



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA



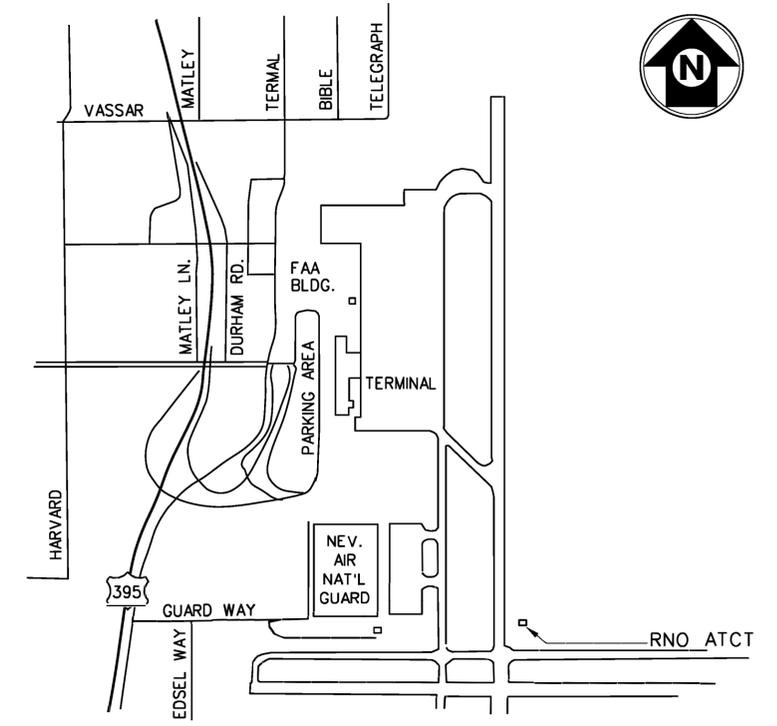
RENO - NEVADA
RENO INTERNATIONAL AIRPORT
AIR TRAFFIC CONTROL TOWER
CHILLER REPLACEMENT PROJECT

DRAWING INDEX

DRAWING NUMBER	TITLE
GENERAL	
RNO-D-ATCT-G012	TITLE SHEET, DRAWING INDEX AND VICINITY MAP
DEMOLITION	
RNO-D-ATCT-D001	DEMOLITION CHILLER SITE PLAN
MECHANICAL	
RNO-D-ATCT-M046	EQUIPMENT SCHEDULE
RNO-D-ATCT-M047	CHILLER SITE PLAN
RNO-D-ATCT-M048	CHILLER PIPING DETAIL AND SECTION
RNO-D-ATCT-M049	EXISTING CONTROLS DIAGRAM AND SEQUENCE OF OPERATION
ELECTIRCAL	
RNO-D-ATCT-E085	ELECTICAL SINGLE LINE

GENERAL NOTES:

- RENO AIR TRAFFIC CONTROL TOWER IS A 24 HOURS, 365 DAYS OPERATING FACILITY. ALL WORK SHALL BE ACCOMPLISHED TO NOT INTERRUPT ANY CHILLED WATER SERVICE TO THE FACILITY THROUGHOUT THE DURATION OF CONSTRUCTION.
- CHILLER REPLACEMENT SHALL BE ACCOMPLISHED ONE AT A TIME. EACH CHILLER SYSTEM SHALL BE FULLY OPERATIONAL AND RUN TESTED FOR AT LEAST ONE DAY BEFORE REPLACEMENT OF THE NEXT CHILLER.
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY PURCHASE OR FABRICATION OF ANY EQUIPMENT AND MATERIALS. THERE MAY BE FIELD CONDITIONS THAT DIFFER FROM DRAWINGS. ANY DEVIATIONS SHALL BE BROUGHT TO ATTENTION OF FAA RESIDENT ENGINEER FOR A RESOLUTION PRIOR TO CONSTRUCTION, FABRICATION OR EQUIPMENT/MATERIAL PURCHASE.



VICINITY MAP

SCALE: NONE

LOCATION:

RNO ATCT ADDRESS: 755 S. ROCK BLVD, RENO, NEVADA, 89502
LAT/LONG: 39° 29'57.6"N, 119° 45'46.3"W
ELEVATION: 4,500 FEET

REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
A		CONSTRUCTION	18061150		

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA

ATCT
CHILLER REPLACEMENT PROJECT
TITLE SHEET, DRAWING INDEX AND VICINITY MAP

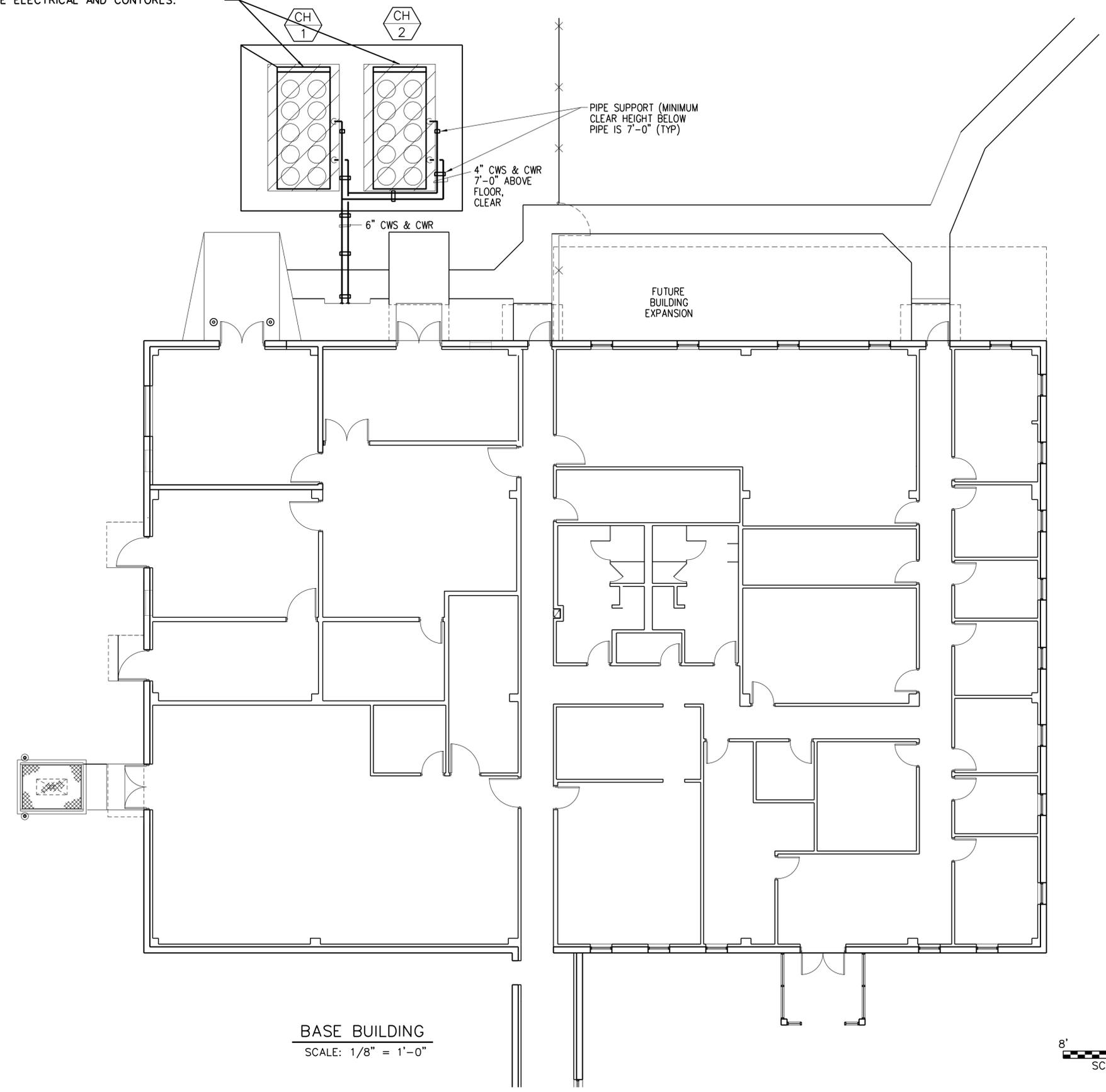
RENO NV

REVIEWED BY	SUBMITTED BY	APPROVED BY
	MATTHEW TAEUBEL	KHANH TRAN
	PROJECT ENGINEER	MGR: OPERATIONS SUPPORT
	DESIGNED	DATE 12/13/2021 JCN 18061150
	DRAWN	ISSUED BY
	CHECKED	ENGINEERING SERVICES OPERATIONS
		DRAWING NO
		REV
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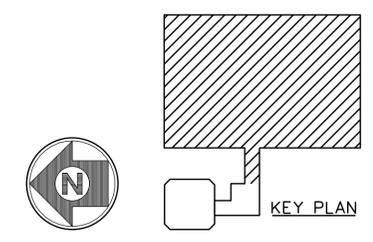
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REMOVE AND REPLACE CHILLERS, ASSOCIATE WATER PIPING, DEVICES AND ACCESSORIES UP TO ISOLATION VALVES. UPDATE ELECTRICAL AND CONTORLS.



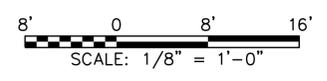
NOTES

- ① CONTRACTOR SHALL REPLACE ONE CHILLER AT A TIME. ONE CHILLER MUST REMAIN OPERATIONAL AT ALL TIMES TO MAINTAIN CHILLED WATER SERVICE TO FACILITY.
- ② PIPING INSTALLED ABOVE GROUND AS SHOWN GEOGRAPHICALLY.
- ③ ALL WORK SHALL BE ACCOMPLISHED DILIGENTLY IN ORDER TO MINIMIZE ANY POSSIBLE LOSS OF SERVICE TO ANY OPERATING CHILLER AND EQUIPMENT.
- ④ COORDINATE WITH ON SITE FAA REPRESENTATIVE FOR CHILLER REPLACEMENT ORDER.



FOR OFFICIAL USE ONLY

BASE BUILDING
SCALE: 1/8" = 1'-0"



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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA

ATCT
CHILLER REPLACEMENT PROJECT
DEMOLITION CHILLER SITE PLAN

RENO		NV
REVIEWED BY	SUBMITTED BY	APPROVED BY
PROJECT ENGINEER	DESIGNED	ISSUED BY
DESIGNED	MT	MGR: OPERATIONS SUPPORT
DRAWN	MT	DATE
CHECKED	MT	11/03/2021
		JCN
		18061150
		DRAWING NO
		RNO-D-ATCT-D001
		REV
		A

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ISSUED FOR: CONSTRUCTION

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AIR COOLED CHILLER

MARK	SERVES	NET CAPACITY (TONS) ③	AMB TEMP °F	MIN OPER TEMP °F	REF	EVAPORATOR				CONDENSER		COMPRESSOR		EER	UNIT ELECTRICAL				REMARKS	
						GPM	MAX PD FT	EWT °F	LWT °F	NO FANS	FAN HP	QTY	TON EA ACTUAL		VOLT	PH	HZ	MCA		
CH-1	CHILLED WATER	59.8	108°	8°	R-22	152.5	13.2	55.0	45	8	1.0	2	30	8	460	3	60	133	TRANE RTAA070	ESSENTIAL POWER ①②④
CH-2	CHILLED WATER	59.8	108°	8°	R-22	152.5	13.2	55.0	45	8	1.0	2	30	8	460	3	60	133	TRANE RTAA070	ESSENTIAL POWER ①②④

- ① CONTROLLER AND DISCONNECT SWITCH BY MANUFACTURER. STARTER IS WYE-DELTA CLOSED TRANSITION TYPE.
- ② WATER CONTAINS 35% INHIBITED PROPYLENE GLYCOL BY VOLUME
- ③ NET CAPACITY WITH 35% INHIBITED PROPYLENE GLYCOL BY VOLUME, ELEV. 4,500 FT
- ④ ONLY ONE WILL RUN ON ESSENTIAL POWER, TWO CHILLERS WIRED

REMOVE AND REPLACE EQUIPMENT TO INCLUDE ASSOCIATED ELECTRICAL, PIPING AND CONTROLS

OLD EQUIPMENT SCHEDULE

SCALE NONE 1 M046

AIR COOLED CHILLER

MARK	SERVES	MAKE	MODEL	TYPE	NOMINAL CAPACITY (TONS)	NET CAPACITY (TONS)	AMB TEMP °F	MIN OPER TEMP °F	REF	EVAPORATOR				CONDENSER		COMPRESSOR		UNIT ELECTRICAL				MOCP	OPERATING WEIGHT (LB)	ELEVATION (FT)	REMARKS
										GPM	MAX PD FT	EWT °F	LWT °F	NO FANS	FAN RPM	QTY	TON/CKT	VOLT	PH	HZ	MCA				
CH-1	CHILLED WATER	CARRIER	30RB ①	AIR COOLED SCROLL	70	61.56	108°	8°	R-410A	158	15.6	54	44	4	1140	3	25+25+20	460	3	60	148	175	4317	4,500	ESSENTIAL POWER ②③④
CH-2	CHILLED WATER	CARRIER	30RB ①	AIR COOLED SCROLL	70	61.56	108°	8°	R-410A	158	15.6	54	44	4	1140	3	25+25+20	460	3	60	148	175	4317	4,500	ESSENTIAL POWER ②③④

OPTIONS AND ACCESSORIES

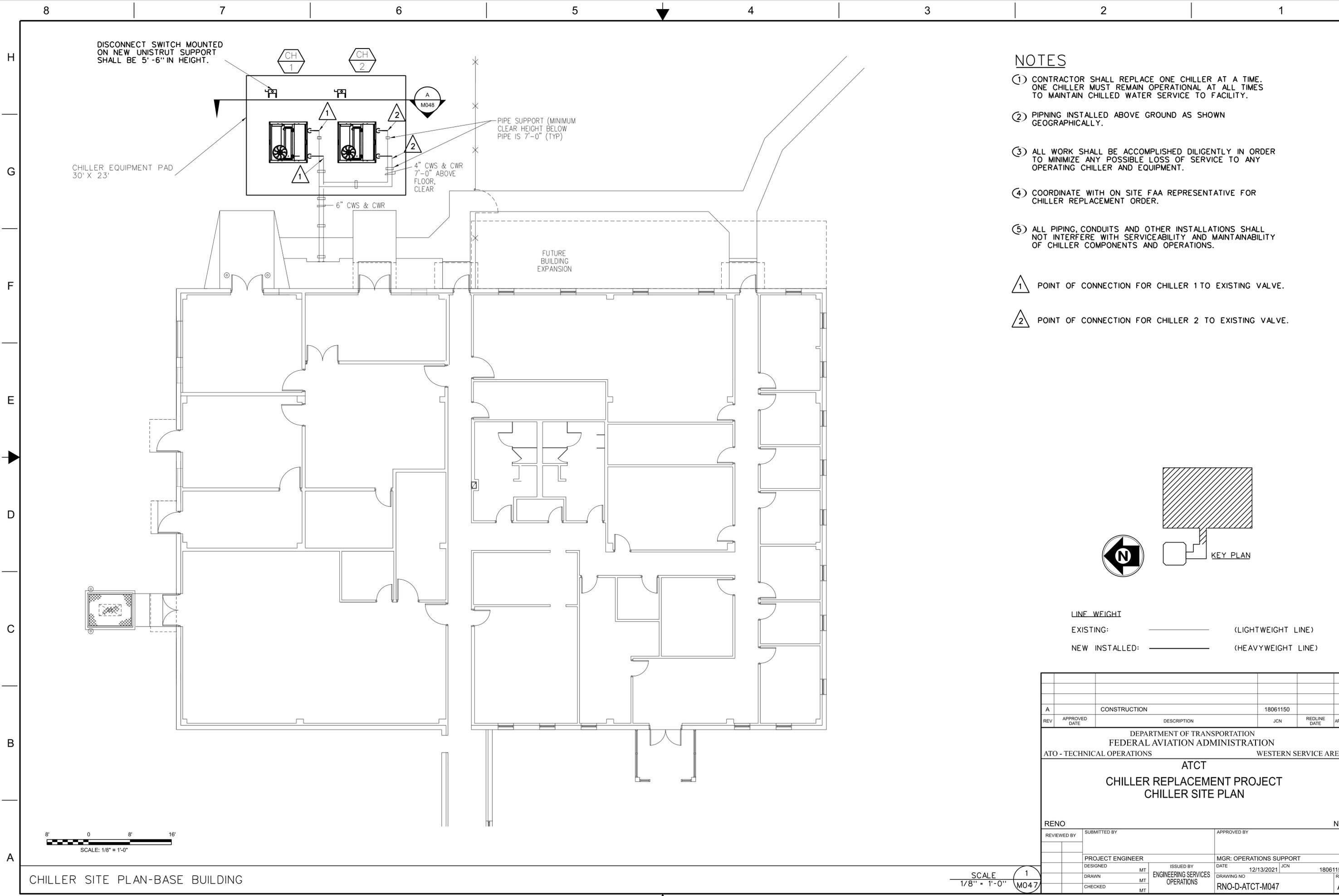
- REFRIGERATION CIRCUIT OPTIONS:
SUCTION VALVE INSULATION, SUCTION SERVICE VALVE,
LOW AMBIENT HEAD PRESSURE, MINIMUM LOAD OPERATION
- ELECTRICAL/LOW SOUND OPTIONS:
SINGLE POINT CONNECTION, XL,
TERMINAL BLOCK, COMPRESSOR BLANKETS
- CONTROLS/COMMUNICATION OPTIONS:
BACNET COMMUNICATION
- PACKING/SECURITY OPTIONS:
SKID, COIL TRIM PANELS

- ① MODEL NUMBER CONTINUED:
X0706-GGG34
- ② CONTROLLER BY MANUFACTURER. STARTER IS ACROSS THE LINE TYPE.
- ③ WATER CONTAINS 35% INHIBITED PROPYLENE GLYCOL BY VOLUME
- ④ ONLY ONE WILL RUN ON ESSENTIAL POWER, TWO CHILLERS WIRED

RENO		NV	
REVIEWED BY	SUBMITTED BY	APPROVED BY	
	MATTHEW TAEUBEL	KHANH TRAN	
DESIGNED	ENGINEERING SERVICES OPERATIONS	MGR: OPERATIONS SUPPORT	
DRAWN	MT	DATE	12/13/2021 JCN 18061150
CHECKED	MT	DRAWING NO	RNO-D-ATCT-M046
		REV	A

NEW EQUIPMENT SCHEDULE

SCALE NONE 2 M046



DISCONNECT SWITCH MOUNTED ON NEW UNISTRUT SUPPORT SHALL BE 5'-6" IN HEIGHT.

CHILLER EQUIPMENT PAD 30' X 23'

PIPE SUPPORT (MINIMUM CLEAR HEIGHT BELOW PIPE IS 7'-0" (TYP))

4" CWS & CWR 7'-0" ABOVE FLOOR, CLEAR

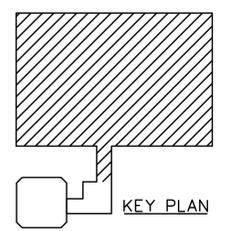
6" CWS & CWR

FUTURE BUILDING EXPANSION

NOTES

- ① CONTRACTOR SHALL REPLACE ONE CHILLER AT A TIME. ONE CHILLER MUST REMAIN OPERATIONAL AT ALL TIMES TO MAINTAIN CHILLED WATER SERVICE TO FACILITY.
- ② PIPING INSTALLED ABOVE GROUND AS SHOWN GEOGRAPHICALLY.
- ③ ALL WORK SHALL BE ACCOMPLISHED DILIGENTLY IN ORDER TO MINIMIZE ANY POSSIBLE LOSS OF SERVICE TO ANY OPERATING CHILLER AND EQUIPMENT.
- ④ COORDINATE WITH ON SITE FAA REPRESENTATIVE FOR CHILLER REPLACEMENT ORDER.
- ⑤ ALL PIPING, CONDUITS AND OTHER INSTALLATIONS SHALL NOT INTERFERE WITH SERVICEABILITY AND MAINTAINABILITY OF CHILLER COMPONENTS AND OPERATIONS.

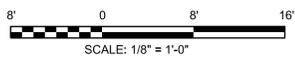
- ① POINT OF CONNECTION FOR CHILLER 1 TO EXISTING VALVE.
- ② POINT OF CONNECTION FOR CHILLER 2 TO EXISTING VALVE.



LINE WEIGHT

EXISTING: ——— (LIGHTWEIGHT LINE)

NEW INSTALLED: ——— (HEAVYWEIGHT LINE)



CHILLER SITE PLAN-BASE BUILDING

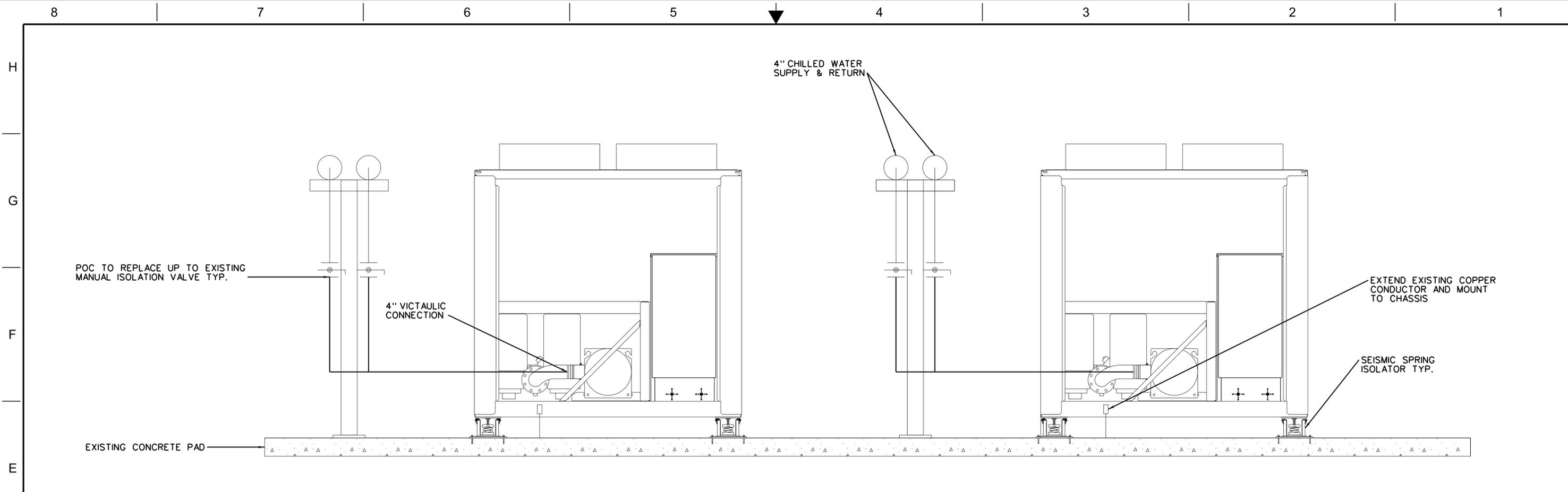
SCALE 1/8" = 1'-0" 1 M047

REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
A		CONSTRUCTION	18061150		

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA					
ATCT CHILLER REPLACEMENT PROJECT CHILLER SITE PLAN					
RENO					NV
REVIEWED BY	SUBMITTED BY		APPROVED BY		
PROJECT ENGINEER	DESIGNED		ISSUED BY		MGR: OPERATIONS SUPPORT
MT	MT		ENGINEERING SERVICES OPERATIONS		DATE 12/13/2021 JCN 18061150
DRAWN	CHECKED		DRAWING NO		REV
MT	MT		RNO-D-ATCT-M047		A

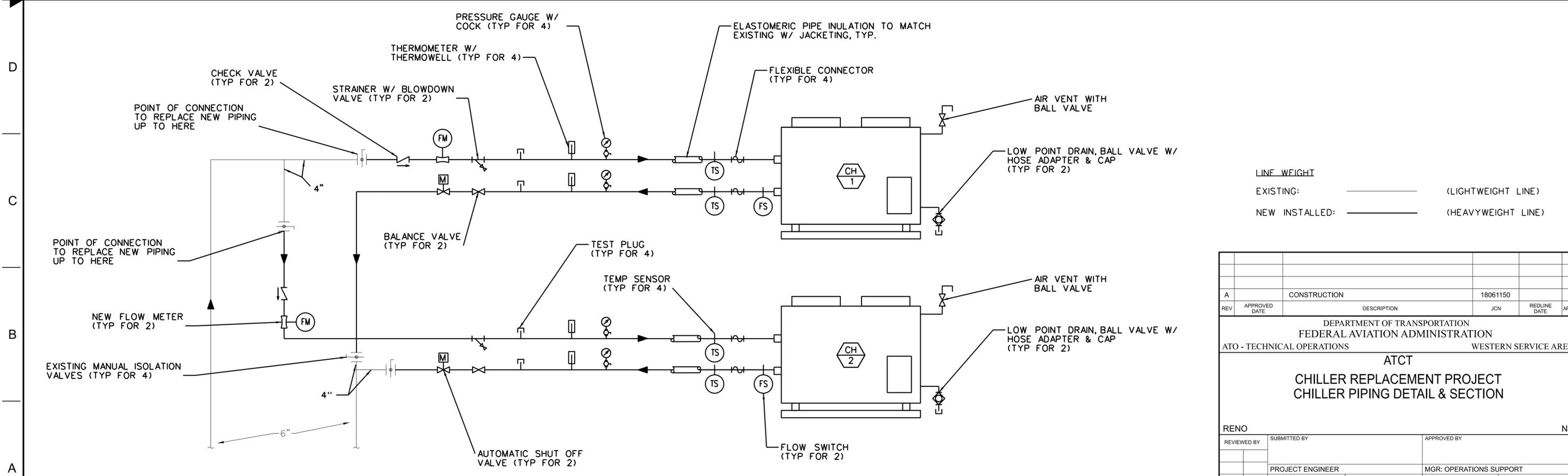
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ISSUED FOR: CONSTRUCTION



CHILLER SECTION

SCALE NONE 1 M048



LINE WEIGHT
 EXISTING: (LIGHTWEIGHT LINE)
 NEW INSTALLED: (HEAVYWEIGHT LINE)

RENO		NV	
REVIEWED BY	SUBMITTED BY	APPROVED BY	
PROJECT ENGINEER	DESIGNED	ISSUED BY	MGR: OPERATIONS SUPPORT
DATE	12/13/2021	JCN	18061150
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CHILLER PIPING DETAIL

SCALE NONE 2 M048

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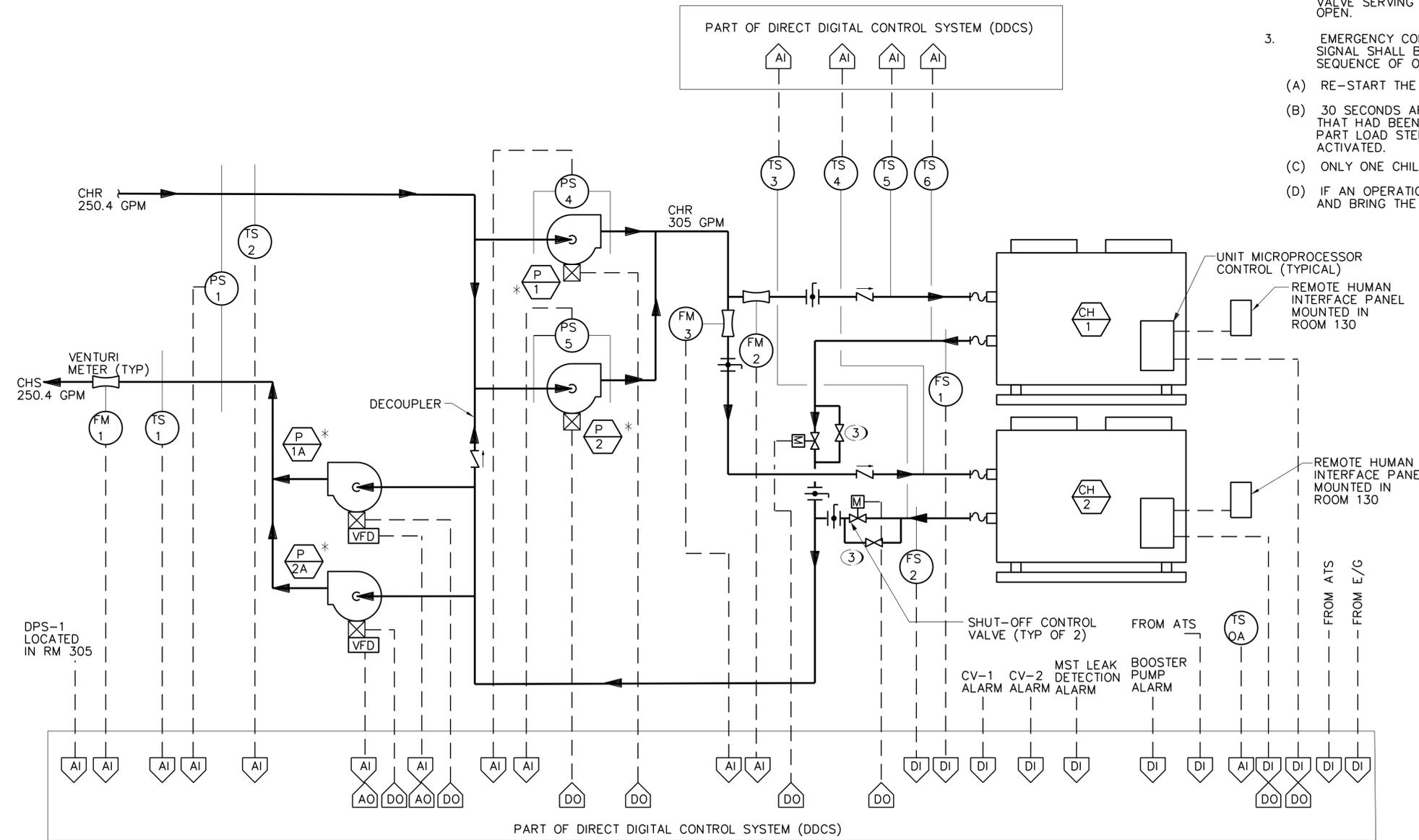
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CHILLER SEQUENCE OF OPERATION

1. GENERAL: EACH OF THE CHILLERS IS SIZED FOR 100% OF THE FACILITY CRITICAL HVAC LOAD. (ALL EXCEPT ADMIN AREA SERVED BY AHU-3)
2. OPERATION:
 - (A) THE OPERATION OF THE CHILLER SHALL BE CONTROLLED BY THE UNIT MICROPROCESSOR. IN THE AUTOMATIC START POSITION, THE DDC SYSTEM SHALL BE PROGRAMMED TO ENERGIZE THE CHILLER'S SELF CONTAINED CONTROLS WHEN THE CHILLED WATER SUPPLY TEMPERATURE AT TS-1 RISES ABOVE 46 DEGREES F (ADJUSTABLE).
 - (B) STARTING SEQUENCE: THE PRIMARY CHILLED WATER PUMP (P-1 OR P-2) SHALL BE ENERGIZED. CHILLED WATER FLOW THROUGH THE CHILLER IS VERIFIED BY THE ASSOCIATED FLOW SWITCH FS-1 OR FS-2 IN THE CHILLED WATER LINE.
 - (C) IF ONE CHILLER OPERATION AT 95% CAPACITY FOR MORE THAN 5 MINUTES, THE DDC SHALL ENERGIZE THE SECOND PRIMARY PUMP (P-1 OR P-2), AND UPON FLOW VERIFICATION VIA PS-1A OR PS-2A START THE SECOND CHILLER.
 - (D) IF BOTH CHILLERS OPERATE AT 40% CAPACITY FOR MORE THAN 5 MINUTES, THE DDC SHALL SHUT DOWN ONE CHILLER AND DE-ENERGIZE ONE PRIMARY CHILLED WATER PUMP (P-1 OR P-2).
 - (E) AN OPERATIONS FAILURE SHALL SEND A SIGNAL TO THE DDC. THE DDC SHALL AUTOMATICALLY BRING THE SECOND CHILLER ON LINE IN THE EVENT OF A FAILURE SIGNAL FROM THE LEAD CHILLER. IF ONLY ONE CHILLER IS OPERATING, IF BOTH CHILLERS ARE OPERATING AND OPERATIONS FAILURE OCCURS, THE DDC SHALL CLOSE THE ASSOCIATED SHUT-OFF CONTROL VALVE, AND DE-ENERGIZE ONE PRIMARY CHILLED WATER PUMP (P-1 OR P-2).
2. INTERLOCKS: PRIOR TO START OF THE CHILLER, THE ASSOCIATED CHILLED WATER SHUTOFF CONTROL VALVE SERVING THE CHILLER SHALL OPEN. CHILLER SHUT-OFF CONTROL VALVES SHALL BE NORMALLY OPEN.
3. EMERGENCY CONDITION: WHEN THE NORMAL POWER FAILS, AND UPON STARTING THE EMERGENCY GENERATOR, SIGNAL SHALL BE RECEIVED FROM THE EMERGENCY GENERATOR CONTROL PANEL TO ALLOW THE FOLLOWING SEQUENCE OF OPERATION:
 - (A) RE-START THE PRIMARY CHILLED WATER PUMP THAT WAS RUNNING PRIOR TO THE EMERGENCY CONDITION.
 - (B) 30 SECONDS AFTER RESTARTING THE PRIMARY CHILLED WATER PUMP, SEND SIGNAL TO THE CHILLER UNIT THAT HAD BEEN OPERATING PRIOR TO NORMAL POWER FAILURE WHICH ACTIVATES PART LOAD STEP 1. PART LOAD STEPS 2,3,4,5,6 SHALL ACTIVATE, AS NECESSARY, AT 30 SECONDS INTERVALS AFTER STEP 1 IS ACTIVATED.
 - (C) ONLY ONE CHILLER IS TO OPERATE ON EMERGENCY GENERATOR POWER.
 - (D) IF AN OPERATIONS FAILURE IS RECEIVED AT THE DDC, THE DDC SHALL DE-ENERGIZE THE RUNNING CHILLER AND BRING THE SECOND CHILLER ONLINE AUTOMATICALLY.

NOTES

- ① ALL SETPOINTS DEFINED IN THE SEQUENCE OF OPERATION ARE ADJUSTABLE.
- ② VALVES ARE ADJUSTED TO ALLOW FLOW OF 10 GPM AT ALL TIMES.
- ③ BUILDING AUTOMATION SYSTEM IS: DELTA CONTROLS
- ④ LOCAL RENO, NEVADA INSTALL COMPANY IS: AUTOMATED TEMPERATURE CONTROLS (775) 826-7700
- ⑤ CONTRACTOR SHALL REUSE AND RECONNECT EXISTING CONTROLS TO NEW CHILLERS



CHILLED WATER PLANT CONTROL DIAGRAM

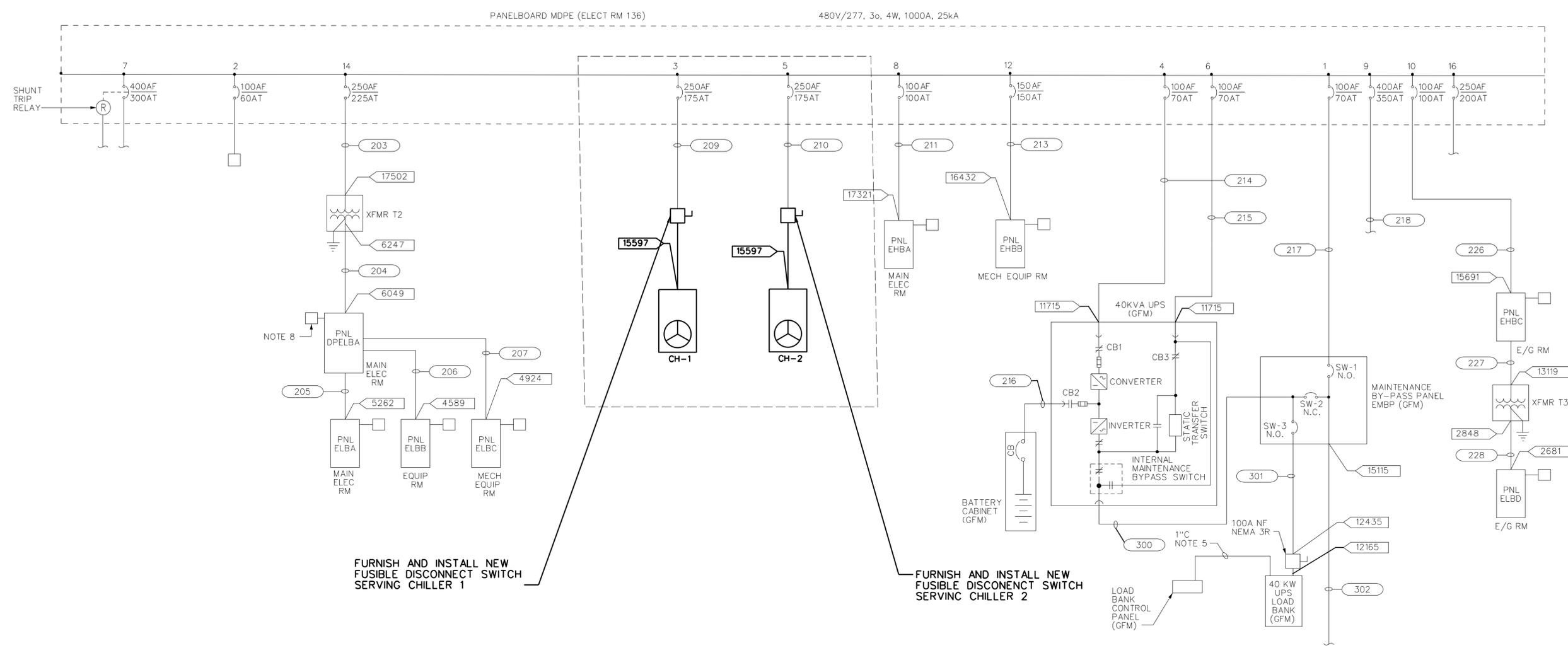
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A		CONSTRUCTION	18061150		
REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA					
ATCT CHILLER REPLACEMENT PROJECT EXISTING CONTROLS DIAGRAM & SEQUENCE OF OPERATION					
RENO		NV			
REVIEWED BY	SUBMITTED BY	APPROVED BY			
PROJECT ENGINEER	DESIGNED	ISSUED BY	MGR: OPERATIONS SUPPORT		
	MT	ENGINEERING SERVICES OPERATIONS	DATE	12/13/2021	JCN 18061150
DRAWN	MT		DRAWING NO	RNO-D-ATCT-M049	
CHECKED	MT			REV	A

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FURNISH AND INSTALL NEW FUSIBLE DISCONNECT SWITCH SERVING CHILLER 1

FURNISH AND INSTALL NEW FUSIBLE DISCONNECT SWITCH SERVING CHILLER 2

NOTES:

1. FURNISH AND INSTALL NEW 600V, 200A, HEAVY DUTY, 3 PHASE FUSED DISCONNECT SWITCH. SQUARE D MODEL: H364RB OR APPROVED EQUAL.
2. FUSES ARE 175A, TIME DELAY, CLASS RK5.
3. REUSE EXISTING LINE SIDE CONDUCTORS. PULL NEW SUPPLY SIDE CONDUCTORS SIZED PER MANUFACTURER'S INSTRUCTIONS AND NEC.

LINE WEIGHT
 EXISTING: _____ (LIGHTWEIGHT LINE)
 NEW INSTALLED: _____ (HEAVYWEIGHT LINE)

DETAIL - CHILLER ELECTRICAL SINGLE LINE

SCALE NONE 1/8085

REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
A		CONSTRUCTION	18061550		
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS WESTERN SERVICE AREA ATCT CHILLER REPLACEMENT PROJECT ELECTRICAL SINGLE LINE					
RENO		NV			
REVIEWED BY	SUBMITTED BY	APPROVED BY			
PROJECT ENGINEER	DESIGNED	ISSUED BY	MGR: OPERATIONS SUPPORT		
			DATE	12/13/2021	JCN 18061150
DRAWN	MT	ENGINEERING SERVICES OPERATIONS	DRAWING NO	RNO-DATCT-E085	
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mrcalicio@fs.com 12/13/2021 7:32:06 AM Matthew Tschabel EDN: mrcalicio@fs.com

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