EAST CAMPUS CHILLER PLANT - INSTALL WATER COOLED CHILLER PROJECT NO. CP212233 ADVERTISEMENT FOR BIDS: AUGUST 25, 2022

UNIVERSITY OF MISSOURI - COLUMBIA FOR THE CURATORS OF THE UNIVERSITY OF MISSOURI

CODE DATA

JURISDICTION: UNIVERSITY OF MISSOURI

CODES ENFORCED:

- INTERATIONAL BUILDING CODE 2021
- INTERNATIONAL MECHANICAL CODE 2021
- INTERNATIONAL FIRE CODE 2021
- INTERNATIONAL PLUMBING 2021
- NATIONAL ELECTRICAL CODE 2020
- ASHRAE 90.1 (2019)



LOCATION MAP

ROSS & BARUZZINI, INC. 6TH SOUTH OLD ORCHARD AVENUE ST.LOUIS, MISSOURI 63119-3203 TEL.(314) 918-8383



-PROJECT SITE

SITE MAP

"I HEREBY CERTIFY THESE DRAWINGS AND/OR DNS HAVE BEEN PREPARED BY ME. OUR UNDER MY SUPERVISION. I FURTHER CERTIFY THAT TO THE BEST OF MY KNOWLEDGE THESE DRAWINGS AND/OR SPECIFICATIONS ARE AS REQUIRED BY AND IN COMPLIANCE WITH THE BUILDING CODES OF THE **UNIVERSITY OF MISSOURI."**

SIGNATURE

DRAWING INDEX

G000 - COVER SHEET X1 - STAGING

- M000 SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
- MD101 MECHANICAL GROUND LEVEL DEMOLITION PLAN SOUTH
- MD201 MECHANICAL SECTION VIEWS DEMOLITION PLAN
- M101 MECHANICAL GROUND LEVEL NEW WORK PLAN SOUTH
- M102 MECHANICAL GROUND LEVEL NEW WORK PLAN TOWER WATER SYSTEM
- M103 MECHANICAL GROUND LEVEL NEW WORK PLAN CHILLED WATER SYSTEM
- M201 MECHANICAL SECTION VIEWS M202 - MECHANICAL SECTION VIEWS
- M500 DETAILS
- M501 DETAILS
- M502 DETAILS
- M600 SCHEDULES
- M700 CONTROLS
- M701 CONTROLS

P000 - PLUMBING SYMBOLS AND ABBREVIATIONS P101 - PLUMBING - GROUND LEVEL & UNDERFLOOR DEMOLITION AND NEW WORK PLAN

E000 - ELECTRICAL SYMBOLS AND ABBREVIATIONS

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ED100 - ELECTRICAL - FINISH FLOOR LEVEL - DEMO & NEW WORK PLAN - NORTH
ED101 - ELECTRICAL - FINISH FLOOR LEVEL - DEMOLITION PLAN - SOUTH
ED200 - ELECTRICAL - EQUIPMENT PLATFORM LEVEL - DEMOLITION PLAN - NORTH
E101 - ELECTRICAL - FINISH FLOOR LEVEL - NEW WORK PLAN - SOUTH
E102 - ELECTRICAL - FINISH FLOOR LEVEL - NEW WORK PLAN - RM 200
E200 - ELECTRICAL - EQUIPMENT PLATFORM LEVEL - NEW WORK PLAN - NORTH
E201 - ELECTRICAL - EQUIPMENT PLATFORM LEVEL - NEW WORK PLAN - SOUTH
E202 - ELECTRICAL - EQUIPMENT PLATFORM LEVEL - NEW WORK PLAN - RM 200
E400 - ELECTRICAL SWBD-6 & 7 ONE-LINE DIAGRAMS - DEMO AND NEW WORK
E401 - ELECTRICAL SWBD 2 ONE-LINE DIAGRAMS - DEMO & NEW WORK
E402 - ELECTRICAL DETAILS
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TWO (2) VEHICLES ALLOWED TO PARK IN DRIVE. DO NOT BLOCK ACCESS TO FACILITY.-

GATE ENTRANCE







NO SCALE

GENERAL NOTES

- 1. SEE SHEET M000 FOR PROJECT GENERAL NOTES. 2. THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS OF THE SITE PRIOR TO BID. EXTRAS DUE TO THE CONTRACTOR'S UNFAMILARITY WITH THE SITE WILL NOT BE ALLOWED. EXISTING CONDITIONS ARE BASED ON INFORMATION OBTAINED FROM EXISTING CONSTRUCTION DOCUMENTS AND FIELD SURVEY AND SHALL NOT BE CONSTRUED AS "AS-BUILT" DOCUMENTS. THE CONTRACTOR SHALL FIELD VERIFY CONDITIONS PRIOR TO THE ONSET OF CONSTRUCTION. 4. CONTRACTOR SHALL PROVIDE FENCING AS REQUIRED FOR SECURITY AND PERSONAL PROTECTION. 5. ALL TREES, SHRUBS, GRASS AND/OR VEGETATION OUTSIDE OF CONSTRUCTION FENCING SHALL BE PROTECTED FROM DAMAGE AND HARM DURING CONSTRUCTION. ALL DAMAGED TREES, SHRUBS, GRASS AND/OR VEGETATION SHALL BE REPLACED BY THIS CONTRACTOR AT THE COMPLETION OF CONSTRUCTION. 6. THE INTEGRITY OF THE EXISTING SITE MUST BE MAINTAINED DURING THE CONTRACTOR'S CONSTRUCITON ACTIVITIES. THE CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL INSPECT THE SITE AND DOCUMENT CONDITIONS IN WRITTING AND/OR PHOTOGRAPHS PRIOR TO STARTING ANY WORK. UPON COMPLETION OF ALL WORK THE CONTRATOR AND OWNER'S REPRESENTATIVE SHALL EXAMINE THE SITE. CONTRACTOR SHALL REPAIR ALL DEFECTS NOT
- REFER TO SPECIFICATIONS FOR SCHEDULING AND COORDINATION FOR ALL ACCESS TO SITE.

PREVIOUSLY DOCUMENTED.

-KEEP AREA CLEAR FOR DELIVERY TRUCK TO ACCESS OVERHEAD DOOR.





DUCT SYS	TEM SYMBOLS	
12x12	DUCT SIZE, FIRST FIGURE IS SIDE SHOWN (CLEAR INSIDE, ADJUST FOR LINER)	BALI
12ø	ROUND DUCT SIZE, (ACTUAL SIZE INDICATED)	
	CHANGE OF ELEVATION - RISE (R) OR DROP (D)	
	EXHAUST AIR SECTION UP	
	EXHAUST AIR SECTION DOWN	<u>шт</u> —————— мот
	MANUAL VOLUME DAMPER	PRES PRES PRES
		PITC
IECHANIC	CAL SYMBOLS	
(X) ^Y _Z −−−−	HVAC SENSOR —SENSOR TYPE T = TEMPERATURE SENSOR	
AHU 1	R = REFRIGERANT SENSOR EQUIPMENT DESIGNATION UNIT NUMBER	
<u></u> <u>AHU-1</u>	EXISTING EQUIPMENT DESIGNATION	

DLS	PIPE SYSTEM ABBREVIATIONS	MECH EQU
L VALVE	CFCFCHEMICAL FEED	MECH EQUIF AS AIR SE BS BASKI
TERFLY VALVE		CH CHILLI CT COOL
		CTF COOL CWP CHILL
CK VALVE	COLD WATER, DOMESTIC	EF EXHAI HX HEAT
D-WAY CONTROL VALVE	D DRAIN	HXP HEAT LP LOOP
TORIZED BUTTER FLY VALVE	LOW PRESSURE CONDENSATE RETURN (15 PSIG)	MD MOTO P PUMP
	LOW PRESSURE STEAM SUPPLY (15 PSIG)	PHX PLATE TP TOWE
ESSURE AND TEMPERATURE TEST PORT	MEDIUM PRESSURE CONDENSATE RETURN (60 PSIG)	VFD VARIA
ESSURE GAGE WITH COCK	MPS MEDIUM PRESSURE STEAM SUPPLY (60PSIG)	
	MU MAKE-UP WATER (NON-POTABLE)	
CH DOWN IN DIRECTION OF ARROW	RV REFRIGERANT VENT	
	TWR TOWER WATER RETURN	
	TWS TOWER WATER SUPPLY	

MECHANICAL PROJECT GENERAL NOTES

- 1. ALL ELBOWS, FITTINGS, ETC., IN PIPING AND DUC TO CLEAR ALL JOB OBSTRUCTIONS ARE NOT NEU INDICATED. ALL NECESSARY TRANSITIONS, FITT ARE REQUIRED WHETHER SHOWN OR NOT.
- 2. THE CONTRACTOR SHALL COORDINATE STAGING WITH THE OWNER'S REPRESENTATIVE.
- 3. EXISTING CONDITIONS ARE BASED ON INFORMATING FROM PREVIOUS CONSTRUCTION DOCUMENTS A FIELD OBSERVATION AND SHALL NOT BE CONSTI BUILT." THE CONTRACTOR SHALL FIELD-VERIFY E CONDITIONS BEFORE THE ONSET OF CONSTRUCT
- 4. DEMOLISH ALL PIPING, DUCTWORK EQUIPMENT, REMOVED, IN ITS ENTIRETY, INCLUDING ALL HAN SUPPORTS.
- 5. WHERE CONTRACTOR IS REQUIRED TO CONCEA REMOVE OR MODIFY EXISTING CONSTRUCTION (ATTACH TO EXISTING CONSTRUCTION, THE CON REPAIR OR REPLACE EXISTING CONSTRUCTION / MATCH CONDITIONS AT THE ONSET OF CONSTRUC CONTRACTOR'S RESPONSIBILITY TO REMOVE AN EXISTING CEILINGS AND WALLS REQUIRED FOR I MECHANICAL SYSTEMS.
- THE OWNER SHALL MAINTAIN ALL SALVAGE RIGH AND MATERIALS REMOVED. ALL EQUIPMENT AND CLAIMED BY THE OWNER SHALL BE REMOVED FR BY THIS CONTRACTOR.
- ALL WORK SHALL BE INSTALLED PER THE REFER REGARDLESS OF WHETHER OR NOT THE DETAIL ON THE PLANS.
- 8. PROVIDE VENTS AT ALL HYDRONIC PIPING HIGH F DRAINS AT ALL PIPING LOW POINTS, REGARDLES SHOWN OR NOT.
- 9. THERE ARE EXISTING TEMPERATURE CONTROLS THAT ARE REUSED AND/OR RELOCATED. REFER TO DOCUMENTS AS FURTHER WITHIN THESE DOCUMENTS. ALL EXISTING TEMP CONTROLS THAT ARE BEING CALLED OUT TO BE DEMOLISH DISABLED AS WORK OF THIS CONTRACT SHALL BE COMPLE REMOVED FROM BUILDING. COORDINATE WITH OWNERS

REPRESENTATIVE.

UIPMENT DESIGNATION

ENT DESIGNATION ARATOR STRAINER G TOWER G TOWER FILTER WATER PUMP T FAN	
CHANGER PUMP JMP ZED DAMPER	
IEAT EXCHANGER PUMP .E FREQUENCY DRIVE	

MECHANICAL ABBREVIATIONS

А	AIR OR AMP (PER CONTEXT)	JS	JOIST SPACE
		KW	KILOWATTS
AFF	ABOVE FINISHED FLOOR		LEAVING AIR TEMPERATURE
AFS	AIR FLOW SWITCH	LB(S)	POUNDS
AHRI	AIR CONDITIONING, HEATING, AND REERIGERATION INSTITUTE		
AI	ANALOG SIGNAL INPUT	LIXA	LIGHT SPACE
AMB	AMBIENT	LVL	
AO AP	ACCESS PANEL	LVV I MAN	LEAVING WATER TEMPERATURE
APD	AIR PRESSURE DROP	MANU	MANUFACTURER
APLV	APPLICATION PART LOAD VALUE	MAX	
ARCH	ARCHITECTURE/ARCHITECT	MBH	HOUSAND BRITISH THERMAL UNITS PER HOUR
AUX	AUXILIARY	MCA	MINIMUM CIRCUIT AMPS
AV AVG		MCC	MOTOR CONTROL CENTER
BDD	BACK DRAFT DAMPER	MERV	
BFC			(ASHRAE 52.2)
BHP	BACKFLOW PREVENTER BRAKE HORSEPOWER	MFR	
BI	BINARY SIGNAL INPUT	MTD	MOUNTED
BMS	BUILDING MANAGEMENT SYSTEM	MTL	
BOB	BOTTOM OF BEAM		NORMALLY CLOSED OR NOISE CRITERIA
BOD	BOTTOM OF DUCT		(PER CONTEXT)
BOP	BOTTOM OF PIPE BEAM SPACE	NIC	
BTU	BRITISH THERMAL UNIT	NOM	NOMINAL POPEN OK NOMBER (PER CONTEXT)
BTUH	BRITISH THERMAL UNITS PER HOUR	NPLV	NON-STANDARD PART LOAD VALUE
CAP	CAPACITY	NPSH NTS	NET POSITIVE SUCTION HEAD NOT TO SCALE
CAV	CONSTANT AIR VOLUME	OA	OUTSIDE AIR
CFH		OBD	OPPOSED BLADE DAMPER
	COBIC FEET PER MINUTE CAST IRON		ON CENTER OUTSIDE DIAMETER
CLG	COOLING DUCT (COLD DUCT)	OT	OIL TRAP
		PA	
CONC	CONCRETE	PBD	PARALLEL BLADE DAMPER PRESSURE DROP
COND	CONDENSATE	PENT	PENTHOUSE
CONN	CONNECTION	PH	PHASE
CV	CONTROL VALVE	PLBG	PLUMBING
D	DEPTH	PNEU	PNEUMATIC
DB DBA	A-WEIGHTED DECIBELS	PPH PRESS	POUNDS PER HOUR
DEFL	DEFLECTION	PRV	PRESSURE REGULATING VALVE
DEG		PSI	POUNDS PER SQUARE INCH
DEGF DES	DEGREES FARRENTET	PSIA PSIG	POUNDS PER SQUARE INCH ABSOLUTE POUNDS PER SQUARE INCH GAUGE
DIA	DIAMETER	QTY	QUANTITY
		RA	
DISCH	DIVISION	RAD RD	RADIATED ROOF DRAIN
DN	DOWN	REFR	REFRIGERANT
DP DPS	DIFFERENTIAL PRESSURE SENSOR	REQ	
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	RLA	RUNNING LOAD AMPS
DTL	DETAIL	RM	ROOM
DWG(S) EA	EXHAUST AIR OR EACH (PER CONTEXT)	RND RPM	ROUND REVOLUTIONS PER MINUTE
EAT	ENTERING AIR TEMPERATURE	SA	SUPPLY AIR
EER	ENERGY EFFICIENT RATIO	SAN	SANITARY
ELEC	ELECTRIC	SECIN	SECTION SEASONAL ENERGY EFFICIENCY RATIO
ELEV	ELEVATION	SENS	SENSIBLE
EQ ESP	EQUAL EXTERNAL STATIC PRESSURE	SF	SQUARE FOOT
EWB	ENTERING AIR WET BULB TEMPERATURE	SHT	SHEET
EWT	ENTERING WATER TEMPERATURE	SND	SOUND
EXH FXIST FX	EXHAUST EXISTING	SOL	SOLENOID STATIC PRESSURE
EXT	EXTERNAL	SPD	STATIC PRESSURE DIFFERENTIAL
F	FAHRENHEIT	SPT	STATIC PRESSURE TRANSMITTER
FC	FLEXIBLE CONNECTION	SST	SQUARE STAINLESS STEEL
FD		STL	STEEL
FDC FIN	FIRE DEPARTMENT CONNECTION	STM T&P	STEAM TEMPERATURE AND PRESSURE
FLR	FLOOR	TC	TEMPERATURE CONTROL
FPF	FINS PER FOOT	TD	
FPM FS	FLOW SWITCH	трн	DIFFERENTIAL (PER CONTEXT) TOTAL DYNAMIC HEAD
FT	FEET	TEMP	TEMPERATURE
FT-HD	HEAD IN FEET	TOT	
GAL	GALLONS	TSP	TOTAL PRESSURE DROP TOTAL STATIC PRESSURE
GALV	GALVANIZED	TYP	TYPICAL
GC GPH	GENERAL CONTRACTOR GALLONS PER HOUR	UC	
GPM	GALLONS PER MINUTE	UNO	UNLESS NOTED OTHERWISE
Н НП		V	VOLTS
HEV	HOSE END VALVE	VAC VD	
HORIZ	HORIZONTAL	VEL	VELOCITY
HP HR	HORSEPOWER	VERT	
HTG	HEATING DUCT (HOT DECK)	VOL	VANIADLE FREQUEINUT DRIVE
HVAC	HEATING, VENTILATING & AIR	VTR	VENT THRU ROOF
HW	HOT WATER	W W//	WATT OR WIDTH (PER CONTEXT) WITH
HZ	HERTZ	W/O	WITHOUT
IB IE		WB	WET BULB
IN	INVERTELEVATION	WC WG	WATER GOLUMN WATER GAUGE
INDIC	INDICATOR	WPD	WATER PRESSURE DIFFERENTIAL
IPLV ISP	INTEGRATED PART-LOAD VALUE INTERNAL STATIC PRESSURE	WT	WEIGHT

JCTWORK REQUIRED ECESSARILY TINGS AND OFFSETS	9.	THE CONTRACTOR SHALL CONNECT THE NEW HVAC SYSTEM TO THE OWNER'S EXISTING BUILDING CONTROL SYSTEM. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.	16.	INSTALL ALL MANUFACTURED ITEMS, MATERIALS, AND EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED SPECIFICATIONS, EXCEPT THAT SPECIFICATIONS HEREIN, WHERE MORE STRINGENT, SHALL BE COMPLIED WITH.
NG AND SCHEDULING	10.	REFER TO SPECIFICATION 230990 - TESTING, ADJUSTING AND BALANCING FOR REQUIREMENTS CONCERNING OWNER TEST AND BALANCING OF SYSTEMS.	17.	CONTRACTOR SHALL CHECK ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, AND DIMENSIONS FOR ACCURACY AND CONFIRM THAT WORK IS BUILDABLE AS SHOWN BEFORE PROCEEDING WITH
ATION OBTAINED S AND INFORMAL TITUTED AS "AS Y EXISTING JCTION.	11.	THESE PLANS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR SHALL BE PREPARED TO MAKE SOME ALTERATIONS TO THE EXACT LOCATION OF DUCTWORK, PIPING AND EQUIPMENT FROM THE LOCATION INDICATED ON THESE DRAWINGS TO FIT ACTUAL JOB CONDITIONS.		CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATING QUESTIONS, THE CONTRACTOR SHALL OBTAIN A CLARIFICTION FROM THE OWNER BEFORE PROCEEDING WITH WORK.
Γ, ETC., SHOWN TO BE NGERS AND	12.	CONTRACTOR SHALL PROTECT ALL EXISTING EQUIPMENT DURING CONSTRUCTION.	18.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE WHICH MAY OCCUR DURING CONSTRUCTION TO EXISTING EQUIPMENT, BUILDING FEATURES, OR ANY OTHER RELATED PROPERTY OF THE LANDLORD OR OWNER.
EAL NEW WORK, I OR EQUIPMENT, OR NTRACTOR SHALL N AND MATERIALS TO RUCTION. IT IS THE AND REPLACE	13.	EAST CAMPUS CHILLER PLANT IS AN ACTIVE OPERATING FACILTY PROVIDING CHILLED WATER TO THE ENTIRE UNIVERSITY OF MISSOURI CAMPUS 24/7 365 DAYS. CHILLED WATER, CONDENSING WATER AND ALL ELECTRICAL COMPLETE SHUT DOWNS SHALL BE FULLY COORDINATED WITH THE OWNER'S REPRESEANTATIVE. ALL SHUT DOWNS SHALL BE COORDINATED AND APPROVED 14-DAYS PRIOR TO SHUT DOWN.	19.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE FIRE EXTINGUISHERS IN THE WORK SPACE TO COMPLY WITH ALL FIRE REGULATIONS THROUGHOUT THE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL AND LOCAL SAFETY REGULATIONS IN THE EXECUTION OF THE WORK.
R INSTALLATION OF	14.	THERE ARE MULTIPLE PIECES OF EQUIPMENT THAT WITH BE RELOCATED AND REUSED. COORDINATE WITH OWNER'S REPRESENTATIVE.	20.	WHERE THERE IS WORK ASSOCIATED WITH THE EXISTING CONCRETE FLOOR, CONTRACTOR SHALL INCLUDE IN HIS/OR HER BID TO SEAL FLOOR WATER TIGHT AT COMPLETION OF CONSTRUCTION.
FROM THE PREMISES	15.	OWNER SHALL CLAIM EXISTING PLATE AND FRAME HEAT EXCHANGER. CONTRACTOR SHALL DRAIN AND DISCONNECT ALL EXISTING PIPING COMPONENTS. COORDINATE WITH OWNER'S REPRESENTATIVE WHEN UNIT IS READY TO BE REMOVED		 A. REFER TO SHEET MID TO MECHANICAL - GROUND LEVEL - DEMOLITION PLAN - SOUTH. B. REFER TO SHEET M201 AND M202 MECHANICAL PLANS. C. REFER TO SHEET P101 PLUMBING - GROUND LEVEL & UNDERCROUND DEMOLITION AND NEW WORK PLAN.
ILS ARE CALLED OUT	16.	UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL LEAVE		UNDERGROUND DEMOETHON AND NEW WORK FLAN.
H POINTS, AND ESS OF WHETHER		ACCEPTABLE CONDITION.		
LS THAT ARE BEING UMENTS AS NOTED ISTING TEMPERATURE E DEMOLISHED OR BE COMPLETELY	17.	BEFORE PERFORMING ANY WORK OR ORDERING ANY MATERIALS, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF ANY EXISTING AND NEW WORK AND SHALL BE RESPONSIBLE FOR THEIR ACCURACY. ANY DIFFERENCES FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE PROCEEDING WITH THE WORK.		









KEYED NOTES # 1. EXISTING FLOOR DRAIN IN FRONT OF HEAT EXCHANGER TO BE DEMOED. REFER TO SHEET P101 -GROUND LEVEL & UNDERFLOOR DEMOLITION AND NEW WORK PLAN FOR NEW FLOOR DRAIN LOCATION. DISCONNECT AND REMOVE EXISTING BUTTERFLY TYPE SHUTOFF VALVE. SHUT OFF VALVE TO BE RELOCATED. CONTRACTOR SHALL STORE EQUIPMENT AND PROTECT FROM DAMAGE. REFER TO NEW WORK PLANS. B. DISCONNECT AND REMOVE EXISTING CONTROL VALVE IN EXISTING 12-INCH TWR. COORDINATE WITH DIVISION 26. CONTROL VALVE TO BE RELOCATED. CONTRACTOR SHALL STORE EQUIPMENT AND PROTECT FROM DAMAGE. REFER TO NEW WORK PLANS. 4. DISCONNECT AND REMOVE EXISTING FLOW METER IN EXISTING 12-INCH. FLOW METER TO BE RELOCATED. CONTRACTOR SHALL STORE EQUIPMENT AND PROTECT FROM DAMAGE. REFER TO NEW WORK PLANS. DISCONNECT AND REMOVE EXISTING TEMPERATURE TRANSMITTER. TRANSMITTER SHALL BE RELOCATED. CONTRACTOR SHALL STORE EQUIPMENT AND PROTECT FROM DAMAGE. TYPICAL FOR ALL EXISTING TEMPERATURE TRANSMITTERS SERVING PLATE AND FRAME HEAT EXCHANGER (CHWS, CHWR, TWS AND TWR). 6. OWNER SHALL CLAIM EXISTING PLATE AND FRAME HEAT EXCHANGER. CONTRACTOR SHALL DRAIN AND DISCONNECT ALL EXISTING PIPING FROM EXISTING PLATE AND FRAME HEAT EXCHANGER. CONTRACTOR SHALL DELIVER PLATE AND FRAME HEAT EXCHANGER TO OWNERS STORAGE FACILITY LOCATED ON THE COLUMBIA, MO CAMPUS. COORDINATE WITH OWNER'S REPRESENTATIVE FOR SCHEDULING LOCATION AND DATE TO ACCEPT UNIT. OWNER HAS EXISTING SHOP DRAWINGS OF UNIT. EXISTING PLATE AND FRAME HEAT EXCHANGER (ARMSTRONG MODEL S-229-3750-417). WEIGHT (LBS): EMPTY 24,868 / FLOODED 33,052. SIZE (INCHES) 154.94 x 44.63 x 127.09. DEMOLISH EXISTING CONCRETE HOUSEKEEPING PAD EXISTING PLATE AND FRAME HEAT EXCHANGER CURRENTLY IS SITTING ON. CONTRACTOR SHALL SMOOTH EXISTING FLOOR TO MATCH EXISTING FLOOR. REMOVE ALL ANCHOR BOLTS, DOWELS, GROUT AND CONCRETE TO CREATE A SMOOTH SURFACE. CONTRACTOR SHALL SEAL FLOOR TO MATCH EXISTING. REFER TO SPECIFICATIONS (099000 PROTECTIVE COATINGS) FOR CONCRETE SEALANT REQUIREMENTS. INCLUDE A MINIMUM 20'-0" x 10'-0" OF CONCRETE SEALING WORK IN BIDS. 8. DEMO A PORTION OF UNDERGROUND SANITARY PIPING AND EXISTING FLOOR DRAIN. REFER TO PLUMBING SHEET P101. 9. DISCONNECT AND REMOVE THE EXISTING HORIZONTAL CHECK VALVE.

- 10. REMOVE EXISTING PIPING FROM EXISTING HXP-1 AS SHOWN. PREPARE PIPE FOR CONNECTION TO NEW. REFER TO NEW WORK PLAN.
- 11. DISCONNECT 6-INCH TWS AT SHUT OFF VALVE TO 36-INCH TWS MAIN. CONNECTION TO 36-INCH MAIN TO BE MOVED TO ALLOW FOR NEW CONNECTION TO CHILLER CH-9. REFER TO NEW WORK PLANS.











#	KEYED NOTES
1.	INSTALL 9'-0" x 1'-6" x 6" CONCRETE PAD AT EACH CENTERED UNDER CHILLER BEARING FEET (TWC PER CHILLER). COORDINATE WITH CHILLER MANUFACTURER. PROVIDE (4) #6 LONG WAY IN T PAD (1-INCH CLEAR) WITH HOOK EACH END, TUR DOWN AND EMBEDDED 4-INCH MINIMUM INTO EX SLAB WITH HILTI HIT-HY200 ADHESIVE. AT CONTA SURFACES BETWEEN PADS AND EXISTING SLAB, SANDBLAST EXISTING CONCRETE AND COAT WIT SIKADUR 32 HI-MOD BONDING. FOLLOW SIKA INSTRUCTIONS. AT EACH FOOT, CHILLER SHALL ELECTROMETRIC ISOLATOR PAD (FOUR (4) PER CHILLER) ATTACHED TO NEW CONCRETE BASE W ANCHOR BOLTS. REFER TO SPECIFICATIONS.
2.	HINGED MARINE STYLE WATER BOX (TYPICAL FO CONDENSER AND EVAPORATOR ON EACH END).
3.	3/4" HOSE END DRAIN VALVE AND CAP. INSTALL (CHWS, CHWR, TWS AND TWR PIPING AT CHILLER (TYPICAL)
4.	INSTALL FLOW STRAIGHTENER FLANGE UPSTREA CHECK VALVE. STRAIGHTENER SHALL BE METRA VANE FLEX FLANGE, MODEL VFFV. FLANGE SHAL CARBON STEEL WITH 304 STAINLESS STEEL VAN (TYPICAL FOR NEW TP-9 AND EXISTING PUMP HXI
5.	NEW METRAFLEX STYLE 900 GLOBE SILENT CHEC VALVE OR APPROVED EQUAL.
6.	EXISTING 12-INCH BUTTERFLY TYPE SHUT OFF VA VALVE WAS REMOVED DURING DEMO OF EXISTIN PLATE AND FRAME HEAT EXCHANGER.
7.	RE-INSULATE PIPING AT PUMP. REFER TO SPECIFICATIONS.
8.	WELD CAP EXISTING PIPE. INSULATE CAP PER SPECIFICATIONS.
9.	PRESSURE AND TEMPERATURE TEST PLUG. INS AT SAME ELEVATION ON SUPPLY AND RETURN PL ON CHILLED WATER AND CONDENSER WATER AT CHILLER (TYPICAL).
10.	EXISTING TEMPERATURE TRANSMITTER INSTALL NEW CHWS, CHWR, TWS AND TWR PIPING AT CH (TYPICAL). TRANSMITTER WAS REMOVED DURING DEMO OF EXISTING PLATE AND FRAME HEAT EXCHANGER.
11.	EXISTING FLOW METER RE-LOCATED. METER WA REMOVED DURING DEMO OF EXISTING PLATE AN FRAME HEAT EXCHANGER.
12.	SHORT RADIUS ELBOW USED TO MAINTAIN MAXIM DISTANCE FROM EXISTING CHEMICAL TREATMEN TANK AND NEW PIPING. INSTALL GRADUAL OFFS PIPE TO ALIGN TO CONNECT TO 36-INCH MAIN.
13.	16-INCH BY-PASS AROUND BASKET STRAINER. IN AT A HEIGHT TO ALLOW BASKET STRAINER TO BE COMPLETELY REMOVED FOR MAINTENANCE.
14.	PIPING AND EQUIPMENT LAYOUT FROM NEW 16-II TWS CONNECTION AT 36-INCH TWS MAIN TO SUC CONNECTION ON NEW PUMP TP-9 SHALL MATCH EXACTLY PIPING AND EQUIPMENT LAYOUT OF EX TOWER PUMPS INSTALLED ADJACENT.
15.	EXISTING 12-INCH CONTROL VALVE. VALVE WAS REMOVED DURING DEMO OF EXISTING PLATE AN FRAME HEAT EXCHANGER.
16.	NEW BUTTERFLY TYPE SHUT OFF VALVE.
17.	INSTALL 5'-4" x 5'-4" x 6" CONCRETE PAD CENTER UNDER PUMP. PROVIDE (4) #6 LONG WAY IN TOP PAD (1-INCH CLEAR) WITH HOOK EACH END, TURI DOWN AND EMBEDDED 4-INCH MINIMUM INTO EX SLAB WITH HILTI HIT-HY200 ADHESIVE. AT CONTA SURFACES BETWEEN PADS AND EXISTING SLAB, SANDBLAST EXISTING CONCRETE AND COAT WIT SIKADUR 32 HI-MOD BONDING. FOLLOW SIKA INSTRUCTIONS. REFER TO SPECIFICATIONS.
18.	INSTALL 3'-2" x 3'-2" x 6" CONCRETE PAD CENTER UNDER BASKET STRAINER. PROVIDE (4) #6 LONG IN TOP OF PAD (1-INCH CLEAR) WITH HOOK EACH TURNED DOWN AND EMBEDDED 4-INCH MINIMUM EXISTING SLAB WITH HILTI HIT-HY200 ADHESIVE. CONTACT SURFACES BETWEEN PADS AND EXIST SLAB, SANDBLAST EXISTING CONCRETE AND COM WITH SIKADUR 32 HI-MOD BONDING. FOLLOW SIK INSTRUCTIONS. REFER TO SPECIFICATIONS.
19.	PRESSURE GAUGE WITH BALL VALVES TO ISOLA SUCTION AND DISCHARGE READINGS (TYP).
20.	ROUTE 1 1/2" DRAIN TO NEW FLOOR DRAIN. TURI DOWN OVER FLOOR DRAIN. SUPPORT PIPE WITH COOPER B-LINE DURA-BLOK (SERIES DB) PIPE SUPPORT. SUPPORT PIPE MINIMUM EVERY 4'-0".

ROSS & BARUZZINI MISSOURI STATE CERTIFICATE OF AUTHORITY #000148 AL NST Σ © ROSS & BARUZZINI, INC. 2022 RANDY JAMES DIEMER NUMBER E-20170157 08/25/2 RANDY J. DIEMER ENG. LIC. NO. PE-2017015702 sional Engineer whose signature and personal ocument, assumes responsibility only for what appears hereon ns responsibility for all other plans, specifications, estimates, s, documents or instruments not sealed by the Profession g to, or intended to be used for, any part or parts of the eng p which this document refers. Prints sealed by the Engineer bossed or wet seal of the Engineer across the signature and of this document, as signed and sealed, have been retained sional Engineer. The Professional Engineer will not be resp ubsequent changes to this document, unless the changes are n ne Engineer or with the Engineer's written authorization. WHEN THIS DRAWING IS REPRODUCED AT ORIGINAL SCALE THIS BAR = 1 INCH 1 INCH **REVISIONS:** CP212233 0011484.000 08/25/2022 ISSUE DATE: DRAWING TITLE: MECHANICAL SECTION VIEWS DRAWING NO.: M201

SECTION VIEW AT CH-9, HXP-1 AND TP-9 1/4" = 1'-0"

SECTION VIEW EAST - EXISTING AND NEW TOWER WATER PUMPS

DOWN OVER FLOOR DRAIN. SUPPORT PIPE WITH COOPER B-LINE DURA-BLOK (SERIES DB) PIPE SUPPORT. SUPPORT PIPE MINIMUM EVERY 4'-0".

PLAN MARK							
		MANUFACTURER	MODEL	COMPRESSOR TYPE	LOCATION	SE	
СН	9	YORK - JOHNSON CONTROLS	YMC2	MAGNETIC BEARING CENTRIFUGAL	EAST CAMPUS CHILLER PLANT	CAMPUS CH	

		CH #	WAT	rer (CHILLE	ER SC	HEDU	LE - ((OWN	ER P	ROVI	DED)									
ERVICE	REFRIGERANT TYPE	NOMINAL TONS	EWT (°F)	LWT (°F)	EVAPORATOF FLOW (GPM)	R PERFORMAI MAX WATER PD (FT)	NCE NO OF PASSES	DESIGN FOULING FACTOR	EWT (°F)	LWT (°F)	MINIMUM CONT. RUN (°F)	CONDE FLOW (GPM)	NSER DATA MAX WATER PD (FT)	NO OF PASSES	DESIGN FOULING FACTOR	NPLV.IP (KW/TON)	MAX. FULL LOAD (KW/TON)	MAX SND PRESSURE (dBA)	ELECTRI kW	CAL DATA V/PH/HZ	1
ILLED WATER LOOP	R134a	1020	56	43	1890	15	2	0.0001	87	97.12	36	2860	20	2	0.00025	0.3203	0.6022	84	614.2	460/60/3	ALL AF

OADING AND INSTALLING CHILLER.

				TI #
PLAN MARK	MANUFACTURER	MODEL	TYPE	
TP-9	ARMSTRONG	4300-14X14X15	VERTICAL INLINE	
NOTEO				

NOTES:

REFER TO EQUIPMENT DATA SCHEDULE FOR ELECTRICAL REQUIREMENTS. PROVIDE WITH INVERTER-DUTY MOTOR WITH AEGIS SHAFT GROUNDING RING ON MOTOR SHAFT AND INSULATED BEARINGS. REFER TO ELECTRICAL ONE-LINE (E300). 3. PROVIDE OPTIONAL STEEL CASING SUPPORT STANCHION PLATES FOR MOUNTING ON CONCRETE PAD. 4.

PROVIDE FLUSH LINE SEPARATOR. 5.

			(BS #
MARK	MFR	MODEL	TYPE	
BS-9	EATON	SIMPLEX - 73	STRAIGHT FLOW SIMPLEX	EAST C
NOTES: 1. BASK	ET STRAINER SH	ALL BE PROVIDE	D WITH FACTORY EPOXY COAT	ING INSIDE

2. PROVIDE TWO (2) STAINLESS STEEL 316 PERFORATED STRAINER SCREENS WITH 5/32-INCH OPENINGS AND 62-PERCENT OPEN AREA.

	PUMP SCI	HEDU	LE							
LOCATION	SERVICE	GPM	TDH (FT)	IMPELLER (IN)	MIN EFF	NPSH REQD (FT)	RPM	HP/BHP	1 VOLTS/ PHASE	NO
EAST CAMPUS CHILLER PLANT	TOWER PUMP	4,800	67	15.2	88.3	10	1200	100 / 91.76	460/3	ALL A

BASKET STRAINER SCHEDULE

LOCATION	SERVICE	FLOW (GPM)	LINE SIZE (INCH)	MAX PRESSURE DROP (PSIG)	NOTES		
CAMPUS CHILLER PLANT MECHANICAL ROOM	CONDENSER WATER	4800	16	1.5	ALL APPLY		

DE AND OUT.

NOTES: H-O-A SWITCH FURNISHED BY CONTRACTOR.

NOTES:

- 1. COORDINATE THIS DRAWING WITH DDC CONTROL POINTS LISTS.
- 2. SEE SPECIFICATIONS FOR DEVICE SPECIFICATIONS.
- 3. COORDINATE THIS DRAWING WITH FLOW DIAGRAM.
- 4. COORDINATE THIS DRAWING WITH CONTROLS DETAILS.
- 5. ANY DEVICE REQUIRING POWER MUST BE POWERED BY CONTRACTOR.
- 6. REFER TO DDC POINTS LISTS FOR NEW/EXISTING DESIGNATIONS.

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GENERAL NOTES

- 1. DUE TO THE LIMITED SPACE AVAILABLE FOR THE INSTALLATION OF ALL THE PLUMBING WORK, COORDINATION BETWEEN ALL OTHER TRADES IS OF UTMOST IMPORTANCE.
- 2. THIS CONTRACTOR SHALL VISIT THE PROJECT SITE AND VERIFY LOCATIONS, ELEVATIONS AND SIZES OF ALL UTILITIES AT SITE PRIOR TO PROCEEDING WITH WORK. EXISTING SYSTEMS AND STRUCTURE SHALL BE INVESTIGATED FOR BEST POSSIBLE ROUTING OF COLD WATER, HOT WATER, SANITARY WASTE AND VENT, STORM AND MEDICAL LABORATORY GAS PIPING.
- 3. THESE PLANS ARE DIAGRAMMATIC IN NATURE SINCE THE ONLY AVAILABLE INFORMATION HAS BEEN OBTAINED FROM EXISTING PLANS, SPECIFICATIONS, AND FIELD SURVEYS. THE EXACT LOCATION OF PIPING, FIXTURES AND EQUIPMENT MAY DEVIATE FROM THE LOCATION INDICATED ON THESE DRAWINGS. EXTREME ACCURACY IS NOT GUARANTEED. THIS CONTRACTOR SHALL BE PREPARE TO MAKE ALTERATIONS TO NEW AND/OR EXISTING SERVICES TO FIT JOB CONDITIONS. THIS CONTRACTOR SHALL FURNISH A COMPLETE CODE COMPLYING SYSTEM. THIS CONTRACTOR SHALL REPORT, IN WRITING, ANY DISCREPANCIES WHICH PREVENT THE INSTALLATION OF WORK AS SHOWN.
- 4. IF THIS CONTRACTOR DOES NOT CLEARLY UNDERSTAND THESE PLANS OR IS NOT COMPLETELY SURE OF THEIR MEANING, THIS CONTRACTOR SHOULD OBTAIN THE ENGINEER'S WRITTEN EXPLANATION AND/OR INTERPRETATION PRIOR TO SUBMITTING BIDS, SINCE THIS CONTRACTOR WILL BE HELD RIGIDLY TO THE INTERPRETATION OF THE ENGINEER.
- 5. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO REPAIR THE EXISTING SURFACES TO REMAIN WHERE THEIR WORK HAS BEEN COMPLETED. REPAIR SHALL INCLUDE, BUT NOT LIMITED TO, ANY EXISTING WALL, CEILING OR FLOOR THAT IS SCHEDULED TO REMAIN. REPAIR, PAINTING, AND PATCHING SHALL BE COMPLETED BY AN APPROPRIATE CONTRACTOR QUALIFIED FOR THIS TYPE OF WORK.
- 6. THE OWNER SHALL MAINTAIN ALL SALVAGE RIGHTS OF FIXTURES, EQUIPMENT AND MATERIALS REMOVED, HOWEVER, ALL FIXTURES, EQUIPMENT AND MATERIALS NOT CLAIMED BY THE OWNER SHALL BE REMOVED FROM THE PREMISES AND PROPERLY DISPOSED OF THE BY THE DEMOLITION CONTRACTOR.
- 7. CEILING REMOVAL, STORAGE AND REPLACEMENT FOR NEW PIPING INSTALLATION SHALL BE BY THE GENERAL CONTRACTOR.
- 8. IF HAZARDOUS MATERIALS ARE ENCOUNTERED DURING DEMOLITION OPERATIONS, THE CONTRACTOR WILL NOTIFY BUILDING OWNER OF THE HAZARDOUS MATERIAL.
- 9. TEMPORARY CONNECTION SHALL BE PROVIDED BY RESPECTIVE PLUMBING AND FIRE PROTECTION CONTRACTORS WHEN EXTENDED INTERRUPTIONS OF SERVICES AND UTILITIES SUCH AS WATER, WASTE AND FIRE PROTECTION WHICH SERVE OTHER AREAS ARE NECESSARY.
- 10. COORDINATE WITH MAINTENANCE PERSONNEL AS TO SOURCE OF UTILITIES AND TEMPORARILY DISCONNECT OR SHUT OFF SERVICES OR UTILITIES AT NEAREST MAIN. TEMPORARY AND ACCESSIBLE ISOLATION VALVES SHALL BE INSTALLED CLOSE TO THIS POINT OF WORK.
- 11. IT IS ESSENTIAL THAT BUILDING OPERATIONS CONTINUE WITH MINIMAL INTERRUPTIONS. IT IS NECESSARY THAT OPERATION OF EXISTING SYSTEMS BE INTERFACED WITH AS LITTLE DISRUPTION AS POSSIBLE EXCEPT IN AREAS VACATED FOR CONSTRUCTION WORK. WORK WHICH WILL INTERFERE WITH OPERATION OF EXISTING FIRE SUPPRESSION AND PLUMBING SYSTEMS OR WHICH REQUIRE DOWNTIME WILL BE SCHEDULED ONLY AFTER CONSULTATION WITH AND PERMISSION GIVEN BY THE OWNER. ALLOW 10 DAYS PRIOR TO ANTICIPATED INTERRUPTION OF SYSTEMS. WORK MAY BE REQUIRED TO BE PERFORMED OUTSIDE NORMAL WORKING HOURS.
- 12. ARCHITECTURAL DEMOLITION DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH THESE DRAWINGS.
- 13. ALL PIPING HANGERS AND SUPPORTS SHALL BE REMOVED ALONG WITH PIPING BEING REMOVED.
- 14. THE CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH PROJECT'S PHASING SCHEDULE PRIOR TO COMMENCEMENT OF ANY WORK.
- 15. WHEN PLACING NEW PLUMBING FIXTURES, CONTRACTOR SHALL VERIFY LOCATIONS OF PLUMBING VENTS. OFFSET VENTS THAT TERMINATE WITHIN 25 FEET OF HVAC UNITS OUTDOOR AIR INTAKES. CONTRACTOR SHALL FIELD VERIFY PRIOR TO BID WHERE THE INTERFERENCE'S ARE PRICE ACCORDINGLY OR MAKE ALLOWANCES IN BID.
- 16. USE CAUTION WHEN SAW-CUTTING THROUGH EXISTING CONCRETE FLOOR OR WALL CONSTRUCTION FOR THE INSTALLATION OF PLUMBING SYSTEMS TO AVOID CUTTING REBAR AT EDGE OF OPENING. LEAVE SUFFICIENT REBAR EXPOSED TO TIE NEW REINFORCING REPLACEMENT CONCRETE AND/OR OTHER STRUCTURAL ATTACHMENTS FOR NEW CONSTRUCTION.
- 17. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS, TRANSITIONS, OFFSETS, ETC., TO AVOID DUCTWORK, PIPING, EQUIPMENT OR STRUCTURE NEW OR EXISTING AND TO MAKE A COMPLETE AND FUNCTIONING SYSTEM.

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PLUMBING SYMBOLS & ABBREVIATIONS NOT ALL SYMBOLS ARE USED FOR THIS PROJECT

	TRAPPED CONNECTION
	STRAINER
	BALANCING VALVE
	CLEANOUT (CO)
	OS & Y GATE VALVE
	TEMPERATURE GAUGE
	THERMOSTATIC MIXING VALVE
	REDUCED PRESSURE BACKFLOW PREV
	HOSE BIBB/WALL HYDRANT
	ACID VENT PIPING
	ACID WASTE PIPING
	DOMESTIC COLD WATER PIPING (CW)
	DOMESTIC HOT WATER PIPING (HW)
	DOMESTIC HOT WATER RETURN PIPING
	DRAIN PIPING
	DEIONIZED WATER PIPING
	GREASE VENT PIPING
	GREASE WASTE PIPING
	NATURAL GAS PIPING
	NON-POTABLE WATER PIPING
	OVERFLOW STORM PIPING
	OIL WASTE PIPING
	PUMP DISCHARGE PIPING
	REVERSE OSMOSIS PIPING (RO)
	SANITARY PIPING
	SOFTENED COLD WATER PIPING
	SOFTENED HOT WATER PIPING
	SUBSOIL DRAINAGE PIPING
	STORM PIPING
	TEMPERED WATER PIPING
· _	VENT PIPING
	WASTE PIPING
	FLEXIBLE CONNECTION
	FLOOR DRAIN/FLOOR SINK (FD/FS)
	CIRCULATION PUMP

#	SHEET KEYNOTES
1.	EXISTING PLUMBING FIXTURE AND ALL AS PIPING AND COMPONENTS TO BE REMOVE VIEW #1 ON THIS SHEET FOR CONTINUATION DEMOLITION.
2.	SAW CUT CONCRETE SLAB FOR INSTALLA WASTE PIPING AND CONNECTION INTO EX TRENCH TO BE MINIMUM 24-INCH WIDE WI OF 4-INCH COMPACTED GRANULAR FILL. F TO MATCH EXISTING. AREA AROUND FLOO SHALL BE SLOPED BACK TO DRAIN. CONT SHALL SEAL FLOOR TO MATCH EXISTING. SPECIFICATIONS (099000 PROTECTIVE CO/ CONCRETE SEALANT REQUIREMENTS. INO MINIMUM AREAS OF 6'-0" x 10'-0" AND 3'-0" CONCRETE SEALING WORK FOR EACH CO IN BIDS.

5 TRAP PRIMER NONE

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B

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KEYPLAN

SOUTH

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ABBREVIATIONS

AMPERES ALTERNATING CURRENT AC ACS ACCESS CONTROL SYSTEM AFF ABOVE FINISHED FLOOR AIC AMPERES INTERRUPTING CAPACITY AUDIO/VIDEO AV AWG BAS AMERICAN WIRE GAUGE BUILDING AUTOMATION SYSTEM CONDUIT С CAT CATEGORY CATV CBP CABLE TELEVISION COPPER BACKBONE PATCH PANEL CCTV CFCI CLOSED CIRCUIT TELEVISION CONTRACTOR FURNISHED, CONTRACTOR INSTALLED COMM CPP CT COMMUNICATIONS COPPER HORIZONTAL PATCH PANEL CABLE TRAY CU CUH CO DC DPST DW EC COPPER CABINET UNIT HEATER COPIER DIRECT CURRENT DUAL POLE, SINGLE THROW DISHWASHER EMPTY CONDUIT EXHAUST FAN EF EGC EIA EMT EQUIPMENT GROUNDING CONDUCTOR ELECTRONICS INDUSTRIES ASSOCIATIONS ELECTRICAL METALLIC TUBING EOC EMERGENCY OPERATIONS CENTER EPO EMERGENCY POWER OFF ETR EXISTING TO REMAIN EWC FAAP FACP ELECTRIC WATER COOLER FIRE ALARM ANNUNCIATOR PANEL FIRE ALARM CONTROL PANEL FBO FURNISHED BY OTHERS FO FPD FIBER OPTIC FLAT PANEL DISPLAY FPP FIBER OPTIC PATCH PANEL FT FEET OR FOOT GFI OR GFCI GROUND FAULT CIRCUIT INTERRUPTER GC G OR GND GFR GFP HZ GENERAL CONTRACTOR GROUND GROUND FAULT RELAY GROUND FAULT PROTECTION HERTZ ISOLATED GROUND IG INV INVERTER JBOX JUNCTION BOX KILO K KCMIL THOUSAND CIRCULAR MILS KILOVOLT AMPERES KV KWH KILOWATT HOURS LC LIGHTING CONTACTOR LIGHTNING PROTECTION INSTITUTE LPI MAX MAXIMUM MCB MAIN CIRCUIT BREAKER MDP MAIN DISTRIBUTION PANEL MH MANHOLE MLO MM MTD MAIN LUGS ONLY MULTIMODE MOUNTED MW MICROWAVE NEUTRAL CONDUCTOR Ν N.C. NEC NEMA NORMALLY CLOSED NATIONAL ELECTRICAL CODE NATIONAL ELECTRICAL MA MANUFACTURER'S ASSOCIATION NIC NOT IN CONTRACT NIGHT LIGHT NL N.O. NORMALLY OPEN NTS NOT TO SCALE OC ON CENTER OFCI OWNER FURNISHED, CONTRACTOR INSTALLED OFOI OWNER FURNISHED, OWNER INSTALLED ONT OPTICAL NETWORK TERMINAL POLE Р PAIR PR POLYVINYL CHLORIDE PVC RELAY R REF REFRIGERATOR RIGID GALVANIZED STEEL CONDUIT RGS RN RMC REPLACE WITH NEW RIGID METAL CONDUIT SCCR SHORT CIRCUIT CURRENT RATING SCH ScTP SCHEDULE SHIELDED TWISTED PAIR SECURITY ELECTRONICS SE SINGLE MODE SM SPD SURGE PROTECTION DEVICE SPECS SPST STR CONTRACT SPECIFICATIONS SINGLE POLE SINGLE THROW STRAND SWBD SWITCHBOARD TRANSFORMER TR TELECOMMUNICATIONS ROOM TYP TYPICAL UHF ULTRA-HIGH FREQUENCY UNDERWRITERS' LABORATORIES UL UON UNLESS OTHERWISE NOTED UPS UNINTERRUPTABLE POWER SUPPLY UTP UNSHIELDED TWISTED PAIR V VOLTS VOLT AMPERES VA VFD VHF VARIABLE FREQUENCY DRIVE VERY HIGH FREQUENCY VM VENDING MACHINE WIRE OR WATT W WP WEATHERPROOF WR WEATHER-RESISTANT WPIU XFMR WEATHERPROOF WHILE IN USE TRANSFORMER XRL EXISTING TO BE RELOCATED

IMPEDANCE

RACEWAYS			DRAWING REFERENCES		
CABLE TRAY : TYPE AS NOTE	D	1 TITLE SCALE	PLAN DETAIL REFERENCE TITLE		
WIRE IN CONDUIT, CONCEALE	ED		KEYED NOTE DESIGNATION		
CONTINUATION		TRUE PLAN NORTH	NORTH ARROW		
JUNCTION AND PULL B	OXES	AHU 1	PLAN MARK EQUIPMENT DESIGNATION REFER TO MEP SCHEDULE FOR CIRCUITING AND DEVICE REQUIREMENTS AND FLOOR PLANS FOR		
JUNCTION BOX : CEILING OR FLO	OR MOUNTED. SIZE		LOCATIONS —EQUIPMENT NUMBER		
JUNCTION BOX : WALL MOUNTED REQUIREMENTS.	D. SIZE PER N.E.C.	1 SIM A101	PLAN MARK ENLARGED PLAN REFERENCE SHEET NUMBER		
		1 AD888	SECTION		
WIRING DEVICES			INTERFACE, EXISTING TO NEW		
		\bullet	EXTENT OF DEMOLITION		
ECEPTACLES (NEMA 5-20 R)			MATCHLINE		
		$\underline{\land}$	REVISION TAG		
b RECESSED DUPLEX b SPECIAL RECEPTACLE REFER TO ELECTRICA	AL NEW WORK PLANS	LINE TYPE LE	GEND		
FOR NEMA CONFIGUR	RATION		EXISTING TO REMAIN OR NEW WORK BY OTH (LIGHT, SOLID LINE)		
ELECTRICAL EQUIPME	NT		NEW WORK BY THIS CONTRACTOR (DARK, SOLID LINE)		
OTE: THE ACTUAL SIZE OF EQUIPMENT IS SH	HOWN ON THE DRAWINGS AND MAY		EXISTING TO BE REMOVED BY THIS CONTRA (DARK, DASHED LINE, DEMOLITION PLANS)		
ELECTRICAL DISTRIBUTION EQU	IPMENT VINGS		NEW WORK BY THIS CONTRACTOR TO BE INSTALLED UNDERGROUND, OR BELOW FLO (DARK, LONG DASHED LINE)		
MOTOR STARTER	FUSED DISCONNECT	MEP COORDIN	NATION		
		1. REFER TO THE MEP O E6.11 FOR MECHANIC EQUIPMENT REQUIRE	COORDINATION SCHEDULE SHOWN ON CAL EQUIPMENT AND PLUMBING EMENTSEQUIPMENT TYPE		
			EQUIPMENT TAG		

DEMO GENERAL NOTES

REFER TO SHEET E400 FOR ELECTRICAL ONE-LINE DIAGRAM.

JEMO SHEET KEYNOTES

DE-ENERGIZE EXISTING SWITCHBOARD 7 AND REMOVE EXISTING CABLE PULL SECTION.

------EXISTING LP-6 DISCONNECT SWITCH

NEW WORK GENERAL SHEET NOTES

- . REFER TO SHEET E400 & E401 FOR ELECTRICAL ONE-LINE DIAGRAM.
- 2. PROVIDE 600V CABLE TRAY RATED, MULTI-CONDUCTOR CABLE FOR CHILLER CONTROL CIRCUIT WIRING.

I ■ NEW WORK SHEET KEYNOTES

- CONNECT CHILLER FEEDER TO SECTION 1 OF EXISTING SWITCHBOARD 7 CIRCUIT BREAKER AS INDICATED ON ELECTRICAL ONE-LINE DIAGRAM AND RE-ENERGIZE WHEN WORK IS COMPLETED.
- OWNER FURNISHED, CONTRACTOR INSTALLED VFD FOR NEW TOWER PUMP. REFER TO SPECIFICATION SECTION 262923 FOR VFD REQUIREMENTS. REFER TO DETAIL 4/ E402
- B. SERVICE DISCONNECT SWITCH INSTALLED ON LINE SIDE OF VFD. REFER TO DETAIL 4/ E402.
- 4. ROUTE CONDUIT HIGH ABOVE MECHANICAL DUCT AND SUPPORT FROM STRUCTURE USING UNISTRUT AND HANGERS PER NEC. PROVIDE X-RAY OF FLOOR ABOVE PRIOR TO FLOOR
- PENETRATIONS TO ENSURE STRUCTURAL REBAR IS AVOIDED. PROVIDE APPROVED FIRE STOPPING FOR PENETRATIONS. REFER TO DETAIL 5/ E402.
- 6. PROVIDE EMON DMON METER FOR CHILLER AND TOWER PUMP. SEE SPECIFICATION SECTION 260913.
- PROVIDE 2 #10, 1 #10 IN 1"C FOR (1) 120V CONTROL CIRCUIT FOR CHILLER AND UTILIZE EXISTING 20A-1P CIRCUIT BREAKER IN EXISTING PANEL PP4 TO ALLOW FOR CONNECTION. SEE SHEET E200 FOR CONTINUATION.

SOUTH

ELECTRICAL - FINISH FLOOR LEVEL - DEMOLITION PLAN - SOUTH 1/4" = 1'-0"

KEYPLAN

PLAN NORTH 1/4" = 1'-0"

SOUTH

KEYPLAN

GENERAL SHEET NOTES REFER TO SHEET E400 & E401 FOR ELECTRICAL ONE-

LINE DIAGRAM. 2. FLEXIBLE METAL CONDUIT IS REQUIRED FOR FINAL CONNECTION TO CHILLER FOR VIBRATION ISOLATION, PER MANUFACTURER'S INSTRUCTIONS.

■ SHEET KEYNOTES

- PROVIDE NEW FLOOR MOUNTED VERTICAL UNISTRUT ASSEMBLY FOR MOUNTING OF RELOCATED CONTROLS BOXES, FXTW-V BOX, AND RELOCATED MELTRIC DECONTACTOR. MATCH EXISTING UNISTRUT MOUNTING METHOD. REUSE SALVAGAED UNISTRUT WHERE POSSIBLE. PROVIDE NEW BOXES AS NECESSARY. COORDINATE WITH DIVISION 23 FOR CONNECTIONS AND MOUNTING OF CONTROLS BOX FOR TEMPERATURE TRANSMITTER AND FLOW METER. SEE DETAILS 8 & 9/E402.
- 2. SALVAGED, RELOCATED FXTW-V BOX AND MELTRIC DECONTACTOR. PROVIDE CABLING FROM DECONTACTOR TO PIPING CONTROL VALVE AND CONNECT. MATCH EXISTING CABLE TYPE. PROVIDE CABLE STRAIN RELIEF FOR CABLE. IT SHALL BE THE CONTRACTOR'S OPTION TO RE-USE FXTW-V BOX.
- PROVIDE 1" CONDUIT AND CONTROL WIRING FROM RELOCATED UNISTRUT MOUNTED CONTROL BOX(HIGH) TO CATWALK MOUNTED CONTROL BOX.
- 4. PROVIDE 1" CONDUIT AND CONTROL WIRING BETWEEN RELOCATED HIGH AND LOW CONTROL BOXES. . PROVIDE CONTROL WIRING AND 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT FROM CONTROL BOX (LOW) TO CONNECT TO PIPING CONTROL VALVE. SEE SHEET
- E201 FOR CONDUIT ROUTING ABOVE. 6. PROVIDE FLOOR MOUNTED UNISTRUT SUPPORT SYSTEM FOR MOUNTING OF NEW CONTROLS BOXES AND CONDUITS.
- PROVIDE CONTROLS BOX AND MOUNTED TO UNISTRUT ASSEMBLY.
- 8. PROVIDE 1" CONDUIT AND CONTROL WIRING FROM CONTROL BOX TO CONTROL BOX.

ELECTRICAL - FINISH FLOOR LEVEL - NEW WORK PLAN - SOUTH 1/4" = 1'-0"

KEYPLAN

NORTH

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GENERAL SHEET NOTES

- 1. REFER TO SHEET E400 & E401 FOR ELECTRICAL ONE-LINE DIAGRAM.
- 2. REFER TO SHEET E402 FOR ELECTRICAL DETAILS.

NORTH

SOUTH

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DTES
RPOSED OUTING PRIOR
E TRAY DETAIL.
TES
OR RISERS HEET ED100 FOR
DNNECT IIT AND CONDUIT.
ECONNECT DUIT TO TURE.
CONNECT AND CONDUIT DCATE TO THE F CABLE TRAY.
CONNECT STRIP BENEATH CABLE
CONDUIT STUBS RFALL" INTO
FOR CONDUIT TO
NDUIT FOR 120V ROM BOTTOM BOX. PROVIDE AR FEET AND NDUIT BENDS.

SOUTH

ELECTRICAL - EQUIPMENT PLATFORM LEVEL - NEW WORK PLAN - RM 200

GENERAL SHEET NOTES

1. REFER TO SHEET E400 & E401 FOR ELECTRICAL ONE-LINE DIAGRAM.

2. REFER TO SHEET E402 FOR ELECTRICAL DETAILS.

SOUTH

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ELECTRICAL SWBD-6 & 7 ONE-LINE DIAGRAMS - DEMO AND NEW WORK 12" = 1'-0"

8 SETS (3 #500, #500NEUT, 4" C) 1-EMPTY 4" C (9-4 CONDUITS TOTAL)

EXISTING SE-2 -

REMOTE ELECTRIC OPERATOR FOR MAIN

FIRST FLOOR

GROUNDING BUS

EXISTING SE-2 -

REMOTE ELECTRIC OPERATOR FOR MAIN

FIRST FLOOR

ELECTRICAL SWBD-2 ONE-LINE DIAGRAM NEW WORK

ELECTRICAL SWBD-2 ONE-LINE DIAGRAM DEMOLITION

FEEDER SCHEDULE									
FEEDER NUMBER		PHASE CONDUCTORS							
	TOTAL SETS	QUANTITY (PER SET)	SIZE	NEUTRAL CONDUCTOR (1 PER SET)	GROUNDING CONDUCTOR (1 PER SET)	C(SIZ			
1200/-/G	4	3	350kCMIL	-	3/0				
30/-/G	1	3	10	-	10				
225/-/G	1	3	4/0	-	4				

200A DISCONNECT/200A FUSES

480:208/120V

(WITH NEUT & GND BUS

200A DISCONNECT/200A FUSES

(WITH NEUT & GND BUS

