

ELECTRICAL SYMBOLS

CP

CP - CONTROL PANEL

DUPLEX CONVENIENCE  
RECEPTACLE, 2 POLE, 3 WIRE, 120 VAC

WP

INDICATES WEATHERPROOF DEVICE

M

5

ELECTRIC MOTOR (NO. INDICATES HORSEPOWER)

M

MOTOR STARTER/CONTROLLER  
(NON-COMBINATION - COMBINATION - MANUAL)

F

LINE SWITCH DISCONNECT - UNFUSED - FUSED (SIZE AS  
REQUIRED OR AS NOTED)

S

SINGLE POLE SWITCH

S<sup>3</sup>

THREE-WAY SWITCH

S<sup>4</sup>

FOUR-WAY SWITCH

L-1

LETTER-NUMERAL(EG. L-1) DENOTES LIGHTING PANEL  
AND BRANCH CIRCUIT NUMBER. LOWER CASE LETTER  
DENOTES SWITCHED CIRCUIT. FOR LIGHTING PANEL  
SCHEDULES SEE SPECIFICATIONS SECTION 16501.  
TYPICAL ANY TYPE LIGHTING FIXTURE.

PENDANT MOUNTED LIGHTING FIXTURE

L

WALL MOUNTED LIGHTING FIXTURE.  
FIXTURE TYPE

F

FLUORESCENT LIGHTING FIXTURE

EXIT LIGHTING FIXTURE (TYPE X U.O.N.) LETTER NUMERAL (EG. LA-1)  
DENOTES LIGHTING PANEL AND BRANCH CIRCUIT NUMBER CONNECT  
AHEAD OF LOCAL SWITCHES.

LA-1

2 LAMP SELF CONTAINED DC EMERGENCY LIGHTING UNIT. (TYPE Y U.O.N.)  
LETTER NUMERAL (EG. LA-1) DENOTES LIGHTING PANEL AND BRANCH  
CIRCUIT NUMBER. CONNECT AHEAD OF LOCAL SWITCHES.

FIXTURE DESIGNATION SYMBOL. DENOTES FIXTURE TYPE, QUANTITY WITH LAMP SIZE,  
AND HEIGHT A.A.F.

BRANCH CIRCUIT HOME RUN TO PANELBOARD  
LETTERS AND NUMERALS INDICATE PANEL  
AND CIRCUIT NUMBER. CROSS LINES INDICATE  
MINIMUM NUMBER OF CONDUCTORS WHEN THERE  
ARE MORE THAN TWO. NO HASH MARKS INDICATES  
TWO CONDUCTORS. HALF HASH MARK INDICATES NEUTRAL.  
AS A MINIMUM, ALL WIRING SHALL BE 3#12 AWG  
IN 3/4" CONDUIT. #10 AWG WIRE SHALL BE  
USED FOR RUNS BETWEEN PANEL AND FIRST  
LIGHTING FIXTURE OR RECEPTACLE EXCEEDING 50  
FEET, UNLESS OTHERWISE NOTED ON DRAWING.

INDICATES HOMERUN AND CONDUIT TAG, REFER TO  
SPECIFICATIONS FOR CONDUIT AND CABLE SCHEDULE

EXPOSED CONDUIT (3-#12 IN 3/4" CONDUIT U.O.N.)

CONCEALED CONDUIT (3-#12 IN 3/4" CONDUIT U.O.N.)

INDICATES GROUND CONDUCTOR (#12 U.O.N.)

INDICATES NEUTRAL CONDUCTOR (#12 U.O.N.)

GROUNDING SYSTEM CONDUCTOR (#4/0 BARE COPPER U.O.N.)

CONDUIT TURNS UP

CONDUIT TURNS DOWN

UNDERGROUND DUCT BANK

SITE LIGHTING CIRCUIT. 3-#10 IN 3/4" CONDUIT,  
CONCRETE ENCASED U.O.N.

PB

PULL BOX

J

JUNCTION BOX

T

TERMINAL BOX

CB

ENCLOSED CIRCUIT BREAKER

EHH

ELECTRICAL HANDHOLE

TRANSFORMER - TYPE AND SIZE AS NOTED ON THE  
DRAWINGS AND IN SPECIFICATIONS

DELTA

GROUNDED WYE

DEVICE LOCATED AT MOTOR

FIELD LOCATED DEVICE

DEVICE LOCATED AT LOCAL CONTROL PANEL

INDICATES NEW

INDICATES EXISTING

POWER PANEL

ABBREVIATIONS

GENERAL NOTES

1. SYMBOLS AND ABBREVIATIONS ARE STANDARD DESIGNATIONS. SOME MAY NOT BE  
APPLICABLE TO THESE DRAWINGS.
2. ALL CONDUITS ARE SHOWN DIAGRAMMATICALLY, FINAL LOCATION TO BE VERIFIED IN THE FIELD.
3. PROVIDE EXPANSION AND DEFLECTION FITTING WHEN CONDUIT PASSES THROUGH STRUCTURAL  
EXPANSION JOINT.
4. CONTRACTOR SHALL PROVIDE ALL INTERCONNECTING CONDUIT AND WIRE AS REQUIRED FOR  
THE LIGHTING FIXTURE AND RECEPTACLE ARRANGEMENTS INDICATED. ALL CONDUIT SHALL  
BE 3/4" MINIMUM. WIRE SHALL BE #12 AWG U.O.N. QUANTITY SHALL BE AS REQUIRED  
FOR CIRCUITING AND SWITCHING INDICATED.

AFF	ABOVE FINISHED FLOOR	REC	RECEPTACLE
AFG	ABOVE FINISHED GRADE	SF	SUPPLY FAN
CP	CONTROL PANEL	SP	SPARE
EF	EXHAUST FAN	TPS	TWISTED PAIR, SHIELDED
ELE	ELECTRICAL	UON	UNLESS OTHERWISE NOTED
FPCP	FILTER PRESS CONTROL PANEL	VSC	VENDOR SUPPLIED CABLE
FVNR	FULL VOLTAGE NON-REVERSING		
FVR	FULL VOLTAGE REVERSING		
GND	GROUND		
GF	GROUND FAULT		
GFCI	GROUND FAULT CIRCUIT INTERRUPTING		
KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY (RMS SYMMETRICAL)		

CONDUIT	NO.	SIZE	CABLE	SIZE	FROM	VIA	TO	PURPOSE	REMARKS
C-1	1	3/4"	3	12	PANEL PP-E	CKT 2	SWITCH	LIGHTS AT FILTER #	POWER & GROUND
C-2	2	3/4"	3	12	PANEL PP-E	CKT 4	SWITCH	LIGHTS AT FILTER #	POWER & GROUND
C-3	3	3/4"	3	12	PANEL PP-E	CKT 8		INFLUENT VALVE V-#01	POWER & GROUND
C-4	4	3/4"	3	12	PANEL PP-E	CKT 10		EFFLUENT VALVE V-#02	POWER & GROUND
C-5	5	3/4"	3	12	PANEL PP-E	CKT 12		BACKWASH INFLUENT V-#03	POWER & GROUND
C-6	6	3/4"	3	12	PANEL PP-E	CKT 14		BACKWASH DRAIN VALVE V-#04	POWER & GROUND
C-7	7	3/4"	3	12	PANEL PP-E	CKT 16		AIR SCOUR VALVE V-#05	POWER & GROUND
C-8	8	3/4"	3	12	PANEL PP-E	CKT 6		FILTER # CONTROL PANEL	POWER & GROUND
C-9	9	1"	1	18 TPS	VENDOR	LEVEL ELEMENT LE-#-1		FILTER # LEVEL TRANSMITTER	SIGNAL
C-10	10	3/4"	3	12	FILTER # CONTROL PANEL			FILTER # LEVEL TRANSMITTER	POWER & GROUND
C-11	11	1"	1	18 TPS	FILTER # CONTROL PANEL			FILTER # LEVEL TRANSMITTER	CONTROL
C-12	12	1"	2	18 TPS	FILTER # CONTROL PANEL			FIT-#-1 AND DPIT-#-1	SIGNAL
C-13	13	3/4"	16	14	FILTER # CONTROL PANEL			INFLUENT VALVE V-#01	CONTROL
C-14	14	3/4"	16	14	FILTER # CONTROL PANEL			EFFLUENT VALVE V-#02	CONTROL
C-15	15	3/4"	16	14	FILTER # CONTROL PANEL			BACKWASH INFLUENT V-#03	CONTROL
C-16	16	3/4"	16	14	FILTER # CONTROL PANEL			BACKWASH DRAIN VALVE V-#04	CONTROL
C-17	17	3/4"	16	14	FILTER # CONTROL PANEL			AIR SCOUR VALVE V-#05	CONTROL

TYPICAL FOR EACH FILTER. INSERT FILTER NUMBER FOR ASTERISK.

C-1	1"	4	8	MCC-3		T-W	POWER & GROUND
C-2	1 1/2"	4	2	T-W		PP-W	POWER
C-3	1"	4	8	MCC-12		T-E	POWER & GROUND
C-4	1 1/2"	4	2	T-E		PP-E	POWER
		1	8				GROUND

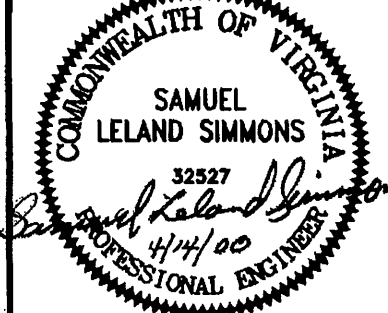
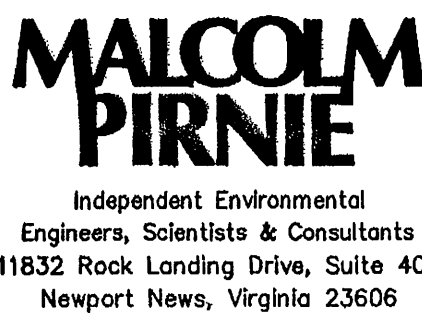
CONDUIT SCHEDULE  
FILTER 4  
(OTHERS TYPICAL)

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	KVA PER PHASE			LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	LIGHTS - FILTER 3	0.9	1.8			0.9	LIGHTS - FILTER 4	20	2
3	20	LIGHTS - FILTER 3	0.9		1.8		0.9	LIGHTS - FILTER 4	20	4
5	20	CONTROL PANEL - FILTER 3	1			2	1	CONTROL PANEL - FILTER 4	20	6
7	20	INFLUENT VALVE - FILTER 3	0.5	1			0.5	INFLUENT VALVE - FILTER 4	20	8
9	20	EFFLUENT VALVE - FILTER 3	0.5		1		0.5	EFFLUENT VALVE - FILTER 4	20	10
11	20	BACKWASH INFLUENT - FILTER 3	0.5			1	0.5	BACKWASH INFLUENT - FILTER 4	20	12
13	20	BACKWASH DRAIN - FILTER 3	0.5	1			0.5	BACKWASH DRAIN - FILTER 4	20	14
15	20	AIR SCOUR VALVE - FILTER 3	0.5		1		0.5	AIR SCOUR VALVE - FILTER 4	20	16
17						0				18
19				0						20
21						0				22
23						0				24
25				0						26
27	20	LIGHTS - FILTER 7	0.9		1.8		0.9	LIGHTS - FILTER 8	20	28
29	20	LIGHTS - FILTER 7	0.9			1.8	0.9	LIGHTS - FILTER 8	20	30
31	20	CONTROL PANEL - FILTER 7	1	2			1	CONTROL PANEL - FILTER 8	20	32
33	20	INFLUENT VALVE - FILTER 7	0.5		1		0.5	INFLUENT VALVE - FILTER 8	20	34
35	20	EFFLUENT VALVE - FILTER 7	0.5			1	0.5	EFFLUENT VALVE - FILTER 8	20	36
37	20	BACKWASH INFLUENT - FILTER 7	0.5	1			0.5	BACKWASH INFLUENT - FILTER 8	20	38
39	20	BACKWASH DRAIN - FILTER 7	0.5		1		0.5	BACKWASH DRAIN - FILTER 8	20	40
41	20	AIR SCOUR VALVE - FILTER 7	0.5			1	0.5	AIR SCOUR VALVE - FILTER 8	20	42
TOTAL				6.8	7.6	6.8	SERVICE CHARACTERISTICS:			
LOCATION:							120/208 VOLT - 3 PHASE - 4 WIRE - 60 HZ			
BUILDING:							100 AMP MAIN BREAKER			
TOTAL				21.2			SOLID NEUTRAL & GROUND BUS			

PANELBOARD EAST

CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD KVA	KVA PER PHASE			LOAD KVA	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
1	20	LIGHTS - FILTER 1	0.9	1.8			0.9	LIGHTS - FILTER 2	20	2
3	20	LIGHTS - FILTER 1	0.9		1.8		0.9	LIGHTS - FILTER 2	20	4
5	20	CONTROL PANEL - FILTER 1	1			2	1	CONTROL PANEL - FILTER 2	20	6
7	20	INFLUENT VALVE - FILTER 1	0.5	1			0.5	INFLUENT VALVE - FILTER 2	20	8
9	20	EFFLUENT VALVE - FILTER 1	0.5		1		0.5	EFFLUENT VALVE - FILTER 2	20	10
11	20	BACKWASH INFLUENT - FILTER 1	0.5			1	0.5	BACKWASH INFLUENT - FILTER 2	20	12
13	20	BACKWASH DRAIN - FILTER 1	0.5	1			0.5	BACKWASH DRAIN - FILTER 2	20	14
15	20	AIR SCOUR VALVE - FILTER 1	0.5		1		0.5	AIR SCOUR VALVE - FILTER 2	20	16
17						0				18
19				0						20
21	20	MAIN PLC	1		1					22
23						0				24
25				0						26
27	20	LIGHTS - FILTER 5	0.9		1.8		0.9	LIGHTS - FILTER 6	20	28
29	20	LIGHTS - FILTER 5	0.9			1.8	0.9	LIGHTS - FILTER 6	20	30
31	20	CONTROL PANEL - FILTER 5	1	2			1	CONTROL PANEL - FILTER 6	20	32
33	20	INFLUENT VALVE - FILTER 5	0.5		1		0.5	INFLUENT VALVE - FILTER 6	20	34
35	20	EFFLUENT VALVE - FILTER 5	0.5			1	0.5	EFFLUENT VALVE - FILTER 6	20	36
37	20	BACKWASH INFLUENT - FILTER 5	0.5	1			0.5	BACKWASH INFLUENT - FILTER 6	20	38
39	20	BACKWASH DRAIN - FILTER 5	0.5		1		0.5	BACKWASH DRAIN - FILTER 6	20	40
41	20	AIR SCOUR VALVE - FILTER 5	0.5			1	0.5	AIR SCOUR VALVE - FILTER 6	20	42
TOTAL				6.8	8.6	6.8	SERVICE CHARACTERISTICS:			
LOCATION:							120/208 VOLT - 3 PHASE - 4 WIRE - 60 HZ			
BUILDING:							100 AMP MAIN BREAKER			
TOTAL				22.2			SOLID NEUTRAL & GROUND BUS			

PANELBOARD WEST



REVISIONS			
NO.	BY	DATE	REMARKS

DES SLS

DWN AAH

OKD



CITY OF ROANOKE, VIRGINIA  
WATER POLLUTION  
CONTROL PLANT  
EFFLUENT FILTER REHABILITATION

EFFLUENT FILTERS  
ELECTRICAL LEGEND AND SCHEDULES  
NOT TO SCALE