



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

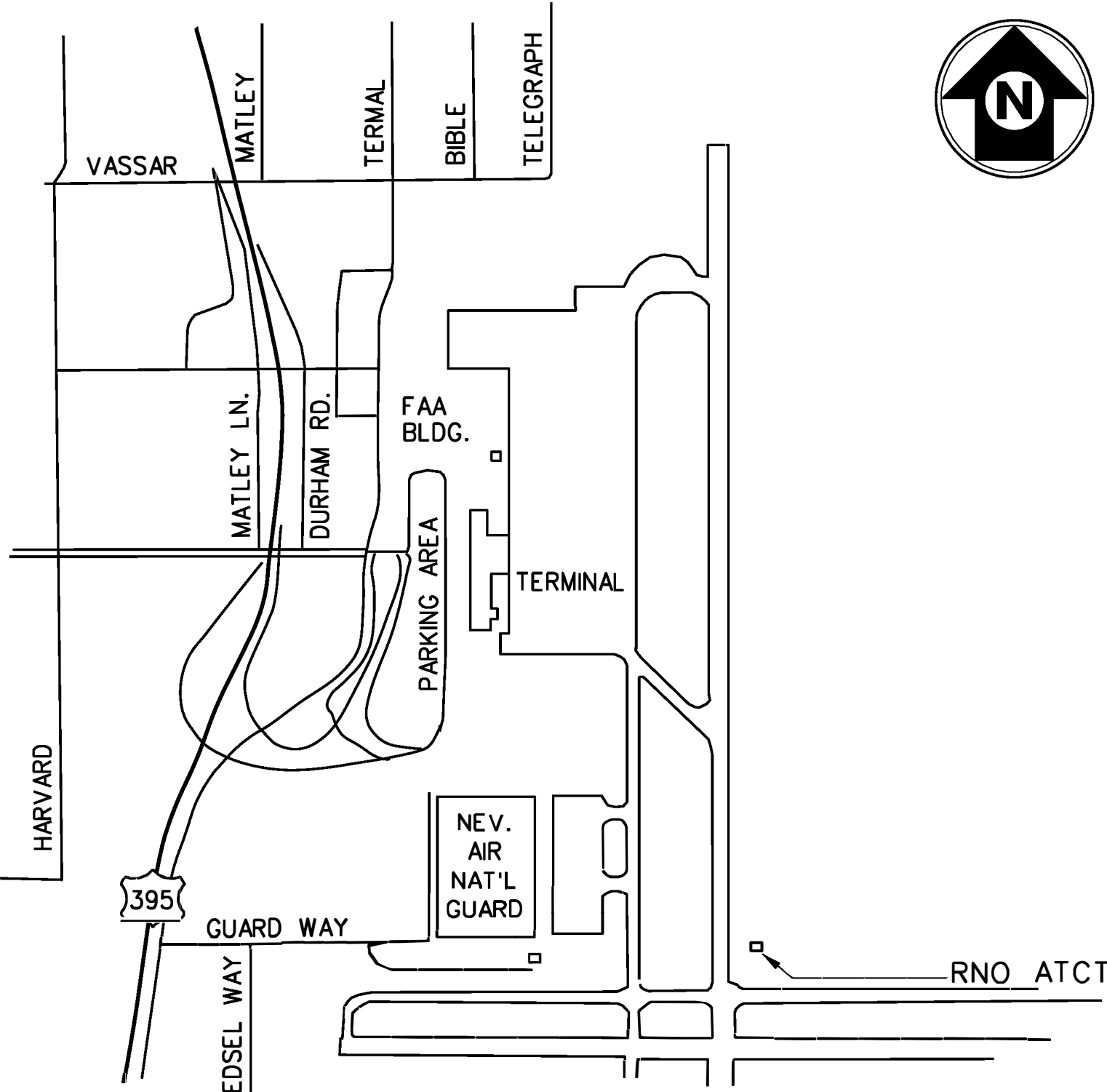
RNO-D-ATCT-D001                      DEMOLITION CHILLER SITE PLAN

MECHANICAL

RNO-D-ATCT-M046                      EQUIPMENT SCHEDULE  
RNO-D-ATCT-M047                      CILLER 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                      ELECTRICAL SINGLE LINE



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

GENERAL NOTES:

1. 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.
2. 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 REPACEMENT OF THE NEXT CHILLER.
3. 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.

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 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	MT	ISSUED BY	DATE	12/13/2021
	DRAWN	MT	ENGINEERING SERVICES	JCN	18061150
	CHECKED	MT	OPERATIONS	DRAWING NO	
				REV	A

8 7 6 5 4 3 2 1

H

G

F

E

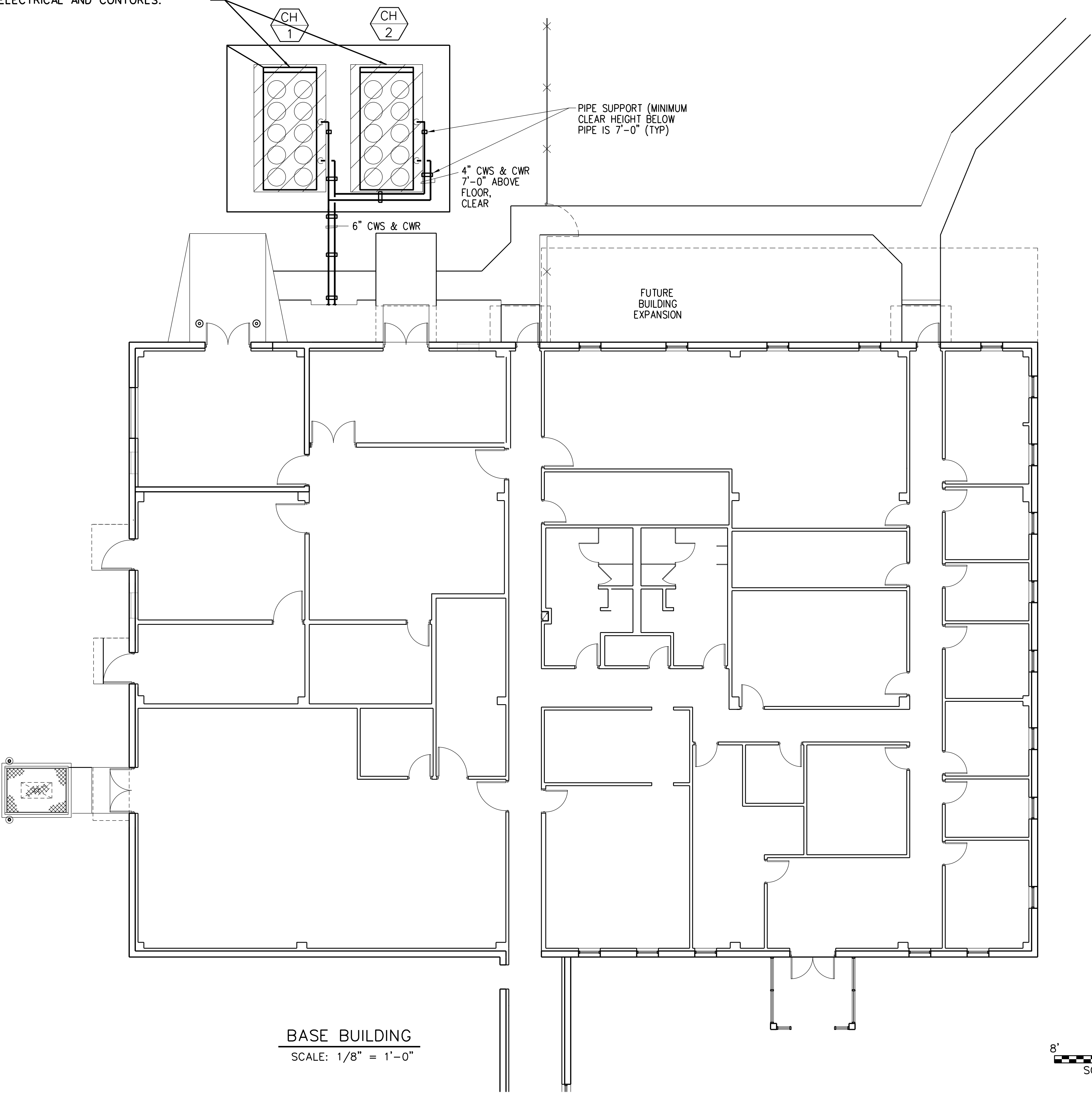
D

C

B

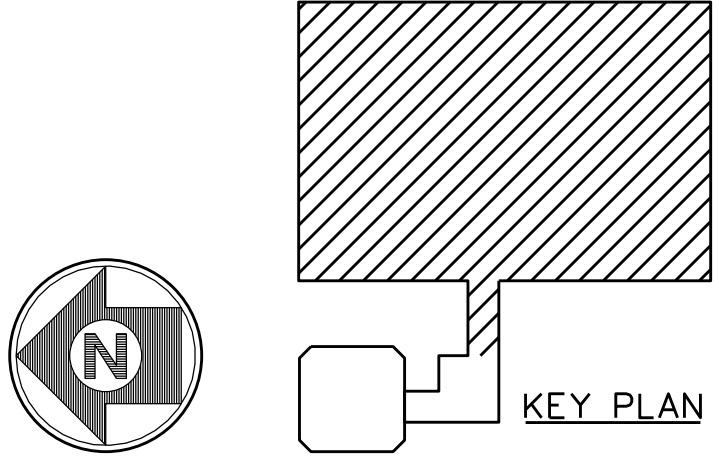
A

REMOVE AND REPLACE CHILLERS, ASSOCIATE WATER PIPING, DEVICES AND ACCESSORIES UP TO ISOLATION VALVES. UPDATE ELECTRICAL AND CONTROLS.



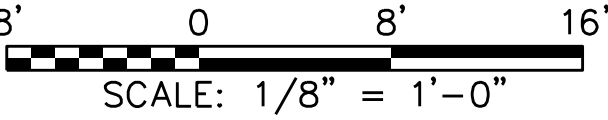
NOTES

- 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

A		CONSTRUCTION			
REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS ATCT CHILLER REPLACEMENT PROJECT DEMOLITION CHILLER SITE PLAN WESTERN SERVICE AREA					
RENO			NV		
REVIEWED BY	SUBMITTED BY		APPROVED BY		
	PROJECT ENGINEER		MGR: OPERATIONS SUPPORT		
	DESIGNED	MT	DATE	11/03/2021	JCN 18061150
	DRAWN	MT	ENGINEERING SERVICES OPERATIONS		DRAWING NO
	CHECKED	MT	RNO-D-ATCT-D001		REV A



## 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	EWI °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. | ③ NET CAPACITY WITH 35% INHIBITED PROPYLENE GLYCOL BY VOLUME, ELEV. 4,500 FT |
| ② WATER CONTAINS 35% INHIBITED PROPYLENE GLYCOL BY VOLUME  | 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

SCAL  
NONE

$$\left( \frac{1}{M_{04}} \right)$$

# AIR COOLED CHILLER

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	EWI ^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

## NEW EQUIPMENT SCHEDULE

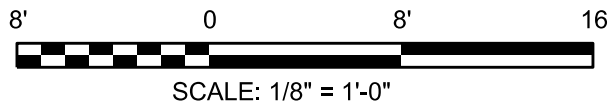
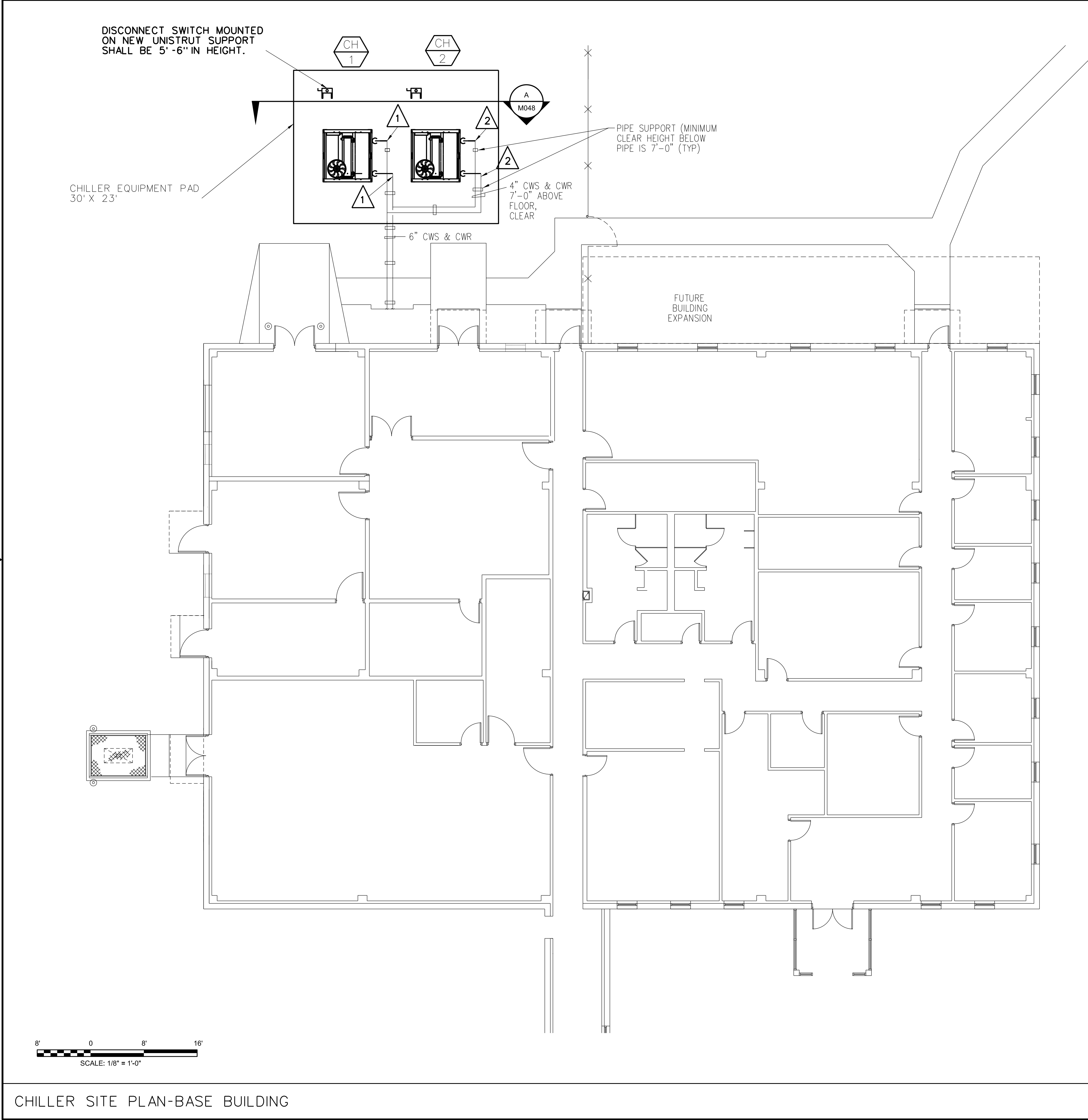
SCALE  
NONE

2  
M046

A		CONSTRUCTION		18061150	
REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONSWESTERN SERVICE AREA					
ATCT					
CHILLER REPLACEMENT PROJECT EQUIPMENT SCHEDULE					
RENO					
NV					
REVIEWED BY		SUBMITTED BY		APPROVED BY	
		MATTHEW TAEUBEL		KHANH TRAN	
		PROJECT ENGINEER		MGR: OPERATIONS SUPPORT	
DESIGNED		MT	ISSUED BY	DATE	12/13/2021 JCN
DRAWN		MT	ENGINEERING SERVICES OPERATIONS	DRAWING NO	18061150
CHECKED		MT		RNO-D-ATCT-M046	REV

models-m047.dgn 12/13/2021 7:29:51 AM Matthew Tasebel

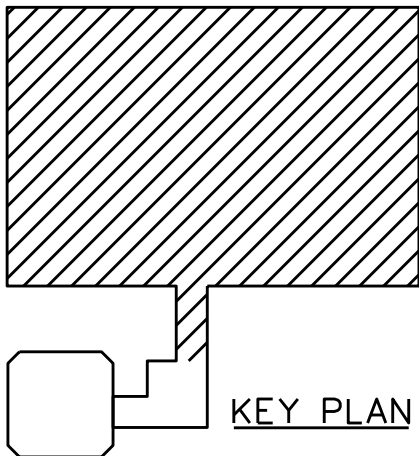
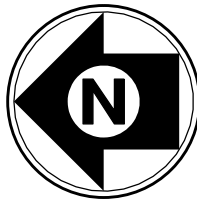
H  
G  
F  
E  
D  
C  
B  
A



## NOTES

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



KEY PLAN

### LINE WEIGHT

EXISTING: (LIGHTWEIGHT LINE)

NEW INSTALLED: (HEAVYWEIGHT LINE)

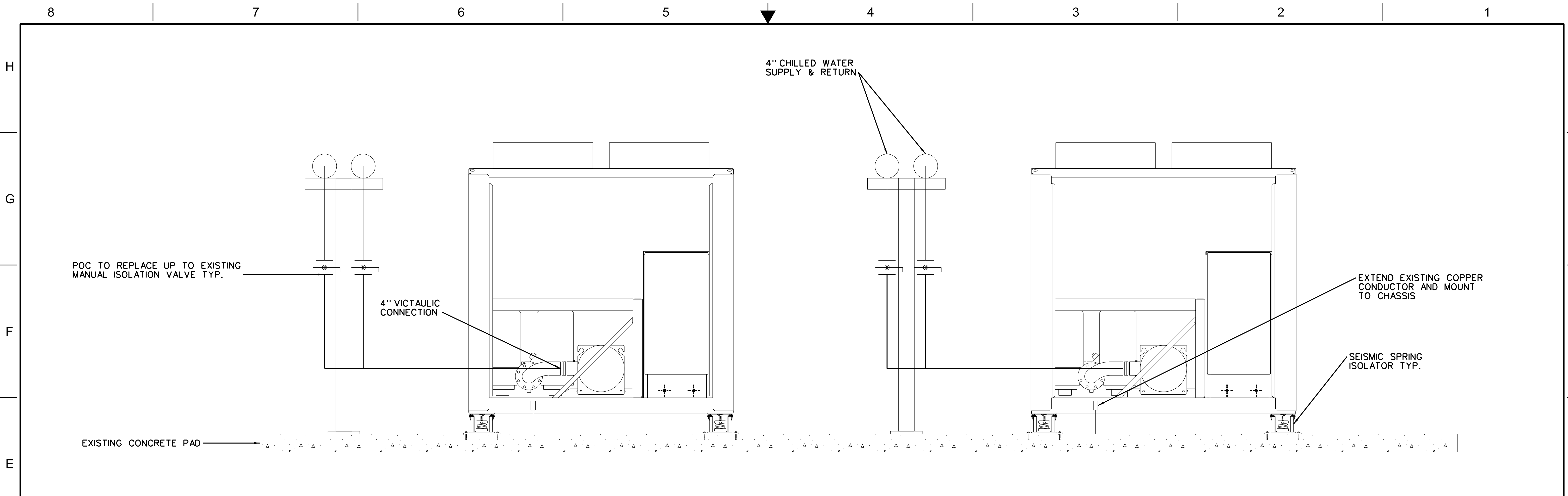
A		CONSTRUCTION		18061150	
REV	APPROVED DATE	DESCRIPTION		JCN	REDLINE DATE
DEPARTMENT OF TRANSPORTATION					
FEDERAL AVIATION ADMINISTRATION					
ATO - TECHNICAL OPERATIONS			WESTERN SERVICE AREA		
ATCT					
CHILLER REPLACEMENT PROJECT					
CHILLER SITE PLAN					
RENO					
NV					
REVIEWED BY		SUBMITTED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

SCALE  
1/8" = 1'-0"

1  
M047

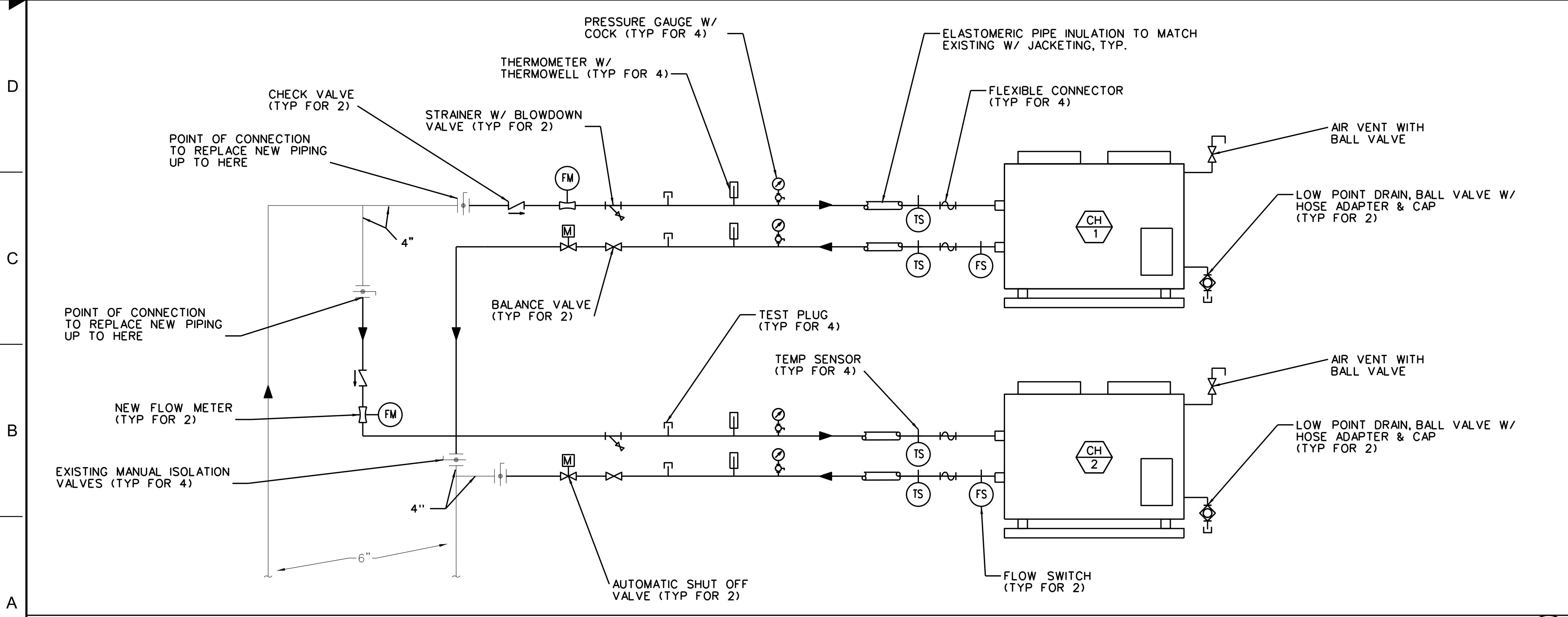
ISSUED FOR: CONSTRUCTION

EDW: mo-d-ats-m047.dgn



CHILLER SECTION

SCALE NONE 1 M048



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

RENO					
REVIEWED BY	SUBMITTED BY			APPROVED BY	
	PROJECT ENGINEER			MGR: OPERATIONS SUPPORT	
	DESIGNED	MT	ISSUED BY	DATE	12/13/2021
	DRAWN	MT	ENGINEERING SERVICES	DRAWING NO	18061150
	CHECKED	MT	OPERATIONS	RNO-D-ATCT-M048	REV
					A

CHILLER PIPING DETAIL

SCALE NONE 2 M048

mod-ctc-m048.dgn 12/13/2021 7:32:17 AM Matthew Tseubel

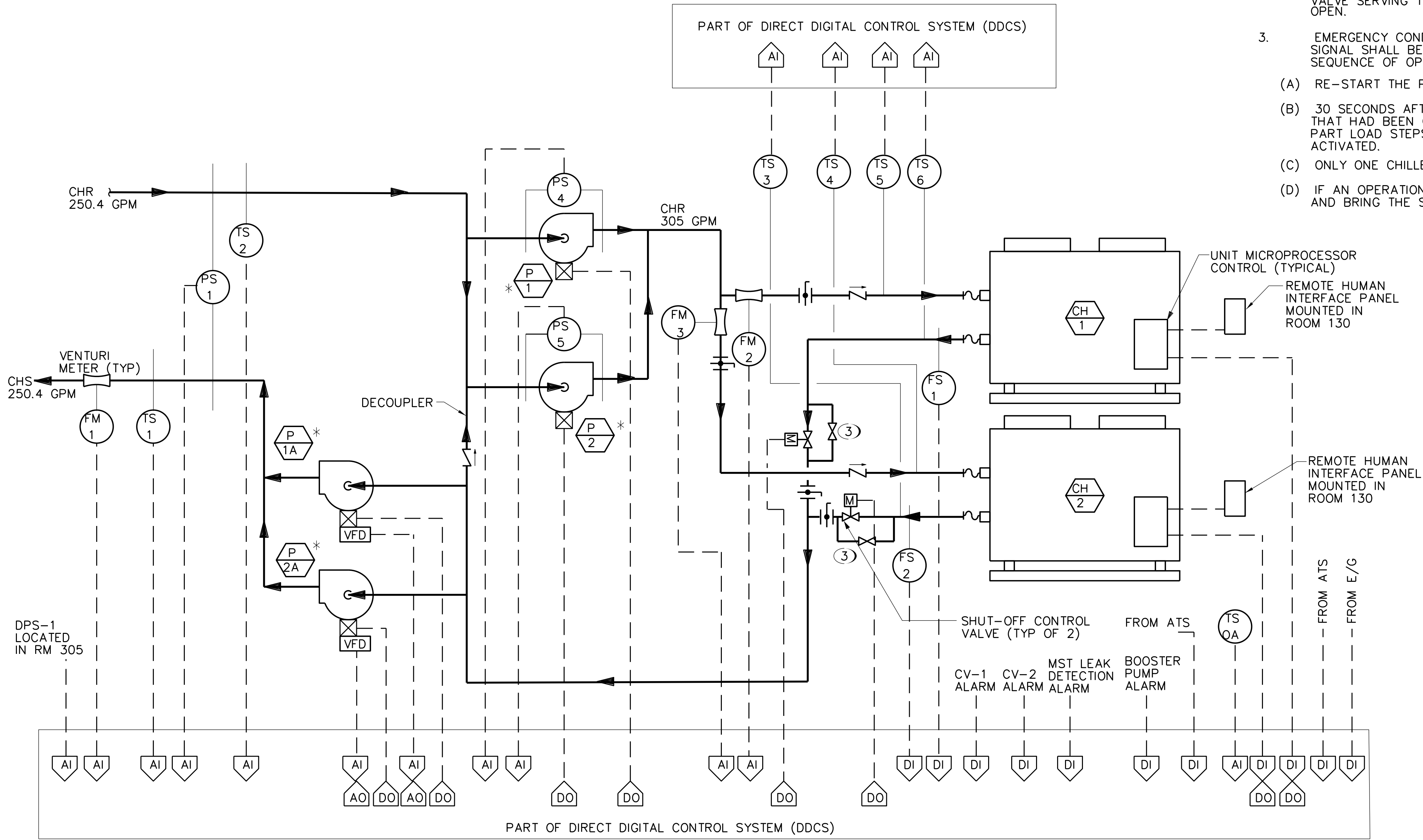
ISSUED FOR: CONSTRUCTION

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

CHILLER SEQUENCE OF OPERATION

1. GENERAL: EACH OF THE CHILLERS IS SIZED FOR 100% OF THE FACILITY CRITICAL HVAC LOAD. (ALL EXCEP 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.



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

CHILLED WATER PLANT CONTROL DIAGRAM

SCALE  
NONE

1  
M049

mod-085-085.dgn 12/13/2021 7:52:06 AM Matthew Tseubel

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  
E085

A		CONSTRUCTION	18061550		
REV	APPROVED DATE	DESCRIPTION	JCN	REDLINE DATE	APVD
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION ATO - TECHNICAL OPERATIONS ATCT CHILLER REPLACEMENT PROJECT ELECTRICAL SINGLE LINE WESTERN SERVICE AREA					
RENO NV					
REVIEWED BY		SUBMITTED BY		APPROVED BY	
PROJECT ENGINEER		MGR: OPERATIONS SUPPORT			
DESIGNED MT		DATE 12/13/2021 JCN		18061150	
DRAWN MT		ISSUED BY ENGINEERING SERVICES OPERATIONS		DRAWING NO RNO-D-ATCT-E085	
CHECKED MT				REV A	

ISSUED FOR: CONSTRUCTION  
EDW: mo-d-085-085.dgn

