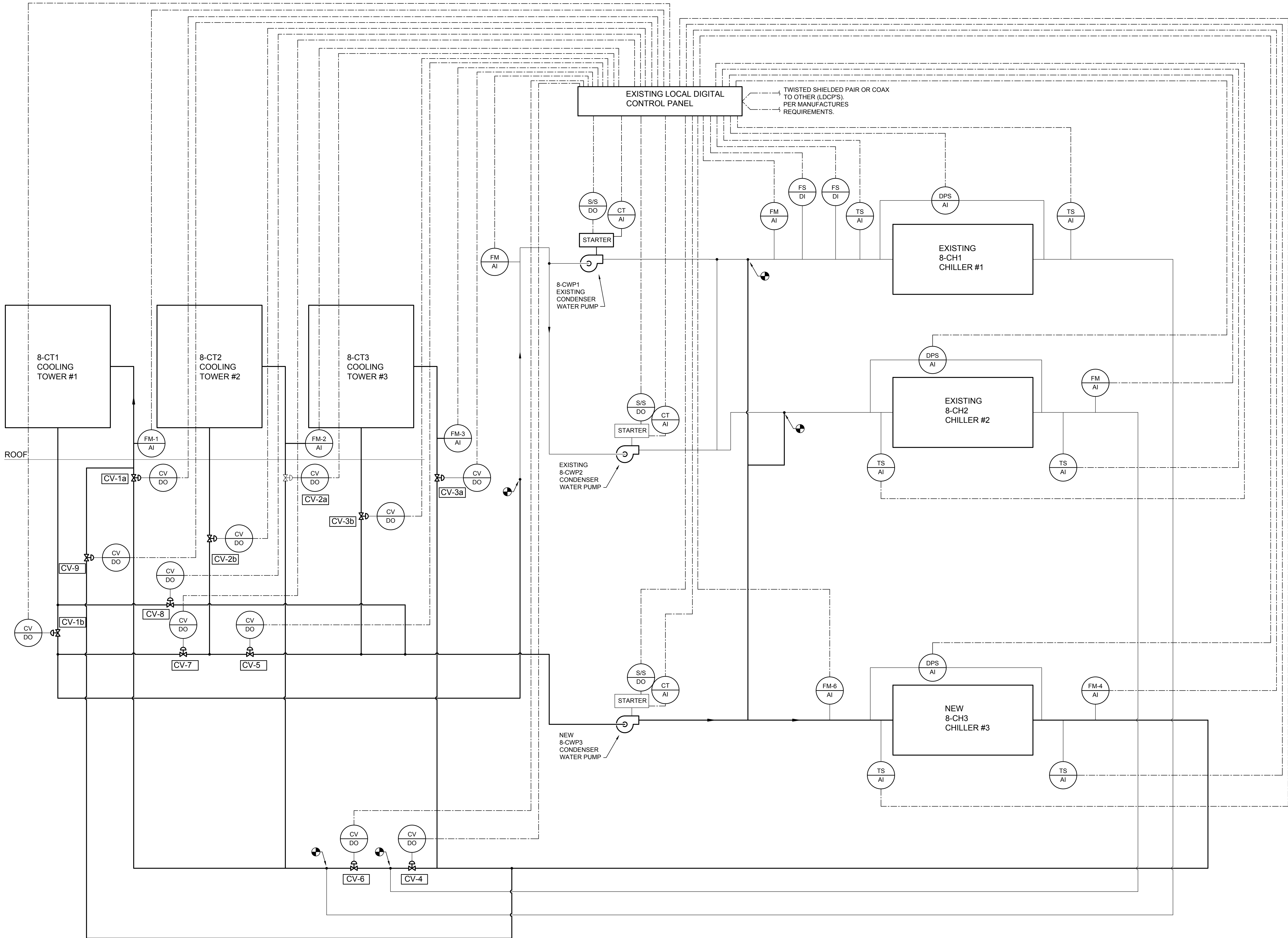


three inches = one foot
one and one-half inches = one foot
one inch = one foot
three-quarters inch = one foot
three-eighths inch = one foot
one-half inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot



CONDENSER WATER SYSTEM CONTROLS

SCALE: NOT TO SCALE

NOTE:
ALL CONTROLS FOR CHILLERS NO. 1 AND 2 ARE EXISTING. CONTRACTOR SHALL CHECK AND RECALIBRATE EXISTING CONTROLS. ALL CONTROLS ON CHILLER NO. 3 AND COOLING TOWERS NO. 1, 2 AND 3 ARE NEW.

ABBREVIATIONS

- AI ANALOG INPUT
- AO ANALOG OUTPUT
- CT CURRENT TRANSFORMER
- CV CONTROL VALVE
- DI DIGITAL INPUT
- DO DIGITAL OUTPUT
- DPS DIFFERENTIAL PRESSURE SENSOR
- FM FLOW METER
- FS FLOW SWITCH
- S/S START/STOP
- TS TEMPERATURE SENSOR

INPUT/OUTPUT SUMMARY TABLE

BUILDING NO. 8	HARDWARE								SOFTWARE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	CONTROL RELAY			CONTROL POINT ADJUSTMENT				POSITION ADJUSTMENT				VFD SPEED ADJUSTMENT				FLOW METER				FLOW GPM	TEMPERATURE (F WET BULB)	TEMPERATURE (F DRY BULB)	CURRENT TRANSFORMER	DIFFERENTIAL PRESSURE	CONTACT CLOSURE	CURRENT TRANSFORMER	HIGH LIMIT	LOW LIMIT	STOP TIME	RUN TIME			SCHEDULED START/STOP	OPTIMUM START/STOP	INDICATING LIGHT	STARTER FAULT	HIGH MOTOR TEMP	HIGH COND TEMP ALARM	LOW OIL PRESSURE ALARM	CHILLER OPTIMIZATION	CHILLED WATER RESET	CONDENSER WATER RESET	FAILURE MODE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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PROVIDE ADDITIONAL POINTS AS SHOWN IN DIAGRAM ABOVE OR AS NEEDED.

29-AHU-1	HARDWARE POINTS					SOFTWARE POINTS					
POINT NAME	AI	AO	DI	DO	SLK	AV	DV	SCHED	TREND	ALARM	SHOW ON GRAPHIC
SUPPLY AIR STATIC PRESSURE	•								•		•
MIXED AIR TEMP	•								•		•
RETURN AIR TEMP	•								•		•
SUPPLY AIR TEMP	•								•		•
SUPPLY FAN VFD SPEED		•							•		•
SUPPLY VFD ALARM			•						•	•	•
SUPPLY FAN STATUS			•						•		•
SUPPLY FAN START/STOP				•					•		•
SUPPLY FAN VFD RUN STATUS			•						•		•
SUPPLY FAN VFD CURRENT	•								•		•
SUPPLY FAN VFD POWER	•								•		•
COOLING VALVE COMMAND		•							•		•
OUTSIDE AIR DAMPER COMMAND			•						•		•
RELIEF AIR DAMPER COMMAND		•							•		•
FREEZE/STAT			•						•	•	•
SUPPLY FAN HIGH STATIC SHUTDOWN			•						•	•	•
PREFILTER STATUS			•						•		•
SUPPLY FAN STATIC PRESSURE SETPOINT						•			•		•
MIXED AIR TEMP SETPOINT						•			•		•
OUTSIDE AIR TEMP SETPOINT						•			•		•
SUPPLY AIR TEMP SETPOINT						•			•		•
SCHEDULE								•			
SUPPLY AIR STATIC PRESSURE	•								•		•
HIGH SUPPLY AIR STATIC PRESSURE										•	
LOW SUPPLY AIR STATIC PRESSURE										•	
SUPPLY AIR DIFFERENTIAL PRESSURE										•	
SUPPLY FAN FAILURE										•	
SUPPLY FAN IN HAND										•	
PRE/AFTER FILTER CHANGE REQUIRED										•	
LOW RETURN AIR TEMP										•	
HIGH SUPPLY AIR TEMP										•	
LOW SUPPLY AIR TEMP										•	
LOW RETURN AIR TEMP										•	
LOW MIXED AIR TEMP										•	

PROVIDE ADDITIONAL POINTS AS SHOWN IN DIAGRAM ABOVE OR AS NEEDED TO COMPLETE THE SEQUENCES OF OPERATION

VARIABLE AIR VOLUME BOX WITH REHEAT COIL

POINT NAME	HARDWARE POINTS					SOFTWARE POINTS				
	AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	GRAPHIC
Zone Temp	X							X		X
Zone Setpoint Adjust	X									X
Reheat Coil Valve		X						X		X
Zone Override			X					X		X
Heating Setpoint								X		X
Heating Mode						X		X		
Schedule							X			
High Zone Temp									X	
Low Zone Temp									X	

NOTE: PROVIDE ANY ADDITIONAL POINTS REQUIRED FOR SEQUENCES OF OPERATION

CONTRACT DOCUMENTS SUBMISSION

AMENDMENT No. 5 SHEET REISSUED 10/07/11 Date	Professional Stamp/Seal DAVID C. PALMER REGISTERED PROFESSIONAL ENGINEER 043216E 6-23-11	H.F. LENZ COMPANY Engineers Planners Surveyors Energy Consultants 1407 Scalp Avenue Johnstown, PA 15904 Phone: 814-269-9300 FAX: 814-269-9301 cadd@hflenzen.com www.hflenzen.com	IKM architecture planning interior design IKM Incorporated One PPG Place Pittsburgh, PA 15222 412-281-1337 www.ikminc.com	Approved: Approved: Approved: Approved:	Approved: Director, VA Pittsburgh Healthcare System Approved: Associate Director, VAPHCS Approved: Vice President, Facilities Management Approved: Manager, Projects Section	Drawing Title CONDENSER WATER SYSTEM CONTROLS Approved: Site Manager Approved: Project Manager	Project Title COOLING TOWER REPLACEMENT Building No. 8 Scale NONE Drawn/Checked JRO/DEP Location VA PITTSBURGH HEALTHCARE SYSTEM UNIVERSITY DRIVE DIVISION PITTSBURGH, PA 15240	Date 23 JUNE 2011 Project No. 646-09-126 DRAWING NO. 8M-9 Dwg. X of X	Veterans Affairs
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