SOUTHFIELD PUBLIC SCHOOLS

SOUTHFIELD, MICHIGAN PROJECT NO. 2021-006

FEBRUARY 19, 2021

BIDS

LIST OF DRAWINGS

MECHANICAL

M0.00 MECHANICAL GENERAL INFORMATION

M4.10 ENLARGED MECHANICAL DEMO AND NEW WORK PLANS

ELECTRICAL

E0.00	ELECTRICAL GENERAL INFORMATION
E4.10	ENLARGED ELECTRICAL DEMO AND NEW WORK PLANS

E5.00 ELECTRICAL ONE-LINE DIAGRAM AND SCHEDULES



architects planners interiors

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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
	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF EJ	EXHAUST FAN 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
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MECHANICAL ABBREVIATIONS		
ABBREV.	DESCRIPTION	
HR	HOUR	
HTG	HEATING	
HYD	HYDRANT	
HZ	HERTZ	
ID	INSIDE DIAMETER	
IE	INVERT ELEVATION	
IN	INCHES	
INST	INSTALLED	
INV	INVERT INTERNAL STATIC PRESSURE	
ISF IW	INTERNAL STATIC PRESSORE	
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	
00	ON CENTER / CENTER TO CENTER	
OD	OUTSIDE DIAMETER	
OED	OPEN ENDED DUCT	
ORS	OVERFLOW ROOF SUMP	
0S&Y	OUTSIDE SCREW AND YOKE	
(0)	OVERHEAD	
PD	PRESSURE DROP (FEET OF WATER) PRESSURE REDUCING VALVE	
PRV	PRESSURE REDUCING VALVE POUNDS PER SQUARE INCH – ABSOLUTE	
PSIG	POUNDS PER SQUARE INCH - GAUGE	
PSIG	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	
Т&Р	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	

ABBREV.
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MECHANICAL PIPING SYMBOLS

PIPE ELBOW UP PIPE ELBOW DOWN PIPE TEE DOWN PIPE TEE DOWN DIRECTION OF FLOW UNION STRAINER CONCENTRIC REDUCER ECCENTRIC REDUCER ECCENTRIC REDUCER ECCENTRIC REDUCER EXPANSION JOINT FLEXIBLE CONNECTION PIPE ANCHOR PIPE GUIDE PIPE GUIDE PIPE CAP OR PLUG ISOLATION VALVE CIRCULATING PUMP GLOBE VALVE BALL VALVE BALL VALVE GUTERFLY VALVE ANGLE VALVE CHECK VALVE (SWING) CHECK VALVE (SWING) CHECK VALVE (SWING) CHECK VALVE (SWING) PLUG 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 (PLEVATION) ROOF SUMP CLEAN OUT (IN FLOR) CLEAN OUT (IN LINE) CLEAN OUT (IN LINE) CLEAN OUT (IN LINE) FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION) ROOF SUMP CLEAN OUT (IN LINE) CLEAN OUT (IN LINE) FLOR REIER ASSEMBLY HOSE BIBB, WALL HYDRANT DIRECTION OF PIPE PITCH SPRINKLER HEAD (UPRIGHT) SPRINKLER HEAD (SIDEWALL) FLOW SWITCH SLAMESE CONNECTION (WALL MOUNTED) FIRE HYDRANT FLOW MEASURING AND BALANCING DEVICE AUTOMATIC AIR VALVE	DESCRIPTION
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	COMBINATION FLOW MEASURING AND BALANCING DEVICE
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ABBREV. DESCRIPTION > RECTANGULAR TAKE-OFF (SINGLE LINE) > RECTANGULAR TAKE-OFF (DOUBLE LINE) > ROUND TAKE-OFF (DOUBLE LINE) > RADUS RECTANGULAR ELBOW > RADUS RECTANGULAR ELBOW UP > RECTANGULAR ELBOW DOWN > ROUND ELBOW DOWN > ROUND ELBOW DOWN > ROUND ELBOW DOWN > RECTANGULAR ELBOW	MECHANICAL SYMBOLS		
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SMOKE DAMPER NEW EXISTING COMBINATION FIRE/SMOKE DAMPER NEW VOLUME DAMPER (MANUALLY ADJUSTABLE) MOTORIZED DAMPER MOTORIZED DAMPER SMOKE DETECTOR SO2 CO2 SENSOR T THERMOSTAT OR TEMPERATURE SENSOR Image: Sensor sens	- `		
• EXISTING COMBINATION FIRE/SMOKE DAMPER • • • COMBINATION FIRE/SMOKE DAMPER • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • • </th <th></th> <th>SMOKE DAMPER</th>		SMOKE DAMPER	
NEW (VERTICAL) EXISTING COMBINATION FIRE/SMOKE DAMPER NEW (HORIZONTAL) VOLUME DAMPER (MANUALLY ADJUSTABLE) MOTORIZED DAMPER SD SMOKE DETECTOR CO2 CO2 SENSOR T THERMOSTAT OR TEMPERATURE SENSOR H HUMIDISTAT OR HUMIDISTAT OR HUMIDISTAT OR	<u>ب</u>	FXISTING	
Image: Combination Fire/SMOKE DAMPER (HORIZONTAL) Image: New (HORIZONTAL) Image: Volume DAMPER (MANUALLY ADJUSTABLE) Image: Volume DAMPER (MANUALLY ADJUSTABLE) Image: Motorized DAMPER Image: Motorized DAMPER Image: SMOKE DETECTOR Image: Color		(VERTICAL)	
Image: Metric Manual Provided and Provid	_ط	COMBINATION FIRE/SMOKE DAMPER	
M MOTORIZED DAMPER SD SMOKE DETECTOR CO2 CO2 SENSOR T THERMOSTAT OR TEMPERATURE SENSOR H HUMIDISTAT OR HUMIDITY SENSOR			
Image: Second state of the second s]		
CO2 CO2 SENSOR T THERMOSTAT OR TEMPERATURE SENSOR H HUMIDISTAT OR HUMIDITY SENSOR			
T THERMOSTAT OR TEMPERATURE SENSOR H HUMIDISTAT OR HUMIDITY SENSOR		SMOKE DETECTOR	
Image: Temperature sensor Image: Humidistat or Humidity sensor)		
HUMIDITY SENSOR	0	TEMPERATURE SENSOR	
¬♪► → RETURN OR EXHAUST / SUPPLY AIR FLOW	H	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	
——F0S——	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	
——————————————————————————————————————	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	
	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

DESCRIPTION

M0.00 MECHANICAL GENERAL INFORMATION

SHT NO

M4.10 ENLARGED MECHANICAL DEMO AND NEW WORK PLANS

l	DRAWING NOTATION	
SYMBOL	DESCRIPTION	
$\langle 1 \rangle$	NEW WORK KEY NOTE NO. 1	
\sum_{1}	DEMOLITION KEY NOTE NO. 1	
EF 1	EQUIPMENT DESIGNATION, (IE: EXHAUST FAN NO. 1)	
S-1 10x10 100-2	AIR TERMINAL TAG: $S = SUPPLY$ $R = RETURN$ 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	
	SECTION NO. 4 4 M5.2 SHEET M5.2 ON WHICH SECTION IS DRAWN	
6 M5.2	$()^{n}$	

WATER FLOW TEST DATA		
DATE PERFORMED	REPORTED PRESSURES	
xx-xx-20xx	STATIC	RESIDUAL
--20**	xx PSI @ xx GPM	xx PSI @ xx GPM

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



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PROJECT Southfield High School ITC Facility Southfield Public Schools

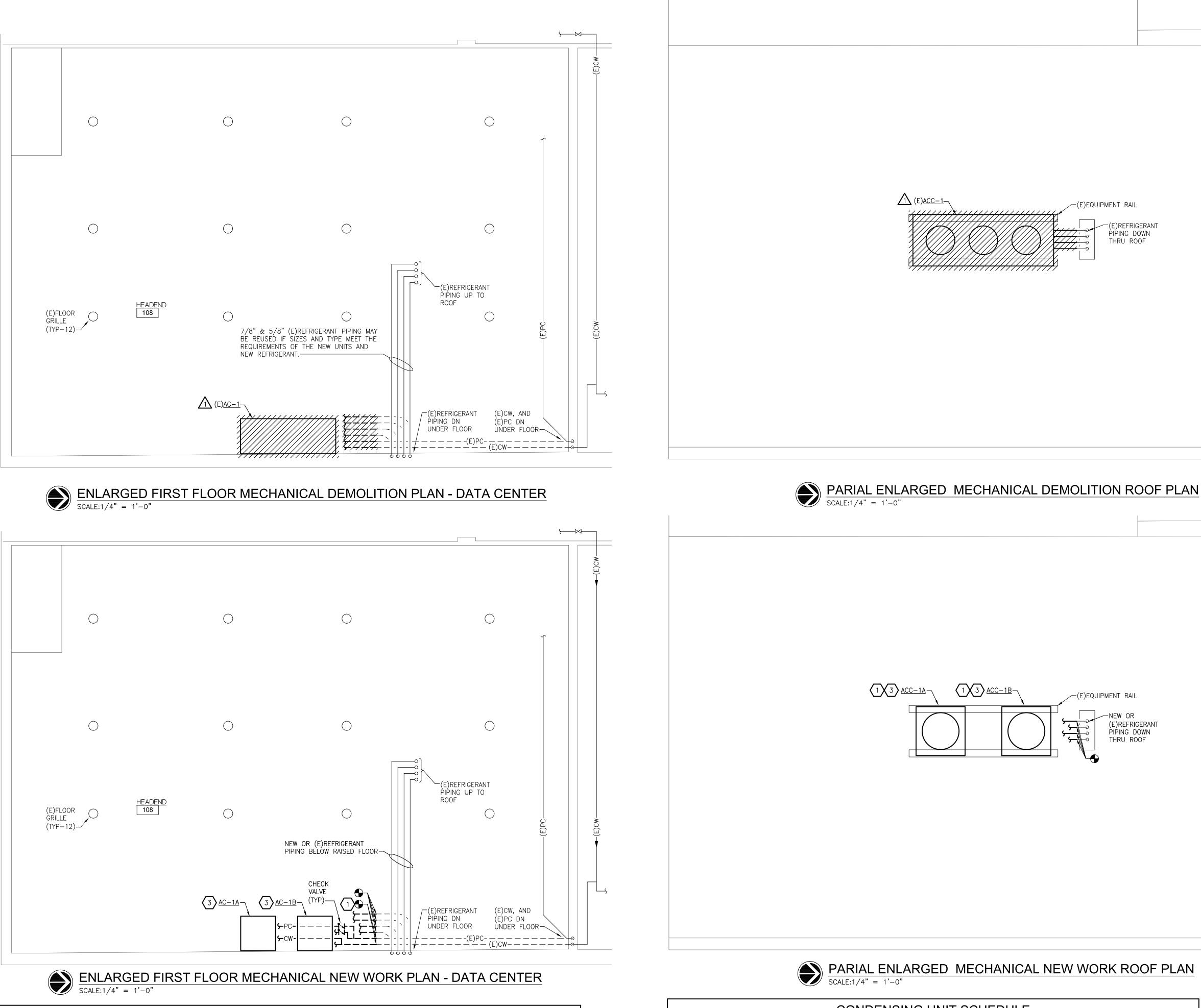
Southfield, Michigan

SHEET MECHANICAL GENERAL INFORMATION

PROJECT NUMBER

2021-006

SHEET NUMBER M0.00





							AIF	RCC	ND	ITIC	DNING		SCHEE	DULE							
	NOM-			_		SUPPLY FAN		COOLING		HEATIN	HEATING CAPACITY		HUMIDIFIER (INFRARED)		FILTER	CASING		ELECTRICAL		LIEBERT	
UNIT ID	INAL TONS	CFM	NO.	HP	EAT (DB/WB)		SENS. (MBH)	TYPE	MBH	KW	CAPACITY (LBS/HR)		EFFICIENCY (ASHRAE %)	LxWxH (IN)	WEIGHT (LBS)	VOLTS/ PHASE	FLA	MOP	MODEL NO.	REMARKS	
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		

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.

				CO	NDEN	SING	UNI	T SC	HEDULE			
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.

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 \mathbb{A}

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

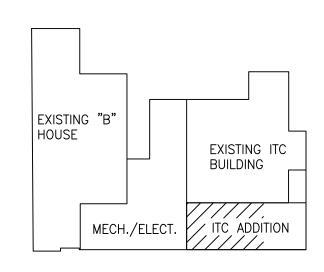
HVAC GENERAL NOTES

- 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.
- . 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 $\langle \# \rangle$

- 1. CONNECT NEW COLD WATER AND PUMPED CONDENSATE FROM NEW $\underline{AC-1A}$ AND $\underline{AC-1B}$ 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 <u>AC-1A/AC-1B</u> AND $\underline{ACC-1A}/\underline{ACC-1B}$.





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



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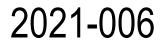
PROJECT Southfield High School ITC Facility Southfield Public Schools

Southfield Michigan

SHEET

ENLARGED MECHANICAL DEMO AND NEW WORK PLANS





SHEET NUMBER



				COPF	PER 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
205	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
255	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
4 5S	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
905	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
7			(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	5000	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

<u>NOTES:</u>

. 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. A. EQUIPMENT GROUND SIZING BASED ON N.E.C. TABLE 250.122.

TEC	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						
нĢ	WALL CLOCK – SINGLE FACE						
н⊕	WALL CLOCK – DOUBLE FACE						
ÐS	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 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					

6	POWER SYMBOL LIST
SYMBOL	DESCRIPTION
•	CONDUIT DOWN
0	CONDUIT UP
L	DISCONNECT SWITCH - NON FUSED
4	DISCONNECT SWITCH - FUSED
4	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
\bullet	GROUNDING ROD
Ē	GROUND
	GROUNDING BAR
Ū	JUNCTION BOX
Μ	METER
\mathcal{N}	MOTOR – SINGLE PHASE
\mathbf{V}	MOTOR – THREE PHASE
\$м	MOTOR RATED SWITCH
φ	POWER RECEPTACLE – SIMPLEX TYPE
φ	POWER RECEPTACLE – DUPLEX TYPE
•	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
Pusb	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
+	POWER RECEPTACLE – QUADRUPLEX TYPE
Φ	POWER RECEPTACLE – RECESSED FLOOR TYPE
\heartsuit	POWER RECEPTACLE – SPECIALTY TYPE
TC	TIME CLOCK
Т	TRANSFORMER
NOTES:	

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

FIR	RE ALARM SYMBOL LIST
SYMBOL	DESCRIPTION
Εd	AUDIBLE DEVICE/WALL MOUNTED
F	VISUAL DEVICE/WALL MOUNTED
Ēd	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED
F	AUDIBLE DEVICE/CEILING MOUNTED
Ē	VISUAL DEVICE/CEILING MOUNTED
F	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED
ĆŚ	CO ALARM/SMOKE DETECTOR
Ś	SMOKE DETECTOR
\bigcirc	CO ALARM
<u>(</u>)	DUCT MOUNTED SMOKE DETECTOR
H	HEAT DETECTOR
√FD	FIRE DEPARTMENT COMMUNICATION OUTLET
	EXISTING COMBINATION FIRE/SMOKE DAMPER NEW (HORIZONTAL)
	EXISTING 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
1/0	INPUT/OUTPUT CONTROL MODULE
NOTES:	

NOTES: 1. DRAWINGS INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR 122222/122 MANUFACTUREDS 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.

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	WG	WIRE GUARD
XFMR TRANSFORMER	WP	WEATHERPROOF
	XFMR	TRANSFORMER

DRAWING INDEX

SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
E4.10	ENLARGED ELECTRICAL DEMO AND NEW WORK PLANS
E5.00	ELECTRICAL ONE-LINE DIAGRAM AND SCHEDULES

DRAWING NOTATION SYMBOL DESCRIPTION L1 LIGHTING FIXTURE TAG ① CONSTRUCTION KEY NOTE NUMBER 1 ① DEMOLITION KEY NOTE NUMBER 1 ② COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)	
L1 LIGHTING FIXTURE TAG 1 CONSTRUCTION KEY NOTE NUMBER 1 1 DEMOLITION KEY NOTE NUMBER 1 20 COPPER FEEDER SIZE TAG	
Image: Construction key note number 1 Image: Competition key note number 1	
Image: Comparison of the second state of the seco	
COPPER FEEDER SIZE TAG	
20 ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)	
EQUIPMENT TAG	
EXISTING DEVICES OR EQUIPMENT	
NEW OR MODIFIED DEVICES OR EQUIPMENT	
NEW OR MODIFIED UNDERGROUND WIRING	
SUPPORT OF THE SYSTEM COMPONENT TO BE REMOVED)
POINT OF NEW CONNECTION	
SHEET E5.2 ON WHICH SECTION IS DRAWN	
SECTION NO. 6	
LIGHTING CONTROL LIGHTING CONTROL TAG SCENE SCHEDULE ID (MAY NOT APPEAR ON EVERY TAG) DAYLIGHTING CONTROL ZONE '1' (MAY NOT APPEAR ON EVERY TA NOTE: THE TAG DOES NOT REFLECT THE QUANTITY OF CONTROL DEVICES REQUIRED IN THE AREA.	N - AG)
APPLICABLE CODES AND REGULATIONS	
YEAR CODE	
2015 MICHIGAN BUILDING CODE	

2015 MICHIGAN ENERGY CODE

2013 NFPA 20

2013 NFPA 72

2013 NFPA 101

2013 NFPA 110

1985 DETROIT ELEVATOR CODE

2015 MICHIGAN RESIDENTIAL CODE

2015 MICHIGAN REHABILITATION CODE

2017 MICHIGAN ELECTRICAL CODE RULES, PART 8

2009 ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

2017 NATIONAL ELECTRICAL CODE (NFPA 70)

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PROJECT Southfield High School ITC Facility Southfield Public School	S
Southfield, Michigan	
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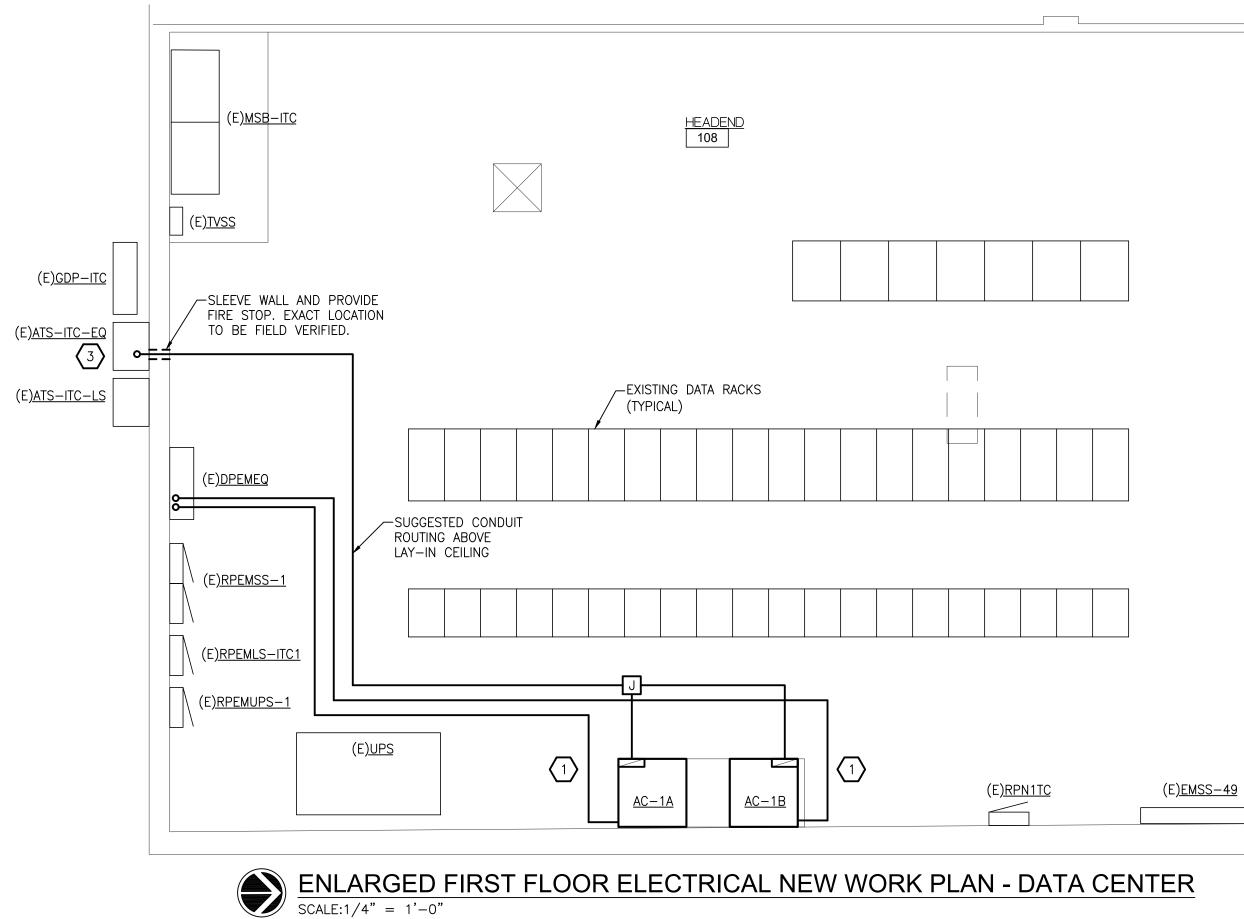
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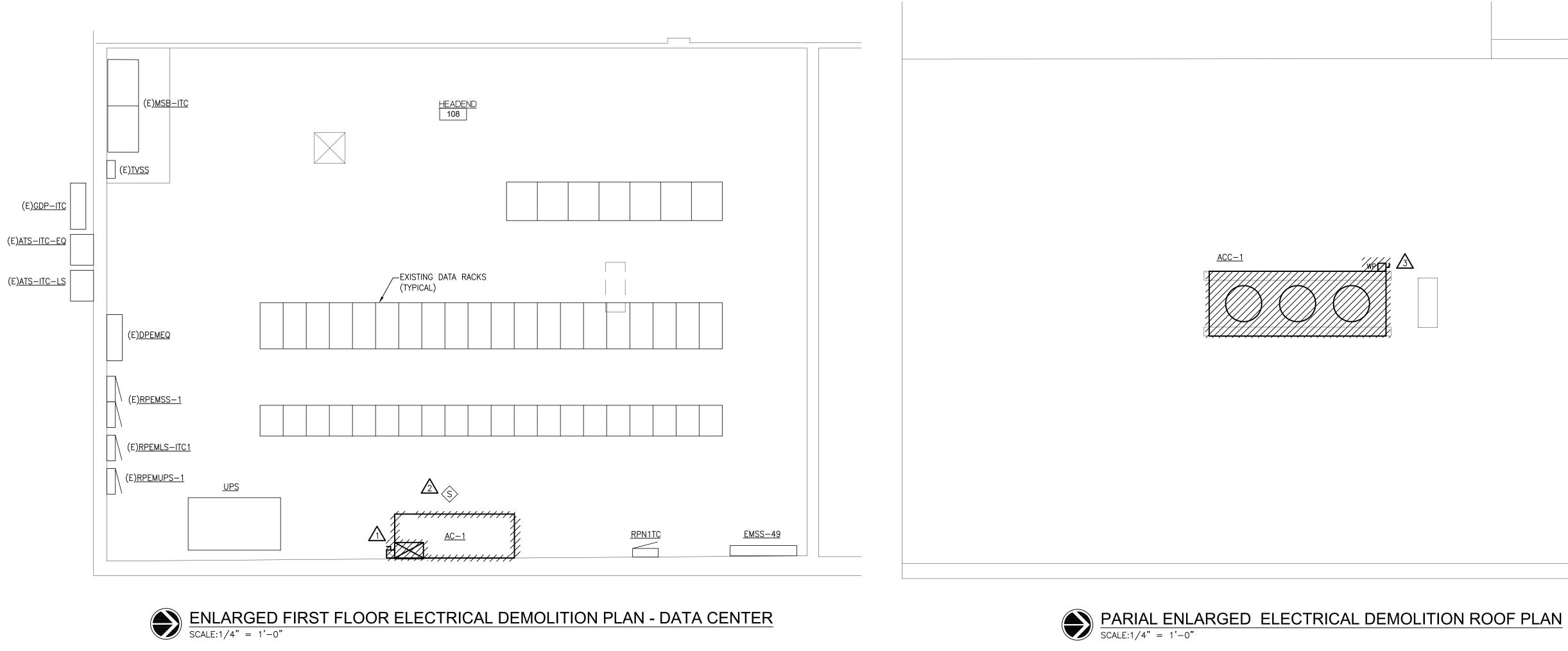
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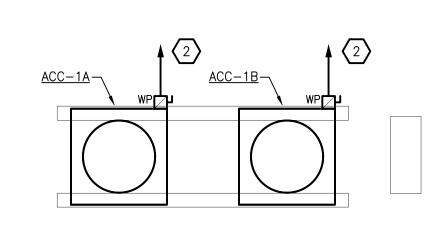
BIDS

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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 \mathbb{A}

- 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.

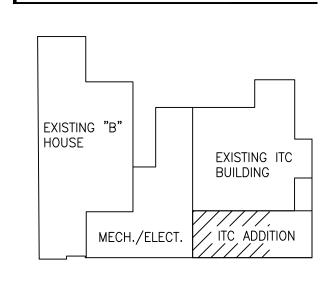


POWER GENERAL NOTES

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

$\langle \# \rangle$ **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.



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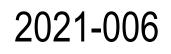
236 Mill Street Rochester, Ml 48307 T 248.656.1377 F 248.656.7746 CFRENCH ASSOCIATES, INC.

PROJECT Southfield High School ITC Facility Southfield Public Schools

Southfield, Michigan

SHEET ENLARGED ELECTRICAL DEMO AND NEW WORK PLANS

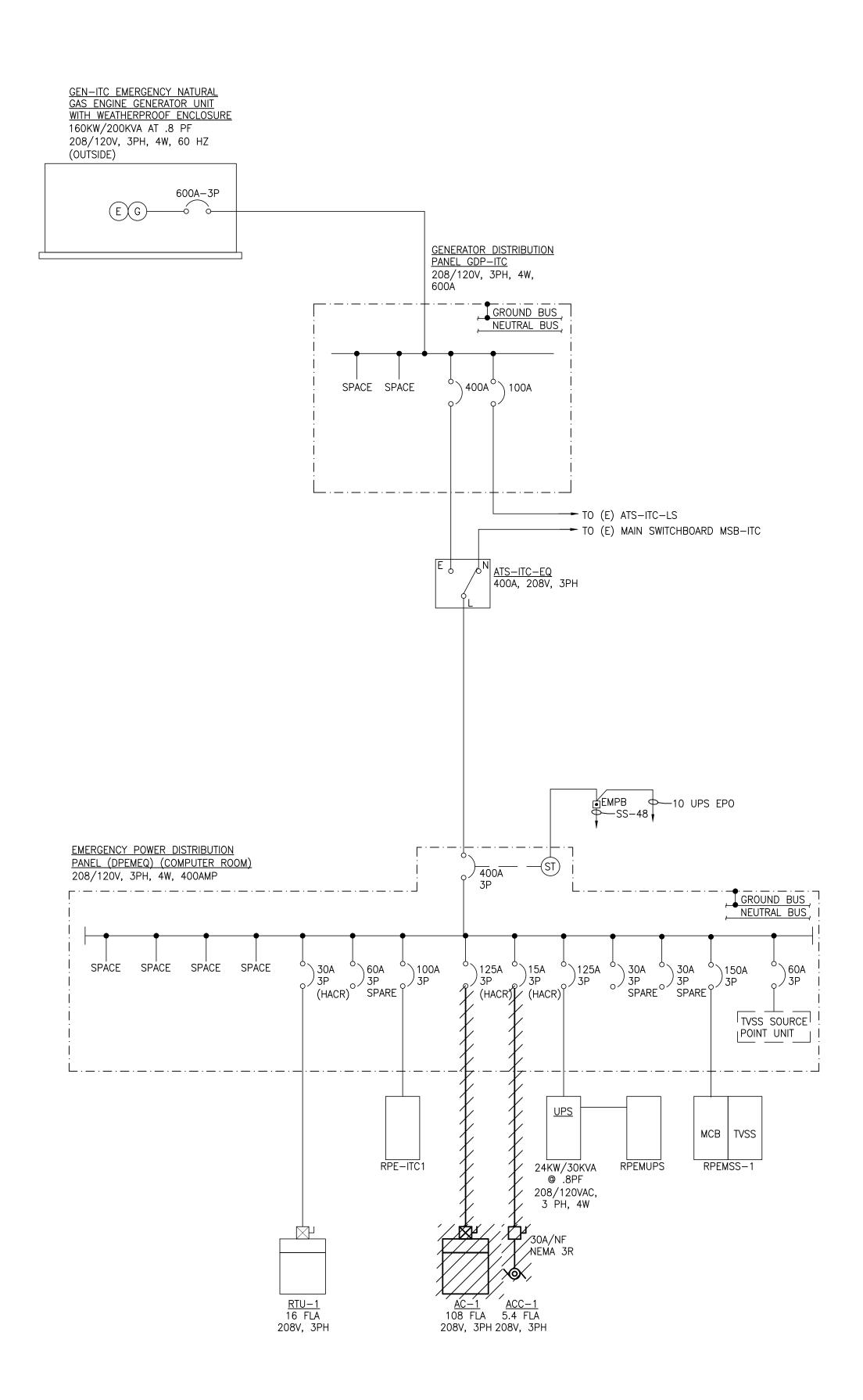
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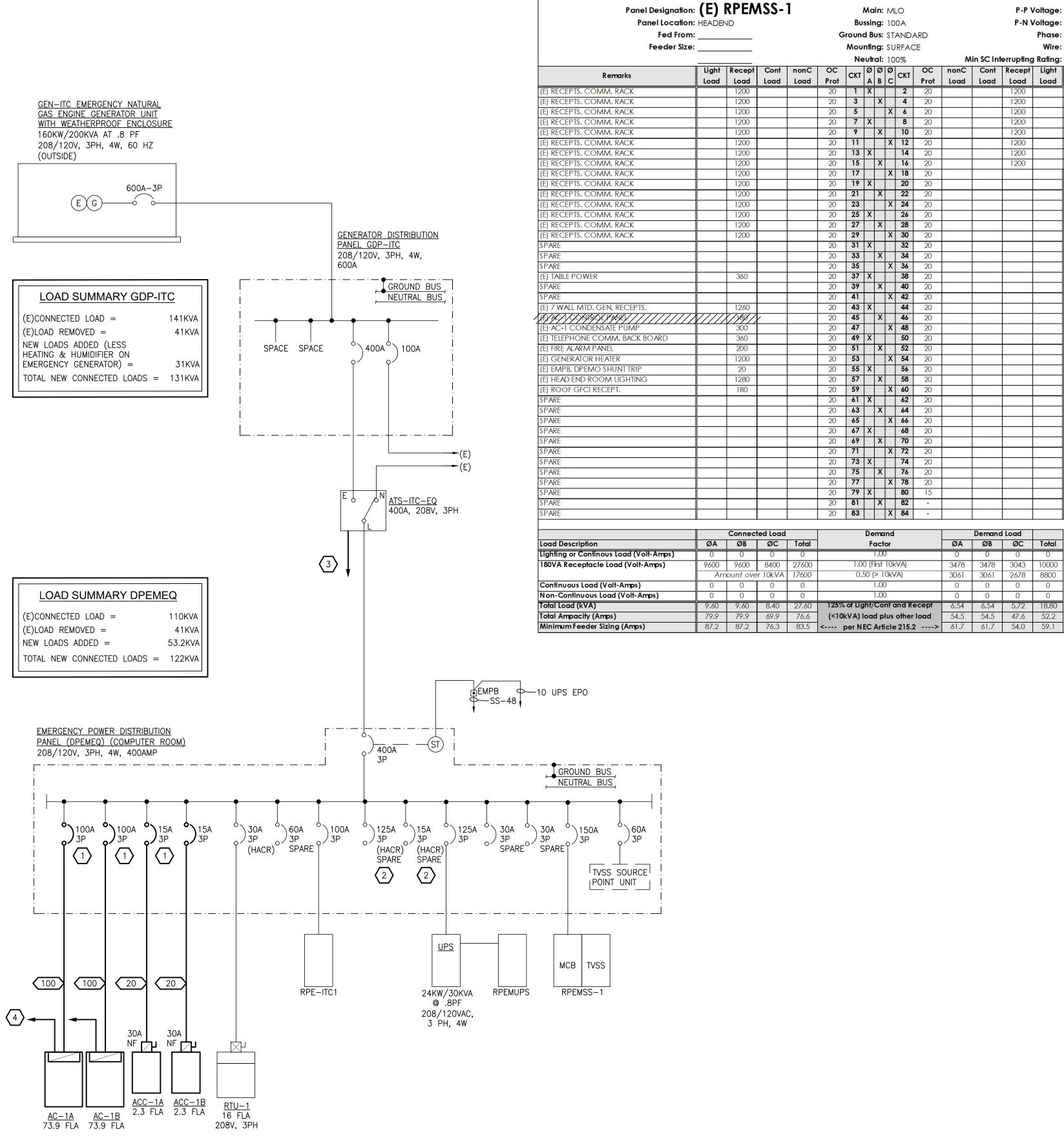








PARTIAL ONE-LINE DIAGRAM - DEMOLITION NO SCALE



PARTIAL EXISTING ONE-LINE DIAGRAM - MODIFIED FOR NEW WORK NO SCALE

$\langle \# \rangle$

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.

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architects planners interiors



PROJECT Southfield High School ITC Facility Southfield Public Schools

Southfield Michigan

SHEET ELECTRICAL **ONE-LINE DIAGRAM** AND SCHEDULES

PROJECT NUMBER



SHEET NUMBER E5.00