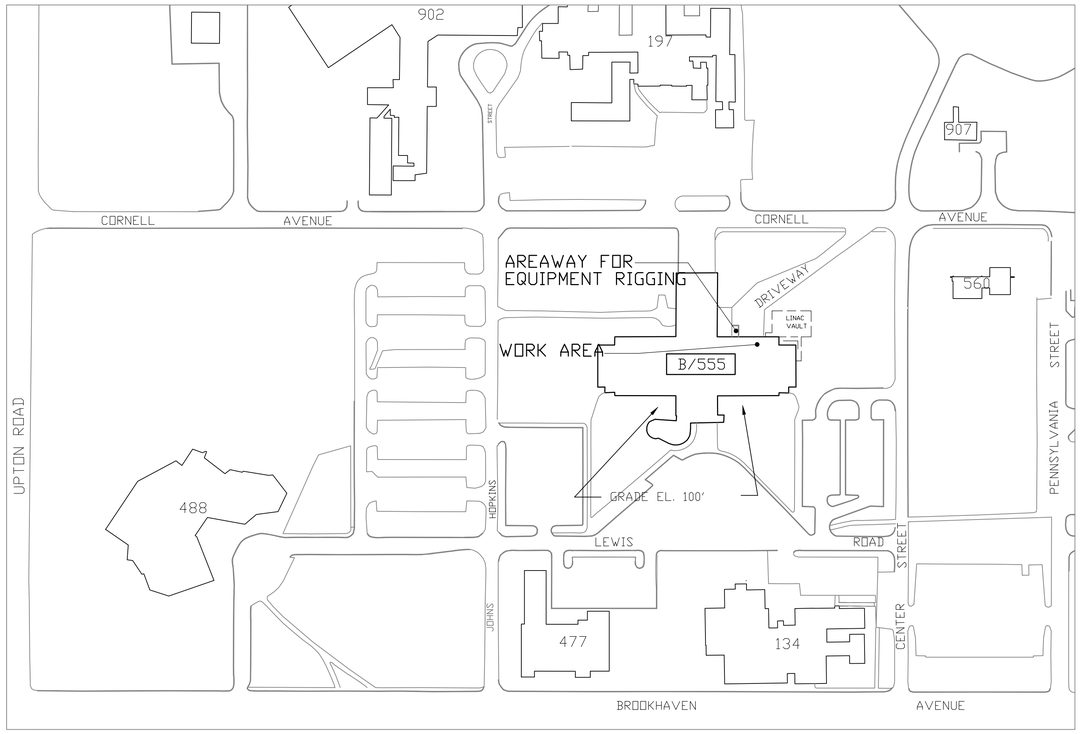
REPLACE AHU K-8
BLDG.555

BROOKHAVEN NATIONAL LABORATORY
UPTON, NEW YORK 11973



SITE PLAN

N.T.S.

North

DRAWING INDEX

12653–T1	TITLE SHEET
12653–M1	MECHANICAL DEMOLITION PLANS
12653–M2	MECHANICAL DEMO SECTION & LEGEND
12653–M3	NEW WORK – MECHANICAL PLANS & SECTION
12653–M4	SCHEDULES AND DETAILS
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12653–E1	ELECTRICAL DEMOLITION PLAN & SECTION
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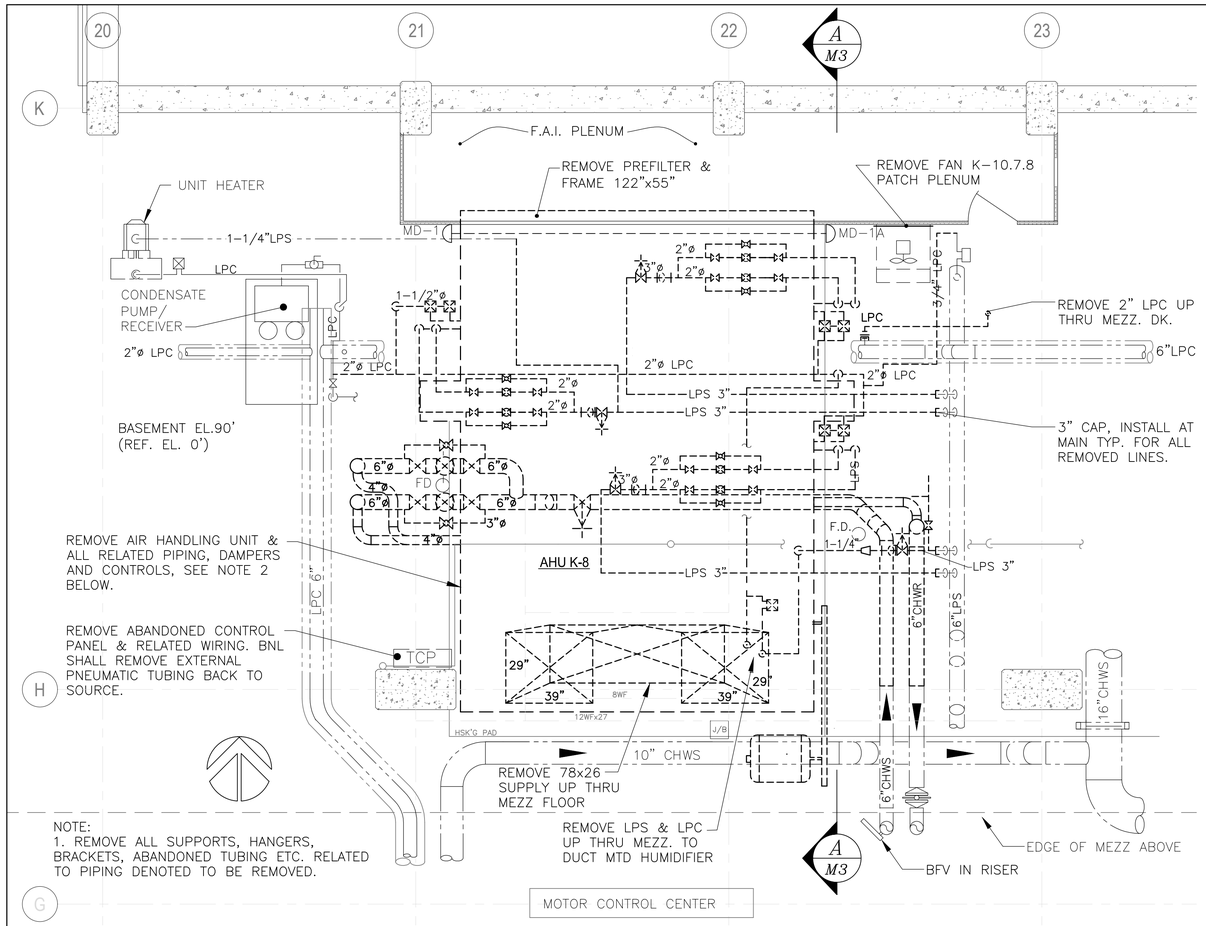
12653–E3	LEGEND AND ONE LINE DIAGRAM

JOB NO	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA

BROOKHAVEN NATIONAL LABORATORY

UNDER CONTRACT WITH
UNITED STATES DEPARTMENT OF ENERGY
FACILITIES & OPERATIONS, MODERNIZATION PROJECT OFFICE
UPTON, NEW YORK 11973

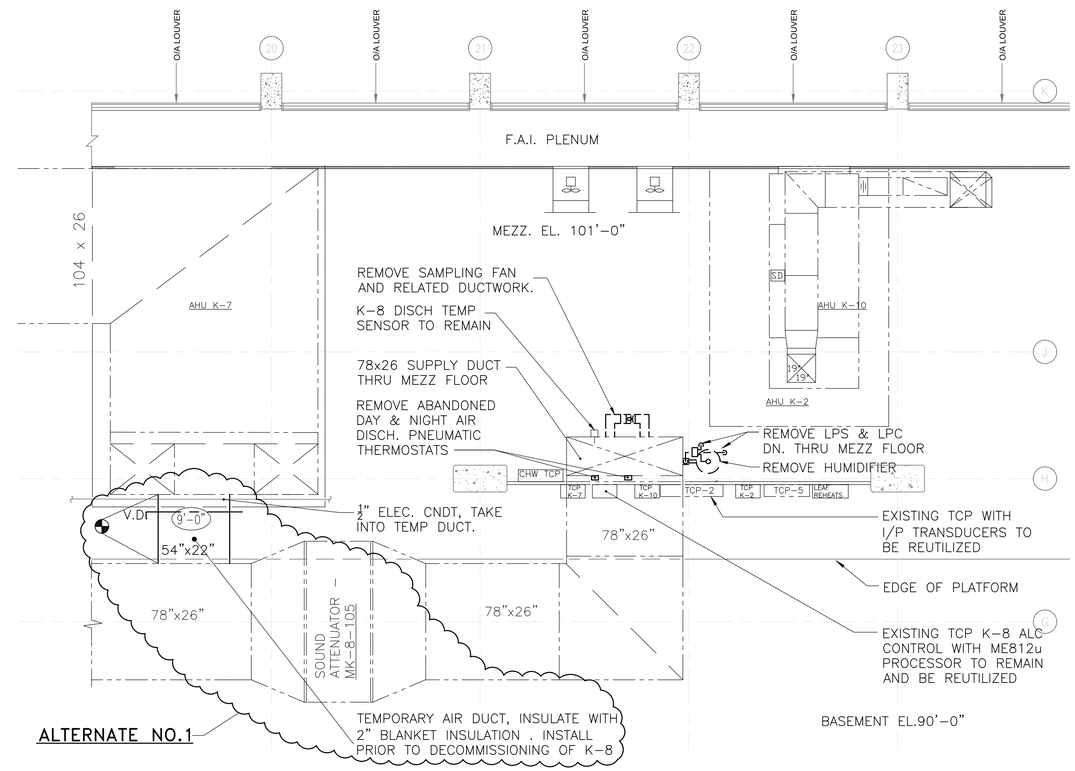
JOB TITLE REPLACE AHU K–8			DWG. TITLE TITLE SHEET	
ILR,GPP,LNI, NEM DMR FY15	DATE 3–18–15		ACCT. NO. 21069	SHEET 1 OF 9
SCALE AS NOTED	DWN. BY GML	REV'D BY	JOB NO. 12653	DWG. NO. 12653–T1
ESHQ RISK LEVEL 3	APP'D. BY		BLDG. NO. 555	
PATH: J: /JOBFILE/B–0555/12653/DESIGN/DRAWINGS				



NOTE:
1. REMOVE ALL SUPPORTS, HANGERS, BRACKETS, ABANDONED TUBING ETC. RELATED TO PIPING DENOTED TO BE REMOVED.

BASEMENT LOWER LEVEL DEMOLITION PART PLAN

SCALE: 3/8"=1'-0"



BASEMENT MEZZANINE LEVEL DEMOLITION PART PLAN

SCALE: 3/8"=1'-0"

NOTES:

1. DRAWINGS ARE DIAGRAMMATIC, CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, ELEVATIONS, AND PIPE SIZES, RUN PIPING ACCORDINGLY AND BE RESPONSIBLE FOR ADDITIONAL OFFSETS FITTINGS ETC. AS REQUIRED TO PROVIDE A COMPLETE & WORKING SYSTEM.

2.REMOVE AHU K-8 IN ITS ENTIRETY INCLUDING RELATED CONTROLS, PNEUMATIC TUBING, WIRING POWER AND CONTROL. CLEAN HOUSEKEEPING PAD PRIOR TO SETTING NEW UNIT.

3. EXISTING STEAM PIPING IS A COMBINATION OF UNCOVERED, COVERED WITH ASBESTOS INSULATION, AND COVERED WITH FIBERGLASS INSULATION. CONTRACTOR SHALL INSPECT SITE PRIOR TO BID TO DETERMINE EXTENT OF ASBESTOS COVERED PIPING. CONTRACTOR SHALL PROPERLY PACKAGE ASBESTOS CONTAMINATED MATERIALS FOR DISPOSAL BY BSA.

4. INTERIOR NON-INSULATED EXPOSED METAL SURFACES OF AHU K-8 (EXCEPT FOR COILS, NEW DRAIN PAN, AND NEW FAN SUPPORTS) WITHIN THE AIR HANDLING UNIT FOLLOWING SECTIONS; FAN, COOLING COIL, ACCESS-1, & 2ND STAGE PREHEAT SECTIONS ARE COATED WITH A MASTIC COMPOUND IMPREGNATED WITH ASBESTOS FIBERS. SEE SECTION "A" DRAWING 12653-M2 FOR LOCATION OF SECTIONS. LEAD AND CADMIUM CONTAMINATION ARE THROUGHOUT THE UNIT. SEGREGATE MATERIAL CONTAMINATED WITH ASBESTOS FROM NON-ASBESTOS CONTAMINATED MATERIAL. REDUCE SIZE OF MATERIAL CONTAINING ASBESTOS TO MAXIMUM OF 5'-10"X3'-10"X12". PLACE INTO BSA PROVIDED CONTAINERS FOR DISPOSAL BY BSA.

5. NON-ASBESTOS METALS SHALL BE; WIPED DOWN WITH LEDIZOLVE CLEANER OR APPROVED EQUAL TO REMOVE LOOSE LEAD & CADMIUM CONTAMINATION, PLASTICIZED, AND PLACED IN BAS PROVIDED CONTAINER FOR DISPOSAL BY BSA.

6. PATCH ALL DUCTS AND REPAIR/REPLACE INSULATION ON PIPING AND DUCTWORK TO MATCH EXISTING WHERE EQUIPMENT OR DEVICES WERE REMOVED.

JOB NO	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
		1					

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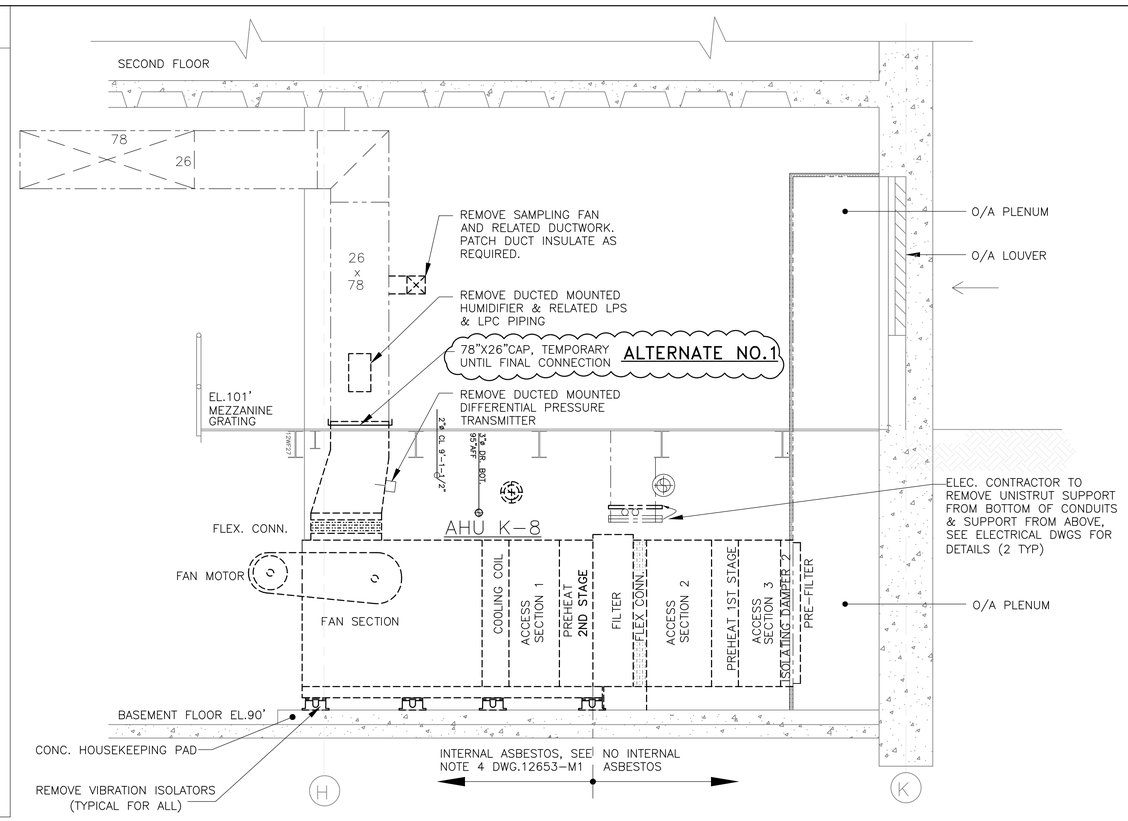
JOB TITLE: REPLACE AHU K-8				DWG. TITLE: MECH DEMOLITION PLANS	
ILR,GPP,LNI, HEM: DMR FY15	DATE: 3-18-15		ACCT. NO.: 21069	SHEET 2 OF 9	
SCALE: AS NOTED	DWN. BY: GML	REV'D BY	JOB NO.: 12653	DWG. NO.	
ESHQ RISK LEVEL: 3	APP'D. BY		BLDG. NO.: 555	12653-M1	
PATH: J:/JOBFILE/B-0555/12653/DESIGN/DRAWINGS					

LEGEND

SYMBOL	DESCRIPTION
	EXISTING PIPELINE OR EQUIPMENT
	EXISTING PIPELINE OR EQUIPMENT TO BE REMOVED
	NEW PIPELINE OR EQUIPMENT
	EXISTING DUCTWORK
	EXISTING DUCTWORK OR EQUIPMENT TO BE REMOVED
	NEW DUCTWORK
VD	VOLUME DAMPER
SD	DUCT SMOKE DETECTOR
	BUTTERFLY VALVE (BFV)
	OS & Y SHUTOFF VALVE
	GLOBE VALVE
	BALL VALVE
	GATE OR SHUTOFF VALVE
V	CONTROL VALVE
	BALANCING VALVE
PRV	PRESSURE REDUCING VALVE
	STRAINER WITH BLOWDOWN VALVE
	FLOAT & THERMOSTATIC STEAM TRAP
	END OF MAIN, RISER DRIP LEG, COIL CONDENSATE TRAP ASSEMBLY
	UNION
FB FT	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	END CAP
A	AUTOMATIC AIR VENT
V	VACUUM BREAKER
	PRESSURE GAGE W/ PET COCK
	THERMOMETER
	POINT OF TIE-IN NEW TO EXISTING
H-1	HUMIDISTAT
T-1	THERMOSTAT
0'-0"	DISTANCE BOTTOM OF DUCT DUCT TO FINISHED FLOOR
MD-1	MOTORIZED DAMPER

LEGEND

SYMBOL	DESCRIPTION
CHWS	CHILLED WATER PIPING
CHWR	CHILLED WATER RETURN PIPING
W(I)	INDIRECT WASTE PIPING
LPS	LOW PRESSURE STEAM PIPING
LPC	LOW PRESSURE CONDENSATE PIPING
CA	COMPRESSED AIR PIPING
W	SANITARY WASTE PIPING
V	SANITARY VENT PIPING
F.D.	FUNNEL DAIN
CV-	CONTROL VALVE
CONC.	CONCRETE
M.D.	MOTORIZED DAMPER
S.S.	STAINLESS STEEL
℄	CENTERLINE
EL.	ELEVATION
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
N.I.C.	NOT IN CONTRACT
DN.	DOWN
TYP.	TYPICAL
CONN.	CONNECTION
F.C.	FLEX CONNECTOR
V.T.R.	VENT THROUGH ROOF
U.O.N.	UNLESS OTHERWISW NOTED
B.D.	BACKDRAFT DAMPER
A.S.	ACCESS SECTION
T.V.	TURNING VANES
AHU	AIR HANDLING UNIT
SF	SUPPLY FAN
F.C.	FLEX CONNECTOR
CC	COOLING COIL
FT	FLAT ON TOP
FB	FLAT ON BOTTOM
A.D.	ACCESS DOOR
ETR	EXISTING TO REMAIN
AFF	ABOVE FINISHED FLOOR
E.C.	ELECTRICAL CONDUIT



DEMOLITION SECTION (A/M1)

SCALE: 3/8"=1'-0"

JOB NO	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
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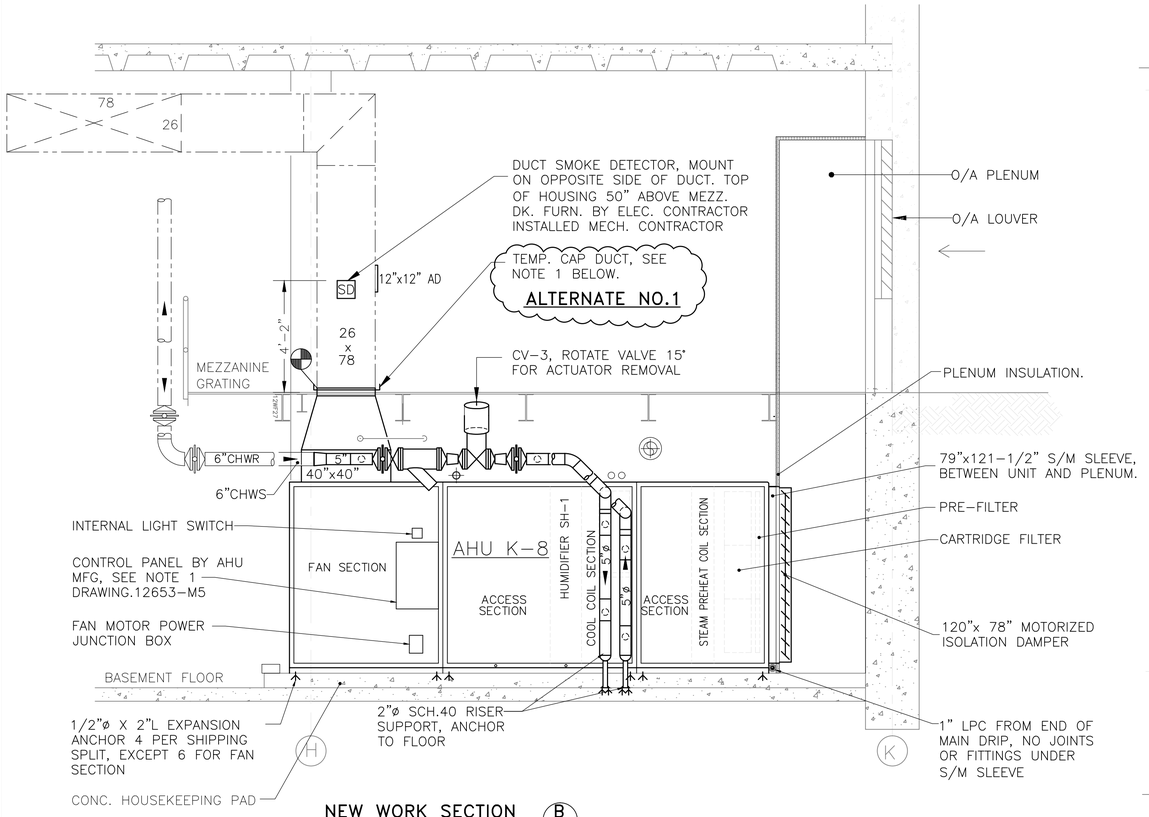
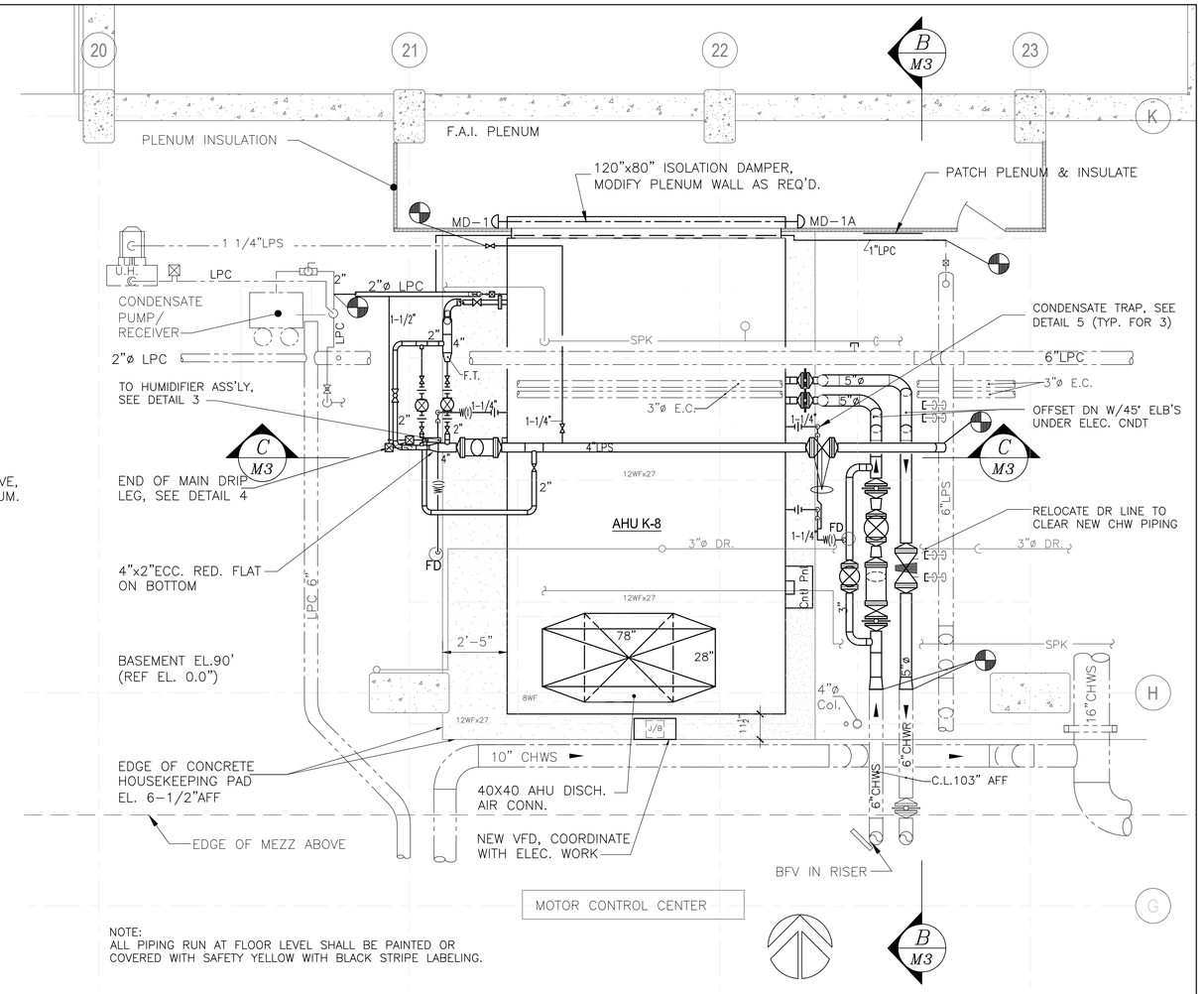
JOB TITLE REPLACE AHU K-8				DWG. TITLE MECHICAL DEMO SECTION & LEGEND	
ILR,GPP,LNI, HEM DMR FY15	DATE 3-18-15		ACCT. NO. 21069	SHEET 3	OF 9
SCALE AS NOTED	DWN. BY GML	REV'D BY	JOB NO. 12653	DWG. NO. 12653-M2	
ESHQ RISK LEVEL 3	APP'D. BY		BLDG. NO. 555		
PATH: J:/JOBFILE/B-0555/12653/DESIGN/DRAWINGS					

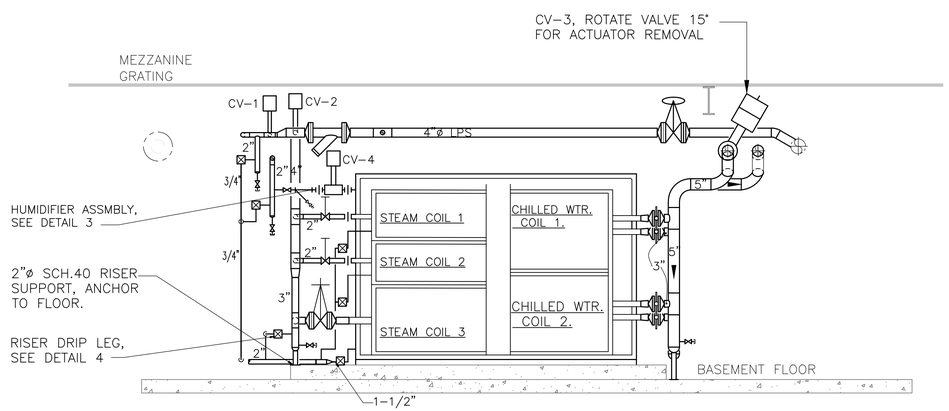


NEW WORK SECTION B/M3
SCALE: 3/8"=1'-0"



NOTE:
ALL PIPING RUN AT FLOOR LEVEL SHALL BE PAINTED OR COVERED WITH SAFETY YELLOW WITH BLACK STRIPE LABELING.

BASEMENT LOWER LEVEL NEW WORK PART PLAN
SCALE: 3/8"=1'-0"



NEW WORK SECTION C/M3
SCALE: 3/8"=1'-0"

NOTE:
1. FOR PIPING ARRANGEMENT AND APPURTENANCES; FOR HUMIDIFIER SEE DETAIL 1, FOR STEAM HEATING COILS SEE DETAIL 2, FOR CHILLED WATER COILS SEE DETAIL 3.
2. STEAM COIL- LPS & LPC, CHILLED WATER COIL- CHWS, CHWR, VENT, & DRAIN, HUMIDIFIER-LPS & LPC PIPING CONNECTIONS ARE EXTENDED 2" OUTSIDE UNIT CASING BY MFG.. EXTEND VENT LINE FROM STEAM COILS OUTSIDE UNIT CASING.
3. FOR CLARITY HUMIDIFIER LPC & UNIT CONDENSATE DRAIN PIPING NOT SHOWN THIS SECTION.

NOTES:
1. TEMPORARY CAP AHU DISCHARGE DUCT THE DAY OF K-8 DECOMMISSIONING. MAINTAIN DURING CONSTRUCTION UNTIL NEW UNIT IS COMPLETELY PIPED, WIRED, (POWER AND CONTROL) AND CONTROLS ARE PROGRAMMED READY FOR COMMISSIONING..

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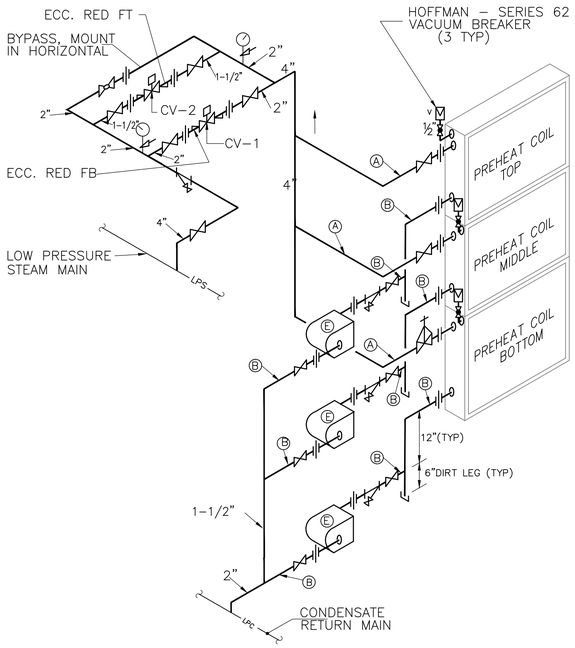
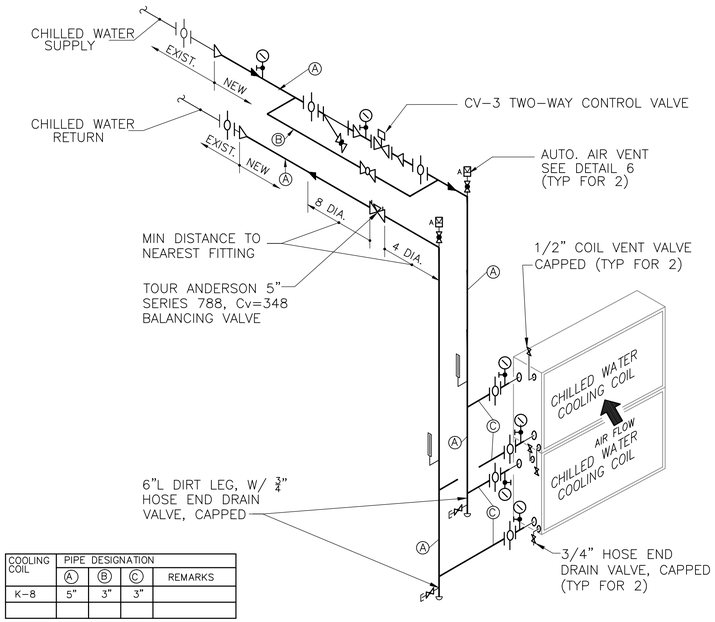
ILR,GPP,LNI, HEM DMR FY15	DATE 3-18-15		ACCT. NO. 21069	SHEET 4	OF 9
SCALE AS NOTED	DWN. BY GML	REV'D BY	JOB NO. 12653	DWG. NO. 12653-M3	
ESHQ RISK LEVEL 3	APP'D. BY		BLDG. NO. 555		
PATH: J:/JOBFILE/B-0555/12653/DESIGN/DRAWINGS					



COIL	UNIT SERVING	PIPE OR EQUIP. DESIGNATION				
		Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
PHC– TOP	AHU K–8	2"	1–1/4"	–	–	FT–30–1–1/4"
PHC–MIDDLE	AHU K–8	2"	1–1/4"	–	–	FT–30–1–1/4"
PHC–BOTTOM	AHU K–8	3"	1–1/2"	–	–	FT–30–1–1/2"

TRIPPLE STACKED PREHEAT STEAM COIL PIPING CONNECTIONS – DETAIL 1

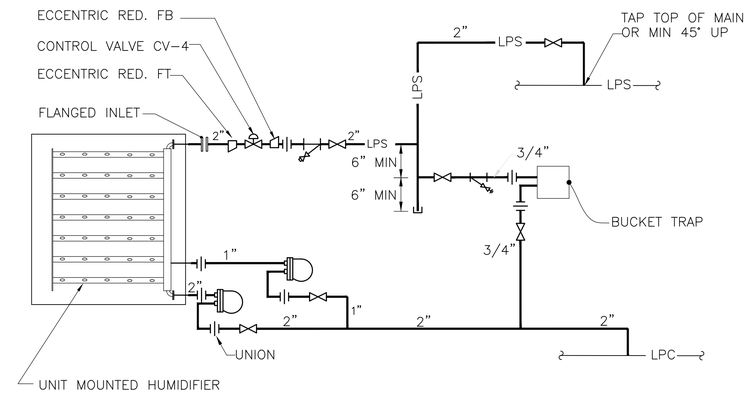
SCALE: NONE



COOLING COIL	PIPE DESIGNATION			REMARKS
	Ⓐ	Ⓑ	Ⓒ	
K–8	5"	3"	3"	

DOUBLE STACKED CHILLED WATER COOLING COIL PIPING CONNECTIONS – DETAIL 2

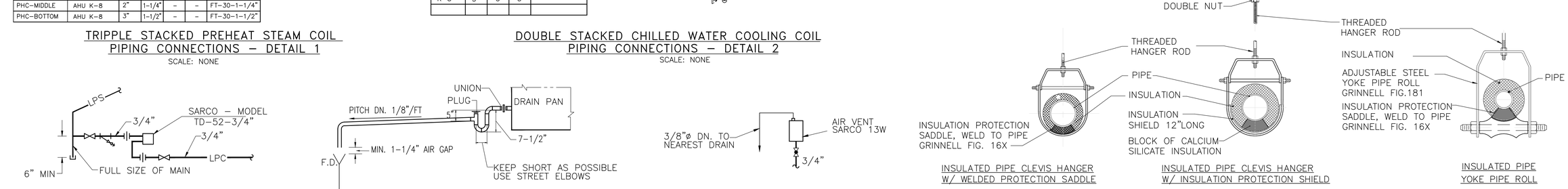
SCALE: NONE



HUMIDIFIER – DETAIL 3

SCALE: NONE

NOTE:
CONTROL VALVE, STRAINER, BUCKET TRAP, & TWO F&T AND BUCKET TRAPS FURN. BY HUMID. MFG. (BNL)



END OF MAIN/ RISER DRIP LEG – DETAIL 4

SCALE: NONE

AHU CONDENSATE TRAP – DETAIL 5

SCALE: NONE

AUTOMATIC AIR VENT – DETAIL 6

SCALE: NONE

INSULATED PIPE CLEVIS HANGER W/ WELDED PROTECTION SADDLE

INSULATED PIPE CLEVIS HANGER W/ INSULATION PROTECTION SHIELD

INSULATED PIPE YOKE PIPE ROLL

TYPICAL PIPE HANGERS

SCALE: NONE

CONTROL VALVE SCHEDULE

ALL MODELS ARE JOHNSON CONTROLS U.O.N.

SERVICE		VALVE No.	MODEL	C.O. PSIG	SPRING RANGE	GPM	ENT. PRESS.	STEAM #/HR	CALC. Cv	RATED Cv	CONN. SIZE	P.D. (psi)	Normal Position	Remarks
AHU K–8	PREHEAT STEAM COIL	CV–1	VG 7243RM+843C01	165	3 TO 7	–	7.5	634	21	28.9	1–1\2" NPT	2.8	N.O.	PNEUMATIC ACTUATOR W FACTORY MTD/PILOT POSITIONER
		CV–2	VG 7243SM+843E01	56	9 TO 13	–	7.5	1272	42.7	46.2	2" NPT	4.85	N.O.	PNEUMATIC ACTUATOR W FACTORY MTD/PILOT POSITIONER
	COOLING COIL	CV–3	VG 2431VN BODY MP865C001G ACTUATOR	86	3 TO 7	336	–	–	146	150	4" FLG	5.3	N.O.	PNEUMATIC ACTUATOR W FACTORY MTD/PILOT POSITIONER
	HUMIDIFIER COIL	CV–4	ACV–06 (BELIMO) MP865C001G ACTUATOR	–	–	–	–	638	–	27	1–1\2" NPT	3.6	N.C.	0–10VDC SIGNAL, ELECTRIC ACTUATOR, FURNISHED BY HUMIDIFIER MFG (BY BNL)

STEAM HUMIDIFIER SCHEDULE

(FURNISHED BY BNL)

NO.	AREA SERVING	AIR SIDE						STEAM SIDE			MANUFACTURER & MODEL
		CFM	S.P. IN. OF H_2O	ABSORPTION DISTANCE	AIR TEMP. DB °F	ENT. AIR R.H. (%)	LVG. AIR R.H. (%)	LBS/HR EVAP.	MIN.ALLOW. ENT. PSIG	ENT. PRESS. PSIG	
SH–1	AHU K–8	25600	.022	18"	55	8.55	65.0	638	2.0	3.9	ARMSTRONG HUMIDIPACKPLUS CF FURN. FACTORY MOUNTED IN AHU

AIR HANDLING UNIT SCHEDULE

(FURNISHED BY BNL)

UNIT NO.	AIR FLOW – CFM			TOTAL S.P.	EXT. S.P.	FAN						MAKE & MODEL	COOLING COIL DATA											PREHEAT COIL (PHC)								FILTER DATA (CLEAN*)				REMARKS
													AIR SIDE						WATER SIDE													FINAL		PRE		
	SUPPLY AIR	OUT. AIR	RET. AIR			HP	MOTOR RPM	BHP	FAN RPM	VOLTAGE	ROTATION/ ORIENTATION		FACE VEL	FACE AREA	TC (MBH)	SC (MBH)	ENTERING DB/WB °F	LEAVING DB/WB °F	AIR P.D.	GPM	EWT °F	LWT °F	WATER P.D. FT. OF H_2O	COIL NO.	TH (MBH)	E.A.T. DB °F	L.A.T. DB °F	AIR P.D.	FACE VEL	ENT PRESS (PSI)	P.D. (PSI)	EFF.	AIR P.D.	AIR P.D.	EFF.	
K–8	25600	25600	0	4.78	1.5	30	1800	27.4	1178	460/3/60	UPBLAST FRONT	TRANE CSAA057UA	453	56.5	2026	1250	95/75	50.92/50.82	.927	336.5	44	56	12.2	TOP	492.2	–10	55	0.13	492.2	1.5	0.76	95%	.60	.5	30%	SOLID DOUBLE WALL CONSTRUCTION, STAIN. STL. INNER LINER, STAIN. STEEL DRAIN PANS IN CC & HUMIDIFIER SECTIONS AND ACCESS SECTION AFTER HUMIDIFIER, HI–EFFICIENCY INVERTER DUTY MOTOR, DWDI AIRFOIL FAN, 2–1/2" BASE RAIL
																								MID	492.2											
																								BOTTOM	820.3											

NOTE:
1. UNIT HAS FACTORY MOUNTED HUMIDIFIER FOR DETAILS SEE HUMIDIFIER SCHEDULE.
2. * UNIT FAN TSP INCLUDES FILTER 2X CLEAN P.D.
3. UNIT FURNISHED WITH FACTORY MOUNTED CONTROLS AND CONTROL TRANSFORMER. CONTROLS ARE WIRED TO TERMINAL STRIP IN UNIT MOUNTED PANEL. INSTALLED CONTROLS ARE; TWO FREEZESTATS, PRE–FILTER DPS–1, FINAL FILTER DPS–2, PHC DISCH. AIR TEMP SENSOR ATS–1, CC DISCH. ATS–2, FAN STATUS INDICATOR DPS–3.
4. CONTROLS SHIPPED LOOSE FOR FIELD MOUNTING DUCT PRESSURE TRANSMITTER,

JOB NO	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
		△					

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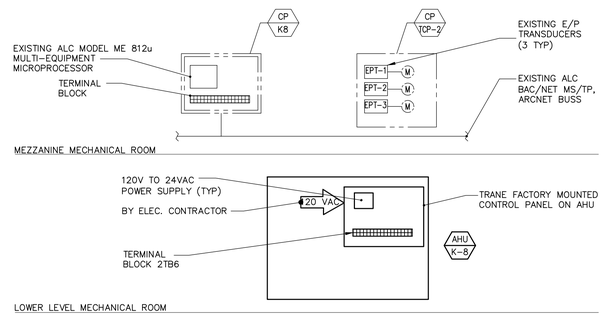
JOB TITLE: REPLACE AHU K–8			DWG. TITLE: SCHEDULES & DETAILS
ILR,GPP,LNI, HEM: DMR FY15	DATE: 3–18–15	ACCT. NO.: 21069	SHEET 5 OF 9
SCALE: AS NOTED	DWN. BY: GML / REV'D BY	JOB NO.: 12653	DWG. NO.
ESHQ RISK LEVEL: 3	APP'D. BY	BLDG. NO.: 555	12653–M4
PATH: J: /JOBFILE/B–0555/12653/DESIGN/DRAWINGS			

LEGEND

SYMBOL NEW	SYMBOL EXIST	DESCRIPTION
1	1	PNEUMATIC LINE NUMBER
M.		20 PSIG MAIN CONTROL AIR, FROM EXIST TCP PANEL
		CONTROL AIR PNEUMATIC COPPER TUBING
		LOW VOLTAGE WIRE BE #14 AWG THNN.
		LINE VOLTAGE WIRE BE #14 AWG THNN.
		LOW VOLTAGE WIRE #18 AWG 2 CONDUCTOR TWISTED SHIELDED PAIR BELDEN 8719 OR EQUAL. NO SPLICES SHALL BE MADE FOR ANY SHIELDED WIRE. THEY SHALL BE CONTINUOUS FROM DEVICE TO DEVICE.
DENOTES DEVICE # & ANALOG INPUT # — D #79 IN-3 — DENOTES TERMINAL # — 5 6	DENOTES DEVICE # & ANALOG INPUT # — D #79 IN-3 — DENOTES TERMINAL # — 5 6	CONTROL DEVICE, TYPE OF SIGNAL AND TERMINAL NUMBER
	AHU MTD TERMINAL BOARD — 2TB6 — DENOTES TERMINAL # — 7 8	FACTORY INSTALLED UNIT MOUNTED TERMINAL STRIP, TYPE OF SIGNAL AND TERMINAL NUMBER
E.S.		END SWITCH
M.D. X		MOTORIZED DAMPER
DPS-X		DIFFERENTIAL PRESSURE SWITCH
DPT-X		DUCT PRESSURE TRANSMITTER
ATS-X		AVERAGING TEMPERATURE SENSOR
HT-X		HUMIDITY TRANSMITTER
HLS-X		HUMIDITY HIGH LIMIT SENSOR
	TD-6	TEMPERATURE SENSOR
	EPT-X	ELECTRIC/ PNEUMATIC TRANSDUCER
	IN	ELECTRONIC INPUT
	UO	UNIVERSAL OUTPUT
	E.T.R.	EXISTING TO REMAIN

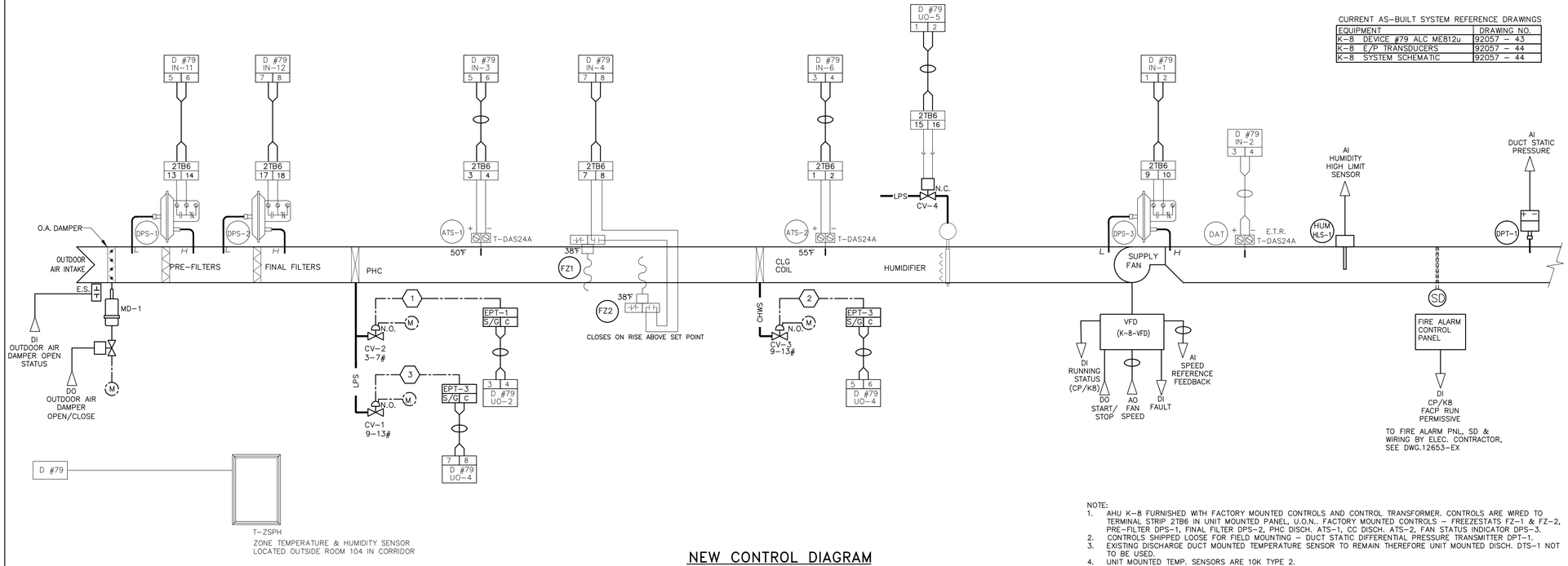


BAS NETWORK ARCHITECTURE DIAGRAM

SCALE: NONE

AIR HANDLER K/8 EMS POINT LIST

SYSTEM POINT IDENTIFICATION		INPUT SENSORS									OUTPUT SENSORS					ALGORITHMS																
		ANALOG				DIGITAL					ANALOG			DIGITAL		PROGRAMS											ALARMS					
EMS TAG	DESCRIPTION	TEMPERATURE	ENTHALPY	PRESSURE	SPEED	HUMIDITY	CONTACT CLOSURE	HIGH LIMIT	CURRENT SWITCH	PRESSURE SWITCH	END SWITCH	DAMPER CONTROL	VALVE CONTROL	VFD SPEED	CONTACT CLOSURE	DAMPER CONTROL	VALVE CONTROL	TEMPERATURE MONITORING	TEMPERATURE CONTROL	PRESSURE MONITORING	VALVE OPERATION	DAMPER OPERATION	TEMPERATURE OVERRIDE	ON/OFF STATUS	OPEN/CLOSE STATUS	START/STOP OPERATION	HUMIDITY MONITORING	FILTER PRESSURE DROP	TEMPERATURE RESET	HUMIDITY CONTROL	VFD CONTROL	TEMPERATURE	PRESSURE	HUMIDITY	ON/OFF STATUS	OPEN/CLOSE STATUS	SPEED DISAGREEMENT
	CONTROL PANEL FOR AIR HANDLER K/8 (CP/K5)																																			
1	OUTDOOR AIR DAMPER OPEN/CLOSE DO/K8															●						●														
2	OUTDOOR AIR DAMPER DO/K8 PROVE OPEN STATUS										●													●											●	
3	PREHEAT COIL VALVE OPEN/CLOSE CV-1/K8																●				●															
4	PREHEAT COIL VALVE OPEN STATUS CV-1/K8										●													●											●	
5	PREHEAT COIL VALVE OPEN/CLOSE CV-2/K8																●				●															
6	PREHEAT COIL VALVE OPEN STATUS CV-2/K8										●													●											●	
7	PREHEAT COIL DISCHARGE TEMPERATURE SENSOR ATS-1/K8	●																●	●			●									●					
8	SUPPLY AIR FAN VARIABLE FREQUENCY DRIVE ENABLE														●											●										
9	SUPPLY AIR FAN VARIABLE FREQUENCY DRIVE STATUS					●																		●									●			
10	SUPPLY AIR FAN VARIABLE FREQUENCY DRIVE SPEED													●																●						●
11	SUPPLY AIR FAN VARIABLE FREQUENCY DRIVE SPEED FEEDBACK				●																									●						●
12	SUPPLY AIR FAN VARIABLE FREQUENCY DRIVE FAULT					●																								●						
13	COOLING COIL DISCHARGE TEMPERATURE SENSOR ATS-2/K8	●																●													●					
14	COOLING COIL CONTROL VALVE MODULATION CV-3/K8												●								●															
15	PREFILTER DIFFERENTIAL PRESSURE SWITCH DPS-1/K8									●										●								●				●				
16	FINAL FILTER DIFFERENTIAL PRESSURE SWITCH DPS-2/K8									●										●								●				●				
17	FAN DIFFERENTIAL PRESSURE SWITCH DPS-3/K8									●										●				●										●		
18	FREEZESTAT ALARM TZ/K8					●												●													●					
19	PERMISSION TO RUN FROM FACP					●																				●										
20	K/8 DISCHARGE AIR TEMPERATURE SENSOR DAT/K8	●																●	●		●										●					
21	HUMIDIFIER CONTROL VALVE MODULATION CV-4/K8												●								●									●						
22	HUMIDITY HIGH LIMIT SENSOR HL/K8					●																					●			●				●		
23	DUCT STATIC PRESSURE TRANSMITTER DPT/K8			●																●												●		●		
24	K/8 ZONE TEMPERATURE/ HUMIDITY SENSOR T-ZSPH	●				●												●	●		●						●			●		●		●		



CURRENT AS-BUILT SYSTEM REFERENCE DRAWINGS

EQUIPMENT	DRAWING NO.
K-8 DEVICE #79 ALC ME812u	92057 - 43
K-8 E/P TRANSDUCERS	92057 - 44
K-8 SYSTEM SCHEMATIC	92057 - 44

NEW CONTROL DIAGRAM

SCALE: NONE

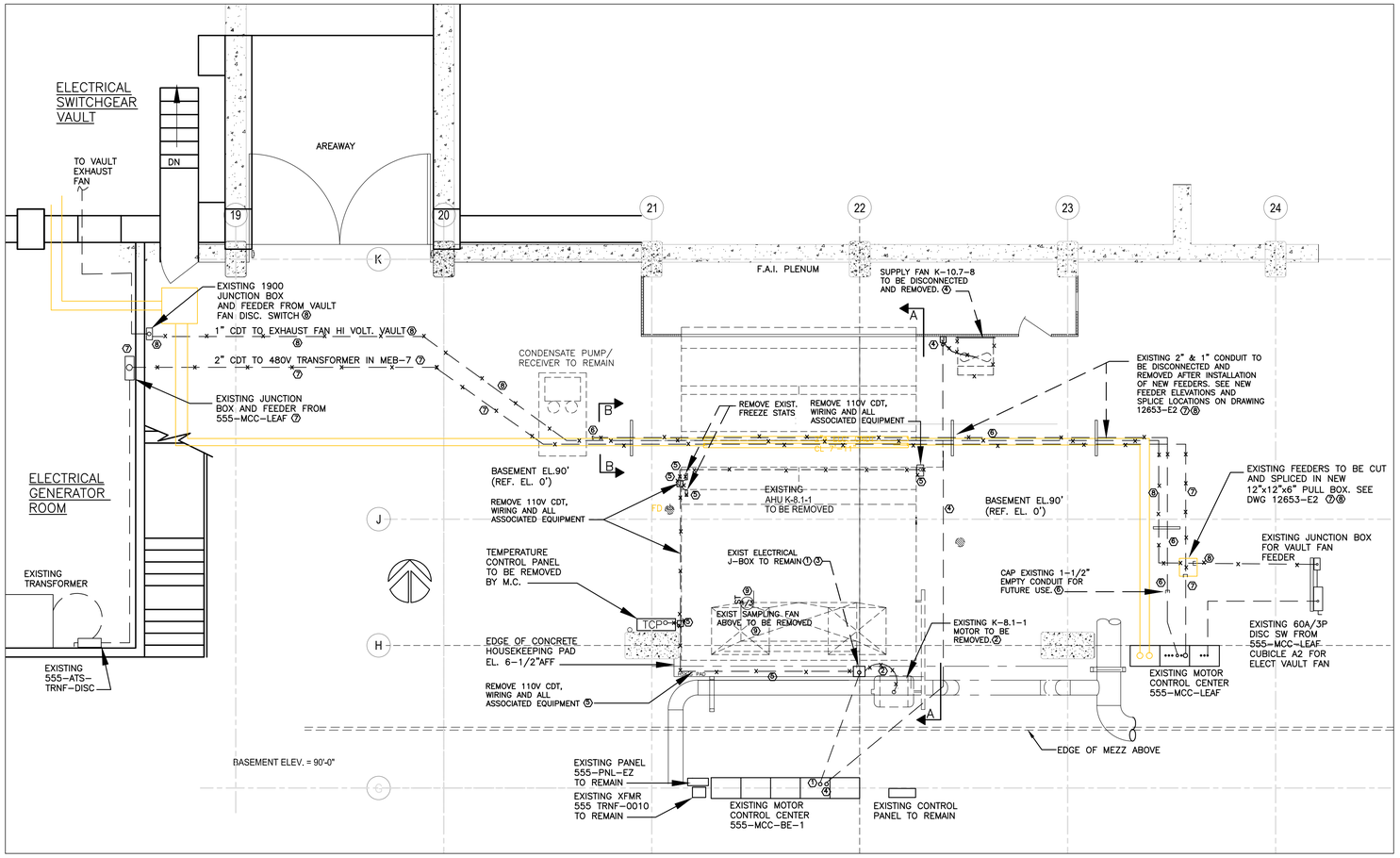
NOTE:
1. AHU K-8 FURNISHED WITH FACTORY MOUNTED CONTROLS AND CONTROL TRANSFORMER. CONTROLS ARE WIRED TO TERMINAL STRIP 2TB6 IN UNIT MOUNTED PANEL, U.O.N.. FACTORY MOUNTED CONTROLS – FREEZESTATS FZ-1 & FZ-2, PRE-FILTER DPS-1, FINAL FILTER DPS-2, PHC DISCH. ATS-1, CC DISCH. ATS-2, FAN STATUS INDICATOR DPS-3.
2. CONTROLS SHIPPED LOOSE FOR FIELD MOUNTING – DUCT STATIC DIFFERENTIAL PRESSURE TRANSMITTER DPT-1.
3. EXISTING DISCHARGE DUCT MOUNTED TEMPERATURE SENSOR TO REMAIN THEREFORE UNIT MOUNTED DISCH. DTS-1 NOT TO BE USED.
4. UNIT MOUNTED TEMP. SENSORS ARE 10K TYPE 2.
5. REUSE EXISTING CONTROL POINTS AND E/P TRANSDUCERS FOR PNEUMATIC CONTROL VALVES CV-1, CV-2, AND CV-3.
6. CV-4 IS AN ELECTRIC VALVE WITH PLUG CONNECTION. UNIT MOUNTED PLUG IS WIRED TO 2TB6.
7. NEW DAMPER END SWITCH SHALL BE WIRED TO OPEN WHEN EVER FAN MOTOR IS DE-ENERGIZED.
8. DUCT STATIC PRESSURE TRANSMITTER, DPT-1 SHALL BE LOCATED IN MAIN DISCHARGE DUCT 20' DOWNSTREAM OF SOUND ATTENUATOR.

JOB NO	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
		△					

BROOKHAVEN NATIONAL LABORATORY

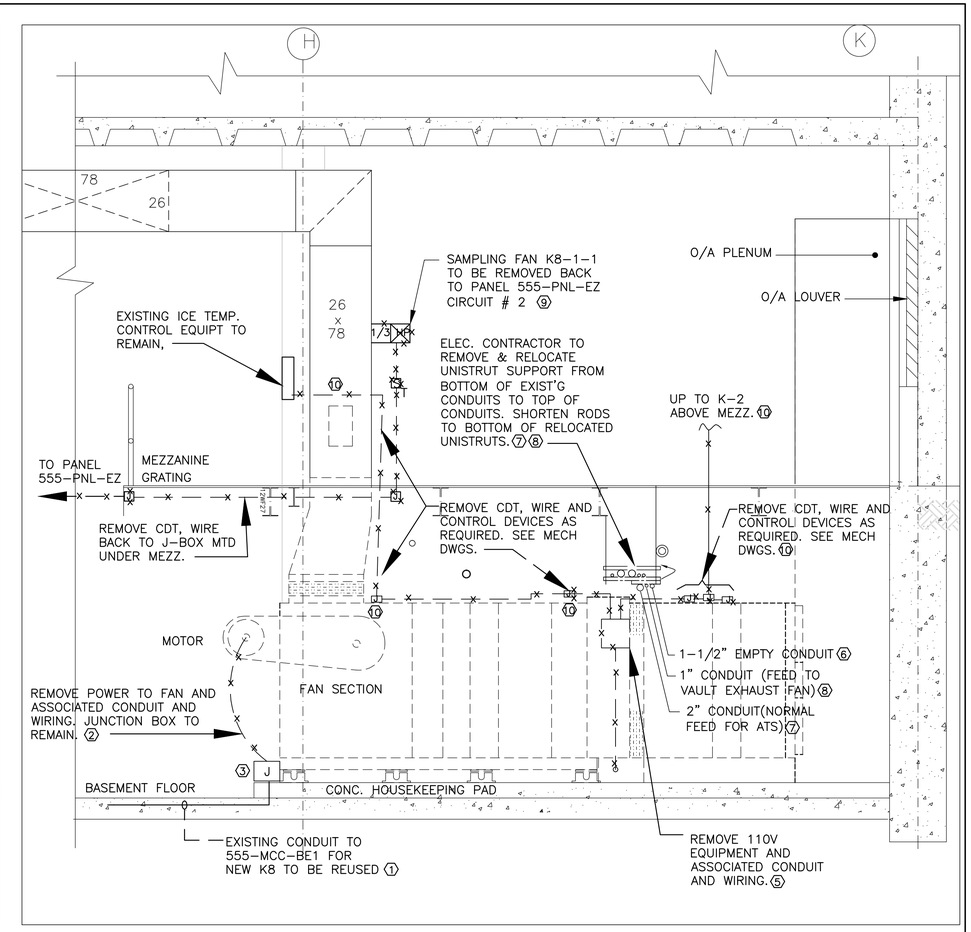
UNDER CONTRACT WITH
UNITED STATES DEPARTMENT OF ENERGY
FACILITIES & OPERATIONS, MODERNIZATION PROJECT OFFICE
UPTON, NEW YORK 11973

JOB TITLE REPLACE AHU K-8		DWG. TITLE CONTROLS – AIR HANDLER K-8	
ILR,GPP,LNI, HEM DMR FY15	DATE 3-18-15	ACCT. NO. 21069	SHEET 6 OF 9
SCALE AS NOTED	DWN. BY GML / REV'D BY	JOB NO. 12653	DWG. NO. 12653-M5
ESHQ RISK LEVEL 3	APP'D. BY	BLDG. NO. 555	
PATH: J:/JOBFILE/B-0555/12653/DESIGN/DRAWINGS			



BASEMENT LOWER LEVEL DEMOLITION PART PLAN

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



DEMOLITION SECTION A/E1

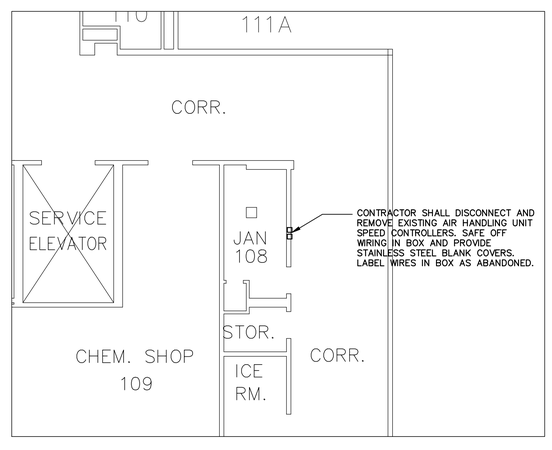
SCALE: 3/8"=1'-0"

GENERAL NOTES:

1 CONTRACTOR SHALL INSTALL THE NEW FEEDERS FOR THE NORMAL ATS FEEDER AND THE ELECTRICAL VAULT EXHAUST AND RECONNECT PRIOR TO THE REMOVAL OF THE EXISTING FEEDERS. COORDINATE WITH BNL FOR A SCHEDULED SHUTDOWN TO TIE IN THE RE-FED CIRCUITS. WORK SHALL BE COMPLETED DURING NORMAL WORKING HOURS.

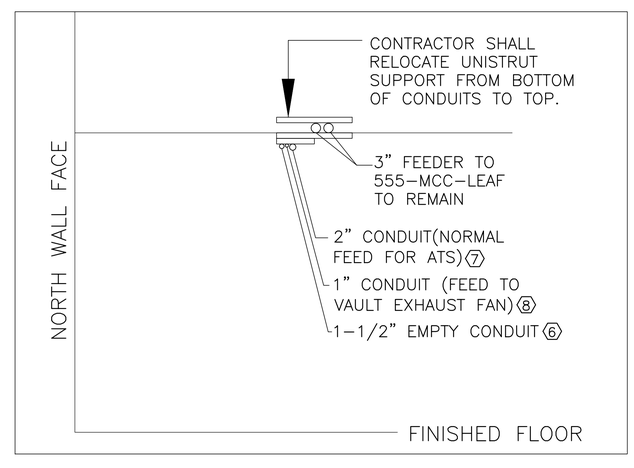
DEMOLITION KEY NOTES:

1. DISCONNECT AND REMOVE 6#8AWG & 3#12AWG FROM STARTER TO AIR HANDLING UNIT K.8.1-1 AND CONTROL CIRCUITS AS SHOWN. EXISTING CONDUIT BELOW SLAB SHALL REMAIN AND BE RE-USED FOR NEW UNIT FEEDER.
2. DISCONNECT AND REMOVE 6#8AWG AND FLEXIBLE CONDUIT FROM EXISTING K.8.1-1 MOTOR.
3. EXISTING JUNCTION BOX TO BE REUSED FOR NEW FEED TO VARIABLE FREQUENCY DRIVE. SEE DRAWINGS 12653-E2 AND 12653-E3 FOR ADDITIONAL INFORMATION.
4. DISCONNECT AND REMOVE 4#12AWG FROM EXISTING CONCEALED CONDUIT CURRENTLY SERVING SUPPLY FAN K-10.7.8 FROM EXISTING STARTER IN 555-MCC-BE1. MARK STARTER AS SPARE. LABEL JUNCTION BOX AT FAN AS TO POINT OF ORIGIN.
5. DISCONNECT AND REMOVE EXISTING ¾" CONDUIT AND 120 VOLT CONTROL WIRING FROM MCC STARTER AND PANEL 555-PNL-EZ TO ALLOW SAFE REMOVAL AND DEMOLITION OF AHU K-8.1-1.
6. DISCONNECT AND REMOVE EXISTING 1-1/2" CONDUIT AS SHOWN. CAP CONDUIT TEN FEET FROM EXISTING MOTOR CONTROL CENTER 555-MCC-LEAF AS INDICATED.
7. EXISTING NORMAL FEEDER TO AUTOMATIC TRANSFER SWITCH (3#2/0AWG,1#6AWG GROUND IN 2"CONDUIT) FROM 555-MCC-LEAF CUBICLE C4 SHALL BE REMOVED AND CUT BACK FOR SPLICING IN NEW PULL BOX. CONTRACTOR SHALL REMOVE THE FEEDER TO THE PULL BOX LOCATED IN THE GENERATOR ROOM. CONTRACTOR SHALL RUN NEW FEEDER TO MATCH EXISTING PRIOR TO DEMOLITION OF EXISTING SO AS TO LIMIT THE DURATION OF THE SHUTDOWN. RUN (3#2/0AWG AND 1#6AWG GROUND IN NEW 2"CONDUIT. SEE DRAWING 12653-E2 FOR ADDITIONAL INFORMATION ON CONDUIT ELEVATIONS.
8. EXISTING 3#10AWG AND 1#10AWG GROUND FROM EXTERIOR SIDE OF GENERATOR ROOM WALL 1900 BOX SHALL BE REMOVED AND CUT BACK FOR SPLICING IN NEW PULL BOX. CONTRACTOR SHALL REMOVE THE EXISTING FEEDER AFTER RUNNING THE NEW FEEDER AND SPLICING IN TO LIMIT THE DURATION OF THE SHUTDOWN. SEE DRAWING 12653-E2 FOR ADDITIONAL INFORMATION ON CONDUIT ELEVATIONS.
9. DISCONNECT AND REMOVE EXISTING 3#12AWG IN ¾"C FROM SAMPLING FAN K8-1-1 BACK TO PANEL 555-PNL-EZ CIRCUIT #2.
10. CONTRACTOR SHALL DISCONNECT AND REMOVE LOW VOLTAGE CONTROL WIRING AND CONDUIT FROM K-8.1-1 MOUNTED DEVICES BACK TO ICE TEMPERATURE CONTROL PANEL.



PART FIRST FLOOR DEMOLITION PLAN

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



SECTION B-B

SCALE: 1/2"=1'-0"

JOB NO.	SHEET	NO	REVISION	DATE	DWN.	APP'D.	GA

BROOKHAVEN NATIONAL LABORATORY

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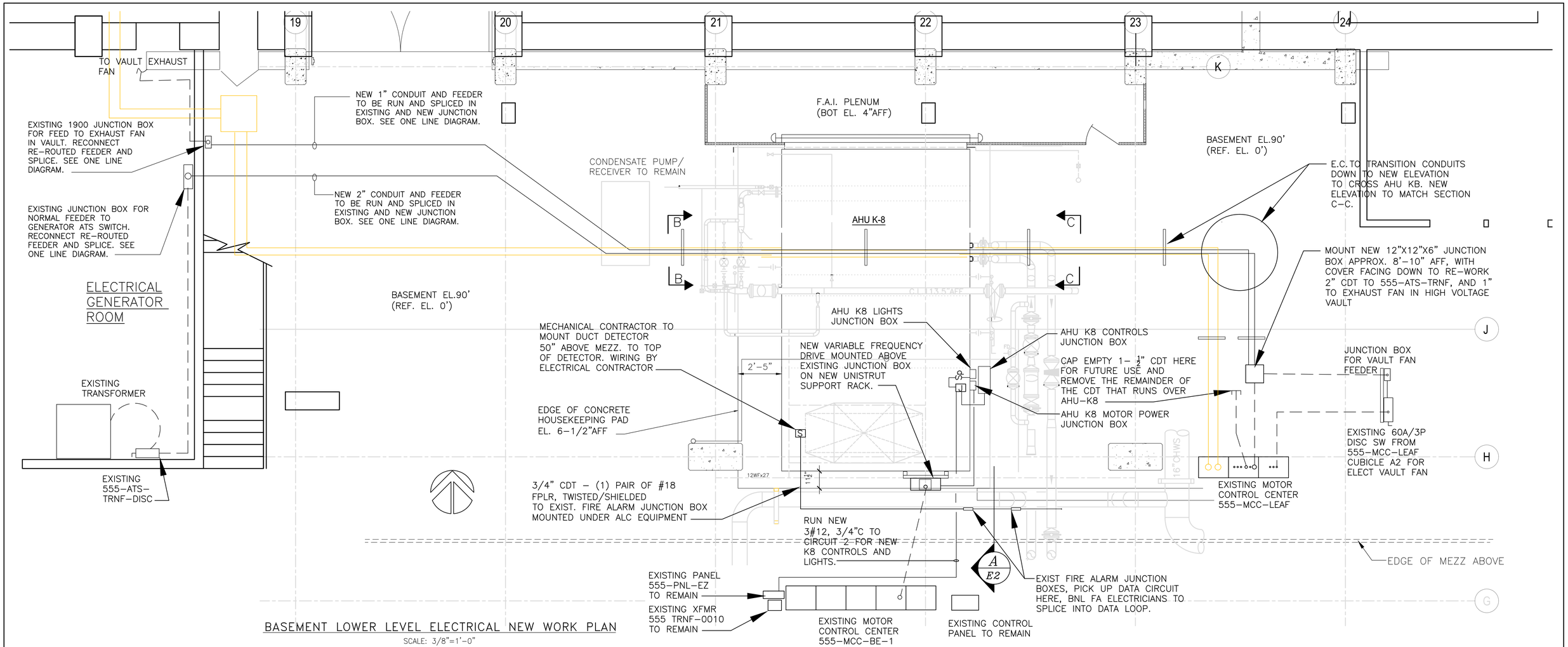
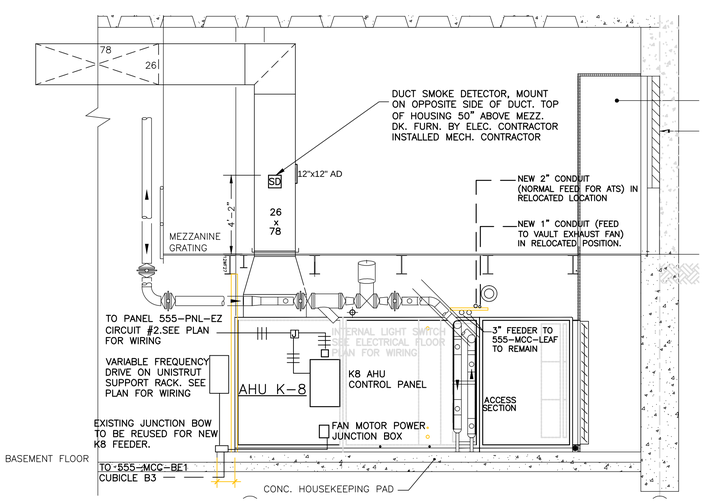
UPTON, NEW YORK 11973

JOB TITLE: REPLACE AHU K-8		DWG. TITLE: ELECTRICAL DEMOLITION PLAN & SECTION	
I.R,GPP,LNI, HEM: DMR FY15	DATE: 3-18-15	ACCT. NO.: 21069	SHEET 7 OF 9
SCALE: AS NOTED	DWN. BY: KK/JW; REV'D BY: RE	JOB NO.: 12653	DWG. NO.
ESHQ RISK LEVEL: 3	APP'D. BY: BM	BLDG. NO.: 555	12653-E1
PATH: J:/JOBFILE/B-0555/12653/DESIGN/DRAWINGS			



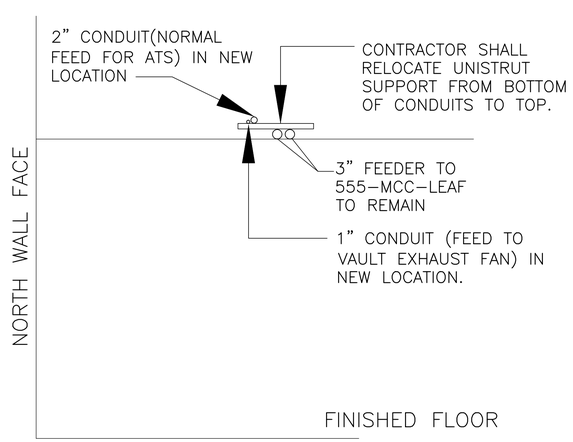
BASEMENT LOWER LEVEL ELECTRICAL NEW WORK PLAN

SCALE: 3/8"=1'-0"



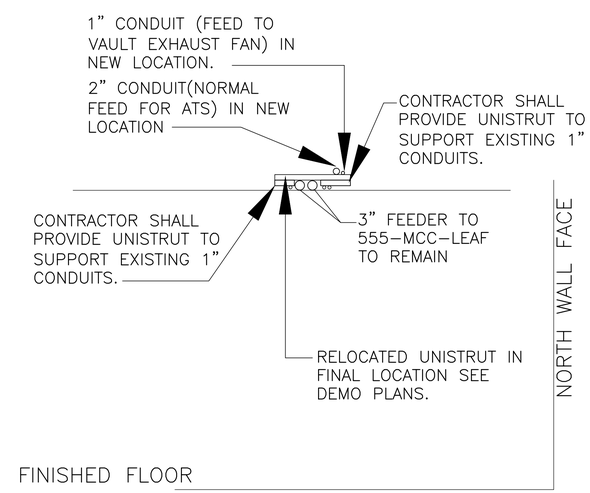
NEW WORK SECTION A/E2

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



SECTION B-B

SCALE: 1/2"=1'-0"



SECTION C-C

SCALE: 1/2"=1'-0"

JOB NO.	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA
		△					

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JOB TITLE REPLACE AHU K-8			DWG. TITLE ELECTRICAL NEW WORK PLAN	
ILR,GPP,LNI, HEM DMR FY15	DATE 3-18-15		ACCT. NO. 21069	SHEET 8 OF 9
SCALE AS NOTED	DWN. BY KK/JW	REV'D BY RE	JOB NO. 12653	DWG. NO. 12653-E2
ESHQ RISK LEVEL 3	APP'D. BY BM		BLDG. NO. 555	
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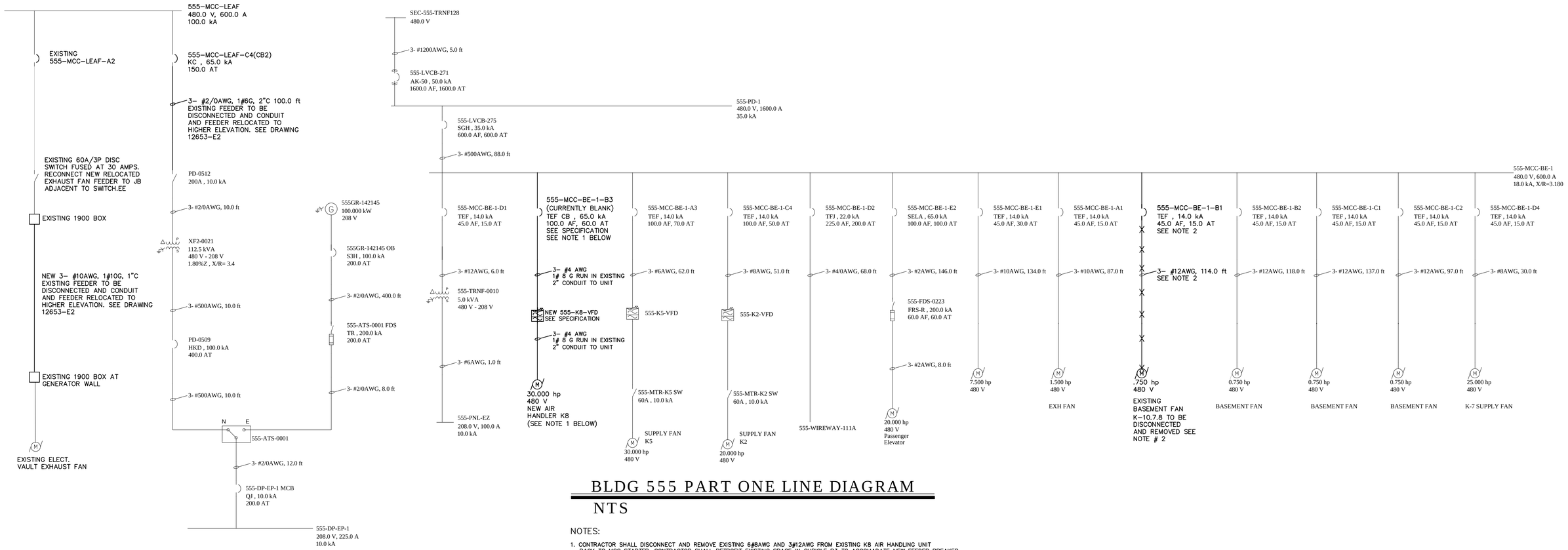
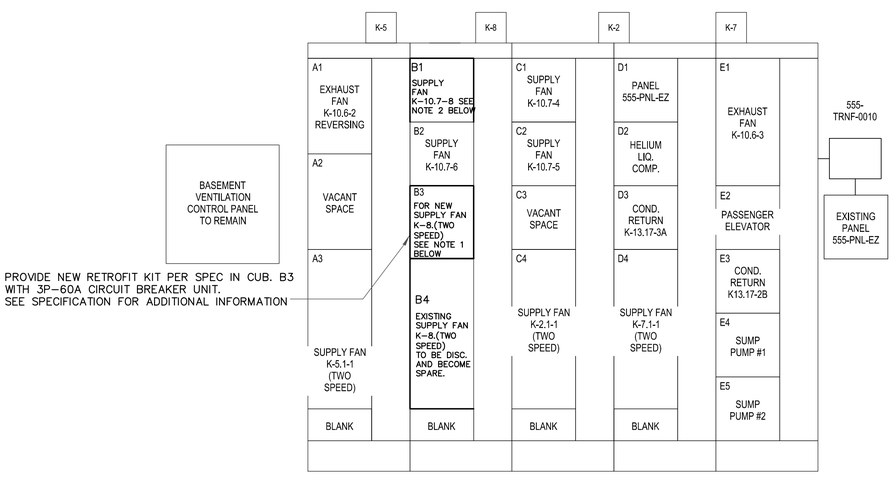


BLDG 555 PART ONE LINE DIAGRAM

NTS

NOTES:

1. CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING 6#8AWG AND 3#12AWG FROM EXISTING K8 AIR HANDLING UNIT BACK TO MCC STARTER. CONTRACTOR SHALL RETROFIT EXISTING SPACE IN CUBICLE B3 TO ACCOMADATE NEW FEEDER BREAKER FOR THE NEW K8 AIR HANDLER. SEE SPECIFICATION FOR RETROFIT REQUIREMENTS.
2. CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING 3#12AWG FROM EXISTING BASEMENT SUPPLY FAN K-10.7.8 BACK TO MCC STARTER. UPDATE CUBICLE DIRECTORY TO LIST IT AS SPARE.
3. NEW WORK IS INDICATED WITH BOLD LINES AND EXISTING TO REMAIN IS INDICATED IN LIGHT LINES.



555-MCC-BE-1

NTS

NOTES:

1. CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING 6#8AWG AND 3#12AWG FROM EXISTING K8 AIR HANDLING UNIT BACK TO MCC STARTER. CONTRACTOR SHALL RETROFIT EXISTING STARTER CUBICLE TO ACCOMADATE NEW FEEDER BREAKER FOR THE NEW K8 AIR HANDLER. SEE SPECIFICATION FOR RETROFIT REQUIREMENTS.
2. CONTRACTOR SHALL DISCONNECT AND REMOVE EXISTING 3#12AWG FROM EXISTING BASEMENT SUPPLY FAN K-10.7.8 BACK TO MCC STARTER. UPDATE CUBICLE DIRECTORY TO LIST IT AS SPARE.
3. NEW WORK IS INDICATED WITH BOLD LINES AND EXISTING TO REMAIN IS INDICATED IN LIGHT LINES.

ELECTRICAL LEGEND

SYMBOLS:

- CONDUIT RUN CONCEALED. MINIMUM SIZE 3/4"C. UNLESS OTHERWISE NOTED.
- CONDUIT HOME RUN. CIRCUIT NUMBERS AS SHOWN ON THE DRAWINGS.
- CONDUIT BURIED IN GROUND
- CAPPED CONDUIT
- CROSS LINES DENOTE NUMBER OF CONDUCTORS IN CONDUIT MINIMUM SIZE #12 AWG INCLUDING GROUND WIRE AND INDIVIUAL CIRCUIT NEUTRAL CONDUCTORS FOR EACH CIRCUIT INDICATED.
- X X X X X — EXISTING WRING AND CONDUIT TO BE DISCONNECTED AND REMOVED.
- T — TRANSFORMER RATING & VOLTAGE AS INDICATED ON DWG.
- S_P — TOGGLE SWITCH WITH RED LED PILOT LIGHT AND SWITCH GUARD., SINGLE POLE, 20A,125/277V. MTD. ON K8 ADJACENT LIGHT CONTROL BOX
- SAFETY DISCONNECT SWITCH. RATING AS INDICATED ON DRAWING.
- 1/2 — MOTOR-3 PHASE OR SINGLE PHASE, NUMBER DENOTES HORSEPOWER RATINGS AS INDICATED ON DRAWINGS.
- J OR J — JUNCTION BOX.
- PULLBOX - SIZE AS INDICATED ON DRAWING
- S — DUCT MOUNTED SMOKE DETECTOR. FURNISHED AND WIRED BY E.C. AND INSTALLED BY M.C.
- NON -FUSED DISCONNECT SWITCH. SEE DRAWING FOR NEMA RATING

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
AWG	AMERICAN WIRE GAGE
AF	AMP FRAME OR AMP FUSE
AT	AMP TRIP
AMP OR A(S)	AMPERE(S)
AS	AMP SWITCH
B.N.L.	BROOKHAVEN NATIONAL LABORATORY
BLDG.	BUILDING
C.B.	CIRCUIT BREAKER
C OR CDT	CONDUIT
CKT OR CIR.	CIRCUIT
COMM	COMMUNICATION
DIST.	DISTRIBUTION
DWG.	DRAWING
EM	EMERGENCY
EC	EMPTY CONDUIT
ELECT.	ELECTRICAL

ABBREVIATIONS (cont):

EXH	EXHAUST
EXIST.	EXISTING
FACP	FIRE ALARM CONTROL PANEL
F.A.	FIRE ALARM
GFI	GROUND FAULT INTERRUPTER
HOA	HAND-OFF-AUTOMATIC
HT.	HEIGHT
HP	HORSEPOWER
JB	JUNCTION BOX
KW	KILOWATT
KVA	KILOVOLT AMPERE
LTG.	LIGHTING
LP	LIGHTING PANEL
MECH.	MECHANICAL
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
MIN	MINIMUM
MTG	MOUNTING
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NF	NON-FUSED
NC OR N.C.	NORMALLY CLOSED
NO OR N.O.	NORMALLY OPEN
N.T.S.	NOT TO SCALE
PNL.	PANEL
P	POLE
PWR	POWER
QTY.	QUANTITY
RMS	ROOT MEAN SQUARED
RP	RECEPTACLE PANEL
RGS	RIGID GALVANIZED STEEL
S.C.	SHORT CIRCUIT
SUBSTA.	SUBSTATION
SW.	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
TRANSF.	TRANSFORMER
TEL	TELEPHONE
TYP.	TYPICAL
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
V	VOLT
WP	WEATHERPROOF
W	WATT, WIRE OR WIDE

JOB NO.	SHEET	NO	REVISION	DATE	DWN.	APP'D.	QA

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FACILITIES & OPERATIONS, MODERNIZATION PROJECT OFFICE
UPTON, NEW YORK 11973

JOB TITLE: REPLACE AHU K-8			DWG. TITLE: LEGEND AND ONE-LINE DIAGRAM
I.R.,GPP.,LNI., HEM: DMR FY15	DATE: 3-18-15	ACCT. NO.: 21069	SHEET 9 OF 9
SCALE: AS NOTED	DWN. BY: KK/JW / REV'D BY: RE	JOB NO.: 12653	DWG. NO.
ESHQ RISK LEVEL: 3	APP'D. BY: BM	BLDG. NO.: 555	12653-E3
PATH: J:/JOBFILE/B-0555/12653/DESIGN/DRAWINGS			