



Welding Laboratory Upgrade



LIST OF DRAWINGS:

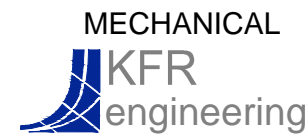
MECHANICAL DRAWINGS:

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- M2 MECHANICAL DETAILS
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ELECTRICAL DRAWINGS:

- E1 ELECTRICAL LAYOUT - DEMOLITION & NEW CONSTRUCTION
- E2 ELECTRICAL SPECIFICATIONS

ISSUED FOR TENDER
SEPTEMBER 15, 2011



10806 119 Street, Edmonton
Alberta, T5H 3P2
Tel.: (780) 488-6008
CONTACT: MIGO KELADA

ELECTRICAL



CONTACT: ALAN JONES



CLIENT



CONSULTANT

PERMIT K.F.R. ENGINEERING SERVICES LTD. PERMIT #P10740



ISSUED:

No.	Date	Description	By
1	---	ISSUED FOR CLIENT REVIEW	KFR
2	08-11-11	ISSUED 99% FOR CLIENT REVIEW	KFR
3	09-15-11	ISSUED TENDER	KFR

PROJECT:

Welding Laboratory Upgrade

DRAWING:

MECHANICAL
COVER SHEET

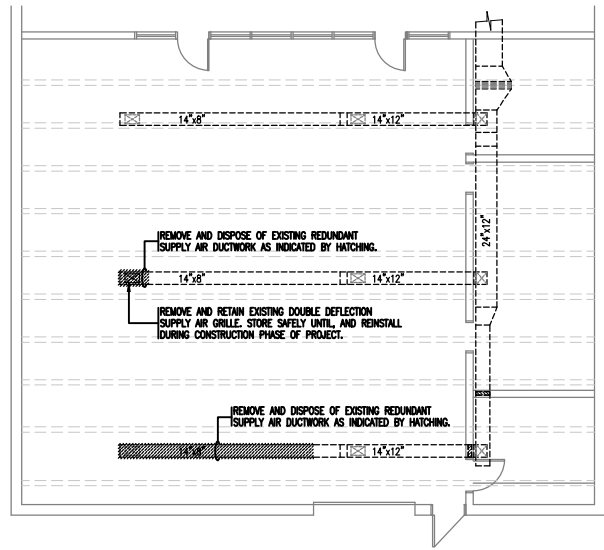
KFR PROJECT No.: KFR11028

DRAWN: M.J.L. CHECKED: S.M.K.

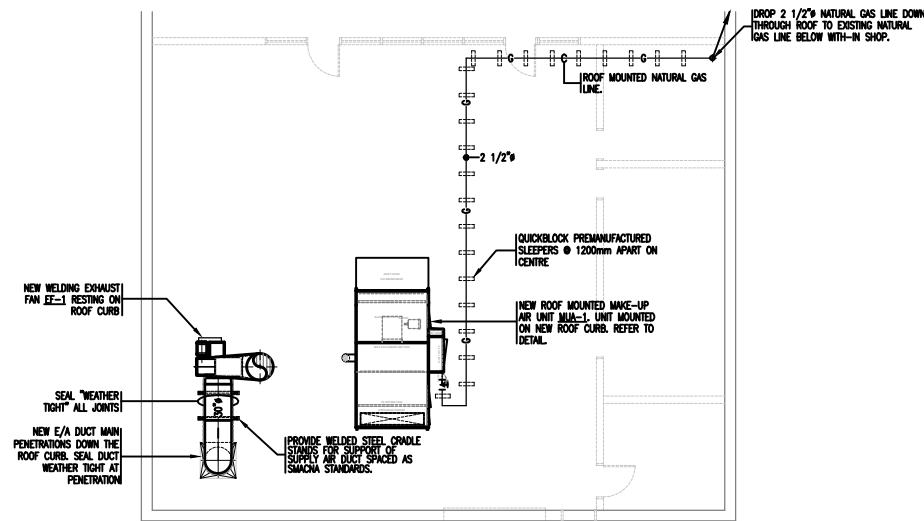
DATE: JUNE, 2011

SCALE: AS NOTED

M0



1 PARTIAL MAIN FLOOR PLAN - VENTILATION DEMOLITION
SCALE: 1/8" = 1'-0"



2 PARTIAL ROOF PLAN - VENTILATION
SCALE: 1/8" = 1'-0"

- KEY NOTES**
- CONNECT NEW DUCT TRANSITION PIECE FROM EXISTING 14"x8" SUPPLY AIR DUCT TO NEW 16"x8" SIDEWALL SUPPLY AIR GRILLE.
 - MOUNT NEW DOUBLE DEFLECTION S/A GRILLES ON BOTTOM OF NEW S/A DISTRIBUTION DUCT. (TYPICAL OF 6.)
 - TRANSITION NEW 20"x20" SUPPLY AIR DUCT DOWN AND RUN TIGHT TO UNDERSIDE OF ROOF STRUCTURE.
 - MOUNT NEW 16"x8" TRANSFER AIR OPENING AS HIGH AS POSSIBLE.
 - CONNECT NEW 3/4" HEATING WATER SUPPLY & RETURN LINES IN APPROXIMATELY THIS LOCATION. DETERMINE BEST TIE-IN LOCATION ON SITE.
 - 72"x14" SUPPLY AIR PLENUM FROM MAKE-UP AIR UNIT MUA-1 ON ROOF ABOVE. PROVIDE 1" THICK ACOUSTIC DUCT LINER WITHIN S/A PLENUM.
 - NEW OSKAR MODEL W02011630 WELDING FUME EXHAUST ARM (BALANCE EXHAUST ARM TO 330 L/S).
 - CAP EXISTING 14"x8" SUPPLY AIR DUCT IN APPROXIMATELY THIS LOCATION. TERMINATE EXISTING S/A DUCT 24" FROM EDGE OF NEW WELDING LAB PARTITION WALL.
 - RELOCATED 16"x8" SUPPLY AIR GRILLE MOUNTED OFF THE BOTTOM OF THE EXISTING SUPPLY AIR GRILLE.
 - NEW HOT WATER UNIT HEATER SUSPENDED FROM STRUCTURE.
 - RUN NEW HEATING WATER SUPPLY AND RETURN MAINS AS HIGH AS POSSIBLE AS TO NOT CONFLICT WITH EXISTING OVERHEAD DOOR RAILS.
 - NEW WALL MOUNTED THERMOSTAT.
 - NEW MOTORIZED BUTTERFLY STYLE TWO POSITION DAMPER COMPLETE WITH WALL MOUNTED OPEN/CLOSED CONTROLLER. DAMPER TO BE EQUAL TO "YOUNG REGULATOR" MODEL 407S.
 - CONNECT NEW 2 1/2" NATURAL GAS LINE TO EXISTING CAPPED 4" GAS MAIN LOCATED WITH-IN EXISTING MECHANICAL ROOM. REFER TO PHOTO 1 FOR EXACT TIE-IN LOCATION.

MECHANICAL LEGEND

ELBOW RISING	
TOP TAKEOFF	
BOTTOM TAKEOFF	
ELBOW DROPPING	
PIPING TEE	
SHUTOFF VALVE	
PLUG VALVE	
CAP OR PLUG	
FLOW DIRECTION	
NATURAL GAS	
PIPE SLOPE	
SUPPLY DUCT (UP & DOWN)	
RETURN DUCT (UP & DOWN)	
EXHAUST (UP & DOWN)	
ROUND DUCT (UP & DOWN)	
FLEXIBLE DUCT CONNECTION	
BALANCING DAMPER	
DEMOLISHED DUCT	
SUPPLY OUTLET	
SQUARE CONE DIFFUSER	
RETURN OR EXHAUST INLET (WALL TYPE)	
ACOUSTIC LINED or THERMAL DUCTWORK	
FIRE DAMPER OR SMOKE DAMPER	
TURNING VANES	
ACCESS DOOR	
SPRINKLER LINE	
AR OUTLET/INLET SYMBOL	
KEYNOTE	
DEMOLITION NOTE	
SECTION FLAG	
DETAIL FLAG	

KFR engineering
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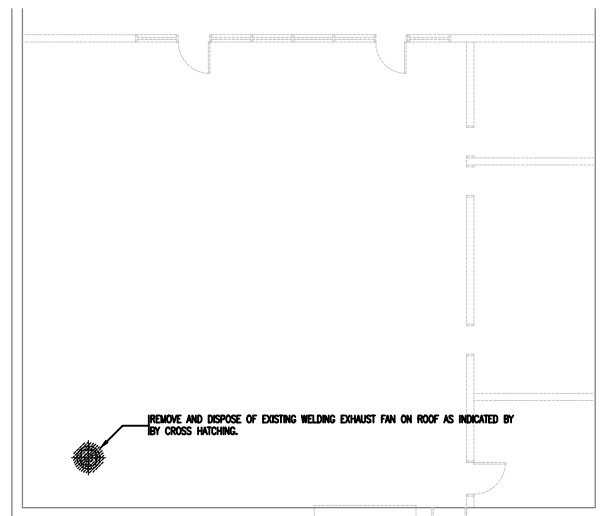
CLIENT
Conseil scolaire Centre-Nord

CONSULTANT

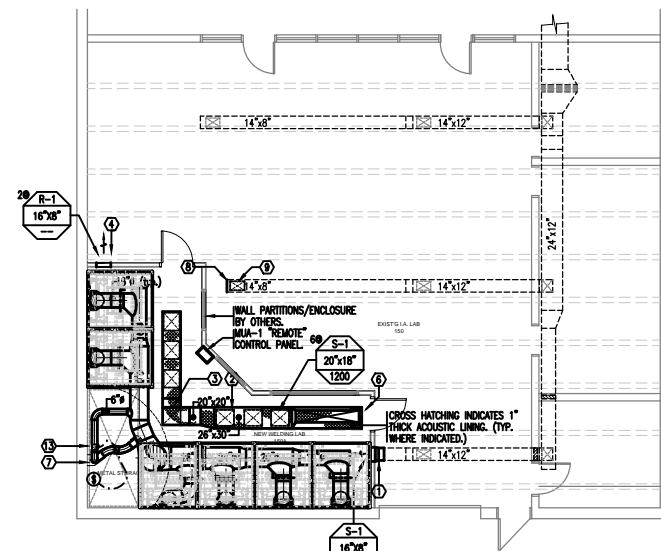
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3 PARTIAL ROOF PLAN - DEMOLITION
SCALE: 1/8" = 1'-0"



4 PARTIAL MAIN FLOOR PLAN - VENTILATION
SCALE: 1/8" = 1'-0"

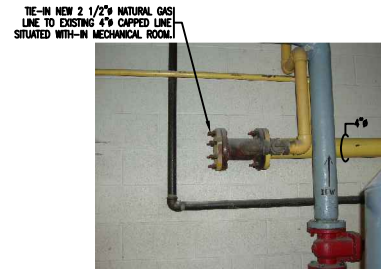
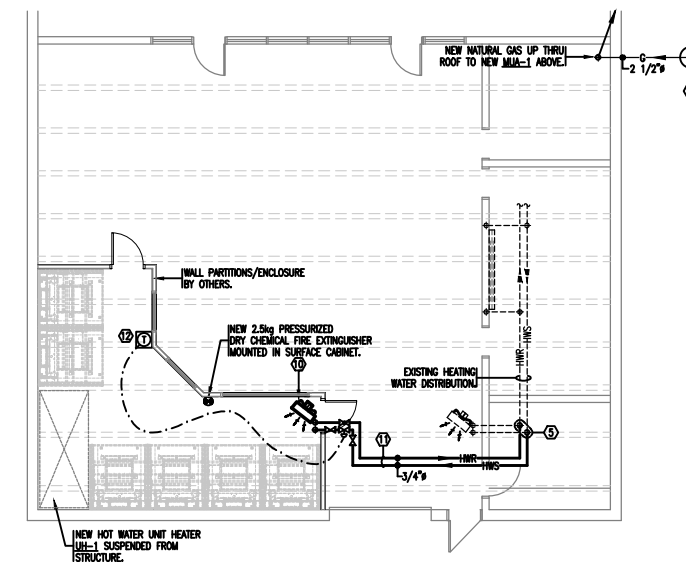


PHOTO 1
SCALE: N.T.S.

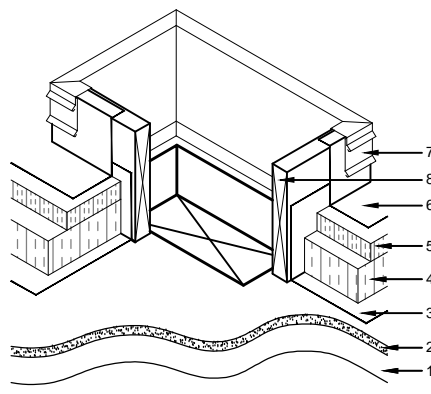


5 PARTIAL MAIN FLOOR PLAN - PLUMBING
SCALE: 1/8" = 1'-0"

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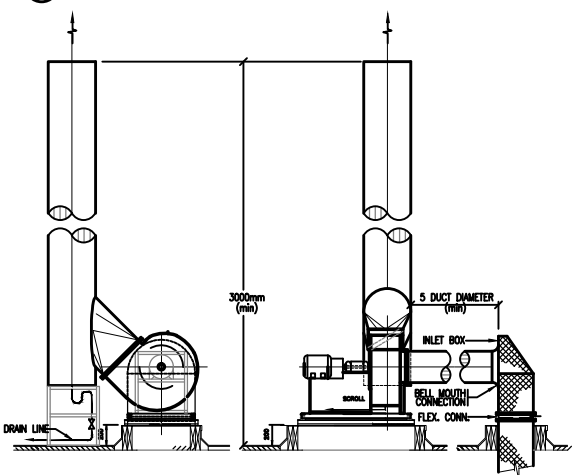
DRAWING:
MECHANICAL
PARTIAL FLOOR PLANS
MECHANICAL

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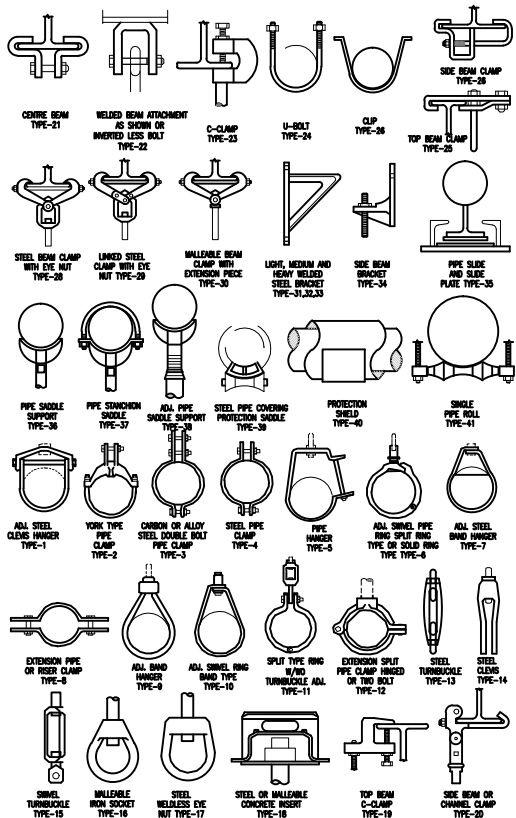


- TYPICAL CURBED OPENING NOTES**
1. ROOF DECK (SEE STRUCTURAL)
 2. 13mm EXTERIOR GIB SHEATHING
 3. AIR / VAPOR BARRIER
 4. RIGID INSULATION
 5. 1" (25mm) FIBER BOARD
 6. 2 PLY ROOFING MEMBRANE
 7. PRE FINISHED METAL FLASHING (1 OR 2 PIECE FLASHING)
 8. SOLID WOOD BLOOMING
 9. SEE STRUCTURAL FOR SUPPORT.
- NOTE:
 *AIR BARRIER (NOT SHOWN) PROVIDE FLEXIBLE MEMBRANE TO ACCOMMODATE DECK DEFLECTION FLEXIBLE MEMBRANE MUST CONNECT AIR BARRIER TO DUCTWORK OR OTHER EQUIPMENT INSTALLED INSIDE CURBED OPENING AND INSTALLED EQUIPMENT
 *PROVIDE MINERAL WOOL INSULATION (NOT SHOWN) INSTALL INSULATION IN CLOSE CONTACT WITH AIR BARRIER ENTIRELY FILL SPACE BETWEEN CURBED OPENING AND INSTALLED EQUIPMENT
 *CONSTRUCT SO THAT TOP OF CURBED OPENING IS MINIMUM 8" (200mm) ABOVE MEMBRANE
 *ALL ROOF CONSTRUCTION IS TO CONFORM WITH A.C.C.A. STANDARDS.

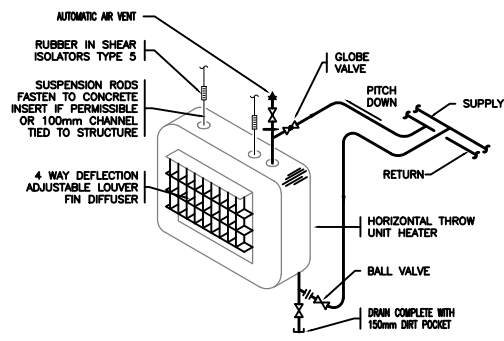
1 TYPICAL ROOF PENETRATION CURB DETAIL
 SCALE: N.T.S.



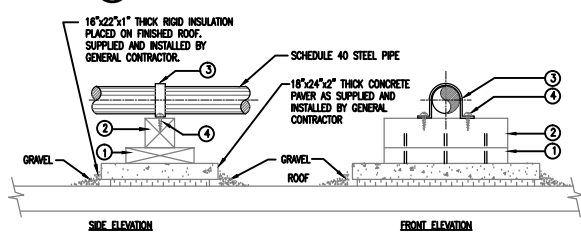
3 ROOF MOUNTED UTILITY EXHAUST FAN DETAIL
 SCALE: N.T.S.



9 TYPICAL PIPE SUPPORT DETAIL
 SCALE: N.T.S.

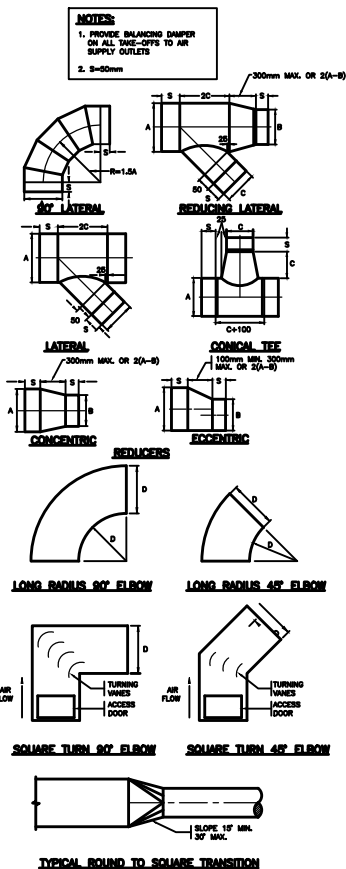


2 HOT WATER HORIZONTAL THROW UNIT HEATER
 SCALE: N.T.S.

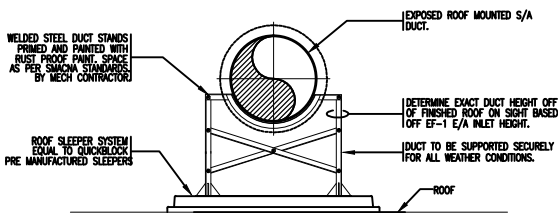


- ITEMS SUPPLIED BY GENERAL CONTRACTOR AND INSTALLED BY DIVISION 15:
1. 2" x 8" x 16" LONG PRESSURE TREATED WOOD PLANK - NAIL TOGETHER WITH GALVANIZED NAILS. CUT ENDS TO BE TREATED.
 2. 4" x 4" x 16" LONG PRESSURE TREATED WOOD PLANK - NAIL TOGETHER WITH GALVANIZED NAILS. CUT ENDS TO BE TREATED.
- PIPE SUPPORTS TO BE 8'-0" APART FOR 1" PIPE AND 10'-0" APART FOR 1 1/4" PIPE AND OVER. THERE MUST BE SUPPORT WITHIN 2'-0" OF EVERY BEND OR TAKE-OFF.
- ITEMS SUPPLIED AND INSTALLED BY DIVISION 15:
1. WROUGHT IRON STRAPS, GRINWELL FIG. 282 OR EQUAL - OVERSIZE (1/2" GAP AROUND PIPING) TO ALLOW FOR PIPE MOVEMENT. PAINT STRAPS WITH NON CORROSIVE PAINT.
 1. CADMIUM PLATED No.12, 2" WOOD SCREWS.
- ALL GAS PIPING TO BE INSTALLED TO SUIT THE REQUIREMENTS OF THE LOCAL GAS CO. PAINT ALL GAS PIPING TO SUIT REQUIREMENTS OF LOCAL GAS CO. AND/OR BEST PRACTICE STANDARDS. ALL GAS PIPING MUST BE PAINTED TO RESIST CORROSION. SPACING BETWEEN GAS PIPE SUPPORTS TO BE VERIFIED WITH LOCAL AUTHORITIES HAVING JURISDICTION.

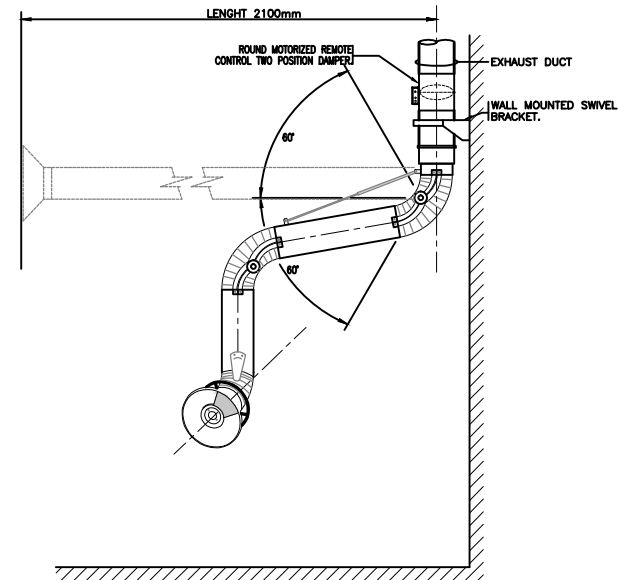
4 GAS PIPING ON ROOF SUPPORT DETAIL
 SCALE: N.T.S.



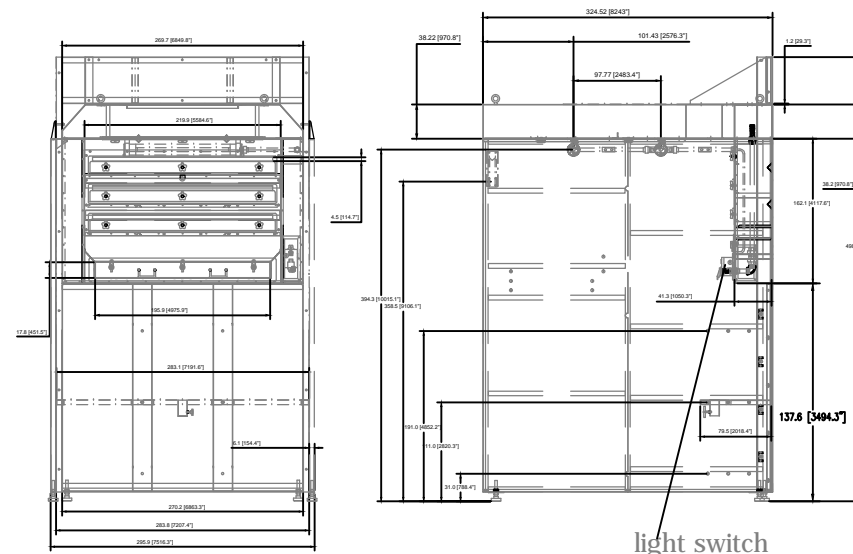
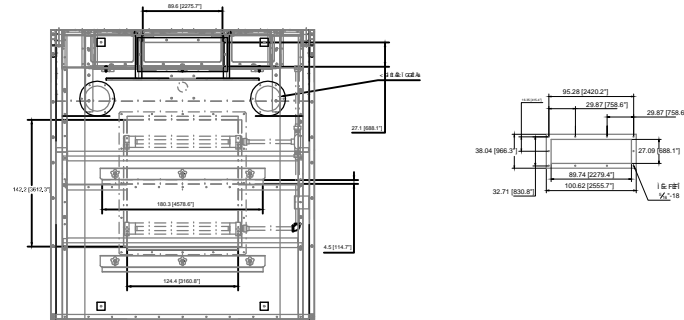
5 TYPICAL DUCT FITTINGS DETAILS
 SCALE: N.T.S.



6 TYPICAL ROOF MOUNTED DUCT SUPPORT
 SCALE: N.T.S.



6 WELDING FUME EXTRACTION ARM
 SCALE: N.T.S.



7 TYPICAL WELDING BOOTH
 SCALE: N.T.S.

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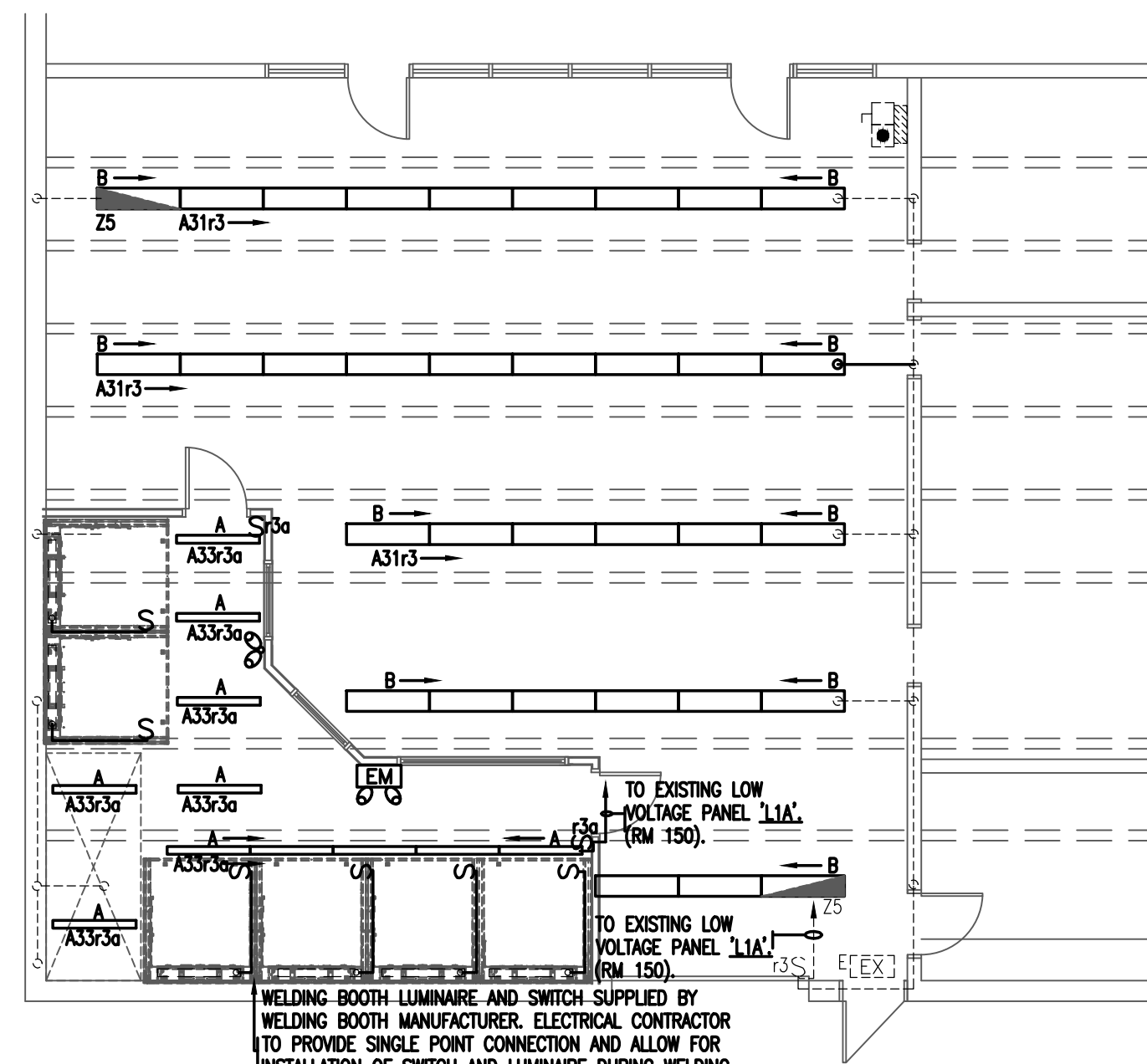
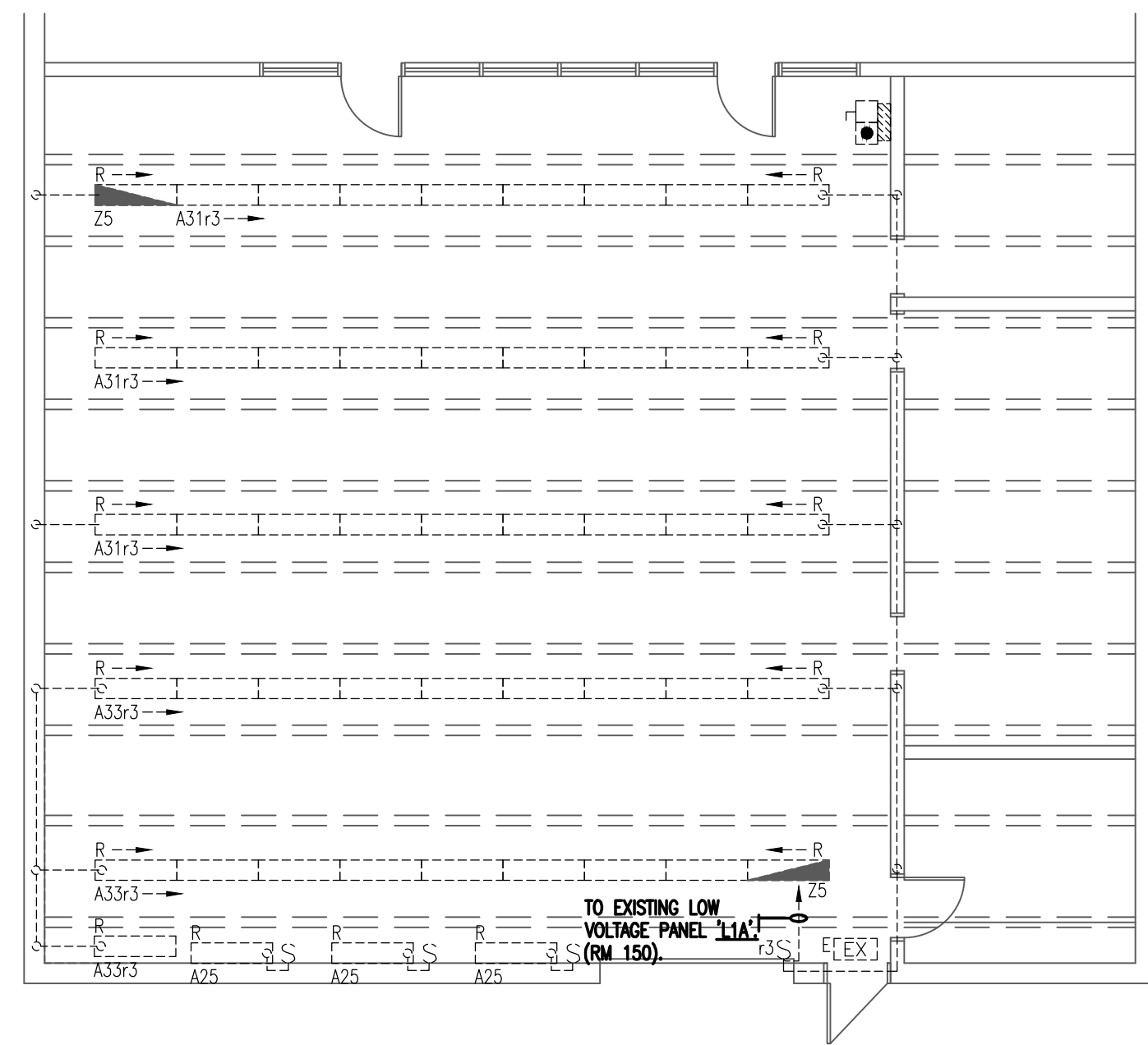
MECHANICAL
 MECHANICAL DETAILS

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LUMINAIRE SCHEDULE

LUMINAIRE TYPE	DESCRIPTION	LAMPS	MOUNTING	SEE NOTE
A	METALUX MB-132T8-FB-347V-EBT1-U (2-4'-0" LUMINAIRES IN TANDEM)	1-F32T8	SUSPENDED AIRCRAFT CABLE +8'-0" AFF	-
B	METALUX (PENDANT WRAP)	2-F32WT8	SUSPENDED PENDANT (MATCH EXISTING)	-
EX	AIMLITE EXST-U-M-WHT-UNV	LED	AS NOTED ON DRAWINGS	
EXIT SIGN c/w EMERGENCY LIGHTS	AIMLITE CXST6-36-U-M-2SM-WHT-ATD-Q	2-PAR18-12W	AS NOTED ON DRAWINGS	
EM	AIMLITE EBST-12360-2MB-WHT BATTERY PACK RATED @ 200	2-20W-MR16	AS NOTED ON DRAWINGS	

NOTES:

- CONFIRM ALL MOUNTING HEIGHTS ON SITE (MOUNT UNDERSIDE OF STRUCTURAL BEAM LEVEL).
- COORDINATE INSTALLATION OF SURFACE/SUSPENDED LINEAR LIGHTING WITH MECHANICAL CONTRACTOR, DUCT WORK AND EXISTING STRUCTURAL BEAMS.

GENERAL LUMINAIRE SCHEDULE NOTES

- APPROVED MANUFACTURERS ARE COOPER AND LITHONIA.
- FLUORESCENT BALLASTS SHALL BE ELECTRONIC RAPID START, THD LESS THAN 10%.
- METAL HALIDE BALLASTS SHALL BE PULSE START.
- ALL EMERGENCY/EXIT LIGHTS TO BE 12V-12W HEADS.

SYMBOL SCHEDULE

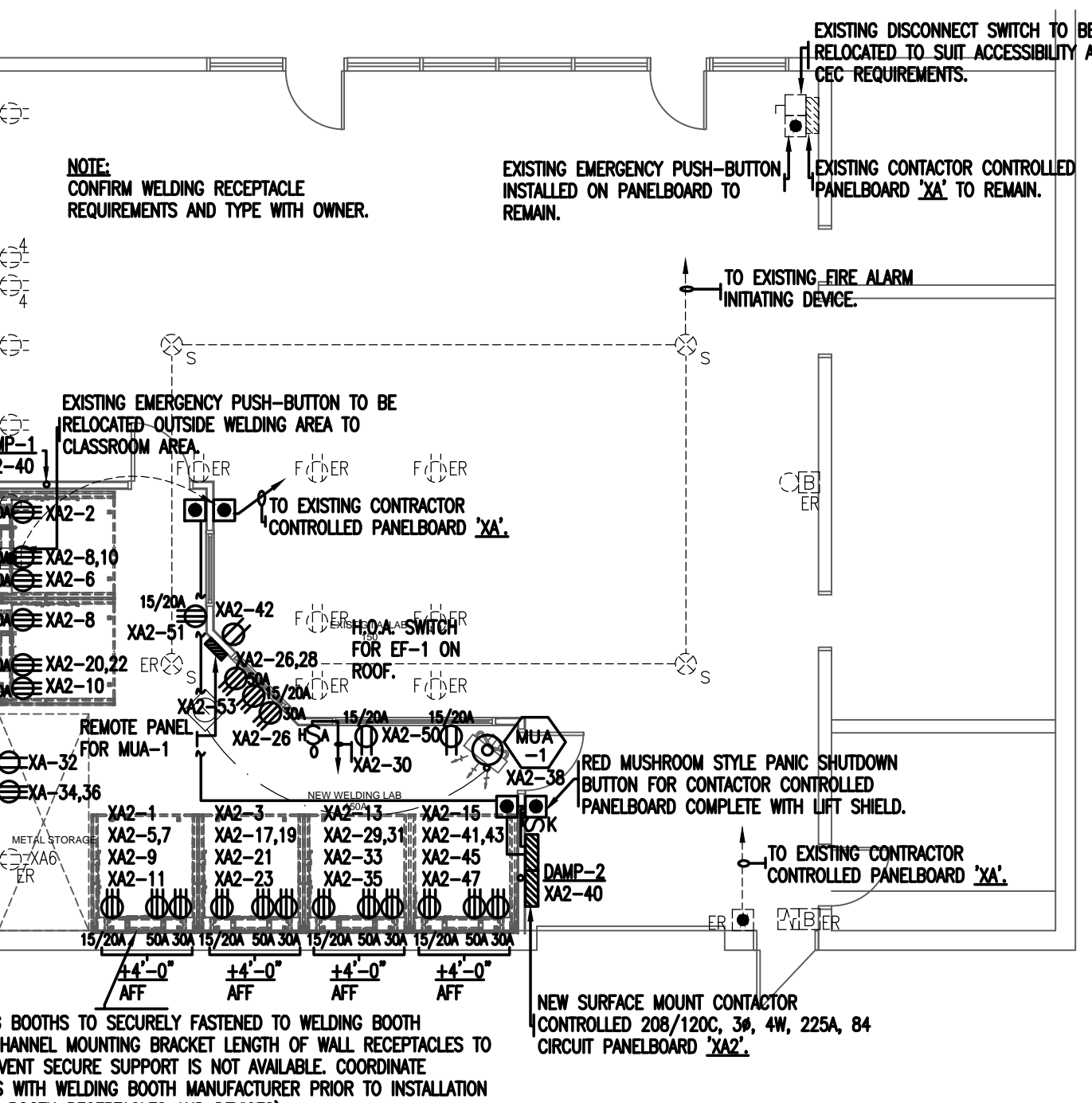
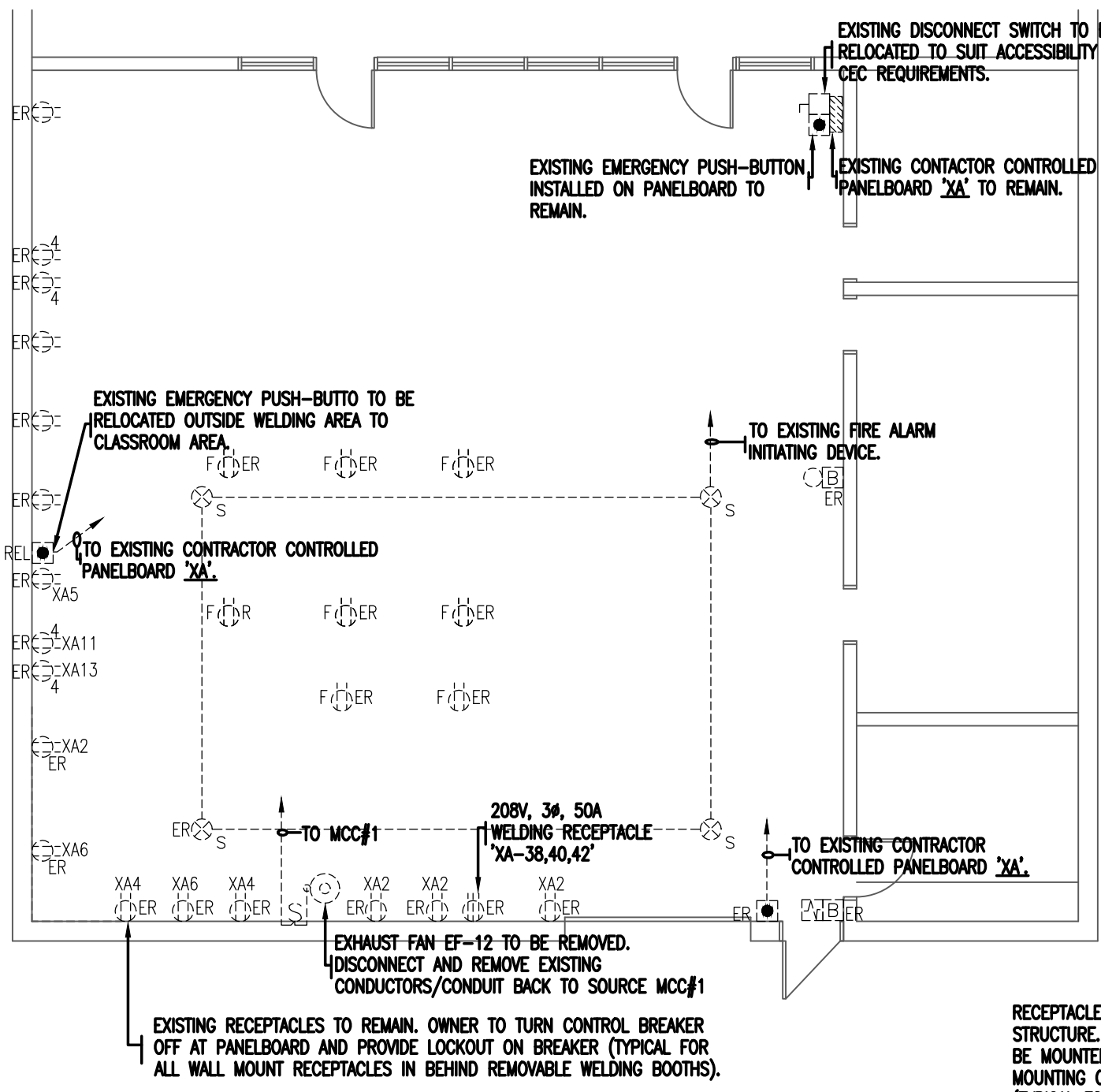
○	OUTLET BOX OR CONDUIT
□	1'x4' SUSPENDED FLUORESCENT LUMINAIRE
▨	1'x4' SUSPENDED NIGHT LIGHT FLUORESCENT LUMINAIRE
S	SINGLE POLE SWITCH
SK	KEY SWITCH
HSA	COMBINATION HAND/OFF/AUTO MAGNETIC STARTER SWITCH
⊕	DUPLEX RECEPTACLE
⊕	SURFACE FLOOR MOUNTED OUTLET BOX
⊕	SURFACE 30A, 120V, 1Ø WELDING RECEPTACLE
⊕	SURFACE 50A, 208V, 1Ø WELDING RECEPTACLE
⊕	SURFACE 15/20A, T-SLOT RECEPTACLE
⊕	PANIC SHUTDOWN CONTACTOR CONTROLLED PANELBOARD PUSH-BUTTON.
⊕	MOTOR
⊕	FIRE ALARM BREAKGLASS STATION
⊕	FIRE ALARM SMOKE DETECTOR
⊕	FIRE ALARM DUCT DETECTOR
⊕	END-OF-LINE RESISTOR
⊕	INDIRECT LED EXIT SIGN (NRCAN C860 COMPLIANT), REFER TO LUMINAIRE SCHEDULE DRAWING E2.0
⊕	EMERGENCY BATTERY PACK (10 YEAR LONG LIFE), 12V, 1/2 HR. CAPACITY c/w 2x20W LONG LIFE MR16 LAMPS.
⊕	REMOTE EMERGENCY HEAD(S) 12V-20W LONG LIFE MR16

DEVICE NOTES:

- 'ER' EXISTING DEVICE TO REMAIN
- 'F' INDICATES FLOOR MOUNTED DEVICE
- 'R' INDICATES EXISTING DEVICE TO BE REMOVED
- 'REL' INDICATES EXISTING DEVICE TO BE RELOCATED

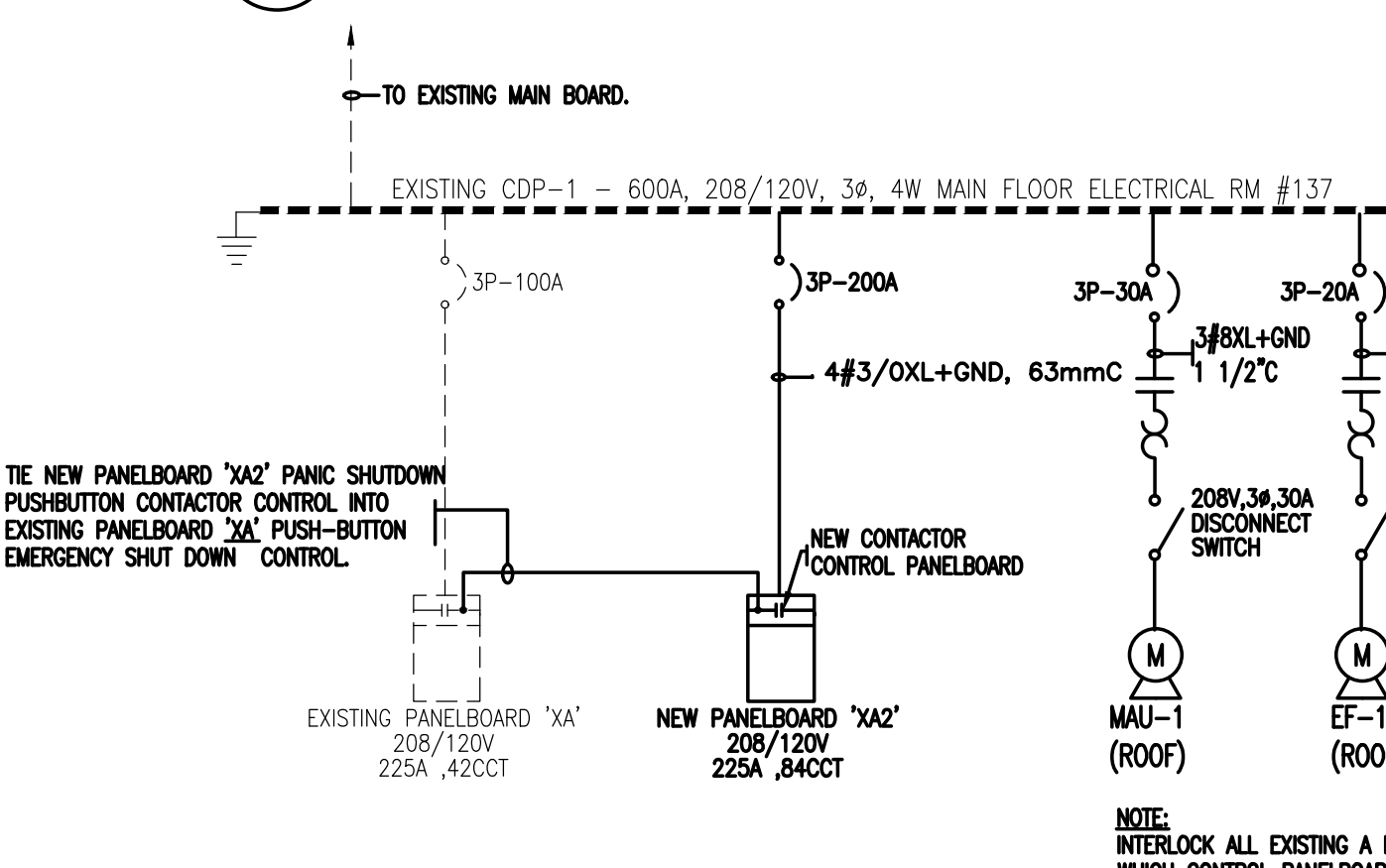
1 LIGHTING PLAN - DEMOLITION
E1.0 SCALE: 1/8" = 1'-0"

2 LIGHTING PLAN - NEW CONSTRUCTION
E1.0 SCALE: 1/8" = 1'-0"

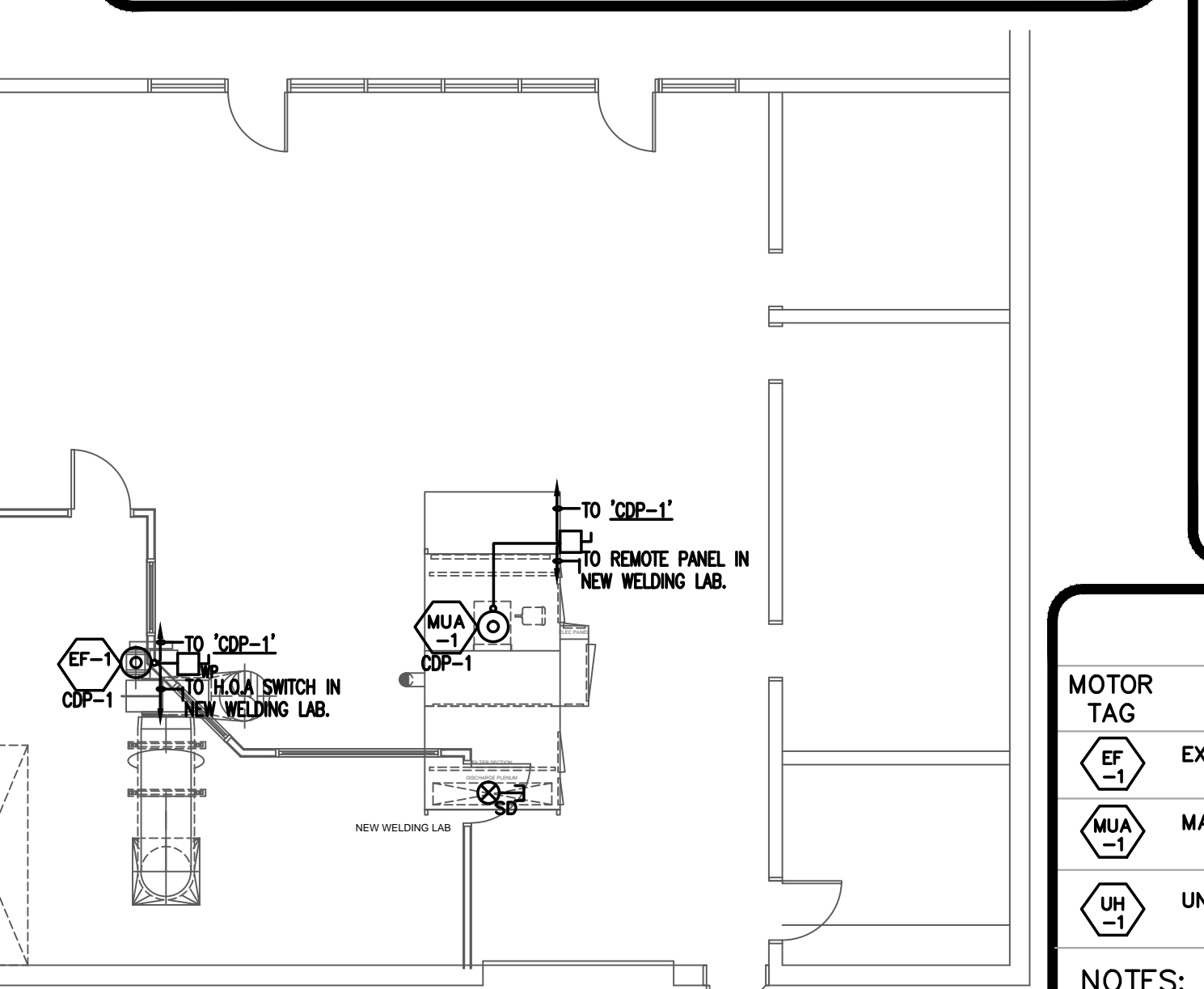


3 POWER PLAN - DEMOLITION
E1.0 SCALE: 1/8" = 1'-0"

4 POWER PLAN - NEW CONSTRUCTION
E1.0 SCALE: 1/8" = 1'-0"



5 PARTIAL RISER DIAGRAM - NEW CONSTRUCTION
E1.0 SCALE: NOT TO SCALE



6 ROOF PLAN - NEW CONSTRUCTION
E1.0 SCALE: 1/8" = 1'-0"

NEW SURFACE MOUNT PANELBOARD 'XAZ' 208/120V, 3Ø, 4W, 225A, 84 CIRCUIT

8-20A-1P-120V BREAKERS - WELDING AREA RECEPTACLES
 7-30A-2P-208V BREAKERS - WELDING RECEPTACLES
 7-50A-2P-208V BREAKERS - WELDING RECEPTACLES
 16-15A-1P-120V BREAKERS - GENERAL PURPOSE
 20-15A-1P-SPARE BREAKERS
 22- PREPARED SPACES

NOTE:
 CONDUCTORS FOR THE 50A AND 30A RECEPTACLES TO BE MINIMUM #8.
 ALL DEVICE BOXES TO BE 'FS' BOXES.
 ALL CONDUIT TO BE INSTALLED c/w COMPRESSION FITTINGS

NOTE:
 EXISTING MODULAR FLOOR OUTLETS TO BE REMOVED AND PATCH/REPAIR WORK TO BE COORDINATED WITH THE GENERAL CONTRACTOR.

ELECTRICAL DEMOLITION NOTES

- ELECTRICAL CONTRACTOR TO VISIT SITE DURING TENDER TO DETERMINE EXTENT OF DEMOLITION, RELOCATION, AND RECONNECTION OF EQUIPMENT AND DEVICES. NOT ALL EXISTING TO BE REMOVED/RELOCATED IS SHOWN.
- ELECTRICAL CONTRACTOR TO REMOVE ALL REDUNDANT DEVICES, FEEDERS, AND DATA/TEL CABLING. ELECTRICAL CONTRACTOR TO UPDATE ALL PANEL SCHEDULES AND PROVIDE NEW TYPED SCHEDULES UPON COMPLETION OF PROJECT.
- ELECTRICAL CONTRACTOR TO REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS TO DETERMINE FURTHER DEMOLITION REQUIRED.
- TEMPORARY LIGHTING TO BE PROVIDED IN ALL AREAS AS REQUIRED. THE OPERATION OF THE SPACE CANNOT BE INTERRUPTED.
- WHERE ELECTRICAL WORK TO REMAIN IS DAMAGED OR DISTURBED IN THE COURSE OF WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY AND FUNCTIONALITY.
- ACCESSIBLE WORK INDICATED TO BE DEMOLISHED: DISCONNECT POWER AND REMOVE EXPOSED ELECTRICAL INSTALLATION IN ITS ENTIRETY.
- DO NOT REUSE EXISTING MATERIALS UNLESS NOTED ON DRAWINGS. REMOVE ALL UNUSED EQUIPMENT, FIXTURES, ETC.
- FACILITY TO REMAIN IN OPERATION THROUGHOUT CONSTRUCTION. ALLOW FOR OFF HOURS CONSTRUCTION. PROVIDE TEMPORARY CONNECTION OF TELEPHONES, POWER, COMPUTER SYSTEMS, ETC. AS REQUIRED.
- CUT AND PATCH SURFACES AS REQUIRED.
- BLANK OFF OUTLET BOXES OF ALL REMOVED ELECTRICAL DEVICES WITH APPROPRIATE COVER PLATES. OUTLET BOXES OF REMOVED DEVICES TO REMAIN ONLY IF NECESSARY TO ENSURE CIRCUIT CONTINUITY OF REMAINING DEVICES.
- ENSURE CIRCUIT CONTINUITY OF ALL PANELS AND OUTLETS WHICH ARE REMAINING.
- KEEP ALL EXISTING SYSTEMS NOT AFFECTED BY RENOVATIONS INTACT AND OPERATIONAL.

KEYED NOTES

△ ALL OTHER EXISTING DEVICES AND INFRASTRUCTURE SHALL BE DISCONNECTED AND REMOVED. ALL EXISTING INFRASTRUCTURE (CONDUIT/CONDUCTORS ETC.) THAT CANNOT BE REUSED SHALL BE REMOVED BACK TO SOURCE PANEL.

MECHANICAL SCHEDULE

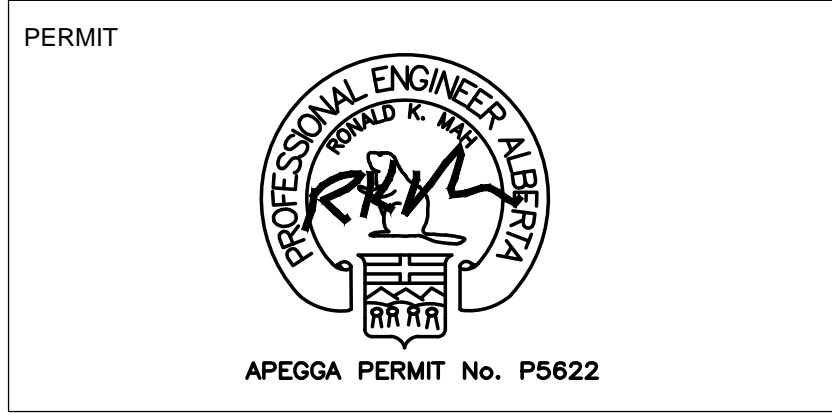
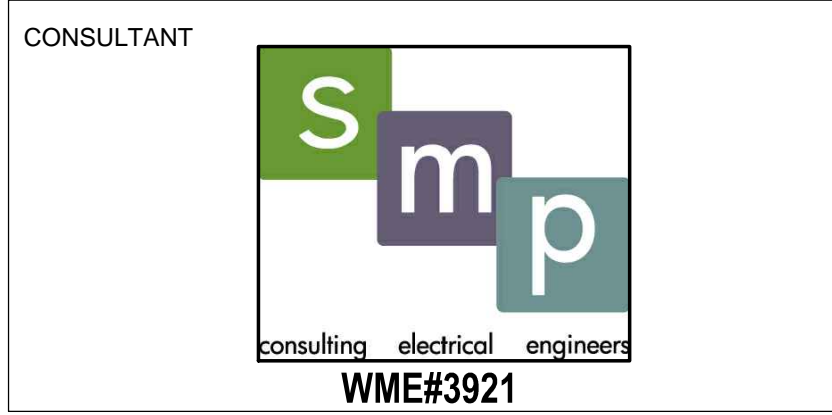
MOTOR TAG	DESCRIPTION	LOAD	VOLT Ø	FEEDER	BREAKER	SEE NOTE
EF-1	EXHAUST FAN	5HP	208V 3Ø	REFER TO RISER	20A-3P	3,8,9
MUA-1	MAKE UP AIR UNIT	7.5HP	208V 3Ø	REFER TO RISER	15A-3P	4,5,6,7,8
UH-1	UNIT HEATER	FRAC.	120V 1Ø	2Ø1XL+GND, 3/4°C	15A-1P	1

NOTES:

- WIRE AND CONNECT THERMOSTAT.
- PROVIDE MANUAL MOTOR STARTER COMPLETE WITH PILOT LIGHT AND KEY SWITCH.
- WIRE AND INTERLOCK WITH MUA-1
- WIRE AND CONNECT CONTROL PANEL.
- UNIT TO SHUT DOWN ON FIRE ALARM.
- PROVIDE FIRE ALARM SMOKE DUCT DETECTORS.
- PROVIDE 120 VOLT CONTROL CIRCUIT.
- WEATHERPROOF DISCONNECT SWITCH
- COMBINATION HAND/OFF/AUTO SWITCH c/w MAGNETIC STARTER

GENERAL MECHANICAL SCHEDULE NOTES

- PROVIDE DISCONNECTS AT ALL MOTORS.
- WIRE AND CONNECT ALL LINE VOLTAGE CONTROLS.
- OBTAIN MOTOR LIST FROM MECHANICAL CONTRACTOR TO CONFIRM LOAD, VOLTS AND PHASE OF ALL MOTORS PRIOR TO ORDERING ELECTRICAL DISTRIBUTION EQUIPMENT.



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DRAWING:
**ELECTRICAL LAYOUT
 DEMOLITION AND NEW CONSTRUCTION**

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