REPORT NUMBER: 131-MGA-05-002

SAFETY COMPLIANCE TESTING FOR FMVSS NO. 131 SCHOOL BUS PEDESTRIAN SAFETY DEVICES

Collins Bus Corporation
2004 Collins Super Bantam School Bus
NHTSA No. C40901

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Final Report Date: February 2, 2005

FINAL REPORT

PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Prepared by:  Date: February 2, 2005

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FINAL REPORT ACCEPTED BY:

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Technical Report Documentation Page

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SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted by the MGA Research Corporation-Wisconsin Operations on a 2004 Collins Super Bantam School Bus, NHTSA No. C40901, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-131SB-01 to determine compliance to the requirements of Federal Motor Vehicle Safety Standard (FMVSS) 131, "School Bus Pedestrian Safety Devices."

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-02-D-01057.

SECTION 2
TEST DATA SUMMARY

Based on the tests performed, the 2004 Collins Super Bantam School Bus, NHTSA No. C40901, appears to meet all of the requirements of FMVSS 131. See Test Summary Data Sheet on the following page.

FMVSS 131, SCHOOL BUS PEDESTRIAN SAFETY DEVICES
VEHICLE INFORMATION AND TEST SUMMARY

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

VIN	1GBHG31U541148487	Chassis Cab	Yes
No. of Stop Signal Arms	1	Forward Control	No
Pass. Capacity (driver included)	20	Rear Engine	No
Stop Signal Arm Manufacturer	Specialty Manufacturing	Tire Size (on bus)	LT225/75R16D

DATA FROM CERTIFICATION LABEL

Final Stage Manufacturer	Collins Bus Corporation	Date of Mfg.	07/2004
Incomplete Vehicle Manufacturer	General Motors Corporation	Date of Mfg.	10/2003
GVWR (kg)	4543	GAWR Front (kg)	1863
		GAWR Rear (kg)	3408

TEST SUMMARY

	Pass/Fail or N/A
Dimensional Requirements (S5.1)	**PASS**
Surface Content and Labeling (S5.2)	**PASS**
Conspicuity Requirements (S5.3)	**PASS**
Location and Position Requirements (S5.4)	**PASS**
Arm Operation Requirements (S5.5)	**PASS**

SECTION 3
COMPLIANCE TEST DATA

FMVSS 131 – DATA SHEET 1
DIMENSIONS OF STOP SIGNAL ARM (S5.1)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

"Regular octagon" with diameter of at least 450 mm (point to point).

	Forward Signal Arm (mm)	Rearmost Signal Arm (mm)
Diameter 1	484	---
Diameter 2	484	---
Diameter 3	484	---
Diameter 4	484	---
Range (max. – min.)	0	---

REQUIREMENTS	Yes, No, N/A
Are all octagon diameter values ≥ 450 mm?	Yes
Is range of octagon diameter values ≤ 12 mm?	Yes
Are all octagon chord dimensions equal within 6 mm?	Yes

Test Results		Pass/Fail
S5.1	Dimensions of Stop Signal Arm	**PASS**

Tested By: _____ Approved By: _____

Date: January 7,2005

FMVSS 131 – DATA SHEET 2
SURFACE CONTENT AND LABELING (S5.2)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

REQUIREMENTS	Forward Signal Arm		Rearmost Signal Arm	
	Front Side	Aft Side	Front Side	Aft Side
Color RED except for border & legend (Yes/No)	YES	YES	---	---
Color of border is WHITE (Yes/No)	YES	YES		---
Color of word "STOP" is WHITE (Yes/No)	YES	YES		---
Word "STOP" is in upper case letters (Yes/No)	YES	YES		---
Width of border (≥ 12 mm)	15 mm	15 mm		---
Percent of border obscured by mounting brackets, clips, or bolts, or other components (15% ≤) *	0%	12%		---
Height of letters (≥ 150 mm)	152 mm	152 mm		---
Stroke width of letters (≥ 20 mm)	26 mm	26 mm		---

* = In addition to area obscured by 2 optional red lamps, if installed.

NOTE:
1. Front side of rearmost signal arm shall not contain any lettering or border.

Test Results		Pass/Fail
S5.2	Surface content and labeling	**PASS**

Tested By: _____ Approved By: _____

Date: January 7,2005

FMVSS DATA SHEET 3
CONSPICUITY (S5.3)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

The Stop Signal Arm shall comply with either S5.3.1 or S5.3.2, or both.

REFLECTORIZED MATERIAL (S5.3.1)

Requirements	Forward Signal Arm		Rearmost Signal Arm	
	Front Side	Aft Side	Front Side	Aft Side
Entire surface of stop signal arm reflectorized except for mounting brackets, clips, bolts, or other necessary components. Front side of rearmost stop signal arm must not be reflectorized. (Yes/No)	No[1]	No [1]	---	---
Percent of entire surface obscured by mounting brackets, clips, bolts or other components necessary for mechanical or electrical operation. (7.5% max. each side)	0%[2]	4%[2]	---	---

Test Notes:

[1] Flashing lights are present meeting the requirements of S5.3.2.

[2] Percentages do not include area obscured by red flashing lights.

FMVSS 131 DATA SHEET 3…continued
CONSPICUITY (S5.3)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

Optional Illuminated Lettering (S5.3.1.1)

	Stop Signal Arm	
Item	Forward	Rearmost
Does the stop sign(s) have illuminated lettering? If optional illuminated lettering is installed, the following requirements apply in addition to reflectorized surface.	NO	---

Requirements		Forward Signal Arm		Rearmost Signal Arm	
		Front Side	Aft Side	Front Side	Aft Side
Only Red lamps used (Yes/No)		N/A	N/A	---	---
Red lamps form the complete shape of each letter of the legend. (Yes/No)		N/A	N/A	---	---
Red lamps centered within stroke of each letter (yes/No) or Red lamps outline each letter in immediately surrounding area (Yes/No)		N/A	N/A	---	---
The shape of each letter remains constant (Yes/No)		N/A	N/A	---	---
Net stroke width ≥ 15 mm (stroke width minus lamp width)	"S"	N/A	N/A	---	---
	"T"	N/A	N/A	---	---
	"O"	N/A	N/A	---	---
	"P"	N/A	N/A	---	---
Lamps on each side of the signal arm flash (60-120 flashes/min.)		N/A	N/A	---	---
Lamps current "on" time of 30% to 75% of the total flash cycle		N/A	N/A	---	---
Total current "on" time for the two terminals shall be between 90-110% of the total flash cycle.		N/A	N/A	---	---
If Xenon short-arc lamps – "off" time before each flash of at least 50% of the total flash cycle.		N/A	N/A	---	---

Lamp Type		
		Filament
		Gaseous Discharge
		Light emitting diode

FMVSS 131 DATA SHEET 3…continued
CONSPICUITY (S5.3)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

RED FLASHING LAMPS (S5.3.2)

Requirements	Forward Signal Arm		Rearmost Signal Arm	
	Front Side	Aft Side	Front Side	Aft Side
Red lamps centered on the vertical centerline (At least 2, enter quantity)	2 – YES	2 – YES	---	---
One lamp at extreme top and another at extreme bottom (Yes/No)	YES	YES	---	---
Lamps on each side of the signal arm flash alternately (60-120 flashes/min.)	YES	YES	---	---
Lamps current "on" time of 30% to 75% of the total flash cycle.	YES	YES	---	---
Total current "on" time for two terminals shall be between 90 and 110% of the total flash cycle.	YES	YES	---	---
If Xenon short-arc lamps-"off" time before each flash of at least 50% of total flash cycle.	N/A	N/A	---	---
Symbol "DOT" on each lamp lens (Yes/No)	NO	NO	---	---
Additional markings on lamp lenses	SMC-194 SAE J1138 FMVSS 131	SMC-194 SAE J1138 FMVSS 131	---	---

MARKINGS ON THE FLASHER

Make	Weldon Technologies	Serial No.	Unknown
Model	7000	Date of Mfg.	Unknown

Test Notes:

TEST RESULTS		Pass/Fail or N/A
S5.3.1	Reflectorized Material	N/A
S5.3.1.1	Optional Illuminated Lettering	N/A
S5.3.2	Red Flashing Lamps	**PASS**

Tested By: _____ Approved By: _____

Date: January 7,2005

FMVSS 131 DATA SHEET 4
STOP SIGNAL ARM INSTALLATION (S5.4)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

Dimensions and angles measured with Signal Arm in the extended position.

Requirements	Stop Signal Arm	
	Forward	Rearmost
Signal arm perpendicular to side of bus (Measure angle between vertical plane of side of bus and vertical plane of the signal arm.) 90 ± 5°	YES 92.3°	---
Top edge of signal arm parallel to horizontal plane (Measure angle between vertical plane of side of bus and the top edge of the signal arm.) 90 ± 5°	YES 90.8°	---
Top edge of signal arm not more than 152.4 mm from a horizontal plane tangent to lower edge of frame of passenger window immediately behind the driver's window:		
Measure top corner closest to the school bus	5 mm	---
Measure top corner furthest from school bus	5 mm	---
Vertical centerline of signal arm not less than 228.6 mm away from side of bus	365 mm	---
Stop signal arm(s) installed on left side of bus (Yes, No, or Not Applicable)	YES	---

TEST RESULTS		Pass/Fail or N/A
S5.4	Stop Signal Arm Installation	**PASS**

Tested By: _____ Approved By: _____

Date: January 7,2005

FMVSS 131 DATA SHEET 5
STOP SIGNAL ARM OPERATION (S5.5)

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

Stop Signal Arm(s) shall be automatically extended, at a minimum, whenever the red signal lamps on the bus required by FMVSS 108 are activated; except that a manual override device may be installed that prevents automatic extension.

Requirements	Stop Signal Arm	
	Forward	Rearmost
Signal Arm(s) automatically extended when red lights are activated and override device is not activated. (Yes, No, or Not Applicable)	YES	---
If a MANUAL OVERRIDE DEVICE is installed, enter applicable data below:		
Mechanism for activating the override device is within reach of the school bus driver (Yes/No)	N/A	---
While the override device is activated; there is a continuous or intermittent signal audible to the driver unless equipped with optional cut-off timing device (Measure duration ≥ 10 min.)	N/A	---
If audible signal is equipped with optional cut-off timing device, it sounds for at least 60 seconds while the manual override is activated. (Measure 3 times, duration ≥ 60 sec.)	N/A	---
If audible signal is equipped with optional cut-off timing device, it automatically recycles every time the service entry door is opened while the engine is running and the manual override is engaged. (Recycle 3 times, Yes/No each cycle)	N/A	---

Describe location and mode of operation of the manual override control, if installed:

No manual override device was installed on this vehicle which allowed overhead lights to flash and stop signal arm NOT to extend.

TEST RESULTS		Pass/Fail or N/A
S5.5	Stop Signal Arm Operation	**PASS**

Tested By: _____ Approved By: _____

Date: January 7,2005

SECTION 4

INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2004 Collins Super Bantam School Bus** NHTSA No.: **C40901**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **1/7/05**

Identify the instruments used during this test and record their make, model, serial number, range, accuracy, and calibration date.

	Digital Caliper	Inclinometer	Tape Measure
Make	Starrett	Digital Protractor	Stanley
Model	721	Pro 360	Powerlock
Serial # (s)	00410129	Complab	167
Range	0 to 150 mm	0 to 360 degrees	0 to 8 m
Accuracy	0.01 mm	0.1 degree	1 mm
Cal. Date	8/26/04	7/29/04	8/13/04
Cal. Due	2/26/05	1/29/05	2/13/05

SECTION 5

PHOTOGRAPHS

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Test Vehicle: **2004 Collins Super Bantam School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C40901**

3/4 Frontal View from Left Side of Vehicle with Stop Signal Arm(s) Extended

Vehicle Certification Label and Tire Placard

Test Vehicle: **2004 Collins Super Bantam School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C40901**

Front Close Up View of Stop Signal Arm

Test Vehicle: **2004 Collins Super Bantam School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C40901**

Back Close Up View of Stop Signal Arm

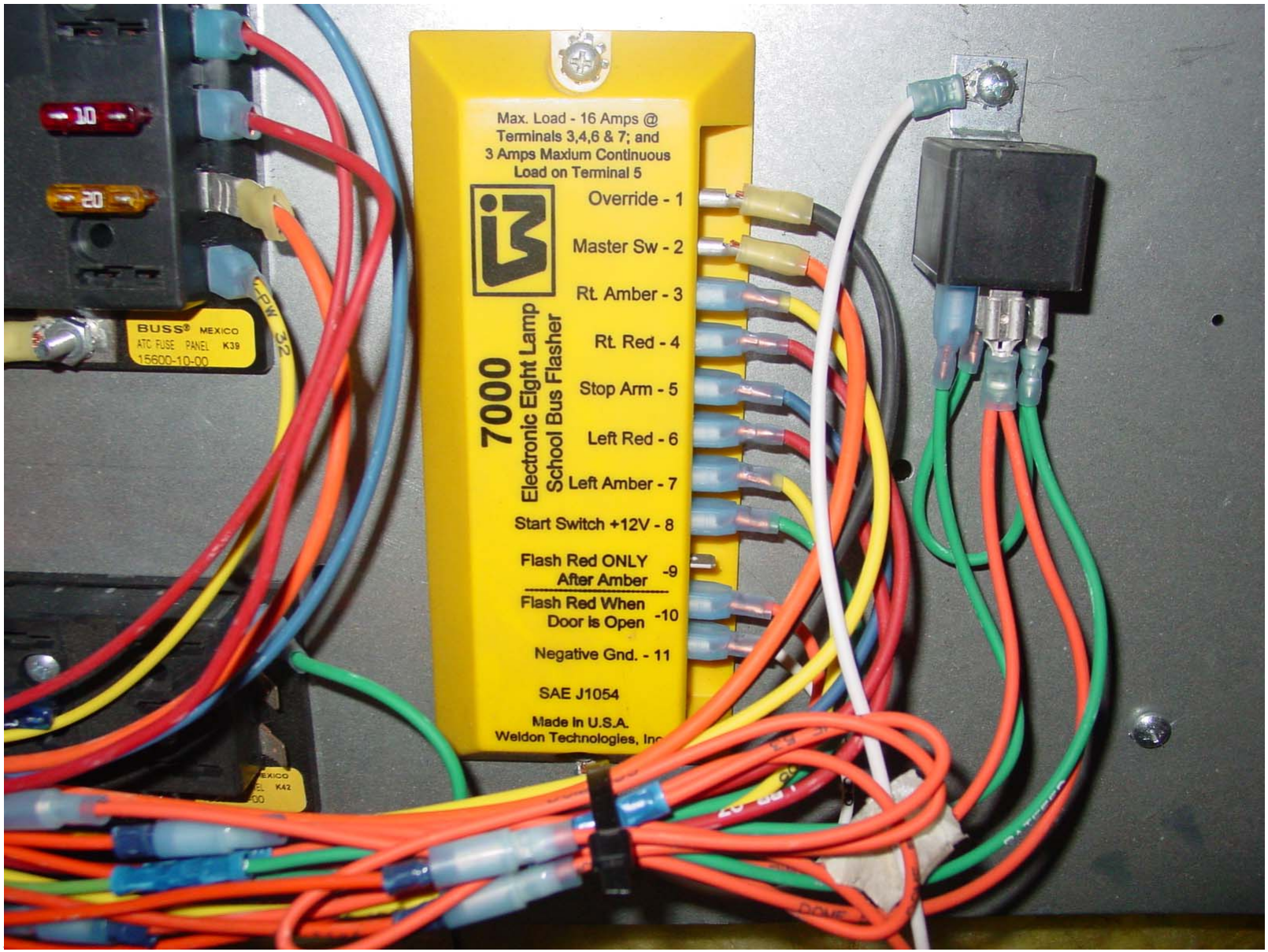
Test Vehicle: **2004 Collins Super Bantam School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C40901**

Close Up View of the Switches That Allow Extension of the Stop Signal Arm(s)

Test Vehicle: **2004 Collins Super Bantam School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C40901**

Switch Console Relative to the Driver Seating Position

Test Vehicle: **2004 Collins Super Bantam School Bus**
Procedure: **FMVSS 131** NHTSA No.: **C40901**



Close Up View of the Flasher