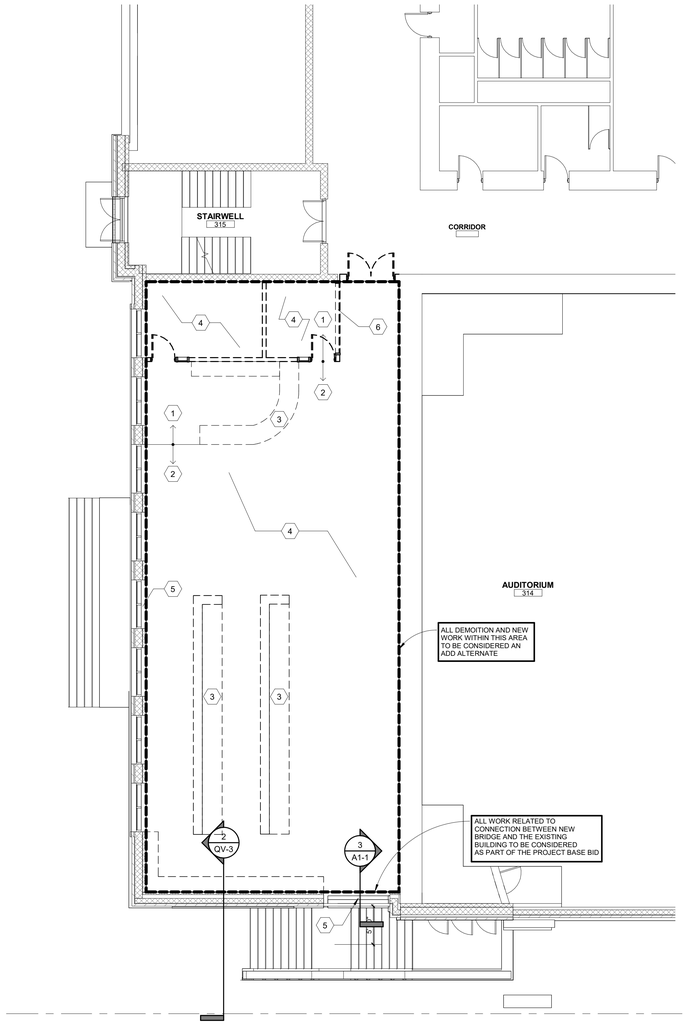
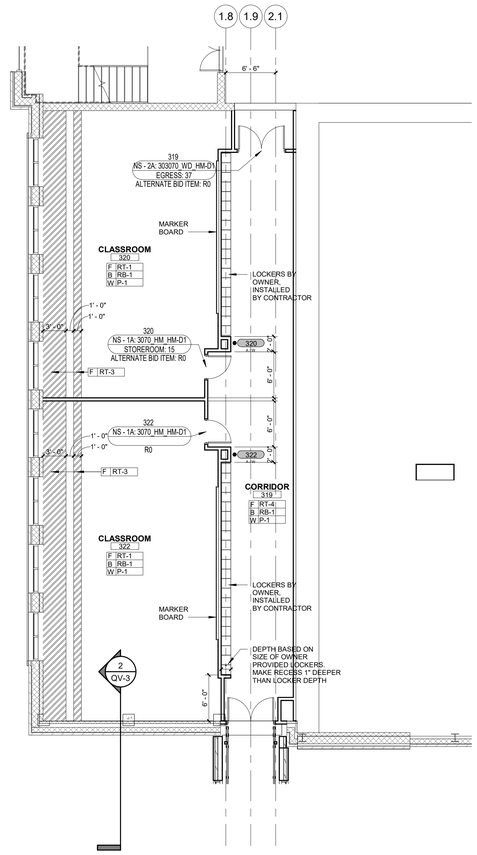
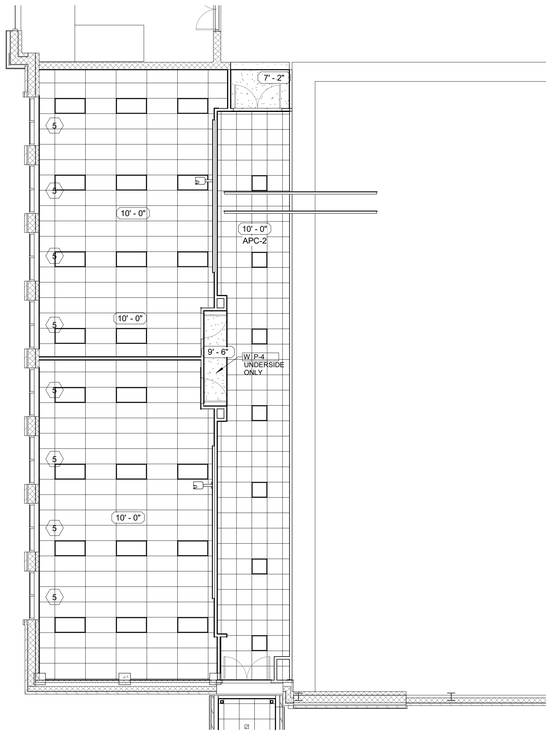


1 DEMOLITION PLAN EXISTING - SECOND FLOOR
SCALE: 1/8" = 1'-0"



2 FLOOR PLAN - EXISTING THIRD FLOOR & SKYBRIDGE
SCALE: 1/8" = 1'-0"



3 REFLECTED CEILING PLAN - EXISTING SECOND FLOOR
SCALE: 1/8" = 1'-0"

DEMOLITION CODED NOTES

1	REMOVE CARPET AND WOOD BASE
2	EXISTING WOOD FLOORING TO REMAIN. CONTRACTOR TO PROTECT CONDITION OF FLOOR DURING DEMOLITION AND NEW CONSTRUCTION
3	EXISTING CASEWORK TO BE REMOVED. OWNER TO HAVE FIRST REFUSAL PRIOR TO DEMOLITION
4	REMOVE EXISTING LAY IN CEILING GRID AND TILES. REMOVE EXISTING ELECTRICAL, MECHANICAL, FIRE PROTECTION AND TECHNOLOGY DEVICES AS INDICATED ON THEIR RESPECTIVE DRAWINGS
5	REMOVE EXISTING TILE WINDOW SILLS
6	DEMOLISH EXISTING OFFICE WINDOW

FLOOR PLAN CODED NOTES

1	FIXED CASEWORK - REFER TO CASEWORK DETAILS.
2	PASS-THROUGH FUME HOOD
3	CENTER WALL ON WINDOW MULLION
4	TRASH GROMMET
5	KNOX-BOX LOCATION. MOUNT AT 72" ABOVE FINISH FLOOR
6	BRIDGE ROOF DRAIN LEADER
7	ROUTE ROOF DRAIN LEADER THROUGH BRIDGE FLOOR CONSTRUCTION AND EXTEND TO DOWNSPOUT NEXT TO CONCRETE COLUMN
8	VAC, GAS AND CA OUTLET TO BE INSTALLED AT THIS LOCATION.
9	EMERGENCY SHOWER / EYE WASH. REFER TO PLUMBING DRAWINGS.
10	WALLS TO BE LINED WITH 3/4" PLYWOOD FROM TOP OF WALL BASE TO 8'-0" ABOVE FINISHED FLOOR

CEILING PLAN CODED NOTES

1	NO CEILING IN THIS ROOM. PAINT EXPOSED STRUCTURE
2	PROVIDE ACOUSTICAL DECK. PAINT ALL EXPOSED STRUCTURAL AND MEP COMPONENTS
3	DECORATIVE METAL CEILING
4	EXPOSED STRUCTURE. PAINT ALL EXPOSED STRUCTURAL AND MEP
5	MANUAL ROLLER SHADE - PROVIDED BY OWNER, INSTALLED BY CONTRACTOR
6	MOTORIZED ROLLER SHADE - PROVIDED BY OWNER, INSTALLED BY CONTRACTOR
7	HANGING ACOUSTICAL BAFFLES SUSPENDED FROM STRUCTURE ABOVE.
8	STUDIO LIGHTS AND TRACK BY OWNER'S VENDOR
9	FIRE SUPRESSION SPRINKLER LINE TO BE MOUNTED TIGHT TO UNDERSIDE OF STAIR.
10	BASE BID: EXISTING CEILING, MECHANICAL SYSTEMS, AND ELECTRICAL TO REMAIN. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.

*ALL WORK (DEMO & NEW) SHOWN ON THIS SHEET TO BE PRICED AS AN ALTERNATE

CODED NOTES (1)
NOTE: ALL CODED NOTES MAY NOT OCCUR ON EVERY SHEET

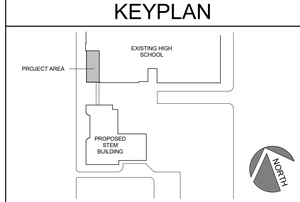
GENERAL NOTES

1. REFER TO DIMENSION PLANS FOR INTERIOR PARTITION TYPES.
2. REFER TO A5 SERIES FOR EXTERIOR WALL TYPES.
3. TYPICAL MOUNTING HEIGHTS, WALL BLOCKING, & LOCATIONS OF FIXTURES, ACCESSORIES AND SELECT EQUIPMENT ARE SHOWN ON SHEET A7-0. LOCATIONS OF 'CA' SUPPORT ANGLES ARE SHOWN ON INTERIOR ELEVATIONS. REFER TO REMAINING A7 SERIES DRAWINGS FOR ADDITIONAL REQUIREMENTS AND LOCATIONS OF ACCESSORIES AND EQUIPMENT NOT SHOWN ON FLOOR PLANS.
4. ALL CMU WALLS ARE 8" (NOMINAL) UNLESS NOTED OR DIMENSIONED OTHERWISE ON DRAWINGS.
5. PATCH AND LEVEL FLOORS AT DEMOLISHED WALLS. PROVIDE LEVEL SURFACES AND PREP FLOOR FOR SCHEDULED FINISH.
6. PATCH EXISTING WALLS WHICH ARE NOT AFFECTED BY THE NEW WORK BUT REQUIRE SURFACE REPAIR DUE TO WATER DAMAGE, MISUSE, ACCIDENTAL DAMAGE AND DEMOLITION OR REMOVAL OF WALL MOUNTED EQUIPMENT OR ACCESSORIES. REMOVE OR REPAIR AREAS WHERE SURFACES ARE LOOSE, SPALLING OR DISPLACED. PATCH AND FILL ALL CRACKS AND OPENINGS. PREPARE SURFACES FOR FINAL FINISHES. ALL EXISTING WALL SURFACES SCHEDULED TO RECEIVE NEW FINISHES SHALL BE PATCHED AND PREPARED IN THIS FASHION.
7. CONTRACTOR FURNISHES OR INSTALLS ALL SPECIALTY ITEMS, EQUIPMENT, ACCESSORIES, AND FURNISHING ON THIS PLAN, UNO. REFER TO LEGEND AND EQUIPMENT SCHEDULE FOR DETAILED REQUIREMENTS.
8. REFER TO COORDINATION PLANS FOR LOCATION OF OWNER FURNISHED ITEMS.

LEGEND

- 1A — WALL / PARTITION TYPE DESIGNATION - REFER TO A2-0 (DENOTES "SPECIAL CONSTRUCTION")
- I # — FRAME/WINDOW TYPE DESIGNATION. 'I' PREFIX DENOTES INTERIOR FRAMES - REFER TO A7 SERIES.
  - EXTERIOR FRAMES (E#): REFER TO EXTERIOR FRAME TYPES (A4 SERIES)
  - INTERIOR FRAMES WITH DOORS (D#): REFER TO DOOR/FRAMES SCHEDULE, DETAILS & PLAN SHEET
- 101 — DOOR DESIGNATION - REFER TO A8 SERIES
- COORDINATION ITEM - REFER TO A11 SERIES
- OWNER FURNISHED / CONTRACTOR INSTALLED
- OWNER PROVIDED CRITICAL ITEM. SHOWN FOR REFERENCE

KEYPLAN



ISSUES / REVISIONS

H	3/15/24	CLASSROOM RENOVATION

STEUBENVILLE CITY SCHOOLS

STEUBENVILLE HIGH SCHOOL STEM BUILDING

STATE OF OHIO — 5/20/2022 — DENNIS M. CHECK 8909110 — REGISTERED ARCHITECT

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PROJECT NO.
21042.000

ALTERNATE - CLASSROOMS

SCALE
As indicated

A2-5

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DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
2. DEMOLITION LINETYPE: THICK (DARK) DASHED LINES REPRESENT EXISTING ITEMS TO BE REMOVED.
3. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.

FIRE PROTECTION NEW WORK NOTES:

1. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING OF EXISTING WALLS, DRYWALL CEILINGS, FLOORS, ROOFS, ETC. THAT ARE TO REMAIN AFTER PIPING AND EQUIPMENT ARE REMOVED. PATCHING MATERIALS SHALL MATCH EXISTING CONSTRUCTION. REFER TO ARCHITECTURAL DRAWINGS FOR CEILINGS THAT ARE SCHEDULED TO BE REPLACED.
2. SHUT-OFF VALVES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. COORDINATE THE LOCATION OF ACCESS DOORS IN CEILINGS OR WALLS WITH THE GENERAL CONTRACTOR IF A VALVE IS REQUIRED TO BE LOCATED ABOVE AN INACCESSIBLE CEILING OR IN A WALL OR CHASE.
3. SHUT-OFF VALVES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. PROVIDE ACCESS DOORS IN CEILINGS OR WALLS IF A VALVE IS REQUIRED TO BE LOCATED ABOVE AN INACCESSIBLE CEILING OR IN A WALL OR CHASE.
4. SPRINKLER HEADS SHALL BE LOCATED IN CENTER OF CEILING TILES. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR COORDINATION OF SPRINKLER HEAD LOCATIONS.
5. SPRINKLER PIPING ROUTED ABOVE LAY-IN CEILINGS SHALL BE INSTALLED WITH AT LEAST 6 INCHES OF CLEARANCE FROM THE BOTTOM OF THE PIPE TO THE TOP OF THE LAY-IN SUPPORT MEMBERS FOR CEILING TILE REMOVAL.
6. CONTROL VALVES SHALL BE LABELED SO AS TO INDICATE THE AREA/ZONE THAT IS SERVICED BY THE VALVE.
7. INSPECTORS TEST VALVES SHALL BE LOCATED IN CONVENIENT LOCATIONS WITHIN 7 FEET OF THE FLOOR AND SHALL DISCHARGE INTO AN APPROVED AREA WHERE FULL FLOW UNDER FULL WORKING PRESSURE WILL NOT CAUSE WATER DAMAGE OR SAFETY HAZARDS.
8. PIPE LENGTHS AND SIZES INDICATED ON THIS DRAWING SET ARE DIAGRAMATIC IN NATURE AND ARE FOR DESIGN INTENT. DO NOT SCALE THE DRAWINGS. THE FIRE PROTECTION CONTRACTOR SHALL VERIFY (BY MEANS OF HYDRAULIC CALCULATIONS) ALL FINAL PIPE LENGTHS AND SIZES BEFORE INSTALLING.
9. SEE ARCHIRECTURAL DRAWINGS FOR FINAL CEILING LAYOUTS.
10. SEE ARCHITECTURAL DRAWINGS FOR LIFE SAFETY DRAWINGS CONTAINING WALL RATINGS AND LOCATIONS.

ABBREVIATIONS

FIRE PROTECTION ABBREVIATION SCHEDULE

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AP	ACCESS PANEL
APPROX	APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURAL
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BOP	BOTTOM OF PIPE
D	DEEP
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DEMO	DEMOLITION
DN	DOWN
DTF	DOWN THROUGH FLOOR
DTR	DOWN THROUGH ROOF
DWG	DRAWING
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
ETR	EXISTING TO REMAIN
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FDV	FIRE DEPARTMENT VALVE
FFE	FINISHED FLOOR ELEVATION
FP	FIRE PROTECTION
FP	FIRE PUMP
FPC	FIRE PROTECTION CONTRACTOR
FT	FEET
GAL	GALLON
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
H	HIGH
HEAD	FEET OF WATER COLUMN PRESSURE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HZ	HERTZ (CYCLES PER SECOND)
IN	INCH
INV	INVERT ELEVATION
L	LENGTH
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MFR	MANUFACTURER
MHP	MOTOR HORSEPOSER
MIN	MINIMUM
N	NORTH
NA, N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NUMBER
NPT	NOMINAL PIPE THREAD
NTS	NOT TO SCALE
P	PUMP
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABOSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
QTY	QUANTITY
RPBP	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
S	SOUTH
SF	SQUARE FEET
SPECS	SPECIFICATIONS
SQ	SQUARE
TCC	(TEMPERATURE) CONTROL CONTRACTOR
TEMP	TEMPERATURE (DEG F)
TOP	TOP OF PIPE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UTF	UP THROUGH FLOOR
UTR	UP THROUGH ROOF
V	VOLTS
VCT	VITREOUS CLAY TILE
W	WEST
W	WIDE

SPRINKLER HEADS

SPRINKLER HEAD LEGEND

SYMBOL	DESCRIPTION
	CONCEALED SPRINKLER HEAD
	PENDANT SPRINKLER HEAD
	RECESSED SPRINKLER HEAD
	SIDEWALL SPRINKLER HEAD
	UPRIGHT SPRINKLER HEAD
	UPRIGHT SPRINKLER HEAD WITH PROTECTIVE CASE

WORK SCOPE

SPRINKLER SYSTEM HATCHING LEGEND

SYMBOL	DESCRIPTION
	NEW "WET PIPE" SPRINKLER COVERAGE
	THIS BOLD DASHED OUTLINE DEPICTS AREA OF SPRINKLER WORK.
	REWORK EXISTING "WET PIPE" SPRINKLER SYSTEM TO ACCOMMODATE NEW FLOOR PLAN LAYOUT
	AREA SPRINKLED FROM LEVEL ABOVE

PIPING

FIRE PROTECTION PIPE ACCESSORIES LEGEND

SYMBOL	DESCRIPTION
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE

FIRE PROTECTION PIPE FITTINGS LEGEND

SYMBOL	DESCRIPTION
	CAP
	REDUCER
	TIE-IN POINT
	UNION

PIPING SYMBOL LEGEND

XX — PIPE TYPE
XX — PIPE SIZE - EQUIP. REF.

SYMBOL	DESCRIPTION
	PIPE DOWN THROUGH FLOOR/ROOF
	EXISTING TO REMAIN PIPE DOWN THROUGH FLOOR/ROOF
	REMOVE PIPE DOWN THROUGH FLOOR/ROOF
	PIPE UP THROUGH FLOOR/ROOF
	EXISTING TO REMAIN PIPE UP THROUGH FLOOR/ROOF
	REMOVE PIPE UP THROUGH FLOOR/ROOF

FIRE PROTECTION LINETYPE LEGEND

ABBREVIATION	DESCRIPTION
D	DRAIN
F	FIRE LINE - ABOVE GROUND
SPR	AUTOMATIC SPRINKLER LINE
UF	FIRE LINE - UNDERGROUND

EQUIPMENT/DEVICES

FIRE PROTECTION EQUIPMENT/DEVICES LEGEND

SYMBOL	DESCRIPTION
	DOUBLE DETECTOR CHECK BACKFLOW PREVENTER WITH BYPASS METER
	FLOW SWITCH
	TAMPER SWITCH

FIRE PROTECTION SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	POST MOUNTED SIAMESE FIRE DEPARTMENT CONNECTION
	SITE FIRE HYDRANT
FD	FLOOR DRAIN BY PC

DRAWING LIST

FIRE PROTECTION DRAWING LIST

WATER SUPPLY

21 09 10 - MUNICIPAL SUPPLY CAPABILITY TEST DATA

DATE PERFORMED	2022-01-12
RESIDUAL PRESSURE	50 PSI
STATIC PRESSURE	63 PSI
TEST FLOW	650 GPM

21 09 10 - ANTICIPATED SYSTEM DEMAND

HOSE STREAM	100 GPM
SPRINKLER DEMAND	150 GPM

GENERAL

REFERENCE SYMBOL LEGEND

X / XXXX — VIEW NUMBER ON SHEET / SHEET REFERENCE	DETAIL CALLOUT
X / XXXX — VIEW NUMBER ON SHEET / SHEET REFERENCE	SECTION AND ELEVATION CALLOUT
X / XXXX — VIEW NUMBER ON SHEET / SHEET REFERENCE	ENLARGED PLAN CALLOUT
X / XXXX — VIEW NUMBER ON SHEET / SHEET REFERENCE	CONTINUATION CALLOUT

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

STEUBENVILLE CITY SCHOOLS

STEUBENVILLE HIGH SCHOOL STEM BUILDING

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STATE OF OHIO — J.S. CERVENY — PROFESSIONAL ENGINEER

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PROJECT NO.
21042.000

FIRE PROTECTION GENERAL INFORMATION

SCALE
As indicated

FP0-0

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DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
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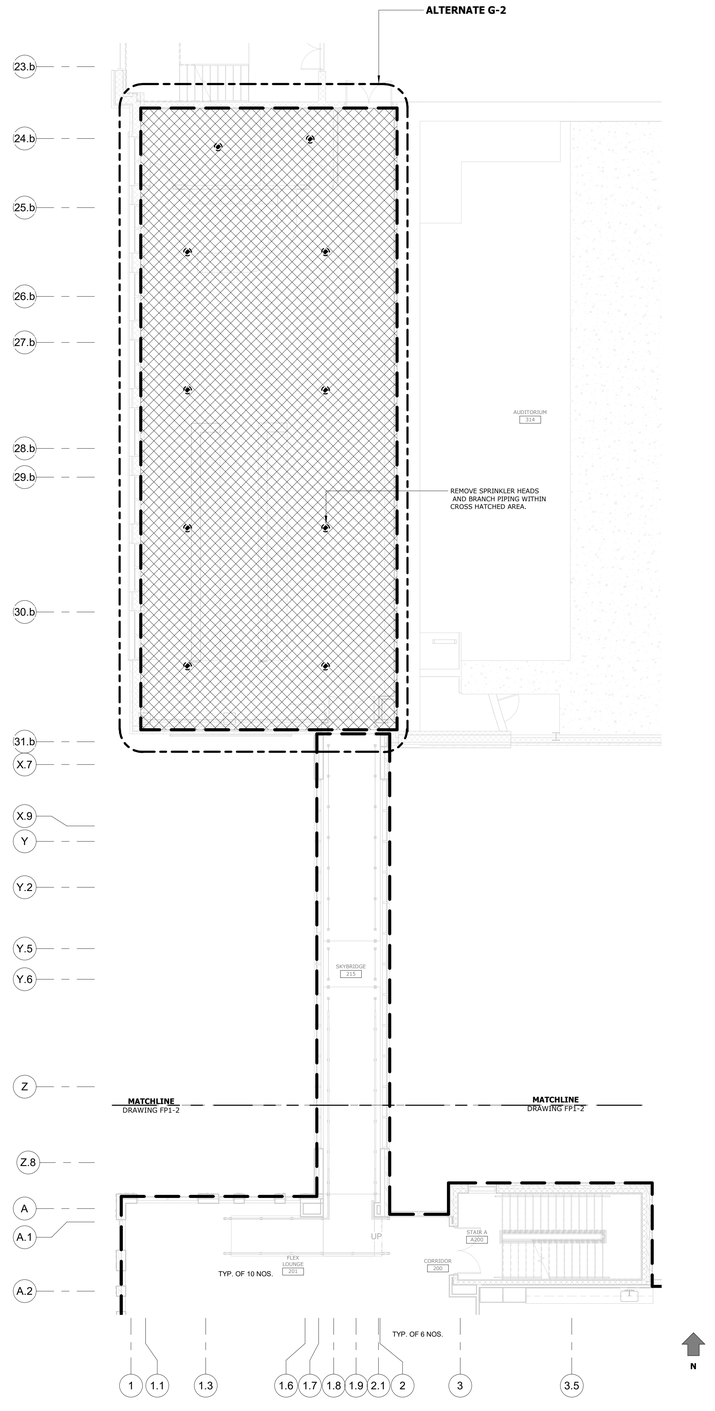
3. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.



EXISTING BUILDING 3RD FLOOR - FIRE PROTECTION DEMOLITION PLAN

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

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

2ND FLOOR - FIRE PROTECTION DEMOLITION PLAN

SCALE 1/8" = 1'-0"

FP0-1

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DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
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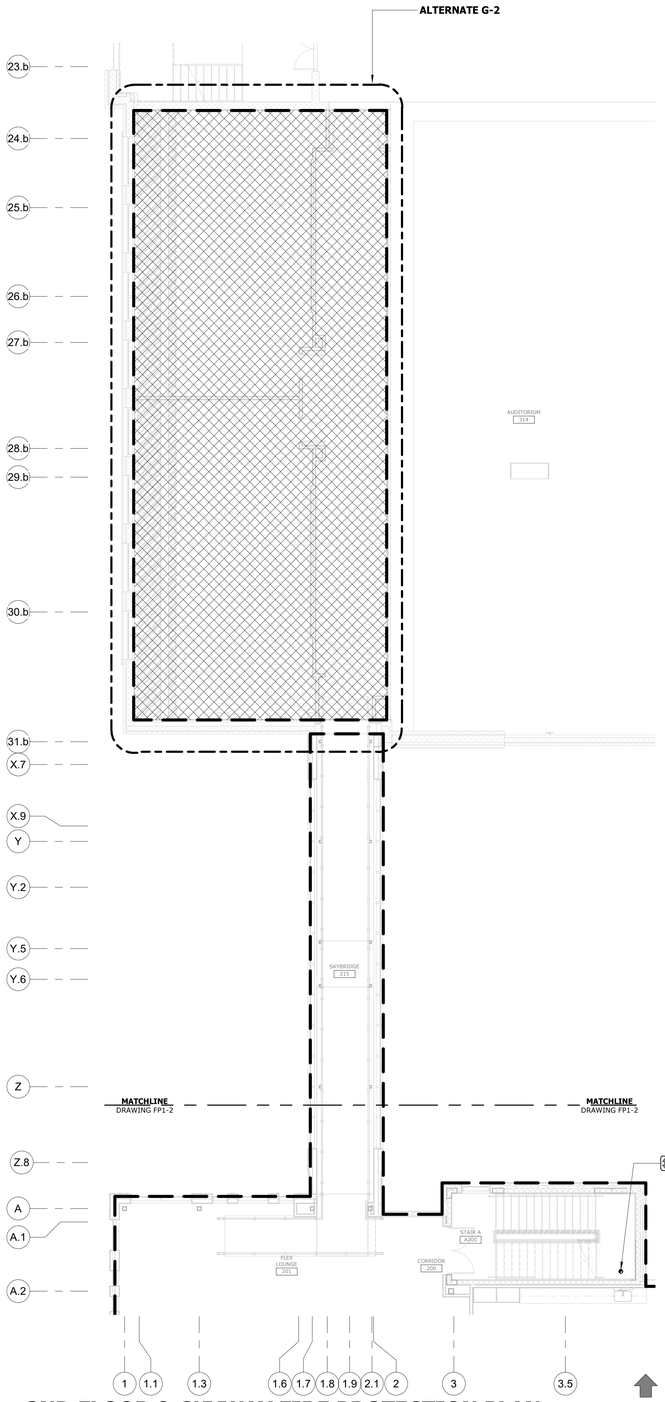
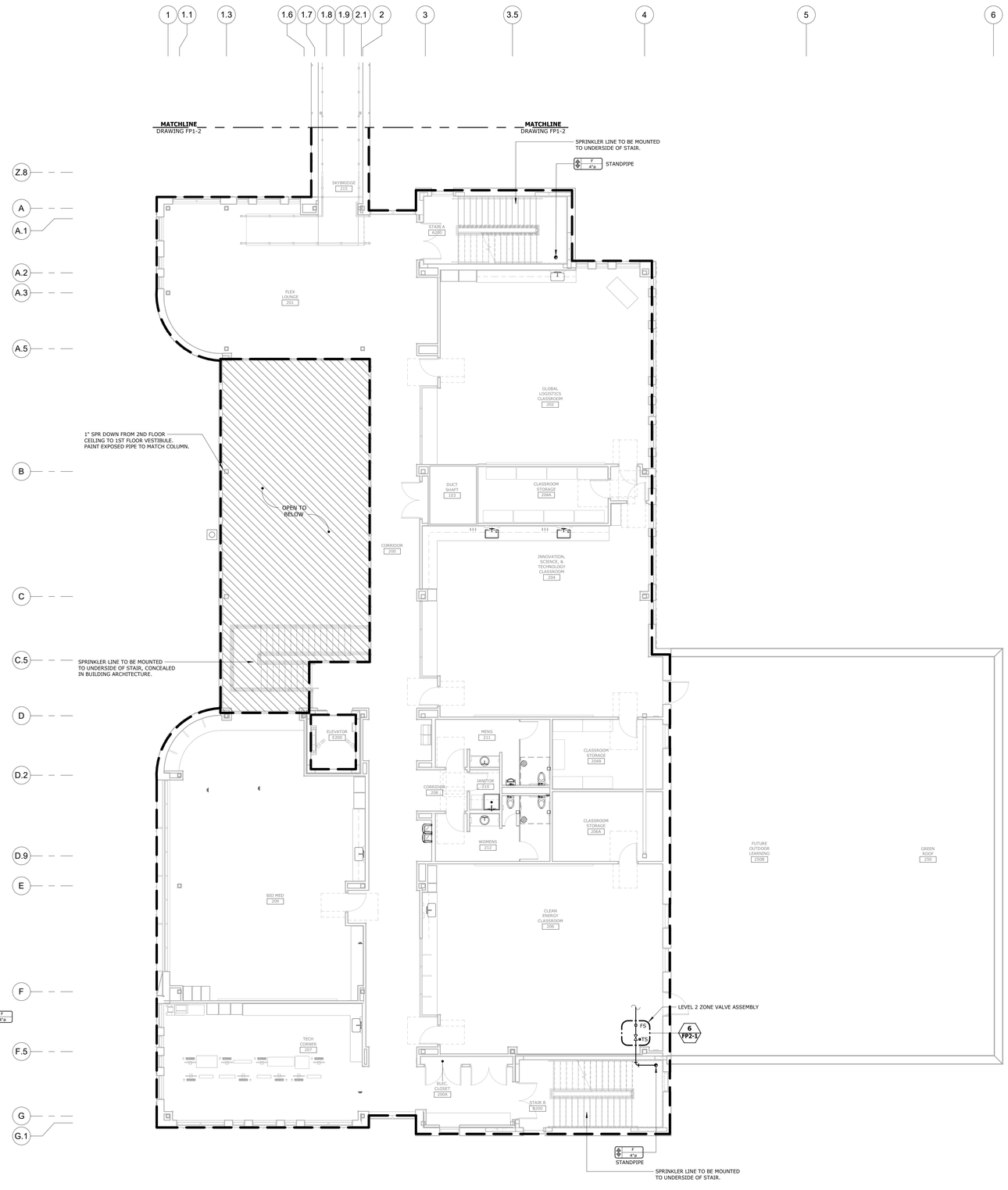
ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION



2ND FLOOR & SKYWAY FIRE PROTECTION PLAN

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



2ND FLOOR - FIRE PROTECTION PLAN

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

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PROJECT NO.
21042.000

2ND FLOOR - FIRE PROTECTION PLAN

SCALE 1/8" = 1'-0"

FP1-2

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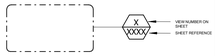
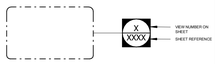
REFERENCE SYMBOL LEGEND

	DETAIL CALLOUT
	SECTION AND ELEVATION CALLOUT
	ENLARGED PLAN CALLOUT
	CONTINUATION CALLOUT

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3. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
4. RELEVANT EXISTING CONDITIONS SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD OBSERVATION(S). NOT ALL EXISTING ITEMS ARE SHOWN, OR COULD BE FIELD VERIFIED. ONCE AREAS OBSCURED FROM VIEW ARE EXPOSED, VERIFY THAT CONDITIONS ARE AS INDICATED ON THIS DRAWING. BEFORE PROCEEDING WITH WORK, NOTIFY THE ENGINEER IF CONDITIONS DIFFER FROM WHAT IS SHOWN.
5. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).
6. EQUIPMENT AND ITEMS TO BE RELOCATED ARE IDENTIFIED ON THE PLANS AND/OR EQUIPMENT SCHEDULE(S).

SANITARY SEWER MINIMUM PIPE SLOPES

PIPE SIZE	SLOPE (PER FOOT)
2-1/2" OR LESS	1/4" (2%)
3" TO 6"	1/8" (1%)

ABBREVIATIONS

PLUMBING ABBREVIATION SCHEDULE

ABBREVIATION	DESCRIPTION
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
AP	ACCESS PANEL
APPROX	APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURAL
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BOP	BOTTOM OF PIPE
BT	BATHTUB
BTUH	BRITISH THERMAL UNIT PER HOUR
CFH	CUBIC FEET PER HOUR
CI	CAST IRON
CS	CLINIC SINK
D	DEEP
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DEG F	DEGREES FARENHEIT
DEMO	DEMOLITION
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DN	DOWN
DS	DOWNSPOUT
DTF	DOWN THROUGH FLOOR
DTR	DOWN THROUGH ROOF
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DWS	DOMESTIC WATER SOFTENER
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE (DEG F)
FD	FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FP	FIRE PROTECTION
FPC	FIRE PROTECTION CONTRACTOR
FT	FEET
GAL	GALLON
GC	GENERAL CONTRACTOR
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPR	GAS PRESSURE REGULATOR
GV	GAS VENT
H	HIGH
HB	HOSE BIBB
HEAD	FEET OF WATER COLUMN PRESSURE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HZ	HERTZ (CYCLES PER SECOND)
IN	INCH
INV	INVERT ELEVATION
KW	KILOWATT
L	LENGTH
LAV	LAVATORY
LT	LAUNDRY TUB

NOTE: ALL ABBREVIATIONS MAY NOT BE USED IN THIS SET.

PLUMBING ABBREVIATION SCHEDULE

ABBREVIATION	DESCRIPTION
LWT	LEAVING WATER TEMPERATURE (DEG F)
MAX	MAXIMUM
MB	MOP BASIN
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MC	MECHANICAL CONTRACTOR
MFR	MANUFACTURER
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MV	MIXING VALVE
MVP	MEDICAL VACUUM PUMP
N	NORTH
NA, N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NO	NUMBER
NPT	NOMINAL PIPE THREAD
NTS	NOT TO SCALE
P	PUMP
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RD	ROOF DRAIN
RPBP	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
S	SOUTH
S	SINK
SF	SQUARE FEET
SH	SHOWER
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
T&P	TEMPERATURE AND PRESSURE
TCC	(TEMPERATURE) CONTROL CONTRACTOR
TEMP	TEMPERATURE (DEG F)
TOP	TOP OF PIPE
TP	TRAP PRIMER VALVE
TYP	TYPICAL
U	URINAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UTF	UP THROUGH FLOOR
UTR	UP THROUGH ROOF
V	VOLTS
VB	VACUUM BREAKER
VCT	VITREOUS CLAY TILE
VP	VACUUM PUMP
VTR	VENT THROUGH ROOF
W	WATTS
W	WEST
W	WIDE
WB	WALL BOX
WC	WATER CLOSET
WHA	WATER HAMMER ARRESTOR
ZV	ZONE VALVE BOX

LINETYPES

LEGEND - PIPE LINETYPE SCHEDULE

ABBREVIATION	DESCRIPTION
120 HW	120º DOMESTIC HOT WATER
140 HW	140º DOMESTIC HOT WATER
140 RHW	140º DOMESTIC HOT WATER RECIRCULATED
AV	ACID VENT
AW	ACID WASTE
AWB	ACID WASTE (BELOW FLOOR OR GRADE)
CA	COMPRESSED AIR
CDV	COMBINATION DRAIN/VENT
CW	DOMESTIC COLD WATER
DE	DEIONIZED WATER
DI	DISTILLED WATER
EST	CARBON DIOXIDE
EST	EMERGENCY STORM SEWER
GV	GAS VENT
HPG	GAS (HIGH PRESSURE)
HW	110º DOMESTIC HOT WATER
IW	INDIRECT WASTE
LPG	GAS (LOW PRESSURE)
LV	LAB VACUUM
NPW	NON-POTABLE WATER
PD	PUMP DISCHARGE
RHW	DOMESTIC HOT WATER (RECIRCULATED)
RO	REVERSE OSMOSIS WATER
SAN	SANITARY SEWER
SANB	SANITARY SEWER (BELOW FLOOR OR GRADE)
ST	STORM SEWER
STB	STORM SEWER (BELOW FLOOR OR GRADE)
SW	SOFT WATER
TP	TRAP PRIMER LINE
TPB	TRAP PRIMER LINE (BELOW FLOOR OR GRADE)
TW	TEMPERED WATER
V	SANITARY VENT

NOTE: ALL LINETYPES MAY NOT BE USED IN THIS SET.

DRAWING LIST

PLUMBING DRAWING LIST

SHEET NUMBER	SHEET NAME
P0-0	PLUMBING GENERAL INFORMATION
P0-1	EXISTING BUILDING PLUMBING DEMO
P1-0	UNDERGROUND - SANITARY AND VENT PLAN
P1-1	1ST FLOOR - SANITARY AND VENT PLAN
P1-2	2ND FLOOR - SANITARY AND VENT PLAN
P1-3	3RD FLOOR - SANITARY AND VENT PLAN
P1-4	ROOF - SANITARY AND VENT PLAN
P2-0	UNDERGROUND - DOMESTIC WATER AND GAS PLAN
P2-1	1ST FLOOR - DOMESTIC WATER AND GAS PLAN
P2-2	2ND FLOOR - DOMESTIC WATER AND GAS PLAN
P2-3	3RD FLOOR - DOMESTIC WATER AND GAS PLAN
P2-4	ROOF - DOMESTIC WATER AND GAS PLAN
P3-1	PLUMBING DIAGRAMS
P5-1	PLUMBING SCHEDULES AND DETAILS
P5-2	PLUMBING SCHEDULES AND DETAILS
P5-3	PLUMBING SCHEDULES AND DETAILS
P6-1	SANITARY ISOMETRICS
P6-2	SANITARY ISOMETRICS

EQUIPMENT/DEVICES

EQUIPMENT/DEVICES SYMBOL LEGEND

SYMBOL	DESCRIPTION
AD	AREAWAY DRAIN
	CONTROL VALVE (TWO-POSITION)
	DOUBLE CHECK BACKFLOW PREVENTER
ERD	EMERGENCY (OVERFLOW) ROOF DRAIN
HB	FAUCET OR HOSE BIBB
	MIXING VALVE
	PRESSURE GAUGE WITH SHUT-OFF VALVE
	REDUCED PRESSURE BACKFLOW PREVENTER WITH FUNNEL AND DRAIN
RD	ROOF DRAIN
FD	SAINTARY FLOOR DRAIN
	THERMOMETER
	TRAP PRIMER VALVE
	WATER HAMMER ARRESTOR
	WATER METER

NOTE: ALL SYMBOLS MAY NOT BE USED IN THIS SET.

PIPING

PLUMBING PIPE ACCESSORIES LEGEND

SYMBOL	DESCRIPTION
	MANUAL BALANCE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GAS COCK
	GATE VALVE
	STRAINER
	STRAINER WITH BLOWDOWN VALVE
	PRESSURE REDUCING VALVE (PRV)

NOTE: ALL SYMBOLS MAY NOT BE USED IN THIS SET.

PIPE FITTINGS SYMBOL LEGEND

SYMBOL	DESCRIPTION
	CAP
CO	CLEANOUT
FWFCO	CLEANOUT (FLUSH WITH FLOOR)
	EXPANSION JOINT
	FLOW METER FITTING
	MANUAL AIR VENT
	MANUAL DRAIN VALVE WITH HOSE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
	REDUCER
	TIE-IN POINT
	90º PIPE RISE OR DROP
	90º PIPE CONNECTION OUT OF BOTTTOM
	90º PIPE CONNECTION OUT OF TOP
SANITARY STANDARD	90º PIPE CONNECTION OUT OF SIDE
	45º PIPE CONNECTION OUT OF SIDE
	PIPING RISER DOWN
	PIPING RISER UP

NOTE: ALL SYMBOLS MAY NOT BE USED IN THIS SET.

PIPING SYMBOL LEGEND

XX — PIPE TYPE
XX — PIPE SIZE - EQUIP. REF.

SYMBOL	DESCRIPTION
	PIPE DOWN THROUGH FLOOR/ROOF
	EXISTING TO REMAIN PIPE DOWN THROUGH FLOOR/ROOF
	REMOVE PIPE DOWN THROUGH FLOOR/ROOF
	PIPE UP THROUGH FLOOR/ROOF
	EXISTING TO REMAIN PIPE UP THROUGH FLOOR/ROOF
	REMOVE PIPE UP THROUGH FLOOR/ROOF
	PIPE CENTERLINE ELEVATION
	REMOVE PIPE DOWN THROUGH FLOOR/ROOF AND CAP
	REMOVE PIPE UP THROUGH FLOOR/ROOF
	REMOVE PIPE UP THROUGH FLOOR/ROOF AND CAP
	PIPE OFFSET DOWN
	PIPE OFFSET UP
	REMOVE PIPE BACK TO TIE-IN POINT.
	CONNECT TO EXISTING PIPING.
	STACKED PIPES

NOTE: ALL SYMBOLS MAY NOT BE USED IN THIS SET.

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

PLUMBING GENERAL INFORMATION

SCALE 12" = 1'-0"

P0-0

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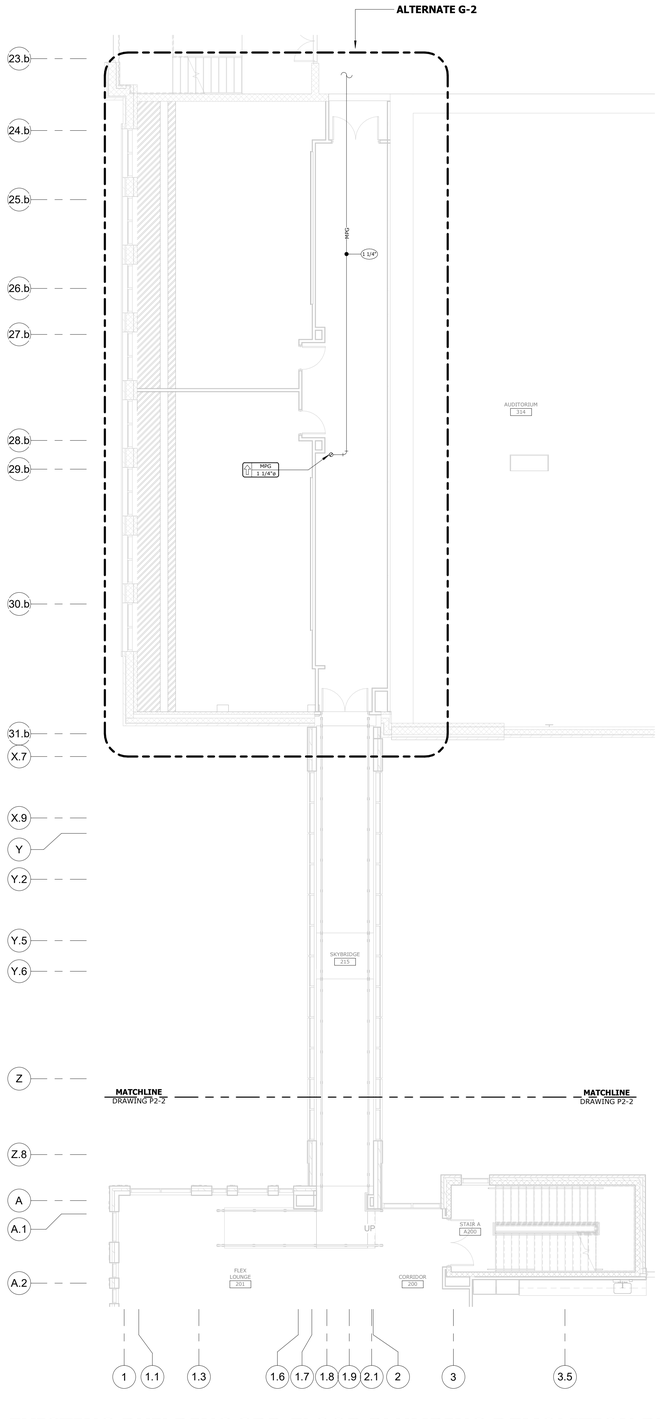
PLUMBING PIPING DEMOLITION NOTES:

1. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL UPON REMOVAL OF ALL SALVAGED ITEMS. OTHERWISE, REMOVE ALL DEMOLISHED ITEMS FROM THE SITE.
2. REMOVE ALL PIPING, AS INDICATED BY THE DEMOLITION LINETYPE. REMOVE ALL ASSOCIATED ANCILLARY ITEMS, SUCH AS PIPE HANGERS, SUPPORTS, INSULATION, VALVES, CONTROLS, ETC. - NOT UTILIZED FOR NEW WORK.
3. REMOVE PIPING BACK TO TIE-IN POINTS WHERE INDICATED.
4. REMOVE PIPING BACK TO CAPPED LOCATIONS WHERE INDICATED. INSULATE CAPPED PIPES SAME AS NEW. DEAD LEGS SHALL NOT BE PERMITTED.

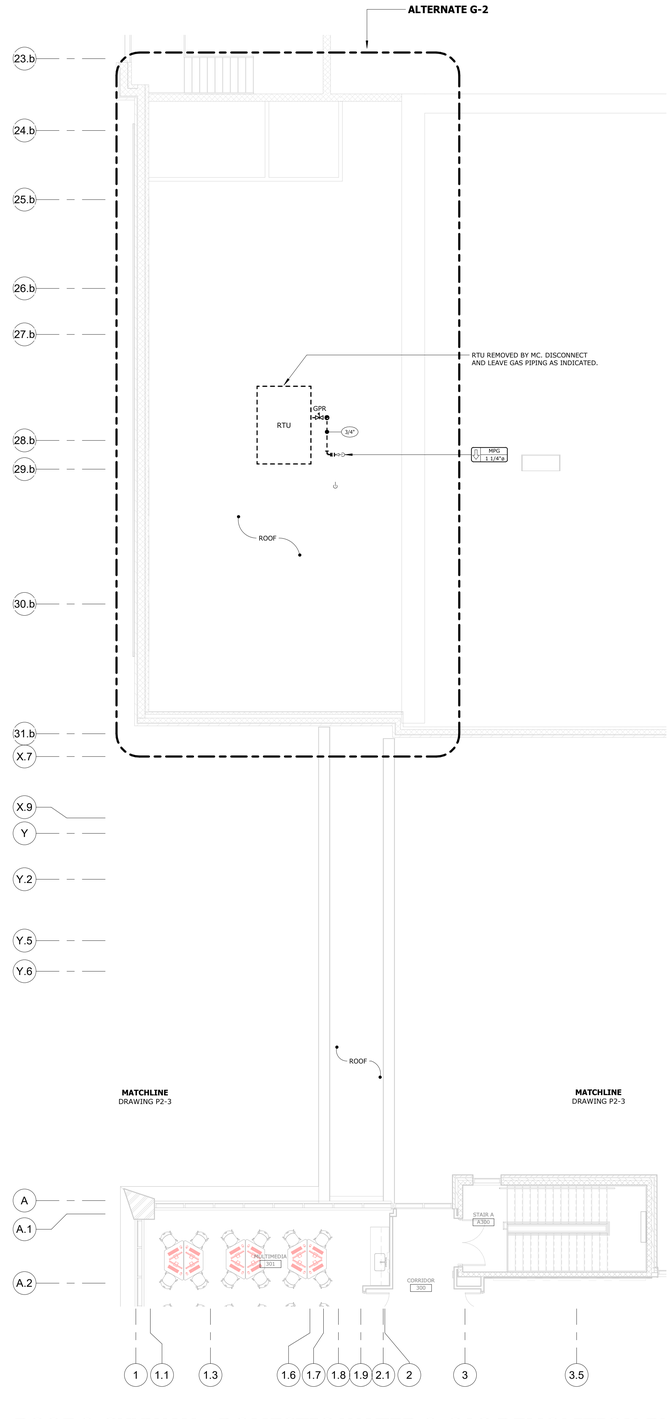
DRAWING INTERPRETATION NOTES:

1. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
2. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).



EXISTING BUILDING 3RD FLOOR PLUMBING DEMOLITION PLAN

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



ROOF & SKYWAY - DOMESTIC WATER & GAS DEMOLITION PLAN

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

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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EXISTING BUILDING PLUMBING DEMO

SCALE 1/8" = 1'-0"

P0-1

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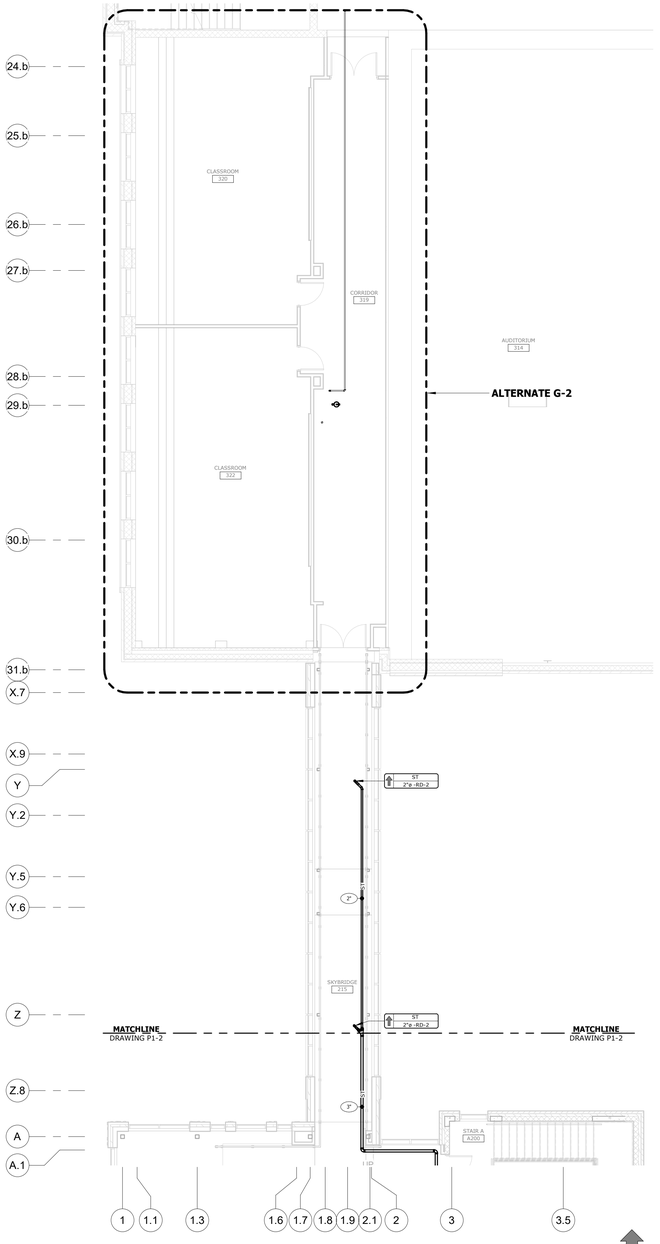
PLUMBING PIPING NEW WORK NOTES:

1. DO NOT INSTALL ANY PIPING BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.
2. FOR SANITARY AND VENT SIZES NOT SHOWN, REFER TO SANITARY ISOMETRIC. FOR RUNOUT/CONNECTION SIZES REFER TO FIXTURE AND EQUIPMENT SCHEDULES.

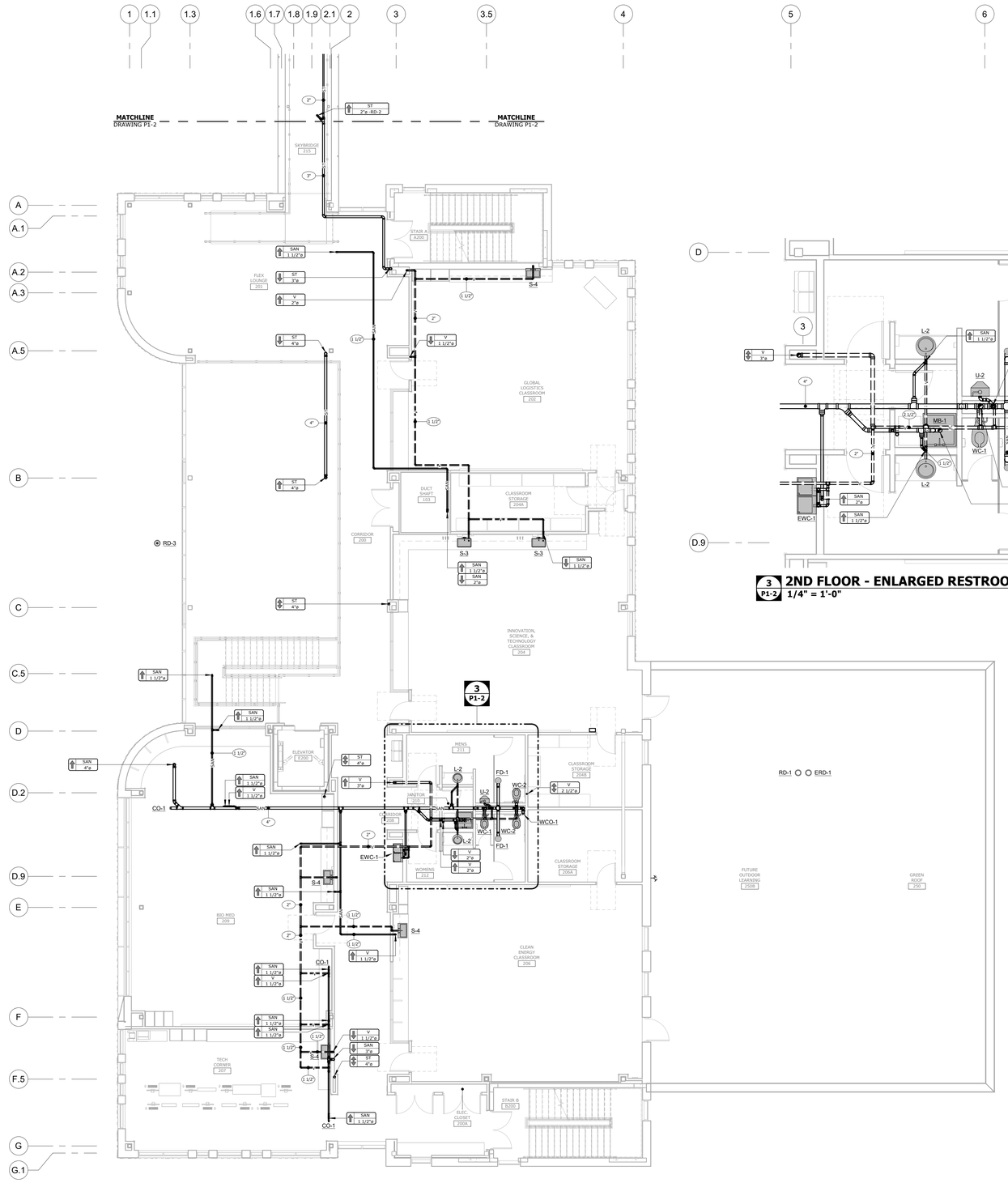
DRAWING INTERPRETATION NOTES:

1. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
2. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).



2ND FLOOR & SKYWAY SANITARY AND VENT PLAN

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



2ND FLOOR - SANITARY AND VENT PLAN

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

3 P1-2 2ND FLOOR - ENLARGED RESTROOM

1/4" = 1'-0"

ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
10	11/15/22	PR-003
H	3/15/24	CLASSROOM RENOVATION

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2ND FLOOR - SANITARY AND VENT PLAN

SCALE As indicated

P1-2

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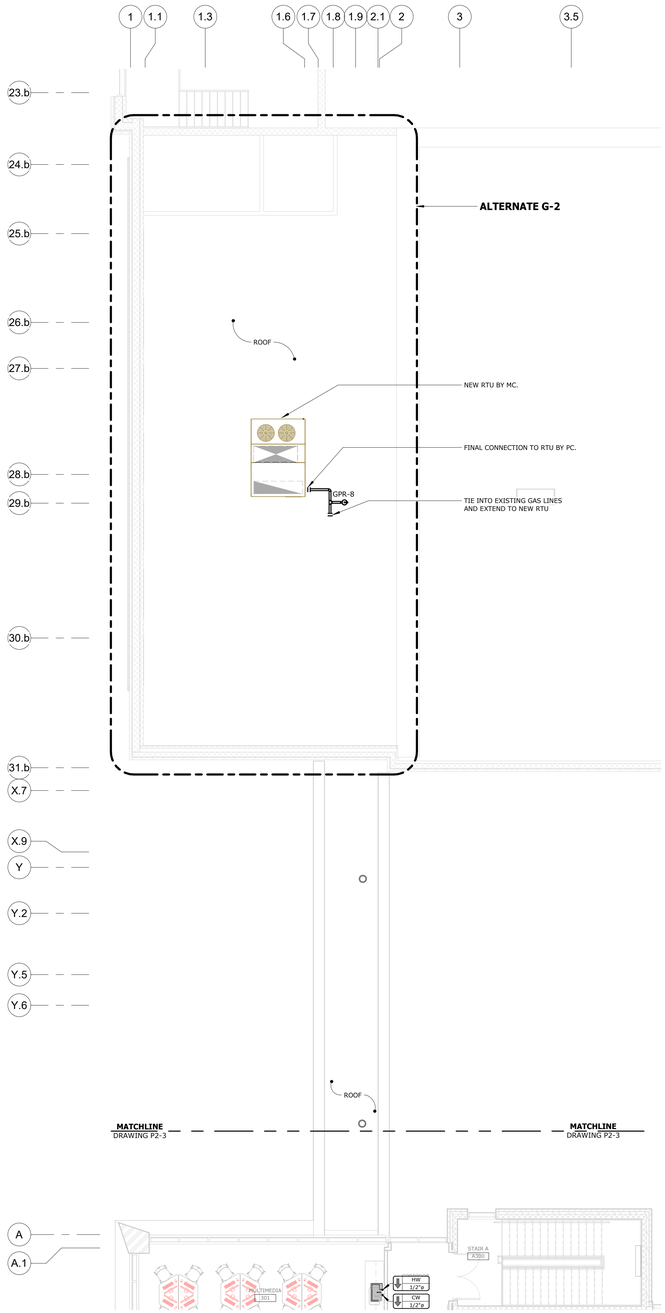
PLUMBING PIPING NEW WORK NOTES:

1. SHUT-OFF VALVES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. COORDINATE THE LOCATION OF ACCESS DOORS IN CEILINGS OR WALLS WITH THE GENERAL CONTRACTOR IF A VALVE IS REQUIRED TO BE LOCATED ABOVE AN INACCESSIBLE CEILING OR IN A WALL OR CHASE.
2. DO NOT INSTALL ANY PIPING BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.
3. FOR DOMESTIC WATER RUNOUT/CONNECTION SIZES REFER TO FIXTURE AND EQUIPMENT SCHEDULES.
4. FOR NATURAL GAS RUNOUT/CONNECTION SIZES REFER TO FIXTURE AND EQUIPMENT SCHEDULES.

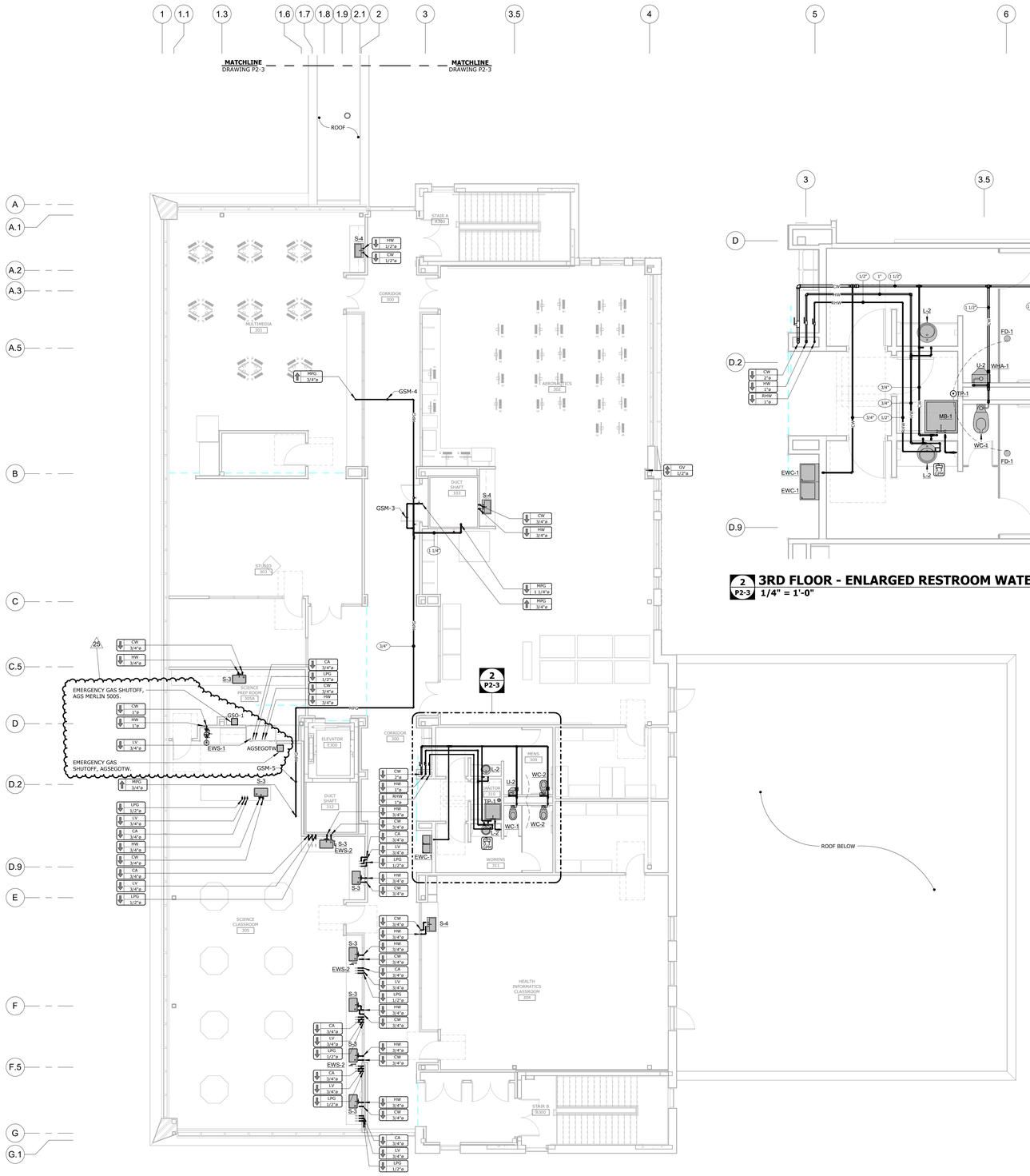
DRAWING INTERPRETATION NOTES:

1. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
2. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).



ROOF & SKYWAY - DOMESTIC WATER & GAS PLAN

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



3RD FLOOR - DOMESTIC WATER AND GAS PLAN

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

2 P2-3 3RD FLOOR - ENLARGED RESTROOM WATER AND GAS

1/4" = 1'-0"

ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
16	Date 23	RFI 65
25	7/28/23	RFI-088
H	3/15/24	CLASSROOM RENOVATION

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3RD FLOOR - DOMESTIC WATER AND GAS PLAN

SCALE
As indicated

P2-3

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FURNISHED BY OWNER. INSTALLED BY CONTRACTOR.

22 21 11 - HIGH EFFICIENCY WATER HEATER SCHEDULE (DWH)

REMARKS:
1.FURNISH WITH BANCET CARD FOR BAS INTEGRATION BY THE TEMPERATURE CONTROL CONTRACTOR.
2. DISCONNECT SWITCH BY EC.

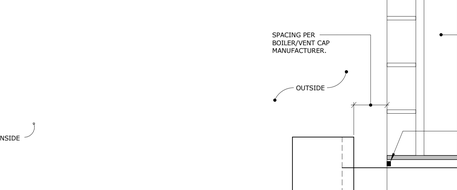
MARK	MANUFACTURER	MODEL	FUEL TYPE	INPUT CAPACITY (MBH)	EFFICIENCY	STORAGE CAPACITY (GAL)	GPH	EWT	LWT	WPD	VOLTS/PHASE	FLA	DISCONNECT RESPONSIBILITY	REMARKS
DWH-1	AERCO	INN 600	NATURAL GAS	625	93%	25.3	1158	50	140	2 PSI	120/1	11.0	EC	1
DWH-2	AERCO	INN 600	NATURAL GAS	625	93%	25.3	1158	50	140	2 PSI	120/1	11.0	EC	1

22 24 20 - RECIRCULATOR PUMP SCHEDULE

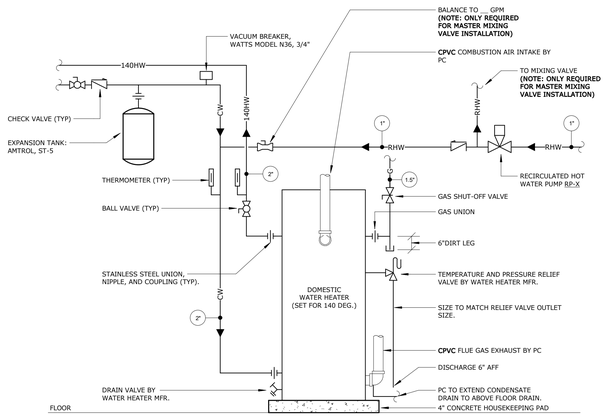
MARK	MANUFACTURER	MODEL	SERVICE	TYPE	FLANGED CONNECTION	GPM	HEAD PRESSURE (FT)	HP	RPM	VOLTS/PHASE
RP-1	TACO	009-SF5	120 HOT WATER RECIRCULATION	CARTRIDGE	1"	3.3	15'	1/8	3250	115/1
RP-2	TACO	003-BC4	140 HOT WATER RECIRCULATION	CARTRIDGE	1/2"	0.6	5'	1/40	3250	115/1

22 40 92 - MIXING VALVE SCHEDULE

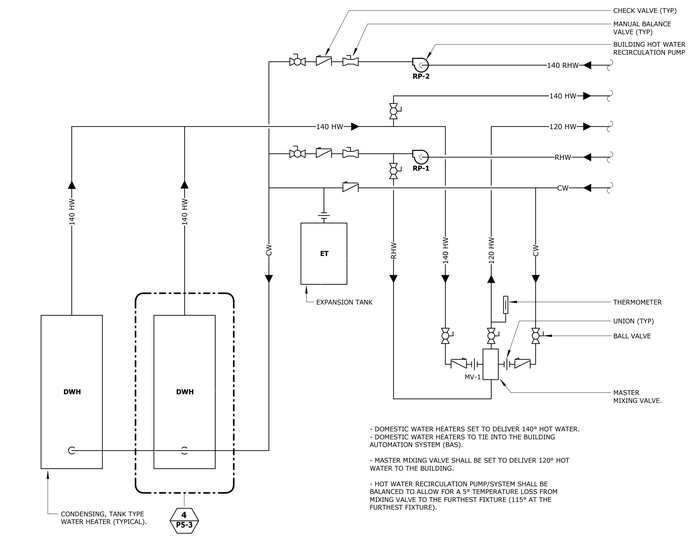
MARK	MANUFACTURER	MODEL	SERVCE	CONNECTIONS			FLOW RATE		SETPOINT	REMARKS
				140 HW	CW	120 HW	MIN	MAX		
MV-1	LEONARD	370-LF	MASTER	3/4"	3/4"	0"	3.3 GPM	0.0 GPM	120 °F	



10 **22 24 20 - RECIRCULATOR PUMP PIPING DETAIL (WITH AQUASTAT)**
NO SCALE



4 **22 21 10 - DOMESTIC WATER HEATER PIPING DETAIL**
NO SCALE



- DOMESTIC WATER HEATERS SET TO DELIVER 140° HOT WATER.
- DOMESTIC WATER HEATERS TO TIE INTO THE BUILDING AUTOMATION SYSTEM (BAS).

- MASTER MIXING VALVE SHALL BE SET TO DELIVER 120° HOT WATER TO THE BUILDING.

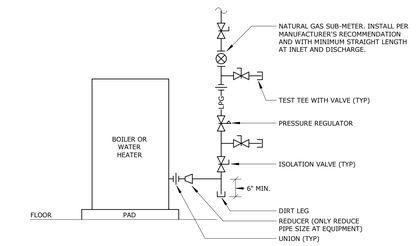
- HOT WATER RECIRCULATION PUMP/SYSTEM SHALL BE BALANCED TO ALLOW FOR A 5° TEMPERATURE LOSS FROM MIXING VALVE TO THE FURTHEST FIXTURE (115° AT THE FURTHEST FIXTURE).

1 **22 21 00 - DOMESTIC WATER HEATER SYSTEM DIAGRAM**
NO SCALE

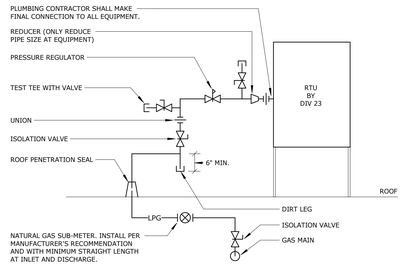
22 23 10 - NATURAL GAS SUB-METER SCHEDULE (GSM)

REMARKS:
1. FURNISH WITH BANCET CARD FOR BAS INTEGRATION BY THE TEMPERATURE CONTROL CONTRACTOR.
2. 24VAC POWER BY TEMPERATURE CONTROL CONTRACTOR.

MARK	MANUFACTURER	MODEL	SERVICE	CONNECTION SIZES INLET/OUTLET	REQUIRED CAPACITY	MAX METERING CAPACITY	INLET PRESSURE	REMARKS
GSM-1	ONICON	F-5500	DWH-1	2"/2"	21 CFH	9740 CFH	10" w.c.	1,2
GSM-2	ONICON	F-5500	DWH-2	2"/2"	21 CFH	9740 CFH	10" w.c.	1,2
GSM-3	ONICON	F-5500	RTU-1	1"/1"	5.4 CFH	2521 CFH	10" w.c.	1,2
GSM-4	ONICON	F-5500	RTU-3	1"/1"	5.4 CFH	2521 CFH	10" w.c.	1,2
GSM-5	ONICON	F-5500	RTU-2	1"/1"	5.4 CFH	2521 CFH	10" w.c.	1,2
GSM-6	ONICON	F-5500	B-2	2"/2"	21 CFH	9740 CFH	14" w.c.	1,2
GSM-7	ONICON	F-5500	B-1	2"/2"	21 CFH	9740 CFH	14" w.c.	1,2



9 **22 12 41 - BOILER/WATER HEATER GAS CONNECTION DETAIL**
NO SCALE

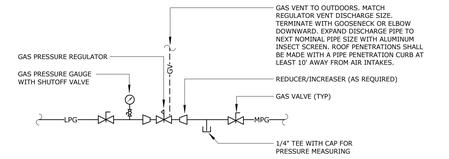


2 **22 12 41 - RTU GAS CONNECTION DETAIL**
NO SCALE

22 12 41 - NATURAL GAS PRESSURE REGULATOR (GPR)

MARK	MANUFACTURER	MODEL	SERVICE	CONNECTION SIZE			CAPACITY (CFH)	PRESSURE	
				HIGH PRESSURE	LOW PRESSURE	RELIEF	DESIGN	INLET	OUTLET
GPR-1	CASHCO	31-N-TB	DWH-1, DWH-2	1"	2"	1/2"	1250	5 psi	10.00 in-wg
GPR-2	CASHCO	31-N-TB	B-1, B-2	1"	2"	1/2"	1596	5 psi	14.00 in-wg
GPR-3	CASHCO	31-N-TB	RTU-1	3/4"	1"	N/A	750	5 psi	10.00 in-wg
GPR-4	CASHCO	31-N-TB	RTU-3	3/4"	1"	N/A	750	5 psi	10.00 in-wg
GPR-5	CASHCO	31-N-TB	RTU-2	3/4"	1"	N/A	600	5 psi	10.00 in-wg
GPR-6	CASHCO	31-N-TB	GREENHOUSE, UH-3, UH-4	1/2"	1/2"	N/A	60	5 psi	6.50 in-wg
GPR-7	CASHCO	31-N-TB	LAB GAS	1/2"	3/4"	1/2"	100	5 psi	10.00 in-wg
GPR-8	CASHCO	31-N-TB	RTU-4	3/4"	1"	N/A	0	5 psi	10.00 in-wg

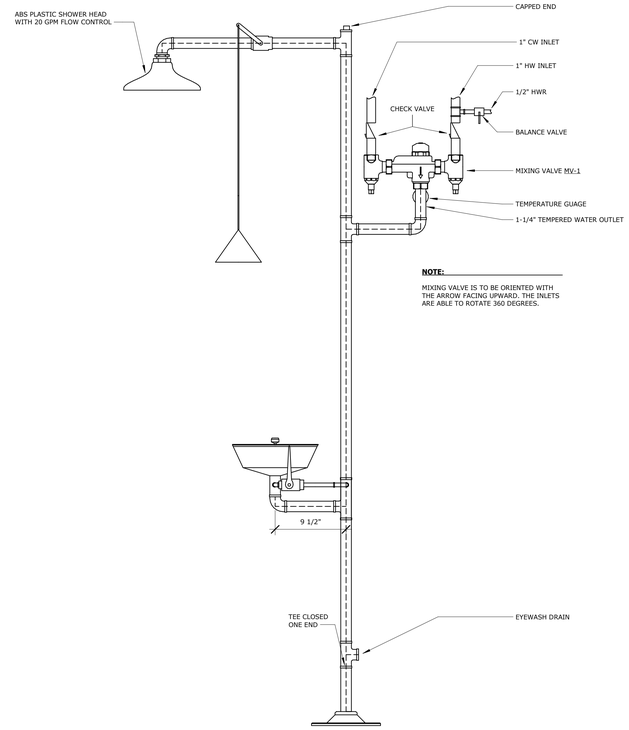
ALTERNATE G-1
ALTERNATE G-2



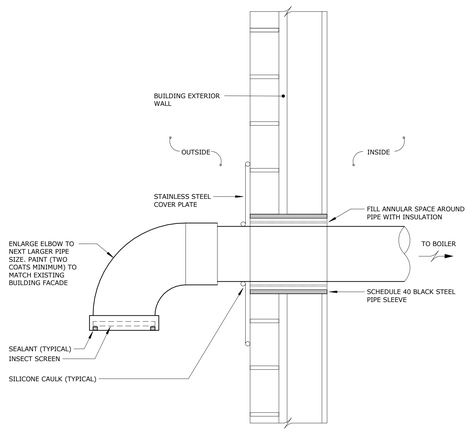
6 **NATURAL GAS PRESSURE REGULATOR PIPING DETAIL**
NO SCALE

22 40 92 - EMERGENCY FIXTURE SCHEDULE (EWS)

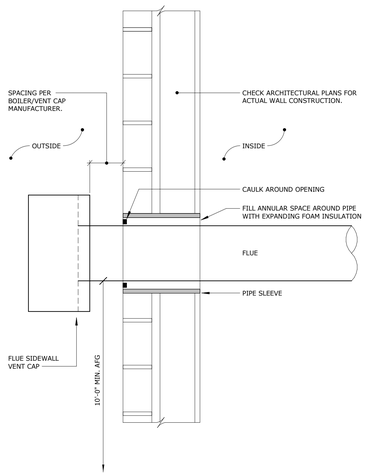
MARK	MANUFACTURER	MODEL	FINISH	MOUNTING LOCATION	REMARKS
EWS-1	GUARDIAN	G1902P	POWDER COATED GALVANIZED STEEL. COLOR SELECTION BY ARCHITECT.	FREE STANDING	EMERGENCY DRENCH SHOWER WITH EYEWASH. FURNISH WITH FACTORY RECOMMENDED MIXING VALVE. SET WATER TEMPERATURE TO 75 F.
EWS-2	GUARDIAN	G1806	POLISHED CHROME PLATED BRASS	COUNTERTOP	EYEWASH STATION WITH PADDLE LEVER. FURNISH EACH WITH FACTORY RECOMMENDED MIXING VALVE. SET WATER TEMPERATURE TO 75 F.



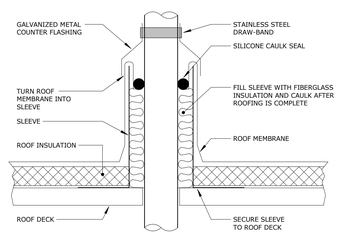
5 **EMERGENCY SHOWER COLUMN DETAIL1**
NO SCALE



8 **WATER HEATER COMBUSTION AIR INLET TERMINATION DETAIL**
NO SCALE



7 **22 07 10 - VENT THROUGH WALL TERMINATION DETAIL**
NO SCALE



3 **ROOF PENETRATION DETAIL**
NO SCALE

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

PLUMBING SCHEDULES AND DETAILS

SCALE
As indicated

P5-3

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HVAC EQUIPMENT AND COMPONENT LEGEND

SYMBOL	DESCRIPTION
	AHU OUTLINE ARROW POINTS IN DIRECTION OF AIRFLOW
HC	HEATING COIL
HGR	HOT GAS REHEAT COIL
GH	GAS HEATING COIL
EC	ELECTRIC HEAT COIL
DX	DX COIL
	FILTER BANK
	CENTRIFUGAL FAN
	DOWNBLAST ROOF EXHAUST FAN
	UPBLAST ROOF EXHAUST FAN
	VANE AXIAL FAN
	PROPELLER FAN
	BACKDRAFT DAMPER
	LOUVER
	MOTOR
	PUMP

SENSORS/DEVICES - TEMPERATURE

SYMBOL	DESCRIPTION
T PLAN	TEMPERATURE SENSOR - WALL MOUNTED
DIGITAL T DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED WITH ADJUSTMENT AND DISPLAY
	TEMPERATURE SENSOR - BULB
	TEMPERATURE SENSOR - POINT
T	TEMPERATURE SENSOR - HYDRONIC - PIPE MOUNTED • FURNISH BRASS SENSOR WELL FOR COPPER PIPING SYSTEMS • FURNISH STAINLESS STEEL SENSOR WELL FOR STEEL PIPING SYSTEMS
	TEMPERATURE SENSOR - OUTSIDE AIR

SENSORS/DEVICES - CARBON DIOXIDE

SYMBOL		DESCRIPTION
PLAN	DIAGRAM	CARBON DIOXIDE SENSOR - WALL MOUNTED • CONDUIT ROUGH-IN BY TC
CO2		CARBON DIOXIDE SENSOR - DUCT MOUNTED

DUCTWORK FITTINGS LEGEND

SYMBOL	DESCRIPTION
	45° ENTRY BOOT TAKE-OFF (RECTANGULAR TO RECTANGULAR)
	45° ENTRY BOOT TAKE-OFF (RECTANGULAR TO ROUND)
	90° BRANCH TAKE-OFF (CONICAL/BELLMOUTH FITTING)
	CONVERGING/DIVERGING TRANSITION
	DUCT CAP
DN	DUCT DROP (IN THE DIRECTION OF AIR FLOW)
UP	DUCT RISE (IN THE DIRECTION OF AIR FLOW)
	DUCTWORK TIE-IN POINT
	EQUAL VELOCITY SPLIT
	FLEXIBLE DUCT CONNECTION
	LINED DUCT
	MITERED DUCT ELBOW (NO VANES)
	MITERED DUCT ELBOW WITH TURNING VANES
	RADIUS DUCT ELBOW
	RETURN, EXHAUST OR RELIEF AIR DUCT DOWN
	RETURN, EXHAUST OR RELIEF AIR DUCT UP
	SQUARE TO ROUND TRANSITION
	SUPPLY OR OUTDOOR AIR DUCT DOWN
	SUPPLY OR OUTDOOR AIR DUCT UP

DUCTWORK ACCESSORIES LEGEND

SYMBOL	DESCRIPTION
	DAMPER (BALANCING/VOLUME)
AD	DUCT ACCESS DOOR ON BOTTOM
AD	DUCT ACCESS DOOR ON SIDE
DD	DUCT MOUNTED SMOKE DETECTOR
XX-XXX MARK CFM	RETURN AIR / EXHAUST AIR GRILLE - CEILING MOUNTED
XX-XXX MARK CFM	RETURN AIR / EXHAUST AIR GRILLE - SIDEWALL MOUNTED
XX-XXX MARK CFM	SUPPLY AIR DIFFUSER - CEILING MOUNTED
XX-XXX MARK CFM	SUPPLY AIR DIFFUSER - SIDEWALL MOUNTED

DUCTWORK SYMBOL LEGEND

XX — DUCT TYPE
XX — DUCT SIZE

SYMBOL	DESCRIPTION
	DUCT UP THROUGH FLOOR
	EXISTING TO REMAIN DUCT UP THROUGH FLOOR
	REMOVE DUCT UP THROUGH FLOOR
	DUCT DOWN THROUGH FLOOR
	DUCT DOWN THROUGH FLOOR
	REMOVE DUCT DOWN THROUGH FLOOR

HVAC PIPE ACCESSORIES LEGEND

SYMBOL	DESCRIPTION
	AUTO AIR VENT
	AUTO BALANCE VALVE
	BALL VALVE (3WAY)
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	COMBINATION TEMPERATURE/PRESSURE TEST PORT
	SPHERICAL RUBBER FLEX CONNECTION
	GAS COCK
	GATE VALVE
	GLOBE VALVE
	MANUAL AIR VENT
	MANUAL BALANCE VALVE
	PLUG VALVE
	PRESSURE GAUGE
	PRESSURE RELIEF VALVE
	PRV (PRESSURE REDUCING VALVE)
	REDUCED PRESSURE BACKFLOW PREVENTOR
	SOLENOID VALVE
	STRAINER
	STRAINER WITH BLOWDOWN VALVE
	SENSOR IMMERSION WELL
	THERMOMETER
	MULTI-PURPOSE VALVE
	MULTI-PURPOSE VALVE W/ MEASURING COMPONENTS
	VENTURI FLOW METER
	WATER METER

HVAC PIPE FITTINGS LEGEND

SYMBOL	DESCRIPTION
	TIE-IN POINT
	CAP
	HOSE THREAD CONNECTION
	REDUCER
	ECCENTRIC REDUCER
	UNION
	WOVEN HOSE FLEX CONNECTION
	SPHERICAL RUBBER FLEX CONNECTION
	BLIND FLANGE
	FLANGE
	EXPANSION JOINT
	PIPE GUIDE
	PIPE ANCHOR
	90° PIPE RISE OR DROP
	90° PIPE CONNECTION OUT OF BOTTTOM
	90° PIPE CONNECTION OUT OF TOP
SANITARY STANDARD	90° PIPE CONNECTION OUT OF SIDE
	45° PIPE CONNECTION OUT OF SIDE
	PIPING RISER DOWN
	PIPING RISER UP

HVAC PIPING PLAN TAG LEGEND

XX — PIPE TYPE
XX — PIPE SIZE

SYMBOL	DESCRIPTION
	PIPE DOWN THROUGH FLOOR/ROOF
	EXISTING TO REMAIN PIPE DOWN THROUGH FLOOR/ROOF
	REMOVE PIPE DOWN THROUGH FLOOR/ROOF
	PIPE UP THROUGH FLOOR/ROOF
	EXISTING TO REMAIN PIPE UP THROUGH FLOOR/ROOF
	REMOVE PIPE UP THROUGH FLOOR/ROOF

REFERENCE SYMBOL LEGEND

X XXXX — VIEW NUMBER ON SHEET; SHEET REFERENCE	DETAIL CALLOUT
X XXXX — VIEW NUMBER ON SHEET; SHEET REFERENCE	SECTION AND ELEVATION CALLOUT
X XXXX — VIEW NUMBER ON SHEET; SHEET REFERENCE	ENLARGED PLAN CALLOUT
X XXXX — VIEW NUMBER ON SHEET; SHEET REFERENCE	CONTINUATION CALLOUT

LEGEND - MECHANICAL ABBREVIATION SCHEDULE

ABBREVIATION	DESCRIPTION
AC	AIR CONDITIONING
ACC	AIR COOLED CONDENSER
ACD	AIR COMPRESSOR DRYER
ACU	AIR CURTAIN UNIT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFMS	AIRFLOW MEASURING STATION
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP (INCHES OF WATER COLUMN)
APPROX	APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURAL
B	BOILER
BD	BACKDRAFT DAMPER
BFG	BELOW FINISHED GRADE
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTUH	BRITISH THERMAL UNIT PER HOUR
C	COMMON
CAV	CONSTANT AIR VOLUME
CC	COOLING COIL
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CO	CARBON MONOXIDE
CO	CLEANOUT
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONV	CONVECTOR
COP	COEFFICIENT OF PERFORMANCE
CP	CONDENSATE PUMP
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	DEEP
DA	DEAREATOR
DACU	DUCTLESS AIR CONDITIONING UNIT
DB	DRY BULB
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DD	DUAL DUCT TERMINAL BOX
DD	DUCT MOUNTED SMOKE DETECTOR
DDC	DIRECT DIGITAL CONTROL
DEG F	DEGREES FARENHEIT
DEMO	DEMOLITION
DIA	DIAMETER
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DTF	DOWN THROUGH FLOOR
DTR	DOWN THROUGH ROOF
DWG	DRAWING
DX	DIRECT EXPANSION
E	EAST
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE (DEG F)
EBB	ELECTRIC BASE BOARD
EC	ELECTRICAL CONTRACTOR
ECH	ELECTRICAL CABINET UNIT HEATER
ECU	ENVIRONMENTAL CONTROL UNIT
EDB	ENTERING DRY BULB
EDH	ELECTRIC DUCT HEATER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ERU	ENERGY RECOVERY UNIT
ERV	ENERGY RECOVERY VENTILATOR
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETC	ET CETERA
ETR	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWH	ELECTRIC WALL HEATER
EWT	ENTERING WATER TEMPERATURE (DEG F)
F	FURNACE
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FD	FLOOR DRAIN
FILT	FILTER
FLA	FULL LOAD AMPS
FP	FIRE PROTECTION
FPC	FIRE PROTECTION CONTRACTOR
FPM	FEET PER MINUTE
FPTB	FAN POWERED TERMINAL BOX
FSD	COMBINATION FIRE/SMOKE DAMPER
FT	FEET
FTK	FLASH TANK
FTR	FINNED TUBE RADIATION
GAL	GALLON
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
GV	GRAVITY VENTILATOR
H	HUMIDIFIER
HC	HEATING COIL
HD	HOOD
HEAD	FEET OF WATER COLUMN PRESSURE
HEPA	HIGH EFFIENCY PARTICULATE AIR
HOA	HAND-OFF-AUTOMATIC
HP	HEAT PUMP
HP	HORSEPOWER
HUM	HUMIDIFIER
HX	HEAT EXCHANGER
HZ	HERTZ (CYCLES PER SECOND)
IFB	INTEGRAL FACE AND BYPASS
IN	INCH
INV	INVERT ELEVATION

LEGEND - MECHANICAL ABBREVIATION SCHEDULE

ABBREVIATION	DESCRIPTION
KW	KILOWATT
L	LENGTH
L	LOUVER
LAT	LEAVING AIR TEMPERATURE (DEG F)
LBS	POUNDS
LF	LINEAR FOOT
LRA	LOCKED ROTOR AMPS
LWT	LEAVING WATER TEMPERATURE (DEG F)
MA	MIXED AIR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MFR	MANUFACTURER
MFS	MINIMUM FUSE SIZE
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MOD	MOTOR OPERATED DAMPER
MOP	MAXIMUM OVERCURRENT PROTECTION
MZU	MULTIZONE UNIT
N	NORTH
NA, N/A	NOT APPLICABLE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO	NORMALLY OPEN
NO	NUMBER
NPT	NOMINAL PIPE THREAD
NTS	NOT TO SCALE
OA	OUTDOOR AIR
OAT	OUTDOOR AIR TEMPERATURE
P	PUMP
PBD	PARALLEL BLADE DAMPER
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE
PHC	PREHEAT COIL
PRV	HYDRONIC PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAUGE
PTAC	PACKAGED TERMINAL AIR CONDITIONING UNIT
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RA	RETURN AIR
RCP	RADIANT CEILING PANEL
RD	ROOF DRAIN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
RV	RELIEF VALVE
S	SOUTH
SA	SOUND ATTENUATOR
SA	SUPPLY AIR
SD	SMOKE DAMPER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FEET
SF	SUPPLY FAN
SMACNA	SHEET METAL AND AIRCONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SPECS	SPECIFICATIONS
SPRS	STEAM PRESSURE REDUCING STATION
SPRV	STEAM PRESSURE REDUCING VALVE
SQ	SQUARE
SS	STAINLESS STEEL
SST	SATURATED SUCTION TEMPERATURE
T&P	TEMPERATURE AND PRESSURE
T-STAT	THERMOSTAT
TA	TRANSFER AIR
TB	TERMINAL BOX
TC	TEMPERATURE CONTROL
TCC	(TEMPERATURE) CONTROL CONTRACTOR
TCP	(TEMPERATURE) CONTROL PANEL
TEMP	TEMPERATURE (DEG F)
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UTF	UP THROUGH FLOOR
UTR	UP THROUGH ROOF
UV	UNIT VENTILATOR
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VCT	VITREOUS CLAY TILE
VFD	VARIABLE FREQUENCY DRIVE
VIFB	VERTICAL INTEGRAL FACE AND BYPASS
VTR	VENT THROUGH ROOF
VVT	VARIABLE VOLUME AND TEMPERATURE
W	WATTS
W	WEST
W	WIDE
WB	WET BULB
WC	INCHES WATER COLUMN (PRESSURE)
WG	WATER GAUGE (PRESSURE)
WPD	WATER PRESSURE DROP (FEET OF WATER COLUMN)
WSA	WIRE SIZE AMPS

DRAWING LIST

SHEET NUMBER	SHEET NAME
M0-0	GENERAL INFORMATION
M0-1	GENERAL INFORMATION
M0-2	MECHANICAL DEMOLITION PLANS
M1-1	1ST FLOOR - DUCTWORK PLAN
M1-2	2ND FLOOR - DUCTWORK PLAN
M1-3	3RD FLOOR - DUCTWORK PLAN
M1-4	ROOF - DUCTWORK PLAN
M2-1	1ST FLOOR - HVAC PIPING PLAN
M2-2	2ND FLOOR - HVAC PIPING PLAN
M2-3	3RD FLOOR - HVAC PIPING PLAN
M2-4	ROOF - HVAC PIPING PLAN
M5-1	SCHEDULES AND DETAILS
M5-2	SCHEDULES AND DETAILS
M5-3	SCHEDULES AND DETAILS
M5-4	SCHEDULES AND DETAILS
M5-5	SCHEDULES AND DETAILS
M5-6	ALTERNATE SCHEDULES AND DETAILS
M6-1	CONTROL DETAILS

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

GENERAL INFORMATION

SCALE 12" = 1'-0"

M0-0

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SENSORS/DEVICES - CURRENT

SYMBOL	DESCRIPTION
CS	CURRENT SWITCH
CT	CURRENT TRANSDUCER

⚠ SAFETY CIRCUIT SYMBOLS ⚠

SYMBOL	DESCRIPTION
TSH SYSTEM	TEMPERATURE SWITCH - HIGH LIMIT • SINGLE POLE/SINGLE THROW, OPENS ON RISE, REQUIRES MANUAL RESET
TSL SYSTEM	TEMPERATURE SWITCH - LOW LIMIT • SINGLE POLE/SINGLE THROW, OPENS ON FALL, REQUIRES MANUAL RESET
SPH SYSTEM	STATIC PRESSURE HIGH LIMIT SWITCH • SINGLE POLE/SINGLE THROW, OPENS ON RISE, REQUIRES MANUAL RESET
SPL SYSTEM	STATIC PRESSURE LOW LIMIT SWITCH • SINGLE POLE/SINGLE THROW, OPENS ON FALL, REQUIRES MANUAL RESET

CONTROL POINT SYMBOL LEGEND

SYMBOL	DESCRIPTION
DO-99.99 NEW POINT DO-99.99 EXISTING POINT DO-99.99 POINT TO BE REMOVED DO-99.99 POINT NUMBER DO POINT NUMBER POINT PREFIX POINT TYPE POINT TYPE	CONTROL POINT. REFER TO CONTROL POINTS SCHEDULE FOR POINT DESCRIPTION. POINT TYPE: AI = ANALOG INPUT AO = ANALOG OUTPUT DI = DIGITAL INPUT DO = DIGITAL OUTPUT INT = INTEGRATION

CONTROL DAMPERS

SYMBOL	DESCRIPTION
NO NC ES NO ES NC	ELECTRIC DAMPER ACTUATOR. ES INDICATES END SWITCH NO=FAIL OPEN, NC = FAIL CLOSED
SD ES	SMOKE DAMPER ACTUATOR
OB PB	DAMPER. OB = OPPOSED BLADE, PD = PARALLEL BLADE.

CONTROL VALVES

SYMBOL	DESCRIPTION
NO NC ES NO ES NC	ELECTRIC VALVE ACTUATOR. ES INDICATES END SWITCH NO=FAIL OPEN, NC = FAIL CLOSED
	THREE WAY CONTROL VALVE
	TWO WAY CONTROL VALVE
	PICCV VALVE

SENSORS/DEVICES - TEMPERATURE

SYMBOL	DESCRIPTION
T PLAN	TEMPERATURE SENSOR - WALL MOUNTED
T PLAN	WALL MOUNTED TEMPERATURE SENSOR WITH CONDUIT ROUGH-IN BY EC. SEE CONTROL DIAGRAMS FOR DETAILS.
DIAGRAM	THERMOSTAT - WALL MOUNTED, LINE VOLTAGE
DIAGRAM	THERMOSTAT - WALL MOUNTED, PROGRAMMABLE
DIAGRAM	THERMOSTAT - WALL MOUNTED
T DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED
Room T DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED WITH DISPLAY
0 T DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED WITH ADJUSTMENT
Room 0 T DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED WITH ADJUSTMENT AND DISPLAY
0 T OR DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED WITH ADJUSTMENT AND LOCAL PUSH BUTTON OCCUPANCY OVERRIDE
Room 0 T OR DIAGRAM	TEMPERATURE SENSOR - WALL MOUNTED WITH ADJUSTMENT, DISPLAY AND LOCAL PUSH BUTTON OCCUPANCY OVERRIDE
	TEMPERATURE SENSOR - BULB
	TEMPERATURE SENSOR - AVERAGING
	TEMPERATURE SENSOR - POINT
T	TEMPERATURE SENSOR - HYDRONIC - PIPE MOUNTED • FURNISH BRASS SENSOR WELL FOR COPPER PIPING SYSTEMS • FURNISH STAINLESS STEEL SENSOR WELL FOR STEEL PIPING SYSTEMS
O	TEMPERATURE SENSOR - OUTSIDE AIR

SENSORS/DEVICES - PRESSURE

SYMBOL	DESCRIPTION
SPT	STATIC PRESSURE TRANSDUCER - DUCT MOUNTED
DPS	DIFFERENTIAL PRESSURE SWITCH
DPT	DIFFERENTIAL PRESSURE TRANSDUCER

SENSORS/DEVICES - HUMIDITY

SYMBOL	DESCRIPTION
H PLAN	HUMIDITY DEVICE - WALL MOUNTED
H PLAN	HUMIDITY SENSOR - WALL MOUNTED. CONDUIT ROUGH-IN BY EC.
H DIAGRAM	HUMIDITY SENSOR - WALL MOUNTED
HS	HUMIDITY SENSOR - DUCT MOUNTED
HHL	HUMIDITY SWITCH - HIGH LIMIT - DUCT MOUNTED

SENSORS/DEVICES - OCCUPANCY

SYMBOL	DESCRIPTION
PLAN DIAGRAM O	OCCUPANCY SENSOR - CEILING MOUNTED
PLAN DIAGRAM O	OCCUPANCY SENSOR - WALL MOUNTED • CONDUIT ROUGH-IN BY TC
PLAN DIAGRAM O	OCCUPANCY SENSOR - WALL MOUNTED • CONDUIT ROUGH-IN BY EC

SENSORS/DEVICES - FLOW

SYMBOL	DESCRIPTION
FS	FLOW SWITCH - HYDRONIC - PIPE MOUNTED
AFMS	AIRFLOW MEASURING STATION - DUCT MOUNTED
AFMS	AIRFLOW MEASURING STATION - FAN INLET

SENSORS/DEVICES - CARBON DIOXIDE

SYMBOL	DESCRIPTION
PLAN DIAGRAM C	CARBON DIOXIDE SENSOR - WALL MOUNTED • CONDUIT ROUGH-IN BY TC
PLAN DIAGRAM C	CARBON DIOXIDE SENSOR - WALL MOUNTED • CONDUIT ROUGH-IN BY EC
CO2	CARBON DIOXIDE SENSOR - DUCT MOUNTED

ELECTRICAL EQUIPMENT LEGEND - STARTERS

SYMBOL	DESCRIPTION
	VARIABLE FREQUENCY DRIVE

ELECTRICAL EQUIPMENT LEGEND - DISCONNECTS

SYMBOL		DESCRIPTION
PLAN	DIAGRAM	DISCONNECT SWITCH - FUSED • 3-POLE
PLAN	DIAGRAM	DISCONNECT SWITCH - NON-FUSED • 3-POLE

ELECTRICAL EQUIPMENT LEGEND - POWER SUPPLY

SYMBOL	DESCRIPTION
X PLAN	CEILING MOUNTED TRANSFORMER. SEE CONTROL DIAGRAMS FOR DETAILS.
120 24 DIAGRAM	POWER TRANSFORMER
PS	POWER SUPPLY MODULE
UPS	UNINTERRUPTIBLE POWER SUPPLY

ELECTRICAL EQUIPMENT LEGEND - SWITCHES, CONTACTS, RELAYS

SYMBOL	DESCRIPTION
C NORMALLY (FAIL) OPEN C NORMALLY (FAIL) CLOSED	RELAY
C	RELAY WITH HOA

WIRING LEGEND

SYMBOL	DESCRIPTION
	WIRE TERMINATION
	WIRE SPLICE
J	JUNCTION BOX
PB	PULL BOX
S	SIGNAL WIRING • PLENUM RATED CABLE NOT IN CONDUIT WHEN CONCEALED • BY TC, UNLESS NOTED OTHERWISE
C	SIGNAL WIRING • INSTALL IN CONDUIT, CONDUIT SIZING PER NEC, MINIMUM 3/4" • INSTALL ON J-HOOKS • BY TC, UNLESS NOTED OTHERWISE
LAN	LOCAL AREA NETWORK WIRING • BY TC, UNLESS NOTED OTHERWISE
E	LINE VOLTAGE POWER WIRING • BY EC, UNLESS OTHERWISE NOTED • WIRING BY EC IS DEPICTED IN THIN (LIGHT) LINETYPE
A H O	HAND-OF-AUTO (HOA) SWITCH
	THERMAL OVERLOAD
	SINGLE PHASE FUSE AND DISCONNECT
	CONTACT - NORMALLY OPEN
	CONTACT - NORMALLY CLOSED

ELECTRICAL EQUIPMENT LEGEND - FIRE ALARM

SYMBOL	DESCRIPTION
DD	DUCT MOUNTED SMOKE DETECTOR FURNISHED BY DIVISION 26, INSTALLED BY DIVISION 23

DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
2. DEMOLITION LINETYPE: THICK (DARK) DASHED LINES REPRESENT EXISTING ITEMS TO BE REMOVED.
3. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
4. RELEVANT EXISTING CONDITIONS SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD OBSERVATION(S). NOT ALL EXISTING ITEMS ARE SHOWN, OR COULD BE FIELD VERIFIED. ONCE AREAS OBSCURED FROM VIEW ARE EXPOSED, VERIFY THAT CONDITIONS ARE AS INDICATED ON THIS DRAWING. BEFORE PROCEEDING WITH WORK, NOTIFY THE ENGINEER IF CONDITIONS DIFFER FROM WHAT IS SHOWN.
5. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).
6. EQUIPMENT AND ITEMS TO BE RELOCATED ARE IDENTIFIED ON THE PLANS AND/OR EQUIPMENT SCHEDULE(S).

COORDINATION NOTES:

1. CERTAIN AREAS OF THE BUILDING UTILIZE RETURN AIR CEILING PLENUMS. ALL MATERIALS INSTALLED WITHIN THE CEILING PLENUMS SHALL COMPLY WITH NFPA 90A REQUIREMENTS.
2. UNLESS DETAILED OTHERWISE, SYSTEMS SHALL BE ORGANIZED SUCH THAT DUCTWORK MAINS ARE THE HIGHEST LEVEL AND ARE TIGHT TO BUILDING STEEL. HVAC PIPING AND PLUMBING PIPING SHALL BE ROUTED BELOW THE DUCTWORK MAINS, AND FIRE PROTECTION PIPING SHALL BE BELOW ALL.
3. THE BOTTOM ELEVATION OF ALL SYSTEMS SHALL BE AT LEAST 6" ABOVE LAY-IN CELINGS OR 2" ABOVE LIGHTS TO FACILITATE CEILING TILE REMOVAL AND MAINTENANCE ACCESS.
4. SYSTEMS SHALL BE ARRANGED SUCH THAT THEY ARE NOT TOUCHING EACH OTHER OR ANY PART OF THE BUILDING STRUCTURE TO AVOID VIBRATION TRANSFERRENCE AND EXPANSION INTERFERENCE, AND TO FACILITATE SYSTEM INSULATION INSTALLATION (WHERE REQUIRED).

CONTROLS/BUILDING AUTOMATION NOTES:

1. REPAIR INSULATION TO MAINTAIN THERMAL AND VAPOR BARRIER INTEGRITY IF INSTALLATION OF SENSORS AND DEVICES REQUIRES DISTURBING DUCT AND PIPE INSULATION.
2. CUT AND PATCH EXISTING WALLS FOR INSTALLATION OF WALL MOUNTED SENSORS AND DEVICES. SEE "PENETRATIONS" NOTES.
3. WALL MOUNTED SENSORS AND DEVICES SHALL BE RECESSED INTO WALL WITH NO EXPOSED WIRING OR CONDUIT, UNLESS SPECIFICALLY NOTED OTHERWISE.
4. THE QUANTITY OF DDC PANELS IS DIAGRAMATIC ONLY. THE CONTROLS CONTRACTOR SHALL DETERMINE THE QUANTITY OF DDC PANELS REQUIRED TO PROVIDE THE INPUT/OUTPUT POINTS SHOWN AND PERFORM THE SEQUENCES OF OPERATION SPECIFIED.
5. IF THE BAS UTILIZES GLOBAL SHARING OF OUTDOOR TEMPERATURE AND HUMIDITY, A MINIMUM OF TWO (2) IF THESE SENSORS SHALL BE UTILIZED. EACH OF THESE SENSORS SHALL PROVIDE INPUT TO A DIFFERENT DDC PANEL. PANELS SHALL BE ON DIFFERENT ELECTRICAL CIRCUITS.
6. OUTDOOR AIR TEMPERATURE SENSORS UTILIZED FOR CONTROL OF BOILER SYSTEMS SHALL BE WIRED TO THE DDC PANEL THAT CONTROLS THE BOILERS.

CEILING WORK NOTES:

1. REMOVE AND RE-INSTALL LAY-IN CEILINGS IN AREAS WHERE EXISTING CEILINGS ARE TO REMAIN AS REQUIRED TO COMPLETE THE INSTALLATION OF ITEMS SHOWN. SEE ARCHITECTURAL DRAWINGS FOR IDENTIFICATION OF AREAS WHERE EXISTING CEILINGS ARE TO REMAIN. REPLACE DAMAGED CEILING MATERIALS TO MATCH EXISTING CEILING.
2. CEILING TILES MAY BE LEFT OUT OF THE CEILING IN AREAS UNDER CONSTRUCTION ONLY IF STORED IN AREAS AS DIRECTED BY THE OWNER SO AS NOT TO HINDER THE DAILY OPERATIONS OF THE BUILDING'S OCCUPANTS.
3. REMOVE EXISTING DRYWALL OR PLASTER CEILINGS TO ACCOMMODATE INSTALLATION OF ITEMS INDICATED. PATCH AND PAINT DRYWALL OR PLASTER CEILINGS TO MATCH EXISTING ADJACENT UNDISTURBED SURFACES.
4. PROVIDE ESCUTCHEONS FOR ALL PIPING PENETRATIONS OF CEILINGS IN OCCUPIED AREAS.
5. FIRESTOP ALL PENETRATIONS OF RATED CEILINGS WITH THE APPROPRIATE FIRESTOPPING MATERIAL. REQUIRED MATERIALS ARE INDICATED IN THE SPECIFICATIONS

INTERIOR WALL PENETRATION NOTES:

1. PENETRATE INTERIOR BUILDING WALLS AS REQUIRED TO FACILITATE INSTALLATION OF ITEMS INDICATED.
2. PATCH AND PAINT EXISTING WALLS TO MATCH ADJACENT UNDISTURBED SURFACES.
3. FIRESTOP PENETRATIONS OF RATED WALLS WITH APPROPRIATE SPECIFIED FIREPROOFING MATERIAL AND SEALING METHODS.
4. SOUND STOP FULL HEIGHT WALLS WITH APPROPRIATE MATERIALS AND METHODS AND AS INDICATED IN THE "PENETRATIONS" SECTION OF THE SPECIFICATIONS.
5. MAKE WALL PENETRATIONS LARGE ENOUGH TO ALLOW INSULATED PIPES AND/OR DUCTS TO PASS THROUGH WITHOUT INTERRUPTION OF INSULATION.
6. ALLOW A MINIMUM 3" CLEARANCE AROUND ALL SIDES BETWEEN DUCT SURFACE AND ANY WALL STUDS OR HEADERS TO AVOID TRANSFERRENCE OF VIBRATION TO STRUCTURE.

ROOF PENETRATION NOTES:

1. CUT AND PATCH THE EXISTING ROOF AS REQUIRED TO FACILITATE INSTALLATION OF ROOF MOUNTED EQUIPMENT, SUPPORTS, AND PENETRATIONS INDICATED.
2. THE EXISTING ROOF IS UNDER WARRANTY. ALL ROOF WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO MAINTAIN THE VALIDITY OF THE CURRENT WARRANTY.
3. CUTTING AND PATCHING OF EXISTING ROOF SHALL BE PROVIDED BY THE CONTRACTOR REQUIRING THE WORK. COORDINATE LOCATIONS AND AREAS OF ROOFING SYSTEM REMOVAL WITH OTHERS TO FACILITATE INSTALLATION OF ROOF MOUNTED ITEMS INDICATED.
4. ROOF PENETRATIONS SHALL BE MADE IN ACCORDANCE WITH ARCHITECT/STRUCTURAL ENGINEER'S DESIGN REQUIREMENTS.
5. OBTAIN APPROVAL OF LOCATION AND PENETRATION METHOD PRIOR TO CREATING ROOF PENETRATIONS.

DUCTWORK NEW WORK NOTES:

1. BRANCH DUCTWORK RUNOUTS TO GRILLES/DIFFUSERS SHALL BE THE NECK SIZE OF THE GRILLE/DIFFUSER, UNLESS NOTED OTHERWISE.
2. BRANCH DUCTWORK RUNOUTS TO TERMINAL BOXES SHALL BE THE TERMINAL BOX INLET SIZE, UNLESS NOTED OTHERWISE.
3. DUCT SIZES NOTED REPRESENT THE ACTUAL SHEET METAL SIZE. WHERE INTERIOR DUCT LINING IS USED, DUCT SIZES HAVE ALREADY ACCOUNTED FOR THE LINING.
4. SEE SHEETMETAL FITTING DETAILS FOR FITTING CONSTRUCTION REQUIREMENTS. CONSULT ENGINEER IF UNCERTAIN WHICH TYPE OF FITTING IS REQUIRED IN A SPECIFIC LOCATION.
5. DO NOT INSTALL ANY DUCTWORK BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.
6. DOUBLE WALL DUCTWORK SIZES SHOWN ARE INSIDE DUCT DIMENSIONS.

HVAC PIPING NEW WORK NOTES:

1. SHUT-OFF VALVES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. PROVIDE ACCESS DOORS IN CEILINGS OR WALLS IF A VALVE IS REQUIRED TO BE LOCATED ABOVE AN INACCESSIBLE CEILING OR IN A WALL OR CHASE.
2. BRANCH PIPING RUNOUTS TO HYDRONIC TERMINAL BOXES (TB) REHEAT COILS SHALL BE 3/4" SIZE, UNLESS OTHERWISE NOTED.
3. BRANCH PIPING RUNOUTS TO DUCT-MOUNTED HYDRONIC REHEAT COILS (RHC) SHALL BE 3/4" SIZE, UNLESS OTHERWISE NOTED.
4. BRANCH PIPING RUNOUTS TO HYDRONIC RADIANT CEILING PANELS (RCP) SHALL BE 1/2" SIZE, UNLESS OTHERWISE NOTED.
5. BRANCH PIPING RUNOUTS TO FIN-TUBE RADIATION (FTR) SHALL BE 1/2" SIZE UNLESS OTHERWISE NOTED.
6. DO NOT INSTALL ANY PIPING BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

GENERAL INFORMATION

SCALE
12" = 1'-0"

M0-1

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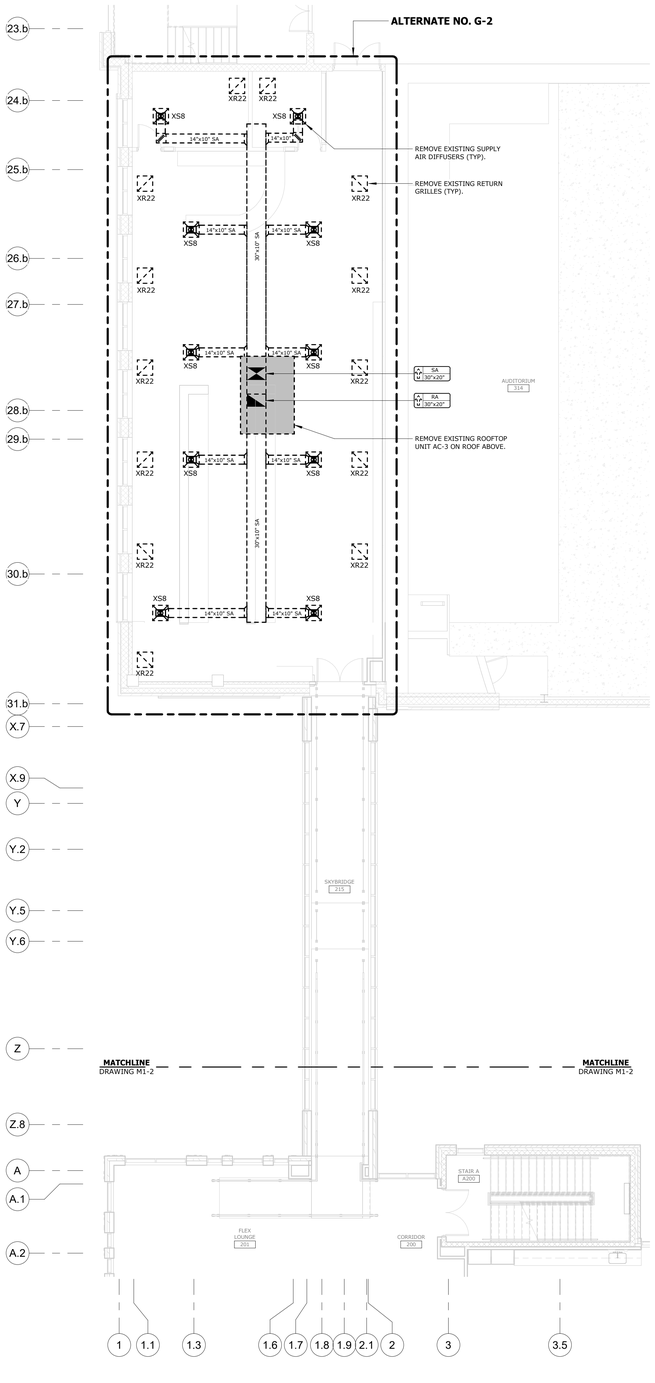
DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
2. DEMOLITION LINETYPE: THICK (DARK) DASHED LINES REPRESENT EXISTING ITEMS TO BE REMOVED.
3. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
4. RELEVANT EXISTING CONDITIONS SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD OBSERVATION(S). NOT ALL EXISTING ITEMS ARE SHOWN, OR COULD BE FIELD VERIFIED. ONCE AREAS OBSCURED FROM VIEW ARE EXPOSED, VERIFY THAT CONDITIONS ARE AS INDICATED ON THIS DRAWING. BEFORE PROCEEDING WITH WORK, NOTIFY THE ENGINEER IF CONDITIONS DIFFER FROM WHAT IS SHOWN.
5. EQUIPMENT AND ITEMS TO BE RELOCATED ARE IDENTIFIED ON THE PLANS AND/OR EQUIPMENT SCHEDULE(S).

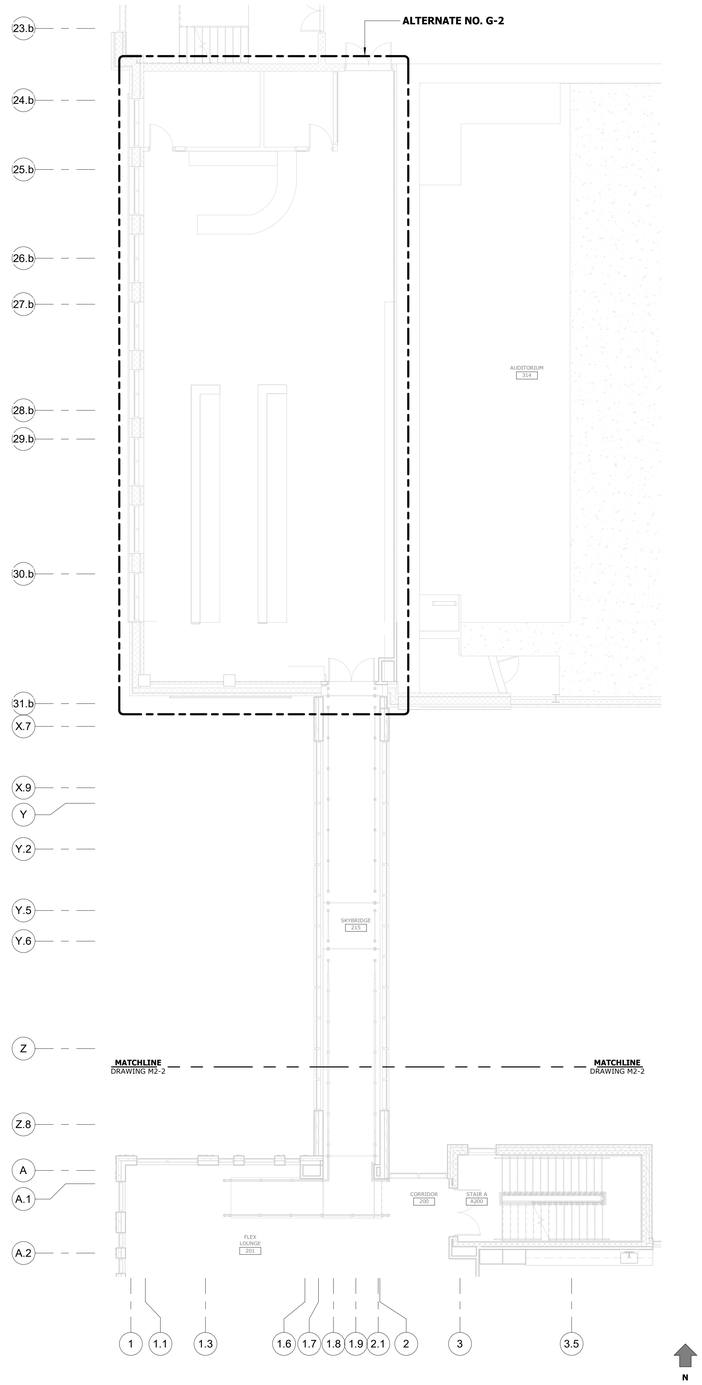
DUCTWORK DEMOLITION NOTES:

1. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL UPON REMOVAL OF ALL SALVAGED ITEMS. OTHERWISE, REMOVE ALL DEMOLISHED ITEMS FROM THE SITE.
2. REMOVE ALL DUCTWORK, AS INDICATED BY THE DEMOLITION LINETYPE. REMOVE ALL ASSOCIATED ANCILLARY ITEMS, SUCH AS HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. - NOT UTILIZED FOR NEW WORK.
3. REMOVE DUCTWORK BACK TO TIE-IN POINTS WHERE INDICATED.
4. REMOVE DUCTWORK BACK TO CAPPED LOCATIONS WHERE INDICATED. INSULATE CAPPED DUCTS THE SAME AS NEW.



2ND FLOOR & SKYWAY DUCTWORK DEMOLITION PLAN

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



2ND FLOOR & SKYWAY HVAC PIPING DEMOLITION PLAN

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

ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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MECHANICAL DEMOLITION PLANS

SCALE 1/8" = 1'-0"

M0-2

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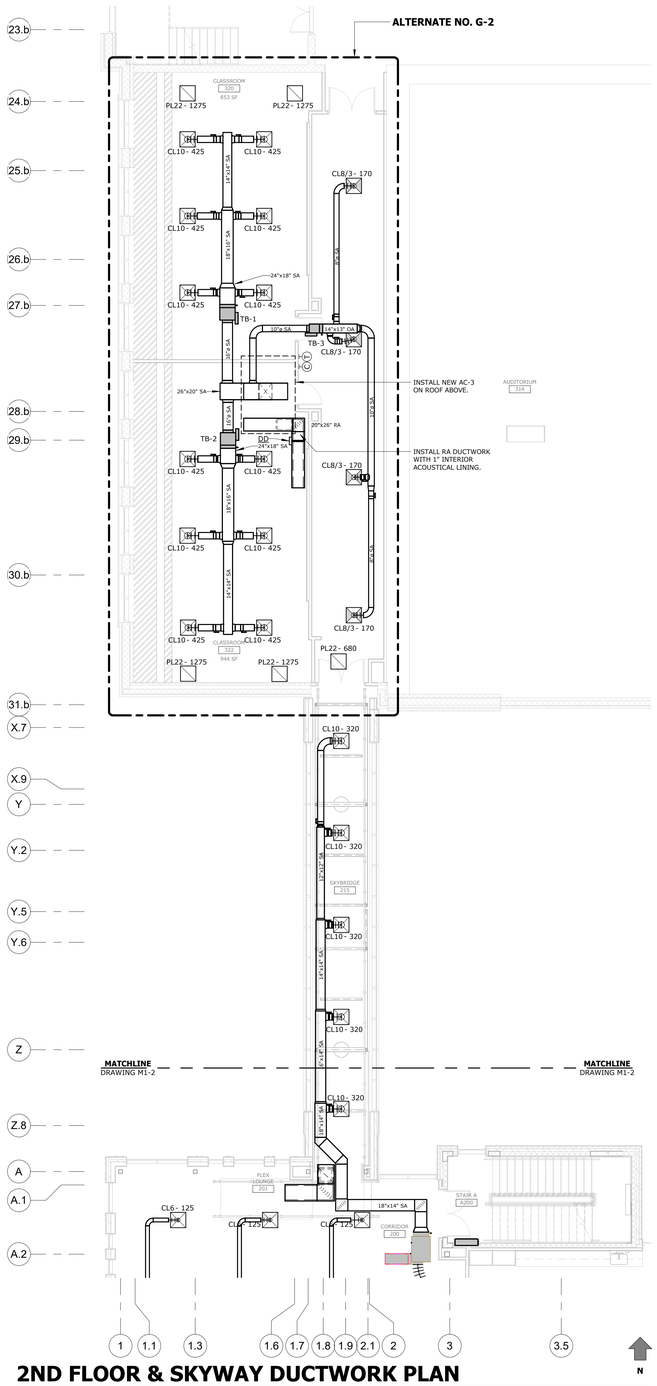
DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
2. NEW LINETYPE: THICK (DARK) SOLID LINES REPRESENT ITEMS THAT ARE NEW OR RELOCATED.
3. RELEVANT EXISTING CONDITIONS SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD OBSERVATION(S). NOT ALL EXISTING ITEMS ARE SHOWN, OR COULD BE FIELD VERIFIED. ONCE AREAS OBSCURED FROM VIEW ARE EXPOSED, VERIFY THAT CONDITIONS ARE AS INDICATED ON THIS DRAWING. BEFORE PROCEEDING WITH WORK, NOTIFY THE ENGINEER IF CONDITIONS DIFFER FROM WHAT IS SHOWN.
4. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).

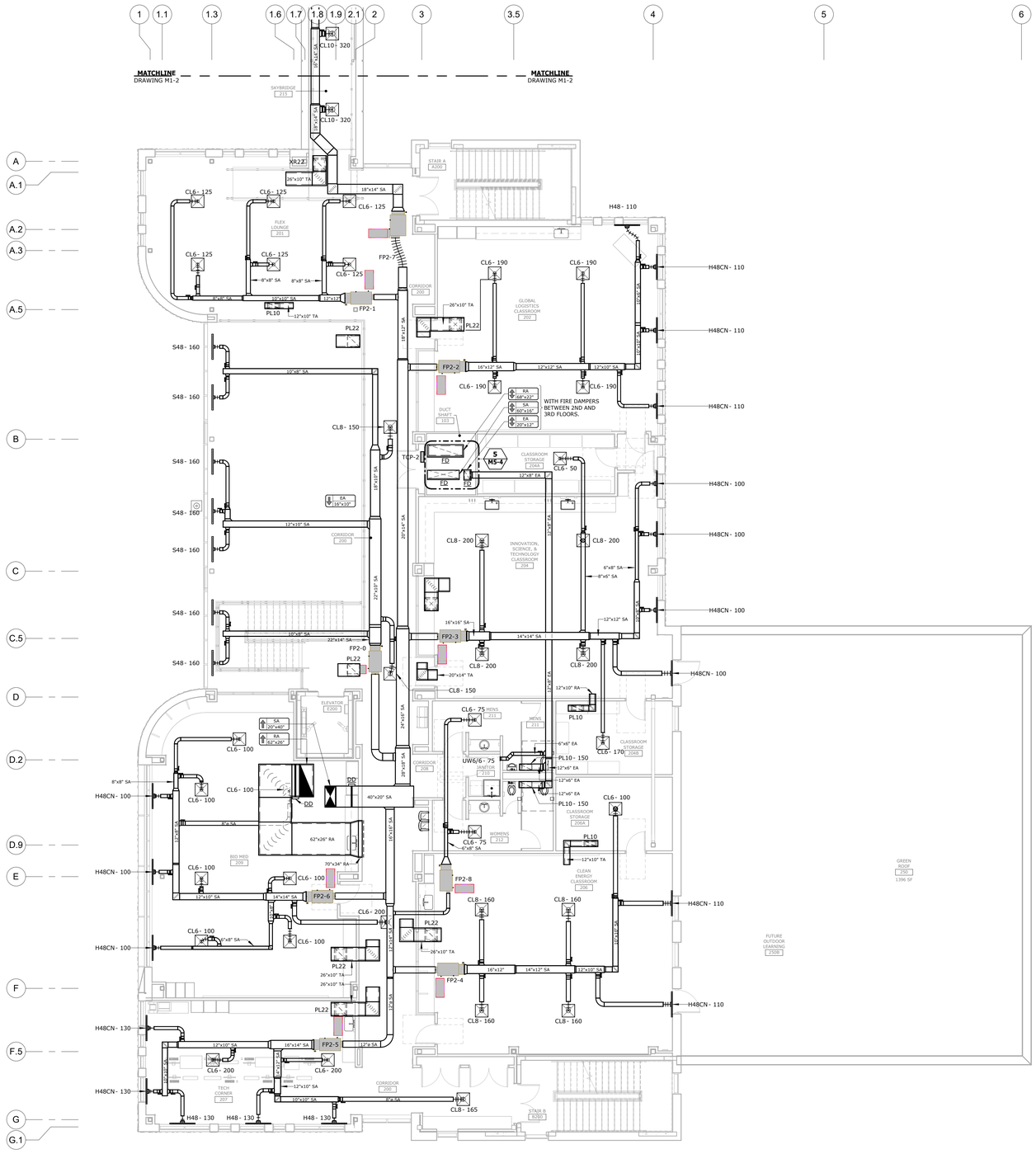
DUCTWORK NEW WORK NOTES:

1. BRANCH DUCTWORK RUNOUTS TO GRILLES/DIFFUSERS SHALL BE THE NECK SIZE OF THE GRILLE/DIFFUSER, UNLESS NOTED OTHERWISE.
2. BRANCH DUCTWORK RUNOUTS TO TERMINAL BOXES SHALL BE THE TERMINAL BOX INLET SIZE, UNLESS NOTED OTHERWISE.
3. DUCT SIZES NOTED REPRESENT THE ACTUAL SHEET METAL SIZE. WHERE INTERIOR DUCT LINING IS USED, DUCT SIZES HAVE ALREADY ACCOUNTED FOR THE LINING.
4. DO NOT INSTALL ANY DUCTWORK BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.



2ND FLOOR & SKYWAY DUCTWORK PLAN

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



2ND FLOOR - DUCTWORK PLAN

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

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ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

PROJECT NO. 21042.000

2ND FLOOR - DUCTWORK PLAN

SCALE 1/8" = 1'-0"

M1-2

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DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
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3. RELEVANT EXISTING CONDITIONS SHOWN ARE BASED ON RECORD DRAWINGS AND FIELD OBSERVATION(S). NOT ALL EXISTING ITEMS ARE SHOWN, OR COULD BE FIELD VERIFIED. ONCE AREAS OBSCURED FROM VIEW ARE EXPOSED, VERIFY THAT CONDITIONS ARE AS INDICATED ON THIS DRAWING. BEFORE PROCEEDING WITH WORK, NOTIFY THE ENGINEER IF CONDITIONS DIFFER FROM WHAT IS SHOWN.
4. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).

DUCTWORK NEW WORK NOTES:

1. BRANCH DUCTWORK RUNOUTS TO GRILLES/DIFFUSERS SHALL BE THE NECK SIZE OF THE GRILLE/DIFFUSER, UNLESS NOTED OTHERWISE.
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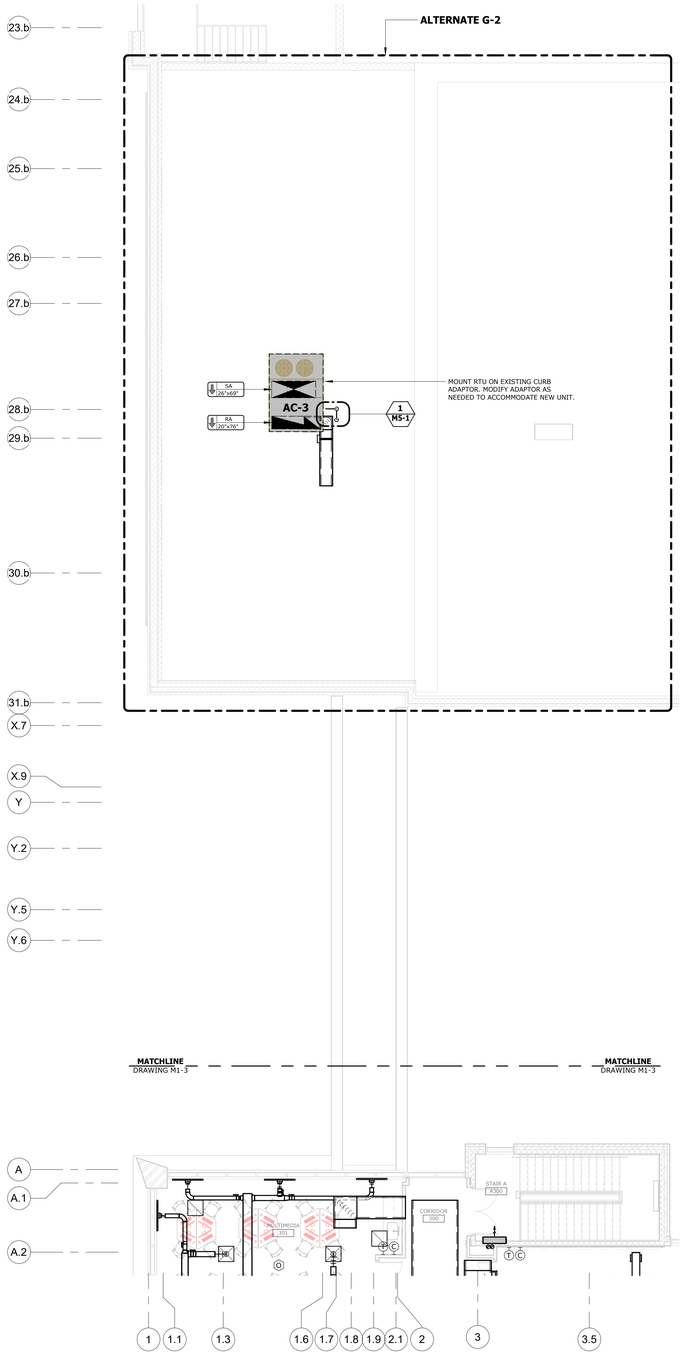
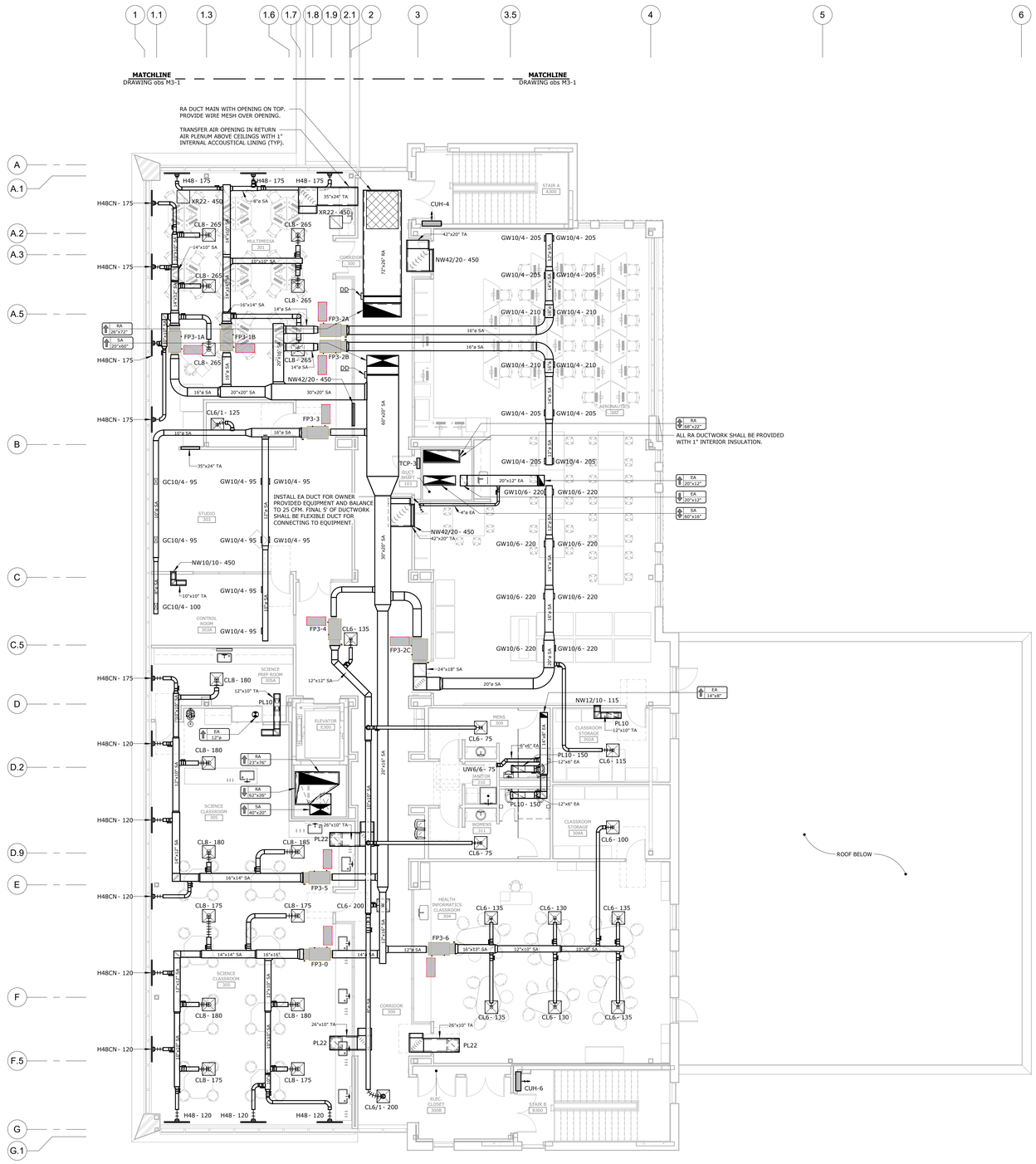


ROOF & SKYWAY - DUCTWORK PLAN

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



3RD FLOOR - DUCTWORK PLAN

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

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ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
22	6/14/23	PR-008
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
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3RD FLOOR - DUCTWORK PLAN

SCALE 1/8" = 1'-0"

M1-3

DRAWING INTERPRETATION NOTES:

1. EXISTING LINETYPE: THIN (LIGHT) SOLID LINES REPRESENT ITEMS THAT ARE EXISTING TO REMAIN OR ARE FURNISHED BY OTHERS.
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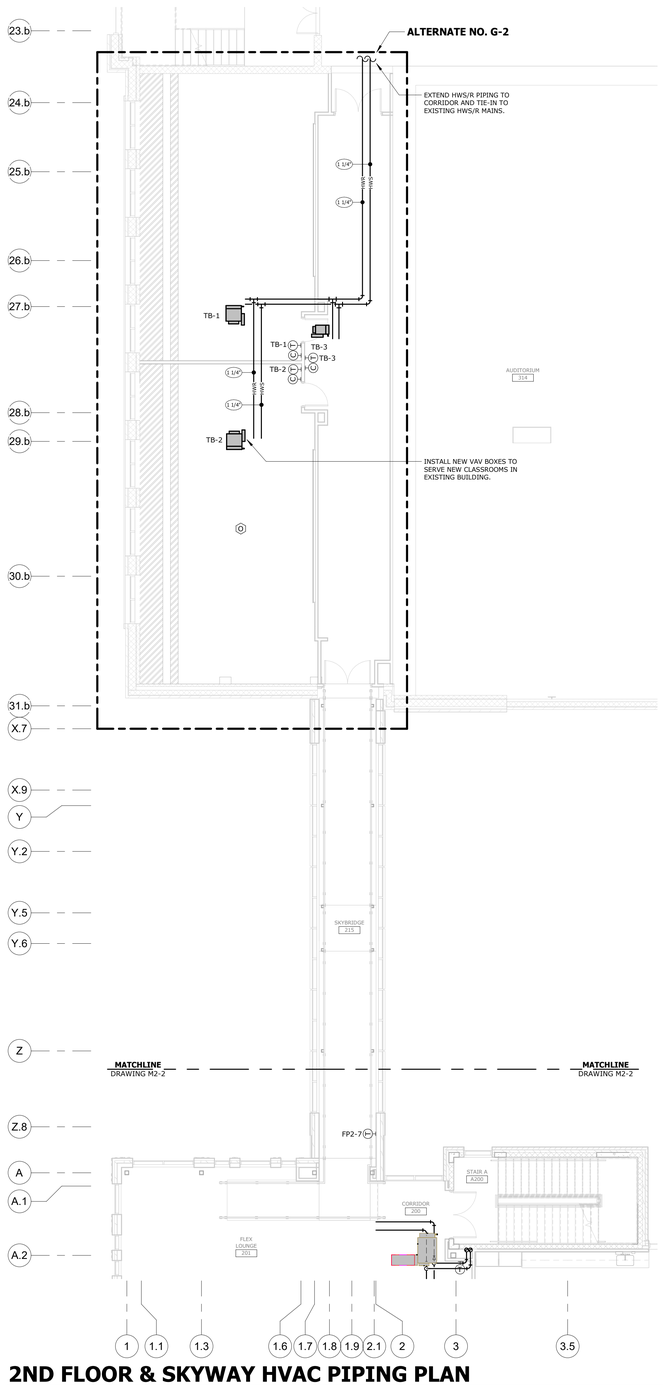
4. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).

HVAC PIPING NEW WORK NOTES:

1. SHUT-OFF VALVES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS. COORDINATE THE LOCATION OF ACCESS DOORS IN CEILINGS OR WALLS WITH THE GENERAL CONTRACTOR IF A VALVE IS REQUIRED TO BE LOCATED ABOVE AN INACCESSIBLE CEILING OR IN A WALL OR CHASE.
2. BRANCH PIPING RUNOUTS TO HYDRONIC RADIANT CEILING PANELS (RCP) SHALL BE 1/2" SIZE, UNLESS OTHERWISE NOTED.
3. BRANCH PIPING RUNOUTS TO FIN-TUBE RADIATION (FTR) SHALL BE 1/2" SIZE UNLESS OTHERWISE NOTED.
4. DO NOT INSTALL ANY PIPING BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.



2ND FLOOR & SKYWAY HVAC PIPING PLAN

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

2ND FLOOR - HVAC PIPING PLAN

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

ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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2ND FLOOR - HVAC PIPING PLAN

SCALE 1/8" = 1'-0"

M2-2

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DRAWING INTERPRETATION NOTES:

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4. EQUIPMENT SHOWN GRAY-SHADED OR TAGGED HAVE AN ASSOCIATED EQUIPMENT SCHEDULE. SEE SCHEDULE SHEET(S).

HVAC PIPING NEW WORK NOTES:

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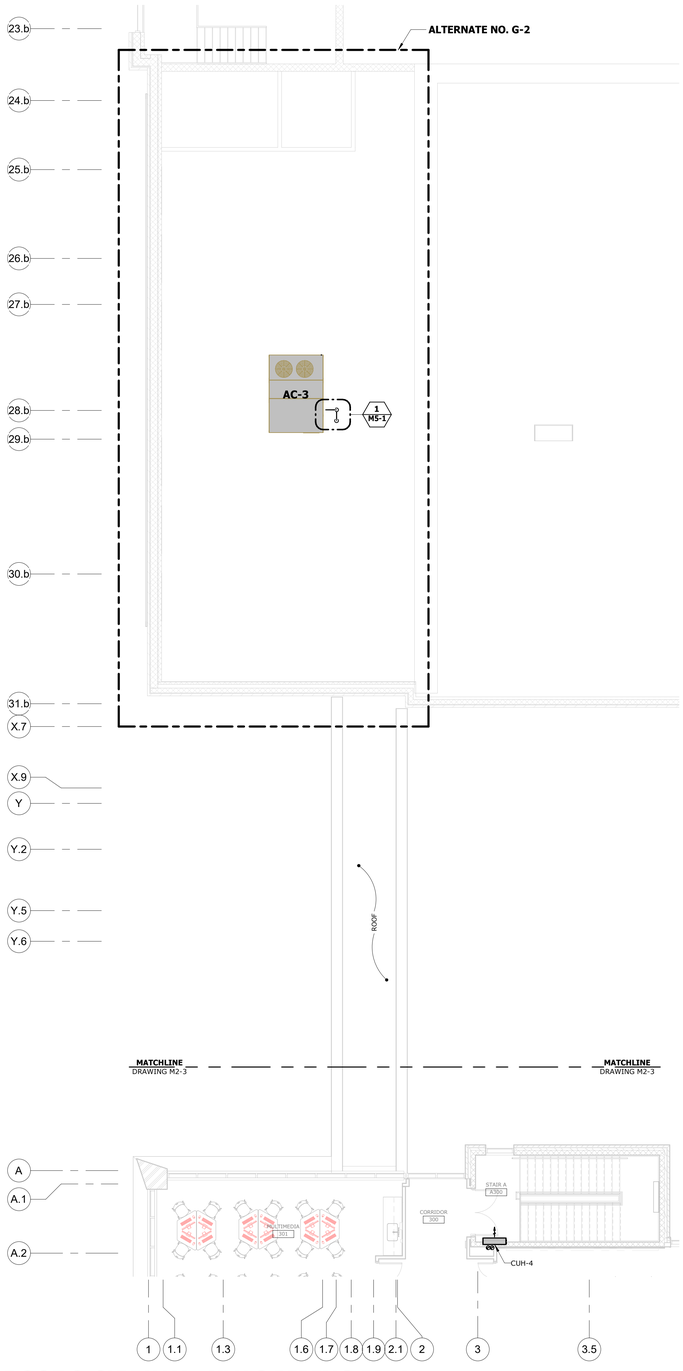
2. BRANCH PIPING RUNOUTS TO HYDRONIC RADIANT CEILING PANELS (RCP) SHALL BE 1/2" SIZE, UNLESS OTHERWISE NOTED.
3. BRANCH PIPING RUNOUTS TO FIN-TUBE RADIATION (FTR) SHALL BE 1/2" SIZE UNLESS OTHERWISE NOTED.
4. DO NOT INSTALL ANY PIPING BENEATH OR ADJACENT TO ANY EQUIPMENT THAT WOULD HINDER MAINTENANCE ACCESS TO EQUIPMENT OR THE FUTURE REMOVAL OF EQUIPMENT.



ROOF & SKYWAY - HVAC PIPING PLAN

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

3RD FLOOR - HVAC PIPING PLAN

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

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ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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3RD FLOOR - HVAC PIPING PLAN

SCALE 1/8" = 1'-0"

M2-3

FURNISHED BY OWNER. INSTALLED BY CONTRACTOR.

23 60 10 - PACKAGED RTU SCHEDULE (PART 1)

NOTES:
1. FURNISH UNIT WITH ROOF CURB WITH DUCT TRANSITION AND OFFSET SPACE.
2. FURNISH WITH INTEGRAL DISCONNECT SWITCH.
3. FURNISH WITH VAV CONTROLS, DEMAND CONTROL VENTILATION (CO2) CONTROLS.
4. FURNISH WITH MODULATING GAS BURNER.
5. FURNISH WITH HINGED ACCESS DOORS.
6. FURNISH WITH CONDENSER HAIL GUARDS.

OPTIONS/ACCESSORIES:
1.

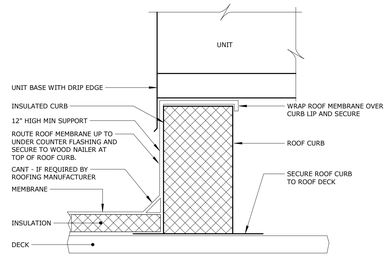
	GENERAL						SUPPLY FAN DATA							POWER EXHAUST		
				UNIT AIRFLOW												
MARK	MANUFACTURER	MODEL	SUPPLY	OA	WEIGHT	ESP	TSP	FAN TYPE	FAN RPM	DRIVE	BHP	MHP	FAN COUNT	FAN TYPE	DRIVE
RTU-1	TRANE	YCD480B4	12000 CFM	3820 CFM	6330 LBS	1.4 IN H2O	2.426 IN H2O	FC	623	625/521	9.03	15	2	PROP	DIRECT
RTU-2	TRANE	YC420B4	11100 CFM	2900 CFM	5505 LBS	1.4 IN H2O	2.514 IN H2O	FC	737	750/625	8.76	10	2	PROP	DIRECT
RTU-3	TRANE	YCD480B4	14500 CFM	2900 CFM	6330 LBS	1.3 IN H2O	2.660 IN H2O	FC	659	675/562	12.35	15	2	PROP	DIRECT

23 60 10 - PACKAGED RTU SCHEDULE (PART 2)

NOTES:
1. FURNISH UNIT WITH ROOF CURB WITH DUCT TRANSITION AND OFFSET SPACE.
2. FURNISH WITH INTEGRAL DISCONNECT SWITCH.
3. FURNISH WITH VAV CONTROLS, DEMAND CONTROL VENTILATION (CO2) CONTROLS.
4. FURNISH WITH MODULATING GAS BURNER.
5. FURNISH WITH HINGED ACCESS DOORS.
6. FURNISH WITH CONDENSER HAIL GUARDS.

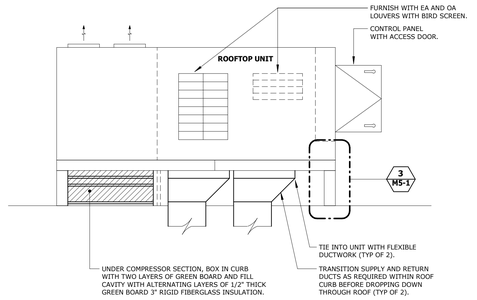
OPTIONS/ACCESSORIES:
1.

	DIRECT EXPANSION COOLING COIL DATA												GAS HEAT				FILTER		ELECTRICAL DATA			
				ENTERING AIR		LEAVING AIR			QTY. OF		COMPRESSOR		EFFICIENCY DATA									
MARK	MINIMUM COIL AREA	TOTAL MBH	SENSIBLE MBH	DRY BULB	WET BULB	DRY BULB	WET BULB	STAGES OF COOLING	REFRIGERANT CIRCUITS	REFRIGERANT TYPE	QUANTITY	TYPE	EER	IEER/SEER	EAT	LAT	MAX INPUT (MBH)	MAX OUTPUT (MBH)	EFFICIENCY	FACE AREA	VOLTS/PHASE	MCA	MOCP	NOTES
RTU-1	36.7 SQFT	480.20	323.76	79.8	67.58	57.49	55.57	5	1	R410A	3	SCROLL	11.0	14.7	47.6	94.10	750	600	4" MERV 14	16X20X4	460/3	103.25	125	1, 2, 3, 4, 5, 6
RTU-2	31.7 SQFT	395.26	284.50	78.90	66.75	58.02	56.13	5	1	R410A	3	SCROLL	10.5	13.6	51.8	92.10	600	480	4" MERV 14	16X20X4	460/3	84	100	1, 2, 3, 4, 5, 6
RTU-3	36.7 SQFT	481.41	356.28	78	65.91	58.06	56.01	5	1	R410A	3	SCROLL	11.0	14.7	56	94.6	750	600	4" MERV 14	16X20X4	460/3	103.25	125	1, 2, 3, 4, 5, 6

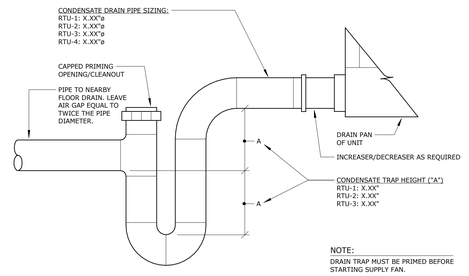


NOTE:
ROOF CURBS SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL LOCATE CURB POSITIONS. GENERAL CONTRACTOR SHALL INSTALL SUPPORTS AND PROVIDE FLASHING AND ROOFING.

3 RTU CURB DETAIL
NO SCALE



2 ROOFTOP UNIT INSTALLATION DETAIL
NO SCALE

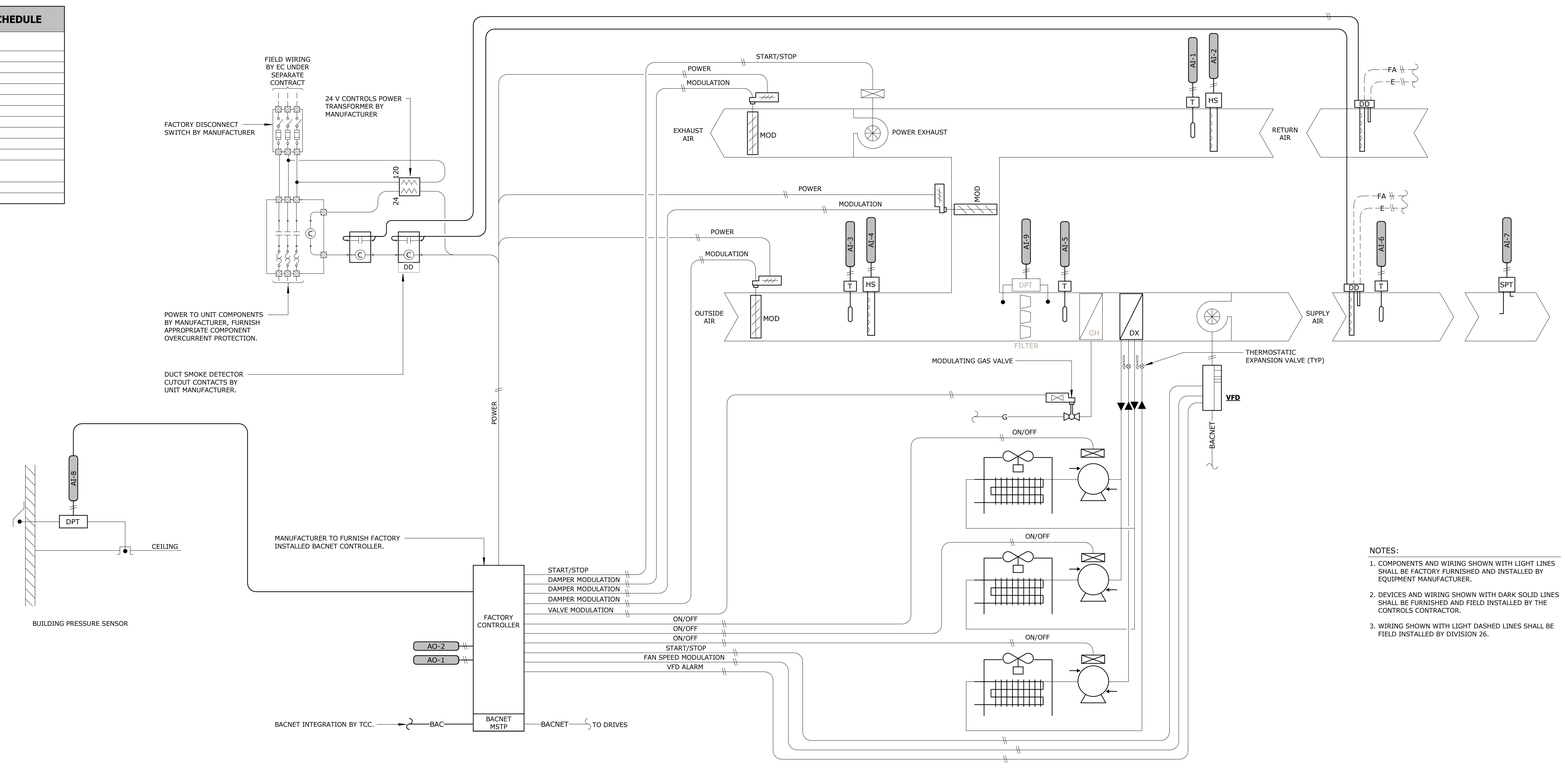


NOTE:
DRAIN TRAP MUST BE PRIMED BEFORE STARTING SUPPLY FAN.

1 CONDENSATE DRAIN TRAP DETAIL
NO SCALE

23 60 10 - RTU-2 CONTROL POINTS SCHEDULE

POINT NUMBER	POINT DESCRIPTION
AI (ANALOG INPUT)	
1	RETURN AIR TEMPERATURE
2	RETURN AIR HUMIDITY
3	OUTSIDE AIR TEMPERATURE
4	OUTSIDE AIR HUMIDITY
5	MIXED AIR TEMPERATURE
6	DISCHARGE AIR TEMPERATURE
7	DUCT STATIC PRESSURE
8	BUILDING PRESSURE
9	FILTER DIFFERENTIAL PRESSURE
AO (ANALOG OUTPUT)	
1	FAN SPEED MODULATION
2	DISCHARGE AIR TEMPERATURE SET POINT



NOTES:
1. COMPONENTS AND WIRING SHOWN WITH LIGHT LINES SHALL BE FACTORY FURNISHED AND INSTALLED BY EQUIPMENT MANUFACTURER.
2. DEVICES AND WIRING SHOWN WITH DARK SOLID LINES SHALL BE FURNISHED AND FIELD INSTALLED BY THE CONTROLS CONTRACTOR.
3. WIRING SHOWN WITH LIGHT DASHED LINES SHALL BE FIELD INSTALLED BY DIVISION 26.

4 RTU W/POWER EF CONTROL DETAIL
NO SCALE

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

STEUBENVILLE CITY SCHOOLS

STEUBENVILLE HIGH SCHOOL STEM BUILDING

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PROJECT NO.
21042.000

SCHEDULES AND DETAILS

SCALE 12" = 1'-0"

M5-1

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23 22 10 - GRILLES AND DIFFUSERS - SLOT DIFFUSER SCHEDULE

NOTES:
1. COLOR OF CEILING-MOUNTED GRILLES AND DIFFUSERS SHALL BE WHITE UNLESS NOTED OTHERWISE. COLOR OF SIDEWALL AND EXPOSED REGISTERS, GRILLES, AND DIFFUSERS SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLOR PALETTE.

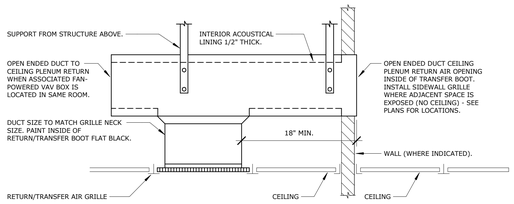
OPTIONS/ACCESSORIES:
1. PROVIDE WITH ALUMINUM FOIL BACKED INSULATION. PROVIDE WITH CENTER NOTCH.
2. PROVIDE WITH SDB(I)150-CF PLENUM.
3. PROVIDE WITH VCRBEC CABLE OPERATED DAMPER.
4.

MARK	SERVICE	PRICE MODEL #	OVERALL SIZE	NECK SIZE	THROW TYPE	MOUNTING TYPE	MAX FLOW	MAX NC	NUMBER OF SLOTS	WIDTH	OPTIONS/ACCESSORIES
I60/3	SUPPLY	LBMH 15A	61.5"x4.5"	60"x3"	DOUBLE DEFLECTION	WALL	265 CFM	20	1	5'	
LBMH 15A: 4											
H48	SUPPLY	TBDI3100	48" x 2"	8" OVAL = 4" x 10 1/8"	ICE-TONGS	LAY-IN	175 CFM	22	1	1"	1
TBDI3100: 10											
H48CN	SUPPLY	TBDI3100-CN	48" x 2"	8" OVAL = 4" x 10 1/8"	ICE-TONGS	LAY-IN	175 CFM	22	1	1"	1, 2
TBDI3100-CN: 24											
S48	SUPPLY	SDS150	48" x 3"	6" DIA	ICE-TONGS	SURFACE	160 CFM	25	1	1 1/2"	1, 3, 4
SDS150: 7											

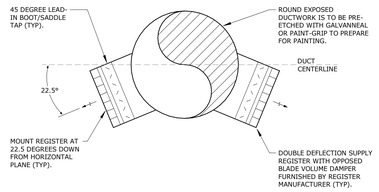
GRILLE AND DIFFUSER

NOTES: APPLICABLE TO EACH MARK
1. COLOR OF CEILING-MOUNTED GRILLES AND DIFFUSERS SHALL BE WHITE UNLESS NOTED OTHERWISE. COLOR OF SIDEWALL AND EXPOSED REGISTERS, GRILLES, AND DIFFUSERS SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLOR PALETTE.
2. ORIENT GRILLE BLADES PARALLEL TO LONG DIMENSION FOR CEILING APPLICATIONS, ORIENT PARALLEL WITH FLOOR FOR WALL MOUNTED APPLICATIONS.
3. SHEET METAL VISIBLE THROUGH THE GRILLE CORE SHALL BE PAINTED BLACK.

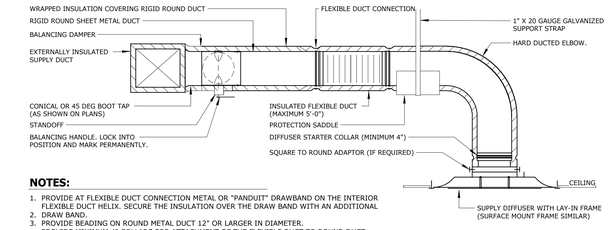
MARK	SERVICE	PRICE MODEL #	OVERALL SIZE	NECK SIZE	THROW TYPE	MOUNTING TYPE	MAX FLOW	MAX NC
CL6	SUPPLY	SPD	24"x24"	6" DIA	4 WAY	LAY-IN	210 CFM	25
CL6/1	SUPPLY	SPD	24"x24"	6" DIA	3 WAY	LAY-IN	210 CFM	25
CL6/3	SUPPLY	SPD	24"x24"	6" DIA	2 WAY	LAY-IN	210 CFM	25
CL8	SUPPLY	SPD	24"x24"	8" DIA	4 WAY	LAY-IN	330 CFM	25
CL8/1	SUPPLY	SPD	24"x24"	8" DIA	3 WAY	LAY-IN	330 CFM	25
CL8/3	SUPPLY	SPD	24"x24"	8" DIA	2 WAY	LAY-IN	330 CFM	25
CL10	SUPPLY	SPD	24"x24"	10" DIA	4 WAY	LAY-IN	470 CFM	25
CL12	SUPPLY	SPD	24"x24"	12" DIA	4 WAY	LAY-IN	630 CFM	25
CS8	SUPPLY	SPD	24"x24"	8" DIA	4 WAY	SURFACE	330 CFM	25
CS10	SUPPLY	SPD	24"x24"	10" DIA	4 WAY	SURFACE	470 CFM	25
CS12	SUPPLY	SPD	24"x24"	12" DIA	4 WAY	SURFACE	630 CFM	25
GC10/4	SUPPLY	520/F/S	11.75"x5.75"	10"x4"	DOUBLE DEFLECTION	CEILING	255 CFM	25
GW10/4	SUPPLY	520/F/S	11.75"x5.75"	10"x4"	DOUBLE DEFLECTION	WALL	255 CFM	25
GW10/6	SUPPLY	520/F/S	11.75"x7.75"	10"x6"	DOUBLE DEFLECTION	WALL	255 CFM	25
GW12/6	SUPPLY	520/F/S	13.75"x7.75"	12"x6"	DOUBLE DEFLECTION	WALL	255 CFM	25
PL10	RETURN	80	24"x12"	22" x 10"	-	LAY-IN	960 CFM	25
PL22	RETURN	80	24"x24"	22" x 22"	-	LAY-IN	2,000 CFM	25
UC10/10	EXHAUST	535/F/L	12"x12"	10"x10"	-	CEILING	310 CFM	25
UW6/6	EXHAUST	535/F/L	8"x8"	6"x6"	-	SURFACE	310 CFM	25



8 RETURN/TRANSFER AIR BOOT DETAIL (NO BALANCE DAMPER)
NO SCALE

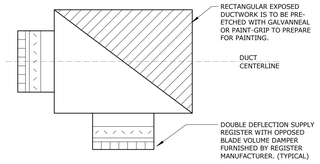


12 DUCT MOUNTED SUPPLY REGISTER DETAIL
NO SCALE



NOTES:
1. PROVIDE AT FLEXIBLE DUCT CONNECTION METAL OR "PANDUIT" DRAWBAND ON THE INTERIOR FLEXIBLE DUCT HELIX. SECURE THE INSULATION OVER THE DRAW BAND WITH AN ADDITIONAL
2. DRAW BAND.
3. PROVIDE BEADING ON ROUND METAL DUCT 12" OR LARGER IN DIAMETER. PROVIDE MINIMUM 4" COLLARS FOR ATTACHMENT OF THE FLEXIBLE DUCT TO ROUND DUCT,
4. DAMPERS AND DIFFUSERS. BAND RIGID ROUND DUCT INSULATION TO DUCT AND PROVIDE TAPE FOR INSULATION OVERLAP.

10 SUPPLY AIR DIFFUSER CONNECTION DETAIL
NO SCALE



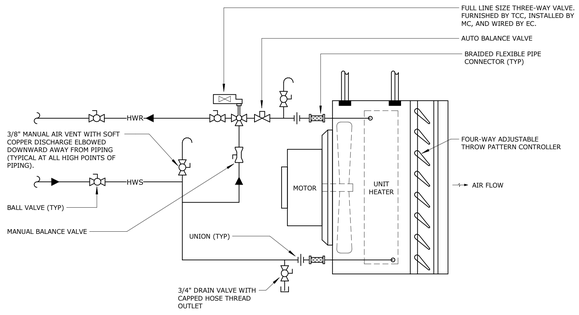
11 DUCT MOUNTED SUPPLY REGISTER DETAIL
NO SCALE

23 76 10 - HYDRONIC UNIT HEATER SCHEDULE (UH)

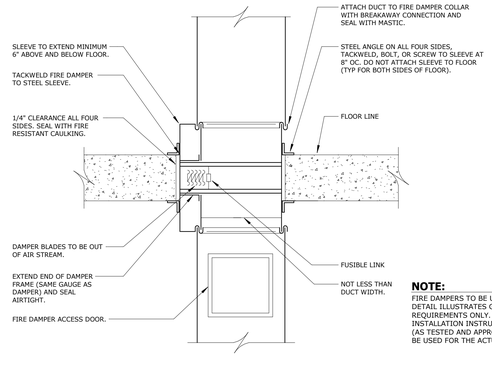
NOTES:
1.

OPTIONS/ACCESSORIES:
1.

MARK	MANUFACTURER	MODEL	TYPE	UNIT CONFIGURATION	INSTALLATION LOCATION	THROW	HEATING COIL					MOTOR						OPTIONS / ACCESSORIES
							REQUIRED MBH	GPM	EAT	EWT	LWT	DISCONNECT BY	QUANTITY	RPM	HP	VOLTS/ PHASE	FLA	
UH-1	MODINE	V42SB01SA	HORIZONTAL	CEILING HUNG	MECH 142	HORIZONTAL	14 MBH	1.1	1/15	140	115	MFR	1	1050	1/30	115/1	1.8	

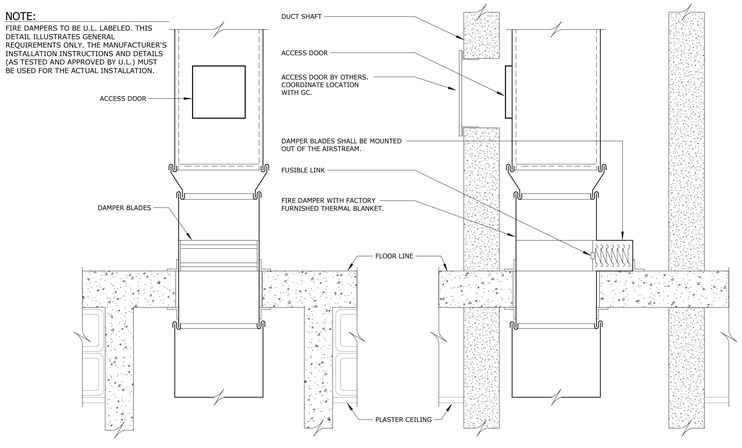


6 HORIZONTAL HYDRONIC UNIT HEATER PIPING DIAGRAM - THREE-WAY
NO SCALE



NOTE:
FIRE DAMPERS TO BE U.L. LABELED. THIS DETAIL ILLUSTRATES GENERAL REQUIREMENTS ONLY. THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND DETAILS (AS TESTED AND APPROVED BY U.L.) MUST BE USED FOR THE ACTUAL INSTALLATION.

2 HORIZONTAL CURTAIN-STYLE FIRE DAMPER DETAIL
NO SCALE



5 HORIZONTAL FIRE DAMPER INSTALLATION DETAIL
NO SCALE

23 77 10 - HYDRONIC CABINET UNIT HEATER SCHEDULE (CUH)

NOTES:
1. SELECTION BASED ON ENTERING AIR TEMPERATURE OF 60°F, ENTERING WATER TEMPERATURE OF 140°F, AND 25°F WATER TEMPERATURE DIFFERENCE.
2. FURNISH WITH HIGH CAPACITY 2-ROW HEATING COIL.

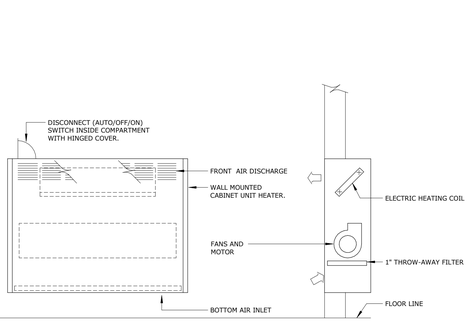
MARK	MANUFACTURER	MODEL	UNIT CONFIGURATION	INSTALLATION	GPM	WPD	DESIGN MBH	DISCONNECT BY	MOTOR QUANTITY	MOTOR HORSEPOWER	VOLTS/PHASE	MOTOR FLA	CONTROL VALVE
CUH-3	MODINE	CW 008	WALL MOUNTED	STAIR A 1ST	2.0	0.1 FT	24.1 MBH	MFR	2	0.03/ 0.05	115/1	1.75	3-WAY
CUH-4	MODINE	CW 004	WALL PARTIALLY RECESSED	STAIR A 3RD	1.0	0.1 FT	11.7 MBH	MFR	1	0.05	115/1	1.05	3-WAY
CUH-5	MODINE	CW 008	WALL MOUNTED	STAIR B 1ST	2.0	0.1 FT	24.1 MBH	MFR	2	0.03/ 0.05	115/1	1.75	3-WAY
CUH-6	MODINE	CW 004	WALL PARTIALLY RECESSED	STAIR B 3RD	1.0	0.1 FT	11.7 MBH	MFR	1	0.05	115/1	1.05	3-WAY
CUH-7	MODINE	CW 002	CEILING RECESSED	VESTIBULE 100A	0.5	0.1 FT	6.2 MBH	MFR	1	0.03	115/1	0.7	3-WAY
CUH-8	MODINE	CW 002	CEILING RECESSED	VESTIBULE 150	0.5	0.1 FT	6.2 MBH	MFR	1	0.03	115/1	0.7	3-WAY

23 77 30 - ELECTRIC CABINET UNIT HEATER SCHEDULE (CUH)

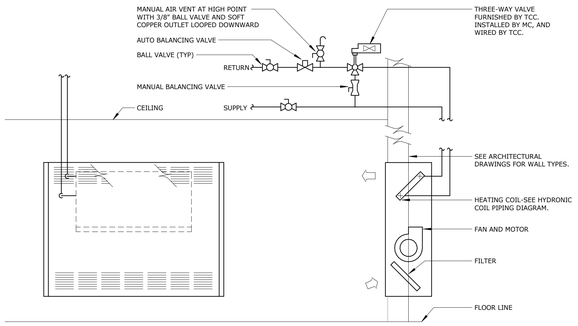
NOTES:
1. COORDINATE COLOR WITH ARCHITECT.

OPTIONS/ACCESSORIES:
1.

MARK	MANUFACTURER	MODEL	INSTALLATION	SERVICE	CFM	CAPACITY	ELECTRICAL			OPTIONS/ACCESSORIES
							VOLTS/PHASE	MCA	DISCONNECT SWITCH	
CUH-1	MARKEL	63T33D0548338SSD0	FULLY RECESSED	VESTIBULE 100	250	5 KW	480/3	7.8	MFR	
CUH-2	MARKEL	63T33D0548338SSD0	FULLY RECESSED	VESTIBULE 100	250	5 KW	480/3	7.8	MFR	



13 ELECTRIC CABINET HEATER INSTALLATION DETAIL - FULLY RECESSED
NO SCALE



4 HYDRONIC CABINET UNIT HEATER INSTALLATION DETAIL - VERTICAL FULLY RECESSED
NO SCALE

23 72 10 - HYDRONIC PANEL RADIATOR

NOTES:
1. SELECTION BASED ON ENTERING AIR TEMPERATURE OF 60° F, ENTERING WATER TEMPERATURE OF 140° F, AND 20° F WATER TEMPERATURE DIFFERENCE.
2. PROVIDE WITH PEDESTAL STANDS, SADDLE END PIECES, AND PERFORATED COVER.

MARK	MANUFACTURER	MODEL	AREA SERVED	TOTAL CAPACITY	LENGTH	GPM	INSTALLATION TYPE
HPR-1	ZEHNDER RITTLING	PR2F-2	MAIN LOBBY	531 BTU/H	15' - 1 11/32"	0.8	SAME END PIPING CONNECTIONS W/ PEDESTAL MOUNT
HPR-2	ZEHNDER RITTLING	PR2F-2	MAIN LOBBY	531 BTU/H	14' - 10 5/8"	0.8	SAME END PIPING CONNECTIONS W/ PEDESTAL MOUNT

3 HYDRONIC PANEL RADIATOR PIPING DETAIL (HPR)
NO SCALE

1 FLUSH CEILING MOUNTED CUH INSTALLATION DETAIL
NO SCALE

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

SCHEDULES AND DETAILS

SCALE
As indicated

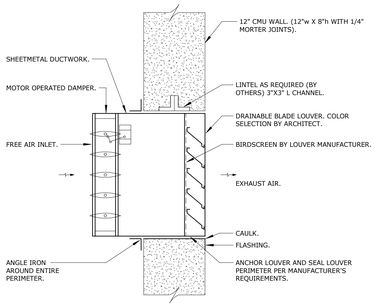
M5-4

23 23 10 - LOUVER SCHEDULE

NOTES:
1. FURNISH WITH WIRE MESH ALUMINUM BIRD SCREEN.

OPTIONS AND ACCESSORIES:
1. FURNISH WITH INTEGRAL MOTOR OPERATED DAMPER.

					OVERALL DIMENSIONS			PERFORMANCE			
MARK	MANUFACTURER	MODEL	FREE AREA RATIO	SERVICE	WIDTH	HEIGHT	DEPTH	CFM	FREE AREA VELOCITY	MAX APD (IN. W.G.)	OPTIONS/ACCESSORIES
L-2	GREENHECK	ESD-435	0.48	EF-5	28"	28"	4"	705 CFM	270 FPM	0.01	
L-3	GREENHECK	ESD-435	0.3	EF-6	12"	12"	4"	225 CFM	750 FPM	0.08	



6 LOUVER INSTALLATION DETAIL
NO SCALE

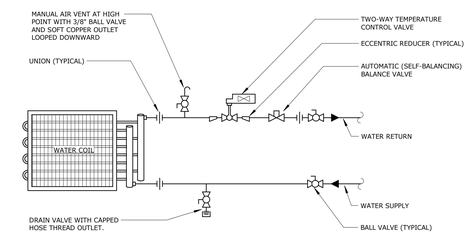
FURNISHED BY OWNER. INSTALLED BY CONTRACTOR.

23 74 20 - SERIES FAN POWERED VAV BOX SCHEDULE - HYDRONIC HEAT

NOTES:
1. FURNISH BOXES WITH MIN 0.25" WC OF EXTERNAL STATIC PRESSURE.
2. FURNISH UNITS WITH 1/2" MATTE INSULATION.
3. FURNISH WITH INTEGRAL DISCONNECT.
4. FURNISH BOXES WITH MIN 2 ROW COIL.

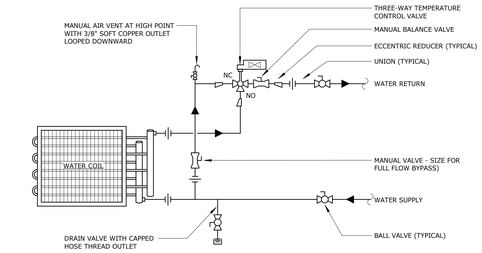
OPTIONS/ACCESSORIES:
1.

			PRIMARY AIR						AIRSIDE				WATERSIDE					ELECTRICAL DATA				
MARK	MANUFACTURER	MODEL	MAX	MIN	SIZE	ESP	HP	CAPACITY (MBH)	HEATING CFM	EAT	LAT	MAX APD	GPM	EWT	LWT	MAX WPD	CONTROL VALVE	VOLTS/ PHASE	FLA	MCA	MOCP	OPTIONS/ACCESSORIES
FP1-0	TRANE	VSWF	1640	495	14	0.25	1/8	50.4	1640	65.5	93.8	0.1	2.5	140	100	3.8	2-WAY	277/1	0.7	0.88	15	
FP1-1	TRANE	VSWF	660	160	8	0.25	1/8	14.3	525	65.5	90.6	0.09	0.7	140	100	0.6	3-WAY	277/1	0.7	0.88	15	
FP1-2	TRANE	VSWF	200	60	6	0.25	1/8	7.0	170	65.3	99.3	0.02	0.4	140	100	0.2	2-WAY	277/1	0.7	0.88	15	
FP1-3	TRANE	VSWF	1230	335	12	0.25	1/3	25.3	1105	63.8	93.0	0.27	1.3	140	100	0.6	2-WAY	277/1	1.6	2	15	
FP1-4	TRANE	VSWF	320	70	6	0.25	1/8	7.1	220	64.8	99.3	0.03	0.4	140	100	0.2	2-WAY	277/1	0.7	0.88	15	
FP1-5	TRANE	VSWF	100	60	6	0.25	1/8	7.0	175	65.3	99.3	0.02	0.4	140	100	0.2	2-WAY	277/1	0.7	0.88	15	
FP1-6	TRANE	VSWF	780	230	10	0.25	1/3	21.4	765	64.7	95.0	0.20	1.1	140	100	0.4	3-WAY	277/1	1.6	2	15	
FP1-7	TRANE	VSWF	1860	555	16	0.25	1/2	42.2	1840	62.5	97.8	0.14	2.1	140	100	2.7	2-WAY	277/1	3.8	4.75	15	
FP1-8	TRANE	VSWF	550	135	8	0.25	1/8	8.2	450	59.3	98.9	0.06	0.4	140	100	0.2	2-WAY	277/1	0.7	0.88	15	
FP1-9	TRANE	VSWF	660	195	10	0.25	1/8	13.7	645	63.5	91.6	0.09	0.7	140	100	0.5	2-WAY	277/1	0.7	0.88	15	
FP1-10	TRANE	VSWF	475	155	8	0.25	1/8	11.2	510	62.9	94.7	0.08	0.6	140	100	0.4	2-WAY	277/1	0.7	0.88	15	
FP1-11	TRANE	VSWF	450	150	8	0.25	1/8	12.4	500	64.4	93.0	0.08	0.6	140	100	0.4	2-WAY	277/1	0.7	0.88	15	
FP1-12	TRANE	VSWF	445	135	8	0.25	1/8	12.9	445	65.5	92.3	0.06	0.7	140	100	0.5	2-WAY	277/1	0.7	0.88	15	
FP1-13	TRANE	VSWF	705	215	10	0.25	1/3	22.1	705	65.5	94.5	0.17	1.1	140	100	0.5	2-WAY	277/1	1.6	2	15	
FP1-14	TRANE	VSWF	380	105	8	0.25	1/8	10.7	330	65.2	95.0	0.03	0.5	140	100	0.3	3-WAY	277/1	0.7	0.88	15	
FP1-15	TRANE	VSWF	215	65	6	0.25	1/8	7.7	215	65.5	98.5	0.03	0.4	140	100	0.2	2-WAY	277/1	0.7	0.88	15	
FP2-0	TRANE	VSWF	1420	425	14	0.25	1/2	40.6	1405	65.5	92.2	0.26	2.0	140	100	1.4	2-WAY	277/1	2.4	3	15	
FP2-1	TRANE	VSWF	750	230	10	0.25	1/3	22.3	755	65.1	94.4	0.19	1.1	140	100	0.5	2-WAY	277/1	1.6	2	15	
FP2-2	TRANE	VSWF	1200	500	12	0.25	1/3	29.9	1165	65.2	90.3	0.30	1.5	140	100	0.8	2-WAY	277/1	1.6	2	15	
FP2-3	TRANE	VSWF	1420	500	12	0.25	1/3	26.9	1125	64.4	92.0	0.28	1.4	140	100	0.7	2-WAY	277/1	1.6	2	15	
FP2-4	TRANE	VSWF	960	500	12	0.25	1/3	23.9	955	64.3	93.7	0.20	1.2	140	100	0.5	2-WAY	277/1	1.6	2	15	
FP2-5	TRANE	VSWF	1215	340	12	0.25	1/3	29.1	1130	65.2	90.7	0.28	1.5	140	100	0.8	2-WAY	277/1	1.6	2	15	
FP2-6	TRANE	VSWF	1200	500	12	0.25	1/3	30.0	1200	65.1	90.2	0.32	1.5	140	100	0.8	2-WAY	277/1	1.6	2	15	
FP2-7	TRANE	VSWF	1600	485	16	0.25	1/2	49.9	1610	65.5	94.1	0.09	2.5	140	100	3.7	3-WAY	277/1	3.8	4.75	15	
FP2-8	TRANE	VSWF	150	60	6	0.25	1/8	7.0	150	65.3	99.3	0.01	0.4	140	100	0.2	2-WAY	277/1	0.7	0.88	15	
FP3-0	TRANE	VSWF	1660	500	14	0.25	1/2	50.7	1660	65.5	93.7	0.10	2.5	140	100	3.8	3-WAY	277/1	3.8	4.75	15	
FP3-1A	TRANE	VSWF	1495	405	14	0.25	1/3	31.6	1340	65.0	89.3	0.36	1.6	140	100	0.9	3-WAY	277/1	2	2.5	15	
FP3-1B	TRANE	VSWF	1320	405	14	0.25	1/3	31.6	1340	65.0	89.3	0.36	1.6	140	100	0.9	2-WAY	277/1	2	2.5	15	
FP3-2A	TRANE	VSWF	1240	370	12	0.25	1/3	22.3	1230	60.8	95.1	0.33	1.1	140	100	0.5	2-WAY	277/1	1.6	2	15	
FP3-2B	TRANE	VSWF	1240	370	12	0.25	1/3	22.3	1230	60.8	95.1	0.33	1.1	140	100	0.5	2-WAY	277/1	1.6	2	15	
FP3-2C	TRANE	VSWF	1875	520	16	0.25	1/2	39.9	1730	62.2	99.0	0.12	2.0	140	100	2.5	2-WAY	277/1	3.8	4.75	15	
FP3-3	TRANE	VSWF	985	435	12	0.25	1/3	27.9	995	65.5	91.3	0.22	1.4	140	100	0.7	2-WAY	277/1	1.6	2	15	
FP3-4	TRANE	VSWF	685	210	10	0.25	1/8	14.5	685	63.8	90.6	0.11	0.7	140	100	0.6	2-WAY	277/1	0.7	0.88	15	
FP3-5	TRANE	VSWF	1260	380	12	0.25	1/3	41.1	1260	65.5	95.6	0.33	3.0	140	100	2.8	2-WAY	277/1	2	2.5	15	
FP3-6	TRANE	VSWF	900	735	10	0.25	1/3	22.6	850	64.5	94.3	0.24	1.1	140	100	0.5	2-WAY	277/1	1.6	2	15	
Grand total: 35																						



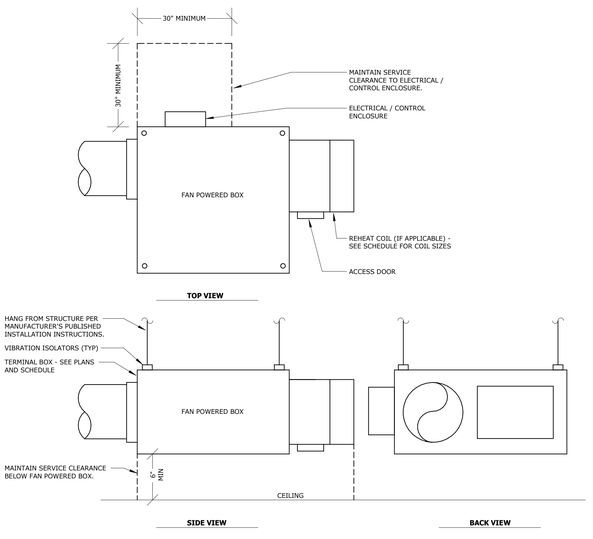
NOTES:
1. CONNECT WATER SUPPLY PIPING TO LEAVING AIR SIDE OF COIL.
2. PROVIDE UNIONS AND /OR FLANGES FOR REMOVAL OR SERVICE OF COMPONENTS.

3 HYDRONIC COIL PIPING DIAGRAM - SERIES FAN POWERED TB (2-WAY AUTO)
NO SCALE

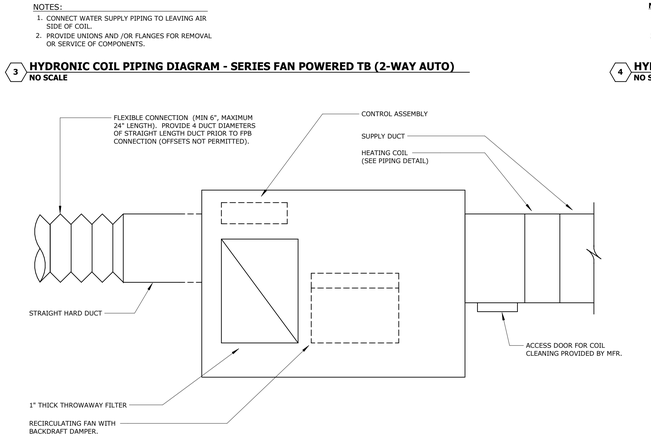


NOTES:
1. CONNECT WATER SUPPLY PIPING TO LEAVING AIR SIDE OF COIL.
2. PROVIDE UNIONS AND/OR FLANGES FOR REMOVAL OR SERVICE OF COMPONENTS.

4 HYDRONIC COIL PIPING DIAGRAM -SERIES FAN POWERED TB (3-WAY)
NO SCALE



2 FAN POWERED TERMINAL BOX INSTALLATION DETAIL
NO SCALE



1 FAN POWERED VAV BOX CONNECTION DETAIL
NO SCALE

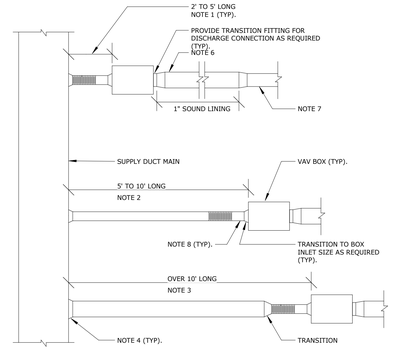
NOTES:
1. PROVIDE 2' MIN. STRAIGHT FLEXIBLE DUCT AT BOX INLET (TYP).
2. PROVIDE 5' MAX FLEXIBLE DUCT OF STANDARD INLET DUCT SIZE PLUS SHEET METAL DUCT OF STANDARD INLET DUCT SIZE FOR COMBINED LENGTH UP TO 10' MAX (SEE SCHEDULE FOR SIZES).
3. PROVIDE 5' MAX FLEXIBLE DUCT OF STANDARD INLET DUCT SIZE PLUS SHEET METAL DUCT OF INCREASED INLET DUCT SIZE FOR COMBINED LENGTH OVER 10' LONG (SEE SCHEDULE FOR SIZES).

STANDARD INLET DUCT SIZE	6"Ø	8"Ø	10"Ø	12"Ø	14"Ø	
INCREASED INLET DUCT SIZE	8"Ø	10"Ø	12"Ø	14X12	18X12	

4. PROVIDE RECTANGULAR TO ROUND, CONICAL TAP, OR EQUIVALENT AT EACH CONNECTION TO SUPPLY DUCT MAIN.
5. RUN LINING FOR 10 FT OR THRU FIRST ELBOW (TYP).
6. SEE SCHEDULE FOR LOW PRESSURE DUCT SIZE.

STANDARD INLET DUCT SIZE	6"Ø	8"Ø	10"Ø	12"Ø	14"Ø	
INCREASED INLET DUCT SIZE	10X8	16X8	18X10	24X10	24X12	

7. PROVIDE DOWNSTREAM TRANSITION WHERE SHOWN ON PLANS (TYP).
8. PROVIDE MINIMUM 2-1/2 DUCT DIAMETERS OF STRAIGHT DUCT FOR COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS (TYP).



5 DUAL DUCT - VAV BOX DETAIL
NO SCALE

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

SCHEDULES AND DETAILS

SCALE As indicated

M5-5

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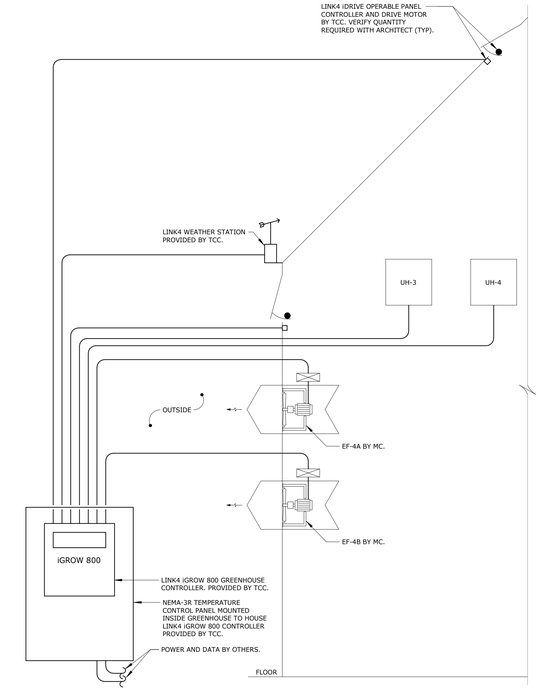
ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

ALTERNATE NO. G-1



5 **GREENHOUSE CONTROL DIAGRAM**
NO SCALE

23 50 50 - PROPELLER FAN (GREENHOUSE)

NOTES:
1. DISCONNECT SWITCH BY EC.

OPTIONS/ACCESSORIES:
1. PROVIDE INTEGRAL BACKDRAFT DAMPER.

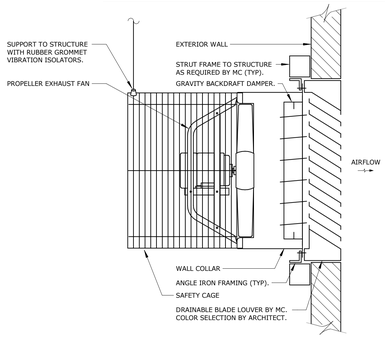
MARK	MANUFACTURER	MODEL	SERVICE	FAN DATA			ELECTRICAL DATA				OPTIONS/ACCESSORIES
				FLOW	ESP	DRIVE TYPE	VOLTS/ PHASE	HP	BHP	DISCONNECT BY	
EF-4A	GREENHECK	AER-E30C-310-VG	GREENHOUSE	3000	0.25	DIRECT	115/1	1/2	0.1	EC	1
EF-4B	GREENHECK	AER-E30C-310-VG	GREENHOUSE	3000	0.25	DIRECT	115/1	1/2	0.1	EC	1

23 76 40 - GAS-FIRED UNIT HEATER SCHEDULE

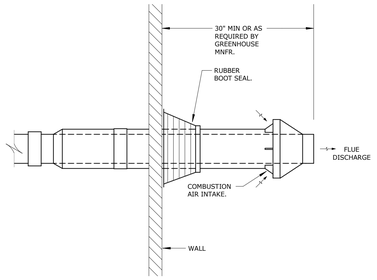
NOTES:
1. FURNISH WITH 4" HORIZONTAL CONCENTRIC VENT KIT.

OPTIONS/ACCESSORIES:
1.

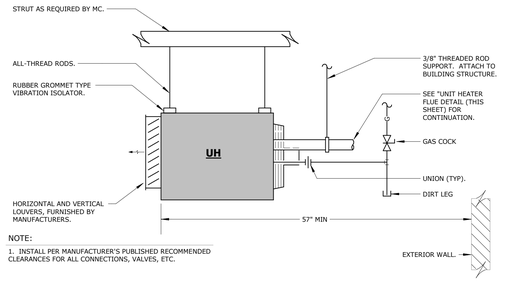
MARK	MANUFACTURER	MODEL	TYPE	UNIT CONFIGURATION	HEATING INPUT MBH	HEATING OUTPUT MBH	GAS PRESSURE	SERVICE	CFM	ELECTRICAL			
										MOTOR HP	FLA	VOLTS/PHASE	DISCONNECT RESPONSIBILITY
UH-2	MODINE	GAS	HORIZONTAL	CEILING HUNG	175	143.5	6-7" WC	GREENHOUSE	2725	1/6	2.5	115/1	EC
UH-3	MODINE	GAS	HORIZONTAL	CEILING HUNG	175	143.5	6-7" WC	GREENHOUSE	2725	1/6	2.5	115/1	EC



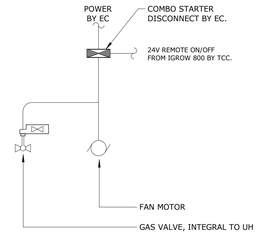
1 **PROPELLER FAN INSTALLATION DETAIL**
NO SCALE



2 **UNIT HEATER FLUE DETAIL**
NO SCALE



3 **GAS-FIRED UNIT HEATER DETAIL**
NO SCALE



4 **GAS FIRED UNIT HEATER CONTROL DETAIL**
NO SCALE

23 73 10 - SINGLE DUCT TERMINAL BOX SCHEDULE - HYDRONIC REHEAT

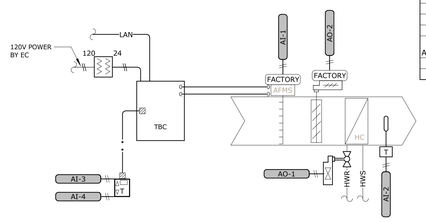
NOTES:
1. COIL'S PERFORMANCE SHALL BE BASED ON 140°F EWT AND 100°F EAT.
2. MAXIMUM AIR PRESSURE DROP THROUGH EACH COIL SHALL NOT EXCEED 0.3" W.G.
3. MAXIMUM WATER PRESSURE DROP THROUGH EACH COIL SHALL NOT EXCEED 10 FT W.G.
4. ALL REHEAT COILS SHALL BE AT LEAST 2 ROWS.
5. ALL TERMINAL UNITS WITH 4-ROW COILS SHALL BE FURNISHED WITH OVERSIZED CASINGS AND COILS.
6. MAINTAIN SERVICE AND OPERATIONAL CLEARANCES AROUND CONTROL ENCLOSURE, COIL PIPING, AND DUCT ACCESS DOORS PER MFR RECOMMENDATIONS.
7. FURNISH TERMINAL UNIT WITH INSULATED ACCESS DOOR UPSTREAM OF REHEAT COIL.
8. FURNISH TERMINAL UNIT WITH FIBER FREE FOAM LINING. UNLESS NOTED OTHERWISE IN OPTIONS.
9. MANUFACTURER SHALL FURNISH HANGER BRACKETS

OPTIONS:
1. FURNISH TERMINAL UNIT WITH OVERSIZED CASING SERVING NOISE SENSITIVE AREAS.
2. FURNISH TERMINAL UNIT WITH UN-FACED FIBERGLASS LINING, 1.5 LB/FT3 DENSITY MINIMUM.
3. PROVIDE TERMINAL BOX WITH ATTENUATOR.
4. FURNISH TERMINAL UNIT WITH EITHER: 1. FACTORY CONTROLLER AND DAMPER ACTUATOR, 2. CONTROLLER AND DAMPER ACTUATOR FURNISHED BY CONTROLS CONTRACTOR AND FIELD INSTALLED, 3. CONTROLLER AND DAMPER ACTUATOR FURNISHED BY CONTROLS CONTRACTOR AND FACTORY INSTALLED.
5. FURNISH FACTORY CONTROLLER TO INTEGRATE WITH EXISTING BAS SYSTEM AND INTEGRAL 24V TRANSFORMER.

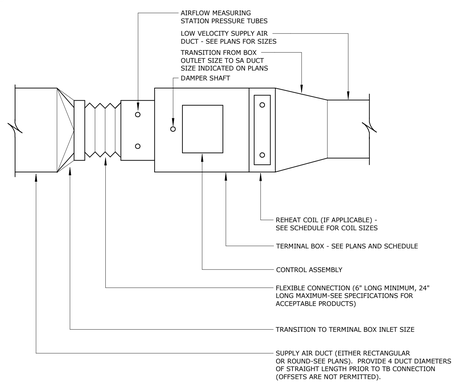
MARK	MANUFACTURER	MODEL	SIZE	MAX COOLING CFM	MIN COOLING CFM	HEATING CFM	HYDRONIC REHEAT COIL		OPTIONS/ACCESSORIES
							DESIGN MBH	GPM	
TB-1	TRANE	VCWF	16" DIA	2,700	810	1000	46.3	3.7	4.(1.), 5
TB-2	TRANE	VCWF	16" DIA	2,700	810	1000	51.3	5.7	4.(1.), 5
TB-3	TRANE	VCWF	10" DIA	535	200	300	15.9	4.0	4.(1.), 5

23 73 10 - CONTROL POINTS SCHEDULE (WITH RHC)

POINT NUMBER	POINT DESCRIPTION
AI (ANALOG INPUT)	
1	SUPPLY AIR CFM
2	DISCHARGE AIR TEMPERATURE
3	ZONE TEMPERATURE
4	ZONE TEMPERATURE SETPOINT
AO (ANALOG OUTPUT)	
1	HEATING WATER CONTROL VALVE MODULATION
2	DAMPER MODULATION



6 **DDC TERMINAL BOX (WITH RHC) CONTROL DETAIL**
NO SCALE



7 **TERMINAL BOX DUCT CONNECTION DETAIL**
NO SCALE

ALTERNATE NO. G-2

23 60 10 - PACKAGED RTU SCHEDULE (PART 1) EXISTING BUILDING

NOTES:
1. FURNISH WITH REQUIRED ACESSORIES TO TIE-IN TO EXISTING BAS SYSTEM.
2. FURNISH WITH ROOF CURB.

OPTIONS/ACCESSORIES:
1.

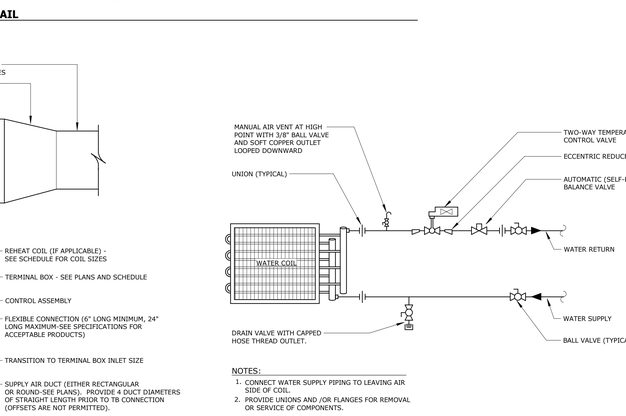
MARK	MANUFACTURER	MODEL	GENERAL			SUPPLY FAN DATA							POWER EXHAUST		
			UNIT AIRFLOW		WEIGHT	ESP	TSP	FAN TYPE	FAN RPM	DRIVE	BHP	MHP	FAN COUNT	FAN TYPE	DRIVE
			SUPPLY	OA											
AC-3	TRANE	HD240G4RVD	6000	1200	2859	1	1.32	CENTRIFUGAL	814	BELT	5.65	5	1	CENTRIFUGAL	DIRECT

23 60 10 - PACKAGED RTU SCHEDULE (PART 2) EXISTING BUILDING

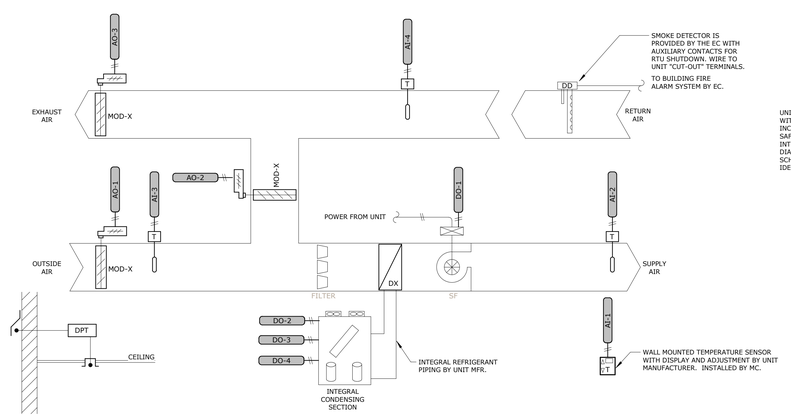
NOTES:
1.

OPTIONS/ACCESSORIES:
1.

MARK	DIRECT EXPANSION COOLING COIL DATA												GAS HEAT				FILTER		ELECTRICAL DATA			OPTIONS/ACCESSORIES
	TOTAL MBH	SENSIBLE MBH	ENTERING AIR		LEAVING AIR		STAGES OF COOLING	QTY. OF REFRIGERANT CIRCUITS	REFRIGERANT TYPE	COMPRESSOR		EFFICIENCY DATA		EAT	LAT	MAX INPUT (MBH)	MAX OUTPUT (MBH)	EFFICIENCY	FACE AREA	VOLTS/PHASE	MCA	MOCP	
			DRY BULB	WET BULB	DRY BULB	WET BULB				QUANTITY	TYPE	EER	IEER/SEER									
AC-3	180.52	142.17	80	67	58.06	57.30	3	2	R-410	2	SCROLL	12.0	15.00	70	113.01	350	280	2" MERV 14	20" x 20"/20"x16"	460/3	33.00	45.00	



8 **HYDRONIC COIL PIPING DIAGRAM (2-WAY AUTO)**
NO SCALE



9 **RTU CONTROL DETAIL**
NO SCALE

UNIT SHALL BE FURNISHED WITH FACTORY CONTROLS, INCLUDING ALL REQUIRED SAFETY DEVICES AND INTERLOCKS. CONTROL DIAGRAM AND POINTS SCHEDULE IS SHOWN TO IDENTIFY UNIT LAYOUT ONLY.

23 60 10 - RTU CONTROL POINTS SCHEDULE

POINT NUMBER	POINT DESCRIPTION
AI (ANALOG INPUT)	
1	ROOM AIR TEMPERATURE
2	SUPPLY AIR TEMPERATURE
3	OUTDOOR AIR TEMPERATURE
4	RETURN AIR TEMPERATURE
AO (ANALOG OUTPUT)	
1	OUTSIDE AIR DAMPER MODULATION
2	RETURN DAMPER MODULATION
3	EXHAUST DAMPER MODULATION
DO (DIGITAL OUTPUT)	
1	SUPPLY FAN START/STOP
2	STAGE 1 COOLING
3	STAGE 1 COOLING
4	CONDENSER FAN START/STOP

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PROJECT NO.
21042.000

ALTERNATE SCHEDULES AND DETAILS

SCALE
As indicated

M5-6

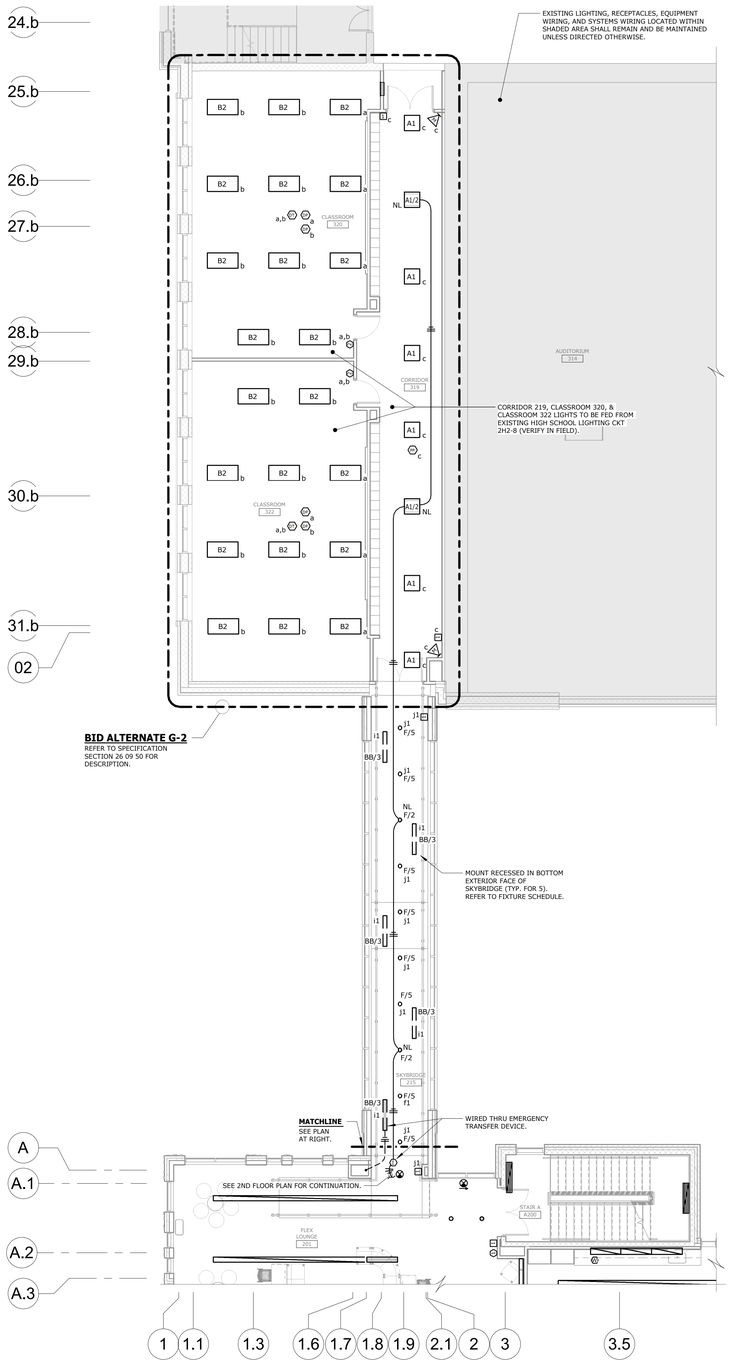
LIGHTING CONTROL PANEL "LC1"					
RELAY	BRANCH CIRCUIT	DESCRIPTION	CONTROL TYPE	CONTROL (SEE LEGEND)	REMARKS
a1	1-4A-2	1ST FLOOR LOBBY, CORRIDOR DOWNLIGHTS	RELAY	1,3	
b1	1-4A-2	LOBBY STEP ACCENT LIGHTS	0-10V	1	
c1	1-4A-2	HEALTH CLINIC CORRIDOR	RELAY	1,3	
d1	1-4A-5	LOBBY DECORATIVE PENDANTS	0-10V	1,3	PROGRAMMED BY EC. COORDINATE SCHEDULE WITH OWNER
e1	1-4A-5	LOBBY HIGH BAY DOWNLIGHTS	0-10V	1,3	
f1	1-4A-5	2ND FLOOR CORRIDOR DOWNLIGHTS	RELAY	1,3	
g1	1-4A-7	3RD FLOOR CORRIDOR DOWNLIGHTS	RELAY	1,3	
h1	1-4A-3	MAIN ENTRY EXTERIOR WALL RED LIGHT	0-10V	1,2	
i1	1-4A-3	EXTERIOR SITE LIGHTING	RELAY	1,2	
j1	1-4A-5	2ND FLOOR SKYBRIDGE DOWNLIGHTS	RELAY	1,3	
k1	1-4A-9	EXTERIOR SIGNAGE	RELAY	1,3	
l1					
m1					
n1					
o1					
p1					

NOTES:
1. LIGHTING CONTROL PANEL FED FROM CIRCUIT 1-4A-1.
2. REFER TO SPECIFICATIONS 26 09 16 FOR DESCRIPTION.
3. FINAL TIMECLOCK SCHEDULES TO BE DETERMINED BY OWNER.
4. RELAY "h1" MUST AUTOMATICALLY TURN OFF FROM MIDNIGHT UNTIL 6 A.M. TO COMPLY WITH LEED REQUIREMENTSFOR EXTERIOR LIGHT POLLUTION REDUCTION.

CONTROL LEGEND:
1. TIMECLOCK
2. PHOTOCELL
3. LV SWITCH

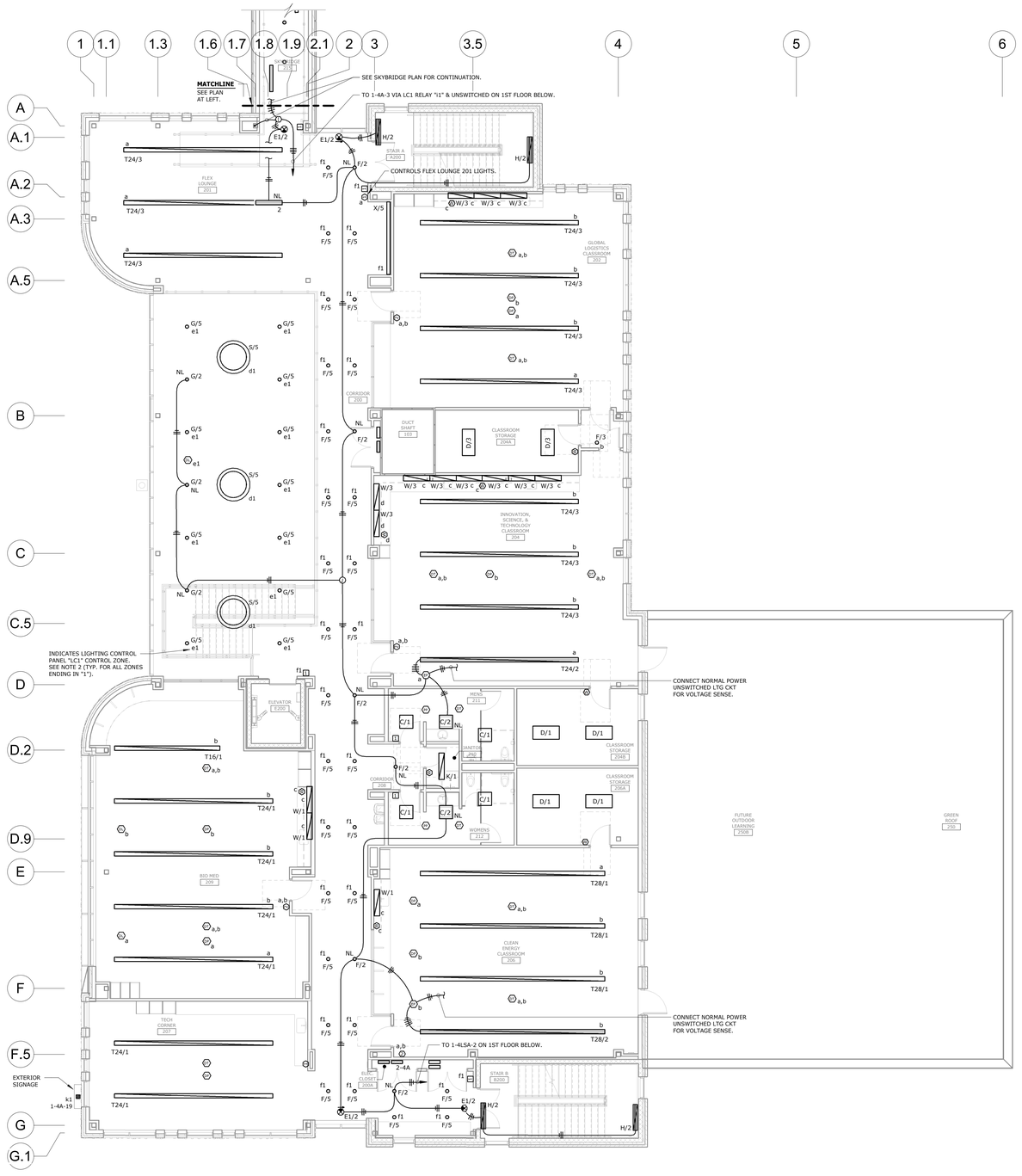
NOTES:

1. WIRING SHOWN ONLY FOR EMERGENCY LIGHTING. REFER TO LIGHTING CONTROL WIRING DIAGRAMS ON E1-3 FOR NORMAL POWER LIGHTING DETAILS.
2. ALL LIGHTING CONTROL PANEL "LC1" CONTROL ZONES ARE FED FROM 1ST FLOOR PANEL 1-4A. ALL OTHER NON-EMERGENCY 2ND FLOOR LIGHTING IS FED FROM PANEL 2-4A.
3. BRANCH CIRCUIT CONDUCTOR SIZES SHALL MINIMALLY BE #12 AWG. WHERE THE LENGTH OF A HOMERUN, FROM PANEL TO FIRST DEVICE, EXCEEDS 75 FEET FOR A 120 VOLT CIRCUIT OR 175 FEET FOR A 277 VOLT CIRCUIT, THE MINIMUM CONDUCTOR SIZE SHALL BE #10 AWG.
4. MC TYPE CABLE MAY BE USED FOR BRANCH CIRCUIT WIRING CONCEALED ABOVE CEILINGS AND IN STUD WALLS. ALL BRANCH CIRCUIT HOMERUNS SHALL BE INSTALLED IN CONDUIT. ALL BRANCH CIRCUIT WIRING INSTALLED EXPOSED IN FINISHED SPACES SHALL BE IN CONDUIT.
5. CONDUIT SHALL BE RAN CONCEALED ABOVE CEILINGS AND IN WALLS AS MUCH AS POSSIBLE. FURNISH AND INSTALL QUANTITY AND SIZE OF WIRES REQUIRED BY CIRCUIT INDICATED. INSTALL A GREEN INSULATED COPPER GROUND CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250-122.



EXISTING THIRD FLOOR & SKYBRIDGE - LIGHTING

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



SECOND FLOOR - LIGHTING

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

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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STATE OF OHIO
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6609
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5/20/2022

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PROJECT NO.
21042.000

SECOND FLOOR - LIGHTING

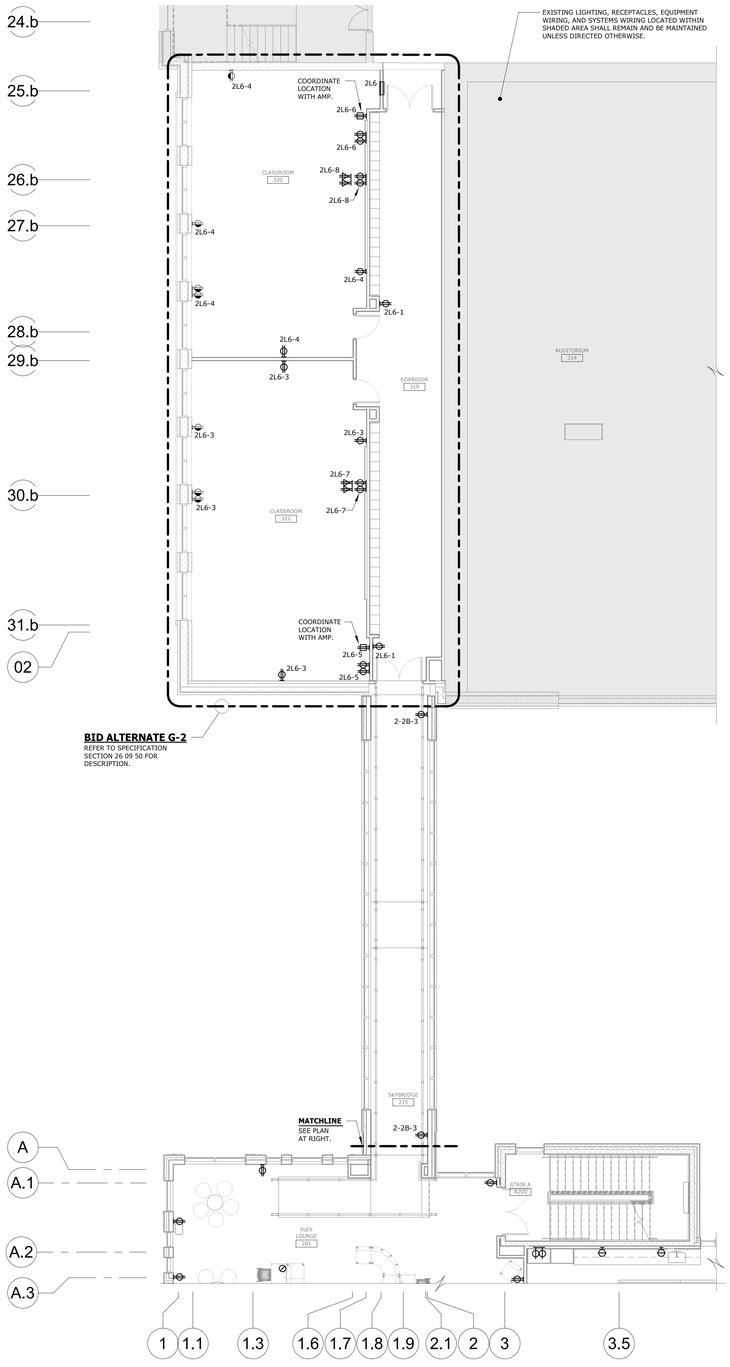
SCALE
As indicated

E1-2

File: C:\Users\jschneider\Documents\060-21-07 Elec R22_JSchneider\JDD3N.rvt
Date: 3/15/2024 7:16:02 AM

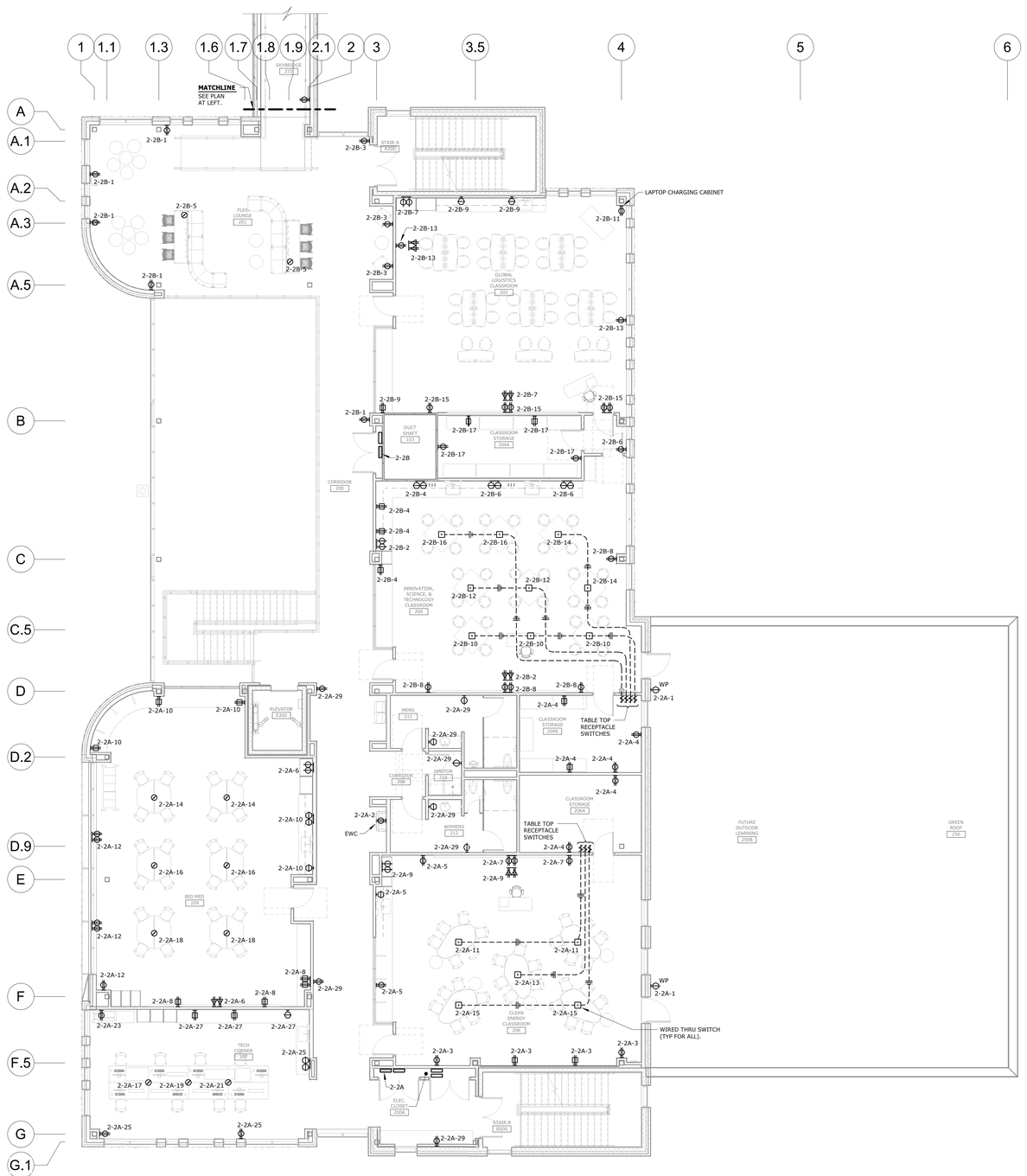
NOTES:

1. BRANCH CIRCUIT CONDUCTOR SIZES SHALL MINIMALLY BE #12 AWG. WHERE THE LENGTH OF A HOMERUN, FROM PANEL TO FIRST DEVICE, EXCEEDS 75 FEET FOR A 120 VOLT CIRCUIT OR 175 FEET FOR A 277 VOLT CIRCUIT, THE MINIMUM CONDUCTOR SIZE SHALL BE #10 AWG.
2. MC TYPE CABLE MAY BE USED FOR BRANCH CIRCUIT WIRING CONCEALED ABOVE CEILINGS AND IN STUD WALLS. ALL BRANCH CIRCUIT HOMERUNS SHALL BE INSTALLED IN CONDUIT. ALL BRANCH CIRCUIT WIRING INSTALLED EXPOSED IN FINISHED SPACES SHALL BE IN CONDUIT.
3. CONDUIT SHALL BE RAN CONCEALED ABOVE CEILINGS AND IN WALLS AS MUCH AS POSSIBLE. FURNISH AND INSTALL QUANTITY AND SIZE OF WIRES REQUIRED BY CIRCUIT INDICATED. INSTALL A GREEN INSULATED COPPER GROUND CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250-122.



EXISTING THIRD FLOOR & SKYBRIDGE - RECEPTACLES

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



SECOND FLOOR - RECEPTACLES

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

0' 4' 8' 16'

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ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

PROJECT NO.
21042.000

SCALE
As indicated

E2-2

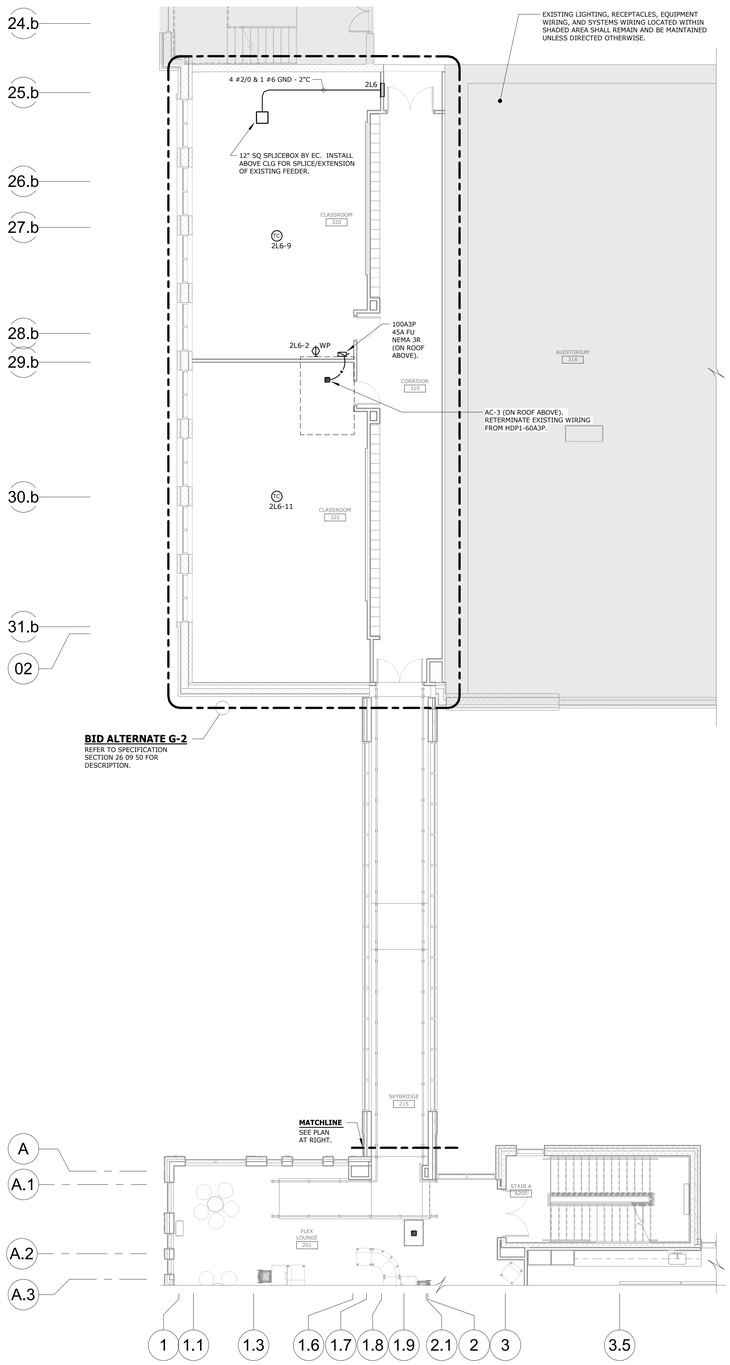
File: C:\Users\jschneider\Documents\360-21-07 Elec R22_JSchneider.rvt
Date: 3/15/2024 7:16:22 AM

NOTES:

1. BRANCH CIRCUIT CONDUCTOR SIZES SHALL MINIMALLY BE #12 AWG. WHERE THE LENGTH OF A HOMERUN, FROM PANEL TO FIRST DEVICE, EXCEEDS 75 FEET FOR A 120 VOLT CIRCUIT OR 175 FEET FOR A 277 VOLT CIRCUIT, THE MINIMUM CONDUCTOR SIZE SHALL BE #10 AWG.
2. MC TYPE CABLE MAY BE USED FOR BRANCH CIRCUIT WIRING CONCEALED ABOVE CEILINGS AND IN STUD WALLS. ALL BRANCH CIRCUIT HOMERUNS SHALL BE INSTALLED IN CONDUIT. ALL BRANCH CIRCUIT WIRING INSTALLED EXPOSED IN FINISHED SPACES SHALL BE IN CONDUIT.
3. CONDUIT SHALL BE RAN CONCEALED ABOVE CEILINGS AND IN WALLS AS MUCH AS POSSIBLE. FURNISH AND INSTALL QUANTITY AND SIZE OF WIRES REQUIRED BY CIRCUIT INDICATED IN PARANTHESES. INSTALL A GREEN INSULATED COPPER GROUND CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250-122.
4. ROOF MOUNTED MECHANICAL EQUIPMENT SHALL BE FED FROM BELOW. ALL FEEDERS SHALL PENETRATE ROOF BELOW UNIT, THROUGH COMMON PIPE CURBS. EC TO COORDINATE WITH MECHANICAL TRADES.

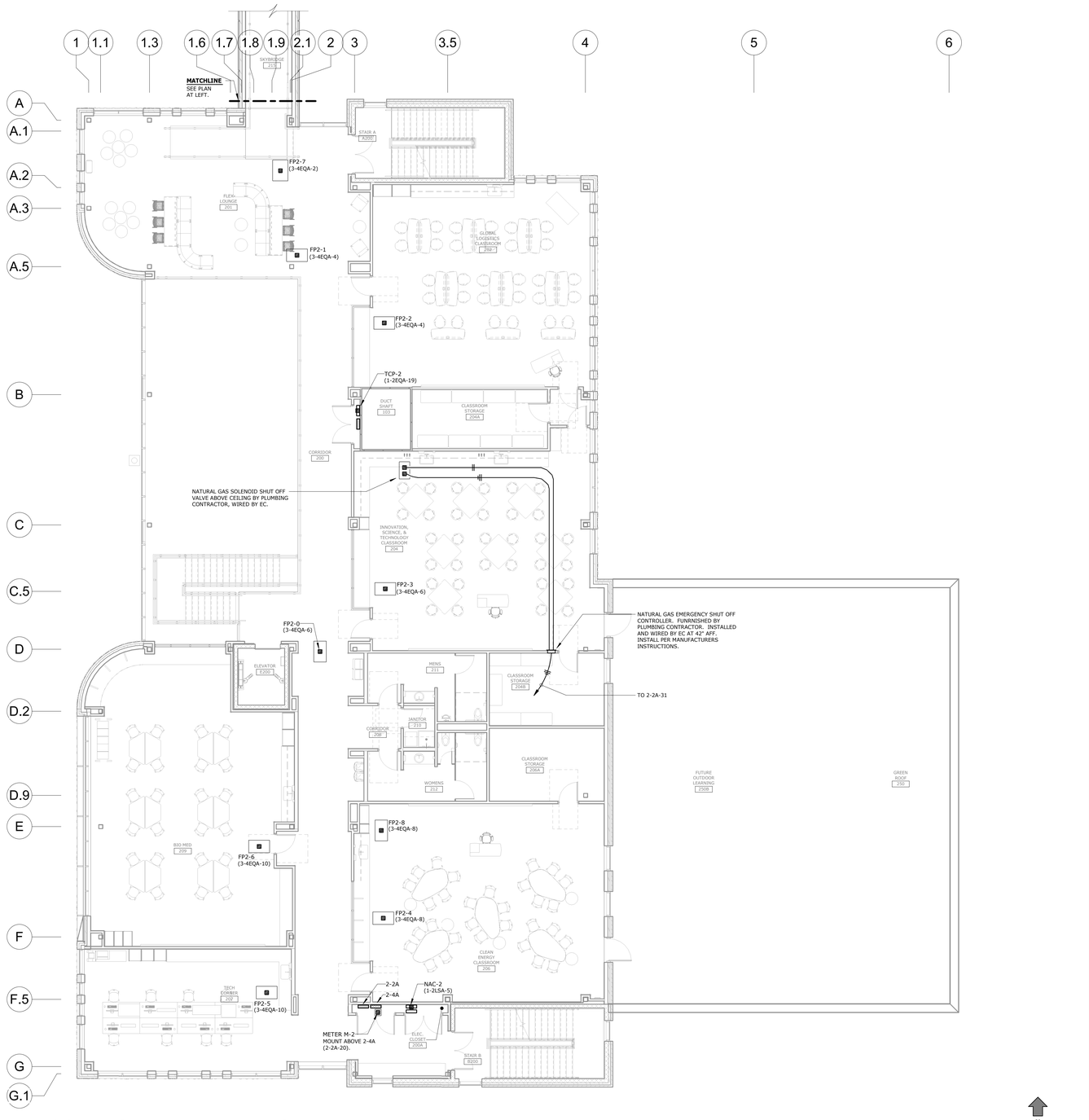
MECHANICAL EQUIPMENT SCHEDULE
(FURNISHED AND SET BY MECHANICAL TRADES, WIRED BY ELECTRICAL TRADES)

ITEM	DESCRIPTION	LOAD	REMARKS
AC-3	ROOF TOP A/C UNT	480V / 3Ø / 33 MCA	45A MOCP. FURNISHED & INSTALLED ONLY UNDER BID ALTERNATE G-2.
FP2-0	FAN POWERED VAV BOX	277V / 1Ø / 2.4 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-1	FAN POWERED VAV BOX	277V / 1Ø / 1.6 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-2	FAN POWERED VAV BOX	277V / 1Ø / 1.6 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-3	FAN POWERED VAV BOX	277V / 1Ø / 1.6 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-4	FAN POWERED VAV BOX	277V / 1Ø / 1.6 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-5	FAN POWERED VAV BOX	277V / 1Ø / 1.6 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-6	FAN POWERED VAV BOX	277V / 1Ø / 1.6 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-7	FAN POWERED VAV BOX	277V / 1Ø / 3.8 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.
FP2-8	FAN POWERED VAV BOX	277V / 1Ø / 0.7 FLA (15A MOCP)	FURNISHED WITH INTEGRAL STARTER AND DISCONNECT.



EXISTING THIRD FLOOR & SKYBRIDGE - EQUIPMENT WIRING

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



SECOND FLOOR - EQUIPMENT WIRING

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

0' 4' 8' 16'

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
25	7/28/23	RFI-088
H	3/15/24	CLASSROOM RENOVATION

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PROJECT NO.
21042.000

SECOND FLOOR - EQUIPMENT WIRING

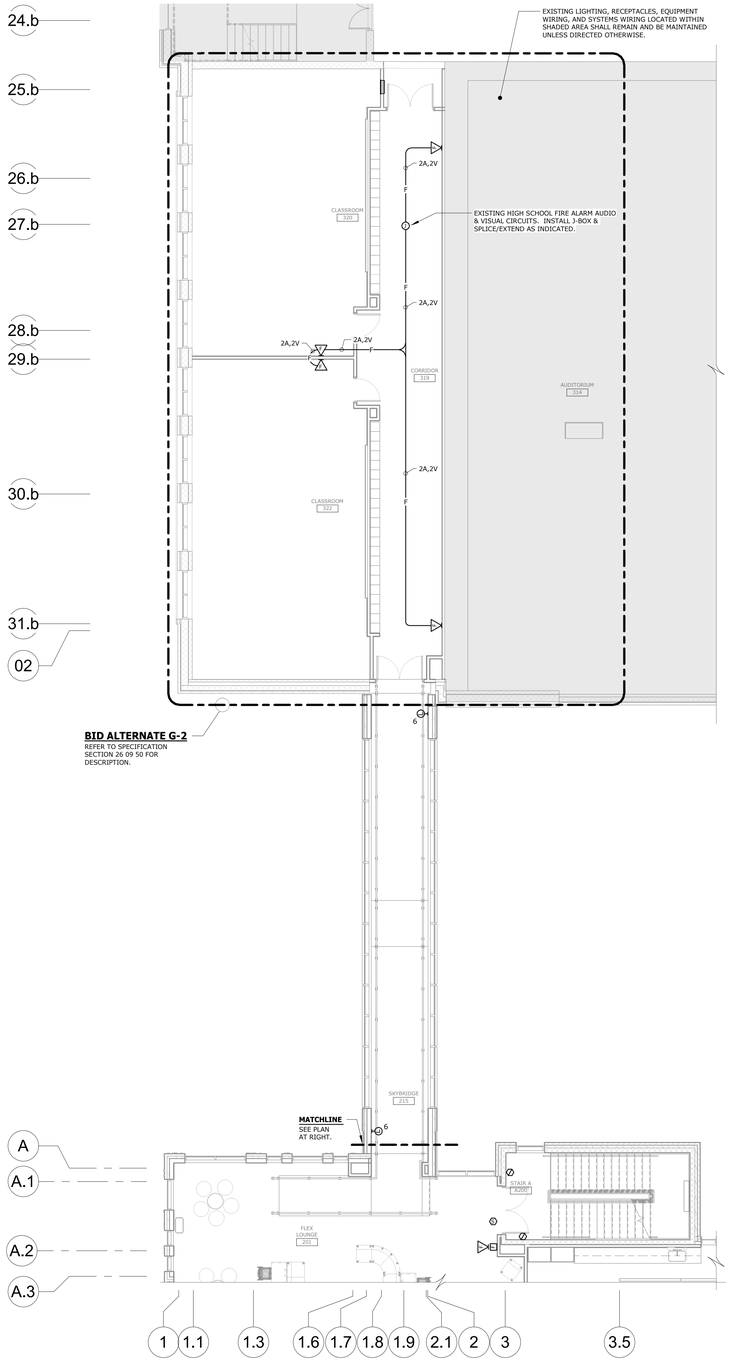
SCALE
As indicated

E3-2

File: C:\Users\jschneider\Documents\0600-21-07 Elec R22_JSchneiderLUD3N.rvt
Date: 3/15/2024 7:16:41 AM

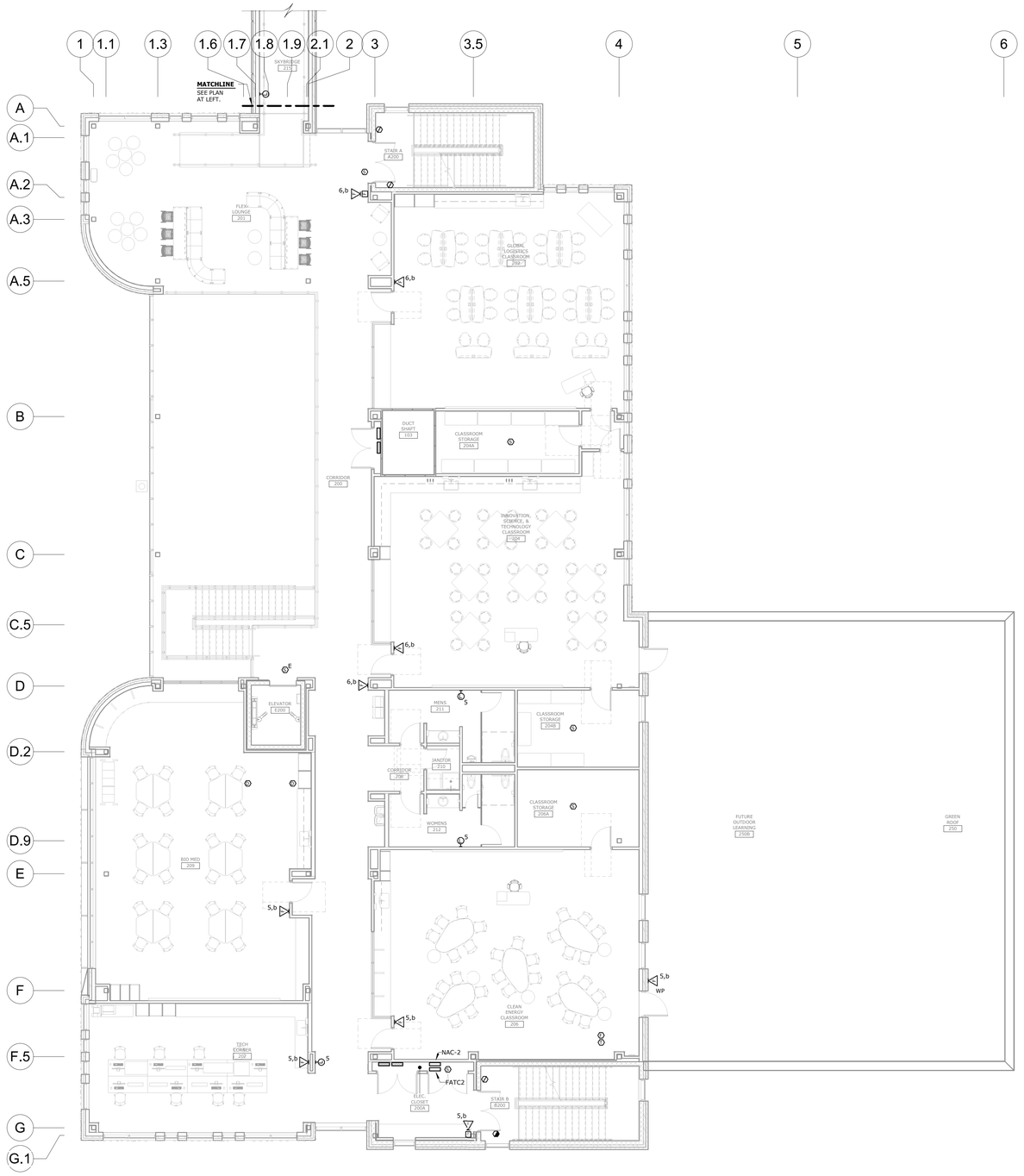
NOTES:

1. REFER TO RISER DIAGRAM ON E10-1 FOR WIRING DETAILS.



EXISTING THIRD FLOOR & SKYBRIDGE - SYSTEMS I

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



SECOND FLOOR - SYSTEMS I

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

0' 4' 8' 16'

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ISSUES / REVISIONS		
G	8/23/22	CONFORMED DOCUMENTS
11	1/27/23	PR-004
H	3/15/24	CLASSROOM RENOVATION

PROJECT NO. 21042.000

SECOND FLOOR - SYSTEMS I

SCALE As indicated

E4-2

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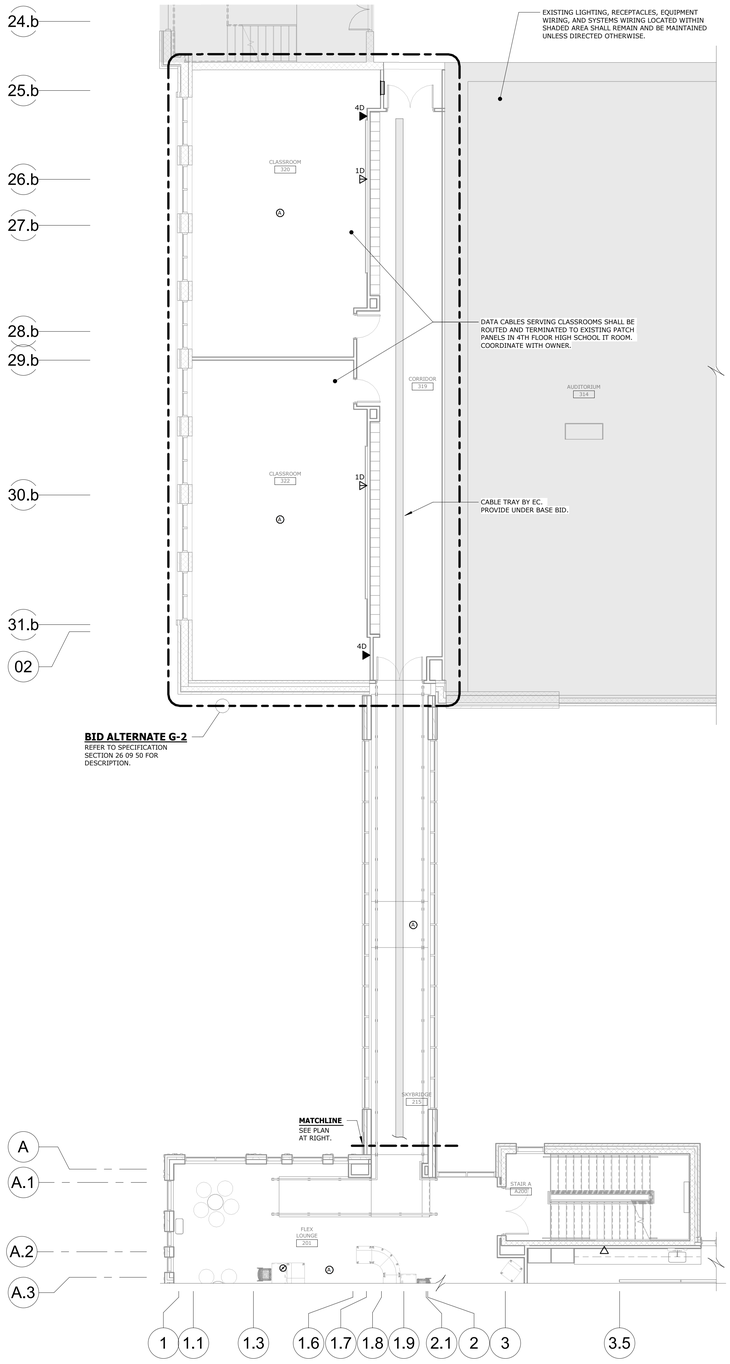
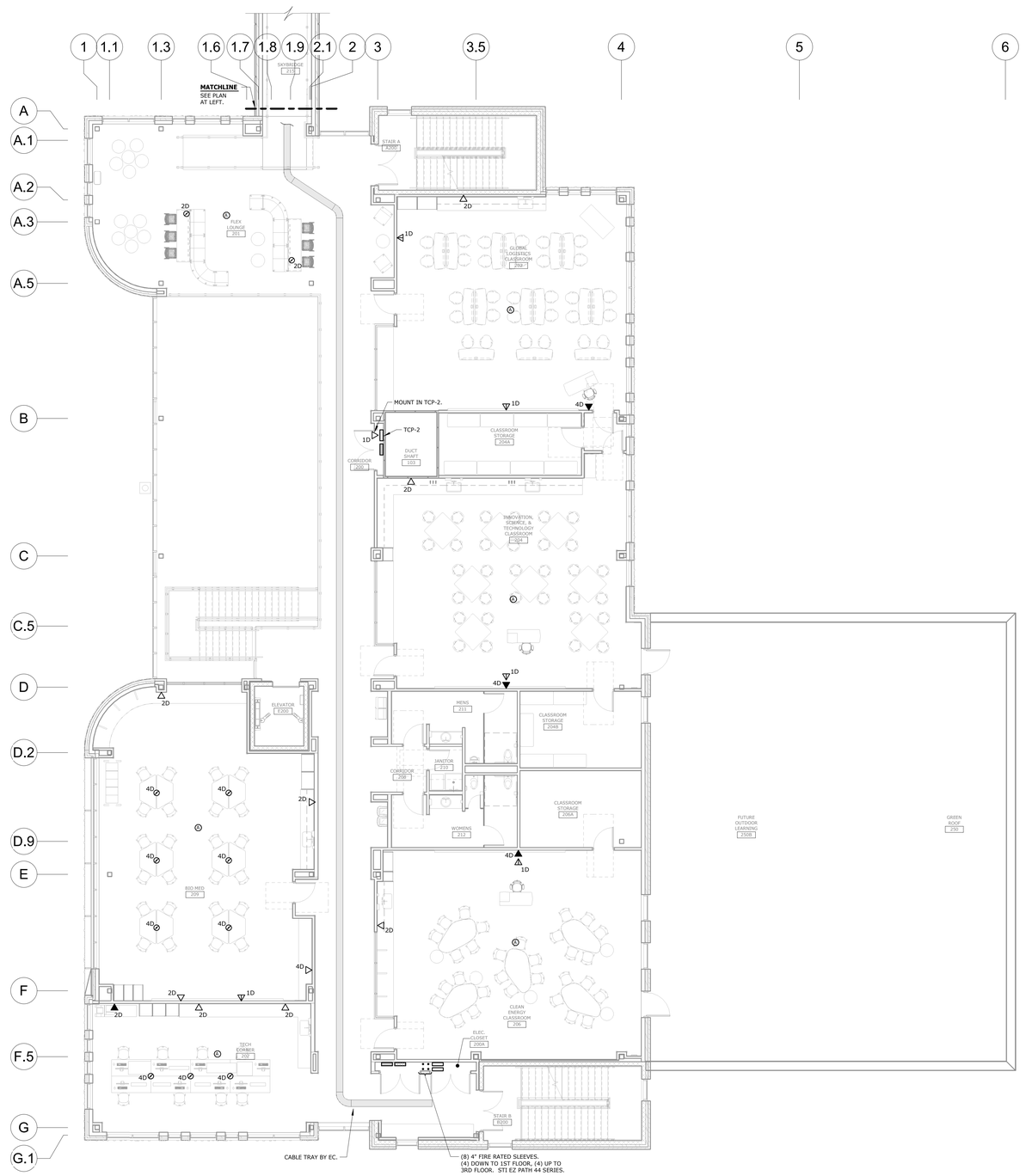


EXISTING THIRD FLOOR & SKYBRIDGE - SYSTEMS II

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



SECOND FLOOR - SYSTEMS II

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

0' 4' 8' 16'

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION

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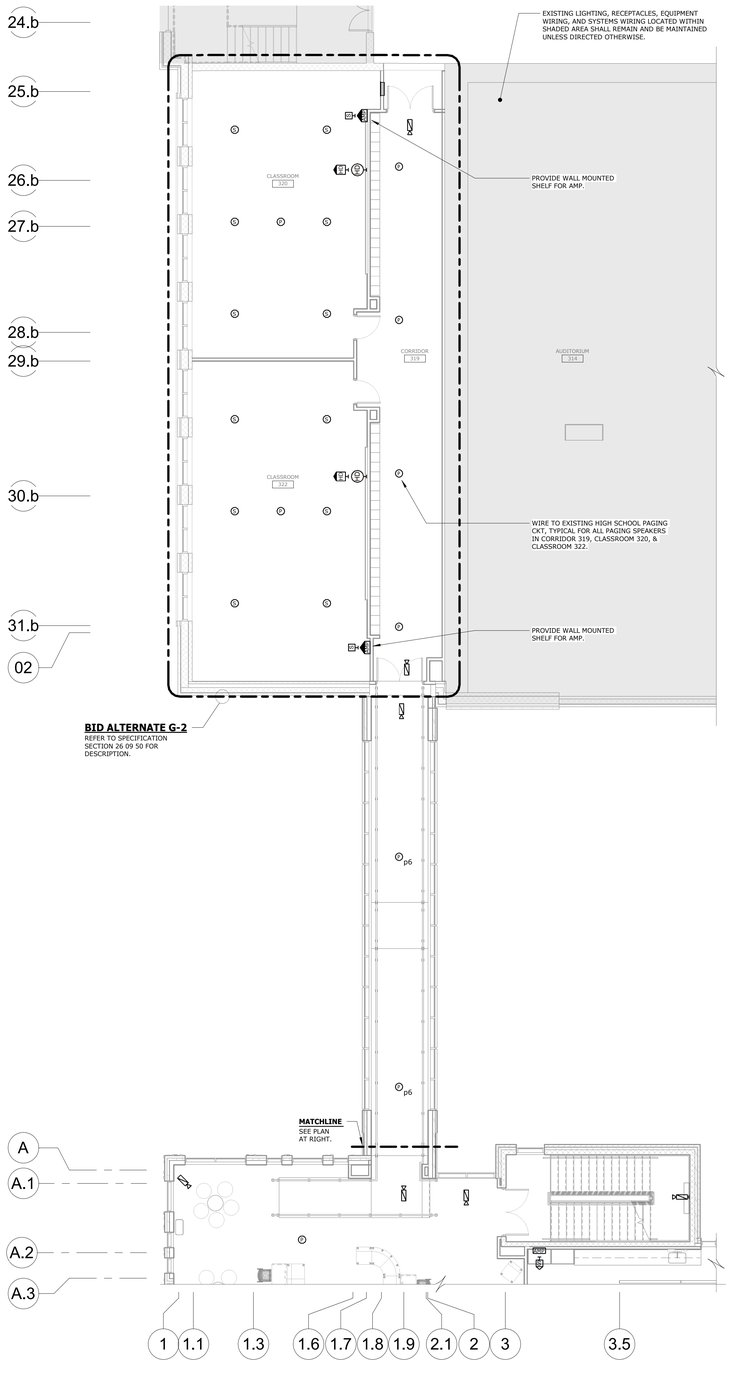
SECOND FLOOR - SYSTEMS II

SCALE 1/8" = 1'-0"

E5-2

File: C:\Users\jschneider\Documents\060-21-07 Elec R22_JSchneider\JD3IN.rvt
Date: 3/15/2024 7:17:19 AM



EXISTING THIRD FLOOR & SKYBRIDGE - SYSTEMS III

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

SECOND FLOOR - SYSTEMS III

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

ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
21	6/8/23	PR-007
H	3/15/24	CLASSROOM RENOVATION

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SECOND FLOOR - SYSTEMS III

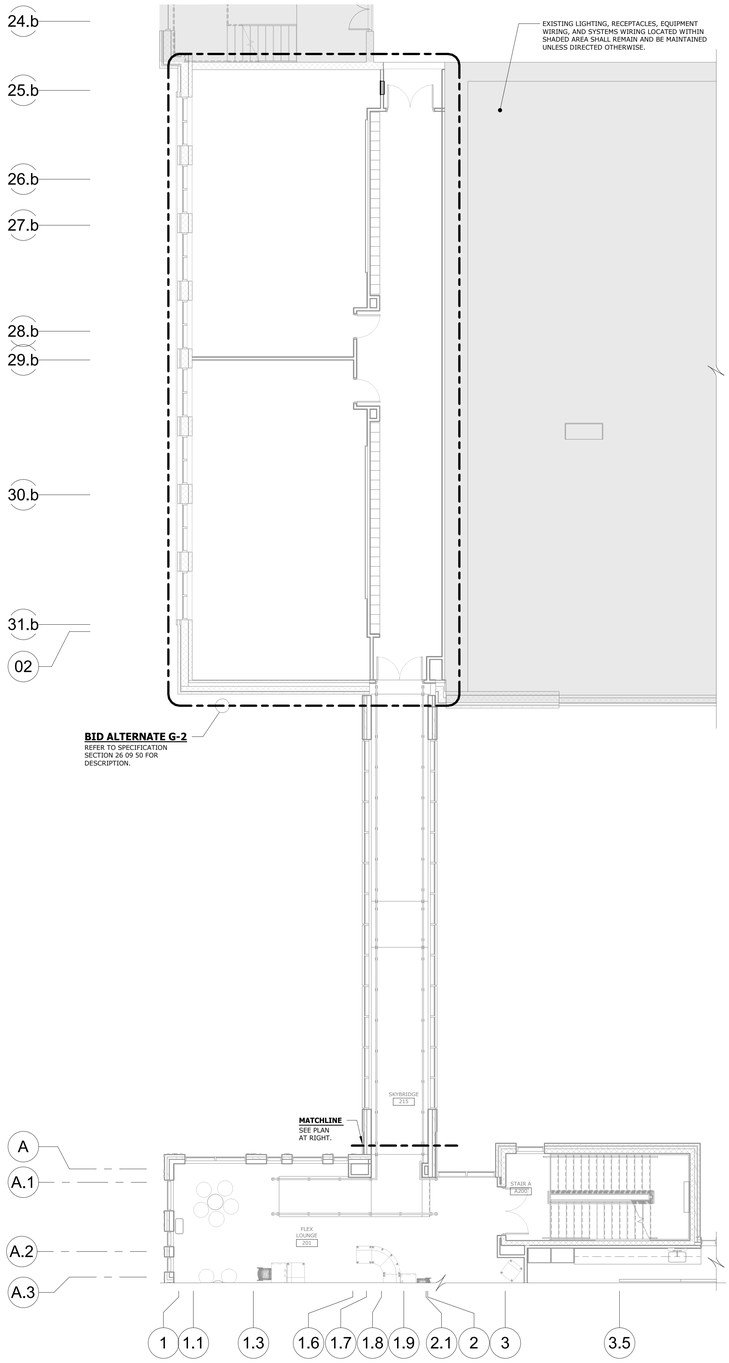
SCALE 1/8" = 1'-0"

E6-2

File: C:\Users\jschneider\Documents\000-21-07 Elec R22_JSchneiderUDDN.rvt
Date: 3/15/2024 7:36:25 AM

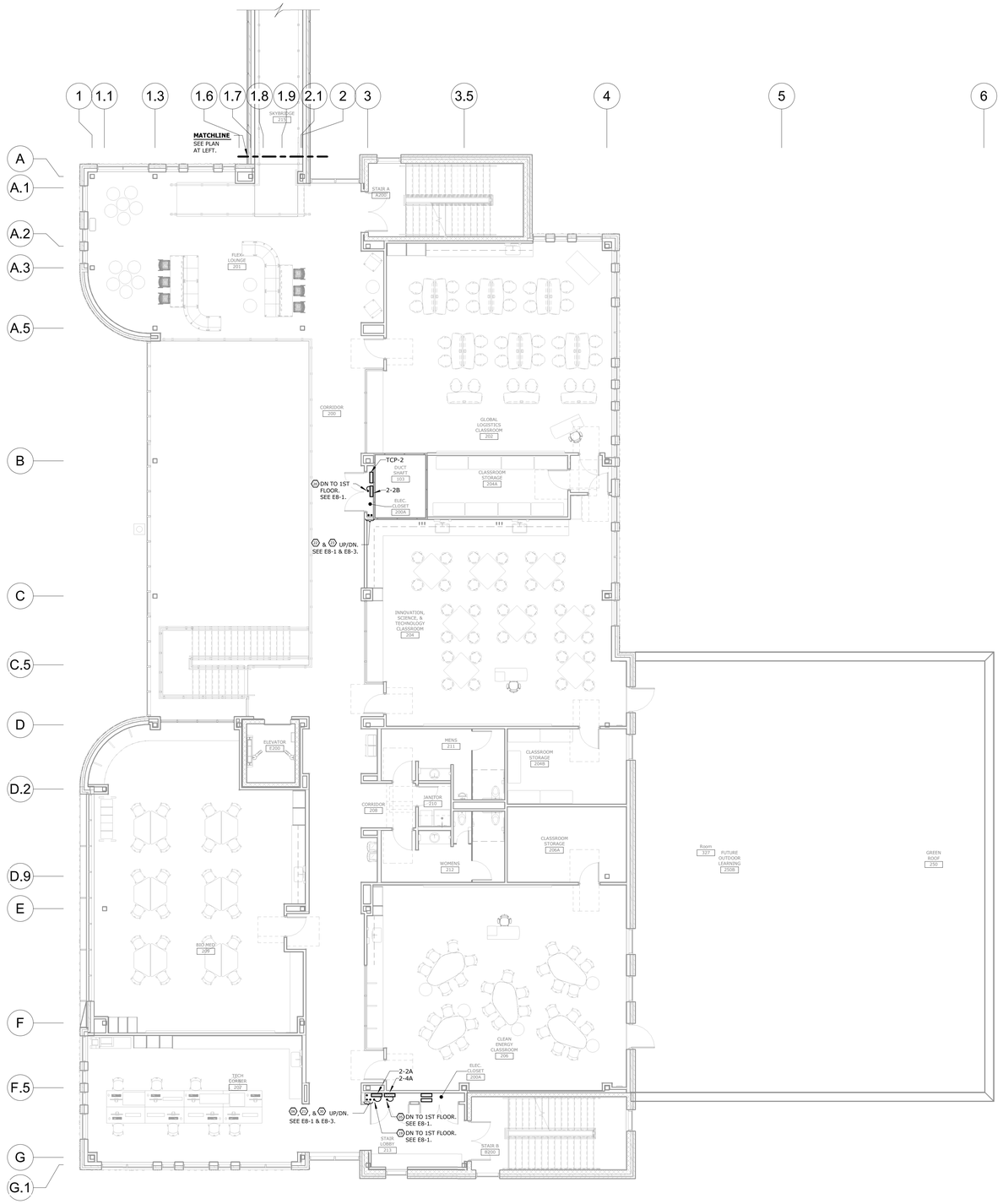
ISSUES / REVISIONS

G	8/23/22	CONFORMED DOCUMENTS
H	3/15/24	CLASSROOM RENOVATION



EXISTING THIRD FLOOR & SKYBRIDGE - FEEDERS & GROUNDING

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



SECOND FLOOR - FEEDERS & GROUNDING

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

0' 4' 8' 16'

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SECOND FLOOR - FEEDERS & GROUNDING

SCALE 1/8" = 1'-0"

E8-2

File: C:\Users\jschneider\Documents\0000-21-07 Elec R22_JSchneiderUDD3N.rvt
Date: 3/15/2024 7:17:58 AM