

New Port Richey VA OPC EES Load Calculations

3/21/2016

GSW

Total Square Footage 139700 Sq. Ft.

Square Foot Loads

		Connected	Pwr. Fac.	Demand	Dem. Fac.	Demand	Electrical Branch
Power	2.00 w/sq.ft.	279 KW	0.90	310 KVA	NEC Rec.	129 KVA	N
LS Lighting	0.50 w/sq.ft.	70 KW	0.95	74 KVA	1.00	74 KVA	L
Contin. Ltg.	0.25 w/sq.ft.	35 KW	0.95	37 KVA	1.00	37 KVA	E
Lighting	1.55 w/sq.ft.	217 KW	0.95	228 KVA	NEC Light.	47 KVA	N
Misc.	1.00 w/sq.ft.	140 KW	0.95	147 KVA	0.50	74 KVA	L
Total		740 KW				360 KVA	

Block Loads (Rooms are Est. Max. Momentary Demand, Motors as shown)

Radiology

X-Ray - General			75 KVA		0.10	8 KVA	N
X-Ray - General			75 KVA		0.10	8 KVA	N
X-Ray - Dental			75 KVA		0.10	8 KVA	N
CT-Scan			150 KVA		0.10	15 KVA	N
MRI			150 KVA		0.25	38 KVA	N
AC-1 Med Comp	2-3 HP	32	7 KVA		0.67	4 KVA	E
AC-2 Den Comp	2-3 HP	32	7 KVA		0.50	3 KVA	E
AC-3 Lab Comp	2-3 HP	32	7 KVA		0.50	3 KVA	E
VP-1 Med Vac	3 HP	8	2 KVA		0.50	1 KVA	E
VP-2 Den Vac	3 HP	8	2 KVA		0.50	1 KVA	E

HVAC (CHW Cooling with reheat, CV)

AHU's

AHU-1 - SF	30 HP	41.7	35 KVA		1.00	35 KVA	N
AHU-1 - RF	30 HP	41.7	35 KVA		1.00	35 KVA	N
AHU-2 - SF	25 HP	36	30 KVA		1.00	30 KVA	N
AHU-2 - RF	15 HP	22.4	19 KVA		1.00	19 KVA	N
AHU-3 - SF	30 HP	41.7	35 KVA		1.00	35 KVA	N
AHU-3 - RF	25 HP	36	30 KVA		1.00	30 KVA	N
AHU-4 - SF	40 HP	55.5	46 KVA		1.00	46 KVA	N
AHU-4 - RF	5 HP	7.6	6 KVA		1.00	6 KVA	N

EF's

EF-1	1.5 HP	3	3 KVA		1.00	3 KVA	N
EF-2	1.5 HP	3	3 KVA		1.00	3 KVA	N
EF-3	1.5 HP	3	3 KVA		1.00	3 KVA	N
EF-4	1 HP	2	2 KVA		1.00	2 KVA	N
EF-5	1.5 HP	3	3 KVA		1.00	3 KVA	N
EF-6	1.5 HP	3	3 KVA		1.00	3 KVA	N
EF-7	3 HP	5	4 KVA		1.00	4 KVA	N
EF-8	5 HP	8	6 KVA		1.00	6 KVA	N

Chillers

CH-1	208 Tons		332 KVA		1.00	332 KVA	N
CH-2	208 Tons		332 KVA		1.00	332 KVA	N

Pumps

CHWP-1	75 HP	97	81 KVA		1.00	81 KVA	N
CHWP-2	75 HP	97	81 KVA		1.00	81 KVA	N
CHWP-3	75 HP	97	81 KVA		1.00	81 KVA	N

Boilers

HWP-1	3 HP	5.2	4 KVA		1.00	4 KVA	N
HWP-2	3 HP	5.2	4 KVA		1.00	4 KVA	N
SHWP-2	25 HP	36	30 KVA		1.00	30 KVA	N
SHWP-2	25 HP	36	30 KVA		0.00	0 KVA	N
SHWP-2	25 HP	36	30 KVA		0.00	0 KVA	N

Cooling Towers

CT-1			125 KVA	1.00	125 KVA	N
CT-2			125 KVA	1.00	125 KVA	N
CWP-1	50 HP	69	57 KVA	1.00	57 KVA	N
CWP-2	50 HP	69	57 KVA	1.00	57 KVA	N

Emergency Stanby Chiller is used for all Cooling during power outage for MCR, MTR, Police Server, OIT Rooms.

E Chiller			156 KVA	1.00	156 KVA	E
E CWP	10 HP	15.2	13 KVA	1.00	13 KVA	

Site Lighting			20 KVA	0.50	10 KVA	N
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TOTAL			3,107 KVA		2,196 KVA	
			3,741 Amps		2,644 Amps	480V,3PH
			20.01 watts/sq.ft.		14.15 watts/sq.ft.	

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Total Square Footage Emerg. 36800

Critical Lighting (Dental) 400 L=Life Safety EC=Equipment Critical ED = Equipment Delayed

Square Foot Loads

		Connected	Pow. Fac.	Demand	Dem. Fac.	Demand	Branch
LS Lighting	0.50 w/sq.ft.	18 KW	0.95	19 KVA	1.00	19 KVA	L
Critical Lighting	2.00 w/sq.ft.	1 KW	0.95	1 KVA	1.00	1 KVA	EC
Misc.	1.00 w/sq.ft.	37 KW	0.95	39 KVA	0.50	19 KVA	L
Total		56 KW				40 KVA	

Block Loads (Rooms are Est. Max. Momentary Demand, Motors as shown)

CRAC Units - None

MCR Emerg. Chiller 125 KVA 1.00 125 KVA ED
Feeds all OIT, Police
MCR and MTR

MTR

Police Server

OIT

OIT

OIT

OIT

Sig Comm

Water

RP-1	0.5 HP	10	1 KVA 1P	0.50	0 KVA	EC
SP-1	3 -.5 HP	30	2 KVA 1P	0.10	0 KVA	ED

TOTAL CONNECTED 240 KVA DEMAND 126 KVA@208V 603.4 Amps 40 KVA@480V 48 Amps

5.41 watts/sq.ft.

3.73 watts/sq.ft.

EES BRANCH LOADS

Life Safety Loads = 55 KVA Connected 39 KVA Demand X 1.25 : 48 KVA = 58 Amps L

Equipment Critical = 3 KVA Connected 1 KVA Demand X 1.25 : 1 KVA = 2 Amps EC

Equipment Delayed = $\frac{127}{185}$ KVA Connected $\frac{125}{165}$ KVA Demand X 1.25 : 157 KVA = 188 Amps ED
Total 206 KVA

New Port Richey VA OPC EES Load Calculations

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Total Square Footage Emerg.	36800						
Critical Lighting (Dental)	400						
L=Life Safety EC=Equipment Critical ED = Equipment Delayed							
Square Foot Loads			Pow.		Dem.		
		Connected	Fac.	Demand	Fac.	Demand	Branch
LS Lighting	0.50 w/sq.ft.	18 KW	0.95	19 KVA	1.00	19 KVA	L
Critical Lighting	2.00 w/sq.ft.	1 KW	0.95	1 KVA	1.00	1 KVA	EC
Misc.	1.00 w/sq.ft.	37 KW	0.95	39 KVA	0.50	19 KVA	L
Total		56 KW				40 KVA	

Block Loads (Rooms are Est. Max. Momentary Demand, Motors as shown)

HVAC (CHW Cooling with reheat, CV)

AHU's							
AHU-1 - SF	30 HP	41.7	35 KVA		1.00	35 KVA	ED
AHU-1 - RF	30 HP	41.7	35 KVA		1.00	35 KVA	ED
AHU-2 - SF	25 HP	36	30 KVA		1.00	30 KVA	ED
AHU-2 - RF	15 HP	22.4	19 KVA		1.00	19 KVA	ED
AHU-3 - SF	30 HP	41.7	35 KVA		1.00	35 KVA	ED
AHU-3 - RF	25 HP	36	30 KVA		1.00	30 KVA	ED
AHU-4 - SF	40 HP	55.5	46 KVA		1.00	46 KVA	ED
AHU-4 - RF	5 HP	7.6	6 KVA		1.00	6 KVA	ED

EF's							
EF-1	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-2	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-3	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-4	1 HP	2	2 KVA		1.00	2 KVA	ED
EF-5	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-6	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-7	3 HP	5	4 KVA		1.00	4 KVA	ED
EF-8	5 HP	8	6 KVA		1.00	6 KVA	ED

Chillers							
CH-1	207.5 Tons		332 KVA		1.00	332 KVA	ED
CH-2	207.5 Tons		332 KVA		1.00	332 KVA	ED

Pumps							
CHWP-1	75 HP	97	81 KVA		1.00	81 KVA	ED
CHWP-2	75 HP	97	81 KVA		1.00	81 KVA	ED
CHWP-3	75 HP	97	81 KVA		1.00	81 KVA	ED

KVA@480V

Cooling Towers							
CT-1			125 KVA		1.00	125 KVA	ED
CT-2			125 KVA		1.00	125 KVA	ED
CWP-1	50 HP	69	57 KVA		1.00	57 KVA	ED
CWP-2	50 HP	69	57 KVA		1.00	57 KVA	ED

Amps

Water							
RP-1	0.5 HP	10	1 KVA 1P		0.50	0 KVA	EC
SP-1	3 -.5 HP	30	2 KVA 1P		0.10	0 KVA	ED

EES BRANCH LOADS

Life Safety Loads =	55 KVA Connected	39 KVA Demand X 1.25 :	48 KVA =	58 Amps	L
Equipment Critical =	3 KVA Connected	1 KVA Demand X 1.25 :	1 KVA =	1 Amps	EC
Equipment Delayed =	1532 KVA Connected	1,531 KVA Demand X 1.25 :	1913 KVA =	2,304 Amps	ED
Total	1,590 KVA	1,570 KVA	1,963 KVA		

Use 1,500KW, 480V generator = 1,916 KVA

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Square Foot Loads			Pow.		Dem.		
		Connected	Fac.	Demand	Fac.	Demand	Branch
LS Lighting	0.50 w/sq.ft.	18 KW	0.95	19 KVA	1.00	19 KVA	L
Critical Lighting	2.00 w/sq.ft.	1 KW	0.95	1 KVA	1.00	1 KVA	EC
Misc.	1.00 w/sq.ft.	37 KW	0.95	39 KVA	0.50	19 KVA	L
Total		56 KW				40 KVA	

Block Loads (Rooms are Est. Max. Momentary Demand, Motors as shown)

HVAC (CHW Cooling with reheat, CV)

AHU's							
AHU-1 - SF	30 HP	41.7	35 KVA		1.00	35 KVA	ED
AHU-1 - RF	30 HP	41.7	35 KVA		1.00	35 KVA	ED
AHU-2 - SF	25 HP	36	30 KVA		1.00	30 KVA	ED
AHU-2 - RF	15 HP	22.4	19 KVA		1.00	19 KVA	ED
AHU-3 - SF	30 HP	41.7	35 KVA		1.00	35 KVA	ED
AHU-3 - RF	25 HP	36	30 KVA		1.00	30 KVA	ED
AHU-4 - SF	40 HP	55.5	46 KVA		1.00	46 KVA	ED
AHU-4 - RF	5 HP	7.6	6 KVA		1.00	6 KVA	ED

EF's							
EF-1	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-2	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-3	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-4	1 HP	2	2 KVA		1.00	2 KVA	ED
EF-5	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-6	1.5 HP	3	3 KVA		1.00	3 KVA	ED
EF-7	3 HP	5	4 KVA		1.00	4 KVA	ED
EF-8	5 HP	8	6 KVA		1.00	6 KVA	ED

Chillers							
CH-1	207.5 Tons		332 KVA		1.00	332 KVA	ED
CH-2	0 Tons		0 KVA		1.00	0 KVA	ED

Pumps							
CHWP-1	75 HP	97	81 KVA		1.00	81 KVA	ED
CHWP-2	0 HP	0	0 KVA		1.00	0 KVA	ED
CHWP-3	0 HP	0	0 KVA		1.00	0 KVA	ED

KVA@480V

Cooling Towers							
CT-1			125 KVA		1.00	125 KVA	ED
CT-2			0 KVA		1.00	0 KVA	ED
CWP-1	50 HP	69	57 KVA		1.00	57 KVA	ED
CWP-2	0 HP	0	0 KVA		1.00	0 KVA	ED

Amps

Water							
RP-1	0.5 HP	10	1 KVA 1P		0.50	0 KVA	EC
SP-1	3 -.5 HP	30	2 KVA 1P		0.10	0 KVA	ED

EES BRANCH LOADS

Life Safety Loads = 55 KVA Connected 39 KVA Demand X 1.25 = 48 KVA = 58 Amps L

Equipment Critical = 3 KVA Connected 1 KVA Demand X 1.25 = 1 KVA = 1 Amps EC

Equipment Delayed = Total 858 KVA Connected 856 KVA Demand X 1.25 = 1070 KVA = 1,288 Amps ED
916 KVA 895 KVA 1,119 KVA 1,348 Amps

Use 1,000KW, 480V generator = 1,221 KVA 1500 amp MB

or 900KW, 1119KVA, 1400 amp MB

1600A, 4W - (5)SETS:4	160	L.F.	of circuit							
Wire, 600 volt, coppe	32.00	C.L.F.	\$ 918.33	\$ 29,386.56	8.750	\$ 55.00	\$ 15,400.00	\$ -	\$ -	\$ 44,786.56
Wire, 600 volt, coppe	8.00	C.L.F.	\$ 483.67	\$ 3,869.36	3.636	\$ 55.00	\$ 1,599.84	\$ -	\$ -	\$ 5,469.20
Conduit in trench, inc	800	L.F.	\$ 12.68	\$ 10,144.00	0.364	\$ 55.00	\$ 16,016.00	\$ -	\$ -	\$ 26,160.00
Cable terminations, te	40	Ea.	\$ 7.05	\$ 282.00	1.379	\$ 55.00	\$ 3,033.80	\$ -	\$ -	\$ 3,315.80
Cable terminations, te	10	Ea.	\$ 2.62	\$ 26.20	0.889	\$ 55.00	\$ 488.95	\$ -	\$ -	\$ 515.15

\$ 80,246.71