Product Tested

Product tested was a standard Impact Recovery Systems In-Street Pedestrian sign, 12” x 45” with a standard blue 200 spring assembly. Base used was a 101QR Quick Release fixed base. Sample used is a standard production model.

Design

This product is the industry leading In-Street Pedestrian sign made by Impact Recovery Systems. It utilizes patented reactive spring technology to ensure proper sign righting after vehicle impact. Panels are made of sturdy HDPE and are sheeted with 3M® Diamond Grade Fluorescent Yellow Green Reflective sheeting and Hi Intensity Prismatic White sheeting. The quick release function of the 101QR Fixed Base allows a sign to be removed and replaced in under 10 seconds.

Testing

The product was stuck a total of 16 times using a small pickup truck. Speeds ranged from 15 to 30 mph, though vehicle strikes over 25 mph are deemed as extreme to design criteria. Average speed was 20.3 mph. Both bumper hits and wheel strikes were performed.

Data

<table>
<thead>
<tr>
<th>Speed (mph)</th>
<th>Bumper</th>
<th>Wheel</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>12</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>30</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>
Below is a representation of a 20 mph bumper strike:

Results

The tests produced results expected from a well-known product that has many years of successful in-field service. Notably, it displayed improved performance of sheeting retention due to a new type of 3M® Diamond Grade sheeting being used which is more flexible than DG³.

Each time the sign was struck, it immediately rebounded to a full upright position. No damage to the spring or base was noted. Slight deformation of the post occurred; however it stayed straight and listed less than 5° (see Figure 2.)
Through 16 impacts, the sign retained approximately 90% of its reflective sheeting. More scuffing of the sign face was noted on the impact side of the sign; however more sheeting loss is observed on the back side of the sign face. All messaging remained clear.

At no time did the sign lose functionality. At the conclusion of the final impact, the sign was still fully functional and presumably ready for more impacts.

Conclusions

Exact ratings of reboundable sign systems are an inexact science at best, as each impact is unique in velocity, angle, vehicle type, and the randomness of each event. However a feel for expected capabilities on the whole (not for an individual sign) can be estimated based on this testing as well as on decades of experience with our product.

This product can be expected to average dozens to scores of vehicle strikes at speeds expected in crosswalk applications. Components are known to have durable properties which will allow the sign to function for many years given proper care and outside of extreme abuse. Components, especially the sign faces, are known to be quickly and easily replaceable should the need occur.