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Lenoir County

EB Frink Middle School

405 North Charles Street La Grange NC, 28551

RENDERING



VICINITY MAP



DRAWING INDEX

VOLUME 2

FIRE PROTECTION
FP-001 FIRE PROTECTION LEGEND, NOTES, AND DETAILS
FP-101 OVERALL FIRST FLOOR FIRE PROTECTION PLAN
FP-102 OVERALL MECH. PLATFORM FIRE PROTECTION PLAN
FP-501 FIRE PROTECTION DETAILS AND SCHEMATICS

PLUMBING
P-001 PLUMBING LEGEND, INDEX, AND NOTES
P-002 PLUMBING SCHEDULES
P-101 OVERALL PLUMBING PLAN
P-111 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100
P-112 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200
P-113 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300
P-114 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400
P-115 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500
P-116 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 600
P-117 MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 100
P-118 MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 200
P-119 ROOF PLUMBING DRAINAGE PLAN
P-211 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100
P-212 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200
P-213 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300
P-214 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400
P-215 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500
P-216 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 600
P-217 MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 100
P-218 MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 200
P-401 ENLARGED PLUMBING PLANS
P-502 U.L. PENETRATION DETAILS
P-503 WASTE & VENT RISER DIAGRAMS
P-504 DOMESTIC RISER DIAGRAM
P-601 PLUMBING DETAILS AND SCHEMATICS

MECHANICAL
M-001 MECHANICAL LEGEND & NOTES
M-002 MECHANICAL SCHEDULES
M-003 MECHANICAL SCHEDULES
M-004 VENTILATION CALCULATIONS
M-005 VENTILATION CALCULATIONS
M-010 MECHANICAL SITE PLAN
M-101 OVERALL MECHANICAL PLAN
M-111 FIRST FLOOR MECHANICAL PLAN - AREA 100
M-112 FIRST FLOOR MECHANICAL PLAN - AREA 200
M-113 FIRST FLOOR MECHANICAL PLAN - AREA 300
M-114 FIRST FLOOR MECHANICAL PLAN - AREA 400
M-115 FIRST FLOOR MECHANICAL PLAN - AREA 500
M-116 FIRST FLOOR MECHANICAL PLAN - AREA 600
M-117 MECH. PLATFORM MECHANICAL PLAN - AREA 100
M-118 MECH. PLATFORM MECHANICAL PLAN - AREA 200
M-119 OVERALL ROOF MECHANICAL PLAN
M-211 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 100
M-212 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 200
M-213 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300
M-214 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 400
M-215 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500
M-216 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 600
M-217 MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 100
M-218 MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 200
M-501 U.L. PENETRATION DETAILS
M-502 MECHANICAL DETAILS
M-503 MECHANICAL DETAILS
M-601 MECHANICAL CONTROL SEQUENCES OF OPERATION
M-602 MECHANICAL CONTROL POINTS LIST

ELECTRICAL
E-001 ELECTRICAL LEGEND AND NOTES
E-002 ELECTRICAL SPECIFICATIONS
E-010 ELECTRICAL SITE PLAN
E-011 ELECTRICAL SITE PLAN PHOTOMETRICS
E-111 FIRST FLOOR LIGHTING PLAN - AREA 100
E-112 FIRST FLOOR LIGHTING PLAN - AREA 200
E-113 FIRST FLOOR LIGHTING PLAN - AREA 300
E-114 FIRST FLOOR LIGHTING PLAN - AREA 400
E-115 FIRST FLOOR LIGHTING PLAN - AREA 500
E-116 FIRST FLOOR LIGHTING PLAN - AREA 600
E-117 MECH. PLATFORM LIGHTING PLAN - AREA 100
E-118 MECH. PLATFORM LIGHTING PLAN - AREA 200
E-211 FIRST FLOOR POWER PLAN - AREA 100
E-212 FIRST FLOOR POWER PLAN - AREA 200
E-213 FIRST FLOOR POWER PLAN - AREA 300
E-214 FIRST FLOOR POWER PLAN - AREA 400
E-215 FIRST FLOOR POWER PLAN - AREA 500
E-216 FIRST FLOOR POWER PLAN - AREA 600
E-217 MECH. PLATFORM POWER PLAN - AREA 100
E-218 MECH. PLATFORM POWER PLAN - AREA 200
E-219 ROOF POWER PLAN
E-451 ENLARGED CLASSROOM PLANS - LIGHTING
E-452 ENLARGED CLASSROOM PLANS - LIGHTING
E-453 ENLARGED CLASSROOM PLANS - LIGHTING
E-454 ENLARGED CLASSROOM PLANS -LIGHTING
E-455 ENLARGED CLASSROOM PLANS -LIGHTING
E-461 ENLARGED CLASSROOM PLANS - POWER
E-462 ENLARGED CLASSROOM PLANS - POWER
E-463 ENLARGED CLASSROOM PLANS - POWER
E-464 ENLARGED CLASSROOM PLANS - POWER
E-465 ENLARGED CLASSROOM PLANS - POWER
E-501 ENLARGED POWER PLANS - KITCHEN
E-502 ENLARGED ELECTRICAL PLANS
E-601 ELECTRICAL DETAILS
E-602 ELECTRICAL DETAILS
E-603 ELECTRICAL DETAILS
E-701 ELECTRICAL DIAGRAMS
E-702 PANEL SCHEDULES
E-703 PANEL SCHEDULES
E-704 PANEL SCHEDULES
E-705 PANEL SCHEDULES
E-706 PANEL SCHEDULES
E-707 EMERGENCY PANEL SCHEDULES
E-708 EMERGENCY PANEL SCHEDULES
E-801 MECHANICAL EQUIPMENT CONNECTION SCHEDULE
E-802 LIGHTING FIXTURE SCHEDULE

FIRE ALARM
FA-001 FIRE ALARM LEGEND & NOTES
FA-010 FIRE ALARM SITE PLAN
FA-111 FIRST FLOOR FIRE ALARM PLAN - AREA 100
FA-112 FIRST FLOOR FIRE ALARM PLAN - AREA 200
FA-113 FIRST FLOOR FIRE ALARM PLAN - AREA 300
FA-114 FIRST FLOOR FIRE ALARM PLAN - AREA 400
FA-115 FIRST FLOOR FIRE ALARM PLAN - AREA 500
FA-116 FIRST FLOOR FIRE ALARM PLAN - AREA 600
FA-117 MECH. PLATFORM FIRE ALARM PLAN - AREA 100
FA-118 MECH. PLATFORM FIRE ALARM PLAN - AREA 200

TECHNOLOGY - TELECOM
T-001 TELECOM LEGEND AND NOTES
T-010 TELECOM SITE PLAN
T-501 TELECOM DETAILS
T-502 TELECOM DETAILS
T-503 TELECOM DETAILS
T-504 TELECOM DETAILS
T-505 TELECOM DETAILS

TECHNOLOGY - INTERCOM
TI-111 FIRST FLOOR INTERCOM PLAN - AREA 100
TI-112 FIRST FLOOR INTERCOM PLAN - AREA 200
TI-113 FIRST FLOOR INTERCOM PLAN - AREA 300
TI-114 FIRST FLOOR INTERCOM PLAN - AREA 400
TI-115 FIRST FLOOR INTERCOM PLAN - AREA 500
TI-116 FIRST FLOOR INTERCOM PLAN - AREA 600

TECHNOLOGY - NETWORK
TN-101 FIRST FLOOR NETWORK PLAN - OVERALL
TN-111 FIRST FLOOR NETWORK PLAN - AREA 100
TN-112 FIRST FLOOR NETWORK PLAN - AREA 200
TN-113 FIRST FLOOR NETWORK PLAN - AREA 300
TN-114 FIRST FLOOR NETWORK PLAN - AREA 400
TN-115 FIRST FLOOR NETWORK PLAN - AREA 500
TN-116 FIRST FLOOR NETWORK PLAN - AREA 600
TN-121 MECH. PLATFORM NETWORK PLAN - AREA 100
TN-122 MECH. PLATFORM NETWORK PLAN - AREA 200
TN-401 ENLARGED NETWORK PLANS
TN-402 ENLARGED NETWORK PLANS
TN-403 ENLARGED NETWORK PLANS
TN-601 NETWORK RISER DIAGRAM

TECHNOLOGY - SECURITY
TY-111 FIRST FLOOR SECURITY PLAN - AREA 100
TY-112 FIRST FLOOR SECURITY PLAN - AREA 200
TY-113 FIRST FLOOR SECURITY PLAN - AREA 300
TY-114 FIRST FLOOR SECURITY PLAN - AREA 400
TY-115 FIRST FLOOR SECURITY PLAN - AREA 500
TY-116 FIRST FLOOR SECURITY PLAN - AREA 600
TY-121 MECH. PLATFORM SECURITY PLAN - AREA 100
TY-122 MECH. PLATFORM SECURITY PLAN - AREA 200
Grand total: 148

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SET NUMBER:

02/18/2025

Construction Documents

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EB Frink Middle School
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ENERGY STAR PARTNER

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PROJECT NUMBER: 02303.000

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FIRE PROTECTION DESIGN CRITERIA

SYMBOL	OCCUPANCY	TYPE	DESIGN DENSITY (GPM/SF)	HYDRAULIC REMOTE AREA (SF)	MAX. COVERAGE PER SPRINKLER HEAD (SF)	HOSE STREAM		AREAS OF COVERAGE
						INSIDE GPM	OUTSIDE GPM	
LH	LIGHT HAZARD	WET	0.10	1500	225	100	-	ENTIRE FACILITY, EXCEPT AS NOTED OTHERWISE
OH-1	ORDINARY HAZARD GROUP I	WET	0.15	1500	130	100	150	MECHANICAL ROOMS, STORAGE ROOMS, ELECTRICAL ROOMS, JANITORS CLOSETS, ETC.
OH-2	ORDINARY HAZARD GROUP II	WET	0.20	1500	130	100	150	STORAGE ROOMS WITH SHELVES OVER 8'-0" TALL

APPLICABLE PUBLICATIONS: THE FOLLOWING PUBLICATIONS SHALL BE USED AS A REFERENCE FOR THE DESIGN OF THE FIRE PROTECTION SYSTEM ON THIS PROJECT:

1. NFPA 13 - STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS - 2013 EDITION
2. NFPA 20 - STANDARD FOR THE INSTALLATION OF CENTRIFUGAL FIRE PUMPS - 2013 EDITION

NOTES:
1. DURING DESIGN CALCULATIONS, AN ALLOWANCE SHALL BE MADE FOR A 250 GPM HOSE STREAM.

SPRINKLER SCHEDULE

1. PROVIDE ADJUSTABLE CONCEALED PENDENT SPRINKLERS ALL LAY-IN ACOUSTICAL TILE AND GYPBOARD CEILINGS. COORDINATE COLOR OF CONCEALED SPRINKLER HEAD COVER-PLATE WITH ARCHITECT.
2. LOCATE SPRINKLERS TO AVOID OBSTRUCTIONS BY CEILING MOUNTED DEVICES. WHERE CEILING DEVICES OBSTRUCT SPRINKLER DISCHARGE, ADD ADDITIONAL SPRINKLERS SPACED AROUND THE OBSTRUCTION.
3. PROVIDE BRASS UPRIGHT SPRINKLERS IN EXPOSED AREAS WITH NO FINISH CEILING.
4. PROVIDE BRASS PENDENT SPRINKLERS WITH SHIELDS IN MECHANICAL ROOMS, ELECTRIC ROOMS, GYMNASIUMS, STORAGE ROOMS AND OTHER AREAS WHERE EXPOSED SPRINKLERS ARE SUBJECT TO DAMAGE.
5. PROVIDE RECESSED DRY STEM PENDENT SPRINKLER WITH WHITE PLATE IN AREAS SUBJECT TO FREEZING.
6. PROVIDE RECESSED SIDEWALL SPRINKLERS AS REQUIRED OR AS INDICATED.
7. PROVIDE INTERMEDIATE TEMPERATURE SPRINKLERS (175° F - 225°F ACTIVATION TEMPERATURE) IN ELEC. ROOMS, BOILER ROOMS, DATA CLOSETS AND WHEN SPRINKLER IS LOCATED WITHIN 18" OF HVAC DIFFUSER.
8. PROVIDE HIGH TEMPERATURE SPRINKLERS (250° F - 300°F ACTIVATION TEMPERATURE) IN KILN ROOMS OR OTHER AREAS SUBJECT TO HIGH TEMPERATURES.

* INSTALL SPRINKLERS IN ACCORDANCE WITH NFPA 13 AND THE MANUFACTURERS APPROVAL LISTING.
* PROVIDE QUICK RESPONSE SPRINKLERS.

FLOW TEST DATA

DATE / TIME	LOCATION	PRESSURE		FLOW (GPM)	FLOW AT 20 PSI (GPM)
		STATIC (PSI)	RESIDUAL (PSI)		
01-17-2025 3:00 PM	HYDRANT #170 AT W QUEEN AND N CHARLES	50	42	1165	2380

FLOW TEST NOTES:

1. THE CONTRACTOR SHALL OBTAIN A NEW FIRE FLOW TEST LESS THAN 1 YEAR OLD. THE FLOW TEST SHALL BE PERFORMED PER NFPA 291 WITH THE FLOW HYDRANT LOCATED AS CLOSE TO THE POINT OF CONNECTION AS POSSIBLE.
2. A 10% SAFETY FACTOR SHALL BE INCLUDED IN THE HYDRAULIC CALCULATIONS BASED ON THE LOW STATIC PRESSURE.
3. PROVIDE THE FLOW TEST DATA AND HYDRANT LOCATIONS WITH THE SUBMITTED SPRINKLER SHOP DRAWING PACKAGE, INCLUDING STATIC PRESSURE, RESIDUAL PRESSURE, FLOW IN GPM, HORIZONTAL AND VERTICAL DISTANCE OF TEST FROM BASE OF FIRE RISER, ORGANIZATION NAME PERFORMING FLOW AND PRESSURE TESTS, AND THE DATE AND TIME THE TEST WAS PERFORMED.

FIRE PUMP PACKAGE - FP1

PROVIDE A COMPLETE SKID MOUNTED, PRE-FABRICATED U.L. LISTED, FM APPROVED, FIRE PUMP PACKAGE. THE FIRE PUMP PACKAGE SHALL INCLUDE A 20 HP, 480 VOLT, 3 PHASE FIRE PUMP RATED FOR 300 GPM AT 40 PSI BOOST, AND A JOCKEY PUMP. PROVIDE 750 GPM TEST HEADER, BY-PASS LOOP, SUCTION CONTROL VALVE, SHUT-OFF VALVES, SERVICE ENTRANCE RATED AUTOMATIC TRANSFER SWITCH, SERVICE ENTRANCE RATED (WYE-DELTA CLOSED TRANSITION) FIRE PUMP CONTROLLER RATED FOR 600% OF THE FIRE PUMP'S RATED AMPERAGE WITH A VOLTAGE SURGE PROTECTOR, AND A JOCKEY PUMP CONTROLLER. THE FIRE PUMP PACKAGE SHALL MEET THE REQUIREMENTS OF NFPA 20, FM GLOBAL AND THE LOCAL AUTHORITY HAVING JURISDICTION.

MATERIALS AND INSTALLATION SPECIFICATIONS

GENERAL:
1. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

2. ABOVE GRADE PIPING:

   BLACK STEEL PIPING: SHALL BE ASTM A53, ASTM A135, OR ASTM A795, LISTED FOR FIRE SPRINKLER PIPING USE AND INCLUDE FM APPROVED MIC INHIBITING COATING.
   - PIPING 1 1/4" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL PIPE THREADED FOR THREADED FITTINGS FITTINGS.
   - PIPING 1 1/2" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PIPE ROLL GROOVED FOR MECHANICAL FITTINGS.
   - USE HOT-DIPPED GALVANIZED PIPE AND FITTINGS FOR COMPRESSED AIR PIPING, WATER MOTOR ALARM PIPING, BALL DRIP DISCHARGES, TEST AND DRAIN CONNECTIONS AND ANY OTHER SYSTEM PIPING SUBJECT TO ALTERNATE WETTING AND DRYING.

   - THREADED FITTINGS:
     UL-LISTED, STANDARD WEIGHT SUITABLE FOR PRESSURE UP TO 175 PSIG, CAST IRON MEETING ASTM A126 OR MALLEABLE IRON MEETING ASTM A197. THREADED CAST IRON FITTINGS SHALL MEET ANSI B16.4; FLANGED CAST IRON FITTINGS SHALL MEET ANSI B16.1. THREADED MALLEABLE IRON FITTINGS SHALL MEET ANSI B16.3.

   - GROOVED-END FITTINGS AND COUPLINGS:
     UL-LISTED, DUCTILE IRON MEETING ASTM A536, UTILIZING AN EDPM GASKET. PLAIN-END FITTINGS AND COUPLINGS, OR WELDED-SEGMENTED FITTINGS SHALL NOT BE USED. CHANGES IN PIPE DIAMETER SHALL BE MADE USING TAPERED REDUCING FITTINGS. BUSHINGS OR GROOVED-END REDUCING COUPLINGS SHALL NOT BE USED UNLESS STANDARD REDUCING FITTINGS ARE NOT REGULARLY AVAILABLE.

3. PIPE HANGERS:
   UL-LISTED SWIVEL LOOP TYPE WITH PRE-GALVANIZED CARBON STEEL BAND, HANGER RODS SIZED PER NFPA 13, UL-LISTED STEEL OR MALLEABLE IRON BEAM CLAMPS, UL-LISTED ANCHORS. POWER DRIVEN ANCHORS SHALL NOT BE USED.

4. VALVES:
   OUTSIDE SCREW AND YOKE (OSY): IRON BODY BRONZE MOUNTED, DOUBLE DISC WITH PARALLEL SEATS. BUTTERFLY: LUG TYPE, DUCTILE IRON BODY, STAINLESS STEEL STEM, ALUMINUM BRONZE DISC, PHENOLIC RING AND BUNA N SEAT. VALVES SHALL BE FM/UL LISTED AND APPROVED FOR FIRE PROTECTION SERVICE.

5. ESCUTCHEON PLATES:
   PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH FINISHED WALLS, FLOORS, OR CEILING. PROVIDE PRIME COAT PAINTED ESCUTCHEON PLATES WHERE PIPES PASS THROUGH WALLS, CEILINGS, ETC. IN UNFINISHED EXPOSED AREAS.

6. SPRINKLERS:
   LISTED IN UL'S FIRE PROTECTION EQUIPMENT DIRECTORY OR FM GLOBAL'S APPROVAL GUIDE. 175-PSIG MINIMUM. AUTOMATIC SPRINKLERS WITH HEAT RESPONSIVE ELEMENT. NOMINAL 1/2-INCH ORIFICE WITH DISCHARGE COEFFICIENT (K) OF 5.6, AND FOR "ORDINARY" TEMPERATURE CLASSIFICATION RATING UNLESS OTHERWISE INDICATED OR REQUIRED BY APPLICATION.

SPRINKLER PIPING SPECIALTIES:

1. FLEXIBLE SPRINKLER PIPE/HOSE FITTINGS: UL1474FLEXIBLE HOSE FOR CONNECTION TO SPRINKLER AND WITH BRACKET FOR CONNECTION TO CEILING GRID. PRESSURE RATED TO 175 PSIG MINIMUM.

INSTALLATION REQUIREMENTS:

1. CONCEAL FIRE PROTECTION SYSTEM PIPING ABOVE CEILINGS UNLESS NOTED OTHERWISE.
2. PROVIDE ALL NECESSARY OFFSETS, RISES, OR DROPS IN THE PIPING WHETHER OR NOT SHOWN ON THE WORKING PLANS.
3. CONNECT ALL SPRINKLER ALARM, TAMPER AND DETECTION SYSTEMS TO THE BUILDINGS CENTRAL FIRE ALARM SYSTEM, COORDINATE LOCATIONS AND REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.
4. PROVIDE HANGERS AND SUPPORTS FOR SPRINKLER SYSTEM PIPING ACCORDING TO NFPA 13. COMPLY WITH REQUIREMENTS FOR HANGER MATERIALS IN NFPA 13.
5. PROVIDE PRESSURE GAUGES ON RISER OR FEED MAIN, AT EACH SPRINKLER TEST CONNECTION, AND AT TOP OF EACH STANDPIPE. INCLUDE PRESSURE GAUGES WITH CONNECTION NOT LESS THAN 1/4" AND WITH SOFT-METAL SEATED GLOBE VALVE, ARRANGED FOR DRAINING PIPE BETWEEN GAUGE AND VALVE. INSTALL GAUGES TO PERMIT REMOVAL, AND LOCATE WHERE THEY ARE NOT SUBJECT TO FREEZING.
6. COORDINATE INSTALLATION OF SPRINKLERS WITH OTHER CONSTRUCTION THAT PENETRATES CEILINGS, INCLUDING LIGHT FIXTURES, HVAC EQUIPMENT, AND PARTITION ASSEMBLIES.
7. CENTER SPRINKLERS IN CEILING TILES IN AREAS WITH LAY-IN CEILINGS AND/OR VISUALLY ALIGNED IN AREAS WITH SMOOTH CEILINGS. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN DRAWINGS FOR CEILING TYPES, HEIGHTS, AND FEATURES. COORDINATE LOCATIONS WITH CEILING CONTRACTOR.
8. WHERE CONCEALED SPRINKLERS ARE SPECIFIED, COORDINATE COVER PLATE COLOR WITH ARCHITECT.
9. PROVIDE "INSPECTOR'S TEST CONNECTIONS" IN SPRINKLER SYSTEM PIPING, COMPLETE WITH SHUTOFF VALVE, AND SIZED AND LOCATED ACCORDING TO NFPA 13.
10. PROVIDE SPRINKLER PIPING WITH DRAINS FOR COMPLETE SYSTEM DRAINAGE.
11. PROVIDE CONTROL VALVES, TEST ASSEMBLIES, AND DRAIN RISERS ADJACENT TO STANDPIPES WHEN SPRINKLER PIPING IS CONNECTED TO STANDPIPES.
12. PROVIDE AUTOMATIC (BALL DRIP) DRAIN VALVE AT EACH CHECK VALVE FOR FIRE-DEPARTMENT CONNECTION, TO DRAIN PIPING BETWEEN FIRE-DEPARTMENT CONNECTION AND CHECK VALVE. INSTALL DRAIN PIPING TO AND SPILL OVER FLOOR DRAIN OR TO OUTSIDE BUILDING.
13. PAINT ALL EXPOSED FIRE PROTECTION SYSTEM PIPING (IN CLOSETS, STAIRWELLS, MECHANICAL ROOMS, ETC.). COLOR TO BE SELECTED BY THE ARCHITECT.
14. PROVIDE LABELING AND PIPE MARKERS ON EQUIPMENT AND PIPING ACCORDING TO REQUIREMENTS IN NFPA 13.
15. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE AMOUNT OF TIME SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

TESTING AND FLUSHING:

1. OVERHEAD SPRINKLER PIPING: TESTED FOR A PERIOD OF TWO HOURS AT A HYDROSTATIC PRESSURE OF 200 LBS. OR 50 PSI IN EXCESS OF THE WORKING PRESSURE WHICHEVER IS GREATER AND ALL PIPING, VALVES, HEADS,ETC. SHALL BE WATERTIGHT.

FIRE PROTECTION SHEET INDEX

FP-001	FIRE PROTECTION LEGEND, NOTES, AND DETAILS
FP-101	OVERALL FIRST FLOOR FIRE PROTECTION PLAN
FP-102	OVERALL MECH. PLATFORM FIRE PROTECTION PLAN
FP-501	FIRE PROTECTION DETAILS AND SCHEMATICS

FIRE PROTECTION LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
F	F	FIRE PROTECTION SUPPLY PIPING
WP	WP	WET PIPE SPRINKLER
D	D	DRAIN PIPING
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	-	SHUT-OFF VALVE
	CV	CHECK VALVE
	FDC	FIRE DEPARTMENT CONNECTION

ADDITIONAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MFG	MANUFACTURER
AFG	ABOVE FINISHED GRADE	PSI	POUNDS PER SQUARE INCH
BAS	BUILDING AUTOMATION SYSTEM	TS	TAMPER SWITCH
BFF	BELOW FINISHED FLOOR	TYP	TYPICAL
CLG	CEILING	WMG	WATER MOTOR GONG
CONT	CONTINUATION	WC	WATER COLUMN
DN	DOWN		
FS	FLOW SWITCH	EC	ELECTRICAL CONTRACTOR
FHV	FIRE HOSE VALVE	FSC	FOOD SERVICE CONTRACTOR
GPM	GALLONS PER MINUTE	GC	GENERAL CONTRACTOR
HP	HORSE POWER	MC	MECHANICAL CONTRACTOR
INV	INVERT ELEVATION	PC	PLUMBING CONTRACTOR
KW	KILOWATT		

FIRE PROTECTION NOTES

GENERAL REQUIREMENTS:

1. THE ENTIRE BUILDING SHALL BE PROTECTED BY AN AUTOMATIC WET SPRINKLER SYSTEM.
2. PROVIDE DESIGN, FABRICATION, AND INSTALLATION OF A HYDRAULICALLY CALCULATED AUTOMATIC SPRINKLER SYSTEM. INCLUDE ALL MATERIALS, LABOR, AND EQUIPMENT REQUIRED FOR A COMPLETE WORKING SYSTEM IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE STATE FIRE PREVENTION CODE, REFERENCED NFPA STANDARDS (NFPA 13R, NFPA 13, NFPA 14), THE OWNER'S INSURANCE UNDERWRITER, AND THE LOCAL AUTHORITY HAVING JURISDICTION.
3. OBTAIN A CURRENT FLOW TEST, LESS THAN 1 YEAR OLD, PRIOR TO STARTING THE DESIGN OF THE SPRINKLER SYSTEM. THE FLOW TEST REPORT SHALL INCLUDE THE STATIC PRESSURE, RESIDUAL PRESSURE, FLOW IN GPM, HORIZONTAL AND VERTICAL DISTANCE OF TEST FROM BASE OF FIRE RISER, THE NAME OF THE PERSON AND COMPANY WHOM PERFORMED THE FLOW TEST, THE TESTING COMPANY'S PHONE NUMBER, AND THE DATE AND TIME THE TEST WAS PERFORMED.
4. OBTAIN A COMPLETE AND CURRENT SET OF THE PROJECT CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS. COORDINATE SYSTEM LAYOUT (PIPING AND SPRINKLERS) WITH THE WORK OF OTHER TRADES BEFORE THE START OF CONSTRUCTION.
5. DESIGN AND HYDRAULICALLY CALCULATE THE SPRINKLER SYSTEM UTILIZING THE INFORMATION PROVIDED IN THE SYSTEM DESIGN CRITERIA ON THIS SHEET.
6. SUBMIT WORKING PLANS AND HYDRAULIC CALCULATIONS TO THE AUTHORITIES HAVING JURISDICTION FOR REVIEW AND OBTAIN APPROVAL BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
7. SUBMIT WORKING PLANS, HYDRAULIC CALCULATIONS, AND MATERIALS DATA TO THE SPECIFYING ENGINEER FOR REVIEW AND OBTAIN APPROVAL BEFORE STARTING THE INSTALLATION OF THE SPRINKLER SYSTEM.
8. DEVIATIONS FROM APPROVED WORKING PLANS FOR PIPING REQUIRE WRITTEN APPROVAL FROM AUTHORITIES HAVING JURISDICTION. PROVIDE COPY OF WRITTEN APPROVAL TO THE ARCHITECT AND ENGINEER BEFORE DEVIATING FROM APPROVED WORKING PLANS.
9. AT THE COMPLETION OF THE PROJECT, PROVIDE A SET OF RECORD DRAWINGS (PDF FORMAT) TO THE OWNER.

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La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
.0	01/23/2025	DOI COMMENT RESPONSE 02
.1	02/18/2025	BID SET /AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
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FIRE PROTECTION LEGEND, NOTES, AND DETAILS

FP-001

Sheet No. 1

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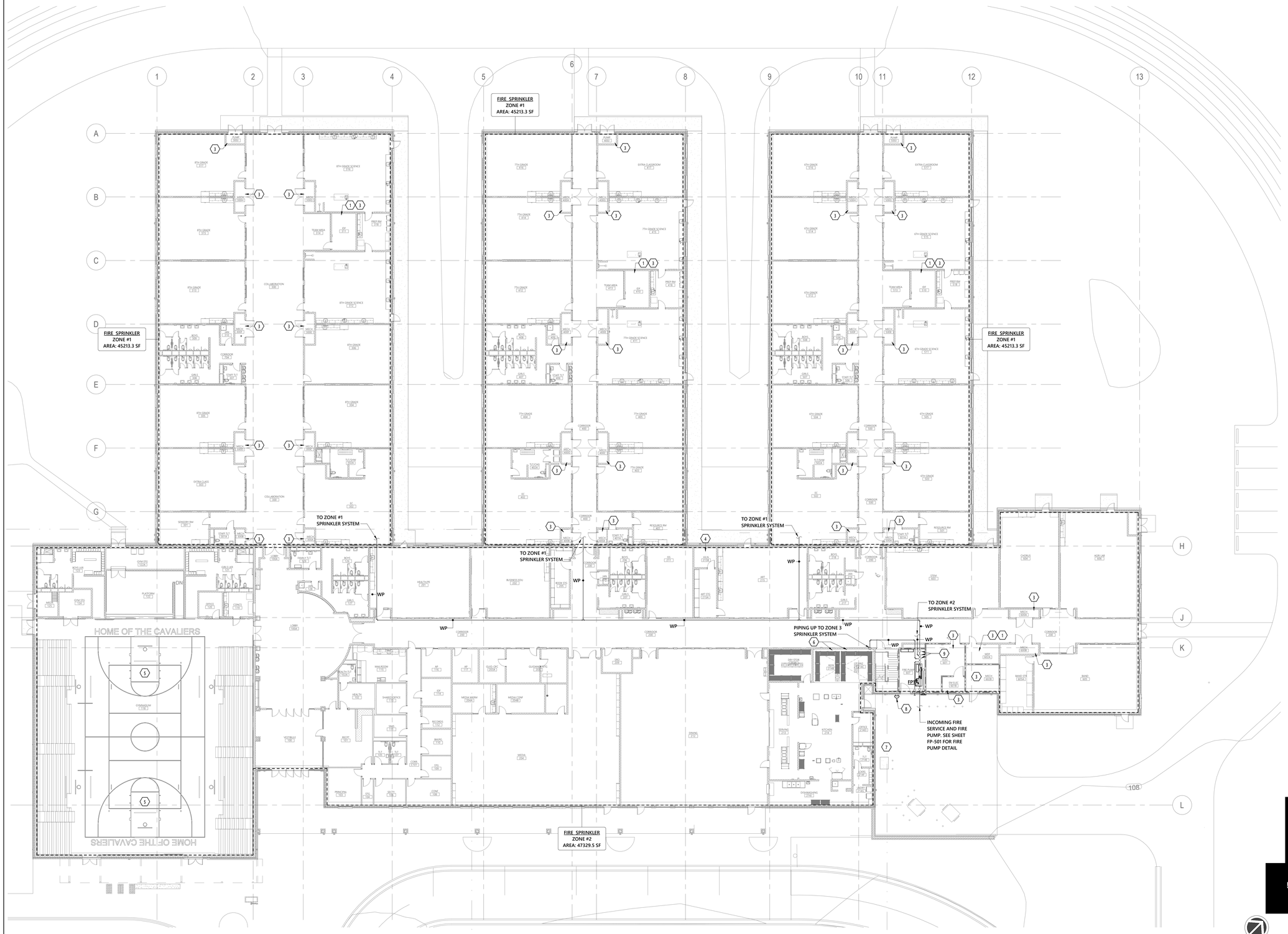
FP KEY NOTES

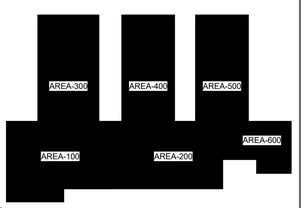
1. DATA ROOM: ROUTE ALL PIPING OUTSIDE DATA ROOM SPACES PROVIDE SIDEWALL SPRINKLER COVERAGE FOR ALL DATA ROOMS. PIPING SHALL NOT BE INSTALLED WITHIN DATA ROOMS.
2. MECHANICAL, ELECTRIC, DATA ROOMS: PROVIDE INTERMEDIATE TEMPERATURE SPRINKERS (200°F ACTIVATION TEMPERATURE).
3. KILN ROOM: PROVIDE HIGH TEMPERATURE SPRINKLERS (300°F ACTIVATION TEMPERATURE) FOR KILN ROOM. LOCATE SPRINKLERS AS FAR AWAY FROM KILN AS POSSIBLE.
4. GYMNASIUM: PROVIDE SPRINKLERS WITH GUARDS IN GYMNASIUM.
5. FREEZER AND COOLER: PROVIDE DRY-STEM PENDANT SPRINKLER COVERAGE.
6. LOADING DOCK: PROVIDE DRY-STEM SIDEWALL SPRINKLER COVERAGE.
7. FIRE ALARM BELL: PROVIDE 120V ALARM BELL MOUNTED 8'-0" AFF.
9. WET SPRINKLER RISER: SEE DETAIL 6/FP-501.



1 OVERALL FIRST FLOOR FIRE PROTECTION PLAN
1/16" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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OVERALL FIRST FLOOR FIRE PROTECTION PLAN

FP-101

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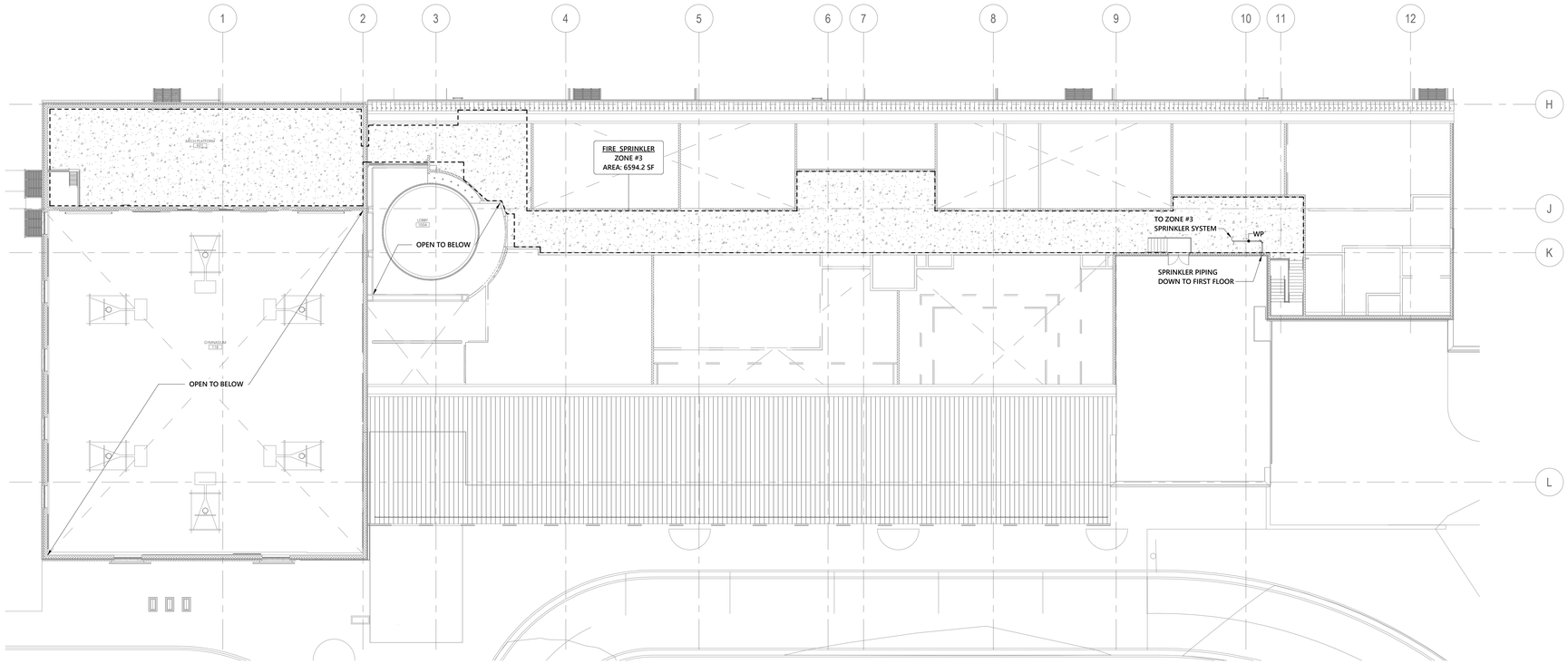
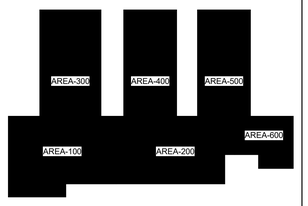


1 MECH. PLATFORM FIRE PROTECTION PLANS
1/16" = 1'-0"

KEYPLAN



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OVERALL MECH. PLATFORM FIRE PROTECTION PLAN

FP-102

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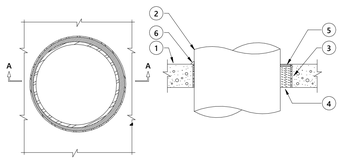
U.L. SYSTEM NO. CAJ1155
METAL PIPE THROUGH A SLEEVE IN CONCRETE WALL OR FLOOR

F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.



TOP VIEW SECTION A-A

1. FLOOR OR WALL ASSEMBLY: B. U.L. CLASSIFIED CONCRETE BLOCK WALL (MINIMUM 8" BLOCK). A. MINIMUM 4-1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR.

2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 20" DIAMETER STEEL PIPE.
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER EMT.

3. OPTIONAL: MAXIMUM 22" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).

4. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) RECESSED 1/2" FROM TOP OF SLEEVE.

5. MINIMUM 1/2" DEPTH HILTI FS-ONE FIRESTOP SEALANT.

6. A GENEROUS BEAD OF HILTI FS-ONE FIRESTOP SEALANT AROUND OUTER PERIMETER OF STEEL SLEEVE.

NOTES:
1. MAXIMUM DIAMETER OF OPENING = 22".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

INSTALLATION INSTRUCTIONS FOR UL NO.CAJ1155

STEP 1 - PREPARATION: to application of firestopping materials. All surfaces must be clean, sound, dry and frost free prior

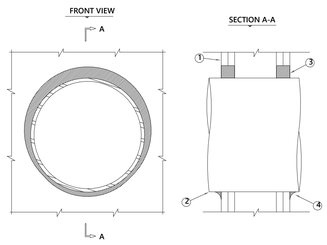
STEP 2 - BACKING MATERIAL: Firmly pack mineral wool around the penetrating item recessing it 1/2" below surface of the sleeve (or both ends of sleeve in wall)

STEP 3 - FIRESTOP SEALANT: Apply the Firestop Sealant over the backing material to a min. depth of 1/2" flush with the end(s) of the sleeve. Wall penetrations require Firestop Sealant installed on both sides. Leave completed seal undisturbed for 48 hours.

1 U.L. SYSTEM NO CAJ-1155 DETAIL
NOT TO SCALE

U.L. SYSTEM NO. WL1054
METAL PIPE THROUGH GYPSUM WALL ASSEMBLY

F RATING = 1-HR OR 2-HR
T RATING = 0-HR
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.



1. GYPSUM-WALL ASSEMBLY (1-HR. AND 2-HR. FIRE RATING)(2-HR. SHOWN).

2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 20" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER STEEL EMT.

1. MINIMUM DEPTH
   A. MINIMUM 5/8" DEPTH HILTI FS-ONE FIRESTOP SEALANT = 1-HR. FIRE-RATING. B. MINIMUM 1-1/4" DEPTH HILTI FS-ONE FIRESTOP SEALANT = 2-HR. FIRE-RATING.

2. MINIMUM 1/2" BEAD HILTI FS-ONE FIRESTOP SEALANT FOR POINT OF CONTACT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 22-1/4".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".

INSTALLATION INSTRUCTIONS FOR UL NO.WL1054

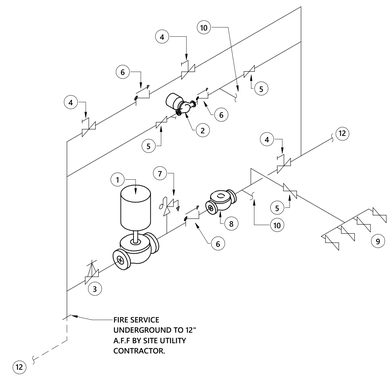
STEP 1 - PREPARATION: All surfaces must be clean, sound, dry and frost free prior to application of firestopping materials.

STEP 2 - FIRESTOP SEALANT: Apply a minimum 5/8" or 1-1/4" depth of FS-ONE in the annular space around the penetrating item. Tool excess sealant beyond perimeter of the opening 1/2" onto wall surface. Leave completed seal undisturbed for for 48 hours.

2 U.L. SYSTEM NO WL1054 DETAIL
NOT TO SCALE

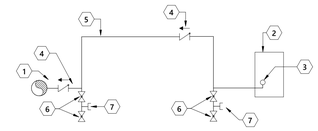
FIRE PUMP NOTES:

1. FIRE PUMP: SEE SHEET FP-001
2. JOCKEY PUMP
3. O.S.&Y. GATE VALVE WITH TAMPER SWITCH
4. INDICATING SHUT-OFF VALVE WITH TAMPER SWITCH
5. INDICATING SHUT-OFF VALVE
6. SWING CHECK VALVE
7. PRESSURE RELIEF VALVE DISCHARGING TO EXTERIOR.
8. SUCTION CONTROL VALVE
9. FIRE PUMP TEST HEADER, CHROME PLATED FOUR OUTLET WITH VALVES, CAPS AND CHAINS.
10. CONNECTION FOR FIRE PUMP CONTROLLER (SEE FIRE PUMP SENSING LINE SCHEMATIC)
11. CONNECTION FOR JOCKEY PUMP CONTROLLER (SEE FIRE PUMP SENSING LINE SCHEMATIC)
12. FIRE MAIN TO SPRINKLER SYSTEM RISERS.



3 FIRE PUMP PIPING SCHEMATIC
NOT TO SCALE

FIRE PUMP LINE SENSING SCHEMATIC



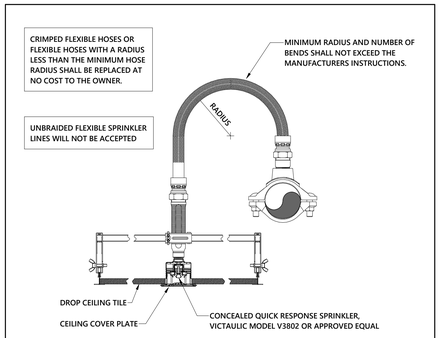
EQUIPMENT SCHEDULE

1. PUMP DISCHARGE LINE. CONNECT BETWEEN CHECK VALVE AND CONTROL VALVE.
2. FIRE PUMP OR JOCKEY PUMP CONTROLLER
3. PRESSURE SWITCH
4. BRONZE CHECK VALVE WITH 3/32" ORIFICE IN THE CLAPPER.
5. NOT LESS THAN 1/2" BRASS PIPE WITH BRASS FITTINGS OR EQUIVALENT.
6. 1/2" GLOBE VALVE
7. 1/4" PLUG

NOTE: A MINIMUM OF 5`-0" OF PIPING SHALL SEPARATE THE TWO CHECK VALVES.

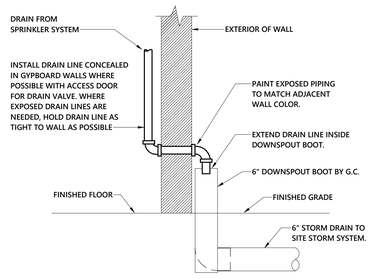
CRIMPED FLEXIBLE HOSES OR FLEXIBLE HOSES WITH A RADIUS LESS THAN THE MINIMUM HOSE RADIUS SHALL BE REPLACED AT NO COST TO THE OWNER.

UNBRAIDED FLEXIBLE SPRINKLER LINES WILL NOT BE ACCEPTED



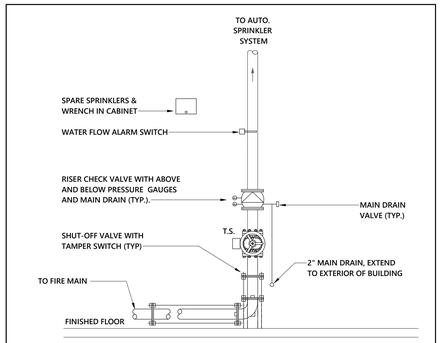
BRAIDED FLEXIBLE HOSE SPRINKLER ASSEMBLIES FOR CONCEALED PENDENT SPRINKLERS

4 TYPICAL RETURN BEND SCHEMATIC - FLEXIBLE HOSE
NOT TO SCALE



NOTE: DO NOT SPILL SPRINKLER DRAIN ONTO PAVING OR LANDSCAPING OF ANY TYPE. DISCHARGE SPRINKLER DRAINS INTO DOWNSPOUT BOOTS AT THE LOCATIONS DESIGNATED ON THE PLANS. IF ADDITIONAL AUXILIARY DRAINS ARE NEEDED, THE SPRINKLER CONTRACTOR SHALL PROVIDE A DOWNSPOUT BOOT AND EXTEND A 6" STORM DRAIN LINE UNDERGROUND TO THE NEAREST SITE STORM DRAIN INLET FOR EACH AUXILIARY DRAIN. OBTAIN DESIGN TEAM APPROVAL FOR ANY ADDITIONAL AUXILIARY DRAIN LOCATIONS PRIOR TO INSTALLATION. DOWNSPOUT BOOTS SHALL MATCH THE OTHER DOWNSPOUT BOOTS UTILIZED ON THE BUILDING. COORDINATE SPRINKLER DRAIN LOCATIONS WITH G.C. AND SITE GRADING PLANS.

5 TYPICAL DRAIN TO DOWNSPOUT BOOT
NOT TO SCALE



6 SPRINKLER RISER DETAIL
NOT TO SCALE

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FIRE PROTECTION DETAILS AND SCHEMATICS

FP-501

Sheet No. 4

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KITCHEN CONNECTION NOTES

1. PLUMBING CONTRACTOR TO BE RESPONSIBLE FOR PROTECTION OF DOMESTIC WATER SYSTEM AGAINST BACKFLOW AND BACK SIPHONING WHEN A 'HARD' CONNECTION IS MADE TO ANY KITCHEN EQUIPMENT OR APPLIANCE. PER NC PLUMBING CODE 608.3, ALL DEVICES, APPURTENANCES,APPLIANCES, AND APPARATUS INTENDED TO SERVE SPECIAL FUNCTIONS SUCH AS PROCESSING, COOKING, HEATING, OR STORAGE OF ICE THAT ARE CONNECTED TO THE WATER SUPPLY SHALL BE PROVIDED WITH PROTECTION AGAINST BACKFLOW CONTAMINATION OF WATER SUPPLY SYSTEM.

2. WATER FILTERS, SOFTENERS, AND HOLDING TANKS OF POTABLE WATER SHALL BE PROTECTED AGAINST CONTAMINATION. THE PC SHALL COOPERATE WITH KITCHEN EQUIPMENT CONTRACTOR AND SHALL VERIFY MOST ADEQUATE PROTECTION REQUIRED. ANY APPROVED DEVICE EITHER EXTERIOR TO OR BUILT-INTO THE APPLIANCE SHALL BE ACCEPTABLE.

LAB CONNECTION NOTES

1. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL INTER-CONNECTING WATER, WASTE, INDIRECT DRAIN PIPING AND FINAL CONNECTIONS TO LAB EQUIPMENT. COORDINATE WITH LAB EQUIP. SUPPLIER, SEE LAB EQUIPMENT DRAWINGS AND LAB EQUIPMENT SPECIFICATIONS FOR ADDITIONAL PLUMBING REQUIREMENTS.

CABLE TRAY COORDINATION

A MINIMUM OF 12" CLEARANCE ABOVE THE CABLE TRAY AND 24" CLEARANCE TO ACCESS THE TRAY IS REQUIRED AT ALL LOCATIONS. PLUMBING PIPING SHALL NOT BE INSTALLED IN THE CABLE TRAY, NOR BE SUPPORTED BY THE CABLE TRAY OR THE CABLE TRAY SUPPORTS. PLUMBING PIPING SHALL NOT OBSTRUCT THE TRAY AND MUST LEAVE THE TRAY ACCESSIBLE THROUGHOUT ITS ROUTING.

SUMP PUMP DRAIN PIPING

1. SUMP PUMP DISCHARGE PIPING: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2" AND SMALLER SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32), JOINTS 2-1/2" AND LARGER SHALL BE BCUP SILVER / PHOSPHORUS / COPPER BRAZED JOINTS (AWS A5.8). SLOPE SUMP DISCHARGE LINE AT 1% SLOPE AWAY FROM SUMP PUMP.

LIQUID PROPANE PIPING

LIQUID PROPANE PIPING:

1. LIQUID PROPANE PIPING AND FITTINGS OUTSIDE BELOW GRADE:
   A. POLYETHYLENE (PE) PIPE (ASTM 2513, SDR 11) WITH SOCKET FUSION TYPE (ASTM D2683) OR BUTT FUSION TYPE (ASTM D3261) FITTINGS (MATCH PE PIPE DIMENSIONS) INSTALLED IN ACCORDANCE WITH ASTM D2774. INSTALL IN WATER TIGHT SCHEDULE 40 PVC CONDUIT WIHT AND INSIDE DIAMETER AT LEAST ONE INCH LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE, WITH NO JOINTS INSIDE CONDUIT. PROVIDE PE PIPE TO STEEL TRANSITION FITTINGS AS NEEDED FOR ABOVE GROUND CONNECTIONS TO METER AND/OR EQUIPMENT.
   B. BLACK STEEL, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND FORGED STEEL WELDING TYPE FITTINGS (ASTM A234) WITH (AWWA C105) POLYETHYLENE JACKET OR DOUBLE LAYER, HALF LAPPED 10 MIL POLYETHYLENE TAPE. PROVIDE WELDED JOINTS (ASME B31.9) FOR ALL UNDERGROUND PIPE.

2. LIQUID PROPANE PIPING AND FITTINGS ABOVE GRADE:
   A. SCHEDULE 40 BLACK STEEL PIPING, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND 150 PSI MALLEABLE BLACK IRON FITTINGS, GRADE 32510, (ASTM B 16.3) OR FORGED STEEL WELDING TYPE FITTINGS (ASTM A234). PROVIDE THREADED JOINTS FOR PIPE 2" AND SMALLER. PROVIDE WELDED JOINTS (ASME B31.9) FOR PIPE 2-1/2" AND LARGER.
   B. SCHEDULE 40 CARBON STEEL PIPE (ASTM A 53) AND COLD PRESS MECHANICAL JOINT FITTINGS WITH EPDM SEALING ELEMENTS (VIEGA MEGAPRESS).

PRESSURE REGULATORS:

1. GAS PRESSURE REGULATORS SHALL COMPLY WITH ANSI Z21.80. PRESSURE REGULATOR SHALL MAINTAIN DISCHARGE PRESSURE SETTING DOWNSTREAM AND NOT EXCEED 150 PERCENT OF DESIGN DISCHARGE PRESSURE AT SHUTOFF. OVERPRESSURE PROTECTION DEVICE SHALL BE FACTORY MOUNTED ON REGULATOR. WHEN USING VENT-LESS REGULATORS, MOUNT REGULATOR IN A HORIZONTAL UPRIGHT POSITION. IF VENTED TYPE REGULATORS ARE USED, INSTALL VENT PIPING (FULL SIZE OPENING) FROM GAS PRESSURE REGULATORS TO OUTDOORS AND TERMINATE IN WEATERPROOF HOOD.

VALVES:

1. PROVIDE A.G.A. CERTIFIED SHUT-OFF VALVES MINIMUM, 125 PSI RATED, NON-LUBRICATED PLUG TYPE WITH BRONZE BODY AND BRONZE PLUG, STRAINERS AND REGULATORS (AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER) FOR ALL EQUIPMENT CONNECTED TO THE LIQUID PROPANE SYSTEM.

INSTALLATION:

1. SPACE GAS PIPING HANGER RODS 7'-0" ON CENTER MAXIMUM AND SPACE TRANSVERSE BRACING 20'-0" ON CENTER MAXIMUM. TRANSVERSE BRACING FOR ONE SECTION MAY ACT AS LONGITUDINAL BRACING FOR THE PIPE SECTION CONNECTED TO IT IF THE BRACING IS INSTALLED WITHIN 24" OF THE ELBOW OR TEE. COORDINATE HANGER LOCATIONS WITH STRUCTURAL DRAWING DETAILS.

2. PAINT EXPOSED GAS PIPING (OUTDOOR) WITH TWO COATS OF YELLOW ENAMEL PAINT, APPLIED WITH A BRUSH (2 MIL THICKNESS MINIMUM), STENCIL "GAS" ON PIPE AT 12'-0" CENTERS FOR ALL LOW PRESSURE PIPING (0.5 PSI). STENCIL "2-PSI GAS" ON PIPE AT 5'-0" CENTERS FOR 2 PSI GAS PIPING.

DRAINAGE PIPING SPECIFICATIONS

SANITARY WASTE AND VENT PIPING:

1. SANITARY WASTE PIPING BELOW GRADE:
   A. SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564)
   B. CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) [WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15)].
   B. SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321.
2. SANITARY WASTE AND VENT PIPING ABOVE GRADE:
   A. CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) [WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15)].
   B. SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED.

CONDENSATE WASTE PIPING:

1. CONDENSATE PIPING BELOW GRADE:
   A. SERVICE WEIGHT CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564.
   B. CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) [WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15)].
   C. SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321. FOAM CORE PIPE IS NOT APPROVED.

2. CONDENSATE PIPING ABOVE GRADE:
   A. SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) [WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15)].
   B. SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED.

CLEANOUTS:

1. PROVIDE CLEAN-OUTS AT THE BASE OF ALL DRAINAGE STACKS AND AT EVERY TURN IN PIPING IN EXCESS OF 45° AND NO FURTHER THAN 100'-0" APART. INSTALL CLEANOUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

2. PROVIDE CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CONCRETE, CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.

INSTALLATION:

1. SLOPE ALL DRAINAGE PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2 1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE.

2. SLOPE SUMP DISCHARGE LINE AT 1% SLOPE TOWARDS DISCHARGE POINT

3. WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.

4. INSULATE MECHANICAL ROOM FLOOR DRAIN BODIES, P-TRAP AND HORIZONTAL DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET.

5. INSULATE HORIZONTAL DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET.

6. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD.

7. DRAINAGE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.

WATER SUPPLY PIPING SPECIFICATIONS

DOMESTIC WATER PIPING:

1. DOMESTIC WATER PIPING AND JOINTS BELOW GRADE
   PIPING 4" AND LARGER:
   A. DUCTILE IRON PIPE (AWWA C151, AWWA C110) AND FITTINGS WITH MECHANICAL JOINTS (AWWA C111). DUCTILE- OR GRAY-IRON GLANDS, RUBBER GASKETS AND STEEL BOLTS.

   PIPING 1 1/4" TO 3":
   A. TYPE 'K', DRAWN-TEMPER (HARD) COPPER TUBE (ASTM B88) WITH PRESSURE-SEAL JOINT FITTINGS (CAST-BRASS, CAST-BRONZE OR WROUGHT-COPPER) WITH EPDM O-RING SEAL ON EACH END. 250 PSI WORKING PRESSURE AT 250° F.
   B. TYPE 'L' DRAWN-TEMPER COPPER TUBE (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18) WITH BCUP SILVER/PHOSPHORUS/COPPER BRAZED JOINTS (AWS A5.8).

2. DOMESTIC WATER PIPING AND JOINTS ABOVE GRADE
   PIPE 2 1/2" AND LARGER:
   A. TYPE 'L', DRAWN-TEMPER COPPER TUBE (ASTM B 88) WITH PRESSURE-SEAL JOINT FITTINGS (CAST-BRASS, CAST-BRONZE OR WROUGHT-COPPER) WITH EPDM O-RING SEAL ON EACH END. 200 PSI WORKING PRESSURE AT 250° F.
   B. TYPE 'L' DRAWN-TEMPER COPPER TUBE (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18) WITH BCUP SILVER/PHOSPHORUS/COPPER BRAZED JOINTS (AWS A5.8).

   PIPE 2" AND SMALLER:
   A. TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBE (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18) WITH LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32).
   B. TYPE 'L', DRAWN-TEMPER COPPER TUBE (ASTM B 88) WITH PRESSURE-SEAL JOINT FITTINGS (CAST-BRASS, CAST-BRONZE OR WROUGHT-COPPER) WITH EPDM O-RING SEAL ON EACH END. 200 PSI WORKING PRESSURE AT 250° F.

VALVES:

1. PROVIDE TWO-PIECE, BRONZE OR BRASS BODY, FULL PORT, 600 PSI WOG, BALL TYPE SHUT-OFF VALVES WITH BLOW-OUT PROOF STEMS AND ADJUSTABLE PACKING GLANDS. VALVES SHALL BE LEAD FREE PER NSF 61, ANNEX G REQUIREMENTS. INSTALL VALVES IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

PIPE INSULATION:

1. DOMESTIC WATER PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES ARE REQUIRED TO MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSULATION SHALL BE CONTINUOUS AT ALL HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION

INSTALLATION:

1. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.

2. PROTECT COPPER PIPING AGAINST CONTACT WITH ALL MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.

3. DOMESTIC WATER PIPING SHALL BE SLOPED FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.

4. INSULATE DOMESTIC WATER DISTRIBUTION SYSTEMS (HOT AND COLD) USING COPPER TUBE/PIPE WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND CANVAS OR PVC JACKETING.

5. PIPE INSULATION CONDUCTIVITY SHALL NOT EXCEED 0.27 BTU-IN/H PER FT² °F. FOLLOW SCHEDULE BELOW:

SERVICE TYPE	PIPE SIZES	THICKNESS	R-VALUE
DOMESTIC HOT WATER (SUPPLY & RETURN)	1/2" - 3/4"	1"	R7
DOMESTIC HOT WATER (SUPPLY & RETURN)	1" - 1 1/4"	1 1/2"	R12.5
DOMESTIC HOT WATER (SUPPLY & RETURN)	1 1/2" - 4"	1 1/2"	R11
DOMESTIC COLD WATER	1/2" - 1 1/4"	1"	R6.5
DOMESTIC COLD WATER	1 1/2" - 4"	1"	R6.5

6. STERILIZE THE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE AMERICAN WATER WORKS ASSOCIATION'S SPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.

7. DOMESTIC WATER SUPPLY PIPING SHALL BE TESTED AND PROVED WATERTIGHT UNDER A WATER PRESSURE OF NO LESS THAN THE WORKING PRESSURE OF THE SYSTEM, OR AN AIR TEST OF NO LESS THAN ONE-HUNDRED (100) PSI. THIS PRESSURE SHALL BE HELD FOR AT LEAST FIFTEEN (15) MINUTES. WATER USED IN TESTING SHALL BE OBTAINED FROM A POTABLE SOURCE OF SUPPLY.

8. BALANCE THE DOMESTIC HOT WATER CIRCULATION SYSTEM TO THE PERFORMANCE SPECIFICATIONS INDICATED ON THE PLANS.

PLUMBING GENERAL NOTES

1. GENERAL AND SPECIAL CONDITIONS OF THE CONTRACT APPLY TO THE PLUMBING SCOPE OF WORK. THE PLUMBING DRAWINGS AND SPECIFICATIONS SHALL NOT BE INTERPRETED AS WAIVING OR OVERRULING ANY REQUIREMENTS EXPRESSED IN GENERAL CONDITIONS.

2. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 NORTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

3. SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.

4. PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.

5. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE TIME PERIOD SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

6. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.

7. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONS OF ALL LOCATIONS OF PLUMBING FIXTURES, FLOOR DRAINS, COLUMNS, WALLS, DOORS, ETC.

8. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.

9. ALL CAST IRON PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

10. ALL VALVES, BACKFLOW PREVENTERS, BOOSTER PUMPS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.

11. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC. AND INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

12. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.

13. PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE.

14. PIPE PENETRATIONS THRU WALLS, PARTITIONS AND FLOORS SHALL BE SLEEVED. CORE DRILLING THRU WALLS AND PARTITIONS IS PERMITTED IF PERFORMED IN A NEAT CRAFTSMAN LIKE MANNER. OPENINGS THRU WALLS, PARTITIONS, AND FLOORS SHALL BE LARGE ENOUGH FOR PIPE INSULATION TO REMAIN CONTINUOUS. PIPES PENETRATING THRU EXTERIOR WALLS SHALL BE SEALED WATER TIGHT. INSTALL ESCUTCHEONS IN ALL EXPOSED AREAS.

15. PROVIDE ACCESS DOORS FOR ALL SPECIALTIES, VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC., CONCEALED BEHIND WALLS OR CEILINGS THAT REQUIRE MAINTENANCE ACCESS. COORDINATE WITH ARCHITECT.

16. DO NOT INSTALL PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.

17. PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.

18. PROVIDE A CHROME FINISH FOR ALL EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.

19. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.

20. REFER TO THE STRUCTURAL PLANS AND DETAILS FOR ACCEPTABLE LOCATIONS TO ATTACH HANGERS AND SUPPORTS TO THE BUILDING STRUCTURE. HANGERS SHALL NOT ATTACH TO THE ROOF DECK.

21. PROVIDE MANUFACTURERS RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE.

22. VALVES AND OTHER PIPING ACCESSORIES REQUIRING ACCESS SHALL BE INSTALLED IN ACCESSIBLE LOCATION NO MORE THAN 18" ABOVE THE CEILING, PROVIDE OFFSETS IN PIPING AS NEEDED.

23. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM, STORM DRAIN SYSTEM, LIQUID PROPANE GAS SYSTEM.

FIRE STOPPING:

1. FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.

PIPE IDENTIFICATION:

1. PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.

2. PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE, EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

SUBMITTALS:

1. PROVIDE SUBMITTALS BEARING THE CONTRACTORS REVIEW STAMP FOR ALL PLUMBING FIXTURES, PIPING, EQUIPMENT AND ACCESSORIES IN ELECTRONIC FORMAT (PDF).

2. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.

3. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

GREASE WASTE PIPING SPECIFICATIONS

GREASE WASTE AND VENT PIPING:

1. GREASE WASTE PIPING BELOW GRADE:
   A. SERVICE WEIGHT HIGH-PERFORMANCE COATED CAST IRON HUB AND SPIGOT PIPE (ASTM A 74) WITH COMPRESSION JOINTS (CISPI HSN) AND NEOPRENE GASKETS (ASTM C 564) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15). PIPE COATING SHALL CONSIST OF A CHEMICALLY DEPOSITED ZINC-PHOSPHATE PRETREATMENT LAYER FOLLOWED BY AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE CATHODIC EPOXY COATING AND FINISHED WITH AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE ANODIC EPOXY TOP COAT. (CHARLOTTE PIPE EDGE HP IRON OR APPROVED EQUAL).

2. GREASE WASTE PIPING ABOVE GRADE:
   A. HIGH-PERFORMANCE COATED CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15). PIPE COATING SHALL CONSIST OF A CHEMICALLY DEPOSITED ZINC-PHOSPHATE PRETREATMENT LAYER FOLLOWED BY AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE CATHODIC EPOXY COATING AND FINISHED WITH AN ELECTRICALLY DEPOSITED HIGH-PERFORMANCE ANODIC EPOXY TOP COAT. (CHARLOTTE PIPE EDGE HP IRON OR APPROVED EQUAL).

3. GREASE VENT PIPING:
   A. CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET/STAINLESS STEEL CLAMP JOINTS (CISPI 310)

INSTALLATION:

1. SLOPE ALL GREASE WASTE PIPING AT 1/4" PER FOOT MINIMUM.

2. PROVIDE CLEAN-OUTS AT THE BASE OF DRAINAGE STACKS, AT EVERY TURN IN PIPING IN EXCESS OF 45°, AND NO FURTHER THAN 100'-0" APART. INSTALL CLEANOUTS IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.

3. DRAINAGE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
TW	TW	TEMPERED HOT WATER PIPING
140	140	140°F HOT WATER PIPING
140	140	140°F HOT WATER RETURN PIPING
	W	SANITARY WASTE PIPING
	V	SANITARY VENT PIPING
GW	GW	GREASE WASTE PIPING
GV	GV	GREASE VENT PIPING
AW	AW	ACID RESISTANT WASTE PIPING
AV	AV	ACID RESISTANT VENT PIPING
CD	CD	CONDENSATE WASTE PIPING
PD	PD	PUMP DISCHARGE (SUMP PUMP)
G	G	NATURAL GAS PIPING
D	D	DRAIN PIPING (INDIRECT)
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	-	SHUT-OFF VALVE
	-	CHECK VALVE
	-	BALANCING VALVE
	PRV	PRESSURE REDUCING VALVE
S	-	SOLENOID VALVE
	RPZ	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY
	-	IN-LINE PUMP
	-	PIPING REDUCER
	FCO	FLOOR CLEANOUT
	YCO	YARD CLEANOUT
	WCO	WALL CLEANOUT
	CO	PLUG CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	RD	ROOF DRAIN
	HB	HOSE BIBB / WALL HYDRANT
	SA-#	SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE

ADDITIONAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MFG	MANUFACTURER
AFG	ABOVE FINISHED GRADE	PSI	POUNDS PER SQUARE INCH
AVTR	ACID VENT THRU ROOF	T&P	TEMPERATURE AND PRESSURE
BAS	BUILDING AUTOMATION SYSTEM	TW	TEMPERED WATER
BFF	BELOW FINISHED FLOOR	TYP	TYPICAL
CFH	CUBIC FEET PER HOUR	UG	UNDERGROUND
CLG	CEILING	VTR	VENT THRU ROOF
CONT	CONTINUATION	WSV	WASTE STACK VENT
DN	DOWN	WC	WATER COLUMN
GPF	GALLONS PER FLUSH		
GPM	GALLONS PER MINUTE	EC	ELECTRICAL CONTRACTOR
HP	HORSE POWER	FSC	FOOD SERVICE CONTRACTOR
INV	INVERT ELEVATION	GC	GENERAL CONTRACTOR
KW	KILOWATT	MC	MECHANICAL CONTRACTOR
MBH	1,000 BRITISH THERMAL UNIT / HOUR	PC	PLUMBING CONTRACTOR

PLUMBING SHEET INDEX

P-001	PLUMBING LEGEND, INDEX, AND NOTES
P-002	PLUMBING SCHEDULES
P-101	OVERALL PLUMBING PLAN
P-111	FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100
P-112	FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200
P-113	FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300
P-114	FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400
P-115	FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500
P-116	FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 600
P-117	MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 100
P-118	MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 200
P-119	ROOF PLUMBING DRAINAGE PLAN
P-211	FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100
P-212	FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200
P-213	FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300
P-214	FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400
P-215	FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500
P-216	FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 600
P-217	MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 100
P-218	MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 200
P-401	EN

ADA AND LEGAL DISCLAIMER: This document is intended to comply with the requirements of the Americans with Disabilities Act (ADA). However architects and engineers are not licensed to interpret laws or give advice concerning laws. The owner should have this document reviewed by his attorney to determine if it complies with ADA and other laws.

STORAGE TANK WATER HEATER CALC. - KITCHEN

WASH SINK EQUIPMENT (CALCULATED AT 75% CAPACITY)	# OF COMPARTMENTS	(INCHES) LENGTH	WIDTH	DEPTH	GALLONS PER HOUR (GPH)
TRIPLE COMPARTMENT POT SINK #1	3	24	24	12	68

PREP SINK EQUIPMENT (CALCULATED AT 5 GPH PER COMPARTMENT)	# OF COMPARTMENTS	GALLONS PER HOUR (GPH)
PREP SINK - #13	3	5
PREP SINK - #13	1	5
PREP SINK - #13	1	5

OTHER KITCHEN EQUIPMENT	GPH EACH	QUANTITY	GALLONS PER HOUR (GPH)
HAND SINK	5	3	15
CAN WASH	10	1	10
MOP SINK	5	1	5
HOSE REEL	5	1	5
CLOTHES WASHER	15	0	0
KITCHEN HOOD EQUIPMENT	5	1	5
PRE-RINSE SINK	35	2	70

DISH MACHINE (CALCULATED AT 70% OF MFG. FINAL RINSE)	FINAL RINSE	QUANTITY	GALLONS PER HOUR (GPH)
HOBART MODEL CL44eN	126	1	126
		RECOVERY RATE NEEDED (GPH)	319

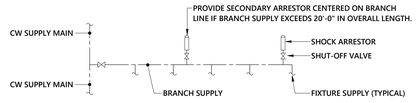
GAS WATER HEATER BTU REQUIRED AT 100°F RISE: 399,000

ELECTRIC WATER HEATER KW REQUIRED AT 100°F RISE: 451

NOTES:
1. WATER HEATER CALCULATIONS BASED ON THE NC DIVISION OF HEALTH STORAGE WATER HEATER CRITERIA.

SHOCK ARRESTOR TABLE

DRAWING SYMBOL	FIXTURE UNITS	P.D.I. WH201 DESIGNATION	ARRESTOR SIZE	REMARKS
SA-A	1 - 11	A	1/2"	INSTALL SHOCK ARRESTORS PER THE PLUMBING DRAINAGE INSTITUTE (P.D.I.) GUIDELINES.
SA-B	12 - 32	B	3/4"	
SA-C	33 - 60	C	1"	ACCEPTED MANUFACTURERS:
SA-D	61 - 113	D	1-1/4"	SIOUX CHIEF, WATTS, PPP INC., ZURN
SA-E	114 - 154	E	1-1/2"	



PLUMBING SPECIALTIES SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE W	V	CW	HW	SPECIFICATION	REMARKS
WB1	ICE MAKER BOX; 7"X 7"X 3.5", 20 GAUGE STEEL, WHITE POWDER COATING, SHOCK ARRESTOR, RECESSED	-	-	1/2"	-	FIXTURE: GUY GRAY MIB1AB STOP: QUARTER TURN WITH SHOCK ARRESTOR SUPPLY: 1/4" FLEXIBLE HOSE	PROVIDE INLINE DOUBLE CHECK VALVE WILKINS SERIES 700
WB2	WASHING MACHINE CONNECTION BOX; 7"X 7"X 3.5", 20 GAUGE STEEL, WHITE POWDER COATING, SHOCK ARRESTORS, RECESSED	-	-	1/2"	-	FIXTURE: GUY GRAY MWB26 STOP: QUARTER TURN WITH SHOCK ARRESTOR SUPPLY: 1/4" FLEXIBLE HOSE	PROVIDE INLINE DOUBLE CHECK VALVE WILKINS SERIES 700
WB3	INDIRECT DRAIN CONNECTION BOX; 14"x 9"x 3.5", 20 GAUGE STEEL, WHITE POWDER COATING, RECESSED	2"	1-1/2"	-	-	FIXTURE: GUY GRAY T200LV WITH KNOCK-OUTS IN TOP OF BOX 2" DRAIN OUTLET	
CS-x	BALANCING VALVE, THERMOSTATIC, AUTOMATIC, SUFFIX INDICATES PIPE SIZE, SEE FLOOR PLANS	-	-	-	**	EQUIPMENT: CIRCUIT SOLVER CS SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	PROVIDE 105°F MODEL
SA-x	SHOCK ARRESTOR, SUFFIX INDICATES PDI SIZE	-	-	x	-	EQUIPMENT: SIOUX CHIEF 650 SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	SEE SHOCK ARRESTOR TABLE THIS SHEET
HB1	HOSE BIBB, INTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: WOODFORD 26P, PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB2	HOSE BIBB, EXTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, FREEZELESS, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: WOODFORD 65 PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB3	CAN WASH TRIM, EXTERIOR MIXING HYDRANT, FREEZEPROOF, ANTI-SIPHON.	-	-	1/2"	1/2"	EQUIPMENT: WOODFORD HCB67-8R	MOUNT 36" AFF
CO	PLUG CLEANOUT, CAST IRON BODY	**	-	-	-	CLEANOUT: ZURN Z-1440-BP, BRONZE PLUG	GAS / WATER TIGHT
WCO	WALL CLEANOUT, CAST IRON BODY, STAINLESS STEEL WALL PLATE	**	-	-	-	CLEANOUT: ZURN Z-1446-BP, BRONZE PLUG	GAS / WATER TIGHT
FCO	FLOOR CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED FLOOR
YCO	YARD CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE, INSTALLED IN 18"x18"x6" CONCRETE PAD	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG INSTALL IN 18"x 18"x 6" DEEP CONCRETE PAD	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED GRADE
FD1	FLOOR DRAIN, CAST IRON BODY, SQUARE NICKEL BRONZE GRATE, ADJUSTABLE	3"	2"	-	-	DRAIN: ZURN ZN415-SZ1	INSTALL TOP FLUSH WITH FINISHED FLOOR. SEE NOTE 1 BELOW.
FD2	FLOOR DRAIN, CAST IRON BODY, ROUND NICKEL BRONZE GRATE, ADJUSTABLE	3"	2"	-	-	DRAIN: ZURN ZN415	INSTALL TOP OF DRAIN LIP FLUSH WITH FLOOR. SEE NOTE 1 BELOW.
FD3	CONDENSATE DRAIN, CAST IRON BODY, ROUND COATED GRATE, ADJUSTABLE	3"	2"	-	-	DRAIN: ZURN ZN415-i	INSTALL TOP OF DRAIN LIP 2" AFF.
FS1	FLOOR SINK, 12"x 12"x 6" DEEP, STAINLESS STEEL BODY AND GRATE					DRAIN: ZURN Z1750	SEE KITCHEN EQUIP. PLANS FOR GRATE (FULL / QUARTER / HALF)
FS2	FLOOR TROUGH BY FOOD SERVICE EQUIPMENT CONTRACTOR STAINLESS STEEL BODY AND GRATE	4"	2"	-	-	DRAIN: PROVIDED BY F.S.E.C. INSTALLED BY P.C.	-

NOTES:
1. PROVIDE WATERLESS INLINE TRAP GUARD FOR EACH FLOOR DRAIN CONFORMING TO ASSE 1072 AND EQUAL TO RECOTORSEAL "SURE-SEAL" MODEL SS3009V. INSTALL TRAP GUARDS IN THE OUTLET OF THE FLOOR DRAIN BODY (NOT IN THE STRAINER).
2. REFER TO THE FOOD SERVICE EQUIPMENT DRAWINGS FOR LOCATIONS OF HALF, THREE-QUARTERS, FULL, ETC. STRAINER CONFIGURATIONS.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
	SHOCK ARRESTOR HOSE BIBBS DRAINS BACKFLOW PREVENTER	SIOUX CHIEF, PPP INC., ZURN, WATTS ZURN, WOODFORD, ZURN, J.R. SMITH ZURN, J.R. SMITH, WADE WILKINS, WATTS, APOLLO

HOT WATER RECIRCULATION PUMP SCHEDULE

SYMBOL	DESCRIPTION	CAPACITY GPM	FT-HD	ELECTRICAL DATA HP	V	PH	HZ	SPECIFICATION	NOTES
CP1	CIRCULATION PUMP SERVING WH1 INLINE	8.0	8.0	1/6	120	1	60	BELL & GOSSETT NBF-33	1-4
CP2	CIRCULATION PUMP SERVING WH2 INLINE	3.0	20.0	1/6	120	1	60	BELL & GOSSETT ECOCIRC+ 20-18	1-4

NOTES:
1. APPROVED MANUFACTURERS: BELL & GOSSETT, GRUNDFOS, GOULDS, TACO.
2. PUMP SHALL BE BRONZE OR STAINLESS STEEL CONSTRUCTION.
3. MOUNT SECURELY FROM STRUCTURE SUCH THAT THE PIPING BEARS NO WEIGHT OF THE PUMP.
4. INTERLOCK WITH FULLY ADJUSTABLE AQUASTAT AND 7-DAY, 24 HOUR TIMER.

WATER HEATER SCHEDULE

SYMBOL	DESCRIPTION	STORAGE (GAL)	GPH AT 100 °F RISE	INPUT (BTU/H)	ELECTRICAL V	PH	SPECIFICATION	NOTES
WH1	SCHOOL (LESS KITCHEN) VERTICAL STORAGE, CONDENSING, GAS-FIRED	119	451	399,999	120	1	A.O. SMITH BTH-400A-LP	1 - 7
WH2	KITCHEN VERTICAL STORAGE, CONDENSING, GAS-FIRED	119	451	399,999	120	1	A.O. SMITH BTH-400A-LP	1 - 7

NOTES:
1. APPROVED MANUFACTURERS: BRADFORD WHITE, RHEEM, STATE INDUSTRIES, A.O. SMITH.
2. WATER HEATER SHALL MEET OR EXCEED THE REQUIREMENTS OF THE NORTH CAROLINA ENERGEY EFFICIENCY CODE.
3. SET WATER HEATER OUTLET TEMPERATURE TO 140 °F.
4. SEE PLUMBING DETAIL SHEETS FOR INSTALLATION.
5. PROVIDE UNIT WITH OPTIONAL GAS PRESSURE REGULATING VALVE SET TO 7" WC, CPVC CONCENTRIC VENT TERMINATION KIT SIZED PER MANUFACTURER, CONDENSATE NEUTRALIZATION KIT AND ALARM MODULE.
6. PROVIDE UNIT WITH FIVE (5) YEAR MANUFACTURER'S WARRANTY.
7. COORDINATE WITH MECHANICAL CONTRACTOR TO PROVIDE ANY ADDITIONAL TAPS IN COLD AND HOT WATER SUPPLY AND RETURN PIPING NECESSARY FOR MONITORING BY THE BUILDING AUTOMATION SYSTEM. ALL ASSOCIATED SENSORS AND CONTROL WIRING TO BE PROVIDED BY THE MECHANICAL CONTRACTOR.

THERMAL EXPANSION TANK SCHEDULE

SYMBOL	DESCRIPTION	TOTAL VOLUME (GAL)	ACCEPTANCE VOLUME (GAL)	WEIGHT (LB)	SPECIFICATION	NOTES
ET1	EXPANSION TANK SERVING WH1 DIAPHRAGM, THERMAL EXPANSION	5.0	3.3	28.0	WESSELS TTA-12	1 - 3
ET2	EXPANSION TANK SERVING WH2 DIAPHRAGM, THERMAL EXPANSION	5.0	3.3	28.0	WESSELS TTA-12	1 - 3

NOTES:
1. APPROVED MANUFACTURERS: AMTROL, BELL & GOSSETT, WATTS, WESSELS.
2. PROVIDE WITH PRESSURE GAUGE, AIR-CHARGE FITTING, AND TANK DRAIN; PRECHARGE TO 40.0 PSI.
3. MOUNT SECURELY AND INDEPENDENTLY FROM STRUCTURE SUCH THAT THE PIPING BEARS NO WEIGHT OF THE EXPANSION TANK.

INTERCEPTOR SCHEDULE

SYMBOL	DESCRIPTION	INLET & OUTLET (")	CAPACITY (GAL)	SPECIFICATION	NOTES
GI1	HYDROMECHANICAL GREASE INTERCEPTOR	4	1500 TOTAL	SCHIER GB-1500	1

NOTES:
1. APPROVED MANUFACTURERS: SCHIER, ENDURA, MI-FAB

DOMESTIC WATER PRESSURE BOOSTER PUMP SCHEDULE

SYMBOL	DESCRIPTION	TYPE	CAPACITY GPM	FT-HD	ELECTRICAL DATA HP	V	PH	HZ	SPECIFICATION	NOTES
DBP1	DOMESTIC BOOSTER PUMP DUPLEX PACKAGED SYSTEM	END SUCTION	205	70.0	5.0 (EACH)	480	3	60	HYFAB MVP-630-460 DUPLEX PUMP PACKAGE HYFAB FC-60V HYDROPNEUMATIC TANK	1-3

NOTES:
1. APPROVED MANUFACTURERS: GRUNDFOS, TIGERFLOW
2. PROVIDE BOOSTER PUMP PACKAGE WITH A 16 GALON HYDRO-PNEUMATIC TANK.
3. DOMESTIC WATER PRESSURE BOOSTER PUMP PACKAGE STARTUP SHALL BE PERFORMED BY AN AUTHORIZED MANUFACTURERS TECHNICIAN.

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE W	V	CW	HW	SPECIFICATION	REMARKS
P1	FIXTURE: TOILET. ELONGATED, WHITE VITREOUS CHINA, CARRIER MOUNTED, TOP SPUD, 1.6 GPF. FLUSH VALVE: BATTERY POWERED, SENSOR OPERATED, PUSH-BUTTON OVERRIDE, 1.6 GPF.	4"	2"	1-1/4"	-	FIXTURE: AMERICAN STANDARD 3351.101-1.6 "AFWALL" FLUSH VALVE: SLOAN 111-SFSM-1.6 SEAT: BEMIS 1955-SS-CT	NOTE 1
P1A	FIXTURE: TOILET ADA. ELONGATED, WHITE VITREOUS CHINA, CARRIER MOUNTED, TOP SPUD, 1.6 GPF. FLUSH VALVE: BATTERY POWERED, SENSOR OPERATED, PUSH-BUTTON OVERRIDE, 1.6 GPF.	4"	2"	1-1/4"	-	FIXTURE: AMERICAN STANDARD 3351.101-1.6 "AFWALL" FLUSH VALVE: SLOAN 111-SFSM-1.6 SEAT: BEMIS 1955-SS-CT	NOTE 1
P2	FIXTURE: URINAL. WHITE VITREOUS CHINA, CARRIER MOUNTED, 0.5 GPF FLUSH VALVE: BATTERY POWERED, SENSOR OPERATED, PUSH-BUTTON OVERRIDE, 0.5 GPF.	2"	2"	3/4"	-	FIXTURE: AMERICAN STANDARD 6590.001 "WASHBROOK" FLUSH VALVE: SLOAN ROYAL 186-SFSM-0.5	NOTE 2
P2A	FIXTURE: URINAL, ADA. WHITE VITREOUS CHINA, CARRIER MOUNTED, 0.5 GPF FLUSH VALVE: BATTERY POWERED, SENSOR OPERATED, PUSH-BUTTON OVERRIDE, 0.5 GPF.	2"	2"	3/4"	-	FIXTURE: AMERICAN STANDARD 6590.001 "WASHBROOK" FLUSH VALVE: SLOAN ROYAL 186-SFSM-0.5	NOTE 2
P3	FIXTURE: LAVATORY, ADA, 20"x18", WHITE ENAMELED CAST IRON, CARRIER MOUNTED, SINGLE HOLE. FAUCET: BATTERY POWERED, SENSOR OPERATED, POLISHED CHROME, LAMINAR SPRAY, INTEGRADED MIXING VALVE AND ABOVE DECK ELECTRONICS, 0.50 GPM.	2"	1-1/2"	1/2"	1/2"	FIXTURE: AMERICAN STANDARD 4869.001 "REGALYN" FAUCET: SLOAN EAF-250-BAT-ITM-CP-0.5GPM-AER-IQ-FCT GRID DRAIN: ZURN 8743; P-TRAP: ZURN Z-8701 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	NOTES 3, 5
P4A	FIXTURE: WATER COOLER & BOTTLE FILLER, ADA. STAINLESS STEEL FINISH, SINGLE BOWL, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER, SENSOR OPERATED BOTTLE FILLER WITH AUTO SHUT-OFF.	2"	1-1/2"	1/2"	-	FIXTURE: ELKAY LZS8WSLK P-TRAP: ZURN Z-870 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK	NOTE 4, 7
P4B	FIXTURE: WATER COOLER. STAINLESS STEEL FINISH, SINGLE BOWL, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER.	2"	1-1/2"	1/2"	-	FIXTURE: ELKAY LZS8L P-TRAP: ZURN Z-870 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK	NOTE 4, 7
P5A	FIXTURE: CASEWORK SINK, ADA. , 22"x22", SINGLE BOWL, 18 GAUGE STAINLESS STEEL, COUNTER MOUNTED, SELF RIMMING. FAUCET: 6" GOOSENECK FAUCET, WRIST BLADE HANDLES, VANDAL RESISTANT AERATOR, 1.5 GPM.	2"	1-1/2"	1/2"	1/2"	FIXTURE: ELKAY LRAD222255-3 FAUCET: AMERICAN STANDARD 6530.170 "MONTERREY" BASKET STRAINER: ZURN Z-8740 P-TRAP: ZURN 8703 (1-1/2"x2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK	NOTE 5
P6	FIXTURE: MOP SINK. 24"x 24"x 12" TERRAZZO BASIN, 6" DROP FRONT WITH STAINLESS STEEL THRESHOLD CAP, 36" HIGH STAINLESS STEEL WALL GUARDS, HOSE, MOP HANGER BRACKET. FAUCET: POLISHED CHROME, 8" CENTERS, VACUUM BREAKER.	3"	2"	1/2"	1/2"	FIXTURE: FIAT TSB100-830AA-832AA-MSG2424 FAUCET: T&S BRASS B-0665-BSTR	PROVIDE CHECK VALVES ON BOTH HW & CW SUPPLIES TO MOP SINK.
P7A	FIXTURE: SHOWER, ADA COMPLIANT, PRESSURE BALANCED SHOWER VALVE WITH 1.5 GPM WALL MOUNTED SHOWER HEAD WITH HAND HELD SHOWER AND SLIDE BAR.	2"	2"	1/2"	1/2"	FIXTURE: TILED WALLS AND FLOOR BY G.C. SHOWER VALVE & HEAD: AMERICAN STANDARD 1662SG.211 PROVIDE FLOOR DRAIN 2" FD1 IN TILED FLOOR BASE	COORDINATE RIGHT OR LEFT HAND CONTROLS WITH ARCHITECTURAL PLANS AND ELEVATIONS

NOTES:
1. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1201 SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
2. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1222 SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
3. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED, ADJUSTABLE CONCEALED ARM CARRIER EQUAL TO ZURN Z1231 SERIES. WHEN CARRIER IS LOCATED BEHIND BLOCK WALL, PROVIDE EXTENDED CONCEALED ARM SLEEVES TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
4. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1225 SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
5. PROVIDE PRE-MANUFACTURED ADA COMPLIANT INSULATION KIT FOR EXPOSED P-TRAP AND SUPPLY TRIM UNDER SINK.
6. PROVIDE HEAVY DUTY CAST IRON CLOSET FLANGE WITH COMPRESSION SEAL AND TEST CAP EQUAL TO ZURN CF2980-CI4. OFFSET FLANGES ARE NOT ACCEPTABLE.
7. PROVIDE CANE APRON ON WATER COOLERS MOUNTED ON EXPOSED WALLS.
8. PROVIDE SOLIDS TRAP IN LIEU OF P-TRAP FOR ART ROOM SINK EQUAL TO ZURN Z1180.
9. COORDINATE RIGHT OR LEFT HAND CONTROLS AND SEATS WITH ARCHITECTURAL PLANS AND ELEVATIONS.

APPROVED EQUALS: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
	VITREOUS CHINA FLUSH VALVES ENAMELED CAST IRON CARRIERS STAINLESS STEEL SINKS FAUCETS WATER COOLERS SUPPLIES, STOPS HOSE BIBBS UTILITY SINKS SHOWER VALVES	KOHLER, AMERICAN STANDARD, SLOAN SLOAN, ZURN, DELANEY KOHLER, AMERICAN STANDARD, ZURN ZURN, J.R. SMITH, WADE ELKAY, JUST, ADVANCE TABCO AMERICAN STANDARD, ZURN, CHICAGO ELKAY, HALSEY TAYLOR, HAWS ZURN, MCGUIRE, BRASSCRAFT ZURN, J.R. SMITH, WOODFORD FIAT, FLORESTONE, STERN WILLIAMS AMERICAN STANDARD, CHICAGO, SYMMONS

PLUMBING FIXTURE SCHEDULE (LAB SPACES)

SYMBOL	DESCRIPTION	CONNECTION SIZE W	V	CW	HW	SPECIFICATION	REMARKS
L1	LAB SINK AND FAUCET BY CASEWORK SUPPLIER.	2"	1-1/2"	1/2"	1/2"	FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - ZURN ZURN Z9A-PHIX (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	SEE NOTE 1 BELOW. SEE DETAILS 8, 9, 10/P601
L2	LAB SINK AND FAUCET BY CASEWORK SUPPLIER. PROVIDE AIR ADMITTANCE VALVE FOR VENTING.	2"	1-1/2"	1/2"	1/2"	FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - ZURN ZURN Z9A-PHIX (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK AIR ADMITTANCE VALVE: STUDOR "REDI-VENT" MATCH PIPE SIZE.	SEE NOTE 1 BELOW. SEE DETAILS 8, 9, 10/P601
L3	LAB SINK AND FAUCET BY CASEWORK SUPPLIER. PROVIDE DECK MOUNTED EMERGENCY EYEWASH AT SINK. PROVIDE MIXING VALVE FOR CONNECTION TO EMERGENCY EYEWASH.	2"	1-1/2"	1/2"	1/2"	FIXTURE AND FAUCET: SUPPLIED BY LAB EQUIP. SUPPLIER, INSTALLED BY P.C. ACID WASTE NEUTRALIZATION DRUM TRAP: ANT1 - ZURN ZURN Z9A-PHIX (1-1/2") STRAINER: ZURN Z9A-WA-112-B SUPPLIES/STOPS: ZURN 8806-XL-LR-LK EMERGENCY EYEWASH: GUARDIAN G1805	SEE NOTE 1 BELOW. SEE DETAILS 8, 9, 10/P601
ES1	FIXTURE: EMERGENCY EYEWASH & SHOWER, ADA COMPLIANT, RECESSED EYEWASH, CEILING MOUNTED SHOWER, STAINLESS STEEL FINISH	2"	2"	1"	1"	FIXTURE: GUARDIAN G8F2170 THERMOSTATIC MIXING VALVE: GUARDIAN G6040	
EW1	EMERGENCY EYEWASH, ADA COMPLIANT COUNTER MOUNTED, HAND HELD	-	-	1/2"	1/2"	FIXTURE: BRADLEY S19-460EFW THMOSTATIC MIXING VALVE: BRADLEY S19-2000EFX8	ANSI Z358.1 COMPLIANT.

NOTES:
1. GRID DRAIN / TAIL PIECE AND PIPING FROM THE LAB SINK TO THE NEUTRALIZATION TRAP SHALL BE ACID RESISTANT SCHEDULE 40 POLYPROPYLENE PIPE (ASTM D4101, ASTM F1412), NSF LISTED, CSA CERTIFIED WITH POLYPROPYLENE FITTINGS (ASTM D4101, ASTM F1412) WITH MECHANICAL JOINTS.

APPROVED EQUALS: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
	EMERGENCY FIXTURES ACID WASTE SPECIALTY	GUARDIAN, BRADLEY, SPEAKMAN ORION, ZURN, ENFIELD

ACID NEUTRALIZATION TRAP - ANT1 (TYPICAL EACH LAB SINK)

AT EACH LAB SINK, PROVIDE AN ACID NEUTRALIZATION DRUM TRAP EQUAL TO ZURN Z9A-PHIX, INCLUDING A GLASS-FILLED POLYPROPYLENE BODY WITH LOWER SEDIMENT CHAMBER, REMOVABLE NEUTRALIZATION CHAMBER, AND NEUTRALIZATION MEDIA . NEUTRALIZATION MEDIA SHALL CONSIST OF NON-HAZARDOUS SOLID ALKALI NON-RESIN MATERIALS. (Limestone, Marble, or Caustic Soda beads are NOT acceptable). SEE DETAIL 11/P601.

LAUNDRY TROUGH / LINT INTERCEPTOR - LI-1

STRIEM TUFF TROUGH TT-4 OR APPROVED EQUAL. 28 GALLON CAPACITY, 4'-0"x 18" x 12" POLYETHELENE LAUNDRY TRENCH WITH A REMOVABLE CORROSION RESISTANT PRIMARY FILTER SCREEN AND SECONDARY FILTER BASKET, INTERNALLY SLOPED FLOOR, AND REMOVABLE LID RATED FOR 450 LBS. PROVIDE WITH 4" OUTLET AND 4" P TRAP. RECESSE INTERCEPTOR IN FLOOR. SEE SCHEMATIC 5/P602.

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North Carolina License Number C-0914

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EB Frink Middle School
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La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: Author
CHECKED BY: Checker

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PLUMBING SCHEDULES

P-002
Sheet No. 2

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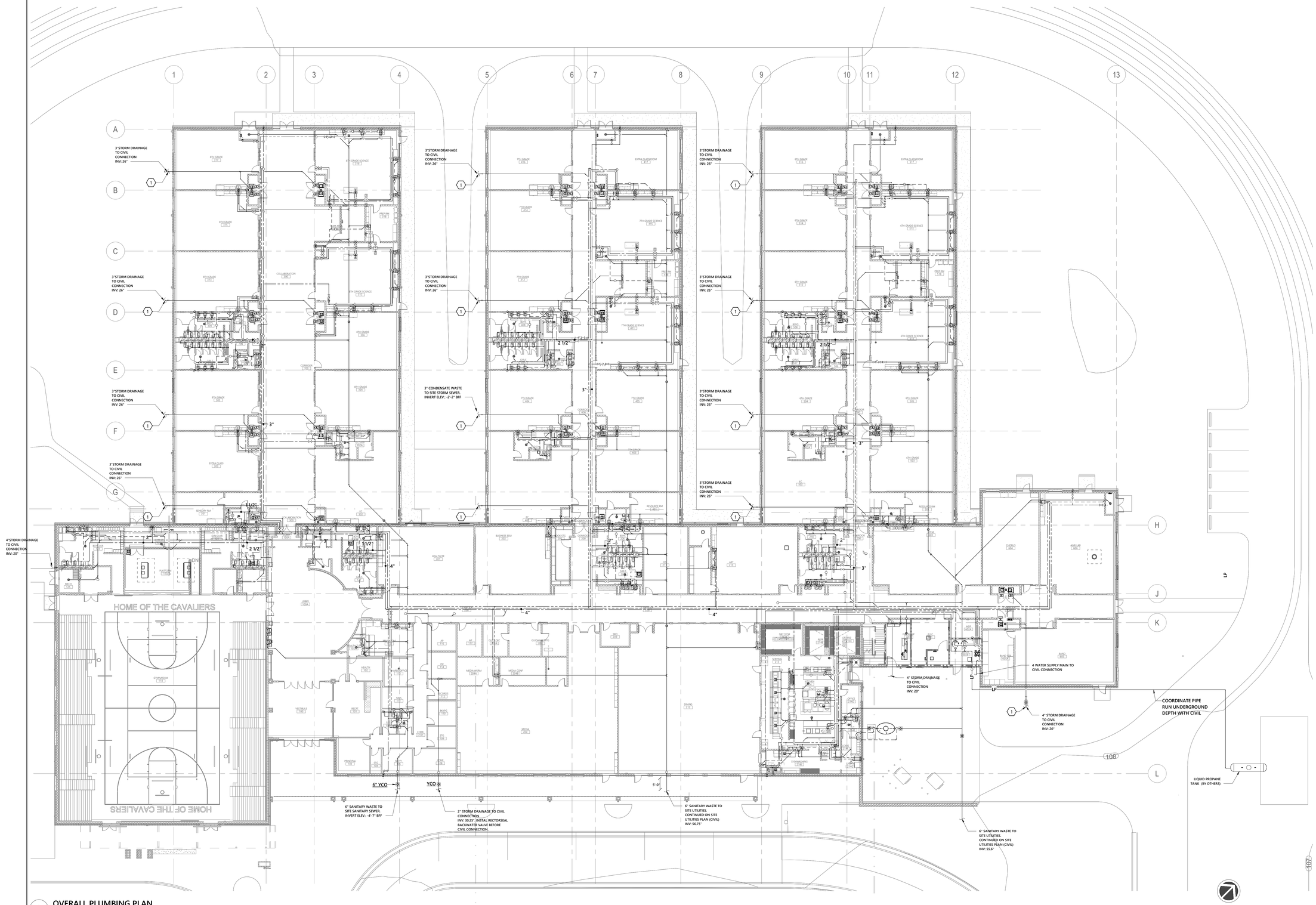
WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYNOTE LEGEND

1. RECTORSEAL BACKWATER VALVE TO BE PROVIDED ON CONDENSATE DRAIN LINE AFTER EXITING BUILDING.



1 OVERALL PLUMBING PLAN

1/16" = 1'-0"

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OVERALL PLUMBING PLAN

P-101

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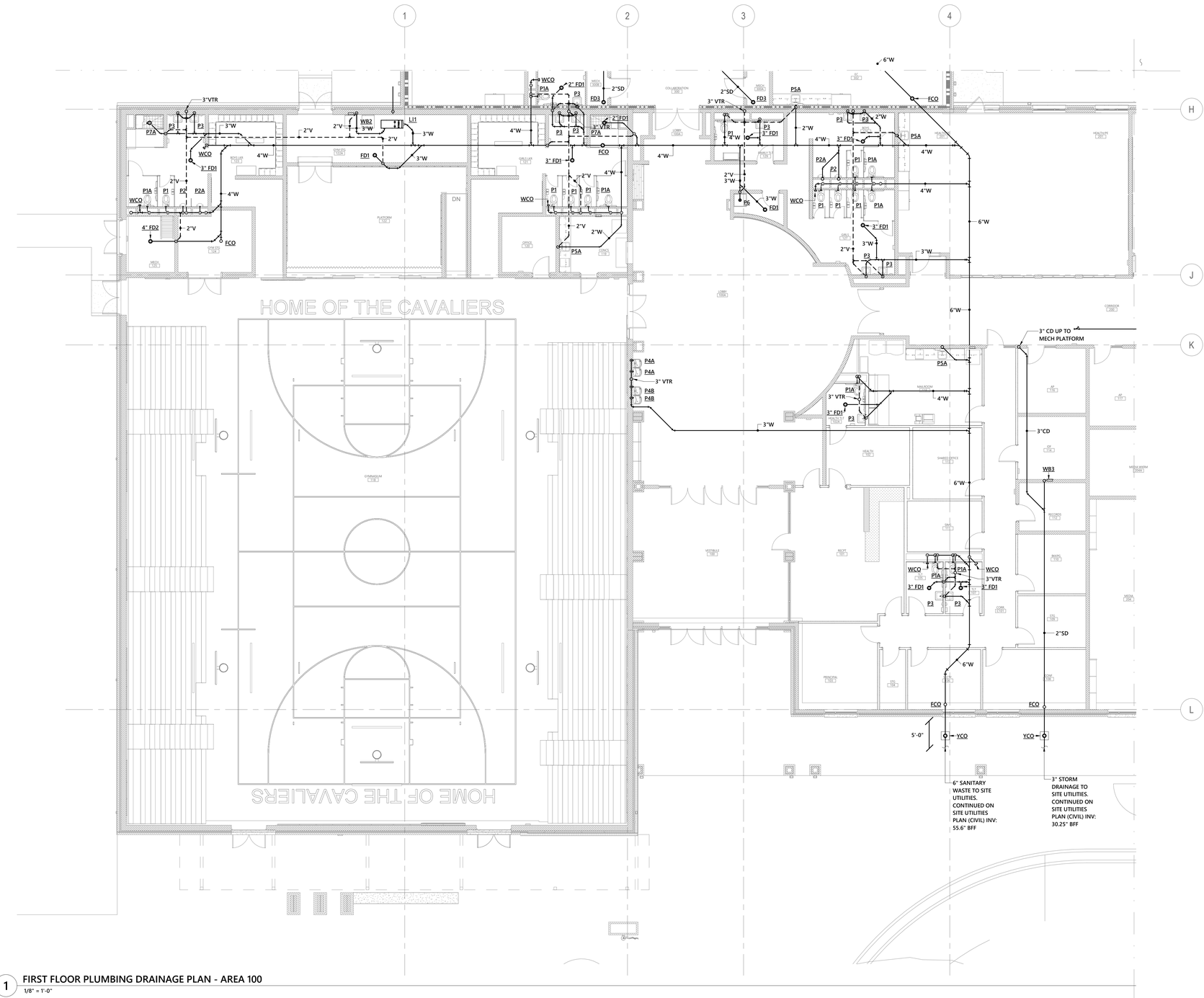
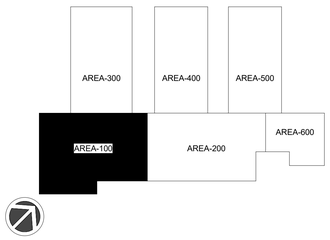


1 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 100

P-111

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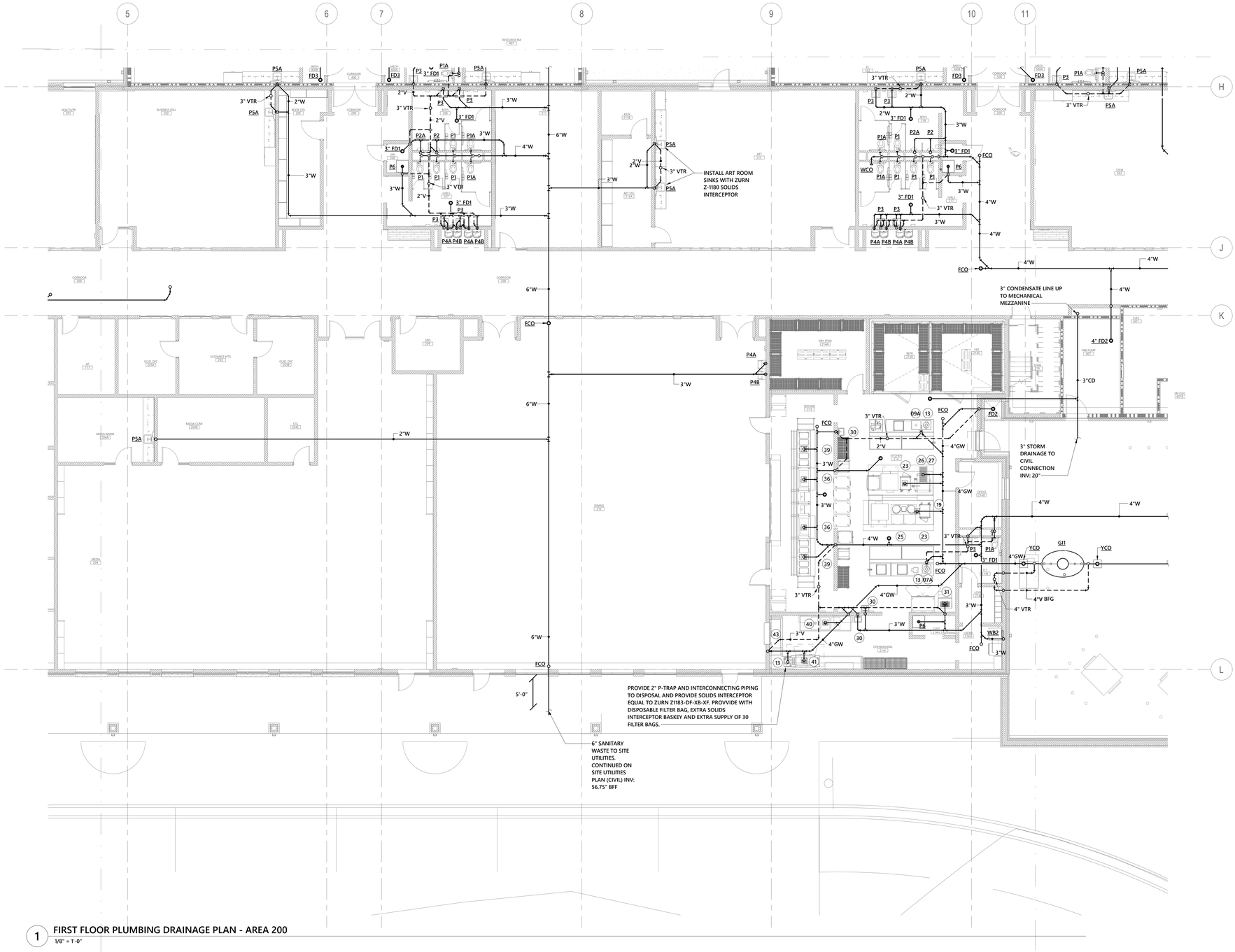
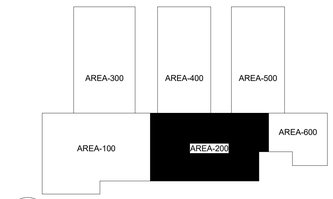


1 **FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 200

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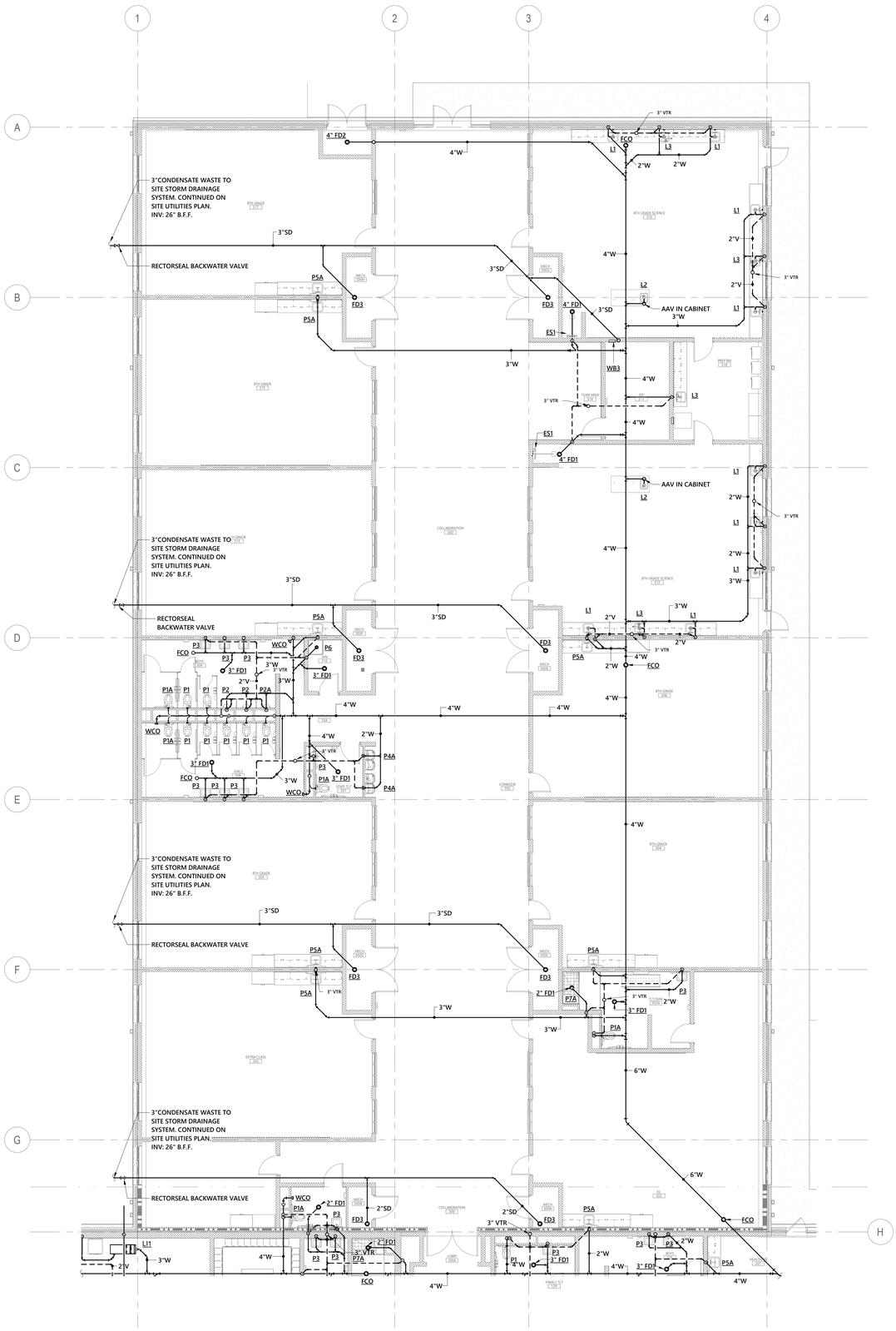
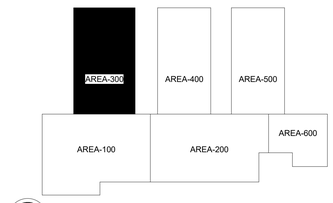


1 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 300

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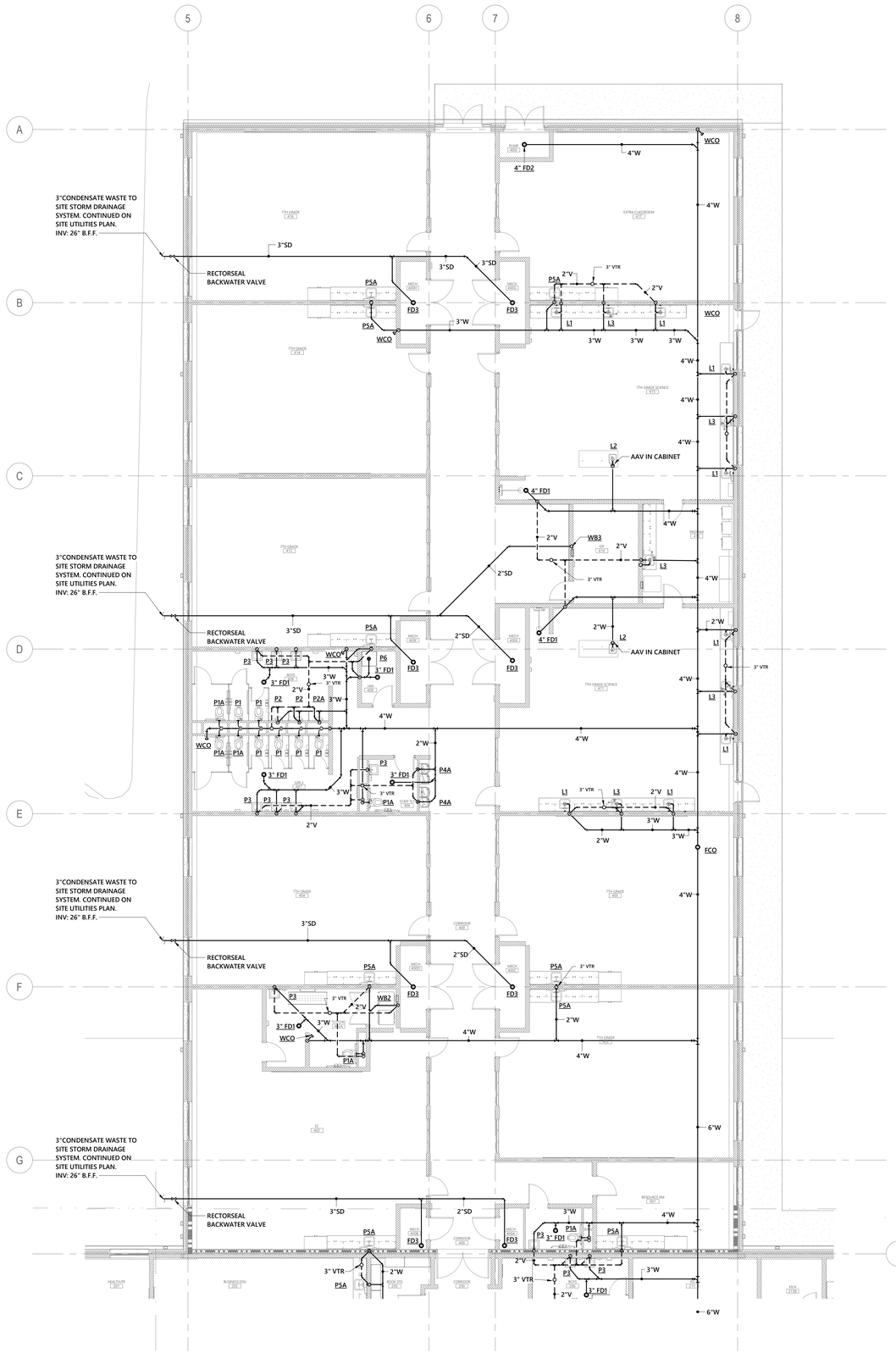
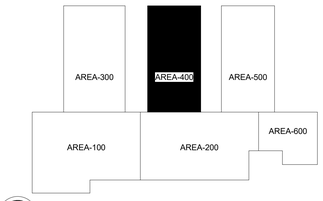


1 FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 400

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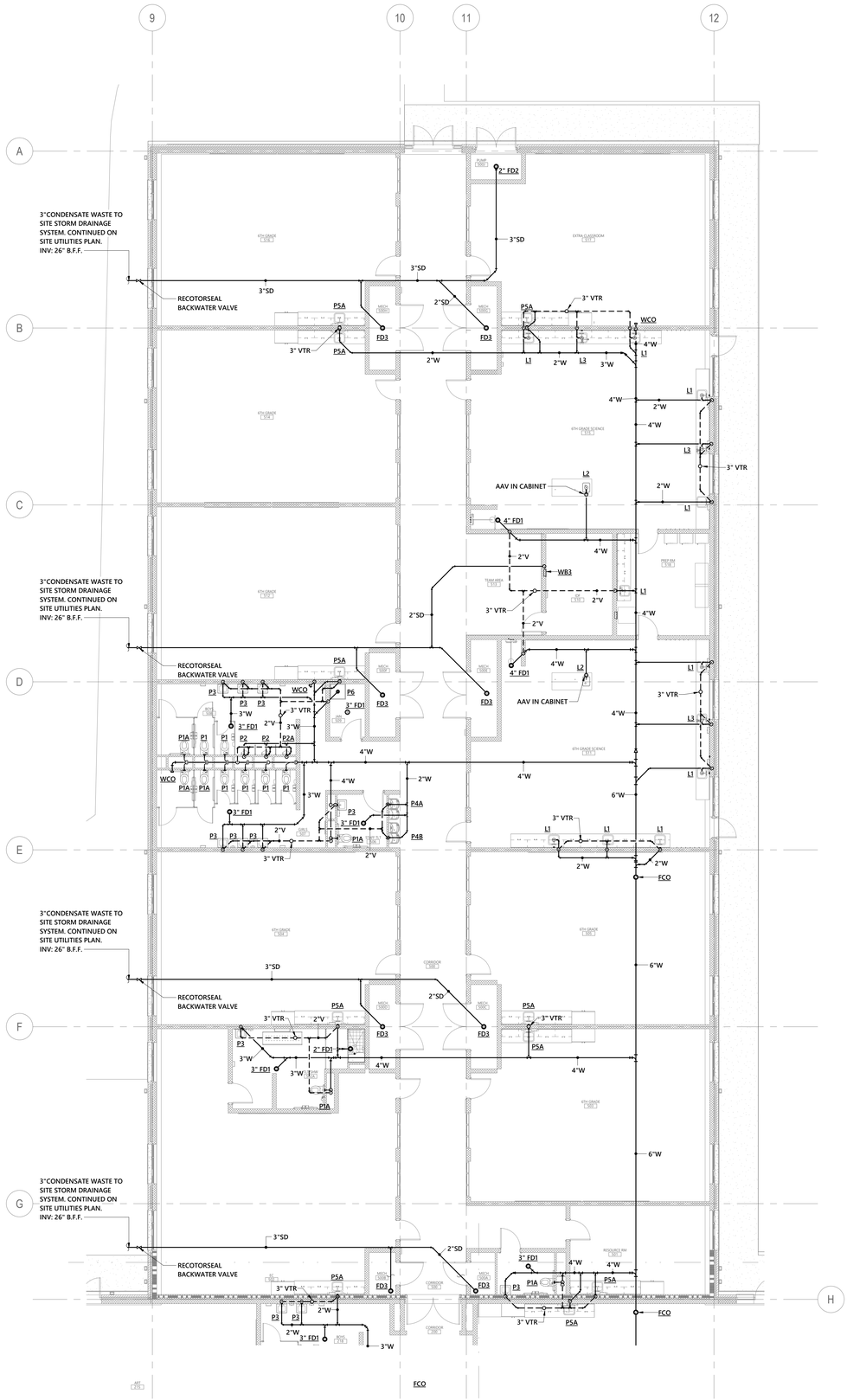
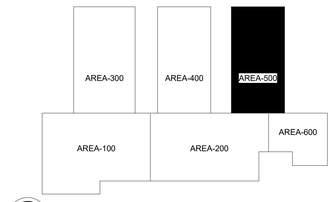


1 **FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500**
1/8" = 1'-0"

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 500

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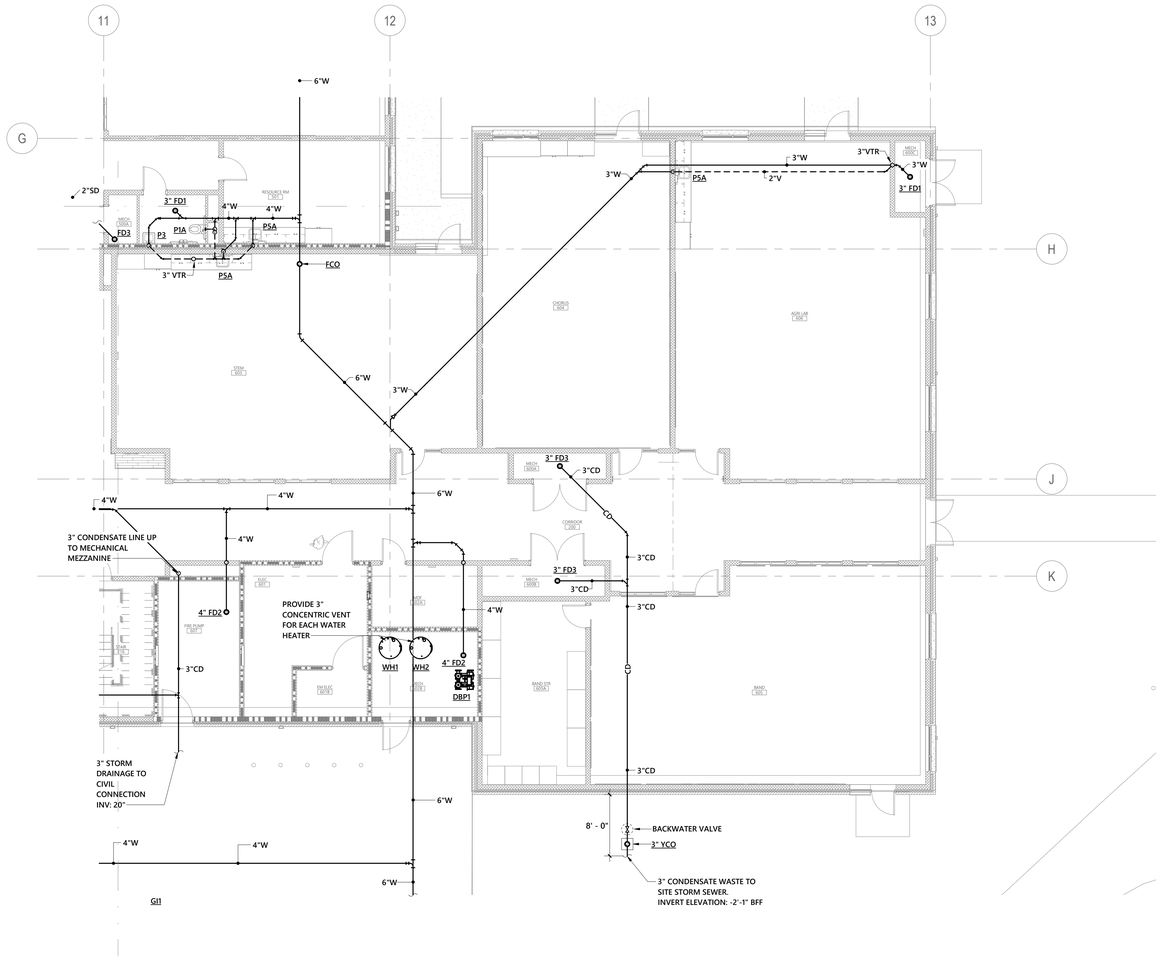
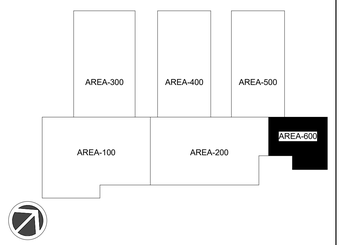


1 **FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 600**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING DRAINAGE PLAN - AREA 600

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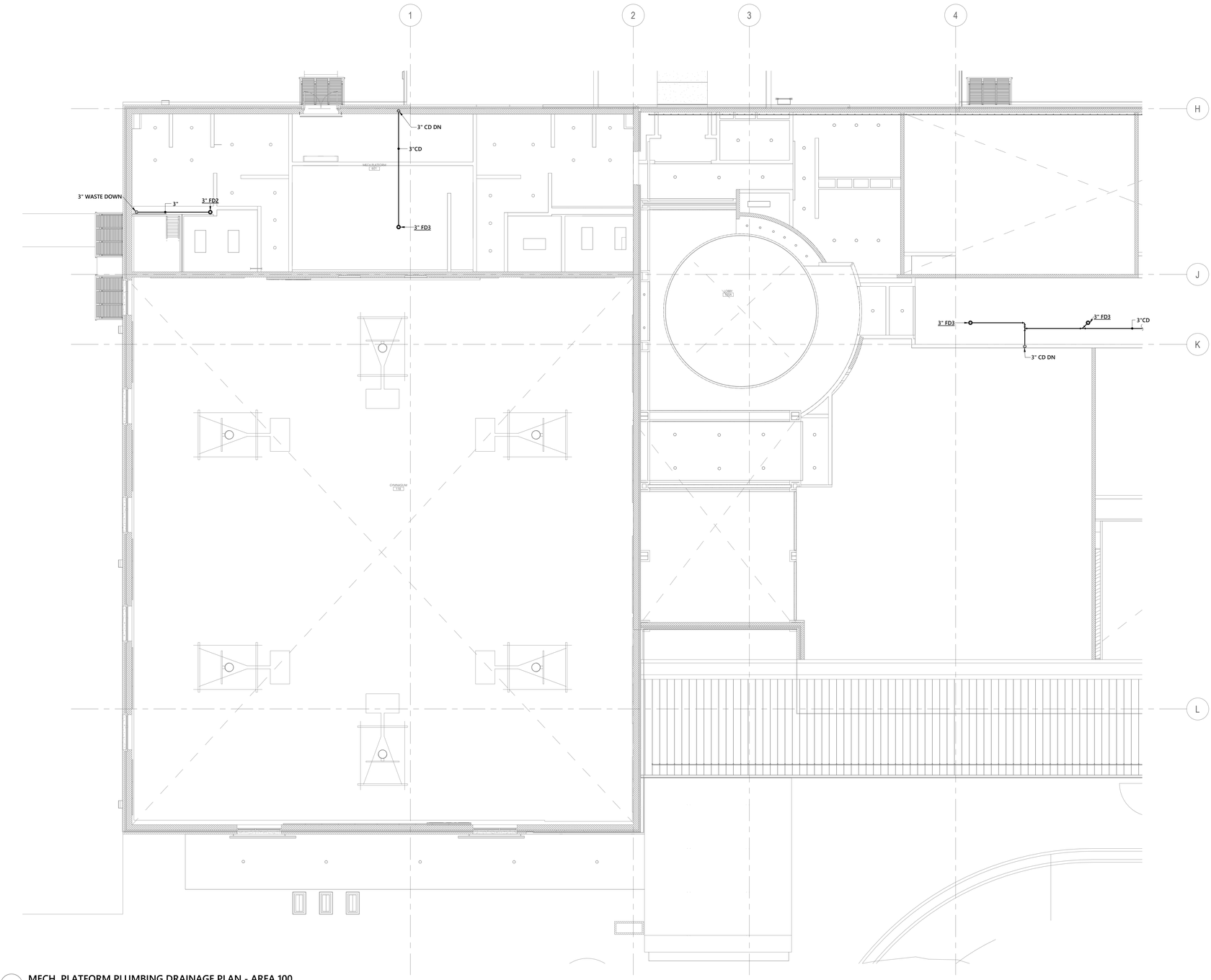
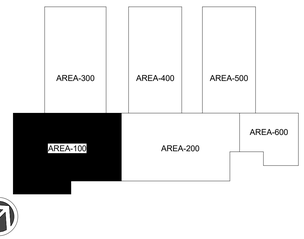


1 MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 100

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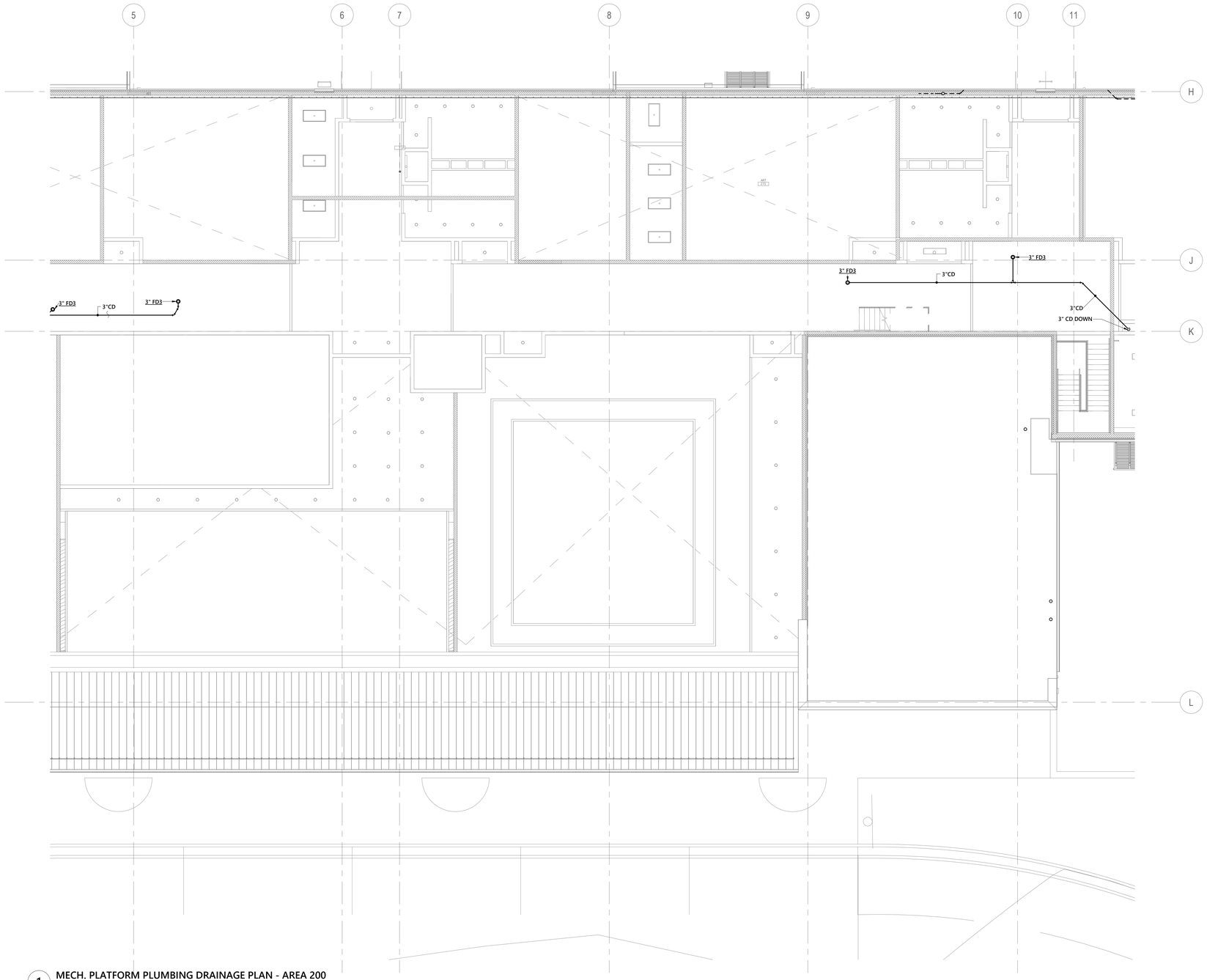
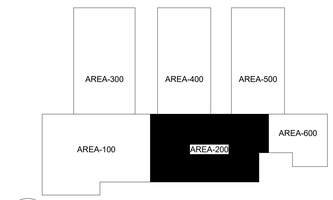


1 MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM PLUMBING DRAINAGE PLAN - AREA 200

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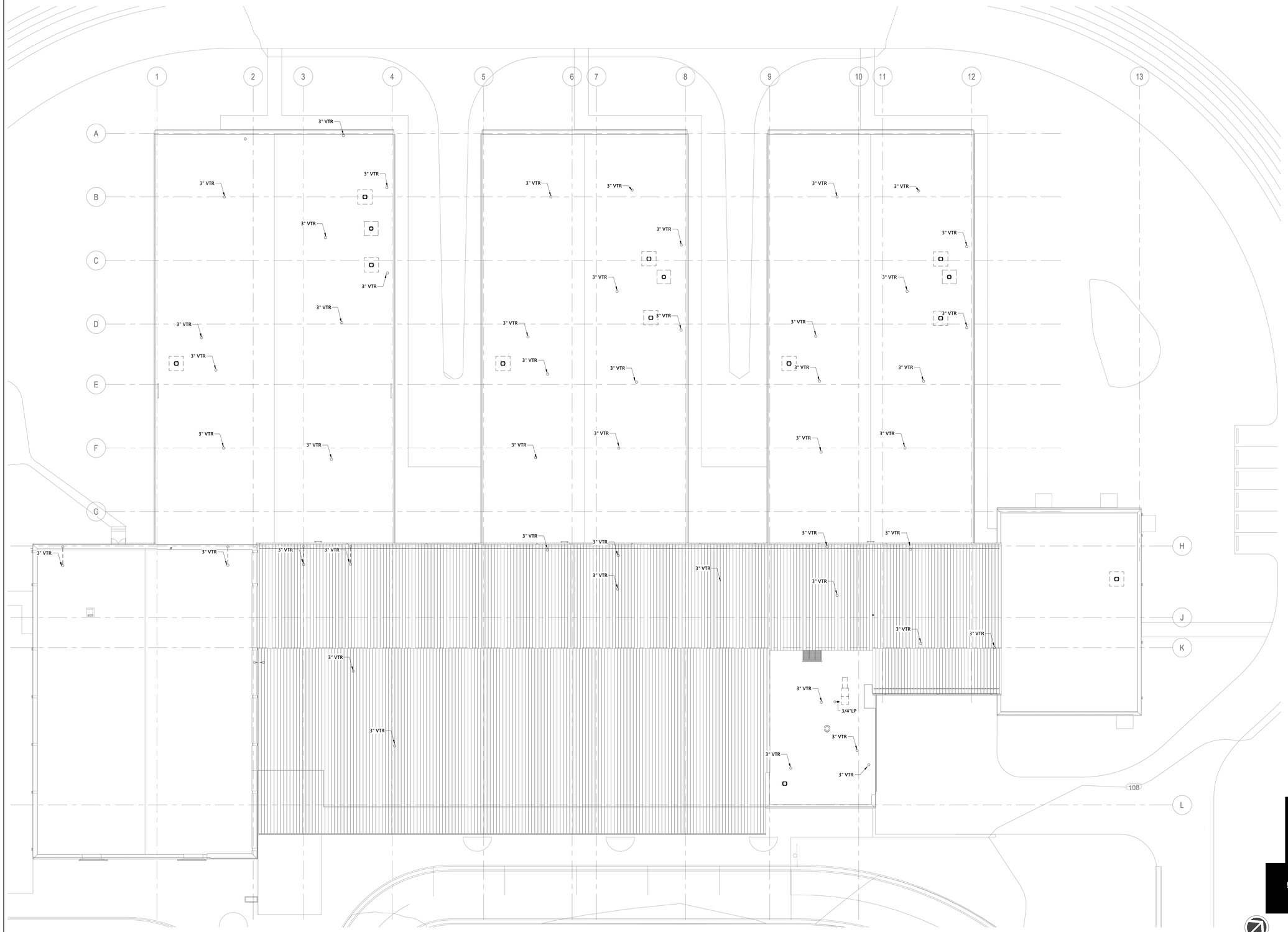
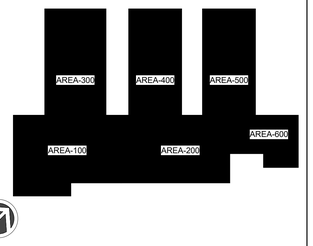


1 ROOF PLUMBING DRAINAGE PLAN
1/16" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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ROOF PLUMBING DRAINAGE PLAN

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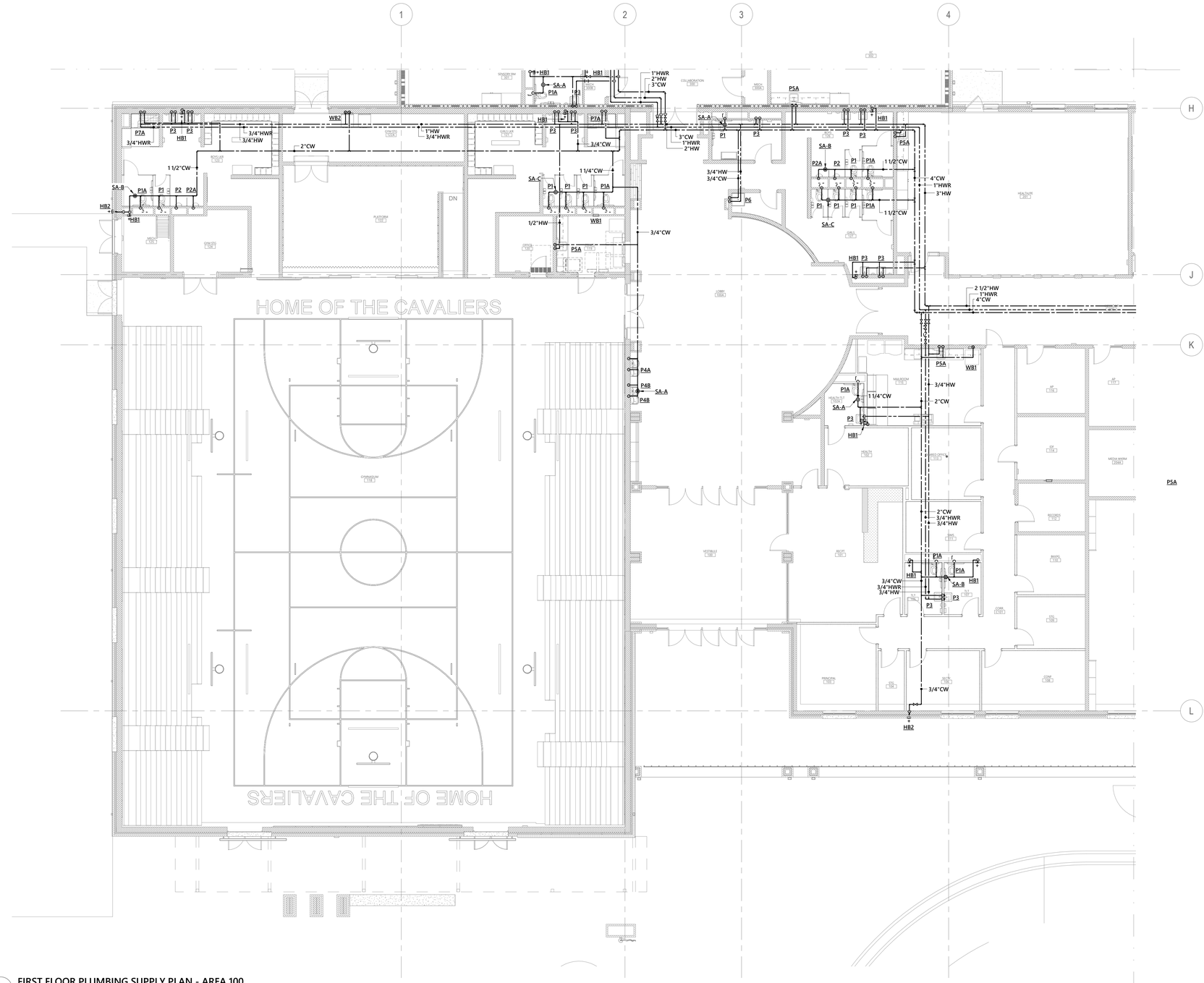
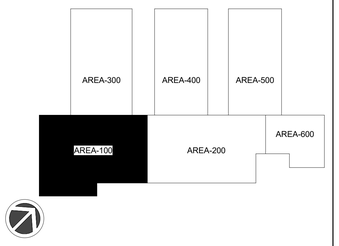


1 **FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 100

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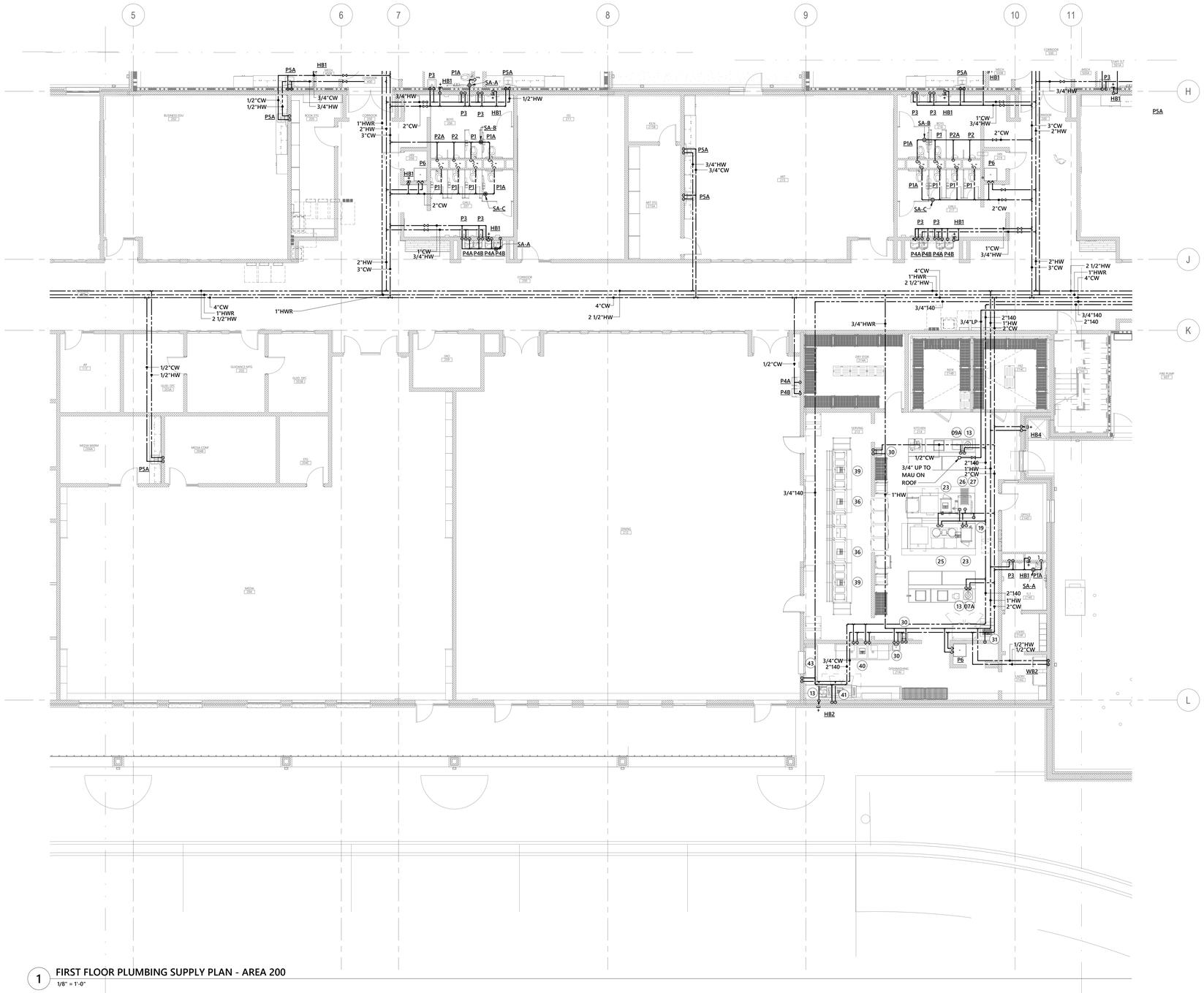
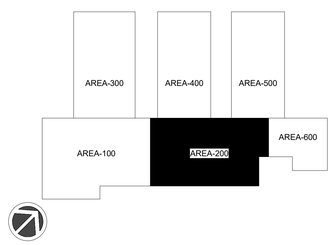


1 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 200

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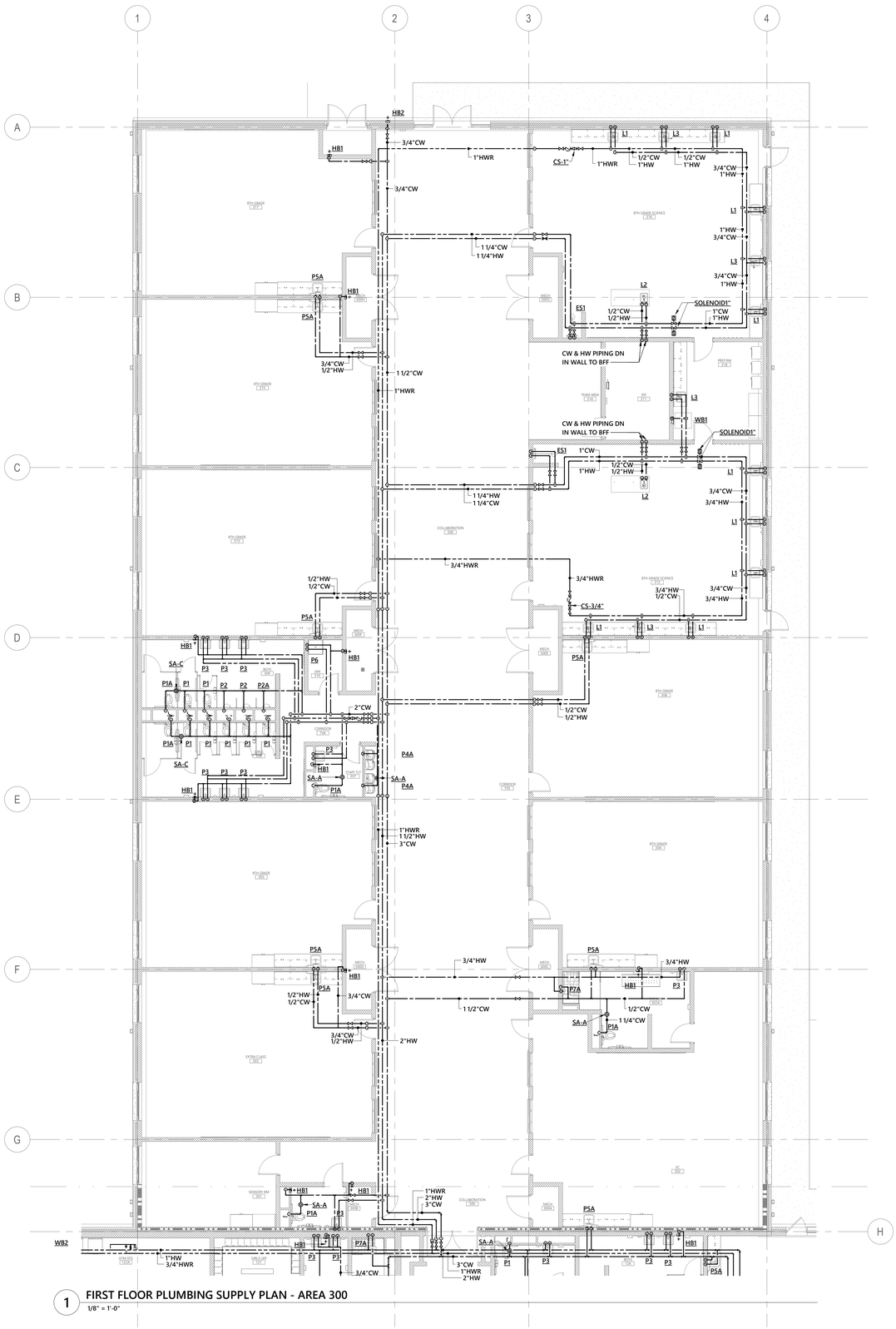
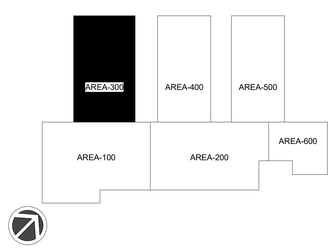


1 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 300

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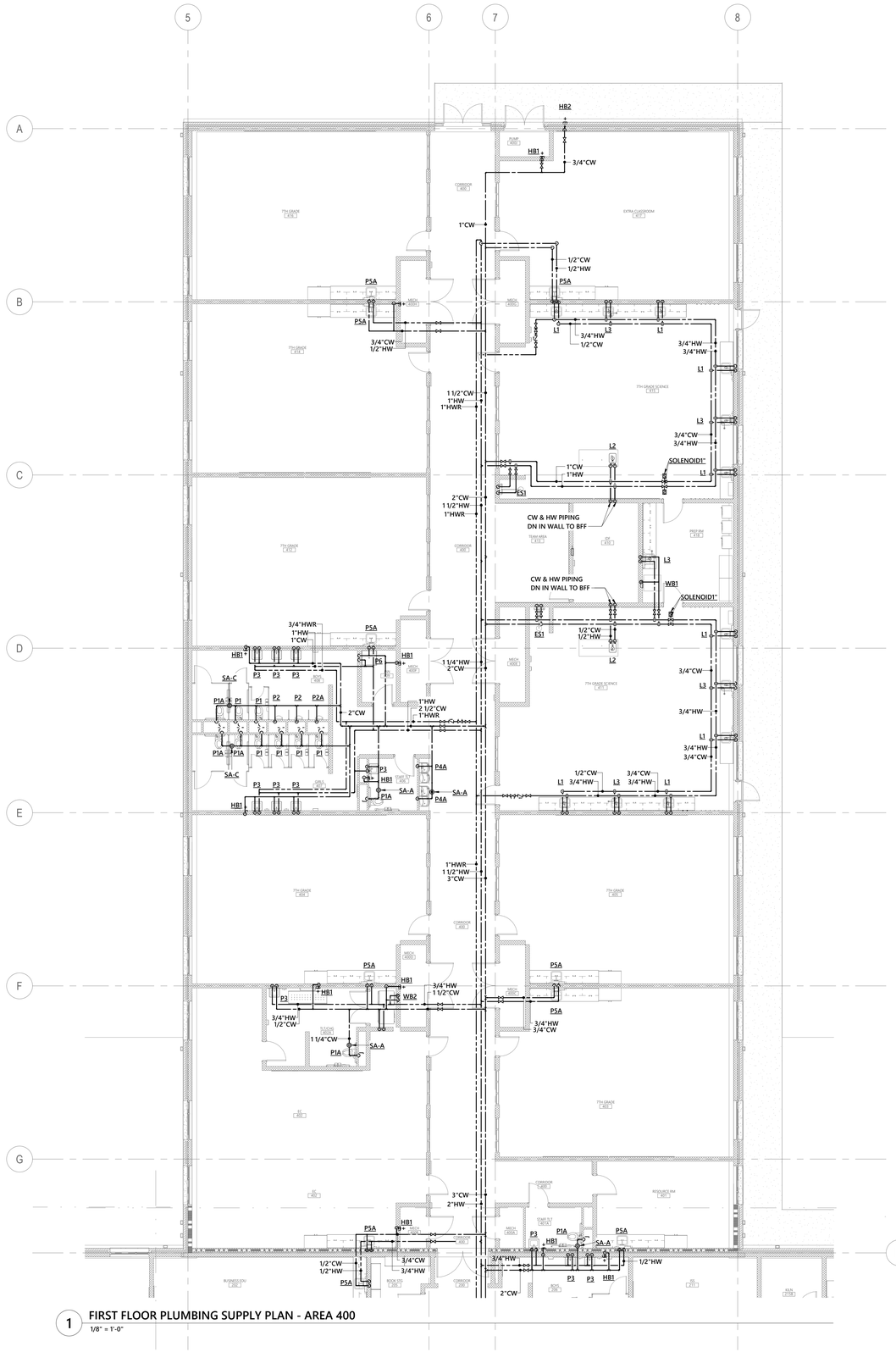
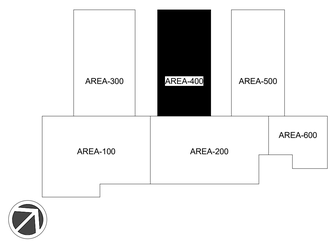


1 FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 400

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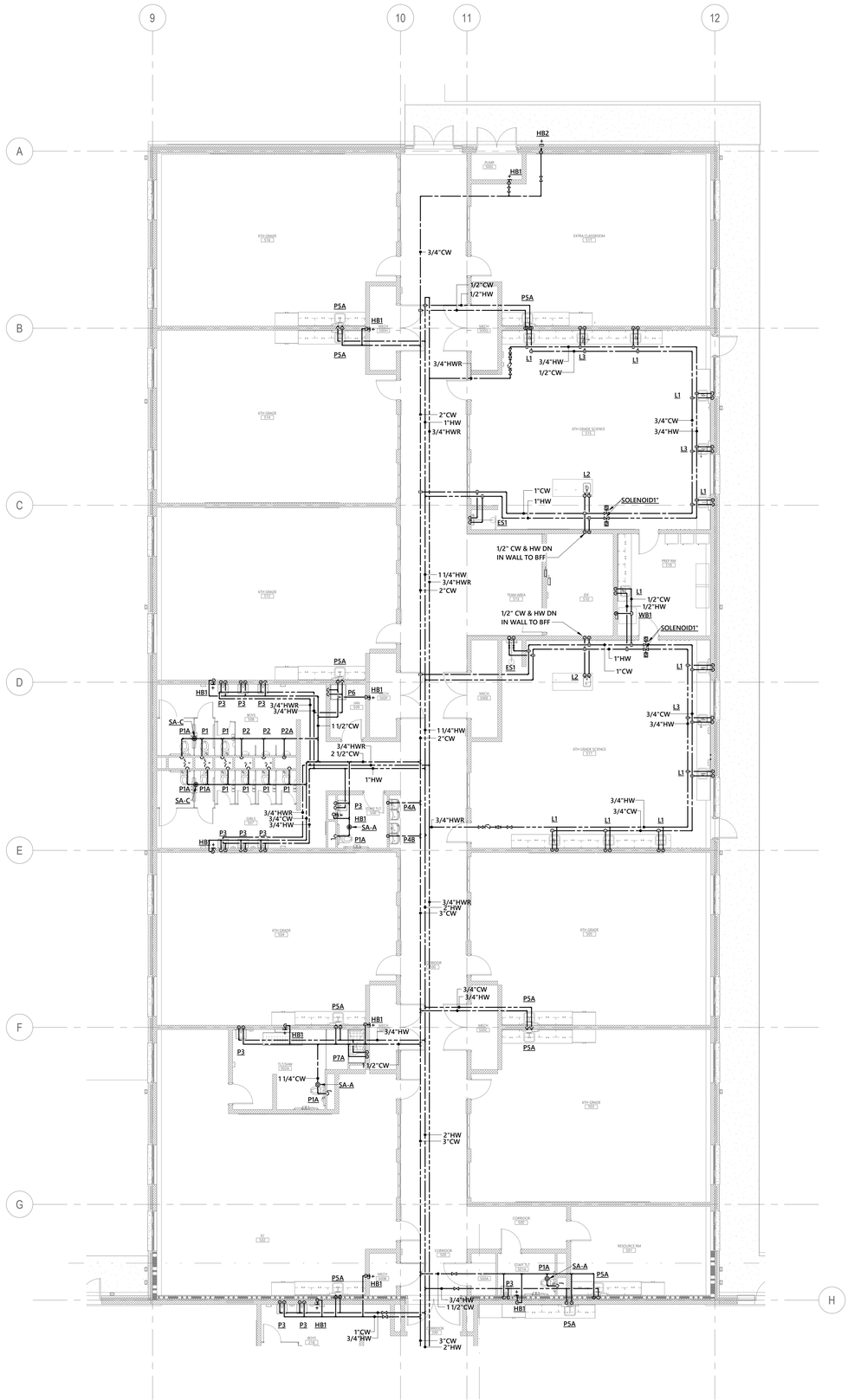
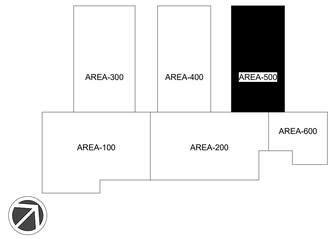


1 **FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 500

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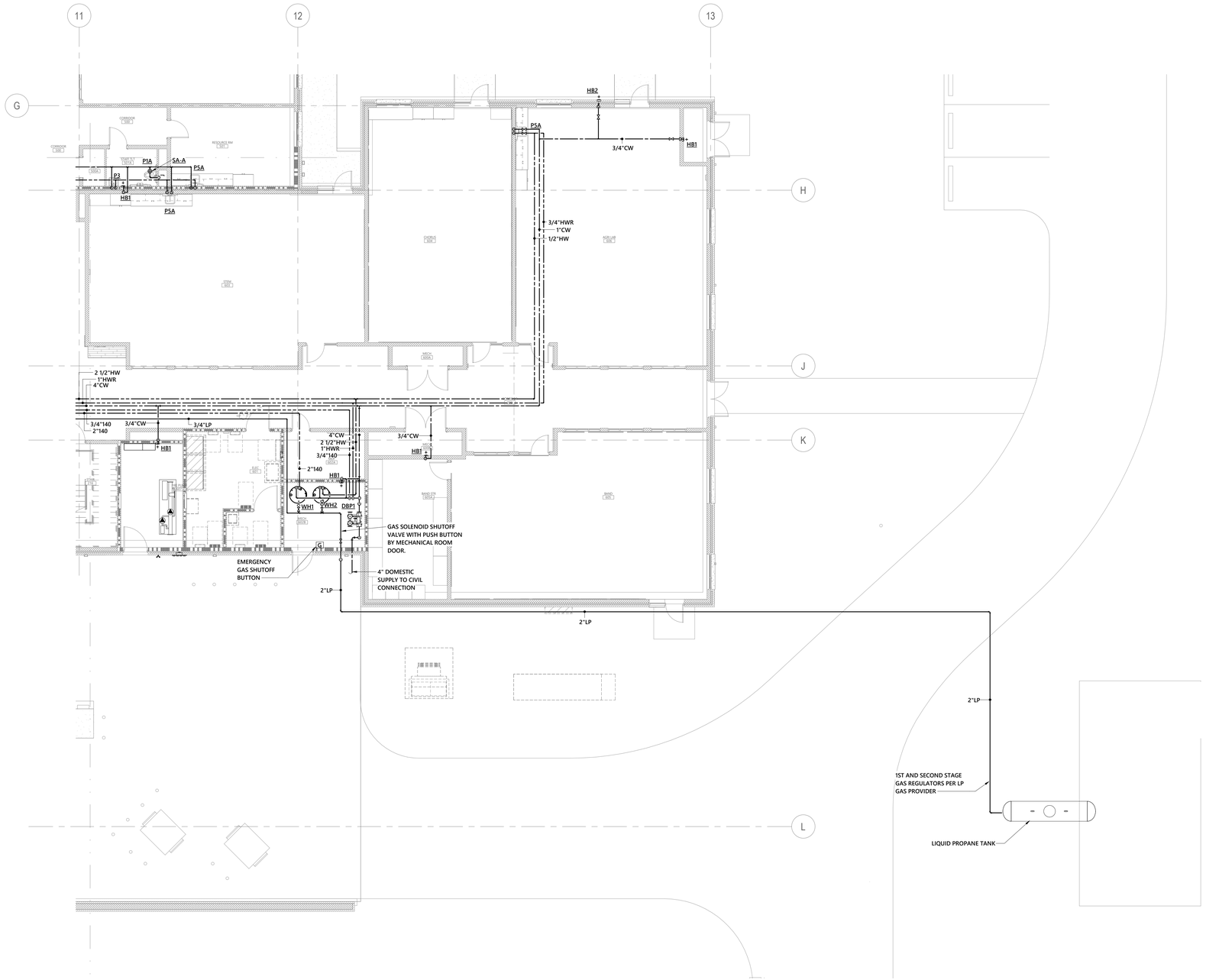
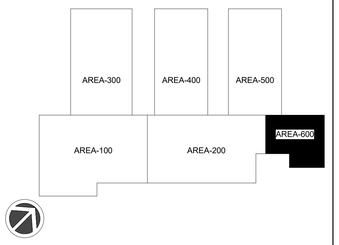


1 **FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 600**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR PLUMBING SUPPLY PLAN - AREA 600

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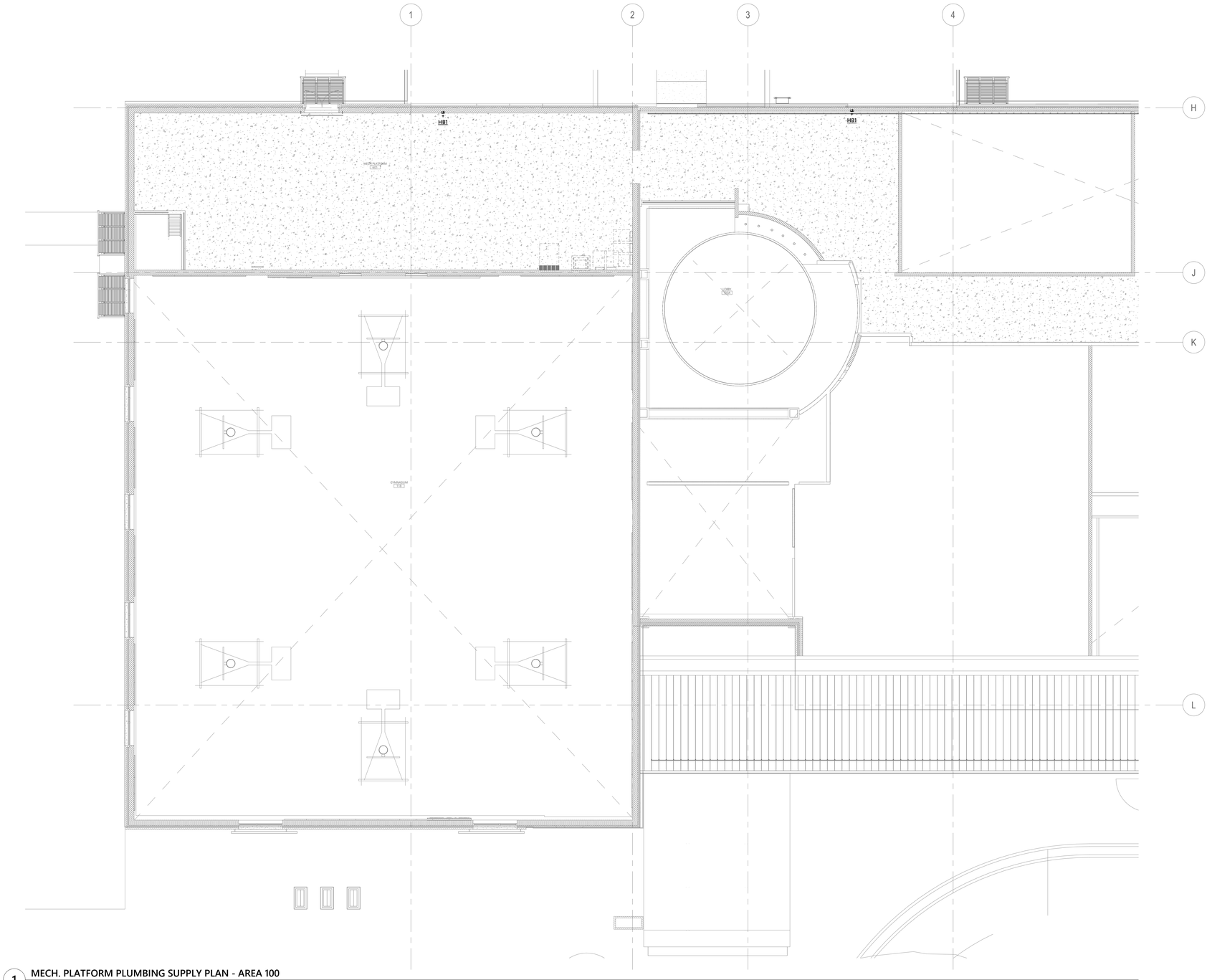
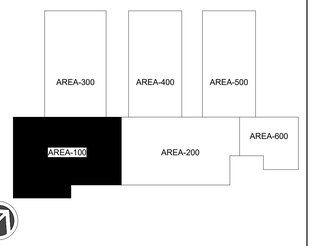


1 MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 100

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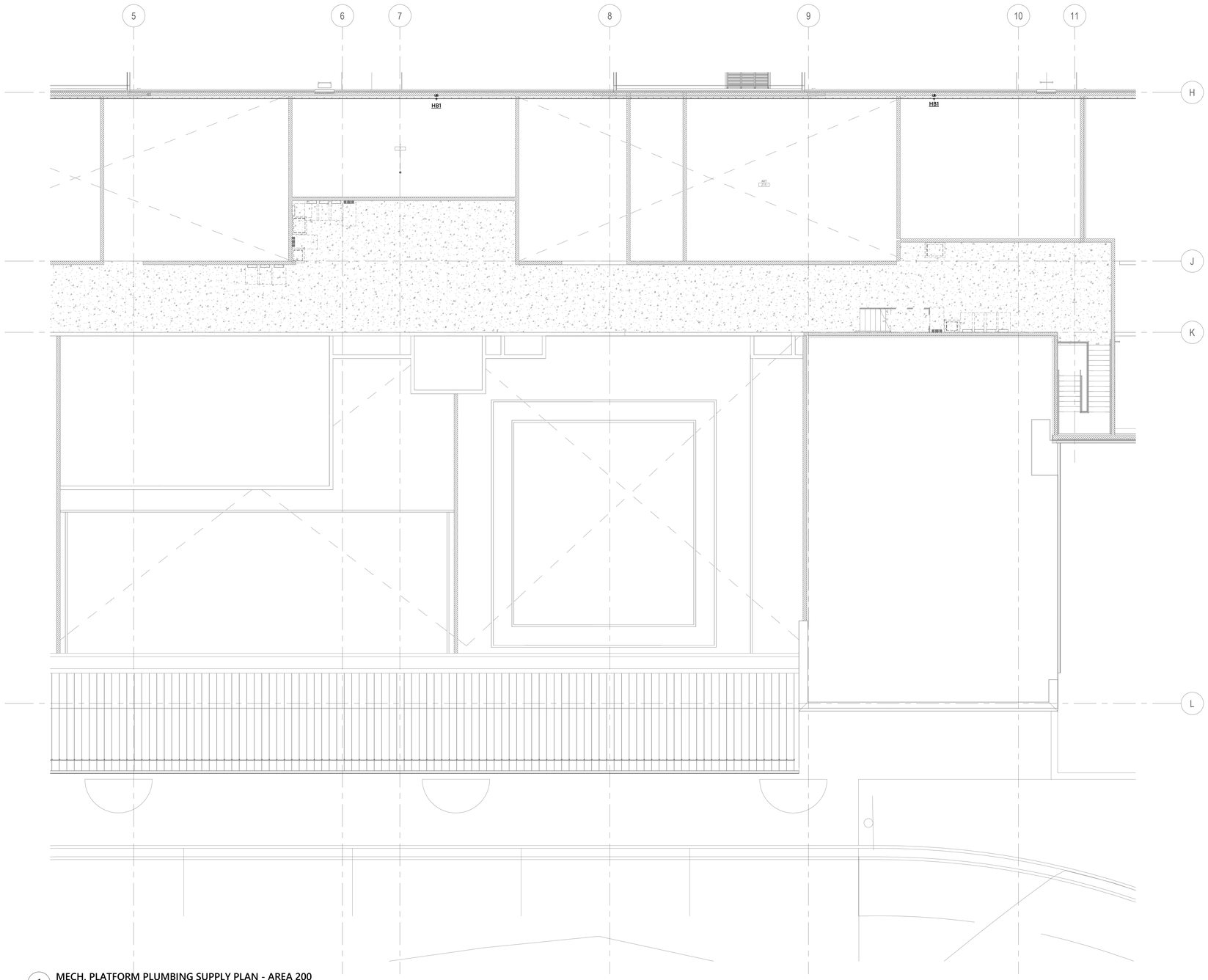
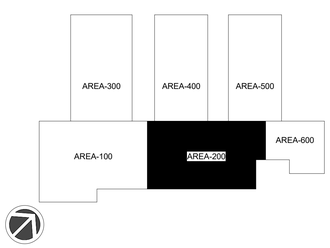


1 MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM PLUMBING SUPPLY PLAN - AREA 200

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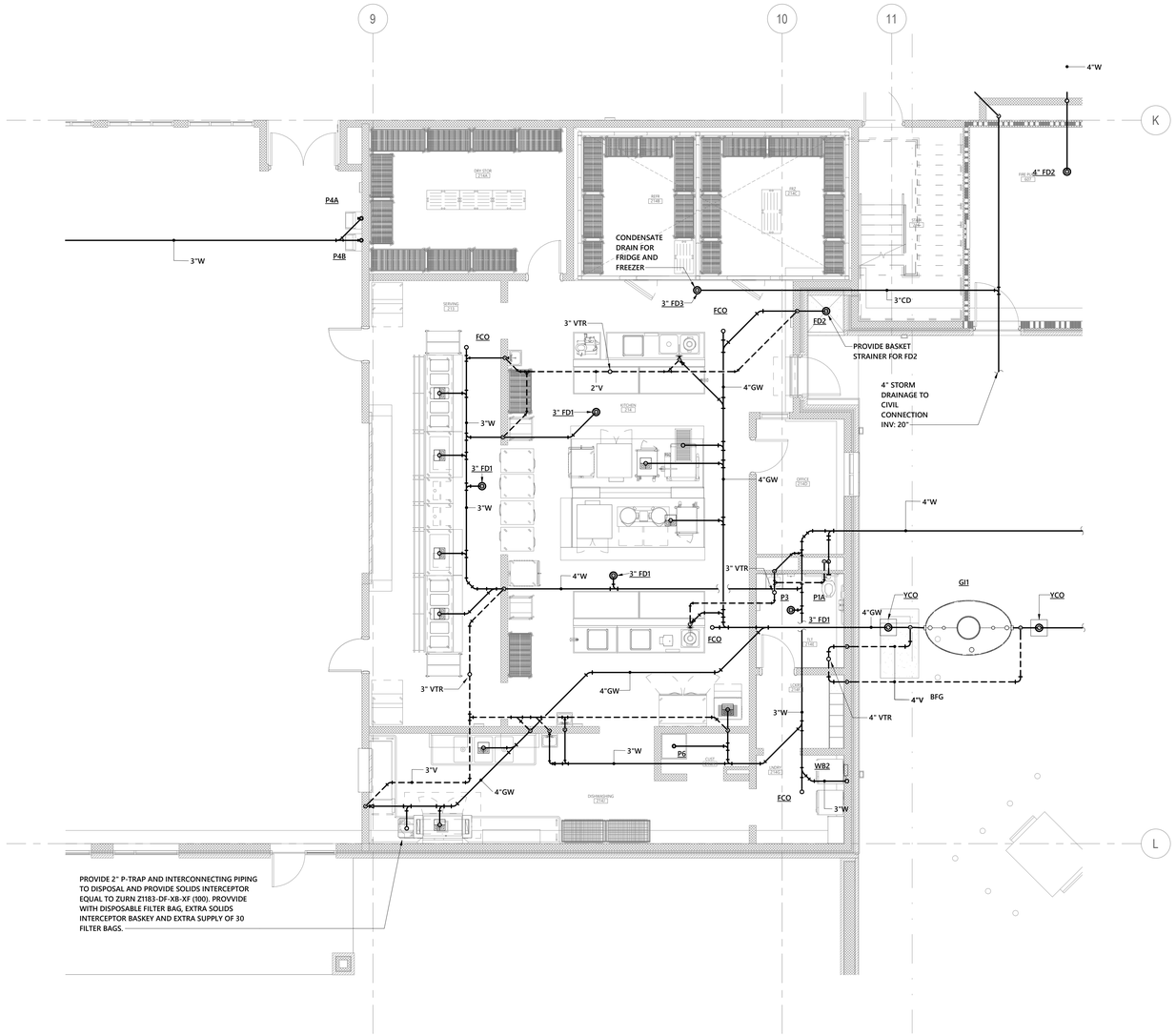
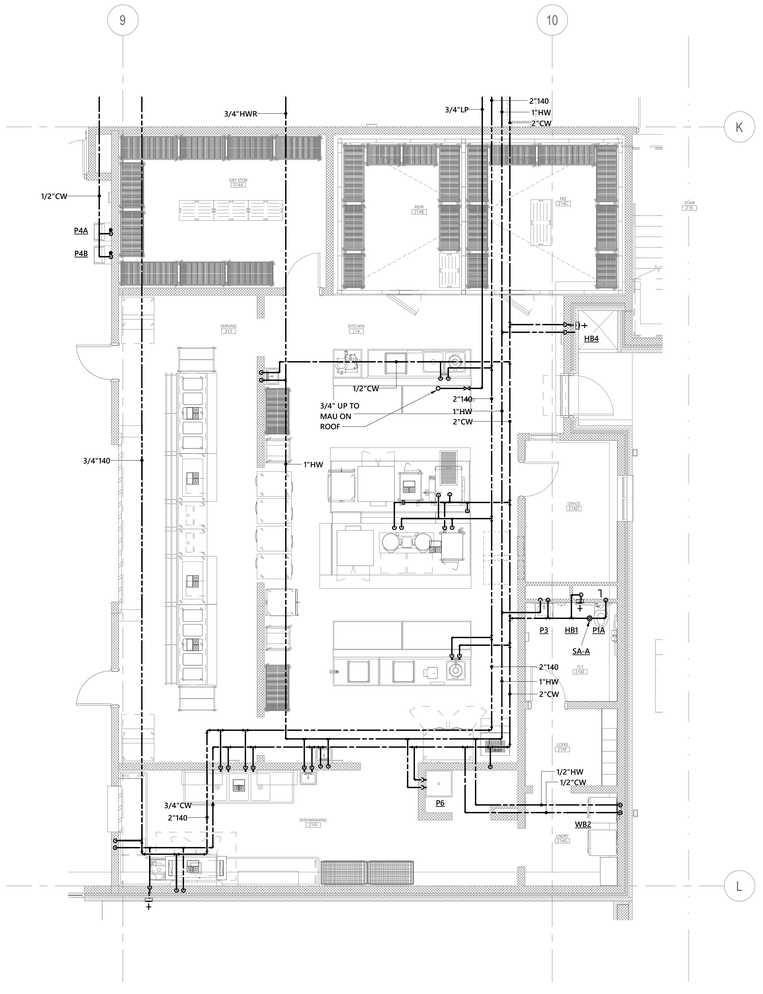


1 ENLARGED KITCHEN DRAINAGE PLAN
3/16" = 1'-0"



2 ENLARGED KITCHEN SUPPLY PLAN
3/16" = 1'-0"

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025

PROJECT #: 02303.000
DRAWN BY: TDM
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ENLARGED PLUMBING PLANS

P-401

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OPTIMA# 24-0073R

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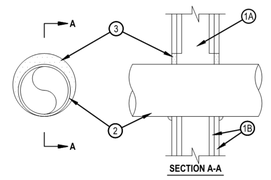
WL 1054

System No. W-L-1054

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating (Without Movement) at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating (Without Movement) at 400°F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
M Rating (Movement) — See Table 1	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 5.1 L/s/m2
	L Rating at 204°C — Less Than 5.1 L/s/m2



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. For M Rating, steel studs to be min 3-5/8 in. (92 mm) wide. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly. The M Rating is applicable only to 1 hr rated walls.

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Hilti Firestop Systems

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WL 1054

System No. W-L-1054

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
   C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
   D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

Movement Direction	Penetrant Item	Nominal Penetrant Diameter	Annular Space	Movement	Sealant Depth	F-Rating	L Rating with Movement
Y	2A, 2C*	2 in.	Max 2-1/4 in.	5%	5/8 in.	1 hr	N/A
Z	2A, 2C*	2 in.	2-1/4 in.	0.25 in.	5/8 in.	1 hr	N/A

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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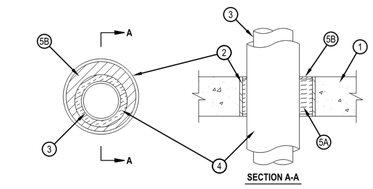
SYSTEM NO. W-L-1054

CAJ 5090

System No. C-AJ-5090

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 2 and 3 Hr (See Item 4)	F Ratings — 2 and 3 Hr (See Item 4)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating At Ambient — 4 CFM/sq ft	FH Ratings — 2 and 3 Hr (See Item 4)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
	L Rating At Ambient — 4 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

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Hilti Firestop Systems

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SYSTEM NO. C-AJ-5090

CAJ 5090

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 18 in. (457 mm).
   See Concrete Blocks (CAZT) Category in the Fire Resistance Directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 18 in. (457 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall.
3. Through Penetrants — One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
   B. Copper Pipe — Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper tubing.
   C. Copper Tubing — Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing.
4. Tube Insulation — Plastics+ — Min 1/2 in. (13 mm) to max 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. Nom 1 in. (25 mm) thick AB/PVC flexible foam insulation may be used for max 2 hr F and FH Ratings when max 3 in. (76 mm) diam pipe or tubing is used. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). When max annular space exceeds 1-1/2 in. (38 mm) the F and FH Ratings are 2 hr.
   See Plastics+ (QMFZ2) Category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
5. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. (6 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. When max annular space exceeds 1-1/2 in. (38 mm) the min thickness of fill material is 1/2 in. (13 mm).
   HILTI CONSTRUCTION CHEMICALS, DIV OF
   HILTI INC — FS-One Sealant

*Bearing the UL Classification Mark

Hilti Firestop Systems

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U.L. PENETRATION DETAILS

P-502

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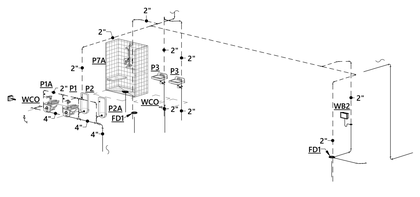
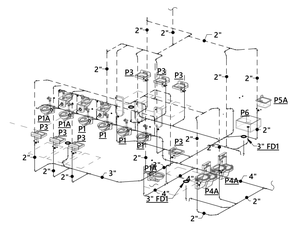


1 PLUMBING - BOYS LOCKER ROOM - SANITARY WASTE AND VENT RISER DIAGRAM
NOT TO SCALE



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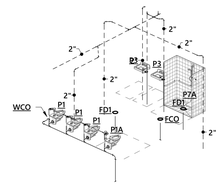

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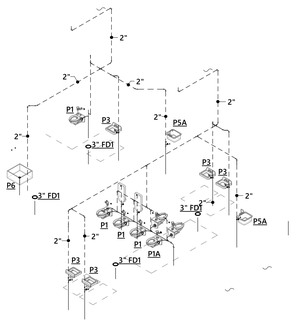

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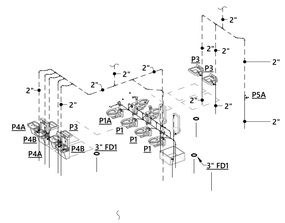

5 PLUMBING - TYPICAL AREA 200 GROUP RESTROOM - SANITARY WASTE AND VENT RISER
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WASTE & VENT RISER DIAGRAMS

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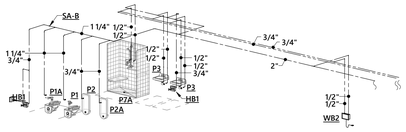

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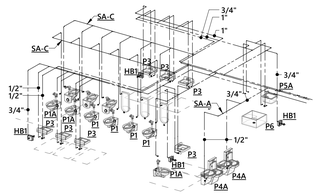

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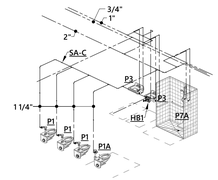

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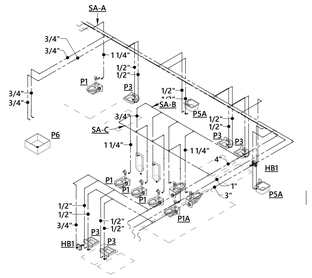

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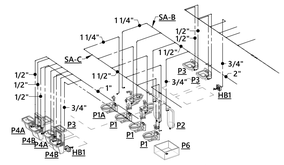

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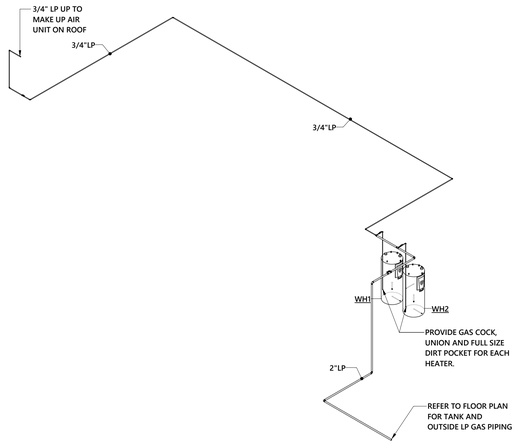

6 LIQUID PROPANE SUPPLY RISER
NOT TO SCALE

LIQUID PROPANE LOAD SUMMARY

LOAD	CONSUMPTION (Btu)
DOMESTIC WATER HEATER: WH1	399,999
DOMESTIC WATER HEATER: WH2	399,999
KITCHEN MAKE UP AIR UNIT: MUA-1	220,866
TOTAL	1,020,864

NOTES:
FARTHEST POINT OF DELIVERY FROM GAS METER (TO 2 PSI GAS PRESSURE REGULATOR AT FARTHEST GAS-FIRED FIXTURE) = ±250 FT.

FUEL GAS CODE TABLE FOR ABOVE GRADE 2 PSI PIPING: 2018 NCFGC - TABLE 402.4(27)
SCHEDULE 40 METALLIC PIPE, 2 PSI INLET PRESSURE, 1 PSI PRESSURE DROP.

FUEL GAS CODE TABLE FOR ABOVE GRADE LOW PRESSURE PIPING: 2018 NCFGC - TABLE 402.4(28)
SCHEDULE 40 METALLIC PIPE, 0.5 PSI INLET PRESSURE, 0.5" W.C. PRESSURE DROP.

*-AVAILABLE AT PRESSURE REGULATOR

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ISSUE DATE: 02/18/2025
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DOMESTIC RISER DIAGRAM

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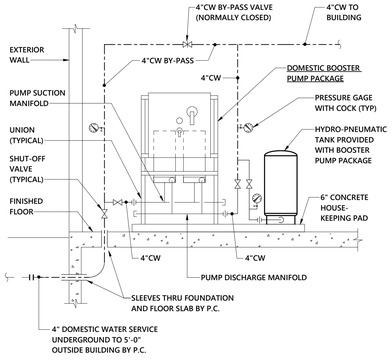

1 DOMESTIC WATER PRESSURE BOOSTER DETAIL - BP1
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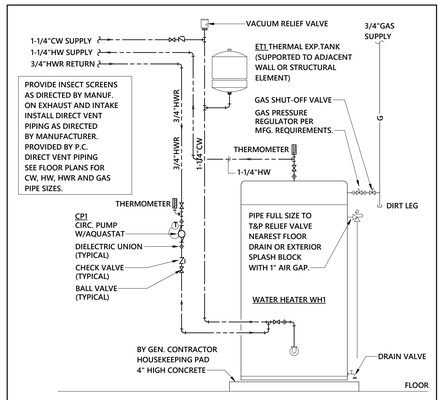

2 PROPANE FIRED WATER HEATER PIPING SCHEMATIC
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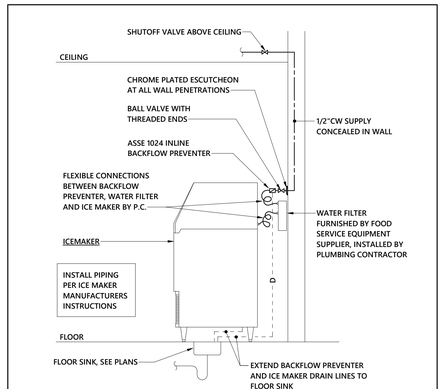

3 ICE MAKER PIPING SCHEMATIC
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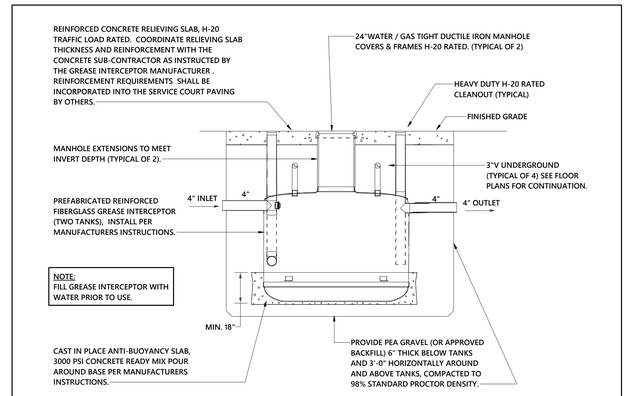

4 GREASE INTERCEPTOR SCHEMATIC - GRS1
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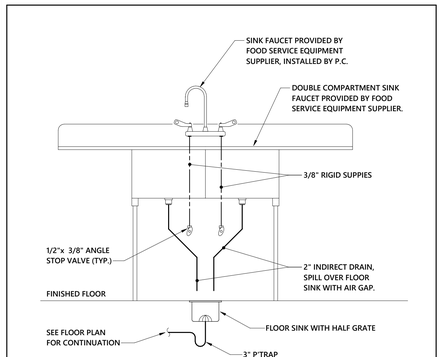

5 DOUBLE COMPARTMENT SINK PIPING DETAIL
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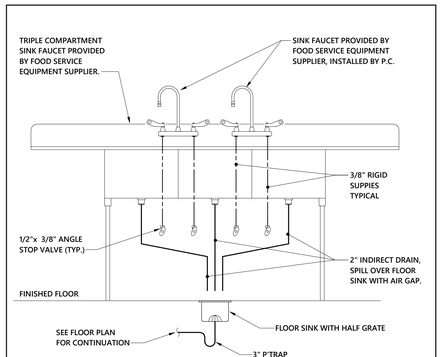

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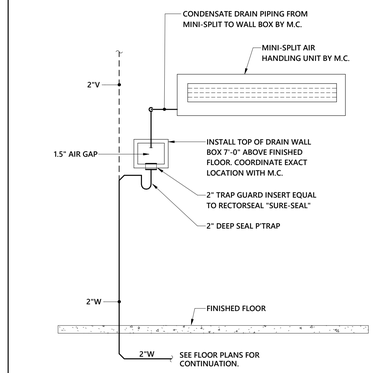

7 CONDENSATE DRAIN WALL BOX SCHEMATIC
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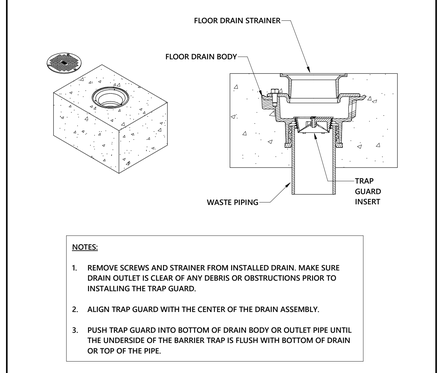
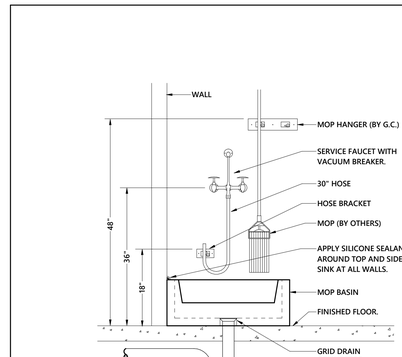
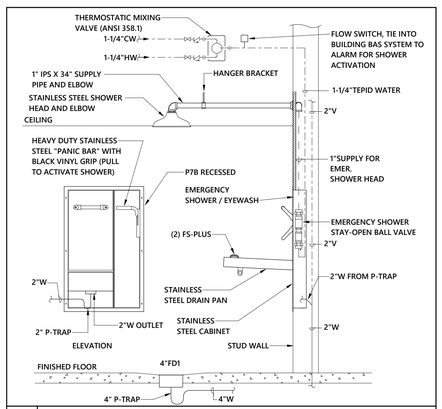


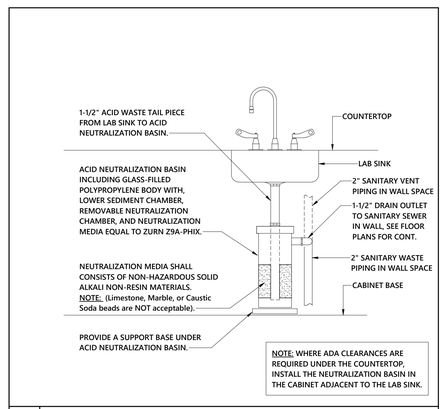
8 FLOOR DRAIN TRAP GUARD DETAIL
NO SCALE



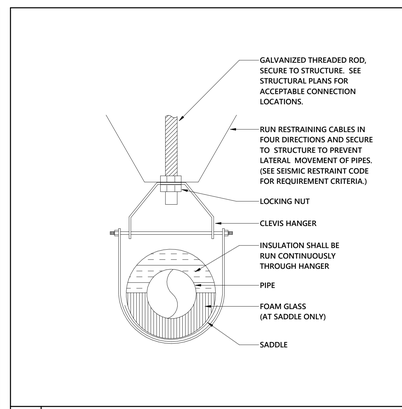
9 MOP BASIN AND ACCESSORIES
NOT TO SCALE



12 EMERGENCY SHOWER PIPING SCHEMATIC (ES1)
NO SCALE AT SCIENCE CLASSROOM



11 LAB SINK ACID NEUTRALIZATION BASIN DETAIL
NOT TO SCALE



10 PIPE HANGER SCHEMATIC
NOT TO SCALE

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: Author
CHECKED BY: Checker

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PLUMBING DETAILS AND SCHEMATICS

P-601

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ABBREVIATIONS

Ø	ROUND	LVR	LOUVER
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE
AC	AIR CONDITIONING	M/A	MIXED AIR
ADD	ADDENDUM	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MBH	ONE THOUSAND BTU PER HOUR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER
ALT	ALTERNATE	MECH	MECHANICAL
AP	ACCESS PANEL	MFR	MANUFACTURER
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS
BLW	BELOW	MTR	MOTOR
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CLG	CEILING	NO	NORMALLY OPEN
D	DEGREE	NTS	NOT TO SCALE
DB	DRY BULB	O/A	OUTSIDE AIR
DIA	DIAMETER	PD	PRESSURE DROP
DN	DOWN	PLBG	PLUMBING
EA	EACH	PRESS	PRESSURE
EAT	ENTERING AIR TEMPERATURE	PSI	POUNDS PER SQUARE INCH
ELEC	ELECTRICAL	PSIG	POUNDS PER SQUARE INCH GAUGE
EQUIP	EQUIPMENT	PWR	POWER
EWT	ENTERING WATER TEMPERATURE	R/A	RETURN AIR
E/A	EXHAUST AIR	RH	RELATIVE HUMIDITY
EXIST	EXISTING	RL/A	RELIEF AIR
F	DEGREES FAHRENHEIT	RM	REMAIN
FD	FIRE DAMPER	RPM	REVOLUTIONS PER MINUTE
FL	FLOOR	SF	SQUARE FOOT
FPM	FEET PER MINUTE	S/A	SUPPLY AIR
FT	FOOT/FEET	SF	SQUARE FOOT
GC	GENERAL CONTRACTOR	SD	SMOKE DAMPER
GPM	GALLONS PER MINUTE	SP	STATIC PRESSURE
HP	HORSE POWER	T	THERMOSTAT
HTG	HEATING	TD	TEMPERATURE DROP
HTR	HEATER	TEMP	TEMPERATURE
HW	HOT WATER	TYP	TYPICAL
IN	INCH	VAV	VARIABLE AIR VOLUME
LB	POUND	VENT	VENTILATION
LAT	LEAVING AIR TEMPERATURE	WB	WET BULB
LP	LOW PRESSURE		

EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT	EWH	ELECTRIC WATER HEATER
ACC	AIR COOLED CONDENSER	FCU	FAN COIL UNIT
ACCU	AIR COOLING CONDENSING UNIT	FP	FIRE PUMP
AHU	AIR HANDLING UNIT	GI	GREASE INTERCEPTOR
AS	AIR SEPARATOR	GRV	GRAVITY ROOF VENTILATOR
B	BOILER	HWP	HEATING WATER PUMP
CH	CHILLER	HX	HEAT EXCHANGER
CT	COOLING TOWER	HRU	HEAT RECOVERY UNIT
CWP	CONDENSER WATER PUMP	PRV	POWER ROOF VENTILATOR
CHWP	CHILLED WATER PUMP	RE	RETURN/EXHAUST FAN
DBP	DOMESTIC WATER BOOSTER PUMP	RTU	ROOFTOP UNIT
DC	DUCT MOUNTED COIL	SEP	SEWAGE EJECTOR PUMP
DCP	DOMESTIC WATER CIRCULATING PUMP	SF	SUPPLY FAN
EF	EXHAUST FAN	SP	SUMP PUMP
EDC	ELECTRIC DUCT COIL	UH	UNIT HEATER
ET	EXPANSION TANK	WH	WATER HEATER

MECHANICAL DUCT SYMBOLS

	DESCRIPTION
16x8	SQUARE DUCT SIZE TAG (WIDTH x HEIGHT)
16/8	OVAL DUCT SIZE TAG (WIDTH / HEIGHT)
16"Ø	ROUND DUCT SIZE TAG (DIAMETER)
S/A	SUPPLY AIR
O/A	OUTDOOR AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
L/A	RELIEF AIR
	SUPPLY AIR DIFFUSER (4-WAY)
	RETURN AIR GRILLE
	RETURN AIR GRILLE WITH SOUND BOOT
	EXHAUST AIR GRILLE
M.C.	MECHANICAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
N.I.C.	NOT IN CONTRACT
AFF	ABOVE FINISHED FLOOR
DN	DOWN
UP	UP
X	SECTION CUT REFERRING DETAIL NUMBER REFERRING SHEET NUMBER

MECHANICAL ACCESSORIES SYMBOL LEGEND

SYMBOL	DESCRIPTION
C	CARBON DIOXIDE SENSOR
T	THERMOSTAT / TEMP SENSOR (4'-0" AFF TO TOP)
CO	CARBON MONOXIDE SENSOR
S	SWITCH (4'-0" AFF TO TOP)
FD	RECTANGULAR DUCT FIRE DAMPER W/ ACCESS DOOR (SEE DETAIL)
DD	RECTANGULAR DUCT SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR.
M	RECTANGULAR DUCT MOUNTED MOTOR OPERATED DAMPER, INTERLOCK WITH FAN AS INDICATED. (DAMPER BY M.C.)
M	ROUND DUCT MOTORIZED DAMPER

MECHANICAL PIPING SYMBOLS

SYMBOL	DESCRIPTION
	BUTTERFLY VALVE
	3-PIECE BALL VALVE
	CHECK VALVE
	STRAINER WITH BLOWDOWN VALVE WITH HOSE CONN.
	BALANCING VALVE
	B&G CIRCUIT SETTER
	UNION
	THERMOMETER
P	PRESSURE GAGE & COCK
	GAGE COCK
	FLOW SWITCH
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	STEAM TRAP, F&T
	STEAM TRAP, TB
	CONTROL VALVE
	GAS COCK
	PRESSURE REDUCING/REGULATING VALVE
	SOLENOID VALVE

MECHANICAL PIPING SYSTEMS LEGEND

SYMBOL	DESCRIPTION
D	CONDENSATE DRAINAGE
GR	GEOTHERMAL WATER RETURN
GS	GEOTHERMAL WATER SUPPLY
R	REFRIGERANT

TESTING, ADJUSTING, AND BALANCING

1. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
2. CONDUCT TESTING AND BALANCING IN ACCORDANCE WITH TECHNICAL PORTIONS OF THE AABC "NATIONAL STANDARDS FOR TESTING AND BALANCING HVAC SYSTEMS", LATEST EDITION.
3. INSTRUMENTS USED FOR BALANCING MUST HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX (6) MONTHS PRIOR TO BALANCING. SUBMIT SERIAL NUMBERS, AND DATES OF CALIBRATION OF ALL INSTRUMENTS TO BE USED PRIOR TO THE START OF WORK.
4. SET HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN THE FOLLOWING TOLERANCES:
   A. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: MINUS 5 TO PLUS 10 PERCENT.
   B. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.
   C. CONDENSER-WATER FLOW RATE: 0 TO MINUS 10 PERCENT.
5. REFER TO SPECIFICATION SECTION 230593 AND CONTRACT DRAWINGS IN THEIR ENTIRETY FOR ADDITIONAL REQUIREMENTS.

MECHANICAL GENERAL NOTES

SEE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS. THESE GENERAL NOTES ARE INTENDED TO SUPPLEMENT THE SPECIFICATIONS. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL EQUIPMENT LISTED IN PROJECT SCHEDULES IS TO BE CONSIDERED DESIGN BASIS EQUIPMENT. ALL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. ROOFTOP UNIT RETURN DUCTWORK AND TRANSFER DUCTS SHALL BE LINED WITH 1" THICK FIBERGLASS DUCT LINER FOR ACOUSTICAL PURPOSES. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE.
4. SUPPLY AND RETURN DUCTWORK LOCATED OUTSIDE THE BUILDING SHALL BE WRAPPED WITH 3" THICK DUCT WRAP WITH VAPOR BARRIER HAVING A MINIMUM INSTALLED R VALUE OF 8.0. COVER EXTERNAL INSULATION WITH AN ALUMINUM OUTER ENCLOSURE AND SEAL WATER TIGHT.
5. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE NORTH CAROLINA INTERNATIONAL MECHANICAL CODE. SEAL MEDIUM PRESSURE SUPPLY DUCTWORK FOR POSITIVE 3" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4.
6. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
7. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
8. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS. IN ADDITION, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR A REGISTERED DESIGN PROFESSIONAL TO COMMISSION THE INSTALLED SYSTEM AND PROVIDE THE OWNER AND CODE REVIEWER A SEALED STATEMENT OF SYSTEM COMMISSIONING (PER 2018 NCECC APPENDIX C1).
9. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
10. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
11. CONDENSATE DRAIN PIPING SHALL BE TYPE 'L' OR 'K' HARD DRAWN COPPER AND SHALL BE INSULATED WITH 1 1/2" THICK FIBERGLASS INSULATION WITH A DENSITY OF 1.5 LB. PER CUBIC FOOT. INSULATION SHALL HAVE A FACTORY APPLIED PRESSURIZED VAPOR BARRIER JACKET WITH PRESSURE SENSITIVE ADHESIVE SELF-SEALING LAP. INSULATION AND JACKET SHALL BE RATED FOR INSULATION IN A RETURN AIR PLENUM.
12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING INSULATION EXPOSED OUTDOORS SHALL BE COVERED WITH AN OUTER ALUMINUM JACKET.
13. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
14. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM-FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
15. CONTRACTOR SHALL VERIFY LOCATION OF ALL ROOF PENETRATIONS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
16. ROOF CURBS SHALL ALLOW A MINIMUM OF 8" ABOVE ROOF INSULATION FOR FLASHING, OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER. IN ADDITION, ALL ROOF CURBS OR EQUIPMENT SUPPORT RAILS THAT SUPPORT EQUIPMENT, PIPING, CONDUIT, ETC. EXPOSED ON THE ROOF SHALL HAVE SUFFICIENT HEIGHT TO MAINTAIN A MINIMUM OF 18" CLEARANCE BELOW SUPPORTED EQUIPMENT FOR ROOF MAINTENANCE.
17. CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 15'-0" FROM ANY OUTSIDE AIR INTAKE.
18. DRYER VENT WALL CAPS SHALL BE PROVIDED WITH A BACKDRAFT DAMPER. DRYER VENT SHALL NOT EXCEED A TOTAL EQUIVALENT LENGTH OF 35'-0" WITH A 2.5' DEDUCTION FOR EACH 45° BEND AND A 5' DEDUCTION FOR EACH 90° BEND.
19. KITCHEN HOOD EXHAUST DUCT SHALL BE 16 GAUGE CARBON STEEL. ALL JOINTS AND SEAMS SHALL BE CONSTRUCTED WITH A CONTINUOUS LIQUID - TIGHT EXTERNAL WELD. ALL DUCTWORK SHALL SLOPE A MINIMUM OF 1/4 INCH PER FOOT TOWARD HOOD. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE EXHAUST DUCT AND AT 20'-0" (MINIMUM) INTERVALS.
20. THE MECHANICAL CONTRACTOR SHALL PERFORM A LIGHT TEST (AS REQUIRED BY THE MECHANICAL CODE) FOR ALL JOINTS AND SEAMS IN THE PRESENCE OF THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO CONCEALING KITCHEN HOOD EXHAUST DUCTWORK.
21. DISHWASHER EXHAUST DUCT SHALL BE STAINLESS STEEL. ALL JOINTS AND SEAMS SHALL HAVE A LIQUID TIGHT CONTINUOUS EXTERNAL WELD. EXHAUST DUCT SHALL SLOPE DOWN IN DIRECTION OF HOOD A MINIMUM OF 1" PER FOOT.
22. ALL GEOTHERMAL CONDENSER WATER PIPING SHALL BE SDR-11 HDPE PIPE. PROVIDE WITH MOLDED PE FITTINGS, HDPE RESIN SOCKET- OR BUTT-FUSION TYPE MADE TO MATCH HDPE PIPE DIMENSIONS AND CLASS.
23. ALL CONDENSER WATER PIPING SHALL PITCH DOWN IN DIRECTION OF FLOW WITH MANUAL AIR VENTS AT ALL HIGH POINTS AND 1/2" DRAIN VALVES AT ALL LOW POINTS.
24. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.
25. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
26. ALL ISOLATION VALVES, TERMINAL UNITS, CONTROLS, ETC. REQUIRING ACCESS AND SERVICE SHALL BE INSTALLED WITHIN 18" OF THE CEILING FOR SERVICE ACCESSIBILITY. LOCATIONS SHALL BE INDICATED ON THE CEILING GRID PER THE SPECIFICATIONS.
27. ALL EQUIPMENT CONCRETE PAD SIZES FOR MECHANICAL EQUIPMENT SHALL BE CONFIRMED WITH APPROVED SHOP DRAWING SUBMITTALS AND ASSOCIATED UNIT MANUFACTURER ANCHOR LOCATIONS PRIOR TO FABRICATION/INSTALLATION. THE MECHANICAL AND PLUMBING CONTRACTORS SHALL COORDINATE THE EXACT LOCATION OF MECHANICAL EQUIPMENT HOUSEKEEPING PADS WITH THE FLOOR DRAIN LOCATIONS PRIOR TO INSTALLATION OF DRAINS AT EQUIPMENT/PAD LOCATIONS.
28. DUCTWORK AND PIPING PASSING THROUGH/ABOVE ELECTRICAL ROOMS SHALL BE CLOSELY COORDINATED WITH THE ELECTRICAL CONTRACTOR. DUCTWORK OR PIPING SHALL NOT BE LOCATED ABOVE ELECTRICAL PANELS.
29. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS, DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.
30. COMMERCIAL DRYER EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL NOT LESS THAN 0.0195 INCHES THICK. EXHAUST DUCT SHALL BE ASSEMBLED WITH SMOOTH INTERIOR SURFACE SO THAT THE JOINTS DO NOT PERMIT THE ACCUMULATION OF LINT, DO NOT USE SHEET METAL SCREWS AT JOINTS. ALL 90° TURN SHALL HAVE LONG RADIUS ELBOWS. ALL DUCTWORK SHALL BE INSTALLED PER THE DRYER MANUFACTURER'S RECOMMENDATIONS. COMMERCIAL DRYER EXHAUST DUCTWORK SHALL BE WRAPPED WITH TWO LAYERS OF 1 1/2" THICK THERMAL INSULATION BLANKET AS MANUFACTURED BY FIREMASTER (OR EQUAL). INSULATION SHALL BE INSTALLED PER NFPA-96 AND IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS TO OBTAIN A 2-HOUR RATED ASSEMBLY. ASSEMBLY SHALL BE U.L. APPROVED.
31. PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH AN IONIZATION TYPE DUCT MOUNTED SMOKE DETECTOR IN DUCTED APPLICATIONS, OR SPOT DETECTORS IN OPENING APPLICATIONS (WITHIN 5'-0" OF THE DAMPER WITH NO AIR OUTLETS OR INLETS BETWEEN DETECTOR AND DAMPER), INSTALLED IN THE DUCT WIRED, TO CLOSE THE DAMPER UPON ACTIVATION. DUCT MOUNTED SMOKE DETECTORS AND SPOT DETECTORS SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. DETECTORS SHALL BE INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR.
32. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING RESTRAINTS TO RESIST THE EARTHQUAKE EFFECTS ON THE MECHANICAL SYSTEMS. THE REQUIREMENTS FOR THOSE RESTRAINTS ARE FOUND IN THE LOCAL BUILDING CODE AND ASCE 7. THE ANCHORAGE OF THE MECHANICAL SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE LOCAL BUILDING CODE AND ASCE 7.
33. MECHANICAL CONTRACTOR SHALL PROVIDE PRE-PRINTED COLOR-CODED PIPE LABELS WITH 1-1/2" HIGH LETTERING INDICATING SERVICE AND FLOW DIRECTION. PLASTIC PIPE LABELS UTILIZED IN A RETURN AIR PLENUM SHALL BE LISTED/APPROVED FOR USE IN A RETURN AIR PLENUM. ALL PIPING TO MATCH EXISTING FACILITIES STANDARD (IF APPLICABLE). OTHERWISE, PIPE LABELS SHALL MATCH THE FOLLOWING:
    CONDENSER WATER: GREEN BACKGROUND, WHITE LETTERING
    REFRIGERANT PIPING: YELLOW BACKGROUD, BLACK LETTERING
34. ALL MECHANICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED AS A COMPLETE PACKAGE, NOT THROUGH INDIVIDUAL COMPONENTS OR PARTS. PROVIDE REQUIRED 3RD PARTY FIELD UL LISTING SERVICES AS REQUIRED TO COMPLY.
35. PREP ROOM EXHAUST DUCTWORK SHALL BE CONSTRUCTED OF APPROVED G90 GALVANIZED SHEET STEEL WITH NOMINAL THICKNESS OF 18 GUAGE. DUCTWORK & EXHAUST SYSTEM SHALL ME THE REQUIREMENTS OF NCMC SECTION S10.

COORDINATION DRAWINGS

THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA (INCLUDING CABLE TRAY) AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS FOR SHOP DRAWINGS AND COORDINATION DRAWINGS:

1. ALL SHOP AND COORDINAGION DRAWINGS WILL BE 1/4" = 1'-0" SCALE
2. DRAWINGS WILL BE ORIGINAL DRAWINGS AND NOT OVERLAYS OF THE CONTRACT/DESIGN
3. COORDINATION DRAWINGS WILL BE DRAWN ON REPRODUCIBLE MATERIAL 48"x36".
4. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
5. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

MECHANICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
M-001	MECHANICAL LEGEND AND NOTES
M-002	MECHANICAL SCHEDULES
M-003	MECHANICAL SCHEDULES
M-004	VENTILATION CALCULATIONS
M-005	VENTILATION CALCULATIONS
M-010	MECHANICAL SITE PLAN
M-101	OVERALL MECHANICAL PLAN
M-111	FIRST FLOOR MECHANICAL PLAN - AREA 100
M-112	FIRST FLOOR MECHANICAL PLAN - AREA 200
M-113	FIRST FLOOR MECHANICAL PLAN - AREA 300
M-114	FIRST FLOOR MECHANICAL PLAN - AREA 400
M-115	FIRST FLOOR MECHANICAL PLAN - AREA 500
M-116	FIRST FLOOR MECHANICAL PLAN - AREA 600
M-117	MECH. PLATFORM MECHANICAL PLAN - AREA 100
M-118	MECH. PLATFORM MECHANICAL PLAN - AREA 200
M-119	OVERALL ROOF MECHANICAL PLAN
M-211	FIRST FLOOR MECHANICAL PIPING PLAN - AREA 100
M-212	FIRST FLOOR MECHANICAL PIPING PLAN - AREA 200
M-213	FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300
M-214	FIRST FLOOR MECHANICAL PIPING PLAN - AREA 400
M-215	FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500
M-216	FIRST FLOOR MECHANICAL PIPING PLAN - AREA 600
M-217	MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 100
M-218	MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 200
M-501	U.L. PENETRATION DETAILS
M-502	MECHANICAL DETAILS
M-503	MECHANICAL DETAILS
M-601	MECHANICAL CONTROL SEQUENCES OF OPERATION
M-602	MECHANICAL CONTROL POINTS LIST

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

C401 METHOD OF COMPLIANCE

- ■ 2018 NCECC CHAPTER 4
- ☐ ASHRAE 90.1-2013 PRESCRIPTIVE
- ☐ ASHRAE 90.1-2013 PERFORMANCE
- ☐ N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- ☐ COMCHECK PROVIDED (2018 NCECC)
- ☐ COMCHECK PROVIDED (90.1-2013)
- ☐ ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ■ C406.3 REDUCED LTG DENSITY
- ☐ C406.4 ENHANCED LTG CONTROLS
- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.7 SERVICE WATER HEATING

C301 CLIMATE ZONE

3A - LENOIR COUNTY, NORTH CAROLINA

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1-2013 TABLE D-1)

winter dry bulb	18° F.
summer dry bulb	94° F.
summer wet bulb	76° F.

INTERIOR (2018 NCECC SECTION C302.1)

winter dry bulb	72° F.
summer dry bulb	75° F.

C403.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

BUILDING HEATING LOAD	1,389,700 BTUH (peak)
BUILDING COOLING LOAD	2,948,300 BTUH (peak)
INSTALLED HEATING CAPACITY	3,985,400 BTUH
INSTALLED COOLING CAPACITY	3,449,300 BTUH

C403.2.3 & C406.2 - REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRIPTION - GEOTHERMAL LOOP SERVING WATER SOURCE HEAT PUMPS WITH HOT GAS REHEAT

- ■ MINIMUM HVAC EQUIP EFFICIENCY COMPLIANCE - TABLE C403.2.3
- ☐ INCREASED HVAC EQUIP EFFICIENCY COMPLIANCE - 10% OVER TABLE C403.2.3

EQUIP TYPE	SIZE CATEGORY (BTUH)	SUBCATEGORY	C403.2.3 MINIMUM EFFICIENCY (a)	10% INCREASED EFF. (a)	DESIGN EFFIC.
TABLE C403.2.3(1) - UNITARY AIR CONDITIONERS AND CONDENSING UNITS					
AIR COND, AIR COOLED	< 65,000 (<= 5 TONS)	SPLIT SYSTEM & SINGLE PACKAGE	13.0 SEER	14.3 SEER	SEE SCHEDULE

a. DEDUCT 0.2 FROM THE REQUIRED EERS AND IEERS FOR UNITS WITH A HEATING SECTION OTHER THAN ELECTRIC RESISTANCE HEAT OR NO HEAT.

TABLE C403.2.3(2) - ELECTRICALLY OPERATED UNITARY AND APPLIED HEAT PUMPS					
WTR TO AIR COOL MODE	< 17,000	86° EWT	12.2 EER	13.4 EER	SEE SCHEDULE
WTR TO AIR COOL MODE	>= 17,000 & < 65,000	86° EWT	13.0 EER	14.3 EER	SEE SCHEDULE
WTR TO AIR COOL MODE	>= 65,000 & < 135,000	86° EWT	13.0 EER	14.3 EER	SEE SCHEDULE
WTR TO AIR HEAT MODE	< 135,000	68° EWT	4.3 COP	4.7 COP	SEE SCHEDULE

a. DEDUCT 0.2 FROM THE REQUIRED EERS AND IEERS FOR UNITS WITH A HEATING SECTION OTHER THAN ELECTRIC RESISTANCE HEAT OR NO HEAT.

C403.2.4 THRU C403.2.11

- ■ HVAC SYSTEMS ARE FULLY COMPLIANT WITH THE REQUIREMENTS FOR HVAC SYSTEM CONTROL, VENTILATION, ENERGY RECOVERY, DUCT AND PLENUM INSULATION AND SEALING, PIPING INSULATION, AND SYSTEM COMPLETION.

C403.2.12 - AIR SYSTEM DESIGN AND CONTROL

- ■ ALL FANS INSTALLED ON THE PROJECT ARE 5 HP OR LESS AND ARE EXEMPT FROM THESE REQUIREMENTS.
- ☐ FANS ABOVE 5 HP MEET THE CFM LIMITATIONS SHOWN BELOW:

OPTION 1 - FAN SYSTEM MOTOR NAMEPLATE HP - TABLE C403.2.12.1(1)

ALLOWABLE NAMEPLATE MOTOR HP	CONSTANT VOLUME MINIMUM CFM	VARIABLE VOLUME MINIMUM CFM	DESIGN CFM
7.5	6,818 CFM	5,000 CFM	SEE SCHEDULE
10

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WATER SOURCE HEAT PUMP SCHEDULE

SYMBOL	EQUIP. SERVES	EVAPORATOR COOLING COIL NOMINAL (TONS)	SUPPLY AIR FLOW	OUTSIDE AIR OCC. MIN.	OUTSIDE AIR DESIGN	ESP	COOLING CAPACITY EWT	LWT	EAT(db)	EAT(wb)	TC (BTUH)	SHC (BTUH)	EER	HEATING CAPACITY EWT	LWT	EAT(db)	BTUH	COP	REFRIG.	HOT GAS REHEAT (BTUH)	CONDENSOR WATER GPM	COOLING PD (FT)	HEATING PD (FT)	RUNOUT	FAN MOTOR FLA	COMPRESSOR (EA) QTY	MOTOR LRA	MOTOR RLA	ELECTRICAL DATA VOLTAGE	PHASE	UNIT FLA	MCA	MOCP	MODEL (CLIMATEMASTER)	WEIGHT (LBS)	COMMENTS
WSHP-1.1	123 BOYS LKR	1.5	600	75	75	0.50	85 °F	95 °F	75.0 °F	63.0 °F	17400	15400	13.5	60 °F	53 °F	68.0 °F	21100	5.0	R-454B	13400	4.5	3.3	4.2	3/4"	3.4	1	40.0	6.5	265 V	1	9.9 A	11.6	15.0	SE-018	257 lb	HGR,DAC
WSHP-1.2	122 PLATFORM	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-1.3	121 GIRLS LKR	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-1.4	100A LOBBY	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-1.5	100A LOBBY	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-1.6	FRONT OFFICE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-1.7	FRONT OFFICE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-1.8	FRONT OFFICE	2.0	800	100	100	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-1.9	201 HEALTH/PE	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-1.10	FRONT OFFICE	4.0	1600	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-2.1	204 MEDIA ROOMS	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-2.2	202 BUSINESS EDU	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-2.3	203 GUIDANCE	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-2.4	204 MEDIA	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-2.5	204 MEDIA	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-2.6	211 ISS	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-2.7	200 CORRIDOR	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-2.8	215 ART	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-2.9	200 CORRIDOR	2.0	800	90	90	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-2.10	603 STEM	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-3.1	301 SENSORY RM	1.5	600	75	75	0.50	85 °F	95 °F	75.0 °F	63.0 °F	17400	15400	13.5	60 °F	53 °F	68.0 °F	21100	5.0	R-454B	13400	4.5	3.3	4.2	3/4"	3.4	1	40.0	6.5	265 V	1	9.9 A	11.6	15.0	SE-018	257 lb	HGR,DAC
WSHP-3.2	303 EXTRA CLASS	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.3	305 8TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.4	300 COLLABORATION	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-3.5	313 8TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.6	315 8TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.7	317 8TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.8	316 8TH GRADE SCIENCE	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-3.9	300 COLLABORATION	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-3.10	312 8TH GRADE SCIENCE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.11	306 8TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.12	304 8TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-3.13	302 EC	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28100	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-3.14	300 COLLABORATION	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-4.1	402 EC	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-4.2	404 7TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.3	400 CORRIDOR	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.4	412 7TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.5	414 7TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.6	416 7TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.7	417 EXTRA CLASSROOM	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.8	415 7TH GRADE SCIENCE	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-4.9	400 CORRIDOR	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-4.10	411 7TH GRADE SCIENCE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.11	405 7TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.12	403 7TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-4.13	401 RESOURCE RM	1.5	600	75	75	0.50	85 °F	95 °F	75.0 °F	63.0 °F	17400	15400	13.5	60 °F	53 °F	68.0 °F	21100	5.0	R-454B	13400	4.5	3.3	4.2	3/4"	3.4	1	40.0	6.5	265 V	1	9.9 A	11.6	15.0	SE-018	257 lb	HGR,DAC
WSHP-5.1	502 EC	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-5.2	504 6TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.3	500 CORRIDOR	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.4	512 6TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.5	514 6TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.6	516 6TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.7	517 EXTRA CLASSROOM	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.8	515 6TH GRADE SCIENCE	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-5.9	500 CORRIDOR	2.0	800	120	120	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-5.10	511 6TH GRADE SCIENCE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.11	505 6TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.12	503 6TH GRADE	3.0	1200	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	38000	25400	17.3	60 °F	52 °F	68.0 °F	43600	5.4	R-454B	21500	9.0	7.0	7.5	3/4"	3.2	1	72.0	13.0	265 V	1	16.2 A	19.5	30.0	TE-038	359 lb	HGR,DAC
WSHP-5.13	501 RSOURCE ROOM	1.5	600	75	75	0.50	85 °F	95 °F	75.0 °F	63.0 °F	17400	15400	13.5	60 °F	53 °F	68.0 °F	21100	5.0	R-454B	13400	4.5	3.3	4.2	3/4"	3.4	1	40.0	6.5	265 V	1	9.9 A	11.6	15.0	SE-018	257 lb	HGR,DAC
WSHP-6.1	604 CHORUS	4.0	1600	240	240	0.50	85 °F	95 °F	75.0 °F	63.0 °F	48300	34100	16	60 °F	53 °F	68.0 °F	54900	4.8	R-454B	28900	12.0	7.5	7.8	1"	6.0	1	109.7	16.0	265 V	1	22.0 A	26.0	40.0	TE-049	448 lb	HGR,DAC
WSHP-6.2	606 AGRI LAB	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-6.3	605 BAND	5.0	2000	300	300	0.50	85 °F	95 °F	75.0 °F	63.0 °F	60000	47200	15.8	60 °F	53 °F	68.0 °F	65600	5.2	R-454B	40600	15.0	8.1	9.3	1"	6.2	1	58.0	6.3	460 V	3	12.3 A	14.1	15.0	SE-060	298 lb	HGR,DAC
WSHP-6.4	200 CORRIDOR	2.0	800	180	180	0.50	85 °F	95 °F	75.0 °F	63.0 °F	24700	16700	16.5	60 °F	52 °F	68.0 °F	29000	5.2	R-454B	14100	6.0	3.3	3.5	3/4"	3.2	1	54.0	9.1	265 V	1	12.3 A	14.6	20.0	TE-026	298 lb	HGR,DAC
WSHP-D.1	DINING	10.0	4000	750	375	0.50	85 °F	95 °F	75.0 °F	63.0 °F	115800	81400	13	60 °F	53 °F	68.0 °F	144700	4.3	R-454B	68300	30.0	18.3	19.4	1 1/2"	4.1	2	58.1	9.2	460 V	3	22.5 A	24.8	30.0	SB-120	698 lb	HGR,DAC,DCV
WSHP-D.2	DINING	10.0	4000	750	375	0.50	85 °F	95 °F	75.0 °F	63.0 °F	115800	81400	13	60 °F	53 °F	68.0 °F	144700	4.3	R-454B	68300	30.0	18.3	19.4	1 1/2"	4.1	2	58.1	9.2	460 V	3	22.5 A	24.8	30.0	SB-120	698 lb	HGR,DAC,DCV
WSHP-G.1	GYM	20.0	8000	1275	750	0.50	85 °F	95 °F	75.0 °F	63.0 °F	232700	186300	12.9	60 °F	53 °F	68.0 °F	276800	4.3	R-454B	160700	60.0	12.1	12.5	2"	6.5	2	123.0	15.0	460 V	3	36.5 A	40.3	60.0	SB-240	1184 lb	HGR,DAC,DCV
WSHP-G.2	GYM	20.0	8000	1275	750	0.50	85 °F	95 °F	75.0 °F	63.0 °F	232700	186300	12.9	60 °F	53 °F	68.0 °F	276800	4.3	R-454B	160700	60.0	12.1	12.5	2"	6.5	2	123.0	15.0	460 V	3	36.5 A	40.3	60.0	SB-240	1184 lb	HGR,DAC,DCV
WSHP-K.1	KITCHEN	3.0	1200

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CONDENSING UNIT SCHEDULE (AIR COOLED)

SYMBOL	NOMINAL TONNAGE	COOLING COIL		EFFICIENCY		COMPRESSOR		FAN	ELECTRICAL DATA				REFRIGERANT TYPE	WEIGHT	MANUFACTURER (MITSUBISHI) MODEL	MATCHING INDOOR UNIT
		TC (BTUH)	SHC (BTUH)	SEER2	EER2	LRA	RLA	FLA	MCA	FUSE	VOLTAGE	PH				
ODU-1.1	1.5	18000	12240	20.2	10.7	13.0	10.0	0.6	16.0	27.0	208 V	1	R-454B	112 lb	PKA-AL18NL	IDU-1.1
ODU-3.1	1.5	18000	12240	20.2	10.7	12.0	7.0	0.5	16.0	27.0	208 V	1	R-454B	112 lb	PKA-AL18NL	IDU-3.1
ODU-4.1	1.5	18000	12240	20.2	10.7	12.0	7.0	0.5	16.0	27.0	208 V	1	R-454B	112 lb	PKA-AL18NL	IDU-4.1
ODU-5.1	1.5	18000	12240	20.2	10.7	12.0	7.0	0.5	16.0	27.0	208 V	1	R-454B	112 lb	PKA-AL18NL	IDU-5.1
ODU-6.1	1.5	18000	12240	20.2	10.7	12.0	7.0	0.5	16.0	27.0	208 V	1	R-454B	112 lb	PKA-AL18NL	IDU-6.1

NOTES:

1. COOLING CAPACITY @ 95 AMBIENT.
2. ALL UNITS SHALL BE U.L. LISTED AND ASHRAE 90.1 COMPLIANT.
3. MOUNT UNITS ON A 4" THICK CONCRETE PAD AND PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND UNITS.
4. PROVIDE UNITS WITH CONDENSER COIL HAIL GUARDS AND LOW AMBIENT CONTROLS.
5. FOR REFRIGERANT LINE APPLICATIONS WITH A TOTAL EQUIVALENT LENGTH BETWEEN 50'-0" AND 175'-0".
   THE FOLLOWING ACCESSORIES SHALL BE PROVIDED;
   -COMPRESSOR CRANKCASE HEATER
   - COMPRESSORT START ASSIST CAPACITOR AND RELAY (NOT REQUIRED FOR SCROLL COMPRESSORS OR THREE PHASE UNITS)
   - WIND BAFFLES (FOR UNIT MOUNTED ON ROOFS)
   -FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE SOLENOID WITHIN 2'-0" OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.

DUCTLESS A/C INDOOR UNIT SCHEDULE

SYMBOL	MANUFACTURER	MODEL NO.	DESIGN AIRFLOW	TOTAL CAPACITY	EAT(db)	EAT(wb)	UNIT WEIGHT	INTERLOCK ID	REMARKS
IDU-1.1	MITSUBISHI ELECTRIC	PUY-AL18NL	450 CFM	18000 Btu/h	90.0 °F	73.0 °F	28 lb	ODU-1.1	POWERED FROM OUTDOOR UNIT
IDU-3.1	MITSUBISHI ELECTRIC	PUY-AL18NL	450 CFM	18000 Btu/h	90.0 °F	73.0 °F	28 lb	ODU-3.1	POWERED FROM OUTDOOR UNIT
IDU-4.1	MITSUBISHI ELECTRIC	PUY-AL18NL	450 CFM	18000 Btu/h	90.0 °F	73.0 °F	28 lb	ODU-4.1	POWERED FROM OUTDOOR UNIT
IDU-5.1	MITSUBISHI ELECTRIC	PUY-AL18NL	450 CFM	18000 Btu/h	90.0 °F	73.0 °F	28 lb	ODU-5.1	POWERED FROM OUTDOOR UNIT
IDU-6.1	MITSUBISHI ELECTRIC	PUY-AL18NL	450 CFM	18000 Btu/h	90.0 °F	73.0 °F	28 lb	ODU-6.1	POWERED FROM OUTDOOR UNIT

DUCTLESS A/C UNIT SCHEDULE NOTES:

1. PROVIDE WITH FACTORY THERMOSTAT AND CONDENSATE PUMP.
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. SIZE AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
4. INDOOR UNITS ARE POWERED BY THE CONDENSING UNITS.
5. IN EVERY ROOM SERVED BY A MINI-SPLIT INDOOR UNIT PROVIDE A TEMPERATURE SENSOR INTEGRATED INTO THE BAS WITH HIGH TEMPERATURE ALARM SET AT 80F (ADJ)

LOUVER SCHEDULE - MECHANICAL EQUIPMENT

SYMBOL	MANUFACTURER	MODEL NO.	DESIGN AIRFLOW	FREE AREA	FREE AREA VELOCITY	PD	DIMENSIONS		REMARKS
							WIDTH	HEIGHT	
L-1.1	GREENHECK	ELF375DX	2925 CFM	14.0 SF	208 FPM	0.01 in-wg	108"	36"	INTAKE
L-1.2	GREENHECK	ELF375DX	900 CFM	6.9 SF	131 FPM	0.01 in-wg	54"	36"	EXHAUST
L-1.3	GREENHECK	ELF375DX	2140 CFM	13.5 SF	159 FPM	0.02 in-wg	108"	36"	INTAKE
L-1.4	GREENHECK	ELF375DX	975 CFM	6.8 SF	144 FPM	0.01 in-wg	54"	36"	EXHAUST
L-2.1	GREENHECK	ELF375DX	2100 CFM	6.8 SF	311 FPM	0.01 in-wg	54"	36"	EXHAUST
L-2.2	GREENHECK	ELF375DX	3210 CFM	18.0 SF	178 FPM	0.02 in-wg	72"	72"	INTAKE
L-3.1	GREENHECK	ELF375DX	1275 CFM	4.0 SF	319 FPM	0.05 in-wg	72"	16"	INTAKE
L-3.2	GREENHECK	ELF375DX	1380 CFM	4.0 SF	345 FPM	0.05 in-wg	72"	16"	INTAKE
L-4.1	GREENHECK	ELF375DX	1140 CFM	4.0 SF	285 FPM	0.05 in-wg	72"	16"	INTAKE
L-4.2	GREENHECK	ELF375DX	1155 CFM	4.0 SF	289 FPM	0.05 in-wg	72"	16"	INTAKE
L-5.1	GREENHECK	ELF375DX	1140 CFM	4.0 SF	285 FPM	0.05 in-wg	72"	16"	INTAKE
L-5.2	GREENHECK	ELF375DX	1155 CFM	4.0 SF	289 FPM	0.05 in-wg	72"	16"	INTAKE
L-6.1	GREENHECK	ELF375DX	650 CFM	1.6 SF	418 FPM	0.02 in-wg	28"	16"	INTAKE
L-6.2	GREENHECK	ELF375DX	650 CFM	1.1 SF	585 FPM	0.01 in-wg	20"	16"	EXHAUST
L-6.3	GREENHECK	ELF375DX	1400 CFM	2.7 SF	525 FPM	0.02 in-wg	24"	32"	INTAKE
L-6.4	GREENHECK	ELF375DX	1400 CFM	2.0 SF	700 FPM	0.01 in-wg	24"	24"	EXHAUST
L-6.5	GREENHECK	ELF375DX	540 CFM	4.0 SF	135 FPM	0.05 in-wg	72"	16"	INTAKE
L-6.6	GREENHECK	ELF375DX	480 CFM	4.0 SF	120 FPM	0.05 in-wg	72"	16"	INTAKE

LOUVER SCHEDULE NOTES:

1. PROVIDE BAKED ENAMEL FINISH, COLOR BY ARCHITECT.
2. PROVIDE WITH BIRDSCREEN.
3. INSTALL WITH 18" DEEP INSULATED PLENUM.
4. PROVIDE FRAME TYPE REQUIRED FOR MOUNTING LOCATION.

ELECTRIC WALL HEATER SCHEDULE

SYMBOL	LOCATION	CFM	BTUH	KW	ELECTRICAL DATA			MANUFACTURER (MARKEL)	ACCESSORIES
					AMPS	VOLT	PH		
EWH-1.1	MECH 119	175	5120	1.50	4.10 A	277 V	1	G3323TD-RP	A,B,G,H
EWH-2.1	STAIR 216	175	5120	1.50	4.10 A	277 V	1	G3323TD-RP	A,B,G,H
EWH-3.1	PUMP 300	175	2560	0.75	6.25 A	120 V	1	E3321TD-RP	A,B,G,H
EWH-4.1	PUMP 400	175	2560	0.75	6.25 A	120 V	1	E3321TD-RP	A,B,G,H
EWH-5.1	PUMP 500	175	2560	0.75	6.25 A	120 V	1	E3321TD-RP	A,B,G,H
EWH-6.1	MECH 602B	175	5120	1.50	4.10 A	277 V	1	G3323TD-RP	A,B,G,H
EWH-6.2	EM ELEC 601B	175	2560	0.75	6.25 A	120 V	1	E3321TD-RP	A,B,G,H
EWH-6.3	ELEC 601	175	2560	0.75	6.25 A	120 V	1	E3321TD-RP	A,B,G,H
EWH-6.4	FIRE PUMP 607	175	5120	1.50	4.10 A	277 V	1	G3323TD-RP	A,B,G,H
EWH-6.5	MECH 600C	175	5120	0.75	6.25 A	120 V	1	E3321TD-RP	A,B,G,H

NOTES:

1. HEATING CAPACITY BASED ON 65° F E.A.T.
2. SEE PLANS FOR TYPE OF THERMOSTAT REQUIRED (WALL MOUNTED OR UNIT MOUNTED). UNIT HEATERS SHOWN WITHOUT THERMOSTAT INDICATED SHALL BE PROVIDED WITH A UNIT MOUNTED THERMOSTAT.
3. SET TO MAINTAIN 45°F.

ELECTRIC UNIT HEATER ACCESSORIES:

A. DISCONNECT SWITCH
B. BUILT IN THERMOSTAT
C. WALL MOUNTED THERMOSTAT
D. WALL MOUNTING BRACKETS
E. CEILING MOUNTED BRACKETS
F. ADJUSTABLE DISCHARGE LOUVERS
G. PENCIL PROOF LOUVERS
H. CABINET FOR SURFACE MOUNTING

EXHAUST FAN SCHEDULE

SYMBOL	LOCATION	MANUFACTURER	MODEL NO.	TYPE	CFM	APPROX. ESP	DRIVE TYPE	FAN RPM	SONES	ELECTRICAL DATA			ACCESSORIES	CONTROL TYPE
										WATTS	H.P.	VOLT-PHØ		
DEF-1	KITCHEN ROOF	GREENHECK	CUE-099-A	UPBLAST	600	1.000	DIRECT	1625	9.4	700	0.25	115 V-1Ø	A,B,D,E,S	8
EF-1.1	MECH PLATFORM 601	GREENHECK	SQ-95	INLINE	450	0.500	DIRECT	1540	7.6	530	0.13	115 V-1Ø	A,B,F,G	2
EF-1.2	MECH PLATFORM 601	GREENHECK	SQ-95	INLINE	450	0.500	DIRECT	1540	7.6	530	0.13	115 V-1Ø	A,B,F,G	2
EF-1.3	MECH PLATFORM 100	GREENHECK	SQ-120	INLINE	750	0.750	DIRECT	1246	5.2	1180	0.50	115 V-1Ø	A,B,F,G	5
EF-1.4	MECH PLATFORM 100	GREENHECK	SQ-90	INLINE	225	0.500	DIRECT	1447	5.8	530	0.10	115 V-1Ø	A,B,F,G	5
EF-2.1	TLT 214E	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-2.2	LCKRS 214F	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-2.3	CUST 214H	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-2.4	KILN 215B	GREENHECK	SP-A200	CLG CABINET	150	0.500	DIRECT	883	3	48	0.00	115 V-1Ø	A,B,F,G,O	2
EF-2.5	MECH PLATFORM 200	GREENHECK	SQ-120	INLINE	675	0.500	DIRECT	1233	5.2	1180	0.50	115 V-1Ø	A,B,F,G	5
EF-2.6	ART 215	GREENHECK	SQ-120	INLINE	750	0.750	DIRECT	1246	5.2	1180	0.50	115 V-1Ø	A,B,F,G	3
EF-2.7	MECH PLATFORM 200	GREENHECK	SQ-120	INLINE	675	0.500	DIRECT	1233	5.2	1180	0.50	115 V-1Ø	A,B,F,G	5
EF-3.1	STAFF TLT 401A	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-3.2	STAFF TLT 406	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-3.3	300 ROOF	GREENHECK	G-100-A	DOWN BLAST	900	0.500	DIRECT	1392	7.7	700	0.25	115 V-1Ø	A,B,D,E	5
EF-3.4	JAN 409	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-3.5	300 ROOF	GREENHECK	G-100-A	DOWN BLAST	1150	0.500	DIRECT	1623	9.9	700	0.25	115 V-1Ø	A,B,D,E	3
EF-3.6	300 ROOF	GREENHECK	G-095-D	DOWN BLAST	300	0.500	DIRECT	1332	7	530	0.13	115 V-1Ø	A,B,D,E	6
EF-3.7	300 ROOF	GREENHECK	G-100-A	DOWN BLAST	1150	0.500	DIRECT	1623	9.9	700	0.25	115 V-1Ø	A,B,D,E	3
EF-3.8	TLT/SWR 302A	GREENHECK	SP-A200	CLG CABINET	150	0.500	DIRECT	883	3	48	0.00	115 V-1Ø	A,B,F,G,O	2
EF-4.1	STAFF TLT 401A	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-4.2	TLT/SWR 402A	GREENHECK	SP-A200	CLG CABINET	150	0.500	DIRECT	883	3	48	0.00	115 V-1Ø	A,B,F,G,O	2
EF-4.3	STAFF TLT 406	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-4.4	JAN 409	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-4.5	400 ROOF	GREENHECK	G-100-A	DOWN BLAST	900	0.500	DIRECT	1392	7.7	700	0.25	115 V-1Ø	A,B,D,E	5
EF-4.6	400 ROOF	GREENHECK	G-100-A	DOWN BLAST	1150	0.500	DIRECT	1623	9.9	700	0.25	115 V-1Ø	A,B,D,E	3
EF-4.7	400 ROOF	GREENHECK	G-095-D	DOWN BLAST	300	0.500	DIRECT	1322	7	530	0.13	115 V-1Ø	A,B,D,E	6
EF-4.8	400 ROOF	GREENHECK	G-100-A	DOWN BLAST	1150	0.500	DIRECT	1623	9.9	700	0.25	115 V-1Ø	A,B,D,E	3
EF-5.1	STAFF TLT 401A	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-5.2	TLT/SWR 402A	GREENHECK	SP-A200	CLG CABINET	150	0.500	DIRECT	883	3	48	0.00	115 V-1Ø	A,B,F,G,O	2
EF-5.3	STAFF TLT 506	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-5.4	JAN 509	GREENHECK	SP-A125	CLG CABINET	75	0.300	DIRECT	1036	0.9	17	0.00	115 V-1Ø	A,B,F,G,O	2
EF-5.5	500 ROOF	GREENHECK	G-100-A	DOWN BLAST	900	0.500	DIRECT	1392	7.7	700	0.25	115 V-1Ø	A,B,D,E	5
EF-5.6	500 ROOF	GREENHECK	G-100-A	DOWN BLAST	1150	0.500	DIRECT	1623	9.9	700	0.25	115 V-1Ø	A,B,D,E	3
EF-5.7	500 ROOF	GREENHECK	G-095-D	DOWN BLAST	300	0.500	DIRECT	1322	7	530	0.13	115 V-1Ø	A,B,D,E	6
EF-5.8	500 ROOF	GREENHECK	G-100-A	DOWN BLAST	1150	0.500	DIRECT	1623	7.7	700	0.25	115 V-1Ø	A,B,D,E	3
EF-6.1	602B MECH	GREENHECK	SQ-120	INLINE	650	0.250	DIRECT	826	2.3	100	0.13	115 V-1Ø	A,B,F,G	1.9
EF-6.2	601B EM ELEC	GREENHECK	SQ-90	INLINE	300	0.500	DIRECT	773	1.5	0	0.02	115 V-1Ø	A,B,F,G,K	1
EF-6.3	601 ELEC	GREENHECK	SQ-100	INLINE	1100	0.500	DIRECT	1336	8.7	0	0.25	115 V-1Ø	A,B,F,G,K	1
EF-6.4	600 ROOF	GREENHECK	G-120-A	DOWN BLAST	1400	0.500	DIRECT	1393	12.1	1180	0.50	115 V-1Ø	A,B,D,E	3

EXHAUST FAN SCHEDULE ACCESSORIES:

A. DISCONNECT SWITCH
B. GRAVITY BACKDRAFT DAMPER
C. MOTORIZED BACKDRAFT DAMPER
D. PREFAB. ROOF CURB
E. BIRDSCREEN
F. ACOUSTICAL LINING
G. HANGING BRACKETS WITH VIBRATION ISOLATION
H. WL. WALL LOUVER DISCHARGE
I. RCC OR GRS ROOF CAP (FLAT ROOF) OR RJ ROOF CAP (PITCHED ROOF)
J. WALL MOUNTING COLLAR
K. INLET GAURD
M. 2" WASHABLE ALUMINUM FILTERS
N. MOTORSIDE FAN GUARD
O. EXHAUST GRILLE
P. U.L. 762
Q. VENTED ROOF CURB EXTENSION
R. COMBINATION KITCHEN HOOD FAN CURB
S. INTERLOCK WITH DISHWASHER
T. PROVIDE DRAIN PLUG ACCESSORY
U. ROOF SUPPORT RAILS
V. VFD

EXHAUST FAN SCHEDULE CONTROLS:

1. WALL MOUNTED THERMOSTAT (REVERSE ACTING, SET FOR 80°)
2. INTERLOCK WITH ROOM LIGHT SWITCH (FAN SHALL OPERATE WHEN LIGHT IS ON IF ANY ROOM IS SERVED BY FAN)
3. WALL MOUNTED ON/OFF 60 MINUTE TIMER SWITCH WITH IDENTIFICATION LABEL
4. WALL MOUNTED MUSHROOM PUSH BUTTON SWITCH/STARTER WITH IDENTIFICATION LABEL
5. CONTROLLED BY BUILDING AUTOMATION SYSTEM
6. CONTINUOUS OPERATION
7. CONTROLLED BY THE FACP AND FIREMAN'S MANUAL OVER-RIDE CONTROL PANEL IN FIRE COMMAND ROOM. NO MECHANICAL CONTROL POINTS REQUIRED BY M.C. FOR SMOKE CONTROL FANS
8. INTERLOCK WITH DISHWASHER OPERATION
9. INTERLOCK WITH MECHANICAL ROOM 'CO' DETECTOR

EXHAUST FAN SCHEDULE NOTES:

1. ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW. ALL FANS INSTALLED INSIDE, ABOVE, OR ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. MECHANICAL CONTRACTOR SHALL PROVIDE MAGNETIC STARTER WITH AUXILIARY CONTACTS AS REQUIRED.
4. PROVIDE ALL DIRECT DRIVE FANS WITH SPEED CONTROLLERS.
5. BACKDRAFT DAMPER ON ROOF SUPPLY FANS SHALL BE MOTORIZED.

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

SYMBOL	DESCRIPTION	MANUF.	MODEL	MATERIAL	FACE SIZE	NECK			INSTALLATION	OPTIONS	NOTES
						SIZE	WIDTH	HEIGHT	BORDER TYPE	DAMPER DESCRIPTION	
A	PLAQUE FACE DIFFUSER	TITUS	OMNI	<varies>	12x12	6			<varies>	---	
B	PLAQUE FACE DIFFUSER	TITUS	OMNI	<varies>	24x24	6			TYPE 3 (LAY-IN)	---	
C	PLAQUE FACE DIFFUSER	TITUS	OMNI	<varies>	24x24	8			TYPE 3 (LAY-IN)	---	
D	PLAQUE FACE DIFFUSER	TITUS	OMNI	<varies>	24x24	10			TYPE 3 (LAY-IN)	---	
F	PLAQUE FACE DIFFUSER	TITUS	OMNI	STEEL	24x24	12			TYPE 3 (LAY-IN)	---	
G	PLAQUE FACE DIFFUSER	TITUS	OMNI	STEEL	24x24	14			TYPE 3 (LAY-IN)	---	
H	PERFORATED DIFFUSER	TITUS	PAR	STEEL	24x24	6			TYPE 3 (LAY-IN)	---	
J	PERFORATED DIFFUSER	TITUS	PAR	STEEL	24x24	8			TYPE 3 (LAY-IN)	---	
K	PERFORATED DIFFUSER	TITUS	PAR	<varies>	24x24	10			<varies>	---	
L	PERFORATED DIFFUSER	TITUS	PAR	<varies>	24x24	12			<varies>	---	
M	PERFORATED DIFFUSER	TITUS	PAR	STEEL	24x24	14			TYPE 3 (LAY-IN)	---	
N	PERFORATED DIFFUSER	TITUS	PAR	<varies>	24x24	16			<varies>	---	
P	PERFORATED DIFFUSER	TITUS	PAR	ALUMINUM	12x12	6			TYPE 1 (SURFACE)	---	
Q	PERFORATED DIFFUSER	TITUS	PAR	ALUMINUM	24x24	8			TYPE 3 (LAY-IN)	---	
R	PERFORATED DIFFUSER	TITUS	PAR	ALUMINUM	24x24	10			TYPE 1 (SURFACE)	---	
S	PERFORATED DIFFUSER	TITUS	PAR	ALUMINUM	24x24	12			<varies>	---	
T	PERFORATED DIFFUSER	TITUS	PAR	ALUMINUM	24x24	14			TYPE 3 (LAY-IN)	---	
U	LOUVERED GRILLE	TITUS	355RL	STEEL	---		48	64	TYPE 1 (SURFACE)	---	
V	LOUVERED GRILLE	TITUS	350RL	STEEL	---		10	8	TYPE 1 (SURFACE)	---	
W	LOUVERED GRILLE	TITUS	350RL	STEEL	---		30	8	TYPE 1 (SURFACE)	---	
Y	SPIRAL SIDEWALL GRILLE	TITUS	US300FL	ALUMINUM		0	28	10			

AIR DISTRIBUTION SCHEDULE NOTES:

1. ALL CEILING AND WALL MOUNTED DEVICES SHALL BE FURNISHED WITH AN ENAMEL BRIGHT WHITE FINISH UNLESS NOTED OTHERWISE.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR THE TYPE OF INSTALLATION REQUIRED.
3. ALL LINEAR DIFFUSERS IN LAY-IN CEILINGS SHALL BE FURNISHED WITH END CAPS. ALL LINEAR DIFFUSERS IN HARD CEILINGS SHALL BE FURNISHED WITH END BORDERS. ALL LINEAR SUPPLY DIFFUSERS SHALL BE PROVIDED WITH INTEGRAL AIRFLOW PATTERN ADJUSTMENT BARS FOR HORIZONTAL/VERTICAL PATTERN ADJUSTMENT AT EACH SLOT.
4. ALL DOUBLE DEFLECTION SUPPLY GRILLES SHALL HAVE DAMPER BLADES ADJUSTED TO PROVIDE AIRFLOW PATTERN INDICATED BY FLOW ARROWS ON PLANS. DAMPERS SHALL BE ADJUSTED TO A 30 DEGREE POSITION UNLESS NOTED OTHERWISE ON PLANS.

KITCHEN HOOD SCHEDULE

(FURNISHED AND INSTALLED BY THE M.C.)

KEF-1 CAPTIVE-AIRE MODEL EADU240H EXHAUST FAN; 4866 CFM, 1.25" E.S.P., 5-HP 460V-3PH FAN MOTOR, 263 LBS OPERATING WEIGHT.

MUA-1 CAPTIVE-AIRE MODEL EA2-D.250-20D LP GAS HEAT MAKE-UP AIR UNIT; 3892 CFM, 0.5" E.S.P., 3-HP 208V-3PH FAN MOTOR, 13.1A MCA, 20A MOCP, 220,866 INPUT BTUs, 203,197 OUTPUT BTUs, 49DEG F TEMP RISE, 682 LBS OPERATING WEIGHT. UNIT USES LP GAS DELIVERED AT 2 PSI.

KH-1 CAPTIVE-AIRE MODEL 6024 ND-2-PSP-F; 12'-2"x5'-0"x2'-0" DEEP HOOD WITH 6" DEEP SUPPLY PLENUMS AT FRONT; 2433 CFM EXHAUST @ 0.818" S.P. (MAX.); 1946 CFM SUPPLY @ 0.16" S.P. (MAX.)

KH-2 CAPTIVE-AIRE MODEL 6024 ND-2-PSP-F; 12'-2"x5'-0"x2'-0" DEEP HOOD WITH 6" DEEP SUPPLY PLENUMS AT FRONT; 2433 CFM EXHAUST @ 0.818" S.P. (MAX.); 1946 CFM SUPPLY @ 0.16" S.P. (MAX.)

ALL 430 STAINLESS STEEL CONSTRUCTION. ALL COMPONENTS SHALL BE U.L. LISTED AND LABELED. PROVIDE A REMOTE CONTROL PANEL MOUNTED ON FACE OF HOOD WITH MASTER DISCONNECT SWITCH, STARTER FOR FAN, CONTROL VOLTAGE TRANSFORMER, FIRE CONTROL SYSTEM RELAY AND TERMINAL STRIP. MOUNT HOOD 6'-8" ABOVE FINISH FLOOR, PROVIDE STAINLESS STEEL ENCLOSURE AROUND TOP OF HOOD AS REQUIRED TO CLOSE TO CEILING. PROVIDE VERTICAL END PANELS FOR ENDS OF HOOD. HOOD SHALL BE PROVIDED WITH: AUTOMATICALLY OPERATED FIXED PIPE FIRE SUPPRESSION SYSTEM IN ACCORDANCE WITH NFPA 96, CONTROL SWITCHES AND PILOT LIGHT FOR EXHAUST FAN, TWO4' VAPORPROOF LED LAMP LIGHT FIXTURES (MIN. 2 PER HOOD), AND STAINLESS STEEL GREASE FILTERS. FIRE SUPPRESSION SYSTEM SHALL BE ANSUL R-102 WITH ANSULEX LIQUID FIRE SUPPRESSANT. REMOTE PULL STATION FOR ACTIVATION OF FIRE SUPPRESSION SYSTEM SHALL BE PROVIDED AND INSTALLED WHERE INDICATED ON THE PLANS. FIRE SUPPRESSION SYSTEM SHALL BE UL 300 LISTED. CONTRACTOR SHALL PROVIDE MANUAL VOLUME DAMPER IN EACH SUPPLY DUCT COLLAR FOR MAKE-UP AIR BALANCING.

HOOD MANUFACTURER SHALL PROVIDE 12" STAINLESS STEEL UTILITY CHASE (UDS) ON WALL, INCLUDING WATER AND ELECTRICAL, TO SERVE ITEMS UNDER HOOD. PROVIDE QUICK DISCONNECTS FOR ALL UTILITIES. COORDINATE REQUIREMENTS WITH KITCHEN PLANS AND KITCHEN EQUIPMENT SUPPLIER.

ADDITIONAL FIRE SUPPRESSION NOTES (2018 NC FIRE CODE)

904.12.1 A MANUAL ACTUATION DEVICE SHALL BE LOCATED AT OR NEAR A MEANS OF EGRESS FROM THE COOKING AREA, A MINIMUM OF 10 FEET AND A MAXIMUM OF 20 FEET FROM THE KITCHEN EXHAUST SYSTEM. THE MANUAL ACTUATION DEVICE SHALL BE LOCATED A MINIMUM OF 3.5 FEET AND A MAXIMUM OF 4 FEET ABOVE THE FLOOR AND CLEARLY INDICATE THE HAZARD PROTECTED. THE MANUAL ACTUATION SHALL REQUIRE A MAXIMUM FORCE OF 40 POUNDS AND A MAXIMUM MOVEMENTOF 14 INCHES TO ACTUATE THE FIRE SUPPRESSION SYSTEM.

904.12.2 THE ACTUATION OF THE FIRE SUPPRESSION SYSTEM SHALL AUTOMATICALLY SHUT DOWN THE FUEL AND ELECTRICAL POWER SUPPLY TO THE COOKING EQUIPMENT. THE FUEL AND ELECTRICAL SUPPLY RESET SHALL BE MANUAL.

NOTES:

1. KITCHEN HOOD SHALL BE CONSTRUCTED AND INSTALLED PER NFPA 96.
2. UPON ACTIVATION OF FIRE CONTROL SYSTEM, KITCHEN HOOD EXHAUST FAN SHALL CONTINUE TO OPERATE. PROVIDE INTERLOCK FOR AUTOMATIC OPERATION OF FIRE SUPPRESSION SYSTEM WITH:
   A. CONTACTORS (BY ELEC. CONTR.)
   B. HOOD SUPPLY AND EXHAUST FANS
   C. REMOTE MANUAL PULL STATION
   D. ALL ASSOCIATED AIR HANDLING UNITS
   E. FIRE ALARM SYSTEM NOTIFICATION (BY ELEC. CONTR.)
3. SEE SHEET M-502 FOR HOOD DETAILS.
4. KITCHEN HOOD EXHAUST DUCT SHALL BE STAINLESS STEEL. ALL JOINTS AND SEAMS SHALL BE CONSTRUCTED WITH A CONTINUOUS LIQUID-TIGHT EXTERNAL WELD. ALL DUCTWORK SHALL SLOPE A MINIMUM OF 1/4 INCH PER FOOT TOWARD HOOD. PROVIDE 2 HR FIRE BLANKET INSULATION ON GREASE EXHAUST DUCT FROM HOOD COLLAR TO ROOF DECK. PROVIDE CLEANOUTS AT EVERY CHANGE OF DIRECTION IN THE EXHAUST DUCT AND AT 20'-0" (MINIMUM) INTERVALS. THE MECHANICAL CONTRACTOR SHALL PERFORM A LIGHT TEST (AS REQUIRED BY MECHANICAL CODE) FOR ALL JOINTS AND SEAMS IN THE PRESENCE OF THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO CONCEALING KITCHEN HOOD EXHAUST DUCTWORK.
5. ALL EXPOSED PIPING WITH FIRE SUPPRESSION SYSTEM SHALL BE COVERED WITH A CHROME SLEEVE.
6. MECHANICAL CONTRACTOR SHALL INSTALL 1/2" CONDUIT IN WALL FOR MANUAL PULL STATION. SEE PLANS FOR LOCATION OF MANUAL PULL STATION.
7. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR HOOD CERTIFICATION IN COMPLIANCE WITH LOCAL CODE REQUIREMENTS. CERTIFICATION SHALL BE WITNESSED AND PERFORMED BY A PERSON CERTIFIED THROUGH AABC, TABB, NEBB OR NBC AND SHALL PROVIDE DOCUMENTATION OF PERFORMANCE TO THE CODE OFFICIAL. THIS SHALL INCLUDE WET TEST CAPTURE & CONTAINMENT.ALL EQUIPMENT SHALL BE ENERGIZED AND IN OPERATION DURING THE TEST. TEST SHALL ALSO INCLUDE VERIFYING ACTUAL FLOW RATES VERSUS DESIGN FLOW RATES.

VARIABLE SPEED KITCHEN HOODS

THE DCV (EMS) DEMAND VENTILATION SYST

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AirQ — Indoor Air Quality Design and Analysis

Project: EB Frink Middle School — Notes: Standard Classroom, 10cfm/person, 0.12cfs/s.ft
Representative: Optima Engineering

Ventilated Space

Building Size	1000	ft²	Ceiling Height	10	ft		
Total Volume of Space	10000	ft³	312.5	ft³/person			
Total Airflow In, Vs	1200	cfm	37.5	cfm/person			
Ventilation Airflow, Vo	160	cfm	5	cfm/person			
Recirculation Airflow, Rv=	1040	cfm	32.5	cfm/person			
Recirculation Flow Factor, R	0.8667						
Ventilation Effectiveness, Ev	1		Air Changes	7.2	/hour		

Occupants

Number of Occupants	32	person(s)
Level of Physical Activity	Standing, Desk Work	
Respiratory Flow	24	cfm/person
CO2 Generation	0.93	ft³/hr/person

Filtration

Filter Efficiency 0 %

Smoking

☐ Smoking in Space
Percent of people smoking 0
Cigarettes / hour / person 0

ASHRAE 62 Ventilation Standard - Under this standard the following apply:

Ventilation Rate Procedure for this facility requires a ventilation rate (Vbr) of 13.8 cfm/person

The Ventilation Rate Procedure is one way to achieve acceptable air quality. This procedure prescribes the rate at which ventilation must be delivered to a space and various means to condition that air. The ventilation rates in Table 2 are derived from psysiological considerations, subjective evaluations, and professional judgements.

Required Filter Efficiency (Ef) = Vbr (Vt-(1-Ev)+Ev Vk) - Ev Vb / (Vk - Vb)(Ev Vk - Vbr (1 - Ev)) = 0.2179

Equivalent to Dust Spot Efficiency: 60-65%
Equivalent to Minimum Efficiency Reporting Value (MERV): 13

Indoor Air Quality Procedure provides an alternative performance method for acieving acceptable air quality. To control particulates to the proper level at the above ventilation rate 60-65% filtration is used. In addition to controlling the particulates, known contaminants also need to be controlled to an acceptable level. These are shown in the following pages.

General: Either the Ventilation Rate Procedure or the IAQ Procedure shall be used to design each ventilation system in a building, subject to the following considerations and restrictions.

Ventilation Rate Procedure: This is a prescriptive procedure in which outdoor air intake rates are determined based on space type/application, occupancy level, and floor area. Note: The Ventilation Rate Procedure minimum rates are based on contaminant sources and source strengths that are typical for the listed space types.

IAQ Procedure: This is a design procedure in which outdoor air intake rates and other system design parameters are based on an analysis of contaminant sources, contaminant concentration targets, and perceived acceptability targets. The IAQ Procedure allows credit to be taken for controls that remove contaminants (for example, air cleaning devices) or for other design techniques (for examples, selection of materials with lower source strengths) that can be reliably demonstrated to result in indoor contaminant concentrations equal to or lower than those achieved using the Ventilation Rate Procedure. The IAQ Procedure may also be used where the design is intended to attain specific target contaminant concentrations or levels of acceptability of perceived indoor air quality.

Indoor Air Quality Procedure: The Indoor Air Quality (IAQ) Procedure is a performance-based design approach in which the building and its ventilation system are designed to maintain the concentrations of specific contaminants at or below certain limits identified during the building design and to achieve the design target level of perceived indoor air quality acceptability by building occupants and/or visitors. For the purposes of this procedure, acceptable perceived indoor air quality excludes dissatisfaction related to thermal comfort, noise and vibration, lighting, and psychological stressors.

Design Approaches: Select one or a combination of the following design approaches to determine minimum space and system outdoor airflow rates and all other design parameters deemed relevant (e.g., air cleaning efficiencies and supply airflow rates).

CO2 Sources in Ventilated Space

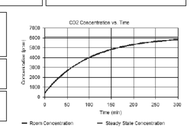
Outdoor Concentration	425	ppm
Initial Indoor Concentration	425	ppm
CO2 Generation Rate by Non-Occupant Sources	0	ft³/hr

Steady State

After an infinite amount of time,
The CO2 level is 6153 ppm

Instantaneous Level

At Time = 120 min
The CO2 level is 4393 ppm



Contaminant	Generation Rate per Person (ibm/hr)	Smoking Generation Rate 1 cig/hour (ibm/hr)	Molecular Weight (g/mole)	Dynamic Air Cleaner Efficiency (%)	Typical Outside Concentration (ppm)	ASHRAE Limit	Steady State Conc. With Dynamic Air Cleaners and Typ. Outside Conc. (ppm)	Steady State Conc. Without Dynamic Air Cleaners and Typ. Outside Conc. (ppm)	
Acetone	1.746E-8	1.47E-8	58	25	0.001265	2.95	0.000216	OK	0.02485	OK
Ammonia	5.733E-7	2.205E-7	17	27	0.001727	2.5	0.0299	OK	2.645	*
Benzene	5.88E-10	2.746E-8	78	10	0.002939	0.1	0.001713	OK	0.0031	OK
Carbon Monoxide	3.675E-7	2.205E-6	28	0	2.621	9	3.65	OK	3.65	OK
Formaldehyde	1.0E-20	8.816E-8	30	25	0.01631	0.1	0.005392	OK	0.01631	OK
Nicotine	1.0E-20	2.976E-7	162	20	0.0007551	0.07	0.0002682	OK	0.0007551	OK
Hydrogen Sulfide	4.0E-9	0	34.08	20	0	0.03	0.003511	OK	0.009199	OK
Methyl Alcohol	1.14E-7	0	32.04	20	0	1.15	0.1064	OK	0.2799	OK
Phenol	1.92E-8	0	94.11	20	0	0.03	0.004769	OK	0.01249	OK
TVOC	8.73E-8	0	86.11	35	0	9	0.0318	OK	0.1219	OK

* Indicates level exceeds 80% of ASHRAE limit



L=ASHRAE Limit w/o=Without Dynamic Air Cleaners w=With Dynamic Air Cleaners

Page 40.9, 1991 ASHRAE HVAC Applications Handbook

(Quoting ASHRAE 62-1999 from the Foreword section addendum 62f page 1)
Addendum 62f addresses a lack of clarity in ANSI/ASHRAE Standard 62-1989 that has contributed to several misunderstandings regarding the significance of indoor carbon dioxide (CO2) levels. The standard previously led many users to conclude that CO2 was itself a comprehensive indicator of indoor air quality and a contaminant with its own health impacts, rather than simply a useful indicator of the concentration of human bioeffluents.

OSHA has a CO2 limit of 5000ppm as outlined in Table Z-1 Federal Register #: 58:35338-35351 Standard Number: 1910.1000

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Construction Documents

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La Grange NC, 28551

No.	Date	Description
1	02/18/2025	BID SET / AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: HFK
CHECKED BY: TAL

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VENTILATION CALCULATIONS

M-004

Sheet No. 4 of 29

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AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Gym Play Area 20cfm/person 0.18/Sq. ft
Representative: Optima Engineering

Ventilated Space

Building Size Area	2000	ft²	Ceiling Height	31 ft
Total Volume of Space	62000	ft³	3100	ft³/person
Total Airflow In, Vs	4000	cfm	200	cfm/person
Ventilation Airflow, Vo	100	cfm	5	cfm/person
Recirculation Airflow, RVr	3900	cfm	195	cfm/person
Recirculation Flow Factor, R	0.975			
Ventilation Effectiveness, Ev	1		Air Changes	3.871 /hour

Occupants

Number of Occupants	20	person(s)
Level of Physical Activity	Moderate Exercise	
Respiratory Flow	64	cfm/person
CO2 Generation	2.5	ft³/hr/person

ASHRAE 62 Ventilation Standard - Under this standard the following apply:

Ventilation Rate Procedure for this facility requires a ventilation rate (Vor) of 38 cfm/person

The Ventilation Rate Procedure is one way to achieve acceptable air quality. This procedure prescribes the rate at which ventilation must be delivered to a space and various means to condition that air. The ventilation rates in Table 2 are derived from psysiological considerations, subjective evaluations, and professional judgements.

$$\text{Required Filter Efficiency (Ef)} = \frac{Vor\,(Vo\,(1 - Ev) + Ev\,Vs) - Ev\,Vo\,Vs}{(Vs - Vo)(Ev\,Vs - Vor\,(1 - Ev))} = 0.1692$$

Equivalent to Dust Spot Efficiency: 60-65%
Equivalent to Minimum Efficiency Reporting Value (MERV): 11

Indoor Air Quality Procedure provides an alternative performance method for acieving acceptable air quality.
To control particulates to the proper level at the above ventilation rate, 60-65% filtration is used.
In addition to controlling the particulates, known contaminants also need to be controlled to an acceptable level. These are shown in the following pages.

General: Either the Ventilation Rate Procedure or the IAQ Procedure shall be used to design each ventilation system in a building, subject to the following considerations and restrictions.

Ventilation Rate Procedure: This is a prescriptive procedure in which outdoor air intake rates are determined based on space type/application, occupancy level, and floor area. Note: The Ventilation Rate Procedure minimum rates are based on contaminant sources and source strengths that are typical for the listed space types.

IAQ Procedure: This is a design procedure in which outdoor air intake rates and other system design parameters are based on an analysis of contaminant sources, contaminant concentration targets, and perceived acceptability targets. The IAQ Procedure allows credit to be taken for controls that remove contaminants (for example, air cleaning devices) or for other design techniques (for examples, selection of materials with lower source strengths) that can be reliably demonstrated to result in indoor contaminant concentrations equal to or lower than those achieved using the Ventilation Rate Procedure. The IAQ Procedure may also be used where the design is intended to attain specific target contaminant concentrations or levels of acceptability of perceived indoor air quality.

Indoor Air Quality Procedure: The Indoor Air Quality (IAQ) Procedure is a performance-based design approach in which the building and its ventilation system are designed to maintain the concentrations of specific contaminants at or below certain limits identified during the building design and to achieve the design target level of perceived indoor air quality acceptability by building occupants and/or visitors. For the purposes of this procedure, acceptable perceived indoor air quality excludes dissatisfaction related to thermal comfort, noise and vibration, lighting, and psychological stressors.

Design Approaches: Select one or a combination of the following design approaches to determine minimum space and system outdoor airflow rates and all other design parameters deemed relevant (e.g., air cleaning efficiencies and supply airflow rates).

AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Gym Play Area 20cfm/person 0.18/Sq. ft
Representative: Optima Engineering

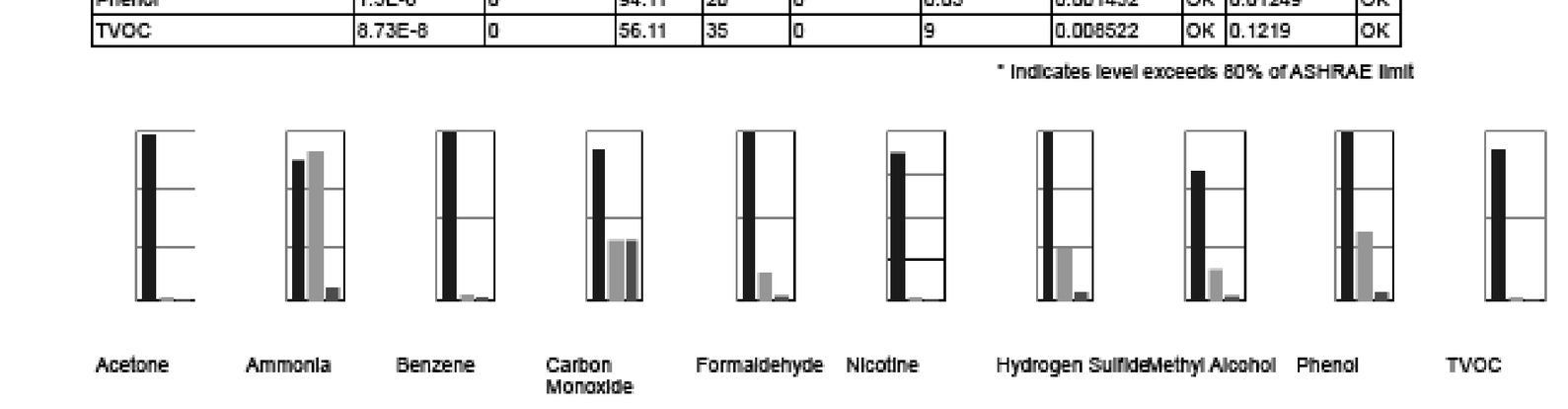
Ventilated Space: Building Size Area 2000 ft², Ceiling Height 31 ft; Total Volume of Space 62000 ft³, 3100 ft³/person; Total Airflow In, Vs 4000 cfm, 200 cfm/person; Ventilation Airflow, Vo 100 cfm, 5 cfm/person; Recirculation Airflow, RVr 3900 cfm, 195 cfm/person; Recirculation Flow Factor, R 0.975; Ventilation Effectiveness, Ev 1; Air Changes 3.871 /hour

Occupants: Number of Occupants 20 person(s); Level of Physical Activity Moderate Exercise; Respiratory Flow 64 cfm/person; CO2 Generation 2.5 ft³/hr/person

Smoking: ☐ Smoking in Space; Percent of people smoking 0; Cigarettes / hour / person 0
Filtration: Filter Efficiency 0 %

Contaminant	Generation Rate per Person (lb/min)	Smoking Generation Rate 1 cig/hour (lb/min)	Molecular Weight (g/mole)	Dynamic Air Cleaner Efficiency (%)	Typical Outside Concentration (ppm)	ASHRAE Limit (ppm)	Steady State Conc. With Dynamic Air Cleaners and Typ. Outside Conc. (ppm)		Steady State Conc. Without Dynamic Air Cleaners and Typ. Outside Conc. (ppm)	
Acetone	1.746E-8	1.47E-8	58	25	0.001265	2.95	0.002366	OK	0.02485	OK
Ammonia	5.733E-7	2.205E-7	17	27	0.001727	2.5	0.2348	OK	2.645	*
Benzene	5.88E-10	2.748E-8	78	10	0.002509	0.1	0.0006455	OK	0.0031	OK
Carbon Monoxide	3.675E-7	2.205E-6	28	0	2.621	9	3.65	OK	3.65	OK
Formaldehyde	1.0E-20	8.818E-8	30	25	0.01631	0.1	0.001552	OK	0.01631	OK
Nicotine	1.0E-20	2.976E-7	162	20	0.0007551	0.07	8.775E-5	OK	0.0007551	OK
Hydrogen Sulfide	4.0E-9	0	34.08	20	0	0.03	0.001069	OK	0.009199	OK
Methyl Alcohol	1.14E-7	0	32.04	20	0	1.15	0.03241	OK	0.2789	OK
Phenol	1.5E-8	0	94.11	20	0	0.03	0.001452	OK	0.01249	OK
TVOC	8.73E-8	0	56.11	35	0	9	0.008522	OK	0.1219	OK

* Indicates level exceeds 80% of ASHRAE limit



L=ASHRAE Limit w/o=Without Dynamic Air Cleaners w=With Dynamic Air Cleaners

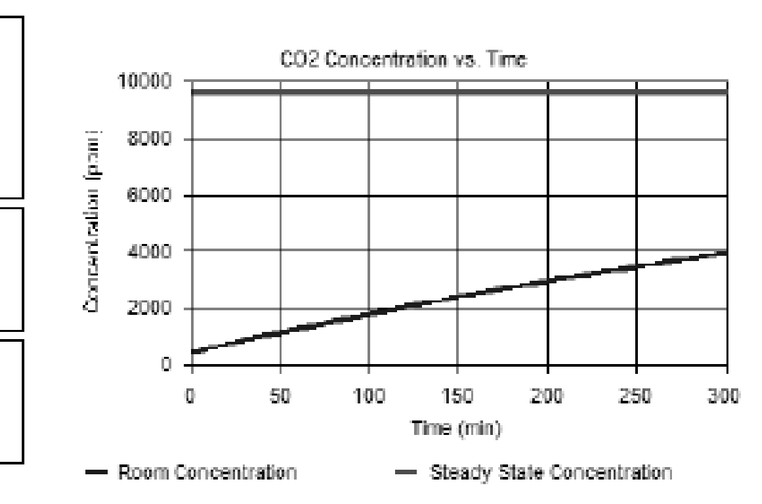
AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Gym Play Area 20cfm/person 0.18/Sq. ft
Representative: Optima Engineering

Ventilated Space: Building Size Area 2000 ft², Ceiling Height 31 ft; Total Volume of Space 62000 ft³, 3100 ft³/person; Total Airflow In, Vs 4000 cfm, 200 cfm/person; Ventilation Airflow, Vo 100 cfm, 5 cfm/person; Recirculation Airflow, RVr 3900 cfm, 195 cfm/person; Recirculation Flow Factor, R 0.975; Ventilation Effectiveness, Ev 1; Air Changes 3.871 /hour

Occupants: Number of Occupants 20 person(s); Level of Physical Activity Moderate Exercise; Respiratory Flow 64 cfm/person; CO2 Generation 2.5 ft³/hr/person

CO2 Sources in Ventilated Space: Outdoor Concentration 425 ppm; Initial Indoor Concentration 425 ppm; CO2 Generation Rate by Non-Occupant Sources 0 ft³/hr
Steady State: After an infinite amount of time, The CO2 level is 9584 ppm
Instantaneous Level: At Time = 120 min; The CO2 level is 2037 ppm



Page 40.9, 1991 ASHRAE HVAC Applications Handbook

(Quoting ASHRAE 62-1999 from the Foreword section addemdum 62f page 1)
Addendum 62f addresses a lack of clarity in ANSI/ASHRAE Standard 62-1989 that has contributed to several misunderstandings regarding the significance of indoor carbon dioxide (CO2) levels. The standard previously led many users to conclude that CO2 was itself a comprehensive indicator of indoor air quality and a contaminant with its own health impacts, rather than simply a useful indicator of the concentration of human bioeffluents.

OSHA has a CO2 limit of 5000ppm as outlined in Table Z-1 Federal Register #: 58:35338-35351 Standard Number: 1910.1000

AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Gym Spectator Area 7.5cfm/person 0.06/Sq. ft
Representative: Optima Engineering

Ventilated Space

Building Size Area	1600	ft²	Ceiling Height	31 ft
Total Volume of Space	49600	ft³	211.1	ft³/person
Total Airflow In, Vs	4000	cfm	17.02	cfm/person
Ventilation Airflow, Vo	1175	cfm	5	cfm/person
Recirculation Airflow, RVr	2825	cfm	12.02	cfm/person
Recirculation Flow Factor, R	0.7063			
Ventilation Effectiveness, Ev	1		Air Changes	4.839 /hour

Occupants

Number of Occupants	235	person(s)
Level of Physical Activity	Standing, Desk Work	
Respiratory Flow	24	cfm/person
CO2 Generation	0.93	ft³/hr/person

ASHRAE 62 Ventilation Standard - Under this standard the following apply:

Ventilation Rate Procedure for this facility requires a ventilation rate (Vor) of 7.5 cfm/person

The Ventilation Rate Procedure is one way to achieve acceptable air quality. This procedure prescribes the rate at which ventilation must be delivered to a space and various means to condition that air. The ventilation rates in Table 2 are derived from psysiological considerations, subjective evaluations, and professional judgements.

$$\text{Required Filter Efficiency (Ef)} = \frac{Vor\,(Vo\,(1 - Ev) + Ev\,Vs) - Ev\,Vo\,Vs}{(Vs - Vo)(Ev\,Vs - Vor\,(1 - Ev))} = 0.3168$$

Equivalent to Dust Spot Efficiency: 80-85%
Equivalent to Minimum Efficiency Reporting Value (MERV): 13

Indoor Air Quality Procedure provides an alternative performance method for acieving acceptable air quality.
To control particulates to the proper level at the above ventilation rate, 80-85% filtration is used.
In addition to controlling the particulates, known contaminants also need to be controlled to an acceptable level. These are shown in the following pages.

General: Either the Ventilation Rate Procedure or the IAQ Procedure shall be used to design each ventilation system in a building, subject to the following considerations and restrictions.

Ventilation Rate Procedure: This is a prescriptive procedure in which outdoor air intake rates are determined based on space type/application, occupancy level, and floor area. Note: The Ventilation Rate Procedure minimum rates are based on contaminant sources and source strengths that are typical for the listed space types.

IAQ Procedure: This is a design procedure in which outdoor air intake rates and other system design parameters are based on an analysis of contaminant sources, contaminant concentration targets, and perceived acceptability targets. The IAQ Procedure allows credit to be taken for controls that remove contaminants (for example, air cleaning devices) or for other design techniques (for examples, selection of materials with lower source strengths) that can be reliably demonstrated to result in indoor contaminant concentrations equal to or lower than those achieved using the Ventilation Rate Procedure. The IAQ Procedure may also be used where the design is intended to attain specific target contaminant concentrations or levels of acceptability of perceived indoor air quality.

Indoor Air Quality Procedure: The Indoor Air Quality (IAQ) Procedure is a performance-based design approach in which the building and its ventilation system are designed to maintain the concentrations of specific contaminants at or below certain limits identified during the building design and to achieve the design target level of perceived indoor air quality acceptability by building occupants and/or visitors. For the purposes of this procedure, acceptable perceived indoor air quality excludes dissatisfaction related to thermal comfort, noise and vibration, lighting, and psychological stressors.

Design Approaches: Select one or a combination of the following design approaches to determine minimum space and system outdoor airflow rates and all other design parameters deemed relevant (e.g., air cleaning efficiencies and supply airflow rates).

AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Gym Spectator Area 7.5cfm/person 0.06/Sq. ft
Representative: Optima Engineering

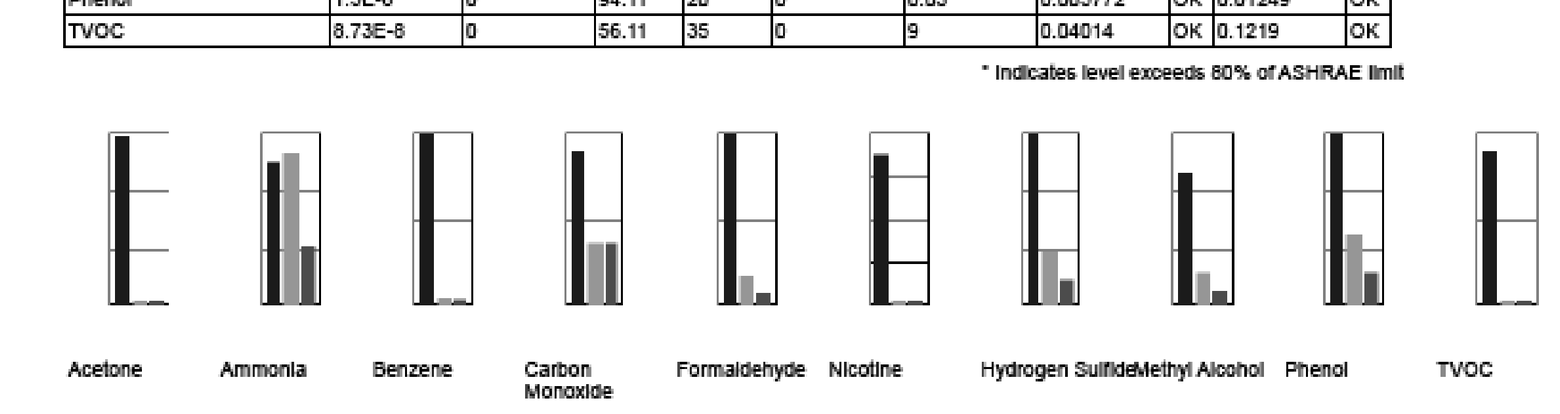
Ventilated Space: Building Size Area 1600 ft², Ceiling Height 31 ft; Total Volume of Space 49600 ft³, 211.1 ft³/person; Total Airflow In, Vs 4000 cfm, 17.02 cfm/person; Ventilation Airflow, Vo 1175 cfm, 5 cfm/person; Recirculation Airflow, RVr 2825 cfm, 12.02 cfm/person; Recirculation Flow Factor, R 0.7063; Ventilation Effectiveness, Ev 1; Air Changes 4.839 /hour

Occupants: Number of Occupants 235 person(s); Level of Physical Activity Standing, Desk Work; Respiratory Flow 24 cfm/person; CO2 Generation 0.93 ft³/hr/person

Smoking: ☐ Smoking in Space; Percent of people smoking 0; Cigarettes / hour / person 0
Filtration: Filter Efficiency 0 %

Contaminant	Generation Rate per Person (lb/min)	Smoking Generation Rate 1 cig/hour (lb/min)	Molecular Weight (g/mole)	Dynamic Air Cleaner Efficiency (%)	Typical Outside Concentration (ppm)	ASHRAE Limit (ppm)	Steady State Conc. With Dynamic Air Cleaners and Typ. Outside Conc. (ppm)		Steady State Conc. Without Dynamic Air Cleaners and Typ. Outside Conc. (ppm)	
Acetone	1.746E-8	1.47E-8	58	25	0.001265	2.95	0.01012	OK	0.02485	OK
Ammonia	5.733E-7	2.205E-7	17	27	0.001727	2.5	1.028	OK	2.645	*
Benzene	5.88E-10	2.748E-8	78	10	0.002509	0.1	0.001959	OK	0.0031	OK
Carbon Monoxide	3.675E-7	2.205E-6	28	0	2.621	9	3.65	OK	3.65	OK
Formaldehyde	1.0E-20	8.818E-8	30	25	0.01631	0.1	0.006642	OK	0.01631	OK
Nicotine	1.0E-20	2.976E-7	162	20	0.0007551	0.07	0.0003489	OK	0.0007551	OK
Hydrogen Sulfide	4.0E-9	0	34.08	20	0	0.03	0.00425	OK	0.009199	OK
Methyl Alcohol	1.14E-7	0	32.04	20	0	1.15	0.1288	OK	0.2789	OK
Phenol	1.5E-8	0	94.11	20	0	0.03	0.005772	OK	0.01249	OK
TVOC	8.73E-8	0	56.11	35	0	9	0.04014	OK	0.1219	OK

* Indicates level exceeds 80% of ASHRAE limit



L=ASHRAE Limit w/o=Without Dynamic Air Cleaners w=With Dynamic Air Cleaners

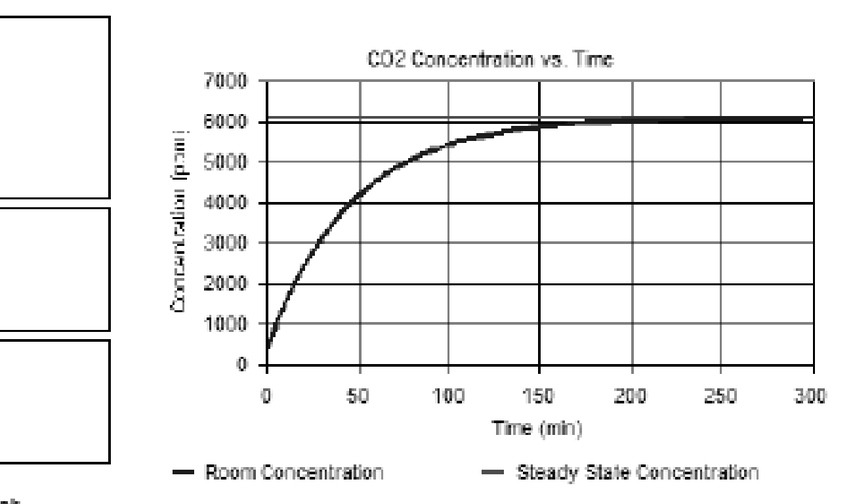
AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Gym Spectator Area 7.5cfm/person 0.06/Sq. ft
Representative: Optima Engineering

Ventilated Space: Building Size Area 1600 ft², Ceiling Height 31 ft; Total Volume of Space 49600 ft³, 211.1 ft³/person; Total Airflow In, Vs 4000 cfm, 17.02 cfm/person; Ventilation Airflow, Vo 1175 cfm, 5 cfm/person; Recirculation Airflow, RVr 2825 cfm, 12.02 cfm/person; Recirculation Flow Factor, R 0.7063; Ventilation Effectiveness, Ev 1; Air Changes 4.839 /hour

Occupants: Number of Occupants 235 person(s); Level of Physical Activity Standing, Desk Work; Respiratory Flow 24 cfm/person; CO2 Generation 0.93 ft³/hr/person

CO2 Sources in Ventilated Space: Outdoor Concentration 425 ppm; Initial Indoor Concentration 425 ppm; CO2 Generation Rate by Non-Occupant Sources 0 ft³/hr
Steady State: After an infinite amount of time, The CO2 level is 6103 ppm
Instantaneous Level: At Time = 120 min; The CO2 level is 5682 ppm



Page 40.9, 1991 ASHRAE HVAC Applications Handbook

(Quoting ASHRAE 62-1999 from the Foreword section addemdum 62f page 1)
Addendum 62f addresses a lack of clarity in ANSI/ASHRAE Standard 62-1989 that has contributed to several misunderstandings regarding the significance of indoor carbon dioxide (CO2) levels. The standard previously led many users to conclude that CO2 was itself a comprehensive indicator of indoor air quality and a contaminant with its own health impacts, rather than simply a useful indicator of the concentration of human bioeffluents.

OSHA has a CO2 limit of 5000ppm as outlined in Table Z-1 Federal Register #: 58:35338-35351 Standard Number: 1910.1000

AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Standard Classroom Science Classroom Band Room Chorus Room Media Center Cafeteria 7.5cfm/person 0.18/Sq. ft
Representative: Optima Engineering

Ventilated Space

Building Size Area	2000	ft²	Ceiling Height	12.5 ft
Total Volume of Space	25000	ft³	183.8	ft³/person
Total Airflow In, Vs	6000	cfm	44.12	cfm/person
Ventilation Airflow, Vo	680	cfm	5	cfm/person
Recirculation Airflow, RVr	5320	cfm	39.12	cfm/person
Recirculation Flow Factor, R	0.8867			
Ventilation Effectiveness, Ev	1		Air Changes	14.4 /hour

Occupants

Number of Occupants	136	person(s)
Level of Physical Activity	Standing, Desk Work	
Respiratory Flow	24	cfm/person
CO2 Generation	0.93	ft³/hr/person

ASHRAE 62 Ventilation Standard - Under this standard the following apply:

Ventilation Rate Procedure for this facility requires a ventilation rate (Vor) of 10.1 cfm/person

The Ventilation Rate Procedure is one way to achieve acceptable air quality. This procedure prescribes the rate at which ventilation must be delivered to a space and various means to condition that air. The ventilation rates in Table 2 are derived from psysiological considerations, subjective evaluations, and professional judgements.

$$\text{Required Filter Efficiency (Ef)} = \frac{Vor\,(Vo\,(1 - Ev) + Ev\,Vs) - Ev\,Vo\,Vs}{(Vs - Vo)(Ev\,Vs - Vor\,(1 - Ev))} = 0.1304$$

Equivalent to Dust Spot Efficiency: 60-65%
Equivalent to Minimum Efficiency Reporting Value (MERV): 11

Indoor Air Quality Procedure provides an alternative performance method for acieving acceptable air quality.
To control particulates to the proper level at the above ventilation rate, 60-65% filtration is used.
In addition to controlling the particulates, known contaminants also need to be controlled to an acceptable level. These are shown in the following pages.

General: Either the Ventilation Rate Procedure or the IAQ Procedure shall be used to design each ventilation system in a building, subject to the following considerations and restrictions.

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Design Approaches: Select one or a combination of the following design approaches to determine minimum space and system outdoor airflow rates and all other design parameters deemed relevant (e.g., air cleaning efficiencies and supply airflow rates).

AirQ Indoor Air Quality Design and Analysis

Project: EB Frink Middle School | Notes: Standard Classroom Science Classroom Band Room Chorus Room Media Center Cafeteria 7.5cfm/person 0.18/Sq. ft
Representative: Optima Engineering

Ventilated Space: Building Size Area 2000 ft², Ceiling Height 12.5 ft; Total Volume of Space 25000 ft³, 183.8 ft³/person; Total Airflow In, Vs 6000 cfm, 44.12 cfm/person; Ventilation Airflow, Vo 680 cfm, 5 cfm/person; Recirculation Airflow, RVr 5320 cfm, 39.12 cfm/person; Recirculation Flow Factor, R 0.8867; Ventilation Effectiveness, Ev 1; Air Changes 14.4 /hour

Occupants: Number of Occupants 136 person(s); Level of Physical Activity Standing, Desk Work; Respiratory Flow 24 cfm/person; CO2 Generation 0.93 ft³/hr/person

Smoking: ☐ Smoking in Space; Percent of people smoking 0; Cigarettes / hour / person 0
Filtration: Filter Efficiency 0 %

Contaminant	Generation Rate per Person (lb/min)	Smoking Generation Rate 1 cig/hour (lb/min)	Molecular Weight (g/mole)	Dynamic Air Cleaner Efficiency (%)	Typical Outside Concentration (ppm)	ASHRAE Limit (ppm)	Steady State Conc. With Dynamic Air Cleaners and Typ. Outside Conc. (ppm)		Steady State Conc. Without Dynamic Air Cleaners and Typ. Outside Conc. (ppm)	
Acetone	1.746E-8	1.47E-8	58	25	0.001265	2.95	0.00909	OK	0.02485	OK
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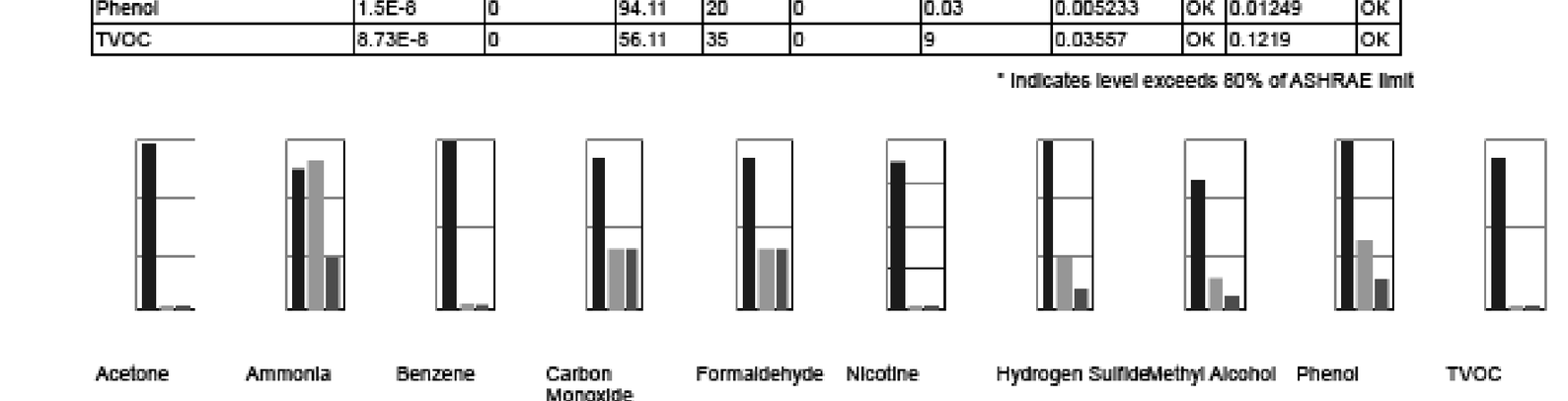
Formaldehyde	1.0E-20	8.818E-8	30	25	0.01631	0.1	0.005965	OK	0.01631	OK
Nicotine	1.0E-20	2.976E-7	162	20	0.0007551	0.07	0.0003163	OK	0.0007551	OK
Hydrogen Sulfide	4.0E-9	0	34.08	20	0	0.03	0.003853	OK	0.009199	OK
Methyl Alcohol	1.14E-7	0	32.04	20	0	1.15	0.1168	OK	0.2789	OK
Phenol	1.5E-8	0	94.11	20	0	0.03	0.005233	OK	0.01249	OK
TVOC	8.73E-8	0	56.11	35	0	9	0.03557	OK	0.1219	OK

* Indicates level exceeds 80% of ASHRAE limit



L=ASHRAE Limit w/o=Without Dynamic Air Cleaners w=With Dynamic Air Cleaners

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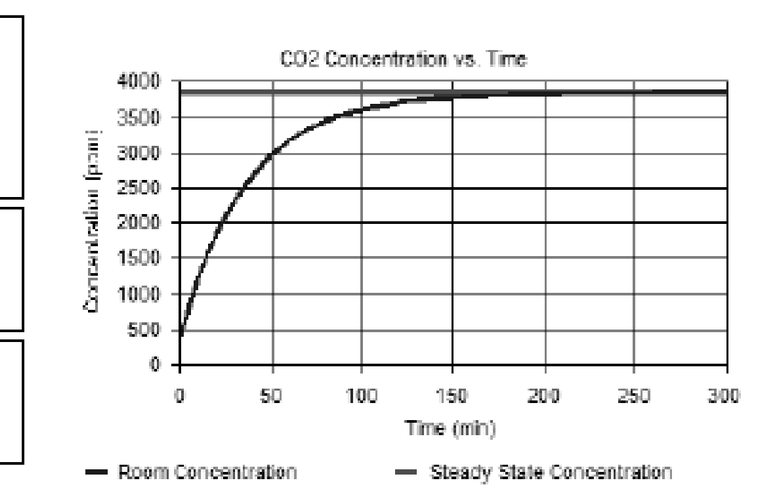
Occupants: Number of Occupants 136 person(s); Level of Physical Activity Standing, Desk Work; Respiratory Flow 24 cfm/person; CO2 Generation 0.93 ft³/hr/person

CO2 Sources in Ventilated Space: Outdoor Concentration 425 ppm; Initial Indoor Concentration 425 ppm; CO2 Generation Rate by Non-Occupant Sources 0 ft³/hr
Steady State: After an infinite amount of time, The CO2 level is 3832 ppm
Instantaneous Level: At Time = 120 min; The CO2 level is 3702 ppm



Page 40.9, 1991 ASHRAE HVAC Applications Handbook

(Quoting ASHRAE 62-1999 from the Foreword section addemdum 62f page 1)
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OSHA has a CO2 limit of 5000ppm as outlined in Table Z-1 Federal Register #: 58:35338-35351 Standard Number: 1910.1000

2018 MECHANICAL VENTILATION SCHEDULE

LOCATION NO.	LOCATION NAME	Occupancy Category	Area	Number of People, Pz	Outdoor Airflow Rate Per Person, Rp	Outdoor Airflow Rate Per Unit Area, Ra	Breathing Zone Outdoor Airflow, Voz	Zone Air Distribution Effectiveness, Ez	Required Outdoor Air Intake Flow, Vot	Outside Air Provided
122A	GYM STG	Storage rooms	285.1 SF	0	0.0 CFM	0.12 CFM/SF	34.21 CFM	1	30 CFM	35 CFM
124	GYM STG	Storage rooms	143.2 SF	0	0.0 CFM	0.12 CFM/SF	17.19 CFM	1	20 CFM	20 CFM
WSHP-1.1									50 CFM	55 CFM
119	CONCS	Office space	124.8 SF	1	5.0 CFM	0.06 CFM/SF	12.49 CFM	1	10 CFM	
120	OFFICE	Office space	98.2 SF	0	5.0 CFM	0.06 CFM/SF	5.89 CFM	1	10 CFM	
WSHP-1.3									20 CFM	0 CFM
100A	LOBBY	Corridors	325.5 SF	0	0.0 CFM	0.06 CFM/SF	19.53 CFM	1	20 CFM	
WSHP-1.4									20 CFM	0 CFM
100A	LOBBY	Main entry lobbies	1750.8 SF	18	5.0 CFM	0.06 CFM/SF	195.05 CFM	1	200 CFM	
WSHP-1.5									200 CFM	0 CFM
100-2	VESTIBULE-2	Corridors	342.9 SF	0	0.0 CFM	0.06 CFM/SF	20.57 CFM	1	20 CFM	
101	RECPT	Reception areas	492.0 SF	15	5.0 CFM	0.06 CFM/SF	104.52 CFM	1	100 CFM	
WSHP-1.6									130 CFM	0 CFM
102	HEALTH	Office space	157.5 SF	6	5.0 CFM	0.06 CFM/SF	39.45 CFM	1	40 CFM	
111	SIMS	Office space	124.0 SF	1	5.0 CFM	0.06 CFM/SF	12.44 CFM	1	10 CFM	
114	SHARED OFFICE	Office space	161.1 SF	1	5.0 CFM	0.06 CFM/SF	14.66 CFM	1	10 CFM	
115	MAILROOM	Office space	308.0 SF	2	5.0 CFM	0.06 CFM/SF	28.48 CFM	1	30 CFM	
WSHP-1.7									100 CFM	0 CFM
109	STG	Storage rooms	114.7 SF	0	0.0 CFM	0.12 CFM/SF	13.76 CFM	1	10 CFM	
110	BKKPG	Storage rooms	132.1 SF	0	0.0 CFM	0.12 CFM/SF	15.85 CFM	1	20 CFM	
112	RECORDS	Storage rooms	105.1 SF	0	0.0 CFM	0.12 CFM/SF	12.61 CFM	1	10 CFM	
116	AP	Office space	144.0 SF	1	5.0 CFM	0.06 CFM/SF	13.64 CFM	1	10 CFM	
128	CORR.	Corridors	415.6 SF	0	0.0 CFM	0.06 CFM/SF	24.94 CFM	1	20 CFM	
WSHP-1.8									80 CFM	0 CFM
100-1	VESTIBULE-1	Corridors	337.6 SF	0	0.0 CFM	0.06 CFM/SF	20.26 CFM	1	20 CFM	
103	PRINCIPAL	Office space	223.2 SF	1	5.0 CFM	0.06 CFM/SF	18.39 CFM	1	20 CFM	
104	STG	Storage rooms	50.7 SF	0	0.0 CFM	0.12 CFM/SF	6.09 CFM	1	10 CFM	
106	SECTY.	Office space	142.9 SF	1	5.0 CFM	0.06 CFM/SF	13.57 CFM	1	10 CFM	
108	CONF	Conference rooms	202.2 SF	10	5.0 CFM	0.06 CFM/SF	62.13 CFM	1	60 CFM	
WSHP-1.10									120 CFM	0 CFM
203B	GUID. OFC	Office space	104.6 SF	1	5.0 CFM	0.06 CFM/SF	11.28 CFM	1	10 CFM	
204A	MEDIA CONF	Conference rooms	239.0 SF	12	5.0 CFM	0.06 CFM/SF	74.34 CFM	1	70 CFM	
204B	MEDIA WKRM	Classroom (age 9 plus) NC	191.9 SF	4	7.5 CFM	0.00 CFM/SF	30.00 CFM	1	30 CFM	
WSHP-2.1									120 CFM	0 CFM
117	AP	Office space	150.1 SF	1	5.0 CFM	0.06 CFM/SF	14.01 CFM	1	10 CFM	
203	GUIDANCE MTG	Office space	194.5 SF	2	5.0 CFM	0.06 CFM/SF	21.67 CFM	1	20 CFM	
203A	GUID. OFC	Office space	150.1 SF	1	5.0 CFM	0.06 CFM/SF	14.01 CFM	1	10 CFM	
WSHP-2.3									50 CFM	0 CFM
200	CORRIDOR	Corridors	1107.5 SF	0	0.0 CFM	0.06 CFM/SF	66.45 CFM			
200-4	CORRIDOR-4	Corridors	306.7 SF	0	0.0 CFM	0.06 CFM/SF	18.40 CFM	1	20 CFM	
211	ISS	Classroom (age 9 plus) NC	562.8 SF	20	7.5 CFM	0.00 CFM/SF	150.00 CFM	1	150 CFM	
WSHP-2.6									170 CFM	0 CFM
200-5	CORRIDOR-5	Corridors	985.5 SF	0	0.0 CFM	0.06 CFM/SF	59.13 CFM	1	60 CFM	
214A	DRY STOR	Storage rooms	241.0 SF	0	0.0 CFM	0.12 CFM/SF	28.92 CFM	1	30 CFM	
WSHP-2.7									90 CFM	0 CFM
200-2	CORRIDOR-2	Corridors	297.3 SF	0	0.0 CFM	0.06 CFM/SF	17.84 CFM	1	20 CFM	
WSHP-2.9									20 CFM	0 CFM

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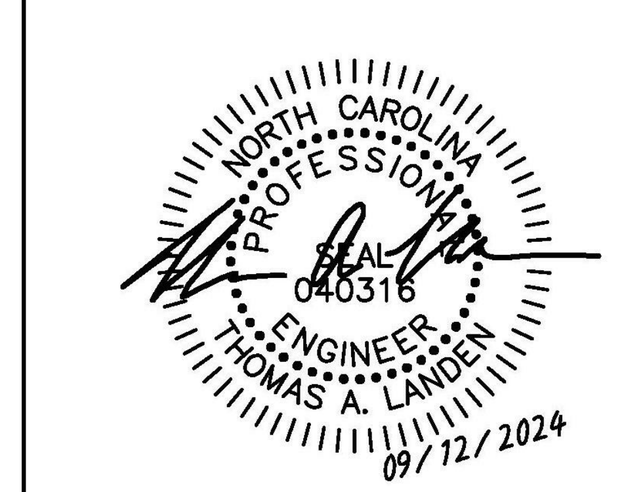

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VENTILATION CALCULATIONS

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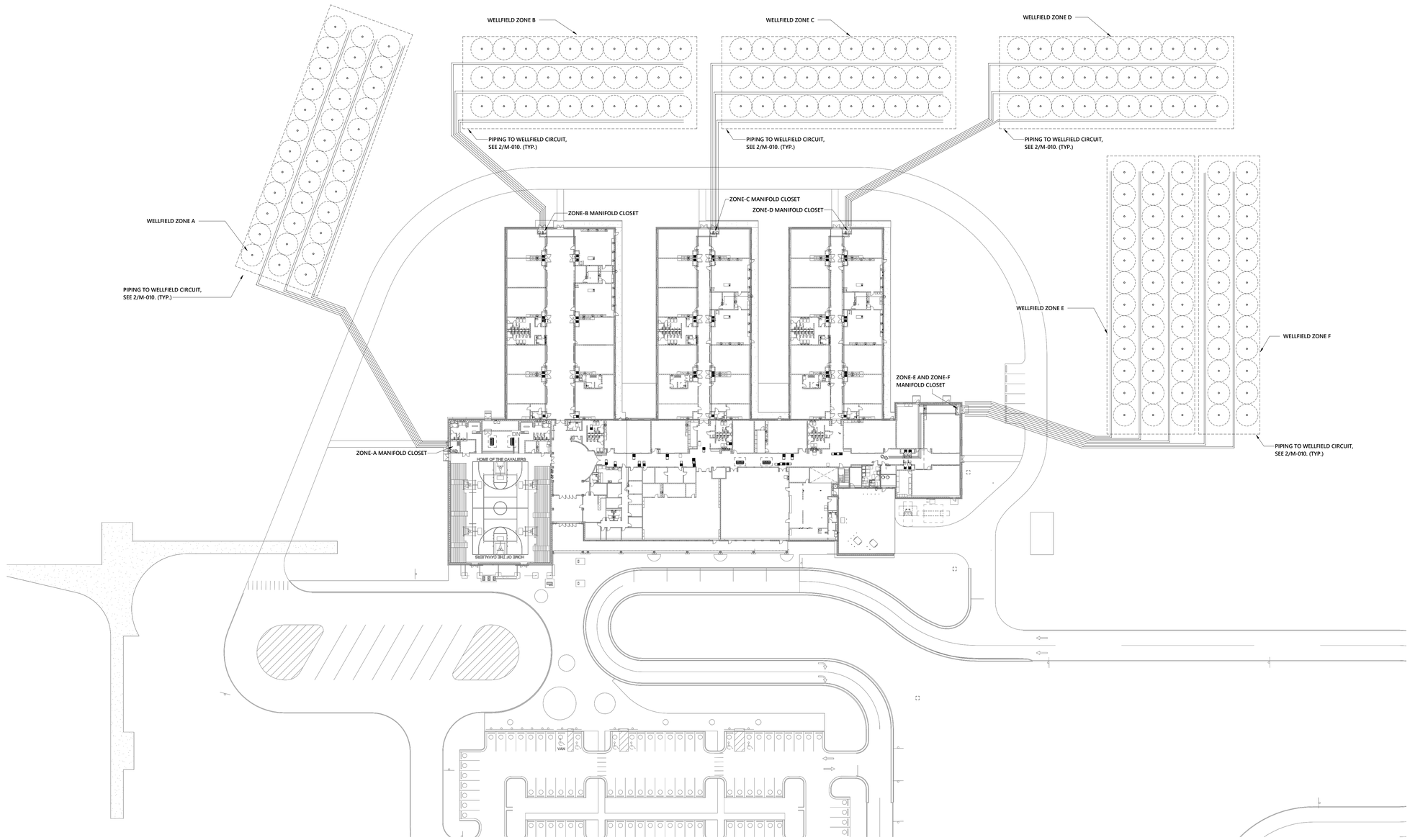
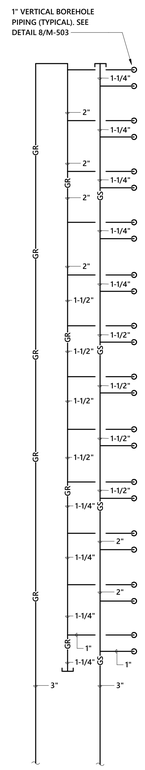


1 MECHANICAL GEOTHERMAL SITE PLAN
1" = 40'-0"



2 TYPICAL REVERSE RETURN CIRCUIT PIPING
1/8" = 1'-0"

GEOTHERMAL WELLFIELD SPECIFICATION

1. DRILLING MUST BE PERFORMED BY A CERTIFIED NORTH CAROLINA WELL DRILLER.
2. LOCATE WELLS A MINIMUM OF 20' APART. COORDINATE EXACT WELLFIELD LAYOUT BASED ON ACTUAL SITE CONDITIONS.
3. COORDINATE EXACT GEOTHERMAL PIPING LOCATIONS AND DEPTHS WITH ALL OTHER UNDERGROUND UTILITY LOCATIONS, SEE CIVIL PLANS.
4. GEOTHERMAL WELLFIELD IS DESIGNED BASED ON THE FOLLOWING:

SITE SPECIFIC PARAMETERS:
- SOIL CONDUCTIVITY - 1.55 BTU/HR*FT*F
- UNDISTRIBUTED SOIL TEMPERATURE - 66.5 DEG F

UTILIZING THE FOLLOWING VARIABLES:

ZONE-A
- PEAK ZONE COOLING LOAD - 868.2 MBH
- PEAK ZONE HEATING LOAD - 1,018.5 MBH
- BASIC WELLFIELD GRID - 3 CIRCUITS, 12 WELLS PER CIRCUIT
- WELL SEPARATION DISTANCE - 20' MINIMUM
- BORE DIAMETER - 5"∅
- BORE DEPTH - 300'
- U-TUBE DIAMETER - 1" HDPE, SDR-11
- GROUT CONDUCTIVITY - 1.55 BTU/HR*FT**F

ZONE-B
- PEAK ZONE COOLING LOAD - 551 MBH
- PEAK ZONE HEATING LOAD - 629.2 MBH
- BASIC WELLFIELD GRID - 3 CIRCUITS, 10 WELLS PER CIRCUIT
- WELL SEPARATION DISTANCE - 20' MINIMUM
- BORE DIAMETER - 5"∅
- BORE DEPTH - 300'
- U-TUBE DIAMETER - 1" HDPE, SDR-11
- GROUT CONDUCTIVITY - 1.55 BTU/HR*FT**F

ZONE-C
- PEAK ZONE COOLING LOAD - 480.7 MBH
- PEAK ZONE HEATING LOAD - 552.3 MBH
- BASIC WELLFIELD GRID - 3 CIRCUITS, 10 WELLS PER CIRCUIT
- WELL SEPARATION DISTANCE - 20' MINIMUM
- BORE DIAMETER - 5"∅
- BORE DEPTH - 300'
- U-TUBE DIAMETER - 1" HDPE, SDR-11
- GROUT CONDUCTIVITY - 1.55 BTU/HR*FT**F

ZONE-D
- PEAK ZONE COOLING LOAD - 480.7 MBH
- PEAK ZONE HEATING LOAD - 552.3 MBH
- BASIC WELLFIELD GRID - 3 CIRCUITS, 10 WELLS PER CIRCUIT
- WELL SEPARATION DISTANCE - 20' MINIMUM
- BORE DIAMETER - 5"∅
- BORE DEPTH - 300'
- U-TUBE DIAMETER - 1" HDPE, SDR-11
- GROUT CONDUCTIVITY - 1.55 BTU/HR*FT**F

ZONE-E
- PEAK ZONE COOLING LOAD - 701.4 MBH
- PEAK ZONE HEATING LOAD - 787.2 MBH
- BASIC WELLFIELD GRID - 3 CIRCUITS, 12 WELLS PER CIRCUIT
- WELL SEPARATION DISTANCE - 20' MINIMUM
- BORE DIAMETER - 5"∅
- BORE DEPTH - 300'
- U-TUBE DIAMETER - 1" HDPE, SDR-11
- GROUT CONDUCTIVITY - 1.55 BTU/HR*FT**F

ZONE-F
- PEAK ZONE COOLING LOAD - 367.3 MBH
- PEAK ZONE HEATING LOAD - 445.9 MBH
- BASIC WELLFIELD GRID - 2 CIRCUITS, 12 WELLS PER CIRCUIT
- WELL SEPARATION DISTANCE - 20' MINIMUM
- BORE DIAMETER - 5"∅
- BORE DEPTH - 300'
- U-TUBE DIAMETER - 1" HDPE, SDR-11
- GROUT CONDUCTIVITY - 1.55 BTU/HR*FT**F

AS A VALUE ENGINEERING OPTION, ALTERNATE WELLFIELD LAYOUTS MAY BE SUMBITTED DURING THE BIDDING PROCESS UTILIZING DIFFERENT COMBINATIONS OF THE VARIABLES, PROVIDED ALL NORTH CAROLINA STATE REGULATIONS ARE MET. CONTRACTOR SHALL SUBMIT FULL CALCULATIONS USING ALTERNATIVE METHODS FOR REVIEW AND APPROVAL BY THE MECHANICAL ENGINEER. ALTERNATE WELLFIELD DESIGNS MUST HAVE SIMILAR STAGING CAPACITY. WELLFIELD SUBSTITUTIONS, LIKE EQUIPMENT SUBSTITUTIONS, REQUIRE A 2-WEEK PRIOR APPROVAL BEFORE BID DAY. SHOULD PUMPING SYSTEM HEAD REQUIREMENTS AND/OR HORSEPOWERS CHANGE, OR ANY OTHER BUILDING SIDE CHANGE RESULT FROM REDESIGN OF THE WELLFIELD, ANY ADDITIONAL COSTS (INCLUDING ELECTRICAL CHANGES AND SITE CHANGES) SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

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MECHANICAL SITE PLAN

M-010

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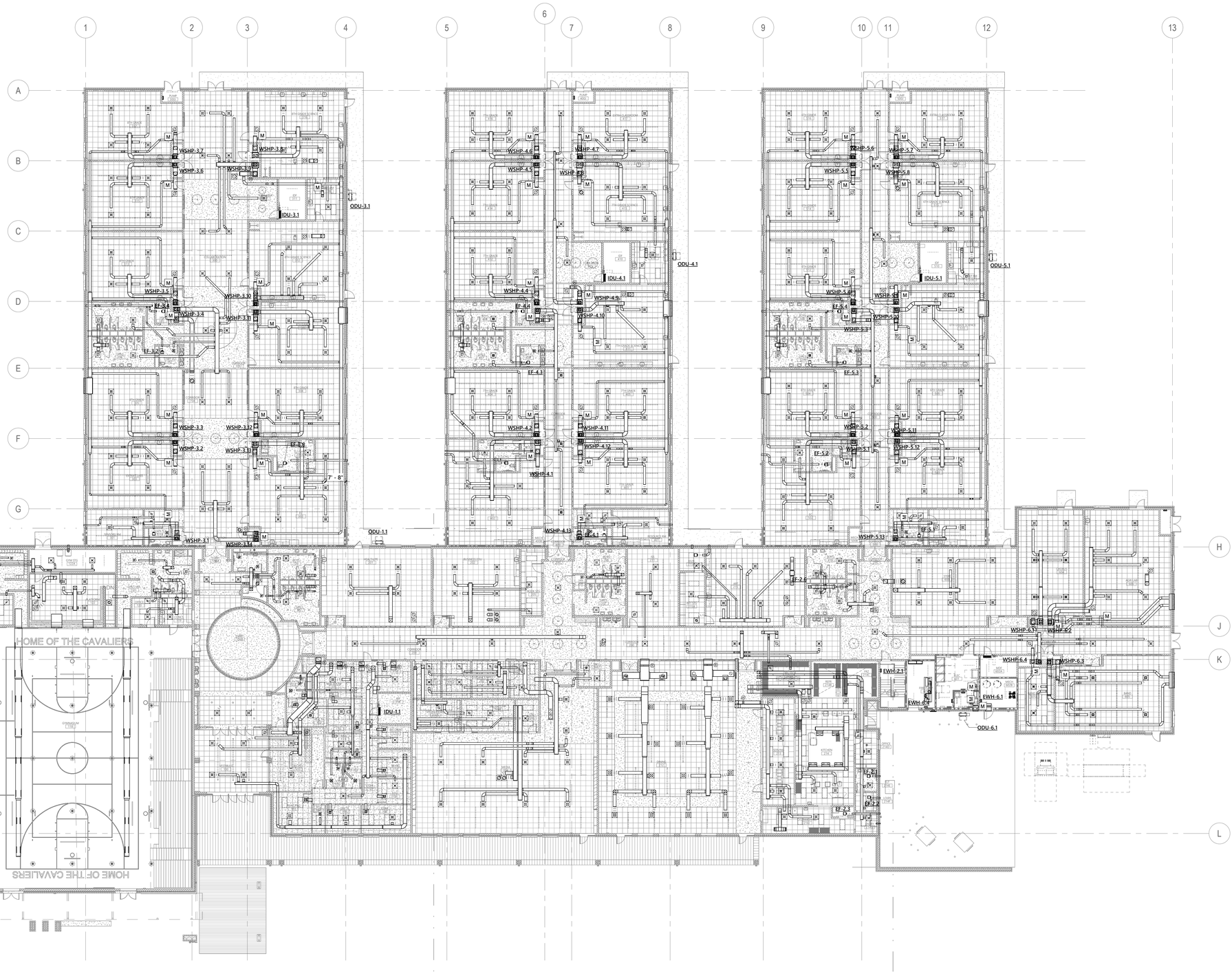

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

1 OVERALL MECHANICAL PLAN
1/16" = 1'-0"

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OVERALL MECHANICAL PLAN

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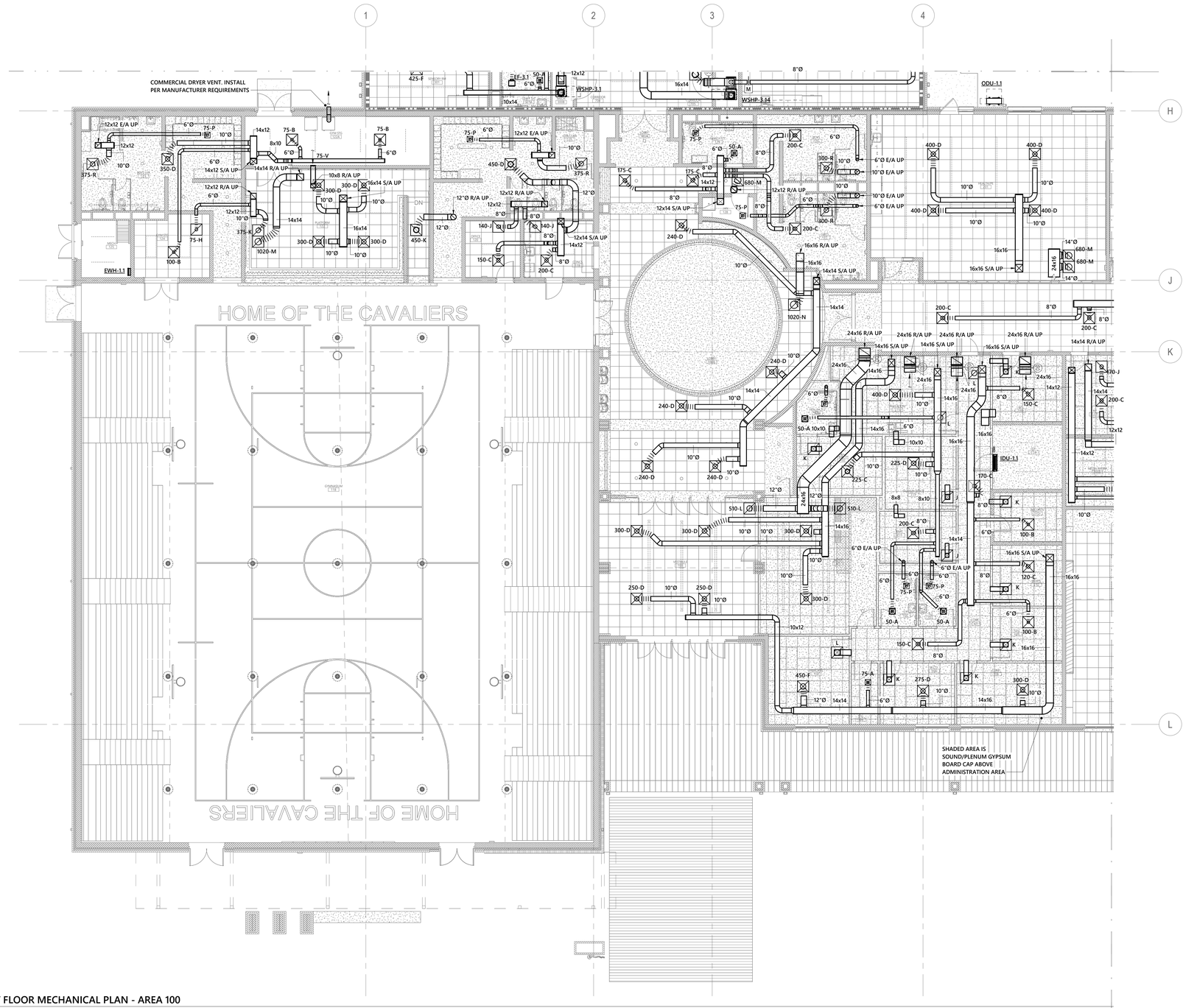
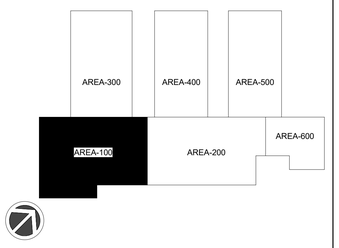


WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PLAN - AREA 100

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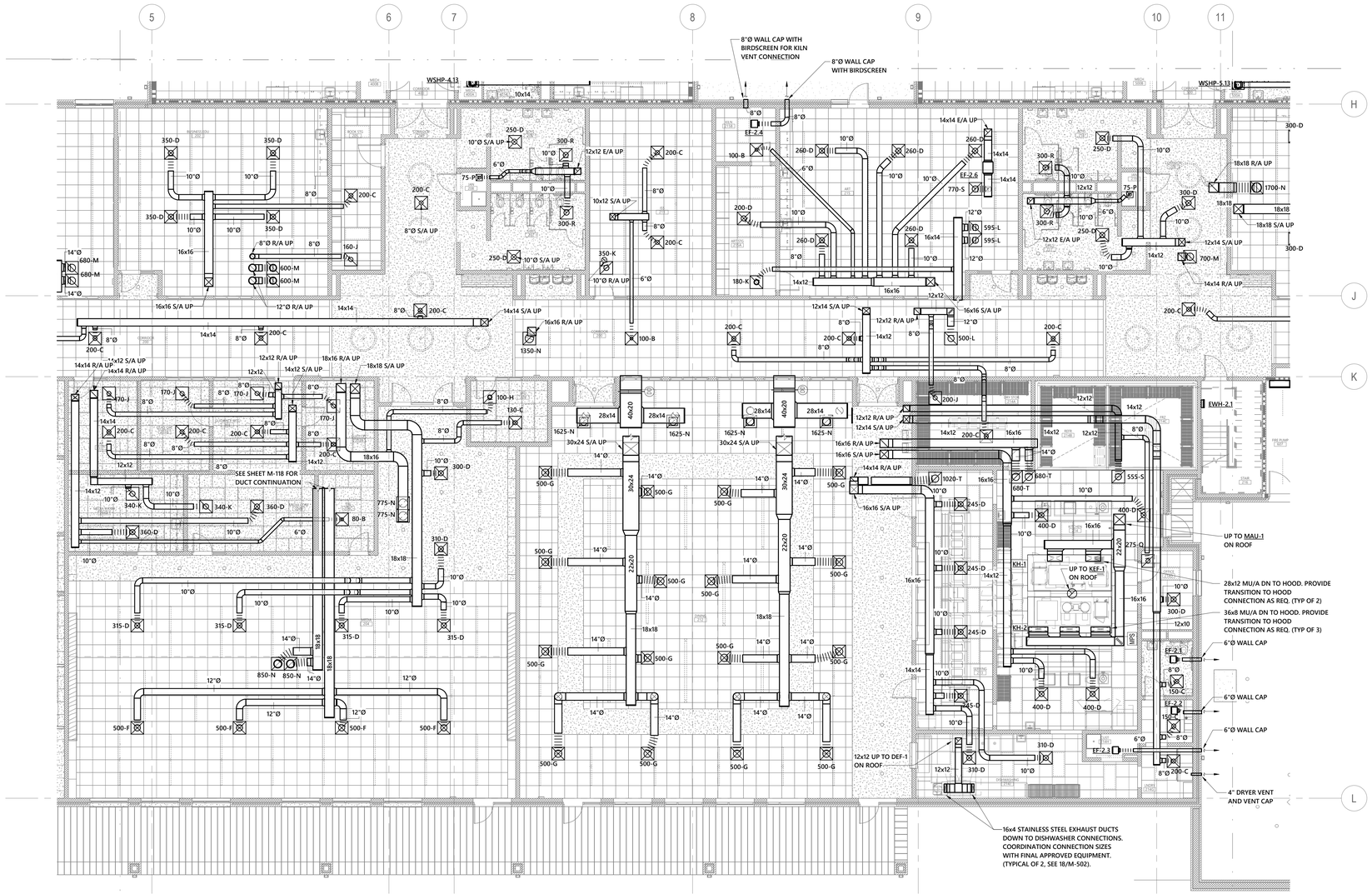


1 FIRST FLOOR MECHANICAL PLAN - AREA 200
1/8" = 1'-0"

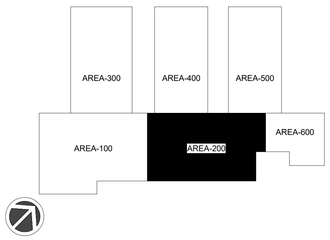
KITCHEN AIR BALANCE SCHEDULE

MECHANICAL EQUIPMENT (SYSTEM)	EXHAUST	MAKE-UP	OUTSIDE AIR
KITCHEN HOOD KEF-1	4866	- -	- -
DISHWASHER EXHAUST DEF-1	600	- -	- -
MAU-1	- -	3892	- -
WSHP-K.1	- -	- -	180
WSHP-K.2	- -	- -	240
WSHP-K.3	- -	- -	120
SUB-TOTALS	4866	3892	- -
TOTALS	5466	4432	
NET PRESSURE SUPPLIED TO KITCHEN:		1034 CFM (NEGATIVE)	

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PLAN - AREA 200

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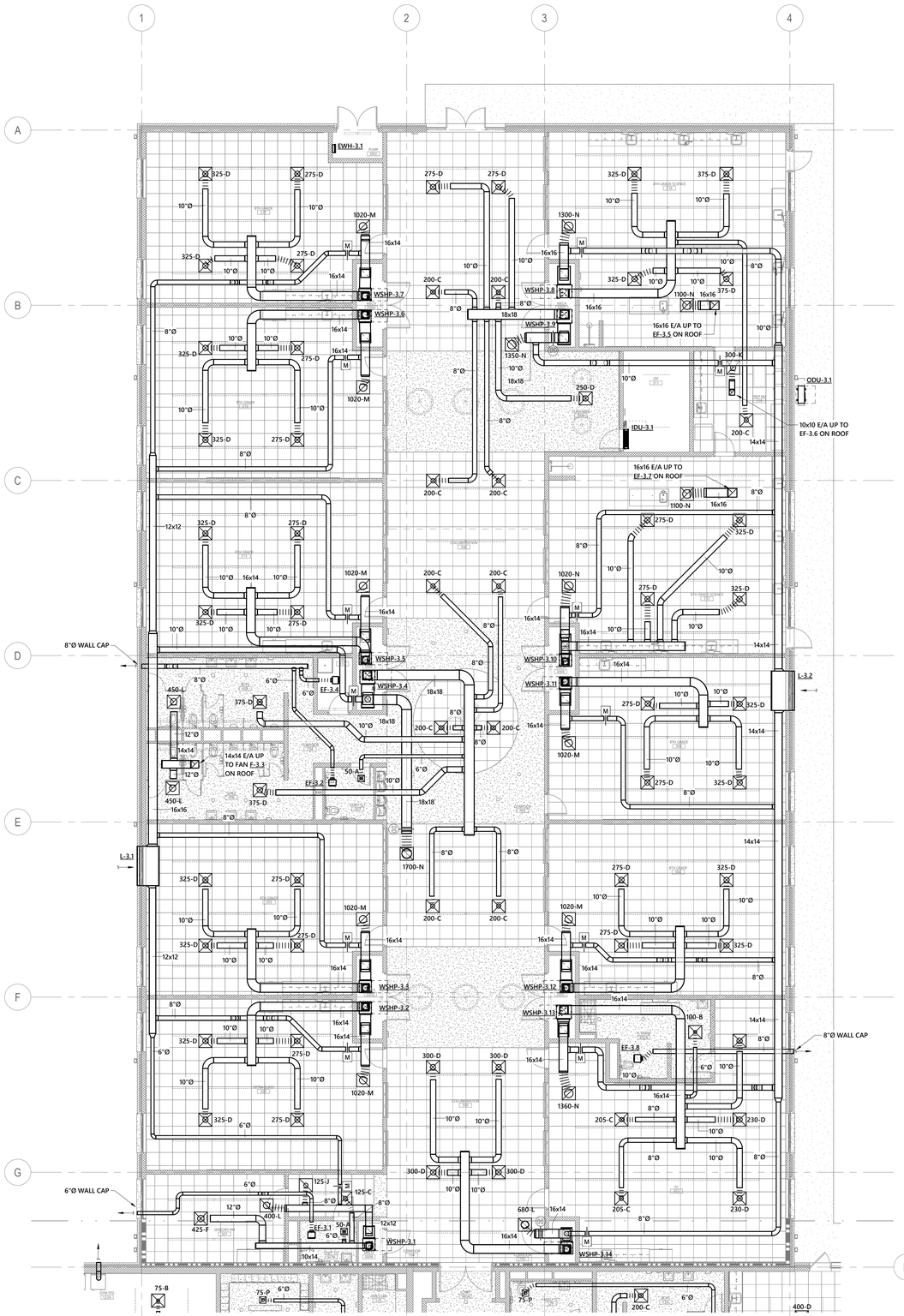
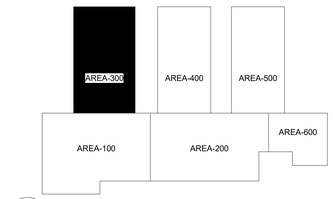


WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PLAN - AREA 300

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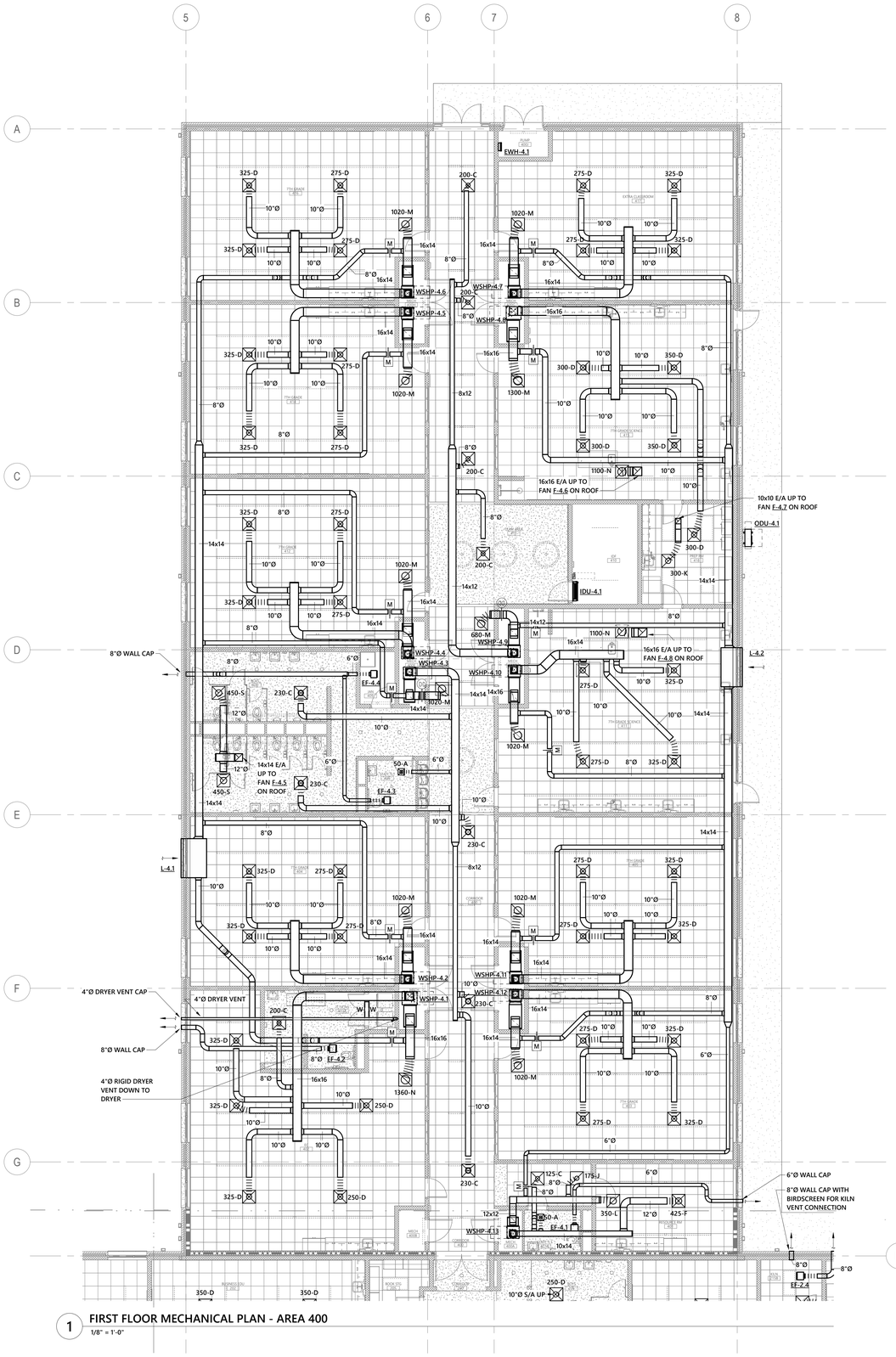
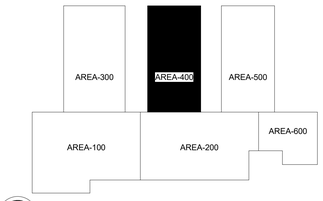


1 FIRST FLOOR MECHANICAL PLAN - AREA 400
1/8" = 1'-0"

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PLAN - AREA 400

M-114

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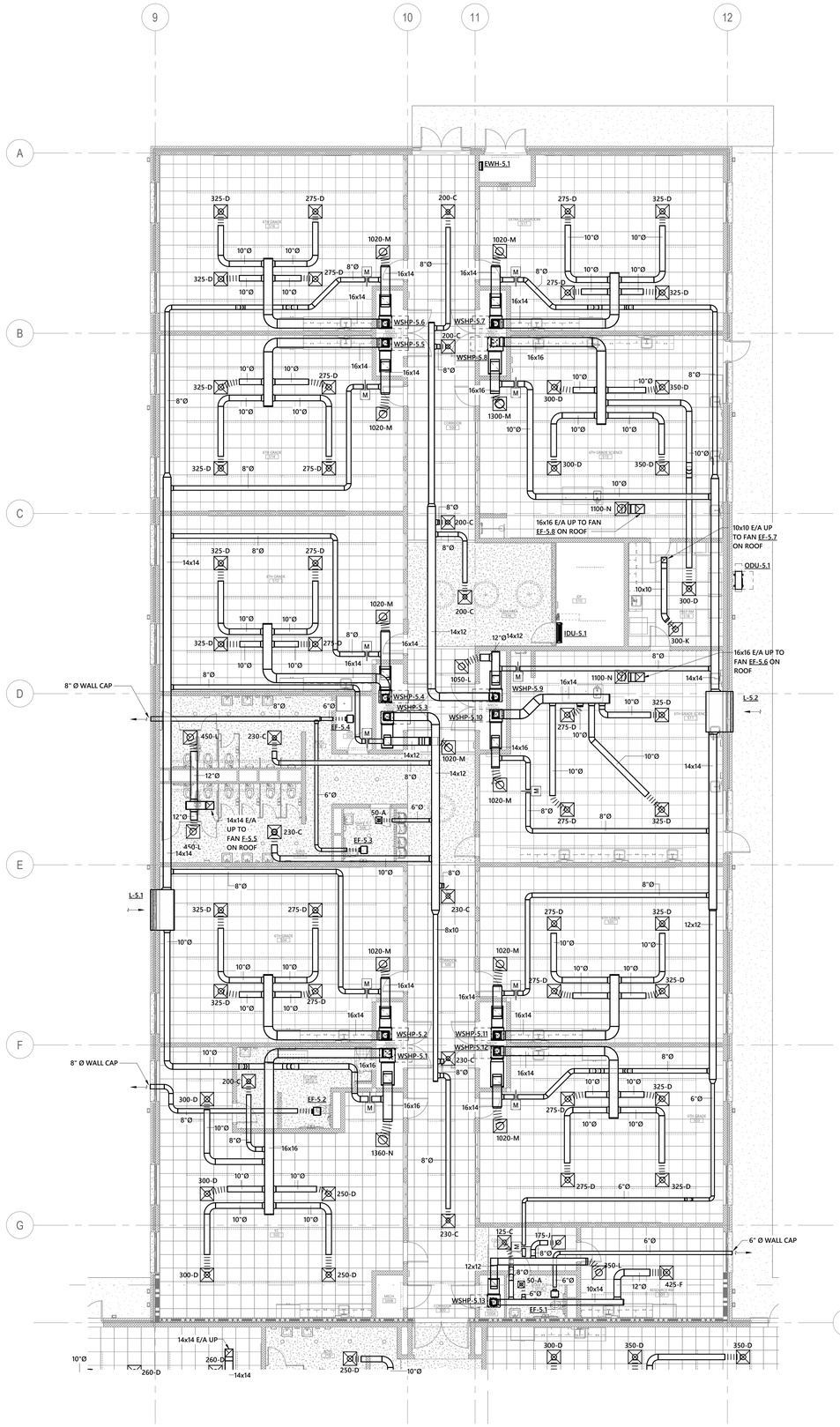
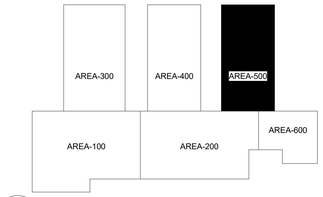


1 FIRST FLOOR MECHANICAL PLAN - AREA 500
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PLAN - AREA 500

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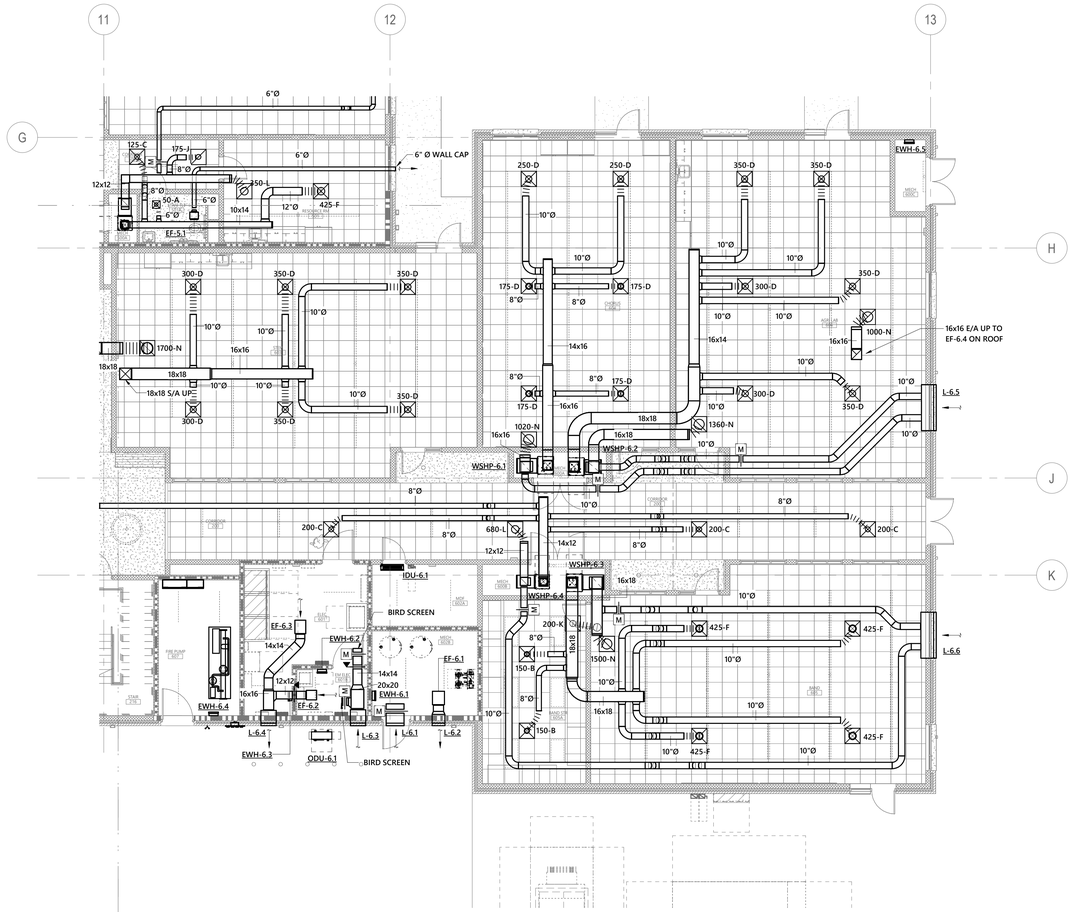
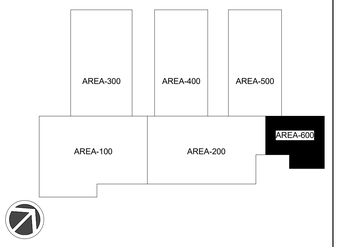


1 **FIRST FLOOR MECHANICAL PLAN - AREA 600**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PLAN - AREA 600

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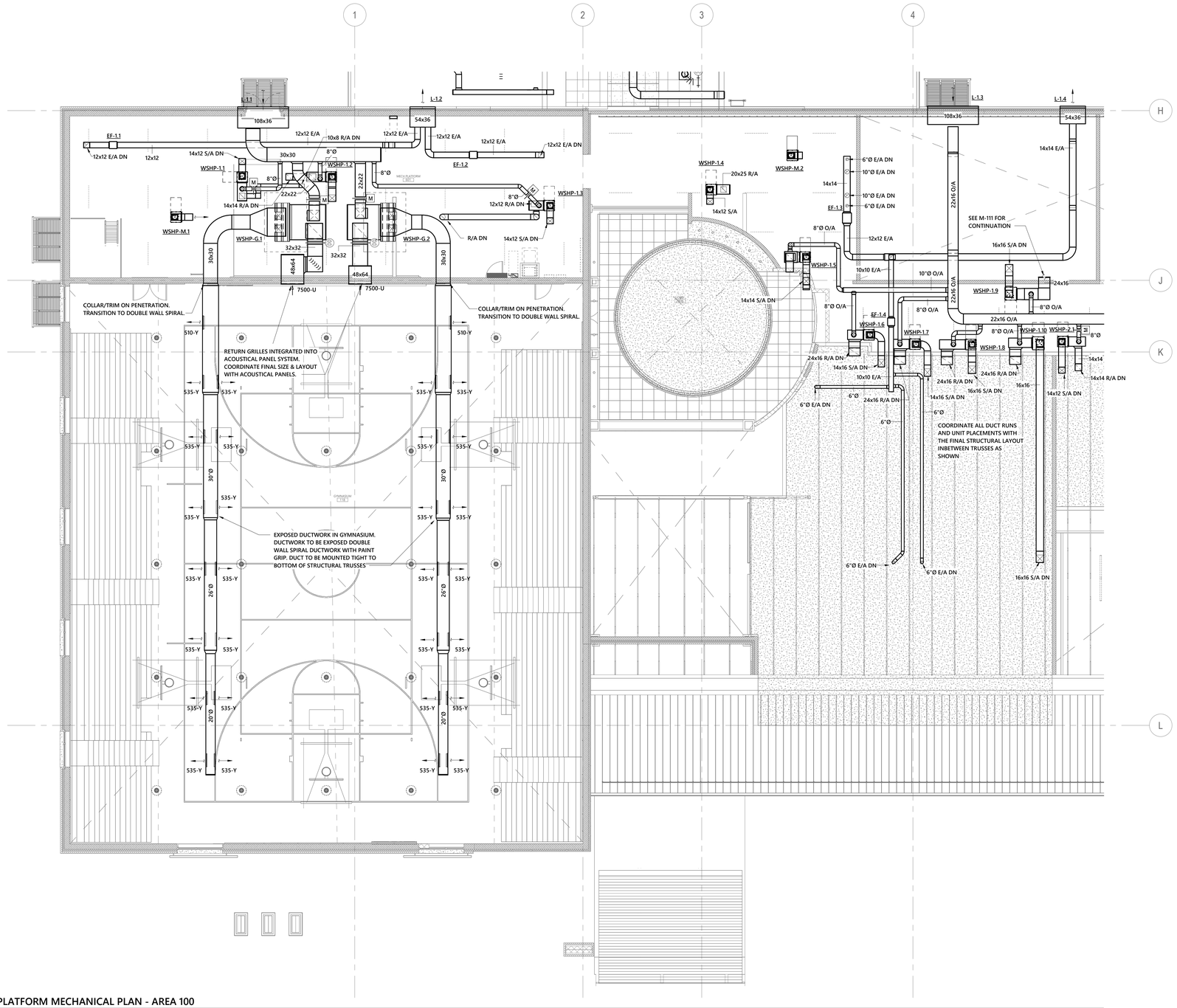
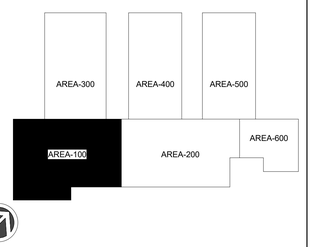


1 MECH. PLATFORM MECHANICAL PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM MECHANICAL PLAN - AREA 100

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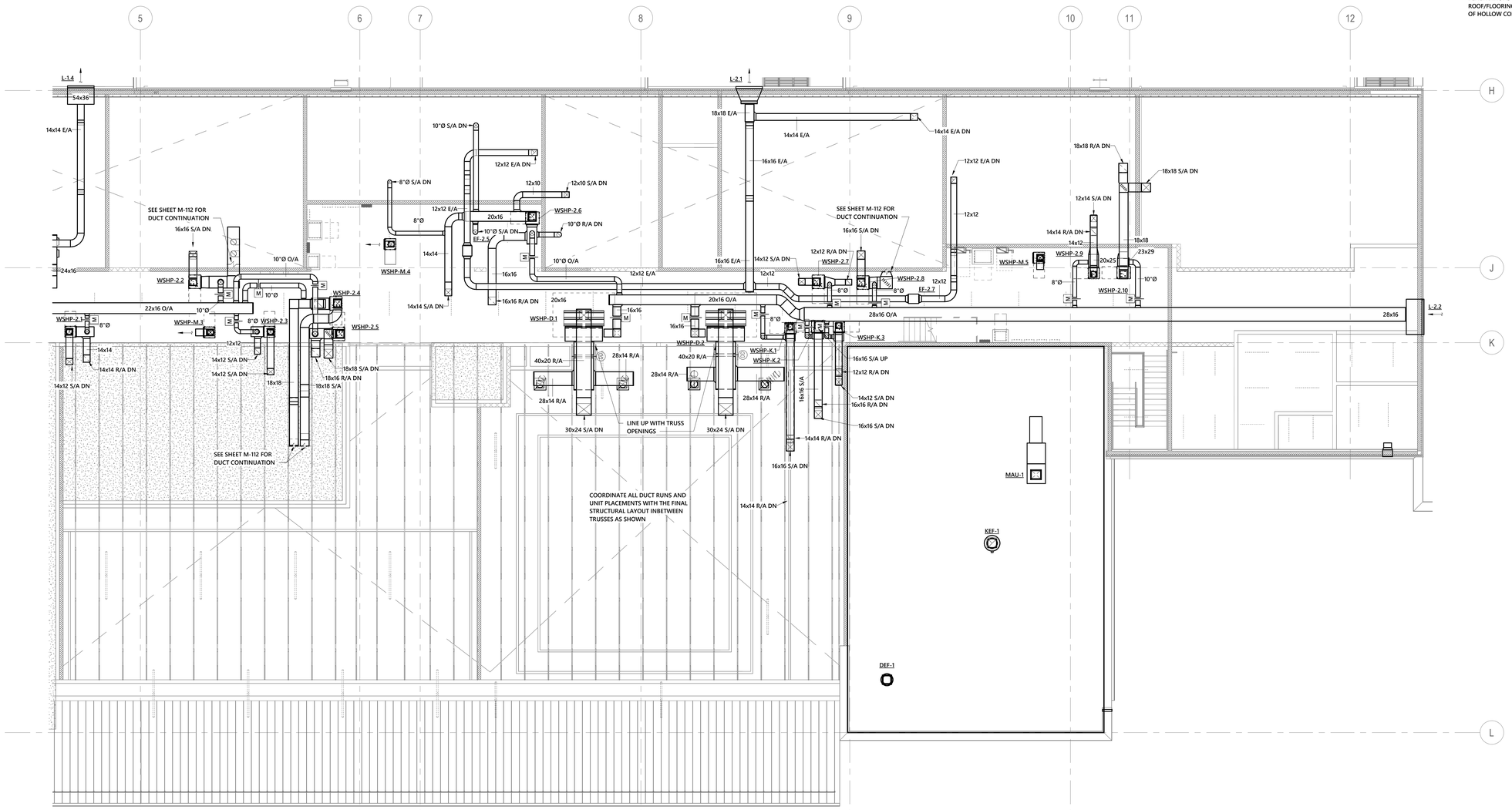

1 MECH. PLATFORM MECHANICAL PLANS - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM MECHANICAL PLAN - AREA 200

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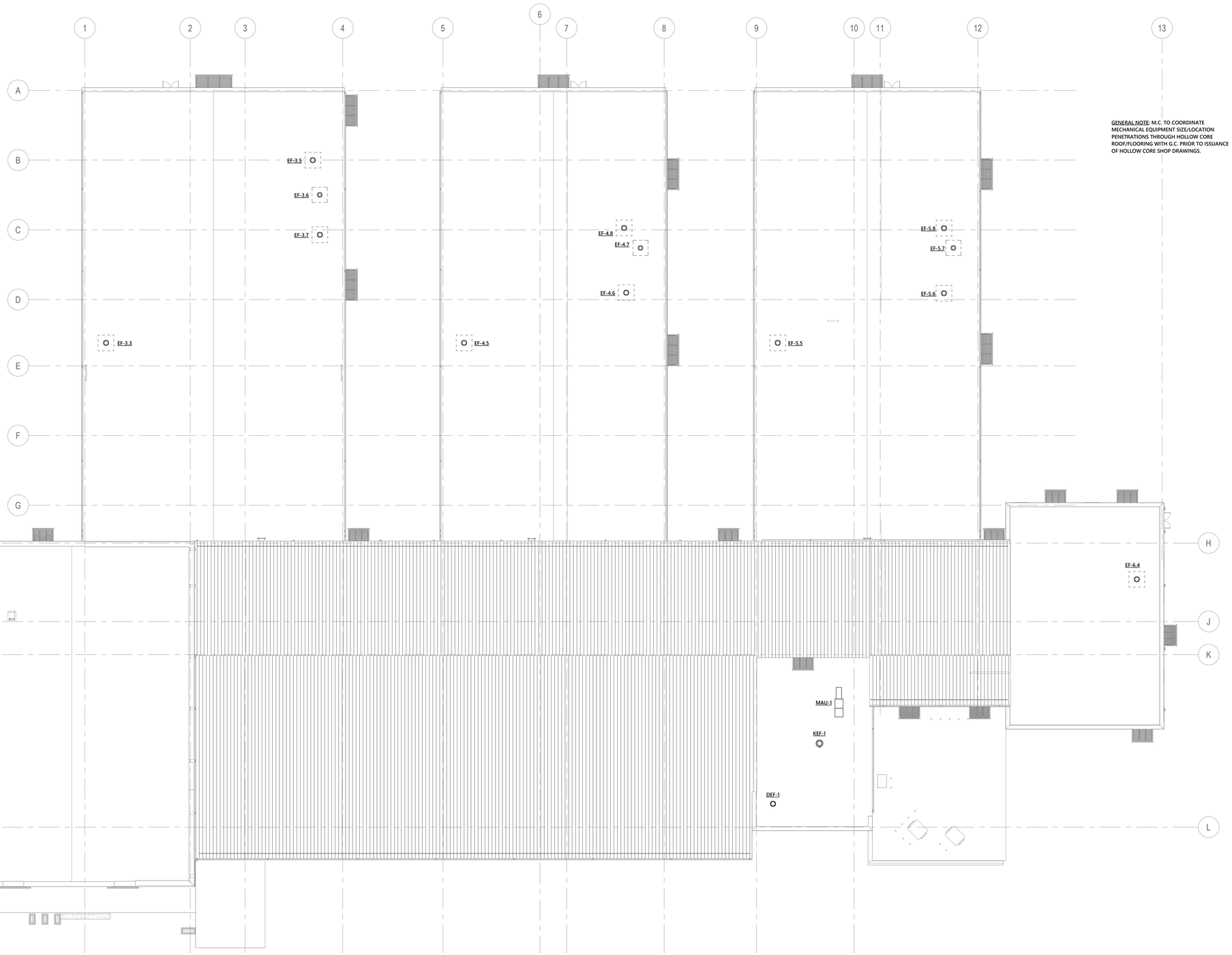

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1 **ROOF MECHANICAL PLAN**
1/16" = 1'-0"

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OVERALL ROOF MECHANICAL PLAN

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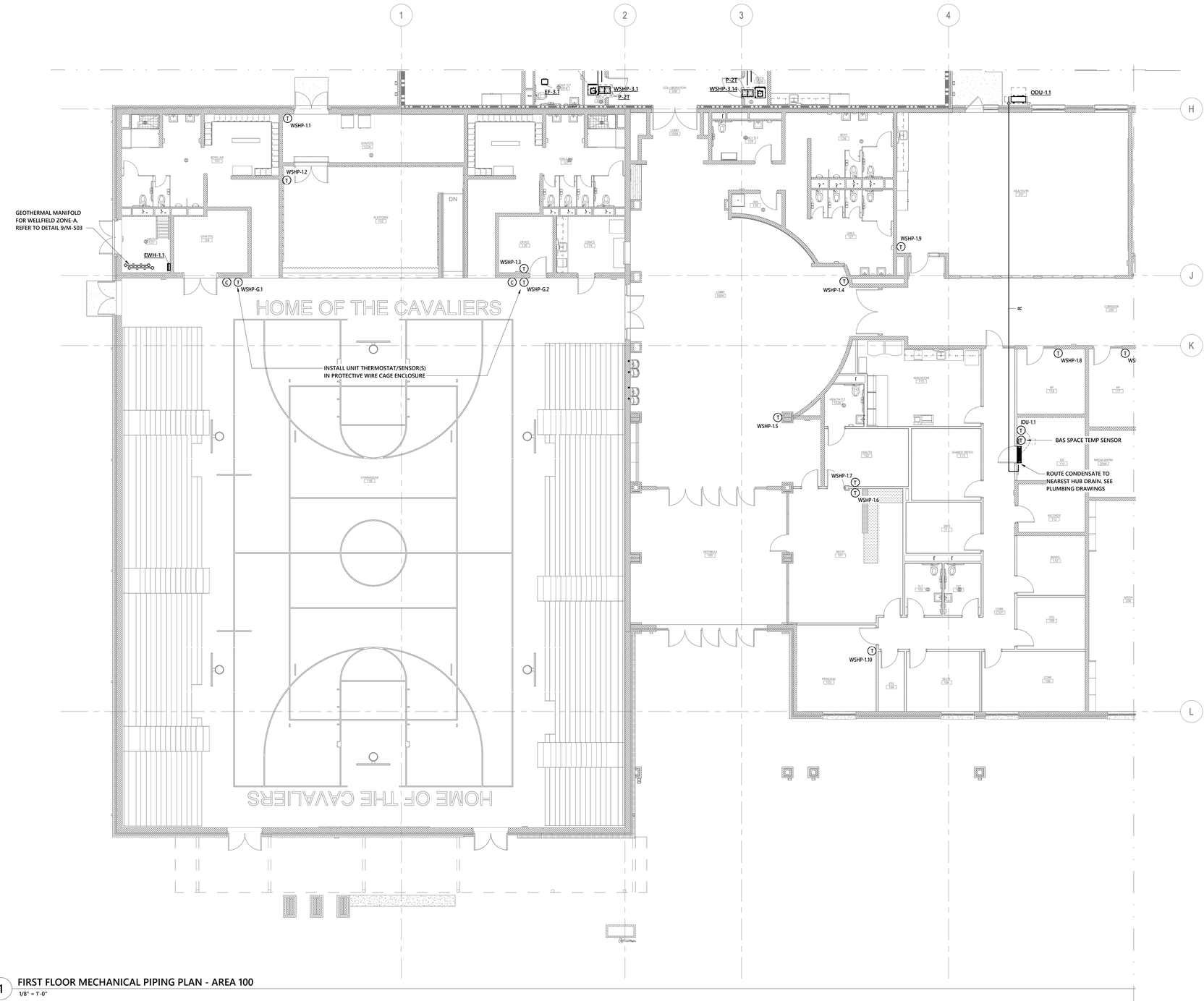
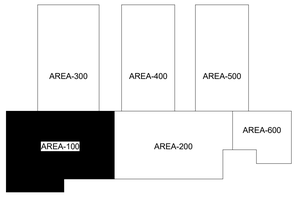


1 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PIPING PLAN - AREA 100

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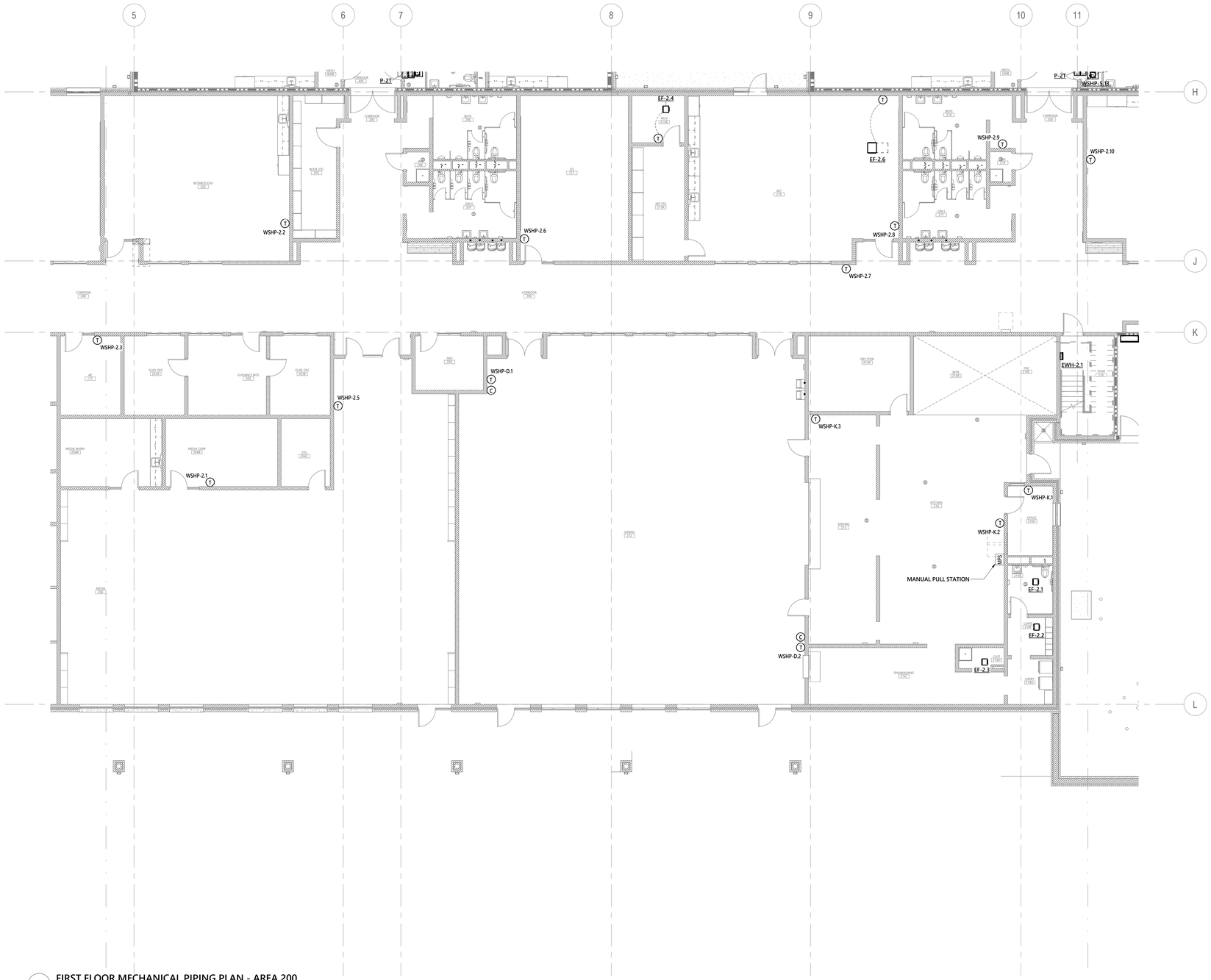
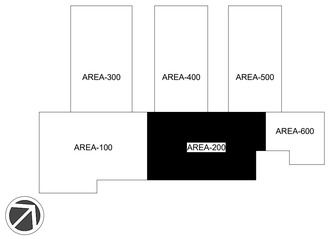


1 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PIPING PLAN - AREA 200

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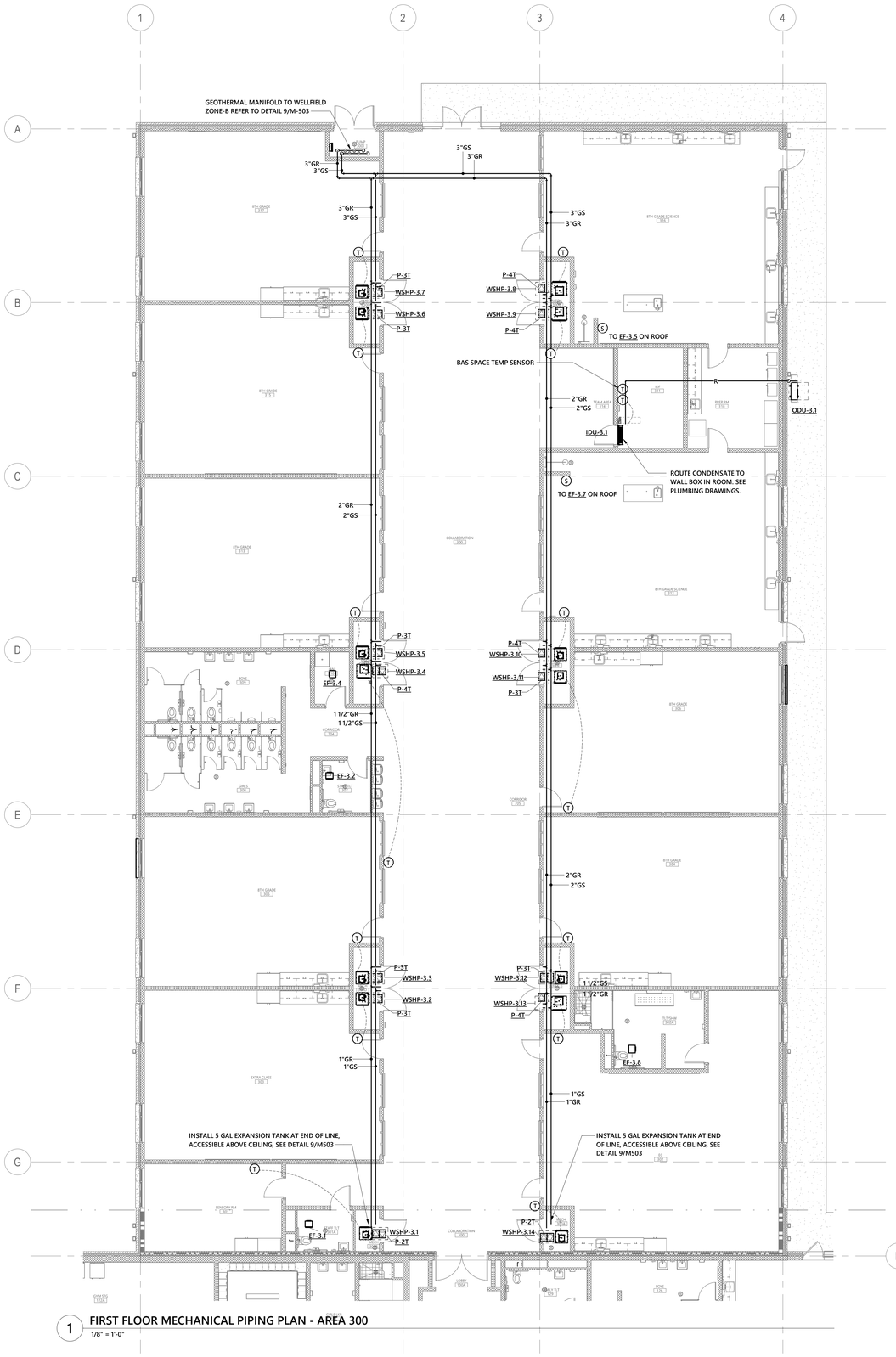
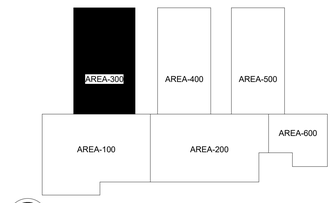


1 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PIPING PLAN - AREA 300

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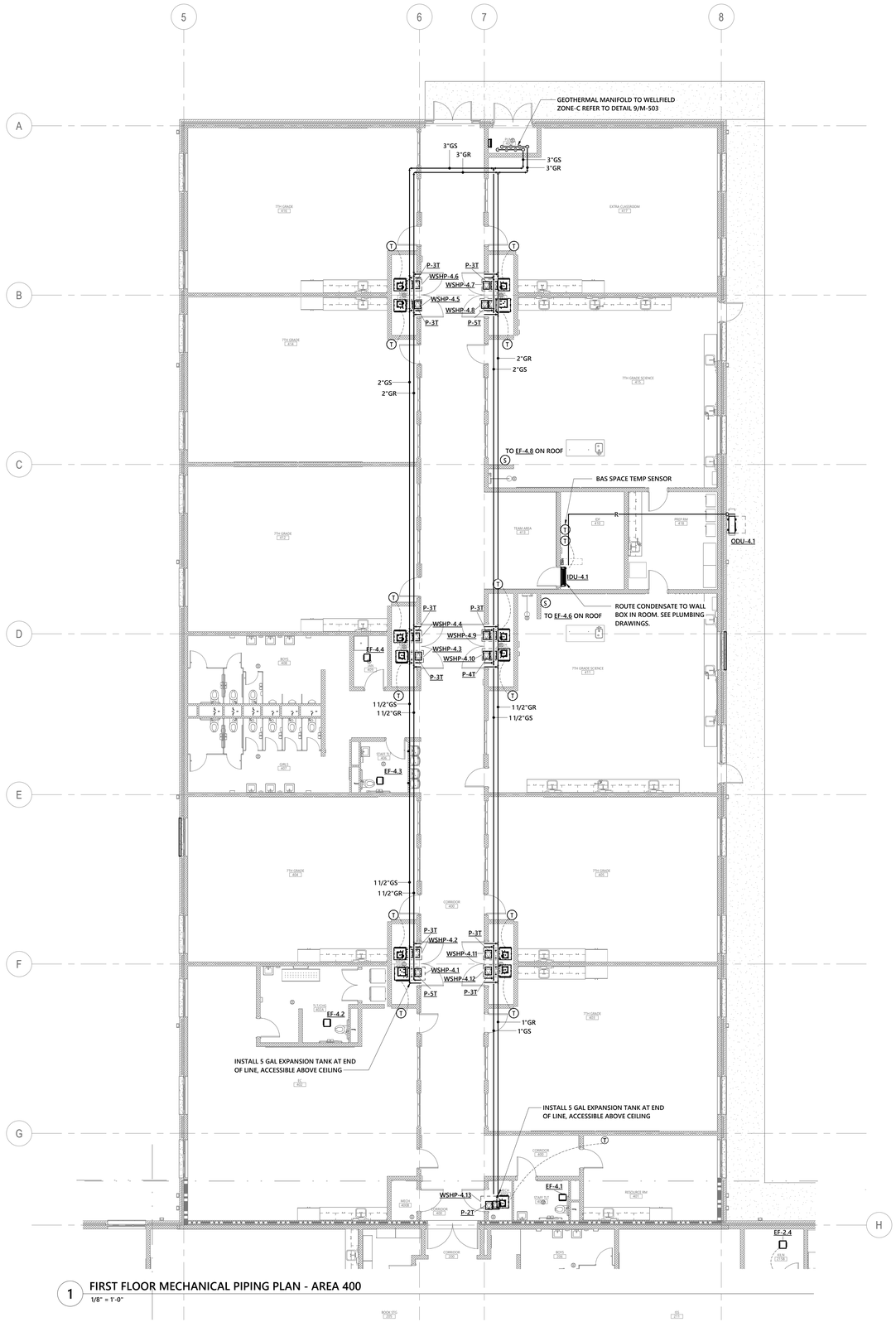
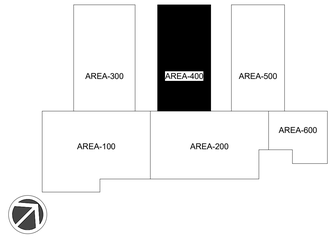


1 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 400
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: HFK
CHECKED BY: TAL

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FIRST FLOOR MECHANICAL PIPING PLAN - AREA 400

M-214

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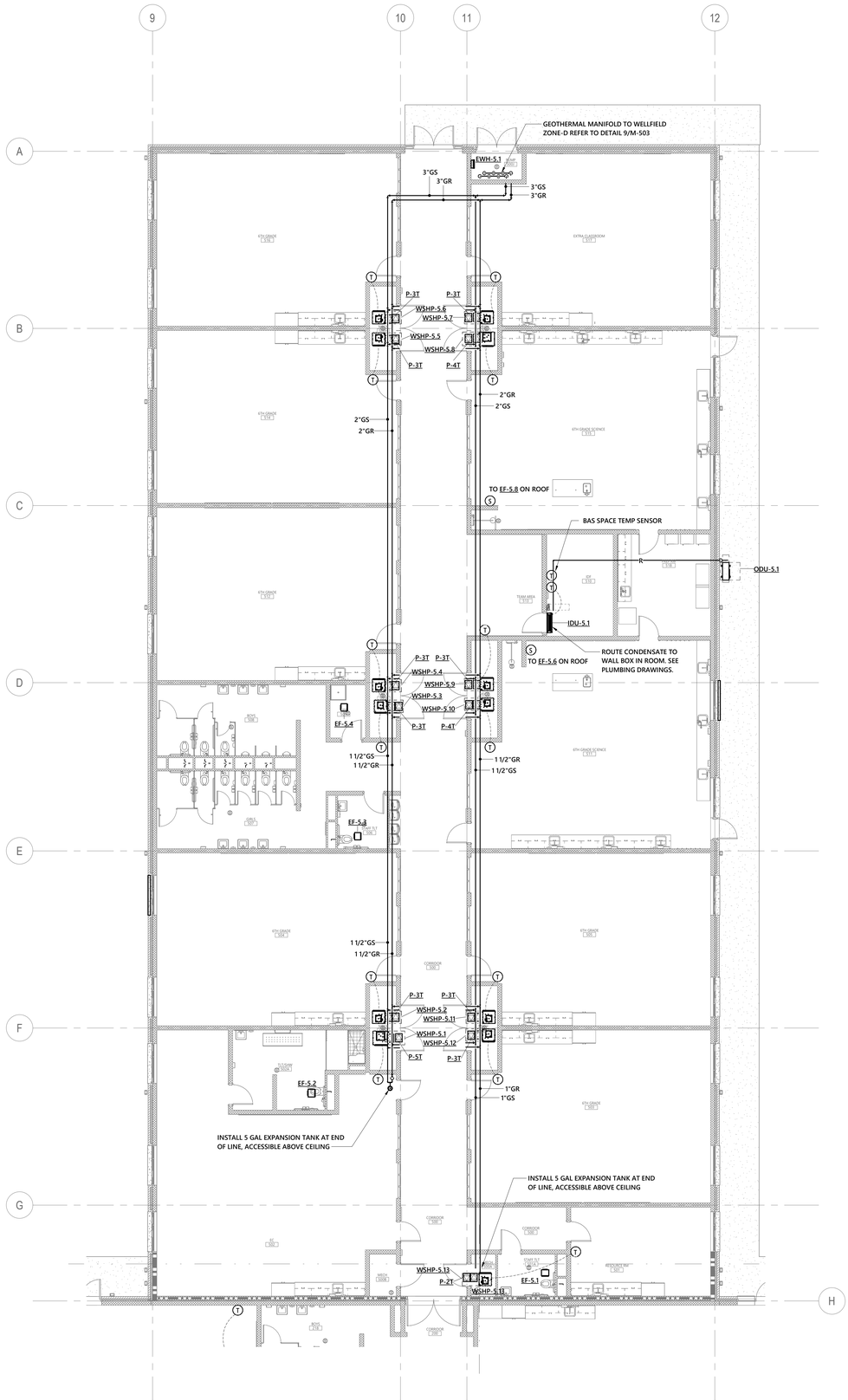
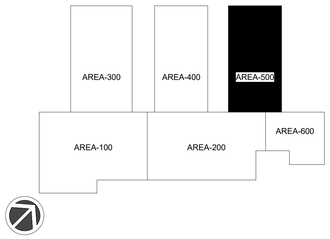


1 **FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500**
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PIPING PLAN - AREA 500

M-215

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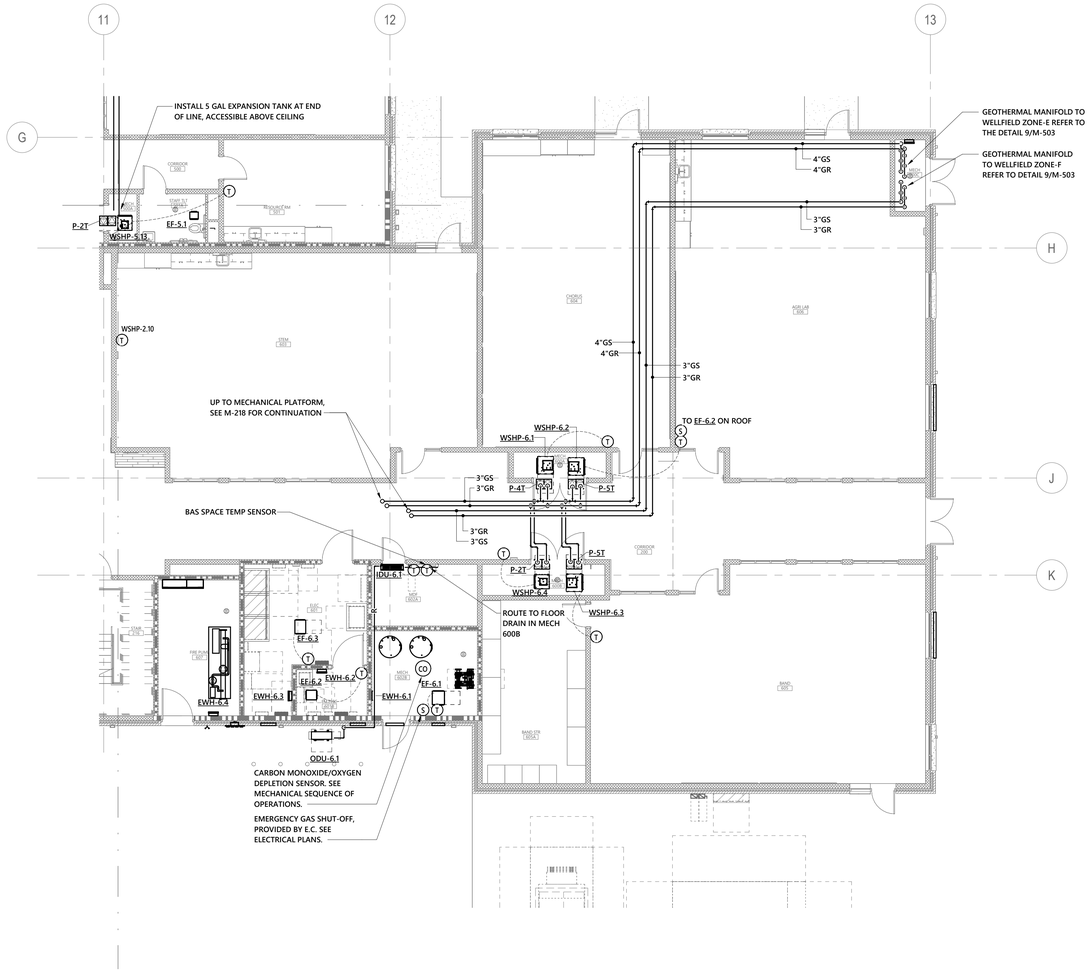
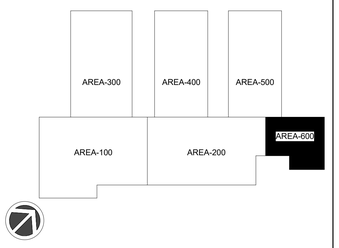


1 FIRST FLOOR MECHANICAL PIPING PLAN - AREA 600
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR MECHANICAL PIPING PLAN - AREA 600

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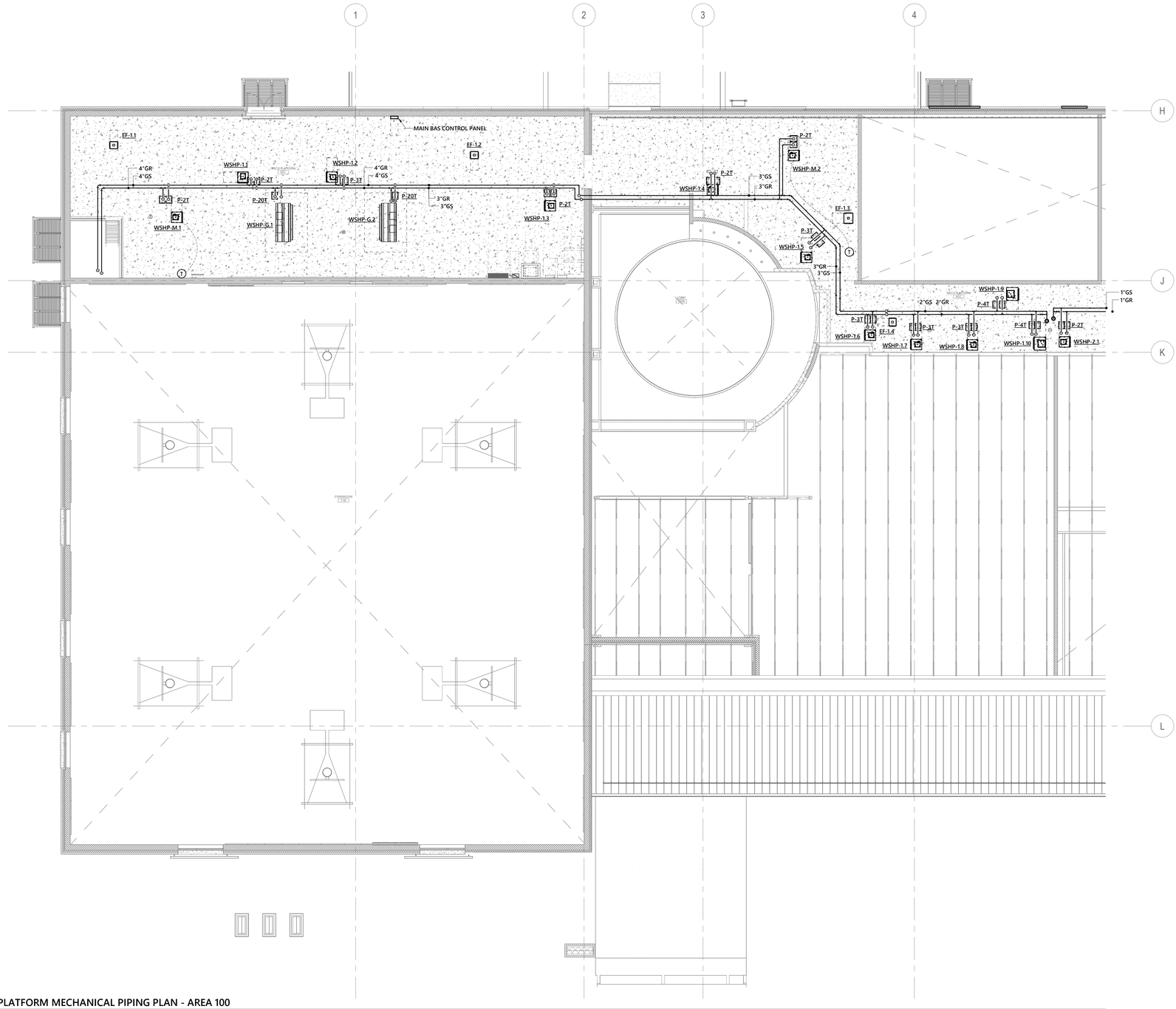
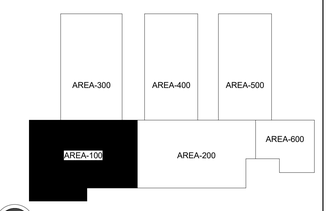


1 MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 100

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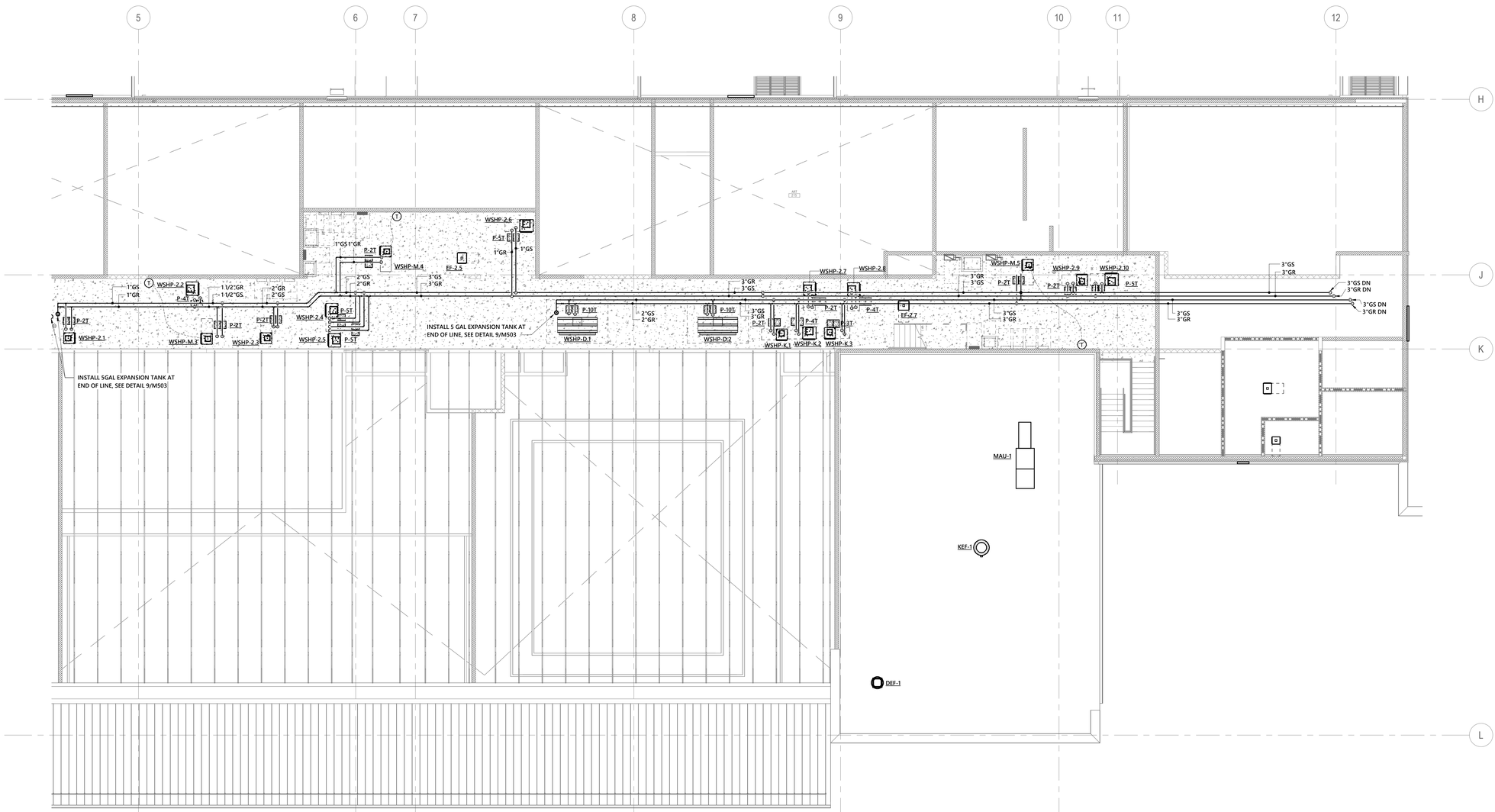
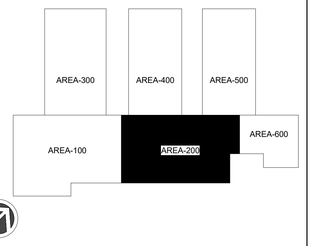


1 MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM MECHANICAL PIPING PLAN - AREA 200

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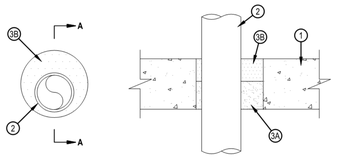
CAJ 2141

System No. C-AJ-2141

F Rating — 3 Hr
T Rating — 2 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating At 400 F — 4 CFM/Sq ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 6 in. (152 mm).
See Concrete Blocks* (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants — One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe or conduit and the perihery of the opening shall be min 1/2 in. (13 mm) to max 2 in. (51 mm). The pipe or conduit to be rigidly supported on both sides of floor or wall. The following types and sizes of pipes or conduits may be used:
A. Polyvinyl Chloride (PVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 40 PVC pipe for use in closed (process or supply) piping systems.
B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 3 in. (76 mm) diam (or smaller) SDR 17 CPVC pipe for use in closed (process or supply) piping systems.
3. Firestop System — The firestop system shall consist of the following:
A. Forming Material* — Min 2-1/2 in. (64 mm) thickness of forming material foamed into opening as a permanent form. Forming material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP812 or CP-AS CJP Foam Sealant
B. Fill, Void or Cavity Material* — Sealant — Min 2 in. (51 mm) thickness of fill material applied within annulus flush with top surface of floor or within both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Hilti Firestop Systems

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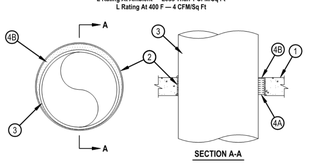
January 09, 2015

SYSTEM NO. C-AJ-2141

CAJ 1226

System No. C-AJ-1226

F Rating — 3 Hr
T Rating — 0 Hr
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating At 400 F — 4 CFM/Sq Ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 32 in.
2. Metallic Sleeve — (Optional) Nom 32 in. diam (or smaller) Schedule 40 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. above floor or beyond both surfaces of wall.
2A. Sheet Metal Sleeve — (Optional) Max 6 in. diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. below the bottom of the deck and a max of 1 in. above the top surface of the concrete floor.
2B. Sheet Metal Sleeve — (Optional) - Max 12 in. diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approx mid-height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place and may extend a max of 4 in. below the bottom of the deck and a max of 1 in. above the top surface of the concrete floor.
3. Through-Penetrant — One metallic pipe, tube or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. Penetrant may be installed with continuous point contact. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic penetrants may be used:
A. Steel Pipe — Nom 30 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 30 in. diam (or smaller) cast or ductile iron pipe.
C. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
E. Conduit — Nom 6 in. diam (or smaller) steel conduit.
F. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing (EMT).
4. Firestop System — The firestop system shall consist of the following:
A. Packing Material — Min 4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or sleeve or from both surfaces of wall or sleeve as required to accommodate the required thickness of fill material.
B. Fill, Void or Cavity Material* — Sealant — Min 1/4 in. thickness of fill material applied within the annulus, flush with top surface of floor or sleeve or with both surfaces of wall or sleeve. At the point or continuous contact locations between penetrant and concrete or sleeve, a min 1/4 in. diam bead of fill material shall be applied at the concrete or sleeve/ pipe penetrant interface on the top surface of floor and on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant
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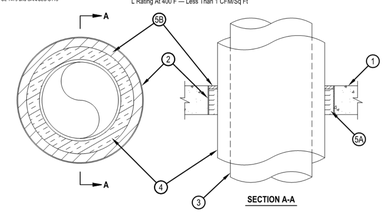
June 27, 2007

SYSTEM NO. C-AJ-1226

CAJ 5091

System No. C-AJ-5091

F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 29 in. (737 mm).
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces or extending a max of 3 in. (76 mm) above floor or beyond both surfaces of wall. If the steel sleeve extends beyond the top surface of the floor or both surfaces of the wall, the T Rating of the firestop system is 0 hr.
2A. Sheet Metal Sleeve — (Optional) - Max 6 in. (152 mm) diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.
2B. Sheet Metal Sleeve — (Optional) - Max 12 in. (305 mm) diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. (51 mm) larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. (25 mm) above the top surface of the floor.
3. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
C. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.

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July 18, 2011

System No. C-AJ-5091

CAJ 5091

F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft

4. Pipe Covering — Min 1/2 in. (13 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min 1/2 in. (13 mm) to max 12 in. (305 mm). When thickness of pipe covering is less than 2 in. (51 mm), the T Rating for the firestop system is 0 hr.
See Pipe Equipment Covering — Materials — (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4A. Pipe Covering — (Not Shown) — As an alternate to Item 4, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf or 224 kg/m³) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. The annular space shall be min 1/2 in. (13 mm) to max 12 in. (305 mm).
5. Firestop System — The firestop system shall consist of the following:
A. Packing Material — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant
*Bearing the UL Classification Mark

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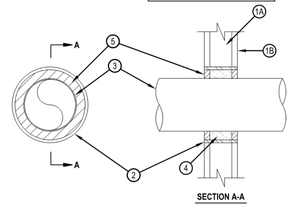
SYSTEM NO. C-AJ-5091

WL 7017

System No. W-L-7017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 1 Hr
	FTH Rating — 0 Hr



SECTION A-A

1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
B. Gypsum Board* — One layer of nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 8-5/8 in. (219 mm).
2. Metallic Sleeve — Nom 8 in. (203 mm) diam (or smaller) Schedule 40 (or heavier) steel sleeve cast into wall assembly with joint compound and installed flush with wall surfaces.
3. Air Duct — Nom 6 in. (152 mm) diam (or smaller) prefabricated No. 28 MSG galv sheet metal duct. A min 1/2 in. (13 mm) to max 1-1/2 in. (38 mm) annular space is required within the firestop system. Duct to be rigidly supported on both sides of wall assembly.
4. Forming Material* — Foamed plastic forming material foamed into opening as a permanent form. Forming material to be recessed from both surfaces of wall as required to accommodate the required thickness of fill material.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP812 or CP-AS CJP Foam Sealant
5. Fill, Void or Cavity Material* — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant
*Bearing the UL Classification Mark

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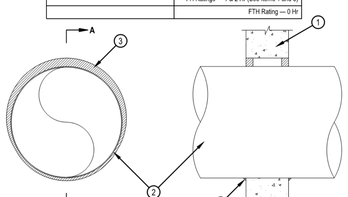
April 20, 2012

SYSTEM NO. W-L-7017

WJ 7022

System No. W-J-7022

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 & 2 Hr (See Items 1 and 3)	F Ratings — 1 & 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 1 & 2 Hr (See Items 1 and 3)
	FTH Rating — 0 Hr



SECTION A-A

1. Wall Assembly — Min 4-3/4 in. and 6 in. (121 and 152 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete for 1 and 2 hr ratings , respectively. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 21- 1/2 in (546 mm).
See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through-Penetrant — Nom galv steel duct to be installed concentrically or eccentrically within the firestop system. The annular space between duct and periphery of opening shall be min 0 in. (point contact) and max 1-1/2 in. (38 mm). Duct to be rigidly supported on both sides of wall assembly.
A. Spiral Wound HVAC Duct — Nom 20 in. (508 mm) diam (or smaller) No. 24 MSG (or heavier) galv steel spiral wound duct.
A. Sheet Metal Duct — Nom 12 in.(305 mm) diam (or smaller) No. 28 MSG (or heavier) galv sheet steel duct.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. and 1-1/4 in. (16 and 32 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly for 1 or 2 hr F Ratings, respectively. At the point contact location between duct and periphery of opening, a min 1/2 in. (13 mm) diam bead of sealant shall be applied at the periphery/duct interface on both surfaces of wall assembly.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 601S Elastomeric Firestop Sealant, CFS-S SIL GG Sealant, CFS-ONE Sealant or CP606 Flexible Firestop Sealant
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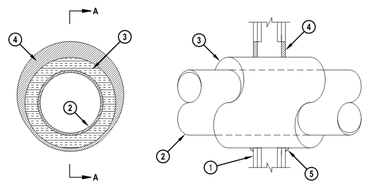
January 14, 2014

SYSTEM NO. W-J-7022

WL 5029

System No. W-L-5029

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)	F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)	FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft	FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
	L Rating At Ambient — 4 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 in. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.
B. Gypsum Board* — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in. (473 mm).
The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 in. (102 mm).
D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper pipe shall not exceed 4 in. (102 mm).
3. Pipe Covering* — Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above.
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

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Hilti Firestop Systems

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May 30, 2012

WL 5029

System No. W-L-5029

F Rating — 2 Hr
T Ratings — 0 and 1 Hr (See Items 2 and 4)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft

1. Wall Assembly — The 1, 2 or 3 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide for 1 and 2 hr F and FH rating and 3-1/2 in. (89 mm) wide for 3 hr F and FH rating and spaced max 24 in. (610 mm) OC.
B. Gypsum Board* — Min 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in. (473 mm).
The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be installed within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe — Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper tube shall not exceed 4 in. (102 mm).
D. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe. When the hourly F or FH Rating of the firestop system is 3 hr, the nom diam of copper pipe shall not exceed 4 in. (102 mm).
3. Pipe Covering* — Nom 1, 1-1/2 or 2 in. (25, 38 or 51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. For 1 and 2 hr F and FH Ratings, the annular space between insulated penetrant and periphery of opening shall be min 0 in. (point contact) to max 1-7/8 in. (48 mm). For 3 hr F and FH Ratings, the annular space shall be min 0 in. (point contact) to max 1-1/4 in. (32 mm).
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
The hourly T, FT, FTH Ratings of the firestop system are 1/2 hr for 1 hr rated walls and 1 hr for 2 hr rated walls. For 3 hr rated walls, the hourly T, FT and FTH Ratings when steel and iron pipes are used are 1 hr. For 3 hr rated walls, the hourly T, FT and FTH Ratings when copper penetrants are used are 1-1/4 hr for 2 in. (51 mm) thick pipe covering and 0 hr for pipe covering thickness less than 2 in. (51 mm).
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. (51 mm) thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 18 AWG stainless steel wire spaced max 12 in. (305 mm) OC. When the alternate pipe covering is used, the T and FT Rating shall be as specified in item 3 above.
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — For 1 and 2 hr F and FH Rating, min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. For 3 hr F and FH Rating, min 1 in. (25 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant

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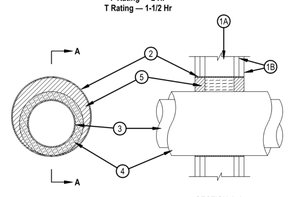
May 30, 2012

SYSTEM NO. W-L-5029

WL 7018

System No. W-L-7018

F Rating — 2 Hr
T Rating — 1-1/2 Hr



SECTION A-A

1. Wall Assembly — The 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* — Two layers of nom 5/8 in. thick gypsum wallboard as specified in the individual Wall and Partition Design No. Max diam of opening is 9 in.
2. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.016 in. thick (No. 28 gauge) galv steel sheet steel and having a min 2 in. lap along the longitudinal seam. Length of sleeve to be 1/8 in. less than thickness of wall. Sleeve to be installed by coiling the sheet metal to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.
3. Steel Duct — Nom 6 in. diam (or smaller) No. 28 gauge (or heavier) galv steel duct to be installed concentrically within the firestop system. Duct to be rigidly supported on both sides of the wall assembly.
4. Pipe Covering* — Nom 1 in. thick hollow cylindrical heavy density (3.5 pcf) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the steel sleeve shall be min 0 in. (point contact) to max 1 in.
See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. depth of sealant applied within the annulus, flush with each surface of the wall assembly. At the point contact location between insulated pipe and wall, a min 1/2 in. diam bead of sealant shall be applied on both surfaces of wall, lapping 1/4 in. beyond the periphery of the opening.
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC — FS-ONE Sealant
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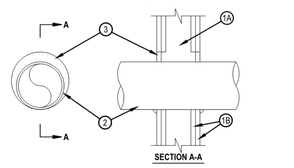
April 09 , 1998

SYSTEM NO. W-L-7018

WL 1054

System No. W-L-1054

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings —1 and 2 Hr (See Items 1 and 3)	F Ratings — 1 and 2 Hr (See Items 1 and 3)
T Rating — 0 Hr	FT Rating — 0 Hr
L Rating (Without Movement) at Ambient — Less Than 1 CFM/sq ft	FH Ratings —1 and 2 Hr (See Items 1 and 3)
L Rating (Without Movement) at 400°F — Less Than 1 CFM/sq ft	FTH Rating — 0 Hr
M Rating (Movement) — See Table 1	FTH Rating — 0 Hr
	L Rating at Ambient — Less Than 5.1 L/s/m2
	L Rating at 204°C — Less Than 5.1 L/s/m2



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC. For M Rating, steel studs to be min 3-5/8 in. (92 mm) wide. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing of the opening.
B. Gypsum Board* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.
The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly. The M Rating is applicable only to 1 hr rated walls.
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January 21, 2020

System No. W-L-1054

2. Through-Penetrants — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
A. Steel Pipe — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
C. Conduit — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) . diam steel conduit.
D. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
E. Copper Pipe — Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX Intumescent Sealant

Movement Direction	Penetrant Item	Nominal Penetrant Diameter	Annular Space	Movement	Sealant Depth	F-Rating	L Rating with Movement
Y	2A, 2C*	2 in.	Max 2-1/4 in.	5%	5/8 in.	1 hr	N/A
Z	2A, 2C*	2 in.	2-1/4 in.	0.25 in.	5/8 in.	1 hr	N/A

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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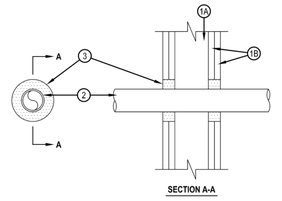
January 21, 2020

SYSTEM NO. W-L-1054

WL 3095

System No. W-L-2098

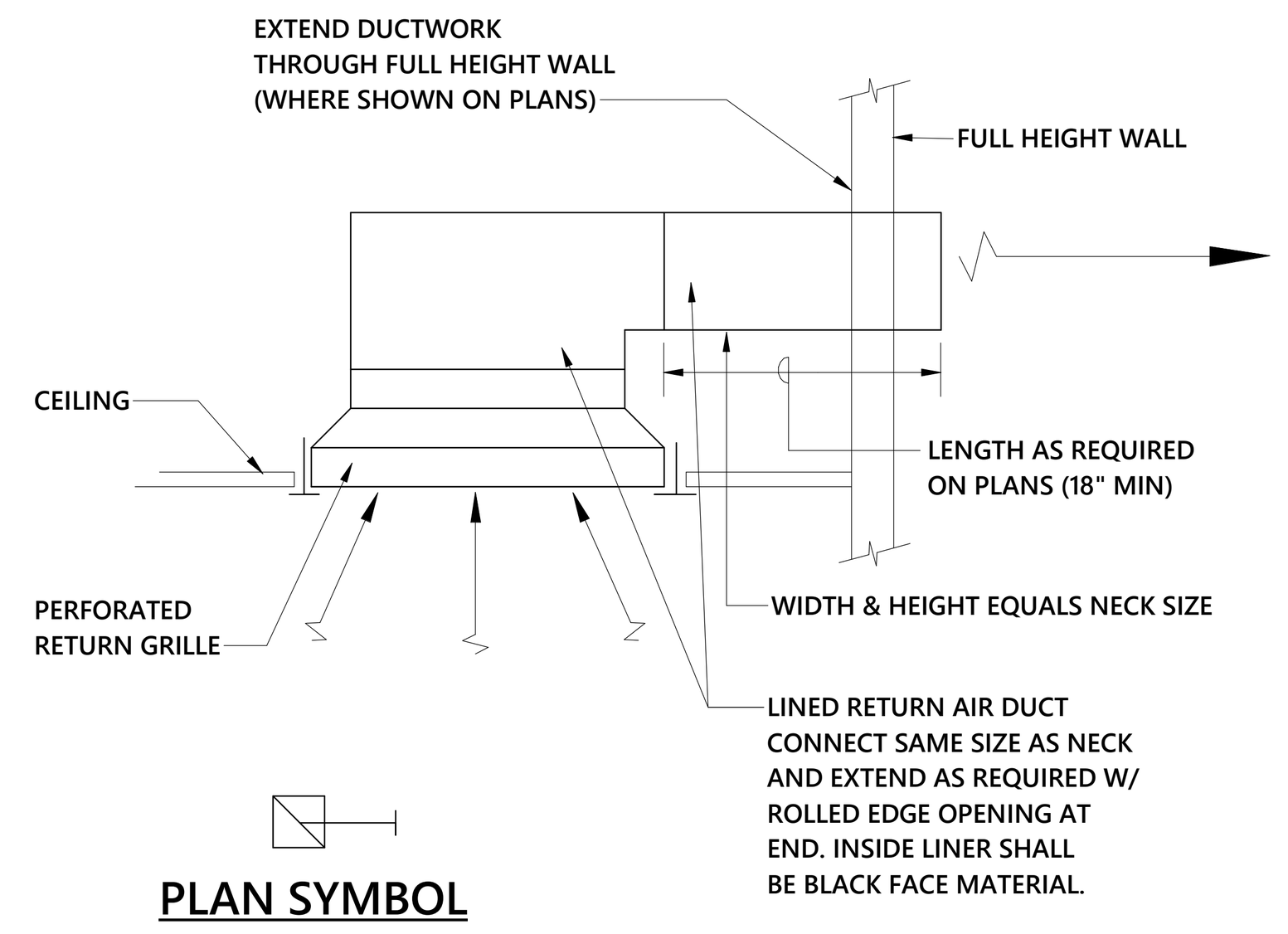
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1 and 2 Hr (See Item 1)
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating At 400 F — 4 CFM/Sq Ft



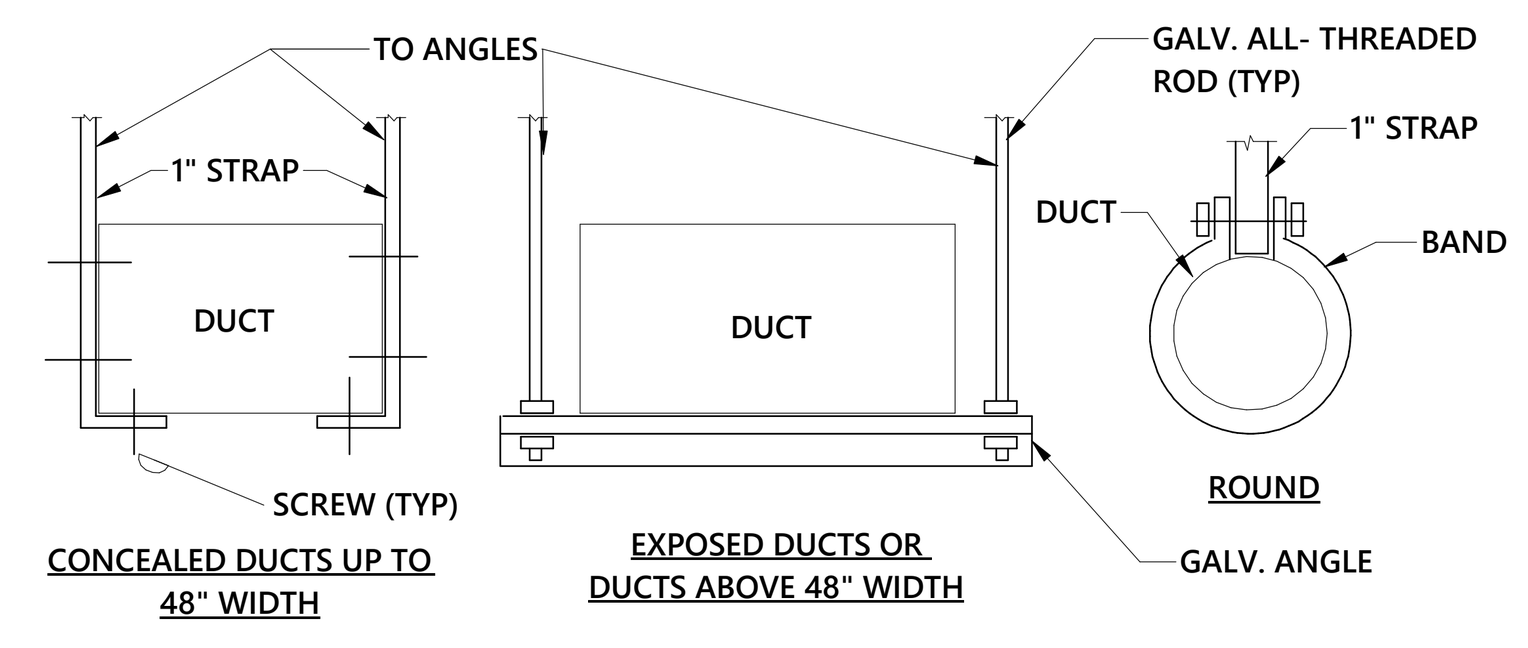
SECTION A-A

1. Wall Assemb

ADA AND LEGAL DISCLAIMER: This document is intended to comply with the requirements of the Americans with Disabilities Act (ADA). However architects and engineers are not licensed to interpret laws or give advice concerning laws. The owner should have this document reviewed by his attorney to determine if it complies with ADA and other laws.



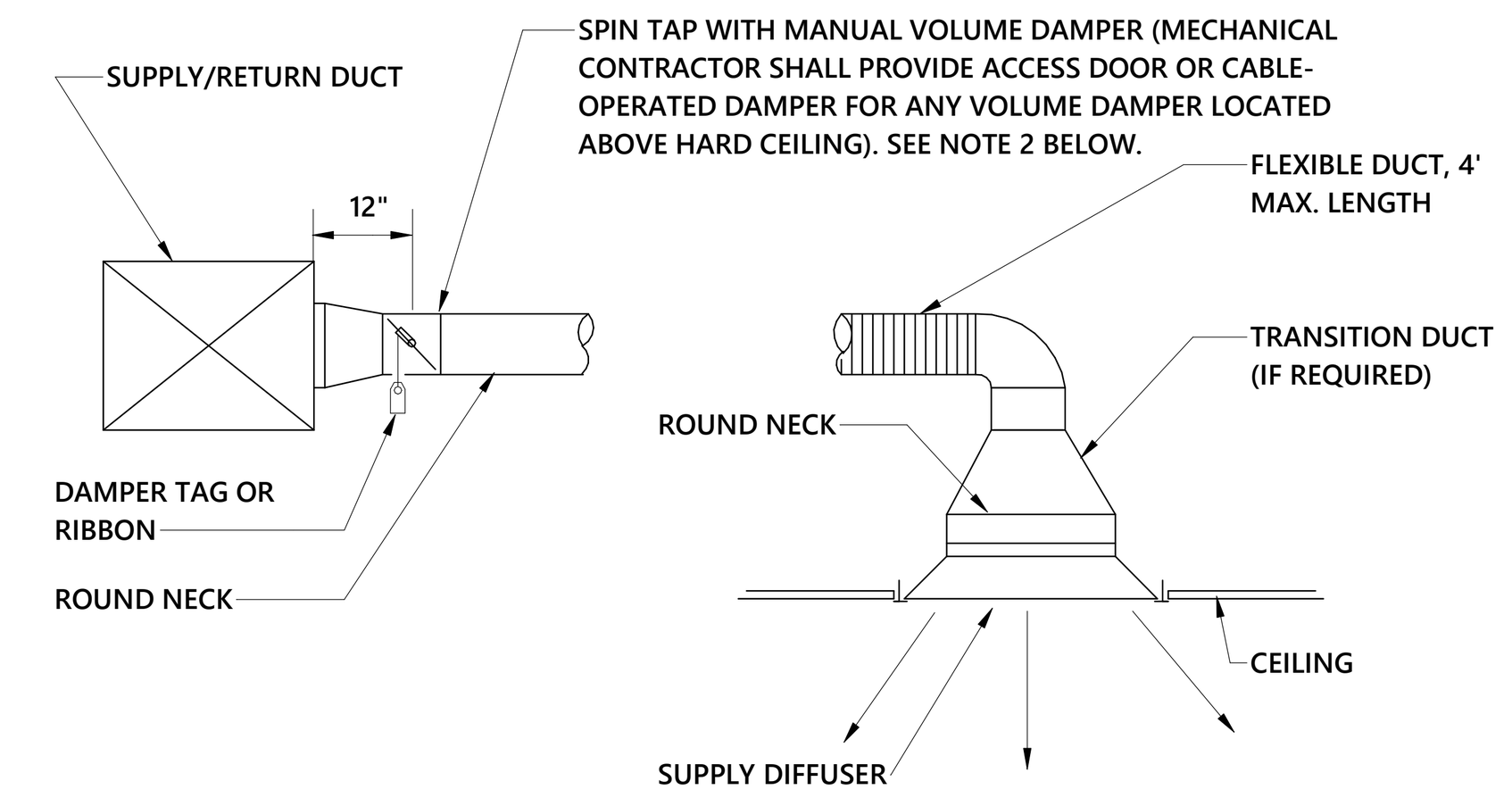
5 RETURN GRILLE W/SOUND ATTENUATION
NOT TO SCALE



LOW PRESSURE DUCTWORK

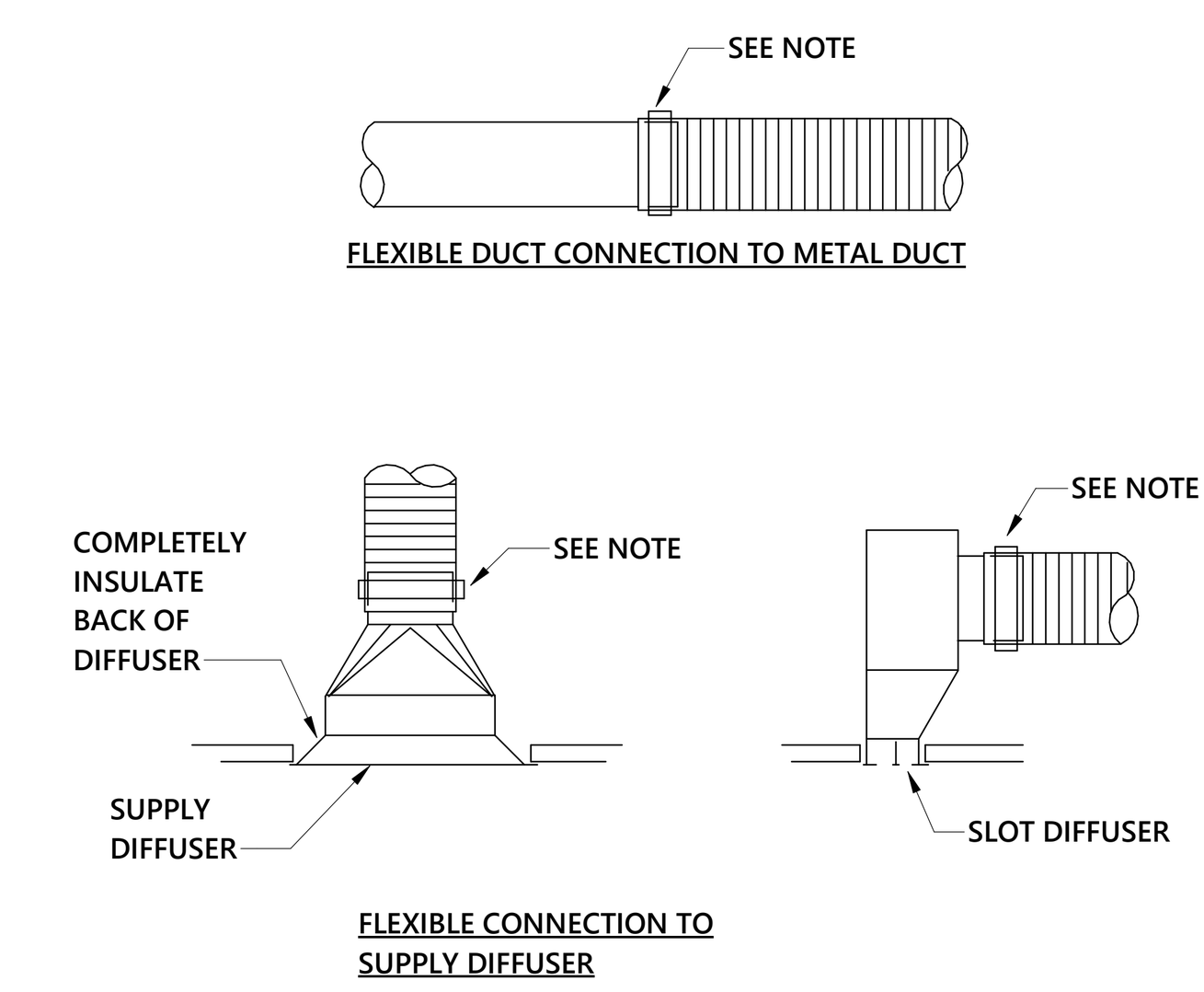
NOTE:
ALL DUCTWORK AND EQUIPMENT HANGERS AND SUPPORTS MUST BE PRUCHASED THRU THE METAL DECKING MANUFACTURER. HANGERS SCREWED INTO THE DECK WILL NOT BE ACCEPTABLE. COORDINATE WITH GENERAL CONTRACTOR.

4 DUCT HANGER
NOT TO SCALE



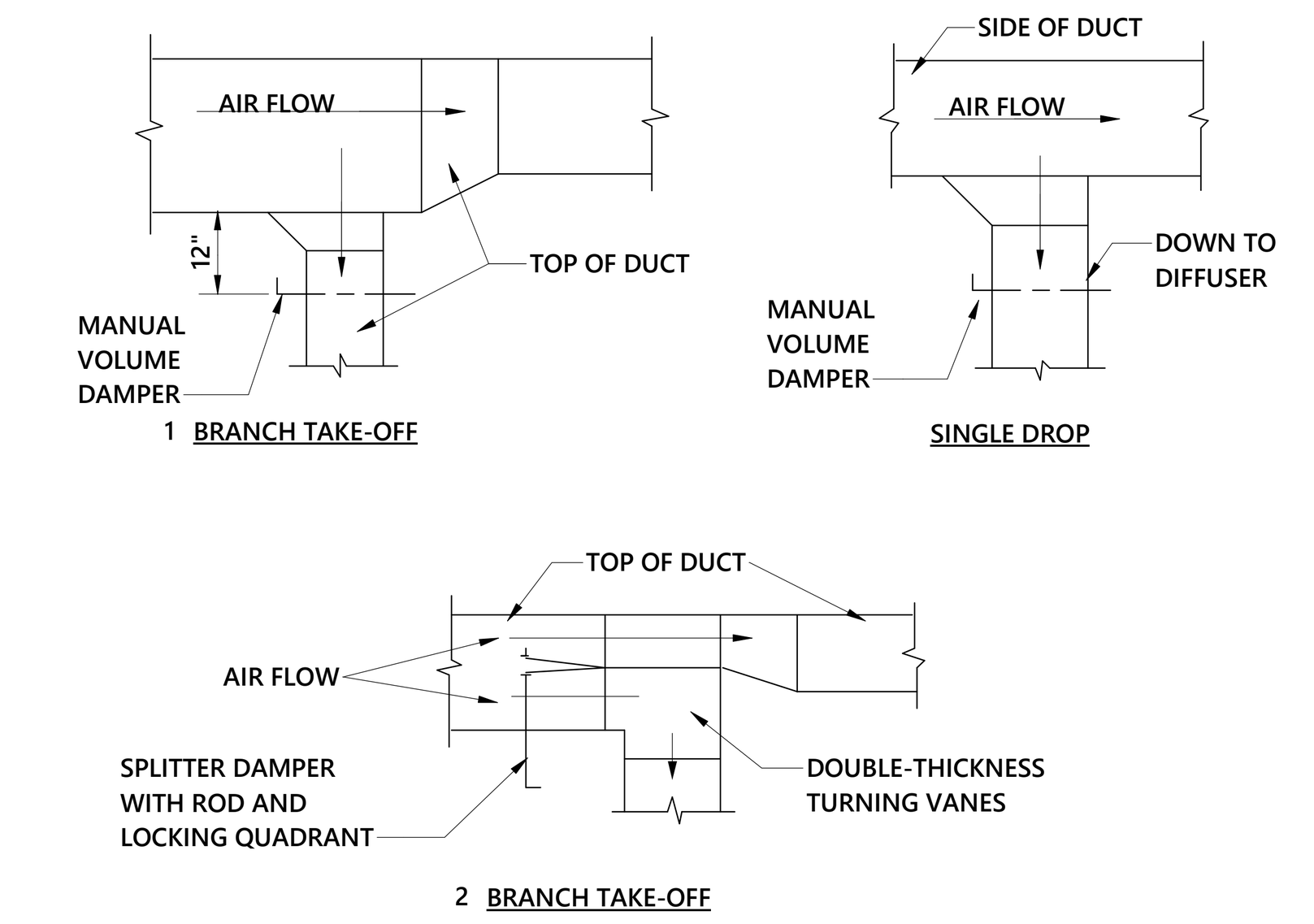
NOTE:
1. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST RUNOUTS.
2. ALL MANUAL VOLUME DAMPERS (FOR INSULATED DUCTWORKS) SHALL BE PROVIDED WITH AN ELEVATED REGULATOR (STAND-OFF) EQUAL TO DURO DYNE SEST SERIES AND FULL-LENGTH SHAFT. STAND SHALL EXTEND A MINIMUM OF 2" BEYOND DUCTWORK WITH EXTENDED TAB/SHAFT.
3. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR DESIRED DAMPER ACCESS STYLE CABLE-OPERATED DAMPER ADJUSTMENT SHALL BE THROUGH AIR TERMINAL. FACE OPERATION (CONCEALED MOUNTING) OR THROUGH CEILING-MOUNTED RECESSED PORTS EQUAL TO MAT RT-CCM.

3 SPIN TAP TO ROUND NECK DIFFUSER
NOT TO SCALE



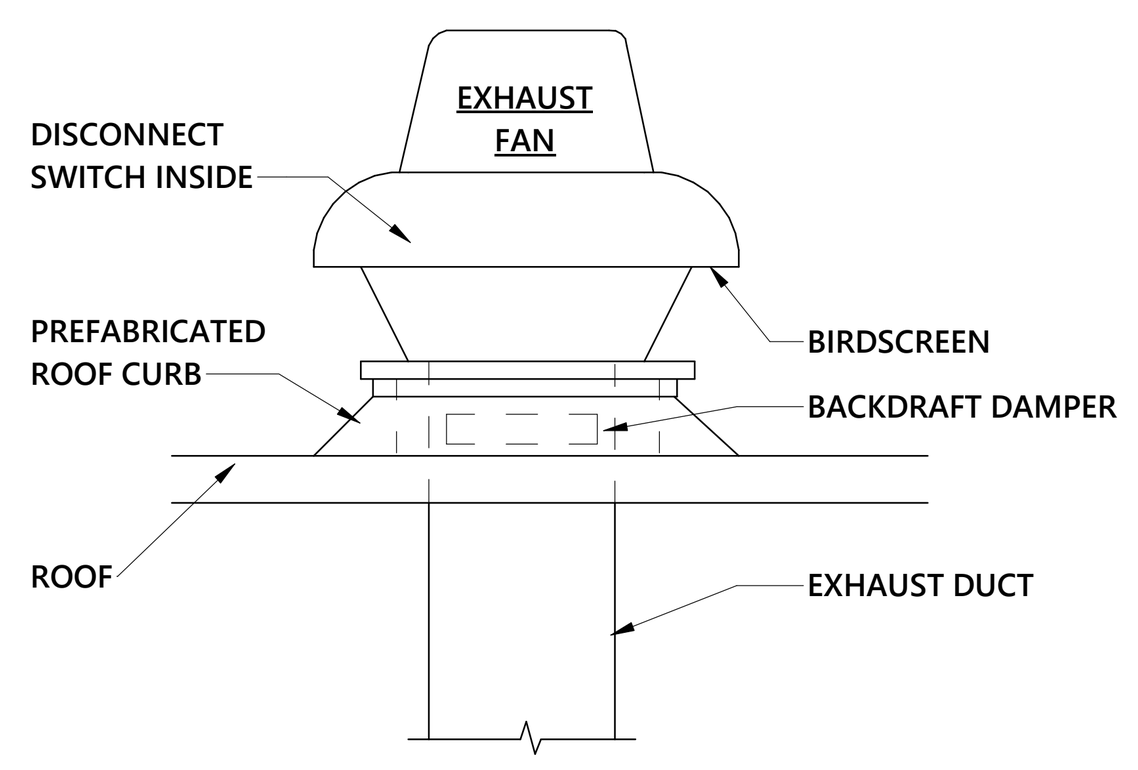
NOTE:
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH APPROVED STRAP AND SEALANT.

2 FLEX CONNECTION DETAIL
NOT TO SCALE



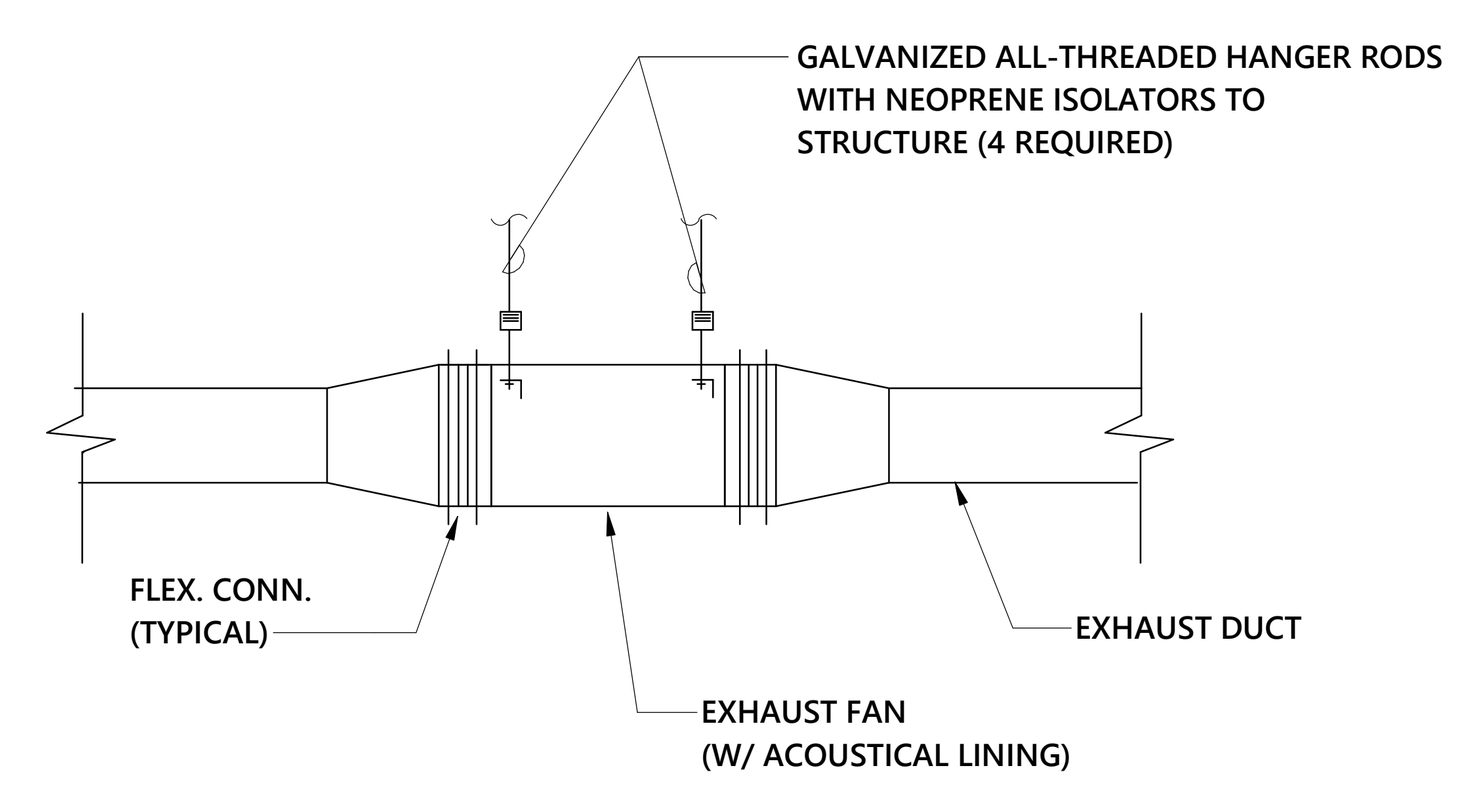
NOTE:
1. USE BRANCH TAKE-OFF (1) WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF (2) WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST SINGLE DROP DUCT RUNS.

1 DUCTWORK DETAILS
NOT TO SCALE



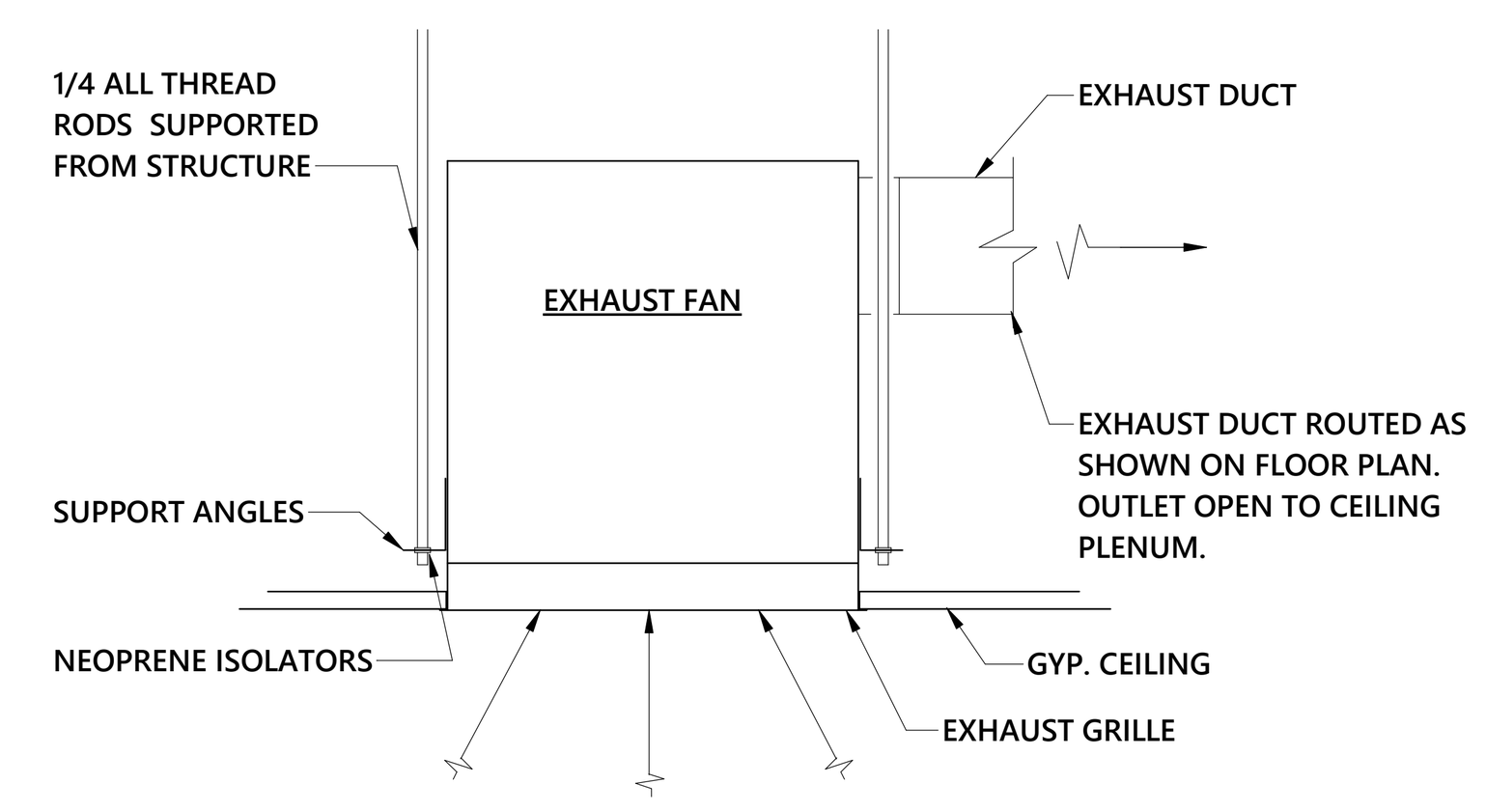
NOTE:
1. SECURED FAN TO CURB WITH NON-FERROUS SCREWS. MIN. 2 PER SIDE, 4-INCHES FROM CORNERS AND MAX, 12- INCHES ON CENTER. PROVIDE EDPM WASHERS FOR BOTH SIDES OF ROOF CURB.

10 EXHAUST FAN ON FLAT ROOF DETAIL
NOT TO SCALE

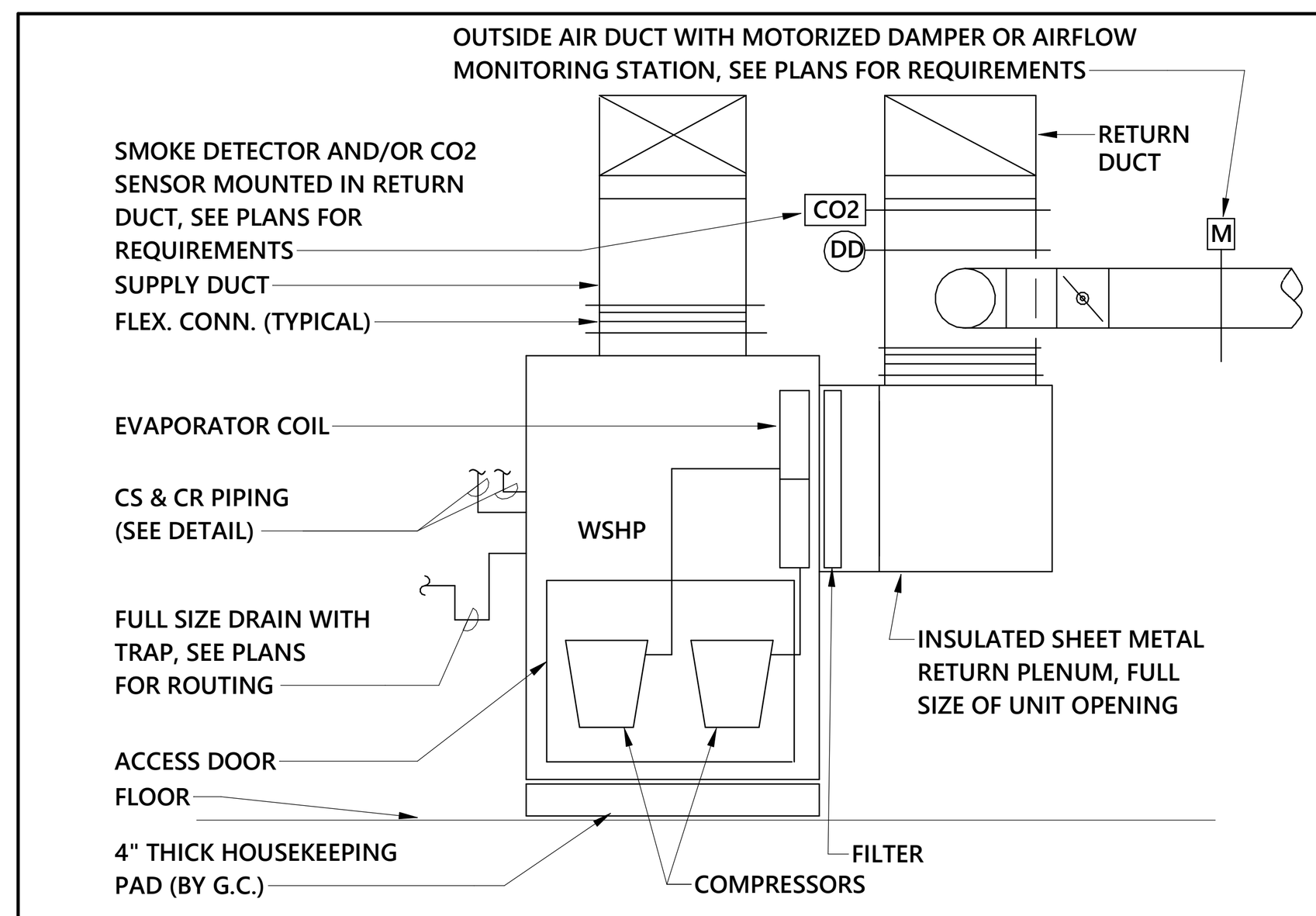


NOTES:
1. COORDINATE LOCATION OF FAN WITH OTHER TRADES TO INSURE SERVICE CLEARANCES.
2. MECHANICAL CONTRACTOR SHALL PROVIDE ACCESS DOOR IN CEILING IF REQUIRED.

9 INLINE EXHAUST FAN DETAIL
NO SCALE

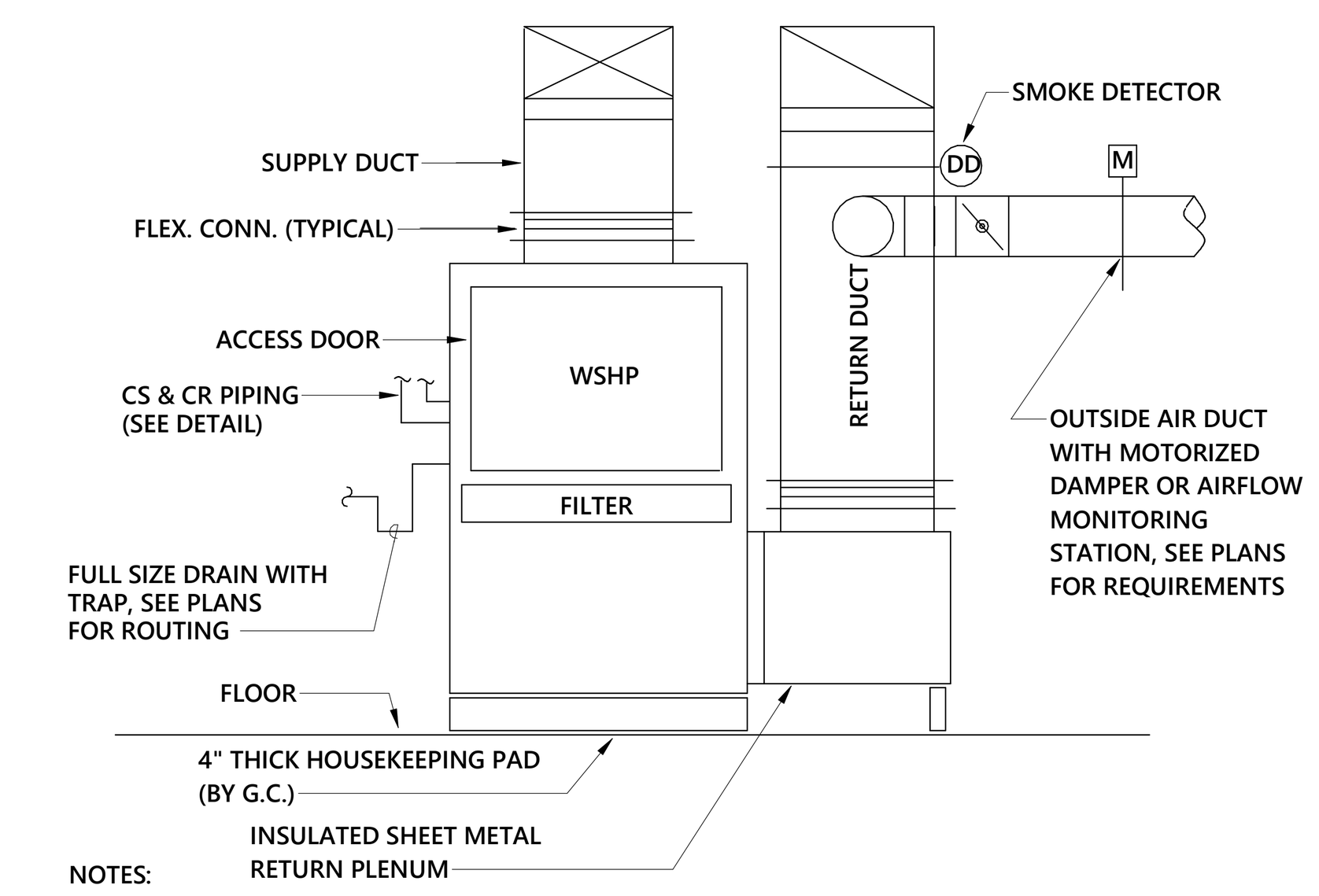


8 EXHAUST FAN DETAIL
NOT TO SCALE



NOTES:
1. SEE PLANS FOR SIZE AND ROUTING OF DUCTWORK AND PIPING.
2. SEE 1/M-503 FOR PIPING DETAILS.
3. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, I INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

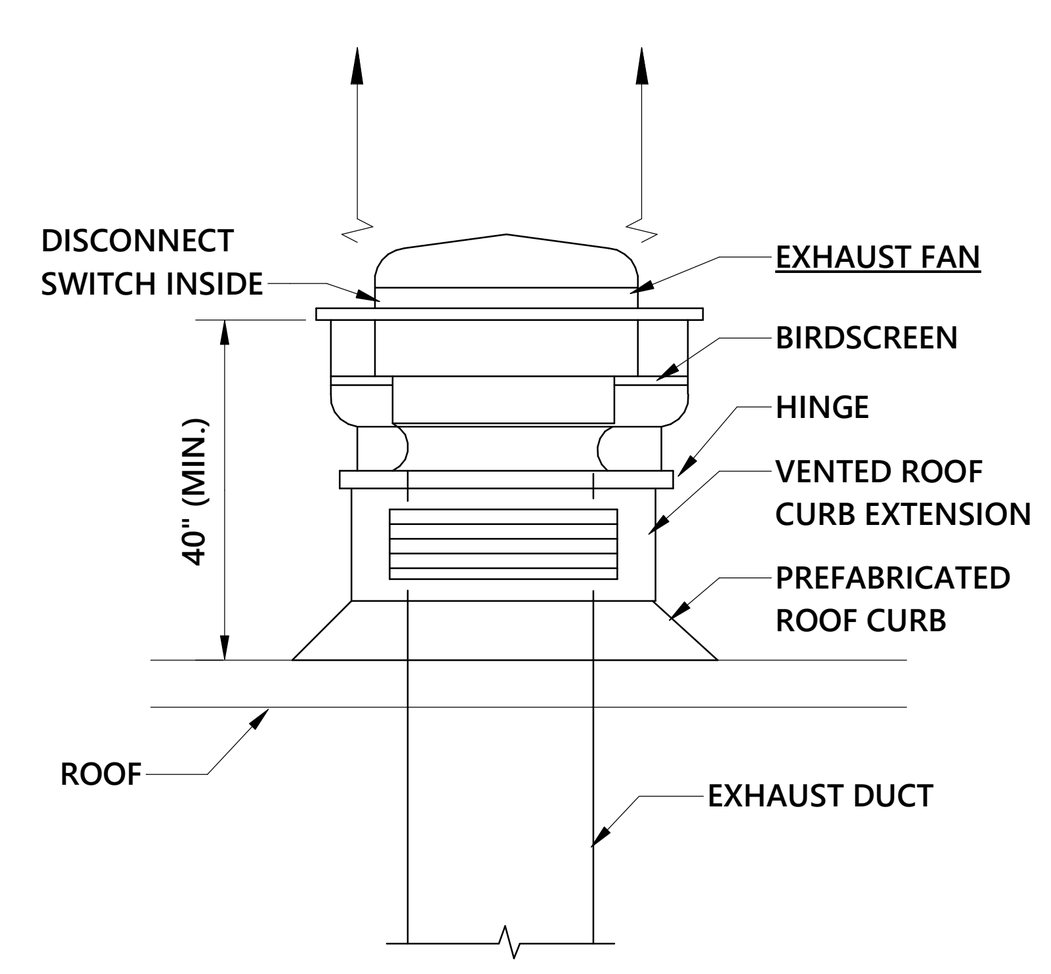
7 UPFLOW WSHP DETAIL (VARIABLE VOLUME)
NO SCALE



NOTES:
1. SEE PLANS FOR SIZE AND ROUTING OF DUCTWORK AND PIPING.
2. SEE 1/M-503 FOR PIPING DETAILS.
3. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. SMOKE DETECTOR SHALL BE SUPPLIED, WIRED FOR INTERFACE WITH FIRE ALARM SYSTEM AND UNIT SHUTDOWN BY THE ELECTRICAL CONTRACTOR. SMOKE DETECTOR SHALL BE INSTALLED IN THE RETURN DUCT BY THE MECHANICAL CONTRACTOR.

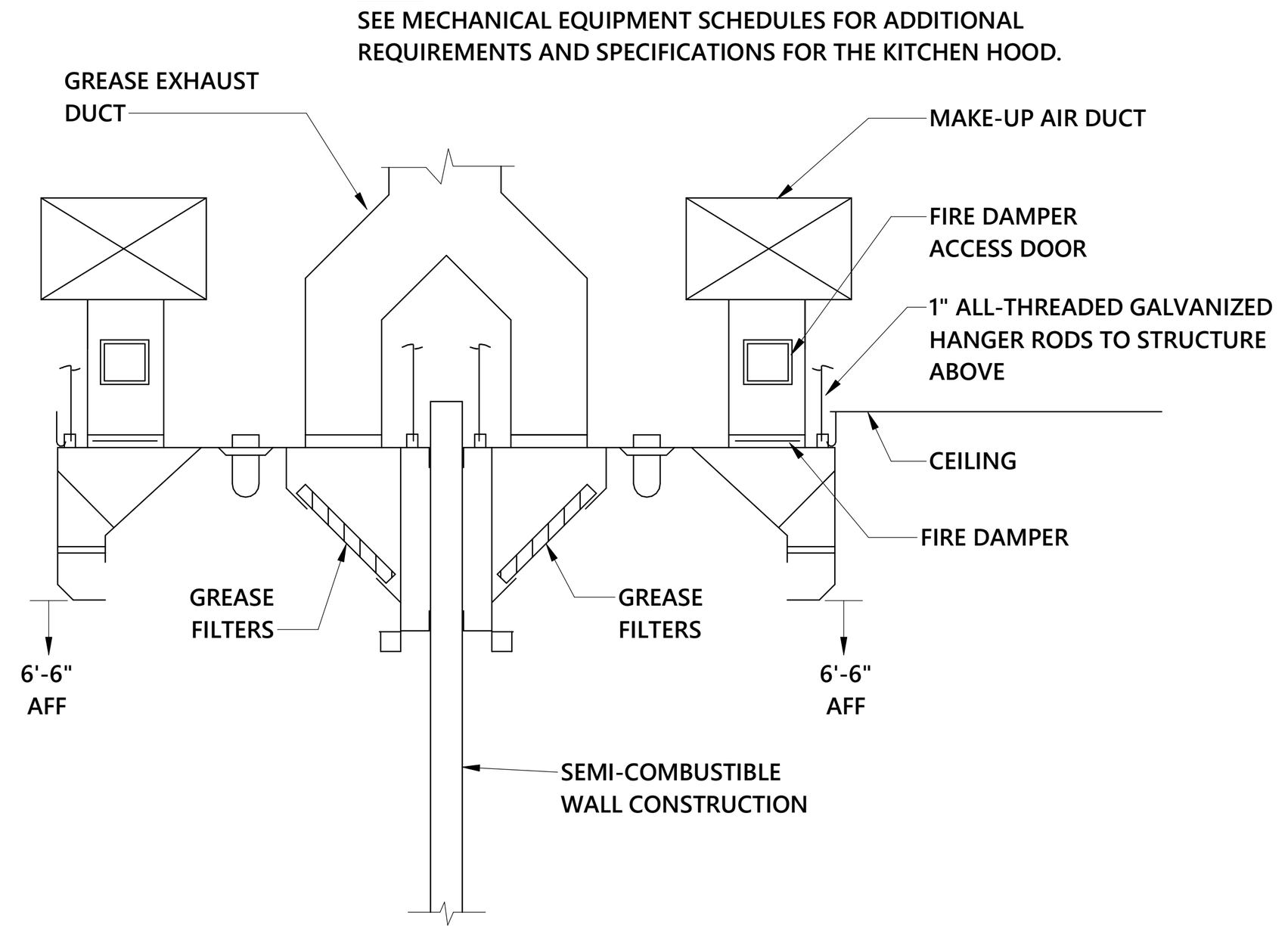
6 UPFLOW WSHP DETAIL (CONSTANT VOLUME)
NO SCALE

NOTE:
KITCHEN HOOD MAKE-UP AIR FAN INTAKE SHALL BE A MINIMUM OF 10'-0" AWAY FROM KITCHEN HOOD EXHAUST FAN OUTLET.



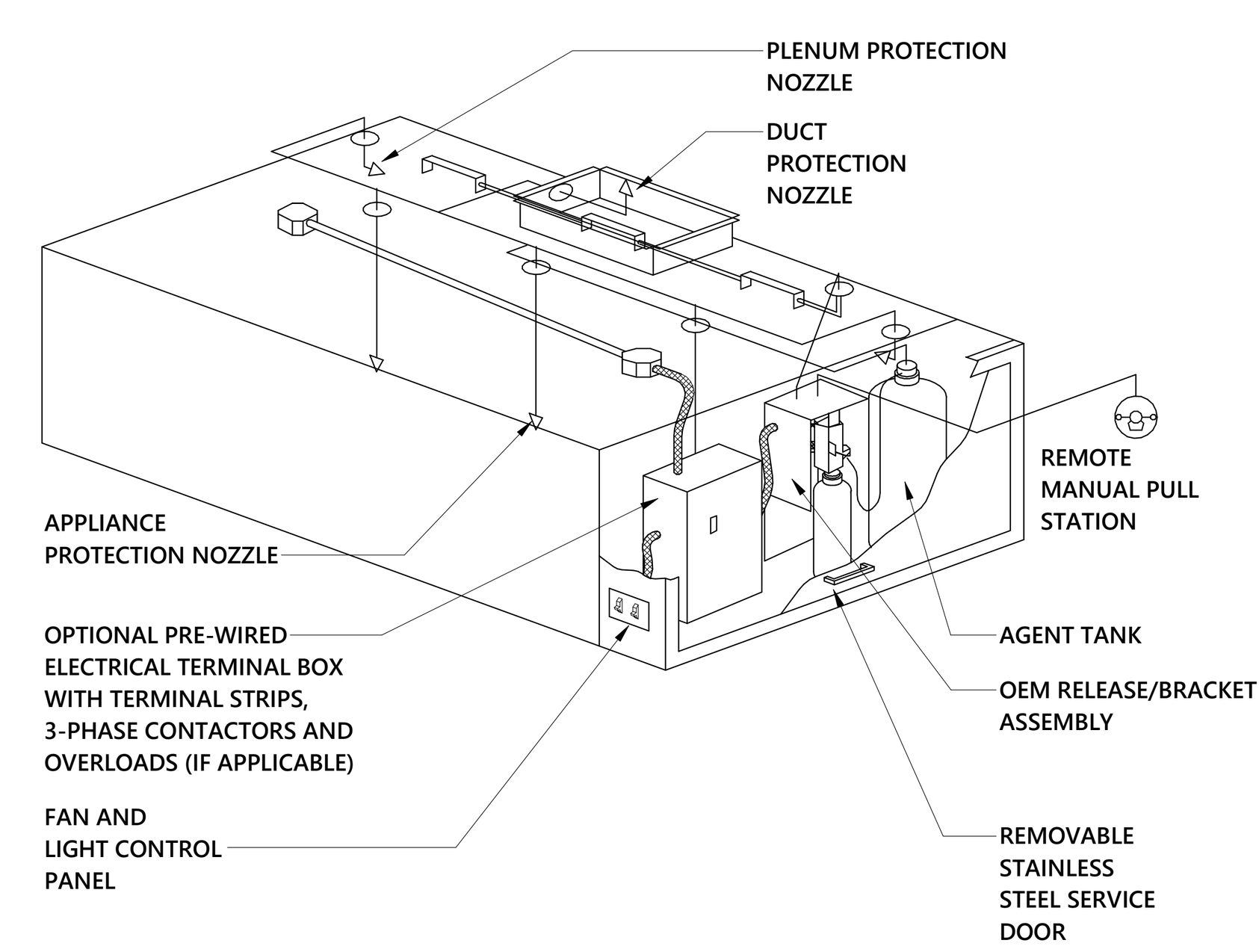
15 KITCHEN HOOD EXHAUST FAN (FLAT ROOF)
NOT TO SCALE

NOTE:
SEE MECHANICAL EQUIPMENT SCHEDULES FOR ADDITIONAL REQUIREMENTS AND SPECIFICATIONS FOR THE KITCHEN HOOD.



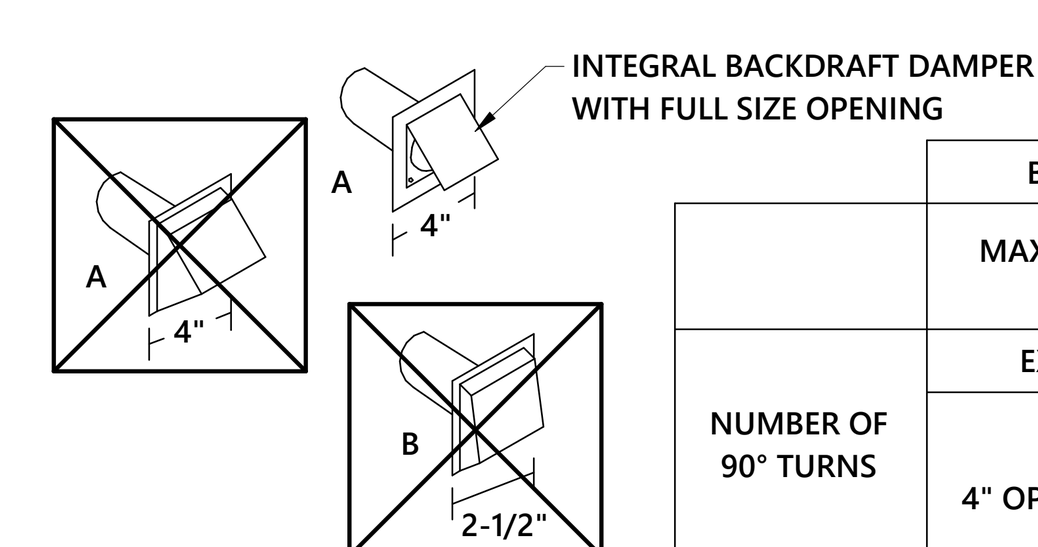
NOTES:
1. INSTALL FIRE SUPPRESSION SYSTEM PER MANUFACTUER'S RECOMMENDATIONS.
2. LOCATE HANGER RODS AT EACH CORNER OF THE HOOD AND AS RECOMMENDED BY THE MANUFACTURER. INSTALL HOOD SUPPORTS PER MANUFACTURER'S RECOMMENDATIONS.
3. SEE STRUCTURAL DRAWINGS FOR STRUCTURAL SUPPORT.

14 EXHAUST HOOD SYSTEM (KITCHEN)
NOT TO SCALE



13 KITCHEN HOOD FIRE SUPRESSION
NO SCALE

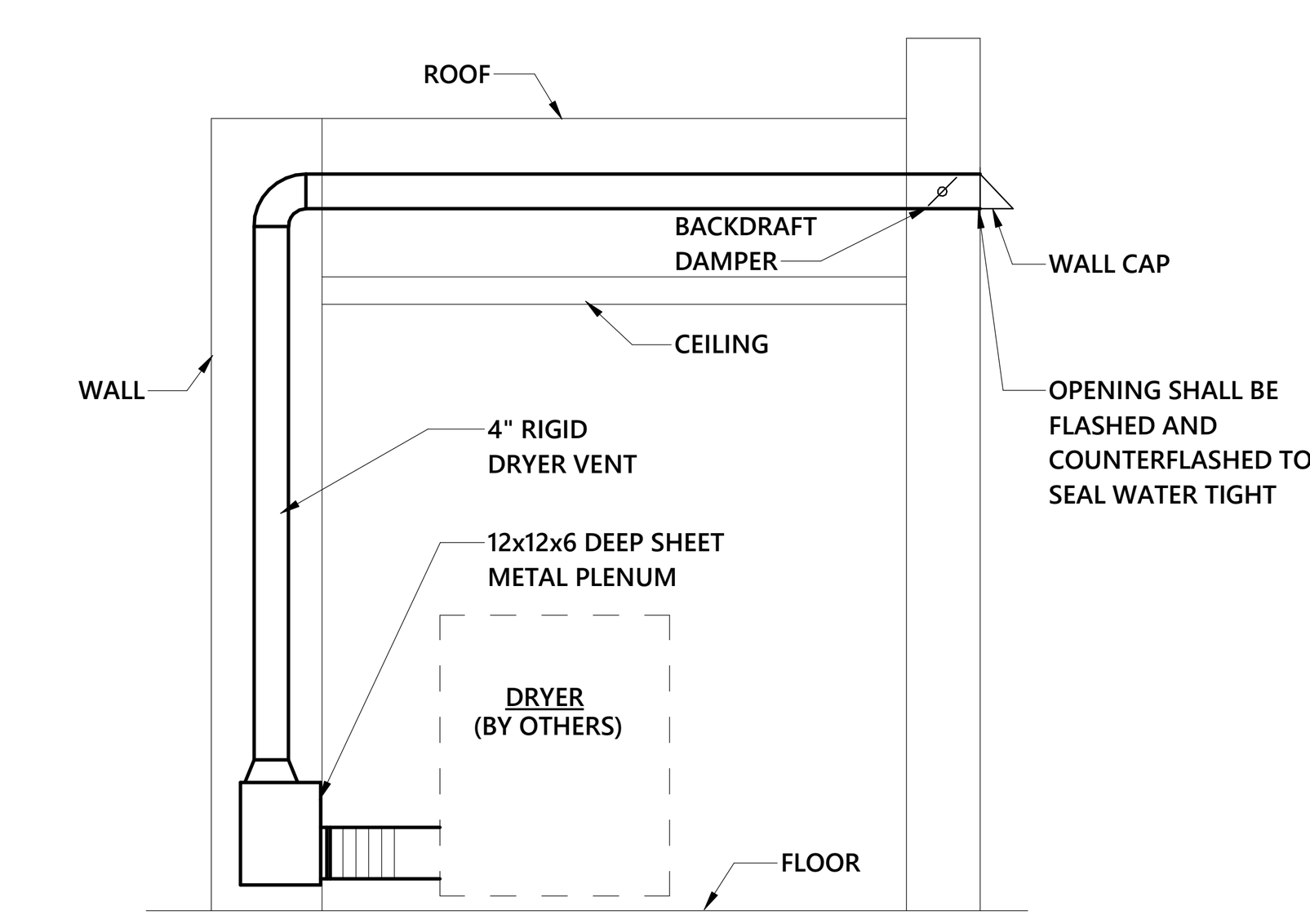
NOTES:
1. DRYER VENT WALL CAPS SHALL BE SECURED TO BUILDING WITH STAINLESS STEEL FASTENERS.
2. DRYER VENT CAPS TO BE ALIGN HORIZONTALLY & VERTICALLY ACROSS THE BUILDING ELEVATIONS. SEE ARCHITECTURAL ELEVATIONS FOR LOCATIONS. GC TO NOTIFY ARCHITECT SHOULD A WALL CAP NEED TO BE RELOCATED.
3. DRYER VENT CAPS SHALL NOT BE HAVE SCREENS OR LOUVERS



		BEST PERFORMANCE	
		MAXIMUM LENGTH OF 4"Ø RIGID METAL DUCT	
	NUMBER OF 90° TURNS	EXHAUST HOOD TYPE	
		A 4" OPENING	B 2-1/2" OPENING
PRE-APPROVED 6.0 CU. FT. CAPACITY DRYER AS NOTED ON PLANS.	0	90 FT.	60 FT.
	1	60 FT.	45 FT.
	2	45 FT.	35 FT.
	3	35 FT.	25 FT.

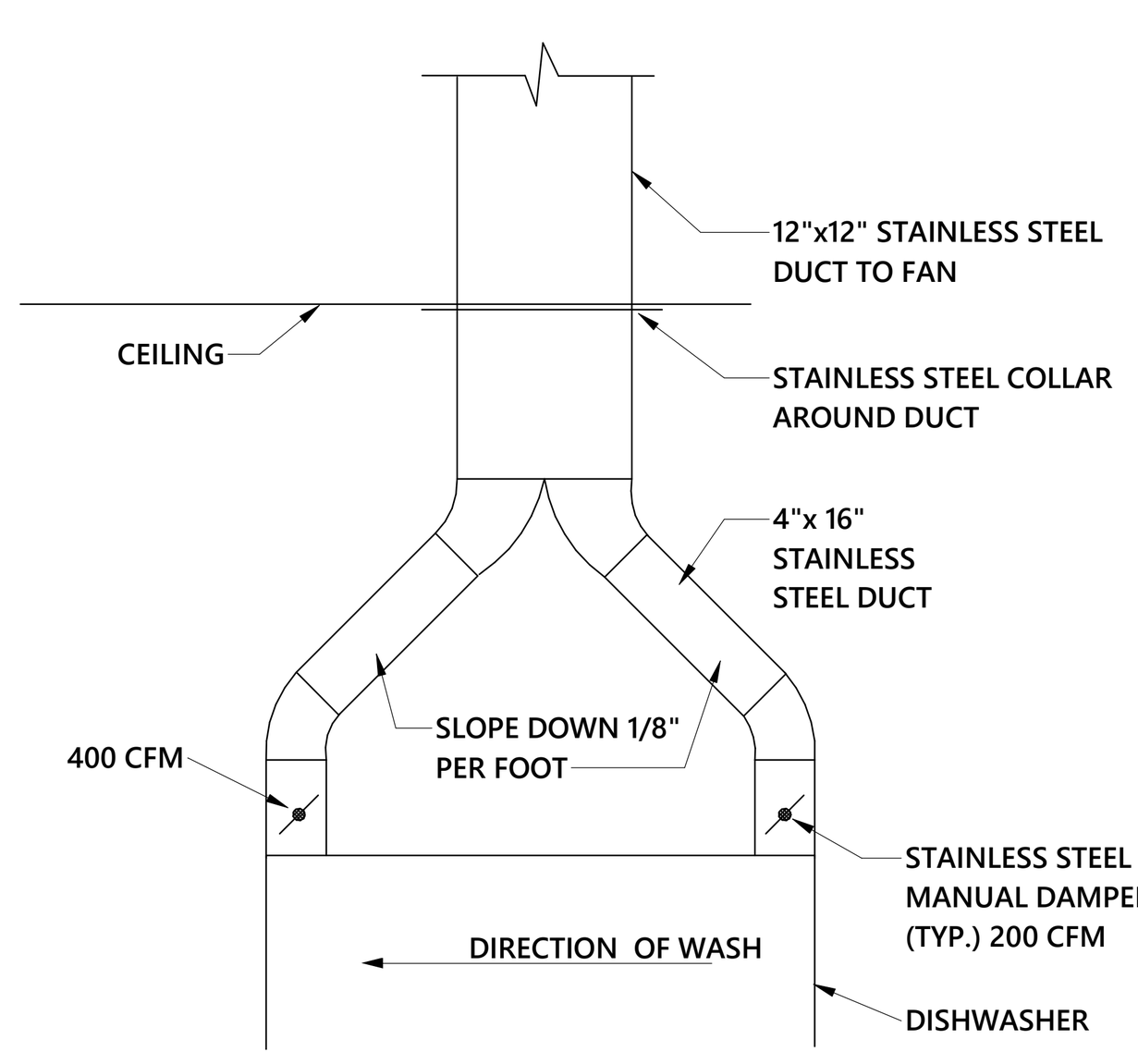
EXHAUST LENGTH CALCULATION:
1. DETERMINE THE NUMBER OF 90° TURNS NEEDED FOR YOUR INSTALLATION. IF YOU EXHAUST TO THE SIDE OR BOTTOM OF DRYER, ADD ONE TURN
2. THE MAXIMUM LENGTH OF 4" RIGID (ALUMINUM OR GALVANIZED) DUCT WHICH CAN BE TOLERATED IS SHOWN IN THE TABLE. A TURN OF 45° OR LESS MAY BE IGNORED. TWO 45° TURNS WITHIN THE DUCT LENGTH SHOULD BE TREATED AS A 90° DEGREE ELBOW. A TURN OVER 45° SHOULD BE TREATED AS A 90° ELBOW.

12 DRYER ALLOWABLE VENT LENGTH DETAIL
NOT TO SCALE



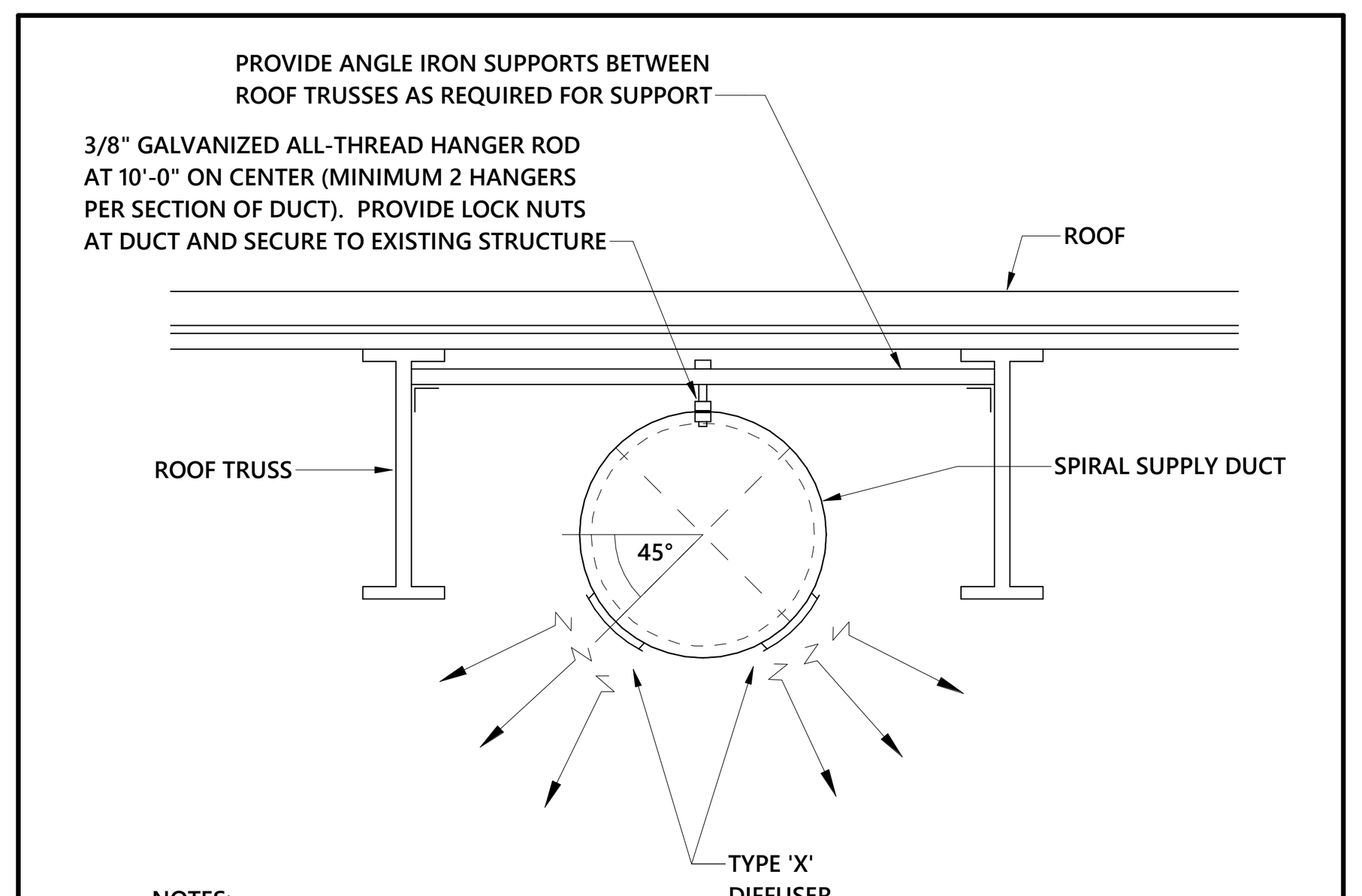
NOTES:
1. DRYER VENT PIPING SHALL BE GALVANIZED SHEET METAL AND SHALL HAVE A SMOOTH INTERIOR FINISH WITH JOINTS RUNNING IN THE DIRECTION OF THE AIR FLOW.
2. MAXIMUM LENGTH OF DRYER VENT SHALL NOT EXCEED 45' IN TOTAL LENGTH (DEDUCT 10' FOR EACH 90° ELBOW AND 5' FOR EACH 45° ELBOW).
3. DRYER VENT SHALL BE NONSCREENED WITH A BACKDRAFT DAMPER AND MINIMUM SIZE OF 4".

11 DRYER VENT THRU WALL
NOT TO SCALE



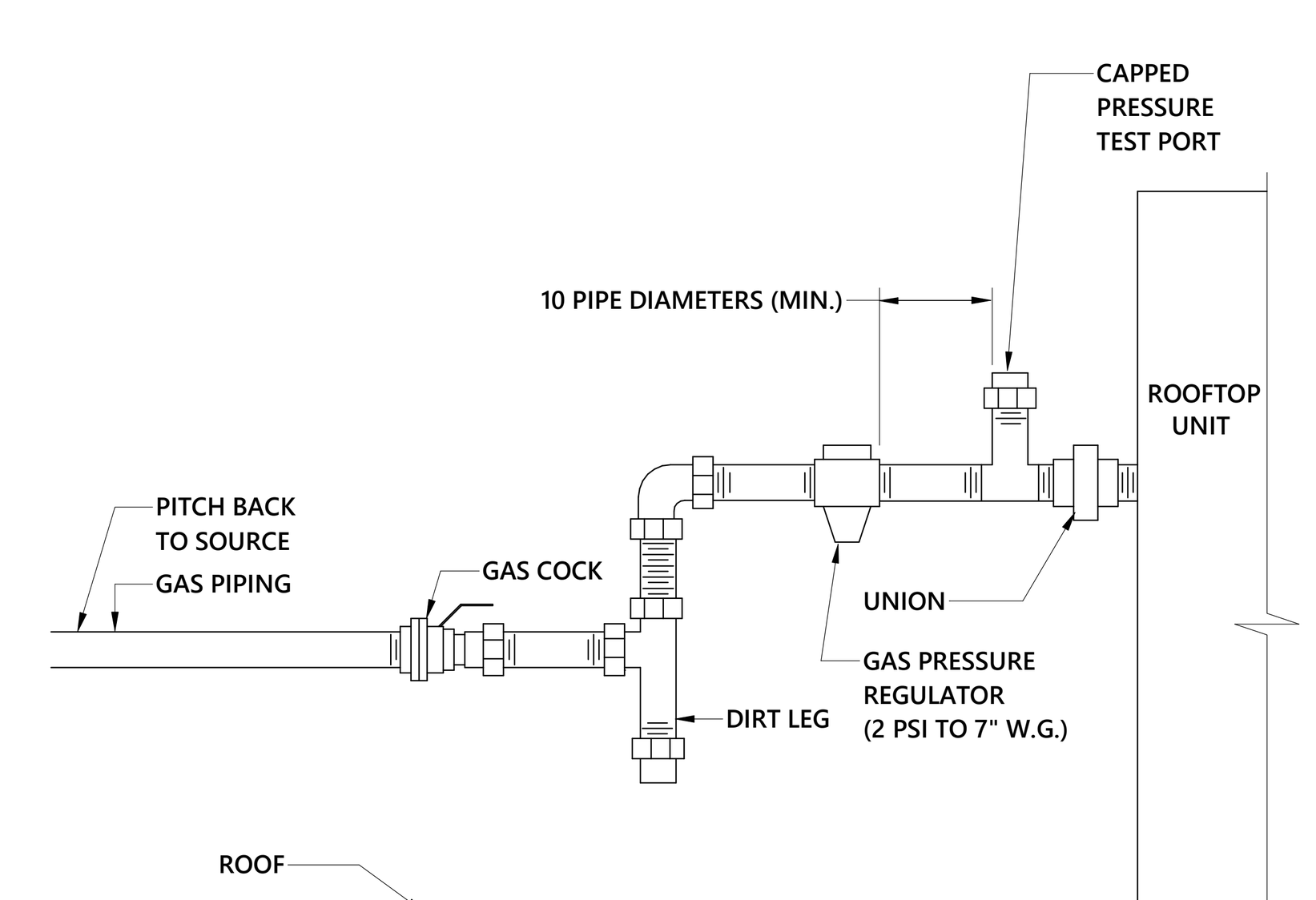
NOTE:
ALL DUCT SEAMS AND JOINTS SHALL BE CONSTRUCTED WATERTIGHT. ALL DUCTWORK SHALL SLOPE TOWARD DISHWASHER.

18 DISHWASHER EXHAUST DETAIL
NO SCALE



NOTES:
1. DUCTWORK SHALL BE INSTALLED LEVEL, AS HIGH AS POSSIBLE (UNLESS OTHERWISE NOTED).
2. ALL EXPOSED SPIRAL DUCTWORK SHALL BE A DOUBLE WALL LINDAB SPIROSAFE SELF-SEALING DUCT SYSTEM (OR APPROVED EQUAL). REGISTERS ON SPIRAL DUCT SHALL BE MOUNTED WITHOUT THE USE OF RECTANGULAR REGISTER TAPS, TOP AND BOTTOM FLANGES SHALL MEET FLUSH WITH THE SPIRAL DUCT WALL REGARDLESS OF DUCT DIAMETER.
3. PROVIDE SPIRAL DUCTWORK WITH PAINT-GRIP FINISH, TO BE PAINTED. COORDINATE FINAL COLOR/FINISH WITH ARCHITECT.

17 DBL. DEFL. DIFFUSER MOUNTING ON SPIRAL DUCT
NOT TO SCALE



NOTE:
1. PROVIDE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED.
2. GAS PRESSURE REGULATORS INSTALLED WITHIN 15 FEET OF AN OUTSIDE AIR INTAKE SHALL BE PROVIDED WITH A VENT PIPE EXTENSION TO EXTEND A MINIMUM OF 3 FEET ABOVE THE OUTSIDE AIR INTAKE.

16 ROOF EQUIPMENT GAS CONNECTION DETAIL
NOT TO SCALE

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL DETAILS

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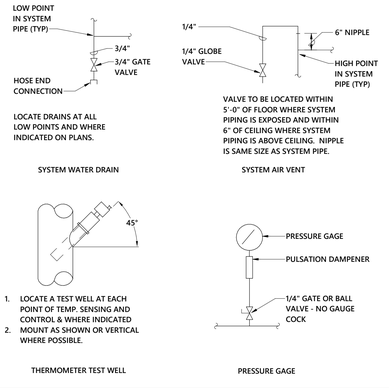
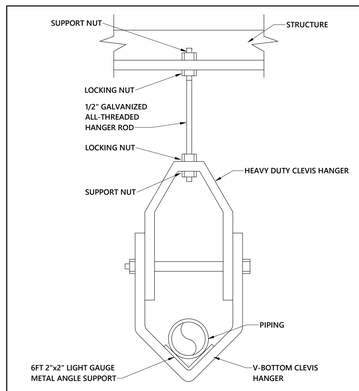
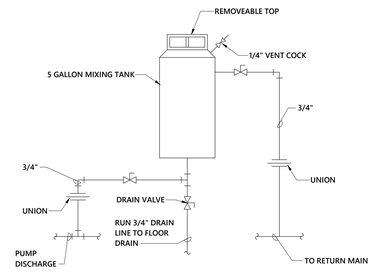


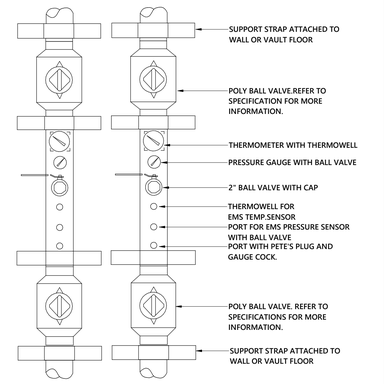
5 PIPING SPECIALTIES
NO SCALE



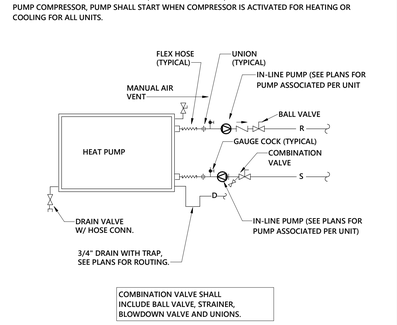
4 GEOTHERMAL PIPE HANGER DETAIL
NOT TO SCALE



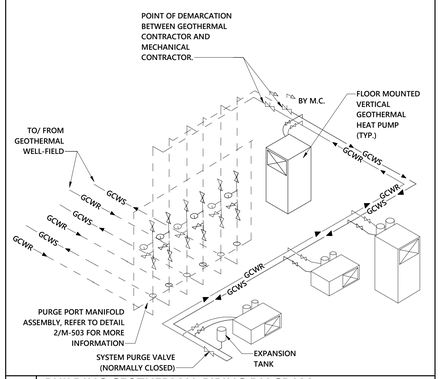
3 CHEMICAL FEEDER FOR CLOSED WATER SYSTEM
NOT TO SCALE



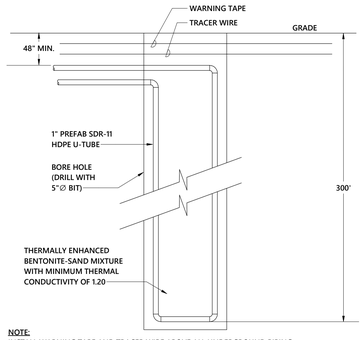
2 PURGE PORT DETAIL
NO SCALE



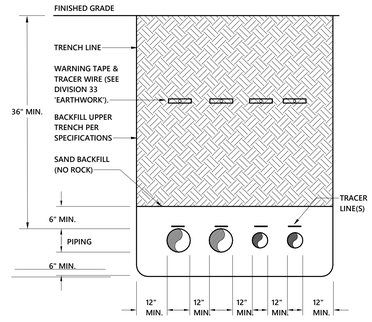
1 WATER SOURCE HEAT PUMP PIPING
NO SCALE



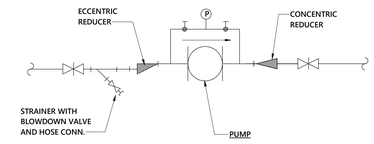
9 BUILDING GEOTHERMAL PIPING DIAGRAM
NOT TO SCALE



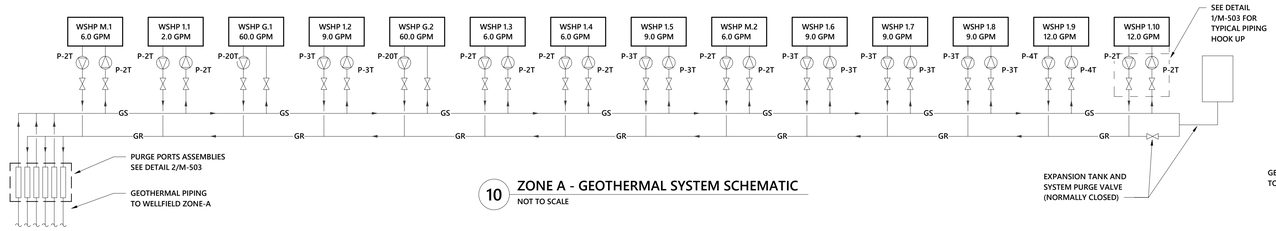
8 GEOTHERMAL WELL DETAIL
NO SCALE



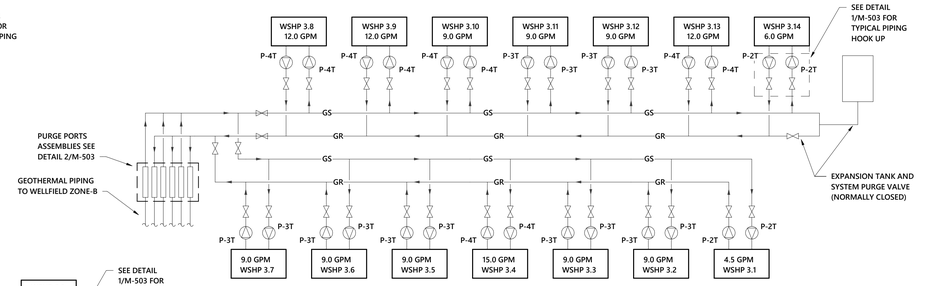
7 PIPING TRENCH
NO SCALE



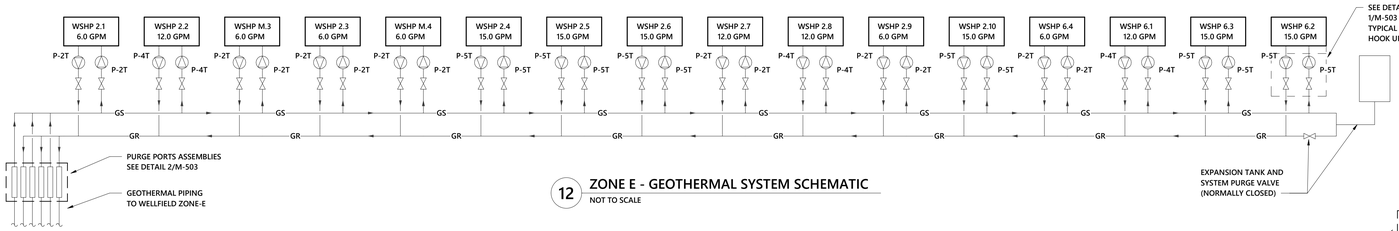
6 INLINE PUMP DETAIL
NOT TO SCALE



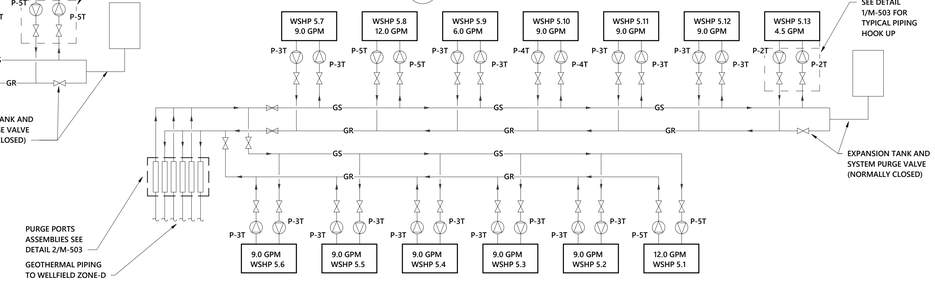
10 ZONE A - GEOTHERMAL SYSTEM SCHEMATIC
NOT TO SCALE



11 ZONE B - GEOTHERMAL SYSTEM SCHEMATIC
NOT TO SCALE



12 ZONE E - GEOTHERMAL SYSTEM SCHEMATIC
NOT TO SCALE



13 ZONE D - GEOTHERMAL SYSTEM SCHEMATIC
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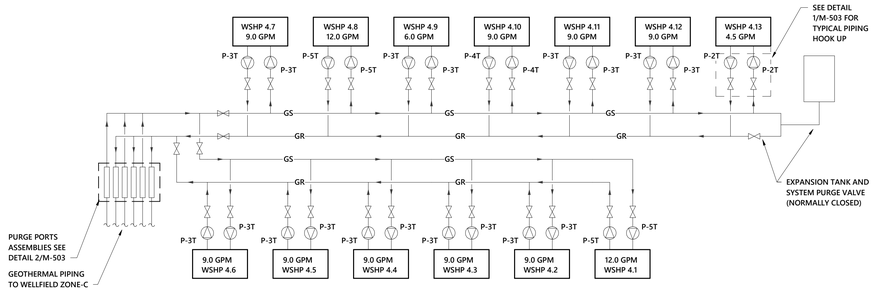
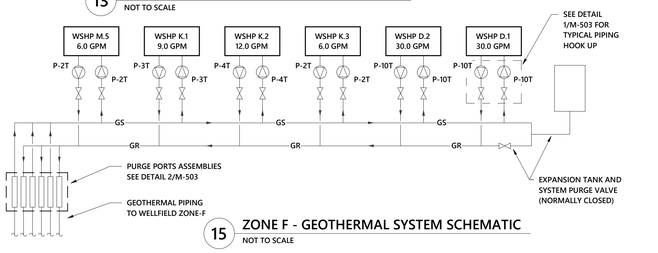


14 ZONE C - GEOTHERMAL SYSTEM SCHEMATIC
NOT TO SCALE



15 ZONE F - GEOTHERMAL SYSTEM SCHEMATIC
NOT TO SCALE

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No.	Date	Description
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
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DRAWN BY: HFK
CHECKED BY: TAL

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SEQUENCE OF OPERATION - MECHANICAL SYSTEMS

A COMPLETE AND OPERATIONAL DDC CONTROL SYSTEM (BAS) SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 230900) AND AS INTENDED ON THESE PLANS. ALL CONTROLS SHALL BE DDC/ELECTRONIC WITH ELECTRIC ACTUATION OF ALL VALVES AND DAMPERS. CONTROL SYSTEM SHALL BE BACNET OR LONMARK COMPATIBLE.

GENERAL:
BUILDING AUTOMATION SYSTEM (BAS) SHALL PROVIDE PROGRAMMED/TIMED OPERATION OF HVAC SYSTEM AND SYSTEM COMPONENTS BY PLACING THE SYSTEM IN "OCCUPIED" OR "UNOCCUPIED" MODES BASED ON THE OWNERS OPERATING SCHEDULE. BAS SHALL BE WEB (IP) BASED TO ALLOW INTERNET ACCESS FOR REMOTE OPERATION OF SYSTEM. BAS SHALL ALLOW GLOBAL OPERATION OF COOLING, HEATING, CO2, AND HUMIDITY SETPOINTS. BAS SHALL ALSO ALLOW EITHER ZONE BY ZONE OR GLOBAL OVERRIDE OF SYSTEM OPERATION WHILE IN THE UNOCCUPIED MODE. OVERRIDE SHALL
ACTIVATE ALL LIGHTS, RECEPTACLES, AND HVAC SYSTEM EQUIPMENT, INCLUDING CENTRAL PLANT, REQUIRED TO MAINTAIN "OCCUPIED" SPACE CONDITIONS IN THE OVERRIDE ZONE FOR A TIME PERIOD OF 2 HOURS, TIME PERIOD SHALL BE ADJUSTABLE THROUGH THE BUILDING AUTOMATION SYSTEM.

THERMOSTATS
THERMOSTATS FOR WSHP UNITS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS, AND PER THE SPECIFICATIONS. THERMOSTATS SHALL HAVE ROTARY SWITCH ADJUSTMENT WITH NUMERICAL INDICATION, INITIALLY SET IN THE OCCUPIED MODE FOR COOLING TO 75° AND HEATING TO 70°. THERMOSTATS SHALL HAVE A 3° RANGE IN WHICH THEY ARE SATISFIED (IF SET TO 70°, SATISFIED ANYWHERE BETWEEN 68.5° AND 71.5°). ROTARY SWITCH SHALL HAVE THE CAPABILITY TO ADJUST THE HEATING AND COOLING SETPOINTS BY 3° IN EITHER DIRECTION, BUT MAINTAIN A MINIMUM 4° SPREAD BETWEEN THE HEATING AND COOLING SETPOINT. UNOCCUPIED SETTINGS SHALL BE 85° COOLING AND 60° HEATING. THERMOSTAT SHALL HAVE PUSHBUTTON OVERRIDE TO PLACE ONLY THAT ZONE INTO THE OCCUPIED MODE FOR TWO HOURS. LOFT WSHP SETPOINTS SHALL BE 80° COOLING AND 60° HEATING, ONLY TEMPORARILY CHANGING TO OCCUPIED SETPOINTS FOR A TWO HOUR DURATION IF THE PUSHBUTTON OVERRIDE IS ACTIVATED.

OCCUPIED SETBACK MODE SHALL BE ENABLED DURING THE OCCUPIED MODE IF THE OCCUPANCY SENSOR DE-ENERGIZES THE LIGHTS IN THE ROOM. OCCUPIED SETBACK MODE SHALL DRIFT THE COOLING AND HEATING SETPOINTS BY 3° EACH WAY (COOLING TO 78° AND HEATING TO 67°). OCCUPIED MODE IS RESTORED WHEN OCCUPANCY SENSOR RE-ENERGIZES THE LIGHTS.

NON-CLASSROOM UNIT: (UNITS WITH O.A./RETURN AIR MIXING BOXES):
WHEN PLACED IN THE OCCUPIED MODE BY THE BAS, THE UNITS SHALL BE INDEXED ON. UNITS SHALL START ON A FIVE MINUTE DELAY RELATIVE TO THE START OF THE WSHP ASSOCIATED PUMP. WHILE IN OCCUPIED MODE, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE CONDENSER WATER CONTROL VALVE AND HEAT PUMP COOLING/HEATING SYSTEM SHALL CYCLE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE.

CONSTANT VENTILATION UNITS (NOT NOTED WITH 'DCV' IN EQUIPMENT SCHEDULE) ARE PROVIDED WITH MOTORIZED DAMPERS. WHILE PLACED IN THE OCCUPIED MODE BY THE BAS, OA DAMPER SHALL OPEN, THEN CLOSE WHILE THE ZONE IS PLACED IN THE UNOCCUPIED MODE.

WHILE IN THE UNOCCUPIED MODE, THE UNIT FAN SHALL BE OFF AND SHALL ENERGIZE ONLY WITH A CALL FOR HEATING OR COOLING AS REQUIRED TO MAINTAIN SETBACK TEMPERATURE. IF ACTIVATED DURING THE UNOCCUPIED MODE, THE UNIT SHALL RUN FOR A MINIMUM OF FIVE MINUTES FOLLOWING SHUT-DOWN.

FOR UNITS PROVIDED WITH MOTORIZED OUTSIDE AIR DAMPERS (INDICATED BY 'DCV' IN EQUIPMENT SCHEDULE), DAMPER SHALL BE CLOSED WHEN IN THE UNOCCUPIED MODE. WHEN PLACED INTO THE OCCUPIED MODE BY THE BAS, OUTSIDE AIR DAMPER SHALL REMAIN CLOSED FOR MORNING WARM-UP IF SPACE TEMPERATURE IS BELOW SETPOINT. ONCE THE SPACE TEMPERATURE SETPOINT IS REACHED, THE OUTSIDE AIR DAMPER SHALL OPEN TO THE MINIMUM POSITION (OCC MIN OA CFM AS INDICATED IN WSHP SCHEDULE), AND SHALL REMAIN OPEN WHILE IN THE OCCUPIED MODE. MOTORIZED DAMPER SHALL VARY THE VOLUME OF OUTSIDE AIR BASED ON CO2 LEVEL AS MEASURED BY A SPACE OR DUCT MOUNTED CO2 SENSOR. OUTSIDE AIR DAMPER SHALL MODULATE OPEN IF CO2 READING RISES ABOVE 500 PPM ABOVE OUTSIDE AIR CO2 LEVEL, DAMPER SHALL MODULATE CLOSED UNTIL MINIMUM POSITION IS REACHED. BAS SHALL CONTINUALLY MONITOR THE AMOUNT OF OUTSIDE AIR PROVIDED TO EACH ZONE, AND ALARM CENTRAL BAS IF CO2 SENSOR READING IS ABOVE 1000 PPM.

WITH SYSTEM IN OCCUPIED OR UNOCCUPIED MODE, HUMIDITY CONTROL SYSTEM SHALL BE CAPABLE OF BEING ACTIVATED. UNDER NORMAL OPERATION, UNIT SHALL BE CONTROLLED AS OUTLINED ABOVE. IF SPACE HUMIDITY REACHES 60% RH IN THE OCCUPIED MODE OR 65% IN THE UNOCCUPIED MODE (ADJUSTABLE), HUMIDITY CONTROL SEQUENCE SHALL BE ENERGIZED THROUGH THE DDC SYSTEM. UNIT OUTSIDE AIR DAMPER SHALL CLOSE TO MINIMUM POSITION WHERE APPLICABLE. CONDENSER WATER CONTROL VALVE SHALL OPEN AND UNIT COMPRESSORS SHALL BE MODULATED TO REHEAT AIR TO MAINTAIN SPACE CONDITIONS AS REQUIRED. WHEN SPACE HUMIDITY DROPS BELOW 55% RH IN THE OCCUPIED MODE OR 60% IN THE UNOCCUPIED MODE, BAS SHALL DEACTIVATE HUMIDITY CONTROL SEQUENCE, AND CONTROL OF THE UNITS SHALL REVERT BACK TO NORMAL OPERATION. IF SPACE HUMIDITY REACHES 65% IN THE OCCUPIED MODE OR 70% IN UNOCCUPIED MODE, AND ALARM SHALL BE SENT TO CENTRAL BAS.

DINING WSHP STAGING
THE DINING ROOM SHALL BE STAGED SUCH THAT WSHP-D.2 SHALL ACT AS THE FIRST STAGE OF HEATING AND COOLING, AND LOW OCCUPANCY CONSTANT VENTILATION DURING OCCUPIED TIMES. WSHP-D.2 SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE AND COMPRESSORS SHALL CYCLE AS NEEDED FOR HEATING AND COOLING. WSHP-D.1 SHALL ACT AS THE SECOND STAGE OF HEATING, COOLING, DEHUMIDIFICATION, AND VENTILATION, OPERATING AS OUTLINED FOR NO-CLASSROOM UNITS (WITH O.A./RETURN AIR MIXING BOXES). THERMOSTAT SETPOINTS FOR WSHP-D.1 SHALL BE SET 2° HOTTER/COLDER THAN SETPOINTS FOR PRIMARY UNIT WSHP-D.2, AND UNIT SHALL ONLY BE ACTIVATED UPON A CALL FOR HEATING AND COOLING FROM THE THERMOSTAT, BY THE CO2 SENSOR INSTALLED IN THE SPACE UTILIZING DEMAND CONTROL VENTILATION AS DESCRIBED IN THE SEQUENCE, OR BY THE SPACE MOUNTED HUMIDISTAT ACTIVIATING THE DEHUMIDIFICATION SEQUENCE.

GYMNASIUM WSHP STAGING
GYMNASIUM SHALL BE STAGED SUCH THAT WSHP-G.1 SHALL ACT AS THE FIRST STAGE OF HEATING AND COOLING, AND LOW OCCUPANCY CONSTANT VENTILATION DURING OCCUPIED TIMES. WSHP-G.1 SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE AND COMPRESSORS SHALL CYCLE AS NEEDED FOR HEATING AND COOLING. WSHP-G2 SHALL ACT AS THE SECOND STAGE OF HEATING, COOLING, DEHUMIDIFICATION, AND VENTILATION, OPERATING AS OUTLINED FOR NON-CLASSROOM UNITS (WITH O.A./RETURN AIR MIXING BOXES). THERMOSTAT SETPOINTS FOR WSHP-G.2 SHALL BE SET 2° HOTTER/COLDER THAN SETPOINTS FOR PRIMARY UNIT WSHP-G.1, AND UNIT SHALL ONLY BE ACTIVATED UPON A CALL FOR HEATING AND COOLING FROM THE THERMOSTAT, BY THE CO2 SENSOR INSTALLED IN THE SPACE UTILIZING DEMAND CONTROL VENTILATION AS DESCRIBED IN THE SEQUENCE, OR BY THE SPACE MOUNTED HUMIDISTAT ACTIVIATING THE DEHUMIDIFICATION SEQUENCE.

HVAC SCHEDULING
INITIAL SCHEDULES OF OPERATION SHALL BE COORDINATED AND CONFIRMED BY THE OWNER, AND PROGRAMMED BY THE CONTROLS CONTRACTOR. MODIFICATION OF SCHEDULES SHALL BE A PART OF REQUIRED OWNER TRAINING. DISCREET SCHEDULES SHALL BE PROVIDED FOR EACH INDIVIDUAL CLASSROOM WING, ADMINISTRATION AREA, MEDIA CENTER, CAFETERIA, KITCHEN AREA, AND GYMNASIUM.

SCHOOL CALENDAR SHALL BE PROGRAMMED INTO THE BAS SUCH THAT THE SYSTEMS REMAIN UNOCCPUIED ON DAYS THE SCHOOL IS CLOSED AND ON TEACHER WORKDAYS.

ADMINISTRATION AREA SHALL REMAIN IN THE OCCPUIED MODE DURING THE SUMMER, EXACT HOURS TO BE COORDINATED WITH THE OWNER. REMAINING WSHP'S SHALL BE INITIALLY SET TO BE IN THE OCCUPIED MODE FROM 30 MINUTES BEFORE THE OPENING BELL TO 30 MINUTES PRIOR TO THE CLOSING BELL, UNTIL MODIFIED BY START/STOP OPTIMIZATION. AFTER HOURS OPERATION FOR ALL ZONES SHALL BE COORDINATED WITH THE OWNER WITH INPUT FROM THE KITCHEN, ATHLETIC, LIBRARY, AND FINE ARTS STAFF.

OVERRIDE PANEL
A CENTRAL OVERRIDE PANEL SHALL BE LOCATED IN THE ADMIN ZONE. PANEL SHALL BE PROVIDED WITH TIMERS, LABELS, AND LED INDICATOR LIGHT FOR EACH AREA SERVED. SOFTWARE SHALL BE PROGRAMMED FOR FULLY FUNCTIONAL OVERRIDE, TO SET HVAC EQUIPMENT, RECEPTACLES, AND LIGHTING INTO THE OCCUPIED MODE FOR A SET PERIOD OF TIME. ALL OVERRIDES SHALL ALSO HAVE REMOTE CAPABILITIES THRU IP BASED ACCESS.

PANEL SHALL INCLUDE THE DISCREET ZONES FOR EACH INDIVIDUAL CLASSROOM WING, ADMINISTRATION AREA, MEDIA CENTER, CAFETERIA, KITCHEN AREA, AND GYMNASIUM. CLASSROOM WING ACTIVATION SHALL ALSO PLACE DOAS SYSTEM SERVING THAT WING INTO THE OCCUPIED MODE.

START/STOP OPTIMIZATION
BAS SHALL PROVIDE START/STOP OPTIMIZATION (SSO) FOR ALL EQUIPMENT AND SYSTEMS. SSO SHALL BE CAPABLE OF LEARNING BUILDING THERMAL CHARACTERISTICS AND RESPOND TO VARIABLE CONDITIONS. SSO SHALL START/STOP CONTROLLED EQUIPMENT AS LATE AS POSSIBLE PRIOR TO OCCUPIED TIME PERIOD AND AS EARLY AS POSSIBLE PRIOR TO UNOCCUPIED TIME PERIOD. SSO SHALL BE CALCULATED BASED ON OUTDOOR AIR TEMPERATURE, ZONE TEMPERATURES, AND CONTROL SETPOINT/SETBACK TEMPERATURES.

SMOKE DETECTORS
SMOKE DETECTOR SHALL BE PROVIDED IN THE RETURN DUCT PRIOR TO THE OUTSIDE AIR DUCT CONNECTION. DETECTOR SHALL INTERFACE WITH FIRE ALARM SYSTEM AND SHUT-DOWN UNIT FANS UPON ACTIVATION. WHERE APPLICABLE, DETECTORS SHALL BE INSTALLED IN THE LOWER SECTION OF
THE RETURN AIR PLENUM BUILT BEHIND THE UNIT (SEE MECHANICAL DRAWINGS FOR DETAILS).

IDF/MDF ROOM SPLIT SYSTEMS:
UNITS SHALL PROVIDE COOLING IN DATA/SERVER ROOMS ON A CONTINUOUS BASIS. SUPPLY FAN AND COOLING CYCLE SHALL CYCLE WITH A CALL FOR COOLING TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 75° F. BAS SHALL MONITOR SYSTEM STATUS AND SHALL ALSO MONITOR ROOM TEMPERATURE. AN ALARM SHALL BE ACTIVATED IF THE ROOM TEMPERATURE RISES ABOVE 85° F.

UNIT HEATERS
UNIT HEATERS SHALL BE PROVIDED WITH A LOW VOLTAGE THERMOSTAT. UNIT HEAT AND FAN SHALL BE ENERGIZED WHEN SPACE TEMPERATURE FALLS BELOW SETPOINT. INITIAL SYSTEM SETPOINTS SHALL BE 50° F.

EXHAUST FANS
CONTROL DEVICES (SWITCHES, THERMOSTATS, INTERLOCKS, ETC.) SHALL BE PROVIDED AS REQUIRED TO COMPLY WITH INTENT OF OPERATION AS INDICATED ON THE FAN SCHEDULE. ELECTRICAL AND MECHANICAL ROOM EXHAUST FANS SHALL BE SET TO MAINTAIN 85° F.

DOMESTIC HOT WATER SYSTEM
BAS SHALL HAVE GLOBAL CONTROL OVER DOMESTIC WATER HEATING SYSTEM. WATER HEATERS SHALL CYCLE ON AND OFF BASED ON THIER TANK TEMPERATURES, TO MAINTAIN 140° FOR WH-1 AND 120° FOR WH-2. AN ALARM SHALL BE GENERATED SHOULD EITHER TANK DEVIATE FROM SETPOINT BY 10° EITHER HIGH OR LOW. AN ALARM SHALL ALSO BE GENERATED SHOULD THE DOMESTIC HWS TEMPERATURE DEVIATE FROM SETPOINT BY 10° EITHER HIGH OR LOW. CIRCULATION PUMPS SHALL OPERATE ON A SCHEDULED BASIS BASED ON BUILDING OCCUPANCY. THE PUMPS SHALL BE CAPABLE OF OPERATING ON SEPARATE SCHEDULES, SHOULD THE KITCHEN SCHEDULE DIFFER FROM THE ENTIRE BUILDING. A TEMPERATURE SENSOR SHALL BE MOUNTED IN THE END OF THE LINE CAPABLE OF OVERRIDING THE PUMP SHOULD THE LOOP TEMPERATURE FALL BELOW 110° FOR CP-1 OR 130° FOR CP-2. BAS SHALL ALSO MONITOR BOTH DOMESTIC HWR TEMPERATURES AND DOMESTIC WATER SUPPLY TEMPERATURE FOR TRACKING PURPOSES. COORDINATE ALL TEMPERATURE SENSOR LOCATIONS WITH PLUMBING CONTRACTOR.

WATER HEATER ROOM OXYGEN DEPLETION
PROVIDE A CARBON MONOXIDE SENSOR IN THE WATER HEATER ROOM, TIED INTO THE CENTRAL DDC SYSTEM TO ALARM OXYGEN DEPLETION. THE SENSOR SHALL ACTIVATE AN AUDIBLE AND VISUAL ALARM INSIDE THE ROOM, ACTIVATE THE VENTILATION FAN, ALARM SHALL BE SENT TO THE DDC IF CO LEVELS EXCEED 50 PPM OVER A CONTINUOUS 8 HOUR PERIOD, OR IF THEY EXCEED 100 PPM OVER A CONTINUOUS 60 SECOND PERIOD.

A PUSH BUTTON EMERGENCY GAS SHUTOFF SWITCH SHALL BE PROVIDED AT THE INDICATED MECHANICAL ROOMS TO CLOSE A SOLENOID VALVE IN THE GAS LINE SERVING DOMESTIC WATER HEATERING EQUIPMENT. ACTIVATION OF THE SWITCH SHALL CLOSE THE GAS VALVE AND ALARM THE CENTRAL BAS (VALVE AND SWITCH BY P.C.)

NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE BY THE USER SCHOOL STAFF, AND MAINTENANCE DEPARTMENT. INDICATED SCHEDULES AND SETPOINTS SHOULD BE USED FOR ORIGINAL SYSTEM SET-UP. ANY CHANGES IN SETPOINT SETTINGS REQUIRED FOR INTENDED SYSTEM OPERATION SHALL BE APPROVED BY THE ENGINEER AND SHALL BE DISCREETLY INDICATED ON THE AS-BUILT DRAWINGS.
3. IONIZATION TYPE DUCT SMOKE DETECTORS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR, INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR AND WIRED TO SHUT DOWN THE UNIT AND FOR FIRE ALARM INTERFACE BY THE ELECTRICAL CONTRACTOR.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE A DEDICATED 120V CIRCUIT IN A J-BOX FOR CONTROL POWER. CONTROLS CONTRACTOR SHALL EXTEND 120V POWER FROM J-BOX TO CONTROL PANELS, DAMPER ACTUATORS, TRANSFORMERS, ETC. AS REQUIRED FOR OPERATION OF CONTROL SYSTEM. BAS CONTRACTOR SHALL PROVIDE ALL 120V
5. BAS SHALL ALLOW GLOBAL OPERATION OF HEAT PUMP SETPOINTS.
6. ALL FACTORY INSTALLED EQUIPMENT SAFETIES (HIGH LIMIT, LOW LIMIT, LOW TEMP., HIGH TEMP., LOW FLOW, HEAD PRESSURE, ETC.) SHALL BE ACTIVE TO PROTECT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. BAS SHALL MONITOR ALL EQUIPMENT SAFETIES AND ACTIVATE ALARMS TO REPORT ACTIVATION OF EQUIPMENT SAFETIES.
7. MECHANICAL CONTRACTOR SHALL COORDINATE ALL EQUIPMENT COMMUNICATION/INTEGRATION REQUIREMENTS PRIOR TO EQUIPMENT SUBMITTALS. EQUIPMENT SUBMITTALS SHALL BE REVIEWED AND APPROVED BY THE CONTROLS VENDOR (APPROVAL SHALL BE INDICATED ON THE SUBMITTAL) PRIOR TO SUBMITTING TO THE DESIGN TEAM FOR APPROVAL. ANY SUBMITTALS RECEIVED WITHOUT CONTROLS VENDOR APPROVAL WILL BE RETURNED WITHOUT REVIEW.

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL CONTROL SEQUENCES OF OPERATION

M-601

OPTIMA# 24-0073R

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POINTS LIST - INPUT/OUTPUT SUMMARY

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS: ANALOG, MEASURED												INPUTS: ANALOG, CALC.				INPUTS: BINARY					
	TEMPERATURE	PRESSURE	RH	KW	AIR FLOW	WATER FLOW	CO2	VELOCITY	RPM	VOLTS	AMPS	HERTZ	KWH	ENTHALPY	RUN TIME	EFFICIENCY	STATUS	FILTER	SMOKE	FREEZE	AIR FLOW	METER
GEOTHERMAL MANIFOLD ROOMS																						
Geothermal Supply Temp - ZONE-A	X																					
Geothermal Return Temp - ZONE-A	X																					
Geothermal Supply Temp - ZONE-B	X																					
Geothermal Return Temp - ZONE-B	X																					
Geothermal Supply Temp - ZONE-C	X																					
Geothermal Return Temp - ZONE-C	X																					
Geothermal Supply Temp - ZONE-D	X																					
Geothermal Return Temp - ZONE-D	X																					
Geothermal Supply Temp - ZONE-E	X																					
Geothermal Return Temp - ZONE-E	X																					
Geothermal Supply Temp - ZONE-F	X																					
Geothermal Return Temp - ZONE-F	X																					
WSHP																						
Supply Fan																	X					
Supply Speed																						
Supply Status																	X					
CW Valve																						
Compressor #1																	X					
Compressor #2																	X					
Space Temp	X																					
Space CO2							X															
Space RH			X																			
Supply Temp	X																					
Over-ride																						
Setpoint Adjust																						
Return Air Smoke (by elec. contr.)																			X			
OA Damper (damper by controls contr.)																						
Hot Gas Reheat Valve																						
Reversing Valve																						
Safety																	X					
Condensate Overflow																	X					
Local Occupancy																	X					
Circulator Pump(s)																	X					
Refrigerant Detection																						
Fans																						
Core Toilet Fans																						
Misc. Fans																						
Split Systems (Server/Data Rooms)																						
Supply Fan																	X					
DX Compressor																	X					
Space Temp	X																					
Supply Temp	X																					
Override																						
Setpoint Adjust																						
Misc. Points																						
Freezer Temp	X																					
Cooler Temp	X																					
OA Temp	X													X								
OA CO2							X							X								
Dew Point	X													X								
Domestic Water Meter						X											X					
LP Gas Meter									X								X					
Fire Alarm Status																	X					
Kitchen Hood/MAU/KEF																	X					

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	OUTPUTS: DIGITAL				OUTPUTS: ANALOG				SYSTEM FEATURES: ALARMS					SYSTEM FEATURES: PROGRAMS											GENERAL	
	OFF-ON	OFF-AUTO-ON	OFF-HI-LO	OPEN-CLOSE	DMPR. POS.	VALVE POS.	SETPOINT ADJ.	STEP CONTROL	HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROOF	TIME SCHEDULING	DEMAND LIMITING	DUTY CYCLE	START/STOP OPT.	ENTHALPY OPT.	SMOKE CNT.	TREND	ALARM INSTRUCT	MAIN. WK. ORD.	OCC. OVERRIDE	BYPASS C'OVER	COLOR GRAPHIC	SUPPLMENT. NOTES
GEOTHERMAL MANIFOLD ROOMS																									X	
Geothermal Supply Temp - ZONE-A																										
Geothermal Return Temp - ZONE-A																										
Geothermal Supply Temp - ZONE-B																										
Geothermal Return Temp - ZONE-B																										
Geothermal Supply Temp - ZONE-C																										
Geothermal Return Temp - ZONE-C																										
Geothermal Supply Temp - ZONE-D																										
Geothermal Return Temp - ZONE-D																										
Geothermal Supply Temp - ZONE-E																										
Geothermal Return Temp - ZONE-E																										
Geothermal Supply Temp - ZONE-F																										
Geothermal Return Temp - ZONE-F																										
WSHP														X	X		X								X	
Supply Fan	X												X													
Supply Speed							X																			WHERE APPLICABLE
Supply Status													X													WHERE APPLICABLE
CW Valve				X																						
Compressor #1	X												X													
Compressor #2	X				X								X													WHERE APPLICABLE
Space Temp																										
Space CO2																										WHERE INDICATED
Space RH																										WHERE INDICATED
Supply Temp																										
Over-ride																							X			
Setpoint Adjust							X																			
Return Air Smoke (by elec. contr.)																					X					
OA Damper (damper by controls contr.)					X																					WHERE INDICATED
Hot Gas Reheat Valve				X																						
Reversing Valve				X																						WHERE INDICATED
Safety																										
Condensate Overflow																										
Local Occupancy																										
Circulator Pump(s)	X												X													
Refrigerant Detection																										
Fans																									X	
Core Toilet Fans	X													X												
Misc. Fans																										SEE FAN SCHEDULE
Split Systems (Server/Data Rooms)														X											X	
Supply Fan	X												X													
DX Compressor																										
Space Temp									X																	
Supply Temp																										
Override																							X			
Setpoint Adjust							X																			
Misc. Points																										
Freezer Temp									X																	
Cooler Temp									X																	
OA Temp																										
OA CO2																										
Dew Point																										
Domestic Water Meter									X																	
LP Gas Meter									X																	
Fire Alarm Status																										
Kitchen Hood/MAU/KEF													X													

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS: ANALOG, MEASURED												INPUTS: ANALOG, CALC.							INPUTS: BINARY							
	TEMPERATURE	PRESSURE	RH	KW	AIR FLOW	WATER FLOW	CO2	VELOCITY	THERMS	VOLTS	AMPS	HERTZ	KWH	ENTHALPY	RUN TIME	EFFICIENCY	KVA	POWER FACTOR	KVAR	STATUS	FILTER	SMOKE	FREEZE	AIR FLOW	METER	OVER-RIDE	LEVEL
Domestic H.W.																											
Circulation Pump																				X							
Domestic Cold Water Temp	X																										
WH Storage Tank	X																										
Building Domestic HWS Temp	X																										
Building End of Line Temp	X																										
Kitchen System HWS Temp	X																										
Kitchen System End of Line Temp	X																										
Electrical Systems																											
Main Service - Total Elec Demand				X																							
Main Service - Total Elec Consumption													X														
Current - Phase A											X																
Current - Phase B											X																
Current - Phase C											X																
Average Current											X																
Voltage - AB Line-to-Line										X																	
Voltage - BC Line-to-Line										X																	
Voltage - CA Line-to-Line										X																	
Voltage - Avg Line-to-Line										X																	
Voltage - AN Line-to-Neutral										X																	
Voltage - BN Line-to-Neutral										X																	
Voltage - CN Line-to-Neutral										X																	
Voltage - Avg Line-to-Neutral										X																	
KW Total (Real Power)				X																							
KW Demand				X																							
KW Maximum Demand				X																							
KVA Total (Apparent Power)																	X										
KVAR Total (Reactive Power)																			X								
KWH Total (Energy)													X														
Power Factor																		X									
Frequency												X															
Total Building Consumption				X									X														
Emergency Generator																											
Current - Phase A											X																
Current - Phase B											X																
Current - Phase C											X																
Average Current											X																
Voltage - AB Line-to-Line										X																	
Voltage - BC Line-to-Line										X																	
Voltage - CA Line-to-Line										X																	
Voltage - Avg Line-to-Line										X																	
Voltage - AN Line-to-Neutral										X																	
Voltage - BN Line-to-Neutral										X																	
Voltage - CN Line-to-Neutral										X																	
Voltage - Avg Line-to-Neutral										X																	
KW Total (Real Power)				X																							
KW Demand				X																							
KW Maximum Demand				X																							
KVA Total (Apparent Power)																	X										
KVAR Total (Reactive Power)																			X								
KWH Total (Energy)													X														
Power Factor																		X									
Frequency												X															

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	OUTPUTS: DIGITAL				OUTPUTS: ANALOG				SYSTEM FEATURES: ALARMS					SYSTEM FEATURES: PROGRAMS									GENERAL	
	OFF-ON	OFF-AUTO-ON	OFF-HI-LO	OPEN-CLOSE	DMPR. POS.	VALVE POS.	SETPOINT ADJ.	STEP CONTROL	HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROOF	TIME SCHEDULING	DEMAND LIMITING	DUTY CYCLE	START/STOP OPT.	ENTHALPY OPT.	SMOKE CNT.	TREND	ALARM INSTRUCT	MAIN. WK. ORD.	COLOR GRAPHIC	SUPPLMENT. NOTES
Domestic H.W.														X									X	
Circulation Pump		X											X											Typical of 2
Domestic Cold Water Temp																								
WH Storage Tank																								Typical of 2
Building Domestic HWS Temp																								
Building End of Line Temp																								
Kitchen System HWS Temp																								
Kitchen System End of Line Temp																								

GENERAL NOTE:
INPUT/OUTPUT SUMMARY IS A GENERAL LIST OF CONTROL POINTS REQUIRED FOR THE OPERATION OF THE MECHANICAL SYSTEM. IN ADDITION TO CONTROL POINTS INDICATED, THE CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADDITIONAL POINTS AS REQUIRED FOR OPERATION OF THE MECHANICAL SYSTEM AS SPECIFIED AND OUTLINED IN THE SEQUENCE OF OPERATION, AND TO COMPLY WITH THE SPECIFICATIONS.

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: HFK
CHECKED BY: TAL

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MECHANICAL CONTROL POINTS LIST

M-602

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2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - ELECTRICAL SUMMARY

C401 METHOD OF COMPLIANCE

- ■ 2018 NCECC CHAPTER 4
- ☐ NC SPECIFIC COMCHECK PROVIDED
- ☐ N/A BASED ON PROJECT SCOPE
- ☐ ASHRAE 90.1-2013

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ■ C406.3 REDUCED LTG DENSITY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.4 ENHANCED DIGITAL LTG CNTLS
- ☐ C406.7 HI-EFF SERVICE WTR HTG
- ☐ NOT APPLICABLE BASED ON PROJECT SCOPE
- ☐ C406.7.1 WTR HTG LOAD FRACTION

C405.2 - LIGHTING CONTROLS (MANDATORY REQUIREMENTS):

- ■ LIGHTING SYSTEMS ARE PROVIDED WITH CONTROLS AS REQUIRED PER SECTION C405.2, EXCEPT WHERE EXEMPT.
- ☐ NOT APPLICABLE

C405.3 - EXIT SIGNS (MANDATORY REQUIREMENTS):

- ■ INTERNALLY ILLUMINATED EXIT SIGNS DO NOT EXCEED 5 WATTS PER SIDE.
- ☐ NOT APPLICABLE

C405.4 - INTERIOR LIGHTING POWER REQUIREMENTS (PRESCRIPTIVE) (NON-EXEMPT):

☐ NOT APPLICABLE PER 2018 NCECC C503.1, EXCEPTION 2.G.

C405.4.1 - TOTAL CONNECTED INTERIOR LIGHTING POWER:
65,790 WATTS SPECIFIED
24 % REDUCTION OF SPECIFIED VS. ALLOWED (APPLICABLE IF C406.1.2 IS SELECTED)

C405.4.2 - TOTAL ALLOWABLE INTERIOR LIGHTING POWER:
METHOD OF COMPLIANCE:
■ BUILDING AREA METHOD ☐ SPACE-BY-SPACE METHOD
87,202 WATTS ALLOWED

C405.5.1 - EXTERIOR BUILDING LIGHTING POWER (NON-EXEMPT):

☐ NOT APPLICABLE
TOTAL CONNECTED EXTERIOR LIGHTING POWER:
2,080 WATTS SPECIFIED
TOTAL ALLOWABLE EXTERIOR LIGHTING POWER:
4,660 WATTS ALLOWED

C405.6 - ELECTRICAL ENERGY CONSUMPTION (DWELLING UNITS):

☐ SEPARATE ELECTRICAL METERING HAS BEEN PROVIDED FOR EACH DWELLING UNIT IN GROUP R-2 BUILDINGS.
■ NOT APPLICABLE

C405.7 - ELECTRICAL TRANSFORMERS (MANDATORY REQUIREMENTS):

■ ELECTRICAL TRANSFORMERS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.7, EXCEPT WHERE EXEMPT.
☐ NOT APPLICABLE

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS):

■ ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.8, EXCEPT WHERE EXEMPT.
☐ NOT APPLICABLE

C408 - SYSTEM COMMISSIONING:

☐ PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
■ PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

TELECOM LEGEND - ELECTRICAL

SYMBOL	DESCRIPTION
	PLYWOOD TELEPHONE BACKBOARD. SIZE AS INDICATED ON RISER.
	TELEPHONE OUTLET ABOVE COUNTER OR HEIGHT SPECIFIED. MINIMUM 1" CONDUIT TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. DATA/TELEPHONE DROPS, NUMBER INDICATES NUMBER OF JACKS/CABLING IN FACEPLATE. HEIGHT AS INDICATED. IF CABLE QUANTITY AND SERVICE ARE NOT IDENTIFIED, THEN PATHWAY ONLY OR REFER TO TO TECHNOLOGY DRAWINGS FOR CABLE AND ACTIVATION TYPE.
#	DATA OUTLET. MINIMUM 1 1/4" CONDUIT TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. SUBSCRIPT NEXT TO OUTLET INDICATES DATA DROPS. IF CABLE QUANTITY AND SERVICE ARE NOT IDENTIFIED, THEN PATHWAY ONLY OR REFER TO TO TECHNOLOGY DRAWINGS FOR CABLE AND ACTIVATION TYPE.
	CEILING MOUNTED DATA. MINIMUM 1 1/4" CONDUIT TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. SUBSCRIPT NEXT TO OUTLET INDICATES DATA DROPS. WHERE NO QUANTITY SHOWN, THIS INDICATES PATHWAYS AND BOXES ONLY.
WAP	STRUCTURE MOUNTED JUNCTION BOX FOR WIRELESS ACCESS POINT IN OPEN CEILING APPLICATIONS. 4" SQUARE BOX WITH A TWO-GANG OPENING. STUB 1" EC FROM BOX TO J-HOOKS OR CABLE TRAY ABOVE ACCESSIBLE CEILING. PROVIDE CABLING, TERMINATIONS AND FACEPLATE PER SPECIFICATIONS.
WAP	STRUCTURE MOUNTED JUNCTION BOX FOR WIRELESS ACCESS POINT ON WALL MOUNTED APPLICATIONS. 4" SQUARE BOX WITH A TWO-GANG OPENING. STUB 1" EC FROM BOX TO J-HOOKS OR CABLE TRAY ABOVE ACCESSIBLE CEILING. PROVIDE CABLING, TERMINATIONS AND FACEPLATE PER SPECIFICATIONS.
TV	SEE TV DETAIL FOR TYPE AND REQUIREMENTS. MINIMUM 1 1/4" CONDUIT FOR CABLING AND 3/4" CONDUIT FOR POWER. PROVIDE PULL STRING FOR LOW VOLTAGE CABLING TO ACCESSIBLE CEILING.
AV1	SEE TV DETAIL FOR TYPE AND REQUIREMENTS. MINIMUM 1 1/4" CONDUIT FOR CABLING AND 3/4" CONDUIT FOR POWER. PROVIDE PULL STRING FOR LOW VOLTAGE CABLING TO ACCESSIBLE CEILING.
AV2	SEE TV DETAIL FOR TYPE AND REQUIREMENTS. MINIMUM 1 1/4" CONDUIT FOR CABLING AND 3/4" CONDUIT FOR POWER. PROVIDE PULL STRING FOR LOW VOLTAGE CABLING TO ACCESSIBLE CEILING.
AV3	SEE TV DETAIL FOR TYPE AND REQUIREMENTS. MINIMUM 1 1/4" CONDUIT FOR CABLING AND 3/4" CONDUIT FOR POWER. PROVIDE PULL STRING FOR LOW VOLTAGE CABLING TO ACCESSIBLE CEILING.
	TYPICAL EQUIPMENT RACK WITH VERTICAL WIRE MANAGEMENT SECTIONS.
TMB	TELECOMMUNICATIONS PRIMARY BUS BAR
TMB	TELECOMMUNICATIONS SECONDARY BUS BAR
	DATA RACK, WALL MOUNTED

SYMBOL SCHEDULE POWER

SYMBOL	DESCRIPTION
	WIRING SYSTEM CONCEALED IN WALL OR CEILING. WHEN SHOWN, CROSS LINES INDICATE NUMBER OF WIRES. (GROUND WIRES ARE NOT SHOWN)
	WIRING SYSTEM CONCEALED IN OR UNDER SLAB OR UNDERGROUND. UNSWITCHED LEG OF LIGHTING CIRCUIT WHEN SHOWN ON LIGHTING PLANS.
	WIRING SYSTEM LOW VOLTAGE.
	CONDUIT TURNED DOWN TO FLOOR BELOW.
	CONDUIT TURNED UP TO FLOOR ABOVE.
	BRANCH CIRCUIT HOMERUN TO PANEL.

SYMBOL SCHEDULE POWER LEGEND

SYMBOL	DESCRIPTION
GFCI	DUPLEX RECEPTACLE CEILNG MOUNTED
	JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
	CEILING MOUNT JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED
	208Y/120V THREE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF.
	480Y/277V THREE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF.
	480-208Y/120V TRANSFORMER. SEE RISER FOR SIZE. PROVIDE 4" THICK HOUSEKEEPING PAD TO EXTEND 3" ON SIDES, FRONT WITH CHAMFER EDGE AND OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE.
	AUTOMATIC TRANSFER SWITCH WALL MOUNT
SPD	SURGE PROTECTION DEVICE (SPD); SEE DETAIL.
GFCI	JUNCTION BOX FOR HAND DRYER CONNECTION; SEE MOUNTING HEIGHTS DETAIL FOR EXACT HEIGHT; SEE ARCH. SHEETS FOR COORDINATION 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
A	SPECIAL OUTLET. SEE PLANS.
	FLUSH MOUNTED FLOOR BOX - TAMPER RESISTANT SINGLE DUPLEX RECEPTACLE, NEMA 5-20R. EQUAL TO WIREMOLD 881 SERIES WITH DUPLEX COVER PLATE WITH FLIP LIDS. EQUALS BY HUBBEL OR LEVITION. ARCHITECT TO SELECT FINISH.
	FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. UNSHADED INDICATES NON-FUSED.
	FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. UNSHADED INDICATES NON-FUSED.
M	DOOR MOTOR CONTROL. MOUNT +40" AFF, CONTROLS SHALL BE UP, DOWN, AND STOP MOUNTED ON 4" SQUARE BOX (FLUSH BOX) NEMA 4
FM	FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER, WITH OVERLOAD PROTECTION
	HANDHOLE
D	ACCESSIBLE DOOR OPENER PUSH BUTTON. PROVIDE MINIMUM (2) GANG BOX WITH SINGLE GANG OPENING. 3/4"C TO DOOR OPERATOR. COORDINATE WITH EQUIPMENT PROVIDED. SEE DETAIL.
DE	EMERGENCY POWER OFF BUTTON

ELECTRICAL FIXTURES LEGEND

SYMBOL	DESCRIPTION
	TAMPER RESISTANT DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER BACKSPLASH, OR AT HEIGHT NOTED
	TAMPER RESISTANT DUPLEX RECEPTACLE, 20 AMP, 120 VOLT
GFI	TAMPER RESISTANT GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI.
GFI	TAMPER RESISTANT GROUND FAULT RECEPTACLE - BREAKER AT PANEL. NEMA 5-20R DUPLEX. MOUNTED ABOVE COUNTER, OR AT HEIGHT NOTED. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI.
GFI	TAMPER RESISTANT GROUND FAULT RECEPTACLE - BREAKER AT PANEL. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI.
5	TAMPER RESISTANT GROUND FAULT DUPLEX RECEPTACLE, NEMA 5-20R MOUNTED ABOVE COUNTER BACKSPLASH OR AT HEIGHT NOTED.
5	TAMPER RESISTANT GROUND FAULT DUPLEX RECEPTACLE - BREAKER AT PANEL, NEMA 5-20R MOUNTED ABOVE COUNTER BACKSPLASH OR AT HEIGHT NOTED.
WR	TAMPER RESISTANT WEATHERPROOF GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX, CORROSION RESISTANT, WITH IN-USE COVER.
	TAMPER RESISTANT QUAD RECEPTACLE. TWO NEMA 5-20R DUPLEX RECEPTACLES, OTHERWISE SAME AS DUPLEX RECEPTACLE ABOVE.
EWC	TAMPER RESISTANT QUAD RECEPTACLE, TWO NEMA 5-20R FOR ELECTRIC WATER COOLER TO BE SUPPLIED BY GROUND FAULT BREAKER. COORDINATE LOCATION WITH PLUMBING CONTRACTOR.
20	TAMPER RESISTANT QUAD RECEPTACLE. TWO NEMA 5-20R DUPLEX RECEPTACLES. AT HEIGHT NOTED.
5 2x	TAMPER RESISTANT GROUND FAULT QUAD RECEPTACLE. TWO NEMA 5-20R DUPLEX RECEPTACLES ABOVE COUNTER.

FLOOR BOXES:

SYMBOL	DESCRIPTION
FB4 #	4-GANG MULTI-SERVICE FLOOR BOX. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, CONDUITS, ELECTRICAL DEVICES AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. LEGRAND: EVOLUTION EFB4SS-OG OR APPROVED EQUAL.

EM./LS LIGHTING FIXTURE SYMBOLS AND DEVICES

SYMBOL	DESCRIPTION
	LED FIXTURE CONNECTED TO LIFE SAFETY CIRCUIT. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE. PROVIDE EMERGENCY TRANSFER RELAY WHERE SHOWN ON PLANS

LIGHTING FIXTURES SYMBOLS AND DEVICES LEGEND

SYMBOL	DESCRIPTION
	WALL MOUNTED LED LIGHTING FIXTURE.
	LED LIGHTING FIXTURE. SEE FIXTURE SCHEDULE. SUSPEND FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
	LED STRIP LIGHT FIXTURE
	RECESSED LED OR H.I.D. LIGHTING FIXTURE.
	SUSPENDED OR PENDANT LIGHT (TYPE DENOTED IN LIGHTING SCHEDULE)
	RECESSED LINEAR LIGHT (TYPE DENOTED IN LIGHTING SCHEDULE)
	EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. GENERATOR BACKUP. SEE LIGHTING FIXTURE SCHEDULE.
	EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. GENERATOR BACKUP. SEE LIGHTING FIXTURE SCHEDULE.
S	SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER AH 1221, OR EQUAL BY HUBBELL, LEVITON AND PASS & SEYMOUR.
^{3}	THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, THREE WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1223, OR EQUAL BY HUBBELL, LEVITON AND PASS & SEYMOUR.
^{4}	FOUR WAY SWITCH, 20 AMP, 120/277 VOLT, COOPER 1224 OR EQUAL.
^{K}	KEY OPERATED SWITCH
^{D}	DIMMER SWITCH. LUTRON SERIES, OR EQUAL. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD AND DEVICE QUANTITY. PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG TRIM PLATE. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED, FLUORESCENT, OR INCANDESCENT.) WATTAGE, AND QUANTITY.
^{3D}	3-WAY DIMMER SWITCH. LUTRON SERIES, OR EQUAL. VERIFY LOAD ON CIRCUIT AND MATCH DIMMER SIZE TO LOAD AND DEVICE QUANTITY. PROVIDE DOUBLE GANG J-BOX WITH SINGLE GANG TRIM PLATE. PROVIDE DIMMING SWITCH AS RECOMMENDED BY LIGHTING MANUFACTURER. MATCH SWITCH TYPE TO SOURCE (LED, FLUORESCENT, OR INCANDESCENT.) WATTAGE, AND QUANTITY.
OC	CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. 360 DEGREE COVERAGE, 2,000 SQ FT COVERAGE LARGE MOTION, 400 SQ FT SMALL MOTION. NON CATEGORY CABLE CONNECTORS. LOW VOLTAGE DETECTOR, PROVIDE WITH POWER PACK FOR EACH SWITCH LEG. SENSOR SWITCH, WATT STOPPER, LEVITION, EATON, SENSORWORX OR EQUAL.
LH	CEILING MOUNTED HIGH BAY OCCUPANCY SENSOR, PASSIVE INFARED, SENSOR SWITCH CM 6, OR EQUAL BY HUBBELL OR ACUITY.
OC	WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY WITH NEUTRAL, 120/277V RATED. WATT STOPPER #WS-250, OR EQUAL BY SENSOR SWITCH, AND LEVITON.
OCD	WALL MOUNTED OCCUPANCY SENSOR AND SWITCH WITH 0-10V DIMMING. INFRARED TECHNOLOGY, WATT STOPPER #PW-311, SENSOR SWITCH, COOPER CONTROLS OR EQUAL. SWITCH SHALL BE INSTALLED IN SINGLE GANG BOX. 120V RATED.
L	GENERATOR TRANSFER DEVICE FOR NORMAL LIGHTING CONTROL, SEE EMERG. LTG RELAY DETAIL. CONNECT TO LOCAL LIFE SAFETY BRANCH LIGHTING CIRCUIT. BASED ON BODINE BLCD-208, EQUALS BY: LEGRAND, ETC, OR APPROVED EQUAL.
	CEILING MOUNTED OCCUPANCY SENSOR POWER PACK. SENSOR SWITCH PP-20, OR EQUAL BY WATTSTOPPER OR COOPER. POWER PACK MUST BE CAPABLE OF POWERING UP TO 14 SENSORS.

SYMBOL SCHEDULE TELECOM:

SEE DETAILS (500 SERIES) IN TELECOM PACKAGE FOR ADDITIONAL ROUGH IN REQUIREMENTS

SYMBOL	DESCRIPTION
#	NETWORK OUTLET. STANDARD HEIGHT (+18" AFF). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
#	NETWORK OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
#	NETWORK OUTLET, ABOVE CEILING (MIN. +6" AFC). WHEN INSTALLED ABOVE HARD CEILING, PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
W	NETWORK WALL-PHONE OUTLET. ELEVATED HEIGHT (+42" AFF). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
	NETWORK OUTLET - RACEWAY ONLY. STANDARD HEIGHT (+18" AFF). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE BLANK COVER PLATE.
	NETWORK OUTLET - RACEWAY ONLY. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE BLANK COVER PLATE.
WAP	WIRELESS ACCESS POINT CONNECTION (CEILING). WHEN INSTALLED ABOVE HARD CEILING, PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. WHEN INSTALLED IN ACCESSIBLE CEILING SPACE, PROVIDE ABOVE-CEILING BRACKET AND SURFACE BOX. REFER TO WIRELESS ACCESS POINT DETAILS.
WAP	WIRELESS ACCESS POINT CONNECTION (WALL). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
WAP EXT	WIRELESS ACCESS POINT CONNECTION (EXTERIOR). PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. SEE DETAIL SHEET - .
TV	STANDARD TV OUTLET. PROVIDE PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. SEE DETAIL ON SHEET T-501 FOR RECEPTACLE REQUIREMENTS.
AV#	AUDIO/VIDEO DISPLAY BACKBOX. PROVIDE RECEPTACLES, BACKBOX/JUNCTION BOX, AND CONDUITS PER CORRESPONDING DETAIL ON SHEET T-502.
	RUNWAY LADDER CABLE TRAY IN TELECOMMUNICATIONS ROOMS.
	WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS.
	TELECOM EQUIPMENT CABINET
	TELECOMMUNCATION TERMINAL BACKBOARD (TTB). PROVIDE 4' BY 8' SHEETS OF 3/4" FIRE-RATED A/C-GRADE PLYWOOD, MOUNTED VERTICALLY WITH BOTTOM EDGE 8" AFF. MOUNT WITH A-SIDE FACING OUTWARD FROM THE WALL. FIRE RATING STAMP MUST REMAIN VISIBLE. DO NOT PAINT.

SYMBOL SCHEDULE TELECOM:

SEE DETAILS (500 SERIES) IN TELECOM PACKAGE FOR ADDITIONAL ROUGH IN REQUIREMENTS

SYMBOL	DESCRIPTION
	NETWORK CAMERA (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO CAMERA DETAIL (HARD/OPEN CEILING).
	NETWORK CAMERA (WALL). PROVIDE 2-GANG JUNCTION BOX AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
EXT	NETWORK CAMERA (EXTERIOR WALL). PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO EXTERIOR NETWORK DEVICE DETAIL.
CR	CARD READER. PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SEE DETAILS ON T-504
DC	DOOR CONTACT. PROVIDE 3/4" CONDUIT TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
RX	REQUEST TO EXIT DEVICE/CONNECTION. PROVIDE 1-GANG JUNCTION BOX MOUNTED HORIZONTALLY AND 3/4" CONDUIT TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
KP	KEYPAD. PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO INTRUSION DETECTION CONTROL PANEL.
ES	ELECTRIC STRIKE. PROVIDE 3/4" CONDUIT WITH PULL STRING IN DOOR FRAME TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. DOOR HARDWARE CONTRACTOR SHALL PROVIDE DEVICE.
EL	ELECTRIC LOCKSET. PROVIDE 3/4" CONDUIT WITH PULL STRING IN DOOR FRAME TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. HARDWARE CONTRACTOR SHALL PROVIDE DEVICE.
PB	PANIC BUTTON, MOUNTED UNDER DESK, UON. PROVIDE 1-GANG JUNCTION BOX ON WALL ADJACENT TO DESK, MOUNTED AT 18" AFF, AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
S	25/70V ANALOG SPEAKER (CEILING). PROVIDE 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
S IP	NETWORK SPEAKER (CEILING). WHEN INSTALLED IN HARD CEILING, PROVIDE SPEAKER BACKBOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
S	25/70V ANALOG SPEAKER (WALL). MOUNT 10' AFF UNLESS OTHERWISE NOTED. PROVIDE SINGLE GANG J-BOX WITH 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
S EXT	HIGH-OUTPUT EXTERIOR ANALOG HORN SPEAKER. MOUNT 10' AFG UNLESS OTHERWISE NOTED. PROVIDE 8"x8"x6" DEEP JUNCTION BOX, 3/4" SLEEVE TO EXTERIOR AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
IC	NETWORK INTERCOM CALL STATION. ELEVATED HEIGHT (+42" AFF). PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO LOCAL ACCESSIBLE CEILING SPACE.

ELECTRICAL SHEET INDEX

E-001	ELECTRICAL LEGEND AND NOTES
E-002	ELECTRICAL SPECIFICATIONS
E-010	ELECTRICAL SITE PLAN
E-011	ELECTRICAL SITE PLAN PHOTOMETRICS
E-111	FIRST FLOOR LIGHTING PLAN - AREA 100
E-112	FIRST FLOOR LIGHTING PLAN - AREA 200
E-113	FIRST FLOOR LIGHTING PLAN - AREA 300
E-114	FIRST FLOOR LIGHTING PLAN - AREA 400
E-115	FIRST FLOOR LIGHTING PLAN - AREA 500
E-116	FIRST FLOOR LIGHTING PLAN - AREA 600
E-117	MECH. PLATFORM LIGHTING PLAN - AREA 100
E-118	MECH. PLATFORM LIGHTING PLAN - AREA 200
E-211	FIRST FLOOR POWER PLAN - AREA 100
E-212	FIRST FLOOR POWER PLAN - AREA 200
E-213	FIRST FLOOR POWER PLAN - AREA 300
E-214	FIRST FLOOR POWER PLAN - AREA 400
E-215	FIRST FLOOR POWER PLAN - AREA 500
E-216	FIRST FLOOR POWER PLAN - AREA 600
E-217	MECH. PLATFORM POWER PLAN - AREA 100
E-218	MECH. PLATFORM POWER PLAN - AREA 200
E-219	ROOF POWER PLAN
E-451	ENLARGED CLASSROOM PLANS - LIGHTING
E-452	ENLARGED CLASSROOM PLANS - LIGHTING
E-453	ENLARGED CLASSROOM PLANS - LIGHTING
E-454	ENLARGED CLASSROOM PLANS - LIGHTING
E-455	ENLARGED CLASSROOM PLANS - LIGHTING
E-461	ENLARGED CLASSROOM PLANS - POWER
E-462	ENLARGED CLASSROOM PLANS - POWER
E-463	ENLARGED CLASSROOM PLANS - POWER
E-464	ENLARGED CLASSROOM PLANS - POWER
E-465	ENLARGED CLASSROOM PLANS - POWER
E-501	ENLARGED POWER PLANS - KITCHEN
E-502	ENLARGED ELECTRICAL PLANS
E-601	ELECTRICAL DETAILS
E-602	ELECTRICAL DETAILS
E-603	ELECTRICAL DETAILS
E-701	ELECTRICAL DIAGRAMS
E-702	PANEL SCHEDULES
E-703	PANEL SCHEDULES
E-704	PANEL SCHEDULES
E-705	PANEL SCHEDULES
E-706	PANEL SCHEDULES
E-707	EMERGENCY PANEL SCHEDULES
E-708	EMERGENCY PANEL SCHEDULES
E-801	MECHANICAL EQUIPMENT CONNECTION SCHEDULE
E-802	LIGHTING FIXTURE SCHEDULE

ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)	DCP	DOMESTIC WATER CIRCULATING PUMP	HT	HEIGHT	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	SWBD	SWITCHBOARD		
A	AMPERE	DEPT	DEPARTMENT	HTG	HEATING			SYM	SYMMETRICAL		
AC	ABOVE COUNTER OR AIR CONDITIONER	DET	DETAIL	HTR	HEATER			SYS	SYSTEM		
		DIA	DIAMETER	HV	HIGH VOLTAGE	NFDS	NON-FUSED SAFETY DISCONNECT SWITCH	TEL	TELEPHONE		
ACLG	ABOVE CEILING	DISC	DISCONNECT	HVAC	HEATING, VENTILATING AND AIR CONDITIONING	NIC	NOT IN CONTRACT	TEL/DATA	TELEPHONE/DATA		
ADO	AUTOMATIC DOOR OPENER	DIST	DISTRIBUTION	HWP	HYDRONIC WATER PUMP	NL	NIGHT LIGHT	TERM	TERMINAL		
AF	AMP FRAME	DN	DOWN			N.O.	NORMALLY OPEN	TL	TWIST LOCK		
AFF	ABOVE FINISHED FLOOR	DPR	DAMPER	IC	INTERRUPTING CAPACITY	NPF	NORMAL POWER FACTOR	TR	TAMPER RESISTANT		
AFG	ABOVE FINISHED GRADE	DS	SAFETY DISCONNECT SWITCH	IG	ISOLATED GROUND	NTS	NOT TO SCALE	T-STAT	THERMOSTAT		
AFI	ARC FAULT CIRCUIT INTERRUPTER	DT	DOUBLE THROW	IMC	INTERMEDIATE METAL CONDUIT			TTC	TELEPHONE TERMINAL CABINET		
		DWG	DRAWING	INCAND	INCANDESCENT	OH	OVERHEAD	TV	TELEVISION		
AHU	AIR HANDLING UNIT			IR	INFRARED	OL	OVERLOADS	TVTC	TELEVISION TERMINAL CABINET		
AL	ALUMINUM	EC	ELECTRICAL CONTRACTOR	I/W	INTERLOCK WITH						
ALT	ALTERNATE	ELEC	ELECTRIC, ELECTRICAL			PA	PUBLIC ADDRESS	TYP	TYPICAL		
AMP	AMPERE	ELEV	ELEVATOR	J-BOX	JUNCTION BOX	PB	PULL BOX OR PUSHBUTTON				
AMPL	AMPLIFIER	EM	EMERGENCY			PE	PNEUMATIC ELECTRIC	UC	UNDER COUNTER		
ANNUN	ANNUNCIATOR	EMS	ENERGY MANAGEMENT SYSTEM	KV	KILOVOLT	PED	PEDESTAL	UE	UNDERGROUND ELECTRICAL		
APPROX	APPROXIMATELY	EMT	ELECTRICAL METALLIC TUBING	KVA	KILOVOLT-AMPERE	PF	POWER FACTOR	UG	UNDERGROUND		
AQ-STAT	AQUASTAT	EP	ELECTRIC PNEUMATIC	KVAR	KILOVOLT-AMPERE REACTIVE	PH	PHASE	UH	UNIT HEATER		
ARCH	ARCHITECT, ARCHITECTURAL	EQUIP	EQUIPMENT	KW	KILOWATT	PIV	POST INDICATING VALVE	UT	UNDERGROUND TELEPHONE		
AS	AMP SWITCH	EWC	ELECTRIC WATER COOLER	KWH	KILOWATT HOUR	PNL	PANEL	UTIL	UTILITY		
AT	AMP TRIP	EX	EXISTING			PP	POWER POLE	UV	UNIT VENTILATOR OR ULTRAVIOLET		
ATS	AUTOMATIC TRANSFER SWITCH	EXH	EXHAUST	LOC	LOCATE OR LOCATION	PR	PAIR				
AUTO	AUTOMATIC	EXP	EXPLOSION PROOF	LT	LIGHT	PRI	PRIMARY				
AUX	AUXILIARY			LTG	LIGHTING	PROJ	PROJECTION	V	VOLT		
AV	AUDIO VISUAL	FA	FIRE ALARM

ADA AND LEGAL DISCLAIMER: This document is intended to comply with the requirements of the Americans with Disabilities Act (ADA). However architects and engineers are not licensed to interpret laws or give advice concerning laws. The owner should have this document reviewed by his attorney to determine if it complies with ADA and other laws.

1. GENERAL:

A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS AND SUPPLIES AS NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON THE PLANS.
B. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
C. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTION FEES.
D. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIALS AND USE EXISTS. ALL ITEMS OF THE SAME TYPE AND RATING SHALL BE IDENTICAL AND OF THE SAME MANUFACTURER.
E. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CATALOG DATA IN ELECTRONIC FORMAT (PDF) FOR ALL ELECTRICAL ITEMS IN THE SCOPE OF WORK, INCLUDING, BUT NOT LIMITED TO, RACEWAYS, BOXES, FITTINGS, CONDUCTORS, LUMINAIRES, LAMPS, BALLASTS, WIRING DEVICES, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, SWITCHBOARDS, SWITCHGEARS, MOTOR CONTROL CENTERS (MCC), BUSWAYS, FIRE ALARM, TELECOMMUNICATIONS, ETC. FOR APPROVAL AS APPLICABLE FOR THE PROJECT. ONE COMPLETE SET OF APPROVED SUBMITTALS SHALL BE MAINTAINED AT THE JOB SITE.
F. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH THE BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, CONDUIT, WIRING, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, METHODS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COSTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED AFTER BIDS HAVE BEEN ACCEPTED AND ALL COSTS WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.
G. ONE COMPLETE SET OF THE LATEST CONSTRUCTION PLANS OF ALL TRADES SHALL BE MAINTAINED AT THE JOB SITE. IN ADDITION, ALL ADDENDUMS, BULLETINS, AND/OR SKETCHES SHALL BE INCORPORATED INTO THE ON-SITE CONSTRUCTION PLANS AS THE JOB PROGRESSES.
H. COMPLETELY ADequate HOUSING SHALL BE PROVIDED FOR ALL MATERIALS STORED ON JOB SITE. ONLY CONDUIT MAY BE STORED OUTSIDE, BUT NOT IN CONTACT WITH THE GROUND.
I. THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT. GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED PER NEC 250.
J. PROVIDE AN INTERSYSTEM BONDING TERMINATION DEVICE AT THE MAIN ELECTRICAL SERVICE PER NEC 250.94.
K. WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER.
L. PROVIDE ALL CUTTING AND PATCHING FOR INSTALLATION OF WORK AND REPAIR ANY DAMAGE DONE.
M. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED), EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING FOR SUCH EQUIPMENT SHALL BE PROVIDED BY THE RESPECTIVE DISCIPLINE.
N. ALL ELECTRICAL JUNCTION BOXES, SWITCHGEAR, CABLING, VOICE/DATA OUTLETS, LOW VOLTAGE CABINETS, EMERGENCY RECEPTACLES, ETC. SHALL BE LABELED ACCORDING TO PANEL/RACK AND CIRCUIT NUMBER.
O. UPON COMPLETION OF WORK, CONTRACTOR SHALL PRESENT ENGINEER WITH CERTIFICATE OF APPROVAL FROM LOCAL INSPECTOR AND/OR AUTHORITY HAVING JURISDICTION BEFORE WORK WILL BE APPROVED FOR FINAL PAYMENT.
P. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR EFFECTIVE THE DATE THE PROJECT IS ACCEPTED BY THE OWNER. ANY IMPERFECT MATERIALS OR WORKMANSHIP SHALL BE REPLACED WITHOUT ADDED COST TO THE PROJECT.
Q. IT SHALL NOT BE THE INTENT OF ISSUED SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL NECESSARY ITEMS FOR A COMPLETE AND OPERATING SYSTEM.
R. THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FURNISH, FABRICATE, ERECT, CONNECT, AND COMPLETELY INSTALL SYSTEMS IN PROPER OPERATING CONDITION. ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED SHALL BE INCLUDED AS PART OF THIS WORK TO COMPLETE THE INSTALLATION.
S. THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.
T. CONTRACTOR SHALL COORDINATE THE ROUGH-IN OF ALL OUTLET LOCATIONS WITH ARCHITECTURAL FLOOR PLANS, ELEVATIONS, AND MILLWORK SHOP DRAWINGS PRIOR TO ROUGH-IN.
U. ELECTRICAL CONTRACTOR SHALL NOT SCALE PLANS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS OTHERWISE NOTED.
V. CONTRACTOR SHALL TEST ALL "LIFE SAFETY" EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS, CONFIRMATION SHALL BE SENT TO THE ENGINEER OF RECORD IN THE FORM OF A LETTER STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETED. "LIFE SAFETY" EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN THE STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE (NEC), NFPA 101, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
W. IF DURING THE COURSE OF WORK, THE CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS, THE NEC, OR OTHER CODES OR REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK.
X. WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BRING ISSUE TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK OR ORDERING ANY MATERIALS. NO ADDITIONAL COSTS SHALL BE WARRANTED WITHOUT A CHANGE TO THE PROJECT SCOPE.
Y. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PROVIDING TEMPORARY POWER AND LIGHTING FOR ALL TRADES. AT NO TIME SHALL EXISTING BUILDING POWER SYSTEMS BE UTILIZED WITHOUT WRITTEN PERMISSION FROM THE OWNER.
Z. COORDINATE LOCATION AND REQUIREMENTS FOR ELECTRICAL SERVICE WITH THE POWER COMPANY. WHERE MORE THAN ONE SERVICE IS SUPPLIED TO A BUILDING, PROVIDE IDENTIFICATION AT EACH SERVICE PER NEC 230-2(E).
AA. COORDINATE LOCATION AND REQUIREMENTS FOR TELEPHONE SERVICE WITH THE TELEPHONE COMPANY.
AB. THE CONTRACTOR SHALL PROVIDE A MINIMUM TWO WEEK NOTICE FOR ANY PLANNED UTILITY OUTAGES. WRITTEN AUTHORIZATION FROM THE OWNER SHALL BE PROVIDED PRIOR TO ANY OUTAGE. ALL PLANNED UTILITY OUTAGES SHALL BE COORDINATED WITH THE OWNER TO OCCUR DURING NON-OPERATING TIMES, INCLUDING NIGHTS, WEEKENDS AND HOLIDAYS. ALL PLANNED UTILITY OUTAGES SHALL INCLUDE PROVISIONS FOR PROPER BACK-UP OF ALL LIFE-SAFETY SYSTEMS AND INCLUDE AN APPROVED FIRE-WATCH PROGRAM AS REQUIRED BY THE LOCAL FIRE MARSHALL.

2. RACEWAY:

A. CONDUIT SHALL BE MANUFACTURED BY ALLIED, WHEATLAND, REPUBLIC CONDUIT, WESTERN TUBE, OR APPROVED EQUIVALENT.
B. FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW CONCRETE SLAB, IN DUCTBANKS, AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE. USE IMC WHERE SUBJECT TO PHYSICAL DAMAGE.
C. EMT FITTINGS SHALL BE COMPRESSION GLAND TYPE, OF MALLEABLE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS, CAST, SET SCREW, OR INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS FOR EMT SHALL BE MADE OF STEEL.
D. ALL RACEWAY SHALL BE RUN CONCEALED, UNLESS OTHERWISE NOTED. FISH ALL NEW OUTLETS IN EXISTING WALLS, WHERE POSSIBLE. ALL RUNS SHALL BE NEAT AND SQUARE.
E. LOW VOLTAGE CABLING NOT SPECIFIED TO BE INSTALLED IN CONDUIT, SHALL BE INSTALLED IN A CABLE TRAY SYSTEM OR J-HOOK SYSTEM CONSISTING OF MINIMUM 2" DIAMETER HOOKS LOCATED ON 3'-0" CENTERS IN ALL ACCESSIBLE CEILINGS. WHERE THERE ARE INACCESSIBLE CEILINGS, PROVIDE CONDUIT FOR ENTIRE LENGTH OF INACCESSIBILITY.
F. RACEWAYS USED FOR LOW VOLTAGE SYSTEMS SUCH AS TELECOMMUNICATIONS, FIRE ALARM, SECURITY, CCTV, CONTROLS, AND SIMILAR CONDUITS ABOVE THE CEILING AND BACKBOARD(S) SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS AT EACH CONDUIT TERMINATION. THESE BUSHINGS SHALL BE BE INSTALLED PRIOR TO PULLING LOW-VOLTAGE CABLES.
G. RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT ROOF CURB.
H. SUPPORT ALL CONDUIT WITH STRAPS AND CLAMPS.
I. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES, WHETHER EXPOSED OR NOT AND SUPPORTED FROM STRUCTURE AND PROPERLY SECURED.
J. WHERE CONDUITS PASS THROUGH A BUILDING EXPANSION JOINT, PROVIDE GALVANIZED EXPANSION FITTINGS WITH BONDING JUMPERS.
K. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR INTERIOR WORK, 1" FOR EXTERIOR WORK.
L. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
M. LIQUID-TIGHT METAL CONDUIT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO EQUIPMENT AND ALL OTHER ROTATING AND VIBRATING EQUIPMENT, MAXIMUM LENGTH OF 3'-0".
N. FLEXIBLE METAL CONDUIT, MINIMUM SIZE 3/8", SHALL ONLY BE USED FOR FINAL CONNECTION TO LIGHTING FIXTURES, MAXIMUM LENGTH OF 6'-0".
O. PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360°. PULL BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDER PAVED AREAS, THEY SHALL BE RGS.
P. ALL CONDUIT BENDS/ELBOWS EMERGING FROM UNDERGROUND SHALL BE IMC AND SHALL EXTEND A MINIMUM OF 18" BELOW GRADE.
Q. ALL UNDERGROUND METALLIC RACEWAYS SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTUM BITUMASTIC.
R. ALL METALLIC CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATERTIGHT BY USE OF POLYETRA-FLUOROETHYLENE TAPE.
S. THE USE OF AC OR NM CABLE IS NOT PERMITTED.
T. THE USE OF MC CABLE IS NOT ALLOWED, EXCEPT FOR FINAL CONNECTION TO LIGHT FIXTURES. PER NOTE 2,N.

3. OUTLET BOXES:

A. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO, CROUSE-HINDS, APPLETON (EMERSON), OR APPROVED EQUIVALENT.
B. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS.
C. ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.
D. ATTACH BOXES TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL.
E. ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
F. ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

4. CONDUCTORS:

A. CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SIMPULL), ENCORE (SUPERSLICK), UNITED COPPER (SLK), CERRO (SLP), OR APPROVED EQUAL, "PRE-LUBRICATED" BY THE MANUFACTURER.
B. ALL CONDUCTORS SHALL BE COPPER, RATED 75° C WET/DRY EXCEPT WHERE OTHERWISE NOTED OR REQUIRED BY U.L. OR OTHER CODES.
C. ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THWN-2. SIZES #10 AWG AND SMALLER SHALL BE SOLID, SIZES #8 AWG AND LARGER SHALL BE STRANDED.
D. BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG.
E. CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS AND BROWN/ORANGE/YELLOW FOR 277/480 VOLT SYSTEMS FOR A, B, AND C PHASES, RESPECTIVELY. NEUTRAL SHALL BE WHITE FOR 120/208 VOLT SYSTEMS AND NATURAL GRAY FOR 277/480 VOLT SYSTEMS. GROUND CONDUCTOR SHALL BE GREEN ON ALL SYSTEMS. ALL CONDUCTOR SIZES SHALL HAVE COLOR-CODED INSULATION. THE USE OF COLORED TAPE ON LARGER WIRE SIZES SHALL NOT BE ALLOWED.
F. INSULATION SHALL BE DUAL RATED TYPE THHN/THWN-2 FOR FEEDERS AND BRANCH CIRCUITS. FIXTURE TAPS SHALL BE #12 THHN/THWN-2 IN FLEX WITH GREEN #12 AWG GROUNDING CONDUCTOR.
G. ALL CONDUCTORS SHALL BE IN CONDUIT.
H. WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY UL LABEL.
I. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ALLOWED.
J. JOINTS IN #10 AWG AND SMALLER SHALL BE MADE UP WITH CRIMPED CONNECTORS WITH INSULATING CAPS (NO TAPE) OR WIRENUTS (MAXIMUM OF 3 CONDUCTORS UNDER ANY CONNECTOR OR WIRENUT). LARGER WIRE SHALL USE SPLIT BOLTS OR BOLTED CLAMPS.
K. ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING, BUT NOT LIMITED TO, BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, MOTOR STARTER LUGS, TRANSFORMERS LUGS, WIRING DEVICE TERMINALS, AND ALL EQUIPMENT LUGS/TERMINALS SHALL BE RATED FOR USE WITH 75 DEGREE INSULATED CONDUCTORS AT THEIR 75 DEGREE AMPACITY AND SHALL BE SIZED AND SELECTED TO MATCH THE CONDUCTOR SIZE AND MATERIAL.
L. CIRCUIT JOINTS SHALL NOT BE MADE ON DEVICE TERMINALS.
M. WIRE WITHIN PANELBOARDS SHALL BE NEATLY TRAINED, SQUARED, BUNCHED, AND TAGGED.
N. ALL SYSTEM FURNITURE CONNECTIONS SHALL COMPLY WITH NEC 605.
O. GROUND ALL EQUIPMENT PER NEC ARTICLE 250. BOND WHERE CONDUITS ENTER ENCLOSURES THROUGH CONCENTRIC KNOCKOUTS, ALL FLEX, INCLUDING FIXTURE TAPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT, SIZED PER NEC 250-122.
P. ALL CONDUITS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC 300-19.
Q. THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW, REGARDLESS WHAT THE PANEL SCHEDULE INDICATES, FOR SIZING ALL 120V & 277V, 20 AMP BRANCH CIRCUITS (COPPER CONDUCTORS) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT:

VOLTAGE	CONDUCTOR LENGTH *	BRANCH CIRCUIT
120	0' - 50'	#12
120	51' - 90'	#10
120	91' - 140'	#8
120	141' - 225'	#6
277	0' - 125'	#12
277	126' - 200'	#10
277	201' - 330'	#8
277	331' - 525'	#6

* - THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

WIRING DEVICES:

A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM, EQUAL TO COOPER QUALITY INDICATED BELOW OR AS MANUFACTURED BY HUBBELL, LEGRAND-PASS & SEYMOUR, LEVITON, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED:

SWITCHES (120/277V) SHALL BE AS FOLLOWS:

SINGLE-POLE 20 AMP	COOPER AH1221
DOUBLE-POLE 20 AMP	COOPER AH1222
THREE-WAY 20 AMP	COOPER AH1223
5. FOUR-WAY 20 AMP	COOPER AH1224
SINGLE-POLE-PILOT 20 AMP	COOPER AH1221PL
DOUBLE-POLE-PILOT 20 AMP	COOPER AH1222PL
THREE-WAY-PILOT 20 AMP	COOPER AH1223PL
SINGLE-POLE-KEY 20 AMP	COOPER AH1221L
DOUBLE-POLE-KEY 20 AMP	COOPER AH1222L
THREE-WAY-KEY 20 AMP	COOPER AH1223L
FOUR-WAY-KEY 20 AMP	COOPER AH1224L

DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:

15 AMP DUPLEX	COOPER 5252
20 AMP DUPLEX	COOPER 5352
15 AMP DUPLEX GFCI	COOPER SGF15F
20 AMP DUPLEX GFCI	COOPER SGF20F
15 AMP DUPLEX TAMPER	COOPER TR5262
20 AMP DUPLEX TAMPER	COOPER TR5362
15 AMP DUPLEX GFCI-TAMPER	COOPER TRSGF15F
20 AMP DUPLEX GFCI-TAMPER	COOPER TRSGF20F

THE PART NUMBERS ABOVE ARE FOR WIRING DEVICE TYPE ONLY. SEE BELOW FOR WIRING DEVICE COLOR AND PLATE MATERIAL/COLOR.

B. SEE MOUNTING HEIGHT ELEVATION DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, UNLESS OTHERWISE NOTED.
C. THE COLOR OF ALL WIRING DEVICES (SWITCHES AND RECEPTACLES) SHALL BE AS DIRECTED BY THE ARCHITECT, UNLESS OTHERWISE NOTED. ALL COVER PLATES SHALL BE 302 STAINLESS STEEL. COVER PLATES IN MASONRY WALLS SHALL BE JUMBO SIZE.
D. EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL BE 20 AMP TYPE.
E. ADJACENT DEVICES SHALL HAVE A COMMON WALL PLATE.
F. WEATHERPROOF COVERS SHALL BE "WHILE-IN-USE" SO PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION. COOPER #WIU-2 DOUBLE-GANG WITH CLEAR COVER OR APPROVED EQUAL.
G. A MAXIMUM OF 10 GENERAL PURPOSE RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT.
H. DIMMERS SHALL BE LINEAR SLIDE, PRESENT ON/OFF, SQUARE LAW DIMMING, W/RFI FILTERING AND VOLTAGE COMPENSATION CIRCUITING.
I. ALL WALL MOUNTED OCCUMPANCY/VACANCY SENSORS/SWITCHES SHALL BE INSTALLED WITH AN EQUIPMENT GROUNDING CONDUCTOR.
J. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED IN ALL LOCATIONS PER NEC 210.8. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
K. ALL GFCI RECEPTACLES SHALL HAVE AUTO-MONITORING / SELF-TEST FUNCTION AND REVERSE LINE-LOAD MISFIRE FUNCTION AND MEET ALL REQUIREMENTS OF UL 943 (LATEST EDITION).
L. ALL RECEPTACLES SHALL BE TAMPER RESISTANT.

6. SUPPORTS:

A. ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE.
B. INSERTS IN MASONRY SHALL BE LEAD OR FIBER IN DRILLED HOLES, OR CAST IN PLACE.
C. NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
D. EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MAXIMUM OF 3'-0" FROM BOXES.
E. LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING GRID OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

7. PAINTING:

A. SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT. PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO BLEND WITH ADJACENT SURFACES, OR SHALL BE MANUFACTURER'S STANDARD COLOR BAKED ENAMEL FINISH, OR AS DIRECTED BY THE ARCHITECT.

8. TELECOMMUNICATIONS:

A. A SEPARATE TELECOMMUNICTIONS PACKAGE HAS BEEN PROVIDED, THAT PACKAGE SHALL TAKE PRECEDENCE SHOULD ANY DISCRPANCIES EXIST BETWEEN THE DOCUMENTS.
B. FURNISH A COMPLETE TELECOMMUNICATIONS PATHWAY SYSTEM AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
C. EACH TELECOMMUNICATIONS OUTLET SHALL CONSIST OF A 4-11/6" SQUARE BY 2-1/8" DEEP JUNCTION BOX WITH A SINGLE-GANG PLASTER RING. PROVIDE A BLANK COVER PLATE FOR EACH OUTLET.
D. PROVIDE MINIMUM 1-1/4" CONDUIT RACEWAY (UNLESS OTHERWIDE NOTED ON TELECOMMUNICATIONS DRAWINGS AND SPECIFICATIONS) FROM EACH OUTLET JUNCTION BOX TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE MINIMUM 210LB TEST NYLON PULL STRING AND NYLON BUSHINGS FOR EACH CONDUIT RACEWAY.
E. PROVIDE GROUNDING FOR ALL TELECOMMUNICATIONS SYSTEMS AND EQUIPMENT IN ACCORDAWNCE WITHDRAWINGS AND SPECIFICATIONS.
F. PROVIDE DEDICATED TELECOMMUNICATIONS GROUNGING BUSBARS IN EACH TELECOMMUNICATIONS ROOM. PROVIDE GREEN-JACKETED COPPER BONDING CONDUCTOR BETWEEN THE MAIN ELECTRICAL GROUND AND THE TELECOMMUNICATIONS PRIMARY BONDING BUSBAR, SIZED PER TIA REQUIREMENTS. PROVIDE GREEN-JACKETED COPPER BONDING CONDUCTOR BETWEEN THE TELECOMMUNICATIONS PRIMARY BONDING BUSBAR AND EACH ADDITIONAL SECONDARY BONDING BUSBAR, SIZED PER TIA REQUIREMENTS.
G. PROVIDE TELECOMMUNICATIONS TERMINAL BACKBOURD IN EACH TELECOMMUNICATIONS ROOM AS INDICATED ON DRAWINGS AND SPECIFICATIONS. BACKBOARDS SHALL CONSIST OF 4' BY 8' SHEETS OF FIRE-RATED A/C GRADE PLYWOOD MOUNTED VERTICALLY WITH THE BOTTOM EDGE AT 8" AFF AND GRADE-A SURFACE EXPOSED. FIRE RATING STAMP MUST NOT BE COVERED AND MUST REMAIN VISIBLE.
H. VERIFY LOCATION OF INCOMING TELECOMMUNICATIONS SERVICES WITH LOCAL SERVICE PROVIDERS PRIOR TO SUBMITTING BID. TELECOMMUNICATIONS SERVICE CONDUITS SHALL BE PROVIDED TO THE PROPERTY LINE OR OTHER POINT AS DIRECTED BY THE LOCAL SERVICE PROVIDER.
I. THE SCOPE OF THE TELECOMMUNICATIONS DESIGN SHOWN ON THESE DRAWINGS INCLUDES PATHWAYS ONLY. TELECOMMUNICATIONS CABLING, CONNECTIONS, AND EQUIPMENT ARE NOT WITHIN THE SCOPE OF THESE DOCUMENTS.

9. LIGHTING FIXTURES:

A. TYPES AND MANUFACTURERS ARE SCHEDULED ON THE PLANS. EQUIVALENT FIXTURES BY OTHERS MAY BE SUBMITTED ONLY AS INDICATED ON THE PLANS AND ARE SUBJECT TO THE APPROVAL OF THE OWNER AND ENGINEER.
B. ALL FIXTURES SHALL BE U.L. LISTED AND LABELED.
C. LAMPS SHALL BE GENERAL ELECTRIC, PHILIPS, OR OSRAM/SYLVANIA EXCEPT WHERE OTHERWISE NOTED IN THE LIGHTING FIXTURE SCHEDULE OR OTHERWISE NOTED. ALL FIXTURES SHALL BE EQUIPPED WITH LAMPS.
D. BALLASTS SHALL BE AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE OR AS OTHERWISE NOTED.
E. ALL FIXTURES SHALL BE PROVIDED FOR PROPER VOLTAGE BASED ON THE CIRCUIT ASSIGNMENT INDICATED ON THE PLANS.
F. CATALOG NUMBERS ARE FOR GENERAL IDENTIFICATION OF FIXTURES ONLY. ALL RELATED PARTS, SUCH AS PLASTER RINGS, JUNCTION BOXES, LOUVERS, SHIELDS, MOUNTING STEMS, CANOPIES, CONNECTORS, STRAPS, HANGERS, HARDWARE, ACCESSORIES, ETC., TO FIT THEM PROPERLY TO THE CONSTRUCTION, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. CONTRACTOR SHALL PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL AS SPECIFIED IN ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF CATALOG NUMBER GIVEN.
G. ALL FIXTURES SHALL BE GROUNDED PER THE NEC.
H. FIXTURES CONNECTED WITH FLEX TO THE RIGID RACEWAY PORTION OF THE WIRING SYSTEM SHALL CARRY A GREEN BONDING JUMPER WITHIN THE FLEX. THE JUMPER SHALL BE FASTENED TO BOTH THE FIXTURE AND THE RACEWAY SYSTEM WITH A STEEL CITY "G" CLIP OR APPROVED EQUIVALENT. PHASE AND GROUND CONDUCTORS RUN IN FLEX SHALL BE #12 AWG MINIMUM. MAXIMUM FLEX LENGTH SHALL BE 6'-0".
I. SURFACE-MOUNTED FLUORESCENT FIXTURES INSTALLED ON COMBUSTIBLE MATERIAL SHALL BE MOUNTED AT LEAST 1/4" FROM THE SURFACE OF THE MATERIAL, EXCEPT FOR FIXTURES WHICH ARE PLAINLY MARKED AS U.L. APPROVED FOR MOUNTING DIRECTLY TO SUCH SURFACES.
J. MOUNT ALL FIXTURES PLUMB AND SQUARE WITH ROWS ALIGNED.
K. FLUORESCENT LUMINAIRES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE REPLACED IN PLACE SHALL HAVE A DISCONNECTING MEANS WITHER INTEGRAL OR EXTERNAL TO EACH LUMINAIRE PER NEC 410.130(G).
L. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF FIXTURES.
M. CONTRACTOR SHALL COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION AND ADJUST ACCORDINGLY WITHOUT ADDITIONAL EXPENSE.
N. ALL LIGHTING FIXTURES SHALL BE THERMALLY PROTECTED PER THE NEC.
O. FIXTURES IN CONTACT WITH INSULATION SHALL BE IC RATED.
P. FOR RECESSED LIGHTING FIXTURES IN FIRE RATED CEILINGS, PROVIDE A MANUFACTURER APPROVED AND LISTED FIRE RATED COVER/ASSEMBLY OVER THE FIXTURE TO MAINTAIN THE INTEGRITY OF THE CEILING FIRE RATING. ANY LIGHTING FIXTURES INSTALLED UNDER THE FIRE RATED CAP SHALL BE SUITABLE FOR THE INSTALLATION.

10. LIGHTING CONTROLS:

A. LIGHTING CONTACTORS SHALL SWITCH LOADS AT THE VOLTAGE AND AMPERE RATING INDICATED AND SHALL HAVE THE NUMBER OF POLES INDICATED ON THE DRAWINGS OR AS REQUIRED. THE CONTACTOR AND CONTACTS SHALL BE CONTINUOUSLY RATED FOR THE LOAD SERVED, INCLUDING TUNGSTEN FILAMENT, INDUCTIVE, AND HIGH-INRUSH BALLAST LOADS.
B. ALL LIGHTING CONTACTORS SHALL BE ELECTRICALLY HELD AND BE INSTALLED IN A NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.

11. EQUIPMENT IDENTIFICATION:

A. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO, WIRING TROUGHS, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, SWITCHBOARDS, SWITCHGEARS, ETC. NAMEPLATE SHALL INDICATE THE DEVICE NAME, SYSTEM VOLTAGE (VOLTAGE/PHASE/WIRE), AND UPSTREAM DEVICE AND CIRCUIT. P

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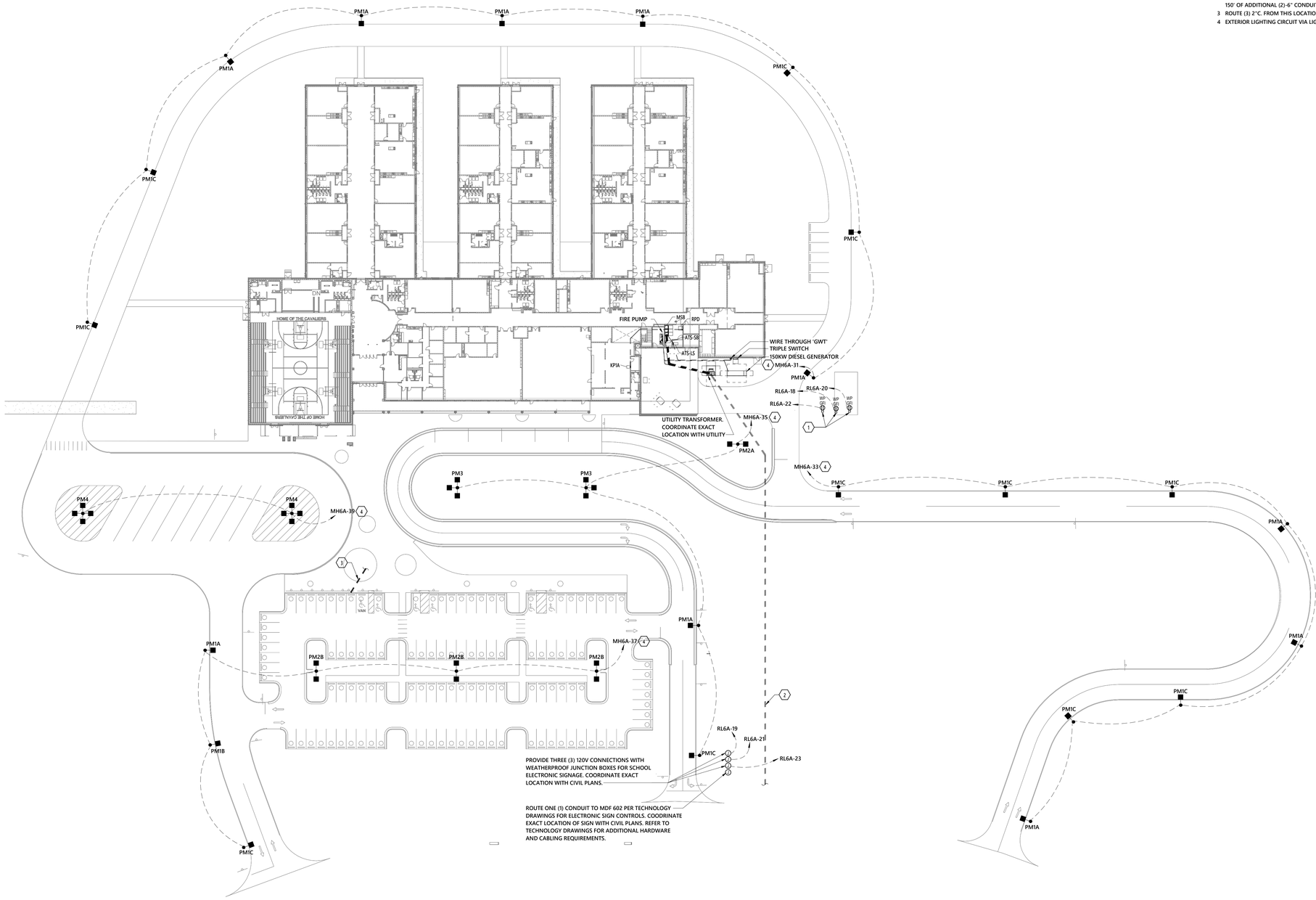
GENERAL NOTES - SITE PLAN

A. ALL LIGHTING AND POWER CONDUCTORS SHALL BE INSTALLED BETWEEN 24" (MINIMUM) AND 36" (MAXIMUM) BELOW FINISHED GRADE.
B. ALL COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.
C. ALL CONDUCTORS FOR EXTERIOR LIGHTING AND POWER CIRCUITS SHALL BE #10 AWG MINIMUM.
D. PROVIDE TRANSFORMER BASE AT ALL POLE MOUNTED FIXTURES, TAP 2 LEGS OF THREE PHASE FEEDER (CIRCUITS DENOTED), PROVIDE BALLAST FUSES AT TAP, AND PROVIDE BRANCH CIRCUITS TO FIXTURES.

KEYNOTES

1 PROVIDE 120V CONNECTION FOR HOTBOXES. COORDINATE EXACT LOCATIONS WITH CIVIL ENGINEER PRIOR TO ROUGH-IN.
2 PROVIDE (2)-6" CONDUIT FROM PAD MOUNTED TRANSFORMER TO DESIGNATED POINT AT EDGE OF PROPERTY FOR LOCAL POWER UTILITY USE. CONDUIT LOCATION, SIZE, AND BENDING RADIUS SHALL BE COORDINATED WITH UTILITY BEFORE INSTALLATION. PULLBOXES AS REQUIRED BY CODE/LOCAL UTILITY. E.C. TO PROVIDE UP TO 150' OF ADDITIONAL (2)-6" CONDUIT AND COMPLETE INSTALLATION BASED ON UTILITY COORDINATION.
3 ROUTE (3) 2"C. FROM THIS LOCATION TO ELECTRICAL ROOM FOR FUTURE EV CHARGERS.
4 EXTERIOR LIGHTING CIRCUIT VIA LIGHTING CONTACTOR 'LCE'.



NOTE:

REFER TO TECHNOLOGY SITE PLAN.
SHEET T-010 FOR ADDITIONAL SITE PLAN REQUIREMENTS.

1 **ELECTRICAL SITE PLAN**
1" = 40'-0"

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ELECTRICAL SITE PLAN

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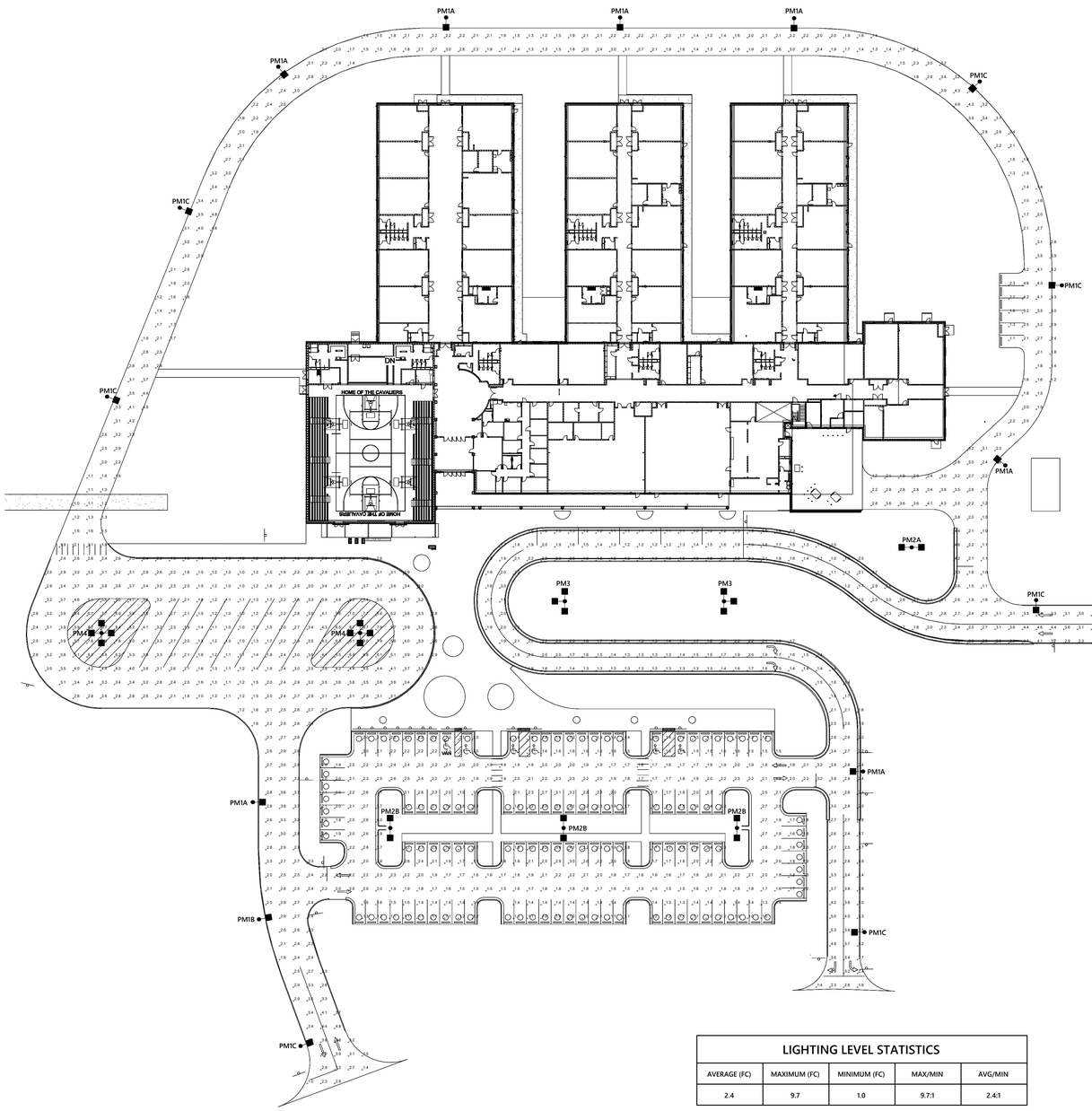
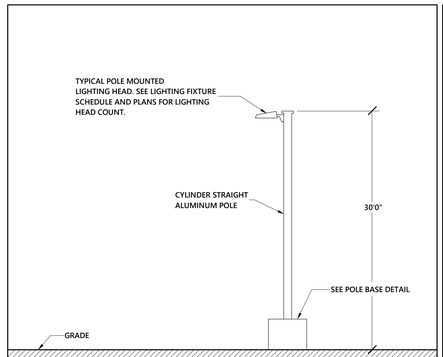
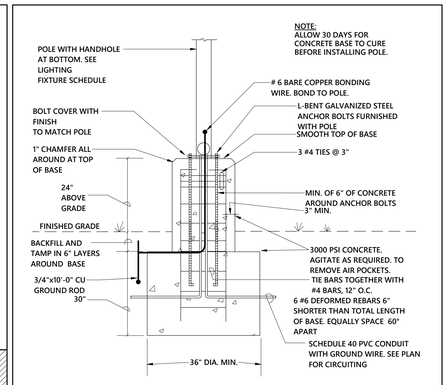


1 ELECTRICAL SITE PLAN PHOTOMETRICS
1" = 40'-0"

LIGHTING LEVEL STATISTICS				
AVERAGE (FC)	MAXIMUM (FC)	MINIMUM (FC)	MAX/MIN	AVG/MIN
2.4	9.7	1.0	9.7:1	2.4:1



2 POLE MOUNTED LIGHTING FIXTURE DETAIL
NOT TO SCALE



3 POLE BASE DETAIL (PARKING)
NOT TO SCALE

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ELECTRICAL SITE PLAN PHOTOMETRICS

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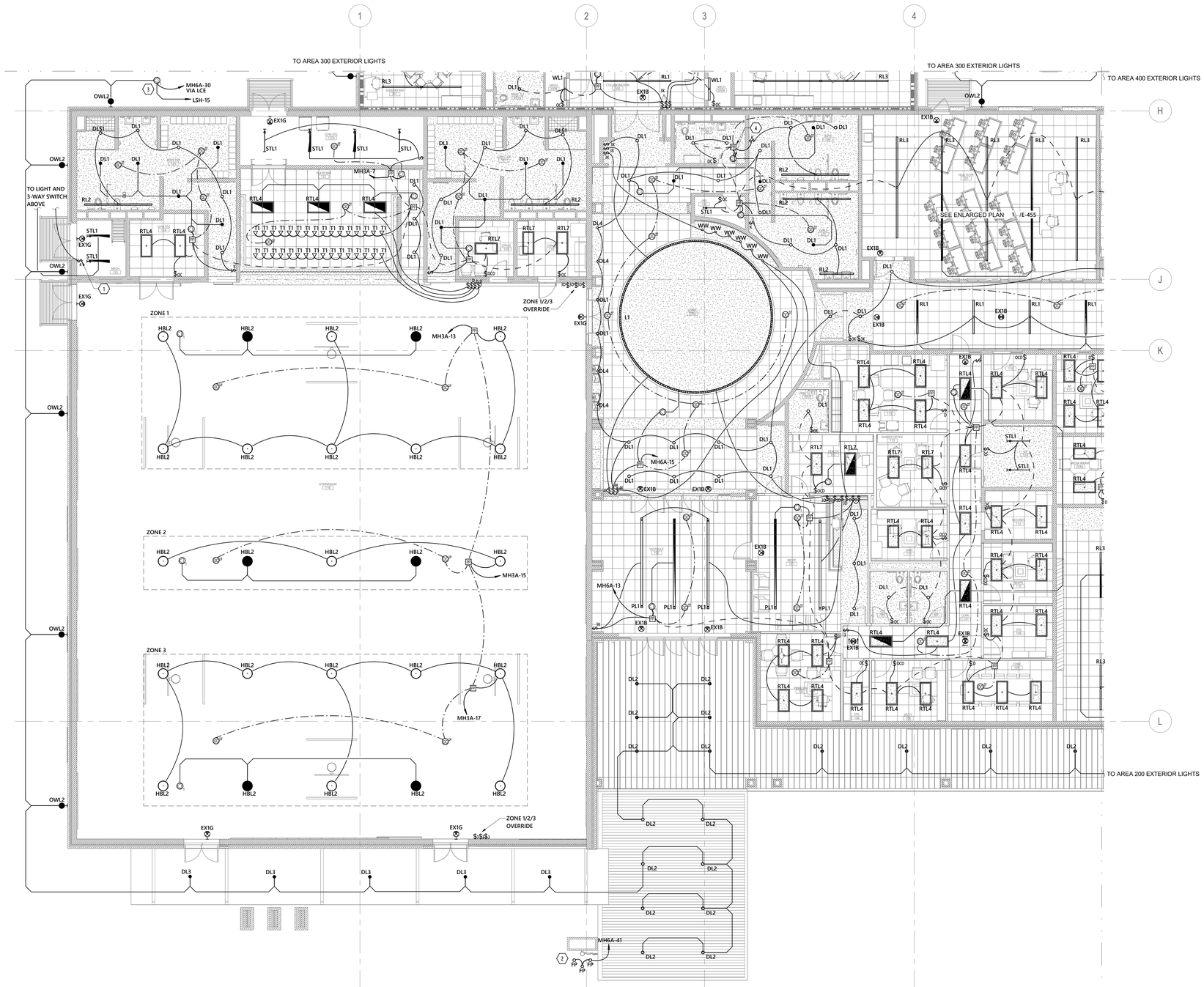


1 FIRST FLOOR LIGHTING PLAN - AREA 100
1/8" = 1'-0"

GENERAL NOTES

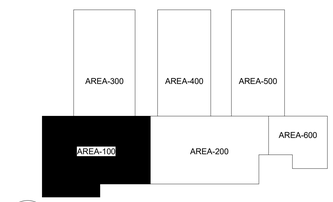
A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-1', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTED IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

KEYNOTES

1 CONNECT 3-WAY SWITCHES IN PARALLEL WITH OCCUPANCY SENSOR SO THAT OCCUPANCY SENSOR CAN BE COMPLETELY OVERRIDEN FOR SAFETY
2 PROVIDE PHOTOCELL TO CONTROL FLAGPOLE LIGHTS.
3 LOCATE TRANSFER RELAY ADJACENT TO LIGHTING PANEL SERVING EXTERIOR LIGHTS
4 LOCATE POWER PACK AND GENERATOR TRANSFER DEVICES IN JAN 128.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR LIGHTING PLAN - AREA 100

E-111

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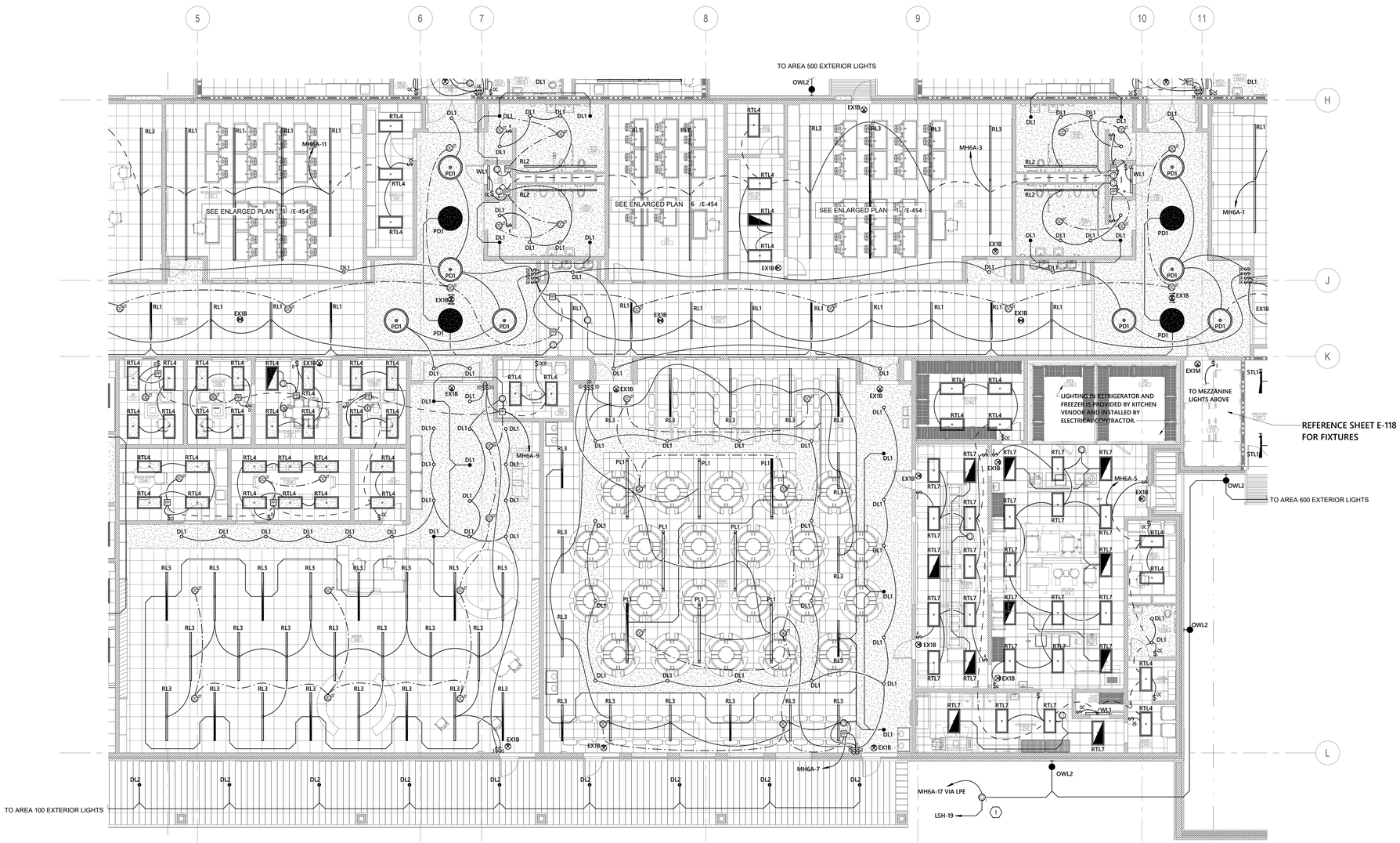
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-3', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTED IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

KEYNOTES

1 LOCATE TRANSFER RELAY ADJACENT TO LIGHTING PANEL SERVING EXTERIOR LIGHTS



1 FIRST FLOOR LIGHTING PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR LIGHTING PLAN - AREA 200

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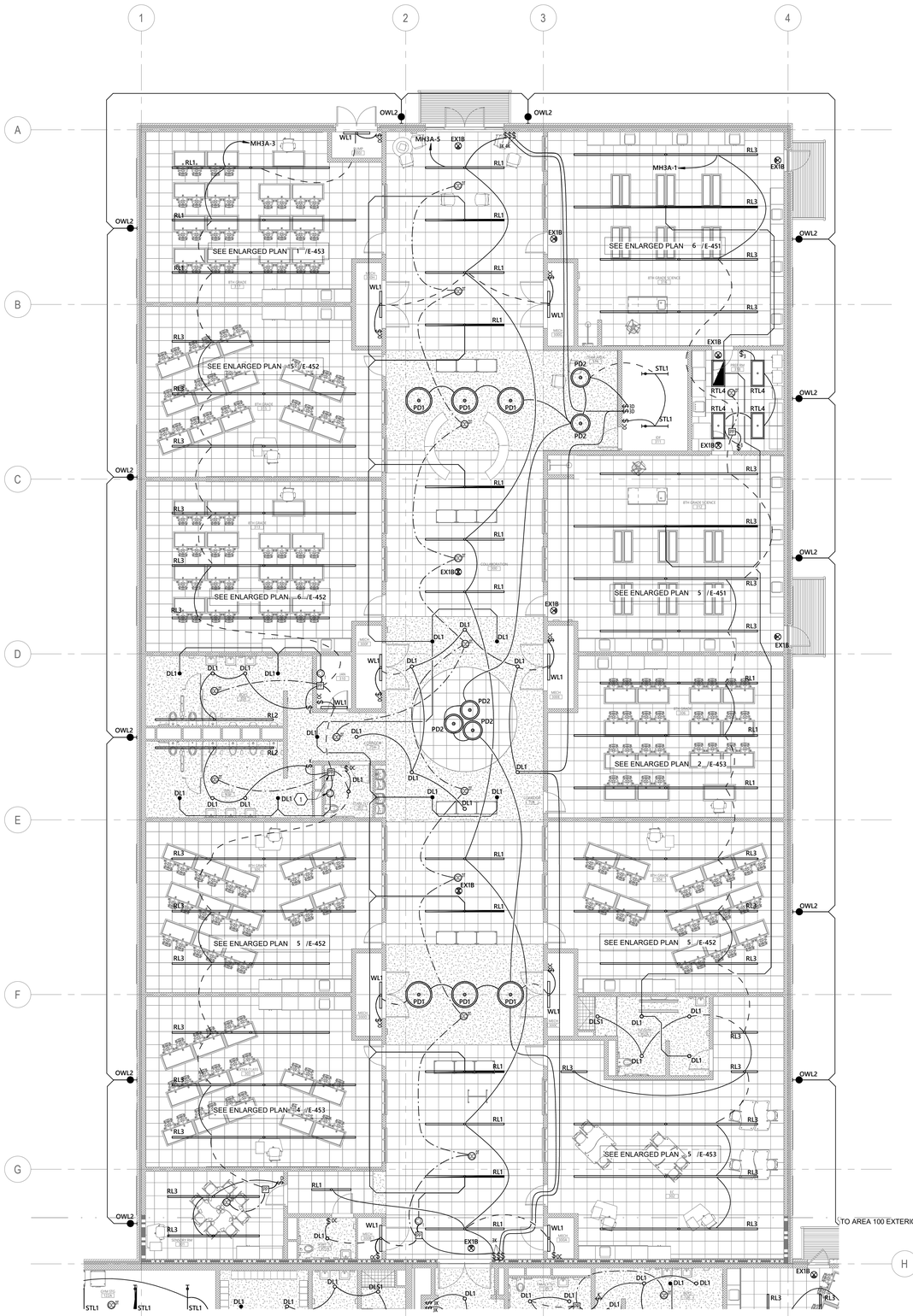

1 FIRST FLOOR LIGHTING PLAN - AREA 300
1/8" = 1'-0"

GENERAL NOTES

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B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-5', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
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H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
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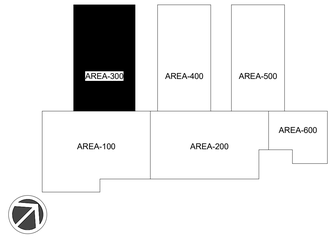
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTED IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

KEYNOTES

1 LOCATE POWER PACK AND GENERATOR TRANSFER DEVICES IN JAN 310.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR LIGHTING PLAN - AREA 300

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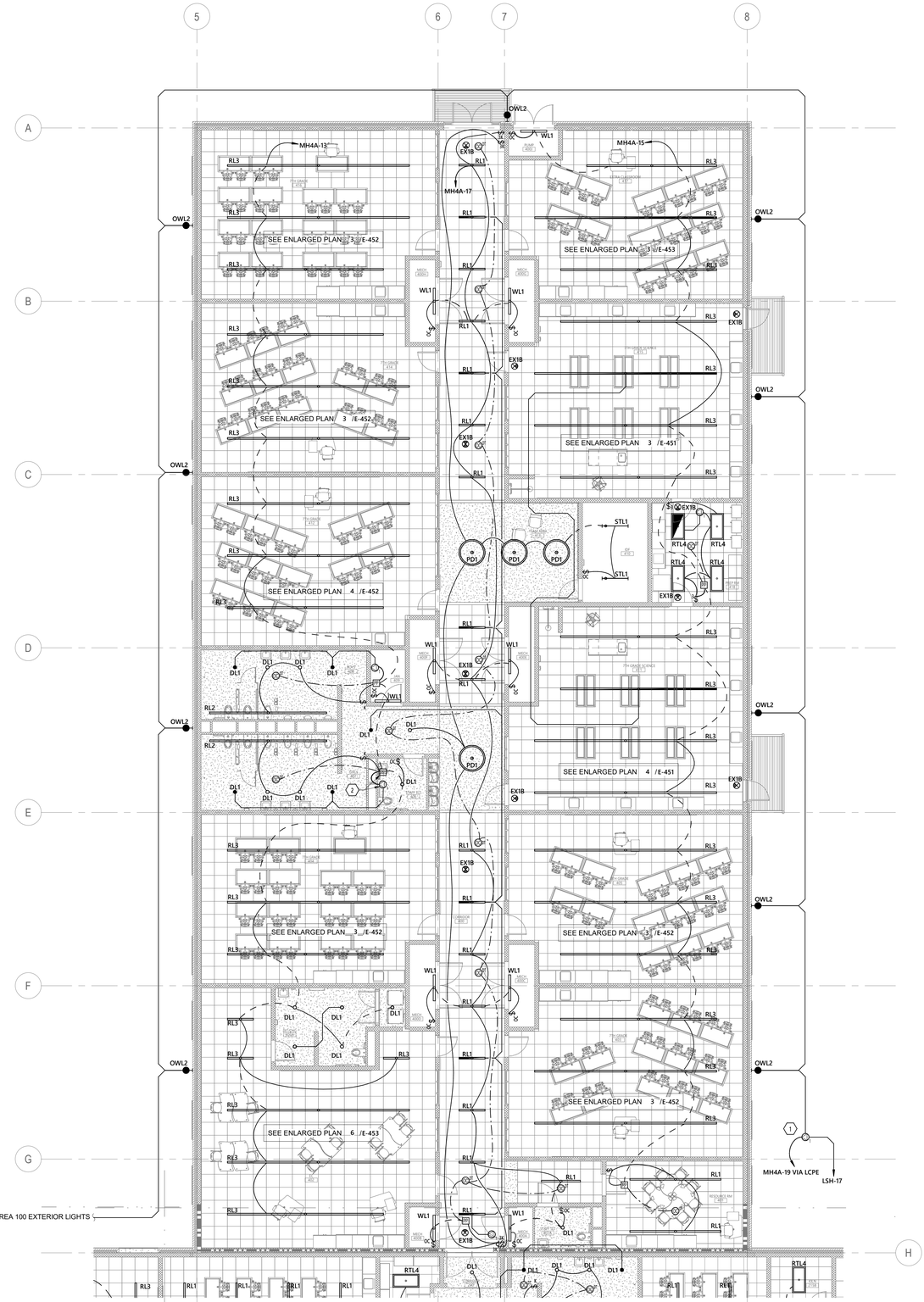


1 **FIRST FLOOR LIGHTING PLAN - AREA 400**
1/8" = 1'-0"

GENERAL NOTES

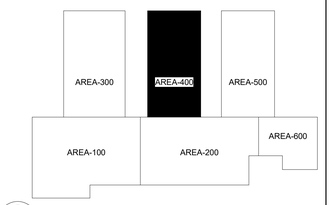
A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-7', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTED IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

KEYNOTES

1 LOCATE TRANSFER RELAY ADJACENT TO LIGHTING PANEL SERVING EXTERIOR LIGHTS
2 LOCATE POWER PACK AND GENERATOR TRANSFER DEVICES IN JAN 409.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR LIGHTING PLAN - AREA 400

E-114

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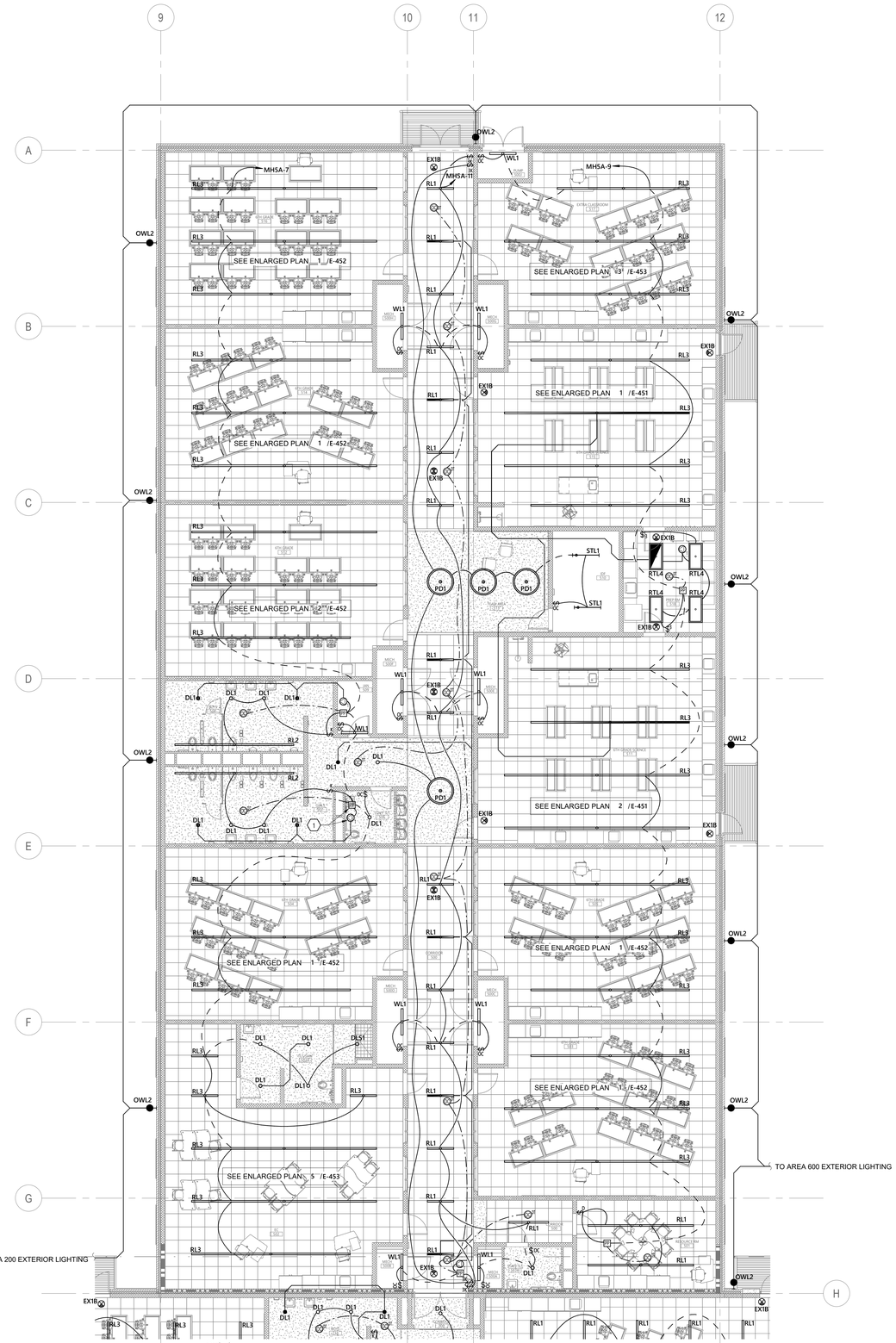

1 FIRST FLOOR LIGHTING PLAN - AREA 500
1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
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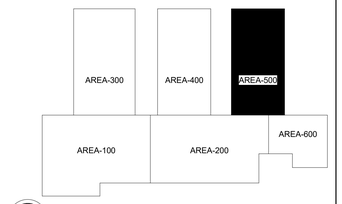
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-9', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTED IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

KEYNOTES

1 LOCATE POWER PACK AND GENERATOR TRANSFER DEVICE IN JAN 509.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR LIGHTING PLAN - AREA 500

E-115

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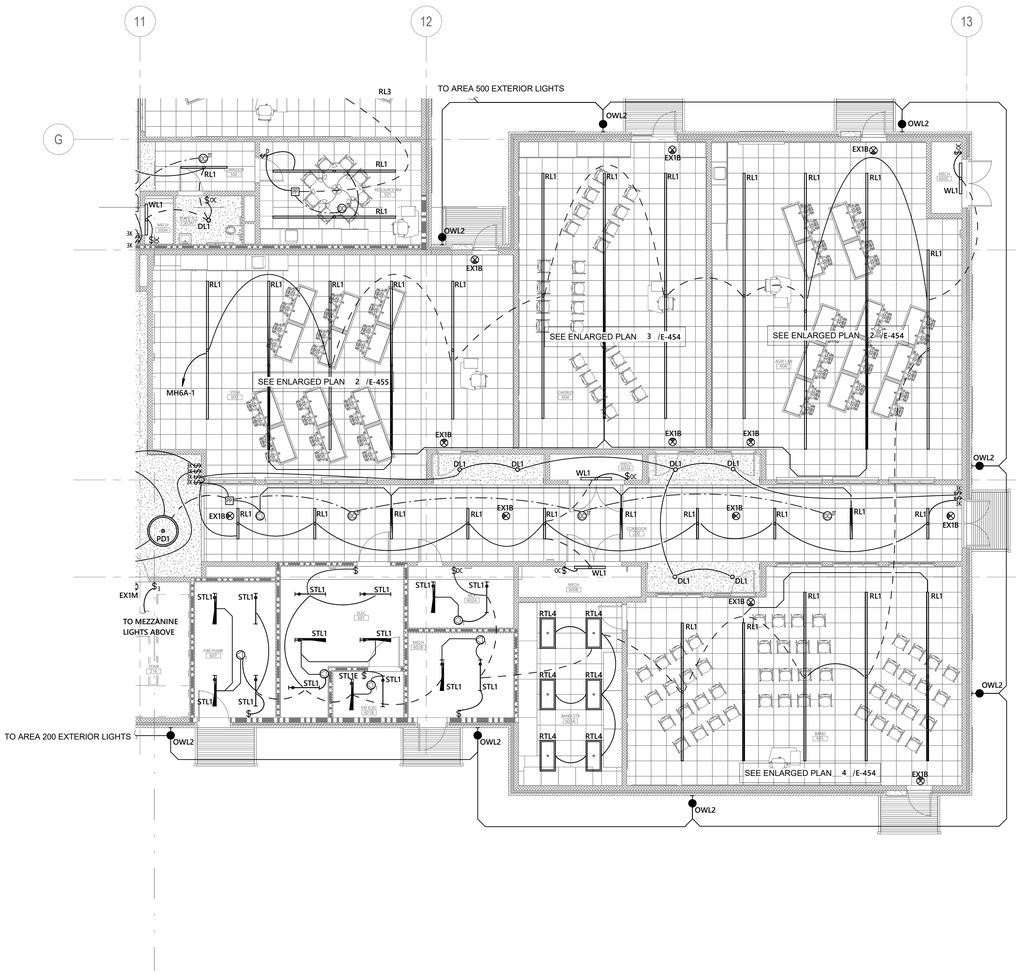

1 FIRST FLOOR LIGHTING PLAN - AREA 600
1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
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C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 'LSH-1T', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
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G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
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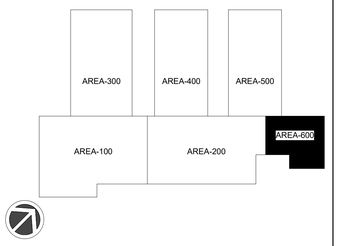
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR LIGHTING PLAN - AREA 600

E-116

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D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, AND THE EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT 1LSH-13', UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
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H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
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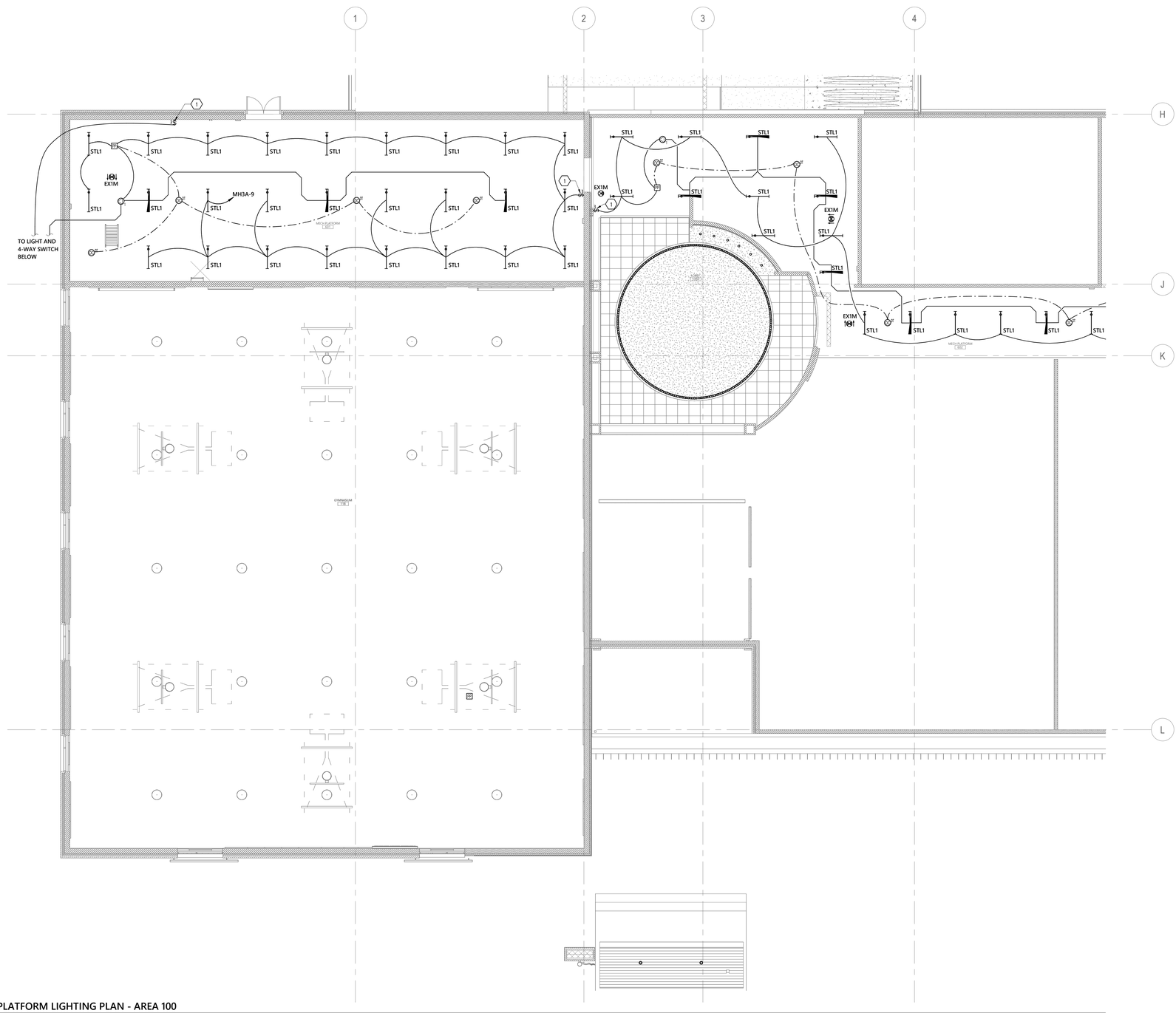
KEYNOTES

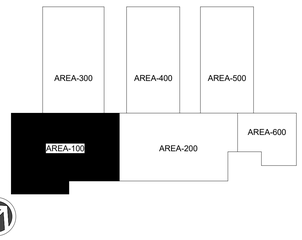
1 CONNECT 3-WAY SWITCHES IN PARALLEL WITH OCCUPANCY SENSOR SO THAT OCCUPANCY SENSOR CAN BE COMPLETELY OVERRIDEN FOR SAFETY



1 MECH. PLATFORM LIGHTING PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM LIGHTING PLAN - AREA 100

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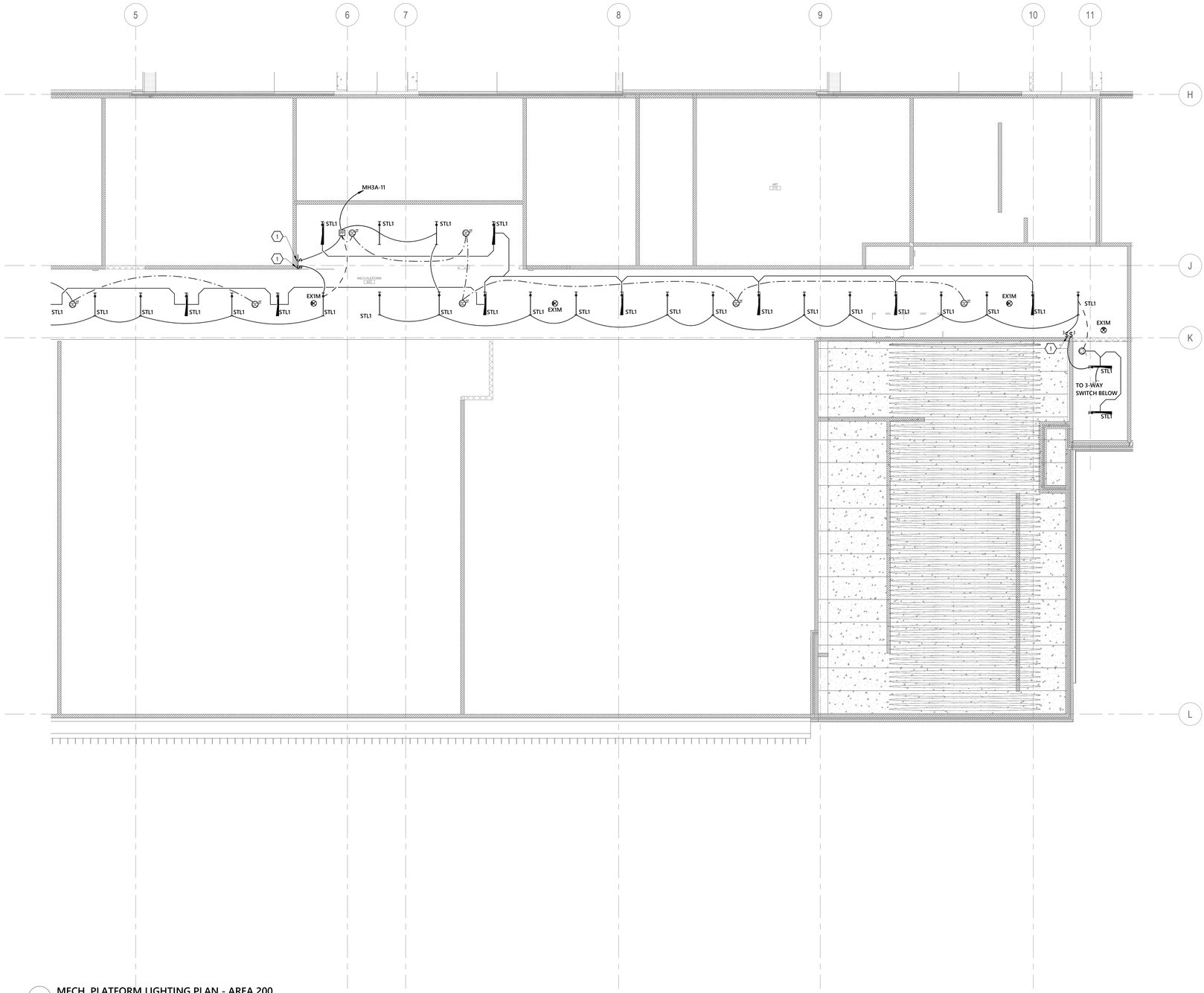
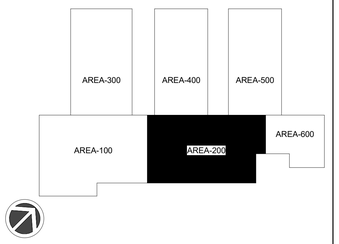


1 MECH. PLATFORM LIGHTING PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM LIGHTING PLAN - AREA 200

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NOTE:

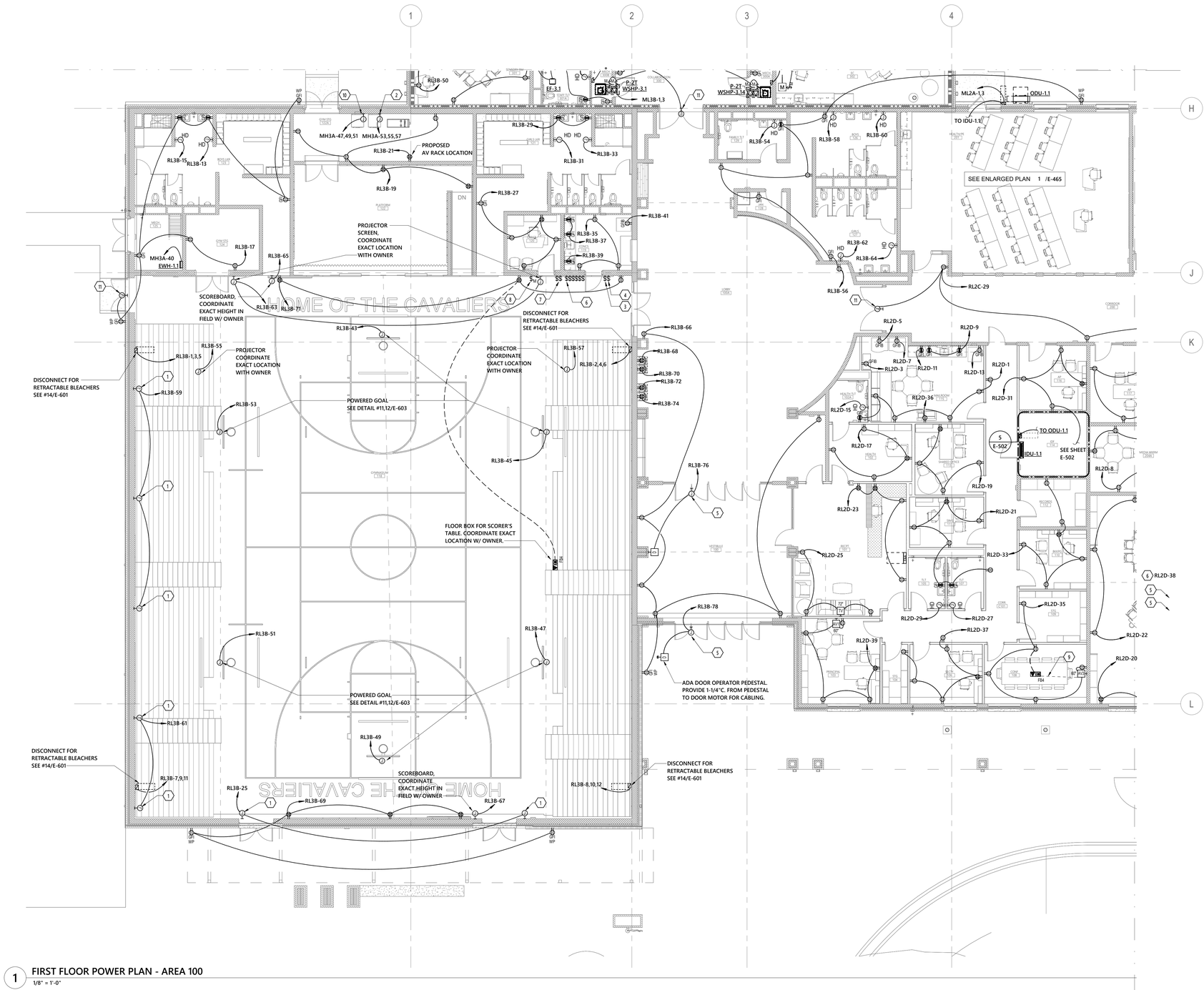
REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES (#)

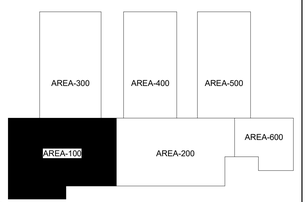
1 120V CONNECTION FOR GYMNASIUM MOTORIZED SHADES. COORDINATE EXACT REQUIREMENTS WITH SHADE INSTALLER AND ARCHITECT PRIOR TO ROUGH-IN.
2 PROVIDE 45A, 480V THREE PHASE CONNECTION FOR ATHLETIC DRYER. COORDINATE EXACT REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN. PROVIDE WITH BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION IN ACCORDANCE WITH NEC 110.25.
3 KEYED RAISE/LOWER/STOP SWITCH FOR PLAN WEST SHADE CONTROL. MOUNT NEXT TO LIGHT SWITCHES ON WALL.
4 KEYED RAISE/LOWER/STOP SWITCH FOR PLAN SOUTH SHADE CONTROL. MOUNT NEXT TO LIGHT SWITCHES ON WALL.
5 120V CONNECTION FOR AUTOMATIC DOOR OPENER. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE PROVIDER PRIOR TO ROUGH-IN.
6 KEYED SWITCH FOR MOTORIZED GOALS TYPICAL OF (6) SIX. SEE DETAIL 11 & 12/ SHEET E-603.
7 KEYED IN/OUT/STOP SWITCH FOR MOTORIZED BLEACHER CONTROL TYPICAL OF (2) TWO. SEE DETAIL 14/ SHEET E-603.
8 PROJECTOR SCREEN CONTROL PROVIDED WITH SCREEN, INSTALLED BY E.C. COORDINATE LOCATION WITH OWNER AND GC.
9 PROVIDE 1.5" C. FROM FLOOR BOX TO TV BOX IN WALL. PROVIDE WITH PULL STRING.
10 PROVIDE 40A, 480V THREE PHASE CONNECTION FOR ATHLETIC WASHER WITH ELECTRIC WATER HEAT. COORDINATE EXACT REQUIREMENTS WITH GENERAL CONTRACTOR PRIOR TO ROUGH-IN. PROVIDE WITH BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION IN ACCORDANCE WITH NEC 110.25.
11 120V CONNECTION FOR DOOR. REFER TO TECHNOLOGY DRAWINGS FOR MORE INFORMATION. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE PROVIDER PRIOR TO ROUGH-IN.



1 FIRST FLOOR POWER PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR POWER PLAN - AREA 100

E-211

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NOTE:

REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
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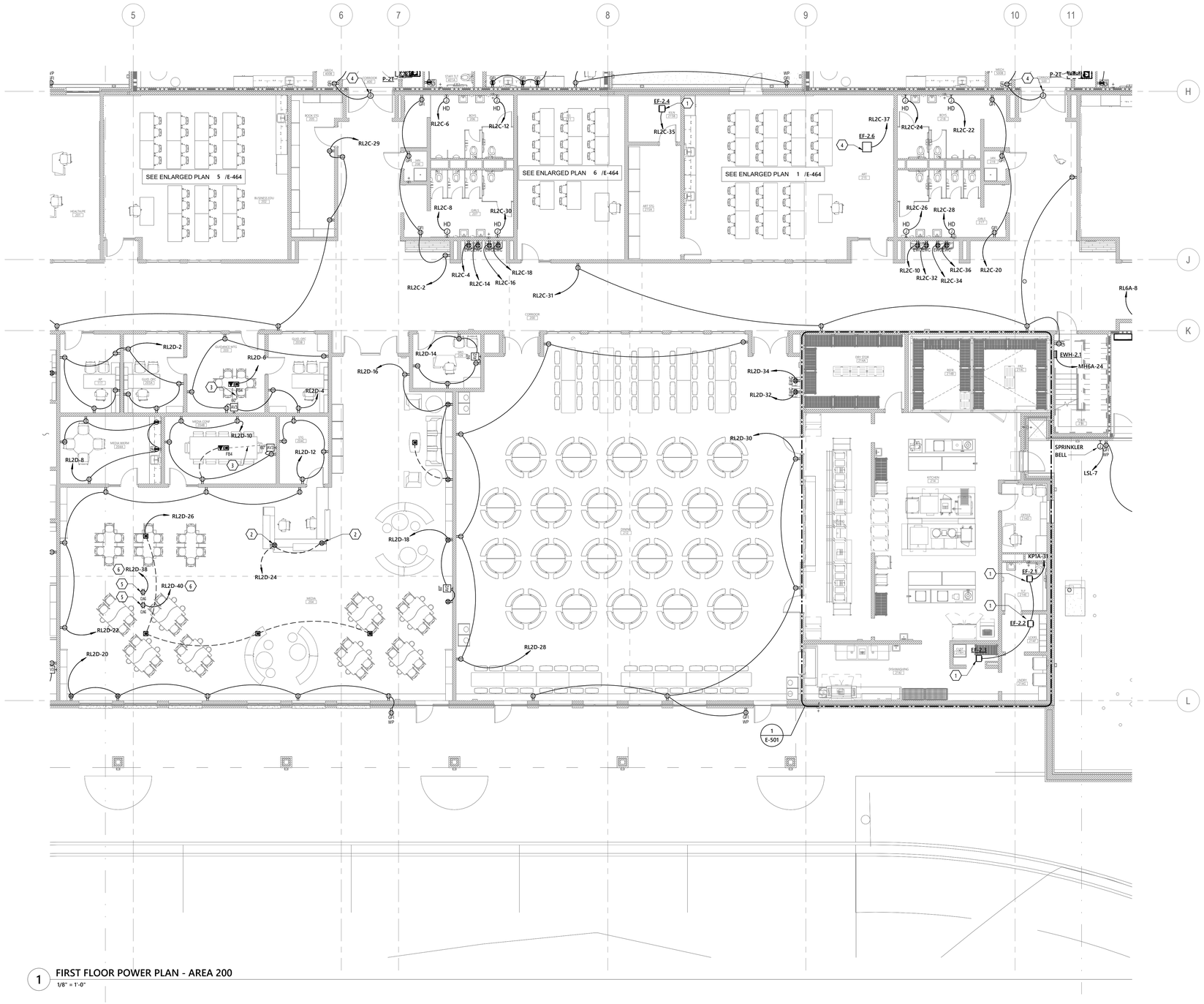
KEYNOTES ⬡

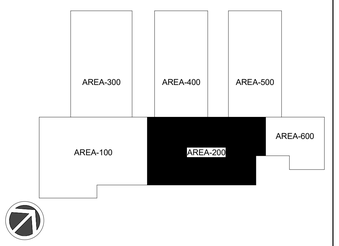
1 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE WITH RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
2 RECEPTACLE TO BE MOUNTED IN CASEWORK. COORDINATE WITH ARCHITECT AND CASEWORK INSTALLER.
3 SEE T- SERIES DRAWINGS & DETAILS FOR CONDUIT REQUIREMENTS.
4 WALL SWITCH CONTROL PROVIDED BY M.C. COORDINATE PRIOR TO ROUGH-IN.
5 PROVIDE CEILING MOUNTED DUPLEX RECEPTACLE AS PART OF ADD ALTERNATE FOR POWERUPEDU SPORTSWALL AND ACTIVEFLOOR EQUIPMENT. COORDINATE EXACT LOCATION OF CEILING MOUNTED DUPLEX RECEPTACLE WITH VENDOR PRIOR TO ROUGH-IN.
6 CIRCUIT TO BE INCLUDED AS PART OF ADD ALTERNATE FOR POWERUPEDU SPORTSWALL AND ACTIVEFLOOR EQUIPMENT.



1 FIRST FLOOR POWER PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR POWER PLAN - AREA 200

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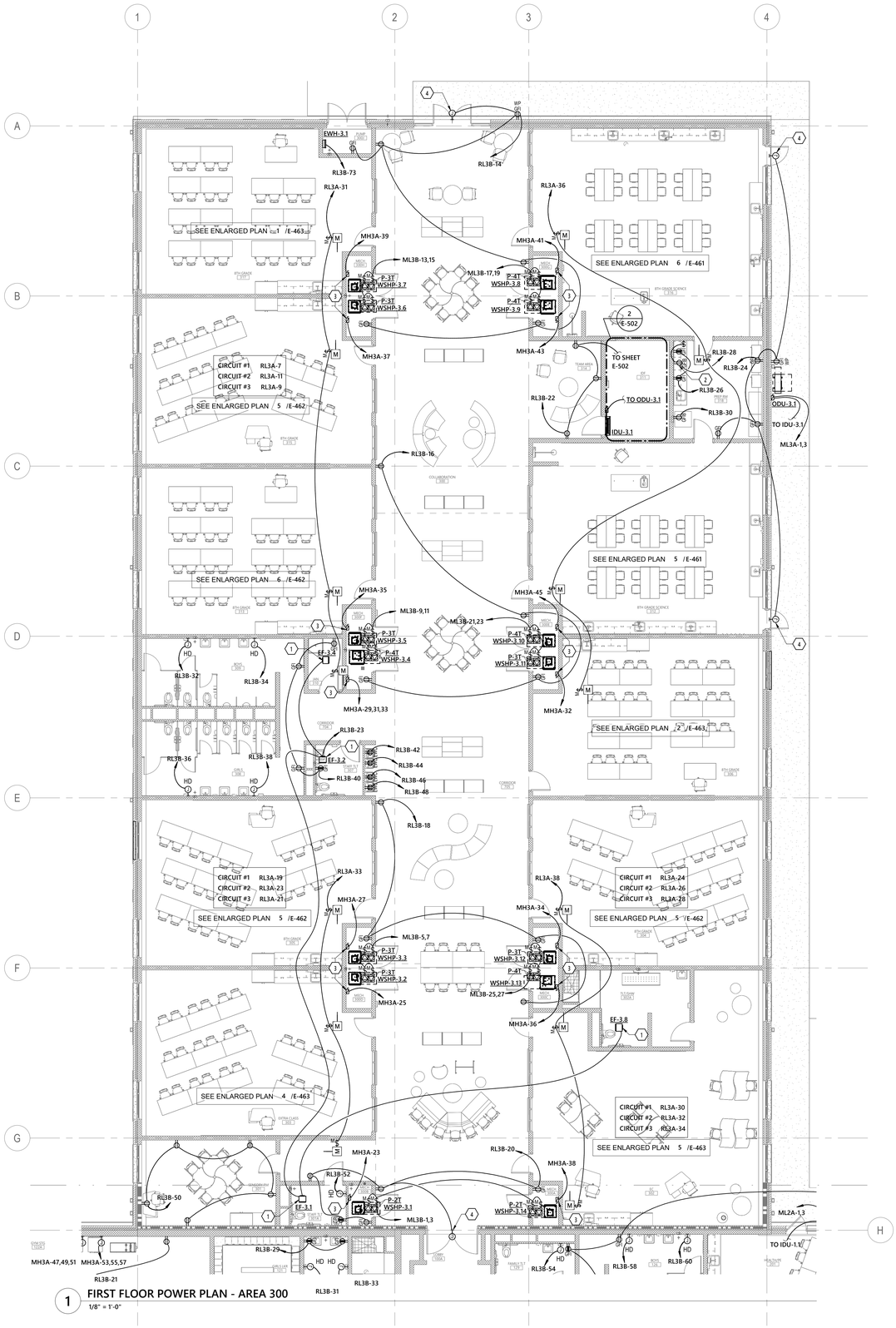

1 FIRST FLOOR POWER PLAN - AREA 300
1/8" = 1'-0"

NOTE:

REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
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KEYNOTES

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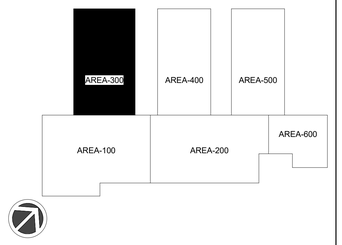
2 PROVIDE 120V CONNECTION FOR DISHWASHER. COORDINATE EXACT REQUIREMENTS WITH GC. MOUNT DISCONNECT SWITCH UNDER COUNTER WHERE REQ'D BY NEC.
3 DISCONNECT TO BE PROVIDED BY MECHANICAL CONTRACTOR.
4 120V CONNECTION FOR DOOR, REFER TO TECHNOLOGY DRAWINGS FOR MORE INFORMATION. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE PROVIDER PRIOR TO ROUGH-IN.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR POWER PLAN - AREA 300

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KEYNOTES ⬡

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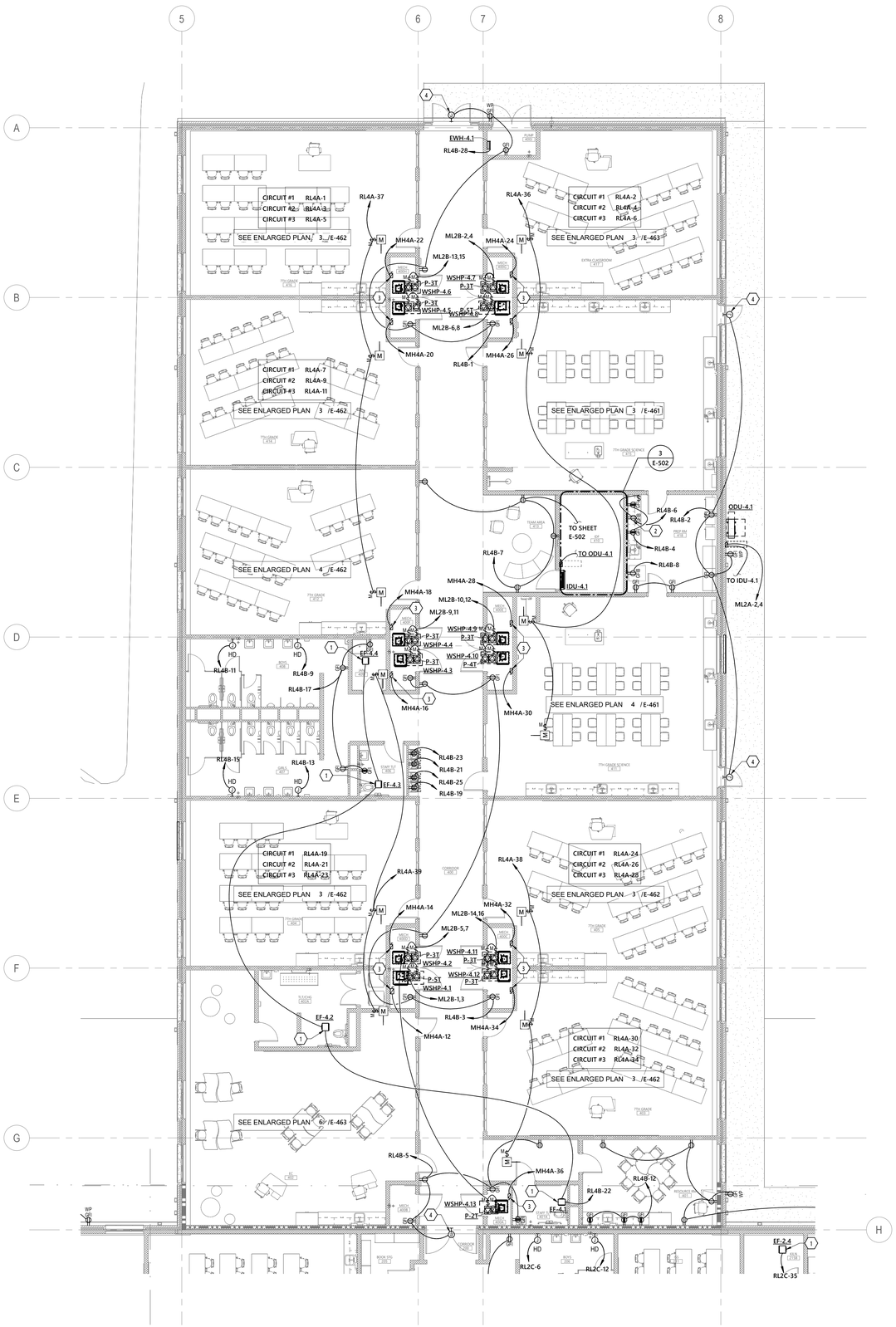
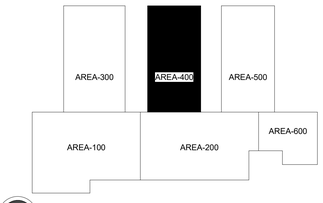


1 FIRST FLOOR POWER PLAN - AREA 400
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR POWER PLAN - AREA 400

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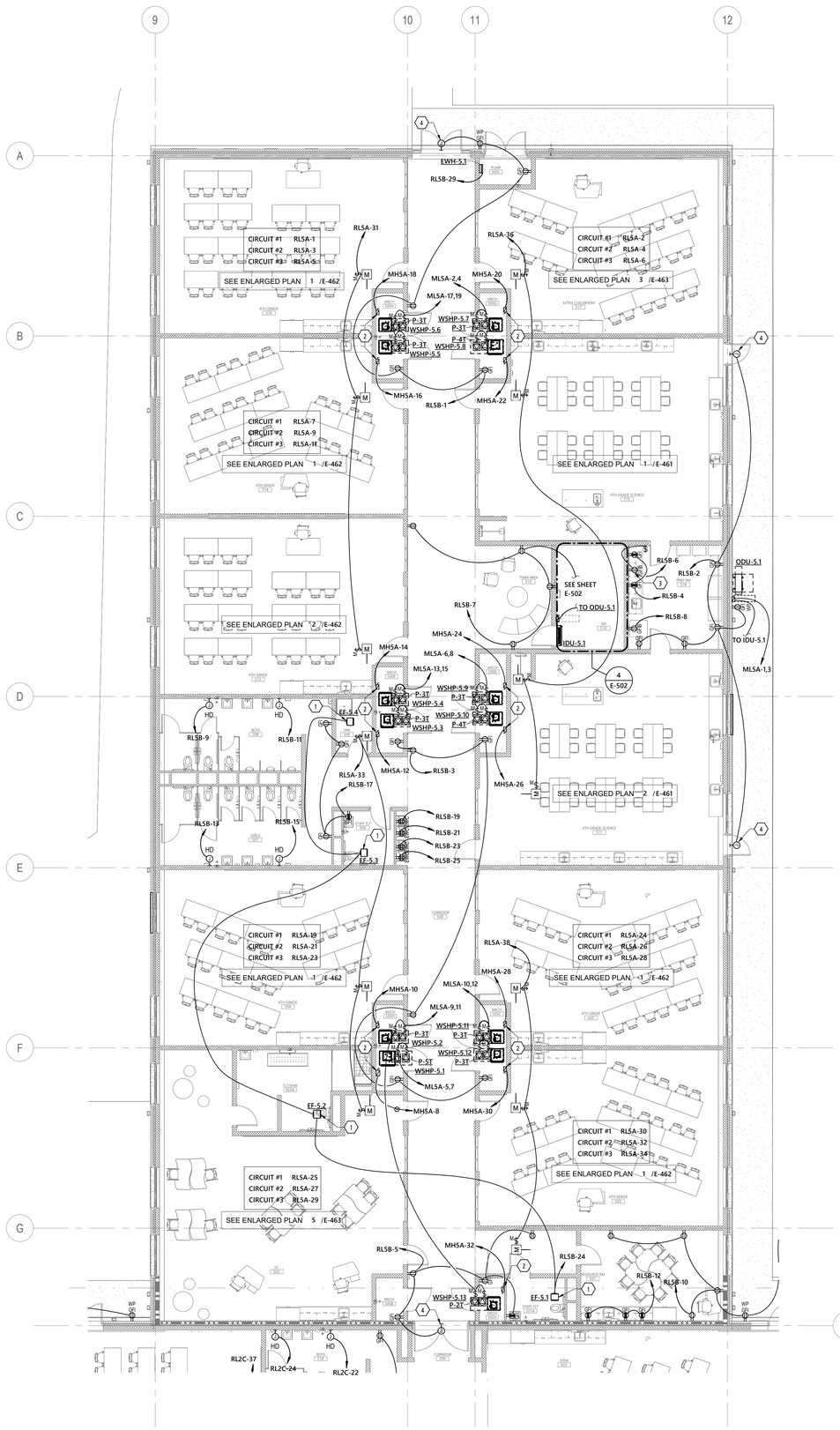

1 **FIRST FLOOR POWER PLAN - AREA 500**
1/8" = 1'-0"

NOTE:

REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
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KEYNOTES

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WALL LEGEND	
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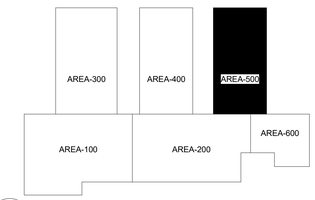
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR POWER PLAN - AREA 500

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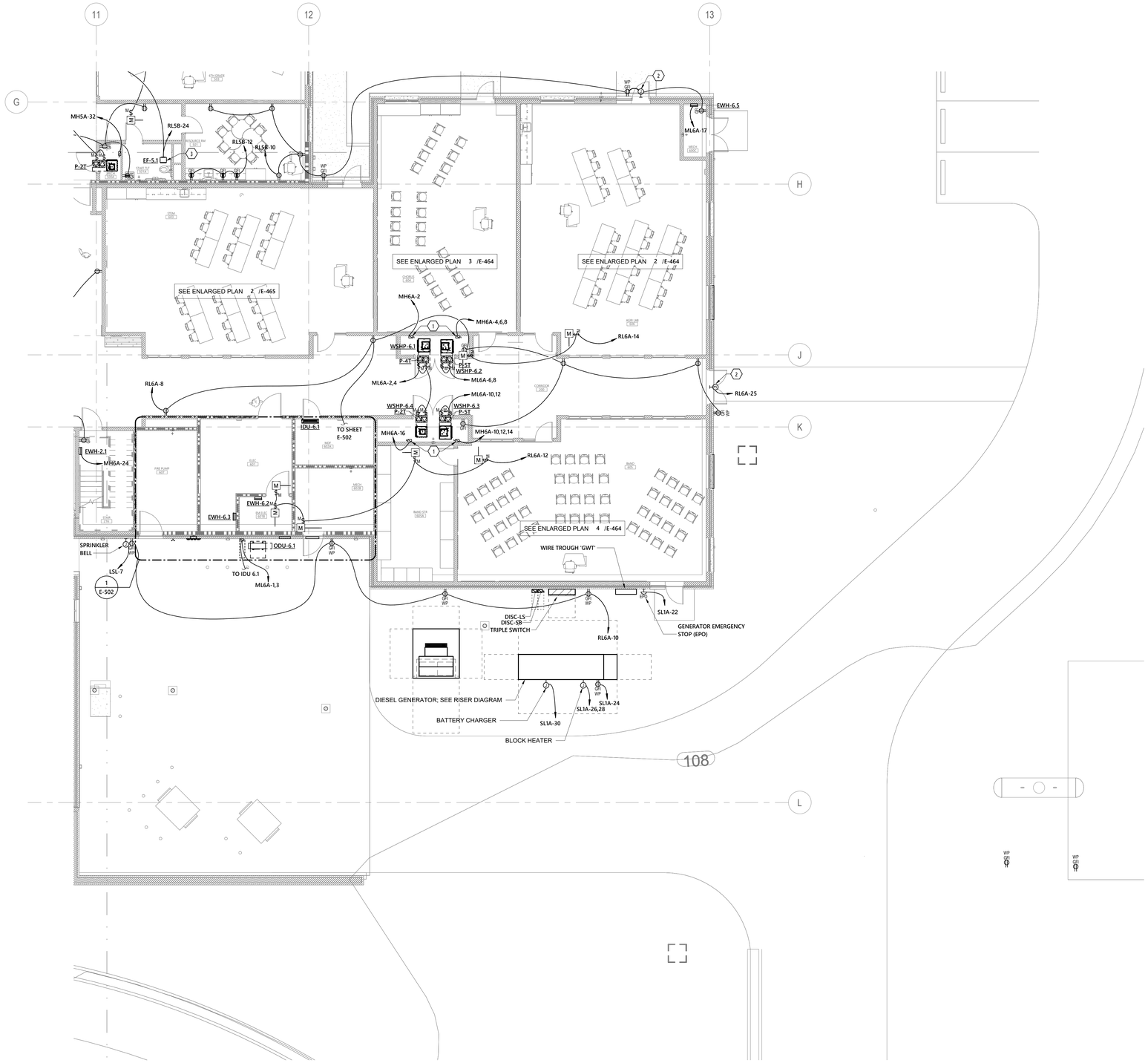


1 FIRST FLOOR POWER PLAN - AREA 600
1/8" = 1'-0"

NOTE:

REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

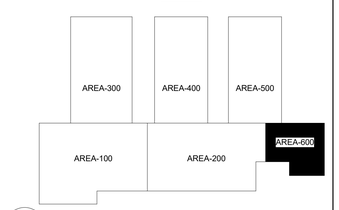
A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES

1 DISCONNECT TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2 120V CONNECTION FOR DOOR, REFER TO TECHNOLOGY DRAWINGS FOR MORE INFORMATION. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE PROVIDER PRIOR TO ROUGH-IN.
3 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE WITH RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR POWER PLAN - AREA 600

E-216

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NOTE:

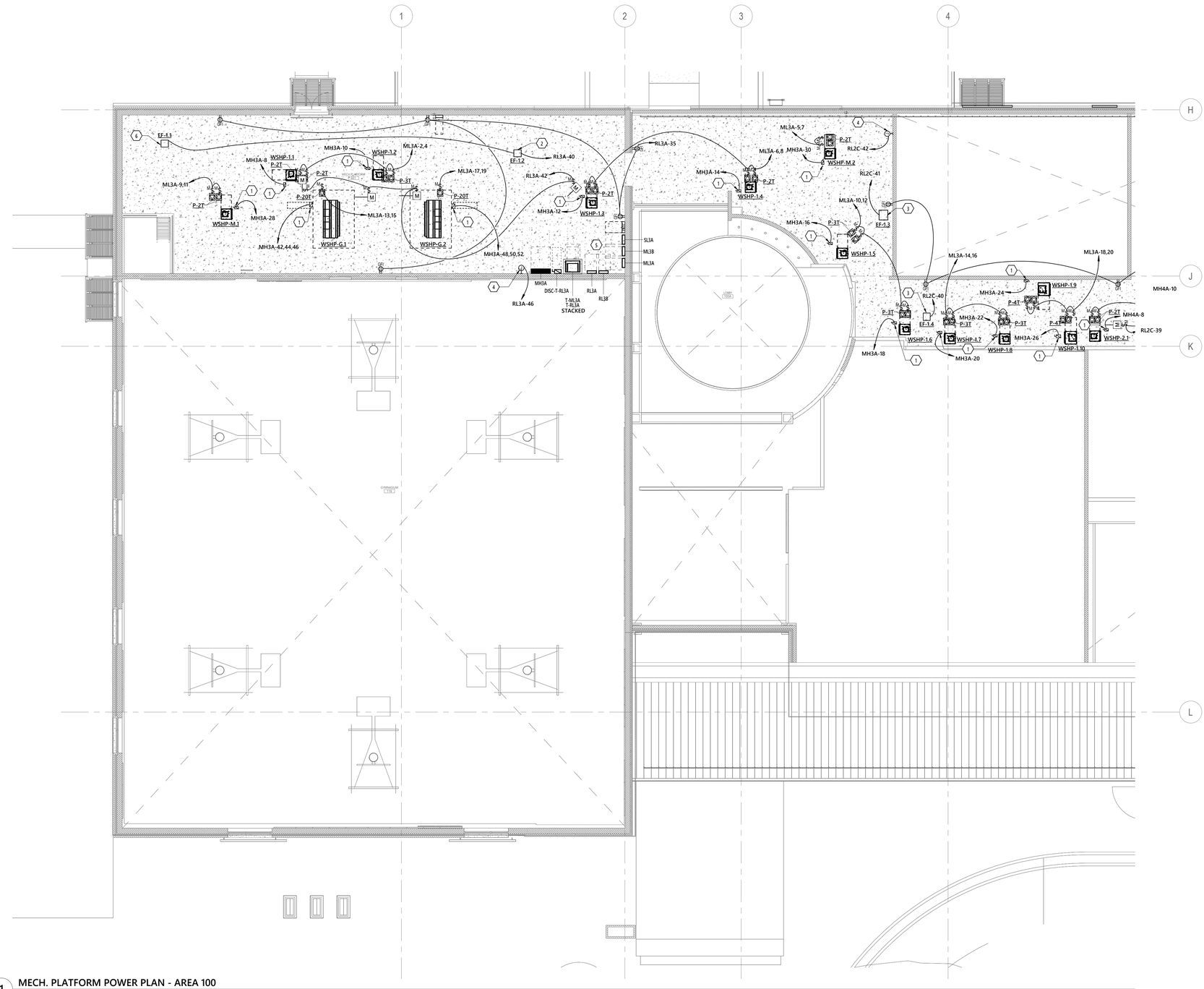
REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES (#)

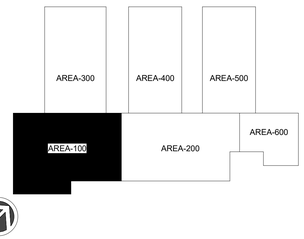
1 DISCONNECT TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2 INTERLOCK FAN WITH LIGHTING CONTROLS IN GIRLS LOCKER ROOM 121. PROVIDE WITH RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
3 FAN WILL BE CONTROLLED BY BUILDING AUTOMATION SYSTEM.
4 PROVIDE 120V CONNECTION FOR MECHANICAL CONTROLS. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
5 PROVIDE YELLOW HEAVY DUTY FLOOR TAPE OR FLOOR PAINTED LINE TO ENSURE MINIMUM NEC WORKING CLEARANCES ARE MAINTAINED; 3 INCHES WIDE, PERMITER SHALL ENCAPSULATE FULL WORKING SPACE FOR ALL ELECTRICAL PANELS AND TRANSFORMERS, THIS AREA.
6 INTERLOCK FAN WITH LIGHTING CONTROLS IN BOYS LOCKER ROOM 123. PROVIDE WITH RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.



1 MECH. PLATFORM POWER PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM POWER PLAN - AREA 100

E-217

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GENERAL NOTES - POWER

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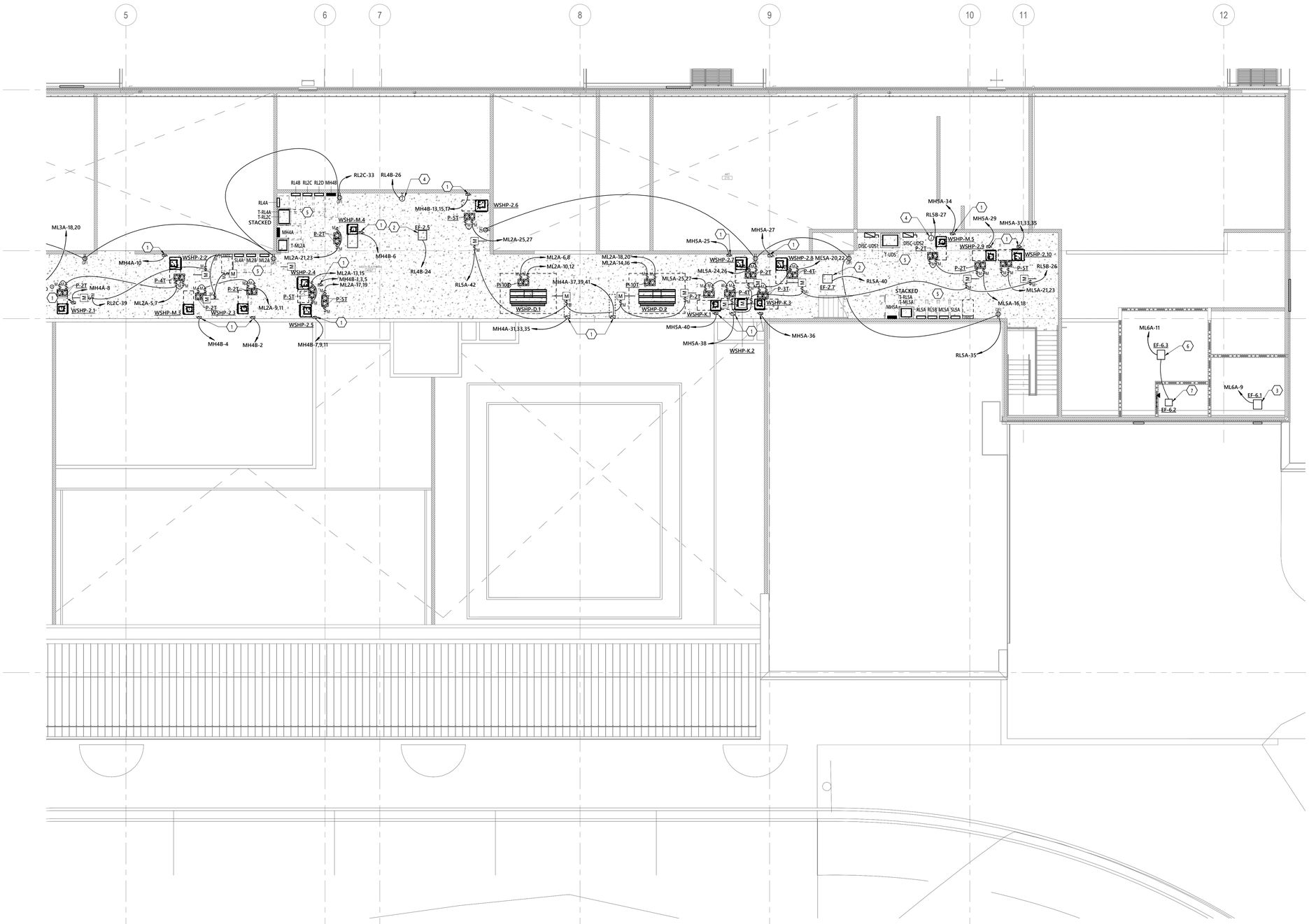
KEYNOTES ⟨#⟩

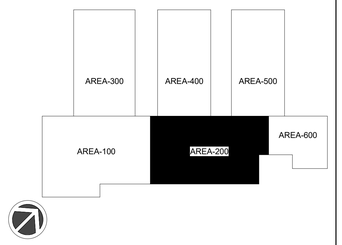
1 DISCONNECT TO BE PROVIDED BY MECHANICAL CONTRACTOR.
2 FAN WILL BE CONTROLLED BY BUILDING AUTOMATION SYSTEM.
3 INTERLOCK FAN WITH MECHANICAL ROOM CO DETECTOR AND THERMOSTAT.
4 PROVIDE 120V CONNECTION FOR MECHANICAL CONTROLS. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
5 PROVIDE YELLOW HEAVY DUTY FLOOR TAPE OR FLOOR PAINTED LINE TO ENSURE MINIMUM NEC WORKING CLEARANCES ARE MAINTAINED; 3 INCHES WIDE, PERMITER SHALL ENCAPSULATE FULL WORKING SPACE FOR ALL ELECTRICAL PANELS AND TRANSFORMERS, THIS AREA.
6 INTERLOCK FAN WITH THERMOSTAT SERVING FIRST FLOOR ELECTRICAL ROOM.
7 INTERLOCK FAN WITH THERMOSTAT SERVING FIRST FLOOR EMERGENCY ELECTRICAL ROOM.



1 MECH. PLATFORM POWER PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM POWER PLAN - AREA 200

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KEYNOTES

1 INTERLOCK FAN WITH DISHWASHER IN THE KITCHEN. PROVIDE WITH RELAY, CONNECT COMPELTE.
2 WALL SWITCH CONTROL PROVIDED BY M.C. COORDINATE PRIOR TO ROUGH-IN.
3 FAN WILL BE CONTROLLED BY BUILDING AUTOMATION SYSTEM.

GENERAL NOTES - POWER

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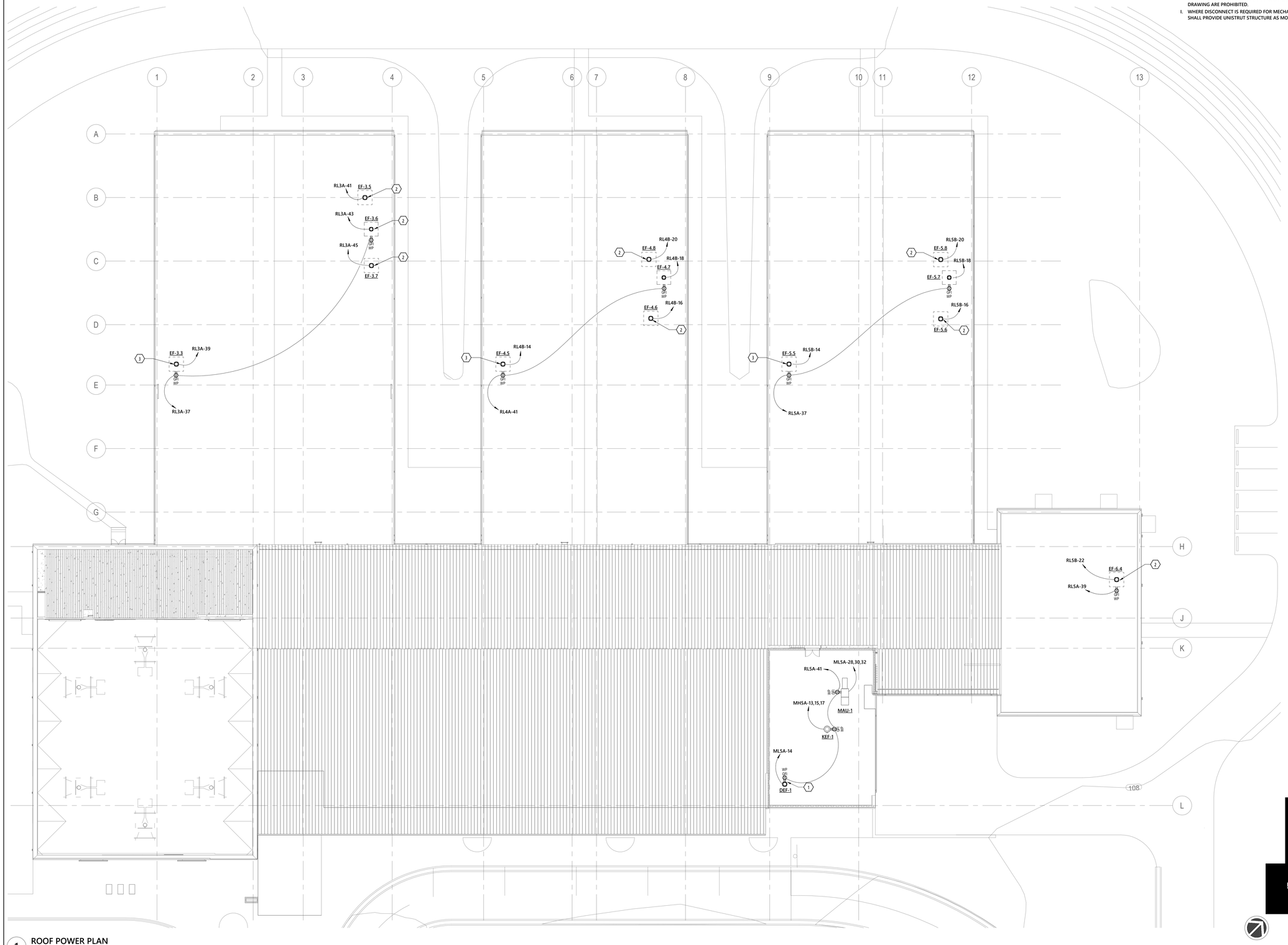
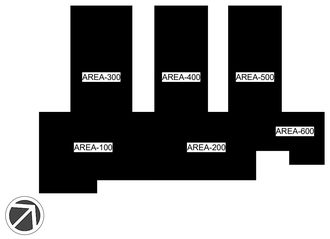


1 ROOF POWER PLAN
1/16" = 1'-0"

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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ROOF POWER PLAN

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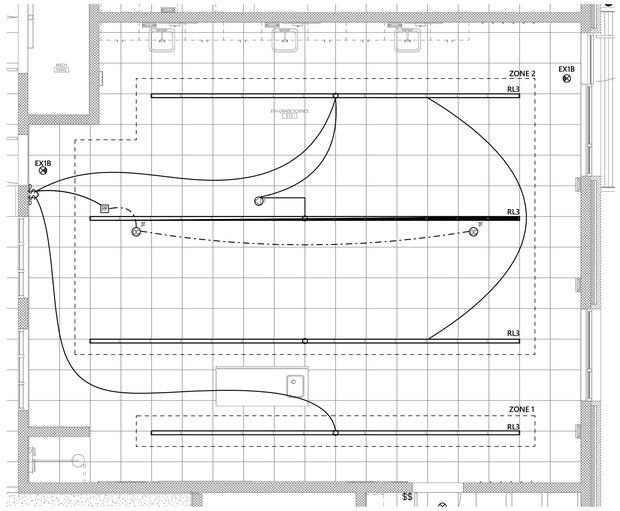
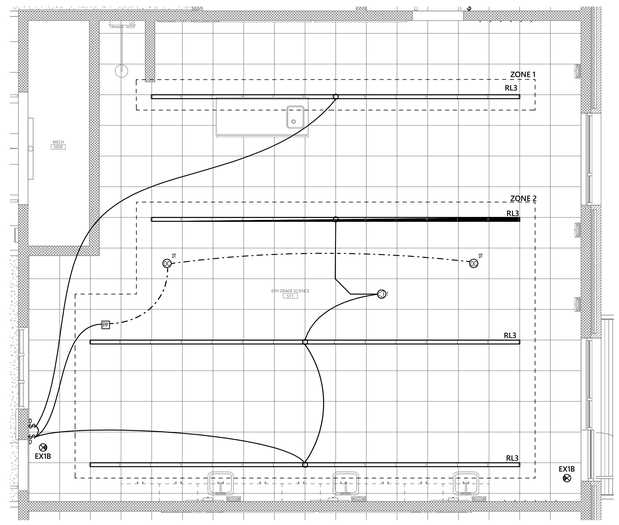


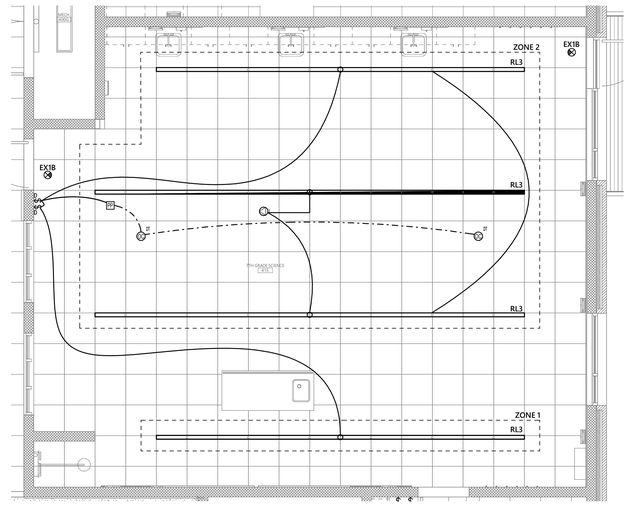
GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

1 TYPICAL 6TH GRADE SCIENCE CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

2 TYPICAL 6TH SCIENCE GRADE CLASSROOM 2 - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

3 TYPICAL 7TH GRADE SCIENCE CLASSROOM - LIGHTING
1/4" = 1'-0"

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

4 TYPICAL 7TH GRADE SCIENCE CLASSROOM 2 - LIGHTING
1/4" = 1'-0"

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

5 TYPICAL 8TH GRADE SCIENCE CLASSROOM - LIGHTING
1/4" = 1'-0"

GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

6 TYPICAL 8TH GRADE SCIENCE CLASSROOM 2 - LIGHTING
1/4" = 1'-0"

GENERAL NOTES - LIGHTING

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT LSH, UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS

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No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - LIGHTING

E-451

Sheet No. 22 of 46

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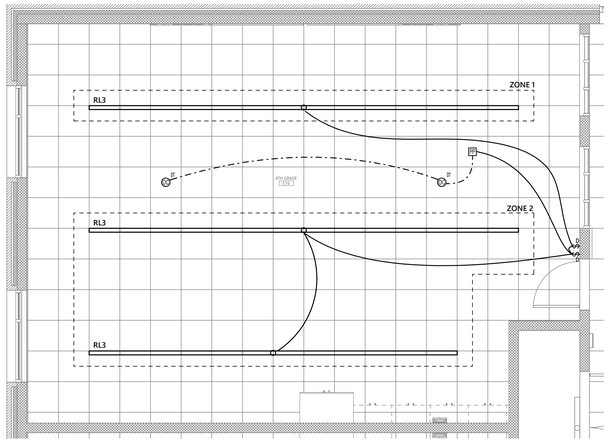
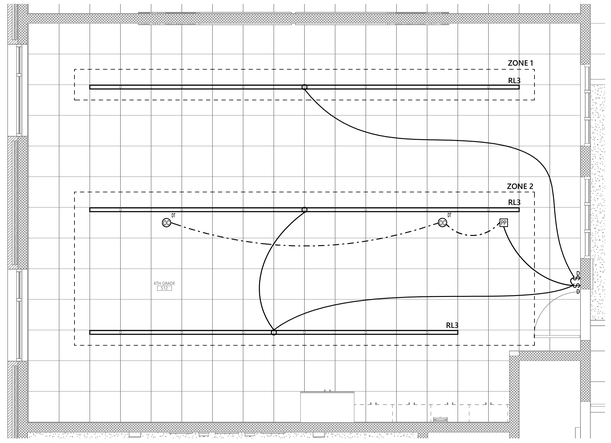


GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

1 TYPICAL 6TH GRADE CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
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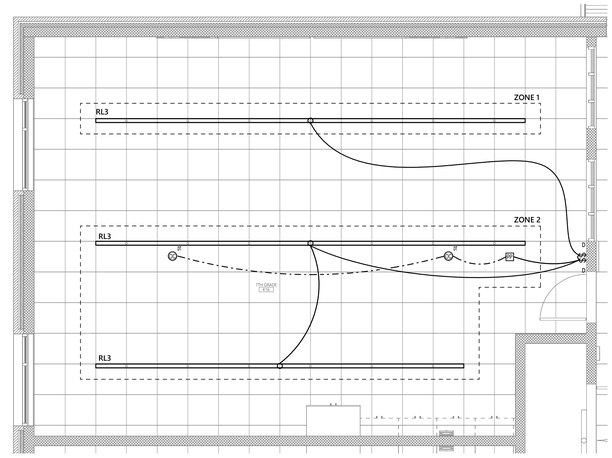
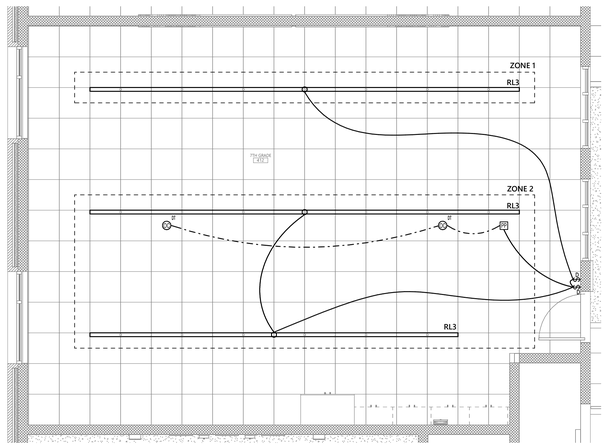
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

2 TYPICAL 6TH GRADE CLASSROOM 2 -LIGHTING
1/4" = 1'-0"



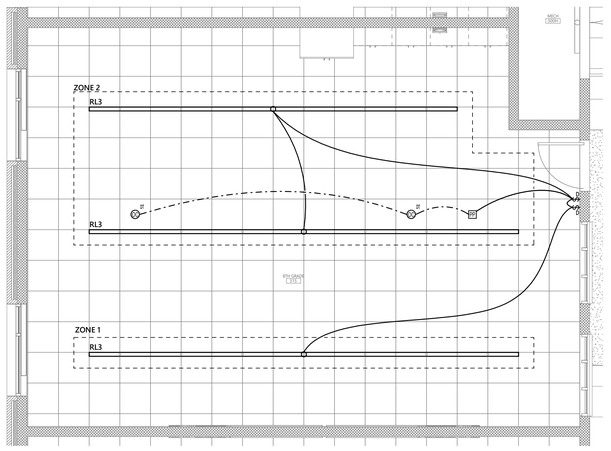
GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

3 TYPICAL 7TH GRADE CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

4 TYPICAL 7TH GRADE CLASSROOM 2 - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
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3. CLASSROOM ZONES
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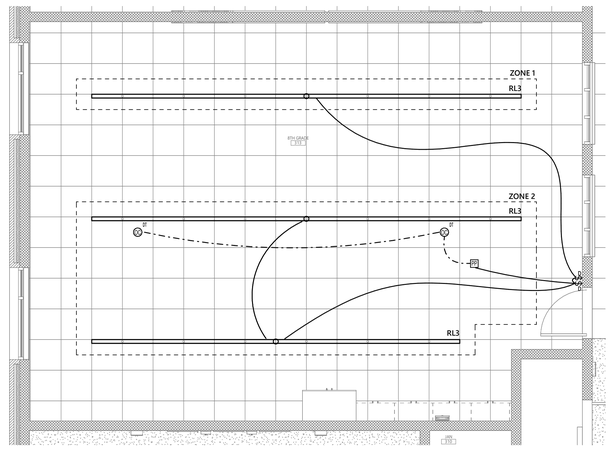
   B. ZONE 2: CLASSROOM ZONE

5 TYPICAL 8TH GRADE CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
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2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

6 TYPICAL 8TH GRADE CLASSROOM 2 - LIGHTING
1/4" = 1'-0"

GENERAL NOTES - LIGHTING

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
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H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS

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.1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - LIGHTING

E-452

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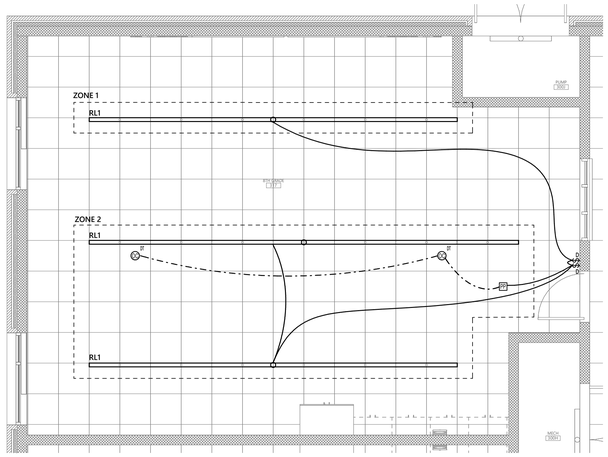
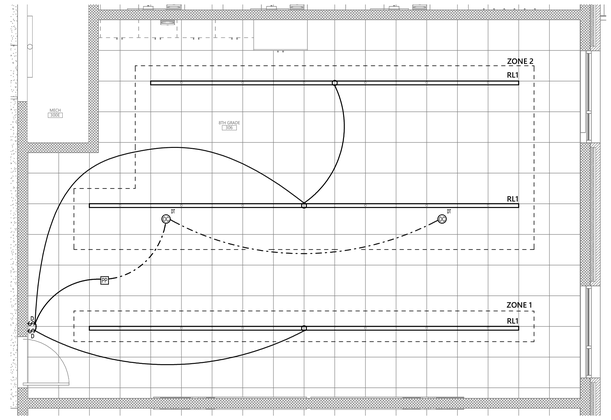


GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

1 TYPICAL 8TH GRADE CLASSROOM 3 - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
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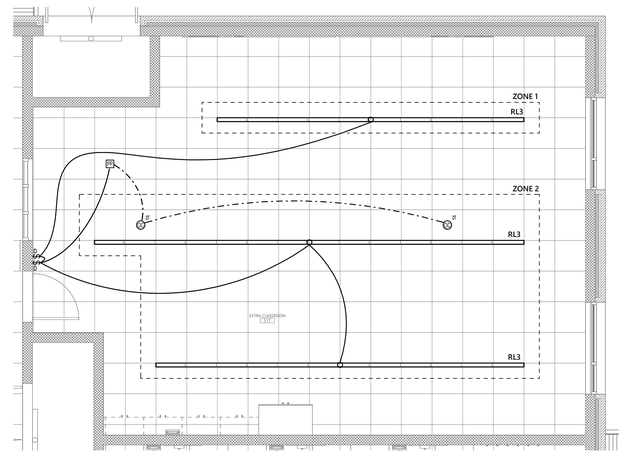
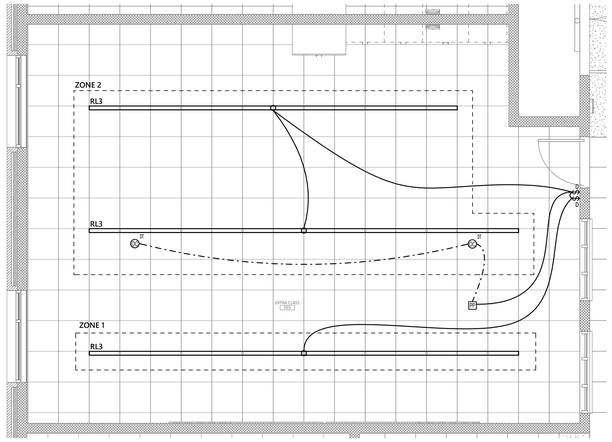
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

2 TYPICAL 8TH GRADE CLASSROOM 4 - LIGHTING
1/4" = 1'-0"



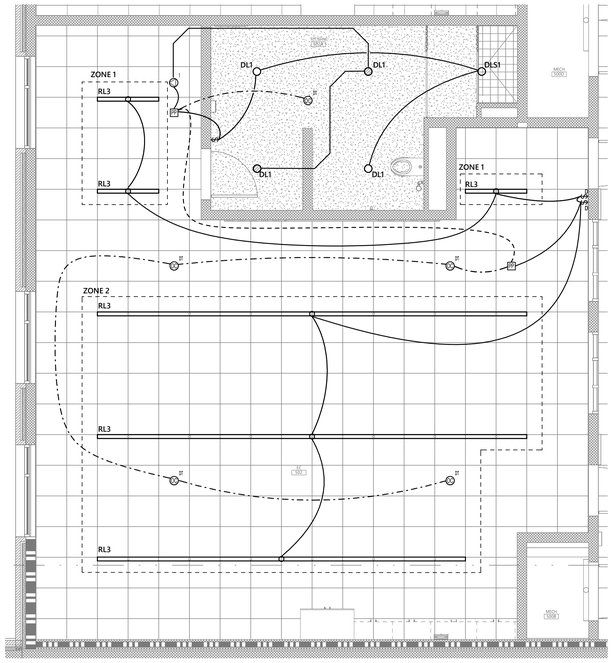
GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

3 TYPICAL EXTRA CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

4 TYPICAL HEALTH/PE CLASSROOM - LIGHTING
1/4" = 1'-0"



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3. CLASSROOM ZONES
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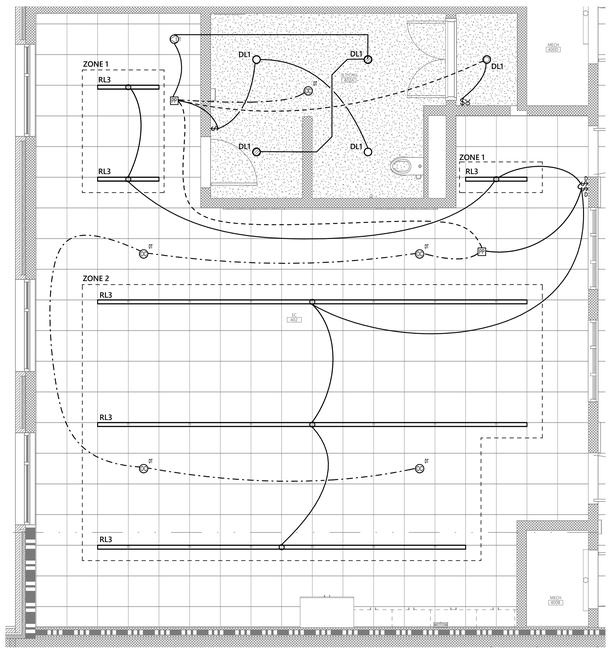
5 TYPICAL EC CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: CLASSROOM ZONE 1
   B. ZONE 2: CLASSROOM ZONE 2

6 TYPICAL EC CLASSROOM 2 - LIGHTING
1/4" = 1'-0"

GENERAL NOTES - LIGHTING

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
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C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
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H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS

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PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - LIGHTING

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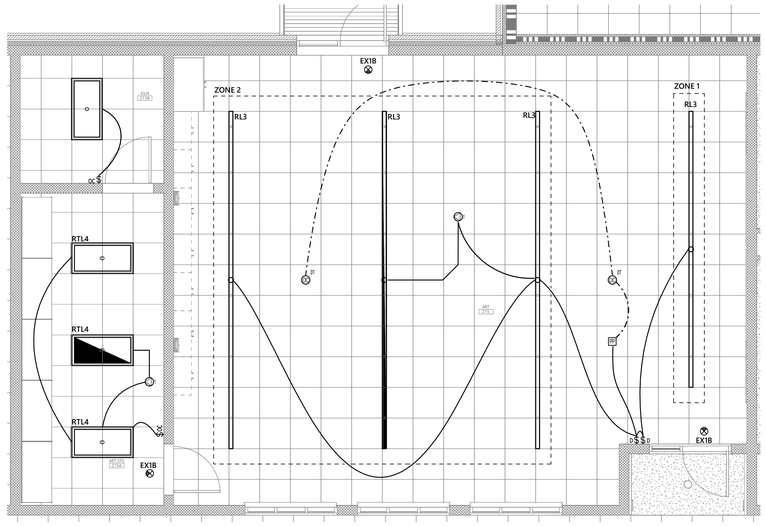
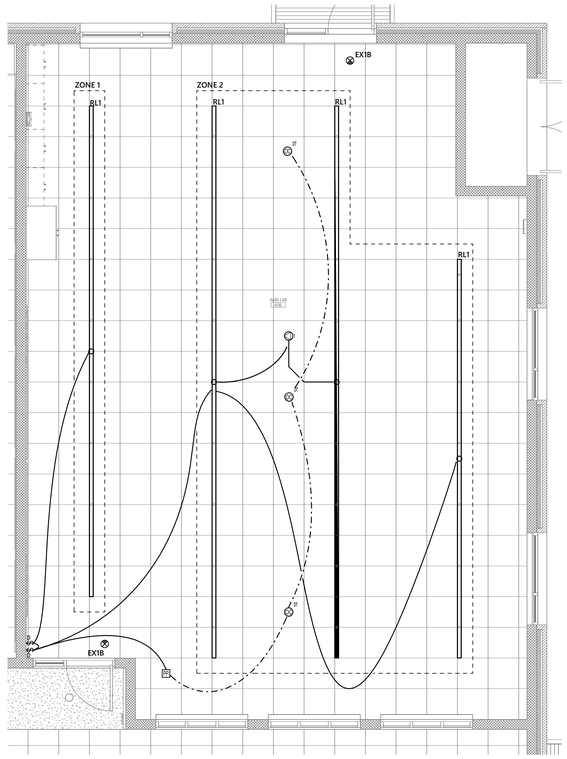


GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

1 TYPICAL ART CLASSROOM - LIGHTING
1/4" = 1'-0"



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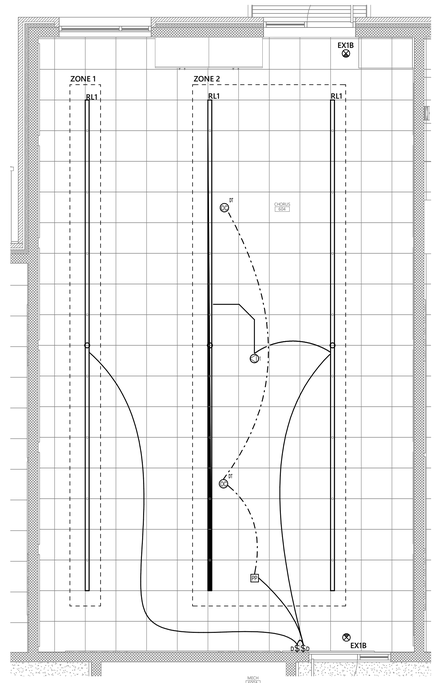
2 TYPICAL AGRI LAB CLASSROOM - LIGHTING
1/4" = 1'-0"



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3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
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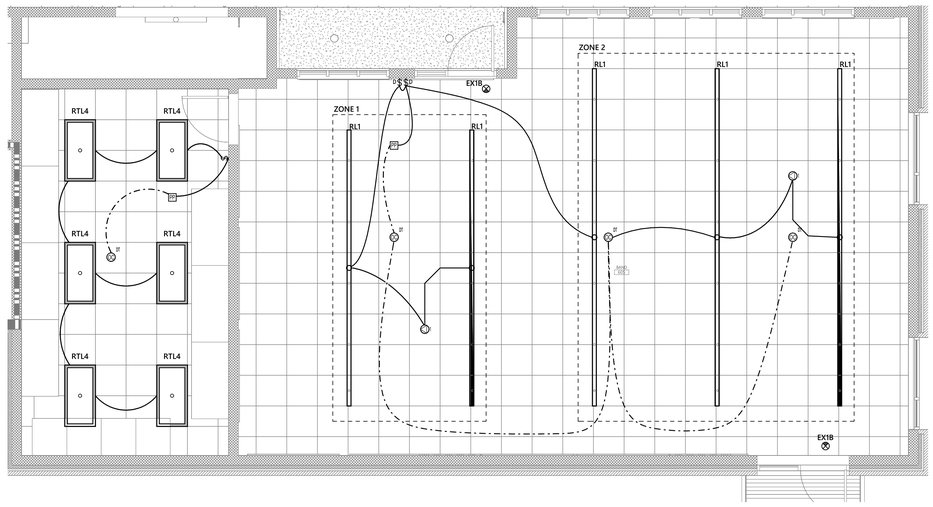
3 TYPICAL CHORUS CLASSROOM - LIGHTING
1/4" = 1'-0"



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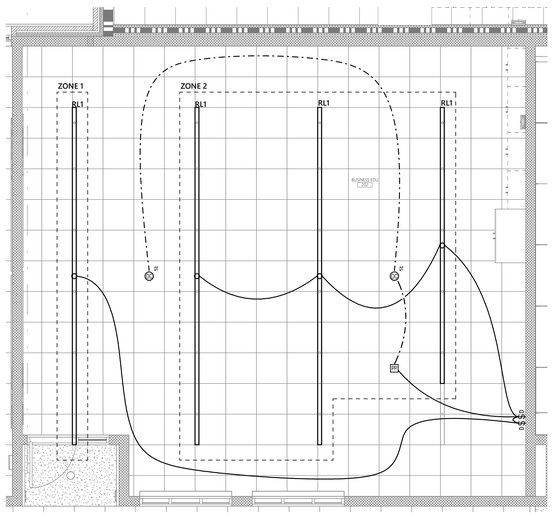
4 TYPICAL BAND CLASSROOM - LIGHTING
1/4" = 1'-0"



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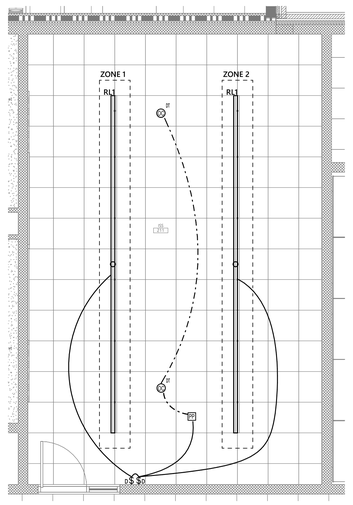
5 TYPICAL BUSINESS CLASSROOM - LIGHTING
1/4" = 1'-0"



GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   A. ZONE 1: TEACHING WALL ZONE
   B. ZONE 2: CLASSROOM ZONE

6 TYPICAL ISS CLASSROOM - LIGHTING
1/4" = 1'-0"

GENERAL NOTES - LIGHTING

A. REFER TO ARCHITECTURAL DRAWINGS, INCLUDING, BUT NOT LIMITED TO, REFLECTED CEILING PLANS AND ELEVATIONS FOR ASSOCIATED NOTES, MOUNTING DETAILS AND EXACT LOCATIONS OF ALL LIGHTING FIXTURES.
B. PROVIDE COMMON FACEPLATE AND REQUIRED METAL INTERIOR BOX BARRIERS FOR ALL MULTIPLE GANG SWITCH LOCATIONS.
C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
D. CONNECT ALL NIGHT LIGHTS (NL), EXIT SIGNS, EMERGENCY INPUT OF ALL GENERATOR TRANSFER DEVICES, AND EMERGENCY POWER PACKS SHOWN ON THIS SHEET TO EMERGENCY CIRCUIT LSH, UNLESS OTHERWISE NOTED.
E. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. CONNECT VOLTAGE SENSING INPUT OF POWER PACKS TO LOCAL NORMAL LIGHTING CIRCUIT, UNSWITCHED.
J. ALL HALLWAY CEILING MOUNTED LIGHTING DEVICES AND HALLWAY CEILING MOUNTED LIGHTING FIXTURES ARE TO BE MOUNTE IN THE CENTER OF THE HALLWAY UNLESS OTHERWISE NOTED.
K. 0-10V DIMMING WIRING IS NOT ANNOTATED ON PLANS. PROVIDE 0-10V DIMMING WIRING AS NEEDED FOR DIMMING ZONES SHOWN ON PLANS

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No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET /AGENCY COM.

ISSUE DATE: 02/18/2025

PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - LIGHTING

E-454

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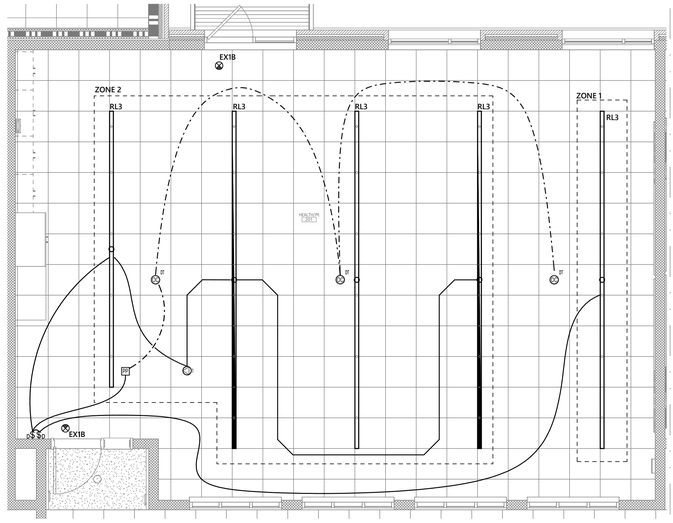
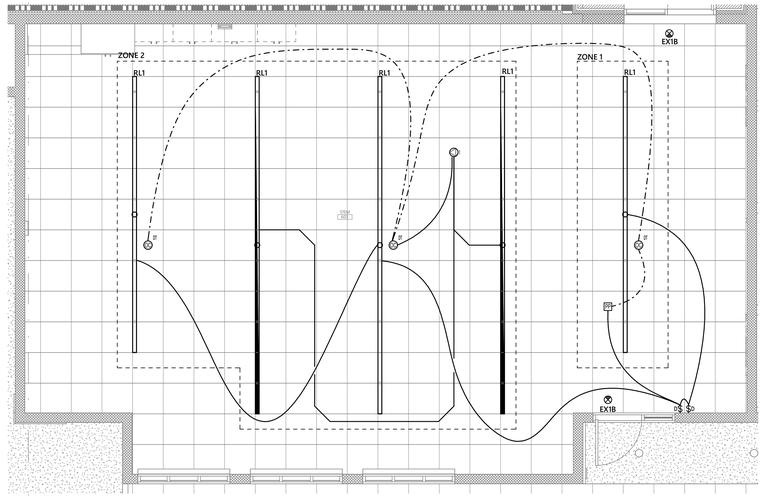


GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.
3. CLASSROOM ZONES
   - A. ZONE 1: TEACHING WALL ZONE
   - B. ZONE 2: CLASSROOM ZONE

1 HEALTH/PE CLASSROOM - LIGHTING
1/4" = 1'-0"



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3. CLASSROOM ZONES
   - A. ZONE 1: TEACHING WALL ZONE
   - B. ZONE 2: CLASSROOM ZONE

2 TYPICAL STEM CLASSROOM - LIGHTING
1/4" = 1'-0"

GENERAL NOTES - LIGHTING

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C. COORDINATE THE PLACEMENT OF ALL PENDANT, SURFACE, OR SEMI-FLUSH FIXTURES AND DEVICES WITH THE FIRE PROTECTION CONTRACTOR OR MAINTAIN NFPA 13 REQUIRED SEPARATION BETWEEN SPRINKLER HEADS AND OBSTRUCTIONS.
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F. REFER TO SHEET E-002 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
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PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - LIGHTING

E-455

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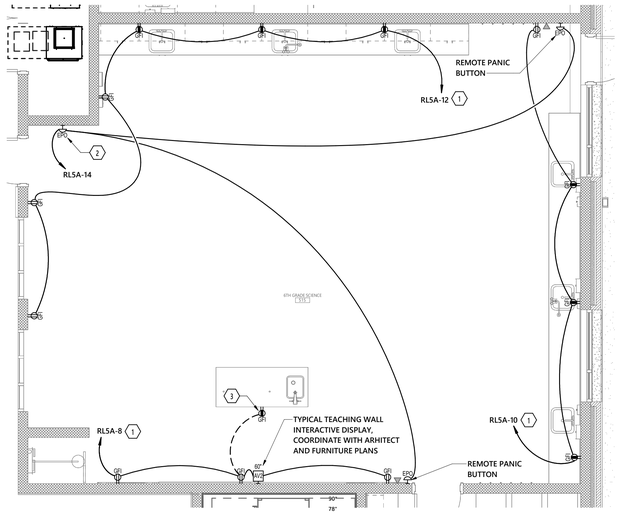
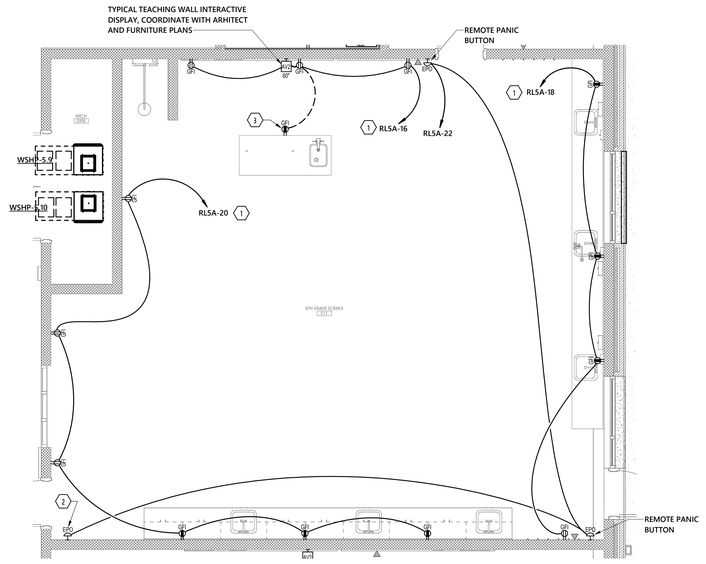


GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

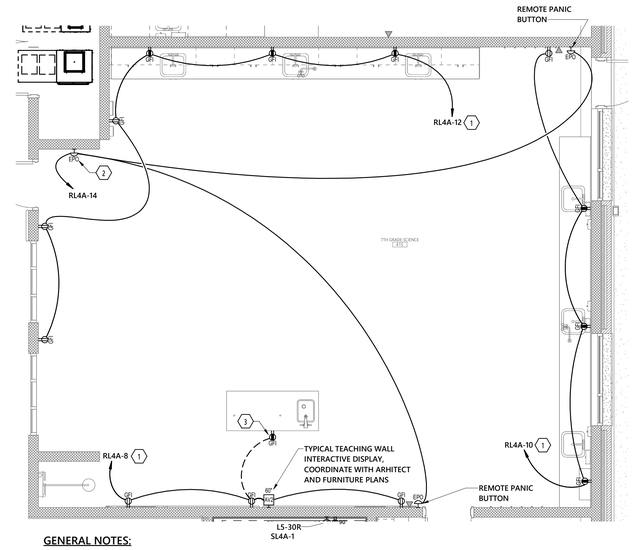
1 TYPICAL 6TH GRADE SCIENCE CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

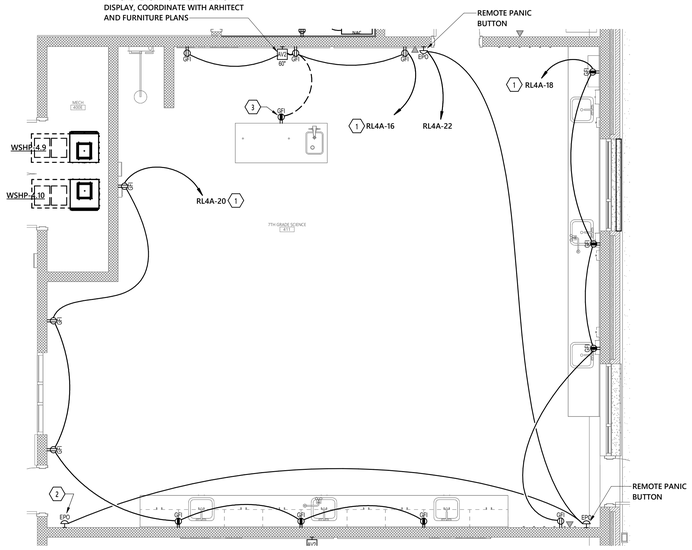
2 TYPICAL 6TH GRADE SCIENCE CLASSROOM 2 - POWER
1/4" = 1'-0"



GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

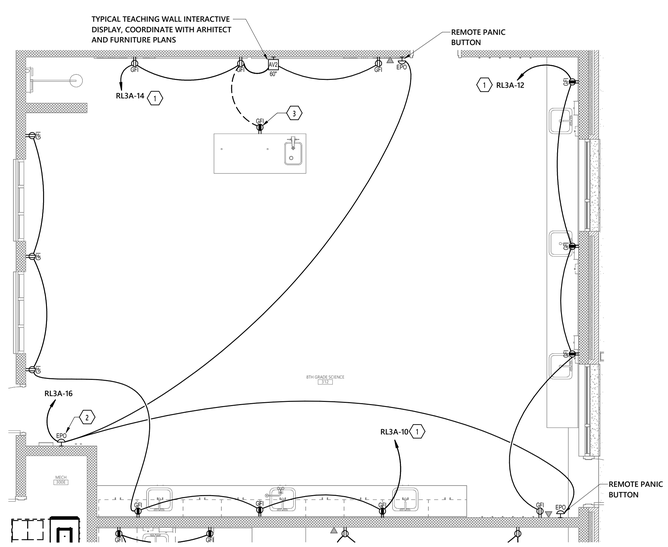
3 TYPICAL 7TH GRADE SCIENCE CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

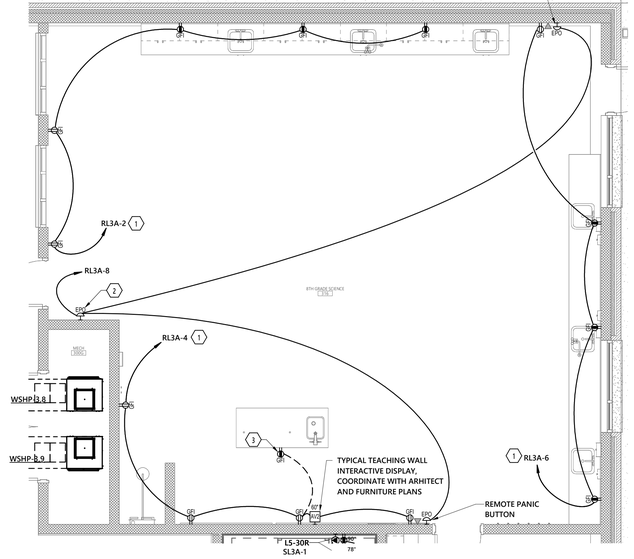
4 TYPICAL 7TH GRADE SCIENCE CLASSROOM 2 - POWER
1/4" = 1'-0"



GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

5 TYPICAL 8TH GRADE SCIENCE CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:

1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

6 TYPICAL 8TH GRADE SCIENCE CLASSROOM 2 - POWER
1/4" = 1'-0"

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES (#)

1 PROVIDE RELAY TO SHUTOFF POWER TO RECEPTACLE CIRCUIT WHEN EMERGENCY STOP BUTTON HAS BEEN PRESSED.
2 EMERGENCY ELECTRIC AND WATER SHUTOFF. REFER TO DETAIL 9/E-603. SOLENOIDS FOR WATER SHUTOFF SHALL BE PROVIDED BY EC AND INSTALLED BY PC. COORDINATE SOLENOID SIZE WITH PLUMBING PLANS.
3 COORDINATE RECEPTACLE MOUNTING AND CONDUIT & CONDUCTOR ROUTING WITH FURNITURE PROVIDER PRIOR TO ROUGH IN

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CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - POWER

E-461

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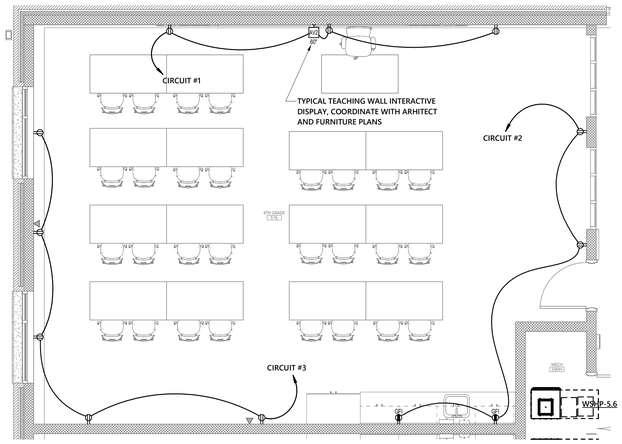

GENERAL NOTES:
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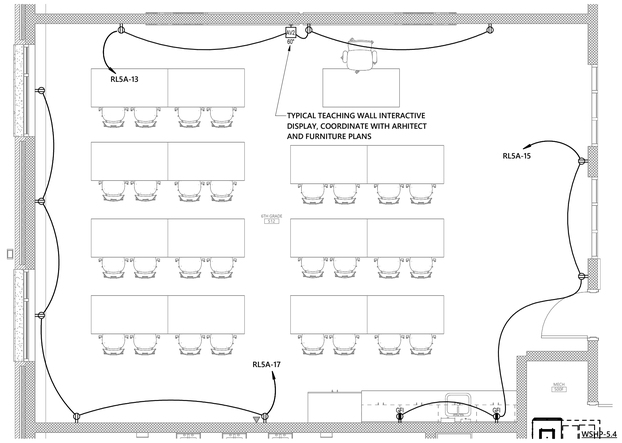
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

1 TYPICAL 6TH GRADE CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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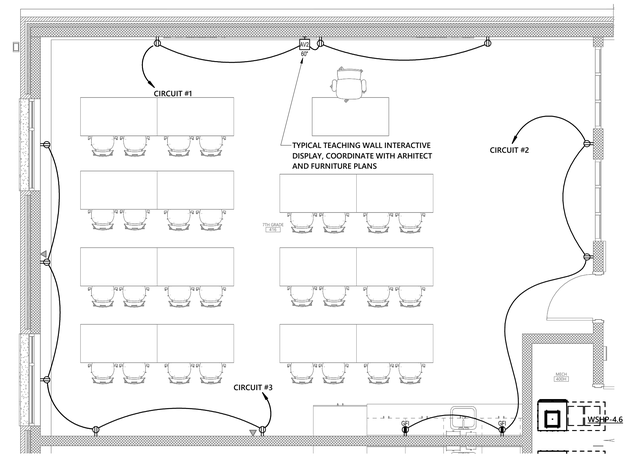
2 TYPICAL 6TH GRADE CLASSROOM 2 - POWER
1/4" = 1'-0"



GENERAL NOTES:
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3 TYPICAL 7TH GRADE CLASSROOM - POWER
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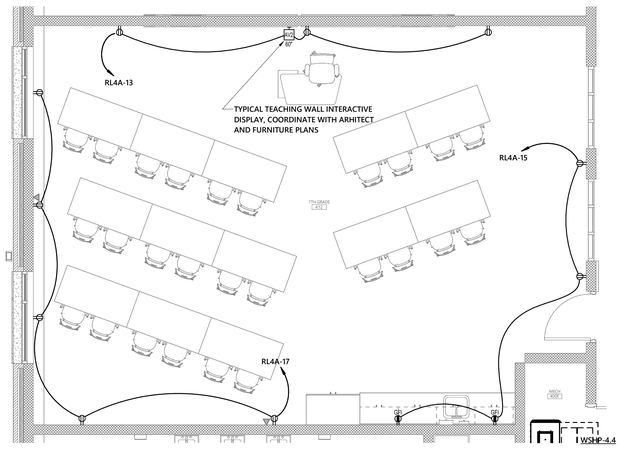

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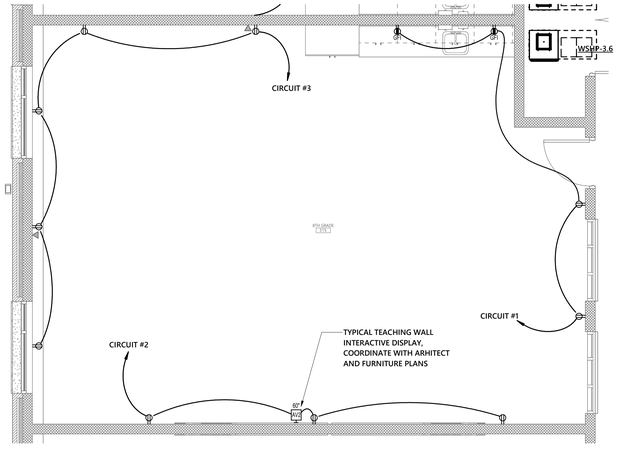

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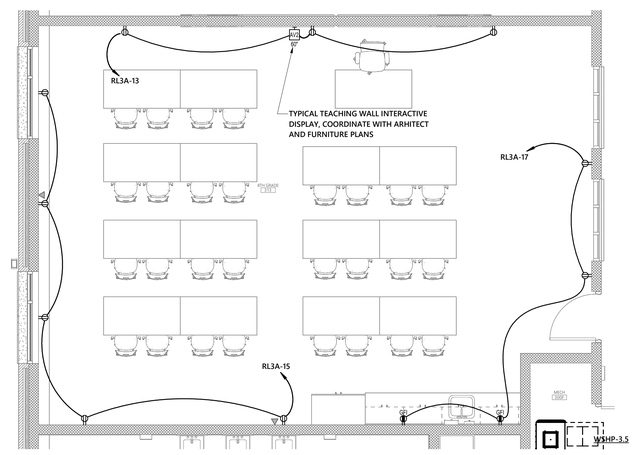

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1/4" = 1'-0"

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ENLARGED CLASSROOM PLANS - POWER

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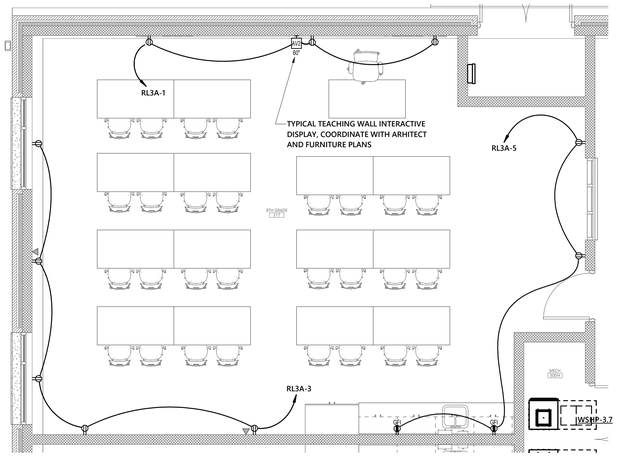
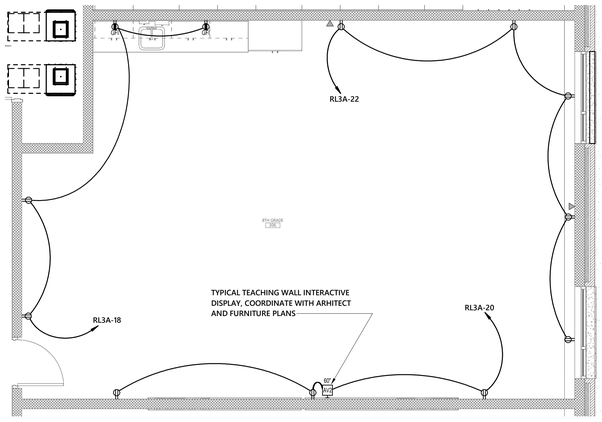


GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

1 TYPICAL 8TH GRADE CLASSROOM 3 - POWER
1/4" = 1'-0"



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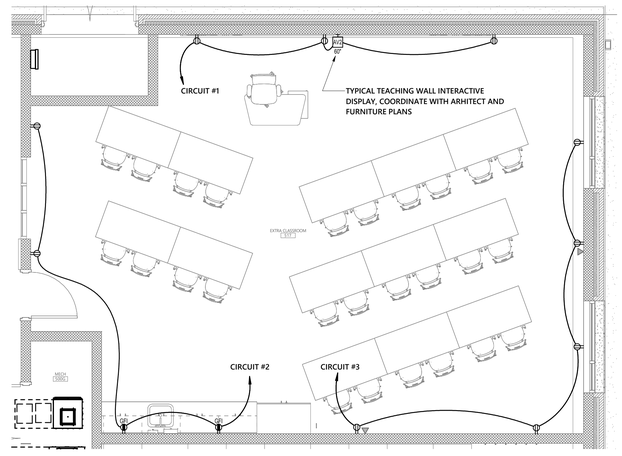
2 TYPICAL 8TH GRADE CLASSROOM 4 - POWER
1/4" = 1'-0"



GENERAL NOTES:
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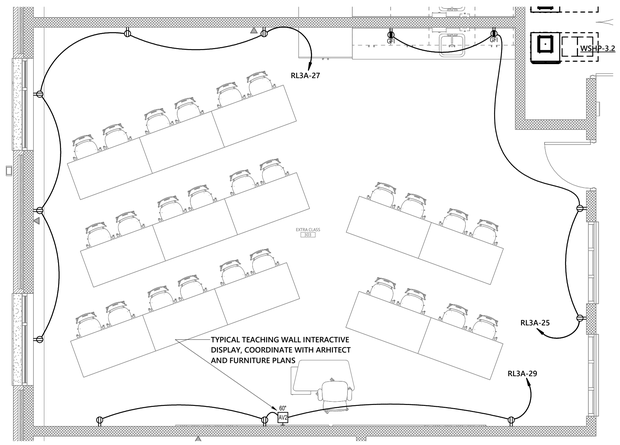
3 TYPICAL EXTRA CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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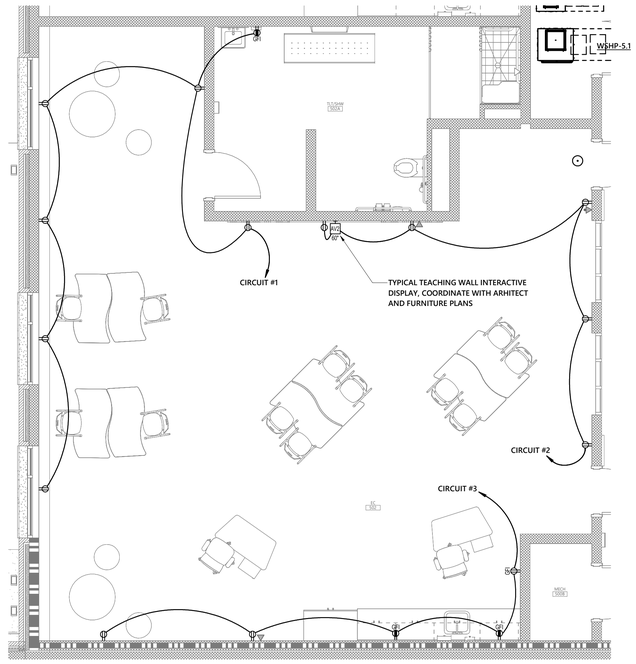
4 TYPICAL HEALTH/PE CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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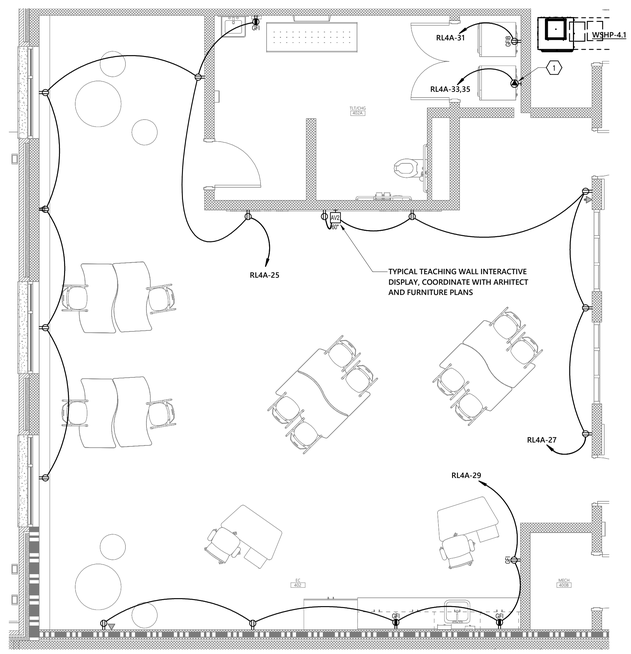
5 TYPICAL EC CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

6 TYPICAL EC CLASSROOM 2 - POWER
1/4" = 1'-0"

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A, BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES

1 PROVIDE 30A, 208V SINGLE PHASE RECEPTACLE FOR DRYER. COORDINATE PLUG TYPE WITH GENERAL CONTRACTOR.

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ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - POWER

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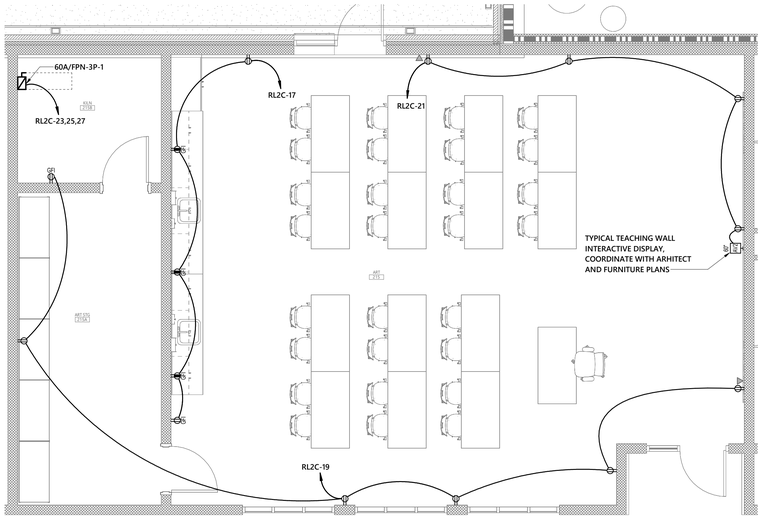
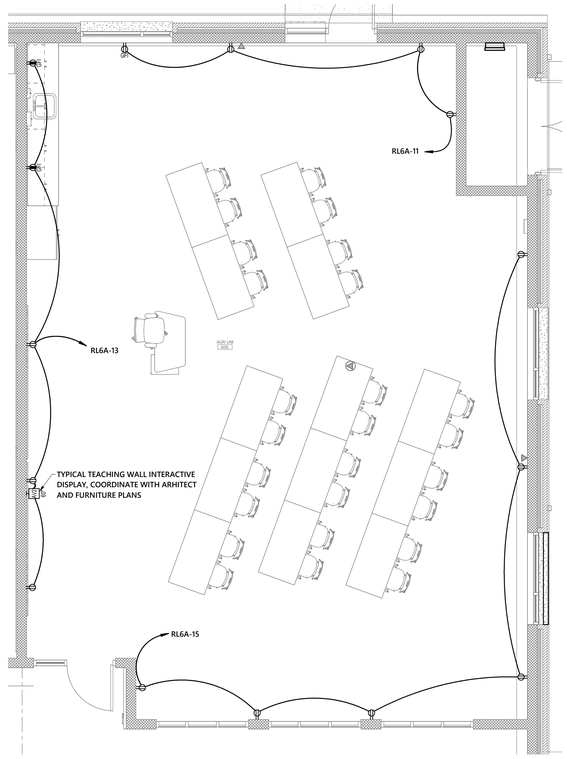


GENERAL NOTES:
1. SEE FLOOR PLANS FOR CIRCUIT DESIGNATIONS
2. SEE MANUFACTURER SUBMITTED DRAWINGS FOR EXACT DEVICE AND CABLING LAYOUTS.

1 TYPICAL ART CLASSROOM - POWER
1/4" = 1'-0"



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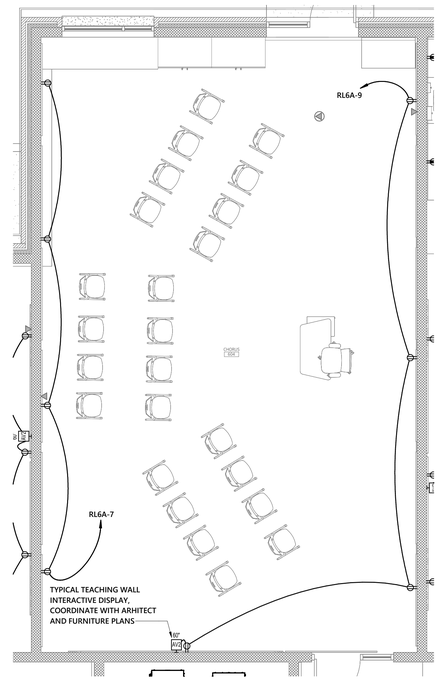
2 TYPICAL AGRI LAB CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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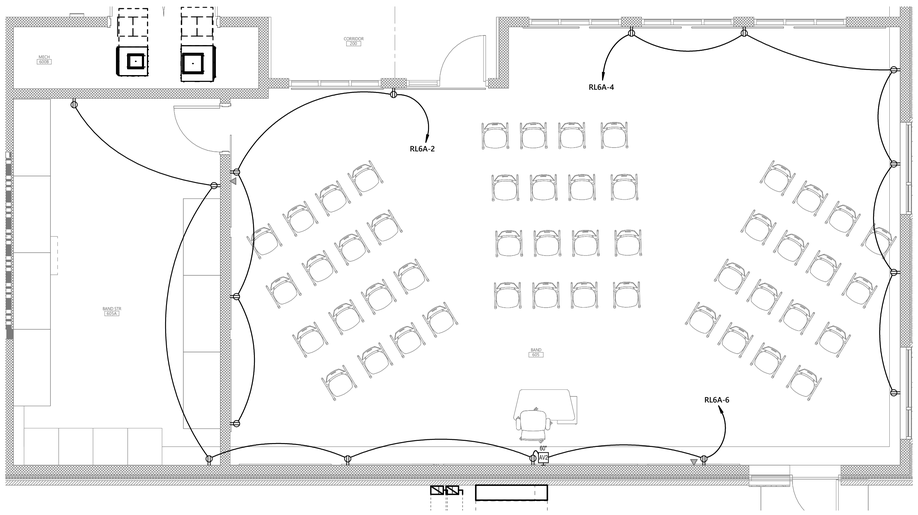
3 TYPICAL CHORUS CLASSROOM - POWER
1/4" = 1'-0"



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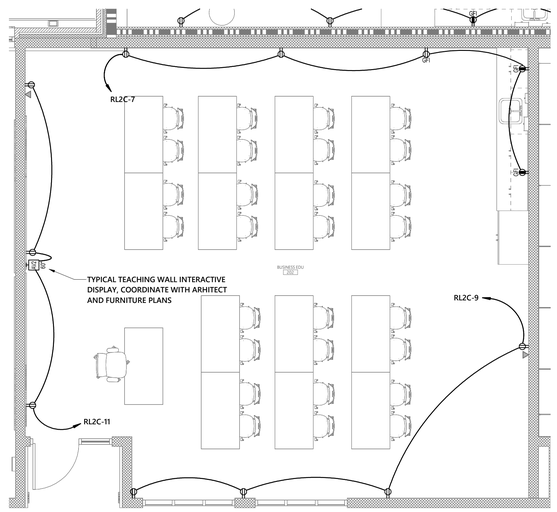
4 TYPICAL BAND CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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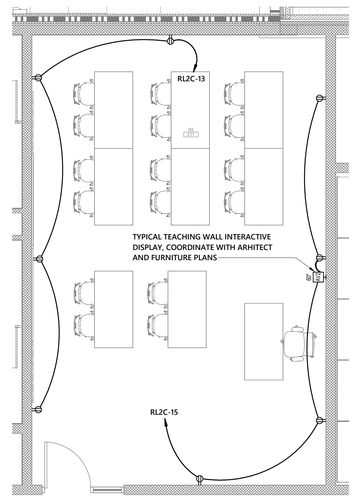
5 TYPICAL BUSINESS CLASSROOM - POWER
1/4" = 1'-0"



GENERAL NOTES:
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6 TYPICAL ISS CLASSROOM - POWER
1/4" = 1'-0"

GENERAL NOTES - POWER

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ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED CLASSROOM PLANS - POWER

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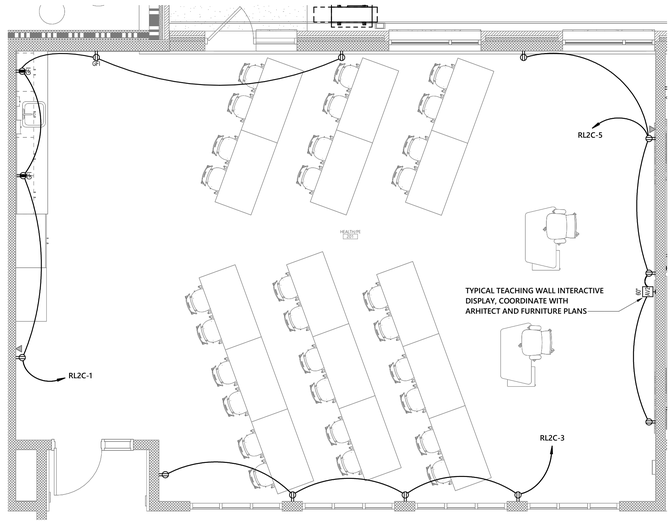

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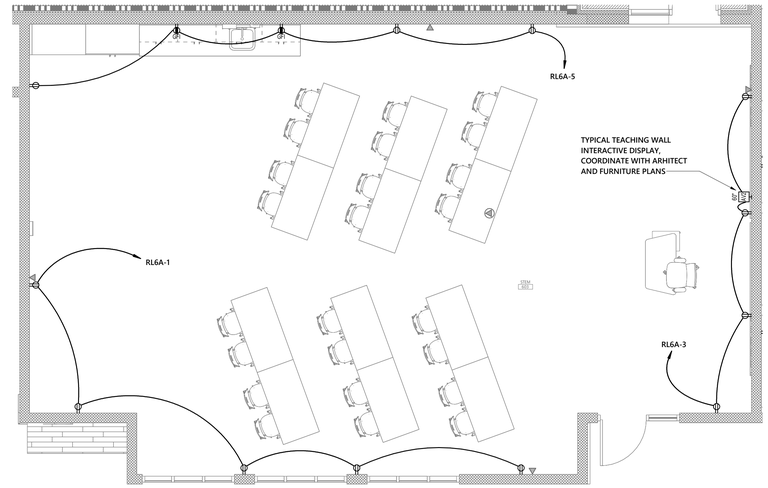
1 HEALTH/PE CLASSROOM - POWER

1/4" = 1'-0"



GENERAL NOTES:

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2 TYPICAL STEM CLASSROOM - POWER

1/4" = 1'-0"

GENERAL NOTES - POWER

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ENLARGED CLASSROOM PLANS - POWER

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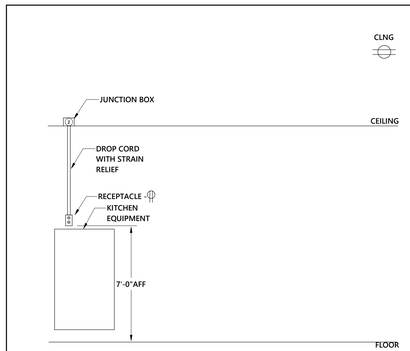
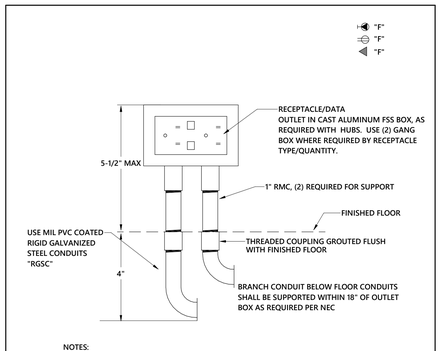


3 KITCHEN - POWER POLE & CEILING DROP
NO SCALE



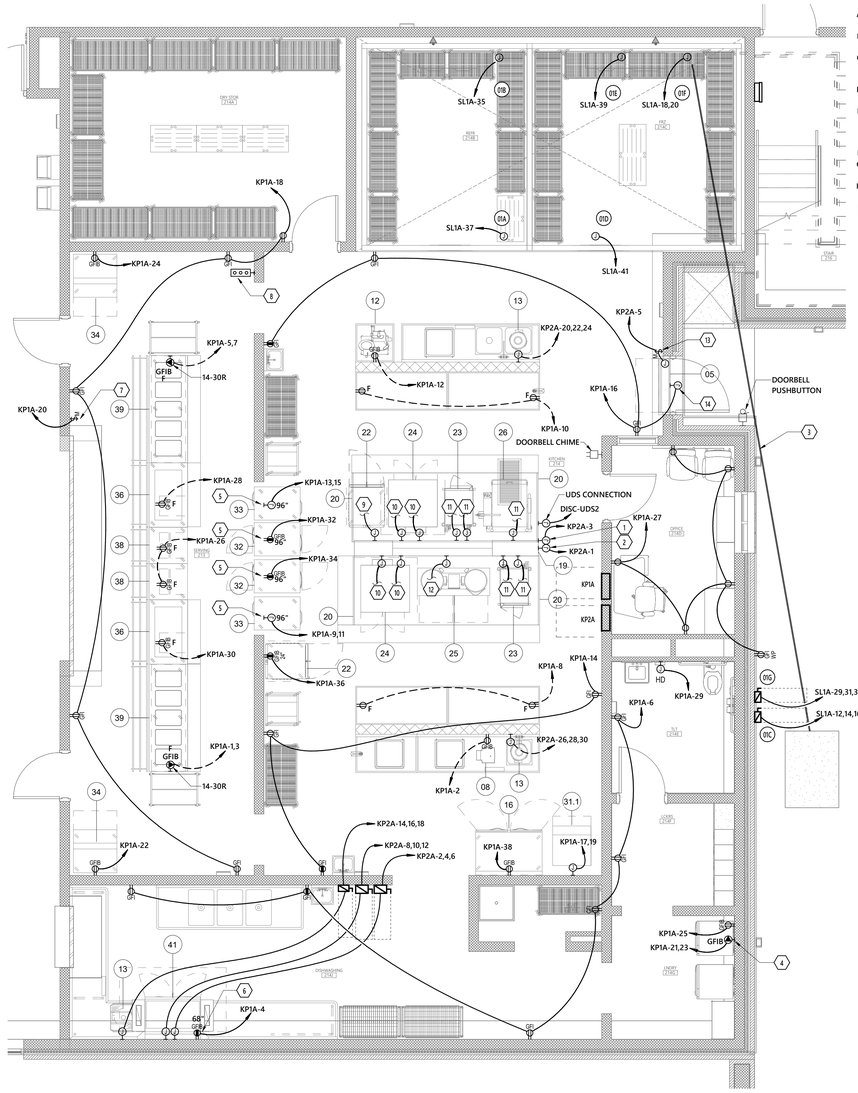
NOTES:
1. COORDINATE HEIGHT OF RECEPTACLE/DATA BOX WITH FOOD SERVICE PLANS PRIOR TO INSTALLATION. FOOD SERVICE HEIGHT SHALL SUPERCEDE HEIGHT SHOWN.

2 KITCHEN FLOOR BOX DETAIL
NOT TO SCALE

REFRIGERATION CONNECTION SCHEDULE

CONN.	EQUIPMENT	LOAD	V/PH	REMARKS	DISCONNECT SIZE	CONDUCTOR AND CONDUIT SIZE
01A	LIGHTS, COOLER	500 W	120/1	4 EXTRA LIGHTS	SINGLE POLE SWITCH	2#12,1#12G., 3/4"C.
01B	EVAP. COIL, COOLER	2.0 AMPS	120/1	---	LOCKABLE CB	2#12,1#12G., 3/4"C.
01C	COND. UNIT, COOLER	11.1 MCA	208/3	---	30A/15A-3P-3R	4#12,1#12G., 3/4"C.
01D	LIGHTS & DOOR HEAT	700 W	120/1	3 EXTRA LIGHTS	LOCKABLE CB	2#12,1#12G., 3/4"C.
01E	HEAT TAPE, FREEZER	15.0 AMPS	120/1	DRAINLINE HEAT TAPE	LOCKABLE CB	2#12,1#12G., 3/4"C.
01F	EVAP. COIL, FREEZER	1.2 MCA	208/1	FEED DEFROST THRU TIMER @ COND. UNIT	LOCKABLE CB	3#12,1#10G., 3/4"C.
01G	COND. UNIT, FREEZER	13.1 AMPS	208/3		30A/20A-3P-3R	4#12,1#12G., 3/4"C.

KITCHEN SCHEDULE NOTES:
1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL AS REQUIRED ALL DISCONNECT SWITCHES, RECEPTACLES, ETC. TO MECHANICAL, PLUMBING, AND KITCHEN EQUIPMENT COMPLETELY. THE ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE ALL CORDS, PLUGS, CABLES, ETC., ON REQUIRING SUCH ITEMS.
2. THE ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL CONNECTIONS TO ALL MECHANICAL, PLUMBING AND KITCHEN EQUIPMENT AS REQUIRED.
3. ALL DISCONNECT SWITCHES, FUSE SIZES, PLUG CONFIGURATIONS, BREAKER SIZES, WIRE SIZES, ETC., SHALL BE COORDINATED WITH SHAP DRAWINGS PRIOR TO INSTALLING. ANY EQUIPMENT INSTALLED INCORRECTLY BECAUSE OF LACK OF COORDINATION WILL BE REMOVED.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE A GROUND WIRE AND A NEUTRAL WITH ALL CIRCUITS, WHETHER SO DESIGNATED OR NOT.
5. ALL 15 AND 20 AMP RECEPTACLES IN FOOD PREP AREA SHALL BE GFI, UNLESS NOTES TO BE PROVIDED WITH A GFI BREAKER.



1 ENLARGED KITCHEN PLAN - POWER
1/4" = 1'-0"

GENERAL NOTES - POWER

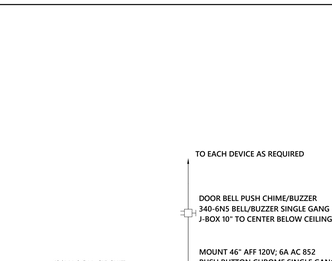
A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIAGRAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER, GENERATOR, OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES

1 120V CONNECTION FOR HOOD CONTROL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
2 120V CONNECTION FOR SHUNT TRIP AND FUEL CONTROL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
3 PROVIDE (1) 1-1/2"C. FROM FREEZER CONDENSING UNIT TO FREEZER EVAPORATOR COIL.
4 30A, 208V RECEPTACLE FOR DRYER. COORDINATE PLUG TYPE WITH EQUIPMENT SUPPLIER.
5 COORDINATE CONNECTION TYPE WITH KITCHEN EQUIPMENT PROVIDER PRIOR TO ROUGH-IN.
6 120V CONNECTION FOR TABLE LIMIT SWITCH. COORDINATE WITH FOOD SERVICE EQUIPMENT PROVIDER.
7 120V CONNECTION TO OVERHEAD DOOR. COORDINATE EXACT REQUIREMENTS WITH DOOR INSTALLER PRIOR TO ROUGH-IN.
8 RAISE/LOWER/STOP SWITCH FOR OVER HEAD DOOR. COORDINATE EXACT REQUIREMENTS WITH DOOR PROVIDER.
9 CONNECT TO 20A, SINGLE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
10 CONNECT TO 40A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
11 CONNECT TO 50A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
12 CONNECT TO 70A, THREE POLE BREAKER IN KITCHEN HOOD UDS PANEL. COORDINATE EXACT REQUIREMENTS WITH KITCHEN HOOD VENDOR.
13 PROVIDE 120V CONNECTION VIA MOTOR RATED SWITCH FOR AIR CURTAIN.
14 120V CONNECTION FOR DOOR, REFER TO TECHNOLOGY DRAWINGS FOR MORE INFORMATION. COORDINATE EXACT REQUIREMENTS WITH DOOR HARDWARE PROVIDER PRIOR TO ROUGH-IN.

FOODSERVICE EQUIPMENT SCHEDULE

QTY	ITEM	`	MANUFACTURER	MODEL	ELECTRICAL					REMARKS	DISCONNECT SIZE	CONDUIT AND CONDUCTOR SIZE
					ELECTRICAL A.F.F.	HP	AMPS	VOLTS	PHASE	NEMA			
1	05	AIR CURTAIN	MARS AIR	LPN242-1UA-OB	ABV.	1/6		120 V	1	DIRECT	MICRO SWITCH @ DOOR	MOTOR RATED SWITCH	2#12,1#12G., 3/4"C.
1	08	FOOD PROCESSOR	ROBOT COUPE	CL50 ULTRA 1 SPEED	50"	1.5	12.0 A	120 V	1	5-15P		CORD AND PLUG	2#12,1#12G., 3/4"C.
1	12	SLICER, ELECTRIC	HOBART	EDGE 13A	50"	1/2	4.0 A	120 V	1	5-15P	SITS ON EQUIPMENT STAND	CORD AND PLUG	2#12,1#12G., 3/4"C.
3	13	DISPOSER	INSINKERATOR	SS-300	18"	3	6.0 A	208 V	3	DIRECT	ADJUSTABLE LEG, CONTROL PANEL MOUNTED TO TABLE	(1) 30A/F15A-3P - 4X STAINLESS STEEL (2) LOCKABLE CIRCUIT BREAKERS	4#12,1#12G., 3/4"C.
1	16	REFRIGERATOR, REACH-IN	BEVERAGE-AIR	HBR49HC-1	50"	1/3	5.0 A	115 V	1	NEMA 5-15P	CASTERS	CORD AND PLUG	2#12,1#12G., 3/4"C.
1	19	UTILITY DISTRIBUTION SYSTEM	CAPTIVEAIRE	UDI	STUB	-		208 V	3	DIRECT	REFER TO UDS DETAILS	500A MCB	SEE RISER DIAGRAM
2	20	EXHAUST HOOD	CAPTIVEAIRE	ND2-PSP	2@ABV.		20.0 A	120 V	1	DIRECT	REFER TO VENTILATION CONNECTION SCHEDULE	BREAKER IN KP1A PANEL	2#12,1#12G., 3/4"C.
2	22	MOBILE HEATED CABINET	WINSTON INDUSTRIES	HOV5-14UV	50"/U.C.		19.1 A	120 V	1	NEMA 5-20P	CASTERS	CORD AND PLUG	2#12,1#12G., 3/4"C.
2	23	CONVECTION STEAMER	CLEVELAND	(2) 22CET66.1	2@U.C.		29.8 A	208 V	3	DIRECT	STACKING KIT, WATER FILTER, BACKFLOW PREVENTION DEVICE	BREAKER IN UDS PANEL	(2) 4#6,1#10G., 1"C.
2	24	CONVECTION OVEN	BLODGETT	ZEPH-100-E DBL	2@U.C.		31.0 A	208 V	3	DIRECT	LOW PROFILE CASTERS	BREAKER IN UDS PANEL	(2) 4#8,1#10G., 3/4"C.
1	25	KETTLE, ELECTRIC, COUNTERTOP, TWIN UNIT	CLEVELAND RANGE	TKET-12-T-H	2@U.C.		68.1 A	208 V	3	DIRECT	EQUIPMENT STAND WITH SPLASH GUARD & DRAIN DRAWER, DOUBLE PANTRY FAUCET	BREAKER IN UDS PANEL	4#4,1#8G., 1-1/4"C.
1	26	TILT SKILLET	CLEVELAND RANGE	SEL30T1	U.C.		1.4 A	120 V	1	DIRECT	SINGLE PANTRY FAUCET, FLANGED FEET	BREAKER IN UDS PANEL	4#6,1#10G., 1"C.
1	31	ICE MAKER, CUBE STYLE	ICE-O-MATIC	CIM0436A	68"		6.3 A	208 V	1	DIRECT	WATER FILTER, BACKFLOW PREVENTION DEVICE	BREAKER IN KP1A PANEL	3#12,1#12G., 3/4"C.
2	32	REFRIGERATOR, PASS-THRU	CONTINENTAL REFRIGERATOR	1RNSAPTHD	90"	0.33	5.2 A	120 V	1	NEMA 5-15P	CASTERS	CORD AND PLUG	2#12,1#12G., 3/4"C.
2	33	HEATED CABINET, PASS-THRU	CONTINENTAL REFRIGERATOR	DL1W-SA-PT-HD	90"		7.2 A	208 V	1	DIRECT	CASTERS	BREAKER IN KP1A PANEL	3#12,1#12G., 3/4"C.
2	34	MILK COOLER	BEVERAGE-AIR	SMF34HC-1-S	24"	1/6	3.0 A	115 V	1	NEMA 5-15P	CASTERS	CORD AND PLUG	2#12,1#12G., 3/4"C.
2	36	COLD FOOD SERVING COUNTER	EXISTING	RESET	STUB	1/3	7.5 A	120 V	1	NEMA 5-15P	F.S.E.C. TO VERIFY EXISTING UTILITIES	CORD AND PLUG	2#12,1#12G., 3/4"C.
2	38	CASHIER COUNTER	EXISTING	RESET	STUB		15.0 A	120 V	1	5-15P		CORD AND PLUG	2#12,1#12G., 3/4"C.
2	39	QUICK SWITCH SERVING COUNTER	EXISTING	RESET	STUB		21.6 A	208 V	1	NEMA 5-15P	F.S.E.C. TO VERIFY EXISTING UTILITIES	CORD AND PLUG	3#10,1#10G., 3/4"C.
1	41	RACK CONVEYOR DISHWASHER	HOBART	CL44EN-BAS	64"		55.0 A	208 V	3	DIRECT	A:DISHMACHINE, B:BOOSTER, DRAIN WATER TEMPERING KIT	(1) 100A/F90A-3P - 4X STAINLESS STEEL (1) 100A/F70A-3P - 4X STAINLESS STEEL	(1) 4#2,1#8G., 1-1/2"C. (1) 4#4,1#8G., 1-1/4"C.



NOTES:
1. DEVICES ARE BASED ON EDWARDS SIGNALING SYSTEMS, OR APPROVED EQUAL.

4 DOOR BELL SYSTEM
NOT TO SCALE

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No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
A	12/09/2024	DPI REVISIONS
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED POWER PLANS - KITCHEN

E-501

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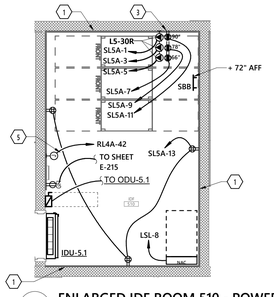
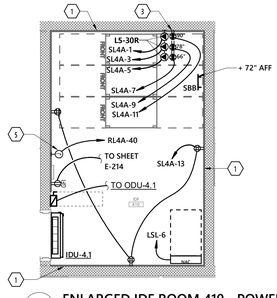
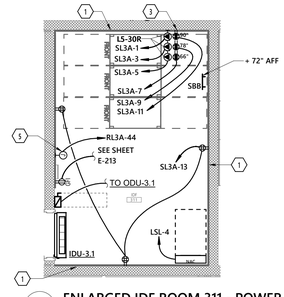


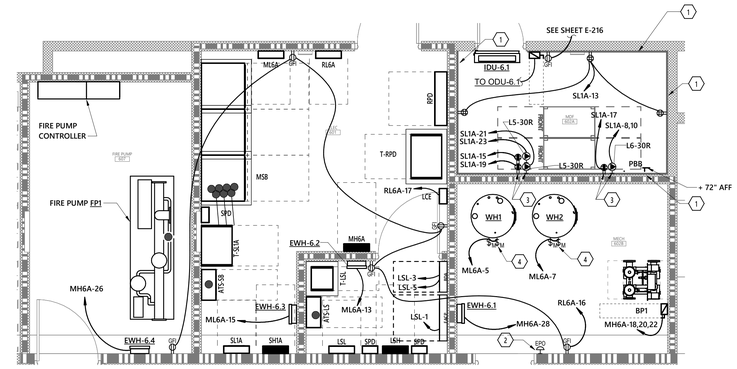
4 ENLARGED IDF ROOM 510 - POWER
1/4" = 1'-0"



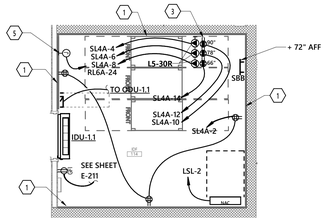
3 ENLARGED IDF ROOM 410 - POWER
1/4" = 1'-0"



2 ENLARGED IDF ROOM 311 - POWER
1/4" = 1'-0"



1 ENLARGED ELECTRICAL ROOM - POWER
1/4" = 1'-0"



5 ENLARGED IDF ROOM 113 - POWER
1/4" = 1'-0"

NOTE:

REFER TO TECHNOLOGY SERIES FOR ADDITIONAL CONDUIT REQUIREMENTS.

GENERAL NOTES - POWER

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATED WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES PRIOR TO ROUGH-IN. MULTIPLE BOXES IN THE SAME ARE SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
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I. WHERE DISCONNECT IS REQUIRED FOR MECHANICAL EQUIPMENT AND THERE IS NOT ADEQUATE WALL SPACE THE EC SHALL PROVIDE UNISTRUT STRUCTURE AS MOUNTING PROVISIONS.

KEYNOTES ⟨#⟩

1 PROVIDE 3/4" FIRE RETARDANT PLYWOOD BACKBOARD FROM FLOOR TO CEILING INSTALLED VERTICALLY STARTING AT 6" AFF.
2 EMERGENCY GAS SHUTOFF. REFER TO DETAIL 10/ SHEET E-603. COORDINATE WITH PLUMBING AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
3 RECEPTACLES SHALL BE STACKED SUCH THAT THE TOP OF THE TOP OUTLET BOX IS FLUSH WITH THE BOTTOM OF THE LOWER LADDER RACK.
4 120V CONNECTIONS FOR WATER HEATER IGNITION CIRCUIT AND FRACTIONAL HP RECIRC PUMP. COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO ROUGH IN
5 PROVIDE 120V CONNECTION FOR MECHANICAL CONTROLS. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.

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No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS.
1	02/18/2025	BID SET /AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ENLARGED ELECTRICAL PLANS

E-502

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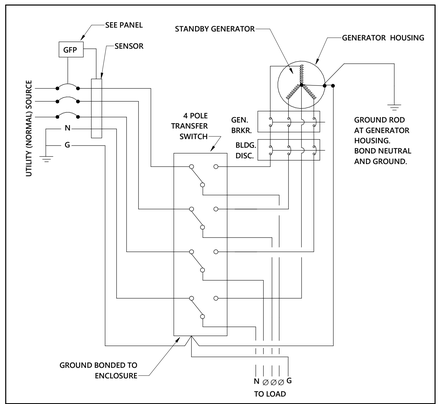
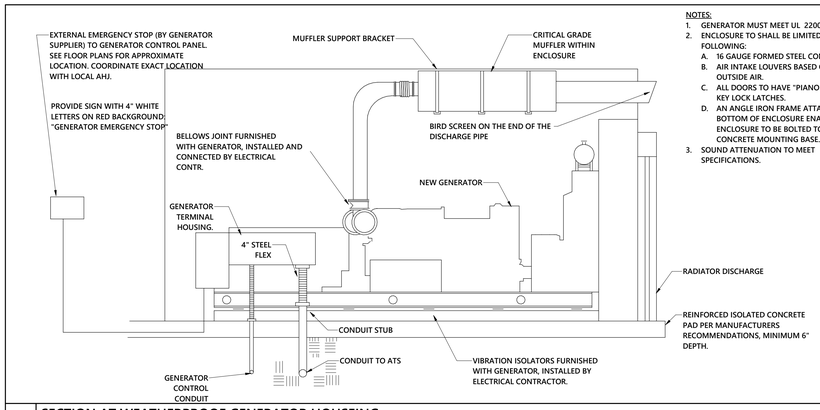
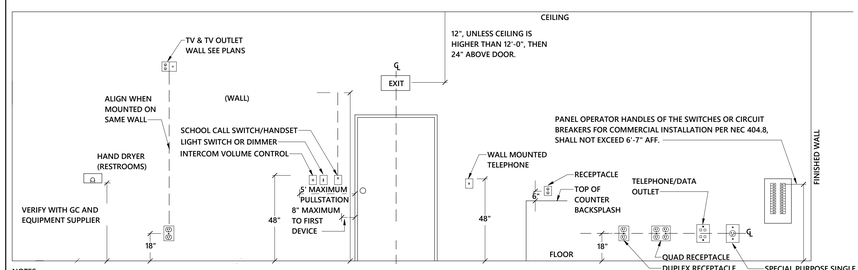


3 GENERATOR GROUNDING DETAIL - 4P ATS
NOT TO SCALE



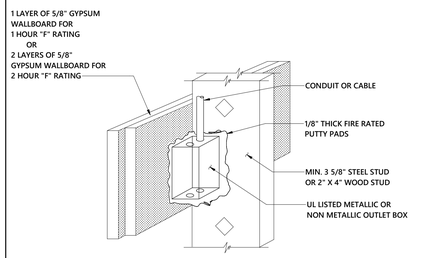
NOTES:
1. GENERATOR MUST MEET UL 2200.
2. ENCLOSURE TO SHALL BE LIMITED TO THE FOLLOWING:
   - A. 16 GAUGE FORMED STEEL CONSTRUCTION.
   - B. AIR INTAKE LOUVERS BASED ON 95° F OUTSIDE AIR.
   - C. ALL DOORS TO HAVE "PIANO HINGES" AND KEY LOCK LATCHES.
   - D. AN ANGLE IRON FRAME ATTACHED TO THE BOTTOM OF ENCLOSURE ENABLING ENCLOSURE TO BE BOLTED TO THE CONCRETE MOUNTING BASE.
3. SOUND ATTENUATION TO MEET SPECIFICATIONS.

2 SECTION AT WEATHERPROOF GENERATOR HOUSEING
NOT TO SCALE



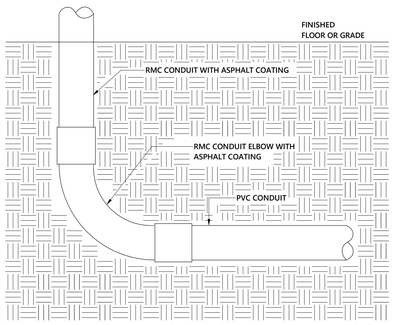
NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE.
3. DEVICES NEXT TO DOOR EXIT SHALL BE WITHIN 8" (MAXIMUM) TYPICAL OF DOOR UNLESS OBSTACLES SUCH AS SIDELITES, ETC.
4. DEVICES REQUIRED TO BE ADA ACCESSIBLE SHALL BE INSTALLED PER ANSI A117.1.

1 MOUNTING HEIGHTS OF DEVICES - ELEVATION
NOT TO SCALE

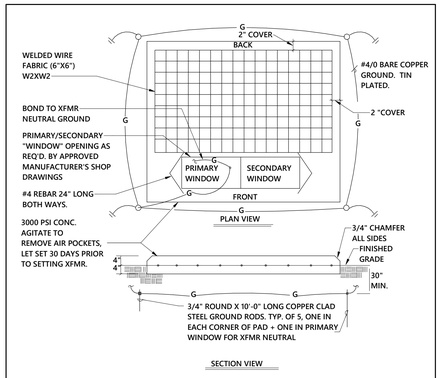


NOTES:
1. REQUIRED FOR METALLIC AND NON-METALLIC ELECTRICAL BOXES EXCEEDING 16 SQ. INCHES IN AREA OR MULTIPLE BOXES SERVING SAME SPACE.
2. REQUIRED FOR BACK TO BACK BOXES IN THE SAME STUD CAVITY.
3. REQUIRED FOR BOXES EXCEEDING 100 SQ INCHES TOTAL IN 100 SQ FEET OF WALL AREA.
4. THE USE OF PUTTY PADS ADHERENCE IS AT THE DISCRETION OF THE LOCAL AUTHORITY HAVING JURISDICTION.
5. REFER TO UL LISTING OF WALL FOR ADDITIONAL RESTRICTIONS OR INFORMATION.

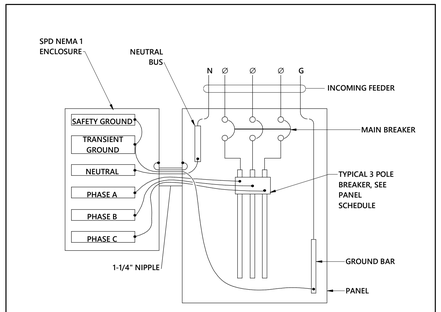
8 WALL OUTLET DETAIL
NOT TO SCALE



7 CONDUIT TRANSITION DETAIL
NO SCALE

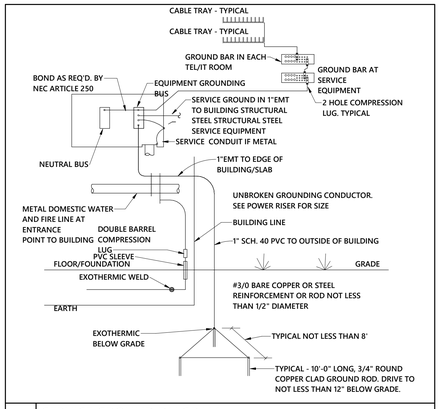


6 TRANSFORMER PAD DETAIL
NOT TO SCALE

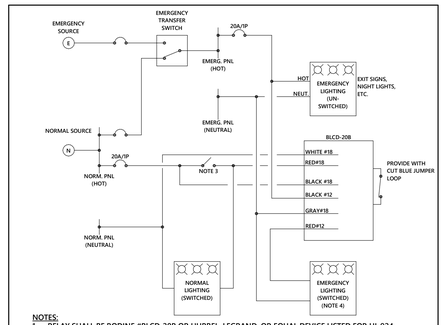


NOTES:
1. ALL WIRING SHALL BE #6 AWG.
2. AVOID SHARP BENDS IN WIRES. ALL WIRE LENGTHS SHALL NOT EXCEED 18" (WHERE POSSIBLE).
3. SEE SPD SPECIFICATION FOR EXACT TYPE FOR LOCATION AS INDICATED ON THE POWER RISER DIAGRAM.

5 SPD CONNECTION DETAIL
NOT TO SCALE

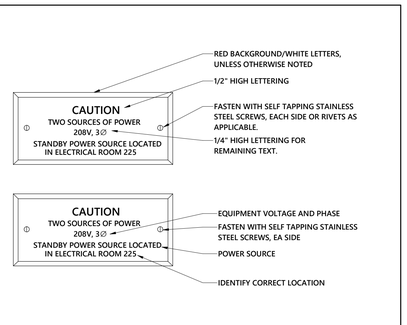


4 SERVICE GROUND DIAGRAM
NOT TO SCALE

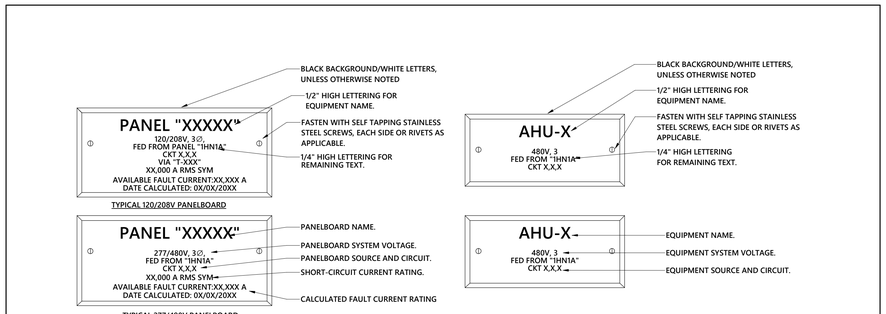


NOTES:
1. RELAY SHALL BE BODINE #BLCD-20B OR HUBBEL, LEGRAND, OR EQUAL DEVICE LISTED FOR UL 924.
2. PROVIDE ONE RELAY PER LIFE SAFETY SWITCH LEG / CIRCUIT SHOWN ON PLANS.
3. LOCAL LIGHTING CONTROL (WALL SWITCH, OCCUPANCY SENSOR, RELAY, CONTACT, ETC.).
4. SWITCHED EMERGENCY FIXTURE SHALL BE POWERED VIA THE EMERGENCY PANEL. SWITCHED EMERGENCY FIXTURE SHALL BE CONTROLLED WITH NORMAL LOCAL LIGHTING FIXTURES ONLY WHEN NORMAL POWER IS AVAILABLE. UPON LOSS OF NORMAL POWER, SWITCHED EMERGENCY LIGHTING FIXTURE CONTROL SHALL BE BYPASSED AND THE FIXTURE SHALL BE FULLY ENERGIZED. RELAY SHALL NOT BE UTILIZED AS A POWER TRANSFER DEVICE (UL1008).

12 EMERGENCY LIGHTING RELAY CONTROL CIRCUIT
NOT TO SCALE

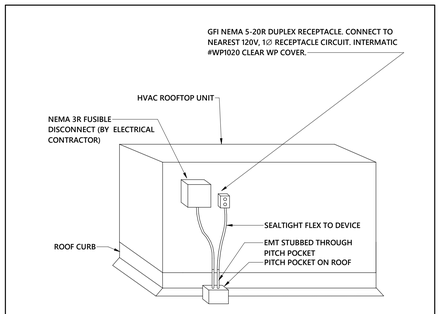


11 EMERGENCY POWER NAMEPLATE
NOT TO SCALE



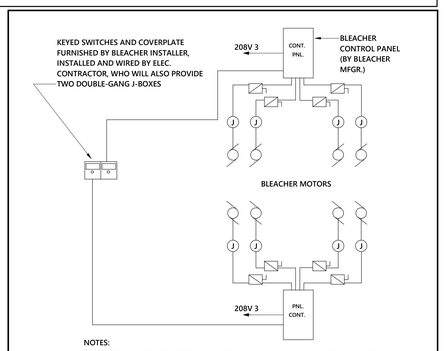
NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, COLORS, ETC.
2. PROVIDE SHORT-CIRCUIT CURRENT RATING AND AVAILABLE FAULT CURRENT ON EACH NON-DWELLING SERVICE EQUIPMENT NAMEPLATE.

10 TYPICAL NAMEPLATE DIAGRAM
NOT TO SCALE



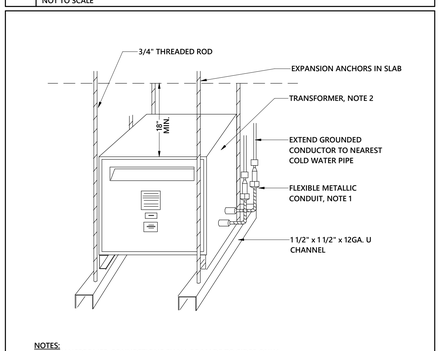
NOTE: TYPICAL FOR ROOF MOUNTED HVAC EQUIPMENT.

9 ROOFTOP RECEPTACLE DETAIL
NOT TO SCALE



NOTES:
1. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-IN J-BOXES, CONDUIT AND WIRING TO CONNECT THE BLEACHER CONTROL PANELS AND KEYED SWITCHES. PROVIDE A 16"X16"X4" MINIMUM J-BOX AT MAIN ROUGH-IN.
2. MINIMUM WIRE SIZE SHALL BE #12 AWG.
3. PROVIDE 3 PHASE DISCONNECT AT EACH PANEL CONTROLLER, 30A/3P.

14 BLEACHER CONNECTION RISER
NO SCALE



NOTES:
1. TRANSFORMER CONNECTIONS SHALL BE MADE TO SIDES ONLY.
2. MAINTAIN 6" MINIMUM CLEARANCE ALL AROUND.

13 TRANSFORMER SUSPENDED FROM STRUCTURE
NOT TO SCALE

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09-12-2024

Construction Documents

optima engineering
434 Fayetteville St, Suite 2450, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

Lenoir County
EB Frink Middle School
405 North Charles Street
La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET / AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ELECTRICAL DETAILS

E-601

Sheet No. 34 of 46

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OPTIMA# 24-0073R

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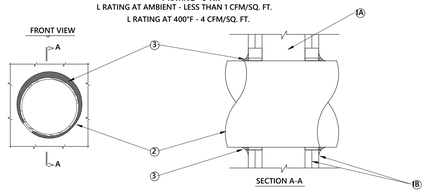
U.L. SYSTEM NO. W-L-1085
F RATING - 1-HR OR 2-HR (SEE ITEM 1B)
T RATING - 0-HR
L RATING AT AMBIENT - LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F - 4 CFM/SQ. FT.



1. WALL ASSEMBLY - THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.

B. GYPSUM BOARD* - 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIA OF OPENING IS 13-1/4 IN.

DIA OF CIRCULAR OPENING CUT THROUGH GYPSUM WALLBOARD OF EACH SIDE OF WALL ASSEMBLY TO BE MIN 1/4 IN. TO MAX 1/2 IN. LARGER THAN OUTSIDE DIA OF THROUGH PENETRANT (ITEM 2). THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

2. THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE ANNUIAR SPACE BETWEEN THE THROUGH-PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE MIN 0 IN. TO MAX 1/4 IN. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

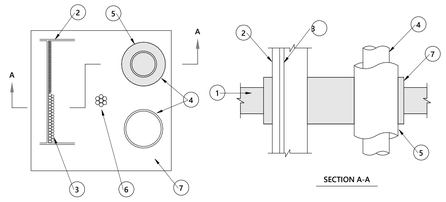
A. STEEL PIPE - NOM 12 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE - NOM 12 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. CONDUIT - NOM 6 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT.
D. COPPER TUBING - NOM 5 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
E. COPPER TUBING - NOM 6 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. FILL, VOID, OR CAVITY MATERIAL* - SEALANT - FILL MATERIAL TO BE FORCED INTO THE ANNULUS TO MAXIMUM EXTENT POSSIBLE. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/2 IN. CROWN IS FORMED AROUND THE PENETRATING ITEM AND LAPPING 1/4 IN. BEYOND THE PERIPHERY OF THE OPENING.

HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

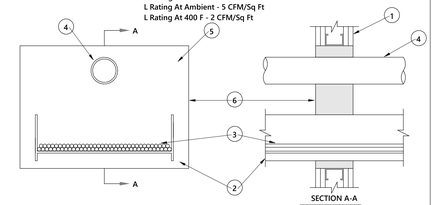
System No. C-AJ-8056
F Rating -- 3 Hr
T Rating -- 0 Hr
L Rating At Ambient -- 5 CFM/sq ft
L Rating At 400 F -- 2 CFM/sq ft



1. FLOOR OR WALL ASSEMBLY -- 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX AREA OF OPENING IS 1296 IN. SQ WITH MAX DIMENSION OF 36 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. CABLE TRAY* -- MAX 18 IN. WIDE BY MAX 6 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.060 IN. THICK ALUMINUM OR STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAYS IS 9 IN. AND BETWEEN THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. TO MAX 4-1/2 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES -- AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY BASED ON A MAX 3 IN. CABLE LOADING DEPTH WITHIN THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 300 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 1/C, 350 KCMIL WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND JACKET.
D. 1/C, 500 KCMIL WITH THERMO PLASTIC INSULATION AND POLYVINYL CHLORIDE (PVC) JACKET.
E. TWENTY FOUR FIBER OPTIC CABLE WITH PVC SUB UNIT AND JACKET.
4. THROUGH-PENETRANTS -- ONE OR MORE PIPE, CONDUIT OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND BETWEEN THE PERIPHERY
OF THE OPENING AND THE PIPES OR CONDUITS SHALL BE MIN 1 IN. TO MAX 4-1/2 IN. PIPE, CONDUIT OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
A. NOM 6 IN. DIA (OR SMALLER) RIGID GALV STEEL CONDUIT.
B. NOM 4 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
C. NOM 4 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
D. NOM 4 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
E. NOM 6 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
F. NOM 6 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.
5. PIPE COVERING -- NOM 1-1/2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT.
SEE PIPE AND EQUIPMENT COVERING AND MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 MAY BE USED.
6. CABLES -- MAX 2 IN. DIA TIGHT BUNDLE OF CABLES CENTERED IN OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF FLOOR AND WALL. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 25 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 2/C NO. 10 AWG WITH PVC INSULATION AND JACKET.
D. 3/C NO. 8 AWG ALUMINUM CLAD CABLE WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND PVC JACKET.
E. TYPE RC - 62 A/U COAXIAL CABLE WITH AIR CORE AND PVC JACKET.
F. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.
7. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* -- FIRE BLOCKS INSTALLED WITH LONG DIMENSION PASSED THROUGH THE OPENING EXTENDING MIN 1-1/2 IN. FROM EACH SURFACE. BLOCKS TO COMPLETELY FILL THE ENTIRE OPENING.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* -- FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES AND BETWEEN CABLES AND CABLE TRAYS TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT
C. WIRE MESH (NOT SHOWN) -- WHEN THE ANNULAR SPACE EXCEEDS 4-1/2 IN. TO THE PERIPHERY, A NOM 2 IN. SQ WIRE FENCING SHALL BE USED TO KEEP THE FIRE BLOCKS IN PLACE. THE WIRE FENCING IS FABRICATED FROM MIN NO. 16 SWG (0.060 IN.) GALV STEEL WIRE. THE WIRE IS CUT TO FIT THE CONTOUR OF THE PENETRATING ITEM WITH A MIN 3 IN. LAP BEYOND THE PERIPHERY OF THE OPENING. WIRE FENCING SECURED TO TOP SURFACE OF FLOOR AND BOTH SURFACES OF WALL ASSEMBLY BY MEANS OF 1/4 IN. DIA BY 1 IN. LONG CONCRETE ANCHORS AND 1/4 IN. BY 1-1/2 IN. DIA FENDER WASHERS SPACED MAX 8 IN. OC.
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

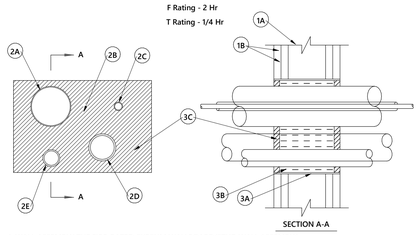
System No. W-L-8013
F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating At Ambient - 5 CFM/Sq Ft
L Rating At 400 F - 2 CFM/Sq Ft



1. WALL ASSEMBLY — THE 1 OR 2 HR FIRE-RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 IN. (51 MM) BY 4 IN. (102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. ADDITIONAL STUDS INSTALLED TO COMPLETELY FRAME THE OPENING.
B. GYPSUM BOARD* — 5/8 IN. (16 MM) THICK, 4 FT (1219 MM) WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF OPENING IS 352 SQ IN. (2271 SQ CM) WITH MAX DIMENSION OF 22 IN. (559 MM) WIDE. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. CABLE TRAY* — MAX 18 IN. (457 MM) WIDE BY MAX 6 IN. (152 MM) DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.065 IN. (1.65 MM) THICK ALUMINUM OR 0.060 IN. (1.52 MM) THICK STEEL AND WITH 1-1/2 IN. (38 MM) WIDE BY 1 IN. (25 MM) CHANNEL SHAPE RUNGS SPACED 9 IN. (229 MM) OC OR A 0.029 IN. (0.74 MM) THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. (25 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES — AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 100 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 1/C, 750 KCMIL (OR SMALLER) WITH PVC INSULATION AND JACKET.
4. THROUGH-PENETRANTS — ONE OR MORE PIPE OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN THE PIPE OR TUBE AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. (38 MM) TO MAX 9-1/4 IN. (235 MM). PIPE OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NON-METALLIC OR METALLIC PIPES, OR TUBES MAY BE USED:
A. POLYVINYL CHLORIDE (PVC) PIPE — MAX 3 IN. (76 MM) DIA SCHEDULE 40 SOLID CORE PVC PIPE (OR SMALLER) FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEM.
B. STEEL PIPE — NOM 6 IN. (152 MM) DIA (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE.
C. CONDUIT — NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. (152 MM) DIA STEEL CONDUIT.
D. COPPER PIPE — NOM 4 IN. (102 MM) DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
E. COPPER TUBE — NOM 4 IN. (102 MM) DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
4A. PIPE COVERING — (NOT SHOWN) NOM 1-1/2 IN. (38 MM) THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) (56KG/M3) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH THE PRODUCT. SEE PIPE AND EQUIPMENT COVERING AND MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 MAY BE USED.
5. CABLES — MAX 1-1/2 IN. (38 MM) DIA TIGHT BUNDLE OF CABLES INSTALLED WITHIN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF WALL. THE SPACE BETWEEN THE CABLES AND PERIPHERY OF THE OPENING SHALL RANGE FROM 1-3/16 IN. (30.2 MM) MIN TO A MAX OF 1-1/2 IN. (38 MM). ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
B. 25 PAIR — NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. TYPE R GU/59 COAXIAL CABLE WITH PVC OUTER JACKET.
D. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.
6. FIRESTOP SYSTEM — THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* FIRE BLOCKS FOR WALLS INCORPORATING MAX 3-5/8 IN. (92 MM) STEEL STUDS OR MAX 2 (51 MM) BY 4 IN. (102 MM) WOOD STUDS, FIRE BLOCK INSTALLED WITH 5 IN. (127 MM) DIMENSION PROJECTING THROUGH AND CENTERED IN OPENING. FOR WALLS CONSTRUCTED OF LARGER STEEL OR WOOD STUDS, FIRE BLOCK INSTALLED WITH LONG DIMENSION PASSING THROUGH AND CENTERED IN OPENING. BLOCKS MAY OR MAY NOT BE CUT FLUSH WITH BOTH SURFACES OF WALL. WHEN MULTIPLE LAYERS OF GYPSUM BOARD ARE USED, BLOCKS MAY BE RECESSED 1/2 IN. (13 MM) FROM SURFACE OF WALL. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS 657 FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* — SEALANT OR PUTTY - FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES, BETWEEN CABLES AND CABLE TRAYS, AROUND EACH PENETRANT AND WHERE OBVIOUS VOIDS ARE OBSERVED TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE SEALANT, CP 618 PUTTY STICK OR CP620 FIRE FOAM *BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

System No. W-L-8004
F Rating - 2 Hr
T Rating - 1/4 Hr



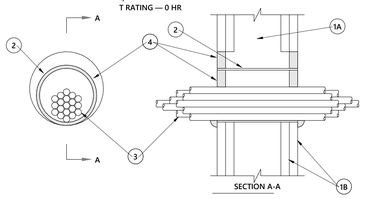
1. WALL ASSEMBLY THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE
CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL
U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE
DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL
STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN.
OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.
ADDITIONAL FRAMING (NOT SHOWN) MAY BE INSTALLED AROUND THE
PERIMETER OF
THE OPENING IN LIEU OF THE STEEL WIRE MESH (ITEM NO. 3A).
B. GYPSUM BOARD* TWO LAYERS OF NOM 5/8 IN. THICK GYPSUM WALLBOARD, AS
SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF
OPENING
IS 96 SQ IN. WITH MAX DIMENSION OF 12 IN. MAX WIDTH OF OPENING IN WOOD
STUD WALLS IS LIMITED TO 12 IN.
2. THROUGH PENETRANTS THE FOLLOWING TYPES AND SIZES OF PIPES, CONDUITS,
TUBING
OR CABLES MAY BE USED:
A. NOM 3 IN. DIA (OR SMALLER) ELECTRICAL METALLIC TUBING (EMT).
B. MAX 25 PAIR -- NO. 24 AWG (OR SMALLER) TELEPHONE CABLE WITH POLYVINYL
CHLORIDE (PVC) INSULATION AND JACKET.
C. MAX 3/C WITH GROUND -- NO. 10 AWG (OR SMALLER) TYPE NM CABLE WITH
PVC INSULATION AND JACKET.
D. NOM 2 IN. DIA (OR SMALLER) SCHEDULE 40 PVC PIPE FOR USE IN CLOSED
(PROCESS OR SUPPLY) PIPING SYSTEMS ONLY.
E. MAX 300 KCMIL (OR SMALLER) POWER CABLE WITH PVC INSULATION AND NYLON
JACKET. THE THROUGH PENETRATING ITEMS TO BE RIGIDLY SUPPORTED ON BOTH
SIDES OF WALL ASSEMBLY AND LOCATED AS SHOWN IN THE TABLE BELOW:

ITEM NO.	ADJACENT PEN. ITEM IN.	ADJACENT PEN. ITEM IN.	THROUGH OPENING IN.	THROUGH OPENING IN.
	MAX DISTANCE BETWEEN	MIN DISTANCE BETWEEN	MAX DISTANCE FROM	MIN DISTANCE FROM
2A	7-7/16	1-11/16	7-7/16	1/2
2B	7-7/16	1-11/16	7-7/16	1/2
2C	7-7/16	1-11/16	7-7/16	1/2
2D	7-7/16	1-11/16	7-7/16	1/2
2E	7-7/16	1-11/16	7-7/16	1-1/2

3. FIRESTOP SYSTEM THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. STEEL WIRE MESH NO. 8 STEEL WIRE MESH HAVING A MIN 1 IN. LAP ALONG THE
LONGITUDINAL SEAM. LENGTH OF STEEL WIRE MESH TO BE 4-3/4 IN., CENTERED
AND FORMED TO FIT PERIPHERY OF THROUGH OPENING. STEEL WIRE MESH IS NOT
REQUIRED WHEN ADDITIONAL FRAMING MEMBERS (ITEM NO. 1A) ARE USED.
B. PACKING MATERIAL MIN 4.0 IN. THICKNESS OF MIN 3.5 PCF MINERAL WOOL BATT
INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING
MATERIAL
TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE
THE
REQUIRED THICKNESS OF FILL MATERIAL.
C. FILL, VOID OR CAVITY MATERIAL* - SEALANT MIN 1/2 IN. THICKNESS OF FILL
MATERIAL
APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARKING

HILTI FIRESTOP SYSTEMS
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

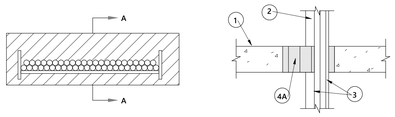
SYSTEM NO. W-L-3065
F RATINGS — 1 AND 2 HR (SEE ITEM 1)
T RATING — 0 HR



1. WALL ASSEMBLY — THE 1 OR 2 FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS — WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC.
B. GYPSUM BOARD* — NOM 5/8 IN. (16 MM) THICK GYPSUM BOARD, WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300, U400 OR V400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIA OF OPENING IS 5-1/2 IN. (138 MM) WHEN SLEEVE (ITEM 2) IS EMPLOYED. MAX DIA OF OPENING IS 4 IN. (102 MM) WHEN SLEEVE (ITEM 2) IS NOT EMPLOYED.
THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.
2. METALLIC SLEEVE — (OPTIONAL) - NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR SCHEDULE 5 (OR HEAVIER) STEEL PIPE OR MIN 0.016 IN. THICK (0.41 MM, NO. 28 GA) GALV STEEL SLEEVE INSTALLED FLUSH WITH WALL SURFACES. THE ANNULAR SPACE BETWEEN STEEL SLEEVE AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25MM). WHEN SCHEDULE 5 STEEL PIPE OR EMT IS USED, SLEEVE MAY EXTEND UP TO 18 IN. (457 MM) BEYOND THE WALL SURFACES.
3. CABLES — AGGREGATE CROSS-SECTIONAL AREA OF CABLE IN OPENING TO BE MAX 45 PERCENT OF THE CROSS-SECTIONAL AREA OF THE OPENING. THE ANNULAR SPACE BETWEEN THE CABLE BUNDLE AND THE PERIPHERY OF THE OPENING TO BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25 MM) CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
A. MAX 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
B. MAX 25 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC INSULATION AND JACKET.
B1. MAX 4 PR NO. 22 AWG CAT 5 OR CAT 6 COMPUTER CABLES.
C. TYPE RG/U COAXIAL CABLE WITH POLYETHYLENE (PE) INSULATION AND PVC JACKET HAVING A MAX OUTSIDE DIAMETER OF ½ IN. (13 MM).
C1. MAX RG 6/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
D. MULTIPLE FIBER OPTICAL COMMUNICATION CABLE JACKETED WITH PVC AND HAVING A MAX OD OF 5/8 IN. (16 MM).
E. THROUGH PENETRATING PRODUCTS*— MAX THREE COPPER CONDUCTOR NO. 8 AWG . METAL-CLAD CABLE+. AFC CABLE SYSTEMS INC
F. MAX 3/C (WITH GROUND)OR SMALLER) NO. 8 AWG COPPER CONDUCTOR CABLE WITH PVC INSULATION AND JACKETING.
G. MAX 3/4 IN. (19 MM) DIA COPPER GROUND CABLE WITH OR WITHOUT A PVC JACKET.
H. FIRE RESISTIVE CABLES* - MAX 1-1/4 IN. (32 MM) DIA SINGLE CONDUCTOR OR MULTI CONDUCTOR TYPE MI CABLE. A MIN 1/8 IN. (3 MM) SEPARATION SHALL BE MAINTAINED BETWEEN MI CABLES AND ANY OTHER TYPES OF CABLE.
I. MAX 4/C WITH GROUND 300KCMIL (OR SMALLER) ALUMINUM SER CABLE WITH PVC INSULATION AND JACKET.
J. THROUGH PENETRATING PRODUCT* - ANY CABLES, METAL-CLAD CABLE+ OR ARMORED CABLE+ CURRENTLY CLASSIFIED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
SEE THROUGH PENETRATING PRODUCT (XHLY) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
4. FILL, VOID OR CAVITY MATERIAL*— SEALANT OR PUTTY — FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH EACH END OF THE STEEL SLEEVE OR WALL SURFACE. FILL MATERIAL INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. A MIN 5/8 IN. (16 MM) THICKNESS OF SEALANT IS REQUIRED FOR THE 1 OR 2 HR F RATING . AN ADDITIONAL 1/2 IN. (13 MM) DIA BEAD OF FILL MATERIAL SHALL BE APPLIED AROUND THE PERIMETER OF SLEEVE ON BOTH SIDES OF THE WALL WHEN SLEEVE EXTENDS BEYOND SURFACE OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP606, FS-ONE SEALANTS OR CP618 PUTTY
*BEARING THE UL CLASSIFICATION MARK
+BEARING THE UL LISTING MARK

HILTI FIRESTOP SYSTEMS
DRAWING ORIGINATION DATE: 03-21, 2011
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

SYSTEM NO. C-AJ-4035
F RATING - 3 HR.
T RATING = 0 HR.



1. FLOOR OR WALL ASSEMBLY MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX AREA OF OPENING IS 270 SQ IN WITH MAX DIMENSION OF 30 IN.
SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. CABLE TRAY* MAX 24 IN. WIDE BY MAX 4 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.10 IN. THICK ALUMINUM OR 0.060 IN. THICK GALV STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. THE ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. TO MAX 4 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 40 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COP

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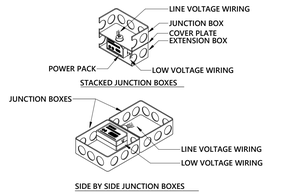
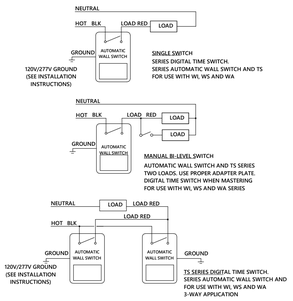


NOTE:
DO NOT MOUNT POWER PACKS CLOSER THAN 6-12 INCHES FROM SENSOR. PROVIDE DOUBLE STACKED JUNCTION BOX FOR MAXIMUM VENTILATION OF POWER PACK. PROVIDE BLANK COVER, WHERE PERMITTED BY CODE AND AHJ, LEAVE (2) OPENINGS IN CONDUIT KNOCKOUT FOR VENTING OF POWER PACK. VERIFY WITH AHJ PRIOR TO KNOCKOUT REMOVAL.

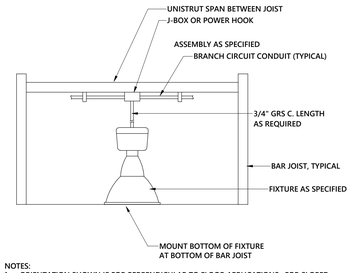
POWER PACK INSTALLED IN J-BOX

5 POWER PACK INSTALLATION
NOT TO SCALE



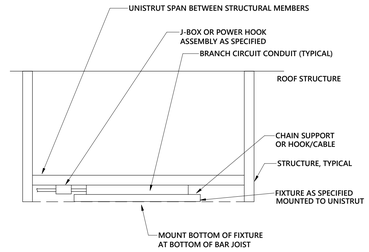
*WHEN THESE SWITCHES ARE WIRED IN A THREE-WAY WIRING CONFIGURATION THEY WILL ONLY OPERATE AS THREE-WAY SWITCHES IF THEY ARE LEFT IN AUTOMATIC MODE. IF ONE SWITCH IS TURNED OFF, THE LIGHTS WILL NOT COME AUTOMATICALLY ON UNTIL THAT SWITCH IS TURN BACK TO THE AUTOMATIC POSITION.

4 SINGLE POLE OCC. SENSOR SWITCH
NOT TO SCALE



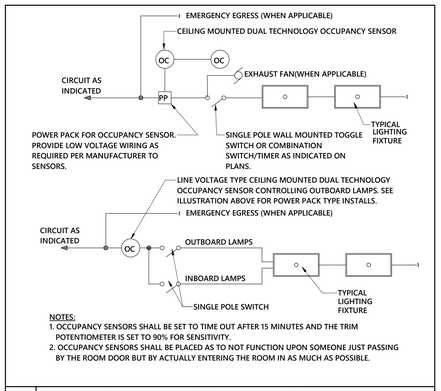
NOTES:
1. ORIENTATION SHOWN IS FOR PERPENDICULAR TO FLOOR APPLICATIONS. FOR SLOPED JOIST INSTALLATION, MATCH SLOPE OF JOIST AND MOUNT FLUSH WITH JOIST. ADJUST UNISTRUT AS REQUIRED.
2. EXPOSED CONDUIT SHALL BE PAINTED TO MATCH LOCAL AREA.

3 HI-BAY FIXTURE PENDANT
NOT TO SCALE



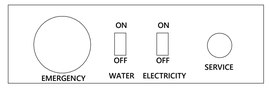
NOTES:
1. ORIENTATION SHOWN IS FOR PERPENDICULAR TO FLOOR APPLICATIONS. FOR SLOPED JOIST INSTALLATION, MATCH SLOPE OF JOIST AND MOUNT FLUSH WITH JOIST. ADJUST UNISTRUT AS REQUIRED.

2 HI-BAY FIXTURE 2X4
NOT TO SCALE



NOTES:
1. OCCUPANCY SENSORS SHALL BE SET TO TIME OUT AFTER 15 MINUTES AND THE TRIM POTENTIOMETER IS SET TO 90% FOR SENSITIVITY.
2. OCCUPANCY SENSORS SHALL BE PLACED AS TO NOT FUNCTION UPON SOMEONE JUST PASSING BY THE ROOM DOOR BUT BY ACTUALLY ENTERING THE ROOM IN AS MUCH AS POSSIBLE.

1 TYPICAL CEILING MOUNTED OCCUPANCY SENSOR WIRING DIAGRAMS
NOT TO SCALE

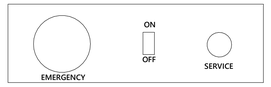


FLUSH PANEL - SEE PLANS FOR LOCATION
TYPICAL DIMENSIONS: 6"HX11.875"WX4"D

NOTES:
1. PROVIDE PHENOLIC LABEL ABOVE PUSH BUTTON: EMERGENCY SHUT-OFF
2. PROVIDE WITH PANIC BUTTON COVER.
3. MANUAL PUSH BUTTON RESET AT PANEL.
4. E.C. SHALL PROVIDE CONTACT ENCLOSURE, AND PANEL. (ALL COMPONENTS OF ISIMET SYSTEM)
5. WALL BOX IS PROVIDED WITH SYSTEM. SEE MANUFACTURER DRAWINGS FOR SIZE AND MOUNTING INSTRUCTIONS.
6. CONTACT ENCLOSURE SHALL BE MOUNTED ABOVE CEILING NEAREST CONTROLLER.
7. PROVIDE 120V SOURCE CIRCUIT FOR CONTROLLER FROM LOCAL CIRCUIT. SEE PLANS
8. TYPICAL OPERATION: OUTPUT SIGNAL FROM CONTROLLER ENGAGES OR DIS-ENGAGES CONTACTORS FOR ELECTRIC.

MODEL INFORMATION:
CONTROLLER: LAV2-HV-K-F-E-W-C
E-SERIES COMPANION: E-31-__-S. SEE PLANS FOR CONTROLLED CIRCUIT QUANTIES IN EACH ROOM AND PROVIDE ACCORDINGLY.
EQUALS: JOHNSON CONTROLS, EATON CUTLER HAMMER, AGS

9 SCIENCE CLASSROOM SHUT OFF - WATER & ELEC. ONLY
NOT TO SCALE

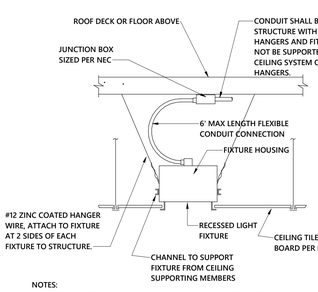


FLUSH PANEL - SEE PLANS FOR LOCATION
TYPICAL DIMENSIONS: 6"HX11.875"WX4"D

NOTES:
1. PROVIDE PHENOLIC LABEL ABOVE PUSH BUTTON: EMERGENCY SHUT-OFF
2. PROVIDE WITH PANIC BUTTON COVER.
3. MANUAL PUSH BUTTON RESET AT PANEL.
4. E.C. SHALL PROVIDE CONTACT ENCLOSURE, AND PANEL. (ALL COMPONENTS OF ISIMET SYSTEM)
5. WALL BOX IS PROVIDED WITH SYSTEM. SEE MANUFACTURER DRAWINGS FOR SIZE AND MOUNTING INSTRUCTIONS.
6. CONTACT ENCLOSURE SHALL BE MOUNTED ABOVE CEILING NEAREST CONTROLLER.
7. PROVIDE 120V SOURCE CIRCUIT FOR CONTROLLER FROM LOCAL CIRCUIT.
8. TYPICAL OPERATION: OUTPUT SIGNAL FROM CONTROLLER ENGAGES OR DIS-ENGAGES CONTACTORS FOR ELECTRIC.
9. PROVIDE 24VAC INPUT FROM FIRE ALARM/DISPATCH FOR AUTOMATIC EMERGENCY SHUT-OFF OF GAS. (COORDINATE ANY TIME DELAY WITH OWNER).

MODEL INFORMATION:
CONTROLLER: LAV2-HV-K-F-E-C
E-SERIES COMPANION: E-31-__-S. SEE PLANS FOR CONTROLLED CIRCUIT QUANTIES IN EACH ROOM AND PROVIDE ACCORDINGLY.
EQUALS: JOHNSON CONTROLS, EATON CUTLER HAMMER, AGS

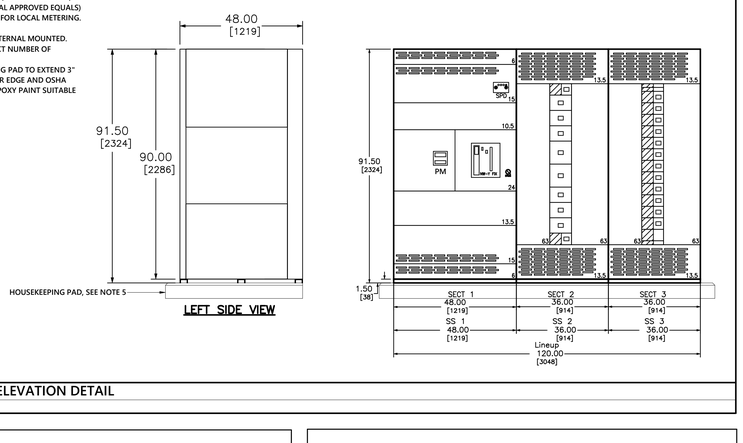
8 CLASSROOM SHUT OFF - ELEC. ONLY
NOT TO SCALE



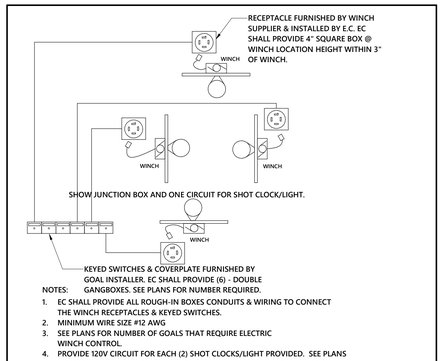
NOTES:
1. WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

7 TYPICAL RECESSED DOWN LIGHT FIXTURE INSTALLATION DIAGRAM
NOT TO SCALE

SWITCHBOARD NOTES: (BASED ON QED SWITCHBOARD, CUTLER HAMMER AND GE ARE TYPICAL APPROVED EQUALS)
1. PROVIDE WITH POWER MODULE FOR LOCAL METERING.
2. FRONT ACCESSIBLE ONLY.
3. OPTIONAL INTERNAL SPD OR EXTERNAL MOUNTED.
4. SEE PANEL SCHEDULES FOR EXACT NUMBER OF BREAKERS AND SPACES.
5. PROVIDE 4" THICK HOUSEKEEPING PAD TO EXTEND 3" ON SIDES, FRONT WITH CHAMFER EDGE AND OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE.

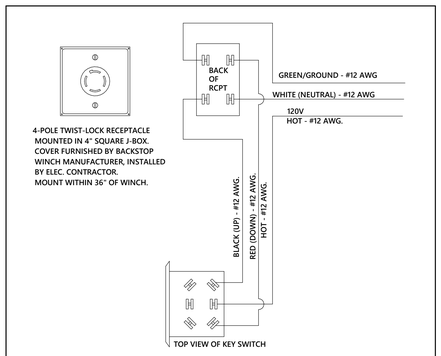


6 SWITCHBOARD ELEVATION DETAIL
NOT TO SCALE



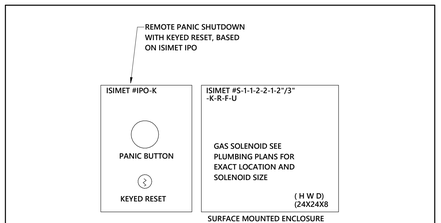
NOTES:
1. EC SHALL PROVIDE ALL ROUGH-IN BOXES CONDUITS & WIRING TO CONNECT THE WINCH RECEPTACLES & KEYED SWITCHES.
2. MINIMUM WIRE SIZE #12 AWG
3. SEE PLANS FOR NUMBER OF GOALS THAT REQUIRE ELECTRIC WINCH CONTROL.
4. PROVIDE 120V CIRCUIT FOR EACH (2) SHOT CLOCKS/LIGHT PROVIDED. SEE PLANS FOR GOAL LOCATIONS. SHOT CLOCKS ARE AT EACH MAIN BASKETBALL GOAL.
5. PROVIDE INTERLOCKING SWITCH SO THAT GOALS LOCATED NEAR BLEACHERS ARE NOT EXTENDED WHEN BLEACHERS ARE EXTENDED. COORDINATE WITH BLEACHER AND BASKETBALL GOAL MANUFACTURER.

12 BASKETBALL GOAL SWITCH RISER
NO SCALE



NOTES:
1. KEY SWITCHES AND COVERPLATE SHALL BE FURNISHED BY GOAL INSTALLER. ELEC. CONTRACTOR SHALL PROVIDE AND INSTALL ALL J-BOXES, CONDUIT, AND WIRING.
2. MINIMUM WIRE SIZE SHALL BE #12 AWG.

11 ELECT. BASKETBALL WINCH WIRING DETAIL
NO SCALE



NOTES:
1. PROVIDE PHENOLIC LABEL ABOVE PUSH BUTTON: EMERGENCY BOILER SHUT-OFF
2. PROVIDE REMOTE PANIC ASSEMBLY IPO-K-C WITH OPTION "C", PANIC BUTTON COVER.
3. CONNECT TO LOCAL 120V CIRCUIT FOR CONTROLLER.
4. SEE PLUMBING PLANS FOR EXACT SOLENOID SIZE REQUIREMENT.
5. 3/4" CONDUIT FROM EACH PANIC BUTTON TO SOLENOID ENCLOSURE. SEE PLANS FOR QUANTITY AND LOCATION.

EQUALS: ISIMET, AGS, LACS

10 EMERG. GAS SHUT OFF CONTROL DETAIL
NOT TO SCALE

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Construction Documents

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Lenoir County
EB Frink Middle School
405 North Charles Street
La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ELECTRICAL DETAILS

E-603

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FEEDER SCHEDULE ALUMINUM CONDUCTORS

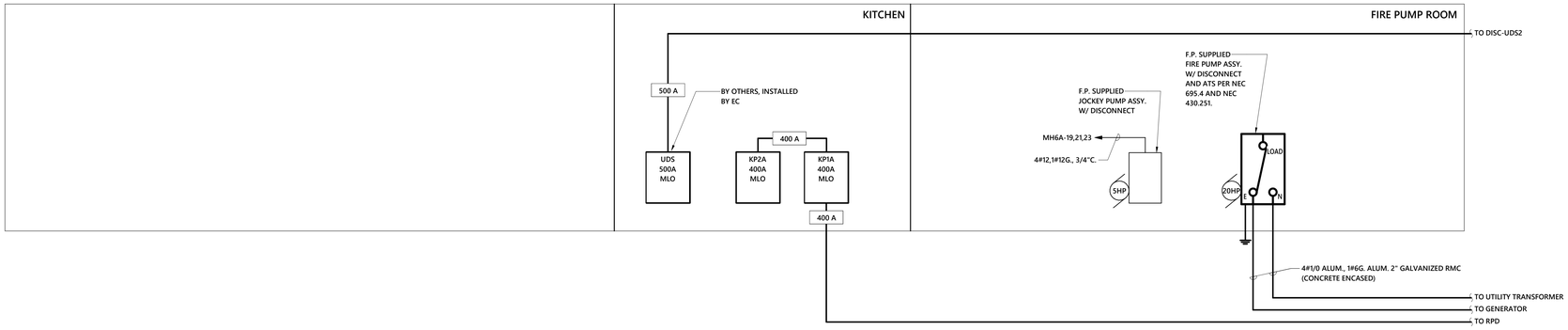
FEEDER AMPS	WIRE SIZE TEMP 75°C (AL)
100 A	4#1/0, 1#6G, 2"C
150 A	4#3/0, 1#4G, 2-1/2"C
175 A	4#4/0, 1#4G, 2-1/2"C
200 A	4-250 KCMIL, 1#4G, 3"C
225 A	4-300 KCMIL, 1#2G, 3"C
400 A	(2) 4-250 KCMIL, 1#1 G, 3"C
500 A	(2) 4-350 KCMIL, 1#1/0G, 3"C

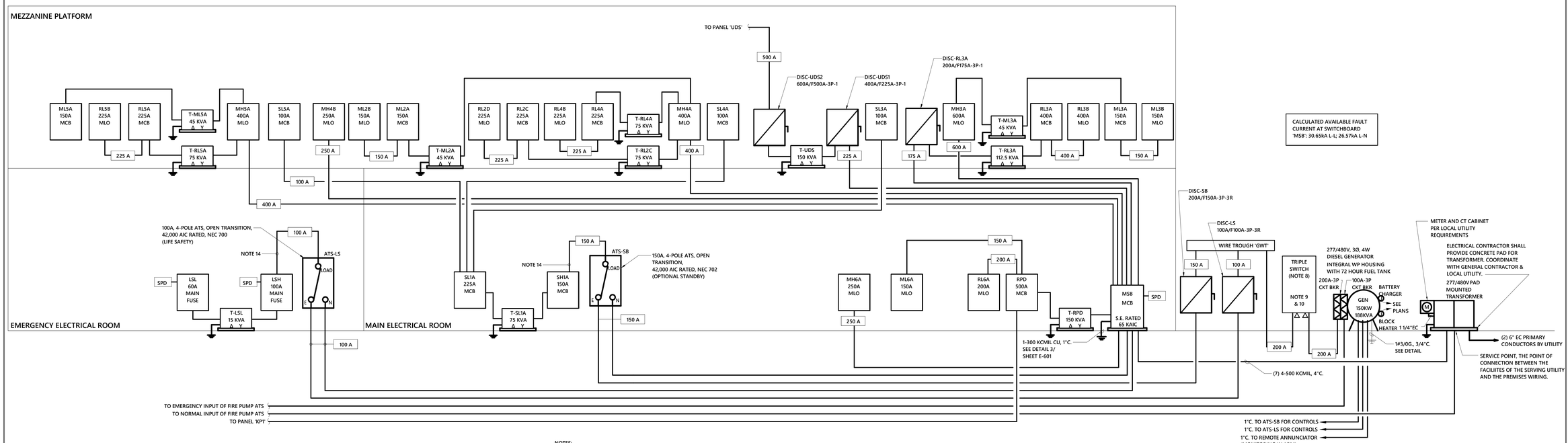
NOTES:
1.) WHERE ALUMINUM CONDUCTORS ARE ALLOWED BY THE ENGINEER, THE CONTRACTOR SHALL MAKE EVERY PROVISION TO INSTALL ALUMINUM CONDUCTORS CORRECTLY, INCLUDING TERMINATIONS IN PANELBOARDS, DISCONNECTS, ETC. ALL TERMINALS SHALL BE LISTED SUITABLE FOR ALUMINUM. APPLY OXIDE INHIBITING PASTE TO ALUMINUM CONDUCTORS AT TERMINATIONS.

DRY-TYPE TRANSFORMER SCHEDULE

TRANSFORMER	VOLTAGE		KVA	PRIMARY			SECONDARY			
TYPE	PRIMARY	SECONDARY	RATING	FLA	BREAKER	WIRE & CONDUIT	FLA	BREAKER	WIRE & CONDUIT	SERVICE GROUND
T-4	480 V	208Y/120	15	18.04	25	3#10 CU, 1#10 CU G, 3/4"C	41.7	60	4#6 CU, 1#8 CU G, 1 1/4"C	#8 CU, 1"C
T-6	480 V	208Y/120	45	54.1	70	3#4 CU, 1#8 CU G, 1"C	125	150	4#4/0, 1#2G, 2-1/2"C	#4 CU, 1"C
T-7	480 V	208Y/120	75	90.2	100	3#1/0, 1#4G, 2"C	208	225	4-300KCMIL, 1#1/0G,3"C	#2 CU, 1"C
T-8	480 V	208Y/120	112.5	135	175	3#4/0, 1#4G, 2-1/2"C	313	400	2(4-250 KCMIL, 1#1/0G, 2-1/2"C)	#1/0 CU, 1"C
T-9	480 V	208Y/120	150	180	225	3-300KCMIL, 1#2G,3"C	417	500	2(4-350KCMIL, 1#2/0G, 3"C)	#2/0 CU, 1"C

NOTES:
1. HOUSEKEEPING PADS SHALL HAVE OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE.
2. CONDUCTOR SIZES ARE SHOWN FOR ALUMINUM MATERIALS, UNLESS OTHERWISE NOTED.





NOTES:
1. ALL FEES ASSOCIATED WITH UTILITY COMPANY COORDINATION, INCLUDING PURCHASE/LEASE OF UTILITY TRANSFORMER, TRANSFORMER PRIMARY FEES, PAD, AND ALL ADMINISTRATIVE FEES SHALL BE INCLUDED AS PART OF THE E.C. CONTRACT. ALLOWANCE OF $25,000.00 SHALL BE ESTIMATED FOR THE UNDERGROUND TRANSFORMER SERVICE FEE.
2. PROVIDE 1 1/4"C FROM GAS METER TO EMS (BAS) CONTROL PANEL WITH #18 AWG STRANDED PAIR WIRE. COORDINATE FINAL CONNECTION WITH LOCAL GAS UTILITY.
3. PROVIDE PERMANENT PLACARD LOCATED ABOVE MAIN SERVICE DISCONNECT. PLACARD SHALL READ: EMERGENCY POWER IS LOCATED OUTSIDE OF KITCHEN, 150KW DIESEL GENERATOR 480V 3 PHASE.
4. PROVIDE 4" HIGH FORMED CONCRETE HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED ELECTRICAL GEAR.
5. MOTOR(S), CONTROLLER(S), AND ASSOCIATED ACCESSORIES FOR THE FIRE PUMP SYSTEM SHALL BE LISTED FOR FIRE PROTECTION SERVICE. COORDINATE EXACT SIZING REQUIREMENTS WITH MANUFACTURER. ADJUST BREAKER/FUSE/WIRING SIZING AS REQUIRED BASED ON THE MANUFACTURER'S REQUIREMENTS.
6. FIRE/JOCKEY PUMPS CONTROLLER DISCONNECTS SHALL BE LISTED FOR USE AS SERVICE ENTRANCE EQUIPMENT, LOCABLE IN THE "ON" POSITION, LABELED PER NEC 695-4(b)(3) AND SUPERVISED IN THE CLOSED POSITION BY THE FIRE ALARM CONTROL PANEL. LOCATE DISCONNECTS ADJACENT TO FIRE/JOCKEY PUMPS CONTROLLER.
7. GENERATOR CONTROLLER SHALL ALLOW THE GENERATOR TO RUN AND CONTINUE TO PRODUCE RATED NAMEPLATE POWER WITHOUT SHUTDOWN OR DERATE FOR ALARMS AND WARNINGS OR FAILED ENGINE SENSORS, EXCEPT FOR OVERSPEED SHUTDOWN PER NFPA 20 SECTION 9.6.2.2.
8. 200A, 277/480V, 3 PHASE, 4W. TRIPLE SWITCH. TRIPLE SWITCH SHALL CONSIST OF (2) MECHANICALLY-INTERLOCKED MOLDED CASE CIRCUIT BREAKERS, AND (1) INDEPENDENT LOAD BANK BREAKER WITH A SHUNT TRIP, MALE CAM-STYLE INLET CONNECTORS, FEMALE CAM-TYLE OUTLET CONNECTORS, DISTRIBUTION BLOCKS AND GROUNDING TERMINALS, ALL HOUSED WITHIN A PADLOCKABLE NEMA 3R ENCLOSURE.
9. 200A QUICK CONNECT CAMLOCK CONNECTIONS FOR THE OWNER TO PROVIDE A ROLL UP STAND-BY GENERATOR.
10. 200A QUICK CONNECT CAMLOCK CONNECTIONS FOR THE OWNER TO PROVIDE A ROLL UP LOAD BANK.
11. PROVIDE DIRECTORY PER NEC 705.10 AT ALL SERVICE LOCATIONS.

1 ELECTRICAL RISER DIAGRAM
1/8" = 1'-0"

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405 North Charles Street
La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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ELECTRICAL DIAGRAMS

E-701

Sheet No. 37 of 46

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SWITCHBOARD: MSB

VOLTAGE: 480Y/277 3Ø
MOUNTING: FLOOR
MAIN: 2000 A
MAIN TYPE: 2000A
PHASE: 3
WIRE: 4
AIC: 65 KAIC

MAIN CB NOTES: 3, 4, 6, 7

CKT/ID	LOAD SERVED	FRAME	TRIP	POLE	FEEDER	NOTES	Load
1	PANEL 'RPD' VIA XFMR 'T-RPD'	225 A	225 A	3	NOTE 8		126.4 kVA
2	ATS-SB	150 A	150 A	3	NOTE 8	NOTE 7	56.0 kVA
3	ATS-LS	100 A	100 A	3	NOTE 8	NOTE 7	16.0 kVA
4	PANEL 'MH3A'	600 A	600 A	3	NOTE 8		265.4 kVA
5	PANEL 'MH4A'	400 A	400 A	3	NOTE 8		270.0 kVA
6	PANEL 'MH5A'	400 A	400 A	3	NOTE 8		189.1 kVA
7	PANEL 'MH6A'	250 A	250 A	3	NOTE 8		76.9 kVA
8	PANEL 'MH4B'	250 A	250 A	3	NOTE 8		37.9 kVA
9	KITCHEN PANEL 'UDS' VIA XFMR 'T-UDS'	225 A	225 A	3	NOTE 8		125.9 kVA
10	PANEL 'T-RL3A' VIA XFMR 'T-RL3A'	175 A	175 A	3	NOTE 8		102.2 kVA
11	SPACE ONLY	--	--	3		PROVIDE SPACE FOR 400A BREAKER	--
12	SPACE ONLY	--	--	3		PROVIDE SPACE FOR 400A BREAKER	--
13	SPACE ONLY	--	--	3		PROVIDE SPACE FOR 400A BREAKER	--
14	SPACE ONLY	--	--	3		PROVIDE SPACE FOR 400A BREAKER	--
15	SPD	60 A	60 A	3	4#4, 1#8G., 1-1/4"C.		0.0 kVA

Load Classification	Connected Load	Demand Factor	Estimated Demand
LIGHTS	65.88 kVA	125.00%	82.34 kVA
LIGHTING - EXTERIOR	10.19 kVA	125.00%	12.74 kVA
HEATING	10.50 kVA	100.00%	10.50 kVA
COOLING	8.00 kVA	100.00%	8.00 kVA
VENTILATION	17.30 kVA	100.00%	17.30 kVA
MOTORS	532.15 kVA	100.00%	532.15 kVA
KITCHEN	78.25 kVA	65.00%	50.86 kVA
RECEPTACLES	181.08 kVA	52.76%	95.54 kVA
WATER HEATER	2.20 kVA	100.00%	2.20 kVA
MISC.	353.98 kVA	100.00%	353.98 kVA
ELEVATOR	0.00 kVA	0.00%	0.00 kVA
EV CHARGING	0.00 kVA	0.00%	0.00 kVA
Spare	0.00 kVA	0.00%	0.00 kVA

TOTAL KVA (CONNECTED):	1265.8 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	1171.9 kVA	1618.9 A	1561.3 A	1425.8 A
TOTAL AMP. (CONNECTED):	1522.6 A			
TOTAL AMP. (DEMAND):	1409.6 A	**TOTAL AMP. (DEMAND) x 125%**		1762.0 A

NOTES:
1. THIS SWITCHBOARD SHALL BE U.L. LISTED FOR USE AS S.E. EQUIPMENT.
2. PROVIDE WITH TYPE 1 SPD (120kA/MODE, 240kA/PHASE MIN.).
3. PROVIDE BREAKER WITH ADJUSTABLE GFP TRIP FUNCTIONS.
4. BREAKER SHALL BE 100% RATED.
5. PROVIDE BREAKER WITH SHUNT TRIP.
6. PROVIDE BREAKER WITH RELT (MAINTENANCE MODE) SWITCH.
7. PROVIDE BREAKER WITH ADJUSTABLE LSI TRIP FUNCTIONS.
8. SEE RISER DIAGRAM/SHEET E-701 FOR WIRE SIZE.
9. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

PANEL: KP1A

VOLTAGE: 208Y/120 3Ø
MOUNTING: RECESSED
ENCLOSURE: NEMA4X
MAIN: 400 A
MAIN TYPE: MCB
PHASE: 3
WIRE: 4
FED FROM: RPD
TYPE: 20-INCH WIDE
AIC: 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
K	HOT FOOD SERVING COUNTER (NOTE 8)	NOTE 7	30 A	1	2	2.36 1.44			1	2	20 A	-	FOOD PROCESSOR (NOTE 7 & 8)	K
				3			2.36 0.18		1	4	20 A	12	TABLE LIMIT SWITCH (NOTE 8)	MI
K	HOT FOOD SERVING COUNTER (NOTE 8)	NOTE 7	30 A	5	2			2.36 1.08	1	6	20 A	12	KITCHEN RECEPTS	R
				7		2.36 0.36			1	8	20 A	12	KITCHEN FLR RECEPTS (NOTE 8)	R
K	HEATED PASS-THRU CABINET (NOTE 9)	NOTE 7	20 A	9	2		0.75 0.36		1	10	20 A	12	KITCHEN FLR RECEPTS (NOTE 8	R
				11				0.75 0.48	1	12	20 A	-	ELECTRIC SLICER (NOTE 7 & 8)	K
K	HEATED PASS-THRU CABINET (NOTE 9)	NOTE 7	20 A	13	2	0.75 0.54			1	14	20 A	12	RECEPTACLES KITCHEN 214	R
				15			0.75 0.78		1	16	20 A	12	RECEPTACLES KITCHEN 214	R
MS	ICE MAKER	NOTE 7	15 A	17	2			0.66 0.90	1	18	20 A	12	REC SERVING/ DRY STOR	R
				19		0.66 1.00			1	20	20 A	12	OVERHEAD DOOR	M
MS	DRYER LNDRY (NOTE 8)	10	30 A	21	2		2.50 0.36		1	22	20 A	-	MILK COOLER SERVING (NOTE 7 & 8)	MS
				23				2.50 0.36	1	24	20 A	-	MILK COOLER SERVING (NOTE 7 & 8)	MS
MS	WASHER LNDRY (NOTE 8)	12	20 A	25	1	1.00 0.36			1	26	20 A	12	POS STATIONS SERV. 213 (NOTE 8)	R
R	KITCHEN OFFICE RECEPTS	12	20 A	27	1		0.90 0.90		1	28	20 A	-	COLD SERV. COUNTER (NOTE 7 & 8)	K
MS	HAND DRYER TLT 214E (NOTE 9)	12	20 A	29	1			1.00 0.90	1	30	20 A	-	COLD SERV. COUNTER (NOTE 7 & 8)	K
V	EF-2.1, EF-2.2, EF-2.3 (NOTE 11)	-	15 A	31	1	0.05 0.66			1	32	20 A	-	FRIDGE PASS-THRU (NOTE 7 & 8)	K
Sp...	SPARE	-	20 A	33	1		0.00 0.66		1	34	20 A	-	FRIDGE PASS-THRU (NOTE 7 & 8)	K
Sp...	SPARE	-	20 A	35	1			0.00 1.83	1	36	20 A	-	HOLDING CABINET (NOTE 7 & 8)	K
Sp...	SPARE	-	20 A	37	1	0.00 0.47			1	38	20 A	-	REACH-IN FRIDGE (NOTE 7 & 8)	MS
Sp...	SPARE	-	20 A	39	1		0.00 0.00		1	40	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	41	1			0.00 0.00	1	42	20 A	-	SPARE	Sp...

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.05 kVA	100.00%	0.05 kVA
M	MOTORS	1.53 kVA	100.00%	1.53 kVA
K	KITCHEN	78.25 kVA	65.00%	50.86 kVA
R	RECEPTACLES	5.22 kVA	100.00%	5.22 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	12.02 kVA	100.00%	12.02 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

TOTAL KVA...	97.07 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	69.68 kVA	268.0 A	266.2 A	275.2 A
TOTAL AMP....	269 A			
TOTAL AMP. (DEMAND):	193 A	**TOTAL AMP. (DEMAND) x 125%**		241.8 A

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE SHEET E-501 FOR WIRE SIZE.
8. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
9. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
10. REFER TO REF. CONNECTION SCHEDULE SHEET E-501 FOR WIRE SIZE.
11. REFER TO MECHANICAL EQUIPMENT SCHEDULE SHEET E-801 FOR WIRE SIZE.
12. PROVIDE PANEL WITH NEMA 4X STAINESS STEEL COVER.
13. PROVIDE PANEL WITH FEED-THRU LUGS.
14. LOAD TOTAL INCLUDES FEED-THRU SECTION.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: KP2A

VOLTAGE: 208Y/120 3Ø
MOUNTING: RECESSED
ENCLOSURE: NEMA4X
MAIN: 400 A
MAIN TYPE: MLO
PHASE: 3
WIRE: 4
FED FROM: KP1A
TYPE: 20-INCH WIDE PANEL
AIC: 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MS	UDS SHUNT TRIP & FUEL CONTROL	12	20 A	1	1	0.48 10.00			1	2				
MS	HOOD CONTROL	12	15 A	3	1		1.80 10.00		3	4	90 A	NOTE 7	DISHWASHER BOOSTER HEATER	K
M	AIR CURTAIN	12	15 A	5	1			0.53 10.00		6				
Sp...	SPARE	-	20 A	7	1	0.00 6.60				8				
Sp...	SPARE	-	20 A	9	1		0.00 6.60		3	10	70 A	NOTE 7	DISHWASHER	K
Sp...	SPARE	-	20 A	11	1			0.00 6.60		12				
Sp...	SPARE	-	20 A	13	1	0.00 1.61				14				
Sp...	SPARE	-	20 A	15	1		0.00 1.61		3	16	15 A	NOTE 7	DISPOSAL - DISHWASHING	K
Sp...	SPARE	-	20 A	17	1			0.00 1.61		18				
Sp...	SPARE	-	20 A	19	1	0.00 0.72				20				
Sp...	SPARE	-	20 A	21	1		0.00 0.72		3	22	15 A	NOTE 7	DISPOSAL - KITCHEN	K
Sp...	SPARE	-	20 A	23	1			0.00 0.72		24				
Sp...	SPARE	-	20 A	25	1	0.00 0.72				26				
Sp...	SPARE	-	20 A	27	1		0.00 0.72		3	28	15 A	NOTE 7	DISPOSAL - KITCHEN	K
Sp...	SPARE	-	20 A	29	1			0.00 0.72		30				
	SPACE ONLY	-	--	31	1	-- --				32				
	SPACE ONLY	-	--	33	1		-- --		3	34	--	-	SPACE ONLY	
	SPACE ONLY	-	--	35	1			-- --		36				
	SPACE ONLY	-	--	37	1	-- --				38				
	SPACE ONLY	-	--	39	1		-- --		3	40	--	-	SPACE ONLY	
	SPACE ONLY	-	--	41	1			-- --		42				

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	0.53 kVA	100.00%	0.53 kVA
K	KITCHEN	58.94 kVA	65.00%	38.31 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	2.28 kVA	100.00%	2.28 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

TOTAL KVA...	61.75 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	41.12 kVA	167.7 A	178.8 A	168.2 A
TOTAL AMP....	171 A			
TOTAL AMP. (DEMAND):	114 A	**TOTAL AMP. (DEMAND) x 125%**		142.7 A

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE SHEET E-501 FOR WIRE SIZE.
8. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
9. REFER TO MECHANICAL EQUIPMENT SCHEDULE SHEET E-801 FOR WIRE SIZE.
10. PROVIDE PANEL WITH NEMA 4X STAINESS STEEL COVER.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)

F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.



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CHECKED BY: MKG

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PANEL SCHEDULES

E-702

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PANEL: MH3A

VOLTAGE: 480Y/277 3Ø | **FED FROM:** MSB
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
MAIN: 600 A | **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
L	AREA 300 LTS	12	20 A	1	1	3.59	9.55			2				
L	AREA 300 LTS	12	20 A	3	1		3.53	8.05	3	4	70 A	NOTE 9	PANEL 'ML3A' VIA T-ML3A	F
L	AREA 300 COLLABORATION LTS	12	20 A	5	1			2.17	6.68	6				
L	AREA 100 LTS	12	20 A	7	1	1.65	2.57		1	8	15 A	-	WSHP-1.1 (NOTE 8)	M
L	AREA 100 MEZZANINE LTS	12	20 A	9	1			0.91	4.32	1	10	30 A	-	WSHP-1.2 (NOTE 8)	M
L	AREA 200 MEZZANINE LTS	12	20 A	11	1			1.44	3.24	1	12	20 A	-	WSHP-1.3 (NOTE 8)	M
L	GYMNASIUM LTS	12	20 A	13	1	2.70	3.24			1	14	20 A	-	WSHP-1.4 (NOTE 8)	M
L	GYMNASIUM LTS	12	20 A	15	1			1.35	4.32	1	16	30 A	-	WSHP-1.5 (NOTE 8)	M
L	GYMNASIUM LTS	12	20 A	17	1			2.70	4.32	1	18	30 A	-	WSHP-1.6 (NOTE 8)	M
Sp...	SPARE	-	20 A	19	1	0.00	4.32			1	20	30 A	-	WSHP-1.7 (NOTE 8)	M
Sp...	SPARE	-	20 A	21	1			0.00	3.24	1	22	20 A	-	WSHP-1.8 (NOTE 8)	M
M	WSHP-3.1 (NOTE 8)	-	15 A	23	1					1	24	40 A	-	WSHP-1.9 (NOTE 8)	M
M	WSHP-3.2 (NOTE 8)	-	30 A	25	1	4.32	5.76			1	26	40 A	-	WSHP-1.10 (NOTE 8)	M
M	WSHP-3.3 (NOTE 8)	-	30 A	27	1			4.32	3.24	1	28	20 A	-	WSHP-M.1 (NOTE 8)	M
M	WSHP-3.4	NOTE 8	15 A	29						1	30	20 A	-	WSHP-M.2 (NOTE 8)	M
				31	3	3.13	4.32			1	32	30 A	-	WSHP-3.11 (NOTE 8)	M
				33				3.13	4.32	1	34	30 A	-	WSHP-3.12 (NOTE 8)	M
M	WSHP-3.5 (NOTE 8)	-	30 A	35	1					1	36	40 A	-	WSHP-3.13 (NOTE 8)	M
M	WSHP-3.6 (NOTE 8)	-	30 A	37	1	4.32	3.24			1	38	20 A	-	WSHP-3.14 (NOTE 8)	M
M	WSHP-3.7 (NOTE 8)	-	30 A	39	1			4.32	1.50	1	40	15 A	-	EWH-1.1 (NOTE 8)	H
M	WSHP-3.8 (NOTE 8)	-	40 A	41	1					1	42				
M	WSHP-3.9 (NOTE 8)	-	40 A	43	1	5.76	8.93			3	44	60 A	NOTE 8	WSHP-G.1	M
M	WSHP-3.10 (NOTE 8)	-	30 A	45	1			4.32	8.93	1	46				
MS	ATHLETIC WASHER GYM STG 122A (NOTE 10)	8	40 A	47						1	48				
				49	3	8.13	8.93			3	50	60 A	NOTE 8	WSHP-G.2	M
				51				8.13	8.93	1	52				
MS	ATHLETIC WASHER GYM STG 122A (NOTE 10)	6	45 A	53						1	54	20 A	-	SPARE	Sp...
				55	3	9.00	--			1	56	--	-	SPACE ONLY	
				57				9.00	--	1	58	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	59	1					1	60	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	61	1	0.00	--			1	62	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	63	1			0.00	--	1	64	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	65	1					1	66	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	20.05 kVA	125.00%	25.07 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	1.50 kVA	100.00%	1.50 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	191.74 kVA	100.00%	191.74 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	52.14 kVA	100.00%	52.14 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.
10. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION.

TOTAL KVA...	265.43 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	270.45 kVA	337.6 A	310.0 A	310.9 A
TOTAL AMP....	319 A			
TOTAL AMP. (DEMAND):	325 A	**TOTAL AMP. (DEMAND) x 125%**		406.6 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: MH4A

VOLTAGE: 480Y/277 3Ø | **FED FROM:** MSB
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
MAIN: 400 A | **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
				1						2				
F	PANEL 'RL4A' VIA T-RL4A	NOTE 9	100 A	3	3	18.66	26.82			4	100 A	NOTE 9	PANEL 'RL2C' VIA T-RL2C	F
				5			19.07	26.51	3	6				
F	PANEL 'ML2A' VIA T-ML2A	NOTE 9	70 A	7		10.98	3.24			8	20 A	-	WSHP-2.1 (NOTE 8)	M
				9	3		9.91	5.76		10	40 A	-	WSHP-2.2 (NOTE 8)	M
				11				7.05	5.76	12	40 A	-	WSHP-4.1 (NOTE 8)	M
L	AREA 400 LTS	12	20 A	13	1	3.67	4.32			14	30 A	-	WSHP-4.2 (NOTE 8)	M
L	AREA 400 LTS	12	20 A	15	1		3.59	4.32		16	30 A	-	WSHP-4.3 (NOTE 8)	M
L	AREA 400 CORRIDOR LTS	12	20 A	17	1			1.08	4.32	18	30 A	-	WSHP-4.4 (NOTE 8)	M
LE	EXTERIOR LTS	12	20 A	19	1	0.64	4.32			20	30 A	-	WSHP-4.5 (NOTE 8)	M
Sp...	SPARE	-	20 A	21	1		0.00	4.32		22	30 A	-	WSHP-4.6 (NOTE 8)	M
Sp...	SPARE	-	20 A	23	1					24	30 A	-	WSHP-4.7 (NOTE 8)	M
Sp...	SPARE	-	20 A	25	1	0.00	5.76			26	40 A	-	WSHP-4.8 (NOTE 8)	M
Sp...	SPARE	-	20 A	27	1		0.00	3.24		28	20 A	-	WSHP-4.9 (NOTE 8)	M
Sp...	SPARE	-	20 A	29	1			0.00	4.32	30	30 A	-	WSHP-4.10 (NOTE 8)	M
				31		5.50	4.32			32	30 A	-	WSHP-4.11 (NOTE 8)	M
M	WSHP-D.1 (NOTE 8)	-	30 A	33	3		5.50	4.32		34	30 A	-	WSHP-4.12 (NOTE 8)	M
				35				5.50	2.57	36	15 A	-	WSHP-4.13 (NOTE 8)	M
				37		5.50	--			38	--	-	SPACE ONLY	
M	WSHP-D.2 (NOTE 8)	-	30 A	39	3		5.50	--		40	--	-	SPACE ONLY	
				41				5.50	--	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	8.34 kVA	125.00%	10.43 kVA
LE	LIGHTING - EXTERIOR	0.64 kVA	125.00%	0.80 kVA
H	HEATING	0.75 kVA	100.00%	0.75 kVA
C	COOLING	4.00 kVA	100.00%	4.00 kVA
V	VENTILATION	6.85 kVA	100.00%	6.85 kVA
M	MOTORS	123.93 kVA	100.00%	123.93 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	70.04 kVA	57.14%	40.02 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	55.48 kVA	100.00%	55.48 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

TOTAL KVA...	270.03 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	242.25 kVA	342.7 A	336.6 A	304.2 A
TOTAL AMP....	325 A			
TOTAL AMP. (DEMAND):	291 A	**TOTAL AMP. (DEMAND) x 125%**		364.2 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: MH5A

VOLTAGE: 480Y/277 3Ø | **FED FROM:** MSB
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
MAIN: 400 A | **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
				1						2				
F	PANEL 'ML5A' VIA T-ML5A	NOTE 9	70 A	3	3	8.66	17.66			4	100 A	NOTE 9	PANEL 'RL5A' VIA T-RL5A	F
				5			7.81	18.68	3	6				
L	AREA 500 LTS	12	20 A	7	1	3.66	5.76			8	40 A	-	WSHP-5.1 (NOTE 8)	M
L	AREA 500 LTS	12	20 A	9	1			6.59	16.98	10	30 A	-	WSHP-5.2 (NOTE 8)	M
L	AREA 500 CORRIDOR LTS	12	20 A	11	1					12	30 A	-	WSHP-5.3 (NOTE 8)	M
V	KEF-1	NOTE 8	15 A	13	3	2.11	4.32			14	30 A	-	WSHP-5.4 (NOTE 8)	M
				15			2.11	4.32		16	30 A	-	WSHP-5.5 (NOTE 8)	M
				17				2.11	4.32	18	30 A	-	WSHP-5.6 (NOTE 8)	M
Sp...	SPARE	-	20 A	19	1	0.00	4.32			20	30 A	-	WSHP-5.7 (NOTE 8)	M
Sp...	SPARE	-	20 A	21	1			0.00	5.76	22	40 A	-	WSHP-5.8 (NOTE 8)	M
Sp...	SPARE	-	20 A	23	1					24	20 A	-	WSHP-5.9 (NOTE 8)	M
M	WSHP-2.7 (NOTE 8)	-	40 A	25	1	5.76	4.32			26	30 A	-	WSHP-5.10 (NOTE 8)	M
M	WSHP-2.8 (NOTE 8)	-	40 A	27	1			5.76	4.32	28	30 A	-	WSHP-5.11 (NOTE 8)	M
M	WSHP-2.9 (NOTE 8)	-	20 A	29	1					30	30 A	-	WSHP-5.12 (NOTE 8)	M
M	WSHP-2.10	NOTE 8	15 A	31	3	3.12	2.57			32	15 A	-	WSHP-5.13 (NOTE 8)	M
				33			3.12	3.24		34	20 A	-	WSHP-M.5 (NOTE 8)	M
				35				3.12	4.32	36	30 A	-	WSHP-K.1 (NOTE 8)	M
Sp...	SPARE	-	20 A	37	1	0.00	5.76			38	40 A	-	WSHP-K.2 (NOTE 8)	M
Sp...	SPARE	-	20 A	39	1			0.00	3.24	40	20 A	-	WSHP-K.3 (NOTE 8)	M
Sp...	SPARE	-	20 A	41	1					42	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	43	1	0.00	--			44				
Sp...	SPARE	-	20 A	45	1			0.00	--	46	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	47	1					48				
Sp...	SPARE	-	20 A	49	1	0.00	--			50				
Sp...	SPARE	-	20 A	51	1			0.00	--	52	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	53	1					54				

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	8.36 kVA	125.00%	10.45 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.75 kVA	100.00%	0.75 kVA
C	COOLING	2.00 kVA	100.00%	2.00 kVA
V	VENTILATION	5.79 kVA	100.00%	5.79 kVA
M	MOTORS	120.15 kVA	100.00%	120.15 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	35.84 kVA	63.95%	22.92 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	9.94 kVA	100.00%	9.94 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

TOTAL KVA...	189.15 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	178.32 kVA	251.9 A	245.7 A	198.0 A
TOTAL AMP....	228 A			
TOTAL AMP. (DEMAND):	214 A	**TOTAL AMP. (DEMAND) x 125%**		268.1 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: MH6A

VOLTAGE: 480Y/277 3Ø | **FED FROM:** MSB
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
MAIN: 250 A | **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
L	AREA 600 LTS	12	20 A	1	1	3.16	5.76			2	40 A	-	WSHP-6.1 (NOTE 8)	M
L	AREA 200 LTS	12	20 A	3	1			1.78	3.13	4				
L	AREA 200 KITCHEN LTS	12	20 A	5	1			1.97	3.13	3	6	15 A	NOTE 8	WSHP-6.2	M
L	AREA 200 DINING LTS	12	20 A	7	1	1.87	3.13			8					
L	AREA 200 MEDIA LTS	12	20 A	9	1			3.08	3.13	10					
L	AREA 200 LTS	12	20 A	11	1			1.70	3.13	3	12	15 A	NOTE 8	WSHP-6.3	M
L	AREA 100 LTS	12	20 A	13	1	2.27	3.13			1	14				
L	AREA 600/200/100 CORRIDOR LTS	12	20 A	15	1			3.35	3.24	1	16	20 A	-	WSHP-6.4 (NOTE 8)	M
LE	EXTERIOR LTS	12	20 A	17	1					18					
M	JOCKEY PUMP	NOTE 9	20 A	19		2.11	3.88			20	30 A	NOTE 8	DBP1	M	
				21	3			2.11	3.88	22					
				23						24					
Spare	SPARE	-	20 A	25		0.00	1.50			26	15 A	-	EWH-6.4 (NOTE 8)	H	
				27	3			0.00	1.50	28	15 A	-	EWH-6.1 (NOTE 8)	H	
				29						30	20 A	12	EXTERIOR LTS	LE	
LE	SITE LIGHTING	6	20 A	31	1	1.11	--			32					
LE	SITE LIGHTING	8	20 A	33	1			1.08	--	34	--	-	SPACE ONLY		
LE	SITE LIGHTING	8	20 A	35	1					36					
LE	SITE LIGHTING	8	20 A	37	1	1.31	--			38					
LE	SITE LIGHTING	8	20 A	39	1			1.29	--	40	--	-	SPACE ONLY		
LE	FLAGPOLE LTS	12	20 A	41	1					42					
Sp...	SPARE	-	20 A	43	1	0.00	--			44	--	-	SPACE ONLY		
Sp...	SPARE	-	20 A	45	1			0.00	--	46	--	-	SPACE ONLY		
Sp...	SPARE	-	20 A	47	1					48	--	-	SPACE ONLY		
Sp...	SPARE	-	20 A	49	1	0.00	--			50	--	-	SPACE ONLY		
Sp...	SPARE	-	20 A	51	1			0.00	--	52	--	-	SPACE ONLY		
Sp...	SPARE	-	20 A	53	1					54	--	-	SPACE ONLY		

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	19.17 kVA	125.00%	23.97 kVA
LE	LIGHTING - EXTERIOR	7.47 kVA	125.00%	9.34 kVA
H	HEATING	4.50 kVA	100.00%	4.50 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	45.72 kVA	100.00%	45.72 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	0.00 kVA	0.00%	0.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

TOTAL KVA...	76.87 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	83.53 kVA	109.6 A	103.7 A	72.5 A
TOTAL AMP....	92 A			
TOTAL AMP. (DEMAND):	100 A	**TOTAL AMP. (DEMAND) x 125%**		125.6 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: MH4B

VOLTAGE: 480Y/277 3Ø | **FED FROM:** MSB
MOUNTING: SURFACE | **MAIN TYPE:** MLO | **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 | **PHASE:** 3 | **AIC:** 42 KAIC
MAIN: 250 A | **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
				1		3.13	3.24			2	20 A	-	WSHP-2.3 (NOTE 8)	M
M	WSHP-2.4	NOTE 8	15 A	3	3		3.13	3.24		4	20 A	-	WSHP-M.3 (NOTE 8)	M
				5				3.13	3.24	6	20 A	-	WSHP-M.4 (NOTE 8)	M
				7		3.13	0.00			8	20 A	-	SPARE	Sp...
M	WSHP-2.5	NOTE 8	15 A	9	3		3.13	0.00		10	20 A	-	SPARE	Sp...
				11				3.13	0.00	12	20 A	-	SPARE	Sp...
				13		3.13	0.00			14	20 A	-	SPARE	Sp...
M	WSHP-2.6	NOTE 8	15 A	15	3		3.13	0.00		16	20 A	-	SPARE	Sp...
				17				3.13	0.00	18	20 A	-	SPARE	Sp...
				19		0.00	0.00			20	20 A	-	SPARE	Sp...
Spare	SPARE	-	15 A	21	3		0.00	0.00		22	20 A	-	SPARE	Sp...
				23				0.00	0.00	24	20 A	-	SPARE	Sp...
				25		0.00	0.00			26	20 A	-	SPARE	Sp...
Spare	SPARE	-	20 A	27	3		0.00	0.00		28	20 A	-	SPARE	Sp...
				29				0.00	0.00	30	20 A	-	SPARE	Sp...
				31		--	--			32	--	-	SPACE ONLY	
	SPACE ONLY	-	--	33	3		--	--		34	--	-	SPACE ONLY	
				35				--	--	36	--	-	SPACE ONLY	
				37		--	--			38	--	-	SPACE ONLY	
	SPACE ONLY	-	--	39	3		--	--		40	--	-	SPACE ONLY	
				41				--	--	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	37.86 kVA	100.00%	37.86 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	0.00 kVA	0.00%	0.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.
9. REFER TO RISER DIAGRAM/ SHEET E701 FOR WIRE SIZE.

TOTAL KVA...	37.86 kVA	TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA (DEMAND):	37.86 kVA	45.6 A	45.6 A	45.6 A
TOTAL AMP....	46 A			
TOTAL AMP. (DEMAND):	46 A	**TOTAL AMP. (DEMAND) x 125%**		56.9 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: ML2A

VOLTAGE: 208Y/120 3Ø | **FED FROM:** T-ML2A
MOUNTING: SURFACE | **MAIN TYPE:** MCB | **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 | **PHASE:** 3 | **AIC:** 10 KAIC
MAIN: 150 A | **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
C	ODU-1.1	NOTE 9	30 A	1	2	1.00	1.00			2	30 A	NOTE 9	ODU-4.1	C
				3			1.00	1.00		4				
M	P-2T - WSHP-2.1 / P-4T - WSHP-2.2	NOTE 9	15 A	5	2				0.74	0.40	2	6	15 A	NOTE 9	P-10T - WSHP-D.1	M
				7		0.74	0.40					8				
M	P-2T - WSHP-2.3 / P-2T - WSHP-M.5	NOTE 9	15 A	9	2			0.74	0.40		2	10	15 A	NOTE 9	P-10T - WSHP-D.1	M
				11					0.74	0.40		12				
M	P-5T - WSHP-2.4	NOTE 9

ADA AND LEGAL DISCLAIMER: This document is intended to comply with the requirements of the Americans with Disabilities Act (ADA). However architects and engineers are not licensed to interpret laws or give advice concerning laws. The owner should have this document reviewed by his attorney to determine if it complies with ADA and other laws.

PANEL: ML2B

VOLTAGE: 208Y/120 3Ø | **FED FROM:** ML2A
MOUNTING: SURFACE | **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 150 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
M	P-5T - WSHP-4.1	NOTE 8	15 A	1	2	0.89 0.37			2	2	15 A	NOTE 8	P-3T - WSHP-4.7	M
				3			0.89 0.37			4				
M	P-3T - WSHP-4.2 / P-2T - WSHP-4.13	NOTE 8	15 A	5	2			0.74 0.89	2	6	15 A	NOTE 8	P-5T - WSHP-4.8	M
				7		0.74 0.89				8				
M	P-3T - WSHP-4.3 / P-3T - WSHP-4.4	NOTE 8	15 A	9	2		0.74 0.74		2	10	15 A	NOTE 8	P-3T - WSHP-4.9 / P-4T - WSHP-4.10	M
				11				0.74 0.74		12				
M	P-3T - WSHP-4.5 / P-3T - WSHP-4.6	NOTE 8	15 A	13	2	0.74 0.74			2	14	15 A	NOTE 8	P-3T - WSHP-4.11 / P-3T - WSHP-4.12	M
				15			0.74 0.74			16				
Spare	SPARE	-	15 A	17	2			0.00 0.00	2	18	20 A	-	SPARE	Spare
				19		0.00 0.00				20				
Spare	SPARE	-	15 A	21	2		0.00 0.00		2	22	20 A	-	SPARE	Spare
				23				0.00 0.00		24				
	SPACE ONLY	-	--	25	1	-- --			1	26	--	-	SPACE ONLY	
	SPACE ONLY	-	--	27	1		-- --		1	28	--	-	SPACE ONLY	
	SPACE ONLY	-	--	29	1			-- --	1	30	--	-	SPACE ONLY	
	SPACE ONLY	-	--	31	1	-- --			1	32	--	-	SPACE ONLY	
	SPACE ONLY	-	--	33	1		-- --		1	34	--	-	SPACE ONLY	
	SPACE ONLY	-	--	35	1			-- --	1	36	--	-	SPACE ONLY	
	SPACE ONLY	-	--	37	1	-- --			1	38	--	-	SPACE ONLY	
	SPACE ONLY	-	--	39	1		-- --		1	40	--	-	SPACE ONLY	
	SPACE ONLY	-	--	41	1			-- --	1	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	11.70 kVA	100.00%	11.70 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	0.00 kVA	0.00%	0.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	11.70 kVA			
TOTAL KVA (DEMAND):	11.70 kVA	37.8 A	36.6 A	25.9 A
TOTAL AMP....	32 A			
TOTAL AMP. (DEMAND):	32 A	**TOTAL AMP. (DEMAND) x 125%**		40.6 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: ML3A

VOLTAGE: 208Y/120 3Ø | **FED FROM:** T-ML3A
MOUNTING: SURFACE | **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 150 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
C	ODU-3.1	NOTE 9	30 A	1	2	1.00 0.74			2	2	15 A	NOTE 9	P-2T - WSHP-1.1 / P-3T - WSHP-1.2	M
				3			1.00 0.74			4				
M	P-2T - WSHP-M.2	NOTE 9	15 A	5	2			0.37 0.74	2	6	15 A	NOTE 9	P-2T - WSHP-1.3 / P-2T - WSHP-1.4	M
				7		0.37 0.74				8				
M	P-2T - WSHP-M.1	NOTE 9	15 A	9	2		0.37 0.74		2	10	15 A	NOTE 9	P-3T - WSHP-1.5 / P-3T - WSHP-1.6	M
				11				0.37 0.74		12				
M	P-20T - WSHP-G.1	NOTE 9	15 A	13	2	0.76 0.74			2	14	15 A	NOTE 9	P-3T - WSHP-1.7 / P-3T - WSHP-1.8	M
				15			0.76 0.74			16				
M	P-20T - WSHP-G.2	NOTE 9	15 A	17	2			0.76 0.74	2	18	15 A	NOTE 9	P-4T - WSHP-1.9 / P-4T - WSHP-1.10	M
				19		0.76 0.74				20				
Spa...	SPARE	-	20 A	21	1			0.00 0.00	2	22	15 A	-	SPARE	Spare
Spa...	SPARE	-	20 A	23	1					24				
Spa...	SPARE	-	20 A	25	1	0.00 0.00			2	26	20 A	-	SPARE	Spare
Spa...	SPARE	-	20 A	27	1			0.00 0.00		28				
	SPACE ONLY	-	--	29	1			-- --	1	30	--	-	SPACE ONLY	
	SPACE ONLY	-	--	31	1	-- --			1	32	--	-	SPACE ONLY	
	SPACE ONLY	-	--	33	1		-- --		1	34	--	-	SPACE ONLY	
	SPACE ONLY	-	--	35	1			-- --	1	36	--	-	SPACE ONLY	
	SPACE ONLY	-	--	37	1	-- --			1	38	--	-	SPACE ONLY	
	SPACE ONLY	-	--	39	1		-- --		1	40	--	-	SPACE ONLY	
	SPACE ONLY	-	--	41	1			-- --	1	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	23.54 kVA	100.00%	23.54 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	0.74 kVA	100.00%	0.74 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE PANEL WITH FEED-THRU LUGS.
8. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.
9. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	24.28 kVA			
TOTAL KVA (DEMAND):	24.28 kVA	81.3 A	68.8 A	55.7 A
TOTAL AMP....	67 A			
TOTAL AMP. (DEMAND):	67 A	**TOTAL AMP. (DEMAND) x 125%**		84.2 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: ML3B

VOLTAGE: 208Y/120 3Ø | **FED FROM:** ML3A
MOUNTING: SURFACE | **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 150 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
M	P-2T - WSHP-3.1 / P-2T - WSHP-3.14	NOTE 8	15 A	1	2	0.74 --			1	2	--	-	SPACE ONLY	
				3			0.74 --		1	4	--	-	SPACE ONLY	
M	P-3T - WSHP-3.2 / P-3T - WSHP-3.3	NOTE 8	15 A	5	2			0.74 --	1	6	--	-	SPACE ONLY	
				7		0.74 --			1	8	--	-	SPACE ONLY	
M	P-4T - WSHP-3.4 / P-3T - WSHP-3.5	NOTE 8	15 A	9	2		0.74 --		1	10	--	-	SPACE ONLY	
				11				0.74 --	1	12	--	-	SPACE ONLY	
M	P-3T - WSHP-3.6 / P-3T - WSHP-3.7	NOTE 8	15 A	13	2	0.74 --			1	14	--	-	SPACE ONLY	
				15			0.74 --		1	16	--	-	SPACE ONLY	
M	P-4T - WSHP-3.8 / P-4T - WSHP-3.9	NOTE 8	15 A	17	2			0.74 --	1	18	--	-	SPACE ONLY	
				19		0.74 --			1	20	--	-	SPACE ONLY	
M	P-4T - WSHP-3.10 / P-3T - WSHP-3.11	NOTE 9	15 A	21	2		0.74 --		1	22	--	-	SPACE ONLY	
				23				0.74 --	1	24	--	-	SPACE ONLY	
M	P-3T - WSHP-3.12 / P-4T - WSHP-3.13	NOTE 8	15 A	25	2	0.74 --			1	26	--	-	SPACE ONLY	
				27			0.74 --		1	28	--	-	SPACE ONLY	
Spare	SPARE	-	15 A	29	2			0.00 --	1	30	--	-	SPACE ONLY	
				31		0.00 --			1	32	--	-	SPACE ONLY	
Spare	SPARE	-	20 A	33	2		0.00 --		1	34	--	-	SPACE ONLY	
				35				0.00 --	1	36	--	-	SPACE ONLY	
	SPACE ONLY	-	--	37	1	-- --			1	38	--	-	SPACE ONLY	
	SPACE ONLY	-	--	39	1		-- --		1	40	--	-	SPACE ONLY	
	SPACE ONLY	-	--	41	1			-- --	1	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	10.36 kVA	100.00%	10.36 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	0.00 kVA	0.00%	0.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	10.36 kVA			
TOTAL KVA (DEMAND):	10.36 kVA	31.8 A	31.8 A	24.7 A
TOTAL AMP....	29 A			
TOTAL AMP. (DEMAND):	29 A	**TOTAL AMP. (DEMAND) x 125%**		35.9 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: ML5A

VOLTAGE: 208Y/120 3Ø | **FED FROM:** T-ML5A
MOUNTING: SURFACE | **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 150 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
C	ODU-5.1	NOTE 10	30 A	1	2	1.00 0.74			2	2	15 A	NOTE 10	P-3T - WSHP-5.7 / P-4T - WSHP-5.8	M
				3			1.00 0.74			4				
M	P-5T - WSHP-5.1	NOTE 10	15 A	5	2			0.89 0.74	2	6	15 A	NOTE 10	P-3T - WSHP-5.9 / P-4T - WSHP-5.10	M
				7		0.89 0.74				8				
M	P-3T - WSHP-5.2 / P-2T - WSHP-5.13	NOTE 10	15 A	9	2		0.74 0.74		2	10	15 A	NOTE 10	P-3T - WSHP-5.11 / P-3T - WSHP-5.12	M
				11				0.74 0.74		12				
M	P-3T - WSHP-5.3 / P-3T - WSHP-5.4	NOTE 10	15 A	13	2	0.74 0.70			1	14	15 A	-	DEF-1 (NOTE 10)	V
				15			0.74 0.74		2	16	15 A	NOTE 10	P-2T - WSHP-2.9 / P-2T - WSHP-M.5	M
M	P-3T - WSHP-5.5 / P-3T - WSHP-5.6	NOTE 10	15 A	17	2			0.74 0.74		18				
				19		0.74 0.74			2	20	15 A	NOTE 10	P-4T - WSHP-2.8 / P-3T - WSHP-K.1	M
M	P-5T - WSHP-2.10	NOTE 10	15 A	21	2		0.37 0.74			22				
				23				0.37 0.37	2	24	15 A	NOTE 10	P-2T - WSHP-2.7	M
M	P-4T - WSHP-K.2 / P-2T - WSHP-K.3	NOTE 10	15 A	25	2	0.74 0.37				26				
				27			0.74 1.26			28				
Spare	SPARE	-	15 A	29	2			0.00 1.26	3	30	20 A	NOTE 10	MAU-1	M
				31		0.00 1.26				32				
Spare	SPARE	-	20 A	33	2		0.00 --		1	34	--	-	SPACE ONLY	
				35				0.00 --	1	36	--	-	SPACE ONLY	
	SPACE ONLY	-	--	37	1	-- --			1	38	--	-	SPACE ONLY	
	SPACE ONLY	-	--	39	1		-- --		1	40	--	-	SPACE ONLY	
	SPACE ONLY	-	--	41	1			-- --	1	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	2.00 kVA	100.00%	2.00 kVA
V	VENTILATION	0.70 kVA	100.00%	0.70 kVA
M	MOTORS	20.36 kVA	100.00%	20.36 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	0.00 kVA	0.00%	0.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE PANEL WITH FEED-THRU LUGS.
8. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.
9. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
10. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	23.06 kVA			
TOTAL KVA (DEMAND):	23.06 kVA	73.7 A	66.6 A	54.9 A
TOTAL AMP....	64 A			
TOTAL AMP. (DEMAND):	64 A	**TOTAL AMP. (DEMAND) x 125%**		80.0 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: ML6A

VOLTAGE: 208Y/120 3Ø | **FED FROM:** RPD
MOUNTING: SURFACE | **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 150 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
C	ODU-6.1	NOTE 8	30 A	1	2	1.00 0.74			2	2	15 A	NOTE 8	P-4T - WSHP-6.1 / P-2T - WSHP-6.4	M
				3			1.00 0.74			4				
WH	WH1 (NOTE 8)	-	20 A	5	1			1.10 0.89	2	6	15 A	NOTE 8	P-5T - WSHP-6.2	M
WH	WH2 (NOTE 8)	-	20 A	7	1	1.10 0.89				8				
V	EF-6.1 (NOTE 8)	-	15 A	9	1		0.10 0.89		2	10	15 A	NOTE 8	P-5T - WSHP-6.3	M
V	EF-6.2, EF-6.3 (NOTE 8)	-	20 A	11	1			0.72 0.89		12				
H	EWH-6.2 (NOTE 8)	-	20 A	13	1	0.75 0.00			2	14	15 A	-	SPARE	Spare
H	EWH-6.3 (NOTE 8)	-	20 A	15	1		0.75 0.00			16				
H	EWH-6.5 (NOTE 8)	-	20 A	17	1			0.75 0.00	2	18	20 A	-	SPARE	Spare
Sp...	SPARE	-	20 A	19	1	0.00 0.00				20				
Sp...	SPARE	-	20 A	21	1		0.00 --		1	22	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	23	1			0.00 --	1	24	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	25	1	0.00 --			1	26	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	27	1		0.00 --		1	28	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	29	1			0.00 --	1	30	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	31	1	0.00 --			1	32	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	33	1		0.00 --		1	34	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	35	1			0.00 --	1	36	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	37	1	0.00 --			1	38	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	39	1		0.00 --		1	40	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	41	1			0.00 --	1	42	--	-	SPACE ONLY	

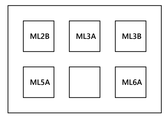
	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	2.25 kVA	100.00%	2.25 kVA
C	COOLING	2.00 kVA	100.00%	2.00 kVA
V	VENTILATION	0.82 kVA	100.00%	0.82 kVA
M	MOTORS	5.04 kVA	100.00%	5.04 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA
WH	WATER HEATER	2.20 kVA	100.00%	2.20 kVA
MS	MISC.	0.00 kVA	0.00%	0.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO KITCHEN EQUIPMENT SCHEDULE/ SHEET E-501 FOR WIRE SIZE.
8. REFER TO MECHANICAL SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	12.31 kVA			
TOTAL KVA (DEMAND):	12.31 kVA	38.4 A	29.0 A	37.4 A
TOTAL AMP....	34 A			
TOTAL AMP. (DEMAND):	34 A	**TOTAL AMP. (DEMAND) x 125%**		42.7 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.



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ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS.
1	02/18/2025	BID SET / AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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PANEL SCHEDULES

E-704

Sheet No. 40 of 46

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PANEL: RL2C

VOLTAGE: 208Y/120 3Ø — **FED FROM:** T-RL2C
MOUNTING: SURFACE — **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 — **PHASE:** 3 — **TYPE:** 20-INCH WIDE
MAIN: 225 A — **WIRE:** 4 — **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A		Pole	B		Pole	C		Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	EXPLORATORY 201: REC	12	20 A	1	1	0.90	0.72							1	2	20 A	12	RR 206-207: REC	R
R	EXPLORATORY 201: REC	12	20 A	3	1				0.72	0.50				1	4	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
R	EXPLORATORY 201: REC	12	20 A	5	1							0.90	1.00	1	6	20 A	12	BOYS RR 206: HD (NOTE 8)	MS
R	BUSINESS EDU 202: REC	12	20 A	7	1	0.90	1.00							1	8	20 A	12	GIRLS RR 207: HD (NOTE 8)	MS
R	BUSINESS EDU 202: REC	12	20 A	9	1				0.72	0.50				1	10	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
R	BUSINESS EDU 202: REC	12	20 A	11	1							0.72	1.00	1	12	20 A	12	BOYS RR 206: HD (NOTE 8)	MS
R	ISS 211: REC	12	20 A	13	1	0.72	0.50							1	14	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
R	ISS 211: REC	12	20 A	15	1				0.90	0.50				1	16	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
R	ART 215: REC	12	20 A	17	1							0.90	0.50	1	18	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
R	ART 215: REC	12	20 A	19	1	1.08	0.54							1	20	20 A	12	RR 217-218: REC	R
R	ART 215: REC	12	20 A	21	1				0.90	1.00				1	22	20 A	12	BOYS RR 218: HD (NOTE 8)	MS
				23								3.84	1.00	1	24	20 A	12	BOYS RR 218: HD (NOTE 8)	MS
MS	KILN -ART ROOM	6	45 A	25	3	3.84	1.00							1	26	20 A	12	GIRLS RR 217: HD (NOTE 8)	MS
				27					3.84	1.00				1	28	20 A	12	GIRLS RR 217: HD (NOTE 8)	MS
R	CORRIDOR 200: REC	12	20 A	29	1							1.32	1.00	1	30	20 A	12	GIRLS RR 207: HD (NOTE 8)	MS
R	CORRIDOR 200: REC	12	20 A	31	1	0.90	0.50							1	32	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
R	MECH. PLAT. AREA 200: REC	12	20 A	33	1				0.90	0.50				1	34	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
V	EF-2.4 (NOTE 11)	-	15 A	35	1							0.05	0.50	1	36	20 A	12	CORRIDOR: EWC (NOTE 7)	MS
V	EF-2.6 (NOTE 11)	-	15 A	37	1	1.18	0.00							1	38	20 A	-	SPARE	Sp...
M	MOTORIZED DAMPERS	12	15 A	39	1				0.50	0.53				1	40	15 A	-	EF-1.4 (NOTE 11)	V
V	EF-1.3 (NOTE 11)	-	15 A	41	1							1.18	1.00	1	42	20 A	12	MECH. CONTROLS	MS

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	2.94 kVA	100.00%	2.94 kVA
M	MOTORS	0.50 kVA	100.00%	0.50 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	36.00 kVA	63.89%	23.00 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	38.24 kVA	100.00%	38.24 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. PROVIDE PANEL WITH FEED-THRU LUGS.
10. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.
11. REFER TO MECHANICAL EQUIPMENT SCHEDULE SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	77.68 kVA			
TOTAL KVA (DEMAND):	64.68 kVA	226.3 A	223.7 A	202.9 A
TOTAL AMP....	216 A			
TOTAL AMP. (DEMAND):	180 A	**TOTAL AMP. (DEMAND) x 125%**		224.4 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: RL2D

VOLTAGE: 208Y/120 3Ø — **FED FROM:** RL2C
MOUNTING: SURFACE — **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 — **PHASE:** 3 — **TYPE:** 20-INCH WIDE
MAIN: 225 A — **WIRE:** 4 — **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A		Pole	B		Pole	C		Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	MAILROOM 115: REC	12	20 A	1	1	1.08	1.44							1	2	20 A	12	AP 117, OFF 203A: REC	R
MS	MAILROOM 115: VENDING (NOTE 7)	12	20 A	3	1				1.00	1.26				1	4	20 A	12	GUIDANCE MTG 203: REC	R
MS	MAILROOM 115: VENDING (NOTE 7)	12	20 A	5	1							1.00	0.18	1	6	20 A	12	GUIDANCE MTG 203: FLR REC	R
MS	MAILROOM 115: VENDING (NOTE 7)	12	20 A	7	1	1.00	0.90							1	8	20 A	12	MEDIA WKRM 204B: REC	R
R	MAILROOM 115: COUNTER REC	12	20 A	9	1				0.36	1.26				1	10	20 A	12	MEDIA WKRM 204A: REC	R
MS	MAILROOM 115: COUNTER MW	12	20 A	11	1							1.50	0.72	1	12	20 A	12	GUID. OFF 203B: REC	R
MS	MAILROOM 115: FRIDGE (NOTE 7)	12	20 A	13	1	1.00	0.90							1	14	20 A	12	SRO 209: REC	R
MS	HEALTH TLT 102A: HD (NOTE 8)	12	20 A	15	1				1.00	0.72				1	16	20 A	12	MEDIA 204: REC	R
R	HEALTH 102: REC	12	20 A	17	1							0.72	0.54	1	18	20 A	12	MEDIA 204: REC	R
R	SHARED OFFICE 114: REC	12	20 A	19	1	0.72	1.08							1	20	20 A	12	MEDIA 204: REC	R
R	SIMS 111, TLT 105-107: REC	12	20 A	21	1				1.26	0.90				1	22	20 A	12	MEDIA 204: REC	R
R	RECPT 101: REC	12	20 A	23	1							1.08	0.36	1	24	20 A	12	MEDIA 204: CASEWORK REC	R
R	RECPT 101: REC	12	20 A	25	1	0.72	0.72							1	26	20 A	12	MEDIA 204: FLR REC	R
MS	TLT 107: HD (NOTE 8)	12	20 A	27	1				1.00	0.90				1	28	20 A	12	DINING 212: REC	R
MS	TLT 105: HD (NOTE 8)	12	20 A	29	1							1.00	0.90	1	30	20 A	12	DINING 212: REC	R
R	AP 116: REC	12	20 A	31	1	0.90	0.50							1	32	20 A	12	DINING 212: EWC (NOTE 7)	MS
R	BKKPG 110: REC	12	20 A	33	1				1.08	0.50				1	34	20 A	12	DINING 212: EWC (NOTE 7)	MS
R	CONF 108: REC	12	20 A	35	1							1.26	0.18	1	36	20 A	12	COPIER MAILROOM 115	MS
R	SECTY 106: REC	12	20 A	37	1	1.08	1.00							1	38	20 A	12	MEDIA 204 SPORTSWALL (NOTE 9)	MS
R	PRINCIPAL 103: REC	12	20 A	39	1				1.26	1.00				1	40	20 A	12	MEDIA 204 ACTIVEFLOOR (NOTE 9)	MS
Sp...	SPARE	-	20 A	41	1							0.00	0.00	1	42	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	43	1	0.00	0.00							1	44	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	45	1				0.00	0.00				1	46	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	47	1							0.00	0.00	1	48	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	49	1	0.00	0.00							1	50	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	51	1				0.00	0.00				1	52	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	53	1							0.00	0.00	1	54	20 A	-	SPARE	Sp...

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	23.22 kVA	71.53%	16.61 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	12.76 kVA	100.00%	12.76 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. CIRCUIT TO BE INCLUDED AS PART OF ADD ALTERNATE FOR POWERUPEDU SPORTSWALL AND ACTIVEFLOOR EQUIPMENT.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	35.98 kVA			
TOTAL KVA (DEMAND):	29.37 kVA	113.3 A	117.1 A	78.7 A
TOTAL AMP....	100 A			
TOTAL AMP. (DEMAND):	82 A	**TOTAL AMP. (DEMAND) x 125%**		101.9 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: RL3A

VOLTAGE: 208Y/120 3Ø — **FED FROM:** T-RL3A
MOUNTING: SURFACE — **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 — **PHASE:** 3 — **TYPE:** 20-INCH WIDE
MAIN: 400 A — **WIRE:** 4 — **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A		Pole	B		Pole	C		Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	8TH GRADE 317: REC	12	20 A	1	1	0.72	0.90							1	2	20 A	12	8TH GRADE SCIENCE 316: REC	R
R	8TH GRADE 317: REC	12	20 A	3	1				0.90	1.08				1	4	20 A	12	8TH GRADE SCIENCE 316: REC	R
R	8TH GRADE 317: REC	12	20 A	5	1							0.72	0.72	1	6	20 A	12	8TH GRADE SCIENCE 316: REC	R
R	8TH GRADE 315: REC	12	20 A	7	1	0.72	0.60							1	8	20 A	12	8TH GRADE SCIENCE 316: EPO	MS
R	8TH GRADE 315: REC	12	20 A	9	1				0.90	1.08				1	10	20 A	12	8TH GRADE SCIENCE 312: REC	R
R	8TH GRADE 315: REC	12	20 A	11	1							0.72	0.72	1	12	20 A	12	8TH GRADE SCIENCE 312: REC	R
R	8TH GRADE 313: REC	12	20 A	13	1	0.72	0.90							1	14	20 A	12	8TH GRADE SCIENCE 312: REC	R
R	8TH GRADE 313: REC	12	20 A	15	1				0.90	0.60				1	16	20 A	12	8TH GRADE SCIENCE 312: EPO	MS
R	8TH GRADE 313: REC	12	20 A	17	1							0.72	0.72	1	18	20 A	12	8TH GRADE 306: REC	R
R	8TH GRADE 305: REC	12	20 A	19	1	0.72	0.72							1	20	20 A	12	8TH GRADE 306: REC	R
R	8TH GRADE 305: REC	12	20 A	21	1				0.90	0.90				1	22	20 A	12	8TH GRADE 306: REC	R
R	8TH GRADE 305: REC	12	20 A	23	1							0.72	0.72	1	24	20 A	12	8TH GRADE 304: REC	R
R	HEALTH/PE 303: REC	12	20 A	25	1	0.72	0.72							1	26	20 A	12	8TH GRADE 304: REC	R
R	HEALTH/PE 303: REC	12	20 A	27	1				0.90	0.90				1	28	20 A	12	8TH GRADE 304: REC	R
R	HEALTH/PE 303: REC	12	20 A	29	1							0.72	1.26	1	30	20 A	12	EC 302: REC	R
M	MOTORIZED DAMPERS	12	15 A	31	1	0.40	1.08							1	32	20 A	12	EC 302: REC	R
M	MOTORIZED DAMPERS	12	15 A	33	1				0.30	0.90				1	34	20 A	12	EC 302: REC	R
R	MECH. PLAT. AREA 100: REC	12	20 A	35	1							0.90	0.40	1	36	15 A	12	MOTORIZED DAMPERS	M
R	AREA 300 ROOF: REC	12	20 A	37	1	0.36	0.30							1	38	15 A	12	MOTORIZED DAMPERS	M
V	EF-3.3 (NOTE 9)	12	15 A	39	1				0.70	1.06				1	40	15 A	-	EF-1.1, EF-1.2 (NOTE 9)	V
V	EF-3.5 (NOTE 9)	12	15 A	41	1							0.70	0.40	1	42	15 A	12	MOTORIZED DAMPERS	M
V	EF-3.6 (NOTE 9)	12	15 A	43	1	0.53	1.00							1	44	20 A	12	MECH. CONTROLS	MS
V	EF-3.7 (NOTE 9)	12	15 A	45	1				0.70	1.00				1	46	20 A	12	MECH. CONTROLS	MS
Sp...	SPARE	-	20 A	47	1							0.00	0.00	1	48	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	49	1	0.00	0.00							1	50	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	51	1				0.00	0.00				1	52	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	53	1							0.00	0.00	1	54	20 A	-	SPARE	Sp...

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.75 kVA	100.00%	0.75 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	3.79 kVA	100.00%	3.79 kVA
M	MOTORS	1.80 kVA	100.00%	1.80 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	44.12 kVA	61.33%	27.06 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	51.70 kVA	100.00%	51.70 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECHANICAL SCHEDULES / SHEET E801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	102.16 kVA			
TOTAL KVA (DEMAND):	85.10 kVA	285.8 A	303.1 A	267.3 A
TOTAL AMP....	284 A			
TOTAL AMP. (DEMAND):	236 A	**TOTAL AMP. (DEMAND) x 125%**		295.3 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: RL3B

VOLTAGE: 208Y/120 3Ø — **FED FROM:** RL3A
MOUNTING: SURFACE — **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 — **PHASE:** 3 — **TYPE:** 20-INCH WIDE PANEL
MAIN: 400 A — **WIRE:** 4 — **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A		Pole	B		Pole	C		Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
				1		1.00	1.00								2				
MS	BLEACHER POWER	12	20 A	3	3				1.00	1.00				3	4	20 A	12	BLEACHER POWER	MS
				5								1.00	1.00		6				
				7		1.00	1.00								8				
MS	BLEACHER POWER	12	20 A	9	3				1.00	1.00				3	10	20 A	12	BLEACHER POWER	MS
				11								1.00	1.00		12				
MS	BOYS LKR 121: HD (NOTE 8)	12	20 A	13	1	1.00	1.32							1	14	20 A	12	COLLAB 300: REC	R
MS	BOYS LKR 121: HD (NOTE 8)	12	20 A	15	1				1.00	0.72				1	16	20 A	12	COLLAB 300: REC	R
R	BOYS LKR 121: REC	12	20 A	17	1							1.68	0.72	1	18	20 A	12	COLLAB 300: REC	R
R	PLATFORM 122: REC	12	20 A	19	1	1.26	1.14							1	20	20 A	12	COLLAB 300: REC	R
MS	GYM STG 122A: AV RACK REC	12	20 A	21	1				1.00	0.72				1	22	20 A	12	TEAM AREA 314: REC	R
V	EF-3.1, EF-3.2, EF-3.4, EF3.8 (NOTE 9)	-	15 A	23	1							0.10	1.20	1	24	20 A	12	PREP RM 318: REC	R
MS	GYM 118: MOTORIZED SHADES	12	20 A	25	1	1.00	0.36							1	26	20 A	12	PREP RM 318: COUNTER REC	R
R	GIRLS LKR 123: REC	12	20 A	27	1				0.90	1.00				1	28	20 A	12	PREP RM 318: DISHWSHR (NOTE 7)	MS
R	GIRLS LKR 123: REC	12	20 A	29	1							0.36	1.00	1	30	20 A	12	PREP RM 318: FRIDGE (NOTE 7)	MS
MS	GIRLS LKR 123: HD (NOTE 8)	12	20 A	31	1	1.00	1.00							1	32	20 A	12	BOYS RR 309: HD (NOTE 8)	MS
MS	GIRLS LKR 123: HD (NOTE 8)	12	20 A	33	1				1.00	1.00				1	34	20 A	12	BOYS RR 309: HD (NOTE 8)	MS
R	CONCS 226: REC	12	20 A	35	1							0.54	1.00	1	36	20 A	12	GIRLS RR 308: HD (NOTE 8)	MS
R	CONCS 226: COUNTER REC	12	20 A	37	1	0.36	1.00							1	38	20 A	12	GIRLS RR 308: HD (NOTE 8)	MS
MS	CONCS 226: MW	12	20 A	39	1				1.00	0.72				1	40	20 A	12	RR 308/309: REC	R
MS	CONCS 226: FRIDGE (NOTE 7)	12	20 A	41	1							1.00	0.50	1	42	20 A	12	COLLAB 300: EWC (NOTE 7)	MS
MS	GYM 118: POWERED GOAL	12	20 A	43	1	1.00	0.50							1	44	20 A	12	COLLAB 300: EWC (NOTE 7)	MS
MS	GYM 118: POWERED GOAL	12	20 A	45	1				1.00	0.50				1	46	20 A	12	COLLAB 300: EWC (NOTE 7)	MS
MS	GYM 118: POWERED GOAL	12	20 A	47	1							1.00	0.50	1	48	20 A	12	COLLAB 300: EWC (NOTE 7)	MS
MS	GYM 118: POWERED GOAL	12	20 A	49	1	1.00	0.90							1	50	20 A	12	SENSORY RM 301: REC	R
MS	GYM 118: POWERED GOAL	12	20 A	51	1				1.00	1.00				1	52	20 A	12	STAFF TLT 301A: HD (NOTE 8)	MS
MS	GYM 118: POWERED GOAL	12	20 A	53	1							1.00	1.00	1	54	20 A	12	FAMILY RR 126: HD (NOTE 8)	MS
MS	GYM 118: CEILING REC - PROJ	12	20 A	55	1	0.36	1.44							1	56	20 A	12	BOYS RR 126: REC	R
MS	GYM 118: CEILING REC - PROJ	12	20 A	57	1				0.36	1.00				1	58	20 A	12	BOYS RR 126: HD (NOTE 8)	MS
MS	GYM 118: MOTORIZED SHADES	12	20 A	59	1							1.50	1.00	1	60	20 A	12	BOYS RR 126: HD (NOTE 8)	MS
MS	GYM 118: MOTORIZED SHADES	12	20 A	61	1	1.00	1.00							1	62	20 A	12	GIRLS RR 125: HD (NOTE 8)	MS
MS	GYM 118: PROJECTOR SCREENS	12	20 A	63	1				1.00	1.00				1	64	20 A	12	GIRLS RR 125: HD (NOTE 8)	MS
MS	GYM 118: SCOREBOARD	12	20 A	65	1							0.50	1.26	1	66	20 A	12	LOBBY 100: REC	R
MS	GYM 118: SCOREBOARD	12	20 A	67	1	0.50	0.50							1	68	20 A	12	LOBBY 100A: EWC (NOTE 7)	MS
R	GYM 118: REC	12	20 A	69	1				1.44	0.50				1	70	20 A	12	LOBBY 100A: EWC (NOTE 7)	MS
R	GYM 118: REC	12	20 A	71	1							1.08	0.50	1	72	20 A	12	LOBBY 100A: EWC (NOTE 7)	MS
H	EWH 3.1 (NOTE 9)	-	20 A	73	1	0.75	0.50							1	74	20 A	12	LOBBY 100A: EWC (NOTE 7)	MS
Sp...	SPARE	-	20 A	75	1				0.00	0.50				1	76	20 A	12	VEST 100: DOOR OPENER	MS
Sp...	SPARE	-	20 A	77	1							0.00	0.50	1	78	20 A	12	VEST 100: DOOR OPENER	MS
Sp...	SPARE	-	20 A	79	1	0.00	0.00							1	80	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	81	1				0.00	0.00				1	82	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	83	1							0.00	0.00	1	84	20 A	-	SPARE	Sp...

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.75 kVA	100.00%	0.75 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.10 kVA	100.00%	0.10 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	18.92 kVA	76.43%	14.46 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	47.42 kVA	100.00%	47.42 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO MECH. CONN. SCHEDULES/ SHEET E-801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTA

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PANEL: RL5A

VOLTAGE: 208Y/120 3Ø | **FED FROM:** T-RL5A
MOUNTING: SURFACE | **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	6TH GRADE 516: REC	12	20 A	1	1	0.72	0.72		1	2	20 A	12	EXTRA CLASSROOM 517: REC	R
R	6TH GRADE 516: REC	12	20 A	3	1		0.72	0.72	1	4	20 A	12	EXTRA CLASSROOM 517: REC	R
R	6TH GRADE 516: REC	12	20 A	5	1			0.90 0.90	1	6	20 A	12	EXTRA CLASSROOM 517: REC	R
R	6TH GRADE 514: REC	12	20 A	7	1	0.72	0.90		1	8	20 A	12	6TH GRADE SCIENCE 515: REC	R
R	6TH GRADE 514: REC	12	20 A	9	1		0.72	0.72	1	10	20 A	12	6TH GRADE SCIENCE 515: REC	R
R	6TH GRADE 514: REC	12	20 A	11	1			0.90 1.08	1	12	20 A	12	6TH GRADE SCIENCE 515: REC	R
R	6TH GRADE 512: REC	12	20 A	13	1	0.72	0.60		1	14	20 A	12	6TH GRADE SCIENCE 515: EPO	MS
R	6TH GRADE 512: REC	12	20 A	15	1		0.72	0.90	1	16	20 A	12	6TH GRADE SCIENCE 511: REC	R
R	6TH GRADE 512: REC	12	20 A	17	1			0.90 0.72	1	18	20 A	12	6TH GRADE SCIENCE 511: REC	R
R	6TH GRADE 504: REC	12	20 A	19	1	0.72	1.08		1	20	20 A	12	6TH GRADE SCIENCE 511: REC	R
R	6TH GRADE 504: REC	12	20 A	21	1		0.72	0.60	1	22	20 A	12	6TH GRADE SCIENCE 511: EPO	MS
R	6TH GRADE 504: REC	12	20 A	23	1			0.90 0.72	1	24	20 A	12	6TH GRADE 505: REC	R
R	EC 502: REC	12	20 A	25	1	1.26	0.72		1	26	20 A	12	6TH GRADE 505: REC	R
R	EC 502: REC	12	20 A	27	1		1.08	0.90	1	28	20 A	12	6TH GRADE 505: REC	R
R	EC 502: REC	12	20 A	29	1			0.90 0.72	1	30	20 A	12	6TH GRADE 503: REC	R
M	MOTORIZED DAMPERS	12	15 A	31	1	0.30	0.72		1	32	20 A	12	6TH GRADE 503: REC	R
M	MOTORIZED DAMPERS	12	15 A	33	1		0.30	0.90	1	34	20 A	12	6TH GRADE 503: REC	R
R	MECH. PLAT. AREA 100: REC	12	20 A	35	1			0.72 0.40	1	36	15 A	12	MOTORIZED DAMPERS	M
R	AREA 500 ROOF: REC	12	20 A	37	1	0.36	0.30		1	38	15 A	12	MOTORIZED DAMPERS	M
R	AREA 600 ROOF: REC	12	20 A	39	1		0.18	1.18	1	40	15 A	12	EF-2.7 (NOTE 9)	V
R	AREA 600 ROOF: REC	12	20 A	41	1			0.54 0.40	1	42	15 A	12	MOTORIZED DAMPERS	M

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.75 kVA	100.00%	0.75 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	5.09 kVA	100.00%	5.09 kVA
M	MOTORS	1.70 kVA	100.00%	1.70 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	35.84 kVA	63.95%	22.92 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	9.94 kVA	100.00%	9.94 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE PANEL WITH FEED-THRU LUGS.
8. LOAD TOTAL INCLUDES FEED-THRU SECTIONS.
9. REFER TO MECHANICAL SCHEDULES / SHEET E801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	53.32 kVA			
TOTAL KVA (DEMAND):	40.40 kVA	148.0 A	156.5 A	141.5 A
TOTAL AMP....	148 A			
TOTAL AMP. (DEMAND):	112 A	**TOTAL AMP. (DEMAND) x 125%**		140.2 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: RL5B

VOLTAGE: 208Y/120 3Ø | **FED FROM:** RL5A
MOUNTING: SURFACE | **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	CORRIDOR 500: REC	12	20 A	1	1	1.14 1.38			1	2	20 A	12	PREP RM 518: REC	R
R	CORRIDOR 500: REC	12	20 A	3	1		1.08 0.36		1	4	20 A	12	PREP RM 518: COUNTER REC	R
R	CORRIDOR 500: REC	12	20 A	5	1			1.14 1.00	1	6	20 A	12	PREP RRM 518: DISHWSHR (NOTE 7)	MS
R	TEAM AREA 513: REC	12	20 A	7	1	0.90 1.00			1	8	20 A	12	PREP RM 518: FRIDGE (NOTE 7)	MS
MS	BOYS RR 508: HD (NOTE 8)	12	20 A	9	1		1.00 1.50		1	10	20 A	12	RESOURCE RM 501: REC	R
MS	BOYS RR 508: HD (NOTE 8)	12	20 A	11	1			1.00 0.54	1	12	20 A	12	RESOURCE RM 501: COUNTER REC	R
MS	GIRLS RR 507: HD (NOTE 8)	12	20 A	13	1	1.00 0.70			1	14	15 A	12	EF-5.5 (NOTE 9)	V
MS	GIRLS RR 507: HD (NOTE 8)	12	20 A	15	1		1.00 0.70		1	16	15 A	12	EF-5.6 (NOTE 9)	V
R	RR 507/508: REC	12	20 A	17	1			0.72 0.53	1	18	15 A	12	EF-5.7 (NOTE 9)	V
MS	CORRIDOR 500: EWC (NOTE 7)	12	20 A	19	1	0.50 0.70			1	20	15 A	12	EF-5.8 (NOTE 9)	V
MS	CORRIDOR 500: EWC (NOTE 7)	12	20 A	21	1		0.50 1.18		1	22	15 A	12	EF-6.2 (NOTE 9)	V
MS	CORRIDOR 500: EWC (NOTE 7)	12	20 A	23	1			0.50 0.10	1	24	15 A	-	EF-5.1;EF-5.2;EF-5.3;EF-5.4 (NOTE 9)	V
MS	CORRIDOR 500: EWC (NOTE 7)	12	20 A	25	1	0.50 0.00			1	26	15 A	12	MOTORIZED DAMPERS	M
MS	MECH. CONTROLS	12	20 A	27	1		1.00 --		1	28	--	-	SPACE ONLY	
H	EWH 5.1 (NOTE 9)	-	20 A	29	1			0.75 --	1	30	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	31	1	0.00 --			1	32	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	33	1		0.00 --		1	34	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	35	1			0.00 --	1	36	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	37	1	0.00 --			1	38	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	39	1		0.00 --		1	40	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	41	1			0.00 --	1	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.75 kVA	100.00%	0.75 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	3.91 kVA	100.00%	3.91 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	9.56 kVA	100.00%	9.56 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	8.20 kVA	100.00%	8.20 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
8. REFER TO MECHANICAL SCHEDULES / SHEET E801 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	22.42 kVA			
TOTAL KVA (DEMAND):	22.42 kVA	67.1 A	71.3 A	52.3 A
TOTAL AMP....	62 A			
TOTAL AMP. (DEMAND):	62 A	**TOTAL AMP. (DEMAND) x 125%**		77.8 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: RL6A

VOLTAGE: 208Y/120 3Ø | **FED FROM:** RPD
MOUNTING: SURFACE | **MAIN TYPE:** MLO
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20-INCH WIDE
MAIN: 200 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	STEM 603: REC	12	20 A	1	1	0.90 0.72			1	2	20 A	12	BAND 605: REC	R
R	STEM 603: REC	12	20 A	3	1		0.90 1.08		1	4	20 A	12	BAND 605: REC	R
R	STEM 603: REC	12	20 A	5	1			0.90 1.26	1	6	20 A	12	BAND 605: REC	R
R	CHORUS 604: REC	12	20 A	7	1	0.72 1.44			1	8	20 A	12	CORRIDOR 200: REC	R
R	CHORUS 604: REC	12	20 A	9	1		0.90 0.72		1	10	20 A	12	AREA 600 EXTERIOR: REC	R
R	AGRI LAB 606: REC	12	20 A	11	1			0.72 0.50	1	12	15 A	12	MOTORIZED DAMPERS	M
R	AGRI LAB 606: REC	12	20 A	13	1	1.08 0.20			1	14	15 A	12	MOTORIZED DAMPERS	M
R	AGRI LAB 606: REC	12	20 A	15	1		1.08 0.90		1	16	20 A	12	MAIN ELECTRICAL: REC	R
MS	LTG CONTROLS 'LCE'	12	20 A	17	1			0.36 0.18	1	18	20 A	6	HOTBOX	MS
MS	SITE SIGNAGE (NOTE 7)	6	20 A	19	1	0.50 0.18			1	20	20 A	6	HOTBOX	MS
MS	SITE SIGNAGE (NOTE 7)	6	20 A	21	1		0.50 0.18		1	22	20 A	6	HOTBOX	MS
MS	SITE SIGNAGE (NOTE 7)	6	20 A	23	1			0.50 0.36	1	24	20 A	12	MECH. CONTROLS	MS
MI...	MISC.	12	20 A	25	1	0.24 --			1	26	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	27	1		0.00 --		1	28	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	29	1			0.00 --	1	30	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	31	1	0.00 --			1	32	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	33	1		0.00 --		1	34	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	35	1			0.00 --	1	36	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	37	1	0.00 --			1	38	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	39	1		0.00 --		1	40	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	41	1			0.00 --	1	42	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	0.70 kVA	100.00%	0.70 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	13.14 kVA	88.05%	11.57 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	3.18 kVA	100.00%	3.18 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITHOUT THE LOCK INSTALLED.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	17.02 kVA			
TOTAL KVA (DEMAND):	15.45 kVA	51.4 A	53.7 A	39.8 A
TOTAL AMP....	47 A			
TOTAL AMP. (DEMAND):	43 A	**TOTAL AMP. (DEMAND) x 125%**		53.6 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: RPD

VOLTAGE: 208Y/120 3Ø | **FED FROM:** T-RPD
MOUNTING: SURFACE | **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** I-LINE
MAIN: 500 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
F	PANEL 'RL6A'	NOTE 7	200 A	1	3	5.98 32.13			3	2	400 A	NOTE 7	PANEL 'KP1A'	F
				3			6.26 31.95			4				
				5				4.78 32.99		6				
F	PANEL 'ML6A'	NOTE 7	150 A	7	3	4.48 --			1	8	--	-	SPACE ONLY	
				9			3.48 --		1	10	--	-	SPACE ONLY	
				11				4.35 --	1	12	--	-	SPACE ONLY	
	SPACE ONLY	-	--	13	1	-- --			1	14	--	-	SPACE ONLY	
	SPACE ONLY	-	--	15	1		-- --		1	16	--	-	SPACE ONLY	
	SPACE ONLY	-	--	17	1			-- --	1	18	--	-	SPACE ONLY	
	SPACE ONLY	-	--	19	1	-- --			1	20	--	-	SPACE ONLY	
	SPACE ONLY	-	--	21	1		-- --		1	22	--	-	SPACE ONLY	
	SPACE ONLY	-	--	23	1			-- --	1	24	--	-	SPACE ONLY	

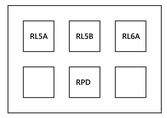
	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	2.25 kVA	100.00%	2.25 kVA
C	COOLING	2.00 kVA	100.00%	2.00 kVA
V	VENTILATION	0.87 kVA	100.00%	0.87 kVA
M	MOTORS	7.27 kVA	100.00%	7.27 kVA
K	KITCHEN	78.25 kVA	65.00%	50.86 kVA
R	RECEPTACLES	18.36 kVA	77.23%	14.18 kVA
WH	WATER HEATER	2.20 kVA	100.00%	2.20 kVA
MS	MISC.	15.20 kVA	100.00%	15.20 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	126.40 kVA			
TOTAL KVA (DEMAND):	94.83 kVA	355.5 A	347.4 A	351.6 A
TOTAL AMP....	351 A			
TOTAL AMP. (DEMAND):	263 A	**TOTAL AMP. (DEMAND) x 125%**		329.0 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.



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Lenoir County
EB Frink Middle School
405 North Charles Street
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ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS.
1	02/18/2025	BID SET /AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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PANEL SCHEDULES

E-706

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NEC 702 PANEL: SH1A

VOLTAGE: 480Y/277 3Ø **FED FROM:** ATS-SB
MOUNTING: SURFACE **MAIN TYPE:** MCB **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 **PHASE:** 3 **AIC:** 42 KAIC
MAIN: 150 A **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
				1		20.40 --			1	2	--	-	SPACE ONLY	
F	PANEL 'SL1A' VIA T-SL1A	NOTE 7	100 A	3	3		18.74 --		1	4	--	-	SPACE ONLY	
				5				16.88 --	1	6	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	7	1	0.00 --			1	8	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	9	1		0.00 --		1	10	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	11	1			0.00 --	1	12	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	13	1	0.00 --			1	14	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	15	1		0.00 --		1	16	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	17	1			0.00 --	1	18	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	19	1	0.00 --			1	20	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	21	1		0.00 --		1	22	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	23	1			0.00 --	1	24	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	3.68 kVA	100.00%	3.68 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	12.72 kVA	89.31%	11.36 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	39.62 kVA	100.00%	39.62 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. SEE RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	56.02 kVA			
TOTAL KVA (DEMAND):	54.66 kVA	74.7 A	68.7 A	60.9 A
TOTAL AMP....	67 A			
TOTAL AMP. (DEMAND):	66 A	**TOTAL AMP. (DEMAND) x 125%**		82.2 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

NEC 702 PANEL: SL1A

VOLTAGE: 208Y/120 3Ø **FED FROM:** T-SL1A
MOUNTING: SURFACE **MAIN TYPE:** MCB **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 **PHASE:** 3 **AIC:** 10 KAIC
MAIN: 225 A **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
				1		3.58 7.16				2				
F	PANEL 'SL3A'	NOTE 7	100 A	3	3		2.50 5.00		3	4	100 A	NOTE 7	PANEL 'SL4A'	F
				5				2.50 5.00		6				
				7		3.58 1.00				8				
F	PANEL 'SL5A'	NOTE 7	100 A	9	3		2.50 1.00		2	10	20 A	12	MDF 602A: L6-30R	MS
				11				2.50 1.07		12				
R	MDF 602A: QUADS	12	20 A	13	1	0.72 1.07			3	14	15 A	NOTE 10	WALK-IN COOLER COND. UNIT	M
MS	MDF 602A: DED. QUAD	12	20 A	15	1		0.50 1.07			16				
MS	MDF 602A: DED. QUAD	12	20 A	17	1			0.50 0.12	2	18	15 A	NOTE 10	FREEZER EVAP COIL (NOTE 8)	M
MS	MDF 602A: DED. QUAD	12	20 A	19	1	0.50 0.12				20				
MS	MDF 602A: L5-30R	10	30 A	21	1		2.00 0.20		1	22	20 A	12	GEN.: EPO	MS
MS	MDF 602A: L5-30R	10	30 A	23	1			2.00 0.18	1	24	20 A	12	GEN.: REC	R
Sp...	SPARE	-	20 A	25	1	0.00 0.60			2	26	20 A	12	GEN. BLOCK HEATER	MS
Sp...	SPARE	-	20 A	27	1		0.00 0.60			28				
MS	WALK-IN FREEZER COND. UNIT	NOTE 10	20 A	29	3	1.57 0.00			1	30	20 A	12	GEN. BATTERY CHARGER	MS
				31				1.57 0.00	1	32	20 A	-	SPARE	Sp...
				33			1.57 0.00		1	34	20 A	-	SPARE	Sp...
M	COOLER EVAP COIL (NOTE 8 & 9)	-	15 A	35	1			0.24 0.00	1	36	20 A	-	SPARE	Sp...
MS	COOLER LIGHTS (NOTE 9)	-	20 A	37	1	0.50 0.00			1	38	20 A	-	SPARE	Sp...
MS	FZR HEAT TAPE (NOTE 8 & 9)	-	20 A	39	1		1.80 0.00		1	40	20 A	-	SPARE	Sp...
MS	FZR LTS & DOOR HEAT (NOTE 8 & 9)	-	20 A	41	1			0.70 0.00	1	42	20 A	-	SPARE	Sp...
Sp...	SPARE	-	20 A	43	1	0.00 --			1	44	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	45	1		0.00 --		1	46	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	47	1			0.00 --	1	48	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	49	1	0.00 --			1	50	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	51	1		0.00 --		1	52	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	53	1			0.00 --	1	54	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	3.68 kVA	100.00%	3.68 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	12.72 kVA	89.31%	11.36 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	39.62 kVA	100.00%	39.62 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. SEE RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.
8. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
9. REFER TO REF. CONNECTION SCHEDULE SHEET E-501 FOR WIRE SIZE.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	56.02 kVA			
TOTAL KVA (DEMAND):	54.66 kVA	172.4 A	158.6 A	140.7 A
TOTAL AMP....	155 A			
TOTAL AMP. (DEMAND):	152 A	**TOTAL AMP. (DEMAND) x 125%**		189.7 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

NEC 702 PANEL: SL3A

VOLTAGE: 208Y/120 3Ø **FED FROM:** SL1A
MOUNTING: SURFACE **MAIN TYPE:** MCB **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 **PHASE:** 3 **AIC:** 10 KAIC
MAIN: 100 A **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MS	IDF 311: L5-30R	10	30 A	1	1	2.00 --			1	2	--	-	SPACE ONLY	
MS	IDF 311: L5-30R	10	30 A	3	1		2.00 --		1	4	--	-	SPACE ONLY	
MS	IDF 311: L5-30R	10	30 A	5	1			2.00 --	1	6	--	-	SPACE ONLY	
MS	IDF 311: DED. REC	12	20 A	7	1	0.50 --			1	8	--	-	SPACE ONLY	
MS	IDF 311: DED. REC	12	20 A	9	1		0.50 --		1	10	--	-	SPACE ONLY	
MS	IDF 311: DED. REC	12	20 A	11	1			0.50 --	1	12	--	-	SPACE ONLY	
R	IDF 311: REC	12	20 A	13	1	1.08 --			1	14	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	15	1		0.00 --		1	16	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	17	1			0.00 --	1	18	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	19	1	0.00 --			1	20	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	21	1		0.00 --		1	22	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	23	1			0.00 --	1	24	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	2.58 kVA	100.00%	2.58 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	6.00 kVA	100.00%	6.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	8.58 kVA			
TOTAL KVA (DEMAND):	8.58 kVA	29.8 A	20.8 A	20.8 A
TOTAL AMP....	24 A			
TOTAL AMP. (DEMAND):	24 A	**TOTAL AMP. (DEMAND) x 125%**		29.8 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

NEC 702 PANEL: SL4A

VOLTAGE: 208Y/120 3Ø **FED FROM:** SL1A
MOUNTING: SURFACE **MAIN TYPE:** MCB **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 **PHASE:** 3 **AIC:** 10 KAIC
MAIN: 100 A **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MS	IDF 410: L5-30R	10	30 A	1	1	2.00 1.08			1	2	20 A	12	IDF 114: REC	R
MS	IDF 410: L5-30R	10	30 A	3	1		2.00 2.00		1	4	30 A	10	IDF 114: L5-30R	MS
MS	IDF 410: L5-30R	10	30 A	5	1			2.00 2.00	1	6	30 A	10	IDF 114: L5-30R	MS
MS	IDF 410: DED. REC	12	20 A	7	1	0.50 2.00			1	8	30 A	10	IDF 114: L5-30R	MS
MS	IDF 410: DED. REC	12	20 A	9	1		0.50 0.50		1	10	20 A	12	IDF 114: DED. REC	MS
MS	IDF 410: DED. REC	12	20 A	11	1			0.50 0.50	1	12	20 A	12	IDF 114: DED. REC	MS
R	IDF 410: REC	12	20 A	13	1	1.08 0.50			1	14	20 A	12	IDF 114: DED. REC	MS
Sp...	SPARE	-	20 A	15	1		0.00 --		1	16	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	17	1			0.00 --	1	18	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	19	1	0.00 --			1	20	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	21	1		0.00 --		1	22	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	23	1			0.00 --	1	24	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	5.16 kVA	100.00%	5.16 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	12.00 kVA	100.00%	12.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	17.16 kVA			
TOTAL KVA (DEMAND):	17.16 kVA	59.7 A	41.7 A	41.7 A
TOTAL AMP....	48 A			
TOTAL AMP. (DEMAND):	48 A	**TOTAL AMP. (DEMAND) x 125%**		59.5 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

NEC 702 PANEL: SL5A

VOLTAGE: 208Y/120 3Ø **FED FROM:** SL1A
MOUNTING: SURFACE **MAIN TYPE:** MCB **TYPE:** 20-INCH WIDE
ENCLOSURE: NEMA1 **PHASE:** 3 **AIC:** 10 KAIC
MAIN: 100 A **WIRE:** 4

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MS	IDF 511: L5-30R	10	30 A	1	1	2.00 --			1	2	--	-	SPACE ONLY	
MS	IDF 511: L5-30R	10	30 A	3	1		2.00 --		1	4	--	-	SPACE ONLY	
MS	IDF 511: L5-30R	10	30 A	5	1			2.00 --	1	6	--	-	SPACE ONLY	
MS	IDF 511: DED. REC	12	20 A	7	1	0.50 --			1	8	--	-	SPACE ONLY	
MS	IDF 511: DED. REC	12	20 A	9	1		0.50 --		1	10	--	-	SPACE ONLY	
MS	IDF 511: DED. REC	12	20 A	11	1			0.50 --	1	12	--	-	SPACE ONLY	
R	IDF 511: REC	12	20 A	13	1	1.08 --			1	14	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	15	1		0.00 --		1	16	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	17	1			0.00 --	1	18	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	19	1	0.00 --			1	20	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	21	1		0.00 --		1	22	--	-	SPACE ONLY	
Sp...	SPARE	-	20 A	23	1			0.00 --	1	24	--	-	SPACE ONLY	

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	0.00 kVA	0.00%	0.00 kVA
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	2.58 kVA	100.00%	2.58 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	6.00 kVA	100.00%	6.00 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

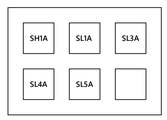
NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.

		TOTAL PER PHASE: (CONNECTED)		
TOTAL KVA...	8.58 kVA			
TOTAL KVA (DEMAND):	8.58 kVA	29.8 A	20.8 A	20.8 A
TOTAL AMP....	24 A			
TOTAL AMP. (DEMAND):	24 A	**TOTAL AMP. (DEMAND) x 125%**		29.8 A

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

ALL PANELBOARDS SHOWN ON THIS SHEET ARE BACKED UP BY THE EMERGENCY GENERATOR.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.



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405 North Charles Street
La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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EMERGENCY PANEL SCHEDULES

E-707

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NEC 700 PANEL: LSH

VOLTAGE: 480Y/277 3Ø
FED FROM: ATS-LS
MOUNTING: SURFACE
ENCLOSURE: NEMA1
MAIN: 100 A
MAIN TYPE: MAIN FUSE
PHASE: 3
WIRE: 4
MFR: COOPER BUSSMAN
TYPE: FUSED
AIC: 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
L	AREA 100 EMERG. LTS	12	20 A	1	1	3.18 0.00			1	2	20 A	-	SPARE	S...
L	AREA 200 EMERG. LTS	12	20 A	3	1		2.10 0.00		1	4	20 A	-	SPARE	S...
L	AREA 300 EMERG. LTS	12	20 A	5	1			1.08 0.00	1	6	20 A	-	SPARE	S...
L	AREA 400 EMERG. LTS	12	20 A	7	1	0.71 0.00			1	8	20 A	-	SPARE	S...
L	AREA 500 EMERG. LTS	12	20 A	9	1		0.71 0.00		1	10	20 A	-	SPARE	S...
L	AREA 600 EMERG. LTS	12	20 A	11	1			1.25 0.00	1	12	20 A	-	SPARE	S...
L	AREA 100/200 MEZZ. EMERG. LTS	12	20 A	13	1	0.92 0.00			1	14	20 A	-	SPARE	S...
LE	EXTERIOR LTS	12	20 A	15	1		0.80 0.00		1	16	20 A	-	SPARE	S...
LE	EXTERIOR LTS	12	20 A	17	1			0.67 0.00	1	18	20 A	-	SPARE	S...
LE	EXTERIOR LTS	12	20 A	19	1	0.61 0.00			1	20	20 A	-	SPARE	S...
S...	SPARE	-	20 A	21	1		0.00 0.00		1	22	20 A	-	SPARE	S...
S...	SPARE	-	20 A	23	1			0.00 0.00	1	24	20 A	-	SPARE	S...
S...	SPARE	-	20 A	25	1	0.00 0.00			1	26	20 A	-	SPARE	S...
S...	SPARE	-	20 A	27	1		0.00 0.00		1	28	20 A	-	SPARE	S...
S...	SPARE	-	20 A	29	1			0.00 0.00	1	30	20 A	-	SPARE	S...
S...	SPARE	-	20 A	31	1	0.00 0.00			1	32	20 A	-	SPARE	S...
S...	SPARE	-	20 A	33	1		0.00 0.00		1	34	20 A	-	SPARE	S...
S...	SPARE	-	20 A	35	1			0.00 0.00	1	36	20 A	-	SPARE	S...
				37		0.00 2.00				38				
MS	SPD	8	30 A	39	3		0.00 1.00		3	40	25 A	NOTE 8	PANEL 'LSL' VIA T-LSL	F
				41				0.00 1.00		42				

	LOAD	Connected Load	Demand Factor	Estimated Demand	NOTES:
L	LIGHTS	9.95 kVA	125.00%	12.44 kVA	1. FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
LE	LIGHTING - EXTERIOR	2.08 kVA	125.00%	2.60 kVA	2. BASED ON COOPER BUSSMANN FUSE PANEL WITH BRANCH FUSES FOR
H	HEATING	0.00 kVA	0.00%	0.00 kVA	SELECTIVE COORDINATION.
C	COOLING	0.00 kVA	0.00%	0.00 kVA	3. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA	4. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
M	MOTORS	0.00 kVA	0.00%	0.00 kVA	5. PROVIDE METAL DIRECTORY FRAME.
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA	6. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA	7. THIS PANEL SHALL BE U.L. LISTED FOR USE AS S.E. EQUIP.
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA	8. REFER TO RISER DIAGRAM/ SHEET E-701 FOR WIRE SIZE.
MS	MISC.	4.00 kVA	100.00%	4.00 kVA	
S	Spare	0.00 kVA	0.00%	0.00 kVA	
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA	
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA	

TOTAL KVA...	16.03 kVA	TOTAL PER PHASE: (CONNECTED)			LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
TOTAL KVA (DEMAND):	19.04 kVA	27.1 A	17.0 A	14.4 A	F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.
TOTAL AMP....	19 A				
TOTAL AMP. (DEMAND):	23 A	**TOTAL AMP. (DEMAND) x 125%**		28.6 A	

NEC 700 PANEL: LSL

VOLTAGE: 208Y/120 3Ø
FED FROM: T-LSL
MOUNTING: SURFACE
ENCLOSURE: NEMA1
MAIN: 60 A
MAIN TYPE: MAIN FUSE
PHASE: 3
WIRE: 4
MFR: COOPER BUSSMAN
TYPE: FUSED
AIC: 10 KAIC

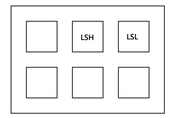
LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
MS	FACP (NOTE 9)	12	20 A	1	1	0.50 0.50			1	2	20 A	12	NAC IDF 113 (NOTE 8)	MS
MS	BDA (NOTE 9)	12	20 A	3	1		0.50 0.50		1	4	20 A	12	NAC IDF 311 (NOTE 8)	MS
MS	BDA (NOTE 9)	12	20 A	5	1			0.50 0.50	1	6	20 A	12	NAC IDF 410 (NOTE 8)	MS
MS	SPRINKLER BELL	12	20 A	7	1	0.50 0.50			1	8	20 A	12	NAC IDF 510 (NOTE 8)	MS
S...	SPARE	-	20 A	9	1		0.00 0.00		1	10	20 A	-	SPARE	S...
S...	SPARE	-	20 A	11	1			0.00 0.00	1	12	20 A	-	SPARE	S...
S...	SPARE	-	20 A	13	1	0.00 0.00			1	14	20 A	-	SPARE	S...
S...	SPARE	-	20 A	15	1		0.00 0.00		1	16	20 A	-	SPARE	S...
S...	SPARE	-	20 A	17	1			0.00 0.00	1	18	20 A	-	SPARE	S...
S...	SPARE	-	20 A	19	1	0.00 0.00			1	20	20 A	-	SPARE	S...
S...	SPARE	-	20 A	21	1		0.00 0.00		1	22	20 A	-	SPARE	S...
S...	SPARE	-	20 A	23	1			0.00 0.00	1	24	20 A	-	SPARE	S...
S...	SPARE	-	20 A	25	1	0.00 0.00			1	26	20 A	-	SPARE	S...
S...	SPARE	-	20 A	27	1		0.00 0.00		1	28	20 A	-	SPARE	S...
S...	SPARE	-	20 A	29	1			0.00 0.00	1	30	20 A	-	SPARE	S...
S...	SPARE	-	20 A	31	1	0.00 0.00			1	32	20 A	-	SPARE	S...
S...	SPARE	-	20 A	33	1		0.00 0.00		1	34	20 A	-	SPARE	S...
S...	SPARE	-	20 A	35	1			0.00 0.00	1	36	20 A	-	SPARE	S...
				37		0.00 0.00				38				
MS	SPD (NOTE 7)	8	30 A	39	3		0.00 0.00		1	40	20 A	-	SPARE	S...
				41				0.00 0.00	1	42	20 A	-	SPARE	S...

	LOAD	Connected Load	Demand Factor	Estimated Demand	NOTES:
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA	1. FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA	2. BASED ON COOPER BUSSMANN FUSE PANEL WITH BRANCH FUSES FOR
H	HEATING	0.00 kVA	0.00%	0.00 kVA	SELECTIVE COORDINATION.
C	COOLING	0.00 kVA	0.00%	0.00 kVA	3. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
V	VENTILATION	0.00 kVA	0.00%	0.00 kVA	4. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
M	MOTORS	0.00 kVA	0.00%	0.00 kVA	5. PROVIDE METAL DIRECTORY FRAME.
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA	6. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
R	RECEPTACLES	0.00 kVA	0.00%	0.00 kVA	7. PROVIDE "ALL MODES" SPD (40kA / MODE, 80kA / PHASE).
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA	8. PROVIDE BREAKER WITH HANDLE LOCK-ON DEVICE.
MS	MISC.	4.00 kVA	100.00%	4.00 kVA	
S	Spare	0.00 kVA	0.00%	0.00 kVA	
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA	
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA	

TOTAL KVA...	4.00 kVA	TOTAL PER PHASE: (CONNECTED)			LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
TOTAL KVA (DEMAND):	4.00 kVA	16.7 A	8.3 A	8.3 A	F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.
TOTAL AMP....	11 A				
TOTAL AMP. (DEMAND):	11 A	**TOTAL AMP. (DEMAND) x 125%**		13.9 A	

ALL PANELBOARDS SHOWN ON THIS SHEET ARE BACKED UP BY THE EMERGENCY GENERATOR.

EVERY CIRCUIT SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRECTORY THAT IS LOCATED ON THE FACE, INSIDE OF, OR IN AN APPROVED LOCATION ADJACENT TO THE PANEL DOOR IN THE CASE OF A PANELBOARD AND AT EACH SWITCH OR CIRCUIT BREAKER IN A SWITCHBOARD OR SWITCHGEAR. NO CIRCUIT SHALLBE DESCRIBED IN A MANNER THAT DEPENDS ON TRANSIENT CONDITIONS OF OCCUPANCY.



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No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS.
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ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
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EMERGENCY PANEL SCHEDULES

E-708

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PUMP SCHEDULE

SYMBOL	DESCRIPTION	ELECTRICAL DATA				DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZES
		HP	V	PH	HZ		
DBP1	DOMESTIC BOOSTER PUMP - DUPLEX PACKAGED SYSTEM (SINGLE POINT CONNECTION)	5.0 (EACH)	480	3	60	30A/F25A-3P-1	4#10, 1#10G., 3/4"C
CP1	CIRCULATION PUMP SERVING WH1 INLINE	1/6	120	1	60	MOTOR RATED SWITCH	2#12, 1#12G., 3/4"C
CP2	CIRCULATION PUMP SERVING WH2 INLINE	1/6	120	1	60	MOTOR RATED SWITCH	2#12, 1#12G., 3/4"C

WATER HEATER SCHEDULE

SYMBOL	DESCRIPTION	ELECTRICAL DATA		DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZES
		V	PH		
WH1	SCHOOL (LESS KITCHEN) VERTICAL STORAGE, CONDENSING, GAS-FIRED ELECTRICAL: 120V IGNITION CIRCUIT	120	1	MOTOR RATED SWITCH	2#12, 1#12G., 3/4"C
WH2	KITCHEN VERTICAL STORAGE, CONDENSING, GAS-FIRED ELECTRICAL: 120V IGNITION CIRCUIT	120	1	MOTOR RATED SWITCH	2#12, 1#12G., 3/4"C

KITCHEN HOOD SCHEDULE

(FURNISHED AND INSTALLED BY THE M.C.)

KEF-1 CAPTIVE-AIRE MODEL EADU240H EXHAUST FAN; 5-HP 460V-3PH FAN MOTOR.
FAN MOTOR DISCONNECT SIZE: PROVIDED BY MC.
CONDUIT AND CONDUCTOR SIZE: 4#12, 1#12G., 3/4"C.

MUA-1 CAPTIVE-AIRE MODEL EA2-D.250-20D LP GAS HEAT MAKE-UP AIR UNIT; 3-HP 460V-3PH FAN MOTOR, 13.1A MCA, 20A MOCP.
FAN MOTOR DISCONNECT SIZE: PROVIDED BY MC.
CONDUIT AND CONDUCTOR SIZE: 4#12, 1#12G., 3/4"C.

WATER SOURCE HEAT PUMP SCHEDULE

SYMBOL	EVAPORATOR COOLING COIL NOMINAL (TONS)	FAN MOTOR HP	ELECTRICAL DATA MCA	MOCP	VOLTAGE	PHASE	DISCONNECT SIZE	CONDUIT AND CONDUCTOR SIZE
WSHP-1.1	1.5	0.33	11.6	15.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-1.2	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-1.3	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-1.4	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-1.5	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-1.6	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-1.7	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-1.8	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-1.9	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-1.10	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-2.1	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-2.2	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-2.3	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-2.4	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-2.5	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-2.6	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-2.7	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-2.8	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-2.9	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-2.10	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-3.1	1.5	0.33	11.6	15.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-3.2	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.3	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.4	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-3.5	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.6	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.7	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.8	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-3.9	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-3.10	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.11	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.12	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-3.13	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-3.14	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-4.1	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-4.2	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.3	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.4	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.5	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.6	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.7	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.8	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-4.9	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-4.10	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.11	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.12	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-4.13	1.5	0.33	11.6	15.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-5.1	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-5.2	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.3	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.4	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.5	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.6	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.7	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.8	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-5.9	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-5.10	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.11	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.12	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-5.13	1.5	0.33	11.6	15.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-6.1	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-6.2	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-6.3	5.0	0.33	14.1	15.0	460 V	3	PROVIDED BY MC	4#12, 1#12G., 3/4"C.
WSHP-6.4	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-D.1	10.0	0.33	24.8	30.0	460 V	3	PROVIDED BY MC	4#10, 1#10G., 3/4"C.
WSHP-D.2	10.0	0.33	24.8	30.0	460 V	3	PROVIDED BY MC	4#10, 1#10G., 3/4"C.
WSHP-G.1	20.0	0.33	40.3	60.0	460 V	3	PROVIDED BY MC	4#4, 1#10G., 1-1/4"C.
WSHP-G.2	20.0	0.33	40.3	60.0	460 V	3	PROVIDED BY MC	4#4, 1#10G., 1-1/4"C.
WSHP-K.1	3.0	0.33	19.5	30.0	265 V	1	PROVIDED BY MC	2#10, 1#10G., 3/4"C.
WSHP-K.2	4.0	0.33	26.0	40.0	265 V	1	PROVIDED BY MC	2#8, 1#10G., 3/4"C.
WSHP-K.3	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-M.1	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-M.2	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-M.3	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-M.4	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
WSHP-M.5	2.0	0.33	14.6	20.0	265 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.

PUMP SCHEDULE

SYMBOL	MOTOR POWER	MAX POWER INPUT	VOLT	PH	DISCONNECT TYPE	CONDUIT AND CONDUCTOR SIZE
P-2T	0.355 hp	370.0 W	208 V	1	MOTOR RATED SWITCH	3#12, 1#12G., 3/4"C
P-3T	0.355 hp	370.0 W	208 V	1	MOTOR RATED SWITCH	3#12, 1#12G., 3/4"C
P-4T	0.355 hp	370.0 W	208 V	1	MOTOR RATED SWITCH	3#12, 1#12G., 3/4"C
P-5T	0.925 hp	890.0 W	208 V	1	MOTOR RATED SWITCH	3#12, 1#12G., 3/4"C
P-10T	0.925 hp	890.0 W	208 V	1	MOTOR RATED SWITCH	3#12, 1#12G., 3/4"C
P-20T	1.500 hp	1520.0 W	208 V	1	MOTOR RATED SWITCH	3#12, 1#12G., 3/4"C

ELECTRIC WALL HEATER SCHEDULE

SYMBOL	LOCATION	KW	ELECTRICAL DATA VOLT	PH	DISCONNECT SIZE	CONDUIT AND CONDUCTOR SIZE
EWH-1.1	MECH 119	1.5	277 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-2.1	STAIR 216	1.5	277 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-3.1	PUMP 300	0.8	120 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-4.1	PUMP 400	0.8	120 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-5.1	PUMP 500	0.8	120 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-6.1	MECH 602B	1.5	277 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-6.2	EM ELEC 601B	0.8	120 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-6.3	ELEC 601	0.8	120 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-6.4	FIRE PUMP 607	1.5	277 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EWH-6.5	MECH 600C	0.8	120 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.

DUCTLESS OUTDOOR UNIT SCHEDULE

ID	ELECTRICAL DATA MCA	MOCP	VOLTAGE	PH	DISCONNECT SIZE	CONDUIT AND CONDUCTOR SIZE
ODU-1.1	16.0 A	27.0 A	208 V	1	30A/FPN-2P-1	3#10, 1#10G., 3/4 "C
ODU-3.1	16.0 A	27.0 A	208 V	1	30A/FPN-2P-1	3#10, 1#10G., 3/4 "C
ODU-4.1	16.0 A	27.0 A	208 V	1	30A/FPN-2P-1	3#10, 1#10G., 3/4 "C
ODU-5.1	16.0 A	27.0 A	208 V	1	30A/FPN-2P-1	3#10, 1#10G., 3/4 "C
ODU-6.1	16.0 A	27.0 A	208 V	1	30A/FPN-2P-1	3#10, 1#10G., 3/4 "C

DUCTLESS INDOOR UNIT SCHEDULE

ID	ELECTRICAL DATA MCA	VOLTAGE	PH	INTERLOCK ID	DISCONNECET SIZE	CONDUIT AND CONDUCTOR SIZE
IDU-1.1	1.0 A	208 V	1	ODU-1.1	30A/F15A-2P-1	3#12, 1#12G., 3/4"C
IDU-3.1	1.0 A	208 V	1	ODU-3.1	30A/F15A-2P-1	3#12, 1#12G., 3/4"C
IDU-4.1	1.0 A	208 V	1	ODU-4.1	30A/F15A-2P-1	3#12, 1#12G., 3/4"C
IDU-5.1	1.0 A	208 V	1	ODU-5.1	30A/F15A-2P-1	3#12, 1#12G., 3/4"C
IDU-6.1	1.0 A	208 V	1	ODU-6.1	30A/F15A-2P-1	3#12, 1#12G., 3/4"C

EXHAUST FAN SCHEDULE

SYMBOL	LOCATION	ELECTRICAL DATA WATTS	H.P.	VOLT-PHØ	DISCONNECT SIZE	CONDUIT AND CONDUCTOR SIZE
DEF-1	KITCHEN ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-1.1	MECH PLATFORM 601	530	0.13	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-1.2	MECH PLATFORM 601	530	0.13	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-1.3	MECH PLATFORM 100	1180	0.50	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-1.4	MECH PLATFORM 100	530	0.10	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.1	TLT 214E	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.2	LCKRS 214F	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.3	CUST 214H	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.4	KILN 215B	48	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.5	MECH PLATFORM 200	1180	0.50	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.6	ART 215	1180	0.50	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2.7	MECH PLATFORM 200	1180	0.50	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.1	STAFF TLT 401A	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.2	STAFF TLT 406	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.3	300 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.4	JAN 409	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.5	300 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.6	300 ROOF	530	0.13	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.7	300 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3.8	TLT/SWR 302A	48	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.1	STAFF TLT 401A	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.2	TLT/SWR 402A	48	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.3	STAFF TLT 406	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.4	JAN 409	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.5	400 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.6	400 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.7	400 ROOF	530	0.13	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-4.8	400 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.1	STAFF TLT 401A	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.2	TLT/SWR 402A	48	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.3	STAFF TLT 506	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.4	JAN 509	17	[redacted]	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.5	500 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.6	500 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.7	500 ROOF	530	0.13	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-5.8	500 ROOF	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-6.1	602B MECH	100	0.13	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-6.2	601B EM ELEC	20	0.02	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-6.3	601 ELEC	700	0.25	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-6.4	600 ROOF	1180	0.50	115 V-1Ø	PROVIDED BY MC	2#12, 1#12G., 3/4"C.

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Construction Documents

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ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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MECHANICAL EQUIPMENT CONNECTION SCHEDULE

E-801

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LIGHTING SEQUENCE OF OPERATION

A COMPLETE AND OPERATIONAL LIGHTING CONTROL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS INTENDED ON THESE PLANS.

SYSTEM DESCRIPTION:
LIGHTING CONTROLS ARE BASED ON STAND ALONE OCCUPANCY SENSORS AND CONTROLS. DEVICES SHALL BE INDEPENDENT AND NOT TIED INTO THE BAS SYSTEM.

SENSORS
1. ALL OCCUPANCY SENSORS SHALL BE PROGRAMMED FOR AUTOMATIC ON (FULL LEVELS) AND AUTOMATIC OFF.
2. LARGE PUBLIC SPACES SHALL BE OCCUPANCY BASED WHERE PROVIDED WITH A SENSOR.

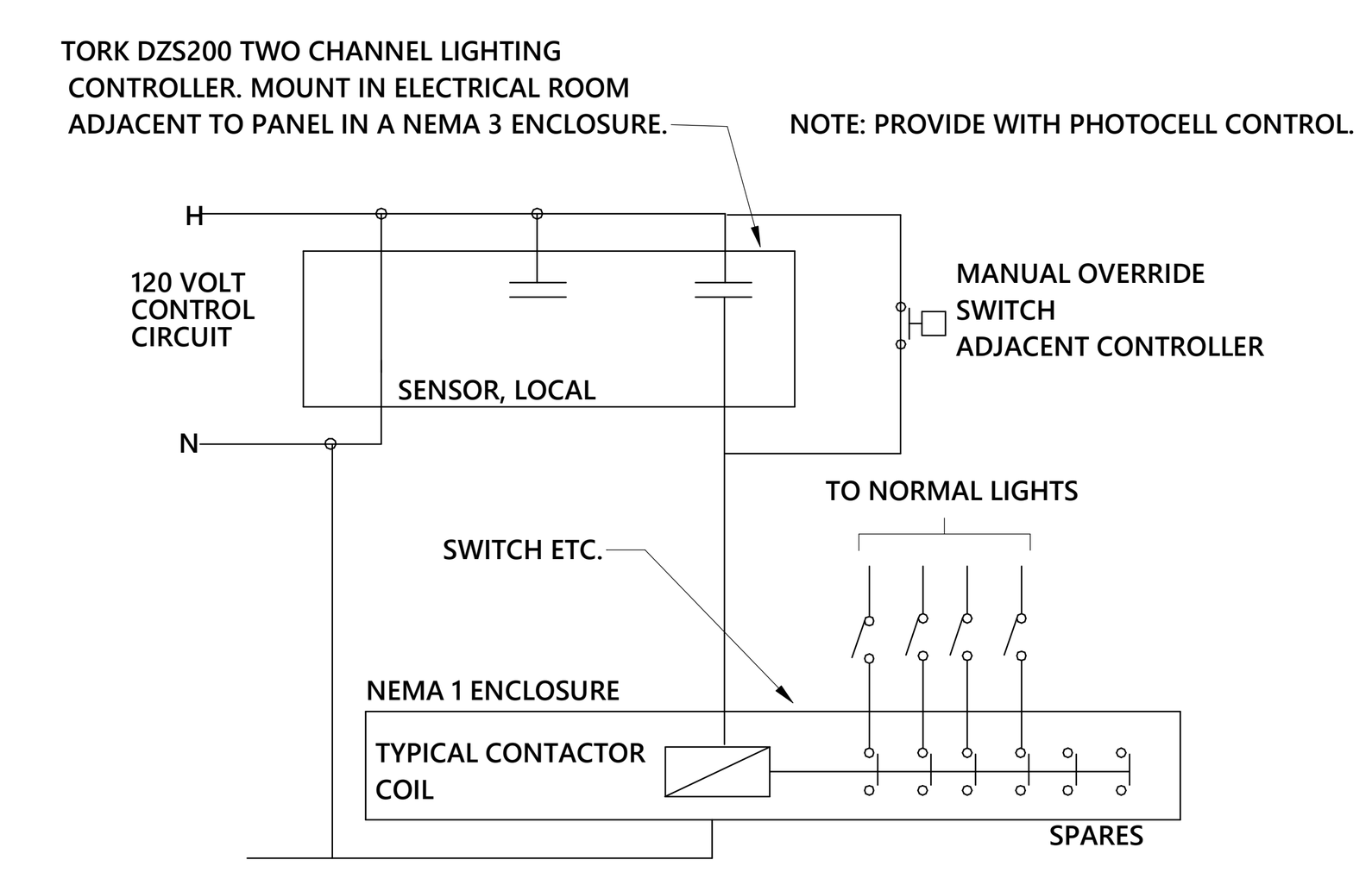
TIMER SETTINGS:
A. WALL SWITCH PASSIVE INFRARED: 2 MINUTES FOR INDIVIDUAL RESTROOMS AND STORAGE ROOMS.
B. CLASSROOMS OCCUPANCY: 15 MINUTES.
C. WALL SWITCH OCCUPANCY SENSORS OFFICES: 5 MINUTES.
D. WALL SWITCH OCCUPANCY SENSORS CONFERENCE: 10 MINUTES.
E. OTHER SPACES NOT LISTED: 30 MINS.

EXTERIOR LIGHTING CONTROL:
A. EXTERIOR LIGHTING CONTROL IS VIA SCHEDULED TIME CONTROL AND PHOTOCELL.
B. EXTERIOR LIGHTING IS BROKEN UP INTO (3) SCHEDULED ZONES:
1. BUILDING MOUNTED LIGHTING
2. SITE LIGHTING
3. SIGNAGE
C. FLAG POLE CONTROL IS VIA PHOTOCELL.

EMERGENCY LIGHTING CONTROL:
A. EXTERIOR EMERGENCY LIGHTING IS VIA EMERGENCY TRANSFER DEVICE (ENTIRE CIRCUIT.) UPON LOSS OF NORMAL POWER, UL924 TRANSFER DEVICE SHALL BYPASS ALL SWITCHING AND TURN FIXTURES ON.
B. MULTIPLE FIXTURES OR LISTED FIXTURES ARE USED TO MEET REQUIRED EGRESS PATH ILLUMINATION.
C. INTERIOR EMERGENCY LIGHTING IS SWITCHED VIA AN EMERGENCY RELAY THAT IS BACKED UP BY A GENERATOR LIFE SAFETY CIRCUIT. EMERGENCY RELAY CONTAINS BOTH AN EMERGENCY CIRCUIT AND A NORMAL CIRCUIT. DURING NORMAL CONDITIONS THE FIXTURE IS ABLE TO BE COMPLETELY TURN OFF. IN EMERGENCY CONDITIONS THE RELAY BYPASSES ALL SWITCHING AND PROVIDES A CONSTANTLY HOT SOURCE VIA GENERATOR BACK LIFE SAFETY CIRCUIT.
D. EMERGENCY LIGHTING IN MAIN AND EMERGENCY ELECTRICAL ROOM WILL ALSO BE PROVIDED WITH BATTERY BACKUP.

TIME SCHEDULES:
A. TIME SCHEDULES ARE TO BE DETERMINED BY THE OWNER. THIS SHALL BE COORDINATED AND DIRECTED BY OWNER AND INPUT BY THE ELECTRICIAN. SEE THE BELOW INITIAL SETTING UNTIL OWNER HAS GIVEN INPUT.
B. EXTERIOR INITIAL TIME SCHEDULES SHALL BE:
7PM ON, 7 AM OFF

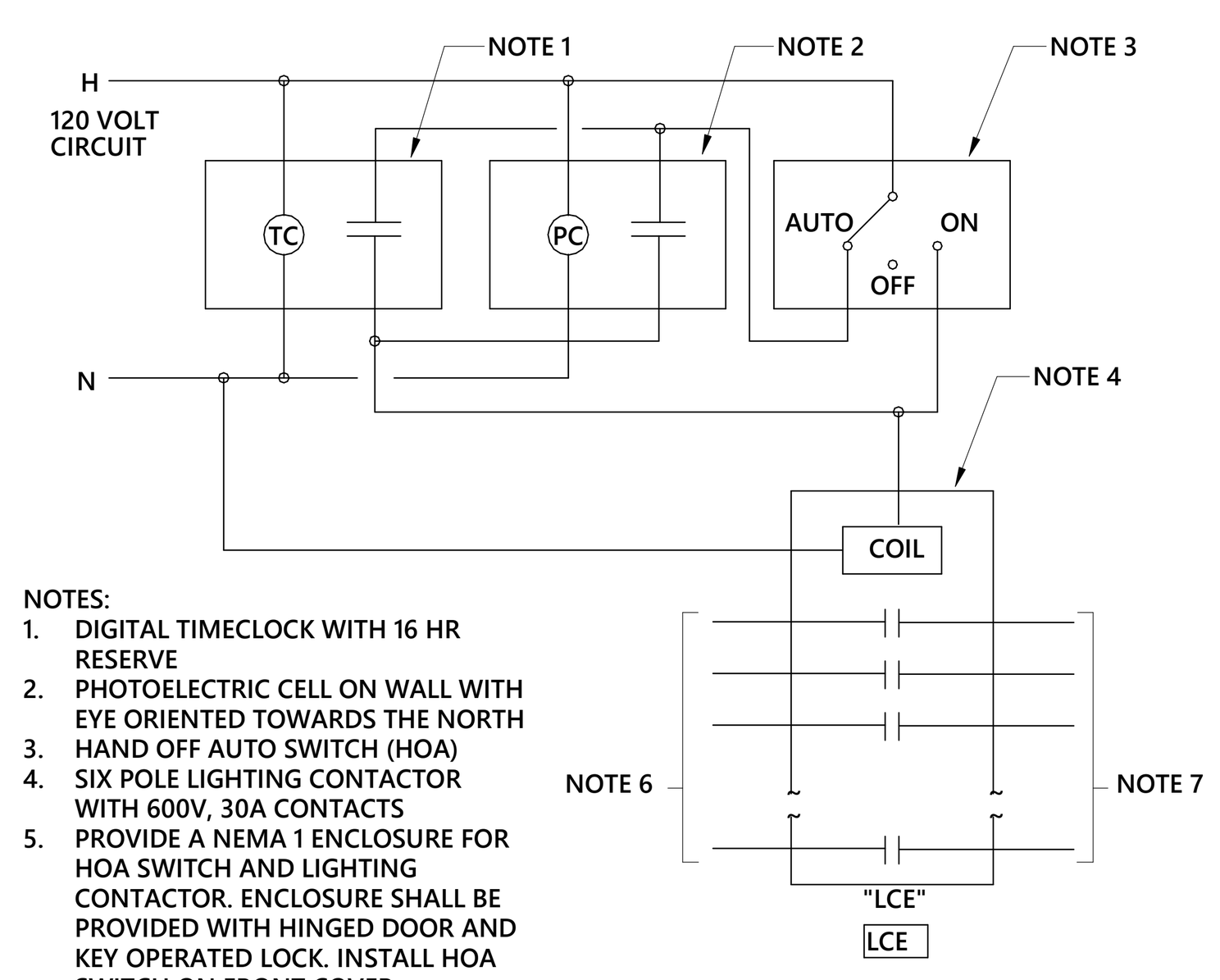
INDIVIDUAL AREAS INTENT OF CONTROL:
- CORRIDORS/HALLWAYS: ON/OFF WALL SWITCH WITH OCCUPANCY SENSORS. EMERGENCY LIGHTING SHALL SUPPLEMENT THIS AREA VIA RELAY CONTROL
- LOBBY/RECEPTION: ON/OFF/DIM WALL SWITCH WITH OCCUPANCY SENSORS. EMERGENCY LIGHTING SHALL SUPPLEMENT THIS AREA VIA RELAY CONTROL.
- GROUP RESTROOMS: KEYED ON/OFF WALL SWITCH VACANCY SENSORS. OCCUPANCY SENSORS SHALL OPERATE NORMAL AND EMERGENCY FIXTURES IN THIS AREA.
- INDIVIDUAL RESTROOMS: ON/OFF WALL SWITCH OCCUPANCY SENSORS.
- ELECTRICAL ROOMS, BOILER ROOMS, ETC.: ON/OFF WALL SWITCH
- STORAGE ROOMS: ON/OFF WALL SWITCH OCCUPANCY SENSORS.
- OFFICES/SMALL WORKROOMS: ON/OFF/DIM WALL SWITCHES WITH OCCUPANCY SENSORS.
- SMALL STORAGE/UTILITY ROOMS: ON/OFF WALL SWITCH OCCUPANCY SENSORS.
- CONFERENCE ROOMS:ON/OFF/DIM BY ZONE. OCCUPANCY SENSORS.
- CAFE/DINING: ON/OFF/DIM BY ZONE. OCCUPANCY SENSORS.
- CLASSROOMS: (2-4) ZONES. ZONE ONE IS ON/OFF WITH FULL DIMMING, ZONE TWO IS ON/OFF WITH FULL DIMMING, ZONE THREE (WHEN SHOWN) IS ON/OFF WITH FULL DIMMING. ZONE FOUR (WHEN SHOWN) ON/OFF WITH FULL DIMMING. ZONES WORK INDEPENDENTLY OF EACH OTHER.
SOME LARGE/MULTI EXIT CLASSROOMS ARE SUPPLEMENTED WITH EMERGENCY RATED RELAYS FOR SWITCHED EMERGENCY APPLICATION OF ON/OFF DIMMING. EMERGENCY IS ZONED WITH LOCAL NORMAL ZONE. SENSORS ARE OCCUPANCY CONTROLLED.
- GYM/MULTIPURPOSE: ON/OFF DIM BY ZONE. OCCUPANCY SENSORS



CONTACTOR	COIL VOLTAGE	POLES	CIRCUITS SWITCHED	ZONE DESCRIPTION
LCE	120	*8*	*MH6A-17, MH6A-30, MH6A-31, MH6A-33, MH6A-35 MH6A-37, MH6A-39*	*EXTERIOR LIGHTING*

NOTE: EMERGENCY FIXTURES SHALL HAVE "AVAILABLE" POWER AT ALL TIMES.

1 LIGHTING CONTACTOR DETAIL W-TIMER
NOT TO SCALE



NOTES:
1. DIGITAL TIMECLOCK WITH 16 HR RESERVE
2. PHOTOELECTRIC CELL ON WALL WITH EYE ORIENTED TOWARDS THE NORTH
3. HAND OFF AUTO SWITCH (HOA)
4. SIX POLE LIGHTING CONTACTOR WITH 600V, 30A CONTACTS
5. PROVIDE A NEMA 1 ENCLOSURE FOR HOA SWITCH AND LIGHTING CONTACTOR. ENCLOSURE SHALL BE PROVIDED WITH HINGED DOOR AND KEY OPERATED LOCK. INSTALL HOA SWITCH ON FRONT COVER.
6. LIGHTING CIRCUITS FROM PANELBOARDS.
7. LIGHTING CIRCUITS TO BLDG/SITE, SEE PLANS.

2 EXTERIOR LIGHTING CONTROL DIAGRAM
NOT TO SCALE

NOTES:
1. ALL FIXTURES SHALL BE LED UNLESS OTHERWISE SPECIFIED. COLOR TEMPERATURE SHALL BE 4000K UNLESS OTHERWISE NOTED.
2. LED DRIVERS SHALL BE PROVIDED FROM PER MANUFACTURER RECOMMENDATION. AS PART OF THIS RECOMMENDATION COORDINATE THE REQUIRED WAVE OUTPUT SO THEY ARE COMPATIBLE. THIS INCLUDES EMERGENCY DRIVERS.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS.
4. FIXTURES IN FIRE RATED CEILING SHALL BE PROVIDED WITH FIRE RATED TENTS AS REQUIRED.
5. SUSPEND ALL FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
6. FIXTURES WITH EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH 1100 LUMEN INVERTERS.
7. PROVIDE INTEGRAL SURGE PROTECTION ON ALL EXTERIOR LED DRIVER FIXTURE TYPES.
8. DIMMING OF FIXTURES SHALL BE WITH A SWITCH AS RECOMMENDED BY THE DRIVER MANUFACTURER.
9. THE CONTRACTOR SHALL VERIFY THE LEAD TIME OF ALL PRODUCTS SPECIFIED IN THIS SCHEDULE AT THE TIME OF PACKAGE QUOTE.
10. DURING THE BID PROCESS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DELIVERY/SCHEDULING ISSUES.
11. NO SUBSTITUTIONS WILL BE ALLOWED DUE TO LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER BID.
12. ALL EXPEDITED EXPENSES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
13. FIXTURES TO BE INSTALLED IN CEILINGS, INDICATED ON ARCHITECTURAL PLANS AS HAVING INSULATION IN CONTACT WITH CEILING SURFACE, SHALL BE IC RATED BY MANUFACTURER.
14. LED DRIVERS LOCATED IN UNCONDITIONED SPACES SHALL BE RATED FOR 90 DEGREES F.
15. PROVIDE 90 MINUTE EMERGENCY BATTERY BACK UP. EMERGENCY BACK UP SHALL BE BASED ON TYPE OF FIXTURE, LED DRIVER, BALLAST, ETC. EMERGENCY BACKUP SHALL BE DUAL INPUT FOR BOTH SWITCHING AND CHARGING. PROVIDE UNSWITCHED "HOT" FROM LOCAL CIRCUIT UNLESS OTHERWISE INDICATED ON PLANS. PROVIDE WITH INDICATOR LIGHT. INSTALL LED INDICATOR ON LIGHT FIXTURE UNLESS DECORATIVE. DECORATIVE FIXTURES SHALL HAVE INDICATOR PLACED AT LOCAL CEILING. BODINE, PHILLIPS, POWER SENTRY OR EQUAL.
16. PROVIDE EMERGENCY RELAY BASED ON MINIMUM BODINE GLCD-20B OR EQUAL. SEE PLANS FOR INTENT. PROVIDE EMERGENCY GENERATOR/INVERTER CIRCUIT AND SWITCH LEG NORMAL CIRCUIT. SEE DETAIL.
17. POLES PROVIDED FOR LED FIXTURES SHALL BE METAL, REGARDLESS OF SPECIFICATION FOR GROUNDING PURPOSES.

PROVIDE ALLOWANCE IN THE BID TAB FOR 5% ATTIC STOCK ON ALL LIGHTING FIXTURES SHOWN IN THIS SCHEDULE.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MINIMUM LUMENS	CCT	DRIVER	TOTAL FIXURE WATTAGE	VOLTAGE	MANUFACTURER	MODEL	REMARKS
DL1	6" RECESSED LED DOWNLIGHT	2,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	20.0 W	UNIV	GOTHAM PATHWAY JUNO COOPER SPECTRUM	EVO6 XX/20 AR LSS MD MVOLT GZ10 6VLED 2000 INDY L6 20 U G2 L600P LD6A 15 2000D010TE ERM6A15 8 6LM0 LI SGE6LEDGI 20W MD	6" APERATURE MINIMUM 10% DIMMING SEMI-SPECULAR WET LOCATION LISTED
DL2	RECESSED LED EXTERIOR CANOPY DOWNLIGHT	1,600	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	20.0 W	UNIV	BEGA GOTHAM HE WILLIAMS	B24443 APPROVED EQUAL APPROVED EQUAL	MINIMUM 10% DIMMING WET LOCATIONS LISTED CLEAR ANODIZED SILVER FINISH
DL3	SURFACE MOUNTED EXTERIOR LED CYLINDER	2,200	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	20.0 W	UNIV	BEGA GOTHAM HE WILLIAMS	B24406 APPROVED EQUAL APPROVED EQUAL	MINIMUM 10% DIMMING WET LOCATIONS LISTED CLEAR ANODIZED SILVER FINISH
DL4	4" RECESSED LED DOWNLIGHT	2,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	20.0 W	UNIV	GOTHAM LIGHTOLIER PRESCOLITE ELITE PORTFOLIO	EVO4 XX/20 AR LSS MD MVOLT GZ10 APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	4" APERATURE MINIMUM 10% DIMMING SEMI-SPECULAR WET LOCATION LISTED
DLS1	6" SHOWER RATED RECESSED LED DOWNLIGHT	1,500	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	15.0 W	UNIV	GOTHAM PATHWAY JUNO	EVO6SH __/15 DFFAMF SMO MVOLT EZ1 APPROVED EQUAL APPROVED EQUAL	6" APERATURE MINIMUM 10% DIMMING WET LOCATION LISTED WITH ANTI MICROBIAL FINISH
EX1B	CLEAR EDGE-LIT EXIT SIGN W/ MIRROR FACE	[redacted]		INTEGRAL LED DRIVER	5.0 W	UNIV	LITHONA HUBBELL JUNO COOPER PHILIPS	LRP 1RMR/RC 120/277 DUAL LITE NAVILITE SURE-LITES CHLORIDE	NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR FACE STYLE RED
EX1G	THERMOPLASTIC EXIT SIGN W/ WIREGUARD	[redacted]		INTEGRAL LED DRIVER	5.0 W	UNIV	LITHONIA CHLORIDE DUAL-LITE MULE SURE-LITES	QUANTUM LQM S W R 120/277 ELA WG1 DUAL LITE LX U R W NAVILITE NXPA R WH SURE-LITES LPX 6 CHLORIDE	NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR FACE STYLE UL LISTED FOR DAMP LOCATIONS RED PROVIDE WITH WIREGAURD
EX1M	THERMOPLASTIC EXIT SIGN	[redacted]		INTEGRAL LED DRIVER	5.0 W	UNIV	LITHONA HUBBELL JUNO COOPER PHILIPS	QUANTUM LQM S W R 120/277 DUAL LITE LX U R W NAVILITE NXPA R WH SURE-LITES LPX 6 CHLORIDE	NON-BATTERY EXIT SIGN (GENERATOR); SEE PLANS FOR FACE STYLE UL LISTED FOR DAMP LOCATIONS RED
FP	EXTERIOR IN-GROUND FLAGPOLE LIGHT	4,200	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	35.0 W	UNIV	HYDREL KIM APPROVED EQUAL	M9700C SS LED P2 XX MVOLT NSP APPROVED EQUAL APPROVED EQUAL	UL LISTED WET LOCATIONS; NARROW SPOT DISTRIBUTION; STAINLESS STEEL FINISH; FULLY GASKETED AND SEALED FOR IN-GROUND INSTALLATION AIM FIXTURE AT THE BALL AT THE TOP OF THE FLAGPOLE
HBL2	LED HIGH-BAY FIXTURE	34,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	243.0 W	UNIV	COLUMBIA WILLIAMS LITHONIA	CRB-40MX-EDU APPROVED EQUAL APPROVED EQUAL	UL LISTED DAMP LOCATIONS; COORDINATE MOUNTING HEIGHTS WITH ARCHITECT;
L1	LOBBY CIRCULAR KNIFE EDGE COVE UP LIGHTING SYSTEM	[redacted]	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	792.0 W	277V	i2SYSTEMS LIGHT ENGINE BASO	CP K1-4 CIRCLE 9W XXK H V RADIUS:13'8" APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	MINIMUM 850 LUMENS/FT; 9W/FT CIRCLE COVE DIAMETER: SEE FLOOR PLANS; RUN LENGTH: CONFIRM WITH MANUFACTURER SHOP DRAWINGS; GYPSUM KNIFE EDGE 30 DEGREE WIDE BODY MOUNTING SYSTEM; GC TO PAINT KNIFE EDGE BODY TO MATCH; 0-10V DIMMING; PROVIDE SHOP DRAWING SUBMITTAL TO BE APPROVED BY ENGINEER PRIOR TO ORDERING. COORDINATE SHOP DRAWINGS, MOUNTING AND PAINTING WITH GC PRIOR TO ROUGH-IN.
OWL2	WALL PACK TRAPEZOID LED	3,000	4000K	INTEGRAL LED DRIVERS (2)	25.0 W	UNIV	LITHONIA HUBBELL JUNO	WST LED P2 VF MVOLT APPROVED EQUAL APPROVED EQUAL	COLOR CHOSEN BY ARCHITECT LS 101 EMERGENCY COMPLIANT 8"HX17"WX10"D FORWARD THROW
PD1	4' DIA. LED SURFACE MOUNTED ACCOUSTICAL RING	3,700	4000K	INTEGRAL LED DRIVER	58.0 W	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL	LOOP STFU 4 XX HIGH UNV DB SURFACE APPROVED EQUAL APPROVED EQUAL	COORDINATE FINISH WITH PRIOR TO ORDERING PROVIDE WITH CLASS-A FIRE RATED ACCOUSTIC FELT 4' DIAMETER; 4" DEPTH
PD2	3' DIA. LED PENDANT MOUNTED ACCOUSTICAL RING	4,100	4000K	INTEGRAL LED DRIVER	45.0 W	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL	LOOPITA STFU 3 XX HIGH UNV DB APPROVED EQUAL APPROVED EQUAL	COORDINATE ALL FINISHES WITH ARCHITECT PRIOR TO ORDERING PROVIDE WITH CLASS-A FIRE RATED ACCOUSTIC FELT COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL ELEVATIONS PRIOR TO ORDERING PROVIDE WITH POWER OVER AIRCRAFT CABLE
PL1	4" WIDE LINEAR PENDANT	[redacted]	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	<varies>	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL	LS4 X'-X" XX HIGH UNV DB W AC FL STD APPROVED EQUAL APPROVED EQUAL	MINIMUM 900 LUMENS/FT; 7.5W/FT SEE PLANS FOR LENGTHS; COORDINATE MOUNTING HARDWARE WITH CEILING TYPE; 0-10V DIMMING; COLOR WHITE; PROVIDE WITH AIR CRAFT CABLE;
PM1A	LED POLE MOUNT AREA LIGHT SINGLE HEAD	12,300	4000K	INTEGRAL LED DRIVER	83.0 W	277V	AMERICAN ELECTRIC LIGHTING	ATB0 P302 R2 4K	TYPE 2 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 12,300 LUMENS
PM1B	LED POLE MOUNT AREA LIGHT SINGLE HEAD	12,280	4000K	INTEGRAL LED DRIVER	83.0 W	277V	AMERICAN ELECTRIC LIGHTING	ATB0 P302 R4 4K	TYPE 4 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 12,280 LUMENS
PM1C	LED POLE MOUNT AREA LIGHT SINGLE HEAD	20,160	4000K	INTEGRAL LED DRIVER	145.0 W	277V	AMERICAN ELECTRIC LIGHTING	ATB0 P305 R2 4K	TYPE 2 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 20,160 LUMENS
PM2A	LED POLE MOUNT AREA LIGHT DUAL HEAD	40,320	4000K	INTEGRAL LED DRIVER	290.0 W	277V	AMERICAN ELECTRIC LIGHTING	(2) ATB0 P305 R2 4K	TYPE 2 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 20,160 LUMENS (PER HEAD)
PM2B	LED POLE MOUNT AREA LIGHT DUAL HEAD	39,620	4000K	INTEGRAL LED DRIVER	290.0 W	277V	AMERICAN ELECTRIC LIGHTING	(2) ATB0 P305 R4 4K	TYPE 4 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 19,810 LUMENS (PER HEAD)
PM3	LED POLE MOUNT AREA LIGHT TRIPLE HEAD	36,840	4000K	INTEGRAL LED DRIVER	249.0 W	277V	AMERICAN ELECTRIC LIGHTING	(3) ATB0 P302 R4 4K	TYPE 4 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 12,280 LUMENS (PER HEAD)
PM4	LED POLE MOUNT AREA LIGHT QUAD HEAD	79,240	4000K	INTEGRAL LED DRIVER	580.0 W	277V	AMERICAN ELECTRIC LIGHTING	(4) ATB0 P305 R4 4K	TYPE 4 DISTRIBUTION 4000K 30'-0" POLE LENGTH MINIMUM 19,810 LUMENS (PER HEAD)
RL1	RECESSED 4" WIDE LINEAR LED	[redacted]	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	<varies>	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL	LSR4 X'-X" XX MED UNV DB W T15 FL APPROVED EQUAL APPROVED EQUAL	MINIMUM 600 LUMENS/FT; 5.5W/FT SEE PLANS FOR LENGTHS; COORDINATE MOUNTING HARDWARE WITH CEILING TYPE; 0-10V DIMMING; COLOR WHITE;
RL2	RECESSED 4" WIDE LINEAR LED	[redacted]	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	<varies>	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL	LSR4 X'-X" XX MED UNV DB W NT FL APPROVED EQUAL APPROVED EQUAL	MINIMUM 600 LUMENS/FT; 5.5W/FT SEE PLANS FOR LENGTHS; PROVIDE WITH MUD-IN FLANGE; 0-10V DIMMING; COLOR WHITE;
RL3	RECESSED 4" WIDE LINEAR LED	[redacted]	4000K	INTEGRAL LED DRIVER (0.1% 0-10V DIMMING)	<varies>	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL	LSR4 X'-X" XX HIGH UNV DB.1% W T15 FL APPROVED EQUAL APPROVED EQUAL	MINIMUM 900 LUMENS/FT; 7.5W/FT SEE PLANS FOR LENGTHS; COORDINATE MOUNTING HARDWARE WITH CEILING TYPE; 0.1% 0-10V DIMMING; COLOR WHITE;
RTL4	2X4 LED LAY-IN TROFFER	5,400	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	41.0 W	UNIV	SIGNIFY WILLIAMS LITHONIA	2 FGX G 54L 840 4 FS UNV DIM APPROVED EQUAL APPROVED EQUAL	UL LISTED DAMP LOCATIONS
RTL7	2X4 LED ACRYLIC LENS LAY-IN TROFFER	7,200	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	55.0 W	UNIV	LITHONIA WILLIAMS COOPER	2GTL 4 72L EZ1 LP840 APPROVED EQUAL APPROVED EQUAL	UL LISTED DAMP LOCATIONS
STL1	4 FT. LED STRIP	5,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	32.0 W	UNIV	LITHONIA COLUMBIA CREE COOPER DAY-BRITE	CLX L48 5000LM SEF FDL MVOLT GZ10 80CRI APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	PROVIDE CHAIN FOR PENDANT MOUNTING PROVIDE WIRE GUARD LENSED
STL1E	SAME AS TYPE 'STL1E' EXCEPT PROVIDED WITH 90 MINUTE INTEGRAL BATTERY BACKUP	5,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	32.0 W	UNIV	LITHONIA COLUMBIA CREE COOPER DAY-BRITE	CLX L48 5000LM SEF FDL MVOLT GZ10 80CRI E10W APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	PROVIDE CHAIN FOR PENDANT MOUNTING PROVIDE WIRE GUARD LENSED PROVIDE WITH 90 MINUTE INTEGRAL BATTERY BACKUP
T1	TRACK LIGHTING	1,000	4000K	INTEGRAL LED DRIVER	16.0 W	UNIV	JUNO LIGHTOLIER WAC LIGHTING	R620L 90 CRI VBS NFL APPROVED EQUAL APPROVED EQUAL	SEE PLANS FOR LAYOUT REQUIRED AND TRACK LENGTH. BLACK FINISH TRACK COMPONENTS: JUNO T-SERIES - BLACK FINISH; ADJUSTABLE BEAM OUTPUT;
WL1	4 FT. LED WALL MOUNT STRIP	4,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	35.0 W	UNIV	LITHONIA H.E. WILLIAMS COOPER	BLPW4 40L ADSM GZ10 LP840 39-4-L40/840-A-DIM-UNV 4SSWLED-40SL-LW-UNV-L840-CD1-U	SEE PLANS FOR MOUNTING HEIGHTS. DLC LISTED.
WW	4" RECESSED LED WALLWASH DOWNLIGHT	1,000	4000K	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	9.0 W	UNIV	GOTHAM PATHWAY JUNO COOPER SPECTRUM	EVO4LW xx/10 AR LSS MVOLT APPROVED EQUAL APPROVED EQUAL	4" APERATURE MINIMUM 10% DIMMING SEMI SPECULAR FINISH SHALL MATCH TYPE 'DL1'

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Construction Documents

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ENERGY STAR PARTNER

No.	Date	Description
0	9/12/24	CONSTRUCTION DOCS
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: JSD
CHECKED BY: MKG

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LIGHTING FIXTURE SCHEDULE

E-802

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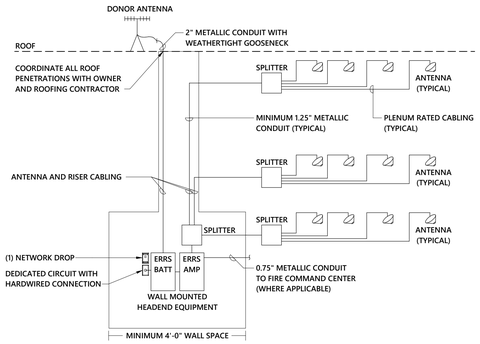


GENERAL NOTES:

A. EMERGENCY RESPONDER RADIO SYSTEM (ERRS) MAY ALSO BE REFERRED TO AS BI-DIRECTIONAL ANTENNA SYSTEM (BDA) OR FIRST RESPONDER DISTRIBUTED ANTENNA SYSTEM.

B. ERRS SYSTEM SURVEY SHALL CONSIST OF TWO PARTS. PART ONE SHALL BE ADMINISTERED AT THE START OF CONSTRUCTION TO DOCUMENT THE AVAILABLE SIGNAL AT THE SITE. PART TWO SHALL BE ADMINISTERED WHEN ALL STEEL, GYPBOARD, AND WINDOWS HAVE BEEN INSTALLED.

C. DETAIL IS DIAGRAMATIC AND ONLY INDICATES MAIN COMPONENTS AND APPROXIMATE LOCATIONS. QUANTITY AND LOCATIONS OF EQUIPMENT ARE DETERMINED BY THE 3RD PARTY DELIGATED DESIGN. SYSTEM DESIGN SHALL BE BASED ON THE ACTUAL CONSTRUCTION OF THE BUILDING. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH VENDOR.

SPECIFICATIONS:

A. ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL, AND TEST A COMPLETE AND OPERATING EMERGENCY RESPONDER RADIO SYSTEM ("SYSTEM"). THE SYSTEM SHALL BE PROVIDED FOR THE PURPOSE OF ASSURING RELIABLE EMERGENCY COMMUNICATIONS.

B. THE REQUIREMENTS ESTABLISHED BY THE AHJ IN EFFECT AT THE TIME OF SYSTEM INSTALLATION SUPERSEDE THE SPECIFICATIONS IN THIS SECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THE INSTALLED SYSTEM COMPLIES WITH ALL CURRENTLY APPLICABLE LOCAL, NATIONAL AND INDUSTRY CODES AS ADOPTED BY THE AHJ.

C. TWO SETS OF FREQUENCIES ARE TO BE UTILIZED ON THE SYSTEM. THE FOLLOWING FCC-LICENSED FACILITIES ARE TO BE CARRIED ON THE SYSTEM: FCC CALL SIGN, DOWNSTREAM/BASE TO MOBILE FREQUENCY, UPSTREAM/MOBILE TO BASE FREQUENCY AND CHANNEL BANDWIDTH. TRANSMISSIONS ON EACH SET OF FREQUENCIES MUST INDIVIDUALLY MEET THE COVERAGE, MINIMUM SIGNAL AND MINIMUM VOICE QUALITY REQUIREMENTS OF THE AHJ. EQUIPMENT SELECTED FOR THIS SYSTEM MUST BE CAPABLE OF BEING CONFIGURED TO DIFFERENT FREQUENCY PAIRS IN THE 700-800 Mhz PUBLIC SAFETY FREQUENCY BANDS. THESE CHANGES MAY LATER BE NECESSARY DUE TO FUTURE ADDITIONS OR OPTIMIZATION OF RADIO SYSTEMS MAINTAINED BY THE AHJ. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE FREQUENCIES IN USE WITH THE AHJ BEFORE PROCEEDING WITH THE SYSTEM INSTALLATION. ALL CABLE AND PASSIVE ELECTRONIC COMPONENTS SHALL HAVE A MINIMUM PASS BAND OF 400-2700 Mhz.

SPECIFICATIONS (CONTINUED):

D. SIGNALS AT OR ABOVE THE MINIMUM LEVELS ARE TO BE RECEIVABLE TO AND FROM 95% OF ALL AREAS WITHIN THE BUILDING. SPACES OR ROOMS DEFINED AS CRITICAL AREAS REQUIRE 99% COVERAGE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SYSTEM DESIGN AND INSTALLATION THAT PROVIDES ENHANCEMENT ONLY TO THOSE AREAS OF THE BUILDING WHERE EXISTING OFF-AIR SERVICE DOES NOT MEET THE MINIMUM LEVELS AS DESCRIBED IN THE LATEST VERSIONS OF NFPA 72 AND IFC. CARE MUST BE TAKEN IN ENGINEERING A SYSTEM THAT WILL NOT CAUSE INTERFERENCE TO THE AUTHORITY'S RADIO SYSTEM OUTSIDE THE BUILDING AND SHALL NOT CAUSE HARMFUL INTERFERENCE TO OTHER RF SYSTEMS INSIDE THE BUILDING.

E. THE SYSTEM SHALL BE DESIGNED FOR CONTINUOUS, ALWAYS-ON SERVICE. SIX (6) MALFUNCTION ALARMS FOR THE SYSTEM SHALL BE PROVIDED AND CONNECTED TO THE BUILDING FIRE ALARM SYSTEM. CONTRACTOR SHALL PROVIDE 24 HOUR BATTERY BACKUP. BATTERIES SHALL BE CONTAINED IN A NEMA 4 TYPE WATERPROOF CABINET.

F. ALL CABLING, WITH THE EXCEPTION OF RADIATING CABLE AND ANTENNA JUMPER CABLES MEASURING LESS THAN 2 FEET IN LENGTH, SHALL BE INSTALLED IN CONDUIT. ALL EXPOSED CABLE, INCLUDING FLEXIBLE JUMPER CABLES, SHALL BE PLENUM RATED, UTILIZING A JACKET OF NON-HALOGENATED, FIRE RETARDANT POLYOLEFIN.

G. GROUND AND BOND CABLE SHIELDS AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS AND LATEST NFPA 70 NEC REQUIREMENTS. THE DONOR ANTENNA MAST SHALL BE GROUNDED PER LATEST NFPA 70 NEC REQUIREMENTS. GROUNDING BLOCKS AND SURGE PROTECTION SHALL BE PROVIDED FOR OUTSIDE CABLING.

H. SHOP DRAWINGS SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER AND AHJ PRIOR TO INSTALLATION. PROVIDE A SYSTEM BLOCK DIAGRAM INDICATING THE DONOR ANTENNA(S), HEADEND EQUIPMENT, PASSIVE COMPONENTS AND IN-BUILDING ANTENNAS. INCLUDE THE RF LINK BUDGET. PROVIDE A OVERLAY OF THE SYSTEM DESIGN ON BUILDING FLOOR PLAN DRAWINGS AND OVERLAY ON FLOOR PLAN DRAWINGS OF THE PREDICTED SIGNAL STRENGTH WITHIN THE COVERAGE AREA INDICATING, AT A MINIMUM, THE –95 DBM DOWNLINK (BASE TO MOBILE) SIGNAL STRENGTH FOR ALL COVERAGE AREAS.

I. CONTRACTOR SHALL PROVIDE THE FOLLOWING DOCUMENTS AT PROJECT CLOSEOUT: AS-BUILT DRAWINGS IN PDF AND AUTOCAD FORMATS, COVERAGE/ACCEPTANCE TEST RESULTS, DONOR ANTENNA ISOLATION, SPECTRUM ANALYSIS DEMONSTRATING ONLY THE INTENDED FREQUENCIES ARE BEING CARRIED ON THE SYSTEM, SPECTRUM ANALYSIS DEMONSTRATING NO SPURIOUS OSCILLATIONS, PIM OR OTHER INTERMODULATION DISTURBANCES ARE BEING CARRIED ON THE SYSTEM, SIGNAL LEVELS RECEIVED AT THE DONOR ANTENNA, SIGNAL LEVELS AT THE INPUT AND OUTPUT OF THE HEADEND EQUIPMENT, GAIN SETTINGS, OPERATION AND MAINTENANCE MANUAL IN HARDCOPY AND PDF FORMAT AND WARRANTY DOCUMENTS.

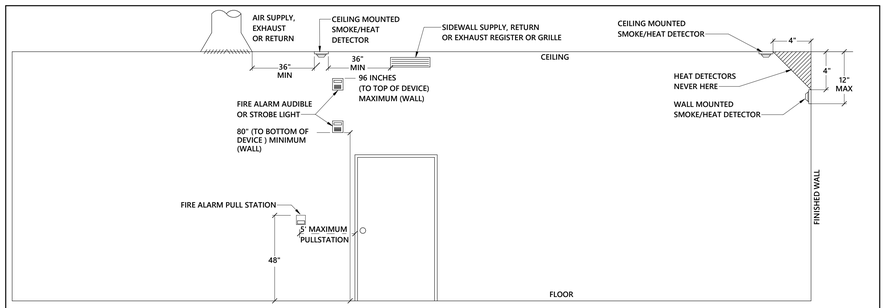
J. CONTRACTOR SHALL PROVIDE A ONE YEAR WARRANTY ON PARTS AND LABOR AND PROVIDE A ONE YEAR MAINTENANCE AGREEMENT. MAINTENANCE AGREEMENT SHALL INCLUDE 24/7 EMERGENCY RESPONSE WITHIN TWO HOURS OF NOTIFICATION AND ANNUAL TESTING.

2 EMERGENCY RESPONDER RADIO SYSTEM (ERRS) - DIAGRAMATIC ONLY
NOT TO SCALE

FIRE ALARM SYSTEM MATRIX — BUILDING SYSTEM OUTPUTS

	ACTIVATE COMMON ALARM SIGNAL INDICATOR	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL	ACTIVATE ZONE OR DEVICE ALARM ADDRESS INDICATOR	ACTIVATE GENERAL EVACUATION SIGNAL	DISPLAY CHANGE OF STATUS SIGNAL	ACTIVATE ALL SOUNDER BASES IN BUILDING	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION	SHUT DOWN RESPECTIVE HVAC	CLOSE ALL FIRE/SMOKE DAMPERS	UNLOCK EXITING CONTROL DOORS	RELEASE MAGNETICALLY HELD DOORS
MANUAL FIRE ALARM PULL BOXES	X	X					X	X	X	X	X			X	X	X	X
DUCT SMOKE DETECTOR			X	X			X		X	X					X	X	
AREA HEAT DETECTOR	X	X					X	X	X	X	X			X	X	X	X
SPRINKLER WATER FLOW	X	X					X	X	X	X	X			X	X	X	X
SPRINKLER TAMPER			X	X			X		X			X					
NOTIFICATION DEVICE SHORT CIRCUIT					X	X			X				X				
OPEN CIRCUIT					X	X			X				X	X			
GROUND FAULT					X	X			X				X				
FIRE ALARM A.C. POWER FAILURE					X	X			X				X				
FIRE ALARM SYSTEM LOW BATTERY					X								X				
GENERATOR RUNNING								X									
GENERATOR SYSTEM LOW FUEL			X	X			X					X					
GENERATOR SYSTEM NOT IN AUTOMATIC			X	X			X					X					
GENERATOR FAULT			X	X			X					X					
FIRE PUMP RUNNING			X	X			X					X					
FIRE PUMP NOT IN AUTOMATIC			X	X			X					X					
FIRE PUMP POWER FAILURE/PHASE REVER.			X	X			X					X					
FIRE PUMP ROOM LOW TEMPERATURE SWITCH			X	X			X					X					
FIRE PUMP ROOM CONTROLLER CONNECTED TO ALTERNATE SOURCE			X	X			X					X					
CARBON MONOXIDE DETECTORS	X	X					X	X	X	X	X			X	X	X	
BDA SYSTEM					X	X	X						X				
SECURITY INPUT (PANIC BUTTON)														X			

1 FIRE ALARM MATRIX
NOT TO SCALE



NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE.
3. DEVICES NEXT TO DOOR EXIT SHALL BE WITHIN 6" (MAXIMUM) TYPICAL OF DOOR UNLESS OBSTACLES SUCH AS SIDELITES, ETC.
4. ALL DEVICES ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.

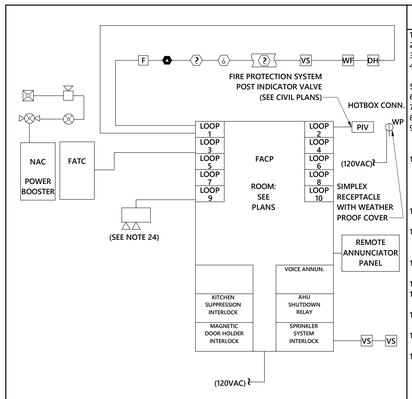
3 MOUNTING HEIGHTS OF DEVICES - ELEVATION
NOT TO SCALE

FIRE ALARM SHEET INDEX

FA-001	FIRE ALARM LEGEND AND NOTES
FA-010	FIRE ALARM SITE PLAN
FA-111	FIRST FLOOR FIRE ALARM PLAN - AREA 100
FA-112	FIRST FLOOR FIRE ALARM PLAN - AREA 200
FA-113	FIRST FLOOR FIRE ALARM PLAN - AREA 300
FA-114	FIRST FLOOR FIRE ALARM PLAN - AREA 400
FA-115	FIRST FLOOR FIRE ALARM PLAN - AREA 500
FA-116	FIRST FLOOR FIRE ALARM PLAN - AREA 600
FA-117	MECH. PLATFORM FIRE ALARM PLAN - AREA 100
FA-118	MECH. PLATFORM FIRE ALARM PLAN - AREA 200

NFPA FIRE ALARM LEGEND

SYMBOL	DESCRIPTION
	DUCT DETECTOR REMOTE INDICATING LIGHT.
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR
FATC	PRE-ACTION PANEL - PROVIDED BY SPRINKLER CONTRACTOR
NEC	NOTIFICATION APPLIANCE CIRCUIT POWER EXTENDER
BDA	BI-DIRECTIONAL AMPLIFIER SYSTEM
	SPRINKLER FLOW SWITCH
	SPRINKLER TEMPERATURE SWITCH
	VALVE SUPERVISORY SWITCH
	ADDRESSABLE INPUT MONITOR
	ADDRESSABLE CONTROL MONITOR
X	GAS DETECTOR (TYPE DENOTED)
	HEAT DETECTOR/SENSOR. X=TYPE
	PULLSTATION/FIRE ALARM
	SMOKE DETECTOR/SENSOR (DEFAULT PHOTOELECTRIC TYPE)
	FIRE ALARM DOOR HOLDER
DD	RECTANGULAR DUCT SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR.
	FIRE ALARM BELL NOTIFICATION
	DUCT SMOKE DETECTOR (NFPA 72, SECTION 17.7.5.5)
	FIRE ALARM SPEAKER ONLY, WHITE FINISH
Hzd	ADA COMPLIANT WALL MOUNTED FIRE ALARM SPEAKER WITH STROBE LIGHT, 15CD UNLESS OTHERWISE NOTED. WHITE FINISH.**
	FIRE ALARM SPEAKER ONLY, WHITE FINISH
Hzd	FIRE ALARM SPEAKER W/STROBE (CANDELAS), WHITE FINISH



FIRE ALARM NOTES

1. FACP SHALL HAVE A MINIMUM 24HR. BATTERY BACKUP.
2. FACP SHALL BE FULLY ANALOG ADDRESSABLE.
3. FACP SHALL BE CONNECTED TO A UL APPROVED CENTRAL STATION.
4. ZONE PER NFPA 72, 2013 AND MANUFACTURER'S RECOMMENDATIONS WITH NO ONE ZONE EXCEEDING 15,000 S.F. PER FLOOR.
5. COORDINATE QUANTITY AND LOCATIONS OF DEVICES WITH CONTRACT DRAWINGS.
6. LOCATE SMOKE DETECTOR WITHIN 5' OF THE MAGNETIC HOLD OPEN DOORS. (TYPICAL)
7. LOCATE FIRE ALARM PULL STATION WITHIN 5' OF THE EXIT DOOR.
8. LOCATE SMOKE/HEAT DETECTOR WITHIN 5' OF THE FA EQUIPMENT (FACP, FATC, NAC).
9. LOCATION OF CEILING MOUNTED SMOKE/HEAT DETECTOR SHALL BE FIELD COORDINATED PRIOR TO ROUGH IN. THE DETECTOR SHALL BE A MINIMUM OF 2' AWAY FROM LIGHT FIXTURE AND A MINIMUM OF 3' AWAY FROM AIR DISTRIBUTION DEVICES.
10. AUTOMATIC DOOR CLOSING SHALL BE ACCOMPLISHED BY THE ACTIVATION OF THE BUILDING FIRE ALARM SYSTEM. SMOKE DETECTOR ACTIVATION SHALL ALERT THE BUILDING FIRE ALARM SYSTEM. THE FIRE ALARM SYSTEM SHALL CAUSE ALL HOLD OPEN DOORS TO CLOSE UPON ALARM ACTIVATION IN THE BUILDING. ALL DOOR HOLDS/RELEASES SHALL BE PROVIDED WITH INDEPENDENT RELAYS TO BE INDEPENDENTLY ACTIVATED FROM FIRE ALARM SYSTEM IN THE EVENT OF SCHOOL LOCKDOWN.
11. ACTIVATION OF AN ALARM ZONE SHALL CAUSE ALL AIR HANDLING EQUIPMENT TO SHUT DOWN (ALL DAMPERS, AIR HANDLERS AND EXHAUST FANS MUST STOP).
12. ACTIVATION OF KITCHEN HOOD SUPPRESSION SYSTEM PROVIDES SIGNAL TO FACP WHICH IN TURN ACTIVATES ALL ANNUNCIATING ZONES & SHUTS DOWN HOOD SUPPLY AIR. HOOD EXHAUST SHALL CONTINUE TO OPERATE.
13. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOW, PRESSURE, & TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION.
14. ALL VISUAL DEVICES WITHIN THE SAME AREA SHALL BE SYNCHRONIZED.
15. ALL FIRE ALARM WIRING SHALL BE IN RED COLORED CONDUIT. FIRE ALARM CABLING SHALL BE PLENUM RATED.
16. PROVIDE MULTI-TEMPORAL SOUNDING CAPABILITY AT ALL AUDIO DEVICES FOR EMERGENCY NOTIFICATION FOR NON VOICE SYSTEMS COMPONENTS.
17. THE FIRE ALARM SYSTEM MANUFACTURER SHALL PROVIDE NOTIFICATION APPLIANCE CIRCUIT (NAC) POWER EXTENDERS AS REQUIRED.
18. THE DUCT SMOKE DETECTORS SHALL COMPLY WITH IFC 907.2.12.1.2 AND 907.3.1.
19. PROVIDE DITEK #DTK-DF120S1 SERIES OR EQUAL TVSS FOR 120V SUPPLY TO FIRE ALARM CONTROL PANELS, WITH TVSS DRY CONTACT TO BE MONITORED BY FACP. PROVIDE DITEK DTK-2MHLP24F-WB OR EQUAL FOR ALL FIRE ALARM CABLES THAT EXIT THE PHYSICAL BUILDING. TAMPER SWITCHES DTK-2MHLP24B-WB, AND EACH UB/EXTENDER FIRE ALARM PANEL. NAC, PIV, IDC SURGE: DTK-2MHLP24B-WB OR EQUAL. DIALER SURGE: DTK -2MHTPWB FIBER MEDIA CONVERTER PROTECTOR DTK-PVPIP OR EQUAL.
20. THE CIRCUIT FEEDING THE FIRE ALARM PANEL IS DEDICATED FOR THE FIRE ALARM ONLY. BREAKER SHALL BE PROVIDED WITH A LABEL "FIRE ALARM CIRCUIT" AND SHALL BE RED. PROVIDE BREAKER LOCK ON DEVICE.
21. PROVIDE REMOTE LIGHT WITH TEST SWITCH FOR DUCT SMOKE DETECTOR ON CEILING WHERE UNIT IS ABOVE CEILING.
22. CONTRACTOR RESPONSIBLE FOR SHOP DRAWINGS AS REQUIRED BY LOCAL AHJ.
23. DUCT DETECTORS SHALL BE VERIFIED WITH THE MECHANICAL DRAWINGS FOR QUANTITY AND LOCATION. TOTAL QUANTITY MINIMUM SHALL BE BASED ON BOTH MECHANICAL SCHEDULES AND MECHANICAL PLAN LOCATIONS AND ELECTRICAL PLANS. WHEN DEVICE QUANTITIES (ELECTRICAL VS. MECHANICAL) ARE IN CONFLICT, PROVIDE THE GREATER QUANTITY OF DETECTORS.
24. DIGITAL ALARM COMMUNICATOR TRANSMITTER SHALL BE ACCEPTABLE TO THE REMOTE CENTRAL STATION AND SHALL COMPLY WITH UL 632. CELLULAR LINE – SINGLE MAIN SOURCE. PROVIDE NAPCO STARLINK (SLD-CMDA-FIRE) FIRE ALARM COMMUNICATOR AND SLE-ANTEXT50 EXTERNAL ANTENNA TO OR EQUAL AND COORDINATED WITH THE CELLULAR DIAL OUT SERVICE. CELLULAR DIAL OUT SHALL BE BACKED UP AS PART OF BATTERY BACKUP AS WELL AS GENERATOR BACKED UP WHERE AVAILABLE. FUNCTIONAL PERFORMANCE: UNIT SHALL RECEIVE AN ALARM, SUPERVISORY, OR TROUBLE SIGNAL FROM FIRE-ALARM CONTROL UNIT AND AUTOMATICALLY CAPTURE A PRESET NUMBER FOR A REMOTE CENTRAL STATION. WHEN CONTACT IS MADE WITH CENTRAL STATION(S), SIGNALS SHALL BE TRANSMITTED. IF SERVICE ON THE CELLULAR LINE IS INTERRUPTED FOR LONGER THAN 45 SECONDS, TRANSMITTER SHALL INITIATE A LOCAL TROUBLE SIGNAL. TRANSMITTER SHALL AUTOMATICALLY REPORT CELLULAR SERVICE RESTORATION TO THE CENTRAL STATION. IF SERVICE IS LOST, TRANSMITTER SHALL INITIATE THE LOCAL TROUBLE SIGNAL.

4 FIRE ALARM RISER DIAGRAM
NOT TO SCALE

FIRE ALARM SPECIFICATIONS

A. SYSTEM SHALL BE A CENTRALIZED, ANALOG, ADDRESSABLE, FULLY ELECTRONICALLY SUPERVISED (INCLUDING AUXILIARY SYSTEMS INTERCONNECT WIRING) SYSTEM LISTED BY UL IN COMPLIANCE WITH ALL APPLICABLE NFPA 72 AND OTHER STANDARDS AS WELL AS THE AMERICAN'S WITH DISABILITIES ACT (ADA). ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. SYSTEM SHALL BE SIMPLEX, NOTIFIER, SIEMENS, OR APPROVED EQUAL AS ACCEPTED BY THE ENGINEER. SYSTEM SHALL HAVE A 24HR MINIMUM BATTERY BACKUP.

B. INITIATING DEVICE ACTIVATION SHALL CAUSE OPERATION OF THE PROPER ALARM CIRCUIT IN THE CONTROL PANEL, AND OPERATE ALL AUDIBLE AND VISUAL INDICATING ALARMS. ALL AIR HANDLING UNITS SHALL BE STOPPED UPON ANY ALARM INPUT. EACH AIR HANDLER UNIT SHALL BE PROVIDED WITH A SYSTEM CONTROLLED RELAY TO EFFECT SHUTDOWN. ALL ALARM DEVICES AND LAMPS SHALL CONTINUE TO OPERATE UNTIL THE INITIATING DEVICE IS RESET. SUBSEQUENT ALARMS SHALL RESOUND THE SYSTEM. AN AUDIBLE AND VISUAL SIGNAL SHALL INDICATE SYSTEM TROUBLE. THE CONTROL PANEL SHALL PROVIDE FOR ACTIVATING A UL LISTED CENTRAL STATION SIGNAL FOR NOTIFYING THE FIRE DEPARTMENT.

C. MANUAL STATIONS SHALL BE NON-CODED, WITH DUAL-ACTION PULL AND KEY TYPE RESET, SEMI-FLUSH MOUNTED. COMBINATION LIGHT AND HORN SIGNALS SHALL BE FLUSH MOUNTED. WIRING SHALL BE IN CONDUIT AS PREVIOUSLY SPECIFIED, #14 AWG MINIMUM, THHN. ALL J-BOXES USED FOR THE FIRE ALARM SYSTEM SHALL BE PAINTED RED.

D. SPRINKLER SYSTEM TAMPER SWITCHES SHALL BE CONNECTED INTO A COMMON ZONE WHICH SHALL DISTINGUISH BETWEEN A CONDUIT FAULT AND A CLOSED VALVE. A CLOSED VALVE SHALL BE INDICATED AS AN ALARM CONDITION, BUT WILL NOT ACTIVATE THE AUDIO-VISUAL DEVICES AND SHALL CAUSE A SUPERVISORY SIGNAL TO BE TRANSMITTED TO THE FIRE DEPARTMENT.

E. CONDUCTORS SHALL BE PLENUM-RATED AND INSTALLED IN CONDUIT AND INSTALLED IN COMPLIANCE WITH NFPA 70, ARTICLE 760; IN ADDITION TO WIRING METHODS 300.4.

F. ALL FIRE ALARM WIRING SHALL BE CLASS B.

G. PROVIDE ALL REQUIRED MODULES, POWER EXTENDERS, PROGRAMMING, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.

H. SUBMIT FIRE ALARM SHOP DRAWINGS CONSISTING OF PRODUCT DATA, TO THE ENGINEER AND FOR APPROVAL.

I. FILL OUT NFPA 72 CERTIFICATION REPORT AND SUBMIT TO ENGINEER AND AUTHORITY HAVING JURISDICTION.

J. WARRANTY - ALL WORK PERFORMED AND ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY THE PROFESSIONAL ENGINEER AND/OR OWNER. THE FULL COST OF MAINTENANCE, LABOR, AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS TWO YEAR PERIOD SHALL BE IMMEDIATELY CORRECTED AT NO ADDITIONAL COST TO THE OWNER. ANY DEFECTS THAT RENDER THE SYSTEM INOPERATIVE SHALL BE REPAIRED WITHIN 24 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR. OTHER DEFECTS SHALL BE REPAIRED WITHIN 48 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR.

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ISSUE DATE: 02/18/2025

PROJECT #: 02303.000
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FIRE ALARM LEGEND AND NOTES

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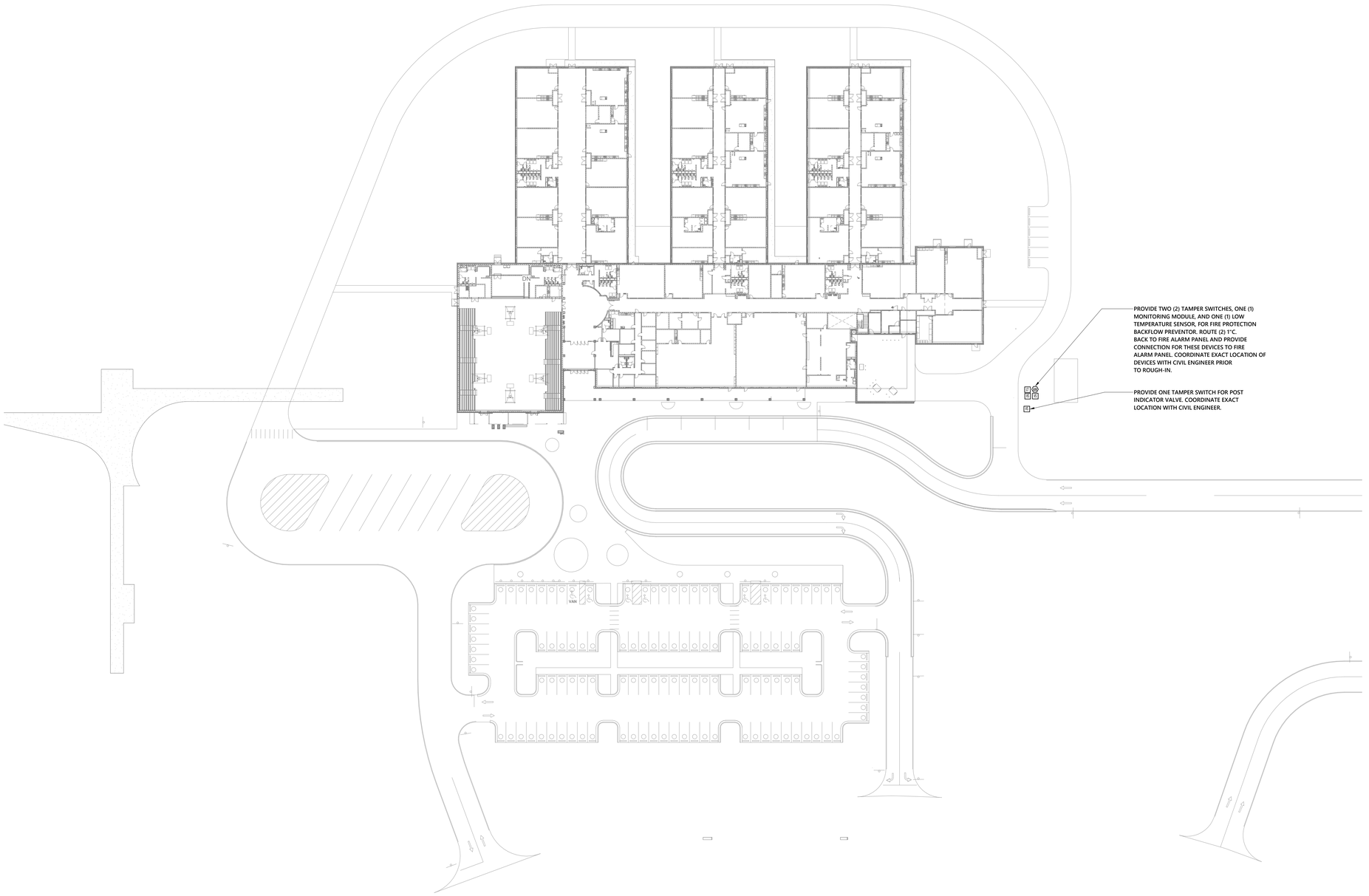
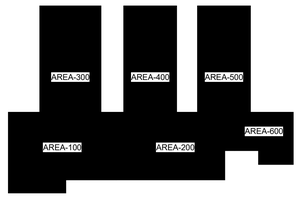


1 **FIRE ALARM SITE PLAN**
1" = 40'-0"

KEYPLAN



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FIRE ALARM SITE PLAN

FA-010

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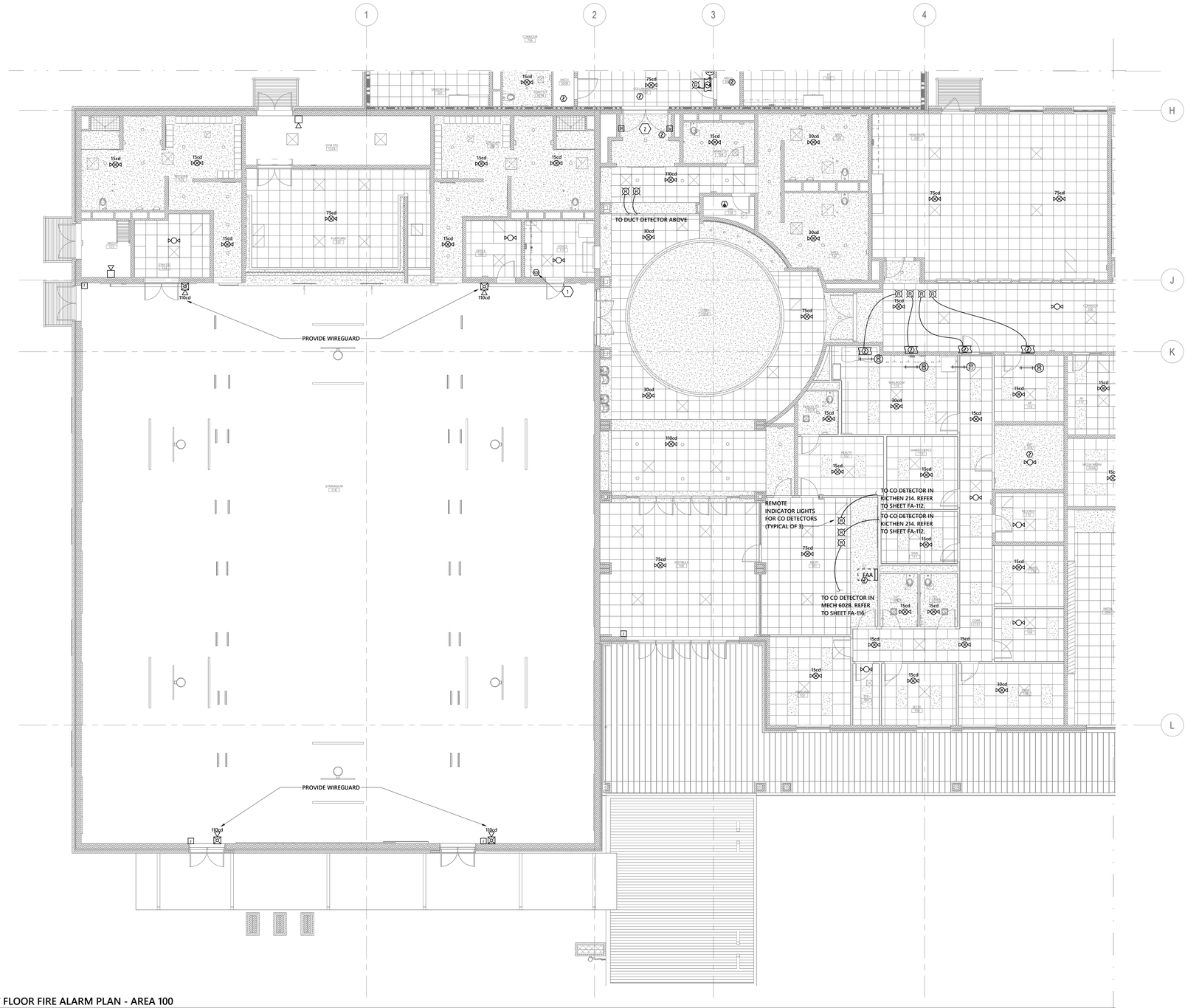
GENERAL NOTES - FIRE ALARM

A. REFER TO DRAWING FA-001 FOR SYMBOL LEGEND AND GENERAL NOTES.

KEYNOTES (#)

1 PROVIDE RELAY TO SHUTDOWN GYMNASIUM SOUND SYSTEM UPON FIRE ALARM.

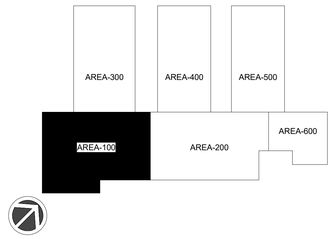
2 DOOR HOLDER TO RELEASE UPON PANIC BUTTON ACTIVATION OR FIRE ALARM ACTIVATION. PROVIDE SEPARATE RELAYS FOR EACH FUNCTION. FIRE ALARM SHALL NOT BE ACTIVATED WHEN PANIC BUTTON IS PRESSED.



1 FIRST FLOOR FIRE ALARM PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR FIRE ALARM PLAN - AREA 100

FA-111

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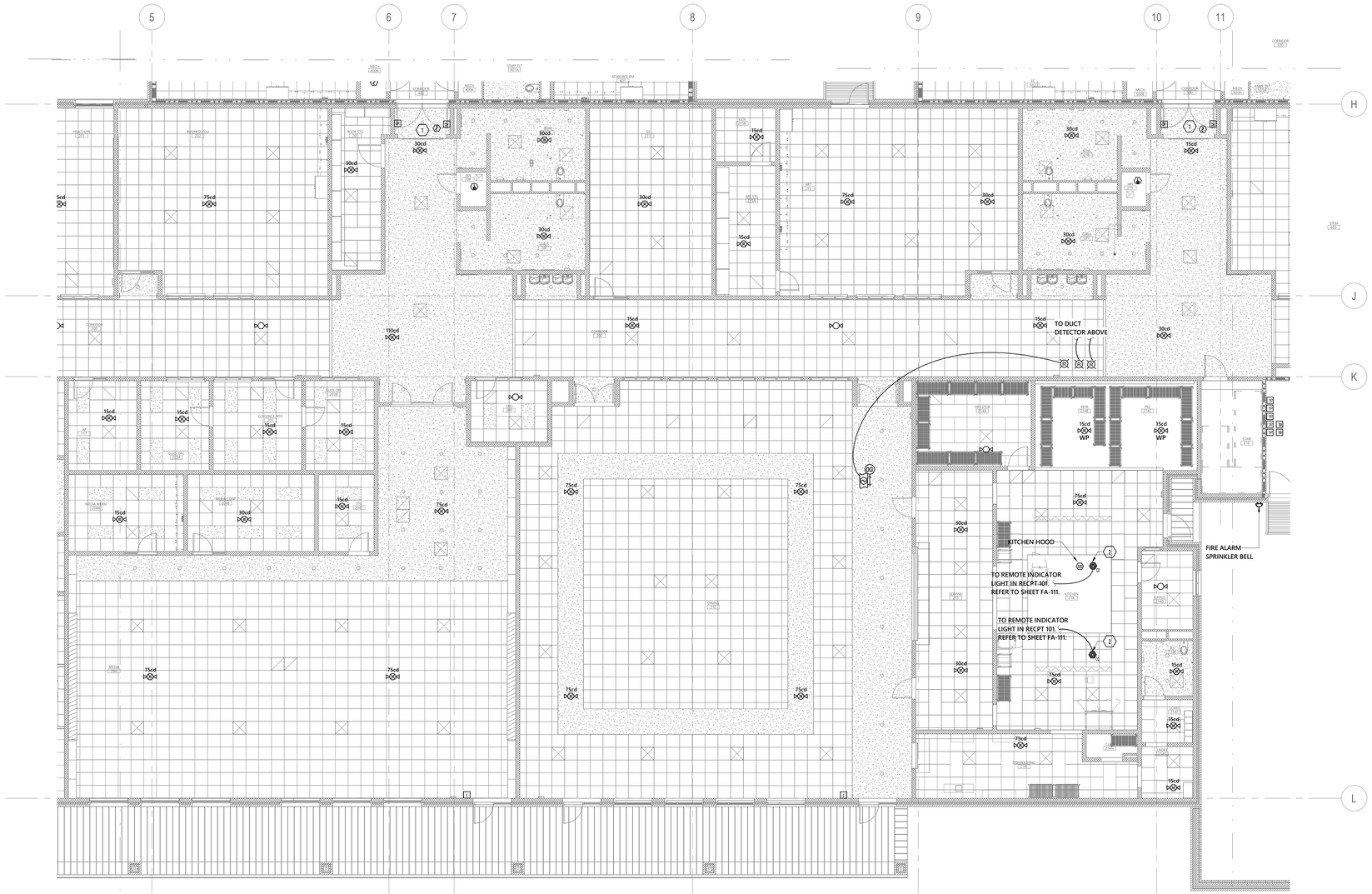

1 FIRST FLOOR FIRE ALARM PLAN - AREA 200
1/8" = 1'-0"

KEYNOTES

1 DOOR HOLDER TO RELEASE UPON PANIC BUTTON ACTIVATION OR FIRE ALARM ACTIVATION. PROVIDE SEPARATE RELAYS FOR EACH FUNCTION. FIRE ALARM SHALL NOT BE ACTIVATED WHEN PANIC BUTTON IS PRESSED.
2 CONNECT TO REMOTE INDICATOR LIGHT AT RECEPTION. SEE SHEET FA-111.

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR FIRE ALARM PLAN - AREA 200

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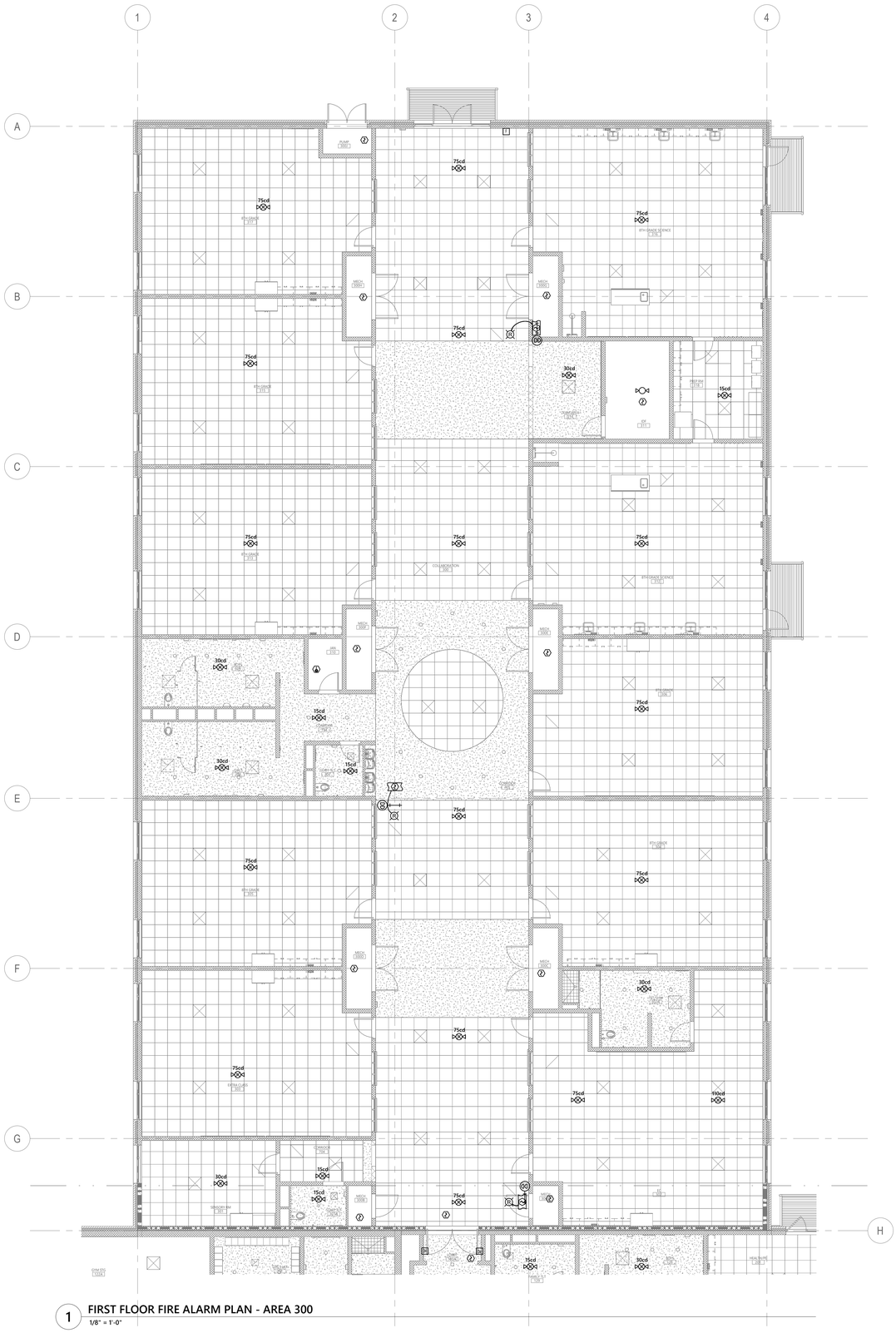
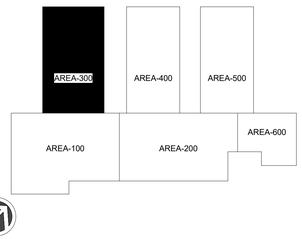


1 FIRST FLOOR FIRE ALARM PLAN - AREA 300
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR FIRE ALARM PLAN - AREA 300

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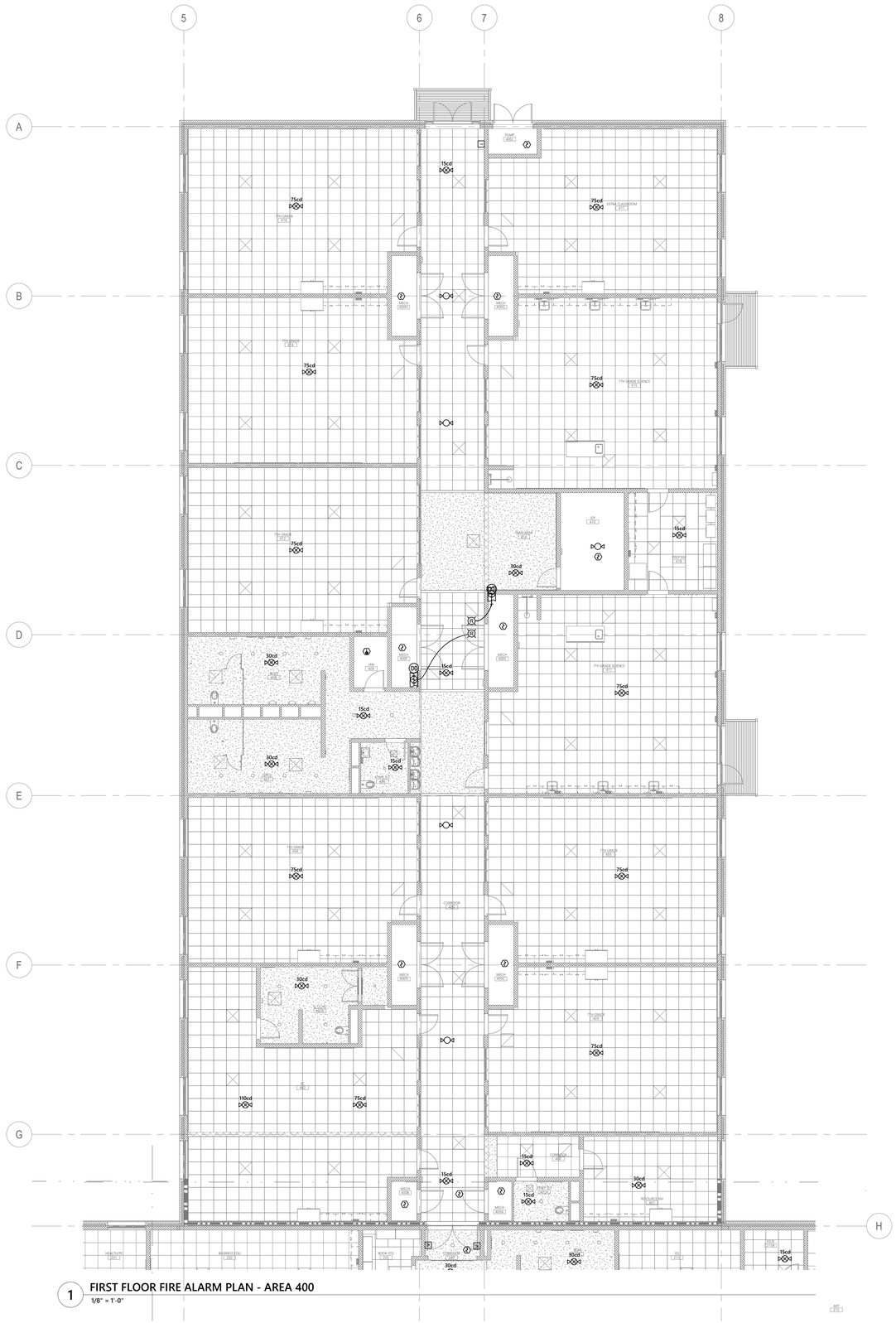
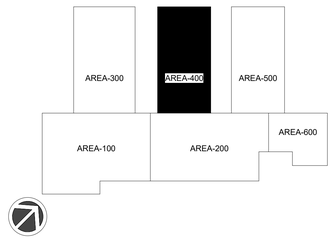


1 FIRST FLOOR FIRE ALARM PLAN - AREA 400
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR FIRE ALARM PLAN - AREA 400

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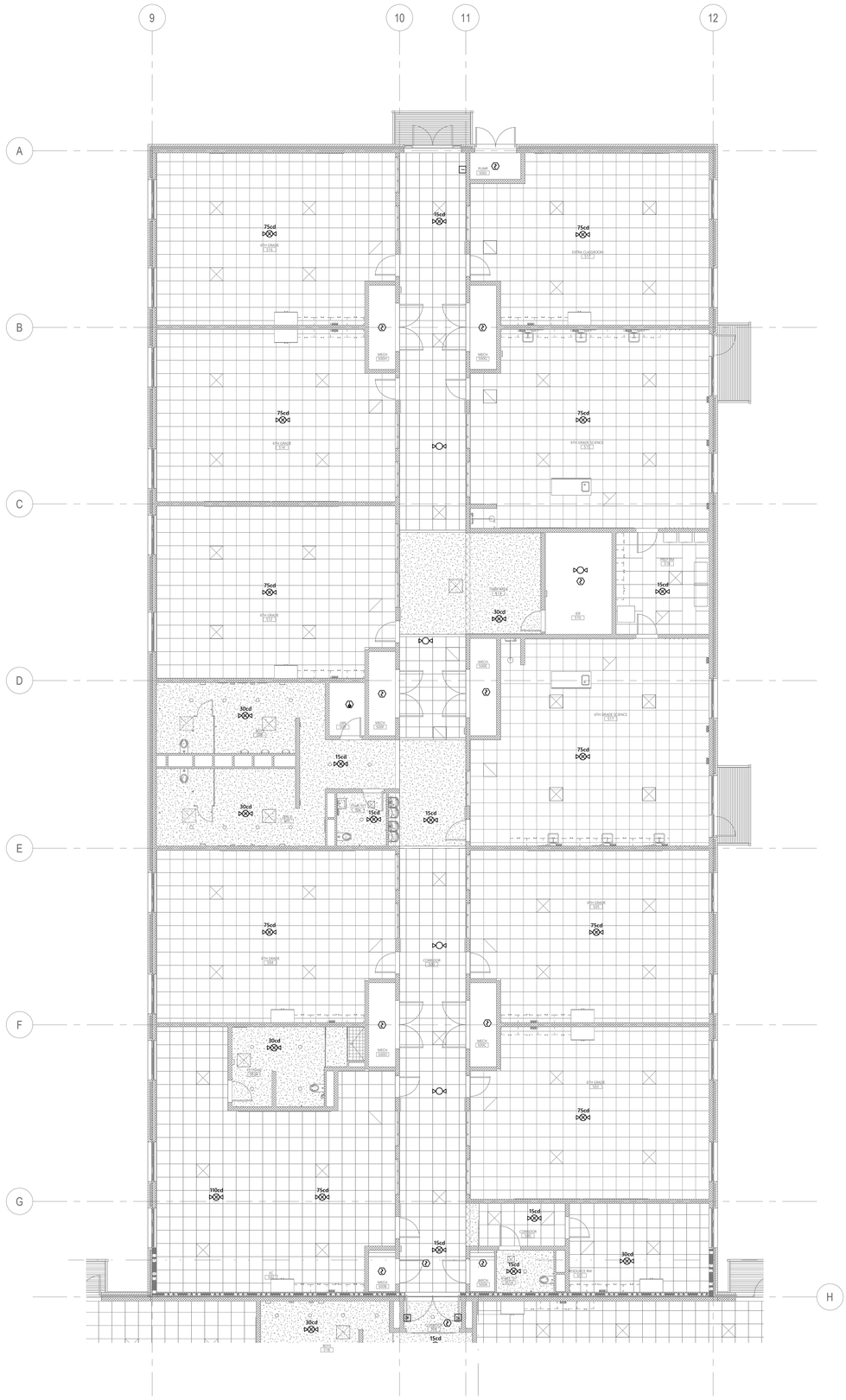
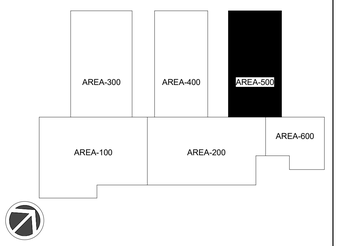


1 FIRST FLOOR FIRE ALARM PLAN - AREA 500
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR FIRE ALARM PLAN - AREA 500

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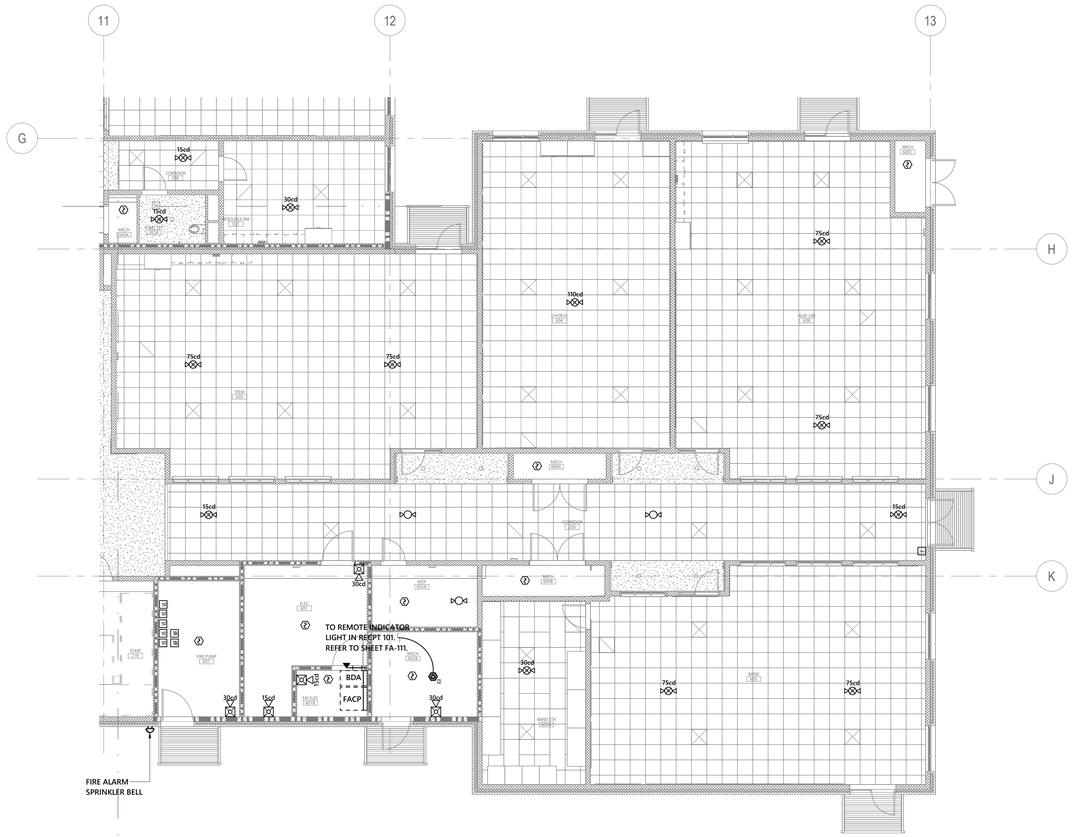
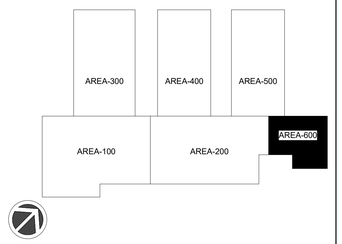


1 FIRST FLOOR FIRE ALARM PLAN - AREA 600
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR FIRE ALARM PLAN - AREA 600

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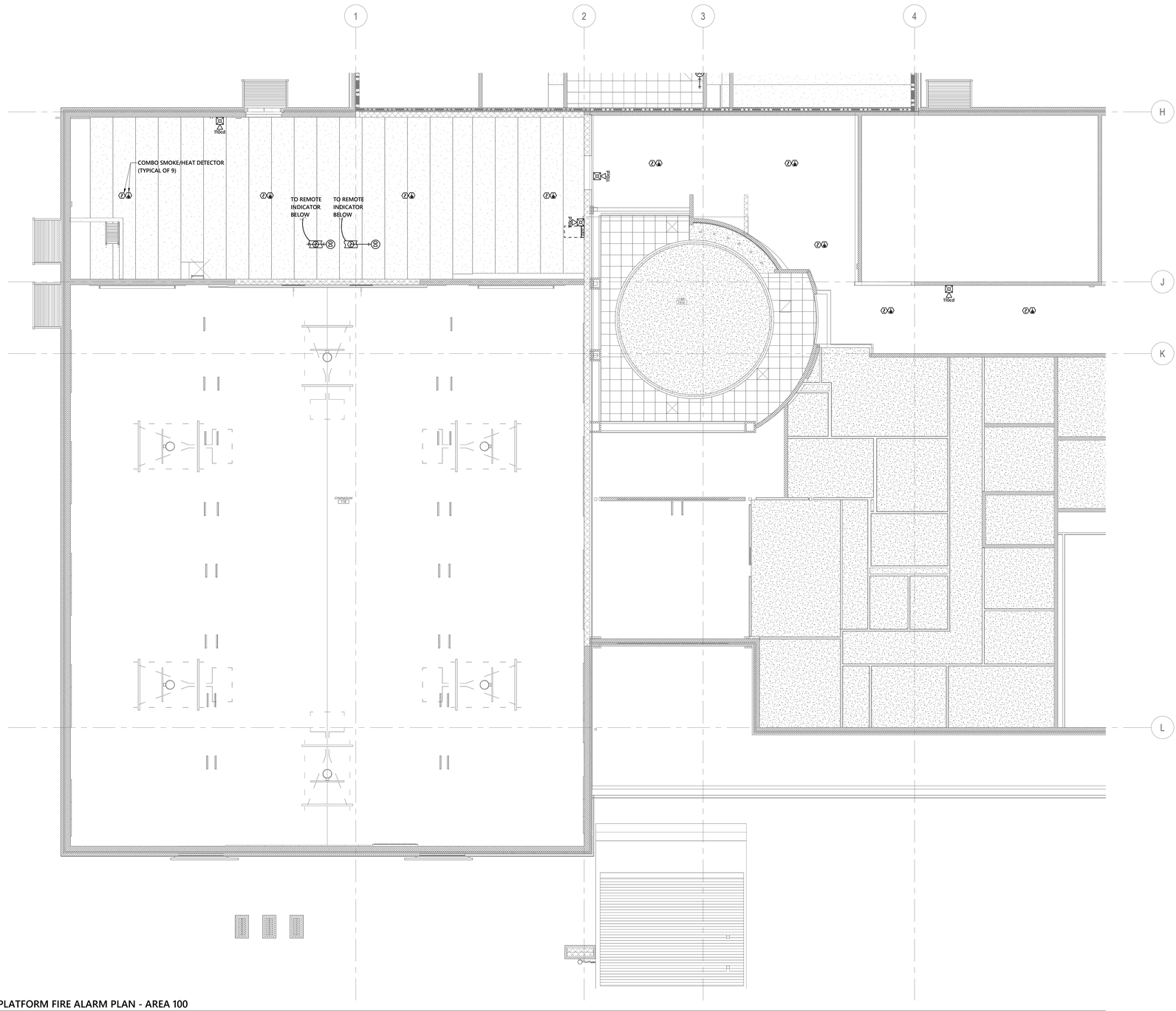

1 MECH. PLATFORM FIRE ALARM PLAN - AREA 100
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM FIRE ALARM PLAN - AREA 100

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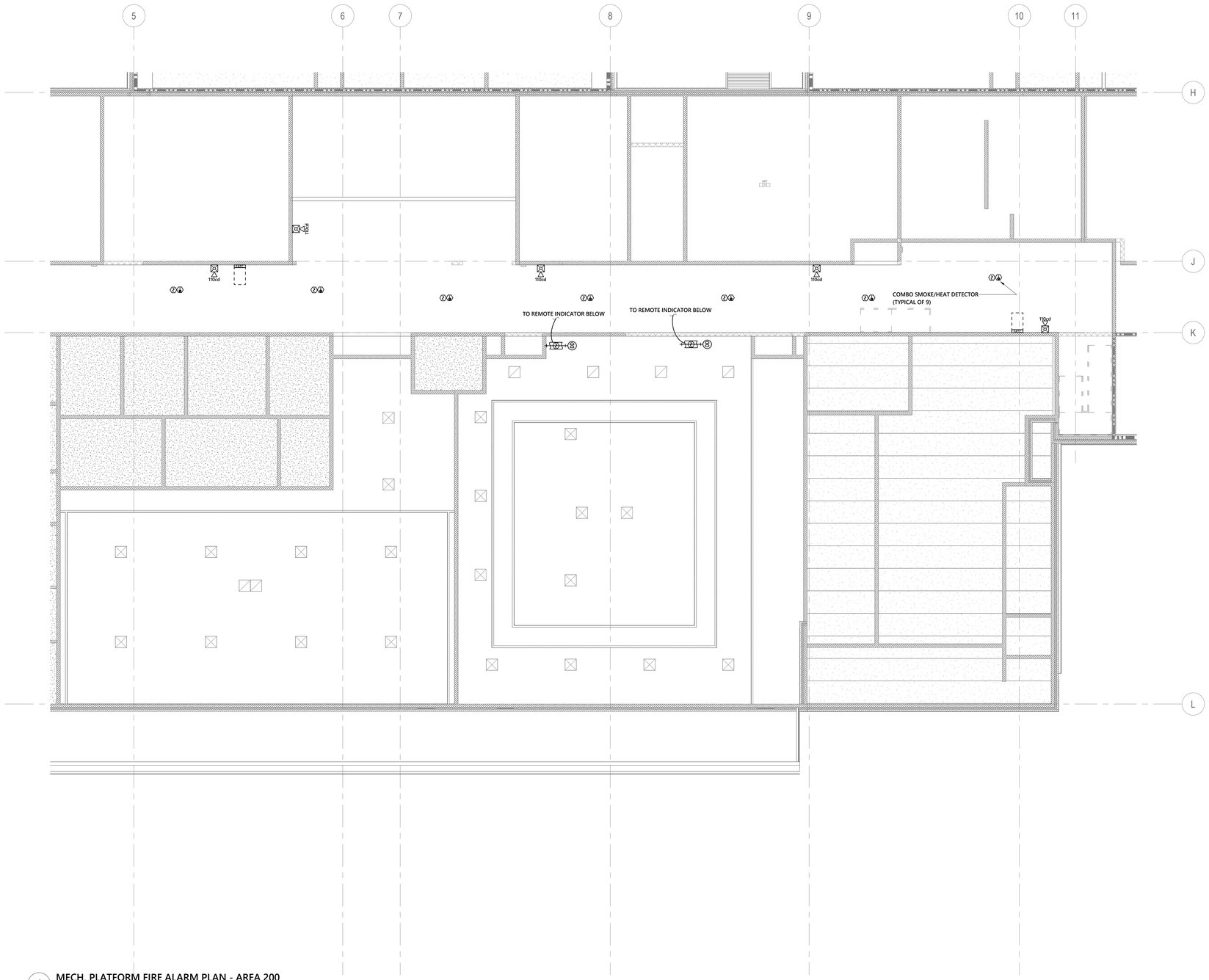
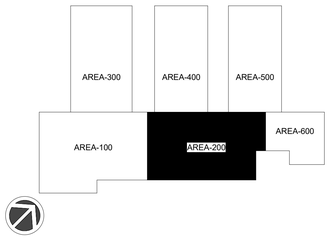


1 MECH. PLATFORM FIRE ALARM PLAN - AREA 200
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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MECH. PLATFORM FIRE ALARM PLAN - AREA 200

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GENERAL NOTES:

A. COORDINATE WITH ARCHITECTURAL PLANS FOR EXACT NETWORK OUTLET LOCATIONS.

B. COORDINATE LOCATIONS OF CEILING MOUNTED DEVICES (WIRELESS ACCESS POINTS, SPEAKERS, CABLE TRAY, ETC) WITH ALL OTHER TRADES (ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, TECHNOLOGY, ETC).

C. ANY DIRECTION GIVEN IN THE FIELD THAT DEVIATES FROM THE CONSTRUCTION DOCUMENTS MUST BE DOCUMENTED AND VERIFIED WITH THE ENGINEER.

D. PROVIDE ALL REQUIRED HARDWARE FOR A COMPLETE INSTALLATION.

E. IF A CONTRADICTION OF DIRECTION IS IDENTIFIED WITHIN THE DRAWINGS AND/OR SPECIFICATIONS, CONTRACTOR SHALL REQUEST CLARIFICATION PRIOR TO FINALIZING BID OR INCLUDE THE HIGHER COST OPTION IN THEIR BID.

F. EACH 4" LOW VOLTAGE SITE CONDUIT SHALL BE PROVIDED WITH (1) 3" 3-CELL FABRIC MESH INNERDUCT.

G. ALL CONDUITS SHALL BE CONCEALED UNLESS OTHERWISE NOTED. WHERE CONDUITS ARE TO BE INSTALLED IN EXPOSED CEILINGS, CONDUITS SHALL BE INSTALLED TIGHT TO STRUCTURE AND PAINTED TO MATCH ADJACENT SURFACE.

H. NO SECTION OF LOW VOLTAGE CONDUIT SHALL CONTAIN MORE THAN (2) 90° BENDS, OR EQUIVALENT BETWEEN PULL POINTS. PROVIDE BOX SIZED PER NEC OR AS INDICATED.

I. NO SECTION OF LOW VOLTAGE CONDUIT SHALL BE LONGER THAN 100'-0" BETWEEN PULL POINTS. PROVIDE BOX SIZED PER NEC OR AS INDICATED.

J. ALL LOW VOLTAGE CONDUIT ENDS MUST BE REAMED AND FIT WITH A NON-CONDUCTIVE BUSHING.

K. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT CONDUIT ROUTING FOR TELECOMMUNICATIONS HORIZONTAL CABLING WITH STRUCTURED CABLING CONTRACTOR PRIOR TO INSTALLATION.

L. ALL 2" AND LARGER CONDUITS SHALL BE LABELED ON BOTH ENDS INDICATING DESTINATION LOCATION.

M. ALL JUNCTION BOXES MOUNTED TO EXTERIOR SIDE OF PERIMTER WALLS SHALL BE WEATHERPROOF AND GASKETED.

N. ELECTRICAL CONTRACTOR SHALL PROVIDE PULLSTRINGS (INTERIOR) OR MULE TAPE (EXTERIOR) FOR ALL CONDUITS TO BE UTILIZED FOR LOW VOLTAGE SYSTEMS.

O. ELECTRICAL CONTRACTOR SHALL MAINTAIN FIRE RATINGS OF WALLS, PARTITIONS, FLOORS OR CEILINGS PER NEC & IBC WHEN INSTALLING RECESSED BOXES. BOXES IN RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE NOT LESS THAN 24". THE HORIZONTAL DISTANCE MAY BE REDUCED, BUT SHALL NOT BE LESS THAN THE DEPTH OF THE WALL CAVITY, WHERE FILLED WITH CELLULOSE LOOSE FILL, ROCKWOOL OR SLAG MINERAL WOOL INSULATION OR WHERE PROTECTED BY LISTED PUTTY PADS OR OTHER LISTED MATERIALS/METHODS. ELECTRICAL CONTRACTOR SHALL PROVIDE LISTED PUTTY PADS AS REQUIRED. IN NO CASE SHALL THE AGGREGATE AREA OF OPENINGS EXCEED 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL SPACE. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH LOW VOLTAGE CONTRACTOR TO VERIFY FINAL INSTALLATION WILL SATISFY CODE REQUIREMENTS.

P. INSTALLATION OF AC VOLTAGE CABLING IN LOW VOLTAGE PATHWAYS IS NOT ACCEPTABLE.

Q. CABLING SHALL PASS STRAIGHT THROUGH ANY PULL BOX. CHANGE OF DIRECTION IN A PULL BOX IS NOT ACCEPTABLE.

R. CONDUIT FILL RATIO SHALL NOT EXCEED 40% FILL.

S. NO CONDUIT BODIES OF ANY TYPE (LB,LR,LL,TEES, ETC) SHALL BE INSTALLED FOR SECURITY OR TECHNOLOGY CABLING.

T. FACEPLATES SHALL MATCH ADJACENT ELECTRICAL DEVICES. FINAL COLOR AND FINISH TO BE APPROVED BY ARCHITECT AND OWNER.

U. ALL FACEPLATES AND PATCH PANELS SHALL UTILIZE MODULAR JACKS.

V. ALL CATEGORY 6 AND CATEGORY 6A CABLING SHALL BE TERMINATED PER T568B STANDARD PINOUT.

W. ALL CABLING SHALL BE PLENUM RATED UNLESS OTHERWISE NOTED.

X. ALL CABLING, TERMINATIONS AND HOUSINGS ARE TO BE RATED FOR THE ENVIRONMENTS IN WHICH THEY ARE INSTALLED.

Y. NO SPLICING SHALL BE PERMITTED IN CATEGORY 6 OR CATEGORY 6A CABLING RUNS.

Z. CABLING SHALL NOT BE PAINTED. MANUFACTURERS WARRANTY MAY BE VOIDED IF PAINTED.

AA. DO NOT INSTALL BRUISED, KINKED, SCORED, DEFORMED, OR ABRADED CABLE. REMOVE AND DISCARD CABLE IF DAMAGED DURING INSTALLATION AND REPLACE IT WITH NEW CABLE.

BB. TERMINATE ALL CABLING ON DEDICATED SYSTEM PATCH PANEL (WIRELESS, DATA, SECURITY, ETC.) AS INDICATED ON EQUIPMENT RACK ELEVATIONS.

CC. PROVIDE OUTSIDE PLANT CABLING FOR IN/UNDERSLAB OR OUTDOOR APPLICATIONS. CONDUIT CONTAINING OUTSIDE PLANT CABLING SHALL BE EXTENDED TO LOCAL TELECOMMUNICATIONS ROOM. INDOOR/OUTDOOR CABLING IS AN ACCEPTABLE ALTERNATIVE. GENERAL CABLE: GENSPEED 10 UTP INDOOR/OUTDOOR 7141007 OR APPROVED EQUAL.

DD. ALL CABLING SHALL BE TERMINATED, TESTED, AND LABELED PER SPECIFICATIONS. ALL LABELING SHALL BE MACHINE PRINTED. HAND WRITTEN LABELS ARE NOT ACCEPTABLE.

EE. PROVIDE PATCH CORD FOR EACH TERMINATED PORT IN TELECOMMUNICATIONS ROOM. COORDINATE EXACT LENGTH WITH OWNER.

FF. PROVIDE EQUIPMENT CORD FOR EACH WIRELESS ACCESS POINT AND NETWORK CAMERA. COORDINATE EXACT LENGTH WITH OWNER.

GG. PROVIDE SURGE SUPPRESSION MODULE AT DEVICES UTILIZING IN/UNDERSLAB CONDUIT AND EXTERIOR WIRELESS ACCESS POINT AND CAMERA LOCATIONS. DITEK: DTK-MRJPOES OR APPROVED EQUAL. REFER TO EXTERIOR NETWORK DEVICE DETAIL. PROVIDE 24 CHANNEL, RACK MOUNTED SURGE SUPPRESSION AT RACK LOCATION FOR NETWORK PROTECTION. DITEK: DTK-RM24NETS OR APPROVED EQUAL. PROVIDE PATCH CORDS AS REQUIRED. INSTALL SURGE SUPPRESSION DEVICES WITHIN 24" OF BUILDING ENTRY OR EQUIPMENT ENCLOSURE.

HH. ALL PENETRATIONS THROUGH RATED WALLS MUST BE FIRESTOPPED. UTILIZE MECHANICAL FIRE RATED PATHWAYS THROUGH WALLS (STI EZ-PATH OR APPROVED EQUAL). PROVIDE FIRESTOPPING FOR ANY CONDUIT STUB-UPS IN RATED WALLS AFTER CABLING HAS BEEN INSTALLED.

II. PROVIDE METALLIC J-HOOKS FOR CABLING IN ACCESSIBLE CEILING SPACES WITHOUT CABLE TRAY, BETWEEN CONDUITS, AND BETWEEN CONDUITS AND CABLE TRAY AT 3'-5' IRREGULAR INTERVALS. PANDUIT, COOPER B-LINE, NVENT CADDY, OR APPROVED EQUAL.

JJ. THE USE OF J-HOOKS IN EXPOSED CEILING AREAS OR INACCESSIBLE CEILING AREAS IS NOT ACCEPTABLE. PROVIDE CONDUIT IN THESE AREAS.

KK. NYLON CABLE TIE WRAPS ARE NOT ACCEPTABLE FOR BINDING OR SECURING CABLE BUNDLES. UTILIZE HOOK AND LOOP STRAPS TO SECURE CABLING IN TELECOMMUNICATIONS ROOM. STRAPS SHALL BE EVENLY SPACED THROUGHOUT THE DRESSED LENGTH AND PLENUM RATED WHERE APPLICABLE.

LL. PROVIDE (2) CATEGORY 6A CABLES TO EACH FIRE ALARM CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. TERMINATE CABLES TO SURFACE-MOUNT BOX WITHING PANEL. EXTEND INCOMING ANALOG DEMARK TO LOCAL TELECOMMUNICATIONS ROOM AS REQUIRED. COORDINATE LOCATION AND REQUIREMENTS WITH FIRE ALARM CONTRACTOR.

MM. PROVIDE (1) CATEGORY 6A CABLE TO EACH EMERGENCY RESPONDER RADIO SYSTEM CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. TERMINATE CABLES TO SURFACE-MOUNT BOX WITHING PANEL. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

NN. PROVIDE (2) CATEGORY 6A CABLES TO EACH SECURITY ALARM PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. TERMINATE CABLES TO SURFACE-MOUNT BOX WITHING PANEL. EXTEND INCOMING ANALOG DEMARK TO LOCAL TELECOMMUNICATIONS ROOM AS REQUIRED. COORDINATE LOCATION AND REQUIREMENTS WITH SECURITY CONTRACTOR.

OO. PROVIDE (1) CATEGORY 6A CABLE TO EACH HVAC CONTROLLER (JACE) FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. COORDINATE LOCATION AND REQUIREMENTS WITH HVAC CONTRACTOR

PP. PROVIDE (1) CATEGORY 6A CABLE TO EACH LIGHTING CONTROL PANEL FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

QQ. PROVIDE (1) CATEGORY 6A CABLE TO MAIN SWITCHBOARD FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

RR. PROVIDE (1) CATEGORY 6A CABLE TO EACH AUTOMATIC TRANSFER SWITCH FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

SS. PROVIDE (1) CATEGORY 6A CABLE TO EACH ELECTRIC VEHICLE (EV) CHARGER FROM LOCAL TELECOMMUNICATIONS ROOM FOR NETWORK INTERFACE. COORDINATE LOCATION AND REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

SYMBOLS:

SYMBOL	DESCRIPTION
#	NETWORK OUTLET. STANDARD HEIGHT (+18" AFF). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (2) CATEGORY 6A CABLES UNLESS OTHERWISE INDICATED BY SUBSCRIPT.
#	NETWORK OUTLET. ELEVATED HEIGHT (+42" AFF, UNLESS OTHERWISE NOTED). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (2) CATEGORY 6A CABLES UNLESS OTHERWISE INDICATED BY SUBSCRIPT.
#W	NETWORK OUTLET, ABOVE CEILING (MIN. +6" AFC). WHEN INSTALLED ABOVE HARD CEILING, PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. WHEN INSTALLED IN ACCESSIBLE CEILING SPACE, PROVIDE ABOVE-CEILING BRACKET AND SURFACE BOX. REFER TO WIRELESS ACCESS POINT DETAILS. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) CATEGORY 6A CABLES UNLESS OTHERWISE INDICATED BY SUBSCRIPT.
W	NETWORK WALL-PHONE OUTLET. ELEVATED HEIGHT (+42" AFF). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (1) CATEGORY 6A CABLE AND WALL-PHONE FACEPLATE WITH MOUNTING STUDS.
WAP	NETWORK OUTLET, CEILING. WHEN INSTALLED ABOVE HARD CEILING, PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. WHEN INSTALLED IN ACCESSIBLE CEILING SPACE, PROVIDE ABOVE-CEILING BRACKET AND SURFACE BOX. REFER TO WIRELESS ACCESS POINT DETAILS. PROVIDE (2) CATEGORY 6A CABLES FOR EACH LOCATION. PROVIDE 6'-0" CATEGORY 6A EQUIPMENT CORD. WIRELESS ACCESS POINT DEVICE (EXTREME NETWORKS AP4000) SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED.
WAP EXT	WIRELESS ACCESS POINT CONNECTION (WALL). PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO WIRELESS ACCESS POINT DETAILS. PROVIDE (2) CATEGORY 6A CABLES FOR EACH LOCATION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE 3'-0" EQUIPMENT CORD. WIRELESS ACCESS POINT DEVICE (EXTREME NETWORKS AP4000) SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED.
WAP EXT	WIRELESS ACCESS POINT CONNECTION (EXTERIOR). PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (2) CATEGORY 6A CABLES FOR EACH LOCATION. PROVIDE SURGE PROTECTION AND 3'-0" EQUIPMENT CORD. WIRELESS ACCESS POINT DEVICE (EXTREME NETWORKS AP4000) SHALL BE OWNER FURNISHED, CONTRACTOR INSTALLED. REFER TO EXTERIOR NETWORK DEVICE DETAIL.
TV	STANDARD TV OUTLET. PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (2) CATEGORY 6A CABLES. REFER TO OUTLET DETAIL ON SHEET T-501.
AV1	AUDIO/VIDEO DISPLAY #1. PROVIDE BACKBOX, CONDUIT, (4) CATEGORY 6A CABLES, AND ADDITIONAL CABLING AS INDICATED ON DETAIL SHEET T-502.
AV2	AUDIO/VIDEO DISPLAY #2. PROVIDE BACKBOX, CONDUIT, (4) CATEGORY 6A CABLES, AND ADDITIONAL CABLING AS INDICATED ON DETAIL SHEET T-502.
AV3	AUDIO/VIDEO DISPLAY #3. PROVIDE BACKBOX, CONDUIT, (2) CATEGORY 6A CABLES, AND ADDITIONAL CABLING AS INDICATED ON DETAIL SHEET T-502.
FC #D/#V	FURNITURE CONNECTION. STANDARD HEIGHT (+18" AFF). PROVIDE LARGE CAPACITY JUNCTION BOX WITH LOW VOLTAGE DIVIDER (RACO 263/981) WITH 2" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE FOR NETWORK CABLING AND 0.75" CONDUIT FOR POWER. PROVIDE QUANTITY OF CATEGORY 6A CABLES AS INDICATED BY SUBSCRIPT. CABLING SHALL BE ROUTED TO EACH STATION AND TERMINATED IN MODULE FACEPLATE DESIGNED FOR FURNITURE SYSTEM. EXPOSED CABLING SHALL BE PROTECTED. COORDINATE WITH FURNITURE VENDOR.
	CONDUIT/SLEEVE. 4" UNLESS OTHERWISE NOTED.
	12" WIDE RUNWAY LADDER CABLE TRAY IN TELECOMMUNICATIONS ROOMS.
	WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS. 12" WIDE BY 4" DEEP, UON.
	42RU TELECOM EQUIPMENT CABINET WITH LOCAKABLE DOORS AND INTEGRAL VERTICAL WIRE MANAGEMENT.
	TELECOMMUNCATION TERMINAL BACKBOARD (TTB). PROVIDE 4' BY 8' SHEETS OF 3/4" FIRE-RATED A/C-GRADE PLYWOOD, MOUNTED VERTICALLY WITH BOTTOM EDGE 8" AFF. MOUNT WITH A-SIDE FACING OUTWARD FROM THE WALL. FIRE RATING STAMP MUST REMAIN VISIBLE. DO NOT PAINT.
X	KEY NOTE

SYMBOLS:

SYMBOL	DESCRIPTION
	NETWORK CAMERA (CEILING). WHEN INSTALLED IN HARD/OPEN CEILING, PROVIDE 2-GANG JUNCTION BOX WITH 1-GANG TRIM RING AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO CAMERA DETAIL (HARD/OPEN CEILING). PROVIDE (2) CATEGORY 6A CABLES AT EACH CAMERA LOCATION. WHEN INSTALLED IN ACCESSIBLE CEILING, PROVIDE ABOVE-CEILING BRACKET AND SURFACE BOX. REFER TO CAMERA DETAIL (ACCESSIBLE CEILING).
	NETWORK CAMERA (WALL). PROVIDE 2-GANG JUNCTION BOX AND 1" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (1) CATEGORY 6A CABLE FOR EACH CAMERA CONNECTION. REFER TO CAMERA DETAIL (WALL MOUNTED).
EXT	NETWORK CAMERA (EXTERIOR WALL). PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (2) CATEGORY 6A CABLES FOR EACH CAMERA LOCATION. PROVIDE SURGE PROTECTION AND EQUIPMENT CORD. REFER TO EXTERIOR CAMERA DETAILS.
EXT	NETWORK CAMERA (EXTERIOR CEILING). PROVIDE 12"x12"x6" DEEP JUNCTION BOX, 1" SLEEVE TO EXTERIOR AND 1.25" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (2) CATEGORY 6A CABLES FOR EACH CAMERA LOCATION. PROVIDE SURGE PROTECTION AND EQUIPMENT CORD. REFER TO EXTERIOR CAMERA DETAILS.
CR	CARD READER. ROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
DC	DOOR CONTACT. PROVIDE 3/4" CONDUIT TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
RX	REQUEST TO EXIT DEVICE/CONNECTION. PROVIDE 1-GANG JUNCTION BOX MOUNTED HORIZONTALLY AND 3/4" CONDUIT TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
KP	KEYPAD. PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO INTRUSION DETECTION CONTROL PANEL. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING.
ES	ELECTRIC STRIKE. PROVIDE 3/4" CONDUIT WITH PULL STRING IN DOOR FRAME TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. DOOR HARDWARE CONTRACTOR SHALL PROVIDE DEVICE AND SECURITY CONTRACTOR SHALL PROVIDE CABLING.
EL	ELECTRIC LOCKSET. PROVIDE 3/4" CONDUIT WITH PULL STRING IN DOOR FRAME TO ACCESS CONTROL JUNCTION BOX ON SECURE SIDE OF DOOR. HARDWARE CONTRACTOR SHALL PROVIDE DEVICE AND SECURITY CONTRACTOR SHALL PROVIDE CABLINING.
PB	PANIC BUTTON, MOUNTED UNDER DESK, UON. PROVIDE 1-GANG JUNCTION BOX ON WALL ADJACENT TO DESK, MOUNTED AT 18" AFF, AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. SECURITY CONTRACTOR SHALL PROVIDE DEVICE, CABLING, AND REQUIRED CONNECTIONS TO SECURITY PANEL. PANIC BUTTON SHALL FORCE LOCKDOWN OF ACCESS CONTROLLED DOORS AS WELL AS SEND OUT ALERT TO MONITORING STATION.
S	25/70V ANALOG SPEAKER (CEILING). PROVIDE (1) SHIELDED 22/2AWG TO EACH SPEAKER, ROUTED THROUGH CABLE TRAY AND J-HOOKS. PROVIDE 10'-0" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING. WHEN INSTALLED IN HARD CEILING, PROVIDE SPEAKER BACKBOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. SEE DETAILS FOR ADDITIONAL INFORMATION.
S IP	NETWORK SPEAKER (CEILING). PROVIDE (1) CATEGORY 6 CABLE TO EACH SPEAKER FROM NEAREST TELECOM ROOM, ROUTED THROUGH CABLE TRAY AND J-HOOKS. WHEN INSTALLED IN ACCESSIBLE CEILING SPACE, PROVIDE ABOVE-CEILING BRACKET AND SURFACE BOX. PROVIDE 10'-0" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING. WHEN INSTALLED IN HARD CEILING, PROVIDE SPEAKER BACKBOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. SEE DETAILS FOR ADDITIONAL INFORMATION.
S	25/70V ANALOG SPEAKER (WALL). MOUNT 10' AFF UNLESS OTHERWISE NOTED. PROVIDE SINGLE GANG J-BOX WITH 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (1) SHIELDED 22/2AWG TO EACH SPEAKER, ROUTED THROUGH CABLE TRAY AND J-HOOKS. PROVIDE 10'-0" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING. SEE DETAILS FOR ADDITIONAL INFORMATION.
S EXT	HIGH-OUTPUT EXTERIOR ANALOG HORN SPEAKER. MOUNT 12' AFG UNLESS OTHERWISE NOTED. PROVIDE 8"x8"x6" DEEP JUNCTION BOX, 3/4" SLEEVE TO EXTERIOR AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. PROVIDE (1) SHIELDED 22/2AWG TO EACH SPEAKER, ROUTED THROUGH CABLE TRAY AND J-HOOKS. PROVIDE 10'-0" CABLE SLACK AND COIL AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING. EXTERIOR SPEAKERS MUST BE ON SEPARATE CIRCUIT FROM INTERIOR SPEAKERS. SEE DETAILS FOR ADDITIONAL INFORMATION.
IC	NETWORK INTERCOM CALL STATION. ELEVATED HEIGHT (+46" AFF). PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO LOCAL ACCESSIBLE CEILING SPACE. PROVIDE (1) CATEGORY 6 CABLE FROM CALL STATION TO LOCAL NETWORK SPEAKER.
MD	DUAL-TECHNOLOGY MOTION DETECTOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. WHERE INSTALLED IN WALL OR HARD CEILING, PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
GB	GLASS BREAK DETECTOR. SECURITY CONTRACTOR SHALL PROVIDE DEVICE AND CABLING. WHERE INSTALLED IN WALL OR HARD CEILING, PROVIDE 1-GANG JUNCTION BOX AND 3/4" CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.

FLOOR BOXES:

SYMBOL	DESCRIPTION
# FB4	4-GANG MULTI-SERVICE FLOOR BOX. ELECTRICAL CONTRACTOR SHALL PROVIDE FLOOR BOX, COVER, CONDUITS, ELECTRICAL DEVICES AND ASSOCIATED MOUNTING PLATES FOR A COMPLETE INSTALLATION. STRUCTURED CABLING CONTRACTOR SHALL PROVIDE (2) 6A CABLES (UNLESS OTHERWISE NOTED BY SUBSCRIPT). PROVIDE (1) HDMI CABLE BETWEEN FLOORBOX AND CORRESPONDING AV BACKBOX WHERE APPLICABLE. LEGRAND: EVOLUTION EFB4SS-OG OR APPROVED EQUAL.

SECURITY GENERAL NOTES

1. LENOIR COUNTY SCHOOLS CURRENTLY USES GALAXY CONTROL SYSTEMS FOR ELECTRONIC ACCESS CONTROL AND EXACQVISION FOR CAMERA MONITORING AND RECORDING. ALL COMPONENTS OF THE ESS FURNISHED UNDER THIS SCOPE MUST BE FULLY COMPATIBLE WITH THESE EXISTING SYSTEMS.
2. CONTRACTOR MUST REVIEW AND COORDINATE WITH THE DOOR HARDWARE INFORMATION SHOWN ON THE ARCHITECTURAL PLANS AND SPECIFICATIONS.
3. PROVIDE SURGE PROTECTION ON ALL CONDUCTORS SERVICING EXTERIOR DEVICES, INCLUDING CAMERAS AND CARD READERS. SURGE PROTECTION MUST BE WITHIN THREE FEET OF THE CONDUCTOR'S ENTRY POINT IN THE BUILDING PERIMETER AND BE GROUNDED TO BUILDING STEEL WITHIN TEN FEET.
4. ALL EQUIPMENT MUST BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. ALL WALL-MOUNTED SECURITY HEADEND EQUIPMENT MUST BE MOUNTED TO FIRE-RATED TTB IN TELECOM ROOMS AS INDICATED ON DRAWINGS.
6. CAMERA LOCATIONS ARE NOT EXACT AND INDICATE GENERAL PLACEMENT ONLY.
7. CAMERA VIEWS SHALL BE COORDINATED WITH THE OWNER AND FIELD-VERIFIED PRIOR TO INSTALLATION. CONTRACTOR SHALL TEMPORARILY SUPPORT THE CAMERA TO CONFIRM THE LOCATION WILL PROVIDE THE DESIRED VIEW. RELOCATION OF CAMERAS NOT PROVIDING THE DESIRED VIEW SHALL BE AT THE CONTRACTOR'S EXPENSE.
8. PATHWAYS SHALL BE CONCEALED WHEREVER POSSIBLE.
9. ALL SECURITY DEVICES MUST BE RATED FOR THE ENVIRONMENT IN WHICH THEY ARE INSTALLED.

TELECOMMUNICATIONS STANDARDS:

INSTALLATION SHALL CONFORM TO THE FOLLOWING STANDARDS:

A. TIA-568.0-E (GENERIC TELECOMMUNICATIONS CABLING FOR CUSTOMER PREMISES)
B. TIA-568.1-E (COMMERCIAL BUILDING TELECOMMUNICATIONS CABLING)
C. TIA-568.2-D (BALANCED TWISTED-PAIR TELECOMMUNICATIONS CABLING AND COMPONENTS)
D. TIA-568.3-E (OPTICAL FIBER CABLING AND COMPONENTS)
E. TIA-569-E (TELECOMMUNICATIONS PATHWAYS AND SPACES)
F. TIA-606-D (ADMINISTRATION STANDARD FOR TELECOMMUNCATIONS INFRASTRUCTURE)
G. TIA-607-D (TELECOMMUNICATIONS BONDING AND GROUNDING FOR CUSTOMER PREMISES)

CABLE SERVICE LOOP SCHEDULE

	SOURCE	DESTINATION	NOTES
BACKBONE - COPPER	20'-0"	20'-0"	
BACKBONE - FIBER	20'-0"	20'-0"	RACK MOUNTED ENCLOSURE
HORIZONTAL - COPPER - DATA	10'-0"	1'-6"	
HORIZONTAL - COPPER - WAP	10'-0"	20'-0"	
HORIZONTAL - COPPER - CAMERA	10'-0"	20'-0"	

NOTES:
A. UTILIZE FIGURE EIGHT CONFIGURATION FOR LARGE SERVICE LOOPS.
B. COIL CABLING FOR FIELD DEVICE LOCATIONS AT CABLE TRAY/J-HOOKS ABOVE ACCESSIBLE CEILING.
C. PROVIDE 20'-0" SERVICE LOOP WERE A ROOM IS UTILIZED AS A PULL POINT AND NO TERMINATIONS ARE MADE.

CABLE COLORS

DATA:	BLUE CABLE - BLUE JACK
WIRELESS ACCESS:	WHITE CABLE - YELLOW JACK
SECURITY:	GREEN CABLE - GREEN JACK
INTERCOM:	GRAY CABLE - BLACK JACK

CONDUIT CAPACITY SCHEDULE

CONDUIT	1"	1.25"	1.50"	2.00"	2.50"	3.00"	4.00"
CABLES	4	8	10	18	32	48	80

NOTES:
A. UPSIZE CONDUIT TO NEXT SIZE SHOWN IN THIS SCHEDULE WHEN CABLE CAPACITY HAS BEEN EXCEEDED.
B. CONDUIT CAPACITY CALCULATED WITH 0.30" O.D. CATEGORY 6A CABLE AT 40% FILL RATIO.

CONDUIT/SLEEVE SCHEDULE

CLASSROOMS	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
COMPUTER LABS	(2) 4" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
SMALL OFFICES	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
LARGE OFFICES	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
WORKSPACES	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
CONFERENCE RMS.	(2) 2" CONDUITS TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.
VESTIBULES	(1) 2" CONDUIT TO CABLE TRAY/J-HOOKS IN ACCESSIBLE CEILING SPACE IN CORRIDOR.

ADDITIONAL REQUIREMENTS:

A. PROVIDE A MINIMUM OF (2) 4" CONDUITS BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A HARD CEILING GREATER THAN 3'-0" UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

B. PROVIDE A MINIMUM OF (1) 2" CONDUIT BETWEEN ALL ACCESSIBLE CEILING SPACES SEPARATED BY A WALL THAT IS CONSTRUCTED TO DECK UNLESS OTHERWISE NOTED. REFER TO TELECOMMUNICATIONS CONDUIT CAPACITY SCHEDULE.

TELCOM SHEET INDEX

T-001	TELECOM LEGEND AND NOTES
T-010	TELECOM SITE PLAN
T-501	TELECOM DETAILS
T-502	TELECOM DETAILS
T-503	TELECOM DETAILS
T-504	TELECOM DETAILS
T-505	TELECOM DETAILS
TI111	FIRST FLOOR INTERCOM PLAN - AREA 100
TI112	FIRST FLOOR INTERCOM PLAN - AREA 200
TI113	FIRST FLOOR INTERCOM PLAN - AREA 300
TI114	FIRST FLOOR INTERCOM PLAN - AREA 400
TI115	FIRST FLOOR INTERCOM PLAN - AREA 500
TI116	FIRST FLOOR INTERCOM PLAN - AREA 600
TN101	FIRST FLOOR NETWORK PLAN - OVERALL
TN111	FIRST FLOOR NETWORK PLAN - AREA 100
TN112	FIRST FLOOR NETWORK PLAN - AREA 200
TN113	FIRST FLOOR NETWORK PLAN - AREA 300
TN114	FIRST FLOOR NETWORK PLAN - AREA 400
TN115	FIRST FLOOR NETWORK PLAN - AREA 500
TN116	FIRST FLOOR NETWORK PLAN - AREA 600
TN121	MECH. PLATFORM NETWORK PLAN - AREA 100
TN122	MECH. PLATFORM NETWORK PLAN - AREA 200
TN401	ENLARGED NETWORK PLANS
TN402	ENLARGED NETWORK PLANS
TN403	ENLARGED NETWORK PLANS
TN601	NETWORK RISER DIAGRAM
TY111	FIRST FLOOR SECURITY PLAN - AREA 100
TY112	FIRST FLOOR SECURITY PLAN - AREA 200
TY113	FIRST FL

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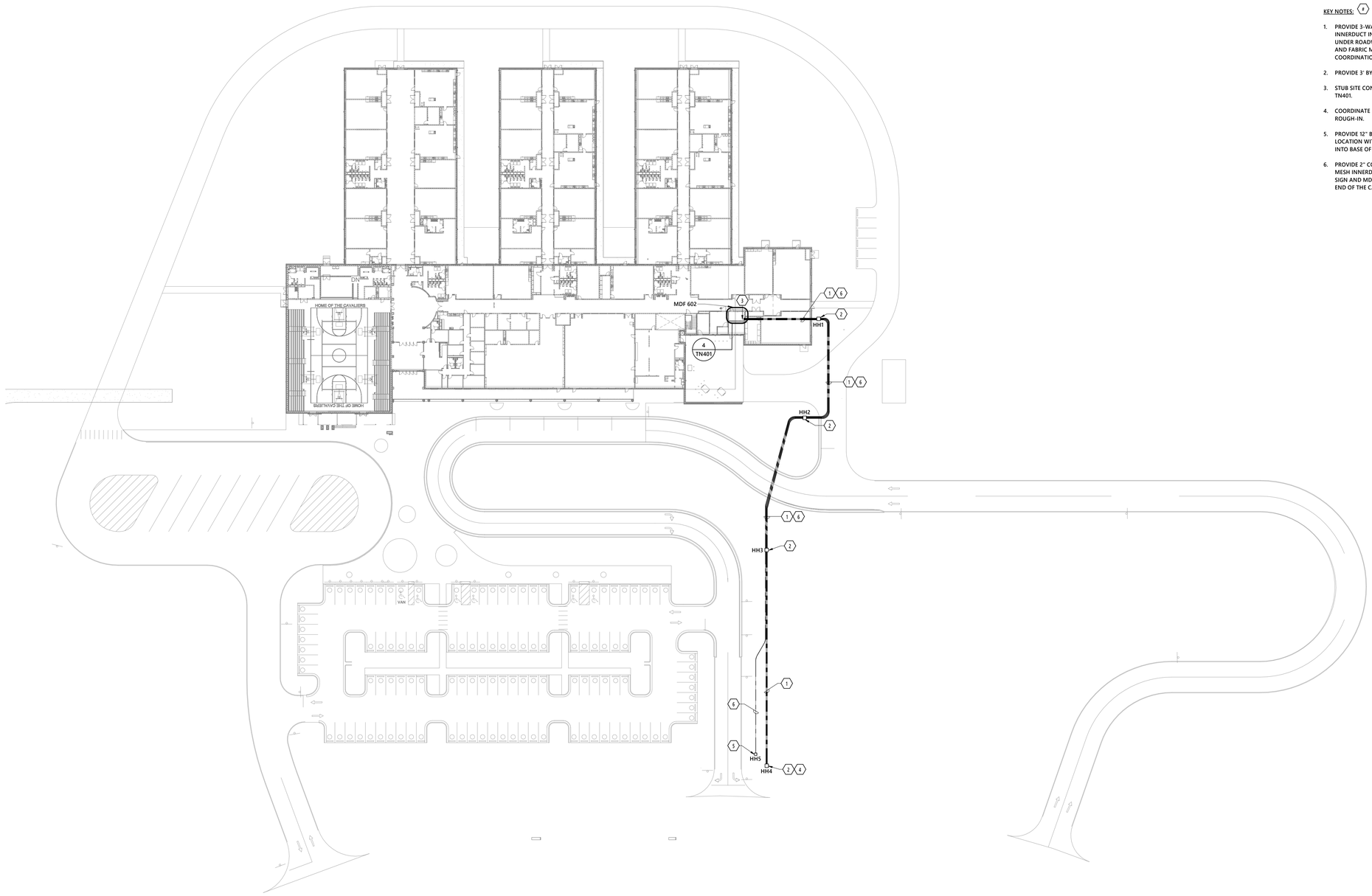

1 **TECHNOLOGY SITE PLAN**
1" = 40'-0"

GENERAL NOTES:

A. ROUTING SHOWN ON THIS PAGE IS DIAGRAMMATIC. ROUTE UNDERGROUND CONDUITS AND DUCTBANKS TO BEST AVOID ANY STRUCTURES AND UTILITIES. REFER TO CIVIL PLANS FOR ADDITIONAL INFORMATION.

KEY NOTES: (#)

1. PROVIDE 3-WAY, 4" TELECOMMUNICATIONS DUCTBANK. PROVIDE 3" 3-CELL FABRIC MESH INNERDUCT IN EACH CONDUIT. PROVIDE CONCRETE ENCASEMENT WHERE DUCTBANK PASSES UNDER ROADWAYS AND PARKING LOTS. PROVIDE UP TO 150' OF ADDITIONAL (3)-4" CONDUIT AND FABRIC MESH INNERDUCT AND COMPLETE INSTALLATION BASED ON UTILITY COORDINATION.
2. PROVIDE 3' BY 3' TELECOMMUNICATIONS HANDHOLE.
3. STUB SITE CONDUITS UP THROUGH FLOOR SLAB INTO MDF. REFER TO ENLARGED PLANS ON TN401.
4. COORDINATE FINAL LOCATION AND SERVICE TIE-IN WITH LOCAL SERVICE PROVIDER PRIOR TO ROUGH-IN.
5. PROVIDE 12" BY 12" TELECOMMUNICATIONS HANDHOLE AT BASE OF SIGN. COORDINATE FINAL LOCATION WITH ARCHITECT AND CIVIL DRAWINGS. PROVIDE 2" CONDUIT FROM HANDHOLE INTO BASE OF SIGN.
6. PROVIDE 2" CONDUIT UNDERGROUND FROM SIGN BACK TO MDF. PROVIDE 2" 3-CELL FABRIC MESH INNERDUCT ALONG ENTIRE ROUTE. PROVIDE 4-STRAND OS2 FIBER OPTIC CABLE BETWEEN SIGN AND MDF. LEAVE 20' SERVICE LOOP IN EACH HANDHOLE AND 25' SERVICE LOOP AT EACH END OF THE CABLE.

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La Grange NC, 28551

ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: DWH
CHECKED BY: TMC

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TELECOM SITE PLAN

T-010

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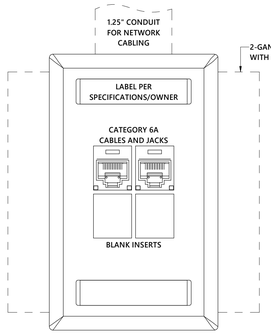
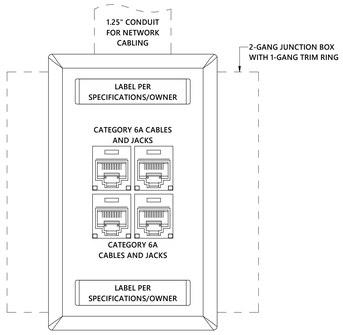
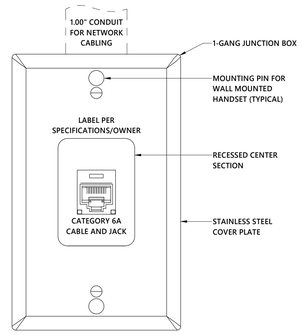


1 NETWORK OUTLET DETAIL - 2 PORT
NOT TO SCALE

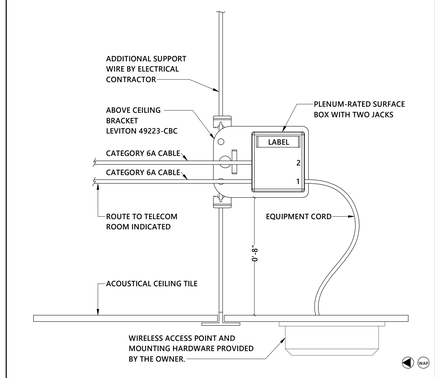


2 NETWORK OUTLET DETAIL - 4 PORT
NOT TO SCALE

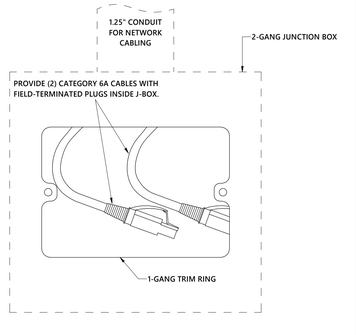


PANDUIT: KWPK6 OR APPROVED EQUAL

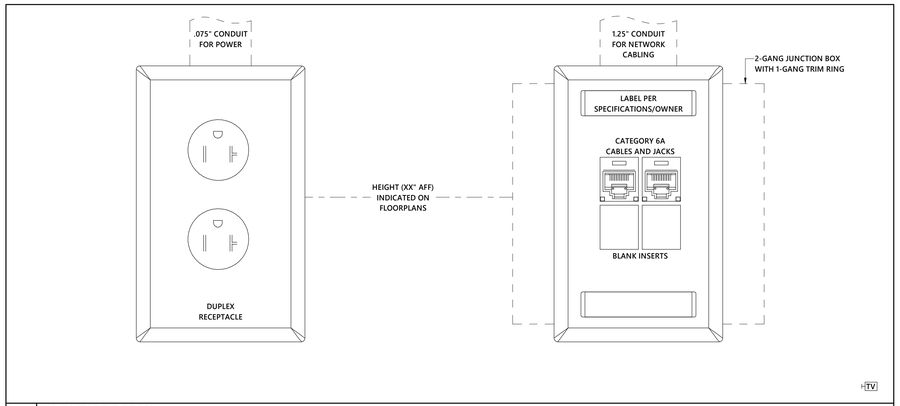
3 WALL PHONE OUTLET DETAIL
NOT TO SCALE



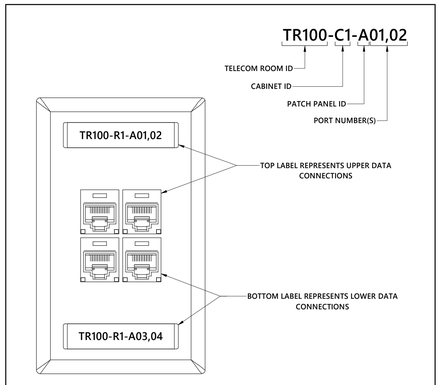
4 WIRELESS ACCESS POINT / CEILING OUTLET (ACCESSIBLE)
NOT TO SCALE



5 WIRELESS ACCESS POINT DETAIL (HARD CEILING/WALL)
NOT TO SCALE



6 TV OUTLET DETAIL
NOT TO SCALE



7 NETWORK OUTLET LABELING DETAIL
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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: DWH
CHECKED BY: TMC

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GENERAL NOTES:

A. BASIS OF DESIGN: LEGRAND EVOLUTION WALL BOX EFS84 OR APPROVED EQUAL. PROVIDE HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

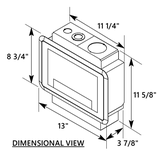
B. PROVIDE (2) 5-20R RECEPTACLES.

C. PROVIDE INSTALLATION HARDWARE AS REQUIRED. COORDINATE WITH ARCHITECTURAL DRAWINGS.

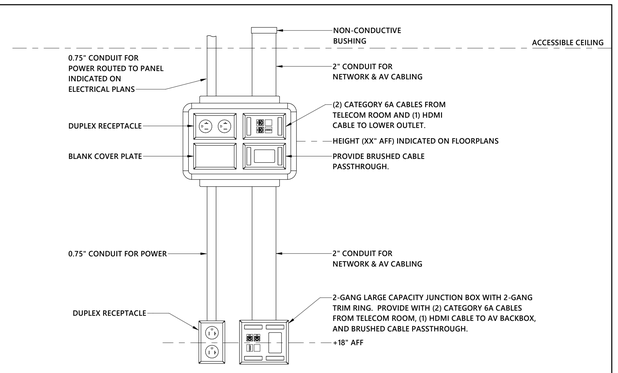
D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

E. WALL BOX, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUTURED CABLING CONTRACTOR.



DIMENSIONAL VIEW



AV1

1 AV BACKBOX WITH WALL PLATE DETAIL - AV1

NOT TO SCALE

GENERAL NOTES:

A. BASIS OF DESIGN: FSR MASONRY WALL BOX PWB-CMU8-B OR APPROVED EQUAL. PROVIDE HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

B. PROVIDE (2) 5-20R RECEPTACLES.

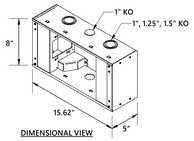
C. PROVIDE INSTALLATION HARDWARE AS REQUIRED. COORDINATE WITH ARCHITECTURAL DRAWINGS.

D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

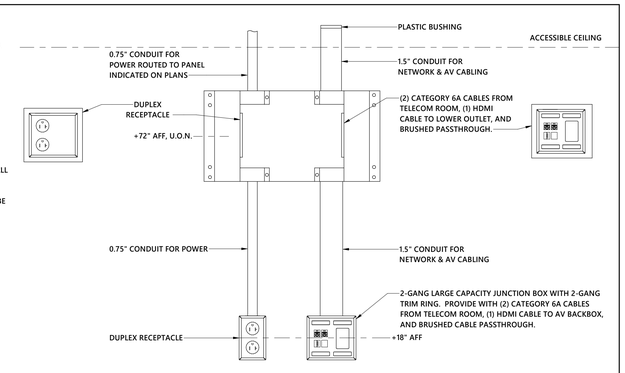
E. WALL BOX, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUTURED CABLING CONTRACTOR.

G. A/V CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY AV CONTRACTOR.



DIMENSIONAL VIEW



AV2

2 AV BACKBOX WITH WALL PLATE DETAIL (BLOCK WALL) - AV2

NO SCALE

GENERAL NOTES:

A. BASIS OF DESIGN: FSR MASONRY WALL BOX PWB-CMU8-B OR APPROVED EQUAL. PROVIDE HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

B. PROVIDE (2) 5-20R RECEPTACLES.

C. PROVIDE INSTALLATION HARDWARE AS REQUIRED. COORDINATE WITH ARCHITECTURAL DRAWINGS.

D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

E. WALL BOX, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUTURED CABLING CONTRACTOR.

G. A/V CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY AV CONTRACTOR.

DIMENSIONAL VIEW

AV3

3 AV BACKBOX WITH FLOORBOX DETAIL (BLOCK WALL) - AV3

NO SCALE

GENERAL NOTES:

A. BASIS OF DESIGN: LEGRAND EVOLUTION FLOOR BOX EFB45S-OG OR APPROVED EQUAL. PROVIDE HARDWARE AS REQUIRED TO CONNECT DEVICES AND CONDUITS AS INDICATED.

B. PROVIDE (2) 5-20R RECEPTACLES.

C. PROVIDE ALL INSTALLATION HARDWARE AS REQUIRED.

D. ROUTE STRUCTURED CABLING TO TELECOMMUNICATIONS ROOM INDICATED.

E. FLOOR BOX & COVER, CONDUIT, RECEPTACLES AND POWER WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR.

F. STRUCTURED CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY STRUTURED CABLING CONTRACTOR.

G. A/V CABLING AND ASSOCIATED HARDWARE SHALL BE PROVIDED BY AV CONTRACTOR.

H. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION.

DIMENSIONAL VIEW

FB4

4 4-GANG MULTI-SERVICE FLOOR BOX

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM

ISSUE DATE: 02/18/2025

PROJECT #: 02303.000
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CHECKED BY: TMC

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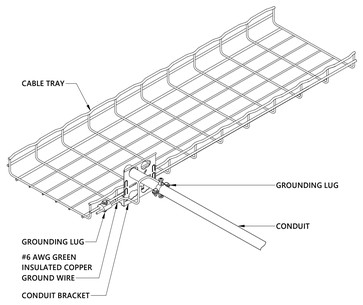


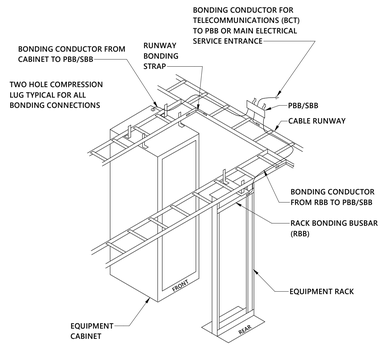
GENERAL NOTES:

A. DETAIL SHALL APPLY TO ALL CABLE TRAY/CONDUIT TRANSISTIONS.

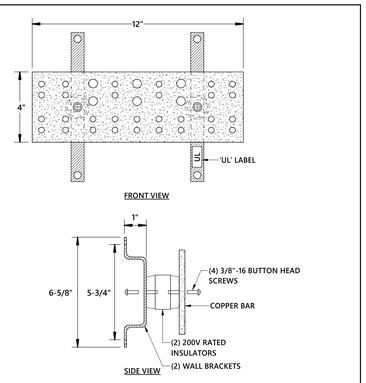
B. BONDING CLAMP SHALL BE APPROVED FOR DISSIMILAR METAL CONNECTIONS.

C. GROUNDING LUGS SHALL BE TIN-PLATED COPPER WITH STAINLESS STEEL HARDWARE

1 CONDUIT AND CABLE TRAY CONNECTION DETAIL
NOT TO SCALE

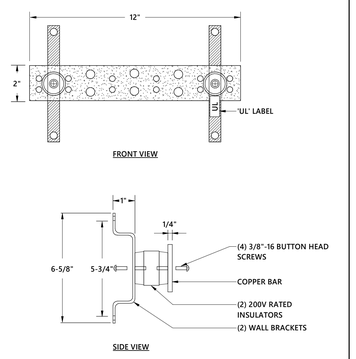


2 CABLE TRAY BONDING AND GROUNDING
NOT TO SCALE



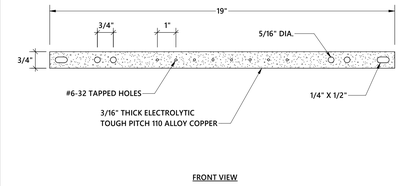
CPI: 40153-012 OR APPROVED EQUAL

3 PRIMARY BONDING BUSBAR 'PBB'
NOT TO SCALE



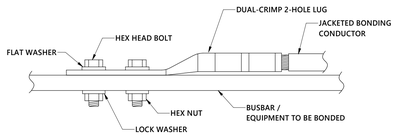
CPI: 13622-012 OR APPROVED EQUAL

4 SECONDARY BONDING BUSBAR 'SBB'
NOT TO SCALE



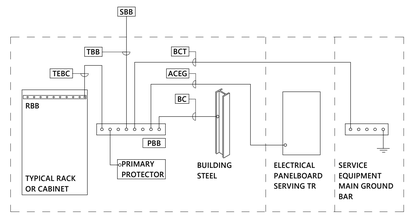
CPI: 10610-019 OR APPROVED EQUAL

5 RACK BONDING BUSBAR 'RBB'
NOT TO SCALE



INSTALLATION NOTES:
1. PROVIDE APPROPRIATELY SIZED LUG FOR BONDING CONDUCTOR.
2. PROVIDE APPROPRIATELY SIZED BOLTS WITH A MINUMUM OF TWO EXPOSED THREADS.
3. REMOVE PAINT FROM MATING SURFACE IN AREA OF LUG CONTACT.
4. APPLY ANTI-OXIDANT COMPOUND TO MATING SURFACE AND WIPE CLEAN EXCESS COMPOUND.

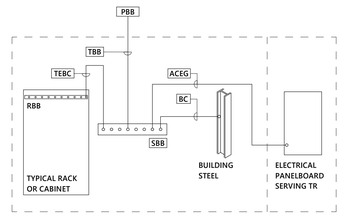
6 2-HOLE GROUNDING LUG TERMINATION
NOT TO SCALE



TELECOMMUNICATIONS GROUNDING LEGEND

PBB	PRIMARY BONDING BUSBAR
SBB	SECONDARY BONDING BUSBAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE. SIZE PER TABLE ON THIS SHEET.
TEBC	TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.
BC	BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.
ACEG	ALTERNATING CURRENT EQUIPMENT GROUND. PROVIDE A MINIMUM #6 AWG GROUND.
BCT	BONDING CONDUCTOR FOR TELECOMMUNICATIONS. PROVIDE A MINIMUM #3/0 AWG GROUND IN 3/4" C.

7 TYPICAL PBB CONNECTIONS
NOT TO SCALE



TELECOMMUNICATIONS GROUNDING LEGEND

PBB	TELECOMMUNICATIONS MAIN GROUND BAR
SBB	SECONDARY BONDING BUSBAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE. SIZE PER TABLE ON THIS SHEET.
TEBC	TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.
BC	BONDING CONDUCTOR. PROVIDE A MINIMUM #6 AWG GROUND.
ACEG	ALTERNATING CURRENT EQUIPMENT GROUND. PROVIDE A MINIMUM #6 AWG GROUND.

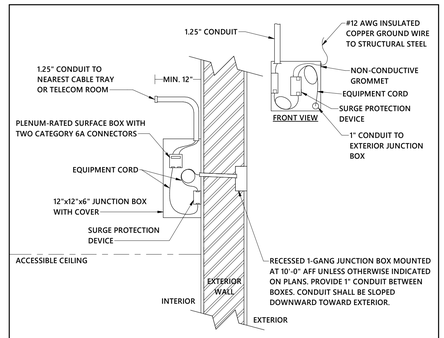
8 TYPICAL SBB CONNECTIONS
NOT TO SCALE

TELECOM BACKBONE BONDING (TBB) CONDUCTOR SIZE VS LENGTH TABLE

TBB/GE LINEAR LENGTH (FT)	TBB/GE SIZE (AWG)
13	6
14-20	4
21-26	3
27-33	2
34-41	1
42-52	1/0
53-66	2/0
67-84	3/0
85-105	4/0
106-125	250 kcmil
126-150	300 kcmil
151-175	350 kcmil
176-250	500 kcmil
251-300	600 kcmil
GREATER THAN 301	750 kcmil

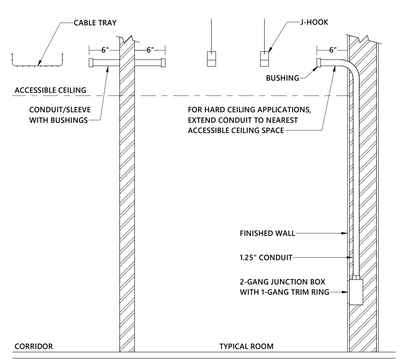
NOTES:
A. TBB SIZING TABLE PER LATEST EDITION OF TIA-607-D.
B. THE MINIMUM TBB CONDUCTOR SIZE SHALL BE A NO. 6 AMERICAN WIRE GAUGE (AWG).

9 TELECOM BACKBONE BONDING (TBB) TABLE
NOT TO SCALE

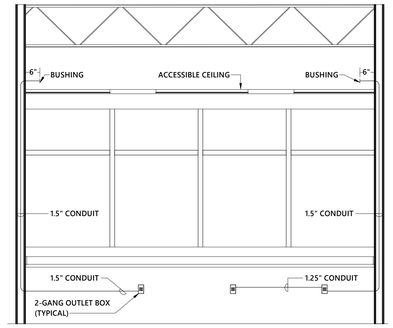


GENERAL NOTES:
A. ALL DEVICES MUST BE SECURED INSIDE JUNCTION BOX.
B. EQUIPMENT CORD BETWEEN EXTERIOR DEVICE AND SURGE PROTECTION DEVICE MUST BE MINIMUM 3' IN LENGTH.
C. SURGE PROTECTION DEVICE MUST BE GROUNDED TO BUILDING STEEL PER MANUFACTURER'S INSTRUCTIONS.

10 EXTERIOR NETWORK DEVICE DETAIL
NOT TO SCALE



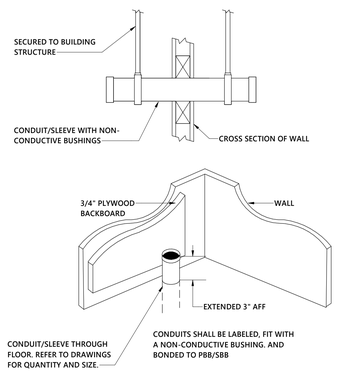
11 NETWORK OUTLET STUB UP DETAIL
NOT TO SCALE



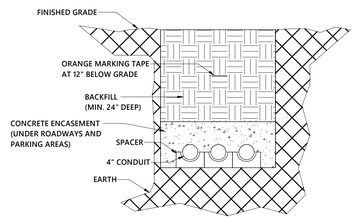
GENERAL NOTES:

A. FOR HARD CEILING APPLICATIONS, EXTEND CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
B. NO MORE THAN (2) CONSECUTIVE JUNCTION BOXES MAY BE SERVED HORIZONTALLY.

12 NETWORK OUTLETS UNDER WINDOW DETAIL
NOT TO SCALE



13 TELECOMMUNICATIONS CONDUIT/SLEEVE DETAIL
NOT TO SCALE



NOTES:
A. PROVIDE 3" 3-CELL FABRIC MESH INNERDUCT WITH PULL TAPE IN EACH 4" SITE CONDUIT.
B. PROVIDE MINIMUM 3" OF SEPARATION BETWEEN CONDUITS IN DUCTBANK.
C. PROVIDE ALL CONDUITS WITH DUCT PLUGS ON BOTH ENDS.
D. PROVIDE TRACER WIRE IN ONE CONDUIT IN THE DUCTBANK.
E. CONDUIT BEND RAIUS SHALL BE NO LESS THAN 10 TIMES THE CONDUIT OUTER DIAMETER.

14 3-WAY 4" TELECOM DUCTBANK DETAIL
NOT TO SCALE

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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET /AGENCY COM.

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: DWH
CHECKED BY: TMC

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GENERAL NOTES:

A. DOOR DETAIL INDICATES DOOR HANDLE OR CRASHBAR ON SECURED SIDE OF DOOR FOR REFERENCE ONLY. LOCK POWER WILL VARY DEPENDING ON LOCK TYPE AND DOOR HARDWARE. CONTRACTOR SHALL CROSS REFERENCE WITH DOOR HARDWARE SCHEDULE/SPECIFICATIONS TO CONFIRM FINAL REQUIREMENTS.

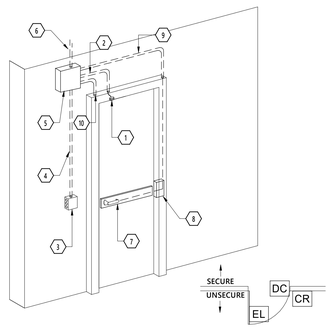
B. ALL CONDUITS SHALL BE CONCEALED; UNLESS OTHERWISE NOTED

C. PROVIDE AND INSTALL PULL STRINGS IN ALL CONDUITS.

D. FOR STOREFRONT DOORS DISREGARD KEYNOTES 3 AND 4. PROVIDE MULLION MOUNT CARD READER AND CONCEAL CABLING WITHIN ALUMINUM FRAMING CHANNELS.

KEYNOTES: (#)

1. DOOR CONTACT: PROVIDE FLUSH MOUNTED DOUBLE POLE DOUBLE THROW (DPDT) DOOR POSITION SWITCH.
2. DOOR CONTACT CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE ABOVE DOOR.
3. READER/KEYPAD: PROVIDE 4"X4"X2-1/8" FLUSH BACK-BOX AND SINGLE GANG MUD RING MOUNTED ON NON-SECURED SIDE OF DOOR AT 42" AFF.
4. READER/KEYPAD CONDUIT: PROVIDE 3/4"C. FROM JUNCTION BOX TO SECURITY ENCLOSURE ABOVE DOOR.
5. SECURITY ENCLOSURE ABOVE DOOR ON SECURE SIDE: PROVIDE 12"X12"X4" PAINTABLE ENCLOSURE MOUNTED ABOVE FINISHED ACCESSIBLE CEILING OR 10' AFF IN AREAS WITHOUT A CEILING ON SECURED SIDE OF DOOR.
6. SECURITY ENCLOSURE CONDUIT: PROVIDE 1"C. HOMERUN TO NEAREST SECURITY PANEL.
7. ELECTRIFIED LOCKSET: INTERNAL ELECTRIFIED LOCKSET WITH INTEGRATED REX SWITCH, SHOWN FOR REFERENCE ONLY.
8. POWER TRANSFER HINGE: HINGE WITH ISOLATED ELECTRICAL CONNECTIVITY, SHOWN FOR REFERENCE ONLY.
9. POWER TRANSFER HINGE CONDUIT/ELECTRIFIED LOCKSET CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE.
10. SPARE CONDUIT (FUTURE USE): PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE.



1 ACS SINGLE DOOR - ELECTRIFIED HARWARE W/INTEGRATED REX
NOT TO SCALE

GENERAL NOTES:

A. DOOR DETAIL INDICATES DOOR HANDLE OR CRASHBAR ON SECURED SIDE OF DOOR FOR REFERENCE ONLY. LOCK POWER WILL VARY DEPENDING ON LOCK TYPE AND DOOR HARDWARE. CONTRACTOR SHALL CROSS REFERENCE WITH DOOR HARDWARE SCHEDULE/SPECIFICATIONS TO CONFIRM FINAL REQUIREMENTS.

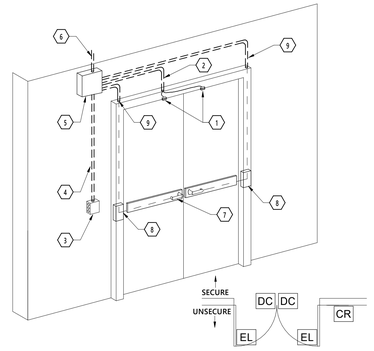
B. ALL CONDUITS SHALL BE CONCEALED; UNLESS OTHERWISE NOTED

C. PROVIDE AND INSTALL PULL STRINGS IN ALL CONDUITS.

D. FOR STOREFRONT DOORS DISREGARD KEYNOTES 3 AND 4. PROVIDE MULLION MOUNT CARD READER AND CONCEAL CABLING WITHIN ALUMINUM FRAMING CHANNELS.

KEYNOTES: (#)

1. DOOR CONTACT: PROVIDE FLUSH MOUNTED DOUBLE POLE DOUBLE THROW (DPDT) DOOR POSITION SWITCH.
2. DOOR CONTACT CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE ABOVE DOOR.
3. CARD READER: PROVIDE 4"X4"X2-1/8" JUNCTION BOX AND SINGLE GANG MUD RING MOUNTED ON NON-SECURED SIDE OF DOOR AT 42" AFF.
4. READER/KEYPAD CONDUIT: PROVIDE 3/4"C. FROM JUNCTION BOX TO SECURITY ENCLOSURE ABOVE DOOR.
5. SECURITY ENCLOSURE ABOVE DOOR ON SECURE SIDE: PROVIDE 12"X12"X4" PAINTABLE ENCLOSURE MOUNTED ABOVE FINISHED ACCESSIBLE CEILING OR 10' AFF IN AREAS WITHOUT A CEILING ON SECURED SIDE OF DOOR.
6. SECURITY ENCLOSURE CONDUIT: PROVIDE 1"C. HOMERUN TO NEAREST SECURITY PANEL.
7. ELECTRIFIED LOCKSET: ELECTRIFIED LOCKSET WITH INTEGRAL REQUEST-TO-EXIT SWITCH, SHOWN FOR REFERENCE ONLY.
8. POWER TRANSFER HINGE: HINGE WITH ISOLATED ELECTRICAL CONNECTIVITY, SHOWN FOR REFERENCE ONLY.
9. POWER TRANSFER HINGE CONDUIT/ELECTRIFIED LOCKSET CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE.



2 ACS DOUBLE DOOR - ELECTRIFIED HARWARE W/INTEGRATED REX
NOT TO SCALE

GENERAL NOTES:

A. DOOR DETAIL INDICATES DOOR HANDLE OR CRASHBAR ON SECURED SIDE OF DOOR FOR REFERENCE ONLY. LOCK POWER WILL VARY DEPENDING ON LOCK TYPE AND DOOR HARDWARE. CONTRACTOR SHALL CROSS REFERENCE WITH DOOR HARDWARE SCHEDULE/SPECIFICATIONS TO CONFIRM FINAL REQUIREMENTS.

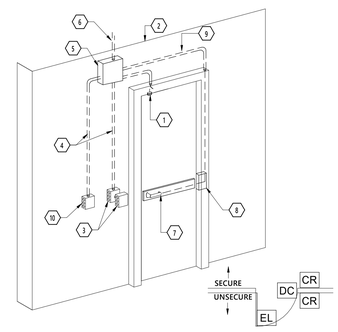
B. ALL CONDUITS SHALL BE CONCEALED; UNLESS OTHERWISE NOTED

C. PROVIDE AND INSTALL PULL STRINGS IN ALL CONDUITS.

D. IF DOOR FRAME IS TO BE FILLED WITH CONCRETE, CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE PROPER CONDUIT AND JUNCTION BOX INTO THE FRAME TO ALLOW FOR CABLING TO BE INSTALLED.

KEYNOTES: (#)

1. DOOR CONTACT: PROVIDE FLUSH MOUNTED DOOR STATUS MONITOR.
2. DOOR CONTACT CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE ABOVE DOOR.
3. READER: PROVIDE 4"X4"X2-1/8" FLUSH BACK-BOX AND SINGLE GANG MUD RING MOUNTED ON BOTH SECURE AND NON-SECURE SIDE OF DOOR AT 42" AFF. CONNECT J-BOXES TO ONE ANOTHER USING 3/4" CONDUIT.
4. READER/ALARM CONDUIT: PROVIDE 3/4"C. FROM JUNCTION BOX TO SECURITY ENCLOSURE ABOVE DOOR.
5. SECURITY ENCLOSURE ABOVE DOOR ON SECURE SIDE: PROVIDE 12"X12"X4" PAINTABLE ENCLOSURE MOUNTED ABOVE FINISHED ACCESSIBLE CEILING OR 10' AFF IN AREAS WITHOUT A CEILING ON SECURED SIDE OF DOOR.
6. SECURITY ENCLOSURE CONDUIT: PROVIDE 3/4"C. TO NEAREST ACCESSIBLE CEILING, CABLE TRAY OR TELECOM ROOM.
7. ELECTRIFIED LOCKSET: ELECTRIFIED LOCKSET WITH INTEGRATED REX SWITCH, SHOWN FOR REFERENCE ONLY.
8. POWER TRANSFER HINGE: HINGE WITH ISOLATED ELECTRICAL CONNECTIVITY, SHOWN FOR REFERENCE ONLY.
9. POWER TRANSFER HINGE CONDUIT/ELECTRIFIED LOCKSET CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE.
10. LOCAL AUDIBLE ALARM: PROVIDE 4"X4"X2-1/8" FLUSH BACK-BOX MOUNTED ON SECURE SIDE OF DOOR AT 42" AFF.



9 ACS SINGLE DOOR - ELECTRIFIED HARWARE, READ-IN/READ-OUT WITH LOCAL ALARM
NOT TO SCALE

GENERAL NOTES:

A. DOOR DETAIL INDICATES DOOR HANDLE OR CRASHBAR ON SECURED SIDE OF DOOR FOR REFERENCE ONLY. LOCK POWER WILL VARY DEPENDING ON LOCK TYPE AND DOOR HARDWARE. CONTRACTOR SHALL CROSS REFERENCE WITH DOOR HARDWARE SCHEDULE/SPECIFICATIONS TO CONFIRM FINAL REQUIREMENTS.

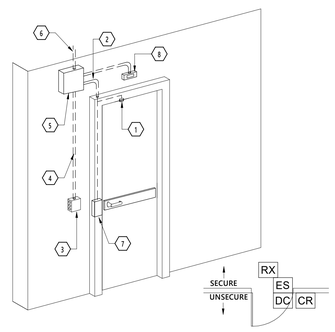
B. ALL CONDUITS SHALL BE CONCEALED; UNLESS OTHERWISE NOTED

C. PROVIDE AND INSTALL PULL STRINGS IN ALL CONDUITS.

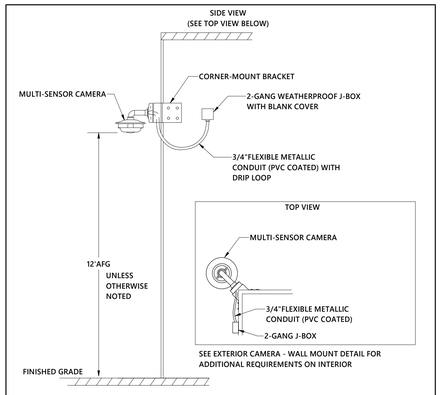
D. FOR STOREFRONT DOORS DISREGARD KEYNOTES 3 AND 4. PROVIDE MULLION MOUNT CARD READER AND CONCEAL CABLING WITHIN ALUMINUM FRAMING CHANNELS.

KEYNOTES: (#)

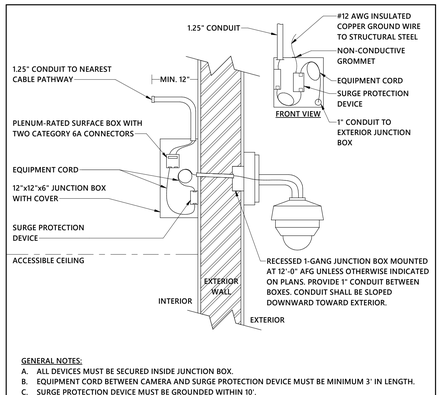
1. DOOR CONTACT: PROVIDE FLUSH MOUNTED DOUBLE POLE DOUBLE THROW (DPDT) DOOR POSITION SWITCH.
2. DOOR CONTACT/LOCKING HARDWARE CONDUIT: PROVIDE 3/4"C. FROM DOOR FRAME TO SECURITY ENCLOSURE ABOVE DOOR.
3. READER/KEYPAD: PROVIDE 4"X4"X2-1/8" FLUSH BACK-BOX AND SINGLE GANG MUD RING MOUNTED ON NON-SECURED SIDE OF DOOR AT 42" AFF.
4. READER/KEYPAD CONDUIT: PROVIDE 3/4"C. FROM JUNCTION BOX TO SECURITY ENCLOSURE ABOVE DOOR.
5. SECURITY ENCLOSURE ABOVE DOOR ON SECURE SIDE: PROVIDE 12"X12"X4" PAINTABLE ENCLOSURE MOUNTED ABOVE FINISHED ACCESSIBLE CEILING OR 10' AFF IN AREAS WITHOUT A CEILING ON SECURED SIDE OF DOOR.
6. SECURITY ENCLOSURE CONDUIT: PROVIDE 1"C. TO NEAREST SECURITY PANEL.
7. ELECTRIFIED STRIKE: INTERNAL ELECTRIFIED STRIKE, SHOWN FOR REFERENCE ONLY.
8. REQUEST-TO-EXIT (RX): PROVIDE MOTION RX DEVICE CENTERED AND MOUNTED TO TOP OF DOOR FRAME. PROVIDE SINGLE GANG J-BOX MOUNTED HORIZONTALLED, ROUTE CABLING INTO DOOR FRAME AND UP TO SECURITY ENCLOSURE ON SECURE SIDE.



4 ACS SINGLE DOOR - ELECTRIC STRIKE AND REX MOTION DEVICE
NOT TO SCALE

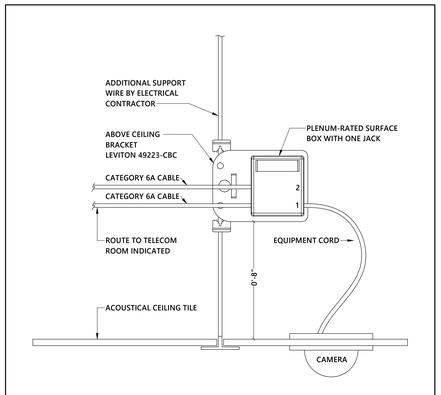


5 EXTERIOR CAMERA - CORNER MOUNT MULTI-SENSOR
NOT TO SCALE

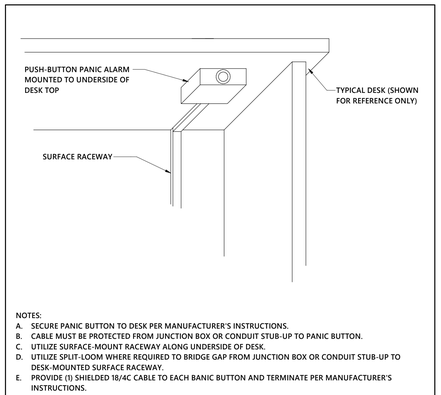


GENERAL NOTES:
A. ALL DEVICES MUST BE SECURED INSIDE JUNCTION BOX.
B. EQUIPMENT CORD BETWEEN CAMERA AND SURGE PROTECTION DEVICE MUST BE MINIMUM 3' IN LENGTH.
C. SURGE PROTECTION DEVICE MUST BE GROUNDED WITHIN 10'.

6 EXTERIOR CAMERA - WALL-MOUNT
NOT TO SCALE



7 INTERIOR CAMERA - ACCESSIBLE CEILING
NOT TO SCALE



NOTES:
A. SECURE PANIC BUTTON TO DESK PER MANUFACTURER'S INSTRUCTIONS.
B. CABLE MUST BE PROTECTED FROM JUNCTION BOX OR CONDUIT STUB-UP TO PANIC BUTTON.
C. UTILIZE SURFACE-MOUNT RACEWAY ALONG UNDERSIDE OF DESK.
D. UTILIZE SPLIT-LOOM WHERE REQUIRED TO BRIDGE GAP FROM JUNCTION BOX OR CONDUIT STUB-UP TO DESK-MOUNTED SURFACE RACEWAY.
E. PROVIDE (1) SHIELDED 18/4C CABLE TO EACH BANIC BUTTON AND TERMINATE PER MANUFACTURER'S INSTRUCTIONS.

8 PANIC BUTTON - UNDER DESK
NOT TO SCALE

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No.	Date	Description
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ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: DWH
CHECKED BY: TMC

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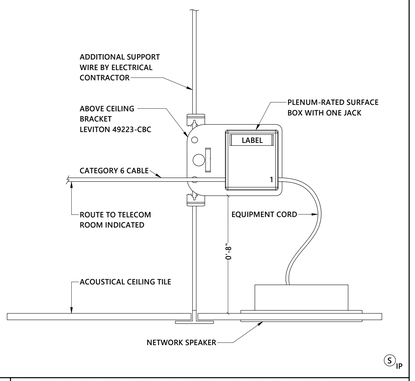
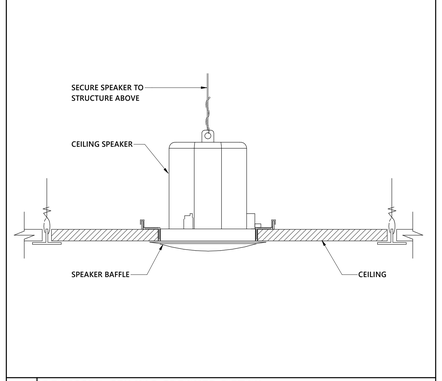
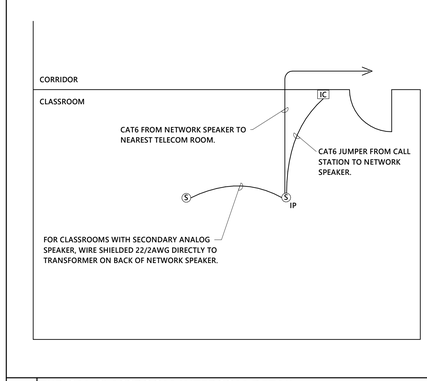


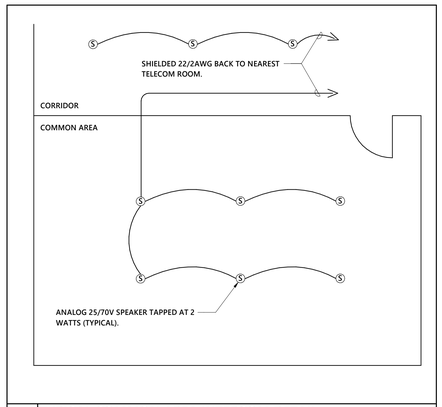
1 **NETWORK SPEAKER OUTLET (ACCESSIBLE CEILING)**
NOT TO SCALE



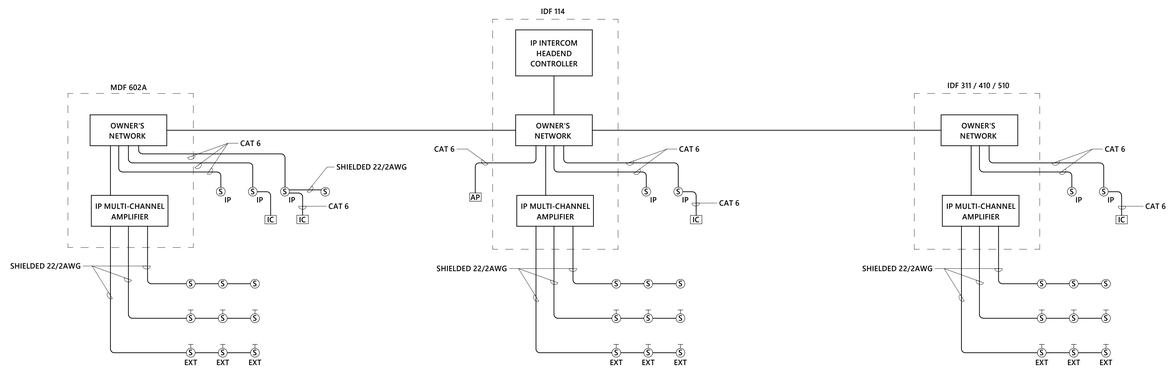
2 **RECESSED CEILING SPEAKER DETAIL**
NOT TO SCALE



3 **TYPICAL CLASSROOM INTERCOM DETAIL**
NOT TO SCALE



4 **TYPICAL COMMON AREA INTERCOM DETAIL**
NOT TO SCALE



5 **INTERCOM RISER DIRAGRAM**
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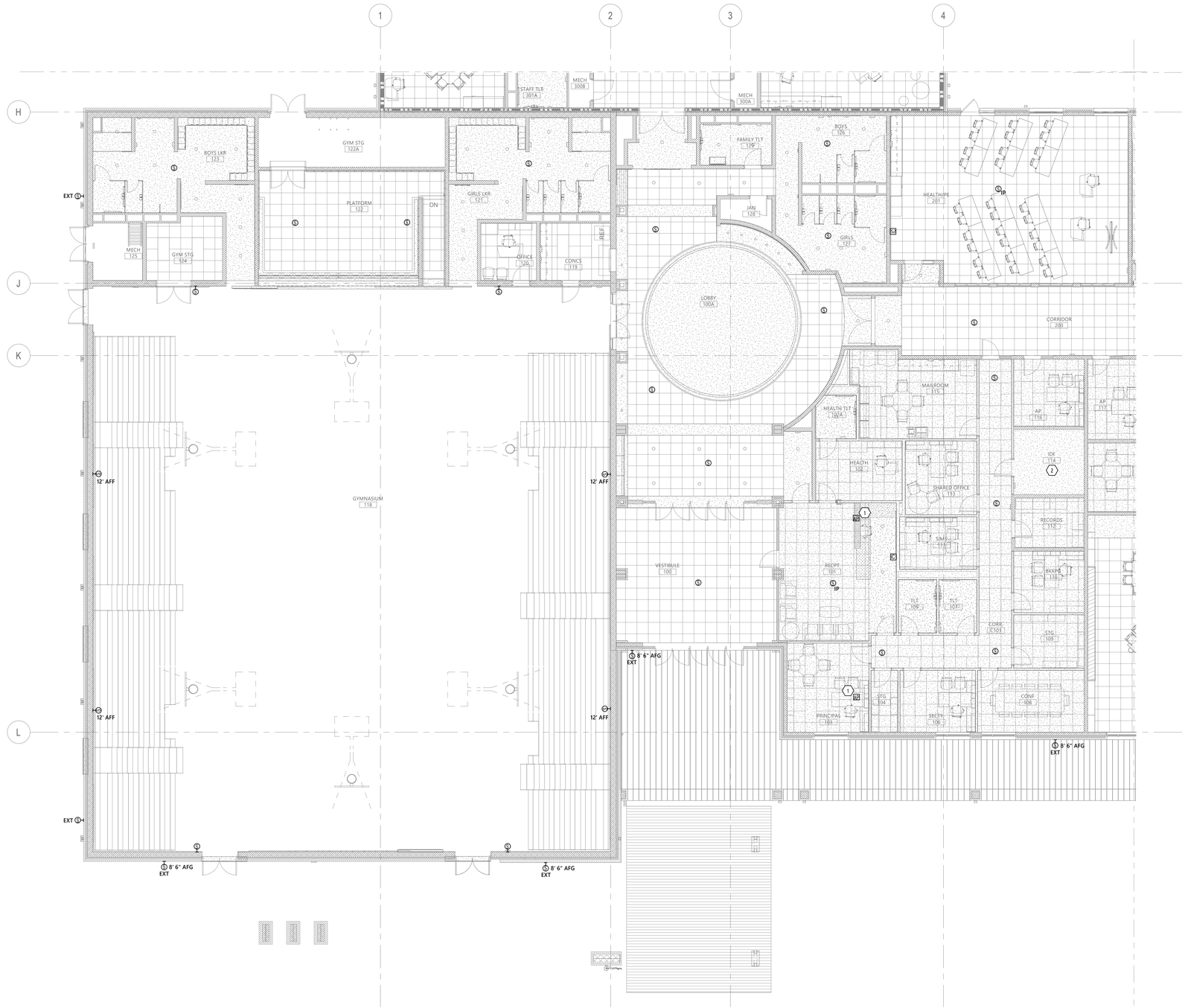


1 FIRST FLOOR INTERCOM PLAN - AREA 100

1/8" = 1'-0"

GENERAL NOTES:

A. ROUTE SPEAKER CABLING THROUGH CABLE TRAY AND J-HOOKS IN ACCESSIBLE CEILING AREAS.

B. ANALOG SPEAKERS IN COMMON AREAS CAN BE DAISY-CHAINED.

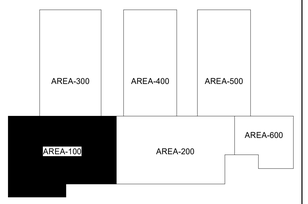
C. INSTALL INTERIOR WALL-MOUNTED SPEAKERS AT 10" AFF, UON.

D. INSTALL EXTERIOR WALL-MOUNTED SPEAKERS AT 12' AFG, UON.

KEY NOTES: (4)

1. PROVIDE DESK-MOUNTED NETWORK INTERCOM ADMIN PHONE STATION. PHONE STATION WILL COMMUNICATE WITH INTERCOM SYSTEM VIA LAN CONNECTION.
2. LOCATE MAIN INTERCOM HEADEND EQUIPMENT IN IDF 114.

KEYPLAN



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FIRST FLOOR INTERCOM PLAN - AREA 100

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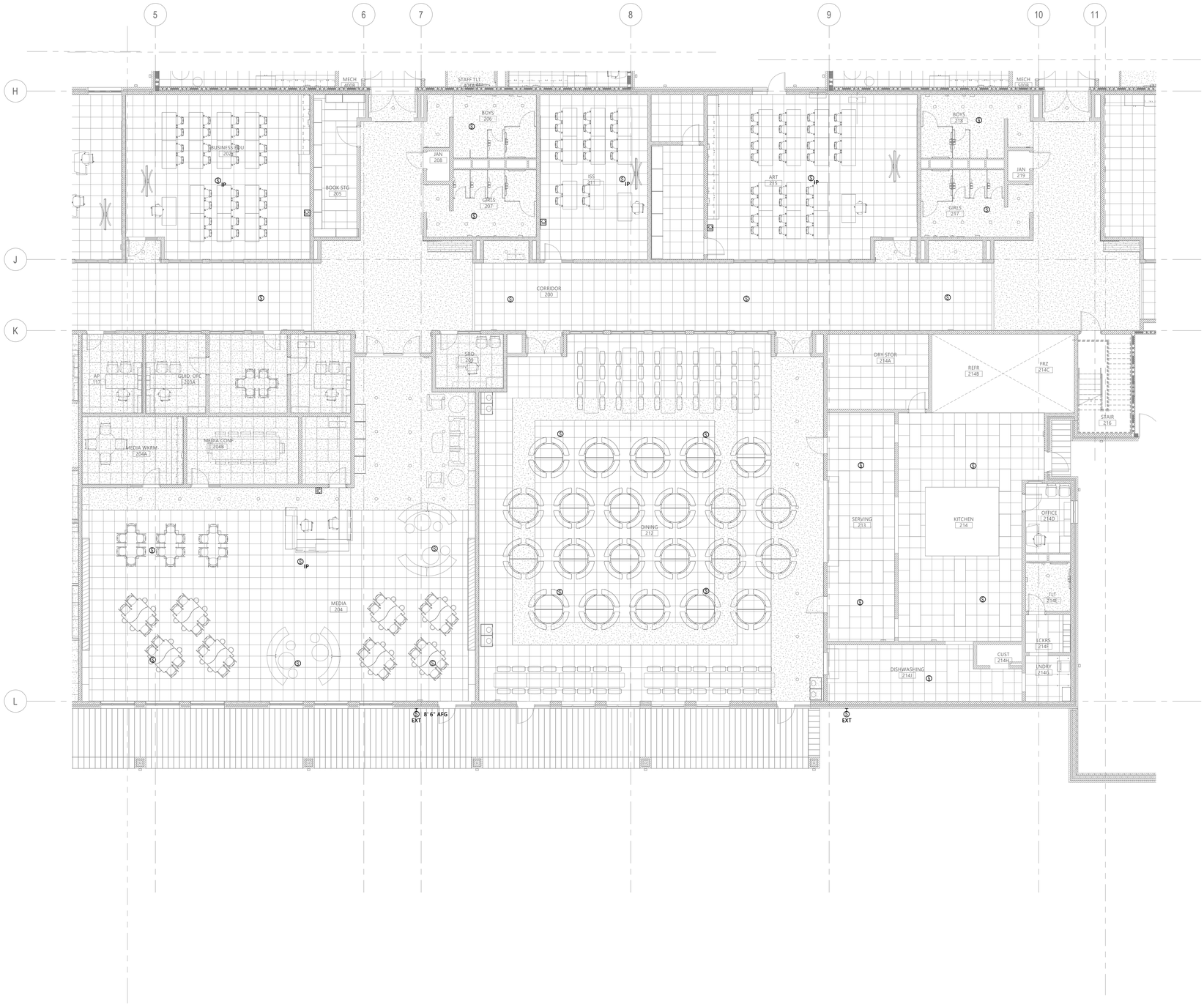


1 **FIRST FLOOR INTERCOM PLAN - AREA 200**
1/8" = 1'-0"

GENERAL NOTES:

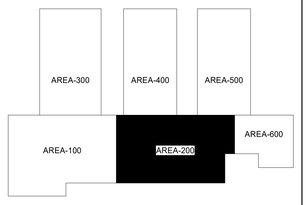
A. ROUTE SPEAKER CABLING THROUGH CABLE TRAY AND J-HOOKS IN ACCESSIBLE CEILING AREAS.

B. ANALOG SPEAKERS IN COMMON AREAS CAN BE DAISY-CHAINED.

C. INSTALL INTERIOR WALL-MOUNTED SPEAKERS AT 10' AFF, UON.

D. INSTALL EXTERIOR WALL-MOUNTED SPEAKERS AT 12' AFG, UON.

KEYPLAN



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FIRST FLOOR INTERCOM PLAN - AREA 200

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Sheet No. 9 of 34

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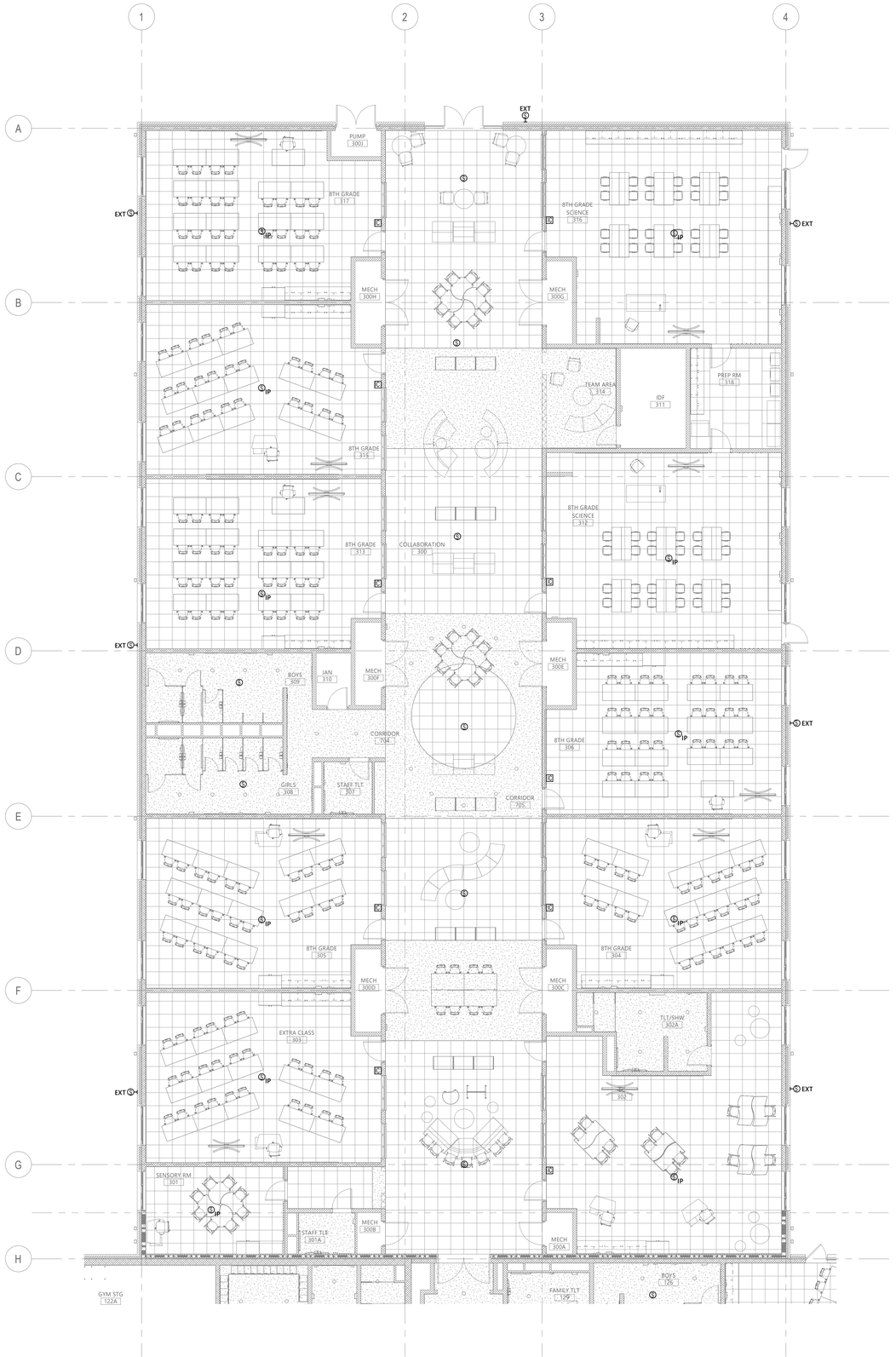


1 **FIRST FLOOR INTERCOM PLAN - AREA 300**
1/8" = 1'-0"

GENERAL NOTES:

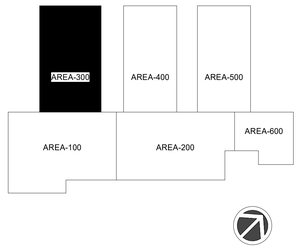
A. ROUTE SPEAKER CABLING THROUGH CABLE TRAY AND J-HOOKS IN ACCESSIBLE CEILING AREAS.

B. ANALOG SPEAKERS IN COMMON AREAS CAN BE DAISY-CHAINED.

C. INSTALL INTERIOR WALL-MOUNTED SPEAKERS AT 10" AFF, UON.

D. INSTALL EXTERIOR WALL-MOUNTED SPEAKERS AT 12' AFG, UON.

KEYPLAN



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FIRST FLOOR INTERCOM PLAN - AREA 300

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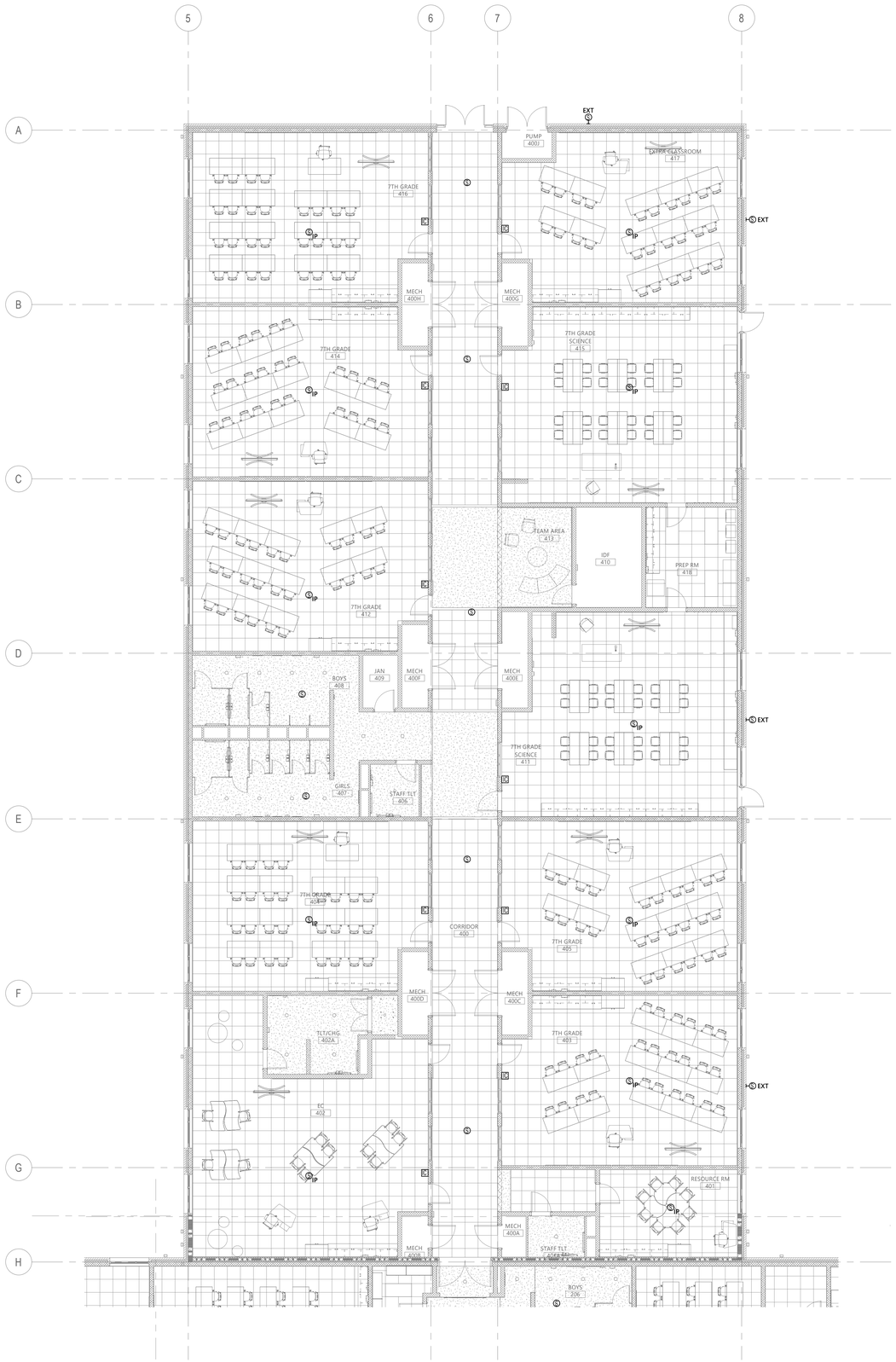


1 **FIRST FLOOR INTERCOM PLAN - AREA 400**
1/8" = 1'-0"

GENERAL NOTES:

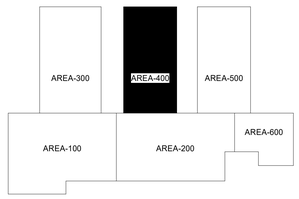
A. ROUTE SPEAKER CABLING THROUGH CABLE TRAY AND J-HOOKS IN ACCESSIBLE CEILING AREAS.

B. ANALOG SPEAKERS IN COMMON AREAS CAN BE DAISY-CHAINED.

C. INSTALL INTERIOR WALL-MOUNTED SPEAKERS AT 10" AFF, UON.

D. INSTALL EXTERIOR WALL-MOUNTED SPEAKERS AT 12' AFG, UON.

KEYPLAN



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FIRST FLOOR INTERCOM PLAN - AREA 400

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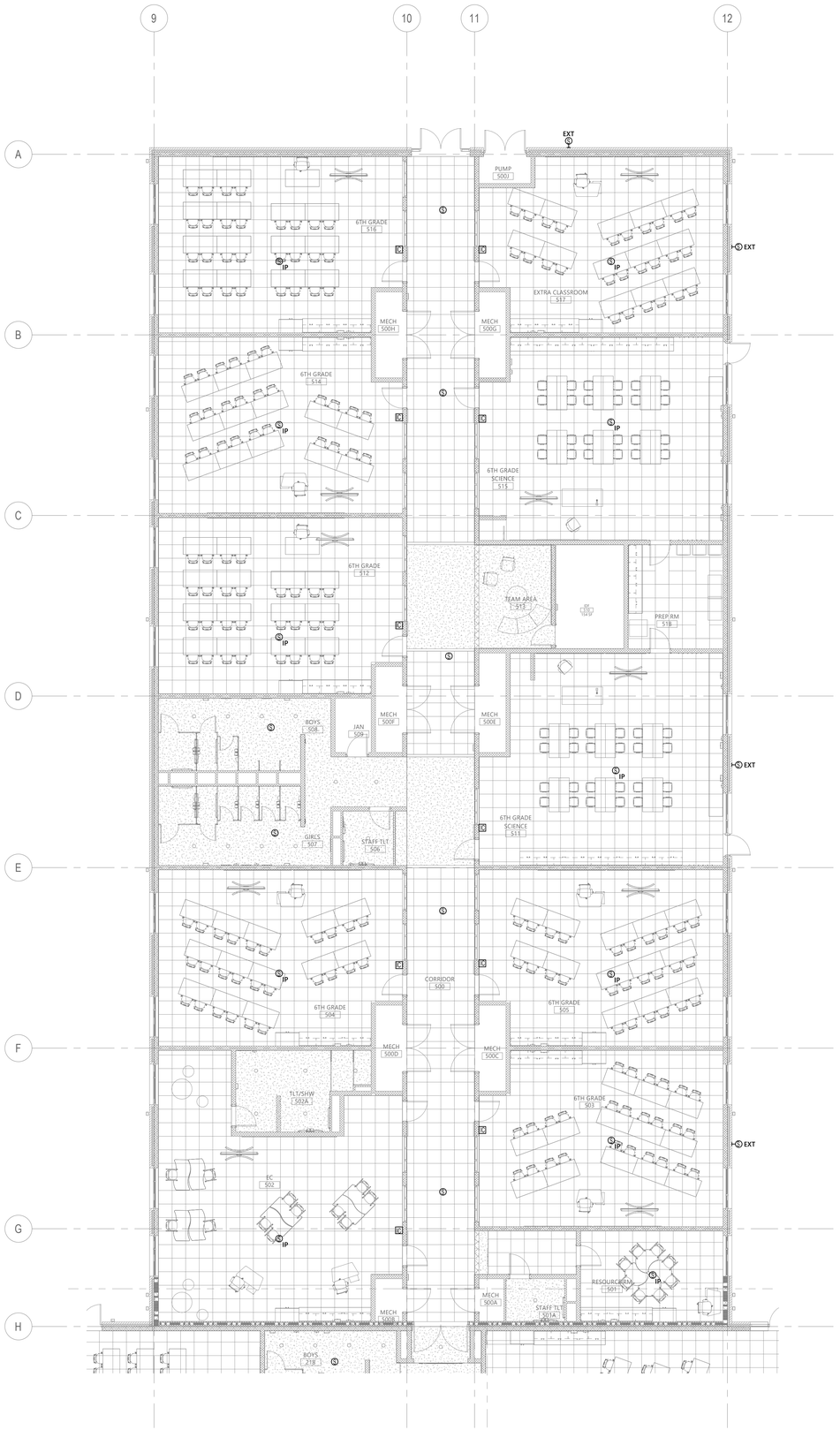

1 **FIRST FLOOR INTERCOM PLAN - AREA 500**
1/8" = 1'-0"

GENERAL NOTES:

A. ROUTE SPEAKER CABLING THROUGH CABLE TRAY AND J-HOOKS IN ACCESSIBLE CEILING AREAS.

B. ANALOG SPEAKERS IN COMMON AREAS CAN BE DAISY-CHAINED.

C. INSTALL INTERIOR WALL-MOUNTED SPEAKERS AT 10" AFF, UON.

D. INSTALL EXTERIOR WALL-MOUNTED SPEAKERS AT 12' AFG, UON.

KEYPLAN



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FIRST FLOOR INTERCOM PLAN - AREA 500

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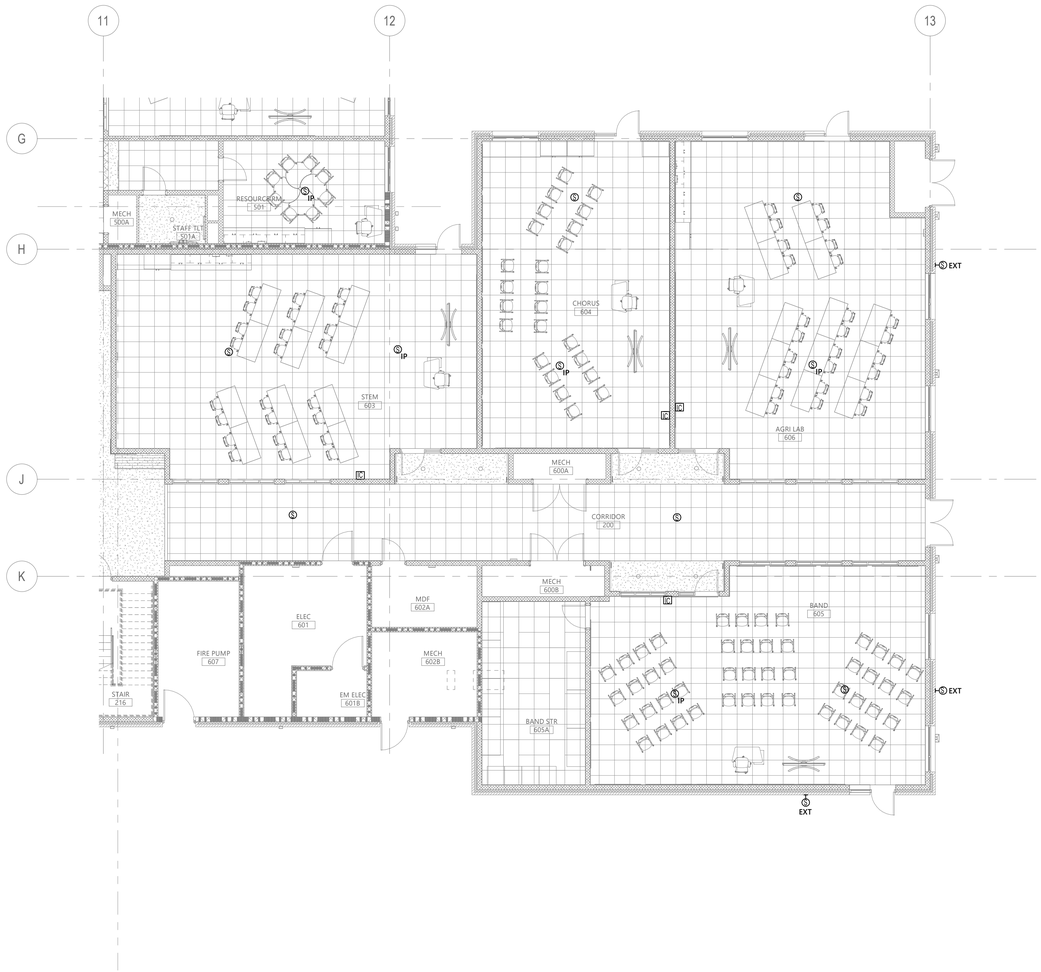

1 **FIRST FLOOR INTERCOM PLAN - AREA 600**
1/8" = 1'-0"

GENERAL NOTES:

A. ROUTE SPEAKER CABLING THROUGH CABLE TRAY AND J-HOOKS IN ACCESSIBLE CEILING AREAS.

B. ANALOG SPEAKERS IN COMMON AREAS CAN BE DAISY-CHAINED.

C. INSTALL INTERIOR WALL-MOUNTED SPEAKERS AT 10' AFF, UON.

D. INSTALL EXTERIOR WALL-MOUNTED SPEAKERS AT 12' AFG, UON.

KEYPLAN



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FIRST FLOOR INTERCOM PLAN - AREA 600

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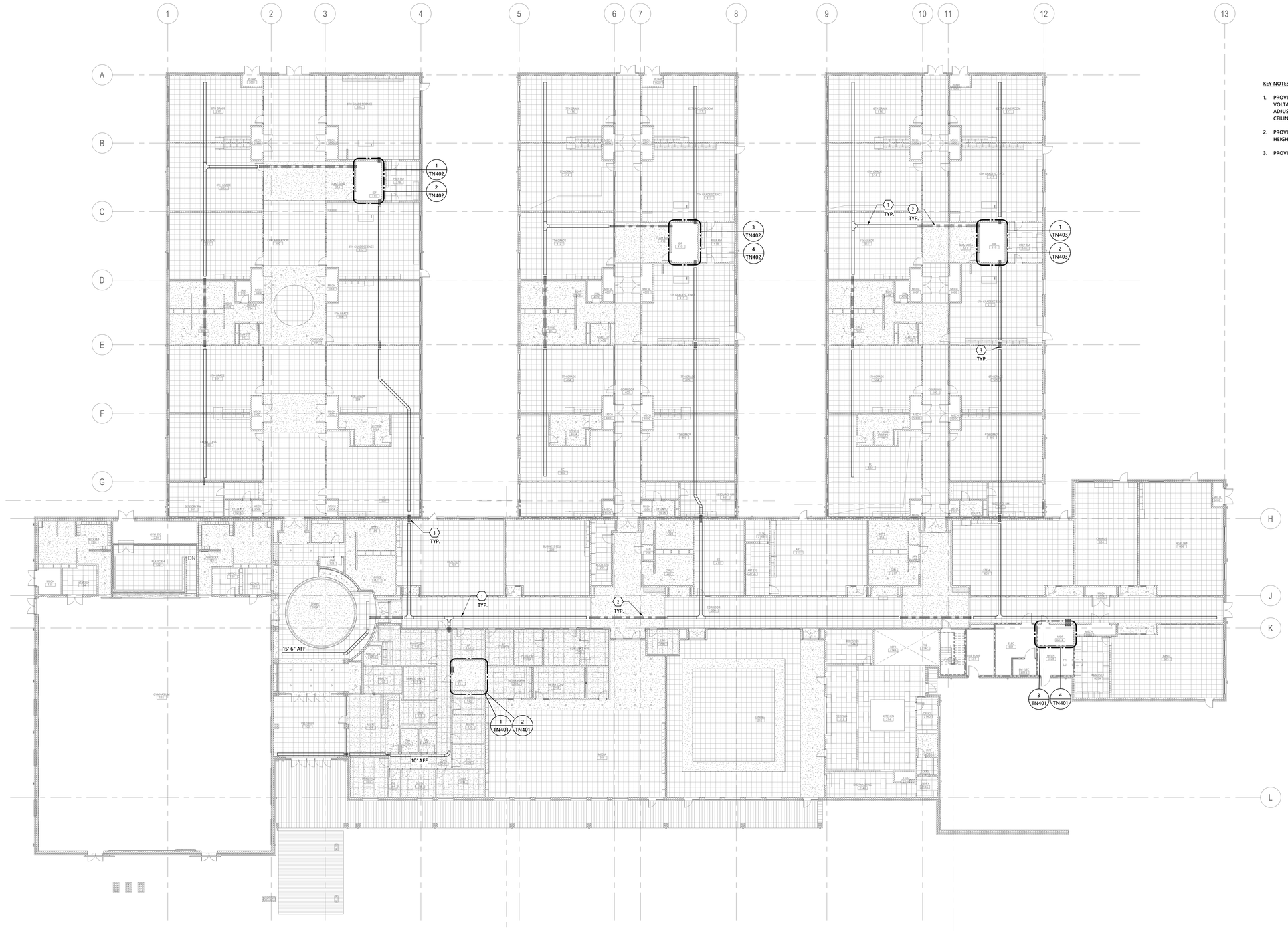


1 **OVERALL NETWORK PLAN**
1/16" = 1'-0"

GENERAL NOTES:

A. CABLING SHALL UTILIZE CABLE TRAY AND CONDUITS AS PRIMARY PATHWAYS THROUGHOUT THE BUILDING. J-HOOKS SHALL BE UTILIZED IN ACCESSIBLE CEILING SPACES BETWEEN CABLE TRAY AND CONDUITS.

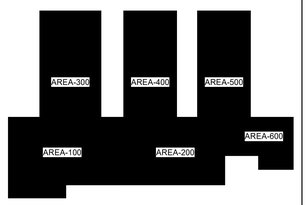
KEY NOTES: (#)

1. PROVIDE 12" WIDE BY 4" DEEP WIRE MESH CABLE TRAY ABOVE ACCESSIBLE CEILINGS FOR LOW VOLTAGE CABLE DISTRUBUTION. MOUNT AT 11' AFF, UON. CABLE TRAY HEIGHT MAY BE ADJUSTED AS NEEDED TO AVOID OBSTACLES BUT MUST REMAIN AT MINIMUM 6" ABOVE CEILING GRID.
2. PROVIDE 4" CONDUIT IN NON-ACCESSIBLE CEILING AREAS AS INDICATED. MOUNT AT SAME HEIGHT AS CABLE TRAY.
3. PROVIDE 4" SLEEVES THROUGH WALLS AS INDICATED. MOUNT AT SAME HEIGHT AS CABLE TRAY.

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - OVERALL

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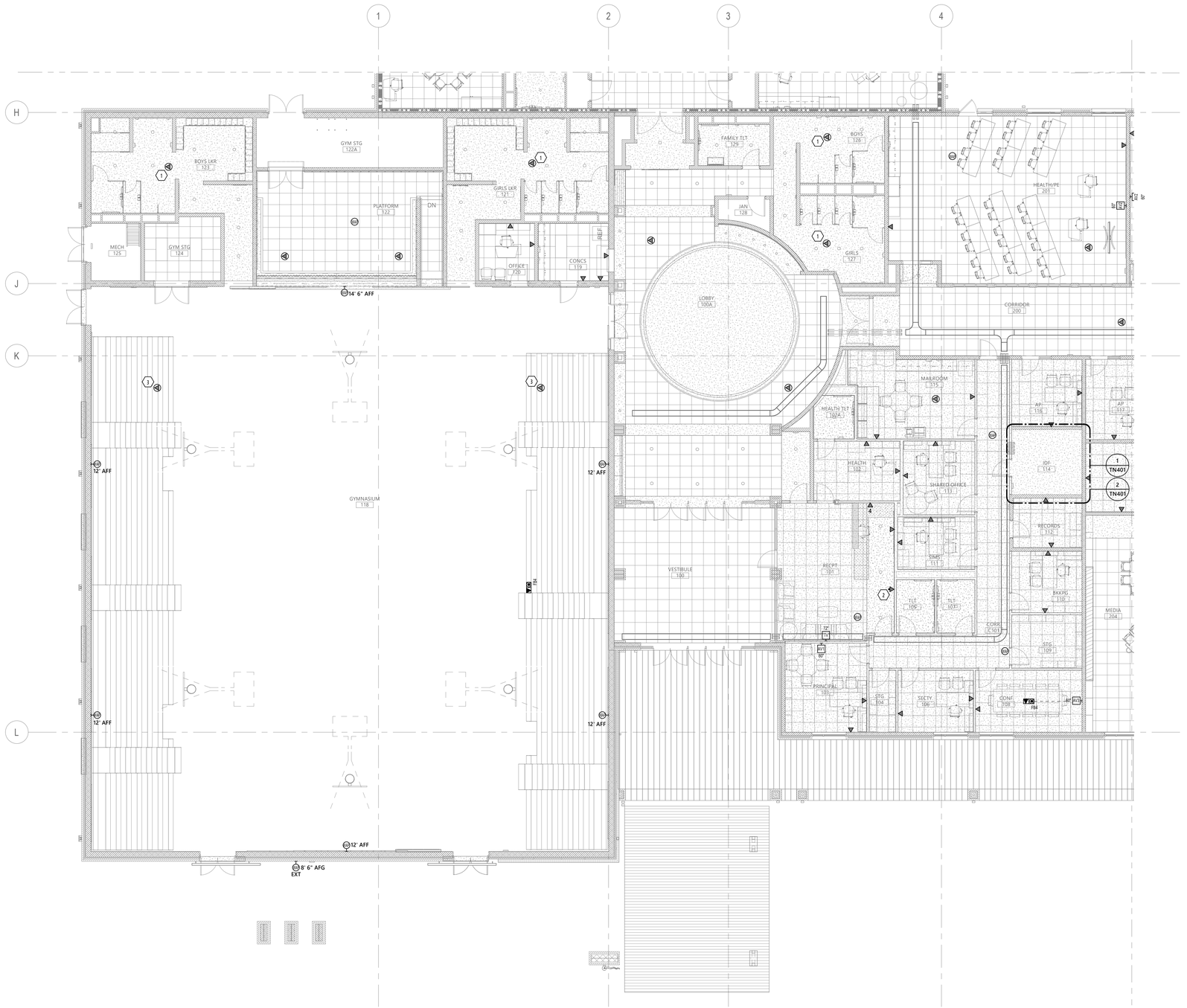


1 **FIRST FLOOR NETWORK PLAN - AREA 100**
1/8" = 1'-0"

GENERAL NOTES:

A. PROVIDE PROTECTIVE COVER FOR WIRELESS ACCESS POINTS INSTALLED IN GYMNASIUM. COVER MUST BE IMPACT RESISTANT AND DESIGNED FOR PROTECTION OF WIRELESS ACCESS POINTS WHILE ALLOWING WIRELESS SIGNAL TO PASS THROUGH. TRIPP-LITE EN1111 OR APPROVED EQUAL.

B. THERE SHALL BE NO EXPOSED CABLING IN THE GYM AREA. ALL CABLING MUST BE INSTALLED IN CONDUIT FROM OUTLET LOCATION BACK TO ADJACENT ACCESSIBLE CEILING SPACE.

C. CABLING SHALL UTILIZE CABLE TRAY AND CONDUITS AS PRIMARY PATHWAYS THROUGHOUT THE BUILDING. J-HOOKS SHALL BE UTILIZED IN ACCESSIBLE CEILING SPACES BETWEEN CABLE TRAY AND CONDUITS.

D. REFER TO SHEET TN101 FOR PATHWAY DETAILS.

E. ALL HORIZONTAL CABLING IN AREA 100 WILL PULL BACK TO IDF 114.

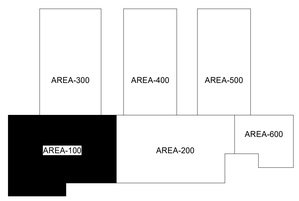
KEY NOTES: (#)

1. PROVIDE 18" X 18" ACCESS PANEL IN HARD CEILING AT OUTLET LOCATION.
2. FACP CONNECTION. PROVIDE SURFACE-MOUNT BOX WITH (2) CATEGORY 6A CABLES INSIDE FACP, COORDINATE PLACEMENT WITH FIRE ALARM VENDOR.
3. PROJECTOR OUTLET. MOUNT TO STRUCTURAL STEEL IN OPEN GYM CEILING. COORDINATE FINAL LOCATION WITH OWNER. PROVIDE 15' SERVICE LOOP IN NEAREST ACCESSIBLE CEILING SPACE.

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - AREA 100

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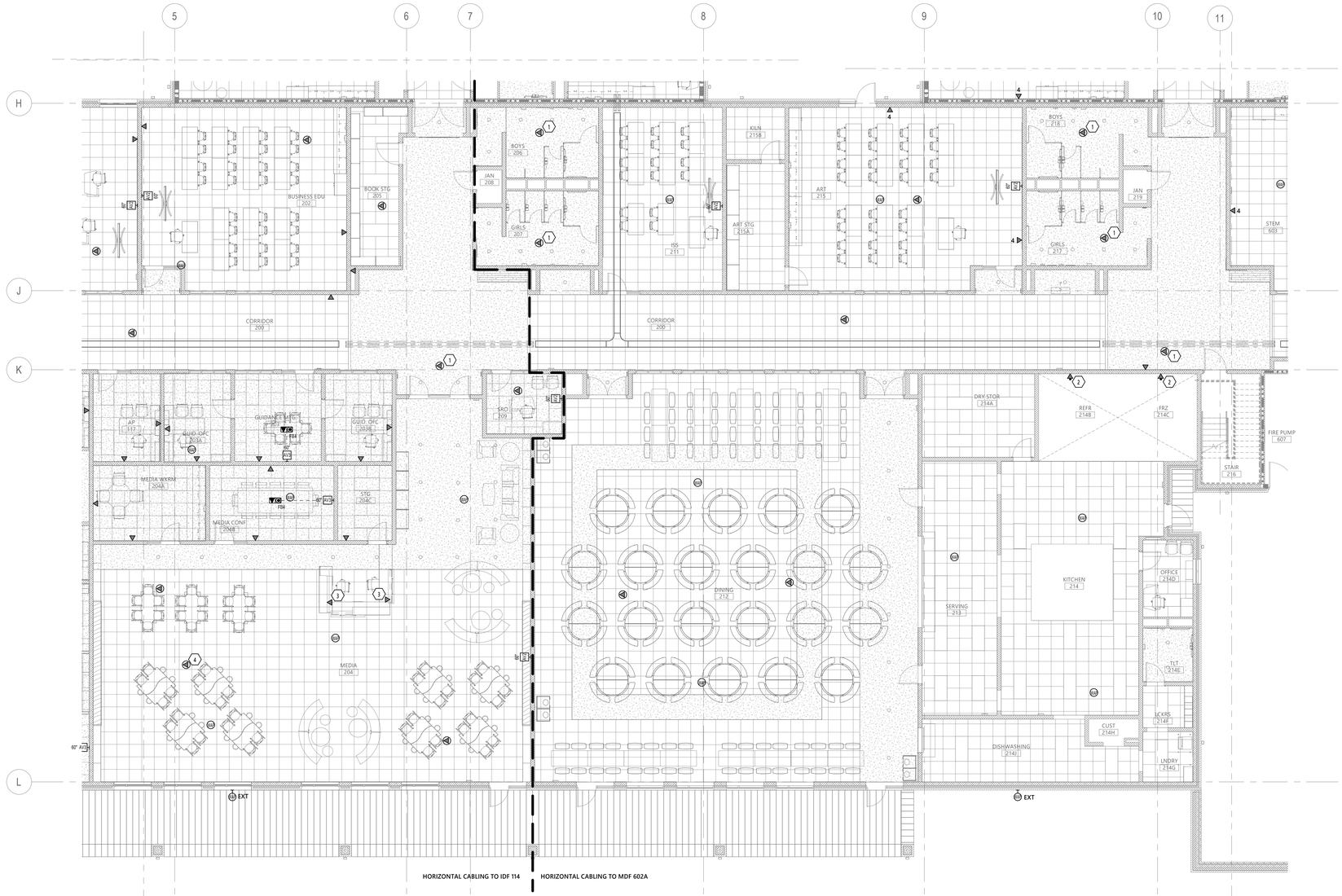


1 **FIRST FLOOR NETWORK PLAN - AREA 200**
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING SHALL UTILIZE CABLE TRAY AND CONDUITS AS PRIMARY PATHWAYS THROUGHOUT THE BUILDING. J-HOOKS SHALL BE UTILIZED IN ACCESSIBLE CEILING SPACES BETWEEN CABLE TRAY AND CONDUITS.

B. REFER TO SHEET TN101 FOR PATHWAY DETAILS.

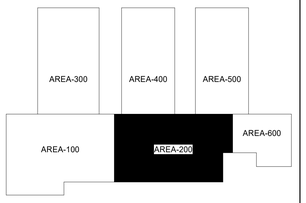
C. HORIZONTAL CABLING IN AREA 200 WILL PULL BACK TO IDF 114 OR MDF 602A. REFER TO LINE ON FLOORPLAN.

KEY NOTES: (#)

1. PROVIDE 18" X 18" ACCESS PANEL IN HARD CEILING AT OUTLET LOCATION.
2. DATA CONNECTION FOR TEMPERATURE MONITORING. COORDINATE PLACEMENT WITH VENDOR PRIOR TO ROUGH-IN.
3. OUTLET MOUNTED IN CASEWORK. COORDINATE WITH ARCHITECT AND CASEWORK INSTALLER.
4. FOR FUTURE SPORTSWALL APPLICATION.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - AREA 200

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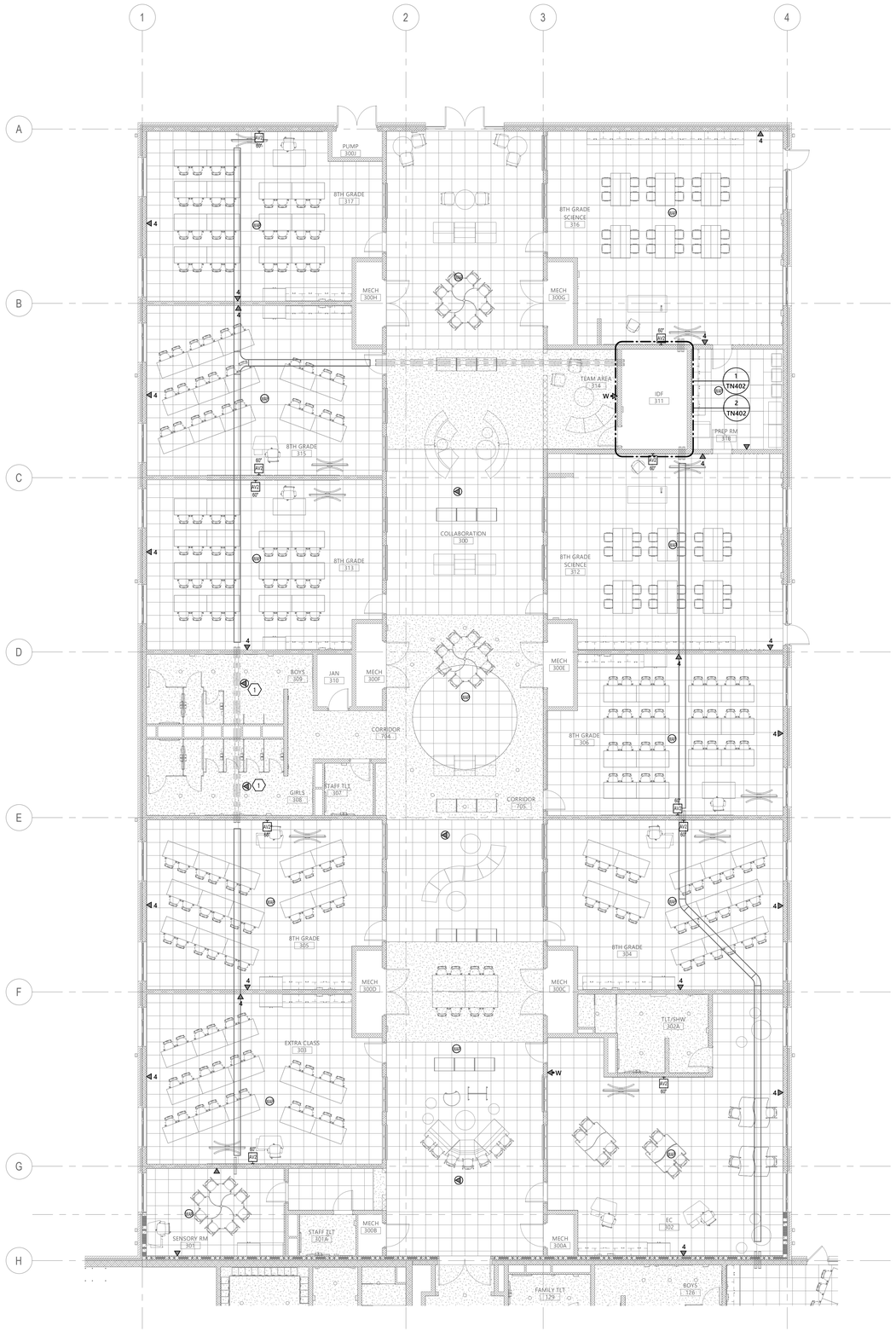

1 **FIRST FLOOR NETWORK PLAN - AREA 300**
1/8" = 1'-0"

GENERAL NOTES:

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B. REFER TO SHEET TN101 FOR PATHWAY DETAILS.

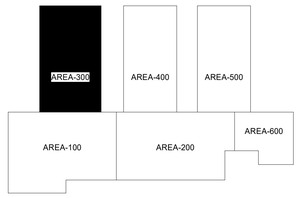
C. ALL HORIZONTAL CABLING IN AREA 300 WILL PULL BACK TO IDF 311.

KEY NOTES: (#)

1. PROVIDE 18" X 18" ACCESS PANEL IN HARD CEILING AT OUTLET LOCATION.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - AREA 300

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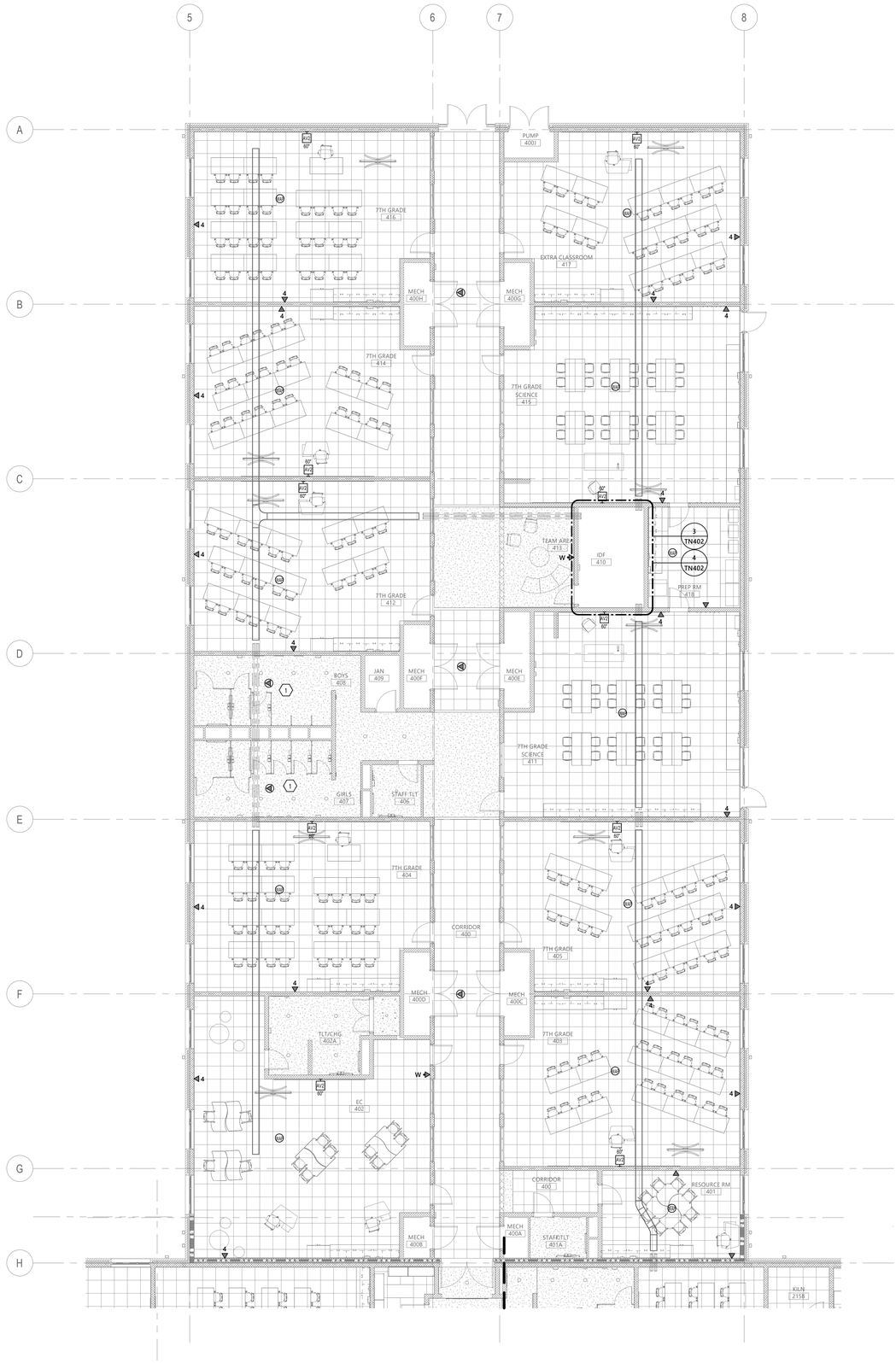

1 FIRST FLOOR NETWORK PLAN - AREA 400
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING SHALL UTILIZE CABLE TRAY AND CONDUITS AS PRIMARY PATHWAYS THROUGHOUT THE BUILDING. J-HOOKS SHALL BE UTILIZED IN ACCESSIBLE CEILING SPACES BETWEEN CABLE TRAY AND CONDUITS.

B. REFER TO SHEET TN101 FOR PATHWAY DETAILS.

C. ALL HORIZONTAL CABLING IN AREA 400 WILL PULL BACK TO IDF 410.

KEY NOTES: (#)

1. PROVIDE 18" X 18" ACCESS PANEL IN HARD CEILING AT OUTLET LOCATION.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - AREA 400

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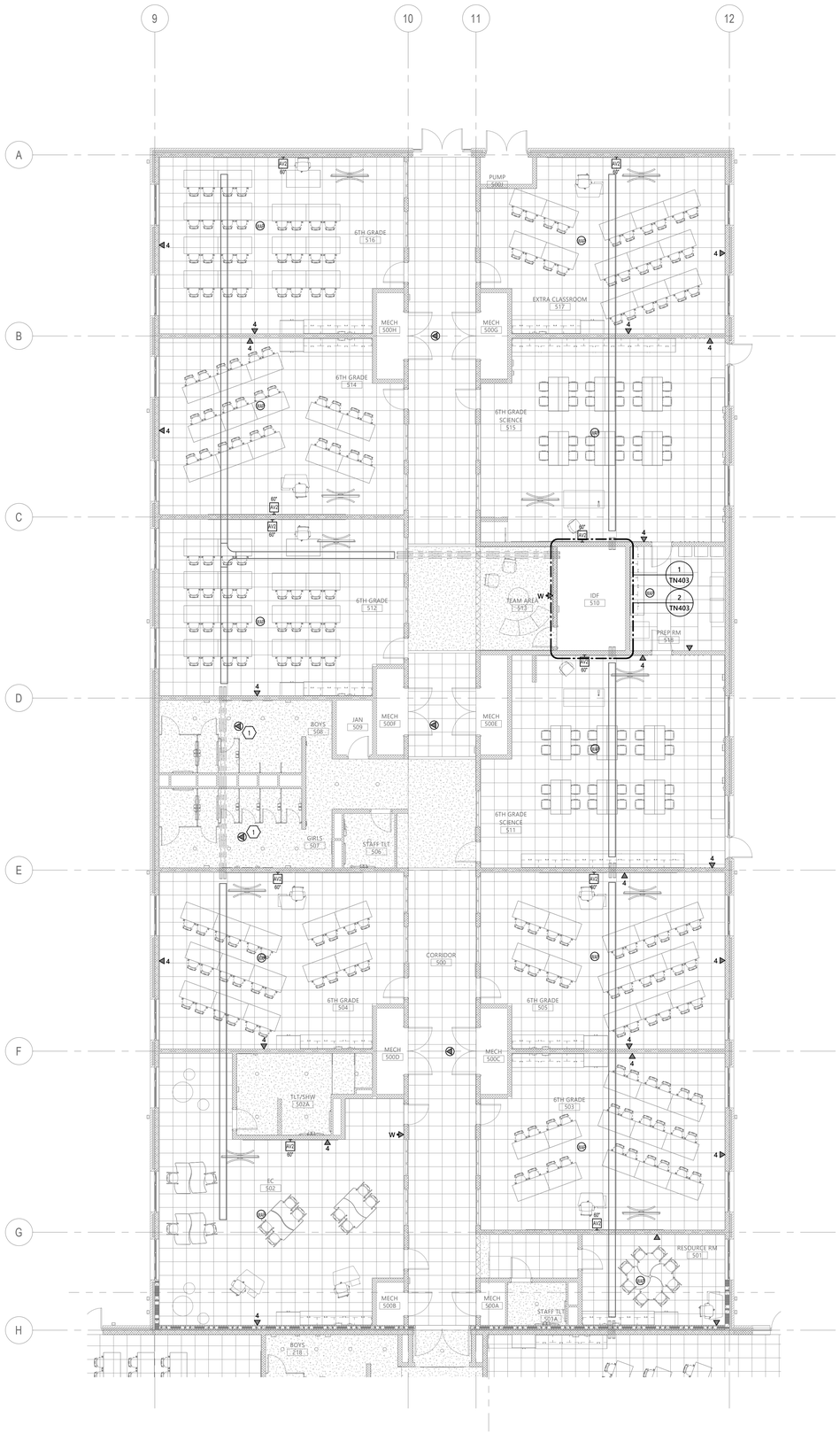


1 FIRST FLOOR NETWORK PLAN - AREA 500
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING SHALL UTILIZE CABLE TRAY AND CONDUITS AS PRIMARY PATHWAYS THROUGHOUT THE BUILDING. J-HOOKS SHALL BE UTILIZED IN ACCESSIBLE CEILING SPACES BETWEEN CABLE TRAY AND CONDUITS.

B. REFER TO SHEET TN101 FOR PATHWAY DETAILS.

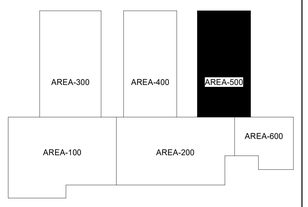
C. ALL HORIZONTAL CABLING IN AREA 500 WILL PULL BACK TO IDF 510.

KEY NOTES: (#)

1. PROVIDE 18" X 18" ACCESS PANEL IN HARD CEILING AT OUTLET LOCATION.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - AREA 500

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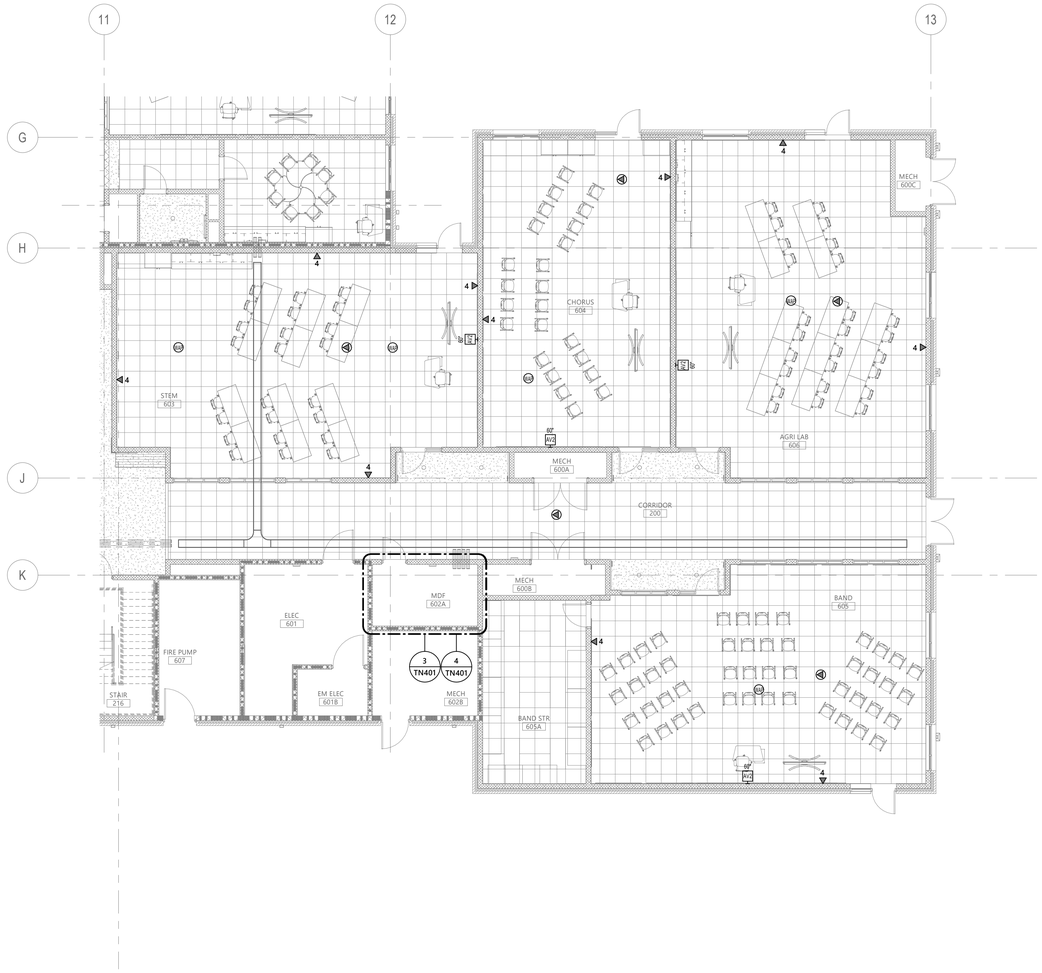

1 **FIRST FLOOR NETWORK PLAN - AREA 600**
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING SHALL UTILIZE CABLE TRAY AND CONDUITS AS PRIMARY PATHWAYS THROUGHOUT THE BUILDING. J-HOOKS SHALL BE UTILIZED IN ACCESSIBLE CEILING SPACES BETWEEN CABLE TRAY AND CONDUITS.

B. REFER TO SHEET TN101 FOR PATHWAY DETAILS.

C. ALL HORIZONTAL CABLING IN AREA 600 WILL PULL BACK TO MDF 602A.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR NETWORK PLAN - AREA 600

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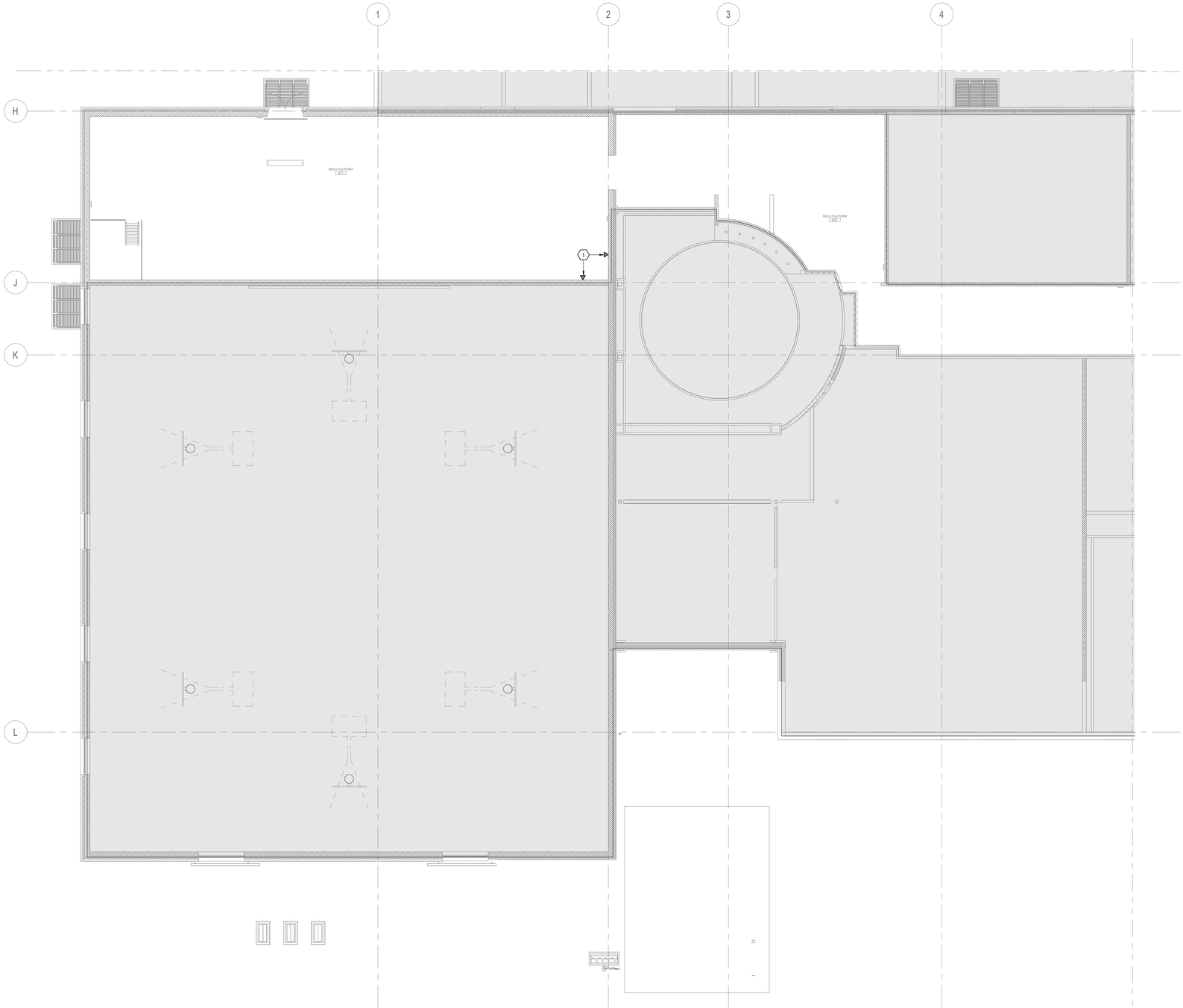


1 MECH. PLATFORM NETWORK PLAN - AREA 100
1/8" = 1'-0"

GENERAL NOTES:

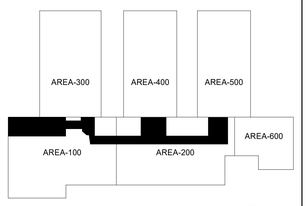
A. SHADED AREA INDICATES FIRST FLOOR SPACE.

B. THERE SHALL BE NO EXPOSED CABLING IN THE MECHANICAL PLATFORM AREA. ALL CABLING MUST BE INSTALLED IN CONDUIT FROM OUTLET LOCATION BACK TO FIRST FLOOR ACCESSIBLE CEILING SPACE.

KEY NOTES: (1)

1. PROVIDE SURFACE MOUNT BOX AND (2) CATEGORY 6A CABLES INSIDE UTILITY PANELS. COORDINATE PLACEMENT WITH TRADES PRIOR TO ROUGH-IN.

KEYPLAN



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MECH. PLATFORM NETWORK PLAN - AREA 100

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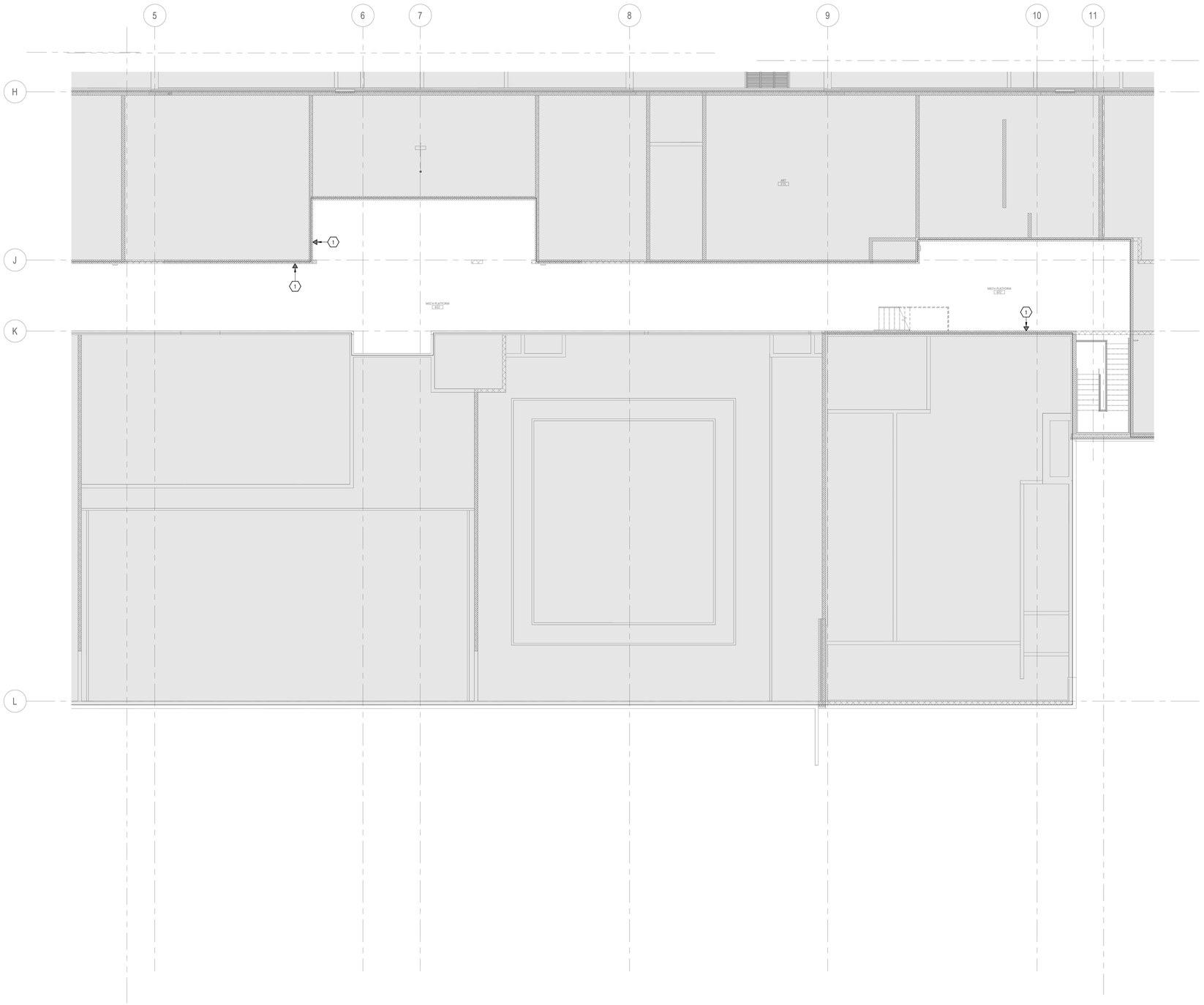


1 MECH. PLATFORM NETWORK PLAN - AREA 200
1/8" = 1'-0"

GENERAL NOTES:

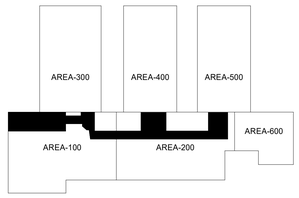
A. SHADED AREA INDICATES FIRST FLOOR SPACE.

B. THERE SHALL BE NO EXPOSED CABLING IN THE MECHANICAL PLATFORM AREA. ALL CABLING MUST BE INSTALLED IN CONDUIT FROM OUTLET LOCATION BACK TO FIRST FLOOR ACCESSIBLE CEILING SPACE.

KEY NOTES: (#)

1. PROVIDE SURFACE MOUNT BOX AND (2) CATEGORY 6A CABLES INSIDE UTILITY PANELS. COORDINATE PLACEMENT WITH TRADES PRIOR TO ROUGH-IN.

KEYPLAN



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MECH. PLATFORM NETWORK PLAN - AREA 200

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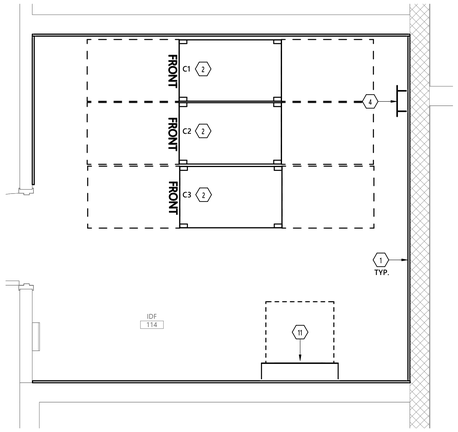
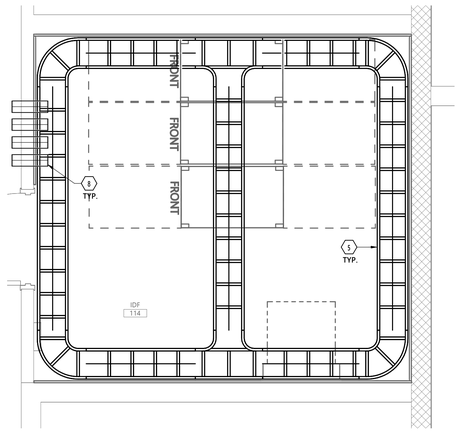
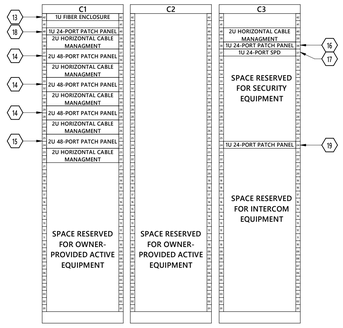


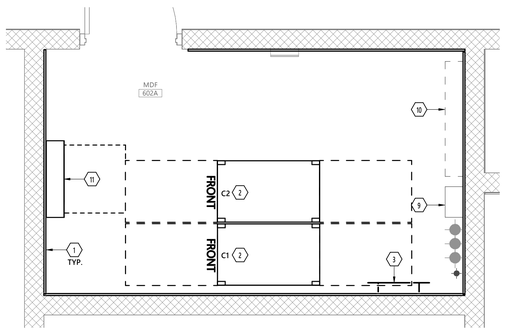
1 IDF 113 - ENLARGED EQUIPMENT PLAN
1/2" = 1'-0"



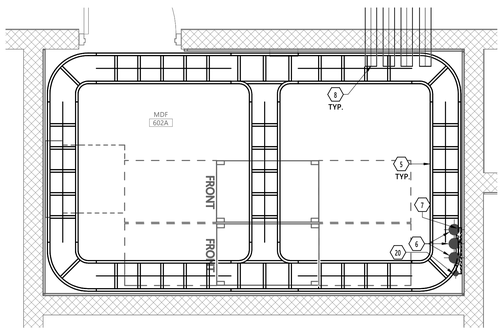
2 IDF 113 - ENLARGED PATHWAY PLAN
1/2" = 1'-0"



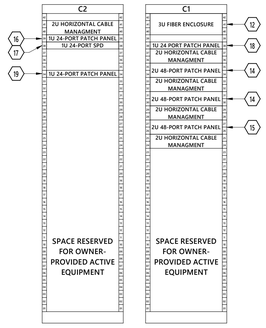
6 IDF 113 - CABINET ELEVATIONS
NO SCALE



3 MDF 602 - ENLARGED EQUIPMENT PLAN
1/2" = 1'-0"



4 MDF 602 - ENLARGED PATHWAY PLAN
1/2" = 1'-0"



5 MDF 602 - CABINET ELEVATIONS
NO SCALE

GENERAL NOTES:

A. PROVIDE D-RINGS AS NEEDED TO DRESS CABLING RUN ALONG TTB.

B. PROVIDE 1RU HORIZONTAL RACK BONDING BUSBAR (RBB) MOUNTED TO THE TOP RACK UNIT ON THE REAR SIDE OF EACH EQUIPMENT CABINET. BOND TO PBB/SBB PER TIA-607.

C. PROVIDE 1RU HORIZONTAL RACK-MOUNTED POWER STRIP FOR EACH CABINET. POWER STRIP SHALL HAVE (12) NEMA 5-20R RECEPTACLES ((6) FRONT AND (6) REAR) AND A 15' CORD WITH NEMA L5-20P PLUG CONNECTION.

D. ALL CATEGOTY 6A CABLING SHALL BE TERMINATED PER T568B STANDARD.

KEY NOTES: (#)

1. PROVIDE TELECOM TERMINAL BACKBOARD (TTB) ALONG ALL WALLS OF TELECOM ROOM. ENSURE FIRE RATING STAMP IS VISIBLE. DO NOT PAINT.
2. PROVIDE 24" WIDE 42RU LOCKABLE EQUIPMENT CABINET WITH 19" MOUNTING RAILS.
3. PROVIDE PRIMARY BONDING BUSBAR (PBB) MOUNTED TO TBB AT 6' AFF.
4. PROVIDE SECONDARY BONDING BUSBAR (SBB) MOUNTED TO TTB AT 6' AFF.
5. PROVIDE 12" WIDE LADDER-TYPE CABLE RUNWAY MOUNTED HORIZONTALLY AT 7' 6" AFF. SECURE TO WALLS AND EQUIPMENT CABINETS PER MANUFACTURER'S INSTRUCTIONS.
6. PROVIDE (3) 4" SERVICE ENTRANCE CONDUITS FROM COMMUNICATIONS HANDHOLE TO TELECOM ROOM, STUBBED UP THROUGH FLOOR SLAB. PROVIDE 3" 3-CELL FABRIC MESH INNERDUCT IN EACH CONDUIT. REFER TO TELECOM SITE PLAN FOR ROUTING INFORMATION.
7. PROVIDE 18" WIDE LADDER-TYPE CABLE RUNWAY MOUNTED VERTICALLY TO TTB BETWEEN SERVICE ENTRANCE CONDUITS AND HORIZONTAL CABLE RUNWAY.
8. PROVIDE 4" SLEEVES THROUGH THE WALL BETWEEN MDF/IDF AND WIRE-MESH CABLE TRAY ABOVE CEILING. QUANTITY AS INDICATED ON DRAWINGS.
9. PROVIDE 50-PAIR PROTECTED ENTRANCE TERMINAL (PET) FOR COPPER SERVICE CABLE.
10. SPACE RESERVED FOR WALL-MOUNTED SERVICE PROVIDER AND DEMARCATION EQUIPMENT.
11. WALL-MOUNTED ELECTRONIC SECURITY EQUIPMENT.
12. PROVIDE 3RU FIBER ENCLOSURE. PROVIDE COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.
13. PROVIDE 1RU FIBER ENCLOSURE AND COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.
14. PROVIDE 2RU 48-PORT CAT6A PATCH PANEL DEDICATED FOR DATA CABLING.
15. PROVIDE 2RU 48-PORT CAT6A PATCH PANEL DEDICATED FOR WAP CABLING.
16. PROVIDE 1RU 24-PORT CAT6A PATCH PANEL DEDICATED FOR CAMERA CABLING.
17. PROVIDE 1RU 24-PORT SURGE PROTECTION DEVICE FOR CAT6A CAMERA CABLING. BOND TO RBB PER TIA-607.
18. PROVIDE 1RU 24-PORT PUNCH-DOWN VOICE PATCH PANEL DEDICATED FOR VOICE CABLING. TERMINATE 25-PAIR COPPER CABLE FROM PROTECTED ENTRANCE TERMINAL IN MDF 602A. TERMINATE (1) PAIR PER PORT TO PINS 4 AND 5.
19. PROVIDE 1RU 24-PORT CAT6 PATCH PANEL DEDICATED FOR INTERCOM/NETWORK SPEAKER CABLING.
20. PROVIDE (1) 2" CONDUIT FOR SIGN FROM COMMUNICATIONS HANDHOLE TO TELECOM ROOM, STUBBED UP THROUGH FLOOR SLAB. PROVIDE 2" 3-CELL FABRIC MESH INNERDUCT IN CONDUIT. REFER TO TELECOM SITE PLAN FOR ROUTING INFORMATION.

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ENLARGED NETWORK PLANS

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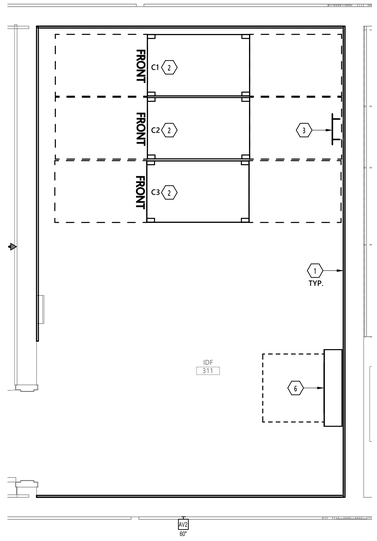
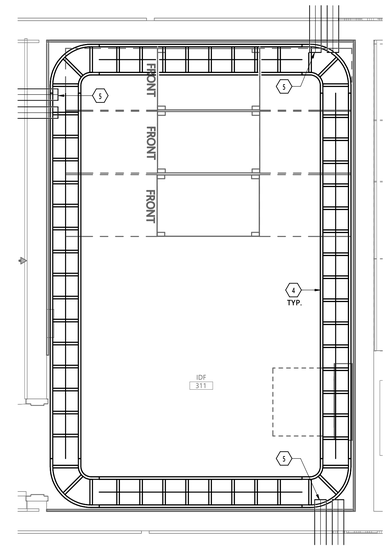
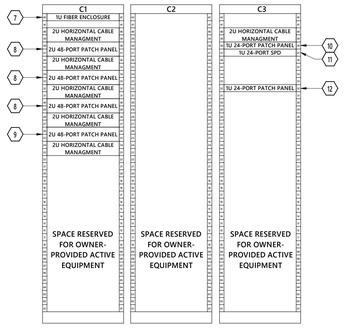


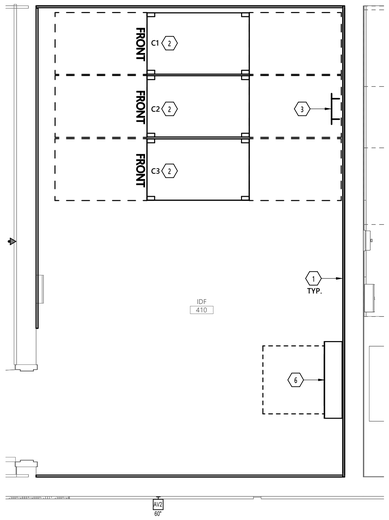
1 IDF 311 - ENLARGED EQUIPMENT PLAN
1/2" = 1'-0"



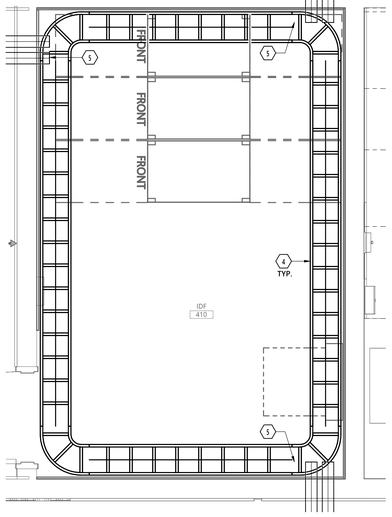
2 IDF 311 - ENLARGED PATHWAY PLAN
1/2" = 1'-0"



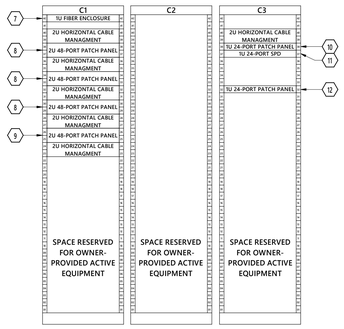
5 IDF 311 - CABINET ELEVATIONS
NO SCALE



3 IDF 410 - ENLARGED EQUIPMENT PLAN
1/2" = 1'-0"



4 IDF 410 - ENLARGED PATHWAY PLAN
1/2" = 1'-0"



6 IDF 410 - CABINET ELEVATIONS
NO SCALE

GENERAL NOTES:

A. PROVIDE D-RINGS AS NEEDED TO DRESS CABLING RUN ALONG TTB.

B. PROVIDE 1RU HORIZONTAL RACK BONDING BUSBAR (RBB) MOUNTED TO THE TOP RACK UNIT ON THE REAR SIDE OF EACH EQUIPMENT CABINET. BOND TO PBB/SBB PER TIA-607.

C. PROVIDE 1RU HORIZONTAL RACK-MOUNTED POWER STRIP FOR EACH CABINET. POWER STRIP SHALL HAVE (12) NEMA 5-20R RECEPTACLES ((6) FRONT AND (6) REAR) AND A 15' CORD WITH NEMA L5-20P PLUG CONNECTION.

KEY NOTES: (#)

1. PROVIDE TELECOM TERMINAL BACKBOARD (TTB) ALONG ALL WALLS OF TELECOM ROOM. ENSURE FIRE RATING STAMP IS VISIBLE. DO NOT PAINT.
2. PROVIDE 24" WIDE 42RU LOCKABLE EQUIPMENT CABINET WITH 19" MOUNTING RAILS.
3. PROVIDE SECONDARY BONDING BUSBAR (SBB) MOUNTED TO TTB AT 6' AFF.
4. PROVIDE 12" WIDE LADDER-TYPE CABLE RUNWAY MOUNTED HORIZONTALLY AT 7' 6" AFF. SECURE TO WALLS AND EQUIPMENT CABINETS PER MANUFACTURER'S INSTRUCTIONS.
5. PROVIDE 4" SLEEVES THROUGH THE WALL BETWEEN MDF/IDF AND WIRE-MESH CABLE TRAY ABOVE CEILING. QUANTITY AS INDICATED ON DRAWINGS.
6. WALL-MOUNTED ELECTRONIC SECURITY EQUIPMENT.
7. PROVIDE 1RU FIBER ENCLOSURE AND COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.
8. PROVIDE 2RU 48-PORT CAT6A PATCH PANEL DEDICATED FOR DATA CABLING.
9. PROVIDE 2RU 48-PORT CAT6A PATCH PANEL DEDICATED FOR WAP CABLING.
10. PROVIDE 1RU 24-PORT CAT6 PATCH PANEL DEDICATED FOR CAMERA CABLING.
11. PROVIDE 1RU 24-PORT SURGE PROTECTION DEVICE FOR CAT6 CAMERA CABLING. BOND TO RBB PER TIA-607.
12. PROVIDE 1RU 24-PORT CAT6 PATCH PANEL DEDICATED FOR INTERCOM/NETWORK SPEAKER CABLING.

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ENLARGED NETWORK PLANS

TN402

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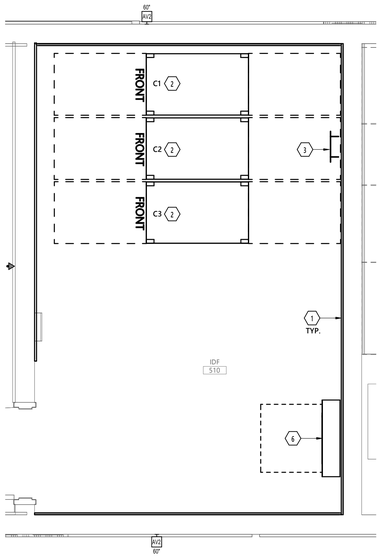
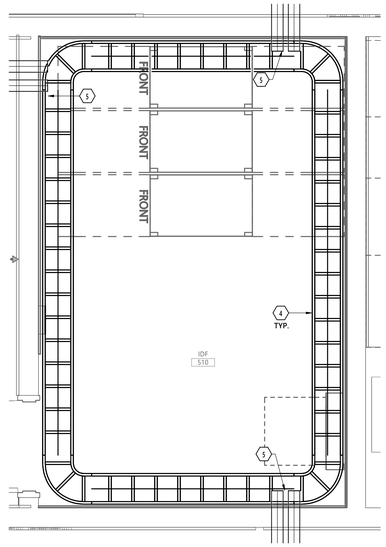
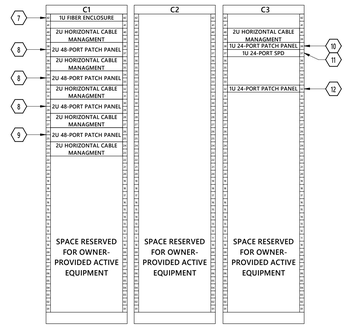


1 IDF 510 - ENLARGED EQUIPMENT PLAN
1/2" = 1'-0"



2 IDF 510 - ENLARGED PATHWAY PLAN
1/2" = 1'-0"



3 IDF 510 - CABINET ELEVATIONS
NO SCALE

GENERAL NOTES:

A. PROVIDE D-RINGS AS NEEDED TO DRESS CABLING RUN ALONG TTB.

B. PROVIDE 1RU HORIZONTAL RACK BONDING BUSBAR (RBB) MOUNTED TO THE TOP RACK UNIT ON THE REAR SIDE OF EACH EQUIPMENT CABINET. BOND TO PBB/SBB PER TIA-607.

C. PROVIDE 1RU HORIZONTAL RACK-MOUNTED POWER STRIP FOR EACH CABINET. POWER STRIP SHALL HAVE (12) NEMA 5-20R RECEPTACLES ((6) FRONT AND (6) REAR) AND A 15' CORD WITH NEMA L5-20P PLUG CONNECTION.

KEY NOTES: (#)

1. PROVIDE TELECOM TERMINAL BACKBOARD (TTB) ALONG ALL WALLS OF TELECOM ROOM. ENSURE FIRE RATING STAMP IS VISIBLE. DO NOT PAINT.
2. PROVIDE 24" WIDE 42RU LOCKABLE EQUIPMENT CABINET WITH 19" MOUNTING RAILS.
3. PROVIDE SECONDARY BONDING BUSBAR (SBB) MOUNTED TO TTB AT 6' AFF.
4. PROVIDE 12" WIDE LADDER-TYPE CABLE RUNWAY MOUNTED HORIZONTALLY AT 7' 6" AFF. SECURE TO WALLS AND EQUIPMENT CABINETS PER MANUFACTURER'S INSTRUCTIONS.
5. PROVIDE 4" SLEEVES THROUGH THE WALL BETWEEN MDF/IDF AND WIRE-MESH CABLE TRAY ABOVE CEILING. QUANTITY AS INDICATED ON DRAWINGS.
6. WALL-MOUNTED ELECTRONIC SECURITY EQUIPMENT.
7. PROVIDE 1RU FIBER ENCLOSURE AND COUPLER PANELS FOR DUPLEX LC-TYPE CONNECTORS.
8. PROVIDE 2RU 48-PORT CAT6A PATCH PANEL DEDICATED FOR DATA CABLING.
9. PROVIDE 2RU 48-PORT CAT6A PATCH PANEL DEDICATED FOR WAP CABLING.
10. PROVIDE 1RU 24-PORT CAT6A PATCH PANEL DEDICATED FOR CAMERA CABLING.
11. PROVIDE 1RU 24-PORT SURGE PROTECTION DEVICE FOR CAT6A CAMERA CABLING. BOND TO RBB PER TIA-607.
12. PROVIDE 1RU 24-PORT CAT6 PATCH PANEL DEDICATED FOR INTERCOM/NETWORK SPEAKER CABLING.

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ENLARGED NETWORK PLANS

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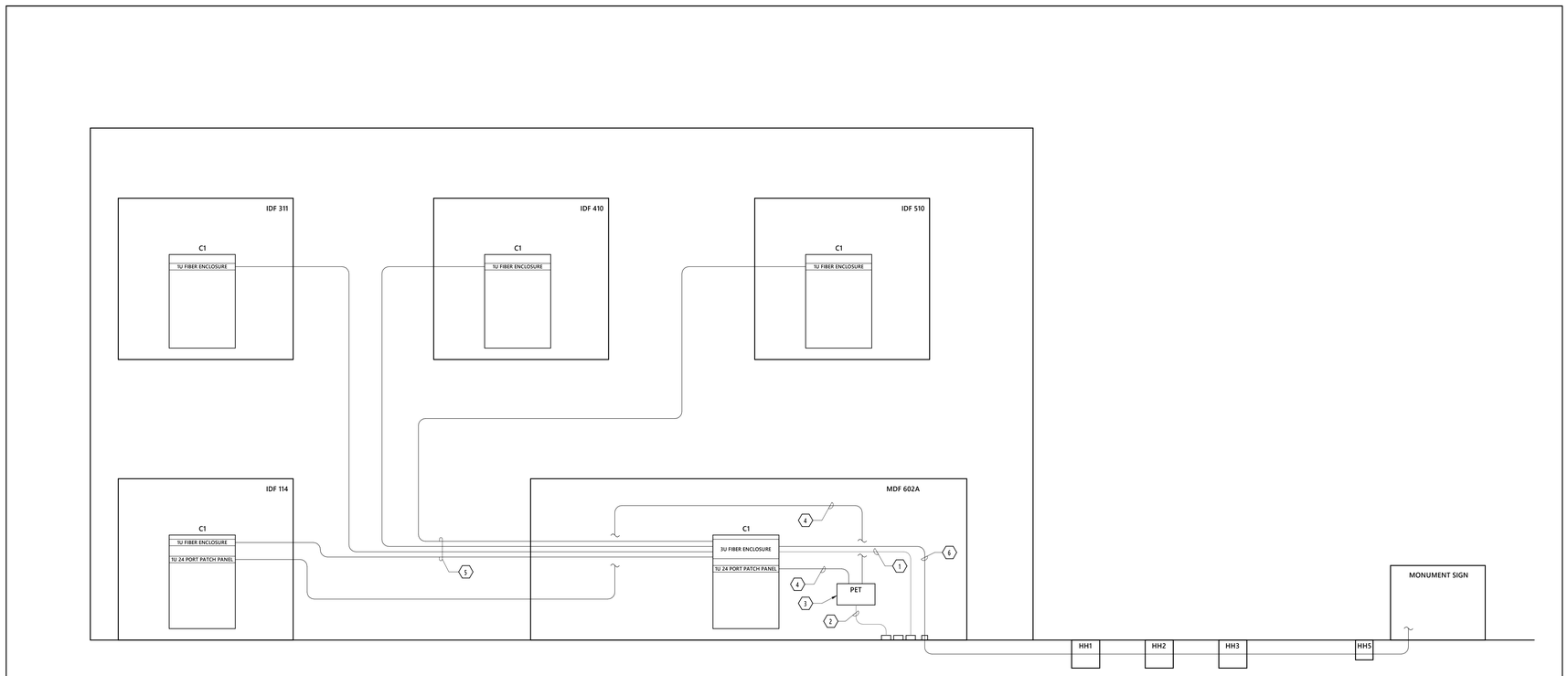

TELECOM BACKBONE RISER DIAGRAM
NO SCALE

GENERAL NOTES:

A. CABINETS ARE SHOWN FOR REFERENCE ONLY. REFER TO ENLARGED PLANS FOR ROOM LAYOUT AND CABINET ELEVATIONS.

B. PROVIDE 6-PORT (12-FIBER) DUPLEX-LC COUPLER PANLES IN RACK-MOUNTED FIBER ENCLOSURES FOR TERMINATION OF BACKBONE FIBER.

KEY NOTES: (#)

1. INCOMING FIBER OPTIC SERVICE CABLE BY LOCAL SERVICE PROVIDER (BRIGHTSPEED FIBER).
2. INCOMING ANALOG PHONE SERVICE CABLE BY LOCAL SERVICE PROVIDER.
3. PROVIDE 50-PAIR PROTECTED ENTRANCE TERMINAL (PET) FOR INCOMING COPPER SERVICE. MOUNT TO TTB AND GROUND PER TIA-607 AND MANUFACTURER'S INSTRUCTIONS.
4. PROVIDE (1) 25-PAIR CAT 5E CABLE FROM PET TO 24-PORT RACK-MOUNTED VOICE PATCH PANEL. TERMINATE 1 PAIR PER PORT TO PINS 4 AND 5.
5. PROVIDE (1) 12-STRAND SINGLEMODE FIBER OPTIC CABLE FROM MDF TO EACH IDF. TERMINATE INSIDE RACK-MOUNTED ENCLOSURE ON EACH END USING LC-TYPE CONNECTORS.
6. PROVIDE (1) 4-STRAND SINGLEMODE OSP FIBER OPTIC CABLE FROM MDF TO MONUMENT SIGN. TERMINATE ON EACH END USING LC-TYPE CONNECTORS. PROVIDE FIBER-TO-CATEGORY 6 MEDIA CONVERTER ON EACH END OF FIBER RUN. COORDINATE WITH SIGNAGE VENDOR PRIOR TO INSTALLATION.

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NETWORK RISER DIAGRAM

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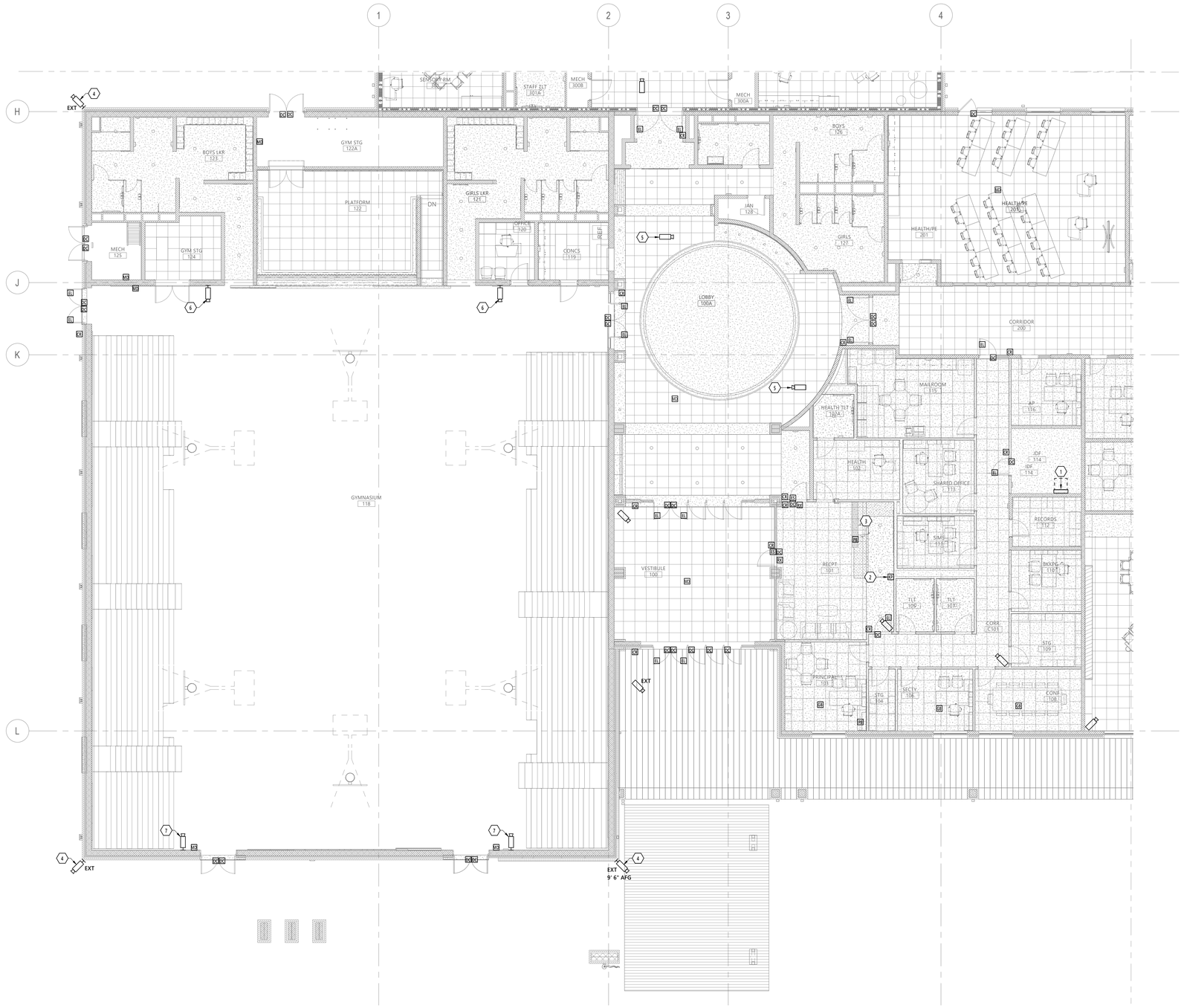

1 FIRST FLOOR SECURITY PLAN - AREA 100
1/8" = 1'-0"

GENERAL NOTES:

A. THERE SHALL BE NO EXPOSED CABLING IN THE GYM. ALL CABLING MUST BE INSTALLED IN CONDUIT FROM OUTLET LOCATION TO NEAREST CABLE TRAY ABOVE ACCESSIBLE CEILING.

B. CABLING FOR SECURITY DEVICES SHALL ROUTE TO NEAREST TELECOM ROOM.

C. ALL CAMERAS NOT NOTED AS MULTI-SENSOR SHALL BE SINGLE-SENSOR CAMERAS.

D. 4-SENSOR CAMERAS MUST PROVIDE 360-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

E. 2-SENSOR CAMERAS MUST PROVIDE 180-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

F. INSTALL ALL INTERIOR WALL-MOUNTED CAMERAS AT 10' AFF, UON.

G. INSTALL ALL EXTERIOR WALL-MOUNTED CAMERAS AT 12' AFG, UON.

KEY NOTES: (#)

1. WALL-MOUNTED ELECTRONIC SECURITY HEADEND EQUIPMENT. LOCATE MAIN ESS CONTROL EQUIPMENT IN IDF 114.
2. WALL-MOUNTED KEYPAD TO ARM/DISARM INTRUSION DETECTION SYSTEM.
3. SECURITY WORKSTATION. PROVIDE WORKSTATION WITH THE ABILITY TO LOCK/UNLOCK ELECTRONICALLY CONTROLLED DOORS, MONITOR DOOR STATUS, AND MONITOR NETWORK SURVEILLANCE CAMERAS.
4. PROVIDE EXTERIOR-RATED 4-SENSOR CAMERA WITH CORNER-MOUNT BRACKET. MOUNT CAMERA AT 12' AFG, UON.
5. PROVIDE INTERIOR 4-SENSOR CEILING-MOUNT CAMERA. SECURE CAMERA TO CEILING PER MANUFACTURER'S INSTRUCTIONS.
6. PROVIDE INTERIOR 2-SENSOR CAMERA MOUNTED TO WALL. MOUNT CAMERA AT 12' AFF, UON.
7. PROVIDE INTERIOR SINGLE-SENSOR CAMERA MOUNTED TO WALL. MOUNT CAMERA AT 12' AFF, UON.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR SECURITY PLAN - AREA 100

TY111

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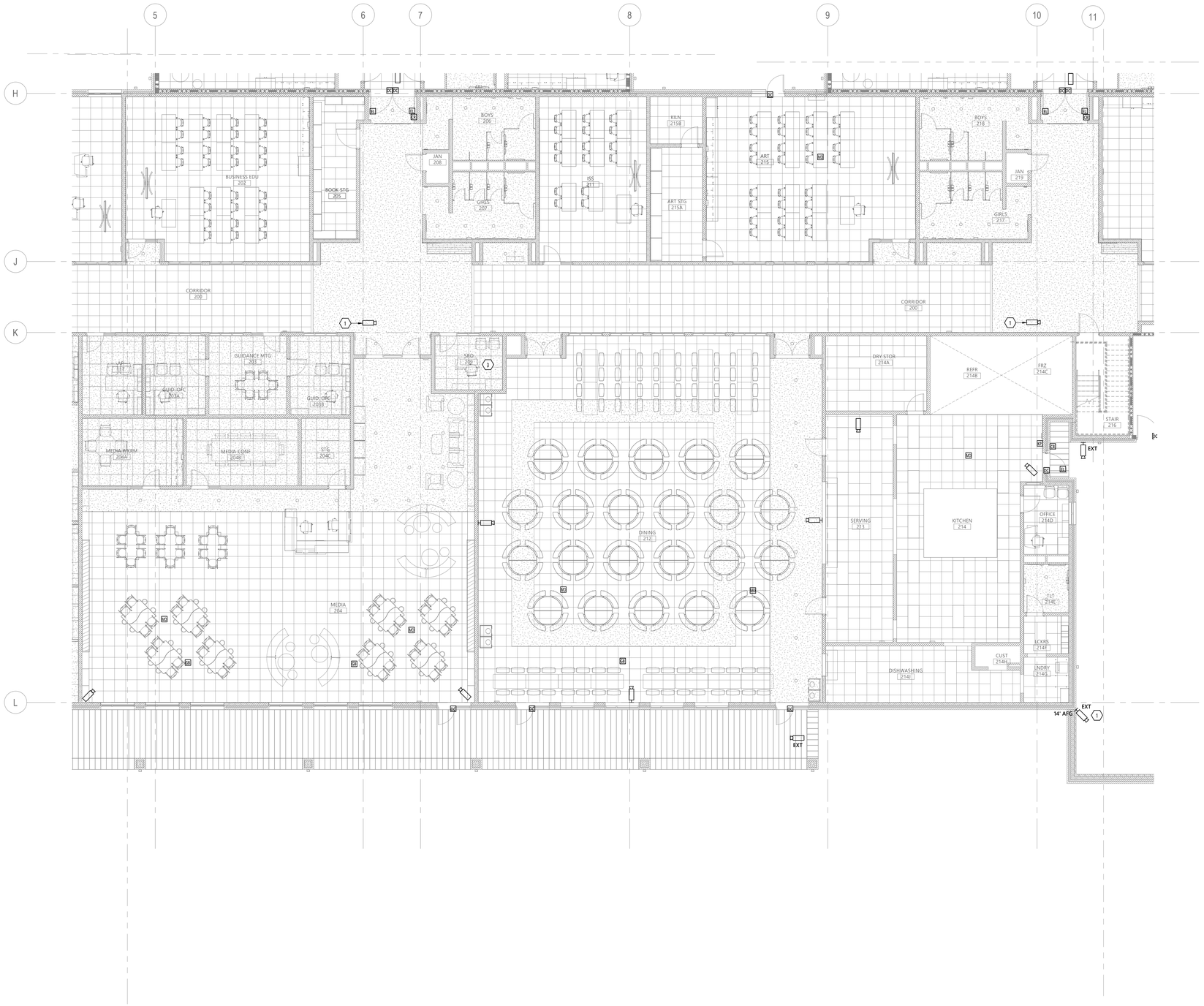


1 FIRST FLOOR SECURITY PLAN - AREA 200
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING FOR SECURITY DEVICES SHALL ROUTE TO NEAREST TELECOM ROOM.

B. ALL CAMERAS NOT NOTED AS MULTI-SENSOR SHALL BE SINGLE-SENSOR CAMERAS.

C. 4-SENSOR CAMERAS MUST PROVIDE 360-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

D. 2-SENSOR CAMERAS MUST PROVIDE 180-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

E. INSTALL ALL INTERIOR WALL-MOUNTED CAMERAS AT 10' AFF, UON.

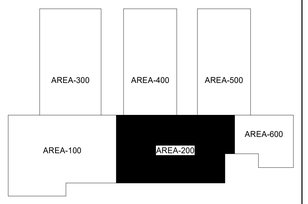
F. INSTALL ALL EXTERIOR WALL-MOUNTED CAMERAS AT 12' AFG, UON.

KEY NOTES: (#)

1. PROVIDE INTERIOR 4-SENSOR CEILING-MOUNT CAMERA. SECURE CAMERA TO CEILING PER MANUFACTURER'S INSTRUCTIONS.
2. WALL-MOUNTED KEYPAD TO ARM/DISARM INTRUSION DETECTION SYSTEM.
3. SECURITY WORKSTATION. PROVIDE WORKSTATION WITH THE ABILITY TO LOCK/UNLOCK ELECTRONICALLY CONTROLLED DOORS, MONITOR DOOR STATUS, AND MONITOR NETWORK SURVEILLANCE CAMERAS.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR SECURITY PLAN - AREA 200

TY112

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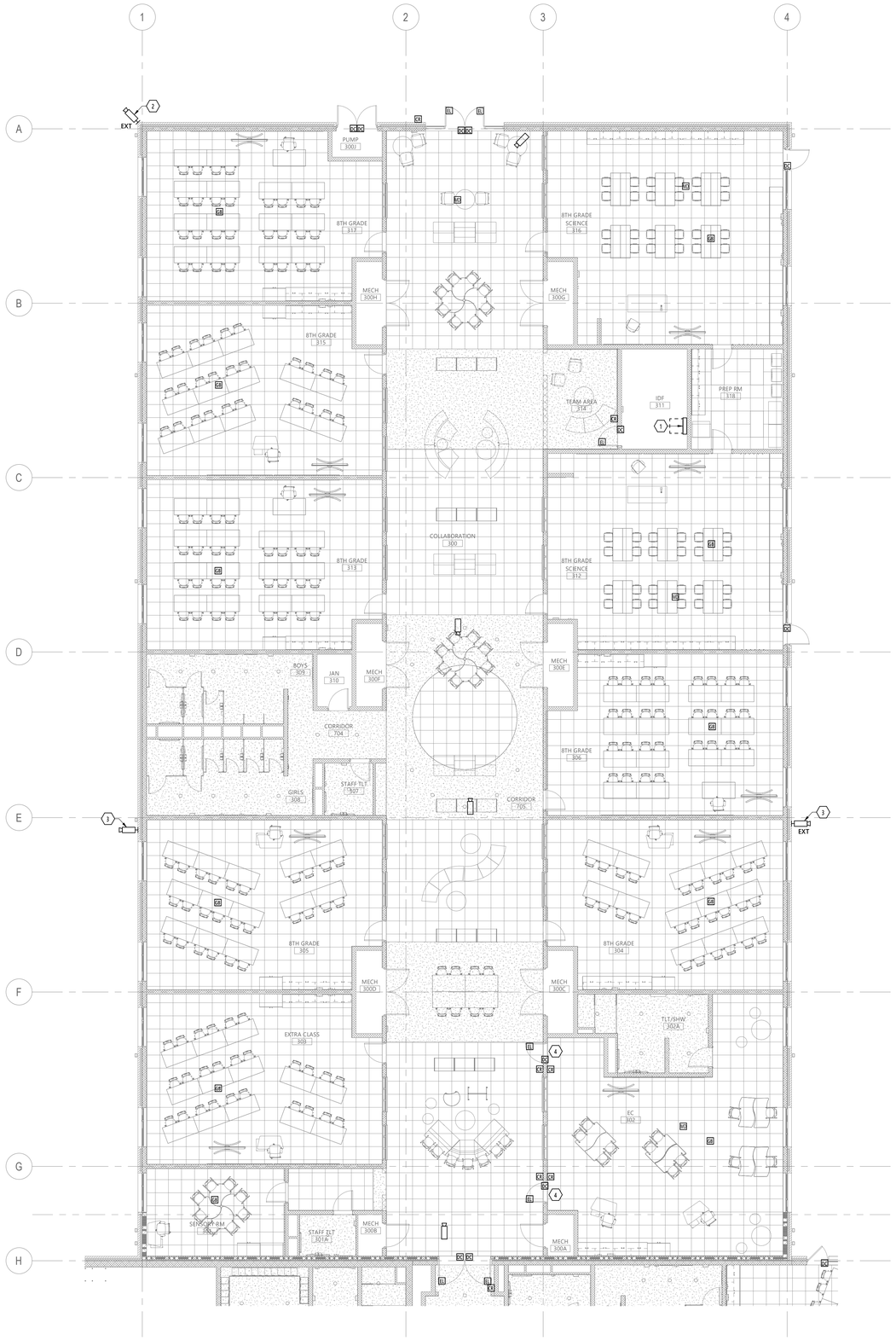


1 **FIRST FLOOR SECURITY PLAN - AREA 300**
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING FOR SECURITY DEVICES SHALL ROUTE TO NEAREST TELECOM ROOM.

B. ALL CAMERAS NOT NOTED AS MULTI-SENSOR SHALL BE SINGLE-SENSOR CAMERAS.

C. 4-SENSOR CAMERAS MUST PROVIDE 360-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

D. 2-SENSOR CAMERAS MUST PROVIDE 180-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

E. INSTALL ALL INTERIOR WALL-MOUNTED CAMERAS AT 10' AFF, UON.

F. INSTALL ALL EXTERIOR WALL-MOUNTED CAMERAS AT 12' AFG, UON.

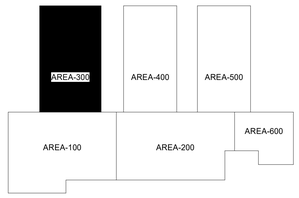
KEY NOTES: (#)

1. WALL-MOUNTED ELECTRONIC SECURITY HEADEND EQUIPMENT.
2. PROVIDE EXTERIOR-RATED 4-SENSOR CAMERA WITH CORNER-MOUNT BRACKET.
3. PROVIDE EXTERIOR-RATED 2-SENSOR CAMERA MOUNTED TO WALL.
4. EC ROOM CARD READER FUNCTION: CARD READER IN CORRIDOR WILL ALLOW ENTRY INTO EC ROOM WITH VALID CREDENTIAL. DOOR HARDWARE SHALL ALLOW FOR FREE EGRESS, BUT DOORS SHALL BE EQUIPPED WITH LOCAL AUDIBLE ALARM. EXITTING EC ROOM WITHOUT PRESENTING VALID CREDENTIAL WILL RESULT IN ALARM SOUNDING. PRESENTATION OF VALID CREDENTIAL PRIOR TO OPENING EC DOORS FROM INSIDE THE ROOM WILL BYPASS THE ALARM.

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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ENERGY STAR PARTNER

No.	Date	Description
1	02/18/2025	BID SET / AGENCY COM

ISSUE DATE: 02/18/2025
PROJECT #: 02303.000
DRAWN BY: DWH
CHECKED BY: TMC

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FIRST FLOOR SECURITY PLAN - AREA 300

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Sheet No. 29 of 34

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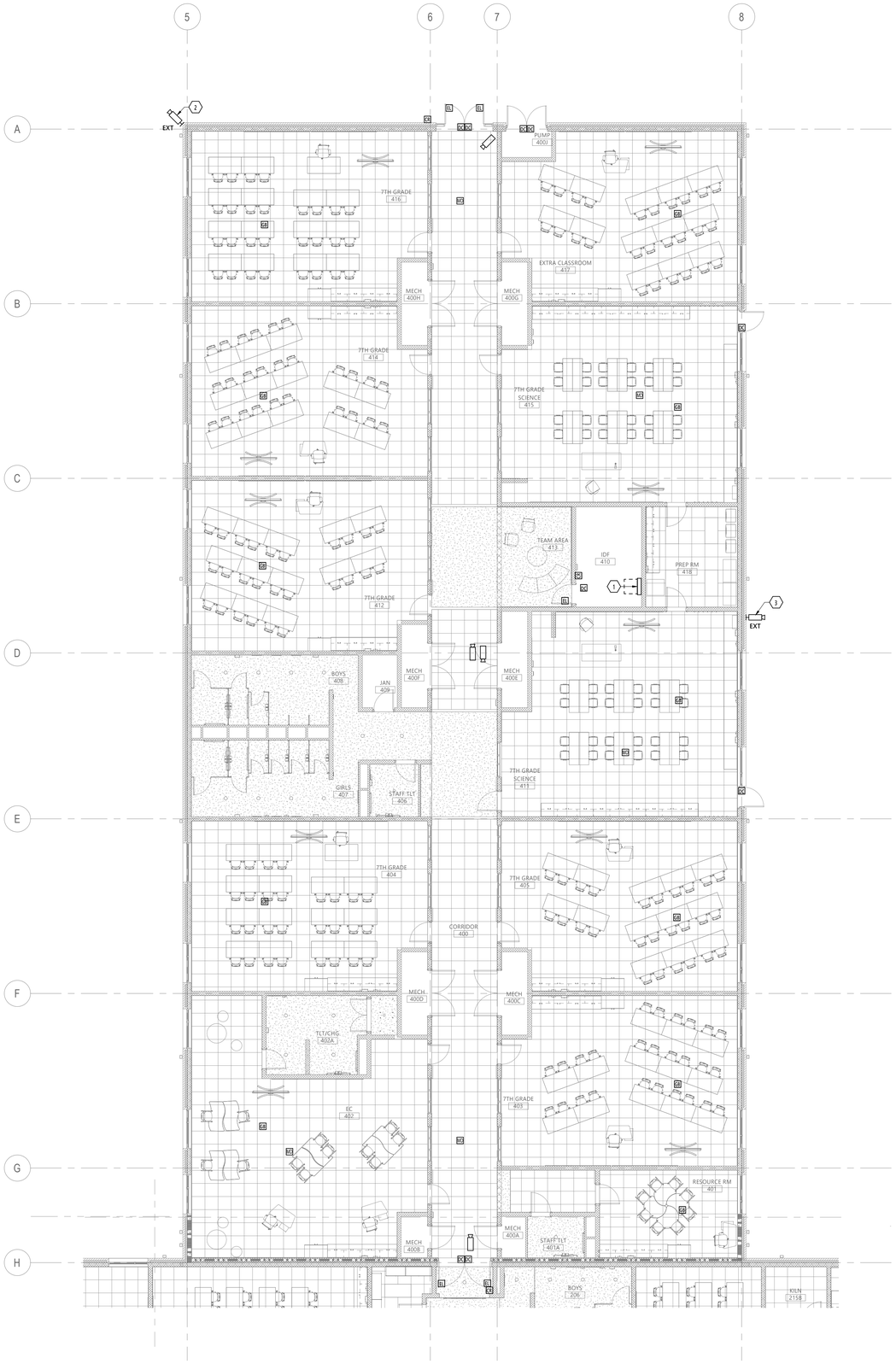

1 **FIRST FLOOR SECURITY PLAN - AREA 400**
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING FOR SECURITY DEVICES SHALL ROUTE TO NEAREST TELECOM ROOM.

B. ALL CAMERAS NOT NOTED AS MULTI-SENSOR SHALL BE SINGLE-SENSOR CAMERAS.

C. 4-SENSOR CAMERAS MUST PROVIDE 360-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

D. 2-SENSOR CAMERAS MUST PROVIDE 180-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

E. INSTALL ALL INTERIOR WALL-MOUNTED CAMERAS AT 10' AFF, UON.

F. INSTALL ALL EXTERIOR WALL-MOUNTED CAMERAS AT 12' AFG, UON.

KEY NOTES: (#)

1. WALL-MOUNTED ELECTRONIC SECURITY HEADEND EQUIPMENT.
2. PROVIDE EXTERIOR-RATED 4-SENSOR CAMERA WITH CORNER-MOUNT BRACKET.
3. PROVIDE EXTERIOR-RATED 2-SENSOR CAMERA MOUNTED TO WALL.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR SECURITY PLAN - AREA 400

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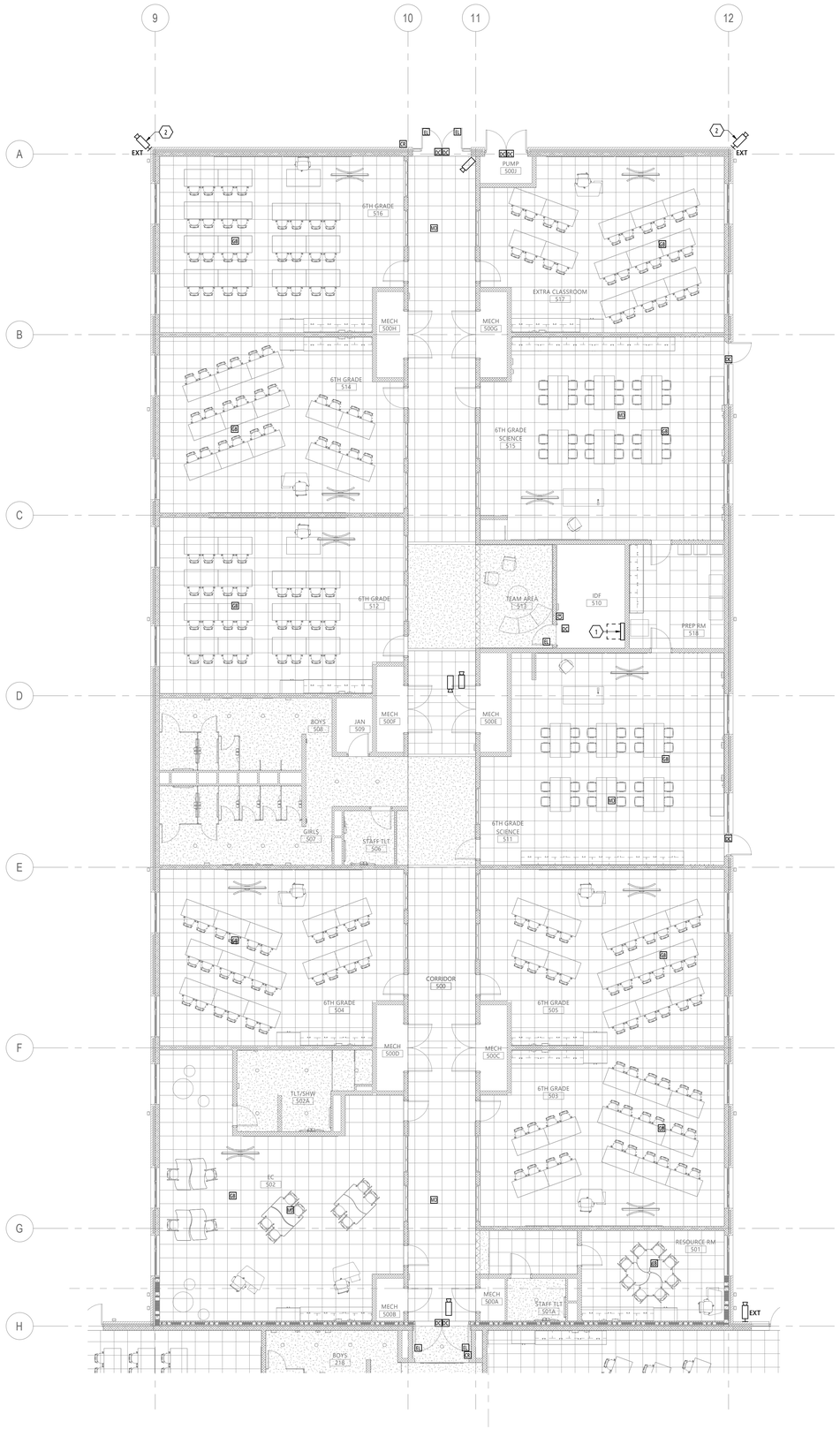

1 **FIRST FLOOR SECURITY PLAN - AREA 500**
1/8" = 1'-0"

GENERAL NOTES:

A. CABLING FOR SECURITY DEVICES SHALL ROUTE TO NEAREST TELECOM ROOM.

B. ALL CAMERAS NOT NOTED AS MULTI-SENSOR SHALL BE SINGLE-SENSOR CAMERAS.

C. 4-SENSOR CAMERAS MUST PROVIDE 360-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

D. 2-SENSOR CAMERAS MUST PROVIDE 180-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

E. INSTALL ALL INTERIOR WALL-MOUNTED CAMERAS AT 10' AFF, UON.

F. INSTALL ALL EXTERIOR WALL-MOUNTED CAMERAS AT 12' AFG, UON.

KEY NOTES: (2)

1. WALL-MOUNTED ELECTRONIC SECURITY HEADEND EQUIPMENT.
2. PROVIDE EXTERIOR-RATED 4-SENSOR CAMERA WITH CORNER-MOUNT BRACKET.

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR SECURITY PLAN - AREA 500

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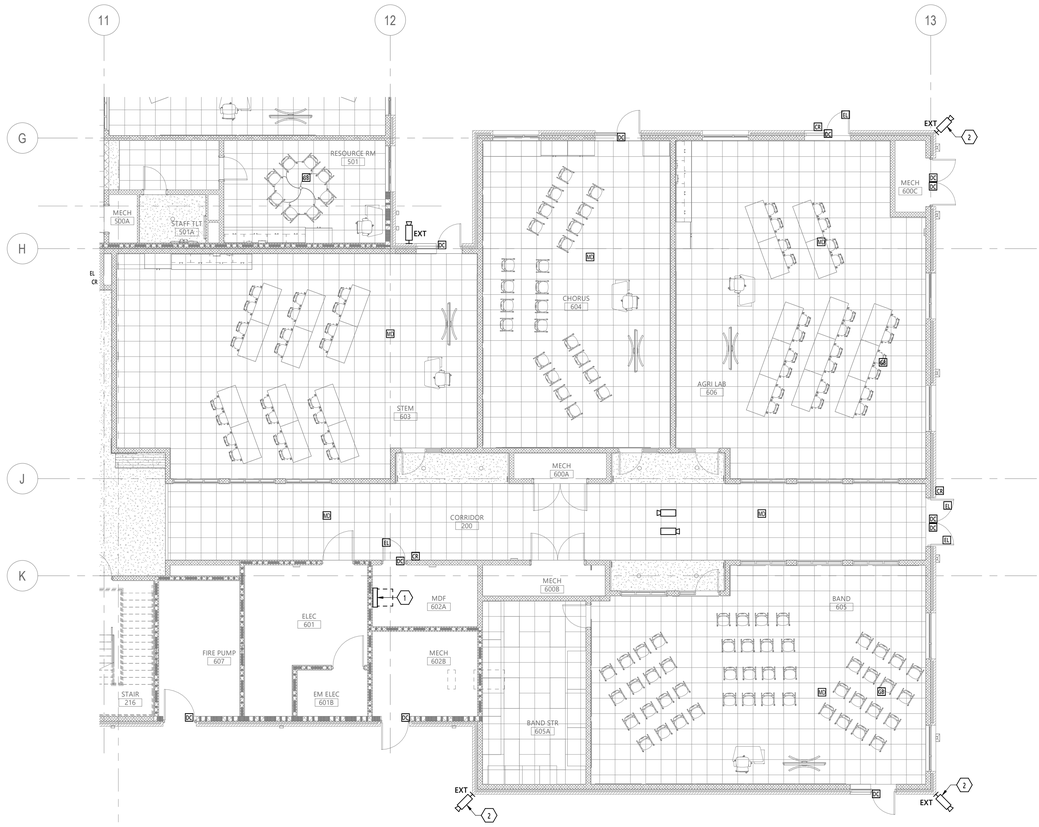


1 FIRST FLOOR SECURITY PLAN - AREA 600

1/8" = 1'-0"

GENERAL NOTES:

A. CABLING FOR SECURITY DEVICES SHALL ROUTE TO NEAREST TELECOM ROOM.

B. ALL CAMERAS NOT NOTED AS MULTI-SENSOR SHALL BE SINGLE-SENSOR CAMERAS.

C. 4-SENSOR CAMERAS MUST PROVIDE 360-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

D. 2-SENSOR CAMERAS MUST PROVIDE 180-DEGREE FIELD-OF-VIEW AND OPERATE ON SINGLE LICENSE AND IP ADDRESS.

E. INSTALL ALL INTERIOR WALL-MOUNTED CAMERAS AT 10' AFF, UON.

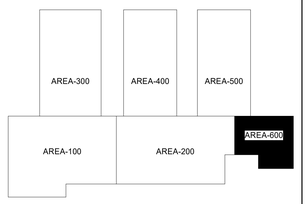
F. INSTALL ALL EXTERIOR WALL-MOUNTED CAMERAS AT 12' AFG, UON.

KEY NOTES: (X)

1. WALL-MOUNTED ELECTRONIC SECURITY HEADEND EQUIPMENT.
2. PROVIDE EXTERIOR-RATED 4-SENSOR CAMERA WITH CORNER-MOUNT BRACKET.

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR RATED (FIRE BARRIER)
	2 HOUR RATED WALL

KEYPLAN



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FIRST FLOOR SECURITY PLAN - AREA 600

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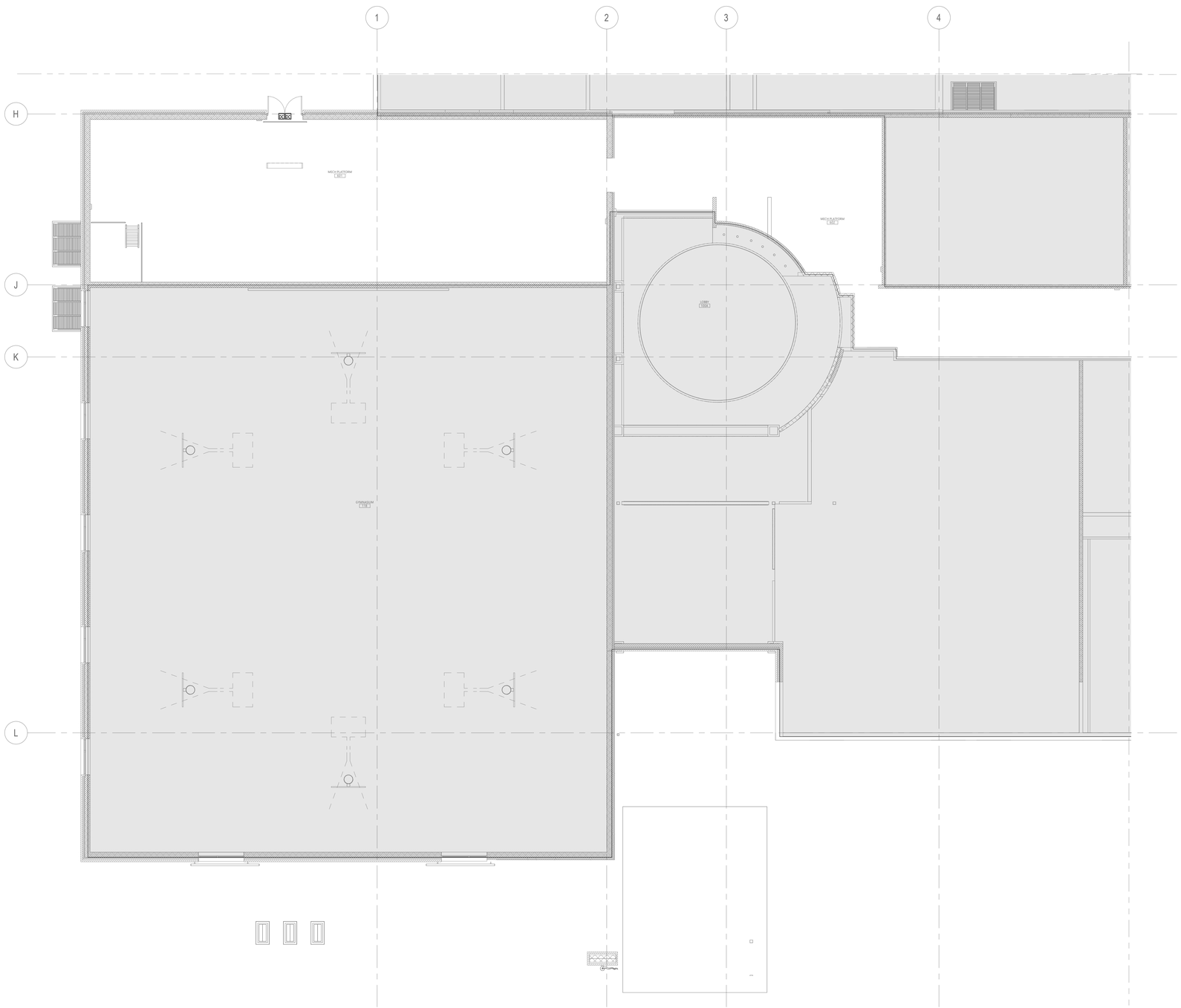


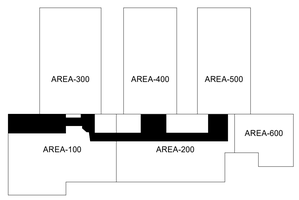
1 **MECH. PLATFORM SECURITY PLAN - AREA 100**
1/8" = 1'-0"

GENERAL NOTES:

A. SHADED AREA INDICATES FIRST FLOOR SPACE.

B. THERE SHALL BE NO EXPOSED CABLING IN THE MECHANICAL PLATFORM AREA. ALL CABLING MUST BE INSTALLED IN CONDUIT FROM DEVICE LOCATION BACK TO FIRST FLOOR ACCESSIBLE CEILING SPACE.

KEYPLAN



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MECH. PLATFORM SECURITY PLAN - AREA 100

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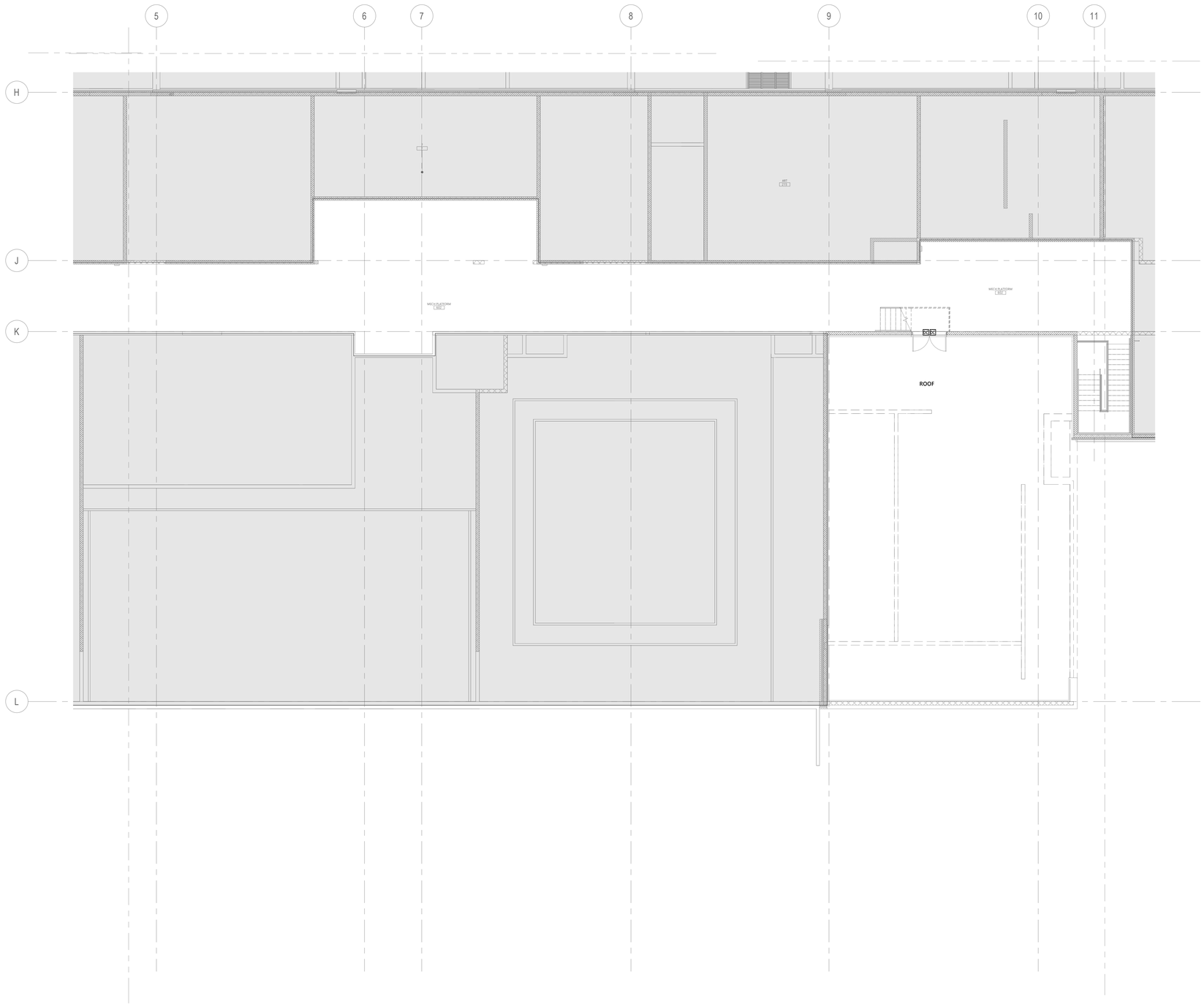
GENERAL NOTES:

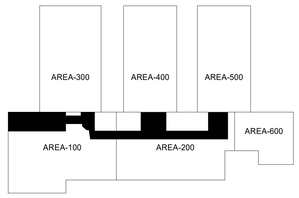
A. SHADED AREA INDICATES FIRST FLOOR SPACE.

B. THERE SHALL BE NO EXPOSED CABLING IN THE MECHANICAL PLATFORM AREA. ALL CABLING MUST BE INSTALLED IN CONDUIT FROM DEVICE LOCATION BACK TO FIRST FLOOR ACCESSIBLE CEILING SPACE.



1 MECH. PLATFORM SECURITY PLAN - AREA 200
1/8" = 1'-0"

KEYPLAN



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MECH. PLATFORM SECURITY PLAN - AREA 200

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