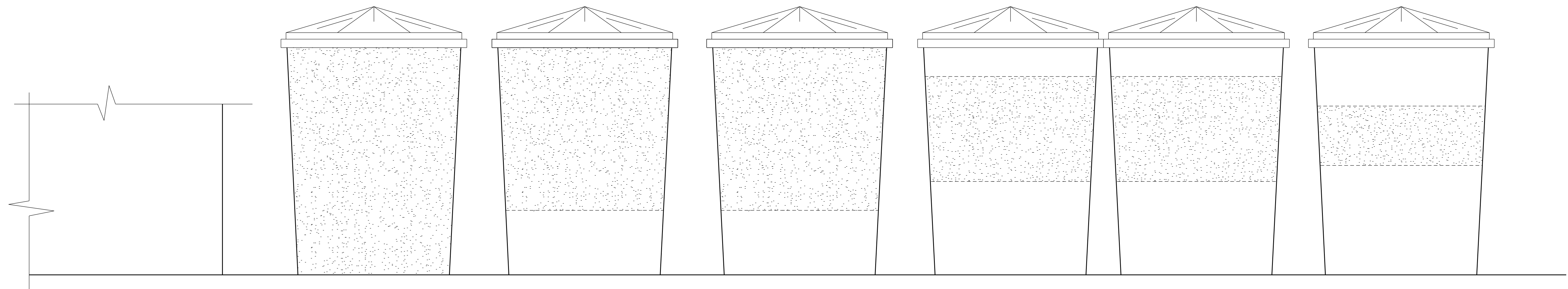


PLAN 1:25



ELEVATION 1:25

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 OS SYSTEM  
DECELERATION  $\leq 12$  g's AT ANY POINT IN SYSTEM
6. ALL SCALES ARE APPROXIMATE
7. LATERAL CROSS SLOP SHALL NOT EXCEED 20H:1V (5%).

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



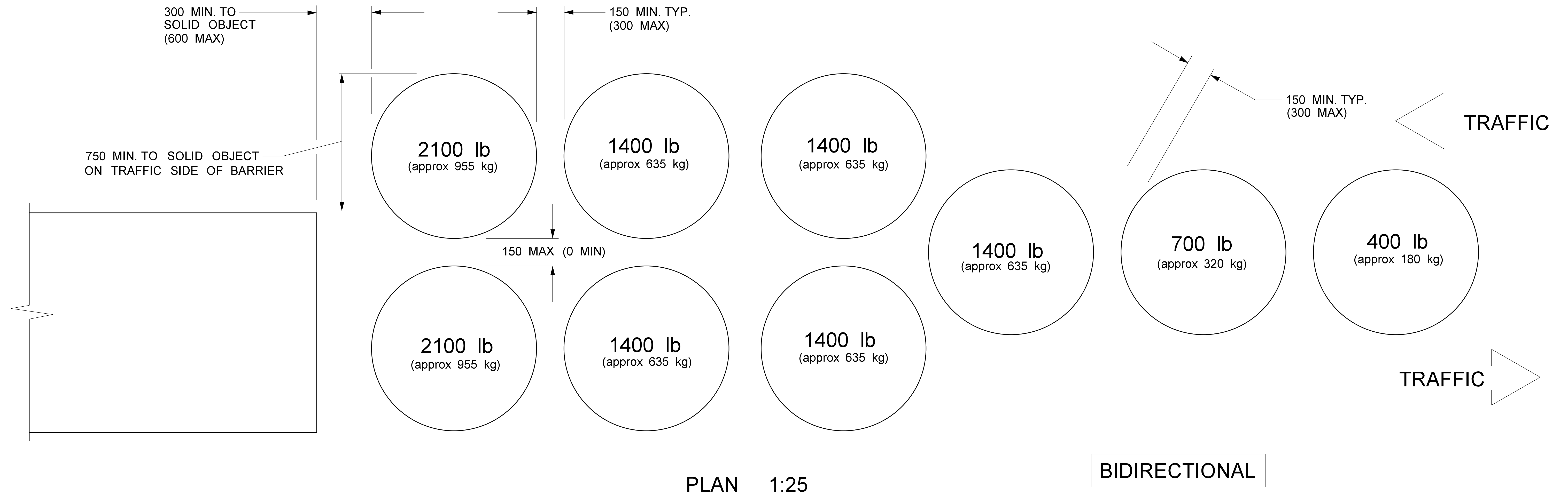
TRAFFIC ENGINEERING



**SAND-FILLED  
BARRELS**  
UNIDIRECTIONAL LAYOUT  
POSTED SPEED  
OF 70 km/h

SHEET NO	1 OF 2
DATE:	2001 - 09
DRAWN:	TRAFFIC ENGINEERING

**TSFB70**



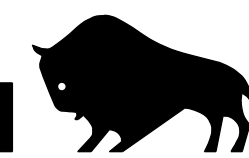
DESIGN CALCULATIONS FOR A POSTED VELOCITY OF 70 km/h (SEE NOTE 1)

ROW	816.5 kg CAR			2041.2 kg TRUCK	
	SAND WT (lb)	EXIT VEL (km/h)	AVG g's FOR ROW	EXIT VEL (km/h)	AVG g's FOR ROW
0		70.00		70.00	
1	400	57.25	6.98	64.27	3.31
2	700	41.20	6.80	55.61	4.47
3	1400	23.15	4.99	42.39	5.57
4	2800	9.05	1.95	26.11	4.80
5	2800	3.54	0.30	16.08	1.82
6	4200	1.06	0.05	8.31	0.82

**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

**Manitoba**   
**Infrastructure**  
 TRAFFIC ENGINEERING



**SAND-FILLED BARRELS**  
 BIDIRECTIONAL LAYOUT  
 POSTED SPEED OF 70 km/h

SHEET NO	2 OF 2
DATE:	2001 - 09
DRAWN:	TRAFFIC ENGINEERING
<b>TSFB70</b>	