SAE The Engineering Society For Advancing Mobility Land Sea Air and Space® INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J699 | REV. NOV85

Issued 1954-01
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Supersedes J699a

Submitted for recognition as an American National Standard

AVERAGE VEHICLE DIMENSIONS FOR USE IN DESIGNING DOCKING FACILITIES FOR MOTOR VEHICLES

1. ***Scope—***This SAE Recommended Practice establishes limits for empty vehicle floor heights and provides limits of vehicle dimensions for use in designing docking facilities for motor vehicles.

2. ***References***

2.1 **Applicable Publications—**The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest version of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J695—Turning Ability and Off Tracking—Motor Vehicles

2.1.2 TIRE AND RIM ASSOCIATION PUBLICATION—Tire and Rim Association, 175 Montrose West Avenue, Suite 150, Copley, OH 44321.

Tire and Rim Association Yearbook

3. ***Empty Vehicle Floor Heights—***The following are recommended floor heights of van-type vehicles without wheel housings, including both straight trucks and tractor semitrailers. These heights were taken from representative fleets. Special purpose equipment may vary considerably.

4. ***Overall Heights of Vehicles***

4.1 **City and Over-the-Road Vehicles—**May vary up to 14 ft depending on local laws. It is recommended that all doorways, marquees, and the like, be so designed to clear vehicles of 14 ft height under all conditions of ice, snow, and uneven approaches.

NOTE—Where the approach to a building is not level, additional clearance must be allowed over that necessary for a level approach. Special consideration must be given to curbside, overhead, alley, and other obstructions.

5. ***Vehicle Widths—***Vehicle widths may vary up to 108 in. At present, 102 in is maximum in most states.

NOTE—Due to body sway, while passing over uneven road surfaces or slopes, the top of a body may require greater side clearance than that necessary at the tire level.

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6. Maximum Gradient—For most efficient operation, the maximum gradient at docks should not exceed 6%.

7. Turning Radius—Since turning radii vary extremely with make, type, and combinations of vehicles, manufacturers' data books and other sources must be consulted and the physical aspects of the property must be considered. (See SAE J695b.)

8. Sources of Information

8.1 Data received from representative fleets.

8.2 Current Yearbook, Tire and Rim Association, Inc., Akron, Ohio.

Type	Representative Tire Sizes (1)		Maximum Overall Tire Diameter, in	Loaded Vehicle Floor Heights, in
	Tube	Tubeless		
City vehicles	7.50 x 20	8.00 x 22.5	39	44 ± 2
	8.25 x 20	9.00 x 22.5	41	46 ± 2
	9.00 x 20	10.00 x 22.5	43	48 ± 2
Over-the-road vehicles	10.00 x 20	11.00 x 22.5	44	52 ± 2
	10.00 x 22	11.00 x 24.5	46	54 ± 2
	11.00 x 20	12.00 x 22.5	46	54 ± 2
	11.00 x 22	12.00 x 24.5	48	56 ± 2

It is preferable that the dock be slightly lower than the truck floor to permit opening of the doors.

1. Tire sizes shown are representative of some used in industry. For other sizes consult the current Tire and Rim Association Year Book (see paragraph 8.2) for diameter determination.

9. Notes

9.1 Marginal Indicia—The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE TRUCK AND BUS CHASSIS SUBCOMMITTEE

Rationale—Not applicable.

Relationship of SAE Standard to ISO Standard—Not applicable.

Application—This SAE Recommended Practice establishes limits for empty vehicle floor heights and provides limits of vehicle dimensions for use in designing docking facilities for motor vehicles.

Reference Section

SAE J695—Turning Ability and Off Tracking—Motor Vehicles

Tire and Rim Association Yearbook, Tire and Rim Association, Inc., Akron, Ohio

Developed by the SAE Truck and Bus Chassis Subcommittee

Sponsored by the SAE Truck and Bus Chassis Committee

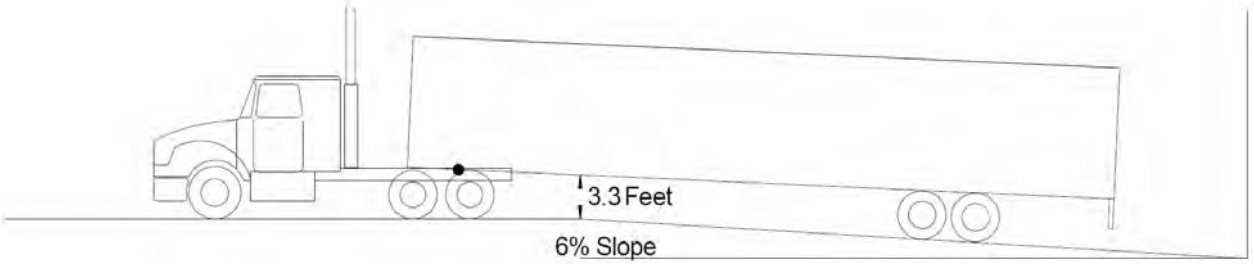

Figure 7 - Clearance of the a 53' Semitrailer loading/unloading cargo on a 6% recessed ramp.

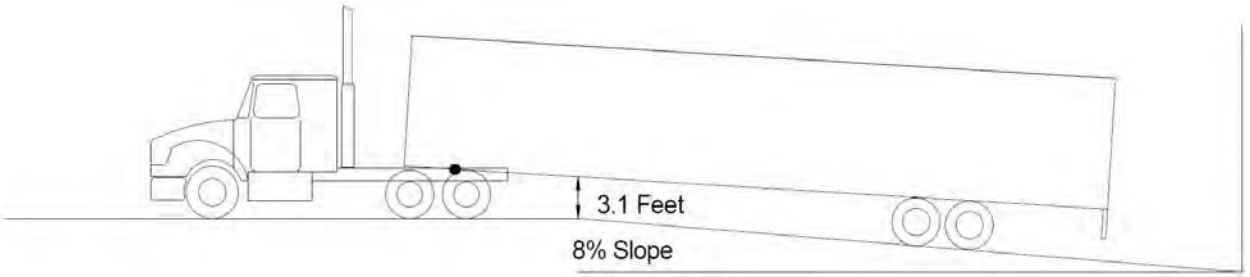

Figure 8 - Clearance of a 53' Semitrailer loading/unloading cargo on an 8% recessed ramp.

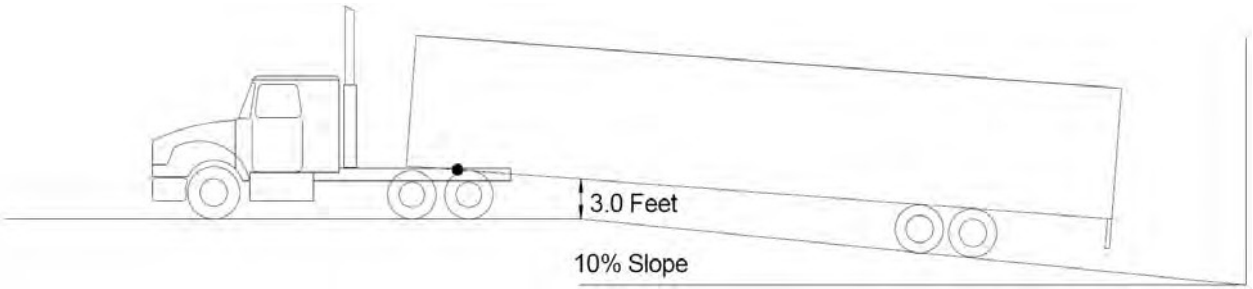

Figure 9 - Clearance of a 53' Semitrailer loading/unloading cargo on a 10% recessed ramp.

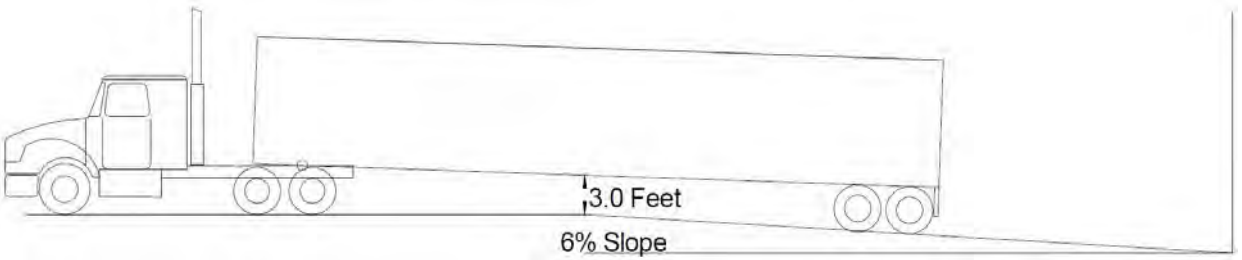

Figure 10 Clearance of a 53' Semitrailer loading/unloading cargo on 6% recessed ramps.

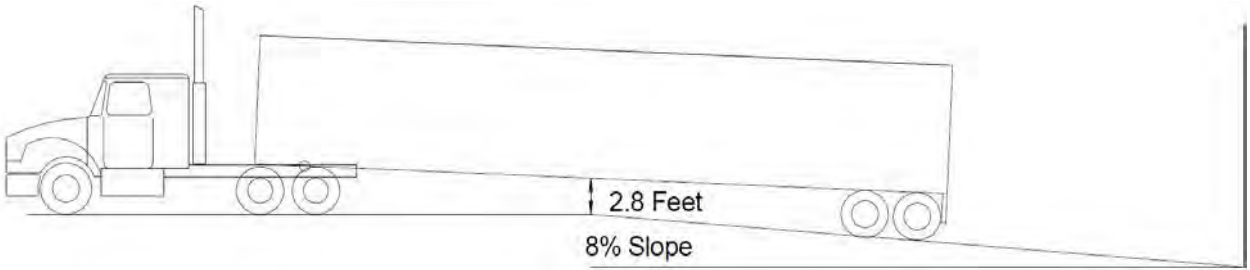

Figure 11 Clearance of a 53' Semitrailer loading/unloading cargo on 8% recessed ramps.

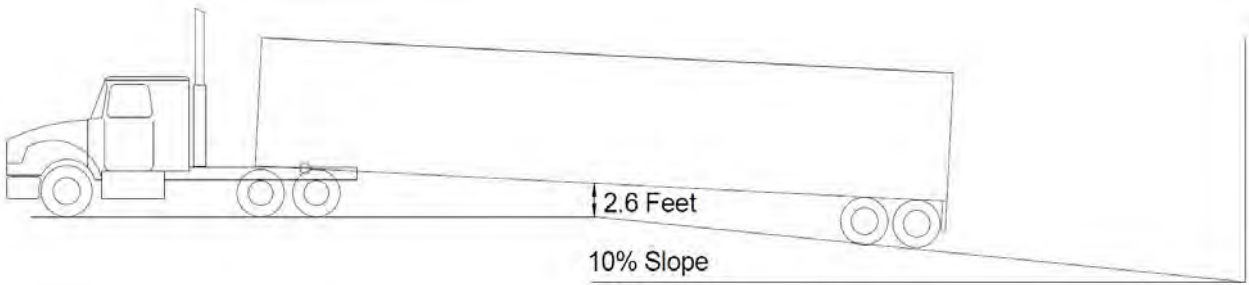

Figure 12 - Clearance of a 53' Semitrailer loading/unloading cargo on 10°% recessed ramps.

Table 1 - 53' Semitrailer Clearance

19.69" Clearance with Side Underride	**6 % Slope Clearance**	**8 % Slope Clearance**	**10 % Slope Clearance**
Tire Location Forward	39.6" - 25.31" = **14.29"**	37.2" – 25.31" = **11.89"**	36" – 25.31" = **10.69"**
Tire Location at Maximum Aft	36" – 25.31" = **10.69**"	33.6" – 25.31" = **8.29"**	31.2" – 25.31" = **5.89"**

Average Vehicle Dimensions for Use in Designing Docking Facilities for Motor Vehicles—SAE J699a

SAE Recommended Practice
Editorial change November 1977

THIS IS A PREPRINT AND WILL APPEAR IN THE 1979 EDITION OF THE SAE HANDBOOK

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

LAND SEA AIR SPACE

PREPRINT

AVERAGE VEHICLE DIMENSIONS FOR USE IN DESIGNING DOCKING FACILITIES FOR MOTOR VEHICLES—SAE J699a

SAE Recommended Practice

Report of Transportation and Maintenance Technical Committee approved January 1954 and last revised by Transportation and Maintenance Technical Committee and Truck and Bus Technical Committee June 1971. Editorial change November 1977.

1. Scope—This SAE Recommended Practice establishes limits for empty vehicle floor heights and provides limits of vehicle dimensions for use in designing docking facilities for motor vehicles.

2. Empty Vehicle Floor Heights—The following are recommended floor heights of van-type vehicles without wheel housings, including both straight trucks and tractor semitrailers. These heights were taken from representative fleets. Special purpose equipment may vary considerably.

3. Overall Heights of Vehicles

3.1 Van-Type City Delivery Vehicles—May vary up to 13 ft 6 in.

3.2 Over-the-Road Vehicles—May vary up to 14 ft. At present, 13 ft 6 in. is maximum in all but five states while the District of Columbia limit is 12 ft 6 in.; four states allow 14 ft and one state (Nevada) has no restriction. It is recommended that all doorways, marquees, and the like, be so designed to clear vehicles of 14 ft height under all conditions of ice, snow, and uneven approaches.

NOTE: Where the approach to a building is not level, additional clearance must be allowed over that necessary for a level approach. Special consideration must be given to curbside, overhead, alley, and other obstructions.

4. Vehicle Widths—Vehicle widths may vary up to 108 in. At present, 96 in. is maximum in most states.

NOTE: Due to body sway, while passing over uneven road surfaces or slopes, the top of a body may require greater side clearance than that necessary at the tire level.

5. Maximum Gradient—For most efficient operation, the maximum gradient at docks should not exceed 6%.

Type	Representative Tire Sizes		Maximum Overall Tire Diameter, in	Empty Vehicle Floor Heights, in
	Tube	Tubeless		
City vehicles	7.50 x 20	8.00 x 22.5	39	44 ± 2
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NOTE: It is preferable that the dock be slightly lower than the truck floor to permit opening of the doors.

6. Turning Radius—Since turning radii vary extremely with make, type, and combinations of vehicles, manufacturers' data books and other sources must be consulted and the physical aspects of the property must be considered. ϕ (See SAE J695a.)

7. Sources of Information

1. Data received from representative fleets.
2. "State Motor Vehicle Size and Weight Laws." Highway Users Federation for Safety and Mobility, Washington, D. C., January 1971.
3. 1970 Year Book, Tire and Rim Association, Inc., Akron, Ohio.

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