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KING+KING PROJECT NUMBER: 23-44-7866 / 23-44-7868

SED PROJECT NUMBERS:

A. CNS HS	42-03-03-06-0-16-036
B. JUNIOR HS	42-03-03-06-0-11-027
C. GILLETTE ROAD MS	42-03-03-06-0-012-021
D. ROXBORO ROAD MS	42-03-03-06-0-10-022
E. ROXBORO ROAD ES	42-03-03-06-0-08-019
F. ALLEN ROAD ES	42-03-03-06-0-01-023
H. BEAR ROAD ES	42-03-03-06-0-02-017
J. SMITH ROAD ES	42-03-03-06-0-09-017
K. DISTRICT OFFICE	42-03-03-06-0-07-014

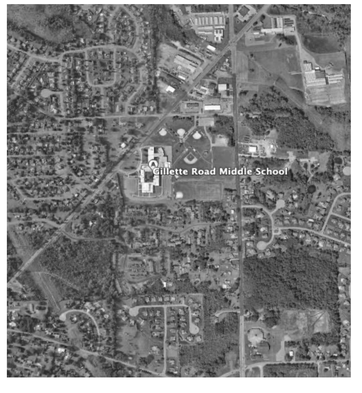
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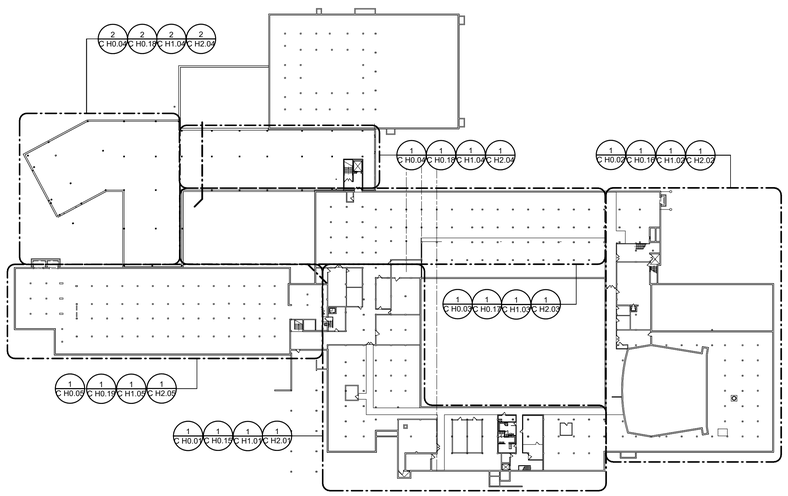
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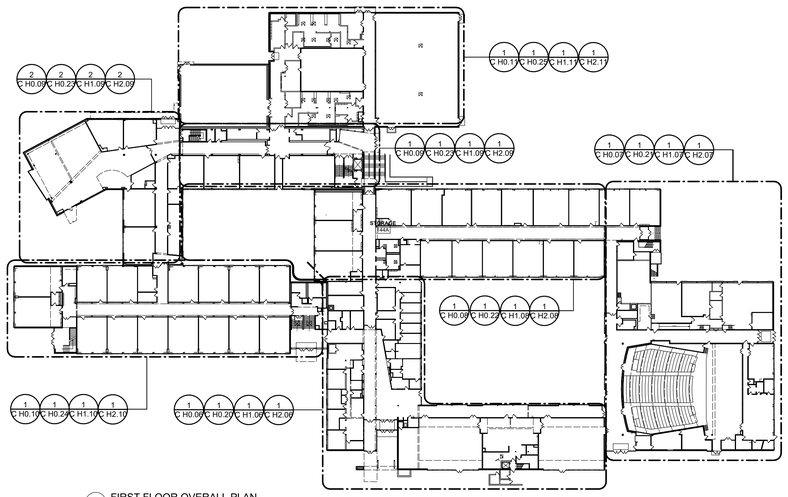
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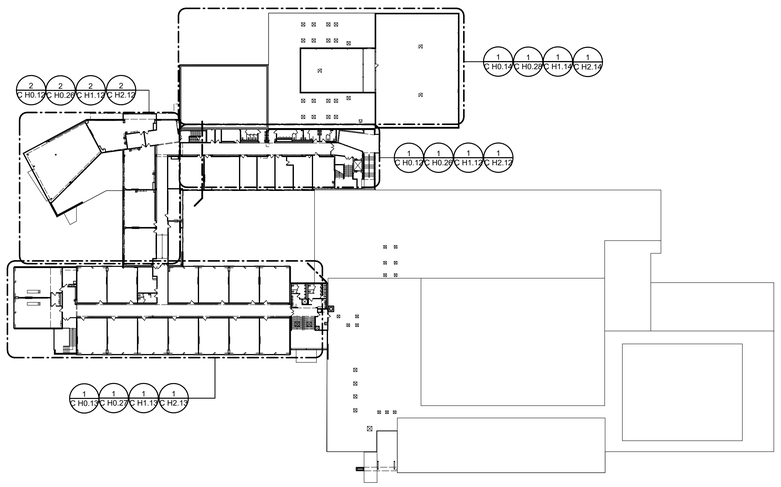
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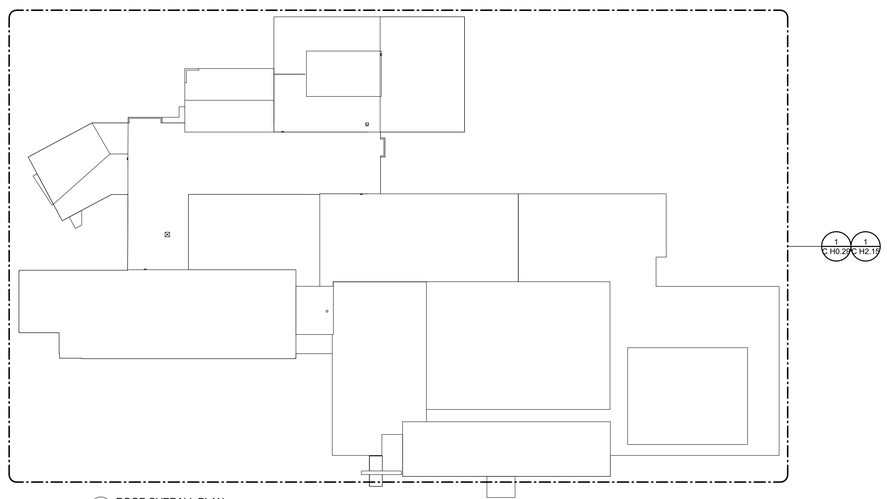
1 BASEMENT OVERALL PLAN
1" = 50'-0"



2 FIRST FLOOR OVERALL PLAN
1" = 50'-0"



3 SECOND FLOOR OVERALL PLAN
1" = 50'-0"



4 ROOF OVERALL PLAN
1" = 50'-0"

ABBREVIATIONS AND TAGS

SYMBOL	DESCRIPTION
(E)	EXISTING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
APD	AIR PRESSURE DROP
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECT
ASD	ADJUSTABLE SPEED DRIVE
AWT	AVERAGE WATER TEMPERATURE
BOD	BOTTOM OF DUCT (ELEVATION)
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
CFM	CUBIC FEET PER MINUTE
CL	CENTER LINE
CMS	COMBINATION MOTOR STARTER
COP	COEFFICIENT OF PERFORMANCE
DAT	DISCHARGE AIR TEMPERATURE
DB	DRYBULB AIR TEMPERATURE
DW	DOUBLE WALL
DIA	DIAMETER
DN	DOWN
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EC	ELECTRICAL CONTRACTOR
ERL	EXISTING TO BE RELOCATED
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
GAL	GALLONS
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HM	HAZARDOUS MATERIAL CONTRACTOR
HP	HORSEPOWER
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
INWC	INCHES WATER COLUMN
KW	KILOWATT
KWH	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
MAN	MANUAL MOTOR STARTER WITH RELAY
MAT	MIXED AIR TEMPERATURE
MBH	1,000 BTUH
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPACITY
MOP	MAXIMUM OVERCURRENT PROTECTION
NC	NORMALLY CLOSED
NC	NOISE CRITERIA
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAT	OUTSIDE AIR TEMPERATURE
PC	PLUMBING CONTRACTOR
PH	PHASE
PSI	POUNDS PER SQUARE INCH
PSIA	PSI ATMOSPHERIC
PSIG	PSI GAUGE
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
REA	RELIEF AIR
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SAT	SUPPLY AIR TEMPERATURE
SEER	SEASONAL EER
SMBH	SENSIBLE MBH
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROL CONTRACTOR
TMBH	TOTAL MBH
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
V	VOLTAGE
WB	WETBULB AIR TEMPERATURE
WPD	WATER PRESSURE DROP

PIPING SYSTEMS LEGEND

SYMBOL	DESCRIPTION
	EXISTING PIPING
	NEW PIPING
	REMOVAL / DEMOLISHED PIPING
S	AIR SEPERATOR
AV	AIR VENT - AUTOMATIC
MV	AIR VENT - MANUAL
	BALANCE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	CONTROL VALVE TWO WAY
	CONTROL VALVE THREE WAY
	CONTROL VALVE TWO WAY (PNEUMATIC)
	CONTROL VALVE THREE WAY (PNEUMATIC)
	GATE VALVE
	GLOBE VALVE
PRV	PRESSURE REDUCING VALVE
	PRESSURE RELIEF VALVE
	ANGLE VALVE
	STRAINER WITH BLOW DOWN
	TRIPLE DUTY VALVE
PS	PRESSURE SWITCH
FS	FLOW SWITCH
TS	TEMPERATURE SWITCH
	PIPE WELL
	PRESSURE GAUGE
	THERMOMETER
	PIPE CAP OR PLUG
	PIPE BREAK OR CONTINUATION
	REDUCER
	FLOW DIRECTION ARROW
	FLEXIBLE CONNECTION
	TEE - BOTTOM CONNECTION
	TEE - TOP CONNECTION
	ELBOW - UP, DOWN
	UNION
	SPOOL PIECE
	PIPE GUIDE
	PIPE ANCHOR - INTER.
	PIPE ANCHOR - MAIN
	INLINE PUMP
BFV	BACKFLOW PREVENTER

PIPING ABBREVIATIONS

SYMBOL	DESCRIPTION
—(E)—	EXISTING PIPING
—CWR—	CHILLED WATER RETURN
—CWS—	CHILLED WATER SUPPLY
—GWR—	GLYCOL WATER RETURN
—GWS—	GLYCOL WATER SUPPLY
—HWR—	HOT WATER RETURN
—HWS—	HOT WATER SUPPLY
—IW—	INDIRECT WASTE
—RL—	REFRIGERANT LIQUID
—RS—	REFRIGERANT SUCTION

EQUIPMENT ABBREVIATIONS

SYMBOL	DESCRIPTION
ACCU	AIR COOLED CONDENSING UNIT
AHU	AIR HANDLING UNIT
AS	AIR SEPERATOR
B	BOILER
CC	COOLING COIL
CT	COMPRESSION TANK
CUH	CABINET UNIT HEATER
CONV	CONVECTOR
CV	CONTROL VALVE
DOAS	DEDICATED OUTDOOR AIR SYSTEM
EF	EXHAUST FAN
EH	EXHAUST HOOD
ERU	ENERGY RECOVERY UNIT
ERV	ENERGY RECOVER VENTILATOR
ET	EXPANSION TANK
EVAP	EVAPORATOR UNIT
F	FAN
FTR	FIN TUBE RADIATION
GMU	GLYCOL MAKE-UP UNIT
HC	HEATING COIL
HRU	HEAT RECOVERY UNIT
IU	INDUCTION UNIT
KEF	KITCHEN EXHAUST FAN
LV	LOUVER
MAU	MAKE-UP AIR UNIT
P	PUMP
PH	PENTHOUSE
PHC	PREHEAT COIL
PRV	PRESSURE RELIEF HOOD
RCP	RADIANT CEILING PANEL
REF	RELIEF FAN
RF	RETURN FAN
RGD	REGISTER, GRILLE, AND DIFFUSER
RH	RELIEF HOOD
RHC	REHEAT COIL
RTU	ROOFTOP UNIT
SF	SUPPLY FAN
SRV	STATIONARY RELIEF VENTILATOR
SS	SPLIT SYSTEM
TU	TERMINAL UNIT
UH	UNIT HEATER
VAV	VARIABLE VOLUME TERMINAL UNIT

DUCTWORK LEGEND

SYMBOL	DESCRIPTION
	EXISTING DUCTWORK
	REMOVAL / DEMOLISHED DUCTWORK
	NEW DUCTWORK
	DUCT SECTION - SUPPLY
	DUCT SECTION - RETURN OR EXHAUST
A" B"	WIDTH A" x DEPTH B"
	DUCT TRANSITION
A"Ø	ROUND DUCT IN INCHES
A"xB"Ø	FLAT OVAL DUCT IN INCHES
A"xB" L	ACOUSTIC / THERMAL LINING (x" L)
A"xB" DW	DOUBLE WALL RECTANGULAR DUCT IN INCHES
A"Ø DW	DOUBLE WALL ROUND DUCT IN INCHES
A"xB"Ø DW	DOUBLE WALL FLAT OVAL DUCT IN INCHES
	FLEXIBLE DUCTWORK
R	RISE IN DUCT
D	DROP IN DUCT
	RETURN OR EXHAUST REGISTER OR GRILLE
	SUPPLY DIFFUSER WITH FLEX DUCT CONNECTION
	SUPPLY DIFFUSER WITH HARD DUCT CONNECTION
	SUPPLY DIFFUSER WITH PLENUM BOX
L	VOLUME DAMPER
FD	FIRE DAMPER
SD	SMOKE DAMPER
CFSD	COMBINATION FIRE / SMOKE DAMPER
FC	FLEXIBLE CONNECTION
AAD	AUTOMATIC AIR DAMPER (OPPOSED BLADE)
AAD	AUTOMATIC AIR DAMPER (PARALLEL BLADE)
	AIRFLOW DIRECTION ARROW
RGD A"x B"	REGISTER, GRILLE, DIFFUSER TAG A = WIDTH B = HEIGHT
VAV A"x B" C"/D"	AIR TERMINAL UNIT TAG C = MAX CFM MAX = MAXIMUM CFM MIN = MINIMUM CFM

GENERAL HVAC NOTES:

A. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS WITHIN THE BUILDING PRIOR TO COMMENCEMENT OF ALL DEMOLITION AND NEW WORK.

B. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE AND REPLACE EXISTING CEILINGS; UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS, FOR PERFORMING DEMOLITION OR NEW WORK WITHIN THE BUILDING. THE EXISTING CEILINGS SHALL BE REMOVED IN A MANNER TO AVOID DAMAGE TO THE CEILING SYSTEMS. STORAGE OF CEILING SYSTEM COMPONENTS FOR REINSTALLATION IS THE RESPONSIBILITY OF THE CONTRACTOR. THE STORAGE OF ALL MATERIAL SHALL BE IN AREAS OR LOCATIONS APPROVED BY THE OWNER. THE OWNER WILL NOT COMPENSATE FOR ANY DAMAGED OR LOST MATERIAL WHILE IN STORAGE. AFTER COMPLETION OF ALL DEMOLITION OR NEW WORK, THE CONTRACTOR SHALL REINSTALL THE CEILING SYSTEMS TO MATCH THE ORIGINAL INSTALLATION. ANY CEILING SYSTEM COMPONENT DAMAGED DURING DEMOLITION, STORAGE OR REINSTALLATION SHALL BE REPLACED WITH NEW AT NO EXPENSE TO THE OWNER.

C. DEMOLITION DRAWINGS SHOW IN GENERAL MAJOR EQUIPMENT, PIPING AND DUCTWORK REMOVALS.

D. THE INTENT IS NOT TO IDENTIFY ALL MISCELLANEOUS PIPING, PIPING ACCESSORIES, DUCTWORK ACCESSORIES, SUPPORTS, CONTROLS, CONTROL ACCESSORIES, CONTROL WIRING AND CONDUIT, AND PNEUMATIC CONTROL TUBING AND ACCESSORIES TO BE DISCONNECTED AND REMOVED, BUT IS THE REQUIREMENT UNDER THIS CONTRACT. NO EQUIPMENT, PIPING OR DUCTWORK SHALL BE ABANDONED IN PLACE, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

E. ALL EQUIPMENT INDICATED TO BE TURNED OVER TO THE OWNER SHALL BE DISCONNECTED AND REMOVED FROM THE EXISTING SYSTEMS AND DELIVERED (INCLUDING LOADING AND UNLOADING) TO A STORAGE AREA WITHIN THE BUILDING AS SELECTED BY THE OWNER. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR ANY EQUIPMENT DAMAGED DURING REMOVAL AND DELIVERY FOR STORAGE. ANY DAMAGE TO EQUIPMENT PRIOR TO DISCONNECTING SHOULD BE REPORTED TO THE OWNER'S REPRESENTATIVE. IF NOT REPORTED, THE CONTRACTOR TAKES FULL RESPONSIBILITY FOR REPAIRS TO THE EQUIPMENT.

F. BEFORE DISCONNECTING, REMOVING OR SERVICING ANY AIR CONDITIONING EQUIPMENT OR SYSTEMS CONTAINING REFRIGERANTS, THE EQUIPMENT OR SYSTEMS SHALL BE EVACUATED OF ALL REFRIGERANT, PER THE LATEST ADOPTED RULES AND REGULATIONS BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA). THE CONTRACTOR OR TECHNICIAN PERFORMING ALL WORK SHALL BE CERTIFIED BY AN EPA APPROVED CERTIFYING AGENCY OR ORGANIZATION.

G. ALL DUCTWORK, PIPING AND CONDUIT PENETRATIONS THROUGH RATED WALLS OR FLOORS SHALL BE PROVIDED WITH FIRE/SMOKE STOPPING'S PER SPECIFICATION. REFER TO THE CODE ANALYSIS OR LIFE SAFETY DRAWINGS FOR ALL RATED WALL LOCATIONS. ALL FLOORS SHALL BE CONSIDERED RATED.

H. UNLESS SHOWN ON THE ARCHITECTURAL DRAWINGS, IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PATCH AND FINISH ALL EXISTING DUCTWORK OR PIPE PENETRATIONS THROUGH FLOORS, ROOFS, INTERIOR WALLS AND EXTERIOR WALLS AFTER DEMOLITION TO MATCH EXISTING INCLUDING EQUAL FIRE RATINGS.

I. IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW ALL AIR VENTS OR DRAINS ON THE PIPING SYSTEMS THROUGHOUT THE BUILDING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AIR VENTS AT ALL SYSTEM HIGH POINTS AND AT AREAS WITHIN THE PIPING SYSTEMS THAT COULD ACCUMULATE OR TRAP AIR WHICH WOULD PREVENT PROPER VENTING OR OPERATION OF THE SYSTEMS. DRAINS SHALL BE PROVIDED AT ALL LOW POINTS WITHIN THE PIPING SYSTEM TO FACILITATE DRAINING OF THE SYSTEM COMPLETELY.

J. ALL NEW PENETRATIONS SHALL BE PROVIDED FOR INSTALLATION OF MECHANICAL SYSTEMS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, DUCTWORK, PIPING, ETC.

K. THIS CONTRACTOR SHALL BE RESPONSIBLE TO REVIEW ALL ABATEMENT SERIES DRAWINGS FOR THEIR SCOPE OF WORK TO RE-INSULATE ALL MECHANICAL SYSTEM AFTER ABATEMENT.

L. ALL CONTROLS CALLED FOR REMOVAL SHALL BE COMPLETE, INCLUDING PNEUMATIC AIR LINE REMOVAL BACK TO MAIN AIR SOURCE. ALL LINES SHALL BE CAPPED AIR TIGHT. PROVIDE AIR TEST AT COMPLETION OF THE WORK. SUBMIT TEST RESULTS AS PART OF CLOSEOUT DOCUMENTATION.

M. ALL ROOM THERMOSTATS AND TEMPERATURE SENSORS CALLED FOR REMOVAL SHALL BE COMPLETE, BACK TO SOURCE. PATCHING AND PAINTING OF WALLS SHALL MATCH EXISTING.

N. PROVIDE A MINIMUM OF THREE DUCT DIAMETERS OF STRAIGHT DUCTWORK UPSTREAM OF ALL AIR TERMINAL UNITS FOR PROPER FLOW MEASURING AT FLOW SENSOR. A MINIMUM OF 1'-6" SHALL BE PROVIDED IN FRONT OF CONTROL ACCESS ENCLOSURES AT ALL TERMINAL UNITS. NO PIPING OR CONDUIT SHALL BE DIRECTLY BELOW THE AIR TERMINAL UNIT ACCESS ENCLOSURES THAT WILL PROHIBIT ACCESS UP TO THE CONTROLS ENCLOSURE. THE CONTRACTOR SHALL COORDINATE THESE REQUIREMENTS WITH ALL OTHER CONTRACTORS ON THE PROJECT. IF PROPER SERVICE ACCESS IS NOT MAINTAINED BECAUSE OF COORDINATION OR LACK THEREOF, THE CONTRACTOR SHALL RELOCATE OBSTRUCTIONS AT NO ADDITIONAL COST TO THE OWNER.

O. THE CONTRACTOR SHALL PROVIDE MINIMUM 16x16 ACCESS DOORS WITHIN GYPSUM CEILINGS, GYPSUM WALLS AND MASONRY WALLS AT FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS TO ALLOW FULL ACCESS TO DUCTWORK MOUNTED ACCESS DOORS FOR SERVICING THE DAMPERS. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR CEILING AND WALL CONSTRUCTION TYPES AND RATING REQUIREMENTS FOR SELECTION OF ACCESS DOOR TYPES. REFER TO SPECIFICATIONS FOR ACCESS DOOR REQUIREMENTS. AT SMOKE DAMPER AND COMBINATION FIRE/SMOKE DAMPER INSTALLTIONS, THE CONTRACTOR SHALL PROVIDE A MINIMUM 16x16 ACCESS DOOR AT THE DUCT MOUNTED SMOKE DETECTORS.

P. PRIOR TO DEMOLITION OF ANY HVAC EQUIPMENT, REMOVE ALL ASSOCIATED CONTROLS, WHICH INCLUDES REMOVAL OF CONTROLLERS, CONTROL WIRING BACK TO SOURCE, DEPROGRAMMING OF ALL CONTROL POINTS AND GRAPHICAL USER INTERFACE ASSOCIATED WITH THESE DEVICES FROM THE SYSTEM. PROVIDE ALL WORK REQUIRED TO MAINTAIN CONTINUITY OF EXISTING COMMUNICATION NETWORKS FOR REMAINING CONTROL DEVICES. COORDINATE ALL CONTROL DISCONNECT WORK WITH FACILITIES.

Q. COORDINATE ALL SHUT DOWNS WITH OWNER PRIOR TO CONSTRUCTION.

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
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IBC #: 23038

STATE OF NEW YORK
JON C. HELBERG
PE
EXP. 06/30/2026
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DRAWING DATE: **02/09/2024**

DRAWN BY: **RAC**

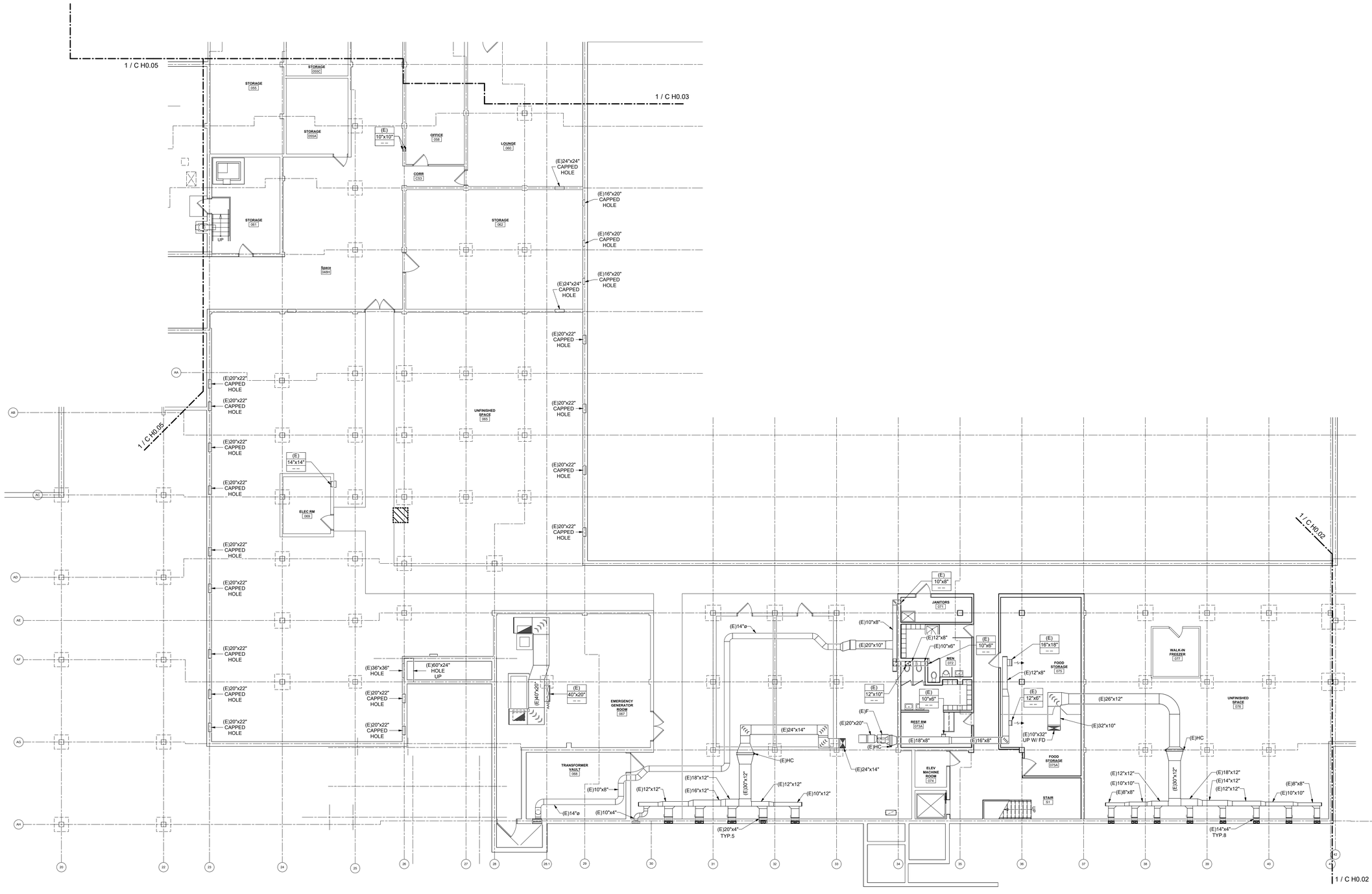
SCALE: **AS NOTED**

DRAWING TITLE:

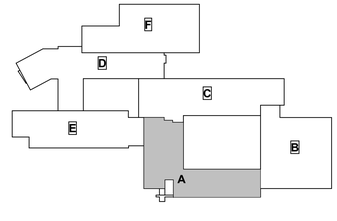
GENERAL NOTES AND LEGENDS - HVAC

C H0.00

GENERAL SHEET NOTES:
A. NO SCOPE. FOR REFERENCE ONLY.



1 PARTIAL BASEMENT PLAN - AREA A - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

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B: Junior HS	42-03-03-06-0-11-027
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D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
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J: Smith Road ES	42-03-03-06-0-09-017
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EXP. 06/30/2026
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DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA A - DUCTWORK DEMOLITION

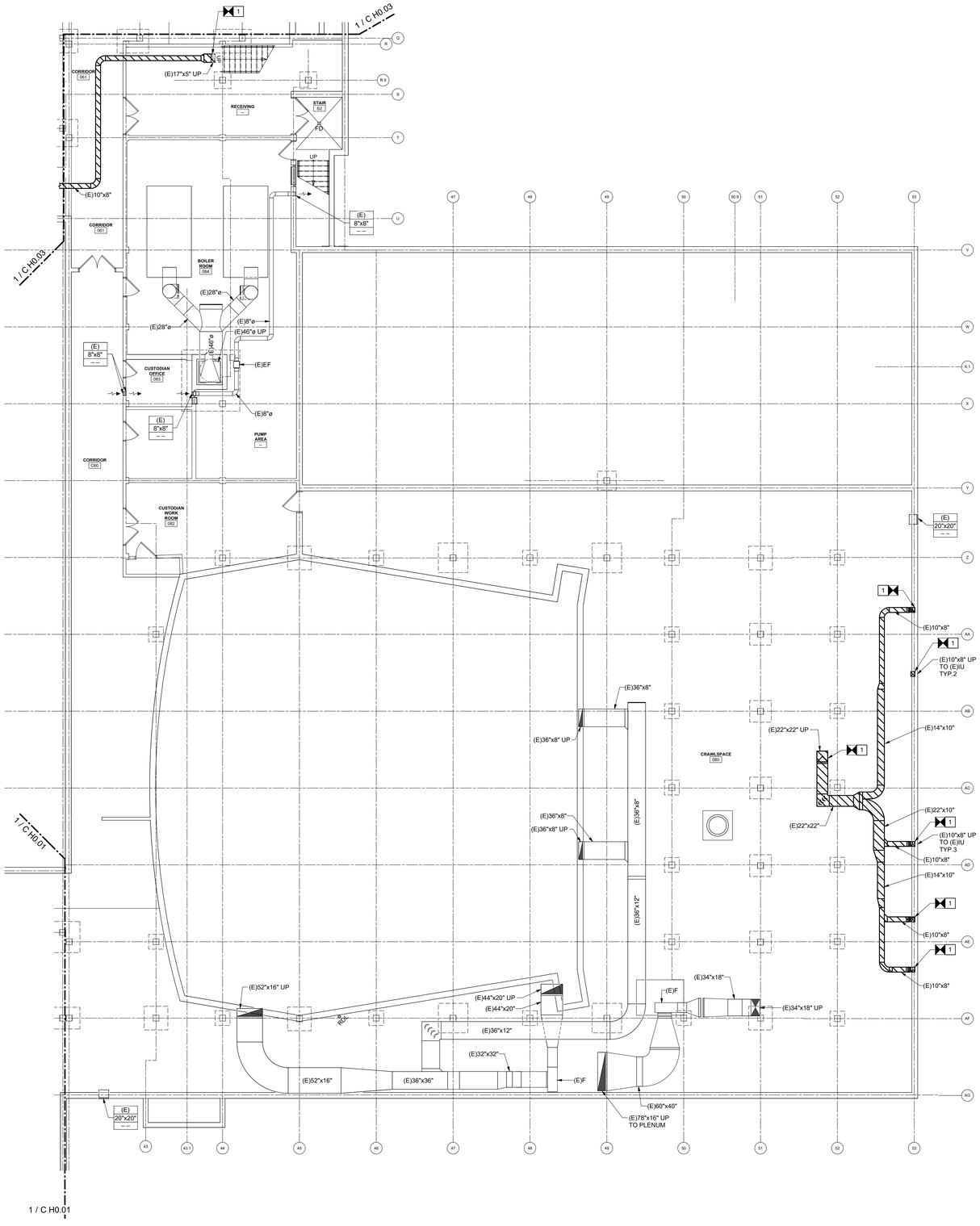
C H0.01

GENERAL SHEET NOTES:

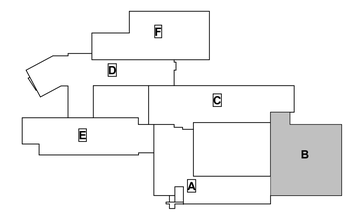
A. ALL RISERS UP SEE SHEET C H0.07 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE SUPPLY DUCTWORK UP TO EXISTING RISER AND PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN RISER PER SPECIFICATION 230130.



1 PARTIAL BASEMENT PLAN - AREA B - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

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D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
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STATE OF NEW YORK
JOIN C. HELBERG
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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA B - DUCTWORK DEMOLITION

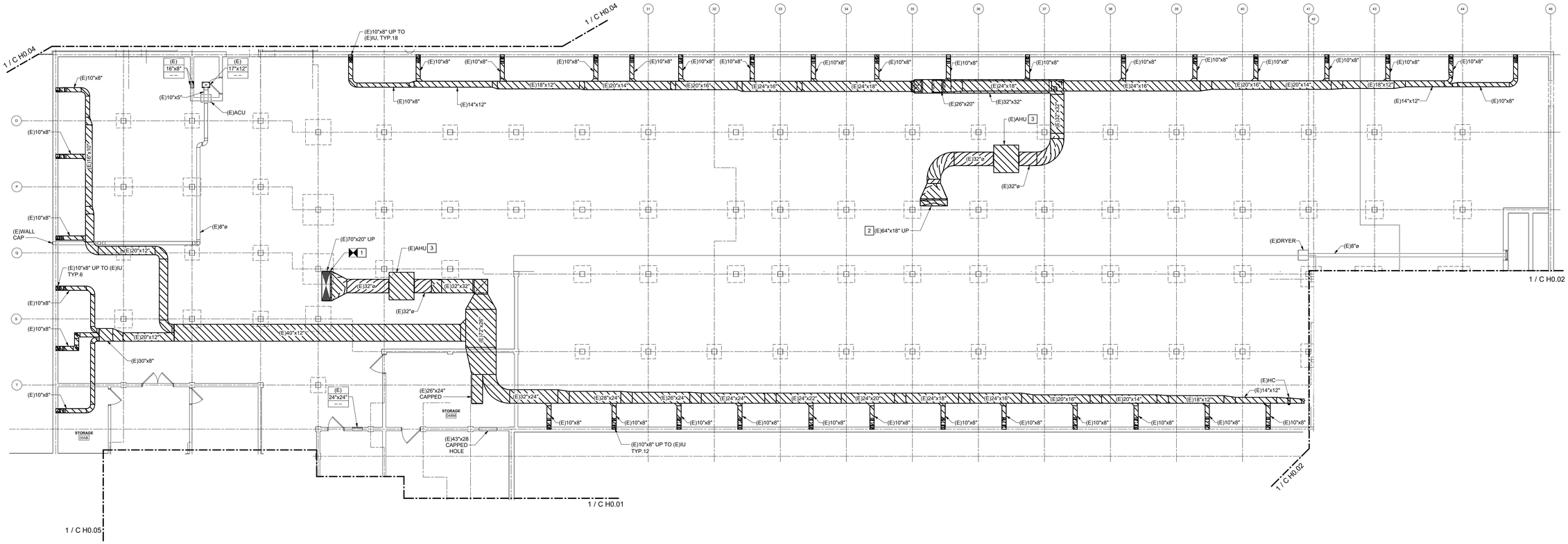
C H0.02

GENERAL SHEET NOTES:

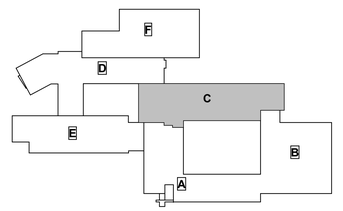
A. ALL RISERS UP SEE SHEET C H0.08 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK UP TO EXISTING RISER AND PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN RISER PER SPECIFICATION 230130.
2. REMOVE DUCTWORK AND RISER AND PREPARE FOR NEW WORK.
3. DISCONNECT AND REMOVE AIR HANDLING UNIT.



1 PARTIAL BASEMENT PLAN - AREA C - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

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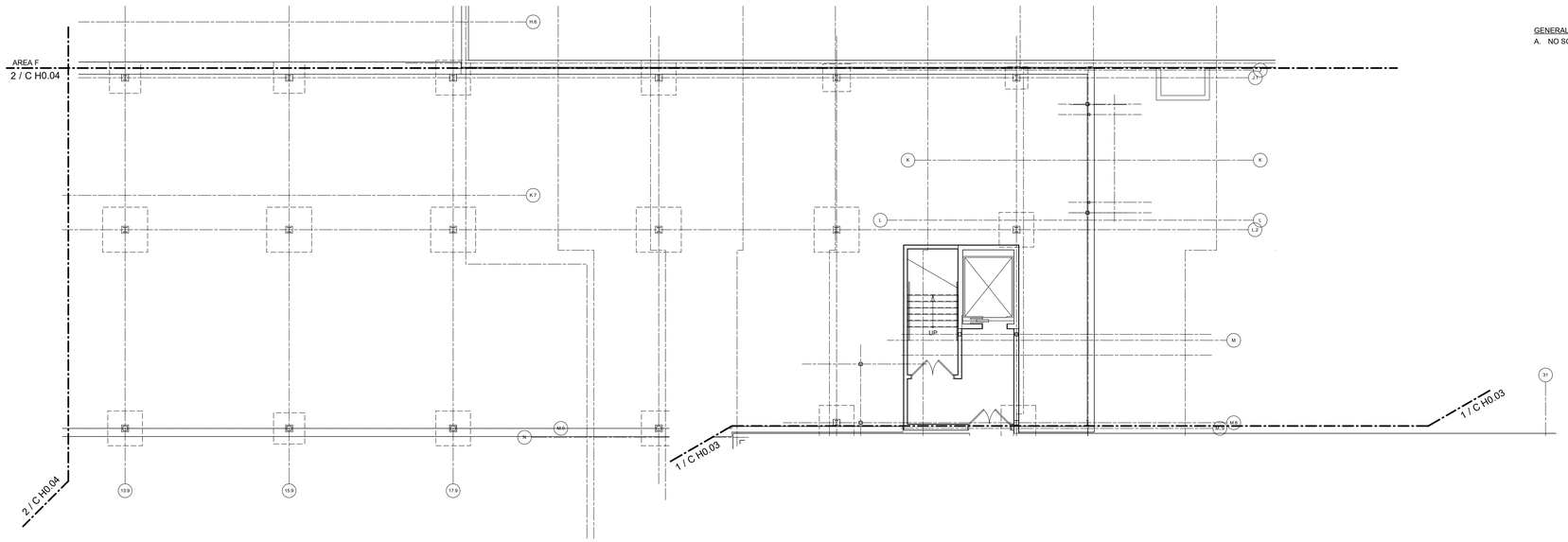
SCALE: **AS NOTED**

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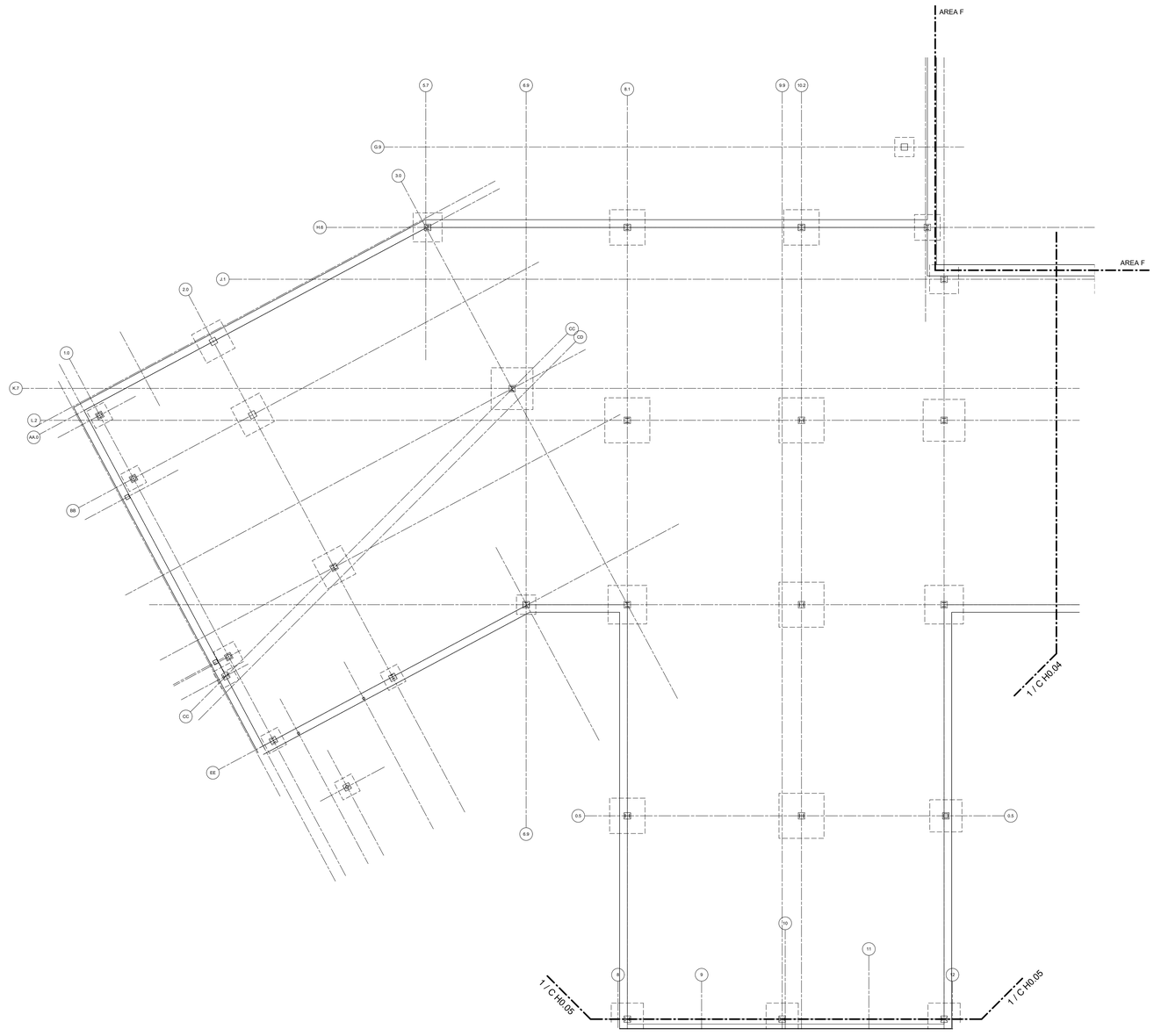
PARTIAL BASEMENT PLAN - AREA C - DUCTWORK DEMOLITION

C H0.03

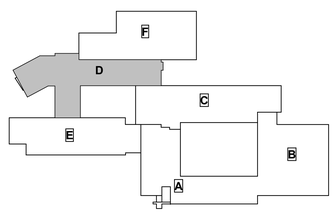
GENERAL SHEET NOTES:
A. NO SCOPE. SHOWN FOR REFERENCE ONLY.



1 PARTIAL BASEMENT PLAN - AREA D SOUTH - DUCTWORK DEMOLITION
1/8" = 1'-0"



2 PARTIAL BASEMENT PLAN - AREA D NORTH - DUCTWORK DEMOLITION
(E)10" Ø UP TO (E)4" 1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
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DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA D - DUCTWORK DEMOLITION

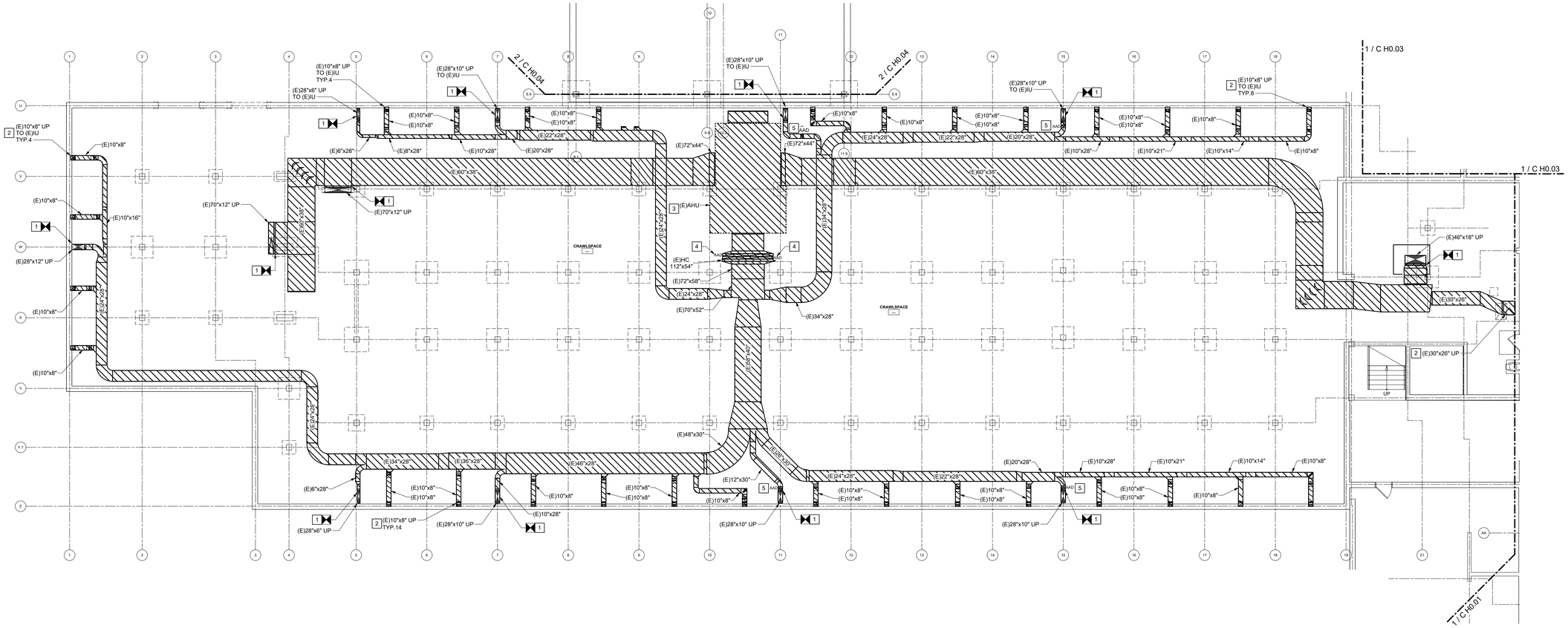
C H0.04

GENERAL SHEET NOTES:

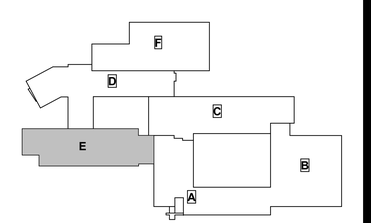
A. ALL RISERS UP SEE SHEET C H0.10 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK UP TO EXISTING RISER AND PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN RISER PER SPECIFICATION 230130.
2. REMOVE DUCTWORK AND RISER.
3. DISCONNECT AND REMOVE AIR HANDLING UNIT.
4. REMOVE PNEUMATIC AUTOMATIC AIR DAMPER. DISCONNECT AND REMOVE ALL ASSOCIATED TUBING BACK TO SOURCE AND CAP.
5. REMOVE ELECTRONIC AUTOMATIC AIR DAMPER. DISCONNECT AND REMOVE ALL ASSOCIATED WIRE BACK TO SOURCE AND CAP.



1 PARTIAL BASEMENT PLAN - AREA E - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7886**

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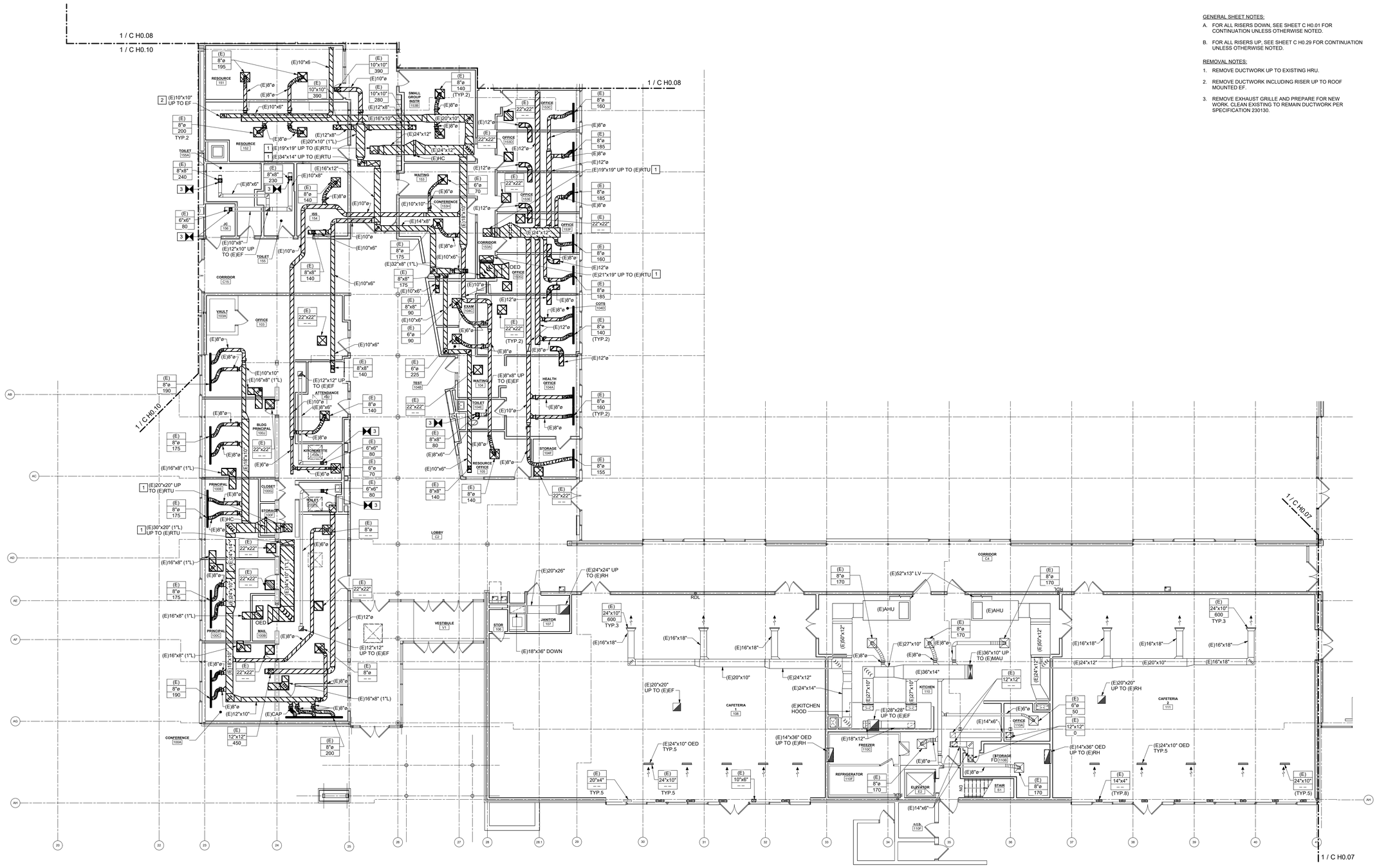
DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA E - DUCTWORK DEMOLITION

C H0.05



1 PARTIAL FIRST FLOOR - AREA A - DUCTWORK DEMOLITION
1/8" = 1'-0"

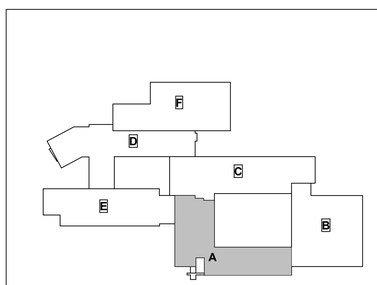
GENERAL SHEET NOTES:

A. FOR ALL RISERS DOWN, SEE SHEET C H0.01 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. FOR ALL RISERS UP, SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK UP TO EXISTING HRU.
2. REMOVE DUCTWORK INCLUDING RISER UP TO ROOF MOUNTED EF.
3. REMOVE EXHAUST GRILLE AND PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN DUCTWORK PER SPECIFICATION 230130.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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LICENSED PROFESSIONAL ENGINEER
EXP. 06/30/2026
080515

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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA A - DUCTWORK DEMOLITION

C H0.06

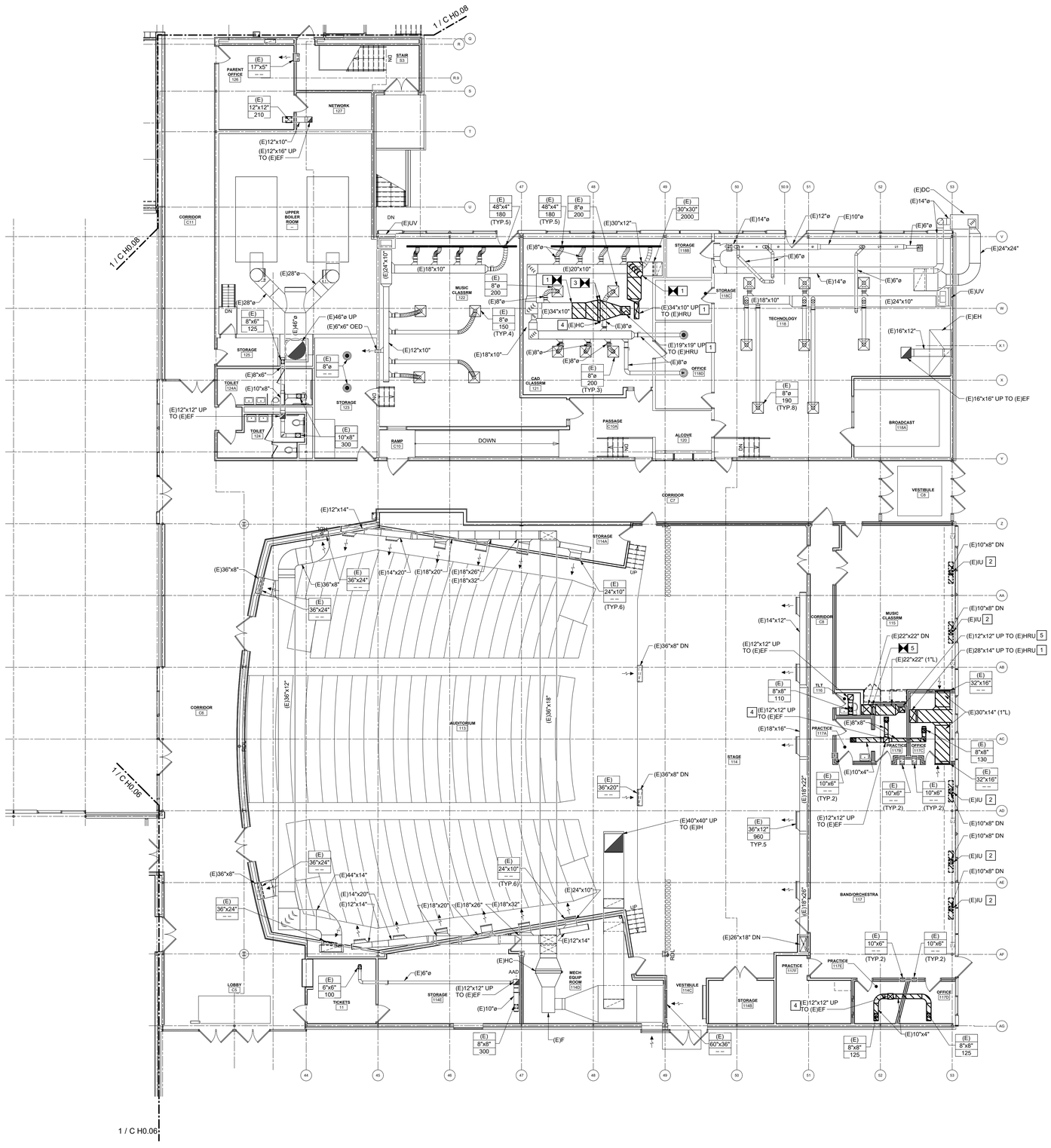
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H0.02 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK UP TO EXISTING HRU.
2. DISCONNECT AND REMOVE EXISTING INDUCTION UNIT.
3. DISCONNECT AND REMOVE DUCT MOUNTED HEATING COIL.
4. REMOVE DUCTWORK INCLUDING RISER UP TO ROOF MOUNTED EF.
5. REMOVE DUCTWORK FROM POINT SHOWN UP TO HRU, INCLUDING THE EXISTING RISER. CLEAN EXISTING TO REMAIN RISER DOWN TO BASEMENT PER SPECIFICATION 230130. PREPARE FOR NEW WORK.


1 / C H0.08
1 / C H0.06
1 / C H0.06
PARENT OFFICE 126
NETWORK 127
CORRIDOR C11
UPPER BOILER ROOM
STAIR S3
MUSIC CLASSRM 122
STORAGE 125
TOILET 124A
TOILET 124
STORAGE 123
CAD CLASSRM 121
RAMP C10
DOWN
PASSAGE C104
ALCOVE 120
OFFICE 118D
STORAGE 118B
STORAGE 118C
TECHNOLOGY 116
BROADCAST 116A
CORRIDOR C7
VESTIBULE C8
STORAGE 114A
CORRIDOR C6
AUDITORIUM 113
LOBBY C5
TICKETS 11
STORAGE 114E
MECH EQUIP ROOM 114D
VESTIBULE 114C
STORAGE 114B
STAGE 114
CORRIDOR C9
MUSIC CLASSRM 115
TLT 116
PRACTICE 117A
PRACTICE 117B
OFFICE 117C
BAND/ORCHESTRA 117
PRACTICE 117E
PRACTICE 117F
OFFICE 117D
STORAGE 114F
(E) 17"x5"
(E) 12"x12" 210
(E)12"x10"
(E)12"x16" UP TO (E)EF
(E)28"ø
(E) 8"x6" 125
(E)46"ø UP
(E)6"x6" OED
(E)46"ø
(E)8"x6"
(E)10"x8"
(E)12"x12" UP TO (E)EF
(E) 8"ø
(E) 10"x8" 300
(E)12"x10"
(E)18"x10"
(E) 8"ø 200
(E)8"ø
(E) 8"ø 150 (TYP.4)
(E)34"x10"
4 (E)HC
(E)8"ø
(E) 8"ø 200 (TYP.3)
(E)34"x10" UP TO (E)HRU 1
(E)19"x19" UP TO (E)HRU 4
(E)8"ø
(E)18"x10"
(E)24"x10"
(E) 48"x4" 180 (TYP.5)
(E) 48"x4" 180 (TYP.5)
(E) 8"ø 200
(E) 30"x30" 2000
(E)30"x12"
(E)20"x10"
(E)14"ø
(E)12"ø
(E)10"ø
(E)DC
(E)6"ø
(E)24"x24"
(E)UV
(E)EH
(E)16"x12"
(E)16"x16" UP TO (E)EF
(E)24"x10"
(E)14"ø
(E)18"x10"
(E) 8"ø 190 (TYP.8)
(E)12"x14"
(E)36"x8"
(E) 36"x24"
(E)14"x20"
(E)18"x20"
(E)18"x26"
(E)18"x32"
(E) 24"x10" (TYP.6)
(E)36"x8" DN
(E)36"x12"
(E)12"x14"
(E)HC
AAD
(E)6"ø
(E)12"x12" UP TO (E)EF
(E)10"ø
(E)F
(E) 8"x8" 300
(E) 60"x36"
(E)10"x4"
(E) 8"x8" 125
(E) 8"x8" 125
(E)10"x8" DN
(E)IU 2
(E)12"x12" UP TO (E)HRU 5
(E)28"x14" UP TO (E)HRU 1
(E)22"x22" DN 5
(E)22"x22" (1"L)
(E) 8"x8" 110
4 (E)12"x12" UP TO (E)EF
(E)8"x8"
(E)18"x16"
(E) 32"x16"
(E)30"x14" (1"L)
(E) 8"x8" 130
(E) 10"x6" (TYP.2)
(E)10"x4"
(E)40"x40" UP TO (E)IH
(E) 36"x12" 960 TYP.5
(E)12"x12" UP TO (E)EF
(E)18"x22"
(E)18"x26"
(E)26"x18" DN
(E) 10"x6" (TYP.2)
4 (E)12"x12" UP TO (E)EF
(E)10"x4"
(E) 8"x8" 125
(E) 8"x8" 125
(E) 36"x20"
(E)36"x8" DN
(E)44"x14"
(E)12"x14"
(E)24"x10"
(E)6"ø
(E)8"ø
(E)12"x14"
(E)36"x12"
(E)36"x18"
(E)36"x8"
(E) 36"x24"
(E) 24"x10" (TYP.6)
(E) 36"x24"
(E) 36"x24"
(E)36"x8"
(E)36"x8" DN
(E)10"x8" DN
(E)IU 2
(E)10"x8" DN
(E)IU 2
(E)10"x8" DN
(E)IU 2

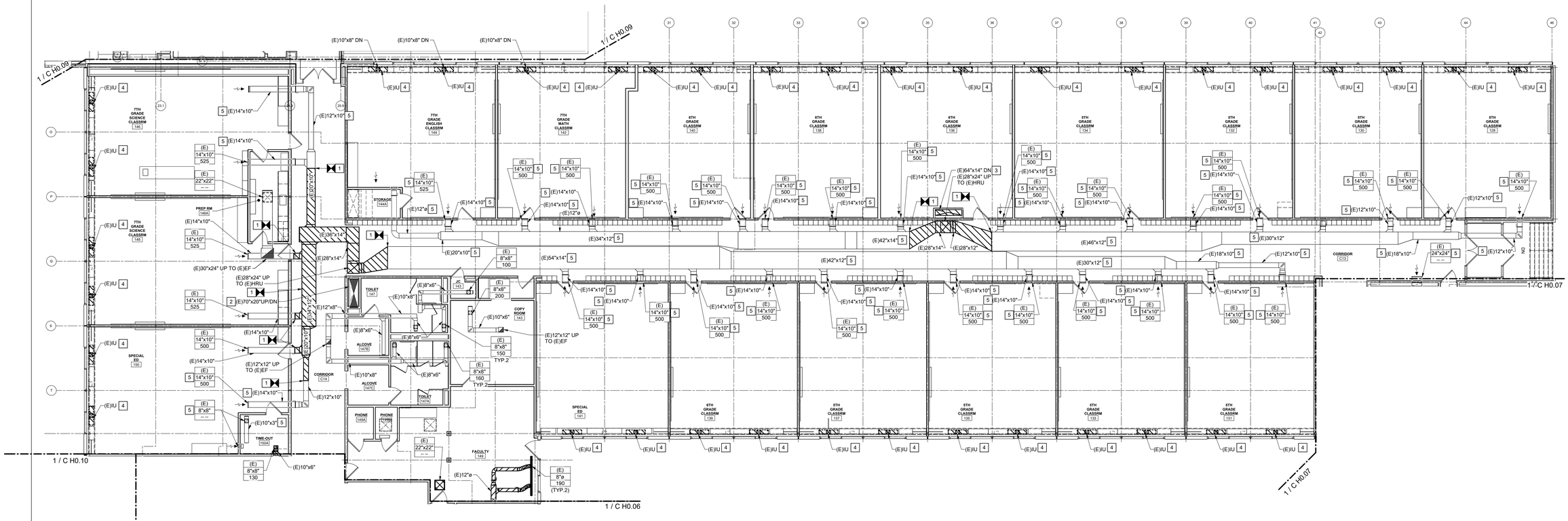
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H0.03 FOR CONTINUATION UNLESS OTHERWISE NOTED.

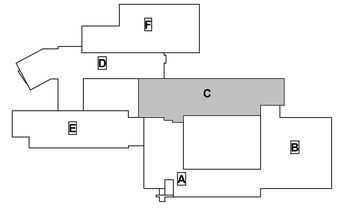
B. ALL RISERS UP SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK UP TO EXISTING DUCT AT LOCATION SHOWN AND PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN RISER PER SPECIFICATION 230130.
2. REMOVE DUCTWORK FROM EXISTING HRU, TO 70"x20" DUCTWORK RISER. PREPARE FOR NEW WORK.
3. REMOVE DUCTWORK FROM EXISTING HRU, TO 64"x14" DUCTWORK RISER. PREPARE FOR NEW WORK.
4. DISCONNECT AND REMOVE EXISTING INDUCTION UNIT.
5. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION



1 PARTIAL FIRST FLOOR PLAN - AREA C - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-001
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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STATE OF NEW YORK
JOHN C. HELBERG
EXP. 06/30/2026
080515
LICENSED PROFESSIONAL ENGINEER

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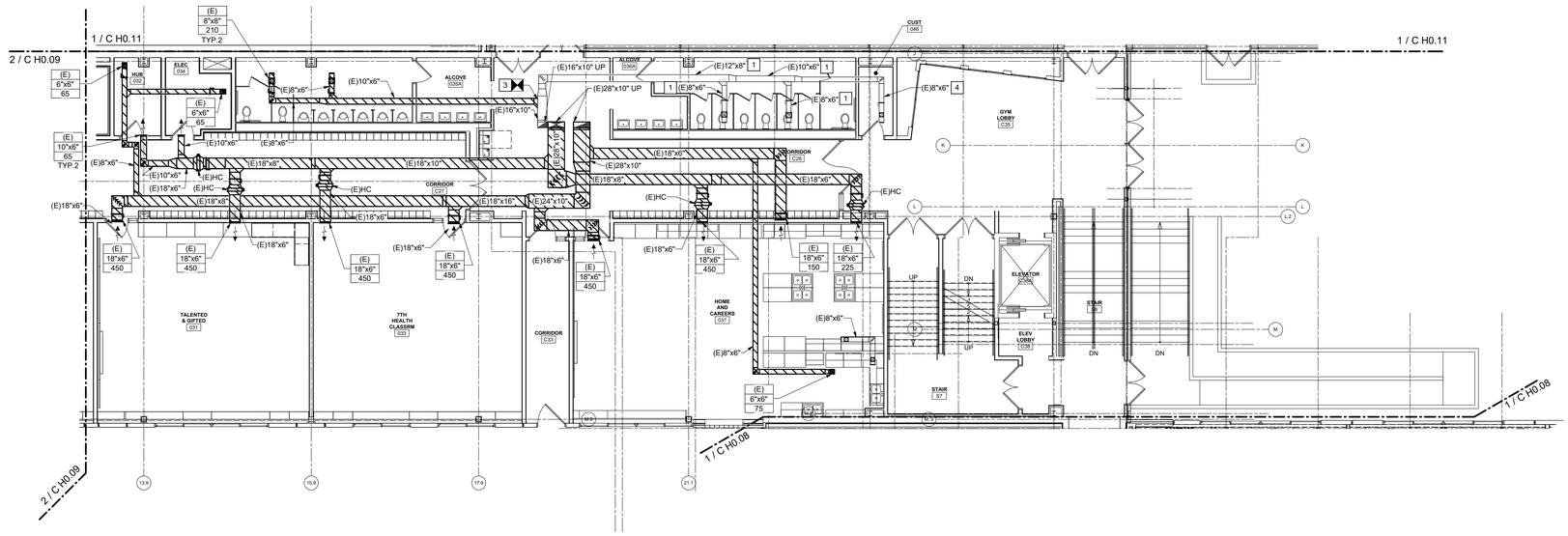
MARK	DATE	DESCRIPTION

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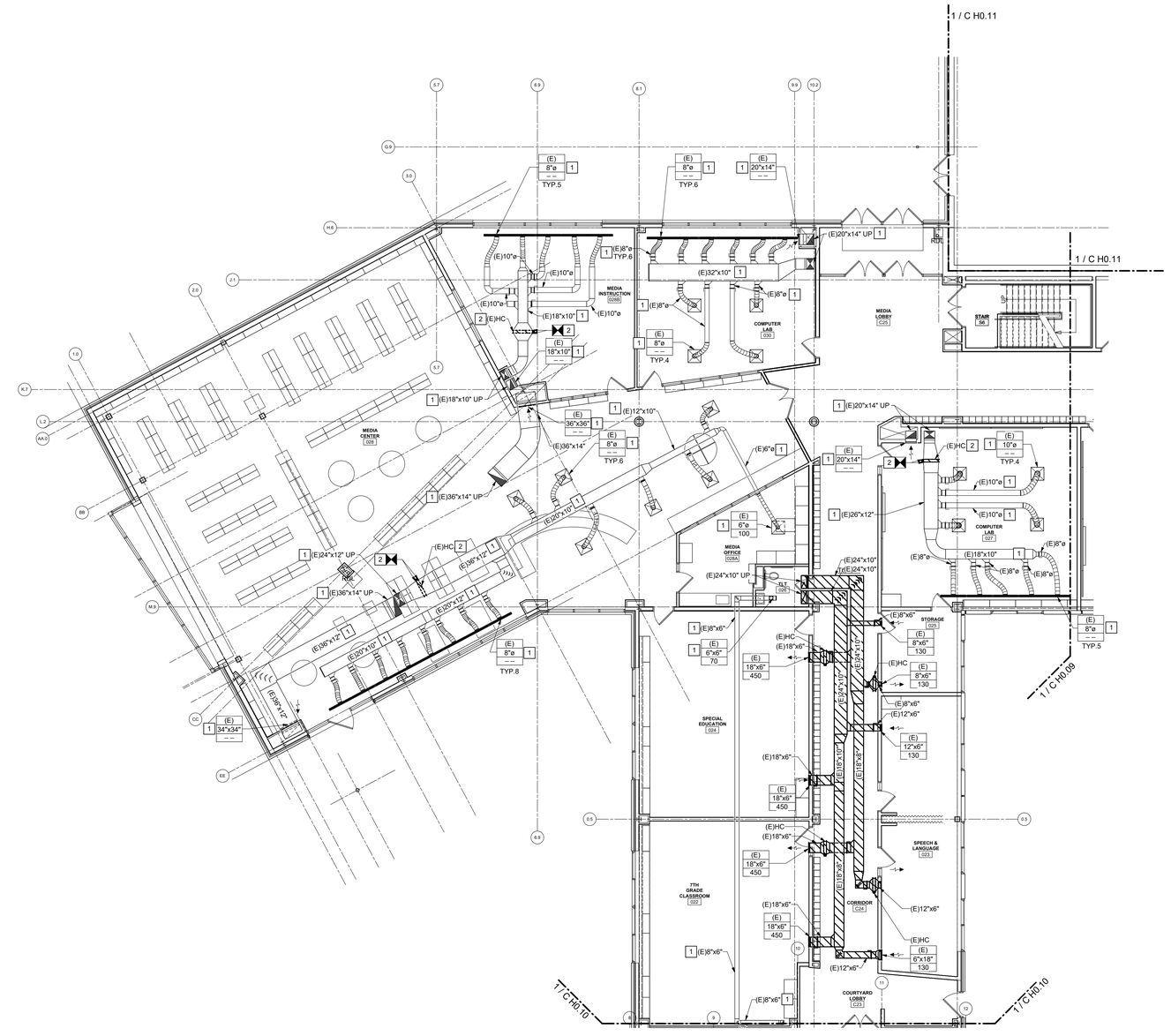
DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA C - DUCTWORK DEMOLITION

C H0.08



1 PARTIAL FIRST FLOOR PLAN - AREA D SOUTH - DUCTWORK DEMOLITION
1/8" = 1'-0"



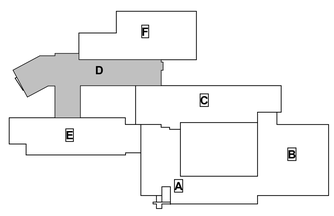
2 PARTIAL FIRST FLOOR PLAN - AREA D NORTH - DUCTWORK DEMOLITION
1/8" = 1'-0"

GENERAL SHEET NOTES:

A. FOR ALL RISERS UP, SEE SHEET C H0.12 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.
2. DISCONNECT AND REMOVE DUCT MOUNTED HEATING COIL.
3. REMOVE DUCTWORK TO POINT INDICATED. PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7865**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA D - DUCTWORK DEMOLITION

C H0.09

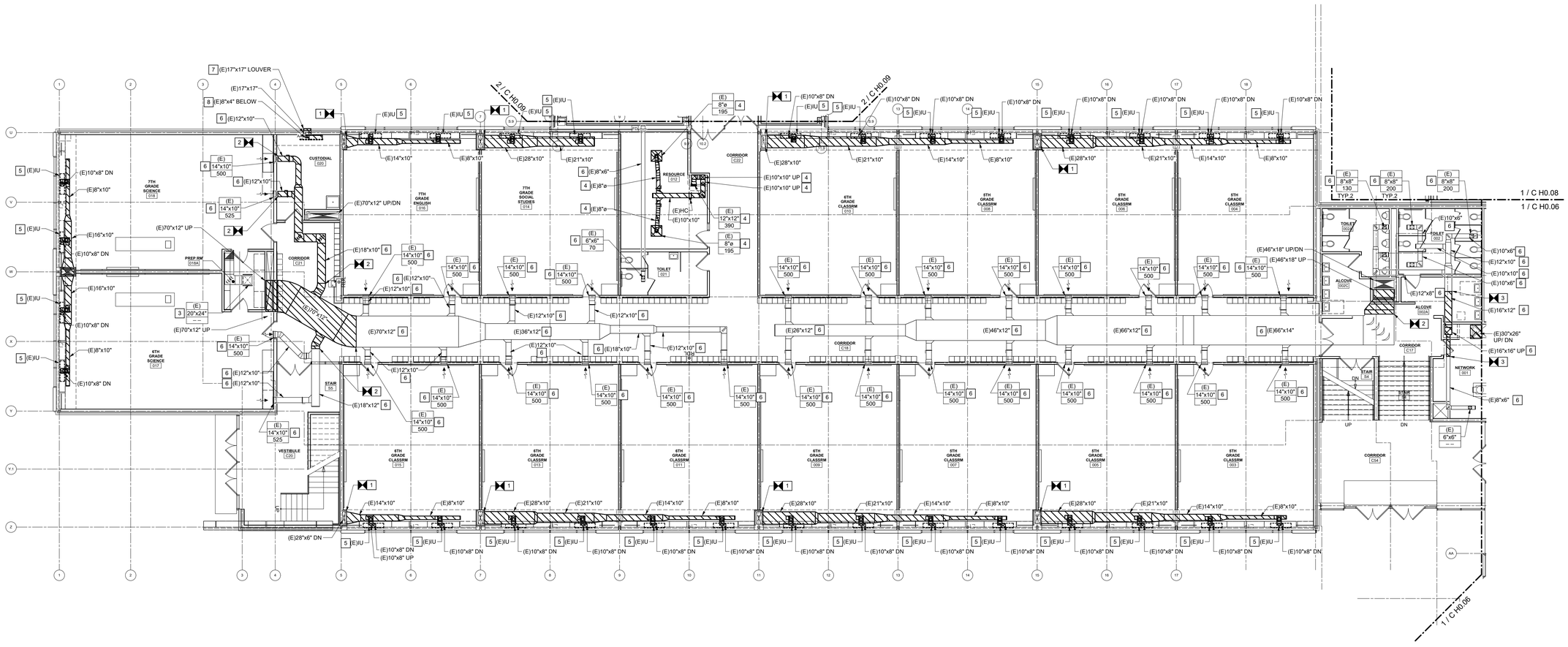
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H0.05 FOR CONTINUATION UNLESS OTHERWISE NOTED.

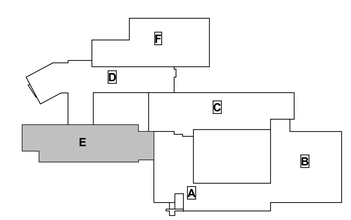
B. ALL RISERS UP SEE SHEET C H0.13 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE SUPPLY DUCTWORK FROM CHASE PENETRATION UP TO 2ND FLOOR RISER AND PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN RISER PER SPECIFICATION 23010.
2. REMOVE DUCTWORK IN CHASE FROM EXISTING HRU TO POINT INDICATED. PREPARE FOR NEW WORK. CLEAN EXISTING DUCTWORK TO REMAIN PER SPECIFICATION 23010.
3. REMOVE EXISTING GRILLE AND DUCTWORK UP TO THE EXISTING EXHAUST FAN.
4. REMOVE EXISTING DIFFUSER, GRILLES AND DUCTWORK UP TO EXISTING ROOFTOP UNIT. PREPARE FOR NEW WORK.
5. DISCONNECT AND REMOVE EXISTING INDUCTION UNIT.
6. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.
7. REMOVE EXISTING LOUVER AND DUCTWORK.
8. REMOVE DUCTWORK AND AUTOMATIC AIR DAMPER.



1 PARTIAL FIRST FLOOR PLAN - AREA E - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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STATE OF NEW YORK
JOHN C. HELBERG
EXP. 06/30/2026
080515
LICENSED PROFESSIONAL ENGINEER

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA E - DUCTWORK DEMOLITION

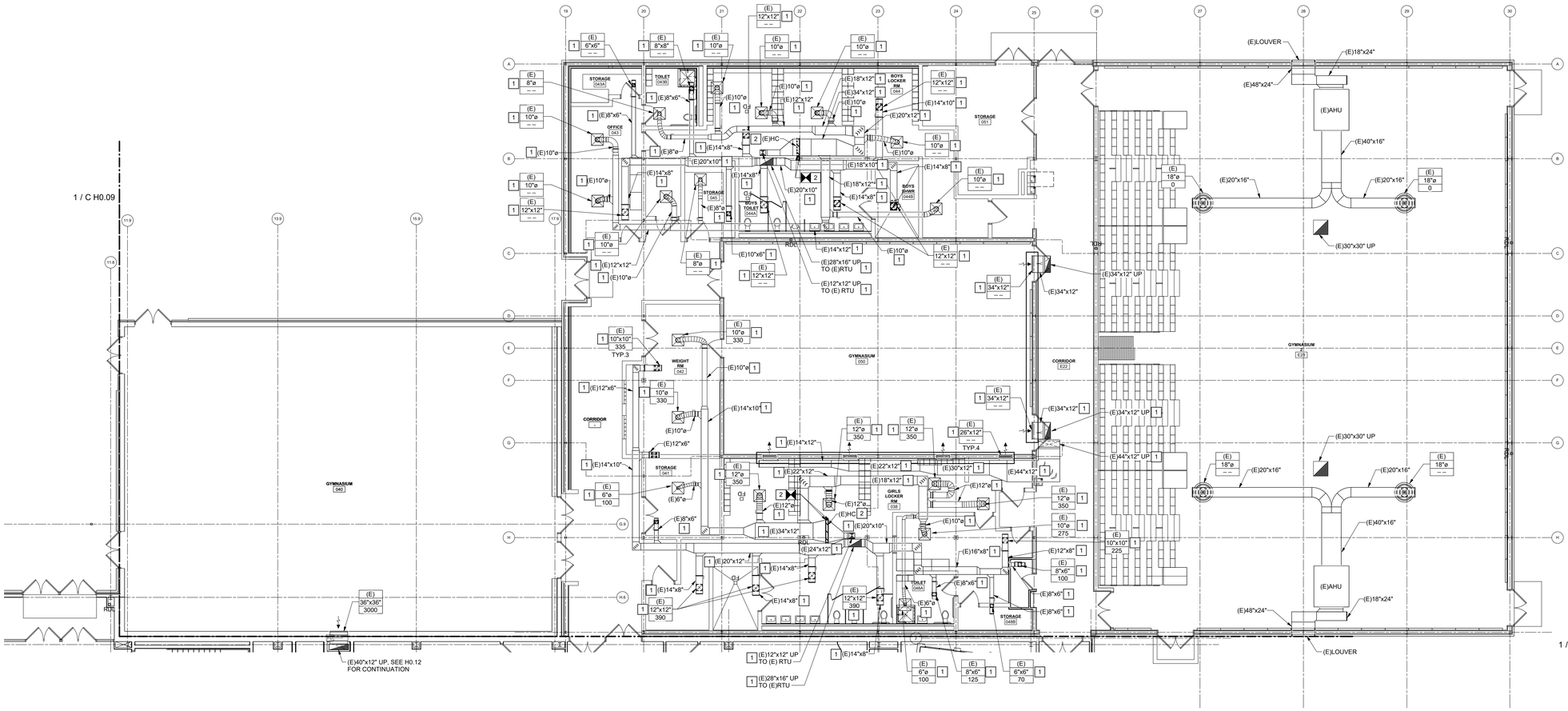
C H0.10

GENERAL SHEET NOTES:

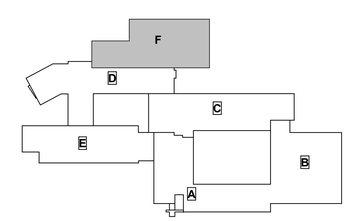
A. ALL RISERS UP SEE SHEET C H0.14 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.
2. DISCONNECT AND REMOVE DUCT MOUNTED HEATING COIL.



1 PARTIAL FIRST FLOOR PLAN - AREA F - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: 23-44-7868/ 23-44-7868

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-031
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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LICENSED PROFESSIONAL ENGINEER
EXP. 06/30/2026
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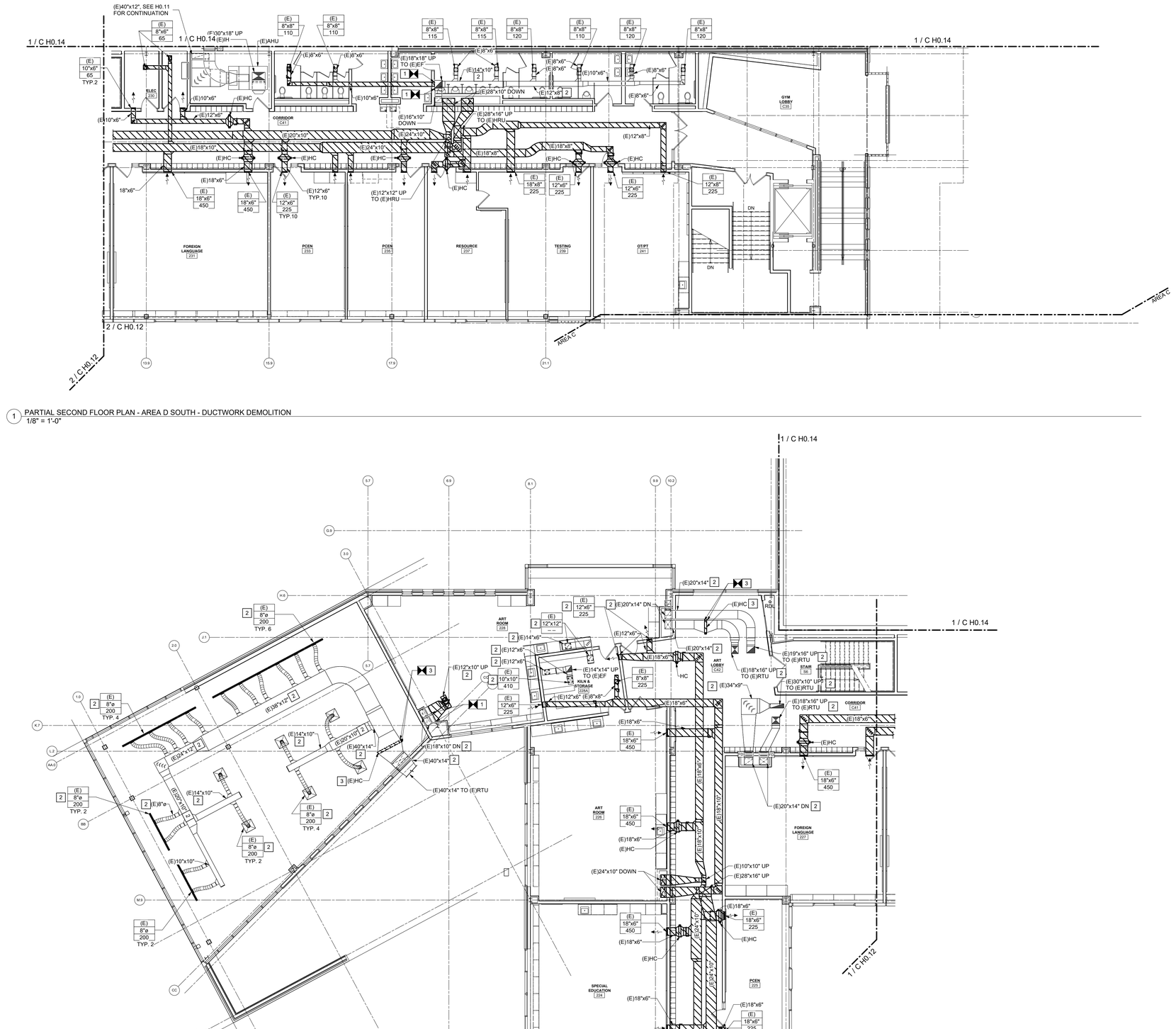
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DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA F - DUCTWORK DEMOLITION

C H0.11



1 PARTIAL SECOND FLOOR PLAN - AREA D SOUTH - DUCTWORK DEMOLITION
1/8" = 1'-0"

2 PARTIAL SECOND FLOOR PLAN - AREA D NORTH - DUCTWORK DEMOLITION
1/8" = 1'-0"

KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

GENERAL SHEET NOTES:

A. FOR ALL RISERS DOWN, SEE SHEET C H0.09 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. FOR ALL RISERS UP, SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK TO POINT INDICATED. PREPARE FOR NEW WORK. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.
2. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.
3. DISCONNECT AND REMOVE DUCT MOUNTED HEATING COIL.

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7866**

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B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-001
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL SECOND FLOOR PLAN - AREA D - DUCTWORK DEMOLITION

C H0.12

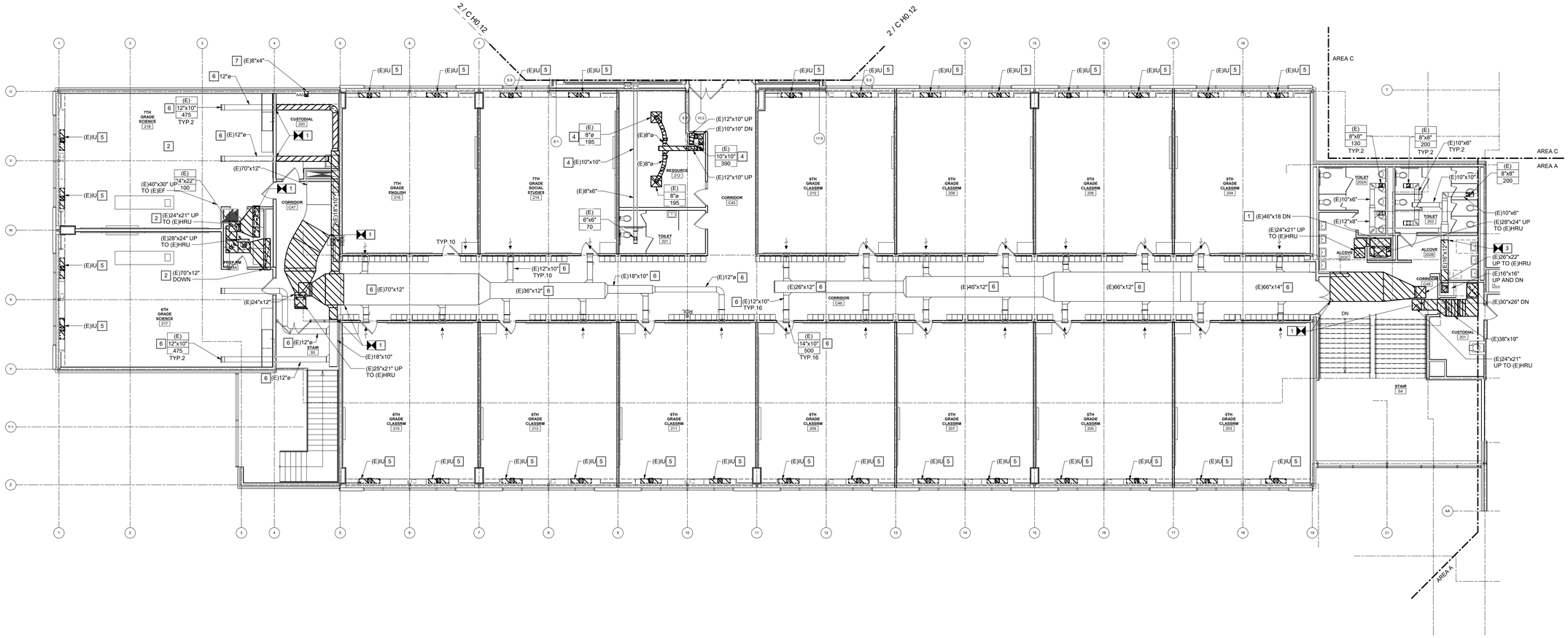
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H0.10 FOR CONTINUATION UNLESS OTHERWISE NOTED.

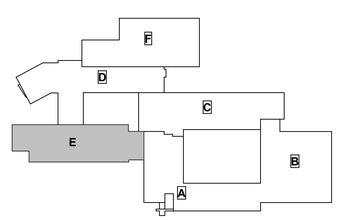
B. ALL RISERS UP SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE DUCTWORK FROM EXISTING HRU TO POINT INDICATED. PREPARE FOR NEW WORK. CLEAN EXISITNG TO REMAIN RISER PER SPECIFICATION 23010.
2. REMOVE DUSTWORK IN CHASE FROM EXISTING HRU TO POINT INDICATED. PREPARE FOR NEW WORK. CLEAN EXISITNG DUCTWORK TO REMAIN PER SPECIFICATION 23010.
3. REMOVE EXISTING GRILLE AND DUCTWORK UP TO THE EXISTING EXHAUST FAN.
4. REMOVE EXISTING DIFFUSER, GRILLES AND DUCTWORK UP TO EXISTING ROOFTOP UNIT. PREPARE FOR NEW WORK.
5. DISCONNECT AND REMOVE EXISTING INDUCTION UNIT.
6. CLEAN EXISTING TO REMAIN DUCTWORK AND RGD'S PER SPECIFICATION 230130.



1 PARTIAL SECOND FLOOR PLAN - AREA E - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: 23-44-7866/ 23-44-7866

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-031
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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JOHN C. HELBERG
EXP. 06/30/2026
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DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL SECOND FLOOR PLAN - AREA E - DUCTWORK DEMOLITION

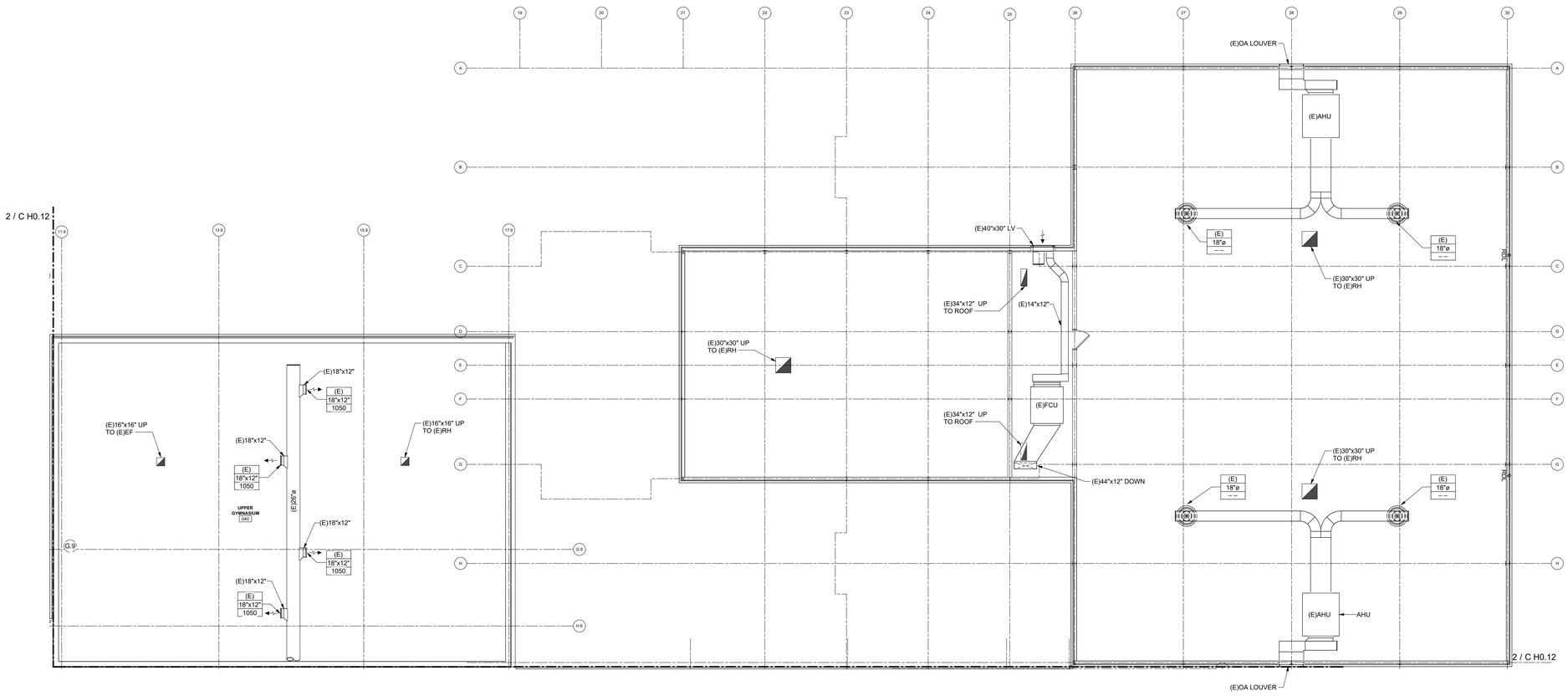
C H0.13

GENERAL SHEET NOTES:

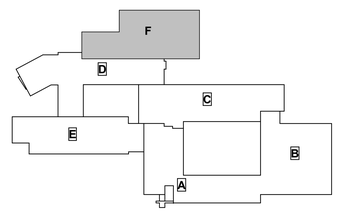
A. ALL RISERS DOWN SEE SHEET C H0.11 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

C. NO SCOPE. FOR REFERENCE ONLY



1 PARTIAL SECOND FLOOR PLAN - AREA F - DUCTWORK DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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J: Smith Road ES	42-03-03-06-0-09-017
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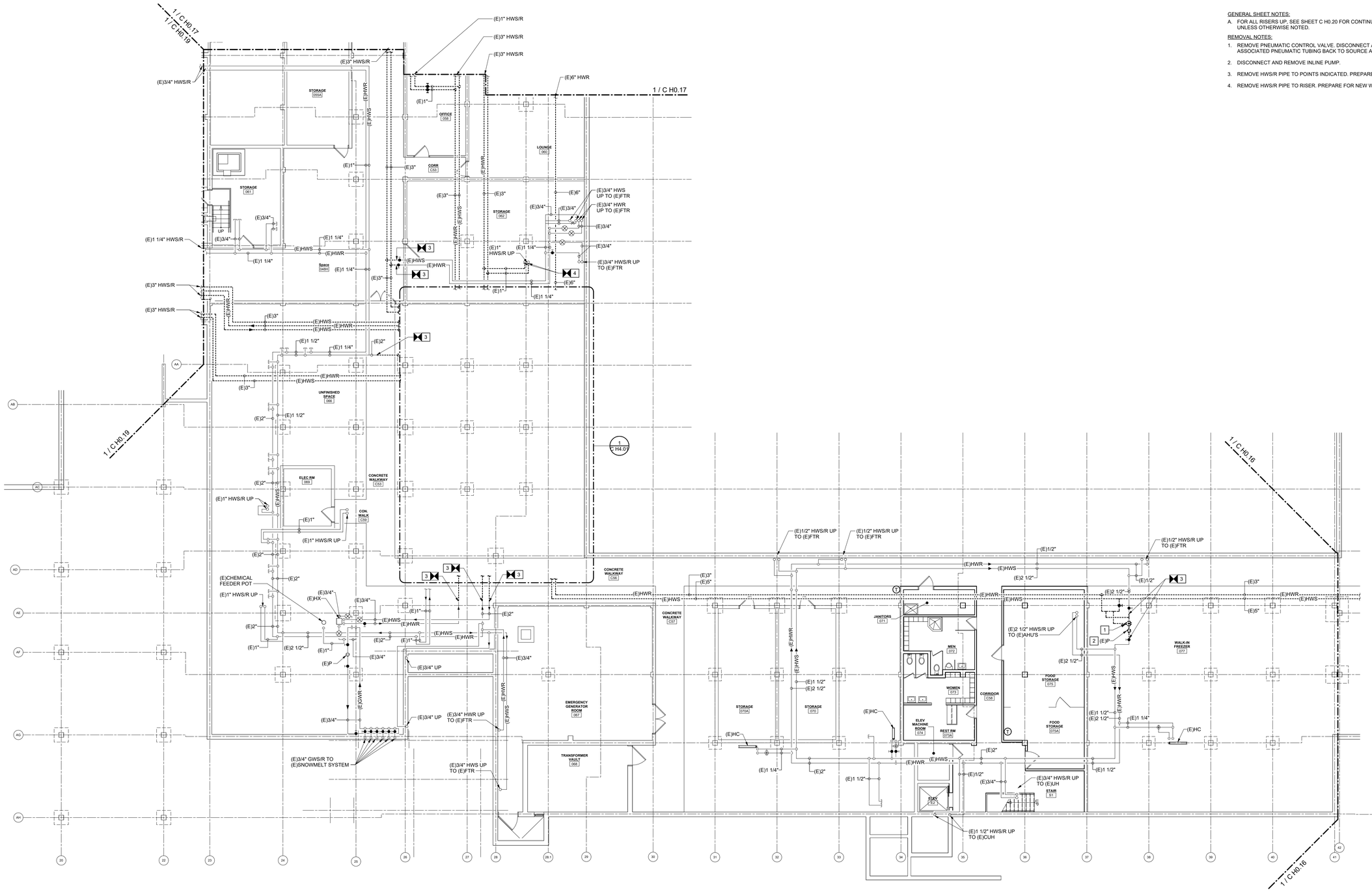
DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL SECOND FLOOR PLAN - AREA F - DUCTWORK DEMOLITION

C H0.14



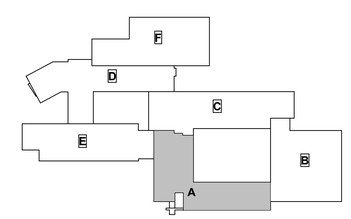
1 PARTIAL BASEMENT PLAN - AREA A - PIPING DEMOLITION
1/8" = 1'-0"

GENERAL SHEET NOTES:

A. FOR ALL RISERS UP, SEE SHEET C H0.20 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. DISCONNECT AND REMOVE INLINE PUMP.
3. REMOVE HWS/R PIPE TO POINTS INDICATED. PREPARE FOR NEW WORK.
4. REMOVE HWS/R PIPE TO RISER. PREPARE FOR NEW WORK.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA A - PIPING DEMOLITION

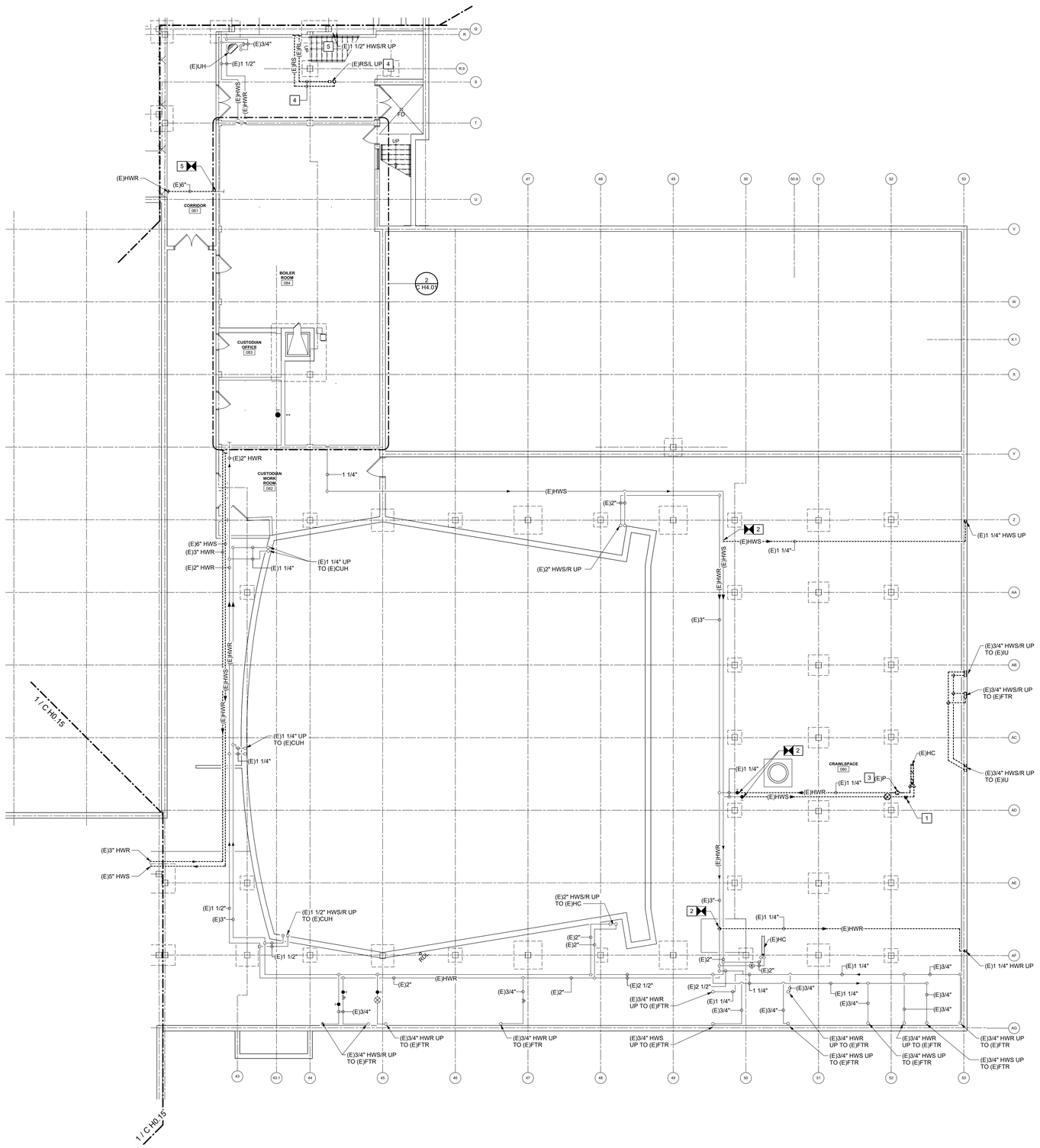
C H0.15

GENERAL SHEET NOTES:

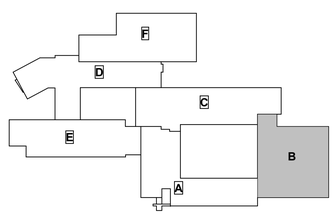
A. FOR ALL RISERS UP, SEE SHEET C H0.21 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE ELECTRONIC CONTROL VALVE AND ASSOCIATED WIRING BACK TO THE SOURCE AND CAP.
2. REMOVE HWS/R PIPE FROM EXISTING HEATING COIL TO BALL VALVES. PREPARE FOR NEW WORK.
3. DISCONNECT AND REMOVE EXISTING INLINE PUMP.
4. REMOVE EXISTING RS/L PIPING AND ASSOCIATED HANGERS.
5. REMOVE HWR PIPE TO WALL. PREPARE FOR NEW WORK.



1 PARTIAL BASEMENT PLAN - AREA B - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

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J: Smith Road ES	42-03-03-06-0-09-017
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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA B - PIPING DEMOLITION

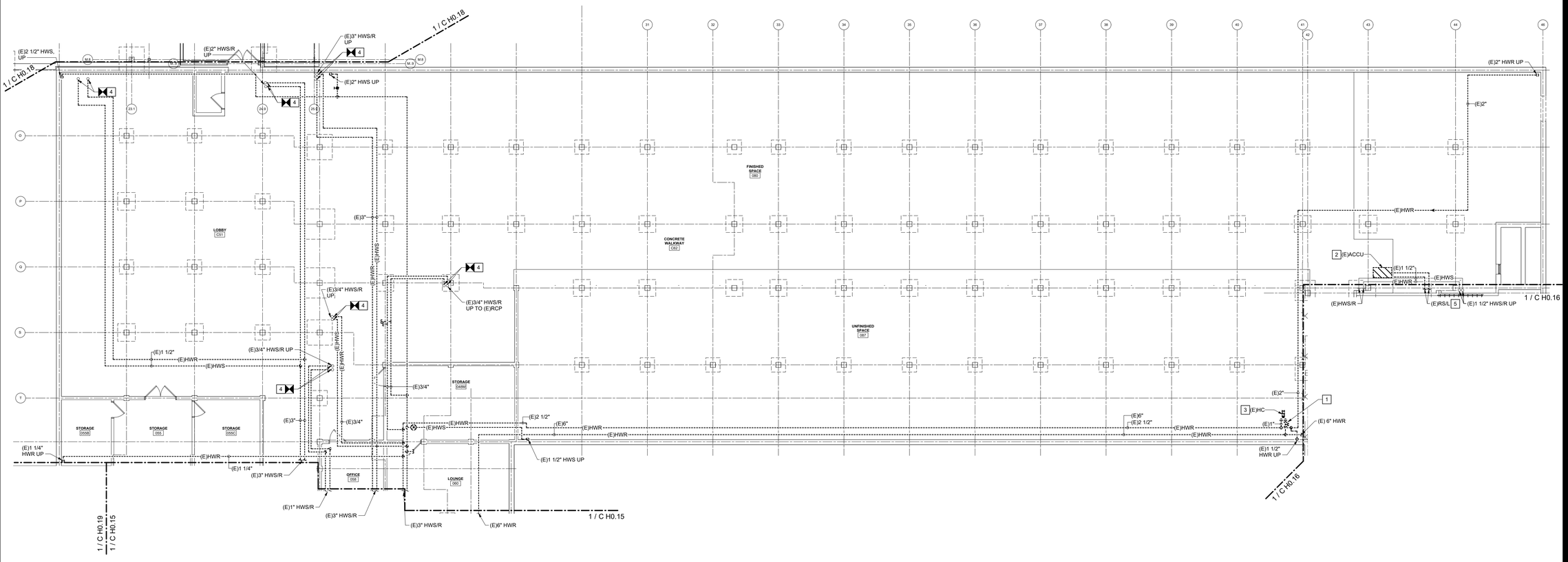
C H0.16

GENERAL SHEET NOTES:

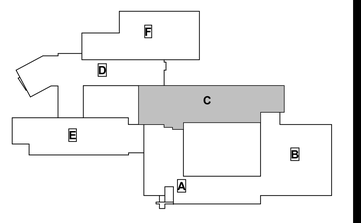
A. FOR ALL RISERS UP, SEE SHEET C H0.22 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. EVACUATE AND DISPOSE OF REFRIGERANT. DISCONNECT AND REMOVE EXISTING ACCU AND EQUIPMENT PAD.
3. DISCONNECT AND REMOVE HEATING COIL.
4. REMOVE EXISTING HWS/R PIPE UP TO RISER AND PREPARE FOR NEW WORK. CLEAN RISER PER SPECIFICATION 230130.
5. REMOVE EXISTING RS/L PIPING AND ASSOCIATED HANGERS.



1 PARTIAL BASEMENT PLAN - AREA C - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
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J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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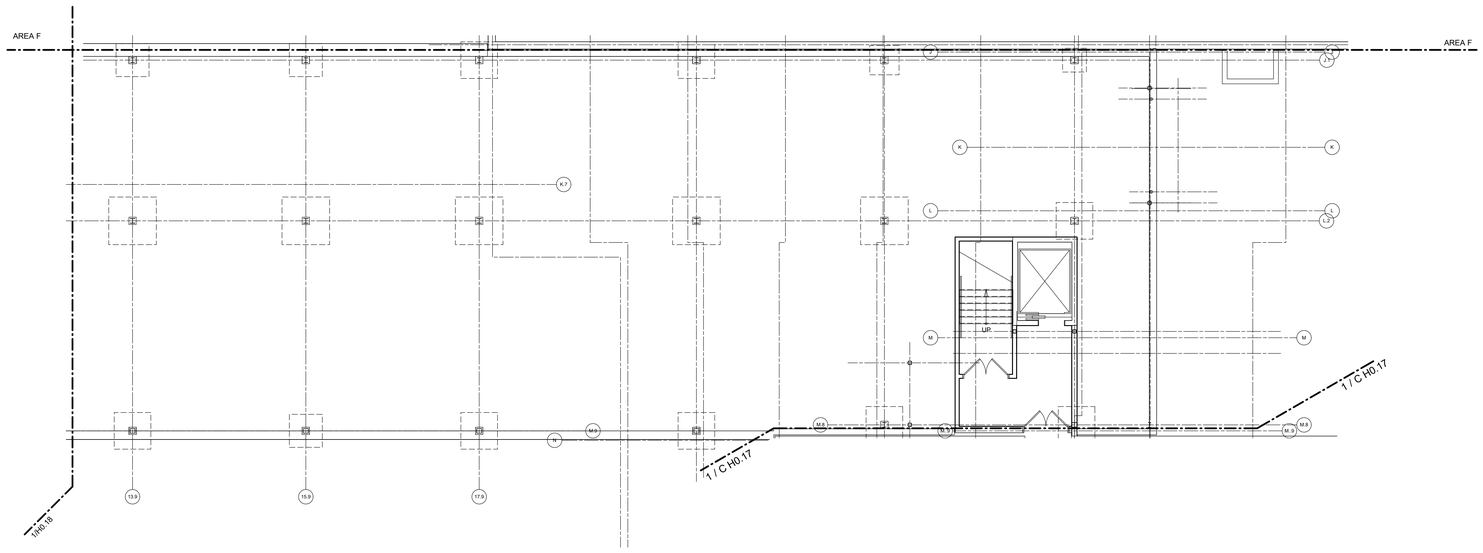
DRAWN BY: **JPK**

SCALE: **AS NOTED**

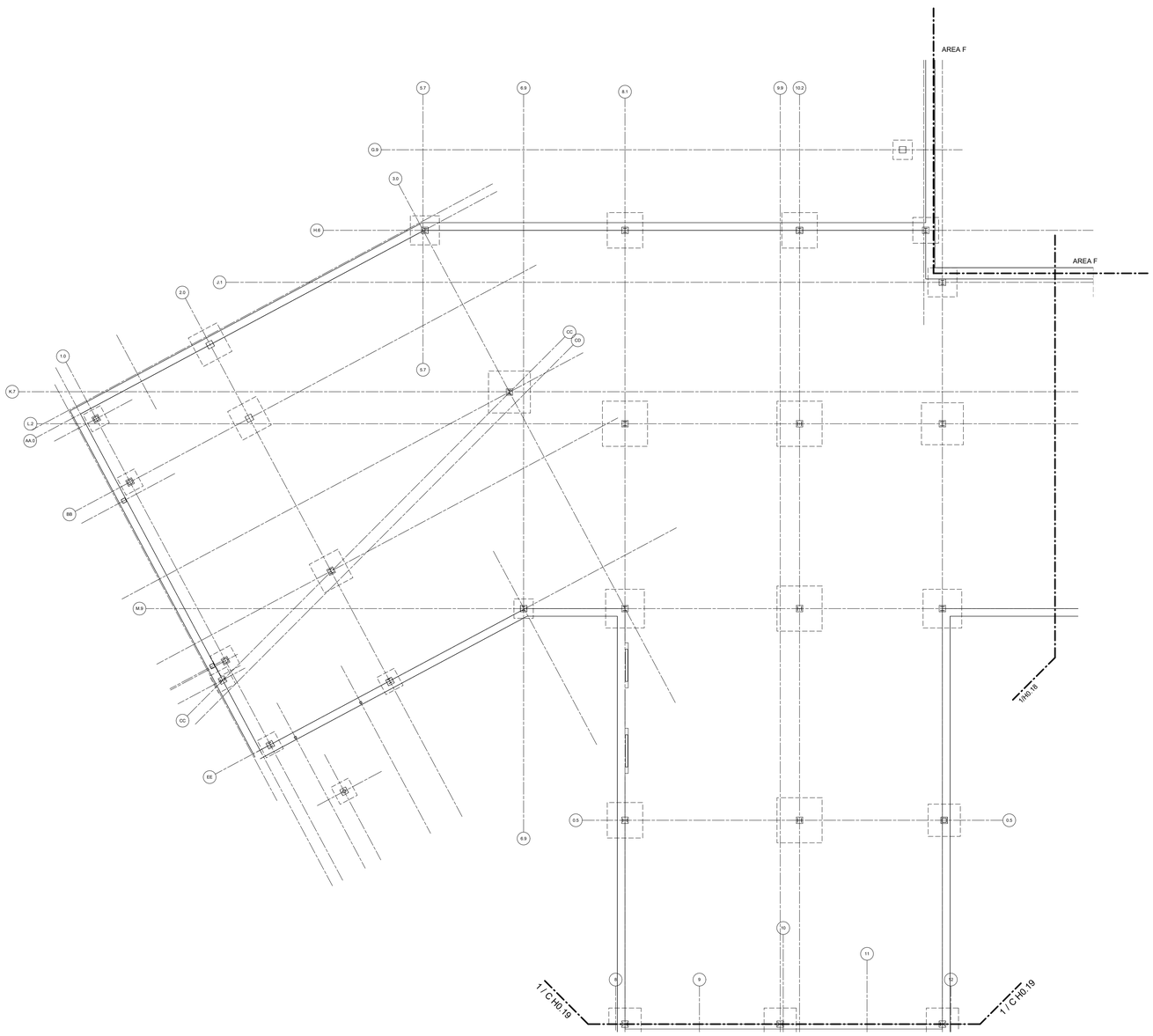
DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA C - PIPING DEMOLITION

C H0.17

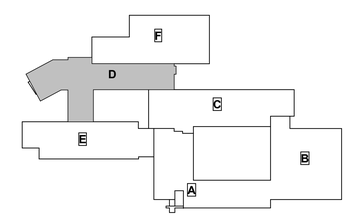
GENERAL SHEET NOTES:
A. NO SCOPE. SHOWN FOR REFERENCE ONLY.



1 PARTIAL BASEMENT PLAN AREA D - PIPING DEMOLITION
1/8" = 1'-0"



2 PARTIAL BASEMENT PLAN - AREA D NORTH - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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E: Roxboro Road ES	42-03-03-06-0-08-019
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K: District Office	42-03-03-06-0-07-014

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100% CONSTRUCTION DOCUMENTS

DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA D - PIPING DEMOLITION

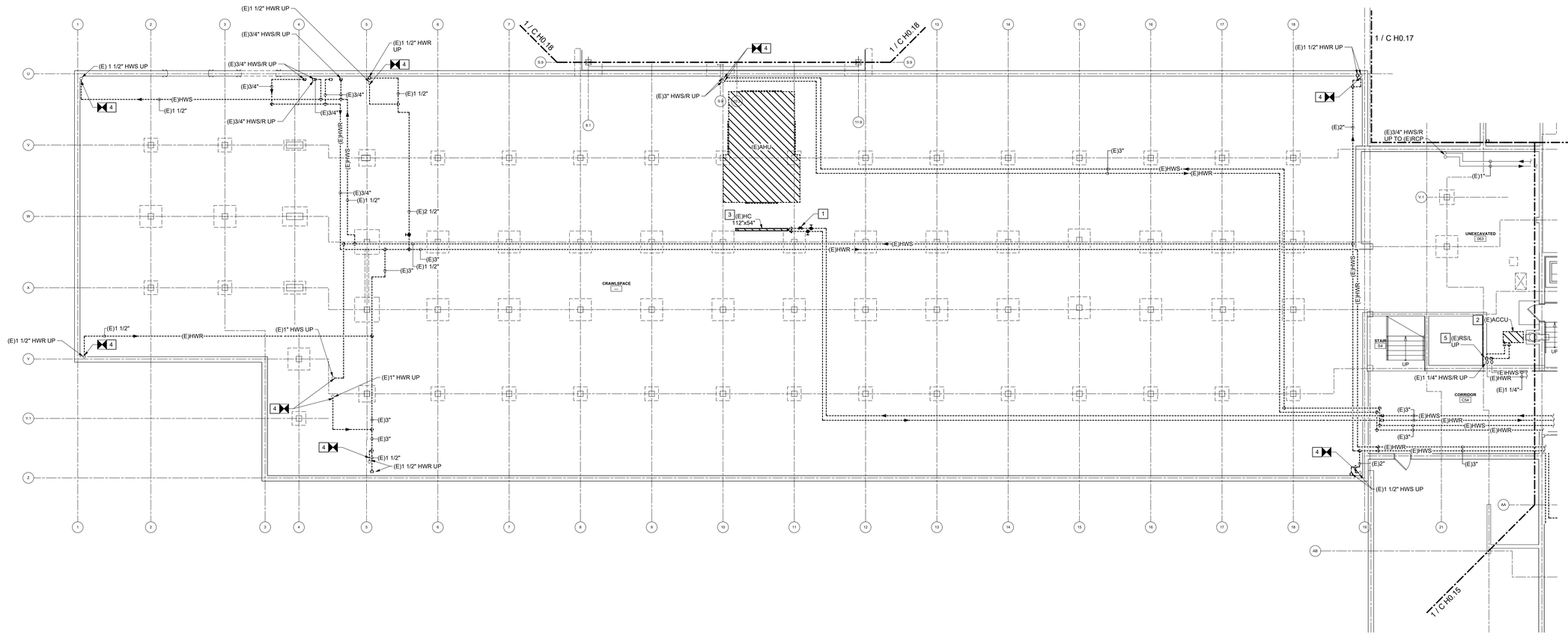
C H0.18

GENERAL SHEET NOTES:

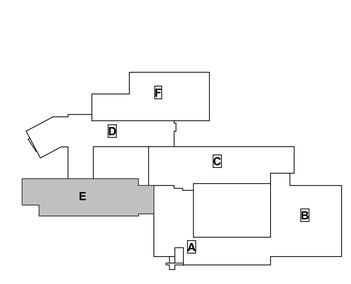
A. ALL RISERS UP SEE SHEET C H0.24 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. EVACUATE AND DISPOSE OF REFRIGERANT. DISCONNECT AND REMOVE EXISTING ACCU AND EQUIPMENT PAD.
3. DISCONNECT AND REMOVE HEATING COIL.
4. REMOVE EXISTING HWS/R PIPE UP TO RISER AND PREPARE FOR NEW WORK. CLEAN RISER PER SPECIFICATION 230130.
5. REMOVE EXISTING RS/L PIPING UP TO SS.



1 PARTIAL BASEMENT PLAN - AREA E - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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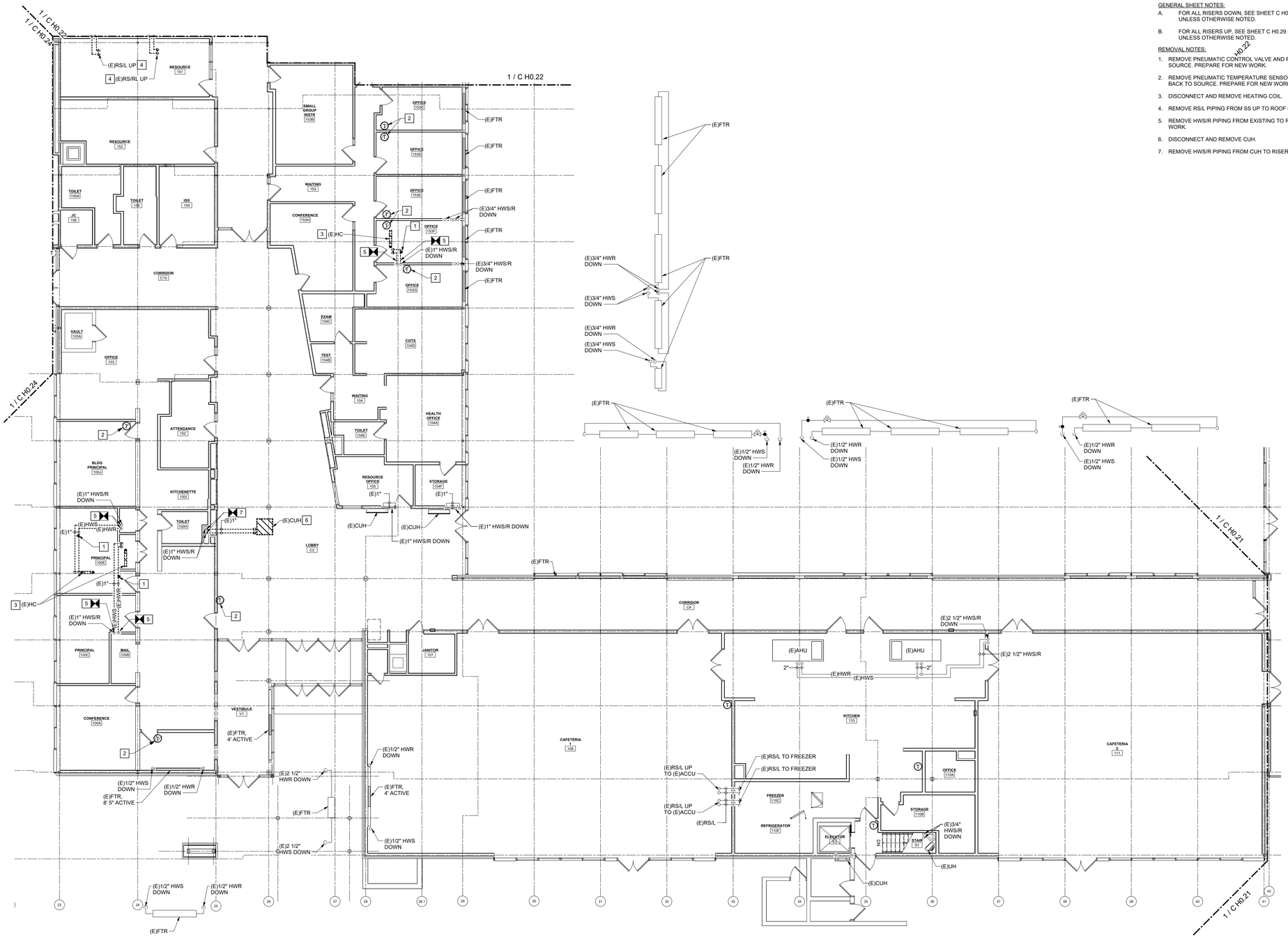
DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA E - PIPING DEMOLITION

C H0.19



1 PARTIAL FIRST FLOOR PLAN - AREA A - PIPING DEMOLITION
1/8" = 1'-0"

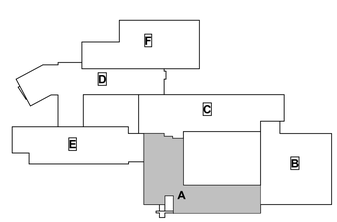
GENERAL SHEET NOTES:

A. FOR ALL RISERS DOWN, SEE SHEET C H0.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. FOR ALL RISERS UP, SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE AND PNEUMATIC TUBING BACK TO SOURCE. PREPARE FOR NEW WORK.
2. REMOVE PNEUMATIC TEMPERATURE SENSOR AND PNEUMATIC TUBING BACK TO SOURCE. PREPARE FOR NEW WORK.
3. DISCONNECT AND REMOVE HEATING COIL.
4. REMOVE RS/L PIPING FROM SS UP TO ROOF MOUNTED ACCU.
5. REMOVE HWS/R PIPING FROM EXISTING TO RISER. PREPARE FOR NEW WORK.
6. DISCONNECT AND REMOVE CUH.
7. REMOVE HWS/R PIPING FROM CUH TO RISER. CAP AND SEAL RISER.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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STATE OF NEW YORK
JON C. HELBERG
EXP. 06/30/2026
080515
LICENSED PROFESSIONAL ENGINEER

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MARK	DATE	DESCRIPTION

100% CONSTRUCTION DOCUMENTS

DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA A - PIPING DEMOLITION

C H0.20

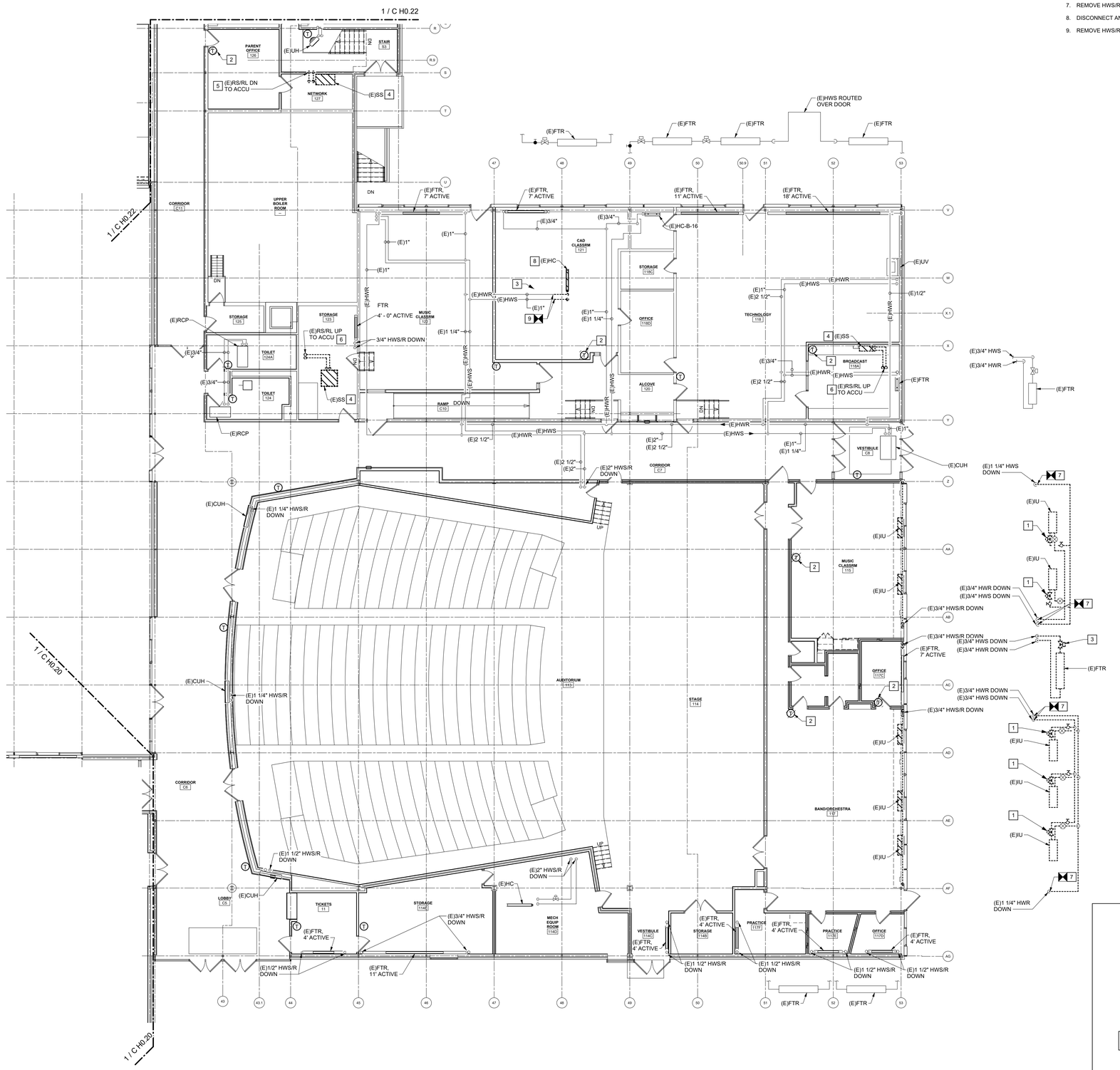
GENERAL SHEET NOTES:

A. FOR ALL RISERS DOWN, SEE SHEET C H0.16 FOR CONTINUATION UNLESS OTHERWISE NOTED.

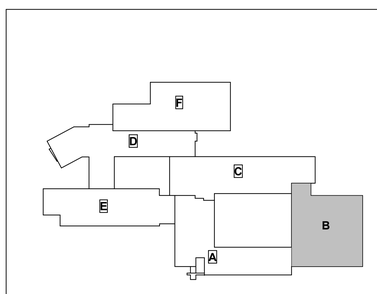
B. FOR ALL RISERS UP, SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. REMOVE PNEUMATIC TEMPERATURE SENSOR AND PNEUMATIC TUBING BACK TO SOURCE AND CAP. PREPARE FOR NEW WORK.
3. REMOVE ELECTRONIC CONTROL VALVE AND ASSOCIATED WIRING BACK TO THE SOURCE AND CAP.
4. EVACUATE AND DISPOSE OF REFRIGERANT AND REMOVE SS.
5. REMOVE RS/RL PIPING FROM SS DOWN TO ACCU IN BASEMENT.
6. REMOVE RS/RL PIPING FROM SS UP TO ACCU ON ROOF.
7. REMOVE HWS/R PIPE TO EXISTING RISER. PREPARE FOR NEW WORK.
8. DISCONNECT AND REMOVE HEATING COIL.
9. REMOVE HWS/R PIPE TO POINT INDCATED. PREPARE FOR NEW WORK.



1 PARTIAL FIRST FLOOR PLAN - AREA B - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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JON C. HELBERG
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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA B - PIPING DEMOLITION

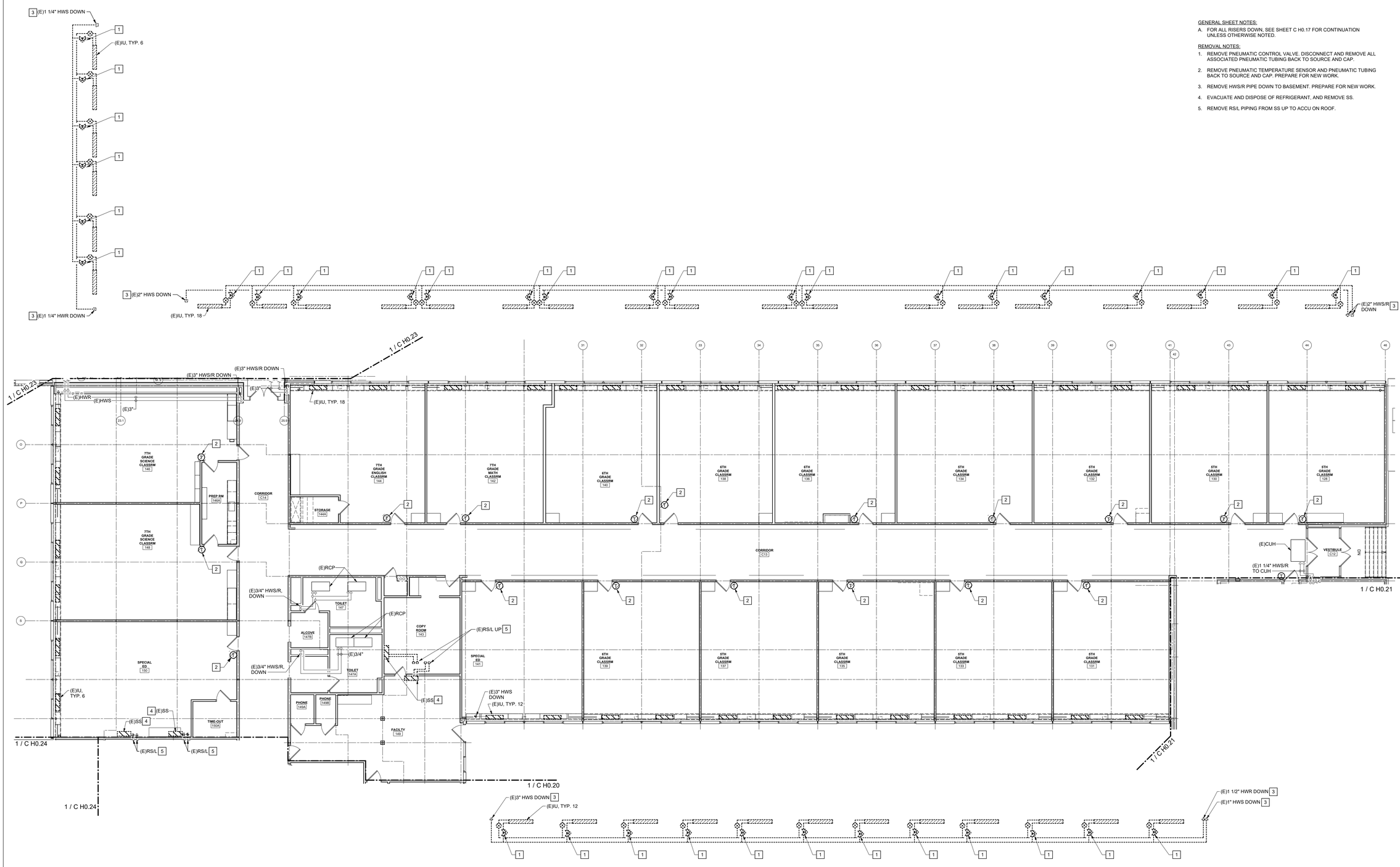
C H0.21

GENERAL SHEET NOTES:

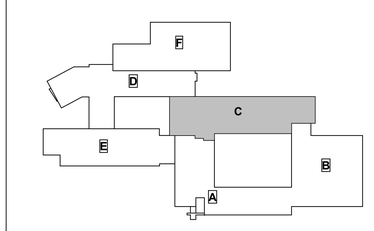
A. FOR ALL RISERS DOWN, SEE SHEET C H0.17 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. REMOVE PNEUMATIC TEMPERATURE SENSOR AND PNEUMATIC TUBING BACK TO SOURCE AND CAP. PREPARE FOR NEW WORK.
3. REMOVE HWS/R PIPE DOWN TO BASEMENT. PREPARE FOR NEW WORK.
4. EVACUATE AND DISPOSE OF REFRIGERANT, AND REMOVE SS.
5. REMOVE RS/L PIPING FROM SS UP TO ACCU ON ROOF.



1 PARTIAL FIRST FLOOR PLAN - AREA C - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

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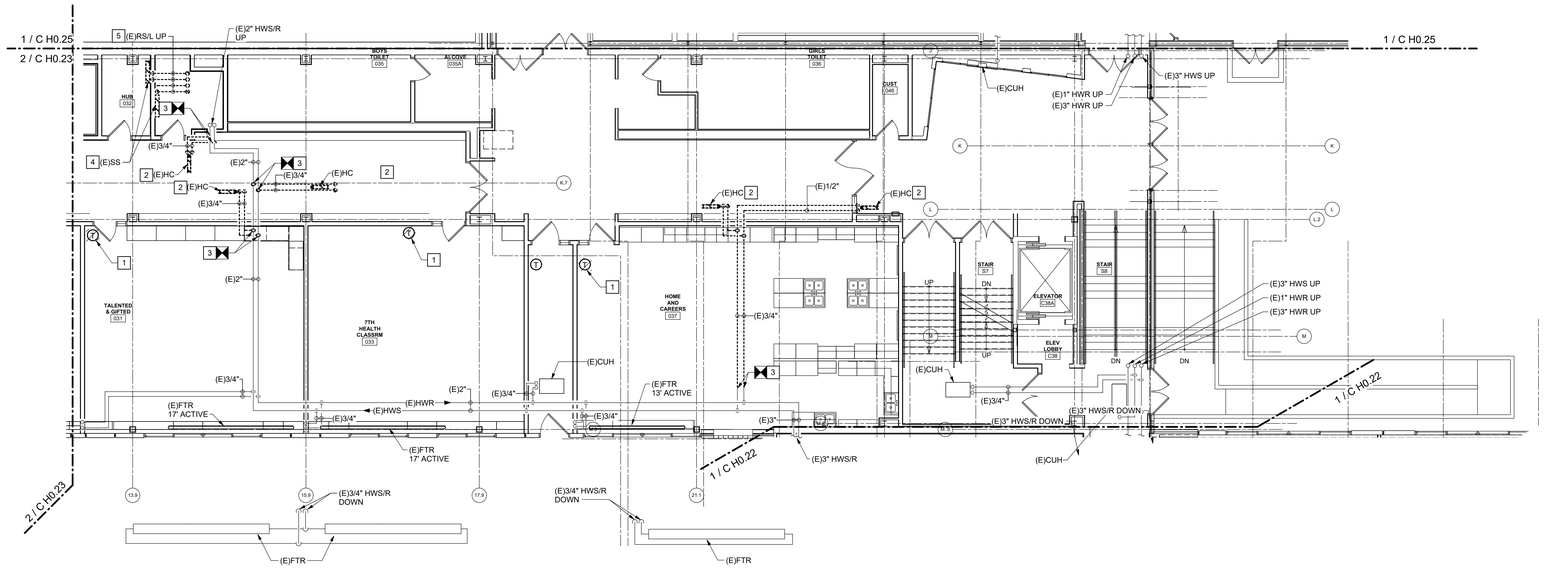
DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

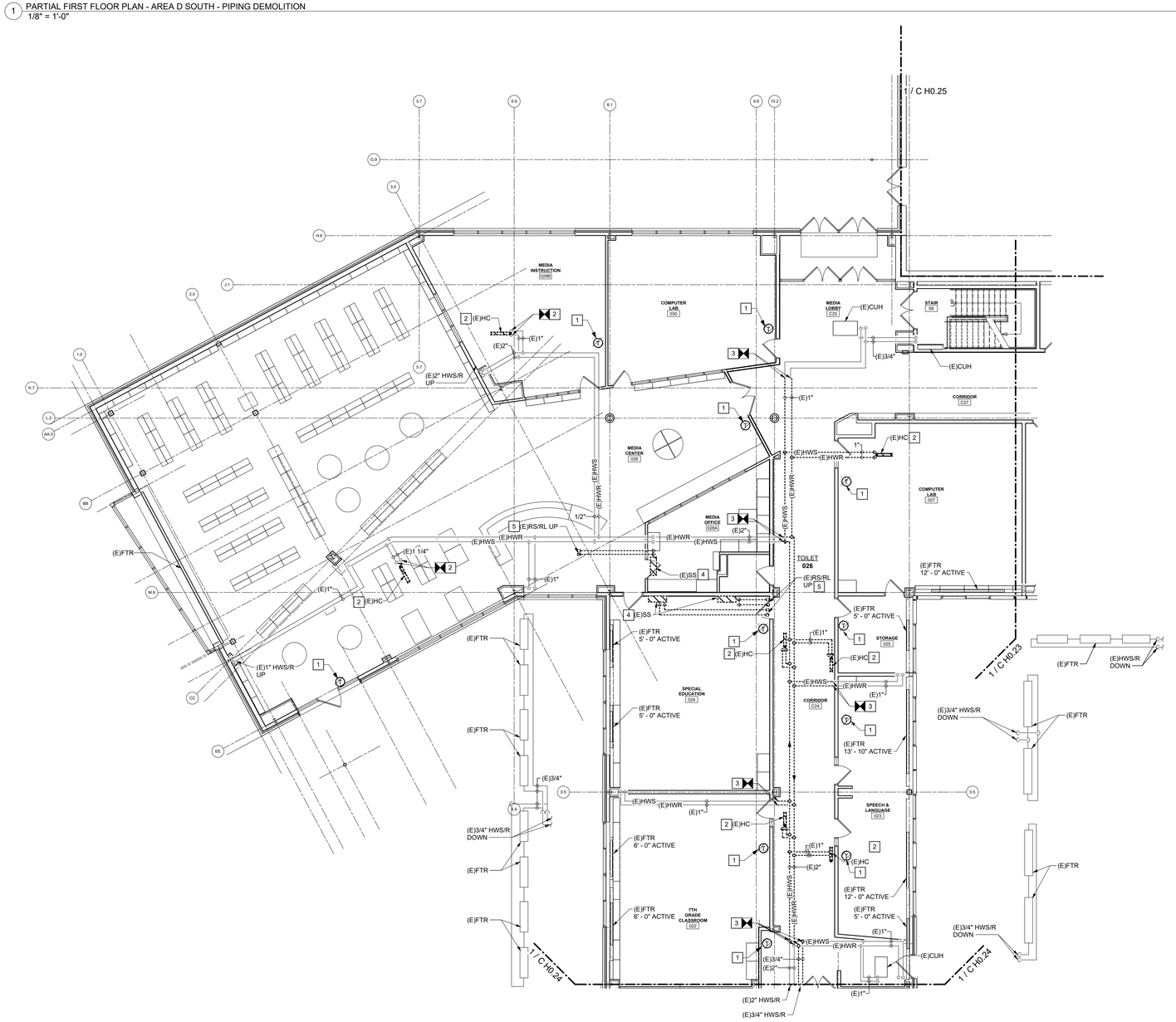
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA C - PIPING DEMOLITION

C H0.22



1 PARTIAL FIRST FLOOR PLAN - AREA D SOUTH - PIPING DEMOLITION
1/8" = 1'-0"



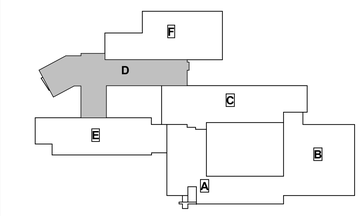
2 PARTIAL FIRST FLOOR PLAN - AREA D NORTH - PIPING DEMOLITION
1/8" = 1'-0"

GENERAL NOTES:

A. FOR ALL RISERS UP, SEE SHEET C H0.26 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC THERMOSTAT. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. DISCONNECT AND REMOVE HEATING COIL.
3. REMOVE HWS/R PIPE TO POINTS INDICATED. PREPARE FOR NEW WORK.
4. EVACUATE AND DISPOSE OF REFRIGERANT. DISCONNECT AND REMOVE SS.
5. REMOVE RS/L PIPING FROM SS UP TO ROOF MOUNTED CU.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL FIRST FLOOR PLAN - AREA D - PIPING DEMOLITION

C H0.23

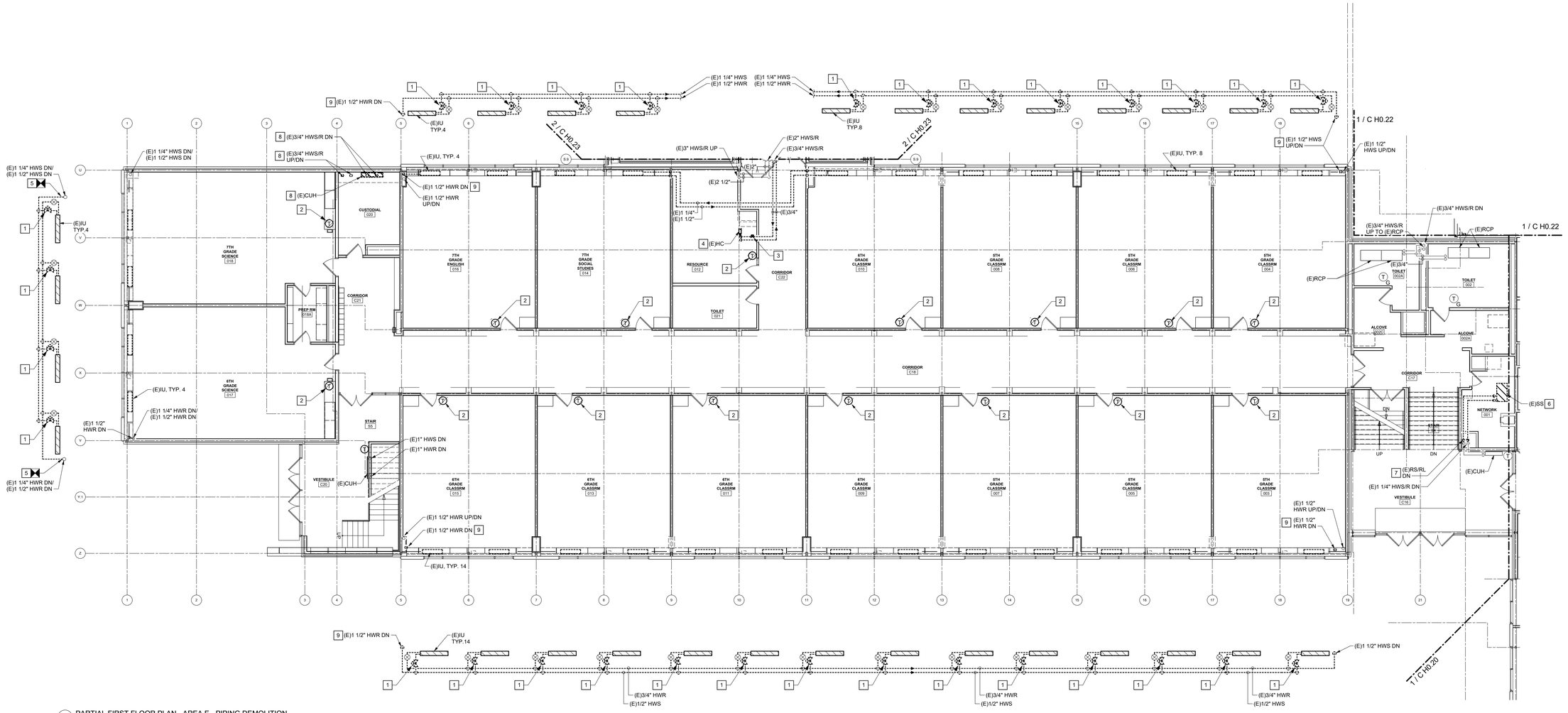
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H0.19 FOR CONTINUATION UNLESS OTHERWISE NOTED.

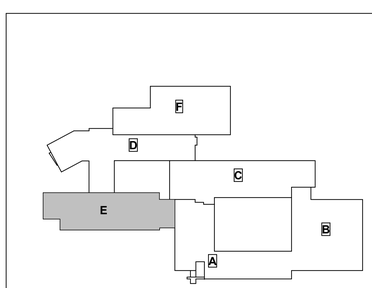
B. ALL RISERS UP SEE SHEET C H0.27 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. REMOVE PNEUMATIC TEMPERATURE SENSOR AND PNEUMATIC TUBING BACK TO SOURCE AND CAP. PREPARE FOR NEW WORK.
3. REMOVE ELECTRONIC CONTROL VALVE AND ASSOCIATED WIRING BACK TO THE SOURCE AND CAP.
4. DISCONNECT AND REMOVE HEATING COIL.
5. REMOVE HWS/R PIPE TO EXISTING RISER. PREPARE FOR NEW WORK.
6. EVACUATE AND DISPOSE OF REFRIGERANT AND REMOVE SS.
7. REMOVE RS/L PIPING FROM SS DOWN TO ACCU IN BASEMENT.
8. DISCONNECT AND RETAIN EXISTING CUH FOR REINSTALLATION. REMOVE EXISTING HWS/R PIPING DOWN TO BASEMENT.
9. REMOVE HWS/R PIPE DOWN TO BASEMENT. PREPARE FOR NEW WORK.



1 PARTIAL FIRST FLOOR PLAN - AREA E - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
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K: District Office	42-03-03-06-0-07-014

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA E - PIPING DEMOLITION

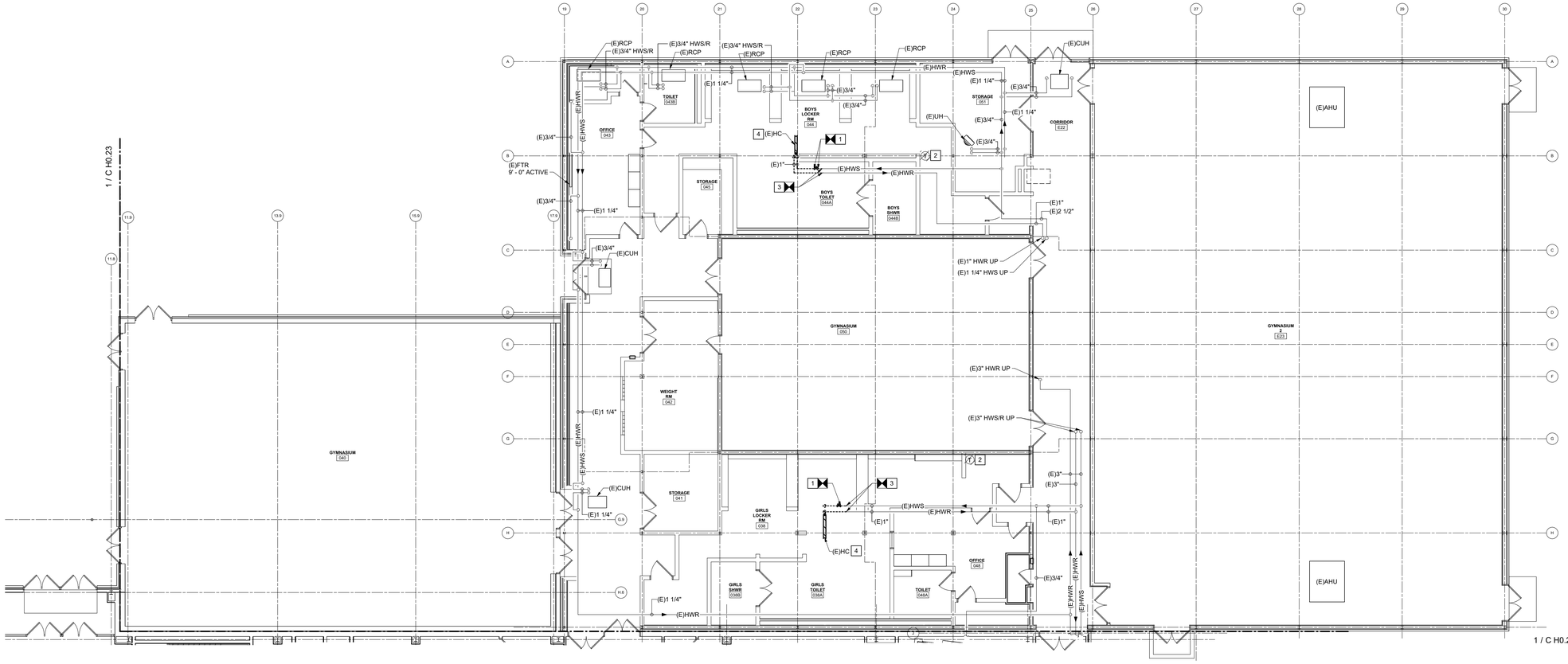
C H0.24

GENERAL SHEET NOTES:

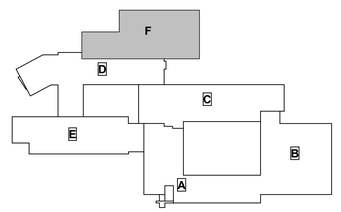
A. FOR ALL RISERS UP, SEE SHEET C H0.28 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. REMOVE PNEUMATIC TEMPERATURE SENSOR AND PNEUMATIC TUBING BACK TO SOURCE AND CAP. PREPARE FOR NEW WORK.
3. REMOVE HWS/R PIPING TO POINT INDCATED. PREPARE FOR NEW WORK.
4. DISCONNECT AND REMOVE HEATING COIL.



1 PARTIAL FIRST FLOOR PLAN - AREA F - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

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H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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JON C. HELBERG
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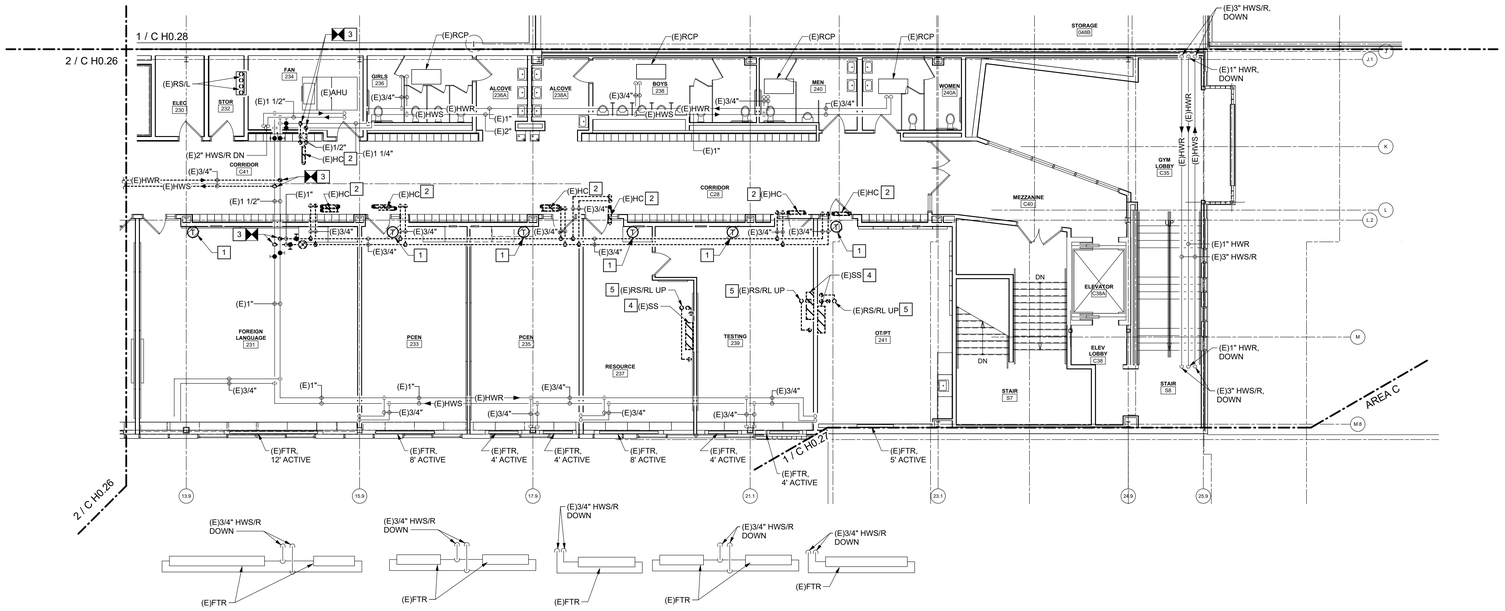
DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

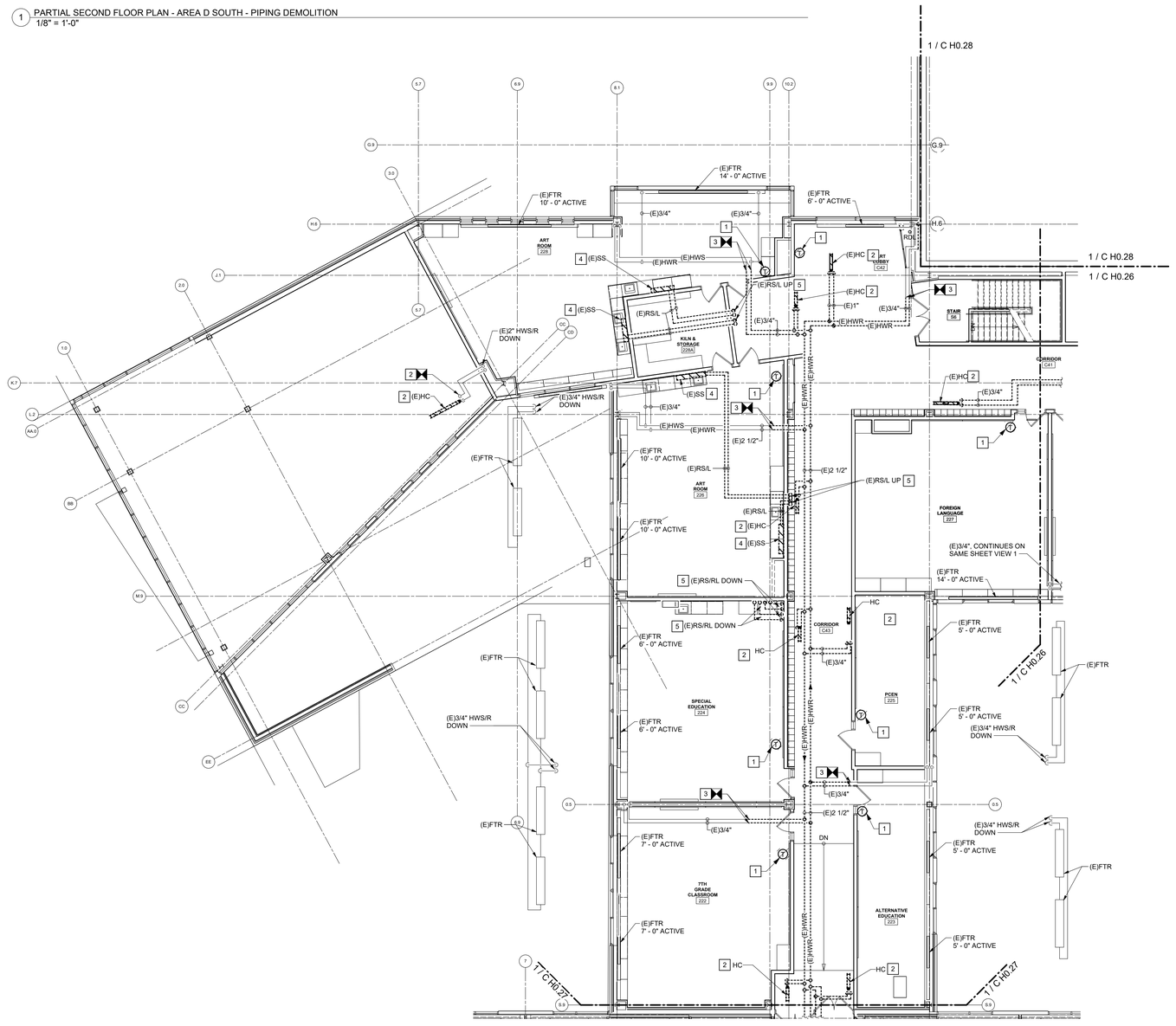
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA F - PIPING DEMOLITION

C H0.25



1 PARTIAL SECOND FLOOR PLAN - AREA D SOUTH - PIPING DEMOLITION
1/8" = 1'-0"



2 PARTIAL SECOND FLOOR PLAN - AREA D NORTH - PIPING DEMOLITION
1/8" = 1'-0"

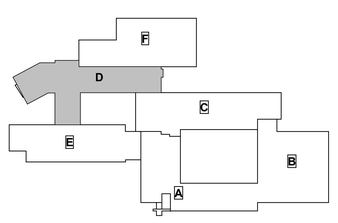
GENERAL SHEET NOTES:

A. FOR ALL RISERS DOWN, SEE SHEET C H0.23 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. FOR ALL RISERS UP, SEE SHEET C H0.29 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC THERMOSTAT. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. DISCONNECT AND REMOVE HEATING COIL.
3. REMOVE HWS/R PIPE TO POINTS INDICATED. PREPARE FOR NEW WORK.
4. EVACUATE AND DISPOSE OF REFRIGERANT. DISCONNECT AND REMOVE SS.
5. REMOVE RS/L PIPING FROM SS UP TO ROOF MOUNTED CU.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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Phone: 585.292.1590
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100% CONSTRUCTION DOCUMENTS

DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL SECOND FLOOR PLAN - AREA D - PIPING DEMOLITION

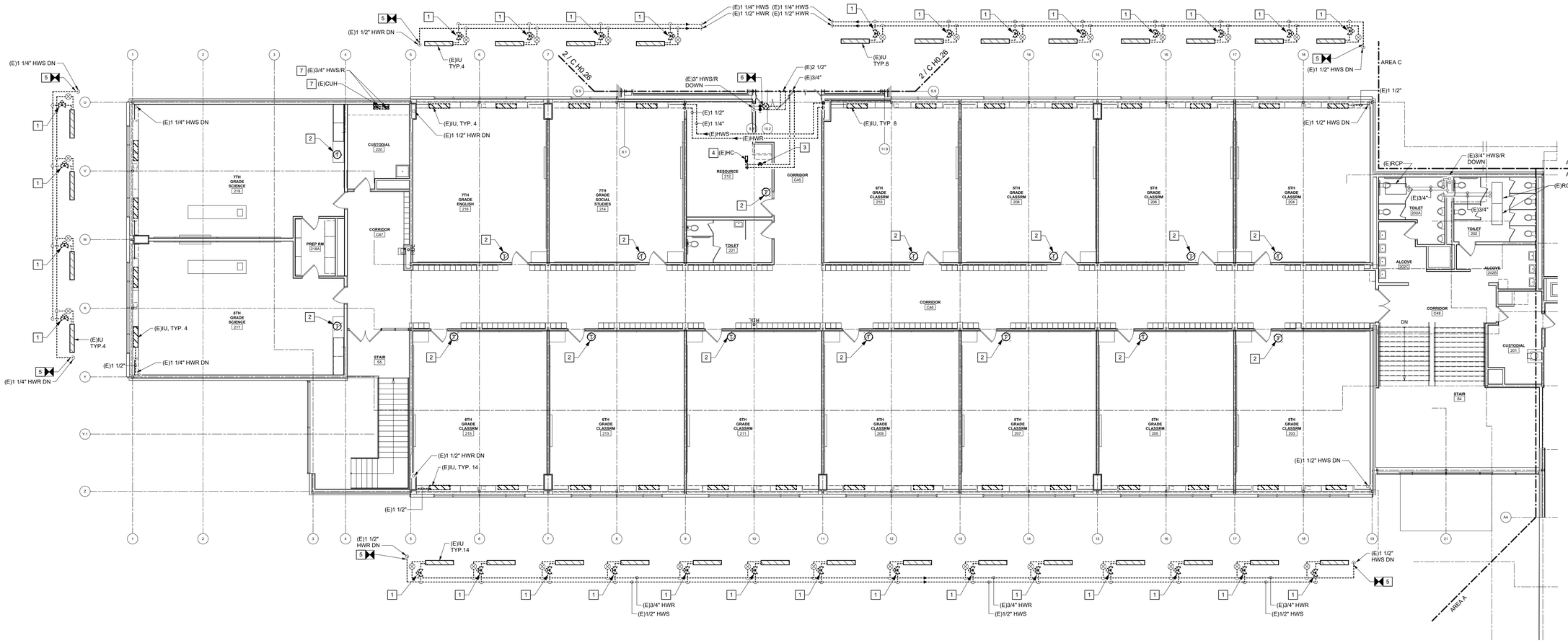
C H0.26

GENERAL SHEET NOTES:

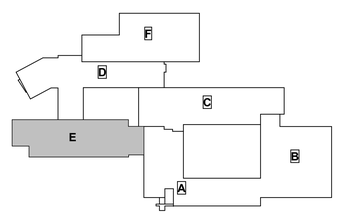
A. ALL RISERS DOWN SEE SHEET C H0.24 FOR CONTINUATION UNLESS OTHERWISE NOTED.

REMOVAL NOTES:

1. REMOVE PNEUMATIC CONTROL VALVE. DISCONNECT AND REMOVE ALL ASSOCIATED PNEUMATIC TUBING BACK TO SOURCE AND CAP.
2. REMOVE PNEUMATIC TEMPERATURE SENSOR AND PNEUMATIC TUBING BACK TO SOURCE AND CAP. PREPARE FOR NEW WORK.
3. REMOVE ELECTRONIC CONTROL VALVE AND ASSOCIATED WIRING BACK TO THE SOURCE AND CAP.
4. DISCONNECT AND REMOVE HEATING COIL.
5. REMOVE HWS/R PIPE TO EXISTING RISER. PREPARE FOR NEW WORK.
6. REMOVE HWS/R PIPE TO POINTS INDICATED. PREPARE FOR NEW WORK.
7. DISCONNECT AND RETAIN EXISTING CUH FOR REINSTALLATION. REMOVE HWS/R PIPING DOWN TO BASEMENT.



1 PARTIAL SECOND FLOOR PLAN - AREA E - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-13-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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JON C. HELBERG
080515
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LICENSED PROFESSIONAL ENGINEER

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100% CONSTRUCTION DOCUMENTS

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

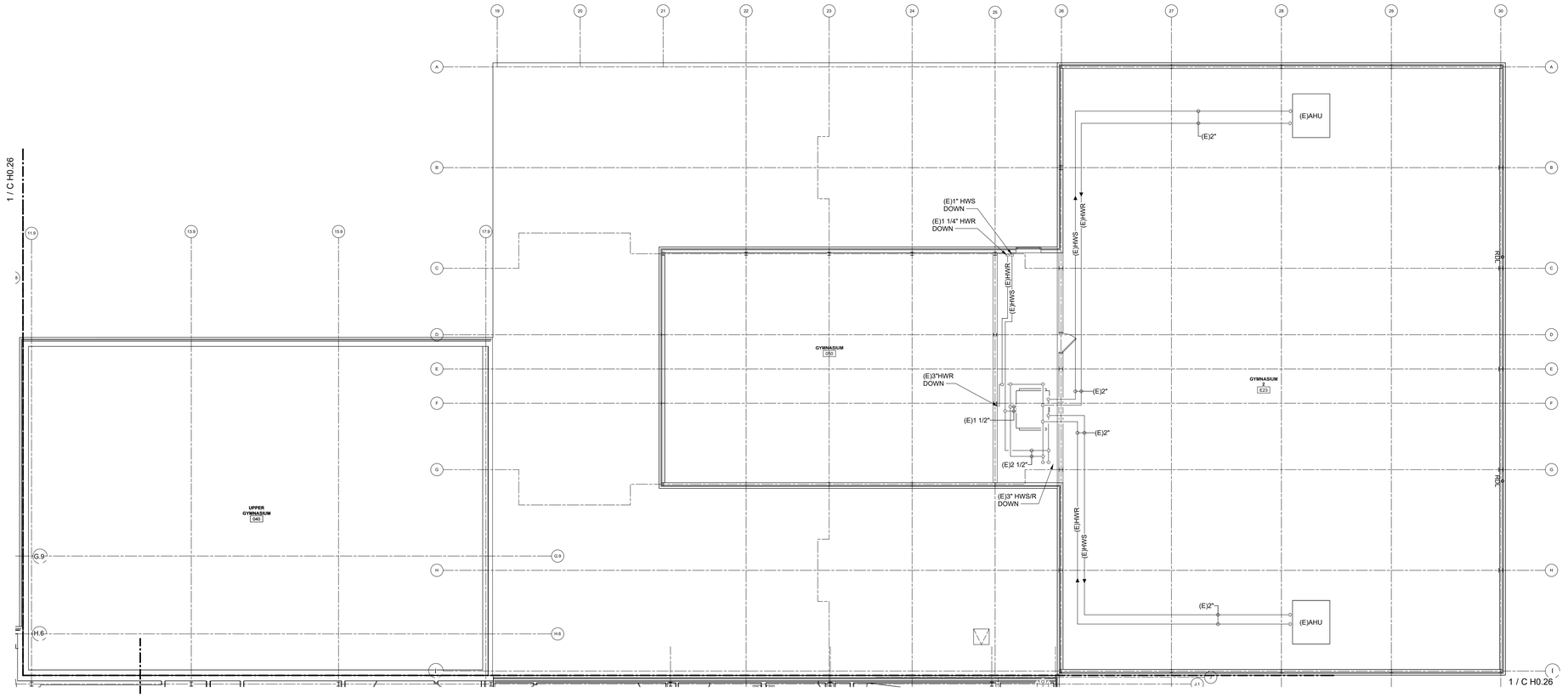
PARTIAL SECOND FLOOR PLAN - AREA E - PIPING DEMOLITION

C H0.27

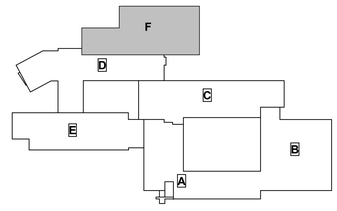
GENERAL SHEET NOTES:

A. NO SCOPE. SHOWN FOR REFERENCE ONLY.

B. FOR ALL RISERS DOWN, SEE SHEET C H0.23 FOR CONTINUATION UNLESS OTHERWISE NOTED.



1 PARTIAL SECOND FLOOR PLAN - AERA F - PIPING DEMOLITION
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-70686/ 23-44-7868**

SED PROJECT NUMBERS:

A. CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

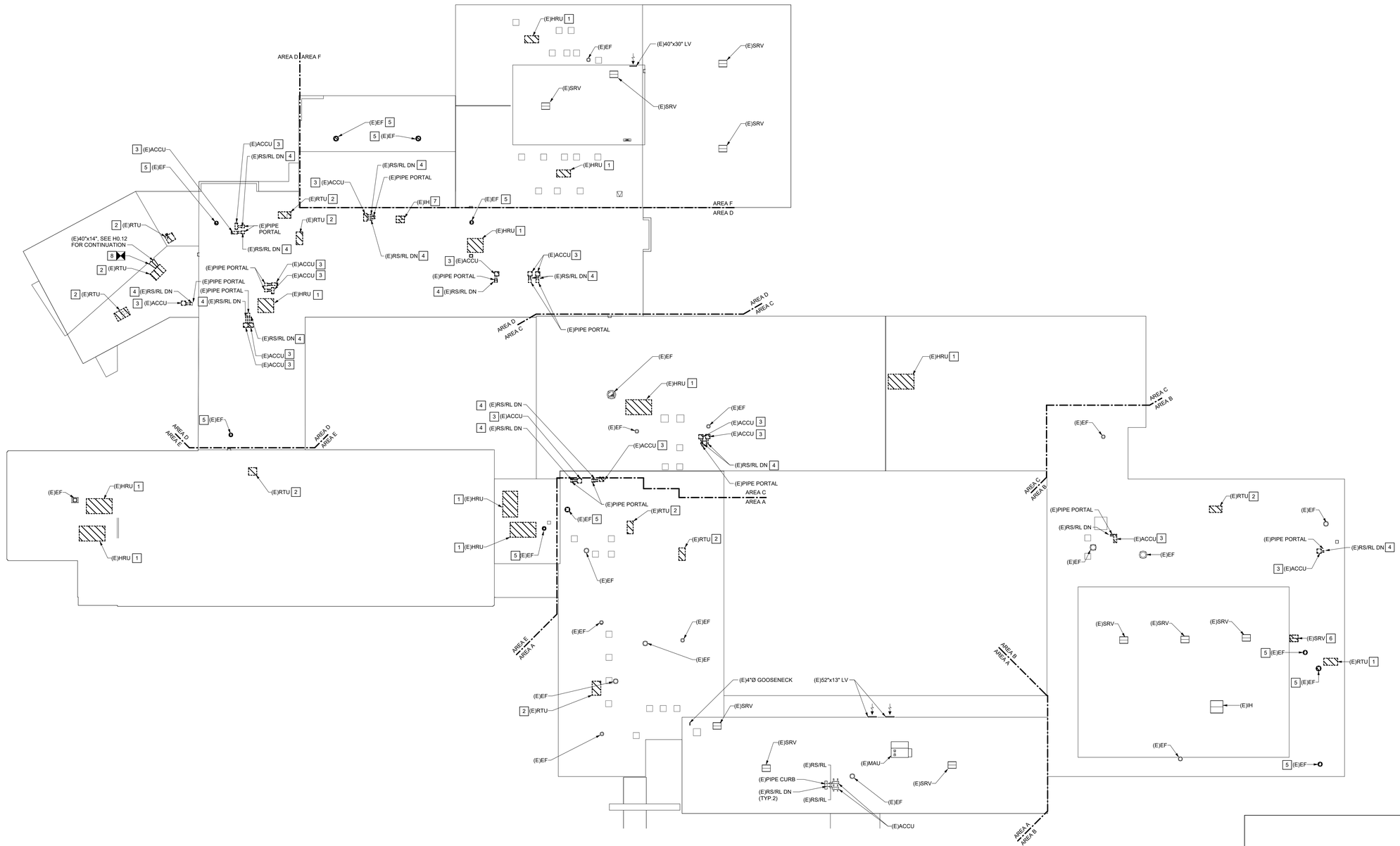
DRAWING TITLE:

PARTIAL SECOND FLOOR PLAN - AREA F - PIPING DEMOLITION

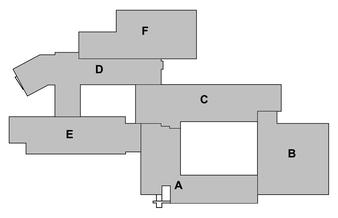
C H0.28

GENERAL SHEET NOTES:
A. G.C. TO REMOVE ALL CURBING.

REMOVAL NOTES:
1. DISCONNECT DUCTWORK AND REMOVE HRU.
2. DISCONNECT DUCTWORK AND REMOVE RTU.
3. EVACUATE REFRIGERANT AND DISPOSE. DISCONNECT AND REMOVE ACCU.
4. REMOVE RS/L PIPING FROM ACCU DOWN THROUGH ROOF.
5. DISCONNECT AND REMOVE EF.
6. DISCONNECT AND REMOVE SRV.
7. DISCONNECT AND REMOVE IH.
8. DISCONNECT AND REMOVE DUCTWORK UP TO EXTERIOR WALL.



1 ROOF PLAN - HVAC DEMOLITION
1" = 20'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

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C: Gillette Road MS	42-03-03-06-0-12-021
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E: Roxboro Road ES	42-03-03-06-0-08-019
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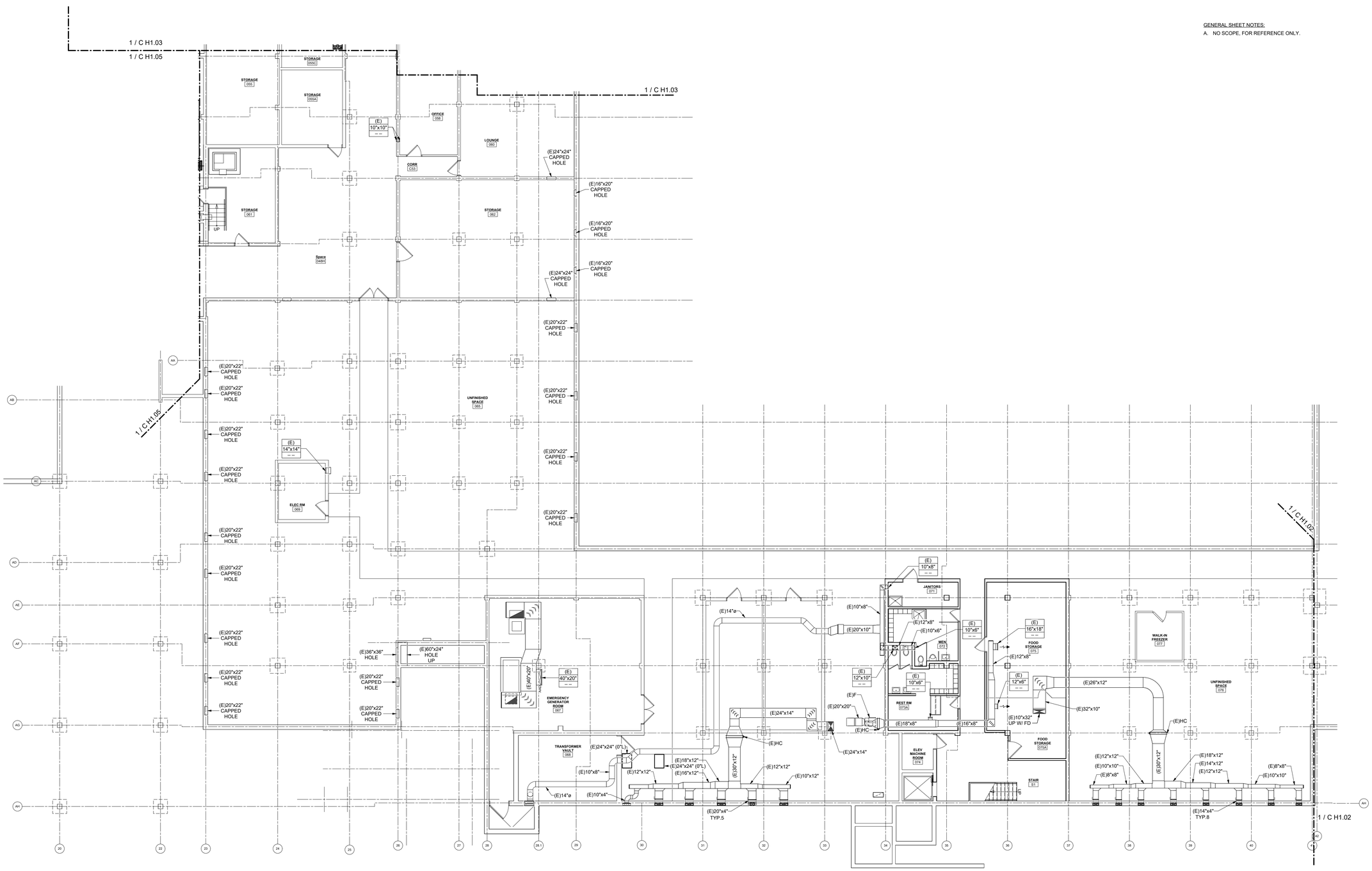
MARK	DATE	DESCRIPTION

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DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
ROOF PLAN - HVAC DEMOLITION

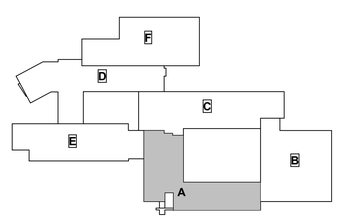
C H0.29



GENERAL SHEET NOTES:

A. NO SCOPE, FOR REFERENCE ONLY.

1 PARTIAL BASEMENT PLAN - AREA A - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78886/ 23-44-7866**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
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SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA A - DUCTWORK

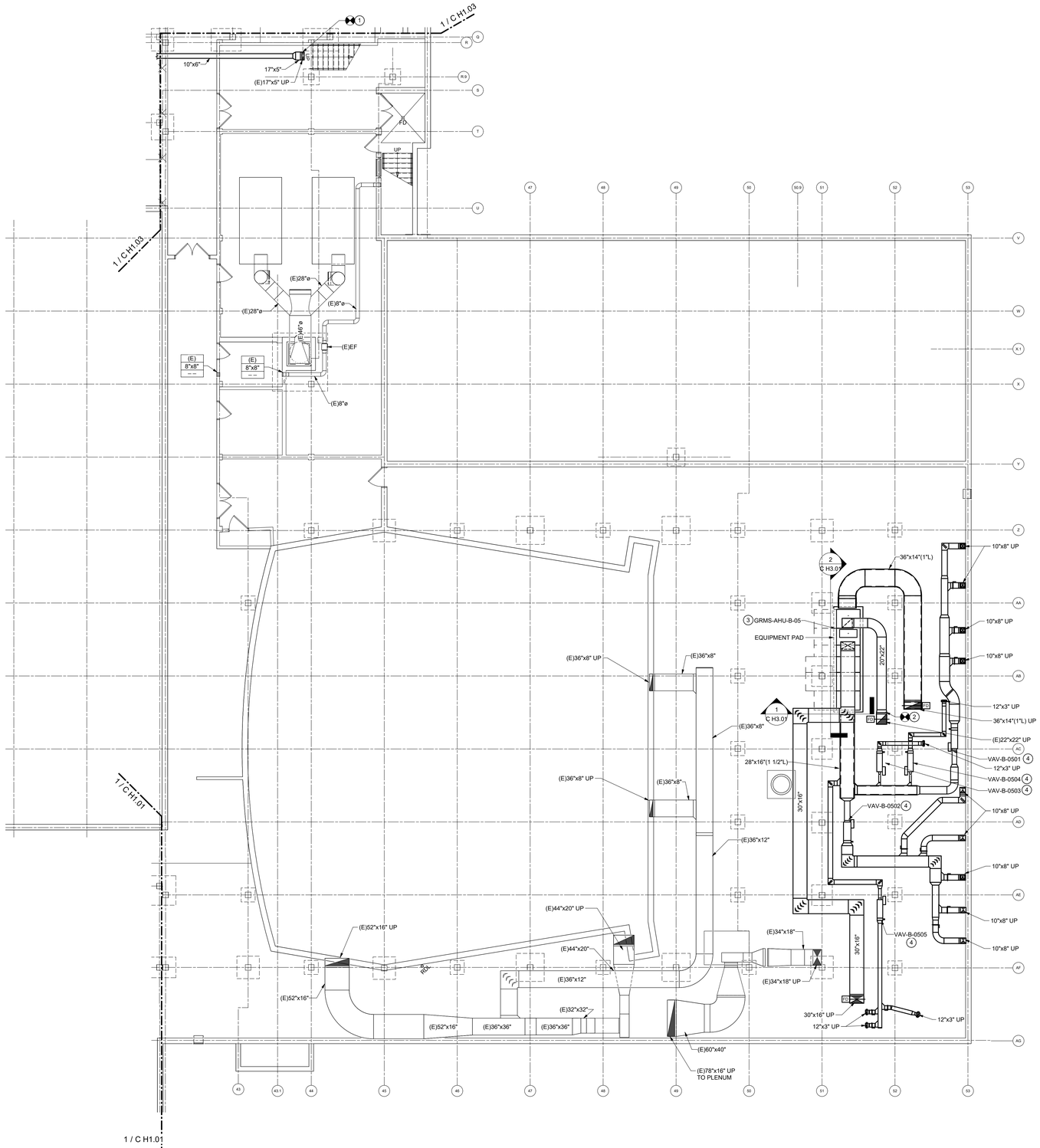
C H1.01

GENERAL SHEET NOTES:

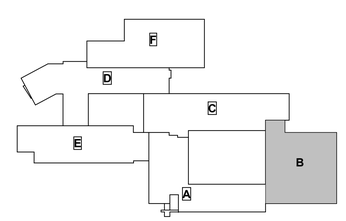
A. ALL RISERS UP SEE SHEET C H1.07 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE SUPPLY AIR DUCTWORK FROM AIR HANDLING UNIT TO EXISTING RISER. CONNECT TO EXISTING.
2. PROVIDE EXHAUST DUCTWORK FROM AIR HANDLING UNIT TO EXISTING RISER. CONNECT TO EXISTING.
3. PROVIDE AIR HANDLING UNIT ON CONCRETE PAD PER DETAIL 13 ON SHEET C H9.01.
4. PROVIDE VAV TERMINAL PER DETAIL 5 ON SHEET C H9.02.



1 PARTIAL BASEMENT PLAN - AREA B - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
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DRAWN BY: **JPK**

SCALE: **AS NOTED**

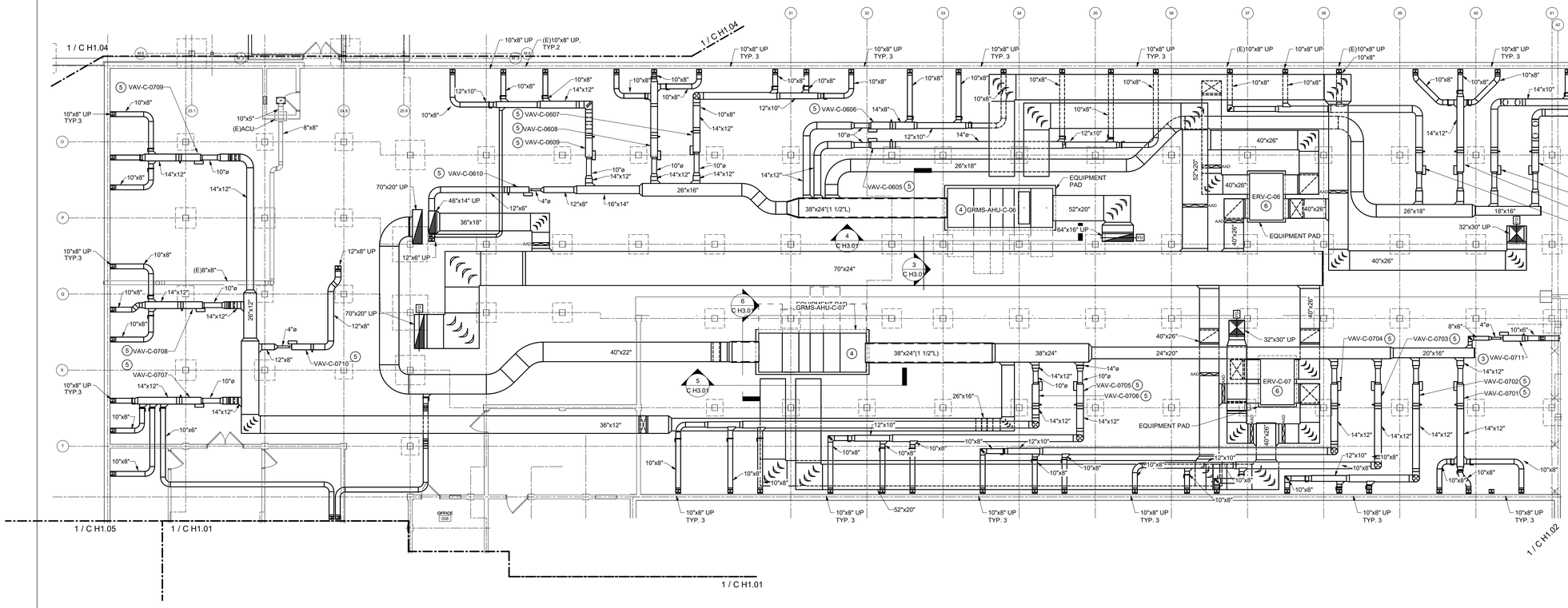
DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA B - DUCTWORK

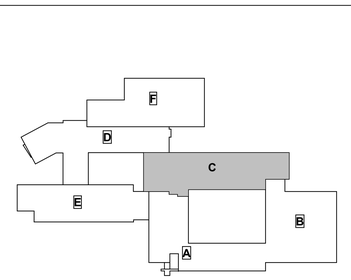
C H1.02

GENERAL SHEET NOTES:
A. ALL RISERS UP SEE SHEET C H1.08 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:
1. PROVIDE SUPPLY AIR DUCTWORK FROM AHU TO EXISTING RISER. CONNECT TO EXISTING.
2. PROVIDE EXHAUST DUCTWORK FROM AHU TO EXISTING RISER. CONNECT TO EXISTING.
3. PROVIDE RETURN DUCTWORK FROM AHU TO EXISTING RISER. CONNECT TO EXISTING.
4. PROVIDE AHU ON CONCRETE PAD PER DETAIL 13 ON SHEET H9.01.
5. PROVIDE VAV TERMINAL PER DETAIL 5 ON SHEET H9.02.
6. PROVIDE ERV ON CONCRETE PAD PER DETAIL 13 ON SHEET H9.01.



1 PARTIAL BASEMENT PLAN - AREA C - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
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H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
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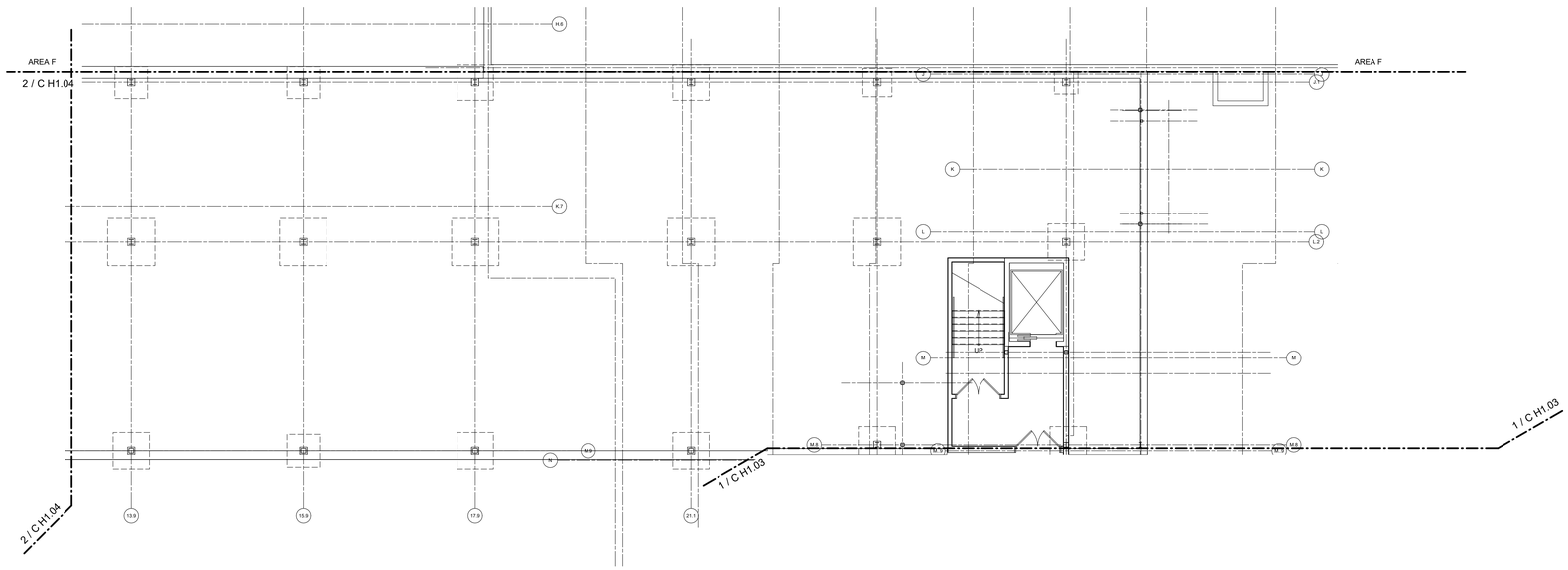
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DRAWN BY: **JPK**
SCALE: **AS NOTED**

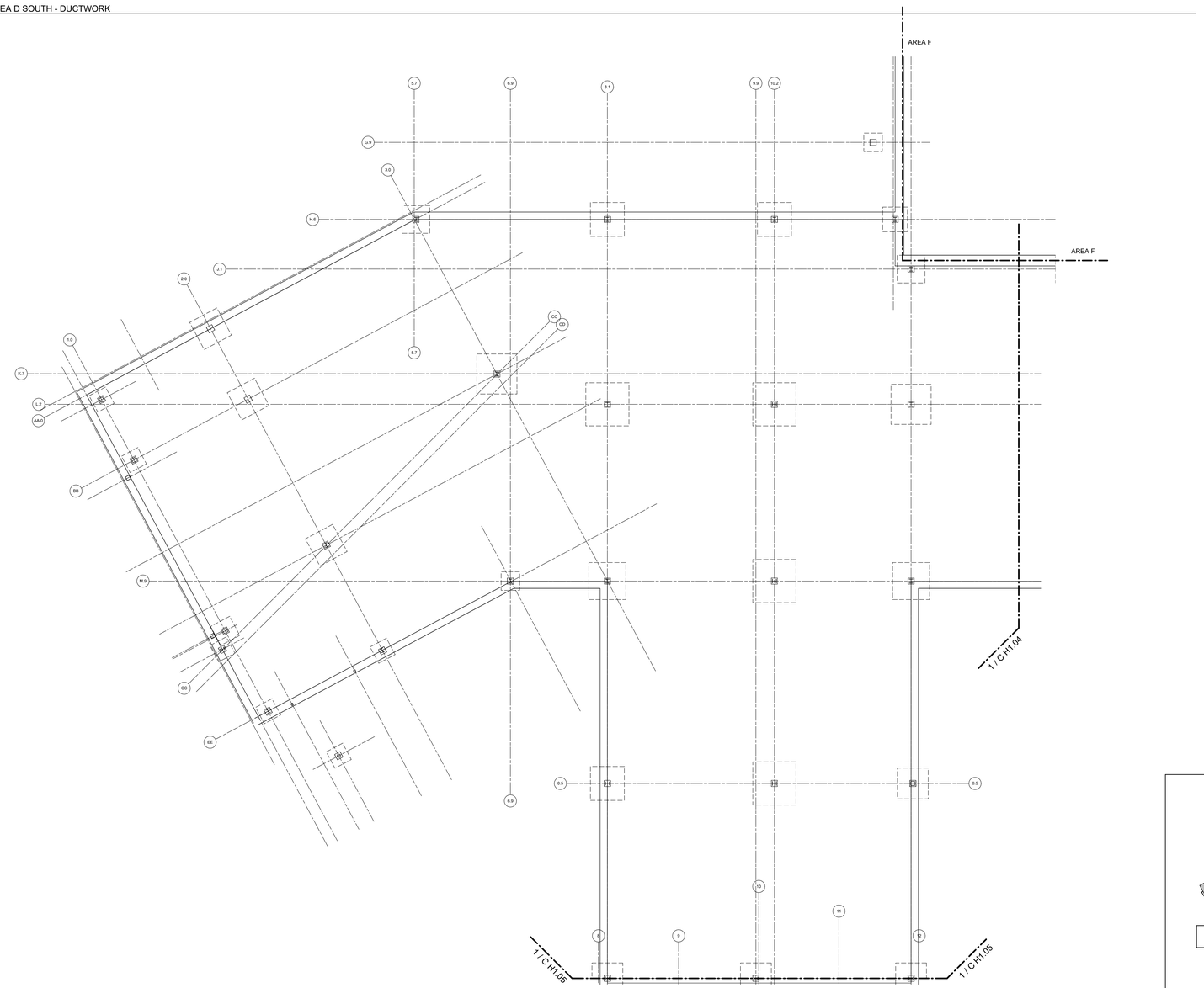
DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA C - DUCTWORK

C H1.03

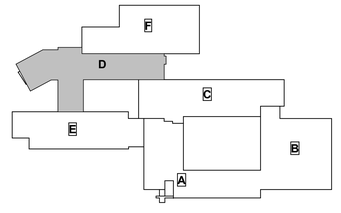
GENERAL SHEET NOTES:
A. NO SCOPE, FOR REFERENCE ONLY



1 PARTIAL BASEMENT PLAN - AREA D SOUTH - DUCTWORK
1/8" = 1'-0"



2 PARTIAL BASEMENT PLAN - AREA D NORTH - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

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C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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EXP. 06/30/2026
080515
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DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA D - DUCTWORK

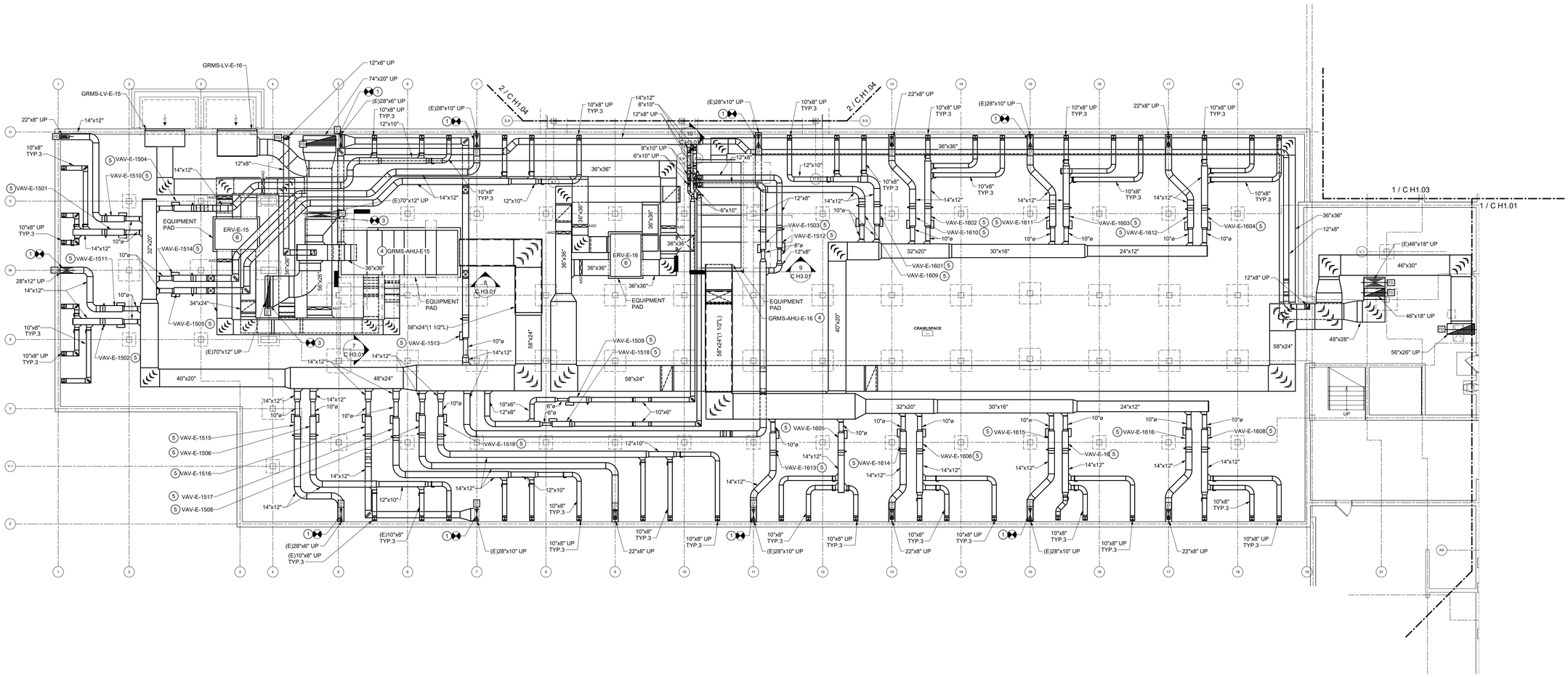
C H1.04

GENERAL SHEET NOTES:

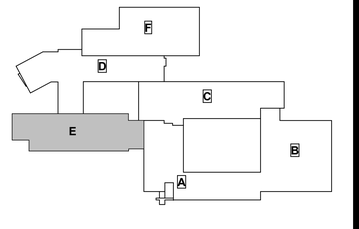
A. ALL RISERS UP SEE SHEET C H1.10 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE SUPPLY AIR DUCTWORK FROM AIR HANDLING UNIT TO EXISTING RISER. CONNECT TO EXISTING.
2. PROVIDE EXHAUST DUCTWORK FROM AIR HANDLING UNIT TO EXISTING RISER. CONNECT TO EXISTING.
3. PROVIDE RETURN DUCTWORK FROM AIR HANDLING UNIT TO EXISTING RISER. CONNECT TO EXISTING.
4. PROVIDE AIR HANDLING UNIT ON CONCRETE PAD PER DETAIL 13 ON SHEET C H9.01.
5. PROVIDE VAV TERMINAL PER DETAIL 5 ON SHEET C H9.02.
6. PROVIDE ENERGY RECOVERY VENTILATOR ON EQUIPMENT PAD PER DETAIL 13 ON SHEET C H9.01.



1 PARTIAL BASEMENT PLAN - AREA E - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA E - DUCTWORK

C H1.05

GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H1.01 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE EXHAUST GRILLE AND DUCTWORK. CONNECT TO EXISTING.
2. PROVIDE VAV TERMINAL PER DETAIL 5 ON SHEET C H9.02.

1 PARTIAL FIRST FLOOR PLAN - AREA A - DUCTWORK
1/8" = 1'-0"

KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-031
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL FIRST FLOOR PLAN - AREA A - DUCTWORK

C H1.06

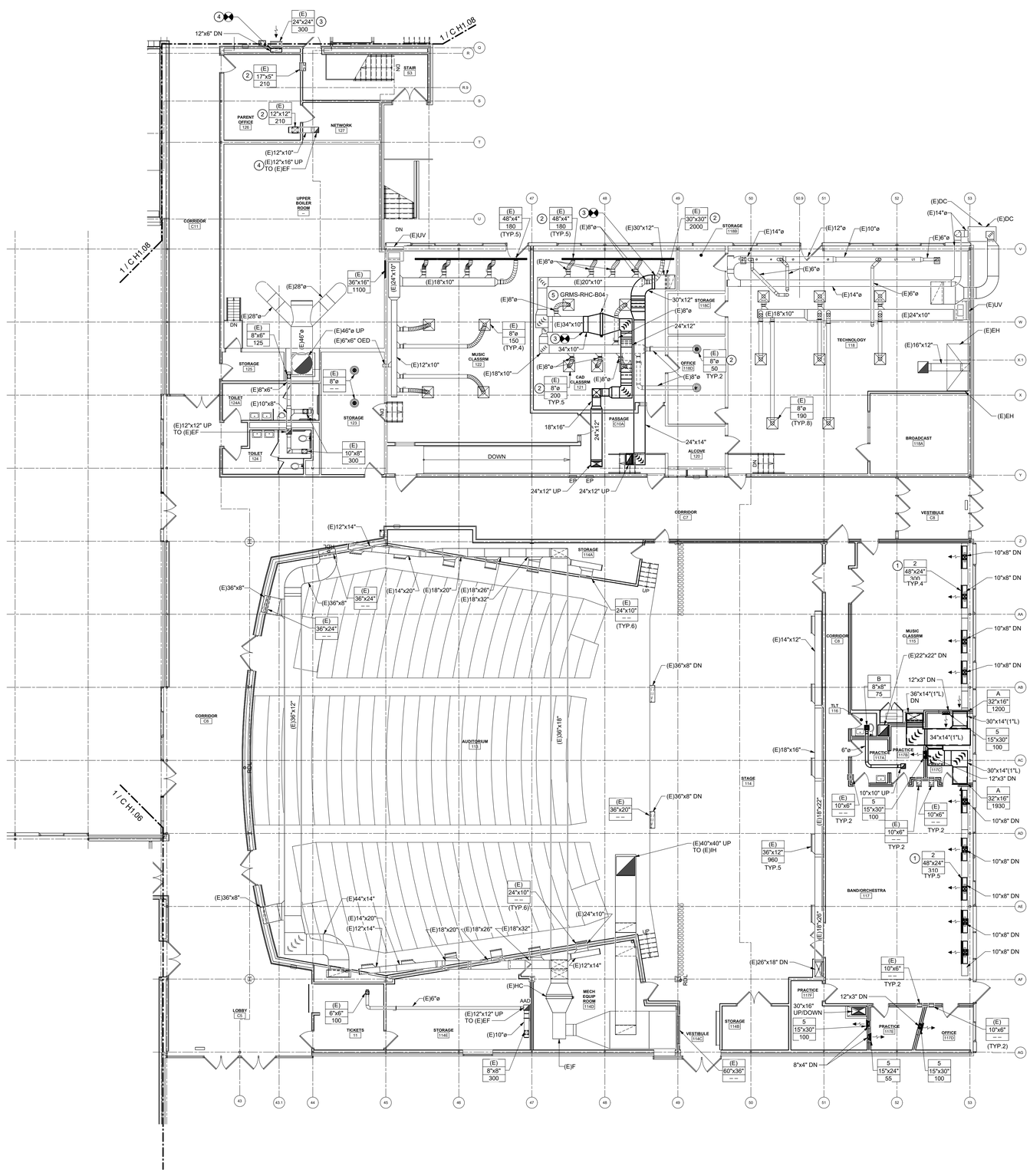
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H1.02 FOR CONTINUATION UNLESS OTHERWISE NOTED.

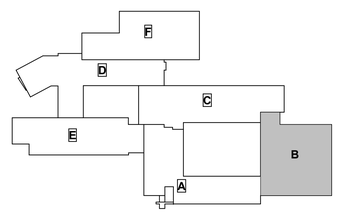
B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE DISPLACEMENT DIFFUSER PER DETAIL 16 ON SHEET C H9.01.
2. BALANCE EXISTING REGISTER, GRILLE, OR DIFFUSER TO THE AIRFLOW SHOWN.
3. RECONNECT DUCTWORK TO NEW RTU AFTER INSTALLATION.
4. REBALANCE FAN ON ROOF TO NEW AIRFLOW.
5. PROVIDE DUCT MOUNTED HEATING COIL IN EXISTING DUCTWORK.



1 PARTIAL FIRST FLOOR PLAN - AREA B - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
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SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA B - DUCTWORK

C H1.07

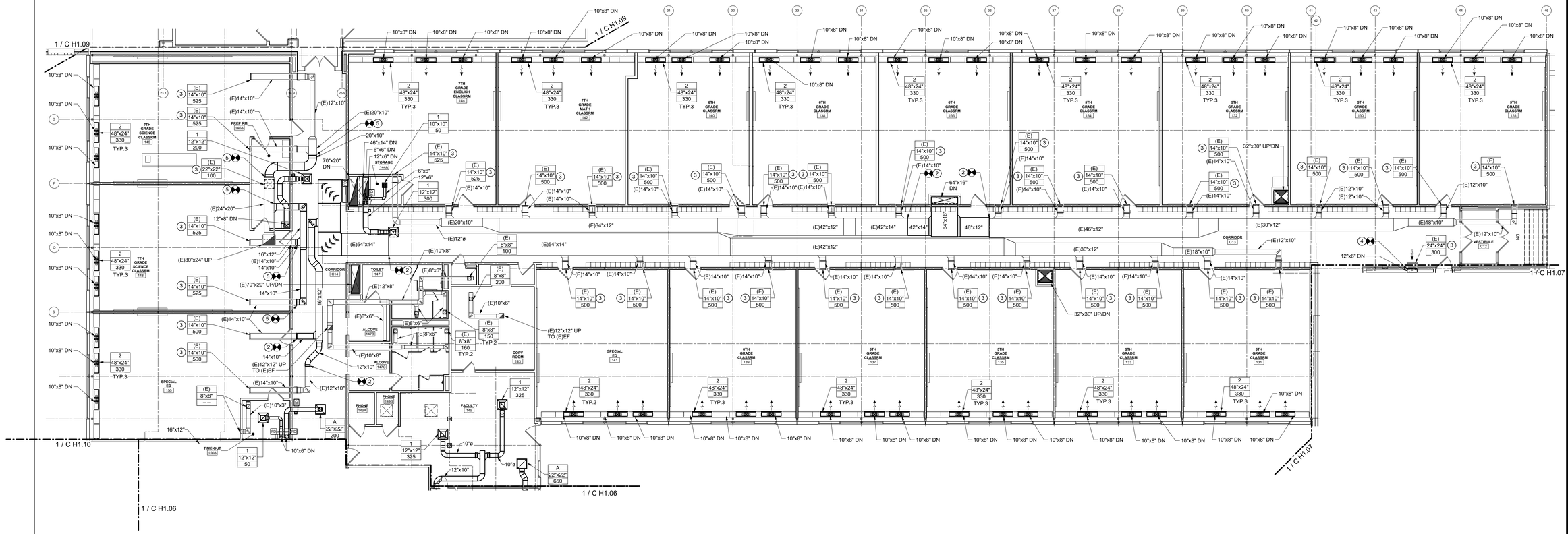
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H1.03 FOR CONTINUATION UNLESS OTHERWISE NOTED.

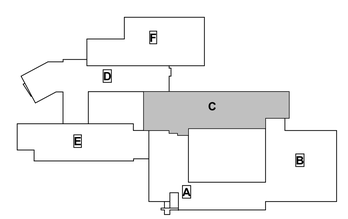
B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE DISPLACEMENT DIFFUSER PER DETAIL 16 ON SHEET C H9.01.
2. PROVIDE RETURN DUCTWORK FROM EXISTING TO AHU.
3. REBALANCE EXISTING REGISTER, GRILLE, OR DIFFUSER TO THE AIRFLOW SHOWN.
4. PROVIDE DUCTWORK UP TO EXISTING DUCTWORK FROM FLOOR PENETRATION BELOW.
5. PROVIDE EXHAUST DUCTWORK BETWEEN POINTS INDICATED.



1 PARTIAL FIRST FLOOR PLAN - AREA C - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
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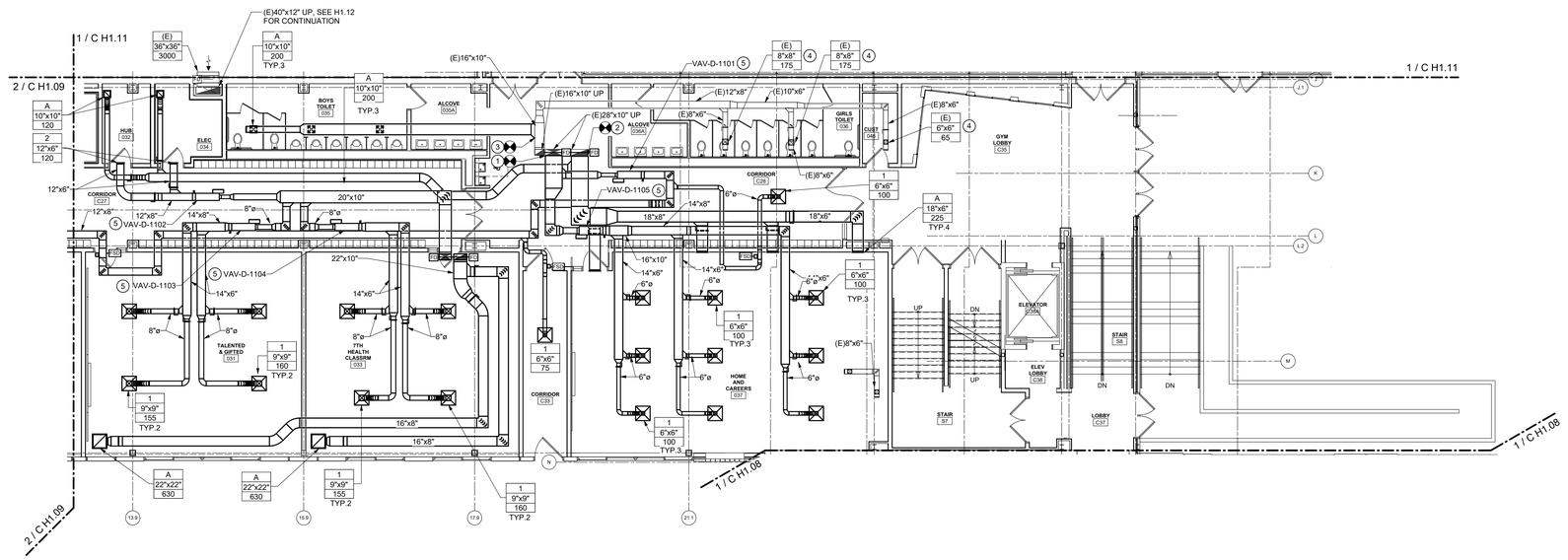
MARK	DATE	DESCRIPTION
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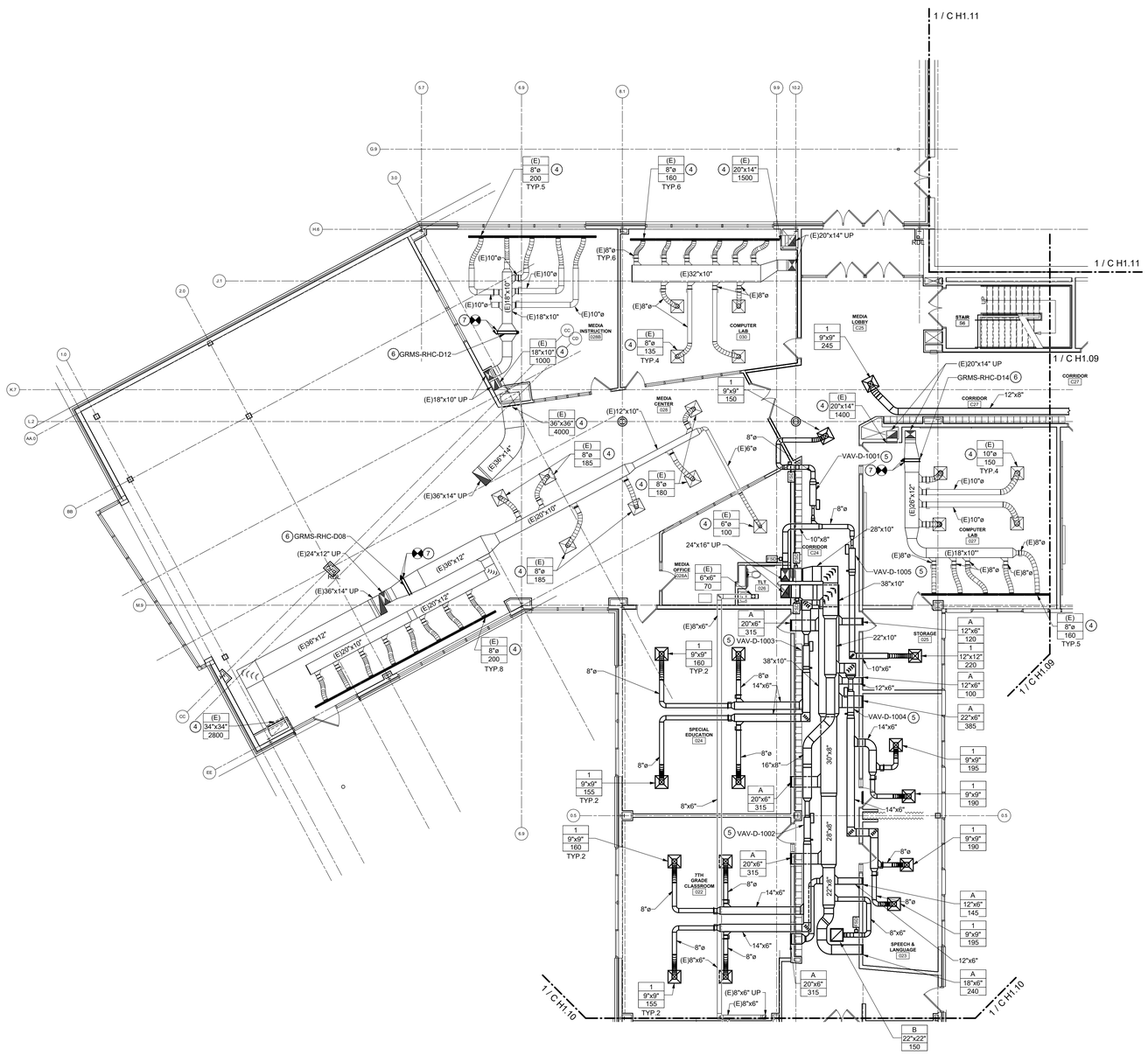
DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA C - DUCTWORK

C H1.08



1 PARTIAL FIRST FLOOR PLAN - AREA D SOUTH - DUCTWORK
1/8" = 1'-0"



2 PARTIAL FIRST FLOOR PLAN - AREA D NORTH - DUCTWORK
1/8" = 1'-0"

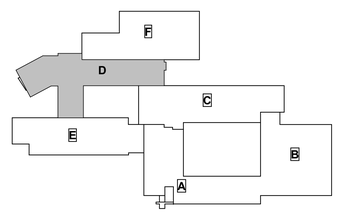
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H1.04 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H1.12 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE SUPPLY DUCTWORK RECONNECTION FROM EXISTING AS POINT SHOWN.
2. PROVIDE RETURN DUCTWORK RECONNECTION FROM EXISTING AS POINT SHOWN.
3. PROVIDE EXHAUST DUCTWORK RECONNECTION FROM EXISTING AS POINT SHOWN.
4. REBALANCE REGISTER, GRILLE, OR DIFFUSER TO VALUE SHOWN.
5. PROVIDE VAV TERMINAL PER DETAIL 5 ON C H9.02.
6. PROVIDE DUCT MOUNTED HEATING COIL.
7. PROVIDE SUPPLY DUCT AS NEEDED TO FACILITATE NEW DUCT MOUNTED HEATING COIL.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7866**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-001
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-04-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL FIRST FLOOR PLAN - AREA D - DUCTWORK

C H1.09

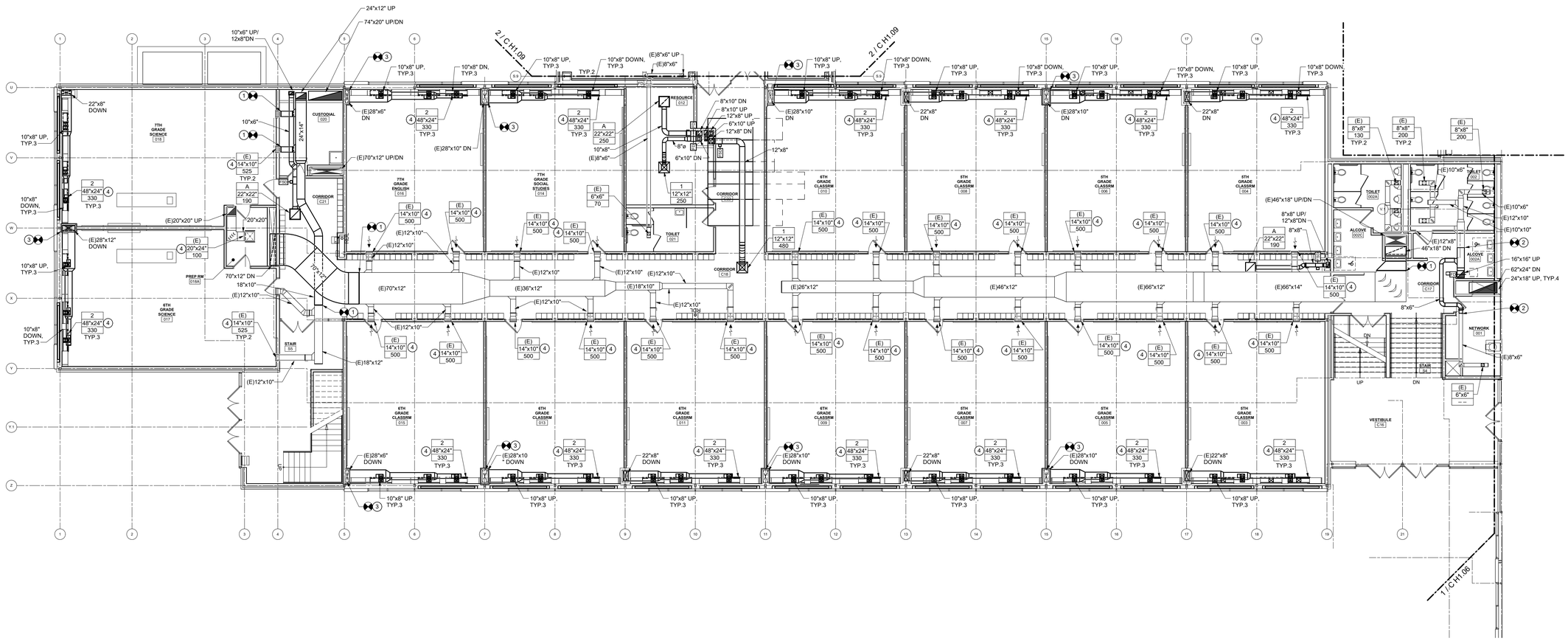
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H1.05 FOR CONTINUATION UNLESS OTHERWISE NOTED.

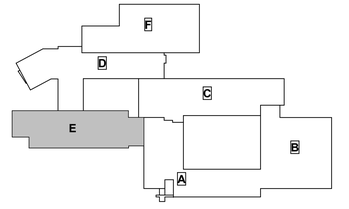
B. ALL RISERS UP SEE SHEET C H1.13 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE RETURN DUCTWORK RECONNECTION FROM EXISTING AT POINT SHOWN.
2. PROVIDE EXHAUST DUCTWORK RECONNECTION FROM EXISTING AT POINT SHOWN.
3. PROVIDE SUPPLY AIR DUCTWORK FROM AIR HANDLING UNIT TO EXISTING RISER. CONNECT TO EXISTING.
4. PROVIDE DISPLACEMENT DIFFUSER PER DETAIL 16 ON SHEET C H9.01.



1 PARTIAL FIRST FLOOR PLAN - AREA E - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

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SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA E - DUCTWORK

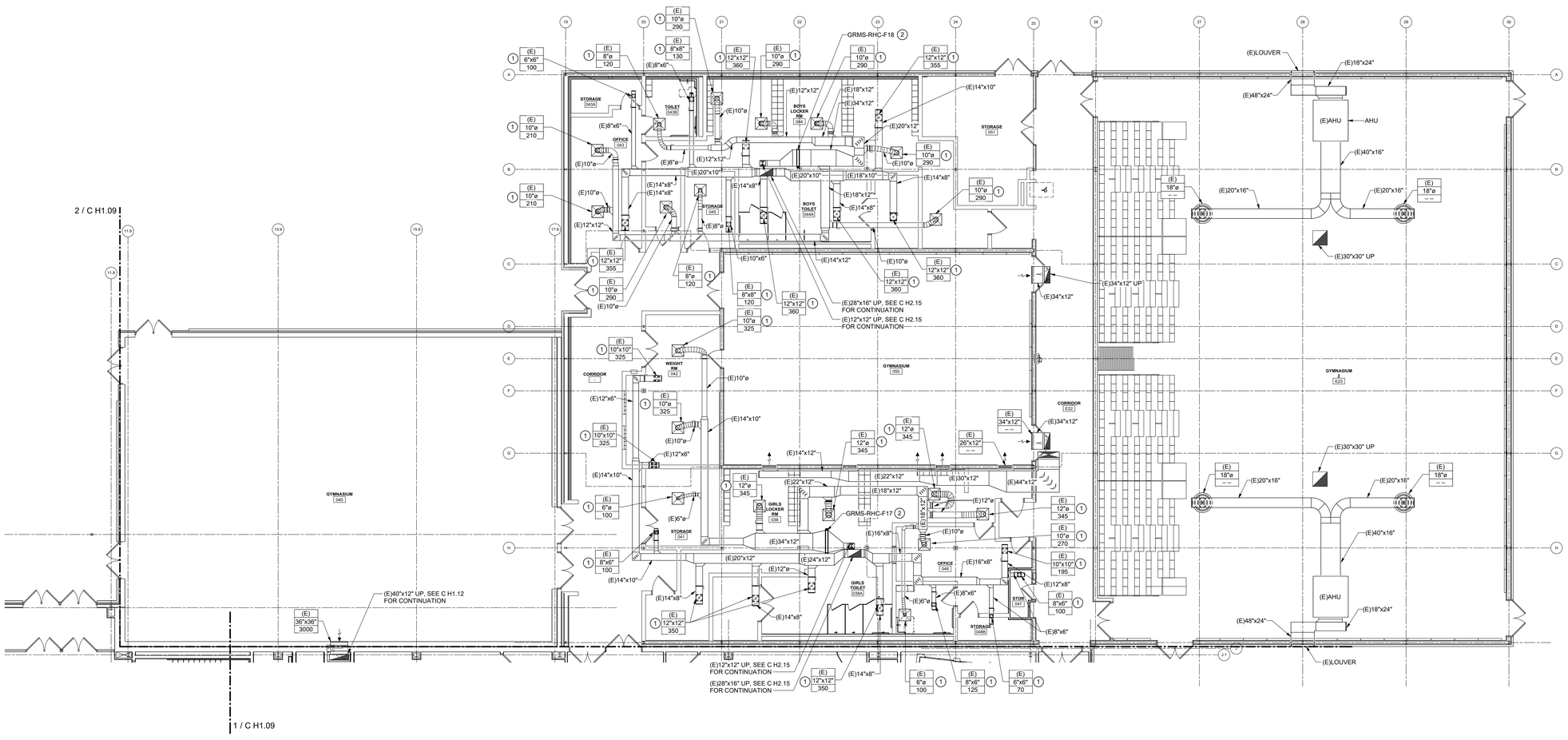
C H1.10

GENERAL SHEET NOTES:

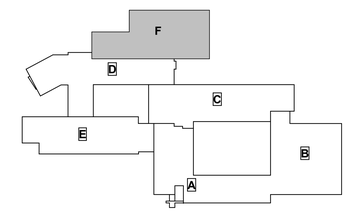
A. ALL RISERS UP SEE SHEET C H1.14 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. REBALANCE REGISTER, GRILLE, OR DIFFUSER TO VALUE SHOWN.
2. PROVIDE DUCT MOUNTED HEATING COIL.



1 PARTIAL FIRST FLOOR PLAN - AREA F - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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JON C. HELBERG
LICENSED PROFESSIONAL ENGINEER
EXP. 06/30/2026
080515

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MARK	DATE	DESCRIPTION

100% CONSTRUCTION DOCUMENTS

DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA F - DUCTWORK

C H1.11

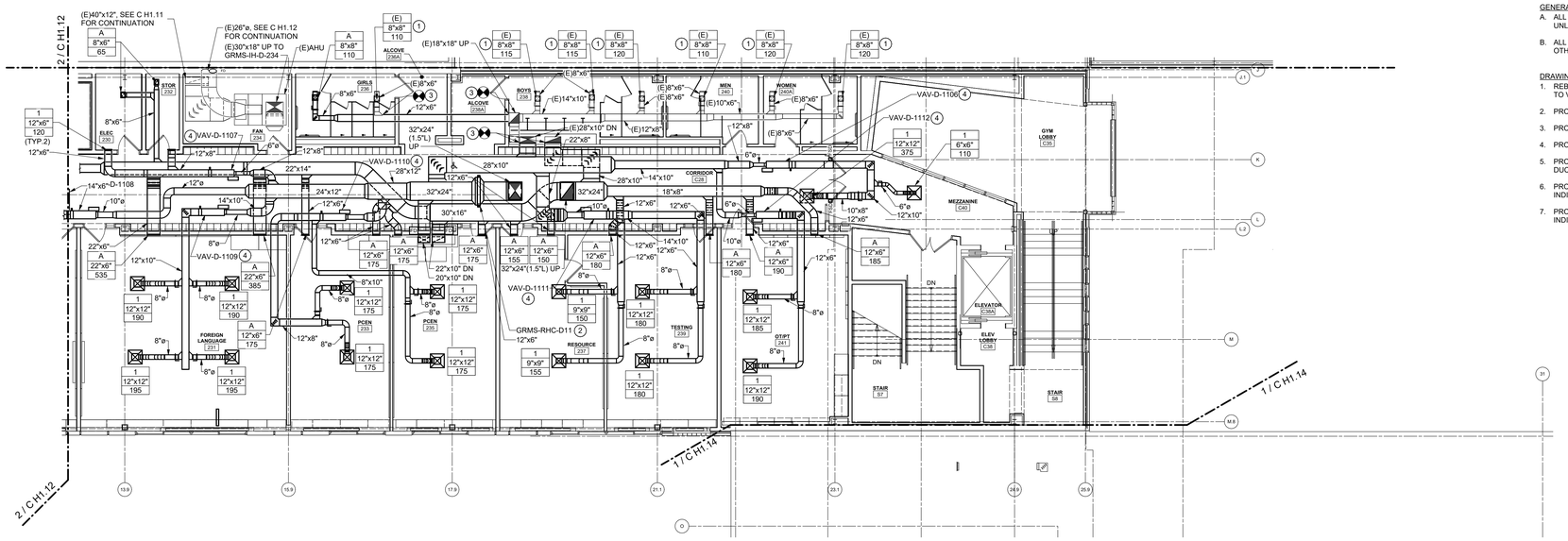
GENERAL NOTES:

A. ALL RISERS DOWN SEE SHEET C H1.09 FOR CONTINUATION UNLESS OTHERWISE NOTED.

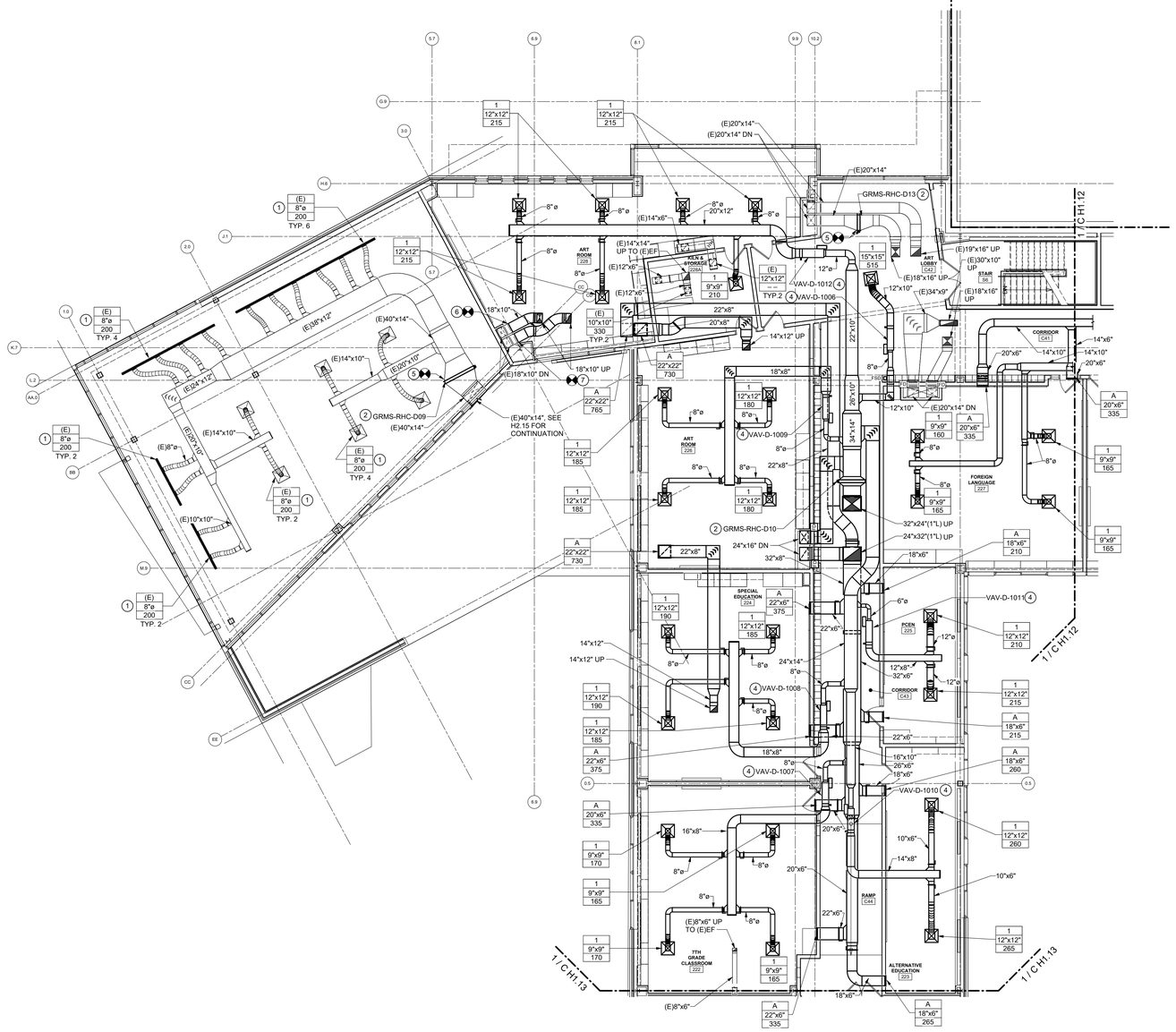
B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

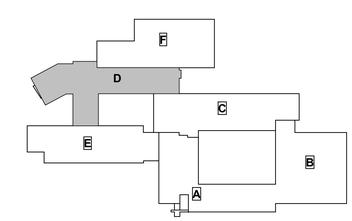
1. REBALANCE REGISTER, GRILLE, OR DIFFUSER TO VALUE SHOWN.
2. PROVIDE DUCT MOUNTED HEATING COIL.
3. PROVIDE EXHAUST DUCT FROM EXISTING.
4. PROVIDE VAV TERMINAL PER DETAIL 5 ON SHEET CH9.02.
5. PROVIDE SUPPLY DUCTWORK AS NEEDED TO FACILITATE NEW DUCT MOUNTED HEATING COIL.
6. PROVIDE SUPPLY DUCTWORK FROM RTU DOWN TO POINT INDICATED. REPAIRE INSULATION.
7. PROVIDE RETURN DUCTWORK FROM RTU DOWN TO POINT INDICATED.



1 PARTIAL SECOND FLOOR PLAN - AREA D SOUTH - DUCTWORK
1/8" = 1'-0"



2 PARTIAL SECOND FLOOR PLAN - AREA D NORTH - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: 23-44-7866/ 23-44-7868

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-031
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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100% CONSTRUCTION DOCUMENTS

DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL SECOND FLOOR PLAN - AREA D - DUCTWORK

C H1.12

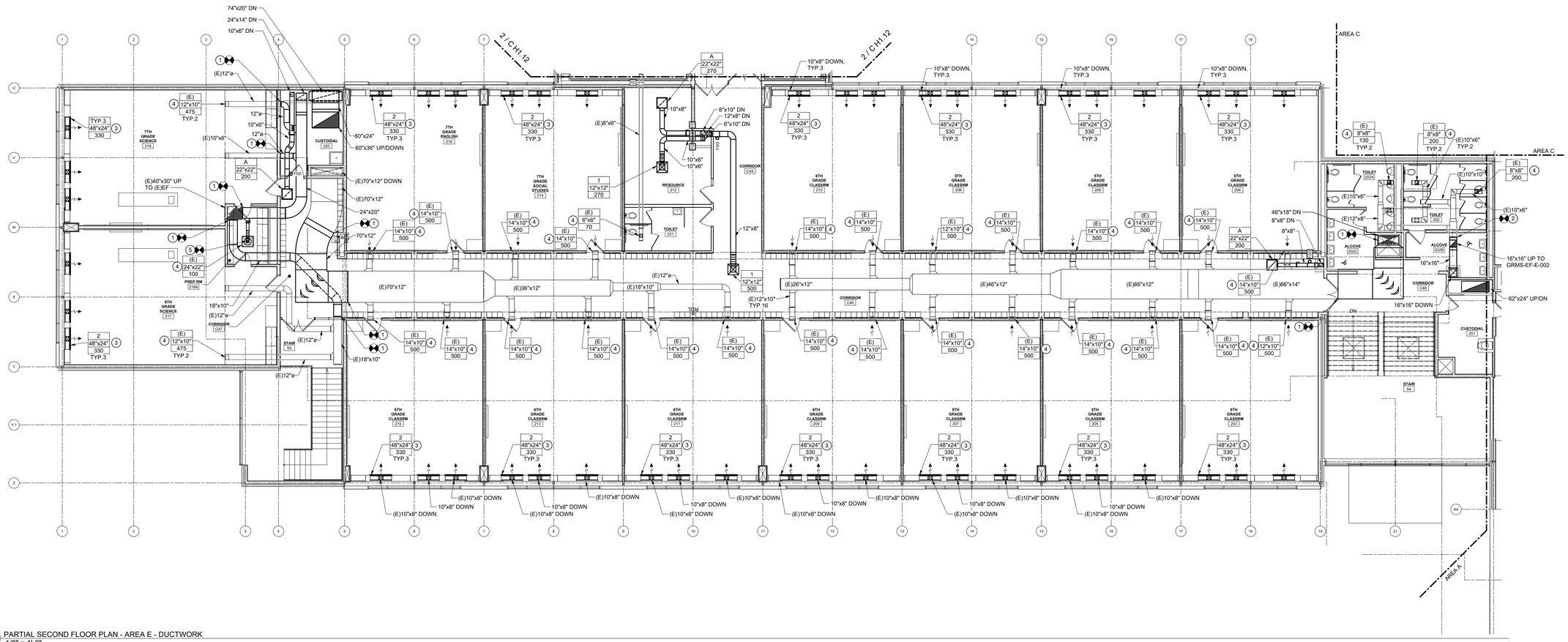
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET H1.10 FOR CONTINUATION UNLESS OTHERWISE NOTED.

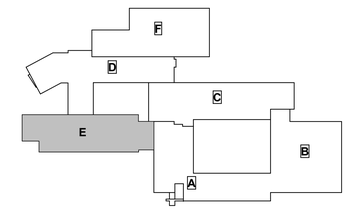
B. ALL RISERS UP SEE SHEET H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE RETURN DUCTWORK RECONNECTION FROM EXISTING AS POINT SHOWN.
2. PROVIDE EXHAUST DUCTWORK RECONNECTION FROM EXISTING AS POINT SHOWN.
3. PROVIDE DISPLACEMENT DIFFUSER PER DETAIL 16 ON SHEET C H9.01.
4. REBALANCE REGISTER, GRILLE, OR DIFFUSER TO VALUE SHOWN.
5. PROVIDE EXHAUST DUCTWORK TO EXISTING GRILLE. CONNECT TO 16" ROUND CONNECTION.



1 PARTIAL SECOND FLOOR PLAN - AREA E - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL SECOND FLOOR PLAN - AREA E - DUCTWORK

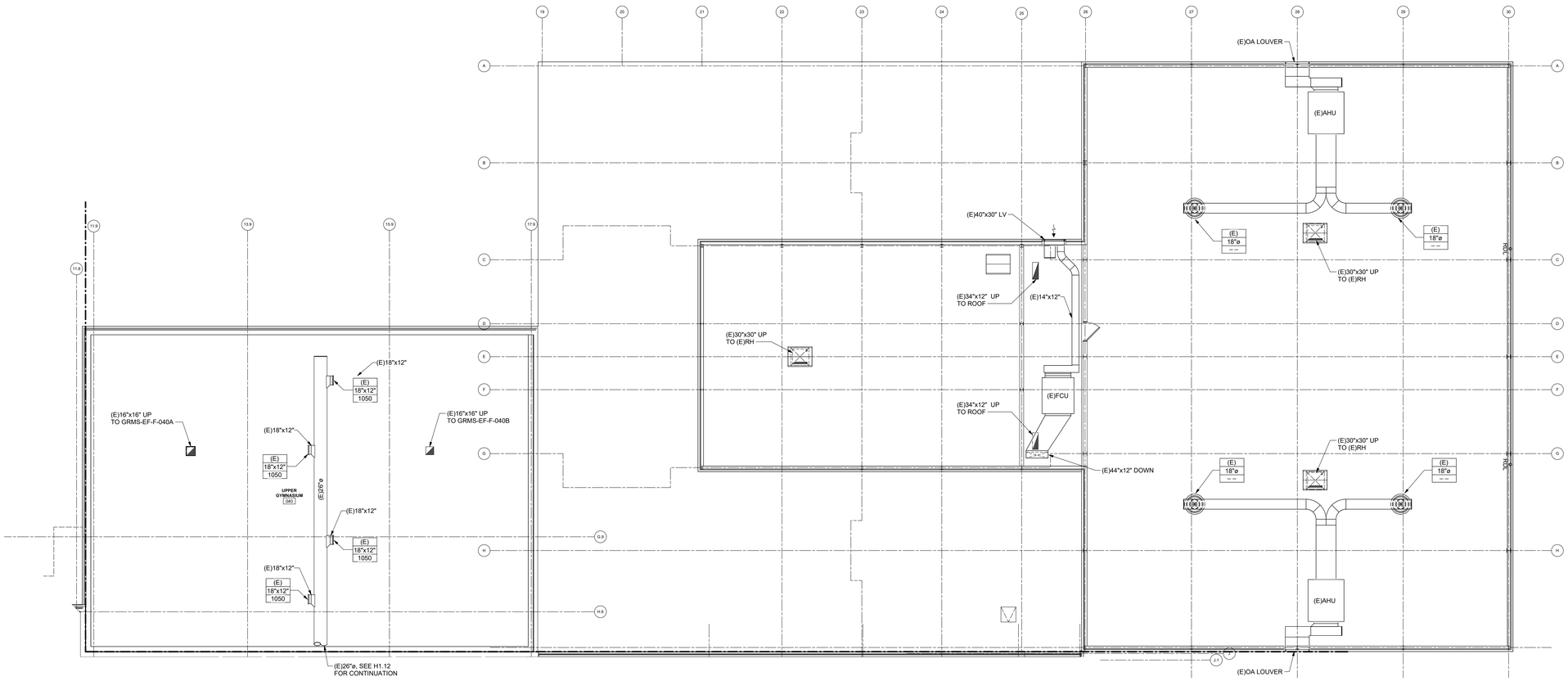
C H1.13

GENERAL NOTES:

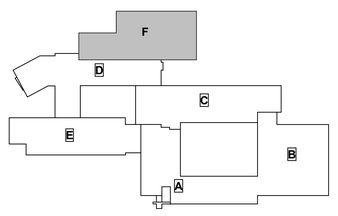
A. ALL RISERS DOWN SEE SHEET C H1.11 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

C. NO SCOPE. FOR REFERNCE ONLY.



1 PARTIAL SECOND FLOOR PLAN - AREA F - DUCTWORK
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

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B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-09-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
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DRAWN BY: **JPK**

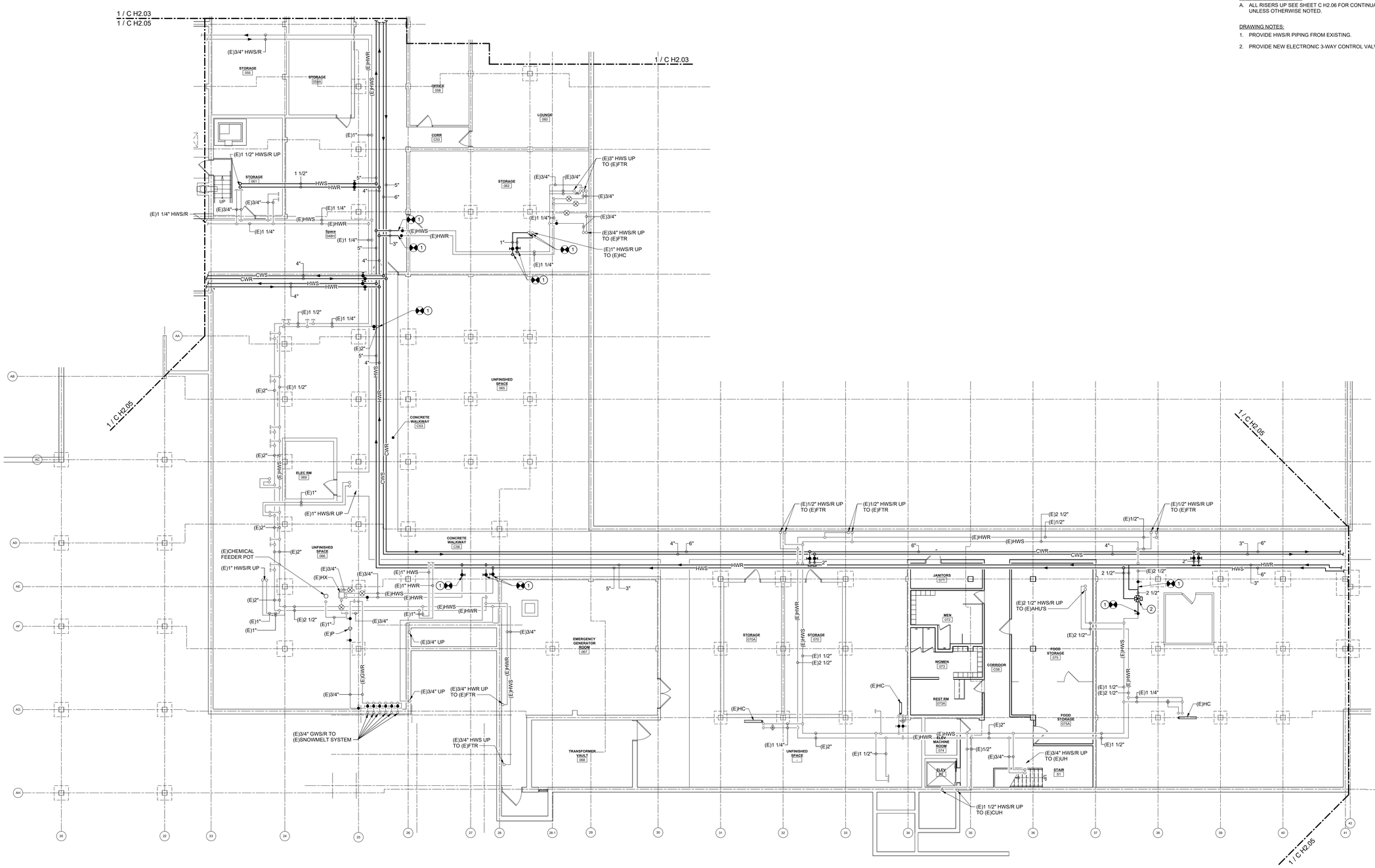
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL SECOND FLOOR PLAN - AREA F - DUCTWORK

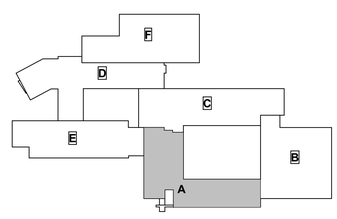
C H1.14

GENERAL SHEET NOTES:
A. ALL RISERS UP SEE SHEET C H2.06 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:
1. PROVIDE HWS/R PIPING FROM EXISTING.
2. PROVIDE NEW ELECTRONIC 3-WAY CONTROL VALVE.



1 PARTIAL BASEMENT PLAN - AREA A - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7866**

SED PROJECT NUMBERS:

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C: Gillette Road MS	42-03-03-06-0-12-001
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA A - PIPING

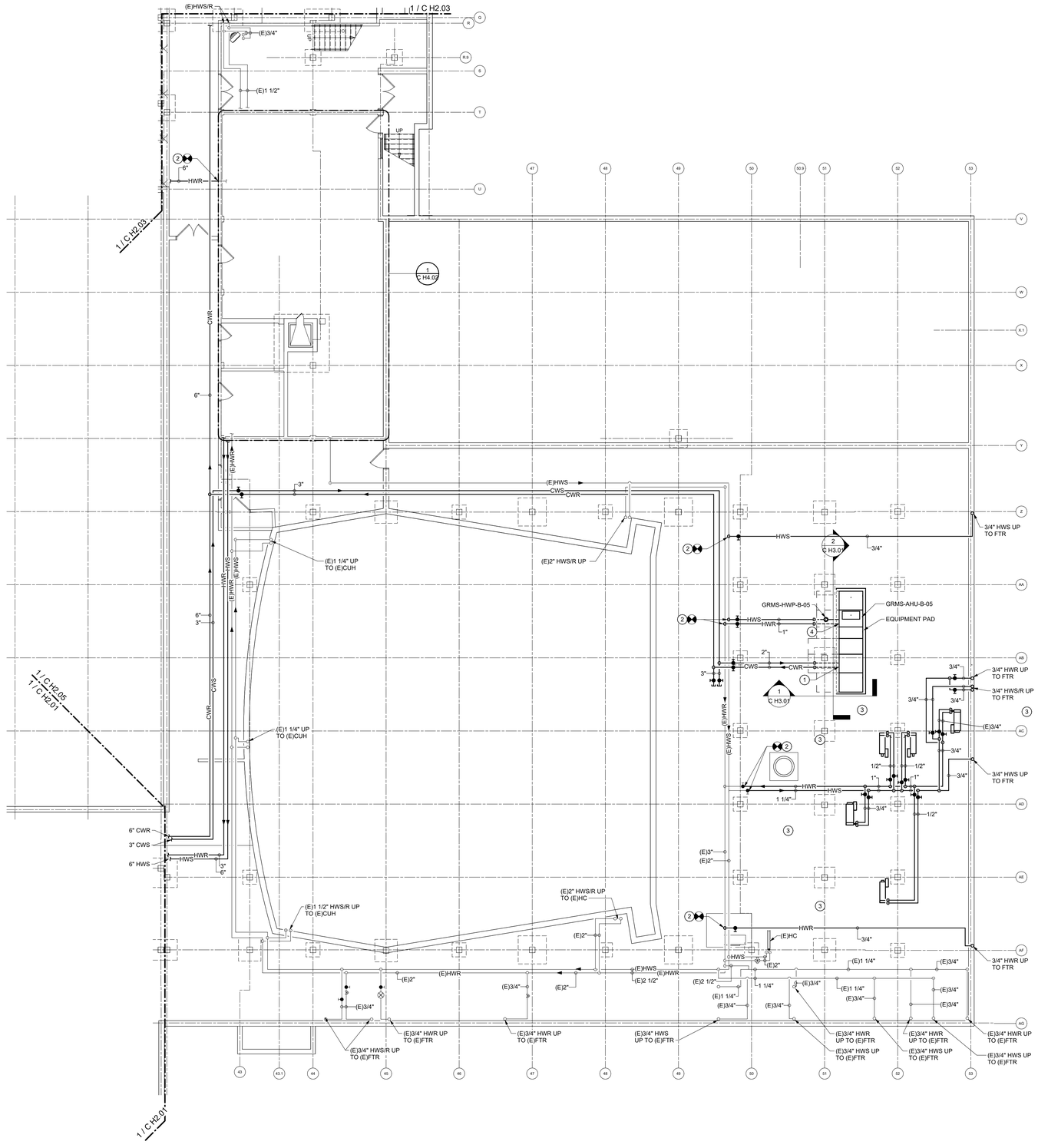
C H2.01

GENERAL SHEET NOTES:

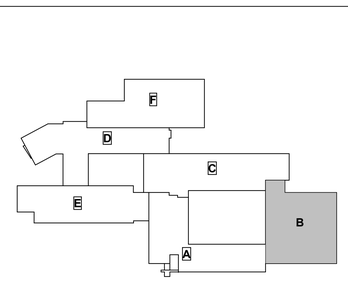
A. ALL RISERS UP SEE SHEET C H2.07 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE CWS/R PIPING TO AHU COOLING COIL PER DETAIL 2 ON SHEET C H9.01.
2. PROVIDE HWS/R PIPING FROM EXISTING.
3. PROVIDE HWS/R PIPING TO VAV REHEAT COIL PER DETAIL 5 ON SHEET C H9.01.
4. PROVIDE HWS/R PIPING TO AHU HEATING COIL PER DETAIL 6 ON SHEET C H9.01.



1 PARTIAL BASEMENT PLAN - AREA B - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-09-019
F: Allen Road ES	42-03-03-06-0-01-023
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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL BASEMENT PLAN - AREA B - PIPING

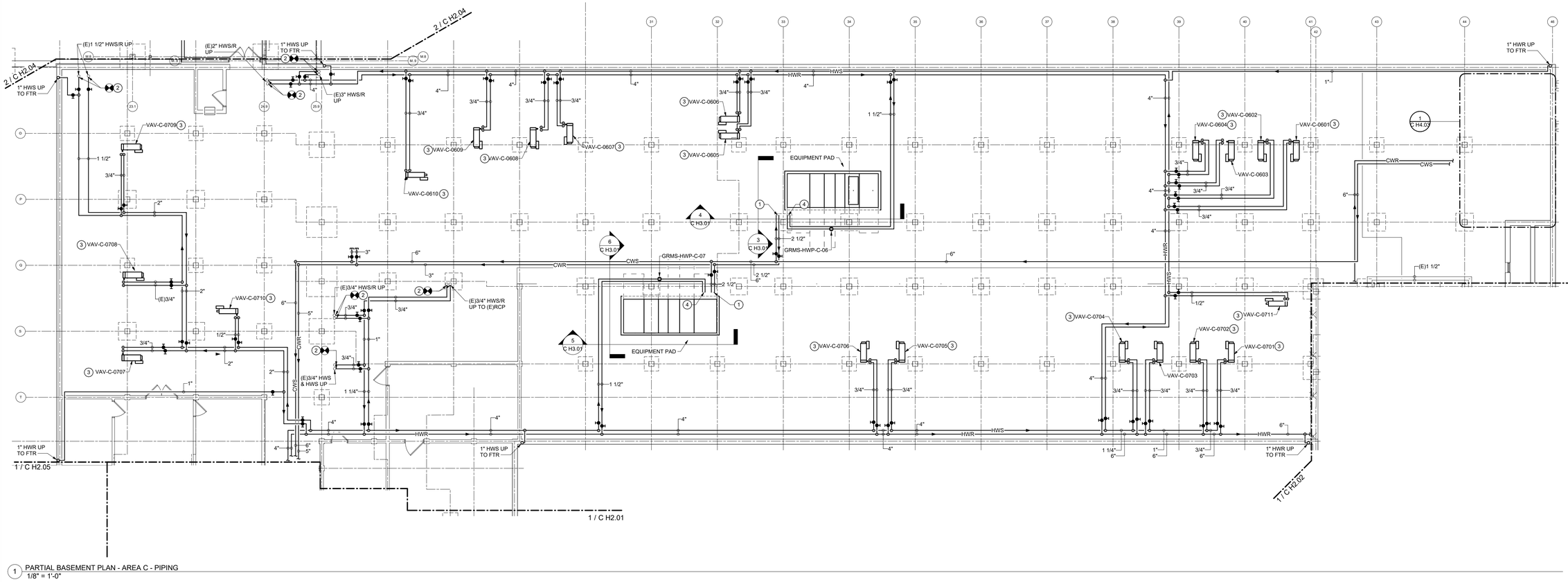
C H2.02

GENERAL SHEET NOTES:

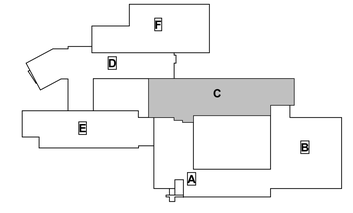
A. ALL RISERS UP SEE SHEET C H2.08 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE CWS/R PIPING TO AHU COOLING COIL PER DETAIL 2 ON SHEET C H9.01.
2. PROVIDE HWS/R PIPING FROM EXISTING.
3. PROVIDE HWS/R PIPING TO VAV REHEAT COIL PER DETAIL 5 ON SHEET C H9.01.
4. PROVIDE HWS/R PIPING TO AHU HEATING COIL PER DETAIL 6 ON SHEET C H9.01.



1 PARTIAL BASEMENT PLAN - AREA C - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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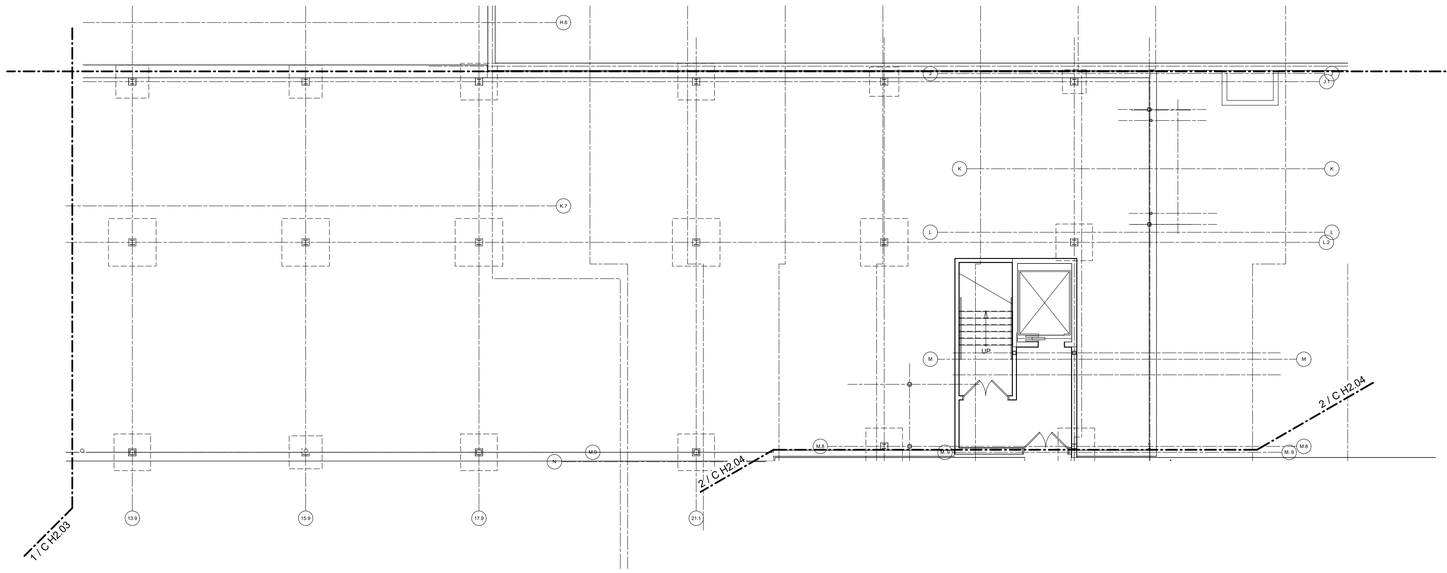
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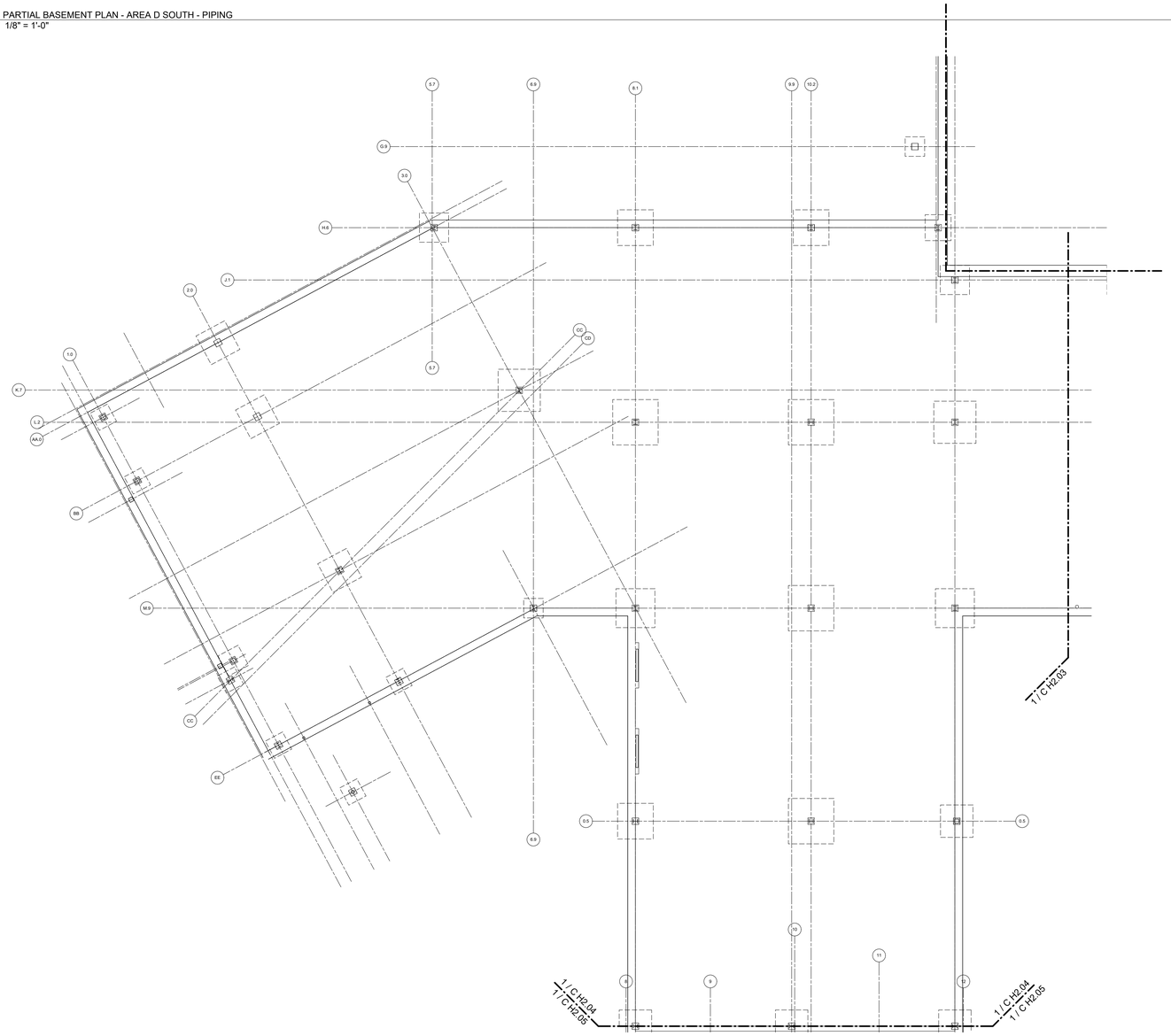
DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**
DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA C - PIPING

C H2.03

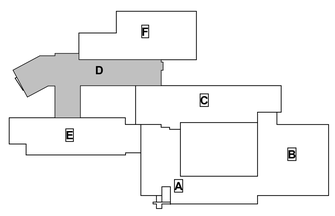
GENERAL SHEET NOTES:
A. NO SCOPE, FOR REFERENCE ONLY.



1 PARTIAL BASEMENT PLAN - AREA D SOUTH - PIPING
1/8" = 1'-0"



2 PARTIAL BASEMENT PLAN - AREA D NORTH - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

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DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA D - PIPING

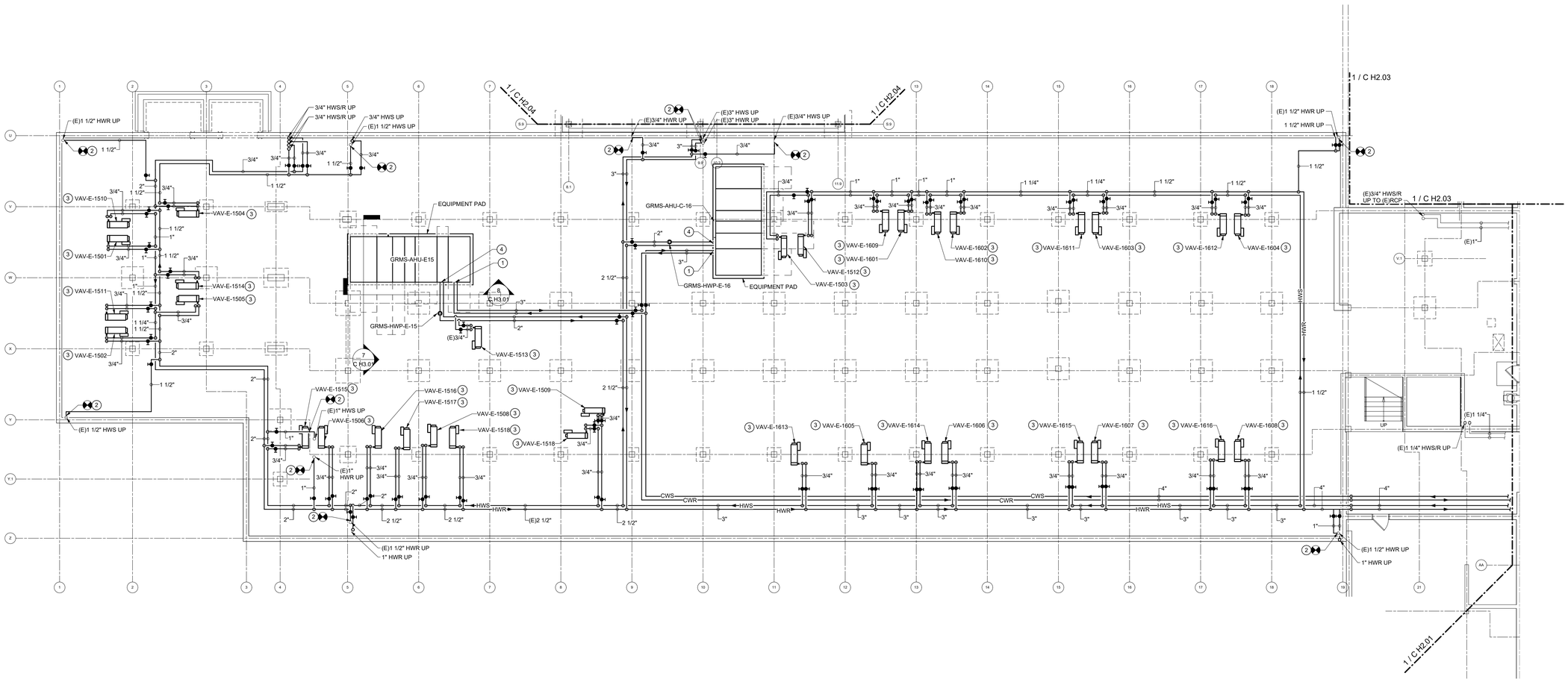
C H2.04

GENERAL SHEET NOTES:

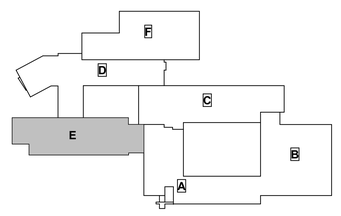
A. ALL RISERS UP SEE SHEET C H2.10 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE CWS/R PIPE TO AHU COOLING COIL PER DETAIL 3 ON C H9.01.
2. PROVIDE HWS/R PIPING FRIM EXISTING.
3. PROVIDE HWS/R PIPING TO VAV REHEAT COIL PER DETAIL 5 ON SHEET C H9.01.
4. PROVIDE HWS/R PIPING TO AHU HEATING COIL PER DETAIL 6 ON SHEET C H9.01.



1 PARTIAL BASEMENT PLAN - AREA E - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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STATE OF NEW YORK
JON C. HELBERG
LICENSED PROFESSIONAL ENGINEER
EXP. 06/30/2026
080515

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100% CONSTRUCTION DOCUMENTS

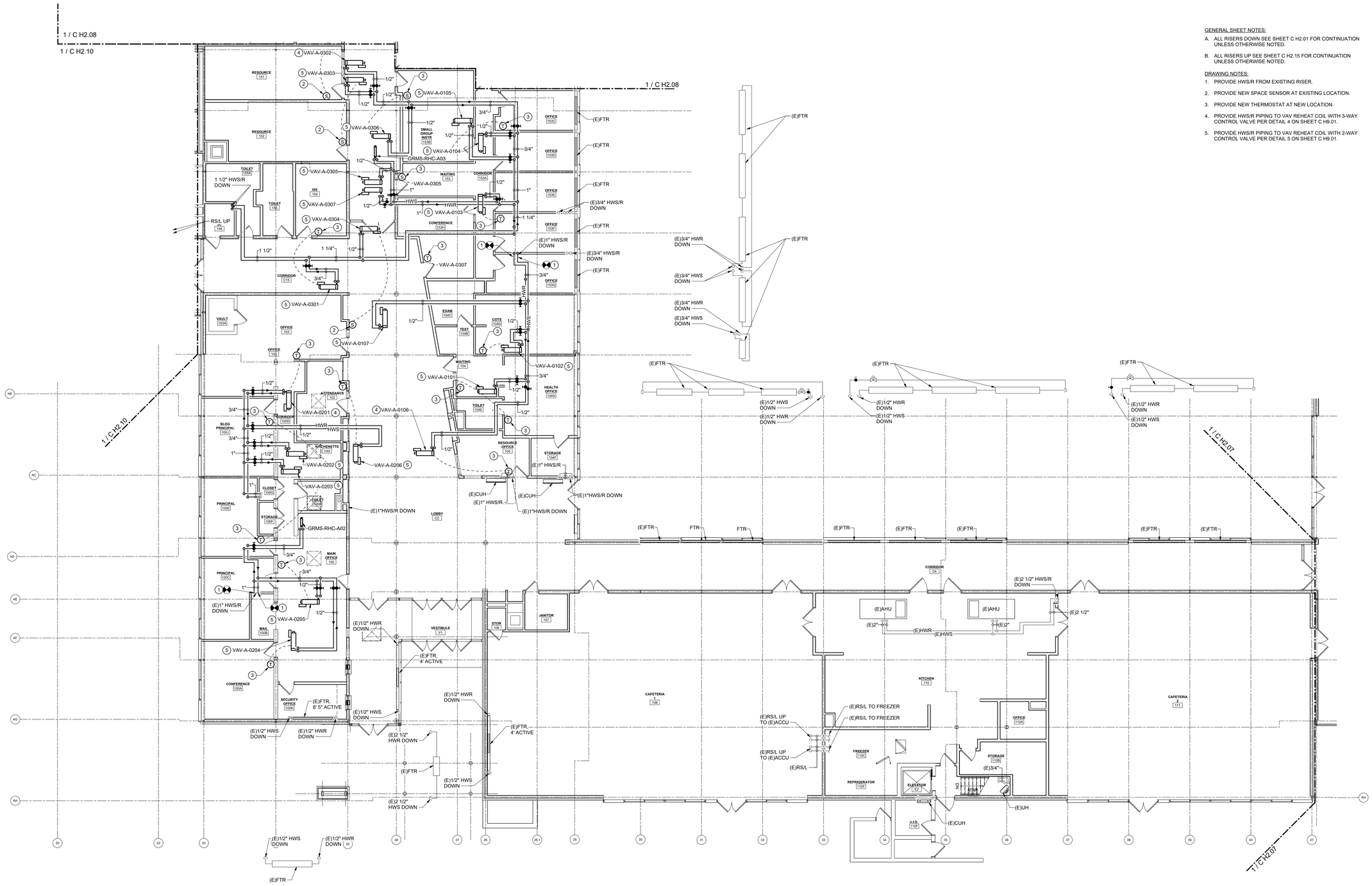
DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL BASEMENT PLAN - AREA E - PIPING

C H2.05



1 PARTIAL FIRST FLOOR PLAN - AREA A - PIPING
1/8" = 1'-0"

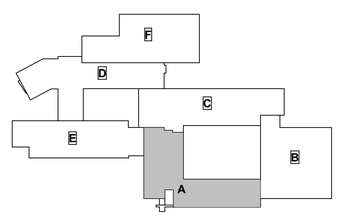
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.01 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE HWS/R FROM EXISTING RISER.
2. PROVIDE NEW SPACE SENSOR AT EXISTING LOCATION.
3. PROVIDE NEW THERMOSTAT AT NEW LOCATION.
4. PROVIDE HWS/R PIPING TO VAV REHEAT COIL WITH 3-WAY CONTROL VALVE PER DETAIL 4 ON SHEET C H9.01.
5. PROVIDE HWS/R PIPING TO VAV REHEAT COIL WITH 2-WAY CONTROL VALVE PER DETAIL 5 ON SHEET C H9.01.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

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DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL FIRST FLOOR PLAN - AREA A - PIPING

C H2.06

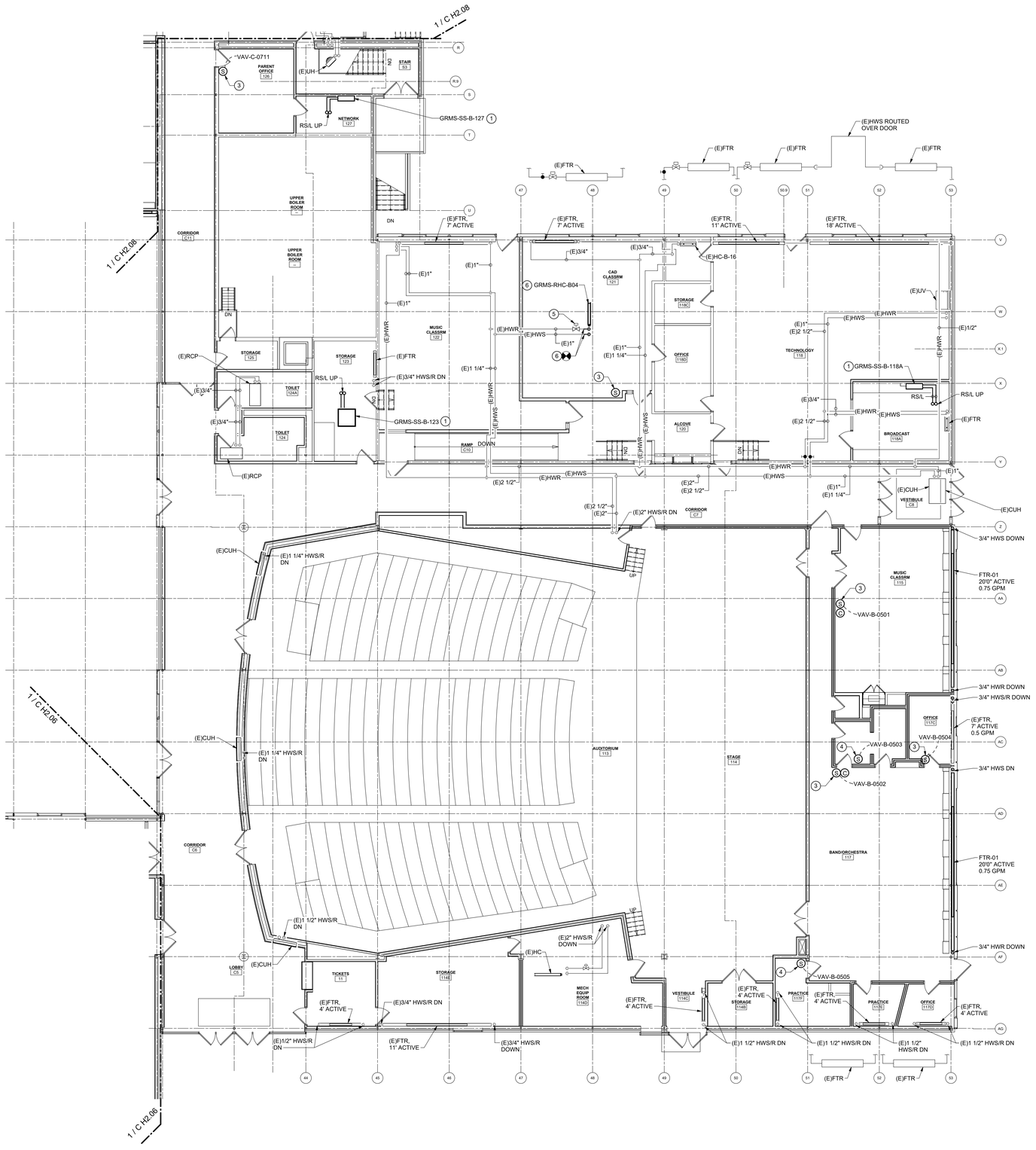
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.02 FOR CONTINUATION UNLESS OTHERWISE NOTED.

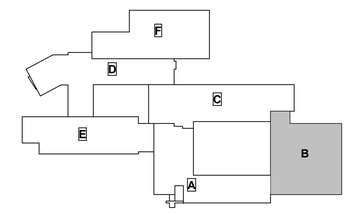
B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE SS AND PROVIDE RS/L PIPE UP TO ACCU.
2. PROVIDE HWS/R PIPING TO NEW FTR PER DETAIL 8 ON SHEET C H9.01 FOR PIPING.
3. PROVIDE NEW HWS/R THERMOSTAT AT EXISTING LOCATION.
4. PROVIDE NEW HWS/R THERMOSTAT AT NEW LOCATION.
5. PROVIDE CONTROL VALVE IN EXISTING PIPING.
6. PROVIDE RHC AND HWS/R PIPING TO FROM EXISTING. REFER TO DETAIL 7 ON SHEET H9.02.



1 PARTIAL FIRST FLOOR PLAN - AREA B - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king + king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

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B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
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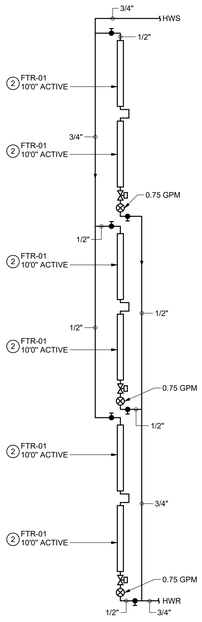
DRAWING DATE: **02/09/2024**

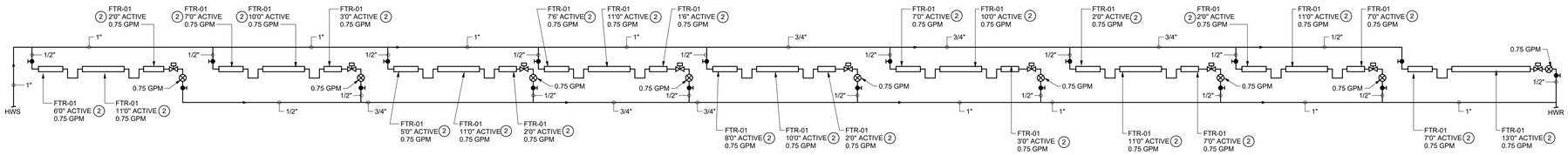
DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA B - PIPING

C H2.07





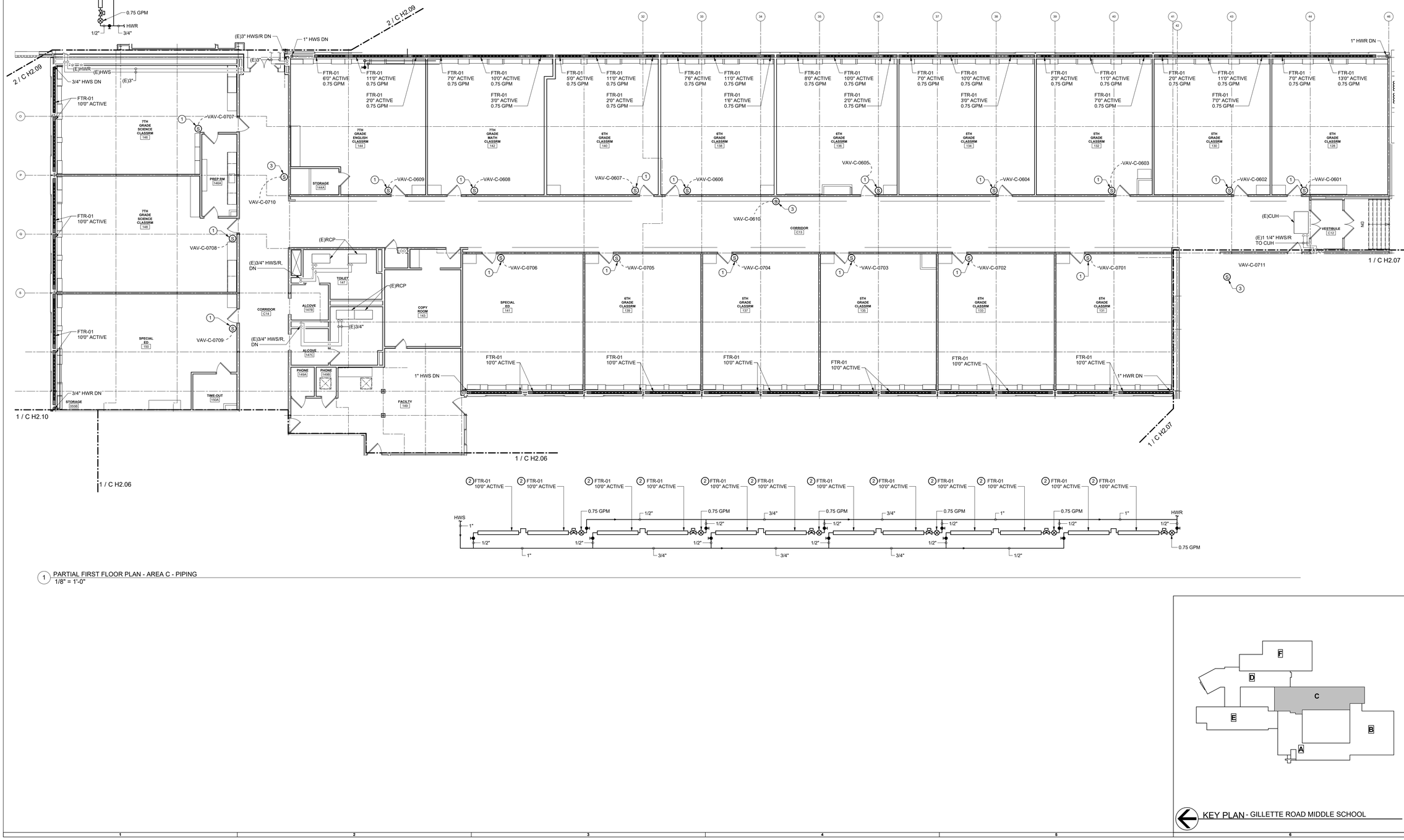
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.03 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE TEMPERATURE SENSOR AT EXISTING LOCATION.
2. PROVIDE HWS/R PIPING TO FTR PER DETAIL 8 ON SHEET CH9.01.
3. PROVIDE TEMPERATURE SENSOR AT NEW LOCATION.



1 PARTIAL FIRST FLOOR PLAN - AREA C - PIPING
1/8" = 1'-0"

KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

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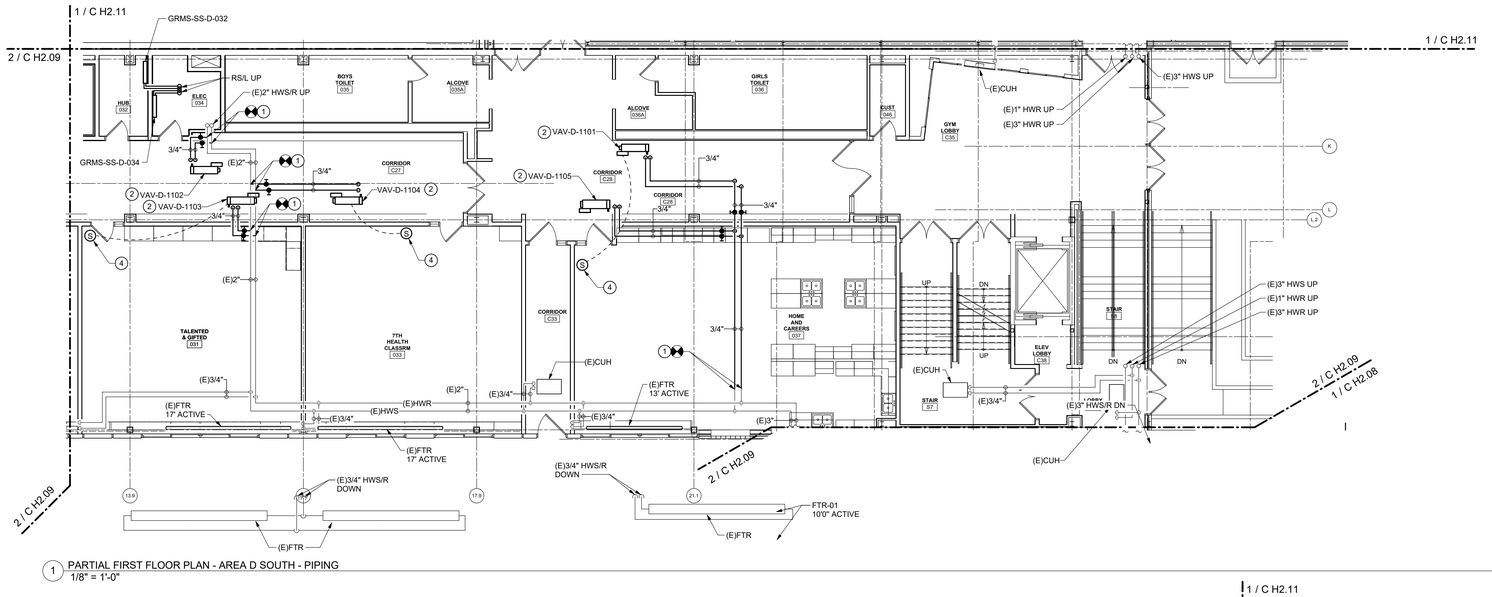
DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

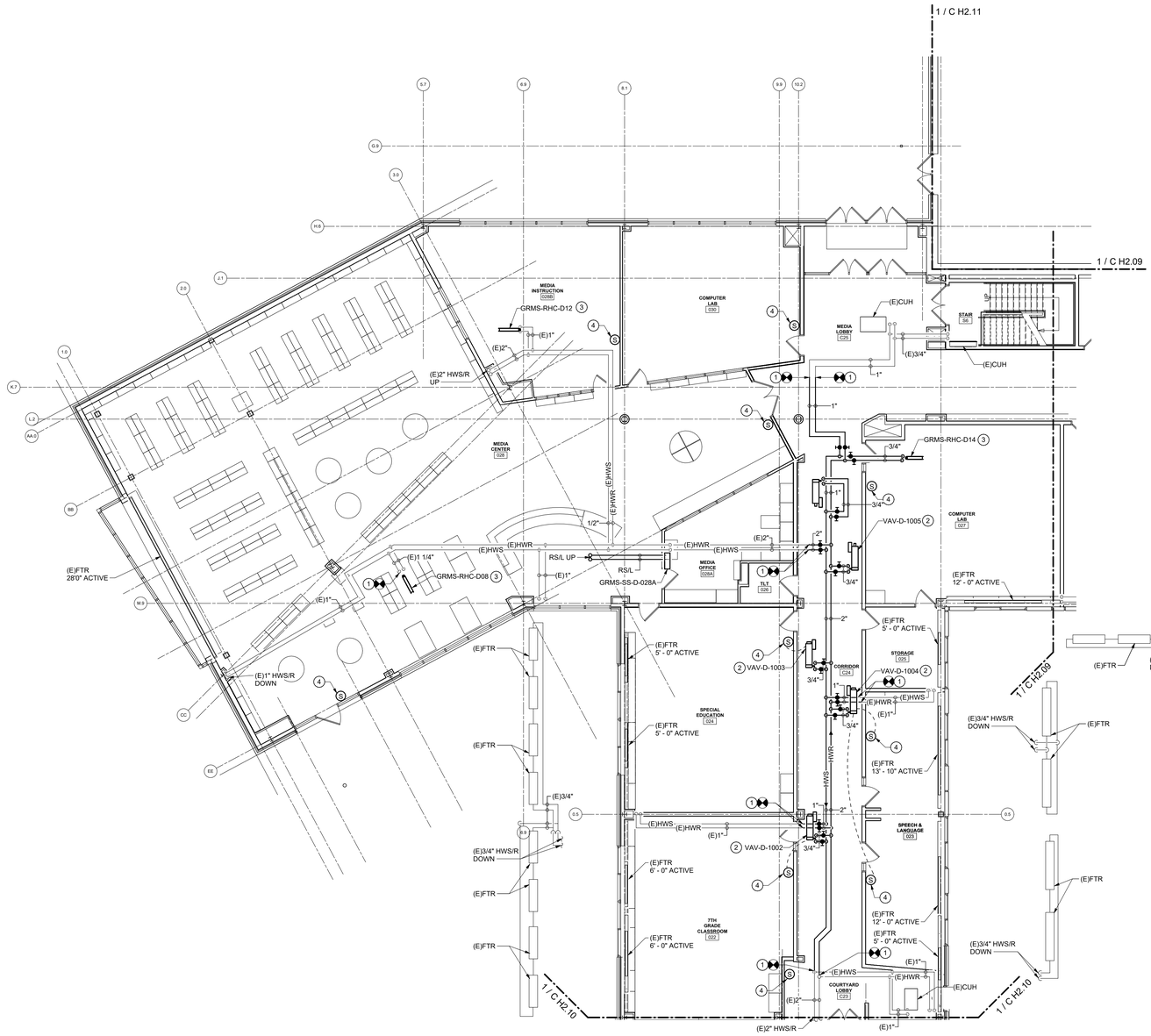
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA C - PIPING

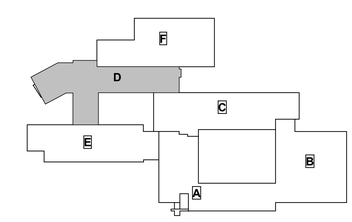
C H2.08



1 PARTIAL FIRST FLOOR PLAN - AREA D SOUTH - PIPING
1/8" = 1'-0"



2 PARTIAL FIRST FLOOR PLAN - AREA D NORTH - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.04 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H2.12 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE HWS/R PIPING FROM EXISTING.
2. PROVIDE HWS/R PIPING TO VAV REHEAT COIL PER DETAIL 5 ON SHEET C H9.01.
3. PROVIDE HWS/R PIPING TO HEATING COIL PER DETAIL 7 ON SHEET C H9.01.
4. PROVIDE TEMPERATURE SENSOR AT EXISTING LOCATION.

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

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Cicero, NY 13039

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J: Smith Road ES	42-03-03-06-0-09-017
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SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL FIRST FLOOR PLAN - AREA D - PIPING

C H2.09

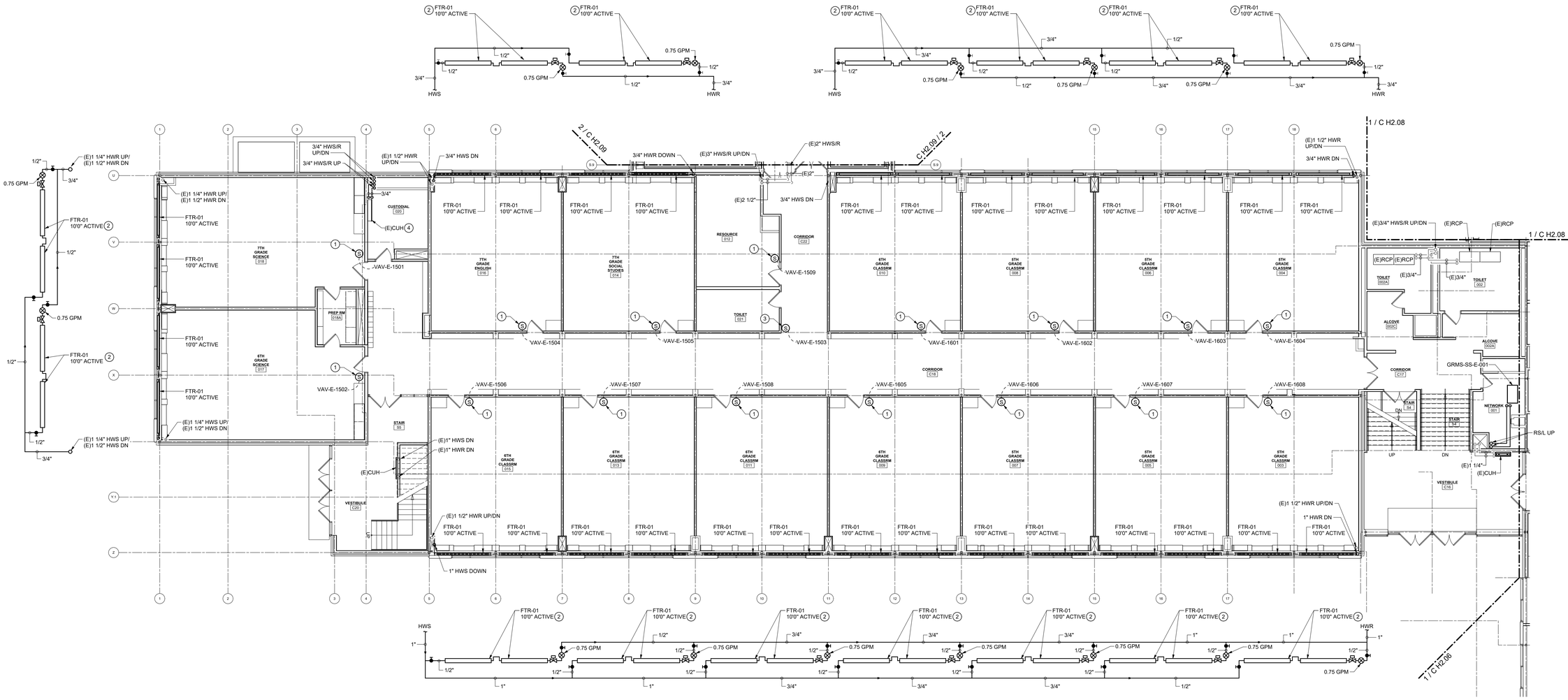
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.05 FOR CONTINUATION UNLESS OTHERWISE NOTED.

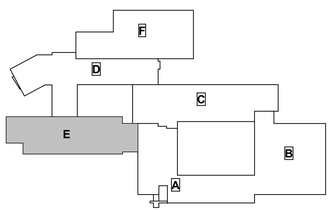
B. ALL RISERS UP SEE SHEET C H2.13 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE TEMPERATURE SENSOR AT EXISTING LOCATION.
2. PROVIDE HWS/R PIPING TO FTR PER DETAIL 8 ON CH9.01. CONNECT HWS/R TO EXISTING RISER.
3. PROVIDE TEMPERATURE SENSOR AT NEW LOCATION.
4. INSTALL RETAINED CUH IN LOCATION SHOWN. PROVIDE HWS/R PIPING TO RETAINED CUH.



1 PARTIAL FIRST FLOOR PLAN - AREA E - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA E - PIPING

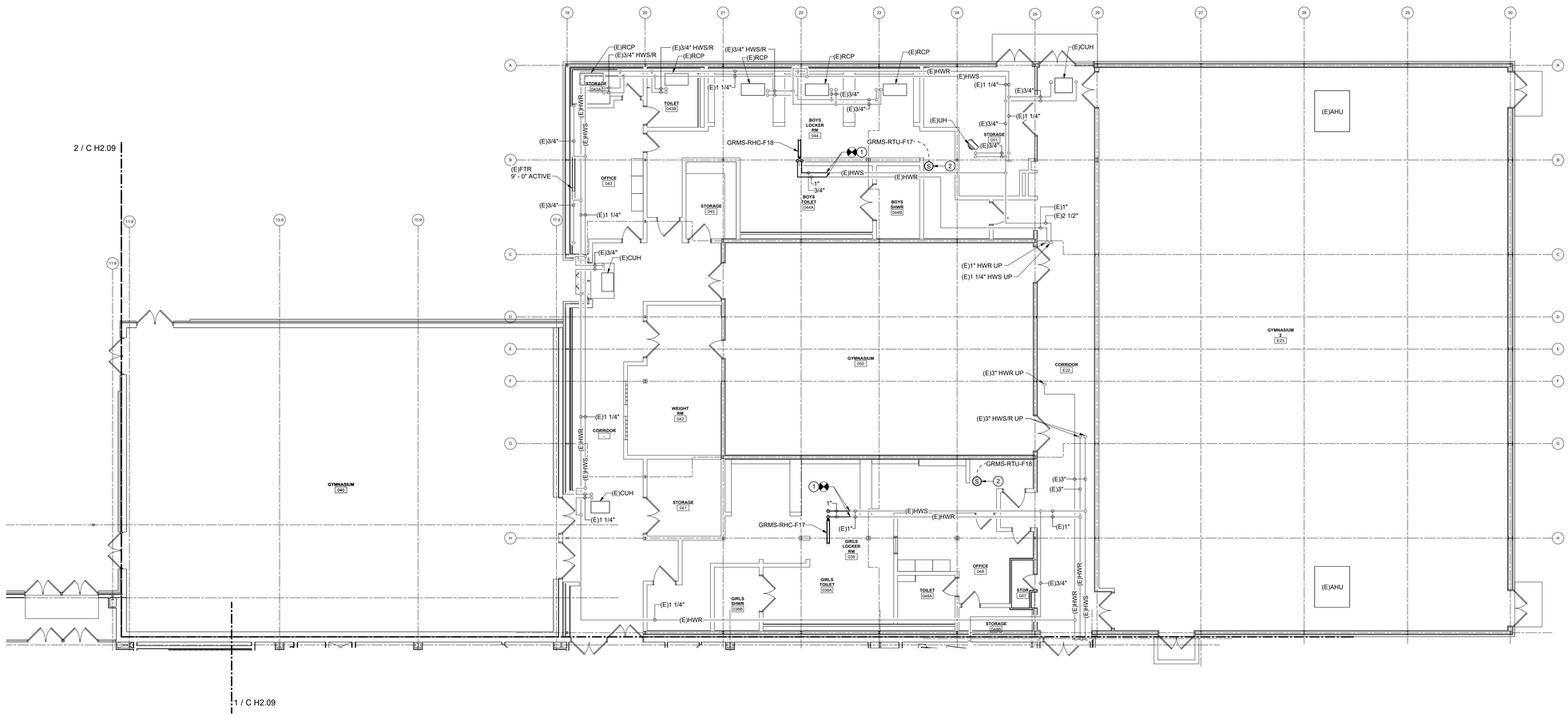
C H2.10

GENERAL SHEET NOTES:

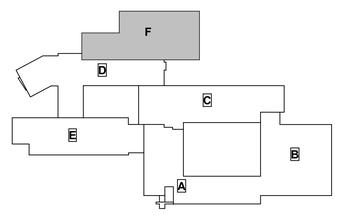
A. ALL RISERS UP SEE SHEET C H2.14 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE HWS/R PIPING TO HEATING COIL PER DETAIL 7 ON SHEET C H9.01.
2. PROVIDE TEMPERATURE SENSOR IN EXISTING LOCATION.



1 PARTIAL FIRST FLOOR PLAN - AREA F - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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STATE OF NEW YORK
JOHN C. HELBERG
EXP. 06/30/2026
080515
LICENSED PROFESSIONAL ENGINEER

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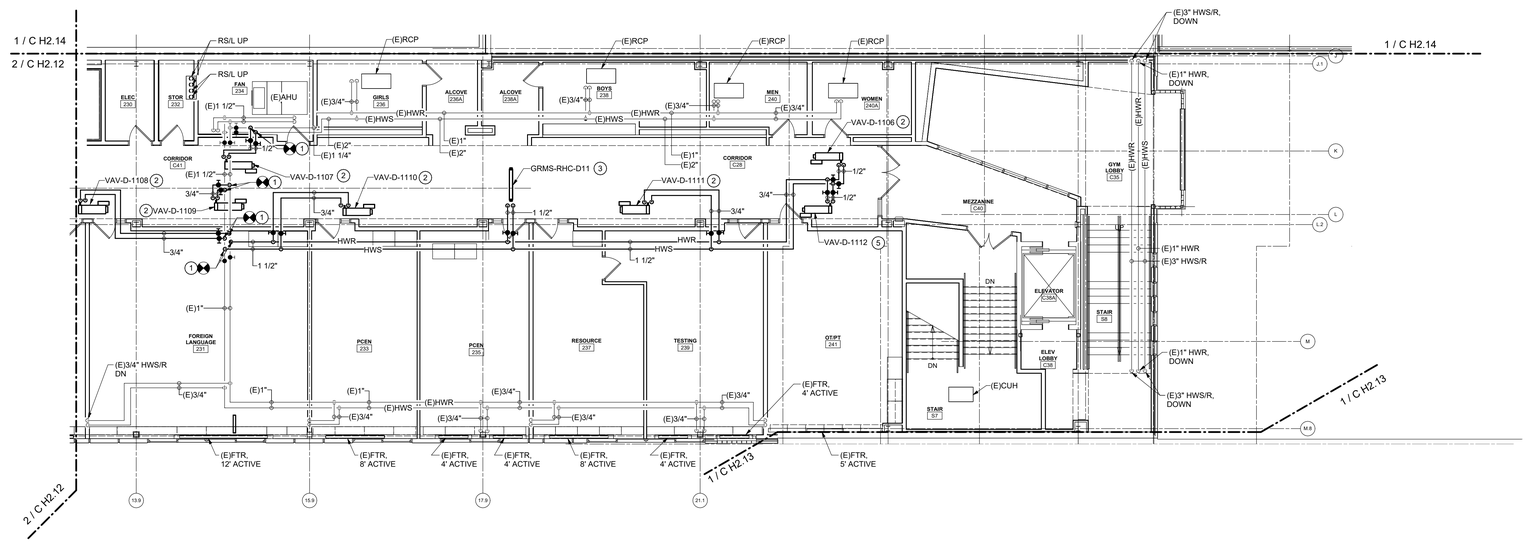
DRAWING DATE: **02/09/2024**

DRAWN BY: **JPK**

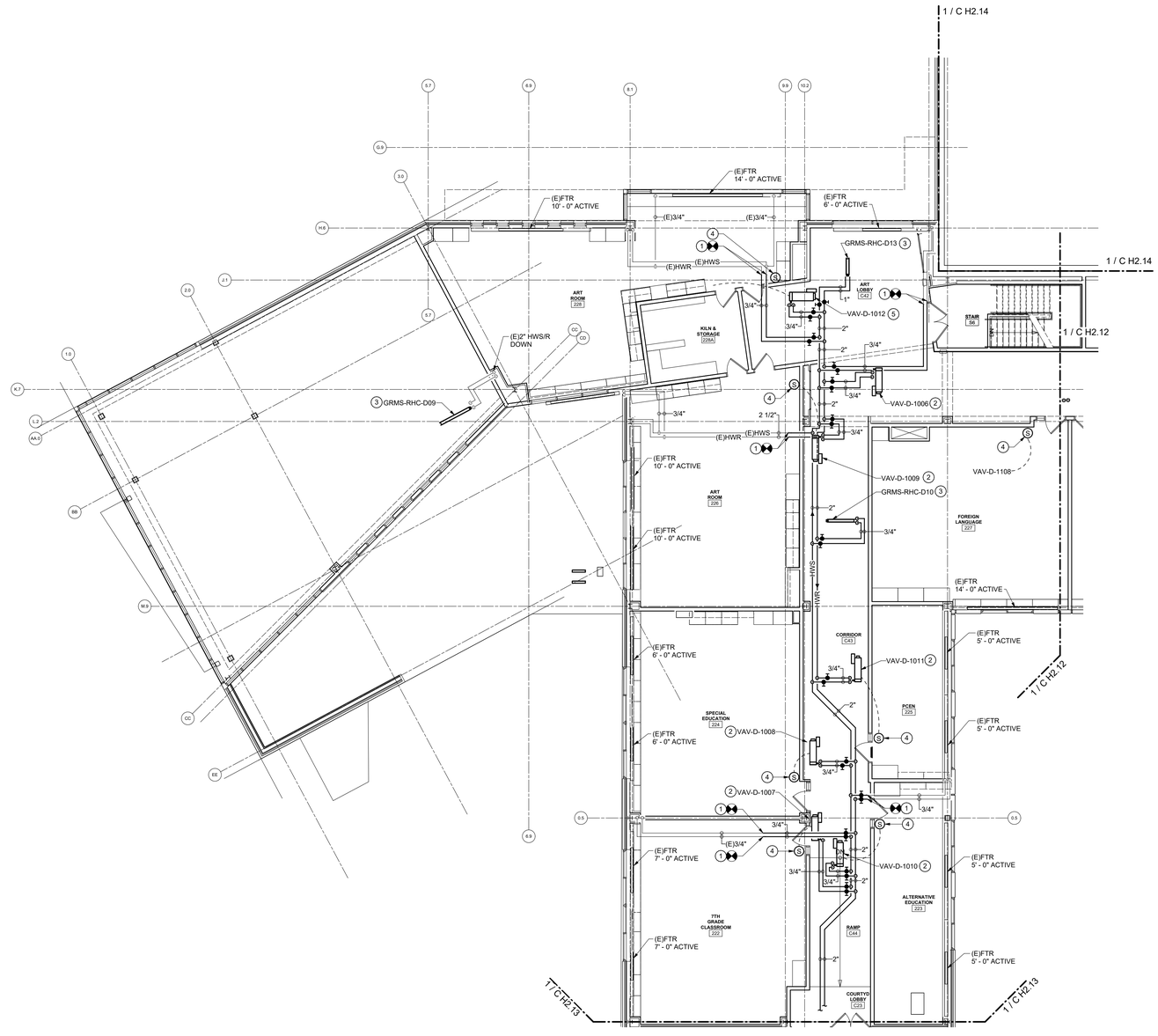
SCALE: **AS NOTED**

DRAWING TITLE:
PARTIAL FIRST FLOOR PLAN - AREA F - PIPING

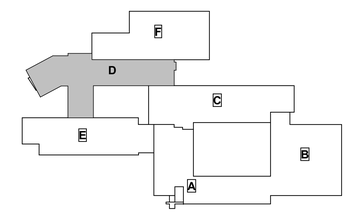
C H2.11



1 PARTIAL SECOND FLOOR PLAN - AREA D SOUTH - PIPING
1/8" = 1'-0"



2 PARTIAL SECOND FLOOR PLAN - AREA D NORTH - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.09 FOR CONTINUATION UNLESS OTHERWISE NOTED.

B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE HWS/R PIPING FROM EXISTING.
2. PROVIDE HWS/R PIPING TO VAV REHEAT COIL WITH 2-WAY CONTROL VALVE PER DETAIL 5 ON C H9.01.
3. PROVIDE HWS/R PIPING TO HEATING COIL PER DETAIL 7 ON C H9.01.
4. PROVIDE TEMPERATURE SENSOR AT EXISTING LOCATION.
5. PROVIDE HWS/R PIPING TO VAV REHEAT COIL WITH 3-WAY CONTROL VALVE PER DETAIL 4 ON SHEET C H9.01.

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWN BY: **JPK**

SCALE: **AS NOTED**

DRAWING TITLE:

PARTIAL SECOND FLOOR PLAN - AREA D - PIPING

C H2.12

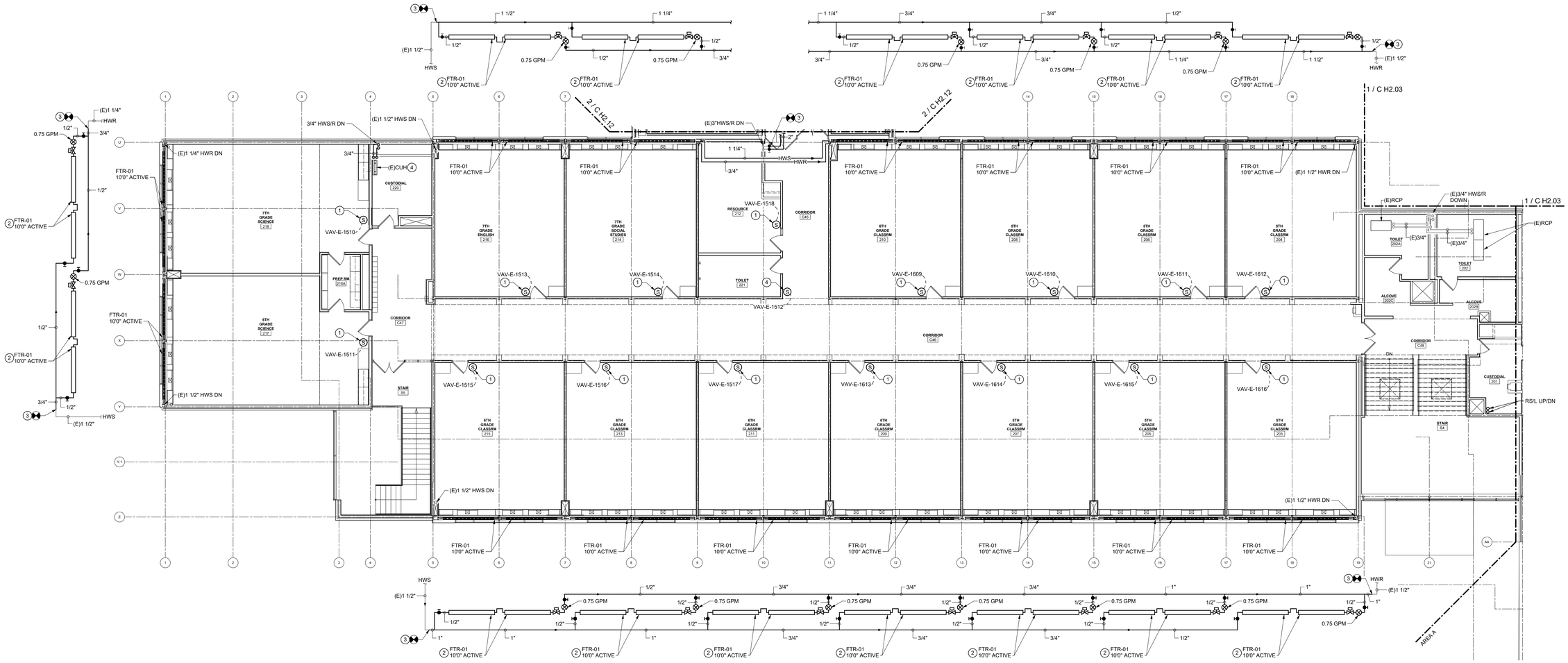
GENERAL SHEET NOTES:

A. ALL RISERS DOWN SEE SHEET C H2.10 FOR CONTINUATION UNLESS OTHERWISE NOTED.

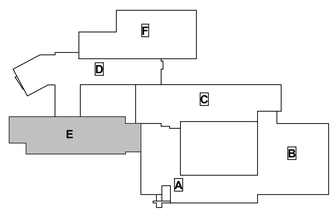
B. ALL RISERS UP SEE SHEET C H2.15 FOR CONTINUATION UNLESS OTHERWISE NOTED.

DRAWING NOTES:

1. PROVIDE TEMPERATURE SENSOR AT EXISTING LOCATION.
2. PROVIDE HWS/R PIPING TO FTR PER DETAIL 8 ON SHEET C H9.01.
3. PROVIDE HWS/R PIPING FROM EXISTING.
4. INSTALL RETAINED CUH IN LOCATION SHOWN. PROVIDE HWS/R PIPING TO RETAINED CUH.



1 PARTIAL SECOND FLOOR PLAN - AREA E - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
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6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

SED PROJECT NUMBERS:

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B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-001
D: Roxboro Road MS	42-03-03-06-0-10-022
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SCALE: **AS NOTED**

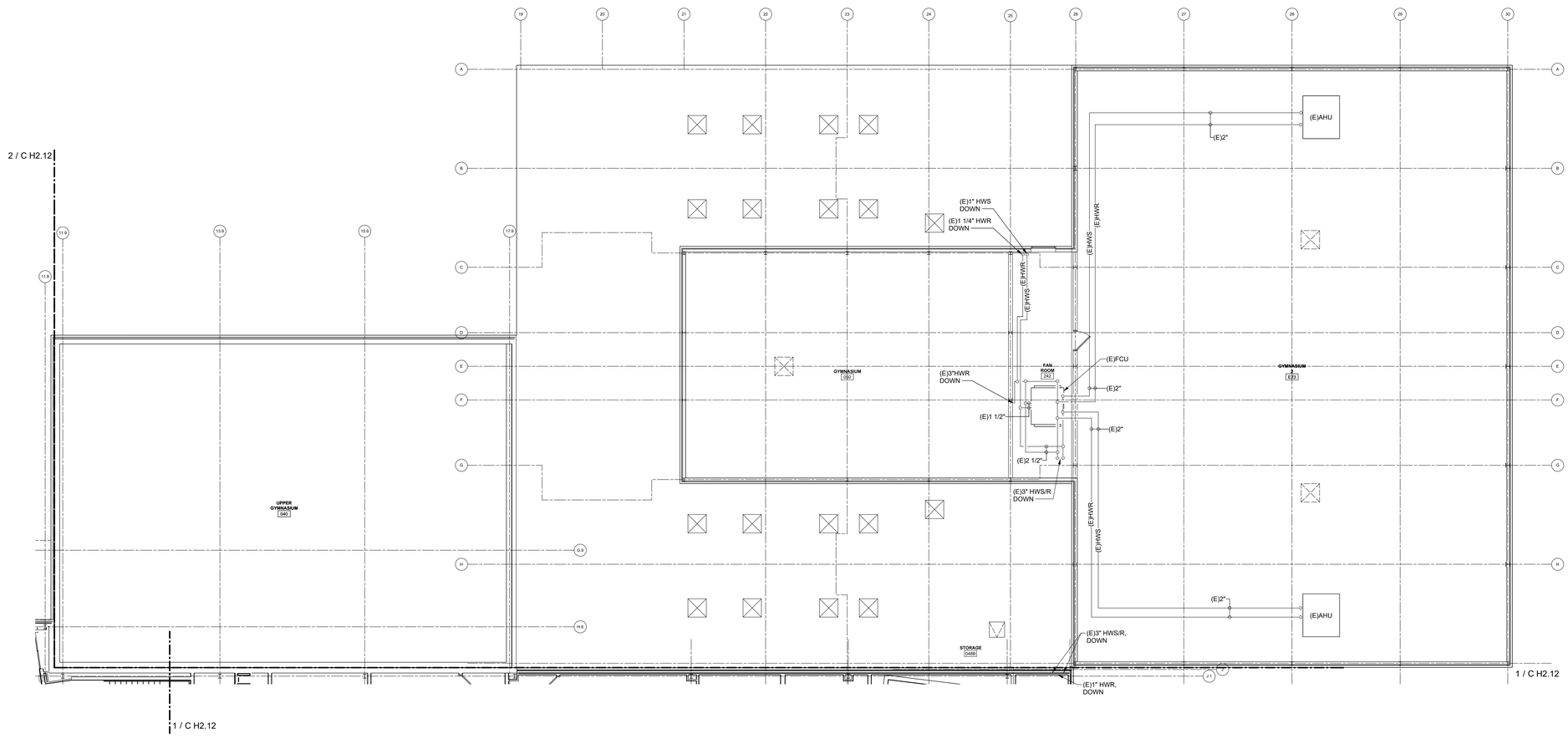
DRAWING TITLE:
PARTIAL SECOND FLOOR PLAN - AREA E - PIPING

C H2.13

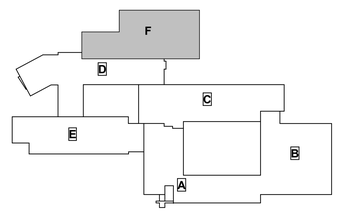
GENERAL SHEET NOTES:

A. NO SCOPE. SHOWN FOR REFERENCE ONLY.

B. FOR ALL RISERS DOWN, SEE SHEET C H2.11 FOR CONTINUATION UNLESS OTHERWISE NOTED.



1 PARTIAL SECOND FLOOR PLAN - AREA F - PIPING
1/8" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

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E: Roxboro Road ES	42-03-03-06-0-08-019
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DRAWN BY: **JPK**

SCALE: **AS NOTED**

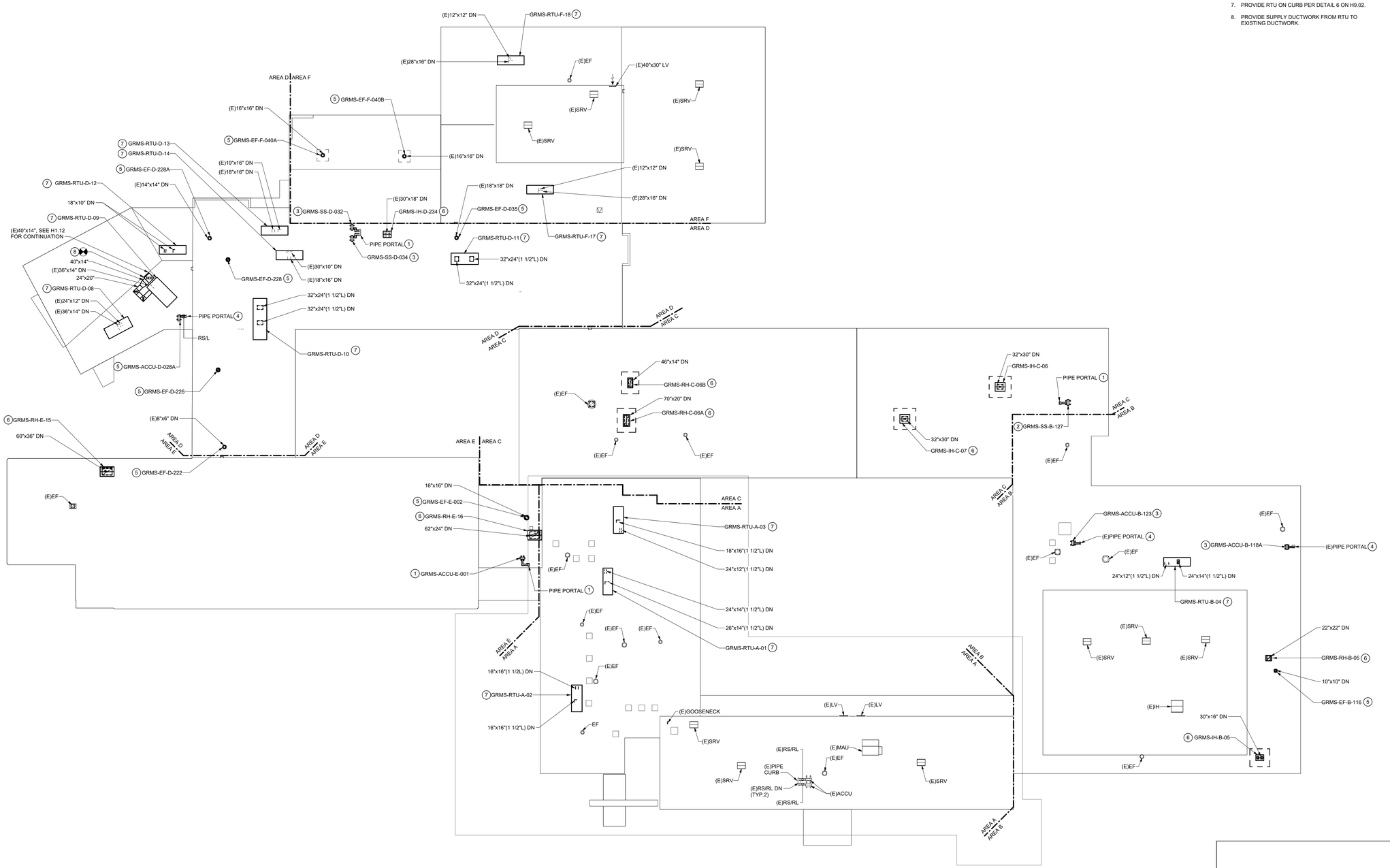
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PARTIAL SECOND FLOOR PLAN - AREA F - PIPING

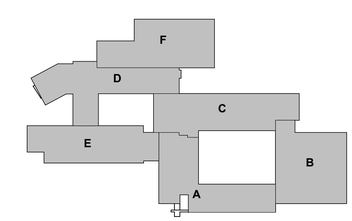
C H2.14

DRAWING NOTES:

1. PROVIDE PIPE PENETRATION PER DETAIL 8 ON SHEET C H9.02.
2. PROVIDE ACCU ON NEW EQUIPMENT SUPPORTS PER DETAIL 9 ON SHEET C H9.02.
3. PROVIDE ACCU ON EXISTING SUPPORTS.
4. PROVIDE RS/L UP THROUGH PIPE PORTAL.
5. PROVIDE ROOF MOUNTED EXHAUST FAN ON CURB PER DETAIL 7 ON C H9.02.
6. PROVIDE RELIEF/INTAKE HOOD ON CURB PER DETAIL 10 ON C H9.02.
7. PROVIDE RTU ON CURB PER DETAIL 6 ON H9.02.
8. PROVIDE SUPPLY DUCTWORK FROM RTU TO EXISTING DUCTWORK.



1 ROOF PLAN - HVAC
1" = 20'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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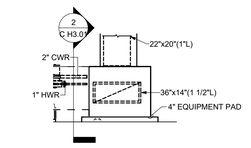
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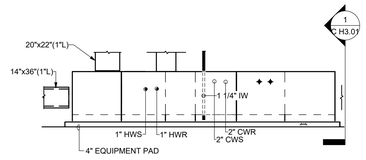
SCALE: **AS NOTED**

DRAWING TITLE:
ROOF PLAN - HVAC

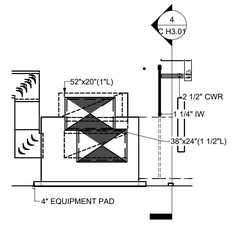
C H2.15



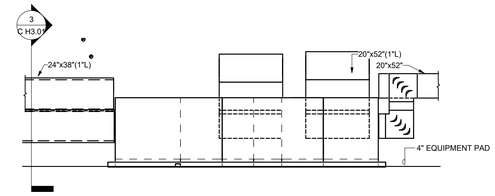
1 AHU-B-05
1/4" = 1'-0"



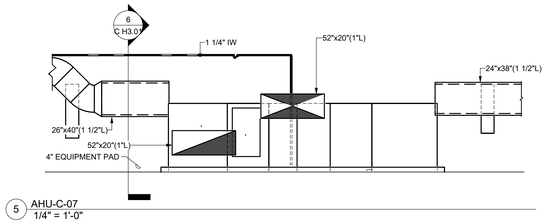
2 AHU-B-05
1/4" = 1'-0"



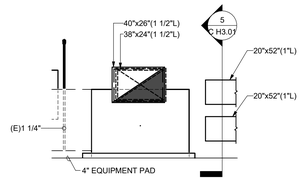
3 AHU-C-06
1/4" = 1'-0"



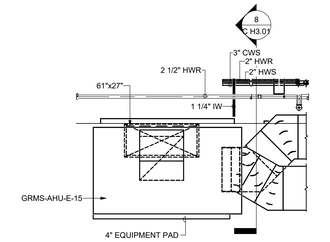
4 AHU-C-06
1/4" = 1'-0"



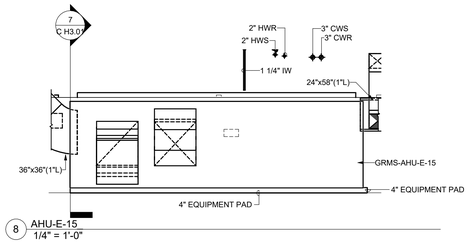
5 AHU-C-07
1/4" = 1'-0"



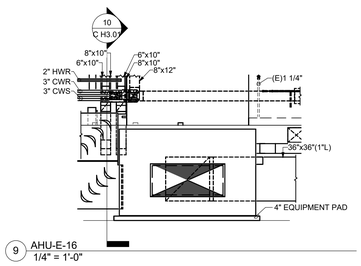
6 AHU-C-07
1/4" = 1'-0"



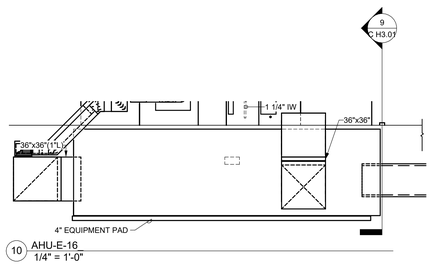
7 AHU-E-15
1/4" = 1'-0"



8 AHU-E-15
1/4" = 1'-0"



9 AHU-E-16
1/4" = 1'-0"



10 AHU-E-16
1/4" = 1'-0"

king + king
ARCHITECTS

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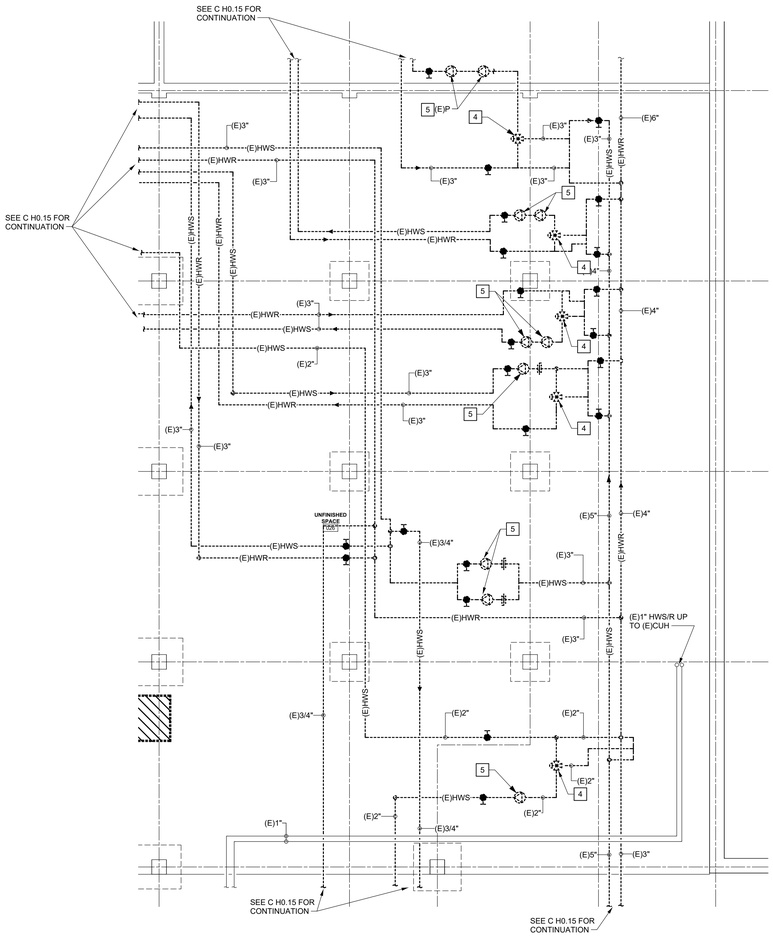
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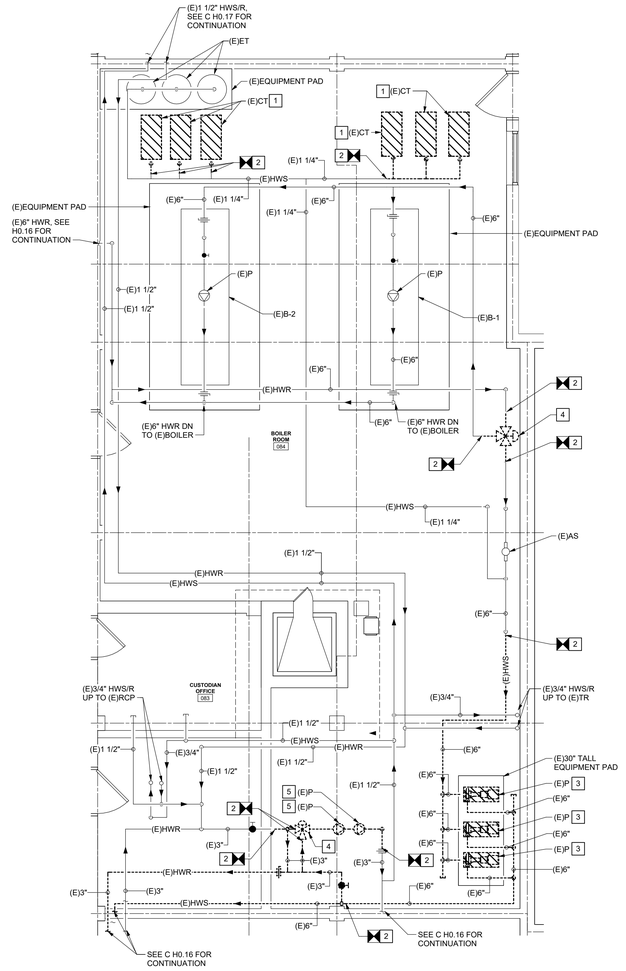
SCALE: **AS NOTED**

DRAWING TITLE:
HVAC SECTIONS

C H3.01



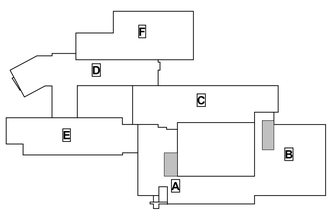
1 ENLARGED PARTIAL BASEMENT PLAN - AREA A - PIPING DEMOLITION
1/4" = 1'-0"



2 ENLARGED BOILER ROOM PLAN - AREA B - HVAC DEMOLITION
1/4" = 1'-0"

REMOVAL NOTES:

1. REMOVE ABANDONED COMPRESSION TANK AND ALL ASSOCIATED PIPING AND HANGERS.
2. DISCONNECT AND REMOVE HWS/R PIPING TO LOCATION SHOWN TO FACILITATE NEW WORK.
3. REMOVE BASE MOUNTED PUMP. REMOVE EXISTING ELEVATED EQUIPMENT PAD.
4. REMOVE 3 WAY CONTROL VALVE. PREPARE PIPING FOR NEW WORK.
5. DISCONNECT AND REMOVE INLINE PUMP.



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

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Cicero, NY 13039

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MARK	DATE	DESCRIPTION

100% CONSTRUCTION DOCUMENTS

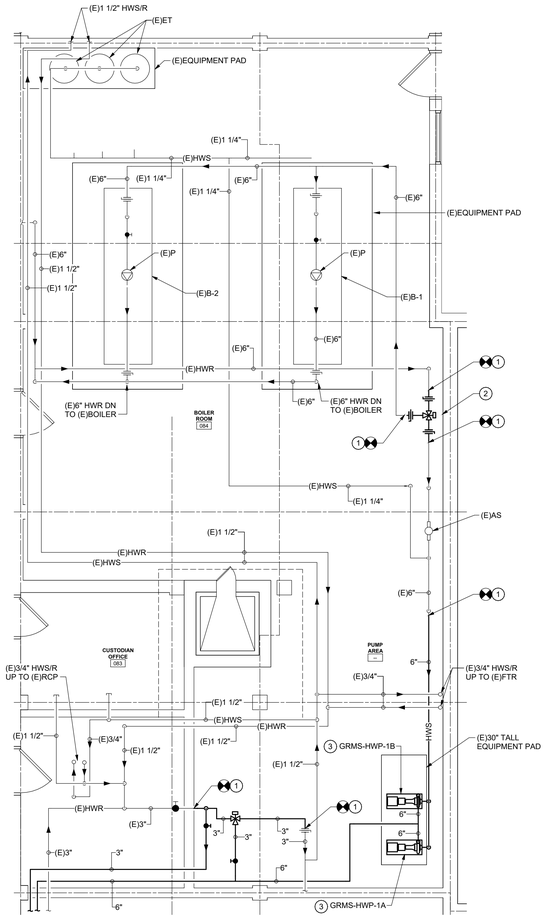
DRAWING DATE: **02/09/2024**
DRAWN BY: **RAC**
SCALE: **AS NOTED**

DRAWING TITLE:
HVAC ENLARGED VIEWS - DEMOLITION

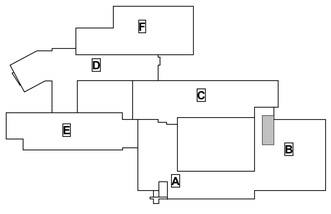
C H4.01

DRAWING NOTES:

1. PROVIDE HWS/R FROM EXISTING.
2. PROVIDE NEW ELECTRONIC 3-WAY CONTROL VALVE.
3. PROVIDE NEW BASE MOUNTED PUMP ON NEW CONCRETE PAD PER DETAIL 13 ON SHEET C H9.01.



1 ENLARGED BOILER ROOM PLAN - AREA B - PIPING
1/4" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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EXP. 06/30/2026
080515
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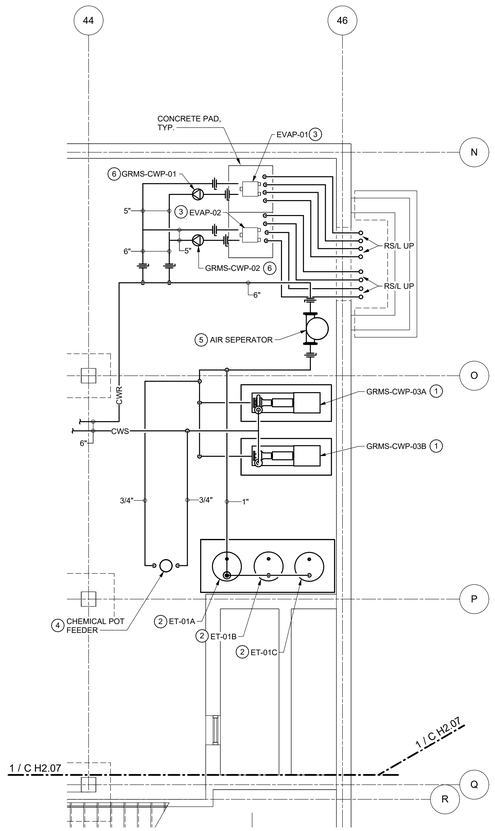
SCALE: **AS NOTED**

DRAWING TITLE:
HVAC ENLARGED VIEWS

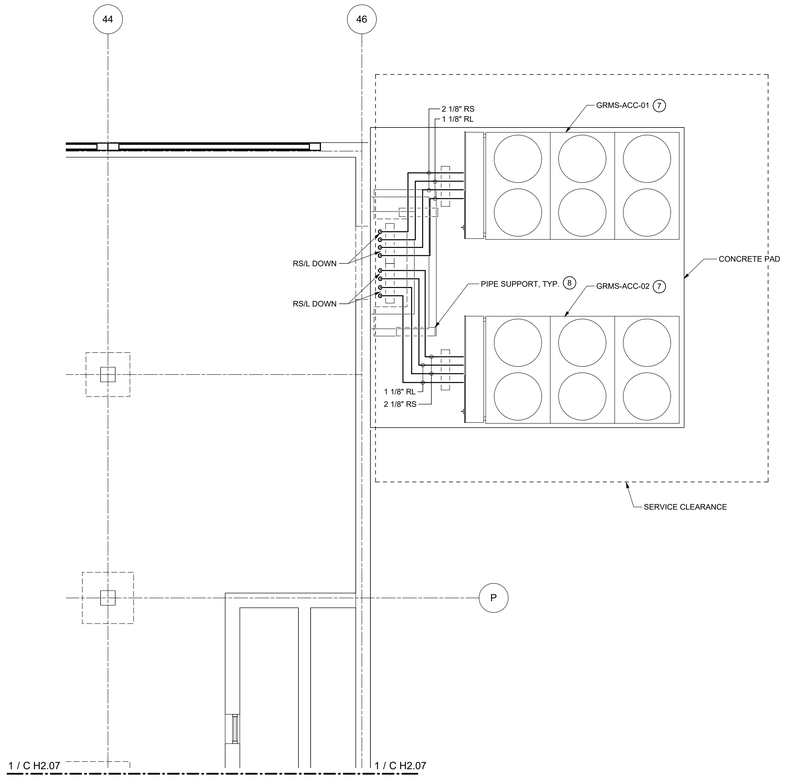
C H4.02

DRAWING NOTES:

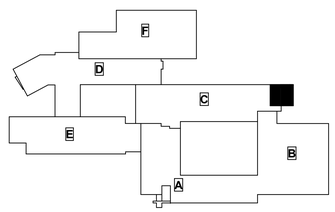
1. PROVIDE BASEMOUNTED PUMP ON EQUIPMENT PAD PER DETAIL 13 ON SHEET C H9.01.
2. PROVIDE EXPANSION TANK ON EQUIPMENT PAD PER DETAIL 13 ON SHEET C H9.01.
3. PROVIDE EVAPORATOR ON EQUIPMENT PAD PER DETAIL 13 ON SHEET C H9.01.
4. PROVIDE CHEMICAL POT FEEDER.
5. PROVIDE AIR SEPERATOR.
6. PROVIDE INLINE PUMP PER DETAIL 10 ON SHEET C H9.01.
7. PROVIDE AIR COOLED CHILLER ON EQUIPMENT PAD. G.C TO PROVIDE EQUIPMENT PAD. M.C. TO COORDINATE SIZE WITH THE G.C.
8. PROVIDE PIPE SUPPORT PER DETAIL 16 ON SHEET C H9.02.



1 ENLARGED EVAPORATOR ROOM PLAN - AREA C - HVAC
1/4" = 1'-0"



2 PARTIAL SITE PLAN - PIPING
1/4" = 1'-0"



KEY PLAN - GILLETTE ROAD MIDDLE SCHOOL

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DRAWN BY: **RAC**

SCALE: **AS NOTED**

DRAWING TITLE:
ENLARGED EVAPORATOR ROOM PLAN - AREA C - HVAC

C H4.03

COMMON ELEMENTS

GENERAL:

A. SPACES WITH MULTIPLE SPACE TEMPERATURE SENSORS SHALL CALCULATE AN AVERAGE SPACE TEMPERATURE TO BE USED FOR OPERATION OF THE SYSTEM(S).

B. DURING OCCUPIED TIMES, ALL VENTILATION EQUIPMENT SHALL OPERATE AT NO LESS THAN MINIMUM OUTSIDE AIR VENTILATION RATE, SUBJECT TO SEQUENCE EMERGENCY AND FAILURE MODE OPERATIONS DESCRIBED WITHIN THE CONTRACT DOCUMENTS.

C. ALL CONTROL PARAMETERS NOTED WITHIN THIS SEQUENCE ARE TO BE USER ADJUSTABLE AND SHALL BE FINE-TUNED FOR BEST OPERATION DURING SYSTEM STARTUP, TEST AND BALANCE, AND FUNCTIONAL PERFORMANCE TESTING. ALL ALARMS SHALL BE PROVIDED AT THE OPERATOR 'S WORKSTATION AND COORDINATED WITH OWNER 'S NEEDS FOR CRITICAL ALARMS, SUCH AS PAGERS, TEXT MESSAGING, ETC.

D. SHUTDOWN OF AIR HANDLING UNITS AND FANS DUE TO A FIRE ALARM SHALL BE BY DIVISION 26. THE FIRE ALARM SYSTEM COMMON ALARM CONDITION SHALL BE MONITORED BY THE BMS FOR MONITORING PURPOSES ONLY. THE BMS WILL PROVIDE AN ORDERLY SHUTDOWN ON ALARM, AND STAGGERED RESTART OF THE EQUIPMENT ONCE THE ALARM IS CLEARED.

E. UNLESS STATED TO THE CONTRARY, ALL HARDWARE POINTS (AI, AO, BI AND BO) SHALL BE HARDWIRED TO BMS CONTROLLERS. DATA POINTS SUCH AS ANALOG AND BINARY VARIABLES SHALL BE ACCESSED THROUGH EQUIPMENT INTEGRATION AS BACNET OBJECTS SPECIFICALLY WHERE CALLED FOR.

F. ALL GLOBAL SYSTEM POINTS (TYPICALLY OUTDOOR AIR TEMPERATURE, HUMIDITY AND / OR CO2, REFER TO CONTROL DIAGRAMS AND POINT MATRICES FOR ADDITIONAL INFORMATION) SHALL BE INTEGRATED INTO CONTROLLER OPERATION THROUGH USE OF DEFINED ANALOG VARIABLES RATHER THAN DIRECT NETWORK POINT REFERENCE. THE ANALOG VARIABLES SHALL BE UPDATED AT AN ADJUSTABLE RATE, INITIALLY ONCE EVERY 120 SECONDS, AND SHALL BE CAPABLE OF BEING OVERRIDDEN ON AN INDIVIDUAL CONTROLLER BASIS TO FACILITATE SYSTEM COMMISSIONING AND MANUAL SYSTEM OPERATION.

ISOLATION DAMPER CONTROL:

A. EQUIPMENT WITHOUT ADJUSTABLE SPEED DRIVES: THE BMS SHALL COMMAND THE ISOLATION DAMPER OPEN. THE DAMPER ACTUATOR END SWITCH SHALL MAKE ONCE THE DAMPER IS FULLY OPENED, COMPLETING THE STARTER CIRCUIT AND ENABLING EQUIPMENT OPERATION. THIS SHALL BE WIRED SUCH THAT THE FAN(S) WILL NOT START IN HAND, AUTOMATIC OR BYPASS WITHOUT THE DAMPER BEING PROVEN OPEN.

B. EQUIPMENT WITH ADJUSTABLE SPEED DRIVES: THE BMS SHALL COMMAND THE ASD "RUN ENABLE" DIGITAL INPUT. IF NO ASD OR SAFETY INTERLOCK ERRORS / LOCKOUTS ARE IN PLACE, THE ASD "DRIVE READY" OUTPUT RELAY SHALL MAKE, ROTATING THE ISOLATION DAMPER OPEN. THE DAMPER ACTUATOR END SWITCH SHALL MAKE ONCE THE DAMPER IS FULLY OPENED, COMPLETING THE ASD SECONDARY SAFETY INTERLOCK CIRCUIT AND ENABLING EQUIPMENT OPERATION. THIS SHALL BE WIRED SUCH THAT THE FAN(S) WILL NOT START IN HAND, AUTOMATIC OR BYPASS WITHOUT THE DAMPER BEING PROVEN OPEN. WHERE MULTIPLE ISOLATION DAMPERS MUST ROTATE PRIOR TO SYSTEM OPERATION, THE END SWITCHES SHALL BE WIRED IN SERIES SUCH THAT ALL DAMPERS MUST BE FULLY ROTATED PRIOR TO OPERATION. WHERE INTERLOCK IS TO MULTIPLE FANS, SUCH AS FAN ARRAYS AND / OR SUPPLY / RETURN FANS, THE INTERLOCKS SHALL BE HARD WIRED TO ALL DRIVES. CONTRACTOR SHALL PROVIDE ALL NECESSARY RELAYS AND INTERLOCK WIRING TO MAINTAIN THIS REQUIREMENT.

SPACE TEMPERATURE SETPOINTS SHALL BE AS FOLLOWS:

A. OCCUPIED MODE:
   a. 75ºF (ADJ) COOLING SETPOINT
   b. 70ºF (ADJ) HEATING SETPOINT

B. OCCUPIED / VACANCY MODE:
   a. 80ºF (ADJ) COOLING SETPOINT
   b. 65ºF (ADJ) HEATING SETPOINT

C. UNOCCUPIED MODE (NIGHT SETBACK):
   a. 85ºF (ADJ) COOLING SETPOINT
   b. 60ºF (ADJ) HEATING SETPOINT

GLOBAL SENSORS:

A. EXCEPT WHERE SHOWN TO THE CONTRARY ON THE CONTRACT DOCUMENTS, A SINGLE SET OF OUTDOOR TEMPERATURE, HUMIDITY AND CARBON DIOXIDE (CO2) SENSORS SHALL BE UTILIZED AS "GLOBAL SENSORS" FOR HVAC EQUIPMENT OUTSIDE AIR TEMPERATURE, HUMIDITY AND CARBON DIOXIDE VALUES.

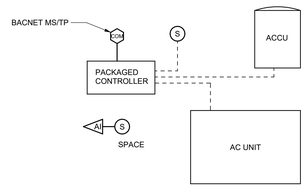
OPTIMIZED SYSTEM STARTUP:

A. ALL EQUIPMENT OVER 1,000 CFM SHALL USE AN OPTIMIZED STARTUP WITH ASSOCIATED MORNING WARMUP / COOL DOWN ROUTINE.

B. ALL EQUIPMENT UNDER 1,000 CFM SHALL USE SIMPLE OCCUPIED / UNOCCUPIED SCHEDULING WITH ADEQUATE PRE-START TO ACHIEVE OCCUPIED TEMPERATURE SETPOINTS PRIOR TO OCCUPIED TIME.

C. WARM-UP MODE — OPTIMIZED STARTUP:
   1. THE BMS SHALL CALCULATE THE REQUIRED WARM-UP TIME BASED ON EACH ZONE 'S OCCUPIED HEATING SET POINT, THE CURRENT ZONE TEMPERATURE, THE OUTDOOR AIR TEMPERATURE, AND A MASS/CAPACITY FACTOR. THE MASS FACTOR SHALL BE TUNED BY THE BMS. WARM-UP MODE SHALL START BASED ON ZONE WITH THE LONGEST CALCULATED WARM-UP REQUIREMENT, BUT NO LESS THAN 30 MINUTES PRIOR TO SCHEDULED OCCUPANCY.
   2. SUPPLY FAN SHALL OPERATE AT MAXIMUM FLOW FOR VARIABLE VOLUME SINGLE ZONE UNITS, OR CONTROL TO DUCT STATIC PRESSURE FOR VAV SYSTEMS.
   3. THE ECONOMIZER DAMPER (AS APPLICABLE) SHALL BE POSITIONED TO 100% RETURN AIR [SUBJECT TO THE REQUIREMENTS OF DEMAND CONTROLLED VENTILATION PRE-PURGE].
   4. WHERE SUPPLY TO RETURN FAN CFM TRACKING IS SPECIFIED, THE RETURN FAN SHALL REVERT TO A FIXED PERCENTAGE SPEED OF SUPPLY DURING WARMUP OPERATION DURING 100% RETURN AIR OPERATION. WHERE RELIEF/EXHAUST FANS ARE SPECIFIED, THESE SHALL REMAIN DISABLED.
   5. LEAVING AIR TEMPERATURE SETPOINT SHALL BE FIXED TO 85 ºF UNTIL ALL SYSTEM SPACE TEMPERATURE SENSORS REACH OCCUPIED HEATING SETPOINT, AT WHICH TIME THE UNIT SHALL ENTER NORMAL OCCUPIED OPERATION.
   6. UPON COMPLETION OF THE WARMUP CYCLE, AS INDICATED BY ALL SPACE SENSORS REACHING WITHIN 1 ºF OF HEATING SPACE TEMPERATURE SETPOINT, THE UNIT SHALL SWITCH TO OCCUPIED MODE OPERATION.

D. COOL-DOWN MODE:
   1. THE BMS SHALL CALCULATE THE REQUIRED COOL-DOWN TIME BASED ON EACH ZONE 'S OCCUPIED COOLING SET POINT, THE CURRENT ZONE TEMPERATURE, THE OUTDOOR AIR TEMPERATURE, AND THE MASS/CAPACITY FACTOR. THE MASS FACTOR SHALL BE TUNED BY THE BMS. COOL-DOWN MODE SHALL START BASED ON THE ZONE WITH THE LONGEST CALCULATED COOL-DOWN TIME REQUIREMENT, BUT NO LESS THAN 30 MINUTES PRIOR TO SCHEDULED OCCUPANCY.
   2. THE LEAVING AIR TEMPERATURE SET POINT SHALL BE 55°F, AND THE ECONOMIZER AND COOLING COIL (WHERE APPLICABLE) SHALL BE CONTROLLED IN SEQUENCE, SUBJECT TO ECONOMIZER LOCKOUT CONTROL, TO MAINTAIN A 55°F LEAVING AIR TEMPERATURE.
   3. SUPPLY FAN SHALL OPERATE AT MAXIMUM FLOW FOR VARIABLE VOLUME SINGLE ZONE UNITS, OR CONTROL TO DUCT STATIC PRESSURE FOR VAV SYSTEMS.
   4. ECONOMIZER COOLDOWN IS NOT AVAILABLE - WHERE SUPPLY TO RETURN FAN CFM TRACKING IS SPECIFIED, THE RETURN FAN SHALL REVERT TO A FIXED PERCENTAGE SPEED OF SUPPLY. WHERE RELIEF/EXHAUST FANS ARE SPECIFIED, THESE SHALL REMAIN DISABLED. MINIMUM VENTILATION RATE SHALL BE SET TO ZERO.
   5. ECONOMIZER COOLING IS AVAILABLE — MINIMUM VENTILATION RATE SHALL BE SET PER OCCUPIED MODE. FAN TRACKING (RETURN AND / OR EXHAUST/RELIEF) TO OPERATE PER OCCUPIED MODE
   6. UPON COMPLETION OF THE COOL-DOWN CYCLE, AS INDICATED BY ALL SPACE SENSORS REACHING WITHIN 1 ºF OF COOLING SPACE TEMPERATURE SETPOINT, UNIT OPERATION SHALL SWITCH TO OCCUPIED MODE OPERATION.



1 AIR CONDITIONING UNIT CONTROL SCHEMATIC
NTS

COMMON ELEMENTS

REDUNDANT PUMP PAIRS:

A. PUMP LEAD TO LAG SHALL AUTOMATICALLY ROTATE ON A RUN TIME BASED ON PERIOD OF 168 OPERATING HOURS. ROTATION SHALL OCCUR AT A SPECIFIED DAY OF WEEK, TIME OF DAY, USER ADJUSTABLE AT THE OPERATOR WORKSTATION.

B. IN THE EVENT THAT THE LEAD PUMP OF THE PAIR FAILS TO OPERATE, THE LAG PUMP SHALL BE ENABLED IN CONJUNCTION WITH THE LEAD AND AN ALARM PROVIDED AT THE OPERATOR 'S CONSOLE. THE LAG PUMP SHALL THEN MODULATE TO MAINTAIN LOOP PRESSURE SETPOINT.

C. IN THE EVENT THAT THE LEAD PUMP RE-ESTABLISHES OPERATION, THE LAG PUMP SHALL BE DISABLED AND THE LEAD PUMP SHALL MODULATE TO MAINTAIN LOOP PRESSURE SETPOINT. A PUMP RESTORED NOTIFICATION SHALL BE PROVIDED TO THE OPERATOR'S CONSOLE.

PUMPED LOOP PRESSURE RESET — CRITICAL VALVE:

A. THE BMS SHALL MONITOR THE CONTROL VALVE OF ALL CONNECTED EQUIPMENT AND SELECT THE SINGLE VALVE WHICH IS THE MOST FULLY OPEN TO COIL, CONSIDERED THE "CRITICAL VALVE". AT OWNER / OPERATOR DISCRETION, ANY VALVE OR VALVES MAY BE OMITTED FROM THIS CALCULATION IF CONSIDERED TO BE ADVERSELY EFFECTING SYSTEM OPERATION.

B. IF THE CRITICAL VALVE POSITION IS GREATER THAN 80%, THE PUMP SYSTEM CONTROL PRESSURE SETPOINT SHALL BE RESET UPWARD AT A RATE OF 0.5 PSI EACH 5 MINUTES UNTIL THE CRITICAL VALVE POSITION IS LESS THAN 80% OR THE MAXIMUM ALLOWABLE SETPOINT IS ACHIEVED.

C. IF THE CRITICAL VALVE POSITION IS LESS THAN 70%, THE PUMP SYSTEM CONTROL SETPOINT SHALL BE RESET DOWNWARD AT A RATE OF 0.5 PSI EACH 5 MINUTES UNTIL THE CRITICAL VALVE POSITION IS GREATER THAN 70% OR THE MINIMUM ALLOWABLE SETPOINT IS ACHIEVED.

D. THE ACTIVE PUMP SHALL MODULATE TO MAINTAIN CALCULATED LOOP PRESSURE SETPOINT. MODULATION RANGE SHALL BE FROM MINIMUM AND MAXIMUM VALUES DETERMINED DURING SYSTEM TESTING AND BALANCING AND COMMISSIONING ACTIVITY.

VAV AIR HANDLER PRESSURE SETPOINT — CRITICAL DAMPER:

A. THE BMS SHALL MONITOR THE VAV BOX DAMPER FOR CONNECTED AIR TERMINALS AND SELECT THE SINGLE DAMPER WHICH IS THE MOST FULLY OPEN, CONSIDERED THE "CRITICAL DAMPER". AT OWNER / OPERATOR DISCRETION, ANY DAMPER OR DAMPERS MAY BE OMITTED FROM THIS CALCULATION IF CONSIDERED TO BE ADVERSELY EFFECTING SYSTEM OPERATION.

B. IF THE CRITICAL DAMPER POSITION IS GREATER THAN 90%, THE DUCT PRESSURE SETPOINT SHALL BE RESET UPWARD AT A RATE OF 0.1 "WC EACH 2 MINUTES UNTIL THE CRITICAL DAMPER POSITION IS LESS THAN 90% OR THE MAXIMUM ALLOWABLE SETPOINT IS ACHIEVED.

C. IF THE CRITICAL VALVE POSITION IS LESS THAN 80%, THE DUCT PRESSURE SETPOINT SHALL BE RESET DOWNWARD AT A RATE OF 0.1 " EACH 2 MINUTES UNTIL THE CRITICAL DAMPER POSITION IS GREATER THAN 80% OR THE MINIMUM ALLOWABLE SETPOINT IS ACHIEVED.

D. THE ACTIVE PUMP SHALL MODULATE TO MAINTAIN CALCULATED LOOP PRESSURE SETPOINT. MODULATION RANGE SHALL BE FROM MINIMUM AND MAXIMUM VALUES DETERMINED DURING SYSTEM TESTING AND BALANCING AND COMMISSIONING ACTIVITY.

DEMAND CONTROL VENTILATION (DCV):

A. THE CO_2 LEVEL SHALL BE MEASURED USING BOTH SPACE CO_2 SENSOR(S) AS LOCATED ON THE PROJECT DRAWINGS AND A RETURN AIR CO $_2$ SENSOR. THE SPACE CO_2 SENSOR(S) AND RETURN AIR CO_2 SENSOR SHALL BE CONTINUOUSLY MONITORED, AND THE SENSOR WITH THE HIGHEST READING FOR THE UNIT UNDER CONTROL SHALL BE DEFINED AS THE "CONTROL CO_2 LEVEL.

B. OUTSIDE AIR AMBIENT CO_2 CONCENTRATION SHALL BE BASED ON ACTUAL MEASURED VALUES. IN THE EVENT OF AN OUTDOOR AIR CO $_2$ SENSOR FAILURE, AN ALARM SHALL BE ANNUNCIATED AT THE OPERATOR 'S CONSOLE AND THE CALCULATION SHALL DEFAULT TO A VALUE OF 400 PPM TO ALLOW CONTINUED OPERATION OF THE DCV SEQUENCE.

C. THE HVAC SYSTEM SEQUENCE OF OPERATION FOR NORMAL THERMAL CONTROL IS UNCHANGED BY INCORPORATION OF THE DCV SEQUENCE BELOW. DCV REPRESENT A FUNCTION THAT RECALCULATES THE MINIMUM VENTILATION RATE IN ORDER TO MAINTAIN CO2 LEVELS WITHIN DESIRED LEVELS.

D. WHERE A SPACE CO2 SENSOR IS ASSOCIATED WITH A VAV AIR TERMINAL, THE MINIMUM CFM OF THE TERMINAL UNIT SHALL BE RESET FROM THE SCHEDULED MIN CFM TO THE COOLING / HEATING MAX CFM AS THE SPACE CO2 LEVEL INCREASES FROM 100PPM OVER AMBIENT TO A LEVEL OF 200PPM ABOVE AMBIENT.

E. DURING OCCUPIED MODES THE AHU OUTDOOR AIR INTAKE RATE SHALL NEVER BE POSITIONED BELOW THE "CALCULATED OA VENTILATION REQUIREMENT". "CALCULATED OA VENTILATION REQUIREMENT" SHALL BE EQUAL TO THE SCHEDULED "DCV MIN OA" RATE PLUS ADDITIONAL OUTSIDE AIR VOLUME TO MAINTAIN AN INTERIOR CO_2 CONCENTRATION.

F. CO_2 TREND MONITORING: TREND OUTSIDE, RETURN AIR AND SPACE AIR CO_2 LEVELS AT FIFTEEN (15) MINUTE INTERVALS. THREE YEARS OF RECORDS SHALL BE MAINTAINED IN THE DDC SYSTEM AT ALL TIMES.

G. CALCULATED OA VENTILATION REQUIREMENT: SHALL BE DYNAMICALLY CALCULATED USING THE CONTROL CO $_2$ LEVEL AND OUTDOOR AIR CO_2 MEASUREMENTS. IF THE CONTROL CO_2 LEVEL IS LESS OR EQUAL TO 100 PPM ABOVE OUTSIDE AIR CO_2 LEVEL THE CALCULATED OA VENTILATION REQUIREMENT SHALL BE EQUAL TO THE DCV MIN OA VALUE. AS THE CONTROL CO2 LEVEL RISES FROM 100 PPM ABOVE AMBIENT CONDITIONS TO A LEVEL OF 500 PPM ABOVE AMBIENT, THE SYSTEM SHALL DYNAMICALLY RESET THE CALCULATED OA VENTILATION REQUIREMENT BETWEEN THE SCHEDULED "DCV MIN OA" AND "MINIMUM OA" VALUES.

H. IF THE DDC SYSTEM DETERMINES THAT IT IS BENEFICIAL TO USE ADDITIONAL OUTSIDE AIR FOR VENTILATION ("ECONOMIZER") COOLING, THEN IT SHALL OVERRIDE THE DEMAND-CONTROLLED VENTILATION ALGORITHM TO MODULATE THE DAMPERS TO AN INCREASED OPEN POSITION AS REQUIRED.

I. DEMAND CONTROLLED VENTILATION SHALL BE INTEGRATED WITH OPTIMUM STARTUP SUCH THAT OPTIMUM START SHALL BE NO LESS THAN A 30-MINUTE INTERVAL, AND DURING THE FINAL 30 MINUTES THE VENTILATION RATE SHALL BE SET TO NO LESS THAN "MIN OA" (AREA PRE-PURGE)

J. SCHEDULED / OPTIMUM SHUTDOWN SHALL BE INTEGRATED WITH THE DEMAND-CONTROLLED VENTILATION SUCH THAT THE VENTILATION RATE SHALL BE SET TO NO LESS THAN "MIN OA" FOR A SUFFICIENT PERIOD SUCH THAT THE CONTROL CO2 LEVEL FALLS TO BELOW 100PPM ABOVE AMBIENT LEVELS (AREA POST-PURGE).

K. EXTENDED COMMISSIONING: PROVIDE A MINIMUM OF ONE (1) YEAR EXTENDED COMMISSIONING TO CHECK THE CALIBRATION OF CO2 SENSORS AND TO MONITOR AND TEST CO2 LEVELS TO ENSURE THAT REQUIRED PER-PERSON VENTILATION RATES ARE ACHIEVED AND MAINTAINED.

SAFETIES:

A. FREEZE PROTECTION: A MANUAL RESET, LOW TEMPERATURE THERMOSTAT(S) LOCATED AT THE INLET OF THE COOLING COIL SHALL SHUT DOWN THE SYSTEM UPON SENSING A TEMPERATURE OF LESS THAN 35°F (ADJUSTABLE). SHUTDOWN SHALL BE BY HARD WIRE INTERLOCK TO THE ASD SAFETY CIRCUITS (SUPPLY AND RETURN).

B. A DEDICATED STATIC PRESSURE HIGH LIMIT CONTROLLER IN THE RETURN AIR INLET AND SUPPLY AIR DISCHARGE SECTION WITH MANUAL RESET (NOT USED FOR ANY OTHER STATIC PRESSURE CONTROL FUNCTION) SHALL SHUT DOWN THE SUPPLY AND RETURN FANS WHEN THE STATIC PRESSURE IN THE DUCTWORK EXCEEDS 4" WATER COLUMN (ADJUSTABLE). SHUTDOWN SHALL BE BY HARD WIRE INTERLOCK TO THE ASD SAFETY CIRCUITS (SUPPLY AND RETURN).

C. DOOR SWITCHES: ALL ACCESS DOORS IN POSITIVELY PRESSURIZED COMPARTMENTS SHALL BE PROVIDED WITH INTERLOCK SWITCHES, FURNISHED BY THE MANUFACTURER WHICH IMMEDIATELY SHUT DOWN SUPPLY AND RETURN AIR FANS IF THE DOOR IS OPENED. HARD WIRE INTERLOCK WIRING SHALL BE BY THIS CONTRACTOR.

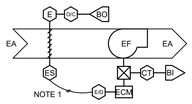
LIFE SAFETY / SMOKE CONTROL:

A. THE SMOKE DETECTOR(S) / CENTRAL FIRE ALARM SYSTEM SHALL SHUT DOWN THE AHU AND ASSOCIATED SYSTEMS. SMOKE DETECTION AND INTERLOCK TO THE CENTRAL FIRE ALARM SYSTEM SHALL BE BY DIVISION 26.

B. THE BMS SHALL MONITOR THE FIRE ALARM SHUTDOWN SIGNAL. ON FIRE ALARM TRIP, THE BMS SHALL PERFORM AN ORDERLY SHUTDOWN OF THE AIR HANDLER. ON CLEAR OF THE FIRE ALARM, THE BMS SHALL PERFORM AN ORDERLY STARTUP OF THE SYSTEM AS DESCRIBED UNDER PARAGRAPHS B AND E OF THIS SEQUENCE.

CONTROL/SYMBOLS LEGEND	
SYMBOL	DESCRIPTION
BI	BINARY INPUT (GENERAL)
BO #	BINARY OUTPUT (GENERAL)
AI #	ANALOG INPUT (GENERAL)
AO #	ANALOG OUTPUT (GENERAL)
A	ALARM
S	STATUS
FS	FLOW SWITCH
DP	DIFFERENTIAL PRESSURE
R	RELAY
WFS	WATER FLOW SWITCH
E	ELECTRIC ACTUATOR
EP	ELECTRIC / PNEUMATIC SWITCH OR RELAY
PS	PNEUMATIC / ELECTRIC SWITCH OR RELAY
CT	CURRENT TRANSDUCER
OC	OPEN/CLOSE
ED	ENABLE/DISABLE
TS	TEMPERATURE SENSOR (DUCT OR PIPE)
HS	HUMIDITY SENSOR (DUCT / AHU MOUNTED)
FT	FLOW TRANSMITTER
P	STATIC PRESSURE TRANSMITTER
EPT	ELECTRIC / PNEUMATIC TRANSDUCER
ET	ELECTRONIC / ELECTRIC TRANSDUCER
FZ	FREEZE - STAT
M	MAIN CONTROL AIR (TEMP. CONTROL)
ES	END SWITCH
FM	FLOW METER (HYDRONIC)
DT	CARBON DIOXIDE TRANSMITTER
O2	OXYGEN SENSOR
COM	NETWORK COMMUNICATIONS INTERFACE
MOD	MODULATING
CAP	CAPACITY FEEDBACK
SC	SPEED CONTROL
DL	DEMAND LIMITING
MB	VSD MANUAL BYPASS
	ELECTRICAL INTERFACE
ASD	ADJUSTABLE SPEED DRIVE
ECM	EC MOTOR
MS	MOTOR STARTER
BDD	BACKDRAFT DAMPER
S	SPACE TEMPERATURE SENSOR
OS	OCCUPANCY SENSOR
H	SPACE HUMIDITY SENSOR
P	SPACE DIFFERENTIAL PRESSURE SENSOR
T	THERMOSTAT
T	THERMOSTAT WITH GAURD
CO2	CARBON DIOXIDE OR DCV SENSOR
VSDD	DUCT SMOKE DETECTOR
	PROBE SENSOR (DUCT)
	AVERAGING SENSOR (DUCT)
	FAN OR BASE-MOUNTED PUMP
	INLINE PUMP
X Y	COIL (X,Y) H,C = HEATING COIL C,C = COOLING COIL D,X = DIRECT EXPANSION COIL G,B = GAS BURNER H,G = HOT GAS REHEAT COIL
	FILTER BANK
	DAMPER (OPPOSED BLADE)
	DAMPER (PARALLEL BLADE)
H	HUMIDIFIER DISPERSION GRID/TUBE
	CONTROL VALVE - 2 WAY
	CONTROL VALVE - 3 WAY
	PIPE WELL

AIR CONDITIONING UNIT CONTROL POINTS LIST	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM	
SPACE TEMPERATURE			X				X		

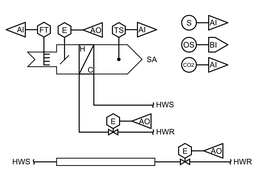


NOTES:
1. FAN TO ENABLE VIA HARD WIRE INTERLOCK TO ISOLATION DAMPER END SWITCH.

2 EXHAUST FAN CONTROL SCHEMATIC
NTS

EXHAUST FANS (ECM) CONTROL POINTS LIST	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM DESCRIPTION	
EXHAUST FAN ENABLE/DISABLE							X		1
EXHAUST FAN STATUS	X						X	MOTOR FAILURE	
EXHAUST AIR DAMPER		X					X		

NOTES:
1. FAN ENABLE VIA INTERLOCK TO ISOLATION DAMPER END SWITCH



3 VAV TERMINAL UNIT CONTROL SCHEMATIC
NTS

AIR TERMINAL UNIT WITH REHEAT CONTROL POINTS LIST	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM	
SUPPLY AIRFLOW			X				X	NOTE 1	
SUPPLY AIR DAMPER				X					
REHEAT HOT WATER CONTROL VALVE				X					
SUPPLY AIR DISCHARGE AIR TERMERATURE			X				X	NOTE 2	
RADIATION HOT WATER CONTROL VALVE				X					
SPACE TEMERATURE SENSOR			X				X	NOTE 3	
OCCUPANCY SENSOR	X								
CARBON DIOXIDE (DCV) SENSOR			X				X	ABOVE 1200 PPM	

NOTES:
1. AIRFLOW IS 10% ABOVE OR BELOW MINIMUM OR MAXIMUM SETPOINT IN OCCUPIED MODE.
2. WHEN REHEAT CONTROL VALVE IN THE CLOSED POSITION, DISCHARGE SUPPLY AIR TEMPERATURE IS 3 °F GREATER THAN AIR HANDLING UNIT SUPPLY AIR TEMERATURE
3. (+/-) 2°F ABOVE SPACE TEMPERATURE SETPOINT

SEQUENCE OF OPERATIONS:

A. EXHAUST SYSTEM (TYP):
   1. THE EXHAUST FAN SHALL OPERATE CONTINOUSLY AT A FIXED SPEED DETERMINED DURING TESTING AND BALANCING DURING OCCUPIED MODES. FAN ENABLE COMMAND SHALL OPEN THE ISOLATION DAMPER. THE FAN SHALL BE ENABLED BY HARD WIRE INTERLOCK TO THE ISOLATION DAMPER ACTUATOR END SWITCH.
   2. IF THE FAN STATUS IS NOT EQUAL TO COMMAND, AN ALARM SHALL BE RECORDED AT THE OPERATOR'S WORKSTATION.

SEQUENCE OF OPERATIONS:

A. VAV BOX OPERATION SHALL FOLLOW THE ASSOCIATED AIR HANDLER SCHEDULED OPERATION. SEPARATE OCCUPIED AND UNOCCUPIED NIGHT SETBACK LEVELS, HEATING AND COOLING, SHALL BE PROVIDED BASED ON OWNER PREFERENCES FOR ALL VAV TERMINALS.

B. OCCUPIED OPERATION
   1. RISE IN SPACE TEMPERATURE ABOVE SETPOINT
      a. BOX ACTUATOR: MODULATE FROM SCHEDULED MINIMUM TO SCHEDULED MAXIMUM COOLING AIR FLOW USING A PI ALGORITHM COMPARING SPACE TEMPERATURE TO ACTIVE SPACE COOLING TEMPERATURE SETPOINT.
      b. REHEAT COIL VALVE: FULLY CLOSED.
   2. DECREASE IN SPACE TEMPERATURE BELOW SETPOINT:
      a. FIRST STEP:
         i. B OX ACTUATOR: MAINTAIN AT MINIMUM SCHEDULED HEATING AIR FLOW.
         ii. REHEAT COIL VALVE: MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT, SUBJECT TO A HIGH LEAVING AIR TEMPERATURE PER THE VAV BOX SCHEDULE, USING A PI ALGORITHM COMPARING SPACE TEMPERATURE TO ACTIVE SPACE HEATING TEMPERATURE SETPOINT.
      b. SECOND STEP:
         i. FOR ZONES WITH ASSOCIATED RADIANT HEAT, INITIAL HEATING CAPACITY SHALL BE USE OF PERIMETER RADIATION TO MAINTAIN SPACE TEMPERATURE, WITH THE VAV AIR TERMINAL AT MINIMUM AIR FLOW AND THE REHEAT COIL CONTROL VALVE MODULATING TO MAINTAIN MAXIMUM LEAVING AIR TEMPERATURE.
         ii. FOR ALL OTHER ZONES, CONTINUE TO THIRD STEP.
      c. THIRD STEP:
         i. FOR ZONES WITH ASSOCIATED RADIANT HEAT: WHEN SCHEDULED VAV BOX LEAVING AIR TEMPERATURE IS REACHED, RADIANT HEAT CONTROL VALVE IS FULLY OPEN AND FURTHER HEATING IS REQUIRED, MODULATE AIR FLOW FROM MINIMUM SCHEDULED HEATING AIR FLOW TO MAXIMUM SCHEDULED HEATING AIR FLOW WHILE HOLDING LEAVING AIR TEMPERATURE CONSTANT AT THE SCHEDULED COIL LEAVING AIR TEMPERATURE VALUE.
         ii. FOR ALL OTHER ZONES: WHEN SCHEDULED VAV BOX LEAVING AIR TEMPERATURE IS REACHED AND FURTHER HEATING IS REQUIRED, MODULATE AIR FLOW FROM MINIMUM SCHEDULED HEATING AIR FLOW TO MAXIMUM SCHEDULED HEATING AIR FLOW WHILE HOLDING LEAVING AIR TEMPERATURE CONSTANT AT THE SCHEDULED COIL LEAVING AIR TEMPERATURE VALUE.

C. OCCUPIED / VACANCY OPERATION:
   1. FOR ZONES WITH OCCUPANCY SENSORS, UPON SENSING VACANCY FOR 30 MINUTES, RESET THE SPACE TEMPERATURE SETPOINT TO OCCUPIED/VACANCY SETPOINTS.

D. UNOCCUPIED OPERATION (NIGHT SETBACK):
   1. FOR ZONES WITH ASSOCIATED RADIANT HEATING, THE RADIANT HEAT SHALL BE MODULATED TO MAINTAIN UNOCCUPIED HEATING SPACE TEMPERATURE SETPOINT.
   2. FOR ALL OTHER ZONES, WHEN SPACE TEMPERATURE FALLS BELOW UNOCCUPIED HEATING SPACE TEMPERATURE SETPOINT MINUS 2°F, A FLAG SHALL BE FORWARDED TO THE AIR HANDLER OPERATION TO TRIGGER ASSOCIATED NIGHT SETBACK OPERATION. ONCE THE AIR HANDLER IS ENABLED, THE REHEAT COIL VALVE SHALL MODULATE TO MAINTAIN UNOCCUPIED HEATING SPACE TEMPERATURE SETPOINT.

E. REFER TO "COMMON ELEMENTS, DEMAND CONTROL VENTILATION " FOR REQUIREMENTS ASSOCIATED WITH USE OF ZONE CO2 SENSORS.

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

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E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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DRAWING DATE: **02/09/2024**
DRAWN BY: **JPK**
SCALE: **AS NOTED**
DRAWING TITLE:
HVAC CONTROLS

C H5.01

SEQUENCE OF OPERATIONS:

GENERAL:

A. VARIABLE VOLUME AIR HANDLING UNIT WITH SUPPLY FAN(S), RETURN FAN(S), CHILLED WATER COOLING AND HOT WATER HEATING COIL WITH COIL PUMP.

B. OUTDOOR AND RELIEF AIR ISOLATION DAMPERS WITH SEPARATE MODULATING DAMPERS.

C. ECONOMIZER (OUTDOOR AIR, RETURN AIR AND RELIEF/EXHAUST AIR DAMPERS, INDIVIDUAL CONTROL).

D. REFER TO COMMON ELEMENTS ON H5.01 FOR ADDITIONAL SEQUENCE INFORMATION

SYSTEM STARTUP AND SHUTDOWN:

A. UNIT STARTUP AND SHUTDOWN SHALL BE OPTIMIZED BY THE BMS.

B. UNOCCUPIED (SHUTDOWN) CYCLE – WHEN SCHEDULED OFF OR TRIGGERED BY A SAFETY DEVICE

a. SUPPLY AND RETURN FAN(S): OFF

b. ISOLATION DAMPERS CLOSED

c. ASD'S OF THE SUPPLY AND RETURN FAN(S) UNLOAD COMPLETELY.

d. OUTSIDE AIR DAMPER: CLOSED

e. RETURN AIR DAMPER: OPEN

f. RELIEF AIR DAMPER: CLOSED

g. COOLING COIL CONTROL VALVE: CLOSED

h. HOT WATER COIL:

1. NORMAL SHUTDOWN - CONTROL VALVE OPEN TO THE COIL TO PREVENT FREEZE. CONTROL TO MAINTAIN ALL SENSORS READINGS WITHIN AHU CASING ABOVE 50°F WHEN OUTDOOR AIR CONDITIONS ARE BELOW 40 °F, ELSE SHUT CONTROL VALVE.

2. SAFETY SHUTDOWN – HOT WATER VALVE FULLY OPEN.

3. ENABLE PUMP TO OPERATE CONTINUOUSLY BELOW 40 °F, ELSE DISABLE PUMP.

C. OCCUPIED CYCLE:

a. SUPPLY AND RETURN FANS: ENABLED

b. ISOLATION DAMPERS OPEN

c. THE ASD'S OF THE SUPPLY AND RETURN FAN(S) SHALL START FULLY UNLOADED, SHALL LOAD SLOWLY OVER AN ADJUSTABLE TIME PERIOD AND SHALL BE QUICK TO UNLOAD UPON SHUTDOWN

d. ASD OF THE SUPPLY FAN(S): UNDER CONTROL TO CALCULATED DUCT STATIC PRESSURE SETPOINT.

e. ASD OF THE RETURN FAN(S): UNDER CONTROL, TRACKING SUPPLY FAN AIR FLOW READING BY A FIXED CFM DIFFERENTIAL

f. HEATING AND COOLING COIL OPERATION:

1. HEATING COOLING AND ECONOMIZER SHALL MODULATE TO MAINTAIN CALCULATED UNIT SUPPLY TEMPERATURE SETPOINT AS MEASURED BY THE TEMPERATURE SENSOR LOCATED AT DISCHARGE OF THE COOLING COIL. HEATING SHALL OPERATE WITHOUT OVERLAP WITH COOLING OR ECONOMIZER. COOLING SHALL BE PERMITTED IN CONJUNCTION WITH ECONOMIZER AS "TRIM CAPACITY" TO MAINTAIN CALCULATED UNIT SUPPLY TEMPERATURE SETPOINT DURING PERIODS WHEN ECONOMIZER ALONE IS INSUFFICIENT.

2. HEATING CONTROL LOCKOUT – AVAILABLE BELOW 40 °F OUTDOOR LOCKOUT, ELSE CLOSED. ENABLE PUMP TO OPERATE CONTINUOUSLY BELOW 40 °F, ELSE DISABLE PUMP.

3. CHILLED WATER COOLING LOCKOUT – AVAILABLE ABOVE 55 °F OUTDOOR LOCKOUT, ELSE CLOSED.

g. DAMPER OPERATION – OCCUPIED MODE:

1. REFER TO "COMMON ELEMENTS, DEMAND CONTROL VENTILATION " FOR REQUIREMENTS ASSOCIATED WITH USE OF ZONE CO2 SENSORS.

2. MINIMUM OUTDOOR AIR CONTROL MODE – WHEN ECONOMIZER COOLING IS NOT AVAILABLE OR IS OTHERWISE DISABLED, THE RETURN AND OUTDOOR AIR DAMPERS ("ECONOMIZER) SHALL MODULATE TO MAINTAIN / CONTROL THE SCHEDULED MINIMUM OUTDOOR AIR INTAKE RATE.

3. ECONOMIZER CONTROL MODE – WHEN AVAILABLE BASED ON OUTDOOR AIR TEMPERATURE MORE THAN 4 °F COOLER THAN RETURN AIR TEMPERATURE, PROVIDES COOLING FOR CONTROL OF CALCULATED UNIT SUPPLY AIR TEMPERATURE SUBJECT TO A MINIMUM MIXED AIR TEMPERATURE OF 50 °F. AT NO POINT SHALL ECONOMIZER OPERATION PROVIDE LESS THAN THE SCHEDULED / CALCULATED OUTDOOR AIR INTAKE RATE.

4. RELIEF AIR DAMPER SHALL TRACK AND CONTROL TO PROVIDE AIR PRESSURE RELIEF AT SENSOR LOCATED AHEAD OF THE RELIEF AIR DAMPER. INITIAL SETPOINT +0.02 "WC. SENSOR SHALL BE BI-DIRECTIONAL +/- 0.5 "WC.

UNOCCUPIED CYCLE – NIGHT SETBACK:

A. ISOLATION DAMPERS CLOSED.

B. OA DAMPER AND RELIEF DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN. RETURN FAN TRACKS SUPPLY AT FIXED FAN SPEED MULTIPLIER, INITIAL VALUE OF 0.9. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.

C. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2 °F BELOW UNOCCUPIED HEATING TEMPERATURE SETPOINT. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO WITHIN 0.5 °F OF UNOCCUPIED TEMPERATURE SETPOINT.

UNOCCUPIED CYCLE – NIGHT COOLING MODE:

A. ISOLATION DAMPERS CLOSED.

B. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2 °F ABOVE UNOCCUPIED COOLING TEMPERATURE SETPOINT. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO WITHIN 0.5 °F OF UNOCCUPIED TEMPERATURE SETPOINT.

C. SUPPLY AND RETURN FANS ENABLED, RETURN FAN TRACKS SUPPLY AT FIXED FAN SPEED MULTIPLIEIR, INITIAL VALUE OF 0.9. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.

D. ECONOMIZER OPERATION NOT AVAILABLE – OA DAMPER AND RELIEF DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN. COOLING "FLAG" FORWARDED TO CHILLER CONTROL SEQUENCE TO ENABLE PLANT. ONCE CHILLED WATER AVAILABLE IN SYSTEM, FANS ENABLED AND UNIT OPERATES AT 55 °F LEAVING AIR TEMPERATURE SETPOINT.

E. ECONOMIZER OPERATION AVAILABLE – OUTDOOR AIR AND RETURN AIR MODULATE TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT OF 55 °F, MINIMUM OA INTAKE RATE OF ZERO.

CALCULATED UNIT SUPPLY TEMPERATURE SETPOINT:

A. DISCHARGE AIR TEMPERATURE SHALL BE AS MEASURED BY AN AVERAGING SENSOR PLACED AT THE DOWNSTREAM SIDE OF THE COOLING COIL. THIS IS FOR ALL OPERATING MODES – ECONOMIZER, MECHANICAL COOLING AND PREHEAT HEATING.

B. AS THE OUTDOOR AIR TEMPERATURE FALLS FROM 75 °F TO 0 °F, AN ANALOG VALUE T1 IS CALCULATED, RANGING FROM 54 °F TO 62 °F.

C. AS THE RETURN AIR HUMIDITY RISES FROM 50% TO 60%, AN ANALOG VALUE T2 IS CALCULATED, RANGING FROM 62 °F TO 54 °F.

D. THE LESSER VALUE OF T1 OR T2 IS FED FORWARD AS THE CONTROL SETPOINT FOR THE AIR HANDLER CALCULATED UNIT SUPPLY TEMPERATURE SETPOINT.

LOW OUTSIDE AIR TEMPERATURE AHU START-UP:

A. WHEN OUTSIDE AIR TEMPERATURES ARE BELOW 32 °F (ADJ):

a. OPEN HEATING VALVE TO FIXED POSITION, INITIALLY100% OPEN.

b. SUPPLY AND RETURN FANS: RAMP TO FIXED SPEED, TBD DURING SYSTEM STARTUP AND COMMISSIONING (INITIAL VALUE 40HZ)

c. MINIMUM OUTSIDE AIR: OPEN SLOW TO PREVENT MIXED AIR TEMPERATURE FROM DROPPING BELOW 40°F. RAMPS TO CONTROL MINIMUM OUTDOOR AIR

d. ONCE MIN OA CONTROL IS ESTABLISHED PLUS 1 MINUTE DELAY SLOWLY RAMP HEATING VALVE DOWN TO ACHIEVE LEAVING AIR TEMPERATURE SETPOINT

e. ONCE DISCHARGE AIR TEMPERATURE HAS DROPPED BELOW 75 °F, RELEASE SUPPLY AND RETURN FANS FROM FIXED SPEED OPERATION AND TRANSITION SEQUENCING OF FANS TO NORMAL OCCUPIED OPERATION TO OCCUR.

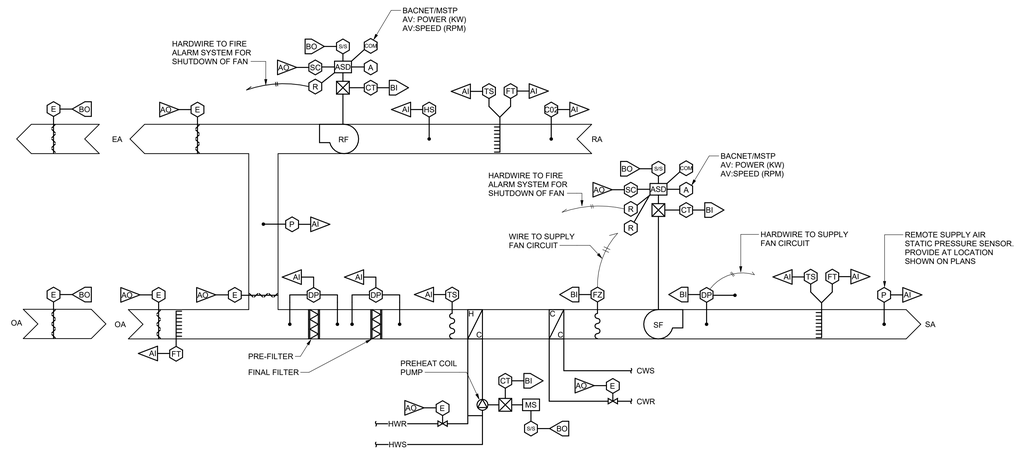
CALCULATED UNIT SUPPLY TEMPERATURE SETPOINT:

A. REFER TO COMMON ELEMENTS ON SHEET H5.01.

AIR HANDLING UNIT CONTROL POINTS LIST

	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM	
RETURN FAN START/STOP		X					X		
RETURN FAN STATUS	X						X	MOTOR FAILURE	
RETURN FAN SPEED COMMAND				X			X		
RETURN FAN ASD ALARM					X			ADJUSTABLE SPEED DRIVE FAILURE	MULTISTATE
RETURN FAN SPEED (RPM)					X		X		BACNET MS/TP
RETURN FAN POWER (KW)					X		X		BACNET MS/TP
FIRE ALARM RELAY	X						X	FAN SHUT DOWN ON FIRE ALARM	
SUPPLY FAN START/STOP		X					X		
SUPPLY FAN STATUS	X						X	MOTOR FAILURE	
SUPPLY FAN SPEED COMMAND				X			X		
SUPPLY FAN ASD ALARM					X			ADJUSTABLE SPEED DRIVE FAILURE	MULTISTATE
SUPPLY FAN SPEED (RPM)					X		X		BACNET MS/TP
SUPPLY FAN POWER (KW)					X		X		BACNET MS/TP
RETURN AIR TEMPERATURE			X				X		
RETURN AIR RH			X				X		
RETURN AIRFLOW STATION			X				X		
RETURN STATIC PRESSURE			X				X		
RETURN CO2			X				X		
RETURN AIR DAMPER				X			X		
RELIEF/EXHAUST AIR DAMPER (ISOLATION)		X					X		
RELIEF/EXHAUST AIR DAMPER (MODULATION)				X			X		
CHILLED WATER COIL VALVE				X			X		
PREHEAT COIL CONTROL VALVE				X			X		
PREHEAT COIL PUMP START/STOP		X					X		
PREHEAT COIL PUMP STATUS	X						X	MOTOR FAILURE	
OUTSIDE AIRFLOW STATION			X				X		
OUTSIDE AIR DAMPER (ISOLATION)		X					X		
OUTSIDE AIR DAMPER (IMODULATION)				X			X		
OUTSIDE AIR TEMPERATURE			X				X		GLOBAL
OUTSIDE AIR RH			X				X		GLOBAL
PRE-FILTER DIFFERENTIAL PRESSURE			X				X		1
FINAL FILTER DIFFERENTIAL PRESSURE			X				X		1
MIXED AIR TEMPERATURE			X				X		
FREEZE STAT STATUS	X						X	FREEZE STAT FAN SHUTDOWN	
SUPPLY AIRFLOW STATION			X				X		
SUPPLY AIR TEMPERATURE			X				X	(+/-) 4deg FROM SETPOINT	
SUPPLY FAN REMOTE STATIC PRESSURE			X				X	(+/-) 10% FROM SETPOINT	
SUPPLY STATIC PRESSURE LIMIT	X								2

NOTES:
1. ALARM IF PRESSURE EXCEEDS DIFFERENTIAL PRESSURE SETPOINT.
2. ALARM IF FAN SHUT DOWN STATIC PRESSURE HIGH/LOW LIMIT.



1 AIR HANDLING UNIT CONTROL SCHEMATIC - AHU-B-05
NTS

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NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS
6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-78686/ 23-44-7868**

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E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
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DRAWING DATE: **02/09/2024**

DRAWN BY: **Author**

SCALE: **AS NOTED**

DRAWING TITLE:
HVAC CONTROLS

C H5.02

SEQUENCE OF OPERATION

GENERAL:

A. VARIABLE VOLUME SYSTEM WITH SUPPLY FANS AND RETURN FAN, CHILLED WATER COOLING COIL, HOT WATER PREHEAT COIL, AND ECONOMIZER. ENERGY RECOVERY IS INCLUDED THROUGH A SEPARATE ENERGY RECOVERY UNIT INTEGRATED INTO THE ECONOMIZER OPERATION. THE UNITS SHALL BE SCHEDULED FOR OCCUPIED/UNOCCUPIED OPERATION, SUBJECT TO NIGHT SETBACK REQUIREMENTS FOR THE ASSOCIATED SPACE(S).

B. THE INTEGRATION OF THE ENERGY RECOVERY UNIT TO THE ECONOMIZER INVOLVES THE FOLLOWING DAMPER ARRANGEMENT:

1. ENERGY RECOVERY MODULE – EXHAUST AIR AND BYPASS DAMPERS.
2. ENERGY RECOVERY MODULE – OUTDOOR AIR AND BYPASS DAMPERS.
3. RELIEF AIR DAMPER
4. RETURN AIR DAMPER
5. OUTDOOR AIR DAMPER

C. DAMPERS 5 AND 6, COMBINED, ARE OTHERWISE REFERRED TO AS THE "ECONOMIZER" DAMPERS. THESE ARE TO BE INDIVIDUALLY OPERATED INREVERSELY UNLESS AS-BUILT CONDITIONS DICTATE THE CONTROL SIGNALS BE SKEWED. SIMILARLY, THE EXHAUST UNLESS AS-BUILT CONDITIONS REQUIRE SIGNALS TO BE OFFSET ARE TO MAINTAIN STABLE OPERATION.

D. ALL CONTROL SETPOINTS NOTED IN THIS SEQUENCE SHALL BE USER ADJUSTABLE AND SHALL BE TUNED DURING SYSTEM STARTUP AND COMMISSIONING FOR PROPER SYSTEM OPERATION.

STARTUP:

A. WARM-UP MODE:

1. THE BMS SHALL CALCULATE THE REQUIRED WARM-UP TIME BASED ON EACH ZONE 'S OCCUPIED HEATING SET POINT, THE CURRENT ZONE TEMPERATURE, THE OUTDOOR AIR TEMPERATURE, AND A MASS/CAPACITY FACTOR. THE MASS FACTOR SHALL BE TUNED BY THE BMS. WARM-UP MODE SHALL START BASED ON ZONE WITH THE LONGEST CALCULATED WARM-UP REQUIREMENT, BUT NO LESS THAN 30 MINUTES PRIOR TO SCHEDULED O'NCY.
2. THE ECONOMIZER DAMPER SHALL BE POSITIONED TO 100% RETURN AIR, EXHAUST FAN DISABLED, SUPPLY FAN OPERATING AT MAXIMUM AIR FLOW. LEAVING AIR TEMPERATURE SETPOINT SHALL BE FIXED TO 85°F UNTIL THE SPACE TEMPERATURE REACHES OCCUPIED HEATING SETPOINT, AT WHICH TIME THE UNIT SHALL ENTER NORMAL OCCUPIED OPERATION.
3. UPON COMPLETION OF THE WARMUP CYCLE, AS INDICATED BY ALL SPACE SENSORS REACHING WITHIN 1 °F OF HEATING SPACE TEMPERATURE SETPOINT, THE DISCHARGE AIR TEMPERATURE SET POINT SHALL REVERT TO THE CALCULATED LEAVING AIR TEMPERATURE SET POINT.

B. COOL-DOWN MODE:

1. THE BMS SHALL CALCULATE THE REQUIRED COOL-DOWN TIME BASED ON EACH ZONE 'S OCCUPIED COOLING SET POINT, THE CURRENT ZONE TEMPERATURE, THE OUTDOOR AIR TEMPERATURE, AND THE MASS/CAPACITY FACTOR. THE MASS FACTOR SHALL BE TUNED BY THE BMS. COOL-DOWN MODE SHALL START BASED ON THE ZONE WITH THE LONGEST CALCULATED COOL-DOWN TIME REQUIREMENT, BUT NO LESS THAN 30 MINUTES PRIOR TO SCHEDULED OCCUPANCY.
2. THE LEAVING AIR TEMPERATURE SET POINT SHALL BE 55°F, AND THE ECONOMIZER AND DX COOLING COIL SHALL BE CONTROLLED IN SEQUENCE, SUBJECT TO ECONOMIZER LOCKOUT CONTROL, TO MAINTAIN A 55°F LEAVING AIR TEMPERATURE. SUPPLY FAN SHALL OPERATE AT MAXIMUM AIR FLOW.
3. MINIMUM VENTILATION RATE SHALL BE SET TO ZERO.
4. UPON COMPLETION OF THE COOL-DOWN CYCLE, AS INDICATED BY ALL SPACE SENSORS REACHING WITHIN 1 °F OF COOLING SPACE TEMPERATURE SETPOINT, THE DISCHARGE AIR TEMPERATURE SET POINT SHALL REVERT TO THE CALCULATED LEAVING AIR TEMPERATURE SET POINT.

C. WHEN INITIATED BY THE DDC SYSTEM, THE SUPPLY AND RETURN AIR FAN ADJUSTABLE SPEED DRIVES SHALL BE ENABLED. IF ALL SAFETIES AND INTERLOCKS ARE IN THE NORMAL POSITION, THE FANS SHALL RAMP TO SETPOINT AND THE PID LOOPS FOR THE COOLING COIL, PREHEAT COIL, AND ECONOMIZER SHALL BE ENABLED.

SHUTDOWN:

A. WHEN INITIATED BY THE DDC SYSTEM OR TRIGGERED BY A SAFETY DEVICE, THE UNIT SHALL SHUT DOWN. BOTH FANS SHALL BE DISABLED. AFTER A PROGRAMMABLE TIME DELAY (INITIALLY 30 SECONDS) THE ECONOMIZER DAMPERS SHALL POSITION TO 100% RETURN AIR, THE RELIEF DAMPER SHALL CLOSE, THE OUTDOOR AIR F&B DAMPERS SHALL POSTION TO FACE, THE RELIEF AIR F&B DAMPERS SHALL POSITION TO FACE. AFTER A FIXED TIME DELAY, THE OUTDOOR AIR AND RELIEF ISOLATION DAMPERS SHALL CLOSE.

B. IF THE OUTDOOR AIR IS ABOVE 40 °F, THE COOLING COIL CONTROL VALVE SHALL CLOSE. OTHERWISE, THE CHILLED WATER VALVE SHALL BE POSITIONED TO A FIXED POSITION OF 50% (ADJ.) TO COIL. AN ALARM SHALL BE GENERATED IF THE COOLING COIL LEAVING WATER TEMPERATURE FALLS BELOW 40 °F, AND THE COOLING COIL VALVE SHALL BE OPENED 100%.

C. IF THE OUTDOOR AIR TEMPERATURE IS ABOVE 40 °F, THE PREHEAT COIL VALVE SHALL CLOSE. IF THE OUTDOOR AIR TEMPERATURE IS BELOW 40 °F, THE PREHEAT COIL VALVE SHALL MODULATE TO MAINTAIN THE TEMPERATURE AT THE MIXED AIR SENSOR ABOVE 60 °F.

COOLING COIL OPERATION:

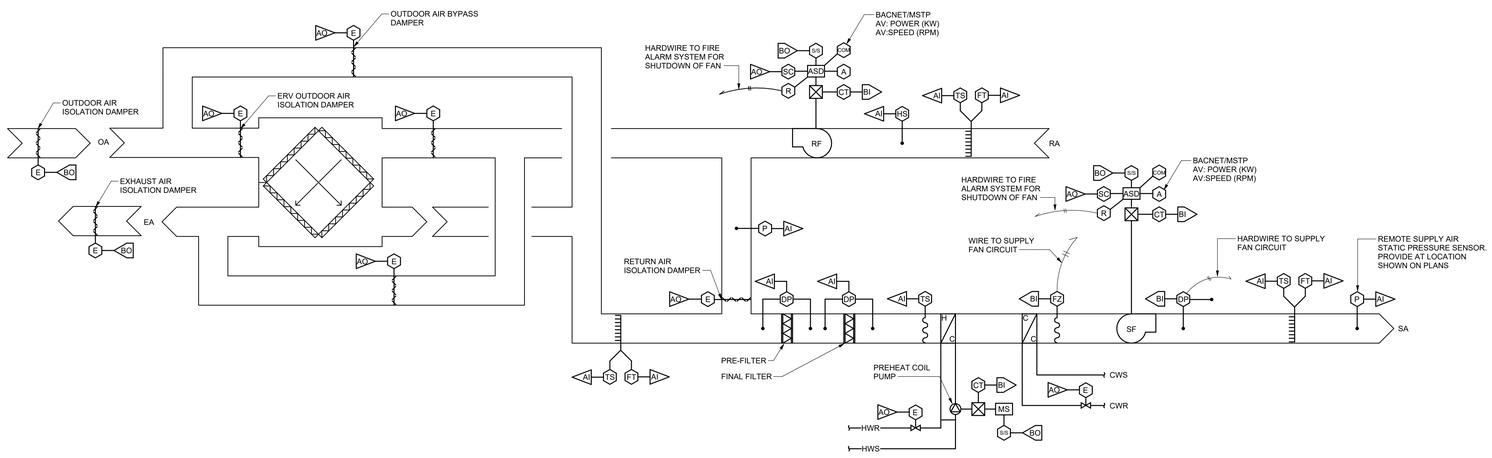
A. MECHANICAL COOLING (CHILLED WATER) SHALL BE LOCKED OUT AT ANY TIME THE OUTDOOR AIR TEMPERATURE IS BELOW 50°F.

B. SUBJECT TO STARTUP AND SHUTDOWN SEQUENCES AND OUTDOOR AIR LOCKOUT TEMPERATURE, THE COOLING COIL SHALL MODULATE IN SEQUENCE WITH ECONOMIZER TO MAINTAIN CALCULATED COIL LEAVING AIR TEMPERATURE AT SETPOINT.

C. LEAVING AIR TEMPERATURE SHALL BE CALCULATED BASED ON AN OUTDOOR AIR RESET WITH HUMIDITY OVERRIDE BASIS. OUTDOOR AIR RESET RATIO SHALL CALCULATE VALUE T1 BASED ON A VALUE OF 55°F WHEN THE OUTDOOR AIR TEMPERARTURE IS 85°F OR ABOVE AND 65° F WHEN THE OUTDOOR AIR TEMPERATURE IS 20°F OR BELOW. A HUMIDITY RESET RATIO SHALL CALCULATE VALUE T2 BASED ON RETURN AIR HUMIDITY RISING FROM 50% TO 55%, DISCHARGE AIR TEMPERATURE RESET FROM 65 TO 55°F. THE LOWER OF T1 OR T2 SHALL BECOME THE LEAVING AIR TEMPERATURE SETPOINT.

D. COOLING SHALL BE PERMITTED TO OPERATE IN CONJUNCTION WITH ECONOMIZER TO SATISFY LEAVING AIR TEMPERATURE SETPOINT AS TRIM CAPACITY ONLY (ECONOMIZER MUST BE FULLY OPEN FIRST).

AIR HANDLING UNIT CONTROL POINTS LIST	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM	
OUTSIDE AIR ERV DAMPER				X			X		
OUTSIDE AIR BYPASS DAMPER				X			X		
EXHAUST AIR ERV DAMPER				X			X		
EXHAUST AIR BYPASS DAMPER				X			X		
OUTSIDE AIR ISOLATION DAMPER		X					X		
EXHAUST AIR ISOLATION DAMPER		X					X		
RETURN FAN ASD START/STOP		X					X		
RETURN FAN ASD SPEED CONTROL				X			X		
RETURN FAN ASD ALARM						X	X	ADJUSTABLE SPEED DRIVE FAILURE	MULTISTATE
RETURN FAN STATUS	X						X	MOTOR FAILURE	
RETURN FAN ASD SPEED (RPM)					X		X		1
RETURN FAN ASD POWER (KW)					X		X		1
RETURN AIR HUMIDITY			X				X		
RETURN AIR TEMPERATURE			X				X		
RETURN AIR FLOW			X				X		
RETURN AIR DAMPER				X			X		
RETURN AIR STATIC PRESSURE			X				X		
PREFILTER DIFFERENTIAL PRESSURE			X				X		
FINAL FILTER DIFFERENTIAL PRESSURE			X				X		
MIXED AIR TEMPERATURE			X				X		
HOT WATER CONTROL VALVE				X			X		
PREHEAT COIL PUMP STATUS	X						X		
PREHEAT COIL PUMP START/STOP		X					X		
CHILLED WATER CONTROL VALVE				X			X		
SUPPLY AIR FREEZE STAT	X						X		
SUPPLY FAN ASD START/STOP		X					X		
SUPPLY FAN ASD SPEED CONTROL				X			X		
SUPPLY FAN ASD ALARM						X	X	ADJUSTABLE SPEED DRIVE FAILURE	MULTISTATE
SUPPLY FAN STATUS	X						X	MOTOR FAILURE	
SUPPLY FAN ASD SPEED (RPM)					X		X		1
SUPPLY FAN ASD POWER (KW)					X		X		1
SUPPLY AIR DIFFERENTIAL PRESSURE	X						X		
SUPPLY AIR FLOW			X				X		
SUPPLY AIR TEMPERATURE			X				X		
SUPPLY AIR STATIC PRESSURE			X				X		



1 AIR HANDLING UNIT CONTROL SCHEMATIC - AHU-C-06, AHU-C-07, AHU-E-15, AHU-E-16
NTS

king+king ARCHITECTS

NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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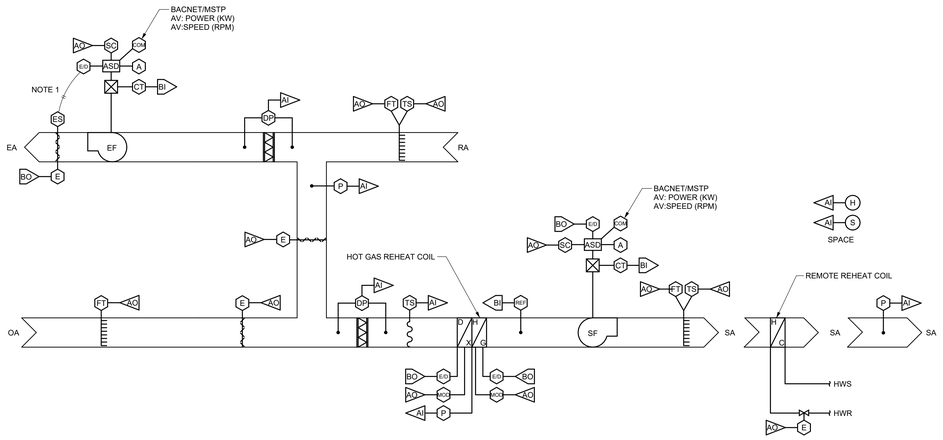
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DRAWN BY: **Author**

SCALE: **AS NOTED**

DRAWING TITLE:
HVAC CONTROLS

C H5.03



ROOFTOP UNIT CONTROL POINTS LIST	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM DESCRIPTION	
SUPPLY FAN ENABLE/DISABLE		X					X		
SUPPLY FAN STATUS	X						X	MOTOR FAILURE	
SUPPLY FAN SPEED COMMAND				X			X		
SUPPLY FAN ASD ALARM					X		X	ASD ALARM STATE	BACNET MULTISTATE VALUE
SUPPLY FAN KW					X		X		
SUPPLY FAN RPM					X		X		
SUPPLY AIRFLOW			X				X		
RELIEF FAN ENABLE/DISABLE		NOTE 1					X		
RELIEF FAN STATUS	X						X	MOTOR FAILURE	
RELIEF FAN SPEED COMMAND				X			X		
RELIEF FAN ASD ALARM					X		X	ASD ALARM STATE	BACNET MULTISTATE VALUE
RELIEF FAN KW					X		X		
RELIEF FAN RPM					X		X		
SUPPLY FAN REMOTE STATIC PRESSURE			X				X	(+/-) 10% FROM SETPOINT	
SUPPLY AIR TEMPERATURE			X				X	(+/-) 4deg FROM SETPOINT	
RETURN AIR TEMPERATURE			X				X		
RETURN AIRFLOW			X				X		
MIXED AIR TEMPERATURE			X				X		
EXHAUST AIR DAMPER		X					X		
RETURN AIR DAMPER				X			X		
OUTSIDE AIR DAMPER				X			X		
OUTSIDE AIR FLOW RATE			X				X	(+/-) 10% DEVIATION FROM SET POINT	
COMPRESSOR ENABLE/DISABLE		X					X		PER STAGE
COMPRESSOR CAPACITY CONTROL				X			X		PER CIRCUIT
REFRIGERANT SUCTION PRESSURE			X				X		PER CIRCUIT
HOT WATER CONTROL VALVE				X			X		
FILTER STATIC PRESSURE			X				X	EXCEED DIFFERENTIAL PRESSURE SETPOINT	TYP.2
RETURN STATIC PRESSURE			X				X		
REFRIGERANT LEAK DETECTOR ALARM	X						X	REFRIGERANT LEAK	
HOT GAS REHEAT ENABLE/DISABLE		X					X		
HOT GAS REHEAT CAPACITY CONTROL				X			X		
SPACE TEMPERATURE			X				X		
SPACE HUMIDITY			X				X		

1 ROOFTOP UNIT CONTROL SCHEMATIC - GRMS-RTU-B-04, D-08, D-09, D-12, D-13, & D-14
NTS

SEQUENCE OF OPERATION — ROOFTOP UNIT — SINGLE ZONE

GENERAL:

A. VARIABLE AIR VOLUME SINGLE ZONE UNIT THAT PROVIDES HEATING AND COOLING.
B. SUPPLY AND POWER RELIEF FANS
C. ECONOMIZER SECTION. (OUTDOOR / RETURN AIR DAMPERS, OPPOSITE ACTING).
D. ADJUSTABLE SPEED SUPPLY AND EXHAUST FANS.
E. HOT WATER HEATING VIA REMOTE REHEAT COIL.
F. DX COOLING SYSTEM SHALL BE PROVIDED WITH CAPACITY MODULATION AND HOT GAS REHEAT,

SYSTEM STARTUP AND SHUTDOWN:

A. UNIT STARTUP AND SHUTDOWN SHALL BE OPTIMIZED BY THE BMS. REFER TO COMMON ELEMENTS

OCCUPIED MODE:

A. SUPPLY AND RETURN FANS: ENABLED
B. ISOLATION DAMPERS OPEN
C. THE ASD'S OF THE SUPPLY AND RETURN FAN(S) SHALL START FULLY UNLOADED, SHALL LOAD SLOWLY OVER AN ADJUSTABLE TIME PERIOD AND SHALL BE QUICK TO UNLOAD UPON SHUTDOWN
D. ASD OF THE SUPPLY FAN(S): UNDER CONTROL TO CALCULATED DUCT STATIC PRESSURE SETPOINT.
E. ASD OF THE RETURN FAN(S): UNDER CONTROL, TRACKING SUPPLY FAN AIR FLOW READING BY A FIXED CFM DIFFERENTIAL
F. HEATING AND COOLING COIL OPERATION:
   1. HEATING, COOLING AND ECONOMIZER SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT AS MEASURED BY THE SPACE TEMPERATURE SENSOR. HEATING SHALL OPERATE WITHOUT OVERLAP WITH COOLING OR ECONOMIZER. COOLING SHALL BE PERMITTED IN CONJUNCTION WITH ECONOMIZER AS "TRIM CAPACITY" TO MAINTAIN SPACE TEMPERATURE SETPOINT DURING PERIODS WHEN ECONOMIZER ALONE IS INSUFFICIENT.
   2. HEATING CONTROL LOCKOUT — AVAILABLE BELOW 40 °F OUTDOOR LOCKOUT, ELSE CLOSED. ENABLE PUMP TO OPERATE BELOW 40 °F, ELSE DISABLE PUMP.
   3. CHILLED WATER COOLING LOCKOUT — AVAILABLE ABOVE 55 °F OUTDOOR LOCKOUT, ELSE CLOSED.
G. DAMPER OPERATION — OCCUPIED MODE:
H. REFER TO 'COMMON ELEMENTS, DEMAND CONTROL VENTILATION ' FOR REQUIREMENTS ASSOCIATED WITH USE OF ZONE CO2 SENSORS.
   1. MINIMUM OUTDOOR AIR CONTROL MODE — WHEN ECONOMIZER COOLING IS NOT AVAILABLE OR IS OTHERWISE DISABLED, THE RETURN AND OUTDOOR AIR DAMPERS ("ECONOMIZER) SHALL MODULATE TO MAINTAIN / CONTROL THE SCHEDULED MINIMUM OUTDOOR AIR INTAKE RATE.
   2. ECONOMIZER CONTROL MODE — WHEN AVAILABLE BASED ON OUTDOOR AIR TEMPERATURE MORE THAN 4 °F COOLER THAN RETURN AIR TEMPERATURE, PROVIDES COOLING FOR CONTROL OF SPACE TEMPERATURE SUBJECT TO A MINIMUM MIXED AIR TEMPERATURE OF 50 °F. AT NO POINT SHALL ECONOMIZER OPERATION PROVIDE LESS THAN THE SCHEDULED / CALCULATED OUTDOOR AIR INTAKE RATE.
   3. RELIEF AIR. DAMPER SHALL TRACK AND CONTROL TO PROVIDE AIR PRESSURE RELIEF AT SENSOR LOCATED AHEAD OF THE RELIEF AIR DAMPER. INITIAL SETPOINT +0.02"WC. SENSOR SHALL BE BI-DIRECTIONAL +/- 0.5"WC.
I. OCCUPIED / VACANCY OPERATION.
   1. FOR ZONES WITH OCCUPANCY SENSORS, UPON SENSING VACANCY FOR 30 MINUTES, RESET THE SPACE TEMPERATURE SETPOINT TO OCCUPIED/VACANCY SETPOINTS.

UNOCCUPIED CYCLE — NIGHT SETBACK:

A. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2 °F BELOW UNOCCUPIED HEATING TEMPERATURE SETPOINT.
B. SUPPLY FAN ENABLED, RELIEF FAN DISABLED.
C. OA DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN.
D. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.
E. UNIT LEAVING AIR TEMPERATURE SETPOINT 85°F.
F. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO UNOCCUPIED HEATING TEMPERATURE SETPOINT.

UNOCCUPIED CYCLE — NIGHT COOLING MODE:

A. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2°F ABOVE UNOCCUPIED COOLING TEMPERATURE SETPOINT.
B. SUPPLY FAN ENABLED.
C. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.
D. ECONOMIZER OPERATION NOT AVAILABLE — OA DAMPER AND RELIEF DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN. RELIEF FAN OFF. DX MODULATES FOR 55°F SUPPLY AIR SETPOINT.
E. ECONOMIZER OPERATION AVAILABLE — OUTDOOR AIR AND RETURN AIR MODULATE TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT OF 55°F, MINIMUM OA INTAKE RATE OF ZERO. RELIEF FAN AS PER OCCUPIED MODE.
F. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO UNOCCUPIED COOLING TEMPERATURE SETPOINT.

CALCULATION OF DUCT PRESSURE SETPOINT:

A. REFER TO COMMON ELEMENTS ON SHEET CH5.01.

LEAVING AIR TEMPERATURE RESET CALCULATION:

A. THERMAL / OUTDOOR AIR RESET — WHEN THE OUTDOOR AIR TEMPERATURE IS EQUAL TO OR GREATER THAN 85°F, LAT SHALL BE EQUAL TO 55°F. WHEN THE OUTDOOR AIR TEMPERATURE IS EQUAL TO OR BELOW 20°F, LAT SHALL BE 65°F.

SAFETIES/OTHER CONTROL FUNCTIONS:

A. DISCHARGE TEMPERATURE DROPS BELOW 45°F DURING HEATING MODES, THE SOFTWARE SHALL DISABLE AS PER UNOCCUPIED SHUTDOWN AND PRINT AN ALARM MESSAGE AT THE OPERATOR 'S TERMINAL INDICATING UNIT NUMBER AND DISCHARGE TEMPERATURE / ALARM CONDITION
B. ON TRIP OF FREEZESTAT, THE UNIT SHALL DISABLE AS PER UNOCCUPIED SHUTDOWN WITH THE HEATING VALVE REMAINING FULLY OPEN.
C. ON TRIP OF FIRE ALARM THE UNIT SHALL SHUT DOWN BY HARD WIRE INTERLOCK TO THE FIRE ALARM CONTROL PANEL AND PERFORM AN ORDERLY SHUTDOWN AS PER UNOCCUPIED MODE. ON CLEAR OF THE FIRE ALARM, THE UNIT SHALL PERFORM AN ORDERLY RESTART.
D. UNOCCUPIED OVERRIDE: WHEN MANUALLY ACTIVATED DURING UNOCCUPIED PERIODS, ENABLE OCCUPIED MODE FOR 3 HOURS (ADJUSTABLE).

DEMAND CONTROL VENTILATION (DCV):

A. REFER TO COMMON ELEMENTS ON SHEET CH5.01.

ALARMS — PROVIDE AN ALARM FOR EACH OF THE FOLLOWING:

A. FAN FAILURE (SUPPLY AND EXHAUST)
B. DISCHARGE AIR TEMPERATURE LOW/HIGH LIMITS.
C. COMPRESSOR FAILURE
D. FAILURE TO HEAT OR COOL (LEAVING AIR TEMPERATURE NOT WITHIN 4 DEGREES OF CALCULATED LEAVING AIR TEMPERATURE SETPOINT AFTER 10-MINUTE DELAY)
E. SPACE TEMPERATURE HIGH AND LOW LIMITS.
F. FREEZESTAT
G. HIGH FILTER DIFFERENTIAL PRESSURE.
H. REFRIGERANT LEAK DETECTION.

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NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
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J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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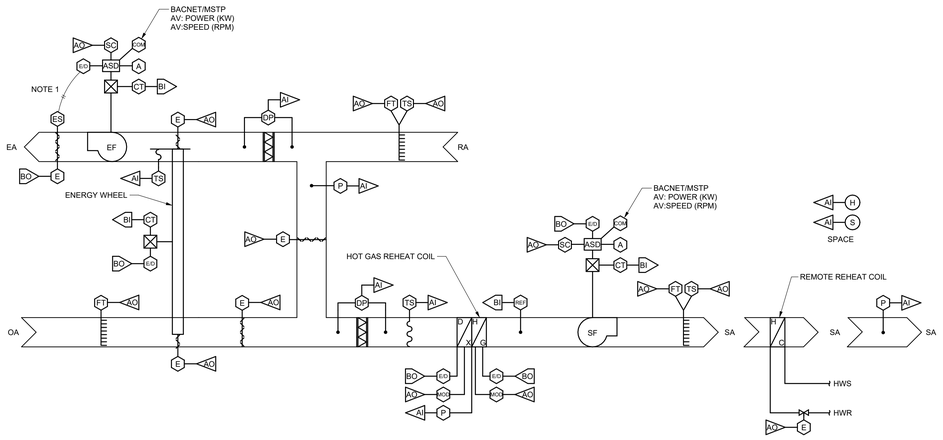
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SCALE: **AS NOTED**

DRAWING TITLE:
HVAC CONTROLS

C H5.04



1 ROOFTOP UNIT CONTROL SCHEMATIC (ERV) - GRMS-RTU-F-17 & 18
NTS

ROOFTOP UNIT WITH ERV CONTROL POINTS LIST

POINT NAME	HARDWARE POINTS BI	BO	AI	AO	SOFTWARE POINTS AV	BV	TREND	ALARM DESCRIPTION	NOTES
SUPPLY FAN ENABLE/DISABLE		X					X		
SUPPLY FAN STATUS	X						X	MOTOR FAILURE	
SUPPLY FAN SPEED COMMAND				X			X		
SUPPLY FAN ASD ALARM					X		X	ASD ALARM STATE	BACNET MULTISTATE VALUE
SUPPLY FAN KW					X		X		
SUPPLY FAN RPM					X		X		
SUPPLY AIRFLOW			X				X		
RELIEF FAN ENABLE/DISABLE		NOTE 1					X		
RELIEF FAN STATUS	X						X	MOTOR FAILURE	
RELIEF FAN SPEED COMMAND				X			X		
RELIEF FAN ASD ALARM					X		X	ASD ALARM STATE	BACNET MULTISTATE VALUE
RELIEF FAN KW					X		X		
RELIEF FAN RPM					X		X		
SUPPLY FAN REMOTE STATIC PRESSURE			X				X	(+/-) 10% FROM SETPOINT	
SUPPLY AIR TEMPERATURE			X				X	(+/-) 4deg FROM SETPOINT	
RETURN AIR TEMPERATURE			X				X		
RETURN AIRFLOW			X				X		
MIXED AIR TEMPERATURE			X				X		
EXHAUST AIR DAMPER		X					X		
RETURN AIR DAMPER				X			X		
OUTSIDE AIR DAMPER				X			X		
OUTSIDE AIR FLOW RATE			X				X	(+/-) 10% DEVIATION FROM SET POINT	
COMPRESSOR ENABLE/DISABLE		X					X		PER STAGE
COMPRESSOR CAPACITY CONTROL				X			X		PER CIRCUIT
REFRIGERANT SUCTION PRESSURE			X				X		PER CIRCUIT
HOT WATER CONTROL VALVE				X			X		
FILTER STATIC PRESSURE			X				X	EXCEED DIFFERENTIAL PRESSURE SETPOINT	TYP.2
RETURN STATIC PRESSURE			X				X		
REFRIGERANT LEAK DETECTOR ALARM	X						X	REFRIGERANT LEAK	
ENERGY WHEEL OUTSIDE AIR BYPASS DAMPER				X			X		
ENERGY WHEEL EXHAUST AIR BYPASS DAMPER				X			X		
ENERGY WHEEL STATUS	X						X		
ENERGY WHEEL ENABLE/DISABLE		X					X		
ENERGY WHEEL EXHAUST AIR TEMPERATURE			X				X		
HOT GAS REHEAT ENABLE/DISABLE		X					X		
HOT GAS REHEAT CAPACITY CONTROL				X			X		
SPACE TEMPERATURE			X				X		
SPACE HUMIDITY			X				X		

SEQUENCE OF OPERATION

A. GENERAL
1. VARIABLE AIR VOLUME SINGLE ZONE UNIT THAT PROVIDES HEATING AND COOLING.
2. SUPPLY AND POWER RELIEF FANS
3. ECONOMIZER SECTION. (OUTDOOR / RETURN AIR DAMPERS, OPPOSITE ACTING).
4. ADJUSTABLE SPEED SUPPLY AND EXHAUST FANS.
5. GAS BURNER HEATING.
6. DX COOLING SYSTEM SHALL BE PROVIDED WITH CAPACITY MODULATION AND HOT GAS REHEAT,

B. SYSTEM STARTUP AND SHUTDOWN:
1. UNIT STARTUP AND SHUTDOWN SHALL BE OPTIMIZED BY THE BMS. REFER TO COMMON ELEMENTS

C. OCCUPIED MODE

1. SUPPLY FAN
   a. UNIT SHALL BE PROVIDED WITH A DUCT STATIC PRESSURE SENSOR. SUPPLY FAN SHALL MAINTAIN THE CALCULATED DUCT STATIC PRESSURE SENSOR SETPOINT.
2. RELIEF FAN OPERATION
   a. THE RELIEF / EXHAUST FAN(S) SHALL BE MODULATED TO MAINTAIN THE AIR FLOW IN THE RETURN DUCT AT A FIXED TRACKING DIFFERENTIAL BELOW THE AIR FLOW IN THE SUPPLY DUCT AS MEASURED BY THE SUPPLY AND RETURN DUCT AIR FLOW STATIONS.
   b. THE TRACKING DIFFERENTIAL SHALL BE FINALIZED DURING BALANCING AS REQUIRED TO ACHIEVE REQUIRED BUILDING AIR BALANCE AND PRESSURIZATION LEVELS.

3. ECONOMIZER OPERATION:

   a. HEATING OPERATION — WHENEVER THE DISCHARGE AIR TEMPERATURE IS BELOW CALCULATED DISCHARGE AIR TEMPERATURE SET POINT, THE RETURN / OUTSIDE AIR DAMPERS SHALL CONTROL SCHEDULED MINIMUM OUTDOOR AIR INTAKE RATE.
   b. ECONOMIZER COOLING OPERATION — WHENEVER THE DISCHARGE AIR TEMPERATURE IS ABOVE THE CALCULATED DISCHARGE AIR TEMPERATURE SETPOINT AND THE OUTDOOR AIR TEMPERATURE IS BELOW THE RETURN TEMPERATURE MINUS AN ADJUSTABLE DIFFERENTIAL, THE UNIT SHALL ENTER ECONOMIZER COOLING OPERATION. THE RETURN / OUTSIDE AIR DAMPERS SHALL MODULATE FOR ADDITIONAL ECONOMIZER COOLING TO MAINTAIN UNIT CALCUALTED LEAVING AIR TEMPERATURE, SUBJECT TO A MIXED AIR LOW LIMIT OF 50°F.

4. COOLING MODE —
   a. COOLING OPERATION SHALL BEGIN WITH THE UNIT OPERATING AT MINIMUM SUPPLY AIR FLOW.
   b. WHEN THERE IS A CALL FOR COOLING AND THE OUTSIDE AIR TEMPERATURE IS BELOW THE ECONOMIZER CHANGEOVER VALUE, THE ECONOMIZER SHALL OPERATE AS INITIAL STAGE OF COOLING. ON A FURTHER CALL FOR COOLING TO ACHIEVE CALCULATED LEAVING AIR TEMPERATURE SETPOINT, MECHANICAL COOLING SHALL BE USED AS "TRIM" CAPACITY ONCE ECONOMIZER IS FULLY OPEN.
   c. ENABLE COMPRESSORS AND MODULATE TO MAINTAIN THE CALCULATED DISCHARGE AIR TEMPERATURE SETPOINT. MONITOR SUCTION PRESSURE AND BACK THE COMPRESSOR CAPACITY DOWN AS NEEDED TO MAINTAIN THE SUCTION PRESSURE ABOVE THE MANUFACTURER RECOMMENDED MINIMUM.
   d. MECHANICAL COOLING SHALL BE SUBJECT TO AN AMBIENT LOCKOUT, INITIAL VALUE OF 55°F.

5. HEATING OPERATION:

   a. HEATING OPERATION SHALL BEGIN WITH THE UNIT OPERATING AT MINIMUM SUPPLY FAN AIR FLOW
   b. ON CALL FOR HEAT, THE HEATING COMPONENT SHALL BE ENABLED. HEATING OPERATION SHALL BE MODULATED TO MAINTAIN CALCULATED DISCHARGE AIR TEMPERATURE SET POINT.
   c. HEATING, COOLING/ECONOMIZER OPERATION SHALL BE CONTROLLED SUCH THAT NO OVERLAP BETWEEN HEATING AND COOLING OPERATION TAKES PLACE.

D. UNOCCUPIED CYCLE — NIGHT SETBACK
1. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2 °F BELOW UNOCCUPIED HEATING TEMPERATURE SETPOINT.
2. SUPPLY FAN ENABLED, RELIEF FAN DISABLED.
3. OA DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN.
4. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.
5. UNIT LEAVING AIR TEMPERATURE SETPOINT 65°F.
6. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO UNOCCUPIED HEATING TEMPERATURE SETPOINT.

E. UNOCCUPIED CYCLE — NIGHT COOLING MODE
1. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2 °F ABOVE UNOCCUPIED COOLING TEMPERATURE SETPOINT.
2. SUPPLY FAN ENABLED.
3. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.
4. ECONOMIZER OPERATION NOT AVAILABLE — OA DAMPER AND RELIEF DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN. . RELIEF FAN OFF. DX MODULATES FOR 55°F SUPPLY AIR SETPOINT.
5. ECONOMIZER OPERATION AVAILABLE — OUTDOOR AIR AND RETURN AIR MODULATE TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT OF 55°F, MINIMUM OA INTAKE RATE OF ZERO. RELIEF FAN AS PER OCCUPIED MODE.
6. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO UNOCCUPIED COOLING TEMPERATURE SETPOINT.

F. CALCULATION OF DUCT PRESSURE SETPOINT
1. THE BUILDING BMS SYSTEM SHALL MONITOR/POLL THE CONNECTED VAV BOXES ONCE EVERY 5 MINUTES FOR THEIR CURRENT CALCULATED DAMPER POSITIONS. IF ANY DAMPER IS MORE THAN 95% OPEN, THE DUCT STATIC PRESSURE SET POINT SHALL BE AUTOMATICALLY INCREMENTED UP 0.1" EACH POLLING INTERVAL, UP TO A MAXIMUM DETERMINED DURING AIR BALANCE TO BE ADEQUATE TO SERVE ALL TERMINALS AT DESIGN MAXIMUM FLOW. IF ALL DAMPER ARE LESS THAN 85% OPEN, THE DUCT STATIC PRESSURE SET POINT SHALL BE INCREMENTED DOWN 0.1" EACH POLLING INTERVAL. (DOWN TO A MINIMUM DETERMINED DURING AIR BALANCE, ADEQUATE TO SERVE ALL TERMINALS AT DESIGN MINIMUM FLOW.)

G. LEAVING AIR TEMPERATURE RESET CALCULATION:
1. THERMAL / OUTDOOR AIR RESET —WHEN THE OUTDOOR AIR TEMPERATURE IS EQUAL TO OR GREATER THAN 85 °F, LAT SHALL BE EQUAL TO 55°F. WHEN THE OUTDOOR AIR TEMPERATURE IS EQUAL TO OR BELOW 20 °F, LAT SHALL BE 65°F.

h. SAFETIES/OTHER CONTROL FUNCTIONS
1. DISCHARGE TEMPERATURE DROPS BELOW 45°F DURING HEATING MODES, THE SOFTWARE SHALL DISABLE AS PER UNOCCUPIED SHUTDOWN AND PRINT AN ALARM MESSAGE AT THE OPERATOR 'S TERMINAL INDICATING UNIT NUMBER AND DISCHARGE TEMPERATURE / ALARM CONDITION
2. ON TRIP OF FREEZESTAT, THE UNIT SHALL DISABLE AS PER UNOCCUPIED SHUTDOWN WITH THE HEATING VALVE REMAINING FULLY OPEN.
3. ON TRIP OF FIRE ALARM THE UNIT SHALL SHUT DOWN BY HARD WIRE INTERLOCK TO THE FIRE ALARM CONTROL PANEL AND PERFORM AN ORDERLY SHUTDOWN AS PER UNOCCUPIED MODE. ON CLEAR OF THE FIRE ALARM, THE UNIT SHALL PERFORM AN ORDERLY RESTART.
4. UNOCCUPIED OVERRIDE: WHEN MANUALLY ACTIVATED DURING UNOCCUPIED PERIODS, ENABLE OCCUPIED MODE FOR 3 HOURS (ADJUSTABLE).

I. DEMAND CONTROL VENTILATION (DCV):
1. THE CO2 LEVEL SHALL BE MEASURED USING BOTH SPACE CO2 SENSOR(S) AS LOCATED ON THE PROJECT DRAWINGS AND A RETURN AIR CO2 SENSOR. THE SPACE CO2 SENSOR(S) AND RETURN AIR CO2 SENSOR SHALL BE CONTINUOUSLY MONITORED, AND THE SENSOR WITH THE HIGHEST READING FOR THE UNIT UNDER CONTROL SHALL BE DEFINED AS THE "CONTROL CO2 LEVEL."
2. THE HVAC SYSTEM SEQUENCE OF OPERATION FOR NORMAL THERMAL CONTROL IS UNCHANGED BY INCORPORATION OF THE DCV SEQUENCE BELOW. DCV REPRESENT A FUNCTION THAT RECALCULATED THE MINIMUM VENTILATION RATE IN ORDER TO MAINTAIN CO2 LEVELS WITHIN DESIRED LEVELS.
3. DURING OCCUPIED MODES THE OUTSIDE AIR DAMPER SHALL NEVER BE POSITIONED BELOW THE "CALCULATED OA VENTILATION REQUIREMENT". "CALCULATED OA VENTILATION REQUIREMENT" SHALL BE EQUAL TO THE SCHEDULED "DCV MIN OA" RATE PLUS ADDITIONAL OUTSIDE AIR VOLUME TO MAINTAIN AN INTERIOR CO2 CONCENTRATION.
4. THE CALCULATED OA VENTILATION REQUIREMENT: SHALL BE DYNAMICALLY CALCULATED USING THE CONTROL CO2 LEVEL. AS THE CONTROL CO2 LEVEL RISES FROM 700 PPM TO A LEVEL OF 1000 PPM, THE SYSTEM SHALL DYNAMICALLY RESET THE CALCULATED OA VENTILATION REQUIREMENT BETWEEN THE SCHEDULED "DCV MIN OA" AND "MIN OA" VALUES.
5. THE DDC SYSTEM SHALL CONTROL THE OUTDOOR AIR INTAKE VOLUME AT NO LESS THAN THE CALCULATED OA VENTILATION REQUIREMENT BY MODULATING THE RETURN AND OUTSIDE AIR DAMPERS.
6. IF THE DDC SYSTEM DETERMINES THAT IT IS BENEFICIAL TO USE ADDITIONAL OUTSIDE AIR FOR VENTILATION ("ECONOMIZER") COOLING, THEN IT SHALL OVERRIDE THE DEMAND-CONTROLLED VENTILATION ALGORITHM TO MODULATE THE DAMPERS TO AN INCREASED OPEN POSITION AS REQUIRED.

h. ALARMS — PROVIDE AN ALARM FOR EACH OF THE FOLLOWING:
1. FAN FAILURE (SUPPLY AND EXHAUST)
2. DISCHARGE AIR TEMPERATURE LOW/HIGH LIMITS.
3. COMPRESSOR FAILURE
4. FAILURE TO HEAT OR COOL (LEAVING AIR TEMPERATURE NOT WITHIN 4 DEGREES OF CALCULATED LEAVING AIR TEMPERATURE SETPOINT AFTER 10-MINUTE DELAY)
5. SPACE TEMPERATURE HIGH AND LOW LIMITS.
6. FREEZESTAT
7. HIGH FILTER DIFFERENTIAL PRESSURE.
8. REFRIGERANT LEAK DETECTION.

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NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7868/ 23-44-7868**

SED PROJECT NUMBERS:

A: CNS HS	42-03-03-06-0-16-036
B: Junior HS	42-03-03-06-0-11-027
C: Gillette Road MS	42-03-03-06-0-12-021
D: Roxboro Road MS	42-03-03-06-0-10-022
E: Roxboro Road ES	42-03-03-06-0-08-019
F: Allen Road ES	42-03-03-06-0-01-023
H: Bear Road ES	42-03-03-06-0-02-017
J: Smith Road ES	42-03-03-06-0-09-017
K: District Office	42-03-03-06-0-07-014

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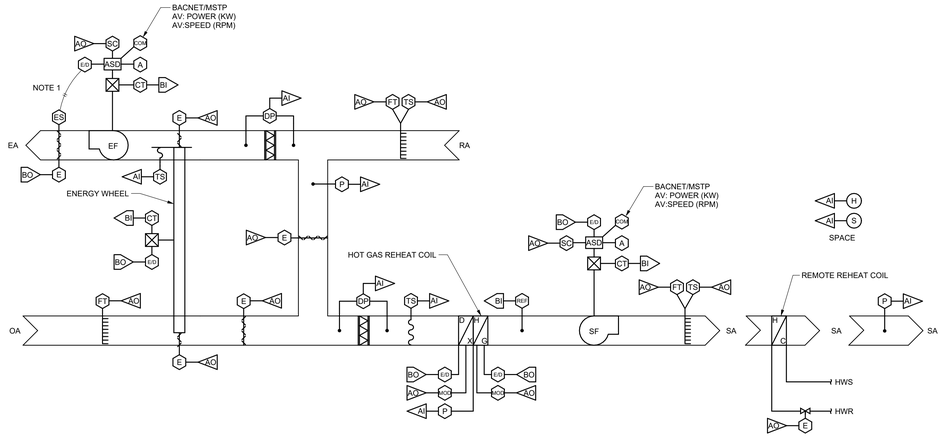
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DRAWING TITLE:
HVAC CONTROLS

C H5.05



1 ROOFTOP UNIT CONTROL SCHEMATIC - GRMS-RTU-A-01, A-02 & A-03
NTS

MULTIZONE ROOFTOP UNIT CONTROL POIN...	HARDWARE POINTS				SOFTWARE POINTS				NOTES
POINT NAME	BI	BO	AI	AO	AV	BV	TREND	ALARM DESCRIPTION	
SUPPLY FAN ENABLE/DISABLE		X					X		
SUPPLY FAN STATUS	X						X	MOTOR FAILURE	
SUPPLY FAN SPEED COMMAND				X			X		
SUPPLY FAN ASD ALARM					X		X	ASD ALARM STATE	BACNET MULTISTATE VALUE
SUPPLY FAN KW					X		X		
SUPPLY FAN RPM					X		X		
SUPPLY AIRFLOW			X				X		
RELIEF FAN ENABLE/DISABLE		NOTE 1					X		
RELIEF FAN STATUS	X						X	MOTOR FAILURE	
RELIEF FAN SPEED COMMAND				X			X		
RELIEF FAN ASD ALARM					X		X	ASD ALARM STATE	BACNET MULTISTATE VALUE
RELIEF FAN KW					X		X		
RELIEF FAN RPM					X		X		
SUPPLY FAN REMOTE STATIC PRESSURE			X				X	(+/-) 10% FROM SETPOINT	
SUPPLY AIR TEMPERATURE			X				X	(+/-) 4deg FROM SETPOINT	
RETURN AIR TEMPERATURE			X				X		
RETURN AIRFLOW			X				X		
MIXED AIR TEMPERATURE			X				X		
EXHAUST AIR DAMPER		X					X		
RETURN AIR DAMPER				X			X		
OUTSIDE AIR DAMPER				X			X		
OUTSIDE AIR FLOW RATE			X				X	(+/-) 10% DEVIATION FROM SET POINT	
COMPRESSOR ENABLE/DISABLE		X					X		PER STAGE
COMPRESSOR CAPACITY CONTROL				X			X		PER CIRCUIT
REFRIGERANT SUCTION PRESSURE			X				X		PER CIRCUIT
HOT WATER CONTROL VALVE				X			X		
FILTER STATIC PRESSURE			X				X	EXCEED DIFFERENTIAL PRESSURE SETPOINT	TYP.2
RETURN STATIC PRESSURE			X				X		
REFRIGERANT LEAK DETECTOR ALARM	X						X	REFRIGERANT LEAK	

SEQUENCE OF OPERATION — ROOFTOP UNIT — MULTIPLE ZONE

GENERAL:

A. VARIABLE AIR VOLUME THAT PROVIDES HEATING AND COOLING TO VAV TERMINAL UNITS.
B. SUPPLY AND POWER RELIEF FANS.
C. ECONOMIZER SECTION. (OUTDOOR / RETURN AIR DAMPERS, OPPOSITE ACTING).
D. ADJUSTABLE SPEED SUPPLY AND EXHAUST FANS.
E. HOT WATER HEATING VIA REMOTE REHEAT COIL.
F. DX COOLING SYSTEM SHALL BE PROVIDED WITH CAPACITY MODULATION AND HOT GAS REHEAT,

SYSTEM STARTUP AND SHUTDOWN:

A. UNIT STARTUP AND SHUTDOWN SHALL BE OPTIMIZED BY THE BMS. REFER TO COMMON ELEMENTS ON CH5.01.

OCCUPIED MODE:

A. SUPPLY FAN
   1. UNIT SHALL BE PROVIDED WITH A DUCT STATIC PRESSURE SENSOR. SUPPLY FAN SHALL MAINTAIN THE CALCULATED DUCT STATIC PRESSURE SENSOR SETPOINT.
B. RELIEF FAN OPERATION
   1. THE RELIEF / EXHAUST FAN(S) SHALL BE MODULATED TO MAINTAIN THE AIR FLOW IN THE RETURN DUCT AT A FIXED TRACKING DIFFERENTIAL BELOW THE AIR FLOW IN THE SUPPLY DUCT AS MEASURED BY THE SUPPLY AND RETURN DUCT AIR FLOW STATIONS..
   2. THE TRACKING DIFFERENTIAL SHALL BE FINALIZED DURING BALANCING AS REQUIRED TO ACHIEVE REQUIRED BUILDING AIR BALANCE AND PRESSURIZATION LEVELS.
C. ECONOMIZER OPERATION:
   1. HEATING OPERATION — WHENEVER THE DISCHARGE AIR TEMPERATURE IS BELOW CALCULATED DISCHARGE AIR TEMPERATURE SET POINT, THE RETURN / OUTSIDE AIR DAMPERS SHALL CONTROL SCHEDULED MINIMUM OUTDOOR AIR INTAKE RATE.
   2. ECONOMIZER COOLING OPERATION — WHENEVER THE DISCHARGE AIR TEMPERATURE IS ABOVE THE CALCULATED DISCHARGE AIR TEMPERATURE SETPOINT AND THE OUTDOOR AIR TEMPERATURE IS BELOW THE RETURN TEMPERATURE MINUS AN ADJUSTABLE DIFFERENTIAL, THE UNIT SHALL ENTER ECONOMIZER COOLING OPERATION. THE RETURN / OUTSIDE AIR DAMPERS SHALL MODULATE FOR ADDITIONAL ECONOMIZER COOLING TO MAINTAIN UNIT CALCUALTED LEAVING AIR TEMPERATURE, SUBJECT TO A MIXED AIR LOW LIMIT OF 50°F.
D. COOLING MODE:
   1. COOLING OPERATION SHALL BEGIN WITH THE UNIT OPERATING AT MINIMUM SUPPLY AIR FLOW.
   2. WHEN THERE IS A CALL FOR COOLING AND THE OUTSIDE AIR TEMPERATURE IS BELOW THE ECONOMIZER CHANGEOVER VALUE, THE ECONOMIZER SHALL OPERATE AS INITIAL STAGE OF COOLING. ON A FURTHER CALL FOR COOLING TO ACHIEVE CALCULATED LEAVING AIR TEMPERATURE SETPOINT, MECHANICAL COOLING SHALL BE USED AS "TRIM" CAPACITY ONCE ECONOMIZER IS FULLY OPEN.
   3. ENABLE COMPRESSORS AND MODULATE TO MAINTAIN THE CALCULATED DISCHARGE AIR TEMPERATURE SETPOINT. MONITOR SUCTION PRESSURE AND BACK THE COMPRESSOR CAPACITY DOWN AS NEEDED TO MAINTAIN THE SUCTION PRESSURE ABOVE THE MANUFACTURER RECOMMENDED MINIMUM.
   4. MECHANICAL COOLING SHALL BE SUBJECT TO AN AMBIENT LOCKOUT, INITIAL VALUE OF 55°F.
E. HEATING OPERATION:
   1. HEATING OPERATION SHALL BEGIN WITH THE UNIT OPERATING AT MINIMUM SUPPLY FAN AIR FLOW
   2. ON CALL FOR HEAT, THE HEATING COMPONENT SHALL BE ENABLED. HEATING OPERATION SHALL BE MODULATED TO MAINTAIN CALCULATED DISCHARGE AIR TEMPERATURE SET POINT.
   3. HEATING, COOLING/ECONOMIZER OPERATION SHALL BE CONTROLLED SUCH THAT NO OVERLAP BETWEEN HEATING AND COOLING OPERATION TAKES PLACE.

UNOCCUPIED CYCLE — NIGHT SETBACK:

A. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2°F BELOW UNOCCUPIED HEATING TEMPERATURE SETPOINT.
B. SUPPLY FAN ENABLED, RELIEF FAN DISABLED.
C. OA DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN.
D. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.
E. UNIT LEAVING AIR TEMPERATURE SETPOINT 65°F.
F. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO UNOCCUPIED HEATING TEMPERATURE SETPOINT.

UNOCCUPIED CYCLE — NIGHT COOLING MODE:

A. UNOCCUPIED OPERATION SHALL BE TRIGGERED BY ANY ZONE MORE THAN 2°F ABOVE UNOCCUPIED COOLING TEMPERATURE SETPOINT.
B. SUPPLY FAN ENABLED.
C. DUCT STATIC SETPOINT MID POINT BETWEEN MAX AND MIN RESET LEVELS.
D. ECONOMIZER OPERATION NOT AVAILABLE — OA DAMPER AND RELIEF DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER OPEN. RELIEF FAN OFF. DX MODULATES FOR 55°F SUPPLY AIR SETPOINT.
E. ECONOMIZER OPERATION AVAILABLE — OUTDOOR AIR AND RETURN AIR MODULATE TO MAINTAIN LEAVING AIR TEMPERATURE SETPOINT OF 55°F, MINIMUM OA INTAKE RATE OF ZERO. RELIEF FAN AS PER OCCUPIED MODE.
F. THE UNIT SHALL RETURN TO SHUTDOWN MODE WHEN ALL ZONES RETURN TO UNOCCUPIED COOLING TEMPERATURE SETPOINT.

CALCULATION OF DUCT PRESSURE SETPOINT:

A. REFER TO COMMON ELEMENTS ON SHEET CH5.01.

LEAVING AIR TEMPERATURE RESET CALCULATION:

A. THERMAL / OUTDOOR AIR RESET — WHEN THE OUTDOOR AIR TEMPERATURE IS EQUAL TO OR GREATER THAN 85°F, LAT SHALL BE EQUAL TO 55°F. WHEN THE OUTDOOR AIR TEMPERATURE IS EQUAL TO OR BELOW 20°F, LAT SHALL BE 65°F.

SAFETIES/OTHER CONTROL FUNCTIONS:

A. DISCHARGE TEMPERATURE DROPS BELOW 45°F DURING HEATING MODES, THE SOFTWARE SHALL DISABLE AS PER UNOCCUPIED SHUTDOWN AND PRINT AN ALARM MESSAGE AT THE OPERATOR 'S TERMINAL INDICATING UNIT NUMBER AND DISCHARGE TEMPERATURE / ALARM CONDITION

B. ON TRIP OF FREEZESTAT, THE UNIT SHALL DISABLE AS PER UNOCCUPIED SHUTDOWN WITH THE HEATING VALVE REMAINING FULLY OPEN.

C. ON TRIP OF FIRE ALARM THE UNIT SHALL SHUT DOWN BY HARD WIRE INTERLOCK TO THE FIRE ALARM CONTROL PANEL AND PERFORM AN ORDERLY SHUTDOWN AS PER UNOCCUPIED MODE. ON CLEAR OF THE FIRE ALARM, THE UNIT SHALL PERFORM AN ORDERLY RESTART.

D. UNOCCUPIED OVERRIDE: WHEN MANUALLY ACTIVATED DURING UNOCCUPIED PERIODS, ENABLE OCCUPIED MODE FOR 3 HOURS (ADJUSTABLE).

DEMAND CONTROL VENTILATION (DCV):

A. REFER TO COMMON ELEMENTS ON SHEET CH5.01.

ALARMS — PROVIDE AN ALARM FOR EACH OF THE FOLLOWING:

A. FAN FAILURE (SUPPLY AND EXHAUST)

B. DISCHARGE AIR TEMPERATURE LOW/HIGH LIMITS.

C. COMPRESSOR FAILURE

D. FAILURE TO HEAT OR COOL (LEAVING AIR TEMPERATURE NOT WITHIN 4 DEGREES OF CALCULATED LEAVING AIR TEMPERATURE SETPOINT AFTER 10-MINUTE DELAY)

E. SPACE TEMPERATURE HIGH AND LOW LIMITS.

F. FREEZESTAT

G. HIGH FILTER DIFFERENTIAL PRESSURE.

H. REFRIGERANT LEAK DETECTION.

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NORTH SYRACUSE CENTRAL SCHOOL DISTRICT
2023 SAFETY & SECURITY IMPROVEMENTS

6150 South Bay Rd.
Cicero, NY 13039

KING + KING PROJ. NO.: **23-44-7866/ 23-44-7868**

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K: District Office	42-03-03-06-0-07-014

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