SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 301
FUEL SYSTEM INTEGRITY

2012 IC CORP CE SCHOOL BUS
NHTSA NO.: CC0900

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

TEST DATE: DECEMBER 28, 2011
FINAL REPORT DATE: JANUARY 17, 2012

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS 220
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WASHINGTON, D.C. 20590
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Prepared by: Eric Peschman, Project Engineer
Date: January 7, 2012

Reviewed by: Michael Janovicz, Program Manager
Date: January 7, 2012

FINAL REPORT ACCEPTED BY:

Edward E. Chan

Date of Acceptance
A compliance test was conducted on the subject 2012 IC Corp CE School Bus, NHTSA No. CC0900 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301S-02 for the determination of FMVSS 301 compliance.

Test failures identified were as follows: None

Compliance Testing
Safety Engineering
FMVSS 301S
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<td>Barrier Information</td>
</tr>
</tbody>
</table>
SECTION 1
PURPOSE OF COMPLIANCE TEST AND SUMMARY

A fuel system integrity test was performed on a MY2012 IC Corp CE School Bus, NHTSA No. CC0900, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedure TP-301S-02, to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 301, “Fuel System Integrity”.

Based on the test results, the MY2012 IC Corp CE School Bus, NHTSA No. CC0900 appears to meet the requirements of FMVSS 301 testing.

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-08-D-00075.
SECTION 2
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the MY2012 IC Corp CE School Bus, NHTSA No. CC0900.
## SCHOOL BUS DATA

### GENERAL VEHICLE IDENTIFICATION

<table>
<thead>
<tr>
<th>School Bus Manufacturer</th>
<th>IC Corp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Bus Model</td>
<td>CE</td>
</tr>
<tr>
<td>Build Date</td>
<td>09/10</td>
</tr>
<tr>
<td>Incomplete Vehicle Manufactured By</td>
<td>N/A</td>
</tr>
<tr>
<td>Build Date for Bus Chassis</td>
<td>N/A</td>
</tr>
<tr>
<td>School Bus GVWR (kg)</td>
<td>13,517 kg / 29,800 lb</td>
</tr>
<tr>
<td>School Bus GAWR Front (kg)</td>
<td>4,536 kg / 10,000 lb</td>
</tr>
<tr>
<td>School Bus GAWR Rear (kg)</td>
<td>9,525 kg / 21,000 lb</td>
</tr>
<tr>
<td>School Bus VIN</td>
<td>4DRBUSKP6CB392585</td>
</tr>
<tr>
<td>No. of Designated Seating Positions (DSP) including Driver</td>
<td>68</td>
</tr>
<tr>
<td>School Bus NHTSA No.</td>
<td>CC0900</td>
</tr>
<tr>
<td>Bus Body Color</td>
<td>Yellow</td>
</tr>
<tr>
<td>No. of Cylinders</td>
<td>6</td>
</tr>
<tr>
<td>Engine Displacement (L)</td>
<td>6.4 – Longitudinal</td>
</tr>
<tr>
<td>Fuel Pump Actuation</td>
<td>Mechanical</td>
</tr>
<tr>
<td>School Bus Width (mm)</td>
<td>2,372</td>
</tr>
<tr>
<td>School Bus Length (mm)</td>
<td>11,816</td>
</tr>
<tr>
<td>Bus Unloaded Vehicle Weight (UVW) (kg)</td>
<td>8,180</td>
</tr>
<tr>
<td>Bus Occupant Load</td>
<td>3,618 kg - Passenger 68 kg - Driver 3,686 kg - Total</td>
</tr>
<tr>
<td>Target Bus Test Weight (SBTW) (kg)</td>
<td>11,857 to 11,866</td>
</tr>
<tr>
<td>Actual (SBTW) (kg)</td>
<td>11,858</td>
</tr>
<tr>
<td>School Bus Tire Manufacturer</td>
<td>Continental</td>
</tr>
<tr>
<td>Front</td>
<td></td>
</tr>
<tr>
<td>Rear</td>
<td></td>
</tr>
<tr>
<td>Rec. Cold Tire Inflation Pressure (KPa)</td>
<td>758</td>
</tr>
<tr>
<td>Tire Size</td>
<td>265/75R22.5G</td>
</tr>
<tr>
<td>Load Range</td>
<td>G</td>
</tr>
</tbody>
</table>
## SCHOOL BUS DATA

### GENERAL VEHICLE IDENTIFICATION

#### SCHOOL BUS ATTITUDE

<table>
<thead>
<tr>
<th>Units</th>
<th>LF</th>
<th>RF</th>
<th>LR</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test (As Received) mm</td>
<td>1,205</td>
<td>1,192</td>
<td>1,224</td>
<td>1,200</td>
</tr>
<tr>
<td>Post Test mm</td>
<td>1,188</td>
<td>1,153</td>
<td>1,202</td>
<td>1,181</td>
</tr>
</tbody>
</table>

### FUEL TANK CAPACITY INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Tank Capacity (liters)</td>
<td>246.0</td>
</tr>
<tr>
<td>Tank Test Volume (liters)</td>
<td>228.8</td>
</tr>
</tbody>
</table>

### TEST VEHICLE WEIGHTS

<table>
<thead>
<tr>
<th>Units</th>
<th>As Delivered</th>
<th>As Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Front</td>
<td>Rear</td>
</tr>
<tr>
<td>Left</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,604</td>
<td>2,280</td>
</tr>
<tr>
<td>Right</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,604</td>
<td>2,692</td>
</tr>
<tr>
<td>Ratio</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>39.2</td>
<td>60.8</td>
</tr>
<tr>
<td>Totals</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,208</td>
<td>4,972</td>
</tr>
</tbody>
</table>

### COMMENTS: NONE

Recorded By: [Signature]

Approved By: [Signature]  Date: 12/28/11
**DATA SHEET 2**
**SCHOOL BUS IMPACT DATA**

**Test Vehicle:** 2012 IC Corp CE School Bus  
**NHTSA No.:** CC0900  
**Test Lab:** MGA Research Corporation  
**Test Date:** 12/28/11

### IMPACT INFORMATION

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of Impact</td>
<td>10:12 AM</td>
</tr>
<tr>
<td>Ambient Temperature (°C)</td>
<td>21</td>
</tr>
<tr>
<td>Barrier Velocity – Speed Trap 1 (kph)</td>
<td>47.4</td>
</tr>
<tr>
<td>Barrier Velocity – Speed Trap 2 (kph)</td>
<td>47.5</td>
</tr>
<tr>
<td>Barrier Penetration</td>
<td>1683 mm</td>
</tr>
</tbody>
</table>

**INDICATE IMPACT POINT BELOW:**

![Diagram](image)

**LEGEND:** Arrow indicates point and angle of barrier impact  
(CL of arrow coincides with CL of monorail).

**DESCRIPTION:** Fuel tank is located on the right side of the vehicle, just rearward of the front axle.
**DATA SHEET 2**

**SCHOOL BUS IMPACT DATA**

<table>
<thead>
<tr>
<th>Fuel Spillage Noted</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure, if applicable</td>
<td>None</td>
</tr>
</tbody>
</table>

**STODDARD SOLVENT SPILLAGE MEASUREMENTS**

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Description</th>
<th>Allowable Spillage</th>
<th>Measured Spilled</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₀ – T₁</td>
<td>Time Zero to Cessation of Motion</td>
<td>31 grams (1 ounce)</td>
<td>0</td>
<td>PASS</td>
</tr>
<tr>
<td>T₁ – T₂</td>
<td>Cessation of Motion to 5 minutes after Cessation of Motion</td>
<td>156 grams (5 ounces)</td>
<td>0</td>
<td>PASS</td>
</tr>
<tr>
<td>T₂ – T₃</td>
<td>5 Minutes after Cessation of Motion to 30 minutes after Cessation of Motion</td>
<td>28 grams (1 ounce) per minute 775 grams (25 ounces) Total Allowed</td>
<td>0</td>
<td>PASS</td>
</tr>
</tbody>
</table>

**COMMENTS:** None

Recorded By: [Signature]

Approved By: [Signature]  Date: 12/28/11
### INSTRUMENTATION AND EQUIPMENT LIST

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manufacturer</th>
<th>Serial No.</th>
<th>Cal. Date</th>
<th>Next Cal. Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counter/Timer</td>
<td>Newport</td>
<td>0080077</td>
<td>10/03/11</td>
<td>04/03/12</td>
</tr>
<tr>
<td>Counter/Timer</td>
<td>Newport</td>
<td>0080076</td>
<td>10/03/11</td>
<td>04/03/12</td>
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<tr>
<td>Vehicle Scales</td>
<td>GSE</td>
<td>004804 &amp; 212091R</td>
<td>09/28/11</td>
<td>03/28/12</td>
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<tr>
<td>Tape Measure</td>
<td>Stanley Powerlock</td>
<td>551</td>
<td>08/19/11</td>
<td>02/19/12</td>
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<tr>
<td>No.</td>
<td>Description</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Vehicle Certification Label/Tire Placard</td>
<td>9</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>Pre-Test Front View of School Bus (Receiving Photograph)</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pre-Test Left Front Three-Quarter View of School Bus (Receiving Photograph)</td>
<td>11</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Pre-Test Right Front Three-Quarter View of School Bus (Receiving Photograph)</td>
<td>12</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>Pre-Test Left Side View of School Bus (Receiving Photograph)</td>
<td>13</td>
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<tr>
<td>6</td>
<td>Pre-Test Right Side View of School Bus (Receiving Photograph)</td>
<td>14</td>
<td></td>
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<tr>
<td>7</td>
<td>Pre-Test Rear View of School Bus (Receiving Photograph)</td>
<td>15</td>
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<td>8</td>
<td>Pre-Test Left Rear Three-Quarter View of School Bus (Receiving Photograph)</td>
<td>16</td>
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<td>9</td>
<td>Pre-Test Right Rear Three-Quarter View of School Bus (Receiving Photograph)</td>
<td>17</td>
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</tr>
<tr>
<td>10</td>
<td>Pre-Test Cart Positioned by School Bus (Rear View)</td>
<td>18</td>
<td></td>
<td></td>
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<tr>
<td>11</td>
<td>Post-Test Cart and School Bus (Rear View)</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Pre-Test Cart Positioned by School Bus (Side View)</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Post-Test Cart and School Bus (Side View)</td>
<td>21</td>
<td></td>
<td></td>
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<tr>
<td>14</td>
<td>Pre-Test Cart Positioned by School Bus (Front View)</td>
<td>22</td>
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<tr>
<td>15</td>
<td>Post-Test Cart and School Bus (Front View)</td>
<td>23</td>
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<tr>
<td>16</td>
<td>Post-Test Impact View 1</td>
<td>24</td>
<td></td>
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<tr>
<td>17</td>
<td>Post-Test Impact View 2</td>
<td>25</td>
<td></td>
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<tr>
<td>18</td>
<td>Post-Test Impact Close-up View</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Post-Test Left Front Three-Quarter View of School Bus Without Cart</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Post-Test Right Front Three-Quarter View of School Bus Without Cart</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Post-Test Left Rear Three-Quarter View of School Bus Without Cart</td>
<td>29</td>
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<tr>
<td>22</td>
<td>Pre-Test Fuel Filler Cap</td>
<td>30</td>
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<td>23</td>
<td>Post-Test Fuel Filler Cap</td>
<td>31</td>
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<td>24</td>
<td>Pre-Test Fuel Tank Overall View</td>
<td>32</td>
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<td>25</td>
<td>Pre-Test Fuel Tank View 1</td>
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<tr>
<td>26</td>
<td>Post-Test Fuel Tank View 1</td>
<td>34</td>
<td></td>
<td></td>
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<tr>
<td>27</td>
<td>Pre-Test Fuel Tank View 2</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Post-Test Fuel Tank View 2</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Pre-Test Fuel Tank View 3</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Post-Test Fuel Tank View 3</td>
<td>38</td>
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<td></td>
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<tr>
<td>31</td>
<td>Post-Test Damage View 1</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Post-Test Damage View 2</td>
<td>40</td>
<td></td>
<td></td>
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<tr>
<td>33</td>
<td>Pre-Test View of Ballast Weight View 1</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Pre-Test View of Ballast Weight View 2</td>
<td>42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Vehicle Certification Label/Tire Placard
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Pre-Test Left Front Three-Quarter View of School Bus (Receiving Photograph)
Pre-Test Right Front Three-Quarter View of School Bus (Receiving Photograph)
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Pre-Test Left Side View of School Bus (Receiving Photograph)
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Lab: MGA Research Corporation
Test Dates: 12/28/11

Pre-Test Right Side View of School Bus (Receiving Photograph)
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Pre-Test Rear View of School Bus (Receiving Photograph)
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Dates: 12/28/11

MGA Research Corporation

Pre-Test Left Rear Three-Quarter View of School Bus (Receiving Photograph)
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Pre-Test Cart Positioned by School Bus (Rear View)
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHSTA No.: CC0900
Test Dates: 12/28/11
Pre-Test Cart Positioned by School Bus (Side View)
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Post-Test Cart and School Bus (Side View)
Pre-Test Cart Positioned by School Bus (Front View)
Test Vehicle: 2012 IC Corp CE School Bus  
Test Lab: MGA Research Corporation  
NHTSA No.: CC0900  
Test Dates: 12/28/11

Post-Test Cart and School Bus (Front View)
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Dates: 12/28/11

MGA Research Corporation

Post-Test Impact View 1
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Dates: 12/28/11
Test Lab: MGA Research Corporation

Post-Test Impact View 2
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Post-Test Impact Close-up View
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Post-Test Left Front Three-Quarter View of School Bus Without Cart
Post-Test Right Front Three-Quarter View of School Bus Without Cart
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Dates: 12/28/11

Test Lab: MGA Research Corporation

Post-Test Left Rear Three-Quarter View of School Bus Without Cart
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Lab: MGA Research Corporation
Test Dates: 12/28/11

Pre-Test Fuel Filler Cap
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Post-Test Fuel Filler Cap
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Pre-Test Fuel Tank View 1
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Post-Test Fuel Tank View 1
Pre-Test Fuel Tank View 2
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11

Post-Test Fuel Tank View 2
Test Vehicle:  2012 IC Corp CE School Bus
Test Lab:  MGA Research Corporation
NHTSA No.:  CC0900
Test Dates:  12/28/11

Pre-Test Fuel Tank View 3
Test Vehicle:
2012 IC Corp CE School Bus

Test Lab:
MGA Research Corporation

NHTSA No.:
CC0900

Test Dates:
12/28/11
Test Vehicle:
2012 IC Corp CE School Bus

NHTSA No.:
CC0900

Test Lab:
MGA Research Corporation

Test Dates:
12/28/11

Post-Test Damage View 1
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11
Test Vehicle: 2012 IC Corp CE School Bus
Test Lab: MGA Research Corporation
NHTSA No.: CC0900
Test Dates: 12/28/11
Test Vehicle: 2012 IC Corp CE School Bus
NHTSA No.: CC0900
Test Dates: 12/28/11

Test Lab: MGA Research Corporation

Pre-Test View of Ballast Weight View 2
SECTION 5
BARRIER INFORMATION

CONTOURED IMPACT SURFACE FOR COMMON CARRIAGE

NOTES:
1. Upper Frame 4.0 in. dia x 0.25 in. wall (102 mm dia x 6 mm wall)
   Steel Tubing (3 Sides)
2. Lower Frame 6.0 in. dia x 0.50 in. wall (152 mm dia x 13 mm wall)
   Steel Tubing
3. Face Plate 0.75 in. (19 mm) thick cold rolled steel
4. Leading Edge 1.0 s 4.0 in. (25 x 102 mm) steel band, sharp
   edges broken
5. All Inner Reinforcements 4.0 x 2.0 x 0.19 in. (102 x 51 x 5 mm)
   steel tubing

Total Weight = 4,000 ± 50 lbs (1,814.1 ± 22.7 kg)
Weight at each Rear Wheel =
   900 ± 25 lbs (408.2 ± 11.3 kg)
Weight at each Front Wheel =
   1,100 ± 25 lbs (499.0 ± 11.3 kg)
Moments of Inertia:
   \( I_x = 271 ± 13.6 \text{ slug-ft}^2 (367 ± 18.4 \text{ kg-m}^2) \)
   \( I_z = 3,475 ± 174 \text{ slug-ft}^2 (4,711 ± 236 \text{ kg-m}^2) \)

DIMENSIONS SHOWN IN TABLE ON NEXT PAGE
## SECTION 5
### BARRIER INFORMATION

**DIMENSIONS FOR CONTOURED IMPACT SURFACE**

<table>
<thead>
<tr>
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