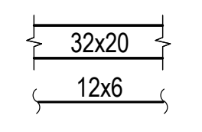
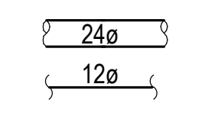
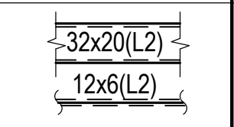
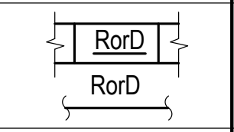
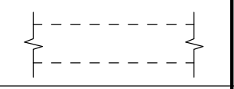
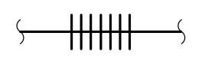
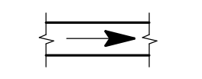
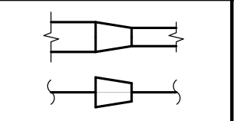
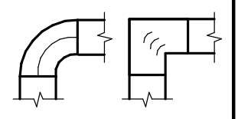
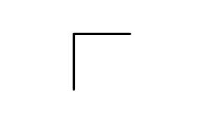
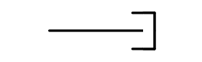
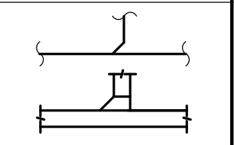
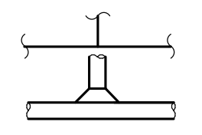
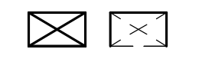
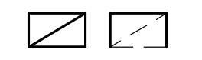
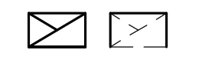
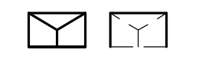
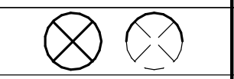
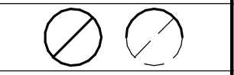
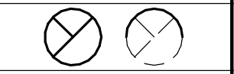
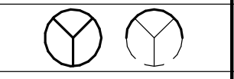
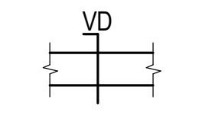
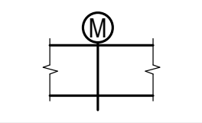
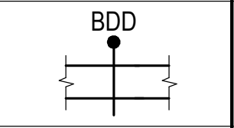
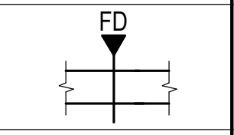
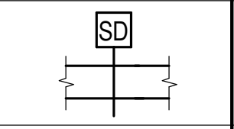
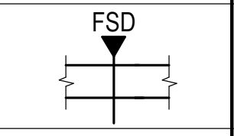
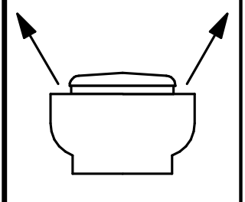
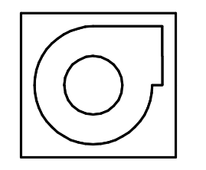
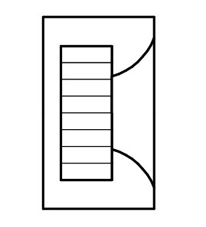
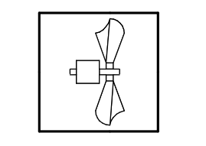
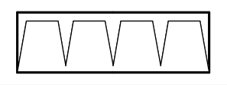
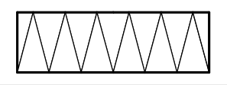
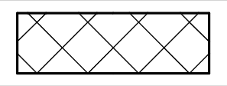
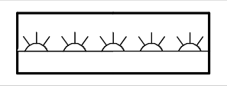
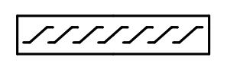
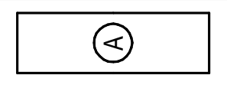
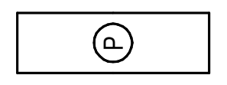
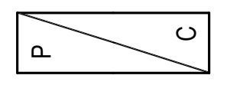
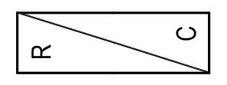
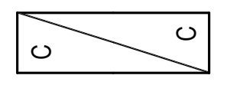
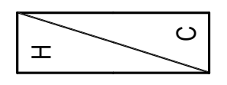
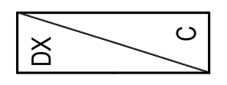
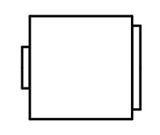
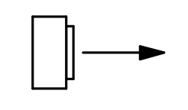
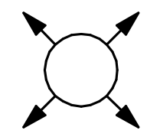
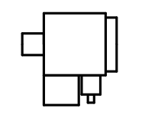
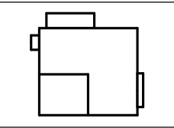
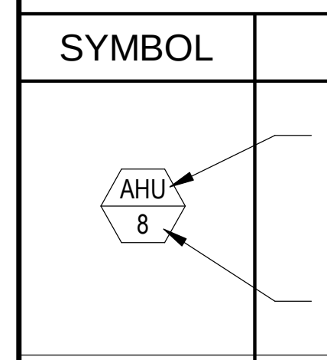
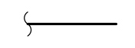
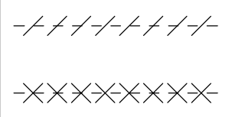
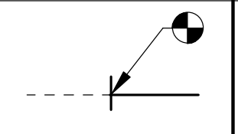
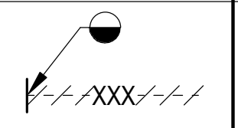
DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
	DOUBLE-LINE AND SINGLE-LINE RECTANGULAR DUCT, FIRST NUMBER INDICATES SIDE IN VIEW IN INCHES, SECOND NUMBER INDICATES SIDE IN DEPTH IN INCHES
	DOUBLE-LINE AND SINGLE-LINE ROUND DUCT, NUMBER INDICATES DIAMETER IN INCHES
	ACOUSTICAL LINED DUCTWORK, SIZES GIVEN ARE CLEAR INSIDE DIMENSIONS IN INCHES
	INCLINED RISE OR DROP IN DIRECTION OR AIR FLOW
	EXISTING DUCTWORK
	FLEXIBLE DUCT
	FLEXIBLE CONNECTION
	DIRECTION OF AIR FLOW
	TRANSITION / REDUCER
	RADIUS ELBOW WITH TURNING VANES & MITERED ELBOW WITH TURNING VANES
	VANED ELBOW OR RADIUS ELBOW (USE VANED ELBOW WHERE SPACE WILL NOT PERMIT THE USE OF LONG RADIUS ELBOW)
	DUCT - END CAP
	RECTANGULAR DUCT BRANCH
	CIRCULAR DUCT BRANCH
	RECTANGULAR SUPPLY AIR DUCT (UP AND DOWN)
	RECTANGULAR RETURN AIR DUCT (UP AND DOWN)
	RECTANGULAR EXHAUST AIR DUCT (UP AND DOWN)
	RECTANGULAR OUTSIDE AIR DUCT (UP AND DOWN)
	ROUND SUPPLY AIR DUCT (UP AND DOWN)
	ROUND RETURN AIR DUCT (UP AND DOWN)
	ROUND EXHAUST AIR DUCT (UP AND DOWN)
	ROUND OUTSIDE AIR DUCT (UP AND DOWN)
	VOLUME DAMPER
	MOTORIZED DAMPER
	BACKDRAFT DAMPER
	FIRE DAMPER
	SMOKE DAMPER
	COMBINATION FIRE/SMOKE DAMPER
	DUCT SMOKE DETECTOR

DUCTWORK SYMBOLS

SYMBOL	DESCRIPTION
	FAN - ROOF MOUNTED - MUSHROOM
	FAN - ROOF MOUNTED - UPBLAST
	FAN - CENTRIFUGAL
	FAN - CENTRIFUGAL PLUG/PLENUM
	FAN - AXIAL
	FILTER - BAG
	FILTER - PLEATED
	FILTER - CARBON
	HUMIDIFIER
	LOUVER
	AIR HANDLING UNIT ACCESS SECTION
	AIR HANDLING UNIT PLENUM SECTION
	COIL - PRE-HEAT
	COIL - RE-HEAT
	COIL - COOLING
	COIL - HEATING
	COIL - DX
	FAN COIL UNIT
	UNIT HEATER
	UNIT HEATER - CEILING - PLAN
	VAV BOX - SINGLE DUCT
	VAV BOX - FAN ASSISTED - PARALLEL
	SOUND ATTENUATOR

GENERAL SYMBOLS AND TAGS

SYMBOL	DESCRIPTION
	EQUIPMENT TYPE EQUIPMENT TAG NUMBER
	LINE BREAK
	ELECTRIC HEAT TRACING
	EXISTING TO BE REMOVED
	POINT OF NEW CONNECTION TO EXISTING WORK
	POINT OF DISCONNECTION OF WORK TO BE REMOVED (XXX - SERVICE REFERENCE. SEE ABBREVIATIONS)

ABBREVIATIONS

SYMBOL	DESCRIPTION
°F	DEGREE FARENHEIT
Ø	DIAMETER OR PHASE
AAV	AUTOMATIC AIR VENT
ABAN	ABANDON
ABV	ABOVE
AC	AIR CONDITIONING UNIT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AMB	AMBIENT
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AS	AIR SEPARATOR
ATM	ATMOSPHERE
ATMV	ATMOSPHERIC VENT
AWT	AVERAGE WATER TEMPERATURE
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BLDWN	BLOWDOWN
BLW	BELOW
BM	BEAM
BOT	BOTTOM
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
C	CONVERTER
C/C	CENTER TO CENTER
CAV	CONSTANT AIR VOLUME
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CFP	CHEMICAL FEED PUMP
CG	CEILING GRILL
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CND	CONDENSER WATER
CNDR	CONDENSER WATER RETURN
CNDS	CONDENSER WATER SUPPLY
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
COL	COLUMN
CONC	CONCRETE
COND	CONDENSATE
CONDR	CONDENSOR
CONN	CONNECTION
CONT	CONTINUATION / CONTINUOUS
CONV	CONVECTOR
COP	COEFFICIENT OF PERFORMANCE
CP	CONTROL PANEL
CPF	CHEMICAL POT FEEDER
CRP	CONDENSATE RETURN PUMP
CSR	CURRENT SENSING RELAY
CT	COOLING TOWER
CU FT	CUBIC FEET
CU IN	CUBIC INCHES
DB	DRY BULB
DC	DRY AIR COOLER
DDC	DIRECT DIGITAL CONTROL
DEGF	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DET	DETAIL
DG	DOOR GRILLE
DH	DOMESTIC WATER HEATER
DHW	DOMESTIC HOT WATER
DIA	DIAMETER
DIM	DIMENSION
DLV	DOOR LOUVER
DMPR	DAMPER
DP	DEWPOINT
DPS	DIFFERENTIAL PRESSURE SENSOR
DR	DRAIN
DS	DISCONNECT SWITCH
DT	DRAW THROUGH
DW	DOMESTIC WATER
DWG	DRAWING
(E)	EXISTING
EA	EXHAUST AIR
EA	EACH
EAD	EXHAUST AIR DAMPER
EAT	ENTERING AIR TEMPERATURE
ED	EXHAUST DIFFUSER

ABBREVIATIONS

SYMBOL	DESCRIPTION
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	EXHAUST GRILLE
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ENT	ENTERING
EQ	EQUAL
ER	EXHAUST REGISTER
ES	ELECTRIC SUPPLY
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWBT	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EXP	EXPANSION
EXT	EXTERIOR
F	FAN
F/O	FLAT OVAL
FA	FROM ABOVE
FAI	FRESH AIR INTAKE
FB	FROM BELOW
FCU	FAN COIL UNIT
FCV	FLOW CONTROL VALVE
FD	FIRE DAMPER
FDR	FLOOR DRAIN
FF	FINAL FILTER
FLA	FULL LOAD AMP
FMD	FLOW MEASURING DEVICE
FPM	FEET PER MINUTE
FPT	FAN POWERED TERMINAL
FSD	COMBINATION FIRE/SMOKE DAMPER
FSS	FLOW SENSING SWITCH
FT	FEET
FTR	FINNED TUBE RADIATION
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GND	GROUND
GPM	GALLON PER MINUTE
GRL	GRILLE
GSNK	GOOSENECK
H	HUMIDITY
HC	HEATING COIL
HFD	HORIZONTAL FIRE DAMPER
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HTG	HEATING
HTP	HEAT TRANSFER PACKAGE
HX	HEAT EXCHANGER
HZ	HERTZ
IN	INCHES
KW	KILOWATT
KX	KITCHEN EXHAUST
(L1)	1 ACOUSTICAL DUCT LINING
(L2)	2 ACOUSTICAL DUCT LINING
L	LINED DUCTWORK
LAT	LEAVING AIR TEMPERATURE
LB	POUND
LD	LINEAR DIFFUSER
LDB	LEAVING DRY BULB TEMPERATURE
LL	LOW LEVEL
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LWBT	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTUH
MBTU	THOUSAND BTU
MCA	MINIMUM CIRCUIT AMPACITY
MCC	MOTORIZED CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MEZZ	MEZZANINE
MFSD	MODULATING FIRE SMOKE DAMPER
MIN	MINIMUM
MISC	MISCELLANEOUS
MPC	MED PRESSURE CONDENSATE
MPS	MED PRESSURE STEAM
MV	MANUAL VENT
(N)	NEW
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NFA	NET FREE AREA
NIC	NOT IN CONTRACT
NO	NUMBER
NOPN	NORMALLY OPEN
NTS	NOT TO SCALE

ABBREVIATIONS

SYMBOL	DESCRIPTION
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OPWT	OPERATING WEIGHT
P	PUMP
PA	PIPE ANCHOR
PCF	POUNDS PER CUBIC FOOT
PD	PRESSURE DROP
PEN	PENETRATION
PERF	PERFORATED
PF	PRE-FILTER
PG	PRESSURE GAUGE
PH	PHASE
PL	PLATE
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH (ABS)
PSIG	POUNDS PER SQUARE INCH (GAUGE)
RA	RETURN AIR
RAD	RETURN AIR DAMPER
RC	REHEAT COIL
RCHWR	RADIANT CHILLED WATER RETURN
RCHWS	RADIANT CHILLED WATER SUPPLY
RD	RETURN DIFFUSER
RDR	ROOF DRAIN
REFG	REFRIGERATION SYSTEM
REFGR	REFRIGERATION RETURN
REFGS	REFRIGERATION SUPPLY
RG	RETURN GRILL
RH	RELATIVE HUMIDITY
RHG	REFRIGERANT HOT GAS
RHHWR	RADIANT HEATING HOT WATER RETURN
RHHWS	RADIANT HEATING HOT WATER SUPPLY
RL	REFRIGERANT LIQUID LINE
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
RS	REFRIGERANT SUCTION LINE
S	SLAB
SA	SUPPLY AIR
SAD	SEE ARCHITECTURAL DRAWINGS
SCHW	SECONDARY CHILLED WATER
SCHWR	SECONDARY CHILLED WATER RETURN
SCHWS	SECONDARY CHILLED WATER SUPPLY
SD	SMOKE DAMPER
SD	SUPPLY DIFFUSER
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SP	STATIC PRESSURE
SPD	SEE PLUMBING DRAWINGS
SQ FT	SQUARE FEET
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
SST	STAINLESS STEEL
ST	SOUND TRAP (ATTENUATOR)
ST	SURFACE TEMPERATURE
STL	STEEL
STM	STEAM
STRUCT	STRUCTURAL
T	TEMPERATURE
TA	TRANSFER AIR
TA	TO LEVEL ABOVE
TB	TO LEVEL BELOW
TG	TRANSFER GRILLE
THK	THICK
TNL	TUNNEL
TYP	TYPICAL
UFD	UNDERFLOOR DUCT
UGND	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
VAV	VARIABLE AIR VOLUME
VB	VACUUM BREAKER
VC	VENT COIL
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE/CONTROLLER
VIF	VERIFY IN FIELD
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WF	WATER FILTER
WFR	WATER FILTER RETURN
WFS	WATER FILTER SUPPLY
WG	WATER GAUGE OR WALL GRILLE
WMS	WIRE MESH SCREEN
WS	WATER SOFTENER
WT	WEIGHT
WW	WELL WATER

MECHANICAL DRAWING LIST PACKAGE 3

DRG NO.	DRAWING TITLE	SCALE
WT-3-M.0.00	MECHANICAL - SYMBOLS, ABBREVIATIONS, AND DRAWING LIST	NTS
WT-3-M.0.01	MECHANICAL - GENERAL NOTES	NTS
WT-3-M.1.00	MECHANICAL - OVERALL PLAN - BASEMENT	3/32" = 1'-0"
WT-3-M.4.00.1	MECHANICAL - SINGLE LINE DIAGRAM - SHEET 1	NTS
WT-3-M.4.00.2	MECHANICAL - SINGLE LINE DIAGRAM - SHEET 2	NTS
WT-3-M.5.00.1	MECHANICAL - BASEMENT - SCHEDULES - SHEET 1	NTS
WT-3-M.7.00.1	MECHANICAL - BASEMENT - PARTIAL PLANS NEW	1/4" = 1'-0"
WT-3-M.8.01	MECHANICAL - DETAILS - SHEET 1	NTS
WT-3-M.8.02	MECHANICAL - DETAILS - SHEET 2	NTS
WT-3-M.8.03	MECHANICAL - DETAILS - SHEET 3	NTS
WT-3-M.8.04	MECHANICAL - DETAILS - SHEET 4	NTS

Issue for Bid
01/26/18

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Interim Review
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Written dimensions on these drawings shall have precedence over scale dimensions. Contractors shall be responsible for all dimensions and conditions on the job. HarrisonKornberg Architects, LLC must be notified of any variation from the dimension and conditions shown by these drawings.

Revisions

No.	Date	Description

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Key Plan

PACKAGE 3

MECHANICAL - SYMBOLS, ABBREVIATIONS, AND DRAWING LIST

WT-3-M.0.00

Scale: NTS

Project Name: HFR Date: 12/27/2017

GENERAL NOTES

1. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. PROVIDE ALL FITTINGS, TRANSITIONS, DAMPERS, VALVES, AND OTHER DEVICES REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
2. THIS CONTRACTOR SHALL INSTALL DUCT MOUNTED SMOKE DETECTORS FURNISHED BY THE ELECTRICAL CONTRACTOR.
3. CONTRACTOR SHALL COORDINATE INSTALLATION OF EQUIPMENT WITH ALL SERVICES AND TRADES.
4. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE BUILDING CODE REQUIREMENTS AND PROVIDE ALL REQUIRED CONTROLLED INSPECTIONS FOR HIS WORK.
5. PROVIDE REDUCER FITTINGS FOR CHANGE IN PIPE SIZE AND FOR FINAL CONNECTION AT EQUIPMENT AND AS REQUIRED TO PERMIT DRAINAGE AND VENTING.
6. CONNECTION OF NEW WORK SHALL BE COORDINATED WITH THE BUILDING ENGINEER SO AS TO NOT DISRUPT BUILDING OPERATIONS AND SERVICES - INCLUDING COORDINATING WITH ALL TRADES DURING CONSTRUCTION. IF TEMPORARY SHUTDOWNS ARE REQUIRED THEY SHALL BE COORDINATED WITH BUILDING ENGINEER AND SCHEDULED AS REQUIRED. ALL SHUTDOWNS MUST BE ACCOMPLISHED COORDINATED WITH THE BUILDING OPERATIONS AND CONSTRUCTION SCHEDULES. ALL REQUIRED OVERTIME LABOR SHALL BE INCLUDED IN THE BASE BID.
7. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE ALL WORK WITH ALL NEW AND EXISTING WORK OF ALL OTHER TRADES. THE SHOP DRAWINGS PREPARED BY THIS CONTRACTOR SHALL INDICATE SPACE ALLOWANCES FOR ALL WORK OF ALL OTHER TRADES AND SHALL BE SIGNED OFF BY ALL OTHER CONTRACTORS.
8. CONTRACTOR SHALL VERIFY ON-SITE ALL CONDITIONS AND MEASUREMENTS SHOWN ON CONTRACT.
9. ALL SUPPORTS FOR MECHANICAL EQUIPMENT ARE BASED ON PRELIMINARY INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING SIZES FROM CERTIFIED DRAWINGS OF EQUIPMENT BEING SUBMITTED AND SHALL MAKE ANY STRUCTURAL MODIFICATIONS REQUIRED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
10. PRIOR TO ISSUING BID PRICE COORDINATE WITH BUILDING ENGINEER TO DETERMINE EXTENT OF WORK WHICH IS REQUIRED TO BE PERFORMED AFTER NORMAL OPERATING HOURS OR DURING THE WEEKENDS AND INCLUDE FOR SUCH WORK IN BID PRICE.
11. CONTRACTOR SHALL IDENTIFY ANY WORK WHICH MAY BE REQUIRED TO BE PERFORMED ON OVERTIME IN ORDER NOT TO DISTURB OCCUPIED SPACES WHICH ARE NOT IN CONTRACT AND/OR ANY WORK WHICH MAY BE REQUIRED TO BE PERFORMED ON OVERTIME IN ORDER TO MEET THE PROJECT CONSTRUCTION SCHEDULE.
12. THE CONTRACTOR SHALL BEAR ALL COSTS FOR UTILITY SHUTDOWNS.

DEMOLITION NOTES

1. DEMOLITION PLANS ARE NOT PROVIDED. DEMOLITION WORK MAY BE NECESSARY IN AREAS WHERE NO DEMOLITION WORK IS INDICATED. ITEMS TO REMAIN AND POINTS OF DISCONNECTIONS/CONNECTIONS ARE SHOWN ON NEW PLANS.
2. CONTRACTOR SHALL REMOVE ANY EXISTING PIPING IN CONFLICT WITH THE ERECTION OF NEW WALLS AND RELOCATE TO MAINTAIN SERVICE.
3. EACH BIDDER PRIOR TO BID SHALL VISIT THE SITE TO EXAMINE EXISTING CONDITIONS AND BECOME INFORMED OF THE EXTENT AND CHARACTER OF WORK REQUIRED. NO ADDITIONAL COMPENSATION WILL BE APPROVED DUE TO FIELD CONDITIONS.
4. CONTRACTOR SHALL MAINTAIN FULL SERVICE TO EXISTING AREAS THAT ARE TO REMAIN. CONTRACTOR SHALL VISIT THE PREMISES TO ASCERTAIN EXISTING CONDITIONS AND AREAS TO REMAIN IN SERVICE.
5. DEMOLITION WORK, NEW WORK AND CONNECTIONS TO EXISTING SHALL BE PROVIDED WITH MINIMUM INTERFERING WITH THE OPERATION OF THE FACILITY. DEMOLITION WORK, NEW WORK, AND CONNECTIONS SHALL BE COORDINATED WITH ALL TRADES AND CONSTRUCTION OPERATIONS. SERVICE SHUTDOWNS, INTERFERENCE WITH THE ACTIVE AREAS, OR INTERFERENCE WITH ANY TRADE SHALL NOT BE PERMITTED WITHOUT PERMISSION OF THE OWNER. NOTIFICATION OF THE OWNER IN ADVANCE IN WRITING IS REQUIRED PRIOR TO ANY SHUTDOWN. MAKE TEMPORARY CONNECTIONS IF NECESSARY TO ENSURE CONTINUOUS FACILITY OPERATION AND CONSTRUCTION.
6. IN THE PROCESS OF DEMOLITION, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO PREVENT DAMAGE TO ARCHITECTURAL SURFACES AND MATERIALS.
7. VERIFY MEASUREMENTS AND SERVICE ARRANGEMENTS AS SHOWN ON THE DRAWINGS. INFORM OWNER'S REPRESENTATIVE OF DISCREPANCIES IN FORM OF WRITTEN DESCRIPTION AND SKETCHES.
8. VERIFY THAT SERVICES DESIGNATED FOR ABANDONMENT SERVES ONLY EQUIPMENT OR FACILITIES TO BE ABANDONED.
9. DRAWINGS, NOTES, AND DETAILS ARE BASED ON FIELD OBSERVATION AND AVAILABLE RECORD DOCUMENTS. REPORT DISCREPANCIES TO THE OWNER'S REPRESENTATIVE BEFORE DISTURBING EXISTING INSTALLATION.
10. COORDINATE ALL DEMOLITION WITH THE WORK OF OTHER DIVISIONS TO ENSURE ALL ELECTRICITY, WATER, DRAINAGE, ETC. SERVING THE EQUIPMENT SCHEDULED FOR DEMOLITION ARE SHUT-OFF AND SAFELY ISOLATED BEFORE BEGINNING DEMOLITION.
11. THE CONTRACTOR SHALL IDENTIFY ALL DEMOLITION OR RE-ROUTING OF EXISTING SERVICES NECESSARY TO ALLOW PHASING OF THIS WORK AND INFORM THE OWNER'S REPRESENTATIVES AS EARLY AS POSSIBLE.
12. FOR THE CONTINUED OPERATION AND CONTINUED RENOVATION OR CONSTRUCTION OF OTHER PARTS OF THE BUILDING NOT INCLUDED UNDER THIS CONTRACT THE CONTRACTOR SHALL ENSURE THAT ANY SYSTEM SHUTDOWN IN ANY PART OF THE BUILDING DOES NOT PREVENT THE CONTINUED OPERATION AND CONTINUED RENOVATION/CONSTRUCTION OF OTHER PARTS OF THE BUILDING UNLESS AGREED BY THE OWNER. WHERE NOT AGREED BY THE OWNER, THE CONTRACTOR SHALL PROVIDE, AT NO INCREASE IN THE CONTRACT SUM, ALTERNATIVES TO THE SERVICES REQUIRED TO BE INTERRUPTED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY AS EARLY AS POSSIBLE ALL SERVICES THAT MAY NEED TO BE INTERRUPTED AND TO AGREE THEIR INTERRUPTION, A SCHEDULE FOR INTERRUPTION AND PROVISION OF ALTERNATIVES WITH THE OWNER'S REPRESENTATIVE AND THE OWNER.
13. WHERE ITEMS ARE TO BE REMOVED FROM THE BUILDING THE CONTRACTOR SHALL RENDER THESE ITEMS SUITABLE FOR REMOVAL AND DISPOSE OF THEM IN AN ENVIRONMENTALLY FRIENDLY MANNER. REFER TO PROJECT SPECIFICATIONS.
14. DISCONNECT AND REMOVE ABANDONED MECHANICAL SERVICES. REMOVE BRACKETS, HANGERS, AND OTHER ACCESSORIES.
15. DISCONNECT AND STORE EXISTING EQUIPMENT INTENDED FOR RE-USE TO BE RELOCATED. REPLACE EQUIPMENT IF DAMAGED, NON-FUNCTIONAL OR DOES NOT MEET SPECIFIED CAPACITY.
16. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.
17. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS, WHICH REMAIN ACTIVE. MODIFY INSTALLATION AND PROVIDE ACCESS PANELS AS APPROPRIATE.
18. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISTING MECHANICAL INSTALLATIONS OR AS SPECIFIED.
19. THE HVAC CONTRACTOR SHALL COORDINATE REPAIRING, RESTORING AND FINISHING OF ALL CUT OPENINGS, CLOSING UP OF EXISTING OPENINGS AND REMOVING AND RESTORING THE AFFECTED SECTIONS OF THE SUSPENDED CEILINGS AND WALLS THAT ARE IMPACTED BY HVAC WORK.
20. UPON COMPLETION, REMOVE ALL TEMPORARY PIPING AND EQUIPMENT, SHORING, SCAFFOLDS, ETC., AND LEAVE ALL AREAS CLEAN AND FREE FROM MATERIAL AND DEBRIS RESULTING FROM WORK PERFORMED UNDER THIS SECTION. PROVIDE ROUGH PATCHING IN AREAS SHOWN.
21. CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT, WHICH REMAIN OR ARE TO BE USED.
22. REMOVE ALL ABANDONED AND UNSERVICEABLE EQUIPMENT INCLUDING ALL ASSOCIATED DUCTWORK, PIPING, AND ELECTRICAL DEVICES.

Issue for Bid
01/09/18

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Interim Review

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Revisions

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Key Plan

PACKAGE 3
MECHANICAL - GENERAL NOTES

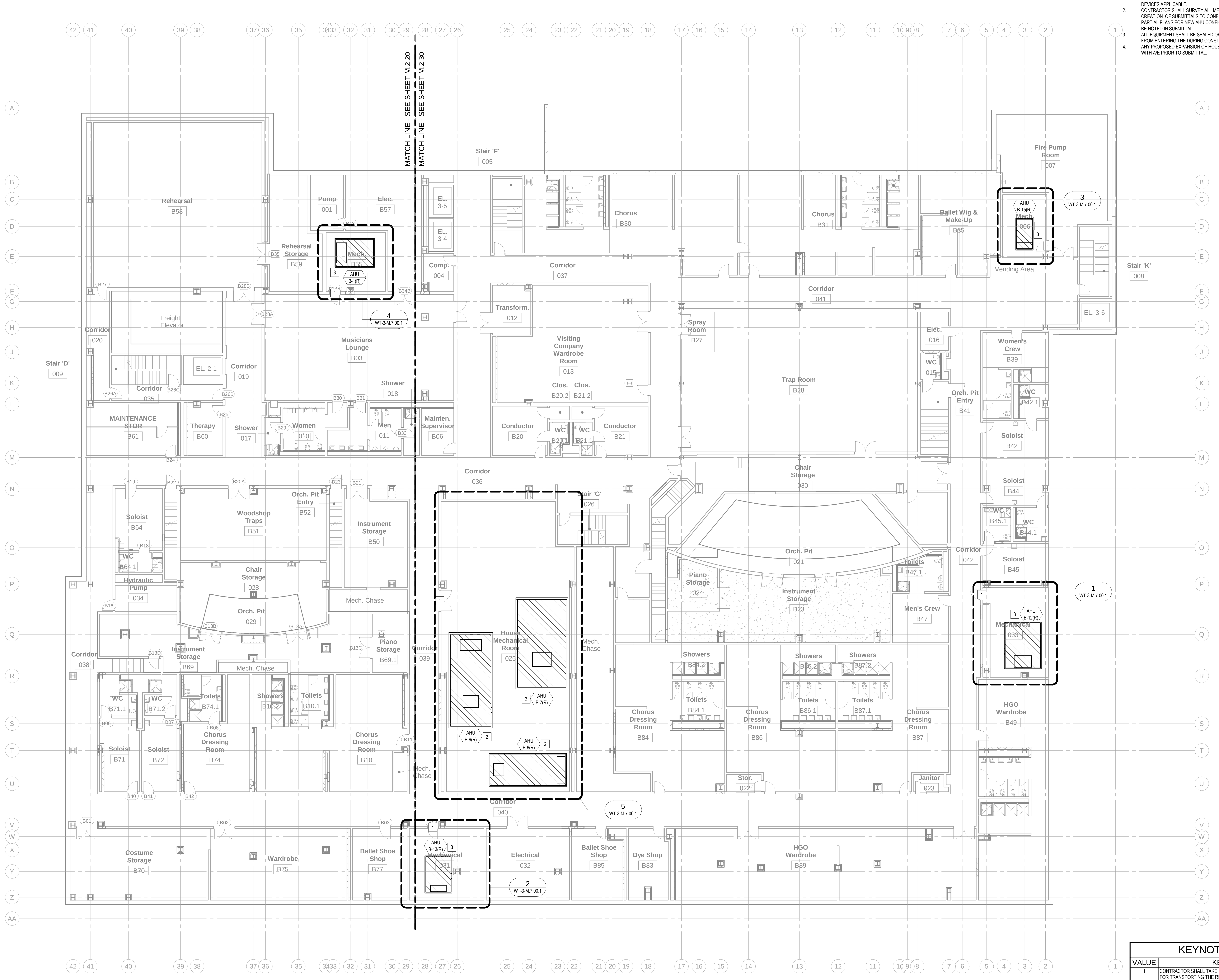
WT-3-M.0.01

Scale: NTS

Project Name: HFR Date: 12/27/2017

MECHANICAL GENERAL NOTES

1. CONTRACTOR TO PERFORM TESTING AND BALANCING TO MEET DESIGN CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND VERIFYING ALL AIR AND WATER FLOWS AT MAIN EQUIPMENT AND TERMINAL DEVICES APPLICABLE.
2. CONTRACTOR SHALL SURVEY ALL MECHANICAL EQUIPMENT PRIOR TO CREATION OF SUBMITTALS TO CONFIRM AHU CONFIGURATION. REFER TO PARTIAL PLANS FOR NEW AHU CONFIGURATIONS. PROPOSED CHANGES SHALL BE NOTED IN SUBMITTAL.
3. ALL EQUIPMENT SHALL BE SEALED OFF AS TO PREVENT ANY CONTAMINATES FROM ENTERING THE DURING CONSTRUCTION.
4. ANY PROPOSED EXPANSION OF HOUSEKEEPING PADS SHALL BE COORDINATED WITH A/E PRIOR TO SUBMITTAL.



1 Overall Plan - Basement
3/32" = 1'-0"

KEYNOTE LEGEND

VALUE	KEYNOTE TEXT
1	CONTRACTOR SHALL TAKE INTO ACCOUNT THE REQUIRED CLEARANCES FOR TRANSPORTING THE REBUILT EQUIPMENT INTO THE MECHANICAL ROOM. REFER TO AHU SCHEDULE FOR DOOR WIDTHS OF MECHANICAL ROOMS.
2	EXISTING UNIT BASE TO REMAIN. CONTRACTOR SHALL CLEAN AND RESURFACE FOR RE-USE.
3	REPLACE EXISTING INERTIA BASE ISOLATORS.

Issue for Bid
01/19/18

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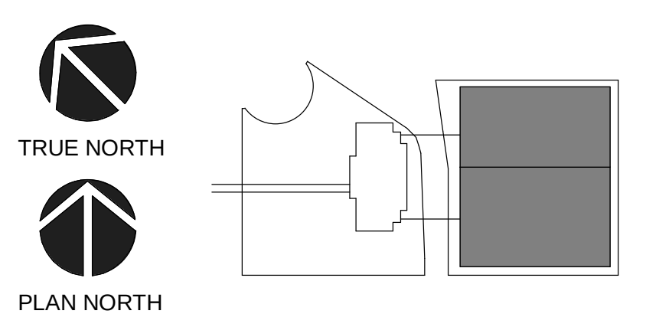
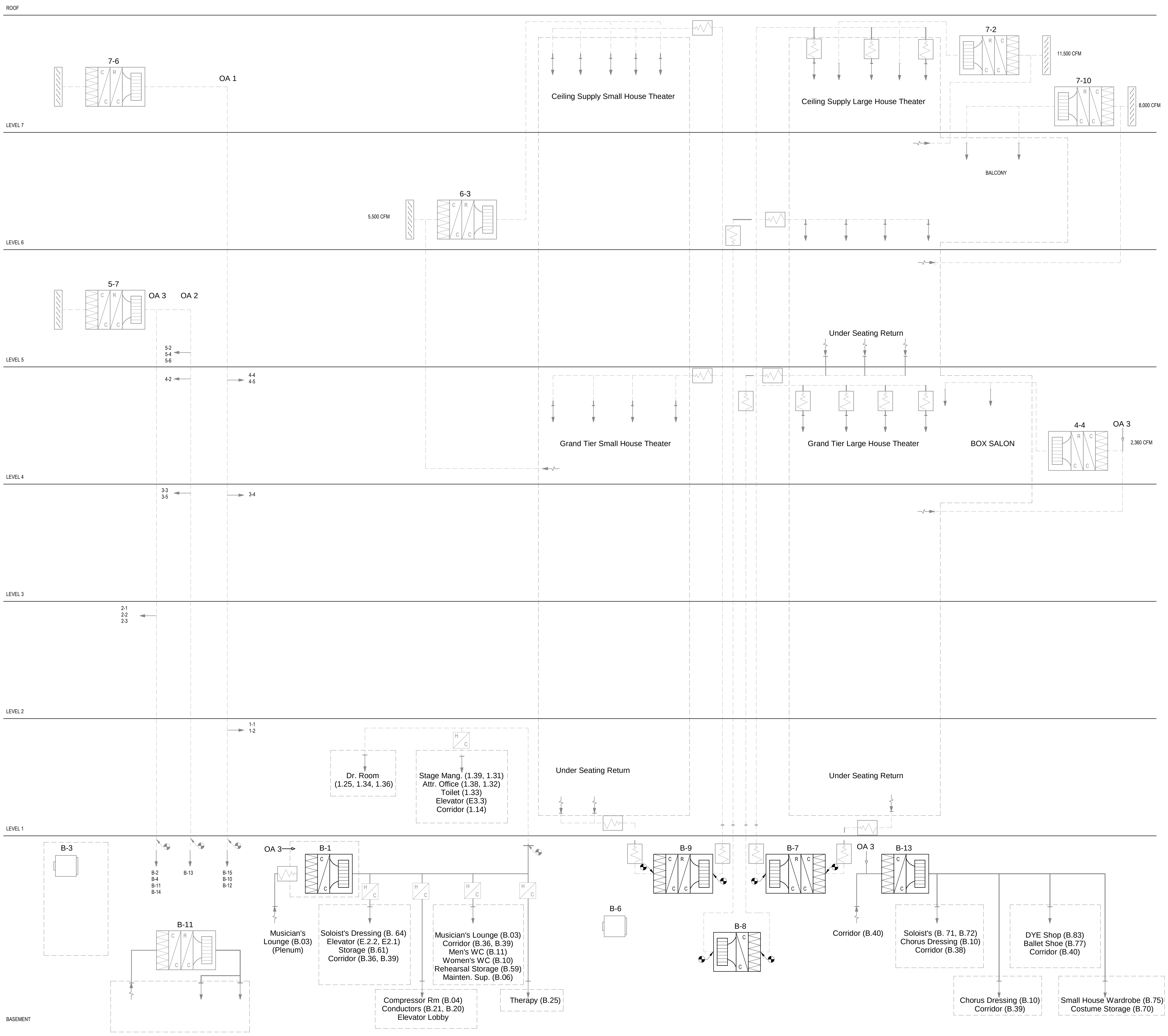
Key Plan



PACKAGE 3
MECHANICAL - OVERALL PLAN - BASEMENT

WT-3-M.1.00
Scale: 3/32" = 1'-0"

Project Name: HFR Date: 12/27/2017



1 AIRSIDE SINGLE LINES - RIGHT SIDE

NTS

MECHANICAL GENERAL NOTES

1. ALL EQUIPMENT ABOVE LEVEL B IS TO REMAIN.
2. AIR HANDLING UNITS SHOWN IN BOLD TO BE REBUILTISHED.
3. ALL EQUIPMENT SHOWN IN LIGHT IS OUTSIDE THE SCOPE OF THESE DRAWINGS.
4. SINGLE LINE FOR REFERENCE ONLY.

Issue for Bid
01/10/18

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Key Plan

PACKAGE 3

MECHANICAL - SINGLE LINE DIAGRAM - SHEET 1

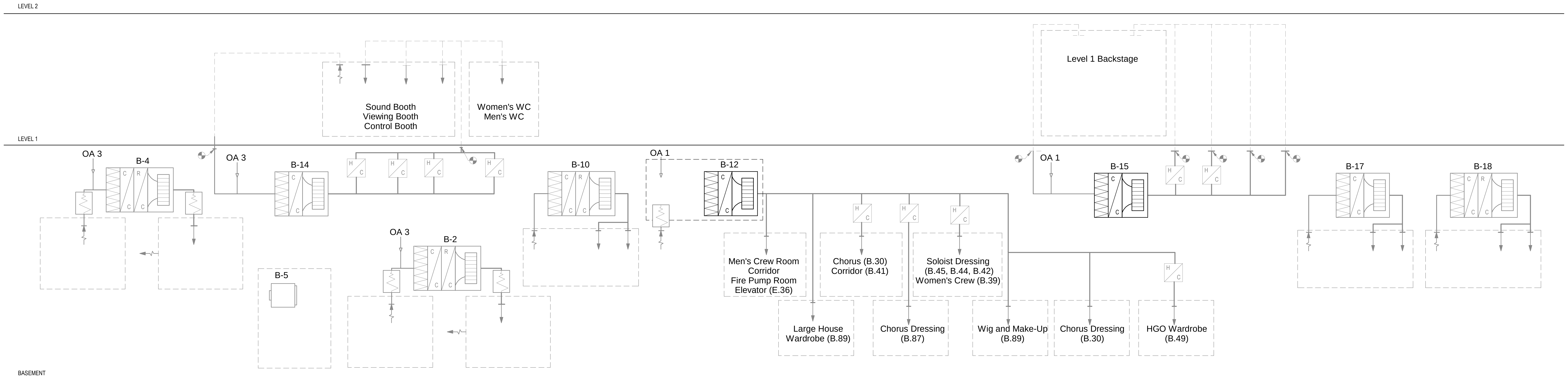
WT-3-M.4.00.1

Scale: NTS

Project Name: HFR Date: 12/27/2017

MECHANICAL GENERAL NOTES

1. ALL EQUIPMENT ABOVE LEVEL B IS TO REMAIN.
2. AIR HANDLING UNITS SHOWN IN BOLD TO BE REBUILTISHED.
3. ALL EQUIPMENT SHOWN IN LIGHT IS OUTSIDE THE SCOPE OF THESE DRAWINGS.
4. SINGLE LINE FOR REFERENCE ONLY.



1 AIRSIDE SINGLE LINES - LEFT SIDE

12" = 1'-0"

Issue for Bid
01/10/18

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Key Plan

PACKAGE 3

MECHANICAL - SINGLE LINE DIAGRAM - SHEET 2

WT-3-M.4.00.2

Scale: NTS

Project Name: HFR Date: 12/27/2017

REBUILT AIR HANDLING UNIT SCHEDULE

ITEM		LOCATION	AREA SERVED	SUPPLY FAN									COOLING COIL											REHEAT COIL			INTERNAL VIBRATION ISOLATION FOR ALL FANS		MAXIMUM UNIT DIMENSIONS			OPERATING WEIGHT [LBS]	ROOM ENTRY CLEARANCE	REFURB. NOTES
TYPE	NO.			SUPPLY AIRFLOW [CFM]	DESIGN OUTSIDE AIRFLOW [CFM]	EXT S.P. [IN W.C.]	MOTOR DATA				TYPE	SPEED CONTROL	MIN COIL ROWS	MIN COIL FPI	AIR					CHILLED WATER				COIL PERFORMANCE CAP [MBH]	HOT WATER		TYPE	MIN. STATIC DEFL. [IN]	WIDTH (IN)	LENGTH (IN)	HEIGHT (IN)			
							HP	VOLT	PH	HZ					COMBINED COIL PERFORMANCE		MAX VEL [FPM]	ENT	LVG	CHW FLOW [GPM]	ENT TEMP [°F]	LVG TEMP [°F]	DELTA P [FT. HD.]		HHW FLOW [GPM]	ENT TEMP [°F]								
															TOTAL CAP [MBH]	SENS CAP [MBH]		DB [°F]	DB [°F]															
AHU	B-1(R)	B.37	Segment 2- Right	10,000	2,890	1.8	15	460	3	60	VAV	VFD	6	10	387	304	500	82	52	56	42	56	10	0	0	0	SPRING	0' - 2"	9' - 0"	12' - 8"	10' - 1"	4,018	3' - 10"	ALL
AHU	B-7(R)	B.08	Large House Theater- Underfloor	36,800	0	1	48	460	3	60	SINGLE ZONE	VFD	8	10	1,277	994	400	78	53	182	42	56	10	517	26	175	SPRING	0' - 2"	16' - 4"	28' - 8"	12' - 4"	16,000	5' - 6"	ALL
AHU	B-8(R)	B.08	Grand Tier Large Theater	10,000	0	1.8	20	460	3	60	SINGLE ZONE	VFD	8	10	374	259	400	78	53	54	42	56	10	0	0	0	SPRING	0' - 2"	9' - 1"	22' - 0"	12' - 4"	7,500	5' - 6"	ALL
AHU	B-9(R)	B.08	Small House Theater- Underfloor	20,000	0	1.5	40	460	3	60	SINGLE ZONE	VFD	8	10	694	590	400	78	53	99	42	56	10	281	14	175	SPRING	0' - 2"	11' - 8"	29' - 1"	12' - 4"	15,000	5' - 6"	ALL
AHU	B-12(R)	B.30	Section 3	21,860	5,000	1.6	32	460	3	60	VAV	VFD	8	10	738.2	582.9	500	78	52	105	42	56	10	0	0	0	SPRING	0' - 2"	15' - 6"	11' - 8"	10' - 1"	8,500	2' - 10"	ALL
AHU	B-13(R)	B.04	Segment 2 - Left	8,200	880	1.7	10	460	3	60	VAV	VFD	6	10	284.8	224.6	500	78	52	41	42	56	10	0	0	0	SPRING	0' - 2"	9' - 3"	11' - 0"	10' - 9"	3,900	2' - 10"	ALL
AHU	B-15(R)	B.06	Level 1- Backstage	3,900	490	1.1	5	460	3	60	VAV	VFD	6	10	99	88	450	79	52	14	42	56	10	0	0	0	SPRING	0' - 2"	6' - 6"	9' - 4"	12' - 4"	2,600	2' - 10"	ALL

REBUILT AIR HANDLING UNIT SOUND SCHEDULE

ITEM		LOCATION	AREA SERVED	MAXIMUM SOUND AT INLET								MAXIMUM SOUND AT DISCHARGE							
TYPE	NO.			63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 kHz
AHU	B-1(R)	B.37	Segment 2- Right	77	80	91	84	79	79	78	68	67	78	76	76	72	71	68	59
AHU	B-7(R)	B.08	Large House Theater- Underfloor	80	91	87	89	87	86	83	80	89	83	90	83	82	77	72	62
AHU	B-8(R)	B.08	Grand Tier Large Theater	67	60	67	80	78	77	75	72	84	77	84	76	74	70	65	55
AHU	B-9(R)	B.08	Small House Theater- Underfloor	71	69	76	87	86	85	81	77	90	84	90	84	83	78	72	61
AHU	B-12(R)	B.30	Section 3	82	85	90	85	83	87	81	72	80	81	84	78	76	74	68	59
AHU	B-13(R)	B.04	Segment 2 - Left	75	93	81	80	86	80	77	111	72	68	78	77	77	72	68	101
AHU	B-15(R)	B.06	Level 1- Backstage	79	78	86	78	72	75	71	64	79	78	71	63	61	59	54	47

GENERAL KEY NOTES

1. PERFORM INTERIOR MICROBIAL AND BACTERIAL TESTING TO ENSURE THE UNITS ARE CLEAN AND READY FOR INTERIOR FINISHES.
2. COAT THE INTERIOR OF THE UNITS (EXCEPT HEAT TRANSFER COILS) WITH AN ANTI-MICROBIAL AND A SEPARATE ANTI-BACTERIAL (PRODUCTS MUST COMPLY WITH NATIONAL AIR DUCT CLEANING ASSOCIATION (NADCA).
3. ALL UNITS SHALL BE QUIET UNITS. REFER TO SPECIFICATIONS FOR SOUND CRITERIA AND CONSTRUCTION MINIMUMS.
4. ALL CONTROLS, WIRING, RELAYS, AND MISCELLANEOUS DEVICES SHALL BE PROVIDED BY DIVISION 23.
5. PROVIDE STAINLESS STEEL CASING AND RACKS ON CHW COILS.
6. ALL COOLING COIL SECTIONS, PANELS, AND COIL RACKS SHALL BE STAINLESS STEEL (304SS).
7. COOLING COIL 42” MAX HEIGHT PER SECTION.
8. INLET/ OUTLET DUCT SHALL HAVE FLEXIBLE ISOLATION JOINT.
9. CAULK JOINTS ALONG PERIMETER CONCRETE CURB. JOINTS SHALL BE WATER-TIGHT AT MATING SURFACE ADJACENT TO COIL AND FILTER SECTION.
10. RE-SEAL ALL CRACKS AND JOINTS BETWEEN PANELS AND AROUND COILS AS WELL AS EXTERIOR PENETRATIONS OF THE UNIT.
11. STAINLESS STEEL SPACERS PROVIDED FOR AIR FLOW BLANK OFFS AT SIDES AND TOP OF COIL AND FILTER SECTION.
12. STAINLESS STEEL DRAIN PAN PROVIDED AT EACH COIL SECTION TO EXTEND 4” BEYOND COIL ON INLET SIDE AND 10" ON OUTLET SIDE.
13. DRAIN HEADER (2” MIN.) EXTEND OUTSIDE OF UNIT HOUSING. PROVIDE TRAP OUTSIDE OF UNIT AND RUN TO FLOOR DRAIN.
14. ALL DRAIN PANS SHALL BE STAINLESS STEEL AND SHALL BE INSULATED BELOW PER ASHRAE 62 REQUIREMENTS, WHERE A UNIT DRAIN PAN IS CORRODED. CONTRACTOR SHALL CLEAN AND RECOAT ALL EXISTING EXPOSED CONCRETE DRAIN PANS.
15. ALL NEW DRAIN PANS, FABRICATED FROM STAINLESS STEEL OR CONCRETE, SHALL PITCH AS A MINIMUM IN TWO DIRECTIONS.
16. RECOAT FLOOR WITH A WATERPROOFING MATERIAL. IF FLOOR HAS UNREPAIRABLE CORROSION, REPLACE WITH FLOORING WITH 12 GAUGE GALVANIZED STEEL.
17. SPOT PREPARE/REPAIR AS REQUIRED AND RECOAT ANY CORRODED AREAS OF THE INTERIOR OF THE UNIT WITH A CORROSION INHIBITING MATERIAL.
18. REPLACE ALL GASKETS AROUND ACCESS DOORS. DOOR SHALL BE DOUBLE GASKETED. CONFIRM OPERATION OF DOOR HINGES AND REPLACE AS REQUIRED.
19. FINISH PAINT COMPATIBLE WITH THE ADHESIVE AND PINS TO BE USED FOR THE RE-INSTALLATION OF THE INTERIOR SOUND DEADENING LINING.
20. RE-INSULATE THE INTERIOR OF THE UNITS WITH A CLOSED CELL FOAM INSULATING AND SOUND DEADENING MATERIAL APPROVED FOR INSTALLATION IN THE AIRSTREAM (NFPA 25/50 FLAME SPREAD/SMOKE DEVELOPMENT RATED MATERIAL).
21. CONTRACTOR MUST WARRANTY UNIT FOR ANY SURFACE CONDENSATION ON UNIT EXTERIOR.
22. REPLACE ALL FANS WITH FAN WALL SYSTEMS WHERE ALLOWABLE AND MODIFY UNIT OPENINGS, AND DOWNSTREAM DUCTWORK TO MEET UNIT PERFORMANCE AND OPERATION REQUIREMENTS.
23. REPLACEMENT MOTORS SHALL BE HIGH-EFFICIENCY SUPER MOTORS AS PER SPECIFICATION 237313.
24. PROVIDE NEW VFD’S FOR FAN ASSEMBLY PER SPECIFICATION 237313.
25. ALL BEARINGS SHALL BE MIN L-10-20000 HOURS. BEARING TYPES SHALL BE PER SPECIFICATION 237313.
26. PROVIDE PERFORATED INTERIOR LINER DOWNSTREAM OF FAN SECTION AND AT UNIT INTAKE SECTION WHERE APPLICABLE.
27. FOR UNITS WITHOUT EXTERNAL INERTIA PADS, PROVIDE INTERNAL FAN VIBRATION ISOLATION SPRINGS.
28. CONTRACTOR SHALL TEST AND WARRANTY UNIT PERFORMANCE FOR AIR FLOW, PRESSURE AND SOUND. ALL TESTS SHALL BE COORDINATED WITH OTHER DISCIPLINES AND SHALL BE PERFORMED ON SITE FOR UNITS SERVING THEATER AND ORCHESTRA AREAS.
29. ALL SOUND POWER LEVELS FOR DISCHARGE, INLET AND CABINET SOUND PATHS SHALL BE IN ACCORDANCE WITH AMCA 300 (OR ASHRAE 68) AND AMCA 301. CONTRACTOR TO PROVIDE WRITTEN SUMMARY FOR ALL UNIT TESTING PERFORMED.
30. CONFIRM REQUIRED CLEARANCES BEFORE ORDERING EQUIPMENT. COORDINATE WITH CONTRACTOR IF WALL REMOVAL IS REQUIRED FOR UNIT INSTALLATION
31. FOR VAV UNITS NOTED IN SCHEDULE, CURRENTLY INSTALLED AS MULTI-ZONE AHU'S, THE CONTRACTOR SHALL MODIFY THE DISCHARGE OF THE UNIT AND REMOVE DAMPERS, ACTUATORS, AND ASSOCIATED CONTROLS FOR ALL MULTI-ZONE SYSTEMS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REVISED OPENINGS PER UPDATED DUCT DRAWINGS TO BE ISSUED AT A LATER DATE.
32. CONTRACTOR SHALL REPLACE EXISTING UNIT INTAKE FOR RETURN AIR AND OUTSIDE AIR WITH NEW DAMPERS WITH ACTUATORS AND END-SWITCHES. MODIFIED SUPPLY AIR OPENINGS SHALL BE PROVIDED WITH NEW DAMPERS WITH ACTUATORS AND END-SWITCHES.
33. UNIT DISCHARGE OPENINGS FOR ALL UNITS SHALL BE MODIFIED TO ALLOW INSTALLATION OF FANWALL SYSTEMS AND OPENING SIZE SHALL BE SUCH THAT OPENING FACE VELOCITY SHALL NOT EXCEED 1,200 FPM.

Issue for Bid
01/11/18

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Interim Review

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Revisions

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Key Plan

PACKAGE 3
MECHANICAL - BASEMENT - SCHEDULES - SHEET 1

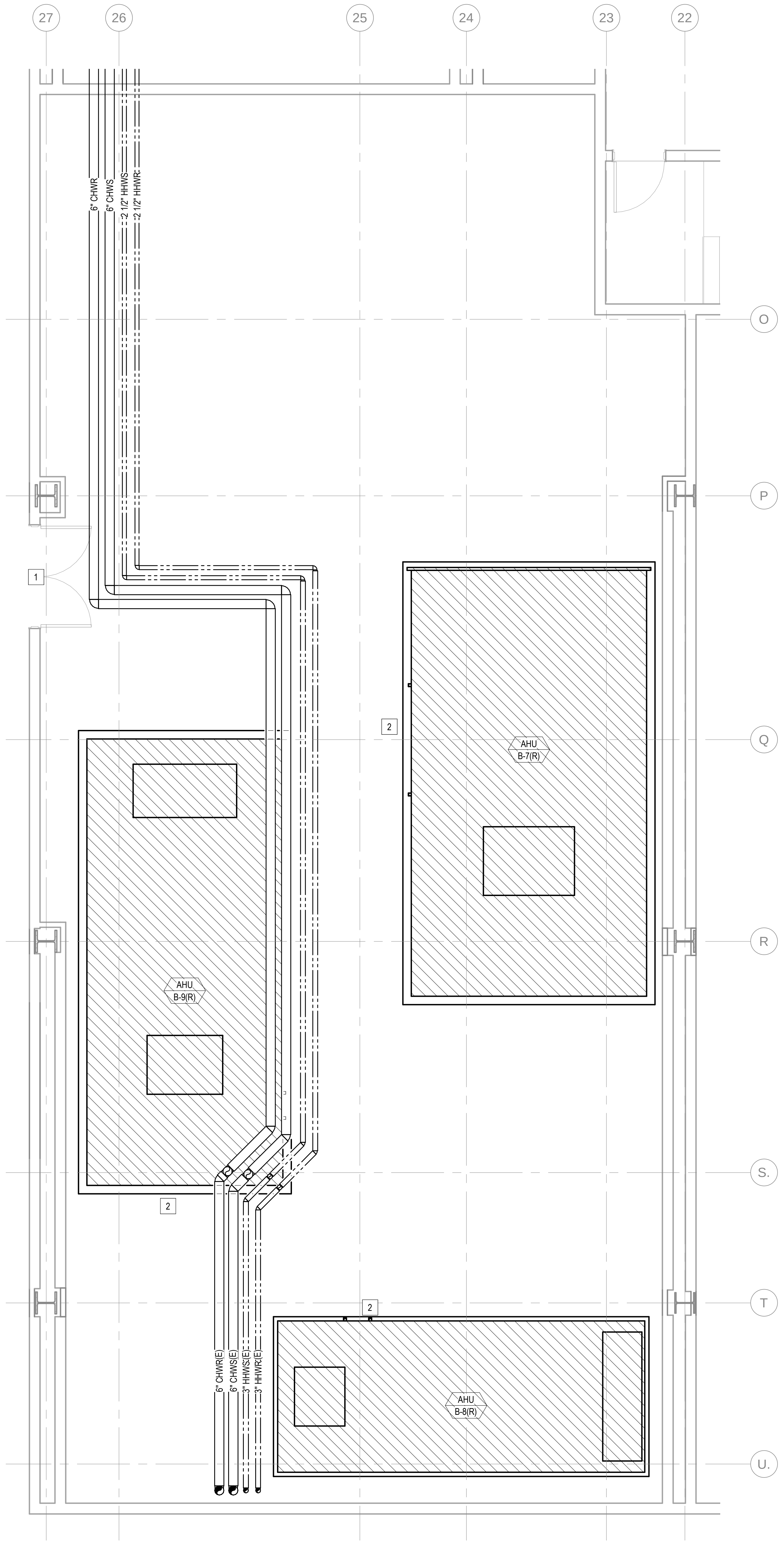
WT-3-M.5.00.1

Scale: NTS

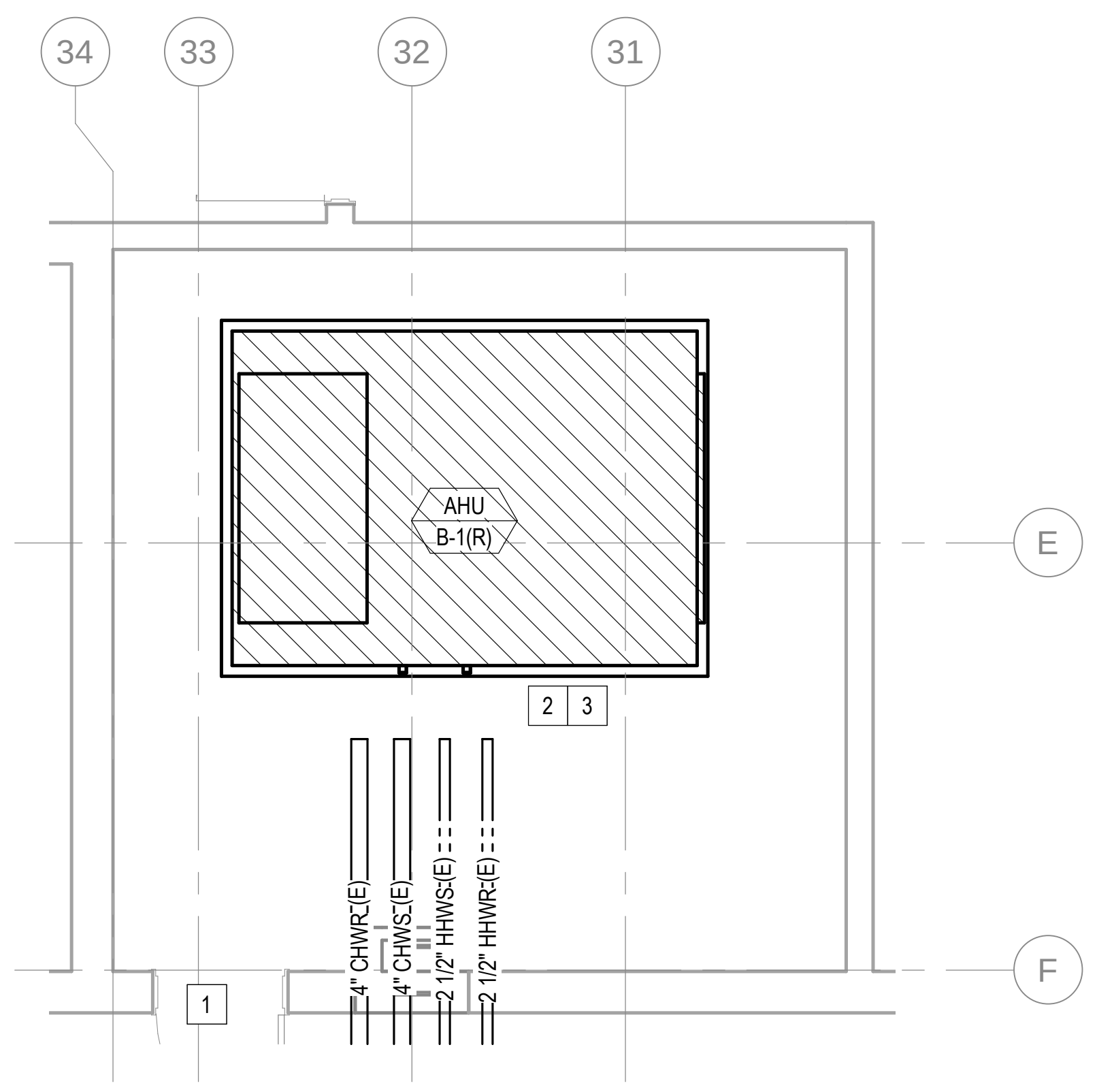
Project Name: HFR Date: 12/27/2017

KEYNOTE LEGEND

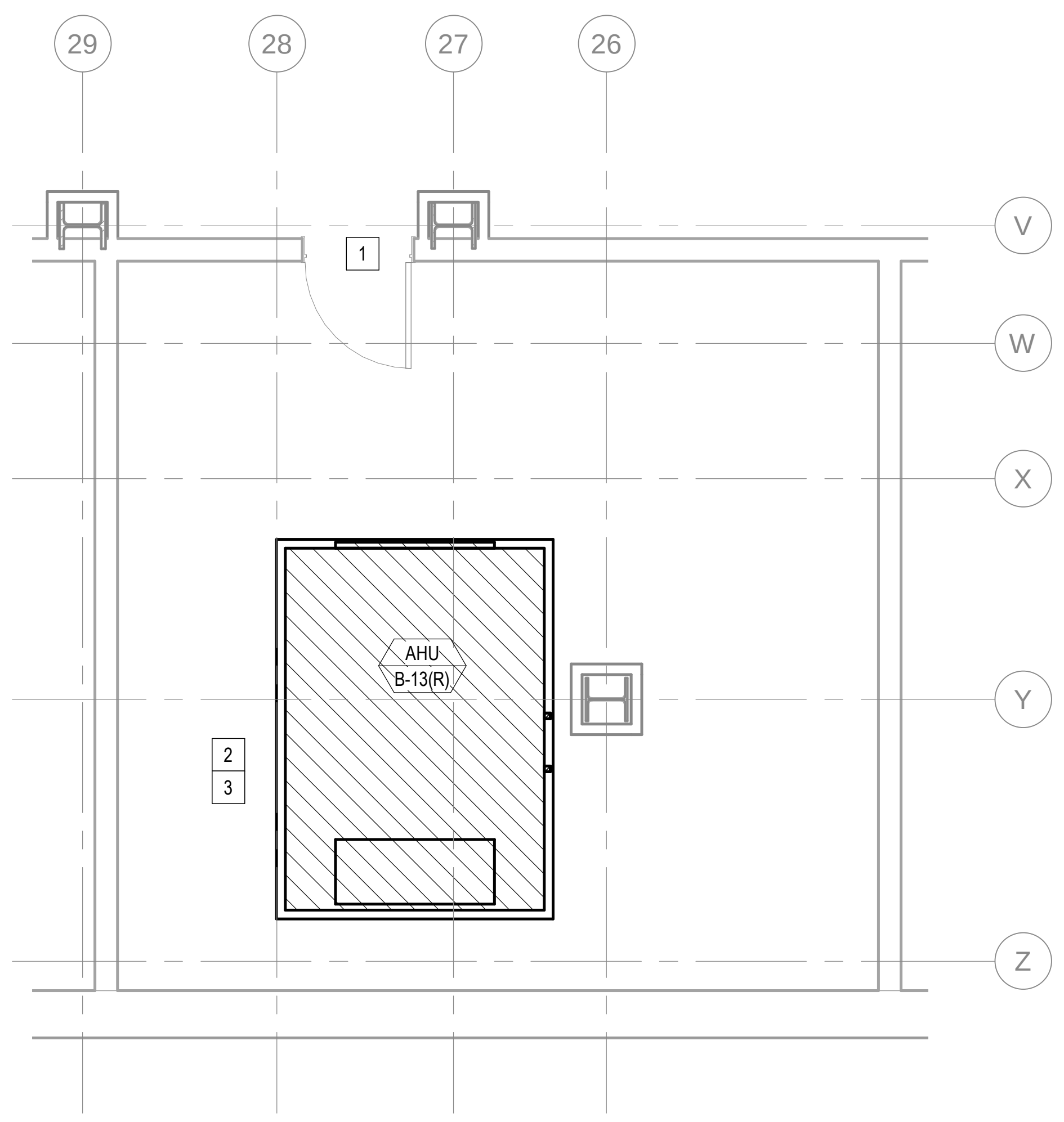
VALUE	KEYNOTE TEXT
1	CONTRACTOR SHALL TAKE INTO ACCOUNT THE REQUIRED CLEARANCES FOR TRANSPORTING THE REBUILT EQUIPMENT INTO THE MECHANICAL ROOM. REFER TO AHU SCHEDULE FOR DOOR WIDTHS OF MECHANICAL ROOMS.
2	EXISTING UNIT BASE TO REMAIN. CONTRACTOR SHALL CLEAN AND RESURFACE FOR RE-USE.
3	REPLACE EXISTING INERTIA BASE ISOLATORS.



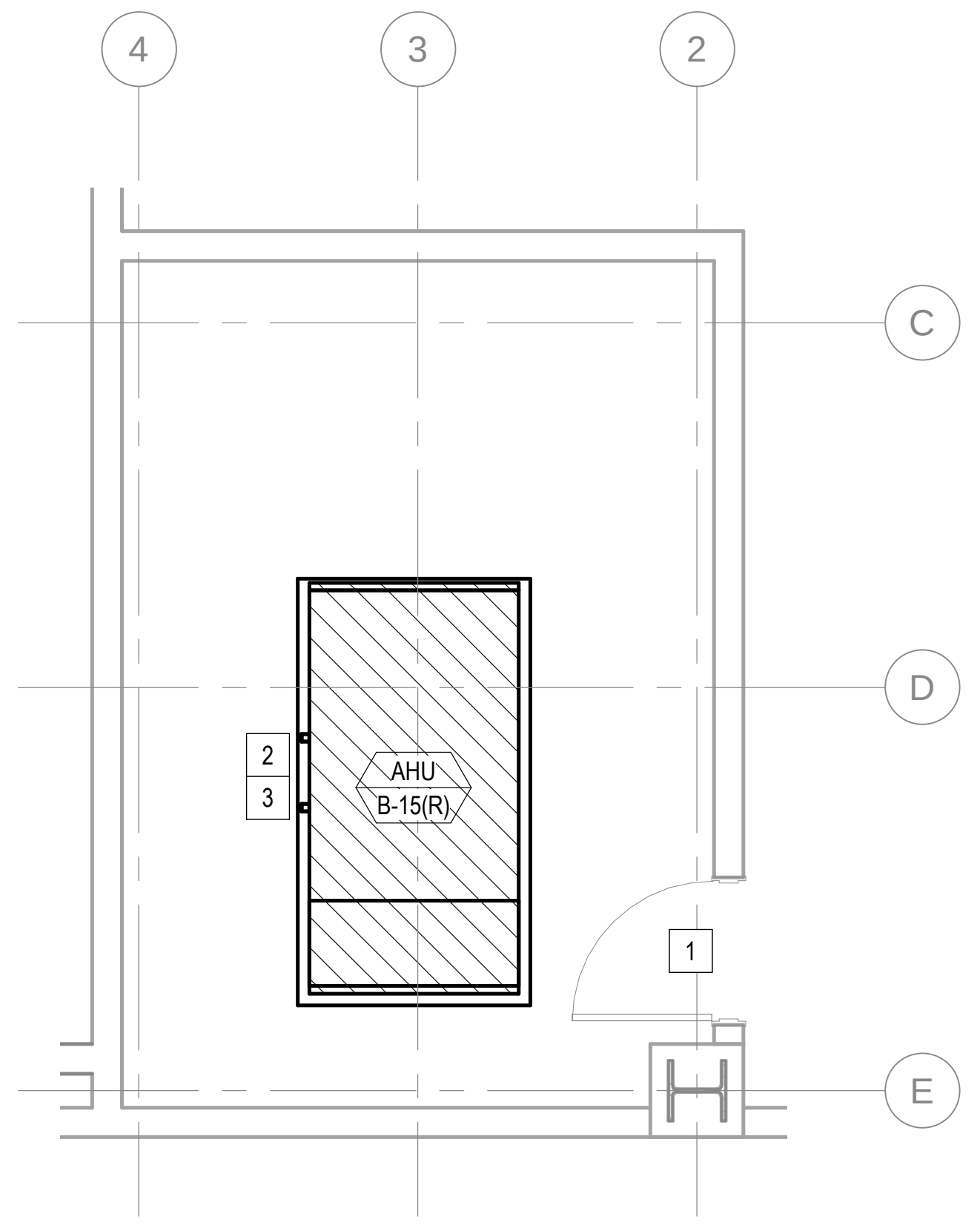
5 Mechanical Room 25 - Theater Service
1/4" = 1'-0"



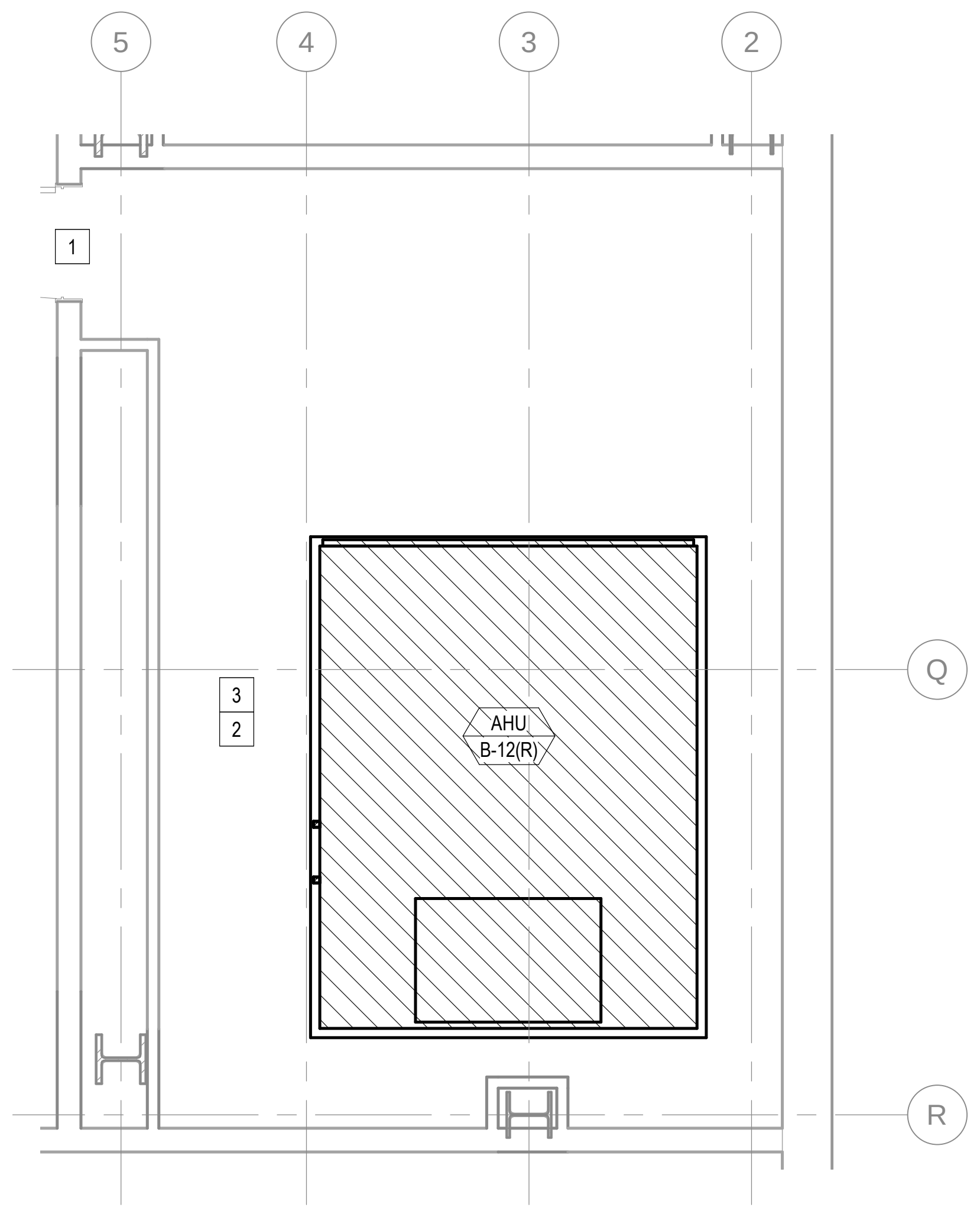
4 Mechanical Room 02 - B-1
1/4" = 1'-0"



2 Mechanical Room 31 - B-13
1/4" = 1'-0"



3 Mechanical Room 06 - B-15
1/4" = 1'-0"



1 Mechanical Room 33 - B-12
1/4" = 1'-0"

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Key Plan

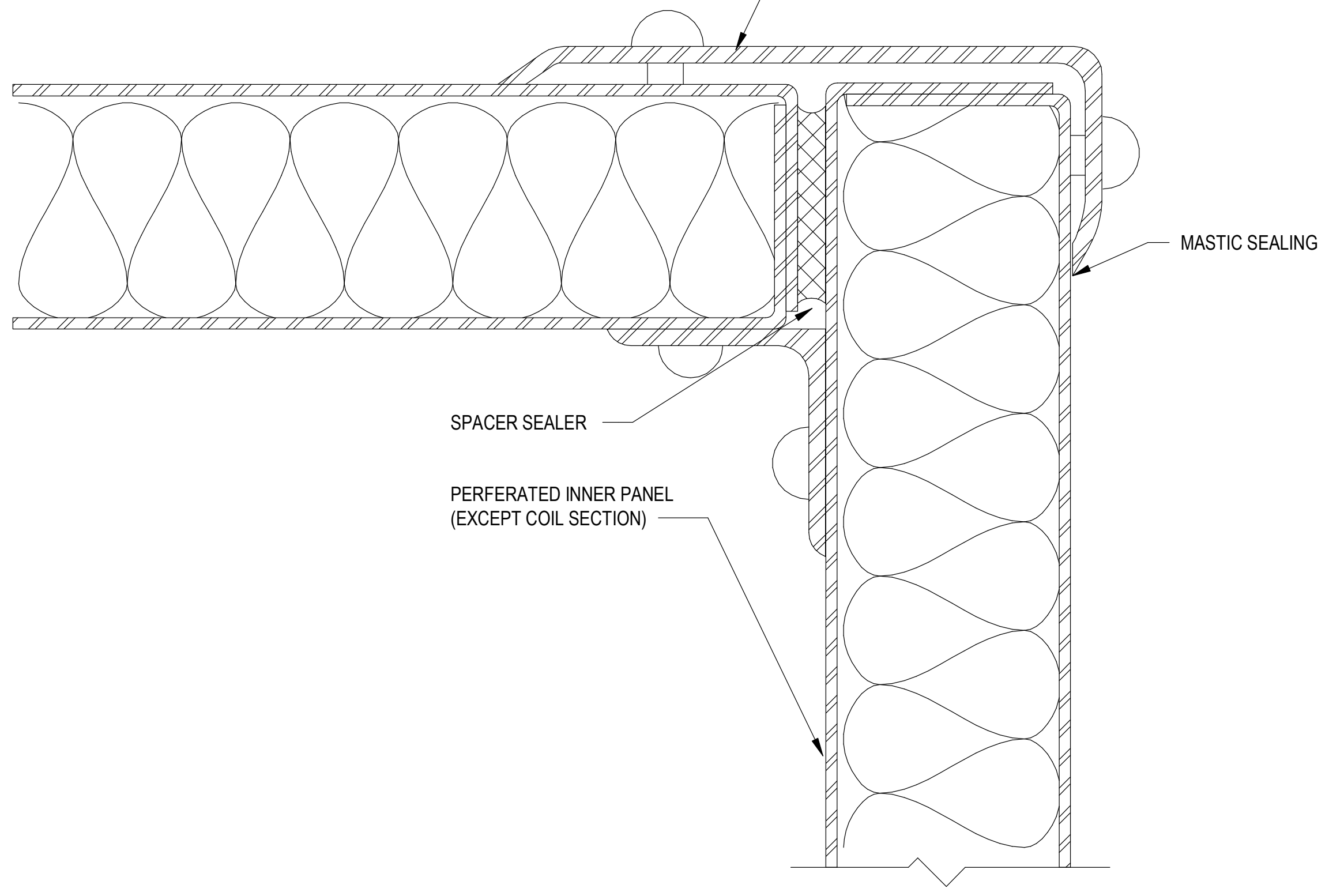
TRUE NORTH
PLAN NORTH

PACKAGE 3
MECHANICAL - BASEMENT - PARTIAL PLANS NEW

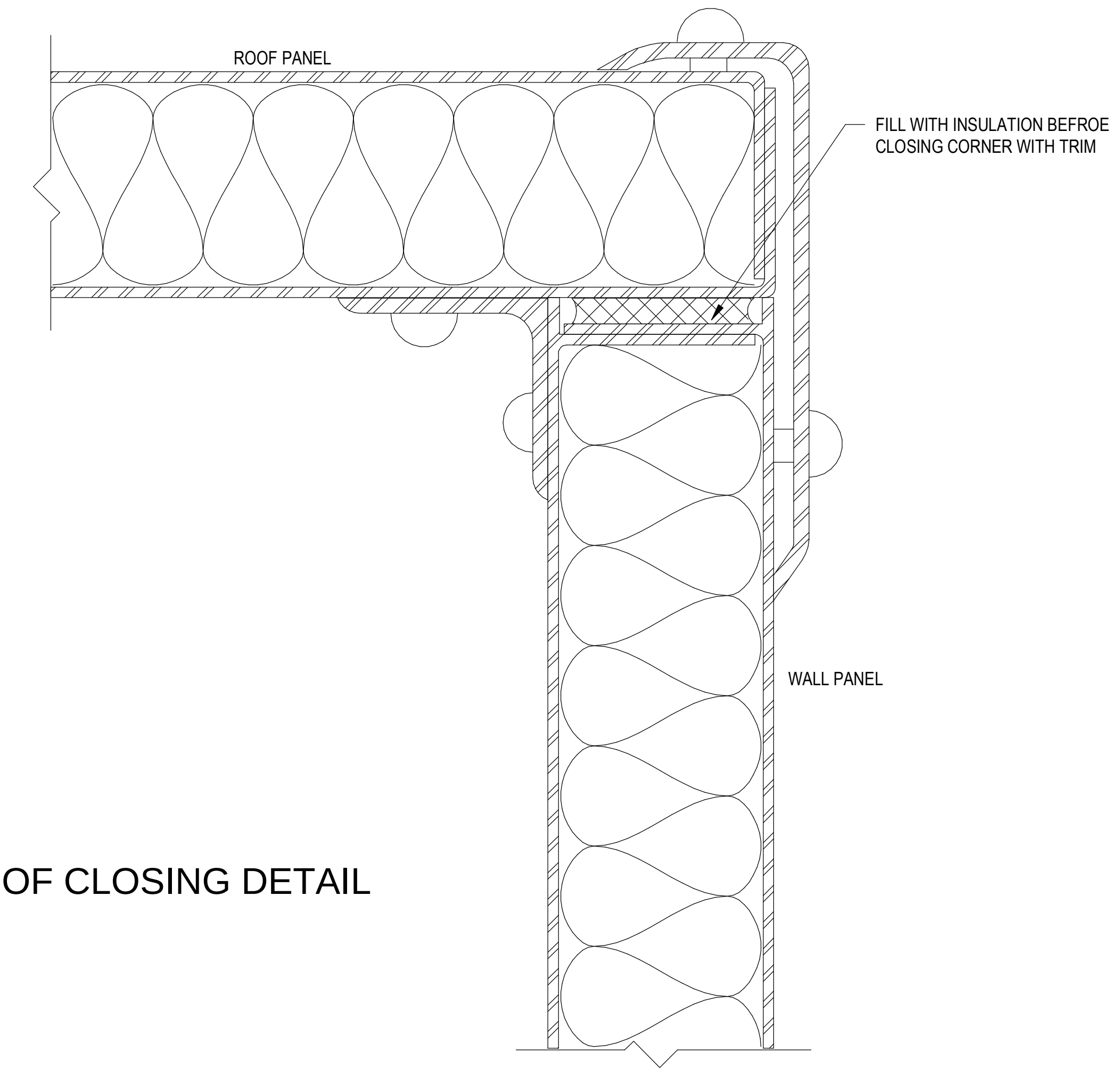
WT-3-M.7.00.1

Scale: 1/4" = 1'-0"

Project Name: HFR Date: 12/27/2017



CLOSING CORNER DETAIL



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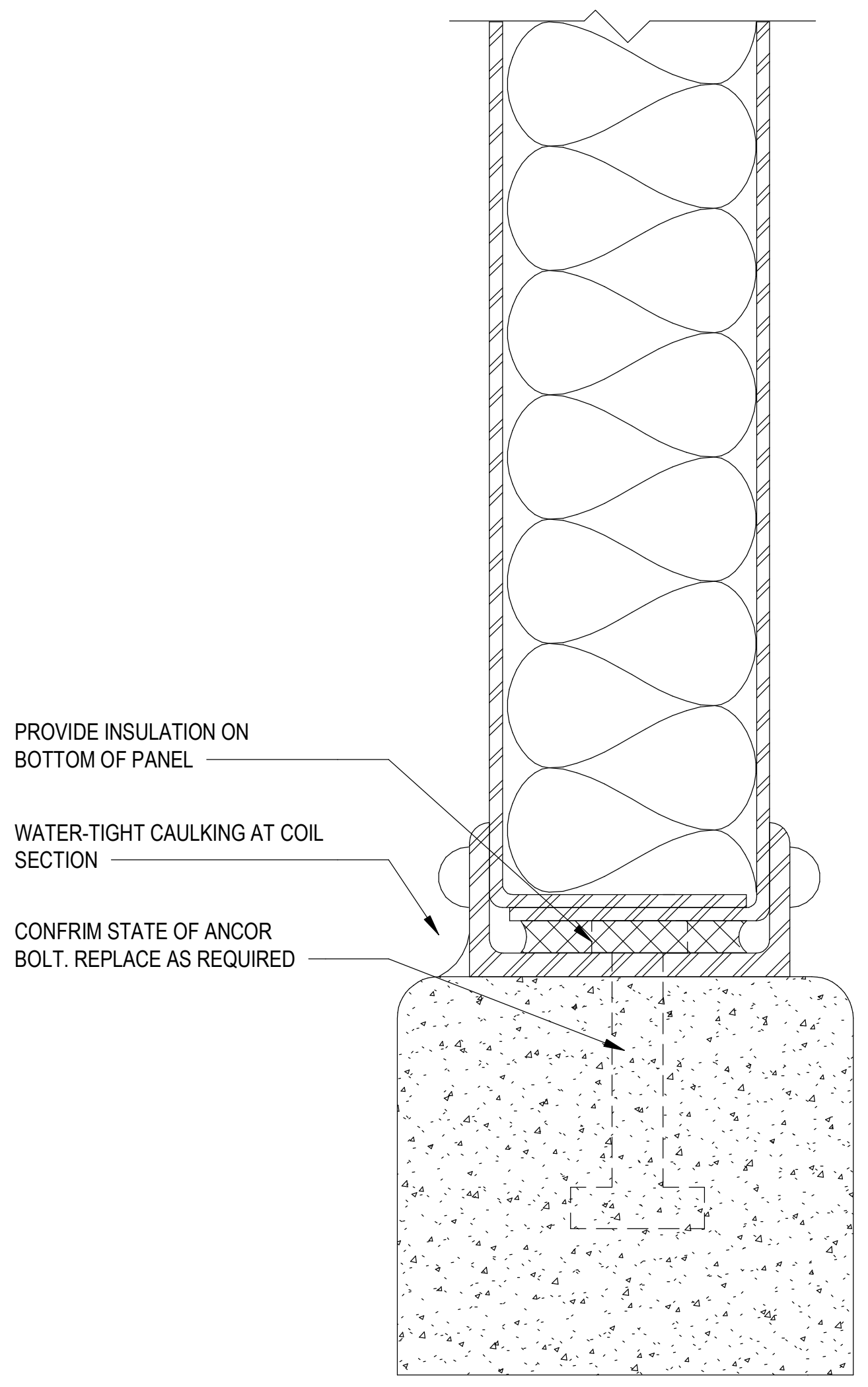

CURB DETAIL

1 BUILT-UP AHU CONSTRUCTION DETAILS

NTS

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01/11/18

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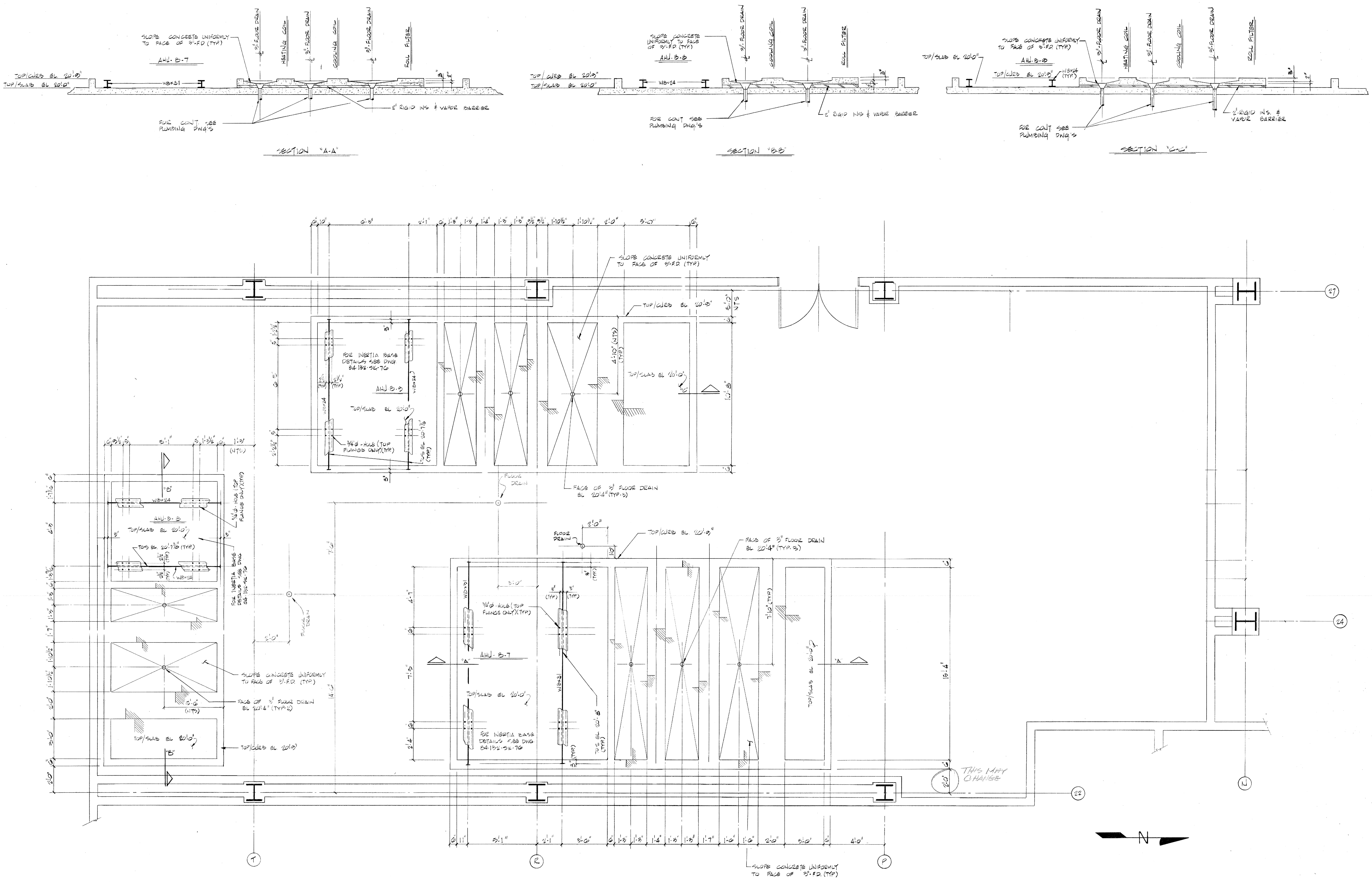
Key Plan

PACKAGE 3
MECHANICAL - DETAILS - SHEET 1

WT-3-M.8.01

Scale: NTS

Project Name: HFR Date: 12/27/2017



SHEET NOTES

1. THIS DRAWING IS FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY CURB DETAIL IN FEILD.

1 Mechanical Room 25 - Existing Curbs
(Original Shop Drawing)
NTS

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Key Plan

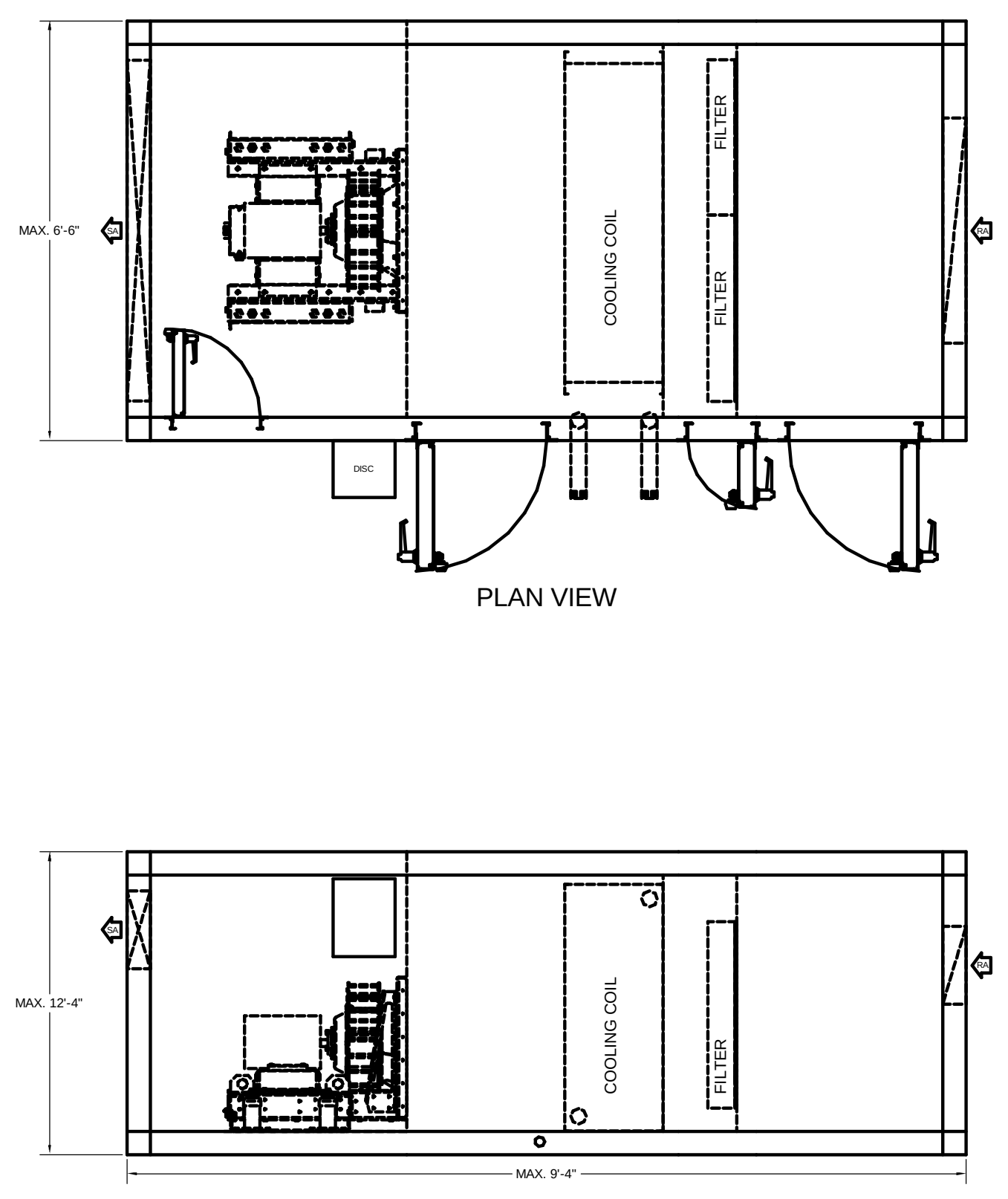
TRUE NORTH
PLAN NORTH

PACKAGE 3
MECHANICAL - DETAILS - SHEET 2

WT-3-M.8.02

Scale: NTS

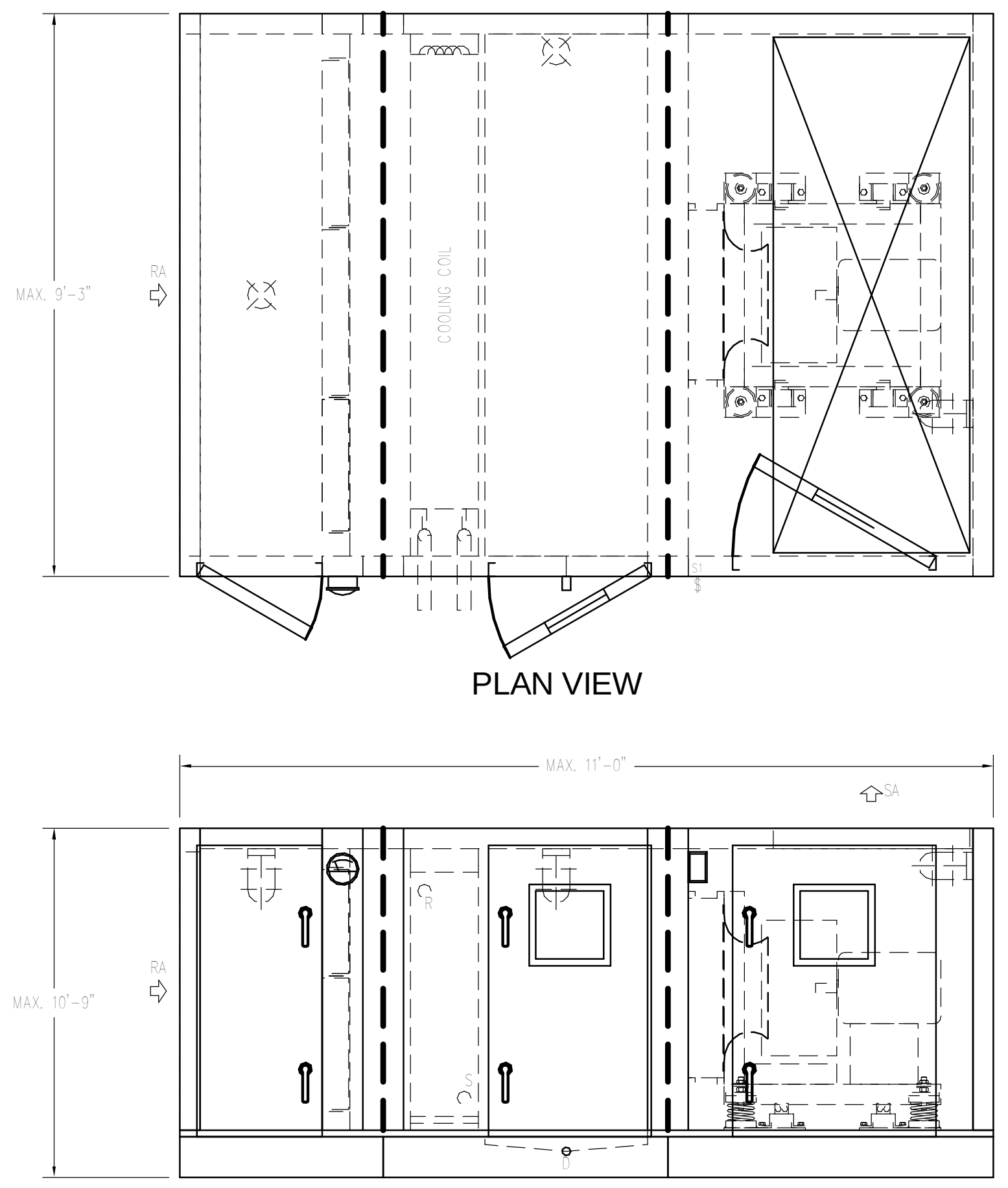
Project Name: HFR Date: 12/27/2017



PLAN VIEW

ELEVATION VIEW

4 AHU-B-15 DETAIL
NTS



PLAN VIEW

ELEVATION VIEW

2 AHU-B-13 DETAIL
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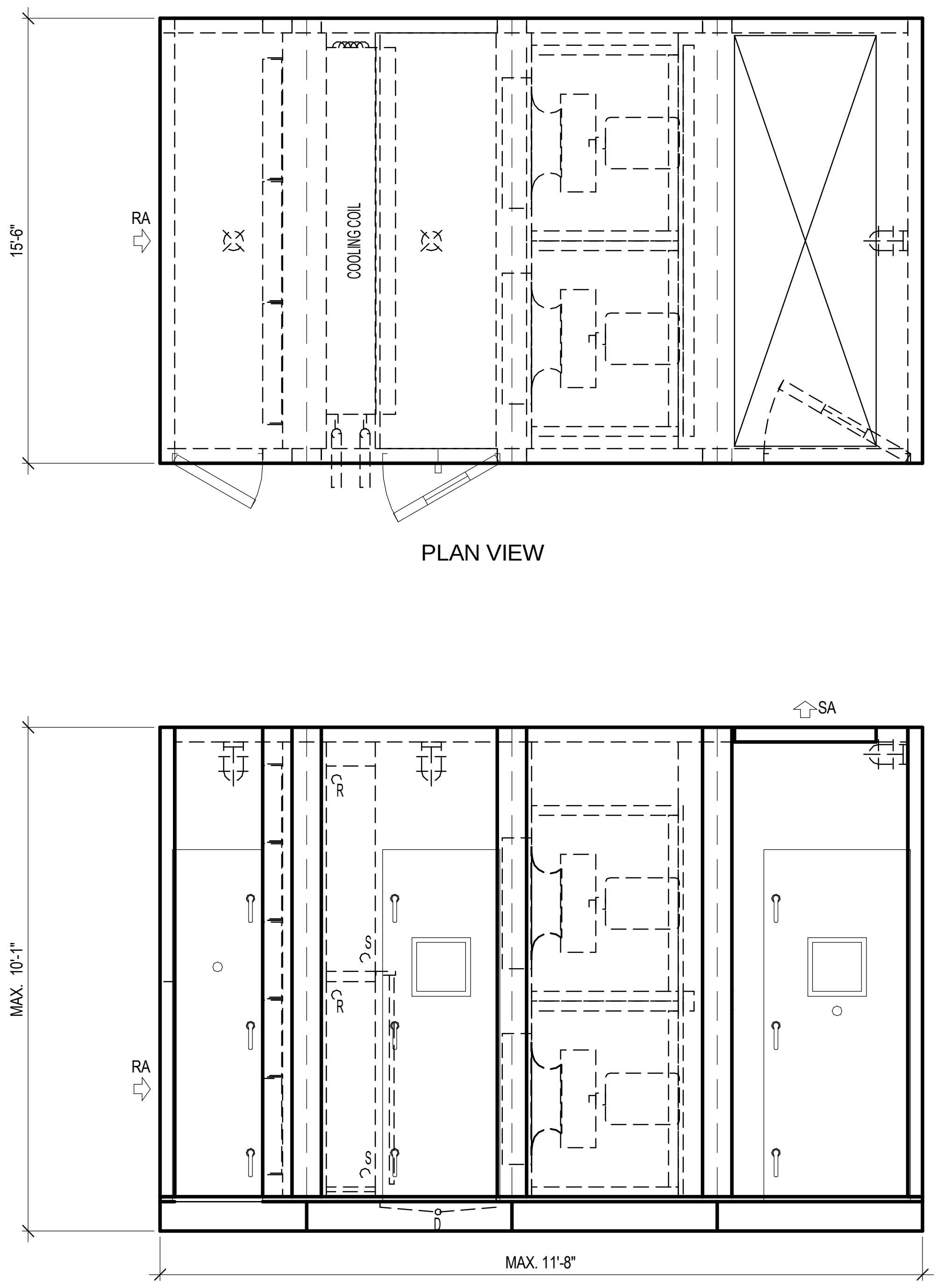

PLAN VIEW

ELEVATION VIEW

3 AHU-B-12 DETAIL
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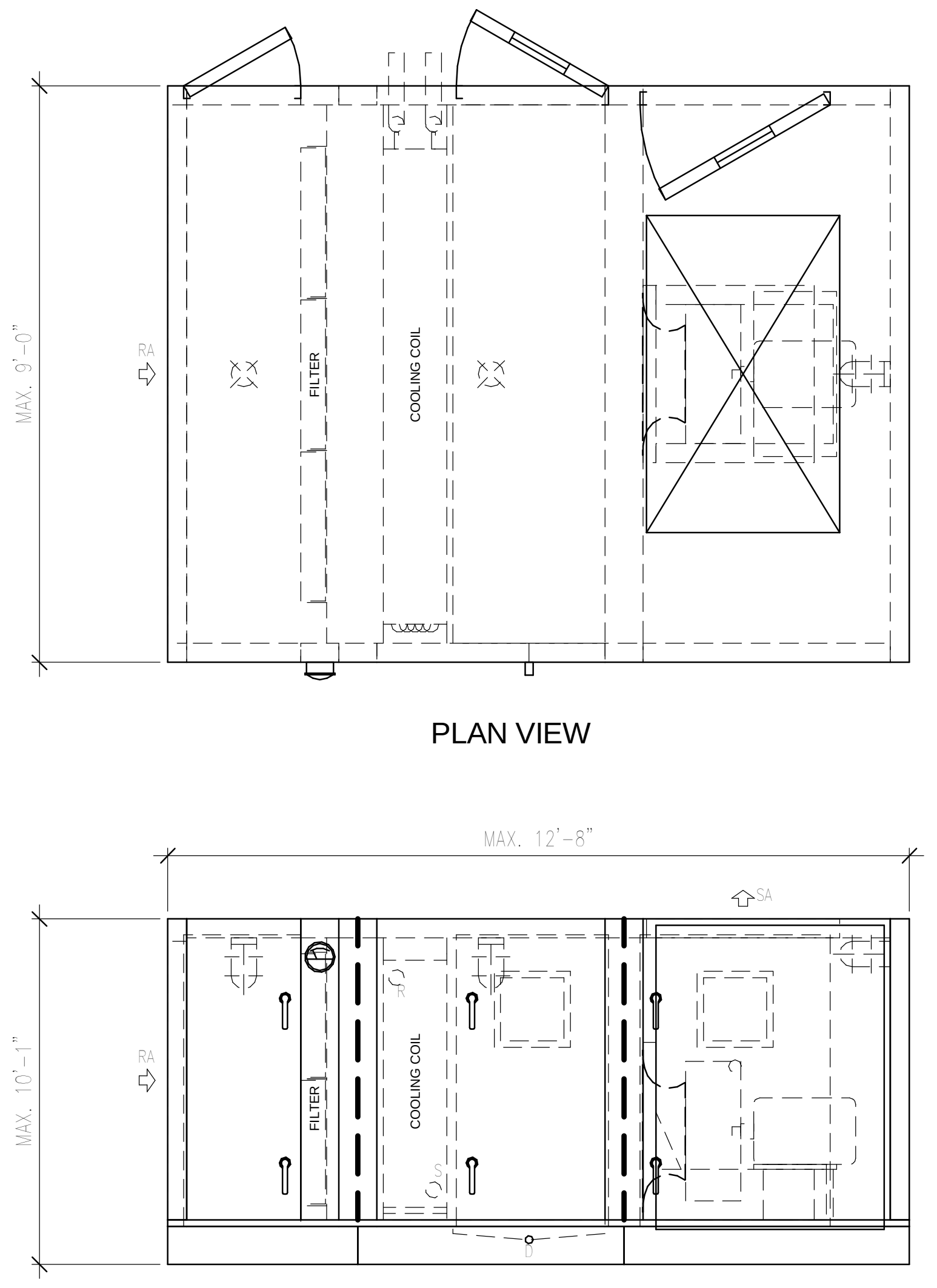

PLAN VIEW

ELEVATION VIEW

1 AHU-B-1 DETAIL
NTS

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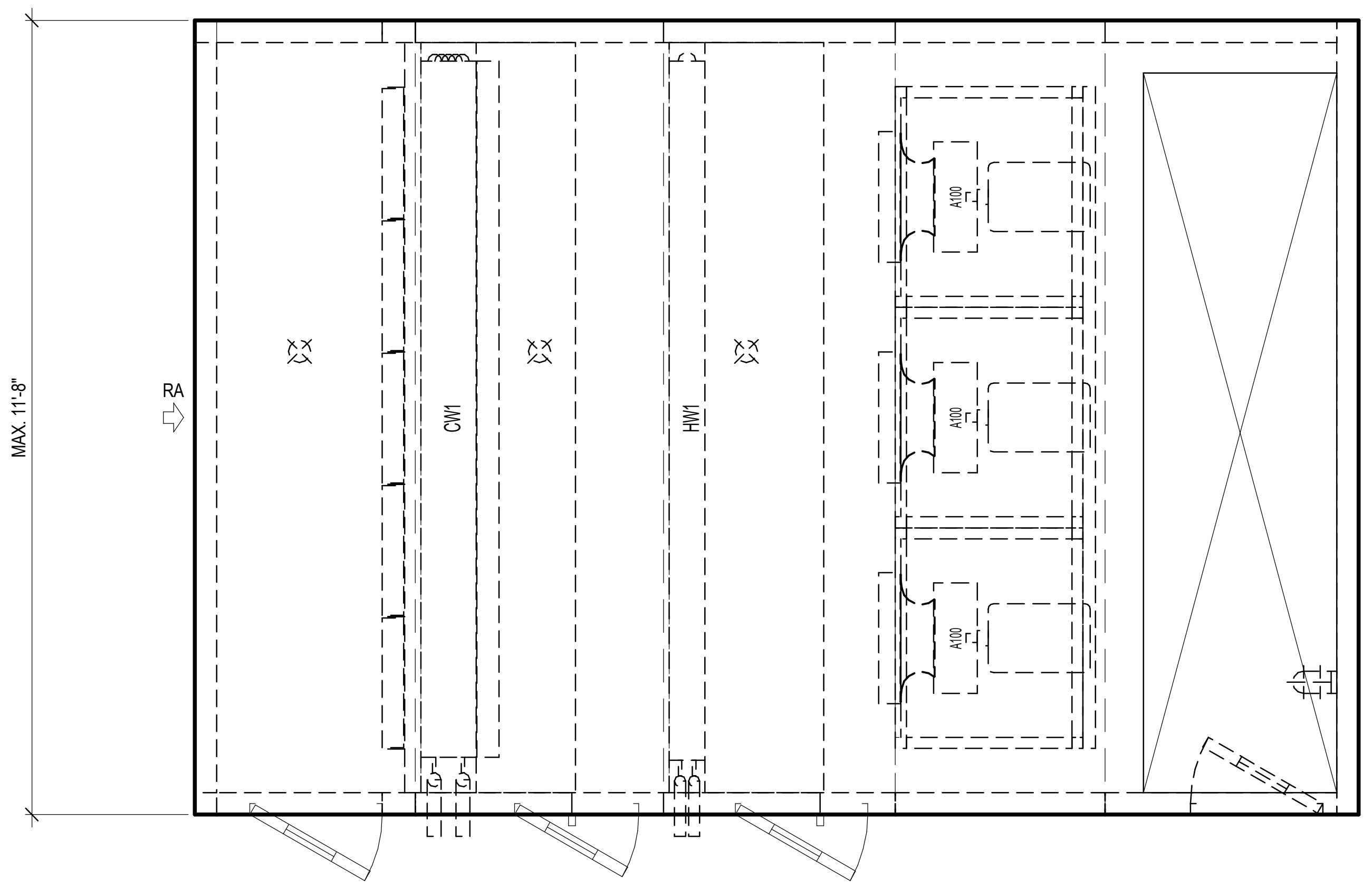
Key Plan

PACKAGE 3
MECHANICAL - DETAILS - SHEET 3

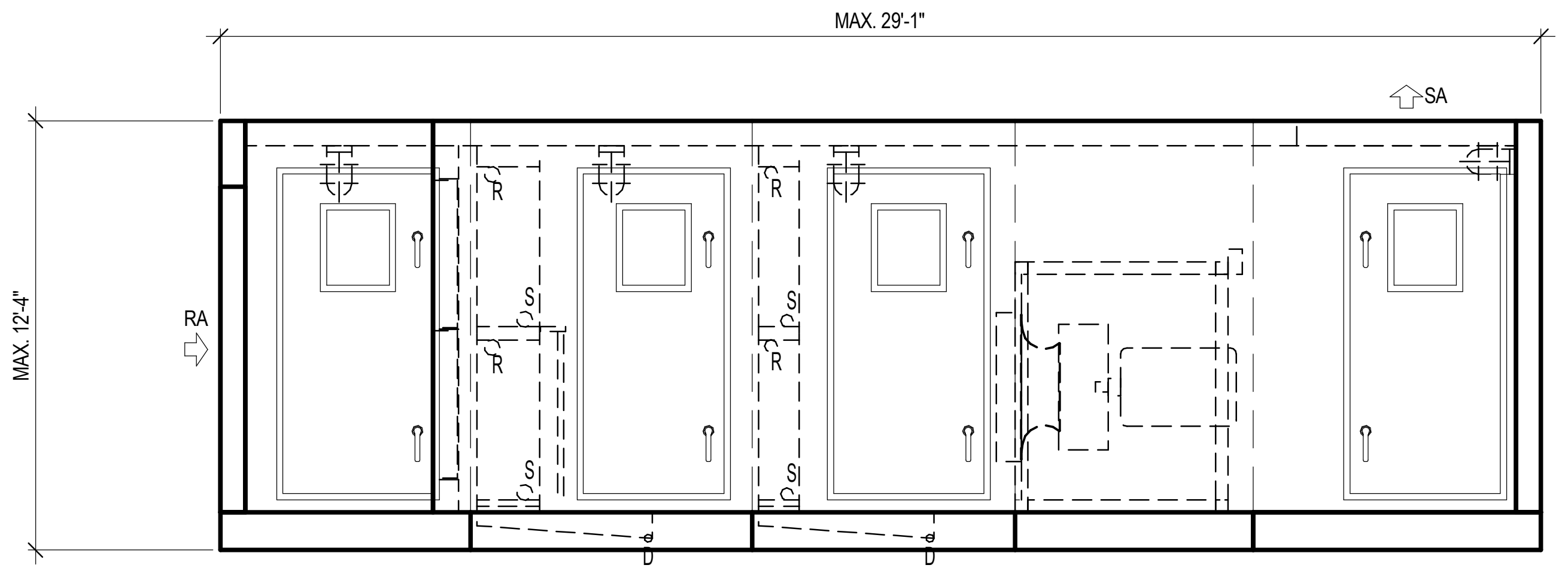
WT-3-M.8.03

Scale: NTS

Project Name: HFR Date: 12/27/2017



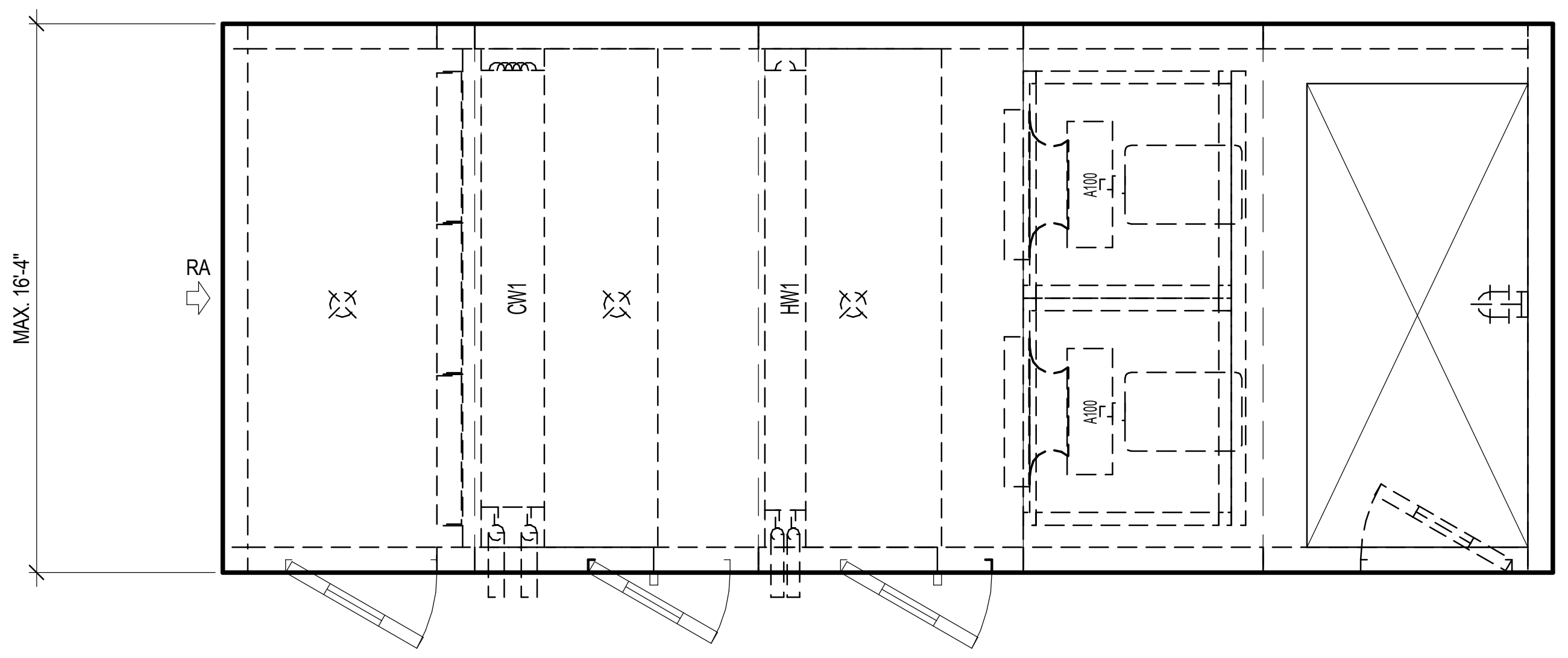
PLAN VIEW



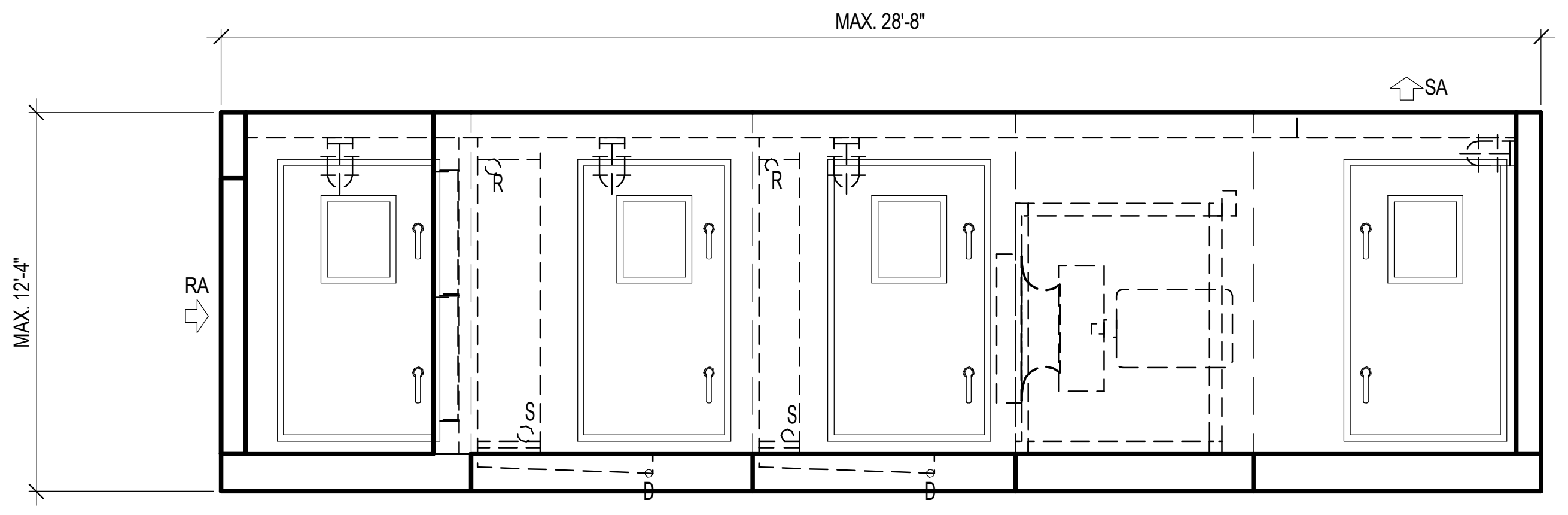
ELEVATION VIEW

3 AHU-B-9 DETAIL

NTS



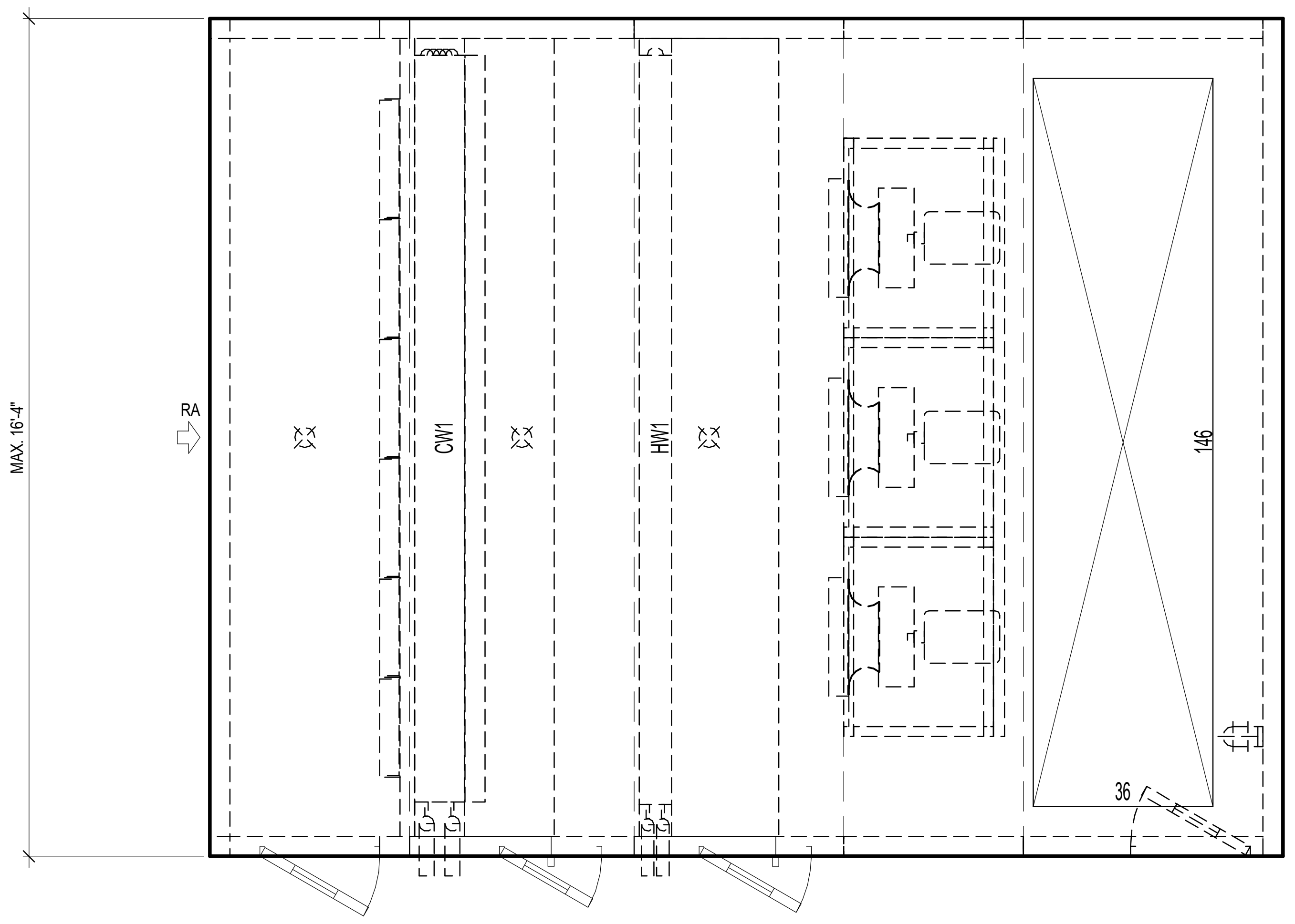
PLAN VIEW



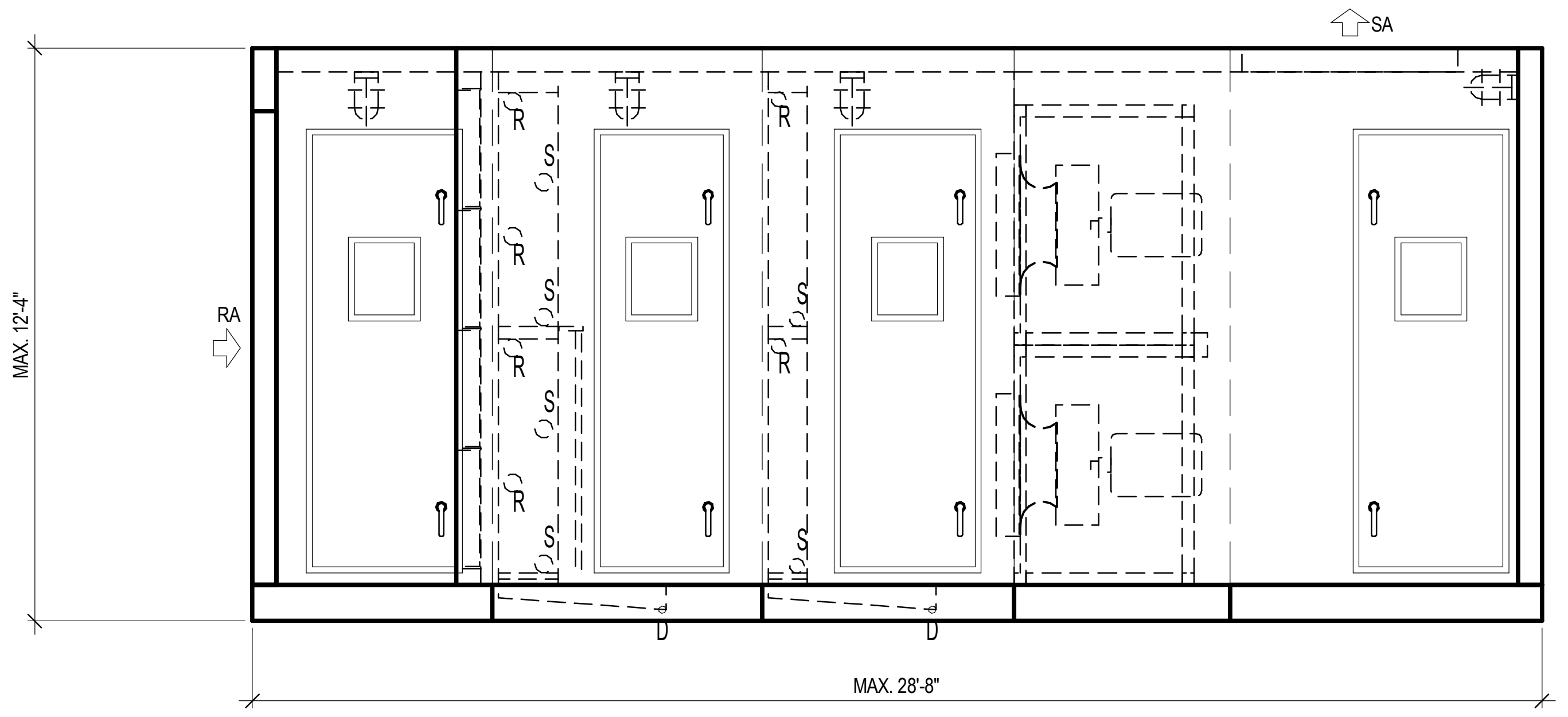
ELEVATION VIEW

2 AHU-B-8 DETAIL

NTS



PLAN VIEW



ELEVATION VIEW

1 AHU-B-7 DETAIL

NTS

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01/18/18

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Key Plan

PACKAGE 3

MECHANICAL - DETAILS - SHEET 4

WT-3-M.8.04

Scale: NTS

Project Name: HFR Date: 12/27/2017