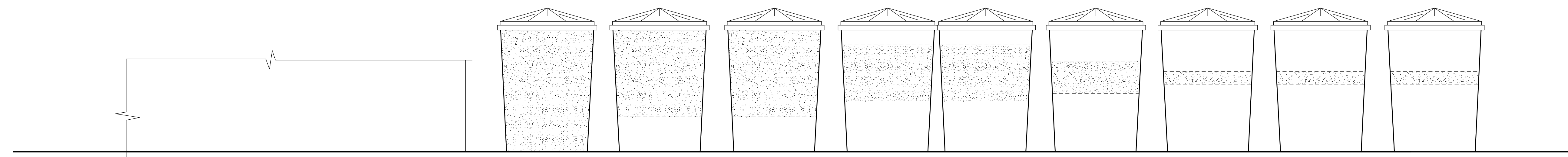


PLAN 1:50



ELEVATION 1:50

NOTES:

1. REFER TO THE MANUFACTURER'S MANUAL FOR PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THIS CRASH ATTENUATOR.
2. THIS SYSTEM IS NOT RECOMMENDED FOR SITES WHERE REDIRECTIVE CAPABILITIES ARE REQUIRED.
3. - INDICATES RELATIVE LOCATION OF SAND.
4. SAND SHALL CONTAIN A MINIMUM 5% ROCK SALT (NaCl), BY WEIGHT.
5. EXIT VELOCITY \leq 15 km/h AT REAR OF THE SYSTEM.
DECELERATION \leq 12 g's AT ANY POINT IN SYSTEM.
6. ALL SCALES ARE APPROXIMATE
7. LATERAL CROSS SLOPE SHALL NOT EXCEED 20H:1V (5%).

REVISIONS		
DATE	DESCRIPTION	BY
07-2011	T. BLOCK REVISED	DC
07-2013	ADDED NOTE REVISED DESIGN	DC
08-2018	REVISED DESIGN	SS

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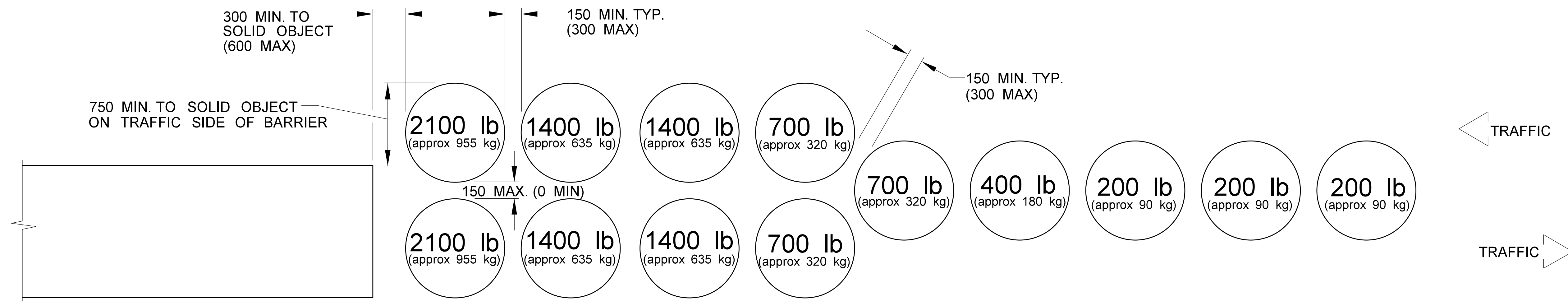
TRAFFIC ENGINEERING



**SAND-FILLED
BARRELS**
UNIDIRECTIONAL LAYOUT
POSTED SPEED
OF 100 km/h

SHEET NO	1 OF 2
DATE:	2001 - 09
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PLAN 1:50

DESIGN CALCULATIONS FOR A POSTED VELOCITY OF 100 km/h (SEE NOTE 1)

ROW	SAND WT (lb)	816.5 kg CAR		2041.2 kg TRUCK	
		EXIT VEL (km/h)	AVG g's FOR ROW	EXIT VEL (km/h)	AVG g's FOR ROW
0	200	100.00	8.19	100.00	3.59
1	200	89.98	6.63	95.74	3.29
2	200	80.97	5.37	91.65	3.02
3	400	72.85	5.37	87.75	3.02
4	700	59.59	7.56	80.57	5.20
5	1400	42.88	7.36	69.70	7.02
6	2800	24.10	5.41	53.14	8.75
7	2800	9.42	2.12	32.73	7.54
8	2800	3.68	0.32	20.16	2.86
8	4200	1.10	0.05	10.42	1.70

NOTES:

1. THE DESIGN CALCULATIONS APPLY ONLY FOR A FRONTAL IMPACT IN EITHER A UNIDIRECTIONAL OR BIDIRECTIONAL LAYOUT.
2. ALL SCALES ARE APPROXIMATE.

REVISIONS		
DATE	DESCRIPTION	BY
07-2011	T. BLOCK REVISED	DC
05-2013	REVISED DESIGN	DC

Manitoba Infrastructure

TRAFFIC ENGINEERING



SAND-FILLED BARRELS
 BIDIRECTIONAL LAYOUT
 POSTED SPEED OF 100 km/h

SHEET NO	2 OF 2
DATE:	2001 - 09
DRAWN:	TRAFFIC ENGINEERING
TSFB100	