

Sound Testing Duex mesh with a pendulum and rubber test weight

The Potential energy in the pendulum=

$$EP = M \times G \times H$$

$$= 5.1 \times 9.81 \times 1.1$$

$$= 55.03 \text{ Joules}$$

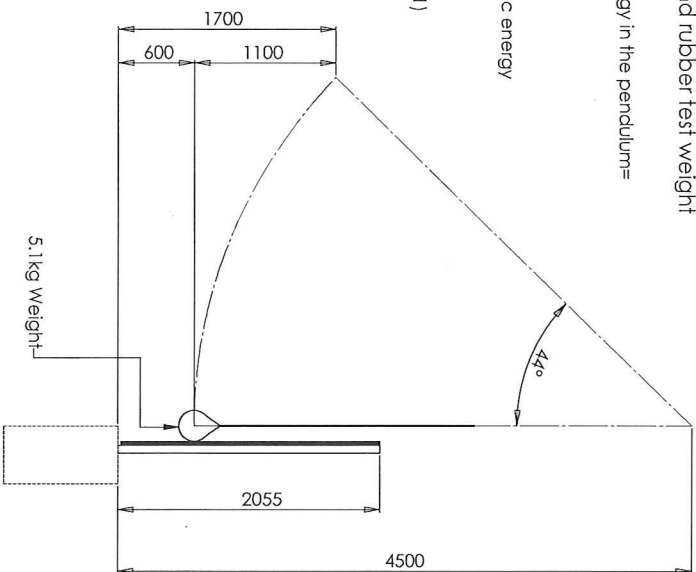
This turns into Kinetic energy

$$EK = \frac{1}{2} M V^2$$

$$V = \sqrt{\frac{2EK}{M}}$$

$$V = \sqrt{\frac{2 \times 55.03}{5.1}}$$

$$V = 4.64 \text{ m/s}$$



The pendulum test was conducted in two sets of ten test swings

TEST 1: Without rubber inserts on posts

TEST 2: With rubber inserts on post

For a football to have the same energy as the pendulum.

$$EK = 55.03 \text{ Joules}$$

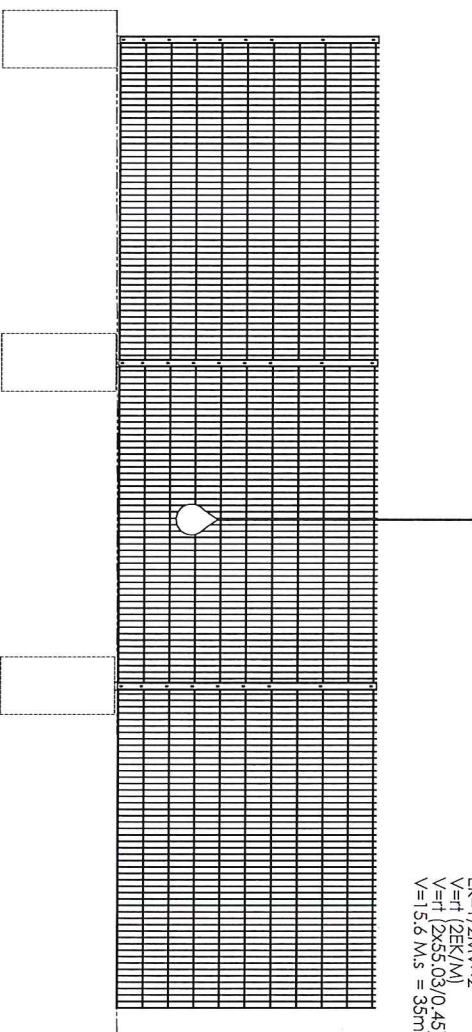
$$\text{Mass} = 0.45 \text{ Kg}$$

$$EK = \frac{1}{2} M V^2$$

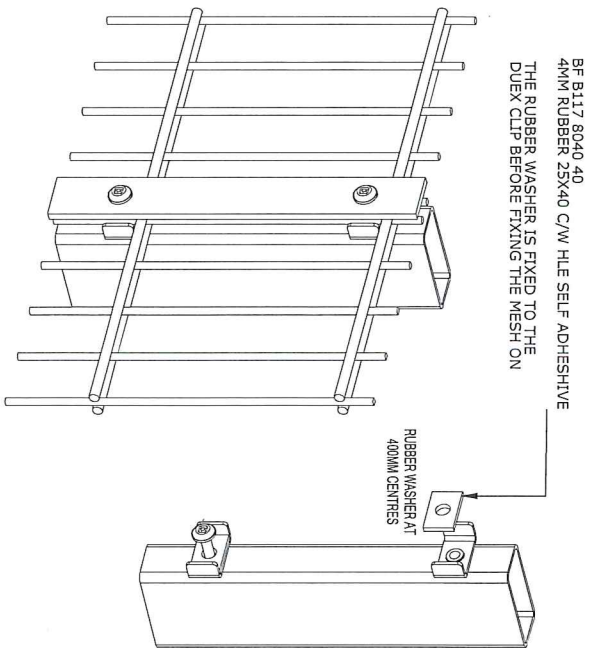
$$V = \sqrt{\frac{2EK}{M}}$$

$$V = \sqrt{\frac{2 \times 55.03}{0.45}}$$

$$V = 15.6 \text{ M/s} = 35 \text{ mph}$$



SOUND DEADENING DETAIL



For a 5.1Kg weight traveling at approx 4.6M/S
Results table noise levels in decibels

Run No	No rubber inserts (LCpk)	rubber inserts (LCpk)
1	111.20	97.70
2	108.60	101.30
3	104.80	96.60
4	110.30	96.50
5	103.90	100.70
6	105.90	99.20
7	105.40	96.50
8	111.20	100.20
9	103.00	97.60
10	108.00	102.90
Average	107.23	98.92

A standard football weighs approx 410-450g and can travel at about 60mph with a professional kick

Our test weight is approximately 12x heavier than a football but is traveling at around 10mph. This is equivalent in energy to football traveling at 35mph. The test gives us a constant and repeatable impact, to make a comparison between the mesh with rubber inserts and without the rubbers.

The results show a measurable reduction in noise levels with the rubber inserts in place

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
TOLERANCES

LINEAR: $\pm 1.50 \text{ mm}$
ANGULAR: 0.5 Deg

DO NOT SCALE DRAWING

DRAWN: []
CHECKED: []
MATERIAL: Mild Steel
FINISH: []

ISSUED DATE: 24 JANUARY 2012
CLIENT: []
PROJECT: []

mesh noise testing data

Research & Development

DWG NO: D00024-30
SHEET 1 OF 1

SCALE: 1:20