FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[MM Docket No. 90-474; RM-7355]

Radio Broadcasting Services; Geneva, OH

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: The Commission, at the request of Ray-Mar Broadcasting Company, substitutes Channel 284A for Channel 285A at Geneva, Ohio, and modifies the license of Station WDON(FM) to specify the alternate Class A channel. See 55 FR 46079, November 1, 1990. The allotment of Channel 284A could enable Station WDON(FM) to increase power to 6 kW and thus increase its coverage area. Channel 284A can be allotted to Geneva in compliance with the Commission's minimum distance separation requirements with a site restriction of 15 kilometers (9.3 miles) west to accommodate petitioner's desired transmitter site. The coordinates for Channel 284A at Geneva are North Latitude 41-48-39 and West Longitude 81-07-33. Canadian concurrence in the allotment has been received because Geneva is located within 320 kilometers (200 miles) of the U.S.-Canadian border. With this action, this proceeding is terminated.

EFFECTIVE DATE: June 10, 1991.

FOR FURTHER INFORMATION CONTACT: Leslie K. Shapiro, Mass Media Bureau, (202) 634-6530.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's Report and Order, MM Docket No. 90-474, adopted April 17, 1991, and released April 25, 1991. The full text of this Commission decision is available for inspection and copying during normal business hours in the FCC Dockets Branch (room 230), 1919 M Street, NW., Washington, DC. The complete text of this decision may also be purchased from the Commission's copy contractor, Downtown Copy Center, (202) 452-1422, 1714 21st Street, NW., Washington, DC 20036.

List of Subjects in 47 CFR Part 73

Radio broadcasting.

47 CFR PART 73—[AMENDED]

1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303.

§ 73.202 [Amended]

2. Section 73.202(b), the Table of FM Allotments under Ohio, is amended by removing Channel 285A and adding Channel 284A at Geneva.

Federal Communications Commission.

Andrew J. Rhodes,

Chief, Allocations Branch, Policy and Rules Division, Mass Media Bureau.

[FR Doc. 91-10546 Filed 5-2-91; 8:45 am]

BILLING CODE 6712-01-M

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 531

[Docket No. LVM 89-01; Notice 10]

Passenger Automobile Average Fuel Economy Standards; Final Decision

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Final decision.

SUMMARY: This decision is issued in response to a petition filed by Dutcher Motors, Inc. (Dutcher) requesting that it be exempted from the generally applicable average fuel economy standard of 27.5 miles per gallon (mpg) for model year (MY) 1992 passenger automobiles, and that a lower alternative standard be established for it. This decision exempts Dutcher and establishes an alternative standard of 17.0 mpg for MY 1992. The decision was preceded by publication of a notice requesting public comments.

DATES: Effective Date: June 3, 1991. This exemption and the alternative standard apply to Dutcher for model year 1992. Petitions for reconsideration must be submitted by June 3, 1991.

ADDRESSES: Petitions for reconsideration must be submitted to: Adminstrator, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. It is requested, but not required, that 10 copies be provided.

FOR FURTHER INFORMATION CONTACT: Mr. Orron Kee, Office of Market Incentives, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. Mr. Kee's telephone number is (202) 366-0846.

SUPPLEMENTARY INFORMATION: NHTSA is exempting Dutcher from the generally applicable average fuel economy standard for 1992 model year passenger automobiles and establishing an alternative standard applicable to Dutcher for that model year. This exemption is issued under the authority of section 502(c) of the Motor Vehicle Information and Cost Savings Act, as amended ("the Act") (15 U.S.C. 2002(c)). Section 502(c) provides that a passenger automobile manufacturer which manufactures fewer than 10,000 passenger automobiles annually may be exempted from the generally applicable average fuel economy standard for a particular model year if that standard is greater than the low volume manufacturer's maximum feasible average fuel economy and if NHTSA establishes an alternative standard for the manufacturer at its maximum feasible level. Section 502(e) of the Act (15 U.S.C. 2002(e)) requires NHTSA, in determining maximum feasible average fuel economy, to consider:

(1) Technological feasibility;

(2) Economic practicability;

(3) The effect of other Federal motor vehicle standards on fuel economy; and

(4) The need of the Nation to conserve energy.

This final decision was preceded by a proposed decision announcing the agency's tentative conclusion that Dutcher should be exempted from the generally applicable MY 1992 passenger automobile average fuel economy standard of 27.5 mpg, and that an alternative standard of 17.0 mpg should be established for Dutcher that model year (56 FR 3441, January 30, 1991). No comments were received on the proposed decision.

The agency is adopting the tentative conclusions set forth in the proposed decision as its final conclusions, for the reasons set forth in the proposed decision. Based on the conclusions that the maximum feasible average fuel economy level for Dutcher in MY 1992 is 17.0 mpg, that other Federal motor vehicle standards will not affect achievable fuel economy beyond the extent considered in the proposed decision, and that the national effort to conserve energy will not be affected by granting this requested exemption, NHTSA hereby exempts Dutcher from the generally applicable passenger automobile average fuel economy standard for the 1992 model year and establishes an alternative standard of 17.0 miles per gallon for Dutcher for that year.

NHTSA has analyzed this decision, and determined that neither Executive Order 12291 nor the Department of Transportation's regulatory policies and procedures apply, because this decision is not a "rule," which term is defined as "an agency statement of general applicability and future effect." This exemption is not generally applicable, since it applies only to Dutcher. If the Executive order and the Departmental policies and procedures were

applicable, the agency would have determined that this action is neither "major" nor "significant." The principal impact of this exemption is that Dutcher will not be required to pay civil penalties if it achieves a CAFE level equivalent to the alternative standard established in this notice. Since this decision sets an alternative standard at the level determined to be Dutcher's maximum feasible average fuel economy, no fuel would be saved by establishing a higher alternative standard. The impacts for the public at large will be minimal.

The agency has also considered the environmental implications of this decision in accordance with the National Environmental Policy Act and determined that this decision will not significantly affect the human environment. Regardless of the fuel economy of a vehicle, it must pass the emissions standards which limit the amount of emissions per mile traveled. Thus, the quality of the air is not affected by this exemption and alternative standard. Further, since Dutcher's MY 1992 automobiles cannot achieve better fuel economy than 17.0 mpg, granting this exemption will not affect the amount of gasoline available.

Since the Regulatory Flexibility Act may apply to a decision exempting a manufacturer from a generally applicable standard, I certify that this decision will not have a significant economic impact on a substantial number of small entities. This decision does not impose any burdens on Dutcher. It does relieve the company from having to pay civil penalties for noncompliance with the generally applicable standard for MY 1992. Since the price of 1992 Dutcher automobiles will not be affected by this decision, the purchasers will not be affected.

List of Subjects in 49 CFR 531

Energy conservation, fuel economy, gasoline, imports, motor vehicles. In consideration of the foregoing, 49 CFR part 531 is amended to read as follows:

PART 531—[AMENDED]

1. The authority citation for part 531 continues to read as follows:

Authority: 15 U.S.C. 2002, delegation of authority at 49 CFR 1.50.

2. Section 531.5 is amended by revising paragraph (b)(11); the introductory text of paragraph (b) is republished to read as follows:

§ 531.5 Fuel economy standards.

* * * * *

(b) The following manufacturers shall comply with the standards indicated below for the specified model years:

* * * * *

(11) Dutcher Motors, Inc.

Model year	Average fuel economy standard (miles per gallon)
1986	16.0
1987	16.0
1988	16.0
1992	17.0

Issued on April 30, 1991.

Jerry Ralph Curry,

Administrator.

[FR Doc. 91-10505 Filed 5-2-91; 8:45 am]

BILLING CODE 4910-59-M

49 CFR Part 571

[Docket No. 90-01; Notice 2]

RIN 2127-AD16

Federal Motor Vehicle Safety Standards; School Bus Pedestrian Safety Devices

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Final rule.

SUMMARY: This rule establishes a new safety standard requiring new school buses to be equipped with a stop signal arm. The standard requires that the stop signal arm be octagonal, meet minimum specified dimensions, and have the word "STOP" in white letters on a background which is red with a white border. To increase the arm's conspicuity, the new standard also requires that the arm be either reflectorized or have at least two red flashing lamps. The standard requires that the device be located on the left side of the bus. The standard further requires that it be automatically deployed, at a minimum, during the entire time that the red signal lamps required by Standard No. 108 are activated. In addition, the standard allows a means by which the driver could manually override the automatic mechanism, provided that the override is equipped with an audible signal to prevent permanent engagement of the override. The intended effect of this rule is to reduce the risk to pedestrians near stopped school buses.

DATES: *Effective Date:* This standard becomes effective September 1, 1992.

Incorporation by reference: The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of September 1, 1992.

Petitions for reconsideration: Any petition for reconsideration of this rule must be received by the agency not later than June 3, 1991.

ADDRESSES: Petitions for reconsideration should refer to Docket No. 90-01; Notice 2 and be submitted to the following: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590 (docket hours 9:30 a.m. to 4 p.m.).

FOR FURTHER INFORMATION CONTACT: Mr. Charles Gauthier, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590 (202) 366-4799.

SUPPLEMENTARY INFORMATION:

Background

Although statistics about school bus operation demonstrate that school buses provide an extremely safe form of transportation, the agency is committed to improving school bus safety. At the request of Congress, the National Academy of Sciences (NAS) studied school bus safety to determine which safety measures would be "most effective" in protecting school children while boarding, leaving, and riding in school buses. (See "Surface Transportation and Uniform Relocation Assistance Act of 1987," Pub. L. 100-17, 204(a) 101 Stat. 219, April 2, 1987.) In May 1989, the National Research Council (NRC), an agency of the NAS, issued a report entitled "Improving School Bus Safety," Special Report No. 222. Among other things, the study reviewed relevant crash data and potential safety measures to prevent injuries suffered by pedestrians, especially students, struck by a school bus or a vehicle passing the bus.

Based on data from the Fatal Accident Reporting System (FARS) for the years 1982 through 1986 about student-aged children killed in school bus related crashes, the NAS report concluded that in an average year, 12 of those killed were student-aged passengers in school buses or vehicles operated as school buses, eight were passengers of other vehicles, and 38 were pedestrians killed after being struck by the school bus or other vehicle. Of the 38 pedestrian fatalities, approximately 26 were killed by school buses or vehicles operating as school buses. The other 12 pedestrian fatalities resulted from pedestrians being struck by other vehicles passing a school bus that stopped to load or unload passengers. An independent

study by the Kansas Department of Education concluded that for the years 1982 through 1988, there were an average of 11 children killed each year by vehicles passing school buses in loading zones. NHTSA's subsequent analysis of FARS data for the years 1982 through 1988 indicated that about half of the bus-caused pedestrian fatalities (12 annually) occurred as the children were boarding or leaving the bus.

The NAS study also estimated that each year 950 pedestrians are injured in school bus loading zones, of which it assumed, based on extrapolating from State data, 800 involve student-aged pedestrians. Approximately 525 of these pedestrians are injured by being struck by vehicles other than the school bus; the remainder are struck by the school bus. Twenty percent of these injuries are categorized as being "incapacitating injuries." These injuries are defined by the American National Standards Institute (ANSI) as including any injury that prevents the injured person from walking, driving or normally continuing activities he or she was capable of performing before the injury occurred. These include severe lacerations, broken or distorted limbs, skull and chest injuries. The majority of non-fatal injuries are caused by vehicles other than the school bus striking the student pedestrian.

These data about pedestrians indicate that despite an apparent downward trend, deaths and injuries caused by vehicles passing school buses remain a significant safety problem. The data also indicate that children are at a much greater risk of being killed while boarding or leaving a school bus than they are while on board a bus.

The 1987 Act directed the agency to review the NAS report to determine safety measures that were potentially "most effective" in improving school bus safety. The agency issued a notice endorsing some of the recommendations in the NAS report, finding that they had the potential for reducing fatalities and injuries to school bus users. (54 FR 29629, July 13, 1989). As for equipment intended to increase pedestrian safety in school bus loading zones, the agency concluded that programs to require the installation of stop signal arms and crossview mirrors on school buses were potentially among the "most effective" in improving school bus safety.

A stop signal arm is a device patterned after conventional "STOP" signs and attached to the left side of a school bus. When the school bus stops, the stop signal arm extends outward from the bus. Its purpose is to alert motorists that a school bus has stopped or is stopping. In considering the effectiveness of stop signal arms, the NAS report emphasized the difficulty in conclusively determining the effectiveness of school bus safety measures. Nevertheless, the NAS report cited studies demonstrating that stop signal arms are effective in reducing illegal passing of stopped school buses, thus reducing the risk to pedestrians struck by other vehicles in school bus loading zones. For instance, a 1983 study by Hale et al. indicated that school buses equipped with eight-light systems and stop signal arms recorded almost 40 percent fewer passing violations than buses equipped with light systems but not the stop signal arm. (Hale, A.R. *et al.*, "Development and Test Rural Pedestrian Countermeasures," NHTSA Report DTNH22–80–C07568.). Similarly, a study by Brackett et al., comparing passing violations before and after school buses were equipped with a stop signal arm, estimated that passing violations could be reduced about 30 percent through the use of stop signal arms. (Brackett, R.Q. *et al.*, "School Bus Safety Equipment Evaluation," Texas Transportation Institute, The Texas A&M University System, College Station, TX, 1984).

Based on these considerations, NHTSA initiated a series of efforts to assess methods to improve school bus safety, including pedestrian safety in school bus loading zones. In taking these steps, NHTSA emphasized that the safety record of school buses has been excellent. Although school buses transport many more passengers per trip than other vehicles, the occupant fatality rate per vehicle mile driven is only one-fourth that of passenger cars. Similarly, the number of fatalities and injuries related to pedestrians in school bus loading zones is comparatively small.

Nevertheless, because of the special concern for the well-being of school children and because each fatality and injury involving them is particularly tragic, NHTSA issued two notices about measures intended to reduce the risk to pedestrians near stopped school buses. One notice was an advance notice of proposed rulemaking (ANPRM) to obtain information about outside crossview mirror systems and other equipment (e.g., crossing control arm barriers, audible back-up warnings, video monitors, and proximity detectors) intended to help school bus drivers detect pedestrians, thus preventing pedestrians from being struck by school buses. (54 FR 53127, December 27, 1989) The agency is reviewing comments to that notice and expects to issue a subsequent notice soon. A second notice proposed a new safety standard to require school buses to be equipped with a stop signal arm (55 FR 3619, February 2, 1990). That notice provides the starting point for this final rule.

Notice of Proposed Rulemaking on Stop Signal Arms

In its February 1990 notice, the agency proposed that the stop signal arm meet minimum size requirements, be octagonal, have a specified color scheme (i.e., a red background with a white border and the word "STOP" in white letters), be reflectorized, and be installed on the left side of the bus. The notice also proposed that the stop signal arm be automatically deployed whenever the red signal lamps required by Standard No. 108 were activated. Finally, the notice proposed to allow a means by which the driver could manually override the automatic deployment mechanism.

The NPRM addressed several issues and invited comments about stop signal arms and pedestrians struck by vehicles passing stopped school buses. The notice referred to the previously mentioned studies evaluating the effectiveness of stop signal arms and the endorsement of their use by the NAS report and by the Tenth National Conference on School Transportation. The latter was a meeting of official representatives of State Departments of Education, local school district personnel, contract school bus operators, manufacturers, and others interested in school bus safety.

The notice also explained that although no Federal provision requires the installation of a stop signal arm on school buses, some Federal provisions are designed to protect student pedestrians in the vicinity of stopped school buses. First, section S5.1.4 of Federal Motor Vehicle Safety Standard (FMVSS) No. 108 Lamps, Reflective Devices, and Associated Equipment (49 CFR 571.108), which sets forth the minimum standard of performance, requires school buses to be equipped with either four red lamps (two in front of the bus and two in back of the bus) or an eight lamp system with four amber lamps and four red lamps. The red lamps are automatically activated when the bus entrance door is opened. Second, Highway Safety Program Guideline No. 17, Pupil Transportation Safety (23 CFR 1204.4, Guideline 17), states that "(w)hen vehicles are equipped with stop signal arms, such devices should be operated only in conjunction with red signal lamps." (Section IV.B.3.(6)c.)). The Highway Safety Program Guidelines are designed to provide a uniform national pupil

transportation safety program and to assist the States in achieving the highest level of safety in the transportation of children on school buses.

The NPRM also described the Society of Automotive Engineer's recommended practice, SAE J1133 Apr84, School Bus Stop Arms, which is not binding on any manufacturer or school bus user. That practice sets forth test procedures, "requirements," and guidelines for school bus stop signal arms. The recommended practice also specifies the sign's color scheme, the minimum size, and the inclusion of at least two flashing lamps. It incorporates vibration, moisture, dust, corrosion, warpage, durability, and flash rate tests for the lamps and sets forth requirements for luminous intensity, color, and materials. SAE J1133 also sets forth "guidelines," for photometric design, certain design aspects, installation, and activation.

The NPRM also explained the potential Federalism implications of the rulemaking. As of December 1989, 36 States required stop signal arms. The agency estimated that at least 71 percent of new school buses were being equipped with stop signal arms. The notice explained that because FMVSSs set forth minimum standards of performance, any purchaser of school buses may order from a school bus manufacturer a school bus that not only meets but exceeds the requirements in the FMVSSs. In addition, under section 103(d) of the Vehicle Safety Act, which provides for the preemption of nonidentical State requirements covering the same aspect of performance of a FMVSS, a State may require school buses "procured for its own use" to meet a performance standard higher than the Federal one. After noting that many States have based their stop signal arm requirements on SAE J1133, the notice described the stop signal arm requirements of certain States.

Comments to the NPRM and the Agency's Response

NHTSA received 25 comments in response to the NPRM. These were from State organizations, school bus and school bus equipment manufacturers, associations, school bus contractors, and individuals. All but two commenters agreed with the general proposal to require a stop signal arm on school buses. Nevertheless, commenters had many different opinions on specific requirements about the design and operation of stop signal arms. The agency has considered the points raised in the comments in developing the final rule. The agency's discussion of the significant comments and other relevant information is set forth below. For the convenience of the reader, this notice follows the NPRM's order.

General Considerations

Safety Need

The proposal first asked whether there was a safety need for requiring the installation of the stop signal arm. Although commenters noted the difficulty in obtaining comparative data to establish a safety need for the requirement, the consensus was that such a safety need exists. For instance, the Washington Superintendent of Public Instruction (Washington) commented that there was "no question" about the safety need for stop signal arms. The Ohio Department of Education (Ohio) stated that stop signal arms are directly related to better student safety. Only the California Department of Education (California DOE) and the California Highway Patrol (CHP) believed that there was no safety need.

Given the data and recommendations in the NAS report, the Hale and Brackett studies on illegal school bus passes, and general support in the docket comments for stop signal arms, the agency has concluded that a safety need exists for better controlling the movement of vehicles passing stopped school buses during the loading and unloading of passengers. The agency notes that the opposition from the California entities may stem from that State's mandatory student escort program that requires school bus drivers to escort elementary school children across the street. Despite California's opposition, the agency notes that the purpose of traffic control devices is to "help insure highway safety by providing for the orderly and predictable movement of traffic, both motorized and non-motorized, throughout the national highway transportation system, and to provide such guidance and warnings as are needed to insure the safe and informed operation of individual elements of the traffic stream." (Manual on Uniform Traffic Control Devices for Streets and Highways, Federal Highway Administration, 1988, 1A–1) (emphasis added). The Manual's section on "Traffic Controls for School Areas" further explained that "(n)on-uniform procedures and devices cause confusion among pedestrians and vehicle operators, prompt wrong decisions, and can contribute to accidents. In order to achieve uniformity of traffic control in school areas, comparable traffic situations must be treated in the same manner." This goal for nationwide uniformity among the States to reduce confusion necessitates requiring all school buses to be equipped with a stop signal arm. Even CHP agreed about the need for nationwide uniformity, stating that a "nationally consistent equipment requirement (is needed so) that every school bus in the nation should send the same signals to other motorists to stop traffic."

Effectiveness of Stop Signal Arms

Based on the previously mentioned studies on the effectiveness of school buses equipped with a stop signal arm in reducing illegal passing of stopped school buses, the agency tentatively concluded in its proposal that such a requirement would reduce the number of student pedestrians struck by vehicles passing stopped school buses. The NPRM requested comments about the reasonableness of its tentative conclusion.

In response to that request, several commenters provided information about the effectiveness of stop signal arms. The Connecticut Department of Motor Vehicles (Connecticut), the Insurance Institute for Highway Safety (IIHS), Mayflower Contract Services, the Colorado Department of Education (Colorado), the Florida Department of Education (Florida), Kickert School Bus Lines (Kickert), and the Hawaii Department of Transportation (Hawaii) indicated either that they believed stop signals arms are effective in protecting pedestrains near stopped buses or provided information that alluded to the effectiveness of these devices. Several commenters agreed with statements in the NAS report and the NPRM about the difficulty in empirically determining the effectiveness of stop signal arms. Only CHP and the California DOE questioned whether school bus stop signal arms would be effect.

Since issuing the NPRM, the agency has analyzed further information indicating that stop signal arms are effective in reducing illegal passing of stopped school buses. A 1986–1987 study conducted in Henrico County, Virginia, a jurisdiction requiring school buses to be equipped with a stop signal arm, concluded that each school bus was illegally passed an average of 1.25 times per day. In contrast, the 1984 study conducted by Brackett in Texas, a jurisduction in which school buses were not equipped with stop signal arms, concluded that each school bus was illegally passed an average of 2.8 times per day. Aggregating the number of illegal passes over the course of a school year for those school buses not now required to be equipped with a stop signal arm indicates that adoption of

such a requirement will result in millions of fewer instances of illegal passing. This reduced risk of illegal passing of stopped school buses, in turn, should reduce the potential for injuries and fatalities sustained by student pedestrians in such illegal passing situations. Because the docket comments and the agency's subsequent analysis appear to confirm the agency's initial determination that stop signal arms are effective in reducing the risk to pedestrians around stopped school buses, the agency has decided to require school buses to be equipped with the stop signal arm.

While the number of illegal passes of a stopped school bus can be reduced by the installation of stop signal arms, the agency encourages the States to educate motorists more fully about their laws on the stopping for school buses that are loading and unloading students. The agency also encourages State and local authorities to increase their enforcement efforts in this area.

The Effect of a Federal Standard on the States

After discussing current levels of stop signal arm usage and the proposal's anticipated effect on the States and State laws, the notice invited comments about the potential impact of a Federal safety standard on existing State laws. In particular, the notice asked whether States would have to amend their laws to comply with the proposed Federal standard in light of section 103(d) of the Vehicle Safety Act.

Of the twelve State organizations that commented on the proposal, all but the two California entities favored the proposal. In addition, Blue Bird stated that a Federal standard was necessary to promote uniformity. As for specific amendments to existing laws, CHP stated that the California Code of Regulations would have to be amended if a stop signal arm is to be installed on California school buses. CHP also stated that the California Vehicle Code would have to be amended to permit flashing lights if such lights on the stop signal arm were required. Two States favoring the proposal stated that a Federal requirement would affect their laws. Florida commented that the proposal's performance and locational requirements might affect their current requirements. The Illinois Department of Transportation (Illinois) explained that it would have to amend its regulation, which currently requires a hexagonal semaphore.

After reviewing the comments, the agency concludes that a Federal standard requiring a stop signal arm on school buses will not impose significant burdens on the States. The agency has determined that this final rule is necessary to ensure uniform school bus stopping and signalling procedures to give passing motorists a consistent message, even though this action will require several States to equip their school buses with a stop signal arm and a few others to modify their laws. It appears that those States having to modify their laws will have little difficulty in enacting the necessary legislation to comply with the new safety standard and section 103(d) of the Vehicle Safety Act.

Stop Signal Arm Characteristics

The NPRM proposed that the stop signal arm be a regular octagon in shape, be on a red background with the word "STOP" in white lettering on both sides and a white border, be at least a specified size, and be reflectorized. The proposal also requested comments on the desirability of adopting other requirements, including those in the SAE recommended practice about flashing lights.

As for the stop signal arm's shape, the NPRM proposed that it be patterned after conventional octagonal highway stop signs with a red background with white lettering. The agency reasoned that drivers recognize the meaning of octagonal signs and have been conditioned to stop when they see them. The notice further explained that standardization of shape, color scheme, and the word "STOP" would ensure that a driver traveling out-of-state would encounter the same familiar stop sign design throughout the country. In addition, the proposal noted that FHWA's Manual on Uniform Traffic Control Devices (1988) requires stop signs to have these characteristics and that the Tenth National Conference expressly recommended that the stop signal arm have these characteristics.

In response to the proposal's request for comments, Blue Bird, Colorado, CHP, the National Student Transportation Association (NSTA), 3M, Superior Coach, and a school teacher supported the proposal to standardize the stop signal arm's shape and color scheme. Even Illinois, a State now requiring a hexagonal shaped sign, did not object to standardizing the stop signal arm's shape. Based on the foregoing, the agency is adopting the requirements that the stop signal arm be octagonal in shape with white letters and a white border on a red background, as set forth in Figure 1 of the final rule.

Minimum Size Requirements

The NPRM also proposed to specify the minimum size of the sign and its lettering. Based on the FHWA's "Standard Alphabets for Highway Signs," a reference guide specifying the size and appearance of letters and numerals used on highway signs, and SAE J1133's recommended practice, the agency proposed to require that the octagonal stop signal arm be a regular octagon at least 450 mm X 450 mm in diameter (approximately 17.7 inches X 17.7 inches), that the white border be at least 12 mm wide (approximately 0.47 inch), and that the white lettering be at least 150 mm (approximately 5.9 inches) in height and have a stroke width of at least 20 mm (approximately 0.79 inch). The proposal asked whether the proposed size specifications adopted from the FHWA practice and SAE J1133 should be incorporated in the standard and whether stop arms and lettering meeting these proposed size requirements would be large enough to be seen and understood by drivers of other vehicles approaching a stopped bus.

In response to these proposals, Blue Bird, Florida, and NSTA expressly supported specifying the sign's size. In addition, the agency assumes that other commenters who generally endorsed the proposal implicitly agreed to the proposed size. 3M believed that the proposed size might be inadequate to make the stop signal arm conspicuous, especially when other vhicles were traveling at 55 miles per hour.

After reviewing the proposal on minimum size requirements in light of the comments, the agency has decided to adopt the size requirements, as proposed. Despite reservations by 3M, the agency concludes that the FHWA guidelines on highway signs, specifications in SAE 1133, and real-world experiences of States using stop signal arms indicate that the proposed minimum size requirements will ensure that the stop signal arm will be conspicuous to drivers of vehicles approaching a stopped school bus. Given that States may specify requirements more stringent than the minimum requirements adopted in this notice, those States who agree with 3M's concerns may equip school buses with a larger stop signal arm.

Conspicuity of Stop Signal Arms

This final rule discusses reflectorization and flashing lights together because both measures are designed to improve the conspicuity of stop signal arms in poor lighting conditions. NHTSA proposed requiring stop signal arms be reflectorized, believing that reflectorization would increase the stop signal arm's

conspicuity, especially when ambient lighting conditions are poor. The proposal requested comments about the need for, costs of, and requirements related to reflectorization. The agency also requested comments on requiring flashing lights on stop signal arms based on provisions in SAE J1133.

Several commenters addressed reflectorization and illumination of stop signal arms. Colorado, Florida, Superior Coach, and a teacher stated that reflectorization together with illumination were effective in increasing the conspicuity of stop signal arms in poor lighting conditions. As for requiring reflectorization alone, the NSTA opposed such a requirement, stating that the benefits of such a requirement had not been established. Carpenter Body Works also opposed requiring reflectorization in any situation. Hawaii and Washington stated they do not require their stop signal arms to be reflectorized. The Virginia Department of Education (Virginia) preferred that reflectorization be at the State's option due to its additional costs. Illinois and the Minnesota Department of Transportation (Minnesota) also stated that a stop signal arm with lights should be allowed as an option to reflectorization. IIHS believed that flashing lights were more effective than reflectorization because reflectorization helps conspicuity primarily in low light conditions such as when headlights on other vehicles render it visible. This led IIHS to conclude that reflectorization is not an adequate substitution for flashing lights in daylight hours. In contrast, 3M advocated requiring the use of reflectorization as a "fail safe" system that would provide high visibility during darkness. 3M criticized the use of flashing lights which might fail, which could "compete and veil the sign shape and message," and which mean different things under different conditions. Similarly, CHP opposed flashing lights, stating that motorists might become jaded to the importance of their message in their uses on other types of vehicles such as emergency vehicles.

Based on the data and the comments, the agency has determined that it is necessary to increase the conspicuity of stop signal arms during poor lighting conditions. While the K–DOT school bus data indicate that most children are killed during "daylight" conditions, at least 10 percent are killed during limited light conditions (e.g., dawn, dusk, dark). In addition, 10 to 20 percent of the fatalities occur during cloudy, rainy, snowy, and foggy conditions, which affect light conditions. Finally, the majority of fatalities occur from November to March, the months when daylight hours are shorter and weather conditions poorer. For the above reasons, the agency has decided to require measures to increase the conspicuity of stop signal arms.

Despite the agency's conclusion that increased conspicuity of stop signal arms is necessary, neither the comments nor independent studies conclusively indicate that one approach is superior to the other. After reviewing the merits of reflectorization and flashing lights to increase the conspicuity of stop signal arms, particularly during poor ambient lighting conditions, the agency has determined that school bus manufacturers and purchasers should have the option of using either a reflectorized stop signal arm or one that is equipped with at least two red flashing lamps. This would enable the State or local school districts to follow their own particular preference to improve stop signal arm conspicuity during limited or non-existing light conditions. They could decide to order buses with stop signal arms that are both reflectorized and equipped with flashing lamps. This decision is consistent with the statement in the FHWA's Manual on Uniform Traffic Control Devices that "signs used for school traffic control shall be reflectorized *or* illuminated when regularly scheduled classes begin or end during hours of darkness, and should be reflectorized or illuminated when there is considerable use of school buildings by children during hours of darkness." (7B–5) (emphasis added).

If reflectorized, both sides of the stop signal arm must use Type III retroreflectorized material that meets Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP–85, FHWA section 718 "Reflective Sheeting" (1985), as set forth in S6.1 and Table 1 of the final rule.

If flashing lamps are used, they must meet the requirements for color, flash rate, and vibration, moisture, dust, corrosion, photometry, and warpage, as set forth in S6.2 of the final rule. These tests are patterned after the tests in certain SAE Recommended Practices: For color in SAE J578, Color Specification for electrical signal lighting devices; for flash rate in SAE J1054, Warning Lamp Alternating Flashers: And for vibration, moisture, dust, corrosion, photometry, and warpage in SAE J575 Tests for Motor Vehicle Lighting Devices and Components and SAE J1133, School Bus Stop Arm.

The NPRM also requested comments about strobe lights on stop signal arms. The proposal noted that while strobe lights might prove beneficial in school districts operating in areas prone to poor visibility, requiring all school buses to be equipped with them would be expensive without providing significant additional safety benefits to most school districts.

Florida, Illinois, NSTA, the Ohio Department of Education (Ohio), and CHP opposed requiring strobe lights on stop signal arm, stating that they were expensive and without any demonstrated safety benefit. CHP and IIHS stated that strobe lights had the potential to make the stop signal arm less readable in certain situations. Because the comments confirm the agency's initial concerns about strobe lights, the agency continues to believe that strobe lights should not be required on stop signal arms.

Location of Stop Signal Arm

The NPRM proposed that the stop signal arm be installed on the left side of the bus. The agency decided to propose this general requirement about stop signal arm location, while seeking comments on more specific, objective locational requirements. The proposal explained the agency's preference for more precise locational requirements, which could be important in increasing the conspicuity of stop signal arms.

The commenters consistently favored locating the stop signal arm near the driver. Colorado stated that it requires a stop signal arm to be mounted outside the bus on the left side opposite the driver and immediately below the window. Minnesota commented that the arm should be approximately even with the driver's position. IIHS stated that stop signal arms typically are located near the driver at or just below the window line. While IIHS was not aware of evidence that this is the only effective position for stop signal arms, it believed that standardizing the location would reduce motorist confusion. Florida, NSTA, and CHP similarly believed that stop signal arms should be located near where they are most typically located today, i.e., outside the driver's window. CHP also stated that stop signal arms should be located in a "transverse vertical plane that passes through the driver's seat," but out of the reach of the passengers who might play with it. Florida suggested that the top of the sign be immediately below the window line.

At a July 1990 school bus transportation conference, State school bus transportation personnel expressed divergent opinions about the stop signal

arm's location relative to the length of the school bus. While several States said they install the device near the driver's window, other States explained that they have been installing the device further rearward than the driver's window because the device may be more visible at these locations if the school bus is stopped at an angle to the road. California stated that given their escort program in which the bus driver holds a stop sign at the front of the school bus, placing the stop signal arm near the bus's rear would be more effective.

Based on the goal for standardization, views of State school transportation personnel about effective locations for stop signal arms, typical location of these devices now in use, and the Vehicle Safety Act's directive that safety standards specify objective requirements, S5.4.1 of the final rule requires that school buses be equipped with one stop signal arm installed on the left side of the bus so that when extended it shall (1) be perpendicular to the side of the bus, plus or minus five degrees; (2) have the top edge of the octagon parallel to and within 6 inches of a horizontal plane passing through the lower edge of the driver's window frame; and (3) have the vertical centerline of the stop sign be at least 9 inches away from the school bus body when the sign is extended. The agency believes that these requirements provide uniform locational specifications while providing users flexibility to install stop signal arms consistent with their experiences with these devices.

Florida and CHP raised the issue of "dual" stop signal arms on longer school buses. Florida stated that it will require dual stop arms on its new school buses over 23 feet in length. CHP stated that the agency should require only one stop signal arm, but if a bus is equipped with a second stop signal arm, then "the forward stop arm should be blank on the rearward side, and the rearward stop arm should be blank on the forward side."

In response to these comments, the agency has decided to permit school buses to be equipped with a second stop signal arm. Motorists following the school bus will see two stop signs, thus reinforcing the message that they are to stop behind a stopped bus and not pass it. The optional second (rear) stop signal arm must comply with all the requirements for the mandatory stop signal arm, except that its front must be blank. The purpose of this latter requirement is to avoid confusion for drivers approaching a stopped bus from the front.

Activation and Override of Stop Signal Arms

As for the operation of a bus' stop signal arm, the NPRM proposed that it be automatically deployed whenever the bus' red signal lamps required by S5.1.4 of Standard No. 108 are activated, i.e., when the bus is in service and the entrance door is open. The notice also proposed to allow, but not to require, a manual override, reasoning that while it would be worthwhile to permit a manual override, it should not be required given cost and engineering considerations associated with an override. The proposal explained that, at times, a manual override might be necessary to allow the stop signal arm to act independently from its automatic activation. For instance, when the weather is cold, the bus driver may wish to keep the school bus door closed but have the stop signal arm activated while a child crossed the street to board the bus. Similarly, when a bus has stopped at a railroad crossing and the driver opens a door to check for approaching trains, the stop signal arm need not or should not be activated while the door needs to be opened.

The NPRM sought comments on the activation and override of stop signal arms. The agency was concerned about the possibility that an override device could permit a driver to override "permanently" the mechanism for automatically deploying the stop signal arm as long as the override device was activated. This would negate the safety benefits obtained from the stop signal arm.

In commenting about permitting a manual override, several States commented on the proposal about tying the deployment of the stop signal arm to the activation of the red stop signal lamps required by Standard 108, i.e., the stop signal arm would be automatically deployed when the bus entrance door is opened and those lamps are activated. Washington, Illinois, and Florida each opposed tying the stop signal arm deployment to the red signal lamp activation and suggested methods of stop signal arm activation other than opening the door. These States believed that their systems increased safety by preventing school children from leaving the bus before the driver had adequately controlled traffic.

Washington recommended a procedure in which the bus driver would activate the flashing red lamps by extending the stop signal arm while the service door remained closed to keep the students within the bus. The driver would only open the door after checking for stopped traffic. To accomplish its suggestion, Washington recommended eliminating the door switch in FMVSS No. 108, requiring a separate control for the stop signal arm independent of the switch that opens the door, and requiring that whenever the stop signal arm is extended, the flashing red lamps must operate. Illinois recommended that stop signal arm operation be patterned after its four-step procedure: (1) Activate the amber lights by hand or foot control, (2) upon a complete stop, desecure but do not open the service door, which turns off the flashing amber lights and turns on the flashing red lamps and extends the stop signal arm; (3) when traffic is clear, open the service door with the red signal still activated and the stop signal arm still extended; and (4) close and secure the service door with the red lamps going off and the stop arm retracting. Florida recommended having drivers activate the stop signal arm before opening the service door and opposed activation by the door switch alone. Florida advocated its current procedure, requiring a three-position switch that controls the warning lights and the stop signal arm and stops traffic before the door is open.

After reviewing the proposal in light of these comments, the agency has decided to adopt the requirement, as proposed. Accordingly, a stop signal arm must automatically extend, at a minimum, whenever the red signal lamps required by S5.1.4 of Standard 108 are activated. The agency emphasizes any system of activation is permissible provided the stop signal arm is extended during, at least, the entire time that the red warning lamps are activated. Accordingly, the systems described by Washington, Illinois, and Florida are permissible under the final rule and appear to serve the interests of safety. The agency nevertheless has decided not to set forth specific requirements regarding these systems, because such specific requirements would be beyond the scope of the proposal and may overburden or otherwise adversely affect States using other means of stop signal arm deployment. For instance, adopting Illinois's system would mandate the now optional 8-lamp system. Nevertheless, given the potential advantages of these systems in better controlling traffic, the agency encourages States to consider such a means of activating stop signal arms.

As for manual override devices, Connecticut stated that it allows an override that can extend or withdraw the stop signal arm regardless of its normal operation, claiming that this eliminates damage to vehicles. Ohio

requires an emergency system for extending stop signal arms and operating the red light. Minnesota commented that a manual override of the stop signal arm should also override the 8-lamp warning system. Illinois opposed allowing a manual override because it might be inadvertently left activated, preventing the stop arm from being extended when the bus was stopped to load or discharge passengers. NSTA opposed such an override, claiming that there was no need for it and that the driver could easily forget that the override was deployed, thus creating a permanent override. IIHS commented that an override should be permitted only if there was a provision reminding the bus operator of the override's activation. IIHS recommended that a manual override system include audible and visible reminders that would activate whenever the override is on and the bus is in use.

Based on the agency's tentative conclusions in the NPRM and comments about the benefits from permitting a manual override device, the agency has concluded that there is adequate reason to permit an override device. This is especially true when school buses are used in non-school charter service where the use of the stop signal arm is prohibited by State law. However, to prevent permanent override, the mechanism for operating the override must be located within the driver's reach. Further, the bus must be equipped with a continuous or intermittent signal, which is audible to the driver and which operates whenever the engine is running and the override is activated.

When school buses are used for non-school purposes, the agency is concerned that an audible signal, without any time limit, could become annoying to the driver and passengers during long boarding and unloading operations and could be the cause of permanent disablement of the audible signal. As stated earlier, the purpose of the audible signal is to ensure that the stop signal arm is not permanently overriden. As a result, the agency has determined that it would be beneficial to allow audible override signals on buses to be equipped with a timer that requires the signal for at least 60 seconds. The 60-second time limit was chosen since it represents an adequate time for the bus driver to recognize the audible signal over any roadside noises and to realize that the stop signal arm's manual override is engaged. If a time limit device is used with the audible signal, it must automatically recycle every time the service entry door is opened while the engine is running and the manual override is engaged.

Miscellaneous Issues

The NPRM also sought comments on issues related to but outside the scope of this rulemaking. These issues include the merits of equipping a school bus with an external loud speaker and increasing the conspicuity of school bus bumpers with a fluorescent paint. Those interested in these issues should review this rulemaking's docket, especially for comments by Washington, NSTA, Virginia, 3M, Superior Coach, Florida, and Ram Guard. As mentioned in the NPRM, the agency plans to use this information when considering future school bus safety measures.

Effective Date

The effective date of this final rule is September 1, 1992. Even though stop signal arms are now available, some leadtime is necessary because a few States need to amend their legislative or administrative codes. In addition, bus manufacturers need time to order the devices from equipment manufacturers. Accordingly, the agency has decided to make this rule effective on September 1, 1992.

Economic and Other Impacts

NHTSA has considered the costs and other impacts of this rulemaking, and has prepared and placed a Final Regulatory Evaluation (FRE) in the Docket. Based on this evaluation, the agency has determined that the rulemaking is not "major" within the meaning of Executive Order 12291. Given general public and Congressional interest, the agency has determined that it is "significant" within the meaning of the Department of Transportation's regulatory policies and procedures.

The NPRM calculated the annual additional consumer cost of buying school buses equipped with a stop signal arm by multiplying the unit price of equipping new school buses with this device by the number of school buses affected by the requirement. Based on several studies, the proposal estimated the unit cost for a reflectorized stop signal arm to be approximately $300. The agency calculated that approximately 10,900 school buses would be affected by the requirement, i.e., of approximately 38,000 new school buses manufactured each year, 28.7 percent of currently operating school buses were not equipped with a stop signal arm. Therefore, the proposal concluded that the approximate aggregate annual cost of this requirement would be $300 per reflectorized stop signal arm without flashing lights × 10,900 school buses presently sold without stop signal arms for a total of $3,270,000.

Two school bus manufacturers and several States responded to the proposal's request for information about the costs of requiring school buses to be equipped with a stop signal arm. Blue Bird and Thomas Built provided unit cost estimates ranging from $200 to $300 for stop signal arms with different characteristics, e.g., reflectorized, with flashing lights, etc. and different means of activation. Blue Bird further explained that, based on its sales records for the 1989 model year, 67 percent of all its new school buses were equipped with a stop signal arm. Florida commented that it requires two stop signal arms for buses exceeding 23 feet and that the second arm costs between $125 and $200. Illinois, Hawaii, and Washington commented that the cost of installing the proposed stop signal arm compared to the sign they now require would not be significant. California stated the total cost of retrofitting its 21,400 buses would exceed $8 million.

The agency has revised its initial cost estimate based on the comments and additional information. It now estimates that the unit cost for requiring school buses to be equipped with a stop signal arm will be between $200 and $300. The agency also has modified its estimates about the number of school buses affected by this final rule. Based on the data supplied by Blue Bird, the agency believes that 33 percent of the 38,700 new school buses manufactured each year are not equipped with stop signal arms. Therefore, the agency now estimates that 12,800 new school buses will be affected by this final rule. Stop signal arms can be vacuum, air, or electrically operated. Blue Bird provided installation rates for the three types of systems for the 1989 model year as follows: Vacuum—18 percent; air—46 percent; and electric—36 percent. Estimating installed prices of $200, $250, and $300 for vacuum, air, and electrically-operated systems, respectively, and applying Blue Bird's installation rates for the three types of systems, produces an estimated annual cost of $3,315,000 for this rulemaking.

In response to California's concern about the costs for retrofitting school buses currently in use, NHTSA emphasizes that its safety standards apply to the manufacture and sale of new school buses. Therefore, this rulemaking does not require any State or local jurisdiction to install this device on school buses now in use.

As explained in the earlier discussion about the effectiveness of stop signal

arms, the agency estimates that the effectiveness of these devices ranges between 30 to 55 percent. Although no conclusive relationship can be demonstrated between illegal passes and injuries and fatalities, each illegal pass of a stopped school bus has the potential of striking a student in a loading zone. As elaborated in the FRE, requiring the installation of stop signal arms should reduce the number of illegal passes by millions of incidents each year.

NHTSA has considered the effects of this action under the Regulatory Flexibility Act. I hereby certify that it will not have a significant economic impact on a substantial number of small entities. School bus manufacturers are generally not small businesses within the meaning of the Regulatory Flexibility Act. Small governmental units and small organizations are generally affected by amendments to the Federal motor vehicle safety standards as purchasers of new school buses. However, any impact on small entities from this action will be minimal since the price increase resulting from this rule is approximately $200 to $300, a small fraction of the purchase price of a bus, which can range from $20,000 to more than $60,000. Accordingly, the agency has determined that preparation of a regulatory flexibility analysis is unnecessary.

NHTSA has also analyzed this rulemaking action for purposes of the National Environmental Policy Act. The agency has determined that implementation of this action would not have any significant impact on the quality of the human environment.

This rulemaking has been analyzed in accordance with the principles and criteria contained in Executive Order 12612, and NHTSA has determined that it does not have sufficient federalism implications to warrant preparation of a Federalism Assessment.

In its analysis, the agency considered the rulemaking's likely effect on the States and possible alternatives to the rulemaking. The agency has determined that States increasingly are requiring school buses to be equipped with a stop signal arm, with 36 States now requiring them. Though the rule will result in school buses being equipped with this device in 14 States not now requiring them, the agency has determined that the rule is necessary to promote nationwide uniformity in sending the same signal to motorists traveling near stopped school buses. Of the twelve State organizations commenting on the proposal, all but the California DOE favored the rulemaking. In addition, the Tenth and Eleventh National Conferences on School Transportation, meetings attended by State representatives interested in pupil transportation, recommended that school buses be equipped with a stop signal arm. As this preamble explained earlier, the new Federal standard provides a minimum requirement that the States may exceed. In addition, few State commenters indicated the rule would pose a significant burden on them. Even the California Highway Patrol, which doubted the effectiveness of stop signal arms, acknowledged the importance of uniformity of highway controls, especially around school buses. Illinois, one of the few States that will have to modify its stop signal arm design, "strongly supported" the Federal Standard and stated the costs of modifying its devices would be minimal. NHTSA accordingly does not expect any significant adverse impact on the States from this rulemaking.

Alternatively, NHTSA could have discontinued this rulemaking and not required school buses to be equipped with a stop signal arm. Based on the agency's review of the rulemaking, including the commenters' general support for the rule and the national conference's endorsement of this device, the agency has decided that the Federalism implications are not significant enough to require the preparation of a Federalism Assessment or prevent the final rule's adoption.

List of Subjects in 49 CFR Part 571

Imports, Incorporation by reference, Motor vehicle safety, Motor vehicles, Rubber and rubber products, Tires.

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

In consideration of the foregoing, 49 CFR part 571 is amended as follows:

1. The authority citation for part 571 of title 49 continues to read as follows:

Authority: 15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 49 CFR 1.50.

2. Section 571.131, Federal Motor Vehicle Safety Standard No. 131, is added to read as follows:

§ 571.131 Federal Motor Vehicle Safety Standard No. 131; School bus pedestrian safety devices.

S1. *Scope.* This standard establishes requirements for devices that can be installed on school buses to improve the safety of pedestrians in the vicinity of stopped school buses.

S2. *Purpose.* The purpose of this standard is to reduce deaths and injuries by minimizing the likelihood of vehicles passing a stopped school bus and striking pedestrians in the vicinity of the bus.

S3. *Application.* This standard applies to school buses.

S4. *Definitions.*

Stop signal arm means a device that can be extended outward from the side of a school bus to provide a signal to other motorists not to pass the bus because it has stopped to load or discharge passengers.

S5. *Requirements.* Each school bus shall be equipped with a stop signal arm meeting the requirements of S5.1 through S5.5 as depicted in Figure 1.

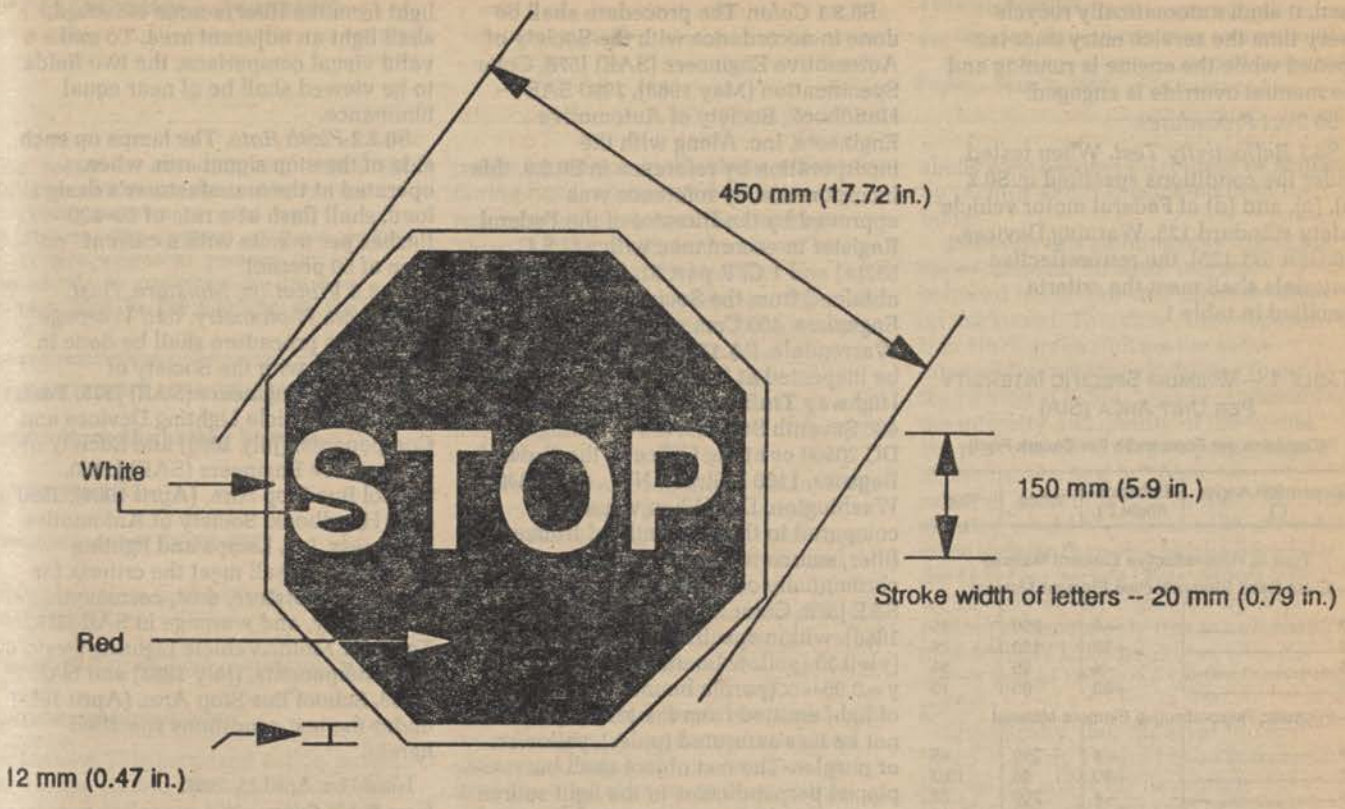


Figure 1. Characteristics of Stop Signal Device

S5.1 The stop signal arm shall be a regular octagon which is at least 450 mm×450 mm (17.72 inches×17.72 inches) in diameter.

S5.2 The stop signal arm shall be red on both sides, except as provided in S5.2.1 and S5.2.2, and S5.2.3.

S5.2.1 The stop signal arm shall have a white border at least 12 mm (0.47 inches) wide on both sides, except as provided in S5.2.3.

S5.2.2 The stop signal arm shall have the word "STOP" displayed in white upper-case letters on both sides, except as provided in S5.2.3. The letters shall be at least 150 mm (5.9 inches) in height and have a stroke width of at least 20 mm (0.79 inches).

S5.2.3 When two stop signal arms are installed on a school bus, the rearmost stop signal arm shall not contain any lettering, symbols, or markings on the forward side.

S5.3 *Conspicuity.* The stop signal arm shall comply with either S5.3.1 or S5.3.2, or both.

S5.3.1 The entire surface of both sides of the stop signal arm shall be reflectorized with type III retroreflectorized material that meets the minimum specific intensity requirements of S6.1 and Table 1. When two stop signal arms are installed on a school bus, the forward side of the rearmost stop signal arm shall not be reflectorized.

S5.3.2 Each side of the stop signal arm shall have at least two red lamps that meet the requirements of S6.2. The lamps shall be centered on the vertical centerline of the stop arm. One of the lamps shall be located at the extreme top of the stop arm and the other at its extreme bottom.

S5.4 The stop signal arm shall be installed on the left side of the bus.

S5.4.1 The stop signal arm shall be located such that, when in the extended position:

(a) The stop arm is perpendicular to the side of the bus, plus or minus five degrees;

(b) The top edge of the sign is parallel to and within 6 inches of a horizontal plane tangent to the lower edge of the driver's window frame; and

(c) The vertical centerline of the stop sign is at least 9 inches away from the side of the school bus.

S5.4.2 A second stop signal arm may be installed on a school bus. That stop signal arm shall comply with S5.4 and S5.4.1.

S5.5 The stop signal arm shall be automatically extended in such a manner that it complies with S5.4.1, at a minimum whenever the red signal lamps required by S5.1.4 of Standard No. 108 are activated; except that a device may be installed that prevents the automatic extension of a stop signal arm. The mechanism for activating the device shall be within the reach of the driver. While the device is activated, a continuous or intermittent signal audible to the driver shall sound. The audible signal may be equipped with a timing device requiring the signal to sound for at least 60 seconds. If a timing device is

used, it shall automatically recycle every time the service entry door is opened while the engine is running and the manual override is engaged.

S6 *Test Procedures.*

S6.1 *Reflectivity Test.* When tested under the conditions specified in S6.2 (b), (c), and (d) of Federal motor vehicle safety standard 125, Warning Devices, (49 CFR 571.125), the retroreflective materials shall meet the criteria specified in table 1.

TABLE 1.—MINIMUM SPECIFIC INTENSITY PER UNIT AREA (SIA)

(Candelas per Footcandle Per Square Foot)

Observation Angle (°)	Entrance Angle (°)	White	Red
Type III Retroreflective Element Material			
A—Glass Bead Retroreflective Element Material			
0.2	−4	250	45
0.2	+30	150	25
0.5	−4	95	15
0.5	+30	65	10
B—Prismatic Retroreflective Element Material			
0.2	−4	250	45
0.2	+30	95	13.3
0.5	−4	200	28
0.5	+30	65	10

S6.2 *Lighting Tests.*

S6.2.1 *Color.* The procedure shall be done in accordance with the Society of Automotive Engineers (SAE) J578, Color Specification (May 1988), 1990 SAE Handbook, Society of Automotive Engineers, Inc. Along with the incorporation by reference in S6.2.3, this incorporation by reference was approved by the Director of the **Federal Register** in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096–0001. Copies may be inspected at Docket Room, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590 or at the Office of the **Federal Register**, 1100 L Street, NW., room 8401, Washington, DC. When visually compared to the light emitted from a filter/source with a combination of chromaticity coordinates as explained in SAE J578, Color Specification (May 1988), within specific boundaries [y=0.33 (yellow boundary) and y=0.98—x (purple boundary)] the color of light emitted from the test object shall not be less saturated (paler), yellower, or purpler. The test object shall be placed perpendicular to the light source to simulate lamps on stop signal arms. In making visual comparisons, the light from the test object shall light one portion of a comparison field and the light from the filter/source standard shall light an adjacent area. To make a valid visual comparison, the two fields to be viewed shall be of near equal luminance.

S6.2.2 *Flash Rate.* The lamps on each side of the stop signal arm, when operated at the manufacturer's design load, shall flash at a rate of 60–120 flashes per minute with a current "on" time of 50 percent.

S6.2.3 *Vibration, Moisture, Dust, Corrosion, Photometry, and Warpage Tests.* The procedure shall be done in accordance with the Society of Automotive Engineers (SAE) J575, Tests for Motor Vehicle Lighting Devices and Components, (July 1983) and Society of Automotive Engineers (SAE) J1133, School Bus Stop Arm, (April 1984), 1990 SAE Handbook, Society of Automotive Engineers, Inc. Lamps and lighting components shall meet the criteria for vibration, moisture, dust, corrosion, photometry, and warpage in SAE J575, Tests for Motor Vehicle Lighting Devices and Components, (July 1983) and SAE J1133, School Bus Stop Arm, (April 1984) under the test conditions specified herein.

Issued on: April 25, 1991.

Jerry Ralph Curry,

Administrator.

[FR Doc. 91–10481 Filed 5–2–91; 8:45 am]

BILLING CODE 4910–59–M