARATION BETWEEN SUPPLY AND RETURN PATHWAYS.

6. FIRE RESISTIVE PATHWAY INSTALLATION

6.1. WHERE NFPA 72 SURVIVABILITY LEVEL 2 OR 3 PATHWAYS (2-HR FIRE RESISTANCE RATED) ARE INDICATED OR REQUIRED, PROVIDE ONE OF THE FOLLOWING:

6.1.1. UL 1424, FIRE ALARM CABLE INSTALLED WITHIN 2-HR FIRE RESISTANCE RATED SHAFT CONSTRUCTION OR SIMILAR 2-HR RATED BUILDING CONSTRUCTION

6.1.2. UL 2196, FIRE RESISTIVE FIRE ALARM CABLE (CATEGORY FHJR) INSTALLED WITHIN METAL RACEWAY IN ACCORDANCE WITH THE CORRESPONDING UL "CIRCUIT INTEGRITY SYSTEM" (CATEGORY FHIT).

6.1.3. UL 1424, FIRE ALARM CABLE INSTALLED WITHIN METAL RACEWAY PROTECTED BY AN ENDOTHERMIC WRAP ASSEMBLY INSTALLED IN ACCORDANCE WITH THE CORRESPONDING UL "CIRCUIT INTEGRITY SYSTEM" (CATEGORY FHIT).

6.1.3.1. BASIS-OF-DESIGN PRODUCT: INTERAM ENDOTHERMIC MAT, MANUFACTURED BY 3M.

7. FIRE ALARM CABLE INSTALLATION

7.1. INSTALL FIRE ALARM CABLES WITHIN DEDICATED CONTINUOUS METAL RACEWAY THROUGHOUT. WIRING SHALL BE CONTINUOUS BETWEEN EQUIPMENT, DEVICE, AND APPLIANCE TERMINALS WITHOUT SPLICES.

7.2. T-TAPPING: NOT PERMITTED FOR ANY FIRE ALARM CIRCUIT.

7.3. DO NOT INSTALL FIRE ALARM SYSTEM WIRING WITHIN CONDUITS, JUNCTION BOXES, OR OUTLET BOXES CONTAINING CONDUCTORS OF LIGHTING OR POWER SYSTEMS.

7.4. NOT MORE THAN TWO CONDUCTORS SHALL BE INSTALLED UNDER ANY DEVICE SCREW TERMINAL. THE WIRES UNDER THE SCREW TERMINAL SHALL BE STRAIGHT WHEN PLACED UNDER THE TERMINAL THEN CLAMPED IN PLACE UNDER THE SCREW TERMINAL. THE WIRES SHALL BE BROKEN AND NOT TWISTED AROUND THE TERMINAL.

8. INSTALLATION FOR SURVIVABILITY

8.1. WHERE NFPA 72 SURVIVABILITY LEVEL 2 OR 3 PATHWAYS ARE INDICATED OR REQUIRED, INSTALL FIRE ALARM SYSTEM CABLES AND PATHWAYS WITHIN 2-HR FIRE RESISTANCE RATED ENCLOSURES OR COMPLY WITH DIVISION 28 FOR "FIRE RESISTIVE PATHWAY INSTALLATION".

8.2. INSTALL CONTROL UNITS, AMPLIFIERS, POWER SUPPLIES, JUNCTION BOXES, TERMINAL CABINETS, OR SIMILAR COMPONENTS WITHIN DEDICATED 2-HR FIRE RESISTANCE RATED FIRE ALARM SYSTEM EQUIPMENT ROOMS WHERE THE COMPONENTS ORIGINATE OR COMPRISE A PORTION OF A NFPA 72 SURVIVABILITY LEVEL 2 OR 3 PATHWAY.

9. MANUAL FIRE ALARM BOX INSTALLATION

9.1. LOCATION AND SPACING: COMPLY WITH DRAWINGS, APPLICABLE BUILDING CODES AND NFPA 72. INSTALL MANUAL FIRE ALARM BOXES ON A BACKGROUND OF A CONTRASTING COLOR.

9.2. INDOOR PROTECTIVE COVERS: AS DIRECTED BY OWNER, PROVIDE COVERS FOR MANUAL FIRE ALARM BOXES LOCATED IN AREAS PRONE TO MALICIOUS OR ACCIDENTAL DAMAGE.

9.3. OUTDOOR PROTECTIVE COVERS: PROVIDE COVERS FOR MANUAL FIRE ALARM BOXES LOCATED OUTDOORS.

PART 3 - EXECUTION

10. SYSTEM SPOT-TYPE FIRE DETECTOR INSTALLATION

10.1. LOCATION AND SPACING: COMPLY WITH DRAWINGS, APPLICABLE BUILDING CODES AND NFPA 72. LOCATE SPOT-TYPE FIRE DETECTORS IN A MANNER THAT READILY PERMITS ACCESS FOR DETECTOR INSPECTION, TESTING, AND MAINTENANCE.

10.2. INSTALL REMOTE ALARM INDICATORS IN A VISIBLE LOCATION AS REQUIRED BY NFPA 72 FOR CONCEALED FIRE DETECTORS AND AS INDICATED BY THE DRAWINGS.

11. INSTALLATION OF AIR DISTRIBUTION DUCTWORK DETECTORS

11.1. LOCATION AND SPACING: COMPLY WITH DRAWINGS, APPLICABLE BUILDING AND MECHANICAL CODES, NFPA 72 AND NFPA 90A. LOCATE DUCT DETECTORS IN A MANNER THAT READILY PERMITS ACCESS FOR DETECTOR INSPECTION, TESTING AND MAINTENANCE.

11.2. INSTALL DUCT SMOKE DETECTORS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION GUIDELINES.

11.3. PLAN AND COORDINATE DUCT DETECTOR LOCATIONS AND MOUNTING REQUIREMENTS WITH DIVISION 23 PRIOR TO DUCTWORK FABRICATION AND INSTALLATION; SHOW COORDINATED DUCT DETECTOR LAYOUT ON COORDINATION DRAWINGS AND SHOP DRAWINGS.

11.4. FURNISH DUCT DETECTOR HOUSINGS AND DUCTWORK ATTACHMENTS FOR INSTALLATION UNDER DIVISION 23. COORDINATE REQUIREMENTS FOR DUCTWORK PENETRATIONS, ATTACHMENTS, SEALANT, AND ACCESS PANELS WITH DIVISION 23.

11.5. INSTALL REMOTE ALARM TEST STATIONS AT EACH DUCT DETECTOR IN READILY ACCESSIBLE LOCATION THAT DOES NOT INTERFERE WITH OTHER SECTIONS OF THE WORK.

12. NOTIFICATION APPLIANCE INSTALLATION

12.1. LOCATION AND SPACING: COMPLY WITH DRAWINGS, APPLICABLE BUILDING CODES AND NFPA 72.

13. CONNECTIONS AND INTERFACES

13.1. INCLUDE NECESSARY INTERFACE MODULES, RELAYS, WIRING, RESISTORS, AND COMPONENTS AS REQUIRED TO ACHIEVE THE INPUT/OUTPUT SEQUENCE OF OPERATIONS PERFORMANCE CRITERIA INDICATED BY THE RAWINGS.

13.2. COORDINATE VOLTAGE AND CURRENT RATINGS OF CONNECTED COMPONENTS SUCH THAT CONNECTIONS AND INTERFACES OPERATE WITHIN LISTED LIMITATIONS. USE INTERPOSING RELAYS WHERE CONNECTED LOADS EXCEED RATING OF ADDRESSABLE INTERFACE MODULES.

13.3. ARRANGE CONNECTIONS AND INTERFACES SUCH THAT CIRCUITS ARE MONITORED FOR INTEGRITY AS REQUIRED BY NFPA 72.

13.4. INTERFACE TO PREMISES SYSTEMS AND CO

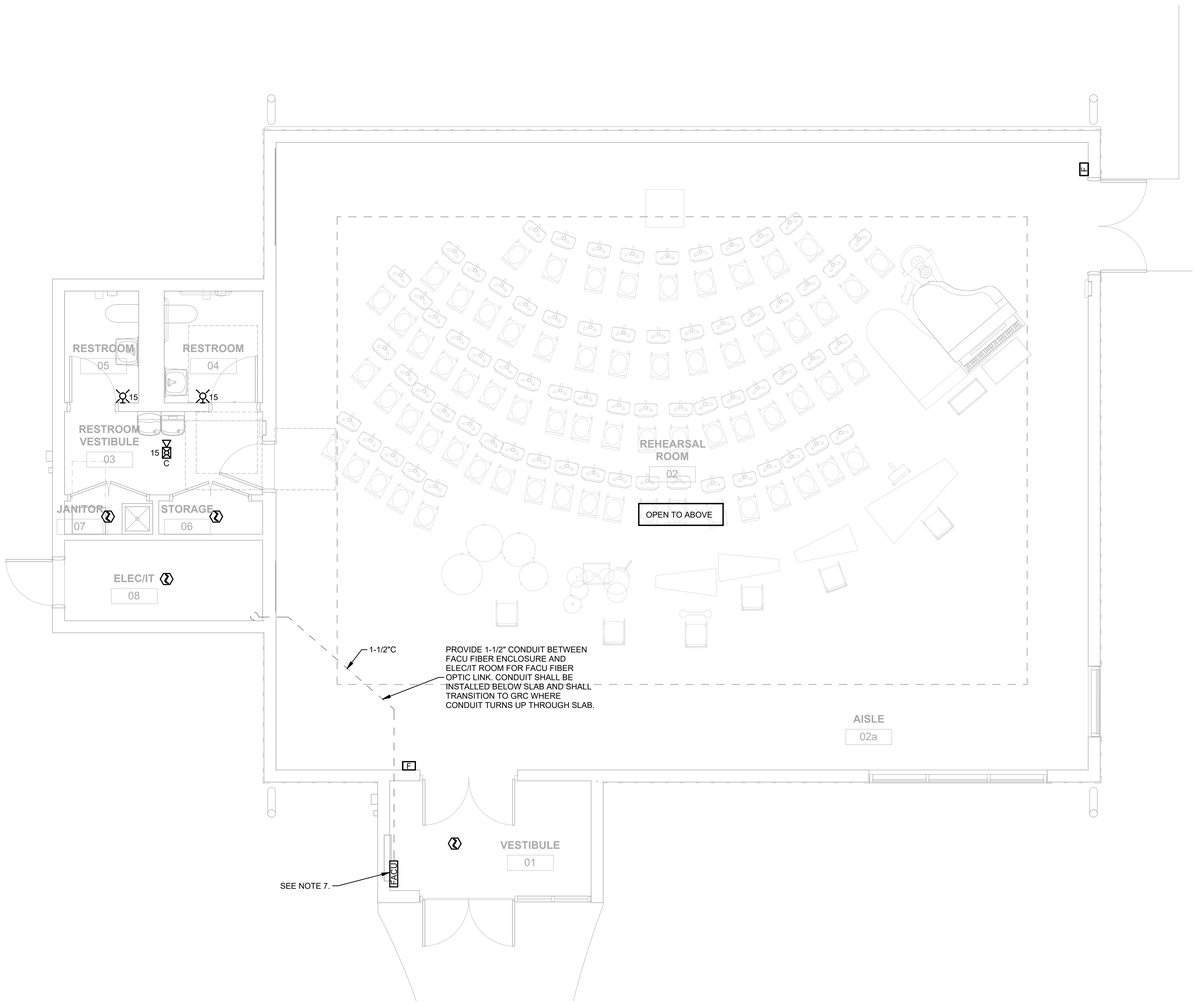
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GENERAL NOTES:

1. REFER TO ARCHITECTURAL & STRUCTURAL SERIES DRAWINGS FOR STRUCTURAL FRAMING PLANS, DETAILED REFLECTED CEILING PLANS, ELEVATIONS, AND SECTIONS.
2. IN AREAS WITH FINISHED CEILINGS, LOCATE CEILING MOUNTED DEVICES AND APPLIANCES IN THE CENTER OF SUSPENDED CEILING TILES, ALONG THE CENTER-LINE OF CEILING FEATURES AND IN-LINE WITH ADJACENT CEILING FIXTURES.
3. LOCATE WALL MOUNTED DEVICES AND APPLIANCES IN ACCORDANCE WITH NFPA 72 REQUIREMENTS AND IN ALIGNMENT WITH ADJACENT WALL MOUNT SWITCHES, WALL PLATES AND SIMILAR ELEMENTS.
4. LOCATE CEILING MOUNTED SMOKE AND HEAT DETECTORS WITH RESPECT TO CEILING POCKETS AND OBSTRUCTIONS SUCH AS EXPOSED BEAMS AND SOFFITS IN ACCORDANCE WITH NFPA 72.
5. COMPLY WITH NFPA 72 AND THE DESIGN INTENT INDICATED ON THE DRAWINGS WITH RESPECT TO INTERFACES REQUIRED FOR EMERGENCY CONTROL FUNCTIONS SUCH AS (BUT NOT LIMITED TO) ELEVATOR RECALL, FIRE / SMOKE DAMPER OPERATION, AND HVAC UNIT SHUTDOWN. DETERMINATION OF THE EXACT QUANTITY AND ARRANGEMENT OF INTERFACE MODULES REQUIRED SHALL BE THE RESPONSIBILITY OF THE INSTALLER'S QUALIFIED DESIGNER.
6. SHOP DRAWINGS INCLUSIVE OF DEVICE AND APPLIANCE LAYOUTS, PATHWAYS AND CIRCUITING, COMPONENT ADDRESSES, EMERGENCY CONTROL INTERFACES AND CORRESPONDING CALCULATIONS SHALL BE PREPARED BY THE INSTALLER'S QUALIFIED ENGINEERING TECHNICIAN. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND SHALL BE USED FOR FIRE ALARM SYSTEM INSTALLATION PERMITS.
7. FIRE PANEL SHALL BE A HONEYWELL XLS3000 FIRE PANEL AND BE CONNECTED TO THE EXISTING CAMPUS FIRE ALARM SYSTEM THAT REPORTS BACK TO THE HONEYWELL UL EBI AT CAMPUS POLICE.

   SYSTEM SHOULD ALL BE PROPRIETARY BY HONEYWELL - AND INTEGRATED INTO THE CAMPUS WIDE HONEYWELL SYSTEM.

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1 FIRE ALARM - LEVEL 1 PLAN
1/4" = 1'-0"

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

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BID DOCUMENTS

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FIRE ALARM - LEVEL 1 PLAN

FA-201

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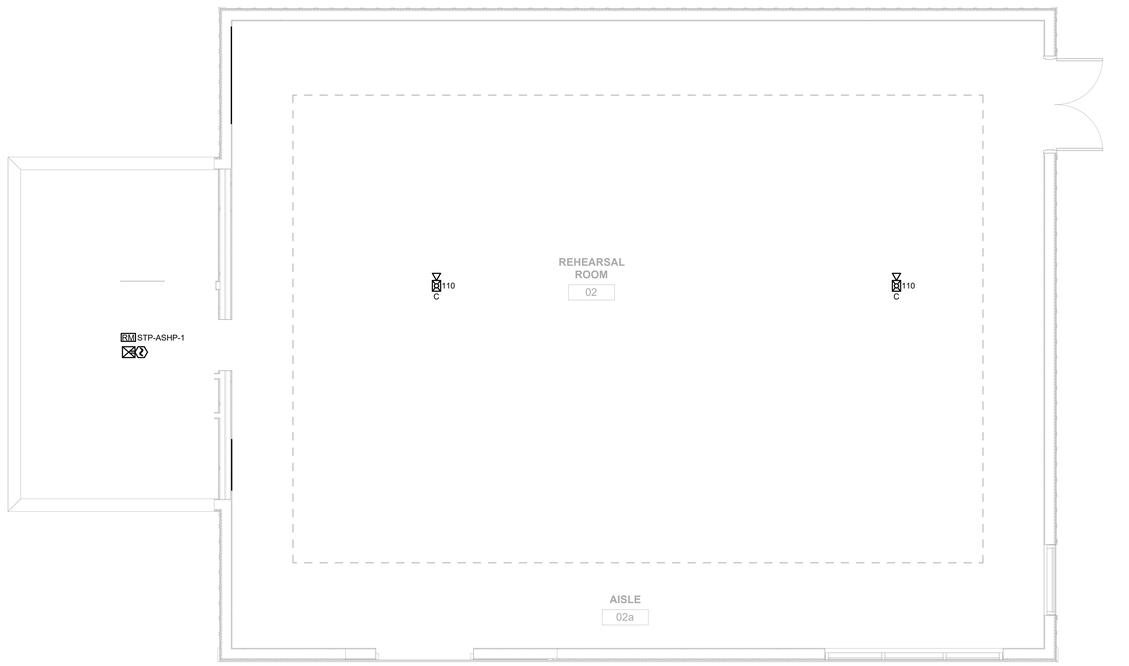
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GENERAL NOTES:

1. REFER TO ARCHITECTURAL & STRUCTURAL SERIES DRAWINGS FOR STRUCTURAL FRAMING PLANS, DETAILED REFLECTED CEILING PLANS, ELEVATIONS, AND SECTIONS.
2. IN AREAS WITH FINISHED CEILINGS, LOCATE CEILING MOUNTED DEVICES AND APPLIANCES IN THE CENTER OF SUSPENDED CEILING TILES, ALONG THE CENTER-LINE OF CEILING FEATURES AND IN-LINE WITH ADJACENT CEILING FIXTURES.
3. LOCATE WALL MOUNTED DEVICES AND APPLIANCES IN ACCORDANCE WITH NFPA 72 REQUIREMENTS AND IN ALIGNMENT WITH ADJACENT WALL MOUNT SWITCHES, WALL PLATES AND SIMILAR ELEMENTS.
4. LOCATE CEILING MOUNTED SMOKE AND HEAT DETECTORS WITH RESPECT TO CEILING POCKETS AND OBSTRUCTIONS SUCH AS EXPOSED BEAMS AND SOFFITS IN ACCORDANCE WITH NFPA 72.
5. COMPLY WITH NFPA 72 AND THE DESIGN INTENT INDICATED ON THE DRAWINGS WITH RESPECT TO INTERFACES REQUIRED FOR EMERGENCY CONTROL FUNCTIONS SUCH AS (BUT NOT LIMITED TO) ELEVATOR RECALL, FIRE / SMOKE DAMPER OPERATION, AND HVAC UNIT SHUTDOWN. DETERMINATION OF THE EXACT QUANTITY AND ARRANGEMENT OF INTERFACE MODULES REQUIRED SHALL BE THE RESPONSIBILITY OF THE INSTALLER'S QUALIFIED DESIGNER.
6. SHOP DRAWINGS INCLUSIVE OF DEVICE AND APPLIANCE LAYOUTS, PATHWAYS AND CIRCUITING, COMPONENT ADDRESSES, EMERGENCY CONTROL INTERFACES AND CORRESPONDING CALCULATIONS SHALL BE PREPARED BY THE INSTALLER'S QUALIFIED ENGINEERING TECHNICIAN. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND SHALL BE USED FOR FIRE ALARM SYSTEM INSTALLATION PERMITS.
7. FIRE PANEL SHALL BE A HONEYWELL XLS3000 FIRE PANEL AND BE CONNECTED TO THE EXISTING CAMPUS FIRE ALARM SYSTEM THAT REPORTS BACK TO THE HONEYWELL UL EBI AT CAMPUS POLICE.

   SYSTEM SHOULD ALL BE PROPRIETARY BY HONEYWELL - AND INTEGRATED INTO THE CAMPUS WIDE HONEYWELL SYSTEM.

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1 FIRE ALARM - LOW ROOF PLAN
1/4" = 1'-0"

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

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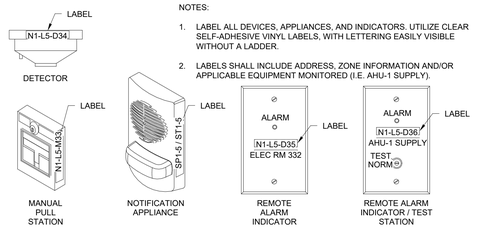
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FIRE ALARM - LOW ROOF PLAN

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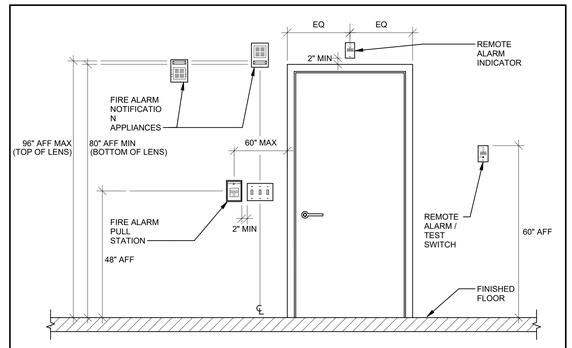
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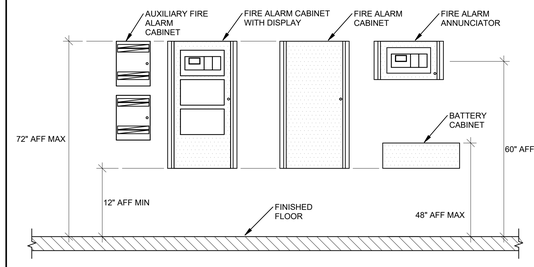
NOTES:

1. LABEL ALL DEVICES, APPLIANCES, AND INDICATORS. UTILIZE CLEAR SELF-ADHESIVE VINYL LABELS, WITH LETTERING EASILY VISIBLE WITHOUT A LADDER.
2. LABELS SHALL INCLUDE ADDRESS, ZONE INFORMATION AND/OR APPLICABLE EQUIPMENT MONITORED (I.E. AHU-1 SUPPLY).

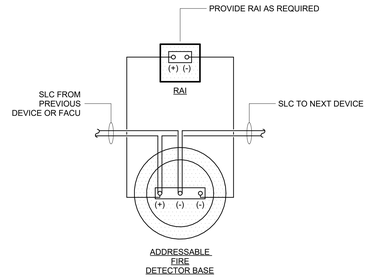
01 FIRE ALARM DEVICE LABEL REQUIREMENTS
SCALE: NONE



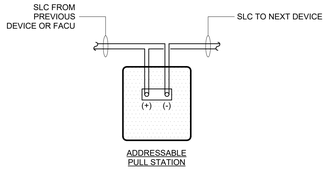
02 WALL-MOUNT DEVICE AND APPLIANCE MOUNTING LOCATION CRITERIA
SCALE: NONE



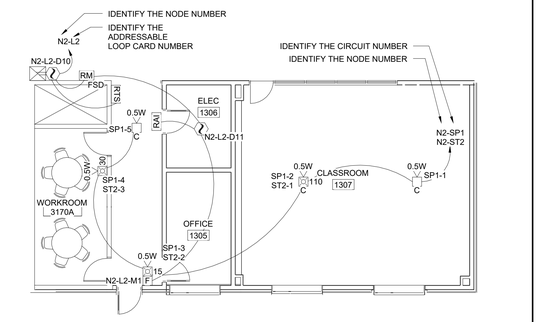
03 CABINET MOUNTING HEIGHTS
SCALE: NONE

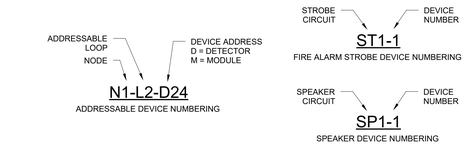


04 SYSTEM FIRE DETECTOR BASE WIRING SCHEMATIC
SCALE: NONE



05 MANUAL PULL STATION WIRING SCHEMATIC
SCALE: NONE

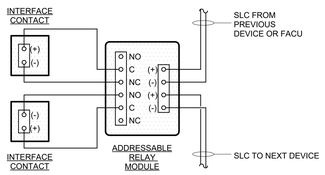




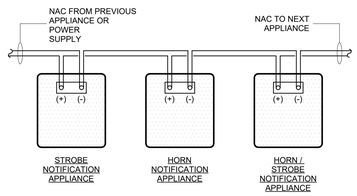
NOTES:

1. SHOP DRAWINGS SHALL INCLUDE ALL SIGNALING LINE CIRCUITS AND NOTIFICATION APPLIANCE CIRCUITS WITH ALL CONNECTED DEVICES, APPLIANCES, AND COMPONENTS.
2. SHOP DRAWINGS SHALL INCLUDE EACH ADDRESS FOR EACH DEVICE ON THE ADDRESSABLE LOOP. ALL MODULES SHALL BE LABELED FOR FUNCTION (I.E. FSD FOR FIRE SMOKE DAMPER, ETC).
3. SHOP DRAWINGS SHALL INCLUDE EACH AUDIBLE DEVICE SPEAKER TAP SETTING AND SPEAKER CIRCUIT NUMBER.
4. SHOP DRAWINGS SHALL INCLUDE EACH VISIBLE DEVICE STROBE SETTING AND NAC CIRCUIT NUMBER.

08 FIRE ALARM SHOP DRAWING CONTENT REQUIREMENTS
SCALE: NONE



06 INTERFACE RELAY MODULE WIRING SCHEMATIC
SCALE: NONE



07 NOTIFICATION APPLIANCE WIRING SCHEMATIC
SCALE: NONE

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FIRE ALARM-
DETAILS

FA-501

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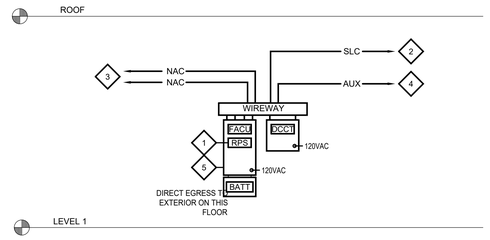
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FIRE ALARM SYSTEM INPUTS / FIRE ALARM SYSTEM OUTPUTS

			FACU & FAA ANNUNCIATION				NOTIFICATION: EMERGENCY COMMUNICATIONS				NOTIFICATION: SUPERVISING STATION			REQUIRED FIRE SAFETY CONTROL: MECHANICAL								
			A: ACTUATE COMMON ALARM SIGNAL INDICATOR & AUDIBLE ALARM SIGNAL	B: ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR & AUDIBLE SUPERVISORY SIGNAL	C: ACTUATE COMMON TROUBLE SIGNAL INDICATOR & AUDIBLE TROUBLE SIGNAL	D: DISPLAY LCD CHANGE OF STATUS	E: ACTIVATE AUDIBLE VISUAL NOTIFICATION APPLIANCES	F	G	H	I: TRANSMIT ALARM SIGNAL TO SUPERVISING STATION	J: TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION	K: TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION	L: SHUT DOWN ASSOCIATED HVAC EQUIPMENT AND CLOSE ASSOCIATED SMOKE DAMPER	M	N	O	P	Q	R	S	T	
ALARM INITIATING DEVICES	1	MANUAL PULL STATION	●			●	●				●												1
	2	AREA SMOKE DETECTOR	●			●	●				●												2
	3																						3
	4																						4
	5																						5
	6																						6
	7																						7
	8																						8
SUPERVISORY INITIATING DEVICES	9	DUCT MOUNTED SMOKE DETECTOR (AIR HANDLING UNIT)		●		●						●		●									9
	10																						10
	11																						11
	12																						12
	13																						13
	14																						14
TROUBLE CONDITIONS	15	FIRE ALARM SYSTEM LOW BATTERY			●	●							●										15
	16	FIRE ALARM OPEN CIRCUIT			●	●							●										16
	17	FIRE ALARM GROUND FAULT			●	●							●										17
	18	FIRE ALARM BATTERY DISCONNECT			●	●							●										18
	19	FIRE ALARM SYSTEM BATTERY CHARGER FAILURE			●	●							●										19
	20	FIRE ALARM SYSTEM DEVICE COMMUNICATION FAILURE			●	●							●										20
	21	FIRE ALARM SYSTEM INITIATING DEVICE FAILURE			●	●							●										21
	22	FIRE ALARM AC POWER FAILURE			●	●							●										22
	23	FIRE ALARM CONTROL UNIT PROCESSOR FAILURE			●	●							●										23
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	

1 Fire Alarm Matrix
12" = 1'-0"



1 FIRE ALARM RISER DIAGRAM
NTS

2 Fire Alarm Riser Diagram
12" = 1'-0"

GENERAL NOTES:

1. SEE FIRE ALARM FLOOR PLANS FOR ADDRESSABLE INITIATING AND NOTIFICATION DEVICE ROOM LOCATIONS AND TYPE DESCRIPTIONS.
2. SEE ELECTRICAL DRAWINGS FOR FIRE ALARM 120 VAC POWER PANELS AND CIRCUIT DESIGNATIONS.

KEY NOTES:

1. FIRE ALARM STROBE POWER SUPPLIES. FINAL EQUIPMENT QUANTITIES TO BE COORDINATED AND SHOWN ON SHOP DRAWINGS.
2. SIGNALING LINE CIRCUIT (SLC) - USED FOR INITIATING DEVICES SUCH AS: PULL STATIONS, AREA SMOKE DETECTORS, DUCT SMOKE DETECTORS, CONTROL RELAYS, SPRINKLER SYSTEM SUPERVISION, ETC.
3. FIRE ALARM HORN AND STROBE CIRCUITS (STR) - USED FOR OCCUPANT NOTIFICATION, VIA HORN AND STROBE APPLIANCES. FINAL EQUIPMENT QUANTITIES TO BE COORDINATED AND SHOWN ON SHOP DRAWINGS.
4. FIRE ALARM AUXILIARY 24 V-DC POWER (AUX) - USED FOR CONTROL MODULES, DOOR HOLDERS, SOUNDER BASES, ETC.
5. FOR FIRE ALARM FACP FIBER INTERCONNECT TO CAMPUS LOOP: FURNISH EMPTY BATTERY BOX ENCLOSURE, HONEYWELL PRODUCT, TO CONTAIN CORNING WCH-02P FIBER TERMINAL. COORDINATE ENCLOSURE SELECTION WITH OWNER. PUNCH BATTERY IN COORDINATION WITH CORNING PANEL TO ENSURE ACCESS TO TERMINATION AND CONNECTOR COMPARTMENTS TO ACCEPT CONDUIT FOR FIBER RISER, AND CONDUIT FOR PATCH CORDS. PATCH CORD CONDUIT EXTENDS TO FACP ENCLOSURE CONTAINING FIBER OPTIC LINE CARD. PATCH CORD CONDUIT IS 2" EMT. INSTALL PULL STRING BETWEEN ENCLOSURE AND FACP PANEL. NO MORE THAN 180-DEGREES IN BENDS. PULL POINTS ARE CONDUIT BODIES WITH COVER PLATES ORIENTED PARALLEL TO THE WALL SURFACE.

FIRE ALARM CIRCUIT LEGEND

TAG	CIRCUIT DESCRIPTION	WIRE TYPE
COM	DATA COMMUNICATIONS CIRCUIT	2C, 16AWG TSP FPL
NAC	NOTIFICATION APPLIANCE CIRCUIT (FOR STROBES, HORNS AND/OR BELLS)	2C, 14AWG SP FPL
IDC	INITIATING DEVICE CIRCUIT	2C, 16AWG TP FPL
STR	STROBE CIRCUIT	2C, 14AWG SP FPL
SPK	SPEAKER CIRCUIT	2C, 16AWG TSP FPL
AUX	24 VDC POWER CIRCUIT (DOOR HOLD OPENS, SOUNDER BASE, ETC)	2C, 14AWG SP FPL
SCC	STROBE SYNCHRONIZATION CIRCUIT	2C, 14AWG TP FPL
SER	SERIAL COMMUNICATIONS CIRCUIT (RS232 / RS485)	2C, 16AWG TP FPL
SLC	SIGNALING LINE CIRCUIT (ADDRESSABLE)	2C, 16AWG TP FPL

NOTES:
1. SLC AND COM SHALL BE SHIELDED OR NON-SHIELDED, AS REQUIRED BY THE FIRE ALARM MANUFACTURER.

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FIRE ALARM - RISER DIAGRAM & MATRIX OF OPERATIONS

FA-601

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ABBREVIATIONS - GENERAL

ABB.	ABBREVIATION
AC	AIR CHAMBER
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
ARCH	ARCHITECT
AVB	ATMOSPHERIC VACUUM BREAKER
BLDG	BUILDING
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF RISER
BV	BALL VALVE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CI	CAST IRON
CL	CENTER LINE
CLDI	CEMENT LINED DUCTILE IRON
CLG	CEILING
COL	COLUMN
CONT	CONTINUATION
CP	CHROME PLATED
CP-#	HOT WATER CIRCULATING PUMP #
CTE	CONNECT TO EXISTING
CV	CHECK VALVE
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EL	ELEVATION
EQ	EQUAL
ETBR	EXISTING TO BE REMOVED
ETR	EXISTING TO REMAIN
EWH	ELECTRIC WATER HEATER
FC	FAIL CLOSED
FFE	FINISH FLOOR ELEVATION
FO	FAIL OPEN
FT	FEET
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GV	GATE VALVE
GWH	GAS WATER HEATER
HC	HANDICAPPED ACCESSIBLE
HP	HORSEPOWER
HZ	HERTZ
ID	INSIDE DIAMETER
IN	INCHES
INV	INVERT
KW	KILOWATTS
MAX	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
MV	MIXING VALVE
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
No.	NUMBER
NTS	NOT TO SCALE
NUM	NUMBER
OC	ON CENTER
OD	OUTSIDE DIAMETER OR OVERFLOW DRAIN
OS&Y	OUTSIDE SCREW & YOKE
PC	PLUMBING CONTRACTOR
PH	PHASE
POS	PROVIDED UNDER OTHER SECTION
PP	POLYPROPYLENE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PVB	PRESSURE VACUUM BREAKER
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
RPBP	REDUCED PRESSURE BACKFLOW PREVENTOR
RPM	REVOLUTIONS PER MINUTE
SCH	SCHEDULE
SF	SQUARE FOOT
ST.ST.	STAINLESS STEEL
SWH	STEAM WATER HEATER
TOR	TOP OF RISER
TP	TRAP PRIMER
TYP	TYPICAL
V/V	VALVE IN VERTICAL
VTR	VENT THROUGH THE ROOF
W/	WITH
WHA	WATER HAMMER ARRESTOR
WM	WATER METER

ABBREVIATIONS - PLUMBING SERVICES

CW	DOMESTIC COLD WATER
CWW	HVAC CONDENSATE
CWW(V)	CONDENSATE VENT
FL	FLUSHING WATER
G	NATURAL GAS - LOW PRESSURE
G(V)	NATURAL GAS VENT
G(XXX)	NATURAL GAS HIGH PRESSURE
GV	GARAGE VENT
GW	GARAGE WASTE
HW	DOMESTIC HOT WATER
HW(XXX)	DOMESTIC HOT WATER (°F)
HWR	DOMESTIC HOT WATER RETURN
HWR(XXX)	DOMESTIC HOT WATER RETURN (°F)
IW	INDIRECT WASTE
KV	KITCHEN VENT
KW	KITCHEN WASTE
NPW	NON-POTABLE WATER
P	PROPANE
REW	RECLAIMED WATER
RW	RAIN WATER
RW(FM)	RAIN WATER FORCE MAIN
RW(O)	SECONDARY RAIN WATER
RW(V)	RAIN WATER VENT
SAN(FM)	SANITARY FORCE MAIN
SV	SANITARY VENT
SW	SANITARY WASTE
SW(R)	SOLAR HOT WATER RETURN
SW(S)	SOLAR HOT WATER SUPPLY
TP	TRAP PRIMER
W	MAIN WATER SERVICE TO FACILITY

ABBREVIATIONS - DRAINAGE

AD	AREA DRAIN
BWV	BACK WATER VALVE
CI	CAST IRON
CO	CLEANOUT
DD	DECK DRAIN
DS	DOWN SPOUT BOOT
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FM	FORCE MAIN
FS	FLOOR SINK
GCO	GRADE CLEANOUT
GD	GARAGE DRAIN
GI	GREASE INTERCEPTOR
GT	GREASE TRAP
GV	GARAGE VENT
IW	INDIRECT WASTE
KW	KITCHEN WASTE
OD	OVERFLOW ROOF DRAIN (SECONDARY)
OED	OPEN END DRAIN
PD	PLANTER DRAIN W/ MESHSCREEN
RD	ROOF DRAIN
RW	RAINWATER
SAN	SANITARY
SS	SOIL STACK
SSD	SUB SOIL DRAINAGE
TD	TRENCH DRAIN
V	VENT
VS	VENT STACK
W	WASTE
W & T	WASTE & TRAP
W & V	WASTE & VENT
WCO	WALL CLEANOUT
WS	WASTE STACK

ABBREVIATIONS - DOMESTIC FIXTURE

BT	BATH TUB
DF	DRINKING FOUNTAIN
EWC	ELECTRIC WATER COOLER
HB	HOSE BIBB W/ VACUUM BREAKER
JS	JANITOR SINK
L	LAVATORY
MSB	MOP SERVICE BASIN
SH	SHOWER
SK	SINK
SS	SERVICE SINK
UR	URINAL
WC	WATER CLOSET
WH	WALL HYDRANT

SYMBOLS - GENERAL

	AUTO-VENT
BF	BLIND FLANGE
	CONNECT TO EXISTING
	CAP OR END OF PIPE
	CONCENTRIC REDUCER
	CONCENTRIC REDUCER
	DIRECTION OF FLOW
	DIRECTION OF SLOPE
	ECCENTRIC REDUCER
	ECCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	EXPANSION JOINT
	ETBR/DEMOLISH
	FLEXIBLE CONNECTION
	HEAT TRACE
	HOSE BIBB
HC	HOSE CONNECTION (GENERIC)
	IN-LINE MIXER
	PIPE ANCHOR
	PIPE BREAK
	PIPE FITTING DOWN OR DROP
	PIPE FITTING TEE DOWN
	PIPE FITTING UP
	PIPE SLEEVE OR BEAM PENETRATION
	QUICK DISCONNECT - FEMALE
	SIGHT GLASS
	STRAINER
	UNION FITTING
	VACUUM RELIEF
	WALL HYDRANT
	WATER HAMMER ARRESTOR
	WATERPROOF SLEEVE
	Y STRAINER W/ PLUGGED BLOWDOWN
	Y STRAINER W/ VALVE

SYMBOLS - DRAINAGE

	AREA DRAIN
	BACK WATER VALVE
	CLEANOUT
	FLOOR OR GRADE CLEANOUT
	FLOOR DRAIN
	P TRAP/OPEN END DRAIN
	ROOF DRAIN (PRIMARY) / PLANTER DRAIN
	ROOF DRAIN (OVERFLOW)
	TRENCH DRAIN

SYMBOLS - VALVES

	ANGLE VALVE
	BALL VALVE
	BALANCING VALVE ASSEMBLY
	BUTTERFLY VALVE
	CHECK VALVE
	DIAPHRAGM VALVE (CLOSED)
	DIAPHRAGM VALVE (OPEN)
	DOUBLE CHECK VALVE
	FOUR WAY VALVE
	FUSIBLE LINK VALVE
	GAS COCK
	GATE VALVE (CLOSED)
	GATE VALVE (OPEN)
	KNIFE GATE VALVE
	MIXING VALVE
	NEEDLE VALVE
	NEEDLE VALVE
	OS&Y VALVE
	PINCH VALVE
	POST VALVE
	PRESSURE REDUCING VALVE
	REDUCED PRESSURE BACKFLOW PREVENTOR
	SOLENOID VALVE
	TEMP. & PRESSURE RELIEF VALVE
	THREE WAY BALL VALVE
	THREE WAY CONTROL VALVE
	TWO WAY CONTROL VALVE
	VALVE IN THE VERTICAL

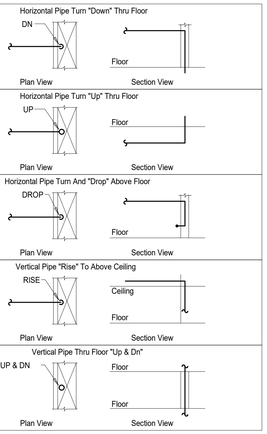
SYMBOLS - INSTRUMENTS

	FLOW METER
	FLOW SWITCH
	PRESSURE GAUGE W/BALL VALVE
	RESISTIVITY METER
	TEMPERATURE GAUGE W/BALL VALVE

PIPE LINETYPES

	PIPE (EXISTING)
	PIPE (ABOVE GRADE)
	VENT PIPE (ABOVE GRADE)
	PIPE (BELOW GRADE)
	VENT PIPE (BELOW GRADE)

PIPE DIRECTION



REFERENCE

X / X-#	X: DETAIL DESIGNATION NUMBER X-#: DETAIL DESIGNATION DRAWING
XX / # / X-#	XX: RISER SERVICE DESIGNATION #: RISER NUMBER DESIGNATION X-#: RISER DESIGNATION DRAWING
X / X-#	X: SECTION DESIGNATION LETTER X-#: SECTION DESIGNATION DRAWING
XX XXX / #	XX: EQUIP. SYSTEM SERVICE XXX: EQUIP. ABBREVIATION #: EQUIP. NUMBER PLBG EQUIPMENT TAG FOR EQUIPMENT REQUIRING AN ELECTRICAL CONNECTION
XX XXX / #	XX: EQUIP. SYSTEM SERVICE XXX: EQUIP. ABBREVIATION #: EQUIP. NUMBER PLBG EQUIPMENT TAG
NUM	KEYNOTE DESIGNATION
	HANDICAPPED ACCESSIBLE (HC)

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ 08618

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PLUMBING
LEGEND AND
GENERAL NOTES

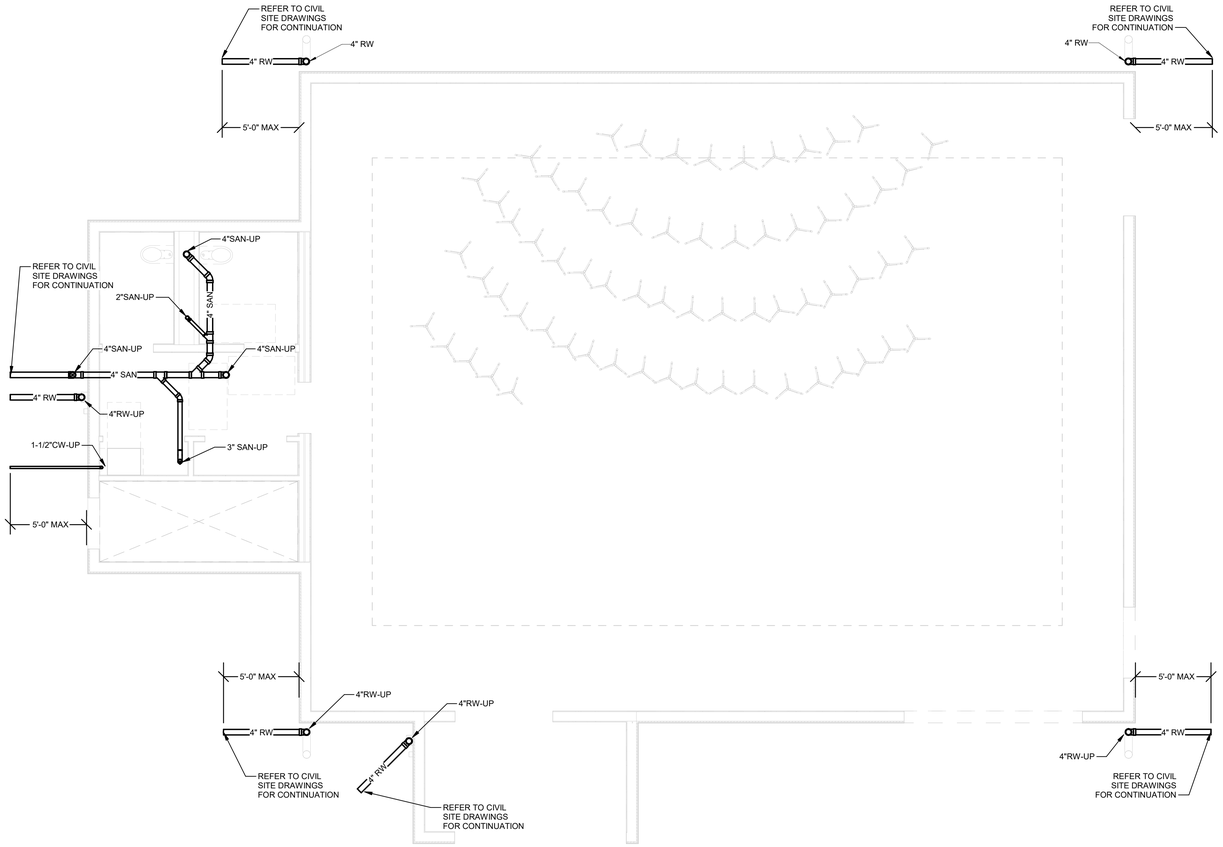
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PLUMBING GENERAL WORK NOTES

1. REFER TO PLUMBING COVER SHEET FOR SYMBOLS, ABBREVIATIONS, PLUMBING GENERAL NOTES AND PLUMBING DEMOLITION NOTES.
2. REFER TO ARCHITECTURAL DRAWINGS FOR PROJECT LIMITS AND ADDITIONAL INFORMATION.



1 PLUMBING - UNDERGROUND PLAN
1/4" = 1'-0"

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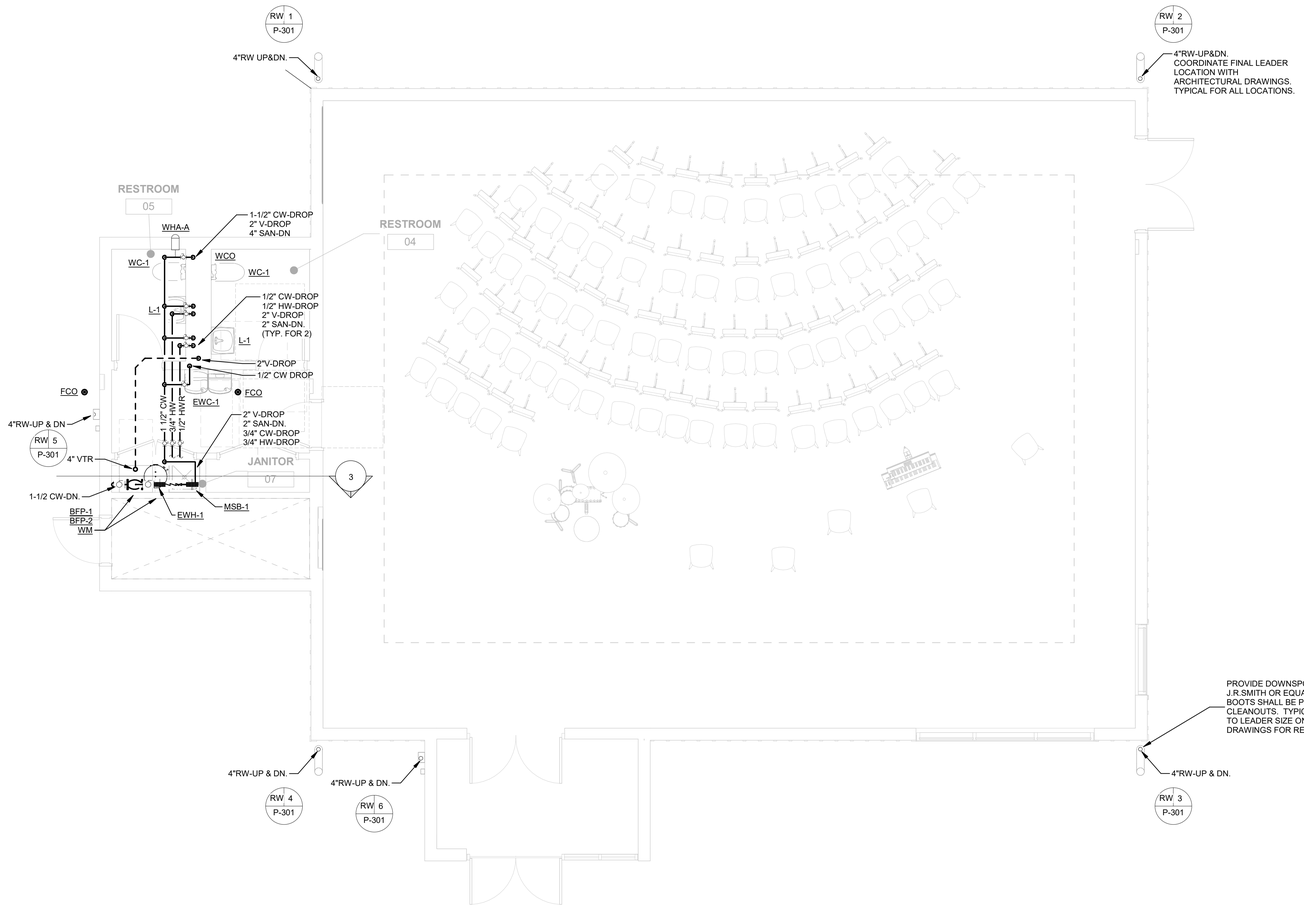
Project No 24102
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PLUMBING - UNDERGROUND PLAN

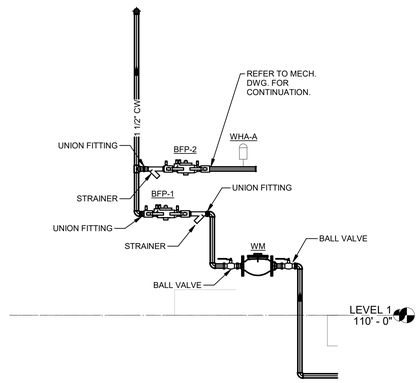
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1 PLUMBING - LEVEL 1 PLAN
1/4" = 1'-0"



3 INCOMING WATER SERVICE ELEVATION
NOT TO SCALE

PLUMBING GENERAL WORK NOTES

1. REFER TO PLUMBING COVER SHEET FOR SYMBOLS, ABBREVIATIONS, PLUMBING GENERAL NOTES AND PLUMBING DEMOLITION NOTES.
2. REFER TO ARCHITECTURAL DRAWINGS FOR PROJECT LIMITS AND ADDITIONAL INFORMATION.
3. ALL PLUMBING VENT TERMINALS AND EXHAUST OUTLETS SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY OUTDOOR AIR INTAKE, OPERABLE WINDOW, OR DOOR OPENING.
4. BACK FLOW PREVENTER SHALL BE 5'-0" MAX. A.F.F.

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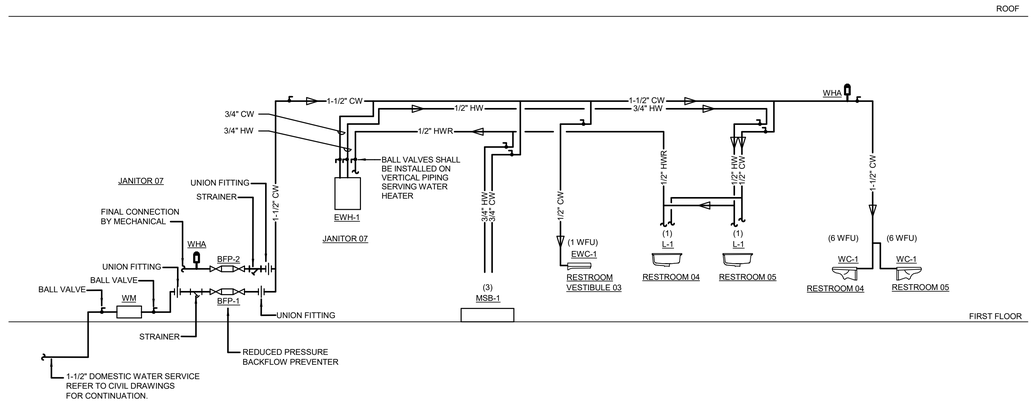
Project No. 24102
Issued 05/15/26

PLUMBING - LEVEL 1 PLAN

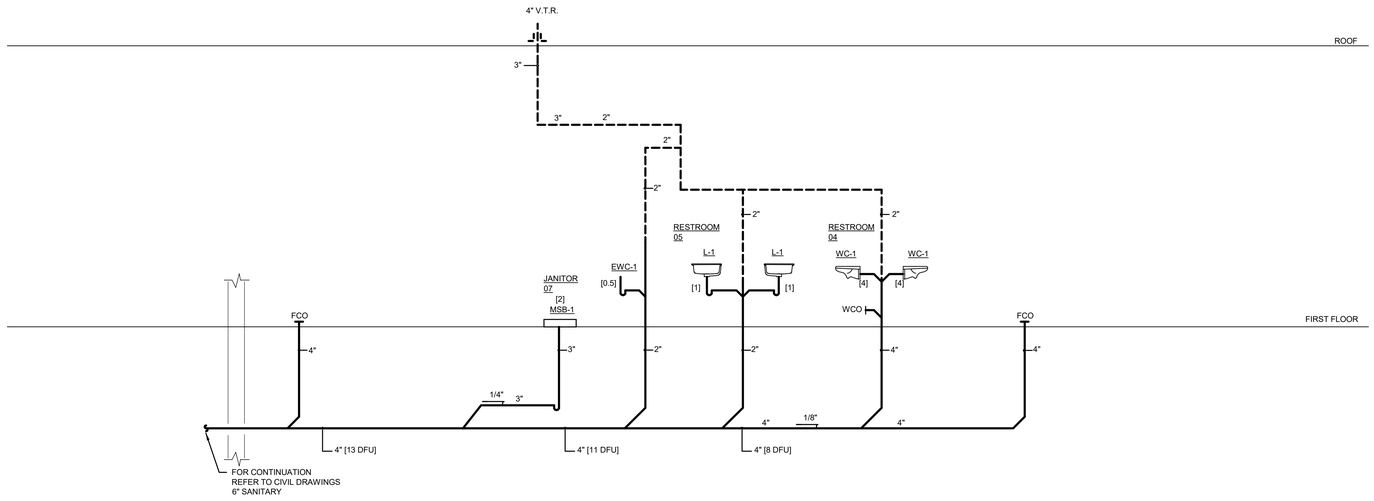
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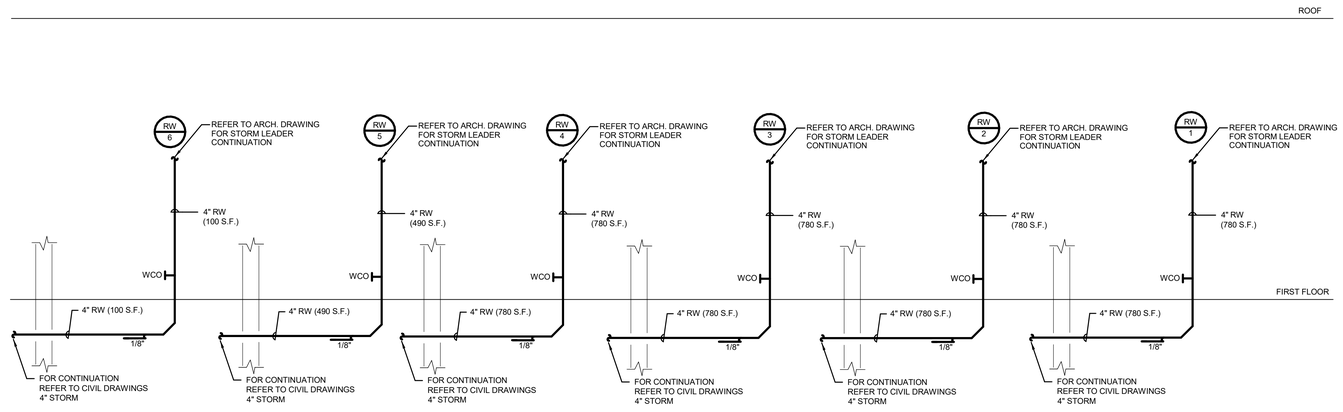
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1 PLUMBING DOMESTIC WATER RISER DIAGRAM
NO SCALE



2 PLUMBING SANITARY RISER DIAGRAM
NO SCALE



3 PLUMBING STORM RISER DIAGRAM
NO SCALE

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PLUMBING - RISER DIAGRAMS

P-301

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PLUMBING FIXTURE CONNECTION SCHEDULE

MARK	FIXTURE	FIXTURE UNIT				PIPE DIAMETER				REMARKS
		CW WSFU	HW WSFU	TOTAL WSFU	DFU	C.W.	H.W.	DRAIN	VENT	
WC-1	WATER CLOSET	6	-	6	4	1"	-	4"	2"	WALL HUNG
L-1	LAVATORY	0.5	0.5	0.7	1	1/2"	1/2"	1-1/4" x 1-1/2"	1-1/2"	INTEGRAL BOWL
MSB-1	MOP RECEPTOR	2.25	2.25	3	3	3/4"	3/4"	3"	1-1/2"	FLOOR RECEPTOR
EWC-1	ELEC. WATER COOLER	0.25	0.25	0.25	0.5	1/2"	-	1-1/2"	1-1/2"	WALL HUNG
NFWH-1	WALL HYDRANT	-	-	-	-	1"	-	-	-	NON FREEZE WALL HYDRANT

* FIXTURE UNIT VALUES BASED ON THE INTERNATIONAL PLUMBING CODE

CLEANOUT SCHEDULE

MARK	MANUFACTURER	MODEL NO.	ITEM	LOCATION	SYSTEM	REMARKS
FCO	J.R.SMITH	4240	FLOOR CLEANOUT	UNFINISHED AREAS	SANITARY / STORM	CAST IRON BODY WITH ROUND ADJUSTABLE CAST IRON SCORAIATED MEDIUM LOAD TOP.
FCO		4020	FLOOR CLEANOUT	HARD FINISHED FLOORS		CAST IRON BODY WITH FLANGE, INSIDE CAULK, ADJUSTABLE HOUSING, AND SECURED NICKEL BRONZE SCORAIATED TOP.
FCO		4160	FLOOR CLEANOUT	TILE OR SHEET FLOORING		CAST IRON BODY, ADJUSTABLE NICKLE BRONZE SQUARE TOP WITH 1/8" RECESS.
FCO		4023-Y	FLOOR CLEANOUT	CARPETED FLOORS		CAST IRON BODY, WITH ROUND ADJUSTABLE NICKEL BRONZE SCORIATED TOP, TAPER THREAD BRONZE PLUG, AND CARPET MARKER TYPE.
CO		4400	CLEANOUT	ABOVE CEILING		CAST IRON CAULK FERRULE WITH LEAD SEAL PLUG
WCO		4422	WALL CLEANOUT	FINISHED WALLS		CAST IRON FERRULE WITH TAPERED THREADED BRONZE PLUG. PLUG TAPPED FOR CENTER SCREW. STAINLESS STEEL ACCESS COVER WITH HARDWARE WHERE REQUIRED.
WCO		4472	WALL CLEANOUT	FINISHED WALLS		TAPER THREADED BRONZE PLUG WITH CENTER SCREW TAPPING. STAINLESS STEEL ACCESS COVER WITH HARDWARE WHERE REQUIRED.

SHOCK ARRESTER SCHEDULE (SA)

LENGTH OF PIPE FEET	PRESSURE UP TO 65 PSI. NOMINAL PIPE DIAMETER-INCHES						REMARKS
	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"	
25'	A	A	B	C	D	E	BASED ON FLOW VELOCITIES OF 10 FPS. OR LESS. J.R.SMITH HYDROTROL, FIG. NO. (AS NOTED IN SCHEDULE). SELECT THE NEXT LARGER SIZE WHEN PSI. EXCEEDS 65. TYPE-A ARRESTER SHALL BE INSTALLED IN HORIZONTAL LINES FOR FIXTURES EQUIPPED WITH QUICK-CLOSING VALVES WITH 12 WSFU OR LESS.
50'	A	B	C	D	E	F	

DOMESTIC HOT WATER HEATER AND ASSESORIES SCHEDULE (PH-X)

MARK	ITEM	LOCATION	MANUFACTURER	MODEL NO.	CAPACITY		TEMP. INLET	TEMP. OUTLET	HP	ELECTRICAL DATA				REMARKS
					STORAGE	RECOVERY @ 100° F RISE				V	PHASE	HZ	kW	
EWH-1	DOMESTIC HEATER	CEILING	A.O.SMITH	DSE-20A	20	17 GPH	40° F	140° F	-	208	3	60	6	CEILING MOUNTED
CP-1	CIRCULATOR PUMP		BELL & GOSSET	NBF-8S/LW	-	-	-	-	-	120	1	60	.04	NBF-8S/LW, 3 GPM @5 FT/HD LEAD FREE

BACKFLOW PREVENTER SCHEDULE

MARK	MANUFACTURER	MODEL NO.	ITEM	LOCATION	SYSTEM	REMARKS
BFP-1	WATTS	1-1/2" LF009M2QT	BLACK FLOW PREVENTER	REFER TO FLOOR PLANS	COLD WATER	LEAD FREE REDUCED PRESSURE ZONE ASSEMBLIES. TO BE MOUNTED IN HORIZONTAL POSITION AT A MAX. OF 5'-0" A.F.F. PROVIDE AIR GAPS AND EXTEND DISCHARGE TO FLOOR DRAIN IN VICINITY.
BFP-2	WATTS	3/4" LF009M2QT	BLACK FLOW PREVENTER	REFER TO FLOOR PLANS	COLD WATER	LEAD FREE REDUCED PRESSURE ZONE ASSEMBLIES. TO BE MOUNTED IN HORIZONTAL POSITION AT A MAX. OF 5'-0" A.F.F. PROVIDE AIR GAPS AND EXTEND DISCHARGE TO FLOOR DRAIN IN VICINITY.

PLUMBING FIXTURE SCHEDULE

MARK	MANUFACTURER	MODEL NO.	REMARKS
WC-1	AMERICAN STANDARD	3351.101	"AFWALL, FLOW WISE" WALL HUNG, ELONGATED BOWL, 1.1 TO 1.6 GALLON PER FLUSH VITREOUS CHINA W/EVERCLEAN, 1-1/2" TOP SPUD.
	AMERICAN STANDARD	5905.110	EXTRA HEAVY DUTY OPEN FRONT SEAT, LESS COVER.
	SLOAN	111-1.6	"ROYAL" FLUSH VALVE, 1.6 GPF, 1-1/2" TOP SPUD, VANDAL PROOF, ADA COMPLIANT.
	J.R.SMITH	067X SERIES	FITTING AND SUPPORT FOR FLOOR MOUNTED BACK DISCHARGE FIXTURE
L-1	AMERICAN STANDARD	0356.015	"LUCERNE" WHITE VITREOUS CHINA, WALL MOUNTED LAVATORY, 8" CENTERS, ADA COMPLIANT
	SLOAN	SF-2150-4-BAT-BDM C-05-MLM-IR-FCT	DECK MOUNTED FAUCET SENSOR FAUCET, 0.5 GPM, CENTER HOLE, - PROVIDE POINT OF USE THERMOSTATIC MIXING VALVE BELOW LAV.
	McGUIRE	LFH2167LK	CHROME PLATED, LOOSE KEY ANGLE STOP, 1/2" I.P.S. x 1/2" O.D., 12" RISER.
	McGUIRE	155A	LAVATORY OPEN GRID TAILPIECE, 1-1/4" x 6", HEAVY CAST BRASS, 17 GAUGE
	McGUIRE	8902CBSAN	CAST BRASS, 17 GAUGE, P-TRAP W/CLEANOUT PLUG 1-1/4" X 1-1/2" x12" W/ESCUTCHEON.
	TRUEBRO	102	"LAV-GUARD " P-TRAP AND ANGLE VALVE RIGID HIGH IMPACT, STAIN-RESISTANT VINLY COVERS
	J.R.SMITH	SERIES 700	CONCEALED LAVATORY LAVATORY CARRIER
MSB-1	FIAT	TSB-3000	FLOOR MOUNTED, MOLDED STONE SINK, 36" x 36" x 10" HIGH WITH STRAINER.
	MOEN	8126	WALL MOUNTED MIXING FAUCET THREADED GARDEN HOSE CONNECTION, 6" WRIST ACTION.
EWC-1	ELKAY	LVRCGRNTL8WSK	BI-LEVEL WATER COOLER AND EZH2O BOTTLE FILLING STATION, FILTERED ELECTRIC REFRIGERATED, SHALL PROVIDE 8.0GPH OF 50°F WATER AT 90°F AMBIANT WITH FILTER.

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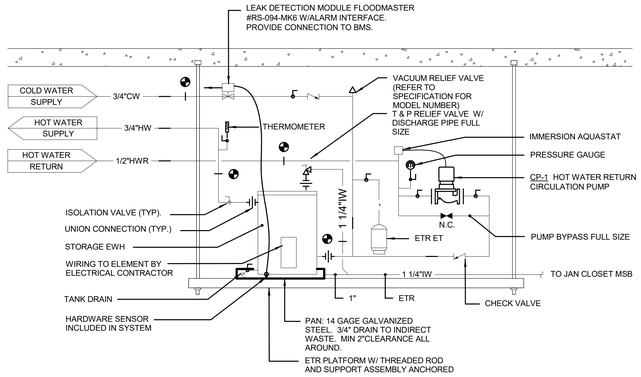
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PLUMBING - SCHEDULES

P-401

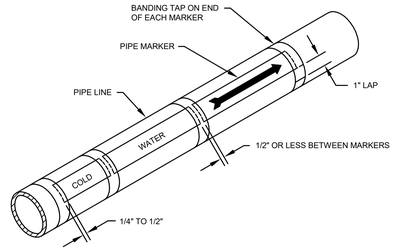
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NOTE:

WATER HEATER SHALL NOT BE LOCATED ABOVE LARGE DUCTWORK, AS WELL AS, CEILING MOUNTED DIFFUSERS, LIGHTS, SPRINKLERS AND FIRE ALARM DEVICES.

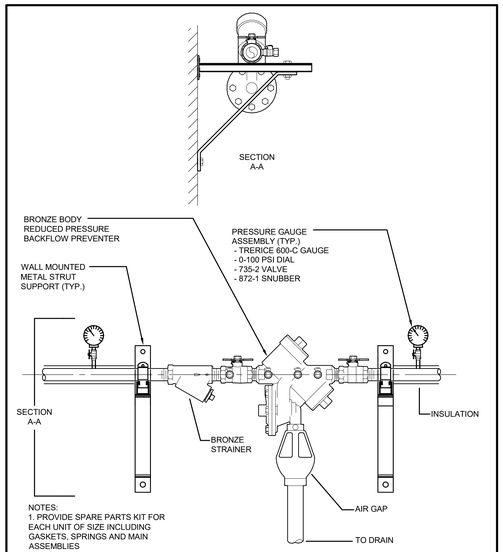
1 TANK EWH ABOVE CEILING DETAIL
SCALE: NTS



NOTES:

1) USE DOUBLE HEADED ARROWS WHERE FLOW CAN BE IN BOTH DIRECTIONS.

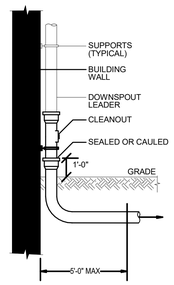
2 HORIZONTAL & VERTICAL PIPE LABELS
SCALE: NONE



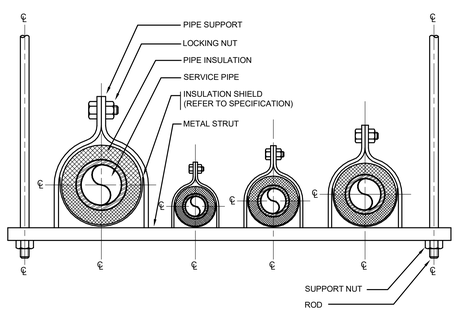
NOTES:
1. PROVIDE SPARE PARTS KIT FOR EACH UNIT OF SIZE INCLUDING GASKETS, SPRINGS AND MAIN ASSEMBLIES

2. PROVIDE BACKFLOW PREVENTER EQUAL TO WATTS 909 SERIES

3 BACKFLOW PREVENTER (1/2" TO 2" WALL MOUNTED)
SCALE: NONE



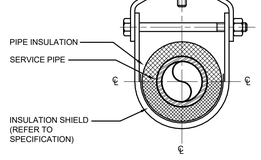
4 RAIN WATER TRANSITION LEADER DETAIL
SCALE: NONE



NOTE:

1. SEE SPECIFICATION FOR HANGER SIZES.

5 PIPE HANGER SUPPORT DETAIL
SCALE: NONE



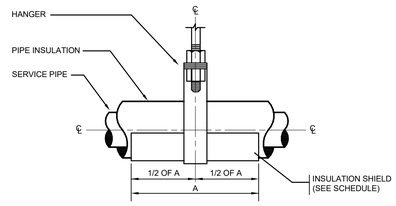
HEAVY DUTY CLEVIS HANGER

NOTE:

1. SEE SPECIFICATION FOR HANGER SIZES.

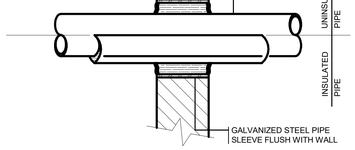
6 PIPE HANGER SUPPORT DETAIL
SCALE: NONE

INSULATION SHIELD SCHEDULE			
PIPE SIZE	DIMENSION "A"	GAUGE OF SHIELD	SHIELD THICKNESS
1/2" TO 4"	12"	18	0.0480
5" TO 6"	18"	16	0.0600
ABOVE 6"	24"	14	0.0750



NOTE:
1. SEE SPECIFICATION FOR FLANGER SIZES

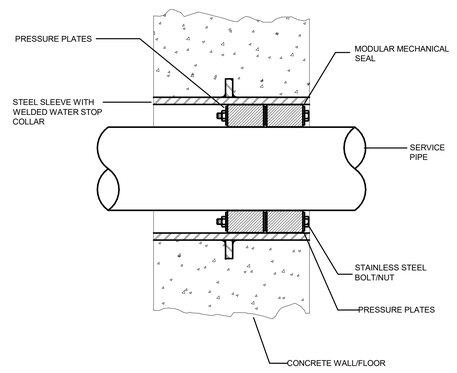
7 PIPE HANGER/SHIELD DIAGRAM
SCALE:



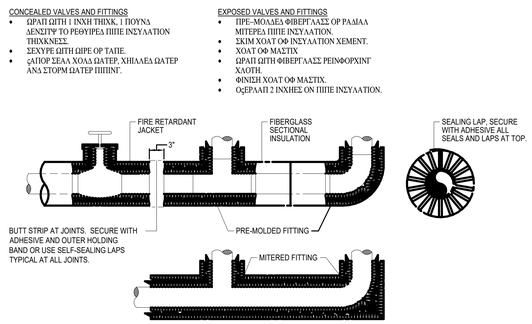
NOTES:
1. WHERE PIPING IS EXPOSED TO VIEW PROVIDE WITH ESCUTCHEON.
2. SEAL PENETRATION BETWEEN PIPE AND SLEEVE IN ACCORDANCE WITH DIVISION 07 PENETRATION SEALS.
3. SLEEVE SHALL HAVE AS A MINIMUM THE SAME FIRE RATING AS THE PENETRATED WALL.

WALL TYPE
CAST IN PLACE CONCRETE CONCRETE MASONRY UNITS

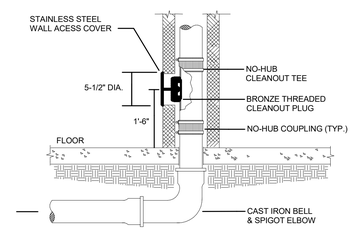
8 FIRE RATED INTERIOR WALL PENETRATION
SCALE: NONE



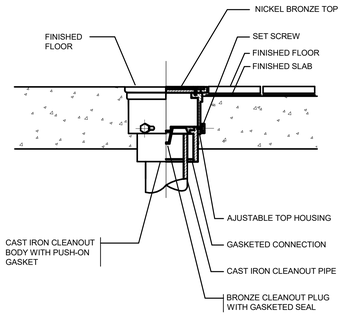
9 WATER TIGHT PIPE PENETRATION
SCALE:



10 PIPE PENETRATION/PIPE RISER SUPPORT DETAIL
SCALE:



11 WALL CLEANOUT DETAIL
SCALE:



NOTE:

CLEANOUTS SHALL BE INSTALLED EVERY 45 TO 50 FEET ON THE HORIZONTAL RUN.

12 FLOOR CLEANOUT
SCALE:

THE MUSIC ANNEX

NEW PERFORMING ART REHEARSAL HALL

THE COLLEGE OF NEW JERSEY
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Project No. 24102
Issued 05/15/26

PLUMBING - DETAILS SHEET

P-501

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AUDIO VISUAL NOTES

1. PROVIDE PLYWOOD BLOCKING AS REQUIRED TO SAFELY SUPPORT THE WEIGHT OF ANY WALL MOUNTED DEVICES SUCH AS SPEAKERS OR DISPLAYS.
2. FOR DISPLAYS: PROVIDE 3/4" THICK PLYWOOD BLOCKING WITHIN WALL, SUPPORTED BY NO LESS THAN 4 STUDS, TO SUPPORT 800LBS OF WEIGHT.
3. ALL CONDUIT TO BE 1-1/4" UNLESS OTHERWISE NOTED.
4. COORDINATE DEVICES THAT ARE TO BE SUPPLIED BY OTHER TRADES SUCH AS POWER/DATA FOR TV'S.
5. AUDIOVISUAL INTEGRATOR IS TO PROVIDE FIRE ALARM SHUTOFF TO AUDIO EQUIPMENT IN ACCORDANCE WITH LOCAL STANDARDS AND ACCORDING TO THE AHJ.
6. FLUSH MOUNTED CEILING SPEAKERS ARE TO BE WHITE AND CENTERED IN TILE.
7. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING DIMENSIONS OF TV'S AND VIDEOWALLS.
8. FURNITURE NOT IN CONTRACT.
9. COMPLY WITH SECTION 271000 STRUCTURED CABLING FOR AV NETWORK CABLING AND COMPONENTS.
10. FOR IN-WALL-MOUNTS (IWM):
AV LCD DISPLAYS OVER 70" DIAGONAL MAY HAVE WALL MOUNTS SPECIFIED IN THIS DRAWING SET WHICH REQUIRE SPECIAL IN-WALL PREPARATION INCLUDING SPECIAL HEAVY 14-GAUGE METAL WALL STUDS AND FASTENERS IN ORDER TO PROPERLY SUPPORT THE LCD DISPLAY. THE IN-WALL MOUNT AND DISPLAY COMBINATION MAY WEIGH 300 TO 400 POUNDS, OR COMPRISE A SIMILAR EXTREME HEAVY WEIGHT, WHICH CANNOT BE SAFELY INSTALLED ON A CONVENTIONAL THIN METAL STUD WALL WITH PLYWOOD BLOCKING AND DRYWALL FASTENERS. ADDITIONALLY, THE SPECIFIED IN-WALL MOUNT MAY HAVE A SCISSOR ARM ASSEMBLY AS PART OF ITS CONSTRUCTION, WHICH EXTENDS 16" AWAY FROM THE WALL AND SUPPORTS THE DISPLAY 'S FULL WEIGHT WHILE IN THE EXTENDED POSITION. THIS IS A WARNING TO COMPLY WITH THE MOUNT MANUFACTURER'S INSTALLATION GUIDELINES DUE TO THE EXTREME WEIGHTS INVOLVED, AND TO PROVIDE PROPER MATERIALS, FASTENERS, AND WALL STRUCTURE PREPARATION TO SAFELY SUPPORT THE DISPLAY AND WALL MOUNT COMBINATION. THE CONTRACTOR SHALL REVIEW THE SPECIFIED AV EQUIPMENT BRANDS AND MODELS TO UNDERSTAND IF SUCH A MOUNT(S) IS/ARE SPECIFIED ON THIS JOB, AND TO PROVIDE IN-WALL PREPARATION IF NECESSARY.

AUDIO VISUAL SYMBOLS LEGEND

BB	BACK BOX (SEE EQUIPMENT LIST)
2B	2-BUTTON WALL CONTROL
WCS	WIRELESS PRESENTATION AND CONFERENCING SYSTEM
OS	OCCUPANCY SENSOR
DL	TABLE TOP AUDIO/CONFERENCING DIAL PAD
DWB	ELECTRICAL / LOW VOLTAGE SPECIAL ROUGH-IN DISPLAY WALL BOX: SEE EQUIPMENT LIST
IWM	ELECTRICAL / LOW VOLTAGE SPECIAL ROUGH-IN DISPLAY IN-WALL MOUNT: SEE EQUIPMENT LIST
RK	AV EQUIPMENT RACK
RPC	ROOM PC
WP	WALL PLATE
RS	ROOM SCHEDULER
TH	UNDER - TABLE HDMI TRANSMITTER
WH	HDMI WALL INPUT JACK PLATE AT 18" AFF
TP	TOUCH PANEL
TPT	TOUCH PANEL - TABLETOP
TPW	TOUCH PANEL - WALL MOUNTED AT 48" AFF
SBC	SOUNDBAR WITH CAMERA
SB	SOUNDBAR
M	CEILING MICROPHONE PANEL, STEERABLE
M	CEILING MICROPHONE
MIC	TABLE MICROPHONE
S	CEILING LOUDSPEAKER
S	SURFACE MOUNTED LOUDSPEAKER
LECTERN	A/V LECTERN OR A/V DESK
PROJ	CEILING/WALL MOUNTED PROJECTOR

AUDIO VISUAL SYMBOLS LEGEND

SG	SINGLE GANG JUNCTION BOX
2G	DOUBLE GANG JUNCTION BOX
3G	THREE GANG JUNCTION BOX
4G	FOUR GANG JUNCTION BOX
4Q	4" SQUARE JUNCTION BOX
5Q	5" SQUARE BOX WITH 2-GANG PLASTER RING RANDL 5" SQAURE TELECOMMUNICATIONS BOX
5QS	5" SQUARE BOX WITH SINGLE GANG PLASTER RING RANDL 5" SQAURE TELECOMMUNICATIONS BOX
4DG	4-11/16" SQUARE, 2-1/8" DEEP BOX WITH DOUBLE GANG PLASTER RING
CAM	VIDEOCONFERENCE CAMERA
CB	CAMERA BOX, FLUSH IN-WALL. REFER TO EQUIPMENT LIST FOR EXACT MODEL
CP	CONTROL PANEL
E	A/V EQUIPMENT
FB	A/V FLOOR BOX
FT	FLIPTOP TABLE BOX
JB	JUNCTION BOX
JP	POWER IN-CEILING FOR PROJECTION SCREEN
LVC	LOW VOLTAGE CONTROLLER
LVR	LOW VOLTAGE RING
RF	RADIO FREQUENCY DEVICE
SPB	SCREWCOVER PULL BOX
VC	VOLUME CONTROL
WCS	WIRELESS COLLABORATION SYSTEM
BT	BLUETOOTH AUDIO RECEIVER
DISPLAY	DISPLAY (SEE NOTE FOR SIZE)
XX" SCREEN	PROJECTION SCREEN (SEE NOTE FOR SIZE)
RK	A/V EQUIPMENT RACK ENCLOSURE. MIDDLE ATLANTIC EWR-12-22SD

VANDERWEIL PROJECT INFO

PROJECT NUMBER	Y0666
PROJECT NAME	TCNJ MUSIC ANNEX

KEY LEGEND

X / TC-XX	DETAIL CALL-OUT - PLAN VIEW. DENOTES DETAIL "X" ON DRAWING "TC-XX".
X / TC-XX	DETAIL CALL-OUT - ELEVATION VIEW. DENOTES DETAIL "X" ON DRAWING "TC-XX".
#	SEE KEY NOTES # ON SHEET FOR DESCRIPTION

LEGEND NOTES

1. THIS SHEET IS A GENERAL LIST OF SYMBOLS AND SHALL BE USED AS A REFERENCE TO DEFINE ITEMS INDICATED ON THE DRAWINGS. NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT.

1 AUDIO/VISUALS LEGENDS AND GENERAL NOTES
N.T.S.

THE MUSIC ANNEX

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AUDIOVISUAL SYMBOLS AND ABBREVIATIONS
Copy 1 Copy 1

AV-001

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		FURNISHED BY						INSTALLED BY						NOTES
		GENERAL CONTRACTOR	OWNER			NA		GENERAL CONTRACTOR	OWNER			NA		
AUDIO VISUAL SYSTEMS	LOW VOLTAGE CABLE BETWEEN EQUIPMENT ITEMS		X						X					
	AV EQUIPMENT RACKS		X						X					
	WIRED AND WIRELESS CONTROL PANELS		X						X					
	PROGRAMMING, TRAINING, AND COMISSIONING		X						X					
	MICROPHONES		X						X					
	MICROPHONE INPUT PLATES		X						X					
	DOCUMENT CAMERAS					X						X		
	AV CONTROL INTERFACE		X						X					
	WIRING UMBILICAL TO FURNITURE		X						X					
	TV/LED SCREENS		X						X					
	TV/LED MOUNTS		X						X					
	TV/LED BACK BOXES AND CONDUIT	X						X						
	TV/LED SPECIALTY BACK BOXES	X						X						
	PROJECTION SCREENS					X						X		
	PROJECTION SCREEN LOW VOLTAGE CONTROL					X						X		
	PROJECTORS					X						X		
	PROJECTOR MOUNTS					X						X		
	PROJECTOR MOUNT UNISTRUT SUPPORT					X						X		
	CAMERAS	X						X						
	CAMERA BACK BOXES AND CONDUIT		X						X					
	CAMERA MOUNTS		X						X					
	SPEAKERS		X						X					
	SPEAKER BACK BOXES AND CONDUIT	X						X						
	MICROPHONES		X						X					
	MICROPHONE BACK BOXES AND CONDUIT	X						X						
	PA SPEAKERS					X						X		
	PA SPEAKER NETWORK CABLING					X						X		
	PA SYSTEM AMPLIFIERS					X						X		
	PA SYSTEM INTERFACES, SERVERS AND RELAYS					X						X		

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THE MUSIC ANNEX

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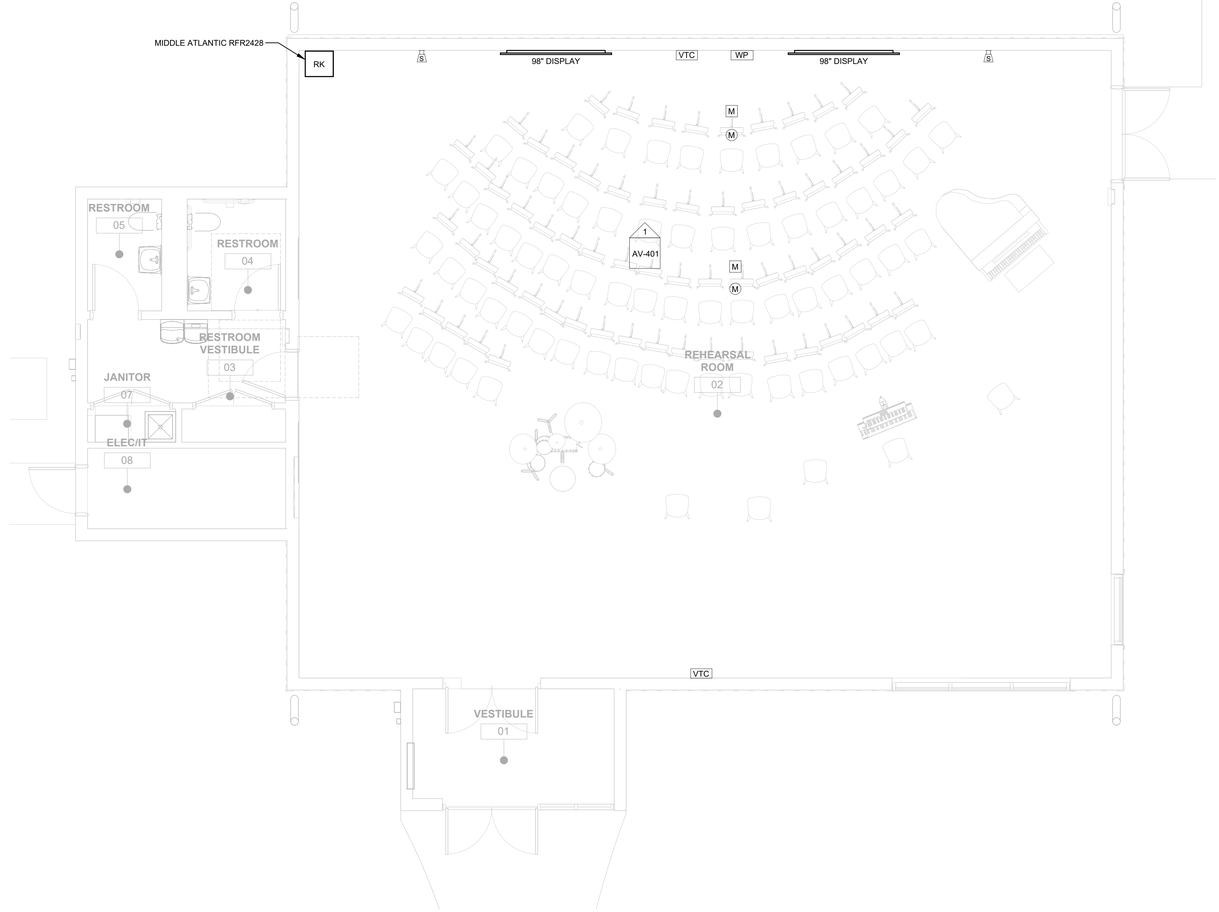
AUDIOVISUAL RESPONSIBILITY MATRIX

AV-002

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NOTE:

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AV CABLES TO BE BUNDLED SEPARATELY FROM IT CABLES WITHIN TRAY.



1 AUDIOVISUAL - LEVEL 1 PLAN
1/4" = 1'-0"

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AUDIOVISUAL - LEVEL 1 PLAN

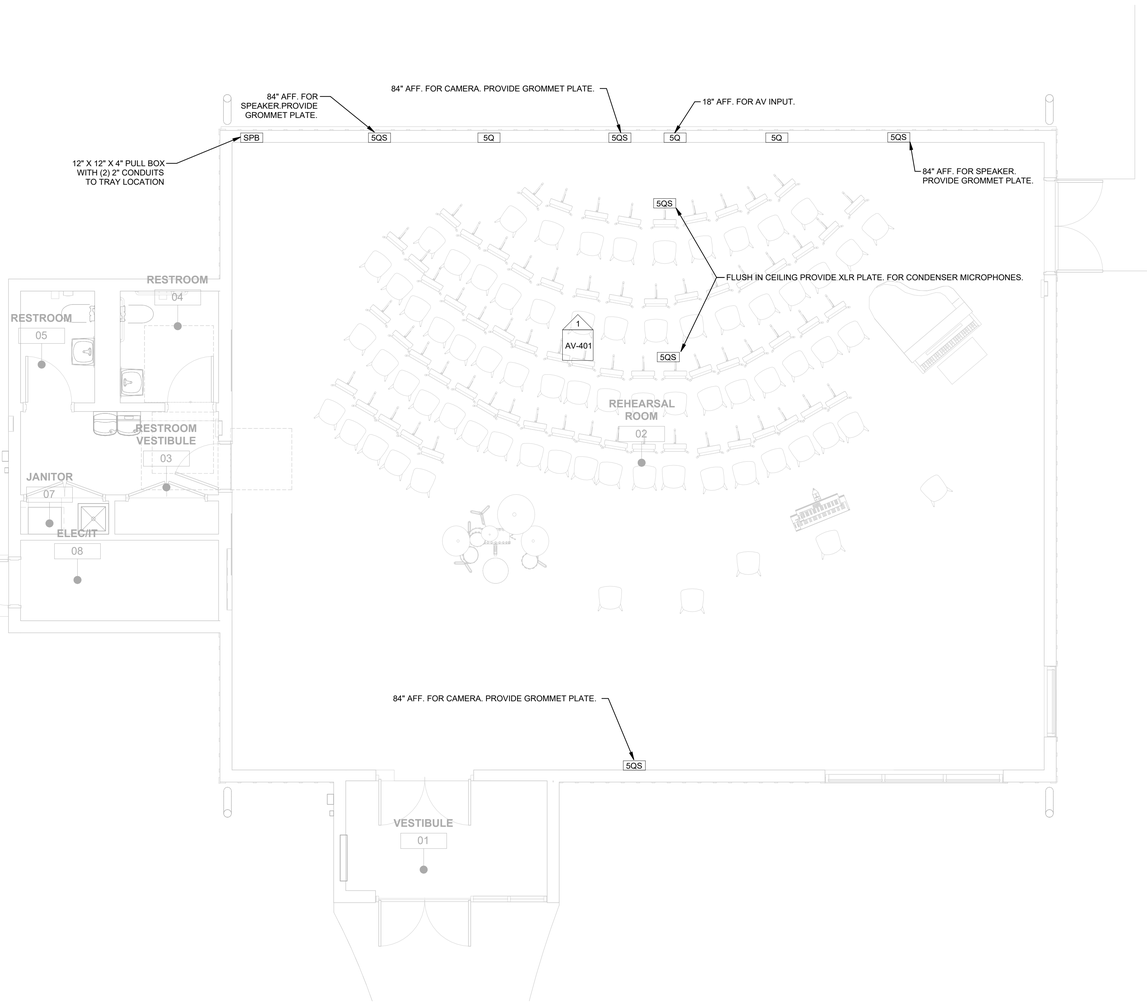
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1 AUDIOVISUAL - LEVEL 1 PLAN - INFRASTRUCTURE
1/4" = 1'-0"

THE MUSIC ANNEX

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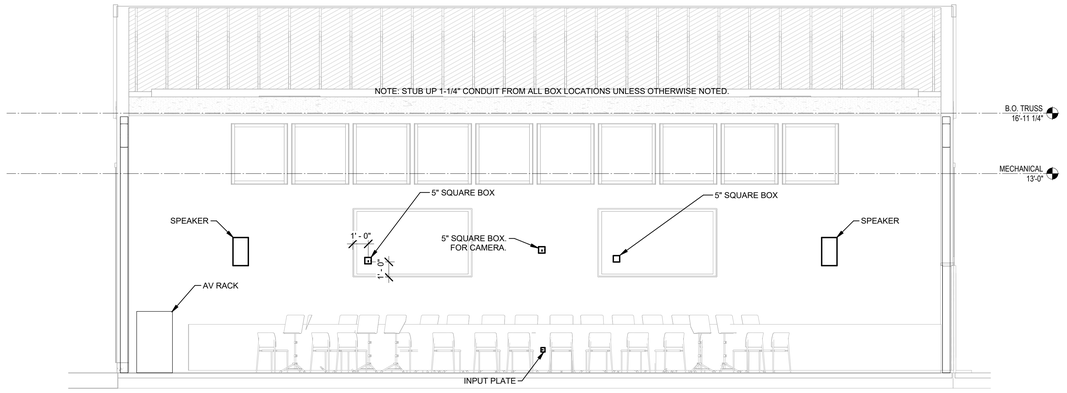
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AUDIOVISUAL - LEVEL 1 INFRASTUCTURE

AV-202

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1 NORTH ELEVATION - LEVEL 1
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AUDIOVISUAL - LEVEL 1 ELEVATIONS

AV-401

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Music Pavilion 2026				
Manufacturer	**Model**	**Description**	**Quantity**	**Notes**
		Video		
Sony	FW-98BZ53L	98" Displays	2	
Chief	XTM1U	100" display mount	2	
Crestron	DM-NVX-D200	Decoder	2	
Crestron	DM-NVX-E384	5K 4x1 AV-over-IP Switcher with HDMI® and USB-C® Connectivity	1	
Apple	Apple TV		1	
		Audio		
Meyer	ULTRA-X40	Power Speaker	2	
Meyer	Speaker Yoke/Rigging		2	
Biamp	AVB CI	Fixed I/O DSP with 12 analog inputs, 8 analog outputs, 8 channels configurable USB audio, 32 x 32 channels of Dante, AEC technology (all 12 inputs), 2 channel VoIP, and standard FXO telephone interface	1	
Audio-Technica	AT4041SP	Audio-Technica AT4041SP Studio Microphone Pack	2	
Miscellaneous		XY mic clip for ceiling suspension	2	
Crestron	DM-NAX-AUD-IO	Audio-over-IP Converter	1	
		Conferencing		
Biamp	TCM-1	Conferencing mic	1	
Biamp	TCM-1X	Conferencing mic (expansion)	1	
Birddog	Max	White Webconference cameras	2	
Inogeni	IP2USB	NDI to USB	1	
Crestron	DM-NUX-R2	USB over Network with Routing, Remote	1	
		Control		
Crestron	CP4N	Control Processor	1	
Crestron	TS-880	8" Touchscreen	1	
Netgear	M4230P	24-Port POE+ Switch	1	
		Miscellaneous		
Middle Atlantic	EWR-12-22SD	Equipment Rack wall-mounted - 12RU	1	
Middle Atlantic	RFR-2428E0	ER on wheels (furniture style)	1	
Middle Atlantic	PD-915R-PL	power conditioner	2	

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AUDIOVISUAL - LEVEL 1 EQUIPMENT SCHEDULE

AV-500

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SECURITY NOTES

1. SYMBOLS LEGEND IS PROVIDED FOR COORDINATION OF SECURITY ITEMS TYPE AND APPROXIMATE LOCATION.
2. COORDINATE WITH PROJECT DRAWINGS AND DOCUMENTS.
3. ALL OUTLET MOUNTING HEIGHTS & LOCATIONS TO BE VERIFIED & COORDINATED WITH ARCHITECTURAL, ELECTRICAL, EQUIPMENT & FURNISHINGS DRAWINGS.
4. ALL OUTLET MOUNTING HEIGHTS & LOCATIONS TO BE VERIFIED & COORDINATED WITH ARCHITECTURAL, ELECTRICAL, EQUIPMENT & FURNISHINGS DRAWINGS.
5. CONDUIT LOCATIONS ARE DIAGRAMMATIC ONLY, REFER TO ELECTRICAL PLANS FOR EXACT CONDUIT RUNS.
6. PROVIDE MANUFACTURER'S CAMERA LICENSE FOR EACH CAMERA.
7. CONNECTIONS SHOWN BETWEEN DEVICES ARE INTENDED TO PORTRAY FUNCTIONAL RELATIONSHIP ONLY. THE PLAN VIEWS ARE NOT INTENDED TO REPLACE BIDDER'S SHOP DRAWINGS, AND DO NOT INCLUDE THE FOLLOWING:
   ACTUAL CABLE TYPES
   - ALL NECESSARY POINT-TO-POINT WIRING
   - RUNS BETWEEN DEVICES AND CONTROL PANELS
   - PROCESSOR BOARDS
   - POWER SUPPLIES
   - PARTITION PROGRAMMING: EXAMPLE "P2" DENOTES THIS DETECTOR SHALL BE PROGRAMMED FOR SECURITY PARTITION TWO (2). PARTITIONS ARE IDENTIFIED AT THE KEYPAD ICONS.

ACCESS CONTROL SYSTEM (ACS) HARDWARE

1. PROVIDE ADDRESSABLE ZONE MODULE RELAY(S) FROM FIRE ALARM SYSTEM FOR ACCESS LOCK POWER CUTOFF OF ALL FAIL-SAFE DOORS UPON FIRE ALARM. THIS IS NOT FOR FAIL-SECURE DOORS.
2. ALL SECURITY ITEMS SHOWN SHALL BE PROVIDED BY DIVISION 28, WITH THE FOLLOWING EXCEPTIONS:
   A. DOOR LOCKING HARDWARE PROVIDED BY DIVISION 8.
   B. DOOR LOCK POWER SUPPLIES FOR (HIGH-CURRENT >1AMPERE) LATCH-RETRACTION LOCKSETS SHALL BE PROVIDED BY DIVISION 8.
   C. ELECTRICAL CONDUIT, ELECTRICAL BOXES, AND AC POWER PROVISIONS BY DIVISION 26.
3. BATTERIES SHALL BE CLEARLY MARKED WITH INSTALLATION DATE.
4. COORDINATE CREDENTIALS WITH BASE BUILDING SYSTEM TO ENSURE COMPATIBILITY.
5. COORDINATE WITH OWNER TO GENERATE ACCESS LEVELS AND INITIAL CARD PROGRAMMING.
6. PROVIDE CABLING BETWEEN VIS AND ACS TO RESULT IN DOOR UNLOCK RELEASE FUNCTION FROM MASTER STATION, FOR EACH DOOR LOCATION RELATED TO THE INTERCOM LOCATION CALL IN-PROGRESS.

VIDEO INTERCOM SYSTEM (VIS) HARDWARE

1. CONFIRM ALL EXTERIOR DOOR STATION MOUNTNG STYLE (FLUSH OR SURFACE) WITH OWNER BEFORE ORDERING INTERCOM EQUIPMENT.
2. PROVIDE CABLING BETWEEN VIS AND ACS TO RESULT IN DOOR UNLOCK RELEASE FUNCTION FROM MASTER STATION, FOR EACH DOOR LOCATION RELATED TO THE INTERCOM LOCATION CALL IN-PROGRESS.

SECURITY VIDEO MANAGEMENT SYSTEM (VMS) HARDWARE

1. ALL INTERIOR CEILING CAMERAS SHALL BE SEMI-FLUSH-MOUNTED WHERE POSSIBLE WITHIN DROPPED CEILING AREAS.
2. ALL CAMERA CABLES SHALL ORIGINATE AT THE CAMERA, AND SHALL TERMINATE AT THE CLOSEST LAN ROOM ON A DATA PATCH PANEL.
3. PROVIDE SUFFICIENT VIDEO SYSTEM CLOUD STORAGE TO RESULT IN 30 DAYS RETENTION OF HIGH QUALITY IMAGES FOR ALL CAMERAS.
4. PERFORM INITIAL CAMERA VIEW ADJUSTMENT DURING INSTALLATION, AND ALSO PROVIDE ANY CAMERA RE-ADJUSTMENT AS REQUESTED BY AND COORDINATED WITH THE OWNER BEFORE SYSTEM COMPLETION AND SIGN-OFF.
5. THE CONTRACTOR SHALL PROGRAM ON-SCREEN CAMERA LOCATION IDENTIFIER TEXT FOR EACH CAMERA, WITH LOCATION INFORMATION AS COORDINATED WITH THE OWNER, TO RESULT IN LOCATION INFORMATION WHICH WILL BE MEANINGFUL TO THE OWNER.

SECURITY SYMBOLS LEGEND

SG	SINGLE GANG JUNCTION BOX
2G	DOUBLE GANG JUNCTION BOX
3G	THREE GANG JUNCTION BOX
4G	FOUR GANG JUNCTION BOX
4Q	4" SQUARE JUNCTION BOX
4SG	4-11/16" SQUARE, 2-1/8" DEEP BOX WITH SINGLE GANG PLASTER RING
4DG	4-11/16" SQUARE, 2-1/8" DEEP BOX WITH DOUBLE GANG PLASTER RING
5SQ	5" SQUARE, 2-1/8" DEEP BOX WITH DOUBLE GANG PLASTER RING
ACW	ACCESS CONTROL WORKSTATION (REQUIRES 120V AC)
ACP	ACCESS CONTROL PANEL/POWER SUPPLY (REQUIRES 120V AC)
AS	AUDIBLE SOUNDER
BCP	BURGLAR ALARM CONTROL PANEL (REQUIRES 120V AC)
ECC	EMERGENCY CONTROL CENTER. (ELEVATOR LANDING PHONE)
ECS	EMERGENCY COMMUNICATIONS STATION. (ELEVATOR LANDING PHONE)
EP	EMERGENCY PANEL TELEPHONE
ENC	ENCODER, GUESTROOM LOCKING SYSTEM
FDT	FRONT DESK TERMINAL, GUESTROOM LOCKING SYSTEM
IC	INTERCOM SUBSTATION
IM	INTERCOM MASTER STATION
VIC	VIDEO INTERCOM SUBSTATION
VIM	VIDEO INTERCOM MASTER STATION
VM	VIDEO MONITOR
VMC	VIDEO MANAGEMENT CLIENT
VMS	VIDEO MANAGEMENT SYSTEM
KP	KEYPAD
NVR	NETWORK VIDEO RECORDER
DVR	DIGITAL VIDEO RECORDER
J P	120VAC FOR HARDWIRED LATCH-RETRACTION POWER SUPPLY
SW	ETHERNET SWITCH, NON-POE
POE	POWER OVER ETHERNET - DATA SWITCH
SS	SIREN STROBE
TE	TELEPHONE ENTRY SYSTEM
PIM	TELEPHONE ENTRY SYSTEM
FDT	FRONT DESK TERMINAL, HOTEL GUESTROOM LOCKING SYSTEM
RR	REMOTE RELAY, HOTEL LOCKING SYSTEM

SECURITY SYMBOLS LEGEND

CAM	SECURITY CAMERA. FIXED WALL OR CEILING MOUNTED. SEE CAMERA TYPE ON EQUIPMENT LIST FOR DETAILS.
CAM	SECURITY CAMERA. INTERIOR FIXED-VIEW DUAL-DIRECTION. CEILING MOUNTED. SEE CAMERA TYPE ON EQUIPMENT LIST FOR DETAILS.
180° CAM	SECURITY CAMERA, 180° PANORAMIC SEE CAMERA TYPE ON EQUIPMENT LIST FOR DETAILS.
270° CAM	SECURITY CAMERA, 270° PANORAMIC SEE CAMERA TYPE ON EQUIPMENT LIST FOR DETAILS.
360° CAM	SECURITY CAMERA, 360° PANORAMIC SEE CAMERA TYPE ON EQUIPMENT LIST FOR DETAILS.
DE	DELAYED RELEASE EXIT LOCK
EL FS	ELECTRIFIED LEVER LOCKSET - FAILSAFE - NORMALLY ENERGIZED - RELEASE ON FIRE ALARM
EL FSE	ELECTRIFIED LEVER LOCKSET - FAIL SECURE - NORMALLY UNENERGIZED
ES FS	ELECTRIFIED DOOR STRIKE - FAIL SAFE - NORMALLY ENERGIZED - RELEASE ON FIRE ALARM
ES FSE	ELECTRIFIED DOOR STRIKE - FAIL SECURE - NORMALLY UNENERGIZED
ET FS	ELECTRIC TRIM - FAIL SAFE - NORMALLY ENERGIZED - RELEASE ON FIRE ALARM
ET FSE	ELECTRIC TRIM - FAIL SECURE - NORMALLY UNENERGIZED
EM	ELECTROMAGNETIC LOCK, MAG LOCK
ID	INTEGRATED ACCESS DOOR LOCK - FAIL SECURE - INTERIOR LEVER
ID LR	INTEGRATED ACCESS DOOR LOCK - FAIL SECURE - INTERIOR PANIC HARDWARE WITH LATCH RETRACTION
LOCK PWR	ELECTRIFIED DOOR LOCK POWER SUPPLY WITH BATTERY BACKUP
LR	ELECTRIC LATCH-RETRACTION PANIC HARDWARE
##	DOOR CONFIGURATION DESIGNATOR FOR SECURITY SYSTEM
	DOOR CONTACT SWITCH
BR	BIOMETRIC READER
CR	CARD READER
CM	CURTAIN MOTION DETECTOR - PASSIVE INFRARED SENSOR
DB	DURESS BUTTON ALARM
DO	DOOR OPERATOR PUSH PLATE
DR	DOOR RELEASE BUTTON
KP	CARD READER WITH KEYPAD
PB	PUSH BUTTON
PIR	PASSIVE INFRARED MOTION DETECTOR
PP	PUSH PLATE DOOR OPERATOR
RX	REQUEST-TO-EXIT PALM BUTTON (REX)
TS	DOOR UNLOCK/LOCK TOGGLE SWITCH
BL	BLUE WARNING LED LIGHT, STEADY BURN, DOOR INTERLOCKED INDICATOR
ER	EMERGENCY DOOR RELEASE WITH ALARMED CLEAR COVER, FOR INTERLOCKED DOORS
GL	ELECTRONIC BATTERY POWERED LOCKSET WITH INTEGRAL PROXIMITY READER
LO	LATCH ONLY DOOR LOCKING SYSTEM

VANDERWEIL PROJECT INFO

PROJECT NUMBER	Y0666
PROJECT NAME	TCNJ MUSIC ANNEX

KEY LEGEND

X / TC-XX	DETAIL CALL-OUT - PLAN VIEW. DENOTES DETAIL "X" ON DRAWING "TC-XX".
X / TC-XX	DETAIL CALL-OUT - ELEVATION VIEW. DENOTES DETAIL "X" ON DRAWING "TC-XX".
#	SEE KEY NOTES # ON SHEET FOR DESCRIPTION

LEGEND NOTES

1. THIS SHEET IS A GENERAL LIST OF SYMBOLS AND SHALL BE USED AS A REFERENCE TO DEFINE ITEMS INDICATED ON THE DRAWINGS. NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT.

1 SECURITY LEGENDS AND GENERAL NOTES
N.T.S.

THE MUSIC ANNEX
NEW PERFORMING ART REHEARSAL HALL
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ 08618

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BID DOCUMENTS

Project No. 24102
Issued 11/11/2026

SECUIRTY SYMBOLS AND ABBREVIATIONS

SE-001

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		FURNISHED BY						INSTALLED BY						NOTES
		GENERAL CONTRACTOR	OWNER			NA		GENERAL CONTRACTOR	OWNER			NA		
SECURITY SYSTEMS	WIRELESS LOCKS					X						X		
	HARDWIRED LOCKS	X						X						
	BALANCE OF DOOR HARDWARE	X						X						BY DIVISION 08. SHOWN ON ARCHITECTURAL DRAWINGS.
	SECURITY LOW VOLTAGE CABLES		X						X					
	SECURITY DATA (IP) CABLES		X						X					
	SECURITY DATA (IP) OUTLETS		X						X					
	CAMERAS		X						X					
	CAMERA LICENSES		X						X					
	CARD READERS		X						X					
	DURESS BUTTONS		X						X					
	CONDUIT, PULLSTRING, AND BACKBOXES	X						X						
	POWER RECEPTACLES	X						X						
	RACKS, PATCH PANELS, WIRE MANAGERS		X						X					
	SERVERS & WORKSTATIONS		X						X					
	SWITCHES		X						X					
	SECURITY LV POWER SUPPLIES		X						X					
	FLOOR CORES	X						X						
	IP ADDRESSES		X						X					
	SECURITY VIDEO DISPLAY		X						X					
	VIDEO MANAGEMENT CLIENTS & THIN CLIENTS		X						X					

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SECUIRTY RESPONSIBILITY MATRIX

SE-002

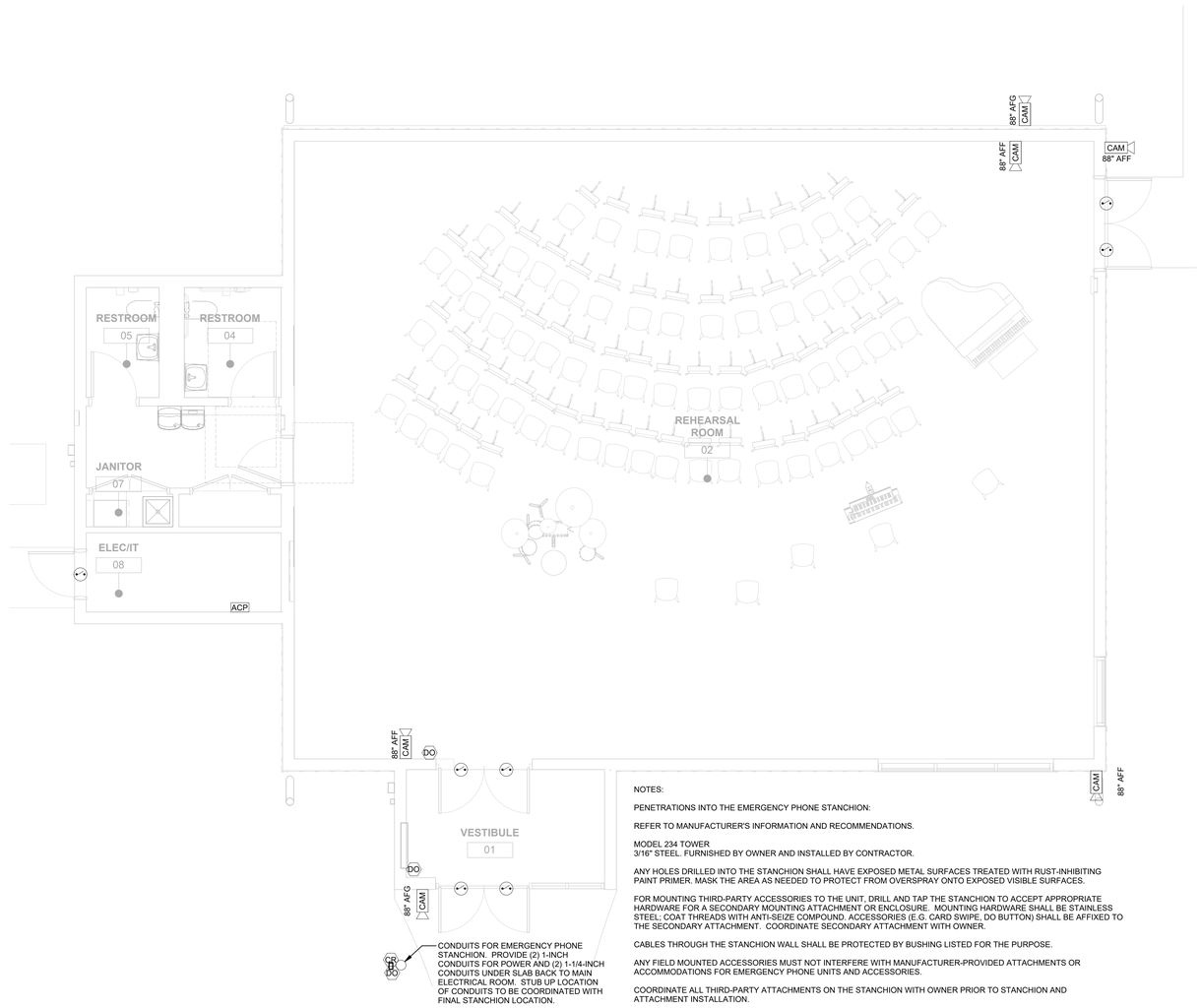
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NOTES:

CONDUITS FOR WALL MOUNTED SECURITY INFRASTRUCTURE IN REHEARSAL AND VESIBULE SPACES SHALL EXTEND THROUGH WALL INTO REHEARSAL CEILING SPACE AND TERMINATE ADJACENT TO BASKET TRAY INSTALLED ABOVE-CEILING.

SECURITY CABLES TO BE BUNDLED SEPERATELY FROM IT CABLES WITHIN TRAY.



NOTES:

PENETRATIONS INTO THE EMERGENCY PHONE STANCHION:

REFER TO MANUFACTURER'S INFORMATION AND RECOMMENDATIONS.

MODEL 234 TOWER
3/16" STEEL. FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.

ANY HOLES DRILLED INTO THE STANCHION SHALL HAVE EXPOSED METAL SURFACES TREATED WITH RUST-INHIBITING PAINT PRIMER. MASK THE AREA AS NEEDED TO PROTECT FROM OVERSPRAY ONTO EXPOSED VISIBLE SURFACES.

FOR MOUNTING THIRD-PARTY ACCESSORIES TO THE UNIT, DRILL AND TAP THE STANCHION TO ACCEPT APPROPRIATE HARDWARE FOR A SECONDARY MOUNTING ATTACHMENT OR ENCLOSURE. MOUNTING HARDWARE SHALL BE STAINLESS STEEL; COAT THREADS WITH ANTI-SEIZE COMPOUND. ACCESSORIES (E.G. CARD SWIPE, DO BUTTON) SHALL BE AFFIXED TO THE SECONDARY ATTACHMENT. COORDINATE SECONDARY ATTACHMENT WITH OWNER.

CABLES THROUGH THE STANCHION WALL SHALL BE PROTECTED BY BUSHING LISTED FOR THE PURPOSE.

ANY FIELD MOUNTED ACCESSORIES MUST NOT INTERFERE WITH MANUFACTURER-PROVIDED ATTACHMENTS OR ACCOMMODATIONS FOR EMERGENCY PHONE UNITS AND ACCESSORIES.

COORDINATE ALL THIRD-PARTY ATTACHMENTS ON THE STANCHION WITH OWNER PRIOR TO STANCHION AND ATTACHMENT INSTALLATION.

1 SECURITY - LEVEL 1 PLAN
1/4" = 1'-0"

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Project No. 24102
Issued 11/11/2026

SECURITY - LEVEL 1 PLAN

SE-201

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ACRONYMS AND ABBREVIATIONS -...

(E)	EXISTING
(N)	NEW
AFF	ABOVE FINISHED FLOOR
AP	ACCESS POINT
ARF	ABOVE RAISED FLOOR
AWG	AMERICAN WIRE GAUGE
AXON	AXONOMETRIC (VIEW)
BLDG	BUILDING
CAD	COMPUTER AIDED DESIGN
CAT-6	CATEGORY-6
CAT-6A	CATEGORY-6A
CB	CABINET
CMC	CONSTRUCTION MANAGEMENT COMPANY
CNR	CORE NETWORK ROOM
COND.	CONDUIT
CRAC	COMPUTER ROOM AIR CONDITIONER
CSI	CONSTRUCTION SPECIFICATIONS INSTITUTE
CT	COUNT
CTR	CENTER
DAS	DISTRIBUTED ANTENNA SYSTEM
DC	DATA CENTER
DET	DETAIL
DETS	DETAILS
DIA	DIAGRAM
DIST	DISTRIBUTION
DN	DOWN
ELEC	ELECTRICAL
ELEV	ELEVATION
EQPT	EQUIPMENT
EXT	EXTERIOR, EXTERNAL
FC RACK	FACILITY CONTROL RACK
FDP	FIBER DISTRIBUTION PANEL
FGS	FIBER GUIDE SYSTEM
FL1	GROUND FLOOR (LEVEL-1)
FL2	SECOND FLOOR (LEVEL-2)
FLUOR	FLUORESCENT
FTB	FIBER TERMINATION BLOCK
FTB ##	FIBER TRENCH BOX
FUT	FUTURE
GCNR	GROUP CORE NETWORK ROOM
HDPE	HIGH DENSITY POLYETHYLENE PLASTIC
HE	HEAD END
HR	HOME RUN
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
IG	ISOLATED GROUND
ISO	ISOLATED
ISP	INSIDE PLANT
LH	LONGHAUL FIBER
LSP	LOCAL SERVICE PROVIDER
MAX	MAXIMUM
MB	MACHINE BOLTS
MDA	MAIN DISTRIBUTION AREA (MDA-A, MDA-B)
MEB	MODULAR ELECTRICAL BUILDING
MEP	MECHANICAL, ELECTRICAL, PLUMBING/PIPING
MGB	MAIN GROUND BAR
MIN	MINIMUM
MMF	MULTIMODE FIBER
MSG	MDA, SECURITY, GENERAL TELECOM
MTD	MOUNTED
MUX	MULTIPLEXER
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION AGENCY
NTS	NOT TO SCALE
ODF	OPTICAL DISTRIBUTION FRAME

ACRONYMS AND ABBREVIATIONS -...

OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
ONCP	OWNER NEGOTIATED, CONTRACTOR PROVIDED
OPP HAND	OPPOSITE HAND
OPR	OWNER'S PROJECT REQUIREMENTS
OPS	OPERATIONS
OSP	OUTSIDE PLANT
OTDR	OPTICAL TIME-DOMAIN REFLECTOMETER
OUTL	OUTLET
PB	PULL BOX
PBB	PRIMARY BONDING BUSBAR
PLCS	PLACES
PLYWD	PLYWOOD
PNTH	PENTHOUSE
POE	POINT OF ENTRY / POWER OVER ETHERNET
POTS	PLAIN OLD TELEPHONE SERVICE
PP	PATCH PANEL
PRI	PRIMARY
PS	POWER SUPPLY
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
QTY	RECEPTACLE (ELECTRICAL)
RECEPT	REQUIRED
REQ'D	RESOURCE
RES	ROOM
RM	RELAY RACK
RO	RADIO OVER INTERNET PROTOCOL
ROIP	ROUTING TABLE
RR	ROUGH OPENING
RT	RACK UNIT
RU	SECONDARY BONDING BUSBAR
SBB	SUBSTATION
SBST	SECONDARY
SEC	SIMILAR
SIM	SINGLE MODE FIBER
SMF	SHIELDED TWISTED PAIR
STP	SUSPENDED
SUSP	TELECOM BONDING BACKBONE
TBB	TO BE DETERMINED
TBD	TELECOMMUNICATIONS
TELECOM	TERMINATOR
TERM	TECHNICAL GROUND
TG	TELECOMMUNICATIONS GROUND BAR
TGB	TELECOMMUNICATIONS MAIN GROUND BAR
TIE	TELECOMMUNICATIONS MAN HOLE
TMGB	TIE CABLE
TMH	TO/FROM
TO/FM	TECHNICAL POWER
TP	TRANSITION POINT OF ENTRY
TPB	TELECOMMUNICATIONS PULL CAN
TPC	TYPICAL
TYP	UNDERWRITERS LABORATORY
UL	UNLESS OTHERWISE NOTED
UON	UNINTERRUPTIBLE POWER SYSTEM
UPS	UNSHIELDED TWISTED PAIR CABLE
UTP	VOLTAGE - ALTERNATING CURRENT
VAC	VOLTAGE - DIRECT CURRENT
VDC	VIDEO SURVEILLANCE SYSTEM
VIF	VERIFY IN FIELD
VOIP	VOICE OVER INTERNET PROTOCOL
VSS	VIDEO SURVEILLANCE SYSTEM
W	WATTS
WAP	WIRELESS ACCESS POINT
WJ	WORK START POINT
WKSN	WORKSTATION

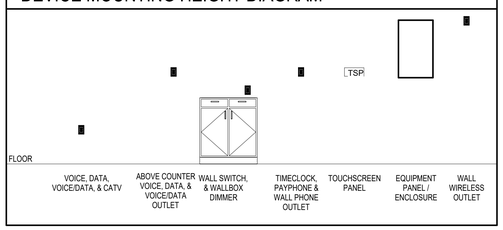
GENERAL NOTES

1. THE WORK REQUIREMENTS DESCRIBED WITHIN DIVISION 20 SPECIFICATION SECTION "COMMON MECHANICAL / ELECTRICAL REQUIREMENTS" FORM COMPLIMENTARY REQUIREMENTS TO THE SCOPE OF WORK CONTAINED WITHIN DIVISION 27 AND 28.
2. CONDITIONS OF THE CONTRACT AND DIVISION 1, GENERAL REQUIREMENTS APPLY TO WORK OF THIS SECTION. EXAMINE DRAWINGS AND OTHER SPECIFICATIONS FOR REQUIREMENTS THAT AFFECT WORK OF THIS SECTION.
3. PROVIDE ITEMS REFERRED TO IN SINGULAR OR PLURAL NUMBERS IN CONTRACT DOCUMENTS IN QUANTITIES NECESSARY TO COMPLETE WORK.
4. PERFORM WORK AS REQUIRED BY CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION.
5. MATERIAL AND EQUIPMENT SHALL BE UL, NEMA, ANSI, IEEE, ADA & CBM APPROVED FOR INTENDED SERVICE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND STATE ELECTRICAL CODE.
6. MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
7. GUARANTEE WORK IN WRITING FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER.
8. SUBMIT GUARANTEE TO ARCHITECT BEFORE APPLICATION FOR FINAL PAYMENT.
9. STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERPRETED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.
10. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS. PROVIDE INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS BUT NOT SHOWN ON PLANS, AND VICE VERSA, AS IF EXPRESSLY REQUIRED ON BOTH.
11. ALL WIRING SHALL BE RUN CONCEALED UNLESS SPECIFIED OTHERWISE.
12. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
13. CONTRACTOR SHALL REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING HEIGHTS AND LOCATIONS FOR TELECOM EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT AND OWNER.
14. ALL GROUNDING SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL AND STATE ELECTRICAL CODES.
15. REFER TO SPECIFICATION FOR CABLE COLORS
16. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL CONDUIT, JUNCTION BOXES, CABLE TRAYS, PANELS, PULL STRINGS, ENCLOSURES, FLOOR BOXES, POWER CIRCUITS, TELCOM GROUNDING SYSTEM, POWER CABLE AND POWER CONNECTIONS UNDER THIS SECTION.
17. CONDUIT SHALL NOT EXCEED 100'-0" OR A TOTAL OF 180 DEGREES IN BENDS BETWEEN PULL BOXES FOR DISTRIBUTION OF TELE/DATA CABLE.
18. VERIFY ALL DEVICE PLATE FINISHES WITH ARCHITECT AND/OR OWNER.
19. LABEL ALL CABLE, CONDUIT AND BACK BOXES FOR EASE OF IDENTIFICATION.
20. ALL CABLE RUNS MUST BE CONTINUOUS FROM SOURCE TO DESTINATION. NO EXCEPTIONS.
21. PROVIDE A SERVICE LOOP OF 15'-0" MINIMUM AT ALL BACKBONE TERMINATION LOCATIONS AND SPLICE POINTS.
22. INTERBUILDING AND INTRABUILDING OPTICAL FIBER CABLING SHALL BE CLEARLY AND VISIBLY IDENTIFIED BY THE CONTRACTOR IN ALL MANHOLES, PULL BOXES, ENTRANCE POINTS, SERVICE ENTRENCES AND 3'-0" BEFORE ENTERING A FREE STANDING RACK, WALL MOUNTED ENCLOSURE OR SURFACE MOUNT FIBER CABINET UTILIZING AN OPTICAL FIBER CABLE MARKER TAG SYSTEM.
23. WHEN ROUTING COMMUNICATIONS CABLES USING OPEN CABLING METHODS, MAINTAIN A MINIMUM SPACING OF 1'-0" FROM ELECTRICAL FEEDERS, BRANCH CIRCUIT WIRING AND AUXILIARY SYSTEM CABLING.
24. WHEN ROUTING COMMUNICATIONS CABLES USING OPEN CABLING METHODS, MINIMUM SPACING FROM ELECTRICAL APPARATUS SUCH AS MOTOR DRIVEN EQUIPMENT AND TRANSFORMERS SHALL BE 4'-0". SPACING REQUIREMENTS SHALL APPLY TO OPEN CABLE PATHS WHERE EQUIPMENT IS LOCATED ON THE SAME FLOOR, FLOOR ABOVE, FLOOR BELOW OR IN ROOMS ADJACENT TO SUCH EQUIPMENT AS THOUGH WALLS AND FLOORS DID NOT EXIST. EXCEPTION: BUILDING CONSTRUCTION THAT RESULTS IN METALLIC BARRIER BETWEEN ELECTRICAL APPARATUS AND CABLE PATHWAYS SHALL BE CONSIDERED SUITABLE SEPARATION.

TELECOM CONDUIT FILL CHART - 40% FILL

			CONDUIT INNER DIAMETER SIZE							
CABLE TYPE	JACKET	CABLE O.D	0.75"	1"	1.25"	1.5"	2"	2.5"	3"	4"
CAT6	CMR	0.2	5	9	14	20	36	56	81	100
CAT6A	CMR	0.34	1	3	4	6	12	19	27	48
CAT6A	CMR	0.307	2	4	7	10	18	28	41	73
CAT6	CMP	0.2	5	9	14	21	37	57	83	110
CAT6A	CMP	0.34	2	3	5	7	13	21	30	53

DEVICE MOUNTING HEIGHT DIAGRAM



TELECOM BACKBOX REQUIREMENTS

1. FOR WIRELESS LOCATIONS:
   PROVIDE A TWO GANG, 5" SQUARE, OUTLET BOX WITH A TWO GANG PLASTER RING AND A 1-1/4" CONDUIT, WITH CONNECTORS, BUSHINGS AND PULL STRING TO THE NEAREST ACCESSIBLE CEILING SPACE ON THE SAME FLOOR AS THE ROOM BEING SERVED BY THE OUTLET LOCATION.
2. FOR WALL MOUNTED LOCATIONS:
   PROVIDE A TWO GANG, 5" SQUARE, OUTLET BOX WITH A TWO GANG PLASTER RING AND A 1-1/4" CONDUIT, WITH CONNECTORS, BUSHINGS AND PULL STRING TO THE NEAREST ACCESSIBLE CEILING SPACE ON THE SAME FLOOR AS THE ROOM BEING SERVED BY THE OUTLET LOCATION.
3. FOR FLOOR BOX LOCATIONS:
   PROVIDE A 1-1/4" CONDUIT, WITH CONNECTORS, BUSHINGS AND PULL STRING TO THE NEAREST ACCESSIBLE CEILING SPACE ON THE SAME FLOOR AS THE ROOM BEING SERVED BY THE OUTLET LOCATION.
4. BASIS OF DESIGN FOR TELECOM BACKBOX PRODUCT IS RANDL INDUSTRIES "5 SQUARE BOX".

TELECOM SYMBOLS LEGEND

WAP	WALL MOUNTED WIRELESS LOCATION (2) - CAT 6A CMP CABLES
WAP	CEILING MOUNTED WIRELESS LOCATION INFRASTUCTURE ONLY CEILING MOUNTED WIRELESS DATA LOCATIONS ARE TO BE MOUNTED TO THE BUILDING STRUCTURE ABOVE THE CEILING. THE CEILING MOUNTED WIRELESS DATA DEVICE BOX ASSEMBLY IS TO BE (UL) RATED FOR PLENUM.
	WALL MOUNTED DATA LOCATION INFRASTUCTURE ONLY
1	WALL MOUNTED DATA 1 LOCATION (1) - CAT 6 CMP CABLE
2	WALL MOUNTED DATA 2 LOCATION (2) - CAT 6 CMP CABLES
3	WALL MOUNTED DATA 3 LOCATION (3) - CAT 6 CMP CABLES
4	WALL MOUNTED DATA 4 LOCATION (4) - CAT 6 CMP CABLES
1	FLOOR MOUNTED DATA 1 LOCATION (1) - CAT 6 CMP CABLE
2	FLOOR MOUNTED DATA 2 LOCATION (2) - CAT 6 CMP CABLES
3	FLOOR MOUNTED DATA 3 LOCATION (3) - CAT 6 CMP CABLES
4	FLOOR MOUNTED DATA 4 LOCATION (4) - CAT 6 CMP CABLES
1	CEILING MOUNTED DATA 1 LOCATION (1) - CAT 6 CMP CABLE
2	CEILING MOUNTED DATA 2 LOCATION (2) - CAT 6 CMP CABLES
3	CEILING MOUNTED DATA 3 LOCATION (3) - CAT 6 CMP CABLES
CAM	CEILING MOUNTED DATA 1 LOCATION - FOR CAMERA (1) - CAT 6 CMP CABLE
W	WALL MOUNTED PHONE VOICE LOCATION. PROVIDE SINGLE GANG MUDRING
TV	WALL MOUNTED TV DATA 1 LOCATION (1) - CAT 6 CMP CABLE
TV	FLOOR MOUNTED TV DATA 1 LOCATION (1) - CAT 6 CMP CABLE
F #	FEED LOCATION (# DENOTES THE NUMBER OF CABLES AT THE FEED LOCATION) PROVIDE A 2-GANG MUDRING WITH GROMMET FACEPLATE AT FEED LOCATIONS AS IDENTIFIED ON PLANS. PROVIDE POLYETHYLENE SLEEVE FROM GROMMET TO MODULAR FURNITURE ENTRY POINT.

VANDERWEIL PROJECT INFO

PROJECT NUMBER	Y0666
PROJECT NAME	TCNJ MUSIC ANNEX

KEY LEGEND

1 / T-501	DETAIL CALL-OUT - PLAN VIEW. DENOTES DETAIL "1" ON DRAWING "T-501".
2 / T-501	DETAIL CALL-OUT - ELEVATION VIEW. DENOTES DETAIL "2" ON DRAWING "T-501".

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Project No. 24102
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TELECOM SYMBOLS AND ABBREVIATIONS

TC-001

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RESPONSIBILITY MATRIX

		FURNISHED BY								INSTALLED BY							
		GENERAL CONTRACTOR	OWNER	NA						GENERAL CONTRACTOR	OWNER	NA					
TEL DATA SYSTEMS	CONDUIT, BACK BOXES AND MUD RINGS	X								X							
	BASKET CABLE TRAY	X								X							
	TELECOM GROUNDING SYSTEM	X								X							
	ELECTRICAL RECEPTACLES	X								X							
	J HOOKS		X								X						
	FACEPLATES		X								X						
	CABLES		X								X						
	TERMINATION OF CABLES		X								X						
	RACKS, PATCH PANELS, WIRE MANAGERS		X								X						
	CONNECTORS		X								X						
	NETWORK SWITCHES		X								X						
	ROUTERS		X								X						
	WAPS		X								X						
	SERVERS, STORAGE		X								X						
	TELEPHONE SYSTEM EQUIP. (SWITCH AND HANDSETS)		X								X						
	POWER DISTRIBUTION UNITS IN TELECOM ROOMS		X								X						
	OUTSIDE PLANT CABLING TO BE		X								X						

THE MUSIC ANNEX

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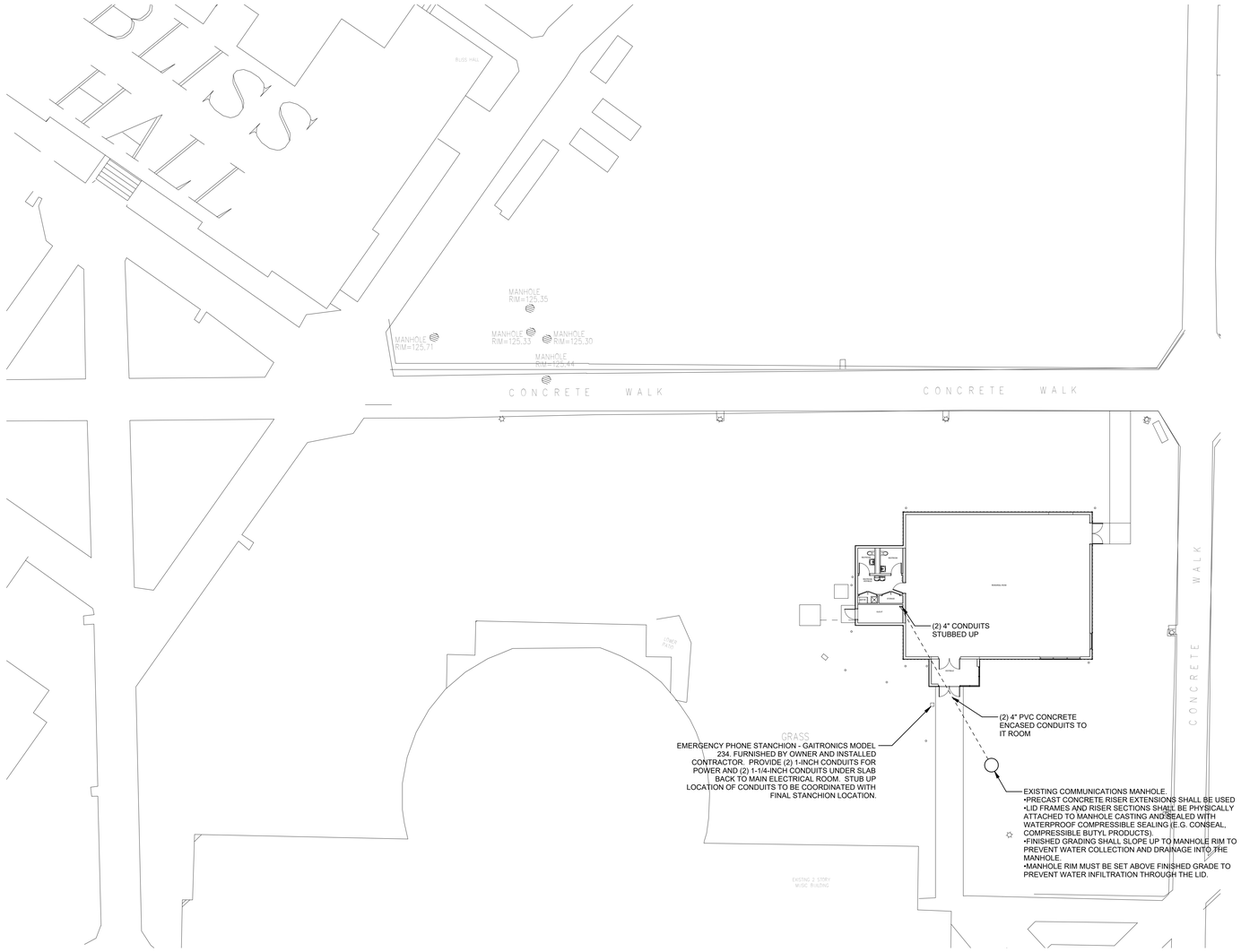
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TELECOM RESPONSIBILITY MATRIX

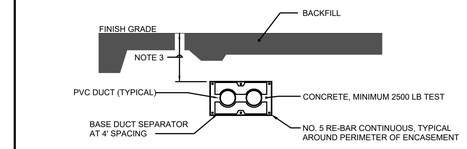
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1 TELECOM - SITE PLAN
1/16" = 1'-0"



NOTES:
1. PROVIDE CONDUIT SIZES, NUMBER OF WAYS, AND DUCT CONFIGURATIONS AS INDICATED ON PLANS.
2. PROVIDE A MINIMUM SPACE OF THREE INCHES BETWEEN INDIVIDUAL DUCTS, AND A MINIMUM SPACE OF THREE INCHES BETWEEN DUCTS AND CONCRETE ENVELOPMENT WALL.
3. INSTALL TOP OF DUCT BANK AT LEAST 36 INCHES BELOW FINISHED GRADE, UNLESS OTHERWISE INDICATED.
4. DUCTBANKS SHALL BE LOCATED ABOVE WATER TABLE AND BELOW STEAM LINES WHEREVER POSSIBLE.
5. PROVIDE PLASTIC PULL-LINE IN EACH UNUSED DUCT FOR FUTURE CABLE PULLS.
6. INTERFACE DUCTBANK RE-BAR WITH BUILDING FOUNDATIONS, MANHOLE AND HANDHOLE WALLS, AND CABLE VAULT WALLS TO MINIMIZE SHEARING.
7. WHEREVER POSSIBLE, CONCRETE POURS SHALL BE DONE CONTINUOUSLY ALONG ENTIRE LENGTH OF DUCTBANK RUN. IF POUR WILL BE INTERRUPTED FOR A PERIOD GREATER THAN FOUR HOURS, EXTEND RE-BAR AT LEAST SIX FEET BEYOND END OF POUR, AND UTILIZE THE RE-BAR EXTENSIONS TO TIE TWO ENDS OF CONCRETE POURS TOGETHER WHEN COMMENCING WITH POUR.
8. PROVIDE RE-BAR STAKES DRIVEN INTO THE BASE OF THE DUCTBANK TRENCH AND ASSOCIATED HOLD DOWN BARS AS REQUIRED TO PREVENT FLOTATION OF DUCTS DURING CONCRETE POUR. FLOTATION IS CAUSED BY DUCT BUOYANCY AND CHURNING OF THE CONCRETE DURING THE POUR. UTILIZE AS MANY STAKES AS REQUIRED TO ENSURE A CONSISTENT DUCTBANK PROFILE ALONG ENTIRE LENGTH OF DUCTBANK.
9. WHEN POURING CONCRETE AROUND CONDUITS, ADJUST DELIVERY CHUTE TO MINIMIZE FALL OF CONCRETE INTO TRENCH. POUR CONCRETE SLOWLY AND DISTRIBUTE EVENLY TO ENSURE SPACERS ARE NOT DISLODGED, AND CONDUITS AND RE-BAR REMAIN IN PLACE.
10. WAIT AT LEAST TWO HOURS AFTER POURING OF CONCRETE ENCASEMENT BEFORE BEGINNING BACKFILLING.
11. MAINTAIN A MINIMUM OF 12 INCH SEPARATION BETWEEN POWER DUCTS AND COMMUNICATION DUCTS, GAS AND WATER MAINS AND SEWERS.
12. MAINTAIN A MINIMUM OF 6 FEET SEPARATION BETWEEN UNDERGROUND DUCTS AND DUCTBANKS AND ANY PARALLEL STEAM LINES. UNDERGROUND CROSSINGS ABOVE AND BELOW STEAM LINES SHALL MAINTAIN A MINIMUM 24" CLEARANCE AND THE SPACE BETWEEN SHALL BE FILLED WITH FOAM GLASS INSULATION.
13. DIRECT-BURIED (NON-CONCRETE-ENCASED) DUCTBANKS SHALL COMPLY WITH REQUIREMENTS OF THIS DETAIL (TRENCHING DEPTHS, SPACERS, WARNING TAPE, ETC.) BUT SHALL NOT REQUIRE ACTUAL CONCRETE ENCASEMENT OR SUPPORTING RE-BAR.
14. CONDUITS SHALL BE STAGGERED AT MANHOLE AND VAULT ENTRANCES TO PROVIDE ADDITIONAL CLEARANCE FOR TRAINING CABLES.
15. CONDUITS SHALL ENTER MANHOLE AT EXISTING WINDOWS OR SIMILAR ELEVATION.
16. ALL BENDS ARE LONG-RADIUS SWEEPS. SWEEP INTO TELECOM ROOM (BUILDING ENTRANCE) WITH GALVANIZED ELBOWS. COORDINATE ENTRY LOCATION WITH OWNER.
17. CONDUIT TERMINUS AT MANHOLE SHALL BE EQUIPPED WITH BELL ENDS.
18. CONDUIT PENETRATIONS INTO MANHOLES SHALL BE FINISHED FLUSH WITH THE INTERIOR WALL. FILL ANNULAR SPACE FROM INTERIOR TO EXTERIOR WITH HYDRAULIC CEMENT FOR A WATER-TIGHT SEAL
19. PROTECT CONDUIT DURING INSTALLATION TO PREVENT INTRUSION OF WATER, MUD, SOIL, GRAVEL, ETC.
20. PULL SWABS THROUGH EACH CONDUIT UNTIL SWABS EMERGE CLEAN AND DRY.
21. CONDUIT DIAMETER AND BEND RADIUS SHALL BE CONFIRMED BY PULLING A MANDREL SIZED TO 90% CONDUIT DIAMETER THROUGH EACH CONDUIT IN THE BANK BEFORE CONCRETE POUR.
22. CONDUIT DIAMETER AND BEND RADIUS SHALL BE CONFIRMED BY PULLING A MANDREL SIZED TO 90% CONDUIT DIAMETER THROUGH EACH CONDUIT IN THE BANK BEFORE CONCRETE POUR.

TYPICAL CONCRETE-ENCASED TELECOM DUCTBANK DETAIL

SCALE: NTS

2 Telecom Site Details
12" = 1'-0"

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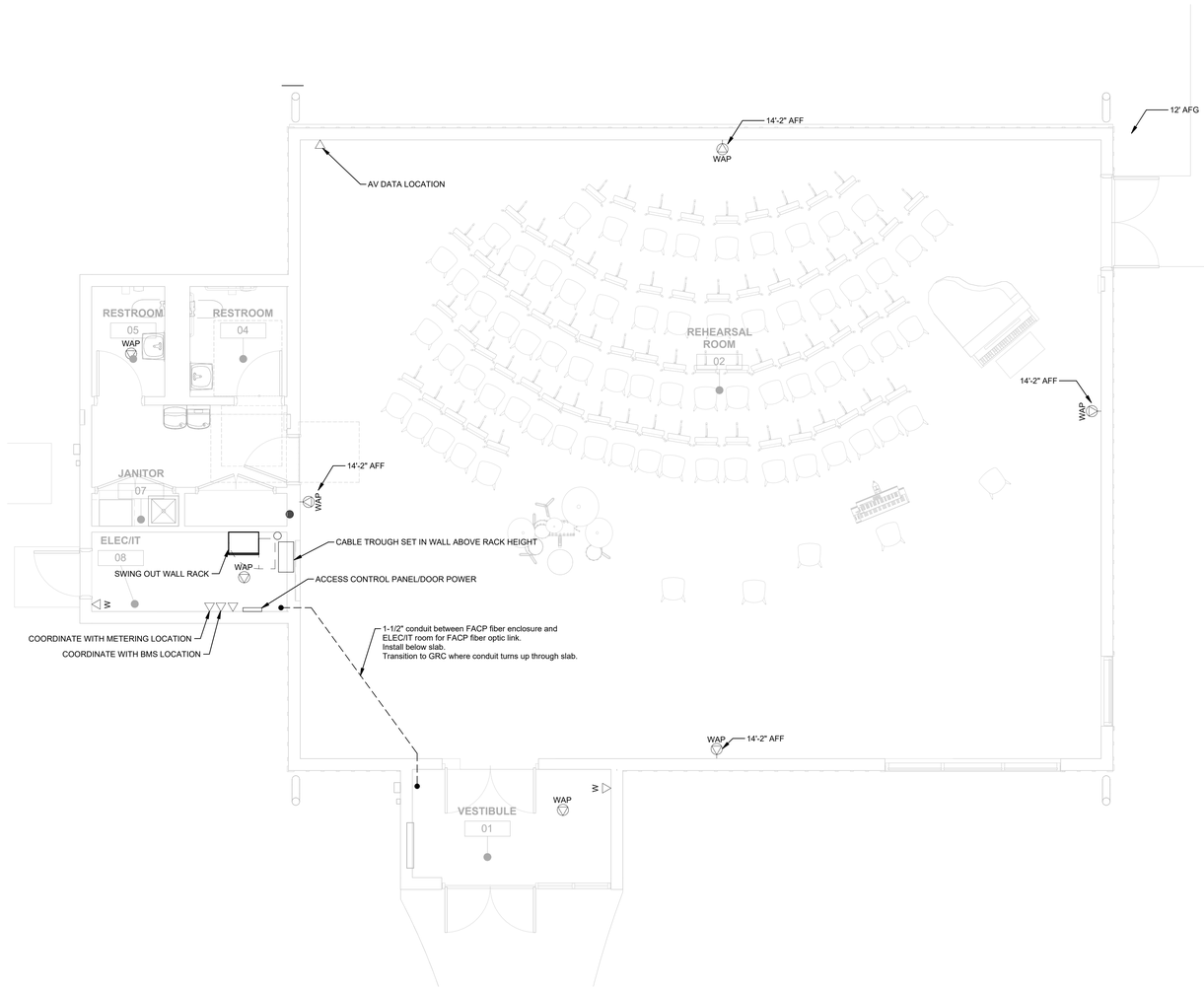
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NOTE:

CONDUITS FOR WALL MOUNTED IT AND AV INFRASTRUCTURE IN REHEARSAL AND VESTIBULE SPACES SHALL EXTEND THROUGH WALL INTO REHEARSAL CEILING SPACE, AND TERMINATE ADJACENT TO BASKET TRAY INSTALLED ABOVE-CEILING.



1 TELECOM - LEVEL 1 PLAN
1/4" = 1'-0"

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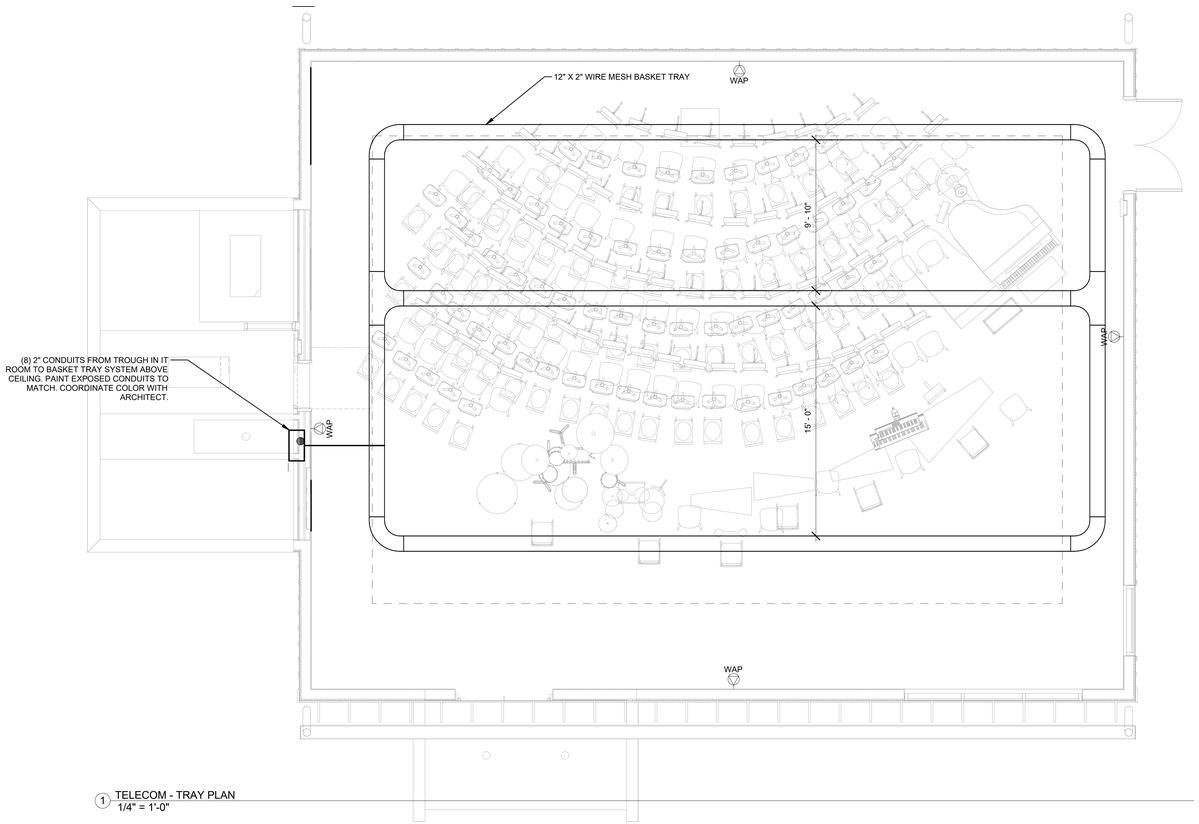
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TELECOM - LEVEL 1 PLAN

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1 TELECOM - TRAY PLAN
1/4" = 1'-0"

NOTES:

DESIGN INTENT FOR WIRE MESH BASKET TRAY SUPPORTING COMMUNICATIONS CABLES (REFERRED TO AS "TRAY" OR "CABLE TRAY") ABOVE THE CLOUD CEILING:
SUPPORT THE TRAY ABOVE THE CEILING PERIMETER PARTIAL-TILE SECTIONS. ACCESS FOLLOWING CEILING INSTALLATION REQUIRES REMOVING FULL-SIZE TILES.
THE CENTER SPAN IS OFFSET FROM THE MAIN SUPPLY DUCT TO AVOID HAVING TO SPAN SUPPORT AROUND THE DUCT.
THE TRAY SPANS ARE WITHIN 4-6" OF THE INTERIOR-ACCESSIBLE EDGE OF A ROW OF CEILING TILES.

WIRE MESH BASKET TRAY BOD IS LEGRAND/CABLOFIL PRODUCT
FINISH PG OR EZ (PRE-GALVANIZED OR ELECTROZINC)
** OR BL (BLACK PAINTED) AS REQUIRED FOR VISUAL STANDARDS
DIMENSIONS CF54/300 (2"X12")

SPLICING AND BENDING SUPPORT AND FIXING FITTINGS/ACCESSORIES AS REQUIRED

BASKET STRUCTURE WIRES CUT SQUARE AND DEBURRED
COUPFIL SIDE-ACTION ANGLE BOLT CUTTERS

EZ- OR RAD- T90RS RADIUS SHIELDS INSTALLED AT ALL CORNERS OF INTERSECTIONS

AS OR FAS-P TRAPEZE SUPPORTS ON THREADED ROD ATTACHED TO CEILING STRUCTURE. SUPPORTS SHALL BE ANCHORED TO INSTALLED LEVEL WITH APPROPRIATE HARDWARE ON BOTH SIDES OF THE SUPPORT.

PROTECTION SUCH AS THRDPT SHALL BE INSTALLED ON THREADED RODS FOR TRAPEZE SUPPORT AND ANY INCIDENTALLY PASSING THROUGH TRAY. PROTECTOR SHALL BE SECURED FROM VERTICAL MOVEMENT. 6" PROTECTOR THRDPT AND SIMILAR.

SUPPORTS DESIGNED FOR MAXIMUM TRY CABLE CAPACITY

BASKET TRAY IS FOR CONVEYANCE OF IT AND AV SYSTEM CABLING ONLY. ELECTRICAL, FIRE ALARM, HVAC CONTROLS, ETC. REQUIRE DEDICATED PATHWAY PER SPEC

#6 AWG GROUNDING CONDUCTOR SHALL BE INSTALLED IN A CONTINUOUS LOOP ALONG THE OUTSIDE OF THE TRAY. EACH INDIVIDUAL SECTION OF TRAY SHALL BE BONDED TO THE CONDUCTOR.
CONDUCTOR SHALL BE STRANDED COPPER, GREEN INSULATED. BONDING CONDUCTOR SHALL BE CONNECTED TO TGB. CONDUCTOR PATHWAY SHALL BE DEDICATED, AND BONDED PER NEC REQUIREMENTS.

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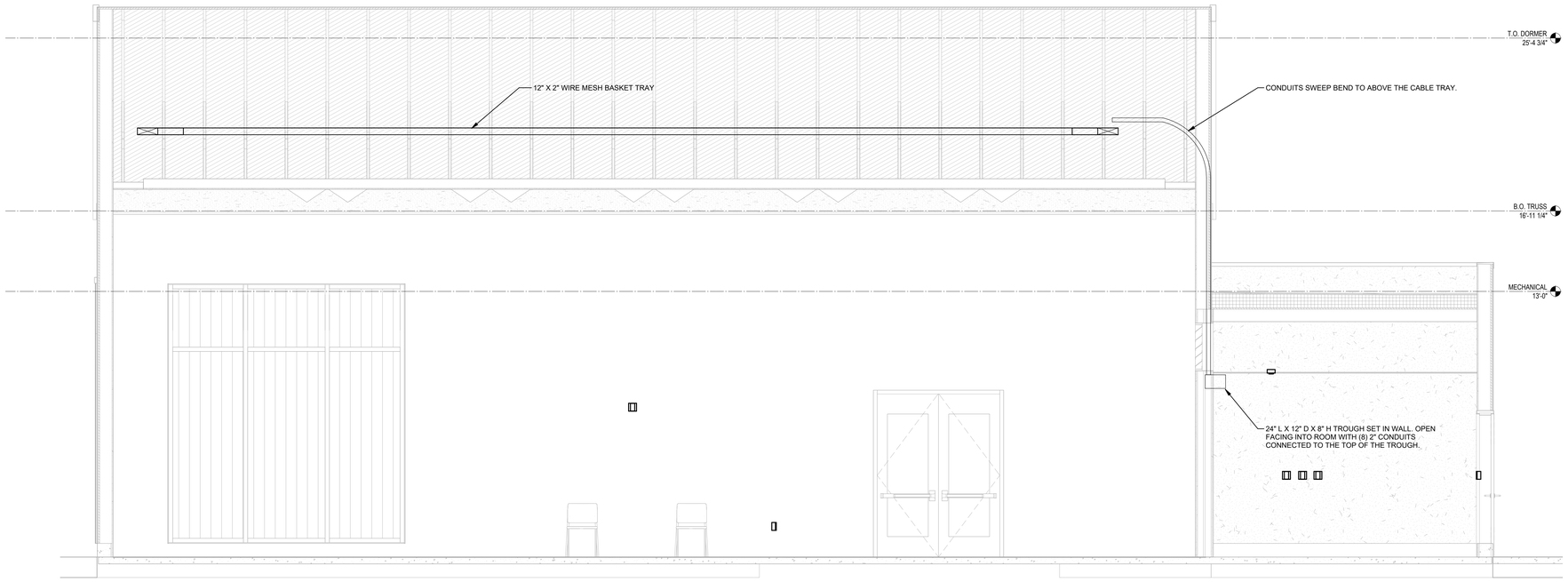
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TELECOM - TRAY PLAN

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1 TELECOM INFRASTRUCTURE SECTION
3/8" = 1'-0"

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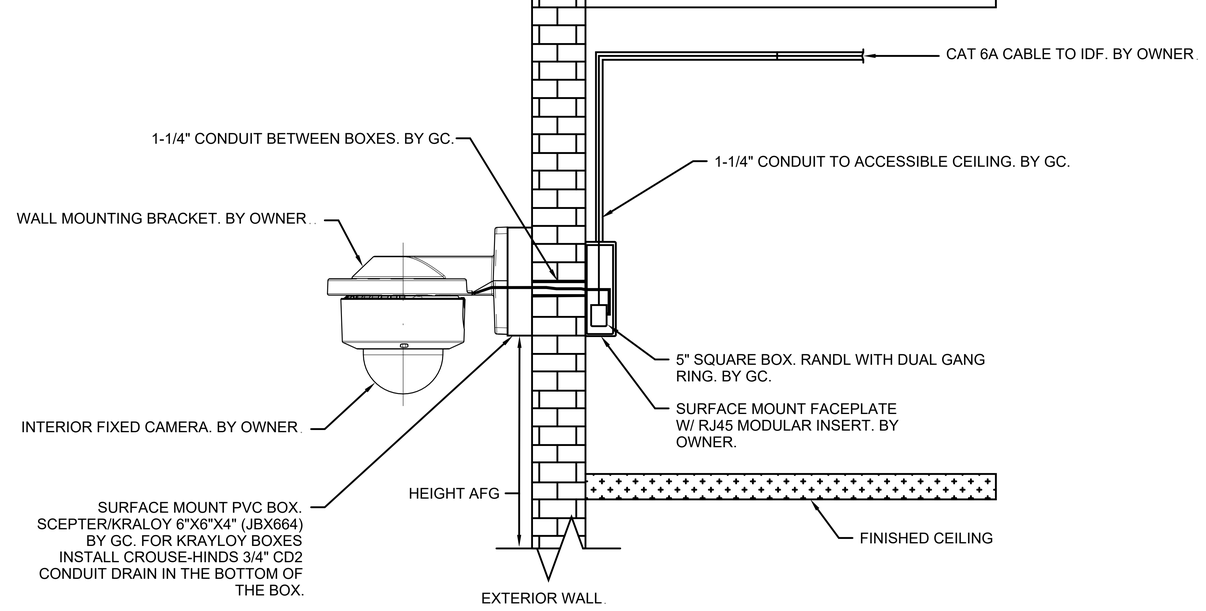
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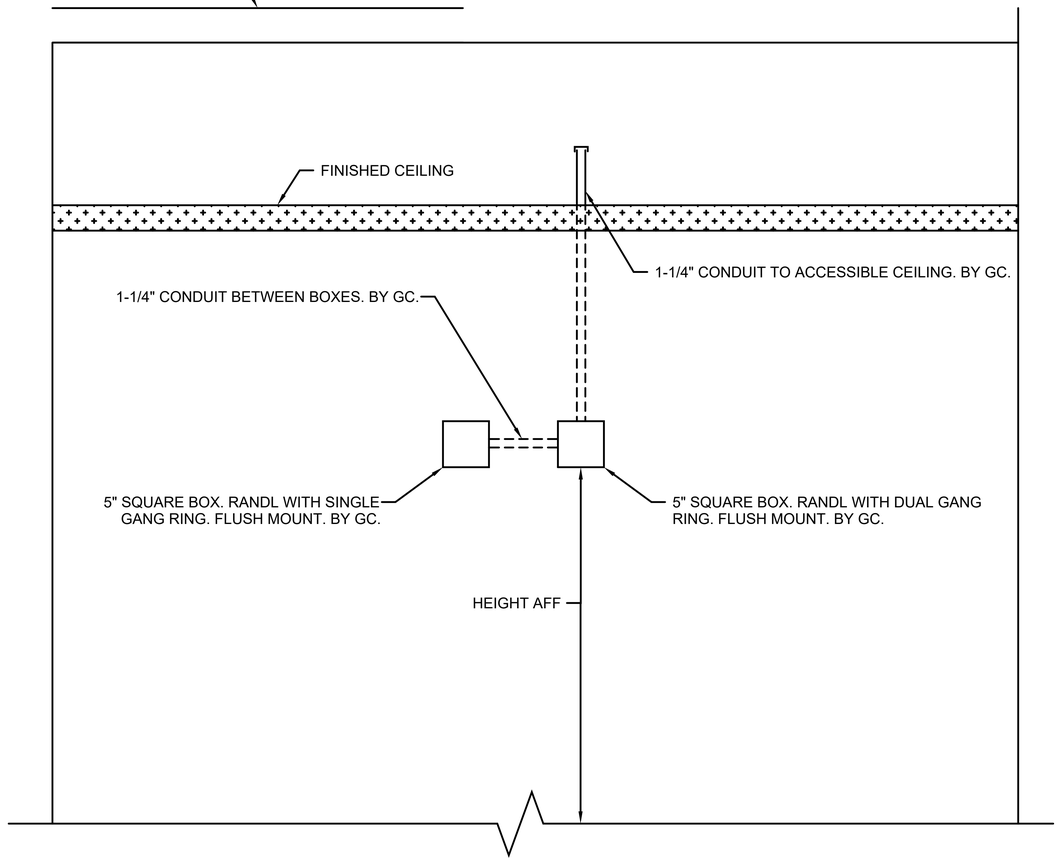
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3/16" = 1'-0"



2 Telecom Details - Interior Camera or AP unit pathway, Elevation
3/16" = 1'-0"

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