HOUSTON COMMUNITY COLLEGE HVAC REPLACEMENT AT FANNIN BUILDING 3601 FANNIN ST HOUSTON, TEXAS FEBRUARY 21, 2020



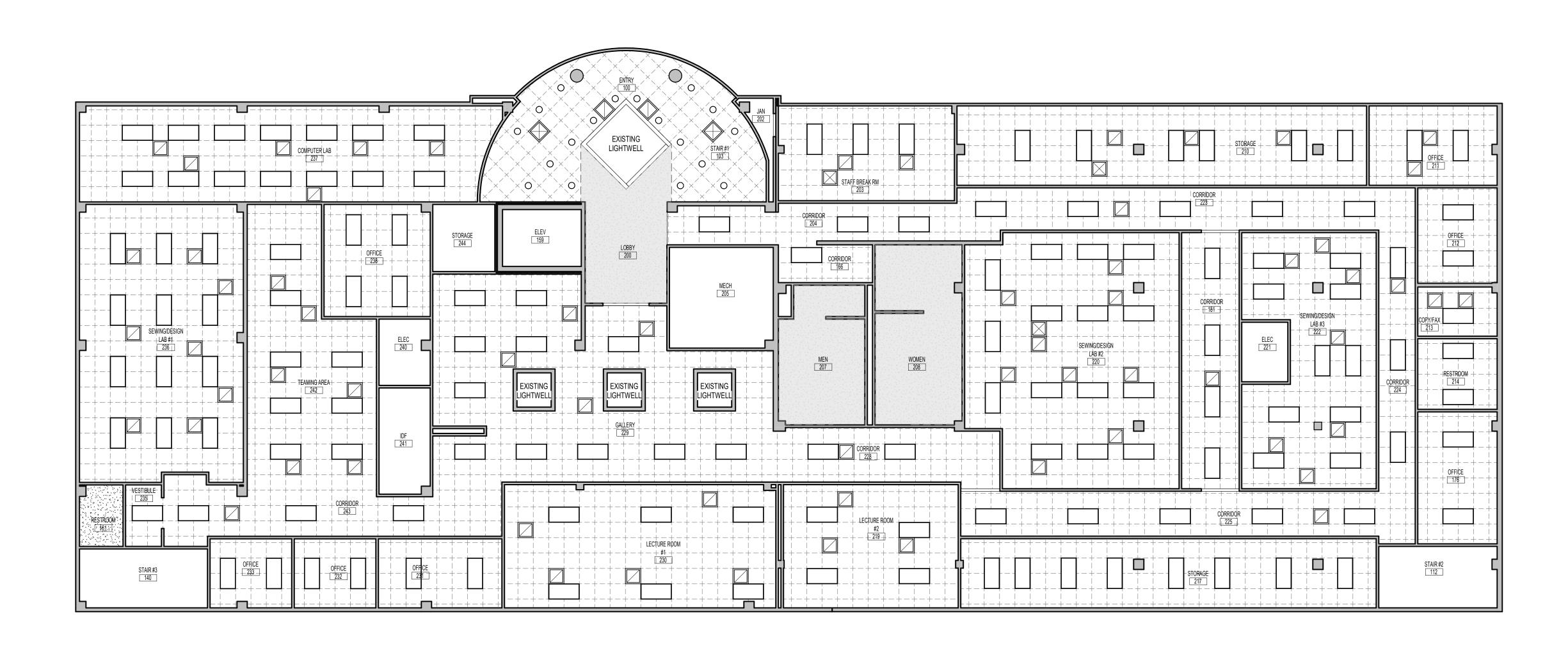
Prime Consultant / Engineer:

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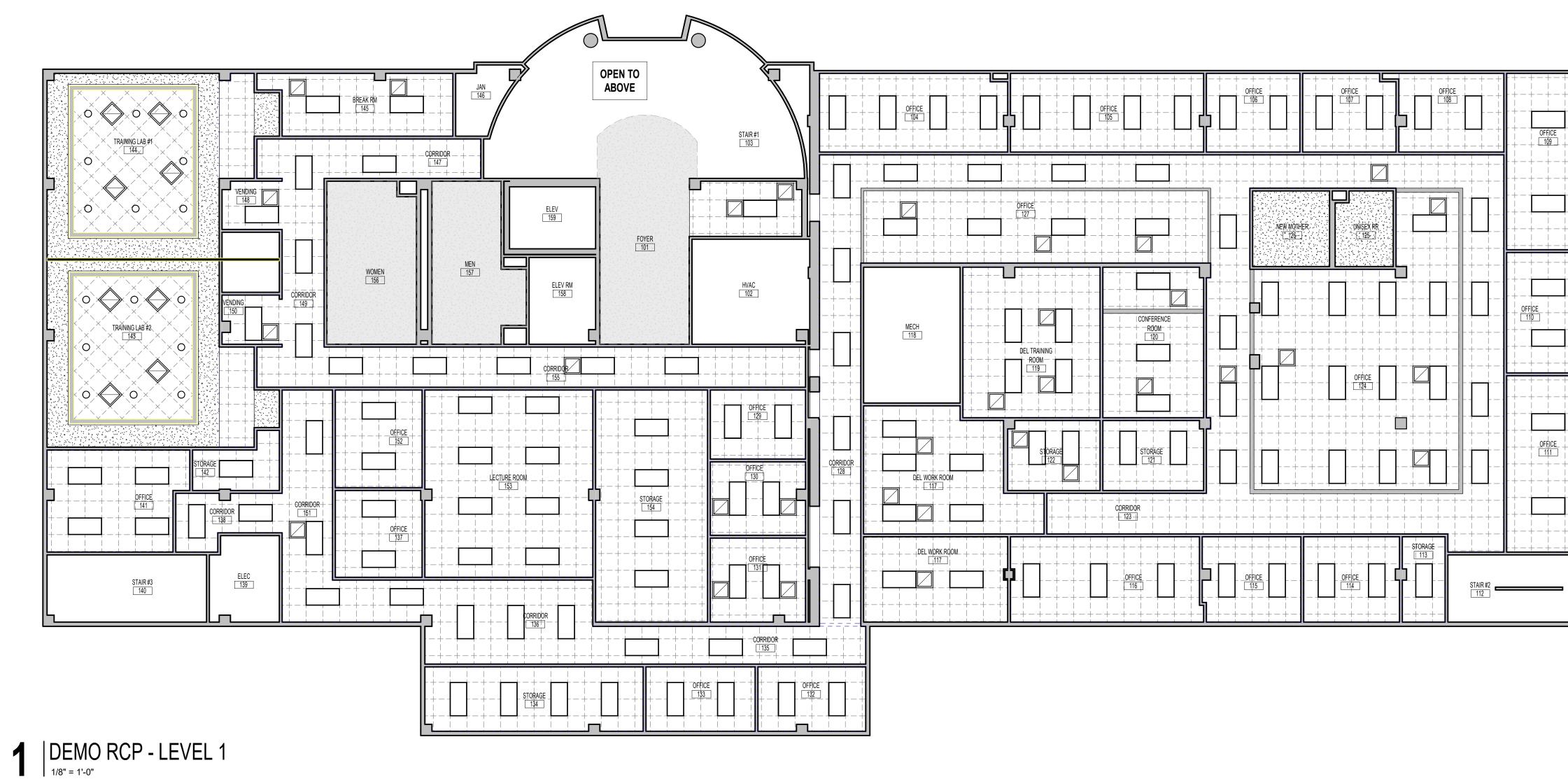
Architectural:

ERO Architects 5444 WESTHEIMER SUITE 1000, OFFICE 1054 HOUSTON, TX 77056





2 DEMO RCP - LEVEL 2



RCP DEMO GENERAL NOTES

1. ALL LIGHTS IN GYP CEILINGS TO REMAIN. 2. ALL GYP. CEILINGS TO REMAIN.

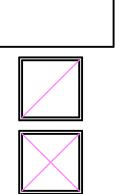
RE-INSTALLATION. 4. ALL EXISTING LIGHTS, SUPPLIES, RETURNS, SPEAKERS, ETC. (CEILING DEVICES) TO REMAIN & RE-INSTALLED IN NEW CEILINGS, UNLESS NOTED



OTHERWISE.

NOTE: ALL ELECTRICAL, MECHANICAL AND RISER ROOMS ARE OPEN TO STRUCTURE ABOVE, W/STRUCTURE PAINTED. U.N.O.

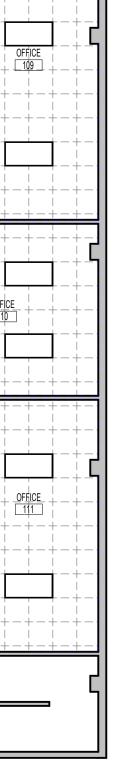
LEGEND

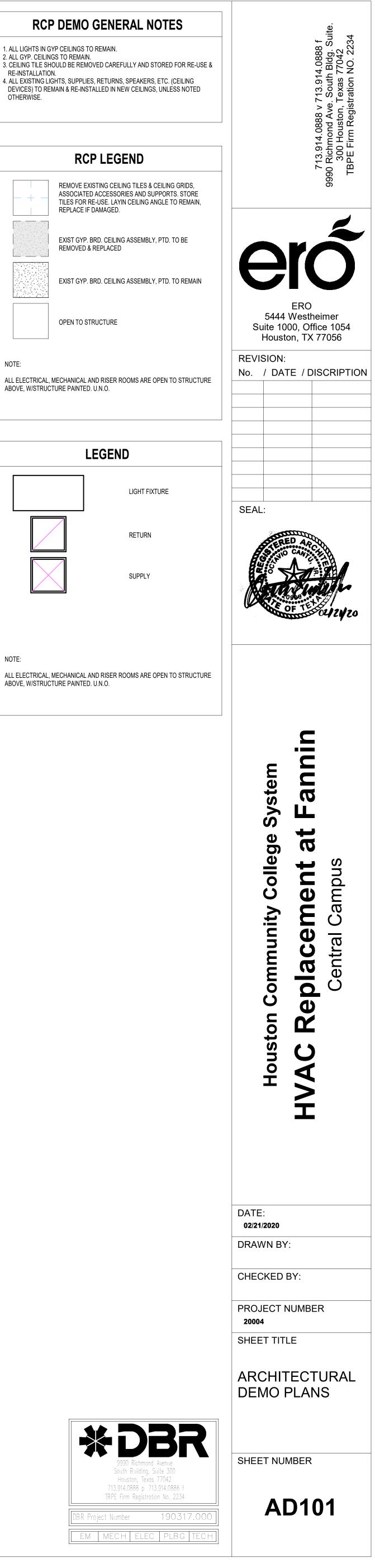


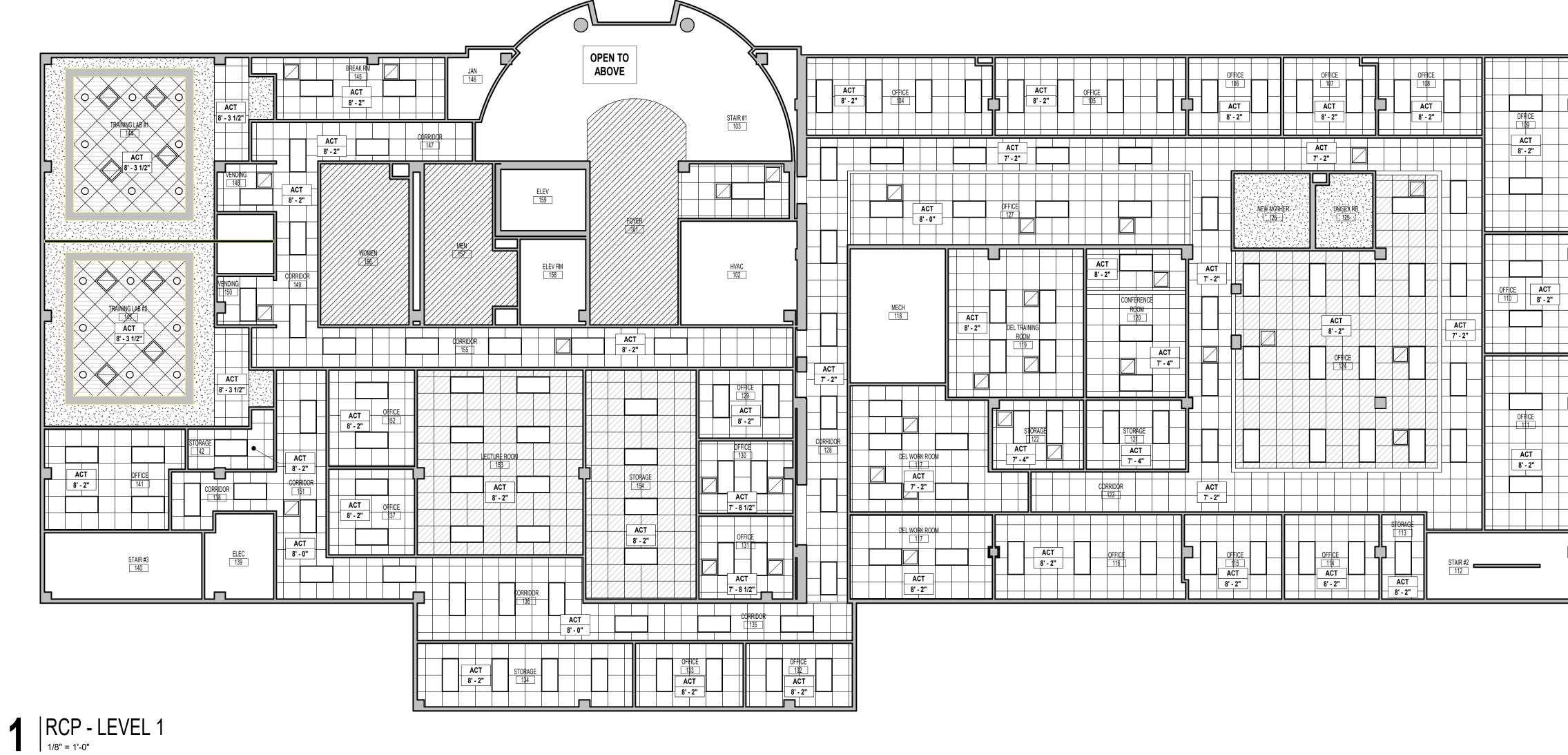
RETURN SUPPLY

NOTE:

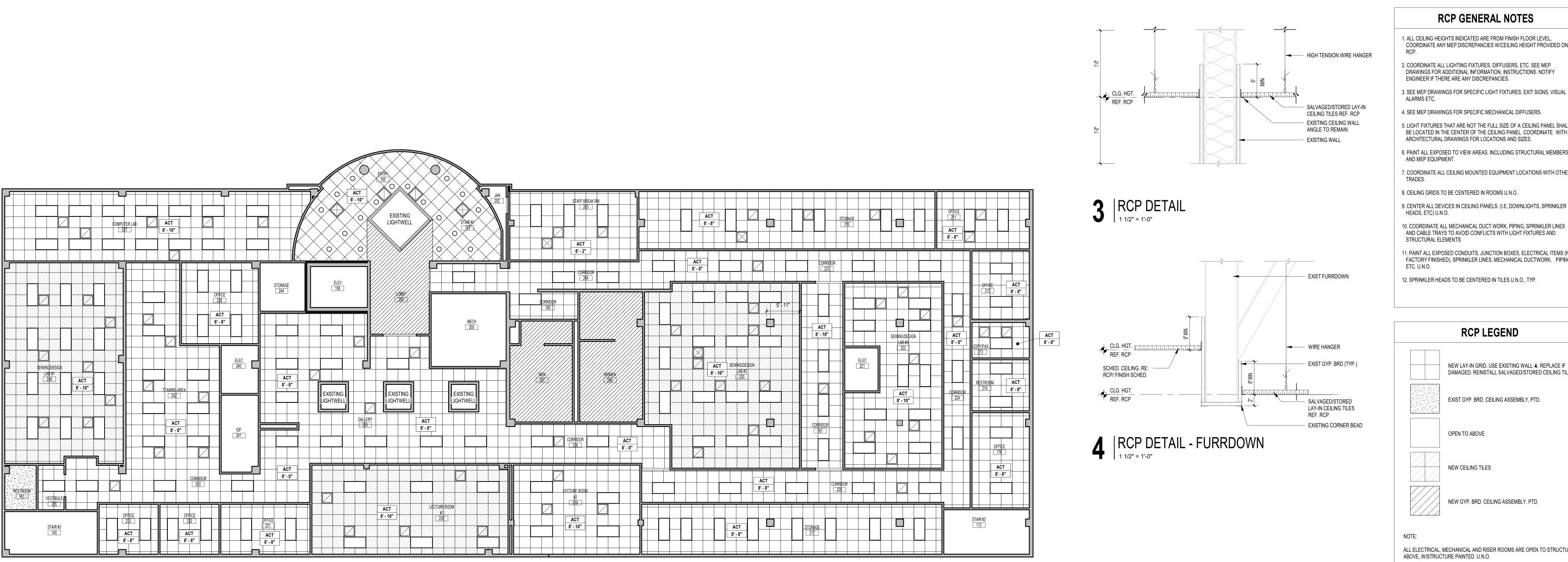
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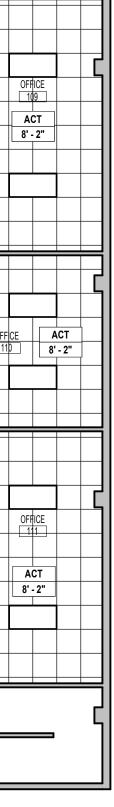


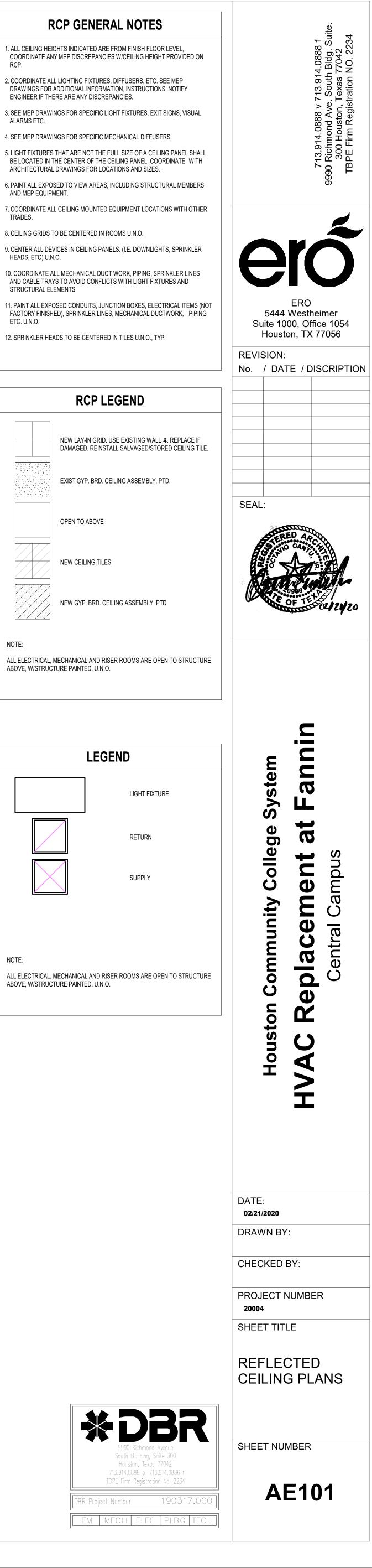




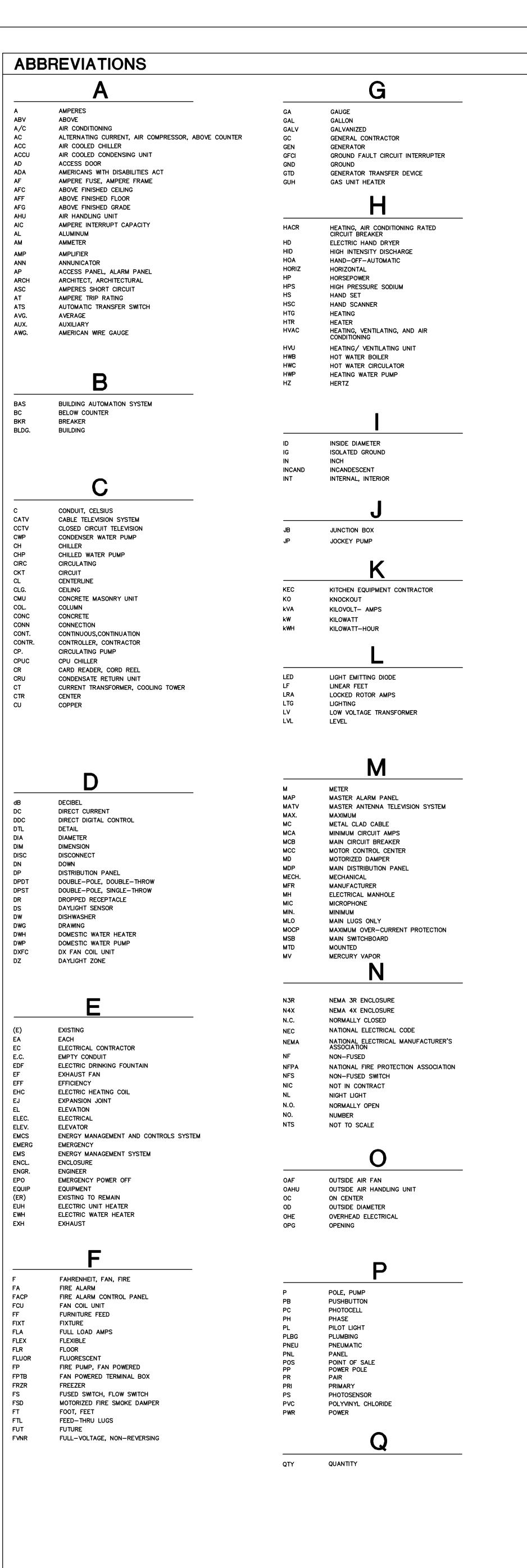
2 | RCP - LEVEL 2





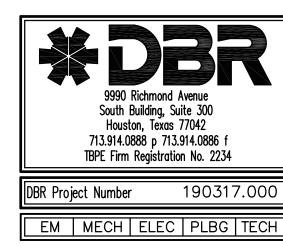


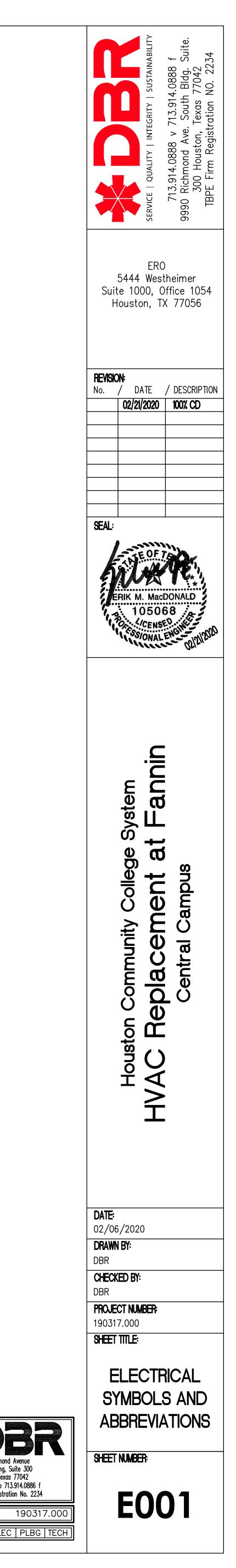
NOTE:

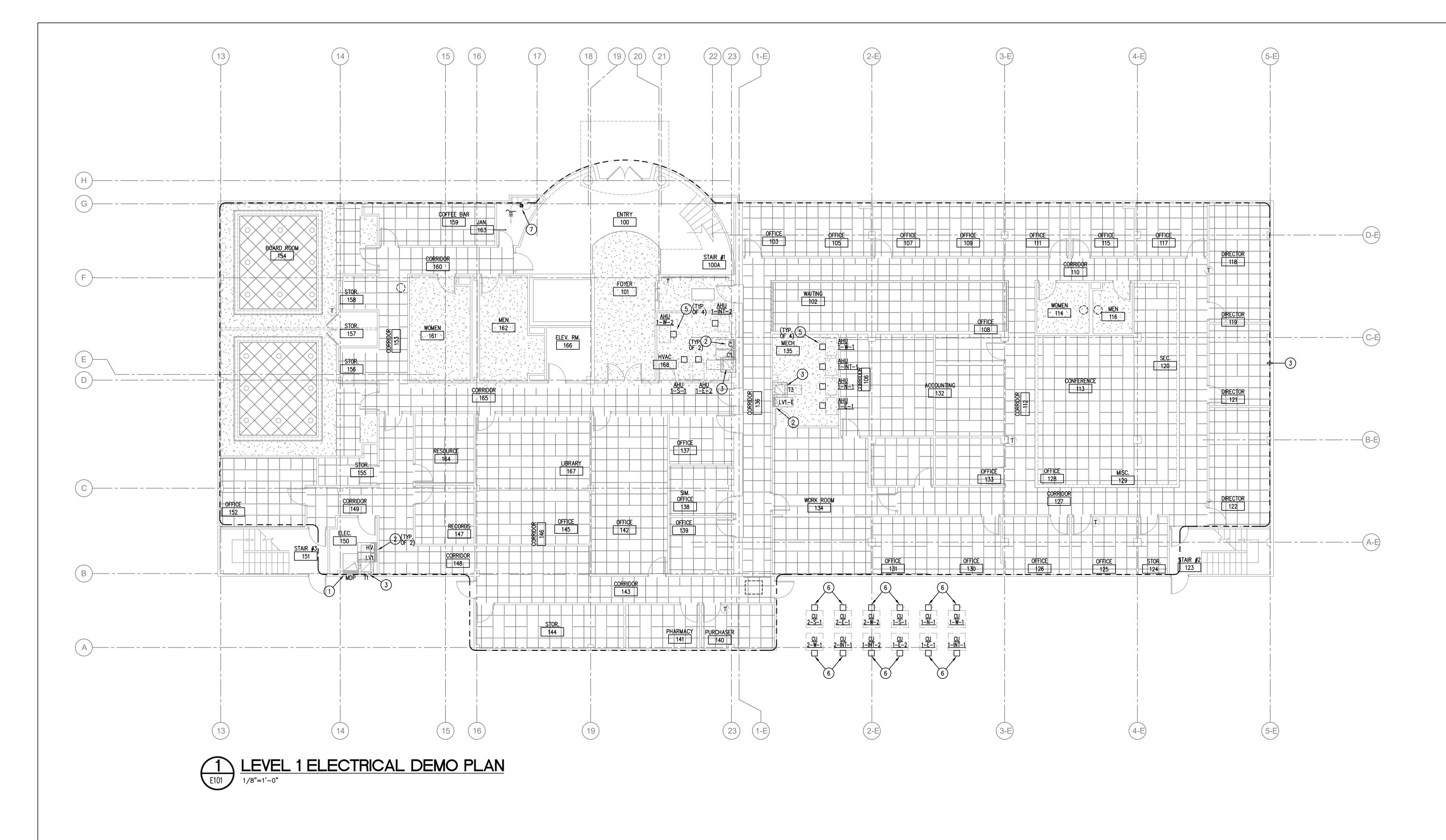


Plotted: Feb 21, 2020, 12:52 PM by user: rflores - Saved: 2/21/2020 by user: rflores H:\19\190317.000\Drawings\0E-190317-ELECTRICAL SYMBOL LEGENDS.dwg

	D		RICAL SYMBOLS S AND CONTROLS		GENER	RAL NOTES: A. NOT ALL SYMBOLS SHOWN ON THIS SYMBOL LIST ARE USED IN THI CONTRACT DOCUMENTS. MISCELLANEOUS
-						
R RA BAD	EXISTING TO BE REMOVED RETURN AIR REFRIGERATED AIR DRYER	5	SINGLE OR THREE PHASE MOTOR NUMBER INDICATES HORSE POWER	<u> </u>	CAP AND STAKE CONDUIT CONCEALED IN WALL OR CEILING	SHADED SYMBOLS INDICATE EXISTING DEVICES TO REMAIN, UNLESS OTHERWISE NOTED.
RAD RAF RC	RETURN AIR FAN RECONNECT EXISTING DEVICE TO CIRCUIT		ELECTRIC DUCT HEATER	EM	CONDUIT UNDERSLAB OR UNDERGROUND EMERGENCY CONDUIT	INDICATES WALL-MOUNTED WHEN ATTACHED TO ANY SYMBOL DRAWING NOTE REFERENCE
RCP	INDICATED REFLECTED CEILING PLAN	C	DISCONNECT (SAFETY) SWITCH "200/3/150" DENOTES AMPERES/POLE/FUSE, "NF" DENOTES NON-FUSED "N3R" DENOTES NEMA 3R	DB	EXPOSED CONDUIT UNDERGROUND CONDUIT, "DB" DENOTES DUCTBANK ENCASED IN CONCRETE	
RCPT RE	RECEPTACLE REFERENCE, REFER			OHE	OVERHEAD ELECTRIC PRIMARY UTILITY POWER LINE	FEEDER SCHEDULE REFERENCE
REC REFR	RECEPTACLE REFRIGERATOR REINFORCING	B	ENCLOSED CIRCUIT BREAKER- "200/3/150" DENOTES AMPERES/POLE/TRIP.		CONDUIT TURNED UP CONDUIT TURNED DOWN	
REINF REL	EXISTING TO BE RELOCATED		MOTOR STARTER FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.		HASH MARKS INDICATE NUMBER OF CONDUCTORS. LEFT TO RIGHT: PHASE/NEUTRAL/SWITCH LEG/GROUND/ISOLATED GROUND. NO HASH MARKS INDICATES 2# 12, PLUS GROUND, UNLESS	D. PC PHOTOCELL
REL/EX REQD	NEW LOCATION OF RELOCATED EQUIPMENT REQUIRED	⊠"	COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR	1LA−2,4	NO HASH MARKS INDICATES 2# 12, PLUS GROUND, UNLESS NOTED OTHERWISE.	Hole PUSH BUTTON/DOOR BELL
REV RGS	REVISION, REVISE RIGID GALVANIZED STEEL		COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER, "30/3/15/#0" DENOTES AMPERES/POLES/FUSE/ STARTER SIZE, "NF" DENOTES NON-FUSED. FURNISHED BY DIVISION 23 AND INSTALLED BY DIVISION 26.		HOMERUN TO PANEL WITH CIRCUIT NUMBER(S) AS INDICATED.	
RLA RPM	RUNNING LOAD AMPS REVOLUTIONS PER MINUTE				PARTIAL CIRCUIT HOMERUN TO PANEL.	
RR RTU	REMOVE AND REPLACE ROOFTOP UNIT	VFD	VARIABLE FREQUENCY DRIVE PROVIDED BY DIVISION 23 AND INSTALLED BY DIVISION 26.	└─(ON)1LA−6 ──── T ────	COMMUNICATIONS CONDUIT OR CABLE: "C" DENOTES MASTER CLOCK, "CA" DENOTES MASTER CLOCK,	SOS AREA OF RESCUE ASSISTANCE
		EPO	EMERGENCY POWER OFF BUTTON.		"CR" DENOTES CASH REGISTER "D" DENOTES DATA.	B BELL
	S			-	"FA" DENOTES FIRE ALARM, "I" DENOTES INTERCOM, "OHE" DENOTES OVERHEAD ELECTRICAL LINE.	
SA	SUPPLY AIR	RECEPT	ACLES AND OUTLETS		"PA" DENOTES PAGING, "S" DENOTES SECURITY, "T" DENOTES TELEPHONE,	FIRE ALARM
SAF SCHED	SUPPLY AIR FAN SCHEDULE		ACLES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR	+++++++++++++++++++++++++++++++++++++	"V" DENOTES VIDEO, TELECOMMUNICATIONS CABLE TRAY TO BE CONCEALED	W WATER FLOW SWITCH
SE SEC	SEWAGE EJECTOR SECONDARY		OF DEVICE UNLESS NOTED OTHERWISE.		ABOVE ACCESSABLE CEILING.	
SECT SF SHT	SECTION SQUARE FEET SHEET	Φ	SIMPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V.	ELECTF	RICAL EQUIPMENT	$\langle S \rangle$ Smoke detector – multi criteria detector
SIM SKVA	SHELT SIMILAR STARTING KILOVOLT-AMPS	Ф	DUPLEX WALL RECEPTACLE, NEMA 5-20R, 20A, 125V. "GFCI" DENOTES GROUND FAULT INTERRUPTER,			$\langle s \rangle$ smoke detector – "sb" indicates in integral sounder base
SKW SP	STARTING KILOVOLT-AMPS STARTING KILOWATTS SUMP PUMP		"WP" DENOTES WEATHERPROOF, "IG" DENOTES ISOLATED GROUND, "TP" DENOTES SAFETY TYPE, (TAMPER PROOF)		DISTRIBUTION PANEL	"R" INDICATES DUCT TYPE "R" INDICATES 120 VOLT RESIDENTIAL TYPE
SPEC SPF	SPECIFICATION STAIR PRESSURIZATION FAN		"DR" DENOTES DROPPED RECEPTACLE, "USB" DENOTES RECEPTACLE WITH UNIVERSAL SERIAL BUS,	MSB	SWITCHBOARD, MAIN DISTRIBUTION PANEL OR	H HEAT DETECTOR
SPKR SPD	SPEAKER SURGE PROTECTION DEVICE		"AC" DENOTES ABOVE COUNTER MOUNTING, SEE "UC" DENOTES UNDER COUNTER MOUNTING, SEE "H" DENOTES HORIZONTALLY ORIENTED RECEPTACLE, SEE ARCHITECTURAL PLANS FOR EXACT MOUNTING HEIGHT.		MOTOR CONTROL CENTER	S_{BT} BEAM DETECTOR TRANSMITTER, HIGH IN CEILING WALL DIRECT LINE OF SIGHT.
SPDT SPST	SINGLE-POLE, DOUBLE-THROW SINGLE-POLE, SINGLE-THROW	۳ R	DUPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT,		PANELBOARD (FLUSH/SURFACE MOUNT)	$\left\langle S \right\rangle_{BR}$ beam detector receiver, high in ceiling wall direct line of sight.
SQ. SRF SS	SQUARE SMOKE REMOVAL FAN START-STOP PUSH BUTTON		RED COLOR.			S FIRE ALARM SPEAKER STROBE / CEILING MOUNTED
SS SSSC ST	START–STOP PUSH BUTTON SOLID STATE SPEED CONTROL SHUNT TRIP	Ŏ	DUPLEX WALL RECEPTACLE ON A CIRCUIT DEDICATED TO DATA PROCESSING, GRAY COLOR. PROVIDE ISOLATED GROUND TYPE RECEPTACLES WHERE NOTED.		FLOOR MOUNTED DRY-TYPE TRANSFORMER	S FIRE ALARM SPEAKER STROBE / WALL MOUNTED
STB STD	STEAM BOILER STANDARD	Φ	SPLIT WIRED RECEPTACLE. TOP RECEPTACLE SHALL BE SWITCHED		SUSPENDED OR WALL MOUNTED TRANSFORMER	S FIRE ALARM SPEAKER / CEILING MOUNT.
STL SURF	STEEL SURFACE		SPLIT WIRED RECEPTACLE. TOP RECEPTACLE SHALL BE SWITCHED ACCORDING TO PLANS, AND BOTTOM SHALL REMAIN UNSWITCHED.			S FIRE ALARM SPEAKER / WALL MOUNTED
SW SWBD	SWITCH SWITCHBOARD	°₽₽₽	CONTROLLED DUPLEX WALL RECEPTACLE, NEMA 5–20R, 20A, 125V. "SP" DENOTES SPLIT WIRED	ATS	AUTOMATIC TRANSFER SWITCH	DH magnetic door holder
		⊕	FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5–20R, 20A, 125V.		FIRE RATED PLYWOOD TERMINAL BOARD, TYPE AS NOTED, 4' X 8' X 3/4" UNLESS NOTED OTHERWISE	R AUXILIARY CONTROL RELAY
	Ŧ	- R	FOURPLEX WALL RECEPTACLE ON EMERGENCY CIRCUIT, RED COLOR.		TERMINAL CABINET (FLUSH/SURFACE MOUNT), TYPE AS NOTED, 24" X 48" X 3–1/2" UNLESS NOTED OTHERWISE.	FH FIRE FIGHTER HANDSET
						F FIRE ALARM PULL STATION +42" AFF
IC TEL TE	TEMPERATURE CONTROL TELEPHONE TRANSFER FAN	⊕ °	CONTROLLED FOURPLEX (DOUBLE DUPLEX) WALL RECEPTACLE. NEMA 5–20R, 20A, 125V.	BAT LV		∇^{F} FIREMAN'S TELEPHONE JACK +42" AFF
TL TOC	TMST-LOCK TOP OF CURB	Φ	SPECIAL RECEPTACLE, NEMA CONFIGURATION AS NOTED.		LOW VOLTAGE TRANSFORMER.	VISUAL FIRE ALARM (STROBE) CEILING MOUNT - 15/75cd U.N.O.
TOS TP	TOP OF CORB TOP OF STEEL CHILD TAMPER PROOF DEVICE		TWO-GANG FLOOR OUTLET			HX VISUAL FIRE ALARM (STROBE) WALL MOUNT +80" AFF- 15/75cd U.N.O. XAD AUDIO VISUAL FIRE ALARM HORN STROBE +80" AFF- 15/75cd U.N.O.
TSTAT TTB	THERMOSTAT TELEPHONE TERMINAL BOARD		THREE-GANG FLOOR OUTLET			AUDIO VISUAL FIRE ALARM HORN STROBE +80 AFF- 13/73cd 0.N.O.
TTC TU	TELEPHONE TERMINAL CABINET TERMINAL UNIT		MULTI-OUTLET SURFACE RACEWAY. SEE ARCHITECTURAL		NICATIONS	FACP FIRE ALARM CONTROL PANEL
TV TVSS	TELEVISION TRANSIENT VOLTAGE SURGE SUPPRESSOR	U U	DRAWINGS FOR EXACT MOUNTING HEIGHTS.	ALL OUTI TO CENT	LET BOXES SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR ER OF DEVICE UNLESS NOTED OTHERWISE.	ANN REMOTE FIRE ALARM ANNUNCIATOR PANEL
ТҮР	TYPICAL		"MD" DENOTES MOTOR DAMPER, "CR" DENOTES CORD REEL, "D" DENOTES DROP CORD RECEPTACLE,	"FAX "W"	OWING NOTATIONS REFER TO ALL COMMUNICATIONS OUTLETS: " DENOTES OUTLET DEDICATED FOR A FAX, DENOTES WALL PHONE SHALL BE MOUNTED AT 42" A.F.F.	RPS REMOTE POWER SUPPLY FOR AUDIO/VISUAL FIRE ALARM DEVICES.
		╒╾╢╌	D DENOTES DROP CORD RECEPTACLE, DUPLEX RECEPTACLE WITH HOMERUN	"PAY	" DENOTES WALL PHONE SHALL BE MOUNTED AT 42" A.F.F.	(FSD) FIRE SMOKE DAMPER
	U		DUPLEX RECEPTACLE (PEDESTAL MOUNTED)			REMOTE LED INDICATOR LIGHT
UG	UNDERGROUND	202	TWO-GANG CEILING OUTLET			
UH UL	UNIT HEATER UNDERWRITERS LABORATORIES, INC.	$ \bigcirc^{D} \odot^{R} \\ \bigcirc \odot^{P} $	FLUSH ELECTRICAL FLOOR OUTLET, "P" DENOTES POKE-THRU. "D" INDICATES DUPLEX RECEPTACLE, "R" INDICATES RED RECEPTACLE	HHS 1	SCHOOL INTERCOMMUNICATION SYSTEM HANDSET.	
UNO UPS	UNLESS NOTED OTHERWISE UNINTERRUPTABLE POWER SYSTEM		ON EMERGENCY POWER. REFER TO FLOOR BOX SCHEDULE, FIRE RATED POKE-THROUGH SCHEDULE AND KEYED NOTES.		INDICATES THE LOCATION OF A NEW TECHNOLOGY WALL OUTLET, PROVIDE DUAL GANG BACK BOX. REFERENCE TECHNOLOGY SHEET FOR CONTENT.	SECURITY
			POWER POLE			HKP KEYPAD IDP INTRUSION DETECTION PANEL
	\ /	- ∲ - ₽	DIRECT CONNECTION TO EQUIPMENT PULL BOX (OVER 4" SQUARE)	M _w	MICROPHONE FLOOR OUTLET, "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED "H" INDICATES HANGING MOUNTED	HKP KEYPAD IDP INTRUSION DETECTION PANEL GB GLASS BREAK SENSOR DO DOOR CONTACT
	V		CLOCK RECEPTACLE SHALL BE MOUNTED 12" BELOW FINISHED	Svc	CEILING MOUNTED SPEAKER. "VC" INDICATES VOLUME CONTROL ON SPEAKER.	(B) GLASS BREAK SENSOR (C) ADA AUTO DOOR OPEN BUTTON
V VA	VOLT VOLT-AMPERE		CEILING. (2) DENOTES DOUBLE SIDED CLOCK.	HSL	ON SPEAKER. WALL MOUNTED SPEAKER.	DS INTERCOM DOOR STATION DR DOOR RELEASE BUTTON
VAV VC	VARIABLE AIR VOLUME VOLUME CONTROL	LIGHTIN	G		"L" INDICATED LOCAL SOUND REINFORCEMENT SCHOOL INTERCOMMUNICATION SYSTEM CALL-IN. PUSH BUTTON	MS INTERCOM MASTER STATION CR CARD READER
VERT VFD	VERTICAL VARIABLE FREQUENCY DRIVE				BELL, BUZZER OR CHIME AT 80+ A.F.F.	$(M) \rightarrow \text{LONG RANGE MOTION DETECTOR } HCR \qquad WALL MOUNTED CARD READER$
VP VM	VACUUM PUMP VOLT METER		TYPE- SEE LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION. 2' X 4' LIGHTING FIXTURE.	HVC	VOLUME CONTROL - WALL MOUNTED	$M \rightarrow CONS RANGE MOTION DETECTOR WALL MODIFIED CARD READER$
	۱۸/		2' X 2' LIGHTING FIXTURE.	₩	AUXILIARY INPUT JACK. "W" INDICATES WALL MOUNTED "F" INDICATES FLOOR MOUNTED	
	V V		1' X 4' LIGHTING FIXTURE.		"H" INDICATES HANGING MOUNTED	
W WG	WATT, WRE, WIDTH WREGUARD		1' X 2' LIGHTING FIXTURE. 1' X 1' LIGHTING FIXTURE.		"HIGH" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.	REFERENCE TECHNOLOGY/SECURITY SHEET FOR ADDITIONAL INFORMATION.
₩/ ₩/O ₩₽	WITH WITHOUT WEATHERPROOF		1 X 1 LIGHTING FIXTURES.	AVI T	"LOW" PORTION OF "HIGH/LOW" OUTLETS, REFER TO OUTLET DETAIL.	
WS WT	WEATHERPROOF WATER SOFTENER WATERTIGHT, WEIGHT		STAGGERED STRIP LIGHTING FIXTURE.	+©(2) LV	LOW VOLTAGE CLOCK SHALL BE MOUNTED 12" BELOW FINISHED CEILING. (2) DENOTES DOUBLE SIDED CLOCK.	ALL WALL SWITCHES SHALL BE MOUNTED AT 42" ABOVE FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.
WWF W/FT ²	WELDED WIRE FABRIC WATTS PER SQUARE FOOT		ROUND DOWNLIGHT FIXTURE. SQUARE DOWNLIGHT FIXTURE.			\$ SWITCH, SPST, 20A, 120/277V. \$SWITCH, 20A, 120/277V: *0" DENOTES DEST
		Бю	WALL MOUNTED LIGHTING FIXTURE.			² "2" DENOTES DPST, "3" DENOTES THREE—WAY, "4" DENOTES FOUR—WAY. "k" DENOTES KEY SWITCH
	X		TRACK LIGHTING FIXTURE. MOUNTED AS SHOWN ON LIGHTING FIXTURE SCHEDULE.			"K" DENOTES KEY SWITCH, "P" DENOTES PILOT LIGHT, "T" DENOTES SPRING WOUND TIMER. "P" DENOTES PED
XFMR	TRANSFORMER		CEILING MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.			"R" DENOTES RED "F" DENOTES FAN SPEED CONTROLLER "OC" DENOTES OCCUPANCY SENSOR SWITCH "LV" DENOTES LOW VOLTAGE SWITCH
	7	H Q	WALL MOUNTED EXIT SIGN; ARROWS AS INDICATED. SHADED AREA DENOTES FACE.		NE AND RISER DIAGRAMS	"LV" DENOTES LOW VOLTAGE SWITCH "L" DENOTES LOCKING SWITCH \$ SWITCH SEDIT OF NOVENTADY CONTACT
		암	EMERGENCY WALL MOUNTED LIGHTING FIXTURE. BATTERY OPERATED UNLESS NOTED OTHERWISE.	8004 /3P	TRANSFORMER, TYPE AND RATINGS AS NOTED	SWITCH, SPDT, CENTER OFF, MOMENTARY CONTACT.
			SECURITY WALL PACK	<u>400A</u>	SWITCH, RATING AS SHOWN	SD DIMMER CONTROL SWITCH, 600 WATT UNLESS OTHERWISE NOTED.
Z	ZONE				FUSE, RATING AS SHOWN CIRCUIT BREAKER, RATING AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE. "CL" DENOTES CURRENT LIMITING	s_{3K} Three-way key switch, 20A, 120/277V.
Z	ZONE		SITE LIGHTING FIXTURE.			S WALL MOUNTED SWITCH TO CONTROL MOTORIZED PROJECTION
Z	ZONE		POST-TOP FIXTURE/ACORN FIXTURE		DRAWOUT CIRCUIT BREAKER, RATINGS AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE	\$ _{sc} Wall mounted switch to control motorized projection screens.
Z	ZONE	╺╼ ╺╼ ⊦ ↔	POST-TOP FIXTURE/ACORN FIXTURE BRACKET ARM INDICATES WALL MOUNT WITH ARM	GD GD GD GD	DRAWOUT CIRCUIT BREAKER, RATINGS AS SHOWN, 3 POLE UNLESS NOTED OTHERWISE SHUNT TRIP GROUND FAULT RELAY	^{SC} SCREENS. \$_M MOTOR RATED SWITCH WITH THERMAL OVERLOADS
Z	ZONE		POST-TOP FIXTURE/ACORN FIXTURE BRACKET ARM INDICATES WALL MOUNT WITH ARM EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH UNSWITCHED HOT FOR LOSS OF VOLTAGE AND CHARGING (SAME CIRCUIT	GL GL GB GF	UNLESS NOTED OTHERWISE SHUNT TRIP	SCREENS. SCREENS. SCREENS. MOTOR RATED SWITCH WITH THERMAL OVERLOADS OC CEILING MOUNTED OCCUPANCY SENSOR MP MASTER OCCUPANCY SENSOR POWER PACK
Z	ZONE	╺╼ ╺╼ ⊦ ↔	POST-TOP FIXTURE/ACORN FIXTURE BRACKET ARM INDICATES WALL MOUNT WITH ARM EMERGENCY LIGHT FIXTURE WITH BATTERY PACK. PROVIDE WITH	S S S S S S S S S S S S S S S S S S S	UNLESS NOTED OTHERWISE SHUNT TRIP GROUND FAULT RELAY KIRK-KEY INTERLOCK DIGITAL METER	 SCREENS. \$_M MOTOR RATED SWITCH WITH THERMAL OVERLOADS OC CEILING MOUNTED OCCUPANCY SENSOR MP MASTER OCCUPANCY SENSOR POWER PACK DS DAYLIGHT/PHOTO SENSOR
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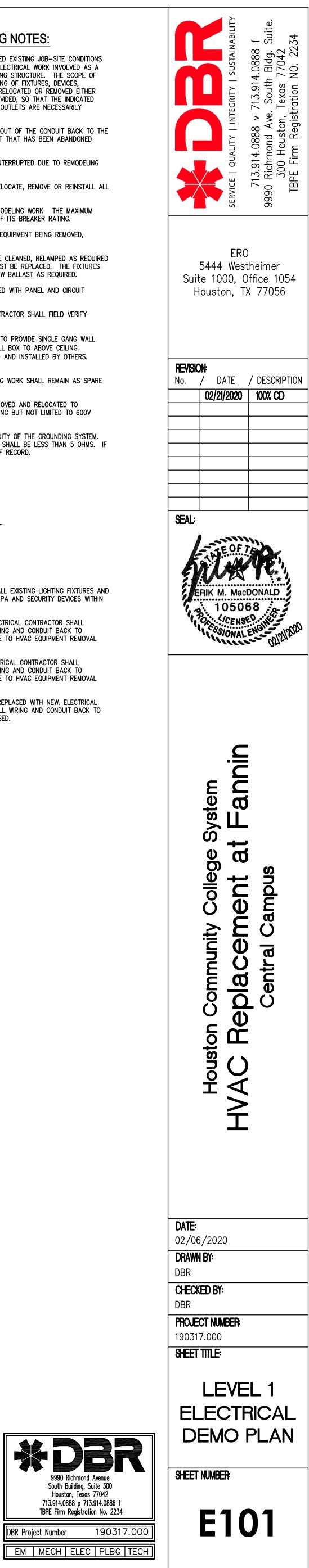


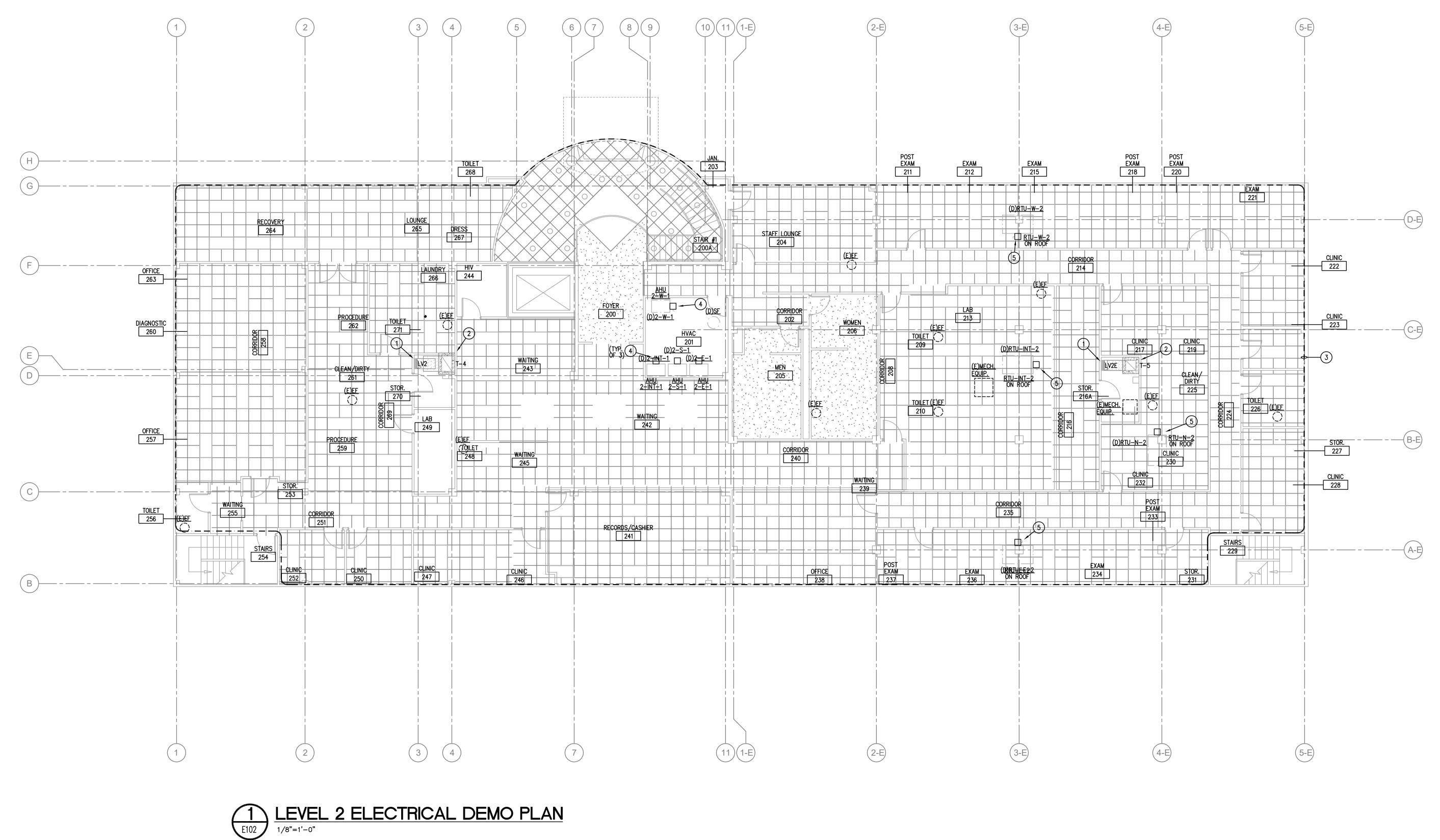


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- D. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE OR REINSTALL ALL ITEMS DESCRIBED IN THESE NOTES.
- E. VERIFY THE LOADING OF EACH CIRCUIT AFFECTED BY REMODELING WORK. THE MAXIMUM
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ELECTRICAL KEYED NOTES:

- 1. EXISTING MAIN DISTRIBUTION PANEL SHALL REMAIN.
- 2. EXISTING PANELBOARD SHALL REMAIN.
 3. EXISTING TRANSFORMER SHALL REMAIN.
- 4. ELECTRICAL CONTRACTOR SHALL REMOVE AND SALVAGE ALL EXISTING LIGHTING FIXTURES AND CEILING MOUNTED ELECTRICAL AND FIRE ALARM DEVICES, PA AND SECURITY DEVICES WITHIN THIS AREA DUE TO HVAC SYSTEM IMPROVEMENT.
- 5. EXISTING AIR HANDLING UNIT SHALL BE DEMOLISHED. ELECTRICAL CONTRACTOR SHALL DISCONNECT CIRCUIT, REMOVE DISCONNECT AND PULL WIRING AND CONDUIT BACK TO ASSOCIATED PANELBOARD. CIRCUITS MADE AVAILABLE DUE TO HVAC EQUIPMENT REMOVAL SHALL REMAIN AS SPARE, UNLESS NOTED OTHERWISE.
- 6. EXISTING CONDENSING UNIT SHALL BE DEMOLISHED. ELECTRICAL CONTRACTOR SHALL DISCONNECT CIRCUIT, REMOVE DISCONNECT AND PULL WIRING AND CONDUIT BACK TO ASSOCIATED PANELBOARD. CIRCUITS MADE AVAILABLE DUE TO HVAC EQUIPMENT REMOVAL SHALL REMAIN AS SPARE, UNLESS NOTED OTHERWISE.
- 7. ELECTRICAL WATER HEATER SHALL BE DEMOLISHED AND REPLACED WITH NEW. ELECTRICAL CONTRACTOR SHALL DISCONNECT WATER HEATER AND PULL WRING AND CONDUIT BACK TO ASSOCIATED DISCONNECT SWITCH. FEEDER SHALL BE REUSED.

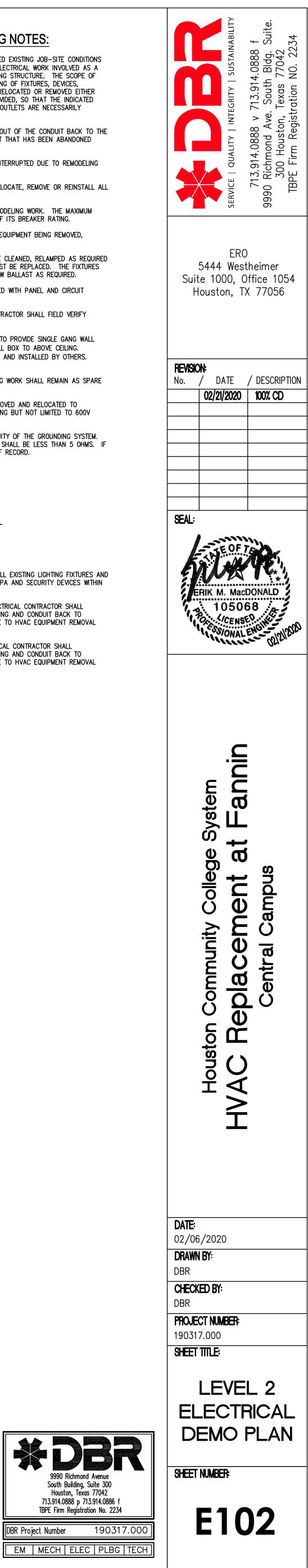


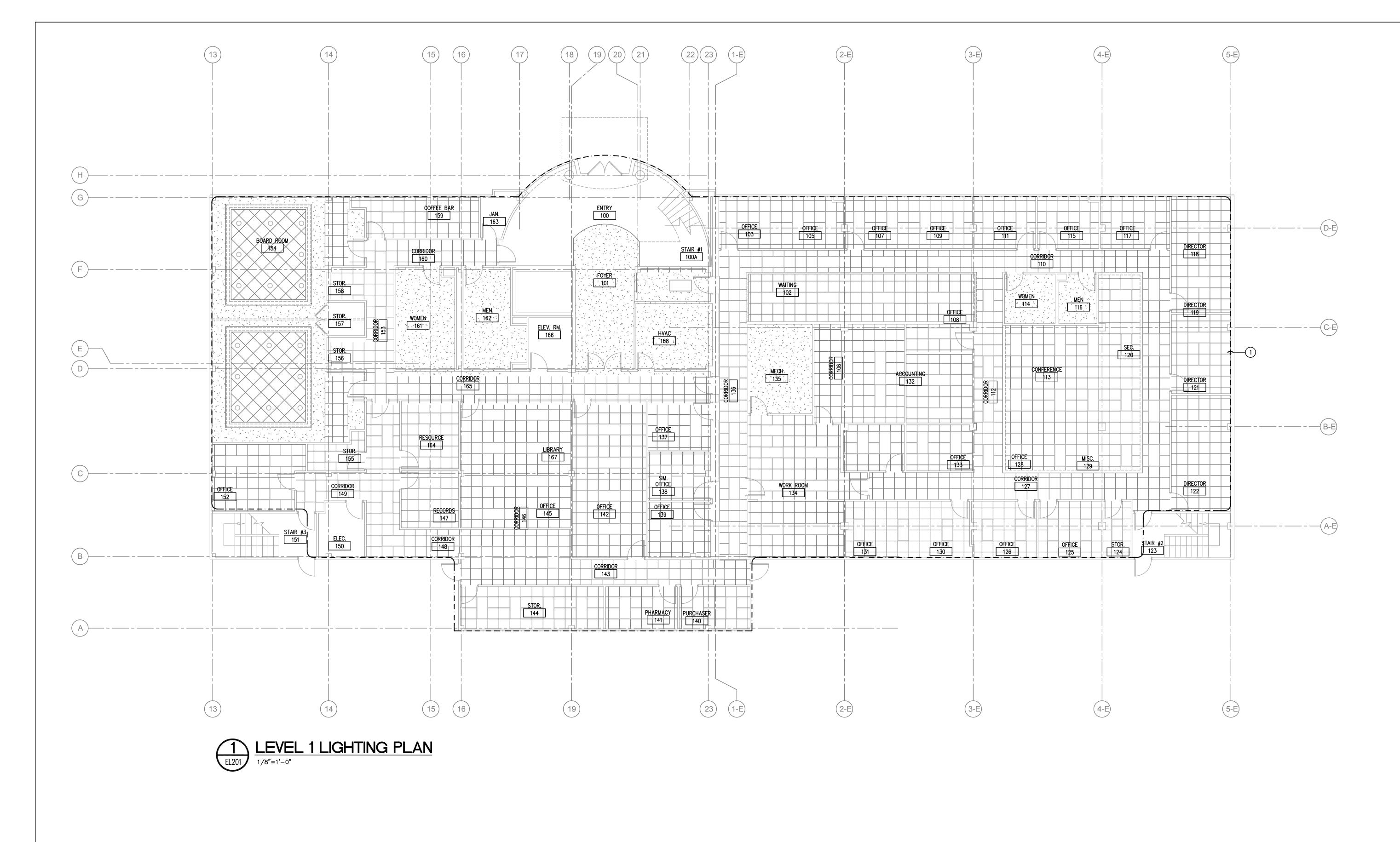


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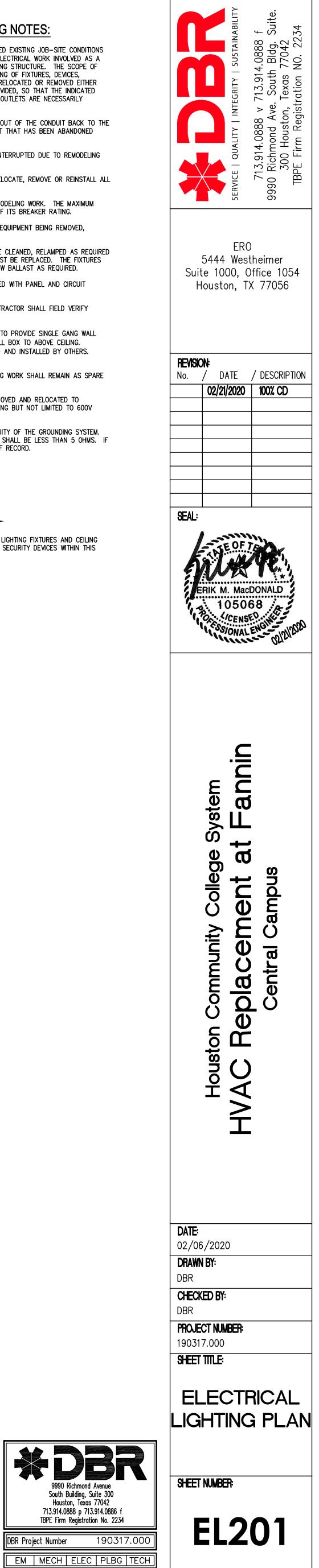


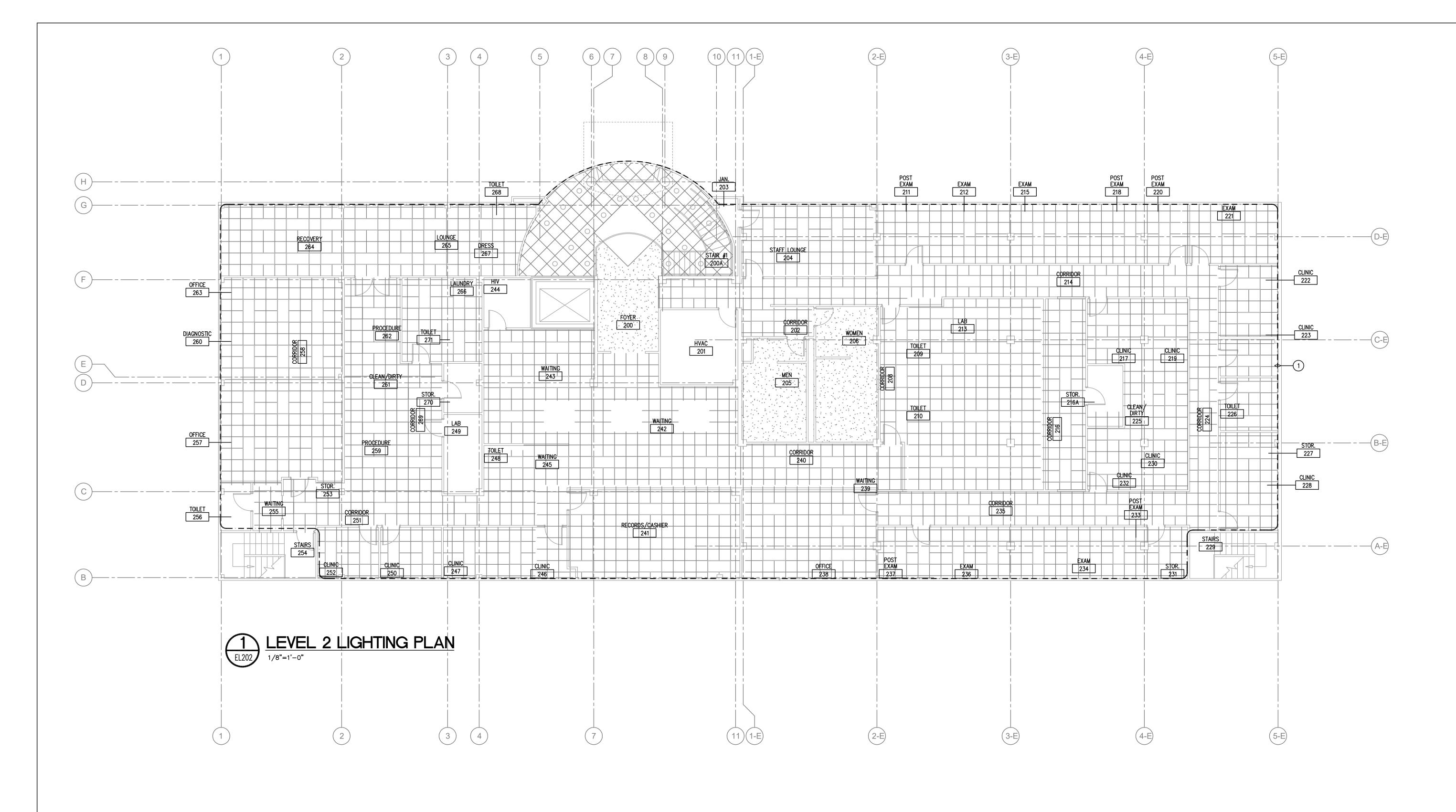


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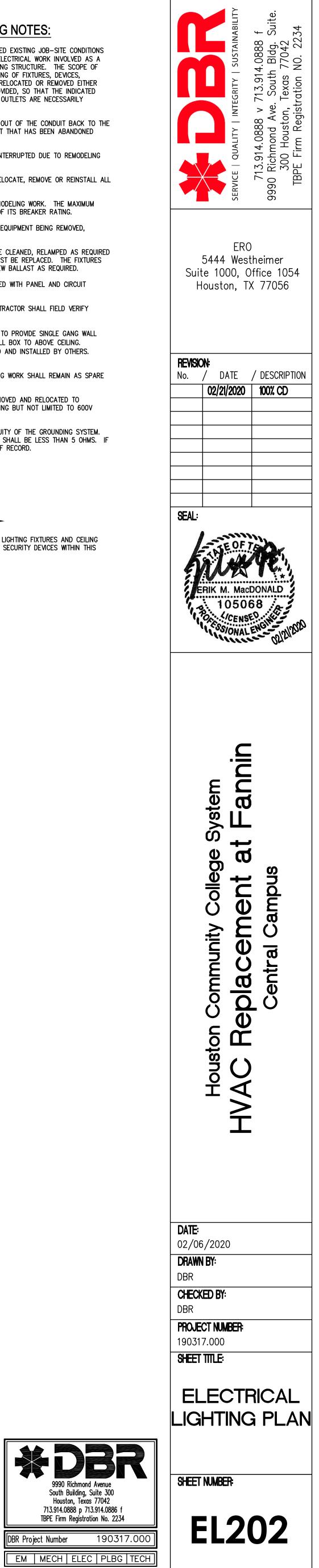


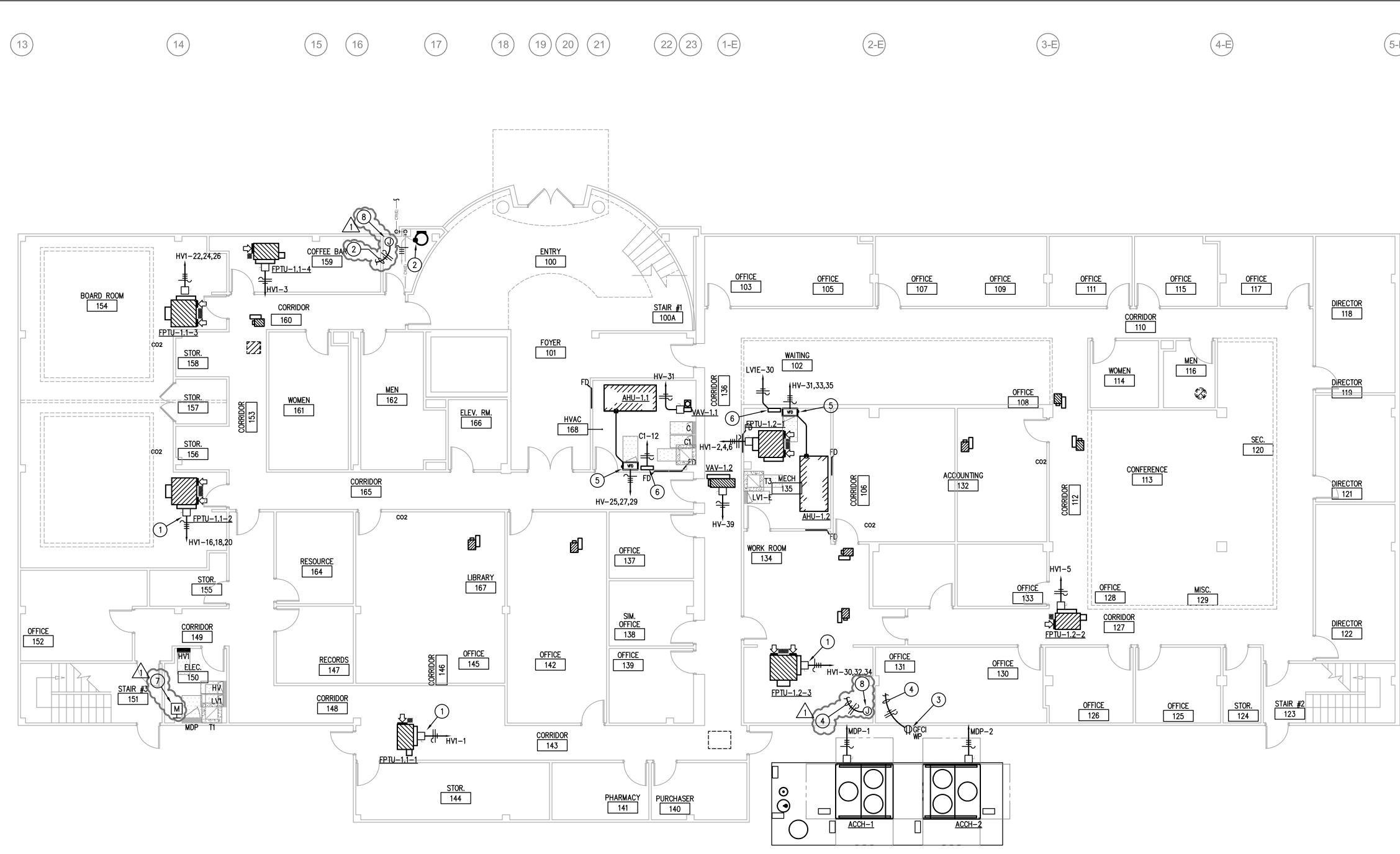


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(2-E)

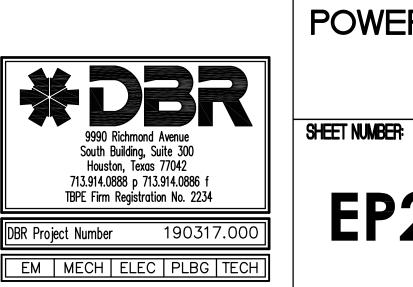
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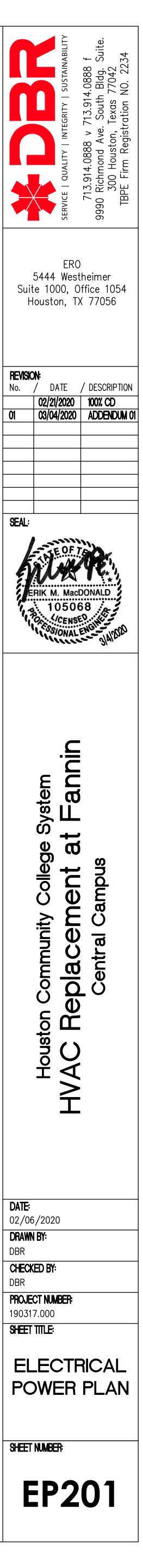
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	REMOVE ALL OUTLETS AND WRING ASSOCIATED WITH ALL EQUIPMENT BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT.	Hc
	3. ALL ELECTRICAL OUTLET COVER PLATES SHALL BE LABELED WITH PANEL AND CIRCUIT NUMBER.	
	I. CIRCUIT NUMBERS ARE FOR PLAN REFERENCE ONLY, CONTRACTOR SHALL FIELD VERIFY ACTUAL NUMBERS AND UPDATE PANEL DIRECTORIES.	
C-E	EXISTING CIRCUIT BREAKERS VACATED DUE TO REMODELING WORK SHALL REMAIN AS SPARE BREAKERS.	REVISION No. / 01
	ELECTRICAL KEYED NOTES: (#)	
(B-E)	. DISCONNECT PROVIDED BY MECHANICAL CONTRACTOR. WIRED AND INSTALLED BY ELECTRICAL CONTRACTOR. TYPICAL UNLESS NOTED OTHERWISE.	
	2. NEW ELECTRICAL WATER HEATER. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO EXTEND EXISTING FEEDER PREVIOUSLY SERVING DEMOLISHED WATER HEATER AND CONNECT TO NEW WATER HEATER. FIELD COORDINATE EXACT LOCATION AND ADDITIONAL REQUIREMENTS WITH PLUMBING CONTRACTOR PRIOR PLACEMENT.	SEAL:
	 PROVIDE 20A @ 120V GFCI TYPE RECEPTACLE FOR HVAC EQUIPMENT SERVICE. FIELD COORDINATE LOCATION WITH MECHANICAL CONTRACTOR. INSTALL AT NO MORE THAN 25' FROM HVAC EQUIPMENT. 	Ţ
	4. CONNECT TO EXISTING 20A @ 120V RECEPTACLE CIRCUIT SERVING THIS AREA.	ER
(A-E)	5. VARIABLE FREQUENCY DRIVE PROVIDED BY MECHANICAL CONTRACTOR. INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. TYPICAL UNLESS NOTED OTHERWISE.	1 PC
\smile	5. PROVIDE 120V POWER FOR DDC PANEL. FIELD COORDINATE EXACT LOCATION AND ADDITIONAL REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR PLACEMENT.	.1
	7. PROVIDE NEW METER FOR MAIN DISTRIBUTION PANEL. FIELD COORDINATE EXACT LOCATION WITH ACTUAL ELECTRICAL ROOM CONDITIONS AND OTHER TRADES. REFER TO ONE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.	

3. 120V JUNCTION BOX CONNECTION FOR WATER METER POWER SUPPLY. FIELD COORDINATE EXACT LOCATION AND ADDITIONAL REQUIREMENTS WITH PLUMBING CONTRACTOR PRIOR TO ROUGH IN.





(5-E)



unity

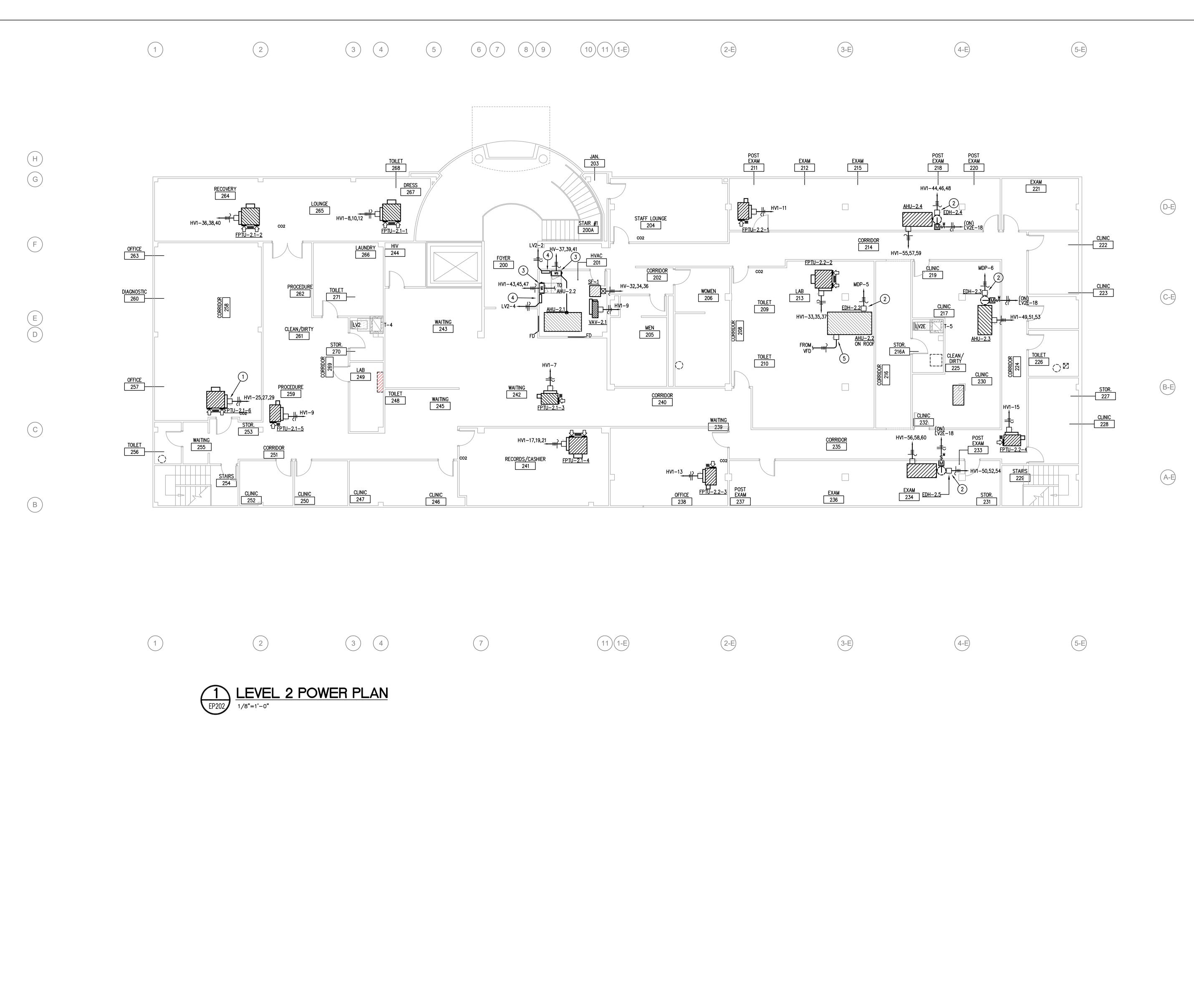
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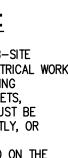


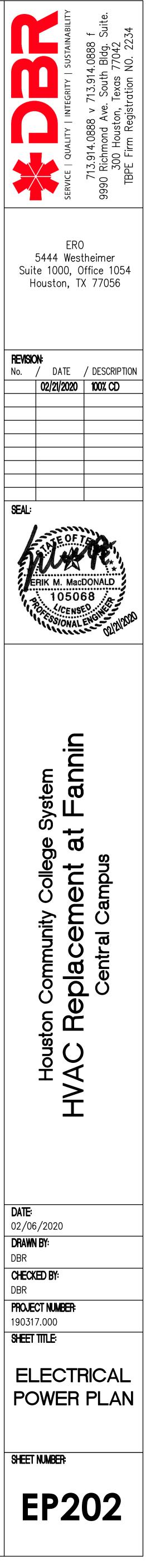
- A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE VERIFIED EXISTING JOB-SITE CONDITIONS DURING THE BIDDING PERIOD TO OBTAIN THE SCOPE OF ELECTRICAL WORK INVOLVED AS A RESULT OF ARCHITECTURAL MODIFICATIONS TO THE EXISTING STRUCTURE. THE SCOPE OF WORK SHALL INCLUDE MATERIALS AND OUTLETS, CONSISTING OF FIXTURES, DEVICES, EQUIPMENT OR APPARATUS, WHICH MUST BE REROUTED, RELOCATED OR REMOVED EITHER TEMPORARILY OR PERMANENTLY, OR WHICH MUST BE PROVIDED, SO THAT THE INDICATED REMODELING MAY BE ACCOMPLISHED. NOT ALL EXISTING OUTLETS ARE NECESSARILY INDICATED ON THE DRAWINGS.
- B. WHEN OUTLETS ARE ABANDONED, WIRE MUST BE PULLED OUT OF THE CONDUIT BACK TO THE NEAREST REMAINING BOX OR CABINET. EXPOSED CONDUIT THAT HAS BEEN ABANDONED MUST BE REMOVED. C. RE-ESTABLISH SERVICE TO ALL OUTLETS THAT MAY BE INTERRUPTED DUE TO
- REMODELING WORK. D. PROVIDE ALL APPURTENANCES REQUIRED TO REROUTE, RELOCATE, REMOVE OR REINSTALL ALL ITEMS DESCRIBED IN THESE NOTES.
- E. VERIFY THE LOADING OF EACH CIRCUIT AFFECTED BY REMODELING WORK. THE MAXIMUM LOAD OF ANY BRANCH CIRCUIT MUST NOT EXCEED 80% OF ITS BREAKER RATING.
- F. REMOVE ALL OUTLETS AND WRING ASSOCIATED WITH ALL EQUIPMENT BEING REMOVED, INCLUDING MECHANICAL AND PLUMBING EQUIPMENT. G. ALL ELECTRICAL OUTLET COVER PLATES SHALL BE LABELED WITH PANEL AND CIRCUIT
- NUMBER. H. CIRCUIT NUMBERS ARE FOR PLAN REFERENCE ONLY, CONTRACTOR SHALL FIELD VERIFY ACTUAL NUMBERS AND UPDATE PANEL DIRECTORIES.
- I. EXISTING CIRCUIT BREAKERS VACATED DUE TO REMODELING WORK SHALL REMAIN AS SPARE BREAKERS.

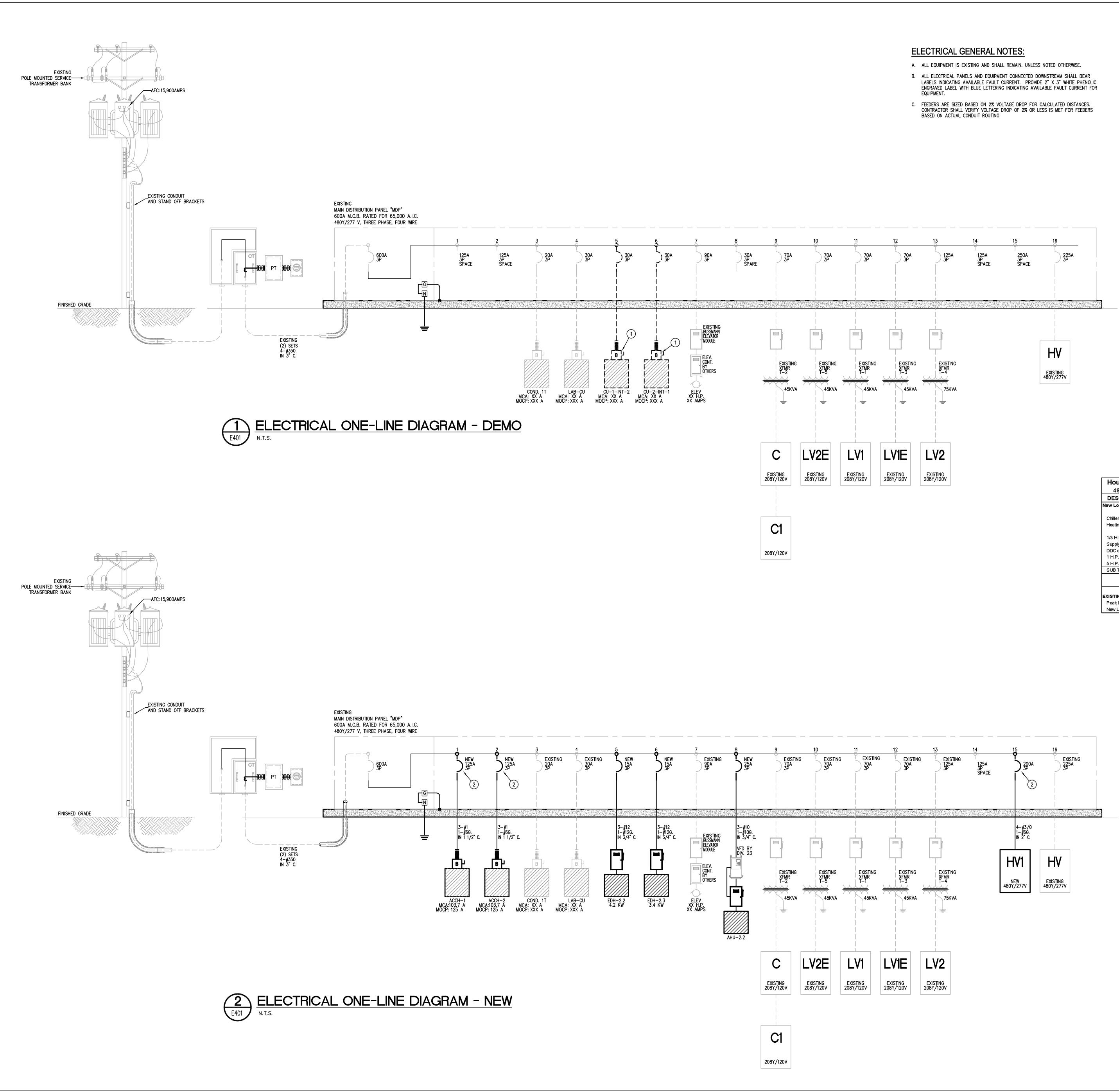
ELECTRICAL KEYED NOTES:

- 1. DISCONNECT PROVIDED BY MECHANICAL CONTRACTOR. WIRED AND INSTALLED BY ELECTRICAL CONTRACTOR. TYPICAL UNLESS NOTED OTHERWISE.
- 2. PROVIDE 30A/3P/NF/N1 SAFETY DISCONNECT FOR ELECTRICAL DUCT HEATER. FIELD COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR PLACEMENT.
- 3. VARIABLE FREQUENCY DRIVE PROVIDED BY MECHANICAL CONTRACTOR. INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR. TYPICAL UNLESS NOTED OTHERWISE.
- 4. PROVIDE 120V POWER FOR DDC PANEL. FIELD COORDINATE EXACT LOCATION AND ADDITIONAL REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR PLACEMENT.
- 5. PROVIDE 30A/3P/NF/N4X DISCONNECT SWITCH WITH EARLY BREAK AUXILIARY CONTACTS. FIELD COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR PRIOR PLACEMENT. ROUTE AND ADDITIONAL 3/4" CONDUIT WITH CONTROL WIRING TO ASSOCIATED VARIABLE FREQUENCY DRIVE, COORDINATE CONTROL WIRING WITH MECHANICAL CONTRACTOR.





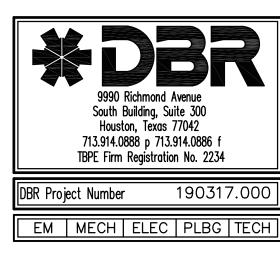


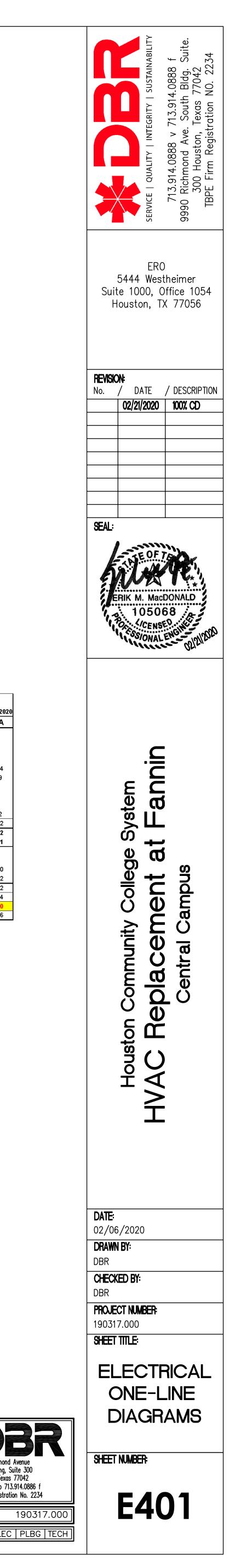


ELECTRICAL KEYED NOTES:

- EXISTING MECHANICAL EQUIPMENT SHALL BE DEMOLISHED. ELECTRICAL CONTRACTOR SHALL DISCONNECT FEEDER, REMOVE DISCONNECT, REMOVE CIRCUIT BREAKER AND PULL WIRING AND CONDUIT BACK TO ASSOCIATED PANEL.
- PROVIDE NEW CIRCUIT BREAKER AS SHOWN. NEW CIRCUIT BREAKER SHALL MATCH EXISTING AIC RATING AND BE COMPATIBLE WITH MAIN DISTRIBUTION PANELBOARD.

480 / 277 ,	3 -PHASE	4 -W	/IRE						2/21/2020
DESCRIPTION								NEC	KVA
New Loads									
	Load (VA)		Qty						0.0
Chiller	111,300	х	1	= 111,300.0	AV (
Heating Load	86,212	х	2	= 172,424.1	VA				
		Cooling	g > Heatir	ng 📮 172,424.1	VA				172.4
1/3 H.P. FPTU Fans	803	х	26	= 20,878.0	VA				20.9
Supply Fan Load	1,673	х	1	= 1,673.0	VA				1.7
DDC controls	500	х	4	= 2,000.0	VA				2.0
1 H.P. AHUs	1,673	х	3	= 5,019.0	VA				5.0
5 H.P. AHUs	6055	х	4	= 24,220.0	VA				24.2
SUB TOTAL									226.2
								New Load Total:	226.2
								New Load Amps:	272.1
EXISTING SERVICE									
Peak Demand	88, 000 V	/A x	1.25					220.87	110.0
New Load	226,214 V	/A							226.2
								Total Load KVA:	336.2
								Amps:	404.4
						F	Exi	sting Service (amps):	600.0
						Ē	Sp	are Capacity (amps):	195.6





							_						0,000 /	AIC Rating	9		
			F	Pan	elbo	ard	С	1					X	Existing			
							-	-						New			
	120/208	V.3-Phase,4-Wi	re		MCB		AMF	^{>} MC	В		Х	Sing	е			Mounting	g
	1	Section		X	MLO	100	AMF	P BU	S (Co	opper)		Doub	le			X Surface	
	1	-Nema Rating					ISO.	GRI	ND. E	BUS		Feed	- Thru			Flush	
Votes	Load (VA)	Description		Туре	Wire	СВ	СКТ #	РН	СКТ #	СВ	Wire	Туре		Description		Load (VA)	Notes
1	900	RC - COMPUTE	R	R	12	20/1	1	А	2	20/1	12			BERVER L		750	1
1	720	RC - PRINTER		R	12	20/1	3	В	4	20/1	12	R	RC - S	SERVER L	JPS	750	1
1	540	RC - PRINTER		R	12	20/1	5	С	6	20/1	12	R	RC - S	SERVER L	JPS	750	1
1	720	RC - PHNE RM	TL	R	12	20/1	7	Α	8	20/1	12	R	EQ - (COM AIR I	HAND.	750	1
1	540	RC - PHNE RM	TL	R	12	20/1	9	В	10	20/1	12	R		COM AIR I		750	1
1	900	RC - LIB. WIREM	OLD	R	12	20/1	11	С	12	20/1	12	М	EQ - [DDC CON	TROL	500	4
1	540	RC - LIB. WIREM	OLD	R	12	20/1	13	Α	14				SPAC	E			
1	900	RC - LIB. WIREM	OLD	R	12	20/1	15	В	16				SPAC				
		SPACE					17	С	18				SPAC				
		SPACE					19	Α	20				SPAC				
		SPACE					21	В	22				SPAC				
		SPACE					23	С	24				SPAC				
1	8646	EQ - SHREDDE	R	М	8	40/3	25	Α	26				SPAC				
-	-	-		-	8	-	27	В	28				SPAC				
-	-	-		-	8	-	29	С	30				SPAC	E			
	14,406	Subtotal												Subtota	I	4,250	
N.	E.C.	Load Type	Co	nn.	Fct.	Divers	sity	N	I.E.C					Conn.	Fct.	Diversity	
22	20.44	(R) Recept.	9,5	510		9,51	10	21	0.20	(a) (L	.) Lighting)		0	125%	6 0	
22	20.56	(K) Kitchen		0	100%	0				(E	EL) Ext. L	.tg.		0	125%	6 0	
22	20.60	(C) Cooling		0	0%	0		6	620.1·	4 (E	E) Elevato	ors		0	100%	6 0	
22	20.60	(H) Heating	1	0	0%	0				(\	VH) Wate	er Ht.		0	100%	6 0	
22	20.60	(F) Fans		0	100%	0		:	220.5		/IT) Lrg. N			0	125%	6 0	
		(M) Misc.	9,1	146	100%	9,14	16			(5	SP) Sub F	Panel		0	100%	6 0	
630).11(B)	(W) Welders		0	100%	0		2	20.8	7 (E	EX) Existi	g Loac	I	0	125%	6 0	
	I	Total Connected Total Load (Dive			18,656 18,656			l.8 I.8	AMF AMF		Locatio	on of P	anel:			d L	

			Pan	elbo	ard	Η	V1				6		AIC Rating Existing New	ļ		
	277/480	V.3-Phase,4-Wire	•	МСВ	•	AMF	P MC	B			Singl	e			Mountin	g
	1	Section	X	MLO	250	AMF	P BU	S (Co	opper)		Doub	le			X Surface	
	1	-Nema Rating				ISO	GRI	ND. E	BUS	Х	Feed	- Thru	L		Flush	
lotes			Туре	Wire	СВ	СКТ #	PH	СКТ #	СВ	Wire	Туре		Description		Load (VA)	Note
	4803	FPTU-1.1-1	н	10	25/1	1	Α	2	20/3	12	F	FPTU	J-1.2-1		1607	
	3803	FPTU-1.1-4	н	12	20/1	3	В	4	-	12	Н	-			7000	
	4803	FPTU-1.2-2	н	10	25/1	5	С	6	-	12	-	-			-	
	5303	FPTU-2.1-3	н	10	25/1	7	Α	8	25/3	10	F	FPTU	J-2.1-1		1607	
	3303	FPTU-2.1-5	н	12	15/1	9	В	10	-	10	н	-			10000	
	4303	FPTU-2.2-1	н	12	20/1	11	С	12	-	10	-	-			-	
	5303	FPTU-2.2-3	Н	10	25/1	13	Α	14				SPAC	CE			
	5303	FPTU-2.1-4	F	10	25/1	15	В	16	20/3	12	F	FPTL	J-1.1-2		1607	
	1607	FPTU-2.1-4	F	12	20/3	17	С	18	-	12	Н	-			5500	
	6000	-	н	12	-	19	Α	20	-	12	-	-			-	
	-	-	-	12	-	21	В	22	20/3	12	F	FPTU	J-1.1-3		1607	
		SPACE				23	С	24	-	12	Н	-			5500	
	1607	FPTU-2.1-6	F	12	20/3	25	Α	26	-	12	-	-			-	
	6000	-	н	12	-	27	В	28				SPAC	CE			
	-	-	-	12	-	29	С	30	20/3	12	F	FPTL	J-1.2-3		1607	╢──
	1600	VAV-1.1	— Н	12	15/1	31	Α	32	-	12	Н	-			5500	╢──
	1607	FPTU-2.2-2	F	12	20/3	33	В	34	-	12	-	-			-	╢──
	6000	-	Н	12	-	35	С	36	20/3	12	F	FPTU	J-2.1-2		1607	╢──
	_	-	-	12	-	37	A	38	-	12	н	-			5500	
	4900	VAV-1.2	— Н	10	25/1	39	В	40	-	12	-	-			-	╢──
		SPACE				41	С	42	15/1	12	н	VAV-	2.1		3200	
	6055	AHU-2.2	мт	12	15/3	43	A	44	15/3	12	Н	EDH-	2.4		3400	╢──
	-	5 H.P.	-	12	-	45	В	46	-	12	-	-			-	╢──
	-	-		12	-	47	C	48	-	12	_	-			-	╢──
	1673	AHU-2.3	F	12	15/3	49	A	50	15/3	12	Н	EDH-	2.5		2100	╢──
		1 H.P.		12	-	51	В	52	-	12	-	-			-	╢──
	_	-		12	_	53	c	54	-	12	_	-			_	╢──
	1673	AHU-2.4	F	12	15/3	55	Ā	56	15/3	12	F	AHU-	2.5		1673	╢──
	-	1 H.P.		12	-	57	В	58	-	12	-	-			-	╢──
	-	-		12	-	59	C	60	-	12	-	-			-	╢──
	75,645	Subtotal					•						Subtotal		59,013	╢──
	I.E.C.	Load Type	Conn.	Fct.	Divers	sitv		I.E.C					Conn.	Fct.	Diversity	<u>_ </u>
		(R) Recept.	0	100.	0	Jicy		0.20) Lighting			0	125%		
		(K) Kitchen	0	100%	0		21	0.20	· / II ·	EL) Ext. L	-		0	125%		
		(C) Cooling	0	0%	0		6	520.1-	ш `	E) Elevato	-		0	12576		
	II.	(H) Heating	0 103,821	100%	103,8	221		20.1	ш `	VH) Wate			0	100%		
	I `	(F) Fans	24,781	100%	24,7		.	220.5	Ш `	MT) Lrg. N			_	125%		
2		(F) Fans (M) Misc.				וט	'	220.0	II `	SP) Sub F			6,055	125%		
60		` '	0	100%					II *				0			
03	0.11(B) ((W) Welders	0	100%	0			20.8		X) Existi	у гоас		0	125%	· 0	
		Total Connected I Total Load (Divers		134,657 136,171				AMF AMF		Locati	on of P	anel:				

											,	1	0,000 ,	AIC Rating			
			F	Pan	elbo	ard	С						Х	Existing			
	400/000													New			
	120/208	V.3-Phase,4-Wir	e	X	MCB	150		P MC				Singl				Mounting	g
	1				MLO	225			•	opper)		Doub				X Surface	
	1	-Nema Rating							ND. E	<u>3US</u>	<u> </u>	Feed	- Thru			Flush	
Notes	Load (VA)	Description		Туре	Wire	СВ	СКТ #	PH	CKT #	СВ	Wire	Туре		Description		Load (VA)	Notes
1	900	RC - 129, 1ST F		R	12	20/1	1	А	2	100/3	3	SP	PANE	L C1		18156	1
1	720	RC - 131, 1ST F	LR	R	12	20/1	3	В	4	-	3		-			-	- 1
1	540	RC - 131,133, 1S	T FL	R	12	20/1	5	С	6	-	3		-			-	- 1
1	720	EXISTING LOAD)	R	12	20/1	7	Α	8	20/1	12	R	EXIST	ING LOAD)	720	1
1	540	EXISTING LOAD)	R	12	20/1	9	В	10	20/1	12	R	EXIST	ING LOAD)	540	1
1	900	EXISTING LOAD)	R	10	30/2	11	С	12	20/1	12	R	RC - 1	154 1ST FL	R	900	1
1	540	EXISTING LOAD)	R	10	-	13	Α	14	20/1	12	R	RC - 1	53 1ST FL	R	540	1
1	900	EXISTING LOAD)	R	12	20/1	15	В	16	30/2	10	R	EXIST	ING LOAD)	900	1
1	720	RC - 127, 1ST F	LR	R	12	20/1	17	С	18	-	10	R	EXIST	ING LOAD)	720	1
1	900	RC - 119, 1ST F	LR	R	12	20/1	19	А	20	20/1	12	R	RC - 1	41 1ST FL	R	900	1
1	720	RC - 120, 1ST F		R	12	20/1	21	В	22	20/1	12	R	RC - 1	44 1ST FL	R	540	1
1	540	RC - 117,122,121		R	12	20/1	23	С	24	20/1	12	R		43 1ST FL		720	
1	720	EXISTING LOAD		R	12	20/1	25	А	26	20/1	12	R		ING LOAD		720	1
1	540	EXISTING LOAD		R	12	20/1	27	В	28	20/1	12	R	EXIST	ING LOAD	,	540	
1	900	EXISTING LOAD		R	12	20/1	29	С	30	20/1	12	R		ING LOAD		900	$\frac{1}{1}$
1	540	EXISTING LOAD		R	12	20/1	31	Α	32	20/1	12	R		ING LOAD		540	1
1	900	EXISTING LOAD		R	12	20/1	33	В	34	20/1	12	R		37,152 1S		900	
1	720	EXISTING LOAD		R	12	20/1	35	С	36	20/1	12			53 1ST FL		720	
1	900	EXISTING LOAD		R	12	20/1	37	A	38	20/1	12	R				900	
1	720	EXISTING LOAD		R	12	20/1	39	В	40	20/1	12	R		ING LOAD		540	
1	540	EXISTING LOAD		R	12	20/1	41	C	42	20/1	12			ING LOAD		720	
	15,120	Subtotal			•=									Subtotal		31,116	
	I.E.C.	Load Type	Co	nn.	Fct.	Divers	sitv		N.E.C	:				Conn.	Fct.	Diversity	_
	20.44	(R) Recept.		,080	101.	19,0			0.20) Lighting	N		0	125%		
	20.44 20.56	(K) Kitchen			1000/	0	40		10.20	· / II ·	L) Ext. L	-		•	125%		
		(C) Cooling		0 0	100% 0%	0		6	520.1 <i>-</i>) Elevato			0	125%		
				-					20. I	ш `	VH) Wate			-	100%		
	20.60 20.60	(H) Heating (F) Fans		0	0%	0			220.5	- II *	,			0			
2	20.00	· /		0	100%	0			220.5	II 1	IT) Lrg. N			0	125%		56
00	0.44(D)	(M) Misc.		0	100%	0					P) Sub F			18,156	100%	I I ¹	
63	0.11(B)	(W) Welders		0	100%	0		2	220.8	<u>/ (E</u>	X) Existi	g Load		0	125%	6 0	
		Total Connected Total Load (Diver			46,236 37,196			8.4 3.3	amf Amf		Locati	on of P	anel:				

		F	Pan	elbo	ard	Ľ	V1					1	X Ex	C Rating kisting ew]		
		V.3-Phase,4-Wire	X	MCB	150		P MC					Singl				Mounting	3
	1	Section		MLO	225				opper)		Doub				X Surface	
	1	-Nema Rating				ISO.	. GR	ND. E	BUS		Х	Feed	- Thru			Flush	
Notes	Load (VA)	Description	Туре	Wire	СВ	СКТ #	PH	CKT #	CE	3	Wire	Туре	D	escription		Load (VA)	Note
1	1080	RC - 143,144 FLOOR	R	12	20/1	1	А	2	20/	1	12	R	RC - 15	3 1ST FL	OOR	720	1
1	900	RC - 143,144 FLOOR	R	12	20/1	3	В	4	20/	1	12	R	RC - 13	4 1ST FL	OOR	900	1
1	720	RC - 143,144 FLOOR	R	12	20/1	5	С	6	20/	1	12	R	RC - 13	2 1ST FL	OOR	1080	1
1	900	RC - PBX TEL	R	12	20/1	7	Α	8	20/	1	12	R	RC - TV	VISTLOC	ĸ	900	1
1	720	EXISTING LOAD	R	12	20/1	9	В	10	20/	1	12	R	RC - TV	VISTLOC	K	1080	1
1	1080	EXISTING LOAD	R	12	20/1	11	С	12	20/	1	12			IG LOAD		720	1
1	720	RC - 145 WC FLOOR	R	12	20/1	13	Α	14	20/	1	12	R	LT - ELE	EVATOR	PIT	1080	1
1	1080	RC - 145 FLOOR	R	12	20/1	15	В	16	20/	1	12	R	RC - EL	EVATOR	R PIT	720	1
1	900	RC - 145 FLOOR	R	12	20/1	17	С	18	20/	1	12		EXISTIN	IG LOAD	>	900	1
1	1080	EXISTING LOAD	R	12	20/1	19	Α	20	90/	2		F	SPARE				2
1	900	EXISTING LOAD	R	12	20/1	21	В	22	-			-	-				- 1
1	720	RC - 146 1ST FLR	R	12	20/1	23	С	24	40/	2		F	SPARE				2
2		SPARE			20/2	25	А	26	-			-	-				- 1
-		-			-	27	В	28	40/	2		F	SPARE				2
1	1080	RC - 143,144 PROJ.	R	12	20/1	29	С	30	-			-	-				- 1
1	720	RC - 143 1ST FLR	R	12	20/1	31	Α	32	20/	1	12	L	LT - CA	NOPY		500	1
1	1080	RC - 144 1ST FLR	R	12	20/1	33	В	34	40/	3			SPARE				2
1	900	RC - GFCI QUAD	R	12	20/1	35	С	36	-				-				- 1
1	1080	EXISTING LOAD	М	8	40/2	37	Α	38	-				-				- 1
-	900	-	-	8	-	39	В	40	20/	1	12			JMP PU		900	1
1	720	EXISTING LOAD	М	12	20/1	41	С	42	20/	1	12		EXISTIN	IG LOAD)	1080	1
	17,280	Subtotal												Subtotal		10,580	
N	.E.C.	Load Type Co	onn.	Fct.	Divers	sity	N	I.E.C	;.					Conn.	Fct.	Diversity	
2	20.44	(R) Recept. 21	,060		15,5	30	21	0.20	(a)	(L)	Lighting		i	500	125%	625	5
2	20.56	(K) Kitchen	0	100%	0					(EL) Ext. L	tg.		0	125%	6 0	
2	20.60	(C) Cooling	0	0%	0		6	620.1 _/	4	(E)	Elevato	rs		0	100%	6 0	
2	20.60	(H) Heating	0	0%	0					(Wł	H) Wate	er Ht.		0	100%	6 0	
2	20.60	(F) Fans	0	100%	0			220.5	5	(MT) Lrg. N	lot.		0	125%	6 0	
		(M) Misc. 2,	700	100%	2,70	00				(SP) Sub F	anel		0	100%	6 0	
630	D.11(B)	(W) Welders	0	100%	0		2	20.8	7	(EX	Existi	g Load		0	125%	6 0	
		Total Connected Load Total Load (Diversified		24,260 18,855			7.4 2.4	amf Amf			Locatio	on of P	anel:				

			F	Pano	elbo	ard	Ľ	V2	Ε		,	1		AIC Rating Existing New			
		V.3-Phase,4-Wir Section -Nema Rating	re	X	MCB MLO		AMF	P MC P BU . GRI	S (Co	opper) 3US	X	Singl Doub Feed		1		Mounting X Surface Flush	9
Notes	Load (VA)	Description		Туре	Wire	СВ	СКТ #	PH	CKT #	СВ	Wire	Туре		Description		Load (VA)	Notes
1	720	RC - 204		R	12	20/1	1	А	2	20/1	12	R	RC - :	225		900	1
1	560	RC - 204		R	12	20/1	3	В	4	20/1	12	R	EXIS	FING LOAD)	560	1
1	900	RC - 204		R	12	20/1	5	С	6	20/1	12	R	EXIS	ring load)	720	1
1	560	RC - 204		R	12	20/1	7	Α	8	20/1	12	R	EXIS	ring load)	560	1
1	900	RC - 204		R	12	20/1	9	В	10	20/1	12	R	RC - :	213		720	1
1	720	RC - 204,211		R	12	20/1	11	С	12	20/1	12	R	RC - 1	213		900	1
1	900	RC - 212		R	10	30/2	13	А	14	20/1	12	R	RC - 1	213		720	1
1	720	RC - 215		R	10	-	15	В	16	20/1	12	R	RC - 1	213		900	1
1	560	EXISTING LOAD)	R	12	20/1	17	С	18	20/1	12	М	EQ -	DAMPERS		500	3
1	720	RC -214,217,218	3,219	R	12	20/1	19	Α	20				SPAC)E			3
1	560	RC - 223,226,227	7,228	R	12	20/1	21	В	22	20/1	12	R	EXIS	FING LOAD)	560	1
1	900	RC - 236		R	12	20/1	23	С	24	20/1	12	R	RC - 1	213,230,		720	1
1	560	RC - 234		R	12	20/1	25	Α	26	20/1	12	R	RC - :	213		560	1
1	900	RC - 237,238		R	12	20/1	27	В	28	20/1	12	R	RC - 1	213		720	1
1	720	RC - 225		R	12	20/1	29	С	30	20/1	12	R	RC - :	231,233,23	5,239	900	1
2		SPARE				40/2	31	Α	32	20/1	12	R	EXIS	ring load)	720	1
-		-				-	33	В	34	20/1	12	R	EXIS	FING LOAD)	900	1
2		SPARE					35	С	36	20/1	12	R	EXIS	FING LOAD)	560	1
-		-					37	Α	38	20/1	12	R	EXIS	ring load)	900	1
1	560	RC - 202,206		R	12	20/1	39	В	40	20/1	12	R	EXIS	ring load)	560	1
1	900	EXISTING LOAD)	R	12	20/1	41	С	42	20/1	12	R	EXIS	ring load)	720	1
	12,360	Subtotal												Subtotal		14,300	
N	I.E.C.	Load Type	Co	nn.	Fct.	Divers	sity	N	I.E.C					Conn.	Fct.	Diversity	
2	20.44	(R) Recept.	26,	160		18,0	80	21	0.20	(a) (L) Lighting]		0	125%	6 0	
2	20.56	(K) Kitchen		0	100%	0				(E	L) Ext. L	.tg.		0	125%	6 0	
2	20.60	(C) Cooling		0	0%	0		6	20.14	4 ∥(E) Elevato	ors		0	100%	6 o	
2	20.60	(H) Heating		0	0%	0				(v	VH) Wate	er Ht.		0	100%	6 0	
2		(F) Fans		0	100%	0			220.5		IT) Lrg. N			0	125%		
		(M) Misc.	5	00	100%	500)				SP) Sub F			0	100%	6 0	
63		(W) Welders		0	100%	0		2	20.8	``	X) Existi			0	125%	6 0	
		Total Connected Total Load (Diver			26,660 18,580			4.1 1.6	AMF AMF		Locatio	on of P	anel:				

PA	NEL SCHEDULES GENERAL NOTES:
A.	ALL PANEL SCHEDULES SHALL BE UPDATED AT THE END OF CONSTRUCTION.

												1	0,000	AIC Rating)		
			F	Pan	elbo	ard		V 2					Х	Existing			
			•			aia		• 2						New			
	120/208	V.3-Phase,4-Wi	re	X	МСВ	225	AM	P MC	B			Sing	e			Mounting	r
		Section	Č		MLO					opper)		Doub				X Surface	9
		I -Nema Rating			MEO	220			ND. E		x		l - Thru	J		Flush	
Notes	Load (VA)			Туре	Wire	СВ	СКТ	PH	СКТ	СВ	Wire	Туре		Description		Load (VA)	Notes
					_	_	#		#					•		. ,	
1	720	RC - 241,246,24	7	R	12	20/1	1	А	2	20/1		M		DDC CONT		500	3
1	360	RC - 241,242		R	12	20/1	3	В	4	20/1	12	M		DDC CONT	ROL	500	3
1	900	RC - 243		R	12	20/1	5	С	6	60/2	_		SPAF	۲E			2
1	360	RC - DISP.CARD		R	12	20/1	7	A	8	-			-	<u></u>			-
1	900	RC - TRIAC CEN		R	12	20/1	9	В	10	30/2	_		SPAF	KE			2
1	720	RC - 201, SEC F		R	12	20/1	11	С	12	-	_		-				-
1	900	RC - 271,269,26	1	R	12	20/1	13	Α	14	30/2	_		SPAF	KE			2
1	720	RC - DISP 261		R	12	20/1	15	В	16	-	_		-				-
1	360	RC - 261 FREEZ		R	12	20/1	17	С	18	20/1	12		RC -			720	1
1	720	RC - AUTOCLA		R	12	20/1	19	А	20	20/1				MDF L6-30		360	1
1	360	RC - MAGNA CI		R	12	20/1	21	В	22	20/1				TING LOAD)	900	1
1	900	RC - MAGNA CI		R	12	20/1	23	С	24	20/1	12			WASHER		1500	1
1	360	RC - MAGNA CI	AVE	R	12	20/1	25	А	26	20/1	• —			268,265,26	4	900	1
1	900	RC - 259		R	12	20/1	27	В	28	20/1	12		RC -			720	1
1	720	RC - 264		R	12	20/1	29	С	30	30/2	_		SPAF	RE			2
1	900	RC - 260,262,26	4	R	12	20/1	31	А	32	-	_		-				-
2	720	SPARE				30/2	33	В	34	40/2	_[SPAF	RE			2
-	360	-				-	35	С	36	-	_		-				-
1	720	WALLPACKS		EL	10	30/2	37	А	38	30/2	_		SPAF	RE			2
-	-	-		-	10	-	39	В	40	-	_		-				-
1	900	EXISTING LOAD			12	20/1	41	С	42	20/1	12		EXIS	TING LOAD		360	1
	I.E.C.	Load Type		nn.	Fct.	Divers	-		N.E.C					Conn.	Fct.	Diversity	
		(R) Recept.		800		10,4	00	21	0.20	· / II ·	_) Lighting			0	125%		
		(K) Kitchen		0	100%	0				ш `	EL) Ext. L	•		720	125%)
		(C) Cooling		0	0%	0		6	520.1·		E) Elevato			0	100%		
		(H) Heating		0	0%	0					NH) Wate			0	100%		
2		(F) Fans		0	100%	0			220.5	ш `	MT) Lrg. N			0	125%		
		(M) Misc.	1,0	000	100%	1,00	00			ì `	SP) Sub F			0	100%		
63	0.11(B)	(W) Welders		0	100%	0		2	20.8	7 (I	EX) Existi	g Loac	1	0	125%	6 0	
		Total Connected Total Load (Dive			12,520 12,300			4.8 4.2	amf Amf		Locati	on of F	anel:				

PANEL SCHEDULES KEYED NOTES:

1. EXISTING BRANCH CIRCUIT SHALL REMAIN.

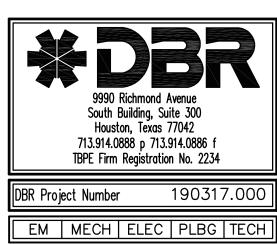
2. EXISTING BRANCH CIRCUIT SHALL BE REMOVED. EXISTING CIRCUIT BREAKER SHALL REMAIN AS SPARE.

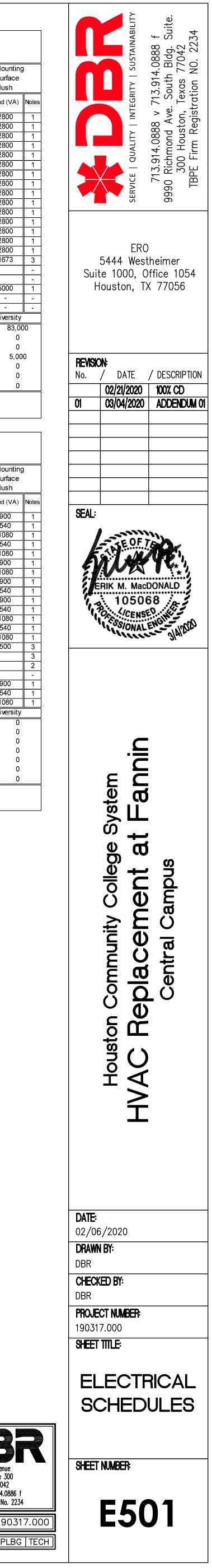
3. EXISTING BRANCH CIRCUIT SHALL BE REMOVED. PROVIDE NEW CIRCUIT/SPACE AS SHOWN.

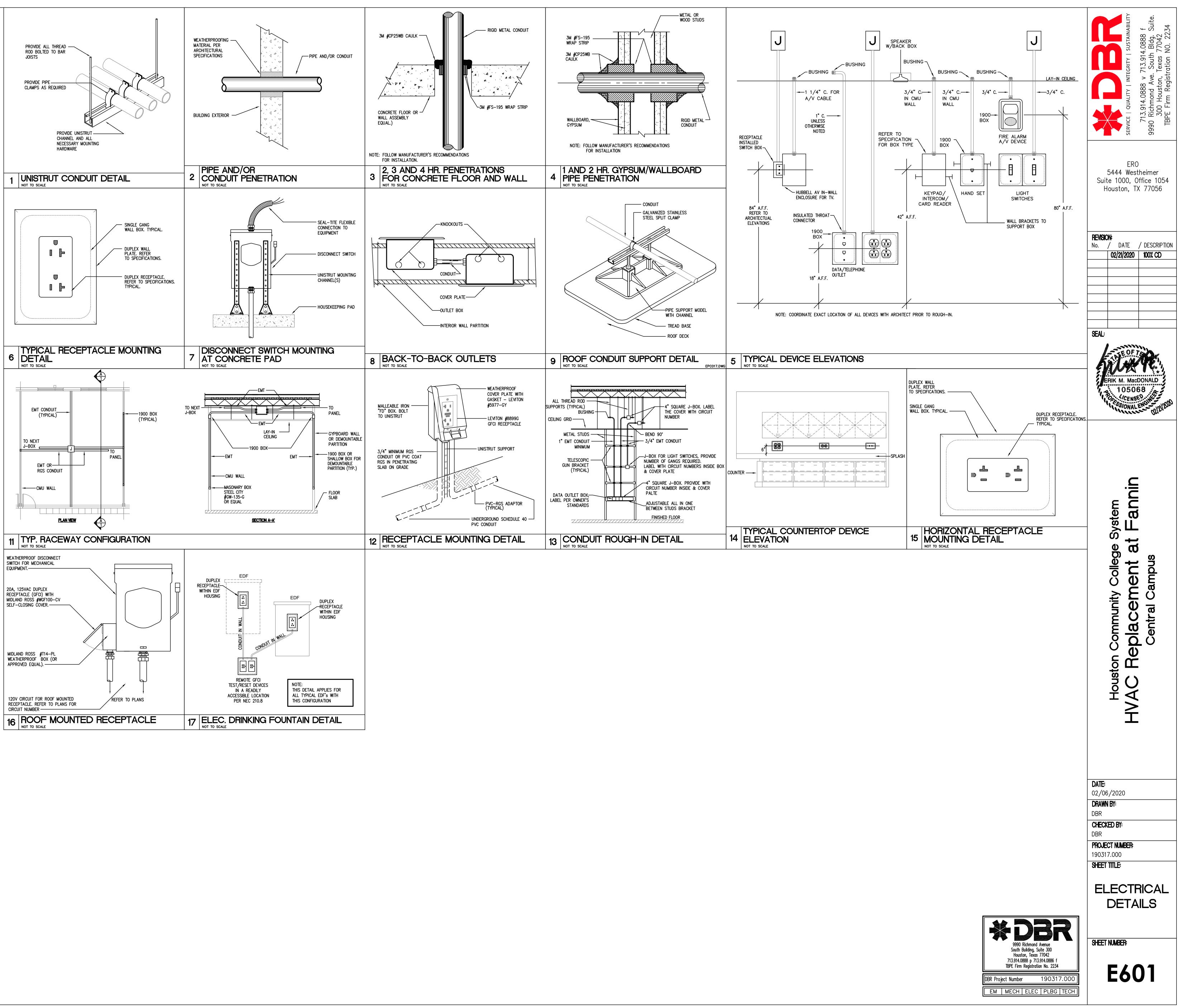
4. PROVIDE NEW CIRCUIT AS SHOWN.

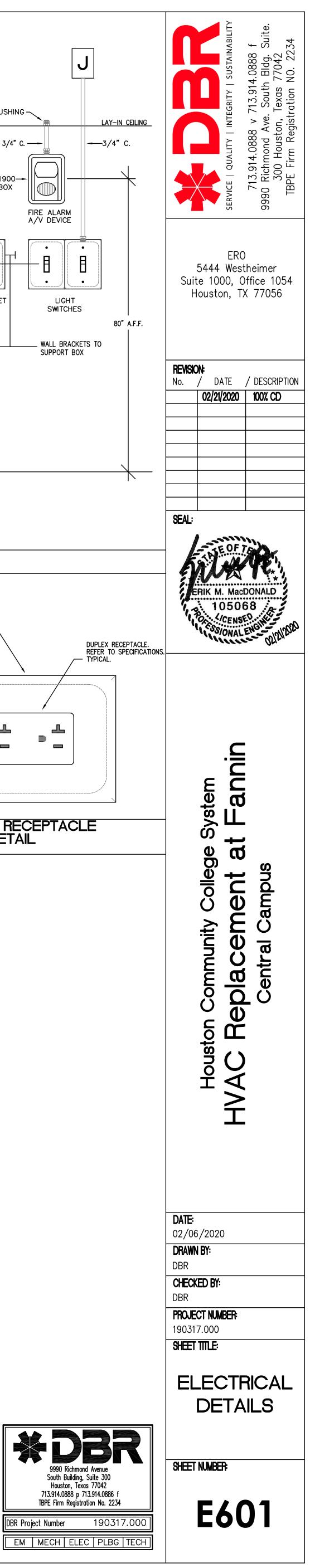
										•	6		AIC Rating	ļ	
			Pan	elbo	ard	Η	V					Х	Existing		
	077/400			MOD	-	<u> </u>					0:	1-	New		
		V.3-Phase,4-Wire		MCB	005				,		Sing				Moun
		Section	X	MLO	225				opper)		Dout				X Surfac
		-Nema Rating		1	1			ND. E		<u> </u>	reed	<u>ป - Thr</u> เ	1		Flush
Notes	Load (VA)	Description	Туре	Wire	СВ	CKT #	PH	CKT #	СВ	Wire	Туре		Description		Load (V
1	2500	LT - 1ST FLOOR	L	12	20/1	1	Α	2	20/	1 12	L	EXIS	ting load)	2800
1	2500	LT - 1ST FLOOR	L	12	20/1	3	В	4	20/	1 12	L	LT - E	EXIT 2ND		2800
1	2500	LT - 1ST FLOOR	L	12	20/1	5	С	6	20/	1 12	L	LT - E	EXTERIOR		2800
1	2500	LT - EXIT LTS 1ST F	LR L	12	20/1	7	Α	8	20/	1 12	L	LT - 1	IST FLOOF	2	2800
1	2500	EXISTING LOAD	L	12	20/1	9	В	10	20/	1 12	L	LT - 1	IST FLOOF	2	2800
1	2500	LT - LOBBY	L	12	20/1	11	С	12	20/	1 12	L	LT - 1	IST FLOOF	2	2800
1	2500	EXISTING LOAD	L	12	20/1	13	A	14	20/	1 12			ting load		2800
1	2500	LT - 2ND FLOOR	L	12	20/1	15	В	16	20/	1 12			ting load		2800
1	2500	LT - 2ND FLOOR	L	12	20/1	17	С	18	20/		L		2ND FLOO		2800
1	2500	LT - 2ND FLOOR	L	12	20/1	19	А	20	20/		L		2ND FLOO		2800
1	2500	LT - LOBBY	L	12	20/1	21	В	22	20/	1 12	L		2ND FLOO		2800
1	2500	LT - 2ND FLOOR	L	12	20/1	23	С	24	20/	1 12	L	LT - 2	2ND FLOO	R	2800
3	6055	AHU-1.1	F	12	15/3	25	А	26	20/	1 12	L		2ND FLOO		2800
-	-	5 H.P.	-	12	-	27	В	28	20/	1 12	L	LT - 2	2ND FLOO	R	2800
-	-	-	-	12	-	29	С	30	20/		L		2ND FLOO	R	2800
3	6055	AHU-1.2	F	12	15/3	31	А	32	15/3	3 12	F	SF-1			1673
-	-	5 H.P.	-	12	-	33	В	34	-	12	-	1 H.F	P.		
-	-	-	-	12	-	35	С	36	-	12	-				
3	6055	AHU-2.1		12	15/3	37	Α	38	20/3	3 12	WH	EWH	-1		5000
-	-	5 H.P.		12	-	39	В	40	-	12	-	-			-
-	-	-		12	-	41	С	42	-	12	-	-			-
Ν	I.E.C.	Load Type	Conn.	Fct.	Divers	sity	١	I.E.C) .				Conn.	Fct.	. Divers
2	20.44	(R) Recept.	0		0		21	0.20	(a)	(L) Lighting	3		66,400	125%	6 83
2	20.56	(K) Kitchen	0	100%	0					(EL) Ext. L	tg.		0	125%	6
2		(C) Cooling	0	0%	0		6	620.1·		(E) Elevato			0	100%	6
2	20.60	(H) Heating	0	0%	0					(WH) Wate	er Ht.		5,000	100%	6 5
2	20.60	(F) Fans	13,783	100%	13,7	83		220.5	5	(MT) Lrg. N	Not.		0	125%	6
	1	(M) Misc.	0	100%	0					(SP) Sub I	Panel		0	100%	6
63	0.11(B)	(W) Welders	0	100%	0		2	20.8	7	(EX) Existi	g Load	ł	0	125%	6
		Total Connected Lo Total Load (Diversif		85,183 101,783			2.5 2.5	amf Amf		Locati	on of F	anel:			

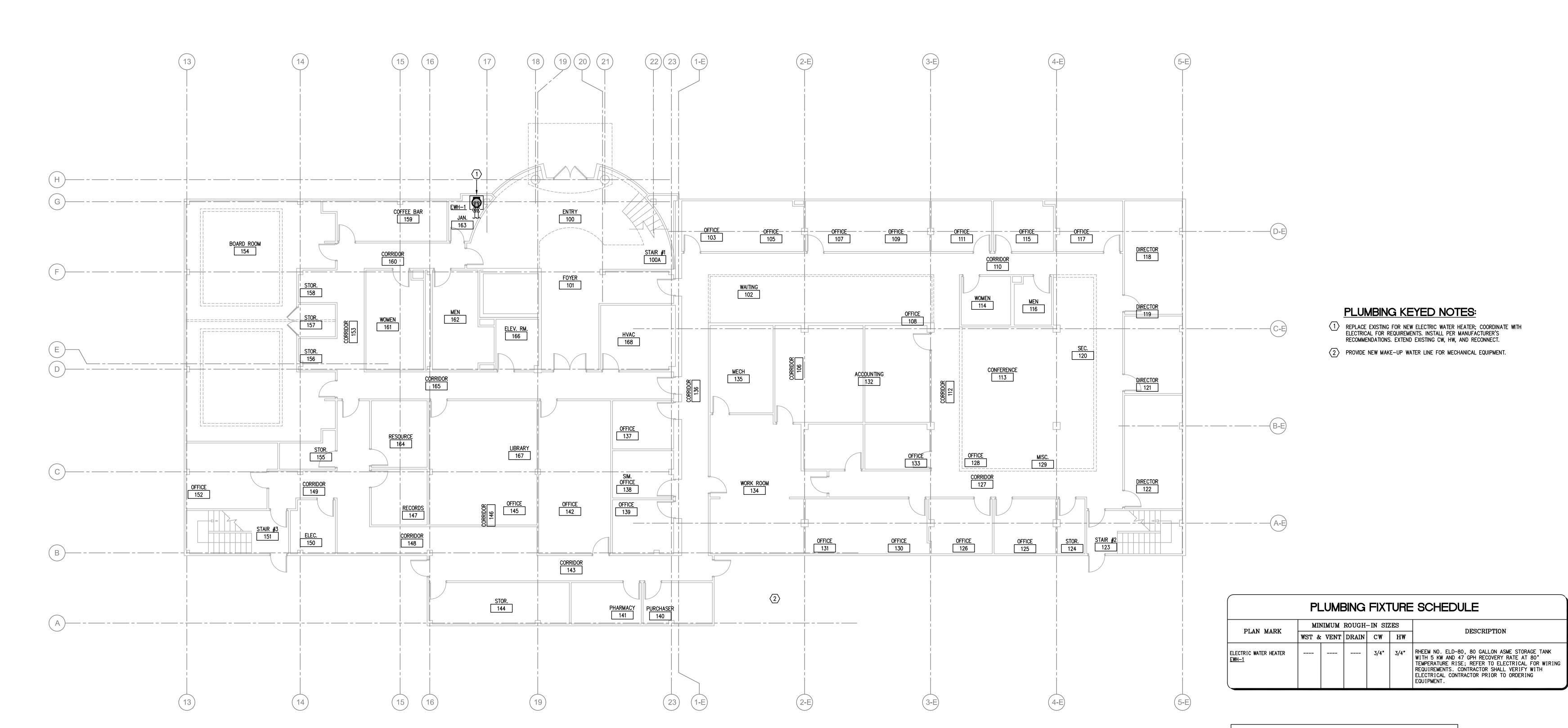
											,		1	0,000	AIC Rating		
			F	an	elbo	ard	Ľ	V1	Ε					Х	Existing		
			_						_						New		
	120/208	V.3-Phase,4-Wir	e	Х	MCB	150	AM	P MC	В				Sing	е			Mounti
		1 Section			MLO	225	AMF	P BU	S (Co	opper))		Doub	le			X Surfac
		1 -Nema Rating					ISO	GRI	ND. E	BUS		Х	Feed	l - Thru	I		Flush
Notes	Load (VA)	Description		Туре	Wire	СВ	СКТ #	ΡΗ	СКТ #	СВ		Wire	Туре		Description		Load (VA
1	540	EXISTING LOAD		R	12	20/1	1	А	2	20/1		12	R		FING LOAD		900
1	1080	EXISTING LOAD		R	12	20/1	3	В	4	20/1		12	R		FING LOAD		540
1	900	EXISTING LOAD		R	12	20/1	5	С	6	20/1		12	R		FING LOAD		1080
1	1080	EXISTING LOAD		R	12	20/1	7	А	8	20/1		12	R		FING LOAD		540
1	900	EXISTING LOAD		R	12	20/1	9	В	10	20/1		12	R		FING LOAD		1080
1	540	EXISTING LOAD)	R	12	20/1	11	С	12	20/*		12	R		ring load		900
2		SPARE				40/2	13	A	14	20/1		12	R		FING LOAD		1080
-		-				-	15	В	16	20/*		12	R		FING LOAD		900
2		SPARE				50/2	17	С	18	20/1		12	R				540
-						-	19	A	20	20/1		12	R				900
2		SPARE				30/2	21	B	22	20/1		12	R				540
-		- SPARE				-	23	C	24	20/* 20/*		12	R				1080 540
2		SPARE				20/2	25	A	26	20/		12	R		FING LOAD FING LOAD		1080
-	540	EXISTING LOAD		R	12	- 20/1	27 29	B C	28 30	20/		12 12	R M				500
1	900			R	12	20/1	29 31	A	30 32	20/	╧┢	12	IVI	SPAC		INOL	500
1	540			R	12	20/1	33	B	34	40/2	<u>-</u>			SPAF			
1	1080	EXISTING LOAD		R	12	20/1	35	C	36					-			
1	540	EXISTING LOAD		R	12	20/1	37	A	38	20/*	1 🕨	12	R	FXIST)	900
1	1080	EXISTING LOAD		R	12	20/1	39	В	40	20/*		12	R				540
1	900	EXISTING LOAD		R	12	20/1	41	C	42	20/2		12	R				1080
	I.E.C.	Load Type	Cc	nn.	Fct.	Divers	sity	N	I.E.C				L	<u> </u>	Conn.	Fct.	Diversi
2	20.44	(R) Recept.	24,	840		17,4	20	21	0.20	(a) ((L) Li	ighting			0	125%	6
2	20.56	(K) Kitchen		0	100%	0					EL)	Ext. L	tg.		0	125%	6
2	20.60	(C) Cooling		0	0%	0		6	20.1	4 ((E) E	levato	rs		0	100%	6
2	20.60	(H) Heating		0	0%	0					WH)) Wate	er Ht.		0	100%	6
2	20.60	(F) Fans		0	100%	0		:	220.5	5 ((MT)	Lrg. N	lot.		0	125%	6
		(M) Misc.	5	00	100%	500	D I					Sub F			0	100%	6
63	0.11(B)	(W) Welders		0	100%	0		2	20.8	7 ((EX)	Existi	g Load	I	0	125%	6
		Total Connected Total Load (Diver			25,340 17,920).4 9.8	AMF AMF		l	_ocatio	on of F	anel:			



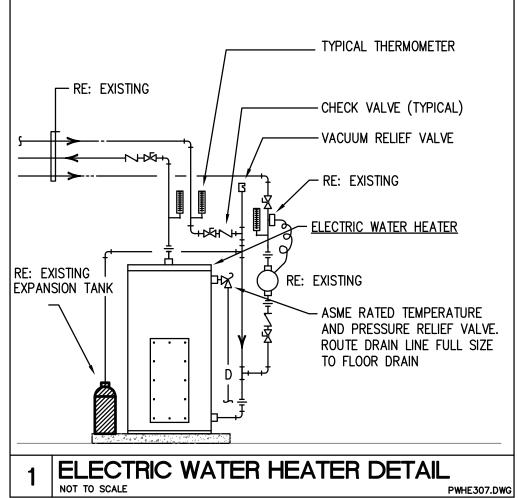




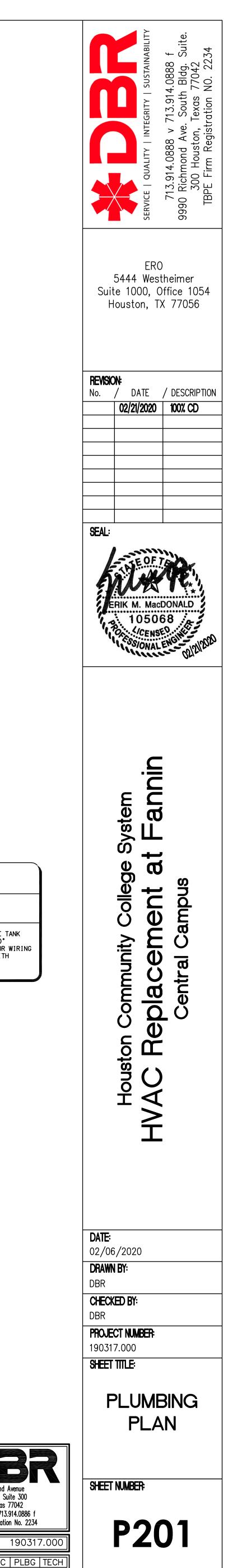




Plotted: Feb 21, 2020, 11:54 AM by user: emacdonald - Saved: 2/21/2020 by user: jram H:\19\190317.000\Drawings\0P-190317-1.dwg $\underbrace{1}_{P201} \underbrace{\text{LEVEL 1 PLUMBING PLAN}}_{1/8"=1'-0"}$







ABBREVIATIONS (NOT ALL ITEMS INDICATED APPLY TO THIS PROJECT) D

A	AIR (COMPRESSED)	
ABV	ABOVE	
A/C	AIR CONDITIONING	
AC	ALTERNATING CURRENT AIR COMPRESSOR	
ACCH	AIR COOLED CHILLER	
ACCU	AIR COOLED CONDENSING UNIT	
AD	ACCESS DOOR, AREA DRAIN	
ADJ	ADJUSTABLE	
AF		
AFC	ABOVE FINISHED CEILING ABOVE FINISHED FLOOR	
AFG	ABOVE FINISHED GRADE	
AHU	AIR HANDLING UNIT	
AL	ALUMINUM	
AMB	AMBIENT	
AP	ACCESS PANEL	
APD	AIR PRESSURE DROP	
ARI	AMERICAN REFRIGERANT INSTITUTE	
ARCH	ARCHITECT, ARCHITECTURAL	
AS	AIR SEPARATOR	
ASHRAE	AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS	
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS	
AV	ACID VENT, AIR VENT	
AVG	AVERAGE	
AWS	AMERICAN WELDING SOCIETY	
AUX	AUXILIARY	
	В	
В	BOILER	
BC	BELOW COUNTER	_
B/C	BACK OF CURB	
BFV	BUTTERFLY VALVE	
BH	BOX HYDRANT	
BLDG	BUILDING	
BM	BENCHMARK	
BOF	BOTTOM OF FOOTING	
BOF BOS	BOTTOM OF STRUCTURE	
BOF BOS BT	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK	
BOF BOS BT BTU	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT	
BOF BOS BT	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK	
BOF BOS BT BTU BV	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE	
BOF BOS BT BTU BV BWV	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE C	
BOF BOS BT BTU BV BWV	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS	
BOF BOS BT BTU BV BWV C CAB	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET	
BOF BOS BT BTU BV BWV C CAB CB	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN	
BOF BOS BT BTU BV BWV C CAB CB CD	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE	
BOF BOS BT BTU BV BWV C CAB CB	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE	
BOF BOS BT BTU BV BWV C CAB CAB CD CFM	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE	
BOF BOS BT BTU BV BWV BWV C C CAB CB CD CFM CFS	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CH	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER	
BOF BOS BT BTU BV BWV C CAB CAB CD CFM CFS CH CHW	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER	
BOF BOS BT BTU BWV BWV C CAB CD CFM CFS CHWP	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWS CI	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWS CI CIRC	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWS CI CIRC CL	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWS CI CIRC CLG	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLED WATER CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHW CHWR CHWS CI CIRC CLG CLR	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWR CLWR CLWR CLR CLR CMP	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHW CHWR CHWS CI CIRC CLG CLR	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHW CHWR CHWR CLQ CLQ CLG CLR CLMU CLQ CMU	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CONCRETE MASONRY UNIT	
BOF BOS BT BTU BV BWV C CAB CD CFN CFS CHWP CHWR CHWR CHWR CLWR CLWR CLWR CLWR CHWS CI CIRC CLR CLMP CLPI	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLED WATER PER CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWR CHUR CL CLR CLR CLP CLP CLQ CLQ CLP CLP CLP CLP CLY CHY CHY	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHILORINATED POLYVINYL CHLORIDE	
BOF BOS BTU BTU BWV BWV C CAB CD CFM CFS CHWP CHWR CI CLQ CIRC CLG CLG CLQ CLQ CLQ CLQ CLQ CLQ CLQ CLQ CLQ CD CD CLQ CD CHWP CLQ CLQ CUQ CMU CPVC CO	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELLING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHWP CHWR CHWR CLQ CLR CLR CLR CLPI CLQ CD CD CD CD CD CD CD CD CD	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHICORINATED POLYVINYL CHLORIDE CLEAN OUT CALATING CLEAN OUT CAST IRON PIPE INSTITUTE	
BOF BOS BT BTU BV BWV C CAB CD CFM CFS CHW CHWR CHWR CLQ CIRC CLG CLQ CDVC CO COL COMP CON	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLED WATER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMBINATION	
BOF BOS BT BTU BV BWV BWV C CAB CD CFM CFS CHWP CHWR CHWR CLQ CRC CLQ CLWR CLWR CLQ CDU CQU CON CON CON	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CCLSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELLING CLEAR CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMPRESSOR CONVERTER CONCRETE, CONCENTRIC	
BOF BOS BT BTU BV BWV BWV C CAB CAB CB CAB CB CB CF CF CF CF CF CHW C CF C C C C C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER POMP CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMBINATION COMBINATION COMPRESSOR CONVERTER CONCRETE, CONCENTRIC CONCRETE, CONCENTRIC	
BOF BOS BT BTU BV BWV C CAB CD CFM CFN CHWP CHWR CHWR CLQ CHWR CHUR CHWR CHUR CLQ CD CUC CLQ CDU CDU CON CONN CONN	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PER SECOND CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMBINATION COMPRESSOR CONVERTER CONCRETE, CONCENTRIC CONDENSER, CONDENSATE CONNECTION	
BOF BOS BT BTU BV BWV BWV C CAB CAB CB CB CB CB CFM CFS CFM CFS CHWP CHWP CHWP CHWR CHWP CHWR CHWR CHWR CHWR CHWR CHWR CHWR CHWR	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CLSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN COLUMN COMBINATION COMPRESSOR CONVERTER CONCRETE, CONCENTRIC CONNECTION CONTINOUS, CONTINUATION	
BOF BOS BT BTU BTU BWV BWV C C C C C C C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER CHILLED WATER CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAR COURUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN COURESSOR CONVERTER CONCRETE, CONCENTRIC CONDENSER, CONTINUATION CONTROLLER, CONTRACTOR	
BOF BOS BT BTU BTU BWV BWV C C CAB C CAB C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CICCULATING CENTERLINE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMBINATION COMBINATION CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR	
BOF BOS BT BTU BTU BWV BWV C C CAB C CAB C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CCLSIUS CAEISUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN COLUMN COMBINATION COMBINATION CONVERTER CONCRETE, CONCENTRIC CONTROLLER, CONTRACTOR COMPUTER ROOM A/C UNIT CATHODE RAY TUBE	
BOF BOS BT BTU BTU BWV BWV C C CAB C CAB C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE C CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMBINATION COMPRESSOR CONVERTER CONCRETE, CONCENTRIC CONCRETE, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONUNCTION CONTROLLER, CONTRACTOR CONDUTER ROOM A/C UNIT	
BOF BOS BT BTU BTU BWV BWV C C CAB C CAB C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CCLSIUS CAEISUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CELING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN COLUMN COMBINATION COMBINATION CONVERTER CONCRETE, CONCENTRIC CONTROLLER, CONTRACTOR COMPUTER ROOM A/C UNIT CATHODE RAY TUBE	
BOF BOS BT BTU BTU BWV BWV C C CAB CAB C C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE C CELSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN COLUMN COMBINATION COMPRESSOR CONVERTER CONCRETE, CONCENTRIC CONCRETE, CONCENTRIC CONTOLLER, CONTRACTOR CONTOLLER, CONTRACTOR CONTOLLER, CONTRACTOR CONTOLLER, CONTRACTOR CONTOLLER, CONTRACTOR CONLER AY TUBE COOLING TOWER CATHODE RAY TUBE	
BOF BOS BTU BTU BTU BWV BWV C C CAB C C C C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE C C C C L S C C L S C S C S C S S S S S	
BOF BOS BT BTU BTU BWV BWV C C C C C C C C C C C C C C C C C C C	BOTTOM OF STRUCTURE BATH TUB, BREAK TANK BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CLSIUS CABINET CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CHILLED WATER PUMP CHILLED WATER RETURN CHILLED WATER RETURN CHILLED WATER SUPPLY CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL CHLORIDE CLEAN COLUMN COMBINATION COMPRESSOR CONVERTER CONCRETE, CONCENTRIC CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONTROLLER, CONTRACTOR CONDENSER, CONDENSATE COOLING TOWER	

D	DEPTH, DRAIN, DRYER
DB	DRY BULB
DC	DOUBLE DUCT CONSTANT VOLUME, DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DESIG	DESIGNATION
DTL	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DISC	DISCONNECT
DN	DOWN
DPR	DAMPER
DS	DOWNSPOUT, DOUBLE SUCTION
DV	DOUBLE DUCT VAV
DW	DISHWASHER
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DWP	DOMESTIC WATER PUMP
DX	DIRECT EXPANSION
	F
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
EDB	ENTERING DRY BULB
EDF	ELECTRIC DRINKING FOUNTAIN
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EFF	EFFICIENCY
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR EMERGENCY ENCLOSURE
EMERG	EMERGENCY
ENCL	ENCLOSURE
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	END SUCTION, EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE EXPANSION TANK
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EVAP	EVAPORATOR
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
EX	EXPLOSION-PROOF
EXT	EXTERNAL
EXTG	EXISTING
	_
F	FAHRENHEIT, FIRE
FBO	FURNISHED BY OTHERS
FCO	FLOOR CLEAN OUT
FCS	FLOOR CONTROL STATION
FCU	FAN COIL UNIT
FD	FLOOR DRAIN, FIRE DAMPER
FDS	FIRE DEPARTMENT SIAMESE
FDV	FIRE DEPARTMENT VALVE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FL	FLOW LINES
FLR	FLOOR
FP	FIRE PUMP
 FPT	FAN POWERED TERMINAL
FRZR	FREEZER
FS	FLOW SWITCH, FIRE SPRINKLER
FSK	FLOOR SINK
FT	FOOT, FEET
FUT	FUTURE
	•
	G
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
00	GLOBE VALVE
GLV	-
	GROUND
GLV	GROUND GALLONS PER DAY
GLV GND GPD	GALLONS PER DAY
GLV GND GPD GPH	GALLONS PER DAY GALLONS PER HOUR
GLV GND GPD GPH GPM	GALLONS PER DAY GALLONS PER HOUR GALLONS PER MINUTE
GLV GND GPD GPH GPM GSH	GALLONS PER DAY GALLONS PER HOUR GALLONS PER MINUTE GRAND SENSIBLE HEAT
GLV GND GPD GPH GPM	GALLONS PER DAY GALLONS PER HOUR GALLONS PER MINUTE

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(T)	
	Η
HB	HOSE BIBB
HD	HEAD, HUB DRAIN
HE	HEAT EXCHANGER
HF	HUMIDIFIER
HORIZ	
HP HPU	HORSEPOWER, HALON PANEL
HKP	HEAT PUMP UNIT HOUSEKEEPING PAD
HSC	HORIZONTAL SPLIT CASE
HSTAT	HUMIDISTAT
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HW	HOT WATER
HWC	HOT WATER CIRCULATOR
HWP	HEATING WATER PUMP
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IH	INFRARED HEATER
IN	INCH
INSUL	
	INTERNAL, INTERIOR
IW	INDIRECT WASTE
	J
JB	JUNCTION BOX
JP	JOCKEY PUMP
	K
KEC	
KO KVA	KNOCKOUT KILOVOLT- AMPS
KW	KILOVOLT- AMPS
	L
L	LENGTH, LAVATORY
LAT	LEAVING AIR TEMPERATURE
	LINEAR FEET
	LOCKED ROTOR AMPS
LVL	
LWB	LEAVING WET BULB
LWCO	LOW WATER CUT OFF
LWT	LEAVING WATER TEMPERATURE
	Μ
MAT	MIXED AIR TEMPERATURE
MAX	
MBTUH	THOUSAND OF BTU'S
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MI	MALLEABLE IRON
MIN	
MP	MEDIUM PRESSURE
MS	MOP SINK
MTD	MOUNTED MAKE-UP
MVD	MAKE-UP MANUAL VOLUME DAMPER
	<u>N</u>
N.C.	NORMALLY CLOSED
N.C. NFPA	NORMALLY CLOSED NATIONAL FIRE PROTECTION ASSOCIATION
	NATIONAL FIRE PROTECTION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NFPA NIC N.O. NO.	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER
NFPA NIC N.O.	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN
NFPA NIC N.O. NO.	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER
NFPA NIC N.O. NO. NTS	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE
NFPA NIC N.O. NO.	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER
NFPA NIC N.O. NO. NTS OA	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR
NFPA NIC N.O. NO. NTS OA OAF	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR OUTSIDE AIR FAN
NFPA NIC N.O. NO. NTS OA OAF OAHU	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT
NFPA NIC N.O. NO. NTS OA OAF OAHU OBD	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR OUTSIDE AIR OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT OPPOSED BLADE DAMPER
NFPA NIC N.O. NO. NTS OA OAF OAHU OBD OC	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR OUTSIDE AIR OUTSIDE AIR FAN OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT OPPOSED BLADE DAMPER ON CENTER
NFPA NIC N.O. NO. NTS OA OAF OAF OAHU OBD OC OD	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR OUTSIDE AIR OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT OPPOSED BLADE DAMPER ON CENTER OUTSIDE DIAMETER, OVERFLOW DRAIN
NFPA NIC N.O. NO. NTS OA OAF OAHU OBD OC OD OFCU	NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NUMBER NOT TO SCALE OUTSIDE AIR OUTSIDE AIR OUTSIDE AIR FAN OUTSIDE AIR FAN OUTSIDE AIR HANDLING UNIT OPPOSED BLADE DAMPER ON CENTER OUTSIDE DIAMETER, OVERFLOW DRAIN OUTSIDE AIR FAN COIL UNIT

	Р
Р	PUMP, PLUMBING EQUIPMENT
PC	PLUMBING CONTRACTOR
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP, PLANTER DRAIN
PH	PHASE, POST HYDRANT
PIV	POST INDICATOR VALVE
PLBG	PLUMBING
PNEU	PNEUMATIC
	PANEL
PNTH	PENTHOUSE
PP PPM	POLYPROPYLENE
PRI	PART PER MILLION
PRS	PRIMARY PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PT	PLUMBING TRIM
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
	Q
QTY	QUANTITY
	D
	<u> </u>
RA	RETURN AIR
RAD	REFRIGERATED AIR DRYER
RAF	RETURN AIR FAN
RAG	RETURN AIR GRILL
RAT	RETURN AIR TEMPERATURE
RCP	REFLECTED CEILING PLAN, REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RE	REFERENCE, REFER
RECIRC	RECIRCULATE
RED	REDUCER
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCING
REQD	REQUIRED
REV	REVISION, REVISE
RH	RELATIVE HUMIDITY
RHG	REFRIGERANT HOT GAS
RKVA	RUNNING KILOVOLT-AMPS
RKW	RUNNING KILOWATTS
RL	REFRIGERANT LIQUID
RLA	RUNNING LOAD AMPS
RM	ROOM, REFRIGERATION MACHINE
RPM	REVOLUTIONS PER MINUTE
RS	REFRIGERANT SUCTION
rtu	ROOFTOP UNIT
RV	RELIEF VALVE
	S
<u></u>	
S	STEAM
SA	SUPPLY AIR
SAF	SUPPLY AIR FAN
SAG	SUPPLY AIR GRILLE
SAN	SANITARY SEWER
SAR	SUPPLY AIR REGISTER
SCHED	
	SILICON CONTROLLED RECTIFIER
SD SF	STORM DRAIN
SE SEC	SEWAGE EJECTOR
SEC	SECONDARY
SECT	SECTION
SENS	SENSIBLE
SF	SQUARE FEET
SFCS	SPRINKLER FLOOR CONTROL STATION
SH	SHOWER
SHT	SHEET
SIM	SIMILAR
SK	SINK
SKVA	STARTING KILOVOLT-AMPS
SKW	STARTING KILOWATTS
SM	SHEETMETAL
SP	SUMP PUMP, STATIC PRESSURE
SPEC	SPECIFICATION
SPR	SPRINKLER
SQ	SQUARE
SS	SERVICE SINK
SSD	SUBSURFACE DRAIN
SSFU	SANITARY SEWER FIXTURE UNITS
SSSC	SOLID STATE SPEED CONTROL
STD	STANDARD
STL	STEEL
STR	STRAINER
SURF	SURFACE
SUSP SV	SUSPEND

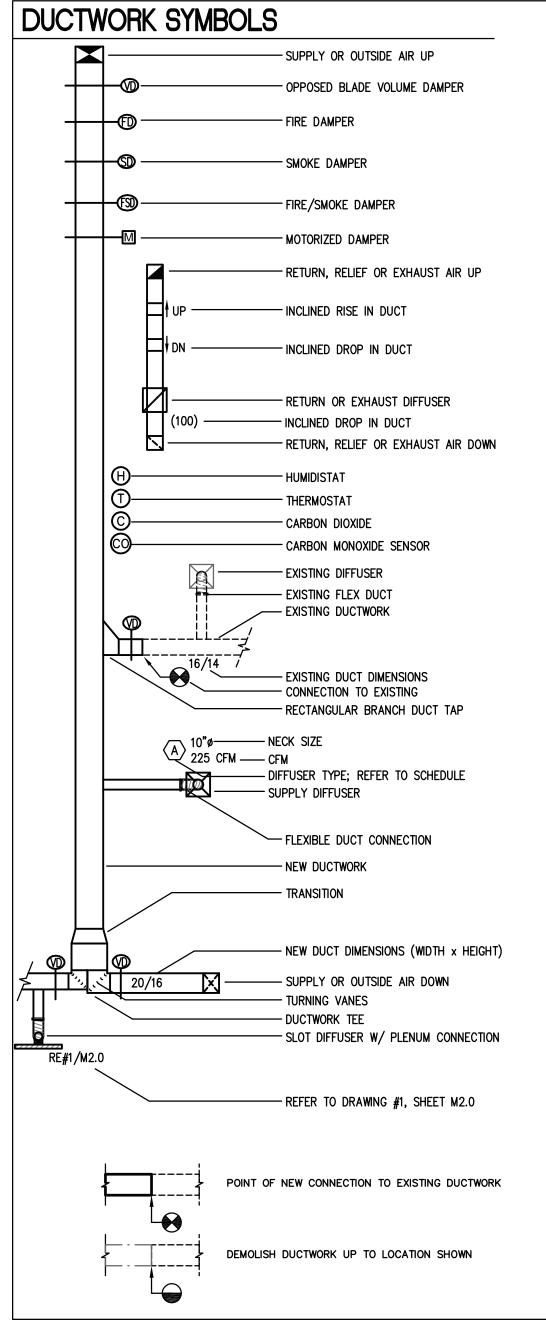
	CAL PIPING SYMBOL	C			
		.0			
CWR	CONDENSER WATER RETURN				STRAINER WITH BLOW DOWN VALVE
	CHILLED WATER SUPPLY			X	GATE VALVE, HVAC BALANCING/STOP VALVE
CHR	CHILLED WATER RETURN				GLOBE VALVE
CD	CONDENSATE DRAIN LINE				BALL VALVE
	CAP ON END OF PIPE				BALANCING VALVE WITH DIFFERENTIAL PRESSURE TAPS
ю	ELBOW UP			&	OS&Y VALVE
+Ð	ELBOW DOWN				CHECK VALVE
<u></u> +≫	VALVE IN DROP				BUTTERFLY VALVE
<u> </u>	VALVE IN RISE				TWO-WAY MODULATING CONTROL VALVE
→	DIRECTION OF FLOW				THREE-WAY MODULATING CONTROL VALVE
<u> </u>	DIRECTION OF SLOPE DOWN				
	CONCENTRIC REDUCER				SOLENOID VALVE
<u></u>	ECCENTRIC REDUCER				PRESSURE REDUCING VALVE
	TEE OUTLET UP			<u>O</u>	GAS REGULATOR
	TEE OUTLET DOWN			, F	GAS COCK
II	UNION			FCS	SPRINKLER FLOOR CONTROL STATION
	FLANGE			<u>+</u> ¬	MANUAL AIR VENT
— X —	PIPE ANCHOR			<u>_</u>	AUTOMATIC AIR VENT
<u> </u>	EXPANSION JOINT			<u> </u>	T&P RELIEF VALVE
	PRESSURE AND TEMPERATURE TAP				
—₽	FLOW VENTURI				PRESSURE GAUGE WITH GAUGE COCK
f	VACUUM BREAKER			8	STEAM TRAP
Ę	VACUUM RELIEF VALVE				
->222>-	BACKFLOW PREVENTOR				FLEXIBLE CONNECTION
Π	THERMOMETER				
<u> </u>	CIRCULATING PUMP				
TENDEDA	T			VORK SYME	OLS
	TURE CONTROL	-		1	SUPPLY OR OUTSIDE AIR UP
	TURE CONTROL COMPRESSOR	4			SUFFLI ON OUTSIDE AIN OF
TRENCH		4		+	OPPOSED BLADE VOLUME DAMPER
TRANSFE		4			
	YNAMIC HEAD	4		+®	FIRE DAMPER
BLK THRUST		4			
TRAP PR		4			SMORE DAMPER
		4			FIRE/SMOKE DAMPER
	TATIC PRESSURE	4			
		4		<u>+</u> M	MOTORIZED DAMPER
P TYPICAL		-			RETURN, RELIEF OR EXHAUST AIR UP
	U				
URINAL					
) UNDER C	UT DOOR				
UNDERGF	ROUND				INCLINED DROP IN DUCT
UNIT HE	ATER				
UNDERW	RITERS LABORATORIES, INC.				RETURN OR EXHAUST DIFFUSER
	NOTED OTHERWISE			(100) —	INCLINED DROP IN DUCT
- UNDERFL					RETURN, RELIEF OR EXHAUST AIR DOWN
S UNDERSL		1			ALTONY, ALLE ON LAHAUST ANY DUNN
		1		H	HUMIDISTAT
	V			D	THERMOSTAT
VOLT, VE	NT			©	CARBON DIOXIDE
VOLT- A	MPERE				CARBON MONOXIDE SENSOR
VACUUM]			
VARIABLE	E AIR VOLUME]			EXISTING FLEX DUCT
VALVE B	OX, VACUUM BREAKER]			
VITRIFIED	CLAY PIPE]			
VOLUME	DAMPER]			
VELOCITY]			/ EXISTING DUCT DIMENSIONS
t vertical]			CONNECTION TO EXISTING
VARIABLE	FREQUENCY DRIVE	1			RECTANGULAR BRANCH DUCT TAP
VALVE IN	I BOX	1		10"ø—	NECK SIZE
VALVE O	N VERTICAL	1			FM —— CFM
VACUUM		1			DIFFUSER TYPE; REFER TO SCHEDULE
	E AIR VOLUME REHEAT	1			SUPPLY DIFFUSER
VENT TH		1			
		1			FLEXIBLE DUCT CONNECTION
	W				NEW DUCTWORK
WATT, W	ASTE, WIDTH, WASHER				TRANSITION
WITH					
			<u> </u>	4/	
) WITHOUT		1 1			
O WITHOUT WET BUL	В		\square		

WALL CLEAN OUT WCO WALL HYDRANT I WH WATER METER WM WEATHERPROOF WP WATER PRESSURE DROP WPD WELDED WIRE FABRIC WWF WATERTIGHT, WEIGHT WT YARD HYDRANT ZONE Ιz

WC

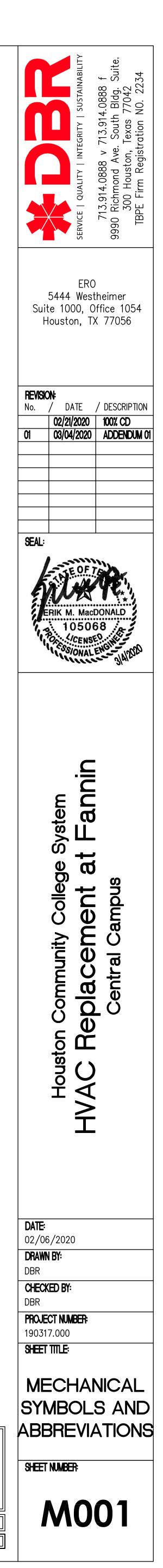
WATER CLOSET

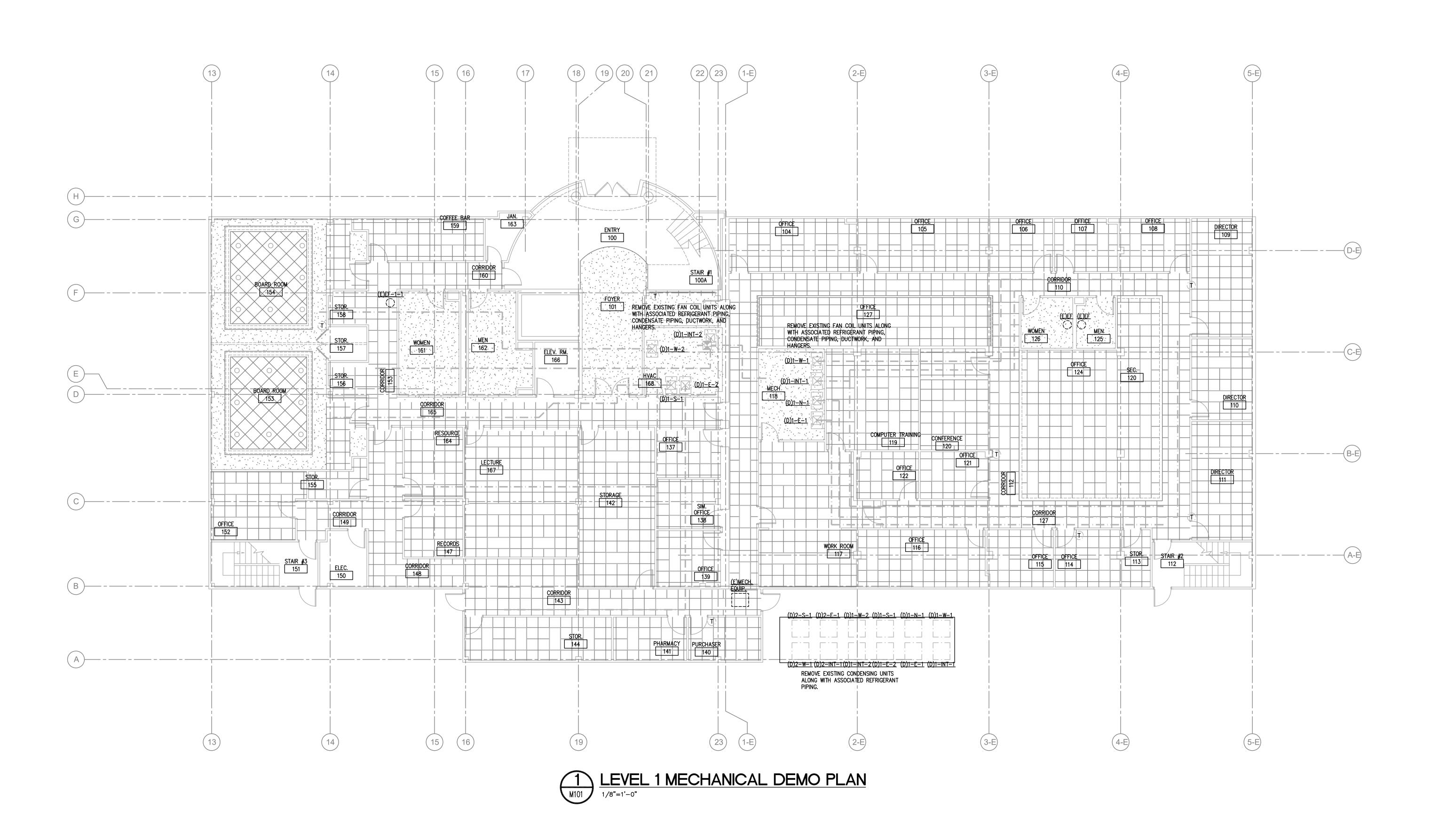
SANITARY VENT

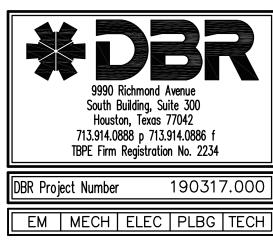


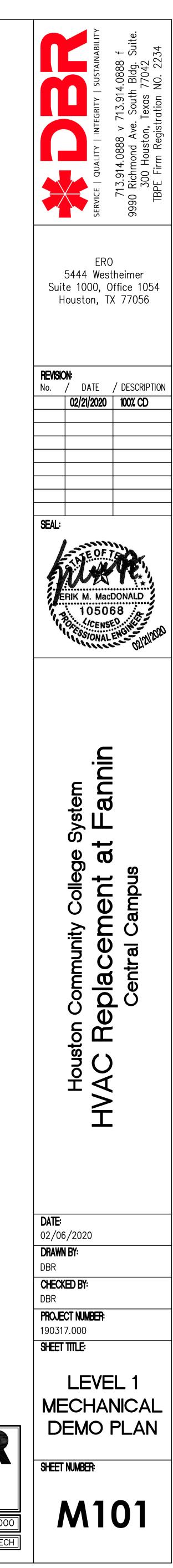
1.	PIPING AND DUCTWORK SHOWN ON PLANS ARE SCHEMATIC ONLY. COORDINATE WITH OTHER TRADES FOR PIPING AND DUCTWORK ROUTING. OFFSET AND RUN PIPING DUCTWORK INSIDE THE STRUCTURE IF REQUIRED. PROVIDE ALL NECESSARY PIPING, DUCTWORK, FITTING, INSULATION, AND OTHER ACCESSORIES IN ORDER TO COMPLETE THE INSTALLATIONS.
2.	CONTRACTOR SHALL COORDINATE WITH STRUCTURAL CONDITIONS AT THE SITE PRIOR TO INSTALLATION OF EQUIPMENT, PIPING OR DUCTWORK AND PROVIDE ALL CLEARANCES AS REQUIRED.
3.	CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR FOR ALL ELECTRICAL POWER REQUIREMENTS.
4.	EQUIPMENT SIZES, DIMENSIONS, AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE MANUFACTURER DRAWINGS AND CUT-SHEETS BEFORE FABRICATING OF DUCTWORK, PIPING, OR POURING OF CONCRETE HOUSEKEEPING PADS.
5.	MECHANICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL OUTSIDE AIR INTAKES TO MAINTAIN 10 FEET DISTANCE BETWEEN OUTSIDE AIR INTAKES AND ANY EXHAUST AIR OUTLET, FLUES OR PLUMBING VENTS. COORDINATE WITH PLUMBING CONTRACTOR AND OTHER TRADES.
6.	EXACT LOCATIONS OF MECHANICAL EQUIPMENT, GRILLES, AND DAMPERS SHALL BE FIELD COORDINATED WITH OTHER TRADES TO AVOID CONFLICTS AND ALLOW ADEQUATE CLEARANCES.
7.	INSTALL FAN POWERED TERMINAL UNITS AND SINGLE INLET VAV BOXES TO ENSURE ACCESS PANELS ARE NOT BLOCKED. ACCESS FOR SERVICE MUST BE PROVIDED PRIOR TO INSALLATION.
8.	DUCT SIZES SHOWN ON PLANS ARE CLEAR INSIDE DIMENSIONS.
9.	ALL MEDIUM AND LOW PRESSURE DUCTWORK AND ASSOCIATED ACCESSORIES SHALL BE CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS FOR MEDIUM AND LOW PRESSURE DUCTWORK.
10.	PROVIDE INSULATION FOR ALL DUCTWORK AND PIPING THAT MEETS 2015 IECC AS SPECIFIED IN SECTION 230713 AND 230700
11.	FASTEN AND SEAL ALL DUCTWORK JOINTS, LONGITUDINAL AND TRAVERSE SEAMS AND CONNECTIONS PER 2012 IMC SECTION 603.9. DUCT SEALANT SHALL BE INSPECTED PRIOR TO DUCTWORF BEING INSULATED.
12.	DIVISION 23 MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO ACTUAL INSTALLATION OF TEMPERATURE SENSORS AND HUMIDITY SENSORS.
13.	PROVIDE YOUNG'S REGULATOR OPERATOR FOR SPIN-IN CONNECTIONS AND VOLUME DAMPERS LOCATED OVER GYPSUM CEILINGS. TYPICAL. RE: DETAIL 9/M501.
14.	PROVIDE RECTANGULAR BRANCH DUCT TAP FOR ALL RECTANGULAR DUCT CONNECTIONS TO RECTANGULAR DUCT TRUNKS. TYPICAL. RE: DETAIL 29/M501.
15.	PROVIDE TURNING VANES IN ALL 90 DEGREE ELBOWS CONSTRUCTED TO MEET THE LATEST SMACNA STANDARDS.
16.	UPON SUBSTANTIAL COMPLETION, CONTRACTOR SHALL PROVIDE TO OWNER A COMPLETE SET OF SPARE BELTS AND A COMPLETE CHANGE OF FILTERS IN THE CARTONS FOR ALL NEW AIR HANDLING UNITS.
17.	COORDINATE LOCATIONS OF FLOOR, ROOF, AND WALL OPENINGS WITH ARCHITECT.
18.	SHALL MATCH ADJACENT ARCHITECTURAL SURFACE. CONTRACTOR SHALL COORDINATE COLOR WITH ARCHITECT.
19.	NO PIPE HANGERS SHALL BE SPACED MORE THAN $10^{2}-0^{7}$ O.C. COMPLY WITH PIPE SPACING AS SPECIFIED IN THE PIPING SUPPORT SPECIFICATIONS.
20.	ALL CHILLED WATER PIPING LOCATED OUTSIDE OF BUILDING TO BE INSULATED AND JACKETED TO RESIST UV-EXPOSURE AND WEATHERING.
21. 1	CONTRACTOR SHALL PROVIDE ALL NECESSARY TESTING AND BALANCING FOR THIS PROJECT, REFER TO SECTION 230593 FOR SPECIFICATIONS, AIR BALANCE SHALL BE REQUIRED FOR ALL AREAS WITHIN SCOPE OF WORK TO MEET DESIGN CFM AND MAINTAIN THE SETPOINT TEMPERATURE.
22.	CONTRACTOR SHALL PROVIDE AND COORDINATE CHEMICAL TREATMENT SCHEDULES WITH OWNER.

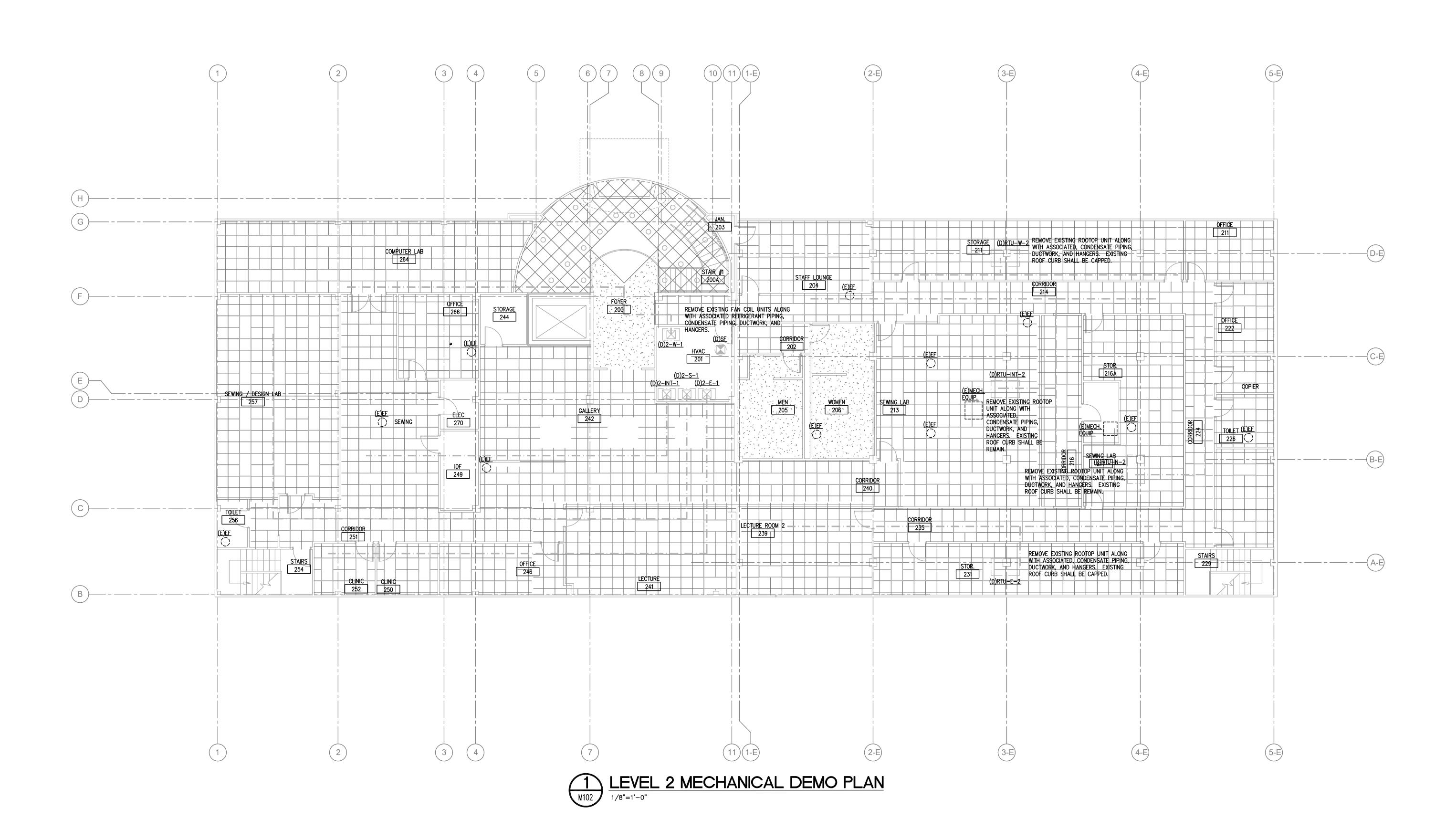




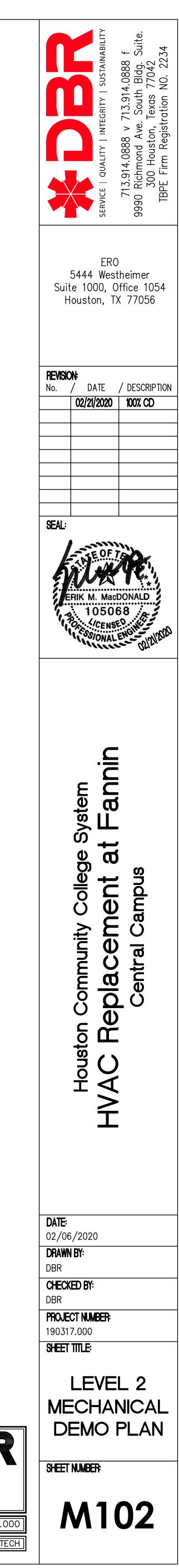


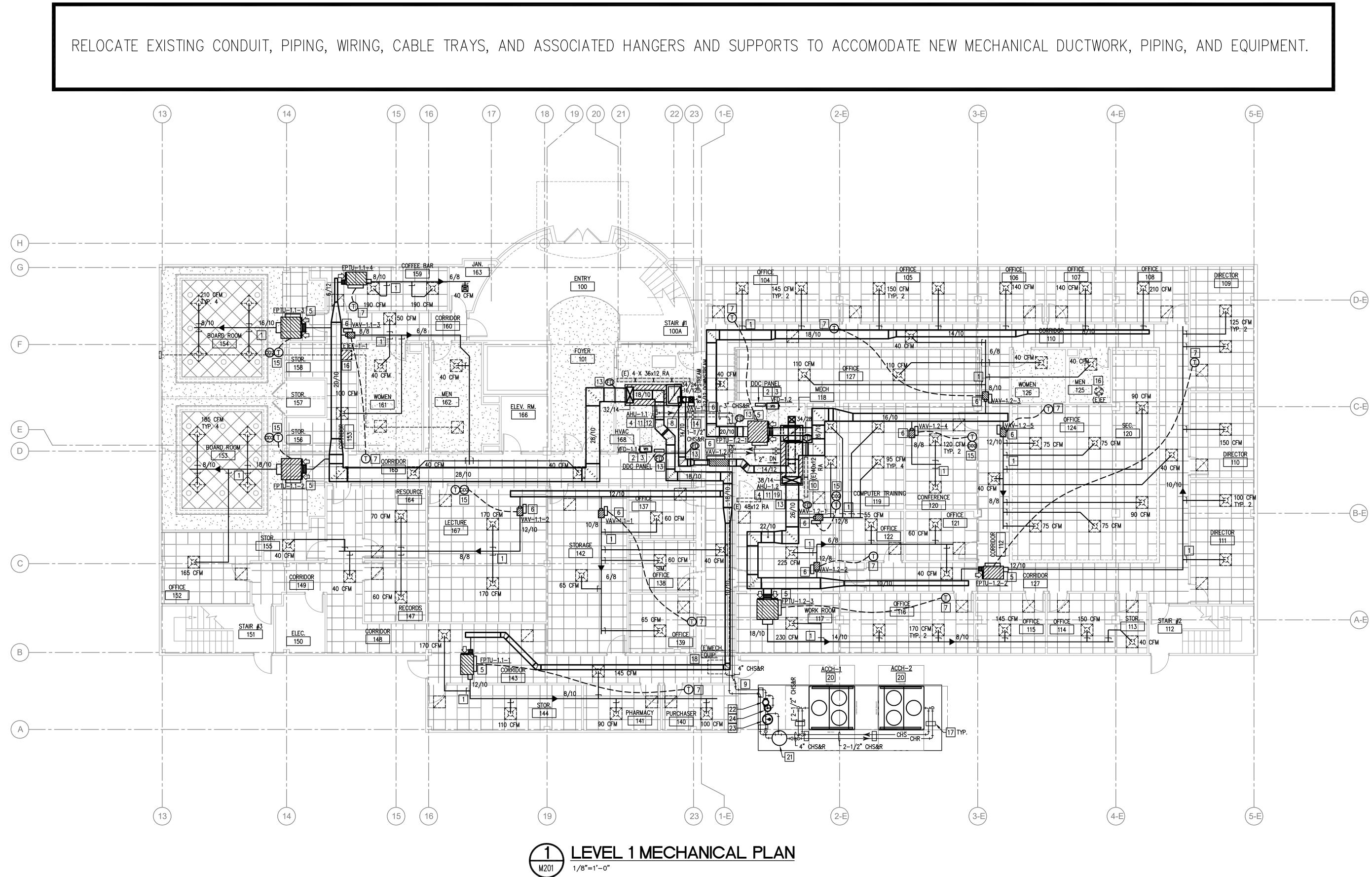












- 2. ROUND DUCTS FROM LOW PRESSURE SUPPLY MAINS TO DIFFUSERS SHALL BE SIZED PER TABLE ON SHEET. SWITCH OUT EXISTING DIFFUSERS TO GET MINIMUM NECK SIZE. PROVIDE NEW DIFFUSERS TO MATCH EXISTING TYPE IF NOT AVAILABLE. MECHANICAL KEYED NOTES:
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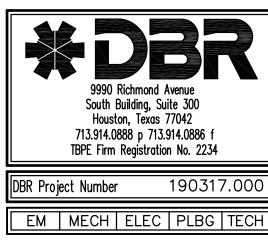
MECHANICAL GENERAL NOTES:

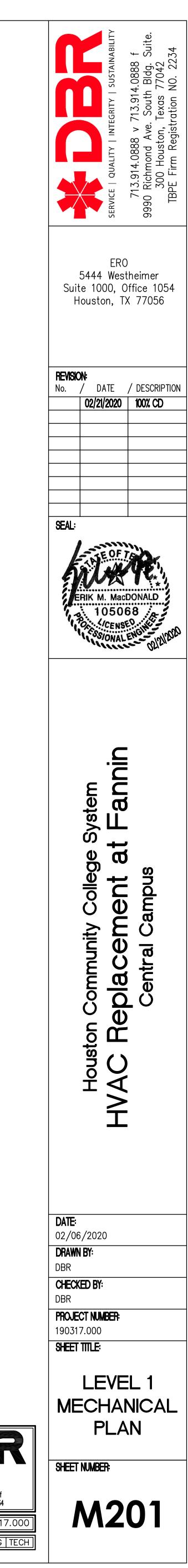
1. REFER TO MO01 FOR MECHANICAL GENERAL NOTES.

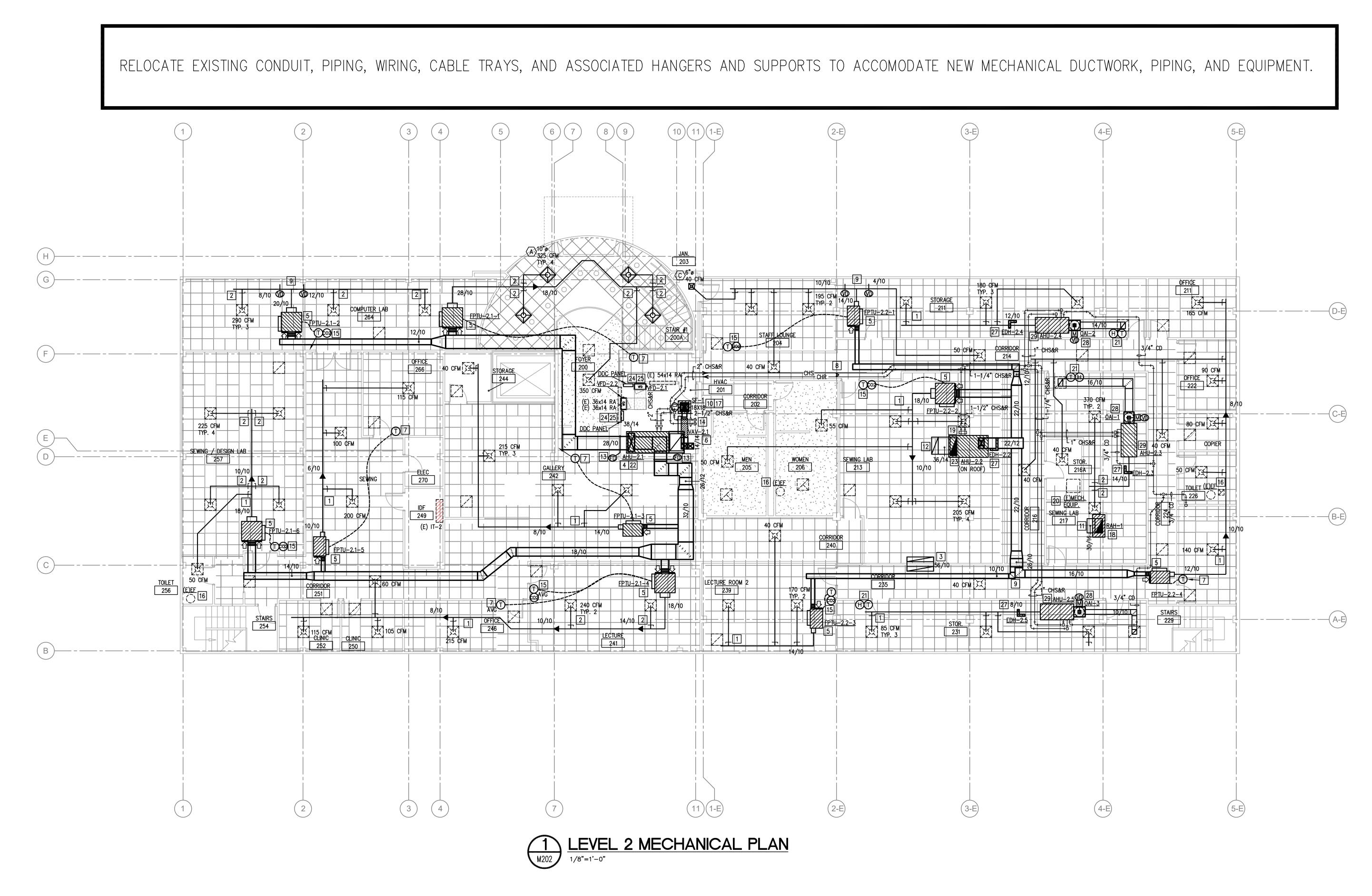
- 2 PROVIDE NEW VARIABLE FREQUENCY DRIVE FOR ASSOCIATED MECHANICAL EQUIPMENT AS SHOWN. CONTRACTOR TO FIELD VERIFY FINAL LOCATION AND INSTALL VFD.
- 3 PROVIDE NEW DDC PANEL IN MECHANICAL ROOM. CONTRACTOR TO FIELD VERIFY FINAL LOCATION OF DDC PANEL.
- 4 PROVIDE 1" CONDENSATE DRAIN LINE FROM AHU TO NEAREST FLOOR DRAIN. RE: DETAIL 15/M501.
- 5 PROVIDE AND INSTALL FAN POWERED TERMINAL UNIT AND DUCTWORK AT APPROXIMATE LOCATION SHOWN. SUPPORT UNIT FROM STRUCTURE ABOVE. RE: DETAIL 4/M501.

- 6 PROVIDE AND INSTALL VARIABLE AIR VOLUME BOX AND DUCTWORK AT APPROXIMATE LOCATION SHOWN. SUPPORT UNIT FROM STRUCTURE ABOVE. RE: DETAIL 5/M501.
- 7 PROVIDE WALL MOUNTED TEMPERATURE SENSOR FOR ASSOCIATED MECHANICAL EQUIPMENT AT LOCATION SHOWN. TYPICAL. COORDINATE WITH ARCHITECT FOR FINAL LOCATION AND MOUNTING HEIGHTS.
- 8 ROUTE OUTSIDE AIR DUCT UP THROUGH FLOOR TO LEVEL ABOVE. SEE PLAN FOR SIZE.
- 9 ROUTE CHILLED WATER SUPPLY AND RETURN THROUGH EXTERIOR WALL AT APPROXIMATE LOCATION SHOWN. RE: DETAIL 24/M501.
- 10 RELOCATE EXISTING TWO 40X12 RETURN AIR OPENINGS WITH FIRE DAMPER TO LOCATION SHOWN.
- 11 PROVIDE NEW AIR HANDLING UNIT AS SHOWN AND SCHEDULED. RE: M401 FOR SCHEDULE. INSTALL NEW UNIT WITH CLEARANCE FOR UNIT SERVICE AS RECOMMENDED BY AHU MANUFACTURER. ROUTE NEW 1" CONDENSATE DRAIN PIPE TO FLOOR DRAIN AS SHOWN. PROVIDE NEW 4" THICK HOUSEKEEPING PAD AS REQUIRED FOR NEW AHU FOOTPRINT.
- 12 PROVIDE NEW MIXING BOX PLENUM FULL SIZE OF UNIT AND 30" DEEP. PROVIDE NEW OUTSIDE AIR DUCTWORK AS SHOWN. ROUTE 12" X 12" OUTSIDE AIR DUCT FROM VAV BOX AND TAP INTO BACK OF MIXING BOX PLENUM. TRANSITION AS REQUIRED. PROVIDE 36" X 24" RETURN AIR DUCT ON TOP OF MIXING BOX PLENUM. PROVIDE MINIMUM RETURN AIR DUCTWORK REQUIRED TO INSTALL MOTORIZED DAMPER AND VOLUME DAMPER.
- 13 PROVIDE FIRE DAMPER IN DUCT AT WALL PENETRATION. RE: DETAIL 28/M501.
- 14 ROUTE CHS&R PIPING UP THROUGH FLOOR TO LEVEL ABOVE.
- 15 PROVIDE WALL MOUNTED TEMPERATURE AND CARBON DIOXIDE SENSOR FOR ASSOCIATED MECHANICAL EQUIPMENT AT LOCATION SHOWN. TYPICAL. COORDINATE WITH ARCHITECT FOR FINAL LOCATION AND MOUNTING HEIGHTS.
- [16] EXISTING EXHAUST FAN TO REMAIN. EXHAUST FAN SHALL BE INTEGRATED INTO NEW ENERGY MANAGEMENT AND CONTROL SYSTEM.
- 17 PROVIDE PIPE SUPPORT AT APPROXIMATE LOCATION SHOWN. TYPICAL. RE: DETAIL 23/M501.
- [18] EXISTING CONDENSING UNIT SHALL REMAIN.
- 19 PROVIDE NEW MIXING BOX PLENUM FULL SIZE OF UNIT AND 32" DEEP. PROVIDE NEW OUTSIDE AIR DUCTWORK AS SHOWN. ROUTE 14" X 12" OUTSIDE AIR DUCT FROM VAV BOX AND TAP INTO BACK OF MIXING BOX PLENUM. TRANSITION AS REQUIRED. PROVIDE 34" X 28" RETURN AIR DUCT ON TOP OF MIXING BOX PLENUM. PROVIDE MINIMUM RETURN AIR DUCTWORK REQUIRED TO INSTALL MOTORIZED DAMPER AND VOLUME DAMPER.
- 20 PROVIDE AIR COOLED CHILLER AS SCHEDULED. ROUTE REFRIGERANT RELIEF 20 FT FROM DOOR OPENINGS. RE: DETAIL 19/M501.
- 21 PROVIDE 180 GALLON MINIMUM VOLUME TANK FOR CHILLED WATER SYSTEM. TACO BTL0180 OR EQUAL. RE: DETAIL 20/M501.
- 22 PROVIDE TACO 4900ADR AIR/DIRT SEPARATOR WITH REMOVABLE COVER OR APPROVED EQUAL FOR CHILLED WATER SYSTEM AT LOCATION SHOWN. RE: DETAIL 21/M501.
- 23 PROVIDE FULL ACCEPTANCE CAPTIVE AIR PRE-CHARGED BLADDER TYPE EXPANSION TANK FOR CHILLED WATER SYSTEM AT LOCATION SHOWN. MINIMUM 23 GAL. VOLUME. TACO CA90 OR EQUAL. RE: DETAIL 21/M501.
- 24 PROVIDE NEW CHEMICAL TREATMENT FEEDER FOR CHILLED WATER SYSTEM AT LOCATION SHOWN. RE: DETAIL 22/M501.

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MIN. DUCT SIZE	<u>CFM</u>	
6 " ø	0–120	
8"ø	125-220	
10 " ø	225-340	
12 " ø	345-500	



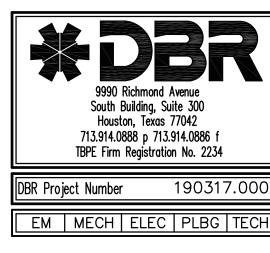


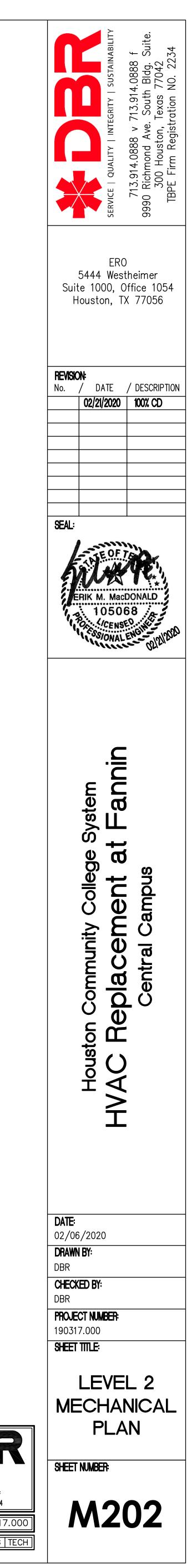


- MECHANICAL GENERAL NOTES: 1. REFER TO MOO1 FOR MECHANICAL GENERAL NOTES.
- 2. ROUND DUCTS FROM LOW PRESSURE SUPPLY MAINS TO DIFFUSERS SHALL BE SIZED PER TABLE ON SHEET. SWITCH OUT EXISTING DIFFUSERS TO GET MINIMUM NECK SIZE. PROVIDE NEW DIFFUSERS TO MATCH EXISTING TYPE IF NOT AVAILABLE.

- MECHANICAL KEYED NOTES:
 Image: Image:
- 2 PROVIDE RECTANGULAR TAP TO ROUND TRANSITION FOR ROUND DUCT CONNECTIONS TO RECTANGULAR DUCT OF SAME HEIGHT OR SHORTER. TYPICAL. RE: DETAIL 7/M501.
- 3 PROVIDE RETURN AIR BOOT; SIZE AS SHOWN. RE: DETAIL 1/M401.
- 4 PROVIDE 1" CONDENSATE DRAIN LINE FROM AHU TO NEAREST FLOOR DRAIN. RE: DETAIL 15/M501.
- 5 PROVIDE AND INSTALL FAN POWERED TERMINAL UNIT AND DUCTWORK AT APPROXIMATE LOCATION SHOWN. SUPPORT UNIT FROM STRUCTURE ABOVE. RE: DETAIL 4/M501.
- 6 PROVIDE AND INSTALL VARIABLE AIR VOLUME BOX AND DUCTWORK AT APPROXIMATE LOCATION SHOWN. SUPPORT UNIT FROM STRUCTURE ABOVE. RE: DETAIL 5/M501.
- 7 PROVIDE WALL MOUNTED TEMPERATURE SENSOR FOR ASSOCIATED MECHANICAL EQUIPMENT AT LOCATION SHOWN. TYPICAL. COORDINATE WITH ARCHITECT FOR FINAL LOCATION AND MOUNTING HEIGHTS.
- 8 PROVIDE 2" CHILLED WATER BYPASS WITH 2-WAY MODULATING CONTROL VALVE AS SHOWN. VALVE SHALL BE SIZED FOR MINIMUM CHILLER FLOW RATE.
- 9 INSTALL DUCTWORK TEE AS SHOWN. RE: DETAIL 6/M501.
- PROVIDE FIRE DAMPER IN DUCT AT FLOOR PENETRATION. RE: DETAIL 29 & 30/M501. PROVIDE ELBOW AT RELIEF AIR DUCT. COVER OPENING WITH 1/2" HARDWARE CLOTH. ROUTE RELIEF AIR DUCT UP THROUGH ROOF TO RELIEF HOOD. PROVIDE BAROMETRIC DAMPER IN VERTICAL SECTION OF RELIEF AIR DUCT. REFER TO PLAN FOR DUCT SIZE.
- 12 PROVIDE ELBOW AT RETURN AIR DUCT. COVER OPENING WITH 1/2" GALVANIZED
- HARDWARE CLOTH. REFER TO PLAN FOR SIZE. 13 PROVIDE FIRE DAMPER IN DUCT AT WALL PENETRATION. RE: DETAIL 28 & 30/M501. 14 CHS&R PIPING FROM FLOOR BELOW.
- PROVIDE WALL MOUNTED TEMPERATURE AND CARBON DIOXIDE SENSOR FOR ASSOCIATED MECHANICAL EQUIPMENT AT LOCATION SHOWN. TYPICAL. COORDINATE WITH ARCHITECT FOR FINAL LOCATION AND MOUNTING HEIGHTS.
- 16 EXISTING EXHAUST FAN TO REMAIN. EXHAUST FAN SHALL BE INTEGRATED INTO NEW ENERGY MANAGEMENT AND CONTROL SYSTEM.
- 17 PROVIDE ROOF-MOUNTED OUTSIDE AIR SUPPLY FAN AS SCHEDULED. MOUNT FAN ON PRE-FABRICATED ROOF CURB. CONNECT OUTSIDE AIR DUCT TO FAN OUTLET AND ROUTE DOWN THROUGH ROOF TO ASSOCIATED AHU'S AS SHOWN. REFER TO PLAN FOR SIZE. PROVIDE TRANSITIONS AS REQUIRED. RE: DETAIL 12/M501.
- PROVIDE ROOF-MOUNTED RELIEF AIR HOOD AS SCHEDULED. MOUNT HOOD ON PRE-FABRICATED ROOF CURB. CONNECT RELIEF AIR DUCT TO HOOD INLET AND ROUTE DOWN THROUGH ROOF. REFER TO PLAN FOR SIZE. PROVIDE TRANSITIONS AS REQUIRED. RE: DETAIL 11/M501.
- 19 PROVIDE PIPE SUPPORT AT LOCATION SHOWN. TYPICAL. RE: DETAIL 18/M501.
- 20 EXISTING CONDENSING UNIT SHALL REMAIN.
- 21 PROVIDE WALL MOUNTED TEMPERATURE AND HUMIDITY SENSOR FOR ASSOCIATED MECHANICAL EQUIPMENT AT LOCATION SHOWN. TYPICAL. COORDINATE WITH ARCHITECT FOR FINAL LOCATION AND MOUNTING HEIGHTS.
- PROVIDE NEW AIR HANDLING UNIT AS SHOWN AND SCHEDULED. RE: M401 FOR SCHEDULE. INSTALL NEW UNIT WITH CLEARANCE FOR UNIT SERVICE AS RECOMMENDED BY AHU MANUFACTURER. ROUTE NEW 1" CONDENSATE DRAIN PIPE TO FLOOR DRAIN AS SHOWN. PROVIDE NEW 4" THICK HOUSEKEEPING PAD AS REQUIRED FOR NEW AHU FOOTPRINT.
- 23 PROVIDE ROOFTOP AIR HANDLING UNIT AS SHOWN AND SCHEDULED. RE: M401 FOR SCHEDULE. MOUNT ROOFTOP UNIT ON CURB ADAPTER. ROUTE NEW 1" CONDENSATE DRAIN PIPE TO NEAREST ROOF DRAIN. RE: DETAIL 14/M501.
- 24 PROVIDE NEW VARIABLE FREQUENCY DRIVE FOR ASSOCIATED MECHANICAL EQUIPMENT AS SHOWN. CONTRACTOR TO FIELD VERIFY FINAL LOCATION AND INSTALL VFD.
- 25 PROVIDE NEW DDC PANEL IN MECHANICAL ROOM. CONTRACTOR TO FIELD VERIFY FINAL LOCATION OF DDC PANEL.
- 26 PROVIDE NEW MIXING BOX PLENUM FULL SIZE OF UNIT AND 32" DEEP. PROVIDE NEW OUTSIDE AIR DUCTWORK AS SHOWN. ROUTE 14" X 14" OUTSIDE AIR DUCT FROM VAV BOX AND TAP INTO BACK OF MIXING BOX PLENUM. TRANSITION AS REQUIRED. PROVIDE 36" X 28" RETURN AIR DUCT ON TOP OF MIXING BOX PLENUM. PROVIDE MINIMUM RETURN AIR DUCTWORK REQUIRED TO INSTALL MOTORIZED DAMPER AND VOLUME DAMPER.
- 27 PROVIDE INLINE ELECTRIC DUCT HEATER AT LOCATION SHOWN. REFER TO M401 FOR SCHEDULE. RE: 13/M501.
- 28 PROVIDE ROOF MOUNTED OUTSIDE AIR INTAKE AT LOCATION SHOWN. MOUNT ON PREFABRICATED ROOF CURB. ROUTE DUCTWORK DOWN TO ASSOCIATED AHU AS SHOWN. REFER TO M401 FOR SCHEDULE. RE: 10/M501.
- PROVIDE NEW AIR HANDLING UNIT SUSPENDED FROM STRUCTURE AS SHOWN AND SCHEDULED. RE: M401 FOR SCHEDULE. INSTALL NEW UNIT WITH CLEARANCE FOR UNIT SERVICE AS RECOMMENDED BY AHU MANUFACTURER. SUPPLY AND RETURN DUCTWORK INCLUDING FLEX DUCT SHALL BE R-8. ROUTE NEW 3/4" CONDENSATE DRAIN PIPE TO NEAREST LAVATORY AS SHOWN. MAIN CONDENSATE DRAIN LINE SHALL BE SLOPED NOT LESS THAN 1/8" PER FOOT.

<u>MIN. DUCT SIZE</u> 6"ø	<u>CFM</u> 0–120
8"ø	125-220
10 " ø	225-340
12 " ø	345-500





	MARK	AHU-5	
	ТҮРЕ	CV	
	UNIT CONFIGURATION	VERTICAL	
	DISCHARGE	TOP	
	DESIGN SUPPLY AIR (CFM)	1,200	
z	DESIGN OUTDOOR AIR (CFM)	270	
FAN	EXTERNAL. S.P. (IN. W.G.)	0.750	
	TOTAL. S.P. (IN. W.G.)	2.510	
	FAN MOTOR BRAKE HORSEPOWER (HP)	1.0	
	FAN MOTOR HORSEPOWER (HP)	1.5	
	VOLTS/PHASE/HERTZ	480/3/60	
	MAX. FAN RPM	1,757.0	
	MCA / MOCP	2.8 / 3	
	MAX. COIL FACE VELOCITY (FPM)	500	
	MIN. COIL ROWS	6	
	MAX FINS PER INCH	11	
	COIL CFM	1,200	
_	EAT DB/WB (°F)	81.5 / 66.7	
3	LAT DB/WB (°F)	53.0 / 52.9	
COOLING COIL	DESIGN TOTAL COOLING CAPACITY (MBH)	50.4	
วี่ไ	TOTAL COOLING CAPACITY PROVIDED BY UNIT (MBH)	49.7	
Ŭ	DESIGN SENSIBLE COOLING CAPACITY (MBH)	37.1	
	SENSIBLE COOLING CAPACITY PROVIDED BY UNIT (MBH)	36.5	
	EWT/LWT (°F)	42 / 54	
	COIL WATER FLOW (GPM)	8.2	
	MAX. WATER P.D. (FT. HD.)	10.0	
	MAX. COIL FACE VELOCITY (FPM)	500	
ľ	POSITION	REHEAT	
	MIN. COIL ROWS	1	
	MAX. FINS PER INCH	11	
	COIL CFM	1,200	
0 0	EAT DB/WB (°F)	59.3	
HEATING COIL	LAT DB/WB (°F)	90.0	
Ξ	DESIGN HEATING CAPACITY (MBH)	40.0	
	HEATING CAPACITY PROVIDED BY UNIT (MBH)	39.8	
	EWT/LWT (°F)	180 / 160	
	COIL WATER FLOW (GPM)	4.1	
	MAX. WATER P.D. (FT. HD.)	10.0	
MAN	IUFACTURER	CARRIER	
MOE	DEL NUMBER	39MN03	
OPE	RATING WEIGHT (LBS.)	1091	
NOT	ES	1, 2, 3, 4	

1. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES DUE TO COILS, FILTERS, AND CASING.

2. PROVIDE UNIT WITH STACKED DRAW THRU BELT DRIVE CENTRIFUGAL FAN SECTION, HOT WATER COIL SECTION, CHILLED WATER COIL SECTION, AND 2" MERV 8 FLAT FILTER RACK MOUNTED TO AHU.

3. UNIT SHALL NOT EXCEED 47" WIDTH X 42" LENGTH.

4. UNIT MANUFACTURER TO PROVIDE SHIPPING SPLITS TO ENSURE FIT THROUGH A 3'-0" WIDE DOORWAY. CONTRACTOR TO ASSEMBLE THE UNIT INTO POSITION.

FAN SCHEDULE					
MARK	SF-1				
SERVES	AHU-1.1, 1.2, 2.1				
TYPE/DRIVE	ROOF / BELT				
CFM	2,565				
EXT. S.P. (IN. W.G.)	0.750				
HORSEPOWER	1				
MOTOR CONTROL	SEE NOTE 3				
FAN RPM	726				
SONES					
VOLTS/PHASE/HERTZ	480 / 3 / 60				
WEIGHT WITH ACCESSORIES - LBS					
MANUFACTURER	GREENHECK				
MODEL NUMBER	SAF-115-10				
NOTES	1, 2, 3, 4				

NOTES:

1. EXTERNAL STATIC PRESSURE DOES NOT ACCOUNT FOR

LOSSES DUE TO FILTERS, HOUSING, NOR ACCESSORIES. 2. PROVIDE FAN WITH MOTOR RATED TOGGLE SWITCH AND

1" WASHABLE ALUMINUM FILTERS. 3. PROVIDE FAN WITH VFD, PREMIUM EFFICIENCY MOTOR

AND SHAFT GROUNDING RINGS FOR DEMAND CONTROL

VENTILATION SEQUENCE. 4. PROVIDE FAN WITH ROOF CURB ADAPTER. FIELD VERIFY

EXISTING ROOF CURB DIMENSIONS PRIOR TO ORDERING.

MARK	AHU-1.1	AHU-1.2	AHU-2.1	AHU-2.2	AHU-2.3	AHU-2.4	AHU-2.5
ТҮРЕ	VAV	VAV	VAV	VAV	CV	cv	CV
UNIT CONFIGURATION	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAI
DISCHARGE	TOP	ТОР	ТОР	воттом	FRONT	FRONT	FRONT
DESIGN SUPPLY AIR (CFM)	4,005	4,755	4,960	2,265	740	540	255
MINIMUM SUPPLY AIR (CFM)	1,180	1,320	1,670	990	225	165	255
DESIGN OUTDOOR AIR (CFM)	640	950	975	760	70	60	65
MINIMUM OUTSIDE AIR (CFM)	340	410	465	345	70	60	65
EXTERNAL. S.P. (IN. W.G.)	1.325	1.250	1.125	1.250	0.500	0.500	0.500
TOTAL. S.P. (IN. W.G.)	3.080	2.910	2.840	3.020	3.090	2.780	2.530
FAN MOTOR BRAKE HORSEPOWER (HP)	3.0	3.3	3.4	1.9	0.8	0.6	0.3
FAN MOTOR HORSEPOWER (HP)	5	5	5	3	1	1	1
VOLTS/PHASE/HERTZ	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
MAX FAN RPM	1,932.0	1,717.0	1,735.0	1,650.0	4,262.0	3,785.0	3,371.0
MCA / MOCP	8.3 / 10	8.3 / 10	8.3 / 10	5.1 / 6			
MAX COIL FACE VELOCITY (FPM)	500	500	500	500	500	500	500
MIN. COIL ROWS	6	6	6	6	6	6	6
MAX FINS PER INCH	11	11	11	11	11	11	11
COIL CFM	4,005	4,755	4,960	2,265	740	540	255
EAT DB/WB (°F)	77.5 / 65.0	78.2 / 66.2	80.4 / 66.3	83.3 / 69.4	62.8 / 54.7	63.3 / 55.2	68.5 / 60.1
LAT DB/WB (°F)	50.6 / 50.6	50.0 / 50.0	50.0 / 50.0	51.00 / 50.8	46.2 / 44.8	46.2 / 45.0	46.2 / 44.6
DESIGN TOTAL COOLING CAPACITY (MBH)	156.4	210.9	215.9	130.3	18.1	13.7	10.1
TOTAL COOLING CAPACITY PROVIDED BY UNIT (MBH)	156.2	209.9	219.6	131.3	17.7	14.1	11.8
DESIGN SENSIBLE COOLING CAPACITY (MBH)	109.3	138.7	151.7	81.5	13.7	9.9	6.1
SENSIBLE COOLING CAPACITY PROVIDED BY UNIT (MBH)	111.5	138.8	155.3	81.3	12.4	9.9	7.7
EWT/LWT (°F)	42 / 56	42 / 56	42 / 56	42 / 56	42 / 56	42 / 56	42 / 56
COIL WATER FLOW (GPM)	22.2	29.9	31.3	18.7	5.9	4.7	3.9
MAX. WATER P.D. (FT. HD.)	10.0	10.0	10.0	10.0	11.0	11.0	11.0
ANUFACTURER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER	CARRIER
ODEL NUMBER	39MN09	39MN11	39MN11	39MW06	39500	39500	39500
PERATING WEIGHT (LBS.)	1427	1666	1666	1695	592.0	592.0	592.0
DTES	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 3, 4, 6, 8, 10	1, 4, 5, 7, 9	1, 4, 5, 7, 9	1, 4, 5, 7, 9
NOTES NOTES: 1. EXTERNAL STATIC PRESSURE DOES NOT INCLUDE LOSSES D 2. PROVIDE UNIT WITH DRAW THRU DIRECT DRIVE PLENUM FAN 3. PROVIDE UNIT WITH REMOTE MOUNTED VARIABLE FREQUEN 4. PROVIDE CHILLED WATER COIL WITH 2-WAY AUTOMATIC CON 5. UNIT MANUFACTURER TO PROVIDE SHIPPING SPLITS TO ENS 6. UNIT SHALL BE OUTDOOR RATED CONSTRUCTION WITH BOTT 7. PROVIDE UNIT WITH DRAW THRU DIRECT DRIVE PLENUM FAN	UE TO COILS, FILTERS, A SECTION, ACCESS SECT CY DRIVE AND PREMIUM ITROL VALVE. JRE FIT THROUGH A 3'-0" OM DISCHARGE, ROOFCL	ND CASING. ION, CHILLED WATER COIL EFFICIENCY MOTORS WITH WIDE DOORWAY. CONTRAC IRB ADAPTER, AND OUTSID	SECTION, AND 2" MERV 11 I SHAFT GROUND RINGS. CTOR TO ASSEMBLE THE UI E AIR INTAKE HOOD WITH D	LAT FILTER SECTION. NIT INTO POSITION. AMPER.		1, 4, 5, 7, 9	1, 4,

9. PROVIDE UNIT WITH COMBINATION STARTER/DISCONNECT SWITCH. 10. PROVIDE UNIT WITH WEATHERPROOF DISCONNECT SWITCH.

SINGLE INLET VAV BOX SCHEDULE								
MARK	COOLING CFM		INLET SIZE			MODEL		
MARK	MAX	MIN.	INLET SIZE VOLTS/PHASE/HZ MANUFACTURER		MODEL			
VAV-1.1-1	290	90	6"Ø	24/1/60	TITUS	DESV-6		
VAV-1.1-2	550	170	8''Ø	24/1/60	TITUS	DESV-8		
VAV-1.1-3	310	90	6"Ø	24/1/60	TITUS	DESV-6		
VAV-1.2-1	380	110	6''Ø	24/1/60	TITUS	DESV-6		
VAV-1.2-2	380	110	6''Ø	24/1/60	TITUS	DESV-6		
VAV-1.2-3	340	70	6''Ø	24/1/60	TITUS	DESV-6		
VAV-1.2-4	240	70	6"Ø	24/1/60	TITUS	DESV-6		
VAV-1.2-5	560	170	8''Ø	24/1/60	TITUS	DESV-8		
				1				

NOTES: 1. PROVIDE TERMINAL UNIT CASING WITH 1" INTERNALLY LINED FIBERGLASS FREE INSULATION. 2. 24 VOLTS AC SHALL BE PROVIDED BY CONTROLS CONTRACTOR.

SINGLE INLET VAV BOX WITH REHEAT SCHEDULE

MARK HEATING CFM REHEAT INLET VOLTS/ MFR MODEL NO									
MAX	MIN.	KW	SIZE	PHASE/ HZ		MODEL NO.			
640	340	1.6	8''Ø	277/1/60	TITUS	DESV-8			
VAV-1.2 950 410 4.9 10"Ø 277/1/60 TITUS DESV-10									
VAV-2.1 975 465 3.2 10"Ø 277/1/60 TITUS DESV-10									
E DISCONN E ELECTRIC	ECT WITH BOXE REHEAT COIL	ES. WITH 0-10V SC	CR MODU	JLATING CAPAC					
	MAX 640 950 975 E TERMINA E DISCONN E ELECTRIC	MAXMIN.640340950410975465E TERMINAL UNIT WITH INT E DISCONNECT WITH BOXE E ELECTRIC REHEAT COIL	MAXMIN.KW6403401.69504104.99754653.2E TERMINAL UNIT WITH INTEGRAL DISCO E DISCONNECT WITH BOXES. E ELECTRIC REHEAT COIL WITH 0-10V SC	MAXMIN.KWSIZE6403401.68"Ø9504104.910"Ø9754653.210"ØE TERMINAL UNIT WITH INTEGRAL DISCONNECT SEDISCONNECT WITH BOXES.EE ELECTRIC REHEAT COIL WITH 0-10V SCR MODU	MAX MIN. KW SIZE PHASE/ HZ 640 340 1.6 8''Ø 277/1/60 950 410 4.9 10''Ø 277/1/60 975 465 3.2 10''Ø 277/1/60 E TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH. E DISCONNECT WITH BOXES. E ELECTRIC REHEAT COIL WITH 0-10V SCR MODULATING CAPAC	MAX MIN. KW SIZE VOLTS/ PHASE/ HZ MFR 640 340 1.6 8"Ø 277/1/60 TITUS 950 410 4.9 10"Ø 277/1/60 TITUS 975 465 3.2 10"Ø 277/1/60 TITUS E TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH. MITCH. MITCH MITCH MITCH			

INLET.

FAN PO		AIR CFM	REHEAT					
MARK				INLET SIZE	VOLTS/ PHASE/ HZ	ECM HP	MFR	MODEL NO.
	MAX	MIN.	KW					NO.
FPTU-1.1-1	615	180	4.0	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-1.1-2	905	270	5.5	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-1.1-3	840	250	5.5	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-1.1-4	420	130	3.0	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-1.2-1	1,120	340	7.0	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-1.2-2	600	180	4.0	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-1.2-3	905	270	5.5	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-2.1-1	1,650	500	10.0	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-2.1-2	870	260	5.5	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-2.1-3	685	210	4.5	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-2.1-4	975	290	6.0	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-2.1-5	415	120	2.5	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-2.1-6	950	290	6.0	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-2.2-1	520	190	3.5	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-2.2-2	925	340	6.0	8"X16"	480/3/60	(2) 1/3	TITUS	DFLS-4
FPTU-2.2-3	630	230	4.5	8"Ø	277/1/60	1/3	TITUS	DFLS-3
FPTU-2.2-4	635	230	4.5	8''Ø	277/1/60	1/3	TITUS	DFLS-3

1. PROVIDE AEROCROSS MULTI-POINT CENTER AVERAGING VELOCITY SENSOR IN PRIMARY AIR INLET. 2. PROVIDE TERMINAL UNIT CASING WITH 1" INTERNALLY LINED FIBERGLASS FREE INSULATION. 3. PROVIDE TERMINAL UNIT WITH INTEGRAL DISCONNECT SWITCH.

4. PROVIDE ELECTRIC REHEAT COIL WITH 0-10V SCR MODULATING CAPACITY CONTROL. 5. PROVIDE LOW PROFILE TERMINAL UNIT.

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$\cap N$	0 5	6 PM by user: jv qs\0M-190317-D	Plotted: Feb 21, 2020, 5:16 PM by user: jvela - Saved: 2/21/2020 by user: j H:\19\190317.000\Drawings\0M-190317-DETAILS & SCHEDULES.dwg

4. PROVIDE TERMINAL UNIT CASING WITH 1" INTERNALLY LINED FIBERGLASS FREE INSULATION. 5. PROVIDE AEROCROSS MULTI-POINT CENTER AVERAGING VELOCITY SENSOR IN PRIMARY AIR

ELECTRIC DUCT HEATI	ER SCHEDULE			
MARK	EDH-2.2	EDH-2.3	EDH-2.4	EDH-2.5
SERVES	AHU-2.2	AHU-2.3	AHU-2.4	AHU-2.5
FUNCTION	RE-HEAT	RE-HEAT	RE-HEAT	RE-HEAT
HEATER TYPE	INLINE	INLINE	INLINE	INLINE
DESIGN CFM	3,180	740	540	255
MINIMUM CFM	990	740	540	255
EAT (°F)	38.5	66.1	65.4	59.5
LAT (°F)	52.0	85.0	85.0	85.0
CAPACITY (KW)	4.2	4.4	3.4	2.1
DUCT DIMENSION WxH (INSIDE)	22 x 12	14 x 10	12 x 10	8 x 10
VOLTS/PHASE/HERTZ	480/3/60	480/3/60	480/3/60	480/3/60
CONTROL TYPE	SCR	SCR	SCR	SCR
MANUFACTURER	INDEECO	INDEECO	INDEECO	INDEECO
MODEL	QUA	QUA	QUA	QUA
NOTES	1	1	1	1

1. PROVIDE REQUIRED WORKING CLEARANCES PER ELECTRICAL CODE, PRIOR TO INSTALLATION.

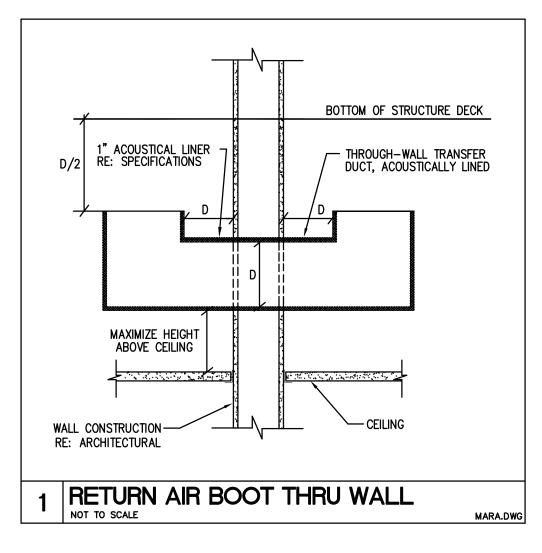
	GRAVITY VEN	TILATOR SCHE	DULE	
MARK	OAI-1	OAI-2	OAI-3	RAH-1
SERVICE	AHU-2.3	AHU-2.4	AHU-2.5	BUILDING RELIEF
INTAKE / RELIEF	INTAKE	INTAKE	INTAKE	RELIEF
CFM	70	60	65	1,545
THROAT SIZE (LENGTH x WIDTH)	8''Ø	8''Ø	8''Ø	30 x 16
MAX. P.D. (IN. W.G.)	0.05	0.05	0.05	0.05
MANUFACTURER	GREENHECK	GREENHECK	GREENHECK	GREENHECK
MODEL NO.	GRSI	GRSI	GRSI	FGR
NOTES	2, 4, 5	2, 4, 5	2, 4, 5	1, 2, 3

NOTES: 1. PROVIDE HIGH WIND RATED PRE-FABRICATED ROOF CURB. 2. PROVIDE UNIT WITH BIRD SCREEN.

3. PROVIDE UNIT WITH BAROMETRIC RELIEF DAMPER SET TO

BUILDING PRESSURE OF 0.05 IN. W.G.

4. PROVIDE WITH MOTORIZED DAMPER. MOTORIZED DAMPER AND ACTUATOR SHALL BE PROVIDED BY CONTROLS CONTRACTOR. 5. PROVIDE CABLE TIE DOWNS FOR STAINLESS STEEL CABLES. CONTRACTOR TO PROVIDE MIN. 1/8" DIA. CABLES.



PACKAGED AIR-COOLED WATE		
MARK	ACCH-1	ACCH-2
UNIT NOMINAL TONNAGE	45	45
DESIGN COOLING CAPACITY (TONS)	31.5	31.5
ACTUAL COOLING CAPACITY PROVIDED BY UNIT (TONS)	41.0	41.0
MINIMUM CAPACITY - PERCENT	8	8
UNIT TYPE	PREMIUM EFFICIENCY	PREMIUM EFFICIEN
REFRIGERANT TYPE	R410A	R410A
FULL LOAD EFFICIENCY, DESIGN (EER)	9.106	9.106
IPLV (INTERGRATED PART LOAD VALUE)	16.73	16.73
NPLV (NON-STANDARD PART LOAD VALUE)	16.07	16.07
EVAPORATOR DATA	1	Γ
EVAPORATOR FLOW RATE (GPM)	70.1	70.06
MINIMUM EVAPORATOR FLOW RATE (GPM)	53.0	53
EVAPORATOR ENTERING WATER TEMPERATURE (°F)	56	56
EVAPORATOR LEAVING WATER TEMPERATURE (°F)	42	42
MAX. PRESSURE DROP (FT. HD.)	10	10
ACTUAL PRESSURE DROP (FT. HD.)	3.22	3.22
ACTUAL PRESSURE DROP WITH STRAINER (FT. HD.)	9.29	9.29
FOULING FACTOR - (hr-sqft-F)/BTU	0.0001	0.0001
NUMBER OF PASSES	2	2
CONDENSER DATA		
CONDENSER TYPE	HIGH-EFFICIENCY VARIABLE SPEED FANS	HIGH-EFFICIENCY VARIABLE
AMBIENT TEMPERATURE (°F)	100	100
MINIMUM AMBIENT TEMPERATURE (°F)	-20	-20
NUMBER OF FANS	3	3
TOTAL FAN MOTOR POWER - KW	3.752	3.752
TOTAL CONDENSER FAN AIR FLOW	30,500	30500
COMPRESSOR DATA	1	
COMPRESSOR TYPE	SCROLL	SCROLL
NUMBER OF COMPRESSORS	4	4
NUMBER OF INDEPENDENT REFRIGERANT CIRCUITS	2	2
CAPACITY STEPS	44	44
TOTAL COMPRESSOR POWER - KW	50.31	50.31
PUMP PACKAGED DATA		
PUMP TYPE	SINGLE PUMP	SINGLE PUMP
DESIGN PUMP HEAD (FT H2O)	80.0	80
AVAILABLE PUMP HEAD (FT H2O)	91.3	91.3
PUMP POWER - KW	3.35	3.35
PUMP HORSEPOWER	5	5.55
PUMP FLOW CONTROL	VARIABLE SPEED DRIVE	VARIABLE SPEED D
ELECTRICAL		
VOLTS/PHASE/HERTZ	480/3/60	480/3/60
	SINGLE POINT	SINGLE POINT
STARTER TYPE	ACROSS THE LINE	ACROSS THE LIN
TOTAL UNIT POWER WITHOUT PUMPS (KW)		
	54.07	54.07
TOTAL UNIT POWER WITH PUMPS (KW)	57.42	57.42
	103.7	103.7
	125	125
LENGTH (INCHES)	89.0	89
WIDTH (INCHES)	93.0	93
HEIGTH (INCHES)	79.0	79
OPERATING WEIGHT (POUNDS)	2881.0	2881
MANUFACTURER	CARRIER	CARRIER
MODEL NUMBER	30RAP045	30RAP045

NOTES: 1. PROVIDE UNIT WITH UNIT MOUNTED NON-FUSED DISCONNECT.

2. PROVIDE HAIL GUARDS. 3. PROVIDE COMPRESSOR BLANKETS AND LOW-NOISE FANS.

4. UNIT SHALL NOT EXCEED 68 Dba @ 40 FEET.

5. PROVIDE CHILLER WITH BACnet INTERFACE FOR INTERGRATION INTO BAS. 6. PROVIDE VARIABLE FREQUENCY DRIVE WITH IP-55 ENCLOSURE FOR CHILLED WATER PUMP.

CHILLER SHALL BE PROVIDED WITH PUMP AND VFD FOR VARIABLE FLOW. PUMPS SHALL BE INTEGRAL TO THE CHILLER. THE CHILLER AND PUMPS SHALL BE SERVICED BY A SINGLE 460/3/60 POWER CONNECTION. IF MANUFACTURER CANNOT PROVIDE PUMP INTEGRAL THE UNIT, THE CONTRACTOR SHALL PROVIDE A PUMP AND BEAR ALL COSTS OF PROVIDING ADDITIONAL PIPING AND ELECTRICAL SERVICE TO THE PUMPS. 8. CHILLER SHALL BE PROVIDED WITH AN INTEGRAL HEATER TO SERVE THE EVAPORATOR SO THAT THE CHILLER IS PROTECTED FROM FREEZING EVEN WHEN THE UNIT IS NOT IN OPERATION.

9. CHILLER MANUFACTURER SHALL PROVIDE A FULLY INTEGRATED PID LOOP WITH AN ELECTRONIC EXPANSION VALVE (EXV) BY VARYING REFRIGERANT FLOW TO THE COMPRESSOR TO PREVENT OVER-SHOOTING SET POINTS WHICH CAN RESULT IN EXCESSIVE COMPRESSOR CYCLING AND EARLY FAILURE.

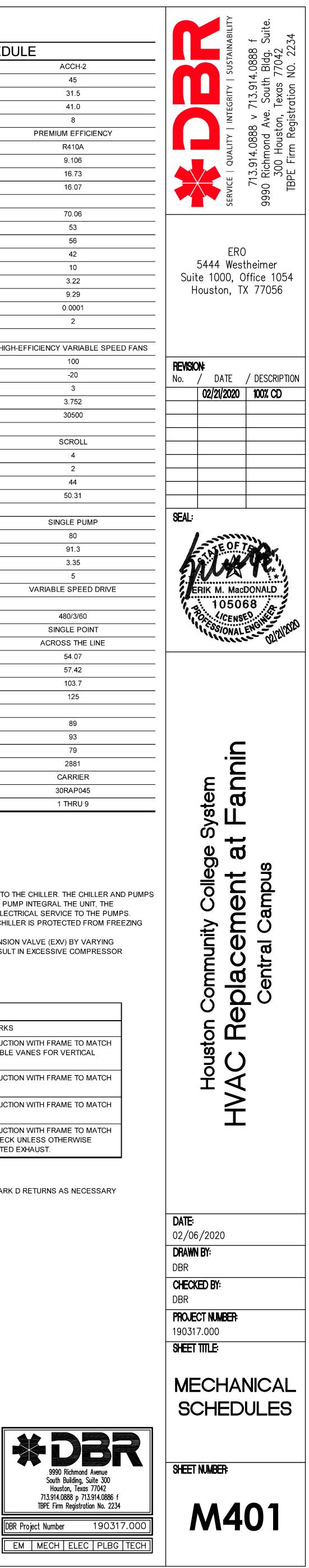
AIR DEVICE SCHEDULE

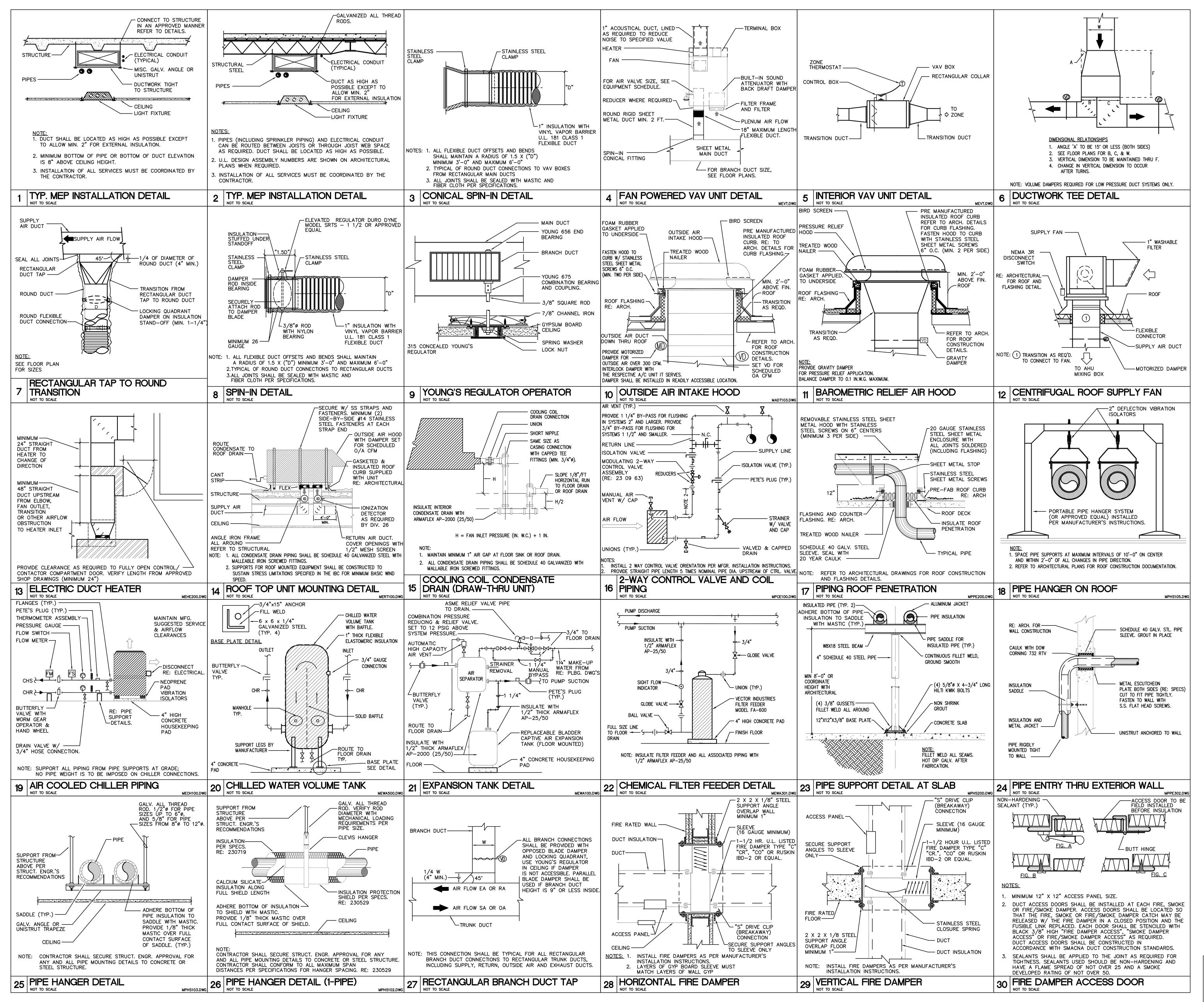
MARK	MFR. & MODEL	TYPE	REMARKS
	TITUS TMSA-AA	LOUVERED FACE SUPPLY AIR DIFFUSER	24"x24" FACE, ALUMINUM CONSTRUCTION WITH FRAME TO MAT CEILING TYPE. PROVIDE ADJUSTABLE VANES FOR VERTICAL DISCHARGE PATTERN.
В	TITUS PAS-AA	PERFORATED FACE SUPPLY AIR DIFFUSER	24"x24" FACE, ALUMINUM CONSTRUCTION WITH FRAME TO MAT CEILING TYPE.
C	TITUS PAS-AA	PERFORATED FACE SUPPLY AIR DIFFUSER	12"x12" FACE, ALUMINUM CONSTRUCTION WITH FRAME TO MAT CEILING TYPE.
	TITUS PAR-AA	PERFORATED FACE RETURN AIR GRILLE	24"x24" FACE, ALUMINUM CONSTRUCTION WITH FRAME TO MAT CEILING TYPE. PROVIDE 22"x22" NECK UNLESS OTHERWISE NOTED. PROVIDE O.B.D. FOR DUCTED EXHAUST.

1. REFER TO ARCHITECTURAL DRAWINGS FOR FINISH. 2. REFER TO MECHANICAL FLOOR PLAN FOR NECK SIZES.

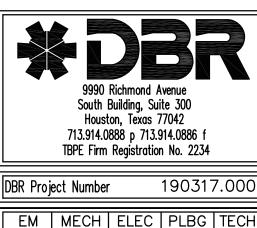
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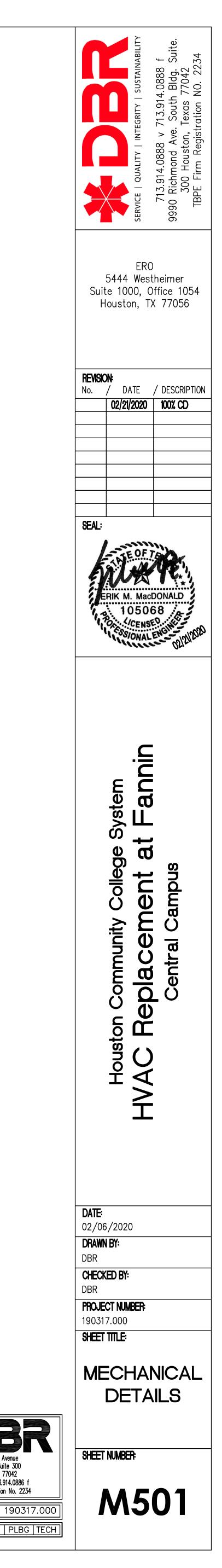
3. CONTRACTOR TO VERIFY EXISTING DIFFUSERS AND PROVIDE NEW MARK B OR MARK C SUPPLY AND MARK D RETURNS AS NECESSARY TO MATCH DIFFUSER COUNT ON DRAWINGS.

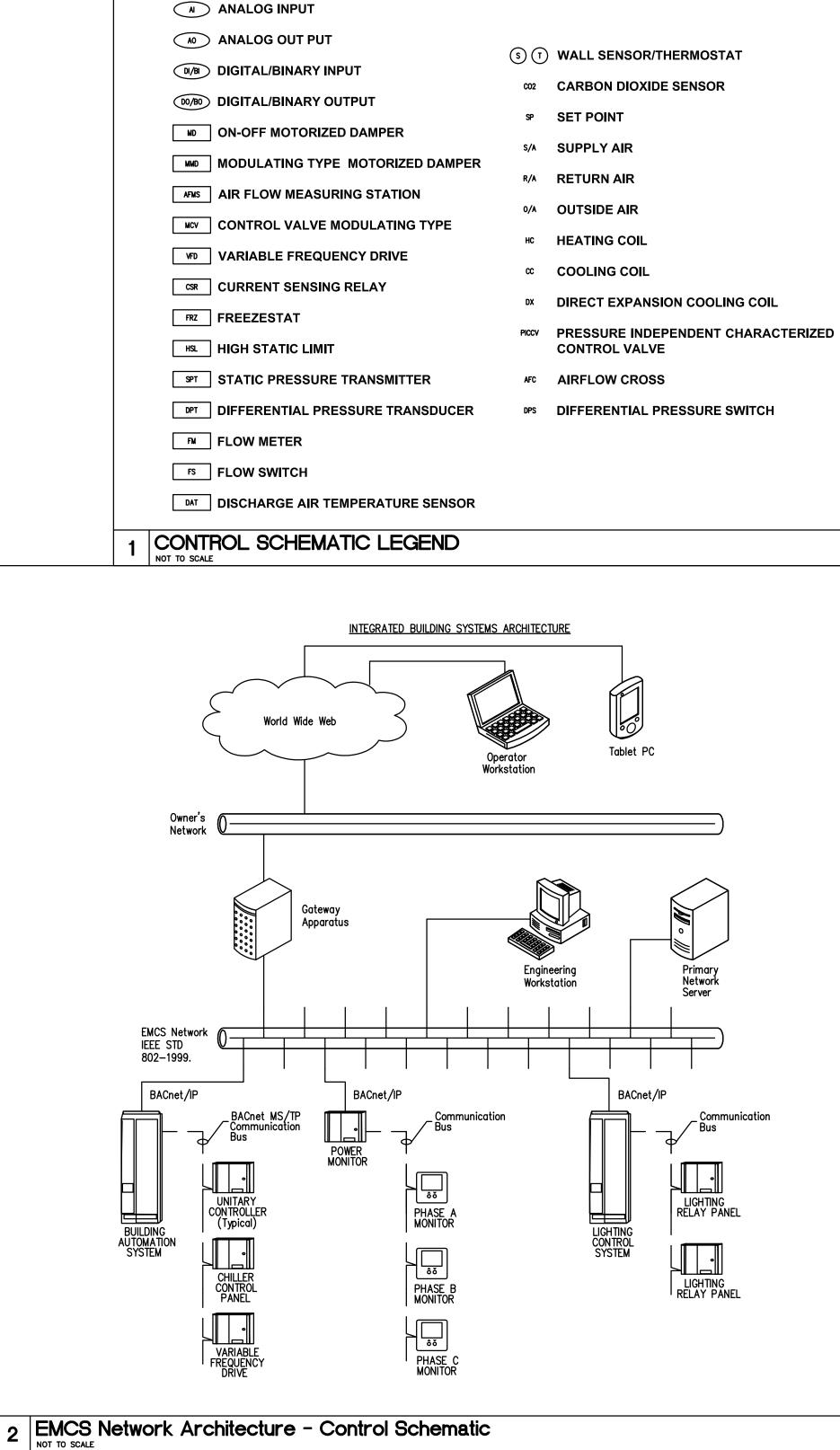




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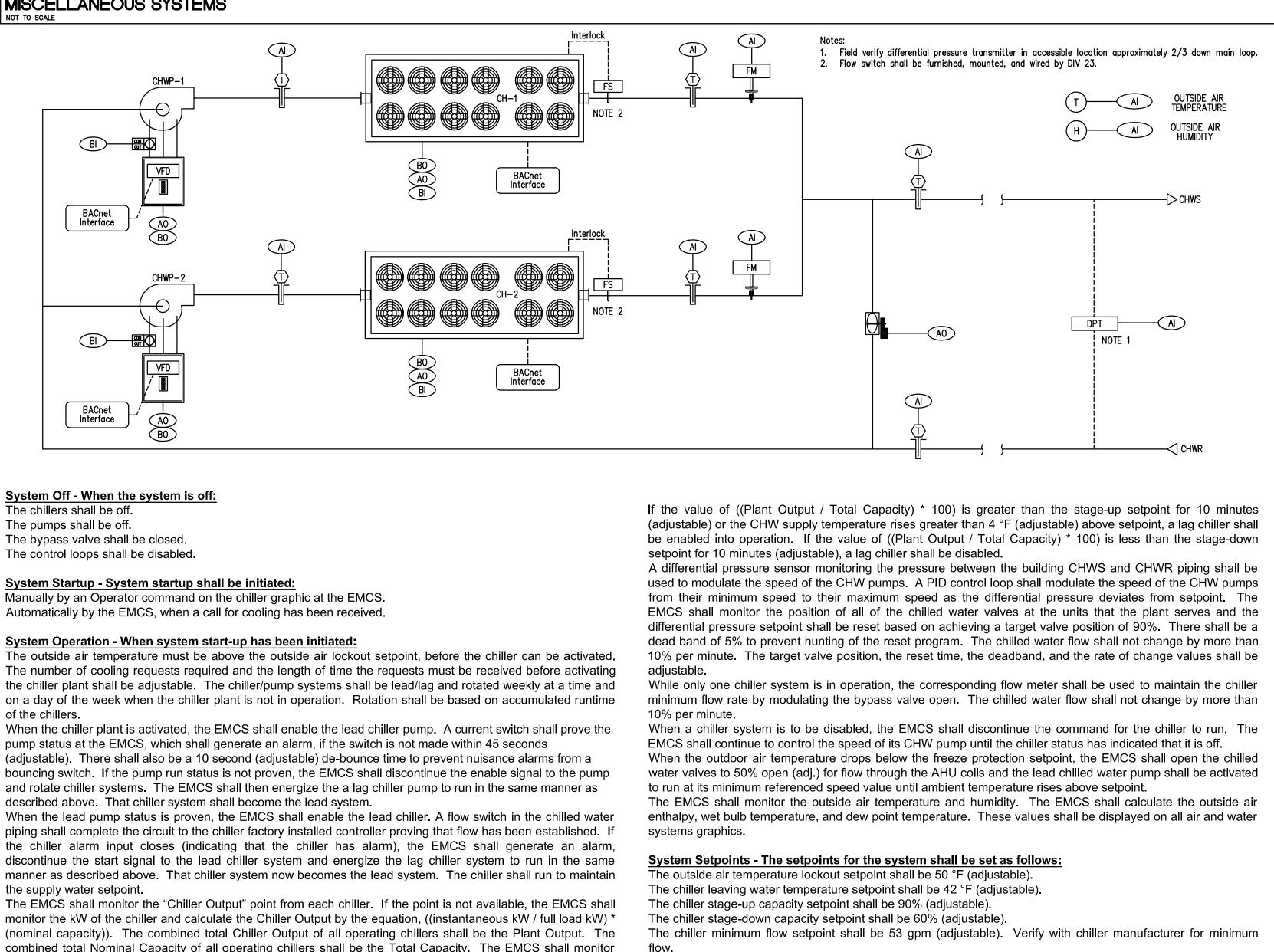




setpoints and shed loads in order to reduce peak consumption. **Electrical Branch Circuit Power Meter Monitoring**

Sump Pumps and Sump Pits Monitoring The EMCS shall monitor the run status of the pumps and alarm outputs on the water level indicators. The EMCS shall display the values and trend log all Change of State (COS) events. The EMCS shall report alarms to the computers, pagers, and/or text message compatible devices designated by the Owner.

3 MISCELLANEOUS SYSTEMS



System Off - When the system is off: The chillers shall be off.

The pumps shall be off.

The control loops shall be disabled.

System Startup - System startup shall be initiated:

System Operation - When system start-up has been initiated:

of the chillers.

pump status at the EMCS, which shall generate an alarm, if the switch is not made within 45 seconds described above. That chiller system shall become the lead system.

the supply water setpoint.

combined total Nominal Capacity of all operating chillers shall be the Total Capacity. The EMCS shall monitor temperature inputs from sensors mounted in the common supply and return piping and flow meters mounted in the chiller supply piping, and calculate the building load in Tons.

4 Chilled Water System - Air Cooled - Variable Primary Flow with Dedicated Pumps - Control Schematic and Sequence of Operations

Outdoor Air Conditions

The sensors shall be mounted in an area on the north side of the building where the representative temperature and humidity can be monitored, both shall have sun shields. Based on the outdoor air temperature and humidity the EMCS shall calculate the outdoor air enthalpy, wet bulb and dew point temperatures. These outdoor air conditions shall be broadcast as global data points for use by other control programs. These shall be displayed on all major air and water systems graphics.

Electrical Switchgear Power Meter Monitoring

The EMCS shall provide BACnet/IP or Modbus TCP communications to the interface modules to monitor the building power usage. The interface modules shall be provided by the switchgear manufacturer per Division 26. The EMCS shall monitor building kW, kWH, kVAR, Power Factor, 3-Phase Amps and Volts, along with all variables available via this interface. The EMCS shall provide a graphic representation to show the current usage, monthly usage, year to date usage, and time and date of the highest peak demand for the month and year. Demand thresholds may be set to adjust

The EMCS shall provide BACnet/IP or Modbus TCP communications to the power monitor. The power monitor locations shall be shown on the Division 26 drawings. The EMCS shall monitor kW, kWH, kVAR, Power Factor, 3-Phase Amps and Volts, along with all variables available via this interface. The EMCS shall provide a graphic representation to show the current usage, monthly usage, year to date usage, and time and date of the highest peak demand for the month and year. Demand thresholds may be set to adjust setpoints and shed loads in order to reduce peak consumption.

Building Domestic Water Metering

The EMCS shall monitor the building domestic water meter, which is to be furnished by the Division 22 contractor and installed by Division 22 contractor at the service entry to the building. This new meter shall be provided regardless of any water metering provisions on site. The EMCS shall display and trend log the following: the monthly usage, yearly usage, accumulative total usage, and alarm when excessive flow is measured. The EMCS shall report alarms to the computers, pagers, and/or text message compatible devices designated by the Owner.

IDF and MDF Room Monitoring

The EMCS shall monitor the space temperature and humidity in the IDF and MDF rooms. The primary cooling for IDF and MDF rooms will be supplied by the packaged computer room units. The EMCS shall report high/low temperature/humidity alarms to the computers, pagers, and/or text message compatible devices designated by the Owner. Alarms shall be sent if the space conditions deviate from the following, temperature between 60 °F and 80 °F (adj), humidity between 40% RH and 70% RH (adj), for more than 10 minutes.

Elevator Machine Room Monitoring

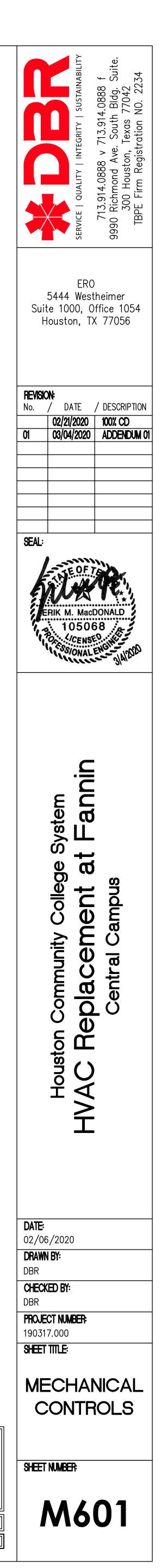
The EMCS shall monitor the space temperature in the machine rooms. The primary cooling for these rooms will be supplied by the packaged AC units. The EMCS shall report high/low temperature alarms to the computers, pagers, and/or text message compatible devices designated by the Owner. Alarms shall be sent if the space conditions deviate from the following, temperature between 60 °F and 80 °F (adj), for more than 10 minutes.

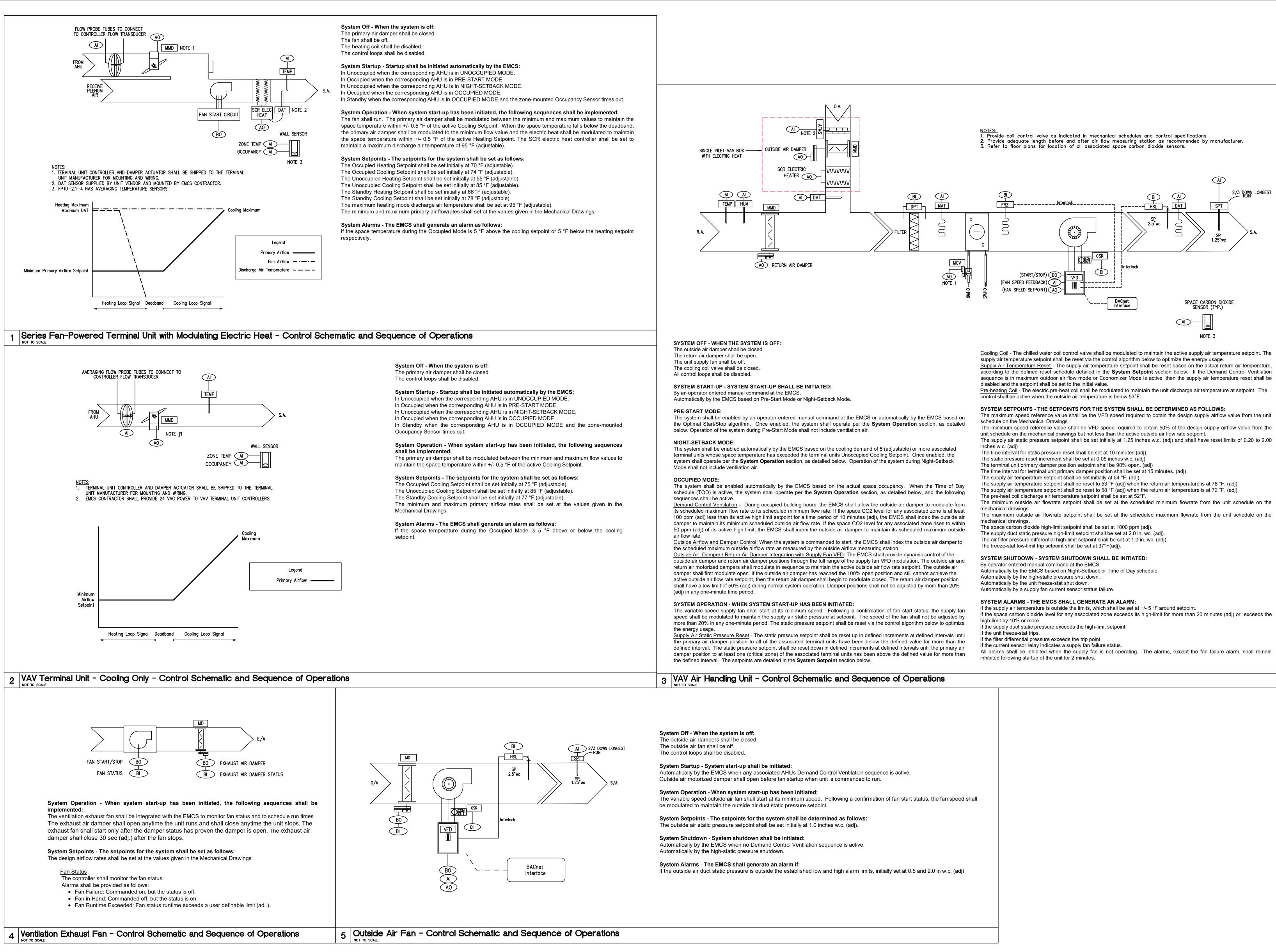
Chilled Water Make-up Water Metering

The EMCS shall monitor the chiller make-up water meter, which is to be furnished by the EMCS contractor and installed by Division 23 contractor at the service entry to the building. This flow meter shall be provided regardless of any water metering provisions on site. The EMCS shall display and trend log the following: the monthly usage, yearly usage, accumulative total usage, and alarm when excessive flow is measured. The EMCS shall report alarms to the computers, pagers, and/or text message compatible devices designated by the Owner.

The chilled water system differential pressure shall be 8 psi (adjustable). The outdoor air temperature freeze protection setpoint shall be 38 °F (adjustable).

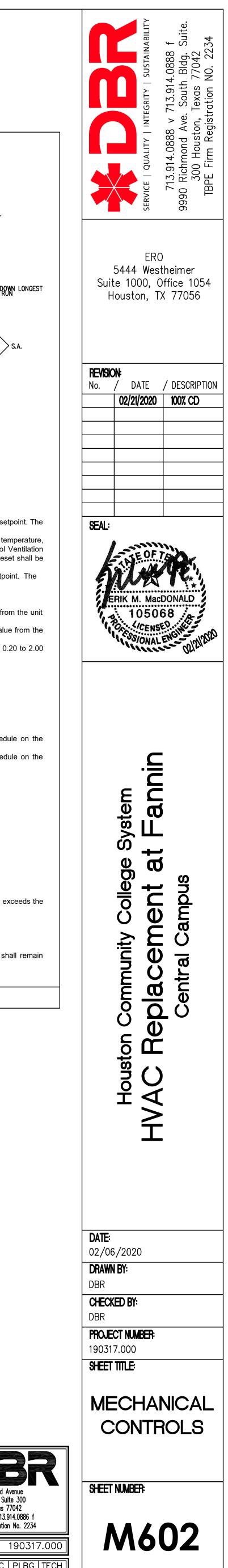


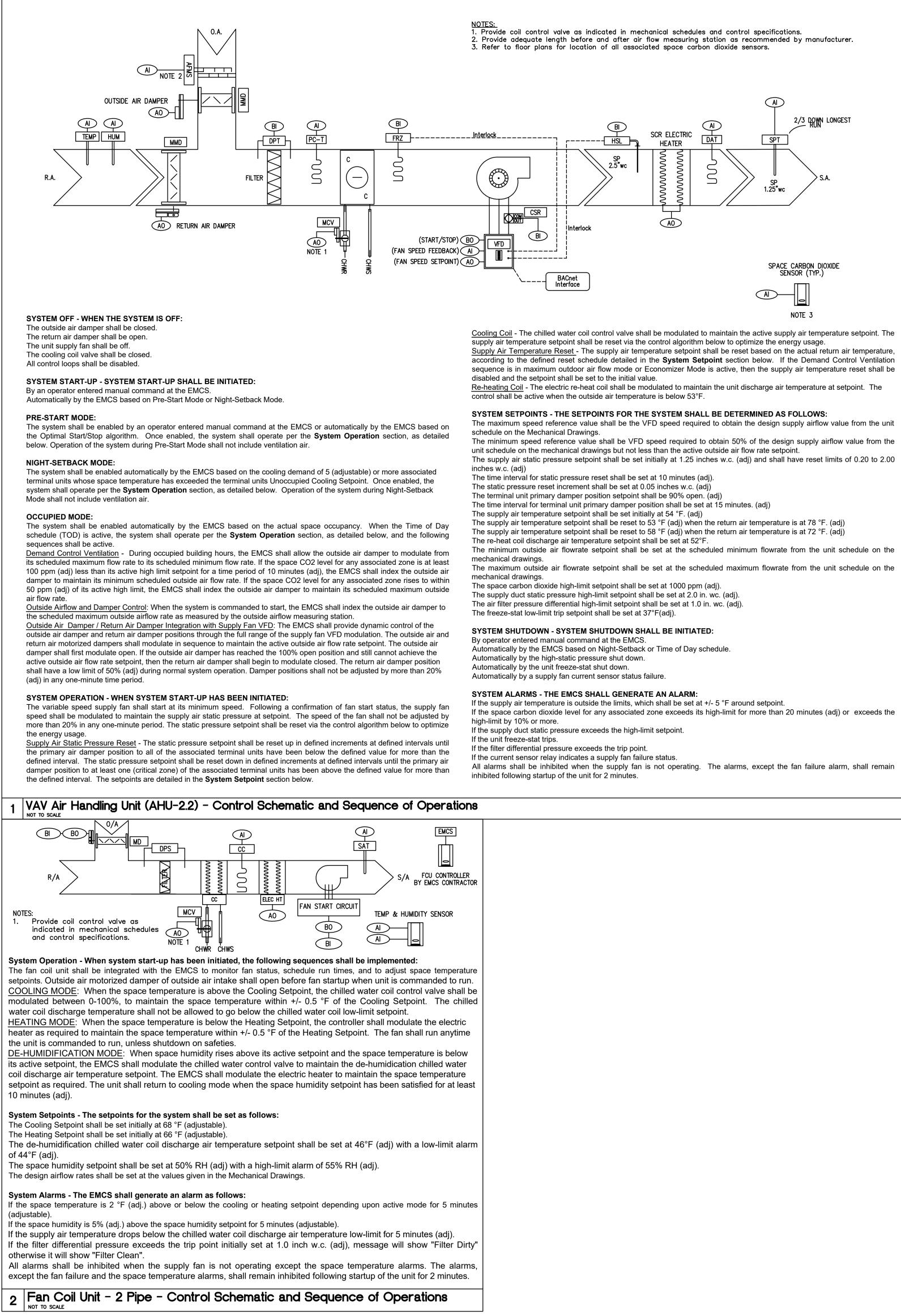




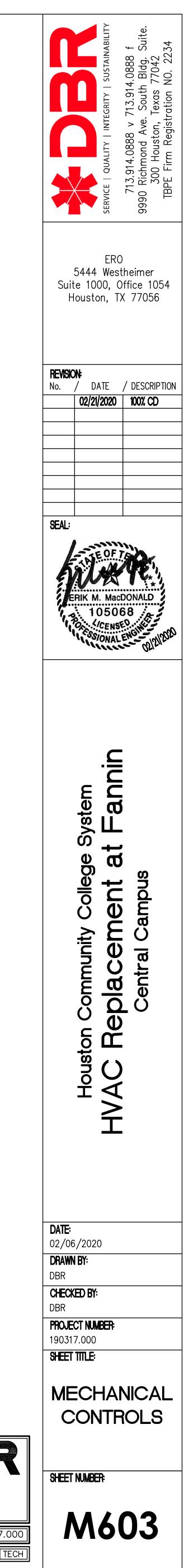
If the space carbon dioxide level for any associated zone exceeds its high-limit for more than 20 minutes (adj) or exceeds the











		PLUMBING
	Α	ABBREVIATIONS
A ABV AC AD ADJ AFF AFG AHU AL AP ARCH AS ASME ASME ASTM AV AVG AW AWS AUX	AIR (COMPRESSED) ABOVE ABOVE CEILING ACCESS DOOR, AREA DRAIN ADJUSTABLE ABOVE FINISHED FLOOR ABOVE FINISHED FLOOR ABOVE FINISHED GRADE AIR HANDLING UNIT ALUMINUM ACCESS PANEL ARCHITECT, ARCHITECTURAL AIR SEPARATOR AMERICAN SOCIETY OF MECHANICAL ENGINEERS AMERICAN SOCIETY OF TESTING AND MATERIALS ACID VENT AVERAGE ACID WASTE AMERICAN WELDING SOCIETY AUXILIARY	F FARENHEIT, FIRE FBO FURNISHED BY OTHERS FCO FLOOR CLEAN OUT FCS FLOOR CONTROL STATON FD FLOOR DRAIN, FIRE DAMPER FDSC FIRE DEPARTMENT SIAMESE CONNECTION FDV FIRE DEPARTMENT VALVE FH FIRE HYDRANT FHC FIRE HOSE CABINET FHR FIRE HOSE RACK FHV FIRE HOSE RACK FHV FIRE HOSE VALVE FIXT FIXTURE FLEX FLEXIBLE FL FLOW LINES FLR FLOOR FP FIRE PUMP FRZR FREEZER FS FLOOR SINK FT FOOT, FEET FUT FUTURE G
B BC B/C BF BFV BH BLDG BM BOF	BOILER BELOW COUNTER BACK OF CURB BELOW FLOOR BUTTERFLY VALVE BOX HYDRANT BUILDING BENCHMARK BOTTOM OF FOOTING	G GAS GA GAUGE GAL GALLON GALV GALVANIZED GC GENERAL CONTRACTOR GCO GRADE CLEANOUT GLV GLOBE VALVE GND GROUND GPD GALLONS PER DAY GPH GALLONS PER HOUR GPM GALLONS PER MINUTE GV GATE VALVE H
BOS BT BTU BV BWV	BOTTOM OF STRUCTURE BATH TUB BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE CELSIUS CABINET	HB HOSE BIBB HD HEAD, HUB DRAIN HORIZ HORIZONTAL HP HORSEPOWER HKP HOUSEKEEPING PAD HSC HORIZONTAL SPLIT CASE HT HEIGHT HTG HEATING HTR HEATER HW HOT WATER HW HOT WATER HWR HOT WATER RETURN HWS HOT WATER SUPPLY HZ HERTZ
CB CD CFM CFS CH CP CI CIRC CLR CLG CLR CMU CPI CDVC	CATCH BASIN CONDENSATE DRAIN LINE CUBIC FEET PER MINUTE CUBIC FEET PER SECOND CHILLER CIRCULATING PUMP CAST IRON CIRCULATING CENTERLINE CEILING CLEAR CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE	ID INSIDE DIAMETER IE INVERT ELEVATION IN INCH INSUL INSULATION INT INTERNAL, INTERIOR IW INDIRECT WASTE
CPVC CO COL COMB COMP CONC CONN CONT CONTR CRAC	CHLORINATED POLYVINYL CHLORIDE CLEAN OUT COLUMN COMBINATION COMPRESSOR CONCRETE, CONCENTRIC CONNECTION CONTINOUS,CONTINUATION CONTROLLER, CONTRACTOR COMPUTER ROOM A/C UNIT	JP JOCKEY PUMP
CTR CU CW	CENTER COPPER COLD WATER	KEC KITCHEN EQUIPTMENT CONTRACTOR KO KNOCKOUT KVA KILOVOLT- AMPS KW KILOWATT
D DESIG DTL DF DIA	DEPTH, DRAIN, DRYER DESIGNATION DETAIL DRINKING FOUNTAIN DIAMETER	L L LENGTH, LAVATORY LAV LAVATORY LF LINEAR FEET LT LINT LP LOW PRESSURE LRA LOCKED ROTOR AMPS LVL LEVEL LWCO LOW WATER CUT OFF
DIM DISC DN DS DW DWG DWH DWP	DIMENSION DISCONNECT DOWN DOWNSPOUT, DOUBLE SUCTON DISHWASHER DRAWING DOMESTIC WATER HEATER DOMESTIC WATER PUMP	MAX MAXIMUM MBTUH THOUSAND OF BTU'S MC MECHANICAL CONTRACTOR MECH MECHANICAL MFR MANUFACTURER MH MANHOLE MI MALLEABLE IRON MIN MINIMUM MP MEDIUM PRESSURE MS MOP SINK MTD MOUNTED MU MAKE-UP
EA EC	EACH ELECTRICAL CONTRACTOR	N.C. NORMALLY CLOSED NFPA NATIONAL FIRE PROTECTION ASSOCIATION NIC NOT IN CONTRACT N.O. NORMALLY OPEN NO. NUMBER NTS NOT TO SCALE
ECC EDF EJ EL ELEC ELEV EMERG ENCL ENGR EQ EQUIP	ECCENTRIC ELECTRIC DRINKING FOUNTAIN EFFICIENCY EXPANSION JOINT ELEVATION ELECTRICAL ELEVATOR EMERGENCY ENCLOSURE ENGINEER EQUAL EQUIPTMENT	OC ON CENTER OD OUTSIDE DIAMETER, OVERFLOW DRAIN OFCU OUTSIDE AIR FAN COIL UNIT OPG OPENING OS&Y OPEN STEM AND YOLK O MEDICAL OXYGEN
ET ETR EXT EXTG	EXPANSION TANK EXISTING TO REMAIN EXTERNAL EXISTING	P PUMP, PLUMBING EQUIPTMENT PC PLUMBING CONTRACTOR PD PRESSURE DROP, PLANTER DRAIN PH PHASE, POST HYDRANT PIV POST INDICATOR VALVE PLBG PLUMBING PNEU PNEUMATIC

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SYMBOLS AND ABBREVIATIONS

	P	PI I	SYMBOLS JMBING SYSTEMS	
PNTH	PENTHOUSE			
PNTH PP PRI PRS PRV PSF PSIG PT	PENTHOUSE POLYPROPYLENE PART PER MILLION PRIMARY		- SANITARY DRAIN BELOW FLOOR	
PRS	PRESSURE REDUCING STATION PRESSURE REDUCING VALVE		- SANITARY DRAIN ABOVE FLOOR	
rsr PSI PSIG	PRIMARY PRESSURE REDUCING STATION PRESSURE REDUCING VALVE POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH GAUGE PLUMBING TRIM PLUG VALVE POLYVINYL CHLORIDE			ہتر پتبر
PV	PLUMBING TRIM PLUG VALVE		- SANITARY VENT	_*
PVC	POLYVINYL CHLORIDE	GW	GREASE WASTE(ABOVE CEILING)	
	Q		GREASE WASTE(BELOW FLOOR)	
QTY	QUANTITY	- SD	- STORM DRAIN(ABOVE CEILING)	
Q I I				•
	R	1	- STORM DRAIN(BELOW FLOOR)	
		OD	- OVERFLOW DRAIN(ABOVE CEILING)	
DOD		OD	- OVERFLOW DRAIN(BELOW FLOOR)	
RCP	REFLECTED CEILING PLAN, REINFORCED CONCRETE PIPE	AW	ACID WASTE(ABOVE CEILING)	(P2.1)
RD RE	ROOF DRAIN REFERENCE,REFER	AW	- ACID WASTE(BELOW FLOOR)	FS
RECIRC	RECIRCULATE			TS
red Refr	REDUCER REFRIGERATOR	AV	- ACID VENT(ABOVE CEILING OR BELOW FLOOR)	
REINF	REININGFORCING		- COLD WATER	
REQD REV	REQUIRED REVISION, REVISE	·	- HOT WATER	
RM RPM	ROOM REVOLUTIONS PER MINUTE		HOT WATER RECIRCULATION	
rtu	ROOFTOP UNIT	G	- NATURAL GAS	
RV	RELIEF VALVE	T	- TEMPERED WATER	- Y
		CA	- COMPRESSED AIR	2
		A	- MEDICAL AIR	P7.1
		00	- MEDICAL OXYGEN	
	S	v	- MEDICAL VACUUM	
		F	- FIRE STANDPIPE, FIRE LINE	
SCHED SD	SCHEDULED STORM DRAIN	FS	- WET AUTOMATIC FIRE SPRINKLER	GE
SE	SEWAGE EJECTOR	TP	- TRAP PRIMER	1. SA
SEC SECT	SECONDARY SECTION		- DRAIN LINE	SLO
SF	SQUARE FEET SPRINKLER FLOOR CONTROL STATION	SW	- SOFT WATER	PEI 2. GR
SH	SPRINCLER FLOOR CONTROL STATION SHOWER SHEET	LT	 LINT WASTE 	SLC PEI
SIM	SIMILAR			3. AC
sk Sp	SINK SUMP PUMP, STATIC PRESSURE			SLC PEI
spec spr	SPECIFICATION SPRINKLER	PI	PING FITTINGS	4. ST
SQ	SQUARE			- 1/8
SS SSD	SERVICE SINK SUBSURFACE DRAIN		CAP ON END OF PIPE	5. GA
SSFU STD	SANITARY SEWER FIXTURE UNITS STANDARD		ELBOW UP	6. CO
STL	STEEL	+⊃ - +⊃+⊃+⊃	ELBOW DOWN VALVE IN DROP	ALI
str Surf	STRAINER SURFACE		VALVE IN RISE	
SUSP SV	SUSPEND SANITARY VENT		DIRECTION OF FLOW	GE
SW SOV	SOFT WATER SHUT-OFF VALVE		DIRECTION OF SLOPE DOWN	001
501	SHUT-UT VALVL		CONCENTRIC REDUCER	CON
		<u> </u>	ECCENTRIC REDUCER	MECI
	Т		TEE OUTLET UP	LATE
	•		TEE OUTLET DOWN	
		ı	UNION	
TD TDH	TRENCH DRAIN TOTAL DYNAMIC HEAD		FLANGE	
TH BLK TP	THRUST BLOCK TRAP PRIMER	×	PIPE ANCHOR	
TPD	TRAP PRIMER DEVICE	_ I <u>NNN</u>	EXPANSION JOINT	
TYP	TYPICAL			
			STRAINER WITH BLOWDOWN VALVE	
			GATE VALVE, HVAC BALANCING/STOP VALVE	
	U		GLOBE VALVE	
U	URINAL		BALL VALVE	
UCD UG	UNDER CUT DOOR UNDERGROUND	i ∳i	BALANCING VALVE WITH DIFFERENTIAL PRESSURE TAPS	
UH UL	UNIT HEATER UNDERWRITERS LABORATORIES, INC.		OS&Y VALVE	
UNO U/F	UNDERWRITERS LABORATORIES, INC. UNLESS NOTED OTHERWISE UNDERFLOOR		CHECK VALVE	
U/S	UNDERSLAB		BUTTERFLY VALVE	
		£	TWO-WAY MODULATING CONTROL VALVE	
		Д		
	V		THREE-WAY MODULATING CONTROL VALVE	
			SOLENOID VALVE	
V VAC	VOLT, VENT VACUUM(MEDICAL) VALVE BOX, VACUUM BREAKER		PRESSURE REDUCING VALVE	
VB VCP	VALVE BOX, VACUUM BREAKER VITRIFIED CLAY PIPE	<u> </u>	GAS REGULATOR	
VEL VERT VIB	VELOCITY VERTICAL VALVE IN BOX	│ , ,	GAS COCK	
VIB VOV	VALVE IN BOX VALVE ON VERTICAL		SPRINKLER FLOOR CONTROL STATION	
VP VTR	VACUUM PUMP VENT THRU ROOF		MANUAL AIR VENT	
		<u></u>	AUTOMATIC AIR VENT	
	W	 براید		
	••	- <u>f</u> **	T&P RELIEF VALVE	
W W/	WATT, WASTE, WIDTH, WASHER WITH		LINE CLEANOUT/ WALL CLEANOUT	
W/ W/O WC	WITH WITHOUT WATER CLOSET	~	FLOOR CLEANOUT	
WCO WH	WALL CLEANOUT WALL HYDRANT	│ — ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		
WH WM WP	WALL HYDRANT WATER METER WEATHERPROOF		GRADE CLEANOUT	
WPD	WATER PRESSURE DROP	<u> </u>	PRESSURE GAUGE WITH GAUGE COCK	
WWF WT	WELDED WIRE FABRIC WATERTIGHT, WEIGHT	<u> </u>		
		, <u>Ÿ</u>	THERMOMETER	
			WATER METER	
	Y		FLEXIBLE CONNECTION	
Y	YARD HYDRANT		PRESSURE AND TEMPERATURE TAP	
	Z			
Z	ZONE		FLOW VENTURI	
£		ــــــب ^ت '+ ا	VACUUM BREAKER	
		,±,	VACUUM RELIEF VALVE	
		-124041	BACKFLOW PREVENTOR	
		— — —	CIRCULATING PUMP WATER SUB-METER	

MISCELLANEOUS

DRAIN(TYPE AND SIZE AS NOTED ON PLANS) ROOF DRAIN OR OVERFLOW DRAIN ROOF DRAIN OR OVERFLOW DRAIN(FROM ABOVE)

HOSE BIBB WALL HYDRANT

PLUMBING FIXTURES

POINT OF NEW CONNECTION TO EXISTING PIPING

PLUMBING DRAWING NOTE REFERENCE

DETAIL NUMBER OR PLAN SHEET WHERE DETAIL OR PLAN IS SHOWN FLOW SWITCH

TAMPER SWITCH

FIRE HOSE CABINET

FIRE DEPARTMENT SIAMESE CONNECTION(WALL MOUNTED)

FIRE DEPARTMENT SIAMESE CONNECTION(FREE STANDING)

PLUMBING RISER DIAGRAM NUMBER SHEET WHERE PLUMBING RISER DIAGRAM IS SHOWN

ERAL PLUMBING NOTES

SEWER PIPING 2 1/2" AND SMALLER TO BE INSTALLED AT A 1/4" PER/FT ID SANITARY SEWER PIPING 3" AND LARGER TO BE INSTALLED AT 1/8" CLOPE.

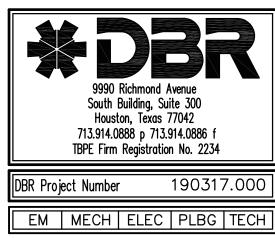
VASTE PIPING 2 1/2" AND SMALLER TO BE INSTALLED AT A 1/4" PER/FT ID SANITARY SEWER PIPING 3" AND LARGER TO BE INSTALLED AT 1/8" SLOPE.

STE PIPING 2 1/2" AND SMALLER TO BE INSTALLED AT A 1/4" PER/FT ND SANITARY SEWER PIPING 3" AND LARGER TO BE INSTALLED AT 1/8" SLOPE.

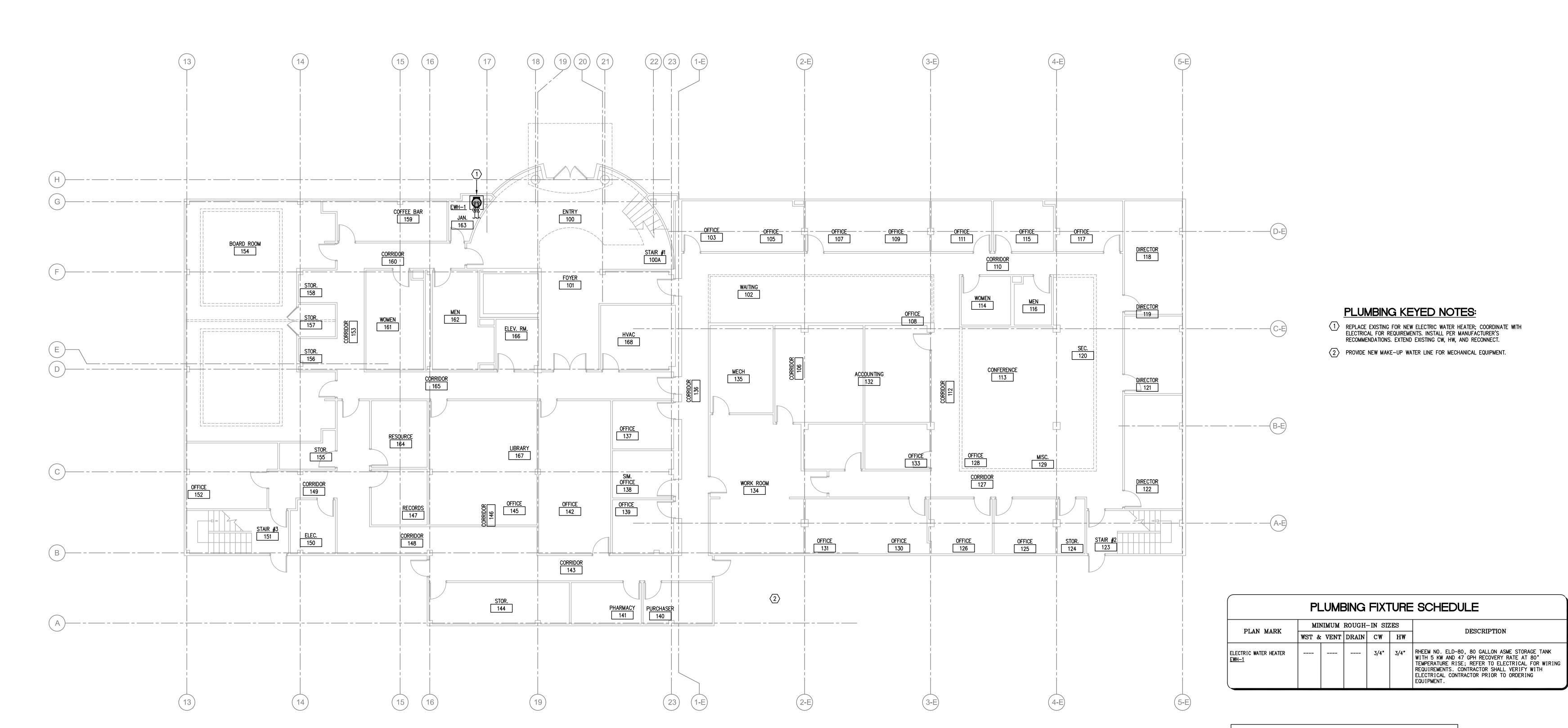
ORAIN PRIMARY AND SECONDARY (OVERFLOW) PIPING TO BE INSTALLED AT R/FT SLOPE, UNLESS OTHERWISE NOTED ON PLAN. ING SHALL BE INSTALLED IN ACCORDANCE WITH THE LOCAL GAS CODE OR 4 WHERE REQUIREMENTS ARE MORE STRINGENT. CTOR TO COORDINATE THE INSTALLATION OF THE PLUMBING SYSTEMS WITH ER TRADES

ERAL FIRE PROTECTION NOTE

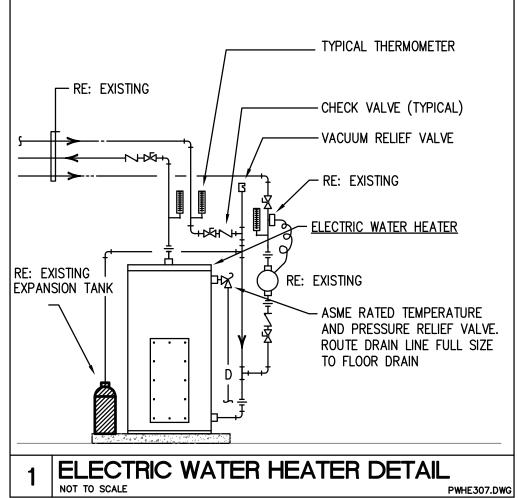
OR SHALL SPRINKLER THE ENTIRE FACILITY AND PROVIDE LIGHT HAZARD EVERYWHERE, EXCEPT FOR ELECTRICAL ROOMS, JANITORS CLOSET, AL ROOMS, STORAGE ROOMS AND FOOD SERVICE AREAS SHALL ALL RECEIVE HAZARD GROUP 2 COVERAGE. INSTALLATION SHALL COMPLY WITH THE EQUIREMENTS OF NFPA 13 AND LOCAL ATHORITIES HAVING JURISDICTION.



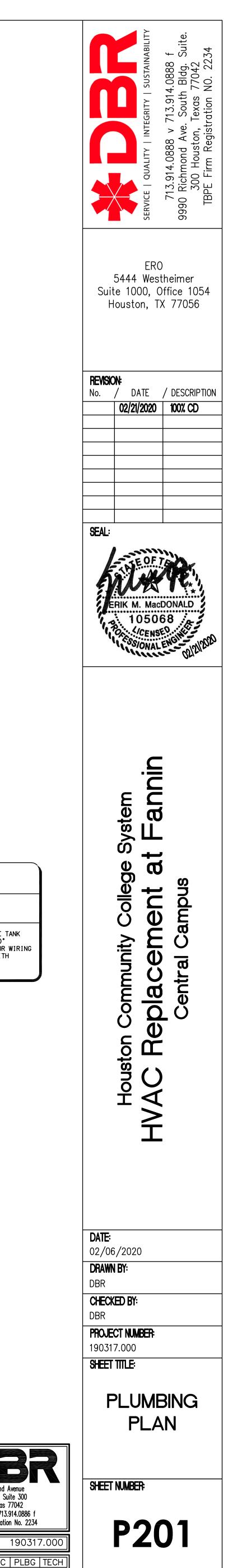


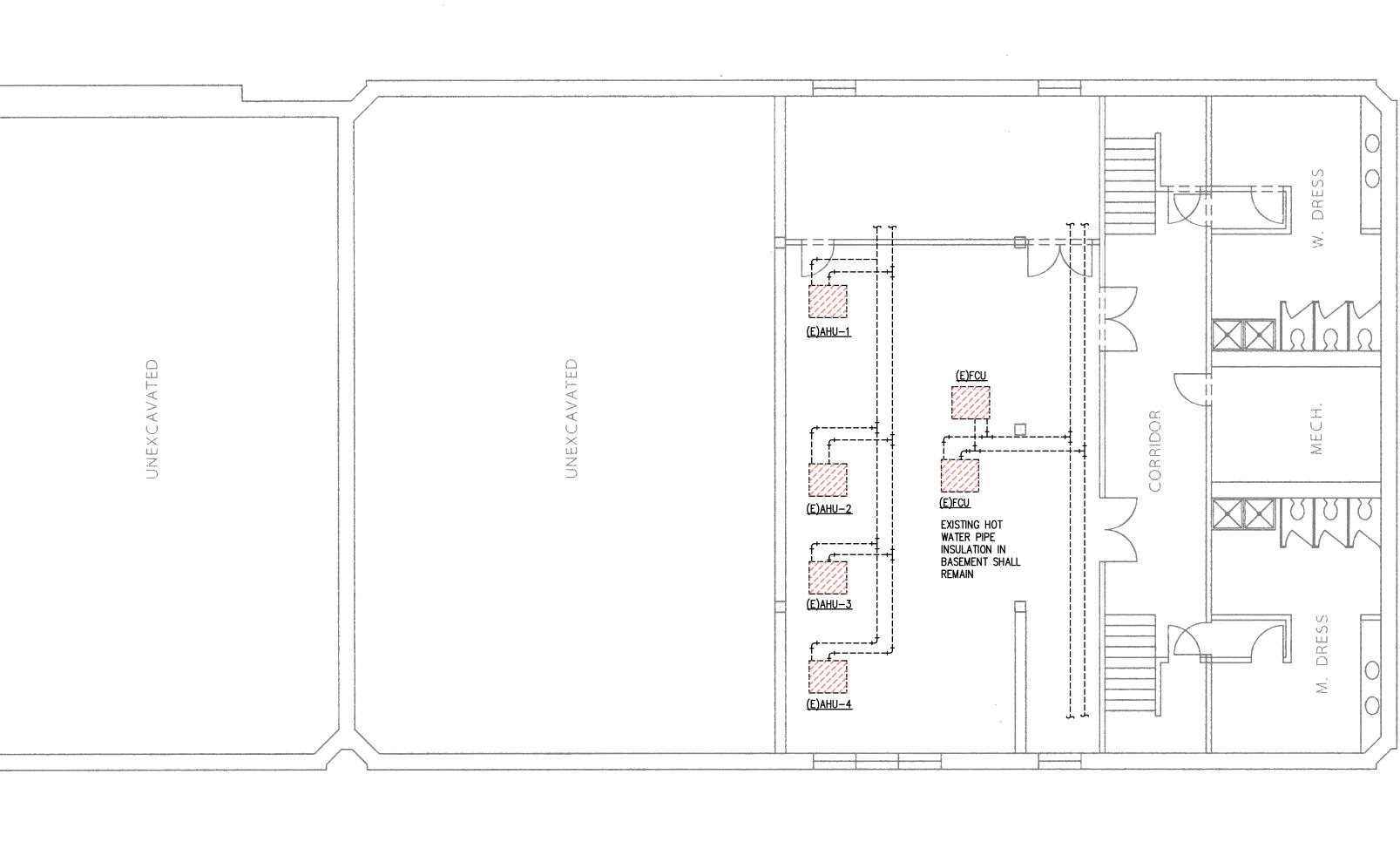


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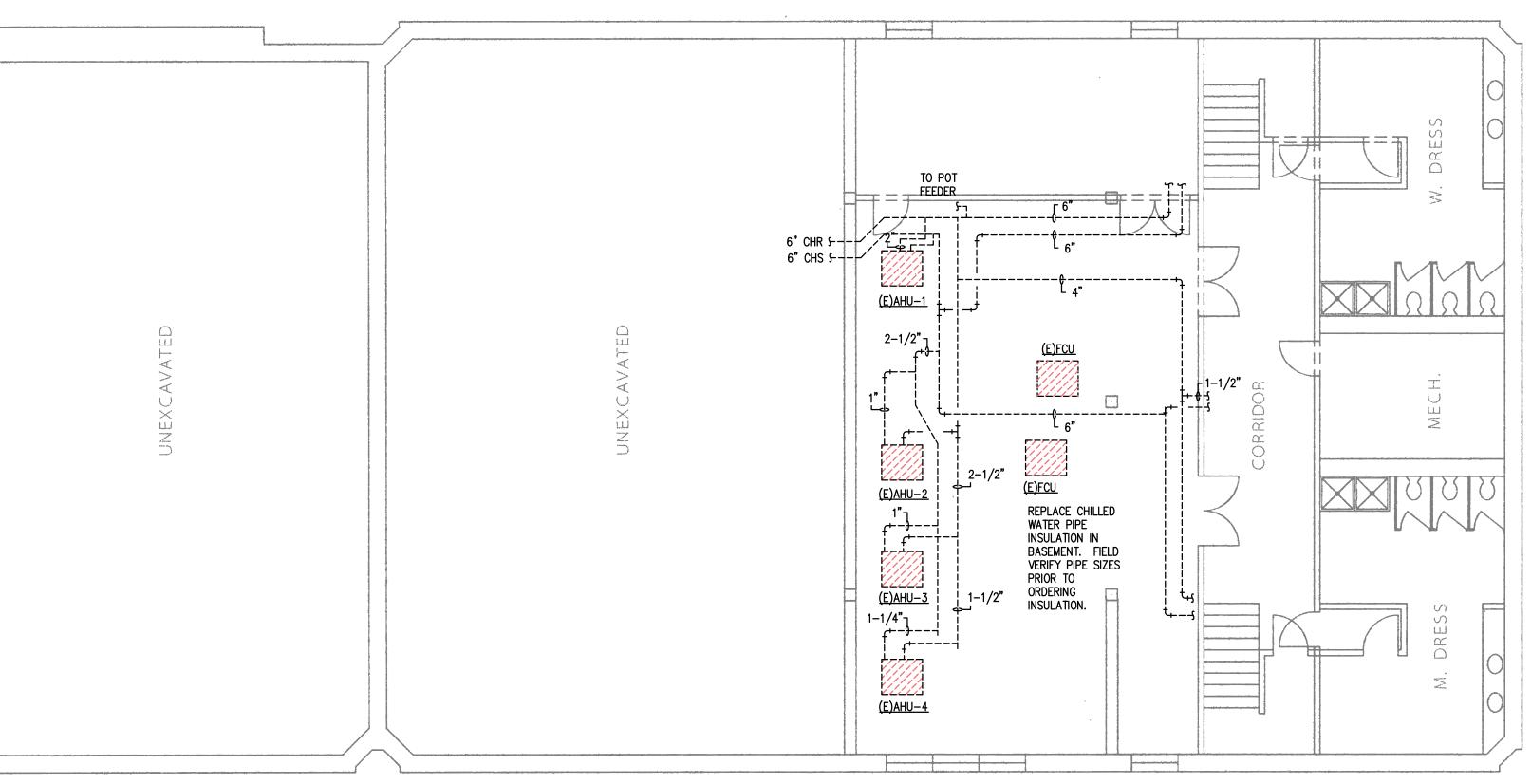




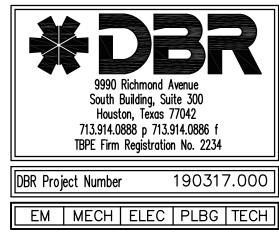


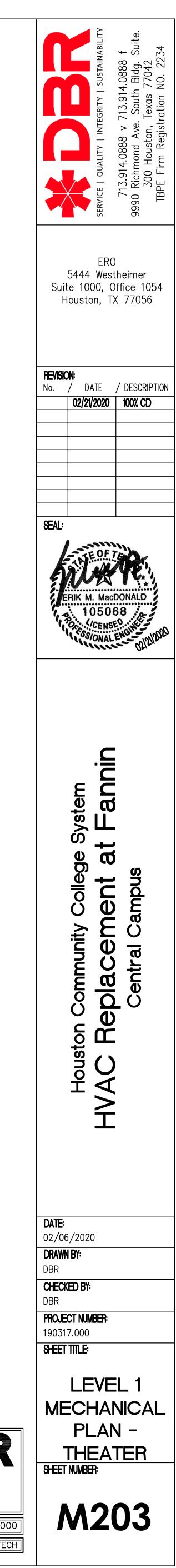


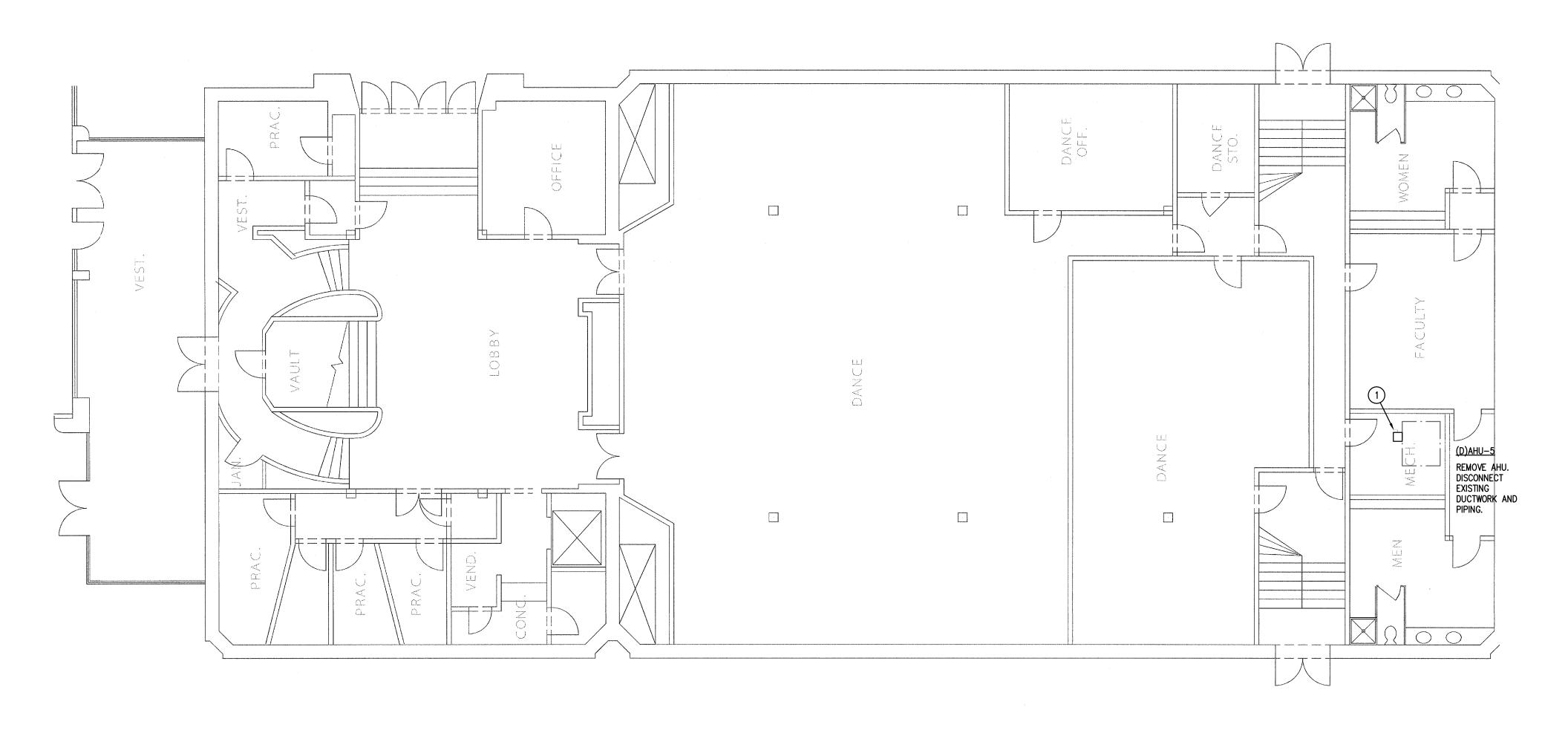


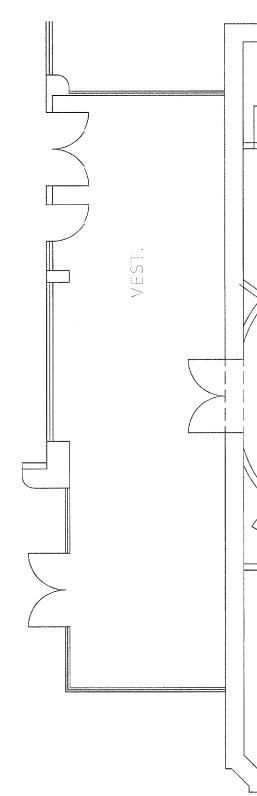


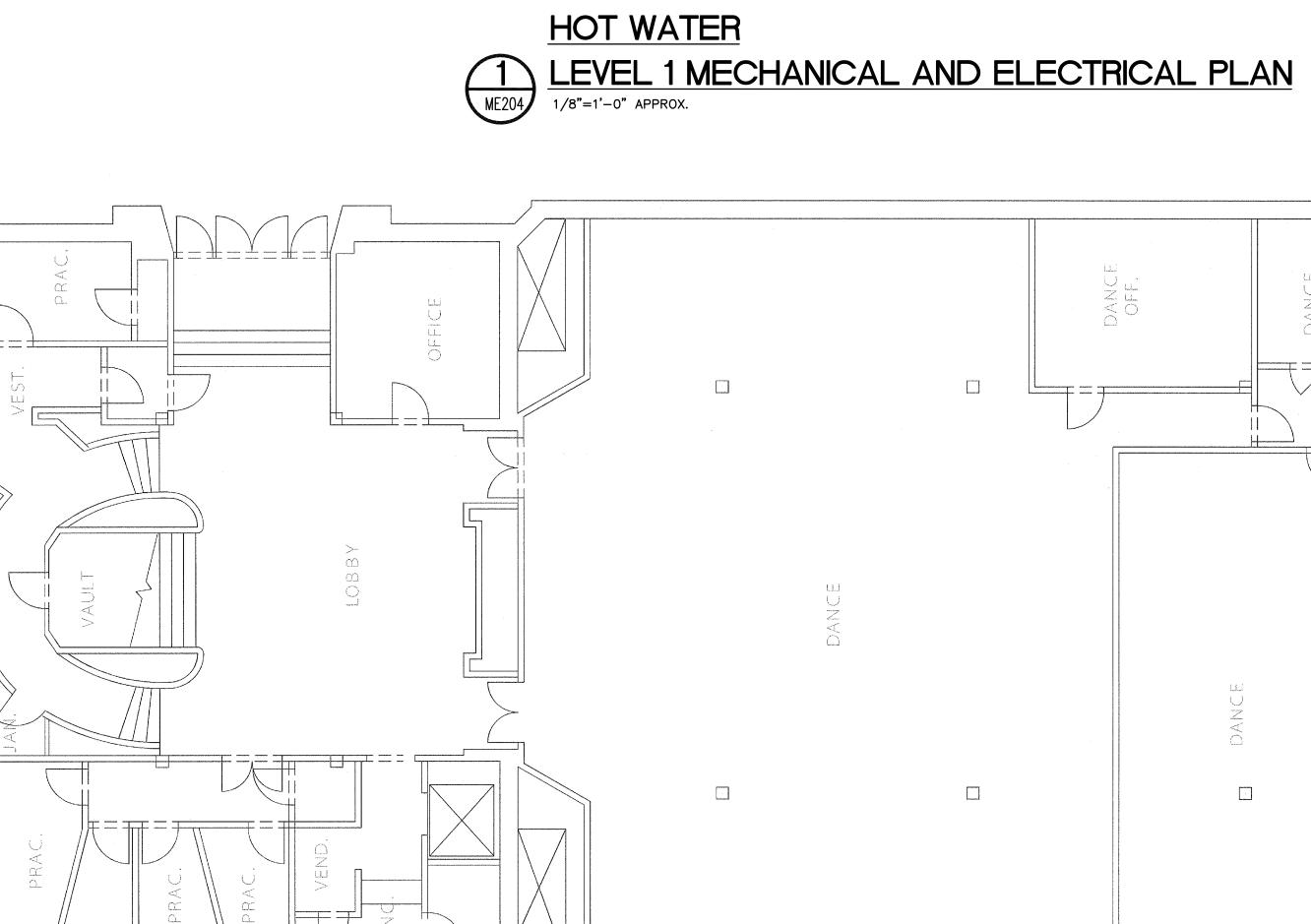




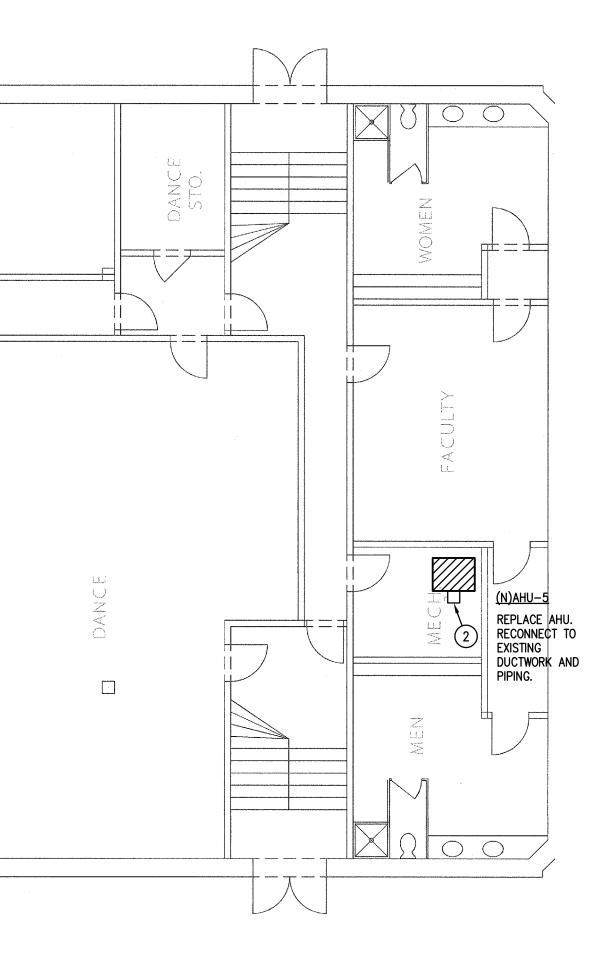












ELECTRICAL KEYED NOTES:

- 1. EXISTING AIR HANDLING UNIT SHALL BE DEMOLISHED. ELECTRICAL CONTRACTOR SHALL DISCONNECT EXISTING FEEDER AND REMOVE EXISTING DISCONNECT. EXISTING FEEDER SHALL REMAIN TO SERVE NEW UNIT.
- 2. ELECTRICAL CONTRACTOR SHALL CONNECT NEW AIR HANDLING UNIT REUSING EXISTING FEEDER PREVIOUSLY SERVING DEMOLISHED AIR HANDLING UNIT. PROVIDE ALL MATERIALS AND LABOR TO EXTEND EXISTING FEEDER TO NEW UNIT'S POINT OF CONNECTION. NEW DISCONNECT PROVIDED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.

