

March 12, 1998  
File: 298-0220



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*Construction Materials  
Building Science  
Geotechnical  
Metallurgy and Corrosion  
Environmental  
Analytical Chemistry  
Physical Testing*

Safe-T-Strap  
20 Bermondsey Road  
Toronto, Ontario  
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Attention: Mr. Richard Vallance

**SUBJECT:** Load Testing of Safe-T-Strap Products

Dear Mr. Vallance:

As requested, tests were performed on Safe-T-Strap's products. Testing was performed on March 11, 1998 at Levelton Engineering Ltd.'s Richmond, B.C. laboratory on our Baldwin-Satec universal test machine, Model BTE-120, verified to the requirements of ASTM E4 and CSA A23.2-9C.

The products tested were Lo Rise and Hi Rise anchors and the fall restraint/lifeline assembly. Details of the components and the securing system are given with the results below.

**Hi Rise Anchors**

The anchors were fabricated from 51 mm wide, yellow nylon web with approximately 2" loops sewn into either end. Loops were secured with two zigzagged stitching blocks, except where a thread break had occurred within a block. In these cases, a third stitch block was sewn in overlapping the other two. A green fabric sleeve, approximately 12" long, was located at one end for abrasion resistance. In six anchors, a drop forged D-ring was sewn into the loop at the end without the abrasion resistant sleeve.

Each end of an anchor was secured to one crosshead of the test machine and the load was applied in a quasi-static manner. For all anchors, a 3/4" diameter pin was placed through the web loop, while a shackle or a 1" diameter pin was used at the other end, depending on whether that end terminated in a D-ring or a web loop.



Table 1

HI Rise Model Test Results

Test No.	End Type	Stitching Blocks	Failure Load (lbs)	Failure Location and Comments
1	Web loop	2	5640	Loop stitching
3	Web loop	2	5860	Loop stitching
5	Web loop	3	8040	Web at loop stitching
2	D-ring	2	6500	Loop stitching, no D-ring deformation
4	D-ring	2	6620	Loop stitching, no D-ring deformation
6	D-ring	3	8040	Web at loop stitching - light D-ring deformation
7	D-ring	3	8060	Web at loop stitching - light D-ring deformation
8	D-ring	2	6840	Loop stitching
9	D-ring	2	6160	Loop stitching

The stretch of the anchor in Test No. 4 was measured. Assuming all of stretch occurred in the single web length, the stretch at failure, 6-1/8", represents an elongation of 17%.

The following statistics are derived from the test results. For the web loop ends, the mean and standard deviation are 6513 lbs and 1327 lbs, respectively. For the D-ring ends, the mean and standard deviation are 7037 lbs and 815 lbs. For all tests, the mean and standard deviation are 6826 lbs and 961 lbs. It should also be noted that the lower failure load values are associated with failures of the loop stitching, while the higher values are associated with web failure.

#### Lo Rise Anchors

These anchors were fabricated from 51 mm white polyester with a 2" loop sewn in one end. The other end was finished by folding back the webbing and stitching it in place. The loops were secured with two zigzagged stitching blocks, except where a thread break occurred within a block. In these cases, a third stitch block was sewn in overlapping the other two. In five anchors, drop forged D-rings were sewn into the loop.

The turned back end was secured to a block of two 2 x 6 lumber sections with 3" bright common nails according to the manufacturer's instructions. The block was fixed to one crosshead to prevent overturning. The other end of the anchor was secured to the other crosshead with a 3/4" diameter pin or a shackle, depending on whether the end terminated in a loop or a D-ring. The anchor was then



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Table 2  
Lo Rise Model Test Results

Test No.	End Type	Stitching Blocks	Failure Load (lbs)	Failure Location and Comments
13	Web loop	3	5780	Web at nails
16	Web loop	3	6040	Web at nails
10	D-ring	2	5560	Web at nails
11	D-ring	2	6400	Web at nails
12	D-ring	2	5820	Loop stitching
14	D-ring	3	5400	Web at nails
15	D-ring	2	6400	Web at nails

Thank you for the opportunity to perform this testing. We trust that you have found the performance of the testing and the presentation of the information satisfactory. Do not hesitate to contact us if you have any questions or comments.

Yours truly,

LEVELTON ENGINEERING LTD.

A circular professional engineer seal for J.D. Ramsden. The outer ring contains the text 'PROFESSIONAL ENGINEER' at the top and 'BRITISH COLUMBIA' at the bottom. The center of the seal features the name 'J.D. RAMSDEN' and the title 'P.Eng.' below it. A horizontal line with a flourish passes through the seal.

J. D. Ramsden, P.Eng.

cc: Workers' Compensation Board of B.C.  
Attn: Mr. Martin Kuster, P.Eng.