

HS# 637883

REPORT NUMBER: 217-MGA-06-003

**SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 217
SCHOOL BUS EMERGENCY EXITS AND WINDOW
RETENTION AND RELEASE**

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

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



Final Report Date: June 20, 2006

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW, ROOM 6115 (NVS-224)
WASHINGTON, D.C. 20690**

Technical Report Documentation Page

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7. Author(s) James Hansen, Project Manager John Roberts, Project Engineer				8. Performing Organization Report No. 217-MGA-05-003	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105				10. Work Unit No.	
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12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Enforcement Office of Vehicle Safety Compliance (NVS-224) 400 Seventh St., S.W. Room 6115 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report 06/01/05- 06/20/05	
				14. Sponsoring Agency Code NVS-224	
15. Supplementary Notes					
16. Abstract Compliance tests were conducted on the subject 2004 Collins Super Bantam School Bus, NHTSA No. C40901 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-217-06 for the determination of FMVSS 217 compliance. Test failures were as follows: None					
17. Key Words Compliance Testing Safety Engineering FMVSS 217				18. Distribution Statement Copies of this report are available from: NHTSA Technical Information Services (TIS) Room 2336, (NPO-405) 400 Seventh Street, S.W. Washington, D.C. 20590 (202) 366-4946	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 41	22. Price

SECTION 1
PURPOSE OF COMPLIANCE TEST

Tests were conducted on a MY2004 Collins Bus Corporation, model Super Bantam School Bus, NHTSA No. C40901, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-217-06 to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 217, "School Bus Emergency Exits and Window Retention and Release".

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

**DATA SHEET 1
TEST SUMMARY**

GENERAL VEHICLE IDENTIFICATION

Model Year/Make/Model:	2004/Collins Bus/ Super Bantam	
NHTSA No.:	C40901	
GVWR:	10,000 lbs 4,536 kg	
Build Date for Bus Chassis:	10/2003	
VIN:	1GBHG31U541148487	
Chassis VIN:	Not Found	
Seating Capacity:	19 Including Driver	
Type of Bus:	School Bus	
Tire Pressure from tire placard (at capacity):	Front: 414 kPa	Front: 414 kPa
Odometer Reading:	166 Miles	

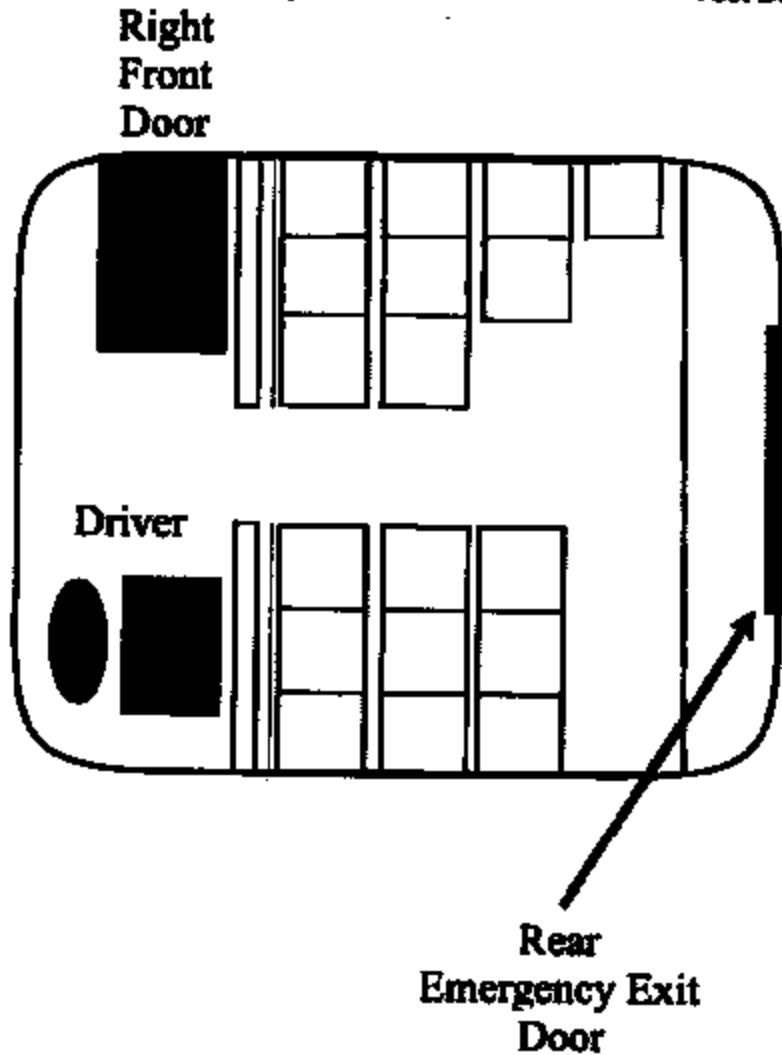
	PASS/FAIL
S5.1 WINDOW RETENTION	PASS
S5.2 PROVISION OF EMERGENCY EXITS	PASS
Meets minimum exit provisions	PASS
Meets all other exit requirements	PASS
Meets requirements for additional exits	PASS
S5.2.3.1.A EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS	PASS
S5.3 EMERGENCY EXIT RELEASE	PASS
Forces to unlatch the emergency exits	PASS
Forces to open the emergency exits	PASS
S5.4 EMERGENCY EXIT OPENING	PASS
S5.5 EMERGENCY EXIT LABELING AND IDENTIFICATION	PASS
S5.5 TAPE REFLECTIVITY (49CFR 571.131)	NOT TESTED

COMMENTS: NONE

DATA SHEET 2
PROVISION OF EMERGENCY EXITS

Test Vehicle: **2004 Collins Super Bantam School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40901**
 Test Date: **06/01/05**



		Height (mm)	Width (mm)
1	Rear Exit Door	1365	825

Seating Capacity: 19 (Including Driver)

	PASS/FAIL
Bus meets minimum emergency exit provision, based upon Table 1	PASS

Comments: NONE

DATA SHEET 3
EMERGENCY EXIT DOOR OPERATIONAL REQUIREMENTS

Test Vehicle: **2004 Collins Super Bantam School Bus**
Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40901**
Test Date: **06/01/05**

		PASS/FAIL
1	The engine starting system does NOT operate if any Emergency Exit is LOCKED	PASS
2	All Emergency Door and Roof Exits can be released by one person (from inside and outside of bus)	PASS
3	When the Release Mechanism is NOT in the closed position and the vehicle Ignition is in the "ON" position, there is a continuous warning sound audible at the Driver's DSP and in the vicinity of the Emergency Door(s) having the unclosed mechanism.	PASS
4	Emergency exit release mechanism does not use remote controls or central power systems	PASS

COMMENTS:

Recorded By: 

Approved By: 

Date: 06/01/05

**DATA SHEET 4B
EMERGENCY EXIT IDENTIFICATION AND LABELING**

Test Vehicle: 2004 Collins Super Bantam School Bus
Test Lab: MGA Research-Wisconsin Operations

NHTSA No.: C40901
Test Date: 06/01/05

EMERGENCY EXIT LABELING - EXTERIOR

Exit Location	Rear Door
Exit Description	Emergency Exit Door
Letter Height (cm)	5 cm
Background Color	Yellow
Location Outside	Top of Door
Pass/Fail	PASS

OPERATING INSTRUCTIONS - EXTERIOR

Exit Location	Rear Door
Instructions	None
Letter Height (cm)	N/A
Letter Color	N/A
Background Color	N/A
Distance From Release (cm)	N/A
Reflective Tape Color	Yellow
Reflective Tape Width	2.6 cm
Pass/Fail	PASS

COMMENTS:

Recorded By: 

Approved By: 

Date: 06/01/05

**DATA SHEET 5
TAPE RELECTIVITY TEST**

Test Vehicle: **2004 Collins Super Bantam School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40901**
 Test Date:

- _____ Color of retroreflective tape (white, red, or yellow)
 _____ Glass bead retroreflective element material – Fill in Part A
 _____ Prismatic retroreflective element material – Fill in Part B

**SPECIFIC INTENSITY PER UNIT AREA
 (Candela Per Foot Candle Per Square Foot)**

Observation Angle	Entrance Angle	Min. Reqd. Intensity	Recorded Intensity	Pass/Fail
Part A – Glass Bead				
Part B - Prismatic				

This section of tape passes the REFLECTIVITY requirement. Yes ___ No ___

COMMENTS: NOT TESTED

Recorded By: _____

Approved By: _____

Date:

**DATA SHEET 6B
FORCE TESTS TO UNLATCH THE EMERGENCY EXITS - EXTERIOR**

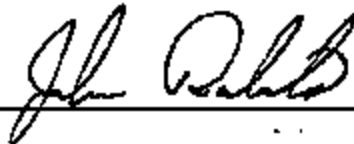
Test Vehicle: **2004 Collins Super Bantam School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40901**
 Test Date: **06/01/05**

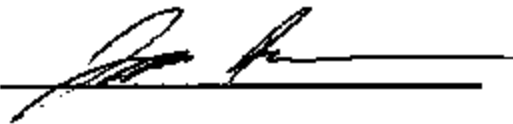
Exit Location	Exit Description	High/Low Force Area	Maximum Force Requirement Newtons	Actual Force Measured (N)	Motion(s) required to Release Exit	Actual Motion(s) to Release Exit	PASS/FAIL
Rear Exit Door	Emergency Exit Door	High	178	1. 113	Rotary	90° Clockwise Turn	PASS
				2. 112			
				3. 106			
				Average: 110.3			

COMMENTS: NONE

Recorded By: _____



Approved By: _____



Date: 06/01/05

**DATA SHEET 7B
FORCE TESTS TO OPEN THE EMERGENCY EXITS - EXTERIOR**

Test Vehicle: 2004 Collins Super Bantam School Bus
 Test Lab: MGA Research-Wisconsin Operations

NHTSA No.: C40901
 Test Date: 06/01/05

Exit Location	Exit Description	High/Low Force Area	Maximum Force Requirement Newtons	Actual Force Measured (N)	Motion(s) required to Open Exit	Actual Motion(s) to Open Exit	Passage of Ellipsoid or Parallelepiped	PASS/FAIL
Rear Exit Door	Emergency Exit Door	High	178	1. 16	Straight	Pull Out	114x56x15 Parallelepiped	PASS
				2. 14				
				3. 18				
				Average: 15.3				

Describe in the comments section if more than one force and motion are required to unlatch the exit.

COMMENTS: NONE

Recorded By: 

Approved By: 

Date: 06/01/05

**DATA SHEET 9
WINDOW RETENTION TEST**


Test Vehicle: **2004 Collins Super Bantam School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40901**
 Test Date: **06/01/05**

1	Test Window Identification:	Left Side Window 2
2	Provide a detailed description of the window such as fixed, push out, single or double glazed, horizontal or vertical sliding, etc.	Vertical Sliding Non-emergency exit
3	Provide the horizontal and vertical glazing dimensions for each panel.	12.5" H x 28.25" W
4	Did the window pass the retention requirements? Describe how the window structure and glazing withstood the force per the PASS/FAIL criteria:	PASS, Max Displacement of 45 mm
5	Did the window pass the force tests to unlatch and open the exit after the completion of the retention test?	N/A

COMMENTS:

Recorded By: 

Approved By: 

Date: 06/01/05

**SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST**

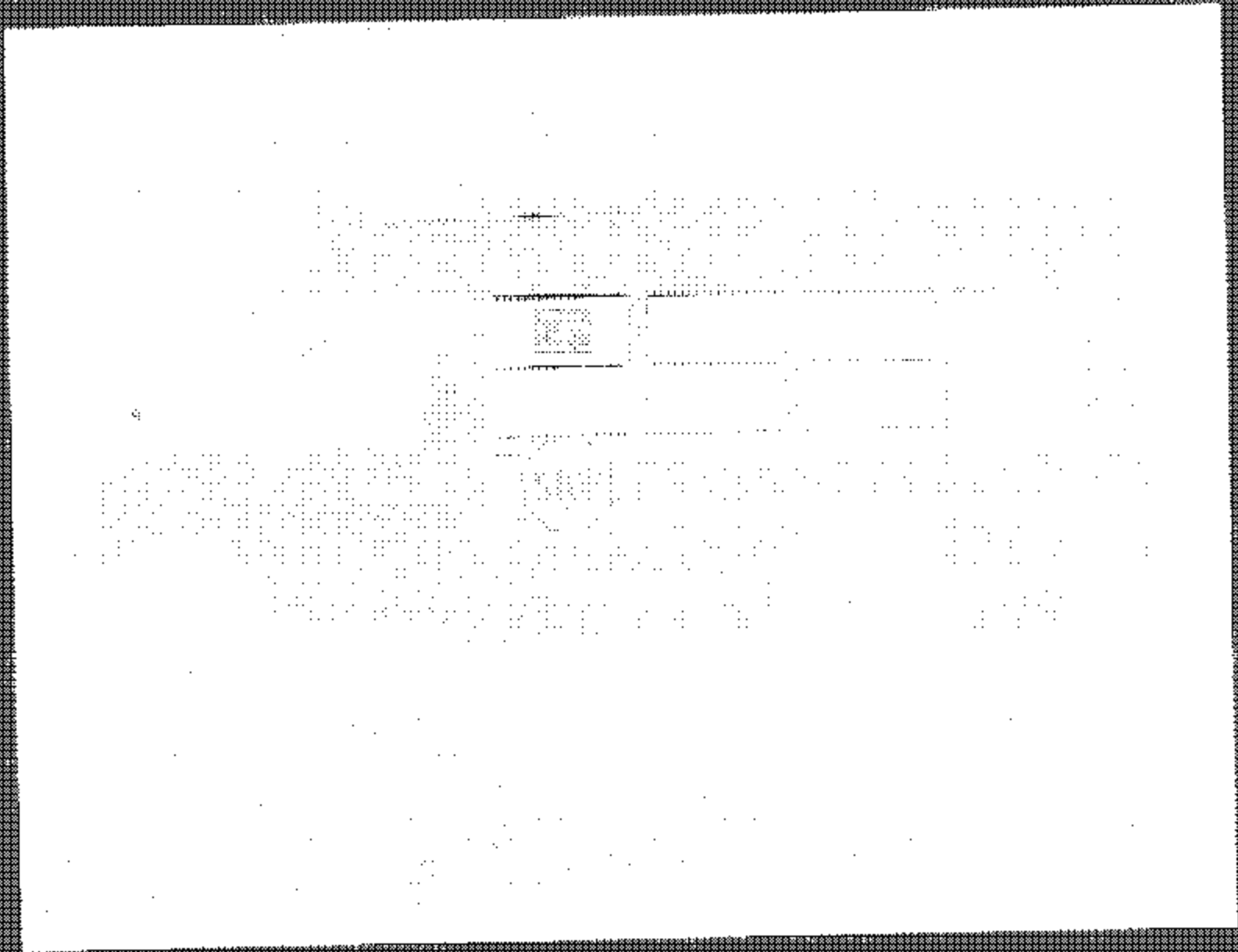
Test Vehicle: **2004 Collins Super Bantam School Bus**
 Test Lab: **MGA Research-Wisconsin Operations**

NHTSA No.: **C40901**
 Test Date: **06/01/05**

Equipment	Description	Model/Serial No.	Cal. Date	Next Cal. Date
Head Form	MGA	217	When Used	When Used
A/D Interface	Metrabyte	DAS-1802	—	—
Sphere	MGA	Sphere - 1A	When Used	When Used
Load Cell	Interface	1210A1-137751	03/09/05	09/09/05
Inclinometer	Digital Protractor	Pro 360 / Comp Lab	02/16/05	08/16/05
Linear Potentiometer	Ametek	P40A/0504-21782	05/23/05	11/23/05
Digital Calipers	Mitutoyd	CD-6" cal/ 0441288	04/01/05	10/01/05
Steel Tape	Stanley	Powerlock / 232	02/03/05	08/03/05
Camera	Sony	DSC-S75	—	—
Ellipsoid	MGA	ELLIP - 1A	When Used	When Used
Parallelepiped	MGA	PARA - 1A	When Used	When Used
Force Gauge	Dillon	AFG/DMLC	05/19/05	11/19/05

Test Vehicle: 2004 Collins Super Bantam School Bus
Procedure: FMVSS 217

NHTSA No.: C40501

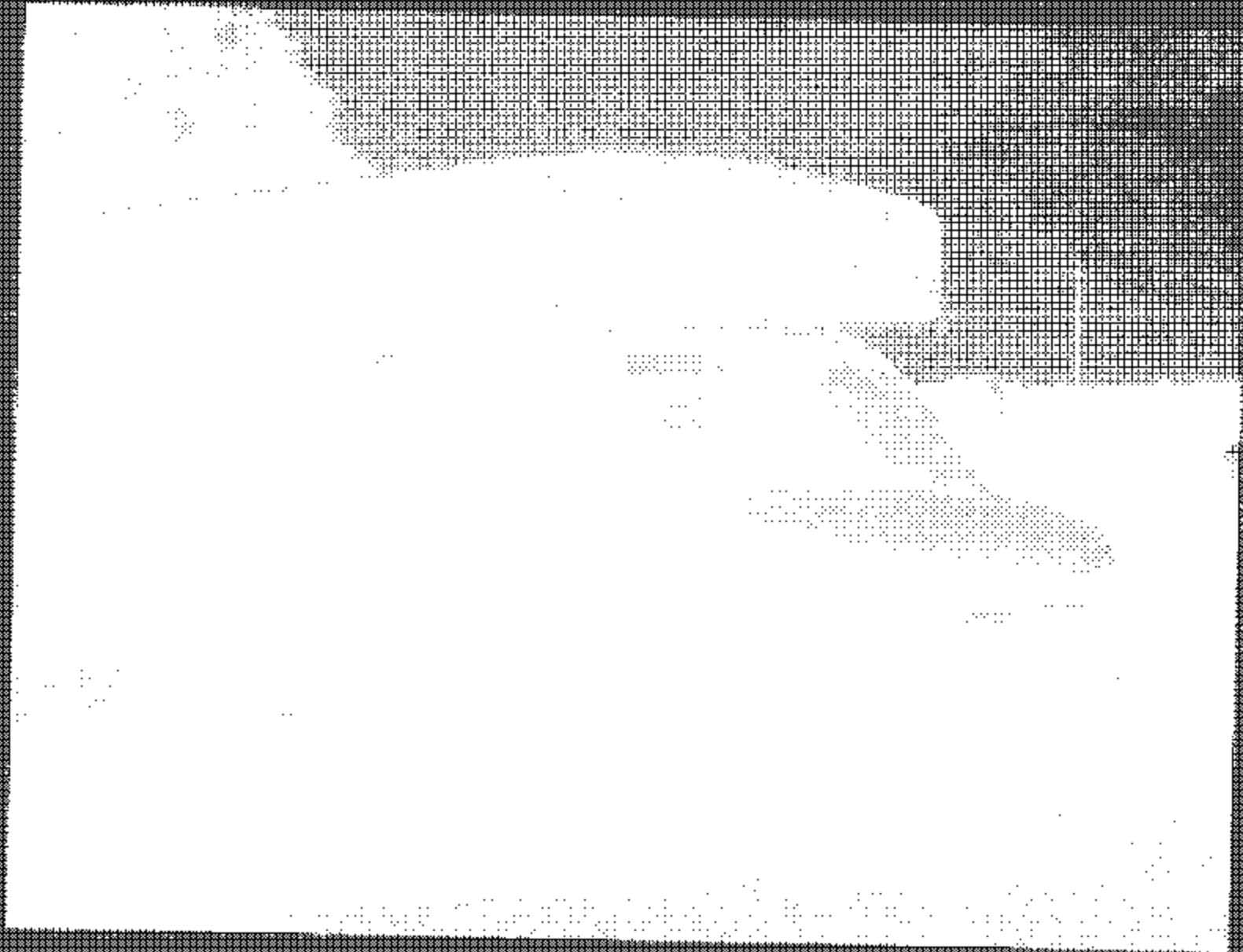


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Exterior Left Side View of School Bus

Test Vehicle: 2004 Collins Super Bantam School Bus
Procedure: FMVSS 217

NHTSA No.: C40001

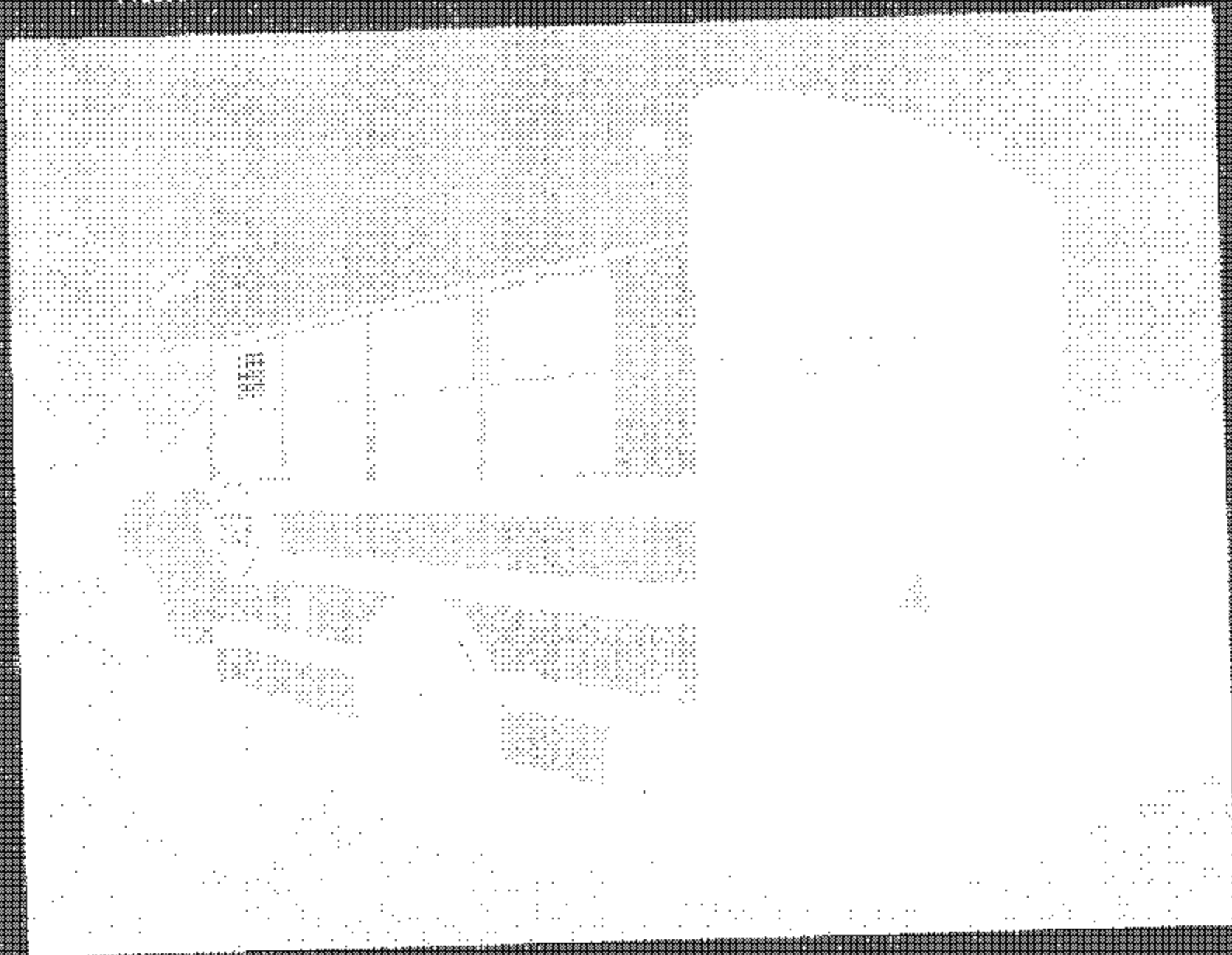


Exterior Right Front 3/4 View of School Bus

Test Vehicle
Procedure:

2004 Collins Super Bantam School Bus
FMVSS 217

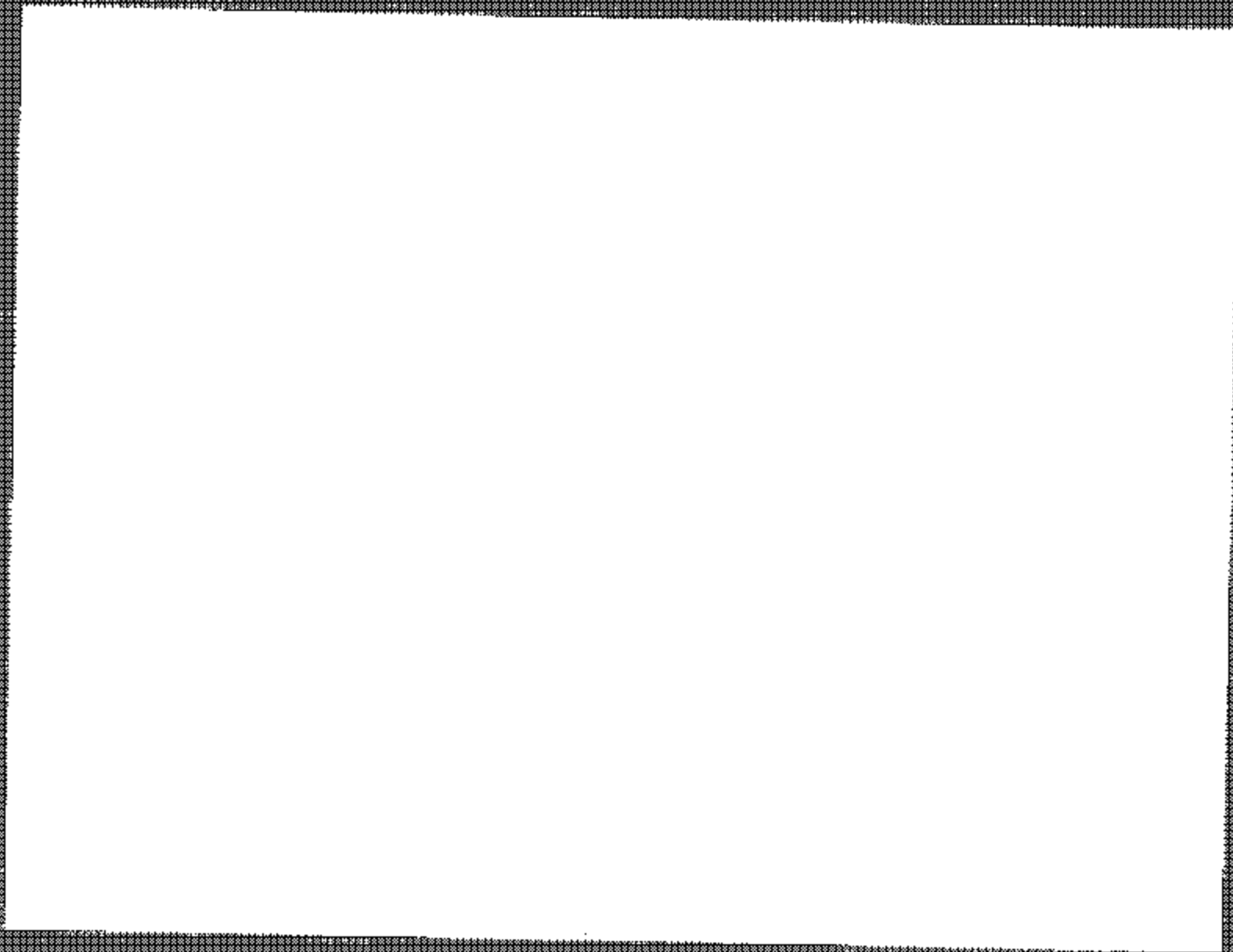
NHTSA No.: 046991



Exterior Left Rear 3/4 View of School Bus

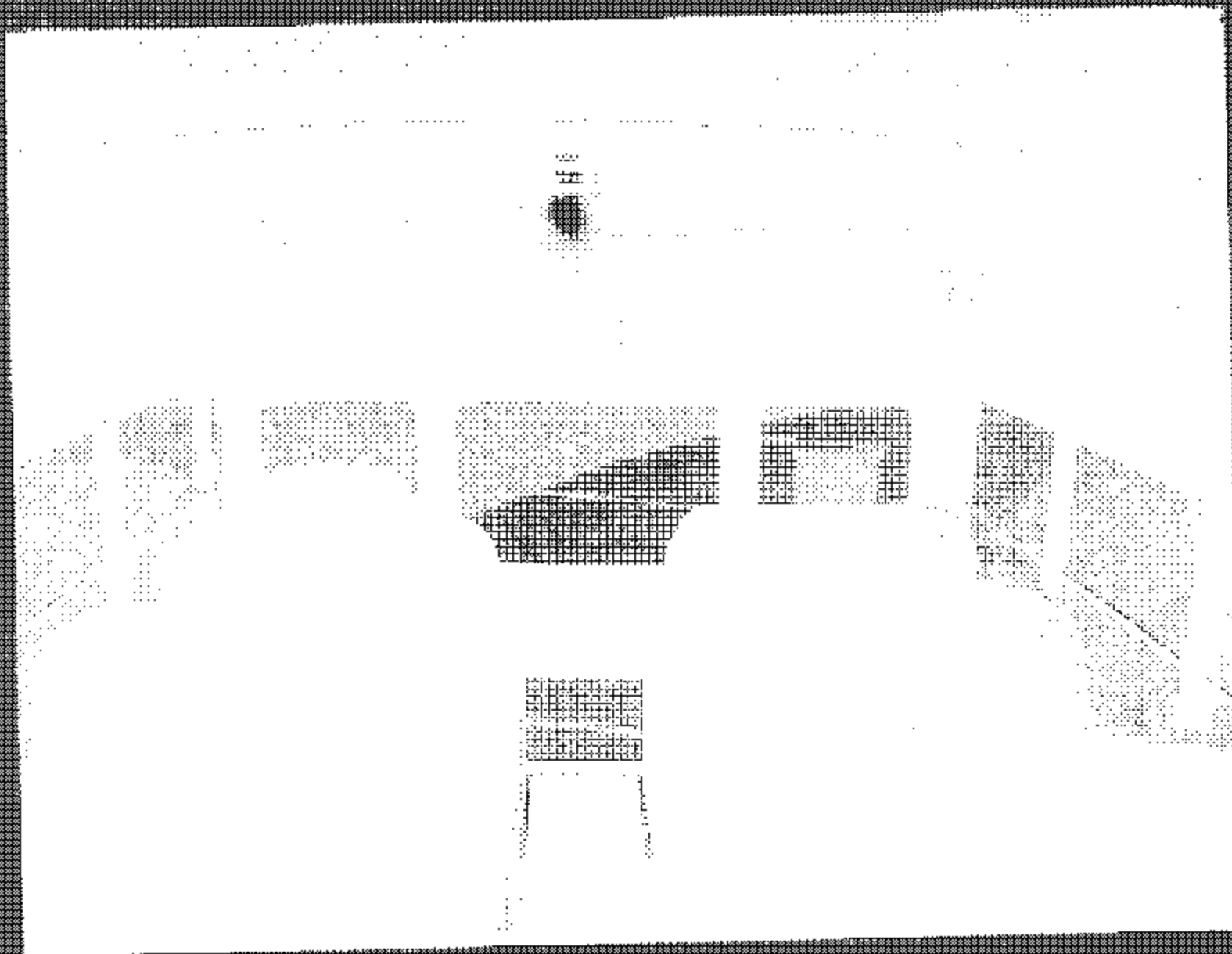
Test Vehicle: 2004 Collins Super Barnhart School Bus
Procedure: FMVSS 217

NHTSA No. C409P1



Test Vehicle: 2004 Collins Super Banner School Bus
Procedure: FMVSS 217

NHTSA No.: C40901

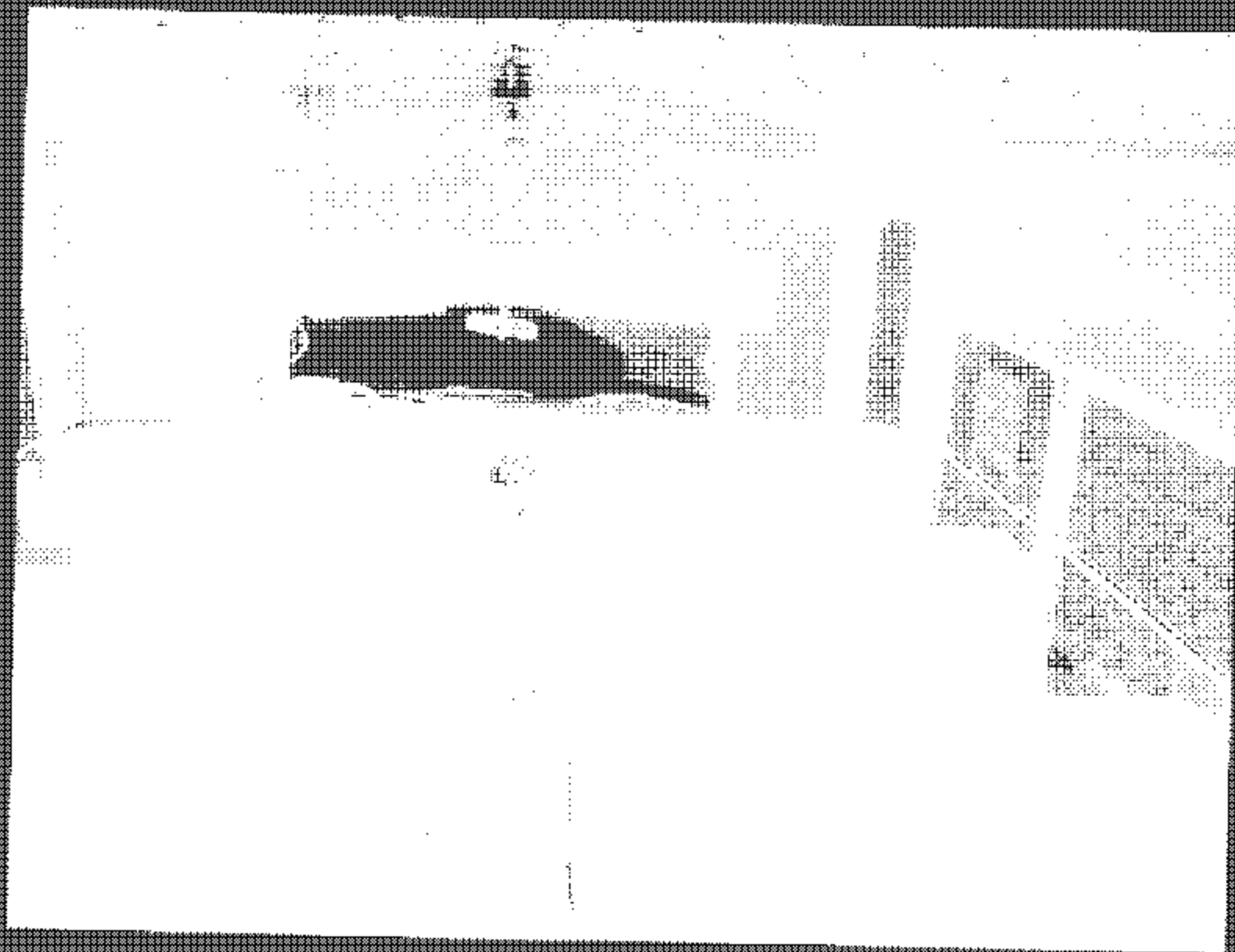


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Interior Front to Rear View Depicting Seating Arrangement

Test Vehicle: 2004 Collins Super Santam School Bus
Procedure: FMVSS 217

NHTSA No.: 040901

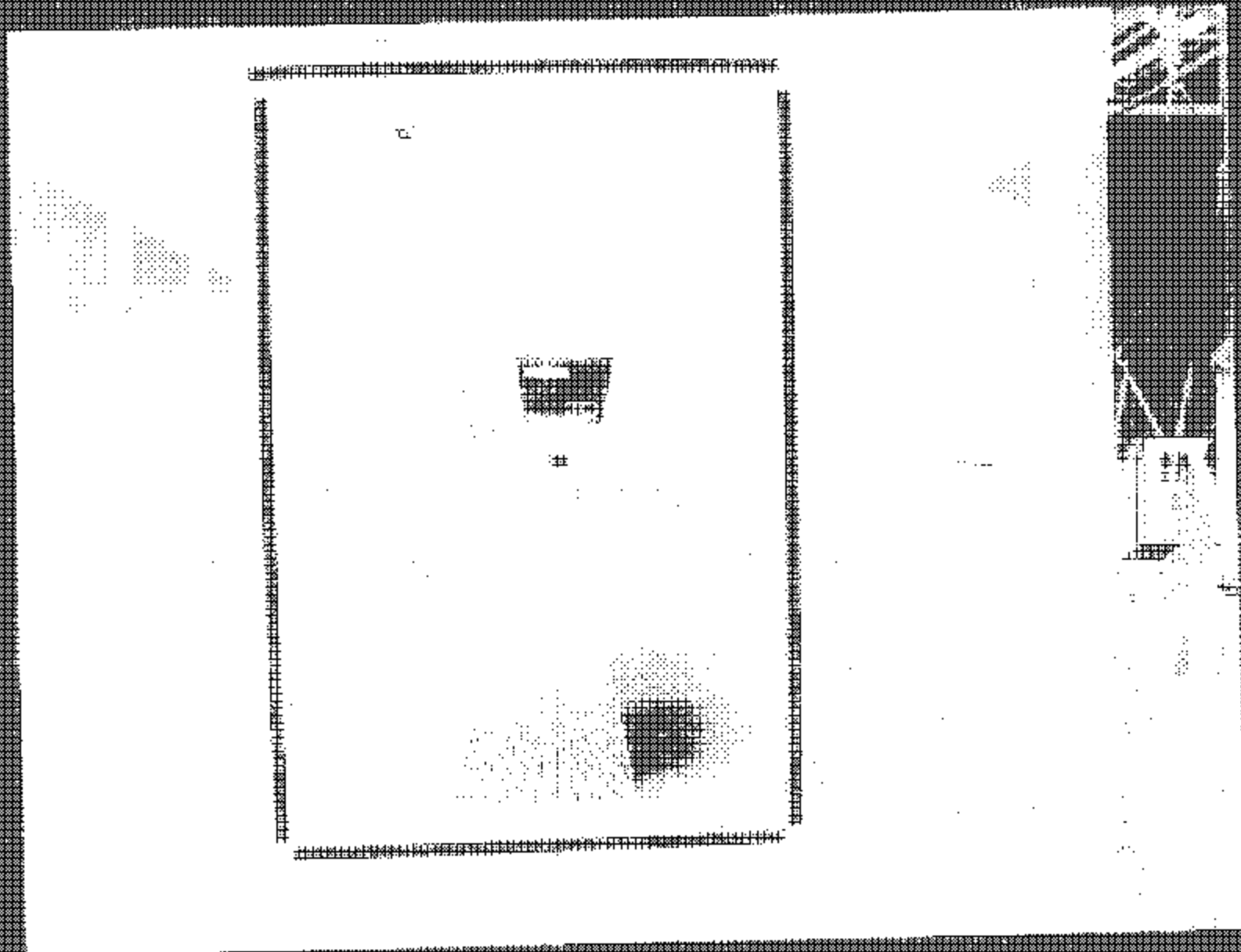


Interior Rear to Front View Depicting Seating Arrangement

Test Vehicle:
Procedure:

2004 Collins Super Bantam School Bus
FRV68 217

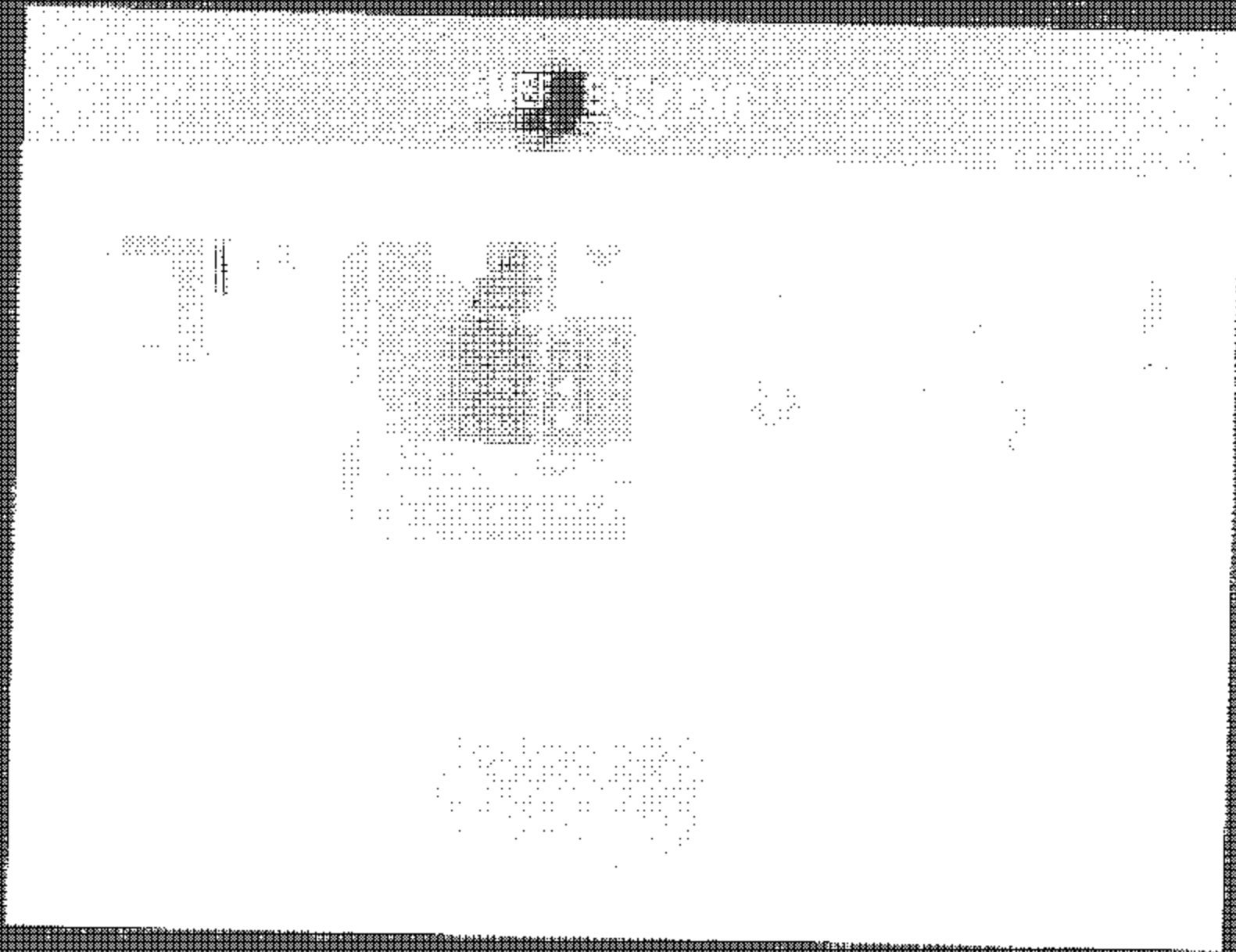
NHTSA No.: C40901



Rear Exit Door Identification (Outside View)

Test Vehicle: 2006 Griffin Super System School Bus
Procedure: FMVSS 217

NHTSA No. C-40501

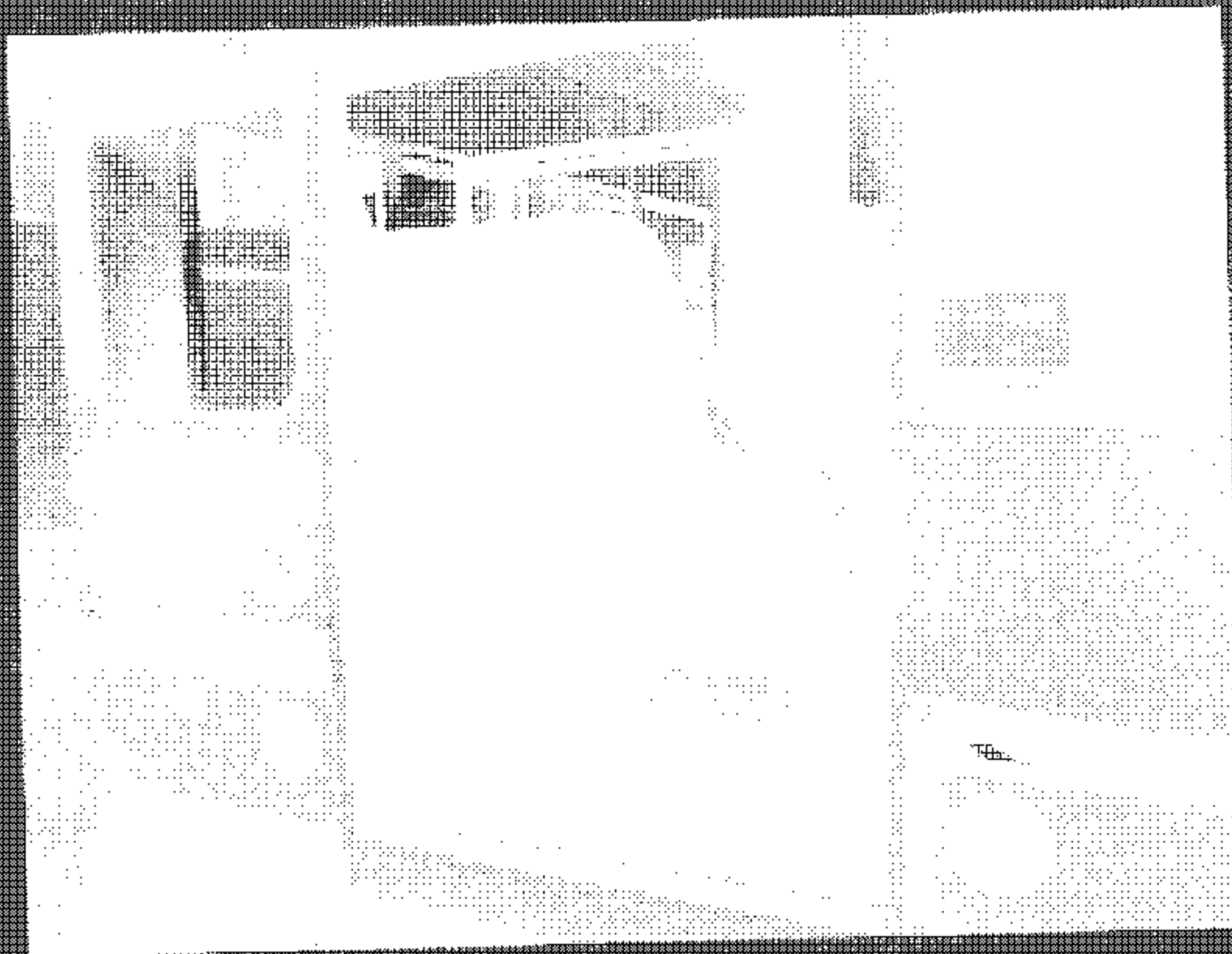


Rear Exit Door Identification (Inside View)

Test Vehicle:
Procedure:

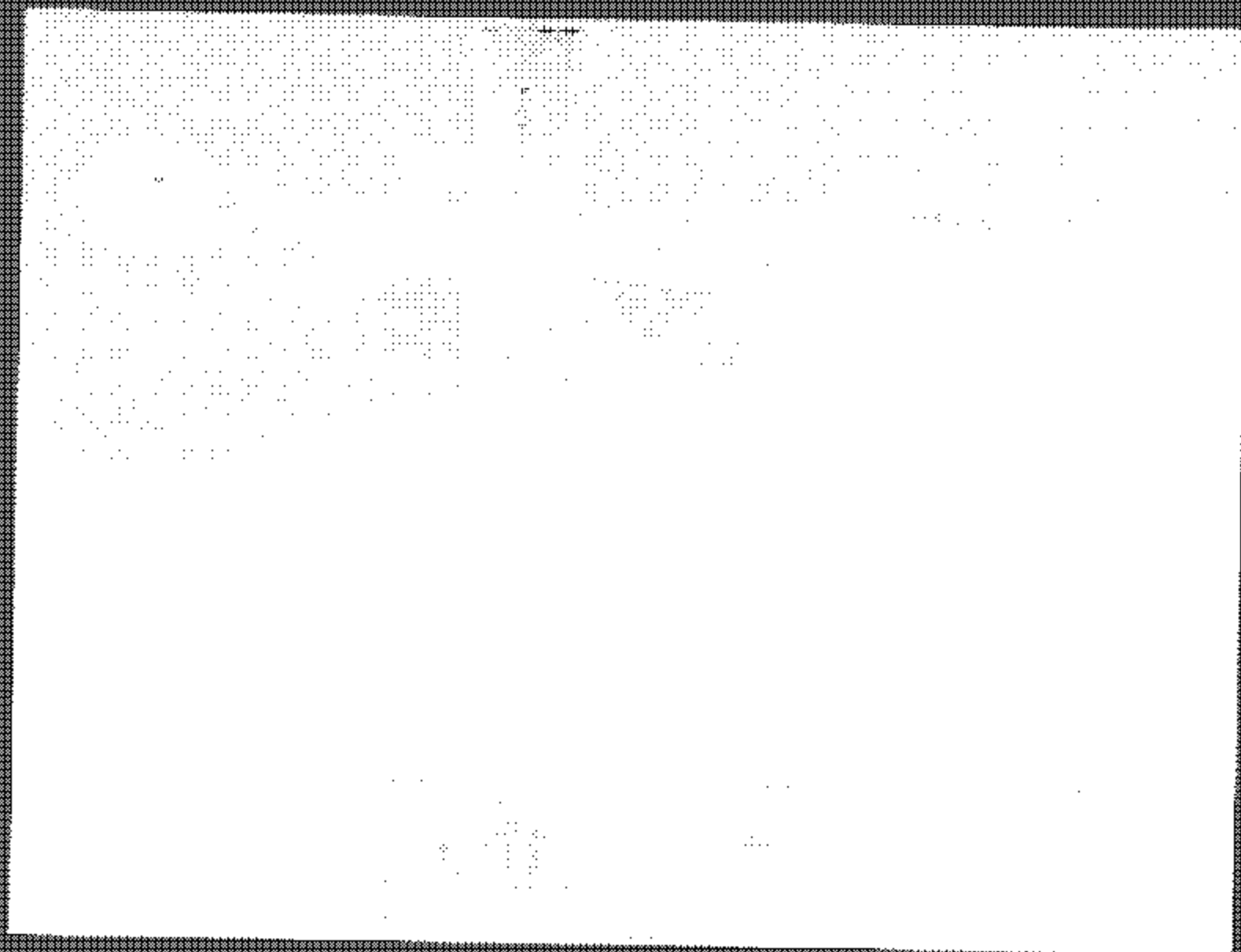
2004 Collins Super Starline School Bus
FMVSS 217

NHTSA No. CA0901



Test Vehicle: 2004 Collins Super Barfan School Bus
Procedure: FMVSS 217

NHTSA No.: C40901

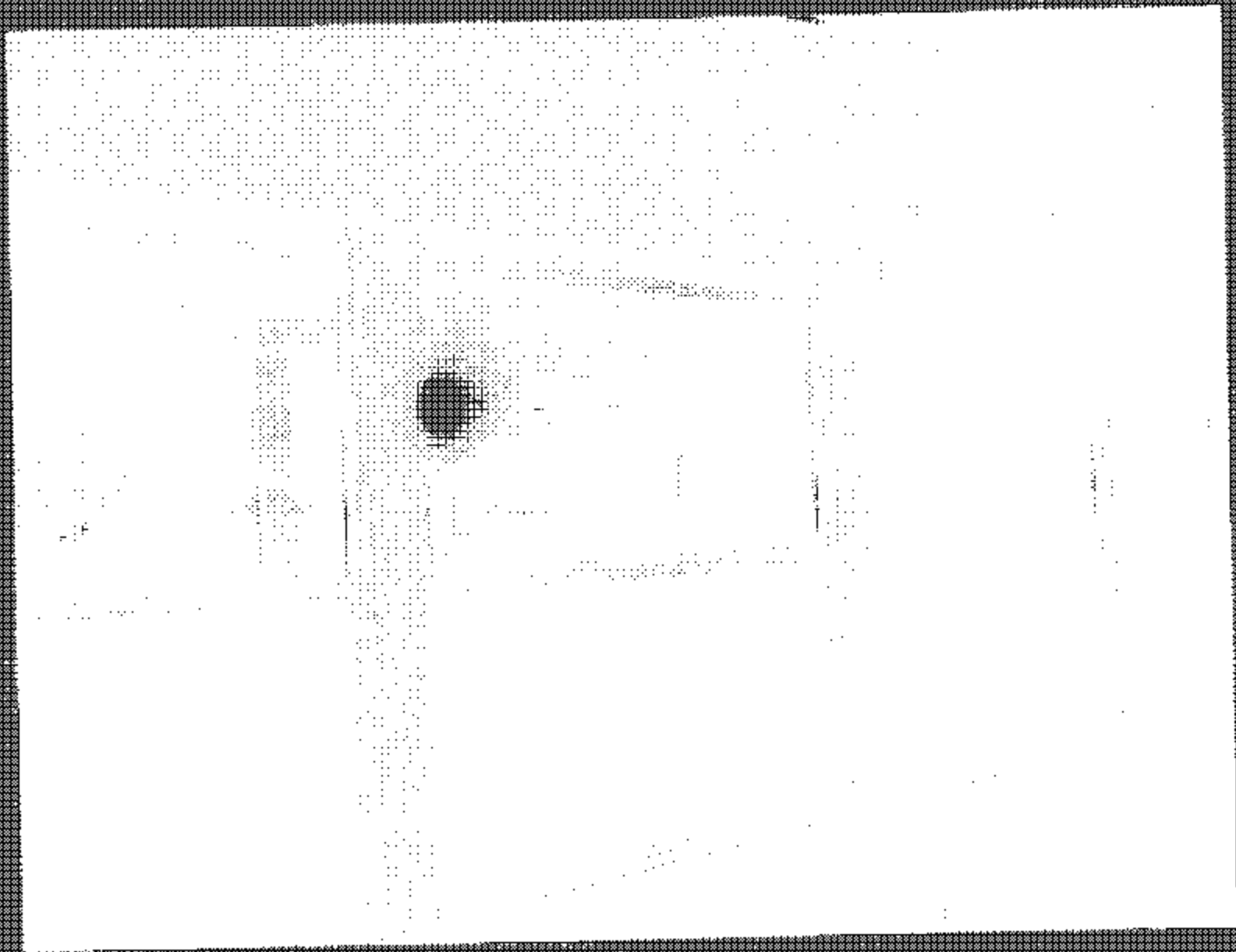


Loading Fixture

Test Vehicle:
Procedure:

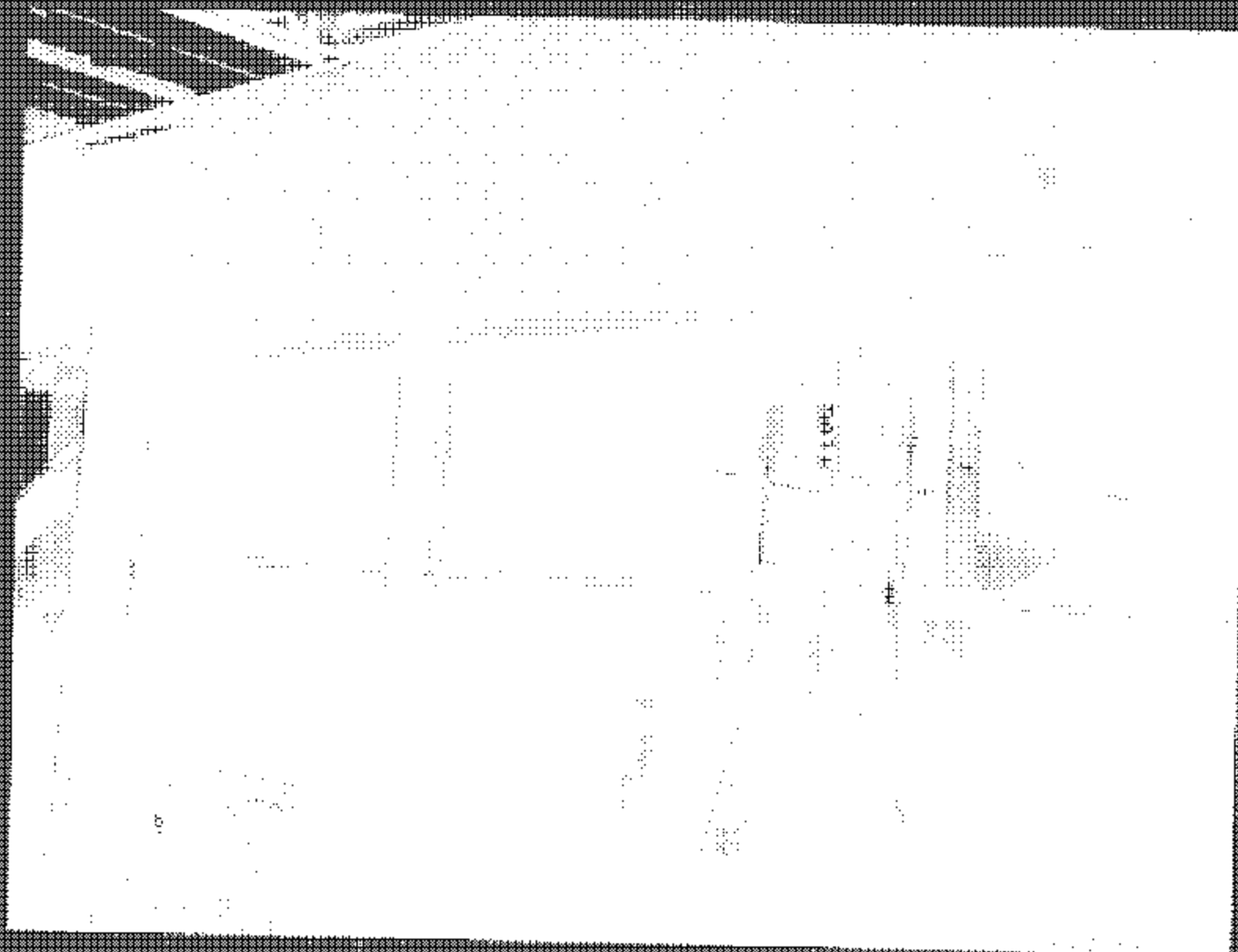
2004 Cadilla Super Bantam School Bus
FMVSS 217

NHTSA No. C40991



Test Vehicle: 2004 Collins Super Bantam School Bus
Procedure: FMVSS 217

NHTSA No.: C40501

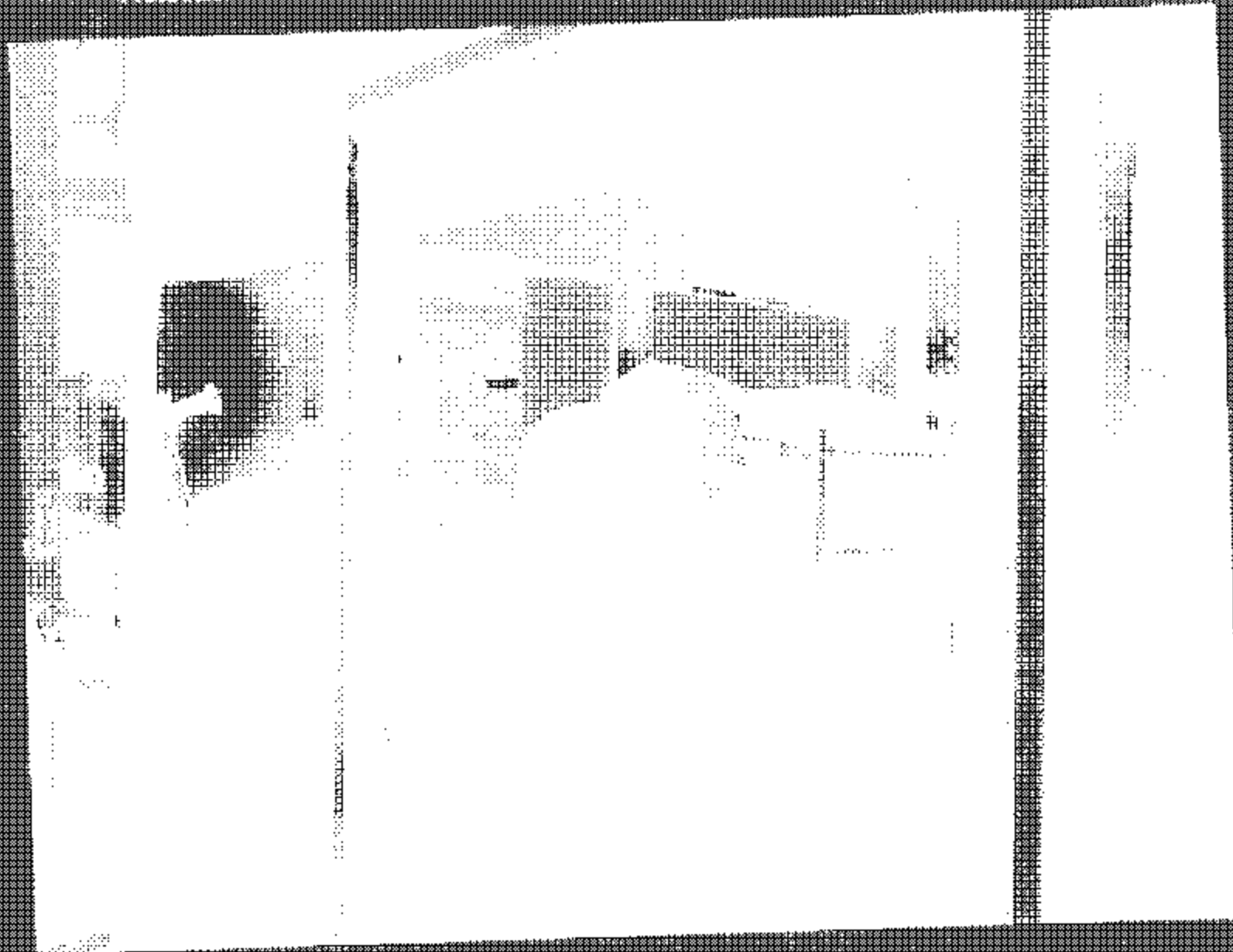


Retention Test of Left Side Window (Post-Test)

Test Vehicle
Procedure:

2004 Collins Super Bantam School Bus
FMVSS 207

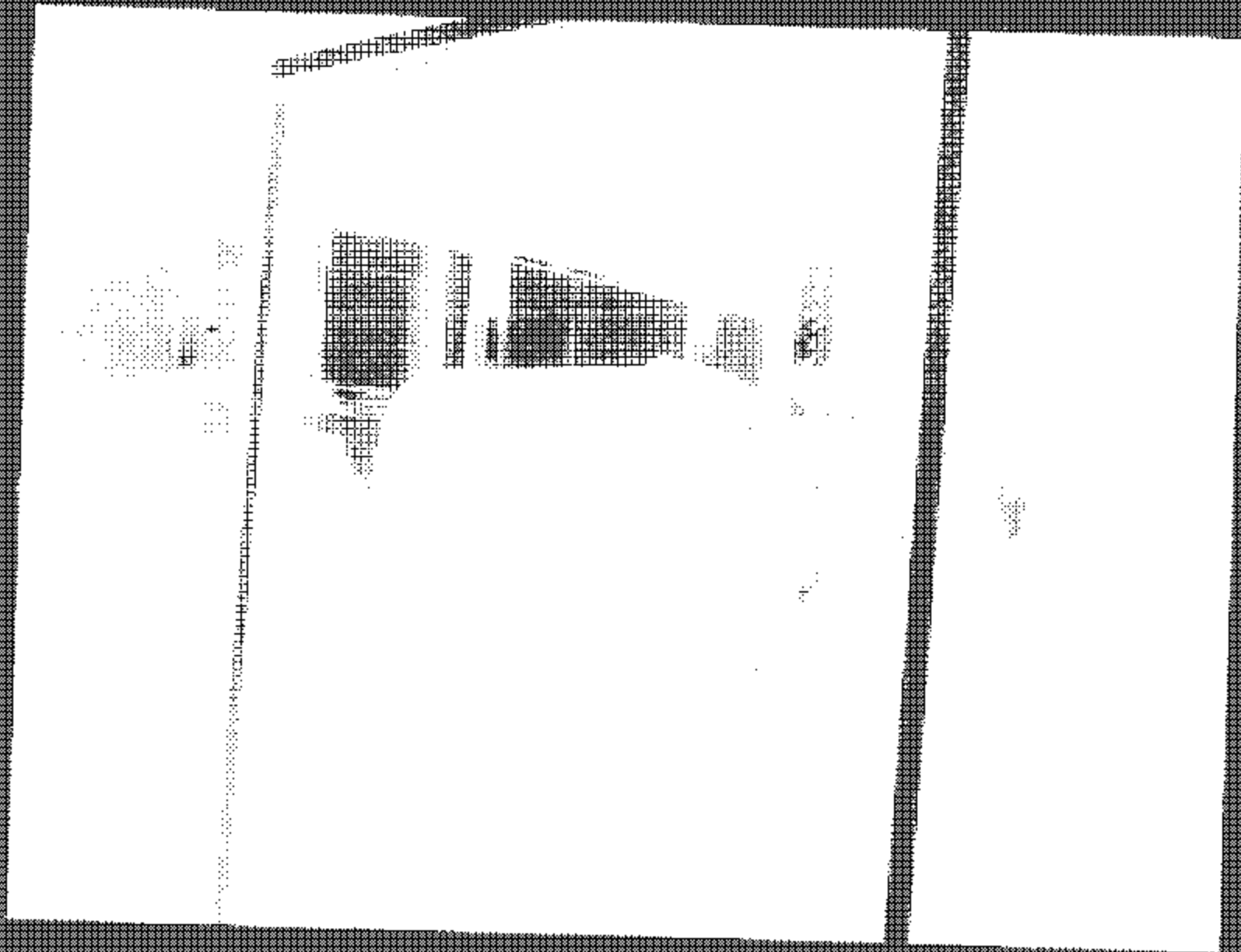
NHTSA No.: D48901



Retention Test of Rear Door Window (Pre-Test)

Test Vehicle: 2004 Collins Super Bantam School Bus
Procedure: FMVSS 217

NHTSA No.: C40901



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Retention Test of Rear Door Window (Post-Test)

**SECTION 6
TEST PLOTS**

