

1

## PARTIAL FIRST FLOOR PLAN - MECHANICAL DEMOLITION

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

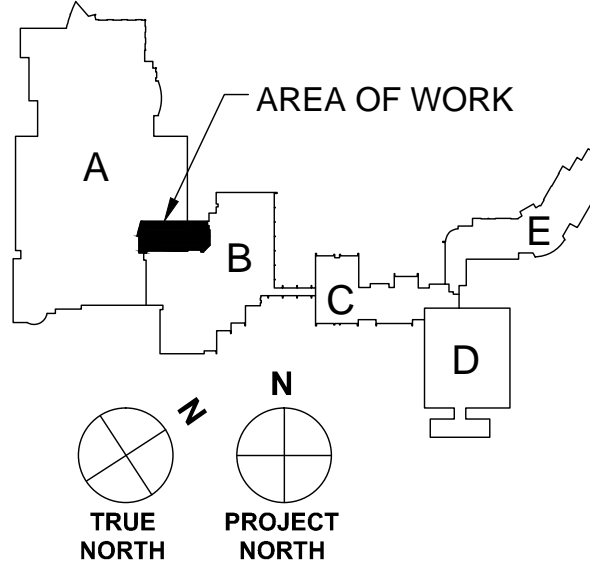
### GENERAL NOTES

1. REMOVE AND REPLACE CEILING AS REQUIRED FOR DUCT DEMOLITION AND INSTALLATION.
2. THE AREA OF CONSTRUCTION WILL BE OCCUPIED DURING CONSTRUCTION. REFER TO THE FRONT END DOCUMENTS FOR LIMITATIONS ON WORK HOURS AND DAYS.
3. ALTERNATE #1: RE-USE EXISTING EXHAUST DUCTWORK AS INDICATED IN LIEU OF FURNISHING AND INSTALLING NEW EXHAUST DUCTWORK.

### MECHANICAL SYMBOLS LIST

SYMBOL: DESCRIPTION:

	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
	EXISTING DUCT TO REMAIN
	EXISTING DUCT TO BE REMOVED
	NEW DUCT
	FLEX DUCT CONNECTION
	MANUAL VOLUME DAMPER
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
	AIR TERMINAL PROPERTIES
	SYMBOL NECK SIZE/CFM
	CD-1 6/115
	DIFFERENTIAL PRESSURE SENSOR
	THERMOSTAT/SENSOR
	HWR HEATING WATER RETURN
	HWS HEATING WATER SUPPLY



### KEYPLAN

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**STRUCTURAL MECHANICAL ELECTRICAL TECHNOLOGY**

Sheet Name  
PARTIAL FIRST FLOOR PLAN -  
MECHANICAL DEMOLITION

CERAMICS LAB VENTILATION - BUILDING A

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CRYSTAL LAKE, ILLINOIS 60012

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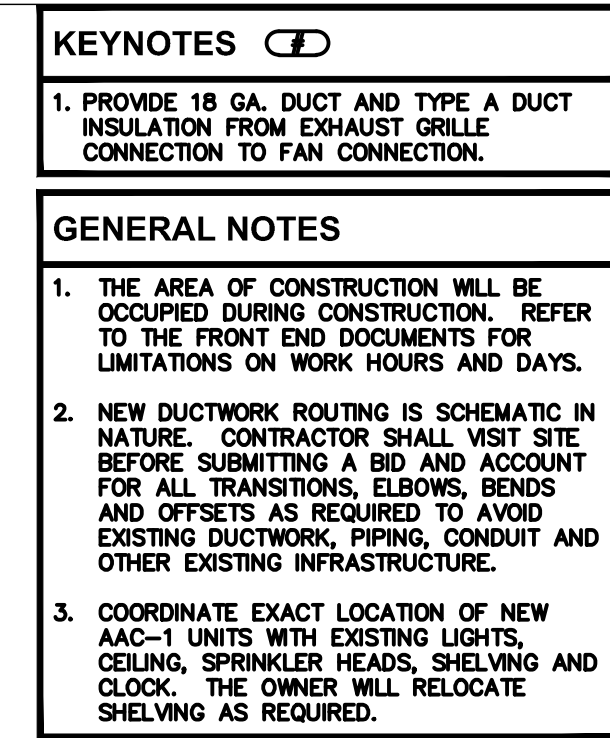
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Issue Date:  
1 JULY 2013

Drawn By:  
PVD

Job Number:  
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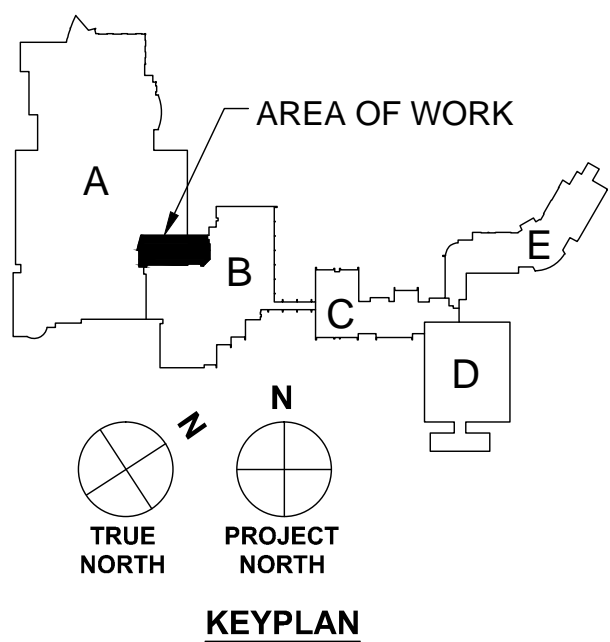
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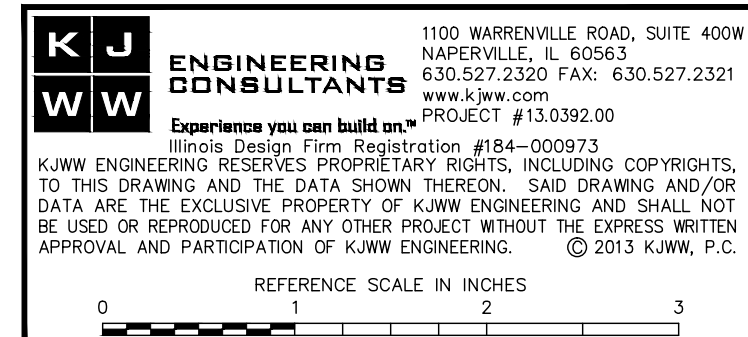
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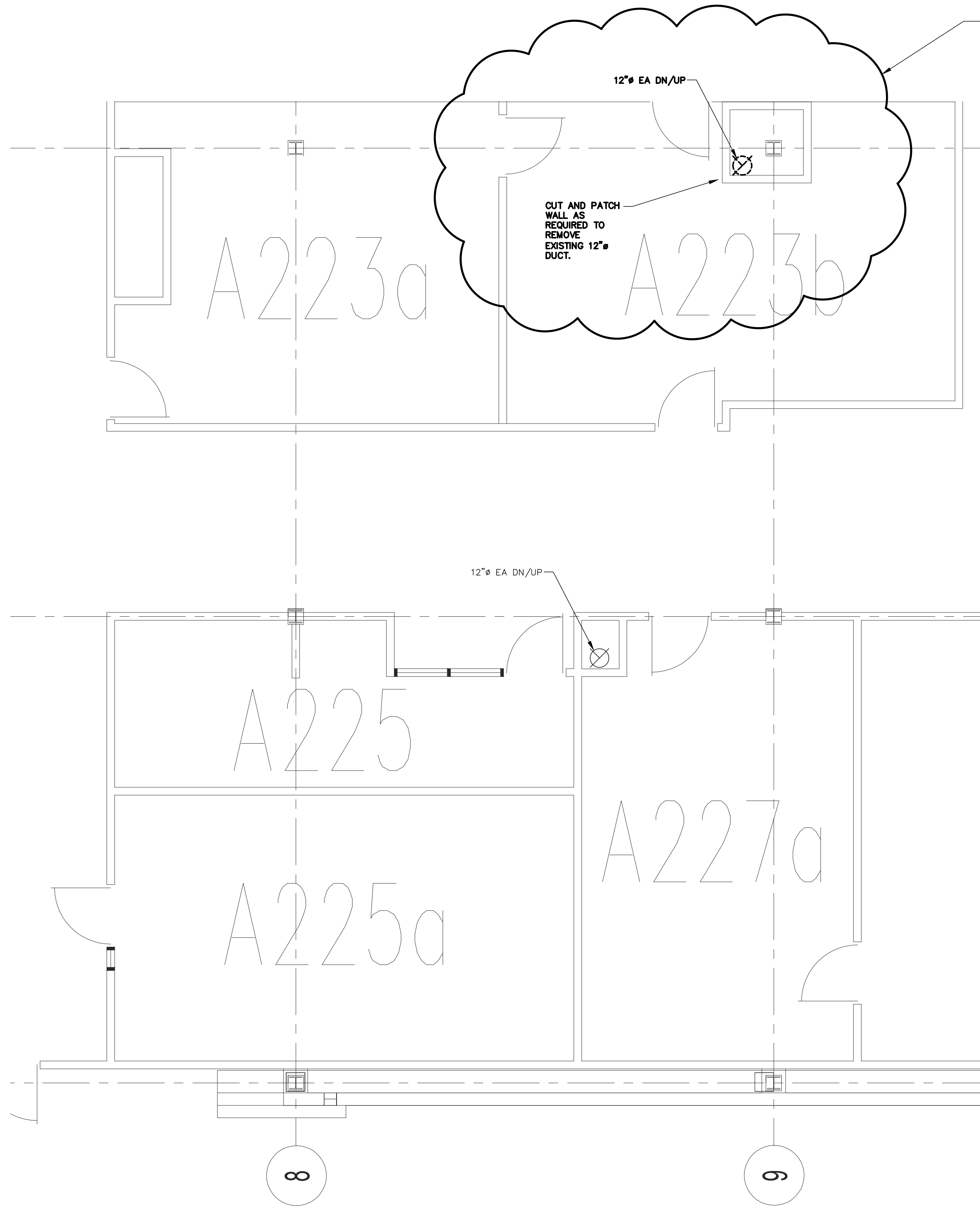


## KEYPLAN



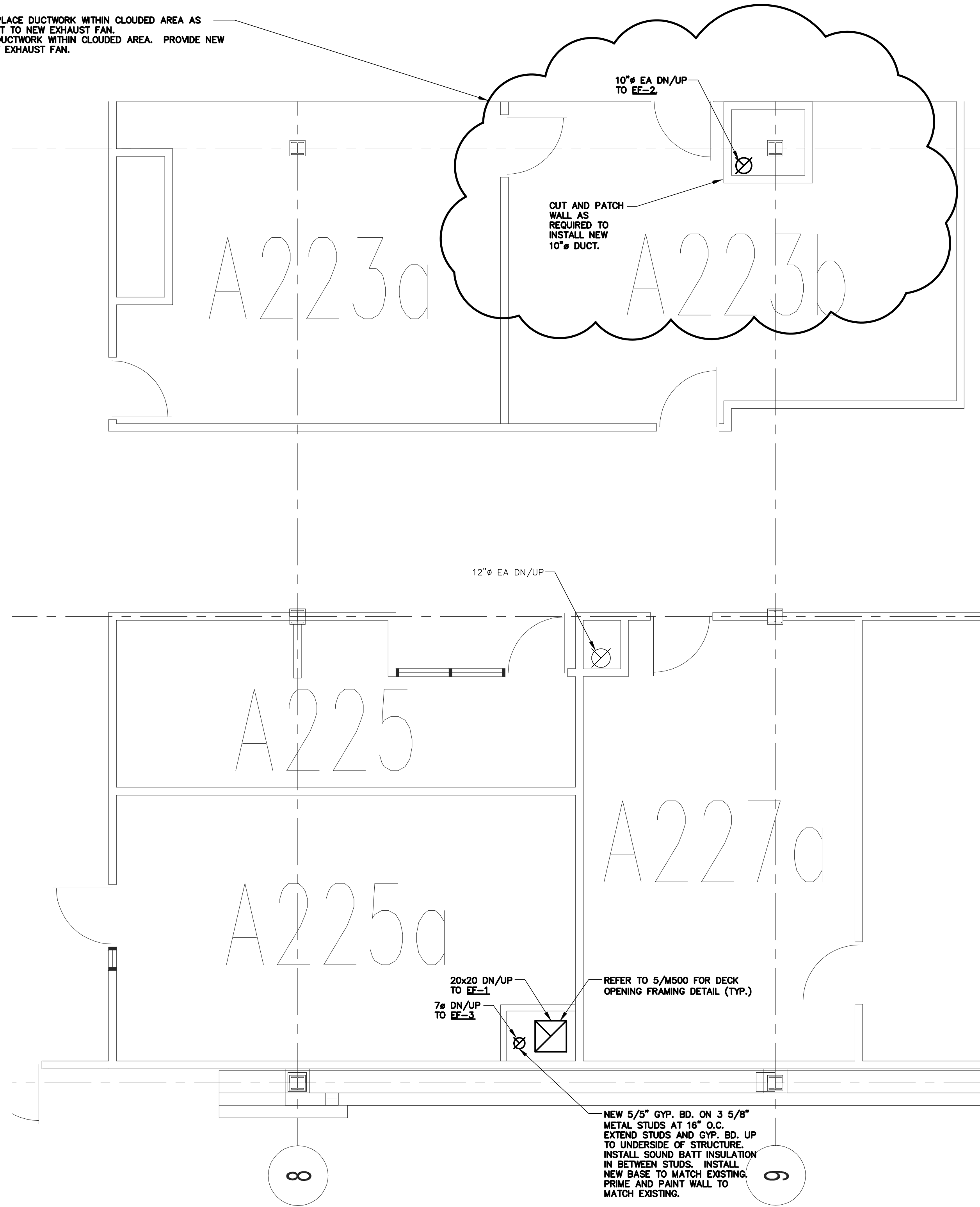
## 1 PARTIAL FIRST FLOOR PLAN - MECHANICAL

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

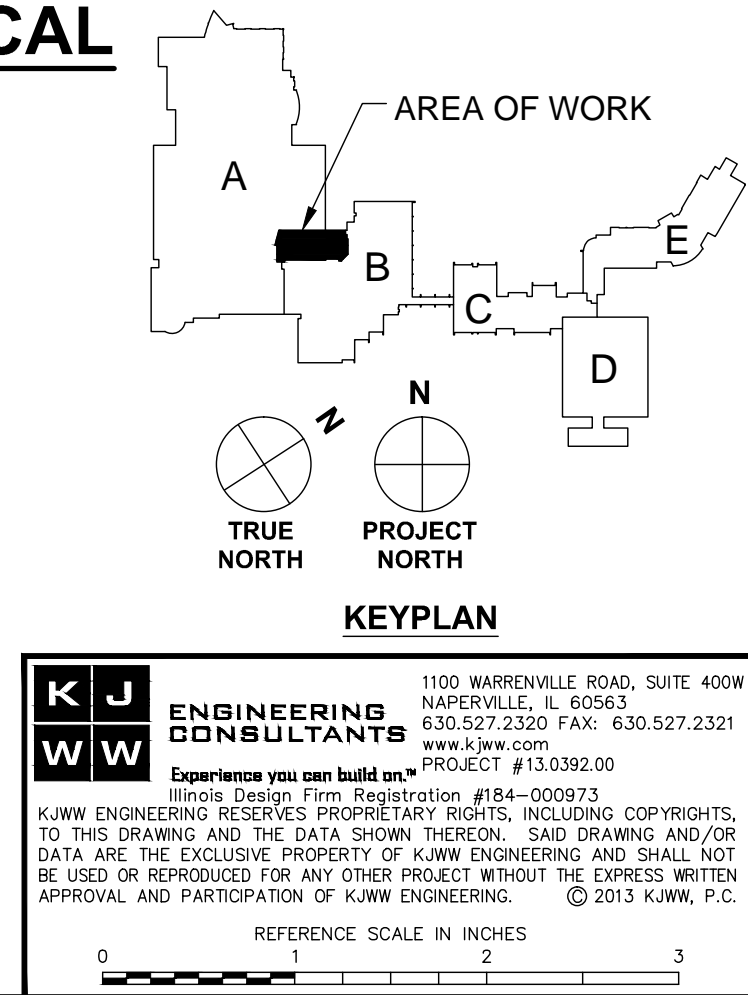


**1 PARTIAL SECOND FLOOR PLAN - MECHANICAL DEMOLITION**  
SCALE: 1/4"=1'-0"

ALTERNATE #1: REPLACE DUCTWORK WITHIN CLOUDED AREA AS SHOWN AND CONNECT TO NEW EXHAUST FAN.  
BASE BID: REUSE DUCTWORK WITHIN CLOUDED AREA. PROVIDE NEW CONNECTION TO NEW EXHAUST FAN.



**2 PARTIAL SECOND FLOOR PLAN - MECHANICAL**  
SCALE: 1/4"=1'-0"



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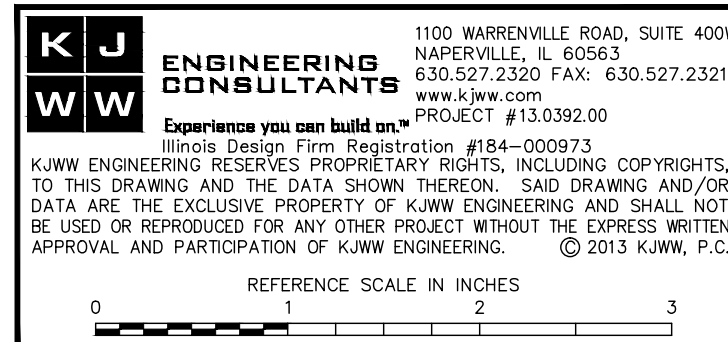
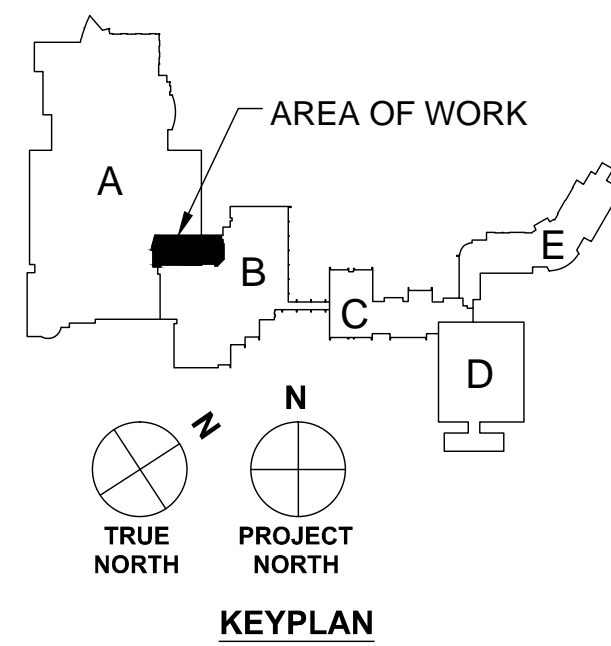
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1. COORDINATE FINAL ROOF PENETRATION AND EQUIPMENT LOCATIONS WITH EXISTING ROOF CONDITIONS.

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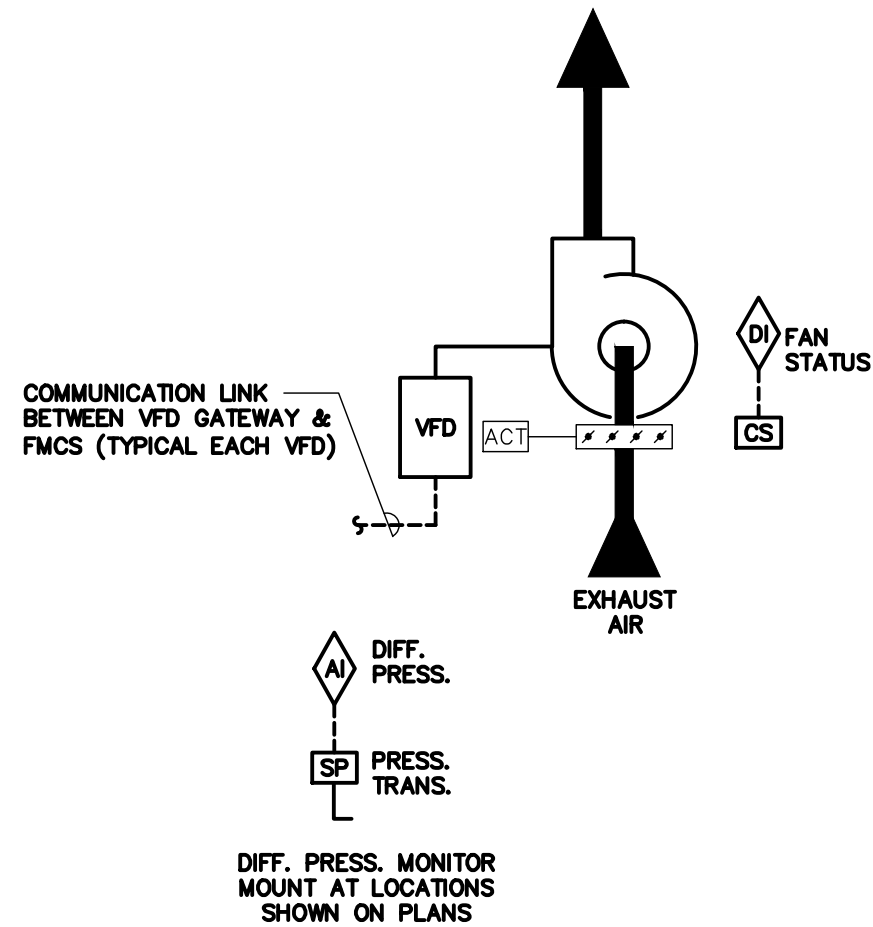
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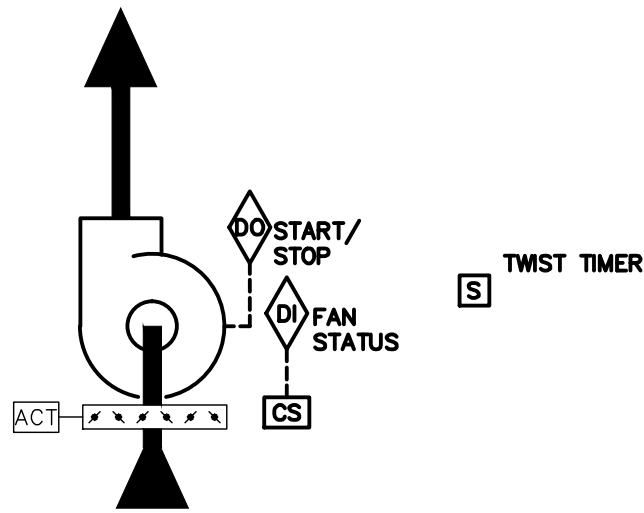
M131



**SEQUENCE OF OPERATION:**  
EXHAUST FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RTU-6 IS OPERATING.  
2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.  
THE FMCS SHALL MODULATE SIGNAL TO THE VFD AS REQUIRED TO MAINTAIN -0.06" W.C. (ADJ.) AT THE DIFFERENTIAL PRESSURE SENSORS. THE FMCS SHALL DISPLAY THE CURRENT STATIC PRESSURE OF THE SYSTEM.  
**ALARMS, INTERLOCKS AND SAFETIES:**  
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT OF AN ALARM CONDITION AT ANY VFD.  
SHOULD THE DDC FMCS COMMAND THE EXHAUST FAN TO OPERATE AND THE FAN FAIL TO DO SO AN ALARM SHALL BE INDICATED AT THE FMCS OPERATOR WORKSTATION.

## 1 EXHAUST FAN CONTROL: EF-1

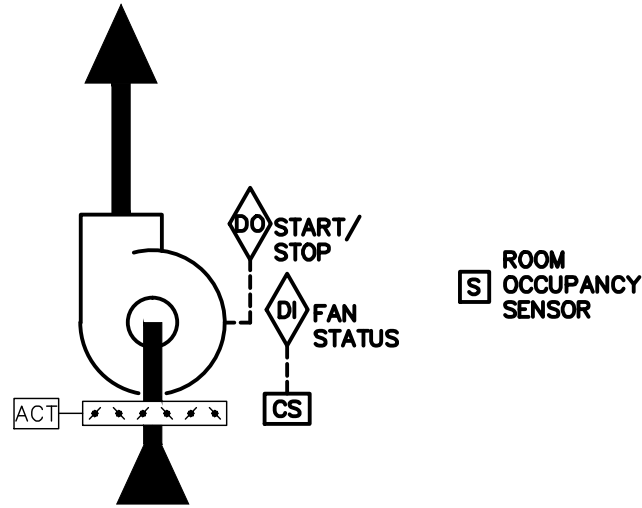
NO SCALE



**SEQUENCE OF OPERATION:**  
FAN SHALL BE CONTROLLED BY MANUAL MOTOR STARTER (FACTORY SUPPLIED, UNIT MOUNTED) AND SHALL RUN CONTINUOUSLY..  
WALL-MOUNTED TWIST TIMER SHALL BE INSTALLED TO DISRUPT POWER TO THE AMBIENT AIR CLEANER FOR UP TO 1 HOUR.

## 4 AMBIENT AIR CLEANER CONTROL (AAC-1)

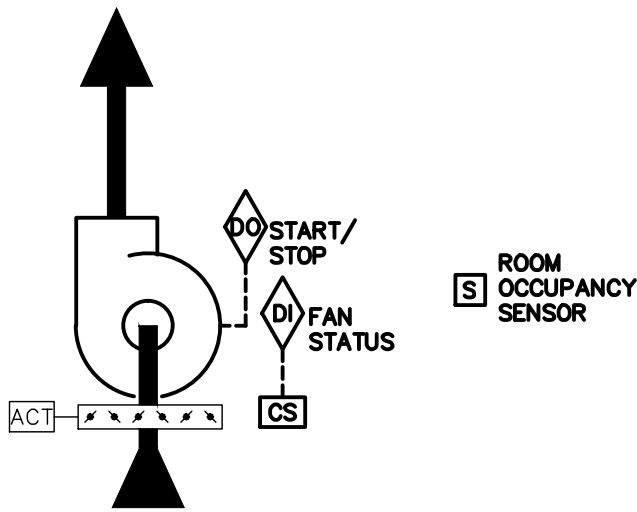
NO SCALE



**SEQUENCE OF OPERATION:**  
FAN SHALL BE CONTROLLED BY MANUAL MOTOR STARTER (ROOM OCCUPANCY SENSOR WITH MANUAL OVERRIDE SWITCH). OCCUPANCY SENSOR SHALL RUN FOR 60 MINUTES (ADJ.) ONCE ACTIVATED.  
2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.  
GREEN LED LIGHT SHALL BE INSTALLED NEXT TO SWITCH AND INDICATE FAN-ON STATUS.  
**ALARMS, INTERLOCKS AND SAFETIES:**  
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE SWITCH POSITION DOES NOT MATCH FAN STATUS ACCORDING TO CURRENT SENSING RELAY.

## 2 EXHAUST FAN CONTROL: EF-2

NO SCALE

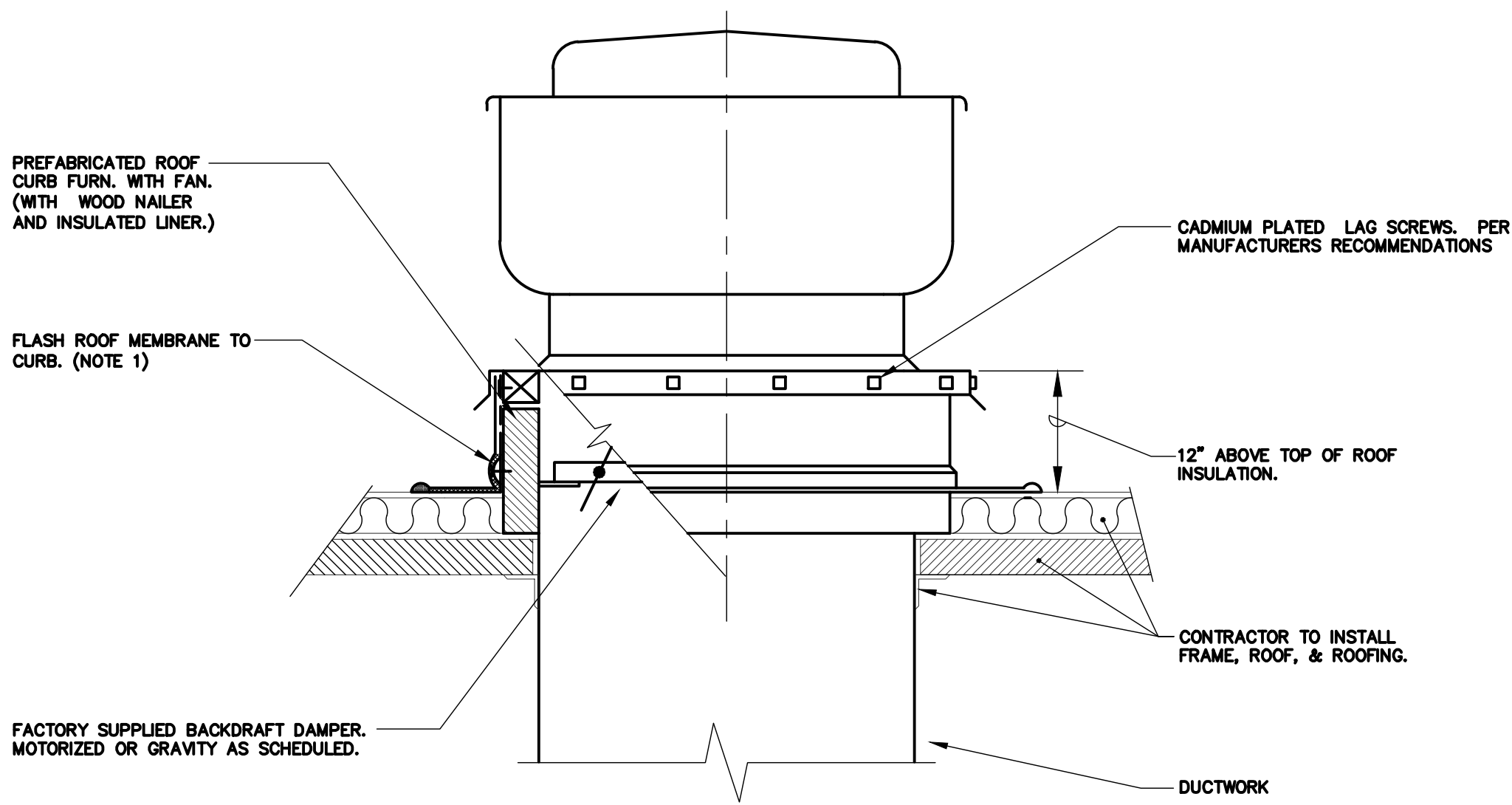


**SEQUENCE OF OPERATION:**  
FAN SHALL BE CONTROLLED BY MANUAL MOTOR STARTER (ROOM OCCUPANCY SENSOR WITH MANUAL OVERRIDE SWITCH). OCCUPANCY SENSOR SHALL RUN FOR 15 MINUTES (ADJ.) ONCE ACTIVATED.  
2-POSITION DAMPER SHALL FULLY OPEN WHEN FAN IS ENERGIZED. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.  
GREEN LED LIGHT SHALL BE INSTALLED NEXT TO SWITCH AND INDICATE FAN-ON STATUS.  
**ALARMS, INTERLOCKS AND SAFETIES:**  
AN ALARM SHALL BE GENERATED AT THE FMCS OPERATOR WORKSTATION IN THE EVENT THE SWITCH POSITION DOES NOT MATCH FAN STATUS ACCORDING TO CURRENT SENSING RELAY.

## 3 EXHAUST FAN CONTROL - WALL SWITCH: EF-3

NO SCALE

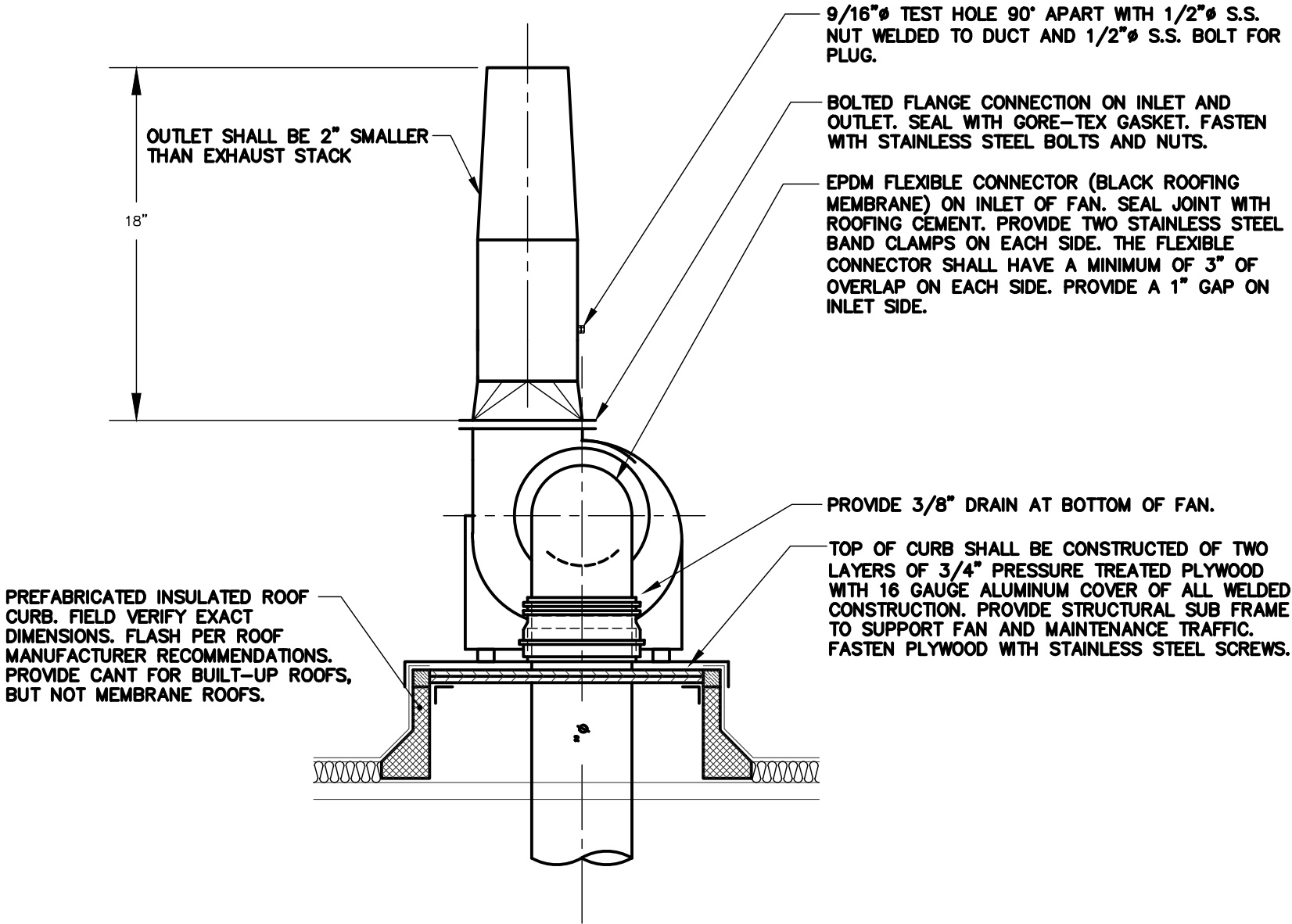




### 1 ROOF MOUNTED FAN/HOOD (MEMBRANE ROOF)

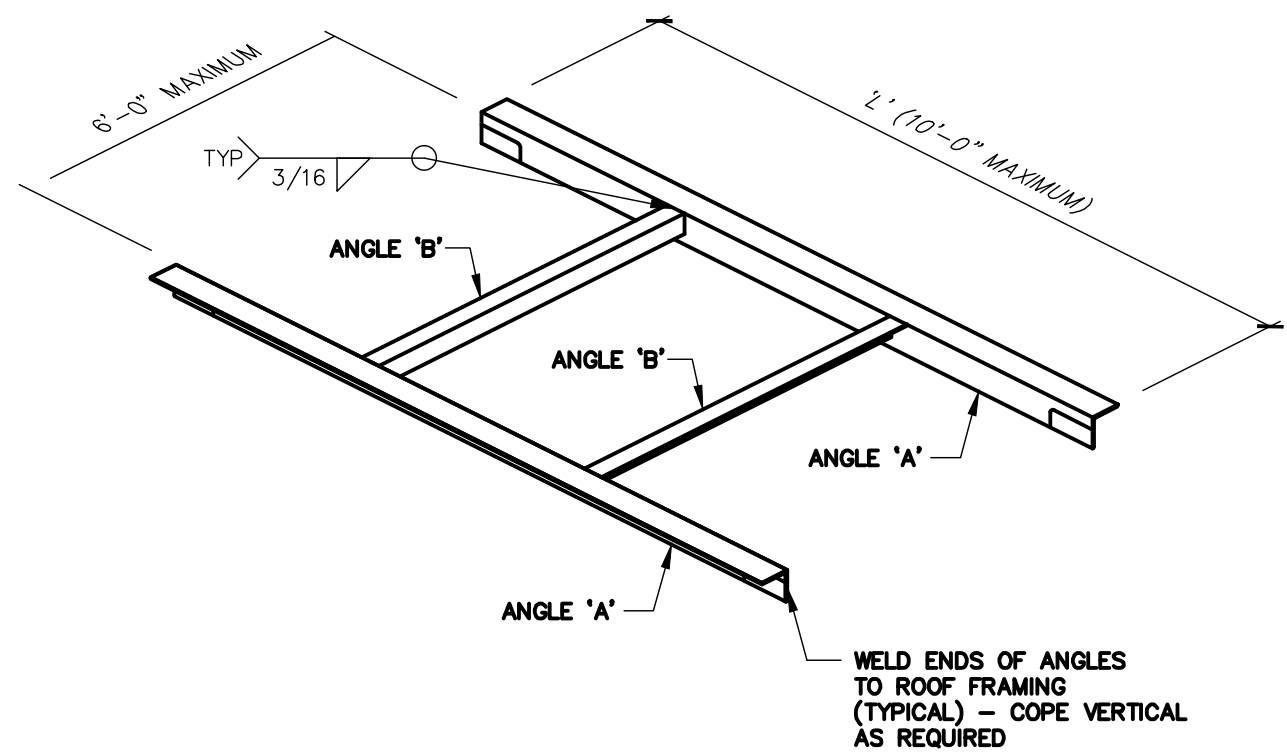
NO SCALE

- NOTES:
1. ALL ROOF FLASHING SHALL BE PER ROOFING MANUFACTURERS RECOMMENDATIONS.



### 2 DUST EXHAUST FAN DETAIL

NO SCALE

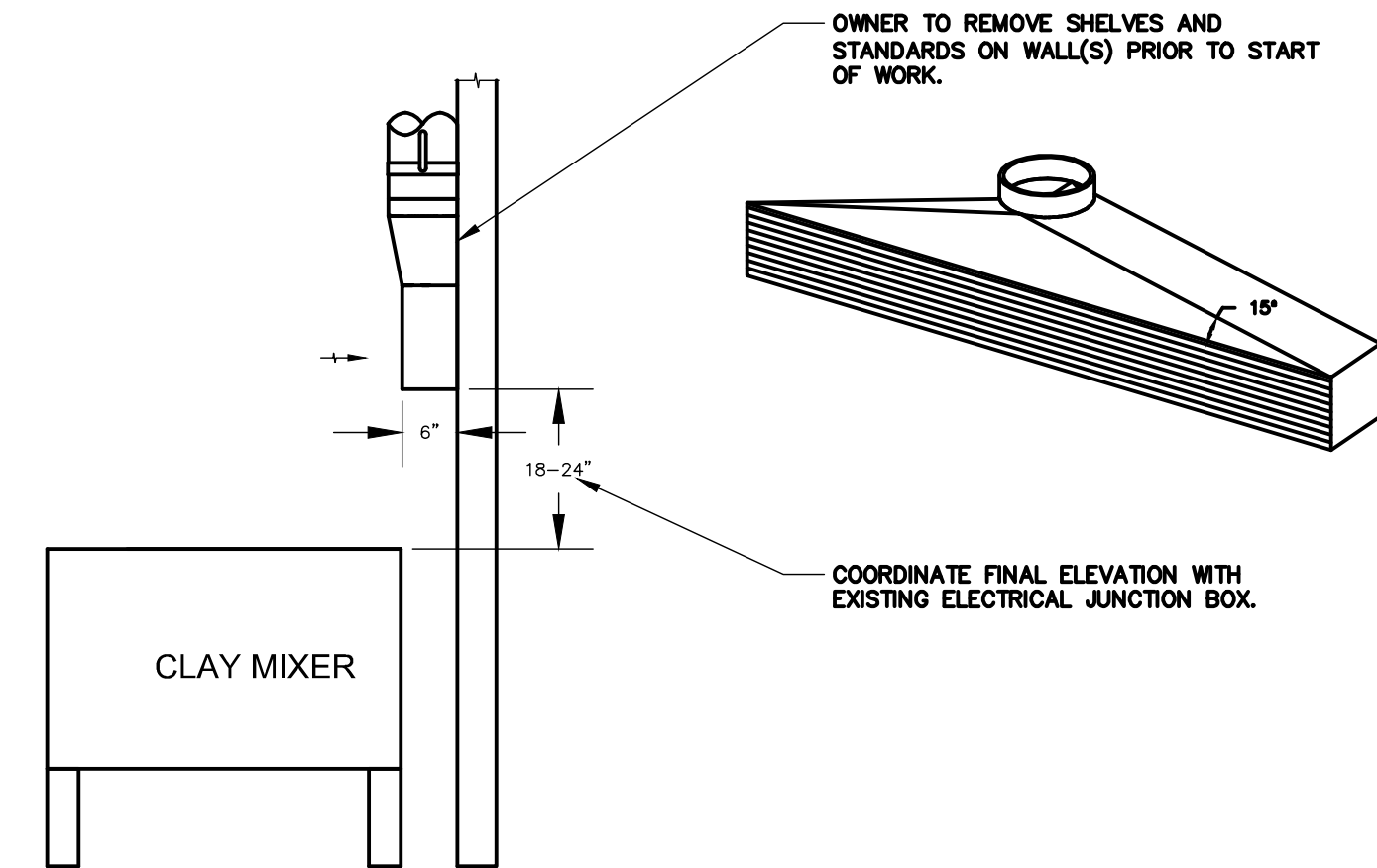


L'	ANGLE 'A'	ANGLE 'B'
UP TO 1'-0"	NONE - SUMP PAN ONLY	NONE - SUMP PAN ONLY
1'-1" TO 4'-6"	L4x4x1/4	L4x4x1/4
4'-7" TO 6'-0"	L4x4x5/16	L4x4x1/4
6'-1" TO 8'-0"	L4x4x3/8	L4x4x1/4
8'-1" TO 10'-0"	L6x4x3/8 (LLV)	L4x4x1/4

- NOTES:
1. USE ABOVE FRAMING AT ALL OPENINGS EXCEEDING 1'-0" UNO
  2. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS
  3. DETAIL APPLIES TO PENETRATION OF THE ROOF AND THE SLAB BETWEEN FIRST AND SECOND FLOOR.
  4. EXISTING ROOF DECK IS GYPSUM DECK ON BULB TEES.

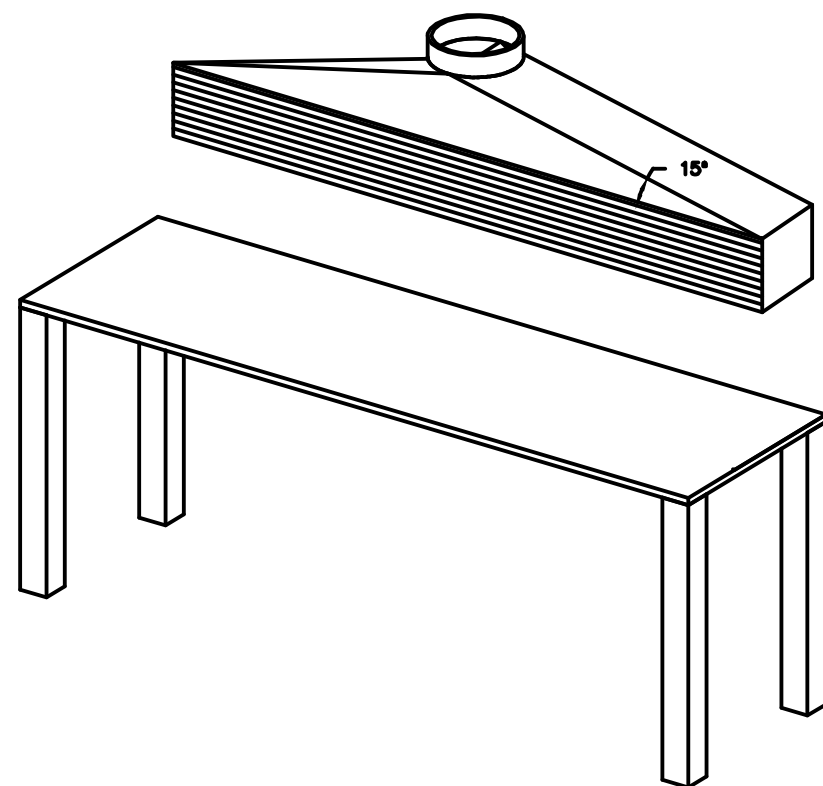
### 5 DECK OPENING FRAMING DETAIL

NO SCALE



### 3 CLAY MIXER EXHAUST GRILLE DETAIL

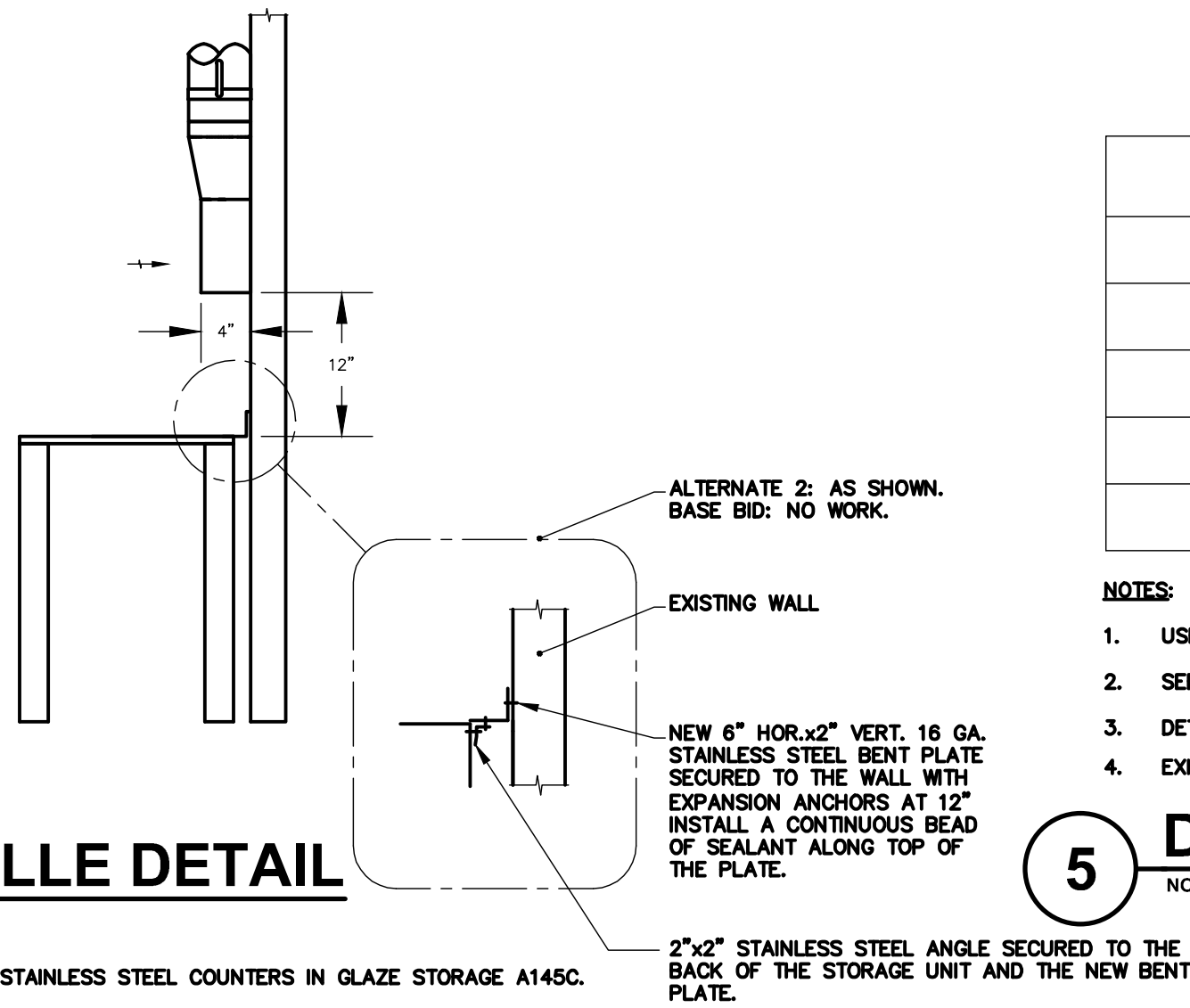
NO SCALE



### 4 GLAZE MIXING EXHAUST GRILLE DETAIL

NO SCALE

- NOTES:
1. ALTERNATE BID #2: PROVIDE STAINLESS STEEL ANGLE CLOSURE AT EXISTING STAINLESS STEEL COUNTERS IN GLAZE STORAGE A145C.



FAN SCHEDULE																				
SYMBOL	SERVICE	CFM	S.P. IN. W.C.	FAN CLASS	WHEEL DIA. INCHES	FAN RPM (NOTE F)	DRIVE	MAX. dBA	BACKDRAFT DAMPER	CURB TYPE (NOTE G)	ELECTRICAL						MANUFACTURER	MODEL	REMARKS	
											BHP (NOTE E)	MHP (NOTE E)	VOLT- PHASE	DISCONNECT		CONTROLLER/STARTER				
			BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)														
EF-1	CERAMICS LAB	2,900	1	I	19.5	978	BELT	63	MOTORIZED	MFR	0.8	1.0	208-3	MFR	NF	EC	VFD	COOK	ACRUB	
EF-2	CLAY STORAGE	2,000	4.8	I	13.5	2,757	BELT	80	MOTORIZED	MFR	2.2	3.0	208-3	MFR	NF	EC	FV	COOK	CA	NOTES 1, 2, 3
EF-3	GLAZE STORAGE	800	5.3	I	8.0	3,139	BELT	82	MOTORIZED	MFR	0.9	1.5	208-3	MFR	NF	EC	FV	COOK	CPS	NOTES 2, 3

- NOTES:
1. PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
  2. PROVIDE FAN HOUSING DRAIN.
  3. DAMPER SHIPPED LOOSE AND INSTALLED BY M.C.

### GRILLES REGISTERS & DIFFUSERS SCHEDULE

SYMBOL	MAT'L	TYPE	MARGIN (NOTE 1)	INLET SIZE (INCH)	FACE SIZE (INCH)	VOLUME DAMPER REQ'D	FINISH	MANUFACTURER	MODEL	REMARKS
EG-1	STEEL	PERFORATED FACE	LAY-IN	SEE DWG.	24x24	NO	WHITE	TITUS	PAR	DUCTED EXHAUST
EG-2	STEEL	0° DEFLECTION	N/A	SEE DWG.	INLET +2	NO	WHITE	TITUS	350ZRL	WALL MOUNTED EXHAUST
TG-1	STEEL	PERFORATED FACE	LAY-IN	SEE DWG.	24x24	NO	WHITE	TITUS	PAR	DUCTED TRANSFER

- NOTES:
1. CONTRACTOR SHALL DETERMINE PROPER MARGIN STYLE TO MATCH CEILING CONSTRUCTION.
  2. ALL RUN OUT DUCTWORK TO DIFFUSERS SHALL BE NECK SIZE UNLESS OTHERWISE NOTED.

SCHEDULE GENERAL NOTES:	
A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND INSTALLED BY: MFR = MANUFACTURER EC = ELECTRICAL CONTRACTOR MC = FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR MFR/EC = FURNISHED LOOSE BY MANUFACTURER ATC = AUTOMATIC TEMPERATURE CONTROL CONTRACTOR	
B. DISCONNECT TYPE: F = FUSED NF = NON-FUSED	
C. CONTROLLER STARTER TYPE: FV = FULL VOLTAGE WYE = WYE-DELTA SS = SOLID STATE (SOFT START) MS = MANUAL STARTER VFD = VARIABLE FREQUENCY DRIVE VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS	
D. FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE. WITH THE SCHEDULED WHEEL TYPE. SUBSTITUTION OF BI OR BIA FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.	
E. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING.	
F. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.	
G. CURB TYPE: MFR = STANDARD CURB BY MANUFACTURER GC = BY GENERAL CONTRACTOR SAC = SOUND ATTENUATOR CURB	

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MECHANICAL DETAILS

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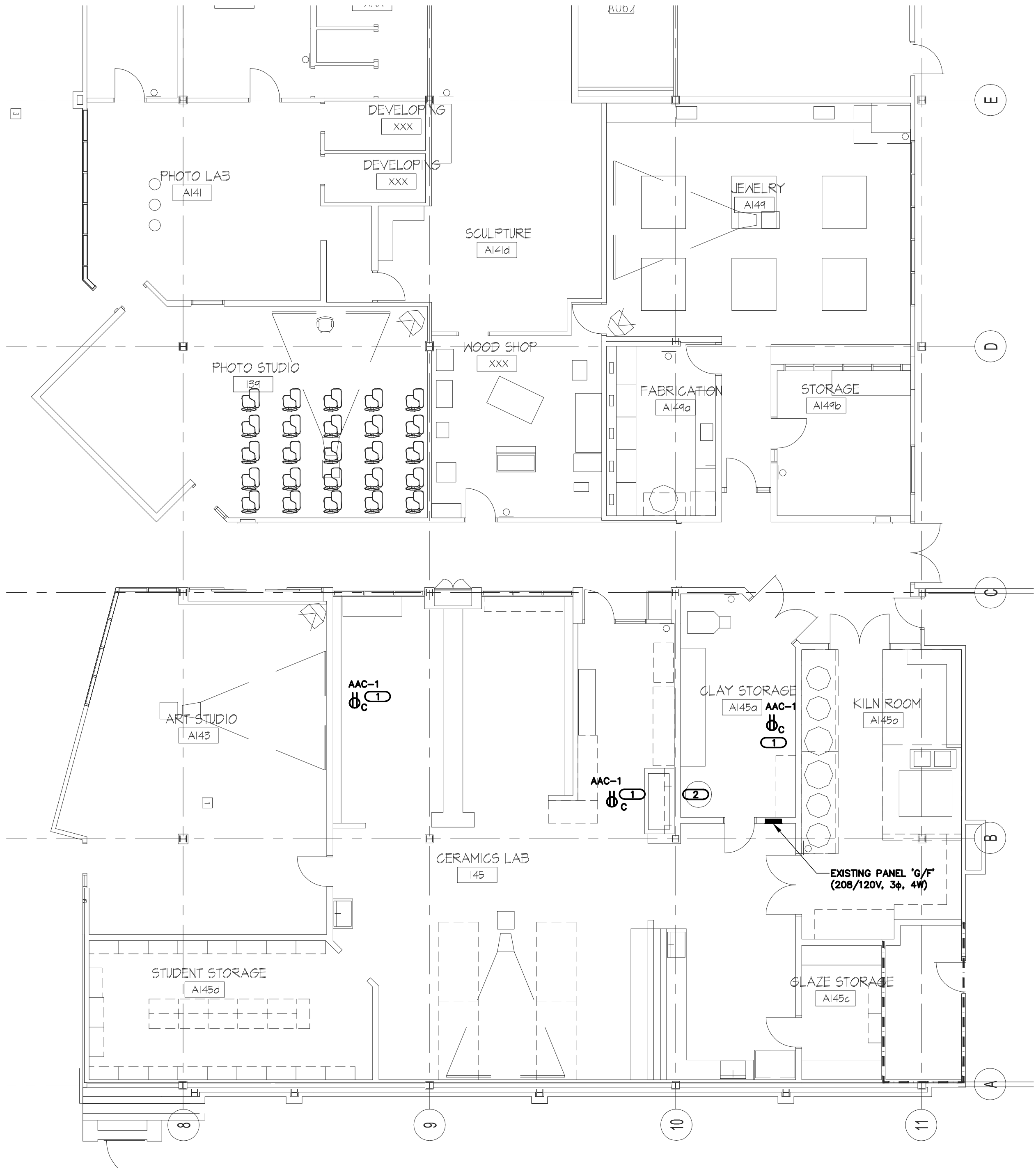
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1 JULY 2013

Drawn By:  
PVD

Job Number:  
1227.04

M500



**1 PARTIAL FIRST FLOOR PLAN - POWER**  
SCALE: 1/8"=1'-0"

GENERAL SHEET NOTES

1. REFER TO SHEET E400 FOR GENERAL ELECTRICAL NOTES, ELECTRICAL INSTALLATION NOTES, GENERAL ELECTRICAL EQUIPMENT SCHEDULE, DISCONNECT AND STARTER SCHEDULE, AND VARIABLE FREQUENCY DRIVE SCHEDULE.

KEYNOTES

1. ROUTE CONDUIT AND WIRING (2#12 & 1#12 GND. IN 3/4" C.) TO EXISTING PANEL 'G/F'. CONNECT TO EXISTING 20A/1P, 120V CIRCUIT BREAKER.
2. RELOCATE SURFACE MOUNTED JUNCTION BOX AND CIRCUIT SERVING MIXER AS REQUIRED TO ALLOW FOR EXHAUST GRILL INSTALLATION. COORDINATE LOCATION WITH M.C.

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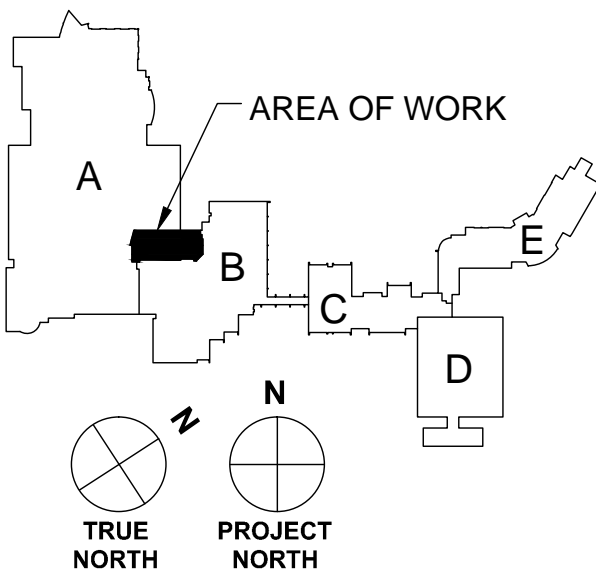
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**PARTIAL FIRST FLOOR  
PLAN - POWER**

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KEYPLAN

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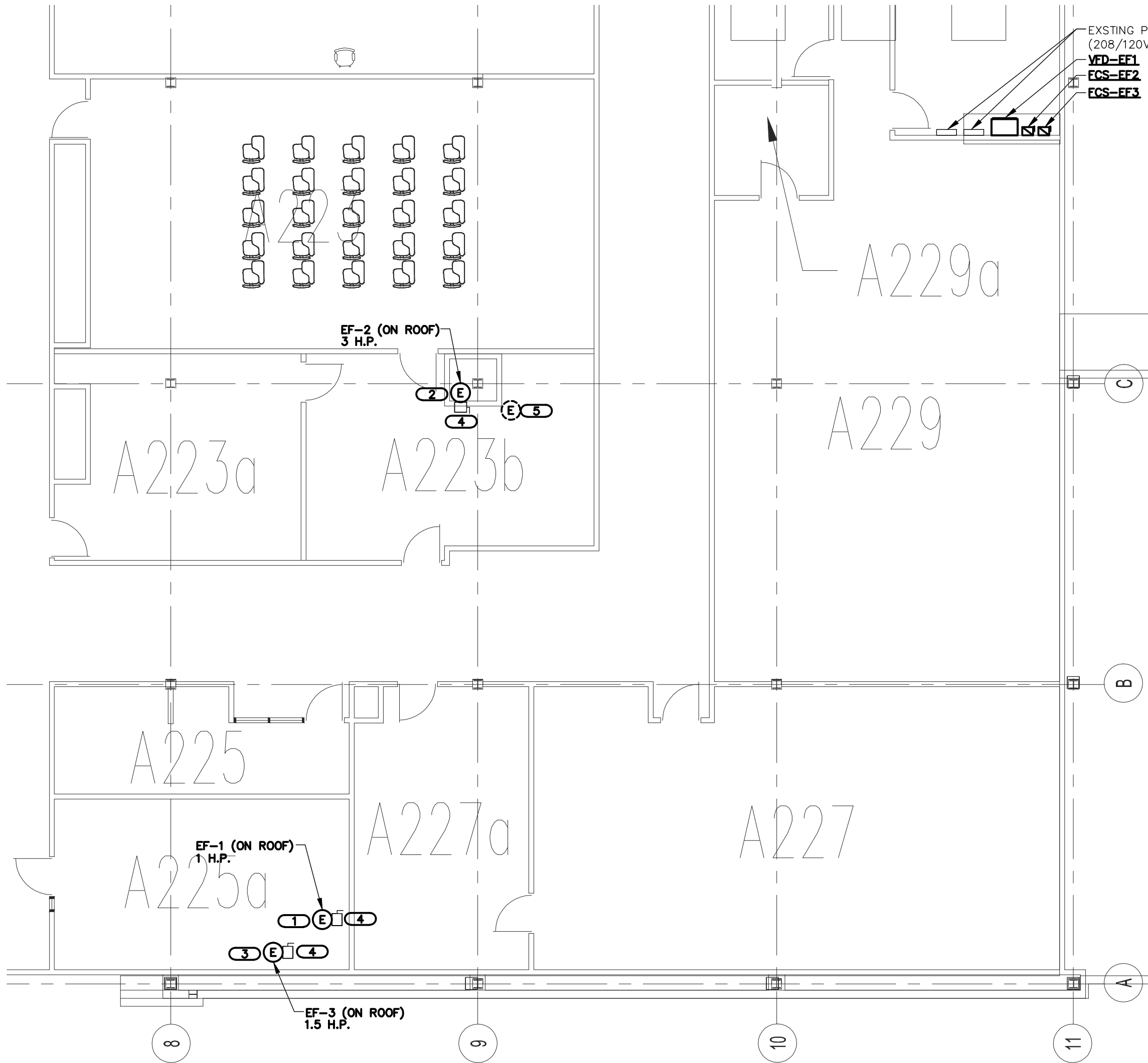
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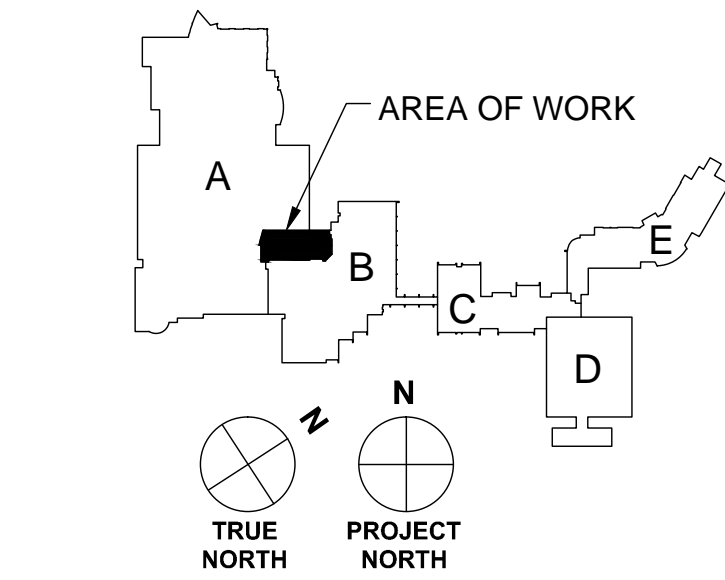
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PARTIAL SECOND FLOOR PLAN - POWER

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



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KEYNOTES

1. ROUTE CONDUIT AND WIRING (3#12 & 1#12 GND, IN 3/4" C.) TO EXISTING PANEL "RP1" VIA VFD-EF1. PROVIDE NEW 20A/3P, 208V CIRCUIT BREAKER AND MAKE FINAL CONNECTIONS. MATCH EXISTING CIRCUIT BREAKER TYPE.
2. ROUTE CONDUIT AND WIRING (3#12 & 1#12 GND, IN 3/4" C.) TO EXISTING PANEL "RP1" VIA FCS-EF2. PROVIDE NEW 20A/3P, 208V CIRCUIT BREAKER AND MAKE FINAL CONNECTIONS. MATCH EXISTING CIRCUIT BREAKER TYPE.
3. ROUTE CONDUIT AND WIRING (3#12 & 1#12 GND, IN 3/4" C.) TO EXISTING PANEL "RP1" VIA FCS-EF3. PROVIDE NEW 20A/3P, 208V CIRCUIT BREAKER AND MAKE FINAL CONNECTIONS. MATCH EXISTING CIRCUIT BREAKER TYPE.
4. DISCONNECT SWITCH PROVIDED WITH EXHAUST FAN.
5. DISCONNECT POWER TO EXHAUST FAN AND REMOVE CONDUIT AND WIRING BACK TO THE SOURCE.

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SHEET NAME  
PARTIAL SECOND FLOOR  
PLAN - POWER

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Issue Date:  
1 JULY 2013


Drawn By:  
TB

Job Number:  
1227.04

E121



GENERAL ELECTRICAL NOTES:

1. "1/E121" INDICATES DETAIL NUMBER/SHEET NUMBER.
2. ~~##-###~~ INDICATES ELECTRICAL EQUIPMENT DEFINED IN ELECTRICAL SCHEDULES. REFER TO DRAWINGS CONTAINING ELECTRICAL SCHEDULES. PERMANENT NAMEPLATE SHALL MATCH FINAL EQUIPMENT NOMENCLATURE, NOT ELECTRICAL EQUIPMENT TAG NAME. REFER TO SPECIFICATIONS.
3.  INDICATES KEYED NOTE USED TO DESCRIBE ADDITIONAL INFORMATION OF WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL IT IS SHOWN WITH.
4. ALL ELECTRICAL CONDUCTORS SHALL BE COPPERS.  
  
ABBREVIATION KEY:  
E.C. ELECTRICAL CONTRACTOR  
M.C. MECHANICAL CONTRACTOR  
G.C. GENERAL CONTRACTOR  
AFF ABOVE FINISHED FLOOR  
C CONDUIT  
TYP TYPICAL  
+# MOUNTING HEIGHT FROM FINISHED FLOOR TO CENTERLINE
6. MOUNTING SUBSCRIPT KEY:  
  
RECEPTACLES AND TELECOMMUNICATIONS OUTLETS:  
C FLUSH MOUNTED IN CEILING.
7. LINE TYPE KEY:  
  
NEW WORK BY THIS CONTRACTOR (DARK SOLID LINE)  
  
NEW WORK BY OTHERS AND/OR EXISTING TO REMAIN (LIGHT SOLID LINE)

ELECTRICAL INSTALLATION NOTES:

1. THE COMPLETE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES).
2. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
3. A GREEN INSULATED GROUND CONDUCTOR SHALL BE INSTALLED WITH CIRCUIT CONDUCTORS.
4. CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILING, AND IN FLOOR SLAB, ETC. UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS. CONDUIT IN MECHANICAL ROOMS, AND STORAGE ROOMS WITHOUT CEILINGS MAY BE EXPOSED ON BUILDING STRUCTURE.
5. CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
6. ALL FINAL ELECTRICAL CONNECTIONS TO MOTORS SHALL BE MADE WITH FLEXIBLE METAL CONDUIT. USE LIQUIDTIGHT CONDUIT AND FITTINGS WHERE SUBJECT TO MOISTURE. ROUTE GROUND WIRE FROM CIRCUIT GROUND TO MOTOR GROUND THROUGH FLEXIBLE CONDUIT. FLEXIBLE CONDUIT SHALL NOT EXCEED 6' IN LENGTH.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
8. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH--PENETRATION FIRESTOPS.
9. CONTRACTOR SHALL REMOVE AND REINSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.
10. ALL FUSES FROM 0 AMPERE TO 200 AMPERE SHALL BE DUAL ELEMENT, CLASS RK-5 UNLESS NOTED OTHERWISE.
11. ALL WIRE SHALL BE TYPE "THHN" ABOVE GRADE. FEEDERS LOCATED BELOW FLOOR SLAB OR UNDERGROUND SHALL BE TYPE "THWN".
12. ALL INTERLOCKING REQUIRED BY THE DRIVE MANUFACTURER BETWEEN THE VARIABLE FREQUENCY DRIVE AND THE DISCONNECT SWITCHES SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

ELECTRICAL DEMOLITION NOTES:

1. THE ELECTRICAL DRAWINGS INDICATE EXISTING ELECTRICAL ITEMS TO BE REMOVED. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY BOX, CONDUIT, OR WIRE THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS.
2. ELECTRICAL ITEMS REMOVED AND NOT RELOCATED REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN (i.e., FOR MAINTENANCE PURPOSES).
3. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER BEFORE TURNING OFF POWER TO CIRCUITS, FEEDERS, PANELS, ETC. COORDINATE ALL OUTAGES WITH OWNER. CONDUIT CONCEALED IN WALL CONSTRUCTION MAY BE ABANDONED IN PLACE IF NOT AFFECTED BY OTHER CONSTRUCTION.
4. THIS CONTRACTOR SHALL COORDINATE ALL HIS WORK WITH OTHER CONTRACTORS AT THE JOB SITE BEFORE REMOVING EXISTING ELECTRICAL AND INSTALLING NEW ITEMS.
5. EXISTING CONDUIT IN GOOD CONDITION, MAY BE REUSED IN PLACE. RELOCATED EXISTING CONDUIT SHALL NOT BE ALLOWED. BONDING CONDUCTORS SHALL BE INSTALLED IN ALL REUSED CONDUIT TO ASSURE PROPER GROUND PATH.
6. EQUIPMENT REMOVAL IN CERTAIN LOCATIONS MAY REQUIRE THE INSTALLATION OF A JUNCTION BOX TO RECONNECT CIRCUITS THAT REMAIN IN OPERATION. EXTEND CONDUIT AND WIRING AS REQUIRED TO MAINTAIN POWER TO REMAINING EQUIPMENT.
7. CONTRACTOR SHALL REMOVE AND INSTALL ALL CEILING TILES AS REQUIRED FOR THE EXECUTION OF ELECTRICAL WORK THAT IS OUTSIDE THE CONTRACT LIMITS OF CONSTRUCTION. CONTRACTOR SHALL REPLACE CEILING TILES WITH IDENTICAL MATERIAL WHERE DAMAGED BY THIS CONTRACTOR.





VARIABLE FREQUENCY DRIVE SCHEDULE

STARTER TYPE:				REMARKS:							
PWM - PULSE WIDTH MODULATED				SA - STANDARD ACCESSORIES (INCLUDES * ITEMS)				TA - TWO CONVERTIBLE AUXILIARY CONTACTS			
12PWM- 12 PULSE PWM				*CT - CONTROL TRANSFORMER, FUSED, 120V				ISO - ISOLATION TRANSFORMER			
18PWM- 18 PULSE PWM				*HA - HAND-OFF-AUTO IN DOOR				*SHZ - SKIP FREQUENCY CAPABILITY			
LINE DISCONNECT				*RP - RED (RUN) PILOT LIGHT IN DOOR				RSS - REMOTE START-STOP			
DS - DISCONNECT SWITCH				*TA - TWO CONVERTIBLE AUXILIARY CONTACTS				RDR - REMOTE DRIVE RUN			
FDS - FUSIBLE DISCONNECT SWITCH				S/N - INSULATED NEUTRAL ASSEMBLY				RFT - REMOTE FAULT TRIP			
CB - CIRCUIT BREAKER								LR - INPUT LINE REACTOR			
CONTROL:								HAR - PASSIVE HARMONIC FILTER			
PN - 3-15 PSI PRESSURE TRANSDUCER											
420 - 4-20mA FOLLOWER											
ITEM	INPUT LINE DISC.	DRIVE BYPASS	CONTROL	VOLTAGE		PH.	H.P. RATING	TYPE	NEMA ENCLOSURE	REMARKS	APPROVED MANUFACTURERS
				INPUT	OUTPUT						
VFD-EF1	CB	N/A	420	208	208	3	1	PWM	1	SA - "LR", VARIABLE TORQUE	DANFOSS VLTC100 SERIES

DISCONNECT AND STARTER SCHEDULE

STARTER TYPE:				REMARKS:							
FV - FULL VOLTAGE				SA - STANDARD ACCESSORIES (INCLUDES * ITEMS)				PF - PHASE FAILURE RELAY (5 HP OR GREATER)			
YD - WYE - DELTA				*CT - CONTROL TRANSFORMER, FUSED 120V				TO - MELTING THERMAL OVERLOADS			
RE - REVERSING				*EO - ELECTRONIC OVERLOAD				TS - 2 SPEED SELECTOR SWITCH IN DOOR			
TW - 2 SPEED, 2 WINDING				*HA - HAND-OFF-AUTO IN DOOR				GP - GREEN (OFF) PILOT LIGHT IN DOOR			
SW - 2 SPEED, 1 WINDING				*RP - RED (RUN) PILOT LIGHT IN DOOR				FA - 4-CONVERTIBLE AUXILIARY CONTACTS			
RV - REDUCED VOLTAGE AUTOXFMR				*TA - TWO CONVERTIBLE AUXILIARY CONTACTS				EI - ELECTRICAL INTERLOCK (2)-N.O.& (2)-N.C			
SS - SOLID STATE				S/N - INSULATED NEUTRAL ASSEMBLY				SS - START-STOP PUSHBUTTON IN DOOR			
MD - MOTOR DISCONNECT SWITCH								HL - HANDLE PADLOCK HASP			
MS - MANUAL STARTER											
MX - MANUAL SWITCH											
FDS - FUSED SWITCH											
ITEM	DISCONNECT TYPE & RATING			VOLTAGE	POLES	STARTER		NEMA ENCLOSURE	REMARKS	APPROVED MANUFACTURERS	
	FUSED	NON-FUSED	CIRCUIT BREAKER			NEMA SIZE	TYPE				
FCS-EF2	30A			208	3	1	FV	1	SA, FUSED AT 15 AMPS	SQUARE D 8538 SCG32 CUTLER-HAMMER TYPE ECN SIEMENS CLASS 17	
FCS-EF3	30A			208	3	1	FV	1	SA, FUSED AT 9 AMPS	SQUARE D 8538 SCG32 CUTLER-HAMMER TYPE ECN SIEMENS CLASS 17	

GENERAL ELECTRICAL EQUIPMENT SCHEDULE

THE SYMBOLS AND THE EQUIPMENT SCHEDULE ARE FOR THE CONVENIENCE OF THE CONTRACTOR. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF QUANTITIES AND SHALL FURNISH ALL MATERIAL REQUIRED, WHETHER SPECIFIED OR NOT, TO PRODUCE A SATISFACTORY WORKING SYSTEM.			
CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE BUT ARE GIVEN ONLY TO AID THE CONTRACTOR IN THE SEARCH FOR MATERIAL. NO MATERIAL SHALL BE ORDERED BY MANUFACTURER AND CATALOG NUMBER ONLY. EACH CONTRACTOR SHALL FIRST READ THE COMPLETE DESCRIPTION OF THE MATERIAL ON THESE DRAWINGS AND SPECIFICATIONS. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN. "STANDARD COLOR" INDICATES FACTORY FINISH AVAILABLE AT NO ADDITIONAL CHARGE.			
ITEM NO.	SYMBOL	DESCRIPTION	APPROVED MANUFACTURERS
1		ALL SWITCH, RECEPTACLE, OUTLET, AND COVERPLATE COLORS SHALL BE VERIFIED WITH ARCHITECT, UNLESS INDICATED OTHERWISE.	HUBBELL LEVITON PASS & SEYMOUR COOPER
2		ALL SWITCHES, RECEPTACLES, AND OUTLETS SHALL BE COMPLETE WITH #302 STAINLESS STEEL COVERPLATES. WHERE SEVERAL DEVICES ARE GANGED TOGETHER, THE COVER PLATE SHALL BE OF THE GANGED STYLE FOR THE NUMBER OF DEVICES USED. INSTALL NAMEPLATE IDENTIFICATION.	HUBBELL LEVITON PASS & SEYMOUR COOPER
3		ELECTRICAL CONNECTION TO EQUIPMENT AND MOTORS, SIZE PER N.E.C. COORDINATE REQUIREMENTS WITH CONTRACTOR FURNISHING EQUIPMENT OR MOTOR. REFER TO SPECIFICATIONS AND GENERAL INSTALLATION NOTES FOR TERMINATIONS TO MOTORS.	REFER TO SPECIFICATIONS
4		RECEPTACLE, DUPLEX, 125 VOLT, 20 AMP, 3 WIRE GROUNDING TYPE, N.E.M.A. 5-20R, IMPACT RESISTANT THERMOPLASTIC FACE, STEEL BACK STRAP.	HUBBELL 5352A LEVITON 5362-S PASS & SEYMOUR 5362 COOPER 5352

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ELECTRICAL NOTES AND SCHEDULES

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