



ADDENDUM TO LOAD TEST REPORT FOR CHIPPY CATCHER SAFETY NET SYSTEM DATED 28 MAY 2013

REPORT ON LOAD/DROP HEIGHT

Hill Design Engineering has been engaged to supervise and observe two additional load / vs fall tests for the Polyethylene fabric 'Chippy Catcher' fall arrest system for residential building construction.

The report reviews the Energy Absorption Capacity of the system and provides a table for the safe fall heights for various loads.

LOAD TEST RESULTS

Two load tests were observed on 17 October 2014 are summarised as follows:

Test No	Test Frame (m)	Test Weight (kg)	Drop Height (h) (m)	Impact Energy (E) (kJ)
1	4.7x4.7x1.25H	170	2.7	4.5
2	2.3x2.3x1.25H	170	2.7	4.5

MESH FIXING

The safety mesh is fixed between 2/90x45 timber plates, turned down and stapled to the back face of the bottom plate, continuously on all four sides of the test frames.

COMPLIANCE WITH 'BEST PRACTICE GUIDE LINES'

We have reviewed 'Work Safe New Zealand: Best Practice Guidelines for Safe Use of Safety Nets' and confirm that Chippy Catcher system energy absorption capacity complies with Class B Net. Work Safe NZ recommends that when a net area is less than 35m² (7.0x5.0m) a Class B Safety Net with not less than 4.4kJ energy absorption capacity should apply.

EQUIVALENT FALL HEIGHTS

From the tested impact energy we have calculated the equivalent fall height for various masses, as shown in the following table:

	Test	Equivalent Load / Fall Height				
Mass (kg)	170	100	125	150	175	200
Fall Height (m)	1.7	3.5	2.6	2.0	1.6	1.3

TEST PERFORMANCE RESULT

The safety net tests observed here-in adequately met the performance requirements of AS/NZ 4389: 1996 and also comply with recommendations Work Safe NZ: Best Practice Guidelines for Safe Use with Safety Nets i.e. for a Class B safety net providing an energy absorption capacity of greater than 4.4kJ.

Report Prepared by:

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APPENDIX

1. Impact Energy Calculation

The impact energy absorbed by the 'Chippy Catcher' arrest system for a 170kg mass falling from a test height of 2.7m is calculated as follows:

$$\begin{aligned}
 \text{Impact Energy } E &= m.g.h \\
 &= 170 \times 9.81 \times 2.7 \\
 &= \underline{4.5\text{kJ}}
 \end{aligned}$$

2. Equivalent Fall Heights

Equivalent fall heights for varying weights are calculated as follows:

$$h_{\text{fall}} = \frac{E}{m.g} - h_{\text{c.o.m.}}$$

where h_{fall} = height from the work platform to the safety net
 E = impact energy (kJ)
 m = mass (kg)
 g = gravity acceleration m/sec^2
 $h_{\text{c.o.m.}}$ = 1.0m above work platform
 (assumed centre of mass of worker)

	Test	Equivalent Load / Fall Height				
Mass (kg)	170	100	125	150	175	200
Fall Height (m)	1.7	3.5	2.6	2.0	1.6	1.3

3. Load Test Arrangement

