SHEET NOTE:

1. FOR EQUIPMENT TO BE DEMOLISHED: ALL EXISTING CONDUIT AND WIRING SHALL BE REMOVED. PERMISSION TO USE EXISTING CONDUIT (WIRES REMOVED) SHALL BE REQUIRED FROM WMATA ENGINEER.

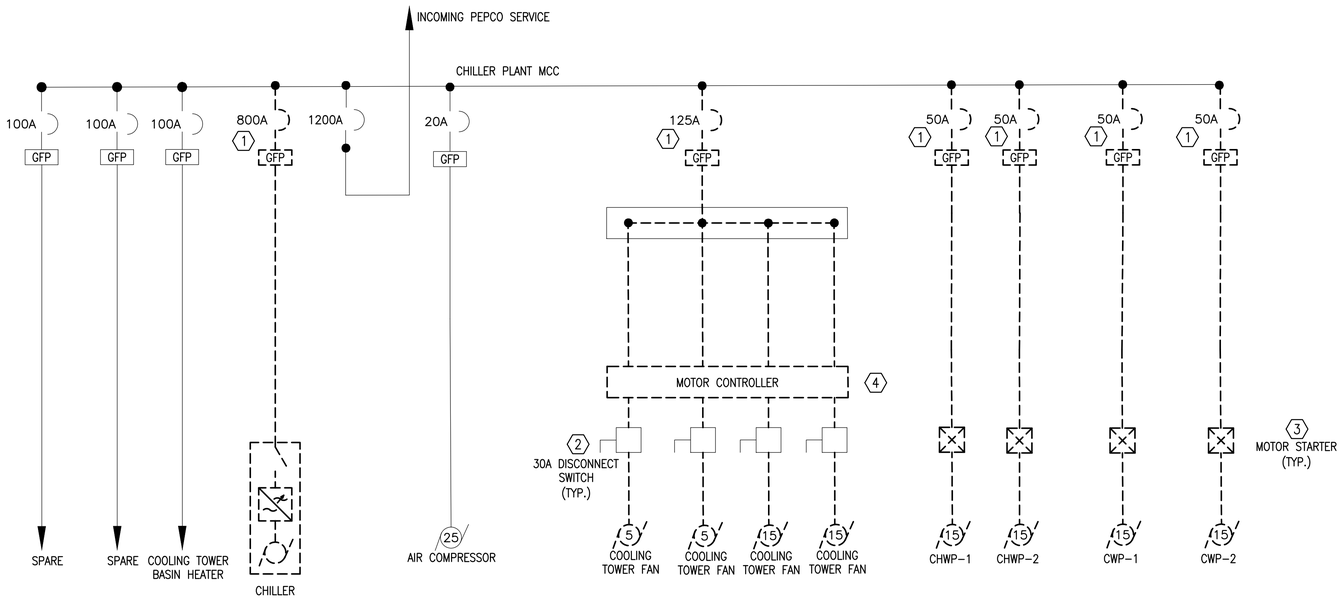
PLAN NOTE:

(1) EXISTING CIRCUIT BREAKER TO BE REMOVED.

(2) EXISTING DISCONNECT SWITCH TO REMAIN.

(3) EXISTING MOTOR STARTER TO BE REMOVED.

(4) EXISTING MOTOR CONTROLLER TO BE REMOVED.



B
CWPE3-E-601

ELECTRICAL SINGLE LINE DIAGRAM - DEMOLITION

GFP A Gannett Fleming/Parsons JOINT VENTURE

DISTRICT OF COLUMBIA
JOAYAN KHAN
No. 8758
03/29/2018
LICENSED
PROFESSIONAL ENGINEER

DESIGNED	B. IDILBI	09/30/17 DATE
DRAWN	J. ZHU	09/30/17 DATE
CHECKED	D. KHAN	03/23/18 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
03/30/2018	0	FINAL CONTRACT DRAWINGS

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

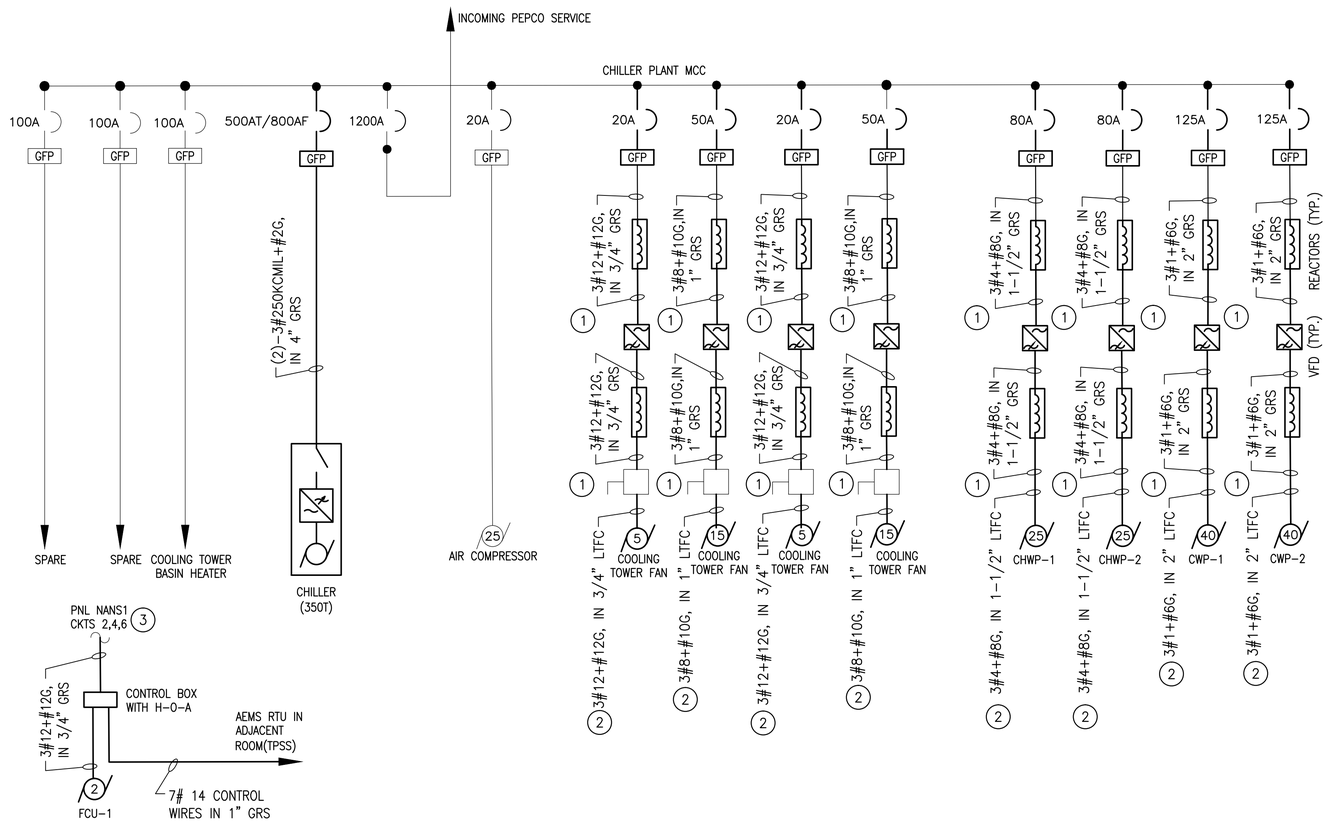
DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES
OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP

APPROVED Mark S. Magnussen 03/2018 DATE
MARK MAGNUSSEN
MANAGER, ENV. PLANNING AND COMP

APPROVED 03/2018 DATE
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPE3 - COLUMBIA HEIGHTS (E04)
ELECTRICAL SINGLE LINE DIAGRAM - DEMOLITION

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	AS NOTED	CWPE3-E-601	109 of 173



B
CWPE3-E-602 ELECTRICAL SINGLE LINE DIAGRAM - NEW WORK

SHEET NOTES:

1. PROVIDE NEW CIRCUIT WITH GROUND FAULT PROTECTION IN EXISTING MCC.
2. RUN ALL CABLES IN AN EXISTING 2" GRS CONDUIT.

PLAN NOTES:

(1) LINE AND LOAD REACTORS FOR EACH VFD SHALL BE MOUNTED IN A SINGLE NEMA 4X ENCLOSURE

(2) RUN NEW RGS FROM CABLE TROUGH AND STOP NEAR MOTOR. RUN LTFC FROM RGS TO MOTOR.

(3) A. IN PANEL NANS REMOVE LOAD WIRES TO CKTS 32,34,36.

B. INSTALL NEW 50A, 3P CKT BREAKER IN POSITIONS 32,34,36.

C. INSTALL A NEW DISTRIBUTION PANEL NANS1 IN A CLOSE PROXIMITY TO PANEL NANS.

D. FEED NEW PANEL NANS1 FROM PANEL NANS CKTS 32,34,36 WITH NEUTRAL AND GROUND WIRES (4#6+#10G IN 1-1/4" GRS).

E. RECONNECT LOAD WIRES REMOVED IN STEP 1 ABOVE TO CKTS 1,3,5 IN NEW PANEL NANS1.

F. CONNECT FCU-1 TO CKTS 2,4,6 IN NEW PANEL NANS1.

GFP A Gannett Fleming/Parsons JOINT VENTURE

DISTRICT OF COLUMBIA — ZIDAYAN KHAN — No. 8758 — 03/29/2018 LICENSED PROFESSIONAL ENGINEER

DESIGNED	B. IDILBI	09/30/17 DATE
DRAWN	J. ZHU	09/30/17 DATE
CHECKED	D. KHAN	03/23/18 DATE

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES
OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP

APPROVED Mark H. Magnussen 03/2018 DATE
MARK MAGNUSSEN
MANAGER, ENV. PLANNING AND COMP

APPROVED 03/2018 DATE
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPE3 - COLUMBIA HEIGHTS (E04)
ELECTRICAL SINGLE LINE DIAGRAM - NEW WORK

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	AS NOTED	CWPE3-E-602	110 of 173

PANEL: NANSS

MAIN BUS: 100A
208/120 VOLT
ENCLOSURE: NEMA 1

MAIN DEVICE: 50A
3 PHASE, 4 WIRE + GROUND
MOUNTING: SURFACE

NEUTRAL BUS: 100%
RMS AIC: 10,000A
LOCATION: NORTH MECHANICAL ROOM

LOAD DESCRIPTION	LOAD VA	WIRE CKT	WIRE GND	RCWY SIZE	C/B TRIP	C/B PL	CKT NMBR	PHASE KVA A	PHASE KVA B	PHASE KVA C	CKT NMBR	C/B PL	C/B TRIP	RCWY SIZE	WIRE GND	WIRE CKT	LOAD VA	LOAD DESCRIPTION	
BATHROOM, ALCOVE RECEPT	300	12	12	3/4"	30	1	1	1300			2	1	20	3/4"	10	10	1000	REC. MECH. RM.	
BATHROOM, ALCOVE FANS	–	12	12	3/4"	30	1	3		600		4	1	20	3/4"	12	12	600	AORA+CORR. RECEPT	
EAST FUTURE REC.& FANS	200	12	12	3/4"	20	1	5			1200	6	1	20	3/4"	12	12	1000	CHILLER CONTROL PANEL	
TPSS –U.L. REC.	–	12	12	3/4"	20	1	7	1000			8	1	20	3/4"	12	12	1000	CONTROL PANEL AC4	
TPSS RM–U.L. REC.	700	12	12	3/4"	20	1	9		700		10	1	20	3/4"	12	12	1000	EF–7	
CHILLER RM. REC.	700	12	12	3/4"	20	1	11			700	12	1	20	3/4"	12	12	1000	MURAL ILLUMINATION	
VU1+2 CONTORL	700	12	12	3/4"	20	1	13	1200			14	1	–	–	–	–	–	SPACE	
NEW 15KV	1000	12	12	3/4"	20	1	15		1000		16	1	–	–	–	–	–	SPACE	
SERVICE LIGHT ACU3	700	12	12	3/4"	20	1	17			700	18	1	20	3/4"	12	12	–	FLOW MONITORING PANEL	NOTE 3
NOTE 3 CONDENSER WATER TREATMENT PACKAGE	–	12	12	3/4"	20	1	19	1200			20	1	20	3/4"	12	12	–	INSTANTANEOUS WATER HEATER	NOTE 3
NOTE 3 CHILLER PLANT MONITORING PANEL	–	12	12	3/4"	20	1	21		1000		22	1	20	–	–	–	–	SPARE	
SPARE	–	–	–	–	20	1	23			700	24	1	20	–	–	–	–	SPARE	

NOTES:

CONNECTED LOAD: 9,812VA
DEMAND LOAD: 9,812VA

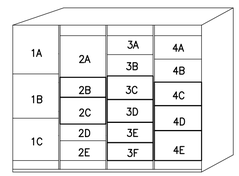
MOTOR CONTROL CENTER: CHILLER

800 AMPS, 480/277V, 3ø, 4W, GND BUS

LOCATION: CHILLER PLANT
AVAILABLE SHORT CIRCUIT: 28,000 AMPS RMS SYM
ENCLOSURE TYPE: NEMA 12

SEC. NO.	ITEM NO.	CIRCUIT BREAKER POLES	CIRCUIT BREAKER FRAMES AMP.	CIRCUIT BREAKER TRIP AMP.	MCP CONTIN. RATING AMP.	CONNECTED LOAD KVA	HP OR KW	DESCRIPTION	CONTROL DIAGRAM DWG NO.
1	1A	–	–	–	–	–	–	SPACE	
	1B	3	1200	1200	–	–	–	MAIN BREAKER	
	1C	–	–	–	–	–	–	SPACE	
2	2A	3	800	500	–	–	–	CHILLER	
	2B	3	100	20	–	–	5HP	ROOF COOLING TOWER 1 FAN (5 HP)	
	2C	3	100	50	–	–	15HP	ROOF COOLING TOWER 1 FAN (15 HP)	
	2D	–	–	–	–	–	–	SPACE	
	2E	3	100	100	–	–	–	COOLING TOWER BASIN HEATER	
3	3A	3	100	100	–	–	–	SPARE	
	3B	3	100	100	–	–	–	SPARE	
	3C	3	200	125	–	–	40HP	CONDENSER WATER PUMP	
	3D	3	200	125	–	–	40HP	CONDENSER WATER PUMP	
	3E	3	100	20	–	–	5HP	ROOF COOLING TOWER 2 FAN (5 HP)	
	3F	3	100	50	–	–	15HP	ROOF COOLING TOWER 2 FAN (15 HP)	
4	4A	3	100	20	–	–	–	AIR COMPRESSOR	
	4B	–	–	–	–	–	–	SPACE	
	4C	3	100	80	–	–	25HP	CHILLER WATER PUMP	
	4D	3	100	80	–	–	25HP	CHILLER WATER PUMP	
	4E	–	–	–	–	–	–	SPACE	

ELEVATION



MANUFACTURER: CULTER–HAMMER
FREEDOM SERIES 2100

SHEET NOTE:

1. PANEL NANSS IS LOCATED IN ROOM C113 WHICH IS ADJACENT TO THE CHILLER PLANT(ROOM C119)
2. THE COOLING TOWER FAN MOTORS SHALL BE CONTROLLED BY HP–RATED VFD AND LINE & LOAD REACTORS.
3. PROVIDE NEW 20A CIRCUIT BREAKERS TO MATCH EXISTING AND WIRE TO NEW LOAD.
4. SEE PLAN NOTE 3 ON DWG CWPE3–E–602.

ELECTRICAL EQUIPMENT SCHEDULE

ITEM	QTY	DESCRIPTION	
1	2	MCC BUCKET TO MATCH EXISTING WITH 80AT/100AF BREAKER	
2	2	MCC BUCKET TO MATCH EXISTING WITH 125AT/200AF BREAKER	
3	1	MCC BUCKET TO MATCH EXISTING WITH 500AT/800AF BREAKER	
4	4	REACTOR/FILTER 480V, 3PH, 34A, 25HP, 60HZ, NEMA 4X ENCLOSURE	NOTE 2
5	4	REACTOR/FILTER 480V, 3PH, 52A, 40HP, 60HZ, NEMA 4X ENCLOSURE	
6	2	VFD,480V, 3PH, 25HP, 60HZ, NEMA 4X ENCLOSURE WITH BYPASS AND REACTOR/FILTERS	
7	2	VFD,480V, 3PH, 40HP, 60HZ, NEMA 4X ENCLOSURE WITH BYPASS AND REACTOR/FILTERS	NOTE 2
8	LOT	#1 AWG RHW–2 WIRE (VFD RATED)	
9	LOT	#1 AWG RHW–2 WIRE	
10	LOT	#2 AWG RHW–2 WIRE (GND)	
11	LOT	#4 AWG RHW–2 WIRE (VFD RATED)	
12	LOT	#4 AWG RHW–2 WIRE	
13	LOT	#6 AWG RHW–2 WIRE	
14	LOT	#6 AWG RHW–2 WIRE (GND)	
15	LOT	#8 AWG RHW–2 WIRE (VFD RATED)	
16	LOT	#8 AWG RHW–2 WIRE	
17	LOT	#8 AWG RHW–2 WIRE (GND)	
18	LOT	#10 AWG RHW–2 WIRE (GND)	
19	LOT	#12 AWG RHW–2 WIRE (VFD RATED)	
20	LOT	#12 AWG RHW–2 WIRE	
21	LOT	#12 AWG RHW–2 WIRE (GND)	
22	LOT	250 KCMIL RHW–2 WIRE	
23	LOT	3/4" GRS CONDUIT	
24	LOT	3/4" LTFC	
25	LOT	1" GRS CONDUIT	
26	LOT	1" LTFC	
27	LOT	1–1/4" GRS CONDUIT	

PANEL:NANS1

MAIN BUS: 100A
480/277 VOLT
ENCLOSURE: NEMA 1

MAIN LUGS ONLY
3 PHASE, 4 WIRE + GROUND
MOUNTING: SURFACE

NEUTRAL BUS: 100%
RMS AIC: 10,000A
LOCATION: CHILLER PLANT

LOAD DESCRIPTION	LOAD VA	WIRE CKT	WIRE GND	RCWY SIZE	C/B TRIP	C/B PL	CKT NMBR	PHASE KVA A	PHASE KVA B	PHASE KVA C	CKT NMBR	C/B PL	C/B TRIP	RCWY SIZE	WIRE GND	WIRE CKT	LOAD VA	LOAD DESCRIPTION	
NOTE 4 EXISTING LOAD	–	12	12	3/4"	20	3	1	–			2								
							3		–		4	3	20	3/4"	12	12	–	FCU	
							5			–	6								
SPARE	–	–	–	–	20	1	7	–			8	1	20	–	–	–	–	SPARE	
SPARE	–	–	–	–	20	1	9		–		10	1	20	–	–	–	–	SPARE	
SPARE	–	–	–	–	20	1	11			–	12	1	20	–	–	–	–	SPARE	

NOTES:

CONNECTED LOAD: –VA

28	LOT	1–1/2" GRS CONDUIT
29	LOT	1–1/2" LTFC
30	LOT	2" GRS CONDUIT
31	LOT	2" LTFC
32	LOT	4" GRS CONDUIT
33	2	MCC BUCKET TO MATCH EXISTING WITH 15 AT/100AF BREAKER
34	2	MCC BUCKET TO MATCH EXISTING WITH 40 AT/100AF BREAKER
35	4	REACTOR/FLITER, 480V , 3PH, 21A, 15HP, 60HZ, NEMA 4X ENCLOSURE.
36	4	REACTOR/FLITER, 480V , 3PH, 21A, 5HP, 60HZ, NEMA 4X ENCLOSURE.
37	2	VFD, 480V, 3PH, 15HP, 60HZ, NEMA 4X ENCLOSURE WITH BYPASS AND REACTOR/FLITER
38	2	VFD, 480V, 3PH, 5HP, 60HZ, NEMA 4X ENCLOSURE WITH BYPASS AND REACTOR/FLITER
39	1	3PHASE 4 WIRE, 50A, 277/480V DISTRIBUTION PANEL(NANS1)12 CKTS.

B ELECTRICAL PNL , EQUIP'T SCHEDULES AND MCC SCHEDULE
CWPE3–E–603

SCALE: NONE

GFP A Gannett Fleming/Parsons JOINT VENTURE

DISTRICT OF COLUMBIA — GIDAYAN KHAN — No. 8758 — 03/29/2018 LICENSED PROFESSIONAL ENGINEER

DESIGNED	B. IDILBI	09/30/17 DATE
DRAWN	J. ZHU	09/30/17 DATE
CHECKED	D. KHAN	03/23/18 DATE

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REVISIONS

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WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

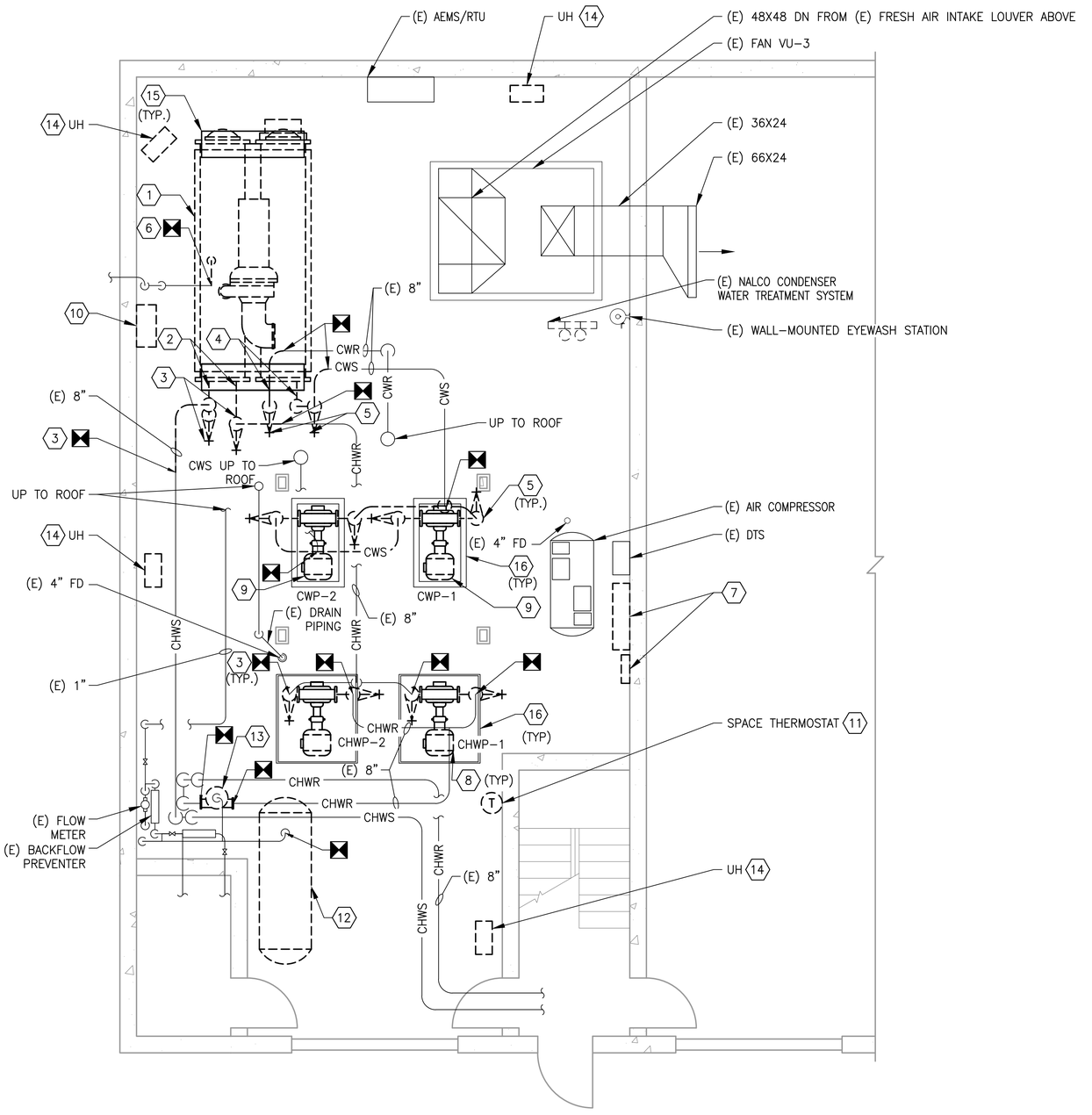
DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES
OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP

APPROVED Mark H. Magnussen 03/2018
MARK MAGNUSSEN DATE
MANAGER, ENV. PLANNING AND COMP

APPROVED 03/2018
GRAHAM SPILLER DATE
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPE3 - COLUMBIA HEIGHTS (E04)
ELECTRICAL EQUIPMENT AND PANEL SCHEDULE

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	AS NOTED	CWPE3-E-603	111 of 173



1 MECHANICAL PLAN - DEMLOTION
CWPG2-M-100

1/4" = 1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND QUANTITIES OF EQUIPMENT, PIPING, VALVES, DUCTWORK, ELECTRICAL AND CONTROL WIRING PRIOR TO DEMOLITION. ITEMS SHOWN ON THIS PLAN ARE APPROXIMATE.

B. REFER TO LEGEND SHEET FOR GENERAL ABBREVIATIONS AND SYMBOLS.

KEYNOTES:

1. REMOVE AND DISPOSE OF CHILLER, CHILLER SUPPORT, STARTER, WIRING, CONDUIT, JUNCTION/PULL BOXES, DISCONNECT, AEMS SENSORS, AND CONTROLS. REMOVAL SHALL INCLUDE R-134a EVACUATION BY A CERTIFIED COMPANY. RECOVERED REFRIGERANT SHALL BE CLEANED AND THEN RETURNED TO WMATA IN 125 POUND BULLET CONTAINERS.
2. REMOVE AND DISPOSE OF CHILLED WATER PIPING (CHWS, CHWR), INSULATION, SUPPORT, TEMPERATURE AND PRESSURE GAUGES. EXTENT OF PIPING REMOVAL SHALL BE, IN GENERAL, TO THE INDICATED ISOLATION VALVE FLANGE FROM THE CHILLER. EXACT DEMOLITION POINT SHALL BE FIELD COORDINATED BY CONTRACTOR TO ACCOMMODATE NEW PIPING CONNECTIONS.
3. REMOVE AND DISPOSE OF CHILLED WATER PIPING VALVES AS IDENTIFIED TO BE DEMOLISHED. EXACT QUANTITY OF VALVES SHALL BE VERIFIED BY INSTALLING CONTRACTOR. THE EXTENT OF ALL VALVE REPLACEMENTS SHALL BE INCLUSIVE OF THE CONNECTION FLANGES (TYP).
4. REMOVE AND DISPOSE OF CONDENSER WATER PIPING (CWR, CWS), SUPPORTS, TEMPERATURE AND PRESSURE GAUGES. EXTENT OF PIPING REMOVAL SHALL BE, IN GENERAL, TO THE INDICATED ISOLATION VALVE FLANGE FROM THE CHILLER. EXACT DEMOLITION POINT SHALL BE FIELD COORDINATED BY CONTRACTOR TO ACCOMMODATE NEW PIPING CONNECTIONS.
5. REMOVE AND DISPOSE OF THE CONDENSER WATER PIPING VALVE. EXACT QUANTITY OF VALVES SHALL BE FIELD VERIFIED BY INSTALLING CONTRACTOR. THE EXTENT OF ALL VALVE REPLACEMENTS SHALL BE INCLUSIVE OF THE CONNECTION FLANGES (TYP).
6. REMOVE EXISTING 2" REFRIGERANT RELIEF (VENT) PIPING TO EXTENT SHOWN.
7. REMOVE AND DISPOSE OF EXISTING JOHNSON CONTROLS CHILLER AND COOLING TOWER CONTROL PANEL.
8. REMOVE AND DISPOSE OF CHILLED WATER PUMPS, CHWP-1 AND CHWP-2. REMOVAL SHALL INCLUDE PUMP, MOTOR, POWER AND CONTROL WIRING, CONDUIT, JUNCTION/PULL BOXES, PIPING, SUPPORT, ISOLATION VALVES, STRAINER AND CHECK VALVE, WITH ALL INSTRUMENTATION AND CONTROLS. EXISTING VIBRATION SUPPORT, INERTIAL PAD AND EQUIPMENT TO REMAIN AND BE RE-USED. EXTENT OF PIPING REMOVAL SHALL BE, IN GENERAL, TO THE INDICATED ISOLATION VALVE FLANGE FROM THE CHILLER. EXACT DEMOLITION POINT SHALL BE FIELD COORDINATED BY CONTRACTOR TO ACCOMMODATE NEW PIPING CONNECTIONS.
9. REMOVE AND DISPOSE OF CONDENSER WATER PUMPS, CWP-1 AND CWP-2. REMOVAL SHALL INCLUDE PUMP, MOTOR, POWER AND CONTROL WIRING, CONDUIT, JUNCTION/PULL BOXES, PIPING, SUPPORT, ISOLATION VALVES, STRAINER, CHECK VALVE, WITH ALL INSTRUMENTATION AND CONTROLS. EXISTING VIBRATION SUPPORT, INERTIAL PAD AND EQUIPMENT TO REMAIN AND BE RE-USED. EXTENT OF PIPING REMOVAL SHALL BE, IN GENERAL, TO THE INDICATED ISOLATION VALVE FLANGE FROM THE CHILLER. EXACT DEMOLITION POINT SHALL BE FIELD COORDINATED BY CONTRACTOR TO ACCOMMODATE NEW PIPING CONNECTIONS.
10. REMOVE AND DISPOSE OF REFRIGERANT MONITORING SENSORS AND PANEL, INCLUDING ALL TUBING, WIRING, AND DEVICES.
11. REMOVE AND DISPOSE OF SPACE THERMOSTAT.
12. REMOVE AND DISPOSE OF EXISTING EXPANSION TANK. TANK SUPPORT SHALL REMAIN AND BE REUSED.
13. REMOVE AND DISPOSE OF EXISTING AIR SEPARATOR. AIR SEPARATOR SUPPORT SHALL REMAIN AND BE REUSED.
14. REMOVE AND DISPOSE OF UNIT HEATERS, INCLUDING SUPPORTS, WIRING, CONDUIT, JUNCTION/PULL BOXES AND ANY ASSOCIATED THERMOSTATS. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS OF THERMOSTATS INTERFACED WITH UNIT HEATERS.
15. DEMOLISH EXISTING EQUIPMENT PAD. SALVAGE EXISTING VIBRATION SUPPORT AND INERTIA PAD.
16. EXISTING EQUIPMENT TO REMAIN, SEE CWPG2-M-101 FOR NEW WORK EQUIPMENT.

N

GFP A Gannett Fleming/Parsons JOINT VENTURE

STATE OF MARYLAND · BISWANATHAN VISWANATHAN · No. 041715 · PROFESSIONAL ENGINEER

State of Maryland Professional Certification. I hereby certify that these documents were prepared or **approved** by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 041715, Expiration Date: 03/08/2020

03/29/2018

DESIGNED B. VISWANATHAN 08/18/17 DATE
DRAWN K. STOCKINGER 08/18/17 DATE
CHECKED R. SILVA 03/23/18 DATE

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OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP

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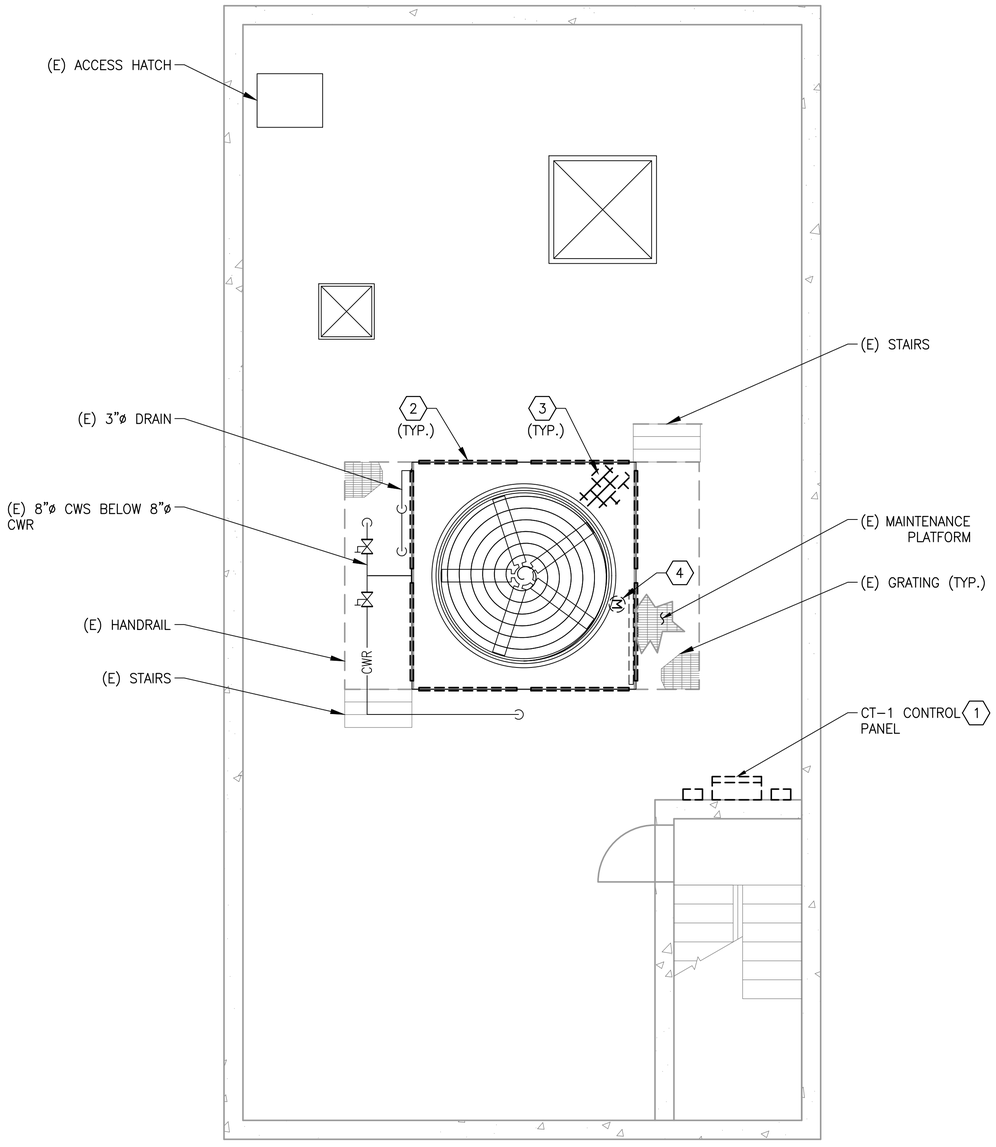
MARK MAGNUSSEN
MANAGER, ENV. PLANNING AND COMP

APPROVED 03/2018 DATE
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPG2 - CAPITOL HEIGHTS (G02)
MECHANICAL PLAN - DEMOLITION

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	1/4" = 1'-0"	CWPG2-M-100	112 of 173



1 MECHANICAL PLAN - DEMOLITION
CWPG2-M-101

1/4" = 1'-0"

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND QUANTITIES OF EQUIPMENT, PIPING, VALVES, DUCTWORK, ELECTRICAL AND CONTROL WIRING PRIOR TO DEMOLITION. ITEMS SHOWN ON THIS PLAN ARE APPROXIMATE.

B. REFER TO LEGEND SHEET FOR GENERAL ABBREVIATIONS AND SYMBOLS

C. COOLING TOWERS LOCATED ON THE ROOF OF CHILLER PLANT G2 AT DAVEY STREET AND MD. 214.

D. ALL COOLING TOWER COMPONENTS THAT ARE REMOVED ARE TO BE REPLACED IN KIND. INSTALLING CONTRACTOR SHALL COORDINATE WITH COOLING TOWER MANUFACTURER PRIOR TO REMOVAL.

KEYNOTES:

1. REMOVE COOLING TOWER FAN STARTER, DISCONNECT, AND CONTROLLER.
2. REMOVE AND DISPOSE OF EXISTING LOUVER ON COOLING TOWER.
3. REMOVE AND DISPOSE OF EXISTING FILL, IN THE COOLING TOWER.
4. REMOVE EXISTING FAN MOTOR, BELT DRIVEN FAN DRIVE ASSEMBLY, BELTS, SHEAVES, AND MOUNTING HARDWARE.
5. REMOVE AND DISPOSE OF ROOF-MOUNTED EXHAUST FAN FSV-11, INCLUDING FAN MOTOR, SUPPORTS, WIRING, CONDUIT, FITTINGS, DAMPER AND OTHER RELATED ACCESSORIES.

A Gannett Fleming/Parsons JOINT VENTURE

STATE OF MARYLAND — VISWANATHAN VISWANATHAN — No. 041715 — PROFESSIONAL ENGINEER

State of Maryland Professional Certification. I hereby certify that these documents were prepared or **approved** by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 041715, Expiration Date: 03/08/2020

03/29/2018

DESIGNED B. VISWANATHAN 08/18/17 DATE
DRAWN K. STOCKINGER 08/18/17 DATE
CHECKED R. SILVA 03/23/18 DATE

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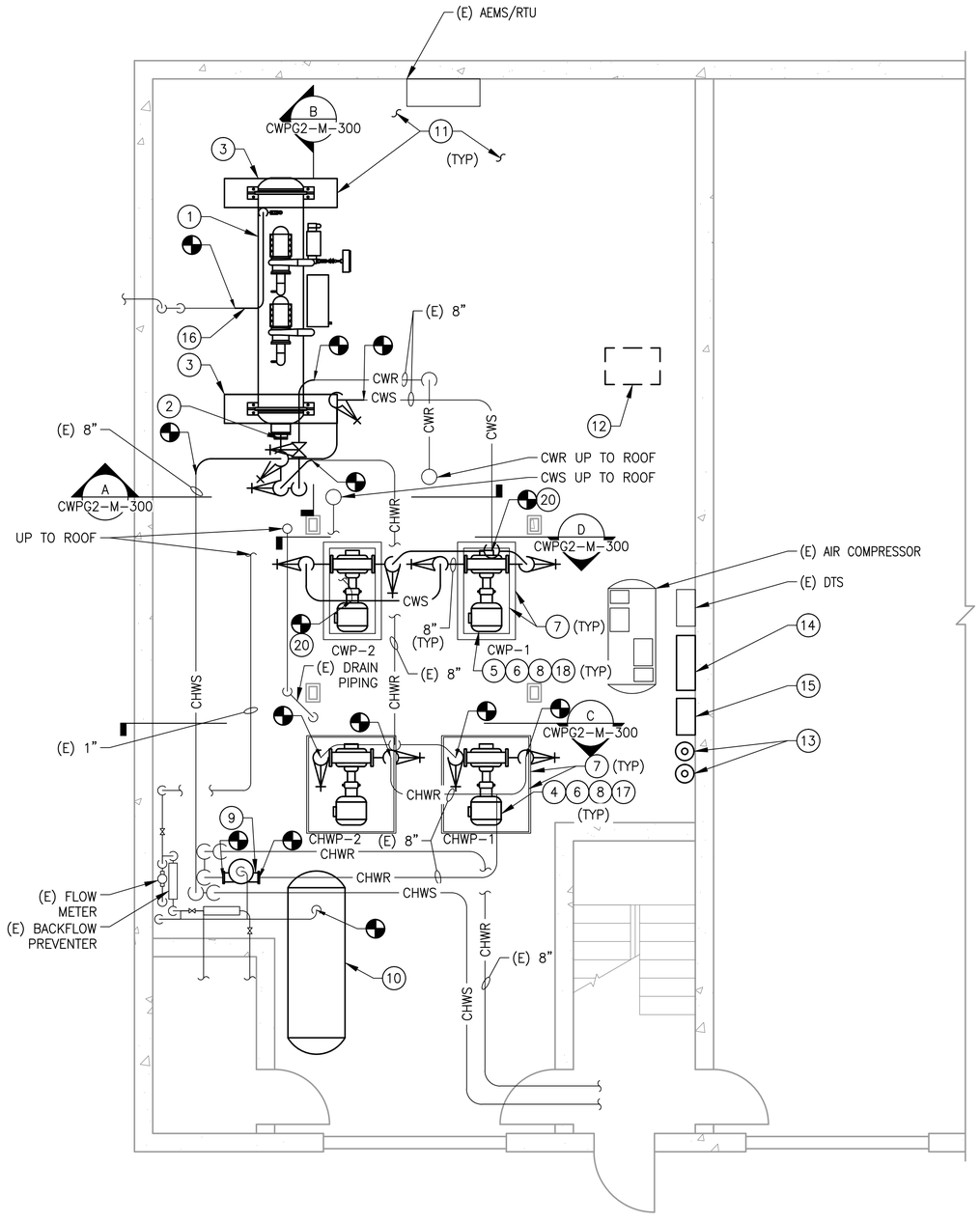
REPLACEMENT OF CHILLERS AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPG2 - CAPITOL HEIGHTS (G02)
MECHANICAL PLAN - DEMOLITION

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	1/4" = 1'-0"	CWPG2-M-101	113 of 173



1 MECHANICAL PLAN - NEW WORK
CWPG2-M-102

1/4" = 1'-0"

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GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY AND COORDINATE LOCATION OF NEW EQUIPMENT, PIPING, VALVES, DUCTWORK, ELECTRICAL AND CONTROL WIRING WITH EXISTING PRIOR TO INSTALLATION. ITEMS SHOWN ON THIS PLAN ARE APPROXIMATE.

B. REFER TO LEGEND SHEET FOR GENERAL ABBREVIATIONS AND SYMBOLS.

C. REFER TO CHILLER PIPING SCHEMATIC FOR ALL VALVES. ALL VALVES MAY NOT BE SHOWN ON THIS DRAWING FOR CLARITY.

D. INSTALL ALL EQUIPMENT AND COMPONENTS PER MANUFACTURERS RECOMMENDATION. PROVIDE ACCESS CLEARANCE AT ALL LOCATION OF VALVES, STRAINER, INSTRUMENTATION AND EQUIPMENT AS REQUIRED BY MANUFACTURER AND FOR EASE OF MAINTENANCE.

KEYNOTES:

(1) PROVIDE AND INSTALL CHILLER, CORRESPONDING VIBRATION ISOLATION, ANCHOR AND SUPPORT.

(2) PROVIDE AND INSTALL ALL PIPING, FITTINGS, VALVES, PIPING INSULATION AND INSTRUMENTATION FOR CONNECTION TO CHILLER. PROVIDE A VICTAULIC COUPLING CONNECTION PIECE AT EACH PIPE CONNECTION TO CHILLER FOR EASE OF MAINTENANCE.

(3) PROVIDE NEW EQUIPMENT PAD. VERIFY LOCATION IN FIELD.

(4) PROVIDE AND INSTALL CHILLED WATER PUMPS, CHWP-1 AND CHWP-2. INSTALLATION SHALL INCLUDE PUMP, INVERTER DUTY RATED MOTOR FOR VFD APPLICATION, VIBRATION SUPPORT, IMMEDIATE PIPING, ISOLATION VALVES, CHECK VALVES, STRAINER, FLEXIBLE CONNECTORS AND CORRESPONDING INSTRUMENTATION & CONTROLS. INSULATE PUMPS AND PIPING.

(5) PROVIDE AND INSTALL CONDENSER WATER PUMPS, CWP-1 AND CWP-2. INSTALLATION SHALL INCLUDE PUMP, INVERTER DUTY RATED MOTOR FOR VFD APPLICATION, VIBRATION SUPPORT, IMMEDIATE PIPING, ISOLATION VALVES, CHECK VALVES, STRAINER, FLEXIBLE CONNECTORS AND CORRESPONDING INSTRUMENTATION & CONTROLS.

(6) INTEGRATE PUMP VFD DRIVES WITH CHILLER CONTROL PANEL. REFER TO ELECTRICAL DRAWINGS FOR EXACT LOCATION OF VFD's.

(7) REUSE EXISTING EQUIPMENT PAD, SPRING ISOLATOR AND INERTIA PAD. REPAIR AND MODIFY AS REQUIRED TO FIT NEW INSTALLATION.

(8) PROVIDE AND INSTALL ALL APPROPRIATE PIPE FITTINGS FOR CONNECTION TO PUMPS.

(9) PROVIDE AND INSTALL AIR SEPARATOR, CORRESPONDING PIPING AND SUPPORTS. INSULATE AIR SEPARATOR AND PIPING.

(10) PROVIDE AND INSTALL EXPANSION TANK AND CORRESPONDING PIPING. REUSE EXISTING CEILING MOUNTED SUPPORT.

(11) CONTRACTOR SHALL PAINT CHILLER PLANT FLOORS AND EQUIPMENT PADS WITH BATTLE SHIP GREY OR EQUAL. THE SAFETY LINES AND TRIPPING HAZARD SHALL BE PAINTED YELLOW OR RED.

(12) A. COORDINATE WITH OTHER WMATA CONTRACT INSTALLING WATER TREATMENT SYSTEM.
B. PROVIDE AND INSTALL NEW WMATA CHILLED WATER SYSTEM LOOP. THE LOOP SHALL INCLUDE PIPING, VALVES, HACH INDUCTIVE CONDUCTIVITY SENSOR – 3725E2T, FLOW SWITCH GEM SENSORS FS-500 170231, AND CONVERTIBLE DIGITAL PH SENSOR HACH DPC1R2A. REFER TO REFERENCE DRAWING DD-ME-HVAC-007.
C. PROVIDE AND INSTALL A NEW WMATA CONDENSER WATER SYSTEM LOOP. THE LOOP SHALL INCLUDE PIPING, VALVES, HACH INDUCTIVE CONDUCTIVITY SENSOR – 3725E2T, FLOW SWITCH GEM SENSORS FS-500 170231. REFER TO REFERENCE DRAWING DD-ME-HVAC-008.

(13) PROVIDE AND INSTALL CHEMICAL POT FEEDER FOR CONDENSER WATER AND CHILLED WATER SYSTEM. CHEMICAL POT FEEDER SHALL BE NEPTUNE VTF-5HF.

(14) PROVIDE AND INSTALL ONE CHILLER PLANT CONTROL PANEL (CPCP). REFER TO REFERENCE DRAWINGS DD-ME-HVAC-009 FOR CPCP DETAILS. PANEL SHALL BE INSTALLED 48" ABOVE FINISHED FLOOR.

(15) PROVIDE AND INSTALL CHILLED WATER AND CONDENSER WATER FLOW MONITORING SYSTEM. PROVIDE AND INSTALL COMMUNICATIONS WIRING IN RIGID CONDUIT FROM FLOW MONITORING PANE TO CHILLER PLANT CONTROL PANEL, UTILIZING BELDEN 89842 MULTI-CONDUCTOR; LOW CAPACITANCE TO COMPUTER POINT OF SERVICE (POS) CABLE OR EQUIVALENT. INSTALL 48" ABOVE FINISHED FLOOR. FLOW METER SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES. FLOW METERS AND SENSOR CABLES SHOULD NOT BE INSTALLED WITHIN EIGHT FEET OF VFDs OR FLORESCENT LIGHT FIXTURES.

(16) PROVIDE AND INSTALL REFRIGERANT VENT/ RELIEF PIPING FROM CHILLER (AS PER CHILLER MANUFACTURER). FIELD VERIFY AND CONNECT NEW 2" REFRIGERANT RELIEF PIPING FROM CHILLER TO EXISTING REFRIGERANT RELIEF MAIN.

(17) PROVIDE 8" STRAINER AND 8" TO 5" ANGLE FLANGE FOR 8" CHILLED PIPING INLET INTO CHILLED WATER PUMP. PROVIDE A 4" TO 8" ANGLE FLANGE AT CHILLED WATER PUMP OUTLET FOR CONNECTION TO CHILLED WATER DISCHARGE PIPING.

(18) PROVIDE 8" STRAINER AND 8" TO 8" ANGLE FLANGE FOR 8" CONDENSER WATER PIPING INLET INTO CONDENSER WATER PUMP. PROVIDE A 6" TO 8" ANGLE FLANGE AT CONDENSER WATER PUMP OUTLET FOR CONNECTION TO CONDENSER WATER DISCHARGE PIPING.

(19) PROVIDE FLOOR MOUNTED, PIPE SADDLE SUPPORT WITH BASE STAND AS NECESSARY FOR NEW PIPING. CHILLED WATER PIPING SUPPORTS SHALL BE PRE-INSULATED.

(20) PROVIDE NECESSARY FITTINGS TO CONNECT NEW WORK PIPE TO EXISTING PIPE AT POINT SHOWN.

GFP A Gannett Fleming/Parsons JOINT VENTURE

STATE OF MARYLAND · KRISHNAN VISWANATHAN · No. 041715 · PROFESSIONAL ENGINEER

State of Maryland Professional Certification. I hereby certify that these documents were prepared or **approved** by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 041715, Expiration Date: 03/08/2020

03/29/2018

DESIGNED	B. VISWANATHAN	08/18/17 DATE
DRAWN	K. STOCKINGER	10/16/17 DATE
CHECKED	R. SILVA	03/23/18 DATE

REFERENCE DRAWINGS

NUMBER	TITLE

REVISIONS

DATE	NUM	DESCRIPTION
03/30/2018	0	FINAL CONTRACT DRAWINGS

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

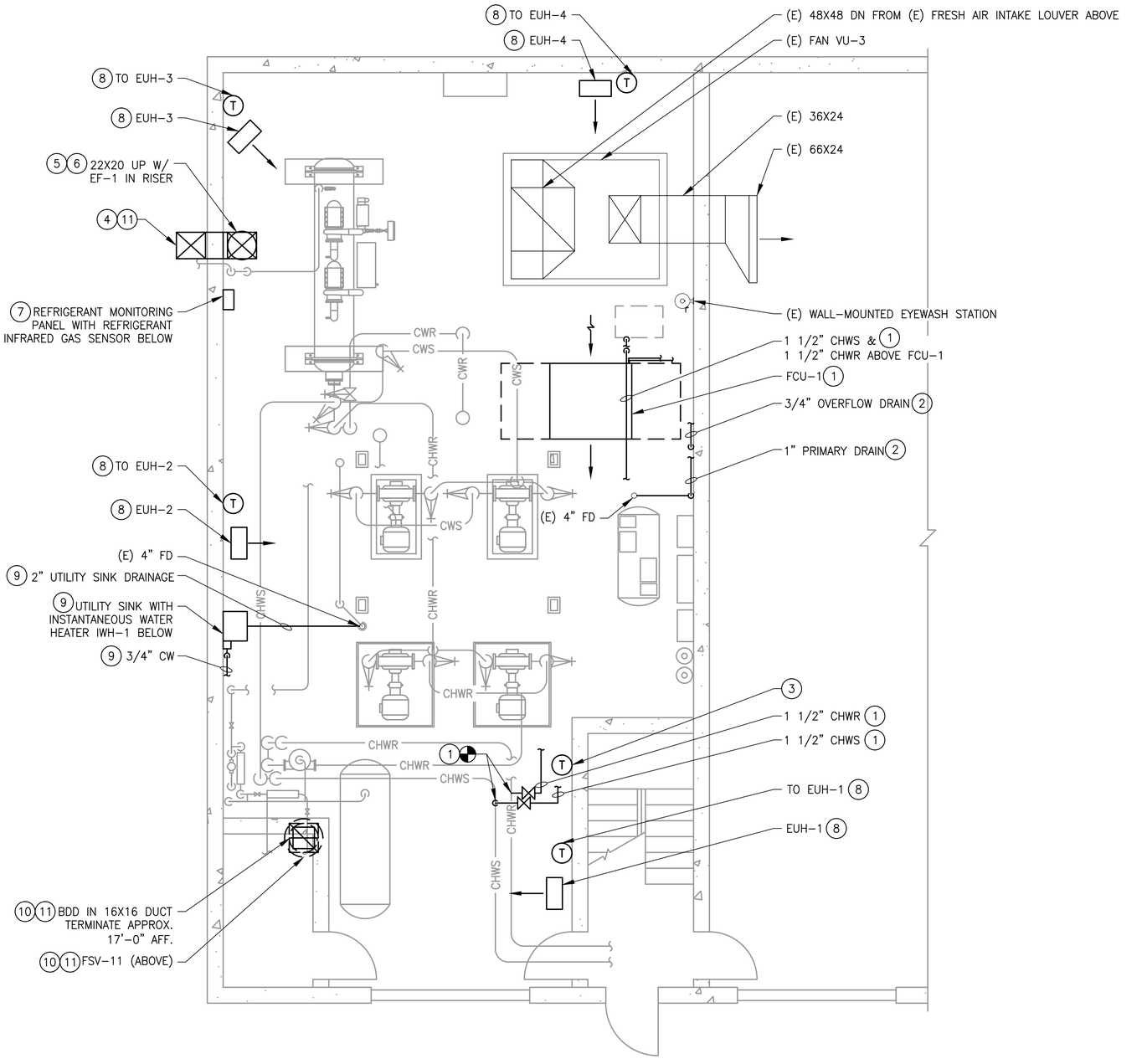
DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES
OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP

APPROVED Mark H. Magnussen 03/2018
MARK MAGNUSSEN DATE
MANAGER, ENV. PLANNING AND COMP

APPROVED 03/2018
GRAHAM SPILLER DATE
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPG2 - CAPITOL HEIGHTS (G02)
MECHANICAL PLAN - NEW WORK

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	1/4" = 1'-0"	CWPG2-M-102	114 of 173



1 MECHANICAL PLAN - NEW WORK
CWPG2-M-103

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GENERAL NOTES:

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B. REFER TO LEGEND SHEET FOR GENERAL ABBREVIATIONS AND SYMBOLS.

C. REFER TO CHILLER PIPING SCHEMATIC FOR ALL VALVES. ALL VALVES MAY NOT BE SHOWN ON THIS DRAWING FOR CLARITY.

D. INSTALL ALL EQUIPMENT AND COMPONENTS PER MANUFACTURERS RECOMMENDATION.

GENERAL NOTES:

(1) PROVIDE AND INSTALL NEW THERMOSTATICALLY CONTROLLED FAN COIL UNIT (FCU-1) INCLUDING PIPING, VALVES, WIRING, CONDUIT, AND SUPPORTS. CHWS TO THE UNIT SHALL BE TAPPED FROM THE CHWS MAIN AS INDICATED; CHWR SHALL BE TAPPED INTO THE CHWR MAIN AS INDICATED. CHWS AND CHWR PIPING SHALL BE FIELD ROUTED. UNIT SHALL BE MOUNTED AT A MINIMUM 7'-0" AFF. FIELD COORDINATE FINAL MOUNTING ELEVATION WITH OTHER TRADES. FCU SHALL NOT BE HUNG DIRECTLY FROM THE METAL DECK.

(2) PRIMARY CONDENSATE DRAINAGE FROM FCU-1 SHALL BE FIELD ROUTED DOWN TO AND ALONG FLOOR SLAB TO A NEARBY FLOOR DRAIN AS SHOWN. OVERFLOW CONDENSATE DRAINAGE FROM AHU-1 SHALL BE FIELD ROUTED TO DISCHARGE AT VISIBLE LOCATION AS INDICATED. DRAINAGE RISERS DOWN TO FLOOR SHALL BE MOUNTED FLUSH WITH STRUCTURAL COLUMN(S). PROVIDE PIPING ALONG FLOOR SLAB WITH NON-SLIP PIPE COVER WHERE THERE IS A TRIP HAZARD.

(3) PROVIDE AND INSTALL NEW SPACE THERMOSTAT AND INTEGRATE WITH NEW FCU-1, FSV-11, AND EF-1.

(4) PROVIDE AND INSTALL NEW EXHAUST DUCTWORK, INCLUDING ALL NECESSARY FITTINGS, SUPPORTS, AND DAMPERS. CONTRACTOR SHALL FIELD COORDINATE THE HEIGHT OF DUCTWORK ABOVE FLOOR TO AVOID ANY INTERFERENCE WITH OTHER PIPING, EQUIPMENT, SUPPORTS, CONDUIT, AND LIGHTING.

(5) TERMINATE EXHAUST DUCT WITHIN CHILLER PLANT WITH A 22X20 WIRE MESH SCREEN AT A 45° ANGLE AND AT 18" ABOVE FINISHED FLOOR. WIRE MESH SCREEN SHALL BE 1/4"x1/4". TERMINATE EXHAUST DUCT OUTSIDE OF CHILLER PLANT WITH GOOSENECK AND INSECT SCREEN AT MIN. 9'-0" ABOVE FINISHED GRADE.

(6) PROVIDE AND INSTALL NEW EXHAUST FAN (EF-1) INCLUDING WIRING, CONDUIT, AND SUPPORTS. CONTRACTOR SHALL UTILIZE FLEXIBLE CONNECTIONS AND TRANSITION AS REQUIRED AT FAN INLETS AND OUTLETS FOR CONNECTION TO NEW DUCTWORK. PROVIDE SUPPORTS WITH SPRING VIBRATION ISOLATORS. EXHAUST FANS SHALL BE SIZED TO MEET THE REQUIREMENTS OF ASHRAE 15.

(7) PROVIDE AND INSTALL NEW REFRIGERANT LEAK MONITORING AND CONTROL SYSTEM, INCLUDING REFRIGERANT INFRARED GAS SENSOR, STROBE LIGHTS, ALARM, AND WIRING. INTEGRATE WITH NEW EXHAUST FANS AND CHILLER PLANT MONITORING PANEL. REFRIGERANT DETECTION SYSTEM SHALL UTILIZE SHERLOCK 402-4 CONTROL MODULE AND ONE SHERLOCK REFRIGERANT INFRARED GAS SENSOR FOR R134A. CONTRACTOR SHALL FIELD VERIFY AND INSTALL REFRIGERANT INFRARED GAS SENSOR 18" ABOVE FINISHED FLOOR LEVEL. REFER TO EXHAUST FAN SEQUENCE OF OPERATION ON DRAWING CWPA1-M-610.

(8) PROVIDE AND INSTALL NEW UNIT HEATER INCLUDING WIRING, CONDUIT, SUPPORTS, AND WALL-MOUNTED THERMOSTAT.

(9) PROVIDE AND INSTALL NEW UTILITY SINK, FAUCET, AND INSTANTANEOUS WATER HEATER, INCLUDING PIPING, WIRING, CONDUIT, AND SUPPORTS. WATER SUPPLY SHALL BE FIELD ROUTED TO CONNECT UPSTREAM OF THE EXISTING MAKE-UP WATER BACKFLOW PREVENTERS. PROVIDE INLINE ISOLATION VALVE, STRAINER, AND REDUCED PRESSURE TYPE BACKFLOW PREVENTER AT AN ACCESSIBLE LOCATION. FIELD ROUTE UTILITY SINK DRAINAGE PIPING ALONG FLOOR SLAB TO NEARBY FLOOR DRAIN. PROVIDE PIPING ALONG FLOOR SLAB WITH NON-SLIP PIPE COVER WHERE THERE IS A TRIP HAZARD. REFER TO DETAIL 1 ON DRAWING M-502.

(10) PROVIDE AND INSTALL NEW ROOF-MOUNTED EXHAUST FAN, DUCTWORK, AND DAMPER, INCLUDING WIRING, CONDUIT, AND SUPPORTS. CONTRACTOR SHALL UTILIZE FLEXIBLE CONNECTIONS AND TRANSITION AS REQUIRED AT FAN OUTLET FOR CONNECTION TO EXISTING PENETRATION.

(11) PATCH WALL/ROOF AND WATERPROOFING AS REQUIRED, MATCHING EXISTING WALL/ROOF CONSTRUCTION.

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GFP A Gannett Fleming/Parsons JOINT VENTURE

STATE OF MARYLAND · KRISHNAN VISWANATHAN · No. 041715 · PROFESSIONAL ENGINEER

State of Maryland Professional Certification. I hereby certify that these documents were prepared or **approved** by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 041715, Expiration Date: 03/08/2020

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