



CITY OF ANN ARBOR,
MICHIGAN

WTP

OZONE GENERATION BUILDING CHILLER REPLACEMENT

SEPTEMBER, 2018

Project Number: 2075139804

GENERAL DRAWINGS		
SHEET NO.	PAGE No.	SHEET TITLE
G-001	1	COVER SHEET
MECHANICAL DRAWINGS		
M-101	2	MECHANICAL DEMOLITION PLAN
M-102	3	MECHANICAL NEW WORK PLAN
M-103	4	INSTALLATION DETAILS
M-104	5	TYPICAL PIPE SUPPORT DETAILS
M-105	6	MECHANICAL SCHEDULES
ELECTRICAL DRAWINGS		
E-001	7	ELECTRICAL LEGEND SYMBOLS
E-101	8	ELECTRICAL NEW WORK PLAN 480V
E-102	9	ELECTRICAL CONTROL NEW WORK PLAN
E-601	10	ELECTRICAL MOTOR CONTROL CENTER - ONE LINE DIAGRAM DEMO WORK
E-602	11	ELECTRICAL MOTOR CONTROL CENTER - ONE LINE DIAGRAM NEW WORK

Notes

1. FIRE PROTECTION-OZONE: FIRE HAZARD AREA SEE SECTION 01010-3 FOR FURTHER DETAIL.
2. ALL ITEMS ARE TO BE SALVAGED BY CONTRACTOR. SALVAGE VALUE SHALL BE APPLIED BY CONTRACTOR.

FINAL CLIENT REVIEW	GS	WA	2018.08.07
Issued	By	Appd	YYYY.MM.DD

File Name: 2075139804_M-101	OK	CL	JW	2018.08.07
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WTP OZONE GENERATION BUILDING
CHILLER REPLACEMENT
ANN ARBOR, MI

Title
MECHANICAL
DEMOLITION PLAN

Project No.
2075139804

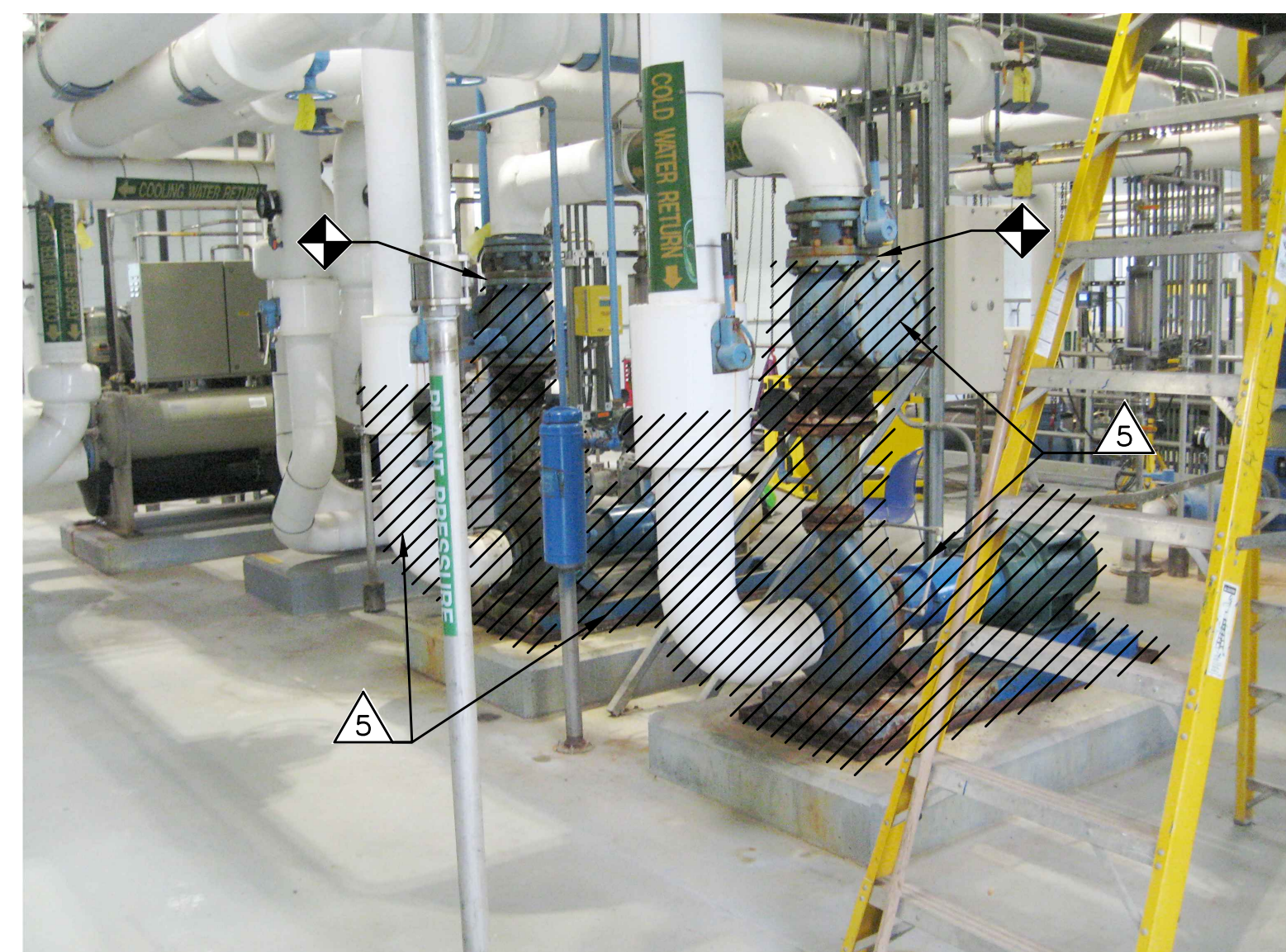
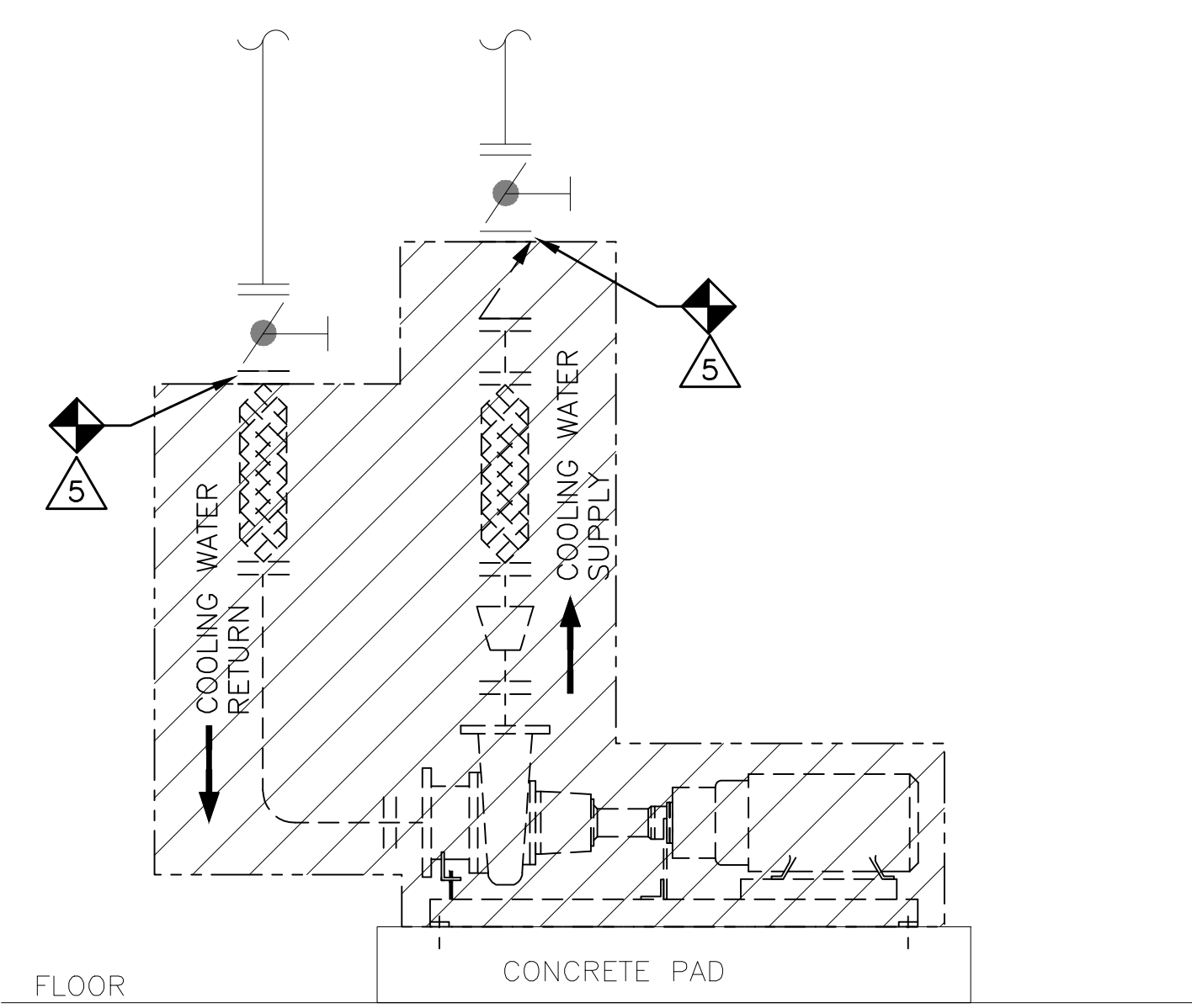
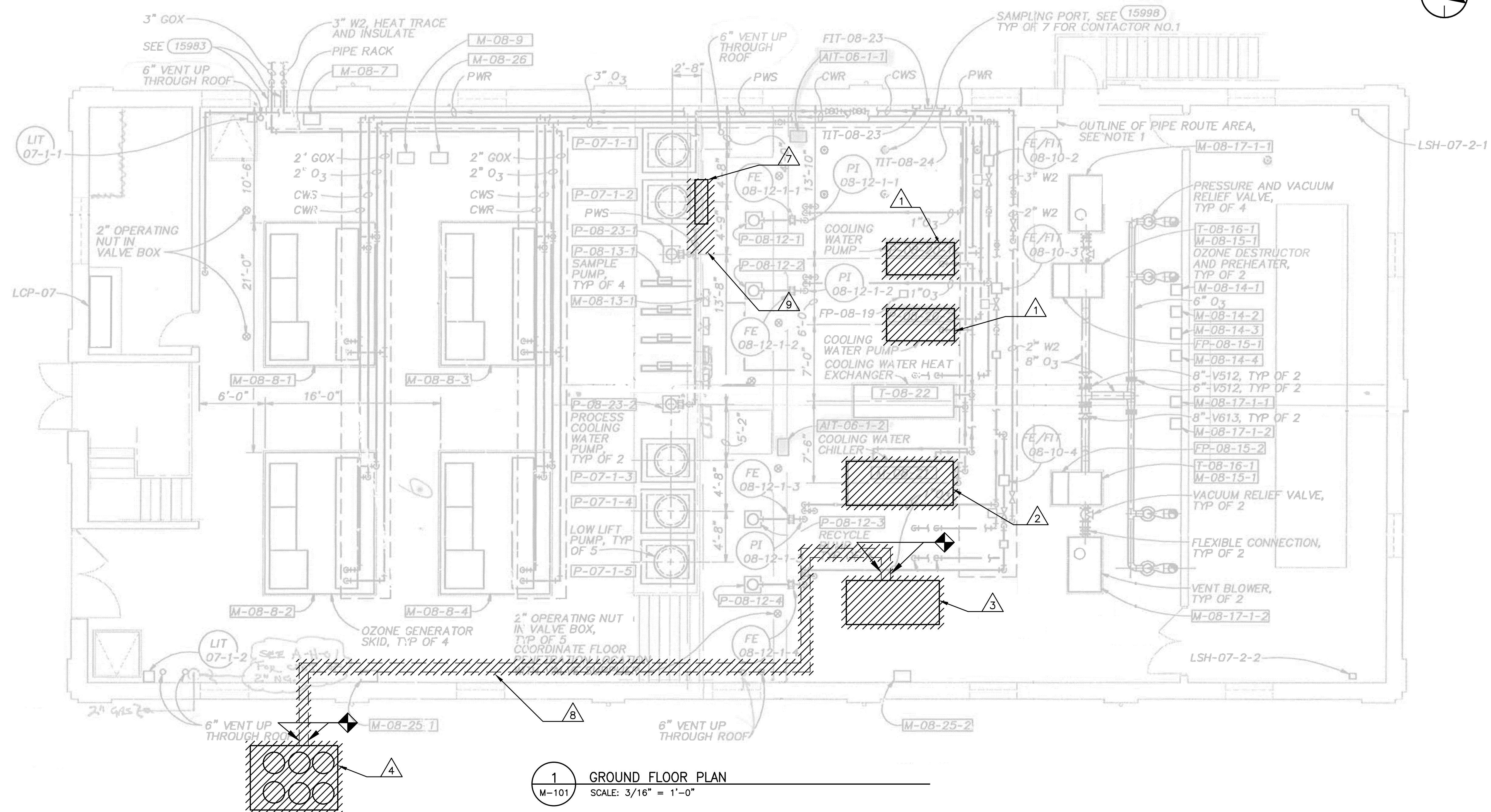
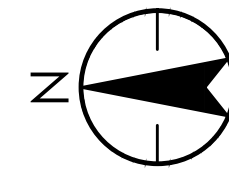
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Revision Sheet

Drawing No.

0 2 of 11

M-101



- DEMOLITION KEY NOTES:**
1. REMOVE EXISTING COOLING WATER PUMP. SEE DETAIL 1 THIS SHEET FOR ADDITIONAL INFORMATION.
 2. REMOVE EXISTING 180 TON WATER COOLED CHILLER. REMOVE EXISTING COLD AND COOLING WATER PIPING TO EXISTING SHUT-OFF VALVES. REMOVE ASSOCIATED REFRIGERANT VENT PIPING AS REQUIRED TO ALLOW FOR INSTALLATION OF NEW CHILLER. PROTECT EXISTING MAINS AND DISCHARGE FOR REUSE.
 3. REMOVE EXISTING 60 TON AIR COOLED CHILLER. CAP EXISTING REFRIGERANT PIPING AT INDICATED LOCATION. REMOVE ASSOCIATED REFRIGERANT VENT PIPING AS REQUIRED TO ALLOW FOR INSTALLATION OF NEW CHILLER. PROTECT EXISTING MAINS AND DISCHARGE FOR REUSE.
 4. REMOVE EXISTING 60 TON CONDENSING UNIT. CAP EXISTING REFRIGERANT PIPING AT INDICATED LOCATION.
 5. REMOVE EXISTING COOLING WATER PUMPS, P-08-20-1 AND P-08-20-2 AND ALL FITTINGS AND ACCESSORIES AS INDICATED.
 6. REFER TO CONTRACT SPECIFICATIONS FOR SEQUENCE OF CONSTRUCTION.
 7. EXISTING BACK FLOW PREVENTOR TO BE RELOCATED.
 8. EXISTING FLOW LINES TO BE REMOVED.
 9. EXISTING 3" SCHEDULE 10 STAINLESS STEEL TO BE MODIFIED, REMOVE AS NECESSARY.

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Notes

1. FIRE PROTECTION-OZONE: FIRE HAZARD AREA SEE SECTION 01010-3 FOR FURTHER DETAIL.
2. ALL ITEMS ARE TO BE SALVAGED BY CONTRACTOR. SALVAGE VALUE SHALL BE APPLIED BY CONTRACTOR.

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	Issued	By	Appd	YYYY.MM.DD
	File Name: 2075139804_M-102	GK	CL	JW
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CHILLER REPLACEMENT
ANN ARBOR, MI

Title
MECHANICAL
NEW WORK PLAN

Project No.
2075139804

Scale
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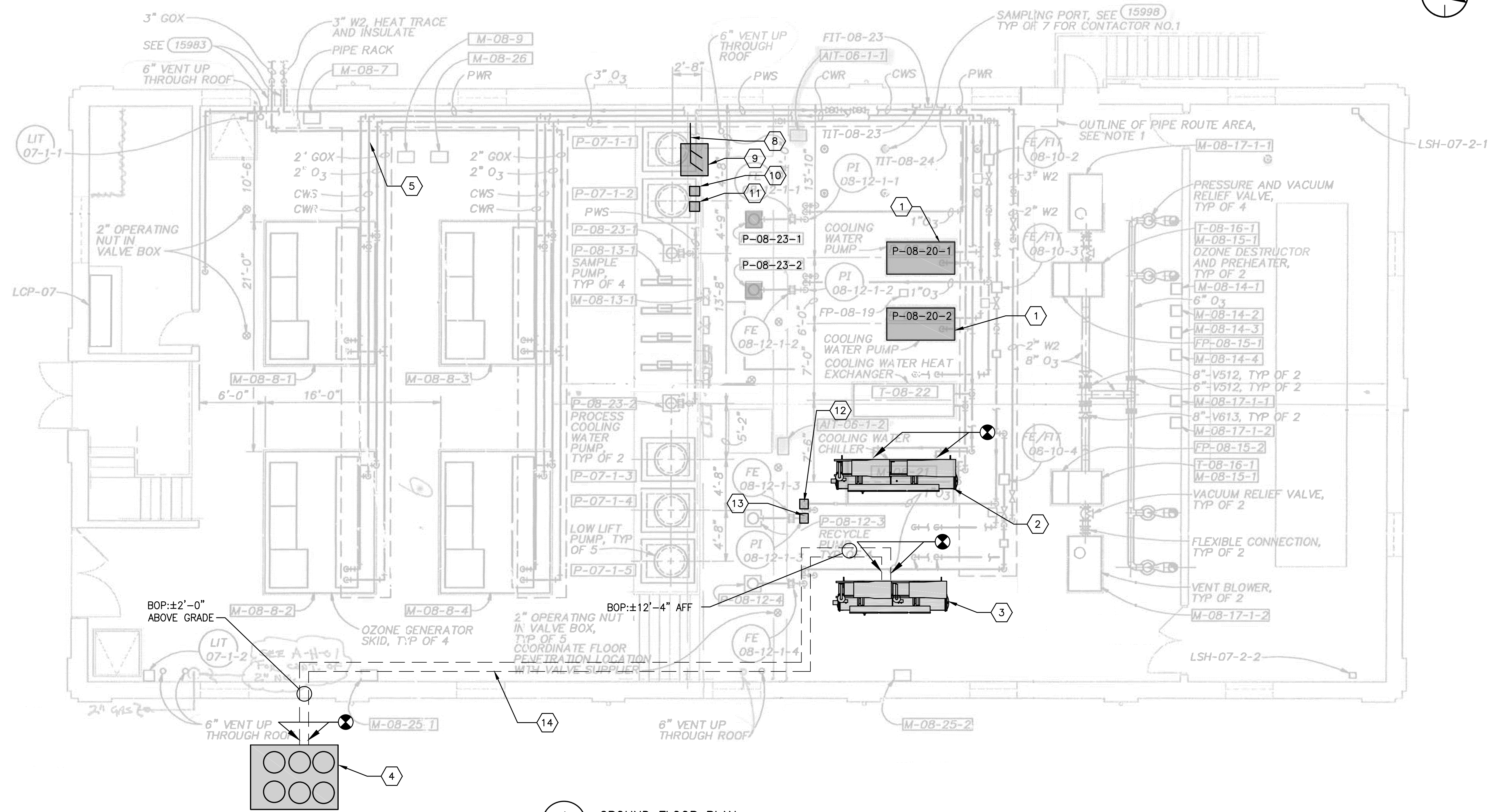
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3 of 11

M-102

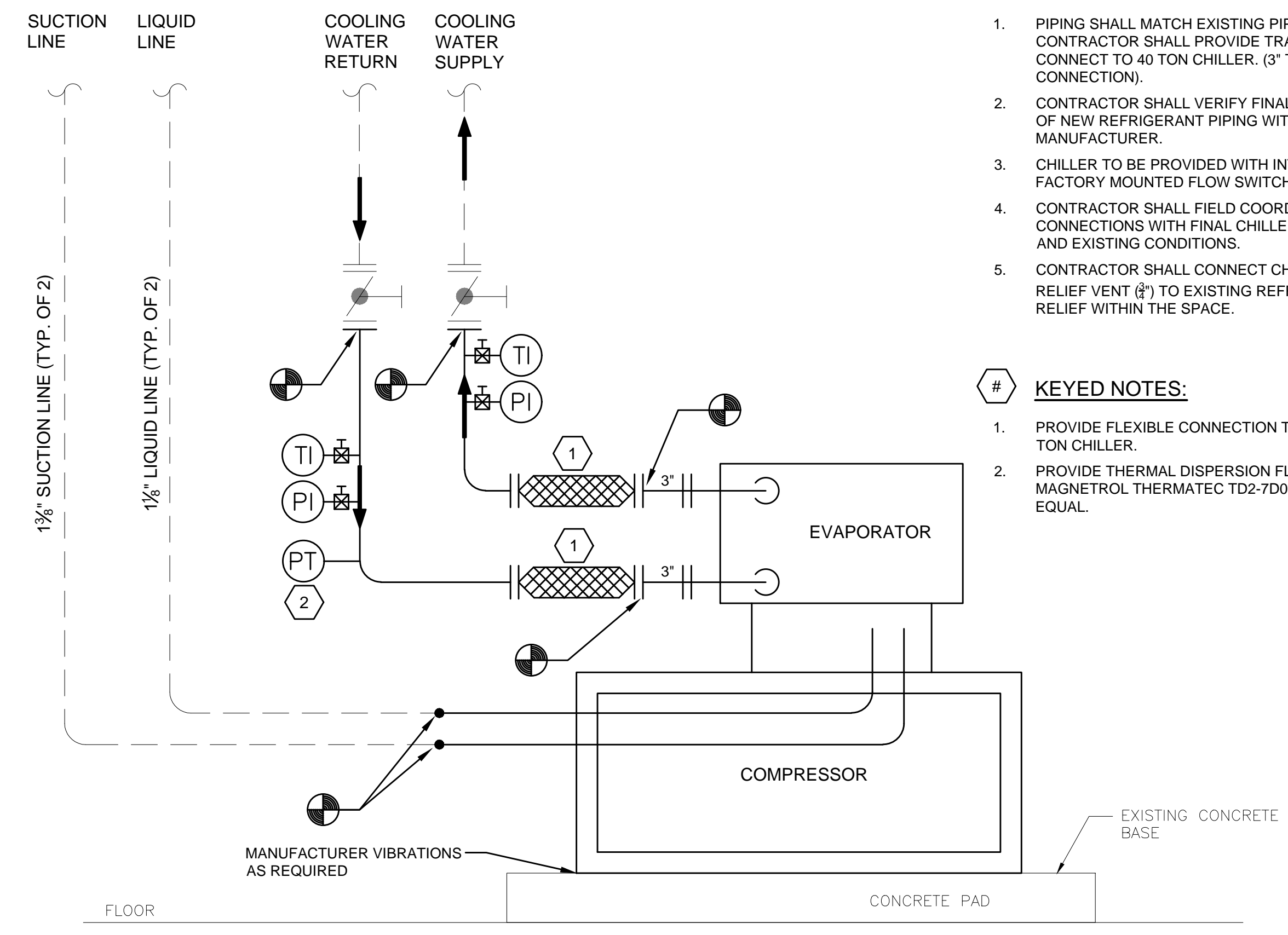


1 GROUND FLOOR PLAN
SCALE: 3/16" = 1'-0"

KEYED NOTES:

1. INSTALL COOLING WATER PUMP AND RECONNECT ALL PIPING.
2. INSTALL 100 TON WATER COOLED CHILLER AND RECONNECT ALL PIPING. INSTALL ACCESSORIES AS PER DETAIL 4, SHEET M-103. CONNECT SYSTEM REFRIGERANT VENTS TO EXISTING VENT LINES.
3. INSTALL 40 TON AIR COOLED CHILLER AND RECONNECT ALL PIPING. INSTALL ACCESSORIES AS PER DETAIL 1, SHEET M-103. CONNECT SYSTEM REFRIGERANT VENTS TO EXISTING VENT LINES.
4. INSTALL 40 TON AIR COOLED CONDENSING UNIT.
5. INSTALL DIFFERENTIAL PRESSURE SENSOR.
6. INSTALL TWO-POSITION CONTROL VALVE ON COLD WATER LINE TO OZONE GENERATORS.
7. REFER TO CONTRACT SPECIFICATIONS FOR SEQUENCE OF CONSTRUCTION.
8. EXISTING SCHEDULE 10 STAINLESS STEEL PIPING COOLING WATER - 3".
9. RELOCATED BACK FLOW PREVENTOR (RPZ).
10. 3" HOT TAP, THERMAL DISPERSION FLOW METER, E&H T-150 SERIES.
11. 3" STAINLESS STEEL GLOBE VALVE (OPEN/CLOSE).
12. EXISTING LOCKING 6" BUTTERFLY VALVE TO BE REPLACED IN KIND, 100-TON CHILLER MANUAL FLOW CONTROL.
13. EXISTING LOCKING 4" BUTTERFLY VALVE TO BE REPLACED IN KIND, 40-TON CHILLER MANUAL FLOW CONTROL.
14. PROVIDE NEW REFRIGERANT LINES PER MANUFACTURE'S REQUIREMENT.

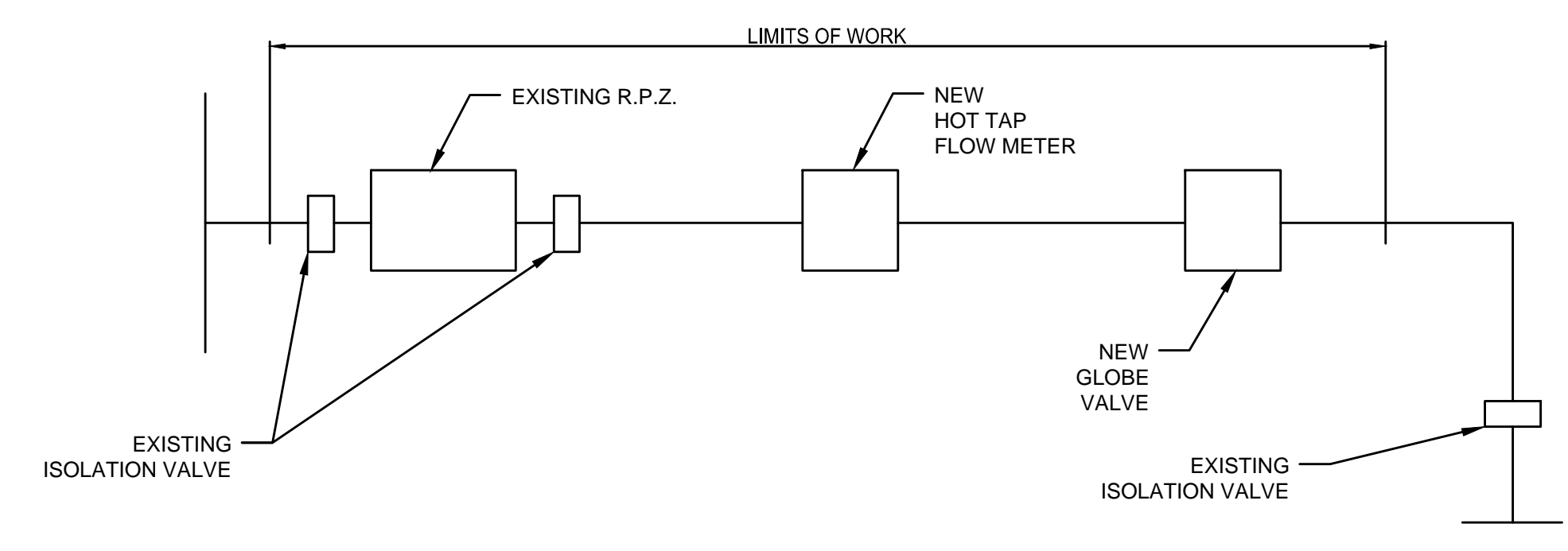
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1 40 TON CHILLER INSTALLATION DETAIL
M-103 N.T.S.

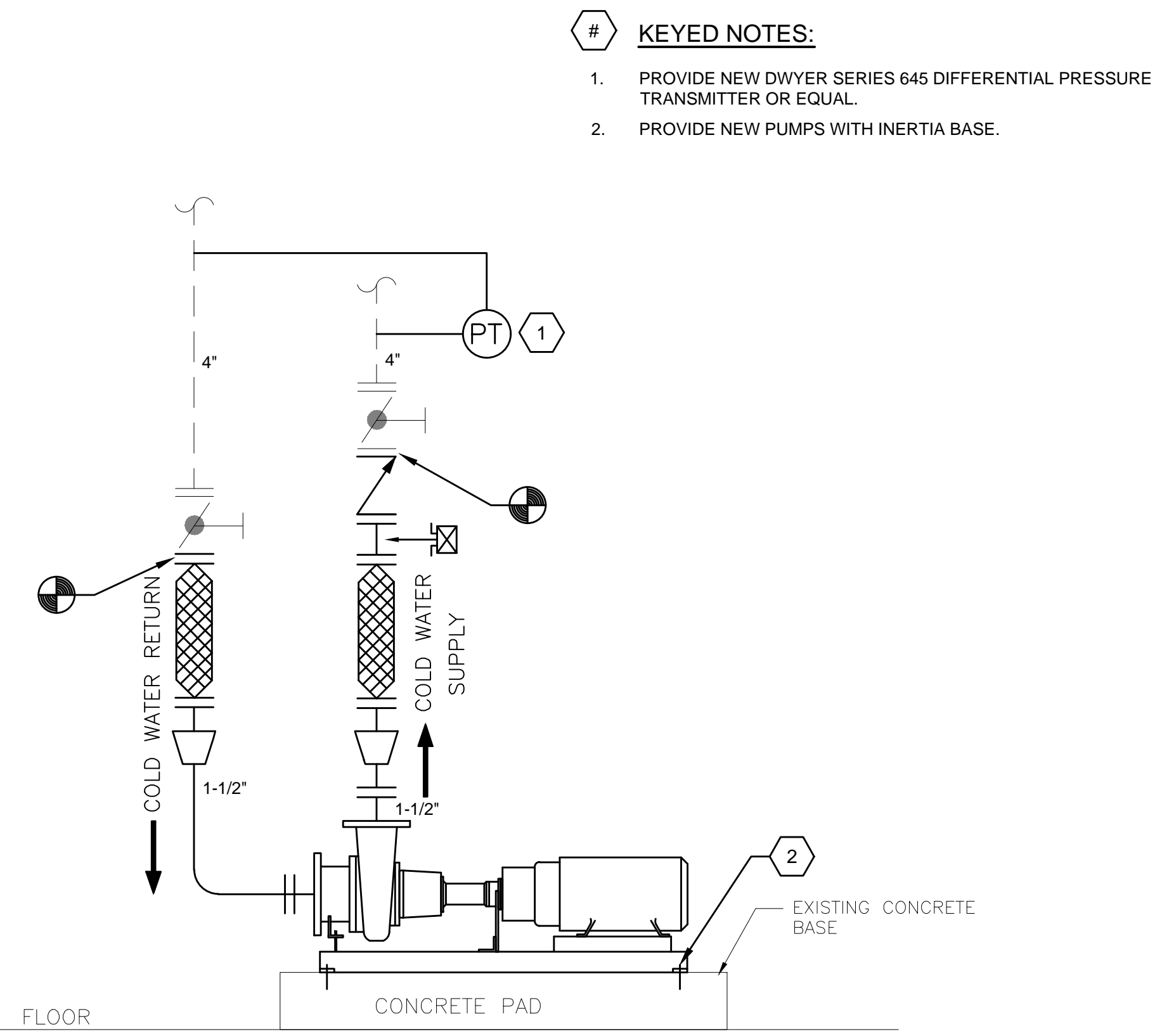
- GENERAL NOTES:**
1. PIPING SHALL MATCH EXISTING PIPE SIZE. CONTRACTOR SHALL PROVIDE TRANSITION TO CONNECT TO 40 TON CHILLER. (3" TYPICAL CONNECTION).
 2. CONTRACTOR SHALL VERIFY FINAL LINE SIZE OF NEW REFRIGERANT PIPING WITH CHILLER MANUFACTURER.
 3. CHILLER TO BE PROVIDED WITH INTEGRAL FACTORY MOUNTED FLOW SWITCH.
 4. CONTRACTOR SHALL FIELD COORDINATE FINAL CONNECTIONS WITH FINAL CHILLER LOCATION AND EXISTING CONDITIONS.
 5. CONTRACTOR SHALL CONNECT CHILLER RELIEF VENT (R) TO EXISTING REFRIGERANT RELIEF WITHIN THE SPACE.

- KEYED NOTES:**
1. PROVIDE FLEXIBLE CONNECTION TO NEW 40 TON CHILLER.
 2. PROVIDE THERMAL DISPERSION FLOW SWITCH. MAGNETROL THERMATEC TD2-7D00-030 OR EQUAL.



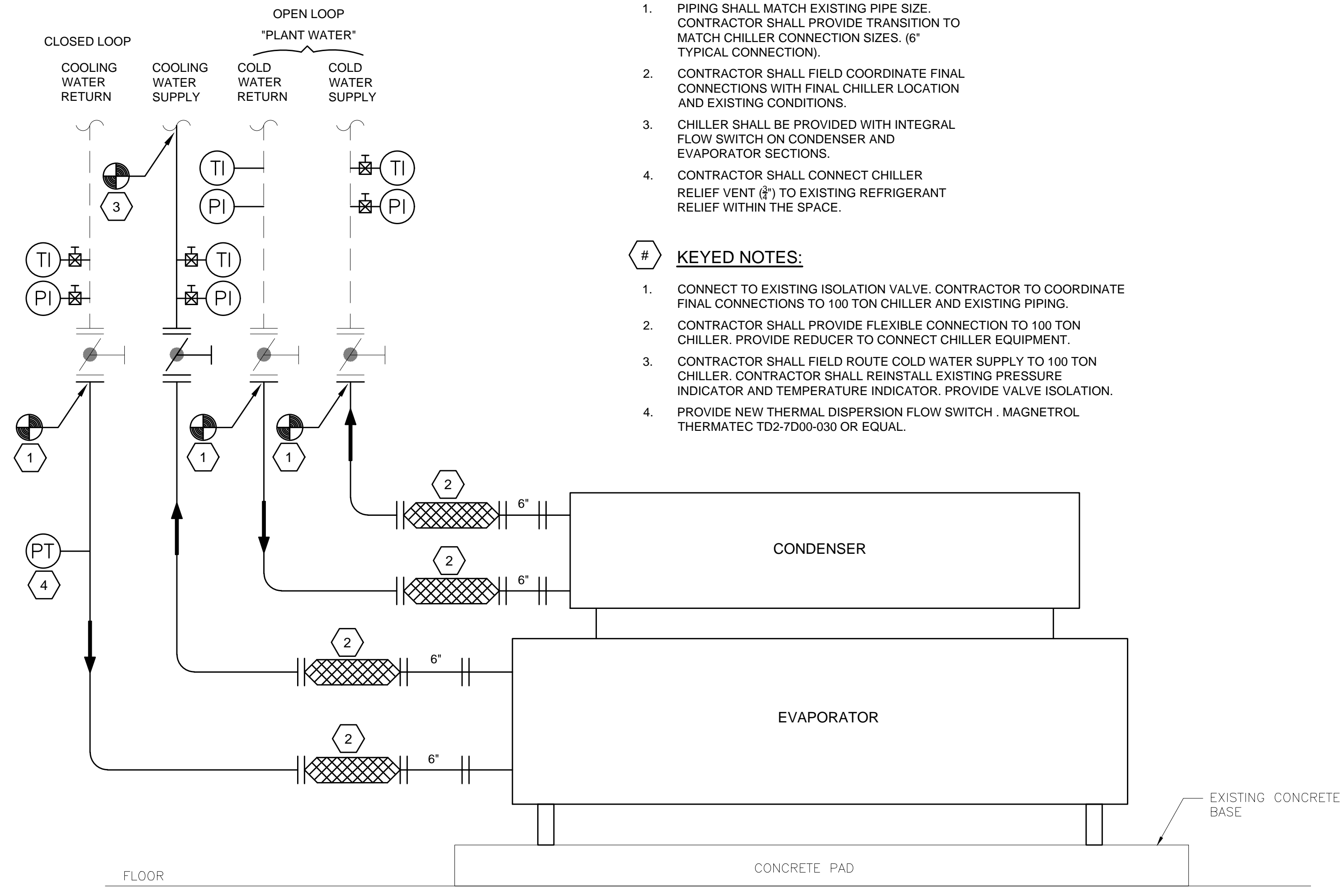
2 RPZ RELOCATION DETAIL
M-103 N.T.S.

NOTE:
ALL PIPING TO BE 3" SCHEDULE 10 STAINLESS STEEL



3 TYPICAL COOLING WATER PUMP DETAIL
M-103 N.T.S.

- KEYED NOTES:**
1. PROVIDE NEW DWYER SERIES 645 DIFFERENTIAL PRESSURE TRANSMITTER OR EQUAL.
 2. PROVIDE NEW PUMPS WITH INERTIA BASE.



4 100 TON CHILLER INSTALLATION DETAIL
M-103 N.T.S.

- GENERAL NOTES:**
1. PIPING SHALL MATCH EXISTING PIPE SIZE. CONTRACTOR SHALL PROVIDE TRANSITION TO MATCH CHILLER CONNECTION SIZES. (6" TYPICAL CONNECTION).
 2. CONTRACTOR SHALL FIELD COORDINATE FINAL CONNECTIONS WITH FINAL CHILLER LOCATION AND EXISTING CONDITIONS.
 3. CHILLER SHALL BE PROVIDED WITH INTEGRAL FLOW SWITCH ON CONDENSER AND EVAPORATOR SECTIONS.
 4. CONTRACTOR SHALL CONNECT CHILLER RELIEF VENT (R) TO EXISTING REFRIGERANT RELIEF WITHIN THE SPACE.

- KEYED NOTES:**
1. CONNECT TO EXISTING ISOLATION VALVE. CONTRACTOR TO COORDINATE FINAL CONNECTIONS TO 100 TON CHILLER AND EXISTING PIPING.
 2. CONTRACTOR SHALL PROVIDE FLEXIBLE CONNECTION TO 100 TON CHILLER. PROVIDE REDUCER TO CONNECT CHILLER EQUIPMENT.
 3. CONTRACTOR SHALL FIELD ROUTE COLD WATER SUPPLY TO 100 TON CHILLER. CONTRACTOR SHALL REINSTALL EXISTING PRESSURE INDICATOR AND TEMPERATURE INDICATOR. PROVIDE VALVE ISOLATION.
 4. PROVIDE NEW THERMAL DISPERSION FLOW SWITCH. MAGNETROL THERMATEC TD2-7D00-030 OR EQUAL.

A	FINAL CLIENT REVIEW	GS	WA	2018.08.07
	Issued	By	Appd	YYYY.MM.DD
	File Name: 2075139804_M-103	GK	GS	JW
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WTP OZONE GENERATION BUILDING
CHILLER REPLACEMENT
ANN ARBOR, MI

Title
INSTALLATION DETAILS

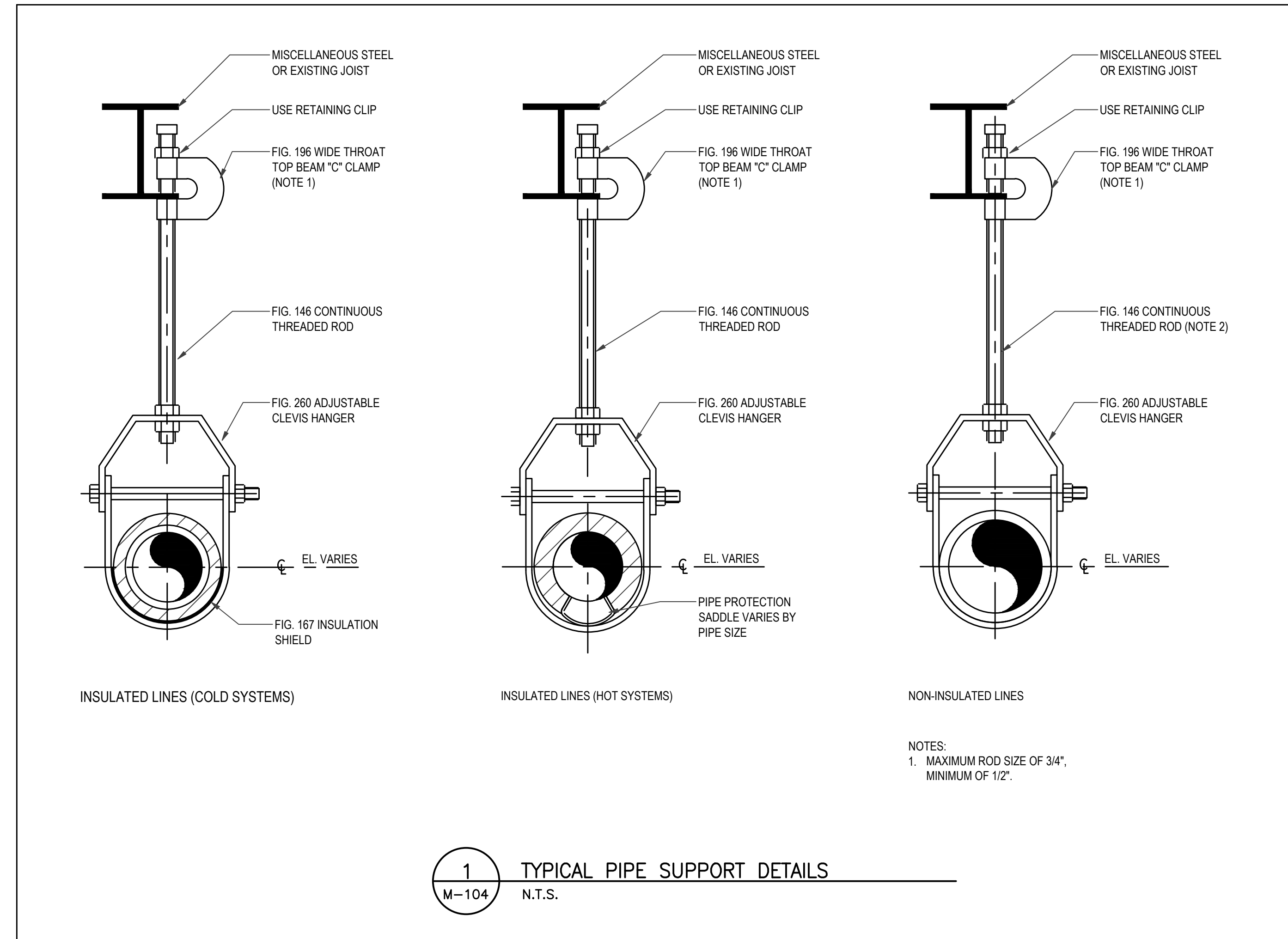
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Revision Sheet 0	Drawing No. M-103
	4 of 11

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WTP OZONE GENERATION BUILDING
CHILLER REPLACEMENT
ANN ARBOR, MI

Title
TYPICAL PIPE SUPPORT DETAILS

Project No. 2075139804	Scale
Revision Sheet 0 5 of 11	Drawing No. M-104

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Notes

D

AIR COOLED CHILLER SCHEDULE																											
UNIT IDENTIFICATION			CAPACITY AND PERFORMANCE				EVAPORATOR				COMPRESSOR				ELECTRICAL				PHYSICAL CHARACTERISTICS					MANUFACTURER	MODEL NUMBER	NOTES	
MARK	NUMBER	AREA/UNIT SERVED	UNIT CAPACITY (TONS)	EER	REFRIG TYPE	REFRIG CHARGE (LBS)	FLUID TYPE	FLOW (GPM)	EWT (F)	LWT (F)	MAX WPD (FT)	FOULING FACTOR	TYPE	NO OF COMP	NO OF CIRCUITS	NO OF STAGES	VOLTS	PHASE	MCA	MOP	OPERATING WEIGHT (LBS)	DIMENSIONS					
																						HEIGHT (IN)	WIDTH (IN)	LENGTH (IN)			
CH	1	OZONE GENERATORS	40.0	13.0	R410a	12	WATER	74.1	54.0	42.0	4.2	0.0001	SCROLL	4	2	4	460	3	77.0	90	1,390	72.2	34.75	80.8	TRANE	CCAQ	1,2,3,4,5

NOTES:
1. PERFORMANCE BASED ON WATER.
2. PROVIDE SINGLE ELECTRICAL CONNECTION.
3. PROVIDE WITH COMPRESSOR SOUND BLANKETS.
4. PROVIDE WITH NEOPRENE ISOLATION PADS FOR VIBRATION ISOLATION.
5. PROVIDE UNIT WITH HOT GAS BYPASS.

C

AIR COOLED CONDENSING UNIT SCHEDULE																							
UNIT IDENTIFICATION			CAPACITY (MBH)	EER	COMPRESSORS			CONDENSER FAN			PHYSICAL CHARACTERISTICS				ELECTRICAL				MANUFACTURER	MODEL NUMBER	NOTES		
MARK	NUMBER	UNIT SERVED			TYPE	NO OF CIRCUITS	NO OF STAGES	SUCTION TEMP (F)	REFRIG TYPE	AIRFLOW (CFM)	NO OF FANS	HP (EACH)	HEIGHT (IN)	WIDTH (IN)	LENGTH (IN)	OPERATING WEIGHT (LBS)	VOLTS	PHASE				MCA	MOP
ACCU	1	CH-1	882.0	10.5	SCROLL	2	4	122.0	R-410a	26,790	4	1	79	88	89	1,808	460	3	7.7	15	TRANE	CAUJ	1

NOTES:
1. PROVIDE WITH SPRING ISOLATORS TO ISOLATE EQUIPMENT VIBRATION.

PUMP SCHEDULE																								
UNIT IDENTIFICATION				PUMP TYPE	COUPLING TYPE	CONTROL	COLUMN DIAMETER (IN)	COLUMN LENGTH (IN)	PERFORMANCE						PUMP MIN FLOW (GPM)	PUMP MOTOR			ELECTRICAL		MANUFACTURER	MODEL NUMBER	NOTES	
MARK	NUMBER	SYSTEM SERVED	REDUNDANT						FLUID TYPE	FLUID TEMP (F)	FLOW (GPM)	PUMP HEAD (FT)	OVERLOAD FLOW (GPM)	MIN EFFICIENCY (%)		NPSHR (FT)	BHP	HP	SPEED (RPM)	VOLTS				PHASE
P	1	OZONE GENERATOR	-	BASE MOUNTED END SUCTION	CLOSE	VFD	N/A	N/A	WATER	45	281.0	135	NON-OVERLOADING	70	16.2	44	12.2	15	3,600	460	3	BELL AND GOSSETT	e-1510	1
P	2	OZONE GENERATOR	YES	BASE MOUNTED END SUCTION	CLOSE	VFD	N/A	N/A	WATER	45	281.0	135	NON-OVERLOADING	70	16.2	44	12.2	15	3,600	460	3	BELL AND GOSSETT	e-1510	1

NOTES:
1. PROVIDE WITH INERTIAL BASE.
2. COORDINATE DISCHARGE HEAD ASSEMBLY WITH EXISTING BASE CONNECTIONS.

B

WATER COOLED ELECTRICAL CHILLER SCHEDULE																																				
UNIT IDENTIFICATION			CAPACITY AND PERFORMANCE				CHILLED WATER						COMPRESSOR						CONDENSER WATER						ELECTRICAL				PHYSICAL CHARACTERISTICS					MANUFACTURER	MODEL NUMBER	NOTES
MARK	NUMBER	AREA/UNIT SERVED	UNIT CAPACITY (TONS)	EER	IPLV	REFRIG TYPE	REFRIG CHARGE (LBS)	FLUID TYPE	FLOW (GPM)	EWT (F)	LWT (F)	MAX WPD (FT)	FOULING FACTOR	TYPE	NO OF COMP	NO OF CIRCUITS	NO OF STAGES	FLUID TYPE	FLOW (GPM)	EWT (F)	LWT (F)	MAX WPD (FT)	FOULING FACTOR	VOLTS	PHASE	MCA	MOP	OPERATING WEIGHT (LBS)	DIMENSIONS							
																													HEIGHT (IN)	WIDTH (IN)	LENGTH (IN)					
CH	2	OZONE GENERATORS	100.0	24.2	0.50	R-134a	239	WATER	260.8	55.0	45.0	21.1	0.0001	SCROLL	2	2	MODULATING	WATER	327.3	95.0	85.0	20.3	0.00025	460	3	124.0	175	6,255	77	35	139	TRANE	RTWD100 HE			

NOTES:
1. PROVIDE [SINGLE, DUAL] ELECTRICAL CONNECTION.
2. PERFORMANCE INCLUDES VFD.

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	Issued		By	Appd
	File Name: 2075139804_M-105	GK	GS	JW
		Dwn.	Dggn.	Chkd.

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WTP OZONE GENERATION BUILDING
CHILLER REPLACEMENT
ANN ARBOR, MI

Title
MECHANICAL
SCHEDULES

Project No. 2075139804
Revision Sheet 0 of 11

Drawing No. M-105

A	GS	WA	2018.08.07
Issued			YYYY.MM.DD
File Name: 2075139804_E-001		OK	GS
Dwn.	Dgri.	Chkd.	YYYY.MM.DD

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WTP OZONE GENERATION BUILDING CHILLER REPLACEMENT ANN ARBOR, MI			
Title ELECTRICAL LEGEND SYMBOLS			
Project No. 2075139804	Scale		Revision Sheet 0 7 of 11
Drawing No. E-001			

PLAN SYMBOLS

	LUMINAIRE TYPE DESIGNATION		RECEPTACLE 20A DUPLEX, FLR MTD
	CIRCUIT NUMBER		RECEPTACLE 20A FOURPLEX, FLR MTD
	SWITCH REFERENCE		RECEPTACLE 20A DUPLEX, MTD 18" AFF UNO - GFCI: GROUND FAULT CIRCUIT INTERRUPTER - IG: ISOLATED GROUND - SH: SHUTTER SAFETY - SP: SURGE PROTECTION - WP: WEATHERPROOF
	1x4 FLUORESCENT TROFFER, SURFACE MTD		SC CONNECTORS, 19" RACK MTD
	2x4 FLUORESCENT TROFFER, SURFACE MTD		CAT-6 PATCH PANEL, 110 PUNCH BLOCKS, 19" RACK MTD
	2x2 FLUORESCENT TROFFER, SURFACE MTD		FIRE ALARM ANNUNCIATOR
	1x4 FLUORESCENT TROFFER, RECESSED		FIRE ALARM CONTROL PANEL
	2x4 FLUORESCENT TROFFER, RECESSED		FIRE ALARM EVACUATION COMBINATION AUDIBLE AND VISIBLE APPLIANCE (HORN/STROBE), WALL MTD w/ LENS 80" MIN & 96" MAX AFF
	2x2 FLUORESCENT TROFFER, RECESSED		FIRE ALARM EVACUATION VISIBLE APPLIANCE (STROBE), CLG MTD
	GENERAL PURPOSE INDUSTRIAL FLUORESCENT, SIZE PER PLANS		FIRE ALARM EVACUATION VISIBLE APPLIANCE (STROBE), WALL MTD w/ LENS 80" MIN & 96" MAX AFF
	LUMINAIRE w/ EMERGENCY BATTERY PACK		FIRE ALARM HEAT DETECTOR
	UNSWITCHED LUMINAIRE		FIRE ALARM MANUAL PULL STATION, WALL MTD w/ OPERABLE PART 42" MIN & 48" MAX AFF
	HID, POLE MTD w/ SINGLE SQUARE HEAD		FIRE ALARM MANUAL PULL STATION, WALL MTD w/ OPERABLE PART 42" MIN & 48" MAX AFF
	HID, POLE MTD w/ DOUBLE SQUARE HEAD		FIRE ALARM SMOKE DETECTOR, DUCT MTD w/ SAMPLE TUBES
	HID, POLE MTD w/ SINGLE ROUND HEAD		PHOTOELECTRIC FIRE ALARM SMOKE DETECTOR, CLG MTD
	HID, POLE MTD w/ DOUBLE ROUND HEAD		FIRE SPRINKLER RISER FLOW SWITCH, COORDINATE EXACT REQUIREMENTS PRIOR TO ROUGH-IN
	SURFACE MTD		FIRE SPRINKLER RISER VALVE TAMPER SWITCH, COORDINATE EXACT REQUIREMENTS PRIOR TO ROUGH-IN
	RECESSED		OCCUPANCY SENSOR, SURFACE MTD
	WALL MTD		OCCUPANCY SENSOR, WALL MTD
	EXIT, SURFACE MTD		125kHz RFID PROXIMITY READER
	EXIT, WALL MTD		DOOR CONTACT
	EMERGENCY, WALL MTD		SECURITY KEYPAD
	EMERGENCY w/ EXIT AND EMERGENCY BATTERY PACK, WALL MTD		EGRESS PIR FOR DOOR SHUNT
	SINGLE POLE, MTD 48" AFF UNO		360° PIR/GLASS BREAK DETECTOR
	2-GANG, MTD 48" AFF UNO		REQUEST TO EXIT PUSHBUTTON
	3-GANG, MTD 48" AFF UNO		PANIC/DURESS PUSHBUTTON
	4-GANG, MTD 48" AFF UNO		INTRUSION ALARM CONTACT
	TWO POLE, MTD 48" AFF UNO		ELECTRIC DOOR STRIKE
	THREE WAY, MTD 48" AFF UNO, (LOWER CASE LETTER INDICATES SWITCH CONTROL LEG)		ELECTRIC LOCK w/ INTERNAL RELAY
	KEY OPERATED, MTD 48" AFF UNO		SPEAKER, CONE TYPE (PUBLIC ADDRESS)
	PILOT LIGHT, MTD 48" AFF UNO		SPEAKER, HORN TYPE WATTAGE NOTED
	RECEPTACLE 20A SINGLE, MTD 18" AFF UNO		CCTV CAMERA, PTZ: PAN/TILT/ZOOM
	RECEPTACLE 20A DUPLEX, MTD 18" AFF UNO		INTERCOMM SYSTEM
	RECEPTACLE 20A SPLIT FEED, MTD 18" AFF UNO		GROUNDING CONDUCTOR
	RECEPTACLE 20A FOURPLEX, MTD 18" AFF UNO		GROUND "UFER" TO CONCRETE REBAR
	RECEPTACLE 20A DUPLEX, CLG MTD		GROUNDING ROD, COPPER CLAD STEEL 3/8" x 120"
	RECEPTACLE 20A FOURPLEX, CLG MTD		GROUNDING ROD WITH INSPECTION PIT.
			GROUNDING CONNECTION TO LOOP CONDUCTOR EXOTHERMIC.

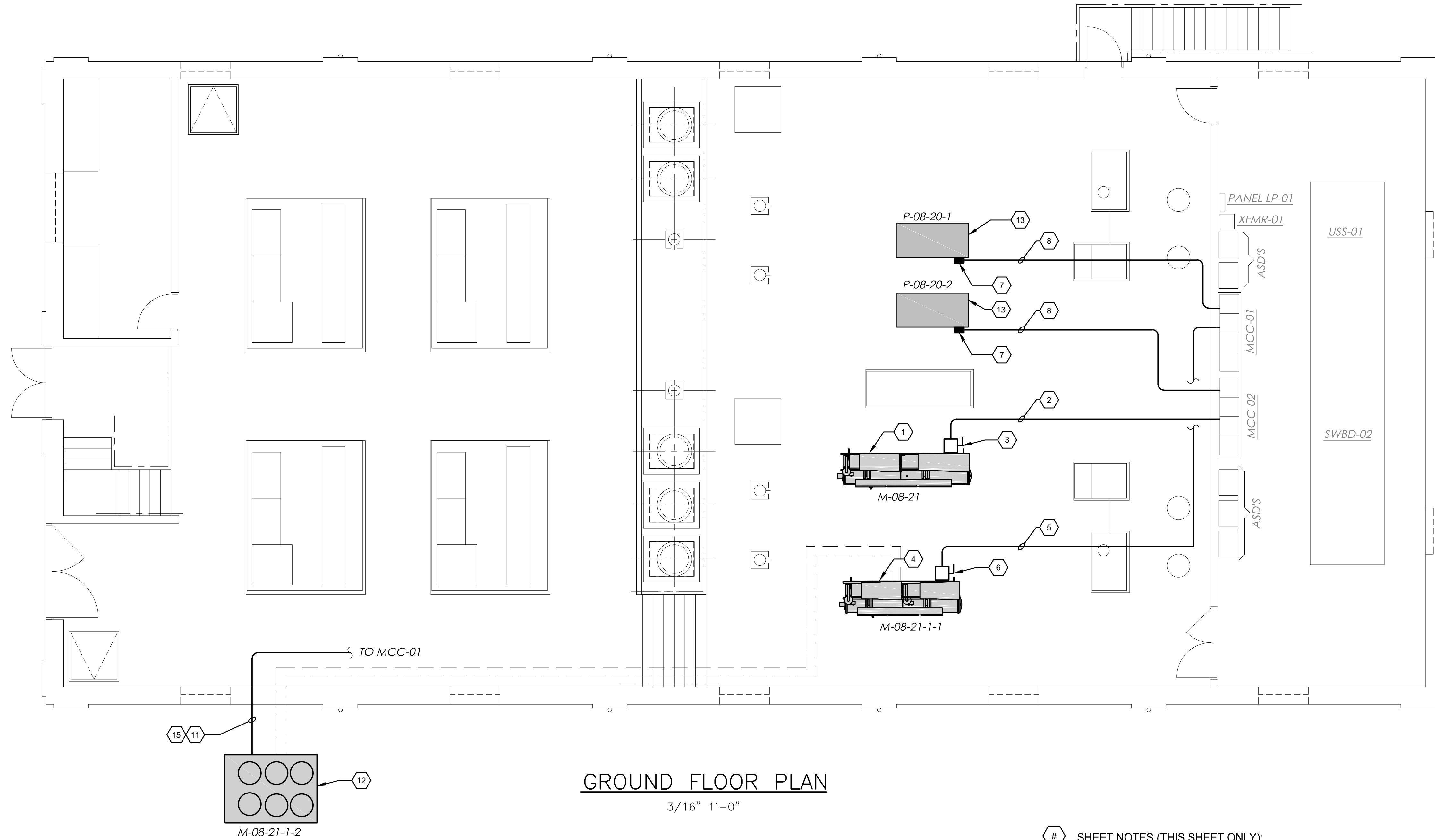
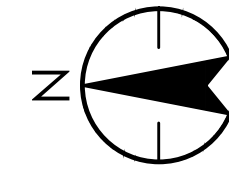
DIAGRAM SYMBOLS

	MOLD-CASE CIRCUIT BREAKER IN
	MOTOR CIRCUIT PROTECTOR IN
	MOTOR STARTER CONTACTOR
	VACUUM CONTACTOR
	MOTOR STARTER OVERLOAD RELAY - OL = THERMAL - EOL = ELECTRONIC
	MOTOR PROTECTION RELAY
	SOLID STATE REDUCED VOLTAGE STARTER
	FUSE, RATING NOTED
	TRANSFORMER, DELTA/WYE
	GROUND
	AUTOMATIC TRANSFER SWITCH
	DISCONNECT SWITCH
	POTENTIAL TRANSFORMER
	3 PHASE, 3 WIRE, DELTA
	3 PHASE, 4 WIRE, WYE, GND
	CURRENT TRANSFORMER, RATIO AND NUMBER OF CT'S AS NOTED
	CURRENT TRANSFORMER, ZERO SEQUENCE TYPE
	BUSHING TYPE CURRENT TRANSFORMER
	ISOLATING FUSE SWITCH, HIGH VOLTAGE PRIMARY FUSE CUT OUT, DRY
	ISOLATING FUSE SWITCH FOR ON-LOAD SWITCHING
	LIGHTNING ARRESTER
	CAPACITOR
	DRAWOUT CIRCUIT BREAKER
	POWER CIRCUIT BREAKER, FIXED TYPE, LOW OR MEDIUM VOLTAGE
	POWER CIRCUIT BREAKER, DRAWOUT TYPE, LOW OR MEDIUM VOLTAGE
	LOADBREAK ELBOW
	DISCONNECT SWITCH, GROUP OPERATED
	DISCONNECT SWITCH, STICK OPERATED
	DISCONNECT SWITCH, SELECTOR OR DOUBLE THROW
	DISCONNECT SWITCH WITH ARCING HORNS, MANUALLY OPERATED
	POTHEAD
	CONNECTIONS
	SHIELDED CONDUCTOR
	SPACE HEATER

**NOT ALL SYMBOLS AND
ABBREVIATIONS ARE USED**

ABBREVIATIONS

A	AMPERE	A	ABOVE
ABV	ABOVE	AC	ALTERNATING CURRENT
ADD	ADDENDUM	AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR	AFG	ABOVE FINISHED GRADE
ACH	ASYMMETRICAL INTERRUPTING CAPACITY	ARCH	ARCHITECT/ARCHITECTURAL
AT	AMPERE TRIP	ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC	AV	AUDIO/VISUAL
CHG	BATTERY CHARGER	C	CONDUIT
CAB	CABINET	CB	CIRCUIT BREAKER, COMBINER BOX
CC	CHARGE CONTROLLER	CC	CHARGE CONTROLLER
CCTV	CLOSED CIRCUIT TELEVISION	CLG	CEILING
COMB	COMBINATION	CONN	CONNECTION, OR CONNECT
CONTR	CONTRACTOR	COORD	COORDINATE
CPT	CONTROL POWER TRANSFORMER	CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT, CONVERTER	DET	DETAIL
DIST	DISTRIBUTION	DIV	DIVISION
DN	DOWN	DS	DISCONNECT SWITCH
DWG	DRAWING	EA	EACH
ELECT	ELECTRICAL	EMCS	ENERGY MANAGEMENT AND CONTROL SYSTEMS
EOLR	END OF LINE RESISTOR	EQUIP	EQUIPMENT
EXPL	EXPLOSION PROOF	EWC	ELECTRIC WATER COOLER
F	FUSED	FA	FIRE ALARM
FD	FUSIBLE DISCONNECT	FIN	FINISHED FL FLOOR
FUT	FUTURE	FIXT	FIXTURE, LTG
FVNR	FULL VOLTAGE NON-REVERSING GENERATOR	G	GENERATOR
GND	GROUND	GFI	GROUND FAULT INTERRUPTER
HOA	HAND - OFF - AUTO	HP	HORSEPOWER
HTG	HEATING	HTR	HEATER
Hz	HERTZ	I/C	INTERRUPTING CAPACITY
INV	INVERTER	I/C	INTERCOM
JB	JUNCTION BOX	KW	KILOWATTS
KVA	KILOVOLT AMPERE	LP	LIGHTING PANEL
LTG	LIGHTING, LIGHT OR LIGHTS	LTFC	LIQUIDTIGHT FLEXIBLE CONDUIT
MAX	MAXIMUM	MCB	MOLDED CASE BREAKER
MCC	MOTOR CONTROL CENTER	MCP	MOTOR CIRCUIT PROTECTION
MECH	MECHANICAL	MIN	MINIMUM
MFR	MANUFACTURER	MTR	MOTOR
MSS	MOTOR STARTER SWITCH	MNTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH	N.C.	NORMALLY CLOSED
NO	NON FUSED	NO	NORMALLY OPEN
Ø	PHASE	PB	PUSH BUTTON
P	PANEL	PNL	PANEL
PAIR	PAIR	PR	PAIR
PS	PANIC/DURESS	PS	POWER SUPPLY
PT	POTENTIAL TRANSFORMER	PVC	POLYVINYL CHLORIDE
PWR	POWER	RECEPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL	RM	ROOM
SA	SUB ARRAY	SHT	SHEET
SH	SHUTTER SAFETY	SPC	SPECIFICATION
SPD	SURGE PROTECTION DEVICE	SPP	SUB PLANT PANEL
STR	STARTER	STR	STARTER
ST	SHUNT TRIP	SW	SWITCH
SWBD	SWITCHBOARD	SWGR	SWITCHGEAR
TC	TIME CLOCK	TC	TIME CLOCK
TEL	TELEPHONE	TRM	TERMINAL
TERM	TERMINAL	TRM	TERMINAL
TFMR	TRANSFORMER	TV	TELEVISION
UG	UNDERGROUND	UG	UNDERGROUND
V	VOLTS	V	VOLTS
VAMP	VOLT AMPERE	VFD	VARIABLE FREQUENCY DRIVE
W	WATTS	W	WATTS
WP	WEATHERPROOF	WP	WEATHERPROOF



GROUND FLOOR PLAN
3/16" 1'-0"

SHEET NOTES (THIS SHEET ONLY):

1. NEW 100 TON CHILLER.
2. EXISTING CHILLER FEEDER TO BE RE-USED, EXTEND WITH 2" RGS WITH 3 - #2 & #4 GND AS REQUIRED.
3. 400A NEMA 1/2R FUSED DISCONNECT.
4. NEW 40 TON CHILLER.
5. EXISTING CHILLER FEEDER TO BE RE-USED, EXTEND WITH 1 1/2" RGS WITH 3 - #1 & #6 GND AS REQUIRED.
6. 200A NEMA 3R FUSED DISCONNECT.
7. 40 HP, 480V, 3Ø, VARIABLE FREQUENCY DRIVE, NEMA 1/12 MOUNTED ON S.S. UNISTRUT TOWER.
8. 1" RGS WITH 3 - #6 & #8 GND.
9. EXISTING CONDENSER FEEDER TO BE RE-USED, EXTEND WITH 3/4" RGS WITH 3 #12 & #12 GND AS REQUIRED.
10. NEW 40 TON OUTDOOR CONDENSER.
11. NEW COOLING WATER PUMPS AND MOTORS.
12. EXISTING UNDERGROUND CONDUIT TO BE REPLACED W/ PVC SCHEDULE 80. CONDUIT TO BE A MINIMUM OF 36" BELOW GRADE W/ EXPANSION JOINTS AS REQUIRED.

A	FINAL CLIENT REVIEW	GS	WA	2018.08.07
	Issued	By	Acqd	YYYY.MM.DD
	File Name: 2075139804_E-101	GK	GS	JW
		Dwn.	Dgri.	Chwd.

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Client/Project Logo

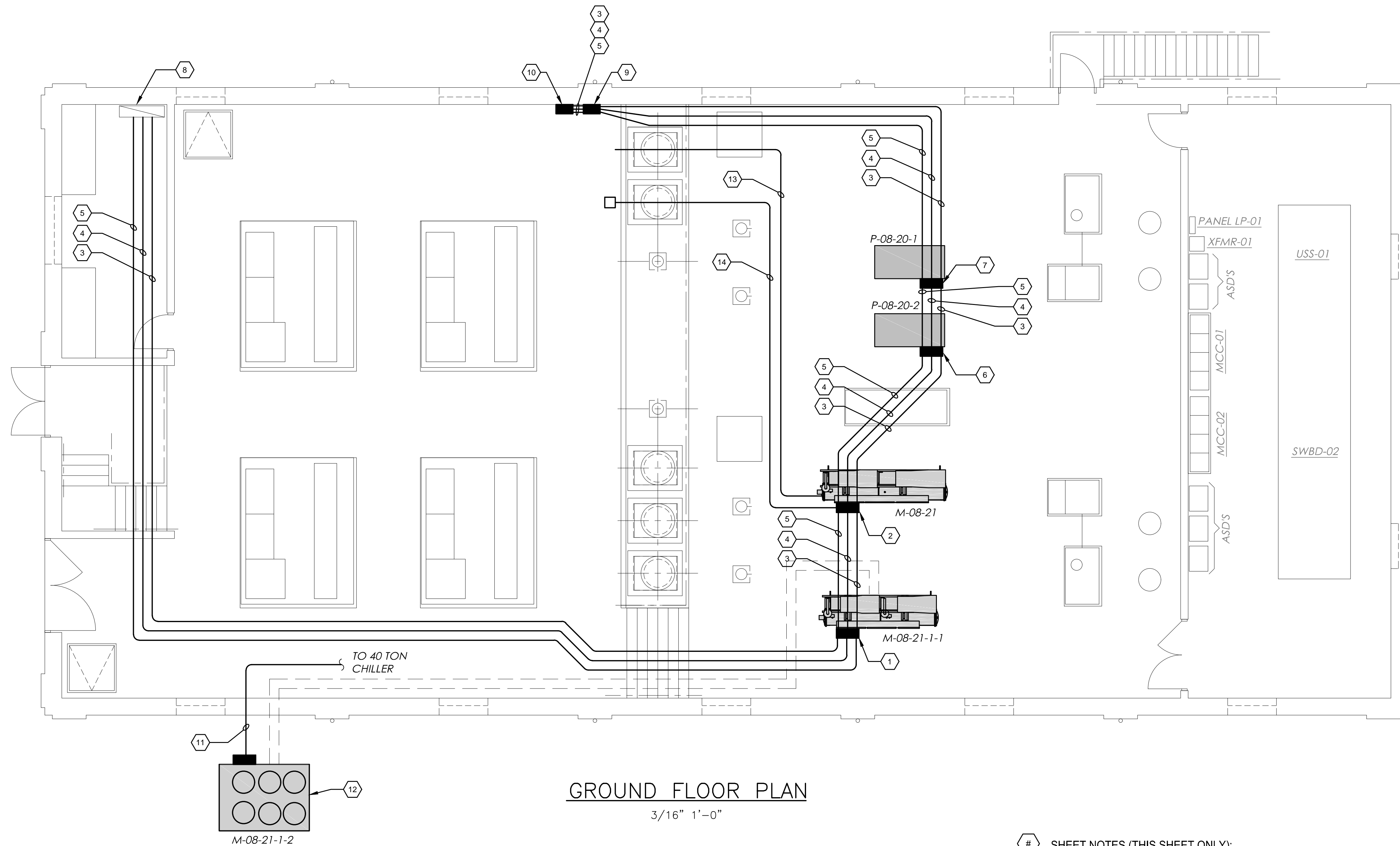
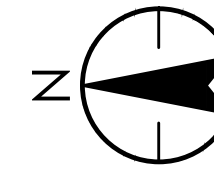
Client/Project
CITY OF ANN ARBOR

WTP OZONE GENERATION BUILDING
CHILLER REPLACEMENT
ANN ARBOR, MI

Title
ELECTRICAL
NEW WORK PLAN
480V

Project No.	2075139804	Scale	AS NOTED
Revision	0	Sheet	8 of 11
		Drawing No.	E-101

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SHEET NOTES (THIS SHEET ONLY):

1. NEW 40 TON CHILLER CONTROL ENCLOSURE.
2. NEW 100 TON CHILLER CONTROL ENCLOSURE.
3. 1" RGS WITH 8 - CAT 6 ETHERNET.
4. 1" RGS WITH 16 - #14 & #14 GND.
5. 1" RGS WITH 12 - 2/C SHIELDED #18.
6. COOLING WATER PUMP P-08-20-02 VFD.
7. COOLING WATER PUMP P-08-20-01 VFD.
8. EXISTING PLANT CONTROL ENCLOSURE.
9. PROCESS COOLING PUMP P-08-23-1 VFD.
10. PROCESS COOLING PUMOP P-08-23-2 VFD.
11. EXISTING 3/4" RGS WITH 8 - #14, CONDENSER CONTROL ALARM.
12. NEW OUTDOOR CONDENSER.
13. 1" RGS W/ 2-2/C SHIELDED #18 COLD WATER FLOW (A) SPARE.
14. 1" RGS W/ 4 - #14 Ø 14 GNS COLD WATER
 OPEN (DO)
 CLOSE (DO)
 OPEN (DI)
 CLOSE (DI)

Issued	By	WA	2018.08.07
File Name: 2075139804_E-102	Dwn.	GK	2018.08.07
	Dgrn.	GS	YYYY.MM.DD
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Client/Project
 CITY OF ANN ARBOR

WTP OZONE GENERATION BUILDING
 CHILLER REPLACEMENT
 ANN ARBOR, MI

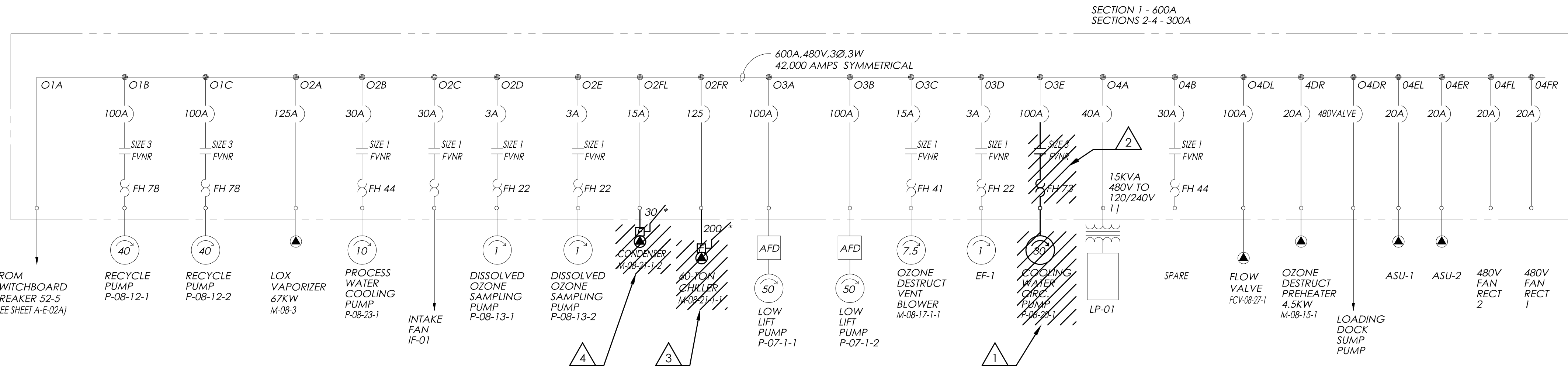
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 NEW WORK PLAN

Project No.
 2075139804

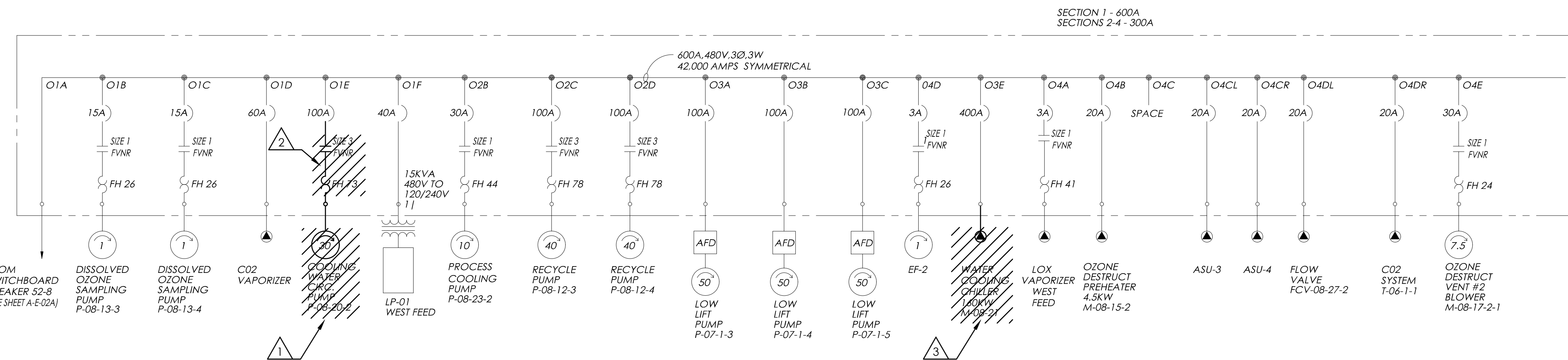
Scale
 AS NOTED

Revision Sheet
 0 9 of 11

Drawing No.
E-102



MCC-01
(1994)



MCC-02
(1994)

SHEET NOTES (THIS SHEET ONLY):

- EXISTING PUMP, PUMP MOTOR, CONDUIT AND CONDUCTORS REMOVED BACK TO MCC.
- REMOVE STARTER AND OVERLOAD AND RETURN TO OWNER.
- CHILLER TO BE REMOVED INCLUDING ASSOCIATED DISCONNECT, CONDUIT AND CONDUCTORS TO REMAIN.
- OUTSIDE CONDENSER TO BE REMOVED, CONDUIT AND CONDUCTORS TO REMAIN FOR REUSE.

ISSUED	GS	WA	2018.08.07
	By	Acqd	YYYY.MM.DD
File Name: 2075139804_E-601	GK	GS	JW
	Dwn.	Dgri.	Chkd.
			2018.08.07
			YYYY.MM.DD

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CITY OF ANN ARBOR

WTP OZONE GENERATION BUILDING
CHILLER REPLACEMENT
ANN ARBOR, MI

Title
ELECTRICAL
MOTOR CONTROL CENTER
ONE-LINE DIAGRAM - DEMO WORK

Project No. 2075139804
Revision Sheet 0 10 of 11
Drawing No. E-601

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Consultant

Notes

- UNLESS NOTED ALL EQUIPMENT IS NEW.

FINAL CLIENT REVIEW	GS	WA	2018.08.07
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	Dwn.	Dgdn.	Chkd.
			YYYY.MM.DD

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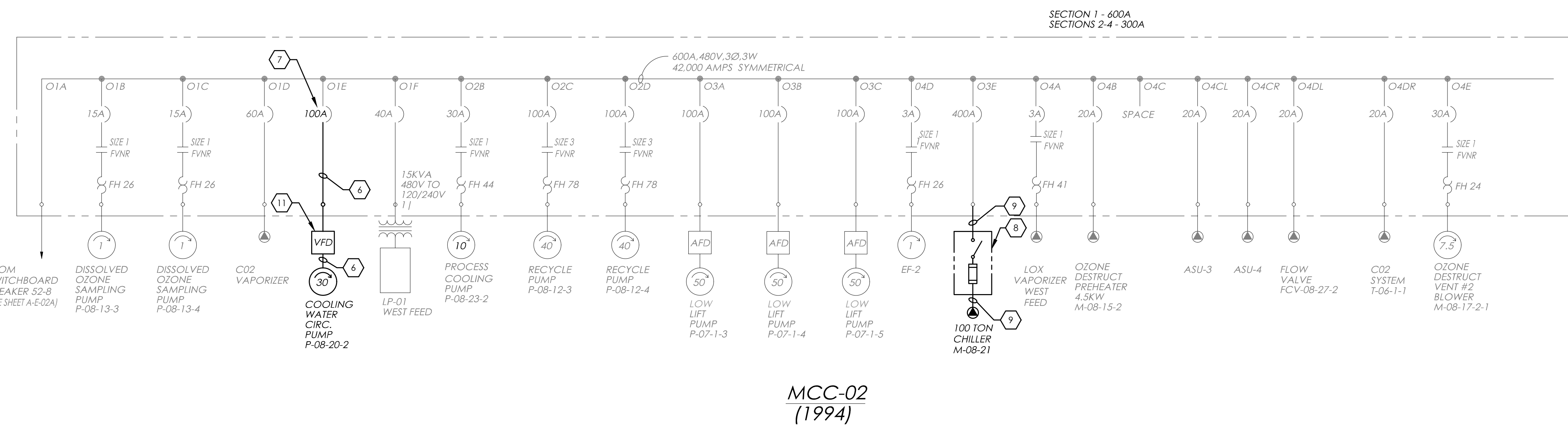
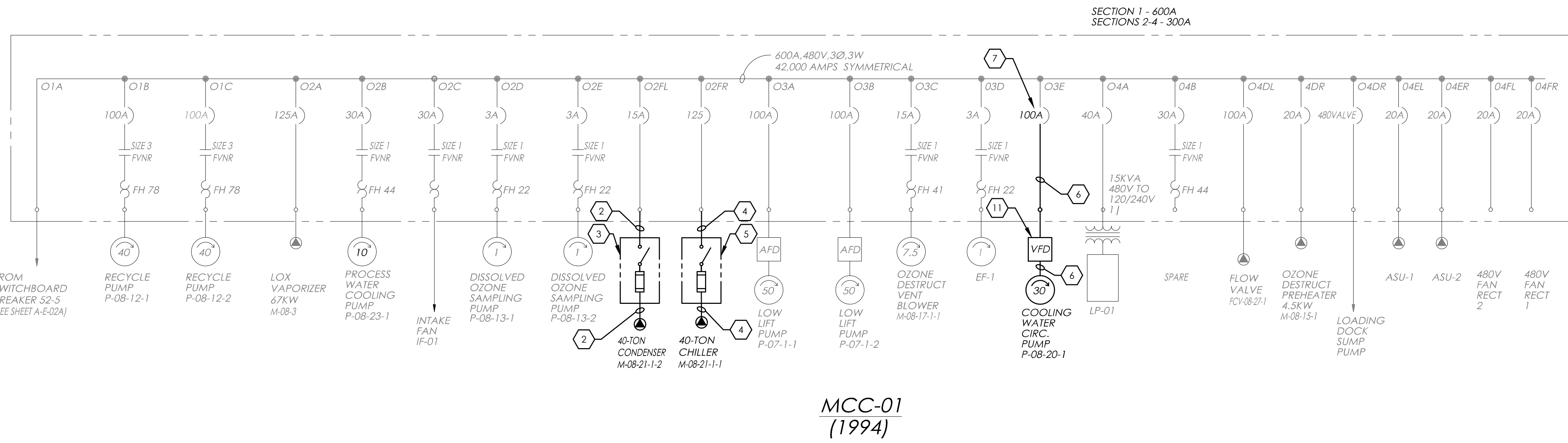
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CITY OF ANN ARBOR

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CHILLER REPLACEMENT
ANN ARBOR, MI

Title
ELECTRICAL
MOTOR CONTROL CENTER
ONE-LINE DIAGRAM - NEW WORK

Project No. 2075139804
Revision Sheet 0 of 11
Scale Drawing No. E-602



SHEET NOTES (THIS SHEET ONLY):

- 1" RGS WITH 3 - #10 & #10 GND.
- 3/4" RGS WITH 3 - #12 & #12 GND.
- 30A NEMA 3R FUSED DISCONNECT WITH 15A FUSED, PROVIDE AS NECESSARY.
- 1/2" RGS WITH 3 - #1 & #6 GND.
- 200A NEMA 3R FUSED DISCONNECT WITH 125A FUSED, PROVIDE AS NECESSARY.
- 1" RGS WITH 3 - #6 & #8 GND.
- SET BREAKER TO 65 AMPS.
- 400A NEMA 3R FUSED DISCONNECT WITH 250 FUSED.
- 2" RGS WITH 3 - #2 & #4 GND.
- 15 HP, 480V, 3Ø, VARIABLE FREQUENCY DRIVE, NEMA 1/12.
- 40 HP, 480V, 3Ø, VARIABLE FREQUENCY DRIVE, NEMA 1/12.

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