

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

JOHN F. KENNEDY SPACE CENTER

PHSF

MECHANICAL UPGRADES

PCN - 98779.1

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INDEX OF DRAWINGS

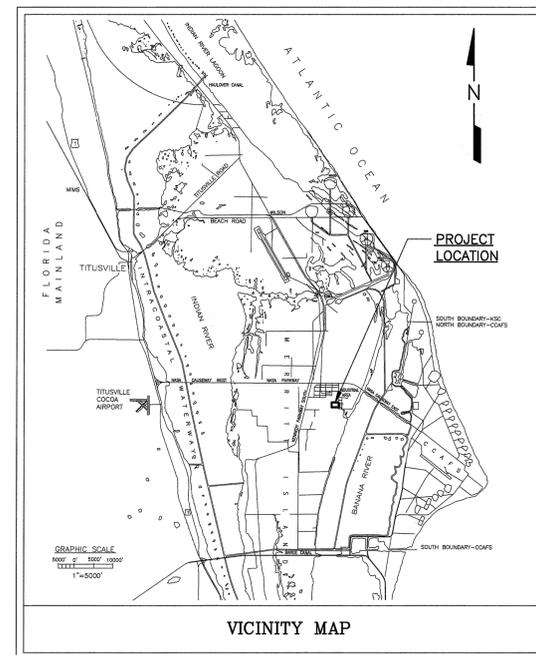
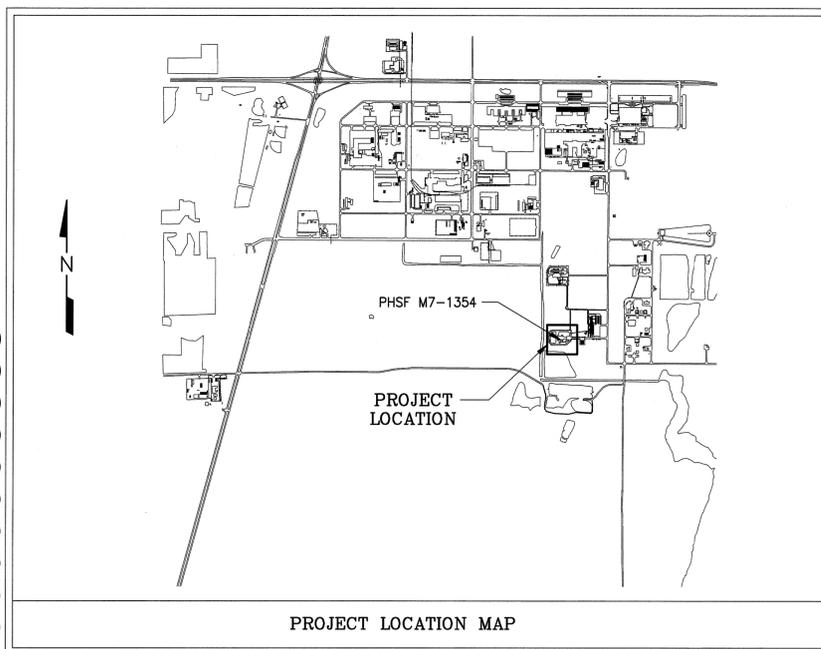
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OPTION #1

OPTION #1

OPTION #1

OPTION #2



THE WORK ASSOCIATED WITH THE REPLACEMENT OF AHU 5 & 6 IS OPTION #1

THE WORK ASSOCIATED WITH THE REPLACEMENT OF AHU 3 IS OPTION #2

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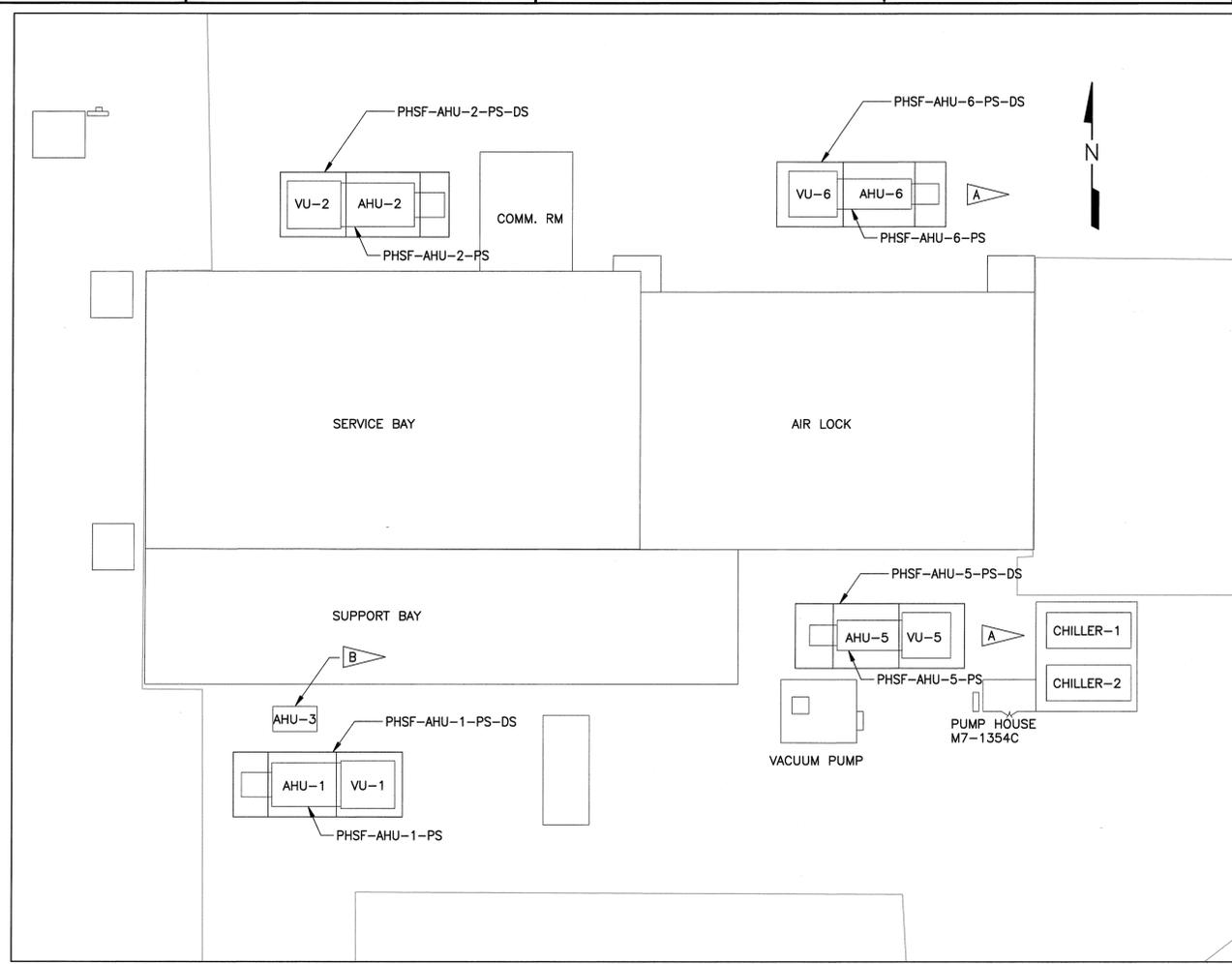
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ENGINEER OF RECORD: WILLIAM WILSON PE LICENSE NO. 22283		
Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207		
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA		
PHSF MECHANICAL UPGRADES		
VICINITY MAP, PROJECT LOCATION MAP AND INDEX OF DRAWINGS		
SIGNATURES	DATE	
DESIGNED A. QUERAL	4/09	
DRAWN A. THOMPSON	4/09	
CHECKED W. WILSON	2/11	
SUBMITTED FOR J. DAVIES D. MINDERMAN	9/29/09	
APPROVED		
APPROVED		
APPROVED		
APPROVED D. MINDERMAN	9/29/09	
APPROVED E.T. CAMACHO	9/29/09	
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FILE NO.	SIZE	DWG. NO.
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PROJ. NO. PCN 98779.1	SHEET 1 OF 27	

Prepared By:

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 Consulting Engineers
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SAMPLE LOCATION PLAN
NO SCALE

NOTE:
FOR ADDITIONAL REQUIREMENTS SEE SPECIFICATION SECTION 02 82 33.13 20

SPECIFIC NOTES

- A** WORK ASSOCIATED WITH REPLACEMENT OF UNITS 5 & 6 IS OPTION #1
- B** WORK ASSOCIATED WITH REPLACEMENT OF UNIT 3 IS OPTION #2

TABLE OF PAINT SAMPLE TEST RESULTS																
SAMPLE ID#	LOCATION	HEAVY METAL CONTENT								PCB CONTENT						
		ARSENIC Mg/Kg	BARIUM Mg/Kg	CADMIUM Mg/Kg	CHROMIUM Mg/Kg	LEAD Mg/Kg	SELENIUM Mg/Kg	SILVER Mg/Kg	MERCURY Mg/Kg	AROCLOR 1016 Mg/Kg	AROCLOR 1221 Mg/Kg	AROCLOR 1232 Mg/Kg	AROCLOR 1242 Mg/Kg	AROCLOR 1248 Mg/Kg	AROCLOR 1254 Mg/Kg	AROCLOR 1280 Mg/Kg
BULK MATRIX																
PHSF-AHU-1-PS	AHU-1	ND	1200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-1-PS-DS	AHU-1 DUCT SUPPORT STRUCTURE	ND	6800	ND	ND	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-2-PS	AHU-2	ND	1500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-2-PS-DS	AHU-2 DUCT SUPPORT STRUCTURE	ND	3500	ND	ND	3200	ND	ND	3100	ND						
PHSF-AHU-5-PS	AHU-5	ND	2500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-5-PS-DS	AHU-5 DUCT SUPPORT STRUCTURE	ND	23000	ND	3000	39000	ND	ND	2000	ND						
PHSF-AHU-6-PS	AHU-6	ND	570	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-6-PS-DS	AHU-6 DUCT SUPPORT STRUCTURE	ND	280	ND	1700	7100	ND	ND	5000	ND						
LEACHATE MATRIX																
PHSF-AHU-1-PS	AHU-1	ND	5.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-1-PS-DS	AHU-1 DUCT SUPPORT STRUCTURE	ND	9.4	ND	ND	150	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-2-PS	AHU-2	ND	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-2-PS-DS	AHU-2 DUCT SUPPORT STRUCTURE	ND	15	0.11	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-5-PS	AHU-5	ND	32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-5-PS-DS	AHU-5 DUCT SUPPORT STRUCTURE	ND	2.8	0.11	ND	4.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHSF-AHU-6-PS	AHU-6	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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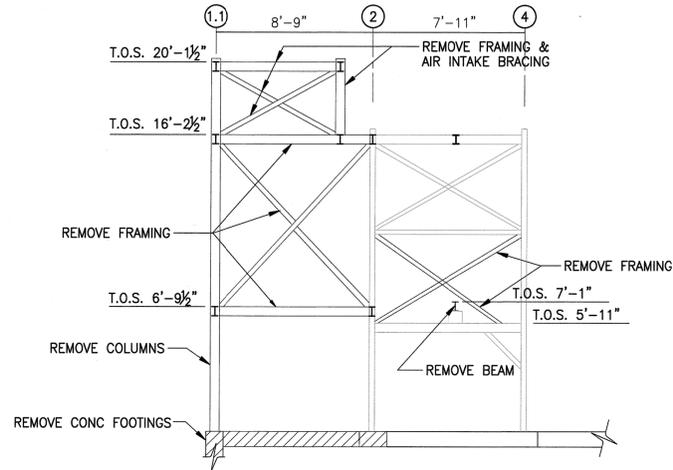
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C.A. NO. 7188 - 904-398-8636		3970 Hendricks Avenue - Jacksonville, FL 32207	
SIGNATURES	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	
DESIGNED -	-	JOHN F. KENNEDY SPACE CENTER, NASA	
DRAWN A. THOMPSON	9/09	KENNEDY SPACE CENTER, FLORIDA	
CHECKED W. WILSON	9/09	PHSF MECHANICAL UPGRADES	
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APPROVED		PROJ. NO. PCN 98779.1	SHEET 2

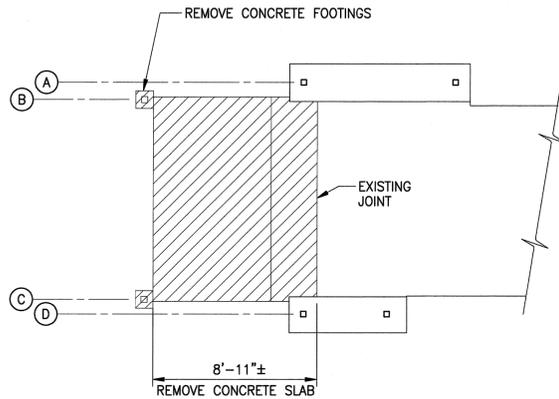
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ENV1

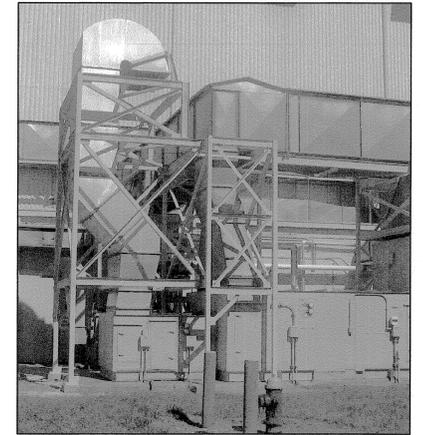
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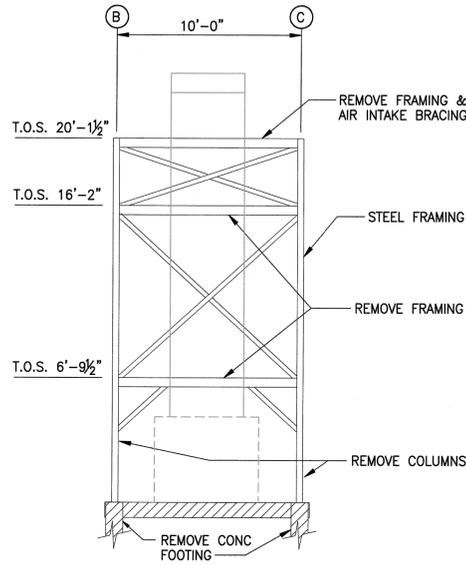
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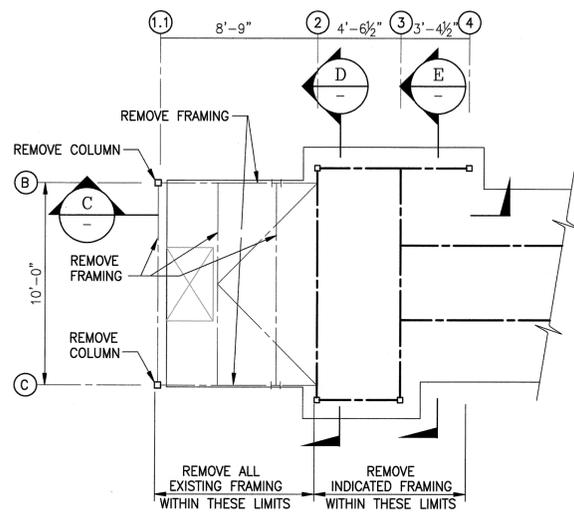
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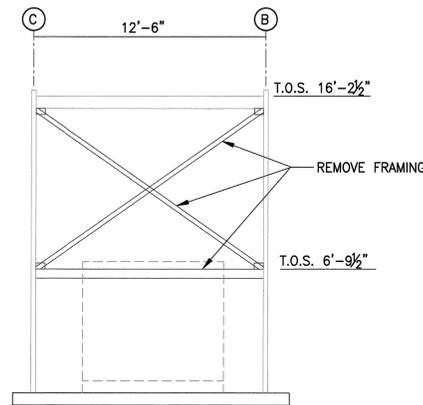
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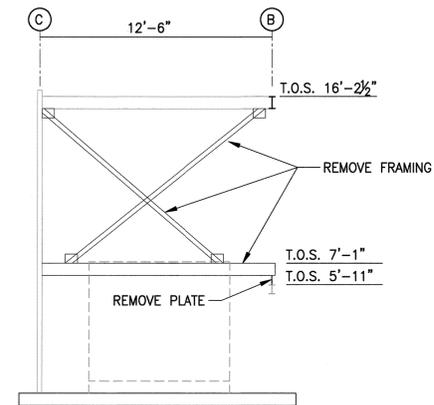
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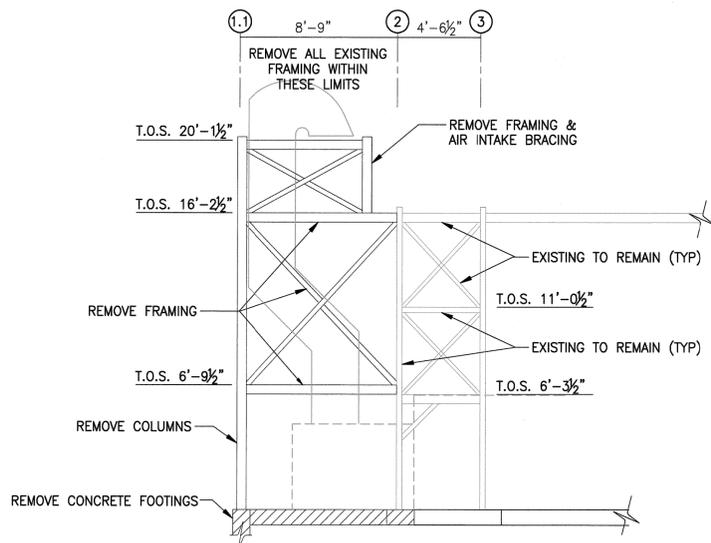
EXISTING STEEL FRAMING PLAN
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SECTION D
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SECTION E
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SOUTH ELEVATION
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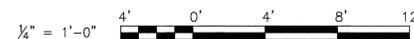
STRUCTURAL FRAMING NOTES

- PHOTOGRAPH SHOWS EXISTING STRUCTURAL FRAMING. SEE MECHANICAL DRAWINGS FOR MODIFICATIONS TO EXISTING AIR HANDLING UNIT.
- STRUCTURAL FRAMING DEMOLITION, MODIFICATIONS AND NEW CONSTRUCTION MUST BE PERFORMED IN PHASES. SEE PROJECT PHASING NOTES ON SHEET M2.

LEGEND

CONCRETE SLAB TO BE REMOVED

GRAPHIC SCALE

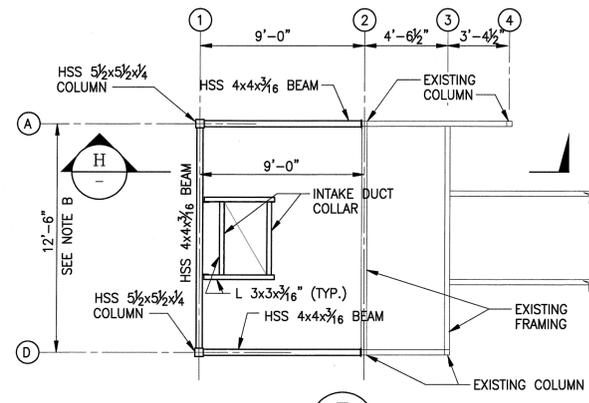


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DESIGNED D.FINLEY	5/09	PHSF MECHANICAL UPGRADES AHU 1 STRUCTURAL DEMOLITION	
DRAWN A.THOMPSON	6/09		
CHECKED D.FINLEY	6/09		
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APPROVED			F 79K38540
APPROVED		PROJ. NO. PCN 98779.1	SHEET 4

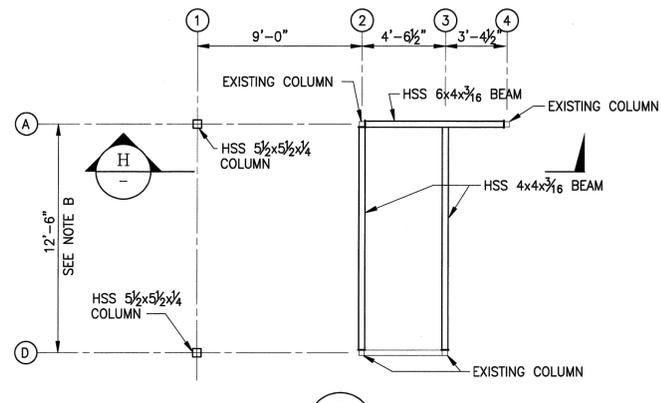
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S2

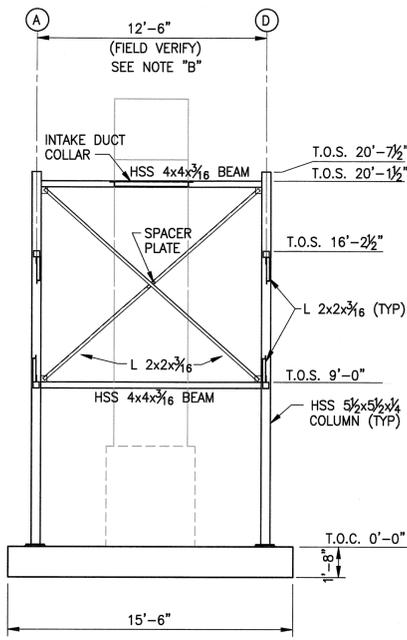
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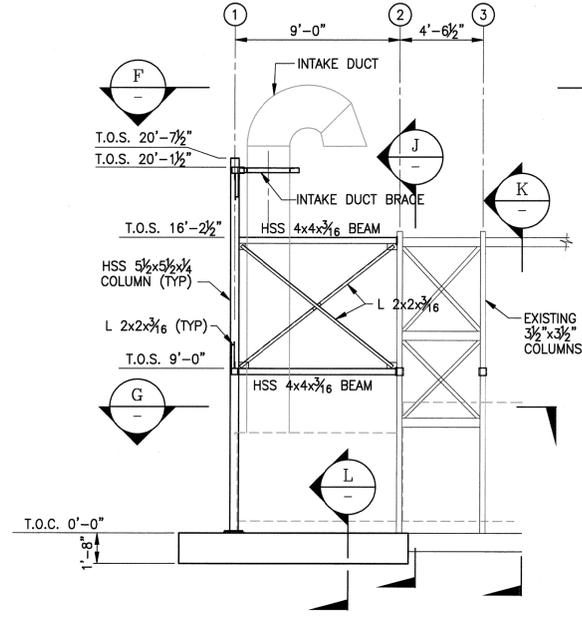
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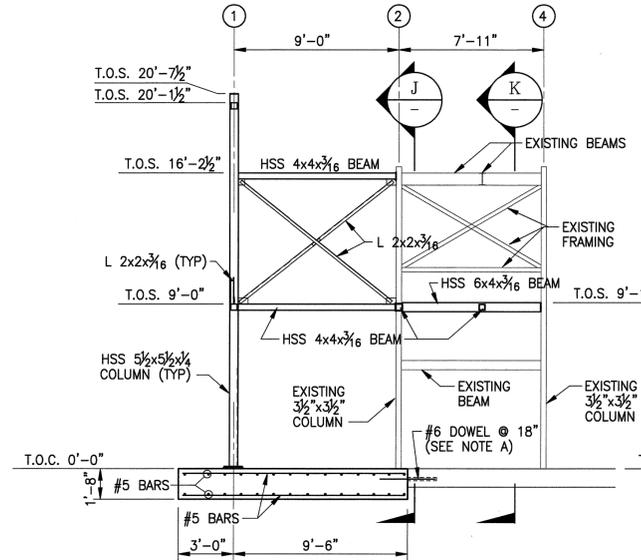
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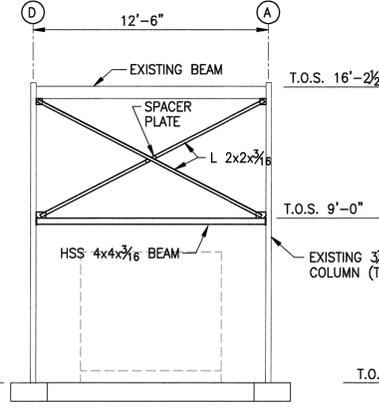
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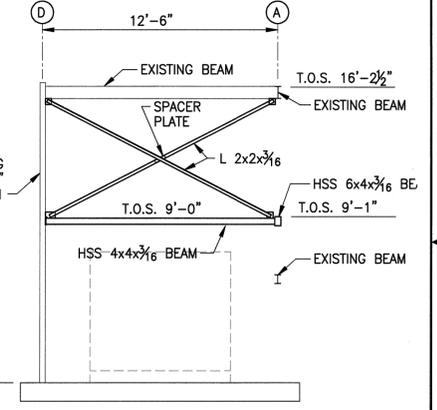
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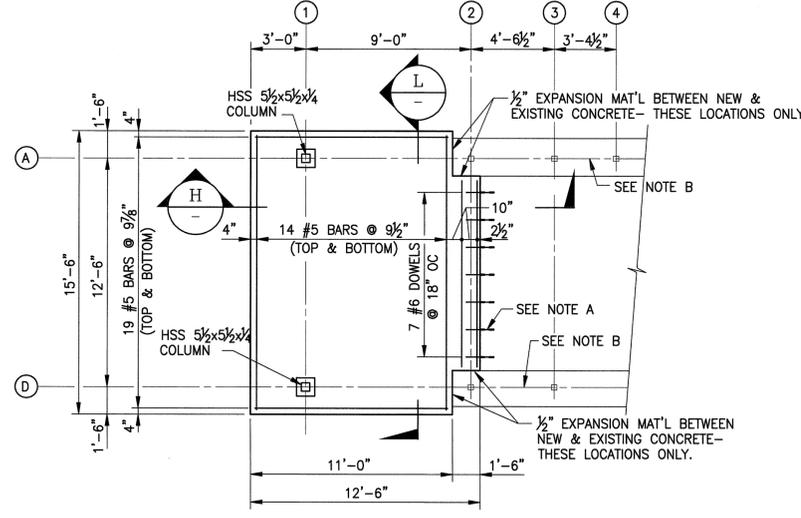
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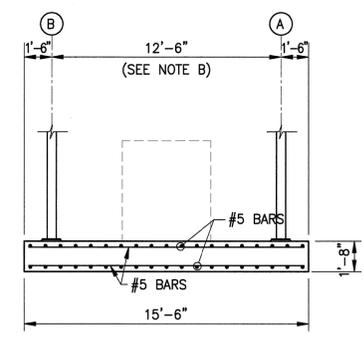
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SECTION K
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FOUNDATION PLAN
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SECTION L
SCALE: 1/4" = 1'-0"

NOTE:
STRUCTURAL FRAMING DEMOLITION, MODIFICATIONS AND NEW CONSTRUCTION MUST BE PERFORMED IN PHASES. SEE PROJECT PHASING NOTES ON SHEET M2.

- NOTES
- A. FIELD DRILL 7/8" Ø x 9" DEEP HOLE AT MID-DEPTH OF EXISTING SLAB. SET 2'-0" LONG #6 DOWEL IN ADHESIVE.
 - B. ALIGN NEW COLUMNS WITH EXISTING COLUMNS
 - C. SEE SHEET S8 FOR CONNECTION DETAILS

GRAPHIC SCALE

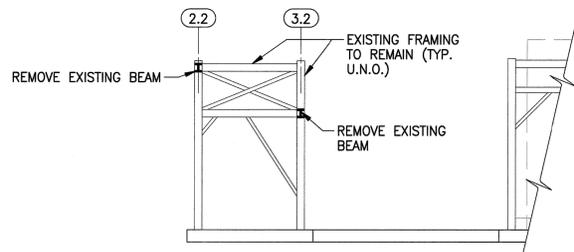


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SIGNATURES	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA	
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DRAWN A.THOMPSON	6/09		
CHECKED D.FINLEY	6/09		
SUBMITTED		AHU 1 STRUCTURAL MODIFICATIONS	
APPROVED			
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APPROVED		F	79K38540
APPROVED		PROJ. NO. PCN 98779.1	SHEET 5

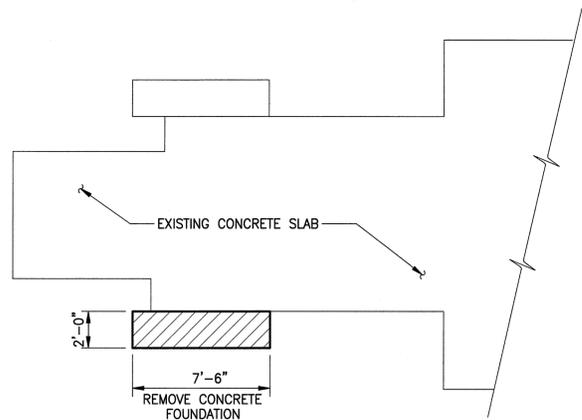
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S3

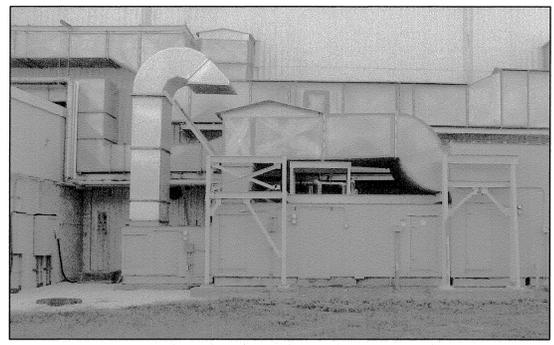
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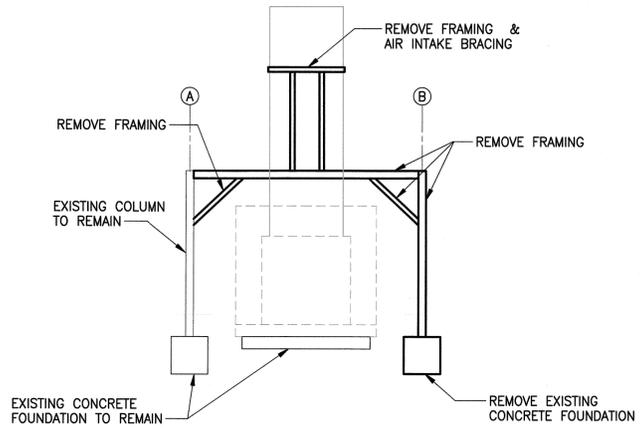
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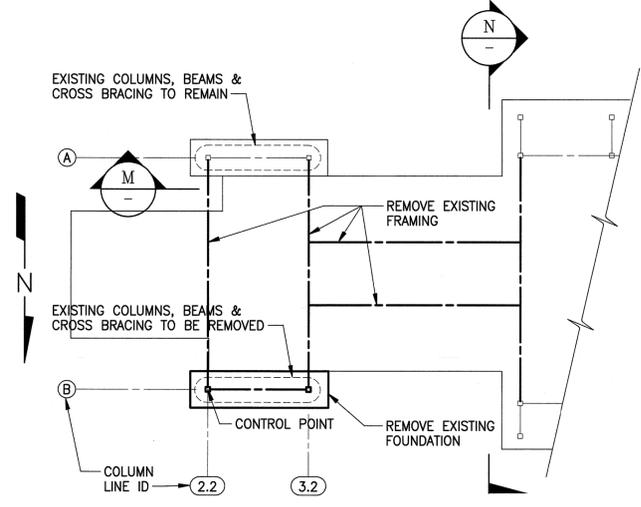
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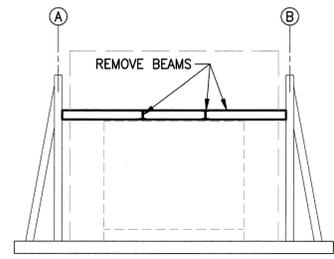
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NOT TO SCALE



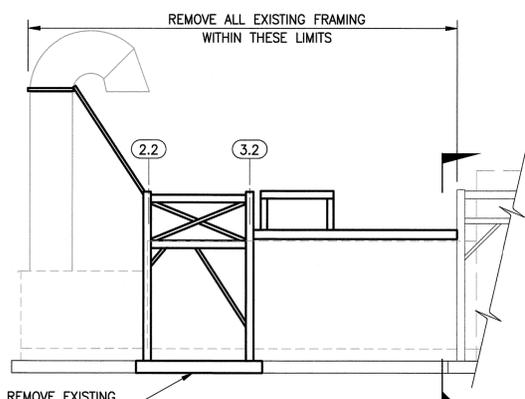
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EXISTING STEEL FRAMING PLAN
SCALE: 1/4"=1'-0"



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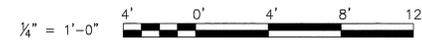


NORTH ELEVATION
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LEGEND

CONCRETE FOUNDATION TO BE REMOVED

GRAPHIC SCALES



STRUCTURAL FRAMING NOTES

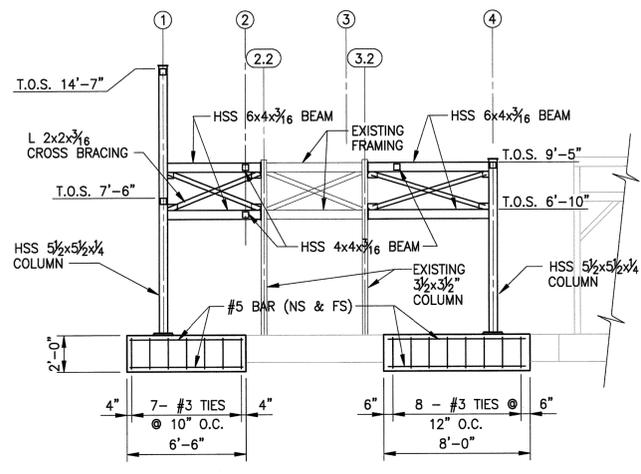
1. PHOTOGRAPH SHOWS EXISTING STRUCTURAL FRAMING. SEE MECHANICAL DRAWINGS FOR MODIFICATIONS TO EXISTING AIR HANDLING UNIT.
2. STRUCTURAL FRAMING DEMOLITION, MODIFICATIONS AND NEW CONSTRUCTION MUST BE PERFORMED IN PHASES. SEE PROJECT PHASING NOTES ON SHEET M2

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SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
ENGINEER OF RECORD: M. DAVID FINLEY FW&A Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207			
SIGNATURES	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA	
DESIGNED D.FINLEY	5/09	PHSF MECHANICAL UPGRADES AHU 2 STRUCTURAL DEMOLITION	
DRAWN A.THOMPSON	6/09		
CHECKED D.FINLEY	6/09		
SUBMITTED			
APPROVED			
APPROVED		FILE NO.	SIZE DWG. NO.
APPROVED		F	79K38540
APPROVED		PROJ. NO. PCN 98779.1	SHEET 6

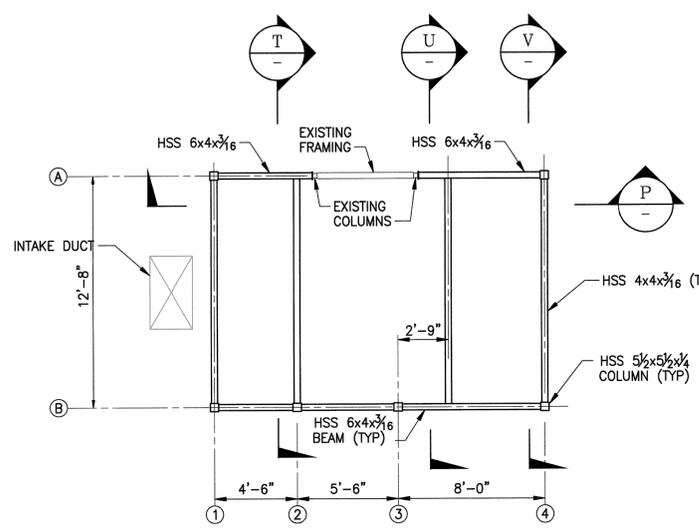
A/E FILE No. 0601\0601-22\Mechanical
FILE: S4 - AHU 2 DEMO.DWG
THIS DRAWING PREPARED BY AutoCAD 2008

S4

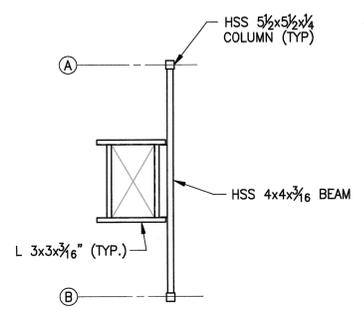
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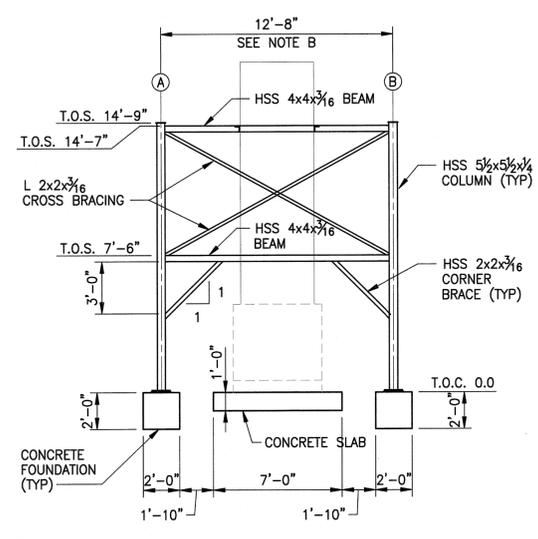
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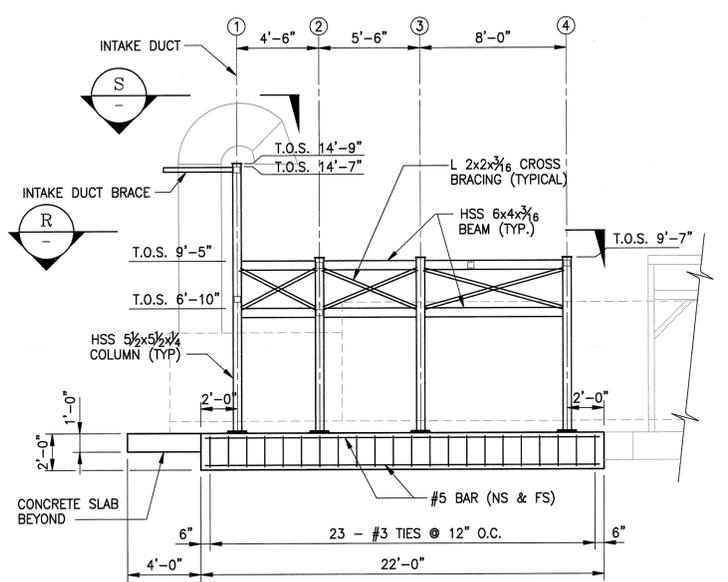
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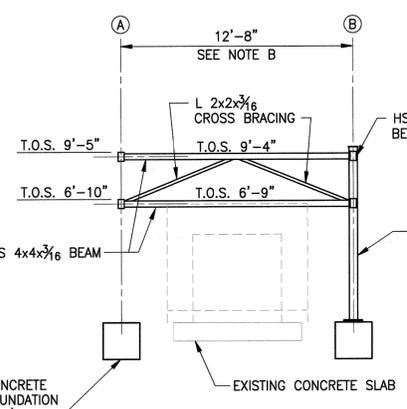
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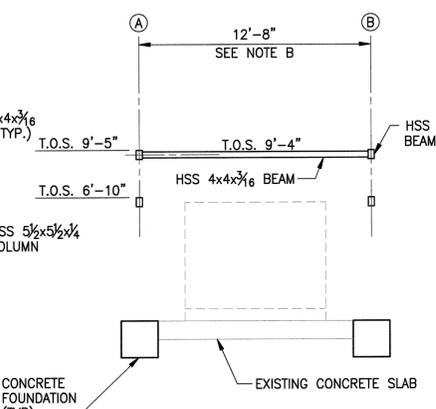
EAST ELEVATION
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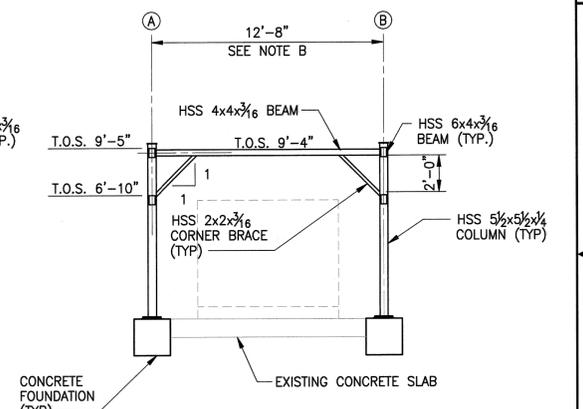
NORTH ELEVATION
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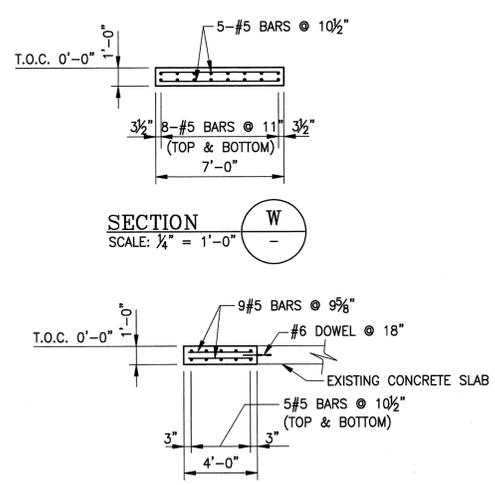
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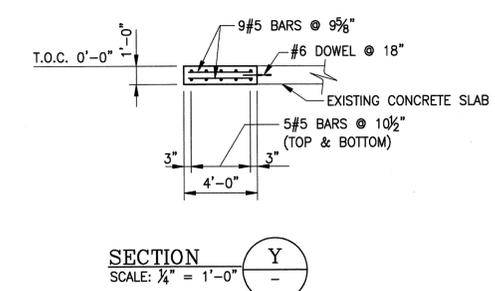
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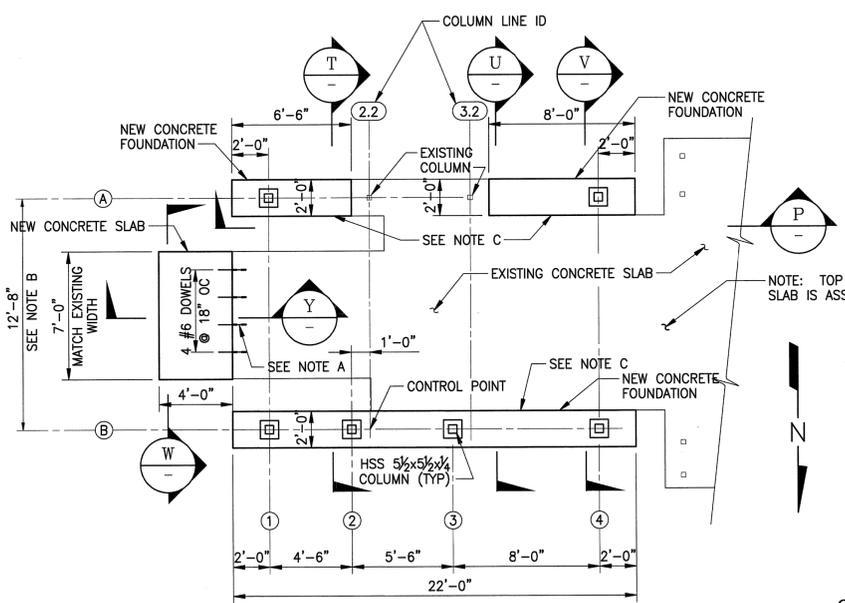
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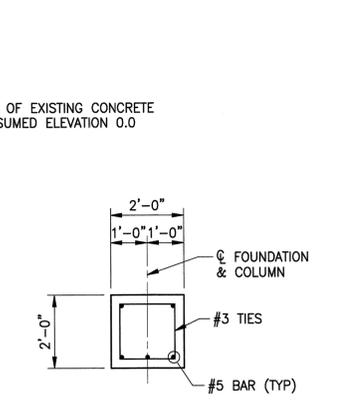
SECTION W
SCALE: 1/4" = 1'-0"



SECTION Y
SCALE: 1/4" = 1'-0"



FOUNDATION PLAN
SCALE: 1/4" = 1'-0"



CONCRETE FOUNDATION DETAIL
NOT TO SCALE

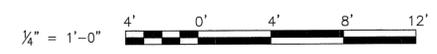
STRUCTURAL FRAMING NOTE

- STRUCTURAL FRAMING DEMOLITION, MODIFICATIONS AND NEW CONSTRUCTION MUST BE PERFORMED IN PHASES. SEE PROJECT PHASING NOTES ON SHEET M2

NOTES

- FIELD DRILL 3/8" ø x 9" DEEP HOLE AT MID-DEPTH OF EXISTING SLAB. SET #6 DOWEL IN ADHESIVE.
- ALIGN NEW COLUMNS WITH EXISTING COLUMNS
- PLACE 1/2" EXPANSION MATERIAL BETWEEN NEW CONCRETE AND EXISTING CONCRETE
- SEE SHEET S8 FOR CONNECTION DETAILS

GRAPHIC SCALES

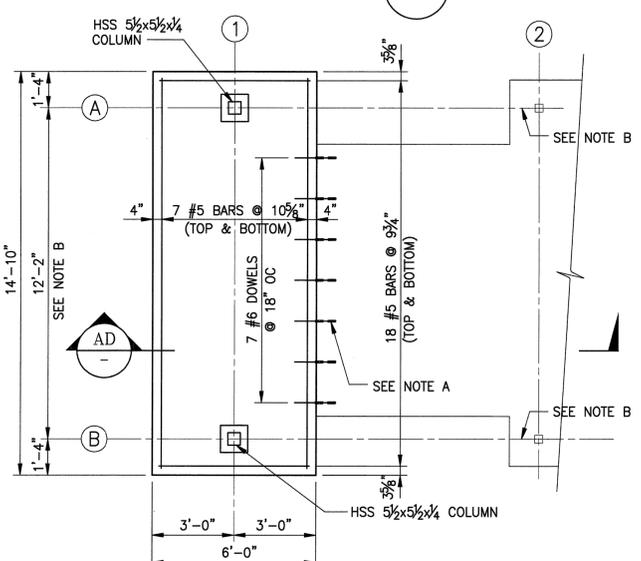
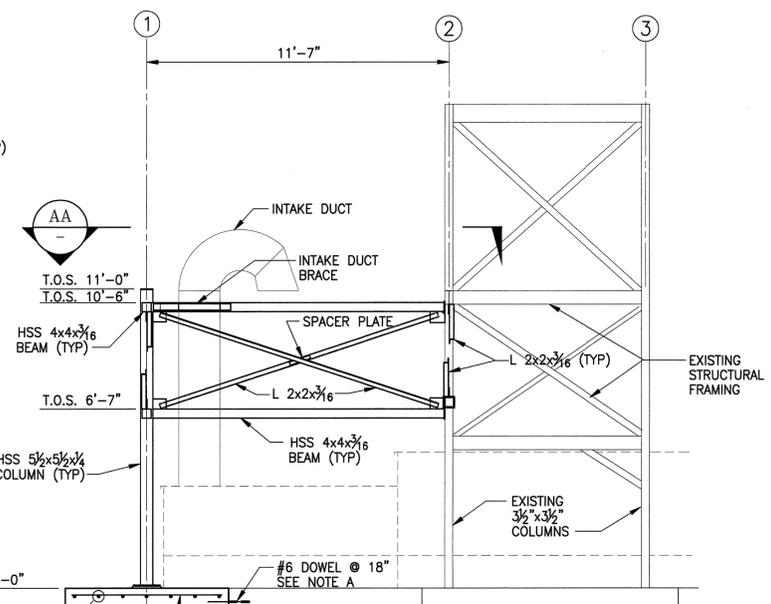
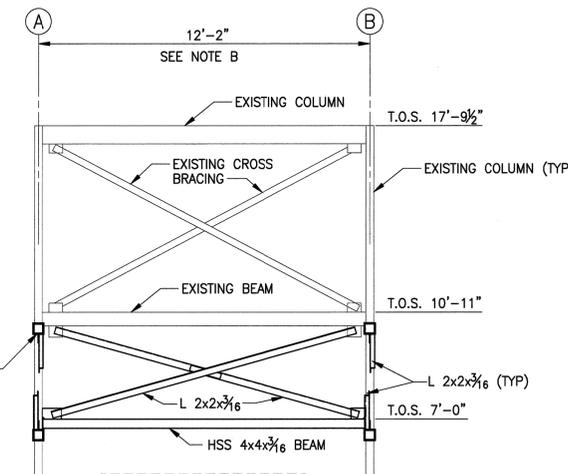
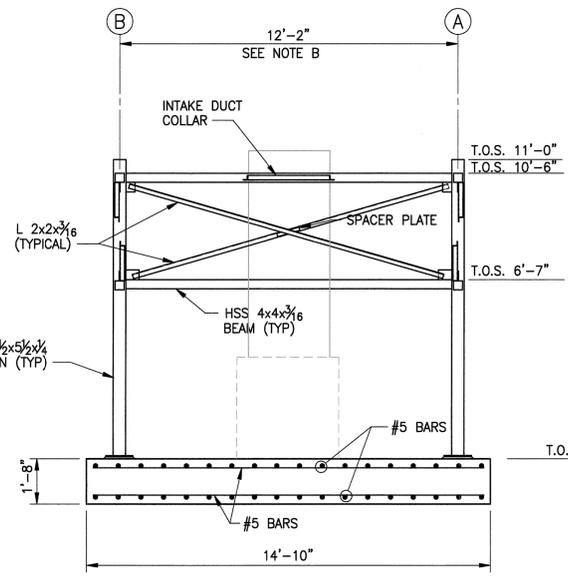
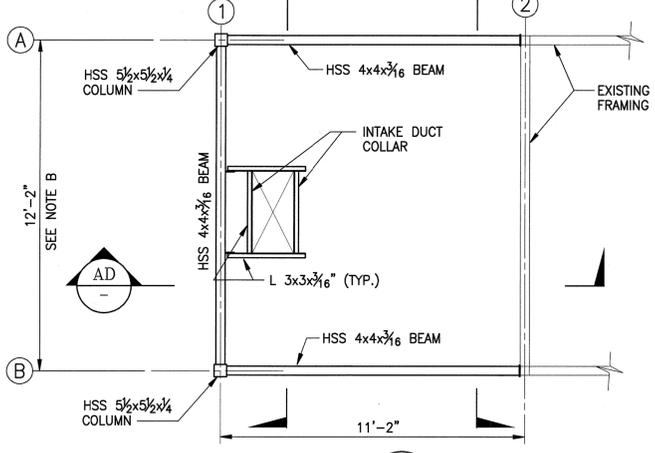


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SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
ENGINEER OF RECORD: M. DAVID FALEY PE LICENSE NO. 40119			
Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 - 904-398-8836 3970 Handricks Avenue - Jacksonville, FL 32207			
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION			
JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA			
PHSF MECHANICAL UPGRADES			
AHU 2 STRUCTURAL MODIFICATIONS			
SIGNATURES	DATE		
DESIGNED D.FINLEY	5/09		
DRAWN A.THOMPSON	6/09		
CHECKED D.FINLEY	6/09		
SUBMITTED			
APPROVED			
FILE NO.	SIZE	DWG. NO.	
	F	79K38540	A
PROJ. NO.	PCN 98779.1	SHEET 7	

A/E FILE No. 0601\0601-22\Mechanical
FILE: S5 - AHU 2 MOD.DWG
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S5

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SECTION AB

SECTION AC

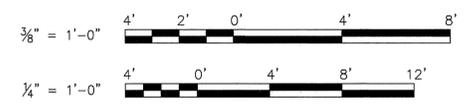
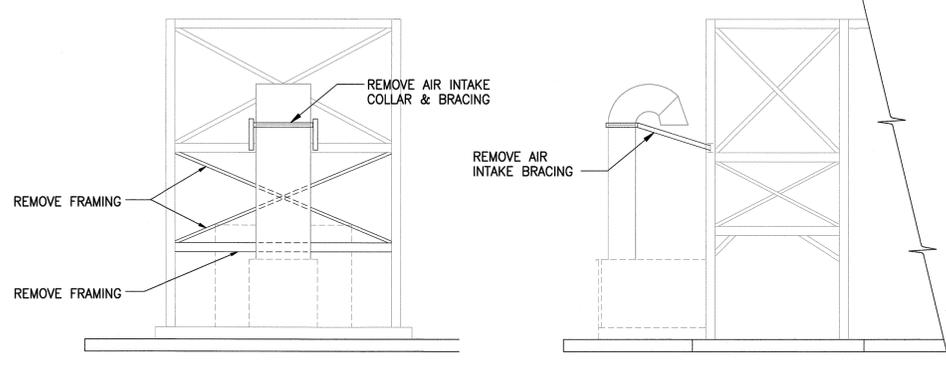
SECTION AD

- NOTES**
- A. FIELD DRILL 7/8" Ø x 9" DEEP HOLE AT MID-DEPTH OF EXISTING SLAB. SET 2'-0" LONG #6 DOWEL IN ADHESIVE.
 - B. ALIGN NEW COLUMNS WITH EXISTING COLUMNS
 - C. SEE SHEET S8 FOR CONNECTION DETAILS

- STRUCTURAL FRAMING NOTES**
1. PHOTOGRAPHS SHOW EXISTING STRUCTURAL FRAMING. SEE MECHANICAL DRAWINGS FOR MODIFICATIONS TO EXISTING AIR HANDLING UNIT.
 2. STRUCTURAL FRAMING DEMOLITION, MODIFICATIONS AND NEW CONSTRUCTION MUST BE PERFORMED IN PHASES, SEE PROJECT PHASING NOTES ON SHEET M2

STRUCTURAL MODIFICATIONS
SCALE 3/8" = 1'-0"

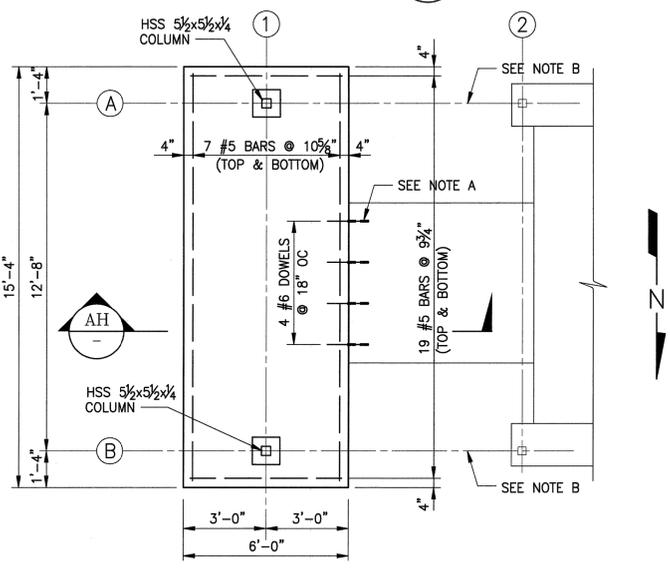
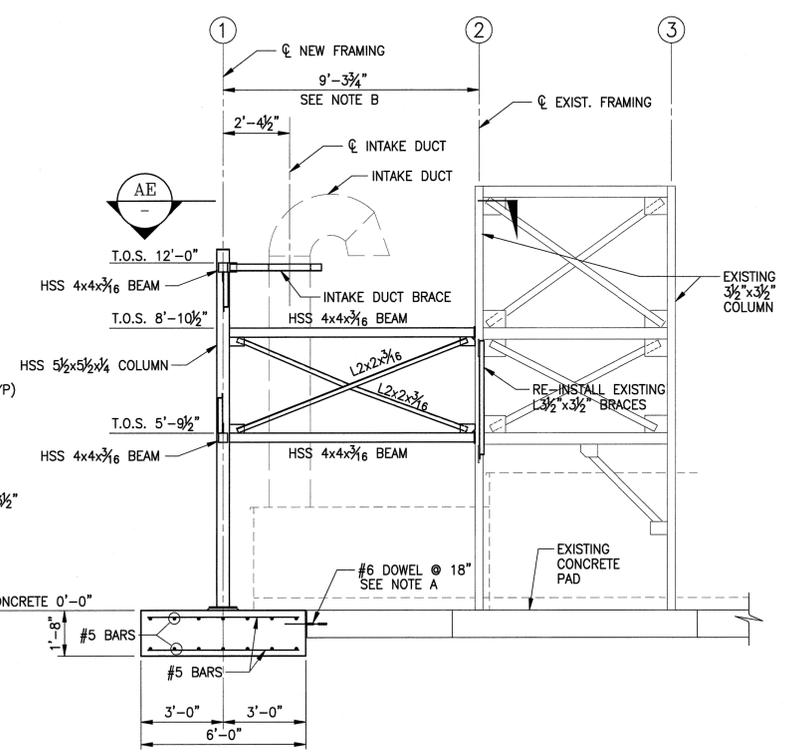
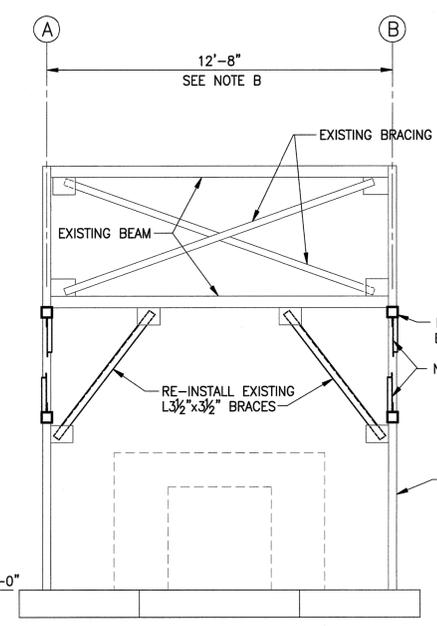
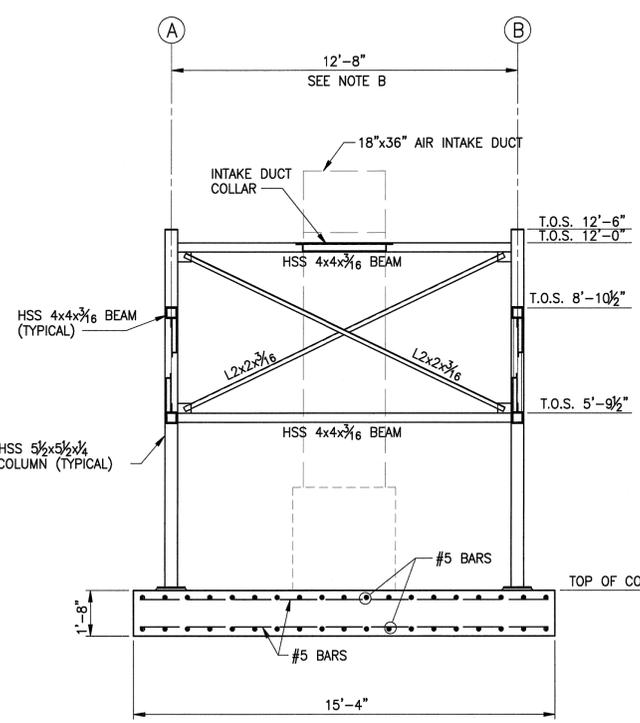
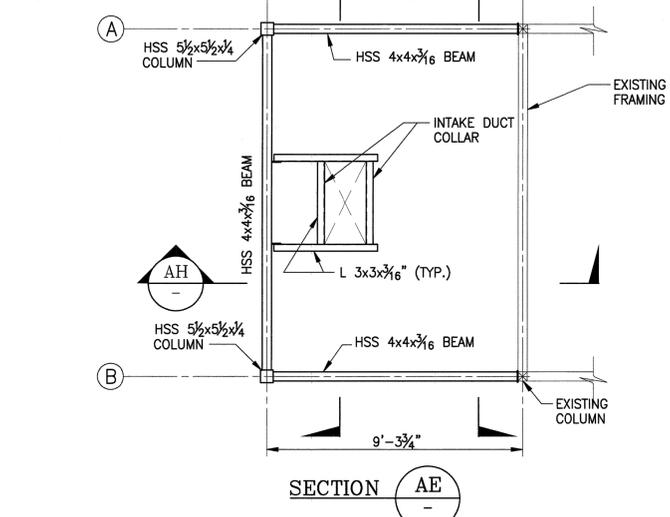
WORK SHOWN ON THIS DRAWING IS OPTION #1



ELEVATION VIEWS OF EXISTING STEEL FRAMING
EXISTING STRUCTURE DEMOLITION DETAILS
SCALE: 1/4" = 1'-0"

RE-ISSUED TO SHOW AHU-5 AS OPTION #1		2/11	SSM
SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
ENGINEER OF RECORD: M. DAVID FINLEY (PE LICENSE NO. 40119)			
Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207			
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA			
PHSF MECHANICAL UPGRADES			
AHU 5 STRUCTURAL MODIFICATIONS			
SIGNATURES	DATE	FILE NO.	SIZE DWG. NO.
DESIGNED D.FINLEY	5/09	F	79K38540
DRAWN A.THOMPSON	6/09		
CHECKED D.FINLEY	6/09		
SUBMITTED			
APPROVED			
A/E FILE No. 0601\0601-22\Mechanical FILE: S6 - AHU 5.DWG		S6	
THIS DRAWING PREPARED BY AutoCAD 2008			
PROJ. NO. PCN 98779.1		SHEET 8	

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SECTION AF

SECTION AG

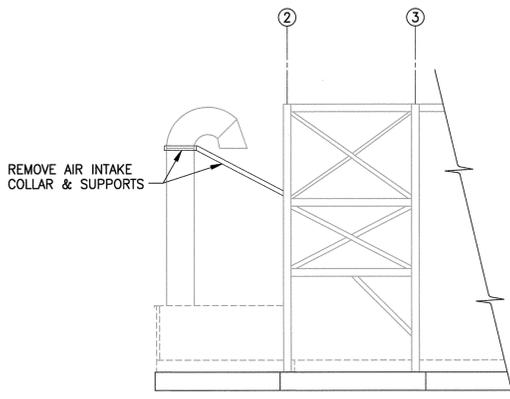
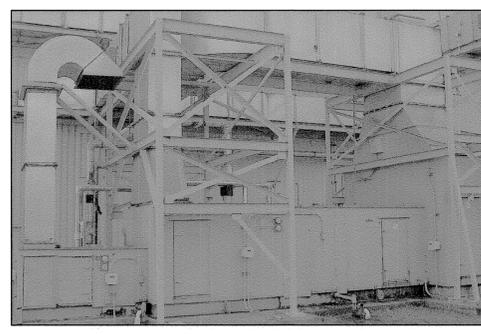
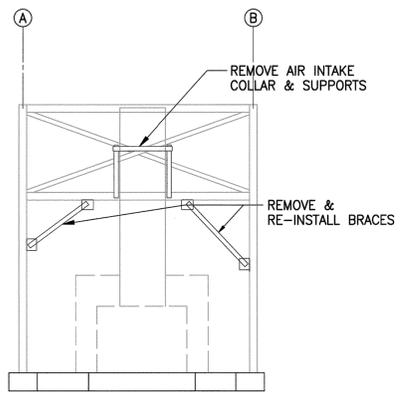
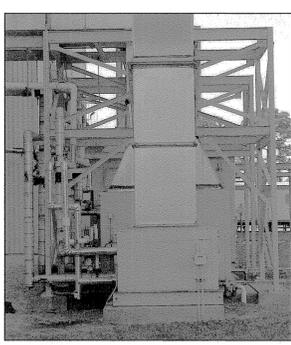
SECTION AH

STRUCTURAL MODIFICATIONS
SCALE 3/8" = 1'-0"

- NOTES**
- A. FIELD DRILL 7/8" ϕ x 9" DEEP HOLE AT MID-DEPTH OF EXISTING SLAB. SET 2'-0" LONG #6 DOWEL IN ADHESIVE.
 - B. ALIGN NEW COLUMNS WITH EXISTING COLUMNS
 - C. SEE SHEET S8 FOR CONNECTION DETAILS

- STRUCTURAL FRAMING NOTES**
1. DETAILS & NOTES ON THIS SHEET ADDRESS ONLY THE STRUCTURAL ELEMENTS. SEE MECHANICAL DRAWINGS FOR MODIFICATIONS TO EXISTING AIR HANDLING UNIT.
 2. STRUCTURAL FRAMING DEMOLITION, MODIFICATIONS AND NEW CONSTRUCTION MUST BE PERFORMED IN PHASES, SEE PROJECT PHASING NOTES ON SHEET M2

WORK SHOWN ON THIS DRAWING IS OPTION #1



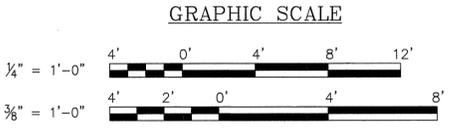
PHOTOGRAPH NOT TO SCALE
END ELEVATION VIEW OF EXISTING STEEL FRAMING

EAST ELEVATION

PHOTOGRAPH NOT TO SCALE
SIDE ELEVATION VIEW OF EXISTING STEEL FRAMING

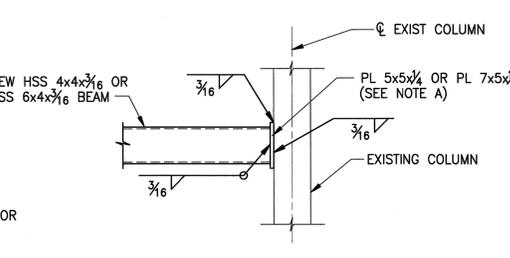
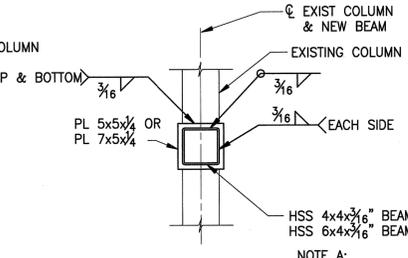
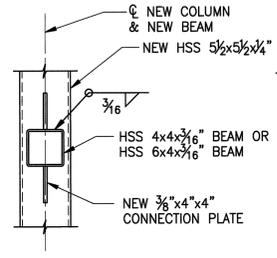
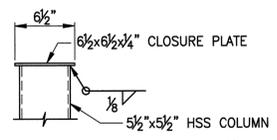
NORTH ELEVATION

EXISTING STRUCTURE DEMOLITION DETAILS
SCALE: 1/4" = 1'-0"



RE-ISSUED TO SHOW AHU-6 AS OPTION #1		2/11	SM
SYM.	ZONE	DESCRIPTION	DATE
REVISIONS			
ENGINEER OF RECORD: M. DAVID FINLEY			
Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 - 904-398-8636 3970 Hendricks Avenue - Jacksonville, FL 32207			
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION			
JOHN F. KENNEDY SPACE CENTER, NASA			
KENNEDY SPACE CENTER, FLORIDA			
PHSF MECHANICAL UPGRADES			
AHU 6			
STRUCTURAL MODIFICATIONS			
SIGNATURES	DATE	FILE NO.	SIZE
DESIGNED D.FINLEY	5/09		F
DRAWN A.THOMPSON	6/09		
CHECKED D.FINLEY	6/09		
SUBMITTED			
APPROVED			
A/E FILE No. 0601\0601-22\Mechanical		S7	
FILE: S7 - AHU 6.DWG		79K38540	
THIS DRAWING PREPARED BY AutoCAD 2008		PROJ. NO. PCN 98779.1	
		SHEET 9	

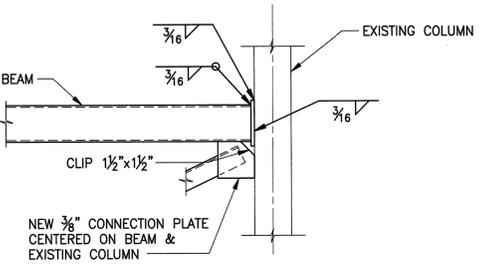
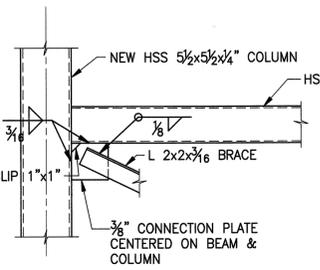
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**CONNECTION DETAIL
NEW BEAM TO NEW COLUMN**
SCALE 1/2" = 1'-0"

CONNECTION DETAILS NEW BEAM TO EXISTING COLUMN
SCALE 1/2" = 1'-0"

NOTE A:
WHERE A CONFLICT OCCURS BETWEEN THE CONNECTION PLATES OF PERPENDICULAR BEAMS FRAMING INTO AN EXISTING COLUMN, CUT CONNECTION PLATES & BUTT WELD AT INTERSECTION.

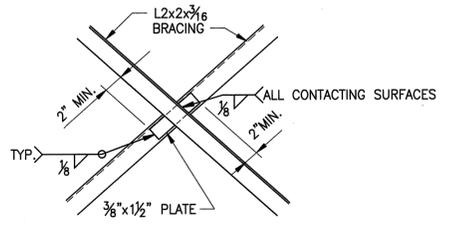


NEW FRAMING

EXISTING FRAMING

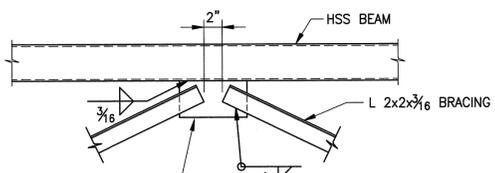
NOTES:

1. DETAIL DRAWN FOR HSS 4x4 BEAM, DETAIL FOR HSS 6x4 BEAM SIMILAR
2. DETAIL DRAWN FOR BRACING LOCATED BELOW THE BEAM. DETAIL FOR BRACING LOCATED ABOVE THE BEAM SIMILAR.
3. SIZE CONNECTION PLATES TO PROVIDE 6" MINIMUM BRACE-TO-PLATE WELD LENGTH (TOTAL WELD LENGTH).
4. SEE SECTIONS & ELEVATIONS FOR BRACING LOCATIONS.

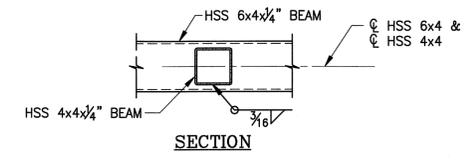


X-CROSSING

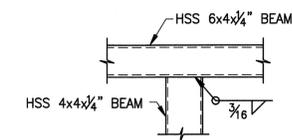
X-BRACE CONNECTION DETAILS
SCALE 1/2" = 1'-0"



K-BRACE CONNECTION DETAILS
SCALE 1/2" = 1'-0"

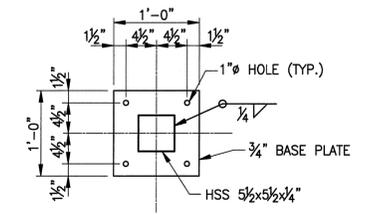


SECTION

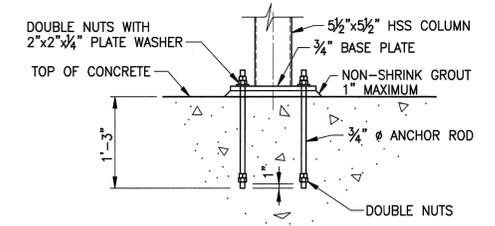


PLAN

**CONNECTION DETAIL
NEW BEAM TO NEW BEAM**
SCALE 1/2" = 1'-0"



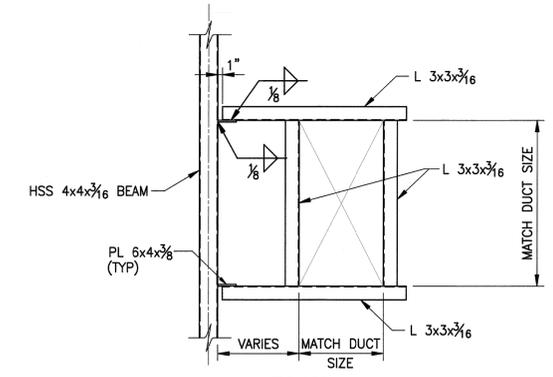
PLAN



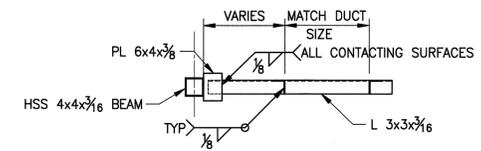
ELEVATION

NEW COLUMN BASE PLATE DETAIL
SCALE 1" = 1'-0"

Z



PLAN

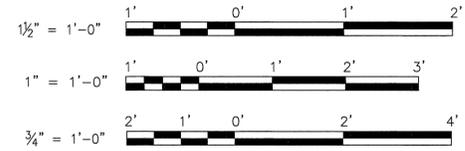


ELEVATION

INTAKE DUCT SUPPORT DETAILS
SCALE: 3/4" = 1'-0"

NOTE:
PROVIDE TEMPORARY SEAT ANGLES OR OTHER ERECTION AIDS AS NEEDED.

GRAPHIC SCALES



A/E FILE No. 0601\0601-22\Mechanical
FILE: SB - STRUCT_DET.DWG
THIS DRAWING PREPARED BY AutoCAD 2008

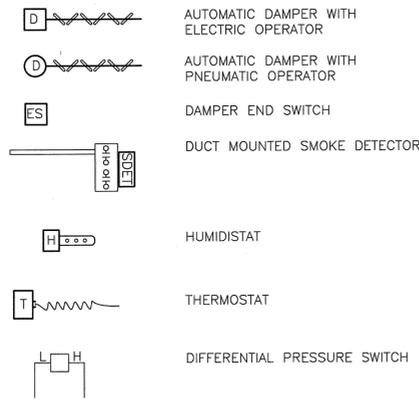
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SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
ENGINEER OF RECORD: M. DAVID FINLEY FW&A Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 - 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207			
SIGNATURES	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA	
DESIGNED M.D.F.	5-20-09	PHSF MECHANICAL UPGRADES STRUCTURAL CONNECTIONS AND DETAILS	
DRAWN A.W.T.	6-5-09		
CHECKED M.D.F.	6-9-09		
SUBMITTED			
APPROVED			
APPROVED		FILE NO.	SIZE DWG. NO.
APPROVED		F	79K38540
APPROVED		PROJ. NO. PCN 98779.1	SHEET 10

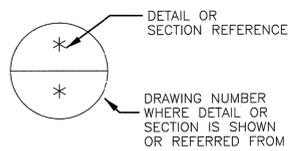
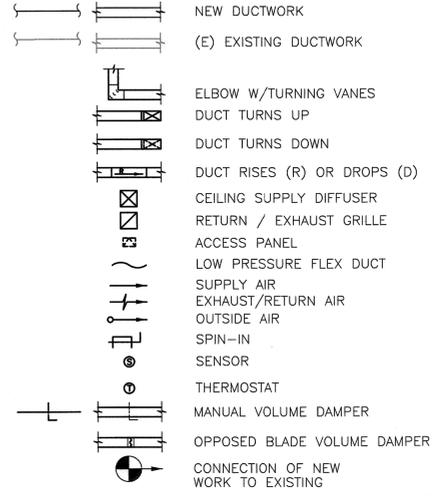
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LEGEND

HVAC CONTROL SYMBOLS



SYMBOLS



ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
BHP	BRAKE HORSEPOWER
BTUH	BRITISH THERMAL UNIT HOUR
CBV	CIRCUIT BALANCING VALVE
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CONT	CONTINUATION
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	DEGREE(S)
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL(LER)
DP	DIFFERENTIAL PRESSURE
DW	DOWN
DIFF	DIFFUSER
ΔT	WATER TEMP. RISE OR DROP
(E)	EXISTING
EXIST	EXISTING
EAT	ENTERING AIR TEMP.
EF	EXHAUST FAN
ES	END SWITCH
EXH	EXHAUST
EXT	EXTERNAL
F	FAHRENHEIT
FC	FORWARD CURVE
FD	FIRE DAMPER/FLOOR DRAIN
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FT	FEET
FM	FLOW METER
GA	GAUGE
GPM	GALLONS PER MINUTE
HC	HEATING COIL
HP	HORSEPOWER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IN	INCHES
LAT	LEAVING AIR TEMP.
MAX	MAXIMUM
MBH	THOUSAND BTUH
MFR	MANUFACTURER
MIN	MINIMUM
MTD	MOUNTED
MV	MANUAL VALVE
MVD	MANUAL VOLUME DAMPER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
OA	OUTSIDE/OUTDOOR AIR
OBVD	OPPOSED BLADE VOLUME DAMPER
PC	PRE-CONDITIONING COIL
PH	PHASE
R	RELOCATE OR RELOCATED
RA	RETURN AIR
REQ'D	REQUIRED
RD	ROOF DRAIN
RH	RELATIVE HUMIDITY
∅	ROUND
SA	SUPPLY AIR
SCH	SCHEDULE
SD	SMOKE DAMPER
SHT	SHEET
S.P.	STATIC PRESSURE
SQ	SQUARE
TEMP.	TEMPERATURE OR TEMPORARY
TH	THERMOSTAT
TYP	TYPICAL
UC	UNDER CUT
V	VOLTS
VD	MANUAL VOLUME DAMPER
VU	VENTILATION UNIT
WB	WET BULB
WG	WATER GAUGE

GENERAL PROJECT NOTES

- DEMOLITION DRAWINGS ARE INTENDED TO GRAPHICALLY REPRESENT THE TASKS TO BE PERFORMED. MINOR ELEMENTS OF THE WORK SUCH AS SUPPORTS AND HANGERS MAY NOT BE INDICATED, BUT SHALL BE REMOVED WITH THE PIPING OR DUCTWORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MODIFICATIONS TO THE EXISTING STRUCTURE REQUIRED TO ACCOMMODATE THE INSTALLATION OF EQUIPMENT. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION. MODIFICATION TO THE EXISTING STRUCTURE SHALL NOT COMPROMISE THE INTEGRITY OF THE EXISTING DUCTWORK SUPPORTS.
- THE DRAWINGS ARE GENERALLY DIAGRAMMATIC IN NATURE AND MAY NOT INDICATE EVERY OFFSET, BEND, FITTING OR MODIFICATION OF PIPING OR DUCTWORK REQUIRED FOR INSTALLATION.
- ELEVATIONS SHOWN ARE APPROXIMATE, PROVIDED FOR THE CONTRACTORS CONVENIENCE, AND SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR INSTALLATION OF WORK.
- THESE DRAWINGS ARE INTENDED TO SHOW THE GENERAL ARRANGEMENT OF DUCTWORK AND EQUIPMENT ONLY AND ARE NOT INTENDED TO SERVE AS FABRICATION SHOP DRAWINGS. EQUIPMENT, DUCTWORK AND PIPING SHOP DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR INDICATING THE PROPOSED INSTALLATION ROUTING WITH DISTANCES FROM FIXED STRUCTURAL ELEMENTS SUCH AS BEAMS AND COLUMNS AND ELEVATION NOTED TO DEMONSTRATE COORDINATION WITH EXISTING FIELD CONDITIONS.
- THE CONTRACTOR SHALL CAREFULLY EXAMINE THE AREAS AND EXISTING CONDITIONS ASSOCIATED WITH THE WORK TO BE PERFORMED TO THOROUGHLY FAMILIARIZE HIMSELF WITH FIELD CONDITIONS AND DIFFICULTIES THAT ATTEND EXECUTION OF THE WORK, AS WELL AS TO IDENTIFY SYSTEMS AND EQUIPMENT WHICH ARE TO REMAIN IN PLACE AND MUST BE PROTECTED DURING THE CONSTRUCTION PERIOD.

GLOSSARY

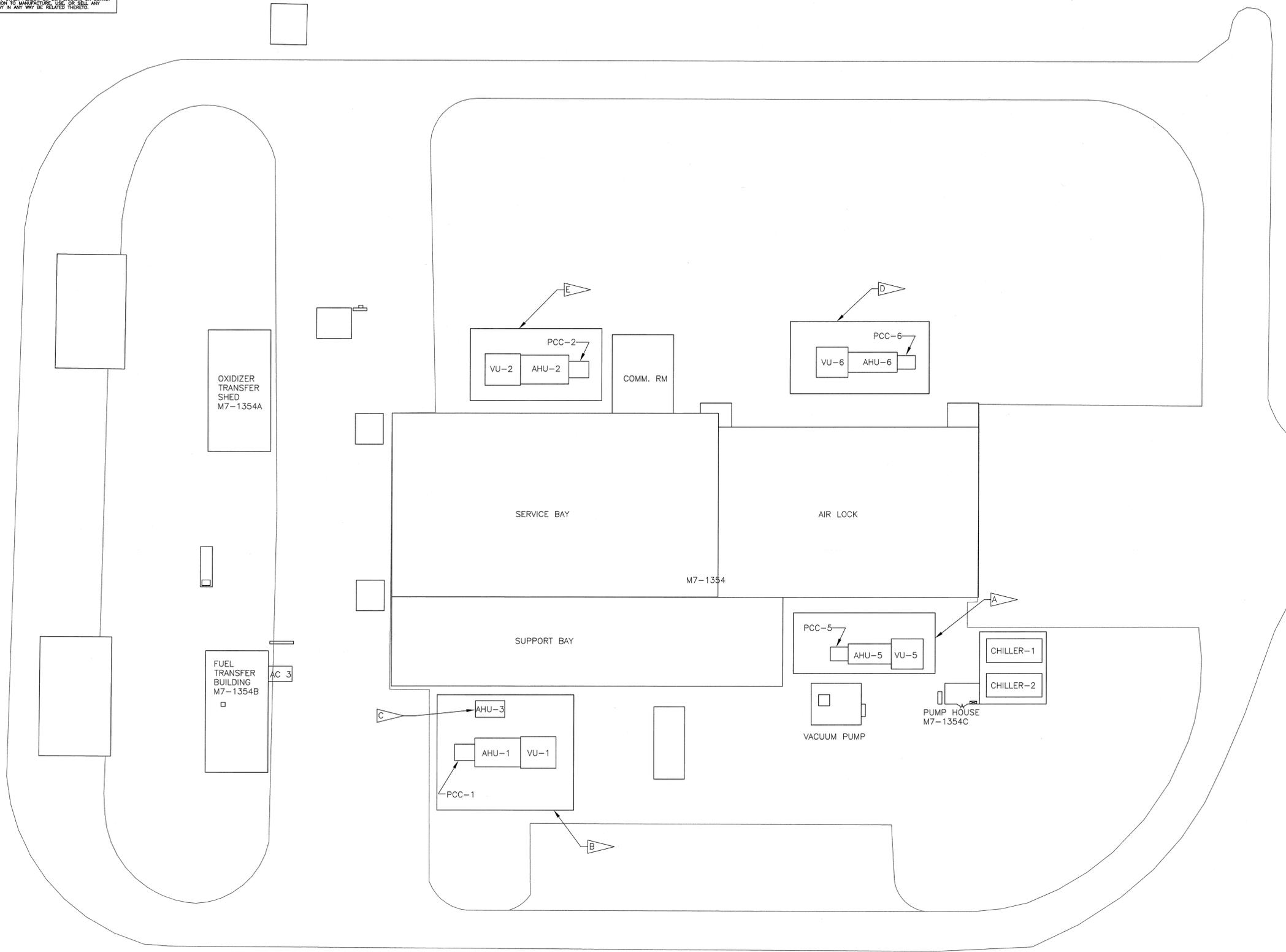
- FURNISH: PURCHASE AND DELIVER (EQUIPMENT) TO THE JOBSITE ONLY.
- INSTALL: PROVIDE ALL MISCELLANEOUS MATERIALS & SERVICES (LABOR & MATERIAL) REQUIRED TO MAKE EQUIPMENT OPERATIONAL.
- PROVIDE: FURNISH & INSTALL
- REMARKS: INFORMATION PERTAINING TO ALL ITEMS ON A SCHEDULE.
- NOTES: INFORMATION PERTAINING TO INDICATED ITEMS ON A SCHEDULE ONLY.

RE-ISSUED WITH NO CHANGES THIS SHEET	2/11	Sam
SYMBOL	ZONE	DATE
REVISIONS		
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA		
PHSF MECHANICAL UPGRADES		
LEGEND, GENERAL NOTES AND ABBREVIATIONS		
SIGNATURES	DATE	
DESIGNED E. DIAZ	9/09	
DRAWN J. CONDIT	9/09	
CHECKED A. GRINNAN	9/09	
SUBMITTED		
APPROVED		
FILE NO.	SIZE	DWG. NO.
	F	79K38540
PROJ. NO.	PCN	SHEET
	98779.1	11

FILE NO. 080034.00
 ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
 PE LIC. NO.: 33661

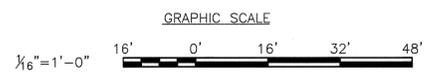
M1

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- PHASED CONSTRUCTION:**
- A OPTION #1, PHASE 1: PCC-5 & AHU-5 REPLACEMENT.
 - B PHASE 1, PCC-1 & AHU-1 REPLACEMENT.
 - C OPTION #2, PHASE 1: REPLACE AHU-3
 - D OPTION #1, PHASE 2: PCC-6 & AHU-6 REPLACEMENT. THIS PHASE SHALL NOT START UNTIL PCC-5 & AHU-5 IS 100% OPERATIONAL.
 - E PHASE 2, PCC-2 & AHU-2 REPLACEMENT. THIS PHASE SHALL NOT START UNTIL PCC-1 & AHU-1 IS 100% OPERATIONAL.

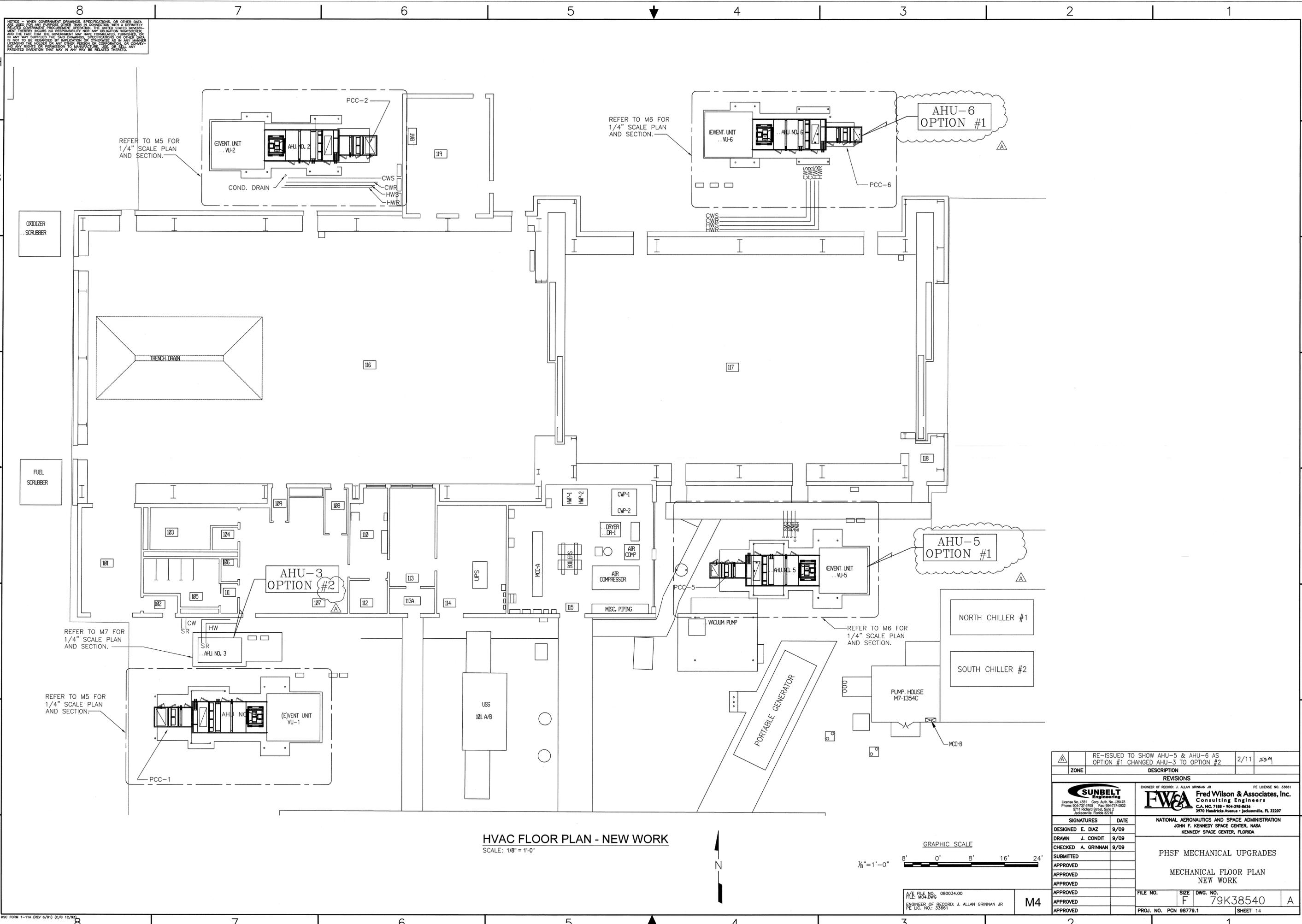
EXISTING MECHANICAL SITE PLAN
SCALE: 1/16" = 1'-0"



RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2	2/11	SSM		
SYM.	ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS				
SUNBELT Engineering License No. 4551 Corp. Auth. No. 25678 Phone: 904-737-6700 Fax: 904-737-0922 5711 Richard Street, Suite 2 Jacksonville, Florida 32216		FW&A Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207		
SIGNATURES		DATE		
DESIGNED	E. DIAZ	9/09		
DRAWN	J. CONDIT	9/09		
CHECKED	A. GRINNAN	9/09		
SUBMITTED				
APPROVED				
FILE NO.	SIZE	DWG. NO.		
	F	79K38540		A
PROJ. NO.	PCN 98779.1	SHEET		12

A/E FILE NO. 080034.00
A/E: M2, DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR
PE LIC. NO.: 33861

M2



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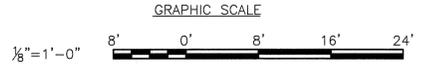
REFER TO M5 FOR 1/4" SCALE PLAN AND SECTION.

REFER TO M6 FOR 1/4" SCALE PLAN AND SECTION.

REFER TO M7 FOR 1/4" SCALE PLAN AND SECTION.

REFER TO M5 FOR 1/4" SCALE PLAN AND SECTION.

HVAC FLOOR PLAN - NEW WORK
SCALE: 1/8" = 1'-0"

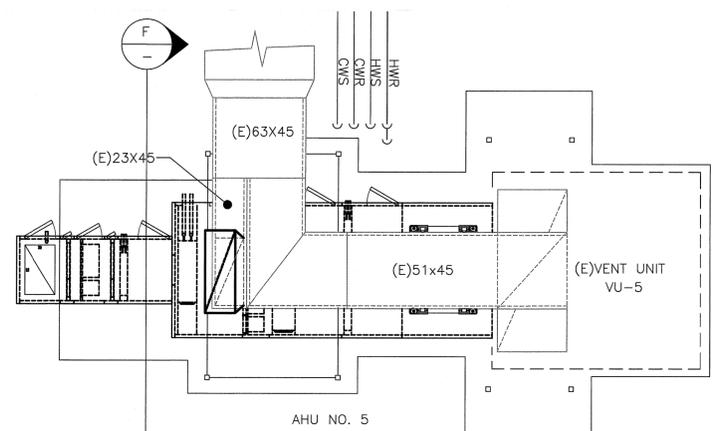


A/E FILE NO. 080034.00
FILE: M04.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
PE LIC. NO.: 33661

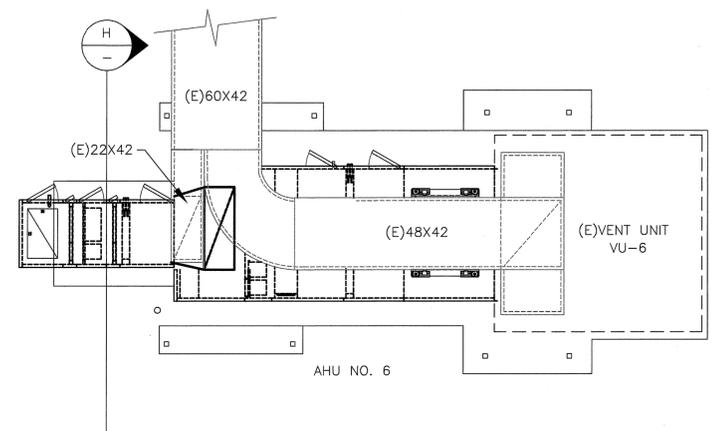
M4

RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2	2/11	SSM
REVISIONS		
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA		
PHSF MECHANICAL UPGRADES		
MECHANICAL FLOOR PLAN NEW WORK		
FILE NO.	SIZE	DWG. NO.
	F	79K38540
PRJ. NO. PCN 98779.1	SHEET 14	

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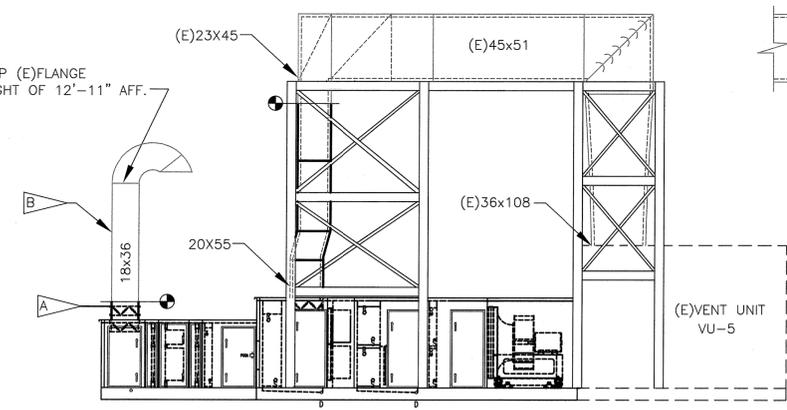


AHU-5 - PLAN VIEW
SCALE: 1/4" = 1'

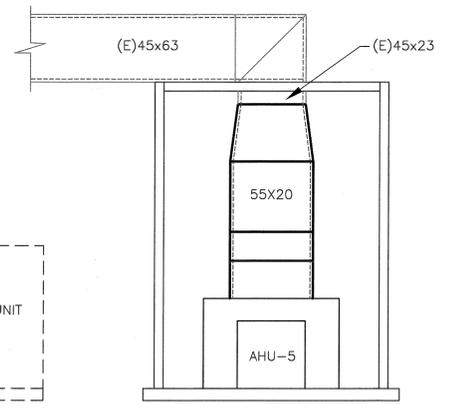


AHU-6 - PLAN VIEW
SCALE: 1/4" = 1'

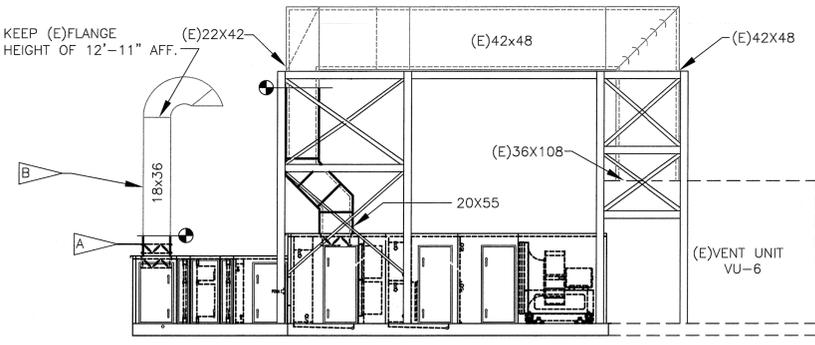
- NOTES:**
- A PROVIDE MANUAL VOLUME DAMPER.
 - B REMOVE DUCTWORK FOR REMOVAL OF (E)STRUCTURE AND (E)UNIT. RE-INSTALL DUCT AFTER NEW UNIT AND STRUCTURE.



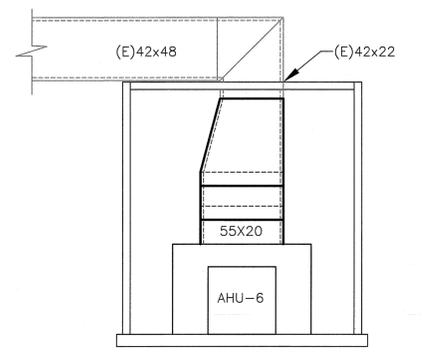
AHU-5 - ELEVATION 1
SCALE: 1/4" = 1'



AHU-5 - ELEVATION 2
SCALE: 1/4" = 1'

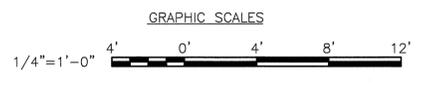


AHU-6 - ELEVATION 1
SCALE: 1/4" = 1'



AHU-6 - ELEVATION 1
SCALE: 1/4" = 1'

WORK SHOWN ON THIS DRAWING IS OPTION #1

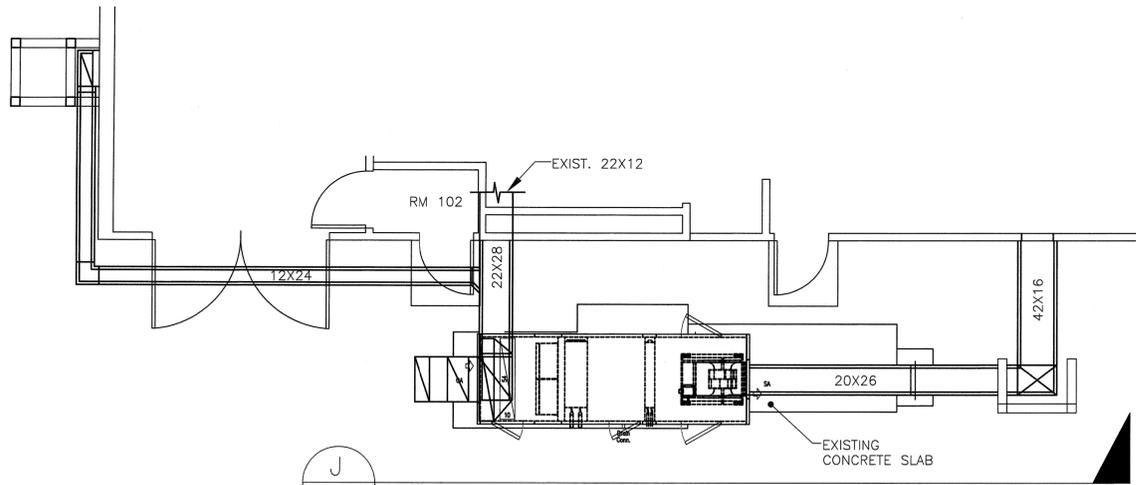


P/E FILE NO. 080034.00
FILE: M06.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
PE LIC. NO.: 33661

M6

RE-ISSUED TO SHOW AHU-5 & 6 AS OPTION #1		2/11	SSM																				
SYM. ZONE	DESCRIPTION	DATE	APPROVED																				
REVISIONS																							
 <small>License No. 4551 Exp. Date: 06/01/18 Phone: 904-737-0700 Fax: 904-737-0932 5711 Richard Street, Suite 2 Jacksonville, Florida 32216</small>		<small>ENGINEER OF RECORD: J. ALLAN GRINNAN JR. PE LICENSE NO. 33661</small> <small>C.A. NO. 7188 - 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207</small>																					
<table border="1"> <tr><th>SIGNATURES</th><th>DATE</th></tr> <tr><td>DESIGNED E. DIAZ</td><td>9/09</td></tr> <tr><td>DRAWN J. CONDIT</td><td>9/09</td></tr> <tr><td>CHECKED A. GRINNAN</td><td>9/09</td></tr> <tr><td>SUBMITTED</td><td></td></tr> <tr><td>APPROVED</td><td></td></tr> <tr><td>APPROVED</td><td></td></tr> <tr><td>APPROVED</td><td></td></tr> <tr><td>APPROVED</td><td></td></tr> <tr><td>APPROVED</td><td></td></tr> </table>		SIGNATURES	DATE	DESIGNED E. DIAZ	9/09	DRAWN J. CONDIT	9/09	CHECKED A. GRINNAN	9/09	SUBMITTED		APPROVED		<small>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA</small> <small>PHSF MECHANICAL UPGRADES MECHANICAL ENLARGED PLANS AND ELEVATIONS AHU-5 & 6</small>									
SIGNATURES	DATE																						
DESIGNED E. DIAZ	9/09																						
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APPROVED		F	79K38540																				
APPROVED		PROJ. NO. PCN 98779.1	SHEET 16																				

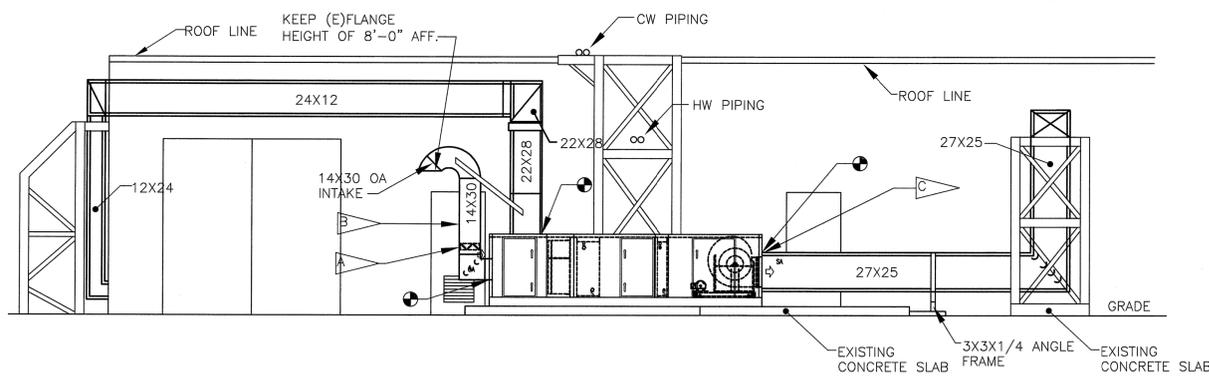
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AHU-3 - PLAN VIEW
SCALE: 1/4" = 1'

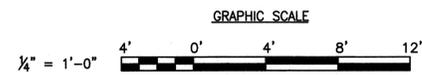


- NOTES:**
- A PROVIDE MANUAL VOLUME DAMPER.
 - B REMOVE DUCTWORK FOR REMOVAL OF (E)UNIT. RE-INSTALL DUCT AFTER NEW UNIT.
 - C PROVIDE NEW DUCT TRANSITION FROM UNIT FAN OUTLET TO (E)DUCT.



AHU-3 - ELEVATION
SCALE: 1/4" = 1'

WORK SHOWN ON THIS DRAWING IS OPTION #2

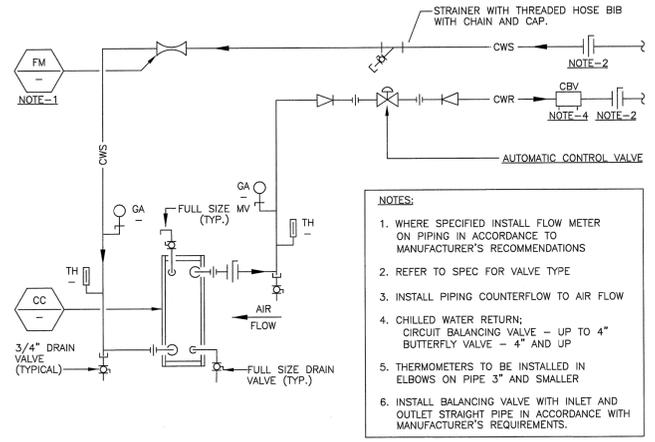


A/E FILE NO. 080034.00
FILE: M7.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
PE LIC. NO.: 33661

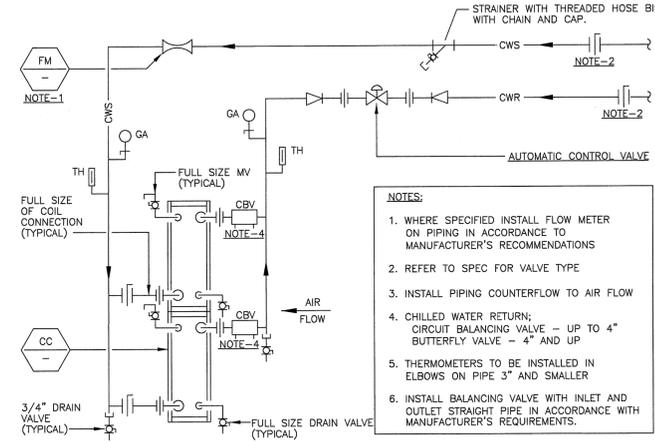
M7

RE-ISSUED TO CHANGE AHU-3 TO OPTION #2		2/11	SSM
SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
		ENGINEER OF RECORD: J. ALLAN GRINNAN JR. PE LICENSE NO. 33661 	
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA		PHSF MECHANICAL UPGRADES MECHANICAL DUCTWORK DETAILS	
FILE NO.	SIZE	DWG. NO.	
	F	79K38540	
PROJ. NO.	PCN 98779.1	SHEET 17	

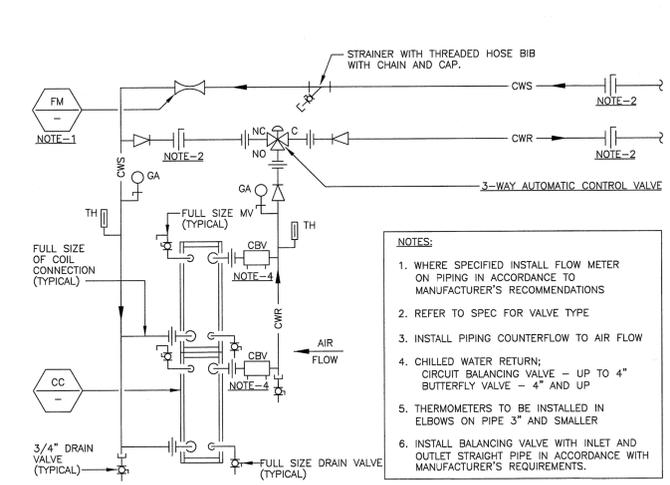
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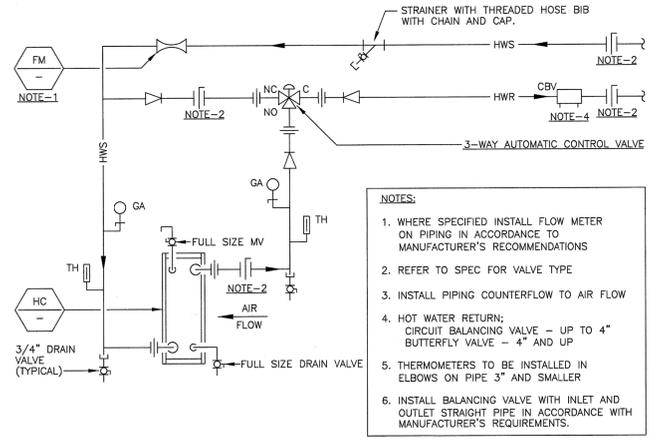
**PIPING DETAIL - CHILLED WATER COIL
UNIT MOUNTED**
NOT TO SCALE



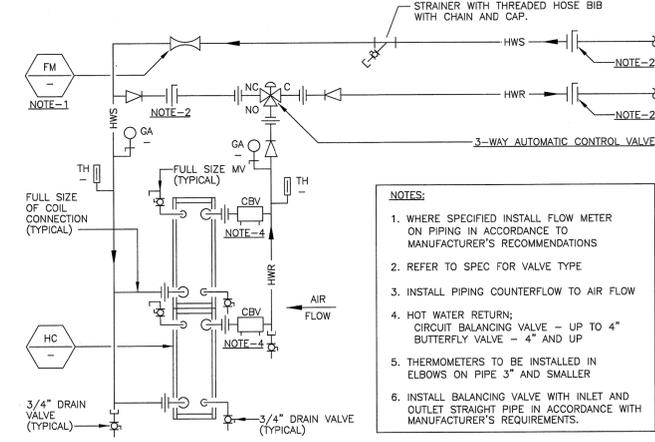
**PIPING DETAIL - CHILLED WATER COIL BANK
2-WAY VALVE**
NOT TO SCALE



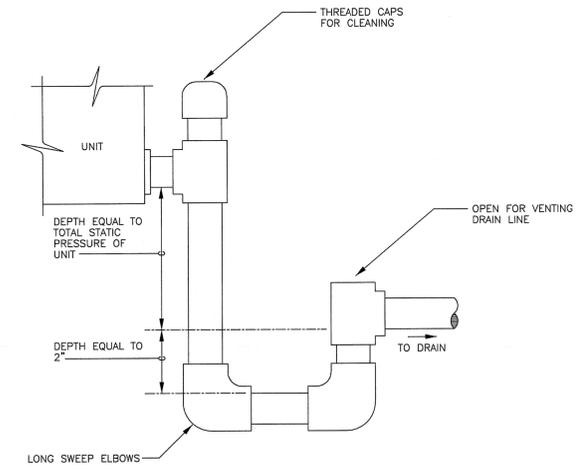
**PIPING DETAIL - CHILLED WATER COIL BANK
3-WAY AUTOMATIC CONTROL VALVE**
NOT TO SCALE



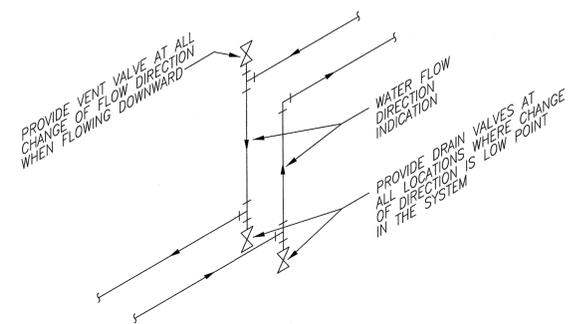
**PIPING DETAIL - HOT WATER COIL
UNIT MOUNTED**
NOT TO SCALE



**PIPING DETAIL - HOT WATER COIL BANK
3-WAY AUTOMATIC CONTROL VALVE**
NOT TO SCALE



COIL CONDENSATE TRAP DETAIL
NOT TO SCALE

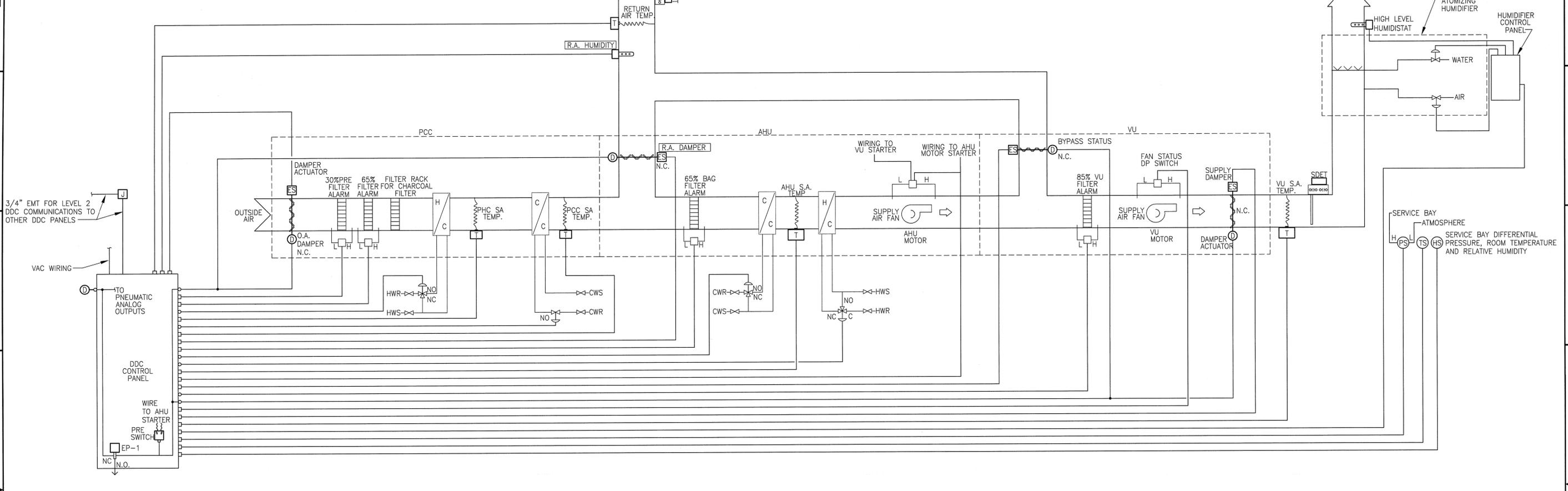


**CHILLED & HOT WATER PIPING
VENT & DRAIN DETAIL**
NOT TO SCALE

A/E FILE NO. 080034.00 FILE: M08.DWG ENGINEER OF RECORD: J. ALLAN GRINNAN JR PE LIC. NO.: 33661	M8	FILE NO. F SIZE DWG. NO. 79K38540 PROJ. NO. PCN 98779.1	A
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RE-ISSUED WITH NO CHANGES THIS SHEET	2/11	303M
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REVISIONS		
ENGINEER OF RECORD: J. ALLAN GRINNAN JR. PE LICENSE NO. 33661 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA		
DESIGNED E. DIAZ	9/09	
DRAWN J. CONDIT	9/09	
CHECKED A. GRINNAN	9/09	
SUBMITTED		
APPROVED		

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HVAC CONTROL DIAGRAM FOR AIR LOCK SYSTEMS PCC-5/AHU-5/VU-5 & PCC-6/AHU-6/VU-6
NOT TO SCALE

SEQUENCE OF OPERATION FOR AIR LOCK CLEAN ROOM SYSTEM AHU-5/VU-5 (TYPICAL FOR AHU-6/VU-6)

- THE AIR HANDLING UNIT (AHU) AND VENTILATING UNIT (VU) SHALL BE CONTROLLED FROM THE DIRECT DIGITAL CONTROL (DDC) SYSTEM. THE TWO-POSITION NORMALLY CLOSED AHU OUTSIDE AIR, RETURN AIR AND BYPASS DAMPERS AND VU SUPPLY AIR DAMPER SHALL BE CLOSED WHEN THE UNIT IS OFF. THE CHILLED WATER VALVES FOR THE PRE-COOLING COIL AND THE COOLING COIL SHALL BE NORMALLY OPEN TO THE COIL. THE HOT WATER VALVES FOR THE PRE-HEATING HOT WATER COIL AND THE HEATING HOT WATER COIL SHALL BE NORMALLY CLOSED TO THE COIL. THE HUMIDIFIER WATER AND AIR VALVES ARE NORMALLY CLOSED.
- EACH SYSTEM GRAPHIC REPRESENTATION SHALL BE MODIFIED TO REPRESENT THE NEW EQUIPMENT CONFIGURATION ON ANY OF THE EXISTING ANDOVER INFINITY WORKSTATIONS (AT SSPF BUILDING M7-360 AND THE FSOC) AND ON THE LOCAL DISPLAY CONTROLLER, DISPLAYING DYNAMIC CONDITIONS OF ANALOG INPUTS AND OUTPUTS AND THE STATUS OF DIGITAL INPUTS AND OUTPUTS ASSOCIATED WITH THE AIR HANDLING SYSTEM, THE OUTSIDE TEMPERATURE AND HUMIDITY, THE COMMON CHILLED WATER SUPPLY AND RETURN TEMPERATURE AND COMMON HOT WATER SUPPLY AND RETURN TEMPERATURE FROM THE BUILDING SYSTEM.
- THE AIR HANDLING UNIT AND VENTILATING UNIT SHALL BE PREVENTED FROM RUNNING OR STOPPED AUTOMATICALLY IF ANY ONE OF THE FOLLOWING SAFETY INTERLOCKS IS NOT SATISFIED:
 - FIRE ALARM SHUTDOWN RELAY
 - THERMAL OVERLOAD RELAYS AT THE MOTOR STARTER
 IF ALL OF THE ABOVE INTERLOCKS ARE SATISFIED, THE AIR HANDLING UNIT AND VENTILATING UNIT SHALL BE COMMANDED TO START LOCALLY (AT THE STARTER) OR REMOTELY FROM THE DDC SYSTEM OR AT THE FACILITY CONTROL PANEL. THE UNIT SHALL BE STARTED AUTOMATICALLY BY THE DDC SYSTEM (ON A TIME SCHEDULE OR OTHER EVENT-PROGRAMMED FUNCTION) OR MANUALLY AT THE LOCAL DISPLAY CONTROLLER IF THE LOCAL/REMOTE KEYSWITCH AT THE AHU STARTER IS IN THE "REMOTE" POSITION. IF THE LOCAL/REMOTE KEYSWITCH IS IN THE "LOCAL" POSITION THE FAN SHALL ONLY BE STARTED LOCALLY AT THE STARTER.

START SEQUENCE: WHEN THE AHU SYSTEM IS COMMANDED TO START, EITHER THROUGH THE "REMOTE" DDC SYSTEM OR THROUGH THE "LOCAL" START PUSH-BUTTON AT THE STARTER, THE SOLENOID AIR VALVE (EP-1) SHALL BE ENERGIZED TO PASS CONTROL AIR TO THE AUTOMATIC VOLUME DAMPERS. AFTER AN ADJUSTABLE TIME DELAY TO ALLOW THE AHU AND VU AUTOMATIC DAMPERS TO OPEN, AND IF ALL SAFETIES ARE SATISFIED, THE PRESSURE ELECTRIC SWITCH SHALL CLOSE TO START THE AHU FAN. IF THE AHU IS RUNNING, AFTER AN ADJUSTABLE 30-SECOND TO 3-MINUTE DELAY, THE VU FAN SHALL BE STARTED THROUGH THE DDC SYSTEM.

- OPERATIONAL MODE: WHEN THE CLEAN ROOM SYSTEMS ARE OPERATIONAL (PAYLOAD IS IN THE FACILITY), THE DDC SYSTEM SHALL CONTROL THE PRE-CONDITIONED OUTSIDE AIR TEMPERATURE BETWEEN 40-60 °F DB (ADJUSTABLE) ± 3 °F DB, BY MODULATING THE PRE-HEAT AND PRE-COOLING VALVES IN SEQUENCE, AND SHALL MAINTAIN THE RETURN AIR TEMPERATURE AT 71 °F DB (ADJUSTABLE) ± 2 °F DB BY MODULATING THE COOLING COIL VALVE AND HEATING COIL VALVE IN SEQUENCE. THE RETURN AIR RELATIVE HUMIDITY SHALL BE CONTROLLED AT 40% RH (ADJUSTABLE) ± 2% RH BY MODULATING THE COOLING COIL VALVE AND HUMIDIFIER VALVES IN SEQUENCE. EACH CONTROL LOOP SHALL BE CONTROLLED BY THE DDC SYSTEM AS FOLLOWS:
 - PRE-HEATING COIL: THE THREE-WAY PRE-HEATING COIL VALVE, NORMALLY CLOSED TO THE COIL, SHALL BE AUTOMATICALLY MODULATED OPEN ON A DECREASE IN THE COIL SUPPLY AIR TEMPERATURE BELOW SETPOINT TO MAINTAIN PRE-HEATING COIL SUPPLY AIR TEMPERATURE OF 40 ± 2 °F DB THROUGH THE DDC SYSTEM, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. ON AN INCREASE IN COIL SUPPLY AIR TEMPERATURE ABOVE SETPOINT, THE VALVE SHALL BE MODULATED CLOSED. IF THE COIL SUPPLY AIR TEMPERATURE FALLS BELOW 35 °F DB, AN ALARM SHALL BE DISPLAYED AT THE DDC WORKSTATIONS.
 - PRE-COOLING COIL: THE TWO-WAY CHILLED WATER VALVE, NORMALLY OPEN TO THE COIL, SERVING THE PRE-COOLING COIL SHALL BE AUTOMATICALLY MODULATED OPEN ON A RISE IN THE COIL SUPPLY AIR TEMPERATURE ABOVE SETPOINT TO MAINTAIN A PRE-COOLING COIL SUPPLY AIR TEMPERATURE OF 60 +0/-3 °F DB THROUGH THE DDC SYSTEM, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. ON A DECREASE IN COIL SUPPLY TEMPERATURE BELOW THE SETPOINT, THE VALVE SHALL BE MODULATED CLOSED. FOR FREEZE PROTECTION, THE PRE-COOLING COIL VALVE SHALL BE FULLY OPENED AND THE CHILLED WATER PUMP STARTED IF THE PRE-COOLING COIL SUPPLY AIR TEMPERATURE IS BELOW 35 °F DB (ADJUSTABLE).
 - COOLING COIL: THE THREE-WAY CHILLED WATER VALVE, NORMALLY OPEN TO THE COOLING COIL, SHALL BE MODULATED OPEN ON A RISE IN THE RETURN AIR TEMPERATURE ABOVE THE SETPOINT TO MAINTAIN THE RETURN AIR TEMPERATURE SETPOINT AUTOMATICALLY THROUGH THE DDC SYSTEM, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. ON A DECREASE IN SUPPLY TEMPERATURE BELOW THE SETPOINT, THE CHILLED WATER VALVE SHALL BE MODULATED CLOSED. FOR DEHUMIDIFICATION, THE CHILLED WATER VALVE SHALL BE MODULATED OPEN ON A RISE IN RETURN AIR RELATIVE HUMIDITY ABOVE THE SETPOINT, OVERRIDING THE RETURN AIR TEMPERATURE CONTROL LOOP, TO MAINTAIN THE RETURN AIR RELATIVE HUMIDITY AT THE SETPOINT AUTOMATICALLY, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. WHEN THE RETURN AIR RELATIVE HUMIDITY DECREASES BELOW THE SETPOINT, THE COOLING COIL VALVE CONTROL SHALL RETURN TO RETURN AIR TEMPERATURE CONTROL AND THE HEATING COIL VALVE SHALL BE CLOSED. WHEN THE CHILLED WATER VALVE IS CONTROLLED TO PROVIDE DEHUMIDIFICATION, THE HEATING COIL VALVE SHALL BE MODULATED OPEN ON A DECREASE IN THE RETURN AIR TEMPERATURE TO MAINTAIN THE RETURN AIR TEMPERATURE AT THE SETPOINT AS DESCRIBED IN THE FOLLOWING PARAGRAPH.

- HEATING COIL: THE THREE-WAY REHEAT COIL VALVE, NORMALLY CLOSED TO THE COIL, SHALL BE MODULATED OPEN ON A DECREASE IN RETURN AIR TEMPERATURE BELOW THE SETPOINT TO MAINTAIN THE SETPOINT AUTOMATICALLY THROUGH THE DDC SYSTEM, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. ON AN INCREASE IN RETURN AIR TEMPERATURE ABOVE THE SETPOINT, THE REHEAT COIL VALVE SHALL BE MODULATED CLOSED.
- HUMIDIFIER: THE DDC SYSTEM SHALL CONTINUOUSLY MONITOR THE RETURN AIR RELATIVE HUMIDITY. IF CONTROL AIR PRESSURE IS AVAILABLE AT THE HUMIDIFIER, THE HUMIDIFIER CONTROL VALVES SHALL BE MODULATED OPEN ON A DECREASE IN RETURN AIR RELATIVE HUMIDITY BELOW THE SETPOINT TO MAINTAIN THE RELATIVE HUMIDITY IN THE RETURN AIR AT THE SETPOINT AUTOMATICALLY, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. THE HI-LIMIT HUMIDISTAT SHALL AUTOMATICALLY LIMIT THE DDC CONTROL SIGNAL TO MODULATE THE HUMIDIFIER CONTROL VALVES CLOSED ON A RISE IN DUCT RELATIVE HUMIDITY ABOVE 90% (ADJUSTABLE). ON AN INCREASE IN RETURN AIR RELATIVE HUMIDITY ABOVE SETPOINT, THE HUMIDIFIER CONTROL VALVES SHALL BE AUTOMATICALLY MODULATED CLOSED BY THE DDC CONTROL SYSTEM THROUGH THE HUMIDIFIER CONTROL PANEL.
- NON-OPERATIONAL MODE: WHEN THE CLEAN ROOM SYSTEMS ARE NON-OPERATIONAL (PAYLOAD IS NOT IN THE FACILITY), THE DDC SYSTEM SHALL CONTROL THE PRE-CONDITIONED OUTSIDE AIR TEMPERATURE AT 40-60 °F DB, AND SHALL MAINTAIN THE RETURN AIR TEMPERATURE BELOW 80 ± 2 °F DB (ADJUSTABLE) BY MODULATING THE COOLING COIL VALVE AND ABOVE 65 ± 2 °F DB (ADJUSTABLE) BY MODULATING THE HEATING COIL VALVE IN SEQUENCE AND SHALL MAINTAIN RETURN AIR RELATIVE HUMIDITY BELOW 65% ± 5% RH (ADJUSTABLE) BY MODULATING THE COOLING COIL VALVE AND ABOVE 40% ± 5% RH (ADJUSTABLE) BY MODULATING OPEN THE HUMIDIFIER VALVES IN SEQUENCE. WHEN THE RETURN AIR TEMPERATURE AND RELATIVE HUMIDITY CONDITIONS ARE OUTSIDE OF THESE PARAMETERS, THE PRE-HEATING AND PRE-COOLING COIL VALVES, THE COOLING COIL VALVE, THE HEATING COIL VALVE AND THE HUMIDIFIER VALVES SHALL BE CONTROLLED AS DESCRIBED IN PARAGRAPHS 4.A THROUGH 4.E.
- UPON ACTIVATION OF THE EXISTING N.C. FIRE ALARM SHUTDOWN RELAY THE AIR HANDLING UNIT AND THE VENTILATING UNIT SHALL BE SHUT DOWN AUTOMATICALLY, AUTOMATIC DAMPERS CLOSED, AND AN ALARM MESSAGE PRINTED AT THE WORKSTATIONS. SHOULD ANY OF THE AUTOMATIC DAMPERS BE LESS THAN 70% OPEN, AS INDICATED BY THE DAMPER END SWITCH, THE DDC SYSTEM SHALL PRINT AN ALARM MESSAGE INDICATING THE DAMPER HAS CLOSED.

WORK SHOWN ON THIS DRAWING IS OPTION #1

A/E FILE NO. 080034.00
FILE: M10.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
PE LIC. NO.: 33661

M10

RE-ISSUED TO SHOW AHU-5 & 6 AS OPTION #1		2/11	JAG
SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
SIGNATURES		DATE	
DESIGNED	E. DIAZ	9/09	
DRAWN	J. CONDT	9/09	
CHECKED	A. GRINNAN	9/09	
SUBMITTED			
APPROVED			
FILE NO.	SIZE	DWG. NO.	
	F	79K38540	
PROJ. NO.	PCN 98779.1	SHEET	20

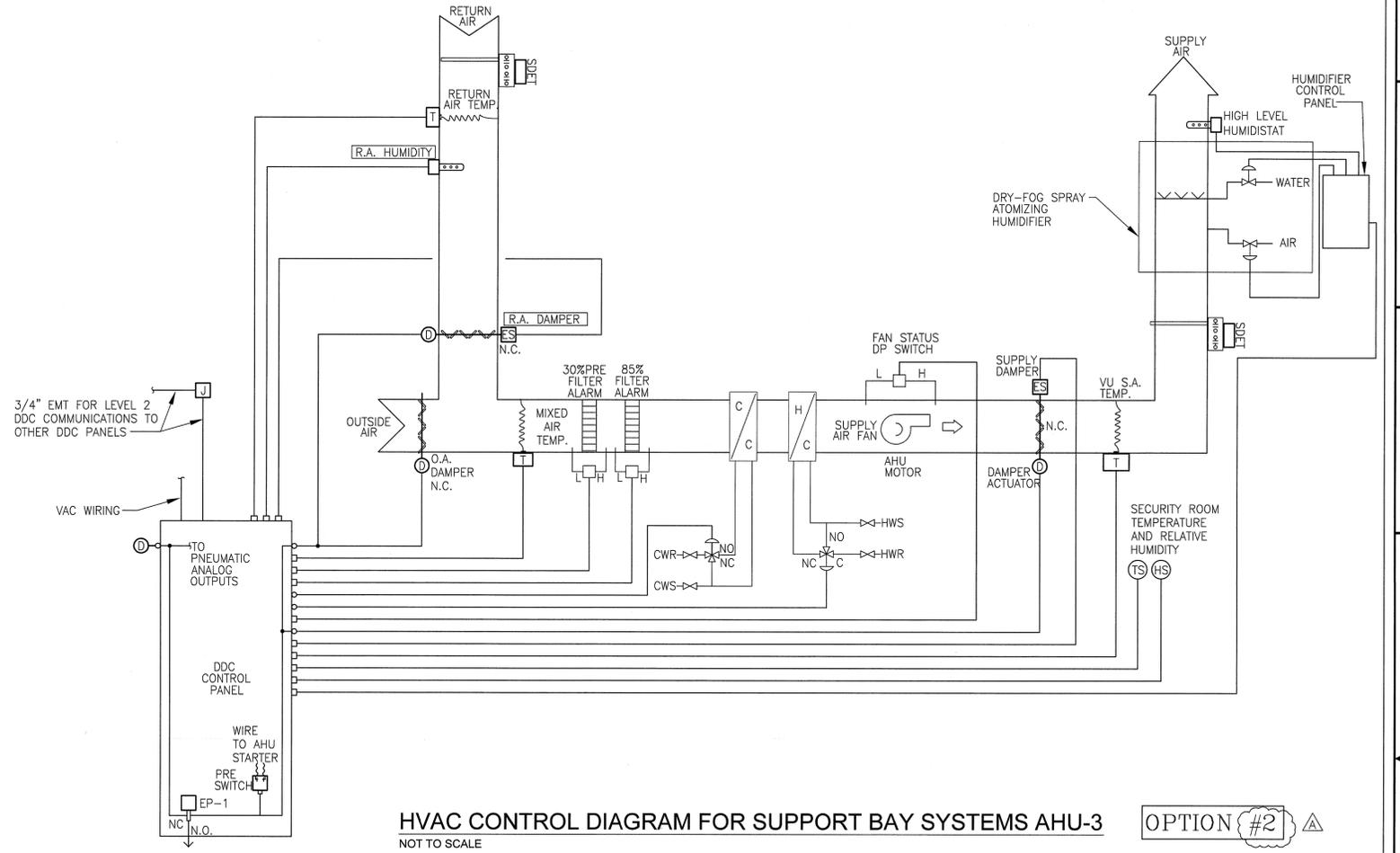
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A SPECIFIC GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OMISSION, MISSTATEMENT, OR THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPORTED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA. THE USER OF THIS DRAWING, SPECIFICATION, OR OTHER DATA SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMISSIONS FROM THE ORIGINAL HOLDER OF ANY OTHER PERSON OR CORPORATION OR CONVEYING THE RIGHTS OF PROTECTION TO MANUFACTURE, USE, OR CONVEY ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

SEQUENCE OF OPERATION FOR SERVICE ROOM SYSTEM AHU-3

- THE AIR HANDLING UNIT (AHU) SHALL BE CONTROLLED FROM THE DIRECT DIGITAL CONTROL (DDC) SYSTEM. THE TWO-POSITION NORMALLY CLOSED AHU OUTSIDE AIR, RETURN AIR AND SUPPLY AIR DAMPERS SHALL BE CLOSED WHEN THE UNIT IS OFF. THE CHILLED WATER VALVES FOR THE COOLING COIL SHALL BE NORMALLY OPEN TO THE COIL. THE HOT WATER VALVE FOR THE HEATING HOT WATER COIL SHALL BE NORMALLY CLOSED TO THE COIL. THE HUMIDIFIER WATER AND AIR VALVES ARE NORMALLY CLOSED.
- EACH SYSTEM GRAPHIC REPRESENTATION SHALL BE MODIFIED TO REPRESENT THE NEW EQUIPMENT CONFIGURATION ON ANY OF THE EXISTING ANDOVER INFINITY WORKSTATIONS (AT SSPF BUILDING M7-360 AND THE FSOC) AND ON THE LOCAL DISPLAY CONTROLLER, DISPLAYING DYNAMIC CONDITIONS OF ANALOG INPUTS AND OUTPUTS AND THE STATUS OF DIGITAL INPUTS AND OUTPUTS ASSOCIATED WITH THE AIR HANDLING SYSTEM, THE OUTSIDE TEMPERATURE AND HUMIDITY, THE COMMON CHILLED WATER SUPPLY AND RETURN TEMPERATURE AND COMMON HOT WATER SUPPLY AND RETURN TEMPERATURE FROM THE BUILDING SYSTEM.
- THE AIR HANDLING UNIT SHALL BE PREVENTED FROM RUNNING OR STOPPED AUTOMATICALLY IF ANY ONE OF THE FOLLOWING SAFETY INTERLOCKS IS NOT SATISFIED:
 - FIRE ALARM SHUTDOWN RELAY
 - EMERGENCY EXHAUST SYSTEM AHU SHUTDOWN RELAY
 - THERMAL OVERLOAD RELAYS AT THE MOTOR STARTER
 IF ALL OF THE ABOVE INTERLOCKS ARE SATISFIED, THE AIR HANDLING UNIT AND VENTILATING UNIT SHALL BE COMMANDED TO START LOCALLY (AT THE STARTER) OR REMOTELY FROM THE DDC SYSTEM OR AT THE FACILITY CONTROL PANEL. THE UNIT SHALL BE STARTED AUTOMATICALLY BY THE DDC SYSTEM (ON A TIME SCHEDULE OR OTHER EVENT-PROGRAMMED FUNCTION) OR MANUALLY AT THE LOCAL DISPLAY CONTROLLER IF THE LOCAL/REMOTE KEYSWITCH AT THE AHU STARTER IS IN THE "REMOTE" POSITION. IF THE LOCAL/REMOTE KEYSWITCH IS IN THE "LOCAL" POSITION THE FAN SHALL ONLY BE STARTED LOCALLY AT THE STARTER.

START SEQUENCE: WHEN THE AHU SYSTEM IS COMMANDED TO START, EITHER THROUGH THE "REMOTE" DDC SYSTEM OR THROUGH THE "LOCAL" START PUSH-BUTTON AT THE STARTER, THE SOLENOID AIR VALVE (EP-1) SHALL BE ENERGIZED TO PASS CONTROL AIR TO THE AUTOMATIC VOLUME DAMPERS. AFTER AN ADJUSTABLE TIME DELAY TO ALLOW THE AHU AUTOMATIC DAMPERS TO OPEN, AND IF ALL SAFETIES ARE SATISFIED, THE PRESSURE ELECTRIC SWITCH SHALL CLOSE TO START THE AHU FAN.
- OPERATIONAL MODE: WHEN THE CLEAN ROOM SYSTEMS ARE OPERATIONAL (PAYLOAD IS IN THE FACILITY), THE DDC SYSTEM SHALL CONTROL THE RETURN AIR TEMPERATURE AT 71 °F DB (ADJUSTABLE) ± 2 °F DB, BY MODULATING THE COOLING COIL VALVE AND HEATING COIL VALVE IN SEQUENCE, AND SHALL MAINTAIN THE RETURN AIR RELATIVE HUMIDITY AT 40% RH (ADJUSTABLE) ± 2% RH BY MODULATING THE COOLING COIL VALVE AND HUMIDIFIER VALVES IN SEQUENCE. EACH CONTROL LOOP SHALL BE CONTROLLED BY THE DDC SYSTEM AS FOLLOWS:
 - COOLING COIL: THE THREE-WAY CHILLED WATER VALVE, NORMALLY OPEN TO THE COOLING COIL, SHALL BE MODULATED OPEN ON A RISE IN THE RETURN AIR TEMPERATURE ABOVE THE SETPOINT TO MAINTAIN THE RETURN AIR TEMPERATURE AUTOMATICALLY THROUGH THE DDC SYSTEM, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. ON A DECREASE IN SUPPLY TEMPERATURE BELOW THE SETPOINT, THE CHILLED WATER VALVE SHALL BE MODULATED CLOSED. FOR DEHUMIDIFICATION, THE CHILLED WATER VALVE SHALL BE MODULATED OPEN ON A RISE IN RETURN AIR RELATIVE HUMIDITY ABOVE THE SETPOINT, OVERRIDING THE RETURN AIR TEMPERATURE CONTROL LOOP, TO MAINTAIN THE RETURN AIR RELATIVE HUMIDITY AT THE SETPOINT AUTOMATICALLY, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. WHEN THE RETURN AIR RELATIVE HUMIDITY DECREASES BELOW THE SETPOINT, THE COOLING COIL VALVE CONTROL SHALL RETURN TO RETURN AIR TEMPERATURE CONTROL AND THE HEATING COIL VALVE SHALL BE CLOSED. WHEN THE CHILLED WATER VALVE IS CONTROLLED TO PROVIDE DEHUMIDIFICATION, THE HEATING COIL VALVE SHALL BE MODULATED OPEN ON A DECREASE IN THE RETURN AIR TEMPERATURE TO MAINTAIN THE RETURN AIR TEMPERATURE AT THE SETPOINT AS DESCRIBED IN THE FOLLOWING PARAGRAPH.

- HEATING COIL: THE THREE-WAY REHEAT COIL VALVE, NORMALLY CLOSED TO THE COIL, SHALL BE MODULATED OPEN ON A DECREASE IN RETURN AIR TEMPERATURE BELOW THE SETPOINT TO MAINTAIN THE SETPOINT AUTOMATICALLY THROUGH THE DDC SYSTEM, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. ON AN INCREASE IN RETURN AIR TEMPERATURE ABOVE THE SETPOINT, THE REHEAT COIL VALVE SHALL BE MODULATED CLOSED.
- HUMIDIFIER: THE DDC SYSTEM SHALL CONTINUOUSLY MONITOR THE RETURN AIR RELATIVE HUMIDITY. IF CONTROL AIR PRESSURE IS AVAILABLE AT THE HUMIDIFIER, THE HUMIDIFIER CONTROL VALVES SHALL BE MODULATED OPEN ON A DECREASE IN RETURN AIR RELATIVE HUMIDITY BELOW THE SETPOINT TO MAINTAIN THE RELATIVE HUMIDITY IN THE RETURN AIR AT THE SETPOINT AUTOMATICALLY, USING A PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROL ALGORITHM. THE HI-LIMIT HUMIDISTAT SHALL AUTOMATICALLY LIMIT THE DDC CONTROL SIGNAL TO MODULATE THE HUMIDIFIER CONTROL VALVES CLOSED ON A RISE IN DUCT RELATIVE HUMIDITY ABOVE 90% (ADJUSTABLE). ON AN INCREASE IN RETURN AIR RELATIVE HUMIDITY ABOVE SETPOINT, THE HUMIDIFIER CONTROL VALVES SHALL BE AUTOMATICALLY MODULATED CLOSED BY THE DDC CONTROL SYSTEM THROUGH THE HUMIDIFIER CONTROL PANEL.
- NON-OPERATIONAL MODE: WHEN THE CLEAN ROOM SYSTEMS ARE NON-OPERATIONAL (PAYLOAD IS NOT IN THE FACILITY), THE DDC SYSTEM SHALL MAINTAIN THE RETURN AIR TEMPERATURE BELOW 80 ± 2 °F DB (ADJUSTABLE) BY MODULATING THE COOLING COIL VALVE AND ABOVE 65 ± 2 °F DB (ADJUSTABLE) BY MODULATING THE HEATING COIL VALVE IN SEQUENCE AND SHALL MAINTAIN RETURN AIR RELATIVE HUMIDITY BELOW 65% ± 5% RH (ADJUSTABLE) BY MODULATING THE COOLING COIL VALVE AND ABOVE 40% ± 5% RH (ADJUSTABLE) BY MODULATING OPEN THE HUMIDIFIER VALVES IN SEQUENCE. WHEN THE RETURN AIR TEMPERATURE AND RELATIVE HUMIDITY CONDITIONS ARE OUTSIDE OF THESE PARAMETERS, THE PRE-HEATING AND PRE-COOLING COIL VALVES, THE COOLING COIL VALVE, THE HEATING COIL VALVE AND THE HUMIDIFIER VALVES SHALL BE CONTROLLED AS DESCRIBED IN PARAGRAPHS 4.A THROUGH 4.C.
- THE EMERGENCY EXHAUST SYSTEM IS ACTIVATED MANUALLY AT THE EXISTING EMERGENCY EXHAUST CONTROL PANELS (IN THE SERVICE BUILDING OR CONTROL BUILDING) TO AUTOMATICALLY OPEN THE EMERGENCY EXHAUST DAMPERS, START THE EMERGENCY EXHAUST FANS AND SHUT DOWN THE AIR HANDLING UNIT AND VENTILATING UNIT (THROUGH THE EMERGENCY EXHAUST SHUTDOWN RELAY). UPON ACTIVATION OF THE EXISTING N.C. FIRE ALARM SHUTDOWN RELAY OR EXISTING N.C. EMERGENCY EXHAUST SHUT DOWN RELAY, THE AIR HANDLING UNIT SHALL BE SHUT DOWN AUTOMATICALLY, AUTOMATIC DAMPERS CLOSED, AND AN ALARM MESSAGE PRINTED AT THE WORKSTATIONS. SHOULD ANY OF THE AUTOMATIC DAMPERS BE LESS THAN 70% OPEN, AS INDICATED BY THE DAMPER END SWITCH, THE DDC SYSTEM SHALL PRINT AN ALARM MESSAGE INDICATING THE DAMPER HAS CLOSED.



SYSTEM APPARATUS OR AREA POINT DESCRIPTION	DIRECT DIGITAL CONTROL SYSTEM POINT LIST																
	OUTPUT		HARDWARE								SOFTWARE						
	DIGITAL	ANALOG	DIGITAL INPUT				ANALOG INPUT				ALARMS	EMCS					
AHU-1	X																
AHU-2	X																
AHU-5	X																
AHU-6	X																
(E)VU-1	X																
(E)VU-2	X																
(E)VU-5	X																
(E)VU-6	X																
AHU-3	X																

OPTION #1

OPTION #1

OPTION #2

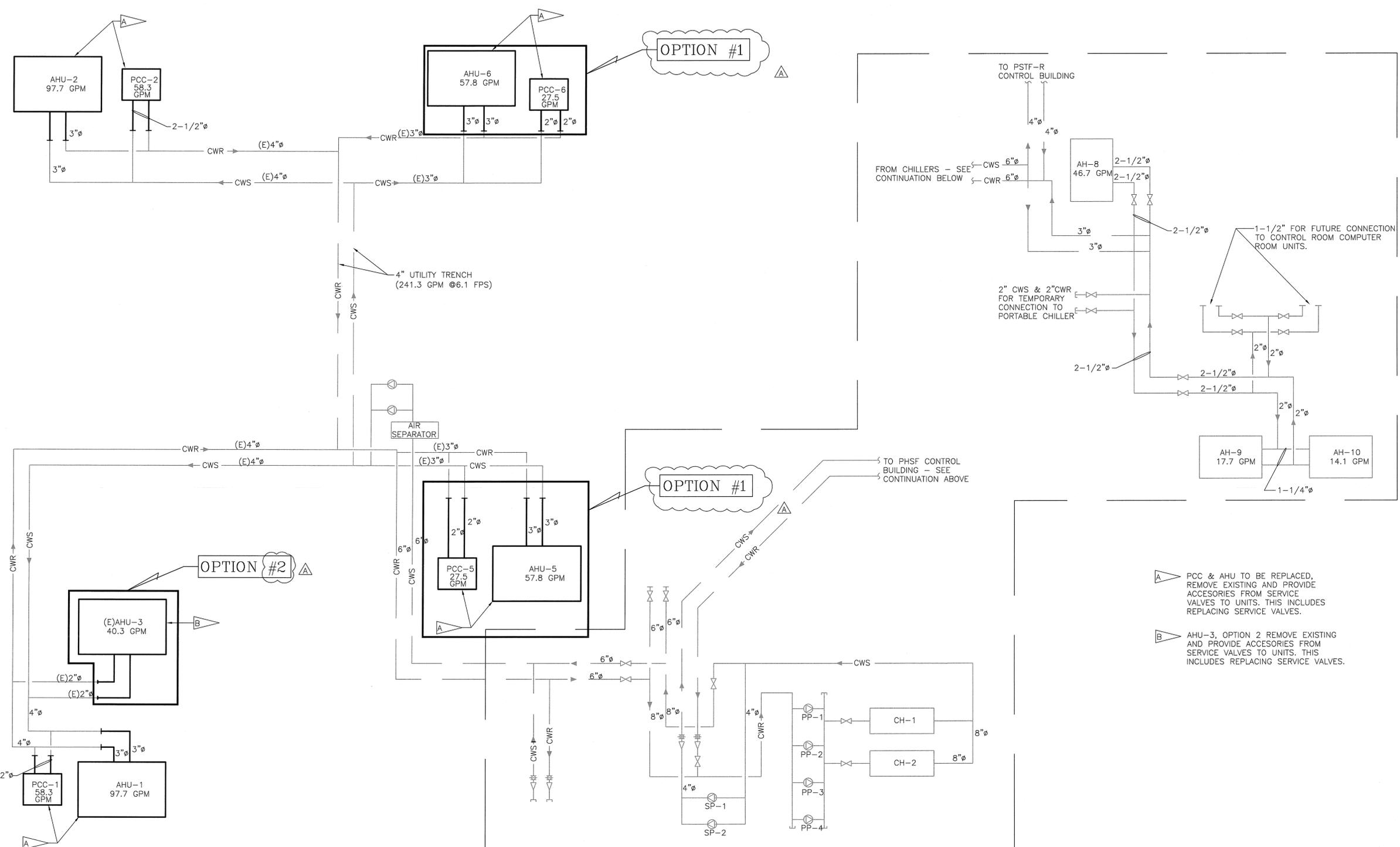
NOTES:
 1. THIS SCHEDULE IS FOR CLARIFICATION PURPOSES. ADDITIONAL POINTS MAY BE REQUIRED, REFER TO CONTROL SEQUENCE.
 ALL DRAWINGS AS WELL AS THE SPECIFICATIONS FOR FURTHER DETAILS.
 2. X = ELECTRIC
 O = PNEUMATIC

FILE NO. 080034.00
 FILE: M11.DWG
 ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
 PE LIC. NO.: 33661

M11

RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2	2/11	ssr	
SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
		ENGINEER OF RECORD: J. ALLAN GRINNAN JR. PE LICENSE NO. 33661	
		CONSULTING ENGINEERS C.A. NO. 7188 - 904-398-8636 3970 Hendricks Avenue - Jacksonville, FL 32207	
SIGNATURES	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	
DESIGNED E. DIAZ	9/09	JOHN F. KENNEDY SPACE CENTER, NASA	
DRAWN J. CONDIT	9/09	KENNEDY SPACE CENTER, FLORIDA	
CHECKED A. GRINNAN	9/09	PHSF MECHANICAL UPGRADES	
APPROVED		MECHANICAL CONTROL DIAGRAM AHU-3	
APPROVED		MECHANICAL CONTROL POINTS LIST	
APPROVED		AHU-1, 2, 3, 5, 6	
APPROVED		FILE NO.	SIZE DWG. NO.
APPROVED		F	79K38540
APPROVED		PROJ. NO. PCN 98779.1	SHEET 21

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- A PCC & AHU TO BE REPLACED, REMOVE EXISTING AND PROVIDE ACCESSORIES FROM SERVICE VALVES TO UNITS. THIS INCLUDES REPLACING SERVICE VALVES.
- B AHU-3, OPTION 2 REMOVE EXISTING AND PROVIDE ACCESSORIES FROM SERVICE VALVES TO UNITS. THIS INCLUDES REPLACING SERVICE VALVES.

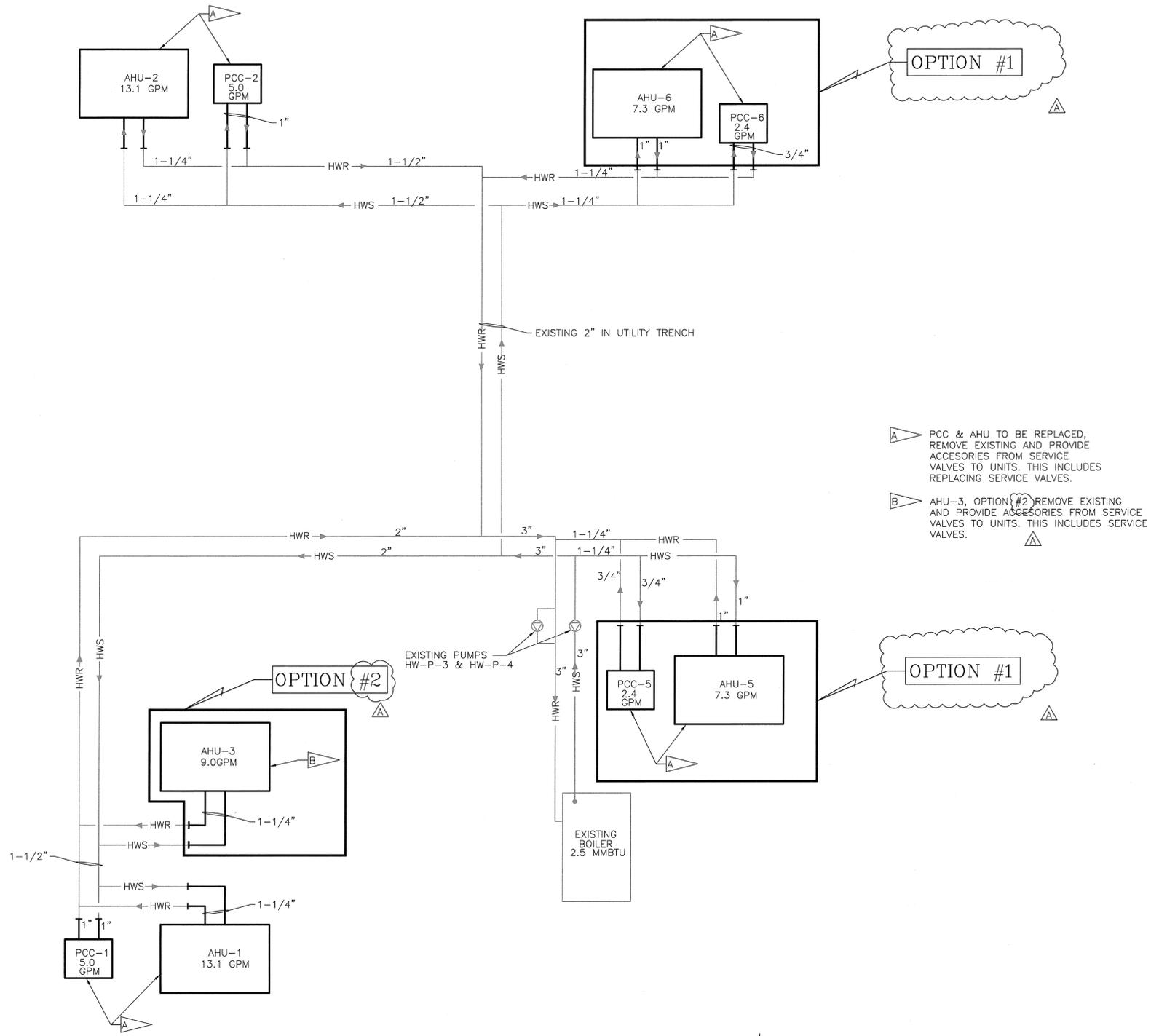
CHILLED WATER FLOW DIAGRAM
NOT TO SCALE



RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2	2/11	JSM		
SYM.	ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS				
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA				
PHSF MECHANICAL UPGRADES CHILLED WATER FLOW DIAGRAM				
DESIGNED	E. DIAZ	9/09		
DRAWN	J. CONDIT	9/09		
CHECKED	A. GRINNAN	9/09		
SUBMITTED				
APPROVED				
FILE NO.	SIZE	DWG. NO.		
M12	F	79K38540	A	
PROJ. NO.	PCN 98779.1	SHEET	22	

A/E FILE NO. 080034.00
A/E: M12.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR
PE LIC. NO.: 33661

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- A PCC & AHU TO BE REPLACED, REMOVE EXISTING AND PROVIDE ACCESSORIES FROM SERVICE VALVES TO UNITS. THIS INCLUDES REPLACING SERVICE VALVES.
- B AHU-3, OPTION #2 REMOVE EXISTING AND PROVIDE ACCESSORIES FROM SERVICE VALVES TO UNITS. THIS INCLUDES SERVICE VALVES.

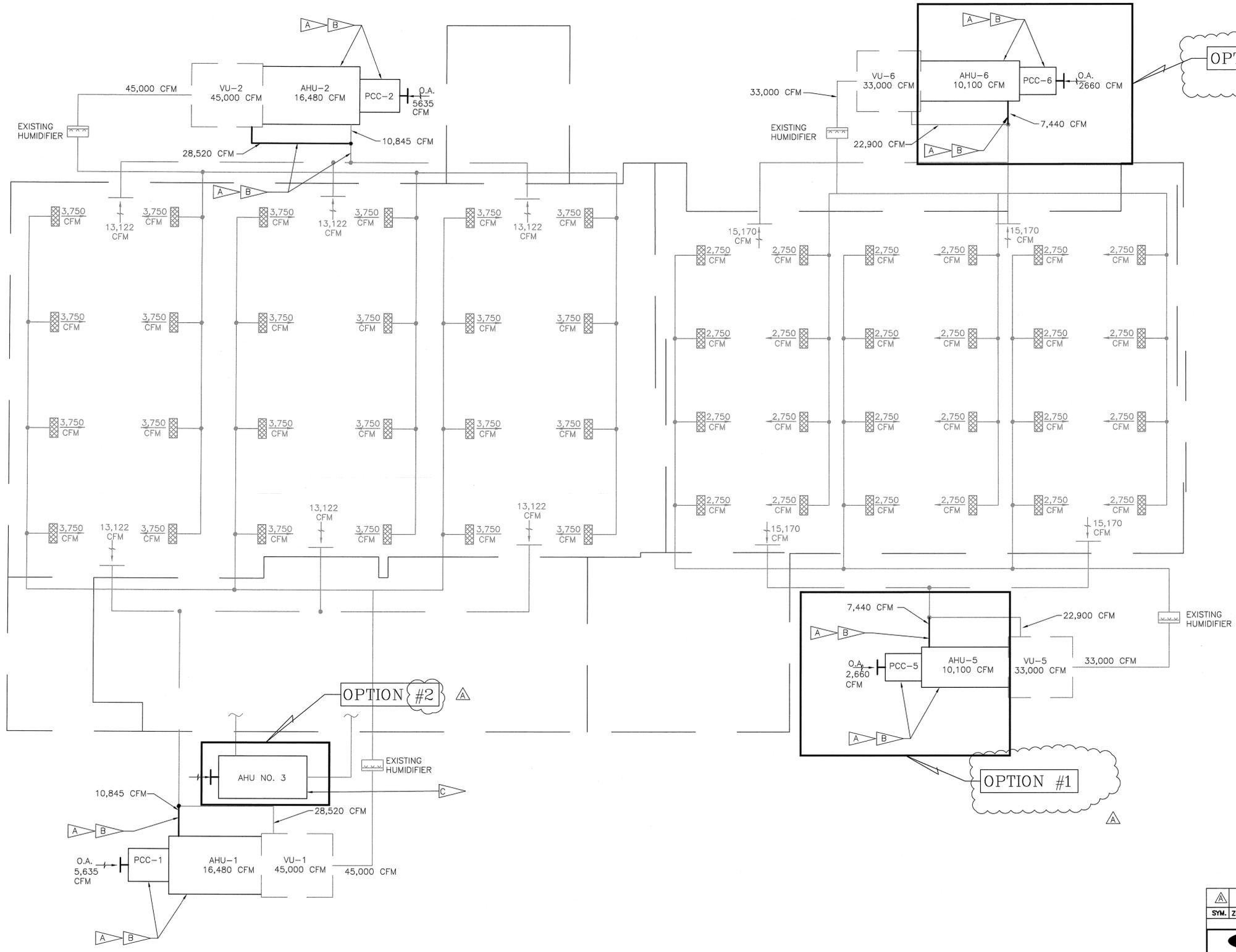
HEATING HOT WATER FLOW DIAGRAM
NOT TO SCALE

RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2		2/11	SSM
SYM. ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS			
<small>License No. 4551 Corp. Auth. No. 08478 Phone: 904-737-5700 Fax: 904-737-0932 9711 Richard Street, Suite 2 Jacksonville, Florida 32216</small>		<small>PE LICENSE NO. 33661 Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207</small>	
DESIGNED	E. DIAZ	9/09	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA PHSF MECHANICAL UPGRADES HEATING HOT WATER FLOW DIAGRAM
DRAWN	J. CONDIT	9/09	
CHECKED	A. GRINNAN	9/09	
SUBMITTED			
APPROVED			
FILE NO.	SIZE	DWG. NO.	
	F	79K38540	A
PROJ. NO.	PCN	98779.1	SHEET 23

P/E FILE NO. 080034.00
FILE: M13.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR
PE LIC. NO.: 33661

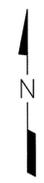
M13

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- A** PCC & AHU TO BE REPLACED, REMOVE EXISTING AND PROVIDE NEW RETURN AIR & OUTSIDE AIR DUCTWORK.
- B** BALANCE OVERALL SYSTEM SUPPLY AIR FLOW, RETURN AIR FLOW & OUTSIDE AIRFLOW.
- C** FOR AHU-3 OPTION #2 SEE M-16.

PHSF BLDG M7-1354 - AIR FLOW DIAGRAM
NOT TO SCALE

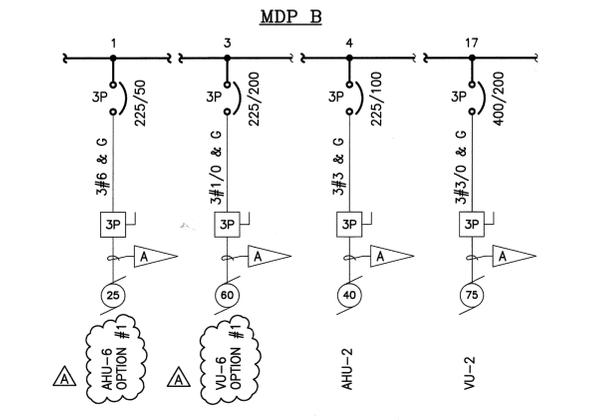
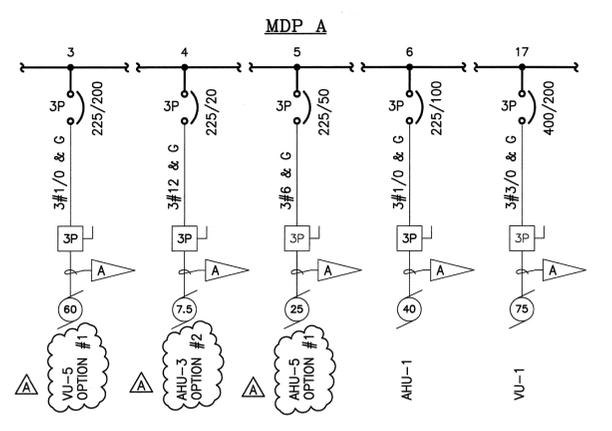
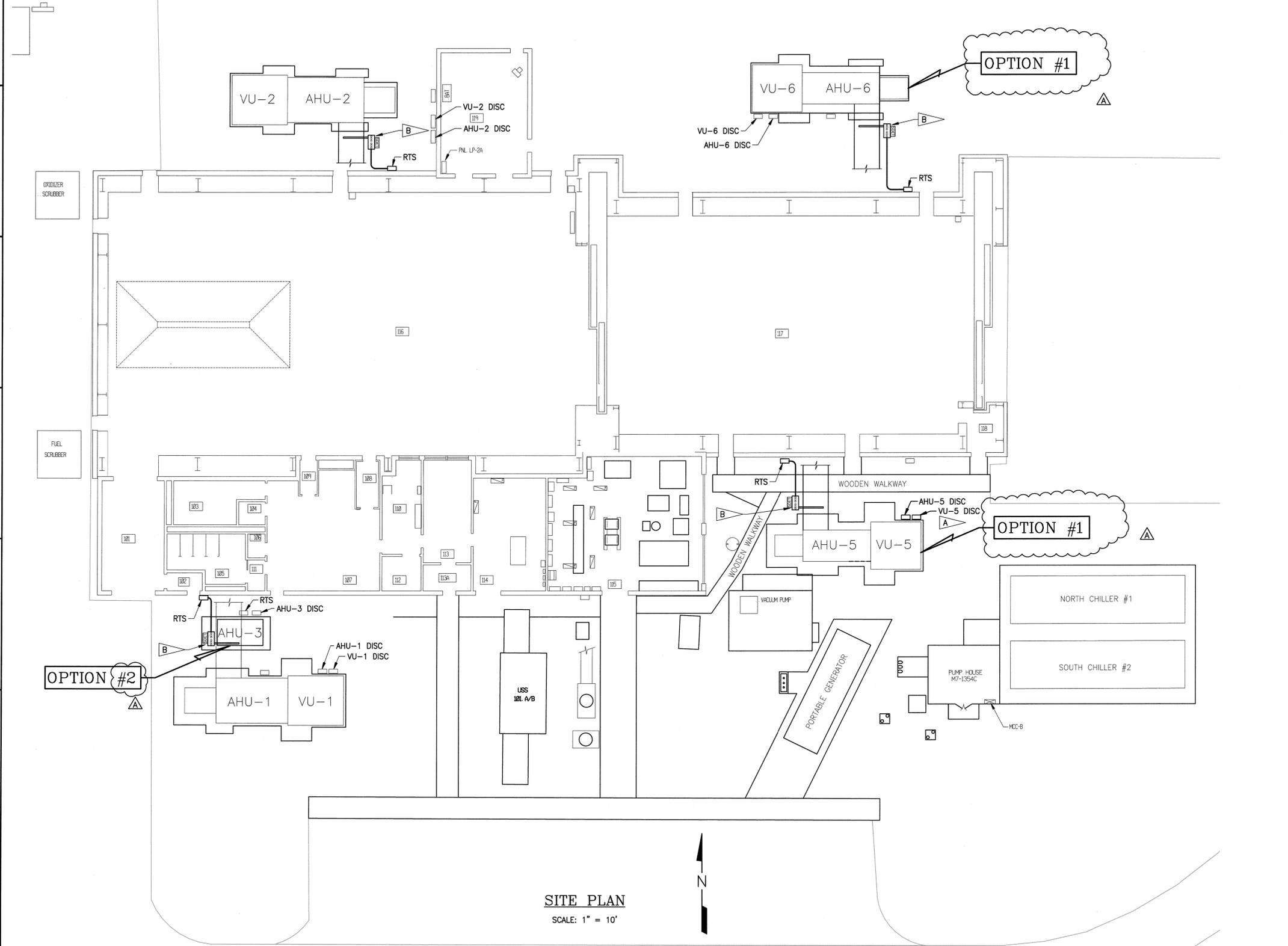


SYM.	ZONE	DESCRIPTION	DATE	APPROVED
△		RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2	2/11	SSM
REVISIONS				
<small>License No. 4551 Phone: 904-737-6700 5111 Richard Street, Suite 2 Jacksonville, Florida 32216</small>		<small>PE LICENSE NO. 33961 C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207</small>		
SIGNATURES	DATE	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		
DESIGNED E. DIAZ	9/09	JOHN F. KENNEDY SPACE CENTER, NASA		
DRAWN J. CONDIT	9/09	KENNEDY SPACE CENTER, FLORIDA		
CHECKED A. GRINNAN	9/09	PHSF MECHANICAL UPGRADES		
SUBMITTED		AIR FLOW DIAGRAM		
APPROVED		FILE NO.	SIZE	DWG. NO.
APPROVED			F	79K38540
APPROVED		PROJ. NO.	PCN 98779.1	SHEET 24

A/E FILE NO. 080034.00
M14.DWG
ENGINEER OF RECORD: J. ALLAN GRINNAN JR.
PE UC NO.: 33661

M14

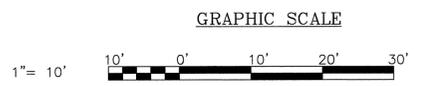
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PARTIAL SINGLE LINE

- NOTES:**
- A DISCONNECT THE MOTOR LEADS OF THE EXISTING AIR HANDLING UNITS AS SHOWN. AFTER THE UNITS ARE REPLACED, CONNECT THE NEW MOTORS. EXTEND AND/OR REROUTE CONDUITS AND CABLES AS NECESSARY.
 - B REMOVE EXISTING DUCT SMOKE DETECTORS FROM EXISTING DUCTS BEING REMOVED. DUCT DETECTORS LOCATION ARE APPROXIMATE. ACTUAL LOCATION TO BE VERIFIED BY CONTRACTOR. PROVIDE NEW REPLACEMENT DUCT DETECTORS IN THE LOCATIONS SHOWN IN THE MECHANICAL DRAWINGS. NEW DETECTORS SHALL COMPLY WITH NFPA-72 AND INSTALLED AS PER MANUFACTURERS INSTRUCTIONS. DETECTORS MOUNTED OUTDOORS SHALL BE INSTALLED IN WEATHERTIGHT ENCLOSURES. EXTEND OR REROUTE EXISTING SMOKE DETECTORS CONDUIT AND CONDUCTORS DUE TO DETECTORS LOCATION CHANGES.

SITE PLAN
SCALE: 1" = 10'



RE-ISSUED TO SHOW AHU-5 & AHU-6 AS OPTION #1 CHANGED AHU-3 TO OPTION #2		2/11	swm	
SYM.	ZONE	DESCRIPTION	DATE	APPROVED
REVISIONS				
ENGINEER OF RECORD: WILLIAM WILSON PE LICENSE NO. 22283				
Fred Wilson & Associates, Inc. Consulting Engineers C.A. NO. 7188 • 904-398-8636 3970 Hendricks Avenue • Jacksonville, FL 32207				
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION JOHN F. KENNEDY SPACE CENTER, NASA KENNEDY SPACE CENTER, FLORIDA				
PHSF MECHANICAL UPGRADES				
ELECTRICAL PLAN & DETAILS				
SIGNATURES	DATE			
DESIGNED A. QUERAL	1/11			
DRAWN A. THOMPSON	2/11			
CHECKED W. WILSON	2/11			
SUBMITTED				
APPROVED				
FILE NO.	SIZE	DWG. NO.		
	F	79K38540		
PROJ. NO.	PCN 98779.1	SHEET 27 OF 27		

A/E FILE No. 0601\0601-22\Mechanical
FILE: E1 - ELECT_DET.DWG
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E1