ENCORUS GROUP

23 Mechanic Street
Springville, NY 14141

2745 Broadway
Buffalo, NY 14227

encorus.com
716.592.3980

# On Top Safety Falcon Cart Functional Test

Safety Cart Analysis

Prepared For:

**On Top Safety**

**600 Cayuga Creek Rd**

**Buffalo, NY 14227**


**Engineer of Record**

**"Unauthorized alteration or additions to any plans, specifications or reports bearing a Licensed Professional Engineer's seal is a violation of Section 7209, subdivision 2, of the New York State Education Law".**

**August 22, 2018**

**REP-18081-001 REV. 0**

**Encorus Project # 18081**

## TABLE OF CONTENTS

# 1.0 INTRODUCTION

This report details the testing and functionality of the On Top Safety Falcon fall protection cart. Several tests were performed to verify the that the cart will adequately arrest a fall. The manufacturer designed the cart to comply with 29 CFR 1926.502, Fall protection systems criteria.

# 2.0 DESCRIPTION OF TESTS

All tests of the On Top Safety Falcon Cart were performed on a flat roof using various test weights dropped from a free-fall distance of at least 6 feet. For each test, the test weight was suspended from a crane using a quick release hook that, when actuated, released the test load. The test weight was also connected to the On Top Safety cart using various shackles and a wire rope sling. The cart was located a predetermined distance from the edge of the roof to allow the test weight to free fall at least 6 feet prior to actuation of the fall arrest system. There were two configurations that were tested. One test configuration was a straight drop with the test weight attachment sling at 90 degrees from the cart centerline. The second configuration was an angle drop with the test weight attachment sling at 45 degrees from the cart centerline.

(1)

# 3.0 TEST RESULTS

## 3.1 Test Results on Rubber Roof, Date: March 28, 2018

### 3.1.1 Straight Drop Tests

Test 1 – Straight (90 degrees from cart centerline), 100 lbs of counter weight.

A 170 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart. Potential Energy: 1020 lb*ft.

Test 2 – Straight (90 degrees from cart centerline), 100 lbs of counter weight.

A 170 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart. Potential Energy: 1020 lb*ft.

Test 3 – Straight (90 degrees from cart centerline), 150 lbs of counter weight.

A 170 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart Potential Energy: 1020 lb*ft.

Test 4 – Straight (90 degrees from cart centerline), 100 lbs of counter weight.
A 170 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart. Potential Energy: 1020 lb*ft.

Test 5 – Straight (90 degrees from cart centerline), 100 lbs of counter weight.

A 170 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart. Potential Energy: 1020 lb*ft.

Test 6 – Straight (90 degrees from cart centerline), 100 lbs of counter weight.

A 250 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart. Potential Energy: 1500 lb*ft.

#### 3.1.2 45 Degree Angle Drop

Test 7 – Angle Drop (45 degrees from cart centerline), 100 lbs of counter weight

A 170 lb weight was released and fell 6’ before the fall was arrested and the weight was held by the cart. Potential Energy: 1020 lb*ft.

## 3.2 Test Results on Steel Deck Roof, Date: May 2, 2018

### 3.2.1 Straight Drop Tests

Test 1 – Straight (90 degrees from cart centerline), 100 lbs of counter weight.

A 170 lb weight was released and fell 6’ before the fall was successfully arrested and the weight was held by the cart. Potential Energy: 1020 lb*ft.

## 4.0 CONCLUSIONS

In the straight configuration, the On Top Safety Falcon Cart successfully arrested several test weight drops with a potential energy of 1020 lb*ft (170 lbs at 6 feet).

In the angle configuration, the On Top Safety Falcon Cart successfully arrested a test weight drop with a potential energy of 1020 lb*ft (170 lbs at 6 feet).

In the straight configuration, the On Top Safety Falcon Cart successfully arrested a test weight drop with a potential energy of 1,500 lb*ft (250 lbs at 6 feet) in the straight configuration.

The results of the tests demonstrate that the On Top Safety Falcon Cart meets the criteria of 29 CFR 1926.502 (d)(16)(v) to have sufficient strength to withstand twice the potential impact energy of an average sized employee falling 3 feet which is the free fall distance permitted by the system when properly set up in a fall arrest arrangement.

## 5.0 REFERENCES

[1] 29 CFR 1926.502, Fall protection systems criteria.