



CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

STANDARD DRAWINGS FOR TRAFFIC SIGNAL STRUCTURES



DRAWING LIST		
SHEET NO.	DESCRIPTION	STRUCTURE TYPE CODE
1	COVER SHEET	-
2	ATTACHMENT CONFIGURATIONS FOR LIGHT DUTY STRUCTURES - 8', 12' & 16' ARMS	-
3	ATTACHMENT CONFIGURATIONS FOR MEDIUM DUTY STRUCTURES - 8', 12' & 16' ARMS	-
4	ATTACHMENT CONFIGURATIONS FOR MEDIUM DUTY STRUCTURES - 8', 12' & 16' ARMS WITH EXTENSION	-
5	ATTACHMENT CONFIGURATIONS FOR MEDIUM DUTY STRUCTURES - 21' & 26' ARMS	-
6	2.438 m (8') SIGNAL ARM	B
6	3.658 m (12') SIGNAL ARM	12
6	4.887 m (16') SIGNAL ARM	16
7	6.401 m (21') SIGNAL ARM	21
7	7.925 m (26') SIGNAL ARM	26
8	LIGHT DUTY SHAFT	L
9	MEDIUM DUTY SHAFT	M
10	DOUBLE MEDIUM DUTY SHAFT	DM
11	VERTICAL EXTENSION TO 10.7 m (35')	E
12	4.572 m (15') STRAIGHT POLE	S15
13	ACCESS PANEL DETAILS	-

CONFIGURATION	STATIC BASE LOADS (kN, kNm)						BREAKAWAY BASE TYPE
	Px	Py	Pz	Mx	My	Mz	
S15-Aa, S15-Ba & S15-Ga	1.15	5.74	1.42	20.46	5.01	0.32	A / B / G-T
S15-Ab, S15-Bb & S15-Gb	1.06	5.31	1.01	21.47	5.12	0.00	A / B / G-T
L8-Aa, L8-Ba & L8-Ga	0.77	3.86	1.63	18.35	4.45	4.80	A-T / B-T / G-T
L8-Ab, L8-Bb & L8-Gb	0.76	3.79	1.64	19.11	4.56	4.25	A-T / B-T / G-T
L8-Ac, L8-Bc & L8-Gc	0.85	4.24	1.76	18.27	4.34	3.80	A-T / B-T / G-T
L8-Ad, L8-Bd & L8-Gd	0.96	4.81	1.81	19.69	4.67	4.12	A-T / B-T / G-T
L8-Ae, L8-Be & L8-Ge	0.77	3.87	1.91	16.76	4.86	4.33	A-T / B-T / G-T
L12-Aa, L12-Ba & L12-Ga	0.76	3.79	1.70	17.85	4.86	6.85	A-T / B-T / G-T
L12-Ab, L12-Bb & L12-Gb	0.74	3.72	1.71	18.35	4.94	6.21	A-T / B-T / G-T
L12-Ac, L12-Bc & L12-Gc	0.89	4.44	1.86	19.44	5.11	6.04	A-T / B-T / G-T
L12-Ad, L12-Bd & L12-Gd	0.91	4.53	1.86	19.31	5.13	6.36	A-T / B-T / G-T
L12-Ae, L12-Be & L12-Ge	0.81	4.07	2.00	17.93	5.95	6.52	A-T / B-T / G-T
L16-Aa, L16-Ba & L16-Ga	0.67	3.34	1.75	15.03	4.76	7.21	A-T / B-T / G-T
L16-Ab, L16-Bb & L16-Gb	0.84	4.18	1.92	18.18	5.39	7.21	A-T / B-T / G-T
L16-Ac, L16-Bc & L16-Gc	0.85	4.24	1.91	17.73	5.36	7.53	A-T / B-T / G-T
M8-Ga	1.21	6.04	2.66	27.85	6.36	4.56	G-T
M8-Gb	0.81	4.03	2.53	17.23	4.96	4.33	G-T
M8/8-Gc	1.46	7.28	3.12	32.00	6.40	0.00	G-T
M8/8-Gd	1.19	5.96	3.37	27.58	5.52	0.00	G-T
M12-Ga	1.19	5.97	2.72	27.09	6.74	6.53	G-T
M12-Gb	0.85	4.23	2.63	18.40	6.04	6.52	G-T
M12/12-Gc	1.54	7.70	3.31	34.45	6.89	0.00	G-T
M12/12-Gd	1.27	6.36	3.57	29.92	5.98	0.00	G-T
M16-Ga	1.12	5.60	2.76	23.78	6.57	7.53	G-T
M16-Gb	0.89	4.44	2.75	19.64	7.28	8.96	G-T
M16/16-Gc	1.06	5.31	3.55	21.47	5.12	0.00	G-T
M16/16-Gd	1.62	8.10	3.80	36.82	7.36	0.00	G-T
M8-Ga-E	1.37	6.86	3.15	35.26	7.85	4.56	G-T
M8/8-Gb-E	1.62	8.09	3.62	35.80	7.88	0.00	G-T
M12-Ga-E	1.24	6.20	3.15	29.95	7.15	5.37	G-T
M12/12-Gb-E	1.70	8.49	3.81	39.79	8.35	0.00	G-T
M16-Ga-E	0.99	4.94	3.00	24.75	6.76	7.53	G-T
M16/16-Gb-E	1.68	8.41	3.98	37.98	8.32	0.00	G-T
M21-Da	1.15	5.76	2.99	25.61	9.08	13.07	D-T
M21-Db	1.26	6.29	3.18	28.44	9.71	13.29	D-T
M21-Dc-E	1.05	5.27	3.41	26.80	8.93	10.21	D-T
M26-Da	1.10	5.52	3.27	23.86	10.66	13.96	D-T
M26-Db	1.08	5.39	3.32	23.53	10.62	13.96	D-T
M26-Dc	1.37	6.83	3.54	33.74	13.39	20.29	FIXED BASE
M26-Dd-E	1.00	4.98	3.60	26.66	10.94	13.96	D-T

DESCRIPTION OF ATTACHMENTS				
ITEM	DESCRIPTION	FACE AREA (m²)	BOTTOM AREA (m²)	MASS (kg)
A	3 SECTION LED SIGNAL HEAD, ARM MOUNTED	0.852 (610W x 1397H)	0.125	17.00
B	3 SECTION LED SIGNAL HEAD, SIDE MOUNTED	0.852 (610W x 1397H)	0.125	17.00
C	4 SECTION LED SIGNAL HEAD, ARM MOUNTED	1.053 (610W x 1727H)	0.125	20.00
D	4 SECTION LED SIGNAL HEAD, SIDE MOUNTED	1.053 (610W x 1727H)	0.125	20.00
E	PEDESTRIAN CORRIDOR LED, 4 LIGHTS	1.023	0.418	46.00
F	TRAFFIC SIGN	0.558 (610W x 915H)	-	6.70
G	STREET NAME SIGN	0.651 (2134W x 305H)	-	7.80
H	TRAFFIC SIGN	0.558 (610W x 915H)	-	6.70
I	TRAFFIC SIGN	0.186 (610W x 305H)	-	2.23
J	TRAFFIC SIGN	0.279 (915W x 305H)	-	3.40
K	PEDESTRIAN COUNTDOWN HEADS AT 90°	0.300	-	6.50
L	PEDESTRIAN HEADS AT 90°	0.300	-	6.50
M	CHEVRON ON SHAFT	0.279 (305W x 915H)	-	3.40
N	VERTICAL EXTENSION TO 10.7 m (35')	-	-	-
O	CAMERA AND ANTENNA	0.200	-	5.00
P	5' EXTENSION BRACKET FOR 15' STRAIGHT POLE C/W OVERHEAD WIRE	-	-	-

DESIGN NOTES:

- AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS, 2009 (5TH EDITION) PLUS INTERIMS.
- FATIGUE STRESS RANGE CALCULATED AT CRITICAL SECTIONS FOR TRAFFIC SIGNAL FATIGUE CATEGORY III PER AASHTO TABLE 11-1, CONSIDERING NATURAL WIND GUSTS, GALLOPING, AND TRUCK INDUCED GUSTS.
- DESIGN WIND PRESSURE CALCULATED AS $P_z = 0.613 K_z G V^2 I_R C_d$

WHERE:

K_z AS PER AASHTO TABLE 3-5 EXCEPT NOT LESS THAN 1.0

$G = 1.14$

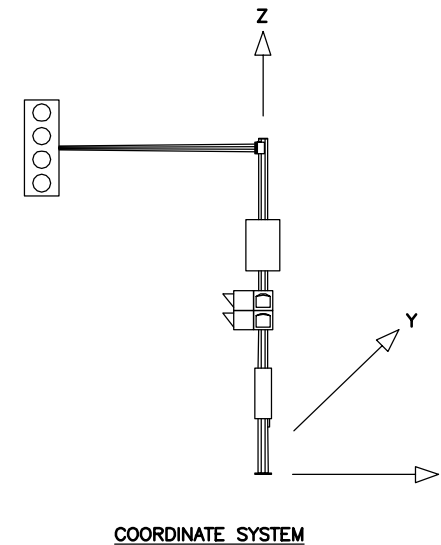
$V = 40$ m/s

I_R AS PER AASHTO TABLE 3-2 FOR 50 YEAR DESIGN LIFE

C_d AS PER AASHTO TABLE 3-6

4. FIELD ASSEMBLY:

- ALL ARM FLANGE BOLTS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION, EACH FOLLOWED BY AN ADDITIONAL 1/2 TURN.
- ALL VERTICAL EXTENSION FLANGE BOLTS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION, EACH FOLLOWED BY AN ADDITIONAL 1/3 TURN.
- JAM NUTS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
- ALL BOLTS SECURING CAP PLATES SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
- SNUG-TIGHT IS DEFINED AS THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH, OR AFTER A FEW IMPACTS OF AN IMPACT WRENCH.
- INSTALLATION OF STRUCTURE ON BREAKAWAY BASE ASSEMBLY SHALL BE PERFORMED AS PER BREAKAWAY BASE MANUFACTURER'S INSTRUCTIONS.



REDUCED DRAWING
N.T.S.

CONSULTANT PROJECT NO.12-5954
DRAWING NO.1
COVER SHEET