MECHANICAL PIPING & INSULATION SCHEDULE

NOTE: ALL EXTERIOR INSULATED PIPING TO BE PROVIDED WITH ALUMINUM JACKET.

SERVICE	PIPING TYPE	INSULATION TYPE	INSULATION THICKNESS	INSULATION THICKNESS NOMINAL PIPE SIZE <1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
EQUIPMENT DRAINS, COOLING CONDENSATE LINES, AND OVERFLOWS	TYPE "L" HARD COPPER	ELASTOMERIC	3/8" IF INTERIOR SPACE N/A EXTERIOR SPACE	0.5	0.5	1.0	1.0	1.0
REFRIGERANT PIPING	COPPER REFRIGERANT PIPING	ELASTOMERIC	1" ON SUCTION LINE	0.5	1.0	1.0	1.0	1.5
ALL OUTDOOR INSULATED PIPING	PROVIDE WITH EMBOSSED ALUMINUM JACKET OVER SCHEDULED INSULATION	PER SCHEDULE	N/A					

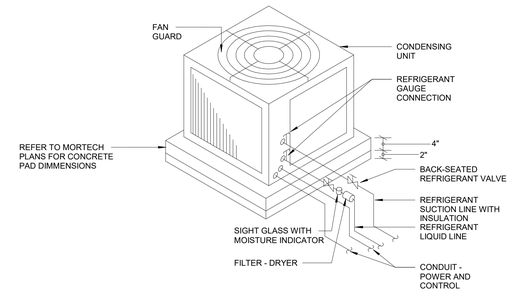
SITE UNDERGROUND NOTES

PRIOR TO CONSTRUCTION, COORDINATE UNDERGROUND REFRIGERANT PIPING CONDUITS WITH ALL OTHER TRADES, INCLUDING BUT NOT LIMITED TO: EASEMENTS, UNDERGROUND UTILITY LINES (COMMUNICATION, ELECTRIC, GAS, WATER), AND STRUCTURAL FOOTINGS AND FOUNDATIONS.

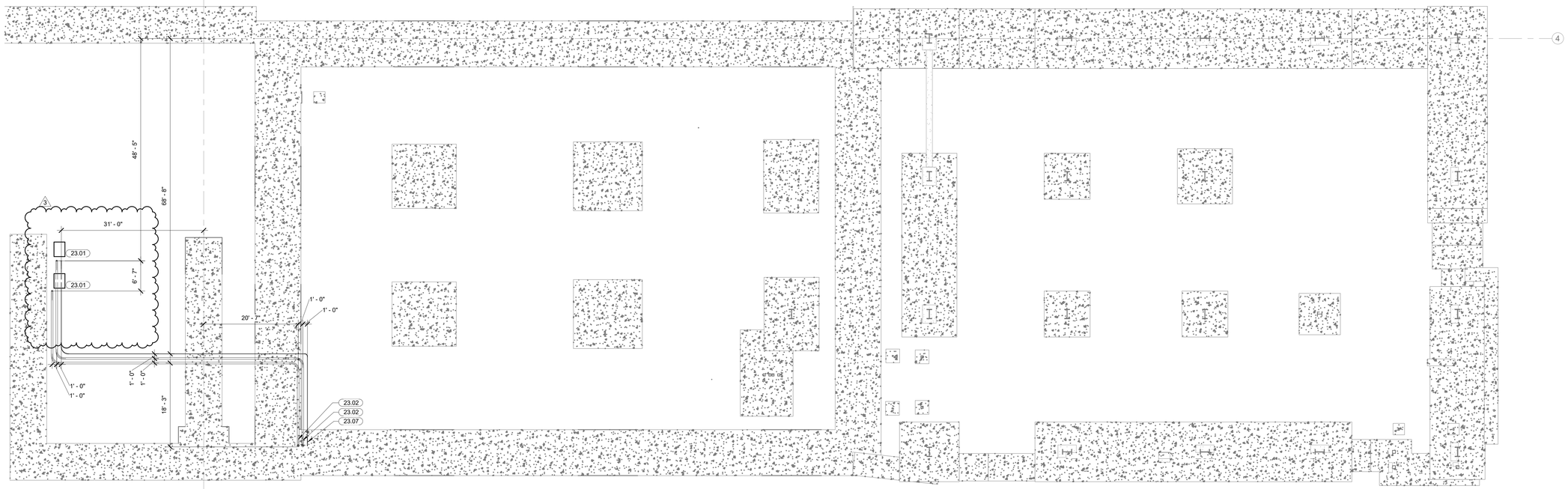
PRIOR TO FOOTING CONSTRUCTION, M.C. SHALL BURY ALL REFRIGERANT PIPING CONDUITS BETWEEN THE INTERIOR AND EXTERIOR OF THE BUILDING. COORDINATE WITH STRUCTURAL DRAWINGS TO DETERMINE REQUIRED BURIAL DEPTH.

KEYNOTES

23.01	MORTECH CONDENSING UNITS. REFER TO MORTECH CONSTRUCTION DOCUMENTS. INSTALL PER MORTECH INSTRUCTIONS.
23.02	PROVIDE 6" UNDERGROUND SCHED 40 PVC CONDUITS FOR REFRIGERANT PIPING SERVING MORTECH CONDENSING UNITS AND INDOOR EVAPORATOR COILS. DIMENSIONS ARE APPROXIMATE FOR REFERENCE. COORDINATE EXACT DIMENSIONS WITH MORTECH AND BUILDING CONSTRUCTION PACKAGE PRIOR TO INSTALLING CONDUIT. INSTALL WITH LONG SWEEPING ELBOWS AND SEAL END OPENINGS WATER TITE. COORDINATE WITH STRUCTURAL FOOTING AND FOLLOW STRUCTURAL DETAILS FOR INSTALLATION OF PIPING MINIMUM 8" ABOVE THE TOP OF THE FOOTING.
23.07	PROVIDE 1" UNDERGROUND SCHED 40 PVC CONDUIT FOR CONTROL WIRING SERVING MORTECH CONDENSING UNITS. DIMENSIONS ARE APPROXIMATE FOR REFERENCE. COORDINATE EXACT DIMENSIONS WITH MORTECH AND BUILDING CONSTRUCTION PACKAGE PRIOR TO INSTALLING CONDUIT. INSTALL WITH LONG SWEEPING ELBOWS AND SEAL END OPENINGS WATER TIGHT. COORDINATE WITH STRUCTURAL FOOTING AND FOLLOW STRUCTURAL DETAILS FOR INSTALLATION OF PIPING MINIMUM 8" ABOVE THE TOP OF THE FOOTING.



2 AIR-COOLED CONDENSING UNIT
SCALE: N.T.S.



PLAN NORTH
TRUE NORTH

1 MECHANICAL UNDERGROUND SITE PLAN
1" = 10'-0"

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Shane Wells
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OKLAHOMA
07-31-2019

CONSULTANT LOGO:
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PROJECT NO. 18163R
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CLIENT:

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02 01

PROJECT PHASE:
100% CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION
3	07-31-19	BID PACKAGE 04 ASI 04

DATE:	JOB NUMBER:
07-31-19	17-13

SHEET NUMBER:
M0.00

UNDERGROUND MECHANICAL PLAN

12.0 BELOW GRADE SLABS

All slabs that are below exterior grade are considered below grade slabs. This condition is anticipated within the south half of the project site within the basement area. **In addition, any elevator pits, recessed mats, floor depressions, etc., are considered below grade slabs and the following recommendations do apply to these areas.**

Although shallow groundwater was not encountered within the borings drilled, site earthwork can, and often does, manipulate the shallow groundwater regime. In view of the possibility for perched groundwater at the project site, it is recommended that any portions of the structure below exterior grade, as described above, be designed and constructed recognizing the possibility of shallow groundwater. A French drain system should be installed under the below grade floor slabs to limit hydrostatic pressure below the slab. A drainage system constructed with coarse free-draining gravel with a minimum 6-inch thickness and perforated pipes wrapped in filter fabric and installed on 30-ft. centers below the free draining gravel is considered adequate. Groundwater collected by these perforated pipe drains should be removed to free discharge by gravity flow. If gravity flow cannot be provided a sump and pump system consisting of a wet well with a duplex pump arrangement is recommended. At least one (1) pump should turn on when groundwater levels are more than 24-inches below finish floor elevation.

A French drain should be installed underneath all below grade slabs. Lateral drain pipes installed on 30-ft. centers should be at least 4-inches in diameter, with perimeter collector pipes at least 6-inches in diameter. An impervious moisture barrier consisting of 6-mil. plastic sheeting or equivalent should be provided below all slab areas. A minimum 10-mil plastic sheeting is recommended beneath all slab areas with an intended use sensitive to slab moisture. Soil moisture should not be allowed to dry and desiccate or be saturated by inundation prior to slab placement.

12.1 Retaining Wall Backfill & Drainage

A foundation drain is recommended to be installed around the portion of the perimeter where the below grade slab is at or below exterior grade level in accordance with Section 1805 of the 2015 IBC. Below grade wall backfill should consist of free-draining crushed stone or alternatively, may consist of gravelly clays or clayey gravels. Crushed stone, if selected, must be imported from a quarry source whereas on-site soils suitable for wall backfill could probably be segregated and stockpiled during excavation. Depending upon the type of backfill selected and degree of wall restraint, the following table of lateral earth pressures are considered appropriate for wall design. **If a building floor slab is planned over the wall backfill, use of an imported free draining stone should be separated from the earth face of the excavation by using a nonwoven filter fabric.**

8.8 Utility Trenches

New utility trenches servicing the new structures are anticipated to be required. These trenches are often times sources of moisture migration into the structure. A relatively impervious material (clay with little rock, etc.) should be placed within the utility trench, surrounding the utility immediately outside the structure to reduce the potential for moisture migration into the structure via utility trenches. The "trench plug" should extend out from the structure a minimum of 5 ft. horizontally, and be placed in a controlled manner in accordance with Section 8.3 above.

8.3 Compaction Requirements

Item	Description
Subgrade Scarification Depth	At least 8 inches
Fill Lift Thickness	12-inches (loose) using the minimum compactor referenced below
Compaction Requirements[1]	Six (6) passes (3 each direction) minimum using a self-propelled vibratory compactor with a minimum drum diameter of 48-inches for granular soils, or 95% Standard Proctor Density (ASTM D698) for materials containing sufficient fines content.
Moisture Content	• ± 2% optimum moisture for CL, SC, GC, GW & SW Soil Types; and • 0 to 4% above optimum for CH Soil Types.
Field Density Testing Frequency (if material type allows)	• Building Areas – One (1) test every 2500 sq. ft. per fill lift; • Pavement Areas – One (1) test every 5000 sq. ft. per fill lift; and • No less than three (3) tests per each fill lift.

[1] We recommend that engineered fill (including scarified compacted subgrade) be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.

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TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
BID PACKAGE 04

REVISIONS:		
#	DATE	DESCRIPTION

DATE: 05-10-19
JOB NUMBER: 17-13
SHEET NUMBER: M0.01
UNDERGROUND MECHANICAL NOTES

DUCT SILENCER SCHEDULE

TAG	MANUF.	MODEL	FLOW DIRECTION	AIRFLOW (CFM)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	FACE VELOCITY (FPM)	MAX. PRESSURE DROP (IN. W.G.)	MINIMUM DYNAMIC INSERTION LOSS (dB) 63	125	250	500	1K	2K	4K	8K	NOTES
SL-RTU-1S	VIBRO-ACOUSTICS	EXRED-UHV-F4-L23750	SUPPLY	40000	84	40(48)	76	+1942	0.15	6	11	16	27	33	35	28	22	A,B,C
SL-RTU-1R	VIBRO-ACOUSTICS	RED-UHV-FE-L23750	RETURN	40000	84	40	86	-1716	0.14	7	11	12	22	24	27	21	17	A,B,C
SL-RTU-2S	VIBRO-ACOUSTICS	RED-UHV-FC-L23750	SUPPLY	15,000	108	36	30	+2000	0.21	10	17	16	28	37	32	22	22	A,B,D
SL-RTU-3R	VIBRO-ACOUSTICS	EXRED-UHV-F3-L23750	RETURN	38,600	120	40 (52)	84	-1721	0.12	8	19	18	32	46	38	27	19	A,B,E
SL-RTU-4S	VIBRO-ACOUSTICS	EXRED-HV-FJ-L23750	SUPPLY	31300	108	36 (48)	62	-2019	0.18	11	17	17	24	30	28	20	20	A,B,F
SL-RTU-4R	VIBRO-ACOUSTICS	EXRED-HV-FJ-L23750	RETURN	31300	108	36 (48)	70	-1789	0.14	11	17	17	24	30	28	20	20	A,B,G
SL-RTU-3S	VIBRO-ACOUSTICS	EXRED-HV-FX-L23750	SUPPLY	38,600	144	42 (48)	76	+1741	0.08	11	11	19	29	42	36	23	23	A,B,H

GENERAL NOTES APPLICABLE TO ALL UNITS:
1) ALL DUCT SIZES SHOWN ARE THE OUTSIDE METAL DIMENSIONS.
2) LENGTH SHOWN FOR ELBOW SILENCERS IS CENTERLINE LENGTH.
3) VELOCITY SHOWN IS +(FORWARD FLOW) OR -(REVERSE FLOW) AS DEFINED BY ASTM E477-13.
4) PRESSURE DROP, DYNAMIC INSERTION LOSS, AND SELF-GENERATED NOISE PER ASTM E477-13.

NOTES
A. HTL CASING
B. ELBOW SILENCER
C. EXTENDED WIDTH SILENCER. DUCT DIMENSION 40" X 76", OUTSIDE CASING DIMENSION 48" X 76". SILENCER TO HAVEE A 45-DEGREE OFFSETTING HORIZONTAL LEG. CASING TO HTL EQUIVALENT TO 14 GAUGE DUCT WALL.
D. CASING TO HTL EQUIVALENT TO 14 GAUGE DUCT WALL TO CONTROL BREAKOUT.
E. EXTENDED WIDTH SILENCER. DUCT DIMENSION 40" X 84", OUTSIDE CASING DIMENSION 52" X 84". CASING TO BE HTL EQUIVALENT TO 12 GAUGE DUCT TO CONTROL BREAKOUT.
F. EXTENDED WIDTH SILENCER. DUCT DIMENSION 36" X 62", OUTSIDE CASING DIMENSION 48" X 62". CASING TO BE HTL EQUIVALENT TO 10 GAUGE DUCT TO CONTROL BREAKOUT.
G. EXTENDED WIDTH SILENCER. DUCT DIMENSION 36" X 70", OUTSIDE CASING DIMENSION 48" X 70". CASING TO BE HTL EQUIVALENT TO 10 GAUGE DUCT TO CONTROL BREAKOUT.
H. TRANSITIONAL TEE-SHAPED ELBOW SILENCER WITH EXTENDED WIDTH. INLET LEG DIMENSION 42" X 76", OUTSIDE CASING DIMENSION 48" X 76". ONE OUTLET LEG TO BE 42" X 76", OUTER CASING 48" X 76" . OTHER OUTLET LET TO BE 42" X 24", OUTER CASING TO BE 48" X 24". CASING TO BE HTL EQUIVALENT TO 10 GAUGE DUCT WALL TO CONTROL BREAKOUT.

BASEBOARD CONVECTION HEATER SCHEDULE

MARK	DESCRIPTION	MFR	MODEL	LENGTH	MAX HEIGHT	DEPTH	WATTS / FT	TOTAL WATTS	VOLTS / PH	AMPS	CONTROL TYPE	NOTES
BH-1	ARCHITECTURAL CONVECTOR	BERKO	BDBSL09	9'-0"	0'-6"	2-5/8"	150	1350	277 / 1	4.9	T-STAT, BAS	COORDINATE FINISH WITH ARCH
BH-2	ARCHITECTURAL CONVECTOR	BERKO	BDBSL09	9'-0"	0'-6"	2-5/8"	150	1350	277 / 1	4.9	T-STAT, BAS	COORDINATE FINISH WITH ARCH
BH-3	ARCHITECTURAL CONVECTOR	BERKO	BDBSL09	9'-0"	0'-6"	2-5/8"	150	1350	277 / 1	4.9	T-STAT, BAS	COORDINATE FINISH WITH ARCH

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. WALL MOUNT. INSTALL FLUSH TO FLOOR. NO PEDESTAL.
2.. PROVIDE (2) 6" FILLER PLATES TO MATCH FINISH FOR CONTINUOUS LOOK A BETWEEN WALLS. CONFIRM REQUIRED LENGTH DURING CONSTRUCTION.
3. PROVIDE WITH FACTORY MOUNTED INTEGRAL DISCONNECT
4. PROVIDE END ELECTRICAL CONNECTION POINT WITH BUILT-IN WIRE WAY
5. THERMAL OVERLOAD PROTECTION
6. PROVIDE FACTORY POWER RELAY WITH 24V COIL. CONTROLS CONTRACTOR TO PROVIDE NECESSARY EQUIPMENT TO CONTROL HEATERS THROUGH BAS. REF CONTROLS SHEETS.

AIR DEVICE SCHEDULE

TAG	DESCRIPTION	MFR	MODEL	FACE SIZE	FRAME SIZE	NECK SIZE	MATERIAL/ FINISH	MAX FLOW	NOTES
CD-1	CEILING DIFFUSER, PLAQUE FACE	TITUS	OMNI-AA	9x9	12x12	6	ALUMINUM/ WHITE	100 CFM	-
CD-2	CEILING DIFFUSER, PLAQUE FACE	TITUS	OMNI-AA	18x18	24x24	8	ALUMINUM/ WHITE	250 CFM	-
CD-3	CEILING DIFFUSER, PLAQUE FACE	TITUS	OMNI-AA	18x18	24x24	10	ALUMINUM/ WHITE	350 CFM	-
CD-4	CEILING DIFFUSER, PLAQUE FACE	TITUS	OMNI-AA	18x18	24x24	12	ALUMINUM/ WHITE	475 CFM	-
CD-5	2-WAY TIERED DIFFUSER WITH ADJUSTABLE PATTERN CONTROL VANES	TITUS	TDC-A	18x18 DIM 'A'	24x24	BRANCH SIZE	ALUMINUM/ WHITE	800 CFM	S2 PATTERN
CD-6	CEILING DIFFUSER, PLAQUE FACE	TITUS	OMNI-AA	18x18	24x24	14	ALUMINUM/ WHITE	800 CFM	-
EG-1	RETURN GRILLE, EGGCRATE CORE - 1/2x1/2x1/2	TITUS	50F	22x22	24x24	N/A	ALUMINUM/ WHITE	1600 CFM	-
EG-2	RETURN GRILLE, EGGCRATE CORE - 1/2x1/2x1/2	TITUS	50F	10x10	12x12	N/A	ALUMINUM/ WHITE	600 CFM	-
LD-1	LINEAR SLOT SUPPLY DIFFUSER, 1" SLOT, 5 SLOT, 4FT LENGTH	TITUS	ML-39	1" SLOT	5 SLOT	4 FT LENGTH	ALUMINIUM/ REF ARCH	400 CFM	-
LD-2	LINEAR SLOT SUPPLY DIFFUSER, 1" SLOT, 1 SLOT, 4FT LENGTH	TITUS	FL-10	1" SLOT	1 SLOT	4 FT LENGTH	ALUMINIUM/ REF ARCH	300 CFM	-
LD-3	LINEAR SLOT SUPPLY DIFFUSER, 2.5" SLOT, 1 SLOT, 5FT LENGTH	TITUS	FL-25	2.5" SLOT	1 SLOT	5 FT LENGTH	ALUMINIUM/ REF ARCH	600 CFM	
LD-4	LINEAR SLOT SUPPLY DIFFUSER, 2.5" SLOT, 1 SLOT, 4FT LENGTH	TITUS	FL-25	2.5" SLOT	1 SLOT	4 FT LENGTH	ALUMINIUM/ REF ARCH	400 CFM	-
LD-5	LINEAR SLOT SUPPLY DIFFUSER, 2.5" SLOT, 2 SLOT, 5FT LENGTH	TITUS	FL-25	2.5" SLOT	2 SLOT	5 FT LENGTH	ALUMINIUM/ REF ARCH	400 CFM	-
RG-1	RETURN GRILLE, EGGCRATE CORE - 1/2x1/2x1/2	TITUS	50F	22x22	24x24	N/A	ALUMINUM/ WHITE	1600 CFM	-
SEG-1	EXHAUST GRILLE WITH 35 DEGREE DEFLECTION	Titus	350FL	24X24	26X26	N/A	ALUMINUM/ WHITE	2400 CFM	-
SEG-2	EXHAUST GRILLE WITH 35 DEGREE DEFLECTION	Titus	350FL	24X36	26X36	N/A	ALUMINUM/ WHITE	3400 CFM	-
SEG-3	EXHAUST GRILLE WITH 35 DEGREE DEFLECTION	Titus	350FL	10X10	12X12	N/A	ALUMINUM/ WHITE	300 CFM	-
SG-1	SIDEWALL SUPPLY DIFFUSER. DOUBLE DEFLECTION 3/4" O.C. SPACING. FRONT BLADES PARALLEL TO SHORT DIMENSION.	TITUS	272	8x6	9.75x7.75	N/A	ALUMINUM/ WHITE	182 CFM	-

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. COORDINATE AIR DEVICE DEFLECTION ADJUSTMENTS WITH THE MECHANICAL ENGINEER DURING AIR BALANCE.
2. PROVIDE 2" FACTORY FIBERGLASS WRAP ON ALL SUPPLY DIFFUSERS WITH BACKSIDE NOT EXPOSED TO SPACE.
3. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.
4. ALL AIR DEVICES ARE 4-WAY THROW UNLESS OTHERWISE NOTED IN SCHEDULES OR WITH FLOW ARROWS ON DRAWINGS.
5. REFER TO SPECIFICATIONS FOR APPROVED ALTERNATES.
6. BRANCH DUCT SIZE SHALL BE SAME AS NOTED DIFFUSER NECK SIZE UNLESS NOTED OTHERWISE. PROVIDE TRANSITION WHERE DUCT SIZE DIFFERS FROM NECK SIZE.
7. WHERE FINISH AND COLOR ARE NOTED TO BE SELECTED BY ARCHITECT/OWNER, THIS CONTRACTOR SHALL PROVIDE A COLOR PALETTE SAMPLE FOR FINAL APPROVAL WITH THE SUBMITTALS.
8. COORDINATE WITH ARCHITECT'S REFLECTED CEILING PLAN TO PROVIDE APPROPRIATE FRAME TYPE AND MOUNTING ACCESSORIES.
9. EQUALS PER SPECIFICATIONS.

EXHAUST FAN SCHEDULE

MARK	DESCRIPTION	MFR	MODEL	DRIVE	FLOW	ESP	RPM	VOLTS	PH	POWER	FLA (AMPS)	CONTROL TYPE	ACCESSORIES	NOTES
DEF-1-1	DRYER EXHAUST	FANTEC	DBF 110	DIRECT	188	-	2175	120 V	1	64.8 W	0.54	PRESSURE SWITCH	K	-
DEF-B-1	DRYER EXHAUST	FANTEC	DBF 110	DIRECT	188	-	2175	120 V	1	64.8W	0.54	PRESSURE SWITCH	K	-
EF-1	DOWNBLAST	GREENHECK	G-133-VG	DIRECT	1420	1.25	1624	120 V	1	3/4 HP	8.8	BAS	B	1,2,5,6
EF-2	DOWNBLAST	GREENHECK	G-163-VG	DIRECT	2425	1.3	1383	208 V	1	2 HP	12	BAS	B	1,2,5,6
EF-3	CEILING MOUNTED EXHAUST FAN	GREENHECK	SP-A510-VG	DIRECT	250	0.25	821	277 V	1	155 W	-	T-STAT	A,F	1,2,5
EF-4	CEILING MOUNTED EXHAUST FAN	GREENHECK	SP-A510-VG	DIRECT	250	0.25	821	277 V	1	155 W	-	T-STAT	A,F	1,2,5
EF-5	CEILING MOUNTED EXHAUST FAN	GREENHECK	SP-A510-VG	DIRECT	250	0.25	821	277 V	1	155 W	-	T-STAT	A,F	1,2,5
EF-6	CEILING MOUNTED EXHAUST FAN	GREENHECK	SP-A510-VG	DIRECT	250	0.25	821	277 V	1	155 W	-	T-STAT	A,F	1,2,5
EF-7	BELT DRIVE UPBLAST	GREENHECK	CUBE-360XP-7 5	BELT	8000	2.35	1343	460 V	3	7.5 HP	11	BAS	B	1,2,5,6

GENERAL NOTES:
1. PROVIDE PRE-WIRED FACTORY MOUNTED INTEGRAL DISCONNECT DEVICE (NEMA 3R FOR EXTERIOR).
2. PROVIDE VARIABLE SPEED CONTROLLER (FACTORY INSTALLED IF AVAILABLE) ON ALL DIRECT DRIVE FANS FOR FAN BALANCING.
3. PROVIDE BELT TENSIONER ON ALL BELT DRIVE FANS.
4. PROVIDE WALL SLEEVE, FAN GUARD, EXTERIOR WEATHER HOOD AND MOTORIZED DAMPER WITH TIME DELAY CONTROLS ON ALL WALL MOUNTED PROPELLER FANS.
5. MOUNT FAN SPEED CONTROLLER IN ACCESSIBLE LOCATION ABOVE CEILING UNLESS OTHERWISE NOTED.
6. PROVIDE ROOF CURB TO MATCH ROOF TYPE AND SLOPE AT ALL ROOF MOUNTED FANS.

NOTES
A PROVIDE BACKDRAFT DAMPER.
B PROVIDE MOTORIZED DAMPER WITH TIME DELAY FAN START. MECHANICAL CONTRACTOR RESPONSIBLE FOR INSTALLING FAN, ROOF CURB, BACK DRAFT DAMPER, AND ALL INTERNAL POWER AND CONTROL WIRING AS REQUIRED TO PROVIDE FULLY OPERATIONAL FAN AND DAMPER.
C PROVIDE WITH VARIABLE FREQUENCY DRIVE SAME SIZE AS LISTED MOTOR HORSE POWER. PROVIDE WITH INVERTER DUTY (NEMA MGI PART 31), MOTOR-MOUNTED GROUNDING RING. REFER TO VARIABLE FREQUENCY DRIVE SCHEDULE FOR SPECIFICS.
D PROVIDE SPUN ALUMINUM VENT CAP, COOK MODEL "PR" WITH ROOF CURB.
E PROVIDE MANUFACTURER'S BRICK VENT. COLOR TO BE SELECTED BY ARCHITECT.
F PROVIDE MANUFACTURER'S WHITE ALUMINUM GRILLE.
G PROVIDE BIRD SCREEN.
H PROVIDE ISOLATOR KIT.
I PROVIDE MANUFACTURER'S WALL CAP.
J PROVIDE GREASE COLLECTION CUP.
K PROVIDE UL507 AND ETL SAFTEY-LISTED FAN WITH INTEGRAL PRESSURE SWITCH TO AUTOMATICALLY ACTIVATE FAN WHEN DRYER IS TURNED ON. LOCATE FAN AND PROVIDE SECONDARY LINT TRAP AND SIGNAGE PER PLAN NOTES.

MINI SPLIT SCHEDULE

INDOOR	OUTDOOR	MANUFACTURER	MODEL INDOOR / OUTDOOR	SEER	HSPF	COOLING CAPACITY	HEATING CAPACITY @ 47F	VOLTS / PH	MCA	MOCP	NOTES
MAH-0-0	MCU-0-0	MITSUBISHI	PKA-A24KA7 / PUZ-A24NHA7	21.4	11	24000	26000	208/1	14 A	25 A	2,3,4
MAH-0-1	MCU-0-1	MITSUBISHI	PKA-A36KA6 / PUY-A36NHA6	14	N/A	36000	N/A	208/1	34 A	40 A	1,2,3,4
MAH-0-2	MCU-0-2	MITSUBISHI	PKA-A36KA6 / PUY-A36NHA6	14	N/A	36000	N/A	208/1	34 A	40 A	1,2,3,4
MAH-0-3	MCU-0-3	MITSUBISHI	PKA-A36KA6 / PUY-A36NHA6	14	N/A	36000	N/A	208/1	34 A	40 A	1,2,3,4
MAH-0-4	MCU-0-4	MITSUBISHI	PKA-A24KA7 / PUY-A24NHA7	21.4	N/A	24000	N/A	208/1	14 A	25 A	1,2,3,4
MAH-1-1	MCU-1-1	MITSUBISHI	MSY-GL09NA / MUY-GL09NA	24.6	N/A	9000	N/A	208/1	14 A	15 A	1,2,3,4
MAH-1-2	MCU-1-2	MITSUBISHI	PKA-A36KA6 / PUZ-HA36NHA5	16.2	10	36000	38000	208/1	34 A	40 A	2,3,4
MAH-1-3	MCU-1-3	MITSUBISHI	PKA-A18HA6 / PUZ-A18NHA6	21.4	11	24000	26000	208/1	14 A	25 A	2,3,4
MAH-1-4	MCU-1-4	MITSUBISHI	MSY-GL09NA / MUY-GL09NA	24.6	N/A	9000	N/A	208/1	14 A	15 A	1,2,3,4
MAH-2-1	MCU-2-1	MITSUBISHI	MSY-GL09NA / MUY-GL09NA	24.6	N/A	9000	N/A	208/1	14 A	15 A	1,2,3,4
MAH-2-2	MCU-2-2	MITSUBISHI	PKA-A24KA6 / PUZ-A24NHA6	21.4	11	24000	26000	208/1	14 A	25 A	2,3,4
MAH-2-3	MCU-2-3	MITSUBISHI	PKA-A24KA6 / PUZ-A24NHA6	21.4	11	24000	26000	208/1	14 A	25 A	2,3,4
MAH-2-4	MCU-2-4	MITSUBISHI	MSY-GL09NA / MUY-GL09NA	24.6	N/A	9000	N/A	208/1	14 A	15 A	1,2,3,4
MAH-3-1	MCU-3-1	MITSUBISHI	PKA-A30KA6 / PUY-A30NHA6	15.5	N/A	30000	N/A	208/1	34 A	40 A	1,2,3,4
MAH-3-2	MCU-3-2	MITSUBISHI	PKA-A18HA6 / PUZ-A18NHA6	15.3	9.5	18000	18000	208/1	18 A	20 A	2,3,4
MAH-3-3	MCU-3-3	MITSUBISHI	PKA-A18HA6 / PUZ-A18NHA6	15.3	9.5	18000	18000	208/1	18 A	20 A	2,3,4
MAH-3-4	MCU-3-4	MITSUBISHI	MSY-GL09NA / MUY-GL09NA	24.6	N/A	9000	N/A	208/1	14 A	15 A	1,2,3,4

GENERAL NOTES:
1. LOW AMBIENT TO 0°F (SYSTEM SHALL MAINTAIN 100% COOLING AT 0°F)
2. ALL REFRIGERANT LINES SHALL BE INSULATED.
3. PROGRAMMABLE THERMOSTAT INTEGRATE TO BAS VIA BACNET.
4. CONDENSATE PUMP (ASPEN MINI BLANC OR BLUE DIAMOND ONLY).

GENERAL MECHANICAL NOTES

1	SUBMISSION OF PROPOSAL IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH HE WILL BE OBLIGATED TO OPERATE SHOULD HE BE AWARDED THE WORK UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
2	ALL RECTANGULAR DUCT SIZES SHOWN ARE THE OUTSIDE METAL DIMENSIONS. DUCT DIMENSIONS ALREADY HAVE ALLOWANCES FOR THE INSULATION LINER WHERE APPLICABLE IN THE RECTANGULAR DUCTS. AT DUAL WALL DUCTS, THE DIMENSION SHOWN IS THE OUTSIDE METAL DUCT SIZE AND ALREADY HAVE ALLOWANCES FOR THE INSULATION THICKNESS.
3	ALL WORK SHALL CONFORM TO STATE AND LOCAL CODES, RULES, REGULATIONS, AND ORDINANCES WHICH SHALL TAKE PRECEDENCE OVER THE PLANS IF CONFLICTS EXIST BETWEEN THEM.
4	THE DRAWINGS INDICATE THE GENERAL LAYOUT REQUIREMENTS FOR EQUIPMENT, FIXTURES, PIPING, DUCTWORK, ETC. FINAL LAYOUT SHALL BE MODIFIED TO FIT ACTUAL SITE CONDITIONS.
5	COORDINATE ALL WORK WITH THE OWNER AND ALL OTHER CONTRACTORS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RIGGING, HANDLING, AND PROTECTION OF MATERIALS. PROVIDE LABOR TO RECEIVE UNLOAD, STORE, PROTECT, AND TRANSFER TO POINT OF INSTALLATION OF ANY OWNER-FURNISHED ITEMS.
6	IN CASES OF EQUIPMENT SUBSTITUTION, CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL SYSTEMS AND COMPONENTS WILL FIT PROPERLY PRIOR TO FABRICATION OR ORDERING. INSTALLED DUCTS MAY BE RESIZED BY THE CONTRACTOR TO FIT FIELD CONDITIONS AS LONG AS THE INSTALLED DUCTS SHALL HAVE EQUAL FRICTION LOSS TO THOSE SHOWN. RECTANGULAR DUCTS SHALL NOT BE CHANGED TO ROUND DUCTS. PROVIDE COMPLETE SHEET METAL SHOP DRAWINGS TO ENGINEER SHOWING ACTUAL DUCT SIZES, ARRANGEMENTS, AND UNIT LOCATIONS TO BE INSTALLED. THIS SHALL BE DONE PRIOR TO FABRICATION OR INSTALLATION.
7	INSTALL ACOUSTIC TURNING VANES IN ELBOWS IN RECTANGULAR DUCTS 20" AND LARGER. INSTALL RADIUS TYPE ELBOWS IN RECTANGULAR DUCTS SMALLER THAN 20".
8	USE 45 DEGREE TAKE-OFF FITTINGS AT ALL ROUND SUPPLY BRANCH TAKEOFFS. PROVIDE BALANCE DAMPERS AT ALL SUPPLY DUCT RUNOUTS TO GRILLES. LOCATE AS FAR AS POSSIBLE FROM GRILLES IN AN ACCESSIBLE LOCATION. PROVIDE ACCESS PANELS IN SOLID WALLS AND CEILINGS FOR BALANCING DAMPERS.
9	USE FLEX DUCTS FOR FINAL CONNECTION TO ALL CEILING DIFFUSERS, AND WHERE NECESSARY, SIDEWALL DIFFUSERS, AND LIMIT TO 6' MAX. LENGTHS.
10	PROVIDE A COMPLETE AND OPERATING MECHANICAL SYSTEM, INCLUDING ALL INCIDENTAL ITEMS AND CONNECTIONS NECESSARY FOR PROPER OPERATION OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM MAY NOT BE INDICATED.
11	THE MECHANICAL INSTALLATION SHALL BE SAFE, RELIABLE, ENERGY EFFICIENT AND EASILY MAINTAINED WITH ADEQUATE PROVISIONS ALLOWED FOR ACCESS TO EQUIPMENT.
12	THE MECHANICAL SYSTEM SHALL OPERATE QUIETLY WITH NOISE LEVELS BELOW THE CRITERIA RECOMMENDED FOR THE APPLICATION BY ASHRAE. PROVIDE CORRECTIVE ACTION AS REQUIRED TO REDUCE OBJECTIONABLE NOISE OR VIBRATION.
13	UNDERCUT DOORS 3/4 INCH WHERE NO RETURN NOR EXHAUST GRILLE IS SHOWN TO ALLOW FOR AIR TRANSFER (DO NOT UNDERCUT FIREDOORS.)
14	REFER TO ARCH. PLANS AND DETAILS FOR EXACT LOCATION OF ALL WALL AND CEILING MOUNTED DEVICES. ADJUST LOCATION OF SIDEWALL DEVICES AS NECESSARY TO AVOID INTERFERENCE WITH MOLDING OR OTHER ELECTRICAL DEVICES.
15	WHERE CONDUIT, CABLES, DUCTWORK OR PIPING PASSES THROUGH FIRE-RATED FLOORS OR WALLS, THE SLEEVES SHALL BE COMPLETELY SEALED WITH A FIRE STOP MATERIAL THAT IS UL LISTED AND ACCEPTED BY LOCAL AUTHORITIES HAVING JURISDICTION (AHJ) AS BEING SUITABLE FOR THIS SERVICE SUCH AS DOWN CORNING CORP "SILICONE ELASTOMER, RTV FOAM, OR SIMILAR MATERIAL TO MAINTAIN FIRE RATING OF THE WALL OR FLOOR.
16	CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORING AND BEAM PENETRATIONS AS IT RELATES TO HIS WORK.
17	CONTRACTOR SHALL NOT INSTALL ANY MAINTENANCE ITEMS ABOVE HARD CEILINGS. THIS SHALL INCLUDE VALVES, DAMPERS, OR ANY OTHER ITEMS THAT REQUIRE ACCESS AFTER CONSTRUCTION IS COMPLETED. IF INSTALLATION ABOVE A HARD CEILING OF THESE ITEMS CANNOT BE AVOIDED, THEN PROVIDE CEILING ACCESS DOORS EQUAL TO ACUDOR MODEL FW-505 WHERE REQUIRED. AT FIRE-RATED WALLS, USE EQUIVALENT OF ACUDOR MODEL FB-5060. MINIMUM SIZE SHALL BE 12"x12". USE 18"x18" WHEN PERSONNEL ACCESS IS REQUIRED.
18	PROVIDE AN INSULATED BACK ON ALL THERMOSTATS AND TEMPERATURE SENSORS THAT ARE MOUNTED ON CMU OR HOLLOW WALLS. PROVIDE SHALLOW DEVICE EXTENSION BOX BEHIND T-STATS AND SENSORS ON MASONRY WALLS IN COMMERCIAL / RETAIL SPACES.
19	PROVIDE FIRE DAMPERS AT ALL FIRE-RATED WALLS AND FLOOR PENETRATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE BARRIER WALLS AND CEILINGS.
20	IF A CENTRAL FIRE ALARM SYSTEM IS REQUIRED FOR THIS PROJECT, MECHANICAL CONTRACTOR SHALL INSTALL DUCT MOUNTED SMOKE DETECTORS PROVIDED BY FIRE ALARM CONTRACTOR. REFER TO ELECTRICAL NOTES FOR EXACT REQUIREMENTS. MECHANICAL CONTRACTOR SHALL IDENTIFY A SET OF TERMINALS FOR EQUIPMENT SHUTDOWN ON ALL FAN POWERED EQUIPMENT REQUIRING SHUTDOWN CONTROLS. FIRE ALARM CONTRACTOR SHALL WIRE FROM DUCT MOUNTED SMOKE DETECTOR TO SHUTDOWN TERMINALS TO SHUT DOWN FAN OPERATION WHEN SMOKE IS DETECTED.
21	AT PENETRATIONS THROUGH FIRE WALLS: ANY PVC PIPE OR DUCT SHOULD BE EXTERNALLY SLEEVED WITH STEEL, FERROUS, OR COPPER MATERIALS, SECURELY FASTENED TO THE FIRE RATED ASSEMBLY, AND ANY SPACE BETWEEN THE SLEEVE AND THE ASSEMBLY PENETRATED SHALL BE PROTECTED USING MATERIAL THAT CONFORMS TO ASTM E 814 OR UL 1479, SUCH AS FIRE STOP FS-1900, OR FLAME STOPPER 5000.
22	REFER TO ELECTRICAL DRAWINGS FOR SMOKE DAMPER AND FIRE/SMOKE DAMPER DETAIL. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL DAMPERS WITH MOTORIZED ACTUATORS AND INSTALL SMOKE DETECTORS AND PROVIDE WIRING FOR FAN SHUTDOWN CONTROLS. COORDINATE WITH ELECTRICAL CONTRACTOR AND PROVIDE DAMPER ACTUATOR COMPATIBLE WITH ELECTRICAL WIRING PROVIDED. PROVIDE ANY WIRING OR COMPONENTS NOT PROVIDED BY THE ELECTRICAL CONTRACTOR THAT ARE REQUIRED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
23	AHEAD OF ALL VAV BOX INLETS, INSTALL STRAIGHT DUCT EQUIVALENT TO AT LEAST 2 DIAMETERS IN LENGTH WHETHER SHOWN ON PLANS OR NOT.
24	SEISMIC PROTECTION FOR CONCERNS OF ALL BUILDING SYSTEMS INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING, AND ELECTRICAL MUST MEET MINIMUM REQUIREMENTS OF ALL APPLICABLE CODES FOR BUILDINGS' CLASSIFIED SEISMIC PROTECTION MEASURES TO BE APPLIED SHALL BE INSTALLED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND/OR FEDERAL CODES AND WITH MANUFACTURERS'S REQUIREMENTS, THE MOST STRINGENT SHALL APPLY
26	NO RECTANGULAR DUCT SMALLER THAN 10"X10"

GENERAL NOTE:
ALL RECTANGULAR DUCT SIZES SHOWN ARE THE OUTSIDE METAL DIMENSIONS. DUCT DIMENSIONS ALREADY HAVE ALLOWANCES FOR THE INSULATION LINER WHERE APPLICABLE IN THE RECTANGULAR DUCTS. AT DUAL WALL DUCTS, THE DIMENSION SHOWN IS THE OUTSIDE METAL DUCT SIZE AND ALREADY HAS ALLOWANCES FOR THE INSULATION THICKNESS.

MECHANICAL DUCTWORK & INSULATION SCHEDULE

SERVICE	DUCT TYPE	INSULATION TYPE	INSULATION THICKNESS
ALL LOW PRESSURE CONSTANT VOLUME SUPPLY AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
ALL RUNOUTS TO SUPPLY DIFFUSERS AND RETURN GRILLES CONCEALED ABOVE CEILINGS	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
ALL RUNOUTS TO SUPPLY DIFFUSERS AND RETURN GRILLES VISIBLE TO OCCUPIED SPACE	DOUBLE WALL SPIRAL WITH PERFORATED METAL LINER	FIBERGLASS EQUAL TO UNITED MCGILL ACOUSTIC - K27	1-1/2", R VALUE=6.0
ALL SUPPLY AIR DIFFUSERS (BACKSIDE, NOT EXPOSED TO SPACE)	N/A	FIBERGLASS WRAP	2" WRAP, R VALUE=6.0
FRESH AIR EXHAUST DUCT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER. N/A IF IN UNCONDITIONED SPACE	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
RESTROOM EXHAUST DUCT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
ALL MEDIUM PRESSURE CONSTANT VOLUME AND VAV SUPPLY AIR DUCT FOR FIRST 20' FROM AIR HANDLER OR PACKAGED UNIT	DOUBLE WALL SPIRAL WITH PERFORATED METAL LINER	FIBERGLASS EQUAL TO UNITED MCGILL ACOUSTIC - K27	1-1/2", R VALUE=6.0
ALL MEDIUM PRESSURE CONSTANT VOLUME AND VAV SUPPLY AIR DUCT BEYOND 20' FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0
COMBUSTION AIR SUPPLY DUCT	ROUND WRAPPED METAL OR PVC AS INDICATED ON PLANS	THERMAL CERAMICS FIREMASTER. UL LISTED FOR ZERO CLEARANCE TO COMBUSTIBLES	1-1/2", R VALUE=6.0
ALL LOW PRESSURE RETURN AIR DUCT FROM AIR HANDLER OR PACKAGED UNIT	ROUND WRAPPED OR RECTANGULAR LINED, AS INDICATED ON PLANS.	FIBERGLASS WRAP OR MATTE FACED FIBERGLASS LINER	2" WRAP OR 1-1/2" LINER, R VALUE=6.0

MECHANICAL PIPING & INSULATION SCHEDULE

NOTE: ALL EXTERIOR INSULATED PIPING TO BE PROVIDED WITH ALUMINUM JACKET.

SERVICE	PIPING TYPE	INSULATION TYPE	INSULATION THICKNESS	INSULATION THICKNESS / NOMINAL PIPE SIZE <1	1 TO <1-1/2	1-1/2 TO <4	4 TO <8	≥8
EQUIPMENT DRAINS, COOLING CONDENSATE LINES, AND OVERFLOWS	TYPE "L" HARD COPPER	ELASTOMERIC	3/8" IF INTERIOR SPACE N/A EXTERIOR SPACE	0.5	0.5	1.0	1.0	1.0
REFRIGERANT PIPING	COPPER REFRIGERANT PIPING	ELASTOMERIC	1" ON SUCTION LINE	0.5	1.0	1.0	1.0	1.5
ALL OUTDOOR INSULATED PIPING	PROVIDE WITH EMBOSSED ALUMINUM JACKET OVER SCHEDULED INSULATION	PER SCHEDULE	N/A					

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CONSULTANT LOGO:
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PROJECT NO.	18163R
100 % COMPLETE	

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SEAL OF THE CHEROKEE NATION SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS

#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M1.00

MECHANICAL SCHEDULES AND NOTES

STRAIGHT VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-4

mca	MANUFACTURER	MODEL	VALVE SIZE (in.)	OUTSIDE AIR REQUIREMENTS		DESIGN COOLING CFM	MINIMUM COOLING CFM	HEATING CFM	HEAT LAT (°F)	HEAT (kW)	STAGES	CONTROL TYPE	UNIT VOLTS / PHASE	MCA	MOCP	NOTES
				MAX CFM	MIN CFM											
VAV-4-1	TRANE	VCEF08	08	150	21	500	375	375	93	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-4-2	TRANE	VCEF06	06	20	5	300	50	50	87	0.5	SCR	BAS	277/1	2 A	15 A	SEE BELOW
VAV-4-3	TRANE	VCEF06	06	24	9	300	50	50	87	0.5	SCR	BAS	277/1	2 A	15 A	SEE BELOW
VAV-4-4	TRANE	VCEF08	08	106	16	400	275	275	90	3	SCR	BAS	2771	10 A	15 A	SEE BELOW
VAV-4-5	TRANE	VCEF12	12	56	56	1850	575	575	90	6.5	SCR	BAS	480/3	8 A	15 A	SEE BELOW
VAV-4-6	TRANE	VCEF06	06	115	65	500	300	300	92	3.5	SCR	BAS	277/1	13 A	20 A	SEE BELOW
VAV-4-7	TRANE	VCEF06	06	63	13	360	175	175	91	2	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-4-8	TRANE	VCEF06	06	63	13	360	175	175	91	2	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-4-9	TRANE	VCEF06	06	18	10	200	100	100	90	1	SCR	BAS	277/1	3 A	15 A	SEE BELOW
VAV-4-10	TRANE	VCEF05	05	16	6	100	50	50	87	0.5	SCR	BAS	277/1	3 A	15 A	SEE BELOW
VAV-4-11	TRANE	VCEF08	08	152	25	780	400	400	90	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-4-12	TRANE	VCEF06	06	14	4	125	50	50	87	1	SCR	BAS	277/1	3 A	15 A	SEE BELOW
VAV-4-13	TRANE	VCEF06	06	23	8	300	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-14	TRANE	VCEF08	08	105	15	380	275	275	90	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-4-15	TRANE	VCEF08	08	58	58	640	250	250	93	3	SCR	BAS	277/1	11 A	15 A	SEE BELOW
VAV-4-16	TRANE	VCEF06	06	16	16	400	100	100	90	1	SCR	BAS	277/1	3 A	15 A	SEE BELOW
VAV-4-17A	TRANE	VCEF08	08	50	10	900	225	225	90	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-4-17B	TRANE	VCEF12	12	100	24	1750	500	500	90	5.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-4-18	TRANE	VCEF05	05	11	6	100	50	50	87	0.5	SCR	BAS	277/1	3 A	15 A	SEE BELOW
VAV-4-19	TRANE	VCEF08	08	40	22	500	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-20	TRANE	VCEF08	08	64	14	650	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-4-21	TRANE	VCEF08	08	64	14	650	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-4-24	TRANE	VCEF14	14	90	60	2200	675	675	90	7.5	SCR	BAS	480/3	9 A	15 A	SEE BELOW
VAV-4-25	TRANE	VCEF08	08	54	24	450	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-26	TRANE	VCEF08	08	54	24	450	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-27	TRANE	VCEF10	10	90	40	1000	325	325	94	4	SCR	BAS	277/1	14 A	20 A	SEE BELOW
VAV-4-28	TRANE	VCEF06	06	62	12	350	175	175	91	2	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-4-29	TRANE	VCEF08	08	72	34	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-4-30	TRANE	VCEF06	06	21	6	300	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-31	TRANE	VCEF08	08	50	50	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-4-32	TRANE	VCEF06	06	54	15	300	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-33	TRANE	VCEF05	05	16	6	130	50	50	87	0.5	SCR	BAS	277/1	3 A	15 A	SEE BELOW
VAV-4-34	TRANE	VCEF08	08	62	12	360	175	175	92	2	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-4-35	TRANE	VCEF08	08	49	49	400	150	150	87	2	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-4-36	TRANE	VCEF08	08	32	32	400	400	400	90	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-4-37	TRANE	VCEF12	12	63	13	1360	450	450	90	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-4-38	TRANE	VCEF12	12	67	17	1440	450	450	90	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-4-39	TRANE	VCEF14	14	116	36	2300	700	700	91	8	SCR	BAS	480/3	10 A	15 A	SEE BELOW
VAV-4-40	TRANE	VCEF10	10	65	15	1000	300	300	92	3.5	SCR	BAS	277/1	13 A	20 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

STRAIGHT VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-3

MARK	MANUFACTURER	MODEL	VALVE SIZE (in.)	OUTSIDE AIR REQUIREMENTS		DESIGN COOLING CFM	MINIMUM COOLING CFM	HEATING CFM	HEAT LAT (°F)	HEAT (kW)	STAGES	CONTROL TYPE	UNIT VOLTS / PHASE	MCA	MOCP	NOTES
				MAX CFM	MIN CFM											
VAV-3-1	TRANE	VCEF10	10	25	15	1445	425	425	92	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-3-2	TRANE	VCEF08	08	17	7	450	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-3-3	TRANE	VCEF10	10	24	14	1105	325	325	89	3.5	SCR	BAS	277/1	13 A	15 A	SEE BELOW
VAV-3-4	TRANE	VCEF08	08	42	42	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-5	TRANE	VCEF10	10	21	11	1000	350	350	91	4	SCR	BAS	277/1	15 A	20 A	SEE BELOW
VAV-3-6	TRANE	VCEF08	08	17	7	800	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-3-7	TRANE	VCEF08	08	17	7	700	225	225	90	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-8	TRANE	VCEF05	05	17	7	275	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-9	TRANE	VCEF05	05	16	6	275	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-10	TRANE	VCEF08	08	71	21	450	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-11	TRANE	VCEF06	06	42	30	425	125	125	93	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-12	TRANE	VCEF12	12	74	14	1450	450	450	90	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-3-13	TRANE	VCEF08	08	64	14	650	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-14	TRANE	VCEF08	08	35	15	480	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-15	TRANE	VCEF10	10	48	18	1035	325	325	89	3.5	SCR	BAS	277/1	13 A	15 A	SEE BELOW
VAV-3-16	TRANE	VCEF08	08	35	15	480	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-17	TRANE	VCEF06	06	17	17	375	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-18	TRANE	VCEF05	05	18	8	275	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-19	TRANE	VCEF08	08	60	24	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-20	TRANE	VCEF06	06	60	24	605	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-21	TRANE	VCEF12	12	77	77	1550	525	525	91	6	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-3-23	TRANE	VCEF14	14	180	70	3000	900	900	90	10	SCR	BAS	480/3	12 A	15 A	SEE BELOW
VAV-3-24	TRANE	VCEF10	10	21	11	1200	400	400	90	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-3-25	TRANE	VCEF06	06	54	14	400	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-26	TRANE	VCEF06	06	24	24	400	400	400	90	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-3-27	TRANE	VCEF12	12	64	14	1700	525	525	91	6	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-3-28	TRANE	VCEF06	06	49	49	480	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-29	TRANE	VCEF14	14	84	24	2600	1000	1000	90	11	SCR	BAS	480/3	13 A	20 A	SEE BELOW
VAV-3-30	TRANE	VCEF10	10	221	33	1100	575	575	90	6.5	SCR	BAS	480/3	8 A	15 A	SEE BELOW
VAV-3-31	TRANE	VCEF10	10	221	33	1100	575	575	90	6.5	SCR	BAS	480/3	8 A	15 A	SEE BELOW
VAV-3-32	TRANE	VCEF10	10	221	33	1100	575	575	90	6.5	SCR	BAS	480/3	8 A	15 A	SEE BELOW
VAV-3-33	TRANE	VCEF10	10	221	33	1100	575	575	90	6.5	SCR	BAS	480/3	8 A	15 A	SEE BELOW
VAV-3-34	TRANE	VCEF10	10	48	18	1410	425	425	92	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-3-35	TRANE	VCEF08	08	64	24	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-36	TRANE	VCEF06	06	48	18	450	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-37	TRANE	VCEF10	10	48	18	1410	450	450	90	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-3-38	TRANE	VCEF08	08	78	78	750	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-3-39	TRANE	VCEF10	10	48	18	1410	450	450	90	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-3-40	TRANE	VCEF06	06	48	18	450	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-41	TRANE	VCEF10	10	48	18	1410	450	450	90	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-3-42	TRANE	VCEF10	10	32	12	1100	350	350	91	4	SCR	BAS	277/1	15 A	20 A	SEE BELOW
VAV-3-43	TRANE	VCEF08	08	64	24	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-44	TRANE	VCEF08	08	64	24	600	200	200	94	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-45	TRANE	VCEF08	08	32	12	500	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-46	TRANE	VCEF06	06	32	16	300	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-3-47	TRANE	VCEF08	08	48	18	750	200	200	94	2..5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-3-48	TRANE	VCEF10	10	34	14	1100	575	575	90	6.5	SCR	BAS	480/3	8 A	15 A	SEE BELOW
VAV-3-49	TRANE	VCEF10	10	42	12	1200	400	400	90	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-3-50	TRANE	VCEF08	08	16	6	700	275	275	90	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-3-51	TRANE	VCEF06	06	32	12	300	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

STRAIGHT VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-2

MARK	MANUFACTURER	MODEL	VALVE SIZE (in.)	DESIGN COOLING CFM	MINIMUM COOLING CFM	HEATING CFM	HEAT LAT (°F)	HEAT (kW)	STAGES	CONTROL TYPE	UNIT VOLTS / PHASE	MCA	MOCP	NOTES
EAV-2-14	TRANE	VCEF14	14	2000	400	400	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW OF VAV-2-12
EAV-2-15	TRANE	VCEF14	14	2600	1250	1250	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW OF VAV-2-11A
EAV-2-16	TRANE	VCEF16	16	3500	1315	1315	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW OF VAV-2-5B
EAV-2-17	TRANE	VCEF14	14	2700	1250	1250	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW OF VAV-2-11B
EAV-2-18	TRANE	VCEF16	16	3700	1315	1315	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW SUM OF VAV-2-5A
EAV-2-19	TRANE	VCEF16	16	3300	1350	1350	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW SUM OF VAV-2-1,2,3,6,9,13
EAV-2-20	TRANE	VCEF06	06	425	300	300	N/A	N/A	N/A	BAS	24V	0 A	0 A	VAV BOX TO TRACK AIRFLOW OF VAV-2-8
VAV-2-1	TRANE	VCEF10	10	900	275	275	90	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-2-2	TRANE	VCEF08	08	800	150	150	86	1.5	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-2-3	TRANE	VCEF06	06	300	125	125	93	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-2-4	TRANE	VCEF05	05	200	50	50	115	1	SCR	BAS	277/1	4 A	15 A	SEE BELOW
VAV-2-5A	TRANE	VCEF16	16	3550	1165	1165	90	13	SCR	BAS	480/3	16 A	20 A	SEE BELOW
VAV-2-5B	TRANE	VCEF16	16	3000	1165	1165	90	13	SCR	BAS	480/3	16 A	20 A	SEE BELOW
VAV-2-6	TRANE	VCEF10	10	1000	900	900	90	11	SCR	BAS	480/3	13 A	20 A	SEE BELOW
VAV-2-7	TRANE	VCEF05	05	150	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-2-8	TRANE	VCEF05	05	300	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-2-9	TRANE	VCEF05	05	200	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-2-10	TRANE	VCEF06	06	200	100	100	102	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-2-11A	TRANE	VCEF14	14	2400	1100	1100	90	12	SCR	BAS	480/3	15 A	20 A	SEE BELOW
VAV-2-11B	TRANE	VCEF14	14	2450	1100	1100	90	12	SCR	BAS	480/3	15 A	20 A	SEE BELOW
VAV-2-12	TRANE	VCEF14	14	2250	700	700	91	8	SCR	BAS	480/3	10 A	15 A	SEE BELOW
VAV-2-13	TRANE	VCEF05	05	300	125	125	93	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

STRAIGHT VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-1

MARK	MANUFACTURER	MODEL	VALVE SIZE (in.)	OUTSIDE AIR REQUIREMENTS		DESIGN COOLING CFM	MINIMUM COOLING CFM	HEATING CFM	HEAT LAT (°F)	HEAT (kW)	STAGES	CONTROL TYPE	UNIT VOLTS / PHASE	MCA	MOCP	NOTES
				MAX CFM	MIN CFM											
VAV-1-1B	TRANE	VCEF14	14	280	30	2250	675	675	90	6.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-1-2	TRANE	VCEF08	08	130	32	500	600	600	91	6.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-1-3	TRANE	VCEF08	08	90	90	850	275	275	90	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-4	TRANE	VCEF08	08	64	15	750	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-5	TRANE	VCEF08	08	64	15	750	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-6	TRANE	VCEF08	08	64	15	750	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-8	TRANE	VCEF14	14	432	65	2890	1250	1250	90	14	SCR	BAS	480/3	17 A	25 A	SEE BELOW
VAV-1-9	TRANE	VCEF10	10	220	35	960	550	550	90	6	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-1-10	TRANE	VCEF10	10	220	35	960	550	550	90	6	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-1-11	TRANE	VCEF08	08	50	10	400	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-12	TRANE	VCEF14	14	65	15	2000	600	600	91	6.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-1-13	TRANE	VCEF14	14	45	13	2000	650	650	90	6.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-1-14B	TRANE	VCEF08	08	80	20	600	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-16	TRANE	VCEF10	10	64	15	1250	375	375	93	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-1-17	TRANE	VCEF10	10	64	15	825	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-18	TRANE	VCEF10	10	64	15	825	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-19	TRANE	VCEF12	12	55	15	1600	500	500	90	5.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-1-20	TRANE	VCEF12	12	55	15	1390	425	425	92	5	SCR	BAS	480/3	6 A	15 A	SEE BELOW
VAV-1-21	TRANE	VCEF06	06	65	65	600	225	225	90	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-1-22	TRANE	VCEF08	08	51	12	700	225	225	90	2.5	SCR	BAS	277/1	9 A	15 A	SEE BELOW
VAV-1-23	TRANE	VCEF08	08	51	12	400	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-24	TRANE	VCEF06	06	51	12	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-25	TRANE	VCEF06	06	66	16	350	175	175	91	2	SCR	BAS	277/1	7 A	15 A	SEE BELOW
VAV-1-26	TRANE	VCEF05	05	54	15	200	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-27	TRANE	VCEF10	10	253	69	1100	650	650	90	6.5	SCR	BAS	480/3	7 A	15 A	SEE BELOW
VAV-1-28	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-29	TRANE	VCEF06	06	51	11	400	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-30	TRANE	VCEF06	06	51	11	400	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-31	TRANE	VCEF06	06	51	11	400	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-33	TRANE	VCEF10	10	150	88	1050	440	440	87	4.5	SCR	BAS	277/1	16 A	20 A	SEE BELOW
VAV-1-34	TRANE	VCEF06	06	53	13	350	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-35	TRANE	VCEF08	08	51	11	530	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-36	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-37	TRANE	VCEF08	08	51	11	530	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-38	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-39	TRANE	VCEF08	08	51	11	530	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-40	TRANE	VCEF08	08	51	11	530	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-41	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-42	TRANE	VCEF08	08	51	11	530	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-43	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-44	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-45	TRANE	VCEF06	06	51	11	300	150	150	87	1.5	SCR	BAS	277/1	6 A	15 A	SEE BELOW
VAV-1-46A	TRANE	VCEF14	14	100	20	3000	900	900	90	10	SCR	BAS	480/3	12 A	12 A	SEE BELOW
VAV-1-46C	TRANE	VCEF08	08	100	20	800	250	250	93	3	SCR	BAS	277/1	10 A	15 A	SEE BELOW
VAV-1-47	TRANE	VCEF08	08	61	51	550	175	175	92	2	SCR	BAS	277/1	7 A	15 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

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CLIENT:
SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M1.01

MECHANICAL SCHEDULES

FAN POWERED VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-1

TAG	MANUFACTURER	MODEL	VALVE SIZE (in.)	FAN SIZE	OUTSIDE AIR REQUIREMENT		DESIGN COOLING CFM	MINIMUM COOLING CFM	FAN AIRFLOW (CFM)	PRIMARY AIR HEATING CFM	TOTAL HEATING CFM	HEATING COIL ENTERING AIR TEMP (°F)	HEATING COIL LEAVING AIR TEMP (°F)	COIL HEAT (kW)	COIL HEAT STAGES	DOWN STREAM SP (in. w.c.)	UNIT VOLTS / PHASE	BLOWER HP	MCA	MOCP	NOTES
					MAX CFM	MIN CFM															
VAV-1-1A	TRANE	VPEF	14	07	370	40	2800	600	2200	600	2800	65	90	24	SCR	0.4	480/3	1	42 A	45 A	SEE BELOW
VAV-1-15A	TRANE	VPEF	14	06	485	90	3000	1250	1750	1250	3000	62	84	20	SCR	0.4	480/3	1/2	28 A	35 A	SEE BELOW
VAV-1-15B	TRANE	VPEF	16	07	485	90	3000	1250	1750	1250	3000	62	84	30	SCR	0.4	480/3	1	43 A	45 A	SEE BELOW
VAV-1-14A	TRANE	VPEF	14	07	65	20	2500	500	2000	500	2500	65	90	24	SCR	0.4	480/3	1	42 A	45 A	SEE BELOW
VAV-1-46B	TRANE	VPEF	16	07	140	40	3500	1500	2250	1500	3750	68	90	36	SCR	0.4	480/3	1	44 A	45 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

FAN POWERED VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-3

TAG	MANUFACTURER	MODEL	VALVE SIZE (in.)	FAN SIZE	OUTSIDE AIR REQUIREMENTS		DESIGN COOLING CFM	MINIMUM COOLING CFM	FAN AIRFLOW (CFM)	PRIMARY AIR HEATING CFM	TOTAL HEATING CFM	HEATING COIL ENTERING AIR TEMP (°F)	HEATING COIL LEAVING AIR TEMP (°F)	COIL HEAT (kW)	COIL HEAT STAGES	DOWN STREAM SP (in. w.c.)	UNIT VOLTS / PHASE	BLOWER HP	MCA	MOCP	NOTES
					MAX CFM	MIN CFM															
VAV-3-22B	TRANE	VPEF	14	06	433	77	2400	1100	1300	1100	2400	62	84	17	SCR	0.4	480/3	1/2	24 A	30 A	SEE BELOW
VAV-3-22A	TRANE	VPEF	14	06	433	77	2475	1100	1300	1100	2400	62	84	17	SCR	0.4	480/3	1/2	24 A	30 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

FAN POWERED VAV BOX WITH ELECTRIC REHEAT SCHEDULE - RTU-4

TAG	MANUFACTURER	MODEL	VALVE SIZE (in.)	FAN SIZE	OUTSIDE AIR REQUIREMENTS		DESIGN COOLING CFM	MINIMUM COOLING CFM	FAN AIRFLOW (CFM)	PRIMARY AIR HEATING CFM	TOTAL HEATING CFM	HEATING COIL ENTERING AIR TEMP (°F)	HEATING COIL LEAVING AIR TEMP (°F)	COIL HEAT (kW)	COIL HEAT STAGES	DOWN STREAM SP (in. w.c.)	UNIT VOLTS / PHASE	BLOWER HP	MCA	MOCP	NOTES
					MAX CFM	MIN CFM															
VAV-4-22A	TRANE	VPEF	14	06	286	93	2850	900	1900	900	2800	64	82	15	SCR	0.4	480/3	1/2	22 A	30 A	SEE BELOW
VAV-4-22B	TRANE	VPEF	14	06	286	93	2800	900	1900	900	2800	64	82	15	SCR	0.4	480/3	1/2	22 A	30 A	SEE BELOW
VAV-4-41A	TRANE	VPEF	14	06	291	194	2800	900	1900	900	2800	64	82	15	SCR	0.4	480/3	1/2	22 A	30 A	SEE BELOW
VAV-4-41B	TRANE	VPEF	14	06	291	194	2800	900	1900	900	2800	64	82	15	SCR	0.4	480/3	1/2	22 A	30 A	SEE BELOW

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. VAV BOX INLET STATIC PRESSURE IS TO BE 0.75".
2. PROVIDE ALL VAV BOXES WITH DDC CONTROLS, ACTUATOR, FACTORY MOUNTED DISCONNECT SWITCH, AIR FLOW SAFETY SWITCH, CONTROL POWER TRANSFORMER AND FUSES, AND SINGLE POINT ELECTRICAL CONNECTION WITH FUSES. LOW VOLTAGE WIRING BY MECHANICAL CONTRACTOR.
3. UNIT INSULATION SHALL BE MATTE FACED WITH 1" INSULATION. TYPICAL FOR ALL

MULTI-ZONE VAV ROOF TOP UNIT WITH GAS FIRED HEAT SCHEDULE

MARK	DESCRIPTION	MFR	MODEL	NOM. TONS	EER / IEER	COOLING							HEATING					SUPPLY FANS				RELIEF FAN			ELECTRICAL				WEIGHT	ECONOMIZER TYPE	CONTROL TYPE	ACCESSORIES
						AIRFLOW COIL	O/A CFM	AMBIENT (°F)	EAT DB / WB	LAT COIL DB / WB	LAT UNIT DB / WB	COMPRESSOR STAGES	AMBIENT (°F)	AIRFLOW	EAT / LAT	HEAT IN / OUT (MBH)	STAGES	AIRFLOW	SUPPLY DUCT ESP	RETURN DUCT ESP	FAN HP	AIRFLOW	ESP	HP	VOLTS	PH	MCA	MOCP				
RTU-1	MULTI-ZONE VAV	TRANE	SFHKD124	115	10.3 / 14.4	37250	7050 CFM	100	74 / 62.4	51.81 / 50.88	56.5 / 52.94	MODULATING	9	20000	52.9 / 72.69	1000 / 800	MODULATING	40000 CFM	2.86"	2.3"	(2) 40	32150	2.3"	40	460 V	3	345	350	17000	COMPARATIVE ENTHALPY	BAS	1-15
RTU-3	MULTI-ZONE VAV	TRANE	SFHKD124	115	10.3 / 14.4	38600	5250 CFM	100	72.2 / 60.7	50.4 / 49.54	54.7 / 51.42	MODULATING	9	20000	52.9 / 72	1000 / 800	MODULATING	40000 CFM	3.871	1.289	(2) 40	40000	1.289	40	460 V	3	345	350	17000	COMPARATIVE ENTHALPY	BAS	1-15
RTU-4	MULTI-ZONE VAV	TRANE	SFHKC904	90	10.5 / 14.6	29660	4700 CFM	100	73.0 / 61.3	50.93 / 49.6	55.18 / 51.49	MODULATING	9	20000	52.9 / 77.76	1000 / 800	MODULATING	31300 CFM	4"	2.322"	(2) 30	31300	2.322"	30	460 V	3	285.3	300	16000	COMPARATIVE ENTHALPY	BAS	1-15

GENERAL NOTES APPLICABLE TO ALL UNITS:
1. PROVIDE VIBRATION ISOLATION ROOF CURB TO MATCH ROOF TYPE AND SLOPE, SEISMIC, AND WIND CLASSIFICATION.
2. PROVIDE THERMAL EXPANSION VALVE.
3. PROVIDE HAIL GUARD.
4. PROVIDE THROUGH THE BASE ELECTRICAL.
5. PROVIDE UNIT MOUNTED CONVENIENCE OUTLET.
6. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
7. VERTICAL DISCHARGE
8. DIGITAL SCROLL COMPRESSORS - PROVIDE COMPRESSOR SOUND BLANKETS.
9. DIRECT DRIVE SUPPLY AND EXHAUST FAN WITH GROUDING RINGS AND VFD.
10. PROVIDE WITH BACNET INTERFACE
11. 0-100% ECONOMIZER
12. OUTSIDE AIRFLOW MONITOR
13. PROVIDE WITH UV LIGHTS
14. STAINLESS STEEL DRAIN PAIN
15. DOUBLE WALL CONSTRUCTION
16. PROVIDE WITH PHASE LOSS MONITORING THROUGH THE BAS.
17. SCCR 65000

ACCEPTABLE MANUFACTURERS AND REPRESENTATION
A.DAIKEN NORTH AMERICA |
B.YORK-A JOHNSON CONTROL COMPANY |
C.TRANE |

ANY SUBSTITUTIONS OR VARIATIONS FROM SCHEDULED EQUIPMENT MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL A MINIMUM OF TWO WEEKS PRIOR TO BID DATE.

100% OUTSIDE AIR MULTI-ZONE VAV ROOF TOP UNIT WITH ERV & GAS FIRED HEAT SCHEDULE

MARK	DESCRIPTION	MFR	MODEL	NOM. TONS	EER / MRE	ERV - SUMMER					COOLING COIL					ERV - WINTER						HEATING				SUPPLY FANS				EXHAUST FAN			ELECTRICAL				WEIGHT	CONTROL TYPE	ACCESSORIES
						OUTSIDE AIR		EXHAUST AIR		VENTILATION SUPPLY AIR						OUTSIDE AIR		EXHAUST AIR		VENTILATION SUPPLY AIR																			
						AMBIENT DB / WB	AIRFLOW	EAT DB / WB	AIRFLOW	AIRFLOW	LAT DB / WB	AIRFLOW COIL	EAT DB / WB	LAT COIL DB / WB MAX 51F	LAT UNIT REHEAT DB / WB	COMPRESSOR STAGES	AMBIENT DB / WB	AIRFLOW	EAT DB / WB	AIRFLOW	AIRFLOW	LAT DB / WB	AIRFLOW	EAT / LAT	HEAT IN / OUT (MBH)	STAGES	AIRFLOW	SUPPLY DUCT ESP	RETURN DUCT ESP	FAN HP	AIRFLOW	ESP	HP	VOLTS	PH	MCA	MOCP			
RTU-2	MULTI-ZONE VAV W/ ERV	TRANE	OANG060C3	60	15.7 / 4.64	100 / 76	15000 CFM	66 / 56.3	15000	15000	80.9 / 66.2	15000 CFM	80.9/ 66.2	50.9 / 50.9	66 / 57.2	MODULATING	9 / 7	15000	66 / 56.3	15000	15000	38.9 / 36.7	15000 CFM	38.9 / 98.9	1200 / 972	MODULATING	15000 CFM	2.5"	1"	(2) 15	15000	2.25"	(2) 10	460 V	3	172	200	12000	BAS	1-16

GENERAL NOTES APPLICABLE TO ALL UNITS:
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2. PROVIDE THERMAL EXPANSION VALVE.
3. PROVIDE HAIL GUARD.
4. PROVIDE THROUGH THE BASE ELECTRICAL.
5. PROVIDE UNIT MOUNTED CONVENIENCE OUTLET.
6. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
7. VERTICAL DISCHARGE
8. DIGITAL SCROLL COMPRESSORS - PROVIDE COMPRESSOR SOUND BLANKETS.
9. DIRECT DRIVE SUPPLY AND EXHAUST FAN WITH GROUDING RINGS AND VFD.
10. PROVIDE WITH BACNET INTERFACE
11. ENERGY RECOVERY WHEEL WITH FROST CONTROL AND BYPASS - PURGE OPTION
12. PROVIDE WITH MODULATING HOT GAS REHEAT.
13. OUTSIDE AIRFLOW MONITOR
14. PROVIDE WITH UV LIGHTS
15. STAINLESS STEEL DRAIN PAIN
16. DOUBLE WALL CONSTRUCTION
17. PROVIDE WITH PHASE LOSS MONITORING THROUGH THE BAS.
18. SCCR 65000

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LICENSED PROFESSIONAL ENGINEER
Shane Wells
28910
OKLAHOMA
CERTIFICATE OF AUTHORIZATION
08/23/19

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CLIENT:
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College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

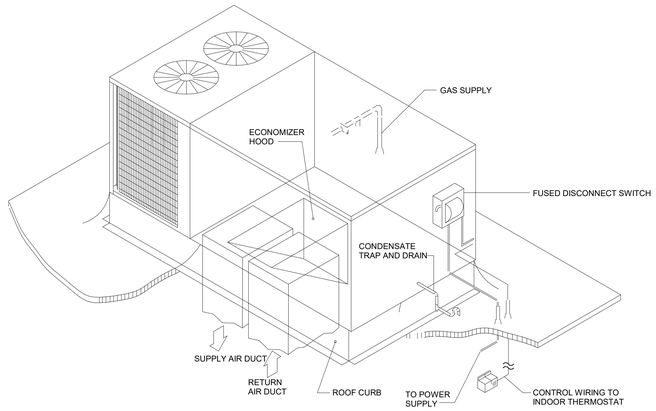
REVISIONS

#	DATE	DESCRIPTION

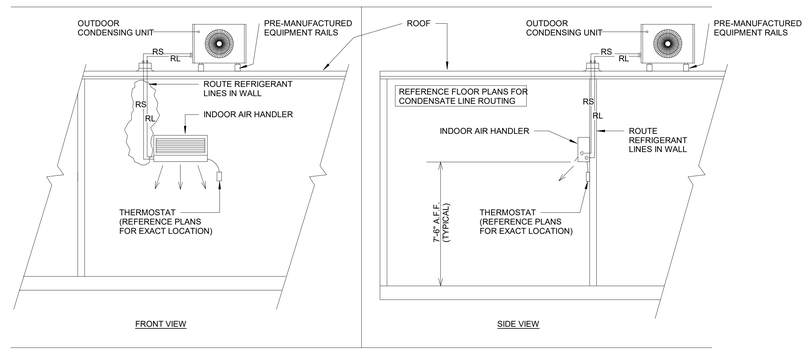
DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M1.02
MECHANICAL SCHEDULES

MECHANICAL LEGEND

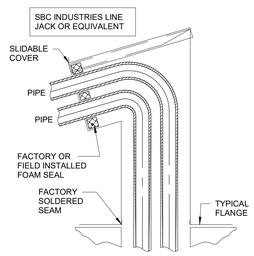
T	THERMOSTAT (MOUNTED AT 48" A.F.F)		EXHAUST GRILLE (CEILING MOUNTED)
S	TEMPERATURE SENSOR (MOUNTED AT 48" A.F.F)		SUPPLY DIFFUSER (CEILING MOUNTED)
F	FORMALDEHYDE SENSOR (HCHO) (MOUNTED AT 48" A.F.F)		RETURN GRILLE (CEILING MOUNTED)
OCC	OCCUPANCY SENSOR PROVIDED BY DIV 26	CD-2 225 CFM	DIFFUSER CALLOUT TAG
D	DUCT MOUNTED SMOKE DETECTOR		MANUAL BALANCE DAMPER
H	HUMIDITY SENSOR (MOUNTED AT 48"AFF)		VERTICAL DUCT TAKE-OFF WITH BALANCE DAMPER
AHU-1	EQUIPMENT OR DEVICE TAG		SIDEWALL AIR DEVICE
CFM	STANDARD CUBIC FEET PER MINUTE	M	MOTORIZED 3-POSITION ACTUATOR EQUAL TO BELIMO MODEL 'LF24-SR-E'
FD	FIRE DAMPER	24x12	RECTANGULAR DUCT (FIRST DIMENSION, SIDE SHOWN)
FSD	COMBINATION FIRE/SMOKE DAMPER	16"	ROUND DUCT
B.O.D.	BOTTOM OF DUCT		INTERNALLY LINED DUCT
B.O.B.	BOTTOM OF BEAM		AIR FLOW ARROW
A.F.F.	ABOVE FINISHED FLOOR	(ROUND) (RECTANGULAR)	DUCT CONTINUATION SYMBOLS
R	REFRIGERANT PIPE	C	CONDENSATE PIPE
OCC	OCCUPANCY SENSOR PROVIDED BY DIV 26		



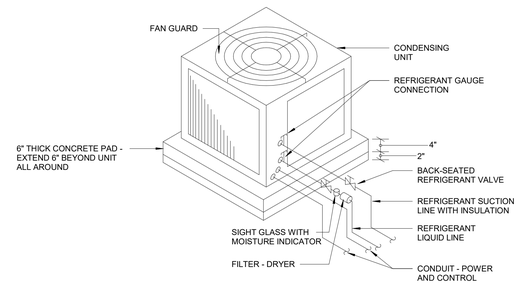
13 ROOF TOP PACKAGED HVAC UNIT DETAIL
12" = 1'-0"



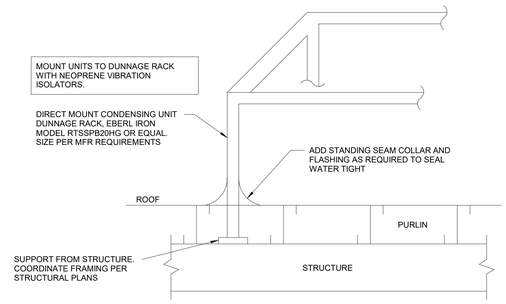
12 DUCTLESS SPLIT SYSTEM WITH ROOF-MOUNTED CONDENSING UNIT
SCALE: N.T.S.



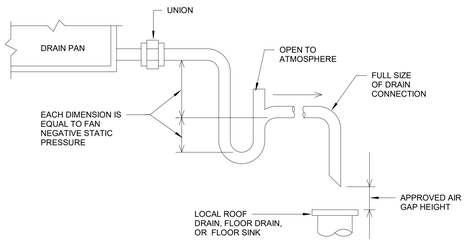
11 ROOF REFRIGERANT PIPING PENETRATION - GOOSENECK
N.T.S.



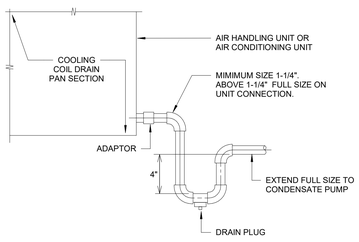
10 AIR-COOLED CONDENSING UNIT
SCALE: N.T.S.



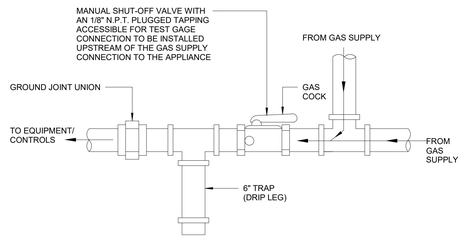
9 ROOF TOP CONDENSOR MOUNTING
SCALE: N.T.S.



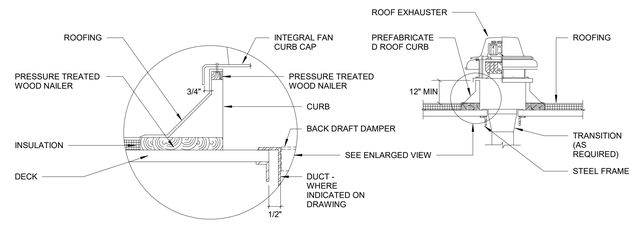
8 CONDENSATE DRAIN DETAIL
SCALE: N.T.S.



7 CONDENSATE DRAIN TO CONDENSATE PUMP DETAIL
SCALE: N.T.S.



6 GAS CONNECTION TO EQUIPMENT
SCALE: N.T.S.

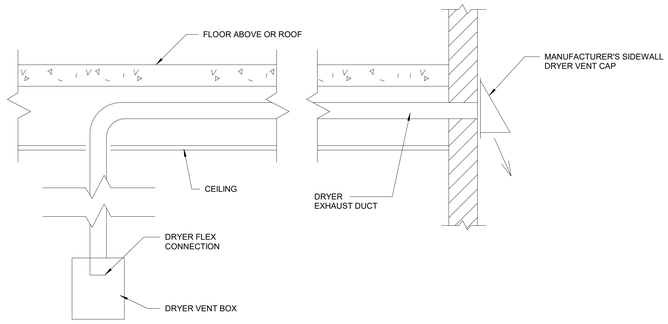


NOTES:

1. WHERE NO DUCT IS INDICATED, BACKDRAFT DAMPER SHALL BE FULL SIZE OF OPENING IN ROOF DECK.

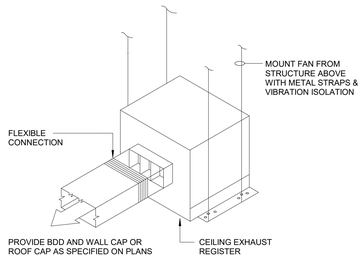
2. ROOF MOUNTED EXHAUST FANS SHALL NOT BE MOUNTED ON A SLOPE OF GREATER THAN 6:12.

5 ROOF MOUNTED EXHAUST FAN DETAIL
SCALE: N.T.S.

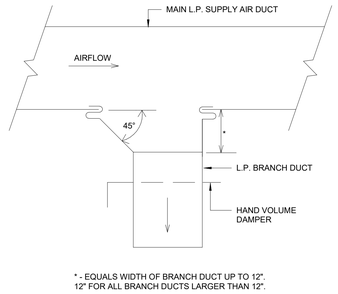


NOTE: VENT ROUTING TO BE INSTALLED PER MANUFACTURER'S RECOMMEDATIONS

4 DRYER EXHAUST VENT THRU SIDEWALL DETAIL
SCALE: N.T.S.

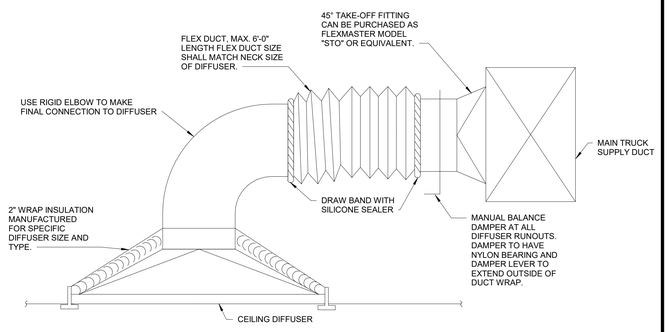


3 CEILING EXHAUST FAN DETAIL
SCALE: N.T.S.



* - EQUALS WIDTH OF BRANCH DUCT UP TO 12". 12" FOR ALL BRANCH DUCTS LARGER THAN 12".

2 TYPICAL SUPPLY AIR BRANCH DUCT TAKE-OFF
SCALE: N.T.S.



1 TYPICAL DIFFUSER CONNECTION WITH INSULATION
SCALE: N.T.S.

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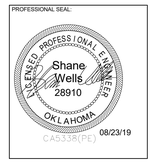

CONSULTANT LOGO:

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PROJECT NO. 18163R
100 % COMPLETE

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CLIENT:

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

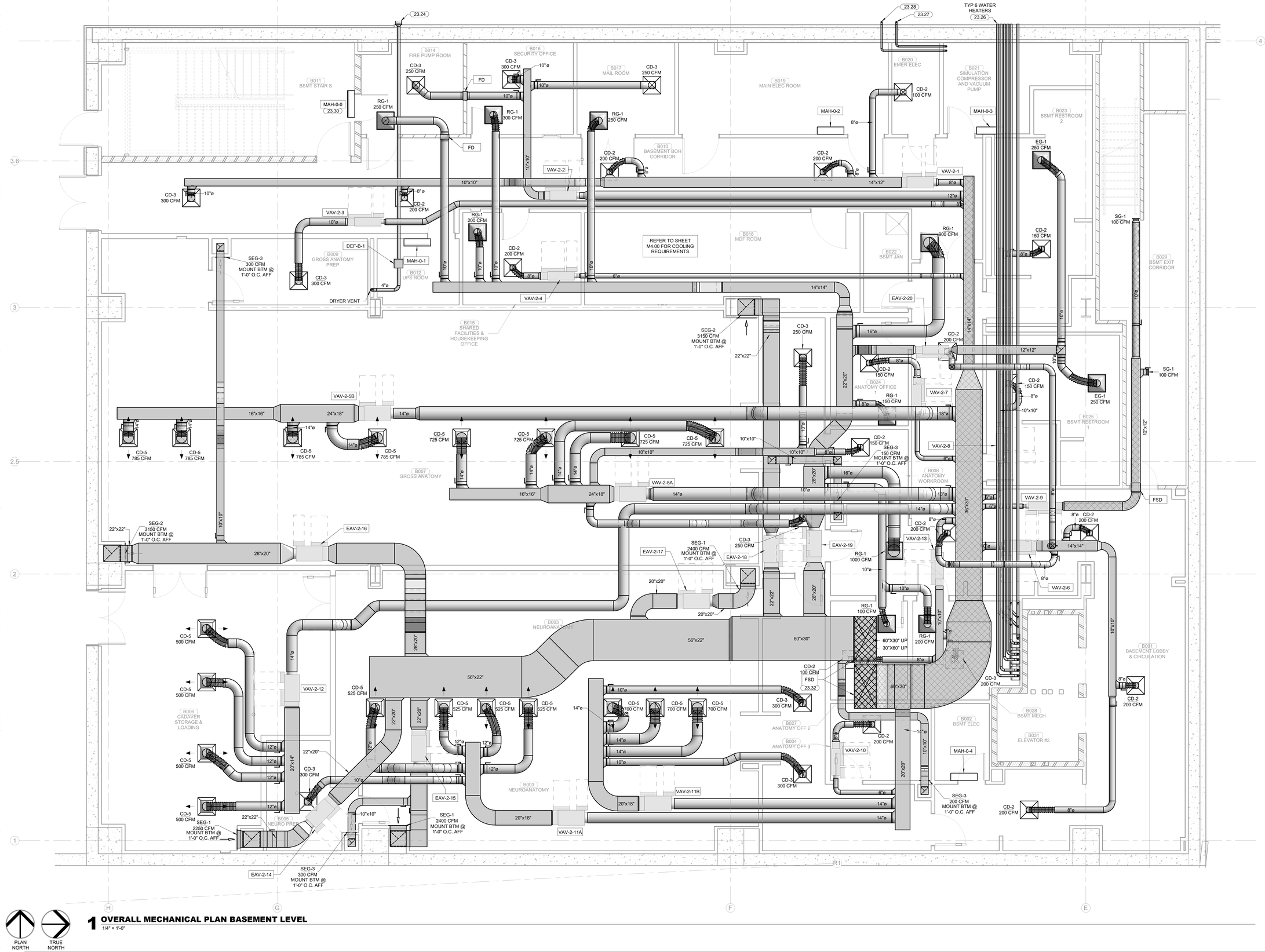
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M1.03

MECHANICAL LEGEND AND DETAILS

KEYNOTES

23.24	ROUTE 4"Ø INSULATED STEEL OR ALUMINUM (RATED FOR DRYER EXHAUST) DRYER DUCT TO EXTERIOR AND TERMINATE WITH MFR WALL CAP AS SHOWN.
23.26	ROUTE WATER HEATER INTAKE AND EXHAUST THROUGH SIDEWALL AS SHOWN. PROVIDE MFR INTAKE/EXHAUST SIDEWALL KIT. INSTALL AND SIZE PIPE PER MFR INSTRUCTIONS. TYPICAL OF 6 WATER HEATERS.
23.27	PROVIDE 2" COPPER TYPE L PIPE THROUGH EXTERIOR WALL WITH ELBOW DN AND INSECT SCREEN FOR AIR COMPRESSOR. COORDINATE EXACT REQUIREMENTS WITH AIR COMPRESSOR MFR.
23.28	PROVIDE 2" COPPER TYPE L PIPE THROUGH EXTERIOR WALL WITH ELBOW DN AND INSECT SCREEN FOR VACUUM. COORDINATE EXACT REQUIREMENTS WITH VACUUM MFR.
23.30	MOUNT AT 9'-0" AFF.



1 OVERALL MECHANICAL PLAN BASEMENT LEVEL

1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER — Shane Wells 28910 — OKLAHOMA — CERTIFICATE — 08/23/19

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CLIENT:

SEAL OF THE CHEROKEE NATION — ESTD. SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine AT THE CHEROKEE NATION

TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

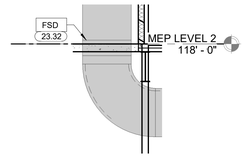
SHEET NUMBER:

M2.00

OVERALL MECHANICAL PLAN BASEMENT LEVEL SECTOR 02

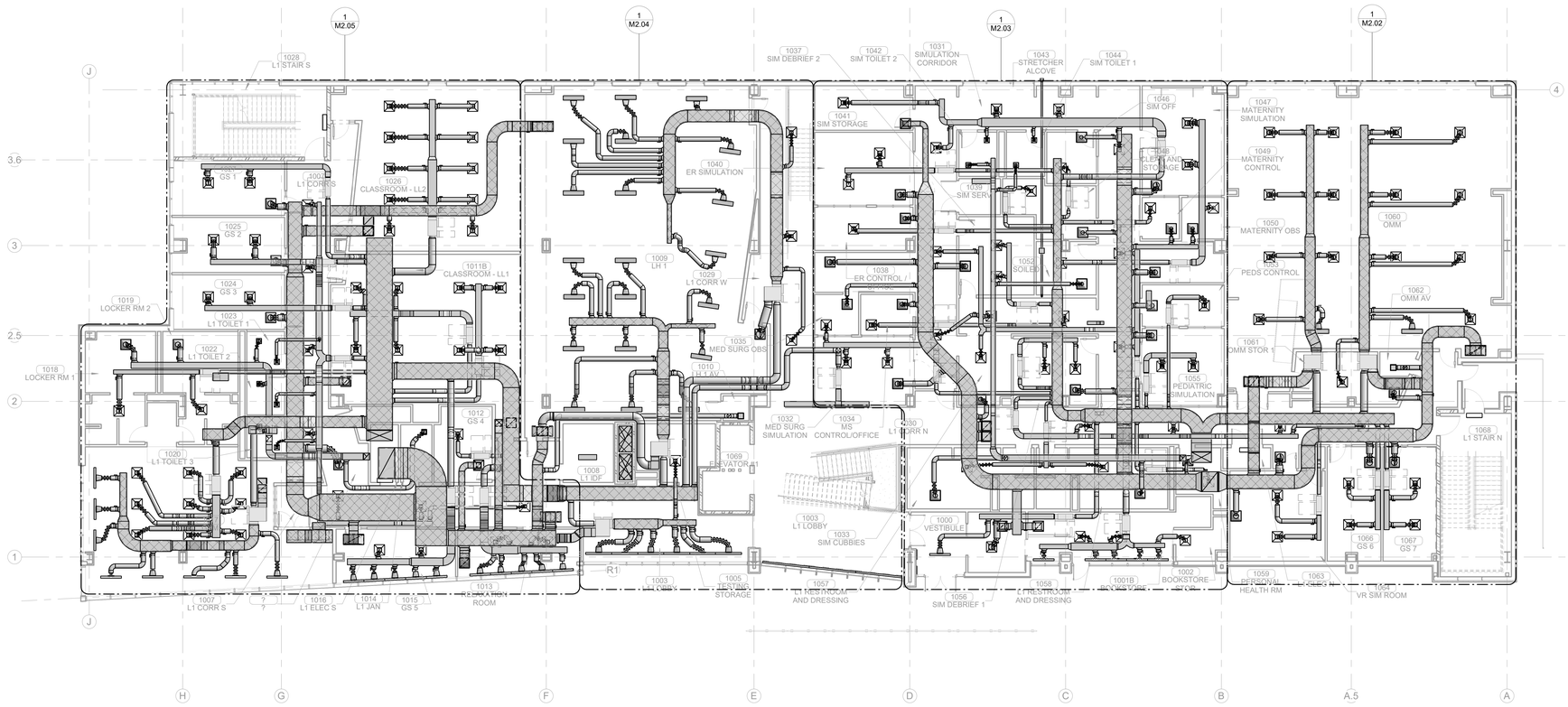
KEYNOTES

23.32	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT FLOOR PENETRATIONS AT BOTTOM OF CHASE TO MAINTAIN 1-2 HOUR RATING AT FLOOR SLAB. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT. REFER TO DETAIL 2-M2.01.



TYPICAL FLOOR SLAB FIRE/SMOKE DAMPER DUCT PENETRATION

2 1/4" = 1'-0"



1 OVERALL MECHANICAL PLAN LEVEL 01

3/32" = 1'-0"

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CONSTRUCTION DOCUMENTS

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#	DATE	DESCRIPTION

DATE: 08-23-19

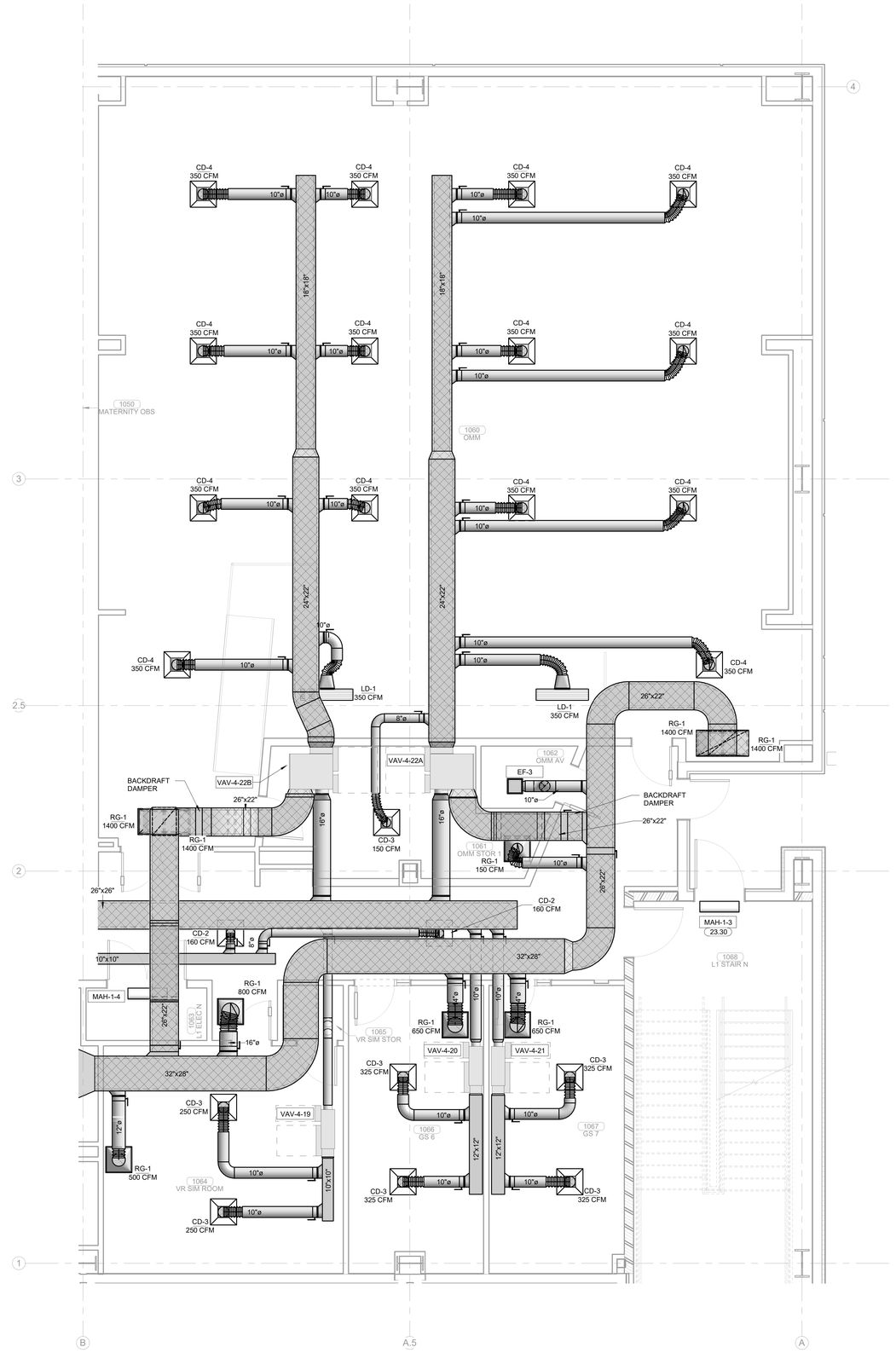
JOB NUMBER: 17-13

SHEET NUMBER: M2.01

OVERALL MECHANICAL PLAN LEVEL 01

KEYNOTES

23.30	MOUNT AT 9'-0" AFF.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 01

1/4" = 1'-0"

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KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

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#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

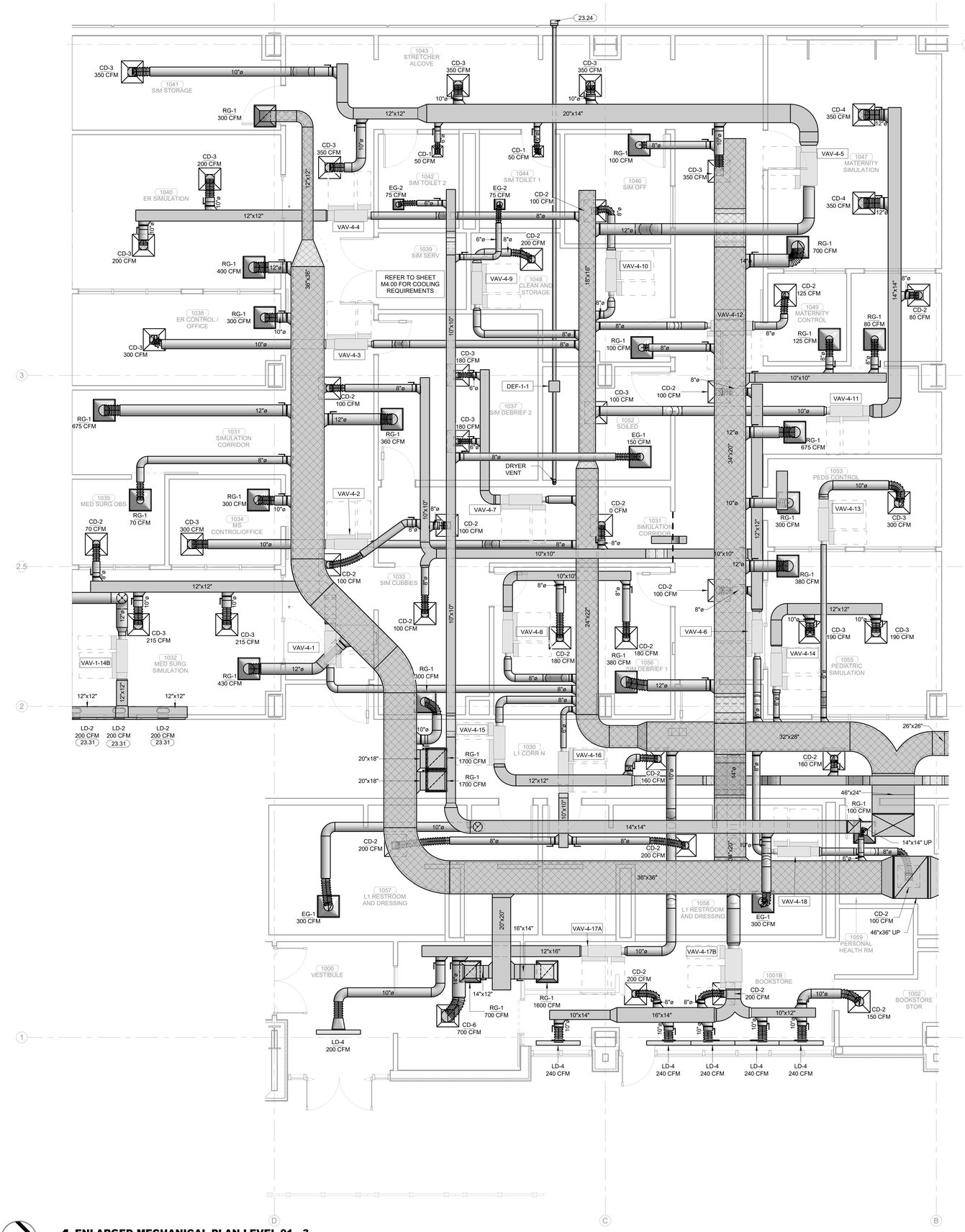
SHEET NUMBER:

M2.02

ENLARGED MECHANICAL PLAN LEVEL 01 SECTOR 01

KEYNOTES

23.24	ROUTE 4"Ø INSULATED STEEL OR ALUMINUM (RATED FOR DRYER EXHAUST) DRYER DUCT TO EXTERIOR AND TERMINATE WITH MFR WALL CAP AS SHOWN.
23.31	MOUNT AT 12'-0" AFF.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 01 - 3

1/4" = 1'-0"

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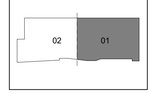
KEY PLAN:



PROJECT PHASE:

CONSTRUCTION DOCUMENTS

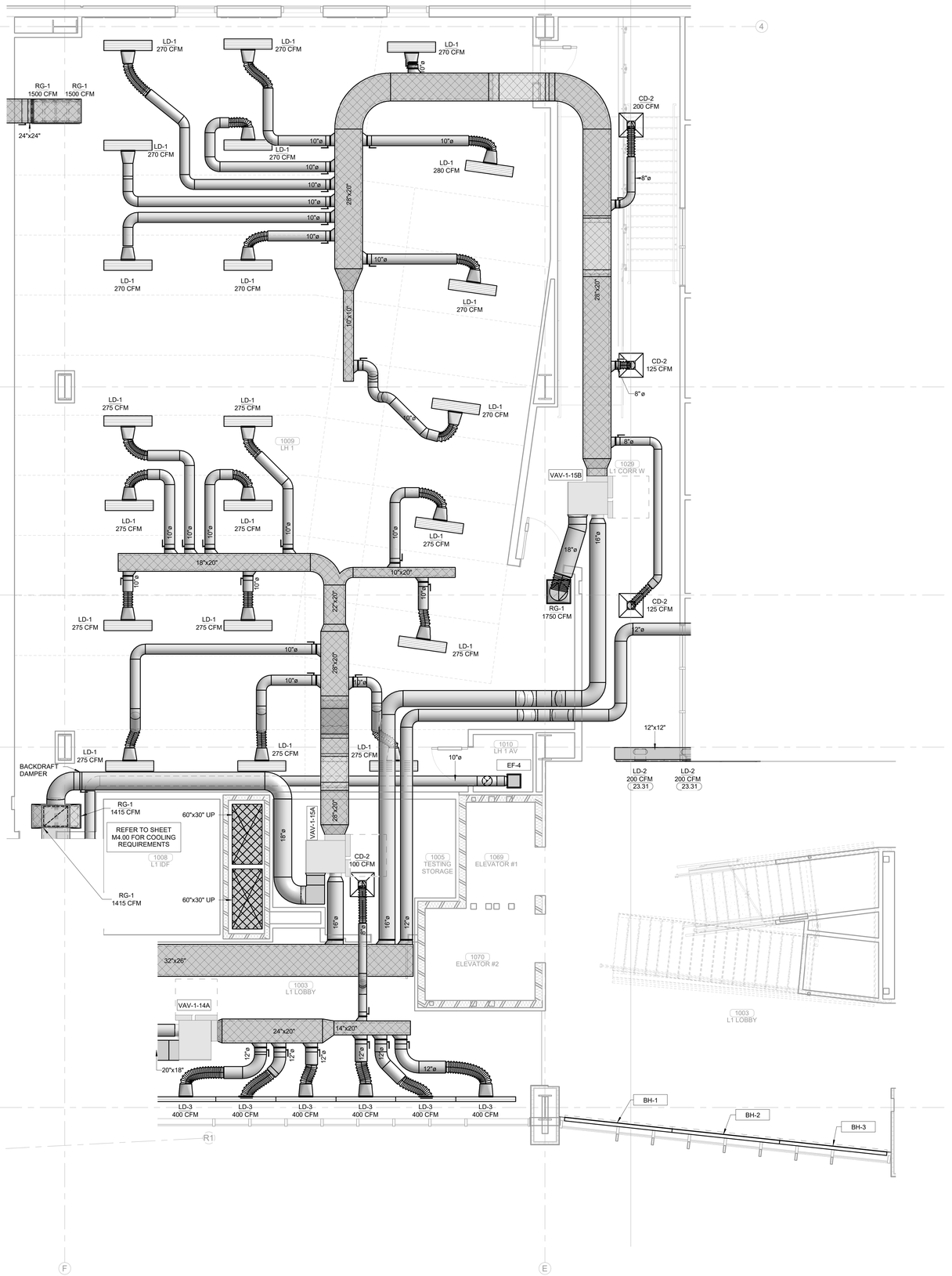
REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19

JOB NUMBER: 17-13

SHEET NUMBER: M2.03

ENLARGED MECHANICAL PLAN LEVEL 01 SECTOR 01



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 01

1/4" = 1'-0"

James R. Childers Architect, Inc.
45 South 4th Street
Fort Smith, AR 72901
479-783-2480
www.childersarchitect.com

PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER
Shane Wells
28910
OKLAHOMA
CASSTATE
08/23/19

CONSULTANT LOGO:

HP ENGINEERING
PROJECT NO. 18163R
100 % COMPLETE
HP ENGINEERING INC.
5214 W. VILLAGE PARKWAY
SUITE 120
ROGERS, AR 72758
(479) 899-6370
www.hpengineeringinc.com

CLIENT:

THE CHEROKEE NATION
SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13

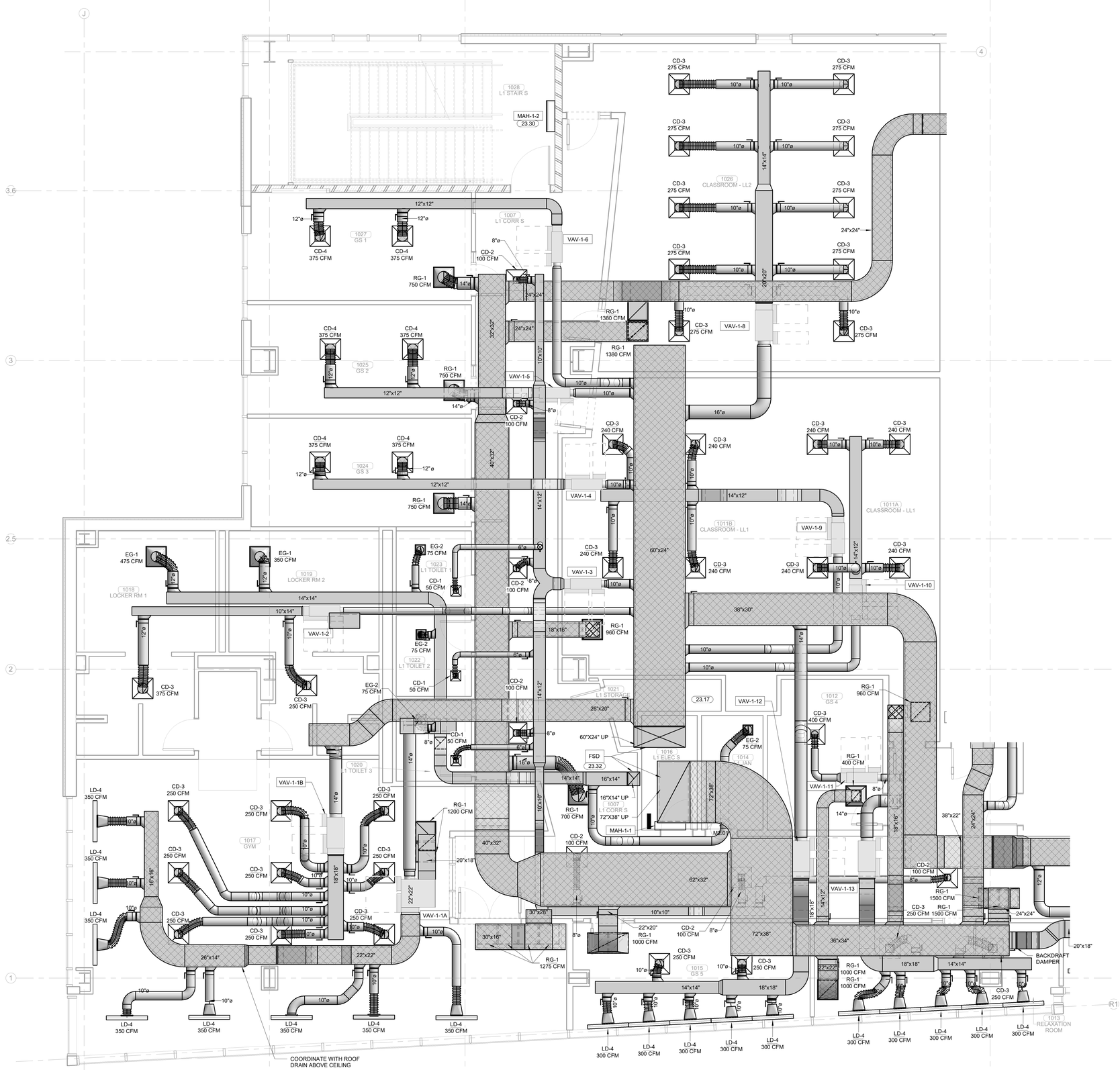
SHEET NUMBER:

M2.04

ENLARGED MECHANICAL PLAN LEVEL 01 SECTOR 02

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.
23.30	MOUNT AT 9'-0" AFF
23.32	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT FLOOR PENETRATIONS AT BOTTOM OF CHASE TO MAINTAIN 1-2 HOUR RATING AT FLOOR SLAB. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT. REFER TO DETAIL 2-M2.01.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 01

1/4" = 1'-0"

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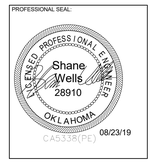

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CLIENT:

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

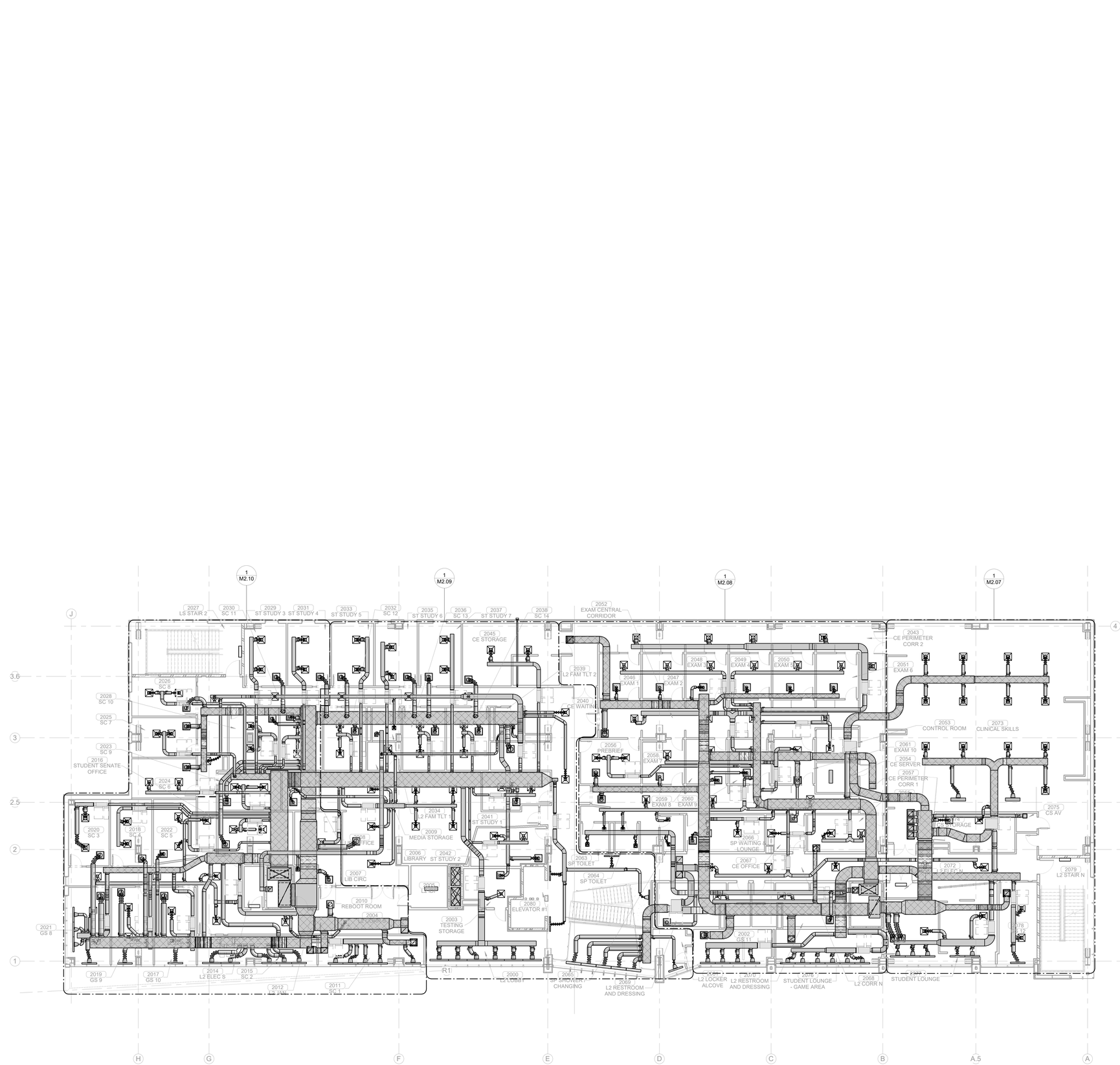
REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:

M2.05

ENLARGED MECHANICAL PLAN LEVEL 01 SECTOR 02



PLAN NORTH

TRUE NORTH

1 OVERALL MECHANICAL PLAN LEVEL 02

3/32" = 1'-0"

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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER
Shane Wells
28910
OKLAHOMA
CERTIFICATE OF AUTHORIZATION
08/23/19

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SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

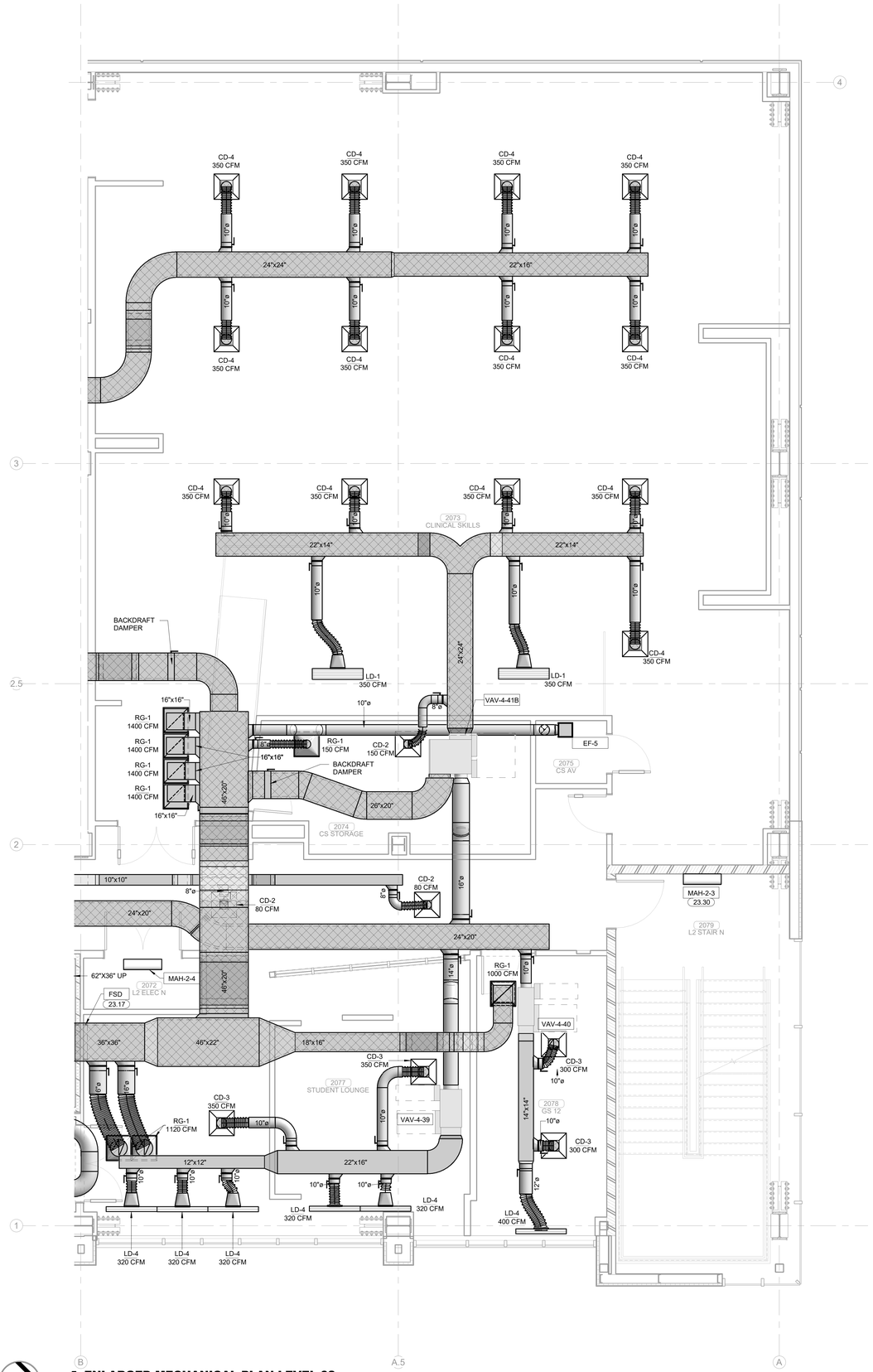
SHEET NUMBER:

M2.06

OVERALL MECHANICAL PLAN LEVEL 02

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.
23.30	MOUNT AT 9'-0" AFF.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 02

1/4" = 1'-0"

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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER — Shane Wells 28910 — OKLAHOMA — CERTIFICATE — 08/23/19

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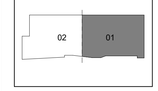
THE CHEROKEE NATION — TRIBAL SEAL OF THE CHEROKEE NATION — SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

OKLAHOMA STATE UNIVERSITY

KEY PLAN:



PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19

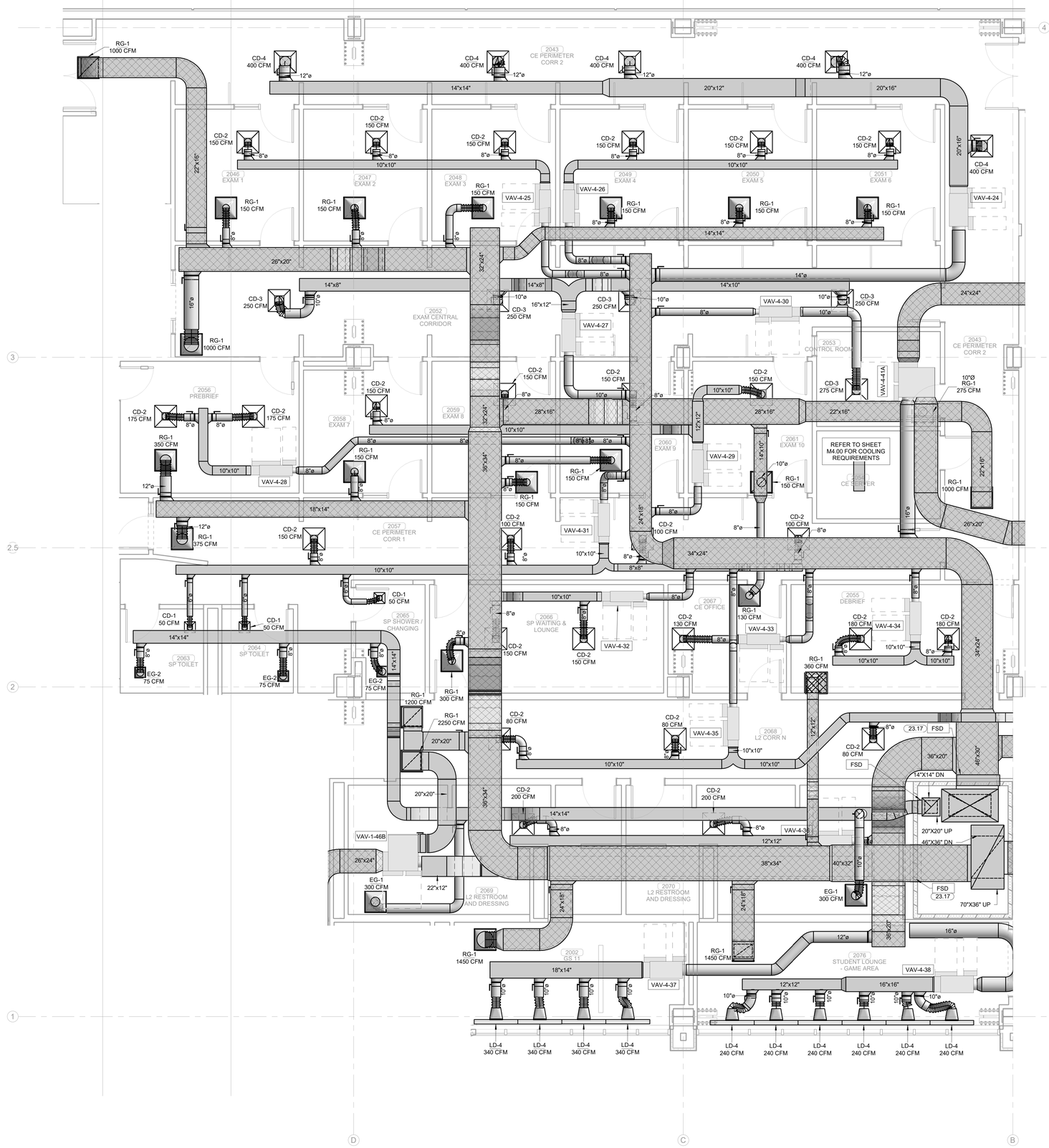
JOB NUMBER: 17-13

SHEET NUMBER: M2.07

ENLARGED MECHANICAL PLAN LEVEL 02 SECTOR 01

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 02

1/4" = 1'-0"

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CONSULTANT LOGO:

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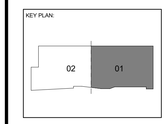
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:



PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19

JOB NUMBER: 17-13

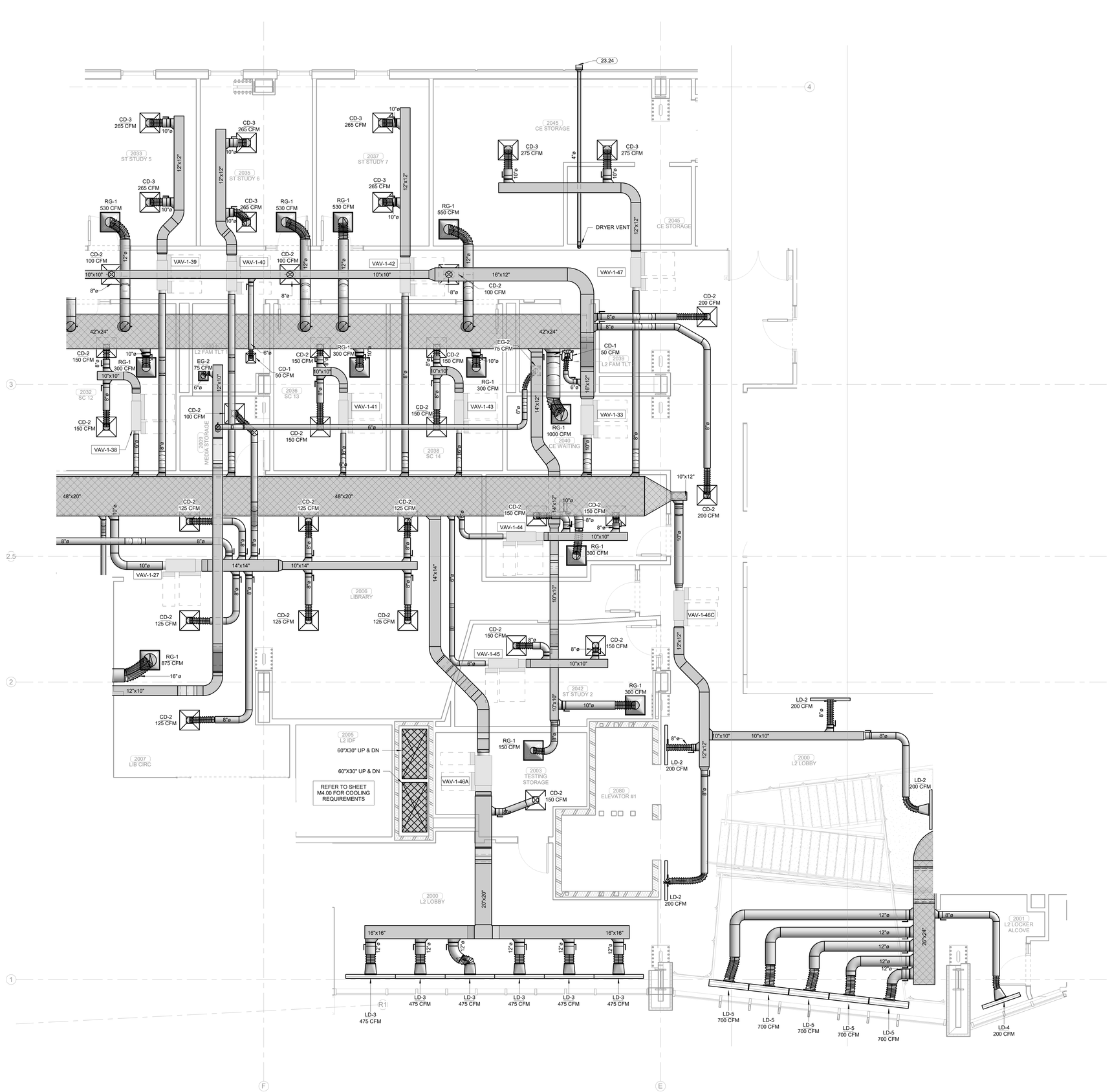
SHEET NUMBER:

M2.08

ENLARGED MECHANICAL PLAN LEVEL 02 SECTOR 01

KEYNOTES

23.24	ROUTE 4"Ø INSULATED STEEL OR ALUMINUM (RATED FOR DRYER EXHAUST) DRYER DUCT TO EXTERIOR AND TERMINATE WITH MFR WALL CAP AS SHOWN.



1 ENLARGED MECHANICAL PLAN LEVEL 02
1/4" = 1'-0"

PLAN NORTH

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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER — Shane Wells 28910 — OKLAHOMA — CERTIFIED — 08/23/19

CONSULTANT LOGO:

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SEAL OF THE CHEROKEE NATION — SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

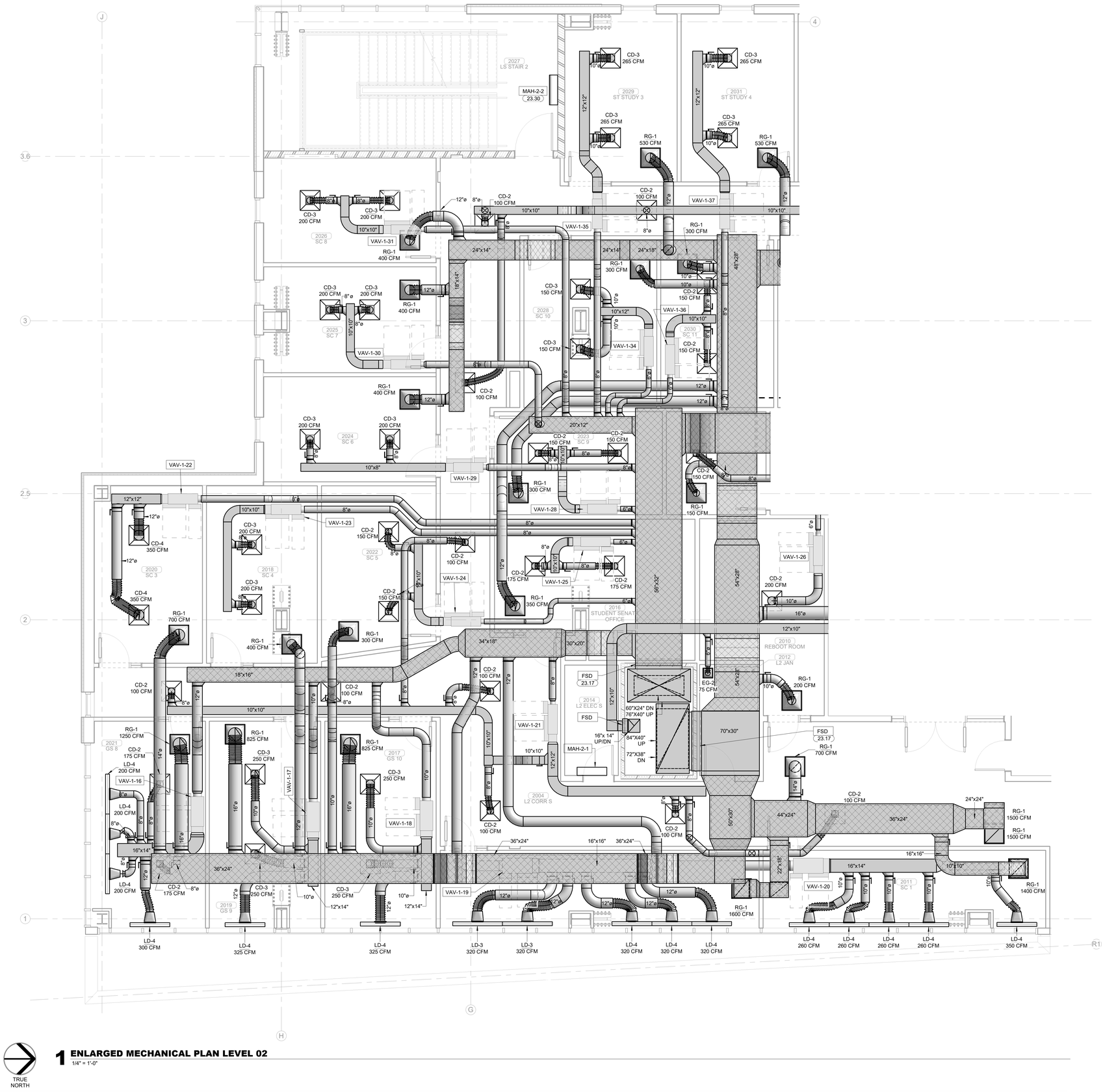
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M2.09

ENLARGED MECHANICAL PLAN LEVEL 02 SECTOR 02

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S. RUSKIN FSD-60 OR EQUIVALENT. WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.
23.30	MOUNT AT 9'-0" AFF.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 02

1/4" = 1'-0"

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PROFESSIONAL SEAL:

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Shane Wells
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OKLAHOMA
CERTIFICATE
08/23/19

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 | 01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

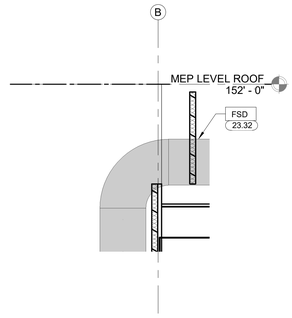
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M2.10

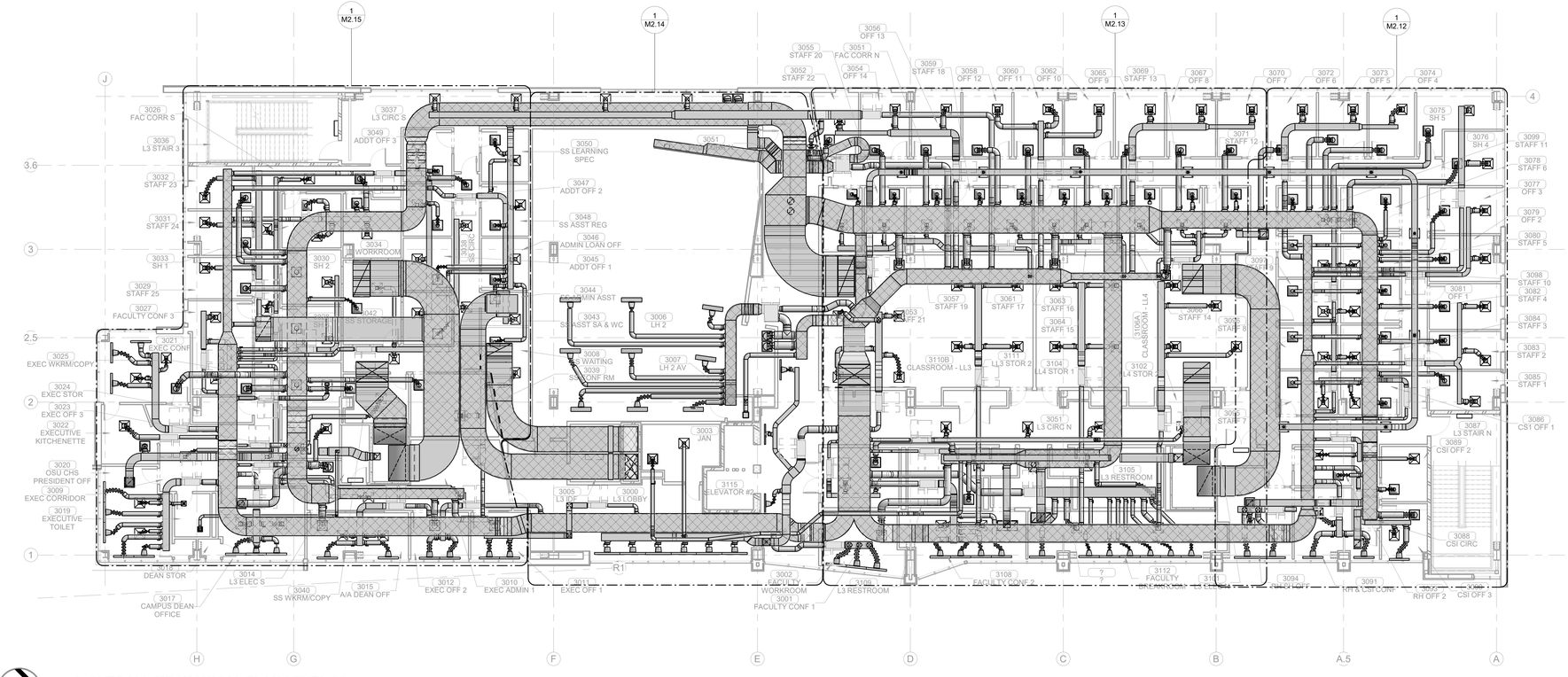
ENLARGED MECHANICAL PLAN LEVEL 02 SECTOR 02

KEYNOTES

23.32	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT FLOOR PENETRATIONS AT BOTTOM OF CHASE TO MAINTAIN 1-2 HOUR RATING AT FLOOR SLAB. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT. REFER TO DETAIL 2-M2.01.



2 TYPICAL 3RD FLOOR CHASE PENETRATION
1/4" = 1'-0"



PLAN NORTH
TRUE NORTH

1 OVERALL MECHANICAL PLAN LEVEL 03
3/32" = 1'-0"

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OKLAHOMA
08/23/19

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CLIENT:
THE CHEROKEE NATION
TRIBAL SEAL
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02 01

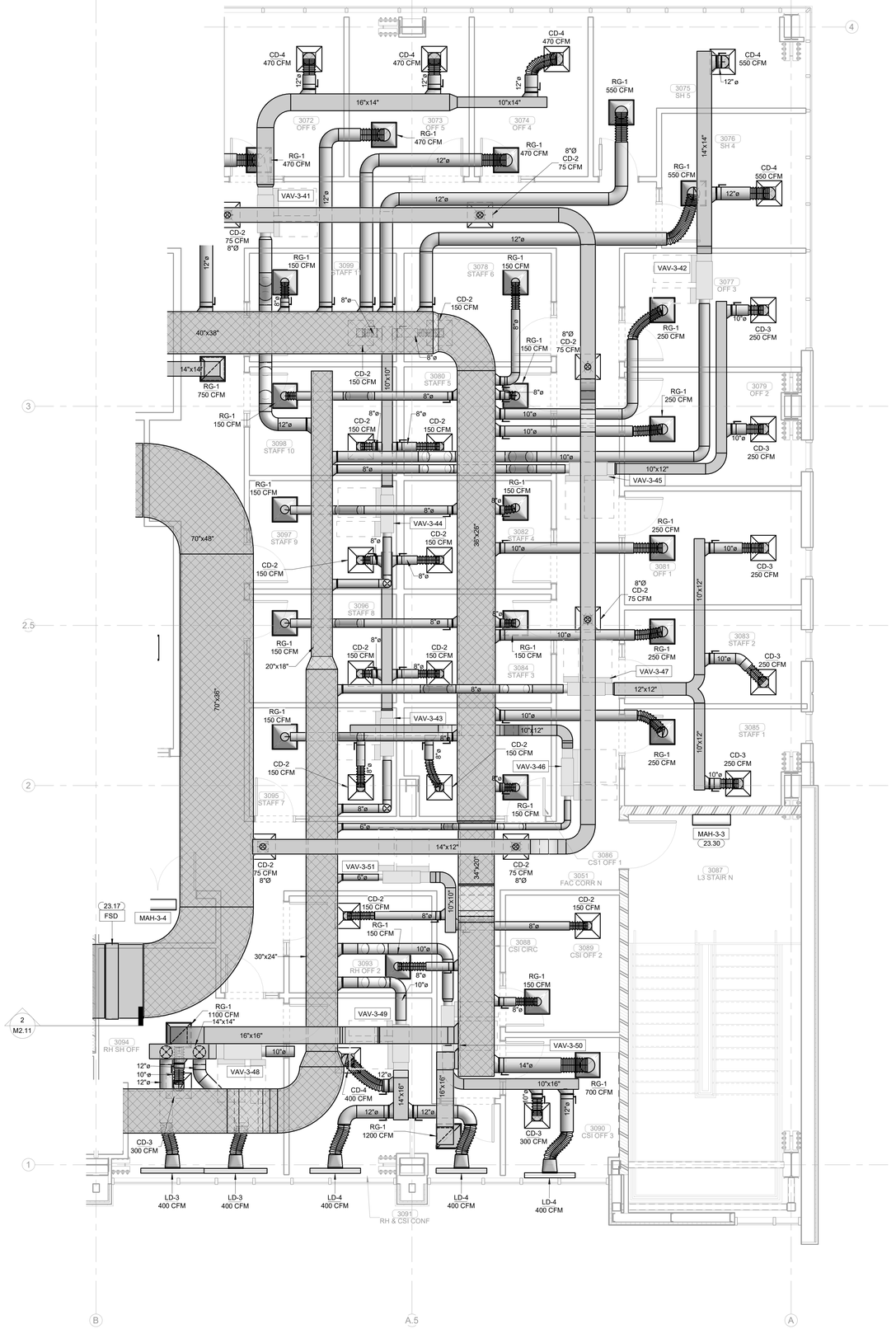
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M2.11
OVERALL MECHANICAL PLAN LEVEL 03

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.
23.30	MOUNT AT 9'-0" AFF.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 03

1/4" = 1'-0"

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28910
OKLAHOMA
CERTIFICATE
08/23/19

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CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

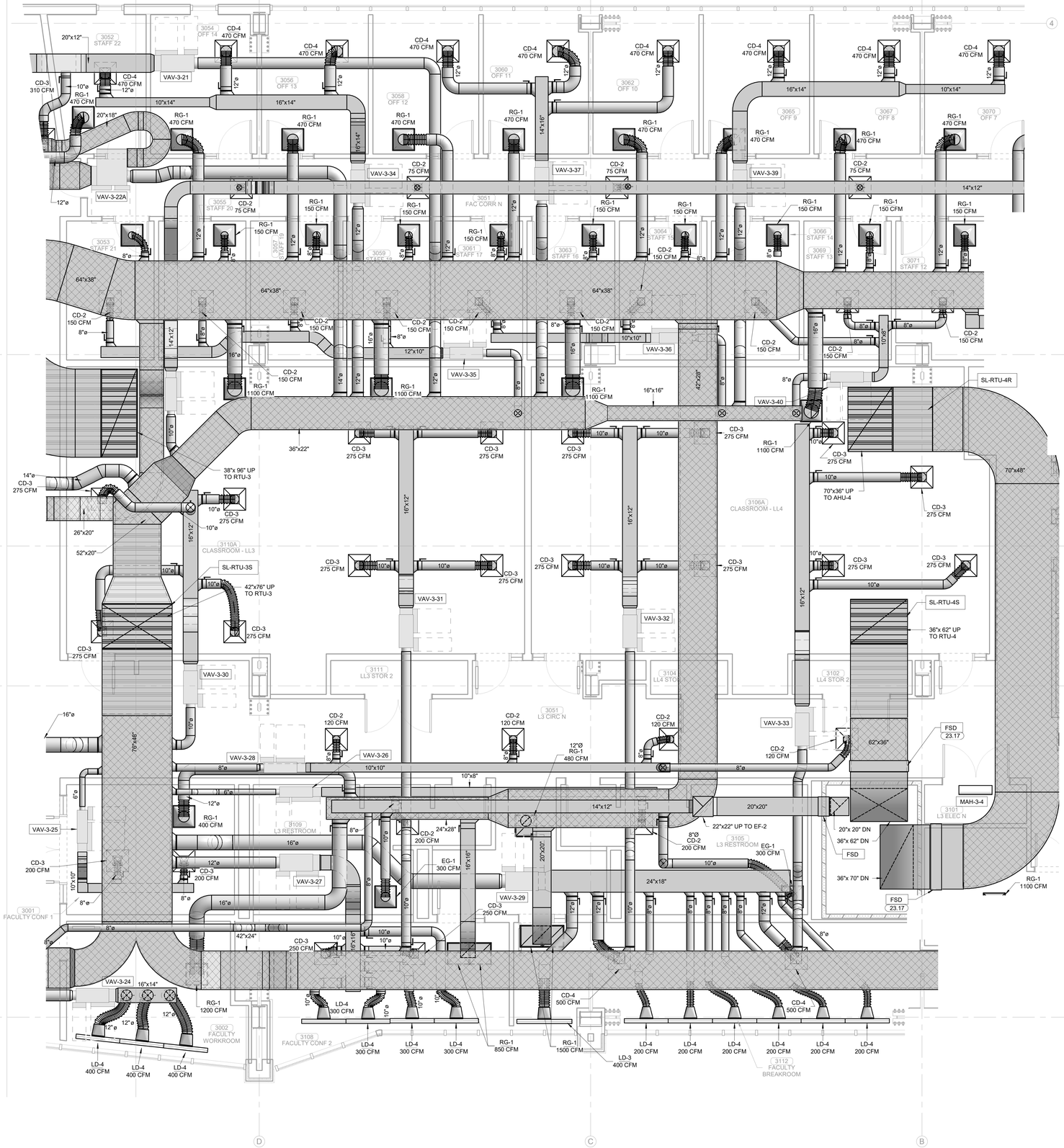
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M2.12
ENLARGED MECHANICAL PLAN LEVEL 03 SECTOR 01

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.



1 ENLARGED MECHANICAL PLAN LEVEL 03

1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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PROFESSIONAL SEAL:

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Shane Wells
28910
OKLAHOMA
08/23/19

CONSULTANT LOGO:

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CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

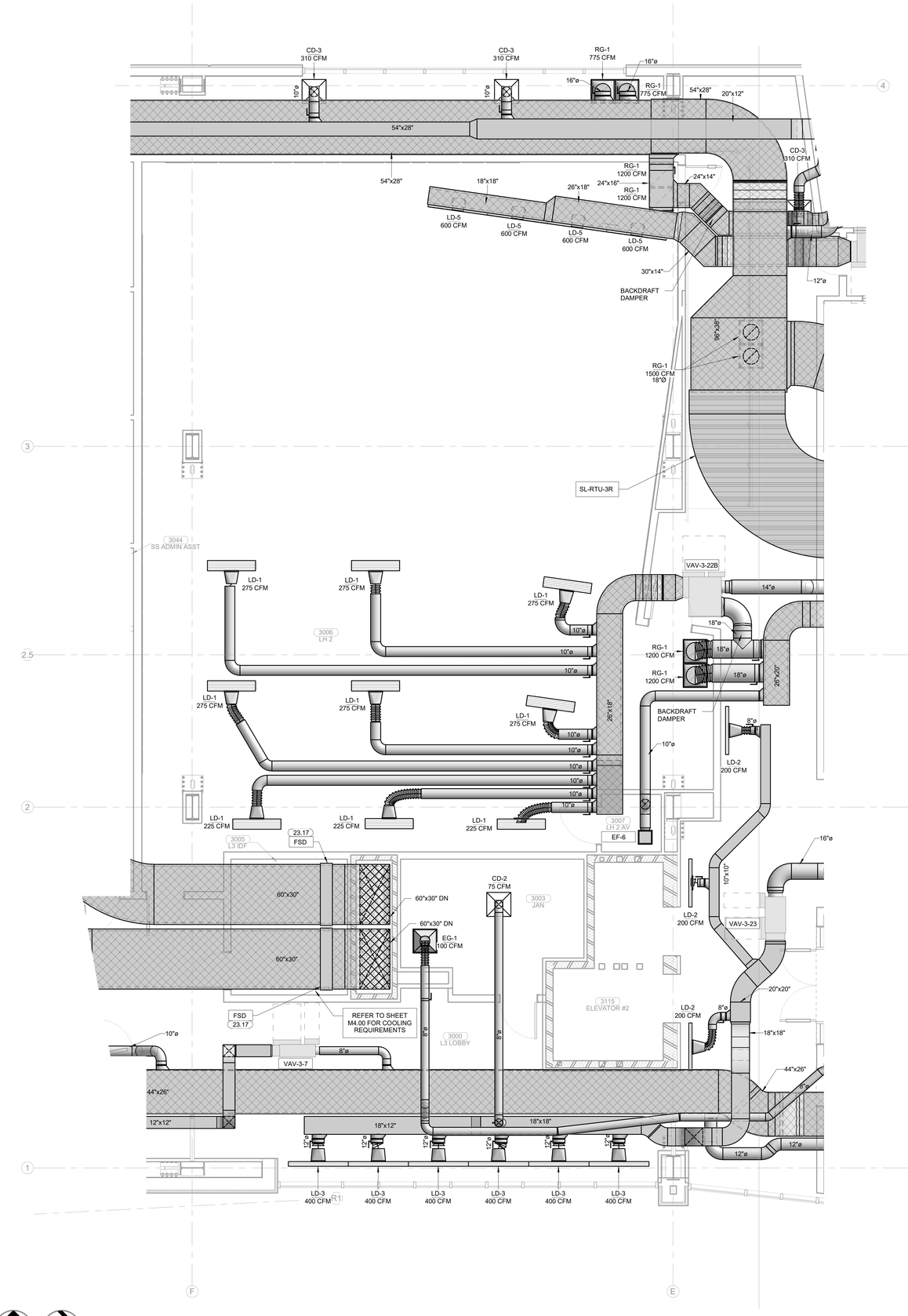
SHEET NUMBER:

M2.13

ENLARGED MECHANICAL PLAN LEVEL 03 SECTOR 01

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S. RUSKIN FSD40 OR EQUIVALENT. WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL PLAN LEVEL 03

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08/23/19

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CLIENT:

SEAL OF THE CHEROKEE NATION TAHLEQUAH, OKLA. SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

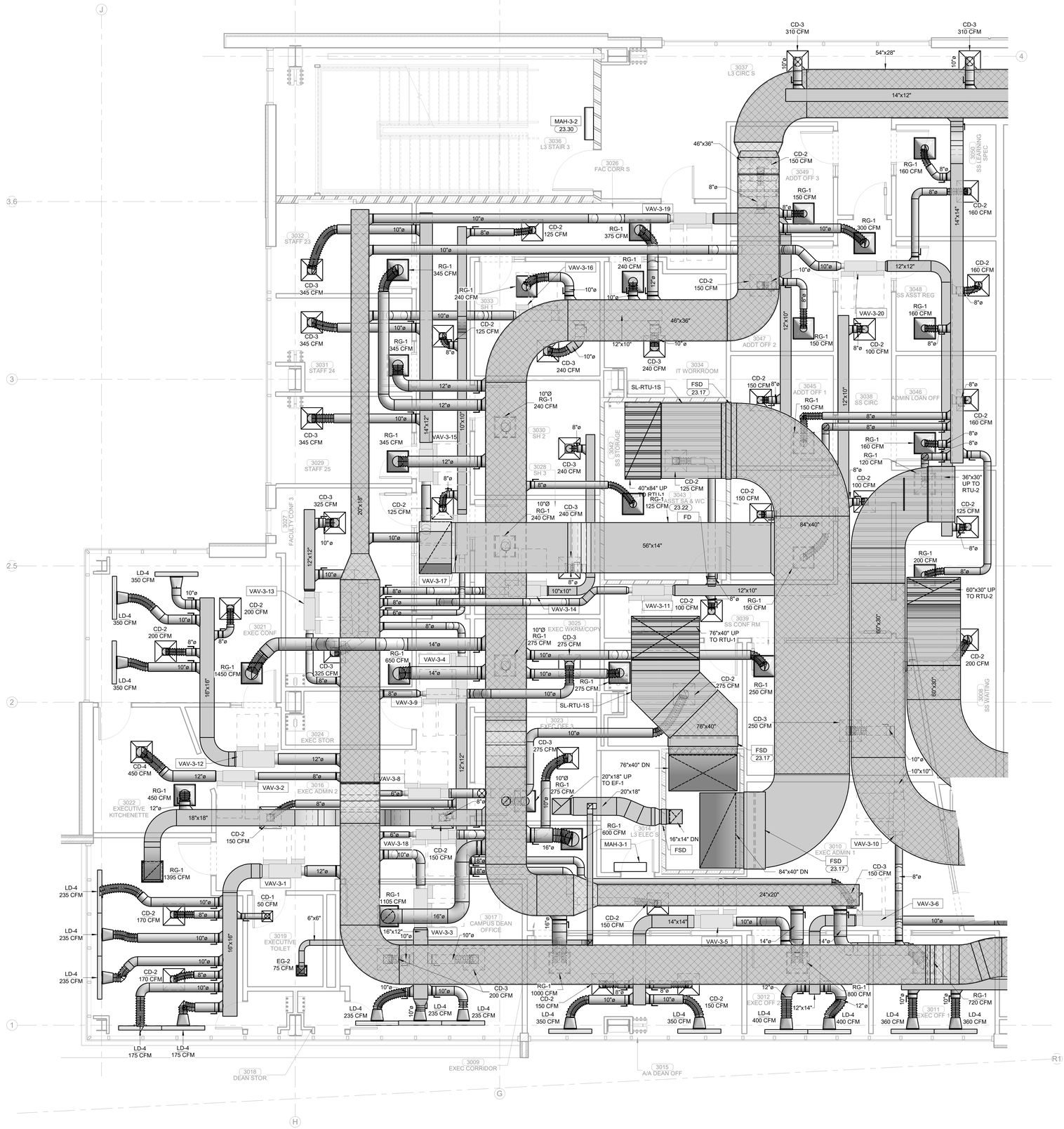
SHEET NUMBER:

M2.14

ENLARGED MECHANICAL PLAN LEVEL 03 SECTOR 02

KEYNOTES

23.17	PROVIDE MULTI-SECTION FIRE AND SMOKE DAMPER'S, RUSKIN FSD-60 OR EQUIVALENT, WHERE INDICATED AT SHAFT WALL PENETRATIONS TO MAINTAIN 1-2 HOUR RATING OF SHAFT WALL. MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCE ON BOTH SIDES OF DUCTS TO ACCOMMODATE FSD ACTUATORS. ACTUATORS SHALL BE TANDEM-MOUNTED (ON SAME SIDE OF DUCT) ONLY WHERE SPACE CONSTRAINTS DO NOT ALLOW ACTUATORS TO BE MOUNTED ON BOTH SIDES OF DUCT.
23.22	ROUTE 60"x14" EXHAUST DUCT TIGHT TO UNDERSIDE OF STRUCTURE AT TAKE-OFF. OFFSET HORIZONTALLY UP TO UNDERSIDE OF SHALLOWER STRUCTURE (W15 BEAM) WITHIN 3009-EXEC CORRIDOR TO RUN DUCT OVER 40"x34" EXHAUST DUCT OVER ROOM 3026-SH3. CONTINUE AT THIS ELEVATION TO CONNECTION TO 58"x36" PLENUM BELOW EXHAUST FAN.
23.30	MOUNT AT 9'-0" AFF.



1 **ENLARGED MECHANICAL PLAN LEVEL 03**
1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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OKLAHOMA
CERTIFICATE
08/23/19

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TRIBAL SEAL
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02
01

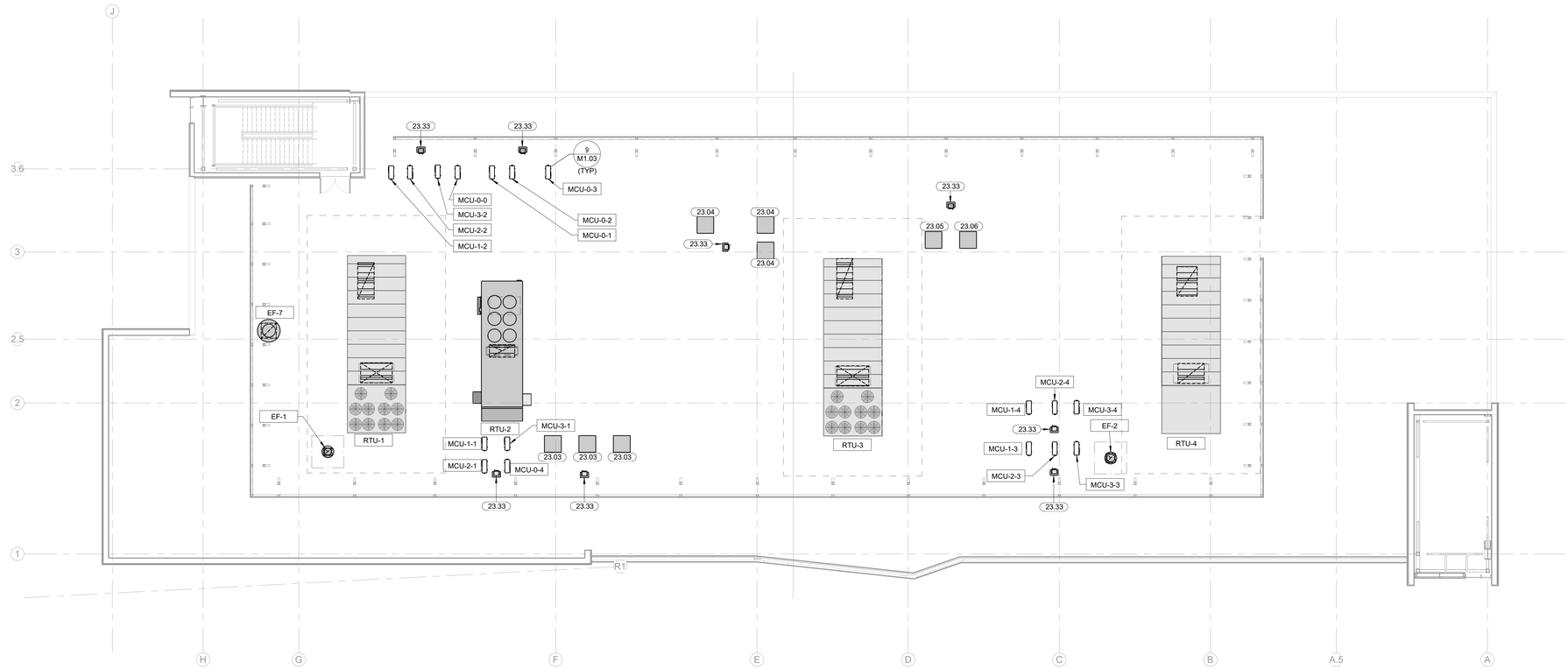
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M2.15
ENLARGED MECHANICAL PLAN LEVEL 03 SECTOR 02

KEYNOTES

23.03	CONDENSING UNIT TO SERVE MDF ROOM IN BASEMENT. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.04	CONDENSING UNIT TO SERVE IDF ROOM. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.05	CONDENSING UNIT TO SERVE SIM SERVER ROOM. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.06	CONDENSING UNIT TO SERVE CE SERVER ROOM. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.33	REFRIGERANT PIPING TO BE ROUTED DN IN GOOSENECK THROUGH ROOF FROM ROOFTOP CONDENSING UNITS TO INDOOR AIR HANDLER. REFER TO DETAIL 11-M1.03. REFER TO SHEETS M7.00 THRU M7.04 FOR CONTINUATION OF REFRIGERANT PIPE ROUTING AND CONDENSATE PIPE ROUTING.



PLAN NORTH

TRUE NORTH

1 OVERALL MECHANICAL PLAN ROOF
3/32" = 1'-0"

James R. Childers Architect, Inc.
45 South 4th Street
Fort Smith, AR 72901
479-783-2480
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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER
Shane Wells
28910
OKLAHOMA
CERTIFIED
08/23/19

CONSULTANT LOGO:

HP ENGINEERING
PROJECT NO. 18163R
100 % COMPLETE

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SUITE 120
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CLIENT:

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

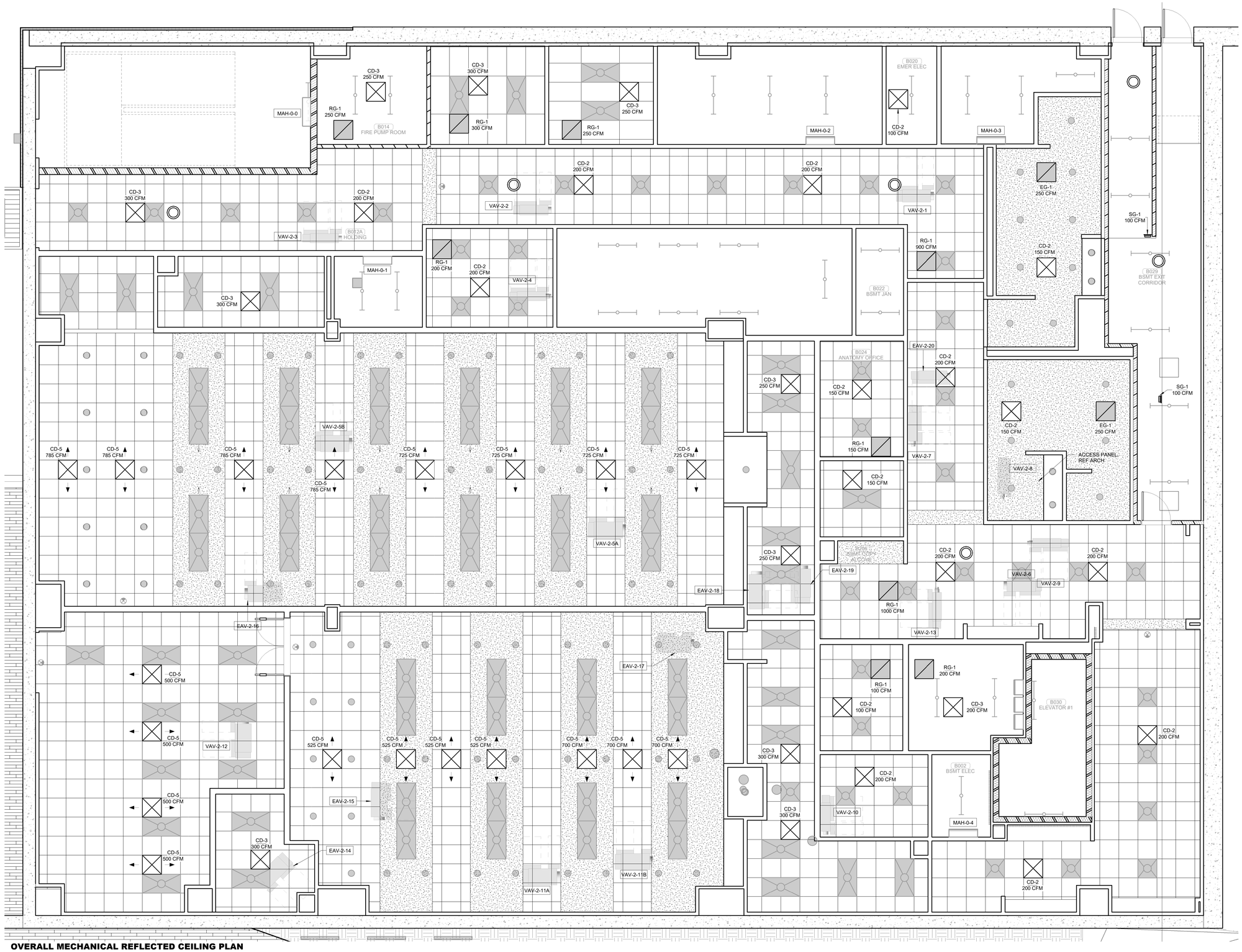
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M2.16

OVERALL MECHANICAL ROOF PLAN



1 OVERALL MECHANICAL REFLECTED CEILING PLAN
BASEMENT LEVEL
1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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1839 OF THE CHEROKEE NATION 1971
SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13

SHEET NUMBER:
M3.00

OVERALL MECHANICAL REFLECTED CEILING PLAN BASEMENT LEVEL SECTOR 02

1 MECHANICAL REFLECTED CEILING PLAN LEVEL 01
3/32" = 1'-0"

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SEPT. 6, 1839

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

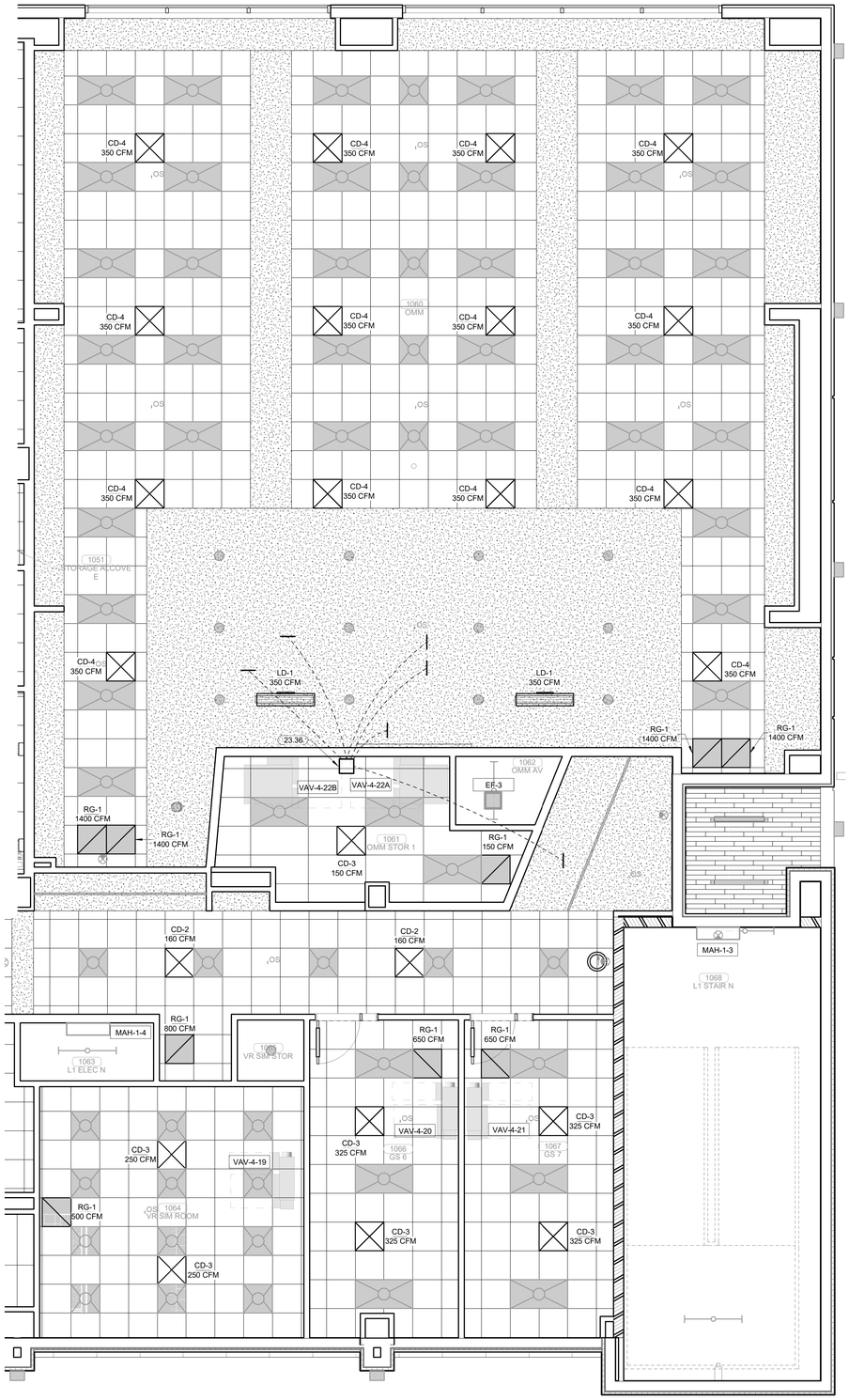
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M3.01

OVERALL MECHANICAL REFLECTED CEILING PLAN LEVEL 01

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 01
1/4" = 1'-0"

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13

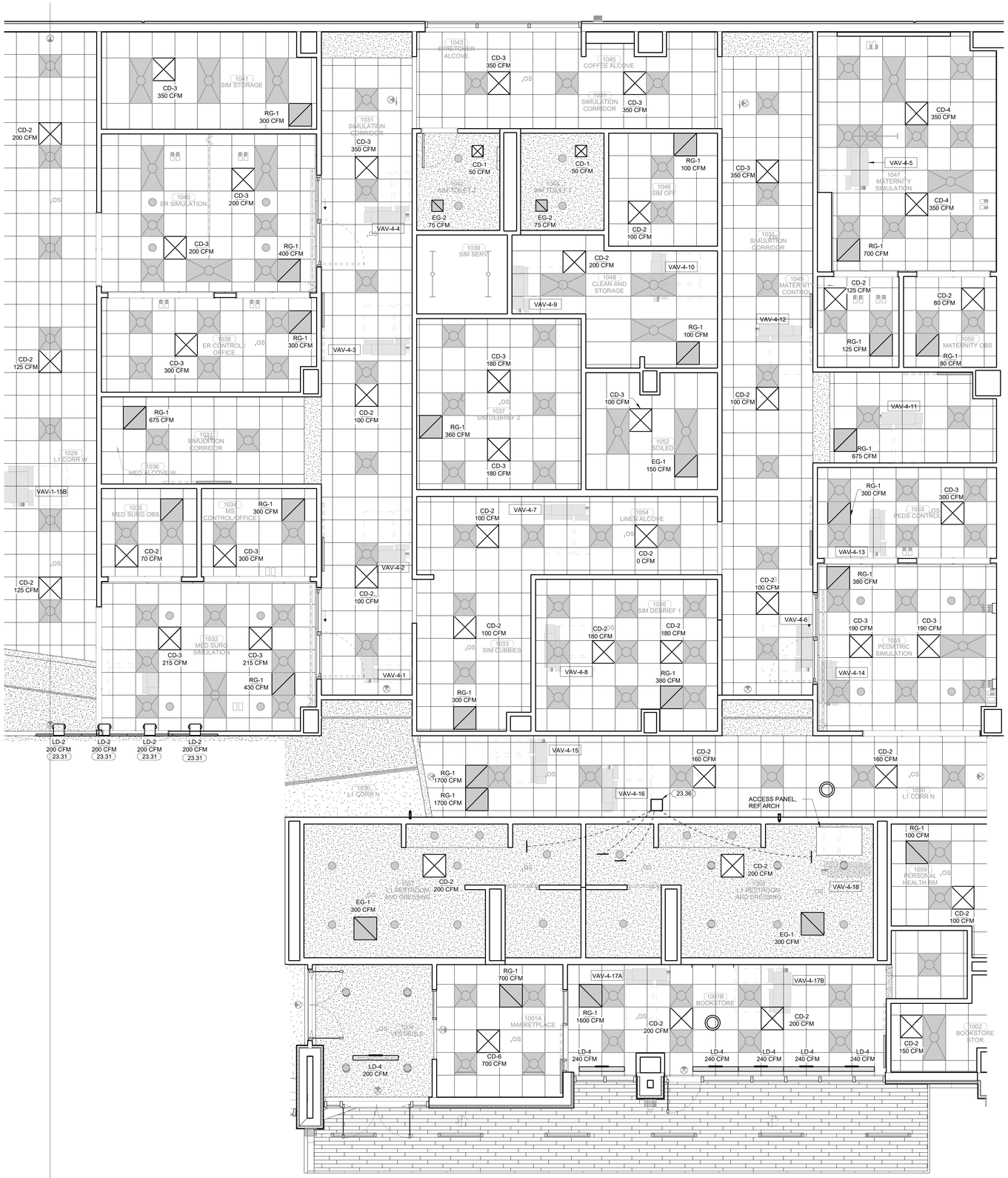
SHEET NUMBER:

M3.02

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 01 SECTOR 01

KEYNOTES

23.31	MOUNT AT 12'-0" AFF.
23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 01
1/4" = 1'-0"

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SEPT. 5, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02
01

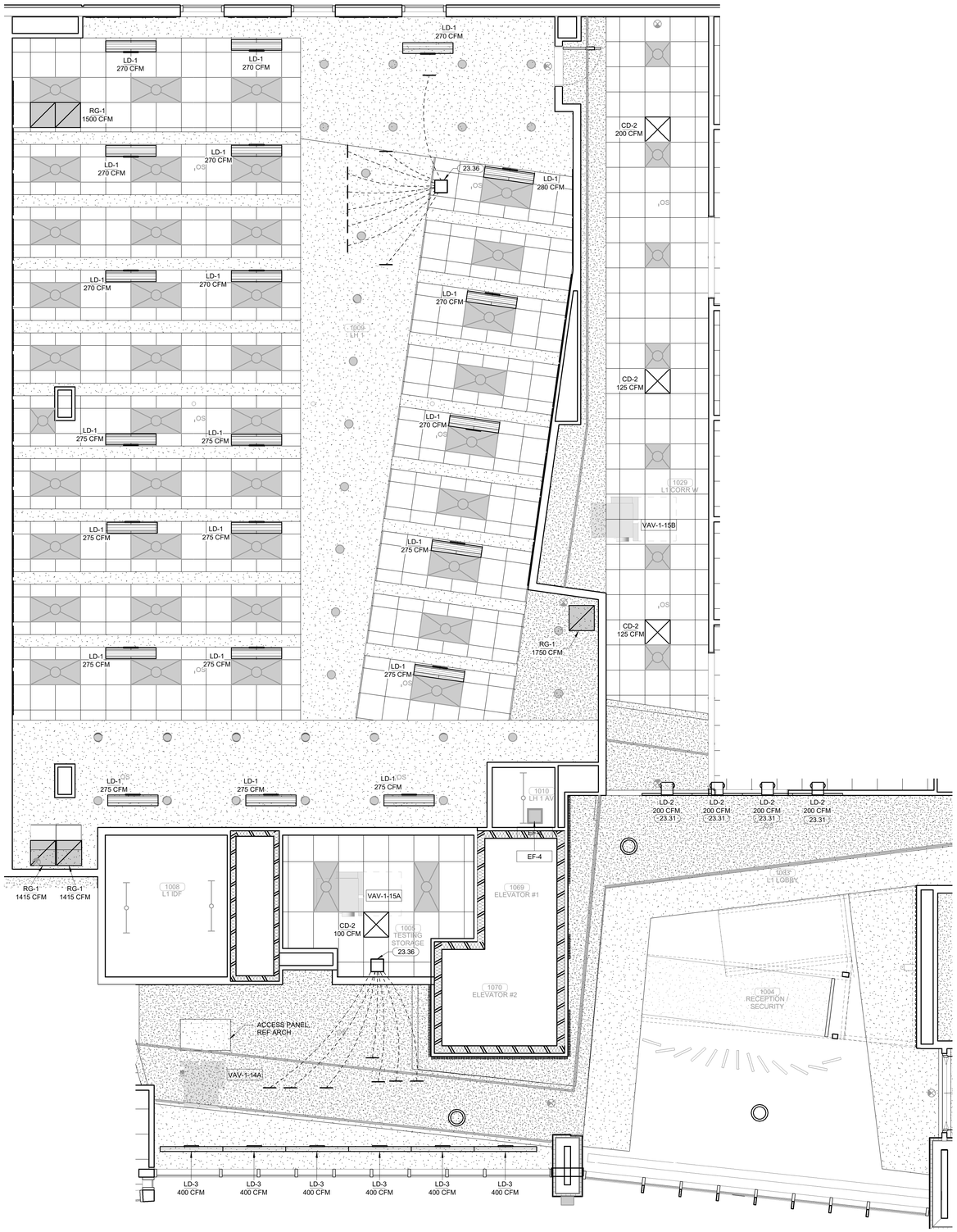
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.03
ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 01 SECTOR 01

KEYNOTES

23.31	MOUNT AT 12'-0" AFF.
23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 01
1/4" = 1'-0"

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SEPT. 6, 1839

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02
01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS:

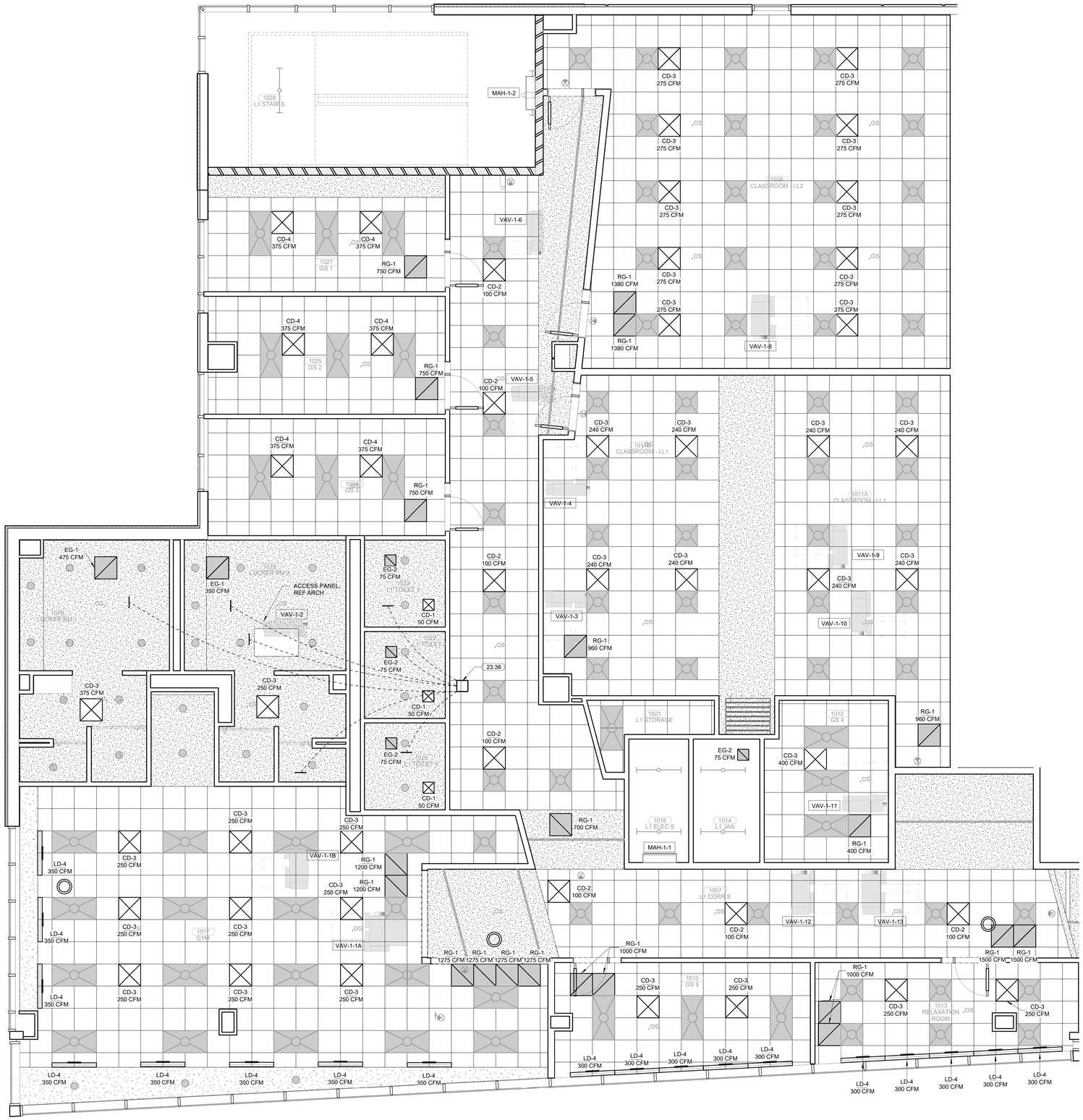
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.04

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 01 SECTOR 02

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 01
1/4" = 1'-0"

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CERTIFICATE
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SEPT. 6, 1839

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

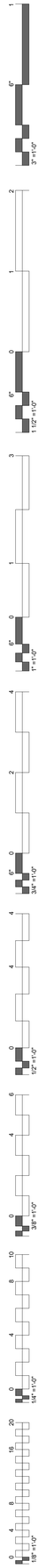
KEY PLAN:
02 01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.05

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 01 SECTOR 02



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 02
3/32" = 1'-0"

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OKLAHOMA
CERTIFICATE OF AUTHORIZATION
08/23/19

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SEPT. 6, 1839

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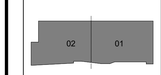
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:



PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

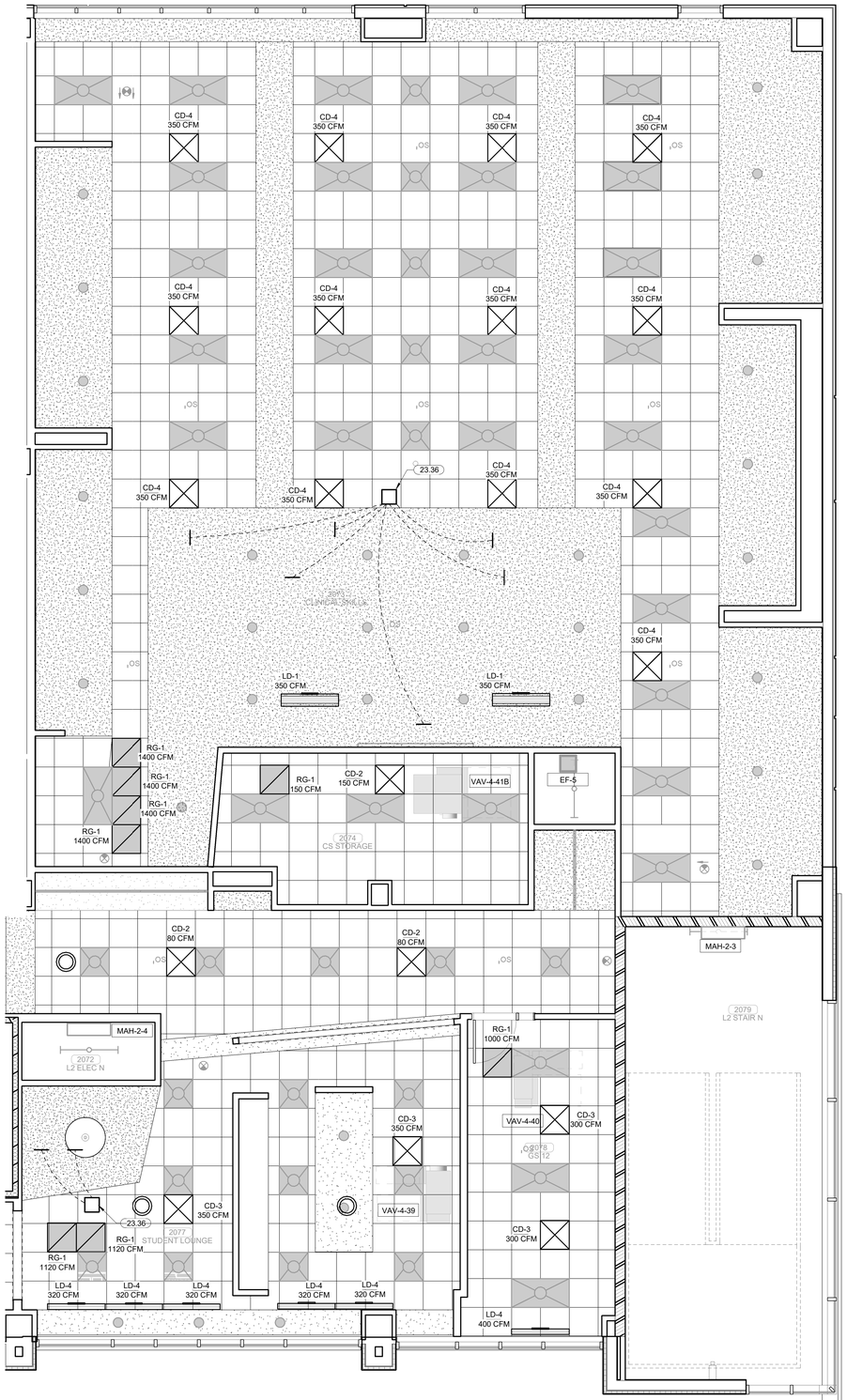
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M3.06

OVERALL MECHANICAL REFLECTED CEILING PLAN LEVEL 02

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



1 **ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 02**
1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02
01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

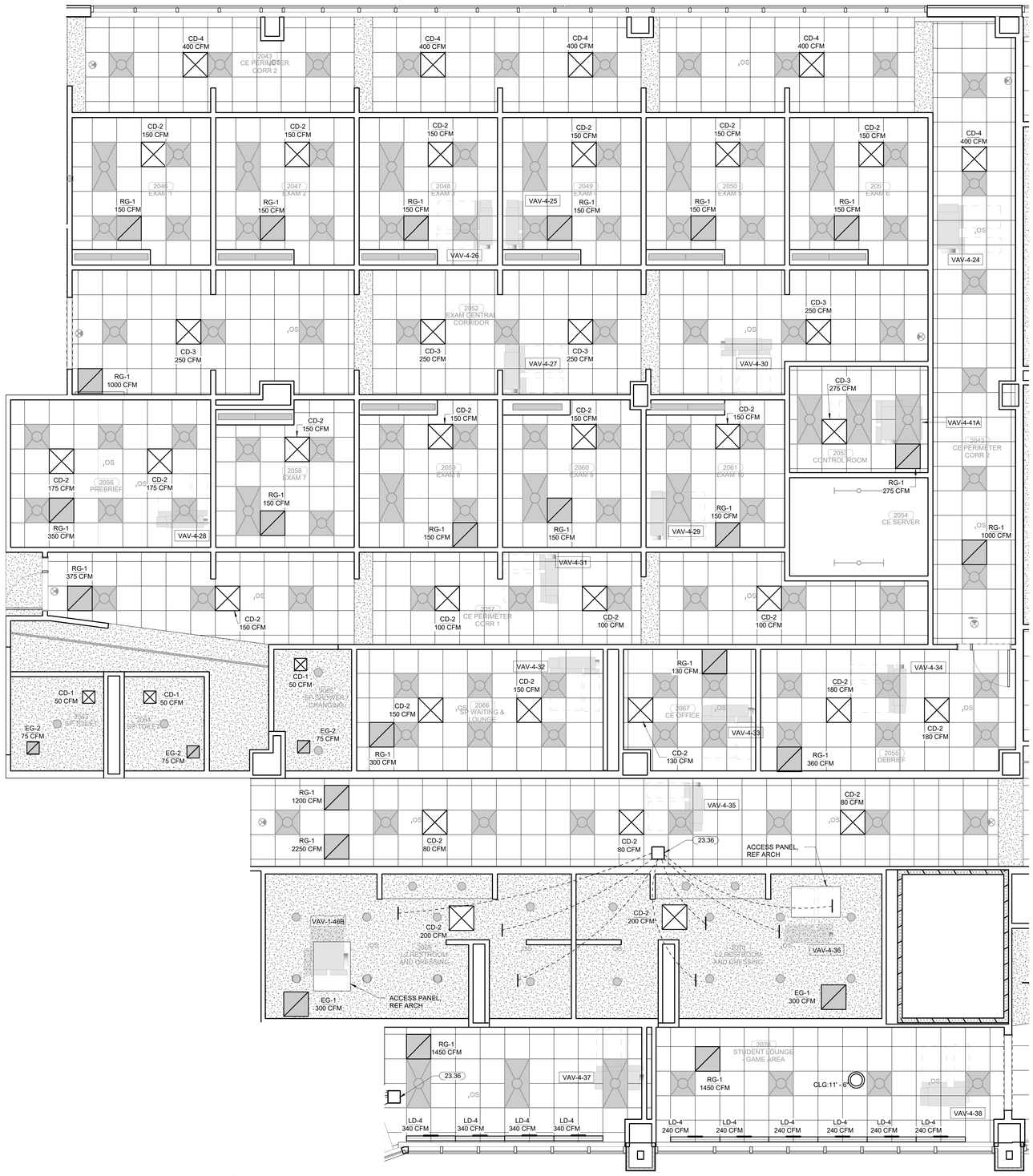
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M3.07

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 02 SECTOR 01

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 02
1/4" = 1'-0"

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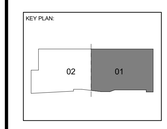
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:



PROJECT PHASE:
CONSTRUCTION DOCUMENTS

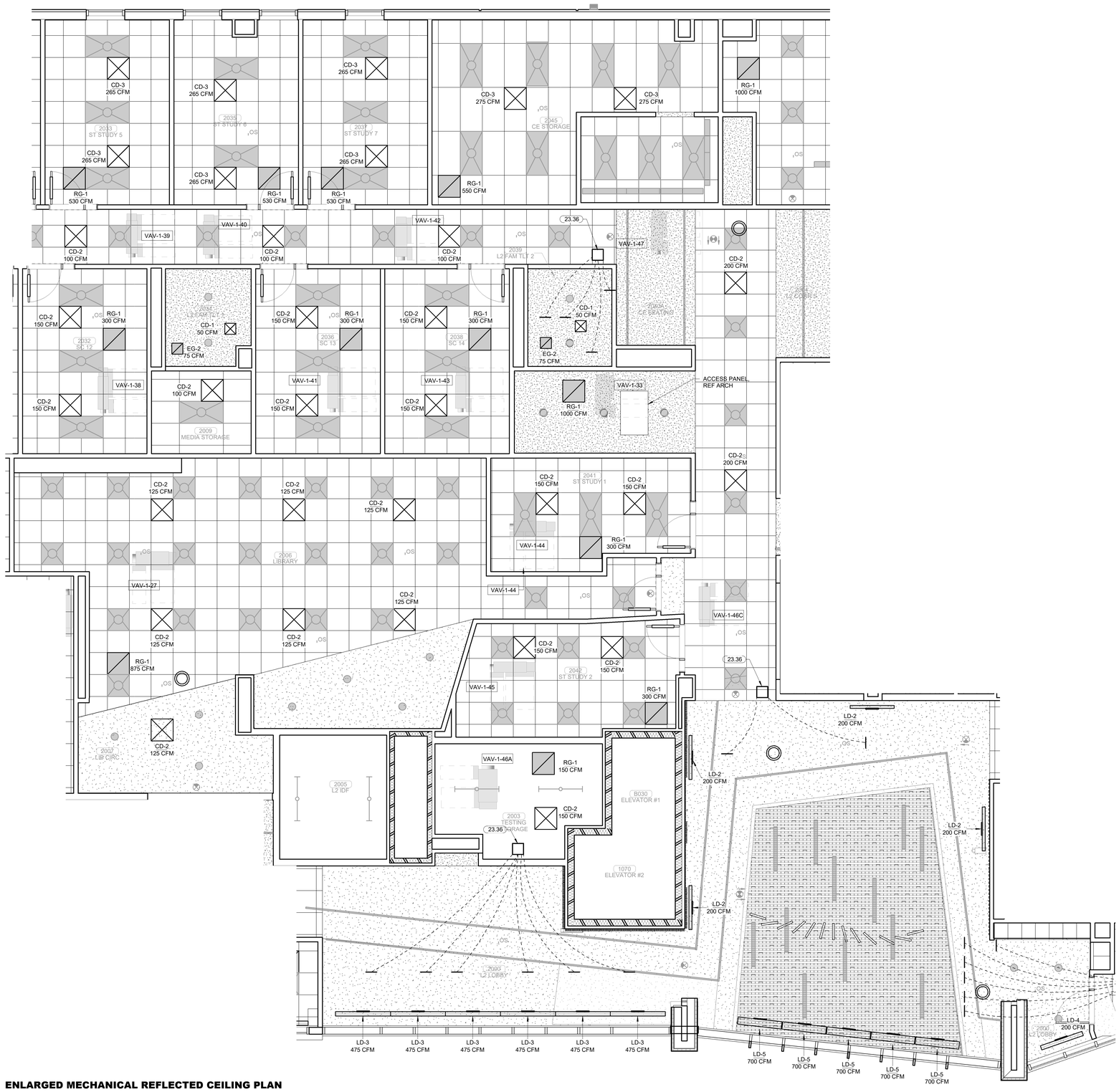
REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.08

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 02 SECTOR 01

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR GREENHECK MODEL RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



1 ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 02

1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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CERTIFICATE
08/23/19

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TAHLEQUAH, OKLAHOMA

KEY PLAN:

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:

M3.09

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 02 SECTOR 02

PLAN NORTH

TRUE NORTH

1 **ENLARGED MECHANICAL REFLECTED CEILING PLAN**
LEVEL 02
1/4" = 1'-0"

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OKLAHOMA
CA5338(PE)
08/23/19

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02
01

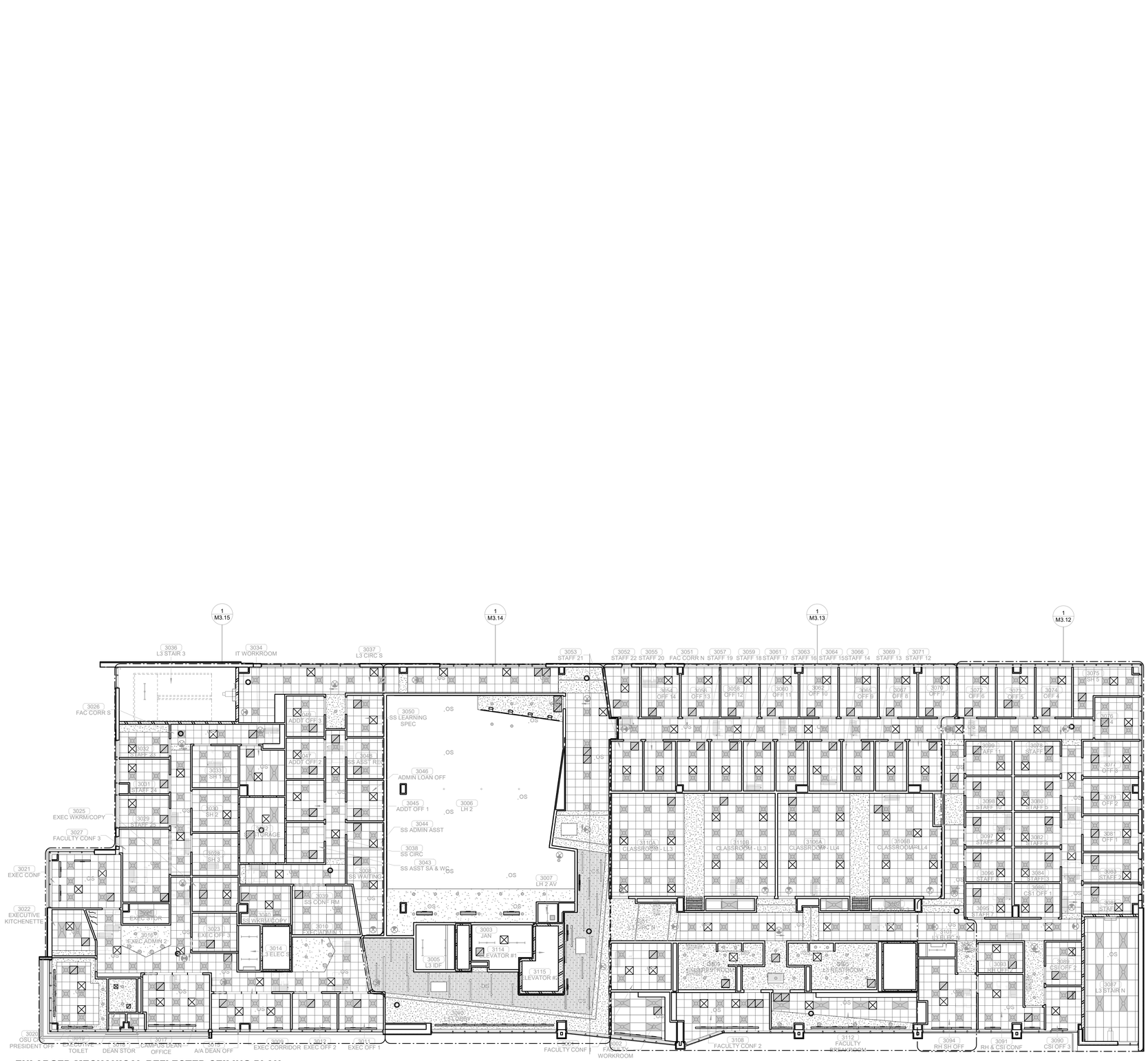
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M3.10

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 02 SECTOR 02



PLAN NORTH

TRUE NORTH

ENLARGED MECHANICAL REFLECTED CEILING PLAN
1 LEVEL 03
3/32" = 1'-0"

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CERTIFIED
08/23/19

CONSULTANT LOGO:

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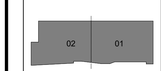
SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:



PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

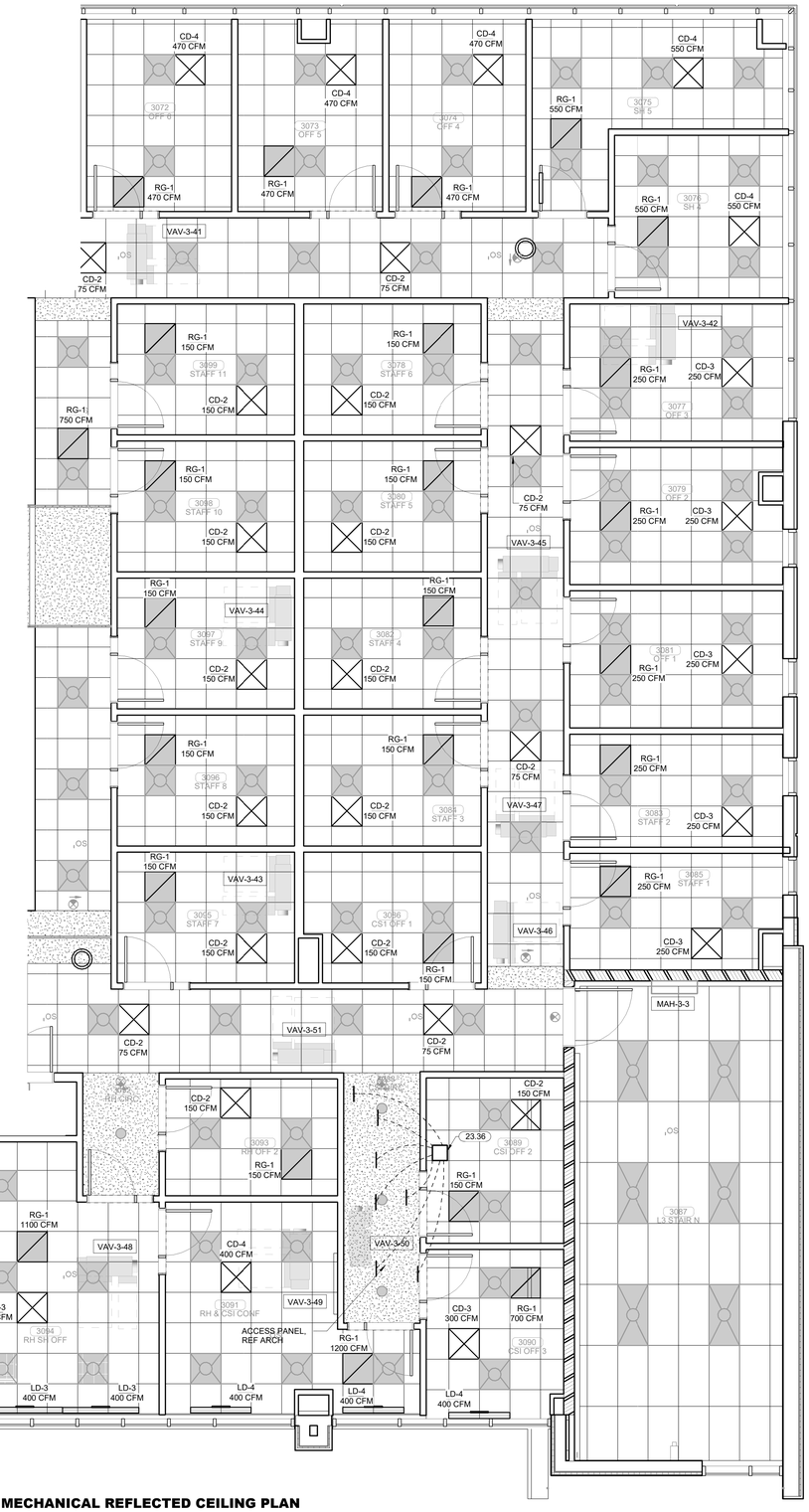
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M3.11

OVERALL MECHANICAL REFLECTED CEILING PLAN LEVEL 03

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 03
1/4" = 1'-0"

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PROFESSIONAL SEAL:
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Shane Wells
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OKLAHOMA
08/23/19

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SEAL OF THE CHEROKEE NATION TAHLEQUAH, OKLA. SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA
OKLAHOMA STATE UNIVERSITY

KEY PLAN:
02
01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

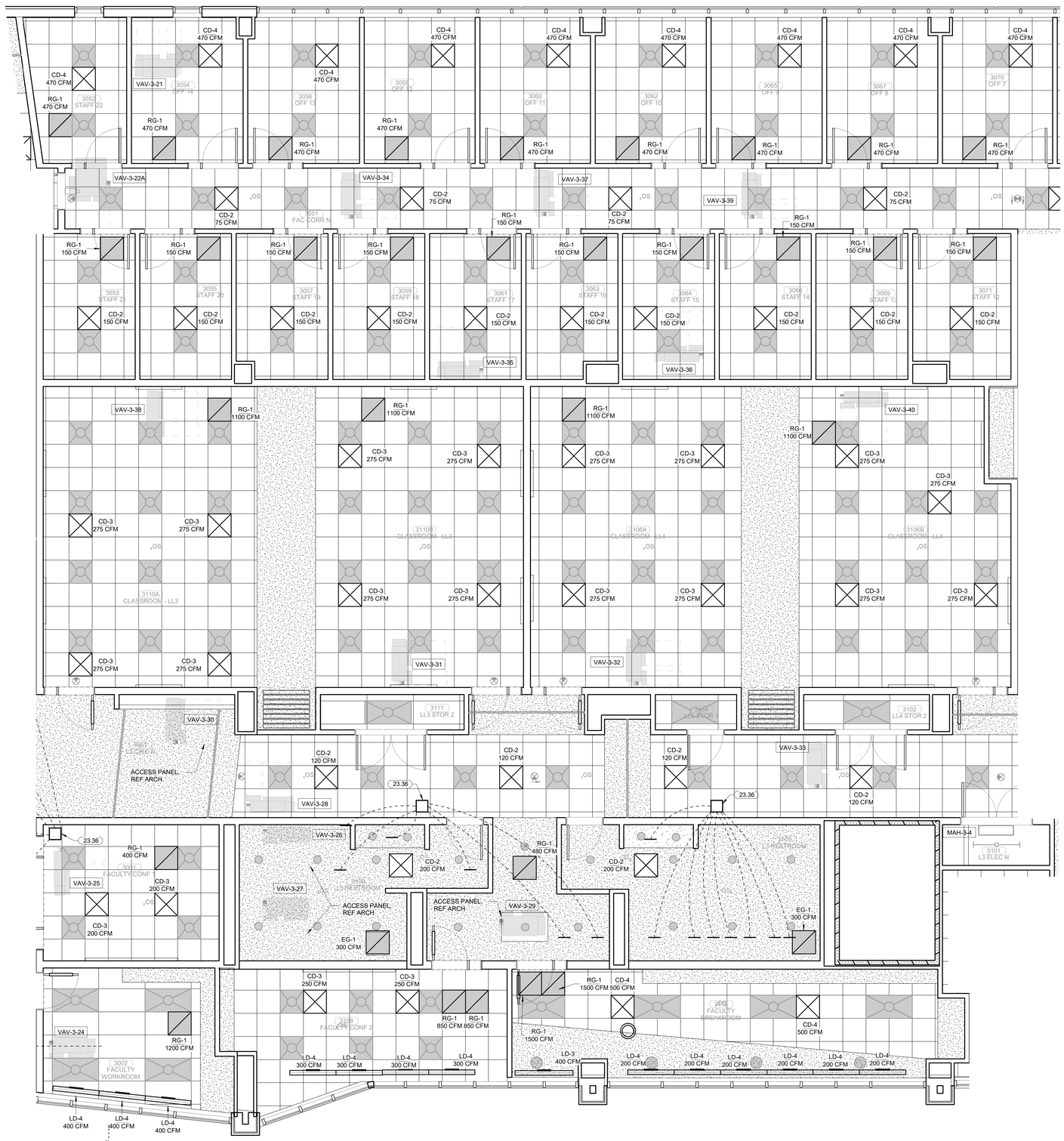
REVISIONS

#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.12
ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 03 SECTOR 01

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR.GREENHECK MODEL RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 03
1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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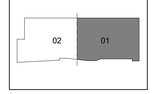
CLIENT:

SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:



PROJECT PHASE:
CONSTRUCTION DOCUMENTS

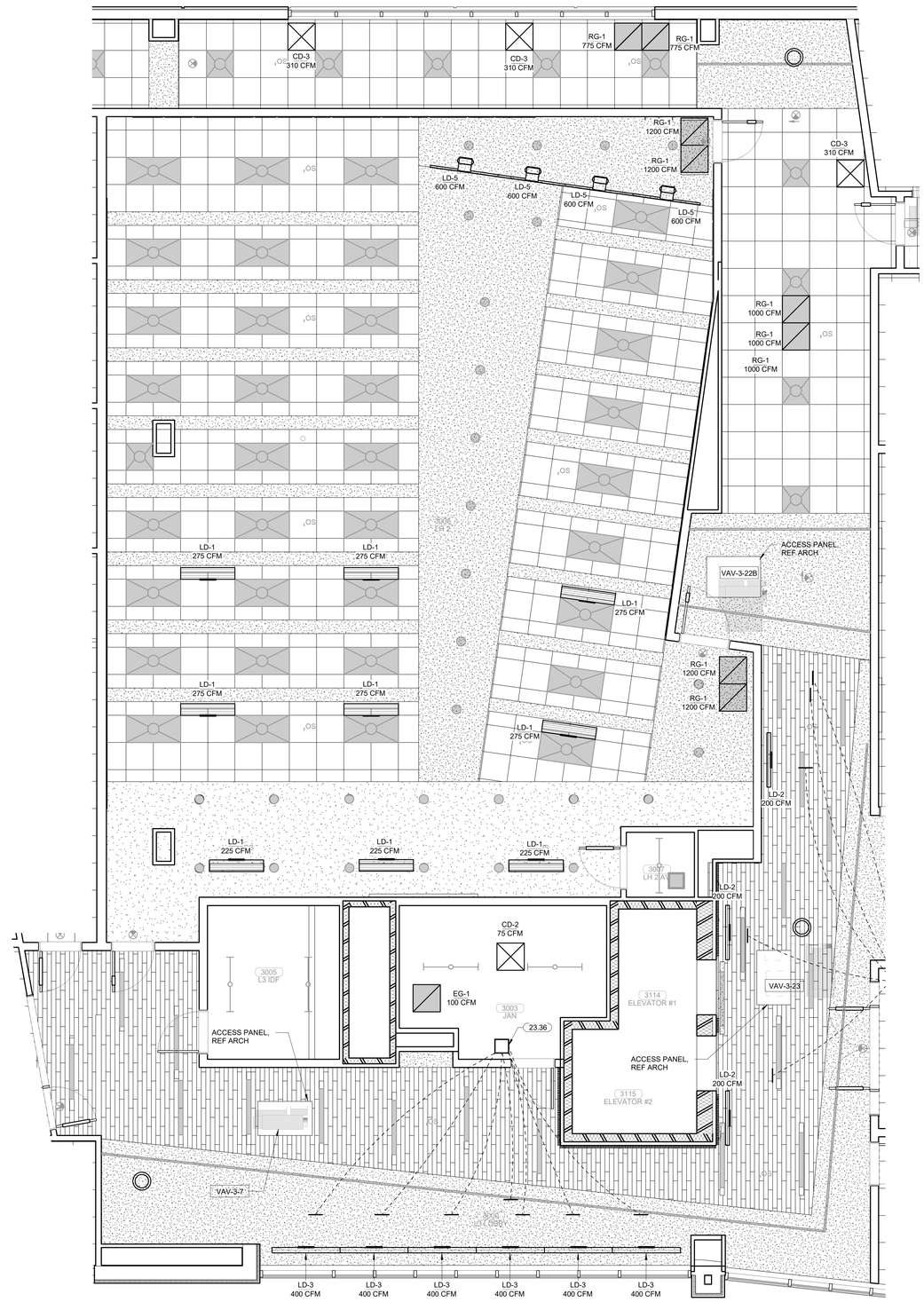
REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.13

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 03 SECTOR 01

KEYNOTES

23.36	PROVIDE REMOTE POWERED REMOTE DAMPER SYSTEM MFR:GREENHECK MODEL:RBDR-50 OR EQUIVALENT ABOVE CEILING IN THIS LOCATION FOR CONTROL OF DAMPERS LOCATED ABOVE HARD CEILINGS NEAR THIS LOCATION. ALL DAMPERS THAT ARE LOCATED ABOVE HARD CEILINGS AND ARE NOT EASILY ACCESSIBLE SHALL BE INSTALLED WITH REMOTE DAMPER SYSTEM.



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 03
1/4" = 1'-0"

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CLIENT:
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SEPT. 6, 1839

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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

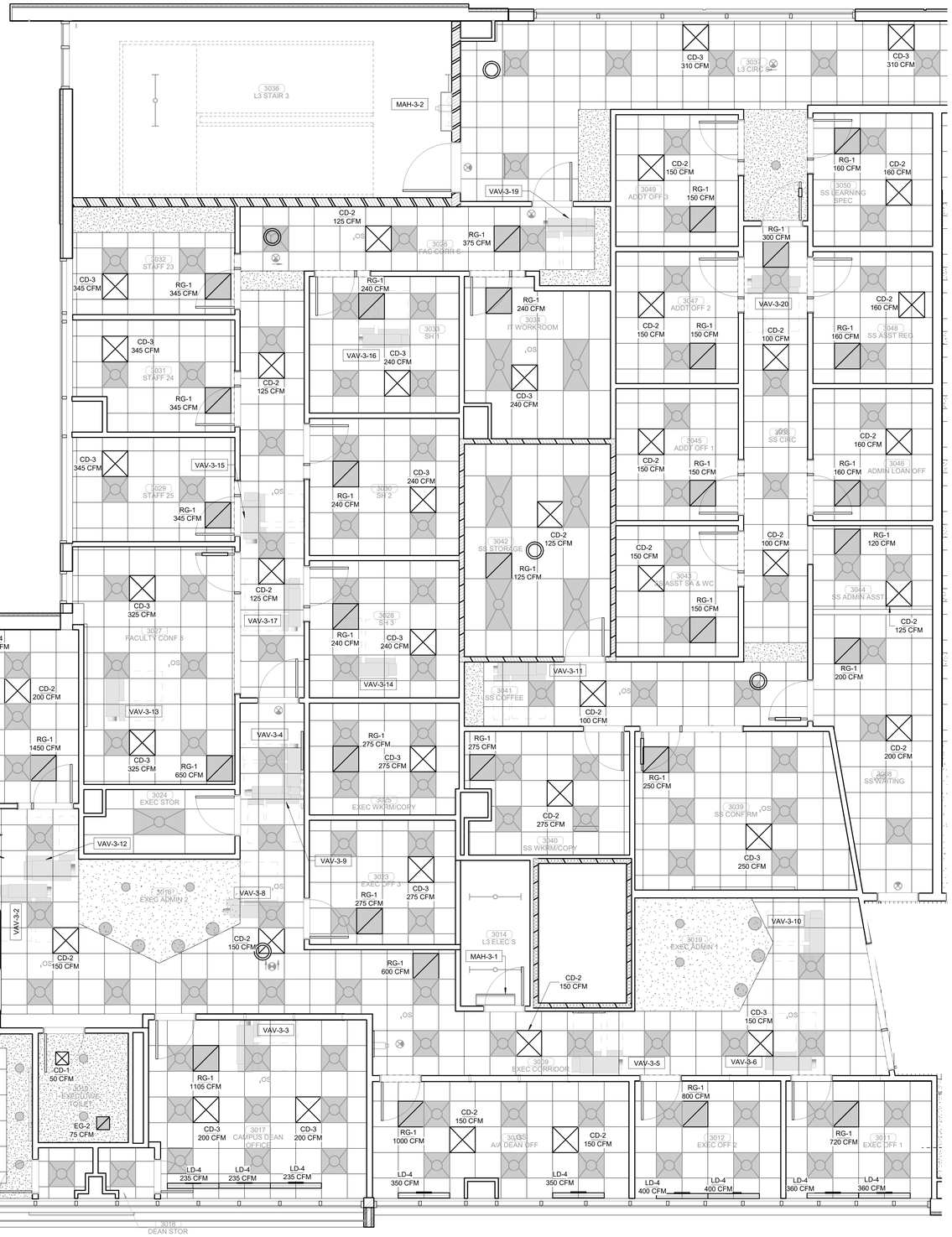
KEY PLAN:
02
01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.14

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 03 SECTOR 02



PLAN NORTH

TRUE NORTH

1 ENLARGED MECHANICAL REFLECTED CEILING PLAN
LEVEL 03
1/4" = 1'-0"

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SEAL OF
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AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS

#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M3.15

ENLARGED MECHANICAL REFLECTED CEILING PLAN LEVEL 03 SECTOR 02

① APC AR3150 NETWORK ENCLOSURES EQUIPPED AS FOLLOWS
(2) AR8865 RACK MOUNT PDU'S L21-20 INPUT (36)C13, (6)C19, (2) L5-20 MOUNTED REAR LEFT SIDE
(1) AP7721 CABLE MANAGER MOUNTED REAR RIGHT SIDE
(1) RACK AIR CONTAINMENT SYSTEM
*FILL 4 CABINETS COMPLET WITH BLANKING PANELS

② APC IN ROW DX ACRD300 COUPLED WITH RACK AIR CONTAINMENT SYSTEM

③ PDU POWER WAVE 2 BUSSWAY 250A 208V 3PHASE WITH HANGARS FOR 1/2" ROD
(4) BUSSWAY TAP OFF UNITS PER BUSS RUN EACH WITH (2)30 3 POLE BREAKERS & (2) L21-30R RECTICLES

④ APC AR3150 NETWORK ENCLOSURES EQUIPPED AS FOLLOWS
(2) AR8865 RACK MOUNT PDU'S L21-20 INPUT (36)C13, (6)C19, (2) L5-20 MOUNTED REAR LEFT SIDE
(1) AP7721 CABLE MANAGER MOUNTED REAR RIGHT SIDE
*FILL 1.5 CABINETS COMPLET WITH BLANKING PANELS

⑤ APC IN ROW DX ACRD300

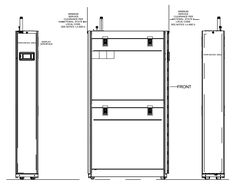
⑥ APC AR3100 I.T. ENCLOSURES EQUIPPED AS FOLLOWS
(2) AR8865 RACK MOUNT PDU'S L21-20 INPUT (36)C13, (6)C19, (2) L5-20 MOUNTED REAR LEFT SIDE
(1) AP7721 CABLE MANAGER MOUNTED REAR RIGHT SIDE
*FILL 1 CABINETS COMPLET WITH BLANKING PANELS

INDOOR UNITS ARE TO BE SUPPLIED WITH INTEGRAL CONDENSATE PUMPS. (TYP ALL)

POWER CONNECTIONS

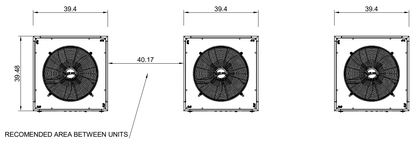
SKU	Voltage	Frequency	65 kAIC	Power Feed	Number of Fan Power Supplies	Drainage System	Airflow Pattern
ACRD300	220 V	50 Hz	No	Dual feed	1	Condensate pump	Rear to front
ACRD300D	220 V	50 Hz	No	Dual feed	2	Condensate pump	Rear to front
ACRD300G	220 V	50 Hz	No	Dual feed	1	Gravity drain	Rear to front
ACRD300GD	220 V	50 Hz	No	Dual feed	2	Gravity drain	Rear to front
ACRD301	100–120 V*/ 200–240 V	50/60 Hz	Yes	Dual feed	1	Condensate pump	Rear to front
ACRD301G	100–120 V*/ 200–240 V	50/60 Hz	Yes	Dual feed	1	Gravity drain	Rear to front

*Configure proper voltage before applying power to the cooling unit.



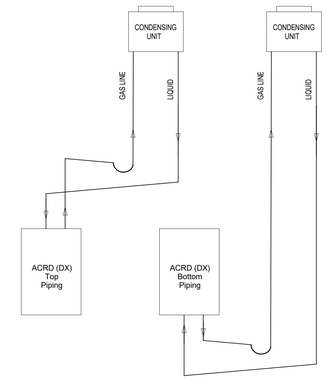
Air System—Fan	
Fan Type	EC
Size – mm (in.)	710 (28.0)
Number of Fans	1
Cooling Coil	3.024 (32.55)
Face Area – m² (ft²)	3
Rows Deep	
Connection Sizes (Not Piping Sizes)	7/8 in. ODF
Gas Piping	1/2 in. ODF
Liquid Piping	
Refrigerant Piping*	120 (393)
Maximum Equivalent Length – m (ft)	30 (98)
Maximum Elevation** – m (ft)	
*See the Installation Manual for more information.	
**Condensing units may be level with or higher than the indoor unit.	
See the *Installation Manual* for more information on refrigerant piping.	

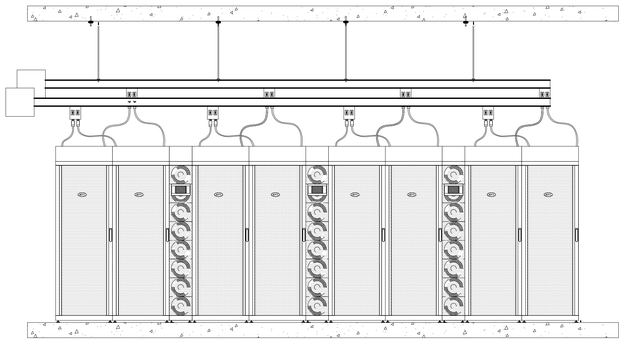
Electrical Data			
Model	MCA	MOP	FLA
ACCU30301	n/a	n/a	15.8
ACCU30302	n/a	n/a	15.8
ACCU30001	50.05	80	n/a
ACCU30002	50.05	80	n/a
ACCU30101	23.1	40	n/a
ACCU30102	23.1	40	n/a
ACCU30201	n/a	n/a	15.8
ACCU30202	n/a	n/a	15.8

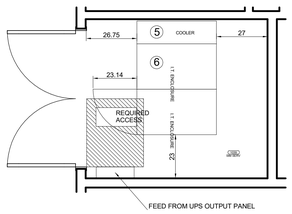


Piping Diagram

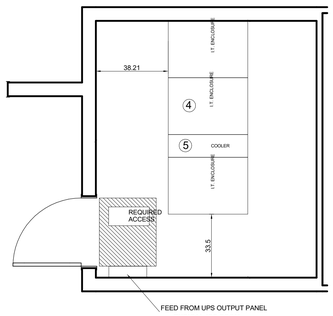
ACP-Cooled Condenser must be located at the same level or above the ACRD unit.



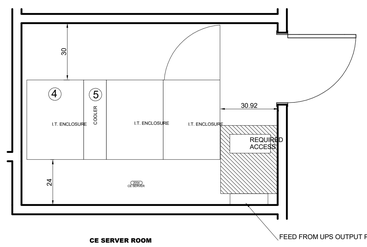




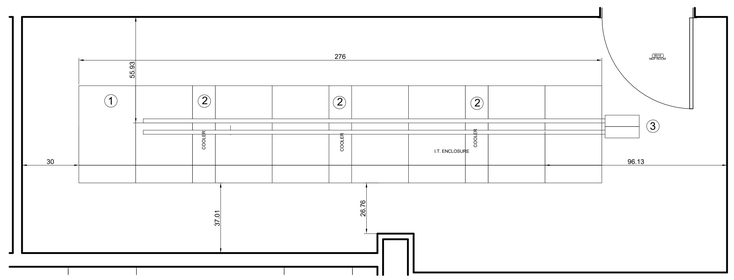
SIM SERVER ROOM



TYPICAL IDF ROOM



CE SERVER ROOM



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CERTIFICATE
08/23/19

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CLIENT:
THE CHEROKEE NATION
TRIBAL SEAL OF THE CHEROKEE NATION
SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

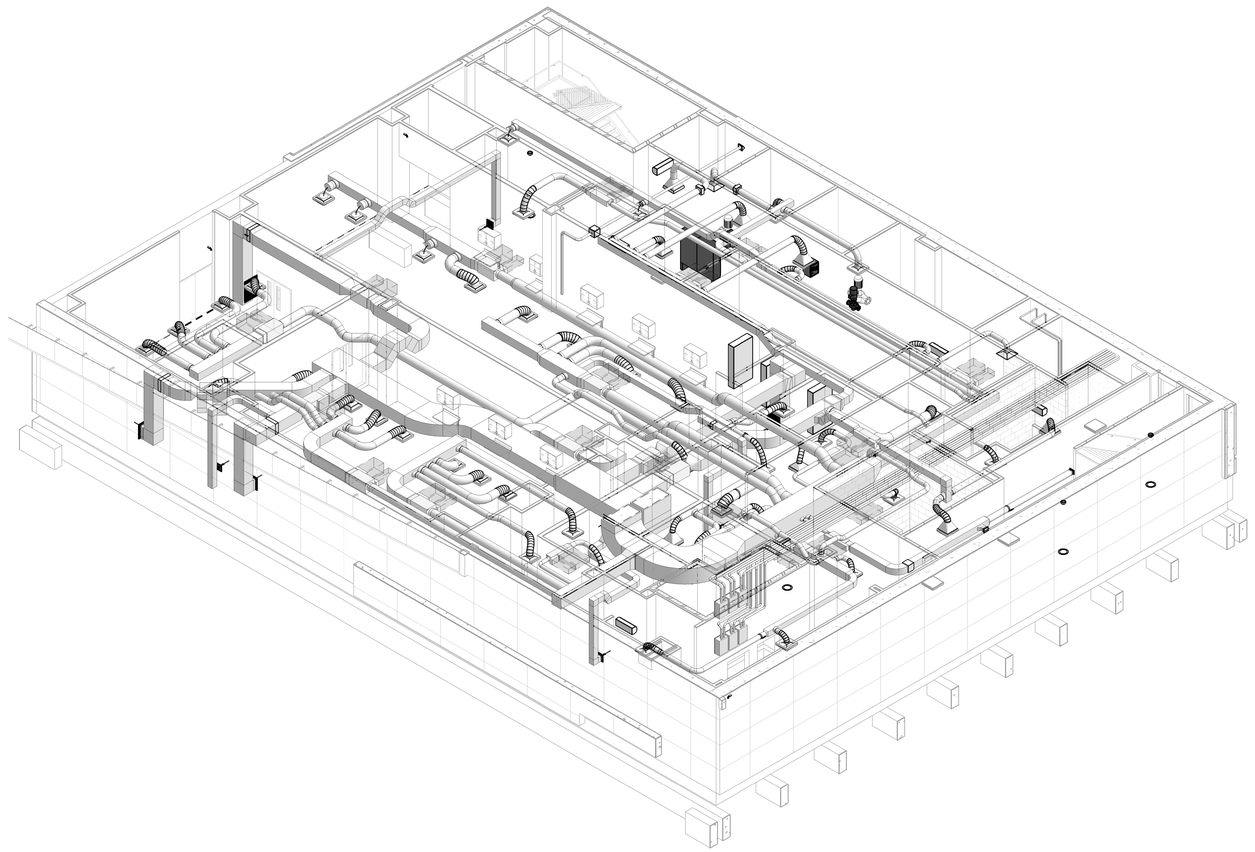
KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M4.00

IT ROOM MECHANICAL PLAN



1 MECHANICAL ANXONOMETRICS PLAN BASEMENT

James R. Childers
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SEPT. 6, 1839

College of Osteopathic Medicine
AT THE CHEROKEE NATION

TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

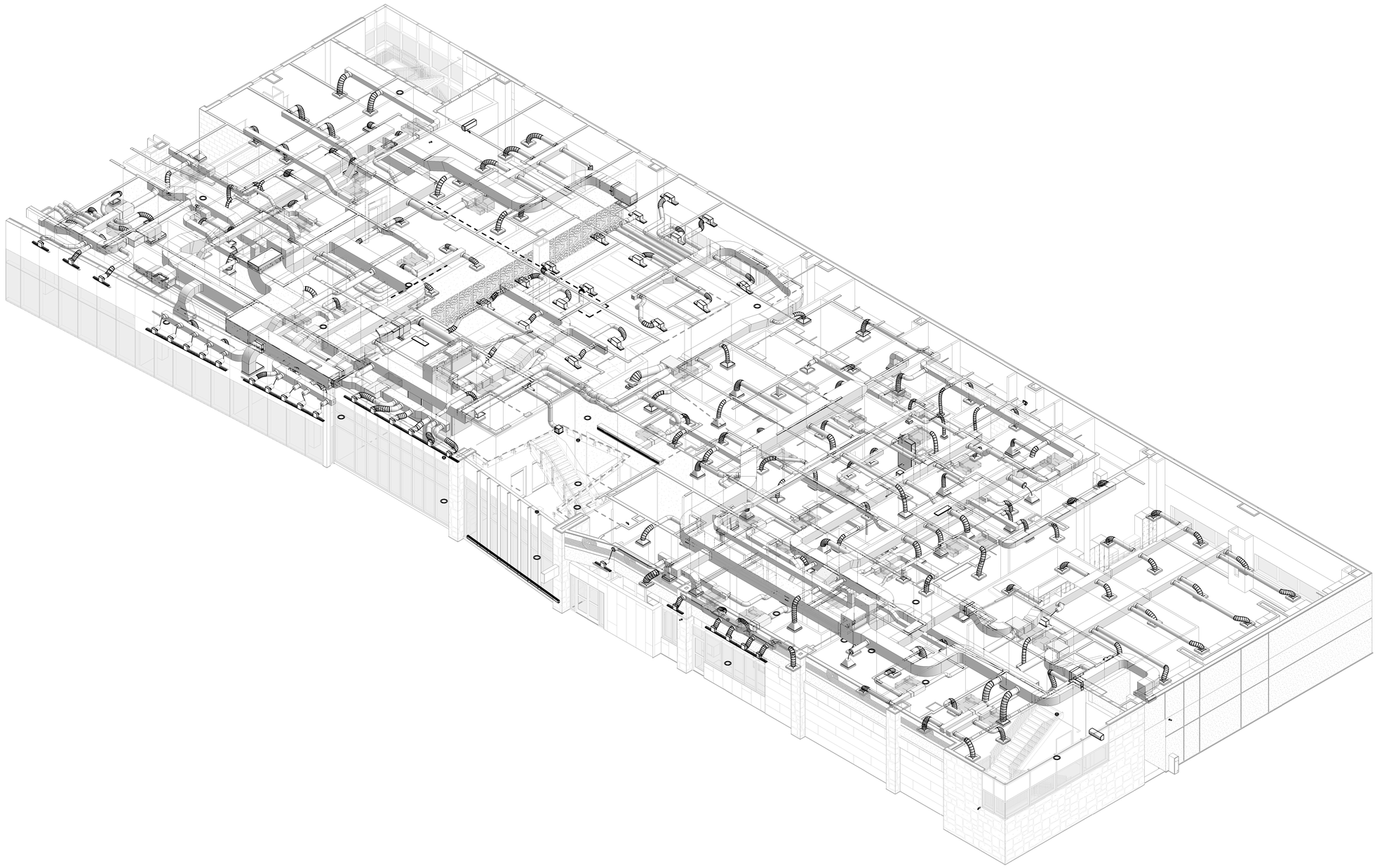
REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:

M5.00

MECHANICAL ANXONOMETRIC PLAN BASEMENT



1 MECHANICAL ANXONOMETRICS PLAN LEVEL 01

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TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

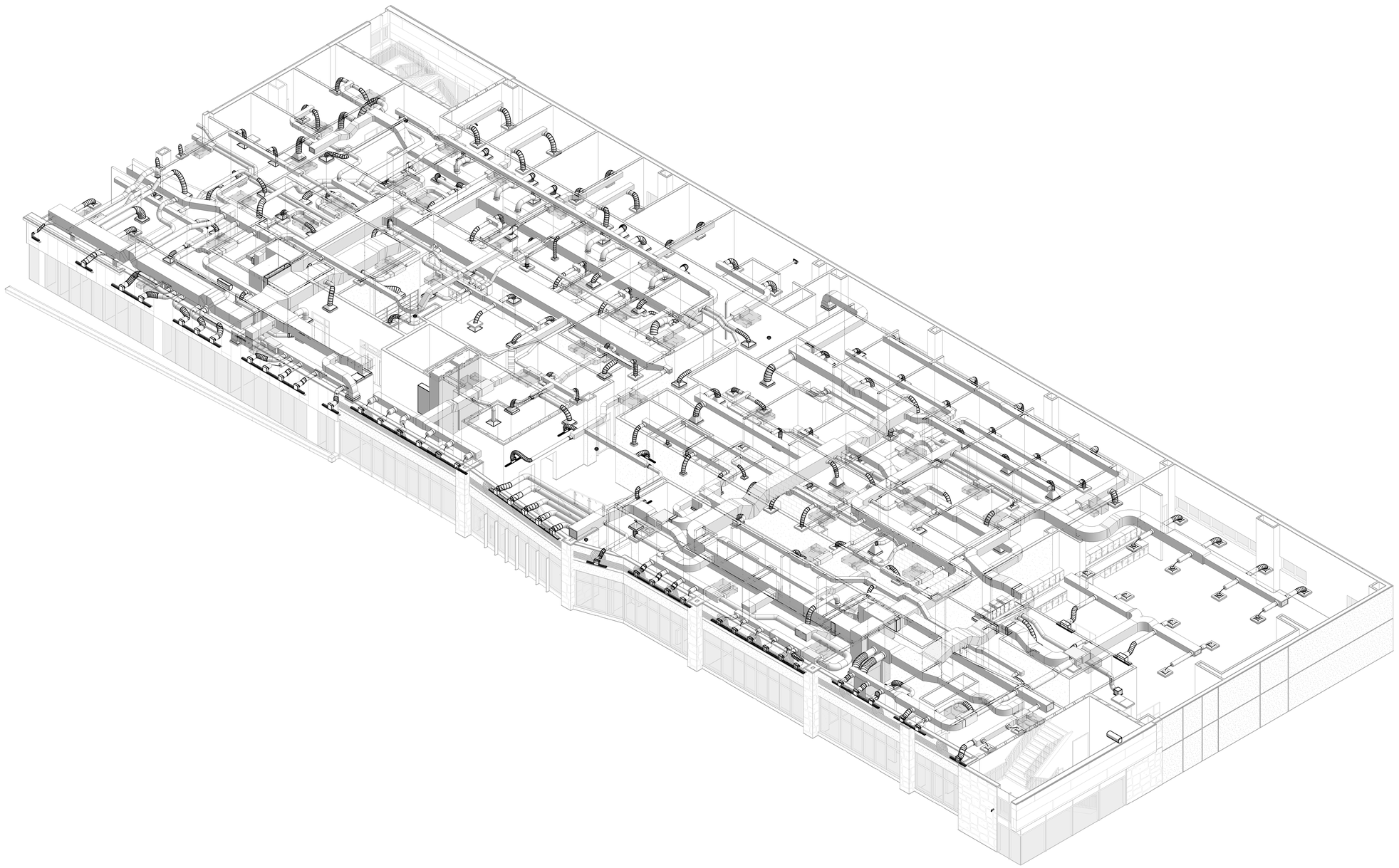
REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:

M5.01

MECHANICAL ANXONOMETRIC PLAN LEVEL 01



1 MECHANICAL ANXONOMETRICS PLAN LEVEL 02

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SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS

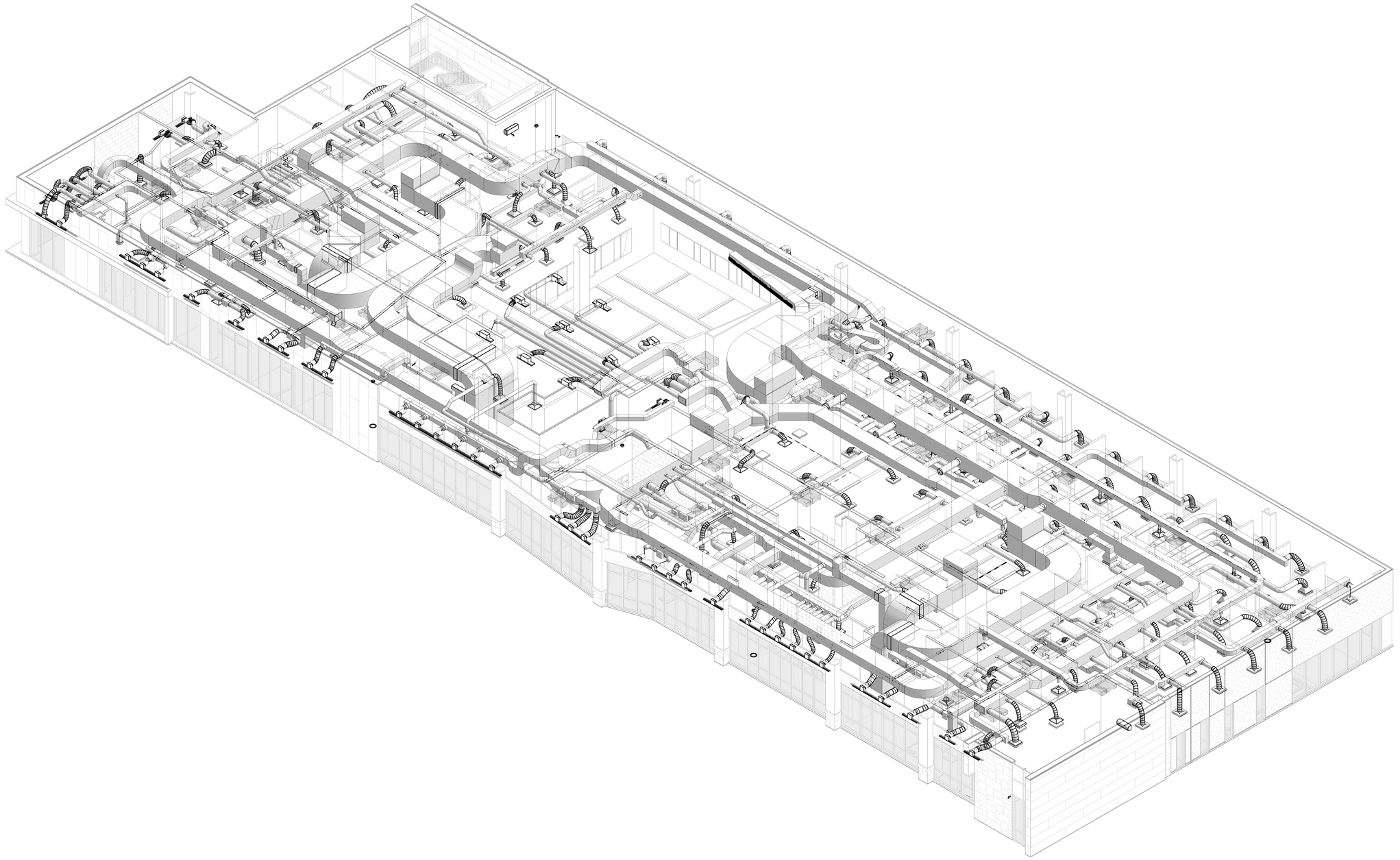
#	DATE	DESCRIPTION

DATE: 08-23-19

JOB NUMBER: 17-13

SHEET NUMBER: M5.02

MECHANICAL ANXONOMETRIC PLAN LEVEL 02



1 **MECHANICAL ANXONOMETRICS PLAN LEVEL 03**

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OKLAHOMA
CERTIFIED
08/23/19

CONSULTANT LOGO:

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SEPT. 6, 1839

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AT THE CHEROKEE NATION
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KEY PLAN:

02 01

PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:

M5.03

MECHANICAL AXONOMETRIC PLAN LEVEL 03

MECHANICAL ZONING LEGEND

- MAH-0-1
- MAH-0-2
- MAH-0-3
- MAH-0-4
- MAH-0-5
- MDF
- UPS
- VAV-2-1
- VAV-2-2
- VAV-2-3
- VAV-2-4
- VAV-2-5
- VAV-2-6
- VAV-2-7
- VAV-2-8
- VAV-2-9
- VAV-2-10
- VAV-2-11
- VAV-2-12
- VAV-2-13

OVERALL MECHANICAL ZONING PLAN BASEMENT LEVEL

1 1/4" = 1'-0"

PLAN NORTH

TRUE NORTH

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PROFESSIONAL SEAL:

LICENSED PROFESSIONAL ENGINEER — Shane Wells — 28910 — OKLAHOMA — 08/23/19

CONSULTANT LOGO:

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CLIENT:

THE CHEROKEE NATION — TRIBE OF INDIANS — SEPT. 6, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:

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REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M6.00

MECHANICAL ZONING PLAN BASEMENT LEVEL

MECHANICAL ZONING LEGEND

IDF-1	VAV-1-11	VAV-4-10
MAH-1-1	VAV-1-12	VAV-4-11
MAH-1-2	VAV-1-13	VAV-4-12
MAH-1-3	VAV-1-14	VAV-4-13
SIM SERV	VAV-1-15	VAV-4-14
VAV-1-1	VAV-4-1	VAV-4-15
VAV-1-2	VAV-4-2	VAV-4-16
VAV-1-3	VAV-4-3	VAV-4-17A
VAV-1-4	VAV-4-4	VAV-4-17B
VAV-1-5	VAV-4-5	VAV-4-18
VAV-1-6	VAV-4-6	VAV-4-19
VAV-1-8	VAV-4-7	VAV-4-20
VAV-1-9	VAV-4-8	VAV-4-21
VAV-1-10	VAV-4-9	VAV-4-22

1 OVERALL MECHANICAL ZONING PLAN LEVEL 01
1/8" = 1'-0"

PLAN NORTH

TRUE NORTH

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CLIENT:

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SEPT. 5, 1839

COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:

02 01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

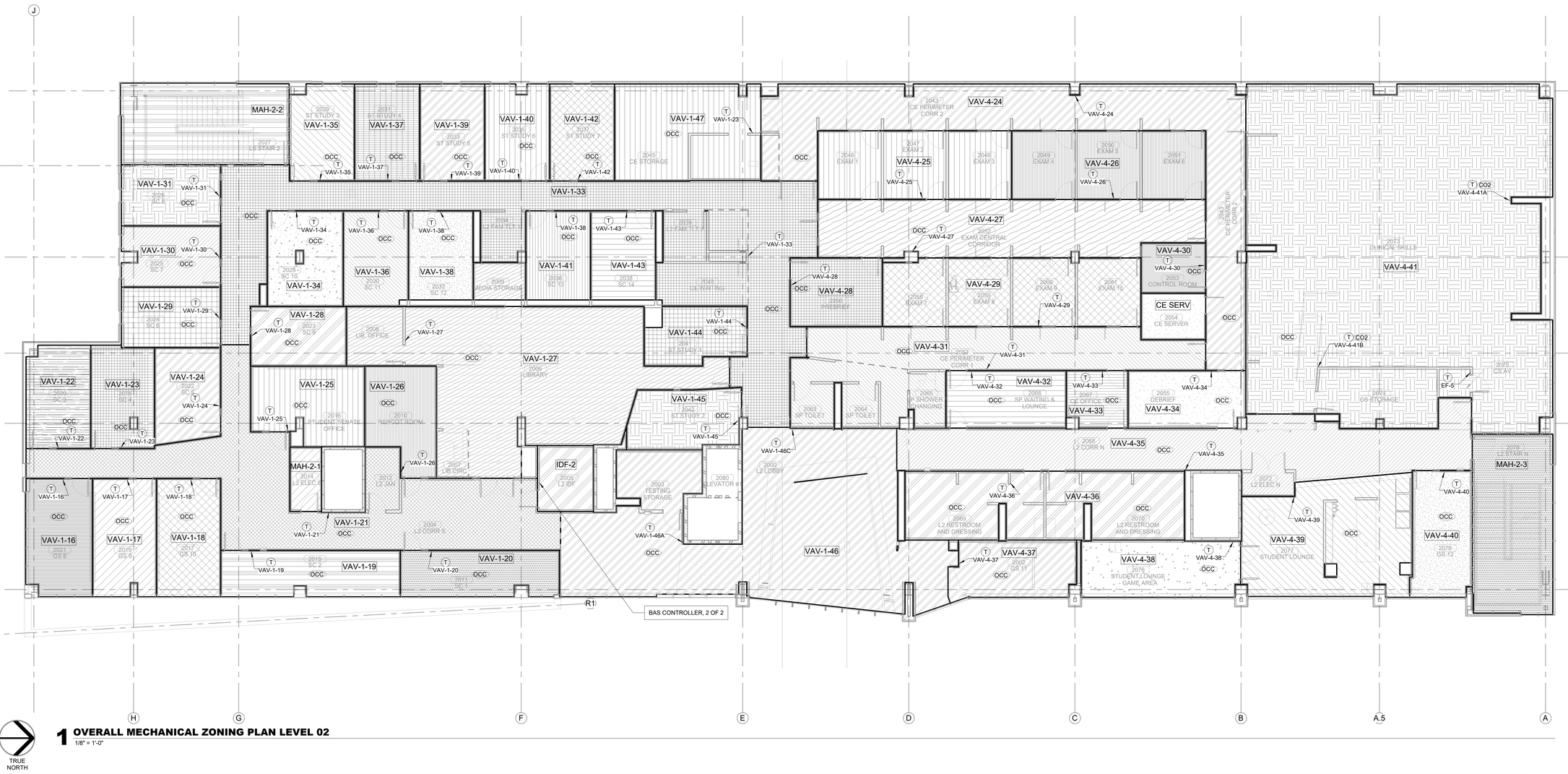
REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M6.01

MECHANICAL ZONING PLAN LEVEL 01

MECHANICAL ZONING LEGEND

CE SERV	VAV-1-29	VAV-4-24
IDF-2	VAV-1-30	VAV-4-25
MAH-2-1	VAV-1-31	VAV-4-26
MAH-2-2	VAV-1-33	VAV-4-27
MAH-2-3	VAV-1-34	VAV-4-28
VAV-1-16	VAV-1-35	VAV-4-29
VAV-1-17	VAV-1-36	VAV-4-30
VAV-1-18	VAV-1-37	VAV-4-31
VAV-1-19	VAV-1-38	VAV-4-32
VAV-1-20	VAV-1-39	VAV-4-33
VAV-1-21	VAV-1-40	VAV-4-34
VAV-1-22	VAV-1-41	VAV-4-35
VAV-1-23	VAV-1-42	VAV-4-36
VAV-1-24	VAV-1-43	VAV-4-37
VAV-1-25	VAV-1-44	VAV-4-38
VAV-1-26	VAV-1-45	VAV-4-39
VAV-1-27	VAV-1-46	VAV-4-40
VAV-1-28	VAV-1-47	VAV-4-41



1 OVERALL MECHANICAL ZONING PLAN LEVEL 02
1/8" = 1'-0"

PLAN NORTH

TRUE NORTH

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08/23/19

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COLLEGE OF Osteopathic Medicine
AT THE CHEROKEE NATION
TAHLEQUAH, OKLAHOMA

KEY PLAN:
02 01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M6.02
MECHANICAL ZONING PLAN LEVEL 02

MECHANICAL ZONING LEGEND

- IDF-3
- MAH-3-1
- MAH-3-2
- MAH-3-3
- VAV-3-1
- VAV-3-2
- VAV-3-3
- VAV-3-4
- VAV-3-5
- VAV-3-6
- VAV-3-7
- VAV-3-8
- VAV-3-9
- VAV-3-10
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- VAV-3-48
- VAV-3-49
- VAV-3-50
- VAV-3-51

PLAN NORTH

TRUE NORTH

1 OVERALL MECHANICAL ZONING PLAN LEVEL 03

1/8" = 1'-0"

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PROJECT PHASE:

CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

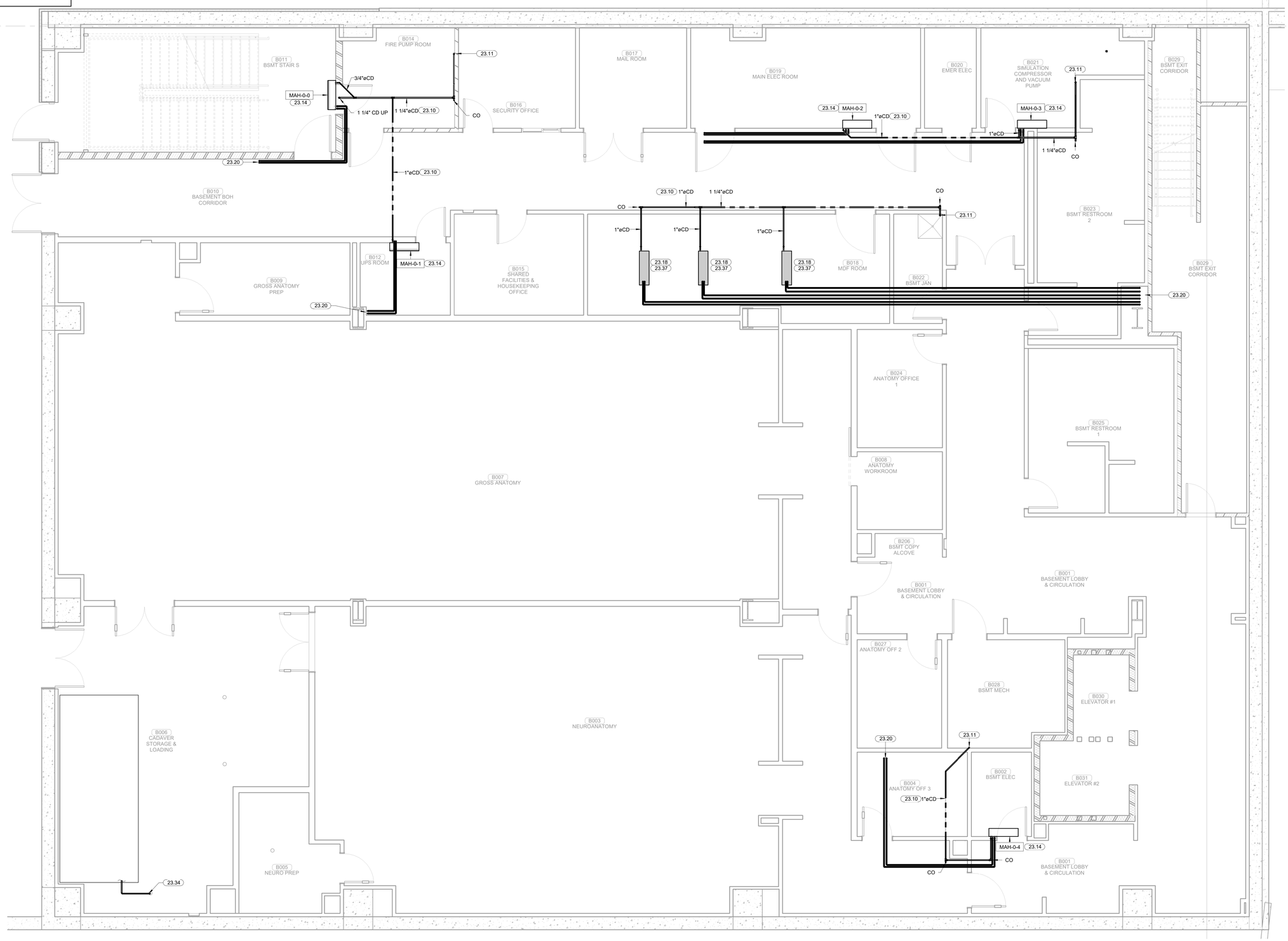
SHEET NUMBER:

M6.03

MECHANICAL ZONING PLAN LEVEL 03

KEYNOTES

23.10	ROUTE PIPE ABOVE CEILING. ROUTE A MINIMUM OF 1/8" / 100FT OF PIPE.
23.11	PIPE DOWN ALONG WALL TO APPROVED DRAIN FIXTURE.
23.14	PROVIDE UNIT WITH CONDENSATE PUMP, MICRO-V BY ASPEN PUMPS OR EQUAL.
23.18	ROUTING SHOWN INSIDE ROOM FOR THIS UNIT IS DIAGRAMATIC IN NATURE.REFER TO MANUFACTURER'S INSTRUCTIONS FOR FINAL INSTALLATION AND SIZING OF CONDENSATE PIPE AND REFRIGERANT LINES.
23.20	REFRIGERANT LINES UP.
23.34	ROUTE CONDENSATE DRAIN FOR BODY COOLER EVAPORATORS TO FLOOR DRAIN WITH AIR GAP. COORDINATE CONDENSATE PIPE SIZING REQUIREMENTS WITH COOLER MFR. SLOPE MINIMUM 1/8" PER FOOT TOWARDS FLOOR DRAIN.
23.37	IN-ROW COOLING UNIT MODEL: ACRD300 208/1 30AMP. REFER TO SHEET M.400.



1 OVERALL MECHANICAL PLAN BASEMENT LEVEL
1/4" = 1'-0"

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PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

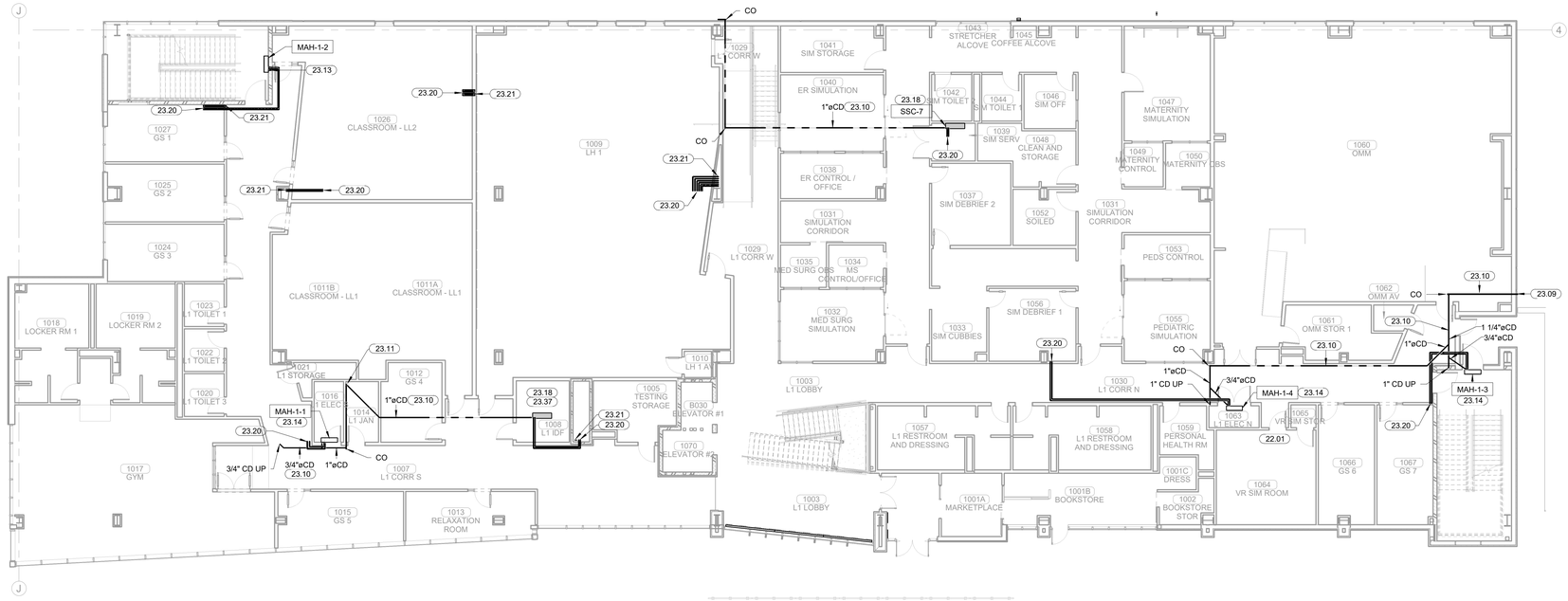
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M7.00

MECHANICAL PIPING PLAN BASEMENT LEVEL

KEYNOTES

22.01	DIRTY PIPE NEW 2" DRAIN LINE IN WALL TO MAIN DRAIN LINE.
23.09	ROUTE CONDENSATE LINE DOWN ALONG EXTERIOR WALL TO GREEN AREA. SEAL PIPE PENETRATION IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS. CONTRACTOR TO COORDINATE FINAL CONDENSATE DRAIN DISCHARGE WITH LOCAL CODES.
23.10	ROUTE PIPE ABOVE CEILING. ROUTE A MINIMUM OF 1/8" / 100FT OF PIPE.
23.11	PIPE DOWN ALONG WALL TO APPROVED DRAIN FIXTURE.
23.13	
23.14	PROVIDE UNIT WITH CONDENSATE PUMP, MICRO-V BY ASPEN PUMPS OR EQUAL.
23.18	ROUTING SHOWN INSIDE ROOM FOR THIS UNIT IS DIAGRAMATIC IN NATURE.REFER TO MANUFACTURER'S INSTRUCTIONS FOR FINAL INSTALLATION AND SIZING OF CONDENSATE PIPE AND REFRIGERANT LINES.
23.19	ROUTE CONDENSATE PIPE OUTSIDE AND CONNECT TO RAIN DOWNSPOUT. MAKE ALL PROVISION FOR THIS CONNECTION. SEAL PIPE PENETRATION IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS. CONTRACTOR TO COORDINATE FINAL CONDENSATE DISCHARGE WITH LOCAL CODES.
23.20	REFRIGERANT LINES UP.
23.21	REFRIGERANT LINES FROM BELOW.
23.37	IN-ROW COOLING UNIT MODEL: ACRD300 208/1 30AMP. REFER TO SHEET M.400.



1 OVERALL MECHANICAL PLAN LEVEL 01
3/32" = 1'-0"

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KEY PLAN:

02 01

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

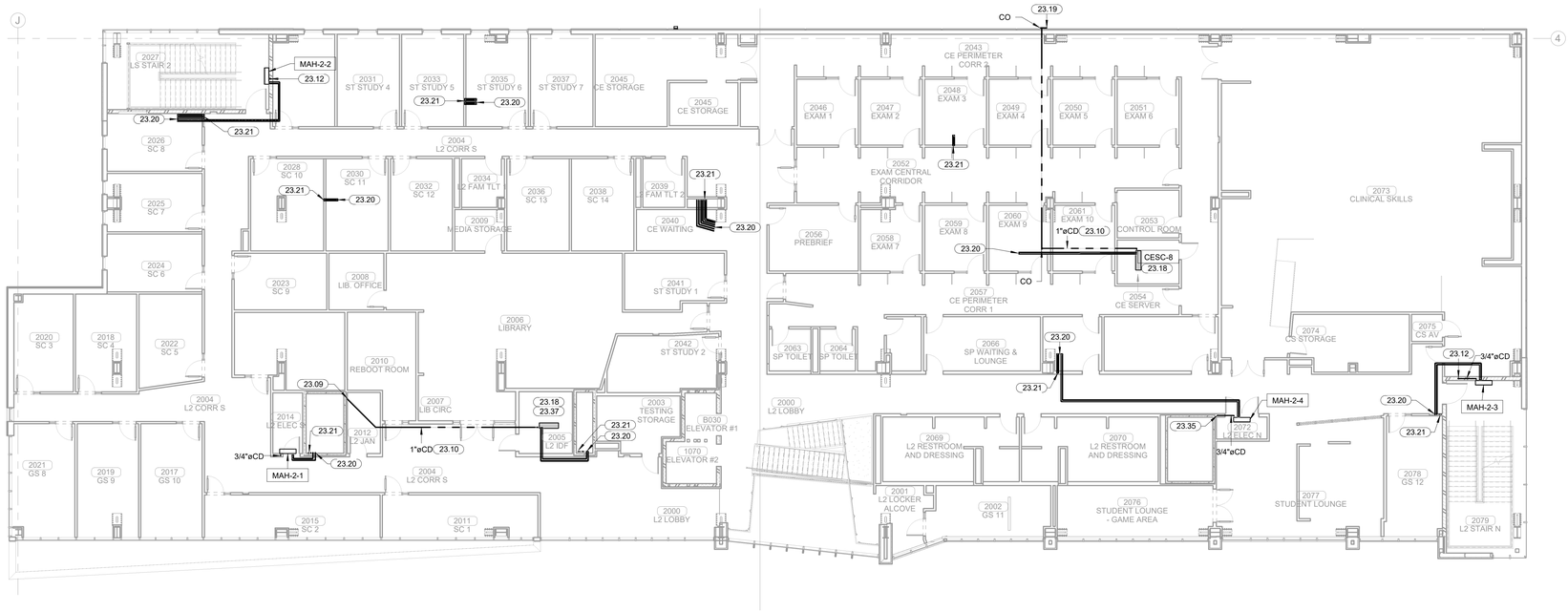
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M7.01

MECHANICAL PIPING PLAN LEVEL 01

KEYNOTES

23.09	ROUTE CONDENSATE LINE DOWN ALONG EXTERIOR WALL TO GREEN AREA. SEAL PIPE PENETRATION IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS. CONTRACTOR TO COORDINATE FINAL CONDENSATE DRAIN DISCHARGE WITH LOCAL CODES.
23.10	ROUTE PIPE ABOVE CEILING. ROUTE A MINIMUM OF 1/8" / 100FT OF PIPE.
23.12	3/4" CONDENSATE PIPE UP, 1" CONDENSATE PIPE DOWN.
23.18	ROUTING SHOWN INSIDE ROOM FOR THIS UNIT IS DIAGRAMATIC IN NATURE.REFER TO MANUFACTURER'S INSTRUCTIONS FOR FINAL INSTALLATION AND SIZING OF CONDENSATE PIPE AND REFRIGERANT LINES.
23.19	ROUTE CONDENSATE PIPE OUTSIDE AND CONNECT TO RAIN DOWNSPOUT. MAKE ALL PROVISION FOR THIS CONNECTION. SEAL PIPE PENETRATION IN ACCORDANCE WITH ARCHITECTURAL SPECIFICATIONS. CONTRACTOR TO COORDINATE FINAL CONDENSATE DISCHARGE WITH LOCAL CODES.
23.20	REFRIGERANT LINES UP.
23.21	REFRIGERANT LINES FROM BELOW.
23.35	1" CONDENSATE PIPE UP, 1" CONDENSATE PIPE DOWN.
23.37	IN-ROW COOLING UNIT MODEL: ACRD300 208/1 30AMP. REFER TO SHEET M.400.



1 OVERALL MECHANICAL PLAN LEVEL 02
3/32" = 1'-0"

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PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

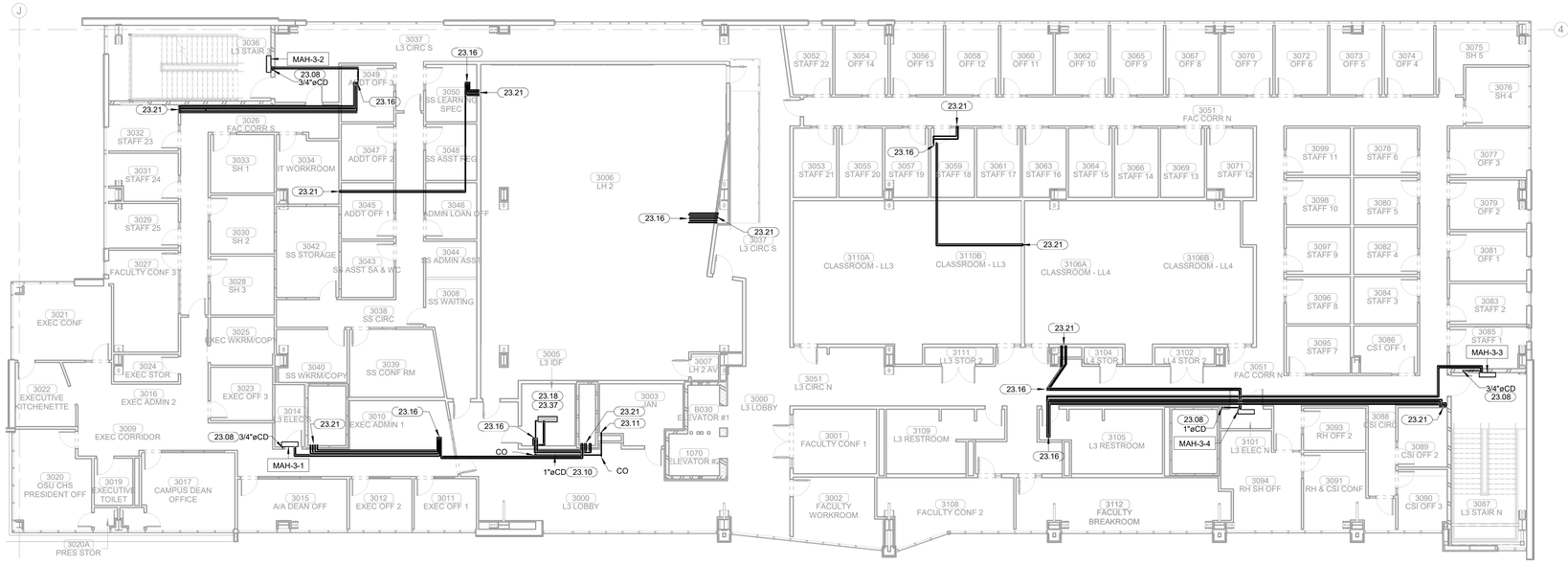
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M7.02

MECHANICAL PIPING PLAN LEVEL 02

KEYNOTES

23.08	EXTEND PIPE ABOVE CEILING AND LEAVE OPEN TO ATMOSPHERE.
23.10	ROUTE PIPE ABOVE CEILING. ROUTE A MINIMUM OF 1/8" / 100FT OF PIPE.
23.11	PIPE DOWN ALONG WALL TO APPROVED DRAIN FIXTURE.
23.16	REFRIGERANT PIPING UP TO ROOF THROUGH GOOSENECK TO CONDENSING UNITS.
23.18	ROUTING SHOWN INSIDE ROOM FOR THIS UNIT IS DIAGRAMATIC IN NATURE.REFER TO MANUFACTURER'S INSTRUCTIONS FOR FINAL INSTALLATION AND SIZING OF CONDENSATE PIPE AND REFRIGERANT LINES.
23.21	REFRIGERANT LINES FROM BELOW.
23.37	IN-ROW COOLING UNIT MODEL: ACRD300 208/1 30AMP. REFER TO SHEET M.400.



1 OVERALL MECHANICAL PLAN LEVEL 03
3/32" = 1'-0"

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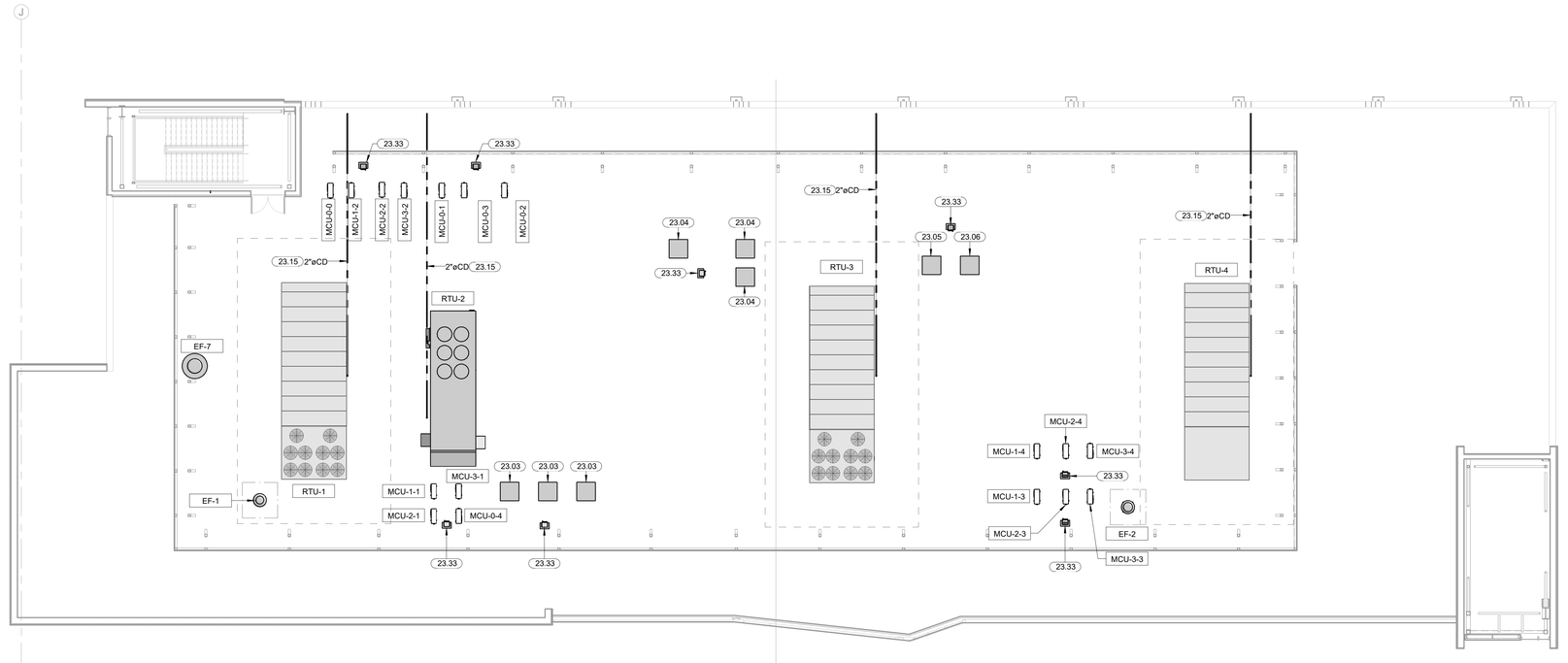
DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M7.03

MECHANICAL PIPING PLAN LEVEL 03

KEYNOTES

23.03	CONDENSING UNIT TO SERVE MDF ROOM IN BASEMENT. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.04	CONDENSING UNIT TO SERVE IDF ROOM. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.05	CONDENSING UNIT TO SERVE SIM SERVER ROOM. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.06	CONDENSING UNIT TO SERVE CE SERVER ROOM. MODEL: ACCU300000 208/3 80 AMP. REFER TO SHEET M4.00.
23.15	FIELD VERIFY EXACT LOCATION OF UNIT CONDENSATE DRAIN CONNECTION. ROUTE CONDENSATE LINE A MINIMUM OF 1/8" / 100FT OF PIPE. PROVIDE WITH ROOF PIPE SUPPORTS. CONTRACTOR TO COORDINATE FINAL CONDENSATE DRAIN DISCHARGE WITH LOCAL CODES.
23.33	REFRIGERANT PIPING TO BE ROUTED DN IN GOOSENECK THROUGH ROOF FROM ROOFTOP CONDENSING UNITS TO INDOOR AIR HANDLER. REFER TO DETAIL 11-M1.03. REFER TO SHEETS M7.00 THRU M7.04 FOR CONTINUATION OF REFRIGERANT PIPE ROUTING AND CONDENSATE PIPE ROUTING.



1 OVERALL MECHANICAL PLAN ROOF
3/32" = 1'-0"

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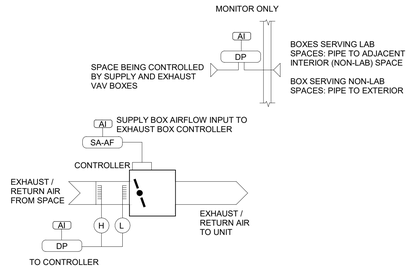
08-23-19	17-13

SHEET NUMBER:
M7.04

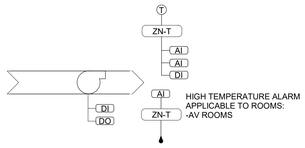
MECHANICAL PIPING PLAN ROOF

CONTROLS LEGEND

AI / AO	INPUT / OUTPUT	HWP	EXAMPLE OF ELEMENT TITLE
	COIL		AUTO-GATE VALVE
C / C	COOLING COIL		THREE-WAY GATE VALVE
E / C	ELECTRIC COIL		GATE VALVE
H / C	HEATING COIL		PIPE WELL
	FAN		SAFETY CIRCUIT
	MEDIA FILTER		TEMPERATURE
	FILTER		LOW LIMIT
	SMOKE CONTROLLER		GROUND
	HUMIDITY		REMOTE SENSOR
	DAMPER	HG / RH	HOT GAS REHEAT

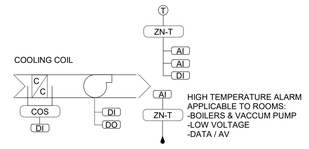


10 AIR TERMINAL UNIT - EXHAUST/RETURN
NTS

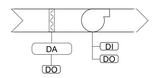


9 AV ROOM EXHAUST FAN - EF-3,4,5
NTS

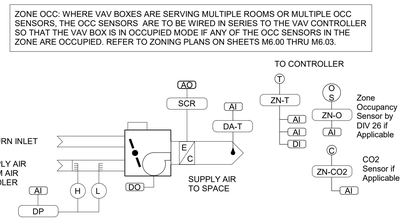
8 ELECTRIC BASEBOARD HEATER
NTS



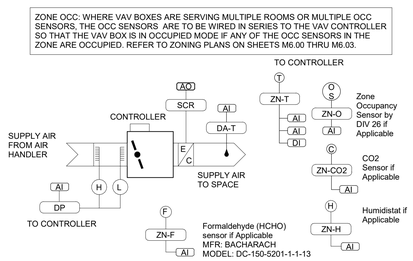
7 MINI SPLIT / IN-ROW COOLING SYSTEM
NTS



6 GENERAL EXHAUST FAN - EF-1,2
NTS



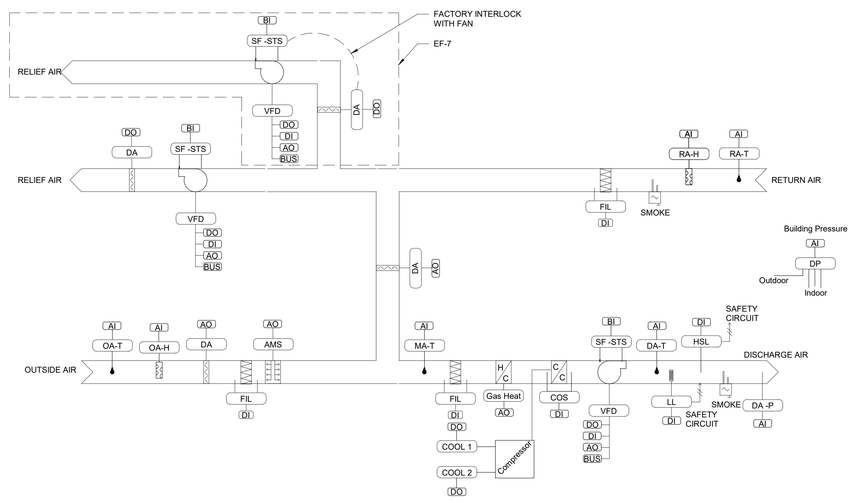
5 FAN POWERED AIR TERMINAL WITH ELECTRIC REHEAT
NTS



4 AIR TERMINAL UNIT WITH ELECTRIC REHEAT
NTS

3 MULTI-ZONE VAV ROOFTOP UNIT - RTU-3,4
NTS

2 DEDICATED OUTSIDE AIR ROOFTOP UNIT - RTU-2
NTS



1 MULTI-ZONE VAV ROOFTOP UNIT W/ EF-7 - RTU-1
NTS

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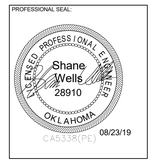

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CONSTRUCTION DOCUMENTS

REVISIONS		
#	DATE	DESCRIPTION

DATE: 08-23-19
JOB NUMBER: 17-13
SHEET NUMBER: M8.00
MECHANICAL CONTROLS

RTU-1 SEQUENCE OF OPERATION

Building Automation System Interface:
The Building Automation System (BAS) shall send the controller Occupied Bypass, Morning Warm-up / Pre-Cool, Occupied / Unoccupied and Heat / Cool modes. If communication is lost with the BAS the controller shall operate using default modes and setpoints. The BAS shall also send the controller a duct static pressure setpoint, discharge air temperature setpoint, and ventilation airflow setpoint, each calculated by optimization routines in the BAS.

Occupied Mode:
During occupied periods, the supply fan shall run continuously and the outside air damper shall open to current airflow setpoint. The factory unit controller shall control the supply fan speed to maintain the current duct static pressure setpoint (adj.).The DX cooling shall be staged and gas heat shall modulated by the factory controller to maintain the current discharge air temperature setpoint. If economizing is enabled the outside air damper shall modulate to maintain the current discharge air temperature setpoint.

Unoccupied Mode:
When the space temperature is below the unoccupied heating setpoint of 60.0 deg. F (adj.) the supply fan shall start, the outside air damper shall remain closed and the gas heat shall be enabled. When the space temperature rises above the unoccupied heating setpoint of 60.0 deg. F (adj.) plus the unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop and the gas heat shall be disabled.
When the space temperature is above the unoccupied cooling setpoint of 85.0 deg. F (adj.) the supply fan shall start, the outside air damper shall open if economizing is enabled and remain closed if economizing is disabled and the DX cooling shall be enabled. When the space temperature falls below the unoccupied cooling setpoint of 85.0 deg. F (adj.) minus the unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop, the DX cooling shall be disabled and the outside air damper shall close.

Optimal Start:
The BAS shall monitor the scheduled occupied time, occupied space setpoints and space temperature to calculate when the optimal start occurs.

Morning Warm-Up Mode:
During optimal start, if the average space temperature is below the occupied heating setpoint a morning warm-up mode shall be activated. When morning warm-up is initiated the unit shall enable the heating and supply fan. The outside air damper shall remain closed. When the average space temperature reaches the occupied heating setpoint (adj.), the unit shall transition to the occupied mode.

Pre-Cool Mode:
During optimal start, if the average space temperature is above the occupied cooling setpoint, pre-cool mode shall be activated. When pre-cool is initiated the unit shall enable the fan and cooling or economizer. The outside air damper shall remain closed, unless economizing. When the average space temperature reaches occupied cooling setpoint (adj.), the unit shall transition to the occupied mode.

Occupied Bypass:
The BAS shall monitor the status of the "on" and "cancel" buttons of the space temperature sensors. When an occupied bypass request is received from a space sensor, the unit shall transition from its current occupancy mode to occupied bypass mode and the unit shall maintain the space temperature to the occupied setpoints (adj.).

Cooling Mode:
The unit controller shall use the discharge air temperature sensor and discharge air temperature cooling setpoint to determine when to initiate requests for cooling.
Discharge air setpoint shall be maintained by the factory controller by modulating the economizer or staging the DX cooling as required to maintain the discharge air setpoint.

Heating Mode:
During Unoccupied Heating or Morning Warm-Up Mode, the unit heat request will be communicated to the system VAVs prior to commencing heating operation to allow VAV units to open. The BAS will request the factory unit controller to command the VFD to 100% and modulate the heat until the zone temperature setpoints are satisfied. During occupied changeover heating, the units factory controller shall modulate the gas heat to maintain the discharge air heating setpoint

Dehumidification Mode:
If the return air humidity rises above setpoint, while a cooling call is not present, the factory unit controller shall stage compressors as
necessary to provide dehumidification while not over-cooling the supply air. The unit shall return to normal operation when the return air humidity setpoint is satisfied.

Supply Air Temperature Reset Control:
The supply air temperature setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the supply air temperature setpoint based on the current outside air temperature, but shall override this reset function and return the supply air temperature setpoint to 55.0 deg. F (adj.) if more than two (adj.) zones begin to overheat. Also, the BAS shall override this reset function whenever outdoor dew point is higher than 60.0 deg. F (adj.) or indoor humidity is higher than 60% RH (adj.).The BAS shall reset the supply air setpoint based on the return air humidity or current humidity measured by the room humidity sensors. If the supply air temperature drops below the minimum limit, a low temperature alarm shall be annunciated and the unit shall shut down. If the supply air temperature rises above the maximum limit, a high temperature alarm shall be annunciated.

Economizer:
The economizer dampers shall be modulated by the factory unit controller in order to accomplish the following sequence intent, per setpoints communicated by the BAS. The supply air sensor shall measure the dry bulb temperature of the air leaving the evaporator coil while economizing. When economizing is enabled and the unit is operating in the cooling mode, the economizer damper shall be modulated between its minimum position and 100% to maintain the discharge air temperature setpoint. The economizer damper shall modulate toward minimum position in the event the discharge air temperature falls below the discharge low limit temperature setpoint.
Comparative Enthalpy:
Outside air (OA) enthalpy shall be compared with Return air (RA) enthalpy point.
The economizer shall enable when OA enthalpy is less than RA enthalpy - 3.0 BTU/LB.
The economizer shall disable when OA enthalpy is greater than RA enthalpy.

Ventilation Control:
When in the occupied mode, the flow-measuring outdoor-air damper shall modulate to maintain the current ventilation airflow setpoint by the factory unit controller. The ventilation airflow setpoint shall be reset to the optimal ventilation setpoint communicated by the BAS. The BAS shall reset the ventilation setpoint based on the current ventilation needs of the VAV terminals.

Supply Fan:
The supply fan shall be enabled while in the occupied mode and cycled on during the unoccupied mode. Fan status shall be monitored by the BAS through the factory unit controller. If fan status does not prove within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated at the BAS, the unit shall be commanded to stop, requiring a manual reset.

Supply Duct Static Pressure Control:
The duct static pressure setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the duct static pressure setpoint based on the position of the furthest open VAV damper.
If for any reason the supply air pressure exceeds the supply air pressure high limit , the
supply fan shall shut down. The unit shall be allowed to restart three times after a 15 minute off period. If the overpressurization condition occurs on the fourth restart, the unit shall shut down and a manual reset diagnostic is displayed at the remote panel and/or the BAS system.

Building Pressure Control:
A differential pressure transducer shall actively monitor the difference in pressure between the building (indoors) and outdoors. If the building pressure increases above the differential pressure setpoint, the unit controller shall turn on the RTU relief exhaust fan and modulate the exhaust fan VFD to control building pressure to the differential pressure setpoint. If the building pressure continues to increase after RTU relief exhaust fan is activated, the BAS shall turn on EF-6 and modulate EF-6 VFD to control building pressure to the differential setpoint. If the building pressure decreases below the differential pressure setpoint, the BAS shall first deativate EF-6. Upon an additional building pressure decrease, the controller shall deactivate the RTU relief exhaust fan VFD.

Exhaust Fan Status:
Fan status shall be monitored by the BAS through the factory unit controller. If fan status does not prove within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated at the BAS, the exhaust fan shall be commanded to stop, requiring a manual reset.

Filter Status:
A differential pressure switch shall monitor the differential pressure across the filter when the fan is running. If the switch closes for 2 minutes after a request for fan operation a dirty filter alarm shall be annunciated at the BAS.

RTU-3,4 SEQUENCE OF OPERATION

Building Automation System Interface:
The Building Automation System (BAS) shall send the controller Occupied Bypass, Morning Warm-up / Pre-Cool, Occupied / Unoccupied and Heat / Cool modes. If communication is lost with the BAS the controller shall operate using default modes and setpoints. The BAS shall also send the controller a duct static pressure setpoint, discharge air temperature setpoint, and ventilation airflow setpoint, each calculated by optimization routines in the BAS.

Occupied Mode:
During occupied periods, the supply fan shall run continuously and the outside air damper shall open to current airflow setpoint. The factory unit controller shall control the supply fan speed to maintain the current duct static pressure setpoint (adj.).The DX cooling shall be staged and gas heat shall modulated by the factory controller to maintain the current discharge air temperature setpoint. If economizing is enabled the outside air damper shall modulate to maintain the current discharge air temperature setpoint.

Unoccupied Mode:
When the space temperature is below the unoccupied heating setpoint of 60.0 deg. F (adj.) the supply fan shall start, the outside air damper shall remain closed and the gas heat shall be enabled. When the space temperature rises above the unoccupied heating setpoint of 60.0 deg. F (adj.) plus the unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop and the gas heat shall be disabled.
When the space temperature is above the unoccupied cooling setpoint of 85.0 deg. F (adj.) the supply fan shall start, the outside air damper shall open if economizing is enabled and remain closed if economizing is disabled and the DX cooling shall be enabled. When the space temperature falls below the unoccupied cooling setpoint of 85.0 deg. F (adj.) minus the unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop, the DX cooling shall be disabled and the outside air damper shall close.

Optimal Start:
The BAS shall monitor the scheduled occupied time, occupied space setpoints and space temperature to calculate when the optimal start occurs.

Morning Warm-Up Mode:
During optimal start, if the average space temperature is below the occupied heating setpoint a morning warm-up mode shall be activated. When morning warm-up is initiated the unit shall enable the heating and supply fan. The outside air damper shall remain closed. When the average space temperature reaches the occupied heating setpoint (adj.), the unit shall transition to the occupied mode.

Pre-Cool Mode:
During optimal start, if the average space temperature is above the occupied cooling setpoint, pre-cool mode shall be activated. When pre-cool is initiated the unit shall enable the fan and cooling or economizer. The outside air damper shall remain closed, unless economizing. When the average space temperature reaches occupied cooling setpoint (adj.), the unit shall transition to the occupied mode.

Occupied Bypass:
The BAS shall monitor the status of the "on" and "cancel" buttons of the space temperature sensors. When an occupied bypass request is received from a space sensor, the unit shall transition from its current occupancy mode to occupied bypass mode and the unit shall maintain the space temperature to the occupied setpoints (adj.).

Cooling Mode:
The unit controller shall use the discharge air temperature sensor and discharge air temperature cooling setpoint to determine when to initiate requests for cooling.
Discharge air setpoint shall be maintained by the factory controller by modulating the economizer or staging the DX cooling as required to maintain the discharge air setpoint.

Heating Mode:
During Unoccupied Heating or Morning Warm-Up Mode, the unit heat request will be communicated to the system VAVs prior to commencing heating operation to allow VAV units to open. The BAS will request the factory unit controller to command the VFD to 100% and modulate the heat until the zone temperature setpoints are satisfied. During occupied changeover heating, the units factory controller shall modulate the gas heat to maintain the discharge air heating setpoint

Dehumidification Mode:
If the return air humidity rises above setpoint, while a cooling call is not present, the factory unit controller shall stage compressors as
necessary to provide dehumidification while not over-cooling the supply air. The unit shall return to normal operation when the return air humidity setpoint is satisfied.

Supply Air Temperature Reset Control:
The supply air temperature setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the supply air temperature setpoint based on the current outside air temperature, but shall override this reset function and return the supply air temperature setpoint to 55.0 deg. F (adj.) if more than two (adj.) zones begin to overheat. Also, the BAS shall override this reset function whenever outdoor dew point is higher than 60.0 deg. F (adj.) or indoor humidity is higher than 60% RH (adj.).The BAS shall reset the supply air setpoint based on the return air humidity or current humidity measured by the room humidity sensors. If the supply air temperature drops below the minimum limit, a low temperature alarm shall be annunciated and the unit shall shut down. If the supply air temperature rises above the maximum limit, a high temperature alarm shall be annunciated.

Economizer:
The economizer dampers shall be modulated by the factory unit controller in order to accomplish the following sequence intent, per setpoints communicated by the BAS. The supply air sensor shall measure the dry bulb temperature of the air leaving the evaporator coil while economizing. When economizing is enabled and the unit is operating in the cooling mode, the economizer damper shall be modulated between its minimum position and 100% to maintain the discharge air temperature setpoint. The economizer damper shall modulate toward minimum position in the event the discharge air temperature falls below the discharge low limit temperature setpoint.
Comparative Enthalpy:
Outside air (OA) enthalpy shall be compared with Return air (RA) enthalpy point.
The economizer shall enable when OA enthalpy is less than RA enthalpy - 3.0 BTU/LB.
The economizer shall disable when OA enthalpy is greater than RA enthalpy.

Ventilation Control:
When in the occupied mode, the flow-measuring outdoor-air damper shall modulate to maintain the current ventilation airflow setpoint by the factory unit controller. The ventilation airflow setpoint shall be reset to the optimal ventilation setpoint communicated by the BAS. The BAS shall reset the ventilation setpoint based on the current ventilation needs of the VAV terminals.

Supply Fan:
The supply fan shall be enabled while in the occupied mode and cycled on during the unoccupied mode. Fan status shall be monitored by the BAS through the factory unit controller. If fan status does not prove within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated at the BAS, the unit shall be commanded to stop, requiring a manual reset.

Supply Duct Static Pressure Control:
The duct static pressure setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the duct static pressure setpoint based on the position of the furthest open VAV damper.
If for any reason the supply air pressure exceeds the supply air pressure high limit , the
supply fan shall shut down. The unit shall be allowed to restart three times after a 15 minute off period. If the overpressurization condition occurs on the fourth restart, the unit shall shut down and a manual reset diagnostic is displayed at the remote panel and/or the BAS system.

Building Pressure Control:
A differential pressure transducer shall actively monitor the difference in pressure between the building (indoors) and outdoors. If the building pressure increases above the differential pressure setpoint, the unit controller shall turn on the exhaust fan and modulate the exhaust fan VFD to control building pressure to the differential pressure setpoint. If the building pressure decreases below the differential pressure setpoint, the controller shall deactivate the exhaust fan VFD.

Exhaust Fan Status:
Fan status shall be monitored by the BAS through the factory unit controller. If fan status does not prove within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated at the BAS, the exhaust fan shall be commanded to stop, requiring a manual reset.

Filter Status:
A differential pressure switch shall monitor the differential pressure across the filter when the fan is running. If the switch closes for 2 minutes after a request for fan operation a dirty filter alarm shall be annunciated at the BAS.

RTU-2 SEQUENCE OF OPERATION

Building Automation System Interface:
The Building Automation System (BAS) shall send the controller Occupied Bypass, Morning Warm-up / Pre-Cool, Occupied / Unoccupied and Heat / Cool modes. If communication is lost with the BAS the controller shall operate using default modes and setpoints. The BAS shall also send the controller a duct static pressure setpoint and discharge air temperature setpoint.

Occupied Mode:
During occupied periods, the supply fan and exhaust fan shall run continuously and the outside air damper shall modulate fully open. The factory unit controller shall control the supply fan speed to maintain the current duct static pressure setpoint (adj.) and shall control the exhaust fan speed to maintain an exhaust airflow differential (adj.) to the supply airflow. The exhaust airflow shall always be greater than the supply airflow by the airflow differetial setpoint. The DX cooling shall be staged and gas heat shall be modulated by the factory controller to maintain the current discharge air temperature setpoint.

Unoccupied Mode:
When the space temperature is below the unoccupied heating setpoint of 60.0 deg. F (adj.) the supply fan and exhaust fans shall start, the outside air damper shall modulate fully open and the gas heat shall be enabled. When the space temperature rises above the unoccupied heating setpoint of 60.0 deg. F (adj.) plus the unoccupied differential of 4.0 deg. F (adj.) the supply fan and exhaust fan shall stop and the gas heat shall be disabled. When the space temperature is above the unoccupied cooling setpoint of 85.0 deg. F (adj.) the supply fan and exhaust fan shall start, the outside air damper shall modulate fully open and the DX cooling shall be enabled. When the space temperature falls below the unoccupied cooling setpoint of 85.0 deg. F (adj.) minus the unoccupied differential of 4.0 deg. F (adj.) the supply fan and exhaust fan shall stop, the DX cooling shall be disabled and the outside air damper shall close.

Optimal Start:
The BAS shall monitor the scheduled occupied time, occupied space setpoints, space temperature, and outside air temperature to calculate when the optimal start occurs.

Morning Warm-Up Mode:
During optimal start, if the average space temperature is below the occupied heating setpoint a morning warm-up mode shall be activated. When morning warm-up is initiated the unit shall enable the heating coil, supply fan, and exhaust fan. The outside air damper shall modulate fully open. When the average space temperature reaches the occupied heating setpoint (adj.), the unit shall transition to the occupied mode.

Pre-Cool Mode:
During optimal start, if the average space temperature is above the occupied cooling setpoint, pre-cool mode shall be activated. When pre-cool is initiated the unit shall enable the supply fan and exhaust fan and either the DX cooling coil or the economizer, based upon differential enthalpy. The outside air damper shall modulate fully open. When the average space temperature reaches occupied cooling
setpoint (adj.), the unit shall transition to the occupied mode.

Occupied Bypass:
The BAS shall monitor the status of the "on" and "cancel" buttons of the space temperature sensors. When an occupied bypass request is received from a space sensor, the unit shall transition from its current occupancy mode to occupied bypass mode and the unit shall maintain the space temperature to the occupied setpoints (adj.) for the set (adj.) occupied bypass duration time.

Cooling Mode:
The unit controller shall use the discharge air temperature sensor and discharge air temperature cooling setpoint to determine when to initiate requests for cooling.
Discharge air setpoint shall be maintained by the factory controller by modulating the DX cooling as required to maintain the discharge air setpoint.

Heating Mode:
During Unoccupied Heating or Morning Warm-Up Mode, the unit heat request will be communicated to the system VAVs prior to commencing heating operation to allow VAV units to open. The BAS will request the factory unit controller to command the supply fan VFD to control to the maximum duct static pressure setpoint and modulate the heat until the zone temperature setpoints are satisfied. During occupied changeover heating, the unit's factory controller shall modulate the gas heat to maintain the discharge air heating setpoint

Dehumidification Mode:
If the return air humidity rises above setpoint, while a cooling call is not present, the factory unit controller shall stage compressors and modulate the hot gas reheat as necessary to provide dehumidification while not over-cooling the supply air. The unit shall return to normal operation when the return air humidity setpoint is satisfied.

Supply Air Temperature Reset Control:
The supply air temperature setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the supply air temperature setpoint based on the current outside air temperature, but shall override this reset function and return the supply air temperature setpoint to 55.0 deg. F (adj.) if more than two (adj.) zones begin to overheat. Also, the BAS shall override this reset function whenever outdoor dew point is higher than 60.0 deg. F (adj.) or indoor humidity is higher than 60% RH (adj.).The BAS shall reset the supply air setpoint based on the return air humidity or current humidity measured by the room humidity sensors. If the supply air temperature drops below the minimum limit, a low temperature alarm shall be annunciated and the unit shall shut down. If the supply air temperature rises above the maximum limit, a high temperature alarm shall be annunciated.

Supply Fan:
The supply fan shall be enabled while in the occupied mode and cycled on during the unoccupied mode. Fan status shall be monitored by the BAS through the factory unit controller. If fan status does not prove within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated at the BAS, the unit shall be commanded to stop, requiring a manual reset.

Supply Duct Static Pressure Control:
The duct static pressure setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the duct static pressure setpoint based on the position of the furthest open VAV damper.
If for any reason the supply air pressure exceeds the supply air pressure high limit, the supply fan shall shut down. The unit shall be allowed to restart three times after a 15 minute off period. If the overpressurization condition occurs on the fourth restart, the unit shall shut down and a manual reset diagnostic is displayed at the remote panel and/or the BAS system.

Building Pressure Control:
The Exhaust Fan shall be ON whenever the Supply Fan is ON and shall control exhaust airflow to a set differential (adj.) to the supply fan airflow. A differential pressure transducer shall actively monitor and log/trend the difference in pressure between the building (indoors) and outdoors for troubleshooting purposes.

Exhaust Fan Status:
Fan status shall be monitored by the BAS through the factory unit controller. If fan status does not prove within 40 seconds after a request for fan operation a fan failure alarm shall be annunciated at the BAS, the exhaust fan shall be commanded to stop, requiring a manual reset. Exhaust Fan duct static pressure shall be monitored and logged/trended by the BAS for troubleshooting purposes.

Filter Status:
A differential pressure switch shall monitor the differential pressure across the filter when the fan is running. If the switch closes for 2 minutes after a request for fan operation a dirty filter alarm shall be annunciated at the BAS.

EXHAUST FAN EF-7: THE EXHAUST FAN WILL BE STARTED AND STOPPED BY THE BAS. THE EXHAUST FAN WILL BE ACTIVATED AS A 2ND STAGE OF BUILDING PRESSURIZATION CONTROL TO THE RTU-1 RELIEF EXHAUST FAN. THE EXHAUST FAN WILL ALSO BE AUTOMATICALLY STOPPED BY THE UNITS SMOKE DETECTORS, LOW LIMIT TEMPERATURE SENSORS, OR HIGH STATIC LIMIT SAFETY SWITCH THROUGH THE VFD SAFETY CIRCUIT WHENEVER AN UNSAFE CONDITION OCCURS. STATUS OF THE EXHAUST FAN WILL BE MONITORED BY THE DIGITAL CONTROLLER INPUT USING THE VFD RUN STATUS. THE SPEED OF THE EXHAUST FAN WILL BE MODULATED BY THE DIGITAL CONTROLLER AS REQUIRED TO MAINTAIN THE BUILDING PRESSURE AT SET POINT (MINUS 0.05" W.C. ADJUSTABLE).
THE ASSOCIATED EXHAUST DAMPER WILL AUTOMATICALLY OPEN PRIOR TO THE EXHAUST FAN STARTING, AND CLOSE AFTER THE EXHAUST FAN IS OFF AFTER AN ADJUSTABLE TIME DELAY.
AN END SWITCH WILL PREVENT THE FAN FROM STARTING UNLESS THE DAMPER IS FULLY OPEN.
SET RAMP SPEED OF VFD FOR SEVEN MINUTES MINIMUM TO MAXIMUM.

EXHAUST FAN EF-1,2: THE EXHAUST FAN WILL BE STARTED AND STOPPED BY THE BAS. THE EXHAUST FAN SHALL RUN CONTINUOUSLY AT SET SPEED DURING BUILDING OCCUPIED MODE.
THE EXHAUST FAN SHALL SHUT DOWN DURING UNOCCUPIED MODES.
THE ASSOCIATED EXHAUST DAMPER WILL AUTOMATICALLY OPEN PRIOR TO THE EXHAUST FAN STARTING, AND CLOSE AFTER THE EXHAUST FAN IS OFF AFTER AN ADJUSTABLE TIME DELAY.
AN END SWITCH WILL PREVENT THE FAN FROM STARTING UNLESS THE DAMPER IS FULLY OPEN.
SET RAMP SPEED OF VFD FOR SEVEN MINUTES MINIMUM TO MAXIMUM.

EXHAUST FAN EF-3,4,5,6: THE EXHAUST FAN SHALL BE COMMANDED ON AND OFF BASED ON A ROOM THERMOSTAT.
THE BAS SHALL SEND AN ALARM STATUS IF ROOM RISES ABOVE 95F (ADJ.)

SINGLE DUCT VAV BOX WITH SCR REHEAT

MODE OF OPERATION:
THE SUPPLY AIR TERMINAL UNIT MODE OF OPERATION WILL BE OCCUPIED, UNOCCUPIED, OR MORNING WARM-UP BASED ON A SCHEDULE COMMUNICATED FROM THE BAS, AN OPERATOR OVERRIDE COMMAND FROM THE BAS, A TEMPORARY OCCUPANCY OVERRIDE SIGNAL FROM THE SPACE TEMPERATURE SENSOR OVERRIDE PUSHBUTTON, OR A SIGNAL FROM THE ZONE OCCUPANCY SENSOR (IF ZONE CONTAINS AN OCCUPANCY SENSOR).

OCCUPIED MODE: DURING THE "OCCUPIED" MODE OF OPERATION, THE SET POINT WILL BE ADJUSTABLE BY THE OCCUPANT AT THE THERMOSTAT BETWEEN A MINIMUM OF 70 DEGREES AND A MAXIMUM OF 75 DEGREES (ADJ.). IF THERE IS NO OCCUPANT ADJUSTMENT AVAILABLE, THE SET POINT SHALL BE 73 DEGREES (ADJUSTABLE). THERE WILL BE A 1 DEGREE DEAD BAND ON EITHER SIDE OF THE SET POINT. ON A CALL FOR COOLING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER BETWEEN THE OCCUPIED COOLING MINIMUM AIR FLOW AND THE OCCUPIED COOLING MAXIMUM AIR FLOW RATES AS SCHEDULED. ON A CALL FOR HEATING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER TO THE OCCUPIED HEATING MINIMUM AIR FLOW RATE AND THE SCR HEATING CONTROL WILL MODULATE TO INCREASE HEAT. IF THERE IS STILL A CALL FOR HEATING AFTER THE SCR CONTROL IS FULLY OPENED, THE TERMINAL DAMPER WILL MODULATE TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER UNTIL IT REACHES THE OCCUPIED HEATING MAXIMUM AIR FLOW RATE AS SCHEDULED. WHEN THE SPACE TEMPERATURE IS BETWEEN THE DEAD BAND TEMPERATURES, THE TERMINAL DAMPER SHALL MODULATE TO MAINTAIN THE AIR FLOW SET POINT AT THE OCCUPIED

UNOCCUPIED MODE: DURING THE "UNOCCUPIED" MODE OF OPERATION, THE SET POINT WILL BE ADJUSTABLE BY THE OCCUPANT AT THE THERMOSTAT BETWEEN A MINIMUM OF 70 DEGREES AND A MAXIMUM OF 75 DEGREES. IF THERE IS NO OCCUPANT ADJUSTMENT AVAILABLE, THE SET POINT SHALL BE 73 DEGREES (ADJUSTABLE). THERE WILL BE A 10 DEGREE DEAD BAND (ADJ.). ON EITHER SIDE OF THE SET POINT. ON A CALL FOR COOLING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER BETWEEN THE OCCUPIED COOLING MINIMUM AIR FLOW (TYPICALLY 0 CFM) AND THE OCCUPIED COOLING MAXIMUM AIR FLOW RATES AS SCHEDULED. ON A CALL FOR HEATING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER TO THE OCCUPIED HEATING MINIMUM AIR FLOW RATE (TYPICALLY 0 CFM) AND THE SCR HEATING CONTROL WILL MODULATE TO INCREASE HEAT. IF THERE IS STILL A CALL FOR HEATING AFTER THE SCR CONTROL IS FULLY OPENED, THE TERMINAL DAMPER WILL MODULATE TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER UNTIL IT REACHES THE OCCUPIED HEATING MAXIMUM AIR FLOW RATE AS SCHEDULED. WHEN THE SPACE TEMPERATURE IS BETWEEN THE DEAD BAND TEMPERATURES, THE TERMINAL DAMPER

MORNING WARM-UP MODE:
IF THE SPACE TEMPERATURE IS BELOW THE EFFECTIVE HEATING SETPOINT, THE SCR HEATING WILL BE ENABLED AND WILL MODULATE TO MAINTAIN THE EFFECTIVE HEATING SETPOINT AND THE SUPPLY AIR TERMINAL UNIT DAMPER WILL BE MODULATED UP TO THE HEATING MAXIMUM SCHEDULED AIRFLOW. IN MORNING WARM-UP MODE, THERE WILL BE NO TERMINAL UNIT HIGH DISCHARGE AIR TEMPERATURE LIMIT.

VENTILATION CONTROL:
WHEN THE UNIT IS IN UN-OCCUPIED MODE, THE VENTILATION AIRFLOW SETPOINT SHALL BE ZERO.
WHEN THE UNIT IS IN OCCUPIED MODE, THE VENTILATION AIRFLOW SETPOINT SHALL EQUAL THE DESIGN OUTDOOR AIRFLOW (SEE VAV SCHEDULE)
IF THE UNIT IS EQUIPMENT WITH A CO2 SENSOR, THE VENTILATION AIRFLOW SETPOINT SHALL MODULE BETWEEN MINIMUM AND MAXIMUM AIRFLOWS TO MEET THE CO2 SENSOR SETPOINT OF 1000PPM (ADJ.).
THE CURRENT VENTILATION AIRFLOW SETPOINT SHALL BE COMMUNICATED TO THE BAS FOR CONTROL OF THE SYSTEM OUTDOOR AIR INTAKE.

HUMIDITY CONTROL:
IF THE UNIT IS EQUIPMENT WITH A HUMIDITY SENSOR, THE HUMIDITY SENSOR SHALL MAINTAIN A RELATIVE HUMIDITY MAXIMUM OF 60%RH (ADJ.). IF RH RISES ABOVE SETPOINT, THE BAS SHALL SEND A SIGNAL TO THE RTU TO RESET SUPPLY AIR TEMPERATURE TO 54F (ADJ.). IF ROOM RH SETPOINT IS STILL NOT SATIFIED, VAV BOX DAMPER IS TO OPEN TO MAXIMUM POSITION. ELECTRIC REHEAT WILL MAINTAIN APPROPRIATE SUPPLY AIR TEMPERATURE TO MAINTAIN ROOM SETPOINT. WHEN ROOM RH DROPS TO BELOW 60%(ADJ), SYSTEM SHALL RETURN TO NORMAL OCCUPIED MODE.

FORMALDEHYDE CONTROL: MFR:BACHARACH MODEL:GDC-150-5201-1-1-13
IF THE UNIT IS EQUIPMENT WITH A FORMALDEHYDE SENSOR, THE FORMALDEHYDE SENSOR SHALL MAINTAIN A HCHO MAXIMUM OF 0.75PPM (ADJ.). IF HCHO LEVELS RISE ABOVE SETPOINT, THE VAV BOX DAMPER IS TO OPEN TO MAXIMUM POSITION TO PURGE THE ROOM. ELECTRIC REHEAT WILL MAINTAIN APPROPRIATE SUPPLY AIR TEMPERATURE TO MAINTAIN ROOM SETPOINT. WHEN ROOM HCHO LEVELS DROP TO BELOW 0.75PPM(ADJ), SYSTEM SHALL RETURN TO NORMAL OCCUPIED MODE.

SPACE SENSOR FAILURE:
IF THERE IS A FAULT WITH THE OPERATION OF THE ZONE SENSOR AN ALARM SHALL BE ANNUNCIATED AT THE BAS. SPACE SENSOR FAILURE SHALL CAUSE THE VAV TO DRIVE THE DAMPER TO MINIMUM AIR FLOW IF THE VAV IS IN THE OCCUPIED MODE, OR DRIVE IT CLOSED IF THE VAV IS IN THE UN-OCCUPIED MODE.

SINGLE DUCT VAV BOX - EXHAUST / RETURN BOX

BOXES SERVING LAB SPACES:
EXHAUST / RETURN VAV BOX AIR VALVE SHALL MODULATE BETWEEN FULLY CLOSED AND FULLY OPEN IN ORDER TO KEEP BOX AIRFLOW GREATER THAN THE CORRESPONDING SUPPLY VAV BOX AIRFLOW BY A SET AIRFLOW DIFFERENTIAL PER VAV BOX SCHEDULE (ADJUSTABLE). SPACE DIFFERENTIAL PRESSURE TO ADJACENT INTERIOR SPACE TO BE MONITORED AND LOGGED VIA THE BAS FOR TROUBLESHOOTING PURPOSES.

BOXES SERVING NON-LAB SPACES:
EXHAUST / RETURN VAV BOX AIR VALVE SHALL MODULATE BETWEEN FULLY CLOSED AND FULLY OPEN IN ORDER TO KEEP BOX AIRFLOW LESS THAN THE SUM OF THE CORRESPONDING SUPPLY VAV BOX AIRFLOWS BY A SET AIRFLOW DIFFERENTIAL PER VAV BOX SCHEDULE (ADJUSTABLE). NON-LAB AREA CORRIDOR DIFFERENTIAL PRESSURE TO THE BUILDING EXTERIOR TO BE MONITORED AND LOGGED VIA THE BAS FOR TROUBLESHOOTING PURPOSES.

BOXE SERVING TOILET ROOMS:
EXHAUST / RETURN VAV BOX AIR VALVE SHALL MODULATE BETWEEN FULLY CLOSED AND FULLY OPEN IN ORDER TO MAINTAIN CONSTANT EXHAUST AIRFLOW PER SCHEDULE.

THE STARTING POINT FOR AIRFLOW DIFFERENTIAL SHALL BE THAT LISTED IN THE VAV BOX SCHEDULE.

EXACT AIRFLOW DIFFERENTIAL SHALL BE SET BY THE CONTROLS CONTRACTOR USING SPACE DIFFERENTIAL PRESSURE SENSOR VIA THE BUILDING BAS AND CONFIRMED BY A TEMPORARY DIFFERENTIAL PRESSURE MEASUREMENT INSTRUMENT PROVIDED BY THE CONTROLS CONTRACTOR.

THE DIFFERENTIAL PRESSURE ACROSS THE DOORWAY BETWEEN THE LAB SPACE AND THE ADJACENT INTERIOR NON-LAB SPACE USED TO ESTABLISH THE EXACT AIRFLOW DIFFERENTIAL FROM THE TOTAL SUPPLY TO THE SPACE SHALL BE -0.01 IN. W.G.

MINI SPLIT: ROOM THERMOSTAT SHALL SEQUENCE MINI-SLIT UNIT TO SWITCH HEATING(WHERE EQUIPPED) AND COOLING TO MEET ROOM TEMPERATURE SETPOINT.

THE BAS SHALL SEND AN ALARM STATUS IF ROOM RISES ABOVE 95F (ADJ.)

IN-ROW COOLING UNITS: THE BAS SHALL INTERFACE WITH THE FACTORY UNIT CONTROLLER VIA A FACTORY PROVIDED BACNET INTERFACE. ALL POINTS AVAILABLE FROM THE INTERFACE SHALL BE DISPLAYED AT THE BAS. UNIT OPERATION: THE FACTORY CONTROLLER SHALL STAGE, MODULATE, AND OTHERWISE OPERATE THE UNIT AS NECESSARY TO MAINTAIN SPACE CONDITIONS AT THE SETPOINTS COMMUNICATED BY THE BAS.

BASEBOARD HEATERS: BASEBOARD SHALL BE ORDERED WITH 24V POWER RELAY TO INTERFACE WITH BAS. BAS SHALL ENERGIZE BASEBOARD HEATERS WHEN THERE IS A CALL FOR HEATING FROM THE ZONE THERMOSTAT.

ATS-1 & ATS-2: BAS SHALL MONITOR ALL POINTS AVAILABLE FROM ATS-1 & ATS-2.

PARALLEL FAN POWERED VAV BOX WITH SCR REHEAT

MODE OF OPERATION:
THE SUPPLY AIR TERMINAL UNIT MODE OF OPERATION WILL BE OCCUPIED, UNOCCUPIED, OR MORNING WARM-UP BASED ON A SCHEDULE COMMUNICATED FROM THE BAS, AN OPERATOR OVERRIDE COMMAND FROM THE BAS, A TEMPORARY OCCUPANCY OVERRIDE SIGNAL FROM THE SPACE TEMPERATURE SENSOR OVERRIDE PUSHBUTTON, OR A SIGNAL FROM THE ZONE OCCUPANCY SENSOR (IF ZONE CONTAINS AN OCCUPANCY SENSOR).

OCCUPIED MODE:
DURING THE "OCCUPIED" MODE OF OPERATION, THE SET POINT WILL BE ADJUSTABLE BY THE OCCUPANT AT THE THERMOSTAT BETWEEN A MINIMUM OF 70 DEGREES AND A MAXIMUM OF 75 DEGREES (ADJ.). IF THERE IS NO OCCUPANT ADJUSTMENT AVAILABLE, THE SET POINT SHALL BE 73 DEGREES (ADJUSTABLE). THERE WILL BE A 1 DEGREE DEAD BAND ON EITHER SIDE OF THE SET POINT. ON A CALL FOR COOLING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER BETWEEN THE OCCUPIED COOLING MINIMUM AIR FLOW AND THE OCCUPIED COOLING MAXIMUM AIR FLOW RATES AS SCHEDULED. ON A CALL FOR HEATING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER TO THE OCCUPIED HEATING MINIMUM AIR FLOW RATE AND THE SCR HEATING CONTROL WILL MODULATE TO INCREASE HEAT. IF THERE IS STILL A CALL FOR HEATING, THE PARALLEL FAN AND THE SCR HEATING CONTROL WILL MODULATE TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER UNTIL IT REACHES THE OCCUPIED HEATING MAXIMUM AIR FLOW RATE AS SCHEDULED. WHEN THE SPACE TEMPERATURE IS BETWEEN THE DEAD BAND TEMPERATURES, THE TERMINAL DAMPER SHALL MODULATE TO MAINTAIN THE AIR FLOW SET POINT AT THE OCCUPIED COOLING MINIMUM AIR FLOW SET POINT AND THE SCR CONTROLLER DEACTIVATES THE HEATING COIL.

UNOCCUPIED MODE:
DURING THE "UNOCCUPIED" MODE OF OPERATION, THE SET POINT WILL BE ADJUSTABLE BY THE OCCUPANT AT THE THERMOSTAT BETWEEN A MINIMUM OF 70 DEGREES AND A MAXIMUM OF 75 DEGREES. IF THERE IS NO OCCUPANT ADJUSTMENT AVAILABLE, THE SET POINT SHALL BE 73 DEGREES (ADJUSTABLE). THERE WILL BE A 10 DEGREE DEAD BAND (ADJ.). ON EITHER SIDE OF THE SET POINT. ON A CALL FOR COOLING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER BETWEEN THE OCCUPIED COOLING MINIMUM AIR FLOW (TYPICALLY 0 CFM) AND THE OCCUPIED COOLING MAXIMUM AIR FLOW RATES AS SCHEDULED. ON A CALL FOR HEATING, THE TERMINAL DAMPER WILL BE MODULATED TO MAINTAIN THE AIR FLOW SET POINT DETERMINED BY THE CONTROLLER TO THE OCCUPIED HEATING MINIMUM AIR FLOW RATE (TYPICALLY 0 CFM) AND THE SCR HEATING CONTROL WILL MODULATE TO INCREASE HEAT. IF THERE IS STILL A CALL FOR HEATING, THE PARALLEL FAN AND THE SCR HEATING CONTROL WILL MODULATE TO MAINTAIN THE AIR FLOWSET POINT DETERMINED BY THE CONTROLLER UNTIL IT REACHES THE OCCUPIED HEATING MAXIMUM AIR FLOW RATE AS SCHEDULED. WHEN THE SPACE TEMPERATURE IS BETWEEN THE DEAD BAND TEMPERATURES, THE
TERMINAL DAMPER SHALL MODULATE TO MAINTAIN THE AIR FLOW SET POINT AT THE OCCUPIED COOLING MINIMUM AIR FLOW SET POINT AND THE SCR CONTROLLER DEACTIVATES THE HEATING COIL.

MORNING WARM-UP MODE:
IF THE SPACE TEMPERATURE IS BELOW THE EFFECTIVE HEATING SETPOINT, THE SCR HEATING WILL BE ENABLED AND WILL MODULATE TO MAINTAIN THE EFFECTIVE HEATING SETPOINT AND THE SUPPLY AIR TERMINAL UNIT DAMPER WILL BE MODULATED UP TO THE HEATING MAXIMUM SCHEDULED AIRFLOW. IN MORNING WARM-UP MODE, THERE WILL BE NO TERMINAL UNIT HIGH DISCHARGE AIR TEMPERATURE LIMIT.

VENTILATION CONTROL:
WHEN THE UNIT IS IN UN-OCCUPIED MODE, THE VENTILATION AIRFLOW SETPOINT SHALL BE ZERO.
WHEN THE UNIT IS IN OCCUPIED MODE, THE VENTILATION AIRFLOW SETPOINT SHALL EQUAL THE DESIGN OUTDOOR AIRFLOW (SEE VAV SCHEDULE)
IF THE UNIT IS EQUIPMENT WITH A CO2 SENSOR, THE VENTILATION AIRFLOW SETPOINT SHALL MODULE BETWEEN MINIMUM AND MAXIMUM AIRFLOWS TO MEET THE CO2 SENSOR SETPOINT OF 1000PPM (ADJ.).
THE CURRENT VENTILATION AIRFLOW SETPOINT SHALL BE COMMUNICATED TO THE BAS FOR CONTROL OF THE SYSTEM OUTDOOR AIR INTAKE.

SPACE SENSOR FAILURE:
IF THERE IS A FAULT WITH THE OPERATION OF THE ZONE SENSOR AN ALARM SHALL BE ANNUNCIATED AT THE BAS. SPACE SENSOR FAILURE SHALL CAUSE THE VAV TO DRIVE THE DAMPER TO MINIMUM AIR FLOW IF THE VAV IS IN THE OCCUPIED MODE, OR DRIVE IT CLOSED IF THE VAV IS IN THE UN-OCCUPIED MODE.

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KEY PLAN:

PROJECT PHASE:
CONSTRUCTION DOCUMENTS

REVISIONS

#	DATE	DESCRIPTION

DATE:	JOB NUMBER:
08-23-19	17-13

SHEET NUMBER:
M8.01

MECHANICAL CONTROLS