REPORT NUMBER: 301S-MGA-2009-005

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 301 FUEL SYSTEM INTEGRITY

COLLINS BUS CORPORATION
2008 COLLINS GRAND BANTAM SCHOOL BUS
NHTSA NO.: C80900

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

TEST DATE: NOVEMBER 10, 2010

FINAL REPORT DATE: NOVEMBER 30, 2010

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared by: _____ Date: 11/30/2010
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Technical Report Documentation Page

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7. Author(s) Eric Peschman, Project Engineer Michael Janovicz, Program Manager		*8. Performing Organization Report No.* 301S-MGA-2009-005	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-08-D-00075	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance Mail Code: (NVS-220) 1200 New Jersey Avenue, S.E. Washington, D.C. 20590		*13. Type of Report and Period Covered* Final Report 11/10/2010 *14. Sponsoring Agency Code* NVS-220	
15. Supplementary Notes			
16. Abstract A compliance test was conducted on the subject 2008 Collins Grand Bantam School Bus, NHTSA No.: C80900 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No.: TP-301-04 for the determination of FMVSS 301 compliance. Test failures identified were as follows: None			
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SECTION 1
PURPOSE OF COMPLIANCE TEST AND SUMMARY

A fuel system integrity test was performed on a 2008 Collins Grand Bantam School Bus, NHTSA No.: C80900, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedure TP-301-04, to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 301, “Fuel System Integrity”.

Based on the test results, the MY2008 Collins Grand Bantam School Bus, NHTSA No.: C80900 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 2008 Collins Grand Bantam School Bus, NHTSA No.: C80900.

DATA SHEET 1

SCHOOL BUS DATA

Test Vehicle: **2008 COLLINS GRAND BANTAM SCHOOL BUS** NHTSA No.: **C80900**
Test Lab: **MGA RESEARCH CORPORATION** Test Date: **11/10/2010**

GENERAL VEHICLE IDENTIFICATION

School Bus Manufacturer:	Collins	
School Bus Model:	Grand Bantam	
Build Date:	06/08	
Incomplete Vehicle Manufactured By:	General Motors Corporation	
Build Date for Bus Chassis:	03/08	
School Bus GVWR (kg):	1,950 kg / 4,300 lbs	
School Bus GAWR Front (kg):	3,901 kg / 8,600 lbs	
School Bus GAWR Rear (kg):	5,579 kg / 12,300 lbs	
School Bus VIN:	1GDJG31K981197124	
No. of Designated Seating Positions (DSP) including Driver:	23	
School Bus NHTSA No.:	C80900	
Bus Body Color:	Yellow	
No. of Cylinders:	6.0L	
Fuel Pump Actuation:	Electrical Pump “ON” with ignition	
School Bus Width (mm):	2,438	
School Bus Length (mm):	7,390	
Bus Unloaded Vehicle Weight (UVW) (kg):	4,098	
Bus Occupant Load:	1,188 kg - Passenger 68 kg - Driver 1,256 kg - Total	
Target Bus Test Weight (SBTW) (kg):	5,354	
Actual (SBTW) (kg):	5,350	
School Bus Tire Manufacturer:	Uniroyal	
	Front	Rear
Rec. Cold Tire Inflation Pressure (KPa):	448	448
Tire Size:	LT225/75R16	LT225/75R16
Load Range:	D	D

DATA SHEET 1 (CONTINUED)

SCHOOL BUS DATA

GENERAL VEHICLE IDENTIFICATION

SCHOOL BUS ATTITUDE

	Units	LF	RF	LR	RR
Pre-Test	mm	853	838	846	833
Post Test:	mm	872	837	854	814

FUEL TANK CAPACITY INFORMATION

Fuel Tank Capacity (liters):	132.5
Tank Test Volume (liters):	123.0

TEST VEHICLE WEIGHTS

	Units	As Delivered			As Tested		
		Front	Rear	Total	Front	Rear	Total
Left	kg	728	1,214		872	1,656	
Right	kg	768	1,388		934	1,888	
Ratio	%	36.5	63.5		33.8	66.2	
Totals	kg	1,496	2,602	4,098	1,806	3,544	5,350

COMMENTS: NONE

Recorded By: _____

Approved By: _____ Date: 11/10/2010

DATA SHEET 2

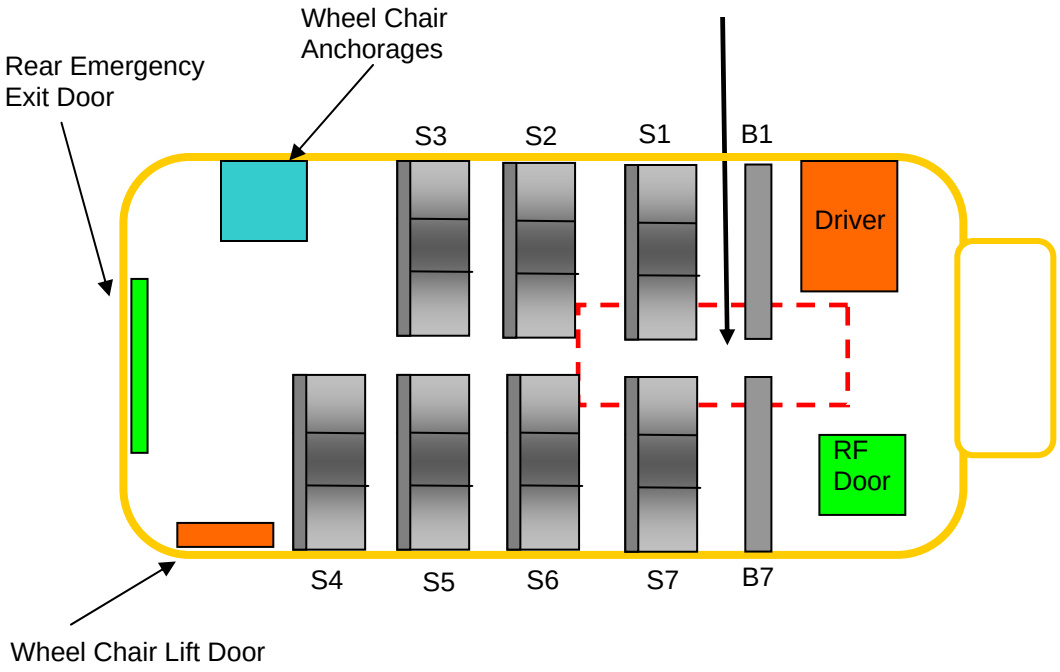
SCHOOL BUS IMPACT DATA

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Date:	**11/10/2010**

IMPACT INFORMATION

Time of Impact:	2:59 PM
Ambient Temperature (°C)	21
Barrier Velocity – Speed Trap 1 (kph):	29.6
Barrier Velocity – Speed Trap 2 (kph):	29.5
Barrier Penetration:	721 mm

INDICATE IMPACT POINT BELOW:



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

DATA SHEET 2 (CONTINUED)

SCHOOL BUS IMPACT DATA

Fuel Spillage Noted:	No
Failure, if applicable:	None

STODDARD SOLVENT SPILLAGE MEASUREMENTS

Timeframe	Description	Allowable Spillage	Measured Spilled	Results
$T_0 - T_1$	Time Zero to Cessation of Motion	31 grams (1 ounce)	0	**PASS**
$T_1 - T_2$	Cessation of Motion to 5 minutes after Cessation of Motion	156 grams (5 ounces)	0	**PASS**
$T_2 - T_3$	5 Minutes after Cessation of Motion to 30 minutes after Cessation of Motion	28 grams (1 ounce) per minute 775 grams (25 ounces) Total Allowed	0	**PASS**

COMMENTS: The test vehicle did not show any signs of fuel system leakage within the required 30 minute window starting at the cessation of vehicle motion following the impact. Upon moving the test vehicle at T_1 + 40 minutes, the vehicle engine was started for purposes of moving vehicle out of the test site. Stoddard leakage was discovered only after vehicle engine was started. Leakage was documented with photographs. The bus key was then turned off and the Stoddard solvent was collected. Approximately 7 oz. was collected.

Recorded By: 

Approved By:  Date: 11/10/2010

SECTION 3

INSTRUMENTATION AND EQUIPMENT LIST

2008 COLLINS GRAND BANTAM SCHOOL BUS NHTSA No.: **C80900**
MGA RESEARCH CORPORATION Test Date: **11/10/2010**

Equipment	Description	Serial No.	Cal. Date	Next Cal. Date
Counter/Timer	DTI	69	8/23/10	2/23/10
Counter/Timer	DTI	4470268	9/10/10	3/10/10
Vehicle Scales	GSE	004804	10/01/10	10/01/11
Tape Measure	Stanley Powerlock 8M	593	8/19/10	2/19/10

SECTION 4
PHOTOGRAPHS

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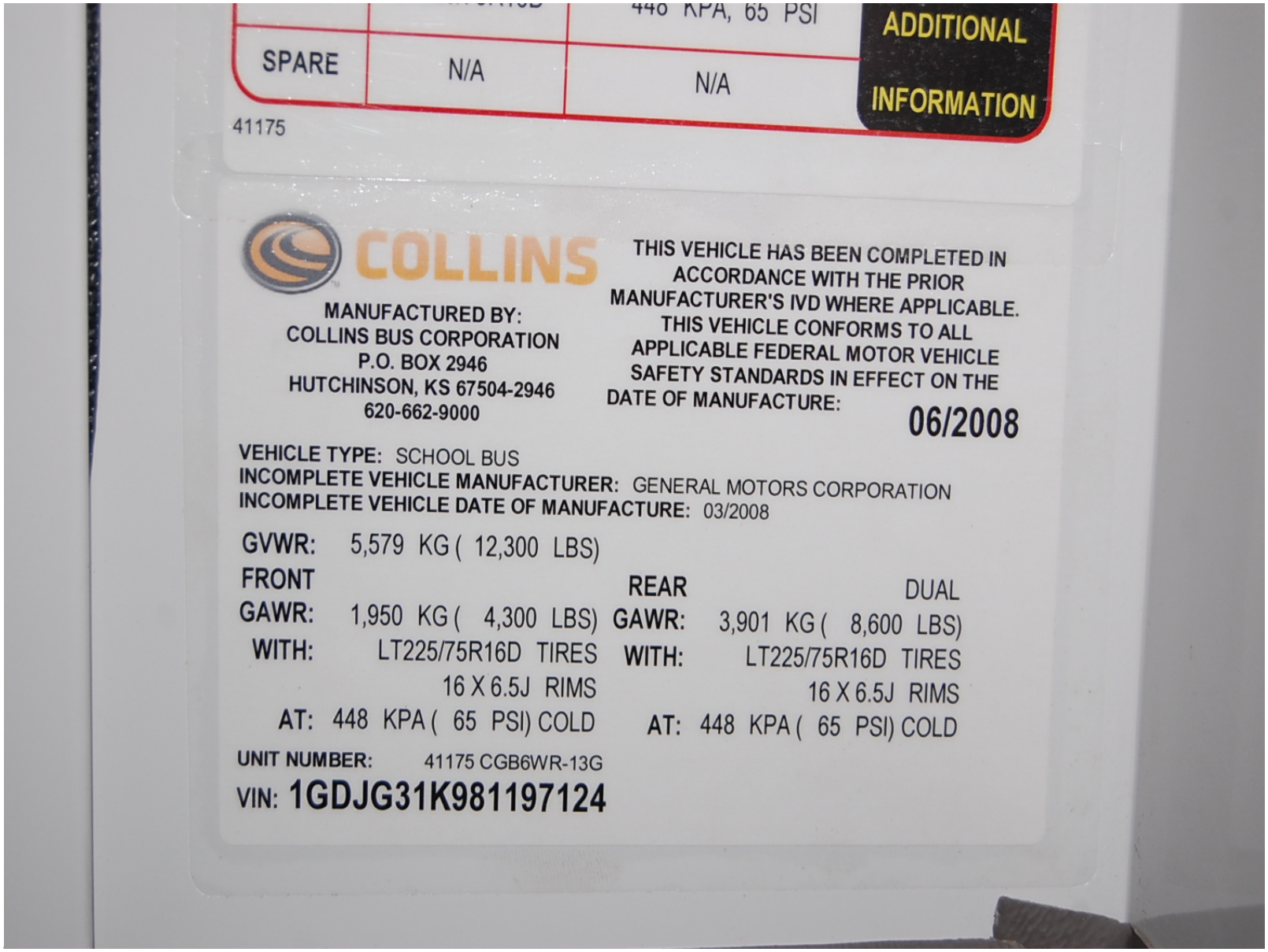


Vehicle Certification Label

Tire Placard

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Front View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Front View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Left Front Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Left Front Three-Quarter View of School Bus

Pre-Test Right Front Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Right Front Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Left Side View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Left Side View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Right Side View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Right Side View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Rear View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Rear View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Left Rear Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Left Rear Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Right Rear Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Right Rear Three-Quarter View of School Bus

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Cart Positioned by School Bus (rear view)

Post-Test Cart and School Bus (rear view)

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Cart Positioned by School Bus (side view)

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Cart and School Bus (side view)

Pre-Test Cart Positioned by School Bus (front view)

Post-Test Cart and School Bus (front view)

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Impact Point View

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Impact Point View

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Left Front Three-Quarter View of School Bus w/out Cart

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Left Front Three-Quarter View of School Bus w/out Cart

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Left Rear Three-Quarter View of School Bus w/out Cart

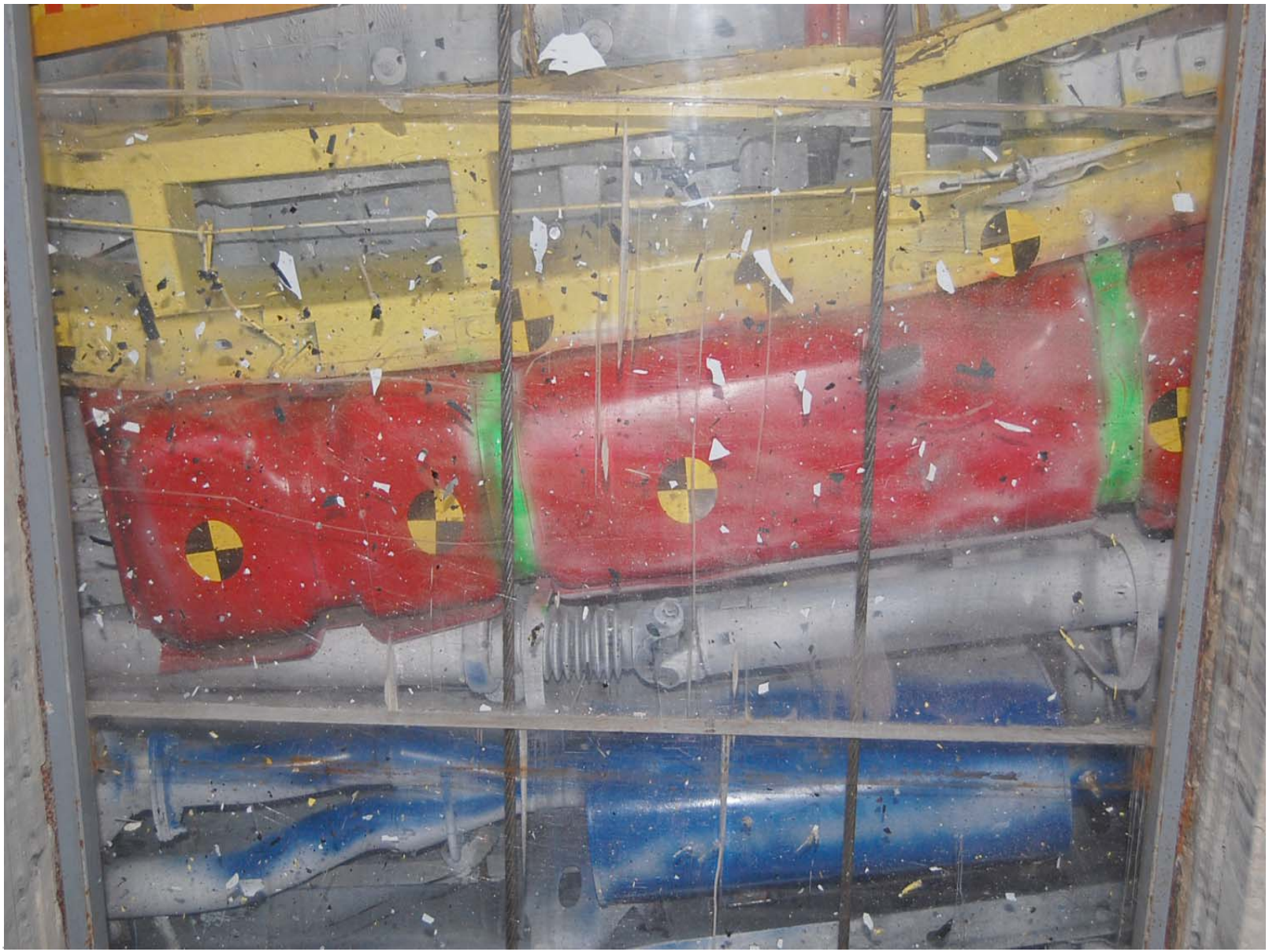
Post-Test Left Rear Three-Quarter View of School Bus w/out Cart

Post-Test Fuel Filler Cap

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Fuel Tank Underbody View

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**



Post-Test Fuel Tank Underbody View

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Fuel Tank View

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Fuel Tank View

Pre-Test View of Ballast Weight View 1

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test View of Ballast Weight View 2

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test View of Ballast Weight View 3

Pre-Test View of Ballast Weight View 4

Pre-Test Left Side View of Cart

Post-Test Left Side View of Cart

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Right Side View of Cart

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Post-Test Right Side View of Cart

Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Pre-Test Front View of Cart

Post-Test Front View of Cart

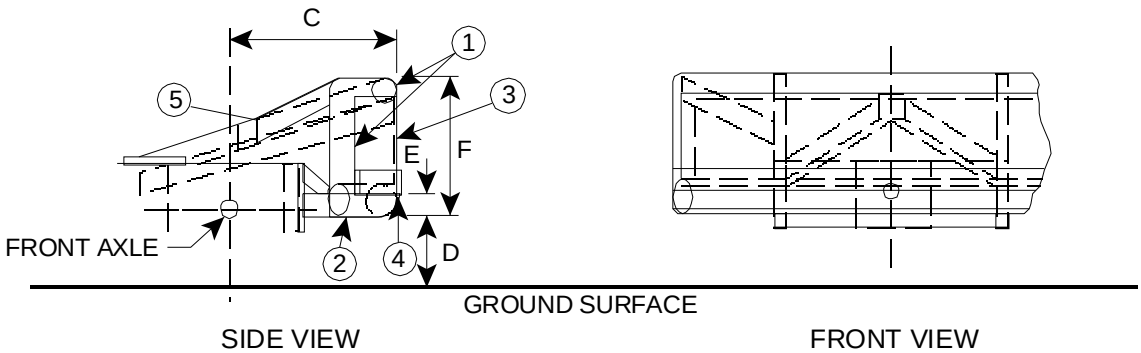
Test Vehicle:	**2008 COLLINS GRAND BANTAM SCHOOL BUS**	NHTSA No.:	**C80900**
Test Lab:	**MGA RESEARCH CORPORATION**	Test Dates:	**11/10/10**

Vehicle Impact View

SECTION 5

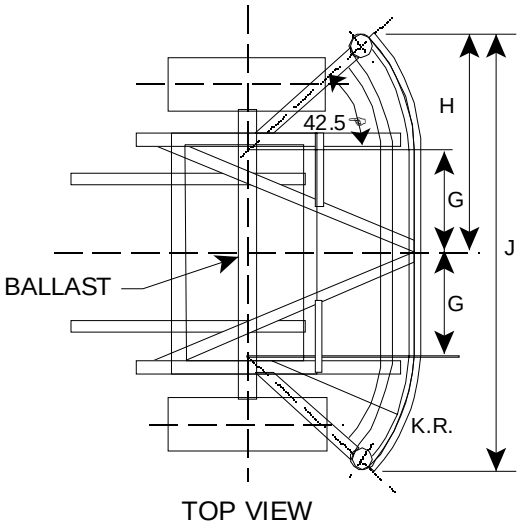
BARRIER INFORMATION

CONTOURED IMPACT SURFACE FOR COMMON CARRIAGE



SIDE VIEW

FRONT VIEW



TOP VIEW

DIMENSIONS SHOWN IN TABLE ON NEXT PAGE

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 slug-ft^2 (367 ± 18.4 kg-m^2)
I_Z = 3,475 ± 174 slug-ft^2 (4,711 ± 236 kg-m^2)

DIMENSIONS FOR CONTOURED IMPACT SURFACE

Letter	Inches	Millimeters
A	54.0	1372
B	15.8	401
C	30.0	762
D	5.25	133
E	3.75	95
F	24.75	629
G	18.0	457
H	39.0	991
J	78.0	1981
K	30.0	762