SOUTHFIELD PUBLIC SCHOOLS

SOUTHFIELD HIGH SCHOOL ITC FACILITY

SOUTHFIELD, MICHIGAN
PROJECT NO. 2021-006

FEBRUARY 19, 2021 BIDS

FRENCH associates

architects planners interiors

LIST OF DRAWINGS

MECHANICAL

ELECTRICAL

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MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
CO	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB TEMPERATURE
DEG	DEGREES
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HO	HUB OUTLET
HP	HORSEPOWER

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
HR	HOUR
HTG	HEATING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INST	INSTALLED
INV	INVERT
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOP	MAXIMUM OVER-CURRENT PROTECTION
N.C.	NOISE CRITERIA
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
ORS	OVERFLOW ROOF SUMP
OS&Y	OUTSIDE SCREW AND YOKE
(O)	OVERHEAD
PD	PRESSURE DROP (FEET OF WATER)
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH – ABSOLUTE
PSIG	POUNDS PER SQUARE INCH – GAUGE
PT	PRESSURE / TEMPERATURE PORT
RA	RETURN AIR
RH	RELATIVE HUMIDITY
REQD	REQUIRED
REL.A	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
SA	SUPPLY AIR
SH	SHOWER
SP	STATIC PRESSURE
SqFt / SF	SQUARE FOOT/SQUARE FEET
SS	SERVICE SINK
TC	TEMPERATURE CONTROL
T & P	TEMPERATURE AND PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
UR	URINAL
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VTR	VENT THRU ROOF
W	WASTE
W&V	WASTE AND VENT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT

MECHANICAL PIPING SYMBOLS

ABBREV.	DESCRIPTION
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE DOWN
	DIRECTION OF FLOW
	UNION
	STRAINER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
	PIPE CAP OR PLUG
	ISOLATION VALVE
	CIRCULATING PUMP
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	ANGLE VALVE
	CHECK VALVE (SWING)
	CHECK VALVE (SPRING)
	PLUG VALVE
	NEEDLE VALVE
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)
	PRESSURE REGULATING VALVE
	SOLENOID VALVE
	CONTROL VALVE (2-WAY / 3-WAY)
	CENTRIFUGAL FAN
	AUTOMATIC GAS SHUT-OFF VALVE
	TRAP (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)
	ROOF SUMP
CO	CLEAN OUT (IN FLOOR)
CO	CLEAN OUT (IN LINE)
WCO	CLEAN OUT (WALL)
BFP	BACKFLOW PREVENTER
M	WATER METER ASSEMBLY
	HOSE BIBB, WALL HYDRANT
	DIRECTION OF PIPE PITCH
	SPRINKLER HEAD (UPRIGHT)
	SPRINKLER HEAD (SIDEWALL)
	FLOW SWITCH
	SIAMESE CONNECTION (YARD)
	SIAMESE CONNECTION (WALL MOUNTED)
	FIRE HYDRANT
	FLOW MEASURING DEVICE
	BALANCING VALVE
	COMBINATION FLOW MEASURING AND BALANCING DEVICE
AAV	AUTOMATIC AIR VALVE
MAV	MANUAL AIR VALVE

MECHANICAL SYMBOLS

ABBREV.	DESCRIPTION
	RECTANGULAR TAKE-OFF (SINGLE LINE)
	RECTANGULAR TAKE-OFF (DOUBLE LINE)
	ROUND TAKE-OFF (SINGLE LINE)
	ROUND TAKE-OFF (DOUBLE LINE)
	SPIN-IN FITTING (WITH VOLUME DAMPER)
	ELBOW (WITH TURNING VANES)
	RADIUS RECTANGULAR ELBOW
	RADIUS ROUND ELBOW
	RECTANGULAR ELBOW UP
	ROUND ELBOW UP
	RECTANGULAR ELBOW DOWN
	ROUND ELBOW DOWN
	CONCENTRIC TRANSITION (DOUBLE LINE)
	CONCENTRIC TRANSITION (SINGLE LINE)
	ECCENTRIC TRANSITION (DOUBLE LINE)
	ECCENTRIC TRANSITION (SINGLE LINE)
R	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)
R	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)
D	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)
D	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER
	SUPPLY DIFFUSER
	LINEAR SLOT DIFFUSER
	RETURN OR EXHAUST GRILLE
	TRANSFER GRILLE
	CROSS SECTION OF SUPPLY AIR DUCT
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT
EXISTING / NEW	FIRE DAMPER (HORIZONTAL)
EXISTING / NEW	FIRE DAMPER (VERTICAL)
EXISTING / NEW	SMOKE DAMPER
EXISTING / NEW	COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
EXISTING / NEW	COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	VOLUME DAMPER (MANUALLY ADJUSTABLE)
M	MOTORIZED DAMPER
SD	SMOKE DETECTOR
CO2	CO2 SENSOR
T	THERMOSTAT OR TEMPERATURE SENSOR
H	HUMIDISTAT OR HUMIDITY SENSOR
	RETURN OR EXHAUST / SUPPLY AIR FLOW

PIPING LEGEND

ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
FOS	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
BCW	BOOSTED-DOMESTIC COLD WATER PIPING
BHW	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
NPCW	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
HW	DOMESTIC HOT WATER PIPING
HW(140°F)	DOMESTIC 140°F HOT WATER PIPING
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
CHWR	CHILLED WATER RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
HPLR	HEAT PUMP LOOP RETURN PIPING
HPLS	HEAT PUMP LOOP SUPPLY PIPING
RL	REFRIGERANT LIQUID PIPING
RS	REFRIGERANT SUCTION PIPING
HGB	HOT GAS BY-PASS PIPING
GXHR	GEO HEAT EXCHANGE RETURN
GXHS	GEO HEAT EXCHANGE SUPPLY
STM	STEAM PIPING
HPS	HIGH PRESSURE STEAM PIPING
LPS	LOW PRESSURE STEAM PIPING
CR	STEAM CONDENSATE RETURN PIPING
PCR	PUMPED STEAM CONDENSATE RETURN PIPING
LPC	LOW PRESSURE CONDENSATE PIPING
HPC	HIGH PRESSURE CONDENSATE PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN GAS PIPING
O2	OXYGEN GAS PIPING
VAC	VACUUM PIPING

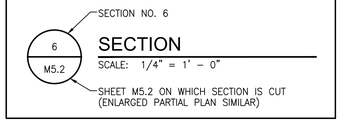
APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2015	MICHIGAN PLUMBING CODE
2015	MICHIGAN MECHANICAL CODE
2015	MICHIGAN UNIFORM ENERGY CODE
2015	INTERNATIONAL FIRE CODE
2015	INTERNATIONAL FUEL GAS CODE
2014	NFPA 96
2013	NFPA 13, NFPA 14, NFPA 20
2012	NFPA 101 WITH BFS AMENDMENTS
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES
–	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

DRAWING INDEX

DRAWING NOTATION

SYMBOL	DESCRIPTION
1	NEW WORK KEY NOTE NO. 1
1	DEMOLITION KEY NOTE NO. 1
EF 1	EQUIPMENT DESIGNATION, (IE: EXHAUST FAN NO. 1)
S-1 10x10 100-2	AIR TERMINAL TAG: S = SUPPLY, R = RETURN, E = EXHAUST IE: DIFFUSER TYPE = S-1 NECK SIZE = 10"x10" CFM = 100 (TYPICAL FOR 2)
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION



WATER FLOW TEST DATA

DATE PERFORMED	REPORTED PRESSURES	
	STATIC	RESIDUAL
xx-xx-20xx	xx PSI @ xx GPM	xx PSI @ xx GPM

ISSUE DATE	ISSUED FOR
02/19/2021	BIDS
	-
	-
	-
	-
	-
	-
	-
	-
	-
DRAWN	DGN
CHECKED	DGN
APPROVED	DGN

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PROJECT

Southfield High School
ITC Facility
Southfield Public Schools

Southfield,
Michigan

SHEET

MECHANICAL
GENERAL
INFORMATION

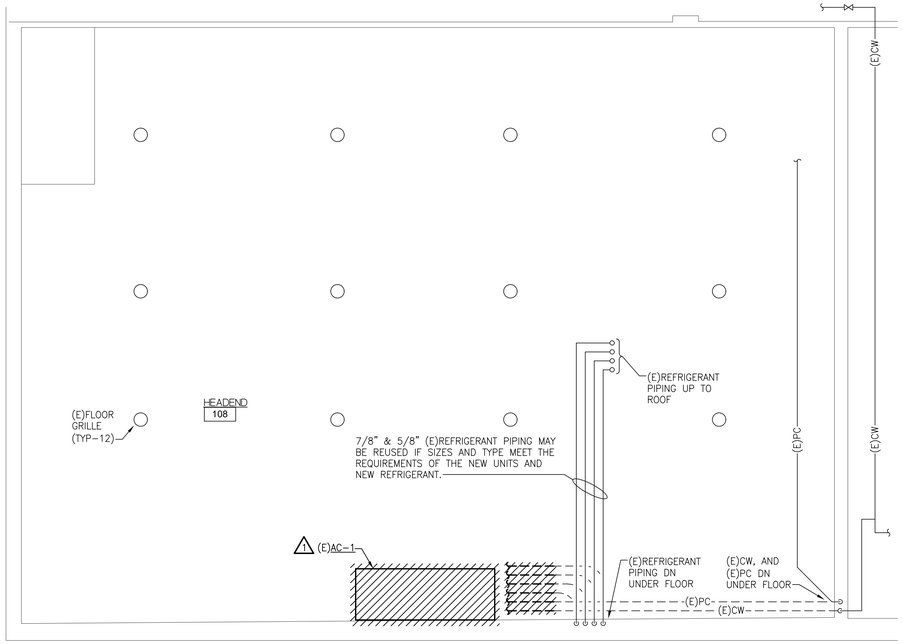
PROJECT NUMBER

2021-006

SHEET NUMBER

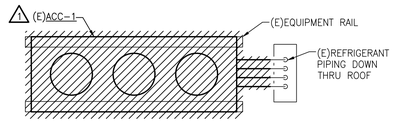
M0.00

2021.006 SOUTHFIELD HIGH SCHOOL



ENLARGED FIRST FLOOR MECHANICAL DEMOLITION PLAN - DATA CENTER

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



PARIAL ENLARGED MECHANICAL DEMOLITION ROOF PLAN

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

MECHANICAL DEMOLITION NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
2. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
3. VERIFY SIZE, LOCATIONS AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
5. ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
6. ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER PROVIDED EQUIPMENT.

DEMOLITION KEYED NOTES

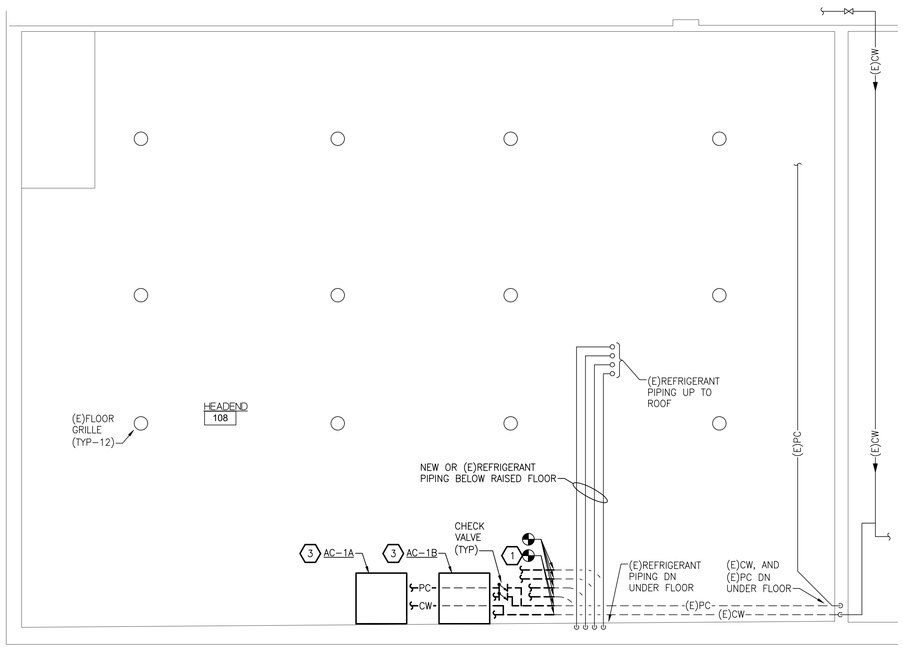
1. REMOVE AIR CONDITIONING UNIT, ASSOCIATED ROOF MOUNTED CONDENSING UNIT, ASSOCIATED CONTROLS, AND PORTION OF COLD WATER, PUMPED CONDENSATE, AND REFRIGERANT PIPING AS INDICATED.

HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE HVAC SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR STRUCTURAL CONDITIONS OR OTHER CONDITIONS.
2. CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER TRADES. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
3. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
4. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. COORDINATE FLOOR, WALL, ROOF PENETRATIONS, ETC. WITH ARCHITECTURAL TRADES. SEAL ALL PIPING PENETRATIONS.
7. FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
8. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.

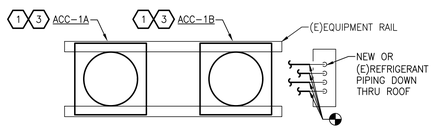
KEYED NOTES

1. CONNECT NEW COLD WATER AND PUMPED CONDENSATE FROM NEW AC-1A AND AC-1B TO EXISTING COLD WATER AND PUMPED CONDENSATE BELOW THE FLOOR. PIPE MATERIALS AND INSULATION TO MATCH EXISTING.
2. ANCHOR NEW CONDENSING UNITS ON EXISTING EQUIPMENT RAILS. PROVIDE ADDITIONAL STRUCTURAL SUPPORTS AS NEEDED.
3. PROVIDE NEW CONTROLS/WIRING BETWEEN AC-1A/AC-1B AND ACC-1A/ACC-1B.



ENLARGED FIRST FLOOR MECHANICAL NEW WORK PLAN - DATA CENTER

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



PARIAL ENLARGED MECHANICAL NEW WORK ROOF PLAN

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

AIR CONDITIONING UNIT SCHEDULE

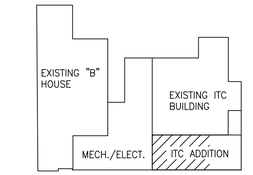
UNIT ID	NOM-INAL TONS	CFM	SUPPLY FAN		COOLING			HEATING CAPACITY			HUMIDIFIER (INFRARED)		FILTER	CASING		ELECTRICAL			LIEBERT MODEL NO.	REMARKS
			NO.	HP	EAT (DB/WB)	TOTAL (MBH)	SENS. (MBH)	TYPE	MBH	KW	CAPACITY (LBS/HR)	CAPACITY (KW)	EFFICIENCY (ASHRAE %)	LxWxH (IN)	WEIGHT (LBS)	VOLTS/ PHASE	FLA	MOP		
AC-1A & AC-1B	8	4300	1	4.1	75	105	91	ELEC.	40	12	7.7	4.8	60/65 %	34x34x78	700	208/3	73.9	100	PX029	

NOTES:
1. REMOTE LOCKOUT OF ELECTRIC HUMIDIFIER AND ELECTRIC REHEAT SHALL BE INCLUDED ON ALL UNITS. UNIT SHALL BE PROVIDED WITH THE FOLLOWING OPTIONS: INFRA-RED HUMIDIFIER, CONDENSATE PUMP, ELECTRIC REHEAT, FIRE STAT, SMOKE DETECTOR, UNLOADER, PREMIUM EFFICIENCY MOTOR, DISCONNECT SWITCH AND STARTER.
2. CONNECT EXISTING CONTROLS TO BOTH NEW UNITS AND PROVIDE BACNET INTERFACE FOR CURRENT OR FUTURE BUILDING MANAGEMENT DDC SYSTEM.

CONDENSING UNIT SCHEDULE

UNIT ID	SERVICE	NO. FANS	DESIGN AMBIENT °F	MINIMUM AMBIENT °F	VOLTS	PHASE	FLA	MOP	RIFR. PIPE SIZES (HG/L)	WT. (LBS)	LIEBERT MODEL NO.	REMARKS
ACC-1A & ACC-1B	AC-1A & AC-1B	1	95	-20	208	3	2.3	15	7/8" & 5/8"	240	MCM040	

NOTES: UNIT SHALL BE PROVIDED WITH THE FOLLOWING OPTIONS: DISCONNECT, AND LEE TEMP WINTER CONTROL.



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PROJECT
Southfield High School
ITC Facility
Southfield Public Schools

Southfield,
Michigan

SHEET
ENLARGED MECHANICAL DEMO AND NEW WORK PLANS

PROJECT NUMBER
2021-006

SHEET NUMBER
M4.10

0 1/2" 1" 2"
ACCURATE WHEN PRINTED TO SCALE

2021.006 SOUTHFIELD HIGH SCHOOL

COPPER FEEDER SCHEDULE

FEEDER (AMPS)	COND. SIZE	2 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	3 WIRE WITH GROUND	FEEDER (AMPS)	COND. SIZE	4 WIRE WITH GROUND
15S	12	2#12, 1#12 GND IN 3/4"C	15	12	3#12, 1#12 GND IN 3/4"C	15N	12	4#12, 1#12 GND IN 3/4"C
20S	12	2#12, 1#12 GND IN 3/4"C	20	12	3#12, 1#12 GND IN 3/4"C	20N	12	4#12, 1#12 GND IN 3/4"C
25S	10	2#10, 1#10 GND IN 3/4"C	25	10	3#10, 1#10 GND IN 3/4"C	25N	10	4#10, 1#10 GND IN 3/4"C
30S	10	2#10, 1#10 GND IN 3/4"C	30	10	3#10, 1#10 GND IN 3/4"C	30N	10	4#10, 1#10 GND IN 3/4"C
35S	8	2#8, 1#10 GND IN 3/4"C	35	8	3#8, 1#10 GND IN 3/4"C	35N	8	4#8, 1#10 GND IN 3/4"C
40S	8	2#8, 1#10 GND IN 3/4"C	40	8	3#8, 1#10 GND IN 3/4"C	40N	8	4#8, 1#10 GND IN 3/4"C
45S	6	2#6, 1#10 GND IN 3/4"C	45	6	3#6, 1#10 GND IN 3/4"C	45N	6	4#6, 1#10 GND IN 1"C
50S	6	2#6, 1#10 GND IN 3/4"C	50	6	3#6, 1#10 GND IN 3/4"C	50N	6	4#6, 1#10 GND IN 1"C
60S	4	2#4, 1#10 GND IN 1"C	60	4	3#4, 1#10 GND IN 1"C	60N	4	4#4, 1#10 GND IN 1 1/4"C
70S	4	2#4, 1#8 GND IN 1"C	70	4	3#4, 1#8 GND IN 1"C	70N	4	4#4, 1#8 GND IN 1 1/4"C
80S	3	2#3, 1#8 GND IN 1"C	80	3	3#3, 1#8 GND IN 1"C	80N	3	4#3, 1#8 GND IN 1 1/4"C
90S	2	2#2, 1#8 GND IN 1"C	90	2	3#2, 1#8 GND IN 1 1/4"C	90N	2	4#2, 1#8 GND IN 1 1/2"C
100S	1	2#1, 1#8 GND IN 1 1/4"C	100	1	3#1, 1#8 GND IN 1 1/4"C	100N	1	4#1, 1#8 GND IN 1 1/2"C
			110	2	3#2, 1#6 IN 1 1/4"C	110N	2	4#2, 1#6 GND IN 1 1/4"C
			125	1	3#1, 1#6 GND IN 1 1/4"C	125N	1	4#1, 1#6 GND IN 1 1/2"C
			150	1/0	3#1/0, 1#6 GND IN 1 1/2"C	150N	1/0	4#1/0, 1#6 GND IN 2"C
			175	2/0	3#2/0, 1#6 GND IN 1 1/2"C	175N	2/0	4#2/0, 1#6 GND IN 2"C
			200	3/0	3#3/0, 1#6 GND IN 2"C	200N	3/0	4#3/0, 1#6 GND IN 2"C
			225	4/0	3#4/0, 1#4 GND IN 2"C	225N	4/0	4#4/0, 1#4 GND IN 2 1/2"C
			250	250	3-250 KCMIL, 1#4 GND IN 2"C	250N	250	4-250 KCMIL, 1#4 GND IN 2 1/2"C
			300	350	3-350 KCMIL, 1#4 GND IN 2"C	300N	350	4-350 KCMIL, 1#4 GND IN 3"C
			350	500	3-500 KCMIL, 1#3 GND IN 3"C	350N	500	4-500 KCMIL, 1#3 GND IN 3 1/2"C
			400	600	3-600 KCMIL, 1#3 GND IN 3 1/2"C	400N	600	4-600 KCMIL, 1#3 GND IN 4"C
			450	2-4/0	(2) 3#4/0, 1#2 GND IN 2"C	450N	2-4/0	(2) 4#4/0, 1#2 GND IN 2 1/2"C
			500	2-250	(2) 3-250 KCMIL, 1#2 GND IN 2 1/2"C	500N	2-250	(2) 4-250 KCMIL, 1#1 GND IN 3"C
			600	2-350	(2) 3-350 KCMIL, 1#1 GND IN 2 1/2"C	600N	2-350	(2) 4-350 KCMIL, 1#1 GND IN 3"C
			700	2-500	(2) 3-500 KCMIL, 1#1/0 GND IN 3"C	700N	2-500	(2) 4-500 KCMIL, 1#1/0 GND IN 3 1/2"C
			800	2-600	(2) 3-600 KCMIL, 1#1/0 GND IN 3 1/2"C	800N	2-600	(2) 4-600 KCMIL, 1#1/0 GND IN 4"C
			1000	3-500	(3) 3-500 KCMIL, 1#2/0 GND IN 3"C	1000N	3-500	(3) 4-500 KCMIL, 1#2/0 GND IN 3 1/2"C
			1200	3-600	(3) 3-600 KCMIL, 1#3/0 GND IN 4"C	1200N	3-600	(3) 4-600 KCMIL, 1#3/0 GND IN 4"C
			1600	4-600	(4) 3-600 KCMIL, 1#4/0 GND IN 4"C	1600N	4-600	(4) 4-600 KCMIL, 1#4/0 GND IN 4"C
			2000	5-600	(5) 3-600 KCMIL, 1-250 KCMIL GND IN 4"C	2000N	5-600	(5) 4-600 KCMIL, 1-250 KCMIL GND IN 4"C
			2500	7-500	(7) 3-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C	2500N	7-500	(7) 4-500 KCMIL, 1-350 KCMIL GND IN 3 1/2"C
			3000	8-500	(8) 3-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C	3000N	8-500	(8) 4-500 KCMIL, 1-400 KCMIL GND IN 3 1/2"C
			4000	10-600	(10) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	4000N	10-600	(10) 4-600 KCMIL, 1-500 KCMIL GND IN 4"C
			5000	12-600	(12) 3-600 KCMIL, 1-700 KCMIL GND IN 4"C	5000N	12-600	(12) 4-600 KCMIL, 1-700 KCMIL GND IN 4"C
			6000	15-600	(15) 3-600 KCMIL, 1-500 KCMIL GND IN 4"C	6000N	15-600	(15) 4-600 KCMIL, 1-800 KCMIL GND IN 4"C

NOTES:

1. AMPACITIES FOR FEEDER SIZES ARE BASED ON N.E.C. CODE 110-14. (TERMINATION PROVISIONS FOR EQUIPMENT RATED 100A OR LESS ARE RATED FOR USE WITH CONDUCTORS RATED 60°C. TERMINATION PROVISIONS FOR EQUIPMENT RATED GREATER THAN 100A ARE RATED FOR USE WITH CONDUCTORS RATED 75°C.)
2. CONTRACTOR MAY OPTIONALLY USE 1/2" CONDUIT IN LIEU OF 3/4" CONDUIT FOR #10 AND #12 CONDUCTORS.
3. CONDUIT FILL IS BASED ON 40% FILL USING SINGLE CONDUCTOR BUILDING WIRE OF INSULATION TYPES THHN, THWN, THWN-2, XHH, XHHW, AND XHHW-2 IN RMC. FOR OTHER RACEWAY TYPES REFER TO APPROPRIATE N.E.C. APPENDIX C TABLES.
4. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

TECHNOLOGY SYMBOL LIST

SYMBOL	DESCRIPTION
	CAMERA
CR	CARD READER
	TECHNOLOGY OUTLET – 6" ABOVE COUNTER
	TECHNOLOGY OUTLET – FLOOR
	TECHNOLOGY OUTLET – WALL
DH	MAGNETIC DOOR HOLDER
	PUSH BUTTON
S	SPEAKER
	WALL CLOCK – SINGLE FACE
	WALL CLOCK – DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT
WAP	WIRELESS ACCESS POINT

NOTES:
1. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED.
2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

LIGHTING CONTROLS LEGEND

SYMBOL	DESCRIPTION
$	SINGLE POLE SWITCH
$3	THREE WAY SWITCH
$4	FOUR WAY SWITCH
$L	LIGHT CONTROL LOCATION
G	GENERATOR TRANSFER DEVICE

POWER SYMBOL LIST

SYMBOL	DESCRIPTION
	CONDUIT DOWN
	CONDUIT UP
	DISCONNECT SWITCH – NON FUSED
	DISCONNECT SWITCH – FUSED
	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
	GROUNDING ROD
	GROUND
	GROUNDING BAR
J	JUNCTION BOX
M	METER
	MOTOR – SINGLE PHASE
	MOTOR – THREE PHASE
$M	MOTOR RATED SWITCH
	POWER RECEPTACLE – SIMPLEX TYPE
	POWER RECEPTACLE – DUPLEX TYPE
	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
USB	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
	POWER RECEPTACLE – QUADRUPLEX TYPE
	POWER RECEPTACLE – RECESSED FLOOR TYPE
	POWER RECEPTACLE – SPECIALTY TYPE
TC	TIME CLOCK
T	TRANSFORMER

NOTES:
1. ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION
F	AUDIBLE DEVICE/WALL MOUNTED
F	VISUAL DEVICE/WALL MOUNTED
F	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED
F	AUDIBLE DEVICE/CEILING MOUNTED
F	VISUAL DEVICE/CEILING MOUNTED
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED
CS	CO ALARM/SMOKE DETECTOR
S	SMOKE DETECTOR
CO	CO ALARM
S	DUCT MOUNTED SMOKE DETECTOR
H	HEAT DETECTOR
FD	FIRE DEPARTMENT COMMUNICATION OUTLET
	EXISTING / NEW — COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	EXISTING / NEW — COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
F	MANUAL PULL STATION
FS	FLOW SWITCH
TS	TAMPER SWITCH
FAA	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
I/O	INPUT/OUTPUT CONTROL MODULE

NOTES:
1. DRAWINGS INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.
2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

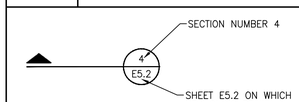
ELECTRICAL ABBREVIATIONS

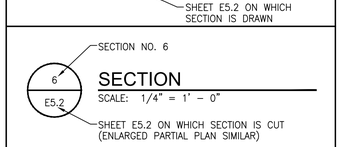
ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
A	AMPERE
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
C	CONDUIT OR CEILING MOUNTED
CB	CIRCUIT BREAKER
CU	COPPER
CT	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LP	LIGHTING PANEL
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOC.
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
PH. OR ø	PHASE
P	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
RMC	RIGID METALLIC CONDUIT
RP	RECEPTACLE PANEL
TBB	TELEPHONE BACKBOARD
TYP.	TYPICAL
UC	UNDER COUNTER
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT AMPERE
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

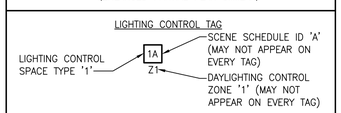
DRAWING INDEX

DRAWING NOTATION

SYMBOL	DESCRIPTION
L1	LIGHTING FIXTURE TAG
1	CONSTRUCTION KEY NOTE NUMBER 1
1	DEMOLITION KEY NOTE NUMBER 1
20	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)
20	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)
EQUIPMENT	EQUIPMENT TAG
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	NEW OR MODIFIED UNDERGROUND WIRING
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION







NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.

APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN ENERGY CODE
2015	MICHIGAN RESIDENTIAL CODE
2015	MICHIGAN REHABILITATION CODE
2017	MICHIGAN ELECTRICAL CODE RULES, PART 8
2017	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2013	NFPA 72
2013	NFPA 101
2013	NFPA 110
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
1985	DETROIT ELEVATOR CODE

ISSUE DATE	ISSUED FOR
02/19/2021	BIDS
DRAWN	JRS
CHECKED	PA
APPROVED	SET

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PROJECT
Southfield High School
ITC Facility
Southfield Public Schools

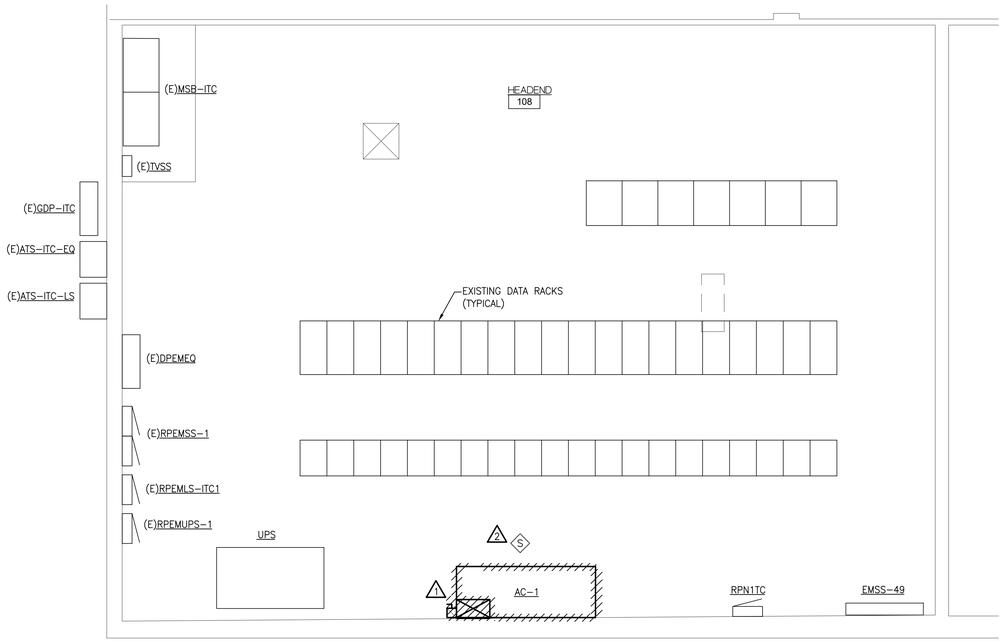
Southfield,
Michigan

SHEET
ELECTRICAL
GENERAL
INFORMATION

PROJECT NUMBER
2021-006

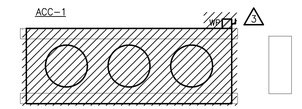
SHEET NUMBER
E0.00

201.006 SOUTHFIELD HIGH SCHOOL



ENLARGED FIRST FLOOR ELECTRICAL DEMOLITION PLAN - DATA CENTER

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



PARIAL ENLARGED ELECTRICAL DEMOLITION ROOF PLAN

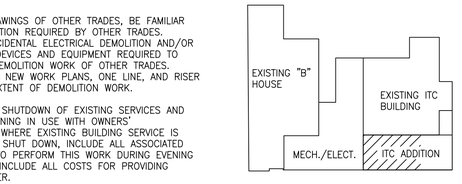
SCALE:1/4" = 1'-0"

ELECTRICAL DEMOLITION NOTES

1. VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
2. EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
3. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
4. COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
5. COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
6. REMOVE ALL CONDUIT AND WIRE BACK TO NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
7. WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
8. PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
9. CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
10. CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.
11. CONTRACTOR SHALL VERIFY ALL UNDERGROUND AND IN-SLAB UTILITIES LOCATIONS PRIOR TO SAW CUTTING OR PENETRATING ANY FLOOR SLABS. CONTRACTOR SHALL REPAIR ALL UTILITIES DAMAGED BY SAW CUTTING.

DEMOLITION KEYED NOTES

1. DISCONNECT, MAKE SAFE AND REMOVE POWER TO AC-1, CONDENSATE PUMP AND CONTROL PANEL COMPLETE WITH ALL ASSOCIATED CONDUIT AND WIRING. COORDINATE WITH MECHANICAL TRADES.
2. EXISTING SMOKE DETECTORS WITHIN RAISED ACCESS FLOOR TO REMAIN.
3. DISCONNECT, MAKE SAFE AND REMOVE POWER TO ACC-1 COMPLETE WITH CONDUIT AND WIRING. COORDINATE WITH MECHANICAL TRADES.



ISSUE DATE	ISSUED FOR
02/19/2021	BIDS
	-
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	-
	-
DRAWN	JRS
CHECKED	PA
APPROVED	SET

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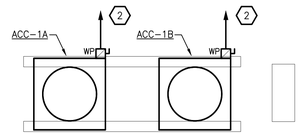


PARIAL ENLARGED ELECTRICAL NEW WORK ROOF PLAN

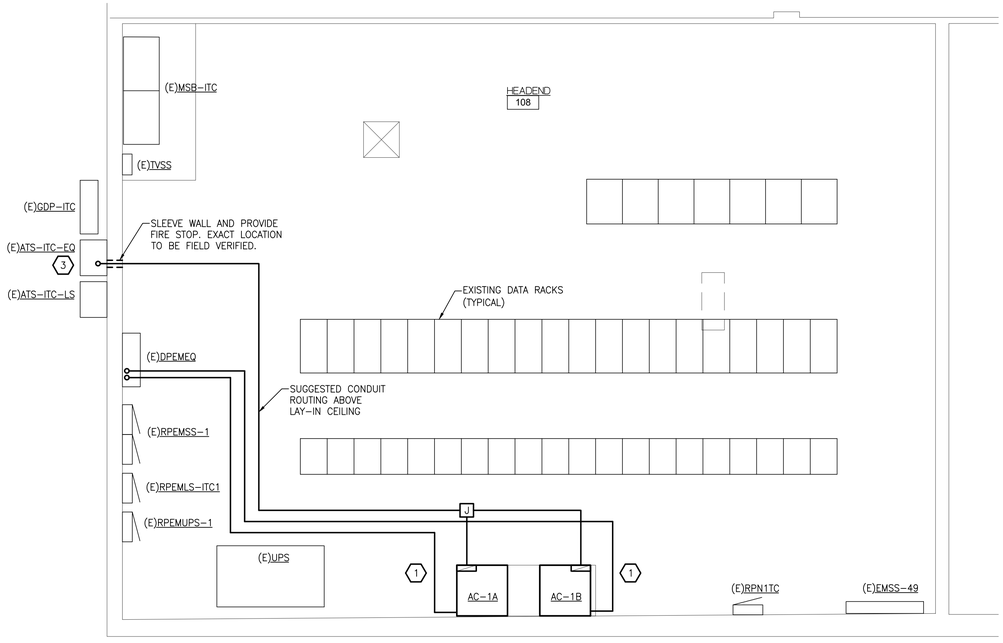
SCALE:1/4" = 1'-0"

POWER GENERAL NOTES

1. ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
2. ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
3. ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.

KEYED NOTES

1. CONNECT AC-1A AND AC-1B TO EMERGENCY POWER DISTRIBUTION PANEL DPEMEQ. SEE ONE LINE DIAGRAM NEW WORK FOR FEEDER SIZES. COORDINATE WITH MECHANICAL TRADES.
2. CONNECT ACC-1A AND ACC-1B TO EMERGENCY POWER DISTRIBUTION PANEL DPEMEQ. SEE ONE LINE DIAGRAM NEW WORK FOR FEEDER SIZES. COORDINATE WITH MECHANICAL TRADES.
3. PROVIDE 2#12-1/2"C. TO AC-1A AND AC-1B FOR GENERATOR START SIGNAL TO LOCK OUT ELECTRIC HUMIDIFIER AND ELECTRIC REHEAT. COORDINATE WITH MECHANICAL TRADES. EXACT LOCATION OF ATS TO BE FIELD VERIFIED.



ENLARGED FIRST FLOOR ELECTRICAL NEW WORK PLAN - DATA CENTER

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

PARIAL ENLARGED ELECTRICAL NEW WORK ROOF PLAN

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

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PROJECT

Southfield High School
ITC Facility
Southfield Public Schools

Southfield,
Michigan

SHEET

ENLARGED ELECTRICAL DEMO AND NEW WORK PLANS

PROJECT NUMBER

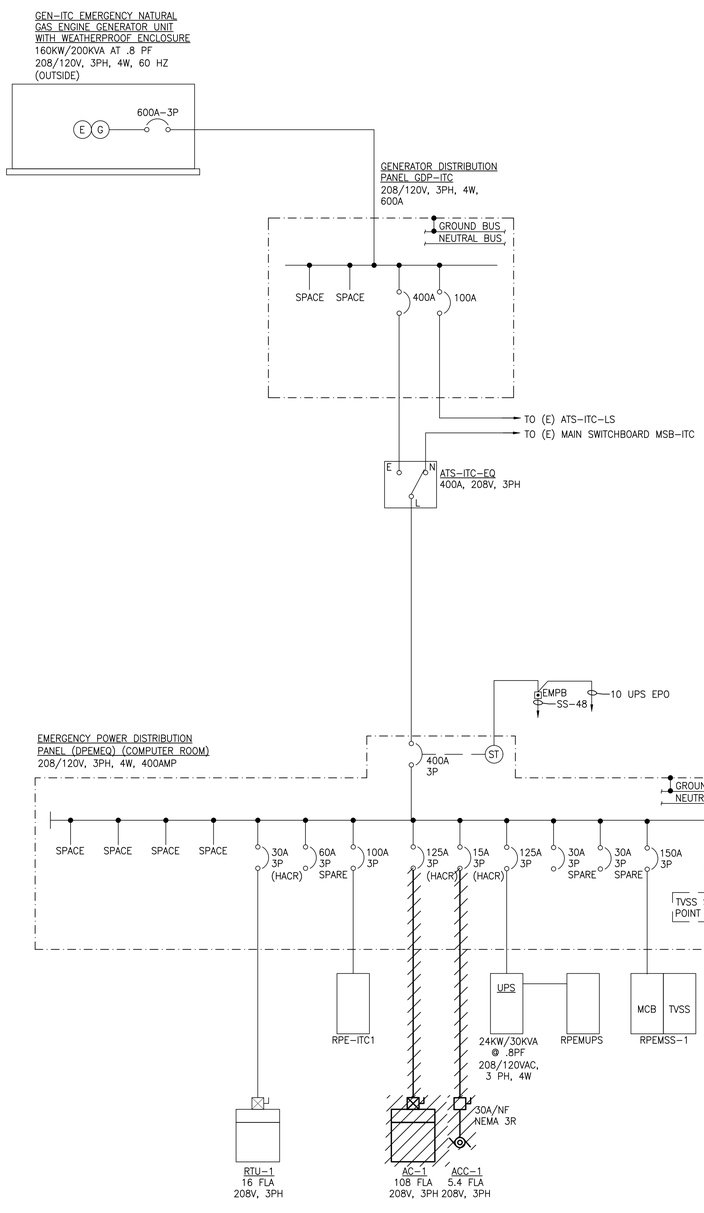
2021-006

SHEET NUMBER

E4.10

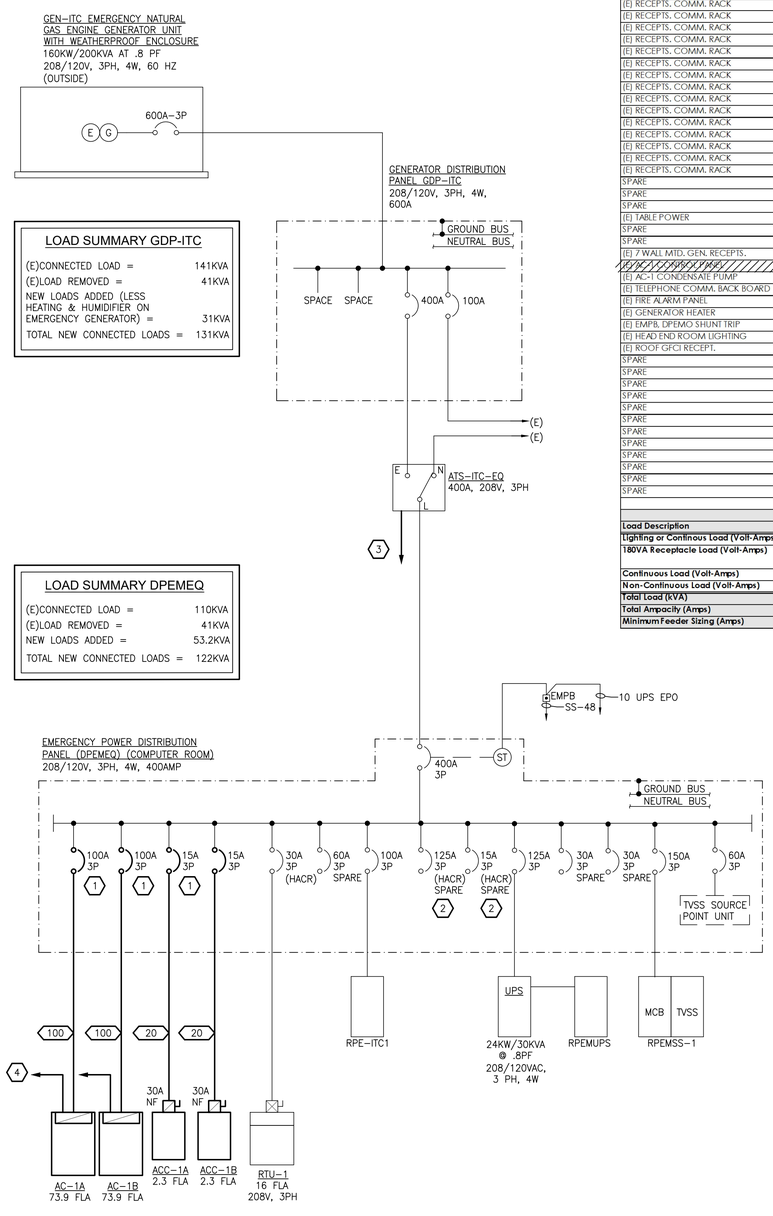
0 1/2" 1" 2"
ACCURATE WHEN PRINTED TO SCALE

2021.006 SOUTHFIELD HIGH SCHOOL



PARTIAL ONE-LINE DIAGRAM - DEMOLITION

NO SCALE



LOAD SUMMARY GDP-ITC

(E)CONNECTED LOAD =	141KVA
(E)LOAD REMOVED =	41KVA
NEW LOADS ADDED (LESS HEATING & HUMIDIFIER ON EMERGENCY GENERATOR) =	31KVA
TOTAL NEW CONNECTED LOADS =	131KVA

LOAD SUMMARY DPEMEQ

(E)CONNECTED LOAD =	110KVA
(E)LOAD REMOVED =	41KVA
NEW LOADS ADDED =	53.2KVA
TOTAL NEW CONNECTED LOADS =	122KVA

PARTIAL EXISTING ONE-LINE DIAGRAM - MODIFIED FOR NEW WORK

NO SCALE

Panel Designation: (E) RPEMSS-1 — **Main:** MLO — **Bussing:** 100A — **Ground Bus:** STANDARD — **Mounting:** SURFACE — **Neutral:** 100% — **P-P Voltage:** 208 — **P-N Voltage:** 120 — **Phase:** 3 — **Wire:** 4 — **Min SC Interrupting Rating:** XXX

Panel Location: HEADEND — **Fed From:** _____ — **Feeder Size:** _____

Remarks	Light Load	Recept Load	Cont Load	nonC Load	OC Prot	CKT	Ø A	Ø B	Ø C	CKT	OC Prot	nonC Load	Cont Load	Recept Load	Light Load	Remarks
(E) RECEPTS, COMM. RACK		1200			20	1	X			2	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	3		X		4	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	5			X	6	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	7	X			8	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	9		X		10	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	11			X	12	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	13	X			14	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	15		X		16	20			1200		(E) RECEPTS, COMM. RACK
(E) RECEPTS, COMM. RACK		1200			20	17			X	18	20					SPARE
(E) RECEPTS, COMM. RACK		1200			20	19	X			20	20					SPARE
(E) RECEPTS, COMM. RACK		1200			20	21		X		22	20					SPARE
(E) RECEPTS, COMM. RACK		1200			20	23			X	24	20					SPARE
(E) RECEPTS, COMM. RACK		1200			20	25	X			26	20					SPARE
(E) RECEPTS, COMM. RACK		1200			20	27		X		28	20					SPARE
(E) RECEPTS, COMM. RACK		1200			20	29			X	30	20					SPARE
SPARE					20	31	X			32	20					SPARE
SPARE					20	33		X		34	20					SPARE
SPARE					20	35			X	36	20					SPARE
(E) TABLE POWER		360			20	37	X			38	20					SPARE
SPARE					20	39		X		40	20					SPARE
SPARE					20	41			X	42	20					SPARE
(E) 7 WALL MTD. GEN. RECEPTS.		1260			20	43	X			44	20					SPARE
					20	45		X		46	20					SPARE
(E) AC-1 CONDENSATE PUMP		300			20	47			X	48	20					SPARE
(E) TELEPHONE COMM. BACK BOARD		360			20	49	X			50	20					SPARE
(E) FIRE ALARM PANEL		200			20	51		X		52	20					SPARE
(E) GENERATOR HEATER		1200			20	53			X	54	20					SPARE
(E) EMPB, DPEMO SHUNT TRIP		20			20	55	X			56	20					SPARE
(E) HEAD END ROOM LIGHTING		1280			20	57		X		58	20					SPARE
(E) ROOF GFCI RECEPT.		180			20	59			X	60	20					SPARE
SPARE					20	61	X			62	20					SPARE
SPARE					20	63		X		64	20					SPARE
SPARE					20	65			X	66	20					SPARE
SPARE					20	67	X			68	20					SPARE
SPARE					20	69		X		70	20					SPARE
SPARE					20	71			X	72	20					SPARE
SPARE					20	73	X			74	20					SPARE
SPARE					20	75		X		76	20					SPARE
SPARE					20	77			X	78	20					SPARE
SPARE					20	79	X			80	15					(E) INTEGRAL TVSS EQUIPMENT
SPARE					20	81		X		82	-					-
SPARE					20	83			X	84	-					-

Load Description	Connected Load ØA	ØB	ØC	Total	Demand Factor	Demand Load ØA	ØB	ØC	Total
Lighting or Continous Load (Volt-Amps)	0	0	0	0	1.00	0	0	0	0
180VA Receptacle Load (Volt-Amps)	9600	9600	8400	27600	1.00 (First 10kVA)	3478	3478	3043	10000
	Amount over 10kVA			17600	0.50 (> 10kVA)	3061	3061	2678	8800
Continuous Load (Volt-Amps)	0	0	0	0	1.00	0	0	0	0
Non-Continuous Load (Volt-Amps)	0	0	0	0	1.00	0	0	0	0
Total Load (kVA)	9.60	9.60	8.40	27.60	125% of Light/Cont and Recept	6.54	6.54	5.72	18.80
Total Ampacity (Amps)	79.9	79.9	69.9	76.6	(<10kVA) load plus other load	54.5	54.5	47.6	52.2
Minimum Feeder Sizing (Amps)	87.2	87.2	76.3	83.5	<---- per NEC Article 215.2 ---->	61.7	61.7	54.0	59.1

Receptacle Demand Factor per Article 220.44 of the National Electrical Code.

ONE LINE DIAGRAM KEYED NOTES

1. PROVIDE NEW HACR BREAKERS IN EXISTING SPACES. UPDATE PANEL DIRECTORY.
2. RENDER BREAKERS AS SPARES.
3. 2#12–1/2" CONDUIT TO AC–1A AND AC–1B FOR GENERATOR START SIGNAL. COORDINATE WITH MECHANICAL TRADES.
4. GENERATOR START SIGNAL FROM ATS–ITC–EQ.

ISSUE DATE	ISSUED FOR
02/19/2021	BIDS
DRAWN	JRS
CHECKED	PA
APPROVED	SET

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PROJECT

Southfield High School
ITC Facility
Southfield Public Schools

Southfield,
Michigan

SHEET

ELECTRICAL
ONE-LINE DIAGRAM
AND SCHEDULES

PROJECT NUMBER

2021-006

SHEET NUMBER

E5.00

2021.006 SOUTHFIELD HIGH SCHOOL