INTERPRETATIVE BULLETIN J-1-76
TRANSPORTATION - SUBPART J OF PART 3280

A. SECTION 3280.903(c)(2) GENERAL REQUIREMENTS FOR DESIGNING THE STRUCTURE TO WITHSTAND TRANSPORTATION, SHOCK AND VIBRATION.

Documented evidence such a service records or other documents certified to by duly authorized personnel of the manufacturer is acceptable for compliance with this section when failures related to chassis damage (e.g., frame or drawbar damage, running gear failure, etc.) And body failure due to transportation loading do not exceed 1% of the total number of units ("Floors") transported upon that chassis. Latent damage failures (e.g., racked windows and doors, floor misalignment, etc.) resulting from primary or secondary movement, which are not related to improper sitting or leveling of the mobile home or loading in excess of the manufacture's recommendations during transport of the mobile home, shall be included in determining the 1% maximum failure level. If the manufacturer does not have or cannot provide actual records of latent damage history, the manufacturer shall provide a statement that, to the manufacturer's knowledge, no latent damage has occurred as a result of transportation.

B. SECTION 3280.903(b) - 3280.904(b)(3) - STRUCTURAL CALCULATION GUIDELINES FOR IN-TRANSIT CONDITIONS IN MOBILE HOMES.

General. The following engineering guidelines are descriptive of methods and design assumptions which may be used for analytical evaluation of in-transit loading conditions. These guidelines have been developed with emphasis on the design of the longitudinal structural components of the mobile home (e.g., main chassis girder beam, the side-wall, rim joist, etc.), as transportation loadings are ordinary critical in the longitudinal direction. However, all elements necessary to the structural integrity of the mobile home during in-transit loading are to be evaluated (e.g., transverse chassis and floor framing members, drawbar, etc.). HUD recognizes the complexity and variety of design assumptions and techniques which may be used in evaluating in-transit loading conditions and provides these guidelines as initial methods for determining compliance with this section. Due to this variation and complexity of assumptions, HUD has undertaken as part of its transportation research study, the development of analytical methods for predicting the dynamic response of the mobile home to in-transit loading.

Design Methods and Assumptions. - Design Loading. The summation of the following loading may be used to determine the adequacy of the chassis in conjunction with the mobile home structure to resist in-transit loading:

(a) dead load, the vertical load due to the weight of all structural and non-structural components of the mobile home at the time of shipment.
(b) floor load, a minimum of 3 pounds per sq. ft.
(c) dynamic loading effect, (0.25)[(a) + (b)].

However, the in-transit design loading need not exceed twice the dead load of the mobile home.

Design Considerations. To determine the adequacy of individual longitudinal structural components to

resist the in-transit design loading, a load distribution based on the relative flexural rigidity and shear stiffness of each component may be utilized.
For the purpose of loading distribution, the sidewall may be considered to be acting as a "deep beam" in conjunction with other load carrying elements in determining the relative stiffness of the integrated structure. Further, by proper precambering of the chassis assembly, additional loading may be distributed to the chassis, and the remaining loading may be distributed to each of the load carrying components by the relative stiffness principle.
In addition, the analysis should include consideration for:

(1) Location of openings in the sidewall during transport and, when appropriate, provisions for reinforcement of the structure and/or chassis at the opening.

(2) Sidewall component member sizing and joint-splice analysis (i.e., top plate, etc.), and connections between load carrying elements.

C. SECTION 3280.904(b)(6) - AXLES

Unless substantiated in the design to the satisfaction of the approval agency (DAPIA) by either engineering analysis, load tests or documented evidence of actual transportation experience, there shall be no less than the following minimum number of 6000# rated axles with not less than the mobile home rated tires indicated in Table 1 and Table 2, on each mobile home or floor section of a multiple unit mobile home:

TABLE 1

Length of mobile home[1]	No. of 6,000 pound rated axles equipped with 7 x 14.5 Mobile Home 8-ply tires
12 foot wide:	
To 60 ft. maximum	2
Greater than 60	3
14 foot wide:	
To 52 ft. maximum	2
To 76 ft. maximum	3
To 80 ft. maximum	4

TABLE 2

Length of mobile home[1]	No. of 6,000 pound rated axles equipped with 8 x 14.5 rated tires
12 foot wide:	
To 65 ft. Maximum	2
Greater than 65 ft. To 80 ft. maximum	3

[1]Length of a mobile home is the "length" as defined in 3280.902(b).

Determination of the number of axles required by use of the above tables does not eliminate the requirement for each axle to be capable of withstanding the actual imposed dead load without exceeding the maximum allowable stresses for design axle life as recommended by the axle manufacturer, or the maximum tire load rating in 3280.904(b)(8). If a manufacturer has submitted documented evidence of transportation experience to meet the requirements of 3280.903(c)(2), the minimum number of axles required by the experience record may not be reduced by use of the above tables. (The number of axles must be consistent with and no less than the number and rating of the axles indicated in the experience record.)

D. SECTION 3280.904(b)(8) - TIRES, WHEELS, AND RIMS

Tires shall be sized and fitted to axles in accordance with the gross axle weight rating determined by the mobile home manufacturer.

The Permissible tire loading may be increased by utilizing a service load factor not to exceed 50% of the mobile home tire load limits specified in MH-1 of the Tire and Rim Association Handbook (1975 edition), but the individual permissible tire loading may not exceed 3,000 pounds. For example, the inflation pressure would be 2805 lbs. (1870 lbs.(MH-1 rating) x 1.5 (service load factor) = 2805 lbs.). The tire load limit specified in MH-1 shall be determined by the tire manufacturer in accordance with procedures described in 49 CFR 571.119.

Used tires may also be sized in accordance with the above criteria whenever the tread depth is at least 2/32 of an inch as determined by a tread wear indicator. The determination as to whether a particular used tire is acceptable shall also include a visual inspection of thermal and structural defects (e.g., dry rotting, excessive tire sidewall splitting, etc.).

Wheels and rims shall be sized in accordance with the tire manufacturer's recommendations as suitable for use with the tires selected.

E. SECTION 3280.904(b)(9) - BRAKE ASSEMBLIES

Unless substantiated in the design to the satisfaction of the approval agency by either engineering analysis or those alternatives listed in 3280.903(c)(1) and (2), there shall be a minimum of two axles equipped with brake assemblies on each mobile home floor or unit.

Whenever tests are used to verify the adequacy of the combined braking performance of the towing vehicle and the mobile home, the combined braking system shall be capable of assuring that the maximum stopping distance from an initial velocity of 20 mph does not exceed 40 feet. The stopping distance shall be measured from the point at which movement of the service brake pedal or control begins.

The towing vehicle and mobile home shall be in the center of a 12' wide lane when the tests begin and the tires shall not deviate from the lane during the tests. The test shall be made on a level surface that is substantially dry, smooth, and free of loose material. The tests shall be made utilizing the actual combinations or running gear equipment to be used by the manufacturer in production.

Regardless of the method of substantiation, any substitution of equipment by the manufacturer shall be approved by the DAPIA, and have a rating no less than the equipment being replaced.

F. SECTION 3280.904(b)(10) - LIGHTS AND ASSOCIATED WIRING

Federal Motor Vehicle Safety Standard No. 108 shall be deemed the applicable Federal standard to be used for location and performance of highway safety electrical lights and associated wiring for determining compliance with this section.

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