ELECTRICAL CALCULATIONS
Union Gap ITS

PREPARED BY: BL
CHECKED BY:
DATE: 8/27/2019

Circuit	From	To	From Sta	To Sta	Conduit Length (Horz. Distance) Ft	Wire Slack (E1.3) Ft	Circuit Length (2X Conduit + Slack) Ft	Wire Type & Size	Wire Ampacity Amps	Res. (Tabel 3-1) R/1000'	Design Load (E1.2) Watts	Voltage Volts	Current Amps	V drop (E1-4) V	V drop (E1-4) %	Wire Area (Tables 3-4, 5-2) Sq In	2" Conduit Fill (Table 5-1) %	3" Conduit Fill (Table 5-1) %	4" Conduit Fill (Table 5-1) %	NOTES
VMS	VMS Cabinet	Power Source	377+67	426+55	5100	300	10800	**350 kcmil**	**350**	0.038	25000	480	52.08	21.38	4.5%	1.25	43.4%	**19.4%**	11.1%	includes 2 #6 for lighting
CCTV	CCTV Cabinet	Power Source	426+00		60	20	160	**#6 Cu**	**45.5**	0.510	5000	480	10.42	0.85	0.2%	0.24	**8.5%**	3.8%	2.2%	
ESS	Power Source	ESS Cabinet	426+55	430+50	920	70	1980	**#6 Cu**	**45.5**	0.510	5000	480	10.42	10.52	2.2%	0.24	**8.5%**	3.8%	2.2%	

VMS & Cabinet Power

Circuit Loading	Power (Watts)
(2) VMS Peak Load, Equipment and service outlets (Table 2-4, Daktronics Spec Sheet)	12000
CCTV (E1.2)	60
Ethernet Switch (E1.2)	120
Total Peak Load =	12180
Peak Future Load (Load X 1.33)(E1-2) =	16199

VMS Transformer Cabinet

Transformer Size (Table 2-3):	**25000**	**Watts**
Primary Main Circuit Breaker Current	52	Amps (480V)
Primary Main Circuit Breaker Size: (Table 4-2)	**60**	**Amps (480V)**
Secondary Main Circuit Breaker Current (x1.25)	84	Amps (240V)
Secondary Main Circuit Breaker Size: (Table 4-2)	**120**	**Amps (240V)**
VMS Circuit Breaker Current (x1.25) (E1-7)	31	Amps (240v)
VMS Circuit Breaker Size: (Table 4-2)	**40**	**Amps (240v)**
Cabinet Cir. Breaker Load (x1.25) (E1-7, Table 2-4)	36	Amps (120V)
VMS Cabinet Circuit Breaker Size: (Table 4-2)	**40**	**Amps (120V)**

CCTV & Cabinet Power

Circuit Loading	Power (Watts)
334 Cabinet (Table 2-4)	2000
CCTV	60
Ethernet Switch	120
Total Peak Load =	2180
Peak Future Load (Load X 1.33)(E1-2) =	2899

CCTV Transformer Cabinet

Transformer Size (Table 2-3):	**5000**	**Watts**
Primary Main Circuit Breaker Current (x1.25)	13	Amps (480V)
Primary Main Circuit Breaker Size: (Table 4-2)	**15**	**Amps (480V)**
Secondary Main Circuit Breaker Current (x1.25)	26	Amps (240V)
Secondary Main Circuit Breaker Size: (Table 4-2)	**30**	**Amps (240V)**
CCTV Cabinet Breaker Current (x1.25) (E1-7)	30	Amps (120V)
CCTV Cabinet Circuit Breaker Size: (Table 4-2)	**30**	**Amps (120V)**

ESS, CCTV & Cabinet Power

Circuit Loading	Power (Watts)
334 Cabinet (Table 2-4)	2000
ESS Equipment	240
CCTV	60
Ethernet Switch	120
Total Peak Load =	2420
Peak Future Load (Load X 1.33)(E1-2) =	3219

ESS/CCTV Transformer Cabinet

Transformer Size (Table 2-3):	**5000**	**Watts**
Primary Main Circuit Breaker Current (x1.25)	13	Amps (480V)
Primary Main Circuit Breaker Size: (Table 4-2)	**15**	**Amps (480V)**
Secondary Main Circuit Breaker Current (x1.25)	26	Amps (240V)
Secondary Main Circuit Breaker Size: (Table 4-2)	**30**	**Amps (240V)**
334 Cabinet Breaker Current (x1.25) (E1-7)	34	Amps (120V)
334 Cabinet Circuit Breaker Size: (Table 4-2)	**40**	**Amps (120V)**
ESS Cabinet Breaker Current (x1.25) (E1-7)	3	Amps (120V)
ESS Cabinet Circuit Breaker Size: (Table 4-2)	**15**	**Amps (120V)**

Total Peak Load =	16780
Total (Peak + Future) Load =	22317
Max Transformer Load =	35000