



**TRAFFIC SIGNAL POLE FOUNDATION DESIGN
WATERBURY NHG SGNL(43), VERMONT
VT ROUTE 100 & I-89 EXIT 10 NB OFF RAMP**

Spread Footing Analysis

DRAWING NO. 235821-SF

	GROUP II MAP-1, 42'	GROUP III MAP-1, 42'	GROUP II MAP-2, 34'/31'	GROUP III MAP-2, 34'/31'
Structure ID	B-102	B-102	B-103	B-103
Fx - Shear (lbs)	6	576	5	8
Fz - Axial (lbs)	2,126	3,267	2,612	4,380
Fy - Shear (lbs)	1,622	812	2,376	1,592
Mx - Moment (ft-lbs)	33,229	15,476	62,830	63,629
Mz - Torsion (ft-lbs)	41,890	17,129	30,658	19,018
My - Moment (ft-lbs)	30,728	67,623	19,102	39,496

Depth to Ground Water (ft)	6.8	6.8	3.1	3.1
Soil Unit Wt (pcf)	120	120	120	120
Soil Friction Angle (deg)	32	32	32	32
At Rest Earth Pressure Coef.	0.38	0.38	0.38	0.38
Soil Friction Coef.	0.40	0.40	0.40	0.40
Conc. Unit Wt. (pcf)	150	150	150	150
Concrete Strength (psi)	3500	3500	3500	3500
Reinforcing Yield (psi)	60000	60000	60000	60000

Pedestal Diameter (ft)	3.00	3.00	3.00	3.00
Pedestal Height (ft)	2.50	2.50	3.50	3.50
Footing Thickness (ft)	1.50	1.50	1.50	1.50
X - Footing Width (ft)	9.50	9.50	13.00	13.00
Y - Footing Width (ft)	9.50	9.50	8.00	8.00

Check O.T. & Sliding:				
Pedestal Wt. (lb)	2651	2651	3535	3535
Footing Wt. (lb)	20306	20306	13666	13666
Soil Wt. (lb)	24954	24954	38292	38292
Pole Wt. (lb)	2126	3267	2612	4380
Total Wt. (lb)	50037	51178	58104	59872
X - Factor of Safety (O.T.)	5.98	12.98	3.11	3.35
Y - Factor of Safety (O.T.)	7.73	3.48	19.75	9.84
Factor of Safety (Sliding)	12.34	20.56	9.78	15.04
	OK	OK	OK	OK

Check Torsional Resistance:				
Bot. Of Footing Friction	47536	48619	61009	62866
Top of Footing Friction	31193	31193	51694	51694
Side of Pedestal Friction	1259	1259	2467	2467
Passive Pressure Coefficient	3.25	3.25	3.25	3.25
Side of Footing Passive	85915	85915	137248	137248
Total Torsional Resistance	165902	166986	252418	254275
Factor of Safety (Torsion)	3.96	9.75	8.23	13.37
	OK	OK	OK	OK