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**Dental School Improve Exhaust Fan EF-2 on Roof Const.
Bids – SCPP Pre-Qualified Only
PN 18-147790**

**Tuesday October 20, 2020
ADDENDUM 2**

**Please see the attached Mandatory Sign in Sheet and the Drawings with
Photos used at the Pre-Bid Meeting.**

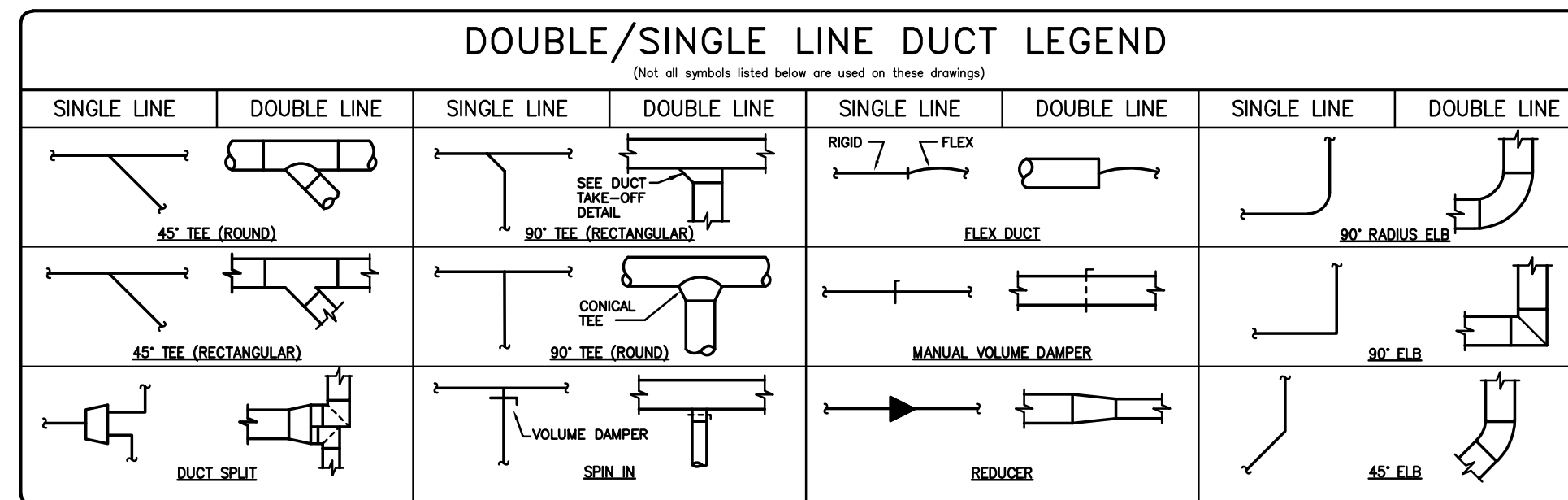
END OF ADDENDUM

Dental School Improve Exhaust Fan EF-2 on Roof Const. / PN18-147790 PreBid Meeting Sign in 10/19/2020 SCPP Pre-Qualified Only

Name	Company	Email
Mike Parker	Parker Sheet Metal	MikeP@parkersheetmetal.com
Ricky DiFranco	Colorado Mechanical Systems	rdifranco@coloradomech.com
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Brad Hoyt	Aberdeen Construction	brad@aberdeenconstruction.com
Zachariah Marvin	Adolfson & Peterson Construction	zmarvin@a-p.com
Chad Bowman	Duro Electric	Chad.Bowman@duroelectric.com
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Mike Herbst	GE Johnson	HerbstM@GEJohnson.com
Ryan Horn	Guarantee Electrical	Ryan.Horn@geco.com

GENERAL LEGEND			
ABBR.	SYMBOL	DESCRIPTION	DESCRIPTION
		SECTION DESIGNATION	
		SECTION DRAIN ON THIS SHEET	
		SECTION CUT ON THIS SHEET	
		RISER DIAGRAM NUMBER	
		SHEET RISER IS DRAWN ON	
		EQUIPMENT UNIT IDENTIFICATION	
		EQUIPMENT UNIT NUMBER	
		DIFFUSER IDENTIFICATION	
		DIFFUSER NECK DIAMETER	
		DIFFUSER CFM	
(E)		EXISTING	
(N)		NEW	
(R)		RELOCATED	
(F)		FUTURE	
		POINT OF CONNECTION, NEW TO EXISTING	
		DIRECTION OF FLOW IN PIPE	
		DUCTWORK, PIPING AND EQUIPMENT TO BE REMOVED	
DA		DIAMETER	
WAD		WALL ACCESS DOOR	
NIC		NOT IN CONTRACT	
AF		ABOVE FINISHED FLOOR	
GC		GENERAL CONTRACTOR	
MC		MECHANICAL CONTRACTOR	
EC		ELECTRICAL CONTRACTOR	
TC		TEMPERATURE CONTROL CONTRACTOR	
KEC		KITCHEN EQUIPMENT CONTRACTOR	
C		COMMON	
NC		NORMALLY CLOSED	
NO		NORMALLY OPEN	

HVAC LEGEND			
ABBR.	SYMBOL	DESCRIPTION	DESCRIPTION
HWS		HEATING WATER SUPPLY PIPING	
HWR		HEATING WATER RETURN PIPING	
HTWS		HIGH TEMPERATURE HOT WATER SUPPLY PIPING	
HTWR		HIGH TEMPERATURE HOT WATER RETURN PIPING	
CWS		CHILLED WATER SUPPLY PIPING	
CWR		CHILLED WATER RETURN PIPING	
D		COOLING COIL DRAIN FAN PIPING	
C		CONDENSER WATER SUPPLY PIPING	
CR		CONDENSER WATER RETURN PIPING	
LPS		LOW PRESSURE STEAM SUPPLY PIPING (20-150)	
LPC		LOW PRESSURE CONDENSATE RETURN PIPING	
MPS		MEDIUM PRESSURE STEAM SUPPLY PIPING (150-500)	
MPC		MEDIUM PRESSURE CONDENSATE RETURN PIPING	
HPS		HIGH PRESSURE STEAM SUPPLY PIPING (500-1250)	
HPC		HIGH PRESSURE CONDENSATE RETURN PIPING	
PC		PUMPED CONDENSATE PIPING	
BD		BOILER BLOWDOWN PIPING	
BF		BOILER FEED WATER PIPING	
RL		REFRIGERANT LIQUID PIPING	
RS		REFRIGERANT SUCTION PIPING	
RHG		REFRIGERANT HOT GAS PIPING	
TT		THERMOSTATIC STEAM TRAP	
FAT		FLOAT AND THERMOSTATIC STEAM TRAP	
BT		INVERTED BUCKET STEAM TRAP	
TCV		(2 OR 3-WAY) TEMPERATURE CONTROL VALVE	
		VENTURI METER	
RSV		REFRIGERANT SERVICE VALVE	
DPS		DIFFERENTIAL PRESSURE SWITCH	
MAV		MANUAL AIR VENT	
AAV		AUTOMATIC AIR VENT	
FS		FLOW SWITCH	
EJ		EXPANSION JOINT	
BJ		BALL JOINT EXPANSION COMPENSATOR	



BUILDING AUTOMATION SYSTEM CONTROL MATRIX

IN ADDITION TO THE DDC POINTS LISTED BELOW, THE CONTRACTOR SHALL CAREFULLY REVIEW ALL DRAWINGS, ALL SPECIFICATIONS, & ALL SEQUENCES OF OPERATION. THE DOCUMENTS ARE ALL INCLUSIVE & COMPLEMENTARY TO EACH OTHER. THE PROJECT SHALL INCLUDE ANY AND ALL NECESSARY DDC POINTS TO SUPPORT THE REQUIREMENTS OF ALL THE DOCUMENTS.

EQUIPMENT, SYSTEM & POINT	POINT TYPE						REMARKS
	NO. OF UNITS	DIGITAL INPUT	DIGITAL OUTPUT	ANALOG INPUT	ANALOG OUTPUT	STATUS	
GENERAL EXHAUST FANS (TYPICAL OF ALL EXHAUST FANS)							
FAN FAILURE						X	
DUCT S.P.			X				
FAN ON/OFF STATUS		X					
FAN START/STOP			X				
VFD FAILURE						X	
VFD SPEED					X		

FAN SCHEDULE

DESIG.	MFR.	MODEL	FAN TYPE	SERVICE	WHEEL DIA. (INCHES)	CFM AT ELEV. 5-400 FEET	E.S.P. IN W.C. 5-400 FEET	APPROX. RPM	REQ'D BHP	MAX HP SIZE	VOLTAGE	MOTOR PHASE (YES/NO)	ECM (YES/NO)	VFD/RELAY STARTER	VFD BYPASS (YES/NO)	FEQ VALUE	DRIVE TYPE	VIBRATION ISOLATOR TYPE	BACKDRAFT DAMPER	APPROX. THROAT DIM.	SIZE (INCHES) L W H	OPER. WEIGHT LBS.	REMARKS
EF-R-2	GREENHECK	USF-33	UTILITY	GENERAL/STERILIZER RM	33	15,000	2.00	925	7.50	10	480	3	NO	VFD	NO	85	BELT	SPRING	GRAVITY	38.25	63 62 79	1150	1, 2

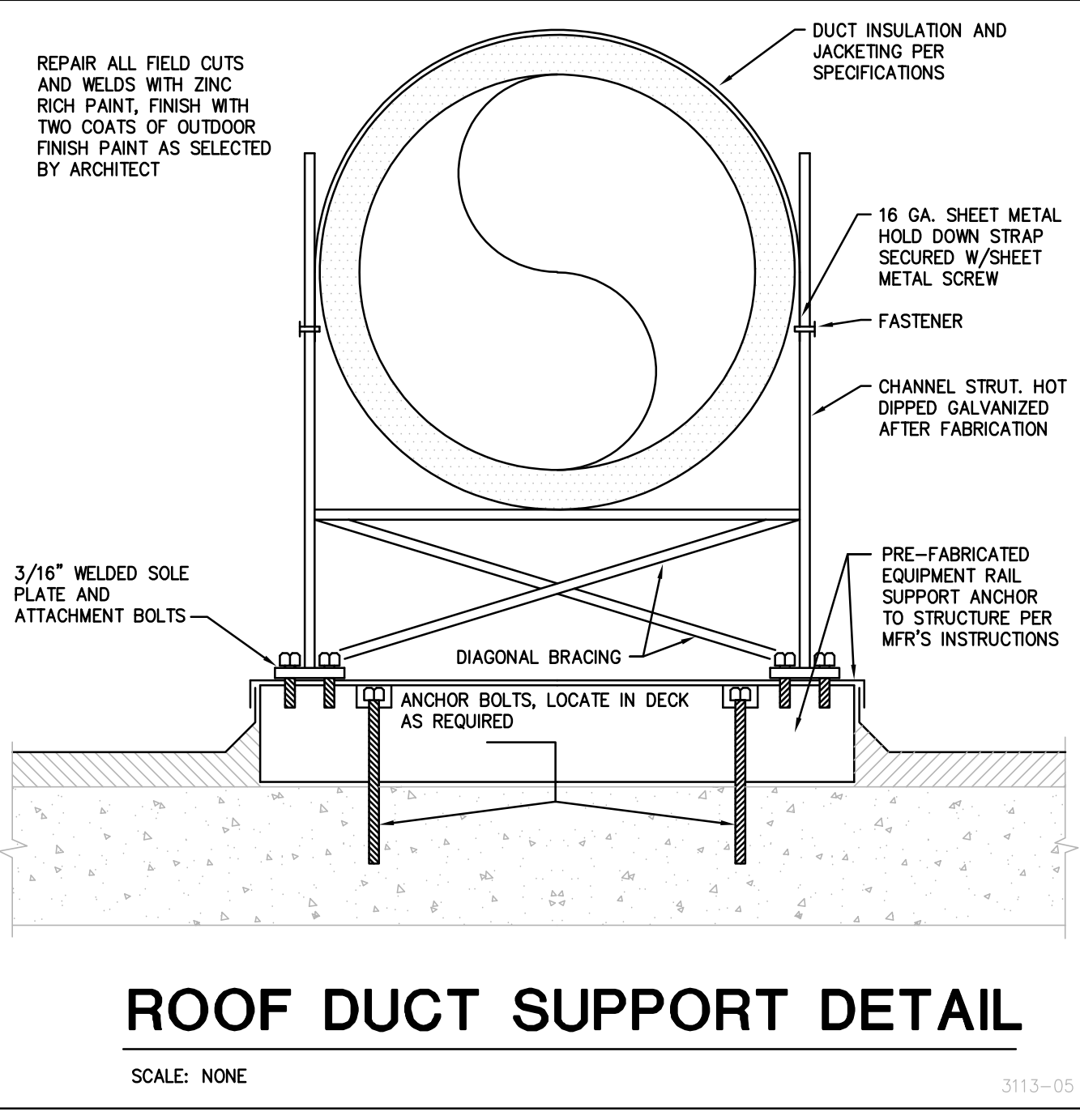
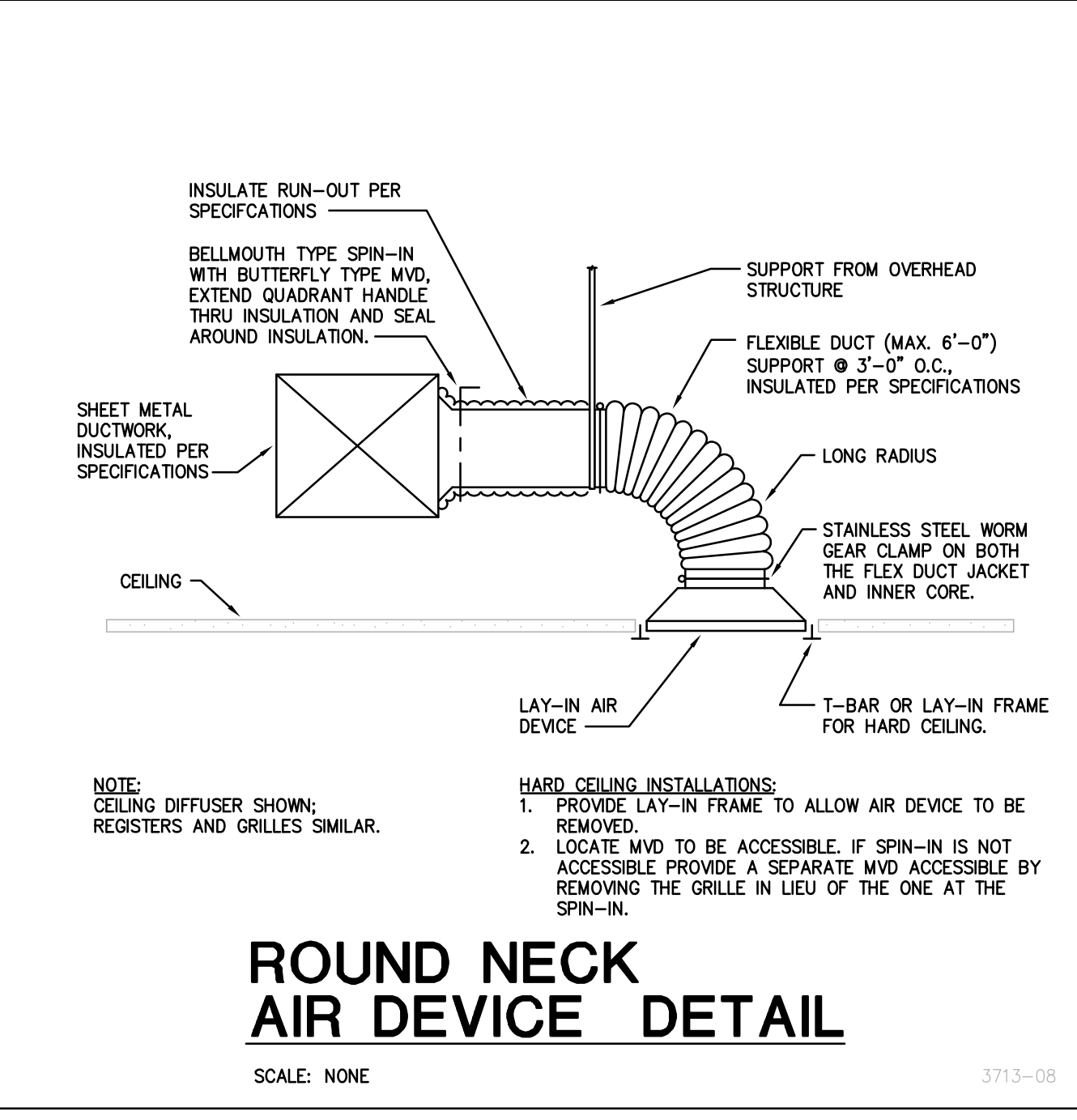
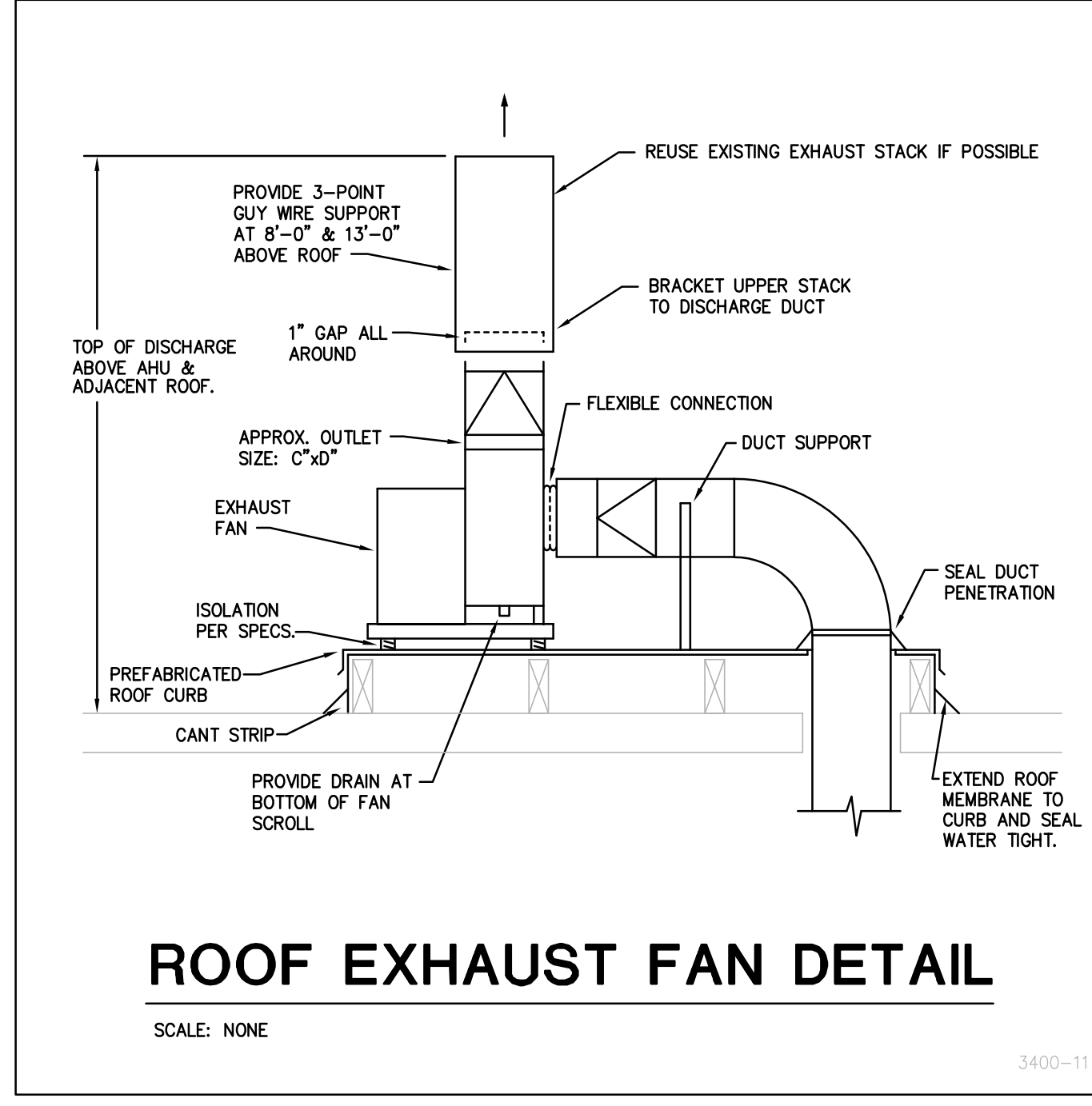
GENERAL REMARKS:
A. REFER TO ELECTRICAL DRAWINGS FOR POWER REQUIREMENTS, INCLUDING COORDINATION OF VOLTAGE, PHASE, SCRR, WIRE SIZES, AND OVERCURRENT PROTECTIVE DEVICES. REFER TO ELECTRICAL ONE-LINE DIAGRAM FOR MINIMUM FAULT CURRENT RATING THAT EACH UNIT SHALL EXCEED. UNIT NAMEPLATE SHALL INDICATE THE SHORT CIRCUIT CURRENT RATING.
B. PROVIDE SHUNT GROUNDING RINGS FOR EACH BEARING ON MOTORS POWERED THROUGH VARIABLE FREQUENCY DRIVES.
C. FEQ = FAN EFFICIENCY GRADE IN ACCORDANCE WITH AMCA 205.
D. FAN E.S.P. INCLUDES DAMPER PRESSURE DROP. INCLUDE DAMPER PRESSURE DROP IN SUBMITTAL.

SPECIFIC REMARKS:
1. PROVIDE INTEGRAL BACKDRAFT DAMPER.
2. PROVIDE SPRING VIBRATION ISOLATORS TO SUPPORT FAN.

AIR DEVICE SCHEDULE

DESIG.	FUNCTION	STYLE	MFR.	MODEL	FRAME STYLE	MODULE SIZE	MATERIAL	FINISH	REMARKS
A	CEILING RETURN, EXHAUST, TRANSFER	MODULAR EGGRATE FACE GRILLE	TITUS	50F	LAY-IN	24x24	ALUMINUM GRID, STEEL FRAME	WHITE	12"x12"x1" CORE WITH 22x22 DUCT COLLAR

REMARKS:
GENERAL - APPLIES TO ALL AIR DEVICES. MANUAL VOLUME DAMPERS SHALL BE ACCEPTABLE IN DUCTWORK AT THE BRANCH POINT OF THE RUNOUT DUCT OR IN-LINE TO THE AIR DEVICE BY THE CONTRACTOR INSTALLING DUCTWORK. A DAMPER LOCATED AT THE AIR DEVICE SHALL BE ACCEPTABLE WHEN PERMITTED BY ENGINEER ON A CASE-BY-CASE BASIS OR WHEN THE MANUFACTURER REQUIRES AN INTEGRAL MANUAL VOLUME DAMPER.



- ### HVAC NOTES:
- ALL SUPPLY AIR DIFFUSERS ARE 4-WAY AIR PATTERN UNLESS SHOWN OTHERWISE.
 - DUCT SIZE OF BRANCH DUCT TO AIR DEVICE SHALL BE THE SAME SIZE AS NECK SIZE OF AIR DEVICE UNLESS NOTED OTHERWISE.
 - PROVIDE ROOM AIR BALANCE TO ACHIEVE POSITIVE (+) OR NEGATIVE (-) AT THE DIFFERENTIAL PRESSURE INDICATED ON THE DRAWINGS.

- ### DEMOLITION GENERAL NOTES:
- EXISTING ITEMS TO REMAIN ARE DENOTED LIGHTLY UNLESS OTHERWISE NOTED. ALL ITEMS SHOWN HATCHED OR CROSS HATCHED SHALL BE REMOVED UNLESS OTHERWISE NOTED.
 - CONTRACTOR SHALL NOT SHUT-OFF OR PUT-OUT OF SERVICE ANY SYSTEMS OR SERVICE WITHOUT FIRST COORDINATING WITH THE OWNER.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND UNDERSTAND THE EXTENT OF THE REMODEL WORK REQUIRED PRIOR TO BID. NO EXTRAS WILL BE ALLOWED FOR WORK REQUIRED TO ACHIEVE THE END RESULT AS INDICATED BY THE CONTRACT DOCUMENT.
 - CONTRACTOR SHALL DETERMINE AND COORDINATE THE EXACT EXTENT OF DEMOLITION TO FACILITATE ALL WORK INDICATED BY THE CONTRACT DOCUMENT.
 - PRIOR TO COMMENCEMENT OF ANY DEMOLITION WORK, VERIFY EXISTING CONDITIONS AND NOTIFY ENGINEER OF ANY DISCREPANCIES FOR RESOLUTION.
 - ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY UNLESS OTHERWISE NOTED. REMOVED ITEMS SHALL BE TURNED OVER TO THE OWNER UNLESS OTHERWISE NOTED AND STORED IN THE AREA DESIGNATED BY THE OWNER. REMOVE FROM SITE AND LEGALLY DISPOSE OF ALL ITEMS THE OWNER CHOOSES NOT TO ACCEPT.
 - WHERE EXISTING PIPING, T.C. TUBING/WIRING ETC. ARE TO BE REMOVED FROM WALLS WHICH ARE REMAINING, THE WALLS SHALL BE REPAIRED TO MATCH ORIGINAL CONDITIONS.
 - WHERE EXISTING PIPING TO BE REMOVED PASSES THROUGH FLOORS, THEY SHALL BE CUT BACK TO WITHIN CONCRETE AND FILLED WITH GROUT TO ACHIEVE A SMOOTH AND EVEN FINISH WITH CONCRETE SURFACE.

- ### GENERAL NOTES:
- WORK INCLUDED IN THE CONTRACT IS DENOTED IN BOLD. EXISTING CONDITIONS TO REMAIN ARE DENOTED LIGHTLY.
 - A DETAILED METHOD OF PROCEDURE IS REQUIRED WHEN A CONSTRUCTION ACTIVITY AFFECTS THE SAFETY OF THE OCCUPANTS, OWNER'S EQUIPMENT OR VALUABLE CONTENTS OR ANY SYSTEM WHICH SUPPORTS THESE SYSTEMS, OR ESSENTIALLY AFFECTS THE BUILDING MANAGEMENT, OPERATIONS OR SECURITY.
 - CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK AND SHALL NOTIFY THE ENGINEER/ARCHITECT OF ANY DISCREPANCIES FOR RESOLUTION.
 - COORDINATE WORK WITH ALL TRADES.
 - CONTRACTOR IS RESPONSIBLE FOR SECURING AND WEATHERPROOFING ANY ROOF OPENING NOT COMPLETED DURING WORKING HOURS.
 - COORDINATE ALL DUCTWORK AND PIPING WITH EQUIPMENT, STRUCTURE, ETC.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR DEACTIVATION OF ROOF-MOUNTED EQUIPMENT AND ASSOCIATED INDOOR EQUIPMENT. ONLY ONE UNIT SHALL BE TAKEN OUT OF SERVICE AT ANY TIME, WITH REMAINDER OF UNITS LEFT OPERATIONAL.
 - CONTRACTOR SHALL NOT SHUT DOWN / TAKE OUT OF SERVICE ANY SYSTEMS WITHOUT FIRST COORDINATING WITH OWNER AND PREPARING M.O.P.
 - CONTRACTOR TO REPAIR AND PATCH ANY LIGHTWEIGHT METAL STUDS MODIFIED BY NEW DUCTWORK WHERE STUDS GO TO DECK. FRAME STUDS AROUND DUCTWORK AS NECESSARY TO MAINTAIN INTEGRITY OF WALL ASSEMBLY.
 - NEW DUCTWORK ROOF PENETRATION TO BE CONSTRUCTED IDENTICALLY AS EXISTING. FLASH NEW CURB TO ROOF, AND FLASH NEW DUCT TO CURB AS NECESSARY TO PREVENT ANY WATER PENETRATION OF ROOF MEMBRANE.
 - CONTRACTOR TO REPAIR AND PATCH AND REPAIR ANY DRYWALL THAT MAY BE MODIFIED OR DAMAGED DURING EXTENT OF PROJECT.

DRAWING TITLE

MECHANICAL LEGENDS AND GENERAL NOTES

TITLE

CU ANSCHUTZ - 18-147790 DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF

CATOR IRUMA & ASSOCIATES CO.

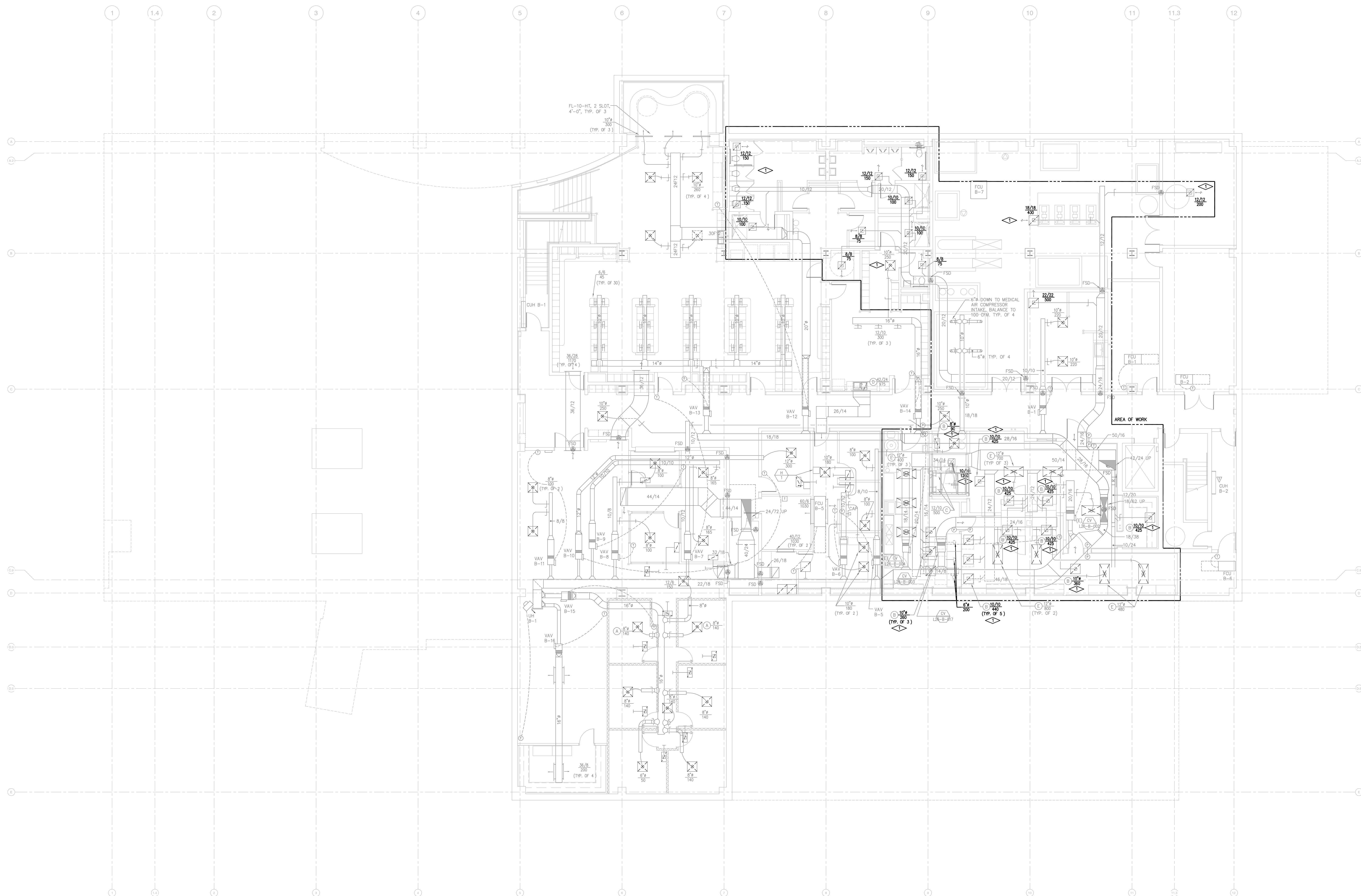
896 Tabor Street, Lakewood, Colorado 80401 Phone: (303) 232-6200 Fax: (303) 232-3701
420 Lincolnway, Cheyenne, Wyoming 82001 Phone: (303) 274-9890 Fax: (303) 233-3701

ISSUES/REVISIONS:

95% CDs	08/05/19
100% CDs	10/12/20

DATE: 10/12/2020
DRAWN BY: MDC
CHECKED BY: BLW
JOB NO: 18-147790
FILE NAME: p-misd
SHEET NO.

M1.00



BASEMENT LEVEL HVAC PLAN
 SCALE: 1/8"=1'-0"

NEW KEY NOTES:

 REBALANCE ALL EXISTING EXHAUST AIR DEVICES CONNECTED TO EXHAUST SYSTEM EF-R-2 AFTER INSTALLATION OF NEW FAN. AIR FLOWS IN BOLD INDICATE SCOPE OF WORK. TYPICAL.

DRAWING TITLE

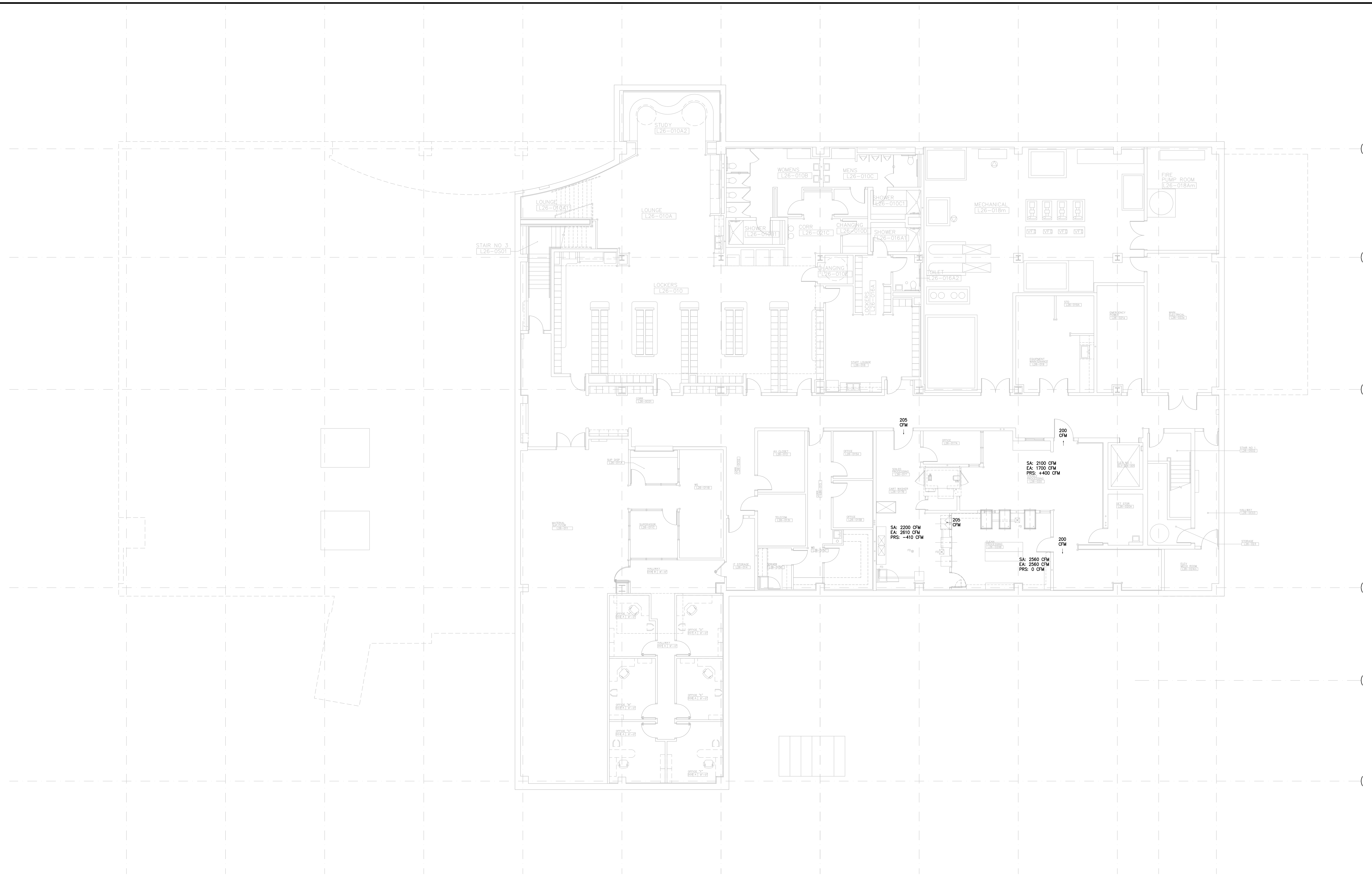
BASEMENT LEVEL HVAC PLAN

TITLE
CU ANSCHUTZ - 18-147790
DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF



CATOR IRUMA & ASSOCIATES CO.
 895 TABOR STREET, LAKEWOOD, COLORADO 80001 PHONE: (303) 232-6200 FAX: (303) 233-3701
 420 LINCOLNWAY, CHEYENNE, WYOMING 82001 PHONE: (303) 274-8830 FAX: (303) 233-3701

M2.00




STERILIZATION DEPARTMENT PRESSURE RELATIONSHIPS
 SCALE: 1/8"=1'-0"

DRAWING TITLE
STERILIZATION DEPARTMENT PRESSURE RELATIONSHIPS

TITLE
**CU ANSCHUTZ - 18-147790
 DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF**

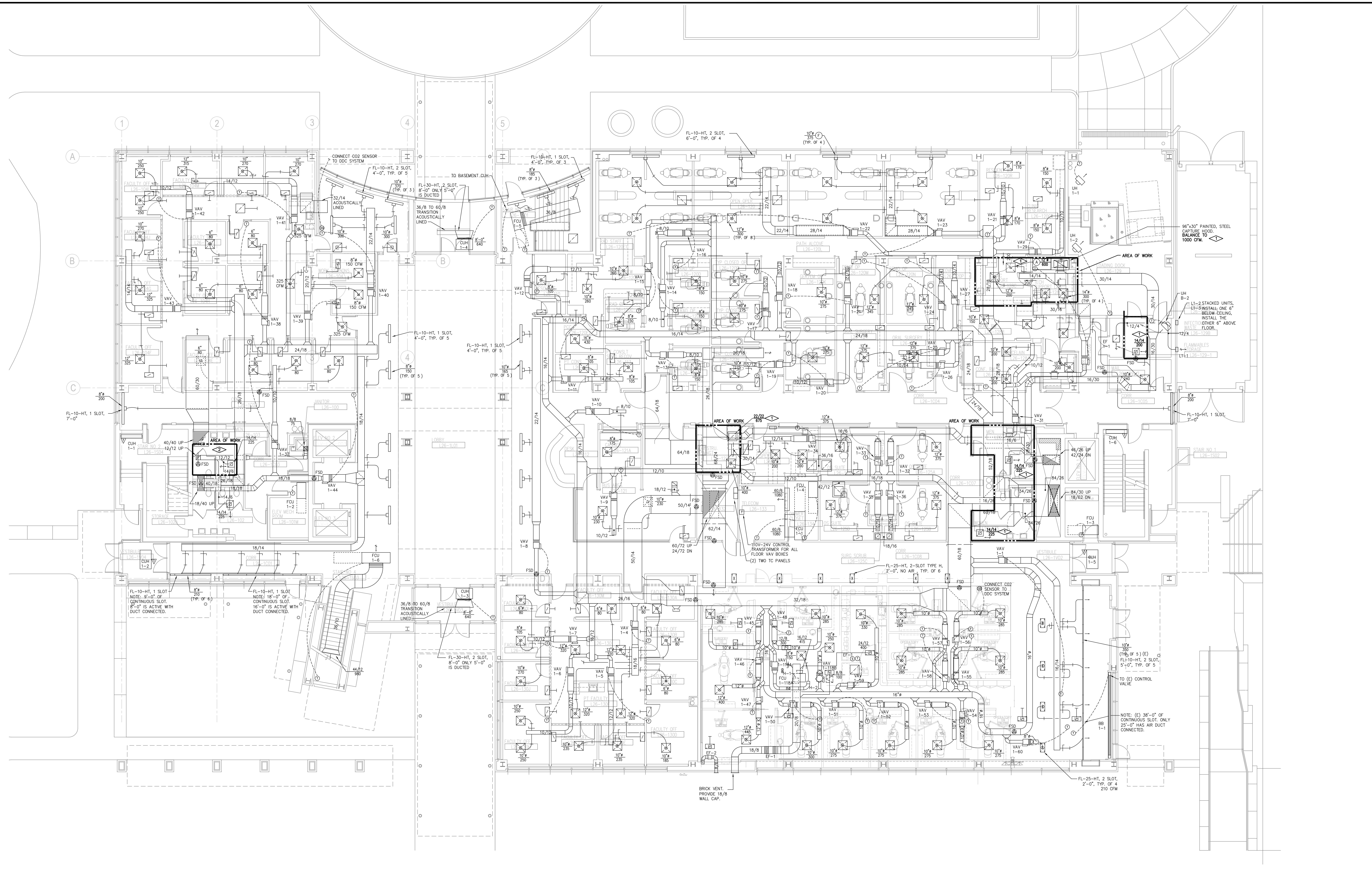


ISSUES/REVISIONS:

95% CDs	09/05/19
100% CDs	10/12/20

DATE: 10/12/2020
 DRAWN BY: MDG
 CHECKED BY: BLW
 JOB NO: 18-1477907
 FILE NAME: p-hyb

SHEET NO.
M2.00a



FIRST FLOOR HVAC PLAN
SCALE: 1/8"=1'-0"

- NEW KEY NOTES:**
- ◊ REBALANCE ALL EXISTING EXHAUST AIR DEVICES CONNECTED TO EXHAUST SYSTEM EF-R-2 AFTER INSTALLATION OF NEW FAN. AIR FLOWS IN BOLD INDICATE SCOPE OF WORK. TYPICAL.
 - ◊ PERFORM PRE-READ MEASUREMENTS OF EXISTING EXHAUST AIRFLOW WHERE DUCT TERMINATES AT SHIRT. SUBMIT AIRFLOWS TO ENGINEER. REBALANCE TO PRE-READ VALUES UPON COMPLETION.

FIRST FLOOR HVAC PLAN

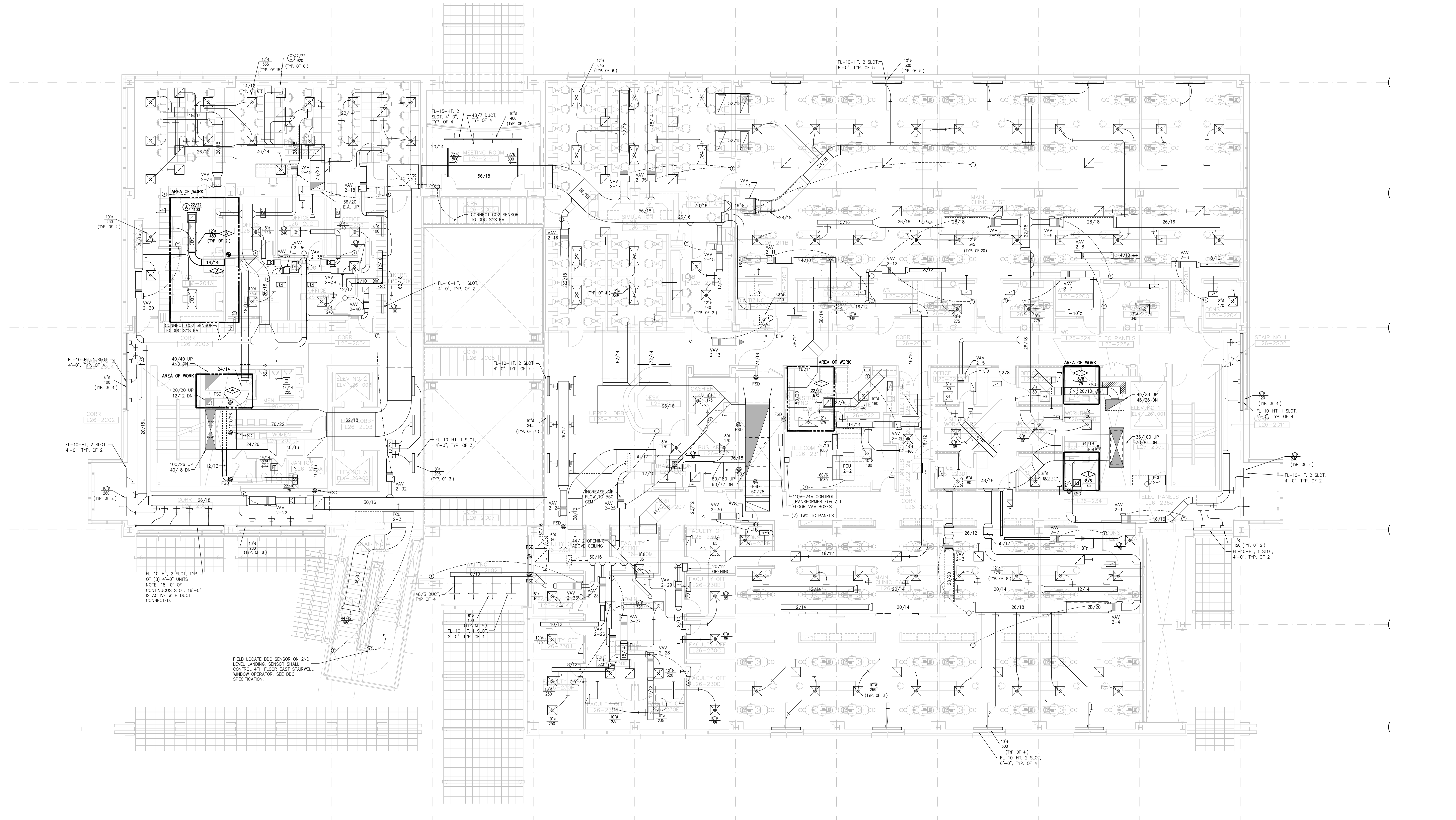
CU ANSCHUTZ - 18-147790
DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF

CATOR IRUMA & ASSOCIATES CO.
898 TABOR STREET, LAKEWOOD, COLORADO 80403 PHONE: (303) 232-6200 FAX: (303) 232-3701
420 LINCOLNWAY, CHEYENNE, WYOMING 82001 PHONE: (303) 274-8850 FAX: (303) 232-3701

ISSUES/REVISIONS:	
95% CDs	09/05/19
100% CDs	10/12/20

DATE: 10/12/2020
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CHECKED BY: BLW
JOB NO: 18-1477907
FILE NAME: p-hv1
SHEET NO.

M2.01



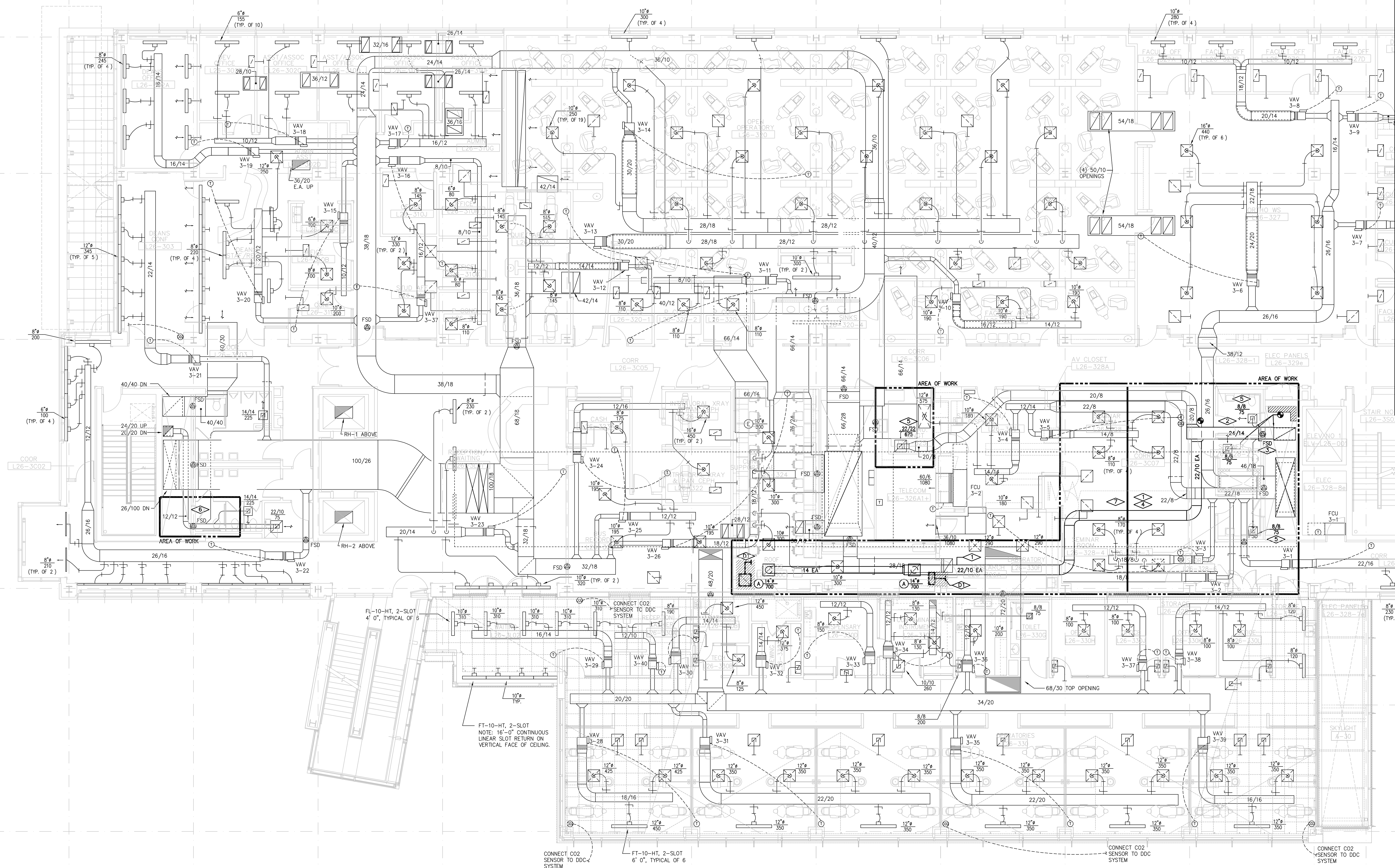
DRAWING TITLE
SECOND FLOOR HVAC PLAN
 TITLE
CU ANSCHUTZ - 18-147790
DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF
 CATOR IRUMA & ASSOCIATES CO.
 895 TABOR STREET, LAKEWOOD COLORADO 80403 PHONE: (303) 232-6200 FAX: (303) 233-3701
 420 LINCOLNWAY, CHEYENNE WYOMING 82001 PHONE: (303) 274-8850 FAX: (303) 233-3701

SECOND FLOOR HVAC PLAN
 SCALE: 1/8"=1'-0"

- NEW KEY NOTES:**
- 1. REBALANCE ALL EXISTING EXHAUST AIR DEVICES CONNECTED TO EXHAUST SYSTEM EF-R-2 AFTER INSTALLATION OF NEW FAN. AIR FLOWS IN BOLD INDICATE SCOPE OF WORK. TYPICAL.
 - 2. EXTEND NEW 14x14 EA DUCT FROM EXISTING CAPPED DUCT ABOVE CEILING TO NEW EXHAUST GRILLE. TAKE PRE-READS ON EACH FLOOR SERVED BY THIS SYSTEM AND REBALANCE EXHAUST SYSTEM TO PRE-READ VALUES UPON COMPLETION.
 - 3. REBALANCE EXISTING SUPPLY AIR DEVICES TO THE AIRFLOWS SHOWN.
 - 4. PERFORM PRE-READ MEASUREMENTS OF EXISTING EXHAUST AIRFLOW WHERE DUCT TERMINATES AT SHAFT. SUBMIT AIRFLOWS TO ENGINEER. REBALANCE TO PRE-READ VALUES UPON COMPLETION.

ISSUES/REVISIONS:	
95% CDs	09/05/19
100% CDs	10/12/20
DATE:	10/12/2020
DRAWN BY:	MDG
CHECKED BY:	BLW
JOB NO.:	18-1477907
FILE NAME:	p-hv2
SHEET NO.	

M2.02



THIRD FLOOR HVAC PLAN
SCALE: 1/8"=1'-0"

NEW KEY NOTES:

- ◇ EXTEND EXHAUST DUCT OUT TO PROVIDE EXHAUST TO CLINIC SUPPORT LAB.
- ◇ DEMOLISH EXISTING EXHAUST MAIN OFF OF RISER AND UPSIZE AS SHOWN. THE EXISTING DUCT TAPS INTO NEW MAIN.
- ◇ PROVIDE NEW FSD.
- ◇ ROUTE DUCT ABOVE CONDUIT IN CORRIDOR, TIGHT TO STRUCTURE.
- ◇ REBALANCE ALL EXISTING EXHAUST AIR DEVICES CONNECTED TO EXHAUST SYSTEM EF-R-2 AFTER INSTALLATION OF NEW FAN. AIR FLOWS IN BOLD INDICATE SCOPE OF WORK. TYPICAL.
- ◇ PERFORM PRE-READ MEASUREMENTS OF EXISTING EXHAUST AIRFLOW WHERE DUCT TERMINATES AT SHAFTS. SUBMIT AIRFLOWS TO ENGINEER. REBALANCE TO PRE-READ VALUES UPON COMPLETION.
- ◇ DEEP BEAM IN APPROX. THIS LOCATION. 12" CLEAR FROM BOTTOM OF STRUCTURE TO TOP OF CEILING. ROUTE DUCTWORK UNDER BEAM.
- ◇ DEMOLISH EXISTING RETURN BOOTS.



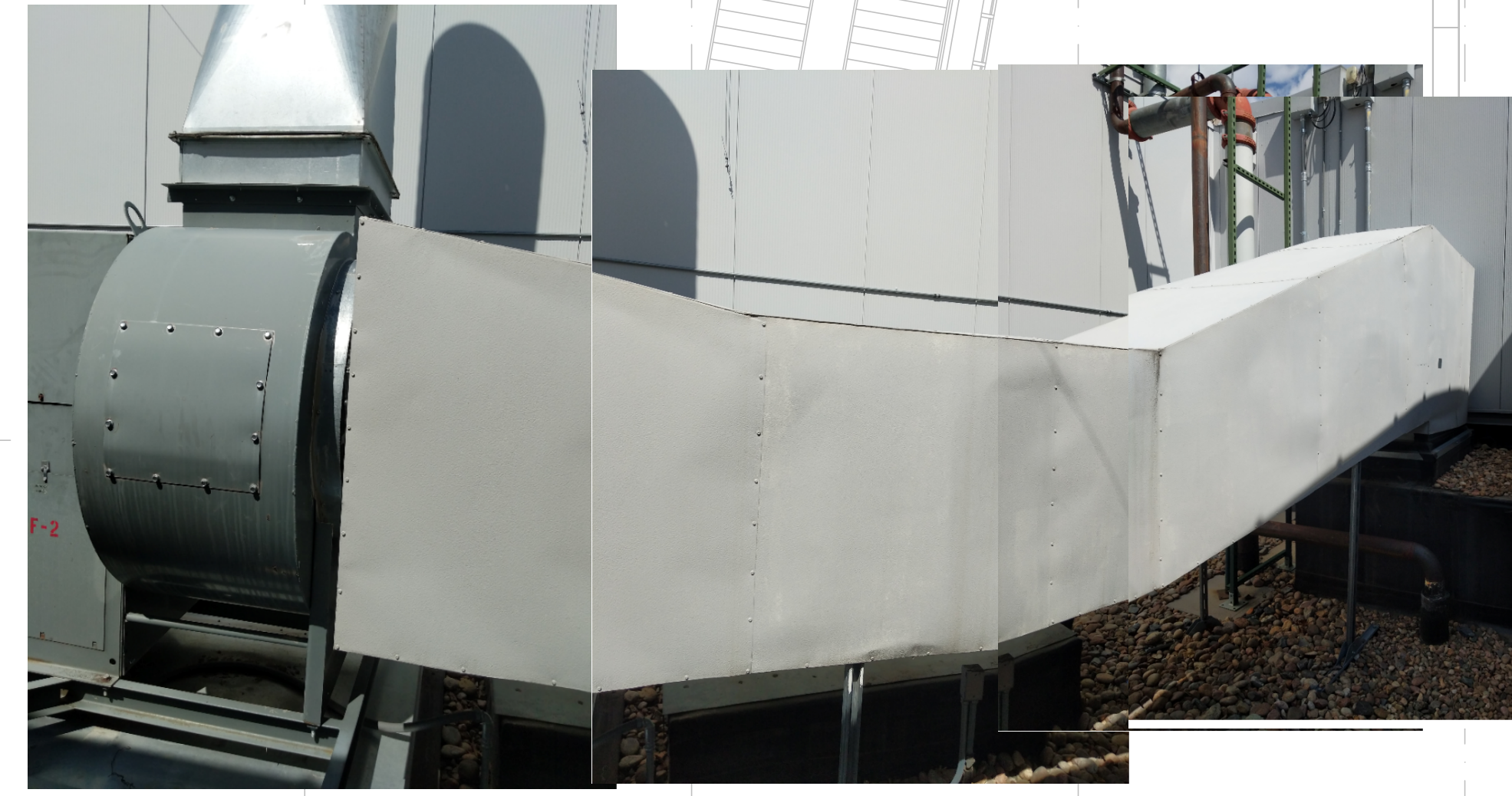
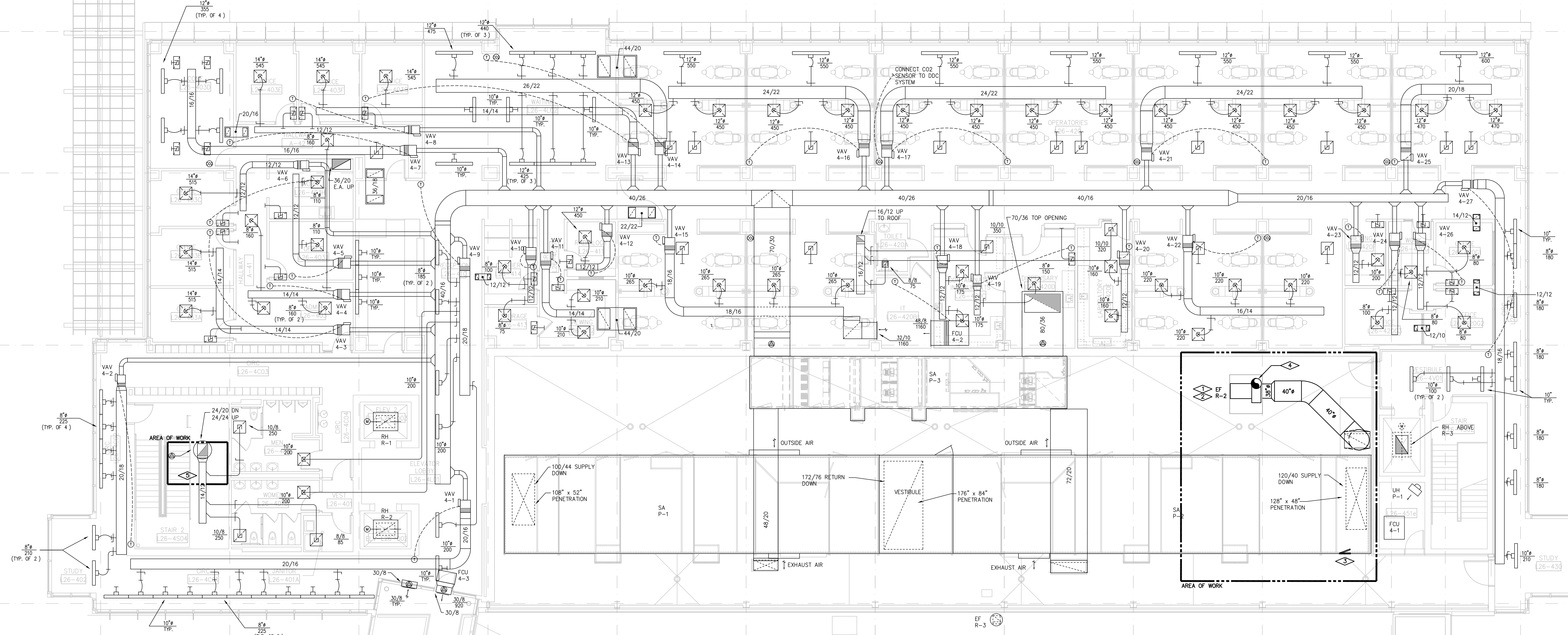
ISSUES/REVISIONS:

95% CDs	09/05/19
100% CDs	10/12/20

DATE: 10/12/2020
DRAWN BY: MDG
CHECKED BY: BLW
JOB NO: 18-1477907
FILE NAME: p-hv3

SHEET NO.

M2.03



FOURTH FLOOR HVAC PLAN
SCALE: 1/8"=1'-0"

NEW KEY NOTES:

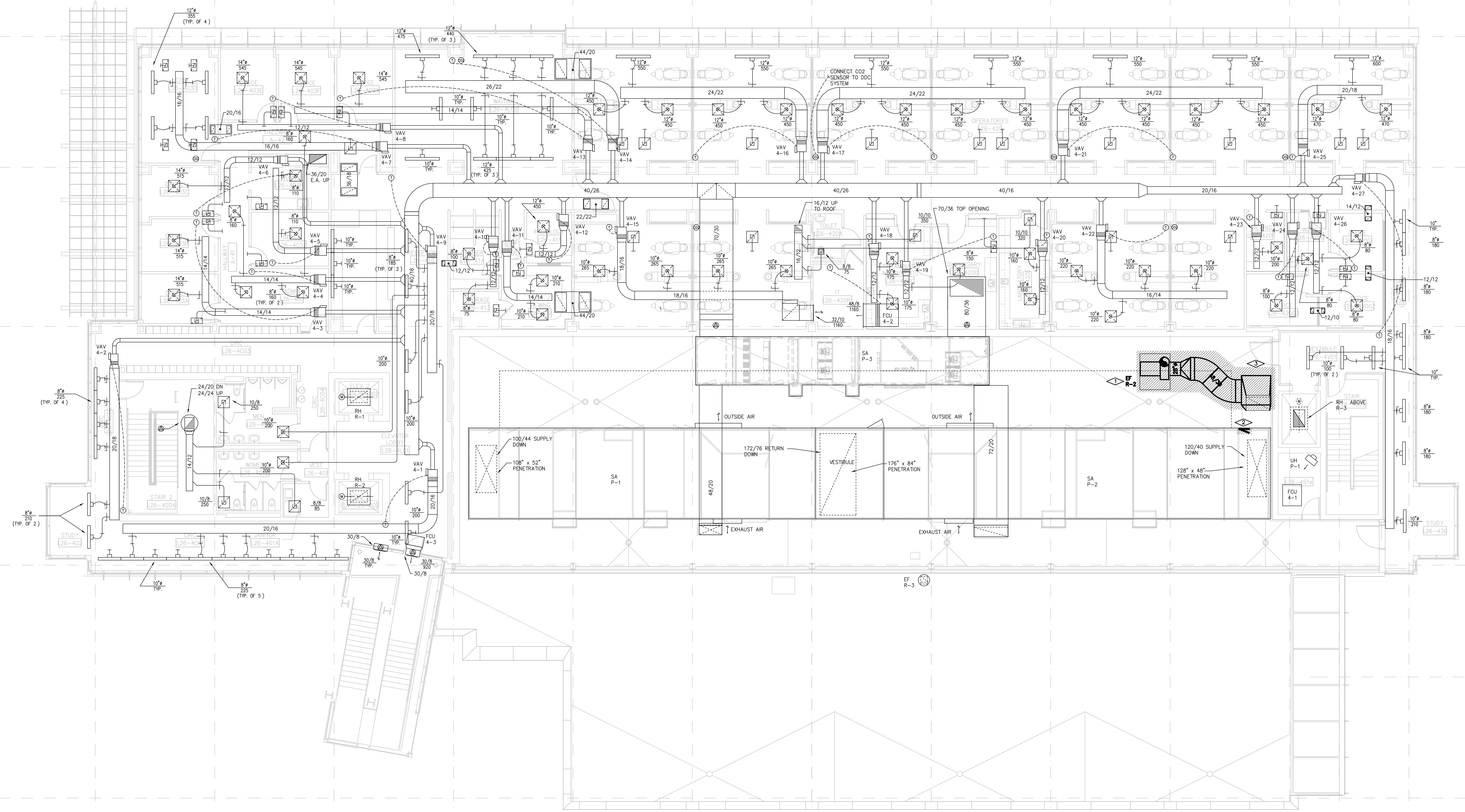
- ◊ INSTALL NEW EF-R-2 ON NEW PREFABRICATED ROOF CURB. TRANSITION FROM FAN INLET TO 40" ROUND DUCT ON ROOF, DOWN INTO DUCT SHAFT USING SMOOTH RADIUS ELBOWS. TRANSITION INTO RECTANGULAR EXHAUST RISER VERTICALLY.
- ◊ PROVIDE NEW ELECTRICAL SERVICE AND VFD FOR EF-R-2.
- ◊ RELOCATE EXISTING RTU ACCESS DOOR TO THIS LOCATION.
- ◊ REUSE EXISTING EXHAUST DISCHARGE STACK.
- ◊ PERFORM PRE-READ MEASUREMENTS OF EXISTING EXHAUST AIRFLOW WHERE DUCT TERMINATES AT SHAFT. SUBMIT AIRFLOWS TO ENGINEER. REBALANCE TO PRE-READ VALUES UPON COMPLETION.

100% CDs	10/12/20
DATE:	10/12/2020
DRAWN BY:	MDG
CHECKED BY:	BLW
JOB NO.:	18-1477907
FILE NAME:	p-hv4
SHEET NO.	

M2.04

1 2 3 4 5 6 7 8 9 10 11 11.3 12

A
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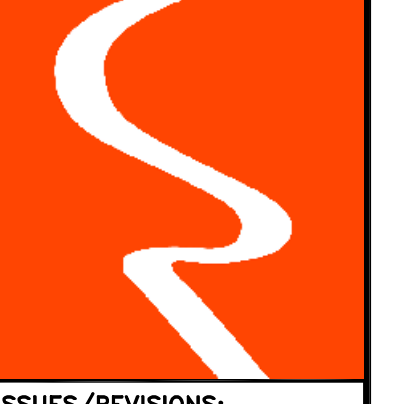
FOURTH FLOOR HVAC DEMO PLAN
SCALE: 1/8"=1'-0"

DEMO KEY NOTES:

- 1 DEMOLISH EXISTING EXHAUST FAN EF-R-2 AND DUCTWORK BACK TO RISER. DEMOLISH EXISTING ELBOWS, FITTINGS, AND TRANSITIONS AT TOP OF EXHAUST RISER THAT ARE CURRENTLY ACTING AS A SYSTEM CHOKER POINT.
- 2 REMOVE EXISTING AHU ACCESS DOOR DOWNSTREAM OF FILTER BANK AND RELOCATE TO OPPOSITE SIDE OF UNIT. PATCH AND SEAL EXISTING HOLE.
- 3 DEMOLISH EXISTING DUCT OFFSET IN VERTICAL RISER.

FOURTH FLOOR HVAC DEMO PLAN

CU ANSCHUTZ - 18-147790
DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF



ISSUES/REVISIONS:	DATE
95% CDs	09/05/19
100% CDs	10/12/20

DATE:	10/12/2020
DRAWN BY:	MDG
CHECKED BY:	BLW
JOB NO:	18-1477907
FILE NAME:	p-dhv4
SHEET NO.	

MD2.04

P:\CU\ANSCHUTZ\2018-147790 - 18-147790 - DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF - MD2.04 - 10/09/2020 @ 7:19am REV: 04/03/2020 08:38 JIncealSmith

POWER LEGEND (Not all symbols listed below are used on these drawings) Table with columns: SYMBOL, DESCRIPTION, SYMBOL, DESCRIPTION. Lists various electrical symbols like receptacles, switches, and conduits.

REFERENCE SYMBOLS LEGEND (Not all symbols listed below are used on these drawings) Table with columns: SYMBOL, DESCRIPTION, SYMBOL, DESCRIPTION. Lists symbols for key notes, circuit numbers, and equipment references.

CONTROLS LEGEND (Not all symbols listed below are used on these drawings) Table with columns: SYMBOL, DESCRIPTION, SYMBOL, DESCRIPTION. Lists symbols for switches, relays, and control devices.

ABBREVIATIONS LEGEND (Not all symbols listed below are used on these drawings) Table with columns: SYMBOL, DESCRIPTION, SYMBOL, DESCRIPTION. Lists abbreviations for electrical components like breakers, panels, and transformers.

GENERAL NOTES:

- 1. FOR REMODELING WORK INCLUDED IS DENOTED IN BOLD. EXISTING CONDITIONS TO REMAIN ARE DENOTED LIGHTLY.
2. PROJECT STRUCTURE AND OWNER EQUIPMENT FROM DAMAGE. IMMEDIATELY REPLACE OR REPAIR TO ORIGINAL CONDITION. DAMAGE CAUSED BY THE CONTRACTOR WHETHER EQUIPMENT APPEARS TO BE CURRENTLY IN USE OR NOT, UNLESS WRITTEN AUTHORIZATION FROM THE OWNER INDICATED OTHERWISE. PREPARE LISTING OF ALL EXISTING DAMAGED ITEMS AND SUBMIT TO OWNER PRIOR TO BEGINNING WORK.
3. INSTALL CONDUIT CONCEALED IN FINISHED AREAS UNLESS OTHERWISE NOTED. PAINT EXPOSED CONDUIT TO MATCH EXISTING FINISHES WITHIN THE SURROUNDING AREA.
4. FIRE SEAL ALL FIRE-RATED WALL AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.
5. COORDINATE EXACT REQUIREMENTS AND LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN AND ORDERING MATERIALS OR EQUIPMENT.
6. A DETAILED WRITTEN METHOD OF PROCEDURE IS REQUIRED WHEN A CONSTRUCTION ACTIVITY OR AN OUTAGE AFFECTS THE SAFETY OF OCCUPANTS, TELEPHONE/DATA/FIRE ALARM EQUIPMENT OR COMPONENTS OF ANY SYSTEM WHICH SUPPORTS THIS EQUIPMENT OR ESSENTIALLY AFFECTS THE BUILDING MANAGEMENT, OPERATIONS OR SECURITY. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. EXISTING INFORMATION SHOWN ON THE DRAWINGS HAS BEEN TAKEN FROM OWNER FURNISHED DRAWINGS AND/OR LIMITED FIELD OBSERVATIONS. CATOR, RUMA & ASSOCIATES IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY INFORMATION OR THE ADEQUACY, SAFETY AND CONFORMANCE TO CURRENT PREVALING CODES OF ANY WORK SHOWN AS EXISTING ON THESE DRAWINGS.
8. PROVIDE SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL FEEDER, HOMERUN AND BRANCH CIRCUITS.

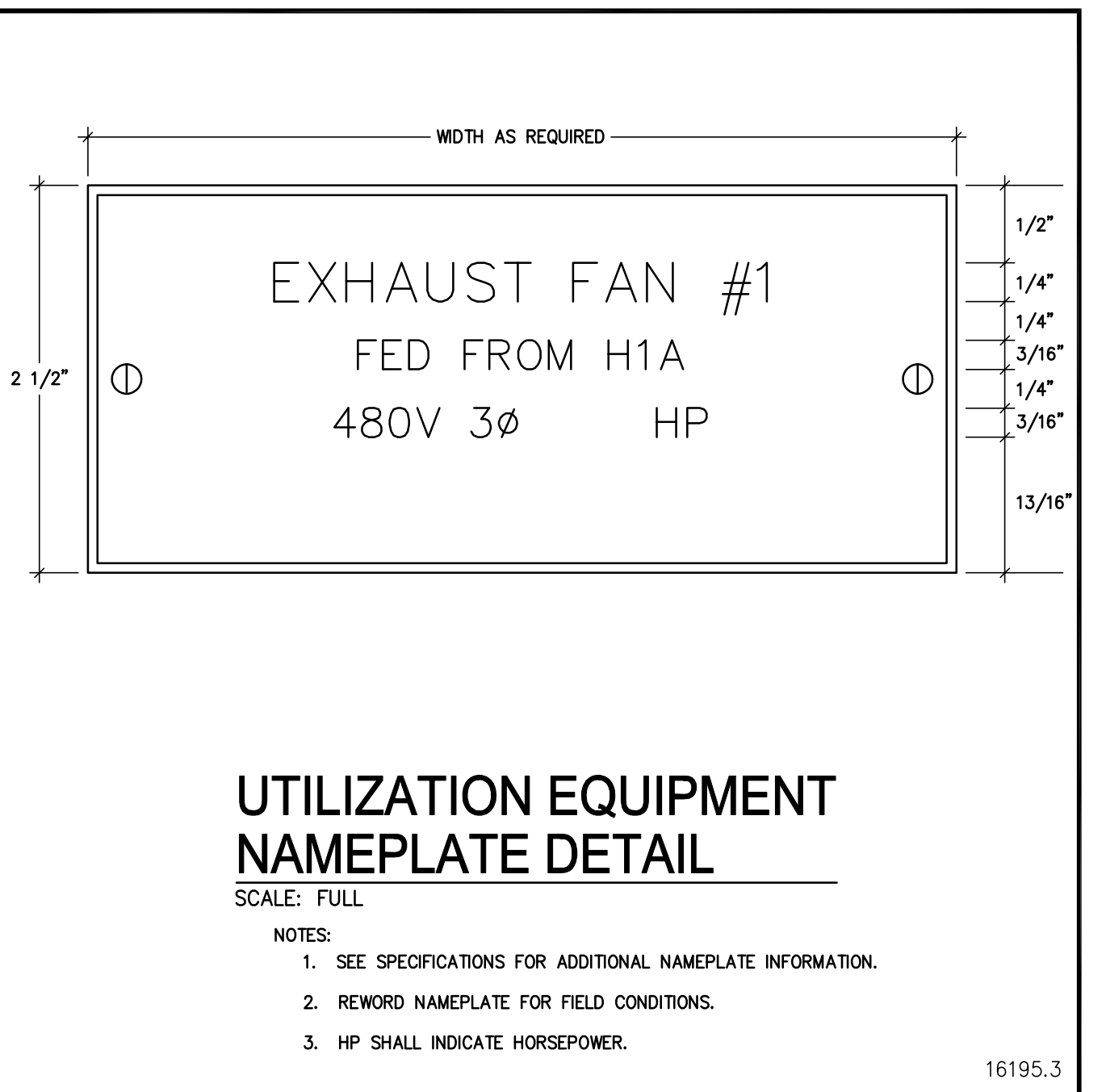
POWER PLAN NOTES:

- 1. MAKE ALL FINAL ELECTRICAL CONNECTIONS TO EQUIPMENT REQUIRING ELECTRICAL CONNECTION. THIS SHALL INCLUDE BUT NOT BE LIMITED TO ALL MECHANICAL AND OTHER EQUIPMENT INCLUDED IN THIS PROJECT.
2. PROVIDE FUSES PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.
3. DISCONNECT SWITCH LOCATIONS ARE SHOWN DIAGRAMMATICALLY AND SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS TO SUIT EQUIPMENT AND SPACE. DISCONNECT SWITCHES SHALL BE WITHIN SIGHT OF THE EQUIPMENT THEY SERVE AND MOUNTED AT 6'-3" MAXIMUM TO TOP OF CABINET. MAINTAIN NEC WORK SPACE REQUIREMENTS.
4. PROVIDE NEW NAMEPLATE FOR EXHAUST FAN DISCONNECT SWITCH.

DEMOLITION NOTES:

- 1. ALL ITEMS IDENTIFIED TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY INCLUDING ALL WIRING AND EXPOSED CONDUIT AND CONDUIT SUPPORTS BACK TO POINT OF ORIGIN OR NEXT DEVICE TO REMAIN. REMOVED ITEMS SHALL BE TURNED OVER TO THE OWNER, UNLESS NOTED OTHERWISE, AND STORED IN THE AREA DESIGNATED BY THE OWNER. REMOVE FROM SITE AND LEGALLY DISPOSE OF ALL ITEMS THE OWNER CHOOSES NOT TO ACCEPT.
2. WHERE EXISTING CONDUITS ARE SHOWN TO BE REMOVED AND HAVE BEEN ROUTED IN CONCRETE FLOOR SLABS, CONCRETE WALLS OR CONCRETE CEILINGS, THEY SHALL BE CUT BACK FLUSH WITH CONCRETE. FILL WITH GROUT TO ACHIEVE A SMOOTH AND EVEN FINISH FLUSH WITH CONCRETE SURFACE AFTER CONDUCTORS HAVE BEEN REMOVED.
3. REUSE EXISTING CONDUIT WHERE CURRENT NEC AND LOCAL CODE REQUIREMENTS ARE MAINTAINED. PROVIDE NEW CONDUIT AND WIRE FOR NEW INSTALLATIONS AND EXTENSION OF EXISTING INSTALLATIONS. REUSE EXISTING CONDUIT IN PLACE. DO NOT REINSTALL EXISTING CONDUIT. PROVIDE LABELING PER SPECIFICATIONS FOR REUSED CONDUIT.
4. RELOCATED EQUIPMENT AND DEVICES ARE TO BE CLEANED OF ALL FOREIGN MATERIAL, REPLACE EQUIPMENT OR DEVICES WHICH ARE DEFECTIVE OR DAMAGED DURING RELOCATION.

EXISTING PANEL HR. Panel Notes: 1. REPLACE EXISTING CIRCUIT BREAKER WITH NEW BREAKER COMPATIBLE WITH EXISTING PANELBOARD. CONNECT NEW BRANCH CIRCUIT. Panel Notes: 250 A MAIN CIRCUIT BREAKER VOLTAGE 120 / 208 V. 400 A BUS PHASE 3 PH. WIRE 4 W. MFR: MTG: SURFACE 35,000 AMPERE SHORT CIRCUIT RATING (FULLY RATED). PANELBOARD IS BEING METERED TO DETERMINE EXISTING DEMAND LOAD. Table with columns: NOTE, DESCRIPTION, LTG, RECEPT, MOTORS, OTHER, GENERAL, TOTAL. Includes a summary table for PANEL LOADING SUMMARY with columns for PH A, PH B, PH C, LOAD TYPE, CONNECTED, and NEC CALCULATED.



ISSUES/REVISIONS: 100% Cds 10/12/20

UTILIZATION EQUIPMENT NAMEPLATE DETAIL SCALE: FULL

- NOTES: 1. SEE SPECIFICATIONS FOR ADDITIONAL NAMEPLATE INFORMATION. 2. REWORD NAMEPLATE FOR FIELD CONDITIONS. 3. HP SHALL INDICATE HORSEPOWER.

DATE: 10/12/2020 DRAWN BY: GL CHECKED BY: CMP JOB NO: 18-1477907 FILE NAME: P-ELS SHEET NO.

FILENAME: P:\CU\Weschurt\2018-058 SDM Room 128C Ventilation\Coel\cadd\Exhaust Fan Upgrade\Elec\p-1line.dwg LAYOUT: E-002 REVISED: 4/2/2020 02:50 PLOTTED: 10/9/2020 07:33:26 USER: Jordan Kincaid-Smith

KEY NOTES:
1. PROVIDE 3-PHASE DIGITAL RECORDING METER AT LOCATION INDICATED FOR A PERIOD OF 30 DAYS PRIOR TO START OF CONSTRUCTION TO VERIFY EXISTING LOAD, METER SHALL RECORD VOLTAGE, AMPERAGE, KVA AND POWER FACTOR FOR EACH PHASE AND SUM OF THE PHASES. THE METER SHALL CONTINUALLY AVERAGE THE POWER DEMAND OVER MAXIMUM 15 MINUTE INTERVALS AS REQUIRED BY NEC 220.87. COMPLETE A METERING SUMMARY REPORT AND DELIVER RESULTS TO ENGINEER AFTER 7 DAYS AND AFTER 30 DAYS. VERIFY EXISTING LOADS AT AND DOWNSTREAM OF THE METERING LOCATION AND PROVIDE LIST TO ENGINEER OF WHAT LOADS ARE NOT ON DURING THE 30 DAY METERING AND THE REASON WHY. ORGANIZE LIST BY EQUIPMENT NAME. IF ANY LOADS HAVE BEEN REMOVED OR PERMANENTLY ABANDONED, TURN CIRCUIT BREAKER OFF AND LABEL AS SPARE.

TRANSFORMER SCHEDULE

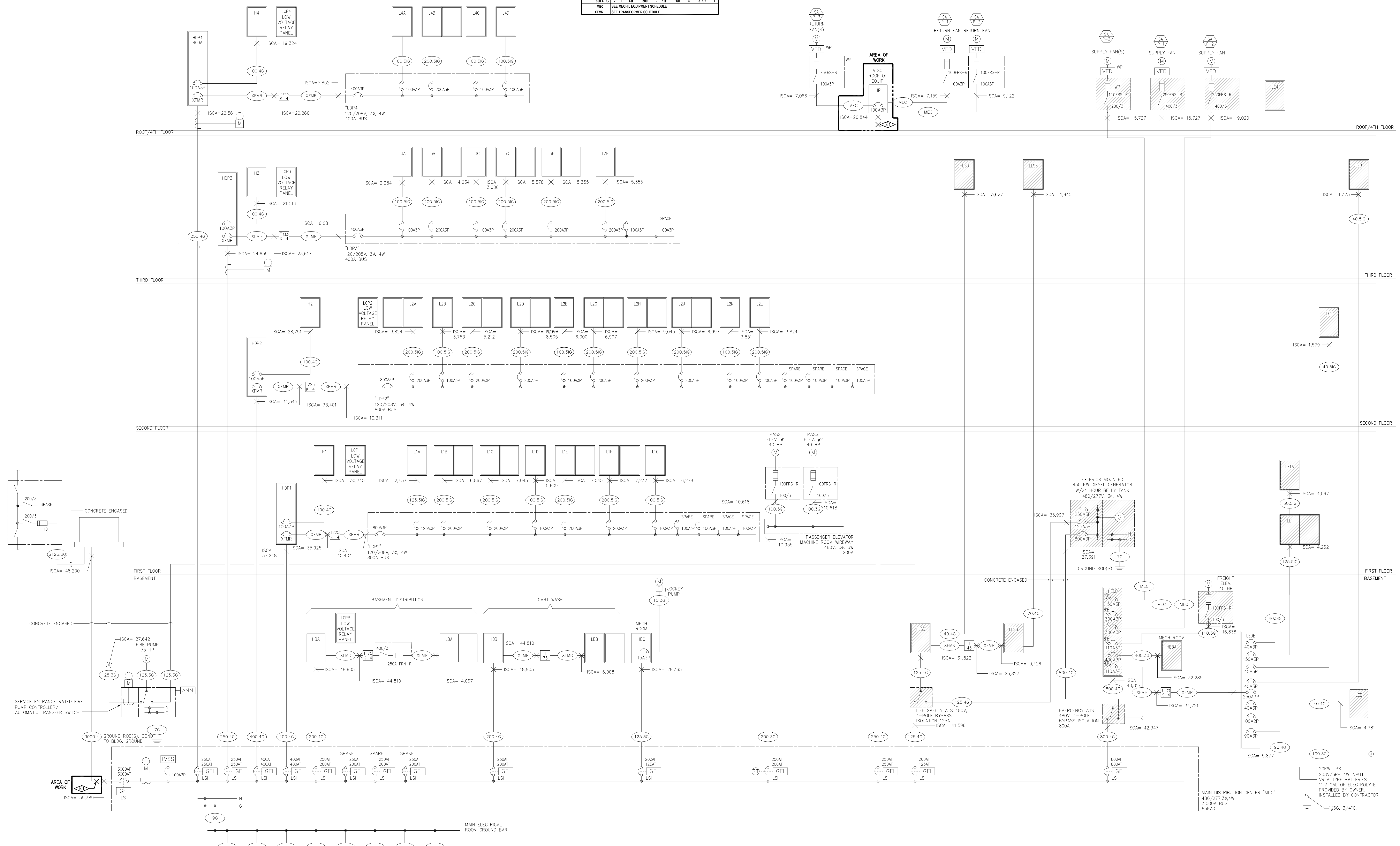
KEY (N)	MBVA	LVFLA	HP PROF (1)	HP PROF (2)	HIGH VOLTAGE FEEDER (1)	HIGH VOLTAGE FEEDER (2)	LV PROF (1)	LV PROF (2)	LOW VOLTAGE FEEDER (1)	LOW VOLTAGE FEEDER (2)	CONDUCTORS (1)	CONDUCTORS (2)	WEIGHT (1)	WEIGHT (2)	REMARKS	
T8	541	1343	15 A3P	150 A3P	FRMB-10	3# 4 - 1# 8 G 5/16	150 A3P	200 A3P	4# 10 - 1# 8 G 2	1# 8 3# 30.00	30.00	20.00	990	1400		
T9	862	2062	15 A3P	200 A3P	FRMB-10	3# 1 - 1# 8 G 5/16	200 A3P	200 A3P	4# 20 - 1# 4 G 2/16	1# 4 3# 20.00	20.00	20.00	780	940		
T14+T13	1043	2523	15 A3P	200 A3P	FRMB-10	3# 20 - 1# 8 G 2	400 A3P	200 A3P	4# 10 - 1# 3 G 4	1# 10 3# 40.00	30.00	24.00	1000	1400	7	
T14+T8	541	1343	15 A3P	150 A3P	FRMB-10	3# 4 - 1# 8 G 5/16	150 A3P	200 A3P	FRMB-10	3# 10 - 1# 8 G 2	1# 8 3# 30.00	24.00	18.00	475	860	7

NOTES:
1) PRIMARY G.C. PROTECTION PER NEC 480-3 (N) (1)
2) SECONDARY G.C. PROTECTION PER NEC 480-3 (N) (2)
3) ALL CONDUCTORS ARE COPPER. SEE PLANS FOR INCREASED CONDUCTOR SIZES DUE TO VOLTAGE DROP ETC.
4) BONDING AND PROTECTIVE CONDUCTOR PER NEC 250-198
5) DIMENSIONAL WEIGHTS & BTM OUTPUT SHOWN ARE FOR REFERENCE ONLY. ACTUAL DIMENSIONS MAY VARY FROM MANUFACTURER TO MANUFACTURER.
6) BRANCH CIRCUITS TO A HIGHER VOLTAGE NEUTRAL FOR EACH CIRCUIT ON RATED TRANSFORMER.
7) FOR H-RATED TRANSFORMER, PROVIDE PARALLEL NEUTRAL CONDUCTOR LUGS AT TRANSFORMER, LOW VOLTAGE PANELBOARD, AND DISCONNECTS.

FEEDER SCHEDULE

KEY	CONDUCTORS	WEIGHT	BTM	REMARKS
48.5 G	1# 8 - 2# 10 G 1	1		
103.5 G	1# 8 - 2# 8 G 2	2		
203.5 G	1# 10 - 2# 8 G 2	2		
103.5 G	1# 12 - 1# 12 G 3/4	3/4		
98.5 G	3# 2 - 1# 8 G 1/4	1/4		
103.5 G	3# 1 - 1# 8 G 1/2	1/2		
125.5 G	3# 10 - 1# 8 G 1/2	1/2		
98.5 G	4# 2 - 1# 8 G 1/2	1/2		
48.5 G	3# 800 - 1# 8 G 3	3		
48.5 G	4# 8 - 1# 10 G 1	1		
78.5 G	4# 8 - 1# 8 G 1/4	1/4		
108.5 G	4# 1 - 1# 8 G 1/2	1/2		
208.5 G	4# 30 - 1# 8 G 2/12	2/12		
208.5 G	4# 200 - 1# 8 G 3	3		
888.5 G	2 L 4# 800 - 1# 10 G 3/12	3/12		

MEC SEE MECH/ELECTRICAL SCHEDULE
277V SEE TRANSFORMER SCHEDULE



ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

DRAWING TITLE: **ELECTRICAL LEGENDS, NOTES & SCHEDULES**

TITLE: **CU ANSCHUTZ - 18-147790 DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF**

ISSUES/REVISIONS: 100% CDs 10/12/20

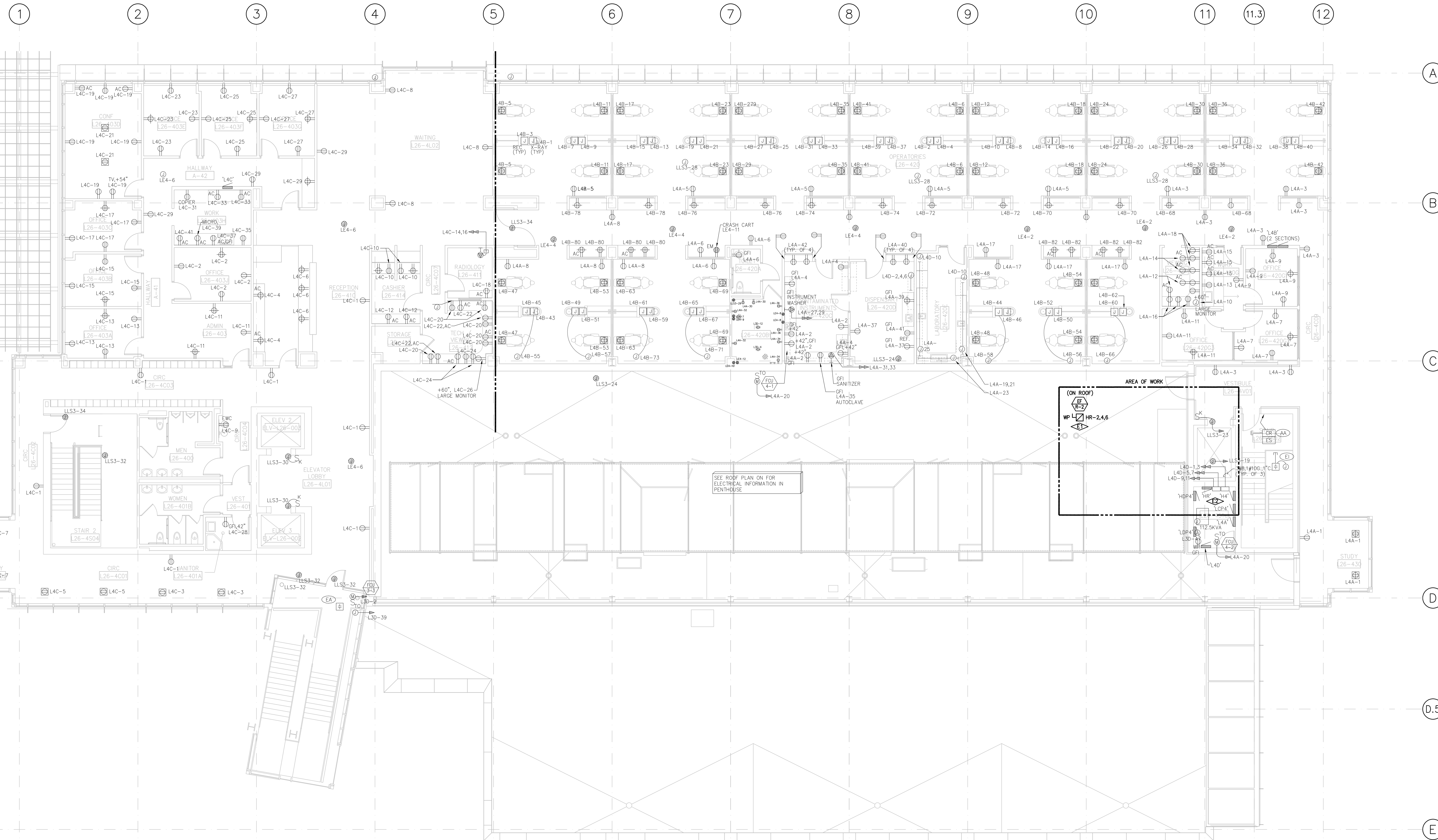
DATE: 10/12/2020
DRAWN BY: GL
CHECKED BY: CMP
JOB NO: 18-147790
FILE NAME: P-ELS

SHEET NO. **E-002**

CATOR I RUMA & ASSOCIATES CO.
898 LABOR STREET, LAKEWOOD, COLORADO 80003 PHONE: (303) 232-6200 FAX: (303) 233-3701
420 LINCOLNWAY, CHESTER, WYOMING 82001 PHONE: (303) 274-9850 FAX: (303) 233-3701

KEY NOTES:

- Ⓐ EXISTING EXHAUST FAN TO BE UPSIZED FROM 10 HP TO 15 HP MOTOR. PROVIDE NEW BRANCH CIRCUIT (3Ø120/208V/4°C TO FAN MOTOR VIA VFD. EXISTING CONDUIT MAY BE REUSED IF DEEMED BY OWNER TO BE IN GOOD CONDITION. PROVIDE NEW 60A3P DISCONNECT SWITCH WITH 35A FRN-R FUSES.
- Ⓑ MOUNT NEW EXHAUST FAN VFD IN ELECTRICAL ROOM. COORDINATE EXACT LOCATION WITH OWNER.



FOURTH FLOOR POWER PLAN
SCALE: 1/8"=1'-0"

DRAWING TITLE: **FOURTH FLOOR POWER PLAN**

TITLE: **CU ANSCHUTZ - 18-14790 DENTAL SCHOOL IMPROVE EXHAUST FAN EF-R2 ON ROOF**

ISSUES/REVISIONS:

100% Cds	10/12/20
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DATE: 10/12/2020
DRAWN BY: GL
CHECKED BY: CMP
JOB NO: 18-1477907
FILE NAME: P-PWR4

SHEET NO.

CATORI RUMA & ASSOCIATES CO.
896 TABOR STREET, LAKEWOOD, COLORADO 80401. PHONE: (303) 232-6200 FAX: (303) 233-3701
420 UNINCULWATY, CHEYENNE, WYOMING 82001. PHONE: (303) 274-2850 FAX: (303) 233-3701

FILENAME: P:\CUV\anschutz\2018-058-SDM Room 1280_Ventilation\Coa\Yeds\Exhaust Fan Upgrades\Elec\pwr4.dwg LAYOUT: E-204 REVISED: 4/2/2020 05:06 PLOTTED: 10/9/2020 07:38:50 USER: Jordan Kincaid-Smith

Dental School Improve Exhaust Fan EF-2 on Roof Const. / PN18-147790 PreBid Meeting Sign in 10/19/2020 SCPP Pre-Qualified Only

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