

1 MECHANICAL PLAN - NEW WORK
CWPE3-M-102

SCALE: 1/4" = 1'-0"

		REFERENCE DRAWINGS		REVISIONS		
		NUMBER	TITLE	DATE	NUM	DESCRIPTION
DESIGNED	K. STOCKINGER	09/03/17	DATE	03/30/2018	0	FINAL CONTRACT DRAWINGS
DRAWN	K. STOCKINGER	09/05/17	DATE			
CHECKED	D. ROMNESS	03/23/18	DATE			



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

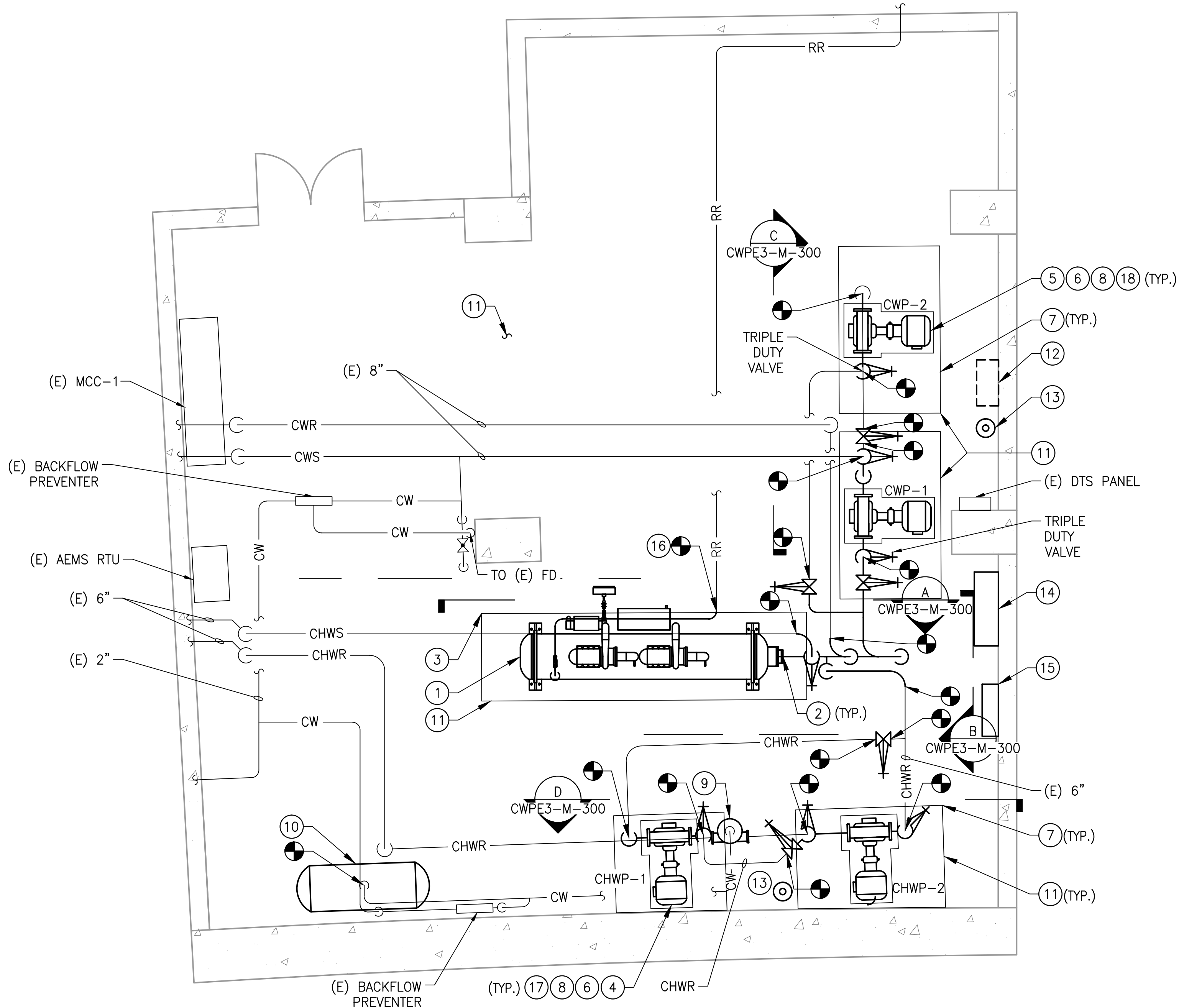
DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES
OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP

APPROVED *Mark H. Magnusson* 03/2018
MARK MAGNUSSEN
MANAGER, ENV. PLANNING AND COMP

APPROVED *Gabe Spiller* 03/2018
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPE3 - COLUMBIA HEIGHTS (E04)
MECHANICAL PLAN - NEW WORK

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	1/4" = 1'-0"	CWPE3-M-102	95 of 173



GENERAL NOTES:

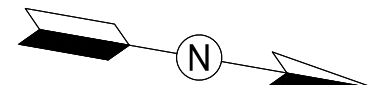
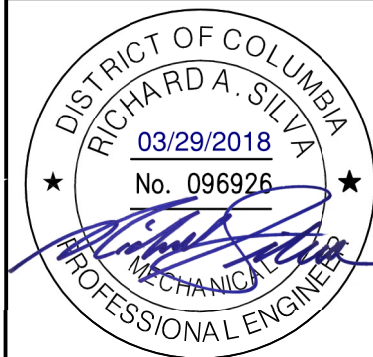
- CONTRACTOR SHALL FIELD VERIFY AND COORDINATE LOCATION OF NEW EQUIPMENT, PIPING, VALVES, DUCTWORK, ELECTRICAL AND CONTROL WIRING WITH EXISTING PRIOR TO INSTALLATION. ITEMS SHOWN ON THIS PLAN ARE APPROXIMATE.
- REFER TO LEGEND SHEET FOR GENERAL ABBREVIATIONS AND SYMBOLS.

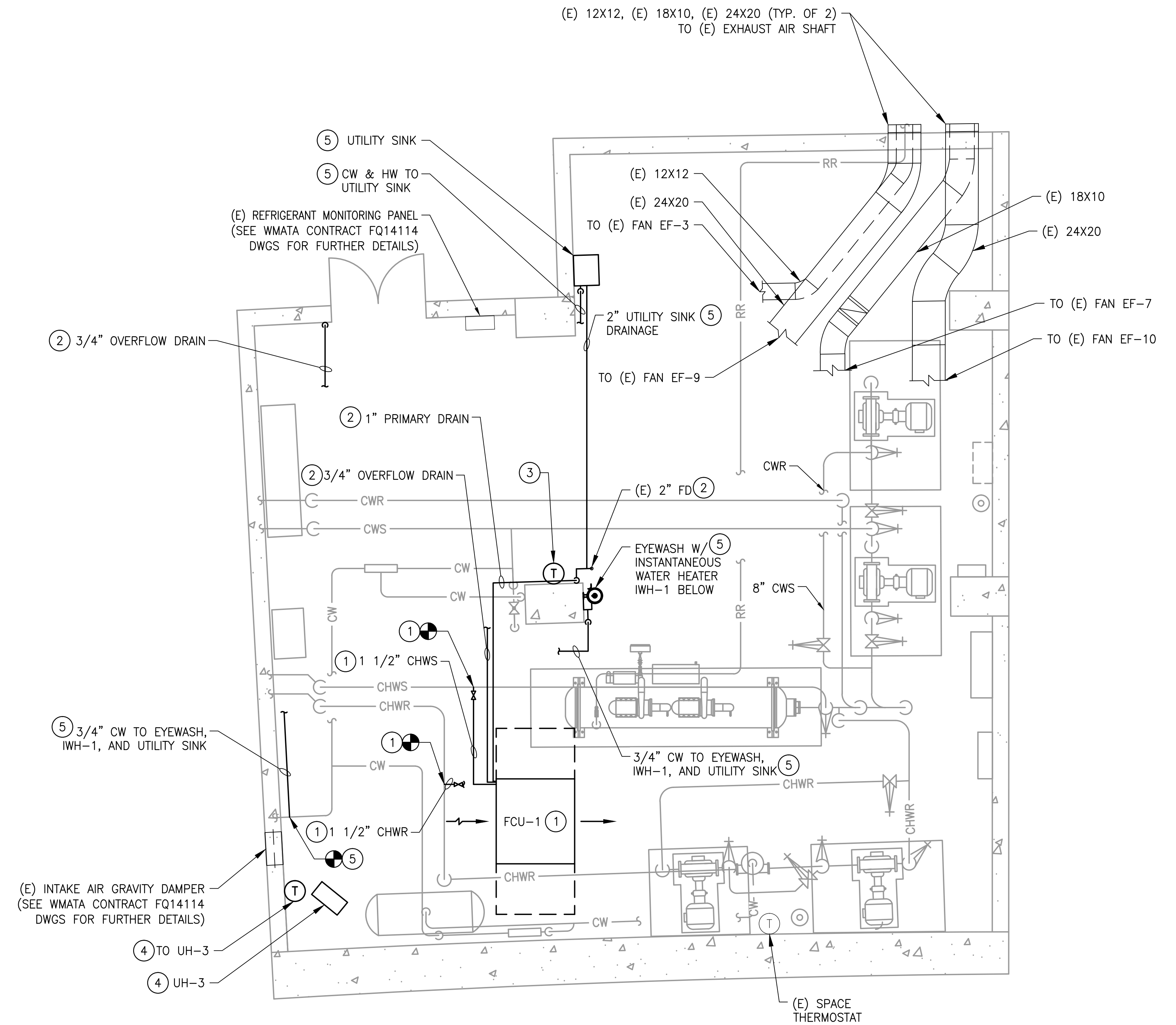
- REFER TO CHILLER PIPING SCHEMATIC FOR ALL VALVES. ALL VALVES MAY NOT BE SHOWN ON THIS DRAWING FOR CLARITY.
- INSTALL ALL EQUIPMENT AND COMPONENTS PER MANUFACTURERS RECOMMENDATION. PROVIDE ACCESS CLEARANCE AT ALL LOCATION OF VALVES, STRAINER, INSTRUMENTATION AND EQUIPMENT AS REQUIRED BY MANUFACTURER AND FOR EASE OF MAINTENANCE.

KEYNOTES:

- PROVIDE AND INSTALL CHILLER, CORRESPONDING VIBRATION ISOLATION, ANCHOR AND SUPPORT.
- 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.
- REUSE EXISTING EQUIPMENT PAD. REPAIR AND MODIFY AS REQUIRED TO FIT NEW INSTALLATION.
- 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, TRIPLE DUTY VALVES, STRAINER, FLEXIBLE CONNECTORS AND CORRESPONDING INSTRUMENTATION & CONTROLS. INSULATE PUMPS AND PIPING.
- PROVIDE AND INSTALL CONDENSER WATER PUMPS, CWP-1, CWP-2. INSTALLATION SHALL INCLUDE PUMP, INVERTER DUTY RATED MOTOR FOR VFD APPLICATION, VIBRATION SUPPORT, IMMEDIATE PIPING, ISOLATION VALVES, CHECK VALVES, TRIPLE DUTY VALVES, STRAINER, FLEXIBLE CONNECTORS AND CORRESPONDING INSTRUMENTATION & CONTROLS. INSULATE PUMPS AND PIPING.
- INTEGRATE PUMP VFD DRIVES WITH CHILLER CONTROL PANEL. REFER TO ELECTRICAL DRAWINGS FOR EXACT LOCATION OF VFDs.
- REUSE EXISTING EQUIPMENT PAD, SPRING ISOLATOR AND INERTIA PAD. REPAIR AND MODIFY AS REQUIRED TO FIT NEW INSTALLATION.
- PROVIDE AND INSTALL ALL APPROPRIATE PIPE FITTINGS FOR CONNECTION TO PUMPS.
- PROVIDE AND INSTALL AIR SEPARATOR, CORRESPONDING PIPING AND SUPPORTS. INSULATE AIR SEPARATOR AND PIPING.
- PROVIDE AND INSTALL EXPANSION TANK AND CORRESPONDING PIPING. REUSE EXISTING CEILING MOUNTED SUPPORT.
- 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.
- 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.
- PROVIDE AND INSTALL CHEMICAL POT FEEDER FOR CONDENSER WATER AND CHILLED WATER SYSTEM. FEEDING POT SHALL BE NEPTUNE VTF-5HF.
- PROVIDE AND INSTALL ONE CHILLER PLANT CONTROL PANEL (CPCP). REFER TO REFERENCE DRAWING DD-ME-HVAC-009 FOR CPCP DETAILS. PANEL SHALL BE INSTALLED 48" ABOVE FINISHED FLOOR.
- PROVIDE AND INSTALL CHILLED WATER AND CONDENSER WATER FLOW MONITORING SYSTEM. PROVIDE AND INSTALL COMMUNICATIONS WIRING IN RIGID CONDUIT FROM FLOW MONITORING PANEL TO CHILLER PLANT CONTROL PANEL, UTILIZING BELDEN 89842 MUTLI-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.
- 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.
- PROVIDE 6" TO 6" SUCTION GUIDE WITH STRAINER, ANGLE FLANGE FOR 6" CHILLED PIPING INLET INTO CHWP-1. PROVIDE A 6" TO 6" ANGLE FLANGE FOR CHILLED PIPING INLET INTO CHWP-2. PROVIDE A 5" TO 6" ANGLE FLANGE AT CHILLED WATER PUMP OUTLET FOR CONNECTION TO CHILLED WATER DISCHARGE PIPING.
- PROVIDE 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.

GFP A Gannett Fleming/Parsons
JOINT VENTURE





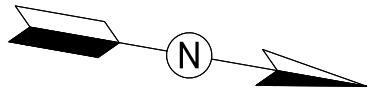
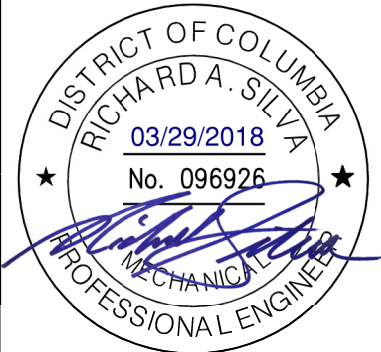
1 MECHANICAL PLAN - NEW WORK
CWPE3-M-103

SCALE: 1/4" = 1'-0"

- 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.

- KEYNOTES:
- 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.
 - 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 FCU-1 SHALL BE FIELD ROUTED TO DISCHARGE AT VISIBLE LOCATION AS INDICATED. DRAINAGE RISERS DOWN TO FLOOR SHALL BE MOUNTED FLUSH WITH STRUCTURAL WALL AND COLUMN. 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.
 - 4 PROVIDE AND INSTALL NEW UNIT HEATER INCLUDING WIRING, CONDUIT, SUPPORTS, AND WALL-MOUNTED THERMOSTAT.
 - 5 PROVIDE AND INSTALL NEW EYEWASH, 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. EYEWASH DRAINAGE SHALL BE STRAIGHT TO FLOOR. REFER TO DETAIL 1 ON DRAWING M-502.

GFP A Gannett Fleming/Parsons
JOINT VENTURE



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

APPROVED *Mark H. Magnusson* 03/2018
MARK MAGNUSSEN
MANAGER, ENV. PLANNING AND COMP

APPROVED *Graham Spiller* 03/2018
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

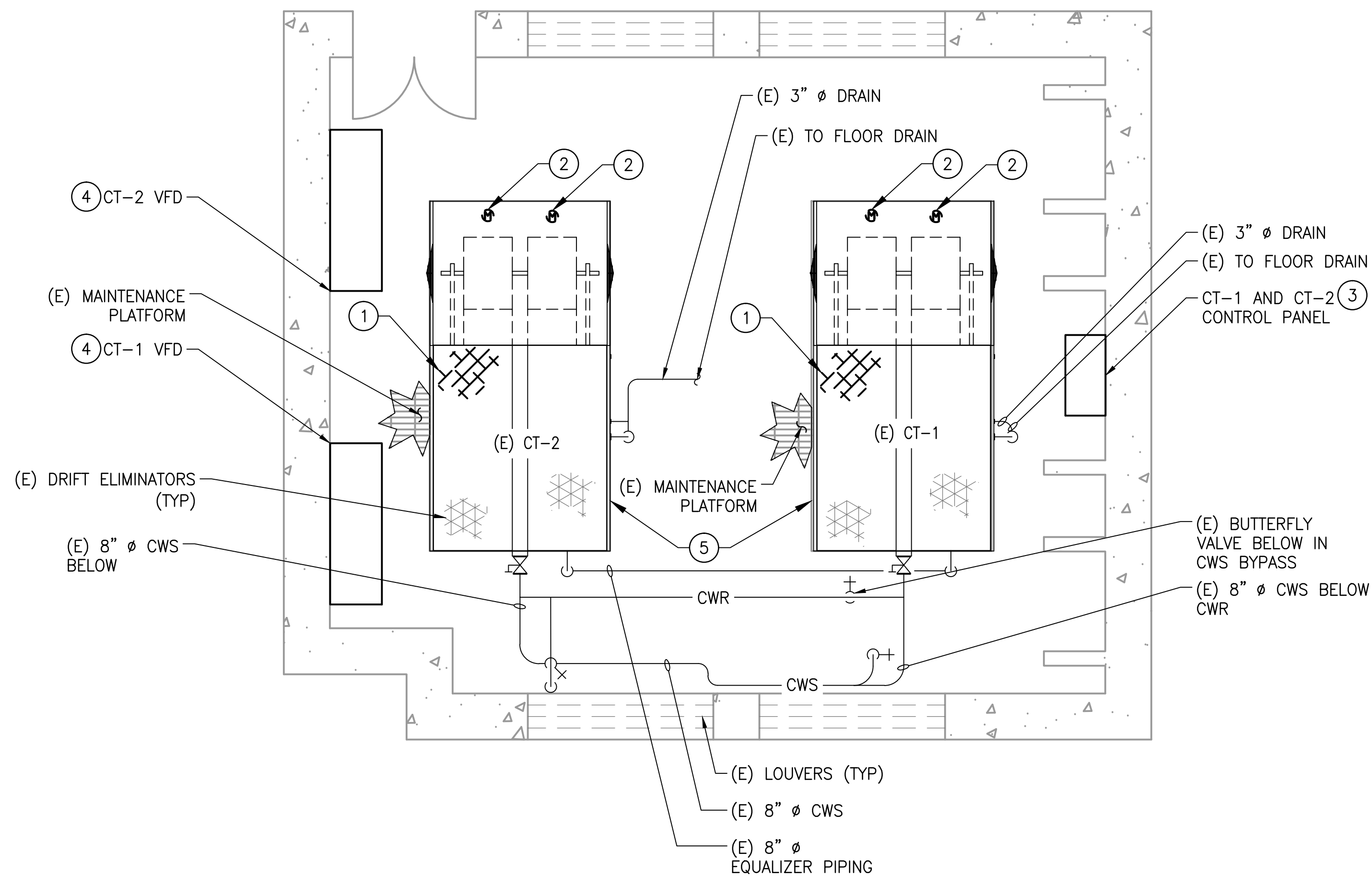
REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPE3 - COLUMBIA HEIGHTS (E04)
MECHANICAL PLAN - NEW WORK

DESIGNED	M. OLAYA	09/03/17
		DATE
DRAWN	M. OLAYA	09/05/17
		DATE
CHECKED	D. ROMNESS	
		DATE

REFERENCE DRAWINGS	
NUMBER	TITLE

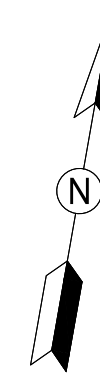
REVISIONS			
NUMBER	DATE	NUM	DESCRIPTION

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	1/4" = 1'-0"	CWPE3-M-103	96 of 173



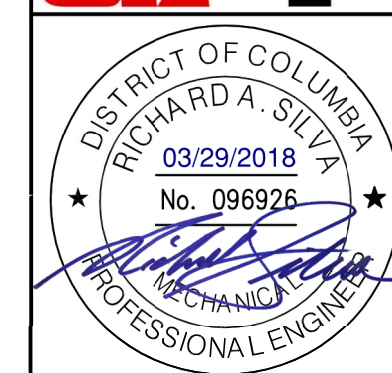
1 MECHANICAL PLAN - NEW WORK
CWPE3-M-104

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 BUILDING 3030 14TH STREET NW, WASHINGTON, D.C. (HIGHLAND PARK).

- KEYNOTES:
- 1 PROVIDE AND INSTALL NEW PLASTIC FILL IN THE COOLING TOWER. COORDINATE WITH COOLING TOWER MANUFACTURER FOR EXACT PART. THE NEW FILL DIMENSION AND TYPE SHALL MATCH EXISTING.
 - 2 PROVIDE AND INSTALL NEW DIRECT DRIVE FAN MOTOR, DRIVE ASSEMBLY, AND MOUNTING HARDWARE. FAN MOTOR SHALL BE INVERTER DUTY RATED. COORDINATE WITH COOLING TOWER MANUFACTURER FOR EXACT PARTS.
 - 3 PROVIDE AND INSTALL NEW DISCONNECT AND CONTROLS.
 - 4 PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVE CONTROLLER FOR COOLING TOWER FAN. VFD SHALL BE LOCATED ON THE ROOF IN THE SAME LOCATION AS EXISTING, AND INSIDE A NEMA 4X ENCLOSURE.
 - 5 PROVIDE NEW SUMP PUMP. FIELD COORDINATE EXACT LOCATION OF SUMP PUMP.



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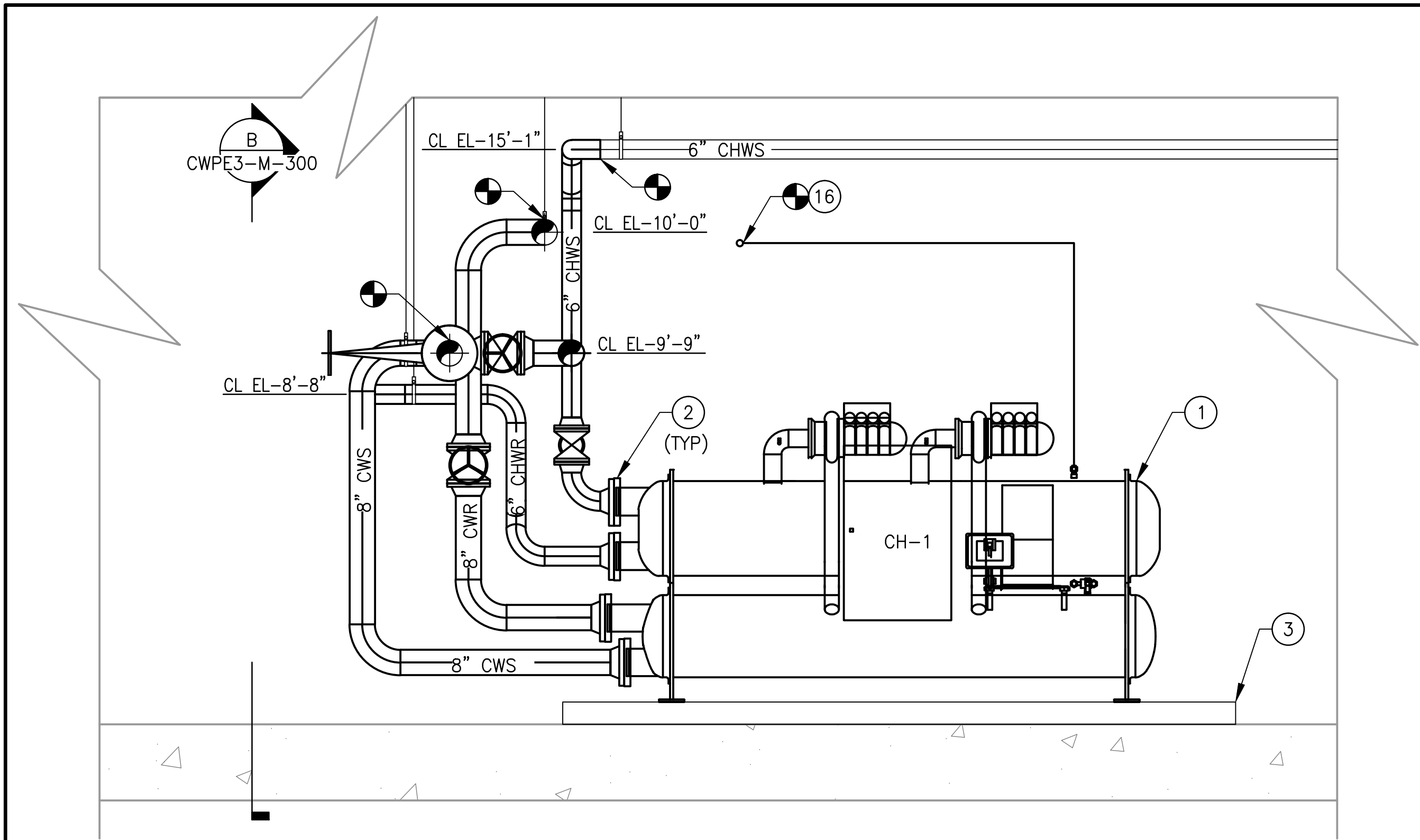
APPROVED *Graham Spiller* 03/2018
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS
AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS
CWPE3 - COLUMBIA HEIGHTS (E04)
MECHANICAL PLAN - NEW WORK

DESIGNED B. VISWANATHAN 08/18/17
DATE
DRAWN K. STOCKINGER 08/18/17
DATE
CHECKED D. ROMNESS 03/23/18
DATE

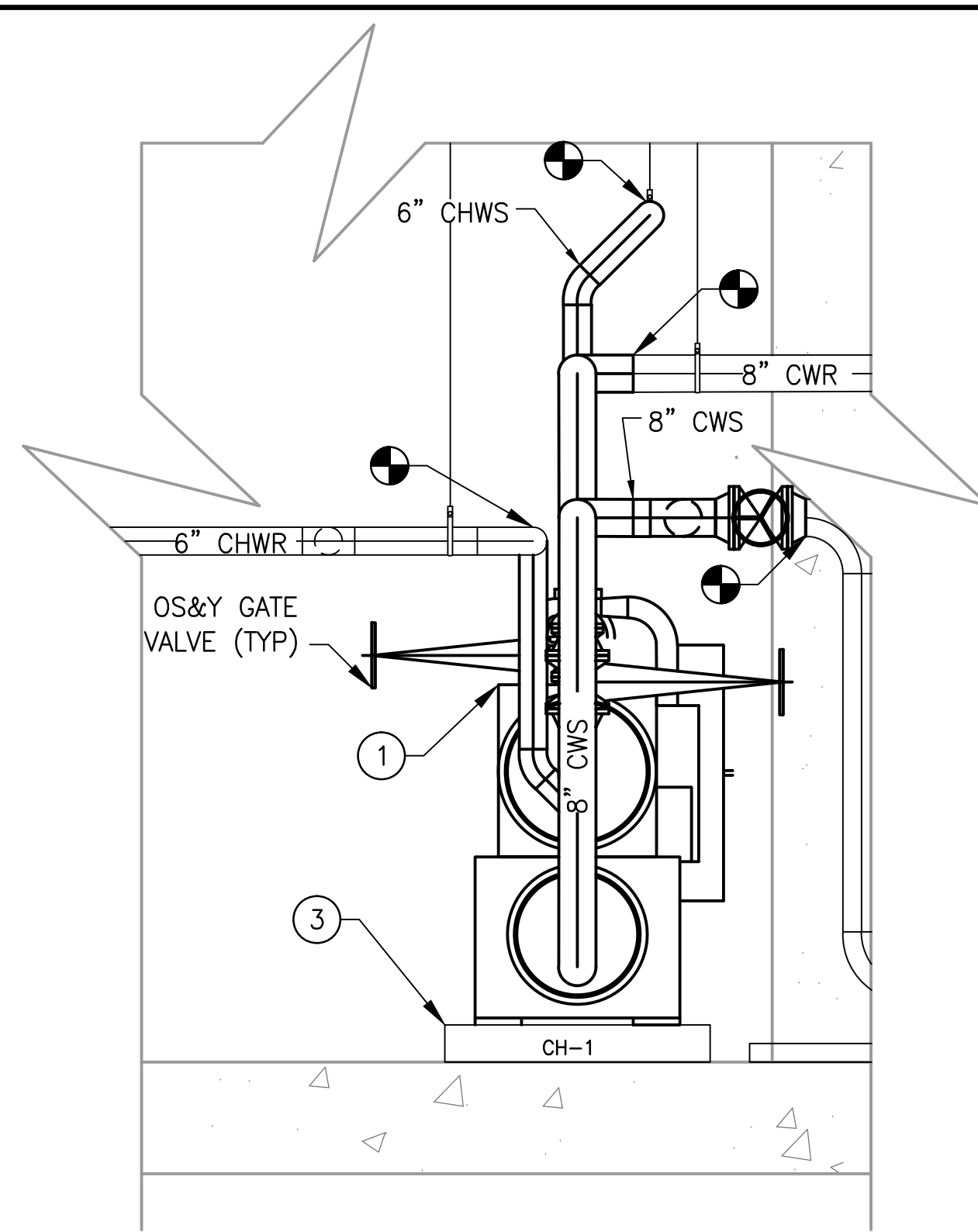
REFERENCE DRAWINGS		REVISIONS		
NUMBER	TITLE	DATE	NUM	DESCRIPTION
		03/30/2018	0	FINAL CONTRACT DRAWINGS

M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
M1304	FQ-18102	1/4" = 1'-0"	CWPE3-M-104	97 of 173



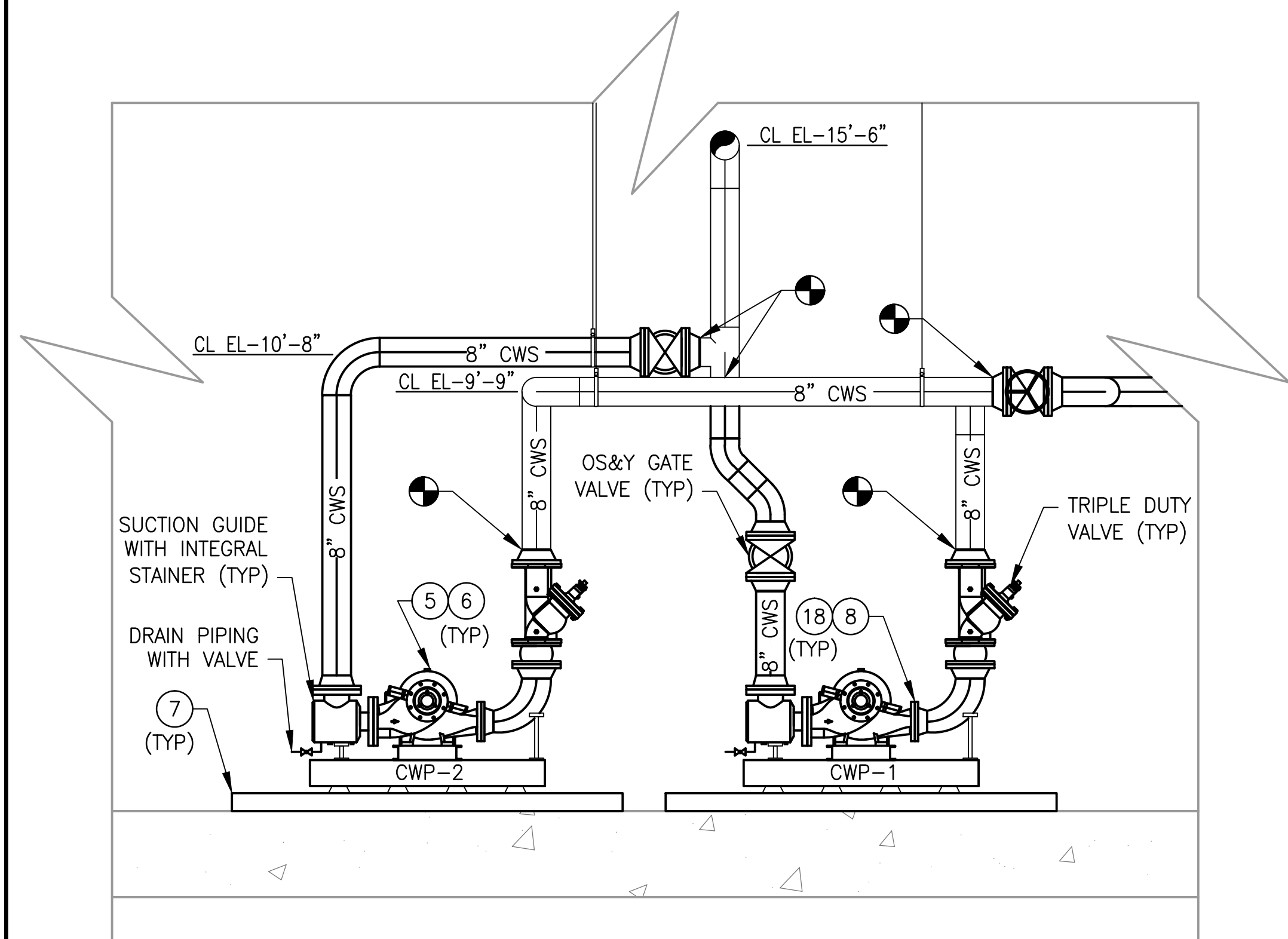
A SECTION - MECHANICAL
CWPE3-M-300

3/8" = 1'-0"



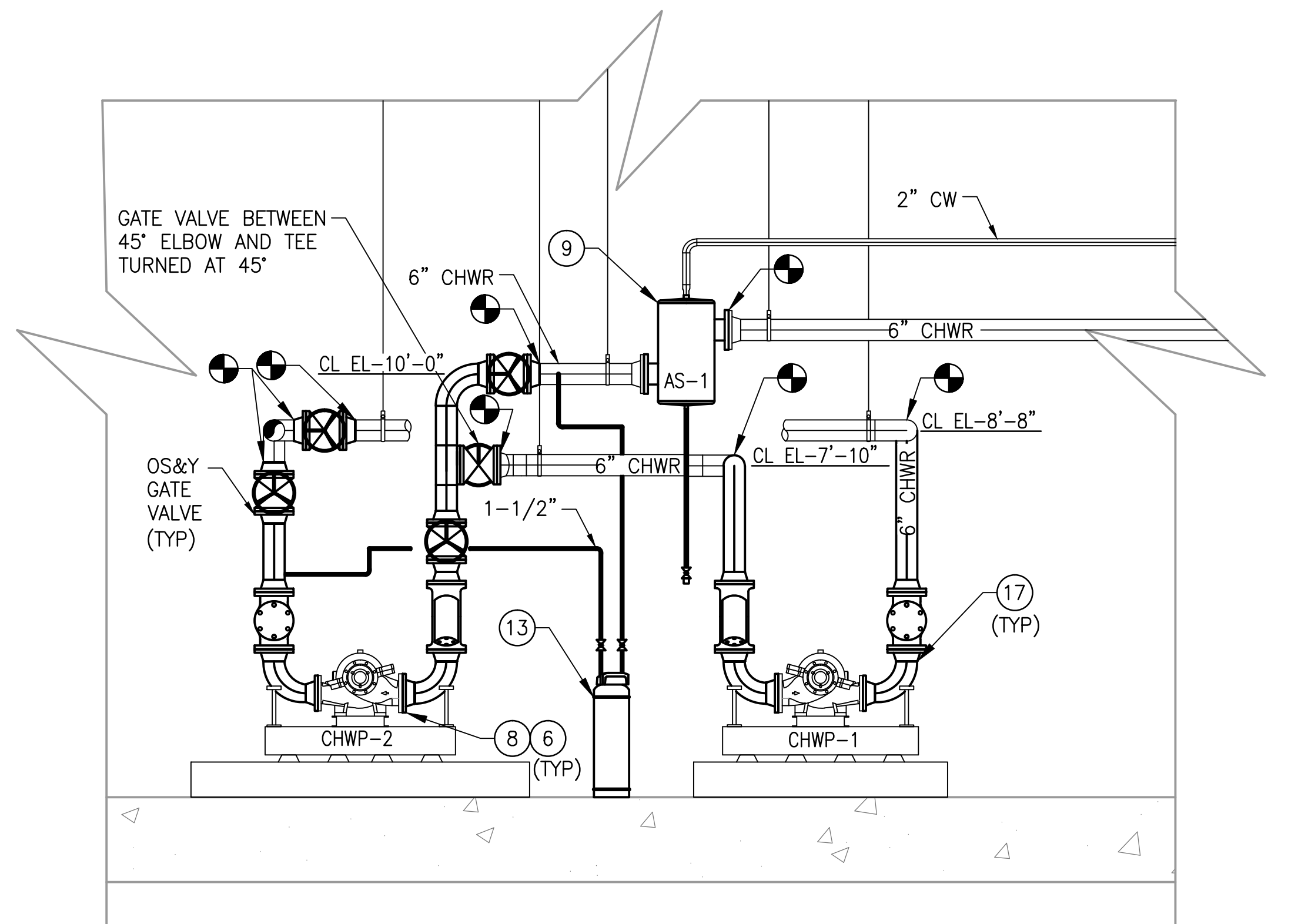
B SECTION - MECHANICAL
CWPE3-M-300

3/8" = 1'-0"



C SECTION - MECHANICAL
CWPE3-M-300

3/8" = 1'-0"



D SECTION - MECHANICAL
CWPE3-M-300

3/8" = 1'-0"

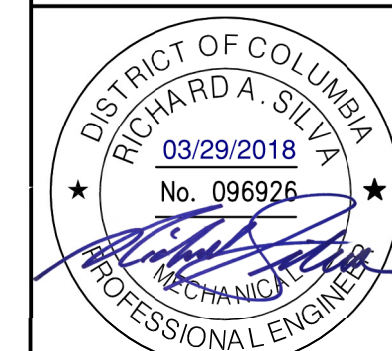
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- INSTALL ALL EQUIPMENT AND COMPONENTS PER MANUFACTURER'S RECOMMENDATION. PROVIDE ACCESS CLEARANCE AT ALL LOCATIONS OF VALVES, STRAINERS, INSTRUMENTATION, AND EQUIPMENT AS REQUIRED BY MANUFACTURER FOR EASE OF MAINTENANCE.

KEYNOTES:

REFER TO CWPE3-M-102 FOR KEYNOTES USED ON THIS DRAWING.

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JOINT VENTURE



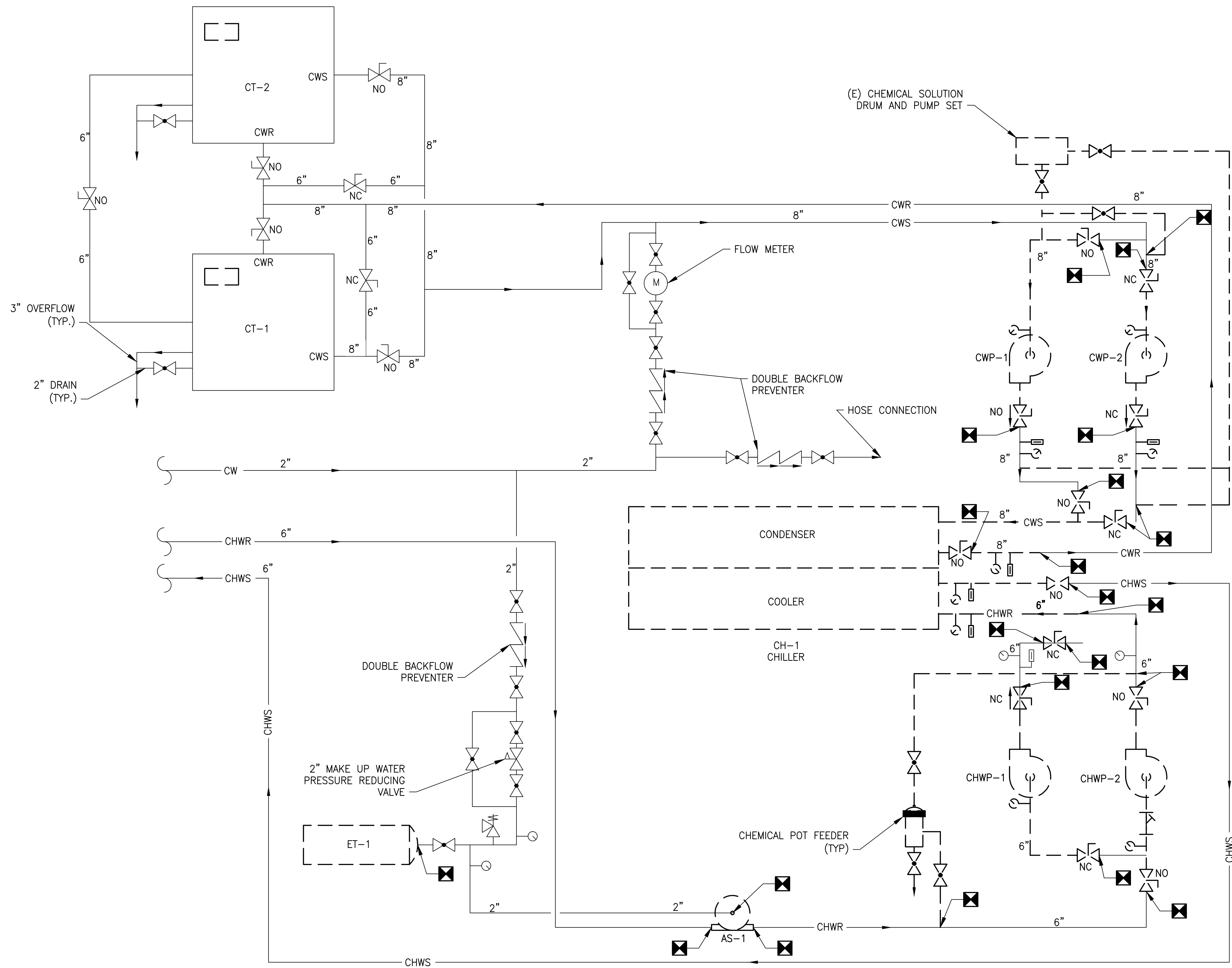
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	NUMBER	TITLE	DATE	NUM	DESCRIPTION	
DESIGNED	B. VISWANATHAN	08/18/17	DATE	03/30/2018	0	FINAL CONTRACT DRAWINGS
DRAWN	K. STOCKINGER	09/01/17	DATE			
CHECKED	D. ROMNESS		DATE			

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

APPROVED *Mark H. Magnusen* 03/2018
MARK MAGNUSSEN
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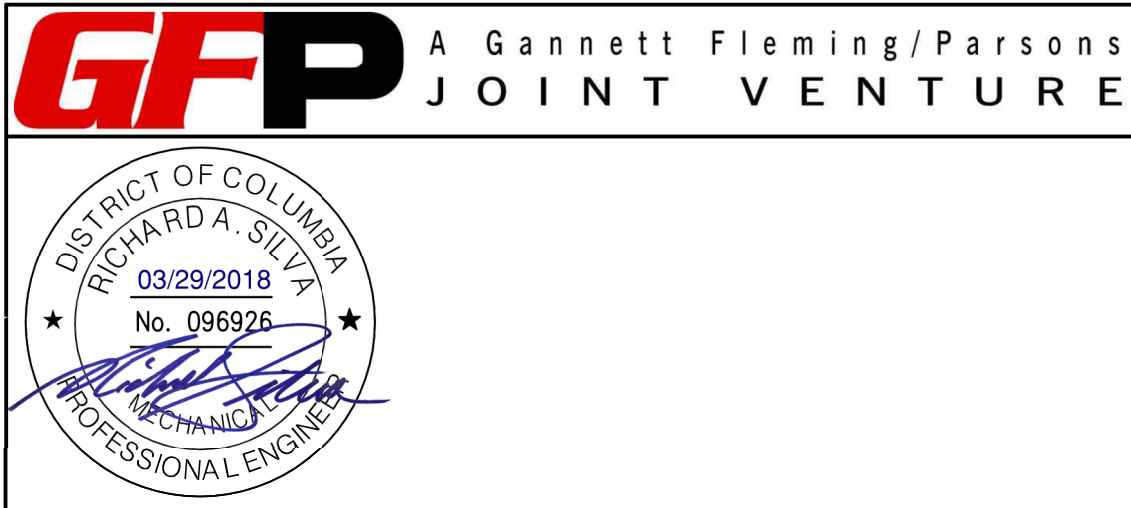
APPROVED *Gabe Spiller* 03/2018
GRAHAM SPILLER
GFP DEPUTY PROGRAM MANAGER

REPLACEMENT OF CHILLERS AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS CWPE3 - COLUMBIA HEIGHTS (E04) MECHANICAL SECTION					
M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.	
M1304	FQ-18102	1/2" = 1'-0"	CWPE3-M-300	98 of 173	



1 MECHANICAL FLOW DIAGRAM - DEMOLITION
CWPE3-M-500

SCALE: NOT TO SCALE



DESIGNED <u>B. VISWANATHAN</u> 08/18/17 DATE DRAWN <u>K. STOCKINGER</u> 08/18/17 DATE CHECKED <u>D. ROMNESS</u> DATE	REFERENCE DRAWINGS		REVISIONS		WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP APPROVED <u>Mark H. Magnusson</u> 03/2018 MARK MAGNUSSEN MANAGER, ENV. PLANNING AND COMP. DATE APPROVED <u>Gabe Spiller</u> 03/2018 GRAHAM SPILLER GFP DEPUTY PROGRAM MANAGER DATE	REPLACEMENT OF CHILLERS AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS CWPE3 - COLUMBIA HEIGHTS (E04) MECHANICAL FLOW DIAGRAM - DEMOLITION				
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			03/30/2018	0	FINAL CONTRACT DRAWINGS					
						M NO.	CONTRACT NO.	SCALE	DRAWING NO.	SHEET NO.
						M1304	FQ-18102	NOT TO SCALE	CWPE3-M-500	99 of 173

CHILLER SCHEDULE																				
PLANT	DESIGNATION	CAPACITY (TONS)	EVAPORATOR					CONDENSER					COMPRESSOR/CHILLER ELECTRICAL							BASIS OF DESIGN
			GPM	PASSES	EWT (°F)	LWT (°F)	PD FT H ₂ O	GPM	PASSES	EWT (°F)	LWT (°F)	PD FT H ₂ O	VOLT	PH	HZ	RLA	LRA	MOCp	MCA	
CWPE3	CH-1	350	644	2	55.0	42.0	16.8	1050	2	85.0	94.3	17.1	460	3	60	316	174	500	356	DAIKIN WMC060DD

NOTES:

1. PROVIDE WITH SPRING TYPE VIBRATION ISOLATION.
2. PROVIDE WITH CHILLED WATER FLOW INDICATOR.
3. WATER-COOLED, SEMI-HERMETIC OIL-FREE CENTRIFUGAL COMPRESSOR WATER CHILLER.
4. TWO MAGNETIC BEARING, COMPLETELY OIL-FREE CENTRIFUGAL COMPRESSORS ON CHILLER.
5. CHILLERS SHALL BE CHARGED WITH REFRIGERANT R-134A.
6. MOTORS SHALL BE LIQUID REFRIGERANT COOLED WITH INTERNAL THERMAL SENSING DEVICES IN THE STATOR WINDINGS.
7. THE CHILLER SHALL BE EQUIPPED WITH AN INTEGRATED VARIABLE FREQUENCY DRIVE (VFD) TO AUTOMATICALLY REGULATE COMPRESSOR SPEED IN RESPONSE TO COOLING LOAD AND THE COMPRESSOR PRESSURE LIFT REQUIREMENT, OPERATING CONTROLS AND EQUIPMENT PROTECTION CONTROLS.
8. CHILLER CONTROLS SHALL COORDINATE COMPRESSOR SPEED AND GUIDE VANE POSITION TO OPTIMIZE CHILLER EFFICIENCY.
9. CHILLER SHALL BE EQUIPPED WITH MICROTECH II CONTROLLER OR EQUIVALENT AND SHALL INCLUDE REMOTE COMMUNICATIONS CARDS WITH MODBUS RTU CAPABILITY, TO CONNECT THE I/O POINTS TO CHILLER PLANT MONITORING PANEL.
10. CHILLER CAPACITY BASED ON WATER.
11. CHILLER TOTAL OPERATING WEIGHT 13948 LB
12. CHILLER DIMENSIONS 178.19 IN X 55.17 IN (FOOT PRINT)
13. PROVIDE EACH CHILLER WITH SINGLE POINT POWER CONNECTION.

PUMP SCHEDULE															
ITEM NO.	SERVICE	TYPE	GPM	FT HEAD	INLET (IN)	OUTLET (IN)	IMPELLER DIA (IN)	OPERATING WEIGHT (LB)	FOOTPRINT (IN)	MOTOR					BASIS OF DESIGN
										RPM	HP	VOLTS	PH	HZ	
CWP-1	CONDENSER WATER	CENTRIFUGAL	1050	86	8	6	9.70	1390	58X19	1780	40	460	3	60	ARMSTRONG 4600-8X6X10H
CWP-2	CONDENSER WATER	CENTRIFUGAL	1050	86	8	6	9.70	1390	58X19	1780	40	460	3	60	ARMSTRONG 4600-8X6X10H
CHWP-1	CHILLED WATER	CENTRIFUGAL	644	86	6	5	9.70	1044	58X19	1780	25	460	3	60	ARMSTRONG 4600-6X5X10H
CHWP-2	CHILLED WATER	CENTRIFUGAL	644	86	6	5	9.70	1044	58X19	1780	25	460	3	60	ARMSTRONG 4600-6X5X10H

NOTES:

1. PROVIDE WITH INVERTER DUTY, VFD COMPATIBLE MOTOR.
2. PROVIDE WITH SPRING TYPE VIBRATION ISOLATION.

UNIT HEATER SCHEDULE															
DESIGNATION	LOCATION	TYPE	KW	ELECTRICAL DATA					HORIZ. AIR THROW (FT)	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	WEIGHT (LB)	BASIS OF DESIGN	NOTES
				MOTOR HP	VOLTS	PH	AMPS	RPM							
UH-3	CWPE3	ELECTRIC, SUSPENDED	20.0	1/10	480	3	24	1500	41	19.00	21.75	13.75	63.00	BERKO HUHA2048	1-4

NOTES:

1. UNIT INSTALLED MOTOR STARTER.
2. DISCONNECT: FACTORY INSTALLED.
3. WALL/CEILING MOUNTED BRACKET.
4. WALL MOUNT THERMOSTAT KIT, SET POINT 50°F.

EXISTING COOLING TOWER SCHEDULE															
DESIGNATION	SERVICE	TYPE	GPM	EWT (°F)	LWT (°F)	AMB. AIR WET BULB TEMP	FAN							OPERATING WEIGHT (LBS)	BASIS OF DESIGN
							NO.	CFM (EACH)	NO. OF MOTORS	HP	V	PH	HZ		
(E) CT-1	CONDENSER WATER	AXIAL	644	95.0	85.0	78.0	2	41020	2	15/5	208	3	60	8770	EVAPCO LPT 849
(E) CT-2	CONDENSER WATER	AXIAL	644	95.0	85.0	78.0	2	41020	2	15/5	208	3	60	8770	EVAPCO LPT 849

NOTES:

1. SEPARATE STARTER PANELS FURNISHED FOR FIELD MOUNTING.
2. PROVIDE DIRECT DRIVE FAN WITH INVERTER DUTY MOTORS.
3. COOLING TOWER FAN MOTORS SHALL BE RATED VFD COMPATIBLE.
4. PROVIDE WITH NEW LOUVERS FOR EXISTING COOLING TOWERS.
5. PROVIDE WITH NEW PLASTIC FILL FOR EXISTING COOLING TOWERS.
6. THE COOLING TOWER AND ALL EQUIPMENT, EXCEPT FOR WHAT IS DISCUSSED IN NOTE 1-5 SHALL REMAIN IN PLACE.

VALVE SCHEDULE					
TYPE	SIZE (IN)	QUANTITY	SERVICE	MANUFACTURER	MODEL
GATE VALVE	6	6	CHILLED WATER	NIBCO	F-617-6
GATE VALVE	8	5	CONDENSER WATER	NIBCO	F-617-8
TRIPLE DUTY VALVE	8	2	CONDENSER WATER	BELL & GOSSET	3DS-8S
CHECK VALVE	6	2	CHILLED WATER	NIBCO	F-918-B

NOTES:

1. CONTRACTOR SHALL VERIFY ALL VALVE QUANTITIES AND SIZES IN FIELD PRIOR TO BEGINNING WORK.
2. PROVIDE WITH CHAIN ACTUATOR TO ALLOW ACCESS TO VALVES ABOVE FROM FLOOR LEVEL.

LEAK DETECTION SYTEM

1. REFRIGERANT LEAK DETECTION SYSTEM INSTALLED AS PART OF WMATA CONTRACT FQ14114.
2. PROVIDE RS-485 ETHERNET CONNECTION TO CONNECT TO THE CHILLER PLANT CONTROL PANEL.

FLOW MONITORING SYSTEM

1. NON-INTRUSIVE CLAMP-ON FLOW SENSORS
2. MAINTENANCE-FREE
3. ACCURACY: 1% OF VELOCITY
4. NO DEPENDENCY ON CONDUCTIVITY
5. AUTOMATICALLY ADAPT TO PIPE MATERIAL AND LIQUID PROPERTY VARIATIONS
6. BUILT-IN FLOW TOTALIZERS
7. ISOLATED RS-485 INTERFACE WITH POWER SURGE PROTECTION. SUPPORTS THE MODBUS PROTOCOL - CONNECT TO PAC 3000 IN CHILLER PLANT MONITORING PANEL
8. ABUNDANT INPUT/OUTPUT, ISOLATED 4-20MA OUTPUT, RELAY, PULSE OUTPUT, ALARM OUTPUT
9. SELF-EXPLANATORY MENU-DRIVEN PROGRAMMING
10. PIPE SIZE RANGE, 8" ~ 10"
11. NEMA 4X (IP65) WEATHER-RESISTANT ENCLOSURE
12. SIEMENS SITRANS FUS 1010 (OR APPROVED EQUAL). PROVIDE CABLES OF SUFFICIENT LENGTH TO REACH ALL TERMINATION POINTS

DESIGNED B. VISWANATHAN 08/11/17 DATE	REFERENCE DRAWINGS		REVISIONS			<div><div>M</div><div>metro</div></div> <div>WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY</div> <div>DEPARTMENT OF DESIGN AND CONSTRUCTION SERVICES</div> <div>OFFICE OF INFRASTRUCTURE RENEWAL PROGRAM GROUP</div> <div>APPROVED <i>Mark H. Magnusen</i> 03/2018 MARK MAGNUSSEN MANAGER, ENV. PLANNING AND COMP</div> <div>APPROVED <i>Gabe Spiller</i> 03/2018 GRAHAM SPILLER GFP DEPUTY PROGRAM MANAGER</div>	REPLACEMENT OF CHILLERS AND COOLING TOWER ACCESSORIES AT EIGHT METRO-RAIL STATIONS CWPE3 COLUMBIA HEIGHTS (E04) MECHANICAL EQUIPMENT SCHEDULES - SHEET 1 OF 2				
	NUMBER	TITLE	DATE	NUM	DESCRIPTION		M NO. M1304	CONTRACT NO. FQ-18102	SCALE NONE	DRAWING NO. CWPE3-M-600	SHEET NO. 101 of 173
			03/30/2018	0	FINAL CONTRACT DRAWINGS						
DRAWN K. STOCKINGER 08/11/17 DATE											
CHECKED D. ROMNESS 03/23/18 DATE											

