METHOD OF CONVERTING HEAVY MOTOR VEHICLE LOADS INTO EQUIVALENT DESIGN LOADS ON THE BASIS OF MAXIMUM BENDING MOMENTS

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BULLETIN NO. 127 — OCTOBER 1952

A Publication Resulting From
The Cooperative Investigation of Bridge Types
by the
Bureau of Public Roads
and the
Texas Engineering Experiment Station

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ACKNOWLEDGMENT

The authors wish to express their appreciation to H. S. Fairbank, Deputy Commissioner, Bureau of Public Roads, Washington, D. C., for the encouragement and cooperation they have received throughout the course of the research which has made possible this bulletin. They also wish to express their thanks to C. F. Rogers, Raymond Archibald, E. L. Erickson, and Neil Van Eenam, all of the Bureau of Public Roads, for helpful advice and criticism in the preparation and final review of the manuscript.

Due recognition and appreciation is extended to the 47 state highway departments for their efficient cooperation in the loadometer survey of 1942 which provided the basic information for much of the discussion and the observed and calculated frequency distributions of highway loads given in Parts IV and V of this bulletin.

This study was conducted by staff members of the Texas Engineering Experiment Station of the Texas Agricultural and Mechanical College System. The authors are indebted to James W. Williams, Mrs. Bettye D. Regester, Mrs. Jane D. Meliff, Mrs. Inell S. Stephens, Mrs. Marguerite J. Jones, Mrs. Mozelle W. Todd, Mrs. Barbara K. Durham, and Mrs. Laura N. Holt for various assistance. Finally the authors wish to acknowledge the fine work of the late Fred B. Walker, who was a staff member of the Texas Engineering Experiment Station and prepared and checked the drawings.

FOREWORD

The cost of bridges and other highway structures is not only a function of the sizes and weights of the heavier motor vehicle loads to which they are subjected but also the frequencies with which the various intensities of these loads are applied.

More accurate knowledge concerning the stress producing effects of the various heavy vehicle types and loadings, and their expected frequencies, should contribute toward a reduction in the cost of these structures through the establishment of minimum design standards which are consistent with practical needs.

Certain of the complexities involved in these problems have been removed.

Trucks and bridges can be brought to a common denominator. The method presented for accomplishing this and all pertinent data along with a discussion on estimating the occurrence of various weight concentrations in traffic appear in this publication.

It is hoped that the technical and nontechnical publics whose problems touch on these fields shall avail themselves of it.

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SUMMARY

The rating of heavy motor vehicle types and loadings—such as those reported by a local, state, or national loadometer survey—in terms of equivalent H truck loadings, equivalent H design loadings, equivalent concentrated loads or any other convenient standardized loads can be accomplished by evaluating some stress producing effect on a bridge type and then finding the gross weight required on a standard vehicle to produce the same effect.

Tables and charts are provided for rating most any type of heavy vehicle—irrespective of its wheel base length, number and spacing of axles, or distribution of load among the axles—ordinarily encountered in highway traffic, in terms of standardized equivalent loads.

It was observed that the Poisson distribution yields mathematical answers which are sufficiently accurate in many practical situations for estimating the frequencies of various intensities of highway loads or loading equivalencies, and for evaluating their stress producing effects on simple span bridges and other highway structures.

INTRODUCTION

This bulletin has been prepared for the convenience of those who are concerned with one or more problems associated with the sizes, weights, and frequencies of heavy motor vehicles commonly used for heavy trucking operations in present-day highway traffic. It was prepared in response to the long-standing and increasing needs of engineers and others for factual information, principles, and methods that might be used as an approach to the analysis and solution of certain of these problems.

In recognition of these needs, and as a partial contribution toward their fulfillment, it presents the results obtained from a rather extensive investigation of highway loads and their stress producing effects (based on maximum bending moment) on simple span bridges of various lengths, and undertakes to show how this information may be used for analyzing and solving several types of these problems. And, by way of showing how this approach is related to certain other elements which must be taken into account in the study of heavy motor vehicle problems and their influence on highway and bridge provision requirements, it also presents a brief discussion of some of the more important considerations involved in the establishment of minimum standards for the design, construction, or rating of highways and bridges for given traffic conditions.

The results of these studies not only provide the means for solving several interesting problems pertaining to the stress producing characteristics of the more common heavy vehicle types and loadings and for measuring their effects in terms of equivalent loads, but they also include a wide variety of basic data that should prove to be of value in the study of similar or related problems that are not considered in this report. The problems selected here for special consideration will be discussed later in more detail.

It requires but little reflection to appreciate the fact that the problems associated with the sizes, weights, and frequencies of heavy motor vehicles ordinarily encountered in highway traffic are both numerous and varied. Their influence not only extends into practically every phase of highway design, construction, maintenance, and administration, but also into the fields of highway economics and motor transport, and even into the design and manufacture of heavy motor vehicles and other transportation equipment. The scope of this bulletin, however, is limited to a comparatively small segment of these problems; namely, those whose solutions are related in one way or another to the stress producing characteristics of highway loads or their effects on the load carrying capacity of simple span bridges of various lengths.

The main objectives of this work are:

1. To furnish, arrange, and catalogue the factual information and other background material required for quickly and accurately determining the stress producing characteristics of the more common heavy vehicle types and loadings on simple span bridges of various lengths.

2. To outline and discuss the method proposed for converting a given heavy vehicle loading into an equivalent load whose stress producing effects on various span lengths are the same as those for the given vehicle loading. For this purpose, heavy vehicle loads may be converted into equivalent H truck loadings, equivalent H-S truck loadings, equivalent concentrated loads, or equivalent loads based on any other standardized design vehicle or arbitrary loading that might prove to be desirable as a basis of measure or comparison.

3. To illustrate how the use of equivalent loads provide a simple yet rational means for analyzing the relative frequencies, or frequency distribution, of various intensities of heavy vehicle loads for given traffic conditions.

4. To show how the frequency distributions of various intensities of equivalent loads obtained from the heavy vehicle data reported by a local, state, or national loadometer survey provide a quantitative measure of the level or levels of heavy motor vehicle operation at those stations or on those routes covered by such surveys.

5. To introduce and explain the use of some of the more elementary statistical methods which have been found appropriate for determining the frequencies of various intensities of equivalent vehicle loadings for given traffic conditions.

6. To point out and discuss certain potential uses for the above mentioned data that are not specifically covered by the foregoing objectives.

The substance of these objectives may be summarized rather briefly by saying that the over-all objective of this bulletin is to develop a mathematical procedure, based on accepted engineering principles, for the rating of the more common heavy vehicle types and loadings in terms of standardized equivalent loads; and to show how the frequency distributions of various intensities of these equivalent loads provide a simple precise and yet rational means for measuring the level or levels of heavy motor vehicle operation corresponding to various traffic conditions.

Since the principal function of this bulletin is to serve as a reference, handbook, or catalogue of highway loads, and their stress (moment) producing effects on simple spans, and for the rating of heavy vehicle types and loadings in terms of equivalent loads, more than half the volume is devoted to the presentation of tables and charts for these purposes. The major portion of the remaining half consists of tables and charts pertaining to the analysis of heavy motor vehicle operation in 1942. The frequency distributions of equivalent H truck loadings and equivalent concentrated loads shown in these studies were based on the sizes and weights of the heavy vehicles reported by the special loadometer survey of 1942. For these reasons, the text material has been purposely held to a minimum, most of which is in explanatory articles of Part I and Part III.

For convenience, the presentation and discussion of this material has been divided into six parts. Part I deals with the development and use of equivalent loads as a means for measuring heavy motor vehicle operation. Part II presents the reference tables and charts for the identification and rating of heavy vehicle types and loadings in terms of equivalent loads, and for determining the maximum moment produced by such vehicles on simple span bridges of various lengths. Part III undertakes to show how the Poisson distribution formula correlates with the measurement of the frequency distribution of various intensities of equivalent heavy motor vehicle loads on various spans and how the results of such studies provide a quantitative measure of heavy motor vehicle operation. Part IV presents a study of the observed frequency distributions of equivalent H truck loadings, as obtained from the heavy vehicle data reported by the 1942 loadometer survey, and compares the results with the calculated frequencies based on the Poisson frequency distribution formula as discussed in Part III. In a similar manner, Part V presents a study of the observed and calculated frequency distributions of equivalent concentrated loads based on the same heavy vehicle data as that used to obtain the frequency distributions given in Part IV. In fact, the only difference between Parts IV and V is that the observed and calculated frequency distributions given in Part V are based on equivalent concentrated loads instead of equivalent H truck loadings as shown in Part IV. The bulletin then closes with the brief summary and conclusions given in Part VI.

Part I

DEVELOPMENT AND USE OF EQUIVALENT LOADS FOR MEASURING HEAVY MOTOR VEHICLE OPERATION

1. PERMISSIBLE VEHICLE WEIGHTS ON ROADWAYS AND BRIDGES

1.1 General

The over-all objective of this bulletin, as was discussed in some detail in the introduction, is to develop a rapid yet simple and accurate mathematical procedure for the rating of heavy motor vehicle types and loadings, such as those reported by a loadometer survey, in terms of equivalent H truck loadings or any other convenient standardized equivalent loads; and to show how the frequency distributions of these equivalent loads provide a rational means for measuring the level or levels of heavy motor vehicle operation corresponding to given traffic conditions. In order to accomplish these ends, it is first necessary to find a satisfactory method of converting a given heavy vehicle loading into an equivalent design load.

This may be accomplished by evaluating some stress producing effect, such as maximum moment or shear, caused by the given vehicle on, say, a 40-foot simple span bridge and then finding the gross weight required on, say, a standard H truck to produce the same effect. For example, if the given vehicle caused a maximum moment on this 40-foot span of 259.5 kip-feet (see AASHO moment table) it would produce the same maximum bending stress as an H 15 truck. On this basis, therefore, the given vehicle would be rated as an equivalent H 15 truck loading on a 40-foot simple span bridge. In a similar manner, the given vehicle could be rated in terms of an equivalent H-S truck loading, equivalent concentrated load, or any other standardized equivalent load as may be desired. Moreover, since the maximum moment produced by any given standardized vehicle or loading on a given span bears a constant relationship to the maximum moment produced by any other standardized loading on the same span, any given vehicle that has been converted into either an equivalent H truck loading, an equivalent H-S truck loading, or an equilavent concentrated load, on a given span, can easily be rated in terms of either of the other two equivalent loadings simply by using the conversion coefficients as explained in Article 13.

Owing to the fact that it is the bending stresses that ordinarily determine the load carrying capacity of simple span bridges, the maximum moments produced by heavy vehicle types and loadings on simple spans of various lengths are used in this bulletin as a basis for the determination of equivalent loads. The tables and charts given in Part II provide the means for quickly determining the maximum moment produced by heavy vehicle types and loadings on various spans and also for converting them into equivalent loads. The use of this material will be more fully explained in Article 5.

Another important use of equivalent loads is that of determining permissible vehicle weights on bridges of various lengths and design designations. If the H loading equivalent of a given vehicle on a 40-foot span were known, for example, it would then be a simple matter to decide whether or not it should be permitted to pass over, say, an H 15 bridge of that length. The over-all problem of determining permissible vehicle weights on roadways and bridges, however, is not a simple one. And though no attempt will be made here to cover all the elements involved, it is believed that a brief review of some of the more important considerations which must be taken into account in the study of these problems will contribute toward a better appreciation of their importance. Such a review is given in the remaining sections of this article.

1.2 The Need For Better Understanding of Heavy Motor Vehicle Problems

The maximum size and weights of heavy motor vehicles that should be permitted to operate over the Nation's highways and bridges are subjects that have been of major importance for many years to highway officials, legislative bodies, commercial truckers, and the manufacturers of heavy motor vehicles and other transportation equipment. An almost inconceivable amount of very careful and painstaking study and experimental work has been done on these subjects, particularly during the past thirty or forty years. The importance of these subjects has been increasing year by year along with and at a pace which approximately parallels the rapid increases in commercial trucking operations that have taken place since the end of the first World War. Many able investigators have made valuable contributions to our present store of information on these subjects, but much more research and study will be required to find the ultimate answers to many of the problems pertaining to the sizes and weights of heavy motor vehicles and their effects on the construction and maintenance costs for safe and adequate highway facilities.

For the benefit of those who are not altogether familiar with these problems or the developments leading up to present-day regulation of motor vehicle sizes and weights, it should be explained that many elements of these problems are of a highly controversial nature. And owing to the fact that certain of these matters are of a controversial nature, it should be further explained that the reason for discussing them here is to contribute, if possible, toward a better understanding of some of the issues involved rather than to arrive at any specific recommendations concerning the economic justification of any particular level of permissible axle loads and gross loads that should obtain for given traffic conditions.

The reasons for controversy, however, are not difficult to find since they arise mainly from the different points of view and conflicting interests of (1) those whose business would benefit from either heavier permissible axle loads or gross vehicle weights or both and (2) those (mainly highway officials and legislative bodies) who are charged with the duty and responsibility of providing protection for existing as well as new highway facilities in such ways as to insure their maximum economic[1] life.

In the planning of new facilities, for example, highway officials must not only decide on the maximum permissible axle loads and gross loads to be accommodated, but they must also estimate or otherwise determine the expected frequencies of various intensities of these loads before the actual design of such facilities can even be started. After these matters have been settled and a new facility has been built, it is then the duty of some appropriate regulatory body to see to it that loads in excess of those for which the facility was designed are not permitted.

From a practical point of view, even the layman will agree that thicker pavements and stronger bridges are required to support or sustain heavier loads, and, as a consequence, that highway and bridge provision will cost more to accommodate the heavier loads than would otherwise be required for light loads. In general, what he fails to understand is that the cost of highway and bridge provision is not only a function of permissible axle loads and gross loads, but is also a function of the anticipated frequencies of various intensities of these loads. If the truth of these facts, which are accepted as commonplace by highway and bridge engineers, could be explained to the layman in such a way as to leave no doubt of their validity in his mind, one of the major sources of misunderstanding and controversy concerning the necessity of imposing maximum limitations on axle loads and gross loads would automatically be eliminated.

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[1]H. S. Fairbank, "Sizes and Weights of Motor Vehicles Require Economic Study." CIVIL ENGINEERING, June, 1949, pp. 40-43.

1.3. Effects of Heavy Axle Loads on Roadway Surfaces and Foundations

Insofar as the design of roadway surfaces and foundations are concerned, the deteriorating effects of repeated excessive axle loads can be explained rather easily by briefly describing the procedure recommended by competent highway authorities for evaluating the effects of repeated applications of various intensities of these loads. Concrete, for example, like other structural materials, is affected more by repeated critical stresses than by a single stress of the same magnitude. This effect, for want of a better name has been called "fatigue." Figure 1.1 shows the fatigue behavior of concrete subjected to repeated bending stresses such as those which occur in pavements during

FATIGUE OF CONCRETE IN FLEXURE

RELATION BETWEEN ULTIMATE FLEXURAL STRENGTH OF CONCRETE AND NUMBER OF STRESS REPETITIONS TO INDUCE FATIGUE FAILURE

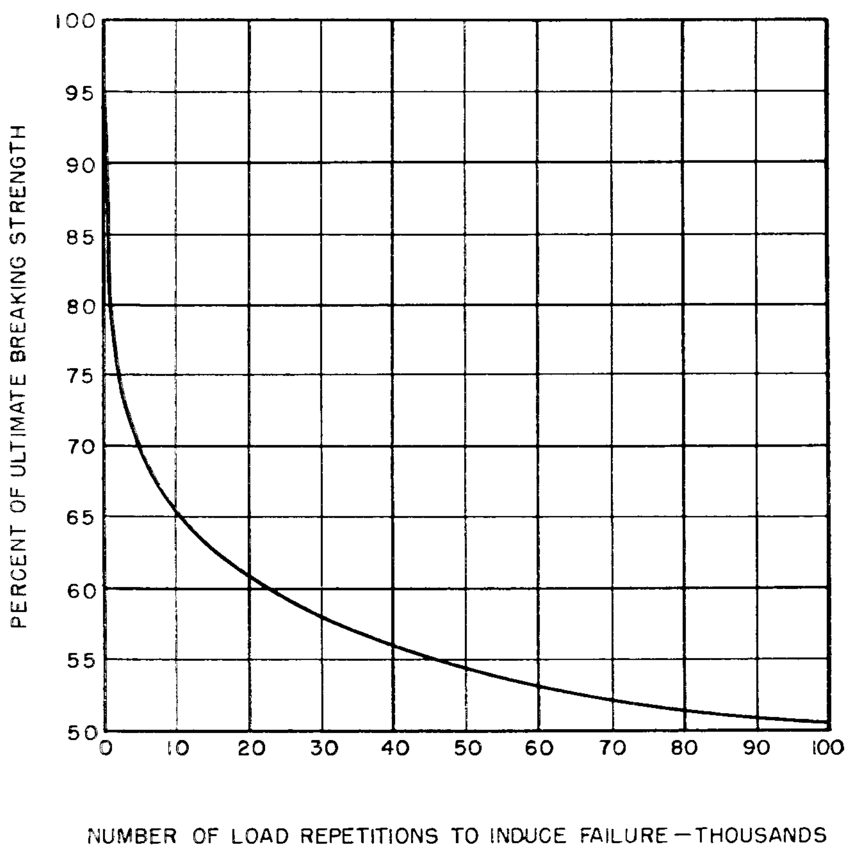


Figure 1.1

the passage of a heavy axle load. This curve is in agreement with Illinois Highway Department studies, which are the most extensive studies available on the fatigue behavior of full-sized concrete specimens under repetitions of flexural stress, and it is also in agreement with current pavement design practice. This curve shows the relationship between ultimate strength and the number of stress repetitions required to induce failure in a concrete pavement.

Perhaps the best way to explain the meaning of this curve (Figure 1.1) would be to avoid the complications involved in an actual design by applying it to an overly simplified illustration. The vertical scale shows the value of flexural stress measured in terms of percent of ultimate flexural strength of concrete and the horizontal scale shows the number of stress repetitions to induce failure. The ultimate flexural strength of concrete ordinarily used for pavements is somewhere in the neighborhood of 700 psi. So if 700 psi concrete were used, then 700 psi would represent 100 percent of its ultimate flexural strength. In connection with this fatigue strength curve (Figure 1.1) it will be noted that a concrete pavement can withstand an indefinitely large number of stress repetitions provided the stress does not exceed about 50 percent of its ultimate strength. In the case of 700 psi concrete, this means that it would not fail from repeated load applications so long as the stress resulting from such loads does not exceed 350 psi, which would be the design stress on about 50 percent of its ultimate strength. On the other hand, if the repeated load were increased to such an extent that each application would result in a stress equal to 60 percent of the ultimate strength, or 420 psi, a fatigue failure would be expected to occur after about 22,000 repetitions of this load. Now if this repeated load were increased still further so that each application produced a stress equal to 75 percent of the ultimate strength or $700 \times .75 = 525$ psi, it would require only about 2,000 repetitions to cause a fatigue failure.

If this illustration were expressed in terms of a 700 psi concrete pavement that had been designed for an indefinitely large number of applications of 18,000-pound axle loads based on a design stress equal to 50 percent of the concrete's ultimate strength or 350 psi, then it would not fail as a result of fatigue, irrespective of how many applications of load were applied to it provided they did not exceed the 18,000-pound axle load for which it was designed. Another way of describing this pavement would be to say that its strength was such that a single application of a certain excessive axle load would produce a stress equal to 100 percent of its ultimate strength, or 700 psi; and if such a load were actually applied to this pavement it would be expected to fail the first time. The significant thing to note in connection with this pavement design, though, is that even comparatively small increases in axle loads in excess of the 18,000 pounds for which it was designed would rather quickly induce fatigue failure.

With respect to fatigue action, therefore, it can be stated more specifically that, as the applied load on a pavement increases from the design load to a load which is of sufficient magnitude to cause failure in a single application, the resulting stresses increase. Then, for each stress increase that is above or beyond the design stress provided, there is an accompanying decrease in the number of load applications which will induce fatigue failure.

Although it would be out of place here to undertake a detailed discussion of pavement design, the relationship between repeated loads and fatigue action, as indicated in Figure 1.1, can be illustrated by analogy rather simply. For example, suppose that a plain concrete member, such as a simply supported rectangular beam, is made of such size that a single 18,000-pound concentrated load applied at its mid-span will produce a maximum flexural stress equal to 50 percent of its ultimate strength. If it is now assumed for the purpose of this example that the curve in Figure 1.1 represents the relationship between repeated loads and fatigue action for isolated beams of this kind, then if a number of them were tested in the laboratory it would be found that they could withstand an indefinitely large number of repetitions of the 18,000-

pound load without causing a fatigue failure. On the other hand, if the applied load were increased to a point where it produced a maximum flexural stress equal to 60 percent of the concrete's ultimate strength, it will be seen that about 22,000 repetitions of this load would be expected to induce a fatigue failure. Similarly, if the applied load were increased to a point where it would produce a maximum flexural stress equal to 75 percent of the concrete's ultimate strength, only about 2,000 repetitions would be required to cause a fatigue failure.

The above examples—even though they are overly simplified—will not only serve to illustrate the most up-to-date thought on pavement design practice but also to demonstrate the serious damage to roadway foundations and pavements that can result from axle loads which are but a few percent in excess of those used for their design.

In order to avoid complicating the discussion of these examples, nothing was said about "pumping" and its deteriorating effects on concrete pavements and their supporting foundations or subgrades. Pumping is defined[2] as the ejection of water and subgrade soil through joints, cracks and along the edges of pavements caused by downward slab movement actuated by the passage of heavy axle loads over the pavement after the accumulation of free water on or in the subgrade. No attempt will be made here to go into the details of pumping action and how it contributes to the structural failure of concrete pavements and subgrades. For the present purpose of this discussion it is only necessary to point out that pumping failures do not occur on roads where there are no heavy axle loads. This was one of the conclusions[3] reported by the Highway Research Board which was arrived at after about six years of research studies by a committee of outstanding engineers under the chairmanship of Harold Allen, Principal Materials Engineer, Public Roads Administration. On this point, the committee's report says: "The data collected show conclusively that the repeated passage of heavy axle loads is the primary activating element in pumping at joints and cracks in concrete pavements." Specific cases pertaining to the effects of heavy axle loads on pumping could be cited at almost any length but the following quotation from this committee's report will suffice since it is typical:

"The general effect of traffic on pumping has been demonstrated in a number of ways. On many of the four-lane highways surveyed practically all of the pumping was found in the outside lanes which are used by the slower, heavily loaded trucks, whereas little if any pumping was found in the inner lanes used by the faster and lighter traffic. This effect is further evidenced by instances where heavy traffic on one lane of a two-lane highway has produced pumping, while the lighter traffic on the other lane has produced none. An outstanding example of this was found on US 81 near Salina, Kansas. On this road and the northbound traffic was composed of loaded tank trucks from a refinery area and the southbound lane carried the returning empty trucks. Practically all of the pumping was found on the northbound lane where an average daily commercial axle count was 349 axles under 10,000 lb. and 275 axles over 10,000 lb., of which 155 were over 14,000 lb. and 10 were over 18,000 lb. Almost no pumping was found on the southbound lane where the average daily commercial axle count was 506 axles under 10,000 lb. and only 38 axles over 10,000 lb. of which but 17 were over 14,000 lb. and 3 were over 18,000 lb."

Other authoritative evidence running into hundreds of pages could be given concerning the design, construction, and maintenance of roadway surfaces and foundations, but the preceding discussion should be sufficient to demonstrate conclusively that both the minimum standards for highway pro-

[2], [3]Final Report of Committee on Maintenance of Concrete Pavements as Related to the Pumping Action of Slabs, Highway Research Board, Vol. 28, heavy axle loads are the primary activating element in pumping at joint and cracks in concrete pavements, pp. 281-310.

vision and the useful life of a given facility are not only a function of permissible axle loads but are also a function of the anticipated frequencies of various intensities of these loads.

1.4 Permissible Vehicle Weights on Simple Span Bridges

The vehicles that are of particular interest in connection with these studies are the various types of heavy-axle trucks and other vehicle combinations whose axle-loads, axle-group loads, or gross weights are considered sufficiently heavy to influence the design of bridges and other highway structures. Heavy vehicles are defined as those with one or more axles weighing 18,000 pounds or more; or, based on gross weight, all single-unit trucks weighing 26,000 pounds or more, and all other combinations weighing 34,000 pounds or more. These were the gross weights used in the 1942 loadometer survey as the dividing line between light-freight vehicles and heavy-freight vehicles by the Planning Survey Divisions of the several State Highway Departments and the Bureau of Public Roads.

After many years of study, the American Association of State Highway Officials formulated a "Policy Concerning Maximum Dimensions, Weights and Speeds of Motor Vehicles to Be Operated Over the Highways of the United States" which was adopted April 1, 1946. The standards recommended by this policy are as follows:

(1) WIDTH

No vehicle, unladen or with load, shall have a total outside width in excess of 96 inches.

(Note: It is recognized that certain conditions inherent in the design of vehicles suggest the desirability of 102 inches as a standard of maximum width. The existence of numerous bridges and a large mileage of highways too narrow for the safe accommodation of vehicles of such width precludes the present adoption of the higher standard of width. The State Highway Departments and Public Roads Administration are urged to give consideration to the desirability of eventual provision for the accommodation of vehicles 102 inches in width in planning the reconstruction of Federal-aid and State highways.)

(2) HEIGHT

No vehicle, unladen or with load, shall exceed a height of 12 feet, 6 inches.

(3) LENGTH

(a) No single truck, unladen or with load, shall have an over-all length, inclusive of front and rear bumpers, in excess of 35 feet.

(b) No single bus, unladen or with load, shall have an over-all length, inclusive of front and rear bumpers, in excess of 40 feet, provided that a bus in excess of 35 feet in over-all length shall not have less than 3 axles.

(c) No combination of truck-tractor and semi-trailer, unladen or with load, shall have an over-all length, inclusive of front and rear bumpers, in excess of 50 feet.

(d) No other combination of vehicles shall consist of more than two units, and no such combination of vehicles, unladen or with load, shall have an over-all length, inclusive of front and rear bumpers, in excess of 60 feet.

(4) SPEED

(a) Minimum speed. No motor vehicle shall be unnecessarily driven at such slow speed as to impede or block the normal and reasonable movement of traffic. Exception to this requirement shall be recognized when reduced speed is necessary for safe operation or when a vehicle or combination of vehicles is necessarily or in compliance with law or police direction proceeding at reduced speed.

(b) Maximum speed. No truck shall be operated at a speed greater than 45 miles per hour. Passenger vehicles may be operated at such speeds as shall be consistent at all times with safety and the proper use of the roads.

(c) Vehicles equipped with solid rubber or cushion tires shall be operated at a speed not in excess of 10 miles per hour.

(5) PERMISSIBLE LOADS

(a) No axle shall carry a load in excess of 18,000 pounds.

(Note: An axle load shall be defined as the total load transmitted to the road by all wheels whose centers may be included between two parallel traverse vertical planes 40 inches apart, extending across the full width of the vehicle.)

(b) No group of axles shall carry a load in pounds in excess of the value given in the following table corresponding to the distance in feet between the extreme axles of the group, measured longitudinally to the nearest foot. The loads shown in Table 1.1 are based on the equation $W = 1025\ (L+24) - 3L^2$.

(c) The maximum axle and axle-group loads recommended in paragraphs (a) and (b) above are subject to reasonable reduction in the discretion of the appropriate highway authorities during periods when road subgrades have been weakened by water saturation or other cause.

(d) The operation of vehicles or combinations of vehicles having dimensions or weights in excess of the maximum limits herein recommended shall be permitted only if authorized by special certificate issued by an appropriate State authority.

The extent to which the above axle load limitations are recognized officially is indicated by the fact that in 1949 the axle load limit of 18,000 pounds was fixed by law in 34 states. In the remaining states and the District of Columbia the legal axle load limit varied from 19,000 to 22,400 pounds.

According to Section 5(b) of the present AASHO policy, which includes the permissible axle-group loads shown in Table 1.1, it will be seen that the maximum permissible load on any individual axle is recommended not to exceed 18,000 pounds and on tandem or dual axles about 4 feet apart the permissible gross load is limited to 32,000 pounds. These loads were established because it is generally agreed that roadway foundations and pavements can be protected against undue overstress, fatigue failure, or other premature injury simply by limiting the load that may be carried on a single axle or on tandem axles which are about 4 feet apart. For roadway foundations and pavements, therefore, the problem of permissible loads is mainly concerned with the load carried by single and by tandem axles, irrespective of the total gross load carried by the entire vehicle.

The problem of determining permissible vehicle weights for bridges, however, is not as simple as it is for roadway foundations and pavements. This is because the critical stresses produced in bridges by heavy vehicle loads are influenced by a number of other factors beside the permissible loads that may be carried by single and tandem axles. These variables not only include the number and spacing of axles and the distribution of gross vehicle weight among the several axles and groups of axles, but they also include the span length of the bridge. And since the critical stresses in bridges are influenced by so large a number of variables, it will be readily seen that the problem of determining permissible axle-group loads and gross vehicle weights, that will

Table 1.1

PERMISSIBLE LOADS AS RECOMMENDED BY AASHO POLICY ADOPTED APRIL 1, 1946

Distance L in feet between the extremes of any group of axles	Maximum load W in pounds carried on any group of axles	Distance L in feet between the extremes of any group of axles	Maximum load W in pounds carried on any group of axles	Distance L in feet between the extremes of any group of axles	Maximum load W in pounds carried on any group of axles
4	32,000	22	45,700	40	60,800
5	32,000	23	46,590	41	61,580
6	32,000	24	47,470	42	62,360
7	32,000	25	48,350	43	63,130
8	32,610	26	49,220	44	63,890
9	33,580	27	50,090	45	64,650
10	34,550	28	50,950	46	65,400
11	35,510	29	51,800	47	66,150
12	36,470	30	52,650	48	66,890
13	37,420	31	53,490	49	67,620
14	38,360	32	54,330	50	68,350
15	39,300	33	55,160	51	69,070
16	40,230	34	55,980	52	69,790
17	41,160	35	56,800	53	70,500
18	42,080	36	57,610	54	71,200
19	42,990	37	58,420	55	71,900
20	43,900	38	59,220	56	72,590
21	44,800	39	60,010	57	73,280

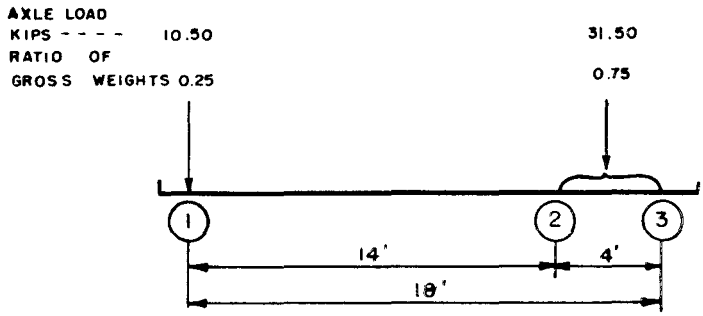
not produce stresses in excess of those permitted by design specifications, resolves itself into one that is anything but simple.

After long and careful consideration of all the factors entering into this problem, the permissible axle-group loads, as given by Table 1.1 in accordance with the recommendations of present AASHO policy, were established at such a level that they will not only result in maximum stresses which will not exceed those presently specified for use in the design of new bridges but, at the same time, will not endanger the safety of existing bridges or produce excessive overstresses that would result in premature injury or unduly shorten their economic life as a result of fatigue. And though this table of permissible axle-group loads and gross vehicle weights provides a practical guide for heavy motor vehicle operation, it gives no clue as to the actual stresses produced by any particular vehicle type or loading on a bridge of given length.

The method developed herein for converting heavy vehicle loads into equivalent loads, however, not only provides a rational procedure for rating a given heavy vehicle in terms of its stress producing effects on a simple span bridge of any particular length, but it also furnishes the means for determining permissible vehicle weights on bridges of various lengths and design designations. The essential features of the method can be outlined and explained rather briefly by discussing them in connection with the equivalent load rating of a particular vehicle, and its stress producing effects on a particular bridge of given length and design designation.

Suppose, for example, that a Type 3 truck, having a gross vehicle weight of 42.0 kips and whose axle loads and spacings are as shown in Figure 1.2, is under consideration. And for this truck, suppose it is desired to know the H-equivalency rating of this vehicle and also whether or not it should be permitted to pass over a particular two-lane simple span bridge, 60 feet in length, that had been designed for an H 15 loading in accordance with the 1949 AASHO Standard Specifications.

In order to rate this truck in terms of an equivalent H truck loading it is only necessary to find the weight of a standard H truck that will produce



TYPE 3 TRUCK NUMBER 18

NOTE: SEE INDEX TABLE 6.2 MAXIMUM MOMENTS PRODUCED BY THIS TRUCK ARE GIVEN IN TABLE 7.2 AND 8.2

Figure 1.2

the same maximum moment on a 60-foot span as the given vehicle. By making the detailed calculations or by consulting Table 7.2, it will be found that the given vehicle will produce a moment of 525.8 kip-feet on a 60-foot span. And since it would require an H-truck weighing 38.6 kips or 19.3 tons to produce the same moment on this span, the given vehicle would be rated as an equivalent H 38.6 (kip) truck loading or an equivalent H 19.3 (ton) truck loading on a 60-foot span.

By referring to the AASHO policy permissible axle-group loads given by Table 1.1, it will be found that the truck shown in Figure 1.2 does not exceed the axle-group loads indicated and, therefore, would be permitted to pass over the 60-foot bridge of H 15 loading design. This, in spite of the fact that the given vehicle has an equivalent rating of 19.8/15.0 = 1.32 times or 32 percent more than that of an H 15 truck, immediately raises the question: How does one arrive at the conclusion that it would be permissible for an equivalent H 19.8 truck to pass over a 60-foot bridge of H 15 loading design? This seemingly contradictory situation may be explained by saying that all bridges, designed in accordance with AASHO specifications, are constructed in such a way as to include a certain stipulated reserve load carrying capacity as a safety precaution against unintentional or illegal overloads and also to provide for legal but infrequent heavy loads such as those indicated by the permissible axle-group loads in Table 1.1.

Perhaps it would contribute to a better understanding of overloads and their effects on bridges if it were explained that an increase of, say, 40 percent in the live load and impact moments on a given bridge does not result in so large an increase in the total moment. This is because the dead load moment, which in most cases is a considerable part of the total moment, for a given span always remains the same and, therefore, a given percent increase in only the live load and impact moments would not result in so great a percent increase in the total moment. And though this line of reasoning provides a qualitative answer to the question, it is not sufficiently specific for one to arrive at a rational conclusion concerning the actual amount of overstress that may be involved in any particular situation. In other words, though the qualitative answer is satisfactory so far as it goes, it gives no information as to the degree in which the reserve load carrying capacity of a given bridge is called upon to function during the passage of any particular heavy vehicle load. Once the H-equivalency of a given vehicle on a particular span has been determined, however, its numerical rating will provide a satisfactory answer for most practical cases but, even so, it is still not sufficiently specific to indicate the probable magnitude of overstress involved in any particular situation.

Owing to the fact that the dead load of a bridge varies with both the span and the type of construction, it is not possible to relate the H-equivalency of a given vehicle with a specific amount of overstress that would be exact for all types of construction. However, if the amount of overstress for a given span and H-equivalency is determined on the basis of the lightest possible type of construction, the answer would be exact in the sense that it would represent the maximum possible magnitude of overstress since it would not be exceeded in another heavier type bridge of the same span.

For example, suppose it is desired to know the amount of overstress produced by the Type 3 truck, shown in Figure 1.2, on the above described 60-foot bridge of H 15 loading design. If it is now assumed that this bridge is of a light construction type, consisting of a concrete deck supported by simple span steel stringers, the dead load moment would account for about 50 percent of the total design moment.

For a 60-foot span, the AASHO moment table shows that the H 15 lane loading would control and produce a maximum live load moment of 418.5 kip-feet per lane, to which a 27 percent allowance must be added for impact. The total moment for which this bridge must be designed, therefore, would be as follows:

H 15 loading design moments in kip-feet for 60-foot span

Live load moment	M_{LL}	=	418.5
Impact moment = .27 × 418.5 =	M_I	=	113.0
Dead load moment = 418.5 + 113.0 =	M_{DL}	=	531.5
Total design moment	$M_{Tot.}$	=	1063.5

This design moment may now be compared with the total moment produced by the 21 ton Type 3 truck shown in Figure 1.2 which is as follows:

Live load moment	M_{LL}	=	525.8
Impact moment = .27 × 525.8 =	M_I	=	142.0
Dead load moment = 418.5 + 113.0 =	M_{DL}	=	531.5
Total moment	$M_{Tot.}$	=	1199.3

The given vehicle, together with the allowance shown for impact, therefore, produces bending stresses which are 1199.3/1063.5 = 1.13 times or 13 percent in excess of the basic design stresses. On this basis, it could be concluded that the given vehicle would not cause an overstress in excess of 13 percent on any 60-foot simple span bridge that was designed in accordance with the 1949 AASHO specifications. Even though it is not within the province of this report to recommend any particuler percent of overstress that should not be exceeded, it would be safe to say that a 13 percent overstress caused by an infrequent heavy vehicle load would not be considered as an undue encroachment on the reserve load carrying capacity of a bridge whose reserve capacity compared favorably with that required by present-day design specifications.

One of the more important points brought out by this example, however, is that even though the given vehicle has an H-equivalency of 32 percent in excess of an H 15 truck, it would cause no more than a 13 percent overstress on a 60-foot bridge of H 15 loading design. This will, in some measure, explain the reason why the present AASHO policy has established the level of permissible axle-group loads in Table 1.1 at a point where the maximum live load and impact moments resulting from them will not be more than about 43 percent in excess of those caused by an H 15 design loading. In other words, the permissible axle-group loads in Table 1.1 establish the maximum level of heavy motor vehicle operation at a point where the maximum live load and impact moments produced by them on any span will

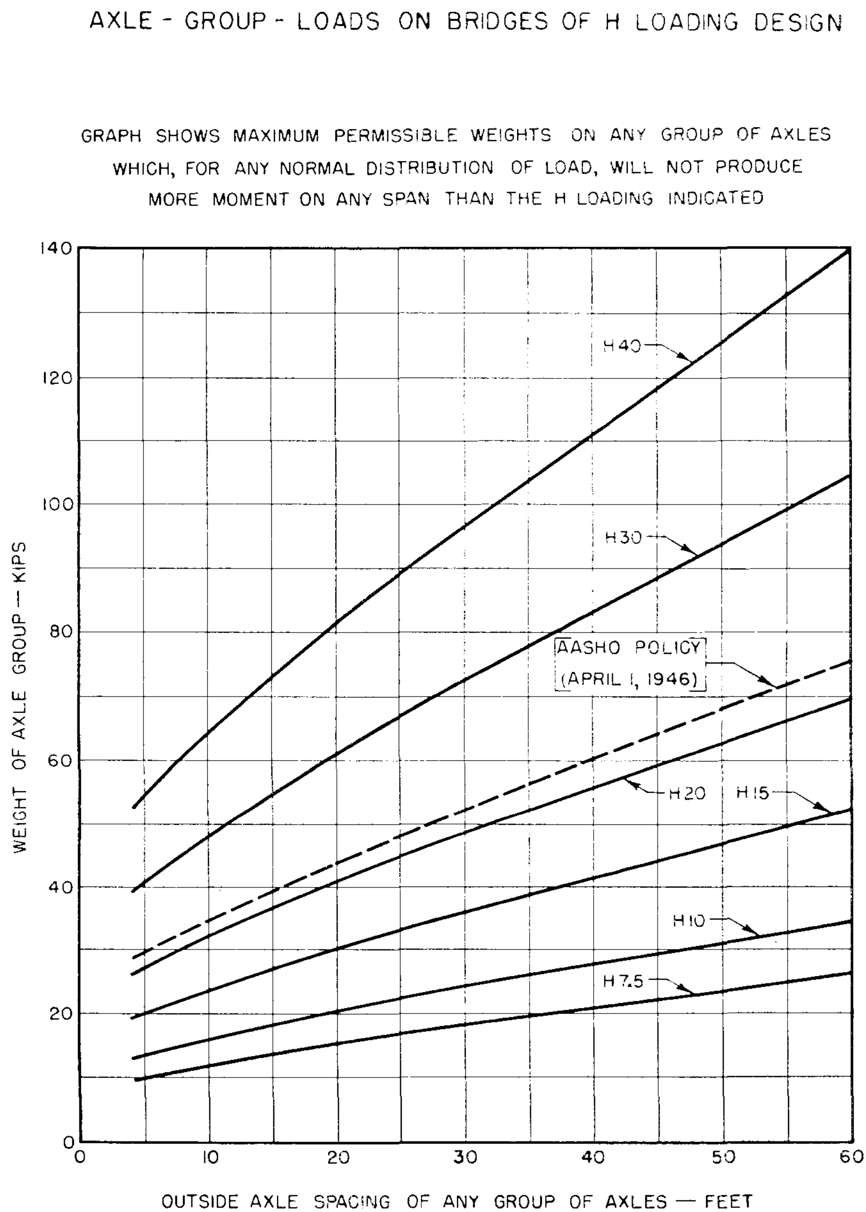


Figure 1.3

not exceed those required for an H 21.5 loading design. A comparison of the permissible axle-group loads in Table 1.1 with other H loading designations is shown graphically by the dashed line in Figure 1.3. The proper interpretation of this figure, however, requires a little explanation.

Explanation of Figure 1.3 and Table 1.2

In connection with this investigation of heavy vehicle loads, it was found, for any normal distribution of gross load among the several axles of a group, that the maximum permissible weight on any group of axles, such that it would not produce more moment on any span than a standard H design loading of given designation, could be estimated rather accurately by use of the following equation[1]

$$W = [\sqrt{C + La/4} + \sqrt{La/4}\,]^2 \qquad 1.1$$

in which

W = Maximum weight in kips on any group of axles such that it will not produce more live load moment on any span than a standard H design loading corresponding with the lane loading constants, C and a, in Equation 1.1.

L = Distance in feet between the extremes of any group of axles.

C = Concentrated load in kips corresponding to H lane loading designation under consideration.

a = Uniform load in kips per foot corresponding to H lane loading designation under consideration.

Note: If pounds instead of kips are used for the constants C and a, in Equation 1.1, the weight, W, will also be in pounds.

[1]Henson K. Stephenson, "Determination of Permissible Vehicle Weights on Bridges of H Loading Design," AASHO Proceedings, Washington, D.C., 1949, pp. 144-185.

Table 1.2

VEHICLE WEIGHTS ON BRIDGES OF H LOADING DESIGN

Axle Group—Loads—Kips

Dist. Between Extremes of Any Group of Axles L Feet	Critical Span S Feet	Designed Standard H. Loading					
		10	15	20	30	40	50
4	12.80	13.10	19.65	26.20	39.30	52.40	65.50
6	16 33	14.23	21.35	28.46	42.69	56.92	71.15
8	19.53	15.25	22.88	30.50	45.75	61.00	76.25
10	22.50	16.20	24.30	32.40	48.60	64.80	81.00
12	25.33	17.11	25.67	34.22	51.33	68.44	85.55
14	28.05	17.98	26.97	35.96	53.94	71.92	89.90
16	30.68	18.82	28.23	37.64	56.46	75.28	94.10
18	33.24	19.64	29.46	39.28	58.92	78.56	98.20
20	35.74	20.44	30.66	40.88	61.32	81.76	102.20
22	38.21	21.23	31.85	42.46	63.69	84.92	106.15
24	40.62	22.00	33.00	44.00	66.00	88.00	110.00
26	43.00	22.76	34.14	45.52	68.28	91.04	113.80
28	45.37	23.52	35.28	47.04	70.56	94.08	117.60
30	47.69	24.26	36.39	48.52	72.78	97.04	121.30
32	50.00	25.00	37.50	50.00	75.00	100.00	125.00
34	52.30	25.74	38.61	51.48	77.22	102.96	128.70
36	54.56	26.46	39.69	52.92	79.38	105.84	132.30
38	56.82	27.18	40.77	54.36	81.54	108.72	135.90
40	59.06	27.90	41.85	55.80	83.70	111.60	139.50
42	61.28	28.61	42.92	57.22	85.83	114.44	143.05
44	63.50	29.32	43.98	58.64	87.96	117.28	146.60
46	65.69	30.02	45.03	60.04	90.06	120.08	150.10
48	67.90	30.73	46.10	61.46	92.19	122.92	153.65
50	70.06	31.42	47.13	62.84	94.26	125.68	157.10
52	72.03	31.93	47.90	63.86	95.72	127.72	159.65
54	74.41	32.81	49.22	65.62	98.43	131.24	164.05
56	76.58	33.51	50.27	67.02	100.53	134.04	167.55
58	78.73	34.20	51.30	68.40	102.60	136.80	171.00
60	80.87	34.88	52.32	69.76	104.64	139.52	174.40

Note: For any normal distribution of load among the individual axles, this table shows the maximum gross weights which may be carried on any group of axles such that they will not produce more moment on any span than the design standard H loading indicated. The critical span S, in this table, is the span on which the moment produced by the axle-group load indicated becomes more nearly equal to that produced by the corresponding H loading. On all other spans, less or greater than S, the moment produced by the axle-group load indicated is always less than that produced by the corresponding H loading.

Equation 1.1, therefore, is the general expression used for determining the solid line axle-group load curves shown in Figure 1.3. In fact, Equation 1.1 was first used to determine the axle-group loads for each of the H loading designations shown in Table 1.2 and then plotted in Figure 1.3.

In Figure 1.3, it will be noted that the permissible axle-group-loads recommended by the AASHO policy (dashed line), throughout the entire range of wheel base lengths, are about 1.43 times or about 43 percent more than those indicated for the H 15 loading. In other words, the present AASHO policy permits axle-group loads and gross vehicle weights which will not produce live load and impact moments on any span in excess of those that would result from an H 21.5 design loading.

In the second column of Table 1.2, it will be noted that the critical span, S in feet, is given for all loads, irrespective of magnitude, that may be carried on a given length of wheel base. This critical span S is the span on which the maximum live load moment produced by the axle-group load indicated becomes more nearly equal to that caused by the corresponding H design loading and, on all other spans, less or greater than S, the moment produced by the axle-group load indicated will always be less than that caused by the H design loading of corresponding designations. Perhaps the most interesting thing to note in this connection is that the length of the critical span is not influenced by the magnitude of load but only by the wheel base length of the axle-group on which the load is carried.

From a practical standpoint this means that if a given heavy vehicle were being investigated to determine its most serious stress (moment) producing effects on bridges of various lengths and H loading design, only those critical spans corresponding to the wheel base lengths of its various axle-groups need be considered. On all other spans, less or greater than the critical span for each axle-group load, the reserve load carrying capacity would be greater than that for the length corresponding to the critical span.

1.5 Closure

The preceding discussion of permissible vehicle weights on roadways and bridges, though it is in no sense complete, will serve in a general way to indicate the nature of several of the more important problems associated with the sizes, weights, and frequencies of heavy vehicle types and loadings, and how they are related to highway and bridge provision. It will also serve to outline the method suggested here for the rating of heavy vehicles in terms of equivalent loads as an approach to the problem of correlating heavy motor vehicle operation with highway and bridge provision. The development and use of the tables and charts given herein for converting heavy vehicles into equivalent loads will be discussed in more detail in Article 5.

2. AXLE LOAD AND GROSS LOAD TRENDS

From a very small beginning in about 1900 the use of motor vehicles has increased almost continously ever since. Motor vehicle registrations were but 78,800 in 1905, passed 10 million in 1921, crossed the 20 million mark in 1926, exceeded 30 million in 1939, and numbered more than 40 million in 1949. Although no figures are available as yet for this year, the number of registrations will probably pass the 50 million mark in 1951. A breakdown of these registrations from 1920 through 1949 into passenger cars, buses, and trucks is shown in Table 2.1.

Since it is the growth in use of motor freight vehicles that is of particular interest in connection with these studies, the important thing to note in Table 2.1 is the relative increase in the number of truck registrations as compared with total registrations. In column 5 of this table it will be seen that trucks accounted for 12.0 percent of all registrations in 1920 and increased

Table 2.1

MOTOR VEHICLE REGISTRATIONS IN UNITED STATES

(Excluding publicly owned vehicles)

Year	Passenger Cars	Buses	Trucks Number	Trucks % of total	Total
1920	8,131,522	(1)	1,107,639	12.0	9,239,161
1925	17,439,701	17,808	2,483,215	12.5	19,940,724
1930	22,972,745	40,507	3,518,747	13.3	26,531,999
1935	22,494,884	58,994	3,675,865	14.0	26,229,743
1940	27,372,397	72,641	4,590,386	14.3	32,035,424
1945	25,691,434	112,253	4,834,742	15.8	30,638,429
1946	28,100,188	119,937	5,725,692	16.9	33,945,817
1947	30,718,852	128,983	6,512,628	17.4	37,360,463
1948	33,261,454	133,430	7,227,380	17.8	40,622,264
1949	36,433,674	137,000	8,099,914[2]	18.0	44,670,588

Source: Bureau of Public Roads MV—1 tables.
(1) Registration of buses not recorded separately.
[2]Percentage based on an estimated 137,000 buses among the 8,236,914 buses and trucks reported.

steadily year by year through 1949 when trucks accounted for 18.0 percent of all motor vehicle registrations. These percentage increases, however, do not tell the full story. It would be more significant, perhaps, to point out that the 8,099,914 trucks registered in 1949 represent a 740 percent increase over the 1,107,639 registered in 1920, whereas the 36,433,674 passenger car registrations in 1949 represent but a 448 percent increase over the 8,131,522 registered in 1920.

Referring again to Table 2.1, it not only shows that the total number of trucks continues to increase but the ratio of trucks among total registrations also continues to increase. However, it is not so much the increasing numbers of trucks as it is the continued increases in their sizes, gross loads, and axle loads that accounts for the growing concern in the subject of permissible vehicle weights and how they are related to highway and bridge provision.

These comparisons will not only serve to establish the present trend in the use of motor freight vehicles but also to emphasize the need for more and better information for dealing with the problems associated with their sizes, weights, and frequencies.

There was some concern during the early twenties over the damage being done to the highways by what was then considered to be heavily loaded trucks.[5] Relatively few of the gross vehicle loads or axle loads recorded in truck-weighing operations conducted during this period, however, would be considered serious in accordance with present standards. Most of these loads were carried on solid tires which were more damaging than the pneumatic tire of today, and also legislation had not yet been enacted which would permit wide use of vehicle combinations with multiple axles. The advent of the pneumatic tire, the enactment of favorable legislation, and the design and construction of thicker pavements virtually eliminated this earlier concern and by 1931 there were rarely any loads carried on the highways heavy enough to over tax their structural capacity.

State-wide highway planning surveys were started in 1935 and during the period 1936-37 nearly all of the States conducted truck-weighing operations giving for the first time comprehensive data from which an accurate analysis could be made of the frequency of occurrence of heavy gross loads and axle loads operating on our highways.

During the years 1938-41 only fragmentary data were collected concerning truck weights and axle loads, but with the beginning of World War II the

[5]J. T. Lynch and T. B. Dimmick, "Axle Loads and Gross Load Trends," PUBLIC ROADS, Vol. 25, No. 12, February, 1950.

increased loadings on trucks began to cause some concern and so data were again collected on a nation-wide scale in 1942 and have been collected annually since that time.

AVERAGE WEIGHTS OF LOADED AND OF EMPTY TRUCKS AND TRUCK COMBINATIONS IN THE SUMMERS OF 1942-49 AND IN A CORRESPONDING PERIOD OF A PREWAR YEAR

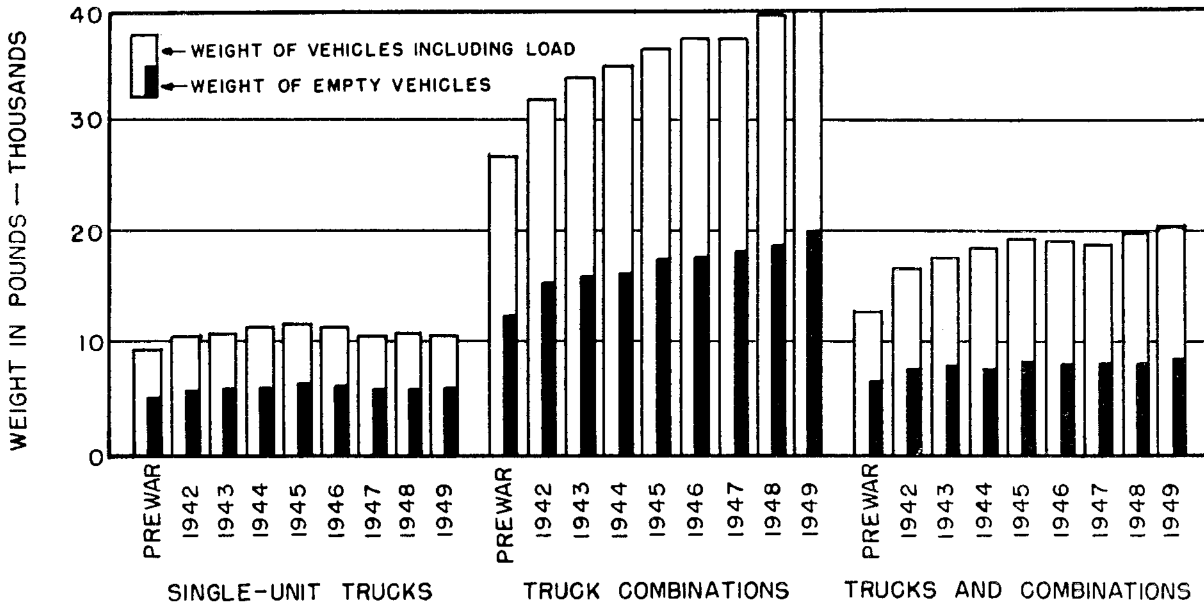


Figure 2.1

The trends[6] indicated by the analysis of this data are shown graphically in Figures 2.1, 2.2, and 2.3 which were taken from Public Roads for December 1950. Figure 2.1 gives the average weight for loaded and empty trucks and truck combinations for a prewar year, generally 1936 or 1937, and for the years 1942 through 1949 inclusive. It can be seen that the single unit trucks gradually increased in weight from the prewar period until about 1945 and then leveled off or declined slightly during the following years so that the over-all increase in average weight for the years reported amounted to only about 12 percent. On the other hand the average weight of the truck

[6]T. B. Dimmick, "Traffic Trends on Rural Roads in 1949," PUBLIC ROADS, Vol. 26, No. 5, December, 1950.

NUMBER OF HEAVY GROSS WEIGHTS PER 1,000 TRUCKS AND TRUCK COMBINATIONS (EMPTIES INCLUDED) IN THE SUMMERS OF 1942-49 AND A PREWAR YEAR

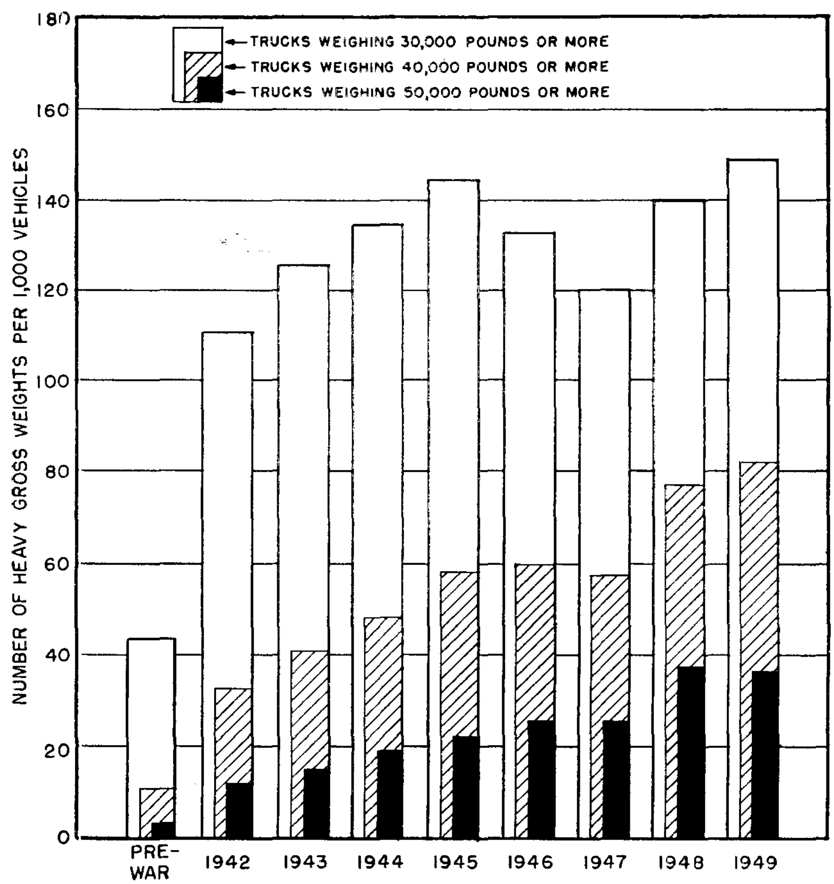


Figure 2.2

NUMBER OF HEAVY AXLE LOADS PER 1,000 TRUCKS AND TRUCK COMBINATIONS (EMPTIES INCLUDED) IN THE SUMMERS OF 1942-49 AND A PREWAR YEAR

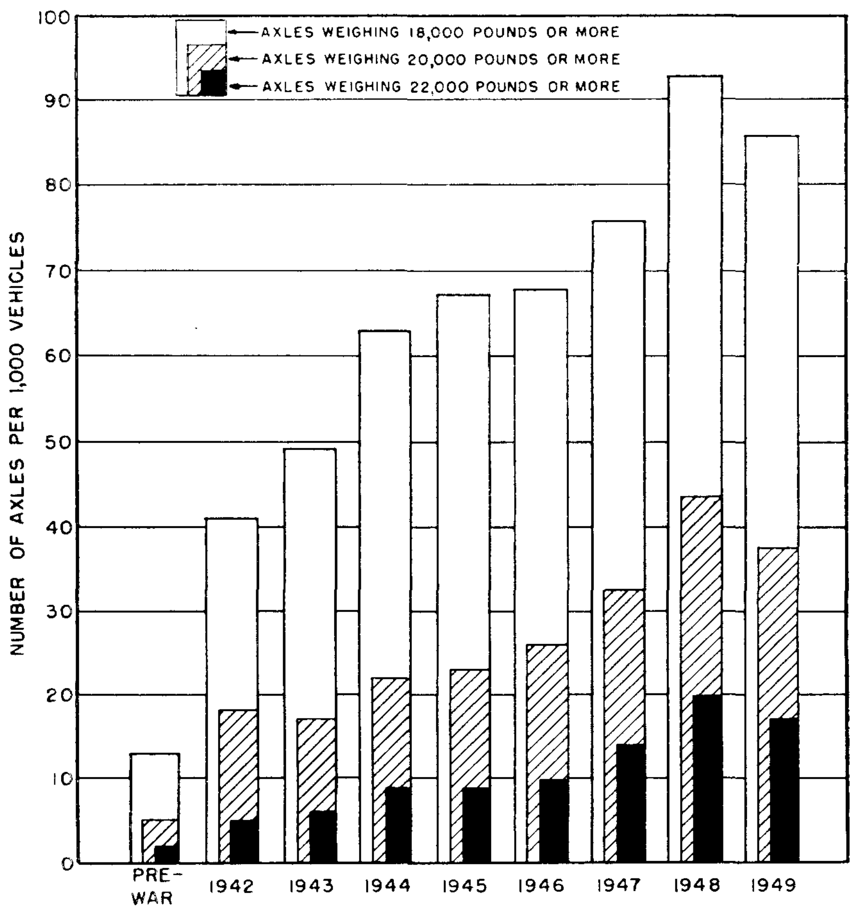


Figure 2.3

combinations, both loaded and empty, has consistently increased from the 1936-37 period through 1949 for an increase of almost 50 percent. The increase for single unit trucks and truck combinations for the same period was approximately 57 percent, a higher percentage than for either type separately because of the larger proportion of truck combination in the latter years.

Figure 2.2 shows for the United States as a whole the number of gross weights of 30,000 pounds or more, 40,000 pounds or more and 50,000 pounds or more per 1,000 vehicles from the prewar years (generally 1936 or 1937) through 1949. The trend of frequency of these loads continues to climb upward although there was some decrease in the frequency of the 50,000 pound loads or more in 1949 as compared with 1948. For the period of this study it can be seen from Figure 2.2 that there was a 12 percent increase in the gross loads of 50,000 pounds or more, a 7 percent increase in the gross loads of 40,000 pounds or more, and a 3 1/2 percent increase in the gross loads of 30,000 pounds or more.

Along with the tremendous increase in the number of heavy trucks and the frequency of gross loads of 30,000 pounds or more, there has been a similar rise in the frequency of heavy axle loads. This can be seen from figure 2.3 which shows the number of axle loads of 18,000 pounds or more, 20,000 pounds or more and 22,000 pounds or more per 1,000 vehicles for a prewar year and for the years 1942 to 1949 inclusive. And it can be seen that the frequency for each of the three groups of axle load increased steadily through 1948 and then declined slightly in 1949. The axle loads of 18,000 to 20,000 pounds showed significant increases in frequency of occurrence, but the greatest increase in frequency was for axle loads of 22,000 pounds or more. These axle loads (22,000 pounds or more) increased in frequency from 2 per 1,000 vehicles in the prewar period to 17 per 1,000 vehicles in 1949 for an increase of 750 percent.

A study[7] of heavy axle load frequencies by regions indicates that the most favorable situation exists in the Western regions while the worst conditions, at the present time, exist in the New England and Middle Atlantic regions. Legislation in the Western regions permits the advantageous distribution of loads on vehicle combinations of five or more axles whereas in the Eastern parts of the United States legislation is such as not to be conducive to the use of more than three or four axles. This is illustrated in Figure 2.4[8] which gives the cumulative frequency of axle loads whose gross weights were equal to or greater than stated values based on the loadmeter surveys of 1942. For example, it can be seen from Figure 2.4 that over 32 percent of the heavy vehicle axles in the East weighed 18,000 pounds or more as compared with about 7 percent in the West. Similarly it shows that about 13 percent of the heavy vehicle axles in the East weighed 21,200 pounds or more as compared with only about 1 percent in the West. For the United States as a whole it will be seen that about 20 percent of the heavy vehicle axles weighed 18,000 pounds or more and that 5 percent of the heavy vehicle axles weighed 21,200 pounds or more. The analysis[9] of later surveys substantiates the findings given in Figure 2.4.

Concern over the tremendous increases in the frequencies of the various intensities of these heavier axle loads stems from the fact that all but an insignificant part of our present highway system was not designed to accomodate either the magnitude or the frequencies of these loads, as shown in Figure 2.3, which have characterized heavy motor vehicle operation in the United States since about the beginning of the second World War. It would seem, therefore, that the only way in which our present highway facilities can be adequately protected is to regulate the maximum axle load and gross loads which will be permitted to operate and, at the same time, provide for some effective means of enforcement. Legislation which would permit lengths to be such as to encourage wider use of vehicle combinations with multiple axles would undoubtedly do much to alleviate the present condition. Legislation which would encourage the use of vehicle combinations with multiple axles would not only tend to reduce the weights carried on individual axles[10] but,

[7, 8]Henson K. Stephenson and A. A. Jakkula, "Highway Loads and Their Effects on Highway Structures Based on Traffic Data of 1942," Texas Engineering Experiment Station Bulletin No. 116, 1950.

[9]J. T. Lynch and T. B. Dimmick, "Axle Loads and Gross Load Trends," PUBLIC ROADS, Vol. 25, No. 12, February, 1950.

[10]Henson K. Stephenson and A. A. Jakkula, "Highway Loads and Their Effects on Highway Structures Based on Traffic Data of 1942," Texas Engineering Experiment Station Bulletin No. 116, Part III, 1950, pp. 113-127.

at the same time, it would permit the realization of reasonable increases in pay load that would not be detrimental to either our present roadways or bridges.

3. INFLUENCE OF HEAVY MOTOR VEHICLE OPERATION ON HIGHWAY AND BRIDGE PROVISION

Earlier in this report, it was pointed out that many elements of the problems associated with the sizes, weights, and frequencies of heavy motor vehicles, and their respective effects on the costs of building and maintaining highways and bridges, are of a highly controversial nature. It was also point-

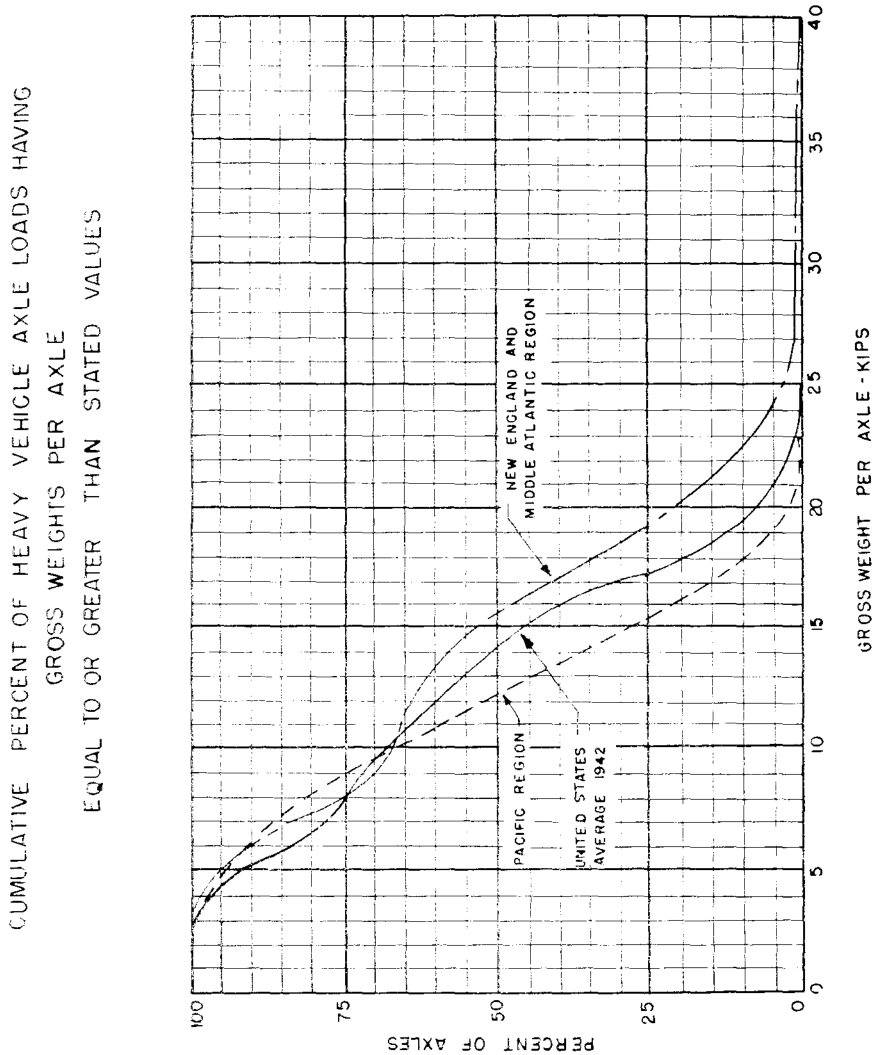


Figure 2.4

ed out that since certain of these matters are of a controversial nature, the reason for discussing them here is to contribute, if possible, toward a better understanding of some of the issues involved rather than that of arriving at any specific recommendations concerning the economic justification of any particular level of permissible axle loads and gross loads that should obtain for given facilities or traffic conditions.

Practically everyone, including the advocates of larger and heavier vehicles, will agree that more substantial subgrades, thicker pavements, and stronger bridges are required to support the heavier loads than would be required to accommodate the lighter loads. But there is still another element which must be taken into account in the design of highways and bridges that is not so well-known or understood. This element for want of a better name has been called "fatigue." This term is used to describe the ability of a structural material to withstand repeated applications of various intensities of load. The curve shown in Figure 1.1, for example, shows the number of repetitions of a given stress required to produce a fatigue failure in a concrete pavement. And though the number of stress repetitions required to produce a fatigue failure would not necessarily be the same as shown in Figure 1.1, the fatigue curves for other structural materials are quite similar.

The curve in Figure 1.1, for example, shows that a concrete pavement can withstand an indefinitely large number of stress repetitions provided the stress does not exceed about 50 percent of its ultimate flexural strength. It also shows that but a comparatively small number of stress repetitions in excess of this amount is required to produce a fatigue failure. More specifically, it will be seen from this curve that if the repeated stress were increased only to, say, 60 percent of the concrete's ultimate flexural strength, it would be expected to fail in fatigue after about 22,000 applications of the load producing this stress. Other examples could be cited, of course, but they would only differ in detail. The main point to be brought out here is that the design of highway facilities—whether they be subgrades, pavements, bridges, or other structures—is not only a function of the maximum axle loads and gross loads to be accommodated but is also a function of the expected frequencies of various intensities of these loads. Therefore, if the truth of these facts, which are well-known to highway and bridge engineers, could be effectively explained to the layman, it is believed that one of the principal sources of misunderstanding would be measurably lessened or perhaps eliminated entirely.

This assignment, however, will not be so simple as it might appear at first glance. To the trucking operator, for example, who is accustomed to hauling excessive loads, the idea of fatigue failure might seem farfetched indeed. This would not be an unnatural reaction because he has actually seen many heavy loads pass over both pavements and bridges without their producing any visible signs of distress or failure. However, if some way could be devised that would clearly explain to him the truth of fatigue failure and certain other deteriorating effects of excessive overloads, he would at least be in a better position to understand that certain limitations on maximum axle loads and gross loads are necessary in the public interest to insure the maximum economic life of the Nation's highway facilities.

The relationship between excessive loads and fatigue failure is one of the more important elements involved in the over-all problem of permissible vehicle sizes and weights, but there are others that are quite as important for which a better understanding is also urgently needed. The deteriorating effects of pumping, for example, is another of these elements that should be more clearly explained. An authoritative report[11] on this subject was briefly discussed in Article 1.3. The effects of vehicle sizes on geometric design and highway capacity are also among these elements but their influence on the

[11]Final Report of Committee on Maintenance of Concrete Pavements as Related to the Pumping Action of Slabs, Highway Research Board, Vol. 28, heavy axle loads are the primary activating element in pumping at joint and cracks in concrete pavements, pp. 281-310.

cost of highway and bridge provision is somewhat more involved and therefore more difficult to determine than those previously mentioned.

Although the above discussion is in no sense complete it is believed to be sufficient to indicate some of the major sources of controversy and misunderstanding pertaining to the determination of, and the necessity for, the regulation or limitation of maximum permissible vehicle sizes and weights. In the final analysis, however, the solution of these problems will depend in large measure on evaluating the effects of heavy motor vehicle operation on the costs of highway and bridge provision, and apportioning those costs in an equitable manner among the various classes of highway users. A vast amount of work has already been done and is still being done along these lines both in the fields of engineering research and highway economics, but much more will be required to find equitable answers that will be acceptable to everyone concerned.

Some indication as to the nature of these problems and the effects of heavy motor vehicle operation on the cost of highway and bridge provision may be had from a report[12] recently submitted to the United States Senate. This report includes the results of two different studies made by the Colorado and New Jersey State Highway Departments respectively which clearly reflects the road damage resulting in these States from heavy truck operation. The results[13] of the studies made by the Colorado Highway Department were as follows:

"ROAD DAMAGE BY TRUCKS IN COLORADO

Mr. A. V. Williamson,
District Engineer, Public Roads Administration,
New Customs House, Denver, Colo.

Dear Sir: The following information in connection with damage to highways by heavy loads is transmitted for your information.

At the outbreak of World War II the legal load limits on Colorado highways were 18,000 pounds on a single axle, 24,000 pounds on a two-axle vehicle, 34,000 pounds on a three-axle vehicle, and $W = 700\ (L + 40)$ on a combination of vehicle and trailer with a gross load of 63,000 pounds.

On September 18, 1943, the Governor of Colorado on account of war necessities by proclamation granted permission for the issuance of certificates of operation for vehicles to carry extra legal weights on Colorado highways. By January 20, 1944, 493 such certificates had been issued. These certificates included some for axle loads up to 23,655 pounds and some for gross loads up to 84,000 pounds.

Early in 1944 maintenance superintendents started to complain that these heavy loads were severely damaging the road surfaces, and as the months passed by their complaints grew louder.

In the late fall of 1944 the task of determining exactly what damage was being done by these overloads was assigned to the maintenance division.

After considerable study it was decided that the concrete pavements presented definite means of determining whether or not damage was actually being caused. It was further determined that definite data could be secured by making parallel crack surveys on pairs of concrete sections comparable as

[12] Thomas H. MacDonald, "A Factual Discussion of Motortruck Operations," Dept. of Commerce, Bureau of Public Roads, Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C.

[13] Thomas H. MacDonald, "A Factual Discussion of Motortruck Operations," Dept of Commerce, Bureau of Public Roads, Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C., Appendix II, pp. 76-79.

regards bases, design, age, strengths of pavement concrete, and other pertinent characteristics. Of each pair, one was to have few or no permitted overloads in regular operation. The other was to have as many regular overloads in operation as possible. It could reasonably be assumed that each would develop about the same percentage of cracks from common causes, and it could also reasonably be assumed that those sections bearing the overloaded vehicle would develop a larger percentage of cracks than the one that had no overloads. After considerable detailed investigation four such pairs of comparable sections were decided upon, the crack surveys were made and the results of those surveys shown in the accompanying tabulation speak for themselves and confirm the prognosis.

A big percentage of the surveyed slabs carrying overloads was on State Highway 2 between Sterling and Julesburg. On this section for the years 1941, 1942, and 1943 the average cost of surface maintenance was $29.36 per mile per year. On the same road the average cost of surface maintenance for 1944, 1945, and 1946 was $59.59 per mile per year.

A notable example of damage from heavy loads to bituminous surfaces was on State Highway 13 from Craig, north, to the Wyoming State line. A 1 1/2″ x 20′ bituminous surface was placed on this road in 1938 and gave generally good service until 1945. In 1945 major developments started in the Rangely oil field, and a big percentage of the oil well drilling equipment was transported from Wyoming to Rangely. This movement continued throughout the winter of 1945-46, and by the spring of 1946 this road was in a deplorable condition. The base had failed over all the road, which had not been previously stabilized, and the bituminious surface was in exceedingly bad condition. The road was in such condition that during the summer of 1946 it was necessary to stabilize the base and relay the surface. The new surface being a 2″ mat 22′ wide.

The following costs indicate clearly the damage this road suffered:

Maintenance costs for 38 miles

1945	Normal routine maintenance	$ 8,381.37
1945	Special maintenance (betterments)	6,888.99
	Total	15,270.36
1946	Normal maintenance	6,261.17
1946	Special maintenance (betterments)	193,059.77
	Total	199,320.94

Trusting this information may have some value, I am,

Very truly yours,

James D. Bell,
Assistant State Highway Engineer.

D. N. Stewart,
Maintenance Engineer."

Various agencies of other states have made studies similar to that of the Colorado Highway Department which differ somewhat in the details of their findings; however, these studies do agree that heavy vehicles may be held responsible for a large percentage of the total costs of building and main-

Table 3.1

COLORADO STATE HIGHWAY DEPARTMENT—TABULATION SHOWING COMPARATIVE RATES OF PROGRESSIVE CRACKING IN CONCRETE PAVING SLABS. EACH PAIR CONSISTS OF PROJECTS OF COMPARABLE CHARACTERISTICS, ONE OF WHICH CARRIES MANY OVERLOADS DAILY, THE OTHER CARRYING ONE OR LESS

Project and location	1943 Daily Traffic: Passenger Cars	1943 Daily Traffic: Trucks and Busses	1944 daily extra legal loads allowed by permits	Number of days between original and first check survey	Percentage of slabs showing new or extended cracks between original and first check survey	Rate of increase each 10 days in number of slabs showing new or extended cracks developing between original and first check survey	Number of days between first and second check surveys	Percentage of slabs showing new or extended cracks between first and second check surveys	Rate of increase each 10 days in number of slabs showing new or extended cracks developing between first and second check surveys	Number of slabs surveyed
					Percent	Percent		Percent	Percent	
Pair No. 1:										
FAP 287-A-3 on State Highway 2 between Wiggins and Fort Morgan. Slabs 18 feet wide, 60 feet long, with deformed metal center joints dowelled. Built in 1928	998	47	45	84	79	9.4	33	53.77	16.3	305
FAP 251-C on State Highway 7 east of Boulder. Slabs are 18 by 60 feet with weakened plane center joint, no steel. Built in 1928	1,505	645	1	95	7.5	.8	23	5.1	2.2	412
Pair No. 2:										
FAP 286-E between Eaton and Ault on State Highway 2. Slabs 18 by 60 feet with center joint, without steel. Built in 1931	1,372	428	37	70	28.8	4.1	48	34.6	7.2	360
SP 766-1931 on State Highway 14 east of Fort Collins. Same section and age as above	560	190	0	85	1.43	.168	45	.95	.21	210
Pair No. 3:										
FAP 122-R-3 on State Highway 2 between Ovid and Julesburg. Same section as above except that slabs are 20 feet wide. Built in 1933	535	165	42	50	30.7	6.1	44	34.9	7.9	321
FAP 79-BR on State Highway 4 between Colorado Springs and Peterson Field. Same section as above. Built in 1933	2,340	960	1	49	0	0	59	3.03	.513	165
Pair No. 4:										
FAP 175-AR-6 on State Highway 2 between Crook and Red Lion, 20 feet wide, expansion joints 90 feet apart, dummy joints 30 feet apart making slabs 30 feet long with center joint. All joints dowelled. Built in 1937	380	120	42	90	18.8	2.1	42	19.8	4.7	1,349
Weld County 3 percent project built on 11th Ave. in Greeley in 1935. Same section as next above with a little less steel. This is a busy city street	....	*50	0	58	0	0	63	4.7	.73	87

*Busses only.

NOTES.—No. 1. All slabs are 6 1/2 inches thick at center, 9 inches thick at edges. No. 2. All surveys were made between Dec. 1, 1944, and July 1, 1945. No. 3. All cracks found on original survey were recorded on a sketch of each slab. Changes in cracks found by check surveys were recorded on same sketches. Tabulation was calculated from these sketches. Figures unchecked and subject to revision.

taining highway facilities. It is beyond the scope of this bulletin, however, to undertake to pass judgment on these findings. They are submitted here merely to indicate the studied conclusions that have been arrived at as a result of authoritative investigations into the effects of heavy motor vehicle operation on the cost of highway and bridge provision.

4. EQUIVALENT LOADS PROVIDE THE MEANS FOR RATING HEAVY MOTOR VEHICLE TYPES AND LOADINGS

Since about the beginning of the second World War, both the numbers and weights of heavy axle loads and gross loads have increased at such a rapid rate (see Figures 2.1, 2.2, 2.3), it has become more and more urgent that suitable procedures and techniques be devised for dealing with certain of the problems, associated with the operation of heavy motor vehicles and their effects on the design, construction, maintenance, and economic life of our present and future highway facilities. In recognition of these needs and as a partial contribution toward their fulfillment, it was pointed out in Article 1.1 that the over-all objective of this bulletin is to develop a simple yet accurate mathematical procedure for the rating of the stress producing effects of heavy vehicle types and loadings in terms of some convenient but standardized equivalent loads, and to show how the frequency distributions of these equivalent loads provide a rational means for measuring the level or levels of heavy motor vehicle operation corresponding to given traffic conditions such as those reported by a local, state, or national loadometer survey.

It was also pointed out that in order to accomplish these ends, it is first necessary to find a satisfactory way for converting a given heavy vehicle loading into an equivalent load, and that this could be done by evaluating some stress producing effect—such as maximum moment, shear, or floor beam reaction—caused by the given vehicle on a simple span bridge of definite length and then finding the gross weight required on, say, a standard H truck to produce the same effect. For example, if a given vehicle caused a maximum moment of say 445.6 kip-feet (see AASHO moment table) on a 50-foot span it would be the same as that produced by an H 20 truck. And on this basis, the given vehicle would be rated as an equivalent H20 truck loading on a 50-foot span. The given vehicle could quite as easily be rated similarly in terms of an equivalent H-S truck loading, equivalent concentrated load, or any other standardized equivalent load that might prove advantageous as a basis of comparison for the particular purpose under consideration. The simplest procedure, however, would be to first convert the given vehicle into an equivalent H truck loading for the span under consideration, and then rate it in terms of either of the other standardized equivalent loadings by use of the conversion coefficients given and explained in Article 13.

Perhaps it should be mentioned again also that another of the more important uses of equivalent loads is that of determining maximum permissible vehicle weights on bridges of various lengths and design designation. For example, it would be but a simple matter to determine whether or not a given vehicle should be permitted to pass over an H15 bridge of given length if the H loading equivalent of the given vehicle were known.

The method described in Article 1.1 for converting heavy vehicle types and loadings into equivalent loads, or for determining permissible vehicle weights, is the principal subject for this bulletin and is presented here for the first time. It gives answers which are mathematically correct for the 10,424 cases covered by the tables and charts presented in Part II, and answers which compare favorably with slide-rule accuracy for those cases where values are obtained by interpolation. The basis upon which the method is developed together with the tables and charts that have been prepared to facilitate its use are discussed in some detail and more fully explained in the articles of Part II which follow immediately.

Part II

METHOD FOR RATING HEAVY VEHICLE LOADS IN TERMS OF EQUIVALENT LOADS

5. BASIS FOR CONVERTING HEAVY VEHICLE LOADS INTO EQUIVALENT LOADS

5.1 General

As pointed out in the preceding articles, it is generally agreed that roadway subgrades and pavements can be protected against undue overstress, pumping, fatigue failure, or other premature injury simply by limiting the load that may be carried on a single axle, or on tandem axles which are less than about 4 feet apart. For roadway subgrades and pavements, then, the problem of permissible loads is fairly simple since it is mainly concerned with the loads carried by single axles and by tandem axles of about 4 feet spacing, irrespective of the total gross load of the vehicle.

On the other hand though, the problem of determining permissible loads for bridges is somewhat more involved. This is due to the fact that the critical stresses produced in bridges by heavy vehicle loads are influenced by no less than six variables, whereas the stresses in subgrades and pavements are influenced mainly by the intensity of single or tandem axle loads. The six variables which must be taken into account in the calculation of critical stresses for simple span bridges are as follows:

1. Span length of bridge
2. Gross weight of vehicle
3. Wheel base length of vehicle
4. Number of axles
5. Spacing of axles
6. Distribution of gross weight among the axles.

If all of these variables are taken into account by use of conventional methods, the only way in which the stress producing characteristics or effects of various heavy vehicle types and loadings on a given bridge can be determined accurately is by making a complete analysis of the stresses, for that particular bridge, produced by each individual vehicle under consideration. And though such an analysis for any particular vehicle or loading on a given span is not difficult, it is, to say the least, tedious and time consuming. The unfortunate thing about such analyses, however, is that the results obtained from them cannot be translated readily into general conclusions which can be used for determining the stress producing characteristics of, or the permissible vehicle weights for, other vehicle types and loading or for spans of different length.

What is needed, therefore, is a simplified method for evaluating the stress producing effects of heavy vehicle types and loadings, or their permissible weights, by which usable answers of any desired accuracy might be obtained without having to resort to the tedious and time consuming procedures required by the presently available conventional methods. As a result of the investigations that have been carried out as a part of the research work on this project, a method has been developed for solving certain of these problems by which usable answers may be obtained without making any calculations at all in many cases, and but a few simple calculations in others, depending on the particular problem under consideration and the degree of accuracy desired.

5.2 Basis For Method of Converting Heavy Motor Vehicle Loads Into Equivalent Design Loads

This method is based on the fact that it is the bending stresses which ordinarily determine the load carrying capacity of simple span bridges. Therefore, any convenient procedure that may be used for finding the maximum bending moment produced by a particular heavy vehicle or loading on a given span, provides a simple yet effective means for measuring the stress producing effects of this particular vehicle or loading on the given span. Thus, after the bending moment produced by a particular vehicle on a given span has been determined, this moment can then be compared with that produced by one of the AASHO standard design trucks, or that produced by a single concentrated load, thereby converting the given vehicle into an equivalent H truck loading, equivalent H-S truck loading, or an equivalent concentrated load as may be desired.

The method provides answers which are exact for the 1300 odd trucks and combinations upon which the tables and charts in the present bulletin are based; and very closely approximate answers for any other vehicle for which values are obtained by interpolation. These tables and charts deal with the stress producing effects caused by 14 of the more common heavy vehicle types ordinarily encountered in present day highway traffic[14] (see Figure 6.1) on simple span bridges up to 100 feet in length. These include the 2- and 3-axle single unit trucks; 6 types of truck-tractor semitrailer combinations with from 3 to 6 axles each; 4 types of truck-trailer combinations with from 4 to 6 axles each; and 2 types of truck-tractor semitrailer trailer combinations with 5 and 8 axles, respectively. All of these heavy vehicles, with the exception of the 8-axle truck-tractor semitrailer trailer combination, were reported in the 1942 loadometer survey. The 8-axle combination was included for two reasons. First, it represents a realistic possibility, that is, it is quite probable that a vehicle of this type may be employed at present or in future trucking operation; and second, the stress producing characteristics of all other combinations having 5 to 8 axles, which may be encountered and which were omitted from this discussion due to their relatively infrequent occurrence, may be closely approximated by interpolation between the 5 and 8 axle combinations included in this analysis.

Owing to the fact that the six variables previously listed, which must be taken into account in the calculation of critical stresses for simple span bridges, may have an infinite number of values and may be combined with each other in an infinite number of ways, it is obvious that the maximum moment produced by any particular vehicle on a given span would represent but one of an infinite number of possible values. For this reason, it would not be practical to undertake to determine the maximum moments that would result from all possible combinations of these variables. These difficulties may be overcome, however, by grouping certain of the variables in such a way as to cover all of the practical cases likely to be encountered and then separate these groups into cells that are close enough together to give accurate results, either directly or by interpolation, and yet far enough apart to keep the total number of cells as small as possible consistent with the degree of accuracy desired.

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[14]Henson K. Stephenson and A. A. Jakkula, "Highway Loads and Their Effects on Highway Structures Based on Traffic Data of 1942," Texas Engineering Experiment Station Bulletin No. 116, January, 1950.

In accordance with this procedure, the 14 heavy vehicle types mentioned above, and shown in Figure 6.1, were selected for special study. A breakdown of each vehicle type was then made by varying wheel base length, spacing of axles, and the axle load ratios—that is, the ratios or percentages of gross vehicle weight carried by the several axles—in such a way as to cover all types and variations of practical trucks and combinations encountered in ordinary highway traffic. It will be noticed that, with the exception of the 2- and 3-axle trucks, the number of axle load ratios has been limited to three, irrespective of the number of axles included in the vehicles under consideration. This was done since, in the preliminary examination of a large number of each of the heavy vehicle types, it was established that the use of more than three axle load ratios did not significantly change the resulting maximum moments. The reason for this obtains from the fact that, as the number of axles increases and the ratio of gross load on each axle decreases, the maximum moment produced by such a vehicle on a given span approaches, as a limit, the maximum moment produced by a load of equal weight on the same span which is uniformly distributed over a length equal to the wheel base length of the given vehicle.[15] Also, any increase in the number of axle load ratios over the three used would have increased the number of cells to a point where there would have been a prohibitive number of calculations as well as a set of tables and charts that would prove to be too voluminous for practical use.

Gross vehicle weight is then eliminated as a variable by the use of these axle load ratios or percentages of the gross vehicle weight carried on the several axles, in lieu of the use of actual weight, thus permitting the use of unit weights or vehicles weighing one kip each. This simplification is possible since the maximum moment produced by a particular vehicle on a given span is directly proportional to its gross weight, therefore, moments produced by a particular vehicle on a given span may be obtained merely by multiplying the moment in kip-feet for a vehicle of unit weight by the gross weight of the same vehicle in kips.

The breakdown for the Type 2 truck (2-axle single-unit truck), for example, is covered by the 36 variations of wheel base length and loading distribution shown in Index Table 6.1. This table shows 6 different lengths of wheel base, varying in 2-foot increments from 10 to 20 feet, and for each wheel base there are 6 different percentage distributions of gross weight between the two axles, making a total of 36 variations or cells. Thus, if the wheel-base length and the percentages of gross weight on each axle were known for any practical 2-axle truck, it could be classified by fitting it into one of the 36 cells or by interpolation between the two cells nearest to it. To use a simple illustration, suppose it was desired to classify a Type 2 truck reported by a loadometer survey as follows: wheel-base length of 18 feet; gross vehicle weight of 24,000 pounds with 7,200 and 16,800 pounds on front and rear axles, respectively. Since this truck carries 30 percent or .30 of the gross load on the front axle and 70 percent or .70 on the rear, it would be classified by Table 6.1 as a Type 2 truck, Number 28, hereafter designated as a 2-28. To further illustrate, suppose it is desired to classify a Type 2 truck reported by a loadometer survey having a wheel base length of 17 feet and a gross vehicle weight of 24,000 pounds, with 6,480 and 17,520 pounds on the front and rear axles, respectively. In this case the truck carries 27 percent or .27 of the gross load on the front axles and 73 percent or .73 on the rear axle. Referring again to Table 6.1 it is found that the .25 - .75 loading distribution to the front and rear axles respectively, more nearly approximates the given vehicle than any other, so that for a 17-foot wheel base the given truck would be classified as a 2-23 or a 2-29. The final choice would be a 2-23. This results from the fact that the shorter wheel base will give a somewhat greater moment than the given truck and would be on the side of

[15]Henson K. Stephenson, "Determination of Permissible Vehicle Weights on Bridges of H Loading Design," AASHO Proceedings, Washington 4, D. C., 1949, pp. 144-185.

safety, whereas a 2-29 with a longer wheel base would give a somewhat lesser moment than the given truck.

A breakdown similar to this was made for each of the 14 heavy vehicle types as shown in the identification index Tables 6.1-6.14. The breakdown for the Type 3 truck, given in Table 6.2, has 42 cells; the Type 2-S1 truck has 126 cells, and so on, and all 14 vehicle types account for a total of 1303 cells from which to choose when undertaking to identify and classify any particular vehicle of known wheel-base length, number and spacing of axles and loading distribution.

Span lengths of 10, 20, 30, 40, 50, 60, 80, and 100 feet were then decided upon and the maximum moment produced by each of the 1303 vehicles on each length of span was calculated. Thus, the general problem of determining the maximum moments produced by heavy vehicle types and loadings on simple span bridges is reduced by this procedure to consideration of 10,424 cells for each of which the maximum moments have been calculated. These 10,424 moments are included in Tables 7.1-7.14. In addition to giving the maximum moment for each of the 10,424 cases, these tables also give the axle group which produces the moment, the axle number under which the maximum moment occurs, and the distance this critical axle is placed to the right or left of the mid-span for obtaining the maximum moment. Tables 7.1-7.14—one for each of the 14 vehicle types considered—provide the fundamental information for determining the stress producing effects of heavy vehicle types and loadings on spans of various lengths, which in turn provides the means of rating them in terms of equivalent H truck loadings, equivalent H-S truck loadings, or equivalent concentrated loads, as may be desired. These tables, as well as the other tables and charts included in Parts II, III, IV, and V, and how they are used, will be more fully explained in the remaining sections of this article. For the time being, however, the above discussion is believed to be sufficient to outline the procedure employed herein for measuring the stress producing effects of heavy vehicles and converting them into equivalent loadings.

The ratings of heavy vehicle types and loadings in terms of equivalent H or H-S truck loadings, or equivalent concentrated loads not only provide a simple yet accurate means for determining permissible vehicle weights for bridges of various lengths and design designations but they also provide a convenient and rapid means for analyzing the frequency distributions of various intensities of heavy vehicle loading equivalents on bridges of different lengths. Such frequency distributions as these, which have been determined from the heavy vehicle data reported by a loadometer survey, furnish a quantitative measure for evaluating the level or levels of heavy motor vehicle operation associated with various traffic conditions. In turn, these distributions may be interpreted as an index to highway transport for correlating the various levels of heavy motor vehicle operation with minimum standards for highway and bridge provision. The results of such an analysis are given and discussed in Parts IV and V which include the observed and calculated frequencies of equivalent H truck loadings, and also the observed and calculated frequencies of equivalent concentrated loads, based on the heavy vehicle data reported by the special loadometer survey of 1942.

5.3 Description of Tables And Charts For Converting Heavy Vehicles Into Equivalent Loads

The tables and charts in Part II are concerned with the maximum moments, equivalent H truck loadings, equivalent H-S truck loadings, equivalent concentrated loads, and permissible vehicle weights associated with 14 of the more common heavy vehicle types, ordinarily encountered in present-day highway traffic, on simple span brides up to 100 feet in length. A drawing of each of these 14 vehicle types is shown in Figure 6.1 and a break-down of each type into cells or variants is given by the identification index Tables 6.1-6.14, as follows:

Vehicle Type	No. of Cells	Table Number	Vehicle Type	No. of Cells	Table Number
2	36	6.1	3-S3	105	6.8
3	42	6.2	2-2	144	6.9
2-S1	126	6.3	2-3	90	6.10
2-S2	108	6.4	3-2	90	6.11
2-S3	90	6.5	3-3	90	6.12
3-S1	90	6.6	2-S1-2	96	6.13
3-S2	112	6.7	3-S2-3	84	6.14

Total Number of Cells = 1303

It will be noted that each of the 1303 trucks listed in these tables is of unit weight and may be thought of as weighing one kip (1000 pounds) each. In fact, all of the tables and charts in Part II are based on vehicles of unit weight or vehicles weighing one kip each. This elimination of gross vehicle weight as a variable is made possible by the fact that the maximum moment produced by a given vehicle on a simple span bridge is directly proportional to its gross weight. In other words, once the maximum moment caused by a particular vehicle of unit weight on a given span is known, the actual moment produced by it on that span is obtained simply by multiplying the unit weight moment by the gross weight of the vehicle under consideration.

After a given vehicle has been classified as to vehicle type and truck number in Tables 6.1-6.14, its stress producing characteristics and effects may then be determined from one or more of the remaining tables of Part II. Before undertaking to discuss the use of these tables and charts, however, a list of their titles is included here for convenient reference and also because they are somewhat self explanatory. They are as follows:

Tables 7.1 - 7.14; Controlling Conditions for Maximum Moments on Simple Span Bridges

Tables 8.1 - 8.14; Summary of Maximum Moments Produced by Vehicles of Unit Weight on Simple Span Bridges

Figures 9.1 - 9.14; Maximum Moments and Equivalent H Truck Loadings for Vehicles of Unit Weight on Simple Span Bridges

Tables 10.1 - 10.14; Equivalent H Truck Loadings for Vehicles of Unit Weight on Simple Span Bridges

Tables 11.1 - 11.14; Gross Load Required for Various Truck Types and Loadings to Produce Same Moment As Standard H Truck of Unit Weight on Simple Span Bridges

Tables 12.1 - 12.14; Equivalent Concentrated Loads Required to Produce Same Moment as Heavy Vehicle Types of Unit Weight on Simple Span Bridges

Table 13.1 and Figure 13.1; Conversion Coefficients for Equivalent Loadings on Simple Spans of Various Lengths

Note: Equivalent H truck loadings, equivalent H-S truck loadings, and equivalent concentrated loads may be converted from any one of these to either of the other by using the proper conversion coefficient as given by Table 13.1 or Figure 13.1.

5.4 Use of Tables and Charts For Converting Heavy Vehicles Into Equivalent Loads

Perhaps the simplest way to explain the use of the tables and charts described above would be to investigate several typical situations that could easily arise in connection with some particular heavy vehicle loading. Suppose, for example, that the vehicle in question is a 3-axle truck-tractor semitrailer combination (Type 2-S1 truck) having a gross weight of 45,000 pounds with 9,000 pounds on the front axle and 18,000 pounds on each of the other two, and with axle spacing front to rear of 8 feet and 16 feet, respectively, making an over-all wheel-base length of 24 feet. The first step toward answering questions concerning this vehicle would be to identify it in accordance with the index Tables 6.1-6.14. Thus in Table 6.3, a Type 2-S1 truck having the same axle spacings as this vehicle, with 20 percent of its gross weight on the front axle and 40 percent on each of the other two will be found among the 126 variations for this vehicle type. In the fourth column from the left it will be seen that Truck Nos. 8 through 14 are for a vehicle with a 24-foot wheel base and axle spacings front to rear of 8 feet and 16 feet, respectively. In the next three columns to the right (columns 5, 6, and 7) it will be seen that Truck No. 13 is the one that fits the vehicle described above with 20 percent of the gross load on the front axle and 40 percent on each of the other two. So this vehicle would be classified as a Type 2-S1 truck—No. 13. In Table 6.3 it will be noted that there are a total of 126 variations of wheel-base lengths, axle spacings, and distributions of load among the axles which are arranged in such a way as to approximate almost any practical Type 2-S1 truck that might be encountered in highway traffic.

Now, suppose it is desired to know the maximum moment produced by this Type 2-S1-13 (Type 2-S1 truck—No. 13) on several different span lengths; say on 30-, 50-, and 80-foot simple span bridges. This information will be found for Type 2-S1-13 in Table 7.3. For the 30-foot span it shows that a truck like this one will produce a maximum bending moment of 3.734 kip-feet for each thousand pounds of gross vehicle weight. It also shows that this maximum moment would occur when axles 1 and 2 are on the span and when axle 2 is placed 1.333 feet to the right of the mid-span. For the 50- and 80-foot spans, similarly, it will be seen that the maximum moment occurs under axle 2 in each case when all three axles are on the span and axle 2 is placed 2.400 feet to the left of the mid-span; the maximum moments being 8.615 kip-feet and 16.072 kip-feet, respectively. In most cases, however, it is only the maximum moment caused by a vehicle on a given span that would be of interest. For this reason, as well as that of making the study of this information more convenient, the maximum moments for all the vehicle types and loadings shown in Tables 7.1-7.14 are summarized in Tables 8.1-8.14, respectively. For example, the maximum moments for the Type 2-S1-13, as given in Table 7.3, are summarized in Table 8.3.

It might be added that Tables 7.1-7.14 and Tables 8.1-8.14 are sufficiently extensive to cover practically any vehicle type, number of axles, wheel-base length, and loading distribution among the axles ordinarily encountered in present-day highway traffic. From these tables the maximum moment caused by any of these vehicles on spans up to 100 feet in length may be rapidly and accurately determined. In many cases, it is only desired to know the maximum moment caused by a particular heavy vehicle on a given span. In other cases, however, just knowing the maximum moment caused by a vehicle on a given span would not be too informative. But if this maximum moment were measured in terms of the load required on a standard H truck to produce the same moment on the same span it could be readily interpreted in terms of an equivalent H truck loading, which would be very informative. This operation of converting a given truck into equivalent H truck loading is accomplished simply by dividing the maximum moment produced by the given truck on a given span by the maximum moment produced by the standard H truck on the same span. For example suppose it is desired to know the equivalent H truck loading on the 100-foot span for a Type 2-S1 truck weighing 30,000 pounds with 6,000 pounds on the front axle and 12,000 pounds on each of the other two, and an axle spacing front to rear of 8 feet and 12 feet resulting in an over-all wheel base of 20 feet. Without any other information it would be necessary to calculate the maximum moment produced by the given vehicle on the 100-foot span, which in this case is found to be 654.78 foot-kips, and the moment produced by the standard H truck weighing 30 kips on the 100-foot span is found to be 708.60 foot-kips. The equivalent H truck loading for the given truck when determined as outlined above would be EHTL = 654.78 ÷ 708.60 = .924, which means that the standard H truck would only have to be loaded with .924 x 30 kips = 27.72 kips to produce as much moment as the given truck. In other words, the given truck would be rated as an H13.86 truck with respect to its stress producing characteristics based on moment. A summary of the equivalent H truck loadings for all the heavy vehicle types, loadings, and span lengths are given in Tables 10.1-10.14 and a brief explanation of their use follows immediately.

As an example in the use of Tables 10.1-10.14, suppose it is desired to know the equivalent load rating for a gross vehicle weight of 45,000 pounds on the Type 2-S1-13 (Type 2-S1 truck—No. 13) on the 30-, 50-, and 80-foot spans. The equivalent H truck loadings for this vehicle based on a gross load of one kip are to be found in Table 10.3 and for the spans in question they are as follows:

Equivalent H Truck Loadings in Kips for a Type 2-S1 Truck—No. 13 Weighing 45,000 Pounds

Gross Vehicle Weight-Kips	Span Length Feet		
	30	50	80
1.00	.606	.773	.863
45.00	27.2	34.8	38.8

This means that the Type 2-S1-13 weighing one kip would produce as much moment on a 30-foot span as a standard H truck weighing 0.606 times as much as the given vehicle, or 606 pounds. In other words it would produce 60.6 percent as much moment as a standard H truck of the same weight. Or, better perhaps, it would produce the same moment on a 30-foot span as a standard H truck weighing 60.6 percent as much. The given Type 2-S1-13, therefore, would produce as much moment on a 30-foot span as a standard H truck weighing 45,000 x 0.606 = 27.2 kips = 13.6 tons; and, for this span it would be rated as an equivalent H13.6 truck loading. On the 50- and 80-foot spans, similarly, it would be rated as an equivalent H17.4 truck loading and an equivalent H19.4 truck loading, respectively.

Similar information, concerning maximum moments and the rating of heavy vehicle types and loadings in terms of equivalent H truck loadings on spans up to 100 feet in length, may be obtained graphically from Figures 9.1-9.14. No further discussion of these charts are believed to be necessary here, however, since they are explained in some detail in the text of Article 9.

In addition to the rating of heavy vehicle types and loadings on various spans in terms of equivalent H truck loadings, as was done in the preceding examples, there is another type of typical problem that often arises in connection with the load carrying capacity of certain bridges of given length and design designation. This is the problem of determining the maximum gross weight that should be permitted on any particular vehicle such that it might safely pass over a simple span bridge of given length and design rating. There are a number of variations to this problem of permissible vehicle weight, of course, but a few illustrative examples is all that is believed to be necessary to show how the tables may be used.

Example 5.1. Use of Tables 7.1-7.14 for Rating Heavy Vehicles

Given: A simple span bridge 50 feet long has a load carrying capacity such that it should not be subjected to a greater moment than that caused by an H20 truck. Suppose it is desired to know the maximum gross load that may be carried over this bridge by a Type 3-S2 truck with axle spacing, front to rear, of 12 feet, 4 feet, 12 feet, and 4 feet, respectively, making an overall wheel-base length of 32 feet, if it is assumed that the gross weight is so distributed that each of the 5 axles will be equally loaded.

By consulting the identification index Table 6.7, it will be seen that this vehicle would be classified as a Type 3-S2-48 (Type 3-S2 truck—No. 48). The problem here is to find the gross weight that might be carried by this vehicle such that it would not produce more moment on a 50-foot span than an H20 truck. By consulting an AASHO moment table it will be found that an H20 truck causes a moment of 445.6 kip-feet on a 50-foot span. And in Table 7.7 it will be found that one kip on the above Type 3-S2-48 moving from right to left produces a moment of 7.713 kip-feet on this span when all 5 axles are on the span and axle No. 3 is placed .800 feet to the left of the mid-span This shows that a gross weight of 445.6/7.713 = 57.6 kips on this vehicle, or 11.52 kips per axle, produce the same moment as an H20 truck. The gross vehicle weight thus indicated is more than would ordinarily be permitted by the AASHO policy (see Table 1.1) but this policy is designed to protect many of the older bridges that are not capable of safely supporting a vehicle load such as this one. However, insofar as this particular bridge is concerned, the permissible gross weight for the Type 3-S2-48 under consideration would be 57.6 kips. And thus loaded, this vehicle would be rated as an equivalent H20 truck loading.

Example 5.2 Use of Tables 8.1-8.14 for Rating Heavy Vehicles

Given: A simple span bridge 50 feet long, the same as for Example 5.1, has a load carrying capacity such that it should not be subjected to a greater moment than that caused by an H20 truck. Suppose it is desired to know the maximum gross load that may be carried over this bridge by the Type 3-S2-48, described in Example 5.1, such that it would be rated as an equivalent H20 truck loading.

In Table 8.7 it will be seen that a one kip load on a Type 3-S2-48 will produce a moment of 7.713 foot-kips on a 50-foot span and the AASHO moment tables show that an H20 truck will produce a moment of 445.6 kip-feet on the same span. Therefore, a gross weight of 445.6/7.713 = 57.6 kips on this vehicle would cause it to be rated as an equivalent H20 truck loading.

Example 5.3 Use of Tables 10.1-10.14 for Rating Heavy Vehicles

Suppose it is desired to know the gross load for a Type 3-S2-48 (Type 3-S2 truck—No. 48) as described in Example 5.1, that would cause it to be rated as an equivalent H20 truck loading on a 50-foot span.

Tables 10.1-10.14 show the equivalent H truck loadings which result from various heavy vehicle types and loadings of unit weight on spans up to 100 feet in length. In Table 10.7 it will be found that a gross vehicle weight of one kip for Type 3-S2-48 on a 50-foot span produces the same moment as 0.692 kips on a standard H truck. Therefore, a gross load of 40.0/.692 = 57.6 kips on this vehicle will produce the same moment as an H20 truck, and for this load the above Type 3-S2-48 would be rated as an equivalent H20 truck loading on a 50-foot span.

Example 5.4 Use of Tables 11.1-11.14 for Rating Heavy Vehicles

Suppose it is desired to know the gross load for a Type 3-S2-48 (Type 3-S2 truck—No. 48) as described in Example 5.1, that would result in its being rated as an equivalent H20 truck loading on a 50-foot span.

Tables 11.1-11.14 show the gross loads required for various heavy vehicle types and loadings to produce the same moment on simple spans as a standard H truck weighing one kip. And in Table 11.7 it will be found that a gross vehicle weight of 1.445 kips for the Type 3-S2-48 on a 50-foot span produces the same moment as 1.000 kip on an H truck. Therefore, a gross load of 40 x 1.445 = 57.6 kips on this vehicle will produce the same moment as an H20 truck, and for this load the above Type 3-S2-48 would be rated as an equivalent H20 truck loading on a 50-foot span.

Use of Equivalent Concentrated Loads

In the preceding discussion it was shown how the tables presented herein may be used for converting heavy vehicle types and loadings into equivalent H truck loading on simple span bridges up to 100 feet in length. The discussion thus far has been confined to equivalent H truck loadings because it is but a simple matter to convert a given heavy vehicle into an equivalent H-S truck loading once its H truck loading equivalent has been determined for any particular span. The coefficients for converting one type of equivalent load into another on various spans are given in Table 13.1 and Figure 13.1, and their use will be taken up immediately after the present discussion of equivalent concentrated loads.

Although the use of either the H or the H-S truck loading equivalents will provide a convenient means for measuring the stress producing effects of heavy vehicle types and loadings on simple spans of various lengths, there are certain advantages associated with the use of equivalent concentrated loads that might also be worthy of consideration when selecting an appropriate basis for comparison. The maximum moment produced by a single concentrated load on a simple span, for example, can be expressed by a very simple equation; namely,

$$M = PS/4 \qquad \text{5.1}$$

in which M = maximum moment in kip-feet
P = concentrated load in kips
S = span length in feet

In this equation, it will be noted for any given load, P, the maximum moment, M, is a continuous function which varies directly with the span length, S. On the other hand, the maximum moments produced by the H and H-S trucks on simple spans are neither continuous functions nor do the moments vary directly with the span. This is owing to the fact that the wheel-base length, spacing of axles, and the distribution of load among the axles must all be taken into account when arriving at an expression for maximum moment for either of the design trucks. For these reasons, equivalent concentrated loads not only provide an absolute basis for comparing the stress producing characteristics of one vehicle with those of another on the same span, but they also permit direct comparisons of these effects from one span to another that would not be so simple if the effects were measured in terms of the H or H-S truck or other arbitrary loading.

The use of the H or H-S truck as a basis for comparison, though, would not only have the advantage of being familiar to everyone but also of coinciding with presently used design loadings and bridge ratings. However, if these design loadings should be changed in the future—and it is possible that they will—their present advantages would not be so great. On the other hand, comparisons based on the use of equivalent concentrated loads would not be affected by one or more future changes in either the loads or procedures used for design.

It is possible of course to rate bridges—irrespective of their design designations—as well as heavy vehicles in terms of any standardized loading that might be selected for the purpose. As to whether one loading or another should be used as a basis for comparison in any particular case, however, is a matter that can only be determined after all the advantages and disadvantages associated with each of them, respectively, have been very carefully considered. At this stage, it is perhaps too early to say whether one or the other of the above mentioned loadings would ultimately prove to be the more satisfactory. For sake of uniformity, though, if it should develop that but one loading be selected as a standard for comparisons, it would seem from this discussion that the use of equivalent concentrated loads might well be included among those chosen for further investigation.

For those who would like to investigate the relative merits of using one or another of these loadings, the frequency distributions of equivalent loadings given in Parts IV and V, which were obtained from the loadometer survey data of 1942, should prove to be of special interest. The frequency distributions given in Part IV are based on equivalent H truck loadings and those in Part V are based on equivalent concentrated loads.

The information required for measuring the stress producing effects of heavy vehicle types and loadings on simple spans in terms of equivalent concentrated loads is given by Tables 12.1-12.14. The use of these tables will be explained by applying them to a simple illustrative example.

Example 5.5 Use of Tables 12.1-12.14 for Rating Heavy Vehicles in Terms of Equivalent Concentrated Loads

For the Type 3-S2-48 (Type 3-S2 truck—No. 48) having a gross weight of 57.6 kips described in Example 5.1, suppose it is desired to know the equivalent concentrated load that would produce the same maximum moment as this vehicle on a 50-foot span.

In Table 12.7 it will be found that a Type 3-S2-48 weighing 1.00 kip will produce the same maximum moment on a 50-foot span as a single concentrated load of 0.617 kips. Therefore, a single concentrated load of 57.6 x .617 = 35.5 kips would produce the same moment as the given vehicle and, on this basis, it would be rated as an equivalent 35.5 kip concentrated load on a 50-foot span.

Incidentally, it was shown in Example 5.1 that this vehicle would produce the same moment on a 50-foot span as an H20 truck. In other words, the given vehicle weighing 57.6 kips would produce the same maximum moment on a 50-foot span as 40.0 kips on a standard H truck or a single concentrated load of 35.5 kips.

6. IDENTIFICATION INDEX OF HEAVY VEHICLE TYPES AND LOADINGS

The tables and charts given in Articles 6-13 (Part II) are concerned with the maximum moments, equivalent H truck loadings, equivalent H-S truck loadings, and equivalent concentrated loads associated with the numerous possible variations in wheel-base lengths, numbers and spacings of axles, and the distribution of gross vehicle weight among the axles, for 14 of the more commonly used heavy vehicle types, ordinarily encountered in present-day highway traffic, on simple span bridges up to 100 feet in length. Each of these 14 vehicle types, together with the standardized notation used for their identification, is shown in Figure 6.1.

The numerals used in this notation, which is shown opposite and to the left of each diagram, indicate the number of axles in each of the one or more units within a given vehicle assembly. When a semitrailer is included within a vehicle, it is identified by the letter S, followed by the numeral which indicates its number of axles. The Type 2 truck and the Type 3 truck, for example, are single-unit trucks with 2 and 3 axles each, respectively. Double-unit vehicles may be one of the truck-tractor semitrailer combinations or one of the truck-trailer combinations; the three-unit vehicles may be one of the truck-tractor semitrailer trailer combinations. The Type 3-S2 truck, for example, consists of a 3-axle truck-tractor with a 2-axle semitrailer; and the Type 3-S2-3 truck is made up of a 3-axle truck-tractor with a 2-axle semitrailer followed by a 3-axle trailer.

A breakdown of each of these 14 vehicle types into cells or variants is given by Tables 6.1-6.14, as follows:

Table Number	Vehicle Types	No. of Cells	Table Number	Vehicle Types	No. of Cells
6.1	2	36	6.8	3-S3	105
6.2	3	42	6.9	2-2	144
6.3	2-S1	126	6.10	2-3	90
6.4	2-S2	108	6.11	3-2	90
6.5	2-S3	90	6.12	3-3	90
6.6	3-S1	90	6.13	2-S1-2	96
6.7	3-S2	112	6.14	3-S2-3	84

Total Number of Cells = 1303

IDENTIFICATION OF FREIGHT VEHICLE TYPES

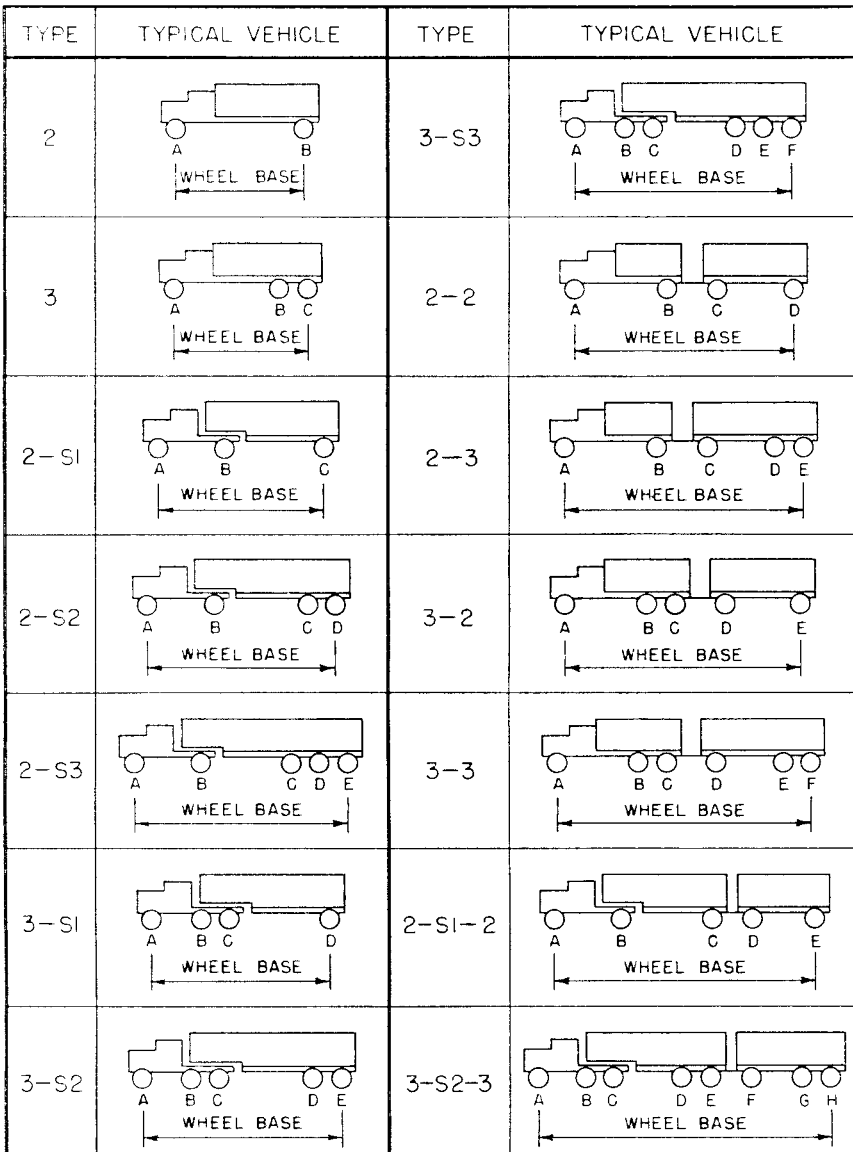


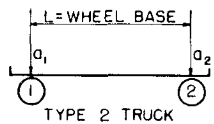
Figure 6.1

A detailed description of these identification index tables and how they are used is given in Article 5.

Table 6.1

INDEX TO THE TYPE 2 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 36 represent 36 combinations of various wheel base lengths and axle loadings.

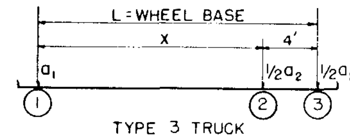


Truck Number	Wheel Base	Loading on Axles Kips		Truck Number	Wheel Base	Loading on Axles Kips	
		a_1	a_2			a_1	a_2
1	10	.45	.55	19	16	.45	.55
2	10	.40	.60	20	16	.40	.60
3	10	.35	.65	21	16	.35	.65
4	10	.30	.70	22	16	.30	.70
5	10	.25	.75	23	16	.25	.75
6	10	.20	.80	24	16	.20	.80
7	12	.45	.55	25	18	.45	.55
8	12	.40	.60	26	18	.40	.60
9	12	.35	.65	27	18	.35	.65
10	12	.30	.70	28	18	.30	.70
11	12	.25	.75	29	18	.25	.75
12	12	.20	.80	30	18	.20	.80
13	14	.45	.55	31	20	.45	.55
14	14	.40	.60	32	20	.40	.60
15	14	.35	.65	33	20	.35	.65
16	14	.30	.70	34	20	.30	.70
17	14	.25	.75	35	20	.25	.75
18	14	.20	.80	36	20	.20	.80

Table 6.2

INDEX TO THE TYPE 3 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 42 represent 42 combinations of various wheel base lengths, axle spacings, and axle loadings.

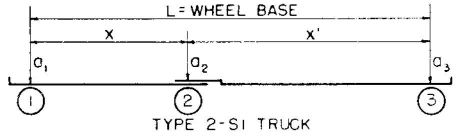


Truck Number	Wh. Base and Axle Spacing		Loading on Axles Kips		Truck Number	Wh. Base and Axle Spacing		Loading on Axles Kips	
	X	L	a_1	a_2		X	L	a_1	a_2
1	10	14	.40	.60	22	16	20	.40	.60
2	10	14	.35	.65	23	16	20	.35	.65
3	10	14	.30	.70	24	16	20	.30	.70
4	10	14	.25	.75	25	16	20	.25	.75
5	10	14	.20	.80	26	16	20	.20	.80
6	10	14	.15	.85	27	16	20	.15	.85
7	10	14	.10	.90	28	16	20	.10	.90
8	12	16	.40	.60	29	18	22	.40	.60
9	12	16	.35	.65	30	18	22	.35	.65
10	12	16	.30	.70	31	18	22	.30	.70
11	12	16	.25	.75	32	18	22	.25	.75
12	12	16	.20	.80	33	18	22	.20	.80
13	12	16	.15	.85	34	18	22	.15	.85
14	12	16	.10	.90	35	18	22	.10	.90
15	14	18	.40	.60	36	20	24	.40	.60
16	14	18	.35	.65	37	20	24	.35	.65
17	14	18	.30	.70	38	20	24	.30	.70
18	14	18	.25	.75	39	20	24	.25	.75
19	14	18	.20	.80	40	20	24	.20	.80
20	14	18	.15	.85	41	20	24	.15	.85
21	14	18	.10	.90	42	20	24	.10	.90

Table 6.3

INDEX TO THE TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 126 represent 126 combinations of various wheel base lengths, axle spacings, and axle loadings.

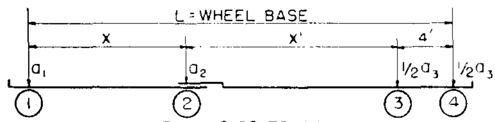


Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X'	L	a_1	a_2	a_3		X	X'	L	a_1	a_2	a_3		X	X'	L	a_1	a_2	a_3
1	8	12	20	.10	.30	.60	43	12	12	24	.10	.30	.60	85	16	8	24	.10	.30	.60
2	8	12	20	.10	.40	.50	44	12	12	24	.10	.40	.50	86	16	8	24	.10	.40	.50
3	8	12	20	.10	.45	.45	45	12	12	24	.10	.45	.45	87	16	8	24	.10	.45	.45
4	8	12	20	.10	.50	.40	46	12	12	24	.10	.50	.40	88	16	8	24	.10	.50	.40
5	8	12	20	.20	.30	.50	47	12	12	24	.20	.30	.50	89	16	8	24	.20	.30	.50
6	8	12	20	.20	.40	.40	48	12	12	24	.20	.40	.40	90	16	8	24	.20	.40	.40
7	8	12	20	.20	.50	.30	49	12	12	24	.20	.50	.30	91	16	8	24	.20	.50	.30
8	8	16	24	.10	.30	.60	50	12	16	28	.10	.30	.60	92	16	12	28	.10	.30	.60
9	8	16	24	.10	.40	.50	51	12	16	28	.10	.40	.50	93	16	12	28	.10	.40	.50
10	8	16	24	.10	.45	.45	52	12	16	28	.10	.45	.45	94	16	12	28	.10	.45	.45
11	8	16	24	.10	.50	.40	53	12	16	28	.10	.50	.40	95	16	12	28	.10	.50	.40
12	8	16	24	.20	.30	.50	54	12	16	28	.20	.30	.50	96	16	12	28	.20	.30	.50
13	8	16	24	.20	.40	.40	55	12	16	28	.20	.40	.40	97	16	12	28	.20	.40	.40
14	8	16	24	.20	.50	.30	56	12	16	28	.20	.50	.30	98	16	12	28	.20	.50	.30
15	8	20	28	.10	.30	.60	57	12	20	32	.10	.30	.60	99	16	16	32	.10	.30	.60
16	8	20	28	.10	.40	.50	58	12	20	32	.10	.40	.50	100	16	16	32	.10	.40	.50
17	8	20	28	.10	.45	.45	59	12	20	32	.10	.45	.45	101	16	16	32	.10	.45	.45
18	8	20	28	.10	.50	.40	60	12	20	32	.10	.50	.40	102	16	16	32	.10	.50	.40
19	8	20	28	.20	.30	.50	61	12	20	32	.20	.30	.50	103	16	16	32	.20	.30	.50
20	8	20	28	.20	.40	.40	62	12	20	32	.20	.40	.40	104	16	16	32	.20	.40	.40
21	8	20	28	.20	.50	.30	63	12	20	32	.20	.50	.30	105	16	16	32	.20	.50	.30
22	8	24	32	.10	.30	.60	64	12	24	36	.10	.30	.60	106	16	20	36	.10	.30	.60
23	8	24	32	.10	.40	.50	65	12	24	36	.10	.40	.50	107	16	20	36	.10	.40	.50
24	8	24	32	.10	.45	.45	66	12	24	36	.10	.45	.45	108	16	20	36	.10	.45	.45
25	8	24	32	.10	.50	.40	67	12	24	36	.10	.50	.40	109	16	20	36	.10	.50	.40
26	8	24	32	.20	.30	.50	68	12	24	36	.20	.30	.50	110	16	20	36	.20	.30	.50
27	8	24	32	.20	.40	.40	69	12	24	36	.20	.40	.40	111	16	20	36	.20	.40	.40
28	8	24	32	.20	.50	.30	70	12	24	36	.20	.50	.30	112	16	20	36	.20	.50	.30
29	8	28	36	.10	.30	.60	71	12	28	40	.10	.30	.60	113	16	24	40	.10	.30	.60
30	8	28	36	.10	.40	.50	72	12	28	40	.10	.40	.50	114	16	24	40	.10	.40	.50
31	8	28	36	.10	.45	.45	73	12	28	40	.10	.45	.45	115	16	24	40	.10	.45	.45
32	8	28	36	.10	.50	.40	74	12	28	40	.10	.50	.40	116	16	24	40	.10	.50	.40
33	8	28	36	.20	.30	.50	75	12	28	40	.20	.30	.50	117	16	24	40	.20	.30	.50
34	8	28	36	.20	.40	.40	76	12	28	40	.20	.40	.40	118	16	24	40	.20	.40	.40
35	8	28	36	.20	.50	.30	77	12	28	40	.20	.50	.30	119	16	24	40	.20	.50	.30
36	12	8	20	.10	.30	.60	78	12	32	44	.10	.30	.60	120	16	28	44	.10	.30	.60
37	12	8	20	.10	.40	.50	79	12	32	44	.10	.40	.50	121	16	28	44	.10	.40	.50
38	12	8	20	.10	.45	.45	80	12	32	44	.10	.45	.45	122	16	28	44	.10	.45	.45
39	12	8	20	.10	.50	.40	81	12	32	44	.10	.50	.40	123	16	28	44	.10	.50	.40
40	12	8	20	.20	.30	.50	82	12	32	44	.20	.30	.50	124	16	28	44	.20	.30	.50
41	12	8	20	.20	.40	.40	83	12	32	44	.20	.40	.40	125	16	28	44	.20	.40	.40
42	12	8	20	.20	.50	.30	84	12	32	44	.20	.50	.30	126	16	28	44	.20	.50	.30

Table 6.4

INDEX TO THE TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 108 represent 108 combinations of various wheel base lengths, axle spacings, and axle loadings.



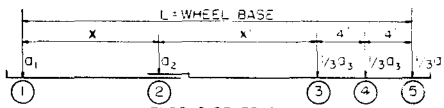
TYPE 2-S2 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X'	L	a_1	a_2	a_3		X	X'	L	a_1	a_2	a_3		X	X'	L	a_1	a_2	a_3
1	8	8	20	.10	.30	.60	37	12	8	24	.10	.30	.60	73	16	8	28	.10	.30	.60
2	8	8	20	.10	.40	.50	38	12	8	24	.10	.40	.50	74	16	8	28	.10	.40	.50
3	8	8	20	.10	.50	.40	39	12	8	24	.10	.50	.40	75	16	8	28	.10	.50	.40
5	8	8	20	.20	.40	.40	41	12	8	24	.20	.30	.50	76	16	8	28	.20	.30	.50
4	8	8	20	.20	.30	.50	40	12	8	24	.20	.40	.40	77	16	8	28	.20	.40	.40
6	8	8	20	.20	.50	.30	42	12	8	24	.20	.50	.30	78	16	8	28	.20	.50	.30
7	8	12	24	.10	.30	.60	43	12	12	28	.10	.30	.60	79	16	12	32	.10	.30	.60
8	8	12	24	.10	.40	.50	44	12	12	28	.10	.40	.50	80	16	12	32	.10	.40	.50
9	8	12	24	.10	.50	.40	45	12	12	28	.10	.50	.40	81	16	12	32	.10	.50	.40
10	8	12	24	.20	.30	.50	46	12	12	28	.20	.30	.50	82	16	12	32	.20	.30	.50
11	8	12	24	.20	.40	.40	47	12	12	28	.20	.40	.40	83	16	12	32	.20	.40	.40
12	8	12	24	.20	.50	.30	48	12	12	28	.20	.50	.30	84	16	12	32	.20	.50	.30
13	8	16	28	.10	.30	.60	49	12	16	32	.10	.30	.60	85	16	16	36	.10	.30	.60
14	8	16	28	.10	.40	.50	50	12	16	32	.10	.40	.50	86	16	16	36	.10	.40	.50
15	8	16	28	.10	.50	.40	51	12	16	32	.10	.50	.40	87	16	16	36	.10	.50	.40
16	8	16	28	.20	.30	.50	52	12	16	32	.20	.30	.50	88	16	16	36	.20	.30	.50
17	8	16	28	.20	.40	.40	53	12	16	32	.20	.40	.40	89	16	16	36	.20	.40	.40
18	8	16	28	.20	.50	.30	54	12	16	32	.20	.50	.30	90	16	16	36	.20	.50	.30
19	8	20	32	.10	.30	.60	55	12	20	36	.10	.30	.60	91	16	20	40	.10	.30	.60
20	8	20	32	.10	.40	.50	56	12	20	36	.10	.40	.50	92	16	20	40	.10	.40	.50
21	8	20	32	.10	.50	.40	57	12	20	36	.10	.50	.40	93	16	20	40	.10	.50	.40
22	8	20	32	.20	.30	.50	58	12	20	36	.20	.30	.50	94	16	20	40	.20	.30	.50
23	8	20	32	.20	.40	.40	59	12	20	36	.20	.40	.40	95	16	20	40	.20	.40	.40
24	8	20	32	.20	.50	.30	60	12	20	36	.20	.50	.30	96	16	20	40	.20	.50	.30
25	8	24	36	.10	.30	.60	61	12	24	40	.10	.30	.60	97	16	24	44	.10	.30	.60
26	8	24	36	.10	.40	.50	62	12	24	40	.10	.40	.50	98	16	24	44	.10	.40	.50
27	8	24	36	.10	.50	.40	63	12	24	40	.10	.50	.40	99	16	24	44	.10	.50	.40
28	8	24	36	.20	.30	.50	64	12	24	40	.20	.30	.50	100	16	24	44	.20	.30	.50
29	8	24	36	.20	.40	.40	65	12	24	40	.20	.40	.40	101	16	24	44	.20	.40	.40
30	8	24	36	.20	.50	.30	66	12	24	40	.20	.50	.30	102	16	24	44	.20	.50	.30
31	8	28	40	.10	.30	.60	67	12	28	44	.10	.30	.60	103	16	28	48	.10	.30	.60
32	8	28	40	.10	.40	.50	68	12	28	44	.10	.40	.50	104	16	28	48	.10	.40	.50
33	8	28	40	.10	.50	.40	69	12	28	44	.10	.50	.40	105	16	28	48	.10	.50	.40
34	8	28	40	.20	.30	.50	70	12	28	44	.20	.30	.50	106	16	28	48	.20	.30	.50
35	8	28	40	.20	.40	.40	71	12	28	44	.20	.40	.40	107	16	28	48	.20	.40	.40
36	8	28	40	.20	.50	.30	72	12	28	44	.20	.50	.30	108	16	28	48	.20	.50	.30

Table 6.5

INDEX TO THE TYPE 2-S3 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 90 represent 90 combinations of various wheel base lengths, axle spacings, and axle loadings.



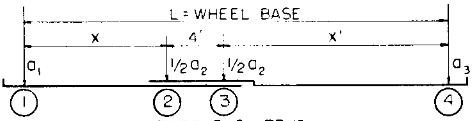
TYPE 2-S3 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft. X	X'	L	Load On Axles Kips a1	a2	a3	Truck Number	Wheel Base and Axle Spacing Ft. X	X'	L	Load On Axles Kips a1	a2	a3	Truck Number	Wheel Base and Axle Spacing Ft. X	X'	L	Load On Axles Kips a1	a2	a3
1	8	8	24	.10	.225	.675	31	12	8	28	.10	.225	.675	61	16	8	32	.10	.225	.675
2	8	8	24	.10	.30	.60	32	12	8	28	.10	.30	.60	62	16	8	32	.10	.30	.60
3	8	8	24	.10	.40	.50	33	12	8	28	.10	.40	.50	63	16	8	32	.10	.40	.50
4	8	8	24	.20	.20	.60	34	12	8	28	.20	.20	.60	64	16	8	32	.20	.20	.60
5	8	8	24	.20	.30	.50	35	12	8	28	.20	.30	.50	65	16	8	32	.20	.30	.50
6	8	8	24	.20	.40	.40	36	12	8	28	.20	.40	.40	66	16	8	32	.20	.40	.40
7	8	12	28	.10	.225	.675	37	12	12	32	.10	.225	.675	67	16	12	36	.10	.225	.675
8	8	12	28	.10	.30	.60	38	12	12	32	.10	.30	.60	68	16	12	36	.10	.30	.60
9	8	12	28	.10	.40	.50	39	12	12	32	.10	.40	.50	69	16	12	36	.10	.40	.50
10	8	12	28	.20	.20	.60	40	12	12	32	.20	.20	.60	70	16	12	36	.20	.20	.60
11	8	12	28	.20	.30	.50	41	12	12	32	.20	.30	.50	71	16	12	36	.20	.30	.50
12	8	12	28	.20	.40	.40	42	12	12	32	.20	.40	.40	72	16	12	36	.20	.40	.40
13	8	16	32	.10	.225	.675	43	12	16	36	.10	.225	.675	73	16	16	40	.10	.225	.675
14	8	16	32	.10	.30	.60	44	12	16	36	.10	.30	.60	74	16	16	40	.10	.30	.60
15	8	16	32	.10	.40	.50	45	12	16	36	.10	.40	.50	75	16	16	40	.10	.40	.50
16	8	16	32	.20	.20	.60	46	12	16	36	.20	.20	.60	76	16	16	40	.20	.20	.60
17	8	16	32	.20	.30	.50	47	12	16	36	.20	.30	.50	77	16	16	40	.20	.30	.50
18	8	16	32	.20	.40	.40	48	12	16	36	.20	.40	.40	78	16	16	40	.20	.40	.40
19	8	20	36	.10	.225	.675	49	12	20	40	.10	.225	.675	79	16	20	44	.10	.225	.675
20	8	20	36	.10	.30	.60	50	12	20	40	.10	.30	.60	80	16	20	44	.10	.30	.60
21	8	20	36	.10	.40	.50	51	12	20	40	.10	.40	.50	81	16	20	44	.10	.40	.50
22	8	20	36	.20	.20	.60	52	12	20	40	.20	.20	.60	82	16	20	44	.20	.20	.60
23	8	20	36	.20	.30	.50	53	12	20	40	.20	.30	.50	83	16	20	44	.20	.30	.50
24	8	20	36	.20	.40	.40	54	12	20	40	.20	.40	.40	84	16	20	44	.20	.40	.40
25	8	24	40	.10	.225	.675	55	12	24	44	.10	.225	.675	85	16	24	48	.10	.225	.675
26	8	24	40	.10	.30	.60	56	12	24	44	.10	.30	.60	86	16	24	48	.10	.30	.60
27	8	24	40	.10	.40	.50	57	12	24	44	.10	.40	.50	87	16	24	48	.10	.40	.50
28	8	24	40	.20	.20	.60	58	12	24	44	.20	.20	.60	88	16	24	48	.20	.20	.60
29	8	24	40	.20	.30	.50	59	12	24	44	.20	.30	.50	89	16	24	48	.20	.30	.50
30	8	24	40	.20	.40	.40	60	12	24	44	.20	.40	.40	90	16	24	48	.20	.40	.40

Table 6.6

INDEX TO THE TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 90 represent 90 combinations of various wheel base lengths, axle spacings, and axle loadings.



TYPE 3-S1 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X'	L	a_1	a_2	a_3
1	8	12	24	.10	.40	.50
2	8	12	24	.10	.50	.40
3	8	12	24	.10	.60	.30
4	8	12	24	.20	.40	.40
5	8	12	24	.20	.50	.30
6	8	12	24	.20	.534	.266
7	8	16	28	.10	.40	.50
8	8	16	28	.10	.50	.40
9	8	16	28	.10	.60	.30
10	8	16	28	.20	.40	.40
11	8	16	28	.20	.50	.30
12	8	16	28	.20	.534	.266
13	8	20	32	.10	.40	.50
14	8	20	32	.10	.50	.40
15	8	20	32	.10	.60	.30
16	8	20	32	.20	.40	.40
17	8	20	32	.20	.50	.30
18	8	20	32	.20	.534	.266
19	8	24	36	.10	.40	.50
20	8	24	36	.10	.50	.40
21	8	24	36	.10	.60	.30
22	8	24	36	.20	.40	.40
23	8	24	36	.20	.50	.30
24	8	24	36	.20	.534	.266
25	8	28	40	.10	.40	.50
26	8	28	40	.10	.50	.40
27	8	28	40	.10	.60	.30
28	8	28	40	.20	.40	.40
29	8	28	40	.20	.50	.30
30	8	28	40	.20	.534	.266

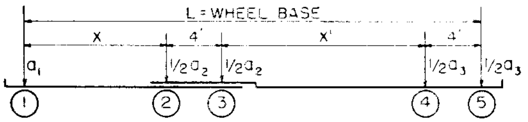
Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X'	L	a_1	a_2	a_3
31	12	12	28	.10	.40	.50
32	12	12	28	.10	.50	.40
33	12	12	28	.10	.60	.30
34	12	12	28	.20	.40	.40
35	12	12	28	.20	.50	.30
36	12	12	28	.20	.534	.266
37	12	16	32	.10	.40	.50
38	12	16	32	.10	.50	.40
39	12	16	32	.10	.60	.30
40	12	16	32	.20	.40	.40
41	12	16	32	.20	.50	.30
42	12	16	32	.20	.534	.266
43	12	20	36	.10	.40	.50
44	12	20	36	.10	.50	.40
45	12	20	36	.10	.60	.30
46	12	20	36	.20	.40	.40
47	12	20	36	.20	.50	.30
48	12	20	36	.20	.534	.266
49	12	24	40	.10	.40	.50
50	12	24	40	.10	.50	.40
51	12	24	40	.10	.60	.30
52	12	24	40	.20	.40	.40
53	12	24	40	.20	.50	.30
54	12	24	40	.20	.534	.266
55	12	28	44	.10	.40	.50
56	12	28	44	.10	.50	.40
57	12	28	44	.10	.60	.30
58	12	28	44	.20	.40	.40
59	12	28	44	.20	.50	.30
60	12	28	44	.20	.534	.266

Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X'	L	a_1	a_2	a_3
61	16	12	32	.10	.40	.50
62	16	12	32	.10	.50	.40
63	16	12	32	.10	.60	.30
64	16	12	32	.20	.40	.40
65	16	12	32	.20	.50	.30
66	16	12	32	.20	.534	.266
67	16	16	36	.10	.40	.50
68	16	16	36	.10	.50	.40
69	16	16	36	.10	.60	.30
70	16	16	36	.20	.40	.40
71	16	16	36	.20	.50	.30
72	16	16	36	.20	.534	.266
73	16	20	40	.10	.40	.50
74	16	20	40	.10	.50	.40
75	16	20	40	.10	.60	.30
76	16	20	40	.20	.40	.40
77	16	20	40	.20	.50	.30
78	16	20	40	.20	.534	.266
79	16	24	44	.10	.40	.50
80	16	24	44	.10	.50	.40
81	16	24	44	.10	.60	.30
82	16	24	44	.20	.40	.40
83	16	24	44	.20	.50	.30
84	16	24	44	.20	.534	.266
85	16	28	48	.10	.40	.50
86	16	28	48	.10	.50	.40
87	16	28	48	.10	.60	.30
88	16	28	48	.20	.40	.40
89	16	28	48	.20	.50	.30
90	16	28	48	.20	.534	.266

Table 6.7

INDEX TO THE TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 112 represent 112 combinations of various wheel base lengths, axle spacings, and axle loadings.



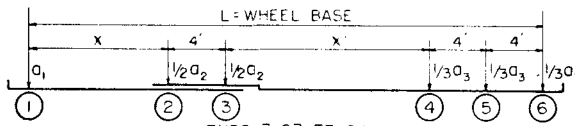
TYPE 3-S2-TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X'	L	a_1	a_2	a_3		X	X'	L	a_1	a_2	a_3		X	X'	L	a_1	a_2	a_3
1	8	12	28	.10	.30	.60	43	12	12	32	.10	.30	.60	85	16	16	40	.10	.30	.60
2	8	12	28	.10	.40	.50	44	12	12	32	.10	.40	.50	86	16	16	40	.10	.40	.50
3	8	12	28	.10	.45	.45	45	12	12	32	.10	.45	.45	87	16	16	40	.10	.45	.45
4	8	12	28	.10	.50	.40	46	12	12	32	.10	.50	.40	88	16	16	40	.10	.50	.40
5	8	12	28	.20	.30	.50	47	12	12	32	.20	.30	.50	89	16	16	40	.20	.30	.50
6	8	12	28	.20	.40	.40	48	12	12	32	.20	.40	.40	90	16	16	40	.20	.40	.40
7	8	12	28	.20	.50	.30	49	12	12	32	.20	.50	.30	91	16	16	40	.20	.50	.30
8	8	16	32	.10	.30	.60	50	12	16	36	.10	.30	.60	92	16	20	44	.10	.30	.60
9	8	16	32	.10	.40	.50	51	12	16	36	.10	.40	.50	93	16	20	44	.10	.40	.50
10	8	16	32	.10	.45	.45	52	12	16	36	.10	.45	.45	94	16	20	44	.10	.45	.45
11	8	16	32	.10	.50	.40	53	12	16	36	.10	.50	.40	95	16	20	44	.10	.50	.40
12	8	16	32	.20	.30	.50	54	12	16	36	.20	.30	.50	96	16	20	44	.20	.30	.50
13	8	16	32	.20	.40	.40	55	12	16	36	.20	.40	.40	97	16	20	44	.20	.40	.40
14	8	16	32	.20	.50	.30	56	12	16	36	.20	.50	.30	98	16	20	44	.20	.50	.30
15	8	20	36	.10	.30	.60	57	12	20	40	.10	.30	.60	99	16	24	48	.10	.30	.60
16	8	20	36	.10	.40	.50	58	12	20	40	.10	.40	.50	100	16	24	48	.10	.40	.50
17	8	20	36	.10	.45	.45	59	12	20	40	.10	.45	.45	101	16	24	48	.10	.45	.45
18	8	20	36	.10	.50	.40	60	12	20	40	.10	.50	.40	102	16	24	48	.10	.50	.40
19	8	20	36	.20	.30	.50	61	12	20	40	.20	.30	.50	103	16	24	48	.20	.30	.50
20	8	20	36	.20	.40	.40	62	12	20	40	.20	.40	.40	104	16	24	48	.20	.40	.40
21	8	20	36	.20	.50	.30	63	12	20	40	.20	.50	.30	105	16	24	48	.20	.50	.30
22	8	24	40	.10	.30	.60	64	12	24	44	.10	.30	.60	106	16	28	52	.10	.30	.60
23	8	24	40	.10	.40	.50	65	12	24	44	.10	.40	.50	107	16	28	52	.10	.40	.50
24	8	24	40	.10	.45	.45	66	12	24	44	.10	.45	.45	108	16	28	52	.10	.45	.45
25	8	24	40	.10	.50	.40	67	12	24	44	.10	.50	.40	109	16	28	52	.10	.50	.40
26	8	24	40	.20	.30	.50	68	12	24	44	.20	.30	.50	110	16	28	52	.20	.30	.50
27	8	24	40	.20	.40	.40	69	12	24	44	.20	.40	.40	111	16	28	52	.20	.40	.40
28	8	24	40	.20	.50	.30	70	12	24	44	.20	.50	.30	112	16	28	52	.20	.50	.30
29	8	28	44	.10	.30	.60	71	12	28	48	.10	.30	.60							
30	8	28	44	.10	.40	.50	72	12	28	48	.10	.40	.50							
31	8	28	44	.10	.45	.45	73	12	28	48	.10	.45	.45							
32	8	28	44	.10	.50	.40	74	12	28	48	.10	.50	.40							
33	8	28	44	.20	.30	.50	75	12	28	48	.20	.30	.50							
34	8	28	44	.20	.40	.40	76	12	28	48	.20	.40	.40							
35	8	28	44	.20	.50	.30	77	12	28	48	.20	.50	.30							
36	12	8	28	.10	.30	.60	78	16	12	36	.10	.30	.60							
37	12	8	28	.10	.40	.50	79	16	12	36	.10	.40	.50							
38	12	8	28	.10	.45	.45	80	16	12	36	.10	.45	.45							
39	12	8	28	.10	.50	.40	81	16	12	36	.10	.50	.40							
40	12	8	28	.20	.30	.50	82	16	12	36	.20	.30	.50							
41	12	8	28	.20	.40	.40	83	16	12	36	.20	.40	.40							
42	12	8	28	.20	.50	.30	84	16	12	36	.20	.50	.30							

Table 6.8

INDEX TO THE TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 105 represent 105 combinations of various wheel base lengths, axle spacings, and axle loadings.



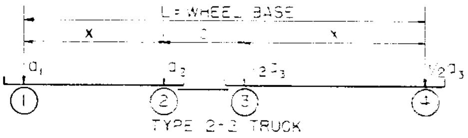
TYPE 3-S3 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.			Load On Axles Kips		
	X	X′	L	a_1	a_2	a_3		X	X′	L	a_1	a_2	a_3		X	X′	L	a_1	a_2	a_3
1	8	12	32	.10	.30	.60	36	12	12	36	.10	.30	.60	71	16	12	40	.10	.30	.60
2	8	12	32	.10	.36	.54	37	12	12	36	.10	.36	.54	72	16	12	40	.10	.36	.54
3	8	12	32	.10	.40	.50	38	12	12	36	.10	.40	.50	73	16	12	40	.10	.40	.50
4	8	12	32	.10	.50	.40	39	12	12	36	.10	.50	.40	74	16	12	40	.10	.50	.40
5	8	12	32	.20	.30	.50	40	12	12	36	.20	.30	.50	75	16	12	40	.20	.30	.50
6	8	12	32	.20	.40	.40	41	12	12	36	.20	.40	.40	76	16	12	40	.20	.40	.40
7	8	12	32	.20	.50	.30	42	12	12	36	.20	.50	.30	77	16	12	40	.20	.50	.30
8	8	16	36	.10	.30	.60	43	12	16	40	.10	.30	.60	78	16	16	44	.10	.30	.60
9	8	16	36	.10	.36	.54	44	12	16	40	.10	.36	.54	79	16	16	44	.10	.36	.54
10	8	16	36	.10	.40	.50	45	12	16	40	.10	.40	.50	80	16	16	44	.10	.40	.50
11	8	16	36	.10	.50	.40	46	12	16	40	.10	.50	.40	81	16	16	44	.10	.50	.40
12	8	16	36	.20	.30	.50	47	12	16	40	.20	.30	.50	82	16	16	44	.20	.30	.50
13	8	16	36	.20	.40	.40	48	12	16	40	.20	.40	.40	83	16	16	44	.20	.40	.40
14	8	16	36	.20	.50	.30	49	12	16	40	.20	.50	.30	84	16	16	44	.20	.50	.30
15	8	20	40	.10	.30	.60	50	12	20	44	.10	.30	.60	85	16	20	48	.10	.30	.60
16	8	20	40	.10	.36	.54	51	12	20	44	.10	.36	.54	86	16	20	48	.10	.36	.54
17	8	20	40	.10	.40	.50	52	12	20	44	.10	.40	.50	87	16	20	48	.10	.40	.50
18	8	20	40	.10	.50	.40	53	12	20	44	.10	.50	.40	88	16	20	48	.10	.50	.40
19	8	20	40	.20	.30	.50	54	12	20	44	.20	.30	.50	89	16	20	48	.20	.30	.50
20	8	20	40	.20	.40	.40	55	12	20	44	.20	.40	.40	90	16	20	48	.20	.40	.40
21	8	20	40	.20	.50	.30	56	12	20	44	.20	.50	.30	91	16	20	48	.20	.50	.30
22	8	24	44	.10	.30	.60	57	12	24	48	.10	.30	.60	92	16	24	52	.10	.30	.60
23	8	24	44	.10	.36	.54	58	12	24	48	.10	.36	.54	93	16	24	52	.10	.36	.54
24	8	24	44	.10	.40	.50	59	12	24	48	.10	.40	.50	94	16	24	52	.10	.40	.50
25	8	24	44	.10	.50	.40	60	12	24	48	.10	.50	.40	95	16	24	52	.10	.50	.40
26	8	24	44	.20	.30	.50	61	12	24	48	.20	.30	.50	96	16	24	52	.20	.30	.50
27	8	24	44	.20	.40	.40	62	12	24	48	.20	.40	.40	97	16	24	52	.20	.40	.40
28	8	24	44	.20	.50	.30	63	12	24	48	.20	.50	.30	98	16	24	52	.20	.50	.30
29	8	28	48	.10	.30	.60	64	12	28	52	.10	.30	.60	99	16	28	56	.10	.30	.60
30	8	28	48	.10	.36	.54	65	12	28	52	.10	.36	.54	100	16	28	56	.10	.36	.54
31	8	28	48	.10	.40	.50	66	12	28	52	.10	.40	.50	101	16	28	56	.10	.40	.50
32	8	28	48	.10	.50	.40	67	12	28	52	.10	.50	.40	102	16	28	56	.10	.50	.40
33	8	28	48	.20	.30	.50	68	12	28	52	.20	.30	.50	103	16	28	56	.20	.30	.50
34	8	28	48	.20	.40	.40	69	12	28	52	.20	.40	.40	104	16	28	56	.20	.40	.40
35	8	28	48	.20	.50	.30	70	12	28	52	.20	.50	.30	105	16	28	56	.20	.50	.30

Table 6.9

INDEX TO THE TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 144 represent 144 combinations of various wheel base lengths, axle spacings, and axle loadings.

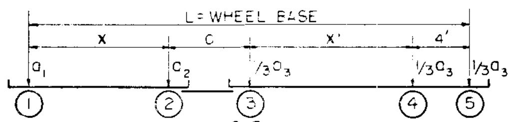


Truck Number	Wheel Base and Axle Spacing Ft. X	X'	C	L	Load On Axles Kips a_1	a_2	a_3	Truck Number	Wheel Base and Axle Spacing Ft. X	X'	C	L	Load On Axles Kips a_1	a_2	a_3	Truck Number	Wheel Base and Axle Spacing Ft. X	X'	C	L	Load On Axles Kips a_1	a_2	a_3
1	12	8	8	28	.10	.20	.70	49	16	8	8	32	.10	.20	.70	97	20	8	8	36	.10	.20	.70
2	12	8	8	28	.10	.30	.60	50	16	8	8	32	.10	.30	.60	98	20	8	8	36	.10	.30	.60
3	12	8	8	28	.10	.40	.50	51	16	8	8	32	.10	.40	.50	99	20	8	8	36	.10	.40	.50
4	12	8	8	28	.20	.20	.60	52	16	8	8	32	.20	.20	.60	100	20	8	8	36	.20	.20	.60
5	12	8	8	28	.20	.30	.50	53	16	8	8	32	.20	.30	.50	101	20	8	8	36	.20	.30	.50
6	12	8	8	28	.20	.40	.40	54	16	8	8	32	.20	.40	.40	102	20	8	8	36	.20	.40	.40
7	12	12	8	32	.10	.20	.70	55	16	12	8	36	.10	.20	.70	103	20	12	8	40	.10	.20	.70
8	12	12	8	32	.10	.30	.60	56	16	12	8	36	.10	.30	.60	104	20	12	8	40	.10	.30	.60
9	12	12	8	32	.10	.40	.50	57	16	12	8	36	.10	.40	.50	105	20	12	8	40	.10	.40	.50
10	12	12	8	32	.20	.20	.60	58	16	12	8	36	.20	.20	.60	106	20	12	8	40	.20	.20	.60
11	12	12	8	32	.20	.30	.50	59	16	12	8	36	.20	.30	.50	107	20	12	8	40	.20	.30	.50
12	12	12	8	32	.20	.40	.40	60	16	12	8	36	.20	.40	.40	108	20	12	8	40	.20	.40	.40
13	12	16	8	36	.10	.20	.70	61	16	16	8	40	.10	.20	.70	109	20	16	8	44	.10	.20	.70
14	12	16	8	36	.10	.30	.60	62	16	16	8	40	.10	.30	.60	110	20	16	8	44	.10	.30	.60
15	12	16	8	36	.10	.40	.50	63	16	16	8	40	.10	.40	.50	111	20	16	8	44	.10	.40	.50
16	12	16	8	36	.20	.20	.60	64	16	16	8	40	.20	.20	.60	112	20	16	8	44	.20	.20	.60
17	12	16	8	36	.20	.30	.50	65	16	16	8	40	.20	.30	.50	113	20	16	8	44	.20	.30	.50
18	12	16	8	36	.20	.40	.40	66	16	16	8	40	.20	.40	.40	114	20	16	8	44	.20	.40	.40
19	12	20	8	40	.10	.20	.70	67	16	20	8	44	.10	.20	.70	115	20	20	8	48	.10	.20	.70
20	12	20	8	40	.10	.30	.60	68	16	20	8	44	.10	.30	.60	116	20	20	8	48	.10	.30	.60
21	12	20	8	40	.10	.40	.50	69	16	20	8	44	.10	.40	.50	117	20	20	8	48	.10	.40	.50
22	12	20	8	40	.20	.20	.60	70	16	20	8	44	.20	.20	.60	118	20	20	8	48	.20	.20	.60
23	12	20	8	40	.20	.30	.50	71	16	20	8	44	.20	.30	.50	119	20	20	8	48	.20	.30	.50
24	12	20	8	40	.20	.40	.40	72	16	20	8	44	.20	.40	.40	120	20	20	8	48	.20	.40	.40
25	12	8	12	32	.10	.20	.70	73	16	8	12	36	.10	.20	.70	121	20	8	12	40	.10	.20	.70
26	12	8	12	32	.10	.30	.60	74	16	8	12	36	.10	.30	.60	122	20	8	12	40	.10	.30	.60
27	12	8	12	32	.10	.40	.50	75	16	8	12	36	.10	.40	.50	123	20	8	12	40	.10	.40	.50
28	12	8	12	32	.20	.20	.60	76	16	8	12	36	.20	.20	.60	124	20	8	12	40	.20	.20	.60
29	12	8	12	32	.20	.30	.50	77	16	8	12	36	.20	.30	.50	125	20	8	12	40	.20	.30	.50
30	12	8	12	32	.20	.40	.40	78	16	8	12	36	.20	.40	.40	126	20	8	12	40	.20	.40	.40
31	12	12	12	36	.10	.20	.70	79	16	12	12	40	.10	.20	.70	127	20	12	12	44	.10	.20	.70
32	12	12	12	36	.10	.30	.60	80	16	12	12	40	.10	.30	.60	128	20	12	12	44	.10	.30	.60
33	12	12	12	36	.10	.40	.50	81	16	12	12	40	.10	.40	.50	129	20	12	12	44	.10	.40	.50
34	12	12	12	36	.20	.20	.60	82	16	12	12	40	.20	.20	.60	130	20	12	12	44	.20	.20	.60
35	12	12	12	36	.20	.30	.50	83	16	12	12	40	.20	.30	.50	131	20	12	12	44	.20	.30	.50
36	12	12	12	36	.20	.40	.40	84	16	12	12	40	.20	.40	.40	132	20	12	12	44	.20	.40	.40
37	12	16	12	40	.10	.20	.70	85	16	16	12	44	.10	.20	.70	133	20	16	12	48	.10	.20	.70
38	12	16	12	40	.10	.30	.60	86	16	16	12	44	.10	.30	.60	134	20	16	12	48	.10	.30	.60
39	12	16	12	40	.10	.40	.50	87	16	16	12	44	.10	.40	.50	135	20	16	12	48	.10	.40	.50
40	12	16	12	40	.20	.20	.60	88	16	16	12	44	.20	.20	.60	136	20	16	12	48	.20	.20	.60
41	12	16	12	40	.20	.30	.50	89	16	16	12	44	.20	.30	.50	137	20	16	12	48	.20	.30	.50
42	12	16	12	40	.20	.40	.40	90	16	16	12	44	.20	.40	.40	138	20	16	12	48	.20	.40	.40
43	12	20	12	44	.10	.20	.70	91	16	20	12	48	.10	.20	.70	139	20	20	12	52	.10	.20	.70
44	12	20	12	44	.10	.30	.60	92	16	20	12	48	.10	.30	.60	140	20	20	12	52	.10	.30	.60
45	12	20	12	44	.10	.40	.50	93	16	20	12	48	.10	.40	.50	141	20	20	12	52	.10	.40	.50
46	12	20	12	44	.20	.20	.60	94	16	20	12	48	.20	.20	.60	142	20	20	12	52	.20	.20	.60
47	12	20	12	44	.20	.30	.50	95	16	20	12	48	.20	.30	.50	143	20	20	12	52	.20	.30	.50
48	12	20	12	44	.20	.40	.40	96	16	20	12	48	.20	.40	.40	144	20	20	12	52	.20	.40	.40

Table 6.10

INDEX TO THE TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 90 represent 90 combinations of various wheel base lengths, axle spacings, and axle loadings.



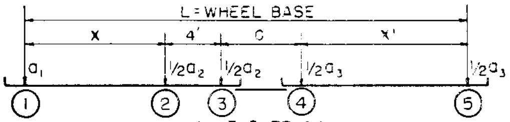
TYPE 2-3 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3
1	12	8	8	32	.10	.20	.70	31	16	8	8	36	.10	.20	.70	61	20	8	8	40	.10	.20	.70
2	12	8	8	32	.10	.30	.60	32	16	8	8	36	.10	.30	.60	62	20	8	8	40	.10	.30	.60
3	12	8	8	32	.10	.40	.50	33	16	8	8	36	.10	.40	.50	63	20	8	8	40	.10	.40	.50
4	12	8	8	32	.20	.20	.60	34	16	8	8	36	.20	.20	.60	64	20	8	8	40	.20	.20	.60
5	12	8	8	32	.20	.30	.50	35	16	8	8	36	.20	.30	.50	65	20	8	8	40	.20	.30	.50
6	12	12	8	36	.10	.20	.70	36	16	12	8	40	.10	.20	.70	66	20	12	8	44	.10	.20	.70
7	12	12	8	36	.10	.30	.60	37	16	12	8	40	.10	.30	.60	67	20	12	8	44	.10	.30	.60
8	12	12	8	36	.10	.40	.50	38	16	12	8	40	.10	.40	.50	68	20	12	8	44	.10	.40	.50
9	12	12	8	36	.20	.20	.60	39	16	12	8	40	.20	.20	.60	69	20	12	8	44	.20	.20	.60
10	12	12	8	36	.20	.30	.50	40	16	12	8	40	.20	.30	.50	70	20	12	8	44	.20	.30	.50
11	12	16	8	40	.10	.20	.70	41	16	16	8	44	.10	.20	.70	71	20	16	8	48	.10	.20	.70
12	12	16	8	40	.10	.30	.60	42	16	16	8	44	.10	.30	.60	72	20	16	8	48	.10	.30	.60
13	12	16	8	40	.10	.40	.50	43	16	16	8	44	.10	.40	.50	73	20	16	8	48	.10	.40	.50
14	12	16	8	40	.20	.20	.60	44	16	16	8	44	.20	.20	.60	74	20	16	8	48	.20	.20	.60
15	12	16	8	40	.20	.30	.50	45	16	16	8	44	.20	.30	.50	75	20	16	8	48	.20	.30	.50
16	12	8	12	36	.10	.20	.70	46	16	8	12	40	.10	.20	.70	76	20	8	12	44	.10	.20	.70
17	12	8	12	36	.10	.30	.60	47	16	8	12	40	.10	.30	.60	77	20	8	12	44	.10	.30	.60
18	12	8	12	36	.10	.40	.50	48	16	8	12	40	.10	.40	.50	78	20	8	12	44	.10	.40	.50
19	12	8	12	36	.20	.20	.60	49	16	8	12	40	.20	.20	.60	79	20	8	12	44	.20	.20	.60
20	12	8	12	36	.20	.30	.50	50	16	8	12	40	.20	.30	.50	80	20	8	12	44	.20	.30	.50
21	12	12	12	40	.10	.20	.70	51	16	12	12	44	.10	.20	.70	81	20	12	12	48	.10	.20	.70
22	12	12	12	40	.10	.30	.60	52	16	12	12	44	.10	.30	.60	82	20	12	12	48	.10	.30	.60
23	12	12	12	40	.10	.40	.50	53	16	12	12	44	.10	.40	.50	83	20	12	12	48	.10	.40	.50
24	12	12	12	40	.20	.20	.60	54	16	12	12	44	.20	.20	.60	84	20	12	12	48	.20	.20	.60
25	12	12	12	40	.20	.30	.50	55	16	12	12	44	.20	.30	.50	85	20	12	12	48	.20	.30	.50
26	12	16	12	44	.10	.20	.70	56	16	16	12	48	.10	.20	.70	86	20	16	12	52	.10	.20	.70
27	12	16	12	44	.10	.30	.60	57	16	16	12	48	.10	.30	.60	87	20	16	12	52	.10	.30	.60
28	12	16	12	44	.10	.40	.50	58	16	16	12	48	.10	.40	.50	88	20	16	12	52	.10	.40	.50
29	12	16	12	44	.20	.20	.60	59	16	16	12	48	.20	.20	.60	89	20	16	12	52	.20	.20	.60
30	12	16	12	44	.20	.30	.50	60	16	16	12	48	.20	.30	.50	90	20	16	12	52	.20	.30	.50

Table 6.11

INDEX TO THE TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 90 represent 90 combinations of various wheel base lengths, axle spacings, and axle loadings.



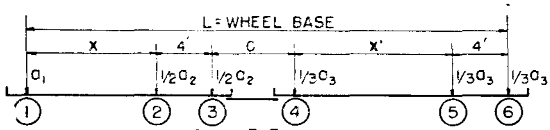
TYPE 3-2 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3
1	12	12	8	36	.10	.40	.50	31	16	12	8	40	.10	.40	.50	61	20	12	8	44	.10	.40	.50
2	12	12	8	36	.10	.50	.40	32	16	12	8	40	.10	.50	.40	62	20	12	8	44	.10	.50	.40
3	12	12	8	36	.10	.60	.30	33	16	12	8	40	.10	.60	.30	63	20	12	8	44	.10	.60	.30
4	12	12	8	36	.20	.40	.40	34	16	12	8	40	.20	.40	.40	64	20	12	8	44	.20	.40	.40
5	12	12	8	36	.20	.50	.30	35	16	12	8	40	.20	.50	.30	65	20	12	8	44	.20	.50	.30
6	12	16	8	40	.10	.40	.50	36	16	16	8	44	.10	.40	.50	66	20	16	8	48	.10	.40	.50
7	12	16	8	40	.10	.50	.40	37	16	16	8	44	.10	.50	.40	67	20	16	8	48	.10	.50	.40
8	12	16	8	40	.10	.60	.30	38	16	16	8	44	.10	.60	.30	68	20	16	8	48	.10	.60	.30
9	12	16	8	40	.20	.40	.40	39	16	16	8	44	.20	.40	.40	69	20	16	8	48	.20	.40	.40
10	12	16	8	40	.20	.50	.30	40	16	16	8	44	.20	.50	.30	70	20	16	8	48	.20	.50	.30
11	12	20	8	44	.10	.40	.50	41	16	20	8	48	.10	.40	.50	71	20	20	8	52	.10	.40	.50
12	12	20	8	44	.10	.50	.40	42	16	20	8	48	.10	.50	.40	72	20	20	8	52	.10	.50	.40
13	12	20	8	44	.10	.60	.30	43	16	20	8	48	.10	.60	.30	73	20	20	8	52	.10	.60	.30
14	12	20	8	44	.20	.40	.40	44	16	20	8	48	.20	.40	.40	74	20	20	8	52	.20	.40	.40
15	12	20	8	44	.20	.50	.30	45	16	20	8	48	.20	.50	.30	75	20	20	8	52	.20	.50	.30
16	12	12	12	40	.10	.40	.50	46	16	12	12	44	.10	.40	.50	76	20	12	12	48	.10	.40	.50
17	12	12	12	40	.10	.50	.40	47	16	12	12	44	.10	.50	.40	77	20	12	12	48	.10	.50	.40
18	12	12	12	40	.10	.60	.30	48	16	12	12	44	.10	.60	.30	78	20	12	12	48	.10	.60	.30
19	12	12	12	40	.20	.40	.40	49	16	12	12	44	.20	.40	.40	79	20	12	12	48	.20	.40	.40
20	12	12	12	40	.20	.50	.30	50	16	12	12	44	.20	.50	.30	80	20	12	12	48	.20	.50	.30
21	12	16	12	44	.10	.40	.50	51	16	16	12	48	.10	.40	.50	81	20	16	12	52	.10	.40	.50
22	12	16	12	44	.10	.50	.40	52	16	16	12	48	.10	.50	.40	82	20	16	12	52	.10	.50	.40
23	12	16	12	44	.10	.60	.30	53	16	16	12	48	.10	.60	.30	83	20	16	12	52	.10	.60	.30
24	12	16	12	44	.20	.40	.40	54	16	16	12	48	.20	.40	.40	84	20	16	12	52	.20	.40	.40
25	12	16	12	44	.20	.50	.30	55	16	16	12	48	.20	.50	.30	85	20	16	12	52	.20	.50	.30
26	12	20	12	48	.10	.40	.50	56	16	20	12	52	.10	.40	.50	86	20	20	12	56	.10	.40	.50
27	12	20	12	48	.10	.50	.40	57	16	20	12	52	.10	.50	.40	87	20	20	12	56	.10	.50	.40
28	12	20	12	48	.10	.60	.30	58	16	20	12	52	.10	.60	.30	88	20	20	12	56	.10	.60	.30
29	12	20	12	48	.20	.40	.40	59	16	20	12	52	.20	.40	.40	89	20	20	12	56	.20	.40	.40
30	12	20	12	48	.20	.50	.30	60	16	20	12	52	.20	.50	.30	90	20	20	12	56	.20	.50	.30

Table 6.12

INDEX TO THE TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 90 represent 90 combinations of various wheel base lengths, axle spacings, and axle loadings.



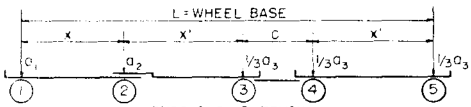
TYPE 3-3 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3
1	12	8	12	40	.10	.30	.60	31	16	8	12	44	.10	.30	.60	61	20	8	12	48	.10	.30	.60
2	12	8	12	40	.10	.40	.50	32	16	8	12	44	.10	.40	.50	62	20	8	12	48	.10	.40	.50
3	12	8	12	40	.10	.50	.40	33	16	8	12	44	.10	.50	.40	63	20	8	12	48	.10	.50	.40
4	12	8	12	40	.20	.30	.50	34	16	8	12	44	.20	.30	.50	64	20	8	12	48	.20	.30	.50
5	12	8	12	40	.20	.40	.40	35	16	8	12	44	.20	.40	.40	65	20	8	12	48	.20	.40	.40
6	12	12	12	44	.10	.30	.60	36	16	12	12	48	.10	.30	.60	66	20	12	12	52	.10	.30	.60
7	12	12	12	44	.10	.40	.50	37	16	12	12	48	.10	.40	.50	67	20	12	12	52	.10	.40	.50
8	12	12	12	44	.10	.50	.40	38	16	12	12	48	.10	.50	.40	68	20	12	12	52	.10	.50	.40
9	12	12	12	44	.20	.30	.50	39	16	12	12	48	.20	.30	.50	69	20	12	12	52	.20	.30	.50
10	12	12	12	44	.20	.40	.40	40	16	12	12	48	.20	.40	.40	70	20	12	12	52	.20	.40	.40
11	12	16	12	48	.10	.30	.60	41	16	16	12	52	.10	.30	.60	71	20	16	12	56	.10	.30	.60
12	12	16	12	48	.10	.40	.50	42	16	16	12	52	.10	.40	.50	72	20	16	12	56	.10	.40	.50
13	12	16	12	48	.10	.50	.40	43	16	16	12	52	.10	.50	.40	73	20	16	12	56	.10	.50	.40
14	12	16	12	48	.20	.30	.50	44	16	16	12	52	.20	.30	.50	74	20	16	12	56	.20	.30	.50
15	12	16	12	48	.20	.40	.40	45	16	16	12	52	.20	.40	.40	75	20	16	12	56	.20	.40	.40
16	12	8	16	44	.10	.30	.60	46	16	8	16	48	.10	.30	.60	76	20	8	16	52	.10	.30	.60
17	12	8	16	44	.10	.40	.50	47	16	8	16	48	.10	.40	.50	77	20	8	16	52	.10	.40	.50
18	12	8	16	44	.10	.50	.40	48	16	8	16	48	.10	.50	.40	78	20	8	16	52	.10	.50	.40
19	12	8	16	44	.20	.30	.50	49	16	8	16	48	.20	.30	.50	79	20	8	16	52	.20	.30	.50
20	12	8	16	44	.20	.40	.40	50	16	8	16	48	.20	.40	.40	80	20	8	16	52	.20	.40	.40
21	12	12	16	48	.10	.30	.60	51	16	12	16	52	.10	.30	.60	81	20	12	16	56	.10	.30	.60
22	12	12	16	48	.10	.40	.50	52	16	12	16	52	.10	.40	.50	82	20	12	16	56	.10	.40	.50
23	12	12	16	48	.10	.50	.40	53	16	12	16	52	.10	.50	.40	83	20	12	16	56	.10	.50	.40
24	12	12	16	48	.20	.30	.50	54	16	12	16	52	.20	.30	.50	84	20	12	16	56	.20	.30	.50
25	12	12	16	48	.20	.40	.40	55	16	12	16	52	.20	.40	.40	85	20	12	16	56	.20	.40	.40
26	12	16	16	52	.10	.30	.60	56	16	16	16	56	.10	.30	.60	86	20	16	16	60	.10	.30	.60
27	12	16	16	52	.10	.40	.50	57	16	16	16	56	.10	.40	.50	87	20	16	16	60	.10	.40	.50
28	12	16	16	52	.10	.50	.40	58	16	16	16	56	.10	.50	.40	88	20	16	16	60	.10	.50	.40
29	12	16	16	52	.20	.30	.50	59	16	16	16	56	.20	.30	.50	89	20	16	16	60	.20	.30	.50
30	12	16	16	52	.20	.40	.40	60	16	16	16	56	.20	.40	.40	90	20	16	16	60	.20	.40	.40

Table 6.13

INDEX TO THE TYPE 2-S1-2 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 96 represent 96 combinations of various wheel base lengths, axle spacings, and axle loadings.



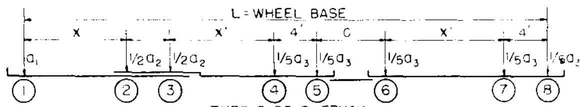
TYPE 2-S1-2 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips			Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3		X	X'	C	L	a_1	a_2	a_3
1	8	10	8	36	.10	.20	.70	33	12	10	8	40	.10	.20	.70	65	16	16	8	56	.10	.20	.70
2	8	10	8	36	.10	.30	.60	34	12	10	8	40	.10	.30	.60	66	16	16	8	56	.10	.30	.60
3	8	10	8	36	.20	.20	.60	35	12	10	8	40	.20	.20	.60	67	16	16	8	56	.20	.20	.60
4	8	10	8	36	.20	.30	.50	36	12	10	8	40	.20	.30	.50	68	16	16	8	56	.20	.30	.50
5	8	12	8	40	.10	.20	.70	37	12	12	8	44	.10	.20	.70	69	16	18	8	60	.10	.20	.70
6	8	12	8	40	.10	.30	.60	38	12	12	8	44	.10	.30	.60	70	16	18	8	60	.10	.30	.60
7	8	12	8	40	.20	.20	.60	39	12	12	8	44	.20	.20	.60	71	16	18	8	60	.20	.20	.60
8	8	12	8	40	.20	.30	.50	40	12	12	8	44	.20	.30	.50	72	16	18	8	60	.20	.30	.50
9	8	14	8	44	.10	.20	.70	41	12	14	8	48	.10	.20	.70	73	16	20	8	64	.10	.20	.70
10	8	14	8	44	.10	.30	.60	42	12	14	8	48	.10	.30	.60	74	16	20	8	64	.10	.30	.60
11	8	14	8	44	.20	.20	.60	43	12	14	8	48	.20	.20	.60	75	16	20	8	64	.20	.20	.60
12	8	14	8	44	.20	.30	.50	44	12	14	8	48	.20	.30	.50	76	16	20	8	64	.20	.30	.50
13	8	16	8	48	.10	.20	.70	45	12	16	8	52	.10	.20	.70	77	16	22	8	68	.10	.20	.70
14	8	16	8	48	.10	.30	.60	46	12	16	8	52	.10	.30	.60	78	16	22	8	68	.10	.30	.60
15	8	16	8	48	.20	.20	.60	47	12	16	8	52	.20	.20	.60	79	16	22	8	68	.20	.20	.60
16	8	16	8	48	.20	.30	.50	48	12	16	8	52	.20	.30	.50	80	16	22	8	68	.20	.30	.50
17	8	18	8	52	.10	.20	.70	49	12	18	8	56	.10	.20	.70	81	16	24	8	72	.10	.20	.70
18	8	18	8	52	.10	.30	.60	50	12	18	8	56	.10	.30	.60	82	16	24	8	72	.10	.30	.60
19	8	18	8	52	.20	.20	.60	51	12	18	8	56	.20	.20	.60	83	16	24	8	72	.20	.20	.60
20	8	18	8	52	.20	.30	.50	52	12	18	8	56	.20	.30	.50	84	16	24	8	72	.20	.30	.50
21	8	20	8	56	.10	.20	.70	53	12	20	8	60	.10	.20	.70	85	16	26	8	76	.10	.20	.70
22	8	20	8	56	.10	.30	.60	54	12	20	8	60	.10	.30	.60	86	16	26	8	76	.10	.30	.60
23	8	20	8	56	.20	.20	.60	55	12	20	8	60	.20	.20	.60	87	16	26	8	76	.20	.20	.60
24	8	20	8	56	.20	.30	.50	56	12	20	8	60	.20	.30	.50	88	16	26	8	76	.20	.30	.50
25	8	22	8	60	.10	.20	.70	57	12	22	8	64	.10	.20	.70	89	16	28	8	80	.10	.20	.70
26	8	22	8	60	.10	.30	.60	58	12	22	8	64	.10	.30	.60	90	16	28	8	80	.10	.30	.60
27	8	22	8	60	.20	.20	.60	59	12	22	8	64	.20	.20	.60	91	16	28	8	80	.20	.20	.60
28	8	22	8	60	.20	.30	.50	60	12	22	8	64	.20	.30	.50	92	16	28	8	80	.20	.30	.50
29	8	24	8	64	.10	.20	.70	61	12	24	8	68	.10	.20	.70	93	16	30	8	84	.10	.20	.70
30	8	24	8	64	.10	.30	.50	62	12	24	8	68	.10	.30	.50	94	16	30	8	84	.10	.30	.50
31	8	24	8	64	.20	.20	.60	63	12	24	8	68	.20	.20	.60	95	16	30	8	84	.20	.20	.60
32	8	24	8	64	.20	.30	.50	64	12	24	8	68	.20	.30	.50	96	16	30	8	84	.20	.30	.50

Table 6.14

INDEX TO THE TYPE 3-S2-3 TRUCKS WEIGHING ONE KIP EACH

Truck numbers 1 to 84 represent 84 combinations of various wheel base lengths, axle spacings, and axle loadings.



TYPE 3-S2-3 TRUCK

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3
1	8	8	8	44	.05	.20	.75
2	8	8	8	44	.05	.30	.65
3	8	8	8	44	.10	.20	.70
4	8	8	8	44	.10	.30	.60
5	8	10	8	48	.05	.20	.75
6	8	10	8	48	.05	.30	.65
7	8	10	8	48	.10	.20	.70
8	8	10	8	48	.10	.30	.60
9	8	12	8	52	.05	.20	.75
10	8	12	8	52	.05	.30	.65
11	8	12	8	52	.10	.20	.70
12	8	12	8	52	.10	.30	.60
13	8	14	8	56	.05	.20	.75
14	8	14	8	56	.05	.30	.65
15	8	14	8	56	.10	.20	.70
16	8	14	8	56	.10	.30	.60
17	8	16	8	60	.05	.20	.75
18	8	16	8	60	.05	.30	.65
19	8	16	8	60	.10	.20	.70
20	8	16	8	60	.10	.30	.60
21	8	18	8	64	.05	.20	.75
22	8	18	8	64	.05	.30	.65
23	8	18	8	64	.10	.20	.70
24	8	18	8	64	.10	.30	.60
25	8	20	8	68	.05	.20	.75
26	8	20	8	68	.05	.30	.65
27	8	20	8	68	.10	.20	.70
28	8	20	8	68	.10	.30	.60

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3
29	12	8	8	48	.05	.20	.75
30	12	8	8	48	.05	.30	.65
31	12	8	8	48	.10	.20	.70
32	12	8	8	48	.10	.30	.60
33	12	10	8	52	.05	.20	.75
34	12	10	8	52	.05	.30	.65
35	12	10	8	52	.10	.20	.70
36	12	10	8	52	.10	.30	.60
37	12	12	8	56	.05	.20	.75
38	12	12	8	56	.05	.30	.65
39	12	12	8	56	.10	.20	.70
40	12	12	8	56	.10	.30	.60
41	12	14	8	60	.05	.20	.75
42	12	14	8	60	.05	.30	.65
43	12	14	8	60	.10	.20	.70
44	12	14	8	60	.10	.30	.60
45	12	16	8	64	.05	.20	.75
46	12	16	8	64	.05	.30	.65
47	12	16	8	64	.10	.20	.70
48	12	16	8	64	.10	.30	.60
49	12	18	8	68	.05	.20	.75
50	12	18	8	68	.05	.30	.65
51	12	18	8	68	.10	.20	.70
52	12	18	8	68	.10	.30	.60
53	12	20	8	72	.05	.20	.75
54	12	20	8	72	.05	.30	.65
55	12	20	8	72	.10	.20	.70
56	12	20	8	72	.10	.30	.60

Truck Number	Wheel Base and Axle Spacing Ft.				Load On Axles Kips		
	X	X'	C	L	a_1	a_2	a_3
57	16	12	8	60	.05	.20	.75
58	16	12	8	60	.05	.30	.65
59	16	12	8	60	.10	.20	.70
60	16	12	8	60	.10	.30	.60
61	16	14	8	64	.05	.20	.75
62	16	14	8	64	.05	.30	.65
63	16	14	8	64	.10	.20	.70
64	16	14	8	64	.10	.30	.60
65	16	16	8	68	.05	.20	.75
66	16	16	8	68	.05	.30	.65
67	16	16	8	68	.10	.20	.70
68	16	16	8	68	.10	.30	.60
69	16	18	8	72	.05	.20	.75
70	16	18	8	72	.05	.30	.65
71	16	18	8	72	.10	.20	.70
72	16	18	8	72	.10	.30	.60
73	16	20	8	76	.05	.20	.75
74	16	20	8	76	.05	.30	.65
75	16	20	8	76	.10	.20	.70
76	16	20	8	76	.10	.30	.60
77	16	22	8	80	.05	.20	.75
78	16	22	8	80	.05	.30	.65
79	16	22	8	80	.10	.20	.70
80	16	22	8	80	.10	.30	.60
81	16	24	8	84	.05	.20	.75
82	16	24	8	84	.05	.30	.65
83	16	24	8	84	.10	.20	.70
84	16	24	8	84	.10	.30	.60

7. CONTROLLING CONDITIONS FOR MAXIMUM MOMENTS ON SIMPLE SPAN BRIDGES

Tables 7.1-7.14 give the maximum moments produced by the 1303 variations of the 14 heavy vehicle types shown in the identification index Tables 6.1-6.14 on simple spans of 10, 20, 30, 40, 50, 60, 80, and 100 feet in length. The maximum moments produced by each of the 1303 heavy vehicle types and loadings on 8 different span lengths makes a total of 10,424 maximum moments recorded in the 14 Tables 7.1-7.14. The table number corresponding to each of the 14 heavy vehicle types is as follows:

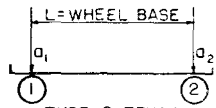
Table No.	Vehicle Type	Table No.	Vehicle Type
7.1	2	7.8	3–S3
7.2	3	7.9	2–2
7.3	2–S1	7.10	2–3
7.4	2–S2	7.11	3–2
7.5	2–S3	7.12	3–3
7.6	3–S1	7.13	2–S1–2
7.7	3–S2	7.14	3–S2–3

In addition to giving the maximum moment for each of the 10,424 cases of vehicle type, loading, and span length, these tables also indicate in each case: (1) the axle group which produces the maximum moment; (2) the axle number under which the maximum moment occurs; and (3) the distance this critical axle is placed to the right or left of the mid-span to coincide with the position for maximum moment.

A detailed description of these tables and how they are used is given in Article 5.

Table 7.1

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2 TRUCK

Thirty-six variations in the Type 2 truck are given in this Table. Each truck number, from 1 to 36, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	10	10	10	10	10	10	12	12	12	12
Load On Axles	a_1	.45	.40	.35	.30	.25	.20	.45	.40	.35	.30
	a_2	.55	.60	.65	.70	.75	.80	.55	.60	.65	.70
Span-Feet 10	G	2	2	2	2	2	2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.375	1.500	1.625	1.750	1.875	2.000	1.375	1.500	1.625	1.750
20	G	1-2	1-2	1-2	1-2	1-2	1-2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	0	0	0	0
	M	3.003	3.200	3.403	3.613	3.828	4.050	2.750	3.000	3.250	3.500
30	G	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	2.700R	2.400R	2.100R	1.800R
	M	5.419	5.633	5.852	6.075	6.302	6.533	5.043	5.292	5.547	5.808
40	G	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	2.700R	2.400R	2.100R	1.800R
	M	7.877	8.100	8.327	8.556	8.789	9.025	7.482	7.744	8.010	8.281
50	G	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	2.700R	2.400R	2.100R	1.800R
	M	10.350	10.580	10.810	11.050	11.280	11.520	9.946	10.220	10.490	10.760
60	G	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	2.700R	2.400R	2.100R	1.800R
	M	12.830	13.070	13.300	13.540	13.780	14.020	12.420	12.700	12.970	13.250
80	G	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	2.700R	2.400R	2.100R	1.800R
	M	17.810	18.050	18.290	18.530	18.770	19.010	17.390	17.670	17.960	18.240
100	G	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.250R	2.000R	1.750R	1.500R	1.250R	1.000R	2.700R	2.400R	2.100R	1.800R
	M	22.800	23.040	23.280	23.520	23.770	24.010	22.370	22.660	22.940	23.230

All dimensions are in feet and moments are in kip-feet.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-2 means axles 1 and 2.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.1 (Continued)

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base L		12	12	14	14	14	14	14	14	16	16
Load On Axles	a_1	.25	.20	.45	.40	.35	.30	.25	.20	.45	.40
	a_2	.75	.80	.55	.60	.65	.70	.75	.80	.55	.60
Span-Feet 10	G	2	2	2	2	2	2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.875	2.000	1.375	1.500	1.625	1.750	1.875	2.000	1.375	1.500
20	G	2	2	2	2	2	2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	3.750	4.000	2.750	3.000	3.250	3.500	3.750	4.000	2.750	3.000
30	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	1.500R	1.200R	3.150R	2.800R	2.450R	2.100R	1.750R	1.400R	3.600R	3.200R
	M	6.075	6.348	4.681	4.961	5.250	5.547	5.852	6.165	4.332	4.641
40	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	1.500R	1.200R	3.150R	2.800R	2.450R	2.100R	1.750R	1.400R	3.600R	3.200R
	M	8.556	8.836	7.098	7.396	7.700	8.010	8.327	8.649	6.724	7.056
50	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	1.500R	1.200R	3.150R	2.800R	2.450R	2.100R	1.750R	1.400R	3.600R	3.200R
	M	11.050	11.330	9.548	9.857	10.170	10.490	10.810	11.140	9.159	9.505
60	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	1.500R	1.200R	3.150R	2.800R	2.450R	2.100R	1.750R	1.400R	3.600R	3.200R
	M	13.540	13.820	12.020	12.330	12.650	12.970	13.300	13.630	11.620	11.970
80	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	1.500R	1.200R	3.150R	2.800R	2.450R	2.100R	1.750R	1.400R	3.600R	3.200R
	M	18.530	18.820	16.970	17.300	17.630	17.960	18.290	18.620	16.560	16.930
100	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	1.500R	1.200R	3.150R	2.800R	2.450R	2.100R	1.750R	1.400R	3.600R	3.200R
	M	23.520	23.810	21.950	22.280	22.610	22.940	23.280	23.620	21.530	21.900

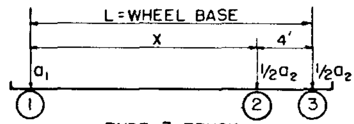
Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base L		16	16	16	16	18	18	18	18	18	18
Load On Axles	a_1	.35	.30	.25	.20	.45	.40	.35	.30	.25	.20
	a_2	.65	.70	.75	.80	.55	.60	.65	.70	.75	.80
Span-Feet 10	G	2	2	2	2	2	2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.625	1.750	1.875	2.000	1.375	1.500	1.625	1.750	1.875	2.000
20	G	2	2	2	2	2	2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	3.250	3.500	3.750	4.000	2.750	3.000	3.250	3.500	3.750	4.000
30	G	1–2	1–2	1–2	2	2	2	2	2	2	2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.800R	2.400R	2.000R	0	0	0	0	0	0	0
	M	4.961	5.292	5.633	6.000	4.125	4.500	4.875	5.250	5.625	6.000
40	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.800R	2.400R	2.000R	1.600R	4.050R	3.600R	3.150R	2.700R	2.250R	1.800R
	M	7.396	7.744	8.100	8.464	6.360	6.724	7.098	7.482	7.877	8.281
50	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.800R	2.400R	2.000R	1.600R	4.050R	3.600R	3.150R	2.700R	2.250R	1.800R
	M	9.857	10.220	10.580	10.950	8.778	9.159	9.548	9.946	10.350	10.760
60	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.800R	2.400R	2.000R	1.600R	4.050R	3.600R	3.150R	2.700R	2.250R	1.800R
	M	12.330	12.700	13.070	13.440	11.220	11.620	12.020	12.420	12.830	13.250
80	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.800R	2.400R	2.000R	1.600R	4.050R	3.600R	3.150R	2.700R	2.250R	1.800R
	M	17.300	17.670	18.050	18.430	16.160	16.560	16.970	17.390	17.810	18.240
100	G	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2	1–2
	N	2	2	2	2	2	2	2	2	2	2
	B	2.800R	2.400R	2.000R	1.600R	4.050R	3.600R	3.150R	2.700R	2.250R	1.800R
	M	22.280	22.660	23.040	23.430	21.110	21.530	21.950	22.370	22.800	23.230

TABLE 7.1 (Continued)

Truck No.			31	32	33	34	35	36
Wh. Base L			20	20	20	20	20	20
Load On Axles		a_1	.45	.40	.35	.30	.25	.20
		a_2	.55	.60	.65	.70	.75	.80
Span-Feet	10	G	2	2	2	2	2	2
		N	2	2	2	2	2	2
		B	0	0	0	0	0	0
		M	1.375	1.500	1.625	1.750	1.875	2.000
	20	G	2	2	2	2	2	2
		N	2	2	2	2	2	2
		B	0	0	0	0	0	0
		M	2.750	3.000	3.250	3.500	3.750	4.000
	30	G	2	2	2	2	2	2
		N	2	2	2	2	2	2
		B	0	0	0	0	0	0
		M	4.125	4.500	4.875	5.250	5.625	6.000
	40	G	1–2	1–2	1–2	1–2	1–2	1–2
		N	2	2	2	2	2	2
		B	4.500R	4.000R	3.500R	3.000R	2.500R	2.000R
		M	6.006	6.400	6.806	7.225	7.656	8.100
	50	G	1–2	1–2	1–2	1–2	1–2	1–2
		N	2	2	2	2	2	2
		B	4.500R	4.000R	3.500R	3.000R	2.500R	2.000R
		M	8.405	8.820	9.245	9.680	10.130	10.580
	60	G	1–2	1–2	1–2	1–2	1–2	1–2
		N	2	2	2	2	2	2
		B	4.500R	4.000R	3.500R	3.000R	2.500R	2.000R
		M	10.840	11.270	11.700	12.150	12.600	13.070
	80	G	1–2	1–2	1–2	1–2	1–2	1–2
		N	2	2	2	2	2	2
		B	4.500R	4.000R	3.500R	3.000R	2.500R	2.000R
		M	15.750	16.200	16.650	17.110	17.580	18.050
	100	G	1–2	1–2	1–2	1–2	1–2	1–2
		N	2	2	2	2	2	2
		B	4.500R	4.000R	3.500R	3.000R	2.500R	2.000R
		M	20.700	21.160	21.620	22.090	22.560	23.040

Table 7.2

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3 TRUCK

Forty-two variations in the Type 3 truck are given in this Table. Each truck number, from 1 to 42, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base L		14	14	14	14	14	14	14	16	16	16
Axle Spacing X		10	10	10	10	10	10	10	12	12	12
Load On Axles	a_1	.40	.35	.30	.25	.20	.15	.10	.40	.35	.30
	a_2	.60	.65	.70	.75	.80	.85	.90	.60	.65	.70
Span-Feet 10	G	1	2–3	2–3	2–3	2–3	2–3	2–3	1	2–3	2–3
	N	1	3	3	3	3	3	3	1	3	3
	B	0	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	0	1.000R	1.000R
	M	1.000	1.040	1.120	1.200	1.280	1.360	1.440	1.000	1.040	1.120
20	G	1–3	1–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	3	3	3	3	3	3	3	3
	B	1.400R	1.100R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	2.498	2.661	2.835	3.038	3.240	3.443	3.645	2.430	2.633	2.835
30	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.400R	1.100R	.800R	.500R	.200R	.100L	.400L	.800R	1.450R	1.100R
	M	4.965	5.140	5.321	5.508	5.701	5.900	6.105	4.608	4.820	5.040
40	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.400R	1.100R	.800R	.500R	.200R	.100L	.400L	.800R	1.450R	1.100R
	M	7.449	7.630	7.816	8.006	8.201	8.400	8.604	7.081	7.303	7.530
50	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.400R	1.100R	.800R	.500R	.200R	.100L	.400L	.800R	1.450R	1.100R
	M	9.939	10.120	10.310	10.510	10.700	10.900	11.100	9.565	9.792	10.020
60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.400R	1.100R	.800R	.500R	.200R	.100L	.400L	.800R	1.450R	1.100R
	M	12.430	12.620	12.810	13.000	13.200	13.400	13.600	12.050	12.290	12.520
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.400R	1.100R	.800R	.500R	.200R	.100L	.400L	.800R	1.450R	1.100R
	M	17.430	17.620	17.810	18.000	18.200	18.400	18.600	17.040	17.280	17.520
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.400R	1.100R	.800R	.500R	.200R	.100L	.400L	.800R	1.450R	1.100R
	M	22.420	22.610	22.810	23.000	23.200	23.400	23.600	22.030	22.270	22.510

All dimensions are in feet and moments are in kip-feet.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.2 (Continued)

Span-Feet	Truck No.	11	12	13	14	15	16	17	18	19	20
	Wh. Base L	16	16	16	16	18	18	18	18	18	18
	Axle Spacing X	12	12	12	12	14	14	14	14	14	14
	Load On Axles a_1	.25	.20	.15	.10	.40	.35	.30	.25	.20	.15
	a_2	.75	.80	.85	.90	.60	.65	.70	.75	.80	.85
10	G	2-3	2-3	2-3	2-3	1	2-3	2-3	2-3	2-3	2-3
	N	3	3	3	3	1	3	3	3	3	3
	B	1.000R	1.000R	1.000R	1.000R	0	1.000R	1.000R	1.000R	1.000R	1.000R
	M	1.200	1.280	1.360	1.440	1.000	1.040	1.120	1.200	1.280	1.360
20	G	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
	N	3	3	3	3	3	3	3	3	3	3
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	3.038	3.240	3.443	3.645	2.430	2.633	2.835	3.038	3.240	3.443
30	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.750R	.400R	.050R	.300L	2.200R	1.800R	1.400R	1.000R	.600R	.200R
	M	5.269	5.505	5.750	6.003	4.261	4.508	4.765	5.033	5.312	5.601
40	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.750R	.400R	.050R	.300L	2.200R	1.800R	1.400R	1.000R	.600R	.200R
	M	7.764	8.004	8.250	8.502	6.721	6.981	7.249	7.525	7.809	8.101
50	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.750R	.400R	.050R	.300L	2.200R	1.800R	1.400R	1.000R	.600R	.200R
	M	10.260	10.500	10.750	11.000	9.197	9.465	9.739	10.020	10.310	10.600
60	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.750R	.400R	.050R	.300L	2.200R	1.800R	1.400R	1.000R	.600R	.200R
	M	12.760	13.000	13.250	13.500	11.680	11.950	12.230	12.520	12.810	13.100
80	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.750R	.400R	.050R	.300L	2.200R	1.800R	1.400R	1.000R	.600R	.200R
	M	17.760	18.000	18.250	18.500	16.660	16.940	17.230	17.510	17.810	18.100
100	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.750R	.400R	.050R	.300L	2.200R	1.800R	1.400R	1.000R	.600R	.200R
	M	22.760	23.000	23.250	23.500	21.650	21.930	22.220	22.510	22.800	23.100

Span-Feet	Truck No.	21	22	23	24	25	26	27	28	29	30
	Wh. Base L	18	20	20	20	20	20	20	20	22	22
	Axle Spacing X	14	16	16	16	16	16	16	16	18	18
	Load On Axles a_1	.10	.40	.35	.30	.25	.20	.15	.10	.40	.35
	a_2	.90	.60	.65	.70	.75	.80	.85	.90	.60	.65
10	G	2-3	1	2-3	2-3	2-3	2-3	2-3	2-3	1	2-3
	N	3	1	3	3	3	3	3	3	1	3
	B	1.000R	0	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	0	1.000R
	M	1.440	1.000	1.040	1.120	1.200	1.280	1.360	1.440	1.000	1.040
20	G	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
	N	3	3	3	3	3	3	3	3	3	3
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	3.645	2.430	2.633	2.835	3.038	3.240	3.443	3.645	2.430	2.633
30	G	1-3	1-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
	N	2	2	3	3	3	3	3	3	3	3
	B	.200L	2.600R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	5.901	3.925	4.246	4.573	4.900	5.226	5.553	5.880	3.920	4.246
40	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.200L	2.600R	2.150R	1.700R	1.250R	.800R	.350R	.100L	3.000R	2.500R
	M	8.401	6.369	6.666	6.972	7.289	7.616	7.953	8.300	6.025	6.356
50	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.200L	2.600R	2.150R	1.700R	1.250R	.800R	.350R	.100L	3.000R	2.500R
	M	10.900	8.835	9.142	9.458	9.781	10.110	10.450	10.800	8.480	8.825
60	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.200L	2.600R	2.150R	1.700R	1.250R	.800R	.350R	.100L	3.000R	2.500R
	M	13.400	11.310	11.630	11.950	12.280	12.610	12.950	13.300	10.950	11.300
80	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.200L	2.600R	2.150R	1.700R	1.250R	.800R	.350R	.100L	3.000R	2.500R
	M	18.400	16.290	16.610	16.940	17.270	17.610	17.950	18.300	15.910	16.280
100	G	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3
	N	2	2	2	2	2	2	2	2	2	2
	B	.200L	2.600R	2.150R	1.700R	1.250R	.800R	.350R	.100L	3.000R	2.500R
	M	23.400	21.270	21.600	21.930	22.270	22.610	22.950	23.300	20.890	21.260

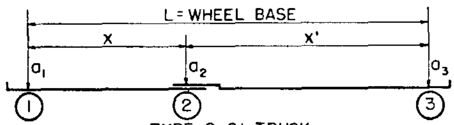
TABLE 7.2 (Continued)

Truck No.			31	32	33	34	35	36	37	38	39	40
Wh. Base L			22	22	22	22	22	24	24	24	24	24
Axle Spacing X			18	18	18	18	18	20	20	20	20	20
Load On Axles		a_1	.30	.25	.20	.15	.10	.40	.35	.30	.25	.20
		a_2	.70	.75	.80	.85	.90	.60	.65	.70	.75	.80
Span-Feet	10	G	2–3	2–3	2–3	2–3	2–3	1	2–3	2–3	2–3	2–3
		N	3	3	3	3	3	1	3	3	3	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	0	1.000R	1.000R	1.000R	1.000R
		M	1.120	1.200	1.280	1.360	1.440	1.000	1.040	1.120	1.200	1.280
	20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	3	3	3	3	3	3	3	3	3	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	2.835	3.038	3.240	3.443	3.645	2.430	2.633	2.835	3.038	3.240
	30	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	3	3	3	3	3	3	3	3	3	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	4.573	4.900	5.226	5.553	5.880	3.920	4.246	4.573	4.900	5.226
	40	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	2	2	2	2	2	2	2	2
		B	2.000R	1.500R	1.000R	.500R	0	3.400R	2.850R	2.300R	1.750R	1.200R
		M	6.700	7.056	7.425	7.806	8.200	5.689	6.053	6.432	6.827	7.236
	50	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	2	2	2	2	2	2	2	2
		B	2.000R	1.500R	1.000R	.500R	0	3.400R	2.850R	2.300R	1.750R	1.200R
		M	9.180	9.545	9.920	10.310	10.700	8.131	8.512	8.906	9.311	9.729
	60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	2	2	2	2	2	2	2	2
		B	2.000R	1.500R	1.000R	.500R	0	3.400R	2.850R	2.300R	1.750R	1.200R
		M	11.670	12.040	12.420	12.800	13.200	10.590	10.990	11.390	11.800	12.220
	80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	2	2	2	2	2	2	2	2
		B	2.000R	1.500R	1.000R	.500R	0	3.400R	2.850R	2.300R	1.750R	1.200R
		M	16.650	17.030	17.410	17.800	18.200	15.550	15.950	16.370	16.790	17.220
	100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	2	2	2	2	2	2	2	2
		B	2.000R	1.500R	1.000R	.500R	0	3.400R	2.850R	2.300R	1.750R	1.200R
		M	21.640	22.020	22.410	22.800	23.200	20.520	20.930	21.350	21.780	22.210

Truck No.			41	42
Wh. Base L			24	24
Axle Spacing X			20	20
Load On Axles		a_1	.15	.10
		a_2	.85	.90
Span-Feet	10	G	2–3	2–3
		N	3	3
		B	1.000R	1.000R
		M	1.360	1.440
	20	G	2–3	2–3
		N	3	3
		B	1.000R	1.000R
		M	3.443	3.645
	30	G	2–3	2–3
		N	3	3
		B	1.000R	1.000R
		M	5.553	5.880
	40	G	2–3	2–3
		N	3	3
		B	1.000R	1.000R
		M	7.671	8.123
	50	G	1–3	1–3
		N	2	2
		B	.650R	.100R
		M	10.160	10.600
	60	G	1–3	1–3
		N	2	2
		B	.650R	.100R
		M	12.660	13.100
	80	G	1–3	1–3
		N	2	2
		B	.650R	.100R
		M	17.660	18.100
	100	G	1–3	1–3
		N	2	2
		B	.650R	.100R
		M	22.650	23.100

Table 7.3

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



One hundred twenty-six variations in the Type 2-S1 truck are given in this Table. Each truck number, from 1 to 126, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.			1	2	3	4	5	6	7	8	9	10
Wh. Base L			20	20	20	20	20	20	20	24	24	24
Axle Spacing		X	8	8	8	8	8	8	8	8	8	8
		X'	12	12	12	12	12	12	12	16	16	16
Load On Axles		a_1	.10	.10	.10	.10	.20	.20	.20	.10	.10	.10
		a_2	.20	.40	.45	.50	.30	.40	.50	.30	.40	.45
		a_3	.60	.50	.45	.40	.50	.40	.30	.60	.50	.45
Span-Feet	10	G	3	3	3	2	3	3	2	3	3	3
		N	3	3	3	2	3	3	2	3	3	3
		B	0	0	0	0	0	0	0	0	0	0
		M	1.500	1.250	1.125	1.250	1.250	1.000	1.250	1.500	1.250	1.125
	20	G	3	3	1–2	1–2	3	1–2	1–2	3	3	1–2
		N	3	3	2	2	3	2	2	3	3	2
		B	0	0	.725R	.667R	0	1.335R	1.145R	0	0	.730R
		M	3.000	2.500	2.363	2.614	2.500	2.252	2.745	3.000	2.500	2.363
	30	G	2–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3	2–3	1–3
		N	3	3	2	2	3	2	2	3	3	2
		B	2.000R	2.665R	2.300L	2.000L	2.250R	1.600L	1.000L	2.665R	3.555R	3.200L
		M	5.070	4.565	4.576	4.833	4.335	4.385	4.933	4.565	3.929	3.841
	40	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	2–3	2–3	1–3
		N	3	3	2	2	3	2	2	3	3	2
		B	2.800R	3.400R	2.300L	2.000L	3.800R	1.600L	1.000L	2.665R	3.555R	3.200L
		M	7.396	6.889	7.032	7.300	6.561	6.864	7.425	6.762	6.085	6.256
	50	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	3	3	2	2	3	2	2	3	3	2
		B	2.800R	3.400R	2.300L	2.000L	3.800R	1.600L	1.000L	3.600R	4.400R	3.200L
		M	9.857	9.331	9.506	9.780	8.989	9.351	9.920	9.159	8.487	8.705
	60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	3	3	2	2	3	2	2	3	3	2
		B	2.800R	3.400R	2.300L	2.000L	3.800R	1.600L	1.000L	3.600R	4.400R	3.200L
		M	12.331	11.793	11.988	12.267	11.441	11.843	12.417	11.616	10.923	11.171
	80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	3	3	2	2	3	2	2	3	3	2
		B	2.800R	3.400R	2.300L	2.000L	3.800R	1.600L	1.000L	3.600R	4.400R	3.200L
		M	17.298	16.745	16.966	17.250	16.381	16.832	17.413	16.562	15.842	16.128
	100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	3	3	2	2	3	2	2	3	3	2
		B	2.800R	3.400R	2.300L	2.000L	3.800R	1.600L	1.000L	3.600R	4.400R	3.200L
		M	22.278	21.716	21.953	22.240	21.344	21.826	22.410	21.530	20.794	21.102

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.3 (Continued)

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	24	24	24	24	28	28	28	28	28	28
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X′	16	16	16	16	20	20	20	20	20	20
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.10	.20	.20
On	a_2	.50	.30	.40	.50	.30	.40	.45	.40	.30	.40
Axles	a_3	.40	.50	.40	.30	.60	.50	.45	.50	.50	.40
Span-Feet 10	G	2	3	3	2	3	3	3	2	3	3
	N	2	3	3	2	3	3	3	2	3	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.250	1.250	1.000	1.250	1.500	1.250	1.125	1.250	1.250	1.000
20	G	1–2	3	1–2	1–2	3	3	1–2	1–2	3	1–2
	N	2	3	2	2	3	3	2	2	3	2
	B	.667R	0	1.333R	1.145R	0	0	.730R	.667R	0	1.335R
	M	2.614	2.500	2.252	2.745	3.000	2.500	2.363	2.614	2.500	2.252
30	G	1–3	2–3	1–2	1–2	3	3	1–2	1–2	3	1–2
	N	2	3	2	2	3	3	2	2	3	2
	B	2.800L	3.000R	1.333R	1.145R	0	0	.730R	.667R	0	1.335R
	M	4.161	3.840	3.734	4.479	4.500	3.750	3.733	4.110	3.750	3.734
40	G	1–3	2–3	1–3	1–3	2–3	2–3	1–3	1–3	2–3	1–3
	N	2	3	2	2	3	3	2	2	3	2
	B	2.800L	3.000R	2.400L	1.600L	3.333R	4.445R	4.100L	3.600L	3.750R	3.200L
	M	6.596	5.780	6.144	6.864	6.249	5.444	5.520	5.924	5.282	5.456
50	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	3	2	2	3	3	2	2	3	2
	B	2.800L	4.800R	2.400L	1.600L	3.333R	5.400R	4.100L	3.600L	5.800R	3.200L
	M	9.057	8.161	8.615	9.351	8.487	7.683	7.936	8.359	7.373	7.905
60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	3	2	2	3	3	2	2	3	2
	B	2.800L	4.800R	2.400L	1.600L	3.333R	5.400R	4.100L	3.600L	5.800R	3.200L
	M	11.531	10.584	11.096	11.843	10.923	10.086	10.380	10.816	9.761	10.371
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	3	2	2	3	3	2	2	3	2
	B	2.800L	4.800R	2.400L	1.600L	3.333R	5.400R	4.100L	3.600L	5.800R	3.200L
	M	16.498	15.488	16.072	16.832	15.842	14.965	15.310	15.762	14.621	15.328
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	3	2	2	3	3	2	2	3	2
	B	2.800L	4.800R	2.400L	1.600L	3.333R	5.400R	4.100L	3.600L	5.800R	3.200L
	M	21.478	20.430	21.058	21.826	20.794	19.892	20.268	20.730	19.536	20.302

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	28	32	32	32	32	32	32	32	36	36
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X′	20	24	24	24	24	24	24	24	28	28
Load	a_1	.20	.10	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.50	.30	.40	.45	.50	.30	.40	.50	.30	.40
Axles	a_3	.30	.60	.50	.45	.40	.50	.40	.30	.60	.50
Span-Feet 10	G	2	3	3	3	2	3	3	2	3	3
	N	2	3	3	3	2	3	3	2	3	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.250	1.500	1.250	1.125	1.250	1.250	1.000	1.250	1.500	1.250
20	G	1–2	3	3	1–2	1–2	3	1–2	1–2	3	3
	N	2	3	3	2	2	3	2	2	3	3
	B	1.145R	0	0	.730R	.667R	0	1.335R	1.145R	0	0
	M	2.745	3.000	2.500	2.363	2.614	2.500	2.252	2.745	3.000	2.500
30	G	1–2	3	3	1–2	1–2	3	1–2	1–2	3	3
	N	2	3	3	2	2	3	2	2	3	3
	B	1.145R	0	0	.730R	.667R	0	1.335R	1.145R	0	0
	M	4.479	4.500	3.750	3.733	4.110	3.750	3.734	4.479	4.500	3.750
40	G	1–3	3	3	1–2	1–2	3	1–2	1–2	3	3
	N	2	3	3	2	2	3	2	2	3	3
	B	2.200L	0	0	.730R	.667R	0	1.335R	1.145R	0	0
	M	6.321	6.000	5.000	5.106	5.608	5.000	5.226	6.222	6.000	5.000
50	G	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3	3	2–3
	N	2	3	3	2	2	3	2	2	3	3
	B	2.200L	4.000R	5.335R	5.000L	4.400L	4.500R	4.000L	2.800L	0	6.220R
	M	8.797	7.938	6.961	7.200	7.687	6.724	7.220	8.257	7.500	6.349
60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	2–3	1–3
	N	2	3	3	2	2	3	2	2	3	3
	B	2.200L	5.200R	6.400R	5.000L	4.400L	6.800R	4.000L	2.800L	4.665R	7.400R
	M	11.281	10.251	9.283	9.617	10.123	8.971	9.667	10.731	9.628	8.513
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	3	3	2	2	3	2	2	3	3
	B	2.200L	5.200R	6.400R	5.000L	4.400L	6.800R	4.000L	2.800L	6.000L	7.400R
	M	16.261	15.138	14.112	14.513	15.042	13.778	14.600	15.698	14.450	13.285
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	3	3	2	2	3	2	2	3	3
	B	2.200L	5.200R	6.400R	5.000L	4.400L	6.800R	4.000L	2.800L	6.000L	7.400R
	M	21.248	20.070	19.010	19.450	19.994	18.662	19.560	20.678	19.360	18.148

TABLE 7.3 (Continued)

Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	36	36	36	36	36	20	20	20	20	20
Axle	X	8	8	8	8	8	12	12	12	12	12
Spacing	X′	28	28	28	28	28	8	8	8	8	8
Load	a_1	.10	.10	.20	.20	.20	.10	.10	.10	.10	.20
On	a_2	.45	.50	.30	.40	.50	.30	.40	.45	.50	.30
Axles	a_3	.45	.40	.50	.40	.30	.60	.50	.45	.40	.50
Span-Feet 10	G	3	2	3	3	2	3	3	3	2	3
	N	3	2	3	3	2	3	3	3	2	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.125	1.250	1.250	1.000	1.250	1.500	1.250	1.125	1.250	1.250
20	G	1–2	1–2	3	1–2	1–2	2–3	2–3	2–3	2–3	2–3
	N	2	2	3	2	2	3	3	3	2	3
	B	.730R	.667R	0	1.335R	1.145R	1.335R	1.780R	2.000R	1.780L	1.500R
	M	2.363	2.614	2.500	2.252	2.745	3.379	3.040	2.880	3.040	2.890
30	G	1–2	1–2	3	1–2	1–2	2–3	2–3	1–3	1–3	2–3
	N	2	2	3	2	2	3	3	2	2	3
	B	.730R	.667R	0	1.335R	1.145R	1.335R	1.780R	1.200L	1.000L	1.500R
	M	3.733	4.110	3.750	3.734	4.479	5.602	5.243	5.148	5.333	4.860
40	G	1–2	1–2	3	1–2	1–2	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	2	2	3	3	2	2	3
	B	.730R	.667R	0	1.335R	1.145R	2.200R	2.600R	1.200L	1.000L	3.200R
	M	5.106	5.608	5.000	5.226	6.222	7.921	7.569	7.636	7.825	7.056
50	G	1–3	1–2	3	1–2	1–2	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	2	2	3	3	2	2	3
	B	5.900L	.665R	0	1.335R	1.145R	2.200R	2.600R	1.200L	1.000L	3.200R
	M	6.496	7.106	6.250	6.721	7.967	10.397	10.035	10.129	10.320	9.505
60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	2	2	3	3	2	2	3
	B	5.900L	5.200L	7.800R	4.800L	3.400L	2.200R	2.600R	1.200L	1.000L	3.200R
	M	8.880	9.451	8.214	8.984	10.193	12.881	12.513	12.624	12.817	11.971
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	2	2	3	3	2	2	3
	B	5.900L	5.200L	7.800R	4.800L	3.400L	2.200R	2.600R	1.200L	1.000L	3.200R
	M	13.735	14.338	12.961	13.888	15.145	17.861	17.485	17.618	17.813	16.928
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	2	2	3	3	2	2	3
	B	5.900L	5.200L	7.800R	4.800L	3.400L	2.200R	2.600R	1.200L	1.000L	3.200R
	M	18.648	19.270	17.808	18.830	20.116	22.848	22.468	22.614	22.810	21.902

Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	20	20	24	24	24	24	24	24	24	28
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	8	8	12	12	12	12	12	12	12	16
Load	a_1	.20	.20	.10	.10	.10	.10	.20	.20	.20	.10
On	a_2	.40	.50	.30	.40	.45	.50	.30	.40	.50	.30
Axles	a_3	.40	.30	.60	.50	.45	.40	.50	.40	.30	.60
Span-Feet 10	G	3	2	3	3	3	2	3	3	2	3
	N	3	2	3	3	3	2	3	3	2	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	1.250	1.500	1.250	1.125	1.250	1.250	1.000	1.250	1.500
20	G	2–3	2–3	3	3	3	2	3	3	2	3
	N	3	2	3	3	3	2	3	3	2	3
	B	2.000R	1.500L	0	0	0	0	0	0	0	0
	M	2.560	2.890	3.000	2.500	2.250	2.500	2.500	2.000	2.500	3.000
30	G	1–3	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3
	N	2	2	3	3	2	2	3	2	2	3
	B	.400L	0	2.000R	2.665R	2.100L	1.800L	2.250R	1.200L	.600L	2.665R
	M	4.705	5.100	5.070	4.565	4.347	4.608	4.335	3.948	4.512	4.565
40	G	1–3	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3
	N	2	2	3	3	2	2	3	2	2	3
	B	.400L	0	2.000R	2.665R	2.100L	1.800L	2.250R	1.200L	.600L	2.665R
	M	7.204	7.600	7.290	6.762	6.810	7.081	6.302	6.436	7.009	6.762
50	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	3	2	2	3	2	2	3
	B	.400L	0	3.000R	3.600R	2.100L	1.800L	4.200R	1.200L	.600L	3.800R
	M	9.703	10.100	9.680	9.159	9.288	9.565	8.653	8.929	9.507	8.989
60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	3	2	2	3	2	2	3
	B	.400L	0	3.000R	3.600R	2.100L	1.800L	4.200R	1.200L	.600L	3.800R
	M	12.203	12.600	12.150	11.616	11.774	12.054	11.094	11.424	12.006	11.441
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	3	2	2	3	2	2	3
	B	.400L	0	3.000R	3.600R	2.100L	1.800L	4.200R	1.200L	.600L	3.800R
	M	17.202	17.600	17.113	16.562	16.755	17.041	16.021	16.418	17.005	16.381
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	2	2	3	3	2	2	3	2	2	3
	B	.400L	0	3.000R	3.600R	2.100L	1.800L	4.200R	1.200L	.600L	3.800R
	M	22.202	22.600	22.090	21.530	21.744	22.032	20.976	21.414	22.004	21.344

TABLE 7.3 (Continued)

Truck No.		51	52	53	54	55	56	57	58	59	60
Wh. Base	L	28	28	28	28	28	28	32	32	32	32
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	16	16	16	16	16	16	20	20	20	20
Load On Axles	a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.10
	a_2	.40	.45	.50	.30	.40	.50	.30	.40	.45	.50
	a_3	.50	.45	.40	.50	.40	.30	.60	.50	.45	.40
Span-Feet 10	G	3	3	2	3	3	2	3	3	3	2
	N	3	3	2	3	3	2	3	3	3	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.250	1.125	1.250	1.250	1.000	1.250	1.500	1.250	1.125	1.250
20	G	3	3	2	3	3	2	3	3	3	2
	N	3	3	2	3	3	2	3	3	3	2
	B	0	0	0	0	0	0	0	0	0	0
	M	2.500	2.250	2.500	2.500	2.000	2.500	3.000	2.500	2.250	2.500
30	G	2–3	2–3	2–3	2–3	1–2	1–2	3	3	1–2	1–2
	N	3	3	2	3	2	2	3	3	2	2
	B	3.555R	4.000R	3.555L	3.000R	2.000R	1.715R	0	0	1.090R	1.000R
	M	3.929	3.630	3.929	3.840	3.380	4.118	4.500	3.750	3.548	3.920
40	G	2–3	1–3	1–3	2–3	1–3	1–3	2–3	2–3	1–3	1–3
	N	3	2	2	3	2	2	3	3	2	2
	B	3.555R	3.000L	2.600L	3.000R	2.000L	1.200L	3.335R	4.445R	3.900L	3.400L
	M	6.085	6.025	6.369	5.780	5.700	6.436	6.249	5.444	5.280	5.689
50	G	1–3	1–3	1–3	1–3	1–3	1–3	2–3	2–3	1–3	1–3
	N	3	2	2	3	2	2	3	3	2	2
	B	4.600R	3.000L	2.600L	5.200R	2.000L	1.200L	3.335R	4.445R	3.900L	3.400L
	M	8.323	8.480	8.835	7.841	8.180	8.929	8.448	7.605	7.704	8.131
60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	3	2	2	3	3	2	2
	B	4.600R	3.000L	2.600L	5.200R	2.000L	1.200L	4.600R	5.600R	3.900L	3.400L
	M	10.753	10.950	11.313	10.251	10.667	11.424	10.753	9.923	10.154	10.593
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	3	2	2	3	3	2	2
	B	4.600R	3.000L	2.600L	5.200R	2.000L	1.200L	4.600R	5.600R	3.900L	3.400L
	M	15.665	15.913	16.285	15.138	15.650	16.418	15.665	14.792	15.090	15.545
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	3	2	2	3	3	2	2
	B	4.600R	3.000L	2.600L	5.200R	2.000L	1.200L	4.600R	5.600R	3.900L	3.400L
	M	20.612	20.890	21.267	20.070	20.640	21.414	20.612	19.714	20.052	20.516

Truck No.		61	62	63	64	65	66	67	68	69	70
Wh. Base	L	32	32	32	36	36	36	36	36	36	36
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	20	20	20	24	24	24	24	24	24	24
Load On Axles	a_1	.20	.20	.20	.10	.10	.10	.10	.20	.20	.20
	a_2	.30	.40	.50	.30	.40	.45	.50	.30	.40	.50
	a_3	.50	.40	.30	.60	.50	.45	.40	.50	.40	.30
Span-Feet 10	G	3	3	2	3	3	3	2	3	3	2
	N	3	3	2	3	3	3	2	3	3	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.250	1.000	1.250	1.500	1.250	1.125	1.250	1.250	1.000	1.250
20	G	3	3	2	3	3	3	2	3	3	2
	N	3	3	2	3	3	3	2	3	3	2
	B	0	0	0	0	0	0	0	0	0	0
	M	2.500	2.000	2.500	3.000	2.500	2.250	2.500	2.500	2.000	2.500
30	G	3	1–2	1–2	3	3	1–2	1–2	3	1–2	1–2
	N	3	2	2	3	3	2	2	3	2	2
	B	0	2.000R	1.715R	0	0	1.090R	1.000R	0	2.000R	1.715R
	M	3.750	3.380	4.118	4.500	3.750	3.548	3.920	3.750	3.380	4.118
40	G	2–3	1–3	1–3	3	3	1–2	1–2	3	1–2	1–2
	N	3	2	2	3	3	2	2	3	2	2
	B	3.750R	2.800L	1.800L	0	0	1.090R	1.000R	0	2.000R	1.715R
	M	5.282	4.996	5.881	6.000	5.000	4.917	5.415	5.000	4.860	5.851
50	G	2–3	1–3	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3
	N	3	2	2	3	3	2	2	3	2	2
	B	3.750R	2.800L	1.800L	4.000R	5.335R	4.800L	4.200L	4.500R	3.600L	2.400L
	M	7.225	7.457	8.365	7.938	6.961	6.961	7.453	6.724	6.759	7.815
60	G	1–3	1–3	1–3	2–3	1–3	1–3	1–3	2–3	1–3	1–3
	N	3	2	2	3	3	2	2	3	2	2
	B	6.200R	2.800L	1.800L	4.000R	6.600R	4.800L	4.200L	4.500R	3.600L	2.400L
	M	9.441	9.931	10.854	10.140	9.126	9.384	9.894	8.670	9.216	10.296
80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	3	3	2	2	3	2	2
	B	6.200R	2.800L	1.800L	5.400R	6.600R	4.800L	4.200L	7.200R	3.600L	2.400L
	M	14.281	14.898	15.841	14.965	13.945	14.288	14.821	13.448	14.162	15.272
100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	3	3	2	2	3	2	2
	B	6.200R	2.800L	1.800L	5.400R	6.600R	4.800L	4.200L	7.200R	3.600L	2.400L
	M	19.184	19.878	20.832	19.892	18.836	19.230	19.776	18.318	19.130	20.258

TABLE 7.3 (Continued)

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	40	40	40	40	40	40	40	44	44	44
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	28	28	28	28	28	28	28	32	32	32
Load	a_1	.10	.10	.10	.10	.20	.20	.20	.10	.10	.10
On	a_2	.30	.40	.45	.50	.30	.40	.50	.30	.40	.45
Axles	a_3	.60	.50	.45	.40	.50	.40	.30	.60	.50	.45
Span-Feet	G	3	3	3	2	3	3	2	3	3	3
10	N	3	3	3	2	3	3	2	3	3	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.500	1.250	1.125	1.250	1.250	1.000	1.250	1.500	1.250	1.125
	G	3	3	3	2	3	3	2	3	3	3
20	N	3	3	3	2	3	3	2	3	3	3
	B	0	0	0	0	0	0	0	0	0	0
	M	3.000	2.500	2.250	2.500	2.500	2.000	2.500	3.000	2.500	2.250
	G	3	3	1–2	1–2	3	1–2	1–2	3	3	1–2
30	N	3	3	2	2	3	2	2	3	3	2
	B	0	0	1.090R	1.000R	0	2.000R	1.715R	0	0	1.090R
	M	4.500	3.750	3.548	3.920	3.750	3.380	4.118	4.500	3.750	3.548
	G	3	3	1–2	1–2	3	1–2	1–2	3	3	1–2
40	N	3	3	2	2	3	2	2	3	3	2
	B	0	0	1.090R	1.000R	0	2.000R	1.715R	0	0	1.090R
	M	6.000	5.000	4.917	5.415	5.000	4.860	5.851	6.000	5.000	4.917
	G	3	2–3	1–2	1–2	3	1–2	1–2	3	3	1–2
50	N	3	3	2	2	3	2	2	3	3	2
	B	0	6.220R	1.090R	1.000R	0	2.000R	1.715R	0	0	1.090R
	M	7.500	6.349	6.289	6.912	6.250	6.348	7.591	7.500	6.250	6.289
	G	2–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3	2–3	1–3
60	N	3	3	2	2	3	2	2	3	3	2
	B	4.665R	6.220R	5.700L	5.000L	5.250R	4.400L	3.000L	5.333R	7.110R	6.600L
	M	9.628	8.483	8.642	9.217	8.167	8.523	9.750	9.129	7.860	7.926
	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
80	N	3	3	2	2	3	2	2	3	3	2
	B	6.200R	7.600R	5.700L	5.000L	8.200R	4.400L	3.000L	7.000R	8.600R	6.600L
	M	14.281	13.122	13.506	14.113	12.641	13.442	14.173	13.613	12.325	12.745
	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
100	N	3	3	2	2	3	2	2	3	3	2
	B	6.200R	7.600R	5.700L	5.000L	8.200R	4.400L	3.000L	7.000R	8.600R	6.600L
	M	19.184	17.978	18.425	19.050	17.472	18.394	19.690	18.491	17.140	17.636

Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	44	44	44	44	24	24	24	24	24	24
Axle	X	12	12	12	12	16	16	16	16	16	16
Spacing	X′	32	32	32	32	8	8	8	8	8	8
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.10	.20	.20
On	a_2	.50	.30	.40	.50	.30	.40	.45	.50	.30	.40
Axles	a_3	.40	.50	.40	.30	.60	.50	.45	.40	.50	.40
Span-Feet	G	2	3	3	2	3	3	3	2	3	3
10	N	2	3	3	2	3	3	3	2	3	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.250	1.250	1.000	1.250	1.500	1.250	1.125	1.250	1.250	1.000
	G	2	3	3	2	2–3	2–3	2–3	2–3	2–3	2–3
20	N	2	3	3	2	3	3	3	2	3	3
	B	0	0	0	0	1.335R	1.778R	2.000R	1.778L	1.500R	2.000R
	M	2.500	2.500	2.000	2.500	3.379	3.040	2.880	3.040	2.890	2.560
	G	1–2	3	1–2	1–2	2–3	2–3	2–3	2–3	2–3	2–3
30	N	2	3	2	2	3	3	3	2	3	3
	B	1.000R	0	2.000R	1.715R	1.335R	1.778R	2.000R	1.778L	1.500R	2.000R
	M	3.920	3.750	3.380	4.118	5.602	5.243	5.070	5.243	4.860	4.506
	G	1–2	3	1–2	1–2	2–3	2–3	1–3	1–3	2–3	1–3
40	N	2	3	2	2	3	3	2	2	3	2
	B	1.000R	0	2.000R	1.715R	1.335R	1.778R	1.000L	.800L	1.500R	0
	M	5.415	5.000	4.860	5.851	7.839	7.469	7.425	7.616	6.845	6.800
	G	1–2	3	1–2	1–2	1–3	1–3	1–3	1–3	1–3	1–3
50	N	2	3	2	2	3	3	2	2	3	2
	B	1.000R	0	2.000R	1.715R	2.400R	2.800R	1.000L	.800L	3.600R	0
	M	6.912	6.250	6.348	7.591	10.215	9.857	9.920	10.113	9.159	9.300
	G	1–3	2–3	1–3	1–2	1–3	1–3	1–3	1–3	1–3	1–3
60	N	2	3	2	2	3	3	2	2	3	2
	B	5.800L	6.000R	5.200L	1.715R	2.400R	2.800R	1.000L	.800L	3.600R	0
	M	8.561	7.680	7.851	9.334	12.696	12.331	12.417	12.611	11.616	11.800
	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
80	N	2	3	2	2	3	3	2	2	3	2
	B	5.800L	9.200R	5.200L	3.600L	2.400R	2.800R	1.000L	.800L	3.600R	0
	M	13.421	11.858	12.738	14.162	17.672	17.298	17.413	17.608	16.562	16.800
	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
100	N	2	3	2	2	3	3	2	2	3	2
	B	5.800L	9.200R	5.200L	3.600L	2.400R	2.800R	1.000L	.800L	3.600R	0
	M	18.336	16.646	17.670	19.130	22.658	22.278	22.410	22.606	21.530	21.800

TABLE 7.3 (Continued)

Truck No.			91	92	93	94	95	96	97	98	99	100
Wh. Base L			24	28	28	28	28	28	28	28	32	32
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	8	12	12	12	12	12	12	12	16	16
Load On Axles		a_1	.20	.10	.10	.10	.10	.20	.20	.20	.10	.10
		a_2	.50	.30	.40	.45	.50	.30	.40	.50	.30	.40
		a_3	.30	.60	.50	.45	.40	.50	.40	.30	.60	.50
Span-Feet	10	G	2	3	3	3	2	3	3	2	3	3
		N	2	3	3	3	2	3	3	2	3	3
		B	0	0	0	0	0	0	0	0	0	0
		M	1.250	1.500	1.250	1.125	1.250	1.250	1.000	1.250	1.500	1.250
	20	G	2–3	3	3	3	2	3	3	2	3	3
		N	2	3	3	3	2	3	3	2	3	3
		B	1.500L	0	0	0	0	0	0	0	0	0
		M	2.890	3.000	2.500	2.250	2.500	2.500	2.000	2.500	3.000	2.500
	30	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	3	3	3	2	3	3	2	3	3
		B	1.500L	2.000R	2.665R	3.000R	2.665L	2.250R	3.000R	2.250L	2.665R	3.555R
		M	4.860	5.070	4.565	4.320	4.565	4.335	3.840	4.335	4.565	3.929
	40	G	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3	2–3
		N	2	3	3	2	2	3	2	2	3	3
		B	.400R	2.000R	2.665R	1.900L	1.600L	2.250R	.800L	.200L	2.665R	3.555R
		M	7.204	7.290	6.762	6.590	6.864	6.302	6.016	6.601	6.762	6.085
	50	G	1–3	2–3	1–3	1–3	1–3	1–3	1–3	1–3	2–3	2–3
		N	2	3	3	2	2	3	2	2	3	3
		B	.400R	2.000R	3.800R	1.900L	1.600L	4.600R	.800L	.200L	2.665R	3.555R
		M	9.703	9.522	8.989	9.072	9.351	8.323	8.513	9.101	8.979	8.278
	60	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	3	3	2	2	3	2	2	3	3
		B	.400R	3.200R	3.800R	1.900L	1.600L	4.600R	.800L	.200L	4.000R	4.800R
		M	12.203	11.971	11.441	11.560	11.843	10.753	11.011	11.601	11.267	10.584
	80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	3	3	2	2	3	2	2	3	3
		B	.400R	3.200R	3.800R	1.900L	1.600L	4.600R	.800L	.200L	4.000R	4.800R
		M	17.202	16.928	16.381	16.545	16.832	15.665	16.008	16.601	16.200	15.488
	100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	3	3	2	2	3	2	2	3	3
		B	.400R	3.200R	3.800R	1.900L	1.600L	4.600R	.800L	.200L	4.000R	4.800R
		M	22.202	21.902	21.344	21.536	21.826	20.612	21.006	21.600	21.160	20.430

Truck No.			101	102	103	104	105	106	107	108	109	110
Wh. Base L			32	32	32	32	32	36	36	36	36	36
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	16	16	16	16	16	20	20	20	20	20
Load On Axles		a_1	.10	.10	.20	.20	.20	.10	.10	.10	.10	.20
		a_2	.45	.50	.30	.40	50	.30	.40	.45	.50	.30
		a_3	.45	.40	.50	.40	.30	.60	.50	.45	.40	.50
Span-Feet	10	G	3	2	3	3	2	3	3	3	2	3
		N	3	2	3	3	2	3	3	3	2	3
		B	0	0	0	0	0	0	0	0	0	0
		M	1.125	1.250	1.250	1.000	1.250	1.500	1.250	1.125	1.250	1.250
	20	G	3	2	3	3	2	3	3	3	2	3
		N	3	2	3	3	2	3	3	3	2	3
		B	0	0	0	0	0	0	0	0	0	0
		M	2.250	2.500	2.500	2.000	2.500	3.000	2.500	2.250	2.500	2.500
	30	G	2–3	2–3	2–3	2–3	2–3	3	3	3	2	3
		N	3	2	3	3	2	3	3	3	2	3
		B	4.000R	3.555L	3.000R	4.000R	3.000L	0	0	0	0	0
		M	3.630	3.929	3.840	3.226	3.840	4.500	3.750	3.375	3.750	3.750
	40	G	1–3	1–3	2–3	1–3	1–3	2–3	2–3	2–3	1–3	2–3
		N	2	2	3	2	2	3	3	3	2	3
		B	2.800L	2.400L	3.000R	1.600L	.800L	3.335R	4.445R	5.000R	3.200L	3.750R
		M	5.796	6.144	5.780	5.264	6.016	6.249	5.444	5.063	5.456	5.282
	50	G	1–3	1–3	2–3	1–3	1–3	2–3	2–3	1–3	1–3	2–3
		N	2	2	3	2	2	3	3	2	2	3
		B	2.800L	2.400L	3.000R	1.600L	.800L	3.335R	4.445R	3.700L	3.200L	3.750R
		M	8.257	8.615	7.744	7.751	8.513	8.448	7.605	7.474	7.905	7.225
	60	G	1–3	1–3	1–3	1–3	1–3	2–3	2–3	1–3	1–3	2–3
		N	2	2	3	2	2	3	3	2	2	3
		B	2.800L	2.400L	5.600R	1.600L	.800L	2.335R	4.445R	3.700L	3.200L	3.750R
		M	10.731	11.096	9.923	10.243	11.011	10.665	9.796	9.928	10.371	9.187
	80	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	3	2	2	3	3	2	2	3
		B	2.800L	2.400L	5.600R	1.600L	.800L	4.800R	5.800R	3.700L	3.200L	6.600R
		M	15.698	16.072	14.792	15.232	16.008	15.488	14.621	14.871	15.328	13.945
	100	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
		N	2	2	3	2	2	3	3	2	2	3
		B	2.800L	2.400L	5.600R	1.600L	.800L	4.800R	5.800R	3.700L	3.200L	6.600R
		M	20.678	21.058	19.714	20.226	21.006	20.430	19.536	19.837	20.302	18.836

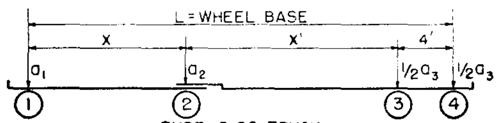
TABLE 7.3 (Continued)

Truck No.		111	112	113	114	115	116	117	118	119	120
Wh. Base	L	36	36	40	40	40	40	40	40	40	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	20	20	24	24	24	24	24	24	24	28
Load	a_1	.20	.20	.10	.10	.10	.10	.20	.20	.20	.10
On	a_2	.40	.50	.30	.40	.45	.50	.30	.40	.50	.30
Axles	a_3	.40	.30	.60	.50	.45	.40	.50	.40	.30	.60
	G	3	2	3	3	3	2	3	3	2	3
Span-Feet 10	N	3	2	3	3	3	2	3	3	2	3
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	1.250	1.500	1.250	1.125	1.250	1.250	1.000	1.250	1.500
	G	3	2	3	3	3	2	3	3	2	3
20	N	3	2	3	3	3	2	3	3	2	3
	B	0	0	0	0	0	0	0	0	0	0
	M	2.000	2.500	3.000	2.500	2.250	2.500	2.500	2.000	2.500	3.000
	G	1–2	1–2	3	3	3	2	3	1–2	1–2	3
30	N	2	2	3	3	3	2	3	2	2	3
	B	2.665R	2.285R	0	0	0	0	0	2.665R	2.285R	0
	M	3.043	3.772	4.500	3.750	3.375	3.750	3.750	3.043	3.772	4.500
	G	1–3	1–2	3	3	1–2	1–2	3	1–2	1–2	3
40	N	2	2	3	3	2	2	3	2	2	3
	B	2.400L	2.285R	0	0	1.455R	1.335R	0	2.665R	2.285R	0
	M	4.544	5.492	6.000	5.000	4.729	5.226	5.000	4.508	5.492	6.000
	G	1–3	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3	3
50	N	2	2	3	3	2	2	3	2	2	3
	B	2.400L	1.400L	4.000R	5.335R	4.600L	4.000L	4.500R	3.200L	2.000R	0
	M	7.015	7.939	7.938	6.961	6.723	7.220	6.724	6.305	7.380	7.500
	G	1–3	1–3	2–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3
60	N	2	2	3	3	2	2	3	2	2	3
	B	2.400L	1.400L	4.000R	5.335R	4.600L	4.000L	4.500R	3.200L	2.000L	4.665R
	M	9.496	10.433	10.140	9.125	9.153	9.667	8.670	8.771	9.867	9.628
	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
80	N	2	2	3	3	2	2	3	2	2	3
	B	2.400L	1.400L	5.600R	6.800R	4.600L	4.000L	7.600R	3.200L	2.000L	6.400R
	M	14.472	15.425	14.792	13.778	14.065	14.600	13.122	13.728	14.850	14.112
	G	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3	1–3
100	N	2	2	3	3	2	2	3	2	2	3
	B	2.400L	1.400L	5.600R	6.800R	4.600L	4.000L	7.600R	3.200L	2.000L	6.400R
	M	19.458	20.420	19.714	18.662	19.012	19.560	17.978	18.702	19.840	19.010

Truck No.		121	122	123	124	125	126
Wh. Base	L	44	44	44	44	44	44
Axle	X	16	16	16	16	16	16
Spacing	X′	28	28	28	28	28	28
Load	a_1	.10	.10	.10	.20	.20	.20
On	a_2	.40	.45	.50	.30	.40	.50
Axles	a_3	.50	.45	.40	.50	.40	.30
	G	3	3	2	3	3	2
Span-Feet 10	N	3	3	2	3	3	2
	B	0	0	0	0	0	0
	M	1.250	1.125	1.250	1.250	1.000	1.250
	G	3	3	2	3	3	2
20	N	3	3	2	3	3	2
	B	0	0	0	0	0	0
	M	2.500	2.250	2.500	2.500	2.000	2.500
	G	3	3	2	3	1–2	1–2
30	N	3	3	2	3	2	2
	B	0	0	0	0	2.665R	2.285R
	M	3.750	3.375	3.750	3.750	3.043	3.772
	G	3	1–2	1–2	3	1–2	1–2
40	N	3	2	2	3	2	2
	B	0	1.455R	1.335R	0	2.665R	2.285R
	M	5.000	4.729	5.226	5.000	4.508	5.492
	G	2–3	1–2	1–2	3	1–2	1–2
50	N	3	2	2	3	2	2
	B	1.220L	1.455R	1.335R	0	2.665R	2.285R
	M	6.349	6.098	6.721	6.250	5.986	7.223
	G	2–3	1–3	1–3	2–3	1–3	1–3
60	N	3	2	2	3	2	2
	B	1.220L	5.500L	4.800L	5.250R	4.000L	2.600L
	M	8.483	8.404	8.984	8.167	8.067	9.313
	G	1–3	1–3	1–3	1–3	1–3	1–3
80	N	3	2	2	3	2	2
	B	7.800R	5.500L	4.800L	8.600R	4.000L	2.600L
	M	12.961	13.278	13.888	12.325	13.000	14.285
	G	1–3	1–3	1–3	1–3	1–3	1–3
100	N	3	2	2	3	2	2
	B	7.800R	5.500L	4.800L	8.600R	4.000L	2.600L
	M	17.808	18.203	18.830	17.140	17.960	19.268

Table 7.4

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S2 TRUCK

One hundred eight variations in the Type 2-S2 truck are given in this Table. Each truck number, from 1 to 108, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base L		20	20	20	20	20	20	24	24	24	24
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	8	8	8	8	8	8	12	12	12	12
Load	a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
On	a_2	.30	.40	.50	.30	.40	.50	.30	.40	.50	.30
Axles	a_3	.60	.50	.40	.50	.40	.30	.60	.50	.40	.50
Span-Feet 10	G	3–4	2	2	3–4	2	2	3–4	2	2	3–4
	N	4	2	2	4	2	2	4	2	2	4
	B	1.000R	0	0	1.000R	0	0	1.000R	0	0	1.000R
	M	.960	1.000	1.250	.800	1.000	1.250	9.60	1.000	1.250	.800
20	G	2–4	2–4	1–3	2–4	1–3	1–3	3–4	1–2	1–2	3–4
	N	3	3	2	3	2	2	4	2	2	4
	B	.667R	1.220R	.500L	.875R	0	.236R	1.000R	.800R	.667R	1.000R
	M	2.721	2.469	2.810	2.331	2.400	2.853	2.430	2.116	2.614	2.025
30	G	1–4	1–4	1–4	1–4	1–4	1–4	2–4	2–4	1–4	2–4
	N	3	2	2	3	2	2	3	3	2	3
	B	1.400R	2.100L	1.600L	2.300R	1.200L	.700L	1.333R	2.111R	2.400L	1.625R
	M	4.965	4.747	5.186	4.376	4.748	5.216	4.402	3.985	4.492	3.770
40	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	2	3	2	2	3	2	2	3
	B	1.400R	2.100L	1.600L	2.300R	1.200L	.700L	2.200R	3.100L	2.400L	3.300R
	M	7.449	7.210	7.664	6.832	7.236	7.712	6.721	6.340	6.944	5.972
50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	2	3	2	2	3	2	2	3
	B	1.400R	2.100L	1.600L	2.300R	1.200L	.700L	2.200R	3.100L	2.400L	3.300R
	M	9.939	9.688	10.151	9.306	9.729	10.210	9.197	8.792	9.415	8.418
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	2	3	2	2	3	2	2	3
	B	1.400R	2.100L	1.600L	2.300R	1.200L	.700L	2.200R	3.100L	2.400L	3.300R
	M	12.433	12.174	12.643	11.788	12.224	12.708	11.681	11.260	11.896	10.882
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	2	3	2	2	3	2	2	3
	B	1.400R	2.100L	1.600L	2.300R	1.200L	.700L	2.200R	3.100L	2.400L	3.300R
	M	17.425	17.155	17.632	16.766	17.218	17.706	16.661	16.220	16.872	15.836
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	2	3	2	2	3	2	2	3
	B	1.400R	2.100L	1.600L	2.300R	1.200L	.700L	2.200R	3.100L	2.400L	3.300R
	M	22.420	22.144	22.626	21.753	22.214	22.705	21.648	21.196	21.858	20.809

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.4 (Continued)

		11	12	13	14	15	16	17	18	19	20
Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	24	24	28	28	28	28	28	28	32	32
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	12	12	16	16	16	16	16	16	20	20
Load	a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.40	.50	.30	.40	.50	.30	.40	.50	.30	.40
Axles	a_3	.40	.30	.60	.50	.40	.50	.40	.30	.60	.50
Span-Feet 10	G	2	2	3–4	2	2	3–4	2	2	3–4	2
	N	2	2	4	2	2	4	2	2	4	2
	B	0	0	1.000R	0	0	1.000R	0	0	1.000R	0
	M	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250	.960	1.000
20	G	1–2	1–2	3–4	1–2	1–2	3–4	1–2	1–2	3–4	1–2
	N	2	2	4	2	2	4	2	2	4	2
	B	1.333R	1.143R	1.000R	.800R	.667R	1.000R	1.333R	1.143R	1.000R	.800R
	M	2.252	2.745	2.430	2.116	2.614	2.025	2.252	2.745	2.430	2.116
30	G	1–4	1–3	3–4	1–2	1–2	3–4	1–2	1–2	3–4	1–2
	N	2	2	4	2	2	4	2	2	4	2
	B	2.000L	.118L	1.000R	.800R	.667R	1.000R	1.333R	1.143R	1.000R	.800R
	M	4.033	4.673	3.920	3.361	4.110	3.267	3.734	4.480	3.920	3.361
40	G	1–4	1–4	2–4	1–4	1–4	2–4	1–4	1–4	2–4	2–4
	N	2	2	3	2	2	3	2	2	3	3
	B	2.000L	1.300L	2.000R	4.100L	3.200L	2.375R	2.800L	1.900L	2.667R	3.889R
	M	6.500	7.142	6.090	5.520	6.256	5.212	5.796	6.590	5.561	4.839
50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	2	2	3	2	2	3	2
	B	2.000L	1.300L	3.000R	4.100L	3.200L	4.300R	2.800L	1.900L	3.800R	5.100L
	M	8.980	9.634	8.480	7.936	8.705	7.570	8.257	9.072	7.789	7.120
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	2	2	3	2	2	3	2
	B	2.000L	1.300L	3.000R	4.100L	3.200L	4.300R	2.800L	1.900L	3.800R	5.100L
	M	11.467	12.128	10.950	10.380	11.171	10.008	10.731	11.560	10.241	9.534
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	2	2	3	2	2	3	2
	B	2.000L	1.300L	3.000R	4.100L	3.200L	4.300R	2.800L	1.900L	3.800R	5.100L
	M	16.450	17.121	15.913	15.310	16.128	14.931	15.698	16.545	15.181	14.425
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	2	2	3	2	2	3	2
	B	2.000L	1.300L	3.000R	4.100L	3.200L	4.300R	2.800L	1.900L	3.800R	5.100L
	M	21.440	22.117	20.890	20.268	21.102	19.885	20.678	21.536	20.144	19.360

		21	22	23	24	25	26	27	28	29	30
Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	32	32	32	32	36	36	36	36	36	36
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	20	20	20	20	24	24	24	24	24	24
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
On	a_2	.50	.30	.40	.50	.30	.40	.50	.30	.40	.50
Axles	a_3	.40	.50	.40	.30	.60	.50	.40	.50	.40	.30
Span-Feet 10	G	2	3–4	2	2	3–4	2	2	3–4	2	2
	N	2	4	2	2	4	2	2	4	2	2
	B	0	1.000R	0	0	1.000R	0	0	1.000R	0	0
	M	1.250	.800	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250
20	G	1 2	3–4	1–2	1–2	3–4	1–2	1–2	3–4	1–2	1–2
	N	2	4	2	2	4	2	2	4	2	2
	B	.667R	1.000R	1.333R	1.143R	1.000R	.800R	.667R	1.000R	1.333R	1.143R
	M	2.614	2.025	2.252	2.745	2.430	2.116	2.614	2.025	2.252	2.745
30	G	1–2	3–4	1–2	1–2	3–4	1–2	1–2	3–4	1–2	1–2
	N	2	4	2	2	4	2	2	4	2	2
	B	.667R	1.000R	1.333R	1.143R	1.000R	.800R	.667R	1.000R	1.333R	1.143R
	M	4.110	3.267	3.734	4.480	3.920	3.361	4.110	3.267	3.734	4.480
40	G	1–3	2–4	1–3	1–2	3–4	1–2	1–2	3–4	1–2	1–2
	N	2	3	2	2	4	2	2	4	2	2
	B	2.000L	3.125R	1.500L	1.143R	1.000R	.800R	.667R	1.000R	1.333R	1.143R
	M	5.680	4.695	5.245	6.222	5.415	4.608	5.608	4.513	5.226	6.222
50	G	1–4	1–4	1–4	1–4	2–4	2–4	1–4	2–4	1–4	1–3
	N	2	3	2	2	3	3	2	3	2	2
	B	4.000L	5.300R	3.600L	2.500L	3.333R	4.778R	4.800L	3.875R	4.400L	1.177L
	M	8.020	6.762	7.559	8.525	7.249	6.359	7.361	6.140	6.887	8.050
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	2	2	3	2	2
	B	4.000L	5.300R	3.600L	2.500L	4.600R	6.100L	4.800L	6.300R	4.400L	3.100L
	M	10.467	9.168	10.016	11.004	9.553	8.720	9.784	8.361	9.323	10.460
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	2	2	3	2	2
	B	4.000L	5.300R	3.600L	2.500L	4.600R	6.100L	4.800L	6.300R	4.400L	3.100L
	M	15.400	14.051	14.962	15.978	14.465	13.565	14.688	13.196	14.242	15.420
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	2	2	3	2	2
	B	4.000L	5.300R	3.600L	2.500L	4.600R	6.100L	4.800L	6.300R	4.400L	3.100L
	M	20.360	18.981	19.930	20.963	19.412	18.472	19.630	18.097	19.194	20.396

TABLE 7.4 (Continued)

Truck No.			31	32	33	34	35	36	37	38	39	40
Wh. Base L			40	40	40	40	40	40	24	24	24	24
Axle		X	8	8	8	8	8	8	12	12	12	12
Spacing		X′	28	28	28	28	28	28	8	8	8	8
Load		a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
On		a_2	.30	.40	.50	.30	.40	.50	.30	.40	.50	.30
Axles		a_3	.60	.50	.40	.50	.40	.30	.60	.50	.40	.50
Span-Feet	10	G	3–4	2	2	3–4	2	2	3–4	2	2	3–4
		N	4	2	2	4	2	2	4	2	2	4
		B	1.000R	0	0	1.000R	0	0	1.000R	0	0	1.000R
		M	.960	1.000	1.250	.800	1.000	1.250	.960	1.000	1.250	.800
	20	G	3–4	1–2	1–2	3–4	1–2	1–2	2–4	2–4	2–3	2–4
		N	4	2	2	4	2	2	3	3	2	3
		B	1.000R	.800R	.667R	1.000R	1.333R	1.143R	.667R	1.222R	1.143L	.875R
		M	2.430	2.116	2.614	2.025	2.252	2.745	2.721	2.469	2.745	2.331
	30	G	3–4	1–2	1–2	3–4	1–2	1–2	2–4	2–4	1–4	2–4
		N	4	2	2	4	2	2	3	3	2	3
		B	1.000R	.800R	.667R	1.000R	1.333R	1.143R	.667R	1.222R	1.400L	.875R
		M	3.920	3.361	4.110	3.267	3.734	4.480	4.965	4.697	4.965	4.320
	40	G	3–4	1–2	1–2	3–4	1–2	1–2	1–4	1–4	1–4	1–4
		N	4	2	2	4	2	2	3	3	2	3
		B	1.000R	.800R	.667R	1.000R	1.333R	1.143R	1.600R	2.100R	1.400L	2.700R
		M	5.415	4.608	5.608	4.513	5.226	6.222	7.264	7.010	7.449	6.482
	50	G	3–4	1–2	1–2	3–4	1–2	1–2	1–4	1–4	1–4	1–4
		N	4	2	2	4	2	2	3	3	2	3
		B	1.000R	.800R	.667R	1.000R	1.333R	1.143R	1.600R	2.100R	1.400L	2.700L
		M	6.912	5.857	7.106	5.760	6.721	7.967	9.751	9.488	9.939	8.946
	60	G	2–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	2	2	3	2	2	3	3	2	3
		B	4.000R	7.100L	5.600L	7.300R	5.200L	3.700L	1.600R	2.100R	1.400L	2.700R
		M	8.940	7.940	9.123	7.588	8.651	9.928	12.243	11.974	12.433	11.422
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	2	2	3	2	2	3	3	2	3
		B	5.400R	7.100L	5.600L	7.300R	5.200L	3.700L	1.600R	2.100R	1.400L	2.700R
		M	13.765	12.730	13.992	12.366	13.538	14.871	17.232	16.955	17.425	16.391
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	2	2	3	2	2	3	3	2	3
		B	5.400R	7.100L	5.600L	7.300R	5.200L	3.700L	1.600R	2.100R	1.400L	2.700R
		M	18.692	17.604	18.914	17.233	18.470	19.837	22.226	21.944	22.420	21.373

Truck No.			41	42	43	44	45	46	47	48	49	50
Wh. Base L			24	24	28	28	28	28	28	28	32	32
Axle		X	12	12	12	12	12	12	12	12	12	12
Spacing		X′	8	8	12	12	12	12	12	12	16	16
Load		a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
On		a_2	.40	.50	.30	.40	.50	.30	.40	.50	.30	.40
Axles		a_3	.40	.30	.60	.50	.40	.50	.40	.30	.60	.50
Span-Feet	10	G	2	2	3–4	2	2	3–4	2	2	3–4	2
		N	2	2	4	2	2	4	2	2	4	2
		B	0	0	1.000R	0	0	1.000R	0	0	1.000R	0
		M	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250	.960	1.000
	20	G	2–3	2–3	3–4	3–4	2	3–4	2	2	3–4	3–4
		N	2	2	4	4	2	4	2	2	4	4
		B	1.333L	.923L	1.000R	1.000R	0	1.000R	0	0	1.000R	1.000R
		M	2.252	2.677	2.430	2.025	2.500	2.025	2.000	2.500	2.430	2.025
	30	G	1–4	1–4	2–4	2–4	1–4	2–4	1–3	1–3	3–4	2–4
		N	2	2	3	3	2	3	2	2	4	3
		B	.800L	.300L	1.333R	2.111R	2.200L	1.625R	0	.353R	1.000R	3.000R
		M	4.321	4.803	4.402	3.985	4.261	3.770	3.600	4.277	3.920	3.320
	40	G	1–4	1–4	2–4	2–4	1–4	2–4	1–4	1–4	2–4	2–4
		N	2	2	3	3	2	3	2	2	3	3
		B	.800L	.300L	1.333R	2.111R	2.200L	1.625R	1.600L	.900L	2.000R	3.000R
		M	6.816	7.302	6.639	6.201	6.721	5.753	6.064	6.720	6.090	5.503
	50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	.800L	.300L	2.400R	3.100R	2.200L	3.700R	1.600L	.900L	2.000R	4.100R
		M	9.313	9.802	9.015	8.592	9.197	8.074	8.551	9.216	8.322	7.736
	60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	.800L	.300L	2.400R	3.100R	2.200L	3.700R	1.600L	.900L	3.200R	4.100R
		M	11.811	12.302	11.496	11.060	11.681	10.528	11.043	11.714	10.771	10.180
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	.800L	.300L	2.400R	3.100R	2.200L	3.700R	1.600L	.900L	3.200R	4.100R
		M	16.808	17.301	16.472	16.020	16.661	15.471	16.032	16.710	15.728	15.110
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	.800L	.300L	2.400R	3.100R	2.200L	3.700R	1.600L	.900L	3.200R	4.100R
		M	21.806	22.301	21.458	20.996	21.648	20.437	21.026	21.708	20.702	20.068

TABLE 7.4 (Continued)

		51	52	53	54	55	56	57	58	59	60
Truck No.		51	52	53	54	55	56	57	58	59	60
Wh. Base	L	32	32	32	32	36	36	36	36	36	36
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X'	16	16	16	16	20	20	20	20	20	20
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
On	a_2	.50	.30	.40	.50	.30	.40	.50	.30	.40	.50
Axles	a_3	.40	.50	.40	.30	.60	.50	.40	.50	.40	.30
Span-Feet 10	G	2	3–4	2	2	3–4	2	2	3–4	2	2
	N	2	4	2	2	4	2	2	4	2	2
	B	0	1.000R	0	0	1.000R	0	0	1.000R	0	0
	M	1.250	.800	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250
20	G	2	3–4	2	2	3–4	3–4	2	3–4	2	2
	N	2	4	2	2	4	4	2	4	2	2
	B	0	1.000R	0	0	1.000R	1.000R	0	1.000R	0	0
	M	2.500	2.025	2.000	2.500	2.430	2.025	2.500	2.025	2.000	2.500
30	G	1–2	3–4	1–2	1–2	3–4	3–4	1–2	3–4	1–2	1–2
	N	2	4	2	2	4	4	2	4	2	2
	B	1.000R	1.000R	2.000R	1.715R	1.000R	1.000R	1.000R	1.000R	2.000R	1.715R
	M	3.920	3.267	3.380	4.118	3.920	3.267	3.920	3.267	3.380	4.118
40	G	1–4	2–4	1–4	1–4	2–4	2–4	1–3	2–4	1–2	1–2
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	2.375R	2.400L	1.500L	2.667R	3.889R	1.750L	3.125R	2.000R	1.715R
	M	6.025	5.212	5.344	6.156	5.561	4.839	5.462	4.695	4.860	5.851
50	G	1–4	1–4	1–4	1–4	2–4	2–4	1–4	2–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	4.700R	2.400L	1.500L	2.667R	3.889R	3.800L	3.125R	3.200L	2.100L
	M	8.480	7.242	7.815	8.645	7.779	7.021	7.789	6.656	7.105	8.088
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	4.700R	2.400L	1.500L	4.000R	5.100R	3.800L	5.700R	3.200L	2.100L
	M	10.950	9.668	10.296	11.138	10.067	9.334	10.241	8.842	9.571	10.574
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	4.700R	2.400L	1.500L	4.000R	5.100R	3.800L	5.700R	3.200L	2.100L
	M	15.913	14.576	15.272	16.128	15.000	14.225	15.181	13.706	14.528	15.555
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	4.700R	2.400L	1.500L	4.000R	5.100R	3.800L	5.700R	3.200L	2.100L
	M	20.890	19.521	20.258	21.123	19.960	19.160	20.144	18.625	19.502	20.544

Truck No.		61	62	63	64	65	66	67	68	69	70
Wh. Base	L	40	40	40	40	40	40	44	44	44	44
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X'	24	24	24	24	24	24	28	28	28	28
Load	a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
On	a_2	.30	.40	.50	.30	.40	.50	.30	.40	.50	.30
Axles	a_3	.60	.50	.40	.50	.40	.30	.60	.50	.40	.50
Span-Feet 10	G	3–4	2	2	3–4	2	2	3–4	2	2	3–4
	N	4	2	2	4	2	2	4	2	2	4
	B	1.000R	0	0	1.000R	0	0	1.000R	0	0	1.000R
	M	.960	1.000	1.250	.800	1.000	1.250	.960	1.000	1.250	.800
20	G	3–4	3–4	2	3–4	2	2	3–4	3–4	2	3–4
	N	4	4	2	4	2	2	4	4	2	4
	B	1.000R	1.000R	0	1.000R	0	0	1.000R	1.000R	0	1.000R
	M	2.430	2.025	2.500	2.025	2.000	2.500	2.430	2.025	2.500	2.025
30	G	3–4	3–4	1–2	3–4	1–2	1–2	3–4	3–4	1–2	3–4
	N	4	4	2	4	2	2	4	4	2	4
	B	1.000R	1.000R	1.000R	1.000R	2.000R	1.715R	1.000R	1.000R	1.000R	1.000R
	M	3.920	3.267	3.920	3.267	3.380	4.118	3.920	3.267	3.920	3.267
40	G	3–4	3–4	1–2	3–4	1–2	1–2	3–4	3–4	1–2	3–4
	N	4	4	2	4	2	2	4	4	2	4
	B	1.000R	1.000R	1.000R	1.000R	2.000R	1.715R	1.000R	1.000R	1.000R	1.000R
	M	5.415	4.513	5.415	4.513	4.860	5.851	5.415	4.513	5.415	4.513
50	G	2–4	2–4	1–3	2–4	1–3	1–3	3–4	3–4	1–2	3–4
	N	3	3	2	3	2	2	4	4	2	4
	B	3.333R	4.778R	2.250L	3.875R	1.500L	.706L	1.000R	1.000R	1.000R	1.000R
	M	7.249	6.359	7.081	6.140	6.436	7.634	6.912	5.760	6.912	5.760
60	G	2–4	2–4	1–4	2–4	1–4	1–4	2–4	2–4	1–4	2–4
	N	2	3	2	3	2	2	3	3	2	3
	B	3.333R	4.778R	4.600L	3.875R	4.000L	2.700L	4.000R	5.667R	5.400L	4.625R
	M	9.465	8.541	9.553	8.100	8.867	10.022	8.940	7.883	8.886	7.586
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	4.800R	6.100R	4.600L	6.700R	4.000L	2.700L	5.600R	7.100R	5.400L	7.700R
	M	14.288	13.365	14.465	12.861	13.800	14.991	13.592	12.530	13.765	12.041
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	4.800R	6.100R	4.600L	6.700R	4.000L	2.700L	5.600R	7.100R	5.400L	7.700R
	M	19.230	18.272	19.412	17.749	18.760	19.973	18.514	17.404	18.692	16.893

TABLE 7.4 (Continued)

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base L		44	44	28	28	28	28	28	28	32	32
Axle	X	12	12	16	16	16	16	16	16	16	16
Spacing	X'	28	28	8	8	8	8	8	8	12	12
Load	a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.40	.50	.30	.40	.50	.30	.40	.50	.30	.40
Axles	a_3	.40	.30	.60	.50	.40	.50	.40	.30	.60	.50
Span-Feet 10	G	2	2	3–4	2	2	3–4	2	2	3–4	2
	N	2	2	4	2	2	4	2	2	4	2
	B	0	0	1.000R	0	0	1.000R	0	0	1.000R	0
	M	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250	.960	1.000
20	G	2	2	2–4	2–4	2–3	2–4	2–3	2–3	3–4	3–4
	N	2	2	3	3	2	3	2	2	4	4
	B	0	0	.667R	1.222R	1.143L	.875R	1.333L	.923L	1.000R	1.000R
	M	2.000	2.500	2.721	2.469	2.745	2.331	2.252	2.677	2.430	2.025
30	G	1–2	1–2	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.000R	1.715R	.667R	1.222R	2.222L	.875R	2.500L	1.875L	1.333R	2.111R
	M	3.380	4.118	4.965	4.697	4.900	4.320	4.167	4.594	4.402	3.985
40	G	1–2	1–2	2–4	2–4	1–4	2–4	1–4	1–4	2–4	2–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.000R	1.715R	.667R	1.222R	1.200L	.875R	.400L	.100R	1.333R	2.111R
	M	4.860	5.851	7.211	6.935	7.236	6.315	6.404	6.700	6.639	6.201
50	G	1–2	1–2	1–4	1–4	1–4	1–4	1–4	1–4	2–4	2–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.000R	1.715R	1.800R	2.300R	1.200L	3.100R	.400L	.100R	1.333R	2.111R
	M	6.348	7.591	9.565	9.306	9.729	8.592	8.903	9.200	8.881	8.431
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	4.800L	3.300L	1.800R	2.300R	1.200L	3.100R	.400L	.100R	2.600R	3.300R
	M	8.184	9.482	12.054	11.788	12.224	11.060	11.403	11.700	11.313	10.882
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	4.800L	3.300L	1.800R	2.300R	1.200L	3.100R	.400L	.100R	2.600R	3.300R
	M	13.088	14.436	17.041	16.766	17.218	16.020	16.402	16.700	16.285	15.836
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	4.800L	3.300L	1.800R	2.300R	1.200L	3.100R	.400L	.100R	2.600R	3.300R
	M	18.030	19.409	22.032	21.753	22.214	20.996	21.402	21.700	21.268	20.809

Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base L		32	32	32	32	36	36	36	36	36	36
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	12	12	12	12	16	16	16	16	16	16
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
On	a_2	.50	.30	.40	.50	.30	.40	.50	.30	.40	.50
Axles	a_3	.40	.50	.40	.30	.60	.50	.40	.50	.40	.30
Span-Feet 10	G	2	3–4	2	2	3–4	2	2	3–4	2	2
	N	2	4	2	2	4	2	2	4	2	2
	B	0	1.000R	0	0	1.000R	0	0	1.000R	0	0
	M	1.250	.800	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250
20	G	2	3–4	2	2	3–4	3–4	2	3–4	2	2
	N	2	4	2	2	4	4	2	4	2	2
	B	0	1.000R	0	0	1.000R	1.000R	0	1.000R	0	0
	M	2.500	2.025	2.000	2.500	2.430	2.025	2.500	2.025	2.000	2.500
30	G	2–4	2–4	2–4	2–4	3–4	2–4	2–3	3–4	2–3	1–2
	N	2	3	2	2	4	3	2	4	2	2
	B	3.111L	1.625R	3.500L	2.625L	1.000R	3.000R	2.286L	1.000R	2.667L	2.286R
	M	4.241	3.770	3.527	4.084	3.920	3.320	3.772	3.267	3.043	3.772
40	G	1–4	2–4	1–4	1–4	2–4	2–4	1–4	2–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	2.000L	1.625R	1.200L	.500L	2.000R	3.000R	2.800L	2.375R	2.000L	1.100L
	M	6.500	5.753	5.636	6.306	6.090	5.503	5.796	5.212	4.900	5.730
50	G	1–4	2–4	1–4	1–4	2–4	2–4	1–4	2–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	2.000L	1.625R	1.200L	.500L	2.000R	3.000R	2.800L	2.375R	2.000L	1.100L
	M	8.980	7.742	8.129	8.805	8.322	7.712	8.257	7.190	7.380	8.224
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	2.000L	4.100R	1.200L	.500L	3.400R	4.300R	2.800L	5.100R	2.000L	1.100L
	M	11.467	10.180	10.624	11.304	10.593	10.008	10.731	9.334	9.867	10.720
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	2.000L	4.100R	1.200L	.500L	3.400R	4.300R	2.800L	5.100R	2.000L	1.100L
	M	16.450	15.110	15.618	16.303	15.545	14.931	15.698	14.225	14.850	15.715
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	2.000L	4.100R	1.200L	.500L	3.400R	4.300R	2.800L	5.100R	2.000L	1.100L
	M	21.440	20.068	20.614	21.303	20.516	19.885	20.678	19.160	19.840	20.712

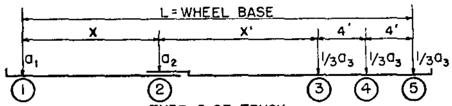
TABLE 7.4 (Continued)

		91	92	93	94	95	96	97	98	99	100
Truck No.		91	92	93	94	95	96	97	98	99	100
Wh. Base	L	40	40	40	40	40	40	44	44	44	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	20	20	20	20	20	20	24	24	24	24
Load	a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
On	a_2	.30	.40	.50	.30	.40	.50	.30	.40	.50	.30
Axles	a_3	.60	.50	.40	.50	.40	.30	.60	.50	.40	.50
Span-Feet 10	G	3–4	2	2	3–4	2	2	3–4	2	2	3–4
	N	4	2	2	4	2	2	4	2	2	4
	B	1.000R	0	0	1.000R	0	0	1.000R	0	0	1.000R
	M	.960	1.000	1.250	.800	1.000	1.250	.960	1.000	1.250	.800
20	G	3–4	3–4	2	3–4	2	2	3–4	3–4	2	3–4
	N	4	4	2	4	2	2	4	4	2	4
	B	1.000R	1.000R	0	1.000R	0	0	1.000R	1.000R	0	1.000R
	M	2.430	2.025	2.500	2.025	2.000	2.500	2.430	2.025	2.500	2.025
30	G	3–4	3–4	2	3–4	1–2	1–2	3–4	3–4	2	3–4
	N	4	4	2	4	2	2	4	4	2	4
	B	1.000R	1.000R	0	1.000R	2.667R	2.286R	1.000R	1.000R	0	1.000R
	M	3.920	3.267	3.750	3.267	3.043	3.772	3.920	3.267	3.750	3.267
40	G	2–4	2–4	1–3	2–4	1–2	1–2	3–4	3–4	1–2	3–4
	N	3	3	2	3	2	2	4	4	2	4
	B	2.667R	3.889R	1.500L	3.125R	2.667R	2.286R	1.000R	1.000R	1.333R	1.000R
	M	5.561	4.839	5.245	4.695	4.508	5.492	5.415	4.513	5.226	4.513
50	G	2–4	2–4	1–4	2–4	1–4	1–4	2–4	2–4	1–4	2–4
	N	3	3	2	3	2	2	3	3	2	3
	B	2.667R	3.889R	3.600L	3.125R	2.800L	1.700L	3.333R	4.778R	4.400L	3.875R
	M	.779	7.021	7.559	6.656	6.657	7.658	7.249	6.359	6.887	6.140
60	G	2–4	2–4	1–4	2–4	1–4	1–4	2–4	2–4	1–4	2–4
	N	3	3	2	3	2	2	3	3	2	3
	B	2.667R	3.889R	3.600L	3.125R	2.800L	1.700L	3.333R	4.778R	4.400L	3.875R
	M	10.008	9.226	10.016	8.630	9.131	10.148	9.465	8.541	9.323	8.100
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	4.200R	5.300R	3.600L	6.100R	2.800L	1.700L	5.000R	6.300R	4.400L	7.100R
	M	14.821	14.051	14.962	13.365	14.098	15.136	14.113	13.196	14.242	12.530
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	4.200R	5.300R	3.600L	6.100R	2.800L	1.700L	5.000R	6.300R	4.400L	7.100R
	M	19.776	18.981	19.930	18.272	19.078	20.129	19.050	18.097	19.194	17.404

Truck No.		101	102	103	104	105	106	107	108
Wh. Base	L	44	44	48	48	48	48	48	48
Axle	X	16	16	16	16	16	16	16	16
Spacing	X′	24	24	28	28	28	28	28	28
Load	a_1	.20	.20	.10	.10	.10	.20	.20	.20
On	a_2	.40	.50	.30	.40	.50	.30	.40	.50
Axles	a_3	.40	.30	.60	.50	.40	.50	.40	.30
Span-Feet 10	G	2	2	3–4	2	2	3–4	2	2
	N	2	2	4	2	2	4	2	2
	B	0	0	1.000R	0	0	1.000R	0	0
	M	1.000	1.250	.960	1.000	1.250	.800	1.000	1.250
20	G	2	2	3–4	3–4	2	3–4	2	2
	N	2	2	4	4	2	4	2	2
	B	0	0	1.000R	1.000R	0	1.000R	0	0
	M	2.000	2.500	2.430	2.025	2.500	2.025	2.000	2.500
30	G	1–2	1–2	3–4	3–4	2	3–4	1–2	1–2
	N	2	2	4	4	2	4	2	2
	B	2.667R	2.286R	1.000R	1.000R	0	1.000R	2.667R	2.286R
	M	3.043	3.772	3.920	3.267	3.750	3.267	3.043	3.772
40	G	1–2	1–2	3–4	3–4	1–2	3–4	1–2	1–2
	N	2	2	4	4	2	4	2	2
	B	2.667R	2.286R	1.000R	1.000R	1.333R	1.000R	2.667R	2.286R
	M	4.508	5.492	5.415	4.513	5.226	4.513	4.508	5.492
50	G	1–3	1–3	3–4	3–4	1–2	3–4	1–2	1–2
	N	2	2	4	4	2	4	2	2
	B	1.000L	.236L	1.000R	1.000R	1.333R	1.000R	2.667R	2.286R
	M	6.016	7.226	6.912	5.760	6.721	5.760	5.986	7.223
60	G	1–4	1–4	2–4	2–4	1–4	2–4	1–4	1–3
	N	2	2	3	3	2	3	2	2
	B	3.600L	2.300L	4.000R	5.667R	5.200L	4.625R	4.400L	.588L
	M	8.416	9.588	8.940	7.883	8.651	7.586	7.723	9.045
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2
	B	3.600L	2.300L	5.800R	7.300R	5.200L	8.100R	4.400L	2.900L
	M	13.362	14.566	13.421	12.366	13.538	11.720	12.642	14.005
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2
	B	3.600L	2.300L	5.800R	7.300R	5.200L	8.100R	4.400L	2.900L
	M	18.330	19.553	18.336	17.233	18.470	16.556	17.594	18.984

Table 7.5

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2-S3 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S3 TRUCK

Ninety variations in the Type 2-S3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

		1	2	3	4	5	6	7	8	9	10
Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	24	24	24	24	24	24	28	28	28	28
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	8	8	8	8	8	8	12	12	12	12
Load	a_1	.100	.10	.10	.20	.20	.20	.100	.10	.10	.20
On	a_2	.225	.30	.40	.20	.30	.40	.225	.30	.40	.20
Axles	a_3	.675	.60	.50	.60	.50	.40	.675	.60	.50	.60
Span-Feet 10	G	3–5	2	2	3–5	2	2	3–5	2	2	3–5
	N	4	2	2	4	2	2	4	2	2	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.788	.750	1.000	.700	.750	1.000	.788	.750	1.000	.700
20	G	3–5	3–5	1–3	3–5	1–3	1–3	3–5	3–5	1–2	3–5
	N	4	4	2	4	2	2	4	4	2	4
	B	0	0	.402L	0	.198R	.366R	0	0	.800R	0
	M	2.475	2.200	2.272	2.200	1.868	2.338	2.475	2.200	2.116	2.200
30	G	2–5	2–5	1–5	2–5	1–5	1–5	2–5	2–5	1–4	2–5
	N	4	3	2	4	2	2	4	3	2	4
	B	1.500R	0	2.604L	1.500R	2.204L	1.596L	2.000R	.667R	2.324L	2.000R
	M	4.568	4.350	4.322	4.060	3.858	4.389	4.170	3.763	3.662	3.706
40	G	1–5	1–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5
	N	3	3	2	3	2	2	4	3	2	3
	B	.350R	.800R	2.604L	1.200R	2.204L	1.596L	2.000R	1.600R	3.605L	2.000R
	M	6.953	6.816	6.766	6.436	6.317	6.868	6.390	6.064	5.920	5.700
50	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	2	3	3	2	3
	B	.350R	.800R	2.604L	1.200R	2.204L	1.596L	1.000R	1.600R	3.605L	2.000R
	M	9.452	9.313	9.232	8.929	8.793	9.355	8.820	8.551	8.355	8.180
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	2	3	3	2	3
	B	.350R	.800R	2.604L	1.200R	2.204L	1.596L	1.000R	1.600R	3.605L	2.000R
	M	11.952	11.811	11.709	11.424	11.277	11.847	11.317	11.043	10.812	10.667
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	2	3	3	2	3
	B	.350R	.800R	2.604L	1.200R	2.204L	1.596L	1.000R	1.600R	3.605L	2.000R
	M	16.952	16.808	16.681	16.418	16.257	16.836	16.313	16.032	15.758	15.650
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	2	3	3	2	3
	B	.350R	.800R	2.604L	1.200R	2.204L	1.596L	1.000R	1.600R	3.605L	2.000R
	M	21.951	21.806	21.664	21.414	21.245	21.830	21.310	21.026	20.725	20.640

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.5 (Continued)

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	28	28	32	32	32	32	32	32	36	36
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X′	12	12	16	16	16	16	16	16	20	20
Load	a_1	.20	.20	.100	.10	.10	.20	.20	.20	.100	.10
On	a_2	.30	.40	.225	.30	.40	.20	.30	.40	.225	.30
Axles	a_3	.50	.40	.675	.60	.50	.60	.50	.40	.675	.60
Span-Feet 10	G	2	2	3–5	2	2	3–5	2	2	3–5	2
	N	2	2	4	2	2	4	2	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.750	1.000	.788	.750	1.000	.700	.750	1.000	.788	.750
20	G	3–5	1–2	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5
	N	4	2	4	4	2	4	4	2	4	4
	B	0	1.333R	0	0	.800R	0	0	1.333R	0	0
	M	1.832	2.253	2.475	2.200	2.116	2.200	1.832	2.253	2.475	2.200
30	G	2–5	1–3	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5
	N	3	2	4	4	2	4	4	2	4	4
	B	.997R	.003R	0	0	.800R	0	0	1.333R	0	0
	M	3.226	3.900	4.163	3.700	3.361	3.700	3.082	3.736	4.163	3.700
40	G	1–5	1–5	2–5	2–5	1–4	2–5	1–4	1–4	3–5	3–5
	N	2	2	4	3	2	4	2	2	4	4
	B	3.205L	2.395L	2.500R	1.333R	3.125L	2.500R	2.645L	1.841L	0	0
	M	5.452	6.149	5.990	5.440	5.131	5.325	4.672	5.539	5.850	5.200
50	G	1–5	1–5	2–5	1–5	1–5	1–5	1–5	1–5	2–5	2–5
	N	2	2	4	3	2	3	2	2	4	3
	B	3.205L	2.395L	2.500R	2.400R	4.606L	2.800R	4.206L	3.193L	3.000R	2.000R
	M	7.900	8.620	8.213	7.815	7.519	7.457	7.048	7.911	7.812	7.122
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	2	3	3	2	3	2	2	3	3
	B	3.205L	2.395L	1.650R	2.400R	4.606L	2.800R	4.206L	3.193L	2.300R	3.200R
	M	10.366	11.101	10.695	10.296	9.948	9.931	9.489	10.377	10.088	9.571
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	2	3	3	2	3	2	2	3	3
	B	3.205L	2.395L	1.650R	2.400R	4.606L	2.800R	4.206L	3.193L	2.300R	3.200R
	M	15.323	16.077	15.684	15.272	14.860	14.898	14.415	15.334	15.066	14.528
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	2	3	3	2	3	2	2	3	3
	B	3.205L	2.395L	1.650R	2.400R	4.606L	2.800R	4.206L	3.193L	2.300R	3.200R
	M	20.298	21.063	20.677	20.258	19.807	19.878	19.371	20.309	20.053	19.502

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	36	36	36	36	40	40	40	40	40	40
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X′	20	20	20	20	24	24	24	24	24	24
Load	a_1	.10	.20	.20	.20	.100	.10	.10	.20	.20	.20
On	a_2	.40	.20	.30	.40	.225	.30	.40	.20	.30	.40
Axles	a_3	.50	.60	.50	.40	.675	.60	.50	.60	.50	.40
Span-Feet 10	G	2	3–5	2	2	3–5	2	2	3–5	2	2
	N	2	4	2	2	4	2	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	.700	.750	1.000	.788	.750	1.000	.700	.750	1.000
20	G	1–2	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5	1–2
	N	2	4	4	2	4	4	2	4	4	2
	B	.800R	0	0	1.333R	0	0	.800R	0	0	1.333R
	M	2.116	2.200	1.832	2.253	2.475	2.200	2.116	2.200	1.832	2.253
30	G	1–2	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5	1–2
	N	2	4	4	2	4	4	2	4	4	2
	B	.800R	0	0	1.333R	0	0	.800R	0	0	1.333R
	M	3.361	3.700	3.082	3.736	4.163	3.700	3.361	3.700	3.082	3.736
40	G	1–3	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5	1–2
	N	2	4	4	2	4	4	2	4	4	2
	B	1.904L	0	0	1.333R	0	0	.800R	0	0	1.333R
	M	4.661	5.200	4.332	5.227	5.850	5.200	4.608	5.200	4.332	5.227
50	G	1–5	2–5	1–5	1–5	3–5	3–5	1–4	3–5	3–5	1–3
	N	2	4	2	2	4	4	2	4	4	2
	B	5.607L	3.000R	5.207L	3.992L	0	0	4.727L	0	0	1.086L
	M	6.722	6.944	6.235	7.227	7.538	6.700	6.047	6.700	5.582	6.784
60	G	1–5	1–5	1–5	1–5	2–5	1–5	1–5	2–5	1–5	1–5
	N	2	3	2	2	4	3	2	4	2	2
	B	5.607L	3.600R	5.207L	3.992L	3.500R	4.000R	6.608L	3.500R	6.208L	4.791L
	M	9.117	9.216	8.645	9.674	9.634	8.867	8.320	8.563	7.834	8.992
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	3	2	2	3	3	2	3	2	2
	B	5.607L	3.600R	5.207L	3.992L	2.950R	4.000R	6.608L	4.400R	6.208L	4.791L
	M	13.986	14.162	13.532	14.607	14.459	13.800	13.138	13.442	12.674	13.896
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	3	2	2	3	3	2	3	2	2
	B	5.607L	3.600R	5.207L	3.992L	2.950R	4.000R	6.608L	4.400R	6.208L	4.791L
	M	18.908	19.130	18.464	19.567	19.437	18.760	18.029	18.394	17.577	18.839

TABLE 7.5 (Continued)

Span-Feet		31	32	33	34	35	36	37	38	39	40
Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	28	28	28	28	28	28	32	32	32	32
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X'	8	8	8	8	8	8	12	12	12	12
Load	a_1	.100	.10	.10	.20	.20	.20	.100	.10	.10	.20
On	a_2	.225	.30	.40	.20	.30	.40	.225	.30	.40	.20
Axles	a_3	.675	.60	.50	.60	.50	.40	.675	.60	.50	.60
10	G	3–5	2	2	3–5	2	2	3–5	2	2	3–5
	N	4	2	2	4	2	2	4	2	2	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.788	.750	1.000	.700	.750	1.000	.788	.750	1.000	.700
20	G	3–5	3–5	2–3	3–5	3–5	2–3	3–5	3–5	2	3–5
	N	4	4	2	4	4	2	4	4	2	4
	B	0	0	1.178L	0	0	.998L	0	0	0	0
	M	2.475	2.200	2.206	2.200	1.832	2.160	2.475	2.200	2.000	2.200
30	G	2–5	2–5	2–5	2–5	2–5	1–4	2–5	2–5	1–4	2–5
	N	4	3	3	4	3	2	4	3	2	4
	B	1.500R	0	.664R	1.500R	.247R	.150L	2.000R	.667R	2.084L	2.000R
	M	4.568	4.350	4.162	4.060	3.800	3.966	4.170	3.763	3.432	3.706
40	G	2–5	1–5	1–5	1–5	1–5	1–5	2–5	2–5	1–5	2–5
	N	4	3	2	3	3	2	4	3	2	4
	B	1.500R	1.000R	2.404L	1.600R	2.196R	1.195L	2.000R	.667R	3.405L	2.000R
	M	6.800	6.625	6.541	6.064	5.921	6.441	6.390	6.011	5.685	5.680
50	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.550R	1.000R	2.404L	1.600R	2.196R	1.195L	1.200R	1.800R	3.405L	2.400R
	M	9.256	9.120	9.012	8.551	8.396	8.934	8.629	8.365	8.127	7.815
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.550R	1.000R	2.404L	1.600R	2.196R	1.195L	1.200R	1.800R	3.405L	2.400R
	M	11.755	11.617	11.493	11.043	10.880	11.429	11.124	10.854	10.589	10.296
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.550R	1.000R	2.404L	1.600R	2.196R	1.195L	1.200R	1.800R	3.405L	2.400R
	M	16.754	16.613	16.469	16.032	15.860	16.423	16.118	15.841	15.540	15.272
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.550R	1.000R	2.404L	1.600R	2.196R	1.195L	1.200R	1.800R	3.405L	2.400R
	M	21.753	21.610	21.454	21.026	20.848	21.419	21.114	20.832	20.511	20.258

Span-Feet		41	42	43	44	45	46	47	48	49	50
Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	32	32	36	36	36	36	36	36	40	40
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X'	12	12	16	16	16	16	16	16	20	20
Load	a_1	.20	.20	.100	.10	.10	.20	.20	.20	.100	.10
On	a_2	.30	.40	.225	.30	.40	.20	.30	.40	.225	.30
Axles	a_3	.50	.40	.675	.60	.50	.60	.50	.40	.675	.60
10	G	2	2	3–5	2	2	3–5	2	2	3–5	2
	N	2	2	4	2	2	4	2	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.750	1.000	.788	.750	1.000	.700	.750	1.000	.788	.750
20	G	3–5	2	3–5	3–5	2	3–5	3–5	2	3–5	3–5
	N	4	2	4	4	2	4	4	2	4	4
	B	0	0	0	0	0	0	0	0	0	0
	M	1.832	2.000	2.475	2.200	2.000	2.200	1.832	2.000	2.475	2.200
30	G	2–5	1–3	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5
	N	3	2	4	4	2	4	4	2	4	4
	B	.997R	.549R	0	0	1.200R	0	0	2.000R	0	0
	M	3.226	3.507	4.163	3.700	3.174	3.700	3.082	3.380	4.163	3.700
40	G	2–5	1–5	2–5	2–5	2–5	2–5	2–5	1–4	3–5	3–5
	N	3	2	4	3	3	4	3	2	4	4
	B	.997R	1.994L	2.500R	1.333R	2.440R	2.500R	1.746R	1.379L	0	0
	M	5.218	5.705	5.990	5.440	4.934	5.325	4.661	5.107	5.850	5.200
50	G	1–5	1–5	2–5	2–5	1–5	2–5	1–5	1–5	2–5	2–5
	N	3	2	4	3	2	4	3	2	4	3
	B	3.195R	1.994L	2.500R	1.333R	4.406L	2.500R	4.194R	2.793L	3.000R	2.000R
	M	7.505	8.186	8.213	7.682	7.283	7.300	6.654	7.463	7.812	7.122
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	2–5	1–5
	N	3	2	3	3	2	3	3	2	4	3
	B	3.195R	1.994L	1.850R	2.600R	4.406L	3.200R	4.194R	2.793L	3.000R	3.400R
	M	9.971	10.672	10.507	10.113	9.718	9.571	9.095	9.937	10.035	9.393
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	2	3	3	2	3	3	2	3	3
	B	3.195R	1.994L	1.850R	2.600R	4.406L	3.200R	4.194R	2.793L	2.500R	3.400R
	M	14.929	15.656	15.493	15.085	14.637	14.528	14.022	14.905	14.878	14.345
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	2	3	3	2	3	3	2	3	3
	B	3.195R	1.994L	1.850R	2.600R	4.406L	3.200R	4.194R	2.793L	2.500R	3.400R
	M	19.903	20.646	20.484	20.068	19.589	19.502	18.978	19.885	19.863	19.316

TABLE 7.5 (Continued)

Truck No.		51	52	53	54	55	56	57	58	59	60
Wh. Base	L	40	40	40	40	44	44	44	44	44	44
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	20	20	20	20	24	24	24	24	24	24
Load	a_1	.10	.20	.20	.20	.100	.10	.10	.20	.20	.20
On	a_2	.40	.20	.30	.40	.225	.30	.40	.20	.30	.40
Axles	a_3	.50	.60	.50	.40	.675	.60	.50	.60	.50	.40
Span-Feet 10	G	2	3–5	2	2	3–5	2	2	3–5	2	2
	N	2	4	2	2	4	2	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	.700	.750	1.000	.788	.750	1.000	.700	.750	1.000
20	G	2	3–5	3–5	2	3–5	3–5	2	3–5	3–5	2
	N	2	4	4	2	4	4	2	4	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	2.000	2.200	1.832	2.000	2.475	2.200	2.000	2.200	1.832	2.000
30	G	1–2	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5	1–2
	N	2	4	4	2	4	4	2	4	4	2
	B	1.200R	0	0	2.000R	0	0	1.200R	0	0	2.000R
	M	3.174	3.700	3.082	3.380	4.163	3.700	3.174	3.700	3.082	3.380
40	G	1–3	3–5	3–5	1–2	3–5	3–5	1–2	3–5	3–5	1–2
	N	2	4	4	2	4	4	2	4	4	2
	B	1.604L	0	0	2.000R	0	0	1.200R	0	0	2.000R
	M	4.443	5.200	4.332	4.860	5.850	5.200	4.418	5.200	4.332	4.860
50	G	1–5	2–5	2–5	1–4	3–5	3–5	1–4	3–5	3–5	1–3
	N	2	4	3	2	4	4	2	4	4	2
	B	5.407L	3.000R	2.495R	1.993L	0	0	4.487L	0	0	.540L
	M	6.478	6.944	6.100	6.767	7.538	6.700	5.811	6.700	5.582	6.371
60	G	1–5	2–5	1–5	1–5	2–5	2–5	1–5	2–5	2–5	1–5
	N	2	4	3	2	4	3	2	4	3	2
	B	5.407L	3.000R	5.193R	3.592L	3.500R	2.667R	6.408L	3.500R	3.244R	4.391L
	M	8.881	8.920	8.252	9.223	9.634	8.807	8.077	8.563	7.542	8.531
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	3	3	2	3	3	2	3	3	2
	B	5.407L	4.000R	5.193R	3.592L	3.150R	4.200R	6.408L	4.800R	6.192R	4.391L
	M	13.759	13.800	13.140	14.170	14.274	13.621	12.906	13.088	12.283	13.450
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	3	3	2	3	3	2	3	3	2
	B	5.407L	4.000R	5.193R	3.592L	3.150R	4.200R	6.408L	4.800R	6.192R	4.391L
	M	18.686	18.760	18.073	19.137	19.249	18.576	17.803	18.030	17.187	18.402

Truck No.		61	62	63	64	65	66	67	68	69	70
Wh. Base	L	32	32	32	32	32	32	36	36	36	36
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	8	8	8	8	8	8	12	12	12	12
Load	a_1	.100	.10	.10	.20	.20	.20	.100	.10	.10	.20
On	a_2	.225	.30	.40	.20	.30	.40	.225	.30	.40	.20
Axles	a_3	.675	.60	.50	.60	.50	.40	.675	.60	.50	.60
Span-Feet 10	G	3–5	2	2	3–5	2	2	3–5	2	2	3–5
	N	4	2	2	4	2	2	4	2	2	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.788	.750	1.000	.700	.750	1.000	.788	.750	1.000	.700
20	G	3–5	3–5	2–3	3–5	3–5	2–3	3–5	3–5	2	3–5
	N	4	4	2	4	4	2	4	4	2	4
	B	0	0	1.178L	0	0	.998L	0	0	0	0
	M	2.475	2.200	2.206	2.200	1.832	2.160	2.475	2.200	2.000	2.200
30	G	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5
	N	4	3	3	4	3	2	4	3	3	4
	B	1.500R	0	.664R	1.500R	.247R	2.996L	2.000R	.667R	1.552R	2.000R
	M	4.568	4.350	4.162	4.060	3.800	3.842	4.170	3.763	3.422	3.706
40	G	2–5	2–5	2–5	2–5	2–5	1–5	2–5	2–5	2–5	2–5
	N	4	3	3	4	3	2	4	3	3	4
	B	1.500R	0	.664R	1.500R	.247R	.795L	2.000R	.667R	1.552R	2.000R
	M	6.800	6.600	6.409	6.045	5.800	6.021	6.390	6.011	5.654	5.680
50	G	1–5	1–5	1–5	1–5	1–5	1–5	2–5	2–5	1–5	2–5
	N	3	3	2	3	3	2	4	3	2	4
	B	.750R	1.200R	2.204L	2.000R	2.596R	.795L	2.000R	.667R	3.205L	2.000R
	M	9.061	8.929	8.793	8.180	8.035	8.518	8.622	8.258	7.900	7.664
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.750R	1.200R	2.204L	2.000R	2.596R	.795L	1.400R	2.000R	3.205L	2.800R
	M	11.559	11.424	11.277	10.667	10.513	11.016	10.933	10.667	10.366	9.931
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.750R	1.200R	2.204L	2.000R	2.596R	.795L	1.400R	2.000R	3.205L	2.800R
	M	16.557	16.418	16.257	15.650	15.485	16.013	15.925	15.650	15.323	14.898
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	3	2	3	3	2	3
	B	.750R	1.200R	2.204L	2.000R	2.596R	.795L	1.400R	2.000R	3.205L	2.800R
	M	21.556	21.414	21.245	20.640	20.468	21.011	20.920	20.640	20.298	19.878

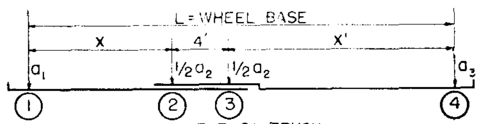
TABLE 7.5 (Continued)

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	36	36	40	40	40	40	40	40	44	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	12	12	16	16	16	16	16	16	20	20
Load	a_1	.20	.20	.100	.10	.10	.20	.20	.20	.100	.10
On	a_2	.30	.40	.225	.30	.40	.20	.30	.40	.225	.30
Axles	a_3	.50	.40	.675	.60	.50	.60	.50	.40	.675	.60
Span-Feet 10	G	2	2	3-5	2	2	3-5	2	2	3-5	2
	N	2	2	4	2	2	4	2	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.750	1.000	.788	.750	1.000	.700	.750	1.000	.788	.750
20	G	3-5	2	3-5	3-5	2	3-5	3-5	2	3-5	3-5
	N	4	2	4	4	2	4	4	2	4	4
	B	0	0	0	0	0	0	0	0	0	0
	M	1.832	2.000	2.475	2.200	2.000	2.200	1.832	2.000	2.475	2.200
30	G	2-5	2-4	3-5	3-5	3-5	3-5	3-5	1-2	3-5	3-5
	N	3	2	4	4	4	4	4	2	4	4
	B	.997R	2.796L	0	0	0	0	0	2.667R	0	0
	M	3.226	3.312	4.163	3.700	3.082	3.700	3.082	3.043	4.163	3.700
40	G	2-5	1-5	2-5	2-5	2-5	2-5	2-5	1-4	3-5	3-5
	N	3	2	4	3	3	4	3	2	4	4
	B	.997R	1.594L	2.500R	1.333R	2.440R	2.500R	1.746R	.917L	0	0
	M	5.218	5.270	5.990	5.440	4.934	5.325	4.661	4.684	5.850	5.200
50	G	2-5	1-5	2-5	2-5	2-5	2-5	2-5	1-5	2-5	2-5
	N	3	2	4	3	3	4	3	2	4	3
	B	.997R	1.594L	2.500R	1.333R	2.440R	2.500R	1.746R	2.393L	3.000R	2.000R
	M	7.214	7.757	8.213	7.682	7.158	7.300	6.648	7.022	7.812	7.122
60	G	1-5	1-5	2-5	1-5	1-5	2-5	1-5	1-5	2-5	2-5
	N	3	2	4	3	2	4	3	2	4	3
	B	3.595R	1.594L	2.500R	2.800R	4.206L	2.500R	4.595R	2.393L	3.000R	2.000R
	M	9.617	10.249	10.444	9.931	9.489	9.283	8.754	9.503	10.035	9.360
80	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	2	3	3	2	3	3	2	3	3
	B	3.595R	1.594L	2.050R	2.800R	4.206L	3.600R	4.595R	2.393L	2.700R	3.600R
	M	14.563	15.238	15.303	14.898	14.415	14.162	13.666	14.479	14.691	14.162
100	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	2	3	3	2	3	3	2	3	3
	B	3.595R	1.594L	2.050R	2.800R	4.206L	3.600R	4.595R	2.393L	2.700R	3.600R
	M	19.531	20.232	20.293	19.878	19.371	19.130	18.614	19.465	19.673	19.130

Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	44	44	44	44	48	48	48	48	48	48
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	20	20	20	20	24	24	24	24	24	24
Load	a_1	.10	.20	.20	.20	.100	.10	.10	.20	.20	.20
On	a_2	.40	.20	.30	.40	.225	.30	.40	.20	.30	.40
Axles	a_3	.50	.60	.50	.40	.675	.60	.50	.60	.50	.40
Span-Feet 10	G	2	3-5	2	2	3-5	2	2	3-5	2	2
	N	2	4	2	2	4	2	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	.700	.750	1.000	.788	.750	1.000	.700	.750	1.000
20	G	2	3-5	3-5	2	3-5	3-5	2	3-5	3-5	2
	N	2	4	4	2	4	4	2	4	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	2.000	2.200	1.832	2.000	2.475	2.200	2.000	2.200	1.832	2.000
30	G	3-5	3-5	3-5	1-2	3-5	3-5	3-5	3-5	3-5	1-2
	N	4	4	4	2	4	4	4	4	4	2
	B	0	0	0	2.667R	0	0	0	0	0	2.667R
	M	3.082	3.700	3.082	3.043	4.163	3.700	3.082	3.700	3.082	3.043
40	G	3-5	3-5	3-5	1-2	3-5	3-5	3-5	3-5	3-5	1-2
	N	4	4	4	2	4	4	4	4	4	2
	B	0	0	0	2.667R	0	0	0	0	0	2.667R
	M	4.332	5.200	4.332	4.507	5.850	5.200	4.332	5.200	4.332	4.507
50	G	2-5	2-5	2-5	1-4	3-5	3-5	2-5	3-5	3-5	1-2
	N	3	4	3	2	4	4	3	4	4	2
	B	3.328R	3.000R	2.495R	1.531L	0	0	4.216R	0	0	2.667R
	M	6.451	6.944	6.100	6.340	7.538	6.700	5.772	6.700	5.582	5.986
60	G	2-5	2-5	2-5	1-5	2-5	2-5	2-5	2-5	2-5	1-5
	N	3	4	3	2	4	3	3	4	3	2
	B	3.328R	3.000R	2.495R	3.191L	3.500R	2.667R	4.216R	3.500R	3.244R	3.990L
	M	8.667	8.920	8.083	8.779	9.634	8.807	7.969	8.563	7.542	8.075
80	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	2	3	3	2	3	3	2	3	3	2
	B	5.207L	4.400R	5.593R	3.191L	3.350R	4.400R	6.208L	5.200R	6.592R	3.990L
	M	13.532	13.442	12.794	13.736	14.090	13.442	12.674	12.738	11.948	13.009
100	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	2	3	3	2	3	3	2	3	3	2
	B	5.207L	4.400R	5.593R	3.191L	3.350R	4.400R	6.208L	5.200R	6.592R	3.990L
	M	18.464	18.394	17.716	18.711	19.062	18.394	17.577	17.670	16.839	17.969

Table 7.6

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S1 TRUCK

Ninety variations in the Type 3-S1 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	24	24	24	24	24	24	28	28	28	28
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	12	12	12	12	12	12	16	16	16	16
Load	a_1	.10	.10	.10	.20	.20	.200	.10	.10	.10	.20
On	a_2	.40	.50	.60	.40	.50	.534	.40	.50	.60	.40
Axles	a_3	.50	.40	.30	.40	.30	.266	.50	.40	.30	.40
Span-Feet 10	G	4	4	2–3	4	2–3	2–3	4	4	2–3	4
	N	4	4	3	4	3	3	4	4	3	4
	B	0	0	1.000R	0	1.000R	1.000R	0	0	1.000R	0
	M	1.250	1.000	.960	1.000	.800	.854	1.250	1.000	.960	1.000
20	G	4	1–3	1–3	4	1–3	1–3	4	1–3	1–3	4
	N	4	2	2	4	2	2	4	2	2	4
	B	0	.167L	.286L	0	.429R	.363R	0	.167L	.286L	0
	M	2.500	2.101	2.503	2.000	2.207	2.341	2.500	2.101	2.503	2.000
30	G	2–4	1–4	1–4	2–4	1–4	1–3	3–4	1–3	1–3	1–3
	N	4	3	3	4	3	2	4	2	2	2
	B	3.111R	1.300L	.600L	3.500R	.100L	.363R	2.286R	.167L	.286L	.667R
	M	4.241	4.056	4.512	3.526	4.000	4.174	3.772	3.600	4.252	3.309
40	G	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	3.111R	1.300L	.600L	.800L	.100L	.132R	4.000R	2.100L	1.200L	1.600L
	M	6.418	6.542	7.009	6.016	6.500	6.664	5.760	5.810	6.436	5.264
50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.000R	1.300L	.600L	.800L	.100L	.132R	5.000R	2.100L	1.200L	1.600L
	M	8.820	9.034	9.507	8.513	9.000	9.164	8.000	8.288	8.929	7.751
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.000R	1.300L	.600L	.800L	.100L	.132R	5.000R	2.100L	1.200L	1.600L
	M	11.267	11.528	12.006	11.011	11.500	11.664	10.417	10.774	11.424	10.243
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.000R	1.300L	.600L	.800L	.100L	.132R	5.000R	2.100L	1.200L	1.600L
	M	16.200	16.521	17.005	16.008	16.500	16.664	15.313	15.755	16.418	15.232
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.000R	1.300L	.600L	.800L	.100L	.132R	5.000R	2.100L	1.200L	1.600L
	M	21.160	21.517	22.004	21.006	21.500	21.664	20.250	20.744	21.414	20.226

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.6 (Continued)

Span-Feet		11	12	13	14	15	16	17	18	19	20
Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	28	28	32	32	32	32	32	32	36	36
Axle Spacing	X	8	8	8	8	8	8	8	8	8	8
	X'	16	16	20	20	20	20	20	20	24	24
Load On Axles	a_1	.20	.200	.10	.10	.10	.20	.20	.200	.10	.10
	a_2	.50	.534	.40	.50	.60	.40	.50	.534	.40	.50
	a_3	.30	.266	.50	.40	.30	.40	.30	.266	.50	.40
10	G	2–3	2–3	4	4	2–3	4	2–3	2–3	4	4
	N	3	3	4	4	3	4	3	3	4	4
	B	1.000R	1.000R	0	0	1.000R	0	1.000R	1.000R	0	0
	M	.800	.854	1.250	1.000	.960	1.000	.800	.854	1.250	1.000
20	G	1–3	1–3	4	1–3	1–3	4	1–3	1–3	4	1–3
	N	2	2	4	2	2	4	2	2	4	2
	B	.429R	.363R	0	.167L	.286L	0	.429R	.363R	0	.167L
	M	2.207	2.341	2.500	2.101	2.503	2.000	2.207	2.341	2.500	2.101
30	G	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3	4	1–3
	N	2	2	4	2	2	2	2	2	4	2
	B	.429R	.363R	0	.167L	.286L	.667R	.429R	.363R	0	.167L
	M	3.955	4.174	3.750	3.600	4.252	3.309	3.955	4.174	3.750	3.600
40	G	1–4	1–4	3–4	1–4	1–3	1–3	1–3	1–3	4	1–3
	N	3	3	4	3	2	2	2	2	4	2
	B	.700L	.402L	2.857R	2.900L	.286L	.667R	.429R	.363R	0	.167L
	M	5.912	6.135	5.143	5.110	6.002	4.807	5.703	6.008	5.000	5.100
50	G	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.700L	.402L	4.889R	2.900L	1.800L	2.400L	1.300L	.935L	5.778R	3.700L
	M	8.410	8.634	7.280	7.568	8.365	7.015	7.834	8.115	6.651	6.874
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.700L	.402L	6.000R	2.900L	1.800L	2.400L	1.300L	.935L	7.000R	3.700L
	M	10.908	11.133	9.600	10.040	10.854	9.496	10.328	10.612	8.817	9.328
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.700L	.402L	6.000R	2.900L	1.800L	2.400L	1.300L	.935L	7.000R	3.700L
	M	15.906	16.133	14.450	15.005	15.841	14.472	15.321	15.608	13.613	14.271
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.700L	.402L	6.000R	2.900L	1.800L	2.400L	1.300L	.935L	7.000R	3.700L
	M	20.905	21.132	19.360	19.984	20.832	19.458	20.317	20.606	18.490	19.237

Span-Feet		21	22	23	24	25	26	27	28	29	30
Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	36	36	36	36	40	40	40	40	40	40
Axle Spacing	X	8	8	8	8	8	8	8	8	8	8
	X'	24	24	24	24	28	28	28	28	28	28
Load On Axles	a_1	.10	.20	.20	.200	.10	.10	.10	.20	.20	.200
	a_2	.60	.40	.50	.534	.40	.50	.60	.40	.50	.534
	a_3	.30	.40	.30	.266	.50	.40	.30	.40	.30	.266
10	G	2–3	4	2–3	2–3	4	4	2–3	4	2–3	2–3
	N	3	4	3	3	4	4	3	4	3	3
	B	1.000R	0	1.000R	1.000R	0	0	1.000R	0	1.000R	1.000R
	M	.960	1.000	.800	.854	1.250	1.000	.960	1.000	.800	.854
20	G	1–3	4	1–3	1–3	4	1–3	1–3	4	1–3	1–3
	N	2	4	2	2	4	2	2	4	2	2
	B	.286L	0	.429R	.363R	0	.167L	.286L	0	.429R	.363R
	M	2.503	2.000	2.207	2.341	2.500	2.101	2.503	2.000	2.207	2.341
30	G	1–3	1–3	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	4	2	2	2	2	2
	B	.286L	.667R	.429R	.363R	0	.167L	.286L	.667R	.429R	.363R
	M	4.252	3.309	3.955	4.174	3.750	3.600	4.252	3.309	3.955	4.174
40	G	1–3	1–3	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	4	2	2	2	2	2
	B	.286L	.667R	.429R	.363R	0	.167L	.286L	.667R	.429R	.363R
	M	6.002	4.807	5.703	6.008	5.000	5.100	6.002	4.807	5.703	6.008
50	G	1–4	1–4	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	3	3	2	2	4	2	2	2	2	2
	B	2.400L	3.200L	.429R	.363R	0	.167L	.286L	.667R	.429R	.363R
	M	7.815	6.305	7.453	7.843	6.250	6.600	7.751	6.305	7.453	7.843
60	G	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–3
	N	3	3	3	3	4	3	3	3	3	2
	B	2.400L	3.200L	1.900L	1.469L	6.667R	4.500L	3.000L	4.000L	2.500L	.363R
	M	10.296	8.771	9.760	10.099	8.167	8.638	9.750	8.067	9.204	9.678
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	4	3	3	3	3	3
	B	2.400L	3.200L	1.900L	1.469L	8.000R	4.500L	3.000L	4.000L	2.500L	2.002L
	M	15.272	13.728	14.745	15.090	12.800	13.553	14.713	13.000	14.178	14.580
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	4	3	3	3	3	3
	B	2.400L	3.200L	1.900L	1.469L	8.000R	4.500L	3.000L	4.000L	2.500L	2.002L
	M	20.258	18.702	19.736	20.085	17.640	18.503	19.690	17.960	19.163	19.570

TABLE 7.6 (Continued)

Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	28	28	28	28	28	28	32	32	32	32
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	12	12	12	12	12	12	16	16	16	16
Load	a_1	.10	.10	.10	.20	.20	.200	.10	.10	.10	.20
On	a_2	.40	.50	.60	.40	.50	.534	.40	.50	.60	.40
Axles	a_3	.50	.40	.30	.40	.30	.266	.50	.40	.30	.40
Span-Feet 10	G	4	4	2–3	4	2–3	2–3	4	4	2–3	4
	N	4	4	3	4	3	3	4	4	3	4
	B	0	0	1.000R	0	1.000R	1.000R	0	0	1.000R	0
	M	1.250	1.000	.960	1.000	.800	.854	1.250	1.000	.960	1.000
20	G	4	2–3	2–3	4	2–3	2–3	4	2–3	2–3	4
	N	4	3	3	4	3	3	4	3	3	4
	B	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0
	M	2.500	2.025	2.430	2.000	2.025	2.163	2.500	2.025	2.430	2.000
30	G	2–4	2–4	2–4	2–4	2–4	2–4	3–4	1–3	1–3	3–4
	N	4	3	3	4	3	3	4	2	2	4
	B	3.111R	2.111L	1.333L	3.500R	1.625L	1.333L	2.286R	.167R	0	2.667R
	M	4.241	3.984	4.403	3.526	3.770	3.913	3.772	3.400	4.050	3.043
40	G	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	3.111R	1.100L	.400L	.400L	.300R	.532R	4.000R	1.900L	1.000L	1.200L
	M	6.418	6.330	6.804	5.604	6.102	6.272	5.760	5.590	6.225	4.836
50	G	1–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.200R	1.100L	.400L	.400L	.300R	.532R	4.000R	1.900L	1.000L	1.200L
	M	8.653	8.824	9.303	8.103	8.602	8.770	7.938	8.072	8.720	7.329
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.200R	1.100L	.400L	.400L	.300R	.532R	5.200R	1.900L	1.000L	1.200L
	M	11.094	11.320	11.803	10.603	11.102	11.269	10.251	10.560	11.217	9.824
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.200R	1.100L	.400L	.400L	.300R	.532R	5.200R	1.900L	1.000L	1.200L
	M	16.021	16.315	16.802	15.602	16.101	16.268	15.138	15.545	16.213	14.818
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.200R	1.100L	.400L	.400L	.300R	.532R	5.200R	1.900L	1.000L	1.200L
	M	20.976	21.312	21.802	20.602	21.101	21.267	20.070	20.536	21.210	19.814

Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	32	32	36	36	36	36	36	36	40	40
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	16	16	20	20	20	20	20	20	24	24
Load	a_1	.20	.200	.10	.10	.10	.20	.20	.200	.10	.10
On	a_2	.50	.534	.40	.50	.60	.40	.50	.534	.40	.50
Axles	a_3	.30	.266	.50	.40	.30	.40	.30	.266	.50	.40
Span-Feet 10	G	2–3	2–3	4	4	2–3	4	2–3	2–3	4	4
	N	3	3	4	4	3	4	3	3	4	4
	B	1.000R	1.000R	0	0	1.000R	0	1.000R	1.000R	0	0
	M	.800	.854	1.250	1.000	.960	1.000	.800	.854	1.250	1.000
20	G	2–3	2–3	4	2–3	2–3	4	2–3	2–3	4	2–3
	N	3	3	4	3	3	4	3	3	4	3
	B	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R
	M	2.025	2.163	2.500	2.025	2.430	2.000	2.025	2.163	2.500	2.025
30	G	1–3	1–3	4	1–3	1–3	4	1–3	1–3	4	1–3
	N	2	2	4	2	2	4	2	2	4	2
	B	1.000R	.908R	0	.167R	0	0	1.000R	.908R	0	.167R
	M	3.573	3.791	3.750	3.400	4.050	3.000	3.573	3.791	3.750	3.400
40	G	1–4	1–4	3–4	1–3	1–3	1–3	1–3	1–3	4	1–3
	N	3	3	4	2	2	2	2	2	4	2
	B	.300L	.002L	2.857R	.167R	0	1.333R	1.000R	.908R	0	.167R
	M	5.502	5.730	5.143	4.900	5.800	4.427	5.318	5.621	5.000	4.900
50	G	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.300L	.002L	4.889R	2.700L	1.600L	2.000L	.900L	.536L	5.778R	3.500L
	M	8.002	8.230	7.280	7.346	8.151	6.580	7.416	7.702	6.651	6.645
60	G	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.300L	.002L	4.889R	2.700L	1.600L	2.000L	.900L	.536L	5.778R	3.500L
	M	10.502	10.730	9.458	9.822	10.643	9.067	9.914	10.201	8.800	9.104
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.300L	.002L	6.200R	2.700L	1.600L	2.000L	.900L	.536L	7.200R	3.500L
	M	15.501	15.730	14.281	14.791	15.632	14.050	14.910	15.200	13.448	14.053
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.300L	.002L	6.200R	2.700L	1.600L	2.000L	.900L	.536L	7.200R	3.500L
	M	20.501	20.730	19.184	19.773	20.626	19.040	19.908	20.199	18.318	19.023

TABLE 7.6 (Continued)

Span-Feet		51	52	53	54	55	56	57	58	59	60
Truck No.		51	52	53	54	55	56	57	58	59	60
Wh. Base	L	40	40	40	40	44	44	44	44	44	44
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X'	24	24	24	24	28	28	28	28	28	28
Load	a_1	.10	.20	.20	.200	.10	.10	.10	.20	.20	.200
On	a_2	.60	.40	.50	.534	.40	.50	.60	.40	.50	.534
Axles	a_3	.30	.40	.30	.266	.50	.40	.30	.40	.30	.266
10	G	2–3	4	2–3	2–3	4	4	2–3	4	2–3	2–3
	N	3	4	3	3	4	4	3	4	3	3
	B	1.000R	0	1.000R	1.000R	0	0	1.000R	0	1.000R	1.000R
	M	.960	1.000	.800	.854	1.250	1.000	.960	1.000	.800	.854
20	G	2–3	4	2–3	2–3	4	2–3	2–3	4	2–3	2–3
	N	3	4	3	3	4	3	3	4	3	3
	B	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R
	M	2.430	2.000	2.025	2.163	2.500	2.025	2.430	2.000	2.025	2.163
30	G	1–3	4	1–3	1–3	4	1–3	1–3	4	1–3	1–3
	N	2	4	2	2	4	2	2	4	2	2
	B	0	0	1.000R	.908R	0	.167R	0	0	1.000R	.908R
	M	4.050	3.000	3.573	3.791	3.750	3.400	4.050	3.000	3.573	3.791
40	G	1–3	1–3	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	4	2	2	2	2	2
	B	0	1.333R	1.000R	.908R	0	.167R	0	1.333R	1.000R	.908R
	M	5.800	4.427	5.318	5.621	5.000	4.900	5.800	4.427	5.318	5.621
50	G	1–4	1–3	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	2	4	2	2	2	2	2
	B	2.200L	1.333R	1.000R	.908R	0	.167R	0	1.333R	1.000R	.908R
	M	7.597	5.921	7.064	7.453	6.250	6.400	7.550	5.921	7.064	7.453
60	G	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4	1–3	1–3
	N	3	3	3	3	4	3	3	3	2	2
	B	2.200L	2.800L	1.500L	1.069L	6.667R	4.300L	2.800L	3.600L	1.000R	.908R
	M	10.081	8.331	9.338	9.682	8.167	8.408	9.531	7.616	8.812	9.286
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	4	3	3	3	3	3
	B	2.200L	2.800L	1.500L	1.069L	8.200R	4.300L	2.800L	3.600L	2.100L	1.603L
	M	15.061	13.298	14.328	14.677	12.641	13.331	14.498	12.562	13.755	14.162
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	4	3	3	3	3	3
	B	2.200L	2.800L	1.500L	1.069L	8.200R	4.300L	2.800L	3.600L	2.100L	1.603L
	M	20.048	18.278	19.323	19.674	17.472	18.285	19.478	17.530	18.744	19.155

Span-Feet		61	62	63	64	65	66	67	68	69	70
Truck No.		61	62	63	64	65	66	67	68	69	70
Wh. Base	L	32	32	32	32	32	32	36	36	36	36
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	12	12	12	12	12	12	16	16	16	16
Load	a_1	.10	.10	.10	.20	.20	.200	.10	.10	.10	.20
On	a_2	.40	.50	.60	.40	.50	.534	.40	.50	.60	.40
Axles	a_3	.50	.40	.30	.40	.30	.266	.50	.40	.30	.40
10	G	4	4	2–3	4	2–3	2–3	4	4	2–3	4
	N	4	4	3	4	3	3	4	4	3	4
	B	0	0	1.000R	0	1.000R	1.000R	0	0	1.000R	0
	M	1.250	1.000	.960	1.000	.800	.854	1.250	1.000	.960	1.000
20	G	4	2–3	2–3	4	2–3	2–3	4	2–3	2–3	4
	N	4	3	3	4	3	3	4	3	3	4
	B	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0
	M	2.500	2.025	2.430	2.000	2.025	2.163	2.500	2.025	2.430	2.000
30	G	2–4	2–4	2–4	2–4	2–4	2–4	3–4	2–4	2–3	3–4
	N	4	3	3	4	3	3	4	3	3	4
	B	3.111R	2.111L	1.333L	3.500R	1.625L	1.333L	2.286R	3.000L	1.000R	2.667R
	M	4.241	3.984	4.403	3.526	3.770	3.913	3.772	3.320	3.920	3.043
40	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	4	3	3	4	3	3	4	3	3	4
	B	3.111R	2.111L	1.333L	3.500R	1.625L	1.333L	4.000R	3.000L	2.000L	4.500R
	M	6.418	6.200	6.640	5.445	5.753	5.901	5.760	5.503	6.090	4.805
50	G	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	3.111R	.900L	.200L	0	.700R	.931R	4.000R	1.700L	.800L	.800L
	M	8.625	8.616	9.101	7.700	8.210	8.382	7.938	7.858	8.513	6.913
60	G	1–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.400R	.900L	.200L	0	.700R	.931R	4.000R	1.700L	.800L	.800L
	M	10.923	11.114	11.601	10.200	10.708	10.879	10.140	10.348	11.011	9.411
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.400R	.900L	.200L	0	.700R	.931R	5.400R	1.700L	.800L	.800L
	M	15.842	16.110	16.601	15.200	15.706	15.876	14.965	15.336	16.008	14.408
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	3	4	3	3	3
	B	4.400R	.900L	.200L	0	.700R	.931R	5.400R	1.700L	.800L	.800L
	M	20.794	21.108	21.600	20.200	20.705	20.874	19.892	20.329	21.006	19.406

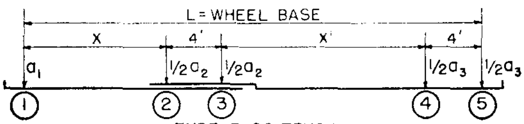
TABLE 7.6 (Continued)

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	36	36	40	40	40	40	40	40	44	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	16	16	20	20	20	20	20	20	24	24
Load	a_1	.20	.200	.10	.10	.10	.20	.20	.200	.10	.10
On	a_2	.50	.534	.40	.50	.60	.40	.50	.534	.40	.50
Axles	a_3	.30	.266	.50	.40	.30	.40	.30	.266	.50	.40
Span-Feet 10	G	2–3	2–3	4	4	2–3	4	2–3	2–3	4	4
	N	3	3	4	4	3	4	3	3	4	4
	B	1.000R	1.000R	0	0	1.000R	0	1.000R	1.000R	0	0
	M	.800	.854	1.250	1.000	.960	1.000	.800	.854	1.250	1.000
20	G	2–3	2–3	4	2–3	2–3	4	2–3	2–3	4	2–3
	N	3	3	4	3	3	4	3	3	4	3
	B	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R
	M	2.025	2.163	2.500	2.025	2.430	2.000	2.025	2.163	2.500	2.025
30	G	2–3	2–3	4	2–3	2–3	4	2–3	2–3	4	2–3
	N	3	3	4	3	3	4	3	3	4	3
	B	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R
	M	3.267	3.489	3.750	3.267	3.920	3.000	3.267	3.489	3.750	3.267
40	G	2–4	2–4	3–4	2–4	1–3	2–4	1–3	1–3	4	1–3
	N	3	3	4	3	2	4	2	2	4	2
	B	2.375L	2.000L	2.857R	3.889L	.286R	5.500R	1.572R	1.453R	0	.500R
	M	5.213	5.412	5.143	4.840	5.602	4.205	4.943	5.244	5.000	4.704
50	G	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.100R	.398R	4.889R	2.500L	1.400L	1.600L	.500L	.136L	5.778R	3.300L
	M	7.600	7.834	7.280	7.125	7.939	6.151	7.005	7.297	6.651	6.418
60	G	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4	2–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.100R	.398R	4.889R	2.500L	1.400L	1.600L	.500L	.136L	5.778R	3.300L
	M	10.100	10.333	9.458	9.604	10.433	8.643	9.504	9.796	8.800	8.882
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.100R	.398R	6.400R	2.500L	1.400L	1.600L	.500L	.136L	7.400R	3.300L
	M	15.100	15.332	14.112	14.578	15.425	13.632	14.503	14.796	13.285	13.836
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	4	3	3	3	3	3	4	3
	B	.100R	.398R	6.400R	2.500L	1.400L	1.600L	.500L	.136L	7.400R	3.300L
	M	20.100	20.332	19.010	19.563	20.420	18.626	19.503	19.796	18.148	18.809

Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	44	44	44	44	48	48	48	48	48	48
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	24	24	24	24	28	28	28	28	28	28
Load	a_1	.10	.20	.20	.200	.10	.10	.10	.20	.20	.200
On	a_2	.60	.40	.50	.534	.40	.50	.60	.40	.50	.534
Axles	a_3	.30	.40	.30	.266	.50	.40	.30	.40	.30	.266
Span-Feet 10	G	2–3	4	2–3	2–3	4	4	2–3	4	2–3	2–3
	N	3	4	3	3	4	4	3	4	3	3
	B	1.000R	0	1.000R	1.000R	0	0	1.000R	0	1.000R	1.000R
	M	.960	1.000	.800	.854	1.250	1.000	.960	1.000	.800	.854
20	G	2–3	4	2–3	2–3	4	2–3	2–3	4	2–3	2–3
	N	3	4	3	3	4	3	3	4	3	3
	B	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R
	M	2.430	2.000	2.025	2.163	2.500	2.025	2.430	2.000	2.025	2.163
30	G	2–3	4	2–3	2–3	4	2–3	2–3	4	2–3	2–3
	N	3	4	3	3	4	3	3	4	3	3
	B	1.000R	0	1.000R	1.000R	0	1.000R	1.000R	0	1.000R	1.000R
	M	3.920	3.000	3.267	3.489	3.750	3.267	3.920	3.000	3.267	3.489
40	G	1–3	1–3	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	2	2	2	2	4	2	2	2	2	2
	B	.286R	2.000R	1.572R	1.453R	0	.500R	.286R	2.000R	1.572R	1.453R
	M	5.602	4.060	4.943	5.244	5.000	4.704	5.602	4.060	4.943	5.244
50	G	1–4	1–3	1–3	1–3	4	1–3	1–3	1–3	1–3	1–3
	N	3	2	2	2	4	2	2	2	2	2
	B	2.000L	2.000R	1.572R	1.453R	0	.500R	.286R	2.000R	1.572R	1.453R
	M	7.380	5.548	6.685	7.072	6.250	6.203	7.351	5.548	6.685	7.072
60	G	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4	1–3	1–3
	N	3	3	3	3	4	3	3	3	2	2
	B	2.000L	2.400L	1.100L	.670L	6.667R	4.100L	2.600L	3.200L	1.572R	1.453R
	M	9.867	7.896	8.920	9.270	8.167	8.180	9.313	7.171	8.429	8.902
80	G	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	4	3	3	3	3	3
	B	2.000L	2.400L	1.100L	.670L	6.667R	4.100L	2.600L	3.200L	1.700L	1.203L
	M	14.850	12.872	13.915	14.268	12.500	13.110	14.285	12.128	13.336	13.747
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	4	3	3	3	3	3
	B	2.000L	2.400L	1.100L	.670L	8.400R	4.100L	2.600L	3.200L	1.700L	1.203L
	M	19.840	17.858	18.912	19.267	17.306	18.068	19.268	17.102	18.329	18.743

Table 7.7

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S2-TRUCK

One hundred twelve variations in the Type 3-S2 truck are given in this Table. Each truck number, from 1 to 112, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	28	28	28	28	28	28	28	32	32	32
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	12	12	12	12	12	12	12	16	16	16
Load	a_1	.10	.10	.10	.10	.20	.20	.20	.10	.10	.10
On	a_2	.30	.40	.45	.50	.30	.40	.50	.30	.40	.45
Axles	a_3	.60	.50	.45	.40	.50	.40	.30	.60	.50	.45
Span-Feet 10	G	4-5	4-5	4-5	2-3	4-5	4-5	2-3	4-5	4-5	4-5
	N	5	5	5	3	5	5	3	5	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.960	.800	.720	.800	.800	.640	.800	.960	.800	.720
20	G	4-5	4-5	1-3	1-3	4-5	1-3	1-3	4-5	4-5	1-3
	N	5	5	2	2	5	2	2	5	5	2
	B	1.000R	1.000R	.091L	.167L	1.000R	.667R	.429R	1.000R	1.000R	.091L
	M	2.430	2.025	1.901	2.102	2.025	1.814	2.205	2.430	2.025	1.901
30	G	2-5	2-5	1-5	1-4	2-5	1-3	1-3	4-5	4-5	1-3
	N	4	4	3	3	4	2	2	5	5	2
	B	1.667R	2.556R	2.100L	.125L	2.000R	.667R	.429R	1.000R	1.000R	.091L
	M	4.134	3.647	3.447	3.701	3.506	3.310	3.953	3.920	3.267	3.276
40	G	2-5	2-5	1-5	1-5	2-5	1-5	1-5	2-5	2-5	1-5
	N	4	4	3	3	4	3	3	4	4	3
	B	1.667R	2.556R	2.100L	1.700L	2.000R	1.200L	.400L	2.333R	3.445R	3.000L
	M	6.364	5.847	5.910	6.172	5.480	5.636	6.204	5.821	5.167	5.125
50	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	2-5	1-5	1-5
	N	4	4	3	3	4	3	3	4	4	3
	B	2.700R	3.500R	2.100L	1.700L	4.000R	1.200L	.400L	2.333R	4.500R	3.000L
	M	8.746	8.245	8.388	8.658	7.820	8.129	8.703	8.047	7.405	7.580
60	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	4	4	3	3	4	3	3	4	4	3
	B	2.700R	3.500R	2.100L	1.700L	4.000R	1.200L	.400L	3.500R	4.500R	3.000L
	M	11.222	10.704	10.874	11.148	10.267	10.624	11.203	10.504	9.838	10.050
80	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	4	4	3	3	4	3	3	4	4	3
	B	2.700R	3.500R	2.100L	1.700L	4.000R	1.200L	.400L	3.500R	4.500R	3.000L
	M	16.191	15.653	15.855	16.136	15.200	15.618	16.202	15.453	14.753	15.013
100	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	4	4	3	3	4	3	3	4	4	3
	B	2.700R	3.500R	2.100L	1.700L	4.000R	1.200L	.400L	3.500R	4.500R	3.000L
	M	21.173	20.623	20.844	21.129	20.160	20.614	21.202	20.423	19.703	19.990

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.7 (Continued)

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	32	32	32	32	36	36	36	36	36	36
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X′	16	16	16	16	20	20	20	20	20	20
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.10	.20	.20
On	a_2	.50	.30	.40	.50	.30	.40	.45	.50	.30	.40
Axles	a_3	.40	.50	.40	.30	.60	.50	.45	.40	.50	.40
Span-Feet 10	G	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	3	5	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.800	.800	.640	.800	.960	.800	.720	.800	.800	.640
20	G	1–3	4–5	1–3	1–3	4–5	4–5	1–3	1–3	4–5	1–3
	N	2	5	2	2	5	5	2	2	5	2
	B	.167L	1.000R	.667R	.429R	1.000R	1.000R	.091L	.167L	1.000R	.667R
	M	2.102	2.025	1.814	2.205	2.430	2.025	1.901	2.102	2.025	1.814
30	G	1–3	4–5	1–3	1–3	4–5	4–5	1–3	1–3	4–5	1–3
	N	2	5	2	2	5	5	2	2	5	2
	B	.167L	1.000R	.667R	.429R	1.000R	1.000R	.091L	.167L	1.000R	.667R
	M	3.602	3.267	3.310	3.953	3.920	3.267	3.276	3.602	3.267	3.310
40	G	1–5	2–5	1–5	1–4	3–5	3–5	1–3	1–3	3–5	1–3
	N	3	4	3	2	4	4	2	2	4	2
	B	2.500L	2.750R	2.000L	1.412L	1.200R	2.143R	.091L	.167L	1.539R	.667R
	M	5.456	4.951	4.900	5.744	5.427	4.579	4.651	5.102	4.537	4.808
50	G	1–5	1–5	1–5	1–5	2–5	2–5	1–5	1–5	2–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	2.500L	5.000R	2.000L	1.000L	3.000R	4.333R	3.900L	3.300L	3.500R	2.800L
	M	7.925	7.000	7.380	8.120	7.512	6.687	6.804	7.218	6.396	6.657
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	2.500L	5.000R	2.000L	1.000L	4.300R	5.500R	3.900L	3.300L	6.000R	2.800L
	M	10.404	9.417	9.867	10.617	9.808	9.004	9.254	9.682	8.600	9.131
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	2.500L	5.000R	2.000L	1.000L	4.300R	5.500R	3.900L	3.300L	6.000R	2.800L
	M	15.378	14.313	14.850	15.613	14.731	13.878	14.190	14.636	13.450	14.098
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	2.500L	5.000R	2.000L	1.000L	4.300R	5.500R	3.900L	3.300L	6.000R	2.800L
	M	20.363	19.250	19.840	20.610	19.685	18.803	19.152	19.609	18.360	19.078

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	36	40	40	40	40	40	40	40	44	44
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X′	20	24	24	24	24	24	24	24	28	28
Load	a_1	.20	.10	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.50	.30	.40	.45	.50	.30	.40	.50	.30	.40
Axles	a_3	.30	.60	.50	.45	.40	.50	.40	.30	.60	.50
Span-Feet 10	G	2–3	4–5	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	5	3	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.800	.960	.800	.720	.800	.800	.640	.800	.960	.800
20	G	1–3	4–5	4–5	1–3	1–3	4–5	1–3	1–3	4–5	4–5
	N	2	5	5	2	2	5	2	2	5	5
	B	.429R	1.000R	1.000R	.091L	.167L	1.000R	.667R	.429R	1.000R	1.000R
	M	2.205	2.430	2.025	1.901	2.102	2.025	1.814	2.205	2.430	2.025
30	G	1–3	4–5	4–5	1–3	1–3	4–5	1–3	1–3	4–5	4–5
	N	2	5	5	2	2	5	2	2	5	5
	B	.429R	1.000R	1.000R	.091L	.167L	1.000R	.667R	.429R	1.000R	1.000R
	M	3.953	3.920	3.267	3.276	3.602	3.267	3.310	3.953	3.920	3.267
40	G	1–3	4–5	4–5	1–3	1–3	4–5	1–3	1–3	4–5	4–5
	N	2	5	5	2	2	5	2	2	5	5
	B	.429R	1.000R	1.000R	.091L	.167L	1.000R	.667R	.429R	1.000R	1.000R
	M	5.703	5.415	4.513	4.651	5.102	4.513	4.808	5.703	5.415	4.513
50	G	1–4	3–5	2–5	1–5	1–3	2–5	1–3	1–3	4–5	4–5
	N	2	4	4	3	2	4	2	2	5	5
	B	1.765L	1.600R	5.222R	4.800L	.167L	4.250R	.667R	.429R	1.000R	1.000R
	M	7.577	7.013	6.043	6.061	6.602	5.889	6.306	7.452	6.912	5.760
60	G	1–5	2–5	2–5	1–5	1–5	2–5	1–5	1–5	2–5	2–5
	N	3	4	4	3	3	4	3	3	4	4
	B	1.600L	3.667R	5.222R	4.800L	4.100L	4.250R	3.600L	2.200L	4.333R	6.111R
	M	10.043	9.203	8.211	8.484	8.980	7.841	8.416	9.481	8.680	7.561
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	4	3	3	4	3	3	4	4
	B	1.600L	5.100R	6.500R	4.800L	4.100L	7.000R	3.600L	2.200L	5.900R	7.500R
	M	15.032	14.025	13.028	13.388	13.910	12.613	13.362	14.461	13.335	12.203
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	4	3	3	4	3	3	4	4
	B	1.600L	5.100R	6.500R	4.800L	4.100L	7.000R	3.600L	2.200L	5.900R	7.500R
	M	20.026	18.960	17.923	18.330	18.868	17.490	18.330	19.448	18.248	17.063

TABLE 7.7 (Continued)

Span-Feet		31	32	33	34	35	36	37	38	39	40
Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	44	44	44	44	44	28	28	28	28	28
Axle	X	8	8	8	8	8	12	12	12	12	12
Spacing	X′	28	28	28	28	28	8	8	8	8	8
Load	a_1	.10	.10	.20	.20	.20	.10	.10	.10	.10	.20
On	a_2	.45	.50	.30	.40	.50	.30	.40	.45	.50	.30
Axles	a_3	.45	.40	.50	.40	.30	.60	.50	.45	.40	.50
10	G	4-5	2-3	4-5	4-5	2-3	4-5	4-5	4-5	2-3	4-5
	N	5	3	5	5	3	5	5	5	3	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.720	.800	.800	.640	.800	.960	.800	.720	.800	.800
20	G	1-3	1-3	4-5	1-3	1-3	3-5	3-5	2-4	2-4	3-5
	N	2	2	5	2	2	4	4	3	3	4
	B	.091L	.167L	1.000R	.667R	.429R	0	.429R	.667L	.429L	.154R
	M	1.901	2.102	2.025	1.814	2.205	2.550	2.205	2.063	2.205	2.150
30	G	1-3	1-3	4-5	1-3	1-3	2-5	2-5	2-5	2-5	2-5
	N	2	2	5	2	2	4	4	4	3	4
	B	.091L	.167L	1.000R	.667R	.429R	1.000R	1.667R	2.000R	1.667L	1.250R
	M	3.276	3.602	3.267	3.310	3.953	4.680	4.334	4.170	4.334	4.042
40	G	1-3	1-3	4-5	1-3	1-3	2-5	2-5	1-5	1-5	2-5
	N	2	2	5	2	2	4	4	3	3	4
	B	.091L	.167L	1.000R	.667R	.429R	1.000R	1.667R	1.000L	.700L	1.250R
	M	4.651	5.102	4.513	4.808	5.703	6.923	6.564	6.525	6.712	6.031
50	G	1-3	1-3	4-5	1-3	1-3	1-5	1-5	1-5	1-5	1-5
	N	2	2	5	2	2	4	4	3	3	4
	B	.091L	.167L	1.000R	.667R	.429R	2.100R	2.700R	1.000L	.700L	3.400R
	M	6.026	6.602	5.760	6.306	7.452	9.288	8.946	9.020	9.210	8.331
60	G	1-5	1-5	2-5	1-3	1-3	1-5	1-5	1-5	1-5	1-5
	N	3	3	4	2	2	4	4	3	3	4
	B	5.700L	4.900L	5.000R	.667R	.429R	2.100R	2.700R	1.000L	.700L	3.400R
	M	7.742	8.300	7.334	7.805	9.201	11.774	11.442	11.517	11.708	10.793
80	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	3	4	3	3	4	4	3	3	4
	B	5.700L	4.900L	8.000R	4.400L	2.800L	2.100R	2.700R	1.000L	.700L	3.400R
	M	12.606	13.200	11.800	12.642	13.898	16.755	16.391	16.513	16.706	15.745
100	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	3	4	3	3	4	4	3	3	4
	B	5.700L	4.900L	8.000R	4.400L	2.800L	2.100R	2.700R	1.000L	.700L	3.400R
	M	17.525	18.140	16.640	17.594	18.878	21.744	21.373	21.510	21.705	20.716

Span-Feet		41	42	43	44	45	46	47	48	49	50
Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	28	28	32	32	32	32	32	32	32	36
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	8	8	12	12	12	12	12	12	12	16
Load	a_1	.20	.20	.10	.10	.10	.10	.20	.20	.20	.10
On	a_2	.40	.50	.30	.40	.45	.50	.30	.40	.50	.30
Axles	a_3	.40	.30	.60	.50	.45	.40	.50	.40	.30	.60
10	G	4-5	2-3	4-5	4-5	4-5	2-3	4-5	4-5	2-3	4-5
	N	5	3	5	5	5	3	5	5	3	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.640	.800	.960	.800	.720	.800	.800	.640	.800	.960
20	G	3-5	2-4	4-5	4-5	4-5	2-3	4-5	4-5	2-3	4-5
	N	4	3	5	5	5	3	5	5	3	5
	B	.667R	.154L	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	1.814	2.150	2.430	2.025	1.823	2.025	2.025	1.620	2.025	2.430
30	G	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	1-3	4-5
	N	4	3	4	4	4	3	4	4	2	5
	B	2.000R	1.250L	1.667R	2.556R	3.000R	2.556L	2.000R	3.000R	1.000R	1.000R
	M	3.706	4.042	4.134	3.647	3.420	3.647	3.506	3.040	3.573	3.920
40	G	1-5	1-5	2-5	2-5	1-5	1-5	2-5	1-5	1-5	2-5
	N	3	3	4	4	3	3	4	3	3	4
	B	0	.600R	1.667R	2.556R	1.900L	1.500L	2.000R	.800L	0	2.333R
	M	6.000	6.409	6.364	5.847	5.690	5.956	5.480	5.216	5.800	5.821
50	G	1-5	1-5	2-5	1-5	1-5	1-5	1-5	1-5	1-5	2-5
	N	3	3	4	4	3	3	4	3	3	4
	B	0	.600R	1.667R	3.700R	1.900L	1.500L	4.400R	.800L	0	2.333R
	M	8.500	8.907	8.601	8.074	8.172	8.445	7.487	7.713	8.300	8.047
60	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	3	4	4	3	3	4	3	3	4
	B	0	.600R	2.900R	3.700R	1.900L	1.500L	4.400R	.800L	0	3.700R
	M	11.000	11.406	11.040	10.528	10.660	10.938	9.923	10.211	10.800	10.328
80	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	3	4	4	3	3	4	3	3	4
	B	0	.600R	2.900R	3.700R	1.900L	1.500L	4.400R	.800L	0	3.700R
	M	16.000	16.405	16.005	15.471	15.645	15.928	14.842	15.208	15.800	15.271
100	G	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5
	N	3	3	4	4	3	3	4	3	3	4
	B	0	.600R	2.900R	3.700R	1.900L	1.500L	4.400R	.800L	0	3.700R
	M	21.000	21.404	20.984	20.437	20.636	20.923	19.794	20.206	20.800	20.237

TABLE 7.7 (Continued)

Truck No.			51	52	53	54	55	56	57	58	59	60
Wh. Base L			36	36	36	36	36	36	40	40	40	40
Axle		X	12	12	12	12	12	12	12	12	12	12
Spacing		X′	16	16	16	16	16	16	20	20	20	20
Load		a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.10
On		a_2	.40	.45	.50	.30	.40	.50	.30	.40	.45	.50
Axles		a_3	.50	.45	.40	.50	.40	.30	.60	.50	.45	.40
Span-Feet	10	G	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3
		N	5	5	3	5	5	3	5	5	5	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	.800	.720	.800	.800	.640	.800	.960	.800	.720	.800
	20	G	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3
		N	5	5	3	5	5	3	5	5	5	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	2.025	1.823	2.025	2.025	1.620	2.025	2.430	2.025	1.823	2.025
	30	G	4–5	1–3	1–3	4–5	1–3	1–3	4–5	4–5	1–3	1–3
		N	5	2	2	5	2	2	5	5	2	2
		B	1.000R	.273R	.167R	1.000R	1.333R	1.000R	1.000R	1.000R	.273R	.167R
		M	3.267	3.075	3.402	3.267	2.934	3.573	3.920	3.267	3.075	3.402
	40	G	2–5	1–5	1–5	2–5	1–5	1–4	3–5	3–5	1–3	1–3
		N	4	3	3	4	3	2	4	4	2	2
		B	3.445R	2.800L	2.300L	2.750R	1.600L	.941L	1.200R	2.143R	.273R	.167R
		M	5.167	4.896	5.232	4.951	4.464	5.320	5.427	4.579	4.450	4.902
	50	G	2–5	1–5	1–5	2–5	1–5	1–5	2–5	2–5	1–5	1–5
		N	4	3	3	4	3	3	4	4	3	3
		B	3.445R	2.800L	2.300L	2.750R	1.600L	.600L	3.000R	4.333R	3.700L	3.100L
		M	7.363	7.357	7.706	6.921	6.951	7.707	7.512	6.687	6.574	6.992
	60	G	1–5	1–5	1–5	1–5	1–5	1–5	2–5	2–5	1–5	1–5
		N	4	3	3	4	3	3	4	4	3	3
		B	4.700R	2.800L	2.300L	5.400R	1.600L	.600L	3.000R	4.333R	3.700L	3.100L
		M	9.668	9.831	10.188	9.086	9.443	10.206	9.735	8.880	9.028	9.460
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	4	3	3	4	3	3	4	4	3	3
		B	4.700R	2.800L	2.300L	5.400R	1.600L	.600L	4.500R	5.700R	3.700L	3.100L
		M	14.576	14.798	15.166	13.965	14.432	15.205	14.553	13.706	13.971	14.420
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	4	3	3	4	3	3	4	4	3	3
		B	4.700R	2.800L	2.300L	5.400R	1.600L	.600L	4.500R	5.700R	3.700L	3.100L
		M	19.521	19.778	20.153	18.892	19.426	20.204	19.503	18.625	18.937	19.396

Truck No.			61	62	63	64	65	66	67	68	69	70
Wh. Base L			40	40	40	44	44	44	44	44	44	44
Axle		X	12	12	12	12	12	12	12	12	12	12
Spacing		X′	20	20	20	24	24	24	24	24	24	24
Load		a_1	.20	.20	.20	.10	.10	.10	.10	.20	.20	.20
On		a_2	.30	.40	.50	.30	.40	.45	.50	.30	.40	.50
Axles		a_3	.50	.40	.30	.60	.50	.45	.40	.50	.40	.30
Span-Feet	10	G	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5	4–5	2–3
		N	5	5	3	5	5	5	3	5	5	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	.800	.640	.800	.960	.800	.720	.800	.800	.640	.800
	20	G	4–5	4–5	2–3	4–5	4–5	2–3	2–3	4–5	4–5	2–3
		N	5	5	3	5	5	3	3	5	5	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	2.025	1.620	2.025	2.430	2.025	1.823	2.025	2.025	1.620	2.025
	30	G	4–5	1–3	1–3	4–5	4–5	1–3	1–3	4–5	1–3	1–3
		N	5	2	2	5	5	2	2	5	2	2
		B	1.000R	1.333R	1.000R	1.000R	1.000R	.273R	.167R	1.000R	1.333R	1.000R
		M	3.267	2.934	3.573	3.920	3.267	3.075	3.402	3.267	2.934	3.573
	40	G	3–5	1–3	1–3	4–5	4–5	1–3	1–3	4–5	1–3	1–3
		N	4	2	2	5	5	2	2	5	2	2
		B	1.539R	1.333R	1.000R	1.000R	1.000R	.273R	.167R	1.000R	1.333R	1.000R
		M	4.537	4.426	5.318	5.415	4.513	4.450	4.902	4.513	4.426	5.318
	50	G	2–5	1–5	1–4	3–5	2–5	1–3	1–3	2–5	1–3	1–3
		N	4	3	2	4	4	2	2	4	2	2
		B	3.500R	2.400L	1.294L	1.600R	5.222R	.273R	.167R	4.250R	1.333R	1.000R
		M	6.396	6.215	7.153	7.013	6.043	5.825	6.402	5.889	5.921	7.064
	60	G	2–5	1–5	1–5	2–5	2–5	1–5	1–5	2–5	1–5	1–5
		N	4	3	3	4	4	3	3	4	3	3
		B	3.500R	2.400L	1.200L	3.667R	5.222R	4.600L	3.900L	4.250R	3.200L	1.800L
		M	8.363	8.696	9.624	9.203	8.211	8.253	8.754	7.841	7.971	9.054
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	4	3	3	4	4	3	3	4	3	3
		B	6.400R	2.400L	1.200L	5.300R	6.700R	4.600L	3.900L	7.400R	3.200L	1.800L
		M	13.112	13.672	14.618	13.851	12.861	13.165	13.690	12.285	12.928	14.041
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	4	3	3	4	4	3	3	4	3	3
		B	6.400R	2.400L	1.200L	5.300R	6.700R	4.600L	3.900L	7.400R	3.200L	1.800L
		M	18.010	18.658	19.614	18.781	17.749	18.112	18.652	17.148	17.902	19.032

TABLE 7.7 (Continued)

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	48	48	48	48	48	48	48	36	36	36
Axle Spacing	X	12	12	12	12	12	12	12	16	16	16
	X'	28	28	28	28	28	28	28	12	12	12
Load On Axles	a_1	.10	.10	.10	.10	.20	.20	.20	.10	.10	.10
	a_2	.30	.40	.45	.50	.30	.40	.50	.30	.40	.45
	a_3	.60	.50	.45	.40	.50	.40	.30	.60	.50	.45
Span-Feet 10	G	4–5	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5
	N	5	5	5	3	5	5	3	5	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.960	.800	.720	.800	.800	.640	.800	.960	.800	.720
20	G	4–5	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5
	N	5	5	5	3	5	5	3	5	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	2.430	2.025	1.823	2.025	2.025	1.620	2.025	2.430	2.025	1.823
30	G	4–5	4–5	1–3	1–3	4–5	1–3	1–3	2–5	2–5	2–5
	N	5	5	2	2	5	2	2	4	4	4
	B	1.000R	1.000R	.273R	.167R	1.000R	1.333R	1.000R	1.667R	2.556R	3.000R
	M	3.920	3.267	3.075	3.402	3.267	2.934	3.573	4.134	3.647	3.420
40	G	4–5	4–5	1–3	1–3	4–5	1–3	1–3	2–5	2–5	2–5
	N	5	5	2	2	5	2	2	4	4	4
	B	1.000R	1.000R	.273R	.167R	1.000R	1.333R	1.000R	1.667R	2.556R	3.000R
	M	5.415	4.513	4.450	4.902	4.513	4.426	5.318	6.364	5.847	5.603
50	G	4–5	4–5	1–3	1–3	4–5	1–3	1–3	2–5	2–5	1–5
	N	5	5	2	2	5	2	2	4	4	3
	B	1.000R	1.000R	.273R	.167R	1.000R	1.333R	1.000R	1.667R	2.556R	1.700L
	M	6.912	5.760	5.825	6.402	5.760	5.921	7.064	8.601	8.068	7.958
60	G	2–5	2–5	1–5	1–5	2–5	1–3	1–3	1–5	1–5	1–5
	N	4	4	3	3	4	2	2	4	4	3
	B	4.333R	6.111R	5.500L	4.700L	5.000R	1.333R	1.000R	3.100R	3.900R	1.700L
	M	8.680	7.561	7.504	8.068	7.334	7.417	8.812	10.860	10.354	10.448
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	4	4	3	3	4	3	3	4	4	3
	B	6.100R	7.700R	5.500L	4.700L	8.400R	4.000L	2.400L	3.100R	3.900R	1.700L
	M	13.165	12.041	12.378	12.976	11.482	12.200	13.472	15.820	15.290	15.436
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	4	4	3	3	4	3	3	4	4	3
	B	6.100R	7.700R	5.500L	4.700L	8.400R	4.000L	2.400L	3.100R	3.900R	1.700L
	M	18.072	16.893	17.303	17.921	16.306	17.160	18.458	20.796	20.252	20.429

Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	36	36	36	36	40	40	40	40	40	40
Axle Spacing	X	16	16	16	16	16	16	16	16	16	16
	X'	12	12	12	12	16	16	16	16	16	16
Load On Axles	a_1	.10	.20	.20	.20	.10	.10	.10	.10	.20	.20
	a_2	.50	.30	.40	.50	.30	.40	.45	.50	.30	.40
	a_3	.40	.50	.40	.30	.60	.50	.45	.40	.50	.40
Span-Feet 10	G	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	3	5	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.800	.800	.640	.800	.960	.800	.720	.800	.800	.640
20	G	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	3	5	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	2.025	2.025	1.620	2.025	2.430	2.025	1.823	2.025	2.025	1.620
30	G	2–5	2–5	2–5	2–5	4–5	4–5	4–5	2–3	4–5	4–5
	N	3	4	4	3	5	5	5	3	5	5
	B	2.556L	2.000R	3.000R	2.000L	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	3.647	3.506	3.040	3.506	3.920	3.267	2.940	3.267	3.267	2.613
40	G	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5
	N	3	4	4	3	4	4	4	3	4	4
	B	2.556L	2.000R	3.000R	2.000L	2.333R	3.445R	4.000R	3.445L	2.750R	4.000R
	M	5.847	5.480	4.980	5.480	5.821	5.167	4.860	5.167	4.951	4.320
50	G	1–5	2–5	1–5	1–5	2–5	2–5	1–5	1–5	2–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	1.300L	2.000R	.400L	.400R	2.333R	3.445R	2.600L	2.100L	2.750R	1.200L
	M	8.234	7.464	7.303	7.903	8.047	7.363	7.135	7.488	6.921	6.529
60	G	1–5	1–5	1–5	1–5	2–5	2–5	1–5	1–5	2–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	1.300L	4.800R	.400L	.400R	2.333R	3.445R	2.600L	2.100L	2.750R	1.200L
	M	10.728	9.584	9.803	10.403	10.280	9.578	9.613	9.974	8.901	9.024
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	1.300L	4.800R	.400L	.400R	3.900R	4.900R	2.600L	2.100L	5.800R	1.200L
	M	15.721	14.488	14.802	15.402	15.090	14.400	14.585	14.955	13.621	14.018
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	3	3	4	4	3	3	4	3
	B	1.300L	4.800R	.400L	.400R	3.900R	4.900R	2.600L	2.100L	5.800R	1.200L
	M	20.717	19.430	19.802	20.402	20.052	19.340	19.568	19.944	18.536	19.014

Table 7.7 (Continued)

	Truck No.	91	92	93	94	95	96	97	98	99	100
Wh. Base	L	40	44	44	44	44	44	44	44	48	48
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	16	20	20	20	20	20	20	20	24	24
Load	a_1	.20	.10	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.50	.30	.40	.45	.50	.30	.40	.50	.30	.40
Axles	a_3	.30	.60	.50	.45	.40	.50	.40	.30	.60	.50
Span-Feet 10	G	2–3	4–5	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	5	3	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.800	.960	.800	.720	.800	.800	.640	.800	.960	.800
20	G	2–3	4–5	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	5	3	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	2.025	2.430	2.025	1.823	2.025	2.025	1.620	2.025	2.430	2.025
30	G	2–3	4–5	4–5	4–5	2–3	4–5	4–5	2–3	4–5	4–5
	N	3	5	5	5	3	5	5	3	5	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	3.267	3.920	3.267	2.940	3.267	3.267	2.613	3.267	3.920	3.267
40	G	2–5	3–5	3–5	1–3	1–3	3–5	1–3	1–3	4–5	4–5
	N	3	4	4	2	2	4	2	2	5	5
	B	2.750L	1.200R	2.143R	.637R	.500R	1.539R	2.000R	1.572R	1.000R	1.000R
	M	4.951	5.427	4.579	4.256	4.704	4.537	4.060	4.944	5.415	4.513
50	G	1–5	2–5	2–5	1–5	1–5	2–5	1–5	1–4	3–5	2–5
	N	3	4	4	3	3	4	3	2	4	4
	B	.200L	3.000R	4.333R	3.500L	2.900L	3.500R	2.000L	.825L	1.600R	5.222R
	M	7.301	7.512	6.687	6.345	6.768	6.396	5.780	6.736	7.013	6.043
60	G	1–5	2–5	2–5	1–5	1–5	2–5	1–5	1–5	2–5	2–5
	N	3	4	4	3	3	4	3	3	4	4
	B	.200L	3.000R	4.333R	3.500L	2.900L	3.500R	2.000L	.800L	3.667R	5.222R
	M	9.801	9.735	8.880	8.804	9.240	8.363	8.267	9.211	9.203	8.211
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	4	3	3	4	3	3	4	4
	B	.200L	4.700R	5.900R	3.500L	2.900L	6.800R	2.000L	.800L	5.500R	6.900R
	M	14.801	14.376	13.535	13.753	14.205	12.778	13.250	14.208	13.678	12.695
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	4	4	3	3	4	3	3	4	4
	B	.200L	4.700R	5.900R	3.500L	2.900L	6.800R	2.000L	.800L	5.500R	6.900R
	M	19.800	19.321	18.448	18.723	19.184	17.662	18.240	19.206	18.603	17.576

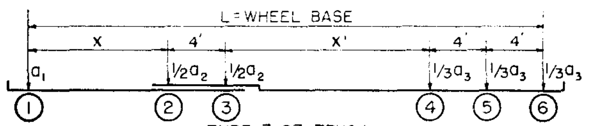
	Truck No.	101	102	103	104	105	106	107	108	109	110
Wh. Base	L	48	48	48	48	48	52	52	52	52	52
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	24	24	24	24	24	28	28	28	28	28
Load	a_1	.10	.10	.20	.20	.20	.10	.10	.10	.10	.20
On	a_2	.45	.50	.30	.40	.50	.30	.40	.45	.50	.30
Axles	a_3	.45	.40	.50	.40	.30	.60	.50	.45	.40	.50
Span-Feet 10	G	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5
	N	5	3	5	5	3	5	5	5	3	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.720	.800	.800	.640	.800	.960	.800	.720	.800	.800
20	G	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5
	N	5	3	5	5	3	5	5	5	3	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	1.823	2.025	2.025	1.620	2.025	2.430	2.025	1.823	2.025	2.025
30	G	4–5	2–3	4–5	4–5	2–3	4–5	4–5	4–5	2–3	4–5
	N	5	3	5	5	3	5	5	5	3	5
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	2.940	3.267	3.267	2.613	3.267	3.920	3.267	2.940	3.267	3.267
40	G	1–3	1–3	4–5	1–3	1–3	4–5	4–5	1–3	1–3	4–5
	N	2	2	5	2	2	5	5	2	2	5
	B	.637R	.500R	1.000R	2.000R	1.572R	1.000R	1.000R	.637R	.500R	1.000R
	M	4.256	4.704	4.513	4.060	4.944	5.415	4.513	4.256	4.704	4.513
50	G	1–3	1–3	2–5	1–3	1–3	4–5	4–5	1–3	1–3	4–5
	N	2	2	4	2	2	5	5	2	2	5
	B	.637R	.500R	4.250R	2.000R	1.572R	1.000R	1.000R	.637R	.500R	1.000R
	M	5.630	6.203	5.889	5.548	6.685	6.912	5.760	5.630	6.203	5.760
60	G	1–5	1–5	2–5	1–5	1–5	2–5	2–5	1–5	1–5	2–5
	N	3	3	4	3	3	4	4	3	3	4
	B	4.400L	3.700L	4.250R	2.800L	1.400L	4.333R	6.111R	5.300L	4.500L	5.000R
	M	8.023	8.528	7.841	7.531	8.633	8.680	7.561	7.268	7.838	7.334
80	G	1–5	1–5	1–5	1–5	1–5	2–5	2–5	1–5	1–5	2–5
	N	3	3	4	3	3	4	4	3	3	4
	B	4.400L	3.700L	7.800R	2.800L	1.400L	4.333R	6.111R	5.300L	4.500L	5.000R
	M	12.942	13.471	11.961	12.498	13.625	13.110	11.921	12.151	12.753	11.250
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	4	3	3	4	4	3	3	4
	B	4.400L	3.700L	7.800R	2.800L	1.400L	6.300R	7.900R	5.300L	4.500L	8.800R
	M	17.726	18.437	16.808	17.478	18.620	17.897	16.724	17.081	17.703	15.974

Table 7.7 (Continued)

			111	112
Truck No.			111	112
Wh. Base	L		52	52
Axle	X		16	16
Spacing	X'		28	28
Load	a_1		.20	.20
On	a_2		.40	.50
Axles	a_3		.40	.30
Span-Feet	10	G	4–5	2–3
		N	5	3
		B	1.000R	1.000R
		M	.640	.800
	20	G	4–5	2–3
		N	5	3
		B	1.000R	1.000R
		M	1.620	2.025
	30	G	4–5	2–3
		N	5	3
		B	1.000R	1.000R
		M	2.613	3.267
	40	G	1–3	1–3
		N	2	2
		B	2.000R	1.572R
		M	4.060	4.944
	50	G	1–3	1–3
		N	2	2
		B	2.000R	1.572R
		M	5.548	6.685
	60	G	1–3	1–3
		N	2	2
		B	2.000R	1.572R
		M	7.040	8.430
	80	G	1–5	1–5
		N	3	3
		B	3.600L	2.000L
		M	11.762	13.050
	100	G	1–5	1–5
		N	3	3
		B	3.600L	2.000L
		M	16.730	18.040

Table 7.8

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S3 TRUCK

One hundred five variations in the Type 3-S3 truck are given in this Table. Each truck number, from 1 to 105, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	32	32	32	32	32	32	32	36	36	36
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	12	12	12	12	12	12	12	16	16	16
Load	a_1	.10	.10	.10	.10	.20	.20	.20	.10	.10	.10
On	a_2	.30	.36	.40	.50	.30	.40	.50	.30	.36	.40
Axles	a_3	.60	.54	.50	.40	.50	.40	.30	.60	.54	.50
Span-Feet 10	G	4–6	4–6	2–3	2–3	4–6	2–3	2–3	4–6	4–6	2–3
	N	5	5	3	3	5	3	3	5	5	3
	B	0	0	1.000R	1.000R	0	1.000R	1.000R	0	0	1.000R
	M	.700	.630	.640	.800	.582	.640	.800	.700	.630	.640
20	G	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6	4–6
	N	5	5	5	2	5	2	2	5	5	5
	B	0	0	0	.167L	0	.667R	.429R	0	0	0
	M	2.200	1.980	1.832	2.101	1.832	1.814	2.207	2.200	1.980	1.832
30	G	4–6	3–6	4–6	1–4	3–6	1–3	1–3	4–6	4–6	4–6
	N	5	5	5	3	5	2	2	5	5	5
	B	0	2.000R	0	.412R	1.844R	.667R	.429R	0	0	0
	M	3.700	3.336	3.082	3.604	3.083	3.309	3.955	3.700	3.330	3.082
40	G	2–6	2–6	2–6	1–6	2–6	1–6	1–5	3–6	2–6	2–6
	N	4	4	4	3	4	3	2	5	4	4
	B	1.000R	1.600R	1.996R	2.094L	1.371R	1.594L	1.667L	2.000R	2.400R	2.884R
	M	5.723	5.458	5.290	5.816	4.937	5.270	5.963	5.275	4.810	4.588
50	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	2–6	2–6	1–6
	N	4	4	4	3	4	3	3	4	4	4
	B	2.100R	2.640R	2.995R	2.094L	3.495R	1.594L	.700L	1.667R	2.400R	3.994R
	M	8.088	7.839	7.680	8.294	7.246	7.757	8.410	7.400	7.034	6.821
60	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	4	4	3	4	3	3	4	4	4
	B	2.100R	2.640R	2.995R	2.094L	3.495R	1.594L	.700L	2.900R	3.560R	3.994R
	M	10.574	10.316	10.151	10.779	9.705	10.249	10.908	9.840	9.491	9.268
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	4	4	3	4	3	3	4	4	4
	B	2.100R	2.640R	2.995R	2.094L	3.495R	1.594L	.700L	2.900R	3.560R	3.994R
	M	15.555	15.287	15.113	15.761	14.654	15.238	15.906	14.805	14.438	14.201
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	4	4	3	4	3	3	4	4	4
	B	2.100R	2.640R	2.995R	2.094L	3.495R	1.594L	.700L	2.900R	3.560R	3.994R
	M	20.544	20.270	20.091	20.750	19.624	20.232	20.905	19.784	19.407	19.162

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

TABLE 7.8 (Continued)

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base L		36	36	36	36	40	40	40	40	40	40
Axle Spacing	X	8	8	8	8	8	8	8	8	8	8
	X'	16	16	16	16	20	20	20	20	20	20
Load On Axles	a_1	.10	.20	.20	.20	.10	.10	.10	.10	.20	.20
	a_2	.50	.30	.40	.50	.30	.36	.40	.50	.30	.40
	a_3	.40	.50	.40	.30	.60	.54	.50	.40	.50	.40
Span-Feet 10	G	2–3	4–6	2–3	2–3	4–6	4–6	2–3	2–3	4–6	2–3
	N	3	5	3	3	5	5	3	3	5	3
	B	1.000R	0	1.000R	1.000R	0	0	1.000R	1.000R	0	1.000R
	M	.800	.582	.640	.800	.700	.630	.640	.800	.582	.640
20	G	1–3	4–6	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3
	N	2	5	2	2	5	5	5	2	5	2
	B	.167L	0	.667R	.429R	0	0	0	.167L	0	.667R
	M	2.101	1.832	1.814	2.207	2.200	1.980	1.832	2.101	1.832	1.814
30	G	1–3	4–6	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3
	N	2	5	2	2	5	5	5	2	5	2
	B	.167L	0	.667R	.429R	0	0	0	.167L	0	.667R
	M	3.600	3.082	3.309	3.955	3.700	3.330	3.082	3.600	3.082	3.309
40	G	1–5	3–6	1–4	1–4	4–6	4–6	4–6	1–3	4–6	1–3
	N	3	5	2	2	5	5	5	2	5	2
	B	1.494L	2.304R	1.269L	.875L	0	0	0	.167L	0	.667R
	M	5.215	4.421	4.829	5.715	5.200	4.680	4.332	5.101	4.332	4.807
50	G	1–6	1–6	1–6	1–6	3–6	2–6	2–6	1–6	2–6	1–4
	N	3	4	3	3	5	4	4	3	4	2
	B	2.893L	4.494R	2.393L	1.300L	2.400R	3.200R	3.772R	3.692L	2.869R	1.632L
	M	7.574	6.406	7.022	7.834	6.861	6.395	6.108	6.881	5.833	6.406
60	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	4	3	3	4	4	4	3	4	3
	B	2.893L	4.494R	2.393L	1.300L	3.700R	4.480R	4.993R	3.692L	5.493R	3.191L
	M	10.047	8.839	9.503	10.328	9.128	8.695	8.411	9.336	8.006	8.779
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	4	3	3	4	4	4	3	4	3
	B	2.893L	4.494R	2.393L	1.300L	3.700R	4.480R	4.993R	3.692L	5.493R	3.191L
	M	15.012	13.755	14.479	15.321	14.071	13.611	13.315	14.279	12.881	13.736
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	4	3	3	4	4	4	3	4	3
	B	2.893L	4.494R	2.393L	1.300L	3.700R	4.480R	4.993R	3.692L	5.493R	3.191L
	M	19.991	18.704	19.465	20.317	19.037	18.561	18.252	19.245	17.805	18.711

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base L		40	44	44	44	44	44	44	44	48	48
Axle Spacing	X	8	8	8	8	8	8	8	8	8	8
	X'	20	24	24	24	24	24	24	24	28	28
Load On Axles	a_1	.20	.10	.10	.10	.10	.20	.20	.20	.10	.10
	a_2	.50	.30	.36	.40	.50	.30	.40	.50	.30	.36
	a_3	.30	.60	.54	.50	.40	.50	.40	.30	.60	.54
Span-Feet 10	G	2–3	4–6	4–6	2–3	2–3	4–6	2–3	2–3	4–6	4–6
	N	3	5	5	3	3	5	3	3	5	5
	B	1.000R	0	0	1.000R	1.000R	0	1.000R	1.000R	0	0
	M	.800	.700	.630	.640	.800	.582	.640	.800	.700	.630
20	G	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6
	N	2	5	5	5	2	5	2	2	5	5
	B	.429R	0	0	0	167L	0	.667R	.429R	0	0
	M	2.207	2.200	1.980	1.832	2.101	1.832	1.814	2.207	2.200	1.980
30	G	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6
	N	2	5	5	5	2	5	2	2	5	5
	B	.429R	0	0	0	.167L	0	.667R	.429R	0	0
	M	3.955	3.700	3.330	3.082	3.600	3.082	3.309	3.955	3.700	3.330
40	G	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6
	N	2	5	5	5	2	5	2	2	5	5
	B	.429R	0	0	0	.167L	0	.667R	.429R	0	0
	M	5.703	5.200	4.680	4.332	5.101	4.332	4.807	5.703	5.200	4.680
50	G	1–5	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6
	N	3	5	5	5	2	5	2	2	5	5
	B	.556L	0	0	0	.167L	0	.667R	.429R	0	0
	M	8.556	6.700	6.030	5.582	6.600	5.582	6.305	7.453	6.700	6.030
60	G	1–6	2–6	2–6	2–6	1–6	2–6	1–6	1–5	4–6	3–6
	N	3	4	4	4	3	4	3	3	5	5
	B	1.900L	3.000R	4.000R	4.660R	4.496L	3.618R	3.990L	1.000L	0	4.000R
	M	9.760	8.535	7.980	7.628	8.646	7.276	8.075	10.415	8.200	7.392
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	4	4	4	3	4	3	3	4	4
	B	1.900L	4.500R	5.400R	5.992R	4.496L	6.492R	3.990L	2.500L	5.300R	6.320R
	M	14.745	13.353	12.805	12.453	13.562	12.031	13.009	14.178	12.651	12.019
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	4	4	4	3	4	3	3	4	4
	B	1.900L	4.500R	5.400R	5.992R	4.496L	6.492R	3.990L	2.500L	5.300R	6.320R
	M	19.736	18.303	17.732	17.363	18.511	16.926	17.969	19.163	17.581	16.919

TABLE 7.8 (Continued)

Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	48	48	48	48	48	36	36	36	36	36
Axle	X	8	8	8	8	8	12	12	12	12	12
Spacing	X′	28	28	28	28	28	12	12	12	12	12
Load	a_1	.10	.10	.20	.20	.20	.10	.10	.10	.10	.20
On	a_2	.40	.50	.30	.40	.50	.30	.36	.40	.50	.30
Axles	a_3	.50	.40	.50	.40	.30	.60	.54	.50	.40	.50
Span-Feet 10	G	2–3	2–3	4–6	2–3	2–3	4–6	4–6	2–3	2–3	4–6
	N	3	3	5	3	3	5	5	3	3	5
	B	1.000R	1.000R	0	1.000R	1.000R	0	0	1.000R	1.000R	0
	M	.640	.800	.582	.640	.800	.700	.630	.640	.800	.582
20	G	4–6	1–3	4–6	1–3	1–3	4–6	4–6	4–6	2–3	4–6
	N	5	2	5	2	2	5	5	5	3	5
	B	0	.167L	0	.667R	.429R	0	0	0	1.000R	0
	M	1.832	2.101	1.832	1.814	2.207	2.200	1.980	1.832	2.025	1.832
30	G	4–6	1–3	4–6	1–3	1–3	4–6	3–6	4–6	2–5	3–6
	N	5	2	5	2	2	5	5	5	3	5
	B	0	.167L	0	.667R	.429R	0	2.000R	0	1.778L	1.844R
	M	3.082	3.600	3.082	3.309	3.955	3.700	3.336	3.082	3.463	3.083
40	G	4–6	1–3	4–6	1–3	1–3	2–6	2–6	2–6	1–6	2–6
	N	5	2	5	2	2	4	4	4	3	4
	B	0	.167L	0	.667R	.429R	1.000R	1.600R	1.996R	1.894L	1.371R
	M	4.332	5.101	4.332	4.807	6.703	5.723	5.458	5.290	5.596	4.937
50	G	4–6	1–3	4–6	1–3	1–3	2–6	2–6	2–6	1–6	2–6
	N	5	2	5	2	2	4	4	4	3	4
	B	0	.167L	0	.667R	.429R	1.000R	1.600R	1.996R	1.894L	1.371R
	M	5.582	6.600	5.582	6.305	7.453	7.968	7.696	7.522	8.078	6.930
60	G	2–6	1–3	3–6	1–3	1–3	1–6	1–6	1–6	1–6	1–6
	N	4	2	5	2	2	4	4	4	3	4
	B	5.547R	.167L	3.687R	.667R	.429R	2.300R	2.840R	3.195R	1.894L	3.894R
	M	6.965	8.100	6.833	7.805	9.203	10.388	10.134	9.971	10.566	9.355
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	4	3	3	4	4	4	3	4
	B	6.991R	5.290L	7.491R	4.789L	3.100L	2.300R	2.840R	3.195R	1.894L	3.894R
	M	11.616	12.860	11.207	12.298	13.620	15.366	15.101	14.929	15.551	14.292
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	4	3	3	4	4	4	3	4
	B	6.991R	5.290L	7.491R	4.789L	3.100L	2.300R	2.340R	3.195R	1.894L	3.894R
	M	16.494	17.790	16.067	17.240	18.596	20.353	20.081	19.903	20.542	19.254

Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	36	36	40	40	40	40	40	40	40	44
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	12	12	16	16	16	16	16	16	16	20
Load	a_1	.20	.20	.10	.10	.10	.10	.20	.20	.20	.10
On	a_2	.40	.50	.30	.36	.40	.50	.30	.40	.50	.30
Axles	a_3	.40	.30	.60	.54	.50	.40	.50	.40	.30	.60
Span-Feet 10	G	2–3	2–3	4–6	4–6	2–3	2–3	4–6	2–3	2–3	4–6
	N	3	3	5	5	3	3	5	3	3	5
	B	1.000R	1.000R	0	0	1.000R	1.000R	0	1.000R	1.000R	0
	M	.640	.800	.700	.630	.640	.800	.582	.640	.800	.700
20	G	2–3	2–3	4–6	4–6	4–6	2–3	4–6	2–3	2–3	4–6
	N	3	3	5	5	5	3	5	3	3	5
	B	1.000R	1.000R	0	0	0	1.000R	0	1.000R	1.000R	0
	M	1.620	2.025	2.200	1.980	1.832	2.025	1.832	1.620	2.025	2.200
30	G	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6
	N	2	2	5	5	5	2	5	2	2	5
	B	1.333R	1.000R	0	0	0	.167R	0	1.333R	1.000R	0
	M	2.935	3.573	3.700	3.330	3.082	3.401	3.082	2.935	3.573	3.700
40	G	1–6	1–5	3–6	2–6	2–6	1–5	3–6	1–3	1–3	4–6
	N	3	2	5	4	4	3	5	2	2	5
	B	1.193L	1.222L	2.000R	2.400R	2.884R	1.264L	2.304R	1.333R	1.000R	0
	M	4.843	5.534	5.275	4.810	4.588	5.000	4.421	4.427	5.318	5.200
50	G	1–6	1–6	2–6	2–6	2–6	1–6	2–6	1–6	1–5	3–6
	N	3	3	4	4	4	3	4	3	2	5
	B	1.193L	.300L	1.667R	2.400R	2.884R	2.698L	2.120R	1.992L	1.667L	2.400R
	M	7.335	8.002	7.400	7.034	6.801	7.353	6.372	6.587	7.600	6.861
60	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	2–6
	N	3	3	4	4	4	3	4	3	3	4
	B	1.193L	.300L	3.100R	3.760R	4.194R	2.698L	4.893R	1.992L	.900L	2.334R
	M	9.831	10.502	9.660	9.316	9.095	9.828	8.502	9.074	9.914	9.081
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	3	4	4	4	3	4	3	3	4
	B	1.193L	.300L	3.100R	3.760R	4.194R	2.698L	4.893R	1.992L	.900L	3.900R
	M	14.825	15.501	14.620	14.257	14.022	14.798	13.402	14.058	14.910	13.890
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	3	4	4	4	3	4	3	3	4
	B	1.193L	.300L	3.100R	3.760R	4.194R	2.698L	4.893R	1.992L	.900L	3.900R
	M	19.821	20.501	19.596	19.221	18.978	19.780	18.342	19.048	19.908	18.852

TABLE 7.8 (Continued)

Truck No.		51	52	53	54	55	56	57	58	59	60
Wh. Base	L	44	44	44	44	44	44	48	48	48	48
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	20	20	20	20	20	20	24	24	24	24
Load	a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.10
On	a_2	.36	.40	.50	.30	.40	.50	.30	.36	.40	.50
Axles	a_3	.54	.50	.40	.50	.40	.30	.60	.54	.50	.40
Span-Feet 10	G	4–6	2–3	2–3	4–6	2–3	2–3	4–6	4–6	2–3	2–3
	N	5	3	3	5	3	3	5	5	3	3
	B	0	1.000R	1.000R	0	1.000R	1.000R	0	0	1.000R	1.000R
	M	.630	.640	.800	.582	.640	.800	.700	.630	.640	.800
20	G	4–6	4–6	2–3	4–6	2–3	2–3	4–6	4–6	4–6	2–3
	N	5	5	3	5	3	3	5	5	5	3
	B	0	0	1.000R	0	1.000R	1.000R	0	0	0	1.000R
	M	1.980	1.832	2.025	1.832	1.620	2.025	2.200	1.980	1.832	2.025
30	G	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6	4–6	1–3
	N	5	5	2	5	2	2	5	5	5	2
	B	0	0	.167R	0	1.333R	1.000R	0	0	0	.167R
	M	3.330	3.082	3.401	3.082	2.935	3.573	3.700	3.330	3.082	3.401
40	G	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6	4–6	1–3
	N	5	5	2	5	2	2	5	5	5	2
	B	0	0	.167R	0	1.333R	1.000R	0	0	0	.167R
	M	4.680	4.332	4.901	4.332	4.427	5.318	5.200	4.680	4.332	4.901
50	G	2–6	2–6	1–5	2–6	1–4	1–4	4–6	4–6	4–6	1–3
	N	4	4	3	4	2	2	5	5	5	2
	B	3.200R	3.791R	1.878L	2.887R	1.086L	.625L	0	0	0	.167R
	M	6.395	6.105	6.660	5.832	5.934	7.106	6.700	6.030	5.582	6.400
60	G	2–6	2–6	1–6	2–6	1–6	1–6	2–6	2–6	2–6	1–6
	N	4	4	3	4	3	3	4	4	4	3
	B	3.200R	3.791R	3.492L	2.887R	2.791L	1.500L	3.000R	4.000R	4.682R	4.291L
	M	8.614	8.312	9.112	7.810	8.339	9.338	8.535	7.980	7.624	8.416
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	4	3	4	3	3	4	4	4	3
	B	4.680R	5.215R	3.492L	5.916R	2.791L	1.500L	4.700R	5.600R	6.217R	4.291L
	M	12.994	13.133	14.061	12.530	13.306	14.328	13.176	12.632	12.275	13.340
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	4	3	4	3	3	4	4	4	3
	B	4.680R	5.215R	3.492L	5.916R	2.791L	1.500L	4.700R	5.600R	6.217R	4.291L
	M	17.939	18.065	19.030	17.442	18.287	19.323	18.121	17.554	17.178	18.294

Truck No.		61	62	63	64	65	66	67	68	69	70
Wh. Base	L	48	48	48	52	52	52	52	52	52	52
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	24	24	24	28	28	28	28	28	28	28
Load	a_1	.20	.20	.20	.10	.10	.10	.10	.20	.20	.20
On	a_2	.30	.40	.50	.30	.36	.40	.50	.30	.40	.50
Axles	a_3	.50	.40	.30	.60	.54	.50	.40	.50	.40	.30
Span-Feet 10	G	4–6	2–3	2–3	4–6	4–6	2–3	2–3	4–6	2–3	2–3
	N	5	3	3	5	5	3	3	5	3	3
	B	0	1.000R	1.000R	0	0	1.000R	1.000R	0	1.000R	1.000R
	M	.582	.640	.800	.700	.630	.640	.800	.582	.640	.800
20	G	4–6	2–3	2–3	4–6	4–6	4–6	2–3	4–6	2–3	2–3
	N	5	3	3	5	5	5	3	5	3	3
	B	0	1.000R	1.000R	0	0	0	1.000R	0	1.000R	1.000R
	M	1.832	1.620	2.025	2.200	1.980	1.832	2.025	1.832	1.620	2.025
30	G	4–6	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3
	N	5	2	2	5	5	5	2	5	2	2
	B	0	1.333R	1.000R	0	0	0	.167R	0	1.333R	1.000R
	M	3.082	2.935	3.573	3.700	3.330	3.082	3.401	3.082	2.935	3.573
40	G	4–6	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3
	N	5	2	2	5	5	5	2	5	2	2
	B	0	1.333R	1.000R	0	0	0	.167R	0	1.333R	1.000R
	M	4.332	4.427	5.318	5.200	4.680	4.332	4.901	4.332	4.427	5.318
50	G	4–6	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3
	N	5	2	2	5	5	5	2	5	2	2
	B	0	1.333R	1.000R	0	0	0	.167R	0	1.333R	1.000R
	M	5.582	5.921	7.064	6.700	6.030	5.582	6.400	5.582	5.921	7.064
60	G	2–6	1–6	1–4	4–6	3–6	2–6	1–3	4–6	1–3	1–3
	N	4	3	2	5	5	4	2	5	2	2
	B	3.639R	3.590L	.875L	0	4.000R	5.573R	.167R	0	1.333R	1.000R
	M	7.274	7.625	8.910	8.200	7.392	6.959	7.900	6.832	7.418	8.814
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	3	4	4	4	3	4	3	3
	B	6.918R	3.590L	2.100L	5.500R	6.520R	7.219R	5.089L	7.920R	4.389L	2.700L
	M	11.688	12.572	13.755	12.478	11.851	11.441	12.635	10.872	11.852	13.191
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	3	4	4	4	3	4	3	3
	B	6.918R	3.590L	2.100L	5.500R	6.520R	7.219R	5.089L	7.920R	4.389L	2.700L
	M	16.569	17.539	18.744	17.403	16.745	16.311	17.570	15.715	16.804	18.173

TABLE 7.8 (Continued)

Span-Feet		Truck No.	71	72	73	74	75	76	77	78	79	80
		Wh. Base L	40	40	40	40	40	40	40	44	44	44
	Axle Spacing	X	16	16	16	16	16	16	16	16	16	16
		X′	12	12	12	12	12	12	12	16	16	16
	Load On Axles	a_1	.10	.10	.10	.10	.20	.20	.20	.10	.10	.10
		a_2	.30	.36	.40	.50	.30	.40	.50	.30	.36	.40
		a_3	.60	.54	.50	.40	.50	.40	.30	.60	.54	.50
10		G	4–6	4–6	2–3	2–3	4–6	2–3	2–3	4–6	4–6	2–3
		N	5	5	3	3	5	3	3	5	5	3
		B	0	0	1.000R	1.000R	0	1.000R	1.000R	0	0	1.000R
		M	.700	.630	.640	.800	.582	.640	.800	.700	.630	.640
20		G	4–6	4–6	4–6	2–3	4–6	2–3	2–3	4–6	4–6	4–6
		N	5	5	5	3	5	3	3	5	5	5
		B	0	0	0	1.000R	0	1.000R	1.000R	0	0	0
		M	2.200	1.980	1.832	2.025	1.832	1.620	2.025	2.200	1.980	1.832
30		G	4–6	3–6	4–6	2–5	4–6	2–5	2–4	4–6	4–6	4–6
		N	5	5	5	3	5	3	3	5	5	5
		B	0	2.000R	0	1.778L	0	2.195L	.167L	0	0	0
		M	3.700	3.336	3.082	3.463	3.082	2.840	3.400	3.700	3.330	3.082
40		G	2–6	2–6	2–6	2–6	2–6	2–6	2–6	3–6	2–6	2–6
		N	4	4	4	3	4	3	3	5	4	4
		B	1.000R	1.600R	2.009R	2.995L	1.384R	3.495L	2.375L	2.000R	2.400R	2.900R
		M	5.723	5.458	5.291	5.507	4.939	4.649	5.213	5.275	4.810	4.587
50		G	2–6	2–6	2–6	1–6	2–6	1–6	1–6	2–6	2–6	2–6
		N	4	4	4	3	4	3	3	4	4	4
		B	1.000R	1.600R	2.009R	1.694L	1.384R	.793L	.100R	1.667R	2.400R	2.900R
		M	7.968	7.696	7.523	7.864	6.932	6.920	7.400	7.400	7.034	6.799
60		G	2–6	1–6	1–6	1–6	1–6	1–6	1–6	2–6	2–6	2–6
		N	4	4	4	3	4	3	3	4	4	4
		B	1.000R	3.040R	3.411R	1.694L	4.313R	.793L	.100R	1.667R	2.400R	2.900R
		M	10.215	9.954	9.791	10.354	9.005	9.418	9.900	9.642	9.266	9.024
80		G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	4	4	3	4	3	3	4	4	4
		B	2.500R	3.040R	3.411R	1.694L	4.313R	.793L	.100R	3.300R	3.960R	4.413R
		M	15.178	14.916	14.742	15.342	13.928	14.415	14.900	14.436	14.076	13.838
100		G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	4	4	3	4	3	3	4	4	4
		B	2.500R	3.040R	3.411R	1.694L	4.313R	.793L	.100R	3.300R	3.960R	4.413R
		M	20.163	19.892	19.713	20.335	18.881	19.413	19.900	19.409	19.037	18.790

Span-Feet		Truck No.	81	82	83	84	85	86	87	88	89	90
		Wh. Base L	44	44	44	44	48	48	48	48	48	48
	Axle Spacing	X	16	16	16	16	16	16	16	16	16	16
		X′	16	16	16	16	20	20	20	20	20	20
	Load On Axles	a_1	.10	.20	.20	.20	.10	.10	.10	.10	.20	.20
		a_2	.50	.30	.40	.50	.30	.36	.40	.50	.30	.40
		a_3	.40	.50	.40	.30	.60	.54	.50	.40	.50	.40
10		G	2–3	4–6	2–3	2–3	4–6	4–6	2–3	2–3	4–6	2–3
		N	3	5	3	3	5	5	3	3	5	3
		B	1.000R	0	1.000R	1.000R	0	0	1.000R	1.000R	0	1.000R
		M	.800	.582	.640	.800	.700	.630	.640	.800	.582	.640
20		G	2–3	4–6	2–3	2–3	4–6	4–6	4–6	2–3	4–6	2–3
		N	3	5	3	3	5	5	5	3	5	3
		B	1.000R	0	1.000R	1.000R	0	0	0	1.000R	0	1.000R
		M	2.025	1.832	1.620	2.025	2.200	1.980	1.832	2.025	1.832	1.620
30		G	2–3	4–6	2–3	2–3	4–6	4–6	4–6	2–3	4–6	2–3
		N	3	5	3	3	5	5	5	3	5	3
		B	1.000R	0	1.000R	1.000R	0	0	0	1.000R	0	1.000R
		M	3.267	3.082	2.613	3.267	3.700	3.330	3.082	3.267	3.082	2.613
40		G	2–5	3–6	1–3	1–3	4–6	4–6	4–6	1–3	4–6	1–3
		N	3	5	2	2	5	5	5	2	5	2
		B	2.473L	2.315R	2.000R	1.572R	0	0	0	.500R	0	2.000R
		M	4.914	4.418	4.060	4.943	5.200	4.680	4.332	4.704	4.332	4.060
50		G	1–6	2–6	1–6	1–6	3–6	2–6	2–6	1–5	2–6	1–4
		N	3	4	3	3	5	4	4	3	4	2
		B	2.493L	2.136R	1.592L	.500L	2.400R	3.200R	3.791R	1.647L	2.887R	.540L
		M	7.132	6.373	6.159	7.005	6.861	6.395	6.105	6.446	5.832	5.571
60		G	1–6	2–6	1–6	1–6	2–6	2–6	2–6	1–6	2–6	1–6
		N	3	4	3	3	4	4	4	3	4	3
		B	2.493L	2.136R	1.592L	.500L	2.333R	3.200R	3.791R	3.292L	2.887R	2.391L
		M	9.611	8.361	8.651	9.504	9.081	8.614	8.312	8.889	7.810	7.905
80		G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	3	4	3	3	4	4	4	3	4	3
		B	2.493L	5.315R	1.592L	.500L	4.100R	4.880R	5.415R	3.292L	6.317R	2.391L
		M	14.585	13.047	13.640	14.503	13.710	13.258	12.960	13.844	12.190	12.881
100		G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	3	4	3	3	4	4	4	3	4	3
		B	2.493L	5.315R	1.592L	.500L	4.100R	4.880R	5.415R	3.292L	6.317R	2.391L
		M	19.570	17.976	18.634	19.503	18.668	18.198	17.886	18.817	17.090	17.867

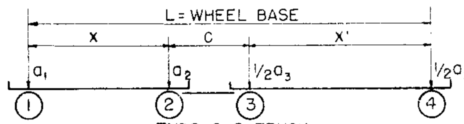
Table 7.8 (Continued)

Truck No.		91	92	93	94	95	96	97	98	99	100
Wh. Base	L	48	52	52	52	52	52	52	52	56	56
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X'	20	24	24	24	24	24	24	24	28	28
Load	a_1	.20	.10	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.50	.30	.36	.40	.50	.30	.40	.50	.30	.36
Axles	a_3	.30	.60	.54	.50	.40	.50	.40	.30	.60	.54
Span-Feet 10	G	2–3	4–6	4–6	2–3	2–3	4–6	2–3	2–3	4–6	4–6
	N	3	5	5	3	3	5	3	3	5	5
	B	1.000R	0	0	1.000R	1.000R	0	1.000R	1.000R	0	9
	M	.800	.700	.630	.640	.800	.582	.640	.800	.700	.630
20	G	2–3	4–6	4–6	4–6	2–3	4–6	2–3	2–3	4–6	4–6
	N	3	5	5	5	3	5	3	3	5	5
	B	1.000R	0	0	0	1.000R	0	1.000R	1.000R	0	0
	M	2.025	2.200	1.980	1.832	2.025	1.832	1.620	2.025	2.200	1.980
30	G	2–3	4–6	4–6	4–6	2–3	4–6	2–3	2–3	4–6	4–6
	N	3	5	5	5	3	5	3	3	5	5
	B	1.000R	0	0	0	1.000R	0	1.000R	1.000R	0	0
	M	3.267	3.700	3.330	3.082	3.267	3.082	2.613	3.267	3.700	3.330
40	G	1–3	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6
	N	2	5	5	5	2	5	2	2	5	5
	B	1.572R	0	0	0	.500R	0	2.000R	1.572R	0	0
	M	4.943	5.200	4.680	4.332	4.704	4.332	4.060	4.943	5.200	4.680
50	G	1–4	4–6	4–6	4–6	1–3	4–6	1–3	1–3	4–6	4–6
	N	2	5	5	5	2	5	2	2	5	5
	B	.125L	0	0	0	.500R	0	2.000R	1.572R	0	0
	M	6.700	6.700	6.030	5.582	6.203	5.582	5.548	6.685	6.700	6.030
60	G	1–6	2–6	2–6	2–6	1–6	2–6	1–6	1–4	4–6	3–6
	N	3	4	4	4	3	4	3	2	5	5
	B	1.100L	3.000R	4.000R	4.682R	4.090L	3.639R	3.189L	.375L	0	4.000R
	M	8.920	8.535	7.980	7.624	8.189	7.274	7.181	8.502	8.200	7.392
80	G	1–6	2–6	1–6	1–6	1–6	1–6	1–6	1–6	2–6	2–6
	N	3	4	4	4	3	4	3	3	4	4
	B	1.100L	3.000R	5.800R	6.417R	4.090L	7.319R	3.189L	1.700L	3.667R	4.800R
	M	13.915	13.002	12.461	12.106	13.119	11.359	12.138	13.336	12.452	11.779
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	3	4	4	4	3	4	3	3	4	4
	B	1.100L	4.900R	5.800R	6.417R	4.090L	7.319R	3.189L	1.700L	5.700R	6.720R
	M	18.912	17.940	17.376	17.003	18.077	16.225	17.113	18.329	17.225	16.572

Truck No.		101	102	103	104	105
Wh. Base	L	56	56	56	56	56
Axle	X	16	16	16	16	16
Spacing	X'	28	28	28	28	28
Load	a_1	.10	.10	.20	.20	.20
On	a_2	.40	.50	.30	.40	.50
Axles	a_3	.50	.40	.50	.40	.30
Span-Feet 10	G	2–3	2–3	4–6	2–3	2–3
	N	3	3	5	3	3
	B	1.000R	1.000R	0	1.000R	1.000R
	M	.640	.800	.582	.640	.800
20	G	4–6	2–3	4–6	2–3	2–3
	N	5	3	5	3	3
	B	0	1.000R	0	1.000R	1.000R
	M	1.832	2.025	1.832	1.620	2.025
30	G	4–6	2–3	4–6	2–3	2–3
	N	5	3	5	3	3
	B	0	1.000R	0	1.000R	1.000R
	M	3.082	3.267	3.082	2.613	3.267
40	G	4-6	1–3	4–6	1–3	1–3
	N	5	2	5	2	2
	B	0	.500R	0	2.000R	1.572R
	M	4.332	4.704	4.332	4.060	4.943
50	G	4-6	1–3	4–6	1–3	1–3
	N	5	2	5	2	2
	B	0	.500R	0	2.000R	1.572R
	M	5.582	6.203	5.582	5.548	6.685
60	G	2–6	1–3	4–6	1–3	1–3
	N	4	2	5	2	2
	B	5.573R	.500R	0	2.000R	1.572R
	M	6.959	7.702	6.832	7.040	8.429
80	G	2–6	1–6	2–6	1–6	1–6
	N	4	3	4	3	3
	B	5.573R	4.889L	4.391R	3.988L	2.300L
	M	11.342	12.410	10.688	11.411	12.766
100	G	1–6	1–6	1–6	1–6	1–6
	N	4	3	4	3	3
	B	7.419R	4.889L	8.221R	3.988L	2.300L
	M	16.139	17.350	15.380	16.371	17.753

Table 7.9

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-2 TRUCK

One hundred forty-four variations in the Type 2-2 truck are given in this Table. Each truck number, from 1 to 144, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.			1	2	3	4	5	6	7	8	9	10
Wh. Base		L	28	28	28	28	28	28	32	32	32	32
Axle		X	12	12	12	12	12	12	12	12	12	12
Spacing		X'	8	8	8	8	8	8	12	12	12	12
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load		a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
On		a_2	.20	.30	.40	.20	.30	.40	.20	.30	.40	.20
Axles		a_3	.70	.60	.50	.60	.50	.40	.70	.60	.50	.60
Span-Feet	10	G	4	4	2	4	2	2	4	4	2	4
		N	4	4	2	4	2	2	4	4	2	4
		B	0	0	0	0	0	0	0	0	0	0
		M	.875	.750	1.000	.750	.750	1.000	.875	.750	1.000	.750
	20	G	2–4	2–4	2–3	2–4	2–3	2–3	2–3	2–3	2–3	2–3
		N	3	3	2	3	2	2	3	2	2	3
		B	.667L	0	1.539L	.500L	1.818L	1.334L	1.455R	2.000L	1.539L	1.600R
		M	2.320	2.100	2.327	2.010	1.841	2.253	2.008	1.920	2.327	1.764
	30	G	2–4	2–4	2–4	2–4	2–4	1–3	2–4	2–4	1–3	2–4
		N	3	3	3	3	3	2	3	3	2	3
		B	.667L	0	.667R	.500L	.250R	.500R	1.445L	.667L	.534L	1.250L
		M	4.563	4.350	4.163	4.006	3.802	4.006	3.913	3.763	4.032	3.442
	40	G	2–4	1–4	1–4	1–4	1–4	1–4	2–4	2–4	1–4	2–4
		N	3	3	2	3	3	2	3	3	2	3
		B	.667L	1.000R	2.400L	1.600R	2.200R	1.200L	1.445L	.667L	2.900L	1.250L
		M	6.811	6.625	6.544	6.064	5.921	6.436	6.147	6.011	6.110	5.431
	50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	3	2	3	3	2	3
		B	.400R	1.000R	2.400L	1.600R	2.200R	1.200L	.300L	.400R	2.900L	1.000R
		M	9.303	9.120	9.015	8.551	8.397	8.929	8.602	8.503	8.568	7.920
	60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	3	2	3	3	2	3
		B	.400R	1.000R	2.400L	1.600R	2.200R	1.200L	.300L	.400R	2.900L	1.000R
		M	11.803	11.617	11.496	11.043	10.881	11.424	11.102	11.003	11.040	10.417
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	3	2	3	3	2	3
		B	.400R	1.000R	2.400L	1.600R	2.200R	1.200L	.300L	.400R	2.900L	1.000R
		M	16.802	16.613	16.472	16.032	15.861	16.418	16.101	16.002	16.005	15.413
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	3	2	3	3	2	3
		B	.400R	1.000R	2.400L	1.600R	2.200R	1.200L	.300L	.400R	2.900L	1.000R
		M	21.802	21.610	21.458	21.026	20.848	21.414	21.101	21.002	20.984	20.410

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	32	32	36	36	36	36	36	36	40	40
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	12	12	16	16	16	16	16	16	20	20
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load On Axles	a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
	a_2	.30	.40	.20	.30	.40	.20	.30	.40	.20	.30
	a_3	.50	.40	.70	.60	.50	.60	.50	.40	.70	.60
Span-Feet 10	G	2	2	4	4	2	4	2	2	4	4
	N	2	2	4	4	2	4	2	2	4	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.750	1.000	.875	.750	1.000	.750	.750	1.000	.875	.750
20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	3	3	2	3	2	2	3	3
	B	1.818L	1.334L	1.455R	2.000R	1.539L	1.600R	1.818L	1.334L	1.455R	2.000L
	M	1.841	2.253	2.008	1.920	2.327	1.764	1.841	2.253	2.008	1.920
30	G	1–3	1–3	2–3	1–3	1–3	2–3	1–3	1–3	2–3	1–3
	N	2	2	3	2	2	3	2	2	3	2
	B	.267R	.500R	1.455R	.857L	.534L	1.600R	.267R	.500R	1.455R	.857L
	M	3.427	4.006	3.364	3.467	4.032	2.993	3.427	4.006	3.364	3.467
40	G	1–4	1–4	2–4	2–4	1–3	2–4	1–3	1–3	2–4	1–3
	N	2	2	3	3	2	3	2	2	3	2
	B	2.300L	1.600L	2.222L	1.334L	.534L	2.000L	.267R	.500R	3.000L	.857L
	M	5.432	6.064	5.511	5.440	5.906	4.880	5.301	6.005	4.903	5.213
50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.300L	1.600L	1.000L	.200L	3.400L	.400R	2.800L	2.000L	1.700L	.800L
	M	7.906	8.551	7.920	7.901	8.131	7.303	7.457	8.180	7.258	7.313
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.300L	1.600L	1.000L	.200L	3.400L	.400R	2.800L	2.000L	1.700L	.800L
	M	10.388	11.043	10.417	10.401	10.593	9.803	9.931	10.667	9.748	9.811
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.300L	1.600L	1.000L	.200L	3.400L	.400R	2.800L	2.000L	1.700L	.800L
	M	15.366	16.032	15.413	15.401	15.545	14.802	14.898	15.650	14.736	14.808
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	2	2	3	3
	B	2.300L	1.600L	1.000L	.200L	3.400L	.400R	2.800L	2.000L	1.700L	.800L
	M	20.353	21.026	20.410	20.400	20.516	19.802	19.878	20.640	19.729	19.806

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	40	40	40	40	32	32	32	32	32	32
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	20	20	20	20	8	8	8	8	8	8
Hitch	C	8	8	8	8	12	12	12	12	12	12
Load On Axles	a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
	a_2	.40	.20	.30	.40	.20	.30	.40	.20	.30	.40
	a_3	.50	.60	.50	.40	.70	.60	.50	.60	.50	.40
Span-Feet 10	G	2	4	2	2	4	4	2	4	2	2
	N	2	4	2	2	4	4	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	.750	.750	1.000	.875	.750	1.000	.750	.750	1.000
20	G	2–3	2–3	2–3	2–3	3–4	3–4	2	3–4	3–4	2
	N	2	3	2	2	4	4	2	4	4	2
	B	1.539L	1.600R	1.818L	1.334L	2.000R	2.000R	0	2.000R	2.000R	0
	M	2.327	1.764	1.841	2.253	2.240	1.920	2.000	1.920	1.600	2.000
30	G	1–3	2–3	1–3	1–3	2–4	2–4	1–3	2–4	2–4	1–3
	N	2	3	2	2	3	3	2	3	3	2
	B	.534L	1.600R	.267R	.500R	.222L	.667R	1.200L	0	1.000R	0
	M	4.032	2.993	3.427	4.006	4.152	3.763	3.561	3.600	3.226	3.600
40	G	1–3	1–3	1–3	1–3	2–4	2–4	1–4	2–4	2–4	1–4
	N	2	2	2	2	3	3	2	3	3	2
	B	.534L	0	.267R	.500R	.222L	.667R	3.400L	0	1.000R	2.000L
	M	5.906	4.600	5.301	6.005	6.401	6.011	5.689	5.600	5.220	5.700
50	G	1–3	1–4	1–3	1–3	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	3	2
	B	.534L	.200L	.267R	.500R	1.000R	1.800R	3.400L	2.400R	3.200R	2.000L
	M	7.779	6.701	7.176	8.004	8.720	8.365	8.131	7.815	7.505	8.180
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	3	2
	B	3.900L	.200L	3.300L	2.400L	1.000R	1.800R	3.400L	2.400R	3.200R	2.000L
	M	10.154	9.201	9.482	10.296	11.217	10.854	10.593	10.296	9.971	10.667
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	3	2
	B	3.900L	.200L	3.300L	2.400L	1.000R	1.800R	3.400L	2.400R	3.200R	2.000L
	M	15.090	14.201	14.436	15.272	16.213	15.841	15.545	15.272	14.928	15.650
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	3	2
	B	3.900L	.200L	3.300L	2.400L	1.000R	1.800R	3.400L	2.400R	3.200R	2.000L
	M	20.052	19.200	19.409	20.258	21.210	20.832	20.516	20.258	19.902	20.640

Truck No.			31	32	33	34	35	36	37	38	39	40
Wh. Base		L	36	36	36	36	36	36	40	40	40	40
Axle		X	12	12	12	12	12	12	12	12	12	12
Spacing		X′	12	12	12	12	12	12	16	16	16	16
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load		a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
On		a_2	.20	.30	.40	.20	.30	.40	.20	.30	.40	.20
Axles		a_3	.70	.60	.50	.60	.50	.40	.70	.60	.50	.60
Span-Feet	10	G	4	4	2	4	2	2	4	4	2	4
		N	4	4	2	4	2	2	4	4	2	4
		B	0	0	0	0	0	0	0	0	0	0
		M	.875	.750	1.000	.750	.750	1.000	.875	.750	1.000	.750
	20	G	4	4	2	4	2	2	4	4	2	4
		N	4	4	2	4	2	2	4	4	2	4
		B	0	0	0	0	0	0	0	0	0	0
		M	1.750	1.500	2.000	1.500	1.500	2.000	1.750	1.500	2.000	1.500
	30	G	2–4	2–4	1–3	2–4	1–3	1–3	2–3	1–3	1–3	2–3
		N	3	3	2	3	2	2	3	2	2	3
		B	1.000L	0	1.200L	.750L	.400L	0	2.182R	1.715L	1.200L	2.400R
		M	3.480	3.150	3.561	3.015	2.929	3.600	3.012	2.918	3.561	2.646
	40	G	2–4	2–4	1–3	2–4	1–3	1–3	2–4	2–4	1–3	2–4
		N	3	3	2	3	2	2	3	3	2	3
		B	1.000L	0	1.200L	.750L	.400L	0	1.778L	.667L	1.200L	1.500L
		M	5.723	5.400	5.427	5.011	4.803	5.600	5.071	4.811	5.427	4.445
	50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–3	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.300R	1.200R	3.900L	1.800R	3.300L	2.400L	.400L	.600R	1.200L	1.200R
		M	8.002	7.729	7.704	7.165	7.018	7.815	7.303	7.107	7.297	6.529
	60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.300R	1.200R	3.900L	1.800R	3.300L	2.400L	.400L	.600R	4.400L	1.200R
		M	10.502	10.224	10.154	9.654	9.482	10.296	9.803	9.606	9.723	9.024
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.300R	1.200R	3.900L	1.800R	3.300L	2.400L	.400L	.600R	4.400L	1.200R
		M	15.501	15.218	15.090	14.641	14.436	15.272	14.802	14.605	14.642	14.018
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.300R	1.200R	3.900L	1.800R	3.300L	2.400L	.400L	.600R	4.400L	1.200R
		M	20.501	20.214	20.052	19.632	19.409	20.258	19.802	19.604	19.594	19.014

Truck No.			41	42	43	44	45	46	47	48	49	50
Wh.Base		L	40	40	44	44	44	44	44	44	32	32
Axle		X	12	12	12	12	12	12	12	12	16	16
Spacing		X′	16	16	20	20	20	20	20	20	8	8
Hitch		C	12	12	12	12	12	12	12	12	8	8
Load		a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
On		a_2	.30	.40	.20	.30	.40	.20	.30	.40	.20	.30
Axles		a_3	.50	.40	.70	.60	.50	.60	.50	.40	.70	.60
Span-Feet	10	G	2	2	4	4	2	4	2	2	4	4
		N	2	2	4	4	2	4	2	2	4	4
		B	0	0	0	0	0	0	0	0	0	0
		M	.750	1.000	.875	.750	1.000	.750	.750	1.000	.875	.750
	20	G	2	2	4	4	2	4	2	2	2–4	2–4
		N	2	2	4	4	2	4	2	2	3	3
		B	0	0	0	0	0	0	0	0	.667L	0
		M	1.500	2.000	1.750	1.500	2.000	1.500	1.500	2.000	2.320	2.100
	30	G	1–3	1–3	2–3	1–3	1–3	2–3	1–3	1–3	2–4	2–4
		N	2	2	3	2	2	3	2	2	3	3
		B	.400L	0	2.182R	1.715L	1.200L	2.400R	.400L	0	.667L	0
		M	2.929	3.600	3.012	2.918	3.561	2.646	2.929	3.600	4.563	4.350
	40	G	1–3	1–3	2–4	1–3	1–3	1–3	1–3	1–3	2–4	2–4
		N	2	2	3	2	2	2	2	2	3	3
		B	.400L	0	2.556L	1.715L	1.200L	.857L	.400L	0	.667L	0
		M	4.803	5.600	4.447	4.651	5.427	4.013	4.803	5.600	6.811	6.600
	50	G	1–3	1–3	2–4	1–4	1–3	1–4	1–3	1–3	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	.400L	0	2.556L	0	1.200L	.600R	.400L	0	.600R	1.200R
		M	6.677	7.600	6.668	6.500	7.297	5.907	6.677	7.600	9.107	8.929
	60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–3	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	3.800L	2.800L	1.100L	0	4.900L	.600R	4.300L	0	.600R	1.200R
		M	9.041	9.931	9.120	9.000	9.300	8.406	8.608	9.600	11.606	11.424
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	3.800L	2.800L	1.100L	0	4.900L	.600R	4.300L	3.200L	.600R	1.200R
		M	13.981	14.898	14.115	14.000	14.200	13.405	13.531	14.528	16.605	16.418
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	2	3	3	2	3	2	2	3	3
		B	3.800L	2.800L	1.100L	0	4.900L	.600R	4.300L	3.200L	.600R	1.200R
		M	18.944	19.878	19.112	19.000	19.140	18.404	18.485	19.502	21.604	21.414

Truck No.			51	52	53	54	55	56	57	58	59	60
Wh. Base		L	32	32	32	32	36	36	36	36	36	36
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	8	8	8	8	12	12	12	12	12	12
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
		a_2	.40	.20	.30	.40	.20	.30	.40	.20	.30	.40
		a_3	.50	.60	.50	.40	.70	.60	.50	.60	.50	.40
Span-Feet	10	G	2	4	2	2	4	4	2	4	2	2
		N	2	4	2	2	4	4	2	4	2	2
		B	0	0	0	0	0	0	0	0	0	0
		M	1.000	.750	.750	1.000	.875	.750	1.000	.750	.750	1.000
	20	G	2–3	2–4	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	3	2	2	3	2	2	3	2	2
		B	1.539L	.500L	1.818L	1.333L	1.455R	2.000L	1.539L	1.600R	1.818L	1.334L
		M	2.327	2.010	1.841	2.253	2.008	1.920	2.327	1.764	1.841	2.253
	30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–3	2–4	2–4	2–3
		N	3	3	3	2	3	3	2	3	3	2
		B	.667R	.500L	.250R	3.000L	1.445L	.667L	1.539L	1.250L	.375L	1.334L
		M	4.163	4.006	3.802	3.840	3.913	3.763	3.926	3.442	3.304	3.736
	40	G	2–4	2–4	2–4	1–4	2–4	2–4	2–4	2–4	2–4	1–4
		N	3	3	3	2	3	3	3	3	3	2
		B	.667R	.500L	.250R	.800L	1.445L	.667L	.111R	1.250L	.375L	1.200L
		M	6.411	6.005	5.802	6.016	6.147	6.011	5.900	5.431	5.303	5.636
	50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	3	3	2	3	3	2	3	3	2
		B	2.200L	2.000R	2.600R	.800L	.100L	.600R	2.700L	1.400R	2.100R	1.200L
		M	8.797	8.180	8.035	8.513	8.400	8.307	8.346	7.539	7.488	8.129
	60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	3	3	2	3	3	2	3	3	2
		B	2.200L	2.000R	2.600R	.800L	.100L	.600R	2.700L	1.400R	2.100R	1.200L
		M	11.281	10.667	10.513	11.011	10.900	10.806	10.822	10.033	9.974	10.624
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	3	3	2	3	3	2	3	3	2
		B	2.200L	2.000R	2.600R	.800L	.100L	.600R	2.700L	1.400R	2.100R	1.200L
		M	16.261	15.650	15.485	16.008	15.900	15.805	15.791	15.025	14.955	15.618
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	2	3	3	2	3	3	2	3	3	2
		B	2.200L	2.000R	2.600R	.800L	.100L	.600R	2.700L	1.400R	2.100R	1.200L
		M	21.248	20.640	20.468	21.006	20.900	20.804	20.773	20.020	19.944	20.614

Truck No.			61	62	63	64	65	66	67	68	69	70
Wh. Base		L	40	40	40	40	40	40	44	44	44	44
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	16	16	16	16	16	16	20	20	20	20
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
		a_2	.20	.30	.40	.20	.30	.40	.20	.30	.40	.20
		a_3	.70	.60	.50	.60	.50	.40	.70	.60	.50	.60
Span-Feet	10	G	4	4	2	4	2	2	4	4	2	4
		N	4	4	2	4	2	2	4	4	2	4
		B	0	0	0	0	0	0	0	0	0	0
		M	.875	.750	1.000	.750	.750	1.000	.875	.750	1.000	.750
	20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	3	2	2	3	2	2	3	3	2	3
		B	1.455R	2.000L	1.539L	1.600R	1.818L	1.333L	1.455R	2.000R	1.539L	1.600R
		M	2.008	1.920	2.327	1.764	1.841	2.253	2.008	1.920	2.327	1.764
	30	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	3	2	2	3	2	2	3	3	2	3
		B	1.455R	2.000L	1.539L	1.600R	1.818L	1.333L	1.455R	2.000R	1.539L	1.600R
		M	3.364	3.380	3.926	2.993	3.186	3.736	3.364	3.380	3.926	2.993
	40	G	2–4	2–4	1–3	2–4	1–3	1–3	2–4	1–3	1–3	2–4
		N	3	3	2	3	2	2	3	2	2	3
		B	2.222L	1.333L	.267L	2.000L	.800R	1.000R	3.000L	.577L	.267L	2.750L
		M	5.511	5.440	5.701	4.880	4.912	5.620	4.903	5.006	5.701	4.351
	50	G	2–4	1–4	1–4	1–4	1–4	1–4	2–4	2–4	1–3	2–4
		N	3	3	2	3	2	2	3	3	2	3
		B	2.222L	0	3.200L	.800R	2.400L	1.600L	3.000L	2.000L	.267L	2.750L
		M	7.739	7.700	7.905	6.913	7.015	7.751	7.112	7.122	7.576	6.321
	60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.800L	0	3.200L	.800R	2.400L	1.600L	1.500L	.600L	3.700L	.200R
		M	10.211	10.200	10.371	9.411	9.496	10.243	9.538	9.606	9.928	8.801
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.800L	0	3.200L	.800R	2.400L	1.600L	1.500L	.600L	3.700L	.200R
		M	15.208	15.200	15.328	14.408	14.472	15.232	14.528	14.605	14.871	13.801
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	2	3	2	2	3	3	2	3
		B	.800L	0	3.200L	.800R	2.400L	1.600L	1.500L	.600L	3.700L	.200R
		M	20.206	20.200	20.302	19.406	19.458	20.226	19.523	19.604	19.837	18.800

Span-Feet		71	72	73	74	75	76	77	78	79	80
Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	44	44	36	36	36	36	36	36	40	40
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	20	20	8	8	8	8	8	8	12	12
Hitch	C	8	8	12	12	12	12	12	12	12	12
Load	a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
On	a_2	.30	.40	.20	.30	.40	.20	.30	.40	.20	.30
Axles	a_3	.50	.40	.70	.60	.50	.60	.50	.40	.70	.60
10	G	2	2	4	4	2	4	2	2	4	4
	N	2	2	4	4	2	4	2	2	4	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.750	1.000	.875	.750	1.000	.750	.750	1.000	.875	.750
20	G	2–3	2–3	3–4	3–4	2	3–4	3–4	2	4	4
	N	2	2	4	4	2	4	4	2	4	4
	B	1.818L	1.333L	2.000R	2.000R	0	2.000R	2.000R	0	0	0
	M	1.841	2.253	2.240	1.920	2.000	1.920	1.600	2.000	1.750	1.500
30	G	2–3	2–3	2–4	2–4	2–3	2–4	2–4	2–3	2–4	2–4
	N	2	2	3	3	2	3	3	2	3	3
	B	1.818L	1.333L	.222L	.667R	2.308L	0	1.000R	2.000L	1.000L	0
	M	3.186	3.736	4.152	3.763	3.491	3.600	3.226	3.380	3.480	3.150
40	G	1–3	1–3	2–4	2–4	2–4	2–4	2–4	1–4	2–4	2–4
	N	2	2	3	3	3	3	3	2	3	3
	B	.800R	1.000R	.222L	.667R	1.556R	0	1.000R	1.600L	1.000L	0
	M	4.912	5.620	6.401	6.011	5.655	5.600	5.220	5.264	5.723	5.400
50	G	1–3	1–3	2–4	2–4	1–4	2–4	2–4	1–4	2–4	2–4
	N	2	2	3	3	2	3	3	2	3	3
	B	.800R	1.000R	.222L	.667R	3.200L	0	1.000R	1.600L	1.000L	0
	M	6.785	7.616	8.651	8.258	7.905	7.600	7.216	7.751	7.968	7.650
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	3	2	3	3
	B	2.900L	2.000L	1.200R	2.000R	3.200L	2.800R	3.600R	1.600L	.500R	1.400R
	M	9.040	9.867	11.024	10.667	10.371	9.931	9.616	10.243	10.304	10.033
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	3	2	3	3
	B	2.900L	2.000L	1.200R	2.000R	3.200L	2.800R	3.600R	1.600L	.500R	1.400R
	M	14.005	14.850	16.018	15.650	15.328	14.898	14.562	15.232	15.303	15.025
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	2	3	3	2	3	3	2	3	3
	B	2.900L	2.000L	1.200R	2.000R	3.200L	2.800R	3.600R	1.600L	.500R	1.400R
	M	18.984	19.840	21.014	20.640	20.302	19.878	19.530	20.226	20.303	20.020

Span-Feet		81	82	83	84	85	86	87	88	89	90
Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	40	40	40	40	44	44	44	44	44	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	12	12	12	12	16	16	16	16	16	16
Hitch	C	12	12	12	12	12	12	12	12	12	12
Load	a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
On	a_2	.40	.20	.30	.40	.20	.30	.40	.20	.30	.40
Axles	a_3	.50	.60	.50	.40	.70	.60	.50	.60	.50	.40
10	G	2	4	2	2	4	4	2	4	2	2
	N	2	4	2	2	4	4	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	.750	.750	1.000	.875	.750	1.000	.750	.750	1.000
20	G	2	4	2	2	4	4	2	4	2	2
	N	2	4	2	2	4	4	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	2.000	1.500	1.500	2.000	1.750	1.500	2.000	1.500	1.500	2.000
30	G	2–3	2–4	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	3	2	2	3	2	2	3	2	2
	B	2.308L	.750L	2.728L	2.000L	2.182R	3.000L	2.308L	2.400R	2.728L	2.000L
	M	3.491	3.015	2.761	3.380	3.012	2.880	3.491	2.646	2.761	3.380
40	G	1–3	2–4	2–4	1–3	2–4	2–4	1–3	2–4	1–3	1–3
	N	2	3	3	2	3	3	2	3	2	2
	B	.934L	.750L	.375R	.500R	1.778L	.667L	.934L	1.500L	.134R	.500R
	M	5.216	5.011	4.703	5.205	5.071	4.811	5.216	4.445	4.400	5.205
50	G	1–4	2–4	2–4	1–4	2–4	2–4	1–3	2–4	1–3	1–3
	N	2	3	3	2	3	3	2	3	2	2
	B	3.700L	.750L	.375R	2.000L	1.778L	.667L	.934L	1.500L	.134R	.500R
	M	7.474	7.009	6.702	7.380	7.307	7.058	7.088	6.436	6.275	7.204
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	3	2	3	3	2	3	2	2
	B	3.700L	2.200R	3.100R	2.000L	.200L	.800R	4.200L	1.600R	3.400L	2.400L
	M	9.928	9.281	9.060	9.867	9.601	9.411	9.494	8.643	8.593	9.496
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	3	2	3	3	2	3	2	2
	B	3.700L	2.200R	3.100R	2.000L	.200L	.800R	4.200L	1.600R	3.400L	2.400L
	M	14.871	14.261	14.020	14.850	14.601	14.408	14.421	13.632	13.545	14.472
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	3	2	3	3	2	3	2	2
	B	3.700L	2.200R	3.100R	2.000L	.200L	.800R	4.200L	1.600R	3.400L	2.400L
	M	19.837	19.248	18.996	19.840	19.600	19.406	19.376	18.626	18.516	19.458

Span-Feet	Truck No.	91	92	93	94	95	96	97	98	99	100
	Wh. Base L	48	48	48	48	48	48	36	36	36	36
	Axle X	16	16	16	16	16	16	20	20	20	20
	Spacing X′	20	20	20	20	20	20	8	8	8	8
	Hitch C	12	12	12	12	12	12	8	8	8	8
	Load a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
	On a_2	.20	.30	.40	.20	.30	.40	.20	.30	.40	.20
	Axles a_3	.70	.60	.50	.60	.50	.40	.70	.60	.50	.60
10	G	4	4	2	4	2	2	4	4	2	4
	N	4	4	2	4	2	2	4	4	2	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.875	.750	1.000	.750	.750	1.000	.875	.750	1.000	.750
20	G	4	4	2	4	2	2	3–4	2–4	2–3	2–4
	N	4	4	2	4	2	2	4	3	2	3
	B	0	0	0	0	0	0	2.000R	0	1.539L	.500L
	M	1.750	1.500	2.000	1.500	1.500	2.000	2.240	2.100	2.327	2.010
30	G	2–3	2–3	2–3	2–3	2–3	2–3	2–4	2–4	2–4	2–4
	N	3	3	2	3	2	2	3	3	3	3
	B	2.182R	3.000R	2.308L	2.400R	2.728L	2.000L	.667L	0	.667R	.500L
	M	3.012	2.880	3.491	2.646	2.761	3.380	4.563	4.350	4.163	4.006
40	G	2–4	1–3	1–3	2–4	1–3	1–3	2–4	2–4	2–4	2–4
	N	3	2	2	3	2	2	3	3	3	3
	B	2.556L	1.429L	.934L	2.250L	.134R	.500R	.667L	0	.667R	.500L
	M	4.447	4.436	5.216	3.902	4.400	5.205	6.811	6.600	6.411	6.005
50	G	2–4	2–4	1–3	2–4	1–3	1–3	2–4	2–4	2–4	2–4
	N	3	3	2	3	2	2	3	3	3	3
	B	2.556L	1.333L	.934L	2.250L	.134R	.500R	.667L	0	.667R	.500L
	M	6.668	6.482	7.088	5.881	6.275	7.204	9.058	8.850	8.658	8.004
60	G	1–4	1–4	1–4	1–4	1–4	1–3	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	.900L	.200R	4.700L	1.000R	3.900L	.500R	.800R	1.400R	2.000L	2.400R
	M	8.914	8.801	9.068	8.017	8.154	9.203	11.411	11.233	11.067	10.296
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	.900L	.200R	4.700L	1.000R	3.900L	2.800L	.800R	1.400R	2.000L	2.400R
	M	13.910	13.801	13.976	13.013	13.090	14.098	16.408	16.225	16.050	15.272
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	2	2	3	3	2	3
	B	.900L	.200R	4.700L	1.000R	3.900L	2.800L	.800R	1.400R	2.000L	2.400R
	M	18.908	18.800	18.921	18.010	18.052	19.078	21.406	21.220	21.040	20.258

Span-Feet	Truck No.	101	102	103	104	105	106	107	108	109	110
	Wh. Base L	36	36	40	40	40	40	40	40	44	44
	Axle X	20	20	20	20	20	20	20	20	20	20
	Spacing X′	8	8	12	12	12	12	12	12	16	16
	Hitch C	8	8	8	8	8	8	8	8	8	8
	Load a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
	On a_2	.30	.40	.20	.30	.40	.20	.30	.40	.20	.30
	Axles a_3	.50	.40	.70	.60	.50	.60	.50	.40	.70	.60
10	G	2	2	4	4	2	4	2	2	4	4
	N	2	2	4	4	2	4	2	2	4	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.750	1.000	.875	.750	1.000	.750	.750	1.000	.875	.750
20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	3	2	2	3	2	2	3	2
	B	1.818L	1.333L	1.455R	2.000L	1.539L	1.600R	1.818L	1.334L	1.455R	2.000L
	M	1.841	2.253	2.008	1.920	2.327	1.764	1.841	2.253	2.008	1.920
30	G	2–4	2–4	2–4	2–4	2–3	2–4	2–4	2–3	2–3	2–3
	N	3	2	3	3	2	3	3	2	3	2
	B	.250R	3.000L	1.445L	.667L	1.539L	1.250L	.375L	1.334L	1.455R	2.000L
	M	3.802	3.840	3.913	3.763	3.926	3.442	3.304	3.736	3.364	3.380
40	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	2	3	3	3	3	3	2	3	3
	B	.250R	3.000L	1.445L	.667L	.111R	1.250L	.375L	3.500L	2.222L	1.334L
	M	5.802	5.780	6.147	6.011	5.900	5.431	5.303	5.445	5.511	5.440
50	G	2–4	1–4	2–4	2–4	2–4	2–4	2–4	1–4	2–4	2–4
	N	3	2	3	3	3	3	3	2	3	3
	B	.250R	.400L	1.445L	.667L	.111R	1.250L	.375L	.800L	2.222L	1.334L
	M	7.801	8.103	8.387	8.258	8.150	7.425	7.302	7.713	7.739	7.682
60	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	3	3	2	3	3	2	3	3
	B	3.000R	.400L	.100R	.800R	2.500L	1.800R	2.500R	.800L	.600L	.200R
	M	10.150	10.603	10.700	10.611	10.604	9.654	9.604	10.211	10.006	10.001
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	3	3	2	3	3	2	3	3
	B	3.000R	.400L	.100R	.800R	2.500L	1.800R	2.500R	.800L	.600L	.200R
	M	15.113	15.602	15.700	15.608	15.578	14.641	14.578	15.208	15.005	15.001
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	2	3	3	2	3	3	2	3	3
	B	3.000R	.400L	.100R	.800R	2.500L	1.800R	2.500R	.800L	.600L	.200R
	M	20.090	20.602	20.700	20.606	20.563	19.632	19.563	20.206	20.004	20.000

Span-Feet		111	112	113	114	115	116	117	118	119	120
Truck No.		111	112	113	114	115	116	117	118	119	120
Wh. Base	L	44	44	44	44	48	48	48	48	48	48
Axle Spacing	X	20	20	20	20	20	20	20	20	20	20
	X′	16	16	16	16	20	20	20	20	20	20
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load On Axles	a_1	.10	.20	.20	.20	.10	.10	.10	.20	.20	.20
	a_2	.40	.20	.30	.40	.20	.30	.40	.20	.30	.40
	a_3	.50	.60	.50	.40	.70	.60	.50	.60	.50	.40
10	G	2	4	2	2	4	4	2	4	2	2
	N	2	4	2	2	4	4	2	4	2	2
	B	0	0	0	0	0	0	0	0	0	0
	M	1.000	.750	.750	1.000	.875	.750	1.000	.750	.750	1.000
20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	3	2	2	3	2	2	3	2	2
	B	1.539L	1.600R	1.818L	1.333L	1.455R	2.000L	1.539L	1.600R	1.818L	1.333L
	M	2.327	1.764	1.841	2.253	2.008	1.920	2.327	1.764	1.841	2.253
30	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	3	2	2	3	2	2	3	2	2
	B	1.539L	1.600R	1.818L	1.333L	1.455R	2.000L	1.539L	1.600R	1.818L	1.333L
	M	3.926	2.993	3.186	3.736	3.364	3.380	3.926	2.993	3.186	3.736
40	G	2–3	2–4	2–4	1–3	2–4	2–4	2–3	2–4	2–3	1–3
	N	2	3	3	2	3	3	2	3	2	2
	B	1.539L	2.000L	1.000L	1.500R	3.000L	2.000L	1.539L	2.750L	1.818L	1.500R
	M	5.539	4.880	4.820	5.245	4.903	4.890	5.539	4.351	4.546	5.245
50	G	1–4	2–4	2–4	1–4	2–4	2–4	1–3	2–4	1–3	1–3
	N	2	3	3	2	3	3	2	3	2	2
	B	3.000L	2.000L	1.000L	1.200L	3.000L	2.000L	0	2.750L	1.333R	1.500R
	M	7.680	6.864	6.816	7.329	7.112	7.122	7.375	6.321	6.402	7.236
60	G	1–4	1–4	1–4	1–4	2–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	1.200R	2.000L	1.200L	3.000L	.400L	3.500L	.600R	2.500L	1.600L
	M	10.150	9.024	9.067	9.824	9.335	9.403	9.704	8.406	8.604	9.443
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	1.200R	2.000L	1.200L	1.300L	.400L	3.500L	.600R	2.500L	1.600L
	M	15.113	14.018	14.050	14.818	14.321	14.402	14.653	13.405	13.578	14.432
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	2	3	2	2	3	3	2	3	2	2
	B	3.000L	1.200R	2.000L	1.200L	1.300L	.400L	3.500L	.600R	2.500L	1.600L
	M	20.090	19.014	19.040	19.814	19.317	19.402	19.623	18.404	18.563	19.426

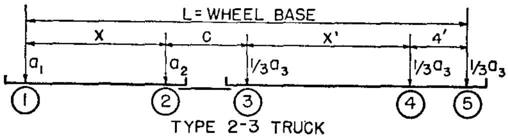
Span-Feet		121	122	123	124	125	126	127	128	129	130
Truck No.		121	122	123	124	125	126	127	128	129	130
Wh. Base	L	40	40	40	40	40	40	44	44	44	44
Axle Spacing	X	20	20	20	20	20	20	20	20	20	20
	X′	8	8	8	8	8	8	12	12	12	12
Hitch	C	12	12	12	12	12	12	12	12	12	12
Load On Axles	a_1	.10	.10	.10	.20	.20	.20	.10	.10	.10	.20
	a_2	.20	.30	.40	.20	.30	.40	.20	.30	.40	.20
	a_3	.70	.60	.50	.60	.50	.40	.70	.60	.50	.60
10	G	4	4	2	4	2	2	4	4	2	4
	N	4	4	2	4	2	2	4	4	2	4
	B	0	0	0	0	0	0	0	0	0	0
	M	.875	.750	1.000	.750	.750	1.000	.875	.750	1.000	.750
20	G	3–4	3–4	2	3–4	3–4	2	4	4	2	4
	N	4	4	2	4	4	2	4	4	2	4
	B	2.000R	2.000R	0	2.000R	2.000R	0	0	0	0	0
	M	2.240	1.920	2.000	1.920	1.600	2.000	1.750	1.500	2.000	1.500
30	G	2–4	2–4	2–3	2–4	2–4	2–3	2–4	2–4	2–3	2–4
	N	3	3	2	3	3	2	3	3	2	3
	B	.222L	.667R	2.308L	0	1.000R	2.000L	1.000L	0	2.308L	.750L
	M	4.152	3.763	3.491	3.600	3.226	3.380	3.480	3.150	3.491	3.015
40	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	2	3	3	3	3
	B	.222L	.667R	1.556R	0	1.000R	4.000L	1.000L	0	1.000R	.750L
	M	6.401	6.011	5.655	5.600	5.220	5.120	5.723	5.400	5.123	5.011
50	G	2–4	2–4	2–4	2–4	2–4	1–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	2	3	3	3	3
	B	.222L	.667R	1.556R	0	1.000R	1.200L	1.000L	0	1.000R	.750L
	M	8.651	8.258	7.894	7.600	7.216	7.329	7.968	7.650	7.368	7.009
60	G	2–4	2–4	1–4	2–4	1–4	1–4	2–4	2–4	1–4	2–4
	N	3	3	2	3	3	2	3	3	2	3
	B	.222L	.667R	3.000L	0	4.000R	1.200L	1.000L	0	3.500L	.750L
	M	10.901	10.507	10.150	9.600	9.267	9.824	10.215	9.900	9.704	9.007
80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	3	2	3	3	2	3
	B	1.400R	2.200R	3.000L	3.200R	4.000R	1.200L	.700R	1.600R	3.500L	2.600R
	M	15.825	15.461	15.113	14.528	14.200	14.818	15.106	14.832	14.653	13.885
100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	2	3	3	2	3	3	2	3
	B	1.400R	2.200R	3.000L	3.200R	4.000R	1.200L	.700R	1.600R	3.500L	2.600R
	M	20.820	20.448	20.090	19.502	19.160	19.814	20.105	19.826	19.623	18.868

Truck No.			131	132	133	134	135	136	137	138	139	140
Wh. Base		L	44	44	48	48	48	48	48	48	52	52
Axle		X	20	20	20	20	20	20	20	20	20	20
Spacing		X'	12	12	16	16	16	16	16	16	20	20
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load		a_1	.20	.20	.10	.10	.10	.20	.20	.20	.10	.10
On		a_2	.30	.40	.20	.30	.40	.20	.30	.40	.20	.30
Axles		a_3	.50	.40	.70	.60	.50	.60	.50	.40	.70	.60
Span-Feet	10	G	2	2	4	4	2	4	2	2	4	4
		N	2	2	4	4	2	4	2	2	4	4
		B	0	0	0	0	0	0	0	0	0	0
		M	.750	1.000	.875	.750	1.000	.750	.750	1.000	.875	.750
	20	G	2	2	4	4	2	4	2	2	4	4
		N	2	2	4	4	2	4	2	2	4	4
		B	0	0	0	0	0	0	0	0	0	0
		M	1.500	2.000	1.750	1.500	2.000	1.500	1.500	2.000	1.750	1.500
	30	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	3	2	2	3	2	2	3	2
		B	2.728L	2.000L	2.182R	3.000L	2.308L	2.400R	2.728L	2.000L	2.182R	3.000L
		M	2.761	3.380	3.012	2.880	3.491	2.646	2.761	3.380	3.012	2.880
	40	G	2–4	2–3	2–4	2–4	2–3	2–4	2–4	2–3	2–4	2–3
		N	3	2	3	3	2	3	3	2	3	2
		B	.375R	2.000L	1.778L	.667L	2.308L	1.500L	.250L	2.000L	2.556L	3.000L
		M	4.703	4.860	5.071	4.811	5.087	4.445	4.202	4.860	4.447	4.335
	50	G	2–4	1–4	2–4	2–4	1–3	2–4	2–4	1–3	2–4	2–4
		N	3	2	3	3	2	3	3	2	3	3
		B	.375R	1.600L	1.778L	.667L	.667L	1.500L	.250L	1.000R	2.556L	1.333L
		M	6.702	6.951	7.307	7.058	6.882	6.436	6.201	6.816	6.668	6.482
	60	G	1–4	1–4	2–4	2–4	1–4	2–4	2–4	1–4	2–4	2–4
		N	3	2	3	3	2	3	3	2	3	3
		B	3.500R	1.600L	1.778L	.667L	4.000L	1.500L	.250L	2.000L	2.556L	1.333L
		M	8.704	9.443	9.548	9.307	9.267	8.430	8.201	9.067	8.898	8.726
	80	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	2	3	3	2	3	2	2	3	3
		B	3.500R	1.600L	0	1.000R	4.000L	2.000R	3.000L	2.000L	.700L	.400R
		M	13.653	14.432	14.400	14.213	14.200	13.250	13.113	14.050	13.706	13.602
	100	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	2	3	3	2	3	2	2	3	3
		B	3.500R	1.600L	0	1.000R	4.000L	2.000R	3.000L	2.000L	.700L	.400R
		M	18.623	19.426	19.400	19.210	19.160	18.240	18.090	19.040	18.705	18.602

Truck No.			141	142	143	144
Wh. Base		L	52	52	52	52
Spacing		X'	20	20	20	20
Axle		X	20	20	20	20
Hitch		C	12	12	12	12
Load		a_1	.10	.20	.20	.20
On		a_2	.40	.20	.30	.40
Axles		a_3	.50	.60	.50	.40
Span-Feet	10	G	2	4	2	2
		N	2	4	2	2
		B	0	0	0	0
		M	1.000	.750	.750	1.000
	20	G	2	4	2	2
		N	2	4	2	2
		B	0	0	0	0
		M	2.000	1.500	1.500	2.000
	30	G	2–3	2–3	2–3	2–3
		N	2	3	2	2
		B	2.308L	2.400L	2.728L	2.000L
		M	3.491	2.646	2.761	3.380
	40	G	2–3	2–4	2–3	2–3
		N	2	3	2	2
		B	2.308L	2.250L	2.728L	2.000L
		M	5.087	3.902	4.102	4.860
	50	G	1-3	2–4	1–3	1–3
		N	2	3	2	2
		B	.667L	2.250L	.667R	1.000R
		M	6.882	5.881	5.882	6.816
	60	G	1–4	2–4	1–3	1–3
		N	2	3	2	2
		B	4.500L	2.250L	.667R	1.000R
		M	8.838	7.867	7.756	8.814
	80	G	1–4	1–4	1–4	1–4
		N	2	3	2	2
		B	4.500L	1.400R	3.500L	2.400L
		M	13.753	12.625	12.653	13.672
	100	G	1–4	1–4	1–4	1–4
		N	2	3	2	2
		B	4.500L	1.400R	3.500L	2.400L
		M	18.703	17.620	17.623	18.658

Table 7.10

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 2-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	32	32	32	32	32	36	36	36	36	36
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X'	8	8	8	8	8	12	12	12	12	12
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
Axles	a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet 10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
	N	4	2	2	5	2	4	2	2	5	2
	B	.998L	0	0	1.000R	0	.998L	0	0	1.000R	0
	M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
20	G	3–5	3–5	2–3	3–5	2–3	4–5	2–3	2–3	4–5	2–3
	N	4	4	2	4	2	4	2	2	5	2
	B	.666R	.667R	1.178L	.667R	1.431L	.998L	1.600L	1.178L	1.000R	1.431L
	M	2.118	1.814	2.206	1.814	1.715	1.892	1.764	2.206	1.620	1.715
30	G	2–5	2–5	1–3	2–5	1–3	3–5	1–3	1–3	3–5	1–3
	N	4	3	2	4	2	4	2	2	4	2
	B	2.296R	.889L	.102L	2.500R	.798R	1.332R	.334L	.102L	1.333R	.798R
	M	3.910	3.573	3.734	3.366	3.149	3.428	3.102	3.734	2.936	3.149
40	G	2–5	2–5	1–5	2–5	1–5	2–5	2–5	1–4	2–5	1–4
	N	4	3	2	4	2	4	3	2	4	2
	B	2.296R	.889L	3.066L	2.500R	2.466L	3.258R	1.778L	2.075L	3.500R	1.354L
	M	6.120	5.818	5.969	5.325	5.286	5.374	5.071	5.491	4.645	4.840
50	G	1–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	4	3	2	3	2
	B	.534L	.200R	3.066L	.800R	2.466L	3.258R	.600L	3.732L	0	3.132L
	M	8.372	8.301	8.422	7.713	7.756	7.577	7.507	7.847	6.900	7.164
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	.534L	.200R	3.066L	.800R	2.466L	1.468L	.600L	3.732L	0	3.132L
	M	10.871	10.801	10.891	10.211	10.235	9.968	10.006	10.300	9.400	9.631
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	.534L	.200R	3.066L	.800R	2.466L	1.468L	.600L	3.732L	0	3.132L
	M	15.870	15.801	15.852	15.208	15.210	14.959	15.005	15.242	14.400	14.591
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	.534L	.200R	3.066L	.800R	2.466L	1.468L	.600L	3.732L	0	3.132L
	M	20.869	20.800	20.828	20.206	20.195	19.954	20.004	20.207	19.400	19.566

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	40	40	40	40	40	36	36	36	36	36
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	16	16	16	16	16	8	8	8	8	8
Hitch	C	8	8	8	8	8	12	12	12	12	12
Load	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
Axles	a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet 10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
	N	4	2	2	4	2	4	2	2	5	2
	B	.998L	0	0	1.000L	0	.998L	0	0	1.000R	0
	M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
20	G	4–5	2–3	2–3	4–5	2–3	3–5	3–5	2	3–5	3–5
	N	4	2	2	4	2	4	4	2	4	4
	B	.998L	1.600L	1.178L	1.000L	1.431L	.666R	.667R	0	.667R	.668R
	M	1.892	1.764	2.206	1.620	1.715	2.118	1.814	2.000	1.814	1.509
30	G	4–5	1–3	1–3	4–5	1–3	3–5	3–5	1–3	3–5	1–3
	N	4	2	2	4	2	4	4	2	4	2
	B	.998L	.334L	.102L	1.000L	.798R	.666R	.667R	.603L	.667R	.297R
	M	3.052	3.102	3.734	2.613	3.149	3.862	3.309	3.409	3.309	2.802
40	G	3–5	1–3	1–3	3–5	1–3	2–5	2–5	1–4	2–5	2–5
	N	4	2	2	4	2	4	3	2	4	3
	B	1.997R	.333L	.102L	2.000R	.798R	2.740R	.222L	2.476L	3.000R	.168R
	M	4.740	4.601	5.402	4.060	4.812	5.771	5.201	5.196	4.980	4.534
50	G	2–5	1–5	1–5	1–5	1–4	2–5	1–5	1–5	1–5	1–5
	N	4	3	2	3	2	4	3	2	3	2
	B	4.220R	1.400L	4.398L	.800L	1.753L	2.740R	1.000R	4.066L	1.600R	3.466L
	M	6.840	6.739	7.289	6.113	6.604	7.987	7.520	7.565	6.951	6.874
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	2.402L	1.400L	4.398L	.800L	3.798L	.066R	1.000R	4.066L	1.600R	3.466L
	M	9.094	9.233	9.724	8.611	9.042	10.266	10.017	10.010	9.443	9.334
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	2.402L	1.400L	4.398L	.800L	3.798L	.066R	1.000R	4.066L	1.600R	3.466L
	M	14.070	14.225	14.644	13.608	13.982	15.266	15.013	14.941	14.432	14.284
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	2.402L	1.400L	4.398L	.800L	3.798L	.066R	1.000R	4.066L	1.600R	3.466L
	M	19.056	19.220	19.595	18.606	18.946	20.266	20.010	19.899	19.426	19.254

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	40	40	40	40	40	44	44	44	44	44
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	12	12	12	12	12	16	16	16	16	16
Hitch	C	12	12	12	12	12	12	12	12	12	12
Load	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
Axles	a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet 10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
	N	4	2	2	5	2	4	2	2	4	2
	B	.998L	0	0	1.000R	0	.998L	0	0	1.000L	0
	M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
20	G	4–5	4–5	2	4–5	2	4–5	4–5	2	4–5	2
	N	4	5	2	5	2	4	4	2	4	2
	B	.998L	1.000R	0	1.000R	0	.998L	1.000L	0	1.000L	0
	M	1.892	1.620	2.000	1.620	1.500	1.892	1.620	2.000	1.620	1.500
30	G	3–5	3–5	1–3	3–5	1–3	4–5	1–3	1–3	4–5	1–3
	N	4	4	2	4	2	4	2	2	4	2
	B	1.332R	1.334R	.603L	1.333R	.297R	.998L	1.000L	.603L	1.000L	.297R
	M	3.428	2.936	3.409	2.936	2.802	3.052	2.720	3.409	2.613	2.802
40	G	3–5	2–5	1–3	3–5	1–3	3–5	1–3	1–3	3–5	1–3
	N	4	3	2	4	2	4	2	2	4	2
	B	1.332R	1.111L	.603L	1.333R	.297R	1.997R	1.000L	.603L	2.000R	.297R
	M	5.167	4.428	5.074	4.427	4.469	4.740	4.215	5.074	4.060	4.469
50	G	2–5	1–5	1–5	2–5	1–5	2–5	2–5	1–3	2–5	1–3
	N	4	3	2	4	2	4	3	2	4	2
	B	3.702R	.200R	4.732L	4.000R	4.132L	4.665R	2.000L	.603L	5.000R	.297R
	M	7.233	6.701	7.016	6.256	6.309	6.512	5.922	6.741	5.600	6.137
60	G	2–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
	N	4	3	2	3	2	4	3	2	3	2
	B	3.702R	.200R	4.732L	.800R	4.132L	4.665R	.600L	5.398L	0	4.798L
	M	9.441	9.201	9.441	8.611	8.753	8.696	8.406	8.888	7.800	8.186
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	.868L	.200R	4.732L	.800R	4.132L	1.802L	.600L	5.398L	0	4.798L
	M	14.341	14.201	14.348	13.608	13.681	13.439	13.405	13.766	12.800	13.090
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	.868L	.200R	4.732L	.800R	4.132L	1.802L	.600L	5.398L	0	4.798L
	M	19.340	19.200	19.292	18.606	18.639	18.430	18.404	18.693	17.800	18.032

Truck No.			31	32	33	34	35	36	37	38	39	40
Wh. Base		L	36	36	36	36	36	40	40	40	40	40
Axle		X	16	16	16	16	16	16	16	16	16	16
Spacing		X'	8	8	8	8	8	12	12	12	12	12
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On		a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
Axles		a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet	10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
		N	4	2	2	5	2	4	2	2	5	2
		B	.998L	0	0	1.000R	0	.998L	0	0	1.000R	0
		M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
	20	G	3–5	3–5	2–3	3–5	2–3	4–5	2–3	2–3	4–5	2–3
		N	4	4	2	4	2	4	2	2	5	2
		B	.666R	.667R	1.178L	.667R	1.431L	.998L	1.600L	1.178L	1.000R	1.431L
		M	2.118	1.814	2.206	1.814	1.715	1.892	1.764	2.206	1.620	1.715
	30	G	2–5	2–5	2–4	2–5	2–5	3–5	2–3	2–3	3–5	2–3
		N	4	3	2	4	3	4	2	2	4	2
		B	2.296R	.889L	2.723L	2.500R	.583L	1.332R	1.600L	1.178L	1.333R	1.431L
		M	3.910	3.573	3.683	3.366	3.143	3.428	2.993	3.611	2.936	2.866
	40	G	2–5	2–5	1–5	2–5	2–5	2–5	2–5	1–4	2–5	2–5
		N	4	3	2	4	3	4	3	2	4	3
		B	2.296R	.889L	2.866L	2.500R	.583L	3.258R	1.778L	1.835L	3.500R	1.415L
		M	6.120	5.818	5.739	5.325	5.141	5.374	5.071	5.272	4.645	4.508
	50	G	2–5	1–5	1–5	1–5	1–5	2–5	2–5	1–5	2–5	1–5
		N	4	3	2	3	2	4	3	2	4	2
		B	2.296R	.400R	2.866L	1.200R	2.066L	3.258R	1.778L	3.532L	3.500R	2.732L
		M	8.347	8.103	8.198	7.329	7.319	7.577	7.307	7.618	6.596	6.717
	60	G	1–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	4	3	2	3	2
		B	.334L	.400R	2.866L	1.200R	2.066L	3.258R	.400L	3.532L	.400R	2.732L
		M	10.668	10.603	10.671	9.824	9.805	9.795	9.803	10.076	9.003	9.192
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	3	3	2	3	2
		B	.334L	.400R	2.866L	1.200R	2.066L	1.268L	.400L	3.532L	.400R	2.732L
		M	15.667	15.602	15.637	14.818	14.787	14.752	14.802	15.024	14.002	14.161
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	3	3	2	3	2
		B	.334L	.400R	2.866L	1.200R	2.066L	1.268L	.400L	3.532L	.400R	2.732L
		M	20.667	20.602	20.616	19.814	19.777	19.748	19.802	19.793	19.002	19.143

Truck No.			41	42	43	44	45	46	47	48	49	50
Wh. Base		L	44	44	44	44	44	40	40	40	40	40
Axle		X	16	16	16	16	16	16	16	16	16	16
Spacing		X'	16	16	16	16	16	8	8	8	8	8
Hitch		C	8	8	8	8	8	12	12	12	12	12
Load		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On		a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
Axles		a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet	10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
		N	4	2	2	4	2	4	2	2	5	2
		B	.998L	0	0	1.000R	0	.998L	0	0	1.000R	0
		M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
	20	G	4–5	2–3	2–3	4–5	2–3	3–5	3–5	2	3–5	3–5
		N	4	2	2	4	2	4	4	2	4	4
		B	.998L	1.600L	1.178L	1.000L	1.431L	.666R	.667R	0	.667R	.668R
		M	1.892	1.764	2.206	1.620	1.715	2.118	1.814	2.000	1.814	1.509
	30	G	4–5	2–3	2–3	4–5	2–3	3–5	3–5	2–3	3–5	3–5
		N	4	2	2	4	2	4	4	2	4	4
		B	.998L	1.600L	1.178L	1.000L	1.431L	.666R	.667R	1.767L	.667R	.668R
		M	3.052	2.993	3.611	2.613	2.866	3.862	3.309	3.310	3.309	2.756
	40	G	3–5	1–3	1–3	3–5	1–3	2–5	2–5	1–4	2–5	2–5
		N	4	2	2	4	2	4	3	2	4	3
		B	1.997R	0	.198R	2.000R	1.398R	2.740R	.222L	2.236L	3.000R	.168R
		M	4.740	4.400	5.203	4.060	4.434	5.771	5.201	4.972	4.980	4.534
	50	G	2–5	2–5	1–5	2–5	1–4	2–5	2–5	1–5	2–5	2–5
		N	4	3	2	4	2	4	3	2	4	3
		B	4.220R	2.667L	4.198L	4.500R	1.273L	2.740R	.222L	3.866L	3.000R	.168R
		M	6.840	6.578	7.054	5.924	6.180	7.987	7.451	7.333	6.944	6.534
	60	G	2–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
		N	4	3	2	3	2	4	3	2	3	2
		B	4.220R	1.200L	4.198L	.400L	3.398L	2.740R	1.200R	3.866L	2.000R	3.066L
		M	9.037	9.024	9.496	8.203	8.594	10.215	9.824	9.783	9.067	8.891
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	3	3	2	3	2
		B	2.202L	1.200L	4.198L	.400L	3.398L	.266R	1.200R	3.866L	2.000R	3.066L
		M	13.859	14.018	14.422	13.202	13.546	15.067	14.818	14.721	14.050	13.852
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	3	3	2	3	2
		B	2.202L	1.200L	4.198L	.400L	3.398L	.266R	1.200R	3.866L	2.000R	3.066L
		M	18.846	19.014	19.378	18.202	18.517	20.067	19.814	19.683	19.040	18.828

Span-Feet			51	52	53	54	55	56	57	58	59	60
Truck No.			51	52	53	54	55	56	57	58	59	60
Wh. Base		L	44	44	44	44	44	48	48	48	48	48
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X'	12	12	12	12	12	16	16	16	16	16
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
		a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet	10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
		N	4	2	2	5	2	4	2	2	4	2
		B	.998L	0	0	1.000R	0	.998L	0	0	1.000L	0
		M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
	20	G	4–5	4–5	2	4–5	2	4–5	4–5	2	4–5	2
		N	4	5	2	5	2	4	4	2	4	2
		B	.998L	1.000R	0	1.000R	0	.998L	1.000L	0	1.000L	0
		M	1.892	1.620	2.000	1.620	1.500	1.892	1.620	2.000	1.620	1.500
	30	G	3–5	3–5	2–3	3–5	2–3	4–5	2–3	2–3	4–5	2–3
		N	4	4	2	4	2	4	2	2	5	2
		B	1.332R	1.333R	1.767L	1.333R	2.146L	.998L	2.400L	1.267L	1.000R	2.146L
		M	3.428	2.936	3.310	2.936	2.572	3.052	2.646	3.310	2.613	2.572
	40	G	3–5	2–5	1–3	3–5	1–3	3–5	3–5	1–3	3–5	1–3
		N	4	3	2	4	2	4	4	2	4	2
		B	1.332R	1.111L	.303L	1.333R	.897R	1.997R	2.000R	.303L	2.000R	.897R
		M	5.167	4.428	4.869	4.427	4.082	4.740	4.060	4.869	4.060	4.082
	50	G	2–5	2–5	1–5	2–5	2–5	2–5	2–5	1–3	2–5	1–3
		N	4	3	2	4	3	4	3	2	4	2
		B	3.702R	1.111L	4.532L	4.000R	.665L	4.665R	2.000L	.303L	5.000R	.897R
		M	7.233	6.673	6.779	6.256	5.875	6.512	5.922	6.537	5.600	5.747
	60	G	2–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	2–5	1–5
		N	4	3	2	3	2	4	3	2	4	2
		B	3.702R	.400R	4.532L	1.200R	3.732L	4.665R	.400L	5.198L	5.000R	4.398L
		M	9.441	9.003	9.210	8.224	8.300	8.696	8.203	8.652	7.534	7.724
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	3	3	2	3	2
		B	.668L	.400R	4.532L	1.200R	3.732L	1.602L	.400L	5.198L	.400R	4.398L
		M	14.138	14.002	14.125	13.218	13.242	13.230	13.202	13.540	12.402	12.644
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	2	3	3	2	3	2
		B	.668L	.400R	4.532L	1.200R	3.732L	1.602L	.400L	5.198L	.400R	4.398L
		M	19.136	19.002	19.073	18.214	18.207	18.224	18.202	18.472	17.402	17.595

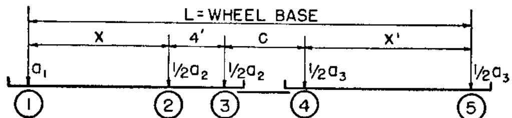
Span-Feet			61	62	63	64	65	66	67	68	69	70
Truck No.			61	62	63	64	65	66	67	68	69	70
Wh. Base		L	40	40	40	40	40	44	44	44	44	44
Axle Spacing		X	20	20	20	20	20	20	20	20	20	20
		X'	8	8	8	8	8	12	12	12	12	12
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
		a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet	10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
		N	4	2	2	5	2	4	2	2	5	2
		B	.998L	0	0	1.000R	0	.998L	0	0	1.000R	0
		M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
	20	G	3–5	3–5	2–3	3–5	2–3	4–5	2–3	2–3	4–5	2–3
		N	4	4	2	4	2	4	2	2	5	2
		B	.666R	.667R	1.178L	.667R	1.431L	.998L	1.600L	1.178L	1.000R	1.431L
		M	2.118	1.814	2.206	1.814	1.715	1.892	1.764	2.206	1.620	1.715
	30	G	2–5	2–5	2–4	2–5	2–5	3–5	2–3	2–3	3–5	2–3
		N	4	3	2	4	3	4	2	2	4	2
		B	2.296R	.889L	2.723L	2.500R	.583L	1.332R	1.600L	1.178L	1.333R	1.431L
		M	3.910	3.573	3.683	3.366	3.143	3.428	2.993	3.611	2.936	2.866
	40	G	2–5	2–5	2–5	2–5	2–5	2–5	2–5	2–4	2–5	2–5
		N	4	3	3	4	3	4	3	2	4	3
		B	2.296R	.889L	.074L	2.500R	.583L	3.258R	1.778L	3.176L	3.500R	1.415L
		M	6.120	5.818	5.734	5.325	5.141	5.374	5.071	5.187	4.645	4.508
	50	G	2–5	2–5	2–5	2–5	2–5	2–5	2–5	1–5	2–5	2–5
		N	4	3	3	4	3	4	3	2	4	3
		B	2.296R	.889L	.074L	2.500R	.583L	3.258R	1.778L	3.332L	3.500R	1.415L
		M	8.347	8.064	7.984	7.300	7.139	7.577	7.307	7.390	6.596	6.500
	60	G	2–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
		N	4	3	2	3	3	4	3	2	3	2
		B	2.296R	.600R	2.666L	1.600R	2.334R	3.258R	.200L	3.332L	.800R	2.332L
		M	10.581	10.406	10.452	9.443	9.425	9.795	9.601	9.853	8.611	8.759
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	3	3	3	2	3	2
		B	.132L	.600R	2.666L	1.600R	2.334R	1.068L	.200L	3.332L	.800R	2.332L
		M	15.468	15.405	15.423	14.432	14.402	14.546	14.601	14.807	13.608	13.736
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	2	3	3	3	3	2	3	2
		B	.132L	.600R	2.666L	1.600R	2.334R	1.068L	.200L	3.332L	.800R	2.332L
		M	20.468	20.404	20.405	19.426	19.388	19.543	19.600	19.779	18.606	18.722

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	48	48	48	48	48	44	44	44	44	44
Axle Spacing	X	20	20	20	20	20	20	20	20	20	20
	X′	16	16	16	16	16	8	8	8	8	8
Hitch	C	8	8	8	8	8	12	12	12	12	12
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
	a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet 10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
	N	4	2	2	4	2	4	2	2	5	2
	B	.998L	0	0	1.000L	0	.998L	0	0	1.000R	0
	M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
20	G	4–5	2–3	2–3	4–5	2–3	3–5	3–5	2	3–5	3–5
	N	4	2	2	4	2	4	4	2	4	4
	B	.998L	1.600L	1.178L	1.000L	1.431L	.666R	.667R	0	.667R	.668R
	M	1.892	1.764	2.206	1.620	1.715	2.118	1.814	2.000	1.814	1.509
30	G	4–5	2–3	2–3	4–5	2–3	3–5	3–5	2–3	3–5	3–5
	N	4	2	2	4	2	4	4	2	4	4
	B	.998L	1.600L	1.178L	1.000L	1.431L	.666R	.667R	1.767L	.667R	.668R
	M	3.052	2.993	3.611	2.613	2.866	3.862	3.309	3.310	3.309	2.756
40	G	3–5	2–5	2–3	3–5	1–3	2–5	2–5	2–5	2–5	2–5
	N	4	3	2	4	2	4	3	3	4	3
	B	1.997R	2.667L	1.178L	2.000R	1.997R	2.740R	.222L	.816R	3.000R	.168R
	M	4.740	4.360	5.022	4.060	4.069	5.771	5.201	4.949	4.980	4.534
50	G	2–5	2–5	1–5	2–5	2–5	2–5	2–5	2–5	2–5	2–5
	N	4	3	2	4	3	4	3	3	4	3
	B	4.220R	2.667L	3.998L	4.500R	2.248L	2.740R	.222L	.816R	3.000R	.168R
	M	6.840	6.578	6.822	5.924	5.883	7.987	7.451	7.196	6.944	6.534
60	G	2–5	1–5	1–5	2–5	1–5	2–5	2–5	1–5	2–5	2–5
	N	4	3	2	4	2	4	3	2	4	3
	B	4.220R	1.000L	3.998L	4.500R	2.998L	2.740R	.222L	3.666L	3.000R	.168R
	M	9.037	8.817	9.268	7.870	8.152	10.215	9.701	9.558	8.920	8.534
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	3
	B	2.002L	1.000L	3.998L	0	2.998L	.466R	1.400R	3.666L	2.400R	3.334R
	M	13.648	13.813	14.202	12.800	13.114	14.869	14.625	14.502	13.672	13.473
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	3
	B	2.002L	1.000L	3.998L	0	2.998L	.466R	1.400R	3.666L	2.400R	3.334R
	M	18.638	18.810	19.162	17.800	18.092	19.868	19.620	19.468	18.658	18.445

Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	48	48	48	48	48	52	52	52	52	52
Axle Spacing	X	20	20	20	20	20	20	20	20	20	20
	X′	12	12	12	12	12	16	16	16	16	16
Hitch	C	12	12	12	12	12	12	12	12	12	12
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.20	.30	.40	.20	.30	.20	.30	.40	.20	.30
	a_3	.70	.60	.50	.60	.50	.70	.60	.50	.60	.50
Span-Feet 10	G	4–5	2	2	4–5	2	4–5	2	2	4–5	2
	N	4	2	2	5	2	4	2	2	4	2
	B	.998L	0	0	1.000R	0	.998L	0	0	1.000L	0
	M	.748	.750	1.000	.640	.750	.748	.750	1.000	.640	.750
20	G	4–5	4–5	2	4–5	2	4–5	4–5	2	4–5	2
	N	4	5	2	5	2	4	4	2	4	2
	B	.998L	1.000R	0	1.000R	0	.998L	1.000L	0	1.000L	0
	M	1.892	1.620	2.000	1.620	1.500	1.892	1.620	2.000	1.620	1.500
30	G	3–5	3–5	2–3	3–5	2–3	4–5	2–3	2–3	4–5	2–3
	N	4	4	2	4	2	4	2	2	4	2
	B	1.332R	1.333R	1.767L	1.334R	2.146L	.998L	2.400L	1.767L	1.000L	2.146L
	M	3.428	2.936	3.310	2.936	2.572	3.052	2.646	3.310	2.613	2.572
40	G	3–5	2–5	2–3	3–5	2–5	3–5	3–5	2–3	3–5	2–3
	N	4	3	2	4	3	4	4	2	4	2
	B	1.332R	1.111L	1.767L	1.333R	.665L	1.997R	2.000R	1.767L	2.000R	2.146L
	M	5.167	4.428	4.712	4.427	3.877	4.740	4.060	4.712	4.060	3.722
50	G	2–5	2–5	1–5	2–5	2–5	2–5	2–5	1–3	2–5	1–3
	N	4	3	2	4	3	4	3	2	4	2
	B	3.702R	1.111L	4.332L	4.000R	.665L	4.665R	2.000L	.003L	5.000R	1.497R
	M	7.233	6.673	6.543	6.256	5.875	6.512	5.922	6.335	5.600	5.365
60	G	2–5	2–5	1–5	2–5	2–5	2–5	2–5	1–5	2–5	1–5
	N	4	3	2	4	3	4	3	2	4	2
	B	3.702R	1.111L	4.332L	4.000R	.665L	4.665R	2.000L	4.998L	5.000R	3.998L
	M	9.441	8.919	8.981	8.214	7.874	8.696	8.160	8.418	7.534	7.268
80	G	1–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	4	3	2	3	2
	B	.468L	.600R	4.332L	1.600R	3.332L	4.665R	.200L	4.998L	.800R	3.998L
	M	13.935	13.805	13.903	12.832	12.807	13.114	13.001	13.314	12.008	12.202
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	2	3	2	3	3	2	3	2
	B	.468L	.600R	4.332L	1.600R	3.332L	1.402L	.200L	4.998L	.800R	3.998L
	M	18.934	18.804	18.856	17.826	17.779	18.018	18.000	18.252	17.006	17.162

Table 7.11

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-2 TRUCK

Ninety variations in the Type 3-2 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	36	36	36	36	36	40	40	40	40	40
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X'	12	12	12	12	12	16	16	16	16	16
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
	a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet 10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
20	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	3	3	3	3	3
	B	.923L	.429L	0	.667L	.154L	.923L	.429L	0	.667L	.154L
	M	1.878	2.207	2.550	1.814	2.151	1.878	2.207	2.550	1.814	2.151
30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	3	3	3	3	3
	B	.923L	.429L	0	.667L	.154L	.923L	.429L	0	.667L	.154L
	M	3.493	3.955	4.425	3.309	3.776	3.493	3.955	4.425	3.309	3.776
40	G	2–5	1–5	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	2	3	3	3	3	2
	B	.556R	1.500L	.941R	1.500R	.236L	.267R	.625R	.941R	1.500R	.236L
	M	5.507	5.956	6.519	5.245	5.901	5.301	5.908	6.519	5.245	5.901
50	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–4
	N	3	3	3	3	3	3	3	3	3	2
	B	2.300L	1.500L	.700L	.800L	0	2.800L	1.900L	1.000L	1.200L	.236L
	M	7.906	8.445	9.010	7.713	8.300	7.457	8.072	8.720	7.329	8.026
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	2.300L	1.500L	.700L	.800L	0	2.800L	1.900L	1.000L	1.200L	.300L
	M	10.388	10.938	11.508	10.211	10.800	9.931	10.560	11.217	9.824	10.502
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	2.300L	1.500L	.700L	.800L	0	2.800L	1.900L	1.000L	1.200L	.300L
	M	15.366	15.928	16.506	15.208	15.800	14.898	15.545	16.213	14.818	15.501
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	2.300L	1.500L	.700L	.800L	0	2.800L	1.900L	1.000L	1.200L	.300L
	M	20.353	20.923	21.505	20.206	20.800	19.878	20.536	21.210	19.814	20.501

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	44	44	44	44	44	40	40	40	40	40
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	20	20	20	20	20	12	12	12	12	12
Hitch	C	8	8	8	8	8	12	12	12	12	12
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
	a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet 10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
20	G	2–4	2–4	2–4	2–4	2–4	2–3	2–3	2–3	2–3	2–3
	N	3	3	3	3	3	2	2	2	2	2
	B	.923L	.429L	0	.667L	.154L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	1.878	2.207	2.550	1.814	2.151	1.620	2.025	2.430	1.620	2.025
30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	1–3
	N	3	3	3	3	3	3	3	3	3	2
	B	.923L	.429L	0	.667L	.154L	1.693L	1.000L	.400L	1.333L	1.000R
	M	3.493	3.955	4.425	3.309	3.776	3.037	3.573	4.129	2.936	3.573
40	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	3	2	3	3	3	2	2
	B	.267R	.625R	.941R	1.500R	.236L	.400L	.125R	.588R	1.000L	.588L
	M	5.301	5.908	6.519	5.245	5.901	4.803	5.500	6.208	4.820	5.608
50	G	1–4	1–4	1–4	1–4	1–4	1–5	1–5	1–5	1–5	1–4
	N	3	3	3	3	2	3	3	3	3	2
	B	.267R	.625R	.941R	1.500R	.236L	3.300L	2.300L	1.300L	1.600L	.588L
	M	7.176	7.906	8.640	7.236	8.026	7.018	7.706	8.434	6.951	7.731
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.300L	2.300L	1.300L	1.600L	.600L	3.300L	2.300L	1.300L	1.600L	.600L
	M	9.482	10.188	10.928	9.443	10.206	9.482	10.188	10.928	9.443	10.206
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.300L	2.300L	1.300L	1.600L	.600L	3.300L	2.300L	1.300L	1.600L	.600L
	M	14.436	15.166	15.921	14.432	15.205	14.436	15.166	15.921	14.432	15.205
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.300L	2.300L	1.300L	1.600L	.600L	3.300L	2.300L	1.300L	1.600L	.600L
	M	19.409	20.153	20.917	19.426	20.204	19.409	20.153	20.917	19.426	20.204

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	44	44	44	44	44	48	48	48	48	48
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	16	16	16	16	16	20	20	20	20	20
Hitch	C	12	12	12	12	12	12	12	12	12	12
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
	a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet 10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	1.620	2.025	2.430	1.620	2.025	1.620	2.025	2.430	1.620	2.025
30	G	2–4	2–4	2–4	2–4	1–3	2–4	2–4	2–4	2–4	1–3
	N	3	3	3	3	2	3	3	3	3	2
	B	1.693L	1.000L	.400L	1.333L	1.000R	1.693L	1.000L	.400L	1.333L	1.000R
	M	3.037	3.573	4.129	2.936	3.573	3.037	3.573	4.129	2.936	3.573
40	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	2	2	3	3	3	2	2
	B	.400L	.125R	.588R	1.000L	.588L	.400L	.125R	.588R	1.000L	.588L
	M	4.803	5.500	6.208	4.820	5.608	4.803	5.500	6.208	4.820	5.608
50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
	N	3	3	3	2	2	3	3	3	2	2
	B	.400L	.125R	.588R	1.000L	.588L	.400L	.125R	.588R	1.000L	.588L
	M	6.677	7.500	8.331	6.816	7.731	6.677	7.500	8.331	6.816	7.731
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–4	1–4	1–4	1–4
	N	3	3	3	3	3	3	3	3	2	2
	B	3.800L	2.700L	1.600L	2.000L	.900L	4.300L	.125R	.588R	1.000L	.588L
	M	9.041	9.822	10.643	9.067	9.914	8.608	9.500	10.455	8.814	9.855
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.800L	2.700L	1.600L	2.000L	.900L	4.300L	3.100L	1.900L	2.400L	1.200L
	M	13.981	14.791	15.632	14.050	14.910	13.531	14.420	15.345	13.672	14.618
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.800L	2.700L	1.600L	2.000L	.900L	4.300L	3.100L	1.900L	2.400L	1.200L
	M	18.944	19.773	20.626	19.040	19.908	18.485	19.396	20.336	18.658	19.614

Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	40	40	40	40	40	44	44	44	44	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	12	12	12	12	12	16	16	16	16	16
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
Axles	a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet 10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
20	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	3	3	3	3	3
	B	.923L	.429L	0	.667L	.154L	.923L	.429L	0	.667L	.154L
	M	1.878	2.207	2.550	1.814	2.151	1.878	2.207	2.550	1.814	2.151
30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	3	3	3	3	3
	B	.923L	.429L	0	.667L	.154L	.923L	.429L	0	.667L	.154L
	M	3.493	3.955	4.425	3.309	3.776	3.493	3.955	4.425	3.309	3.776
40	G	2–5	2–5	2–5	2–5	1–4	2–4	1–4	1–4	1–4	1–4
	N	4	3	3	3	2	3	3	3	3	2
	B	.556R	2.556L	1.667L	3.000L	.236R	.923L	.875R	1.177R	2.000R	.236R
	M	5.507	5.847	6.363	4.980	5.501	5.114	5.715	6.329	4.880	5.501
50	G	2–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–4
	N	4	3	3	3	3	4	3	3	3	2
	B	.556R	1.300L	.500L	.400L	.400R	0	1.700L	.800L	.800L	.236R
	M	7.756	8.234	8.805	7.303	7.903	7.250	7.858	8.513	6.913	7.626
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	2.100L	1.300L	.500L	.400L	.400R	2.600L	1.700L	.800L	.800L	.100R
	M	10.174	10.728	11.304	9.803	10.403	9.713	10.348	11.011	9.411	10.100
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	2.100L	1.300L	.500L	.400L	.400R	2.600L	1.700L	.800L	.800L	.100R
	M	15.155	15.721	16.303	14.802	15.402	14.685	15.336	16.008	14.408	15.100
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	2.100L	1.300L	.500L	.400L	.400R	2.600L	1.700L	.800L	.800L	.100R
	M	20.144	20.717	21.303	19.802	20.402	19.668	20.329	21.006	19.406	20.100

Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	48	48	48	48	48	44	44	44	44	44
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	20	20	20	20	20	12	12	12	12	12
Hitch	C	8	8	8	8	8	12	12	12	12	12
Load	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
Axles	a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet 10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
	N	2	2	2	2	2	2	2	2	2	2
	B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
20	G	2–4	2–4	2–4	2–4	2–4	2–3	2–3	2–3	2–3	2–3
	N	3	3	3	3	3	2	2	2	2	2
	B	.923L	.429L	0	.667L	.154L	1.000L	1.000L	1.000L	1.000L	1.000L
	M	1.878	2.207	2.550	1.814	2.151	1.620	2.025	2.430	1.620	2.025
30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
	N	3	3	3	3	3	3	3	3	3	3
	B	.923L	.429L	0	.667L	.154L	1.693L	1.000L	.400L	1.333L	.616L
	M	3.493	3.955	4.425	3.309	3.776	3.037	3.573	4.129	2.936	3.483
40	G	2–4	1–4	1–4	1–4	1–4	2–5	2–4	1–4	1–4	2–4
	N	3	3	3	3	2	4	3	3	3	3
	B	.923L	.875R	1.177R	2.000R	.236R	1.445R	1.000L	.824R	1.500R	.616L
	M	5.114	5.715	6.329	4.880	5.501	4.747	5.318	6.014	4.445	5.106
50	G	1–4	1–4	1–4	1–4	1–4	2–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	2	4	3	3	3	3
	B	.534R	.875R	1.177R	2.000R	.236R	1.445R	2.000L	1.100L	1.200L	.200L
	M	6.979	7.712	8.448	6.864	7.626	6.987	7.488	8.224	6.529	7.301
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.100L	2.100L	1.100L	1.200L	.200L	3.100L	2.100L	1.100L	1.200L	.200L
	M	9.260	9.974	10.720	9.024	9.801	9.260	9.974	10.720	9.024	9.801
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.100L	2.100L	1.100L	1.200L	.200L	3.100L	2.100L	1.100L	1.200L	.200L
	M	14.220	14.955	15.715	14.018	14.801	14.220	14.955	15.715	14.018	14.801
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	3	3	3	3	3	3	3
	B	3.100L	2.100L	1.100L	1.200L	.200L	3.100L	2.100L	1.100L	1.200L	.200L
	M	19.196	19.944	20.712	19.014	19.800	19.196	19.944	20.712	19.014	19.800

Truck No.			51	52	53	54	55	56	57	58	59	60
Wh. Base		L	48	48	48	48	48	52	52	52	52	52
Axle		X	16	16	16	16	16	16	16	16	16	16
Spacing		X'	16	16	16	16	16	20	20	20	20	20
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On		a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
Axles		a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet	10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	2	2	2	2	2	2	2	2
		B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
	20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	2	2	2	2	2	2	2	2
		B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	1.620	2.025	2.430	1.620	2.025	1.620	2.025	2.430	1.620	2.025
	30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	1.693L	1.000L	.400L	1.333L	.616L	1.693L	1.000L	.400L	1.333L	.616L
		M	3.037	3.573	4.129	2.936	3.483	3.037	3.573	4.129	2.936	3.483
	40	G	2–4	2–4	1–4	1–4	2–4	2–4	2–4	1–4	1–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	1.693L	1.000L	.824R	1.500R	.616L	1.693L	1.000L	.824R	1.500R	.616L
		M	4.646	5.318	6.014	4.445	5.106	4.646	5.318	6.014	4.445	5.106
	50	G	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	3	3	3	3	2	3	3	3	3	2
		B	.134L	.375R	.824R	1.500R	.118L	.134L	.375R	.824R	1.500R	.118L
		M	6.475	7.302	8.137	6.436	7.126	6.475	7.302	8.137	6.436	7.126
	60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–4	1–4	1–4	1–4
		N	3	3	3	3	3	3	3	3	3	2
		B	3.600L	2.500L	1.400L	1.600L	.500L	4.100L	.375R	.824R	1.500R	.118L
		M	8.816	9.604	10.433	8.643	9.504	8.380	9.302	10.260	8.430	9.251
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	3	3	3	3	3
		B	3.600L	2.500L	1.400L	1.600L	.500L	4.100L	2.900L	1.700L	2.000L	.800L
		M	13.762	14.578	15.425	13.632	14.503	13.310	14.205	15.136	13.250	14.208
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	3	3	3	3	3
		B	3.600L	2.500L	1.400L	1.600L	.500L	4.100L	2.900L	1.700L	2.000L	.800L
		M	18.730	19.563	20.420	18.626	19.503	18.268	19.184	20.129	18.240	19.206

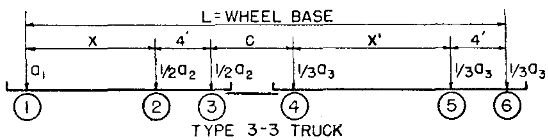
Truck No.			61	62	63	64	65	66	67	68	69	70
Wh. Base		L	44	44	44	44	44	48	48	48	48	48
Axle		X	20	20	20	20	20	20	20	20	20	20
Spacing		X'	12	12	12	12	12	16	16	16	16	16
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On		a_2	.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
Axles		a_3	.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
Span-Feet	10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	2	2	2	2	2	2	2	2
		B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
	20	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	.923L	.429L	0	.667L	.154L	.923L	.429L	0	.667L	.154L
		M	1.878	2.207	2.550	1.814	2.151	1.878	2.207	2.550	1.814	2.151
	30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	.923L	.429L	0	.667L	.154L	.923L	.429L	0	.667L	.154L
		M	3.493	3.955	4.425	3.309	3.776	3.493	3.955	4.425	3.309	3.776
	40	G	2–5	2–5	2–5	2–5	2–5	2–4	2–4	2–4	2–4	2–4
		N	4	3	3	3	3	3	3	3	3	3
		B	.556R	2.556L	1.667L	3.000L	2.000L	.923L	.429L	0	.667L	.154L
		M	5.507	5.847	6.363	4.980	5.480	5.114	5.703	6.300	4.807	5.401
	50	G	2–5	2–5	1–5	2–5	1–5	2–5	2–5	2–5	2–5	1–4
		N	4	3	3	3	3	4	3	3	3	2
		B	.556R	2.556L	.300L	3.000L	.800R	0	3.000L	2.000L	3.500L	.706R
		M	7.756	8.068	8.602	6.944	7.513	7.250	7.712	8.322	6.596	7.233
	60	G	2–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
		N	4	3	3	3	3	4	3	3	3	3
		B	.556R	1.100L	.300L	0	.800R	0	1.500L	.600L	.400L	.500R
		M	10.005	10.520	11.102	9.400	10.011	9.500	10.138	10.806	9.003	9.704
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	4	3	3	3	3	3	3	3	3	3
		B	2.100R	1.100L	.300L	0	.800R	2.400L	1.500L	.600L	.400L	.500R
		M	14.955	15.515	16.101	14.400	15.008	14.472	15.128	15.805	14.002	14.703
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	4	3	3	3	3	3	3	3	3	3
		B	2.100R	1.100L	.300L	0	.800R	2.400L	1.500L	.600L	.400L	.500R
		M	19.944	20.512	21.101	19.400	20.006	19.458	20.123	20.804	19.002	19.703

Span-Feet												
Truck No.			71	72	73	74	75	76	77	78	79	80
Wh. Base	L		52	52	52	52	52	48	48	48	48	48
Axle	X		20	20	20	20	20	20	20	20	20	20
Spacing	X'		20	20	20	20	20	12	12	12	12	12
Hitch	C		8	8	8	8	8	12	12	12	12	12
Load	a_1		.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2		.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
Axles	a_3		.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
	10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	2	2	2	2	2	2	2	2
		B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
	20	G	2–4	2–4	2–4	2–4	2–4	2–3	2–3	2–3	2–3	2–3
		N	3	3	3	3	3	2	2	2	2	2
		B	.923L	.429L	0	.667L	.154L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	1.878	2.207	2.550	1.814	2.151	1.620	2.025	2.430	1.620	2.025
	30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	.923L	.429L	0	.667L	.154L	1.693L	1.000L	.400L	1.333L	.616L
		M	3.493	3.955	4.425	3.309	3.776	3.037	3.573	4.129	2.936	3.483
	40	G	2–4	2–4	2–4	2–4	2–4	2–5	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	4	3	3	3	3
		B	.923L	.429L	0	.667L	.154L	1.445R	1.000L	.400L	1.333L	.616L
		M	5.114	5.703	6.300	4.807	5.401	4.747	5.318	6.003	4.427	5.106
	50	G	1–4	1–4	1–4	1–4	1–4	2–5	2–5	2–5	2–5	1–4
		N	3	3	3	3	2	4	3	3	3	2
		B	.800R	1.125R	1.412R	2.500R	.706R	1.445R	3.445L	2.333L	4.000L	.353R
		M	6.785	7.520	8.259	6.500	7.233	6.987	7.364	8.048	6.256	6.927
	60	G	1–5	1–5	1–5	1–5	1–5	2–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	4	3	3	3	3
		B	2.900L	1.900L	.900L	.800L	.200R	1.445R	1.900L	.900L	.800L	.200R
		M	9.040	9.760	10.514	8.611	9.401	9.231	9.760	10.514	8.611	9.401
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	4	3	3	3	3
		B	2.900L	1.900L	.900L	.800L	.200R	3.100R	1.900L	.900L	.800L	.200R
		M	14.005	14.745	15.510	13.608	14.401	14.020	14.745	15.510	13.608	14.401
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	4	3	3	3	3
		B	2.900L	1.900L	.900L	.800L	.200R	3.100R	1.900L	.900L	.800L	.200R
		M	18.984	19.736	20.508	18.606	19.400	18.996	19.736	20.508	18.606	19.400

Span-Feet												
Truck No.			81	82	83	84	85	86	87	88	89	90
Wh. Base	L		52	52	52	52	52	56	56	56	56	56
Axle	X		20	20	20	20	20	20	20	20	20	20
Spacing	X'		16	16	16	16	16	20	20	20	20	20
Hitch	C		12	12	12	12	12	12	12	12	12	12
Load	a_1		.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On	a_2		.40	.50	.60	.40	.50	.40	.50	.60	.40	.50
Axles	a_3		.50	.40	.30	.40	.30	.50	.40	.30	.40	.30
	10	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	2	2	2	2	2	2	2	2
		B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	.640	.800	.960	.640	.800	.640	.800	.960	.640	.800
	20	G	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3	2–3
		N	2	2	2	2	2	2	2	2	2	2
		B	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L	1.000L
		M	1.620	2.025	2.430	1.620	2.025	1.620	2.025	2.430	1.620	2.025
	30	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	1.693L	1.000L	.400L	1.333L	.616L	1.693L	1.000L	.400L	1.333L	.616L
		M	3.037	3.573	4.129	2.936	3.483	3.037	3.573	4.129	2.936	3.483
	40	G	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4	2–4
		N	3	3	3	3	3	3	3	3	3	3
		B	1.693L	1.000L	.400L	1.333L	.616L	1.693L	1.000L	.400L	1.333L	.616L
		M	4.646	5.318	6.003	4.427	5.106	4.646	5.318	6.003	4.427	5.106
	50	G	2–5	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4	1–4
		N	4	3	3	3	2	3	3	3	3	2
		B	.889R	.625R	1.059R	2.000R	.353R	.134R	.625R	1.059R	2.000R	.353R
		M	6.464	7.106	7.944	6.064	6.927	6.275	7.106	7.944	6.064	6.927
	60	G	2–5	1–5	1–5	1–5	1–5	2–5	1–4	1–4	1–4	1–4
		N	4	3	3	3	3	4	3	3	3	2
		B	.889R	2.300L	1.200L	1.200L	.100L	.333R	.625R	1.059R	2.000R	.353R
		M	8.712	9.388	10.224	8.224	9.100	8.201	9.106	10.066	8.054	9.052
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	3	3	3	3	3
		B	3.400L	2.300L	1.200L	1.200L	.100L	3.900L	2.700L	1.500L	1.600L	.400L
		M	13.545	14.366	15.218	13.218	14.100	13.090	13.991	14.928	12.832	13.802
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	3	3	3	3	3	3	3
		B	3.400L	2.300L	1.200L	1.200L	.100L	3.900L	2.700L	1.500L	1.600L	.400L
		M	18.516	19.353	20.214	18.214	19.100	18.052	18.973	19.923	17.826	18.802

Table 7.12

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 3-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.			1	2	3	4	5	6	7	8	9	10
Wh. Base		L	40	40	40	40	40	44	44	44	44	44
Axle Spacing		X	12	12	12	12	12	12	12	12	12	12
		X'	8	8	8	8	8	12	12	12	12	12
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	4–6	2–3	2–3	4–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	5	2	2	5	2	6	2	2	6	2
		B	.667R	1.000L	1.000L	.668R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	1.814	1.620	2.025	1.509	1.620	1.620	1.620	2.025	1.350	1.620
	30	G	4–6	2–4	2–4	4–6	1–3	4–6	2–4	2–4	4–6	1–3
		N	5	3	3	5	2	5	3	3	5	2
		B	.667R	1.062L	.471L	.668R	1.333R	1.333R	1.062L	.471L	1.336R	1.333R
		M	3.309	2.872	3.454	2.756	2.936	2.936	2.872	3.454	2.444	2.936
	40	G	3–6	2–6	1–5	2–6	1–4	4–6	1–4	1–4	1–4	1–4
		N	5	4	3	4	2	5	3	3	2	2
		B	2.534R	1.260R	.966L	.543R	.360L	1.333R	.297R	.685R	.654L	.360L
		M	4.920	4.570	5.253	4.240	4.668	4.427	4.469	5.241	3.841	4.668
	50	G	2–6	1–6	1–6	2–6	1–6	2–6	1–6	1–5	2–6	1–4
		N	4	3	3	4	3	4	3	3	4	2
		B	.111R	3.466L	2.434L	.543R	1.734L	.778L	4.132L	1.276L	.290L	.360L
		M	7.150	6.874	7.584	6.238	6.826	6.361	6.309	7.160	5.570	6.501
	60	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	3	3
		B	1.500R	3.466L	2.434L	2.766L	1.734L	.700R	4.132L	2.968L	3.432L	2.268L
		M	9.538	9.334	10.065	8.658	9.316	8.708	8.753	9.579	7.964	8.818
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	3	3
		B	1.500R	3.466L	2.434L	2.766L	1.734L	.700R	4.132L	2.968L	3.432L	2.268L
		M	14.528	14.284	15.040	13.628	14.304	13.706	13.681	14.542	12.915	13.796
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	3	3
		B	1.500R	3.466L	2.434L	2.766L	1.734L	.700R	4.132L	2.968L	3.432L	2.268L
		M	19.523	19.254	20.025	18.611	19.296	18.705	18.639	19.520	17.886	18.783

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

Truck No.		11	12	13	14	15	16	17	18	19	20
Wh. Base	L	48	48	48	48	48	44	44	44	44	44
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	16	16	16	16	16	8	8	8	8	8
Hitch	C	12	12	12	12	12	16	16	16	16	16
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
	a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet 10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
	N	6	2	2	6	2	6	2	2	6	2
	B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
	M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
20	G	5–6	2–3	2–3	5–6	2–3	4–6	2–3	2–3	4–6	2–3
	N	6	2	2	6	2	5	2	2	5	2
	B	1.000R	1.000L	1.000L	.997R	1.000L	.667R	1.000L	1.000L	.668R	1.000L
	M	1.620	1.620	2.025	1.350	1.620	1.814	1.620	2.025	1.509	1.620
30	G	5–6	2–4	2–4	1–3	1–3	4–6	4–6	1–3	4–6	1–3
	N	6	3	3	2	2	5	5	2	5	2
	B	1.000R	1.062L	.471L	1.800R	1.333R	.667R	.668R	.167R	.668R	1.333R
	M	2.613	2.872	3.454	2.304	2.936	3.309	2.756	3.400	2.756	2.936
40	G	4–6	1–4	1–4	1–4	1–4	4–6	1–4	1–4	4–6	1–3
	N	5	3	3	2	2	5	3	3	5	2
	B	2.000R	.297R	.685R	.654L	.360L	.667R	.204L	.322R	.668R	1.333R
	M	4.060	4.469	5.241	3.841	4.668	4.807	4.135	4.968	4.004	4.427
50	G	2–6	1–4	1–4	1–4	1–4	2–6	2–6	1–5	2–6	1–4
	N	4	3	3	2	2	4	4	3	4	2
	B	1.667L	.297R	.685R	.654L	.360L	.778R	2.149R	1.583L	1.293R	.723L
	M	5.600	6.137	7.071	5.507	6.501	6.561	6.067	6.909	5.661	6.240
60	G	1–6	1–6	1–6	1–6	1–5	2–6	1–6	1–6	1–6	1–6
	N	4	3	3	3	3	4	3	3	4	3
	B	.100L	4.798L	3.502L	4.098L	.778L	.778R	4.466L	3.234L	4.234R	2.534L
	M	7.700	8.186	9.102	7.382	8.340	8.809	8.466	9.340	7.733	8.573
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	3	3	3	4	3	3	4	3
	B	.100L	4.798L	3.502L	4.098L	2.802L	2.300R	4.466L	3.234L	4.234R	2.534L
	M	12.700	13.090	14.051	12.312	13.296	13.766	13.383	14.297	12.658	13.546
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	3	3	3	4	3	3	4	3
	B	.100L	4.798L	3.502L	4.098L	2.802L	2.300R	4.466L	3.234L	4.234R	2.534L
	M	17.700	18.032	19.021	17.270	18.277	18.753	18.333	19.271	17.613	18.530

Truck No.		21	22	23	24	25	26	27	28	29	30
Wh. Base	L	48	48	48	48	48	52	52	52	52	52
Axle Spacing	X	12	12	12	12	12	12	12	12	12	12
	X′	12	12	12	12	12	16	16	16	16	16
Hitch	C	16	16	16	16	16	16	16	16	16	16
Load On Axles	a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
	a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
	a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet 10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
	N	6	2	2	6	2	6	2	2	6	2
	B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
	M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
20	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
	N	6	2	2	6	2	6	2	2	6	2
	B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
	M	1.620	1.620	2.025	1.350	1.620	1.620	1.620	2.025	1.350	1.620
30	G	4–6	1–3	1–3	4–6	1–3	5–6	1–3	1–3	1–3	1–3
	N	5	2	2	5	2	6	2	2	2	2
	B	1.333R	.400R	.167R	1.336R	1.333R	1.000R	.400R	.167R	1.800R	1.333R
	M	2.936	2.753	3.400	2.444	2.936	2.613	2.753	3.400	2.304	2.936
40	G	4–6	1–4	1–4	4–6	1–3	4–6	1–4	1–4	1–3	1–3
	N	5	3	3	5	2	5	3	3	2	2
	B	1.333R	.204L	.322R	1.336R	1.333R	2.000R	.204L	.322R	1.800R	1.333R
	M	4.427	4.135	4.968	3.687	4.427	4.060	4.135	4.968	3.541	4.427
50	G	4–6	1–4	1–4	1–4	1–4	4–6	1–4	1–4	1–4	1–4
	N	5	3	3	2	2	5	3	3	2	2
	B	1.333R	.204L	.322R	1.155L	.723L	2.000R	.204L	.322R	1.155L	.723L
	M	5.921	5.802	6.800	5.185	6.240	5.548	5.802	6.800	5.185	6.240
60	G	2–6	1–6	1–6	1–6	1–6	2–6	1–4	1–4	1–4	1–4
	N	4	3	3	3	3	4	3	3	2	2
	B	.111L	5.132L	3.768L	4.432L	3.068L	1.000L	.204L	.322R	1.155L	.723L
	M	8.000	7.907	8.869	7.095	8.089	7.215	7.470	8.632	6.850	8.072
80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	3	3	3	4	3	3	3	3
	B	1.500R	5.132L	3.768L	4.432L	3.068L	.700R	5.798L	4.302L	5.098L	3.602L
	M	12.928	12.797	13.809	12.014	13.050	12.106	12.222	13.329	11.427	12.560
100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
	N	4	3	3	3	3	4	3	3	3	3
	B	1.500R	5.132L	3.768L	4.432L	3.068L	.700R	5.798L	4.302L	5.098L	3.602L
	M	17.923	17.731	18.774	16.964	18.026	17.105	17.138	18.283	16.362	17.528

Truck No.			31	32	33	34	35	36	37	38	39	40
Wh. Base		L	44	44	44	44	44	48	48	48	48	48
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	8	8	8	8	8	12	12	12	12	12
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	4–6	2–3	2–3	4–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	5	2	2	5	2	6	2	2	6	2
		B	.667R	1.000L	1.000L	.668R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	1.814	1.620	2.025	1.509	1.620	1.620	1.620	2.025	1.350	1.620
	30	G	4–6	2–4	2–4	4–6	2–4	4–6	2–4	2–4	4–6	2–4
		N	5	3	3	5	3	5	3	3	5	3
		B	.667R	1.062L	.471L	.668R	.747L	1.333R	1.062L	.471L	1.336R	.747L
		M	3.309	2.872	3.454	2.756	2.809	2.936	2.872	3.454	2.444	2.809
	40	G	3–6	2–6	2–5	2–6	1–4	4–6	2–4	1–4	4–6	1–4
		N	5	4	3	4	2	5	3	3	5	2
		B	2.534R	1.260R	2.136L	.543R	.186R	1.333R	1.062L	.958R	1.336R	.186R
		M	4.920	4.570	5.120	4.240	4.266	4.427	4.284	5.049	3.687	4.266
	50	G	2–6	2–6	1–6	2–6	1–6	2–6	2–6	1–5	2–6	1–4
		N	4	4	3	4	3	4	4	3	4	2
		B	.111R	1.260R	2.234L	.543R	1.334L	.778L	.520R	1.045L	.290L	.186R
		M	7.150	6.813	7.366	6.238	6.402	6.361	6.123	6.951	5.570	6.099
	60	G	2–6	1–6	1–6	1–6	1–6	2–6	1–6	1–6	2–6	1–6
		N	4	3	3	4	3	4	3	3	4	3
		B	.111R	3.266L	2.234L	3.634R	1.334L	.778L	3.932L	2.768L	.290L	1.868L
		M	9.400	9.112	9.849	8.254	8.896	8.609	8.526	9.360	7.569	8.390
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	4	3	4	3	3	3	3
		B	1.700R	3.266L	2.234L	3.634R	1.334L	.900R	3.932L	2.768L	3.032L	1.868L
		M	14.336	14.067	14.828	13.199	13.888	13.510	13.461	14.328	12.483	13.376
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	4	3	4	3	3	3	3
		B	1.700R	3.266L	2.234L	3.634R	1.334L	.900R	3.932L	2.768L	3.032L	1.868L
		M	19.329	19.041	19.816	18.166	18.884	18.508	18.423	19.309	17.460	18.367

Truck No.			41	42	43	44	45	46	47	48	49	50
Wh. Base		L	52	52	52	52	52	48	48	48	48	48
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	16	16	16	16	16	8	8	8	8	8
Hitch		C	12	12	12	12	12	16	16	16	16	16
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	5–6	2–3	2–3	5–6	2–3	4–6	2–3	2–3	4–6	2–3
		N	6	2	2	6	2	5	2	2	5	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	.667R	1.000L	1.000L	.668R	1.000L
		M	1.620	1.620	2.025	1.350	1.620	1.814	1.620	2.025	1.509	1.620
	30	G	5–6	2–4	2–4	2–4	2–4	4–6	4–6	2–3	4–6	2–3
		N	6	3	3	3	3	5	5	2	5	2
		B	1.000R	1.062L	.471L	1.504L	.747L	.667R	.668R	1.000L	.668R	1.000L
		M	2.613	2.872	3.454	2.236	2.809	3.309	2.756	3.267	2.756	2.613
	40	G	4–6	2–4	1–4	1–4	1–4	4–6	4–6	2–4	4–6	1–3
		N	5	3	3	2	2	5	5	3	5	2
		B	2.000R	1.062L	.958R	.054L	.186R	.667R	.668R	.891L	.668R	2.000R
		M	4.060	4.284	5.049	3.434	4.266	4.807	4.004	4.779	4.004	4.060
	50	G	2–6	1–4	1–4	1–4	1–4	2–6	2–6	1–5	2–6	1–4
		N	4	3	3	2	2	4	4	3	4	2
		B	1.667L	.597R	.958R	.054L	.186R	.778R	2.149R	1.352L	1.293R	.178L
		M	5.600	5.941	6.878	5.101	6.099	6.561	6.067	6.697	5.661	5.833
	60	G	2–6	1–6	1–6	1–6	1–5	2–6	2–6	1–6	2–6	1–6
		N	4	3	3	3	3	4	4	3	4	3
		B	1.667L	4.598L	3.302L	3.698L	.316L	.778R	2.149R	3.034L	1.293R	2.134L
		M	7.842	7.954	8.880	6.930	7.933	8.809	8.303	9.119	7.656	8.142
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	4	3
		B	.100R	4.598L	3.302L	3.698L	2.402L	2.500R	4.266L	3.034L	4.634R	2.134L
		M	12.700	12.866	13.834	11.873	12.870	13.578	13.161	14.081	12.302	13.123
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	4	3
		B	.100R	4.598L	3.302L	3.698L	2.402L	2.500R	4.266L	3.034L	4.634R	2.134L
		M	17.700	17.813	18.807	16.839	17.856	18.563	18.116	19.058	17.249	18.112

Truck No.			51	52	53	54	55	56	57	58	59	60
Wh. Base		L	52	52	52	52	52	56	56	56	56	56
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X'	12	12	12	12	12	16	16	16	16	16
Hitch		C	16	16	16	16	16	16	16	16	16	16
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	1.620	1.620	2.025	1.350	1.620	1.620	1.620	2.025	1.350	1.620
	30	G	4–6	2–3	2–3	4–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	5	2	2	5	2	6	2	2	6	2
		B	1.333R	1.000L	1.000L	1.336R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	2.936	2.613	3.267	2.444	2.613	2.613	2.613	3.267	2.176	2.613
	40	G	4–6	2–4	2–4	4–6	1–3	4–6	2–4	2–4	4–6	1–3
		N	5	3	3	5	2	5	3	3	5	2
		B	1.333R	1.651L	.891L	1.336R	2.000R	2.000R	1.651L	.891L	2.004R	2.000R
		M	4.427	3.972	4.779	3.687	4.060	4.060	3.972	4.779	3.380	4.060
	50	G	4–6	1–4	1–4	2–6	1–4	4–6	1–4	1–4	1–4	1–4
		N	5	3	3	4	2	5	3	3	2	2
		B	1.333R	.096R	.595R	.460R	.178L	2.000R	.096R	.595R	.555L	.178L
		M	5.921	5.601	6.603	4.971	5.833	5.548	5.601	6.603	4.772	5.833
	60	G	2–6	1–6	1–6	2–6	1–5	2–6	1–4	1–4	1–4	1–4
		N	4	3	3	4	3	4	3	3	2	2
		B	.111L	4.932L	3.568L	.460R	.623L	1.000L	.096R	.595R	.555L	.178L
		M	8.000	7.673	8.644	6.971	7.670	7.215	7.269	8.435	6.439	7.665
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	3	3
		B	1.700R	4.932L	3.568L	4.032L	2.668L	.900R	5.598L	4.102L	4.698L	3.202L
		M	12.736	12.572	13.591	11.571	12.621	11.910	11.994	13.108	10.978	12.126
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	3	3
		B	1.700R	4.932L	3.568L	4.032L	2.668L	.900R	5.598L	4.102L	4.698L	3.202L
		M	17.729	17.511	18.559	16.531	17.603	16.908	16.915	18.066	15.923	17.101

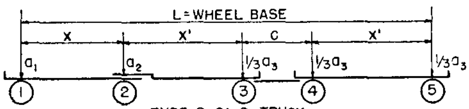
Truck No.			61	62	63	64	65	66	67	68	69	70
Wh. Base		L	48	48	48	48	48	52	52	52	52	52
Axle Spacing		X	20	20	20	20	20	20	20	20	20	20
		X'	8	8	8	8	8	12	12	12	12	12
Hitch		C	12	12	12	12	12	12	12	12	12	12
Load On Axles		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	4–6	2–3	2–3	4–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	5	2	2	5	2	6	2	2	6	2
		B	.667R	1.000L	1.000L	.668R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	1.814	1.620	2.025	1.509	1.620	1.620	1.620	2.025	1.350	1.620
	30	G	4–6	2–4	2–4	4–6	2–4	4–6	2–4	2–4	4–6	2–4
		N	5	3	3	5	3	5	3	3	5	3
		B	.667R	1.062L	.471L	.668R	.747L	1.333R	1.062L	.471L	1.336R	.747L
		M	3.309	2.872	3.454	2.756	2.809	2.936	2.872	3.454	2.444	2.809
	40	G	3–6	2–6	2–5	2–6	2–5	4–6	2–4	2–4	4–6	2–4
		N	5	4	3	4	3	5	3	3	5	3
		B	2.534R	1.260R	2.136L	.543R	2.606L	1.333R	1.062L	.471L	1.336R	.747L
		M	4.920	4.570	5.120	4.240	4.245	4.427	4.284	5.036	3.687	4.139
	50	G	2–6	2–6	2–6	2–6	2–6	2–6	2–6	2–6	2–6	1–4
		N	4	4	3	4	3	4	4	3	4	2
		B	.111R	1.260R	3.594L	.543R	4.168L	.778L	.520R	4.187L	.290L	.731R
		M	7.150	6.813	7.249	6.238	6.144	6.361	6.123	6.798	5.570	5.707
	60	G	2–6	2–6	1–6	2–6	1–6	2–6	2–6	1–6	2–6	1–6
		N	4	4	3	4	3	4	4	3	4	3
		B	.111R	1.260R	2.034L	.543R	.934L	.778L	.520R	2.568L	.290L	1.468L
		M	9.400	9.057	9.635	8.238	8.481	8.609	8.373	9.142	7.569	7.968
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	4	3	4	3	3	4	3
		B	1.900R	3.066L	2.034L	4.034R	.934L	1.100R	3.732L	2.568L	3.368R	1.468L
		M	14.145	13.852	14.618	12.837	13.477	13.315	13.242	14.114	12.110	12.959
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	4	3	4	3	3	4	3
		B	1.900R	3.066L	2.034L	4.034R	.934L	1.100R	3.732L	2.568L	3.368R	1.468L
		M	19.136	18.828	19.607	17.797	18.475	18.312	18.207	19.098	17.081	17.954

Truck No.			71	72	73	74	75	76	77	78	79	80
Wh. Base		L	56	56	56	56	56	52	52	52	52	52
Axle		X	20	20	20	20	20	20	20	20	20	20
Spacing		X'	16	16	16	16	16	8	8	8	8	8
Hitch		C	12	12	12	12	12	16	16	16	16	16
Load		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
Axles		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	5–6	2–3	2–3	5–6	2–3	4–6	2–3	2–3	4–6	2–3
		N	6	2	2	6	2	5	2	2	5	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	.667R	1.000L	1.000L	.668R	1.000L
		M	1.620	1.620	2.025	1.350	1.620	1.814	1.620	2.025	1.509	1.620
	30	G	5–6	2–4	2–4	2–4	2–4	4–6	4–6	2–3	4–6	2–3
		N	6	3	3	3	3	5	5	2	5	2
		B	1.000R	1.062L	.471L	1.504L	.747L	.667R	.668R	1.000L	.668R	1.000L
		M	2.613	2.872	3.454	2.236	2.809	3.309	2.756	3.267	2.756	2.613
	40	G	4–6	2–4	2–4	2–4	2–4	4–6	4–6	2–4	4–6	2–4
		N	5	3	3	3	3	5	5	3	5	3
		B	2.000R	1.062L	.471L	1.504L	.747L	.667R	.668R	.891L	.668R	1.246L
		M	4.060	4.284	5.036	3.394	4.139	4.807	4.004	4.779	4.004	3.887
	50	G	2–6	1–4	1–4	2–6	1–4	2–6	2–6	2–6	2–6	2–6
		N	4	3	3	4	2	4	4	3	4	3
		B	1.667L	.897R	1.231R	1.123L	.731R	.778R	2.149R	4.482L	1.293R	5.168L
		M	5.600	5.747	6.687	4.922	5.707	6.561	6.067	6.578	5.661	5.494
	60	G	2–6	1–6	1–6	2–6	1–4	2–6	2–6	1–6	2–6	1–6
		N	4	3	3	4	2	4	4	3	4	3
		B	1.667L	4.398L	3.102L	1.123L	.731R	.778R	2.149R	2.834L	1.293R	1.734L
		M	7.842	7.724	8.658	6.919	7.538	8.809	8.303	8.900	7.656	7.716
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	4	3
		B	.300R	4.398L	3.102L	3.298L	2.002L	2.700R	4.066L	2.834L	5.034R	1.734L
		M	12.501	12.644	13.618	11.438	12.448	13.391	12.941	13.866	11.951	12.704
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	3	3	4	3	3	4	3
		B	.300R	4.398L	3.102L	3.298L	2.002L	2.700R	4.066L	2.834L	5.034R	1.734L
		M	17.501	17.595	18.594	16.411	17.438	18.373	17.899	18.846	16.887	17.696

Truck No.			81	82	83	84	85	86	87	88	89	90
Wh. Base		L	56	56	56	56	56	60	60	60	60	60
Axle		X	20	20	20	20	20	20	20	20	20	20
Spacing		X'	12	12	12	12	12	16	16	16	16	16
Hitch		C	16	16	16	16	16	16	16	16	16	16
Load		a_1	.10	.10	.10	.20	.20	.10	.10	.10	.20	.20
On		a_2	.30	.40	.50	.30	.40	.30	.40	.50	.30	.40
Axles		a_3	.60	.50	.40	.50	.40	.60	.50	.40	.50	.40
Span-Feet	10	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	.640	.640	.800	.533	.640	.640	.640	.800	.533	.640
	20	G	5–6	2–3	2–3	5–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	6	2	2	6	2	6	2	2	6	2
		B	1.000R	1.000L	1.000L	.997R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	1.620	1.620	2.025	1.350	1.620	1.620	1.620	2.025	1.350	1.620
	30	G	4–6	2–3	2–3	4–6	2–3	5–6	2–3	2–3	5–6	2–3
		N	5	2	2	5	2	6	2	2	6	2
		B	1.333R	1.000L	1.000L	1.336R	1.000L	1.000R	1.000L	1.000L	.997R	1.000L
		M	2.936	2.613	3.267	2.444	2.613	2.613	2.613	3.267	2.176	2.613
	40	G	4–6	2–4	2–4	4–6	2–4	4–6	2–4	2–4	4–6	2–4
		N	5	3	3	5	3	5	3	3	5	3
		B	1.333R	1.651L	.891L	1.336R	1.246L	2.000R	1.651L	.891L	2.004R	1.246L
		M	4.427	3.972	4.779	3.687	3.887	4.060	3.972	4.779	3.380	3.887
	50	G	4–6	1–4	1–4	2–6	1–4	4–6	1–4	1–4	4–6	1–4
		N	5	3	3	4	2	5	3	3	5	2
		B	1.333R	.396R	.868R	.460R	.369R	2.000R	.396R	.868R	2.004R	.369R
		M	5.921	5.403	6.410	4.971	5.434	5.548	5.403	6.410	4.620	5.434
	60	G	2–6	2–6	1–6	2–6	1–4	2–6	1–4	1–4	2–6	1–4
		N	4	4	3	4	2	4	3	3	4	2
		B	.111L	1.409R	3.368L	.460R	.369R	1.000L	.396R	.868R	.373L	.369R
		M	8.000	7.598	8.421	6.971	7.267	7.215	7.071	8.240	6.304	7.267
	80	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	4	3	4	3	3	3	3
		B	1.900R	4.732L	3.368L	4.368R	2.268L	1.100R	5.398L	3.902L	4.298L	2.802L
		M	12.545	12.348	13.374	11.206	12.196	11.715	11.766	12.888	10.533	11.696
	100	G	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6	1–6
		N	4	3	3	4	3	4	3	3	3	3
		B	1.900R	4.732L	3.368L	4.368R	2.268L	1.100R	5.398L	3.902L	4.298L	2.802L
		M	17.536	17.292	18.345	16.159	17.183	16.712	16.693	17.850	15.487	16.677

Table 7.13

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 2-S1-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S1-2 TRUCK

Ninety-six variations in the Type 2-S1-2 truck are given in this Table. Each truck number, from 1 to 96, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

		1	2	3	4	5	6	7	8	9	10
Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	36	36	36	36	40	40	40	40	44	44
Axle	X	8	8	8	8	8	8	8	8	8	8
Spacing	X'	10	10	10	10	12	12	12	12	14	14
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a1	.10	.10	.20	.20	.10	.10	.20	.20	.10	.10
On	a2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a3	.70	.60	.60	.50	.70	.60	.60	.50	.70	.60
Span-Feet 10	G	4	2	5	2	4	2	5	2	4	2
	N	4	2	5	2	4	2	5	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.585	.750	.500	.750	.585	.750	.500	.750	.585	.750
20	G	3–4	1–3	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2
	N	4	2	3	2	4	2	3	2	4	2
	B	1.996R	1.000L	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R
	M	1.496	1.630	1.280	1.764	1.496	1.620	1.280	1.764	1.496	1.620
30	G	3–5	1–3	2–4	1–3	3–5	1–3	2–4	1–3	3–5	1–3
	N	4	2	3	2	4	2	3	2	4	2
	B	.333L	1.000L	.333R	.053L	.666L	1.333L	.667R	.303L	.999L	1.667L
	M	3.156	3.120	2.702	3.368	2.930	2.936	2.509	3.202	2.711	2.756
40	G	2–5	1–5	1–5	1–4	2–5	1–4	1–4	1–4	3–5	1–4
	N	4	3	3	2	4	2	2	2	4	2
	B	1.741R	.200L	.200R	1.836L	1.705R	3.500L	3.000L	2.236L	.999L	4.000L
	M	5.172	5.001	4.601	5.271	4.735	4.645	4.180	4.972	4.454	4.320
50	G	1–5	1–5	1–5	1–4	1–5	1–5	1–5	1–4	2–5	1–5
	N	3	3	3	2	3	3	3	2	4	3
	B	1.133L	.200L	.200R	1.836L	1.066L	0	.400R	2.236L	1.668R	.200R
	M	7.593	7.501	7.101	7.340	7.057	6.900	6.503	7.033	6.537	6.301
60	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	1.133L	.200L	.200R	3.867L	1.066L	0	.400R	4.534L	.999L	.200R
	M	10.088	10.001	9.601	9.782	9.553	9.400	9.003	9.209	9.018	8.801
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	1.133L	.200L	.200R	3.867L	1.066L	0	.400R	4.534L	.999L	.200R
	M	15.083	15.001	14.601	14.720	14.548	14.400	14.002	14.123	14.013	13.801
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	1.133L	.200L	.200R	3.867L	1.066L	0	.400R	4.534L	.999L	.200R
	M	20.080	20.000	19.600	19.683	19.545	19.400	19.002	19.072	19.011	18.800

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

Truck No.			11	12	13	14	15	16	17	18	19	20
Wh. Base		L	44	44	48	48	48	48	52	52	52	52
Axle Spacing		X	8	8	8	8	8	8	8	8	8	8
		X′	14	14	16	16	16	16	18	18	18	18
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.20	.20	.10	.10	.20	.20	.10	.10	.20	.20
		a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
		a_3	.60	.50	.70	.60	.60	.50	.70	.60	.60	.50
Span-Feet	10	G	5	2	4	2	5	2	4	2	5	2
		N	5	2	4	2	5	2	4	2	5	2
		B	0	0	0	0	0	0	0	0	0	0
		M	.500	.750	.585	.750	.500	.750	.585	.750	.500	.750
	20	G	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2
		N	3	2	4	2	3	2	4	2	3	2
		B	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R
		M	1.280	1.764	1.496	1.620	1.280	1.764	1.496	1.620	1.280	1.764
	30	G	1–3	1–3	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2
		N	2	2	4	2	3	2	4	2	3	2
		B	1.000L	.553L	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R
		M	2.320	3.040	2.632	2.613	2.253	2.993	2.632	2.613	2.253	2.993
	40	G	1–4	1–3	3–5	1–3	1–3	1–3	3–5	1–3	1–3	1–3
		N	2	2	4	2	2	2	4	2	2	2
		B	3.500L	.553L	1.332L	2.000L	1.333L	.804L	1.665L	2.333L	1.667L	1.054L
		M	3.845	4.706	4.235	4.060	3.627	4.545	4.020	3.882	3.442	4.386
	50	G	1–5	1–4	2–5	1–4	1–4	1–4	3–5	1–4	1–4	1–4
		N	3	2	4	2	2	2	4	2	2	2
		B	.600R	2.635L	1.631R	4.500L	4.000L	3.035L	1.665L	5.000L	4.500L	3.435L
		M	5.907	6.733	6.102	5.924	5.456	6.438	5.760	5.600	5.124	6.148
	60	G	1–5	1–4	1–5	1–5	1–5	1–4	1–5	1–5	1–5	1–4
		N	3	2	3	3	3	2	3	3	3	2
		B	.600R	2.635L	.932L	.400R	.800R	3.035L	.865L	.600R	1.000R	3.435L
		M	8.406	8.797	8.482	8.203	7.811	8.495	7.947	7.606	7.217	8.198
	80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	2	3	3	3	2	3	3	3	2
		B	.600R	5.201L	.932L	.400R	.800R	5.868L	.865L	.600R	1.000R	6.535L
		M	13.405	13.537	13.479	13.202	12.808	12.962	12.944	12.605	12.213	12.399
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	2	3	3	3	2	3	3	3	2
		B	.600R	5.201L	.932L	.400R	.800R	5.868L	.865L	.600R	1.000R	6.535L
		M	18.404	18.470	18.477	18.202	17.806	17.876	17.942	17.604	17.210	17.292

Truck No.			21	22	23	24	25	26	27	28	29	30
Wh. Base		L	56	56	56	56	60	60	60	60	64	64
Axle Spacing		X	8	8	8	8	8	8	8	8	8	8
		X′	20	20	20	20	22	22	22	22	24	24
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.10	.10	.20	.20	.10	.10	.20	.20	.10	.10
		a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
		a_3	.70	.60	.60	.50	.70	.60	.60	.50	.70	.60
Span-Feet	10	G	4	2	5	2	4	2	5	2	4	2
		N	4	2	5	2	4	2	5	2	4	2
		B	0	0	0	0	0	0	0	0	0	0
		M	.585	.750	.500	.750	.585	.750	.500	.750	.585	.750
	20	G	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2
		N	4	2	3	2	4	2	3	2	4	2
		B	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R
		M	1.496	1.620	1.280	1.764	1.496	1.620	1.280	1.764	1.496	1.620
	30	G	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2
		N	4	2	3	2	4	2	3	2	4	2
		B	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R
		M	2.632	2.613	2.253	2.993	2.632	2.613	2.253	2.993	2.632	2.613
	40	G	3–5	1–3	1–3	1–2	3–4	1–2	3–4	1–2	3–4	1–2
		N	4	2	2	2	4	2	3	2	4	2
		B	1.997L	2.667L	2.000L	1.600R	1.996R	1.000R	2.000L	1.600R	1.996R	1.000R
		M	3.808	3.707	3.260	4.232	3.785	3.610	3.240	4.232	3.785	3.610
	50	G	3–5	1–4	1–4	1–3	3–5	1–3	1–3	1–3	3–5	1–3
		N	4	2	2	2	4	2	2	2	4	2
		B	1.997L	5.500L	5.000L	1.305L	2.330L	3.000L	2.333L	1.555L	2.663L	3.333L
		M	5.544	5.284	4.800	5.890	5.331	5.008	4.565	5.733	5.121	4.833
	60	G	2–5	1–4	1–4	1–4	3–5	1–4	1–4	1–4	3–5	1–4
		N	4	2	2	2	4	2	2	2	4	2
		B	1.558R	5.500L	5.000L	3.835L	2.330L	6.000L	5.500L	4.234L	2.663L	6.500L
		M	7.474	7.203	6.734	7.905	7.068	6.880	6.403	7.617	6.855	6.563
	80	G	1–5	1–5	1–5	1–4	1–5	1–5	1–5	1–4	1–5	1–5
		N	3	3	3	2	3	3	3	2	3	3
		B	.798L	.800R	1.200R	3.835L	.731L	1.000R	1.400R	4.234L	.664L	1.200R
		M	12.410	12.008	11.618	12.019	11.876	11.413	11.025	11.720	11.342	10.818
	100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
		N	3	3	3	2	3	3	3	2	3	3
		B	.798L	.800R	1.200R	7.202L	.731L	1.000R	1.400R	7.869L	.664L	1.200R
		M	17.408	17.006	16.614	16.717	16.874	16.410	16.020	16.150	16.340	15.814

Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	64	64	40	40	40	40	44	44	44	44
Axle	X	8	8	12	12	12	12	12	12	12	12
Spacing	X′	24	24	10	10	10	10	12	12	12	12
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.20	.20	.10	.10	.20	.20	.10	.10	.20	.20
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.60	.50	.70	.60	.60	.50	.70	.60	.60	.50
Span-Feet 10	G	5	2	4	2	5	2	4	2	5	2
	N	5	2	4	2	5	2	4	2	5	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.500	.750	.585	.750	.500	.750	.585	.750	.500	.750
20	G	3–4	1–2	3–4	2–3	3–4	2–3	3–4	2	3–4	2
	N	3	2	4	2	3	2	4	2	3	2
	B	2.000L	1.600R	1.996R	2.000L	2.000L	1.788L	1.996R	0	2.000L	0
	M	1.280	1.764	1.496	1.600	1.280	1.575	1.496	1.500	1.280	1.500
30	G	3–4	1–2	3–5	2–4	2–4	1–3	3–5	1–3	2–4	1–3
	N	3	2	4	3	3	2	4	2	3	2
	B	2.000L	1.600R	.333L	1.000R	.333R	.547R	.666L	1.000L	.667R	.297R
	M	2.253	2.993	3.156	2.973	2.702	2.974	2.930	2.720	2.509	2.802
40	G	3–4	1–2	2–5	2–5	2–5	1–4	2–5	2–4	2–5	1–4
	N	3	2	4	3	4	2	4	3	4	2
	B	2.000L	1.600R	1.741R	1.222L	2.000R	1.356L	1.705R	1.429R	2.000R	1.755L
	M	3.240	4.232	5.172	4.934	4.480	4.839	4.735	4.436	4.080	4.532
50	G	1–3	1–3	2–5	1–5	1–5	1–4	2–5	1–5	1–5	1–4
	N	2	2	4	3	3	2	4	3	3	2
	B	2.667L	1.805L	1.741R	0	.600R	1.356L	1.705R	.200R	.800R	1.755L
	M	4.386	5.577	7.408	7.300	6.707	6.914	6.973	6.701	6.113	6.602
60	G	1–4	1–4	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	2	2	3	3	3	2	3	3	3	2
	B	6.000L	4.634L	.933L	0	.600R	3.467L	.866L	.200R	.800R	4.134L
	M	6.080	7.333	9.882	9.800	9.206	9.333	9.346	9.201	8.611	8.751
80	G	1–5	1–4	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	2	3	3	3	2	3	3	3	2
	B	6.000L	4.634L	.933L	0	.600R	3.467L	.866L	.200R	.800R	4.134L
	M	10.432	11.423	14.878	14.800	14.205	14.283	14.343	14.201	13.608	13.680
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	2	3	3	3	2	3	3	3	2
	B	1.600R	8.536L	.933L	0	.600R	3.467L	.866L	.200R	.800R	4.134L
	M	15.426	15.593	19.876	19.800	19.204	19.253	19.341	19.200	18.606	18.637

Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	48	48	48	48	52	52	52	52	56	56
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	14	14	14	14	16	16	16	16	18	18
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.20	.20	.10	.10	.20	.20	.10	.10
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.70	.60	.60	.50	.70	.60	.60	.50	.70	.60
Span-Feet 10	G	4	2	5	2	4	2	5	2	4	2
	N	4	2	5	2	4	2	5	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.585	.750	.500	.750	.585	.750	.500	.750	.585	.750
20	G	3–4	2	3–4	2	3–4	2	3–4	2	3–4	2
	N	4	2	3	2	4	2	3	2	4	2
	B	1.996R	0	2.000L	0	1.996R	0	2.000L	0	1.996R	0
	M	1.496	1.500	1.280	1.500	1.496	1.500	1.280	1.500	1.496	1.500
30	G	3–5	1–3	3–5	1–2	3–4	1–2	3–4	1–2	3–4	1–2
	N	4	2	4	2	4	2	3	2	4	2
	B	.999L	1.333L	1.000L	2.400R	1.996R	1.500R	2.000L	2.400R	1.996R	1.500R
	M	2.711	2.536	2.320	2.646	2.632	2.430	2.253	2.646	2.632	2.430
40	G	3–5	2–4	2–4	1–3	3–5	2–4	3–5	1–3	3–5	1–3
	N	4	3	3	2	4	3	4	2	4	2
	B	.999L	1.857R	1.000R	.047R	1.332L	2.286R	1.333L	.204L	1.665L	2.000L
	M	4.454	4.160	3.815	4.301	4.235	3.892	3.627	4.135	4.020	3.660
50	G	2–5	2–5	2–5	1–4	2–5	1–4	2–5	1–4	3–5	1–4
	N	4	3	4	2	4	2	4	2	4	2
	B	1.668R	1.000L	2.000R	2.155L	1.631R	4.250L	2.000R	2.555L	1.665L	4.750L
	M	6.537	6.168	5.664	6.295	6.102	5.689	5.264	5.993	5.760	5.361
60	G	2–5	1–5	1–5	1–4	2–5	1–5	1–5	1–4	2–5	1–5
	N	4	3	3	2	4	3	3	2	4	3
	B	1.668R	.400R	1.000R	2.155L	1.631R	.600R	1.200R	2.555L	1.595R	.800R
	M	8.778	8.603	8.017	8.364	8.344	8.006	7.424	8.057	7.909	7.411
80	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	1.799L	.400R	1.000R	4.801L	.732L	.600R	1.200R	5.468L	.665L	.800R
	M	12.841	13.602	13.013	13.087	13.275	13.005	12.418	12.506	12.741	12.408
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	1.799L	.400R	1.000R	4.801L	.732L	.600R	1.200R	5.468L	.665L	.800R
	M	17.833	18.602	18.010	18.029	18.273	18.004	17.414	17.431	17.739	17.406

Truck No.		51	52	53	54	55	56	57	58	59	60
Wh. Base	L	56	56	60	60	60	60	64	64	64	64
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	18	18	20	20	20	20	22	22	22	22
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.20	.20	.10	.10	.20	.20	.10	.10	.20	.20
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.60	.50	.70	.60	.60	.50	.70	.60	.60	.50
Span-Feet 10	G	5	2	4	2	5	2	4	2	5	2
	N	5	2	4	2	5	2	4	2	5	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.500	.750	.585	.750	.500	.750	.585	.750	.500	.750
20	G	3–4	2	3–4	2	3–4	2	3–4	2	3–4	2
	N	3	2	4	2	3	2	4	2	3	2
	B	2.000L	0	1.996R	0	2.000L	0	1.996R	0	2.000L	0
	M	1.280	1.500	1.496	1.500	1.280	1.500	1.496	1.500	1.280	1.500
30	G	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2	3–4	1–2
	N	3	2	4	2	3	2	4	2	3	2
	B	2.000L	2.400R	1.996R	1.500R	2.000L	2.400R	1.996R	1.500R	2.000L	2.400R
	M	2.253	2.646	2.632	2.430	2.253	2.646	2.632	2.430	2.253	2.646
40	G	2–4	1–3	3–5	1–3	2–4	1–2	3–4	1–2	3–4	1–2
	N	3	2	4	2	3	2	4	2	3	2
	B	1.667R	.455L	1.997L	2.334L	2.000R	2.400R	1.996R	1.500R	2.000L	2.400R
	M	3.442	3.971	3.808	3.482	3.260	3.872	3.785	3.422	3.240	3.872
50	G	3–5	1–4	3–5	2–4	2–4	1–3	3–6	2–4	2–4	1–3
	N	4	2	4	3	3	2	4	3	3	2
	B	1.667L	2.955L	1.997L	3.143R	2.000R	.705L	2.330L	3.572R	2.333R	.955L
	M	4.933	5.697	5.544	5.089	4.748	5.474	5.331	4.829	4.565	5.313
60	G	2–5	1–4	2–5	1–4	2–5	1–4	3–5	1–4	1–4	1–4
	N	4	2	4	2	4	2	4	2	3	2
	B	2.000R	2.995L	1.558R	5.250L	2.000R	3.354L	2.330L	5.750L	6.000R	3.754L
	M	6.854	7.755	7.474	6.967	6.454	7.457	7.068	6.641	6.080	7.164
80	G	1–5	1–5	1–5	1–5	1–5	1–4	1–5	1–5	1–5	1–4
	N	3	2	3	3	3	2	3	3	3	2
	B	1.400R	6.135L	.598L	1.000R	1.600R	3.354L	.531L	1.200R	1.800R	3.754L
	M	11.825	11.935	12.206	11.813	11.232	11.584	11.673	11.218	10.641	11.280
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	2	3	3	3	2	3	3	3	2
	B	1.400R	6.135L	.598L	1.000R	1.600R	6.802L	.531L	1.200R	1.800R	7.469L
	M	16.820	16.841	17.206	16.810	16.226	16.261	16.672	16.214	15.632	15.689

Truck No.		61	62	63	64	65	66	67	68	69	70
Wh. Base	L	68	68	68	68	56	56	56	56	60	60
Axle	X	12	12	12	12	16	16	16	16	16	16
Spacing	X′	24	24	24	24	16	16	16	16	18	18
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.20	.20	.10	.10	.20	.20	.10	.10
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.70	.60	.60	.50	.70	.60	.60	.50	.70	.60
Span-Feet 10	G	4	2	5	2	4	2	5	2	4	2
	N	4	2	5	2	4	2	5	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.585	.750	.500	.750	.585	.750	.500	.750	.585	.750
20	G	3–4	2	3–4	2	3–4	2	3–4	2	3–4	2
	N	4	2	3	2	4	2	3	2	4	2
	B	1.996R	0	2.000L	0	1.996R	0	2.000L	0	1.996R	0
	M	1.496	1.500	1.280	1.500	1.496	1.500	1.280	1.500	1.496	1.500
30	G	3–4	1–2	3–4	1–2	3–4	2–3	3–4	1–2	3–4	3–4
	N	4	2	3	2	4	2	3	2	4	3
	B	1.996R	1.500R	2.000L	2.400R	1.996R	3.200L	2.000L	3.200R	1.996R	2.000L
	M	2.632	2.430	2.253	2.646	2.632	2.321	2.253	2.321	2.632	2.253
40	G	3–4	1–2	3–4	1–2	3–5	2–4	2–4	1–3	3–5	2–4
	N	4	2	3	2	4	3	3	2	4	3
	B	1.996R	1.500R	2.000L	2.400R	1.332L	2.286R	1.333R	.396R	1.665L	2.715R
	M	3.785	3.422	3.240	3.872	4.235	3.892	3.627	3.737	4.020	3.629
50	G	3–5	1–3	2–4	1–3	2–5	2–5	2–5	1–4	3–5	2–4
	N	4	2	3	2	4	3	4	2	4	3
	B	2.663L	3.000L	2.667R	1.206L	1.631R	.889L	2.000R	2.075L	1.665L	2.715R
	M	5.121	4.608	4.386	5.153	6.102	5.664	5.264	5.556	5.760	5.353
60	G	3–5	1–4	3–5	1–4	2–5	2–5	2–5	1–4	2–5	2–5
	N	4	2	4	2	4	3	4	2	4	3
	B	2.663L	6.250L	2.667L	4.154L	1.631R	.889L	2.000R	2.075L	1.595R	.778L
	M	6.855	6.321	5.871	6.875	8.344	7.912	7.254	7.627	7.909	7.409
80	G	1–5	1–5	1–5	1–4	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	.464L	1.400R	2.000R	4.154L	.532L	.800R	1.600R	5.068L	.465L	1.000R
	M	11.139	10.625	10.050	10.980	13.072	12.808	12.032	12.053	12.538	12.213
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	.464L	1.400R	2.000R	8.136L	.532L	.800R	1.600R	5.068L	.465L	1.000R
	M	16.138	15.620	15.040	15.126	18.071	17.806	17.026	16.989	17.537	17.210

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	60	60	64	64	64	64	68	68	68	68
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	18	18	20	20	20	20	22	22	22	22
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.20	.20	.10	.10	.20	.20	.10	.10	.20	.20
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.60	.50	.70	.60	.60	.50	.70	.60	.60	.50
Span-Feet 10	G	5	2	4	2	5	2	4	2	5	2
	N	5	2	4	2	5	2	4	2	5	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.500	.750	.585	.750	.500	.750	.585	.750	.500	.750
20	G	3–4	2	3–4	2	3–4	2	3–4	2	3–4	2
	N	3	2	4	2	3	2	4	2	3	2
	B	2.000L	0	1.996R	0	2.000L	0	1.996R	0	2.000L	0
	M	1.280	1.500	1.496	1.500	1.280	1.500	1.496	1.500	1.280	1.500
30	G	3–4	1–2	3–4	3–4	3–4	1–2	3–4	3–4	3–4	1–2
	N	3	2	4	3	3	2	4	3	3	2
	B	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R
	M	2.253	2.321	2.632	2.253	2.253	2.321	2.632	2.253	2.253	2.321
40	G	2–4	1–3	2–4	2–4	2–4	1–2	3–4	3–4	3–4	1–2
	N	3	2	3	3	3	2	4	3	3	2
	B	1.667R	.146R	1.595R	3.143R	2.000R	3.200R	1.996R	2.000L	2.000L	3.200R
	M	3.442	3.567	3.877	3.373	3.260	3.528	3.785	3.240	3.240	3.528
50	G	2–4	1–4	3–5	2–4	2–4	1–3	3–5	2–4	2–4	1–3
	N	3	2	4	3	3	2	4	3	3	2
	B	1.667R	2.474L	1.997L	3.143R	2.000R	.105L	2.330L	3.572R	2.333R	.356L
	M	4.933	5.253	5.544	5.089	4.748	5.067	5.331	4.829	4.565	4.902
60	G	2–5	1–4	2–5	2–5	2–5	1–4	3–5	2–4	2–5	1–4
	N	4	2	4	3	4	2	4	3	4	2
	B	2.000R	2.474L	1.558R	.667L	2.000R	2.874L	2.330L	3.572R	2.000R	3.274L
	M	6.854	7.319	7.474	6.907	6.454	7.016	7.068	6.549	6.054	6.717
80	G	1–5	1–5	1–5	1–5	1–5	1–4	2–5	1–5	1–5	1–4
	N	3	2	3	3	3	2	4	3	3	2
	B	1.800R	5.735L	.398L	1.200R	2.000R	2.874L	1.521R	1.400R	2.200R	3.274L
	M	11.441	11.476	12.004	11.618	10.850	11.152	11.531	11.025	10.261	10.844
100	G	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5
	N	3	2	3	3	3	2	3	3	3	2
	B	1.800R	5.735L	.398L	1.200R	2.000R	6.402L	.331L	1.400R	2.200R	7.069L
	M	16.432	16.394	17.004	16.614	15.840	15.808	16.470	16.020	15.248	15.231

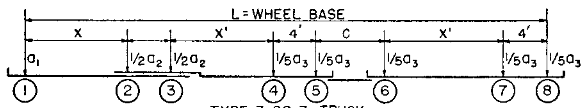
Truck No.		81	82	83	84	85	86	87	88	89	90
Wh. Base	L	72	72	72	72	76	76	76	76	80	80
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	24	24	24	24	26	26	26	26	28	28
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.20	.20	.10	.10	.20	.20	.10	.10
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.70	.60	.60	.50	.70	.60	.60	.50	.70	.60
Span-Feet 10	G	4	2	5	2	4	2	5	2	4	2
	N	4	2	5	2	4	2	5	2	4	2
	B	0	0	0	0	0	0	0	0	0	0
	M	.585	.750	.500	.750	.585	.750	.500	.750	.585	.750
20	G	3–4	2	3–4	2	3–4	2	3–4	2	3–4	2
	N	4	2	3	2	4	2	3	2	4	2
	B	1.996R	0	2.000L	0	1.996R	0	2.000L	0	1.996R	0
	M	1.496	1.500	1.280	1.500	1.496	1.500	1.280	1.500	1.496	1.500
30	G	3–4	3–4	3–4	1–2	3–4	3–4	3–4	1–2	3–4	3–4
	N	4	3	3	2	4	3	3	2	4	3
	B	1.996R	2.000L	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R	1.996R	2.000L
	M	2.632	2.253	2.253	2.321	2.632	2.253	2.253	2.321	2.632	2.253
40	G	3–4	3–4	3–4	1–2	3–4	3–4	3–4	1–2	3–4	3–4
	N	4	3	3	2	4	3	3	2	4	3
	B	1.996R	2.000L	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R	1.996R	2.000L
	M	3.785	3.240	3.240	3.528	3.785	3.240	3.240	3.528	3.785	3.240
50	G	3–5	2–4	2–4	1–2	3–4	2–4	3–4	1–2	3–4	3–4
	N	4	3	3	2	4	3	3	2	4	3
	B	2.663L	4.000R	2.667R	3.200R	1.996R	4.429R	2.000L	3.200R	1.996R	2.000L
	M	5.121	4.574	4.386	4.753	4.943	4.325	4.232	4.753	4.943	4.232
60	G	3–5	2–4	2–4	1–4	3–5	2–4	3–5	1–3	3–5	2–4
	N	4	3	3	2	4	3	4	2	4	3
	B	2.663L	4.000R	2.667R	3.674L	2.996L	4.429R	3.000L	.856L	3.329L	4.857R
	M	6.855	6.287	5.871	6.422	6.644	6.029	5.690	6.242	6.435	5.775
80	G	2–5	1–5	1–5	1–4	2–5	2–5	2–5	1–4	2–5	2–5
	N	4	3	3	2	4	3	4	2	4	3
	B	1.485R	1.600R	2.400R	3.674L	1.448R	.333L	2.000R	4.073L	1.411R	.222L
	M	11.097	10.432	9.672	10.540	10.662	9.901	9.240	10.240	10.229	9.401
100	G	1–5	1–5	1–5	1–4	1–5	1–5	1–5	1–4	1–5	1–5
	N	3	3	3	2	3	3	3	2	3	3
	B	.264L	1.600R	2.400R	3.674L	.197L	1.800R	2.600R	4.073L	.130L	2.000R
	M	15.937	15.426	14.658	14.677	15.403	14.832	14.068	14.370	14.870	14.240

TABLE 7.13 (Continued)

Truck No.			91	92	93	94	95	96
Wh. Base L			80	80	84	84	84	84
Axle		X	16	16	16	16	16	16
Spacing		X′	28	28	30	30	30	30
Hitch		C	8	8	8	8	8	8
Load		a_1	.20	.20	.10	.10	.20	.20
On		a_2	.20	.30	.20	.30	.20	.30
Axles		a_3	.60	.50	.70	.60	.60	.50
Span-Feet	10	G	5	2	4	2	5	2
		N	5	2	4	2	5	2
		B	0	0	0	0	0	0
		M	.500	.750	.585	.750	.500	.750
	20	G	3–4	2	3–4	2	3–4	2
		N	3	2	4	2	3	2
		B	2.000L	0	1.996R	0	2.000L	0
		M	1.280	1.500	1.496	1.500	1.280	1.500
	30	G	3–4	1–2	3–4	3–4	3–4	1–2
		N	3	2	4	3	3	2
		B	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R
		M	2.253	2.321	2.632	2.253	2.253	2.321
	40	G	3–4	1–2	3–4	3–4	3–4	1–2
		N	3	2	4	3	3	2
		B	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R
		M	3.240	3.528	3.785	3.240	3.240	3.528
	50	G	3–4	1–2	3–4	3–4	3–4	1–2
		N	3	2	4	3	3	2
		B	2.000L	3.200R	1.996R	2.000L	2.000L	3.200R
		M	4.232	4.753	4.943	4.232	4.232	4.753
	60	G	2–4	1–3	3–5	2–4	2–4	1–2
		N	3	2	4	3	3	2
		B	3.333R	1.107L	3.662L	5.286R	3.667R	3.200R
		M	5.511	6.081	6.229	5.526	5.335	5.986
	80	G	2–5	1–4	2–5	1–4	2–5	1–4
		N	4	2	4	2	4	2
		B	2.000R	4.473L	1.375R	7.500L	2.000R	4.873L
		M	8.840	9.942	9.794	8.962	8.440	9.648
	100	G	1–5	1–4	1–5	1–5	1–5	1–4
		N	3	2	3	3	3	2
		B	2.800R	4.473L	.063L	2.200R	3.000R	4.873L
		M	13.478	14.066	14.337	13.648	12.890	13.764

Table 7.14

CONTROLLING CONDITIONS AND MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY THE TYPE 3-S2-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S2-3 TRUCK

Eighty-four variations in the Type 3-S2-3 truck are given in this Table. Each truck number, from 1 to 84, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

Truck No.		1	2	3	4	5	6	7	8	9	10
Wh. Base	L	44	44	44	44	48	48	48	48	52	52
Axle Spacing	X	8	8	8	8	8	8	8	8	8	8
	X'	8	8	8	8	10	10	10	10	12	12
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load On Axles	a_1	.05	.05	.10	.10	.05	.05	.10	.10	.05	.05
	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
	a_3	.75	.65	.70	.60	.75	.65	.70	.60	.75	.65
Span-Feet 10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
	N	8	3	8	3	8	3	8	3	8	3
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.480	.480	.448	.480	.480	.480	.448	.480	.480	.480
20	G	4–6	2–4	4–6	2–4	4–6	1–3	4–6	1–3	4–6	1–3
	N	5	3	5	3	5	2	5	2	5	2
	B	.667L	.512L	.667L	.429L	.667L	.286L	.667L	.250R	.667L	.286L
	M	1.360	1.336	1.270	1.324	1.360	1.252	1.270	1.301	1.360	1.252
30	G	2–6	1–5	2–6	1–5	3–6	1–5	3–6	1–5	4–6	1–5
	N	4	3	4	3	5	3	5	3	5	3
	B	.308L	1.148L	.194L	.469L	.728R	1.574L	.808R	.844L	.667L	2.000L
	M	2.677	2.702	2.531	2.704	2.535	2.465	2.371	2.475	2.482	2.236
40	G	2–8	1–6	2–8	1–6	4–8	2–6	4–8	1–5	4–8	2–6
	N	5	4	5	3	6	4	6	3	6	4
	B	1.684L	1.298R	1.556L	1.974L	.400L	1.102R	.400L	.844L	.800L	1.536R
	M	4.568	4.391	4.295	4.374	4.203	4.081	3.923	4.071	3.912	3.801
50	G	2–8	1–8	1–8	1–8	2–8	2–8	2–8	1–6	2–8	1–6
	N	5	5	5	4	5	5	5	3	5	4
	B	1.684L	.100R	.200L	1.100L	1.790L	.484L	1.645L	2.448L	1.895L	2.243R
	M	6.929	6.680	6.541	6.424	6.436	6.100	6.059	5.931	5.943	5.585
60	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	5	5	4	5	5	5	4	5	5
	B	1.000L	.100R	.200L	1.100L	1.050L	.190R	.180L	.940L	1.100L	.280R
	M	9.417	9.180	9.041	8.920	8.868	8.571	8.461	8.275	8.320	7.961
80	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	5	5	4	5	5	5	4	5	5
	B	1.000L	.100R	.200L	1.100L	1.050L	.190R	.180L	.940L	1.100L	.280R
	M	14.413	14.180	14.041	13.915	13.864	13.570	13.460	13.271	13.315	12.961
100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	5	5	4	5	5	5	4	5	5
	B	1.000L	.100R	.200L	1.100L	1.050L	.190R	.180L	.940L	1.100L	.280R
	M	19.410	19.180	19.040	18.912	18.861	18.570	18.460	18.269	18.312	17.961

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

G—Axle group causing maximum moment, thus, 1-3 means axles 1, 2, and 3.

N—Number of critical axle under which maximum moment occurs.

B—Distance to right or left of mid-span to point of maximum moment.

M—Maximum moment.

Truck No.			11	12	13	14	15	16	17	18	19	20
Wh. Base		L	52	52	56	56	56	56	60	60	60	60
Axle		X	8	8	8	8	8	8	8	8	8	8
Spacing		X′	12	12	14	14	14	14	16	16	16	16
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load		a_1	.10	.10	.05	.05	.10	.10	.05	.05	.10	.10
On		a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles		a_3	.70	.60	.75	.65	.70	.60	.75	.65	.70	.60
Span-Feet	10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
		N	8	3	8	3	8	3	8	3	8	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	.448	.480	.480	.480	.448	.480	.480	.480	.448	.480
	20	G	4–6	1–3	4–6	1–3	4–6	1–3	4–6	1–3	4–6	1–3
		N	5	2	5	2	5	2	5	2	5	2
		B	.667L	.250R	.667L	.286L	.667L	.250R	.667L	.286L	.667L	.250R
		M	1.270	1.301	1.360	1.252	1.270	1.301	1.360	1.252	1.270	1.301
	30	G	4–6	1–3	4–6	4–6	4–6	1–3	4–6	4–6	4–6	1–3
		N	5	2	5	5	5	2	5	5	5	2
		B	.667L	.250R	.667L	.667L	.667L	.250R	.667L	.667L	.667L	.250R
		M	2.316	2.301	2.482	2.151	2.316	2.301	2.482	2.151	2.316	2.301
	40	G	2–6	1–5	3–6	2–6	2–6	1–5	3–6	1–5	3–6	1–5
		N	4	3	5	4	4	3	5	3	5	3
		B	.452R	1.219L	1.091R	1.971R	.774R	1.594L	1.273R	2.853L	1.385R	1.969L
		M	3.683	3.844	3.716	3.527	3.489	3.621	3.622	3.284	3.385	3.402
	50	G	2–8	1–6	4–8	1–6	4–8	1–6	4–8	2–6	4–8	1–5
		N	5	3	6	4	6	3	6	4	6	3
		B	1.734L	2.921L	1.200L	2.716R	1.200L	3.395L	1.600L	2.406R	1.600L	1.969L
		M	5.584	5.610	5.497	5.270	5.130	5.295	5.213	4.965	4.866	4.990
	60	G	1–8	1–8	2–8	2–8	2–8	1–6	2–8	1–7	2–8	1–6
		N	5	4	5	5	5	3	5	4	5	3
		B	.160L	.780L	2.000L	.400L	1.822L	3.395L	2.106L	.621R	1.911L	3.869L
		M	7.880	7.630	7.814	7.353	7.350	7.166	7.320	6.796	6.875	6.850
	80	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
		N	5	4	5	5	5	4	5	5	5	4
		B	.160L	.780L	1.150L	.370R	.140L	.620L	1.200L	.460R	.120L	.460L
		M	12.880	12.628	12.767	12.352	12.300	11.985	12.218	11.743	11.720	11.343
	100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
		N	5	4	5	5	5	4	5	5	5	4
		B	.160L	.780L	1.150L	.370R	.140L	.620L	1.200L	.460R	.120L	.460L
		M	17.880	17.626	17.763	17.351	17.300	16.984	17.214	16.742	16.720	16.342

Truck No.			21	22	23	24	25	26	27	28	29	30
Wh. Base		L	64	64	64	64	68	68	68	68	48	48
Axle		X	8	8	8	8	8	8	8	8	12	12
Spacing		X′	18	18	18	18	20	20	20	20	8	8
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load		a_1	.05	.05	.10	.10	.05	.05	.10	.10	.05	.05
On		a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles		a_3	.75	.65	.70	.60	.75	.65	.70	.60	.75	.65
Span-Feet	10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
		N	8	3	8	3	8	3	8	3	8	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	.480	.480	.448	.480	.480	.480	.448	.480	.480	.480
	20	G	4–6	1–3	4–6	1–3	4–6	1–3	4–6	1–3	4–6	2–4
		N	5	2	5	2	5	2	5	2	5	3
		B	.667L	.286L	.667L	.250R	.667L	.286L	.667L	.250R	.667L	.512L
		M	1.360	1.252	1.270	1.301	1.360	1.252	1.270	1.301	1.360	1.336
	30	G	4–6	4–6	4–6	1–3	4–6	4–6	4–6	1–3	2–6	2–5
		N	5	5	5	2	5	5	5	2	4	3
		B	.667L	.667L	.667L	.250R	.667L	.667L	.667L	.250R	.308L	1.786L
		M	2.482	2.151	2.316	2.301	2.482	2.151	2.316	2.301	2.677	2.660
	40	G	4–6	4–6	4–6	1–3	4–6	4–6	4–6	1–3	2–8	2–7
		N	5	5	5	2	5	5	5	2	5	4
		B	.667L	.667L	.667L	.250R	.667L	.667L	.667L	.250R	1.684L	1.025L
		M	3.605	3.125	3.365	3.301	3.605	3.125	3.365	3.301	4.568	4.382
	50	G	2–6	2–6	2–6	1–5	3–6	2–6	3–6	1–5	2–8	2–8
		N	4	4	4	3	5	4	5	3	5	5
		B	1.231R	2.841R	1.420R	2.344L	1.637R	3.275R	1.769R	2.719L	1.684L	.527L
		M	4.944	4.696	4.655	4.770	4.804	4.434	4.493	4.555	6.929	6.660
	60	G	2–8	1–6	2–8	1–6	4–8	1–6	4–8	1–6	1–8	1–8
		N	5	4	5	3	6	4	6	3	5	5
		B	2.211L	3.662R	2.000L	4.342L	2.400L	4.135R	2.400L	4.816L	.900L	.200R
		M	6.827	6.476	6.400	6.539	6.522	6.171	6.087	6.234	9.314	9.081
	80	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
		N	5	5	5	4	5	5	5	4	5	5
		B	1.250L	.550R	.100L	.300L	1.300L	.640R	.080L	.140L	.900L	.200R
		M	11.670	11.134	11.140	10.701	11.121	10.525	10.560	10.060	14.310	14.081
	100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
		N	5	5	5	4	5	5	5	4	5	5
		B	1.250L	.550R	.100L	.300L	1.300L	.640R	.080L	.140L	.900L	.200R
		M	16.666	16.133	16.140	15.701	16.117	15.524	15.560	15.060	19.308	19.080

Truck No.		31	32	33	34	35	36	37	38	39	40
Wh. Base	L	48	48	52	52	52	52	56	56	56	56
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	8	8	10	10	10	10	12	12	12	12
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.05	.05	.10	.10	.05	.05	.10	.10
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.70	.60	.75	.65	.70	.60	.75	.65	.70	.60
Span-Feet 10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
	N	8	3	8	3	8	3	8	3	8	3
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.448	.480	.480	.480	.448	.480	.480	.480	.448	.480
20	G	4–6	2–4	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3
	N	5	3	5	3	5	3	5	3	5	3
	B	.667L	.429L	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R
	M	1.270	1.324	1.360	1.215	1.270	1.215	1.360	1.215	1.270	1.215
30	G	2–6	2–5	3–6	2–5	3–6	2–5	4–6	2–5	4–6	2–5
	N	4	3	5	3	5	3	5	3	5	3
	B	.194L	1.667L	.728R	2.250L	.808R	2.111L	.667L	2.715L	.667L	2.556L
	M	2.531	2.600	2.535	2.435	2.371	2.391	2.482	2.217	2.316	2.187
40	G	2–8	1–6	4–8	2–6	4–8	2–6	4–8	2–6	2–6	1–5
	N	5	3	6	4	6	4	6	4	4	3
	B	1.556L	1.711L	.400L	1.102R	.400L	1.273R	.800L	1.536R	.452R	.907L
	M	4.295	4.156	4.203	4.081	3.923	3.867	3.912	3.801	3.683	3.633
50	G	2–8	2–8	2–8	2–8	2–8	2–8	2–8	2–7	2–8	1–6
	N	5	5	5	5	5	5	5	4	5	3
	B	1.556L	.333L	1.790L	.484L	1.645L	.267L	1.895L	.610L	1.734L	2.658L
	M	6.534	6.272	6.436	6.100	6.059	5.732	5.943	5.556	5.584	5.387
60	G	1–8	1–8	2–8	2–8	2–8	1–8	2–8	2–8	2–8	2–8
	N	5	4	5	5	5	4	5	5	5	5
	B	0	.900L	1.790L	.484L	1.645L	.740L	1.895L	.442L	1.734L	.200L
	M	8.840	8.714	8.801	8.474	8.301	8.069	8.307	7.913	7.825	7.441
80	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	4	5	5	5	4	5	5	5	4
	B	0	.900L	.950L	.290R	.020R	.740L	1.000L	.380R	.040R	.580L
	M	13.840	13.710	13.761	13.471	13.260	13.067	13.213	12.862	12.680	12.424
100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	4	5	5	5	4	5	5	5	4
	B	0	.900L	.950L	.290R	.020R	.740L	1.000L	.380R	.040R	.580L
	M	18.840	18.708	18.759	18.471	18.260	18.065	18.210	17.861	17.680	17.423

Truck No.		41	42	43	44	45	46	47	48	49	50
Wh. Base	L	60	60	60	60	64	64	64	64	68	68
Axle	X	12	12	12	12	12	12	12	12	12	12
Spacing	X′	14	14	14	14	16	16	16	16	18	18
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.05	.05	.10	.10	.05	.05	.10	.10	.05	.05
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.75	.65	.70	.60	.75	.65	.70	.60	.75	.65
Span-Feet 10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
	N	8	3	8	3	8	3	8	3	8	3
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.480	.480	.448	.480	.480	.480	.448	.480	.480	.480
20	G	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3
	N	5	3	5	3	5	3	5	3	5	3
	B	.667L	1.000R	.667L	1.000R	.667L	1.000R	.556L	1.000R	.667L	1.000R
	M	1.360	1.215	1.270	1.215	1.360	1.215	1.270	1.215	1.360	1.215
30	G	4–6	4–6	4–6	1–3	4–6	4–6	4–6	1–3	4–6	4–6
	N	5	5	5	2	5	5	5	2	5	5
	B	.667L	.667L	.667L	.750R	.667L	.667L	.556L	.750R	.667L	.667L
	M	2.482	2.151	2.316	2.108	2.482	2.151	2.316	2.108	2.482	2.151
40	G	3–6	2–6	2–6	1–5	3–6	2–6	3–6	1–5	4–6	4–6
	N	5	4	4	3	5	4	5	3	5	5
	B	1.091R	1.971R	.744R	1.282L	1.273R	2.406R	1.385R	1.657L	.667L	.667L
	M	3.716	3.527	3.489	3.406	3.622	3.260	3.385	3.184	3.605	3.125
50	G	4–8	2–6	4–8	1–6	4–8	2–6	4–8	1–5	2–6	2–6
	N	6	4	6	3	6	4	6	3	4	4
	B	1.200L	1.971R	1.200L	3.132L	1.600L	2.406R	1.600L	1.657L	1.231R	2.841R
	M	5.497	5.239	5.130	5.069	5.213	4.965	4.866	4.775	4.944	4.696
60	G	2–8	2–8	2–8	1–6	2–8	2–8	2–8	1–6	2–8	2–6
	N	5	5	5	3	5	5	5	3	5	4
	B	2.000L	.400L	1.822L	3.132L	2.106L	.358L	1.911L	3.606L	2.211L	2.841R
	M	7.814	7.353	7.350	6.944	7.320	6.792	6.875	6.624	6.827	6.403
80	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	5	5	4	5	5	5	4	5	5
	B	1.050L	.470R	.060R	.420L	1.100L	.560R	.080R	.260L	1.150L	.650R
	M	12.664	12.253	12.100	11.782	12.115	11.644	11.520	11.141	11.567	11.035
100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	5	5	4	5	5	5	4	5	5
	B	1.050L	.470R	.060R	.420L	1.100L	.560R	.080R	.260L	1.150L	.650R
	M	17.661	17.252	17.100	16.782	17.112	16.643	16.520	16.141	16.563	16.034

Truck No.			51	52	53	54	55	56	57	58	59	60
Wh. Base		L	68	68	72	72	72	72	60	60	60	60
Axle Spacing		X	12	12	12	12	12	12	16	16	16	16
		X′	18	18	20	20	20	20	12	12	12	12
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.10	.10	.05	.05	.10	.10	.05	.05	.10	.10
		a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
		a_3	.70	.60	.75	.65	.70	.60	.75	.65	.70	.60
Span-Feet	10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
		N	8	3	8	3	8	3	8	3	8	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	.448	.480	.480	.480	.448	.480	.480	.480	.448	.480
	20	G	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3
		N	5	3	5	3	5	3	5	3	5	3
		B	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R
		M	1.270	1.215	1.360	1.215	1.270	1.215	1.360	1.215	1.270	1.215
	30	G	4–6	1–3	4–6	4–6	4–6	1–3	4–6	2–5	4–6	2–5
		N	5	2	5	5	5	2	5	3	5	3
		B	.667L	.750R	.667L	.667L	.667L	.750R	.667L	2.715L	.667L	2.556L
		M	2.316	2.108	2.482	2.151	2.316	2.108	2.482	2.217	2.316	2.187
	40	G	4–6	1–3	4–6	4–6	4–6	1–3	4–8	2–6	2–6	2–6
		N	5	2	5	5	5	2	6	4	4	4
		B	.667L	.750R	.667L	.667L	.667L	.750R	.800L	1.536R	.452R	1.728R
		M	3.365	3.106	3.605	3.125	3.365	3.106	3.912	3.801	3.683	3.589
	50	G	2–6	1–5	3–6	2–6	3–6	1–5	2–8	2–7	2–8	2–7
		N	4	3	5	4	5	3	5	4	5	4
		B	1.420R	2.031L	1.637R	3.275R	1.769R	2.406L	1.895L	.610L	1.734L	.385L
		M	4.655	4.553	4.804	4.434	4.493	4.334	5.943	5.556	5.584	5.252
	60	G	2–8	1–6	4–8	2–6	4–8	1–6	2–8	2–8	2–8	2–8
		N	5	3	6	4	6	3	5	5	5	5
		B	2.000L	4.079L	2.400L	3.275R	2.400L	4.553L	1.895L	.442L	1.734L	.200L
		M	6.400	6.310	6.522	6.134	6.087	6.003	8.307	7.913	7.825	7.441
	80	G	1–8	1–8	2–8	1–8	2–8	1–8	1–8	1–8	1–8	1–8
		N	5	4	5	5	5	4	5	5	5	4
		B	.100R	.100L	2.316L	.740R	2.089L	.060R	.900L	.480R	.240R	.380L
		M	10.940	10.500	11.063	10.427	10.409	9.860	13.110	12.763	12.481	12.222
	100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
		N	5	4	5	5	5	4	5	5	5	4
		B	.100R	.100L	1.200L	.740R	.120R	.060R	.900L	.480R	.240R	.380L
		M	15.940	15.500	16.014	15.425	15.360	14.860	18.108	17.762	17.481	17.221

Truck No.			61	62	63	64	65	66	67	68	69	70
Wh. Base		L	64	64	64	64	68	68	68	68	72	72
Axle Spacing		X	16	16	16	16	16	16	16	16	16	16
		X′	14	14	14	14	16	16	16	16	18	18
Hitch		C	8	8	8	8	8	8	8	8	8	8
Load On Axles		a_1	.05	.05	.10	.10	.05	.05	.10	.10	.05	.05
		a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
		a_3	.75	.65	.70	.60	.75	.65	.70	.60	.75	.65
Span-Feet	10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
		N	8	3	8	3	8	3	8	3	8	3
		B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
		M	.480	.480	.448	.480	.480	.480	.448	.480	.480	.480
	20	G	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3
		N	5	3	5	3	5	3	5	3	5	3
		B	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R
		M	1.360	1.215	1.270	1.215	1.360	1.215	1.270	1.215	1.360	1.215
	30	G	4–6	4–6	4–6	2–4	4–6	4–6	4–6	4–6	4–6	4–6
		N	5	5	5	3	5	5	5	5	5	5
		B	.667L	.667L	.667L	1.286L	.667L	.667L	.667L	.667L	.667L	.667L
		M	2.482	2.151	2.316	2.033	2.482	2.151	2.316	1.985	2.482	2.151
	40	G	3–6	2–6	2–6	2–6	3–6	2–6	3–6	2–5	4–6	4–6
		N	5	4	4	4	5	4	5	3	5	5
		B	1.091R	1.971R	.774R	2.182R	1.273R	2.306R	1.385R	3.445L	.667L	.667L
		M	3.716	3.527	3.489	3.318	3.622	3.260	3.385	3.100	3.605	3.125
	50	G	4–8	2–6	4–8	2–6	4–8	2–6	4–8	2–6	2–6	2–6
		N	6	4	6	4	6	4	6	4	4	4
		B	1.200L	1.971R	1.200L	2.182R	1.600L	2.406R	1.600L	2.637R	1.231R	2.841R
		M	5.497	5.239	5.130	4.953	5.213	4.965	4.866	4.682	4.944	4.696
	60	G	2–8	2–8	2–8	2–8	2–8	2–8	2–8	1–6	2–8	2–6
		N	5	5	5	5	5	5	5	3	5	4
		B	2.000L	.400L	1.822L	.133L	2.106L	.358L	1.911L	3.342L	2.211L	2.841R
		M	7.814	7.353	7.350	6.900	7.320	6.792	6.875	6.401	6.827	6.403
	80	G	1–8	1–8	1–8	1–8	2–8	1–8	2–8	1–8	2–8	2–8
		N	5	5	5	4	5	5	5	4	5	5
		B	.950L	.570R	.260R	.220L	2.106L	.660R	1.911L	.060L	2.211L	.316L
		M	12.561	12.154	11.901	11.581	12.053	11.545	11.362	10.940	11.558	10.981
	100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
		N	5	5	5	4	5	5	5	4	5	5
		B	.950L	.570R	.260R	.220L	1.000L	.660R	.280R	.060L	1.050L	.750R
		M	17.559	17.153	16.901	16.580	17.010	16.544	16.321	15.940	16.461	15.936

Truck No.		71	72	73	74	75	76	77	78	79	80
Wh. Base	L	72	72	76	76	76	76	80	80	80	80
Axle	X	16	16	16	16	16	16	16	16	16	16
Spacing	X′	18	18	20	20	20	20	22	22	22	22
Hitch	C	8	8	8	8	8	8	8	8	8	8
Load	a_1	.10	.10	.05	.05	.10	.10	.05	.05	.10	.10
On	a_2	.20	.30	.20	.30	.20	.30	.20	.30	.20	.30
Axles	a_3	.70	.60	.75	.65	.70	.60	.75	.65	.70	.60
Span-Feet 10	G	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3	7–8	2–3
	N	8	3	8	3	8	3	8	3	8	3
	B	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R	1.000R
	M	.448	.480	.480	.480	.448	.480	.480	.480	.448	.480
20	G	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3	4–6	2–3
	N	5	3	5	3	5	3	5	3	5	3
	B	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R	.667L	1.000R
	M	1.270	1.215	1.360	1.215	1.270	1.215	1.360	1.215	1.270	1.215
30	G	4–6	4–6	4–6	4–6	4–6	4–6	4–6	4–6	4–6	4–6
	N	5	5	5	5	5	5	5	5	5	5
	B	.667L	.667L	.667L	.667L	.667L	.667L	.667L	.667L	.667L	.667L
	M	2.316	1.985	2.482	2.151	2.316	1.985	2.482	2.151	2.316	1.985
40	G	4–6	1–3	4–6	4–6	4–6	1–3	4–6	4–6	4–6	1–3
	N	5	2	5	5	5	2	5	5	5	2
	B	.667L	1.250R	.667L	.667L	.667L	1.250R	.667L	.667L	.667L	1.250R
	M	3.365	2.916	3.605	3.125	3.365	2.916	3.605	3.125	3.365	2.916
50	G	2–6	2–6	3–6	2–6	3–6	2–6	4–6	2–6	4–6	1–3
	N	4	4	5	4	5	4	5	4	5	2
	B	1.420R	3.091R	1.637R	3.275R	1.769R	3.546R	.667L	3.710R	.667L	1.250R
	M	4.658	4.416	4.804	4.434	4.493	4.156	4.729	4.175	4.414	3.912
60	G	2–8	1–6	4–8	2–6	4–8	3–8	4–8	2–6	4–8	2–6
	N	5	3	6	4	6	5	6	4	6	4
	B	2.000L	3.816L	2.400L	3.275R	2.400L	2.720L	2.800L	3.710R	2.800L	4.000R
	M	6.400	6.085	6.522	6.134	6.087	5.842	6.248	5.868	5.832	5.516
80	G	2–8	2–8	2–8	2–8	2–8	2–8	2–8	2–8	2–8	2–8
	N	5	5	5	5	5	5	5	5	5	5
	B	2.000L	0	2.316L	.274L	2.089L	.067R	2.421L	.232L	2.178L	.134R
	M	10.885	10.320	11.063	10.421	10.409	9.781	10.569	9.861	9.933	9.240
100	G	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8	1–8
	N	5	4	5	5	5	4	5	5	5	4
	B	.300R	.100R	1.100L	.840R	.320R	.260R	1.150L	.930R	.340R	.420R
	M	15.741	15.300	15.912	15.327	15.161	14.661	15.363	14.719	14.581	14.022

Truck No.		81	82	83	84
Wh. Base	L	84	84	84	84
Axle	X	16	16	16	16
Spacing	X′	24	24	24	24
Hitch	C	8	8	8	8
Load	a_1	.05	.05	.10	.16
On	a_2	.20	.30	.20	.30
Axles	a_3	.75	.65	.70	.60
Span-Feet 10	G	7–8	2–3	7–8	2–3
	N	8	3	8	3
	B	1.000R	1.000R	1.000R	1.000R
	M	.480	.480	.448	.480
20	G	4–6	2–3	4–6	2–3
	N	5	3	5	3
	B	.667L	1.000R	.667L	1.000R
	M	1.360	1.215	1.270	1.215
30	G	4–6	4–6	4–6	4–6
	N	5	5	5	5
	B	.667L	.667L	.667L	.667L
	M	2.482	2.151	2.316	1.985
40	G	4–6	4–6	4–6	1–3
	N	5	5	5	2
	B	.667L	.667L	.667L	1.250R
	M	3.605	3.125	3.365	2.916
50	G	4–6	4–6	4–6	1–3
	N	5	5	5	2
	B	.667L	.667L	.667L	1.250R
	M	4.729	4.098	4.414	3.912
60	G	2–6	2–6	2–6	1–5
	N	4	4	4	3
	B	2.154R	4.145R	2.387R	2.844L
	M	6.000	5.607	5.639	5.266
80	G	2–8	2–8	2–8	1–6
	N	5	5	5	3
	B	2.527L	.190L	2.267L	5.237L
	M	10.075	9.300	9.458	8.881
100	G	1–8	1–8	1–8	1–8
	N	5	5	5	4
	B	1.200L	1.020R	.360R	.580R
	M	14.814	14.110	14.001	13.383

8. SUMMARY OF MAXIMUM MOMENTS PRODUCED BY VEHICLES OF UNIT WEIGHT ON SIMPLE SPAN BRIDGES

Tables 8.1-8.14 give the maximum moments produced by the 1303 variations of the 14 heavy vehicle types shown in the identification Tables 6.1-6.14 on simple spans of 10, 20, 30, 40, 50, 60, 80, and 100 feet in length. The maximum moments produced by each of the 1303 heavy vehicle types and loadings on 8 different span lengths makes a total of 10,424 maximum moments recorded in the 14 Tables 8.1-8.14 The table number corresponding to each of the 14 heavy vehicle types is as follows:

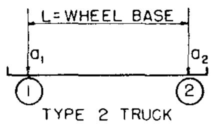
Table No.	Vehicle Type	Table No.	Vehicle Type
8.1	2	8.8	3-S3
8.2	3	8.9	2-2
8.3	2-S1	8.10	2-3
8.4	2-S2	8.11	3-2
8.5	2-S3	8.12	3-3
8.6	3-S1	8.13	2-S1-2
8.7	3-S2	8.14	3-S2-3

The maximum moments given in these tables represent a summary of the maximum moments shown in Tables 7.1-7.14. This summary should prove to be convenient in those cases when one is only concerned with the comparison or determination of maximum moments since these tables (Tables 8.1-8.14) do not include the controlling conditions given in Tables 7.1-7.14.

A description of these tables and how they are used is given in Article 5.

Table 8.1

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 2 TRUCKS WEIGHING ONE KIP EACH



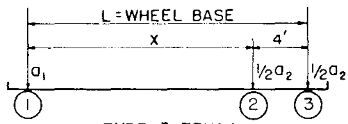
Thirty-six variations in the Type 2 truck are given in this Table. Each truck number, from 1 to 36, represents a different combination of wheel base length, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
L = 10	1	.45	.55	1.375	3.003	5.419	7.877	10.35	12.83	17.81	22.80
	2	.40	.60	1.500	3.200	5.633	8.100	10.58	13.07	18.05	23.04
	3	.35	.65	1.625	3.403	5.852	8.327	10.81	13.30	18.29	23.28
	4	.30	.70	1.750	3.613	6.075	8.556	11.05	13.54	18.53	23.52
	5	.25	.75	1.875	3.828	6.302	8.789	11.28	13.78	18.77	23.77
	6	.20	.80	2.000	4.050	6.533	9.025	11.52	14.02	19.01	24.01
L = 12	7	.45	.55	1.375	2.750	5.043	7.482	9.946	12.42	17.39	22.37
	8	.40	.60	1.500	3.000	5.292	7.744	10.22	12.70	17.67	22.66
	9	.35	.65	1.625	3.250	5.547	8.010	10.49	12.97	17.96	22.94
	10	.30	.70	1.750	3.500	5.808	8.281	10.76	13.25	18.24	23.23
	11	.25	.75	1.875	3.750	6.075	8.556	11.05	13.54	18.53	23.52
	12	.20	.80	2.000	4.000	6.348	8.836	11.33	13.82	18.82	23.81
L = 14	13	.45	.55	1.375	2.750	4.681	7.098	9.548	12.02	16.97	21.95
	14	.40	.60	1.500	3.000	4.961	7.396	9.857	12.33	17.30	22.28
	15	.35	.65	1.625	3.250	5.250	7.700	10.17	12.65	17.63	22.61
	16	.30	.70	1.750	3.500	5.547	8.010	10.49	12.97	17.96	22.94
	17	.25	.75	1.875	3.750	5.852	8.327	10.81	13.30	18.29	23.28
	18	.20	.80	2.000	4.000	6.165	8.649	11.14	13.63	18.62	23.62
L = 16	19	.45	.55	1.375	2.750	4.332	6.724	9.159	11.62	16.56	21.53
	20	.40	.60	1.500	3.000	4.641	7.056	9.505	11.97	16.93	21.90
	21	.35	.65	1.625	3.250	4.961	7.396	9.857	12.33	17.30	22.28
	22	.30	.70	1.750	3.500	5.292	7.744	10.22	12.70	17.67	22.66
	23	.25	.75	1.875	3.750	5.633	8.100	10.58	13.07	18.05	23.04
	24	.20	.80	2.000	4.000	6.000	8.464	10.95	13.44	18.43	23.43
L = 18	25	.45	.55	1.375	2.750	4.125	6.360	8.778	11.22	16.16	21.11
	26	.40	.60	1.500	3.000	4.500	6.724	9.159	11.62	16.56	21.53
	27	.35	.65	1.625	3.250	4.875	7.098	9.548	12.02	16.97	21.95
	28	.30	.70	1.750	3.500	5.250	7.482	9.946	12.42	17.39	22.37
	29	.25	.75	1.875	3.750	5.625	7.877	10.35	12.83	17.81	22.80
	30	.20	.80	2.000	4.000	6.000	8.281	10.76	13.25	18.24	23.23
L = 20	31	.45	.55	1.375	2.750	4.125	6.006	8.405	10.84	15.75	20.70
	32	.40	.60	1.500	3.000	4.500	6.400	8.820	11.27	16.20	21.16
	33	.35	.65	1.625	3.250	4.875	6.806	9.245	11.70	16.65	21.62
	34	.30	.70	1.750	3.500	5.250	7.225	9.680	12.15	17.11	22.09
	35	.25	.75	1.875	3.750	5.625	7.656	10.13	12.60	17.58	22.56
	36	.20	.80	2.000	4.000	6.000	8.100	10.58	13.07	18.05	23.04

Table 8.2

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3 TRUCK

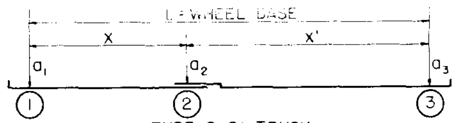
Forty-two variations in the Type 3 truck are given in this Table. Each truck number, from 1 to 42, represents a different combination of wheel base length, axle spacings, and ratios of Gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
	1	.40	.60	1.000	2.498	4.965	7.449	9.939	12.43	17.43	22.42
	2	.35	.65	1.040	2.661	5.140	7.630	10.12	12.62	17.62	22.61
L = 14	3	.30	.70	1.120	2.835	5.321	7.816	10.31	12.81	17.81	22.81
	4	.25	.75	1.200	3.038	5.508	8.006	10.51	13.00	18.00	23.00
X = 10	5	.20	.80	1.280	3.240	5.701	8.201	10.70	13.20	18.20	23.20
	6	.15	.85	1.360	3.443	5.900	8.400	10.90	13.40	18.40	23.40
	7	.10	.90	1.440	3.645	6.105	8.604	11.10	13.60	18.60	23.60
	8	.40	.60	1.000	2.430	4.608	7.081	9.565	12.05	17.04	22.03
	9	.35	.65	1.040	2.663	4.820	7.303	9.792	12.29	17.28	22.27
L = 16	10	.30	.70	1.120	2.835	5.040	7.530	10.02	12.52	17.52	22.51
	11	.25	.75	1.200	3.038	5.269	7.764	10.26	12.76	17.76	22.76
X = 12	12	.20	.80	1.280	3.240	5.505	8.004	10.50	13.00	18.00	23.00
	13	.15	.85	1.360	3.443	5.750	8.250	10.75	13.25	18.25	23.25
	14	.10	.90	1.440	3.645	6.003	8.502	11.00	13.50	18.50	23.50
	15	.40	.60	1.000	2.430	4.261	6.721	9.197	11.68	16.66	21.65
	16	.35	.65	1.040	2.633	4.508	6.981	9.465	11.95	16.94	21.93
L = 18	17	.30	.70	1.120	2.835	4.765	7.249	9.739	12.23	17.23	22.22
	18	.25	.75	1.200	3.038	5.033	7.525	10.02	12.52	17.51	22.51
X = 14	19	.20	.80	1.280	3.240	5.312	7.809	10.31	12.81	17.81	22.80
	20	.15	.85	1.360	3.443	5.601	8.101	10.60	13.10	18.10	23.10
	21	.10	.90	1.440	3.645	5.901	8.401	10.90	13.40	18.40	23.40
	22	.40	.60	1.000	2.430	3.925	6.369	8.835	11.31	16.29	21.27
	23	.35	.65	1.040	2.633	4.246	6.666	9.142	11.63	16.61	21.60
L = 20	24	.30	.70	1.120	2.835	4.573	6.972	9.458	11.95	16.94	21.93
	25	.25	.75	1.200	3.038	4.900	7.289	9.781	12.28	17.27	22.27
X = 16	26	.20	.80	1.280	3.240	5.226	7.616	10.11	12.61	17.61	22.61
	27	.15	.85	1.360	3.443	5.553	7.953	10.45	12.95	17.95	22.95
	28	.10	.90	1.440	3.645	5.880	8.300	10.80	13.30	18.30	23.30
	29	.40	.60	1.000	2.430	3.920	6.025	8.480	10.95	15.91	20.89
	30	.35	.65	1.040	2.633	4.246	6.356	8.825	11.30	16.28	21.26
L = 22	31	.30	.70	1.120	2.835	4.573	6.700	9.180	11.67	16.65	21.64
	32	.25	.75	1.200	3.038	4.900	7.056	9.545	12.04	17.03	22.02
X = 18	33	.20	.80	1.280	3.240	5.226	7.425	9.920	12.42	17.41	22.41
	34	.15	.85	1.360	3.443	5.553	7.806	10.31	12.80	17.80	22.80
	35	.10	.90	1.440	3.645	5.880	8.200	10.70	13.20	18.20	23.20
	36	.40	.60	1.000	2.430	3.920	5.689	8.131	10.59	15.55	20.52
	37	.35	.65	1.040	2.633	4.246	6.053	8.512	10.99	15.95	20.93
L = 24	38	.30	.70	1.120	2.835	4.573	6.432	8.906	11.39	16.37	21.35
	39	.25	.75	1.200	3.038	4.900	6.827	9.311	11.80	16.79	21.78
X = 20	40	.20	.80	1.280	3.240	5.226	7.236	9.729	12.22	17.22	22.21
	41	.15	.85	1.360	3.443	5.553	7.671	10.16	12.66	17.66	22.65
	42	.10	.90	1.440	3.645	5.880	8.123	10.60	13.10	18.10	23.10

Table 8.3

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS
PRODUCED BY TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S1 TRUCK

One hundred twenty-six variations in the Type 2-S1 truck are given in this Table. Each truck number, from 1 to 126, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.
All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

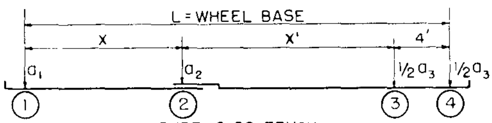
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	1.500	3.000	5.070	7.396	9.857	12.331	17.298	22.278
	2	.10	.40	.50	1.250	2.500	4.565	6.889	9.331	11.793	16.745	21.716
L = 20	3	.10	.45	.45	1.125	2.363	4.576	7.032	9.506	11.988	16.966	21.953
X = 8	4	.10	.50	.40	1.250	2.614	4.833	7.300	9.780	12.267	17.250	22.240
X' = 12	5	.20	.30	.50	1.250	2.500	4.335	6.561	8.989	11.441	16.381	21.344
	6	.20	.40	.40	1.000	2.252	4.385	6.864	9.351	11.843	16.832	21.826
	7	.20	.50	.30	1.250	2.745	4.933	7.425	9.920	12.417	17.413	22.410
	8	.10	.30	.60	1.500	3.000	4.565	6.762	9.159	11.616	16.562	21.530
	9	.10	.40	.50	1.250	2.500	3.929	6.085	8.487	10.923	15.842	20.794
L = 24	10	.10	.45	.45	1.125	2.363	3.841	6.256	8.705	11.171	16.128	21.102
X = 8	11	.10	.50	.40	1.250	2.614	4.161	6.596	9.057	11.531	16.498	21.478
X' = 16	12	.20	.30	.50	1.250	2.500	3.840	5.780	8.161	10.584	15.488	20.430
	13	.20	.40	.40	1.000	2.252	3.734	6.144	8.615	11.096	16.072	21.058
	14	.20	.50	.30	1.250	2.745	4.479	6.864	9.351	11.843	16.832	21.826
	15	.10	.30	.60	1.500	3.000	4.500	6.249	8.487	10.923	15.842	20.794
	16	.10	.40	.50	1.250	2.500	3.750	5.444	7.683	10.086	14.965	19.892
L = 28	17	.10	.45	.45	1.125	2.363	3.733	5.520	7.936	10.380	15.310	20.268
X = 8	18	.10	.50	.40	1.250	2.614	4.110	5.924	8.359	10.816	15.762	20.730
X' = 20	19	.20	.30	.50	1.250	2.500	3.750	5.282	7.373	9.761	14.621	19.536
	20	.20	.40	.40	1.000	2.252	3.734	5.456	7.905	10.371	15.328	20.302
	21	.20	.50	.30	1.250	2.745	4.479	6.321	8.797	11.281	16.261	21.248
	22	.10	.30	.60	1.500	3.000	4.500	6.000	7.938	10.251	15.138	20.070
	23	.10	.40	.50	1.250	2.500	3.750	5.000	6.961	9.283	14.112	19.010
L = 32	24	.10	.45	.45	1.125	2.363	3.733	5.106	7.200	9.617	14.513	19.450
X = 8	25	.10	.50	.40	1.250	2.614	4.110	5.608	7.687	10.123	15.042	19.994
X' = 24	26	.20	.30	.50	1.250	2.500	3'750	5.000	6.724	8.971	13.778	18.662
	27	.20	.40	.40	1.000	2.252	3.734	5.226	7.220	9.667	14.600	19.560
	28	.20	.50	.30	1.250	2.745	4.479	6.222	8.257	10.731	15.698	20.678
	29	.10	.30	.60	1.500	3.000	4.500	6.000	7.500	9.628	14.450	19.360
	30	.10	.40	.50	1.250	2.500	3.750	5.000	6.349	8.513	13.285	18.148
L = 36	31	.10	.45	.45	1.125	2.363	3.733	5.106	6.496	8.880	13.735	18.648
X = 8	32	.10	.50	.40	1.250	2.614	4.110	5.608	7.106	9.451	14.338	19.270
X' = 28	33	.20	.30	.50	1.250	2.500	3.750	5.000	6.250	8.214	12.961	17.808
	34	.20	.40	.40	1.000	2.252	3.734	5.226	6.721	8.984	13.888	18.830
	35	.20	.50	.30	1.250	2.745	4.479	6.222	7.967	10.193	15.145	20.116
	36	.10	.30	.60	1.500	3.379	5.602	7.921	10.397	12.881	17.861	22.848
	37	.10	.40	.50	1.250	3.040	5.243	7.569	10.035	12.513	17.485	22.468
L = 20	38	.10	.45	.45	1.125	2.880	5.148	7.636	10.129	12.624	17.618	22.614
X = 12	39	.10	.50	.40	1.250	3.040	5.333	7.825	10.320	12.817	17.813	22.810
X' = 8	40	.20	.30	.50	1.250	2.890	4.860	7.056	9.505	11.971	16.928	21.902
	41	.20	.40	.40	1.000	2.560	4.705	7.204	9.703	12.203	17.202	22.202
	42	.20	.50	.30	1.250	2.890	5.100	7.600	10.100	12.600	17.600	22.600
	43	.10	.30	.60	1.500	3.000	5.070	7.290	9.680	12.150	17.113	22.090
	44	.10	.40	.50	1.250	2.500	4.565	6.762	9.159	11.616	16.562	21.530
L = 24	45	.10	.45	.45	1.125	2.250	4.347	6.810	9.288	11.774	16.755	21.744
X = 12	46	.10	.50	.40	1.250	2.500	4.608	7.081	9.565	12.054	17.041	22.032
X' = 12	47	.20	.30	.50	1.250	2.500	4.335	6.302	8.653	11.094	16.021	20.976
	48	.20	.40	.40	1.000	2.000	3.948	6.436	8.929	11.424	16.418	21.414
	49	.20	.50	.30	1.250	2.500	4.512	7.009	9.507	12.006	17.005	22.004

TABLE 8.3 (Continued)

	50	.10	.30	.60	1.500	3.000	4.565	6.762	8.989	11.441	16.381	21.344
	51	.10	.40	.50	1.250	2.500	3.929	6.085	8.323	10.753	15.665	20.612
L = 28	52	.10	.45	.45	1.125	2.250	3.630	6.025	8.480	10.951	15.913	20.890
X = 12	53	.10	.50	.40	1.250	2.500	3.929	6.369	8.835	11.313	16.285	21.267
X′= 16	54	.20	.30	.50	1.250	2.500	3.840	5.780	7.841	10.251	15.138	20.070
	55	.20	.40	.40	1.000	2.000	3.380	5.700	8.180	10.667	15.650	20.640
	56	.20	.50	.30	1.250	2.500	4.118	6.436	8.929	11.424	16.418	21.414
	57	.10	.30	.60	1.500	3.000	4.500	6.249	8.448	10.753	15.665	20.612
	58	.10	.40	.50	1.250	2.500	3.750	5.444	7.605	9.923	14.792	19.714
L = 32	59	.10	.45	.45	1.125	2.250	3.548	5.280	7.704	10.154	15.090	20.052
X = 12	60	.10	.50	.40	1.250	2.500	3.920	5.689	8.131	10.593	15.545	20.516
X′= 20	61	.20	.30	.50	1.250	2.500	3.750	5.282	7.225	9.441	14.281	19.184
	62	.20	.40	.40	1.000	2.000	3.380	4.996	7.457	9.931	14.898	19.878
	63	.20	.50	.30	1.250	2.500	4.118	5.881	8.365	10.854	15.841	20.832
	64	.10	.30	.60	1.500	3.000	4.500	6.000	7.938	10.140	14.965	19.892
	65	.10	.40	.50	1.250	2.500	3.750	5.000	6.961	9.126	13.945	18.836
L = 36	66	.10	.45	.45	1.125	2.250	3.548	4.917	6.961	9.384	14.288	19.230
X = 12	67	.10	.50	.40	1.250	2.500	3.920	5.415	7.453	9.894	14.821	19.776
X′= 24	68	.20	.30	.50	1.250	2.500	3.750	5.000	6.724	8.670	13.448	18.318
	69	.20	.40	.40	1.000	2.000	3.380	4.860	6.759	9.216	14.162	19.130
	70	.20	.50	.30	1.250	2.500	4.118	5.851	7.815	10.296	15.272	20.258
	71	.10	.30	.60	1.500	3.000	4.500	6.000	7.500	9.628	14.281	19.184
	72	.10	.40	.50	1.250	2.500	3.750	5.000	6.349	8.483	13.122	17.978
L = 40	73	.10	.45	.45	1.125	2.250	3.548	4.917	6.289	8.642	13.506	18.425
X = 12	74	.10	.50	.40	1.250	2.500	3.920	5.415	6.912	9.217	14.113	19.050
X′= 28	75	.20	.30	.50	1.250	2.500	3.750	5.000	6.250	8.167	12.641	17.472
	76	.20	.40	.40	1.000	2.000	3.380	4.860	6.348	8.523	13.442	18.394
	77	.20	.50	.30	1.250	2.500	4.118	5.851	7.591	9.750	14.173	19.690
	78	.10	.30	.60	1.500	3.000	4.500	6.000	7.500	9.129	13.613	18.491
	79	.10	.40	.50	1.250	2.500	3.750	5.000	6.250	7.860	12.325	17.140
L = 44	80	.10	.45	.45	1.125	2.250	3.548	4.917	6.289	7.926	12.745	17.636
X = 12	81	.10	.50	.40	1.250	2.500	3.920	5.415	6.912	8.561	13.421	18.336
X′= 32	82	.20	.30	.50	1.250	2.500	3.750	5.000	6.250	7.680	11.858	16.646
	83	.20	.40	.40	1.000	2.000	3.380	4.860	6.348	7.851	12.738	17.670
	84	.20	.50	.30	1.250	2.500	4.118	5.851	7.591	9.334	14.162	19.130
	85	.10	.30	.60	1.500	3.379	5.602	7.839	10.215	12.696	17.672	22.658
	86	.10	.40	.50	1.250	3.040	5.243	7.469	9.857	12.331	17.298	22.278
L = 24	87	.10	.45	.45	1.125	2.880	5.070	7.425	9.920	12.417	17.413	22.410
X = 16	88	.10	.50	.40	1.250	3.040	5.243	7.616	10.113	12.611	17.608	22.606
X′= 8	89	.20	.30	.50	1.250	2.890	4.860	6.845	9.159	11.616	16.562	21.530
	90	.20	.40	.40	1.000	2.560	4.506	6.800	9.300	11.800	16.800	21.800
	91	.20	.50	.30	1.250	2.890	4.860	7.204	9.703	12.203	17.202	22.202
	92	.10	.30	.60	1.500	3.000	5.070	7.290	9.522	11.971	16.928	21.902
	93	.10	.40	.50	1.250	2.500	4.565	6.762	8.989	11.441	16.381	21.344
L = 28	94	.10	.45	.45	1.125	2.250	4.320	6.590	9.072	11.560	16.545	21.536
X = 16	95	.10	.50	.40	1.250	2.500	4.565	6.864	9.351	11.843	16.832	21.826
X′= 12	96	.20	.30	.50	1.250	2.500	4.335	6.302	8.323	10.753	15.665	20.612
	97	.20	.40	.40	1.000	2.000	3.840	6.016	8.513	11.011	16.008	21.006
	98	.20	.50	.30	1.250	2.500	4.335	6.601	9.101	11.601	16.601	21.600
	99	.10	.30	.60	1.500	3.000	4.565	6.762	8.979	11.267	16.200	21.160
	100	.10	.40	.50	1.250	2.500	3.929	6.085	8.278	10.584	15.488	20.430
L = 32	101	.10	.45	.45	1.125	2.250	3.630	5.796	8.257	10.731	15.698	20.678
X = 16	102	.10	.50	.40	1.250	2.500	3.929	6.144	8.615	11.096	16.072	21.058
X′= 16	103	.20	.30	.50	1.250	2.500	3.840	5.780	7.744	9.923	14.792	19.714
	104	.20	.40	.40	1.000	2.000	3.226	5.264	7.751	10.243	15.232	20.226
	105	.20	.50	.30	1.250	2.500	3.840	6.016	8.513	11.011	16.008	21.006
	106	.10	.30	.60	1.500	3.000	4.500	6.249	8.448	10.665	15.488	20.430
	107	.10	.40	.50	1.250	2.500	3.750	5.444	7.605	9.796	14.621	19.536
L = 36	108	.10	.45	.45	1.125	2.250	3.375	5.063	7.474	9.928	14.871	19.837
X = 16	109	.10	.50	.40	1.250	2.500	3.750	5.456	7.905	10.371	15.328	20.302
X′= 20	110	.20	.30	.50	1.250	2.500	3.750	5.282	7.225	9.187	13.945	18.836
	111	.20	.40	.40	1.000	2.000	3.043	4.544	7.015	9.496	14.472	19.458
	112	.20	.50	.30	1.250	2.500	3.772	5.492	7.939	10.433	15.425	20.42
	113	.10	.30	.60	1.500	3.000	4.500	6.000	7.938	10.140	14.792	19.714
	114	.10	.40	.50	1.250	2.500	3.750	5.000	6.961	9.125	13.778	18.662
L = 40	115	.10	.45	.45	1.125	2.250	3.375	4.729	6.723	9.153	14.065	19.012
X = 16	116	.10	.50	.40	1.250	2.500	3.750	5.226	7.220	9.667	14.600	19.560
X′= 24	117	.20	.30	.50	1.250	2.500	3.750	5.000	6.724	8.670	13.122	17.978
	118	.20	.40	.40	1.000	2.000	3.043	4.508	6.305	8.771	13.728	18.702
	119	.20	.50	.30	1.250	2.500	3.772	5.492	7.380	9.867	14.850	19.840
	120	.10	.30	.60	1.500	3.000	4.500	6.000	7.500	9.628	14.112	19.010
	121	.10	.40	.50	1.250	2.500	3.750	5.000	6.349	8.483	12.961	17.808
L = 44	122	.10	.45	.45	1.125	2.250	3.375	4.729	6.098	8.404	13.278	18.203
X = 16	123	.10	.50	.40	1.250	2.500	3.750	5.226	6.721	8.984	13.888	18.830
X′= 28	124	.20	.30	.50	1.250	2.500	3.750	5.000	6.250	8.167	12.325	17.140
	125	.20	.40	.40	1.000	2.000	3.043	4.508	5.986	8.067	13.000	17.960
	126	.20	.50	.30	1.250	2.500	3.772	5.492	7.223	9.313	14.285	19.268

Table 8.4

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS
PRODUCED BY TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S2 TRUCK

One hundred eight variations in the Type 2-S2 truck are given in this Table. Each truck number, from 1 to 108, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

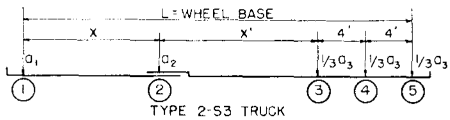
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.960	2.721	4.965	7.449	9.939	12.433	17.425	22.420
L = 20	2	.10	.40	.50	1.000	2.469	4.747	7.210	9.688	12.174	17.155	22.144
X = 8	3	.10	.50	.40	1.250	2.810	5.186	7.664	10.151	12.643	17.632	22.626
X' = 8	4	.20	.30	.50	.800	2.331	4.376	6.832	9.306	11.788	16.766	21.753
	5	.20	.40	.40	1.000	2.400	4.748	7.236	9.729	12.224	17.218	22.214
	6	.20	.50	.30	1.250	2.853	5.216	7.712	10.210	12.708	17.706	22.705
	7	.10	.30	.60	.960	2.430	4.402	6.721	9.197	11.681	16.661	21.648
L = 24	8	.10	.40	.50	1.000	2.116	3.985	6.340	8.792	11.260	16.220	21.196
X = 8	9	.10	.50	.40	1.250	2.614	4.492	6.944	9.415	11.896	16.872	21.858
X' = 12	10	.20	.30	.50	.800	2.025	3.770	5.972	8.418	10.882	15.836	20.809
	11	.20	.40	.40	1.000	2.252	4.033	6.500	8.980	11.467	16.450	21.440
	12	.20	.50	.30	1.250	2.745	4.673	7.142	9.634	12.128	17.121	22.117
	13	.10	.30	.60	.960	2.430	3.920	6.090	8.480	10.950	15.913	20.890
L = 28	14	.10	.40	.50	1.000	2.116	3.361	5.520	7.936	10.380	15.310	20.268
X = 8	15	.10	.50	.40	1.250	2.614	4.110	6.256	8.705	11.171	16.128	21.102
X' = 16	16	.20	.30	.50	.800	2.025	3.267	5.212	7.570	10.008	14.931	19.885
	17	.20	.40	.40	1.000	2.252	3.734	5.796	8.257	10.731	15.698	20.678
	18	.20	.50	.30	1.250	2.745	4.480	6.590	9.072	11.560	16.545	21.536
	19	.10	.30	.60	.960	2.430	3.920	5.561	7.789	10.241	15.181	20.144
L = 32	20	.10	.40	.50	1.000	2.116	3.361	4.859	7.120	9.534	14.425	19.360
X = 8	21	.10	.50	.40	1.250	2.614	4.110	5.680	8.020	10.467	15.400	20.360
X' = 20	22	.20	.30	.50	.800	2.025	3.267	4.695	6.762	9.168	14.051	18.981
	23	.20	.40	.40	1.000	2.252	3.734	5.245	7.559	10.016	14.962	19.930
	24	.20	.50	.30	1.250	2.745	4.480	6.222	8.525	11.004	15.978	20.963
	25	.10	.30	.60	.960	2.430	3.920	5.415	7.249	9.553	14.465	19.412
L = 36	26	.10	.40	.50	1.000	2.116	3.361	4.608	6.359	8.720	13.565	18.472
X = 8	27	.10	.50	.40	1.250	2.614	4.110	5.608	7.361	9.784	14.688	19.630
X' = 24	28	.20	.30	.50	.800	2.025	3.267	4.513	6.140	8.361	13.196	18.097
	29	.20	.40	.40	1.000	2.252	3.734	5.226	6.887	9.323	14.242	19.194
	30	.20	.50	.30	1.250	2.745	4.480	6.222	8.050	10.460	15.420	20.396
	31	.10	.30	.60	.960	2.430	3.920	5.415	6.912	8.940	13.765	18.692
L = 40	32	.10	.40	.50	1.000	2.116	3.361	4.608	5.857	7.940	12.730	17.604
X = 8	33	.10	.50	.40	1.250	2.614	4.110	5.608	7.106	9.123	13.992	18.914
X' = 28	34	.20	.30	.50	.800	2.025	3.267	4.513	5.760	7.588	12.366	17.233
	35	.20	.40	.40	1.000	2.252	3.734	5.226	6.721	8.651	13.538	18.470
	36	.20	.50	.30	1.250	2.745	4.480	6.222	7.967	9.928	14.871	19.837
	37	.10	.30	.60	.960	2.721	4.965	7.264	9.751	12.243	17.232	22.226
L = 24	38	.10	.40	.50	1.000	2.469	4.697	7.010	9.488	11.974	16.955	21.944
X = 12	39	.10	.50	.40	1.250	2.745	4.965	7.449	9.939	12.433	17.425	22.420
X' = 8	40	.20	.30	.50	.800	2.331	4.320	6.482	8.946	11.422	16.391	21.373
	41	.20	.40	.40	1.000	2.252	4.321	6.816	9.313	11.811	16.808	21.806
	42	.20	.50	.30	1.250	2.677	4.803	7.302	9.802	12.302	17.301	22.301

TABLE 8.4 (Continued)

	43	.10	.30	.60	.960	2.430	4.402	6.639	9.015	11.496	16.472	21.458
L = 28	44	.10	.40	.50	1.000	2.025	3.985	6.201	8.592	11.060	16.020	20.996
X = 12	45	.10	.50	.40	1.250	2.500	4.261	6.721	9.197	11.681	16.661	21.648
X′= 12	46	.20	.30	.50	.800	2.025	3.770	5.753	8.074	10.528	15.471	20.437
	47	.20	.40	.40	1.000	2.000	3.600	6.064	8.551	11.043	16.032	21.026
	48	.20	.50	.30	1.250	2.500	4.277	6.720	9.216	11.714	16.710	21.708
	49	.10	.30	.60	.960	2.430	3.920	6.090	8.322	10.771	15.728	20.702
L = 32	50	.10	.40	.50	1.000	2.025	3.320	5.503	7.736	10.180	15.110	20.068
X = 12	51	.10	.50	.40	1.250	2.500	3.920	6.025	8.480	10.950	15.913	20.890
X′= 16	52	.20	.30	.50	.800	2.025	3.267	5.212	7.242	9.668	14.576	19.521
	53	.20	.40	.40	1.000	2.000	3.380	5.344	7.815	10.296	15.272	20.258
	54	.20	.50	.30	1.250	2.500	4.118	6.156	8.645	11.138	16.128	21.123
	55	.10	.30	.60	.960	2.430	3.920	5.561	7.779	10.067	15.000	19.960
L = 36	56	.10	.40	.50	1.000	2.025	3.267	4.839	7.021	9.334	14.225	19.160
X = 12	57	.10	.50	.40	1.250	2.500	3.920	5.462	7.789	10.241	15.181	20.144
X′= 20	58	.20	.30	.50	.800	2.025	3.267	4.695	6.656	8.842	13.706	18.625
	59	.20	.40	.40	1.000	2.000	3.380	4.860	7.105	9.571	14.528	19.502
	60	.20	.50	.30	1.250	2.500	4.118	5.851	8.088	10.574	15.555	20.544
	61	.10	.30	.60	.960	2.430	3.920	5.415	7.249	9.465	14.288	19.230
L = 40	62	.10	.40	.50	1.000	2.025	3.267	4.513	6.359	8.541	13.365	18.272
X = 12	63	.10	.50	.40	1.250	2.500	3.920	5.415	7.081	9.553	14.465	19.412
X′= 24	64	.20	.30	.50	.800	2.025	3.267	4.513	6.140	8.100	12.861	17.749
	65	.20	.40	.40	1.000	2.000	3.380	4.860	6.436	8.867	13.800	18.760
	66	.20	.50	.30	1.250	2.500	4.118	5.851	7.634	10.022	14.991	19.973
	67	.10	.30	.60	.960	2.430	3.920	5.415	6.912	8.940	13.592	18.514
L = 44	68	.10	.40	.50	1.000	2.025	3.267	4.513	5.760	7.883	12.530	17.404
X = 12	69	.10	.50	.40	1.250	2.500	3.920	5.415	6.912	8.886	13.765	18.692
X′= 28	70	.20	.30	.50	.800	2.025	3.267	4.513	5.760	7.586	12.041	16.893
	71	.20	.40	.40	1.000	2.000	3.380	4.860	6.348	8.184	13.088	18.030
	72	.20	.50	.30	1.250	2.500	4.118	5.851	7.591	9.482	14.436	19.409
	73	.10	.30	.60	.960	2.721	4.965	7.211	9.565	12.054	17.041	22.032
L = 28	74	.10	.40	.50	1.000	2.469	4.697	6.935	9.306	11.788	16.766	21.753
X = 16	75	.10	.50	.40	1.250	2.745	4.960	7.236	9.729	12.224	17.218	22.214
X′= 8	76	.20	.30	.50	.800	2.331	4.320	6.315	8.592	11.060	16.020	20.996
	77	.20	.40	.40	1.000	2.252	4.167	6.404	8.903	11.403	16.402	21.402
	78	.20	.50	.30	1.250	2.677	4.594	6.700	9.200	11.700	16.700	21.700
	79	.10	.30	.60	.960	2.430	4.402	6.639	8.881	11.313	16.285	21.268
L = 32	80	.10	.40	.50	1.000	2.025	3.985	6.201	8.431	10.882	15.836	20.809
X = 16	81	.10	.50	.40	1.250	2.500	4.241	6.500	8.980	11.467	16.450	21.440
X′= 12	82	.20	.30	.50	.800	2.025	3.770	5.753	7.742	10.180	15.110	20.068
	83	.20	.40	.40	1.000	2.000	3.527	5.636	8.129	10.624	15.618	20.614
	84	.20	.50	.30	1.250	2.500	4.084	6.306	8.805	11.304	16.303	21.303
	85	.10	.30	.60	.960	2.430	3.920	6.090	8.322	10.593	15.545	20.516
L = 36	86	.10	.40	.50	1.000	2.025	3.326	5.503	7.712	10.008	14.931	19.885
X = 16	87	.10	.50	.40	1.250	2.500	3.772	5.796	8.257	10.731	15.698	20.678
X′= 16	88	.20	.30	.50	.800	2.025	3.267	5.212	7.190	9.334	14.225	19.160
	89	.20	.40	.40	1.000	2.000	3.043	4.900	7.380	9.867	14.850	19.840
	90	.20	.50	.30	1.250	2.500	3.772	5.730	8.224	10.720	15.715	20.712
	91	.10	.30	.60	.960	2.430	3.920	5.561	7.779	10.008	14.821	19.776
L = 40	92	.10	.40	.50	1.000	2.025	3.267	4.839	7.021	9.226	14.051	18.981
X = 16	93	.10	.50	.40	1.250	2.500	3.750	5.245	7.559	10.016	14.962	19.930
X′= 20	94	.20	.30	.50	.800	2.025	3.267	4.695	6.656	8.630	13.365	18.272
	95	.20	.40	.40	1.000	2.000	3.043	4.508	6.657	9.131	14.098	19.078
	96	.20	.50	.30	1.250	2.500	3.772	5.492	7.658	10.148	15.136	20.129
	97	.10	.30	.60	.960	2.430	3.920	5.415	7.249	9.465	14.113	19.050
L = 44	98	.10	.40	.50	1.000	2.025	3.267	4.513	6.359	8.541	13.196	18.097
X = 16	99	.10	.50	.40	1.250	2.500	3.750	5.226	6.887	9.323	14.242	19.194
X′= 24	100	.20	.30	.50	.800	2.025	3.267	4.513	6.140	8.100	12.530	17.404
	101	.20	.40	.40	1.000	2.000	3.043	4.508	6.016	8.416	13.362	18.330
	102	.20	.50	.30	1.250	2.500	3.772	5.492	7.226	9.588	14.566	19.553
	103	.10	.30	.60	.960	2.430	3.920	5.415	6.912	8.940	13.421	18.336
L = 48	104	.10	.40	.50	1.000	2.025	3.267	4.513	5.760	7.883	12.366	17.233
X = 16	105	.10	.50	.40	1.250	2.500	3.750	5.226	6.721	8.651	13.538	18.470
X′= 28	106	.20	.30	.50	.800	2.025	3.267	4.513	5.760	7.586	11.720	16.556
	107	.20	.40	.40	1.000	2.000	3.043	4.508	5.986	7.723	12.642	17.594
	108	.20	.50	.30	1.250	2.500	3.772	5.492	7.223	9.045	14.005	18.984

Table 8.5

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 2-S3 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 2-S3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

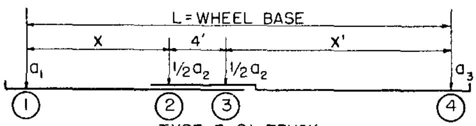
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.225	.675	.788	2.475	4.568	6.953	9.452	11.952	16.952	21.951
L = 24	2	.10	.30	.60	.750	2.200	4.350	6.816	9.313	11.811	16.808	21.806
X = 8	3	.10	.40	.50	1.000	2.272	4.322	6.766	9.232	11.709	16.681	21.664
X' = 8	4	.20	.20	.60	.700	2.200	4.060	6.436	8.929	11.424	16.418	21.414
	5	.20	.30	.50	.750	1.868	3.858	6.317	8.793	11.277	16.257	21.245
	6	.20	.40	.40	1.000	2.338	4.389	6.868	9.355	11.847	16.836	21.830
	7	.10	.225	.675	.788	2.475	4.170	6.390	8.820	11.317	16.313	21.310
L = 28	8	.10	.30	.60	.750	2.200	3.763	6.064	8.551	11.043	16.032	21.026
X = 8	9	.10	.40	.50	1.000	2.116	3.662	5.920	8.355	10.812	15.758	20.725
X' = 12	10	.20	.20	.60	.700	2.200	3.706	5.700	8.180	10.667	15.650	20.640
	11	.20	.30	.50	.750	1.832	3.226	5.452	7.900	10.366	15.323	20.298
	12	.20	.40	.40	1.000	2.253	3.900	6.149	8.620	11.101	16.077	21.063
	13	.10	.225	.675	.788	2.475	4.163	5.990	8.213	10.695	15.684	20.677
L = 32	14	.10	.30	.60	.750	2.200	3.700	5.440	7.815	10.296	15.272	20.258
X = 8	15	.10	.40	.50	1.000	2.116	3.361	5.131	7.519	9.948	14.860	19.807
X' = 16	16	.20	.20	.60	.700	2.200	3.700	5.325	7.457	9.931	14.898	19.878
	17	.20	.30	.50	.750	1.832	3.082	4.672	7.048	9.489	14.415	19.371
	18	.20	.40	.40	1.000	2.253	3.736	5.539	7.911	10.377	15.334	20.309
	19	.10	.225	.675	.788	2.475	4.163	5.850	7.812	10.088	15.066	20.053
L = 36	20	.10	.30	.60	.750	2.200	3.700	5.200	7.122	9.571	14.528	19.502
X = 8	21	.10	.40	.50	1.000	2.116	3.361	4.661	6.722	9.117	13.986	18.908
X' = 20	22	.20	.20	.60	.700	2.200	3.700	5.200	6.944	9.216	14.162	19.130
	23	.20	.30	.50	.750	1.832	3.082	4.332	6.235	8.645	13.532	18.464
	24	.20	.40	.40	1.000	2.253	3.736	5.227	7.227	9.674	14.607	19.567
	25	.10	.225	.675	.788	2.475	4.163	5.850	7.538	9.634	14.459	19.437
L = 40	26	.10	.30	.60	.750	2.200	3.700	5.200	6.700	8.867	13.800	18.760
X = 8	27	.10	.40	.50	1.000	2.116	3.361	4.608	6.047	8.320	13.138	18.029
X' = 24	28	.20	.20	.60	.700	2.200	3.700	5.200	6.700	8.563	13.442	18.394
	29	.20	.30	.50	.750	1.832	3.082	4.332	5.582	7.834	12.674	17.577
	30	.20	.40	.40	1.000	2.253	3.736	5.227	6.784	8.992	13.896	18.839
	31	.10	.225	.675	.788	2.475	4.568	6.800	9.256	11.755	16.754	21.753
L = 28	32	.10	.30	.60	.750	2.200	4.350	6.625	9.120	11.617	16.613	21.610
X = 12	33	.10	.40	.50	1.000	2.206	4.162	6.541	9.012	11.493	16.469	21.454
X' = 8	34	.20	.20	.60	.700	2.200	4.060	6.064	8.551	11.043	16.032	21.026
	35	.20	.30	.50	.750	1.832	3.800	5.921	8.396	10.880	15.860	20.848
	36	.20	.40	.40	1.000	2.160	3.966	6.441	8.934	11.429	16.423	21.419
	37	.10	.225	.675	.788	2.475	4.170	6.390	8.629	11.124	16.118	21.114
L = 32	38	.10	.30	.60	.750	2.200	3.763	6.011	8.365	10.854	15.841	20.832
X = 12	39	.10	.40	.50	1.000	2.000	3.432	5.685	8.127	10.589	15.540	20.511
X' = 12	40	.20	.20	.60	.700	2.200	3.706	5.680	7.815	10.296	15.272	20.258
	41	.20	.30	.50	.750	1.832	3.226	5.218	7.505	9.971	14.929	19.903
	42	.20	.40	.40	1.000	2.000	3.507	5.705	8.186	10.672	15.656	20.646

TABLE 8.5 (Continued)

	43	.10	.225	.675	.788	2.475	4.163	5.990	8.213	10.507	15.493	20.484
L = 36	44	.10	.30	.60	.750	2.200	3.700	5.440	7.682	10.113	15.085	20.068
X = 12	45	.10	.40	.50	1.000	2.000	3.174	4.934	7.283	9.718	14.637	19.589
X′ = 16	46	.20	.20	.60	.700	2.200	3.700	5.325	7.300	9.571	14.528	19.502
	47	.20	.30	.50	.750	1.832	3.082	4.661	6.654	9.095	14.022	18.978
	48	.20	.40	.40	1.000	2.000	3.380	5.107	7.463	9.937	14.905	19.885
	49	.10	.225	.675	.788	2.475	4.163	5.850	7.812	10.035	14.878	19.863
L = 40	50	.10	.30	.60	.750	2.200	3.700	5.200	7.122	9.393	14.345	19.316
X = 12	51	.10	.40	.50	1.000	2.000	3.174	4.443	6.478	8.881	13.759	18.686
X′ = 20	52	.20	.20	.60	.700	2.200	3.700	5.200	6.944	8.920	13.800	18.760
	53	.20	.30	.50	.750	1.832	3.082	4.332	6.100	8.252	13.140	18.073
	54	.20	.40	.40	1.000	2.000	3.380	4.860	6.767	9.223	14.170	19.137
	55	.10	.225	.675	.788	2.475	4.163	5.850	7.538	9.634	14.274	19.249
L = 44	56	.10	.30	.60	.750	2.200	3.700	5.200	6.700	8.807	13.621	18.576
X = 12	57	.10	.40	.50	1.000	2.000	3.174	4.418	5.811	8.077	12.906	17.803
X′ = 24	58	.20	.20	.60	.700	2.200	3.700	5.200	6.700	8.563	13.088	18.030
	59	.20	.30	.50	.750	1.832	3.082	4.332	5.582	7.542	12.283	17.187
	60	.20	.40	.40	1.000	2.000	3.380	4.860	6.371	8.531	13.450	18.402
	61	.10	.225	.675	.788	2.475	4.568	6.800	9.061	11.559	16.557	21.556
L = 32	62	.10	.30	.60	.750	2.200	4.350	6.600	8.929	11.424	16.418	21.414
X = 16	63	.10	.40	.50	1.000	2.206	4.162	6.409	8.793	11.277	16.257	21.245
X′ = 8	64	.20	.20	.60	.700	2.200	4.060	6.045	8.180	10.667	15.650	20.640
	65	.20	.30	.50	.750	1.832	3.800	5.800	8.035	10.513	15.485	20.468
	66	.20	.40	.40	1.000	2.160	3.842	6.021	8.518	11.016	16.013	21.011
	67	.10	.225	.675	.788	2.475	4.170	6.390	8.622	10.933	15.925	20.920
L = 36	68	.10	.30	.60	.750	2.200	3.763	6.011	8.258	10.667	15.650	20.640
X = 16	69	.10	.40	.50	1.000	2.000	3.422	5.654	7.900	10.366	15.323	20.298
X′ = 12	70	.20	.20	.60	.700	2.200	3.706	5.680	7.664	9.931	14.898	19.878
	71	.20	.30	.50	.750	1.832	3.226	5.218	7.214	9.617	14.563	19.531
	72	.20	.40	.40	1.000	2.000	3.312	5.270	7.757	10.249	15.238	20.232
	73	.10	.225	.675	.788	2.475	4.163	5.990	8.213	10.444	15.303	20.292
L = 40	74	.10	.30	.60	.750	2.200	3.700	5.440	7.682	9.931	14.898	19.878
X = 16	75	.10	.40	.50	1.000	2.000	3.082	4.934	7.158	9.489	14.415	19.371
X′ = 16	76	.20	.20	.60	.700	2.200	3.700	5.325	7.300	9.283	14.162	19.130
	77	.20	.30	.50	.750	1.832	3.082	4.661	6.648	8.754	13.666	18.614
	78	.20	.40	.40	1.000	2.000	3.043	4.684	7.022	9.503	14.479	19.465
	79	.10	.225	.675	.788	2.475	4.163	5.850	7.812	10.035	14.691	19.673
L = 44	80	.10	.30	.60	.750	2.200	3.700	5.200	7.122	9.360	14.162	19.130
X = 16	81	.10	.40	.50	1.000	2.000	3.082	4.332	6.451	8.667	13.532	18.464
X′ = 20	82	.20	.20	.60	.700	2.200	3.700	5.200	6.944	8.920	13.442	18.394
	83	.20	.30	.50	.750	1.832	3.082	4.332	6.100	8.083	12.794	17.716
	84	.20	.40	.40	1.000	2.000	3.043	4.507	6.340	8.779	13.736	18.711
	85	.10	.225	.675	.788	2.475	4.163	5.850	7.538	9.634	14.090	19.062
L = 48	86	.10	.30	.60	.750	2.200	3.700	5.200	6.700	8.807	13.442	18.394
X = 16	87	.10	.40	.50	1.000	2.000	3.082	4.332	5.772	7.969	12.674	17.577
X′ = 24	88	.20	.20	.60	.700	2.200	3.700	5.200	6.700	8.563	12.738	17.670
	89	.20	.30	.50	.750	1.832	3.082	4.332	5.582	7.542	11.948	16.839
	90	.20	.40	.40	1.000	2.000	3.043	4.507	5.986	8.075	13.009	17.969

Table 8.6

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S1 TRUCK

Ninety variations in the Type of 3-S1 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

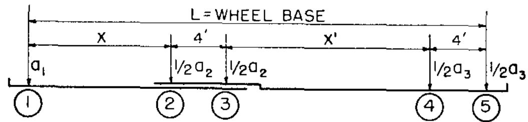
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	1.250	2.500	4.241	6.418	8.820	11.267	16.200	21.160
L = 24	2	.10	.50	.40	1.000	2.101	4.056	6.542	9.034	11.528	16.521	21.517
X = 8	3	.10	.60	.30	.960	2.503	4.512	7.009	9.507	12.006	17.005	22.004
X' = 12	4	.20	.40	.40	1.000	2.000	3.526	6.016	8.513	11.011	16.008	21.006
	5	.20	.50	.30	.800	2.207	4.000	6.500	9.000	11.500	16.500	21.500
	6	.20	.534	.266	.854	2.341	4.174	6.664	9.164	11.664	16.664	21.664
	7	.10	.40	.50	1.250	2.500	3.772	5.760	8.000	10.417	15.313	20.250
L = 28	8	.10	.50	.40	1.000	2.101	3.600	5.810	8.288	10.774	15.755	20.744
X = 8	9	.10	.60	.30	.960	2.503	4.252	6.436	8.929	11.424	16.418	21.414
X' = 16	10	.20	.40	.40	1.000	2.000	3.309	5.264	7.751	10.243	15.232	20.226
	11	.20	.50	.30	.800	2.207	3.955	5.912	8.410	10.908	15.906	20.905
	12	.20	.534	.266	.854	2.341	4.174	6.135	8.634	11.133	16.133	21.132
	13	.10	.40	.50	1.250	2.500	3.750	5.143	7.280	9.600	14.450	19.360
L = 32	14	.10	.50	.40	1.600	2.101	3.600	5.110	7.568	10.040	15.005	19.984
X = 8	15	.10	.60	.30	.960	2.503	4.252	6.002	8.365	10.854	15.841	20.832
X' = 20	16	.20	.40	.40	1.000	2.000	3.309	4.807	7.015	9.496	14.472	19.458
	17	.20	.50	.30	.800	2.207	3.955	5.703	7.834	10.328	15.321	20.317
	18	.20	.534	.266	.854	2.341	4.174	6.008	8.115	10.612	15.608	20.606
	19	.10	.40	.50	1.250	2.500	3.750	5.000	6.651	8.817	13.613	18.490
L = 36	20	.10	.50	.40	1.000	2.101	3.600	5.100	6.874	9.328	14.271	19.237
X = 8	21	.10	.60	.30	.960	2.503	4.252	6.002	7.815	10.296	15.272	20.258
X' = 24	22	.20	.40	.40	1.000	2.000	3.309	4.807	6.305	8.771	13.728	18.702
	23	.20	.50	.30	.800	2.207	3.955	5.703	7.453	9.760	14.745	19.736
	24	.20	.534	.266	.854	2.341	4.174	6.008	7.843	10.099	15.090	20.085
	25	.10	.40	.50	1.250	2.500	3.750	5.000	6.250	8.167	12.800	17.640
L = 40	26	.10	.50	.40	1.000	2.101	3.600	5.100	6.600	8.638	13.553	18.503
X = 8	27	.10	.60	.30	.960	2.503	4.252	6.002	7.751	9.750	14.713	19.690
X' = 28	28	.20	.40	.40	1.000	2.000	3.309	4.807	6.305	8.067	13.000	17.960
	29	.20	.50	.30	.800	2.207	3.955	5.703	7.453	9.204	14.178	19.163
	30	.20	.534	.266	.854	2.341	4.174	6.008	7.843	9.678	14.580	19.570
	31	.10	.40	.50	1.250	2.500	4.241	6.418	8.653	11.094	16.021	20.976
L = 28	32	.10	.50	.40	1.000	2.025	3.984	6.330	8.824	11.320	16.315	21.312
X = 12	33	.10	.60	.30	.960	2.430	4.403	6.804	9.303	11.803	16.802	21.802
X' = 12	34	.20	.40	.40	1.000	2.000	3.526	5.604	8.103	10.603	15.602	20.602
	35	.20	.50	.30	.800	2.025	3.770	6.102	8.602	11.102	16.101	21.101
	36	.20	.534	.266	.854	2.163	3.913	6.272	8.770	11.269	16.268	21.267
	37	.10	.40	.50	1.250	2.500	3.772	5.760	7.938	10.251	15.138	20.070
L = 32	38	.10	.50	.40	1.000	2.025	3.400	5.590	8.072	10.560	15.545	20.536
X = 12	39	.10	.60	.30	.960	2.430	4.050	6.225	8.720	11.217	16.213	21.210
X' = 16	40	.20	.40	.40	1.000	2.000	3.043	4.836	7.329	9.824	14.818	19.814
	41	.20	.50	.30	.800	2.025	3.573	5.502	8.002	10.502	15.501	20.501
	42	.20	.534	.266	.854	2.163	3.791	5.730	8.230	10.730	15.730	20.730
	43	.10	.40	.50	1.250	2.500	3.750	5.143	7.280	9.458	14.281	19.184
L = 36	44	.10	.50	.40	1.000	2.025	3.400	4.900	7.346	9.822	14.791	19.773
X = 12	45	.10	.60	.30	.960	2.430	4.050	5.800	8.151	10.643	15.632	20.626
X' = 20	46	.20	.40	.40	1.000	2.000	3.000	4.427	6.580	9.067	14.050	19.040
	47	.20	.50	.30	.800	2.025	3.573	5.318	7.416	9.914	14.910	19.908
	48	.20	.534	.266	.854	2.163	3.791	5.621	7.702	10.201	15.200	20.199

TABLE 8.6 (Continued)

	49	.10	.40	.50	1.250	2.500	3.750	5.000	6.651	8.800	13.448	18.318
L = 40	50	.10	.50	.40	1.000	2.025	3.400	4.900	6.645	9.104	14.053	19.023
X = 12	51	.10	.60	.30	.960	2.430	4.050	5.800	7.597	10.081	15.061	20.048
X′ = 24	52	.20	.40	.40	1.000	2.000	3.000	4.427	5.921	8.331	13.298	18.278
	53	.20	.50	.30	.800	2.025	3.573	5.318	7.064	9.338	14.328	19.323
	54	.20	.534	.266	.854	2.163	3.791	5.621	7.453	9.682	14.677	19.674
	55	.10	.40	.50	1.250	2.500	3.750	5.000	6.250	8.167	12.641	17.472
L = 44	56	.10	.50	.40	1.000	2.025	3.400	4.900	6.400	8.408	13.331	18.285
X = 12	57	.10	.60	.30	.960	2.430	4.050	5.800	7.550	9.531	14.498	19.478
X′ = 28	58	.20	.40	.40	1.000	2.000	3.000	4.427	5.921	7.616	12.562	17.530
	59	.20	.50	.30	.800	2.025	3.573	5.318	7.064	8.812	13.755	18.744
	60	.20	.534	.266	.854	2.163	3.791	5.621	7.453	9.286	14.162	19.155
	61	.10	.40	.50	1.250	2.500	4.241	6.418	8.625	10.923	15.842	20.794
L = 32	62	.10	.50	.40	1.000	2.025	3.984	6.200	8.616	11.114	16.110	21.108
X = 16	63	.10	.60	.30	.960	2.430	4.403	6.640	9.101	11.601	16.601	21.600
X′ = 12	64	.20	.40	.40	1.000	2.000	3.526	5.445	7.700	10.200	15.200	20.200
	65	.20	.50	.30	.800	2.025	3.770	5.753	8.210	10.708	15.706	20.705
	66	.20	.534	.266	.854	2.163	3.913	5.901	8.382	10.879	15.876	20.874
	67	.10	.40	.50	1.250	2.500	3.772	5.760	7.938	10.140	14.965	19.892
L = 36	68	.10	.50	.40	1.000	2.025	3.320	5.503	7.858	10.348	15.336	20.329
X = 16	69	.10	.60	.30	.960	2.430	3.920	6.090	8.513	11.011	16.008	21.006
X′ = 16	70	.20	.40	.40	1.000	2.000	3.043	4.805	6.913	9.411	14.408	19.406
	71	.20	.50	.30	.800	2.025	3.267	5.213	7.600	10.100	15.100	20.100
	72	.20	.534	.266	.854	2.163	3.489	5.412	7.834	10.333	15.332	20.332
	73	.10	.40	.50	1.250	2.500	3.750	5.143	7.280	9.458	14.112	19.010
L = 40	74	.10	.50	.40	1.000	2.025	3.267	4.840	7.125	9.604	14.578	19.563
X = 16	75	.10	.60	.30	.960	2.430	3.920	5.602	7.939	10.433	15.425	20.420
X′ = 20	76	.20	.40	.40	1.000	2.000	3.000	4.205	6.151	8.643	13.632	18.626
	77	.20	.50	.30	.800	2.025	3.267	4.943	7.005	9.504	14.503	19.503
	78	.20	.534	.266	.854	2.163	3.489	5.244	7.297	9.796	14.796	19.796
	79	.10	.40	.50	1.250	2.500	3.750	5.000	6.651	8.800	13.285	18.148
L = 44	80	.10	.50	.40	1.000	2.025	3.267	4.704	6.418	8.882	13.836	18.809
X = 16	81	.10	.60	.30	.960	2.430	3.920	5.602	7.380	9.867	14.850	19.840
X′ = 24	82	.20	.40	.40	1.000	2.000	3.000	4.060	5.548	7.896	12.872	17.858
	83	.20	.50	.30	.800	2.025	3.267	4.943	6.685	8.920	13.915	18.912
	84	.20	.534	.266	.854	2.163	3.489	5.244	7.072	9.270	14.268	19.267
	85	.10	.40	.50	1.250	2.500	3.750	5.000	6.250	8.167	12.500	17.306
L = 48	86	.10	.50	.40	1.000	2.025	3.267	4.704	6.203	8.180	13.110	18.068
X = 16	87	.10	.60	.30	.960	2.430	3.920	5.602	7.351	9.313	14.285	19.268
X′ = 28	88	.20	.40	.40	1.000	2.000	3.000	4.060	5.548	7.171	12.128	17.102
	89	.20	.50	.30	.800	2.025	3.267	4.943	6.685	8.429	13.336	18.329
	90	.20	.534	.266	.854	2.163	3.489	5.244	7.072	8.902	13.747	18.743

Table 8.7

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS
PRODUCED BY TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S2-TRUCK

One hundred twelve variations in the Type 3-S2 truck are given in this Table. Each truck number, from 1 to 112, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

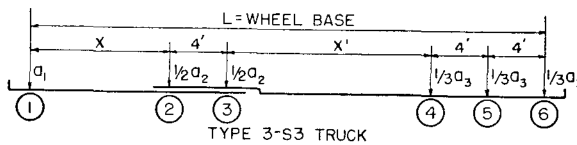
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.960	2.430	4.134	6.364	8.746	11.222	16.191	21.173
	2	.10	.40	.50	.800	2.025	3.647	5.847	8.245	10.704	15.653	20.623
L = 28	3	.10	.45	.45	.720	1.901	3.447	5.910	8.388	10.874	15.855	20.844
X = 8	4	.10	.50	.40	.800	2.102	3.701	6.172	8.658	11.148	16.136	21.129
X' = 12	5	.20	.30	.50	.800	2.025	3.506	5.480	7.820	10.267	15.200	20.160
	6	.20	.40	.40	.640	1.814	3.310	5.636	8.129	10.624	15.618	20.614
	7	.20	.50	.30	.800	2.205	3.953	6.204	8.703	11.203	16.202	21.202
	8	.10	.30	.60	.960	2.430	3.920	5.821	8.047	10.504	15.453	20.423
	9	.10	.40	.50	.800	2.025	3.267	5.167	7.405	9.838	14.753	19.703
L = 32	10	.10	.45	.45	.720	1.901	3.276	5.125	7.580	10.050	15.013	19.990
X = 8	11	.10	.50	.40	.800	2.102	3.602	5.456	7.925	10.404	15.378	20.363
X' = 16	12	.20	.30	.50	.800	2.025	3.267	4.951	7.000	9.417	14.313	19.250
	13	.20	.40	.40	.640	1.814	3.310	4.900	7.380	9.867	14.850	19.840
	14	.20	.50	.30	.800	2.205	3.953	5.744	8.120	10.617	15.613	20.610
	15	.10	.30	.60	.960	2.430	3.920	5.427	7.512	9.808	14.731	19.685
	16	.10	.40	.50	.800	2.025	3.267	4.579	6.687	9.004	13.878	18.803
L = 36	17	.10	.45	.45	.720	1.901	3.276	4.651	6.804	9.254	14.190	19.152
X = 8	18	.10	.50	.40	.800	2.102	3.602	5.102	7.218	9.682	14.636	19.609
X' = 20	19	.20	.30	.50	.800	2.025	3.267	4.537	6.396	8.600	13.450	18.360
	20	.20	.40	.40	.640	1.814	3.310	4.808	6.657	9.131	14.098	19.078
	21	.20	.50	.30	.800	2.205	3.953	5.703	7.577	10.043	15.032	20.026
	22	.10	.30	.60	.960	2.430	3.920	5.415	7.013	9.203	14.025	18.960
	23	.10	.40	.50	.800	2.025	3.267	4.513	6.043	8.211	13.028	17.923
L = 40	24	.10	.45	.45	.720	1.901	3.276	4.651	6.061	8.484	13.388	18.330
X = 8	25	.10	.50	.40	.800	2.102	3.602	5.102	6.602	8.980	13.910	18.868
X' = 24	26	.20	.30	.50	.800	2.025	3.267	4.513	5.889	7.841	12.613	17.490
	27	.20	.40	.40	.640	1.814	3.310	4.808	6.306	8.416	13.362	18.330
	28	.20	.50	.30	.800	2.205	3.953	5.703	7.452	9.481	14.461	19.448
	29	.10	.30	.60	.960	2.430	3.920	5.415	6.912	8.680	13.335	18.248
	30	.10	.40	.50	.800	2.025	3.267	4.513	5.760	7.561	12.203	17.063
L = 44	31	.10	.45	.45	.720	1.901	3.276	4.651	6.026	7.742	12.606	17.525
X = 8	32	.10	.50	.40	.800	2.102	3.602	5.102	6.602	8.300	13.200	18.140
X' = 28	33	.20	.30	.50	.800	2.025	3.267	4.513	5.760	7.334	11.800	16.640
	34	.20	.40	.40	.640	1.814	3.310	4.808	6.306	7.805	12.642	17.594
	35	.20	.50	.30	.800	2.205	3.953	5.703	7.452	9.201	13.898	18.878
	36	.10	.30	.60	.960	2.550	4.680	6.923	9.288	11.774	16.755	21.744
	37	.10	.40	.50	.800	2.205	4.334	6.564	8.946	11.442	16.391	21.373
L = 28	38	.10	.45	.45	.720	2.063	4.170	6.525	9.020	11.517	16.513	21.510
X = 12	39	.10	.50	.40	.800	2.205	4.334	6.712	9.210	11.708	16.706	21.705
X' = 8	40	.20	.30	.50	.800	2.150	4.042	6.031	8.331	10.793	15.745	20.716
	41	.20	.40	.40	.640	1.814	3.706	6.000	8.500	11.000	16.000	21.000
	42	.20	.50	.30	.800	2.150	4.042	6.409	8.907	11.406	16.405	21.404

TABLE 8.7 (Continued)

	43	.10	.30	.60	.960	2.430	4.134	6.364	8.601	11.040	16.005	20.984
	44	.10	.40	.50	.800	2.025	3.647	5.847	8.074	10.528	15.471	20.437
L = 32	45	.10	.45	.45	.720	1.823	3.420	5.690	8.172	10.660	15.645	20.636
X = 12	46	.10	.50	.40	.800	2.025	3.647	5.956	8.445	10.938	15.928	20.923
X′ = 12	47	.20	.30	.50	.800	2.025	3.506	5.480	7.487	9.923	14.842	19.794
	48	.20	.40	.40	.640	1.620	3.040	5.216	7.713	10.211	15.208	20.206
	49	.20	.50	.30	.800	2.025	3.573	5.800	8.300	10.800	15.800	20.800
	50	.10	.30	.60	.960	2.430	3.920	5.821	8.047	10.328	15.271	20.237
	51	.10	.40	.50	.800	2.025	3.267	5.167	7.363	9.668	14.576	19.521
L = 36	52	.10	.45	.45	.720	1.823	3.075	4.896	7.357	9.831	14.798	19.778
X = 12	53	.10	.50	.40	.800	2.025	3.402	5.232	7.706	10.188	15.166	20.153
X′ = 16	54	.20	.30	.50	.800	2.025	3.267	4.951	6.921	9.086	13.965	18.892
	55	.20	.40	.40	.640	1.620	2.934	4.464	6.951	9.443	14.432	19.426
	56	.20	.50	.30	.800	2.025	3.573	5.320	7.707	10.206	15.205	20.204
	57	.10	.30	.60	.960	2.430	3.920	5.427	7.512	9.735	14.553	19.503
	58	.10	.40	.50	.800	2.025	3.267	4.579	6.687	8.880	13.706	18.625
L = 40	59	.10	.45	.45	.720	1.823	3.075	4.450	6.574	9.028	13.971	18.937
X = 12	60	.10	.50	.40	.800	2.025	3.402	4.902	6.992	**9.460**	**14.420**	**19.396**
X′ = 20	61	.20	.30	.50	.800	2.025	3.267	4.537	6.396	8.363	13.112	18.010
	62	.20	.40	.40	.640	1.620	2.934	4.426	6.215	8.696	13.672	18.658
	63	.20	.50	.30	.800	2.025	3.573	5.318	7.153	9.624	14.618	19.614
	64	.10	.30	.60	.960	2.430	3.920	5.415	7.013	9.203	13.851	18.781
	65	.10	.40	.50	.800	2.025	3.267	4.513	6.043	8.211	12.861	17.749
L = 44	66	.10	.45	.45	.720	1.823	3.075	4.450	5.825	8.253	13.165	18.112
X = 12	67	.10	.50	.40	.800	2.025	3.402	4.902	6.402	8.754	13.690	18.652
X′ = 24	68	.20	.30	.50	.800	2.025	3.267	4.513	5.889	7.841	12.285	17.148
	69	.20	.40	.40	.640	1.620	2.934	4.426	5.921	7.971	12.928	17.902
	70	.20	.50	.30	.800	2.025	3.573	5.318	7.064	9.054	14.041	19.032
	71	.10	.30	.60	.960	2.430	3.920	5.415	6.912	8.680	13.165	18.072
	72	.10	.40	.50	.800	2.025	3.267	4.513	5.760	7.561	12.041	16.893
L = 48	73	.10	.45	.45	.720	1.823	3.075	4.450	5.825	7.504	12.378	17.303
X = 12	74	.10	.50	.40	.800	2.025	3.402	4.902	6.402	8.068	12.976	17.921
X′ = 28	75	.20	.30	.50	.800	2.025	3.267	4.513	5.760	7.334	11.482	16.306
	76	.20	.40	.40	.640	1.620	2.934	4.426	5.921	7.417	12.200	17.160
	77	.20	.50	.30	.800	2.025	3.573	5.318	7.064	8.812	13.472	18.458
	78	.10	.30	.60	.960	2.430	4.134	6.364	8.601	10.860	15.820	20.796
	79	.10	.40	.50	.800	2.025	3.647	5.847	8.068	10.354	15.290	20.252
L = 36	80	.10	.45	.45	.720	1.823	3.420	5.603	7.958	10.448	15.436	20.429
X = 16	81	.10	.50	.40	.800	2.025	3.647	5.847	8.234	10.728	15.721	20.717
X′ = 12	82	.20	.30	.50	.800	2.025	3.506	5.480	7.464	9.584	14.488	19.430
	83	.20	.40	.40	.640	1.620	3.040	4.980	7.303	9.803	14.802	19.802
	84	.20	.50	.30	.800	2.025	3.506	5.480	7.903	10.403	15.402	20.402
	85	.10	.30	.60	.960	2.430	3.920	5.821	8.047	10.280	15.090	20.052
	86	.10	.40	.50	.800	2.025	3.267	5.167	7.363	9.578	14.400	19.340
L = 40	87	.10	.45	.45	.720	1.823	2.940	4.860	7.135	9.613	14.585	19.568
X = 16	88	.10	.50	.40	.800	2.025	3.267	5.167	7.488	9.974	14.955	19.944
X′ = 16	89	.20	.30	.50	.800	2.025	3.267	4.951	6.921	8.901	13.621	18.536
	90	.20	.40	.40	.640	1.620	2.613	4.320	6.529	9.024	14.018	19.014
	91	.20	.50	.30	.800	2.025	3.267	4.951	7.301	9.801	14.801	19.800
	92	.10	.30	.60	.960	2.430	3.920	5.427	7.512	9.735	14.376	19.321
	93	.10	.40	.50	.800	2.025	3.267	4.579	6.687	8.880	13.535	18.448
L = 44	94	.10	.45	.45	.720	1.823	2.940	4.256	6.345	8.804	13.753	18.723
X = 16	95	.10	.50	.40	.800	2.025	3.267	4.704	6.768	9.240	14.205	19.184
X′ = 20	96	.20	.30	.50	.800	2.025	3.267	4.537	6.396	8.363	12.778	17.662
	97	.20	.40	.40	.640	1.620	2.613	4.060	5.780	8.267	13.250	18.240
	98	.20	.50	.30	.800	2.025	3.267	4.944	6.736	9.211	14.208	19.206
	99	.10	.30	.60	.960	2.430	3.920	5.415	7.013	9.203	13.678	18.603
	100	.10	.40	.50	.800	2.025	3.267	4.513	6.043	8.211	12.695	17.576
L = 48	101	.10	.45	.45	.720	1.823	2.940	4.256	5.630	8.023	**12.942**	**17.726**
X = 16	102	.10	.50	.40	.800	2.025	3.267	4.704	6.203	8.528	13.471	18.437
X′ = 24	103	.20	.30	.50	.800	2.025	3.267	4.513	5.889	7.841	11.961	16.808
	104	.20	.40	.40	.640	1.620	2.613	4.060	5.548	7.531	12.498	17.478
	105	.20	.50	.30	.800	2.025	3.267	4.944	6.685	8.633	13.625	18.620
	106	.10	.30	.60	.960	2.430	3.920	5.415	6.912	8.680	13.110	17.897
	107	.10	.40	.50	.800	2.025	3.267	4.513	5.760	7.561	11.921	16.724
L = 52	108	.10	.45	.45	.720	1.823	2.940	4.256	5.630	7.268	12.151	17.081
X = 16	109	.10	.50	.40	.800	2.025	3.267	4.704	6.203	7.838	12.753	17.703
X′ = 28	110	.20	.30	.50	.800	2.025	3.267	4.513	5.760	7.334	11.250	15.974
	111	.20	.40	.40	.640	1.620	2.613	4.060	5.548	7.040	11.762	16.730
	112	.20	.50	.30	.800	2.025	3.267	4.944	6.685	8.430	13.050	18.040

Table 8.8

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS
PRODUCED BY TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH



One hundred five variations in the Type 3-S3 truck are given in this Table. Each truck number, from 1 to 105, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

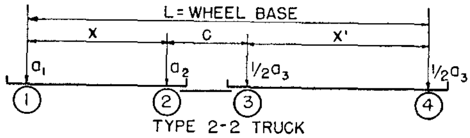
and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.700	2.200	3.700	5.723	8.088	10.574	15.555	20.544
	2	.10	.36	.54	.630	1.980	3.336	5.458	7.839	10.316	15.287	20.270
L = 32	3	.10	.40	.50	.640	1.832	3.082	5.290	7.680	10.151	15.113	20.091
X = 8	4	.10	.50	.40	.800	2.101	3.604	5.816	8.294	10.779	15.761	20.750
X' = 12	5	.20	.30	.50	.582	1.832	3.083	4.937	7.246	9.705	14.654	19.624
	6	.20	.40	.40	.640	1.814	3.309	5.270	7.757	10.249	15.238	20.232
	7	.20	.50	.30	.800	2.207	3.955	5.963	8.410	10.908	15.906	20.905
	8	.10	.30	.60	.700	2.200	3.700	5.275	7.400	9.840	14.805	19.784
	9	.10	.36	.54	.630	1.980	3.330	4.810	7.034	9.491	14.438	19.407
L = 36	10	.10	.40	.50	.640	1.832	3.082	4.588	6.821	9.268	14.201	19.162
X = 8	11	.10	.50	.40	.800	2.101	3.600	5.215	7.574	10.047	15.012	19.991
X' = 16	12	.20	.30	.50	.582	1.832	3.082	4.421	6.406	8.839	13.755	18.704
	13	.20	.40	.40	.640	1.814	3.309	4.829	7.022	9.503	14.479	19.465
	14	.20	.50	.30	.800	2.207	3.955	5.715	7.834	10.328	15.321	20.317
	15	.10	.30	.60	.700	2.200	3.700	5.200	6.861	9.128	14.071	19.037
	16	.10	.36	.54	.630	1.980	3.330	4.680	6.395	8.695	13.611	18.561
L = 40	17	.10	.40	.50	.640	1.832	3.082	4.332	6.108	8.411	13.315	18.252
X = 8	18	.10	.50	.40	.800	2.101	3.600	5.101	6.881	9.336	14.279	19.245
X' = 20	19	.20	.30	.50	.582	1.832	3.082	4.332	5.833	8.006	12.881	17.805
	20	.20	.40	.40	.640	1.814	3.309	4.807	6.406	8.779	13.736	18.711
	21	.20	.50	.30	.800	2.207	3.955	5.703	8.556	9.760	14.745	19.736
	22	.10	.30	.60	.700	2.200	3.700	5.200	6.700	8.535	13.353	18.303
	23	.10	.36	.54	.630	1.980	3.330	4.680	6.030	7.980	12.805	17.732
L = 44	24	.10	.40	.50	.640	1.832	3.082	4.332	5.582	7.628	12.453	17.363
X = 8	25	.10	.50	.40	.800	2.101	3.600	5.101	6.600	8.646	13.562	18.511
X' = 24	26	.20	.30	.50	.582	1.832	3.082	4.332	5.582	7.276	12.031	16.926
	27	.20	.40	.40	.640	1.814	3.309	4.807	6.305	8.075	13.009	17.969
	28	.20	.50	.30	.800	2.207	3.955	5.703	7.453	10.415	14.178	19.163
	29	.10	.30	.60	.700	2.200	3.700	5.200	6.700	8.200	12.651	17.581
	30	.10	.36	.54	.630	1.980	3.330	4.680	6.030	7.392	12.019	16.919
L = 48	31	.10	.40	.50	.640	1.832	3.082	4.332	5.582	6.965	11.616	16.494
X = 8	32	.10	.50	.40	.800	2.101	3.600	5.101	6.600	8.100	12.860	17.790
X' = 28	33	.20	.30	.50	.582	1.832	3.082	4.332	5.582	6.833	11.207	16.067
	34	.20	.40	.40	.640	1.814	3.309	4.807	6.305	7.805	12.298	17.240
	35	.20	.50	.30	.800	2.207	3.955	6.703	7.453	9.203	13.620	18.596
	36	.10	.30	.60	.700	2.200	3.700	5.723	7.968	10.388	15.366	20.353
	37	.10	.36	.54	.630	1.980	3.336	5.458	7.696	10.134	15.101	20.081
L = 36	38	.10	.40	.50	.640	1.832	3.082	5.290	7.522	9.971	14.929	19.903
X = 12	39	.10	.50	.40	.800	2.025	3.463	5.596	8.078	10.566	15.551	20.542
X' = 12	40	.20	.30	.50	.582	1.832	3.083	4.937	6.930	9.355	14.292	19.254
	41	.20	.40	.40	.640	1.620	2.935	4.843	7.335	9.831	14.825	19.821
	42	.20	.50	.30	.800	2.025	3.573	5.534	8.002	10.502	15.501	20.501

TABLE 8.8 **(Continued)**

	43	.10	.30	.60	.700	2.200	3.700	5.275	7.400	9.660	14.620	19.596
	44	.10	.36	.54	.630	1.980	3.330	4.810	7.034	9.316	14.257	19.221
L = 40	45	.10	.40	.50	.640	1.832	3.082	4.588	6.801	9.095	14.022	18.978
X = 12	46	.10	.50	.40	.800	2.025	3.401	5.000	7.353	9.828	14.798	19.780
X′ = 16	47	.20	.30	.50	.582	1.832	3.082	4.421	6.372	8.502	13.402	18.342
	48	.20	.40	.40	.640	1.620	2.935	4.427	6.587	9.074	14.058	19.048
	49	.20	.50	.30	.800	2.025	3.573	5.318	7.600	9.914	14.910	19.908
	50	.10	.30	.60	.700	2.200	3.700	5.200	6.861	9.081	13.890	18.852
	51	.10	.36	.54	.630	1.980	3.330	4.680	6.395	8.614	12.994	17.939
L = 44	52	.10	.40	.50	.640	1.832	3.082	4.332	6.105	8.312	13.133	18.065
X = 12	53	.10	.50	.40	.800	2.025	3.401	4.901	6.660	9.112	14.061	19.030
X′ = 20	54	.20	.30	.50	.582	1.832	3.082	4.332	5.832	7.810	12.530	17.442
	55	.20	.40	.40	.640	1.620	2.935	4.427	5.984	8.339	13.306	18.287
	56	.20	.50	.30	.800	2.025	3.573	5.318	7.106	9.338	14.328	19.323
	57	.10	.30	.60	.700	2.200	3.700	5.200	6.700	8.535	13.176	18.121
	58	.10	.36	.54	.630	1.980	3.330	4.680	6.030	7.980	12.632	17.554
L = 48	59	.10	.40	.50	.640	1.832	3.082	4.332	5.582	7.624	12.275	17.178
X = 12	60	.10	.50	.40	.800	2.025	3.401	4.901	6.400	8.416	13.340	18.294
X′ = 24	61	.20	.30	.50	.582	1.832	3.082	4.332	5.582	7.274	11.688	16.569
	62	.20	.40	.40	.640	1.620	2.935	4.427	5.921	7.625	12.572	17.539
	63	.20	.50	.30	.800	2.025	3.573	5.318	7.064	8.910	13.755	18.744
	64	.10	.30	.60	.700	2.200	3.700	5.200	6.700	8.200	12.478	17.403
	65	.10	.36	.54	.630	1.980	3.330	4.680	6.030	7.392	11.851	16.745
L = 52	66	.10	.40	.50	.640	1.832	3.082	4.332	5.582	6.959	11.441	16.311
X = 12	67	.10	.50	.40	.800	2.025	3.401	4.901	6.400	7.900	12.635	17.570
X′ = 28	68	.20	.30	.50	.582	1.832	3.082	4.332	5.582	6.832	10.872	15.715
	69	.20	.40	.40	.640	1.620	2.935	4.427	5.921	7.418	11.852	16.804
	70	.20	.50	.30	.800	2.025	3.573	5.318	7.064	8.814	13.191	18.173
	71	.10	.30	.60	.700	2.200	3.700	5.723	7.968	10.215	15.178	20.163
	72	.10	.36	.54	.630	1.980	3.336	5.458	7.696	9.954	14.916	19.892
L = 40	73	.10	.40	.50	.640	1.832	3.082	5.291	7.523	9.791	14.742	19.713
X = 16	74	.10	.50	.40	.800	2.025	3.463	5.507	7.864	10.354	15.342	20.335
X′ = 12	75	.20	.30	.50	.582	1.832	3.082	4.939	6.932	9.005	13.928	18.881
	76	.20	.40	.40	.640	1.620	2.840	4.649	6.920	9.418	14.415	19.413
	77	.20	.50	.30	.800	2.025	3.400	5.213	7.400	9.900	14.900	19.900
	78	.10	.30	.60	.700	2.200	3.700	5.275	7.400	9.642	14.436	19.409
	79	.10	.36	.54	.630	1.980	3.330	4.810	7.034	9.266	14.076	19.037
L = 44	80	.10	.40	.50	.640	1.832	3.082	4.587	6.799	9.024	13.838	18.790
X = 16	81	.10	.50	.40	.800	2.025	3.267	4.914	7.132	9.611	14.585	19.570
X′ = 16	82	.20	.30	.50	.582	1.832	3.082	4.418	6.373	8.361	13.047	17.976
	83	.20	.40	.40	.640	1.620	2.613	4.060	6.159	8.651	13.640	18.634
	84	.20	.50	.30	.800	2.025	3.267	4.943	7.005	9.504	14.503	19.503
	85	.10	.30	.60	.700	2.200	3.700	5.200	6.861	9.081	13.710	18.668
	86	.10	.36	.54	.630	1.980	3.330	4.680	6.395	8.614	13.258	18.198
L = 48	87	.10	.40	.50	.640	1.832	3.082	4.332	6.105	8.312	12.960	17.886
X = 16	88	.10	.50	.40	.800	2.025	3.267	4.704	6.446	8.889	13.844	18.817
X′ = 20	89	.20	.30	.50	.582	1.832	3.082	4.332	5.832	7.810	12.190	17.090
	90	.20	.40	.40	.640	1.620	2.613	4.060	5.571	7.905	12.881	17.867
	91	.20	.50	.30	.800	2.025	3.267	4.943	6.700	8.920	13.915	18.912
	92	.10	.30	.60	.700	2.200	3.700	5.200	6.700	8.535	13.002	17.940
	93	.10	.36	.54	.630	1.980	3.330	4.680	6.030	7.980	12.461	17.376
L = 52	94	.10	.40	.50	.640	1.832	3.082	4.332	5.582	7.624	12.106	17.003
X = 16	95	.10	.50	.40	.800	2.025	3.267	4.704	6.203	8.189	13.119	18.077
X′ = 24	96	.20	.30	.50	.582	1.832	3.082	4.332	5.582	7.274	11.359	16.225
	97	.20	.40	.40	.640	1.620	2.613	4.060	5.548	7.181	12.138	17.113
	98	.20	.50	.30	.800	2.025	3.267	4.943	6.685	8.502	13.336	18.329
	99	.10	.30	.60	.700	2.200	3.700	5.200	6.700	8.200	12.452	17.225
	100	.10	.36	.54	.630	1.980	3.330	4.680	6.030	7.392	11.779	16.572
L = 56	101	.10	.40	.50	.640	1.832	3.082	4.332	5.582	6.959	11.342	16.139
X = 16	102	.10	.50	.40	.800	2.025	3.267	4.704	6.203	7.702	12.410	17.350
X′ = 28	103	.20	.30	.50	.582	1.832	3.082	4.332	5.582	6.832	10.688	15.380
	104	.20	.40	.40	.640	1.620	2.613	4.060	5.548	7.040	11.411	16.371
	105	.20	.50	.30	.800	2.025	3.267	4.943	6.685	8.429	12.766	17.753

Table 8.9

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



One hundred forty-four variations in the Type 2-2 truck are given in this Table. Each truck number, from 1 to 144, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	.875	2.320	4.563	6.811	9.303	11.803	16.802	21.802
L = 28	2	.10	.30	.60	.750	2.100	4.350	6.625	9.120	11.617	16.613	21.610
X = 12	3	.10	.40	.50	1.000	2.327	4.163	6.544	9.015	11.496	16.472	21.458
X' = 8	4	.20	.20	.60	.750	2.010	4.006	6.064	8.551	11.043	16.032	21.026
C = 8	5	.20	.30	.50	.750	1.841	3.802	5.921	8.397	10.881	15.861	20.848
	6	.20	.40	.40	1.000	2.253	4.006	6.436	8.929	11.424	16.418	21.414
	7	.10	.20	.70	.875	2.008	3.913	6.147	8.602	11.102	16.101	21.101
L = 32	8	.10	.30	.60	.750	1.920	3.763	6.011	8.503	11.003	16.002	21.002
X = 12	9	.10	.40	.50	1.000	2.327	4.032	6.110	8.568	11.040	16.005	20.984
X' = 12	10	.20	.20	.60	.750	1.764	3.442	5.431	7.920	10.417	15.413	20.410
C = 8	11	.20	.30	.50	.750	1.841	3.427	5.432	7.906	10.388	15.366	20.353
	12	.20	.40	.40	1.000	2.253	4.006	6.064	8.551	11.043	16.032	21.026
	13	.10	.20	.70	.875	2.008	3.364	5.511	7.920	10.417	15.413	20.410
L = 36	14	.10	.30	.60	.750	1.920	3.467	5.440	7.901	10.401	15.401	20.400
X = 12	15	.10	.40	.50	1.000	2.327	4.032	5.906	8.131	10.593	15.545	20.516
X' = 16	16	.20	.20	.60	.750	1.764	2.993	4.880	7.303	9.803	14.802	19.802
C = 8	17	.20	.30	.50	.750	1.841	3.427	5.301	7.457	9.931	14.898	19.878
	18	.20	.40	.40	1.000	2.253	4.006	6.005	8.180	10.667	15.650	20.640
	19	.10	.20	.70	.875	2.008	3.364	4.903	7.258	9.748	14.736	19.729
L = 40	20	.10	.30	.60	.750	1.920	3.467	5.213	7.313	9.811	14.808	19.806
X = 12	21	.10	.40	.50	1.000	2.327	4.032	5.906	7.779	10.154	15.090	20.052
X' = 20	22	.20	.20	.60	.750	1.764	2.993	4.600	6.701	9.201	14.201	19.200
C = 8	23	.20	.30	.50	.750	1.841	3.427	5.301	7.176	9.482	14.436	19.409
	24	.20	.40	.40	1.000	2.253	4.006	6.005	8.004	10.296	15.272	20.258
	25	.10	.20	.70	.875	2.240	4.152	6.401	8.720	11.217	16.213	21.210
L = 32	26	.10	.30	.60	.750	1.920	3.763	6.011	8.365	10.854	15.841	20.832
X = 12	27	.10	.40	.50	1.000	2.000	3.561	5.689	8.131	10.593	15.545	20.516
X' = 8	28	.20	.20	.60	.750	1.920	3.600	5.600	7.815	10.296	15.272	20.258
C = 12	29	.20	.30	.50	.750	1.600	3.226	5.220	7.505	9.971	14.928	19.902
	30	.20	.40	.40	1.000	2.000	3.600	5.700	8.180	10.667	15.650	20.640
	31	.10	.20	.70	.875	1.750	3.480	5.723	8.062	10.502	15.501	20.501
L = 36	32	.10	.30	.60	.750	1.500	3.150	5.400	7.729	10.224	15.218	20.214
X = 12	33	.10	.40	.50	1.000	2.000	3.561	5.427	7.704	10.154	15.090	20.052
X' = 12	34	.20	.20	.60	.750	1.500	3.015	5.011	7.165	9.654	14.641	19.632
C = 12	35	.20	.30	.50	.750	1.500	2.929	4.803	7.018	9.482	14.436	19.409
	36	.20	.40	.40	1.000	2.000	3.600	5.600	7.815	10.296	15.272	20.258
	37	.10	.20	.70	.875	1.750	3.012	5.071	7.303	9.803	14.802	19.802
L = 40	38	.10	.30	.60	.750	1.500	2.918	4.811	7.107	9.606	14.605	19.604
X = 12	39	.10	.40	.50	1.000	2.000	3.561	5.427	7.297	9.723	14.642	19.594
X' = 16	40	.20	.20	.60	.750	1.500	2.646	4.445	6.529	9.024	14.018	19.014
C = 12	41	.20	.30	.50	.750	1.500	2.929	4.803	6.677	9.041	13.981	18.944
	42	.20	.40	.40	1.000	2.000	3.600	5.600	7.600	9.931	14.898	19.878
	43	.10	.30	.70	.875	1.750	3.012	4.447	6.668	9.120	14.115	19.112
L = 44	44	.10	.30	.60	.750	1.500	2.918	4.651	6.500	9.000	14.000	19.000
X = 12	45	.10	.40	.50	1.000	2.000	3.561	5.427	7.297	9.360	14.200	19.140
X' = 20	46	.20	.20	.60	.750	1.500	2.646	4.013	5.907	8.406	13.405	18.404
C = 12	47	.20	.30	.50	.750	1.500	2.929	4.803	6.677	8.608	13.531	18.485
	48	.20	.40	.40	1.000	2.000	3.600	5.600	7.600	9.600	14.528	19.502

TABLE 8.9 (Continued)

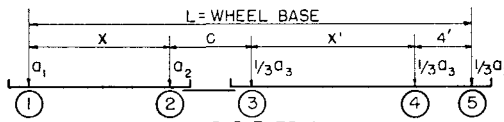
	49	.10	.20	.70	.875	2.320	4.563	6.811	9.107	11.606	16.605	21.604
L = 32	50	.10	.30	.60	.750	2.100	4.350	6.600	8.929	11.424	16.418	21.414
X = 16	51	.10	.40	.50	1.000	2.327	4.163	6.411	8.797	11.281	16.261	21.248
X′ = 8	52	.20	.20	.60	.750	2.010	4.006	6.005	8.180	10.667	15.650	20.640
C′ = 8	59	.20	.30	.50	.750	1.841	3.802	5.802	8.035	10.513	15.485	20.468
	54	.20	.40	.40	1.000	2.253	3.840	6.016	8.513	11.011	16.008	21.006
	55	.10	.20	.70	.875	2.068	3.913	6.147	8.400	10.900	15.900	20.900
L = 36	56	.10	.30	.60	.750	1.920	3.763	6.011	8.307	10.806	15.805	20.804
X = 16	57	.10	.40	.50	1.000	2.327	3.926	5.900	8.346	10.822	15.791	20.773
X′ = 12	58	.20	.20	.60	.750	1.764	3.442	5.431	7.539	10.033	15.025	20.020
X′ = 8	59	.20	.30	.50	.750	1.841	3.304	5.303	7.488	9.974	14.955	19.944
	60	.20	.40	.40	1.000	2.253	3.736	5.636	8.129	10.624	15.618	20.614
	61	.10	.20	.70	.875	2.008	3.364	5.511	7.739	10.211	15.208	20.206
L = 40	62	.10	.30	.60	.750	1.920	3.380	5.440	7.700	10.200	15.200	20.200
X = 16	63	.10	.40	.50	1.000	2.327	3.926	5.701	7.905	10.371	15.328	20.302
X′ = 16	64	.20	.20	.60	.750	1.764	2.993	4.880	6.913	9.411	14.408	19.406
C = 8	65	.20	.30	.50	750	1.841	3.186	4.912	7.015	9.496	14.472	19.458
	66	.20	.40	.40	1.000	2.253	3.736	5.620	7.751	10.243	15.232	20.226
	67	.10	.20	.70	.875	2.008	3.364	4.903	7.112	9.538	14.528	19.523
L = 44	68	.10	.30	.60	.750	1.920	3.380	5.006	7.122	9.606	14.605	19.604
X = 16	69	.10	.40	.50	1.000	2.327	3.926	5.701	7.576	9.928	14.871	19.837
X′ = 20	70	.20	.20	.60	.750	1.764	2.993	4.351	6.321	8.801	13.801	18.800
C = 8	71	.20	.30	.50	.750	1.841	3.186	4.912	6.785	9.040	14.005	18.984
	72	.20	.40	.40	1.000	2.253	3.736	5.620	7.616	9.867	14.850	19.840
	73	.10	.20	.70	.875	2.240	4.152	6.401	8.651	11.024	16.018	21.014
L = 36	74	.10	.30	.60	.750	1.920	3.763	6.011	8.258	10.667	15.650	20.640
X = 16	75	.10	.40	.50	1.000	2.000	3.491	5.655	7.905	10.371	15.328	20.302
X′ = 8	76	.20	.20	.60	.750	1.920	3.600	5.600	7.600	9.931	14.898	19.878
C = 12	77	.20	.30	.50	.750	1.600	3.226	5.220	7.216	9.616	14.562	19.530
	78	.20	.40	.40	1.000	2.000	3.380	5.264	7.751	10.243	15.232	20.226
	79	.10	.20	.70	.875	1.750	3.480	5.723	7.968	10.304	15.303	20.303
L = 40	80	.10	.30	.60	.750	1.500	3.150	5.400	7.650	10.033	15.025	20.020
X = 16	81	.10	.40	.50	1.000	2.000	3.491	5.216	7.474	9.928	14.871	19.837
X′ = 12	82	.20	.20	.60	.750	1.500	3.015	5.011	7.009	9.281	14.261	19.248
C = 12	83	.20	.30	.50	.750	1.500	2.761	4.703	6.702	9.060	14.020	18.996
	84	.20	.40	.40	1.000	2.000	3.380	5.205	7.380	9.867	14.850	19.840
	85	.10	.20	.70	.875	1.750	3.012	5.071	7.307	9.601	14.601	19.600
L = 44	86	.10	.30	.60	.750	1.500	2.880	4.811	7.058	9.411	14.408	19.406
X = 16	87	.10	.40	.50	1.000	2.000	3.491	5.216	7.088	9.494	14.421	19.376
X′ = 16	88	.20	.20	.60	.750	1.500	2.646	4.445	6.436	8.643	13.632	18.626
C = 12	89	.20	.30	.50	.750	1.500	2.761	4.400	6.275	8.593	13.545	18.516
	90	.20	.40	.40	1.000	2.000	3.380	5.205	7.204	9.496	14.472	19.458
	91	.10	.20	.70	.875	1.750	3.012	4.447	6.668	8.914	13.910	18.908
L = 48	92	.10	,30	.60	.750	1.500	2.880	4.436	6.482	8.801	13.801	18.800
X = 16	93	.10	.40	.50	1.000	2.000	3.491	5.216	7.088	9.068	13.976	18.921
X′ = 20	94	.20	.20	.60	.750	1.500	2.646	3.902	5.881	8.017	13.013	18.010
C = 12	95	.20	.30	.50	.750	1.500	2.761	4.400	6.275	8.154	13.090	18.052
	96	.20	.40	.40	1.000	2.000	3.380	5.205	7.204	9.203	14.098	19.078
	97	.10	.20	.70	.875	2.240	4.563	6.811	9.058	11.411	16.408	21.406
L = 36	98	.10	.30	.60	.750	2.100	4.350	6.600	8.850	11.233	16.225	21.220
X = 20	99	.10	.40	.50	1.000	2.327	4.163	6.411	8.658	11.067	16.050	21.040
X′ = 8	100	.20	.20	.60	.750	2.010	4.006	6.005	8.004	10.296	15.272	20.258
C = 8	101	.20	.30	.50	.750	1.841	3.802	5.802	7.801	10.150	15.113	20.090
	102	.20	.40	.40	1.000	2.253	3.840	5.780	8.103	10.603	15.602	20.602
	103	.10	.20	.70	.875	2.008	3.913	6.147	8.387	10.700	15.700	20.700
L = 40	104	.10	.30	.60	.750	1.920	3.763	6.011	8.258	10.611	15.608	20.606
X = 20	105	.10	.40	.50	1.000	2.327	3.926	5.900	8.150	10.604	15.578	20.563
X′ = 12	106	.20	.20	.60	.750	1.764	3.442	5.431	7.425	9.654	14.641	19.632
C = 8	107	.20	.30	.50	.750	1.841	3.304	5.303	7.302	9.604	14.578	19.563
	108	.20	.40	.40	1.000	2.253	3.736	5.445	7.713	10.211	15.208	20.206
	109	.10	.20	.70	.875	2.008	3.364	5.511	7.739	10.006	15.005	20.004
L = 44	110	.10	.30	.60	.750	1.920	3.380	5.440	7.682	10.001	15.001	20.000
X = 20	111	.10	.40	.50	1.000	2.327	3.926	5.539	7.680	10.150	15.113	20.090
X′ = 16	112	.20	.20	.60	.750	1.764	2.993	4.880	6.864	9.024	14.018	19.014
C = 8	113	.20	.30	.50	.750	1.841	3.186	4.820	6.816	9.067	14.050	19.040
	114	.20	.40	.40	1.000	2.253	3.736	5.245	7.329	9.824	14.818	19.814
	115	.10	.20	.70	.875	2.008	3.364	4.903	7.112	9.335	14.321	19.317
L = 48	116	.10	.30	.60	.750	1.920	3.380	4.890	7.122	9.403	14.402	19.402
X = 20	117	.10	.40	.50	1.000	2.327	3.926	5.539	7.375	9.704	14.653	19.623
X′ = 20	118	.20	.20	.60	.750	1.764	2.993	4.351	6.321	8.406	13.405	18.404
C = 8	119	.20	.30	.50	.750	1.841	3.186	4.546	6.402	8.604	13.578	18.563
	120	.20	.40	.40	1.000	2.253	3.736	5.245	7.236	9.443	14.432	19.426
	121	.10	.20	.70	.875	2.240	4.152	6.401	8.651	10.901	15.825	20.820
L = 40	122	.10	.30	.60	.750	1.920	3.763	6.011	8.258	10.507	15.461	20.448
X = 20	123	.10	.40	.50	1.000	2.000	3.491	5.655	7.894	10.150	15.113	20.090
X′ = 8	124	.20	.20	.60	.750	1.920	3.600	5.600	7.600	9.600	14.528	19.502
C = 12	125	.20	.30	.50	.750	1.600	3.226	5.220	7.216	9.267	14.200	19.160
	126	.20	.40	.40	1.000	2.000	3.380	5.120	7.329	9.824	14.818	19.814

TABLE 8.9 (Continued)

	127	.10	.20	.70	.875	1.750	3.480	5.723	7.968	10.215	15.106	20.105
L = 44	128	.10	.30	.60	.750	1.500	3.150	5.400	7.650	9.900	14.832	19.826
X = 20	129	.10	.40	.50	1.000	2.000	3.491	5.123	7.368	9.704	14.653	19.623
X′ = 12	130	.20	.20	.60	.750	1.500	3.015	5.011	7.009	9.007	13.885	18.868
C = 12	131	.20	.30	.50	.750	1.500	2.761	4.703	6.703	8.704	13.653	18.623
	132	.20	.40	.40	1.000	2.000	3.380	4.860	6.951	9.443	14.432	19.426
	133	.10	.20	.70	.875	1.750	3.012	5.071	7.307	9.548	14.400	19.400
L = 48	134	.10	.30	.60	.750	1.500	2.880	4.811	7.058	9.307	14.213	19.210
X = 20	135	.10	.40	.50	1.000	2.000	3.491	5.087	6.882	9.267	14.200	19.160
X′ = 16	136	.20	.20	.60	.750	1.500	2.646	4.445	6.436	8.430	13.250	18.240
C = 12	137	.20	.30	.50	.750	1.500	2.761	4.202	6.201	8.201	13.113	18.090
	138	.20	.40	.40	1.000	2.000	3.380	4.860	6.816	9.067	14.050	19.040
	139	.10	.20	.70	.875	1.750	3.012	4.447	6.668	8.898	13.706	18.705
L = 52	140	.10	.30	.60	.750	1.500	2.880	4.335	6.482	8.726	13.602	18.602
X = 20	141	.10	.40	.50	1.000	2.000	3.491	5.087	6.882	8.838	13.753	18.703
X′ = 20	142	.20	.20	.60	.750	1.500	2.646	3.902	5.881	7.867	12.625	17.620
C = 12	143	.20	.30	.50	.750	1.500	2.761	4.102	5.882	7.756	12.653	17.623
	144	.20	.40	.40	1.000	2.000	3.380	4.860	6.816	8.814	13.672	18.658

Table 8.10

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-3 TRUCK

Ninety variations in the Type 2-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

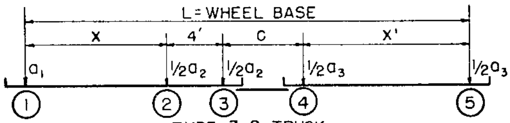
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	.748	2.118	3.910	6.120	8.372	10.871	15.870	20.869
L = 32	2	.10	.30	.60	.750	1.814	3.573	5.818	8.301	10.801	15.801	20.800
X = 12	3	.10	.40	.50	1.000	2.206	3.734	5.969	8.422	10.891	15.852	20.828
X′ = 8	4	.20	.20	.60	.640	1.814	3.366	5.325	7.713	10.211	15.208	20.206
C = 8	5	.20	.30	.50	.750	1.715	3.149	5.286	7.756	10.235	15.210	20.195
	6	.10	.20	.70	.748	1.892	3.428	5.374	7.577	9.968	14.959	19.954
L = 36	7	.10	.30	.60	.750	1.764	3.102	5.071	7.507	10.006	15.005	20.004
X = 12	8	.10	.40	.50	1.000	2.206	3.734	5.491	7.847	10.300	15.242	20.207
X′ = 12	9	.20	.20	.60	.640	1.620	2.936	4.645	6.900	9.400	14.400	19.400
C = 8	10	.20	.30	.50	.750	1.715	3.149	4.840	7.164	9.631	14.591	19.566
	11	.10	.20	.70	.748	1.892	3.052	4.740	6.840	9.094	14.070	19.056
L = 40	12	.10	.30	.60	.750	1.764	3.102	4.601	6.739	9.233	14.225	19.220
X = 12	13	.10	.40	.50	1.000	2.206	3.734	5.402	7.289	9.724	14.644	19.595
X′ = 16	14	.20	.20	.60	.640	1.620	2.613	4.060	6.113	8.611	13.608	18.606
C = 8	15	.20	.30	.50	.750	1.715	3.149	4.812	6.604	9.042	13.982	18.946
	16	.10	.20	.70	.748	2.118	3.862	5.771	7.987	10.266	15.266	20.266
L = 36	17	.10	.30	.60	.750	1.814	3.309	5.201	7.520	10.017	15.013	20.010
X = 12	18	.10	.40	.50	1.000	2.000	3.409	5.196	7.565	10.010	14.941	19.899
X′ = 8	19	.20	.20	.60	.640	1.814	3.309	4.980	6.951	9.443	14.432	19.426
C = 12	20	.20	.30	.50	.750	1.509	2.802	4.534	6.874	9.334	14.284	19.254
	21	.10	.20	.70	.748	1.892	3.428	5.167	7.233	9.441	14.341	19.340
L = 40	22	.10	.30	.60	.750	1.620	2.936	4.428	6.701	9.201	14.201	19.200
X = 12	23	.10	.40	.50	1.000	2.000	3.409	5.074	7.016	9.441	14.348	19.292
X′ = 12	24	.20	.20	.60	.640	1.620	2.936	4.427	6.256	8.611	13.608	18.606
C = 12	25	.20	.30	.50	.750	1.500	2.802	4.469	6.309	8.753	13.681	18.639
	26	.10	.20	.70	.748	1.892	3.052	4.740	6.512	8.696	13.439	18.430
L = 44	27	.10	.30	.60	.750	1.620	2.720	4.215	5.922	8.406	13.405	18.404
X = 12	28	.10	.40	.50	1.000	2.000	3.409	5.074	6.741	8.888	13.766	18.693
X′ = 16	29	.20	.20	.60	.640	1.620	2.613	4.060	5.600	7.800	12.800	17.800
C = 12	30	.20	.30	.50	.750	1.500	2.802	4.469	6.137	8.186	13.090	18.032
	31	.10	.20	.70	.748	2.118	3.910	6.120	8.347	10.668	15.667	20.667
L = 36	32	.10	.30	.60	.750	1.814	3.573	5.818	8.103	10.603	15.602	20.602
X = 16	33	.10	.40	.50	1.000	2.206	3.683	5.739	8.198	10.671	15.637	20.616
X′ = 8	34	.20	.20	.60	.640	1.814	3.366	5.325	7.329	9.824	14.818	19.814
C = 8	35	.20	.30	.50	.750	1.715	3.143	5.141	7.319	9.805	14.787	19.777
	36	.10	.20	.70	.748	1.892	3.428	5.374	7.577	9.795	14.752	19.748
L = 40	37	.10	.30	.60	.750	1.764	2.993	5.071	7.307	9.803	14.802	19.802
X = 16	38	.10	.40	.50	1.000	2.206	3.611	5.272	7.618	10.076	15.024	19.993
X′ = 12	39	.20	.20	.60	.640	1.620	2.936	4.645	6.596	9.003	14.002	19.002
C = 8	40	.20	.30	.50	.750	1.715	2.866	4.508	6.717	9.192	14.161	19.143
	41	.10	.20	.70	.748	1.892	3.052	4.740	6.840	9.037	13.859	18.846
L = 44	42	.10	.30	.60	.750	1.764	2.993	4.400	6.578	9.024	14.018	19.014
X = 16	43	.10	.40	.50	1.000	2.206	3.611	5.203	7.054	9.496	14.422	19.378
X′ = 16	44	.20	.20	.60	.640	1.620	2.613	4.060	5.924	8.203	13.202	18.202
C = 8	45	.20	.30	.50	.750	1.715	2.866	4.434	6.180	8.594	13.546	18.517

TABLE 8.10 (Continued)

	46	.10	.20	.70	.748	2.118	3.862	5.771	7.987	10.215	15.067	20.067
L = 40	47	.10	.30	.60	.750	1.814	3.309	5.201	7.451	9.824	14.818	19.814
X = 16	48	.10	.40	.50	1.000	2.000	3.310	4.972	7.333	9.783	14.721	19.683
X′ = 8	49	.20	.20	.60	.640	1.814	3.309	4.980	6.944	9.067	14.050	19.040
C = 12	50	.20	.30	.50	.750	1.509	2.756	4.534	6.534	8.891	13.852	18.828
	51	.10	.20	.70	.748	1.892	3.428	5.167	7.233	9.441	14.138	19.136
L = 44	52	.10	.30	.60	.750	1.620	2.936	4.428	6.673	9.003	14.002	19.002
X = 16	53	.10	.40	.50	1.000	2.000	3.310	4.869	6.779	9.210	14.125	19.073
X′ = 12	54	.20	.20	.60	.640	1.620	2.936	4.427	6.256	8.224	13.218	18.214
C = 12	55	.20	.30	.50	.750	1.500	2.572	4.082	5.875	8.300	13.242	18.207
	56	.10	.20	.70	.748	1.892	3.052	4.740	6.512	8.696	13.230	18.224
L = 48	57	.10	.30	.60	.750	1.620	2.646	4.060	5.922	8.203	13.202	18.202
X = 16	58	.10	.40	.50	1.000	2.000	3.310	4.869	6.537	8.652	13.540	18.472
X′ = 16	59	.20	.20	.60	.640	1.620	2.613	4.060	5.600	7.534	12.402	17.402
C = 12	60	.20	.30	.50	.750	1.500	2.572	4.082	5.747	7.724	12.644	17.595
	61	.10	.20	.70	.748	2.118	3.910	6.120	8.347	10.581	15.468	20.468
L = 40	62	.10	.30	.60	.750	1.814	3.573	5.818	8.064	10.406	15.405	20.404
X = 20	63	.10	.40	.50	1.000	2.206	3.683	5.734	7.984	10.452	15.423	20.405
X′ = 8	64	.20	.20	.60	.640	1.814	3.366	5.325	7.300	9.443	14.432	19.426
C = 8	65	.20	.30	.50	.750	1.715	3.143	5.141	7.139	9.425	14.402	19.388
	66	.10	.20	.70	.748	1.892	3.428	5.374	7.577	9.795	14.546	19.543
L = 44	67	.10	.30	.60	.750	1.764	2.993	5.071	7.307	9.601	14.601	19.600
X = 20	68	.10	.40	.50	1.000	2.206	3.611	5.187	7.390	9.853	14.807	19.779
X′ = 12	69	.20	.20	.60	.640	1.620	2.935	4.645	6.596	8.611	13.608	18.606
C = 8	70	.20	.30	.50	.750	1.715	2.866	4.508	6.500	8.759	13.736	18.722
	71	.10	.20	.70	.748	1.892	3.052	4.740	6.840	9.037	13.648	18.638
L = 48	72	.10	.30	.60	.750	1.764	2.993	4.300	6.578	8.817	13.813	18.810
X = 20	73	.10	.40	.50	1.000	2.206	3.611	5.022	6.822	9.268	14.202	19.162
X′ = 16	74	.20	.20	.60	.640	1.620	2.612	4.060	5.924	7.870	12.800	17.800
C = 8	75	.20	.30	.50	.750	1.715	2.866	4.069	5.883	8.152	13.114	18.092
	76	.10	.20	.70	.748	2.118	3.862	5.771	7.987	10.215	14.869	19.868
L = 44	77	.10	.30	.60	.750	1.814	3.309	5.261	7.451	9.701	14.625	19.620
X = 20	78	.10	.40	.50	1.000	2.000	3.310	4.949	7.196	9.558	14.502	19.468
X′ = 8	79	.20	.20	.60	.640	1.814	3.309	4.980	6.944	8.920	13.672	18.658
C = 12	80	.20	.30	.50	.750	1.509	2.756	4.534	6.534	8.534	13.473	18.445
	81	.10	.20	.70	.748	1.892	3.428	5.167	7.233	9.441	13.935	18.934
L = 48	82	.10	.30	.60	.750	1.620	2.936	4.428	6.673	8.919	13.805	18.804
X = 20	83	.10	.40	.50	1.000	2.000	3.310	4.712	6.543	8.981	13.903	18.856
X′ = 12	84	.20	.20	.60	.640	1.620	2.936	4.427	6.256	8.214	12.832	17.826
C = 12	85	.20	.30	.50	.750	1.500	2.572	3.877	5.875	7.874	12.807	17.779
	86	.10	.20	.70	.748	1.892	3.052	4.740	6.512	8.696	13.114	18.018
L = 52	87	.10	.30	.60	.750	1.620	2.646	4.060	5.922	8.160	13.001	18.000
X = 20	88	.10	.40	.50	1.000	2.000	3.310	4.712	6.335	8.418	13.314	18.252
X′ = 16	89	.20	.20	.60	.640	1.620	2.613	4.060	5.600	7.534	12.008	17.006
C = 12	90	.20	.30	.50	.750	1.500	2.572	3.722	5.365	7.268	12.202	17.162

Table 8.11

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS
PRODUCED BY TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-2 TRUCK

Ninety variations in the Type 3-2 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

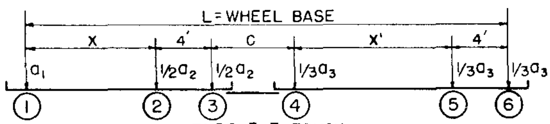
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	.640	1.878	3.493	5.507	7.906	10.388	15.366	20.353
L = 36	2	.10	.50	.40	.800	2.207	3.955	5.956	8.445	10.938	15.928	20.923
X = 12	3	.10	.60	.30	.960	2.550	4.425	6.519	9.010	11.508	16.506	21.505
X′ = 12	4	.20	.40	.40	.640	1.814	3.309	5.245	7.713	10.211	15.208	20.206
C = 8	5	.20	.50	.30	.800	2.151	3.776	5.901	8.300	10.800	15.800	20.800
	6	.10	.40	.50	.640	1.878	3.493	5.301	7.457	9.931	14.898	19.878
L = 40	7	.10	.50	.40	.800	2.207	3.955	5.908	8.072	10.560	15.545	20.536
X = 12	8	.10	.60	.30	.960	2.550	4.425	6.519	8.720	11.217	16.213	21.210
X′ = 16	9	.20	.40	.40	.640	1.814	3.309	5.245	7.329	9.824	14.818	19.814
C = 8	10	.20	.50	.30	.800	2.151	3.776	5.901	8.026	10.502	15.501	20.501
	11	.10	.40	.50	.640	1.878	3.493	5.301	7.176	9.482	14.436	19.409
L = 44	12	.10	.50	.40	.800	2.207	3.955	5.908	7.906	10.188	15.166	20.153
X = 12	13	.10	.60	.30	.960	2.550	4.425	6.519	8.640	10.928	15.921	20.917
X′ = 20	14	.20	.40	.40	.640	1.814	3.309	5.245	7.236	9.443	14.432	19.426
C = 8	15	.20	.50	.30	.800	2.151	3.776	5.901	8.026	10.206	15.205	20.204
	16	.10	.40	.50	.640	1.620	3.037	4.803	7.018	9.482	14.436	19.409
L = 40	17	.10	.50	.40	.800	2.025	3.573	5.500	7.706	10.188	15.166	20.153
X = 12	18	.10	.60	.30	.960	2.430	4.129	6.208	8.434	10.928	15.921	20.917
X′ = 12	19	.20	.40	.40	.640	1.620	2.936	4.820	6.951	9.443	14.432	19.426
C = 12	20	.20	.50	.30	.800	2.025	3.573	5.608	7.731	10.206	15.205	20.204
	21	.10	.40	.50	.640	1.620	3.037	4.803	6.677	9.041	13.981	18.944
L = 44	22	.10	.50	.40	.800	2.025	3.573	5.500	7.500	9.822	14.791	19.773
X = 12	23	.10	.60	.30	.960	2.430	4.129	6.208	8.331	10.643	15.632	20.626
X′ = 16	24	.20	.40	.40	.640	1.620	2.936	4.820	6.816	9.067	14.050	19.040
C = 12	25	.20	.50	.30	.800	2.025	3.573	5.608	7.731	9.914	14.910	19.908
	26	.10	.40	.50	.640	1.620	3.037	4.803	6.677	8.608	13.531	18.485
L = 48	27	.10	.50	.40	.800	2.025	3.573	5.500	7.500	9.500	14.420	19.396
X = 12	28	.10	.60	.30	.960	2.430	4.129	6.208	8.331	10.455	15.345	20.336
X′ = 20	29	.20	.40	.40	.640	1.620	2.936	4.820	6.816	8.814	13.672	18.658
C = 12	30	.20	.50	.30	.800	2.025	3.573	5.608	7.731	9.855	14.618	19.614
	31	.10	.40	.50	.640	1.878	3.493	5.507	7.756	10.174	15.155	20.144
L = 40	32	.10	.50	.40	.800	2.207	3.955	5.847	8.234	10.728	15.721	20.717
X = 16	33	.10	.60	.30	.960	2.550	4.425	6.363	8.805	11.304	16.303	21.303
X′ = 12	34	.20	.40	.40	.640	1.814	3.309	4.980	7.303	9.803	14.802	19.802
C = 8	35	.20	.50	.30	.800	2.151	3.776	5.501	7.903	10.403	15.402	20.402
	36	.10	.40	.50	.640	1.878	3.493	5.114	7.250	9.713	14.685	19.668
L = 44	37	.10	.50	.40	.800	2.207	3.955	5.715	7.858	10.348	15.336	20.329
X = 16	38	.10	.60	.30	.960	2.550	4.425	6.329	8.513	11.011	16.008	21.006
X′ = 16	39	.20	.40	.40	.640	1.814	3.309	4.880	6.913	9.411	14.408	19.406
C = 8	40	.20	.50	.30	.800	2.151	3.776	5.501	7.626	10.100	15.100	20.100
	41	.10	.40	.50	.640	1.878	3.493	5.114	6.979	9.260	14.220	19.196
L = 48	42	.10	.50	.40	.800	2.207	3.955	5.715	7.712	9.974	14.955	19.944
X = 16	43	.10	.60	.30	.960	2.550	4.425	6.329	8.448	10.720	15.715	20.712
X′ = 20	44	.20	.40	.40	.640	1.814	3.309	4.880	6.864	9.024	14.018	19.014
C = 8	45	.20	.50	.30	.800	2.151	3.776	5.501	7.626	9.801	14.801	19.800

TABLE 8.11 (Continued)

	46	.10	.40	.50	.640	1.620	3.037	4.747	6.987	9.260	14.220	19.196
L = 44	47	.10	.50	.40	.800	2.025	3.573	5.318	7.488	9.974	14.955	19.944
X = 16	48	.10	.60	.30	.960	2.430	4.129	6.014	8.224	10.720	15.715	20.712
X′= 12	49	.20	.40	.40	.640	1.620	2.936	4.445	6.529	9.024	14.018	19.014
C = 12	50	.20	.50	.30	.800	2.025	3.483	5.106	7.301	9.801	14.801	19.800
	51	.10	.40	.50	.640	1.620	3.037	4.646	6.475	8.816	13.762	18.730
L = 48	52	.10	.50	.40	.800	2.025	3.573	5.318	7.302	9.604	14.578	19.563
X = 16	53	.10	.60	.30	.960	2.430	4.129	6.014	8.137	10.433	15.425	20.420
X′= 16	54	.20	.40	.40	.640	1.620	2.936	4.445	6.436	8.643	13.632	18.626
C = 12	55	.20	.50	.30	.800	2.025	3.483	5.106	7.126	9.504	14.503	19.503
	56	.10	.40	.50	.640	1.620	3.037	4.646	6.475	8.380	13.310	18.268
L = 52	57	.10	.50	.40	.800	2.025	3.573	5.318	7.302	9.302	14.205	19.184
X = 16	58	.10	.60	.30	.960	2.430	4.129	6.014	8.137	10.260	15.136	20.129
X′= 20	59	.20	.40	.40	.640	1.620	2.936	4.445	6.436	8.430	13.250	18.240
C = 12	60	.20	.50	.30	.800	2.025	3.483	5.106	7.126	9.251	14.208	19.206
	61	.10	.40	.50	.640	1.878	3.493	5.507	7.756	10.005	14.955	19.944
L = 44	62	.10	.50	.40	.800	2.207	3.955	5.847	8.068	10.520	15.515	20.512
X = 20	63	.10	.60	.30	.960	2.550	4.425	6.363	8.602	11.102	16.101	21.101
X′= 12	64	.20	.40	.40	.640	1.814	3.309	4.980	6.944	9.400	14.400	19.400
C = 8	65	.20	.50	.30	.800	2.151	3.776	5.480	7.513	10.011	15.008	20.006
	66	.10	.40	.50	.640	1.878	3.493	5.114	7.250	9.500	14.472	19.458
L = 48	67	.10	.50	.40	.800	2.207	3.955	5.703	7.712	10.138	15.128	20.123
X = 20	68	.10	.60	.30	.960	2.550	4.425	6.300	8.322	10.806	15.805	20.804
X′= 16	69	.20	.40	.40	.640	1.814	3.309	4.807	6.596	9.003	14.002	19.002
C = 8	70	.20	.50	.30	.800	2.151	3.776	5.401	7.233	9.704	14.703	19.703
	71	.10	.40	.50	.640	1.878	3.493	5.114	6.785	9.040	14.005	18.984
L = 52	72	.10	.50	.40	.800	2.207	3.955	5.703	7.520	9.760	14.745	19.736
X = 20	73	.10	.60	.30	.960	2.550	4.425	6.300	8.259	10.514	15.510	20.508
X′= 20	74	.20	.40	.40	.640	1.814	3.309	4.807	6.500	8.611	13.608	18.606
C = 8	75	.20	.50	.30	.800	2.151	3.776	5.401	7.233	9.401	14.401	19.400
	76	.10	.40	.50	.640	1.620	3.037	4.747	6.987	9.231	14.020	18.996
L = 48	77	.10	.50	.40	.800	2.025	3.573	5.318	7.364	9.760	14.745	19.736
X = 20	78	.10	.60	.30	.960	2.430	4.129	6.003	8.048	10.514	15.510	20.508
X′= 12	79	.20	.40	.40	.640	1.620	2.936	4.427	6.256	8.611	13.608	18.606
C = 12	80	.20	.50	.30	.800	2.025	3.483	5.106	6.927	9.401	14.401	19.400
	81	.10	.40	.50	.640	1.620	3.037	4.646	6.464	8.712	13.545	18.516
L = 52	82	.10	.50	.40	.800	2.025	3.573	5.318	7.106	9.388	14.366	19.353
X = 20	83	.10	.60	.30	.960	2.430	4.129	6.003	7.944	10.224	15.218	20.214
X′= 16	84	.20	.40	.40	.640	1.620	2.936	4.427	6.064	8.224	13.218	18.214
C = 12	85	.20	.50	.30	.800	2.025	3.483	5.106	6.927	9.100	14.100	19.100
	86	.10	.40	.50	.640	1.620	3.037	4.646	6.275	8.201	13.090	18.052
L = 56	87	.10	.50	.40	.800	2.025	3.573	5.318	7.106	9.106	13.991	18.973
X = 20	88	.10	.60	.30	.960	2.430	4.129	6.003	7.944	10.066	14.928	19.923
X′= 20	89	.20	.40	.40	.640	1.620	2.936	4.427	6.064	8.054	12.832	17.826
C = 12	90	.20	.50	.30	.800	2.025	3.483	5.106	6.927	9.052	13.802	18.802

Table 8.12

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-3 TRUCK

Ninety variations in the Type 3-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

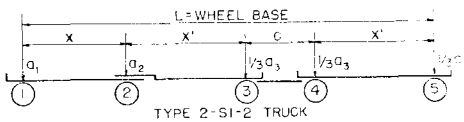
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.640	1.814	3.309	4.920	7.150	9.538	14.528	19.523
L = 40	2	.10	.40	.50	.640	1.620	2.872	4.570	6.874	9.334	14.284	19.254
X = 12	3	.10	.50	.40	.800	2.025	3.454	5.253	7.584	10.065	15.040	20.025
X′ = 8	4	.20	.30	.50	.533	1.509	2.756	4.240	6.238	8.658	13.628	18.611
C = 12	5	.20	.40	.40	.640	1.620	2.936	4.668	6.826	9.316	14.304	19.296
	6	.10	.30	.60	.640	1.620	2.936	4.427	6.361	8.708	13.706	18.705
L = 44	7	.10	.40	.50	.640	1.620	2.872	4.469	6.309	8.753	13.681	18.639
X = 12	8	.10	.50	.40	.800	2.025	3.454	5.241	7.160	9.579	14.542	19.520
X′ = 12	9	.20	.30	.50	.533	1.350	2.444	3.841	5.570	7.964	12.915	17.886
C = 12	10	.20	.40	.40	.640	1.620	2.936	4.668	6.501	8.818	13.796	18.783
	11	.10	.30	.60	.640	1.620	2.613	4.060	5.600	7.700	12.700	17.700
L = 48	12	.10	.40	.50	.640	1.620	2.872	4.469	6.137	8.186	13.090	18.032
X = 12	13	.10	.50	.40	.800	2.025	3.454	5.241	7.071	9.102	14.051	19.021
X′ = 16	14	.20	.30	.50	.533	1.350	2.304	3.841	5.507	7.382	12.312	17.270
C = 12	15	.20	.40	.40	.640	1.620	2.936	4.668	6.501	8.340	13.296	18.277
	16	.10	.30	.60	.640	1.814	3.309	4.807	6.561	8.809	13.766	18.753
L = 44	17	.10	.40	.50	.640	1.620	2.756	4.135	6.067	8.466	13.383	18.333
X = 12	18	.10	.50	.40	.800	2.025	3.400	4.968	6.909	9.340	14.297	19.271
X′ = 8	19	.20	.30	.50	.533	1.509	2.756	4.004	5.661	7.733	12.658	17.613
C = 16	20	.20	.40	.40	.640	1.620	2.936	4.427	6.240	8.573	13.546	18.530
	21	.10	.30	.60	.640	1.620	2.936	4.427	5.921	8.000	12.928	17.923
L = 48	22	.10	.40	.50	.640	1.620	2.753	4.135	5.802	7.907	12.797	17.731
X = 12	23	.10	.50	.40	.800	2.025	3.400	4.968	6.800	8.869	13.809	18.774
X′ = 12	24	.20	.30	.50	.533	1.350	2.444	3.687	5.185	7.095	12.014	16.964
C = 16	25	.20	.40	.40	.640	1.620	2.936	4.427	6.240	8.089	13.050	18.026
	26	.10	.30	.60	.640	1.620	2.613	4.060	5.548	7.215	12.106	17.105
L = 52	27	.10	.40	.50	.640	1.620	2.753	4.135	5.802	7.470	12.222	17.138
X = 12	28	.10	.50	.40	.800	2.025	3.400	4.968	6.800	8.632	13.329	18.283
X′ = 16	29	.20	.30	.50	.533	1.350	2.304	3.541	5.185	6.850	11.427	16.362
C = 16	30	.20	.40	.40	.640	1.620	2.936	4.427	6.240	8.072	12.560	17.528
	31	.10	.30	.60	.640	1.814	3.309	4.920	7.150	9.400	14.336	19.329
L = 44	32	.10	.40	.50	.640	1.620	2.872	4.570	6.813	9.112	14.067	19.041
X = 16	33	.10	.50	.40	.800	2.025	3.454	5.120	7.366	9.849	14.828	19.816
X′ = 8	34	.20	.30	.50	.533	1.509	2.756	4.240	6.238	8.254	13.199	18.166
C = 12	35	.20	.40	.40	.640	1.620	2.809	4.266	6.402	8.896	13.888	18.884
	36	.10	.30	.60	.640	1.620	2.936	4.427	6.361	8.609	13.510	18.508
L = 48	37	.10	.40	.50	.640	1.620	2.872	4.284	6.123	8.526	13.461	18.423
X = 16	38	.10	.50	.40	.800	2.025	3.454	5.049	6.951	9.360	14.328	19.309
X′ = 12	39	.20	.30	.50	.533	1.350	2.444	3.687	5.570	7.569	12.483	17.460
C = 12	40	.20	.40	.40	.640	1.620	2.809	4.266	6.099	8.390	13.376	18.367
	41	.10	.30	.60	.640	1.620	2.613	4.060	5.600	7.842	12.700	17.700
L = 52	42	.10	.40	.50	.640	1.620	2.872	4.284	5.941	7.954	12.866	17.813
X = 16	43	.10	.50	.40	.800	2.025	3.454	5.049	6.878	8.880	13.834	18.807
X′ = 16	44	.20	.30	.50	.533	1.350	2.236	3.434	5.101	6.930	11.873	16.839
C = 12	45	.20	.40	.40	.640	1.620	2.809	4.266	6.099	7.933	12.870	17.856

TABLE 8.12 (Continued)

	46	.10	.30	.60	.640	1.814	3.309	4.807	6.561	8.809	13.578	18.563
L = 48	47	.10	.40	.50	.640	1.620	2.756	4.004	6.067	8.303	13.161	18.116
X = 16	48	.10	.50	.40	.800	2.025	3.267	4.779	6.697	9.119	14.081	19.058
X′ = 8	49	.20	.30	.50	.533	1.509	2.756	4.004	5.661	7.656	12.302	17.249
C = 16	50	.20	.40	.40	.640	1.620	2.613	4.060	5.833	8.142	13.123	18.112
	51	.10	.30	.60	.640	1.620	2.936	4.427	5.921	8.000	12.736	17.729
L = 52	52	.10	.40	.50	.640	1.620	2.613	3.972	5.601	7.673	12.572	17.511
X = 16	53	.10	.50	.40	.800	2.025	3.267	4.779	6.603	8.644	13.591	18.559
X′ = 12	54	.20	.30	.50	.533	1.350	2.444	3.687	4.971	6.971	11.571	16.531
C = 16	55	.20	.40	.40	.640	1.620	2.613	4.060	5.833	7.670	12.621	17.603
	56	.10	.30	.60	.640	1.620	2.613	4.060	5.548	7.215	11.910	16.908
L = 56	57	.10	.40	.50	.640	1.620	2.613	3.972	5.601	7.269	11.994	16.915
X = 16	58	.10	.50	.40	.800	2.025	3.267	4.779	6.603	8.435	13.108	18.066
X′ = 16	59	.20	.30	.50	.533	1.350	2.176	3.380	4.772	6.439	10.978	15.923
C = 16	60	.20	.40	.40	.640	1.620	2.613	4.060	5.833	7.665	12.126	17.101
	61	.10	.30	.60	.640	1.814	3.309	4.920	7.150	9.400	14.145	19.136
L = 48	62	.10	.40	.50	.640	1.620	2.872	4.570	6.813	9.057	13.852	18.828
X = 20	63	.10	.50	.40	.800	2.025	3.454	5.120	7.249	9.635	14.618	19.607
X′ = 8	64	.20	.30	.50	.533	1.509	2.756	4.240	6.238	8.238	12.837	17.797
C = 12	65	.20	.40	.40	.640	1.620	2.809	4.245	6.144	8.481	13.477	18.475
	66	.10	.30	.60	.640	1.620	2.936	4.427	6.361	8.609	13.315	18.312
L = 52	67	.10	.40	.50	.640	1.620	2.872	4.284	6.123	8.373	13.242	18.207
X = 20	68	.10	.50	.40	.800	2.025	3.454	5.036	6.798	9.142	14.114	19.098
X′ = 12	69	.20	.30	.50	.533	1.350	2.444	3.687	5.570	7.569	12.110	17.081
C = 12	70	.20	.40	.40	.640	1.620	2.809	4.139	5.707	7.968	12.959	17.954
	71	.10	.30	.60	.640	1.620	2.613	4.060	5.600	7.842	12.501	17.501
L = 56	72	.10	.40	.50	.640	1.620	2.872	4.284	5.747	7.724	12.644	17.595
X = 20	73	.10	.50	.40	.800	2.025	3.454	5.036	6.687	8.658	13.618	18.594
X′ = 16	74	.20	.30	.50	.533	1.350	2.236	3.394	4.922	6.919	11.438	16.411
C = 12	75	.20	.40	.40	.640	1.620	2.809	4.139	5.707	7.538	12.448	17.438
	76	.10	.30	.60	.640	1.814	3.309	4.807	6.561	8.809	13.391	18.373
L = 52	77	.10	.40	.50	.640	1.620	2.756	4.004	6.067	8.303	12.941	17.899
X = 20	78	.10	.50	.40	.800	2.025	3.267	4.779	6.578	8.900	13.866	18.846
X′ = 8	79	.20	.30	.50	.533	1.509	2.756	4.004	5.661	7.656	11.951	16.887
C = 16	80	.20	.40	.40	.640	1.620	2.613	3.887	5.494	7.716	12.704	17.696
	81	.10	.30	.60	.640	1.620	2.936	4.427	5.921	8.000	12.545	17.536
L = 56	82	.10	.40	.50	.640	1.620	2.613	3.972	5.403	7.598	12.348	17.292
X = 20	83	.10	.50	.40	.800	2.025	3.267	4.779	6.410	8.421	13.374	18.345
X′ = 12	84	.20	.30	.50	.533	1.350	2.444	3.687	4.971	6.971	11.206	16.159
C = 16	85	.20	.40	.40	.640	1.620	2.613	3.887	5.434	7.267	12.196	17.183
	86	.10	.30	.60	.640	1.620	2.613	4.060	5.548	7.215	11.715	16.712
L = 60	87	.10	.40	.50	.640	1.620	2.613	3.972	5.403	7.071	11.766	16,693
X = 20	88	.10	.50	.40	.800	2.025	3.267	4.779	6.410	8.240	12.888	17.850
X′ = 16	89	.20	.30	.50	.533	1.350	2.176	3.380	4.620	6.304	10.533	15.487
C = 16	90	.20	.40	.40	.640	1.620	2.613	3.887	5.434	7.267	11.696	16.677

Table 8.13

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 2-S1-2 TRUCKS WEIGHING ONE KIP EACH



Ninety six variations in the Type 2-S1-2 truck are given in this Table. Each truck number, from 1 to 96, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

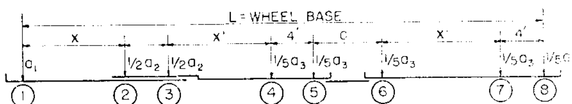
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 36	1	.10	.20	.70	.585	1.496	3.156	5.172	7.593	10.088	15.083	20.080
X = 8	2	.10	.30	.60	.750	1.630	3.120	5.001	7.501	10.001	15.001	20.000
X' = 10	3	.20	.20	.60	.500	1.280	2.702	4.601	7.101	9.601	14.601	19.600
C = 8	4	.20	.30	.50	.750	1.764	3.368	5.271	7.340	9.782	14.720	19.683
L = 40	5	.10	.20	.70	.585	1.496	2.930	4.735	7.057	9.553	14.548	19.545
X = 8	6	.10	.30	.60	.750	1.620	2.936	4.645	6.900	9.400	14.400	19.400
X' = 12	7	.20	.20	.60	.500	1.280	2.509	4.180	6.503	9.003	14.002	19.002
C = 8	8	.20	.30	.50	.750	1.764	3.202	4.972	7.033	9.209	14.123	19.072
L = 44	9	.10	.20	.70	.585	1.496	2.711	4.454	6.537	9.018	14.013	19.011
X = 8	10	.10	.30	.60	.750	1.620	2.756	4.320	6.301	8.801	13.801	18.800
X' = 14	11	.20	.20	.60	.500	1.280	2.320	3.845	5.907	8.406	13.405	18.404
C = 8	12	.20	.30	.50	.750	1.764	3.040	4.706	6.733	8.797	13.537	18.470
L = 48	13	.10	.20	.70	.585	1.496	2.632	4.235	6.102	8.482	13.479	18.477
X = 8	14	.10	.30	.60	.750	1.620	2.613	4.060	5.924	8.203	13.202	18.202
X' = 16	15	.20	.20	.60	.500	1.280	2.253	3.627	5.456	7.811	12.808	17.806
C = 8	16	.20	.30	.50	.750	1.764	2.993	4.545	6.438	8.495	12.962	17.876
L = 52	17	.10	.20	.70	.585	1.496	2.632	4.020	5.760	7.947	12.944	17.942
X = 8	18	.10	.30	.60	.750	1.620	2.613	3.882	5.600	7.606	12.605	17.604
X' = 18	19	.20	.20	.60	.500	1.280	2.253	3.442	5.124	7.217	12.213	17.210
C = 8	20	.20	.30	.50	.750	1.764	2.993	4.386	6.148	8.198	12.399	17.292
L = 56	21	.10	.20	.70	.585	1.496	2.632	3.808	5.544	7.474	12.410	17.408
X = 8	22	.10	.30	.60	.750	1.620	2.613	3.707	5.284	7.203	12.008	17.006
X' = 20	23	.20	.20	.60	.500	1.280	2.253	3.260	4.800	6.734	11.618	16.614
C = 8	24	.20	.30	.50	.750	1.764	2.993	4.232	5.890	7.905	12.019	16.717
L = 60	25	.10	.20	.70	.585	1.496	2.632	3.785	5.331	7.068	11.876	16.874
X = 8	26	.10	.30	.60	.750	1.620	2.613	3.610	5.008	6.880	11.413	16.410
X' = 22	27	.20	.20	.60	.500	1.280	2.253	3.240	4.565	6.403	11.025	16.020
C = 8	28	.20	.30	.50	.750	1.764	2.993	4.232	5.733	7.617	11.720	16.150
L = 64	29	.10	.20	.70	.585	1.496	2.632	3.785	5.121	6.855	11.342	16.340
X = 8	30	.10	.30	.60	.750	1.620	2.613	3.610	4.833	6.563	10.818	15.814
X' = 24	31	.20	.20	.60	.500	1.280	2.253	3.240	4.386	6.080	10.432	15.426
C = 8	32	.20	.30	.50	.750	1.764	2.993	4.232	5.577	7.333	11.423	15.593
L = 40	33	.10	.20	.70	.585	1.496	3.156	5.172	7.408	9.882	14.878	19.876
X = 12	34	.10	.30	.60	.750	1.600	2.973	4.934	7.300	9.800	14.800	19.800
X' = 10	35	.20	.20	.60	.500	1.280	2.702	4.480	6.707	9.206	14.205	19.204
C = 8	36	.20	.30	.50	.750	1.575	2.974	4.839	6.914	9.333	14.283	19.253
L = 44	37	.10	.20	.70	.585	1.496	2.930	4.735	6.973	9.346	14.343	19.341
X = 12	38	.10	.30	.60	.750	1.500	2.720	4.436	6.701	9.201	14.201	19.200
X' = 12	39	.20	.20	.60	.500	1.280	2.509	4.080	6.113	8.611	13.608	18.606
C = 8	40	.20	.30	.50	.750	1.500	2.802	4.532	6.602	8.751	13.680	18.637
L = 48	41	.10	.20	.70	.585	1.496	2.711	4.454	6.537	8.778	12.841	17.833
X = 12	42	.10	.30	.60	.750	1.500	2.536	4.160	6.168	8.603	13.602	18.602
X' = 14	43	.20	.20	.60	.500	1.280	2.320	3.815	5.664	8.017	13.013	18.010
C = 8	44	.20	.30	.50	.750	1.500	2.646	4.301	6.295	8.364	13.087	18.029

TABLE 8.13 (Continued)

L = 52	45	.10	.20	.70	.585	1.496	2.632	4.235	6.102	8.344	13.275	18.273
X = 12	46	.10	.30	.60	.750	1.500	2.430	3.892	5.689	8.006	13.005	18.004
X′ = 16	47	.20	.20	.60	.500	1.280	2.253	3.627	5.264	7.424	12.418	17.414
C = 8	48	.20	.30	.50	.750	1.500	2.646	4.125	5.993	8.057	12.506	17.431
L = 56	49	.10	.20	.70	.585	1.496	2.632	4.020	5.760	7.909	12.741	17.739
X = 12	50	.10	.30	.60	.750	1.500	2.430	3.660	5.361	7.411	12.408	17.406
X′ = 18	51	.20	.20	.60	.500	1.280	2.253	3.442	4.933	6.854	11.825	16.820
C = 8	52	.20	.30	.50	.750	1.500	2.646	3.971	5.697	7.755	11.935	16.841
L = 60	53	.10	.20	.70	.585	1.496	2.632	3.808	5.544	7.474	12.206	17.206
X = 12	54	.10	.30	.60	.750	1.500	2.430	3.482	5.089	6.967	11.813	16.810
X′ = 20	55	.20	.20	.60	.500	1.280	2.253	3.260	4.748	6.454	11.232	16.226
C = 8	56	.20	.30	.50	.750	1.500	2.646	3.872	5.474	7.457	11.584	16.261
L = 64	57	.10	.20	.70	.585	1.496	2.632	3.785	5.331	7.068	11.673	16.672
X = 12	58	.10	.30	.60	.750	1.500	2.430	3.422	4.829	6.641	11.218	16.214
X′ = 22	59	.20	.20	.60	.500	1.280	2.253	3.240	4.565	6.080	10.641	15.632
C = 8	60	.20	.30	.50	.750	1.500	2.646	3.872	5.313	7.164	11.280	15.689
L = 68	61	.10	.20	.70	.585	1.496	2.632	3.785	5.121	6.855	11.139	16.138
X = 12	62	.10	.30	.60	.750	1.500	2.430	3.422	4.608	6.321	10.625	15.620
X′ = 24	63	.20	.20	.60	.500	1.280	2.253	3.240	4.386	5.871	10.050	15.040
C = 8	64	.20	.30	.50	.750	1.500	2.646	3.872	5.153	6.875	10.980	15.126
L = 56	65	.10	.20	.70	.585	1.496	2.632	4.235	6.102	8.344	13.072	18.071
X = 16	66	.10	.30	.60	.750	1.500	2.321	3.892	5.664	7.912	12.808	17.806
X′ = 16	67	.20	.20	.60	.500	1.280	2.253	3.627	5.264	7.254	12.032	17.026
C = 8	68	.20	.30	.50	.750	1.500	2.321	3.737	5.556	7.627	12.053	16.989
L = 60	69	.10	.20	.70	.585	1.496	2.632	4.020	5.760	7.909	12.538	17.537
X = 16	70	.10	.30	.60	.750	1.500	2.253	3.629	5.353	7.409	12.213	17.210
X′ = 18	71	.20	.20	.60	.500	1.280	2.253	3.442	4.933	6.854	11.441	16.432
C = 8	72	.20	.30	.50	.750	1.500	2.321	3.567	5.253	7.319	11.476	16.394
L = 64	73	.10	.20	.70	.585	1.496	2.632	3.877	5.544	7.474	12.004	17.004
X = 16	74	.10	.30	.60	.750	1.500	2.253	3.373	5.089	6.907	11.618	16.614
X′ = 20	75	.20	.20	.60	.500	1.280	2.253	3.260	4.748	6.454	10.850	15.840
C = 8	76	.20	.30	.50	.750	1.500	2.321	3.528	5.067	7.016	11.152	15.808
L = 68	77	.10	.20	.70	.585	1.496	2.632	3.785	5.331	7.068	11.531	16.470
X = 16	78	.10	.30	.60	.750	1.500	2.253	3.240	4.829	6.549	11.025	16.020
X′ = 22	79	.20	.20	.60	.500	1.280	2.253	3.240	4.565	6.054	10.261	15.248
C = 8	80	.20	.30	.50	.750	1.500	2.321	3.528	4.902	6.717	10.844	15.231
L = 72	81	.10	.20	.70	.585	1.496	2.632	3.785	5.121	6.855	11.097	15.937
X = 16	82	.10	.30	.60	.750	1.500	2.253	3.240	4.574	6.287	10.432	15.426
X′ = 24	83	.20	.20	.60	.500	1.280	2.253	3.240	4.386	5.871	9.672	14.658
C = 8	84	.20	.30	.50	.750	1.500	2.321	3.528	4.753	6.422	10.540	14.677
L = 76	85	.10	.20	.70	.585	1.496	2.632	3.785	4.943	6.644	10.662	15.403
X = 16	86	.10	.30	.60	.750	1.500	2.253	3.240	4.325	6.029	9.901	14.832
X′ = 26	87	.20	.20	.60	.500	1.280	2.253	3.240	4.232	5.690	9.240	14.068
C = 8	88	.20	.30	.50	.750	1.500	2.321	3.528	4.753	6.242	10.240	14.370
L = 80	89	.10	.20	.70	.585	1.496	2.632	3.785	4.943	6.435	10.229	14.870
X = 16	90	.10	.30	.60	.750	1.500	2.253	3.240	4.232	5.775	9.401	14.240
X′ = 28	91	.20	.20	.60	.500	1.280	2.253	3.240	4.232	5.511	8.840	13.478
C = 8	92	.20	.30	.50	.750	1.500	2.321	3.528	4.753	6.081	9.942	14.066
L = 84	93	.10	.20	.70	.585	1.496	2.632	3.785	4.943	6.229	9.794	14.337
X = 16	94	.10	.30	.60	.750	1.500	2.253	3.240	4.232	5.526	8.962	13.648
X′ = 30	95	.20	.20	.60	.500	1.280	2.253	3.240	4.232	5.335	8.440	12.890
C = 8	96	.20	.30	.50	.750	1.500	2.321	3.528	4.753	5.986	9.648	13.764

Table 8.14

SUMMARY OF MAXIMUM MOMENTS IN SIMPLE SPANS PRODUCED BY TYPE 3-S2-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S2-3 TRUCK

Eighty four variations in the Type 3-S2-3 truck are given in this Table. Each truck number, from 1 to 84, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet and moments are in kip-feet.
a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 44	1	.05	.20	.75	.480	1.360	2.677	4.568	6.929	9.417	14.413	19.410
X = 8	2	.05	.30	.65	.480	1.336	2.702	4.391	6.680	9.180	14.180	19.180
X' = 8	3	.10	.20	.70	.448	1.270	2.531	4.295	6.541	9.041	14.041	19.040
C = 8	4	.10	.30	.60	.480	1.324	2.704	4.374	6.424	8.920	13.915	18.912
L = 48	5	.05	.20	.75	.480	1.360	2.535	4.203	6.436	8.868	13.864	18.861
X = 8	6	.05	.30	.65	.480	1.252	2.465	4.081	6.100	8.571	13.570	18.570
X' = 10	7	.10	.20	.70	.448	1.270	2.371	3.923	6.059	8.461	13.460	18.460
C = 8	8	.10	.30	.60	.480	1.301	2.475	4.071	5.931	8.275	13.271	18.269
L = 52	9	.05	.20	.75	.480	1.360	2.482	3.912	5.943	8.320	13.315	18.312
X = 8	10	.05	.30	.65	.480	1.252	2.236	3.801	5.585	7.961	12.961	17.961
X' = 12	11	.10	.20	.70	.448	1.270	2.316	3.683	5.584	7.880	12.880	17.880
C = 8	12	.10	.30	.60	.480	1.301	2.301	3.844	5.610	7.630	12.628	17.626
L = 56	13	.05	.20	.75	.480	1.360	2.482	3.716	5.497	7.814	12.767	17.763
X = 8	14	.05	.30	.65	.480	1.252	2.151	3.527	5.270	7.353	12.352	17.351
X' = 14	15	.10	.20	.70	.448	1.270	2.316	3.489	5.130	7.350	12.300	17.300
C = 8	16	.10	.30	.60	.480	1.301	2.301	3.621	5.295	7.166	11.985	16.984
L = 60	17	.05	.20	.75	.480	1.360	2.482	3.622	5.213	7.320	12.218	17.214
X = 8	18	.05	.30	.65	.480	1.252	2.151	3.284	4.965	6.796	11.743	16.742
X' = 16	19	.10	.20	.70	.448	1.270	2.316	3.385	4.866	6.875	11.720	16.720
C = 8	20	.10	.30	.60	.480	1.301	2.301	3.402	4.990	6.850	11.343	16.342
L = 64	21	.05	.20	.75	.480	1.360	2.482	3.605	4.944	6.827	11.670	16.666
X = 8	22	.05	.30	.65	.480	1.252	2.151	3.125	4.696	6.476	11.134	16.133
X' = 18	23	.10	.20	.70	.448	1.270	2.316	3.365	4.655	6.400	11.140	16.140
C = 8	24	.10	.30	.60	.480	1.301	2.301	3.301	4.770	6.539	10.701	15.701
L = 68	25	.05	.20	.75	.480	1.360	2.482	3.605	4.804	6.522	11.121	16.117
X = 8	26	.05	.30	.65	.480	1.252	2.151	3.125	4.434	6.171	10.525	15.524
X' = 20	27	.10	.20	.70	.448	1.270	2.316	3.365	4.493	6.087	10.560	15.560
C = 8	28	.10	.30	.60	.480	1.301	2.301	3.301	4.555	6.234	10.060	15.060
L = 48	29	.05	.20	.75	.480	1.360	2.677	4.568	6.929	9.314	14.310	19.308
X = 12	30	.05	.30	.65	.480	1.336	2.660	4.382	6.660	9.081	14.081	19.080
X' = 8	31	.10	.20	.70	.448	1.270	2.531	4.295	6.534	8.840	13.840	18.840
C = 8	32	.10	.30	.60	.480	1.324	2.600	4.156	6.272	8.714	13.710	18.708
L = 52	33	.05	.20	.75	.480	1.360	2.535	4.203	6.436	8.801	13.761	18.759
X = 12	34	.05	.30	.65	.480	1.215	2.435	4.081	6.100	8.474	13.471	18.471
X' = 10	35	.10	.20	.70	.448	1.270	2.371	3.923	6.059	8.301	13.260	18.260
C = 8	36	.10	.30	.60	.480	1.215	2.391	3.867	5.732	8.069	13.067	18.065
L = 56	37	.05	.20	.75	.480	1.360	2.482	3.912	5.943	8.307	13.213	18.210
X = 12	38	.05	.30	.65	.480	1.215	2.217	3.801	5.556	7.913	12.862	17.861
X' = 12	39	.10	.20	.70	.448	1.270	2.316	3.683	5.584	7.825	12.680	17.680
C = 8	40	.10	.30	.60	.480	1.215	2.187	3.633	5.387	7.441	12.424	17.423
L = 60	41	.05	.20	.75	.480	1.360	2.482	3.716	5.497	7.814	12.664	17.661
X = 12	42	.05	.30	.65	.480	1.215	2.151	3.527	5.239	7.353	12.253	17.252
X' = 14	43	.10	.20	.70	.448	1.270	2.316	3.489	5.130	7.350	12.100	17.100
C = 8	44	.10	.30	.60	.480	1.215	2.168	3.406	5.069	6.944	11.782	16.782

TABLE 8.14 (Continued)

L = 64	45	.05	.20	.75	.480	1.360	2.482	3.622	5.213	7.320	12.115	17.112
X = 12	46	.05	.30	.65	.480	1.215	2.151	3.260	4.965	6.792	11.644	16.643
X′= 16	47	.10	.20	.70	.448	1.270	2.316	3.385	4.866	6.875	11.520	16.520
C = 8	48	.10	.30	.60	.480	1.215	2.108	3.184	4.775	6.624	11.141	16.141
L = 68	49	.05	.20	.75	.480	1.360	2.482	3.605	4.944	6.827	11.567	16.563
X = 12	50	.05	.30	.65	.480	1.215	2.151	3.125	4.696	6.403	11.035	16.034
X′= 18	51	.10	.20	.70	.448	1.270	2.316	3.365	4.655	6.400	10.940	15.940
C = 8	52	.10	.30	.60	.480	1.215	2.108	3.106	4.553	6.310	10.500	15.500
L = 72	53	.05	.20	.75	.480	1.360	2.482	3.605	4.804	6.522	11.063	16.014
X = 12	54	.05	.30	.65	.480	1.215	2.151	3.125	4.434	6.134	10.427	15.425
X′= 20	55	.10	.20	.70	.448	1.270	2.316	3.365	4.493	6.087	10.409	15.360
C = 8	56	.10	.30	.60	.480	1.215	2.108	3.106	4.334	6.003	9.860	14.860
L = 60	57	.05	.20	.75	.480	1.360	2.482	3.912	5.943	8.307	13.110	18.108
X = 16	58	.05	.30	.65	.480	1.215	2.217	3.801	5.556	7.913	12.763	17.762
X′= 12	59	.10	.20	.70	.448	1.270	2.316	3.683	5.584	7.825	12.481	17.481
C = 8	60	.10	.30	.60	.480	1.215	2.187	3.589	5.252	7.441	12.222	17.221
L = 64	61	.05	.20	.75	.480	1.360	2.482	3.716	5.497	7.814	12.561	17.559
X = 16	62	.05	.30	.65	.480	1.215	2.151	3.527	5.239	7.353	12.154	17.153
X′= 14	63	.10	.20	.70	.448	1.270	2.316	3.489	5.130	7.350	11.901	16.901
C = 8	64	.10	.30	.60	.480	1.215	2.033	3.318	4.953	6.900	11.581	16.580
L = 68	65	.05	.20	.75	.480	1.360	2.482	3.622	5.213	7.320	12.053	17.010
X = 16	66	.05	.30	.65	.480	1.215	2.151	3.260	4.965	6.792	11.545	16.544
X′= 16	68	.10	.20	.70	.448	1.270	2.316	3.385	4.866	6.875	11.362	16.321
C = 8	68	.10	.30	.60	.480	1.215	1.985	3.100	4.682	6.401	10.940	15.940
L = 72	69	.05	.20	.75	.480	1.360	2.482	3.605	4.944	6.827	11.558	16.461
X = 16	70	.05	.30	.65	.480	1.215	2.151	3.125	4.696	6.403	10.981	15.936
X′= 18	71	.10	.20	.70	.448	1.270	2.316	3.365	4.658	6.400	10.885	15.741
C = 8	72	.10	.30	.60	.480	1.215	1.985	2.916	4.416	6.085	10.320	15.300
L = 76	73	.05	.20	.75	.480	1.360	2.482	3.605	4.804	6.522	11.063	15.912
X = 16	74	.05	.30	.65	.480	1.215	2.151	3.125	4.434	6.134	10.421	15.327
X′= 20	75	.10	.20	.70	.448	1.270	2.316	3.365	4.493	6.087	10.409	15.161
C = 8	76	.10	.30	.60	.480	1.215	1.985	2.916	4.156	5.842	9.781	14.661
L = 80	77	.05	.20	.75	.480	1.360	2.482	3.605	4.729	6.248	10.569	15.363
X = 16	78	.05	.30	.65	.480	1.215	2.151	3.125	4.175	5.868	9.861	14.719
X′= 22	79	.10	.20	.70	.448	1.270	2.316	3.365	4.414	5.832	9.933	14.581
C = 8	80	.10	.30	.60	.480	1.215	1.985	2.916	3.912	5.516	9.240	14.022
L = 84	81	.05	.20	.75	.480	1.360	2.482	3.605	4.729	6.000	10.075	14.814
X = 16	82	.05	.30	.65	.480	1.215	2.151	3.125	4.098	5.607	9.300	14.110
X′= 24	83	.10	.20	.70	.448	1.270	2.316	3.365	4.414	5.639	9.458	14.001
C = 8	84	.10	.30	.60	.480	1.215	1.985	2.916	3.912	5.266	8.881	13.383

9. MAXIMUM MOMENTS AND EQUIVALENT H TRUCK LOADINGS FOR VEHICLES OF UNIT WEIGHT ON SIMPLE SPAN BRIDGES

Figures 9.1-9.14 provide a graphical means for the determination of maximum moments and equivalent H truck loadings which result from a wide range of wheel-base lengths and loadings for each of the 14 heavy vehicle types, shown in Figure 6.1, on simple spans up to 100 feet in length. The moments given by these charts are those produced by vehicles weighing one kip each, or the moments produced per kip of gross vehicle weight. The equivalent H truck loading for a given vehicle may be determined by comparing the moment produced by it with the moment produced by an H truck of unit weight on the same span. The figure number corresponding to each of the 14 heavy vehicle types is as follows:

Figure Numbers	Vehicle Type	No. of Charts	Figure Numbers	Vehicle Type	No. of Charts
9.1	2	1	9.8 (a)-9.8(i)	3-S3	9
9.2	3	1	9.9 (a)-9.9(l)	2-2	12
9.3(a)-9.3(l)	2-S1	12	9.10(a)-9.10(l)	2-3	12
9.4(a)-9.4(i)	2-S2	9	9.11(a)-9.11(l)	3-2	12
9.5(a)-9.5(i)	2-S3	9	9.12(a)-9.12(l)	3-3	12
9.6(a)-9.6(i)	3-S1	9	9.13(a)-9.13(c)	2-S1-2	3
9.7(a)-9.7(i)	3-S2	9	9.14(a)-9.14(f)	3-S2-3	6

Total Number of Charts = 116

The use of these charts for determining maximum moments and equivalent H truck loadings will now be illustrated by two typical examples.

Example 9.1. Use of Charts for Determining Maximum Moments

Given: A Type 3-S2 truck has a gross weight of 60,000 pounds with axle spacings, front to rear, of 12 feet, 4 feet, 20 feet, and 4 feet, respectively making an over-all wheel base length of 40 feet, and is loaded in such a way that each axle carries 12,000 pounds. Suppose it is desired to know the maximum moments produced by this vehicle on span lengths of 20, 40, and 60 feet, respectively.

In Figure 9.7(h) it will be found on the dashed line for L-40 that this vehicle causes maximum moments of:

1.62 kip-feet on a 20-foot span
4.43 kip-feet on a 40-foot span
8.70 kip-feet on a 60-foot span

for each kip of gross load carried by the given vehicle. Therefore, the maximum moments produced on these spans by the given vehicle would be:

$1.62 \times 60 = 97.2$ kip-feet on a 20-foot span
$4.43 \times 60 = 265.8$ kip-feet on a 40-foot span
$8.70 \times 60 = 522.0$ kip-feet on a 60-foot span

Example 9.2 Use of Charts for Determining Equivalent H Truck Loadings

For the same vehicle described in Example 9.1, it is desired to know its equivalent H truck loadings on span lengths of 20, 40, and 60 feet, respectively.

In Figure 9.7(h) it will be found that an H truck of unit weight causes maximum moments of:

4.00 kip-feet on a 20-foot span
8.65 kip-feet on a 40-foot span
13.63 kip-feet on a 60-foot span

By comparing these moments with those produced by the given vehicle, it will be seen that the given vehicle per kip of gross weight causes:

1.62/ 4.00 = .405 or 40.5% of an H1.0 truck moment on a 20-foot span
4.43/ 8.65 = .512 or 51.2% of an H1.0 truck moment on a 40-foot span
8.70/13.63 = .638 or 63.8% of an H1.0 truck moment on a 60-foot span

These values may also be obtained by interpolation between the percent of H truck moment lines shown in Figure 9.7(h) which, when applied to the given Type 3-S2 truck weighing 60.0 kips, converts it into an equivalent H truck loading of:

.405 x 60.0 = 24.3 kips on a 20-foot span
.512 x 60.0 = 30.7 kips on a 40-foot span
.638 x 60.0 = 38.3 kips on a 60-foot span

The maximum moments and equivalent H truck loadings for other vehicle types and loadings may be determined from Figures 9.1-9.14 in a manner similar to that outlined in these two examples for the above described Type 3-S2 truck weighing 60.0 kips on spans of 20, 40, and 60 feet in length.

In addition to furnishing the maximum moments and equivalent H truck loadings for a wide variety of heavy vehicle types and loadings on simple spans up to 100 feet in length, the graphical representation of these data as shown in Figures 9.1-9.14 provides a convenient means for demonstrating the effects of variations in wheel-base length, number and spacing of axles, and the distribution of load among the axles on the bending moments produced by a given vehicle type on a given span and also for comparing the variations in these moments from one span to another. These charts not only provide a convenient means for comparing the moments produced by one vehicle type and loading with those of another on the same span but also for visually comparing the effects of variations in span length on the moments produced in each case.

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2 TRUCKS

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

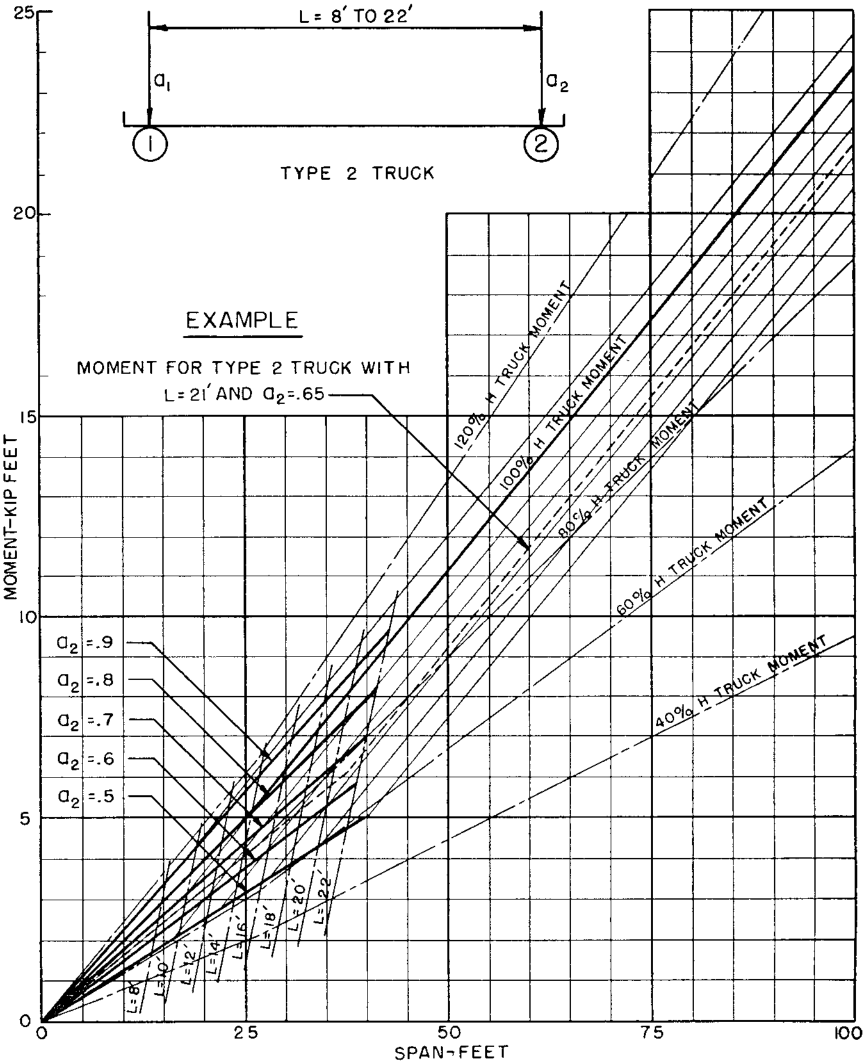


Figure 9.1

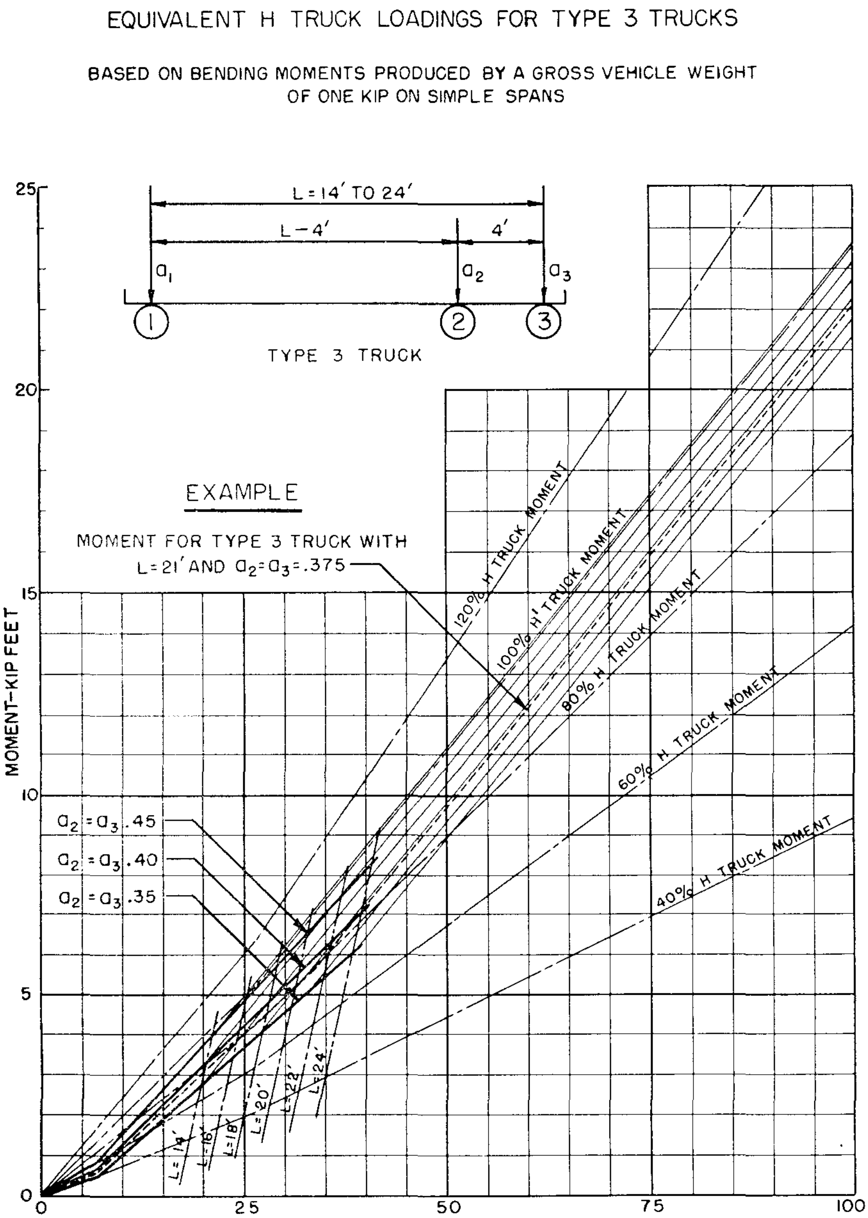

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3 TRUCKS
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS
L = 14′ TO 24′
L − 4′
4′
a1
a2
a3
1
2
3
TYPE 3 TRUCK
EXAMPLE
MOMENT FOR TYPE 3 TRUCK WITH L = 21′ AND a2 = a3 = .375
120% H TRUCK MOMENT
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
a2 = a3 .45
a2 = a3 .40
a2 = a3 .35
L = 14′
L = 16′
L = 18′
L = 20′
L = 22′
L = 24′
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.2

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

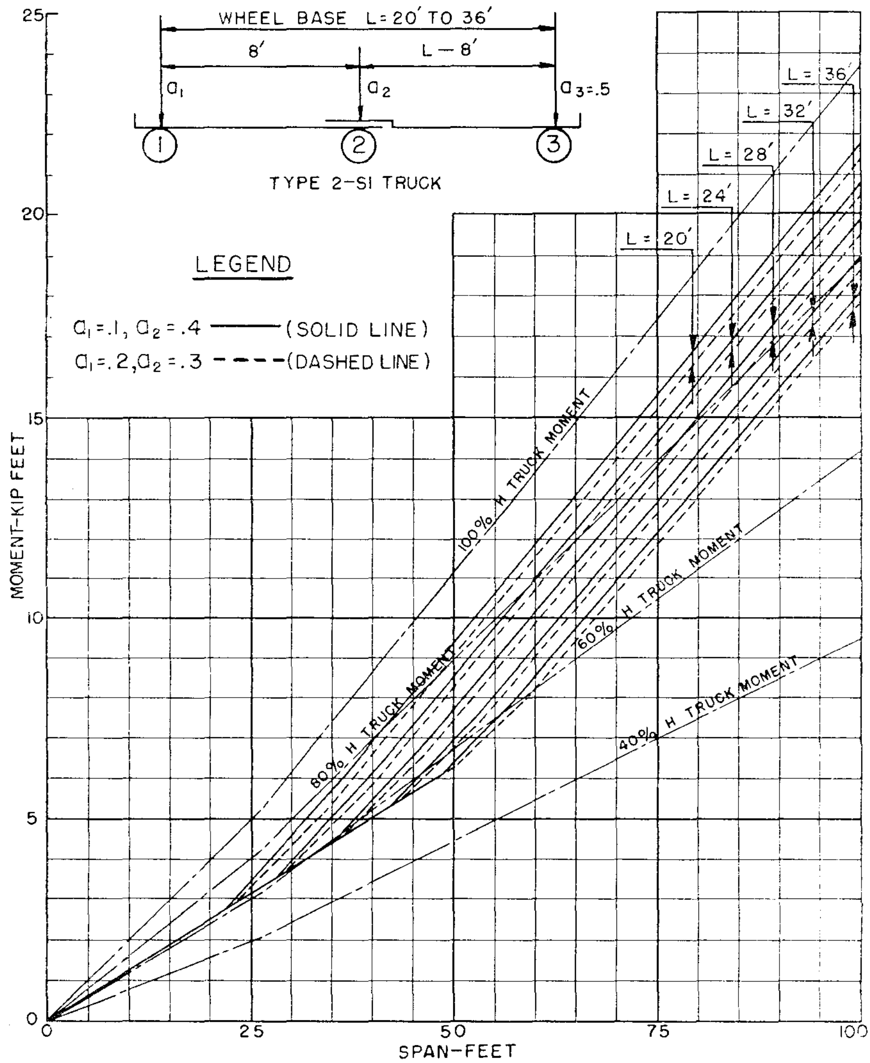


Figure 9.3a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-SI TRUCKS WITH 12' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

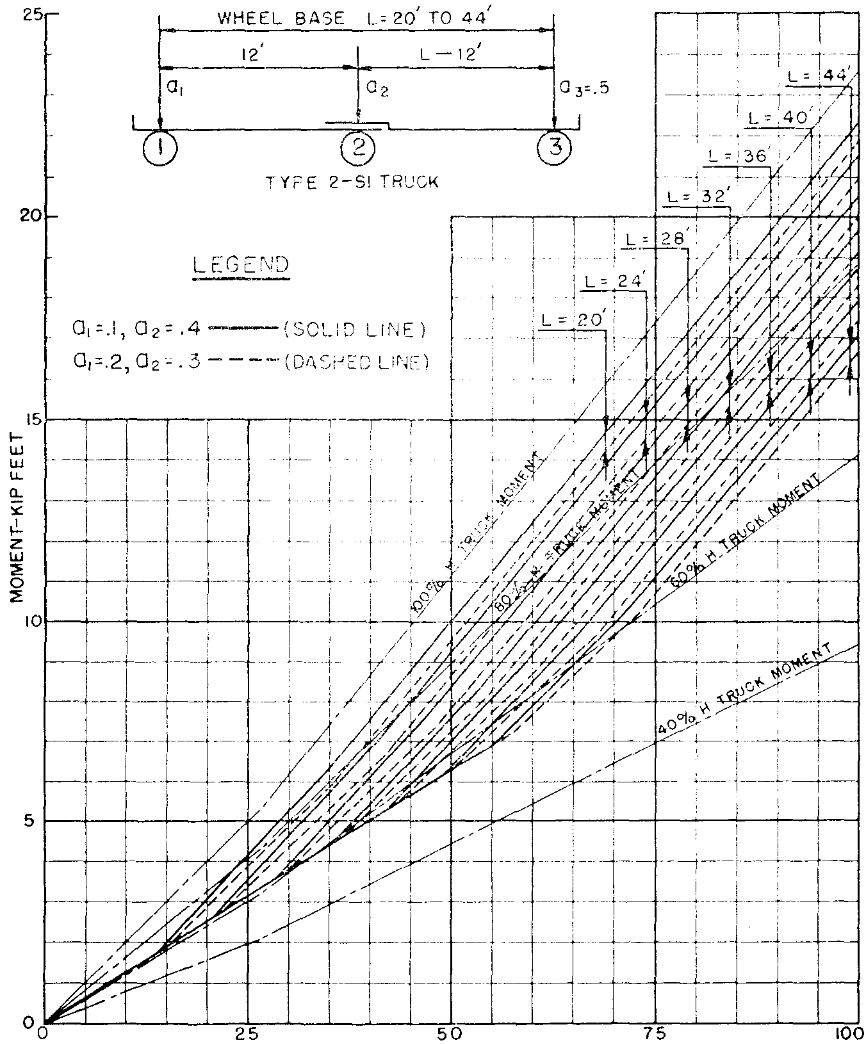


Figure 9.3b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

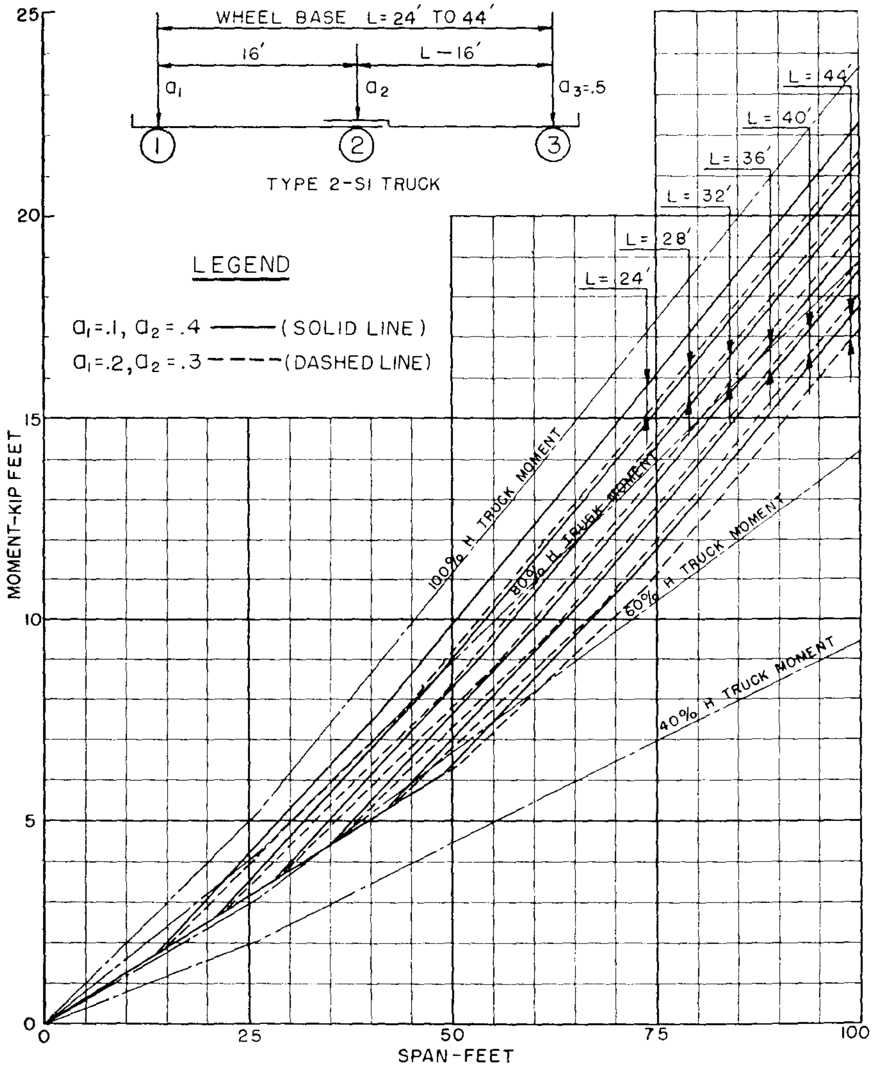


Figure 9.3c

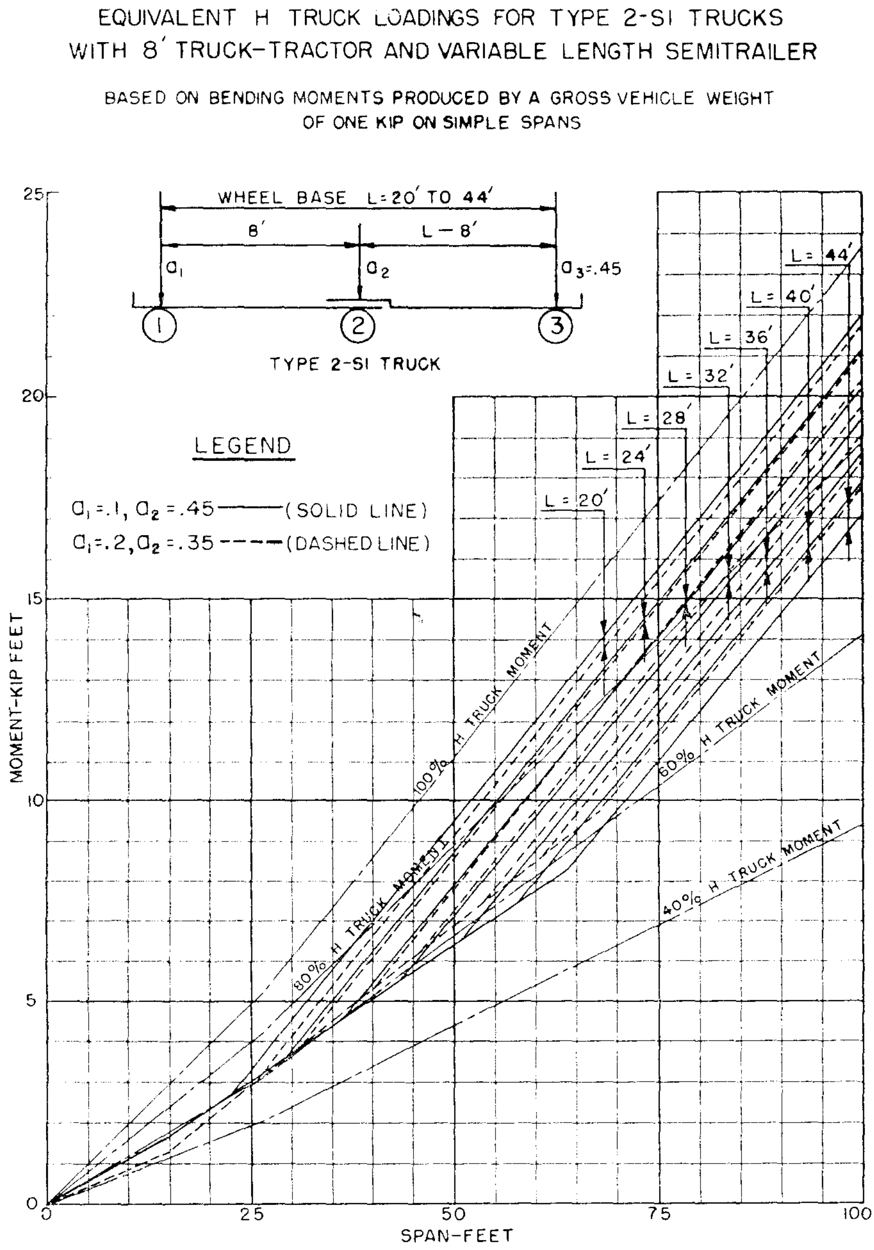

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-SI TRUCKS
WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=20′ TO 44′
8′
L − 8′
a1
a2
a3=.45
TYPE 2-SI TRUCK
LEGEND
a1=.1, a2=.45 (SOLID LINE)
a1=.2, a2=.35 (DASHED LINE)
L=20′
L=24′
L=28′
L=32′
L=36′
L=40′
L=44′
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.3d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-SI TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

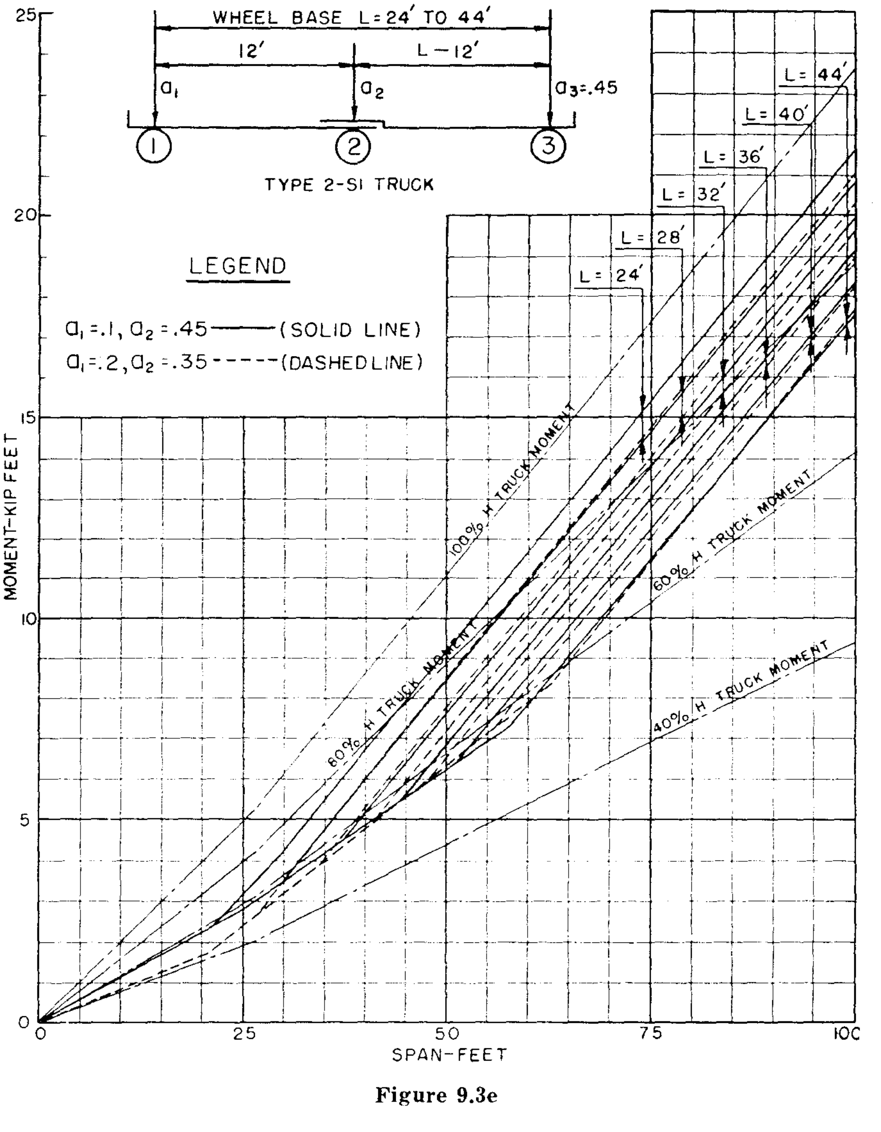


Figure 9.3e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

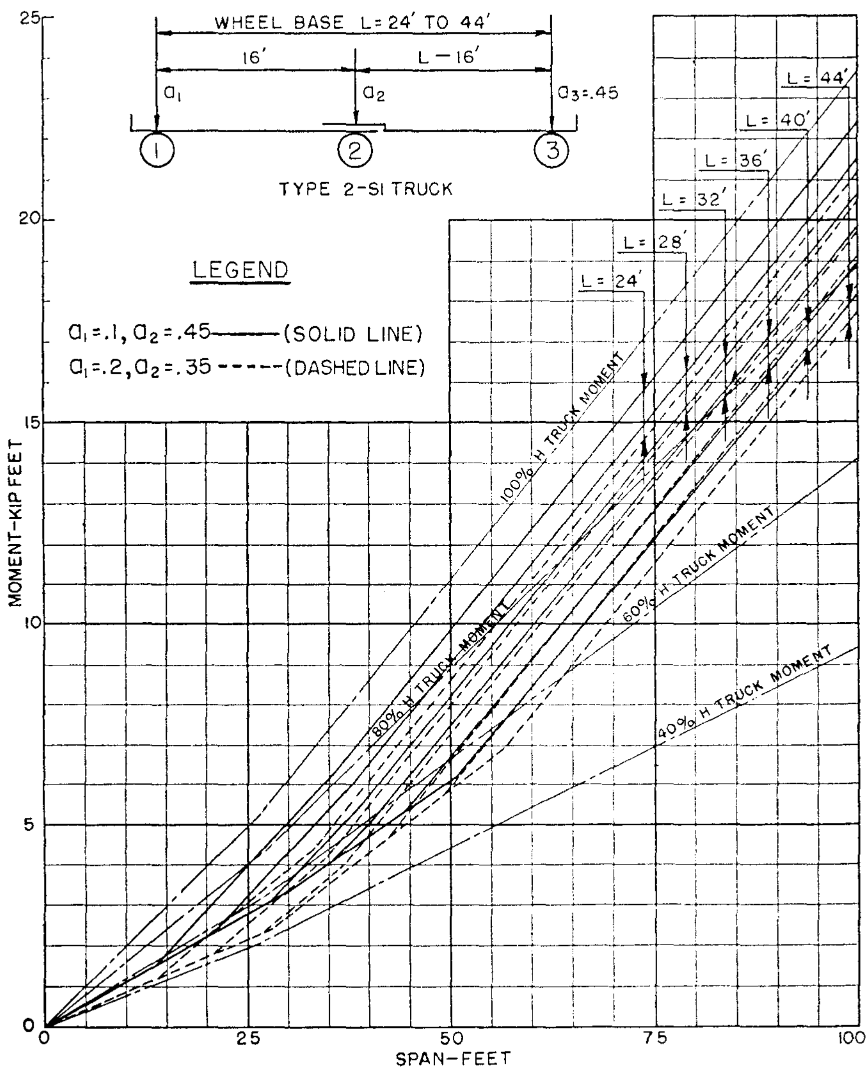


Figure 9.3f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

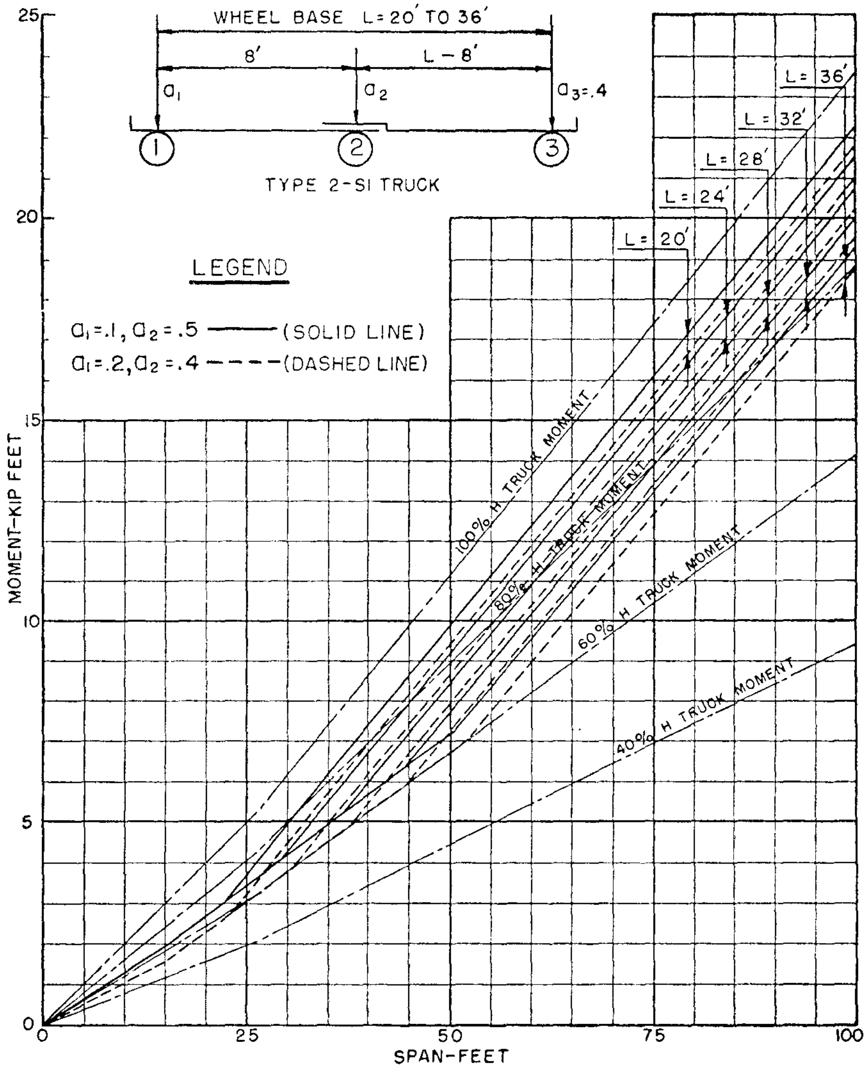


Figure 9.3g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

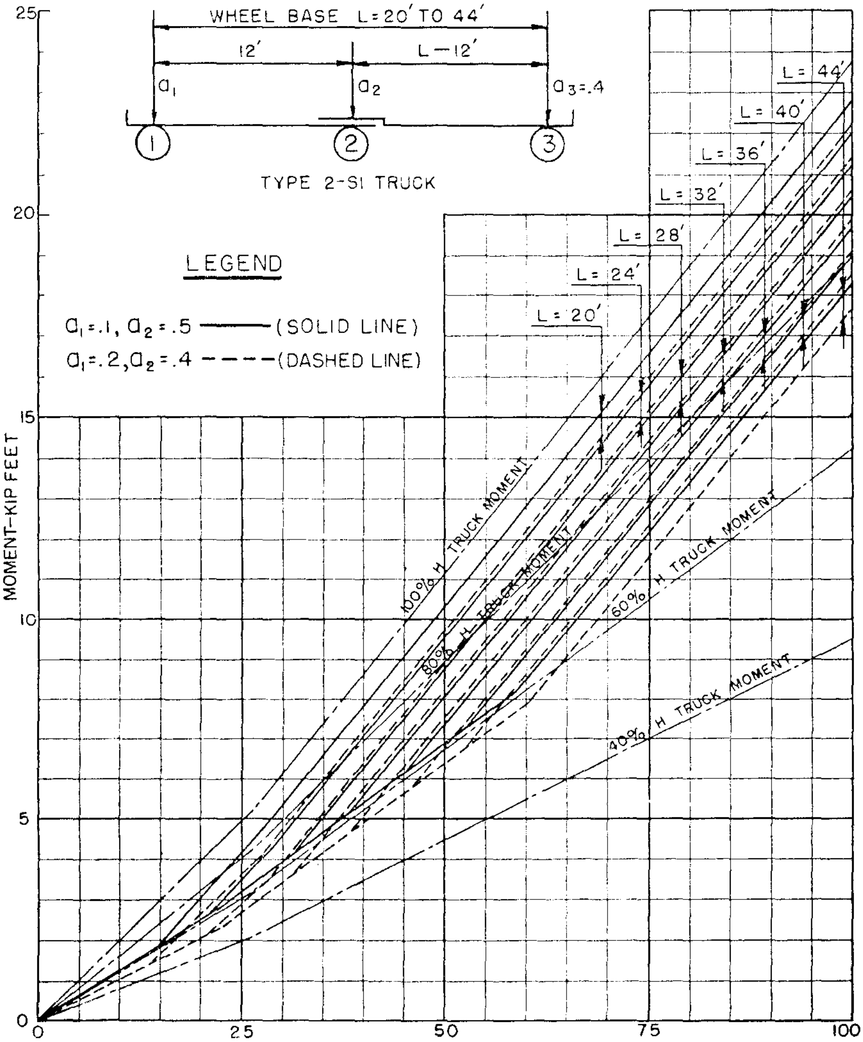


Figure 9.3h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

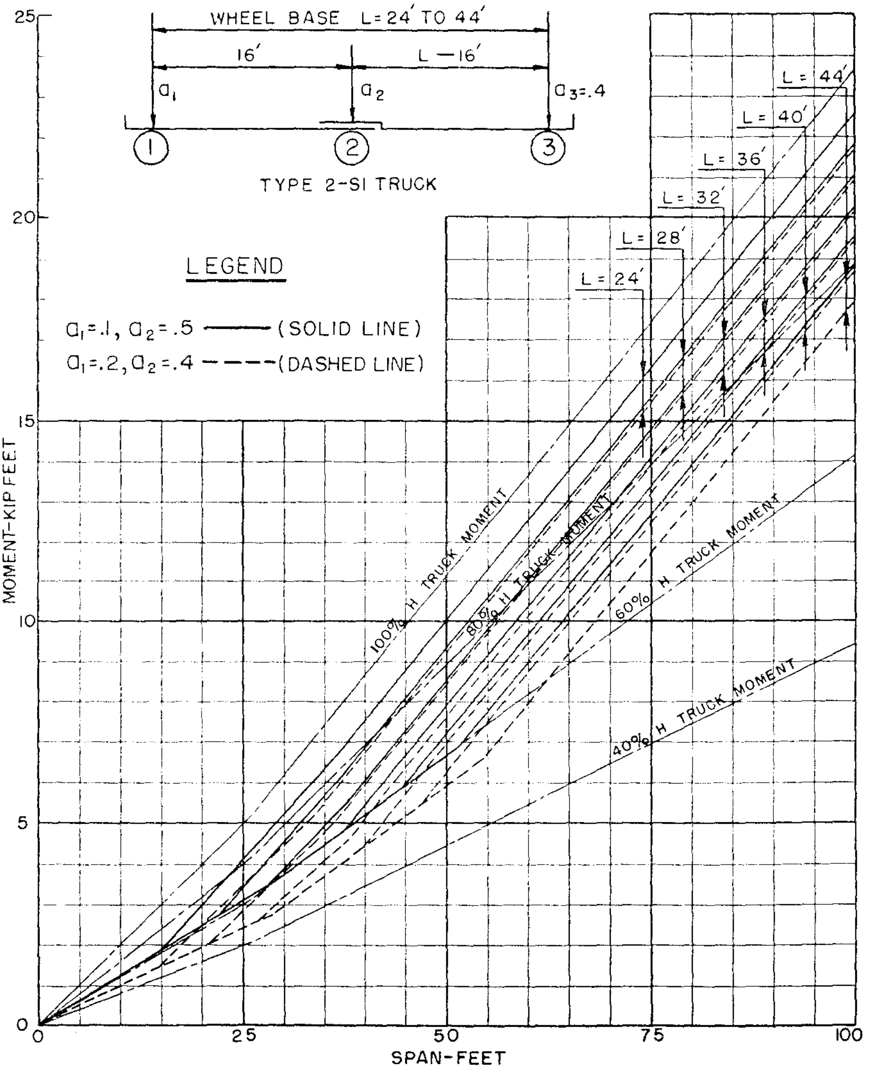


Figure 9.3i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS
WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

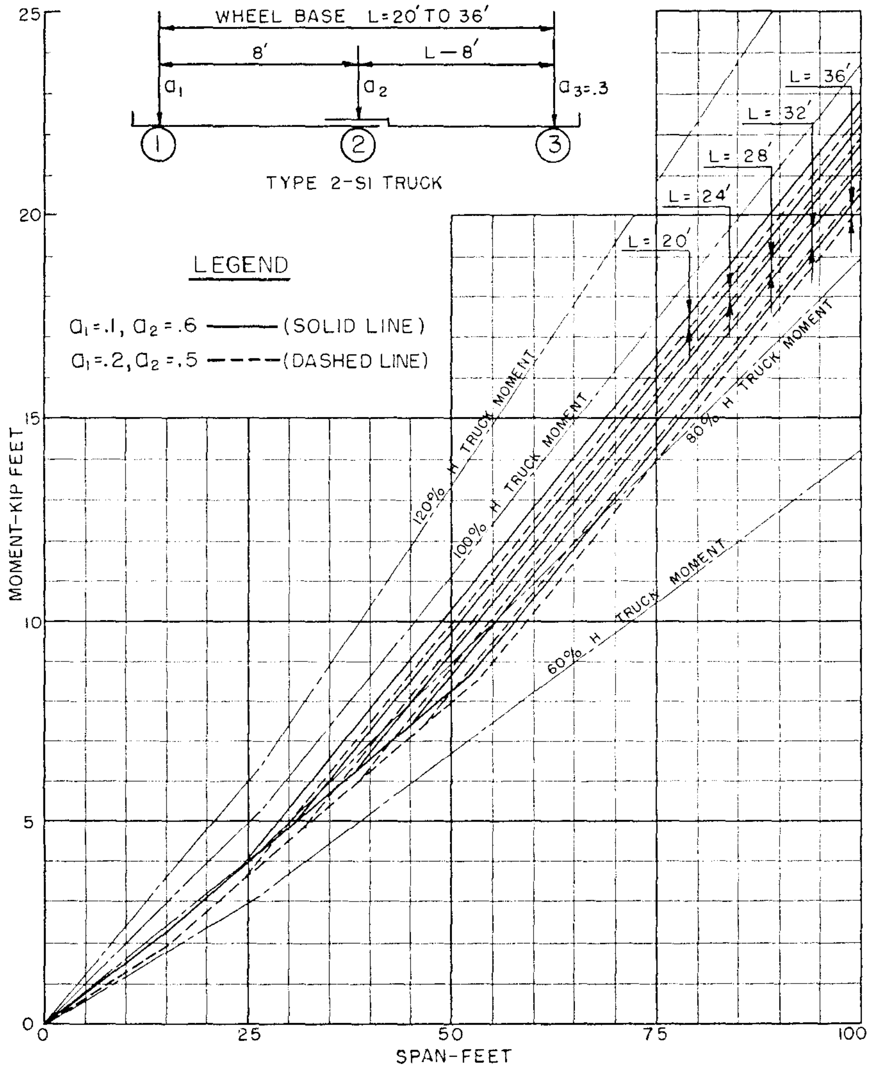


Figure 9.3j

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

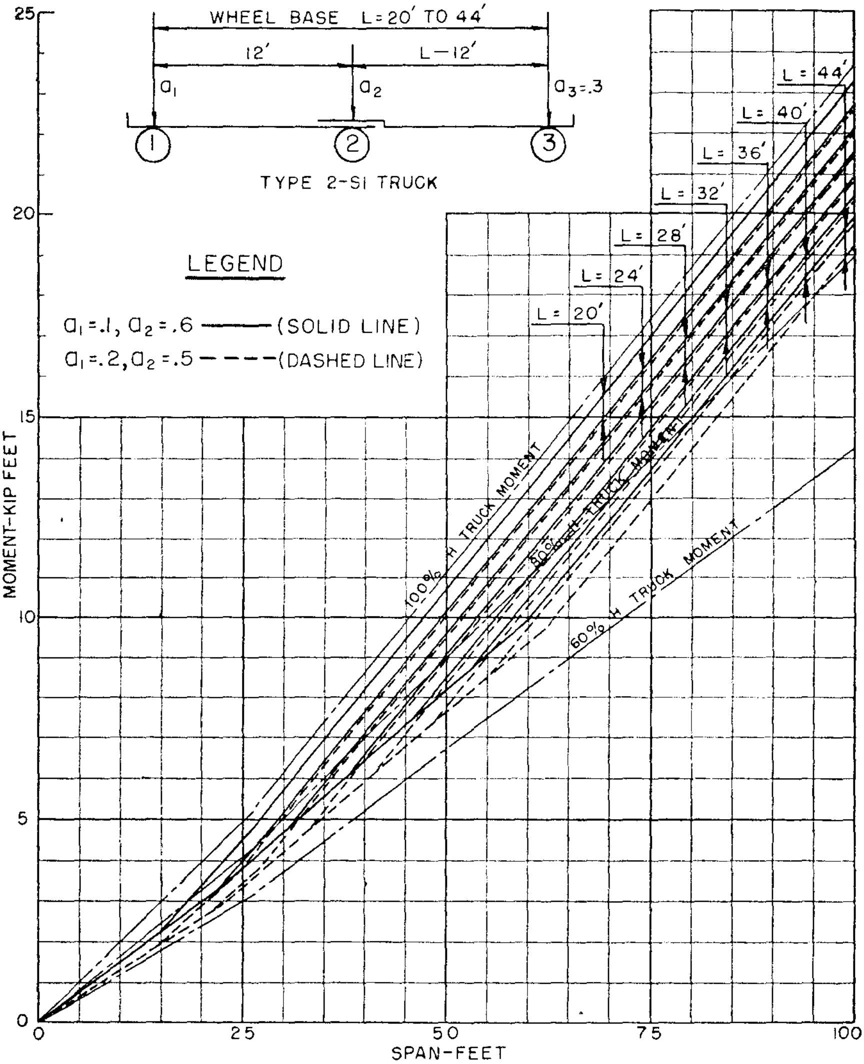


Figure 9.3k

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

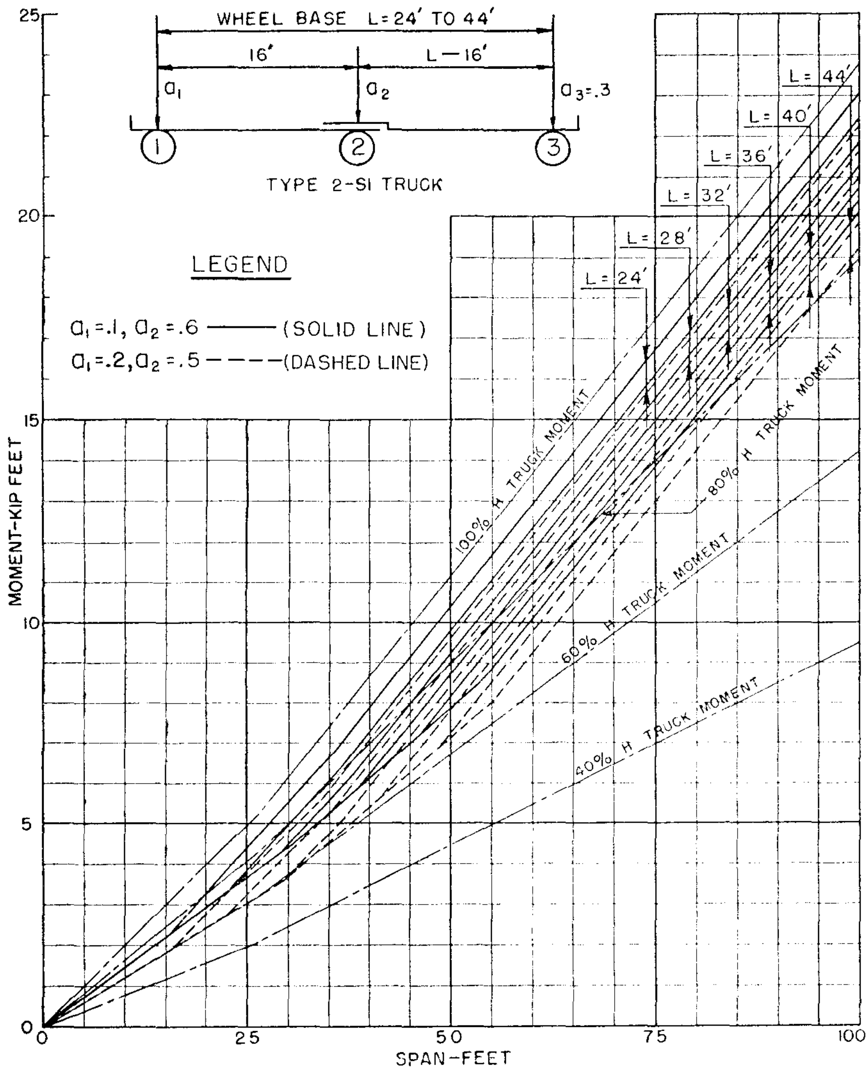


Figure 9.31

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS
WITH 8′ TRUCK–TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

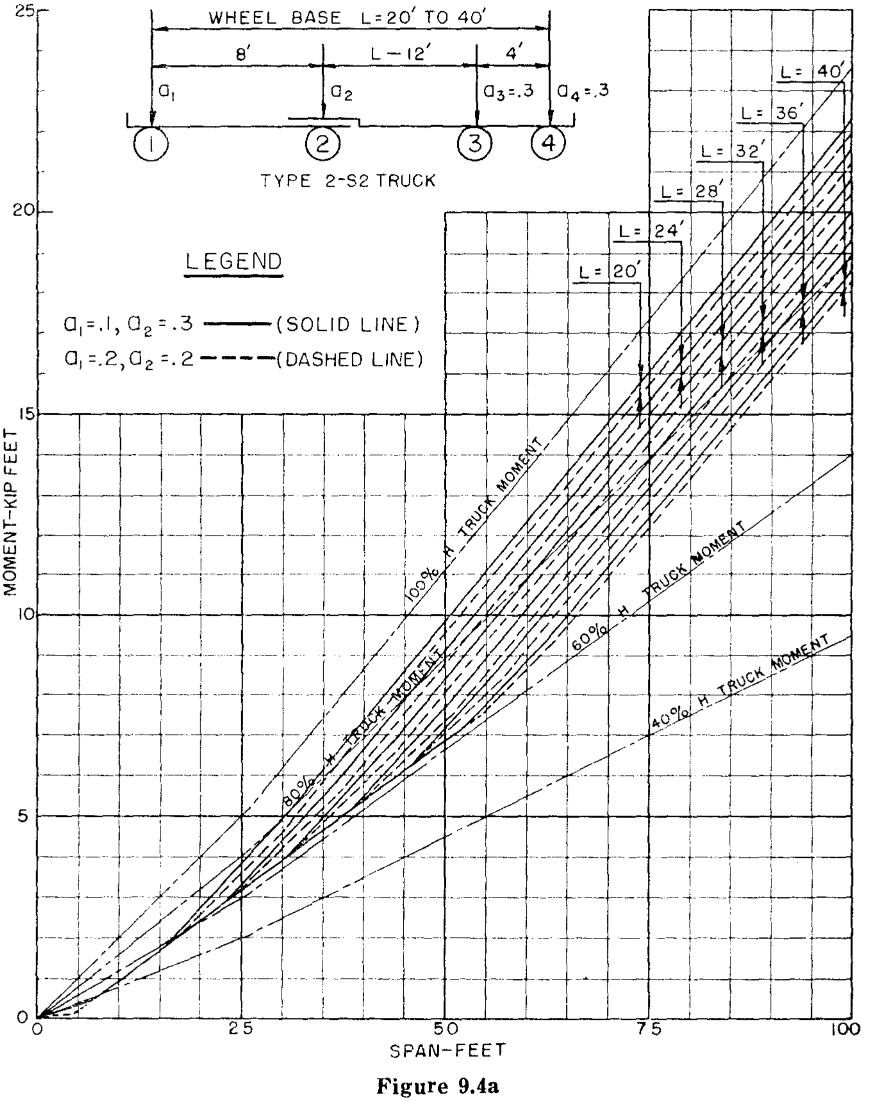


Figure 9.4a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS
WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

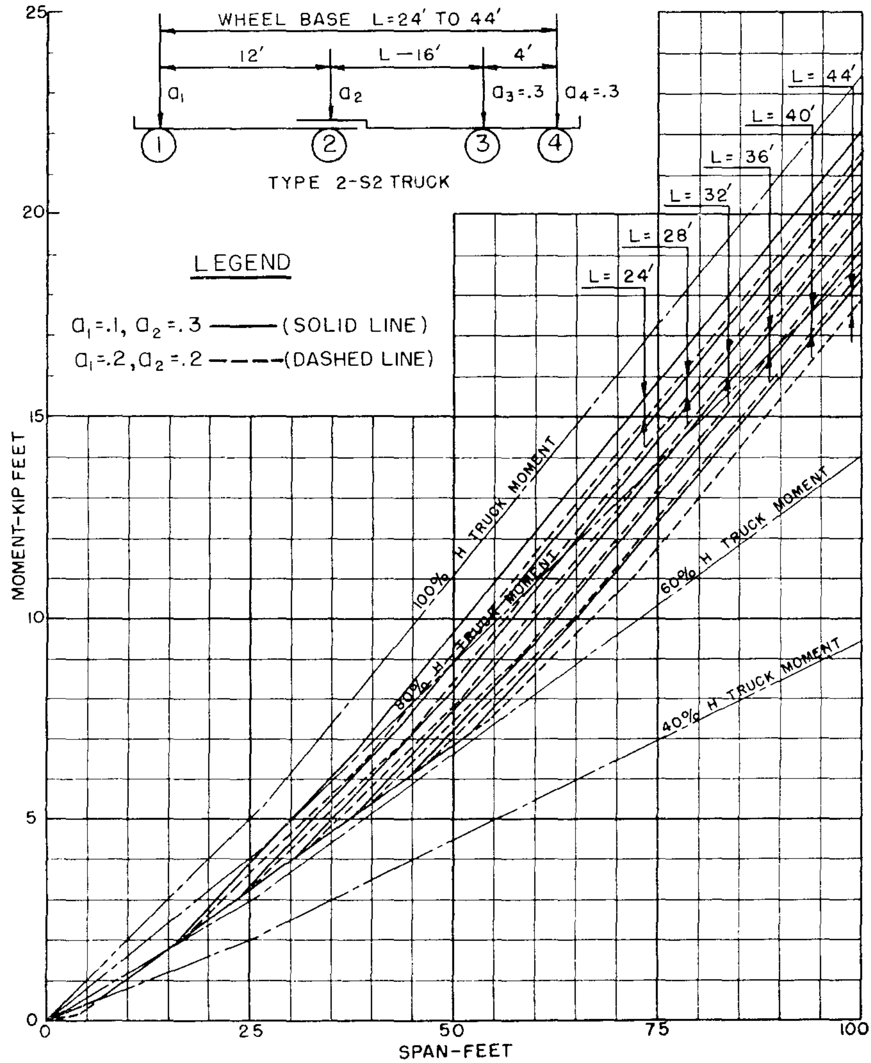


Figure 9.4b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

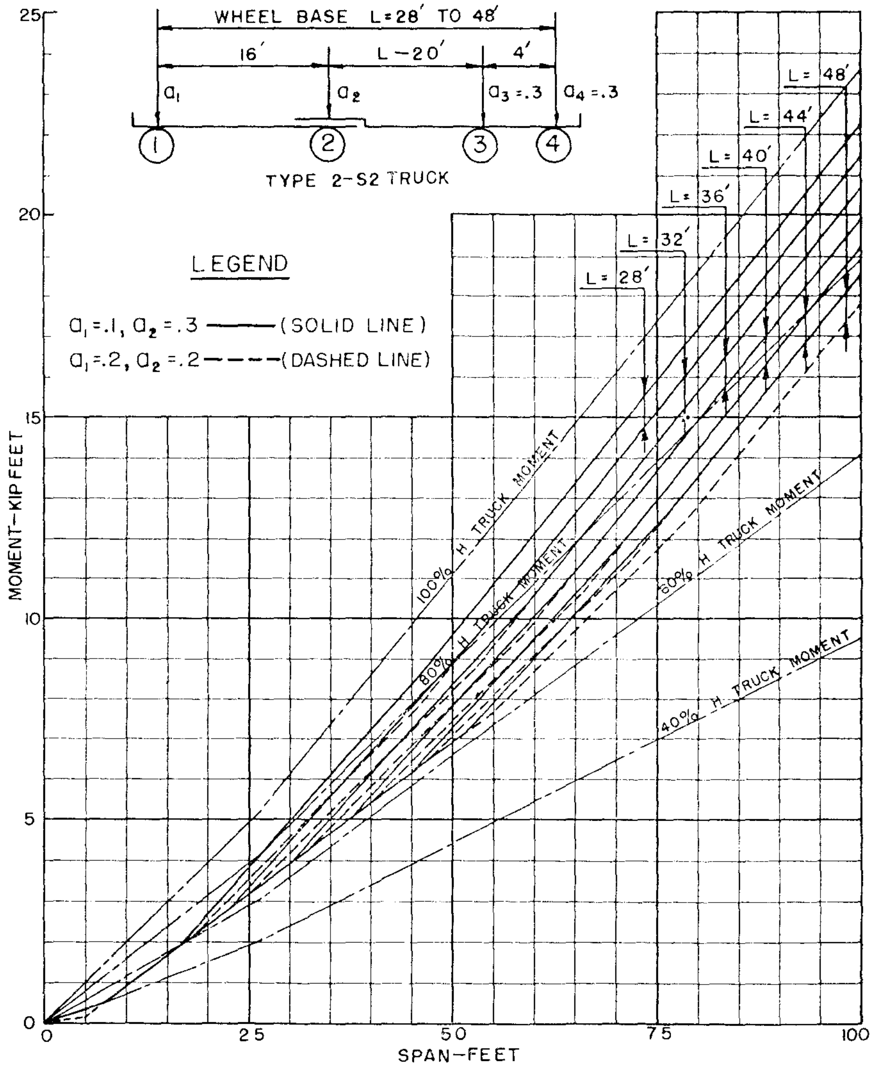


Figure 9.4c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS
WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

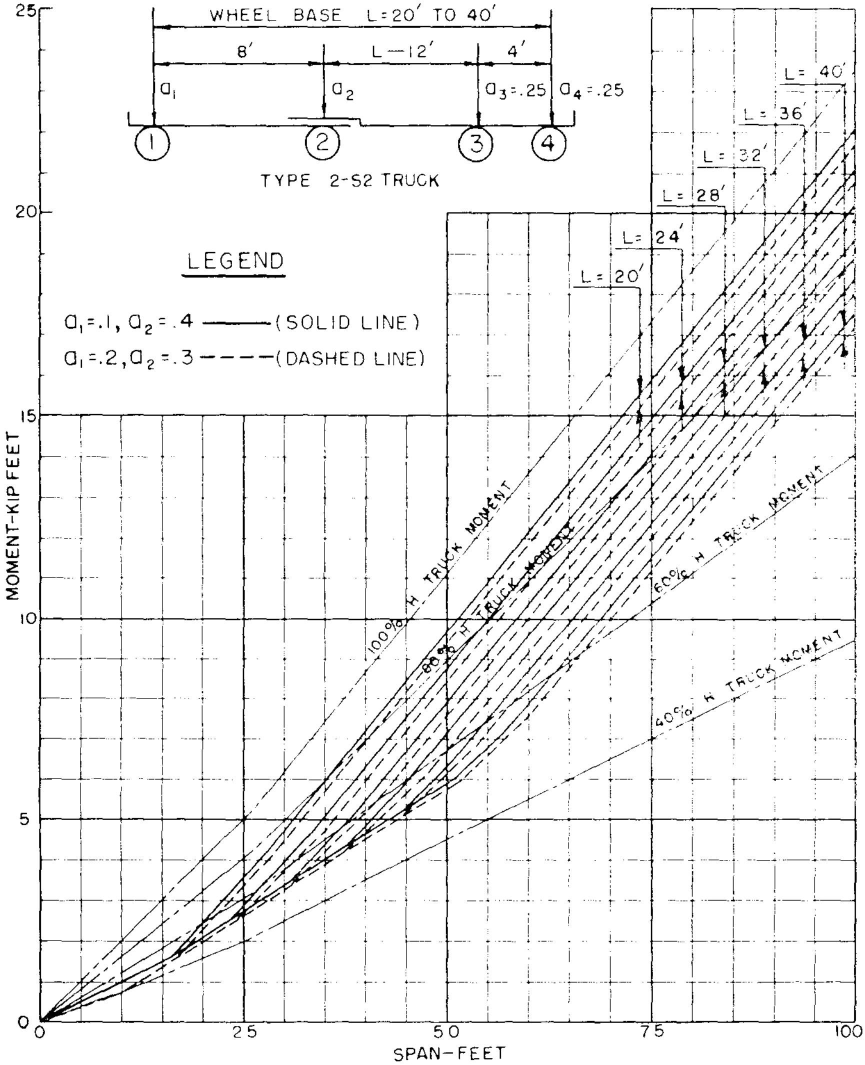
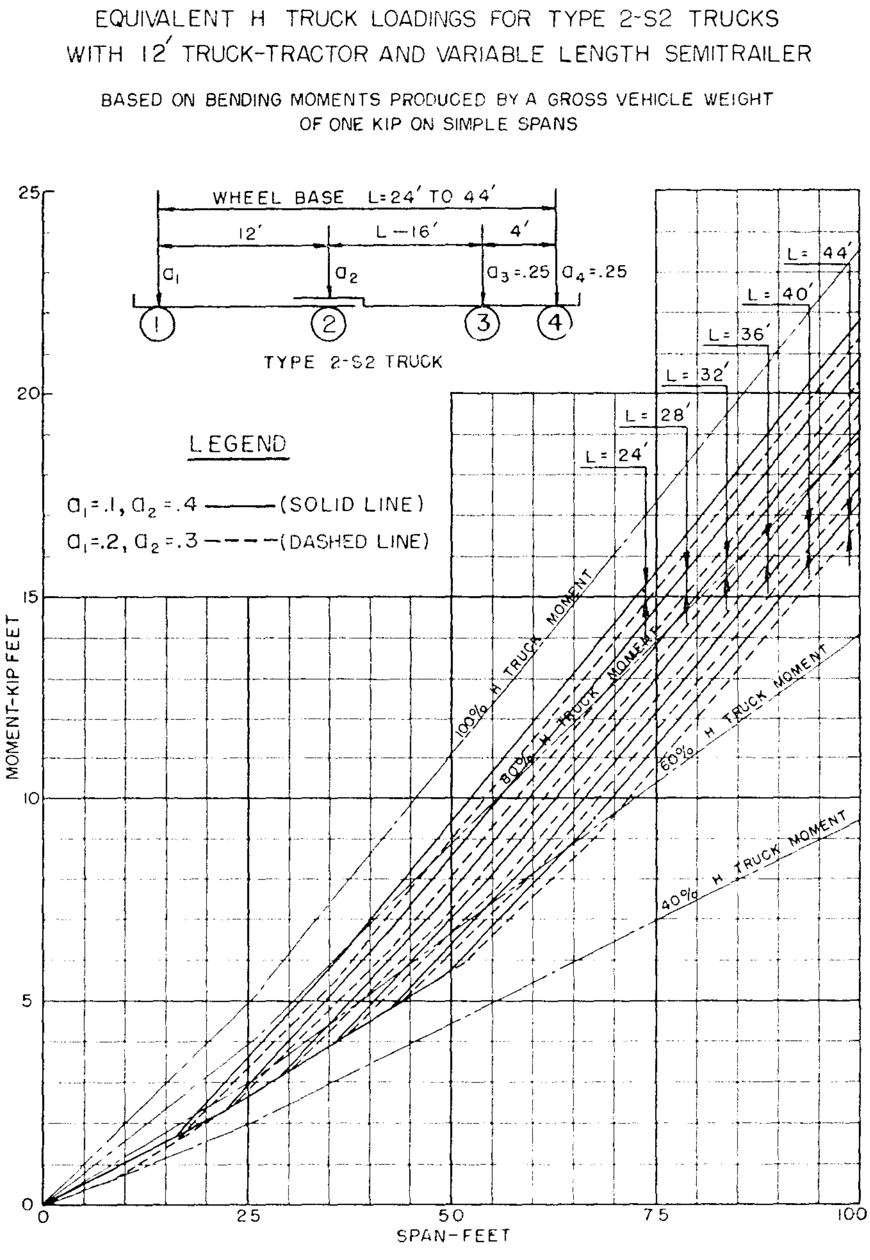


Figure 9.4d



EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS
WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=24′ TO 44′
12′
L—16′
4′
a1
a2
a3=.25
a4=.25
1
2
3
4
TYPE 2-S2 TRUCK
LEGEND
a1=.1, a2=.4 ——— (SOLID LINE)
a1=.2, a2=.3 - - - - (DASHED LINE)
L= 44′
L= 40′
L= 36′
L= 32′
L= 28′
L= 24′
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.4e

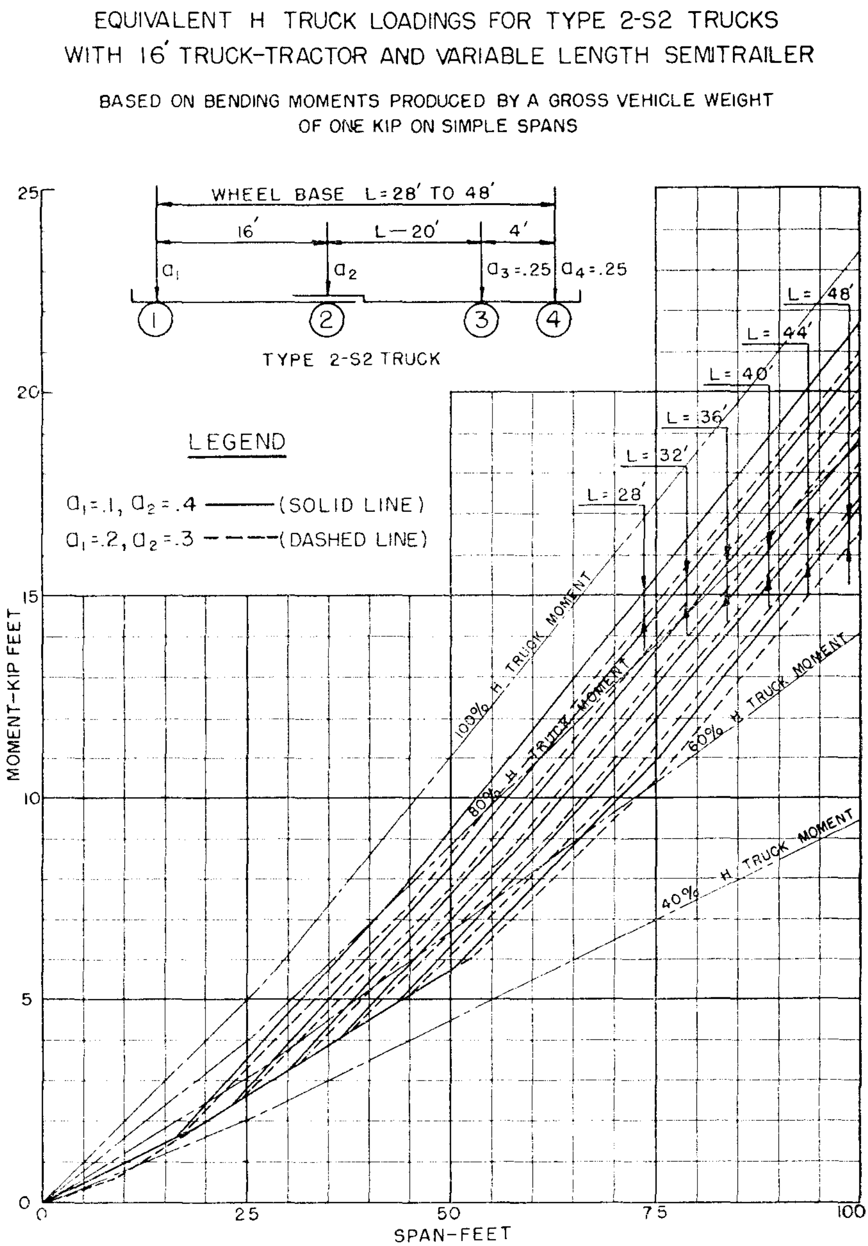

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS
WITH 16' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=28' TO 48'
16'
L—20'
4'
a1
a2
a3=.25
a4=.25
TYPE 2-S2 TRUCK
LEGEND
a1=.1, a2=.4 (SOLID LINE)
a1=.2, a2=.3 (DASHED LINE)
L=48'
L=44'
L=40'
L=36'
L=32'
L=28'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.4f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS
WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

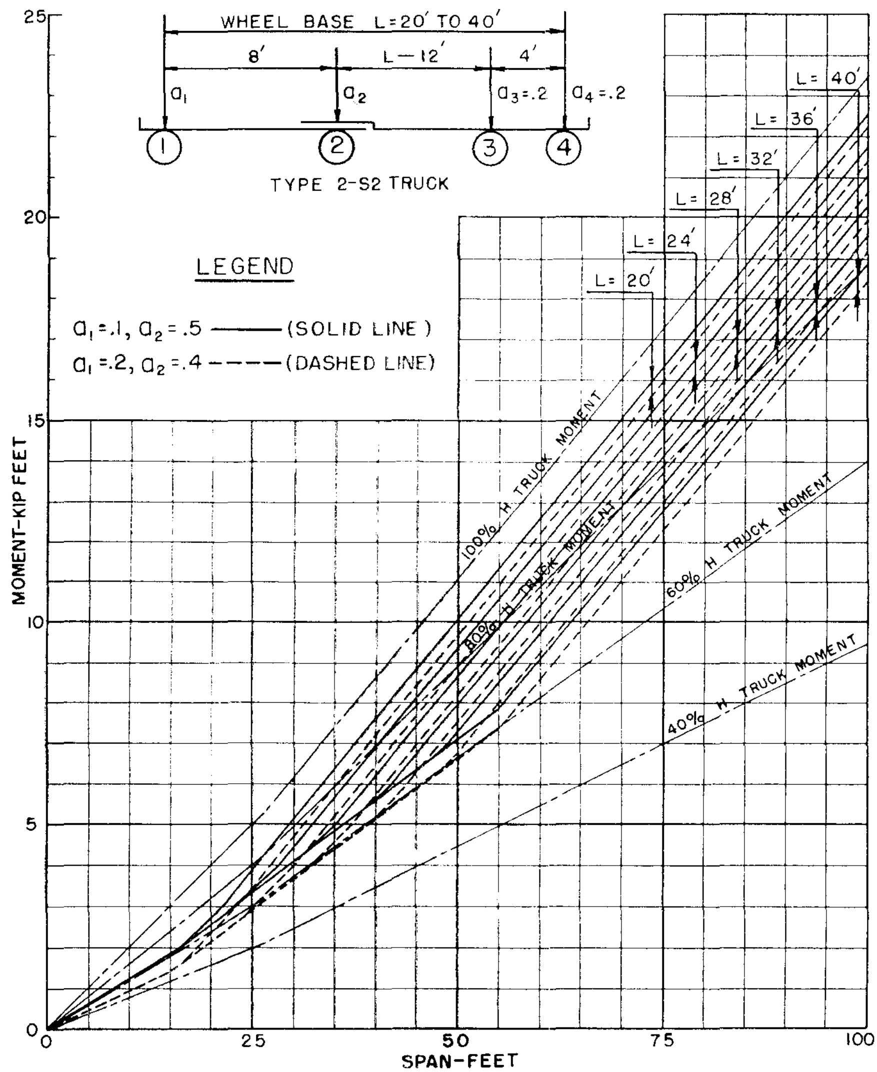


Figure 9.4g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

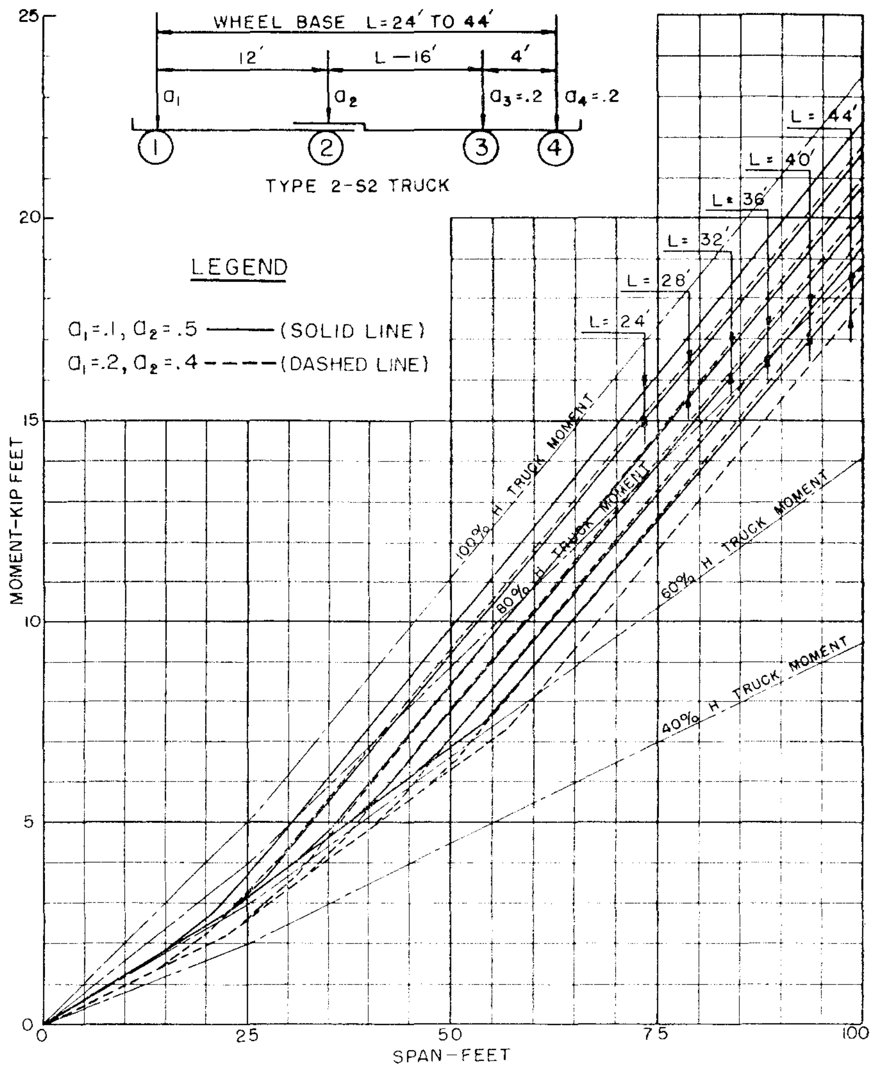


Figure 9.4h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

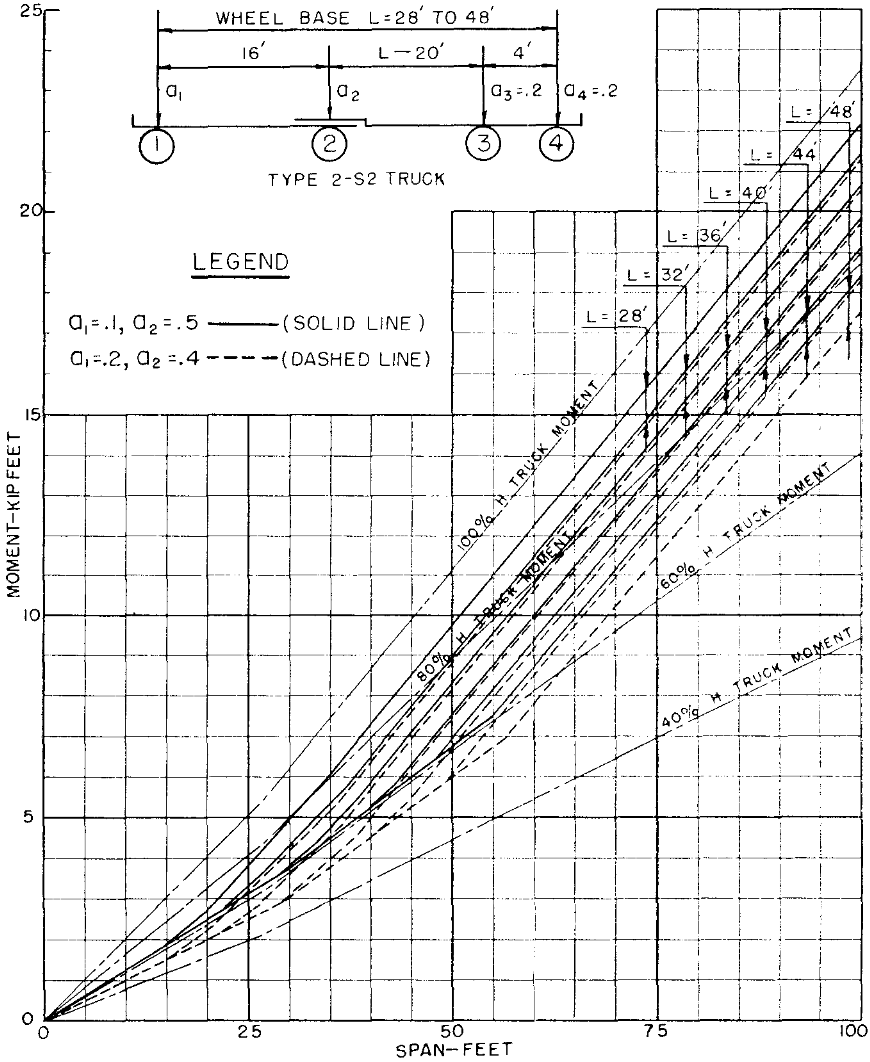


Figure 9.4i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS WITH 8' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

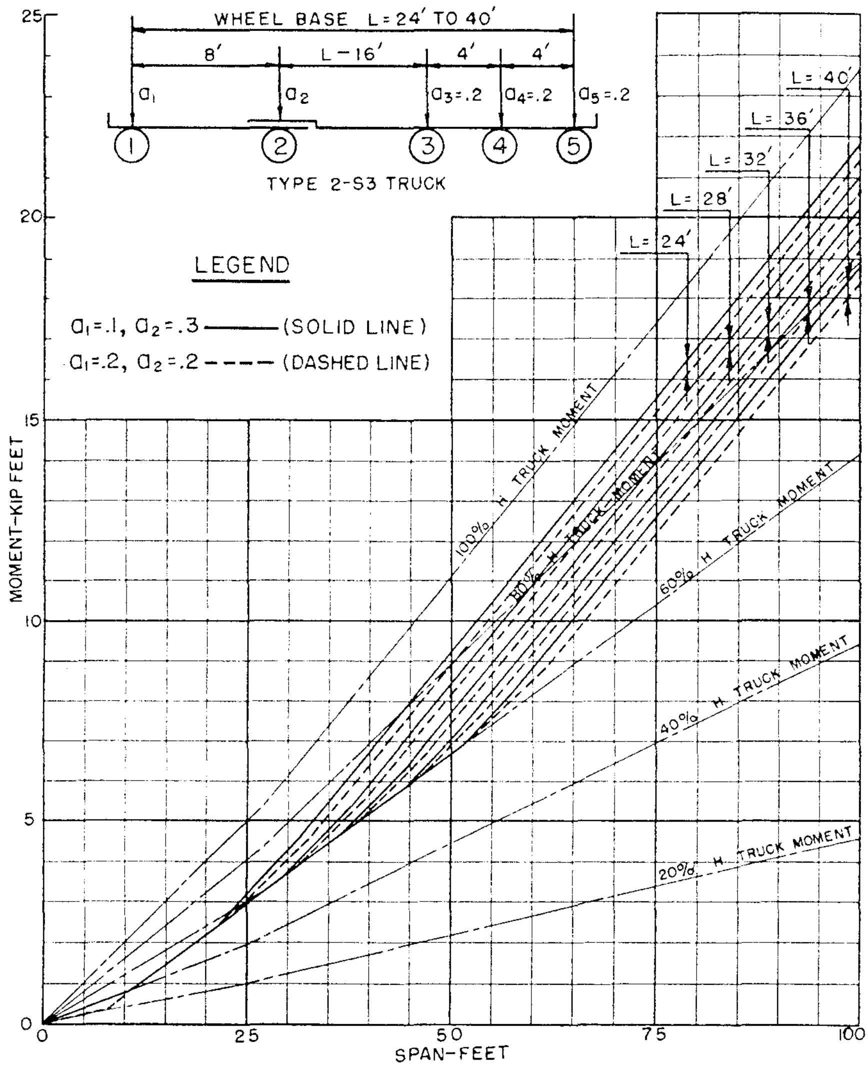


Figure 9.5a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS WITH 12' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

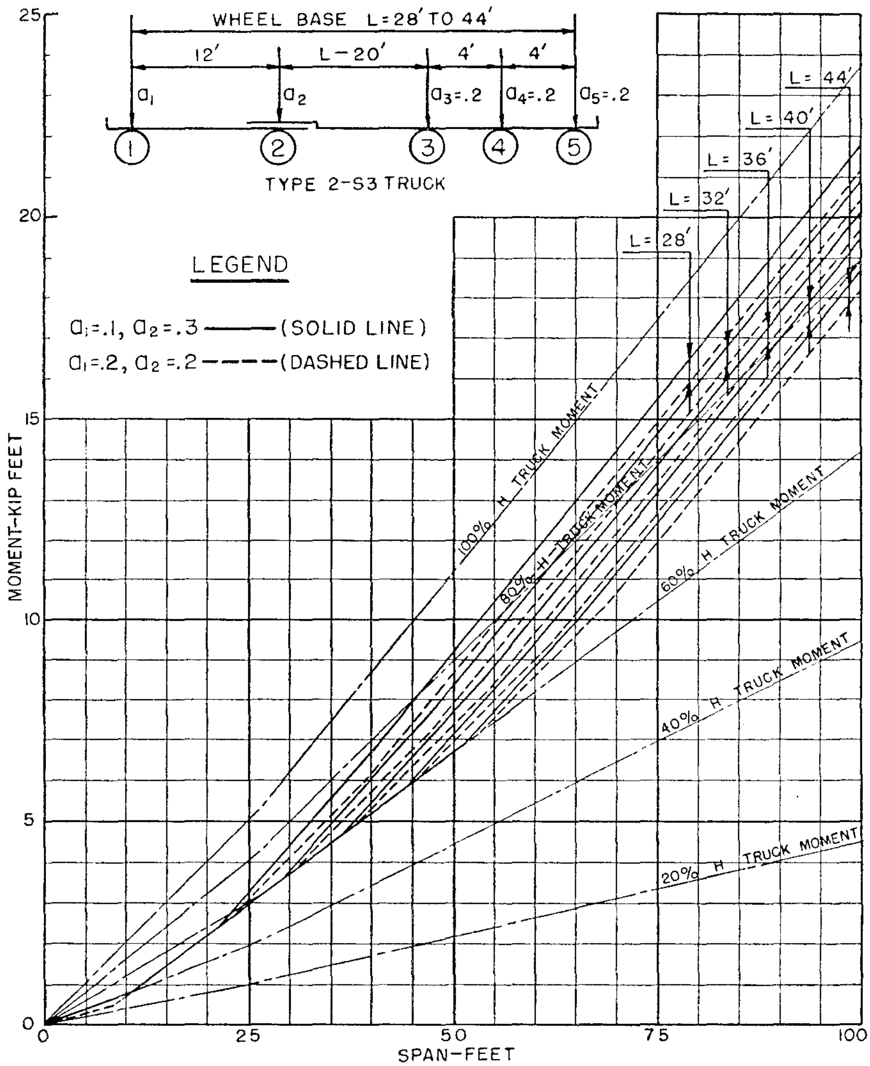


Figure 9.5b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

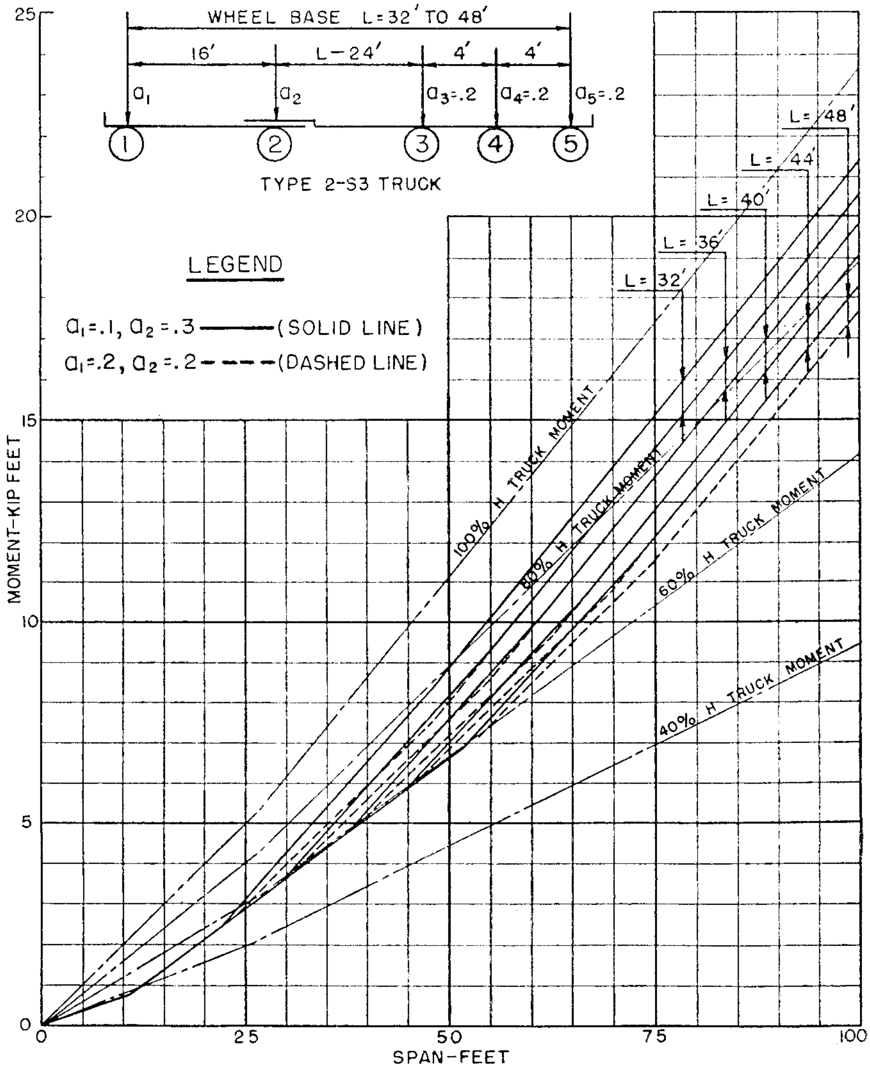


Figure 9.5c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS
WITH 8' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

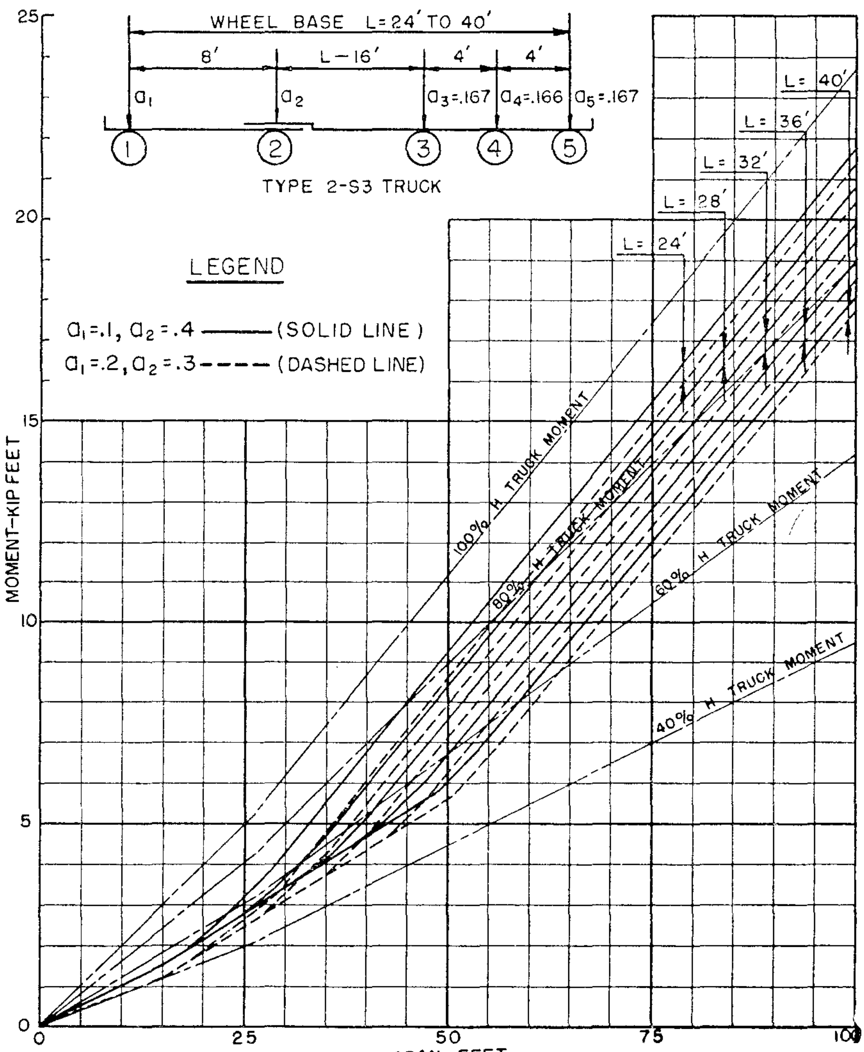


Figure 9.5d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS
WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

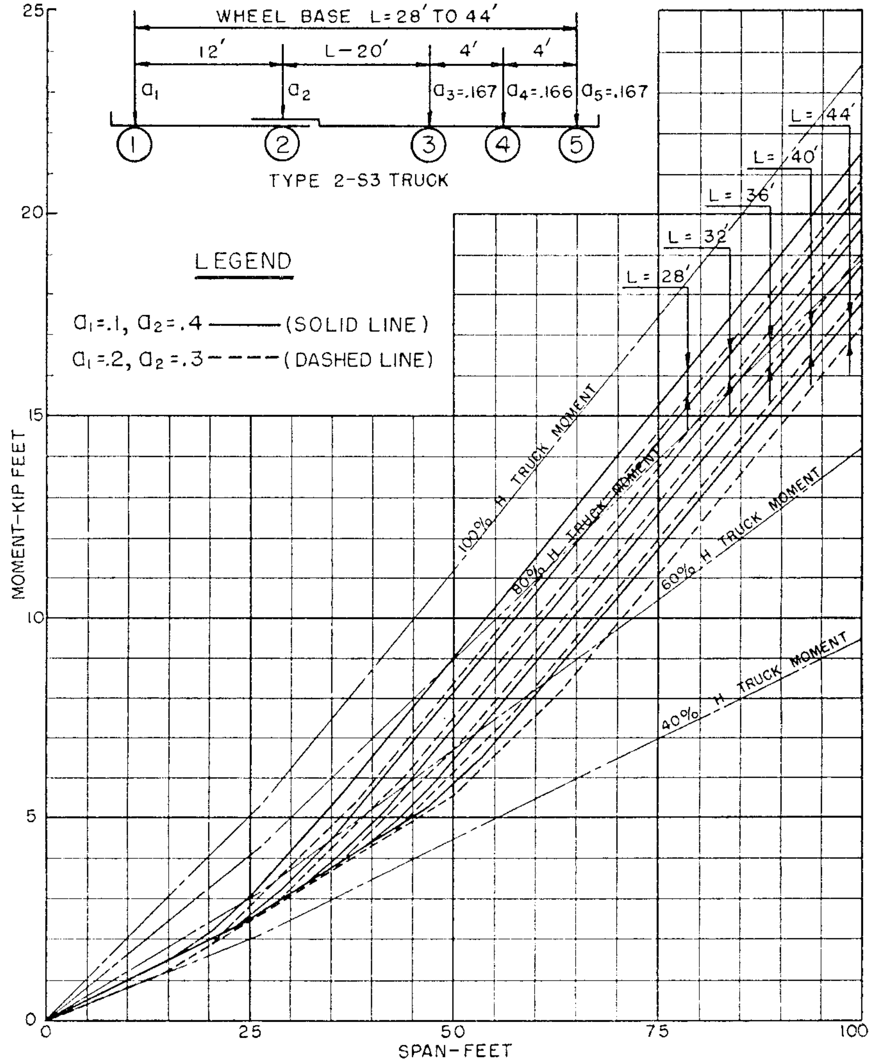


Figure 9.5e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

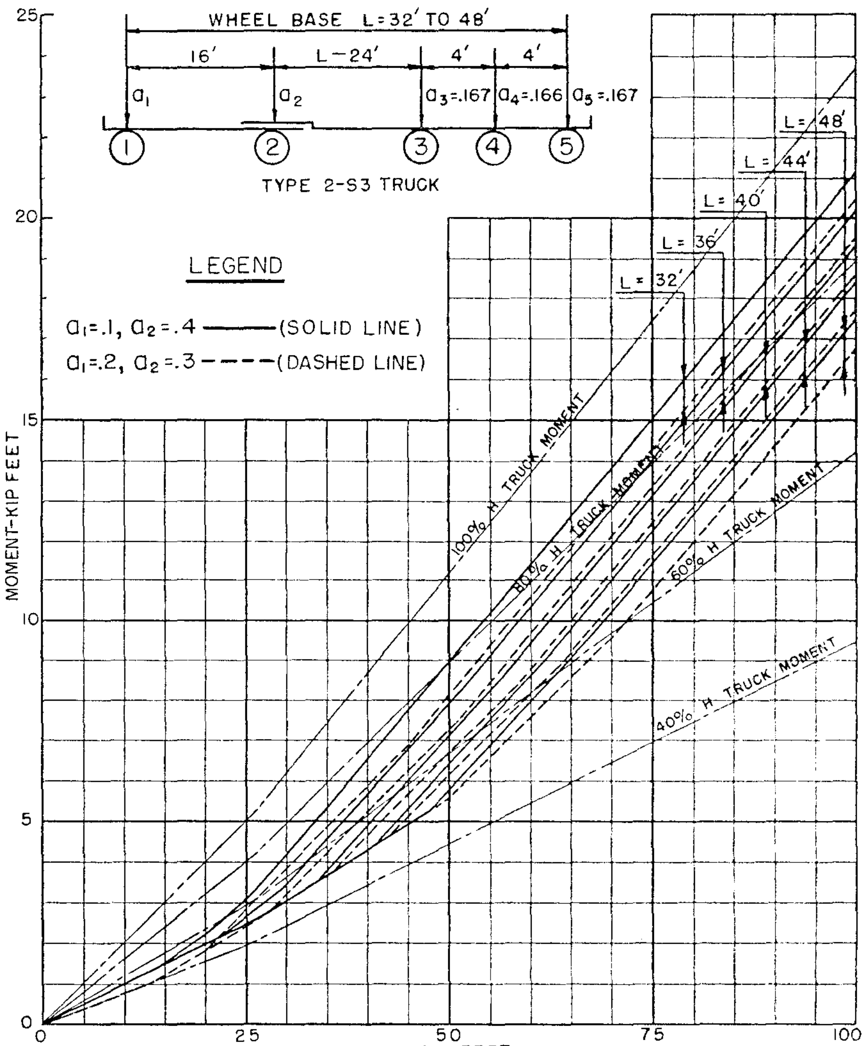


Figure 9.5f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS WITH 8′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

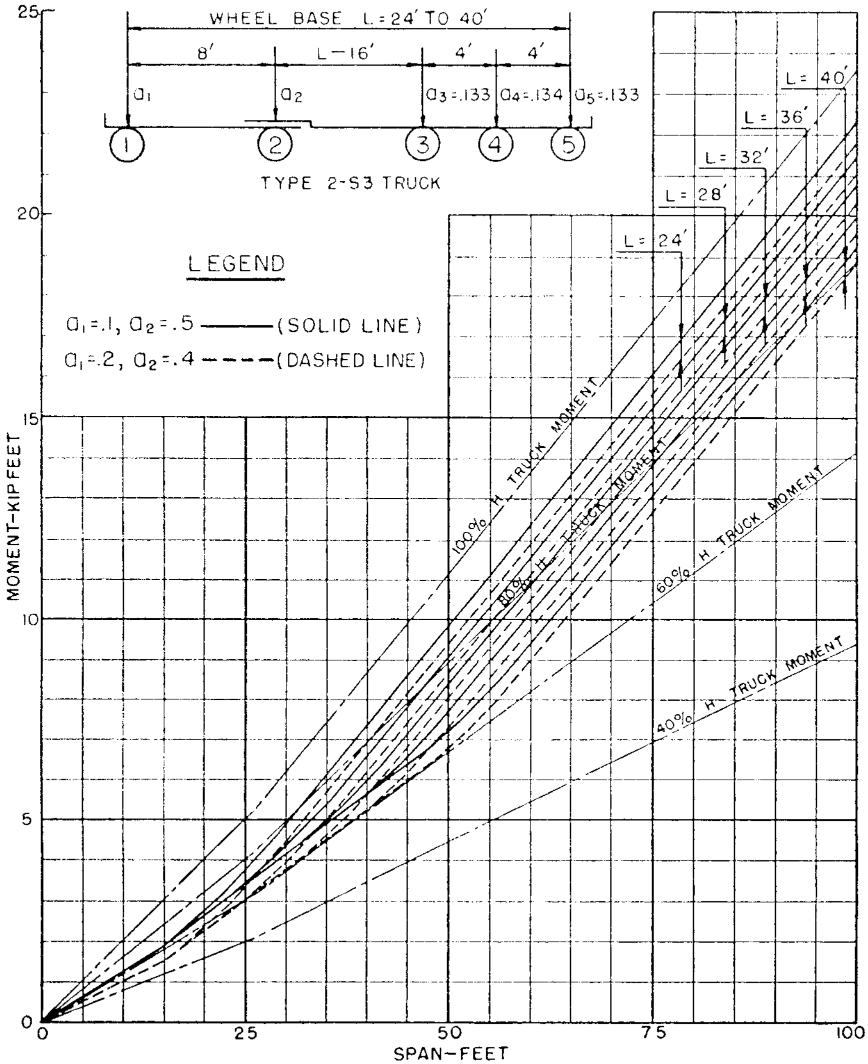


Figure 9.5g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

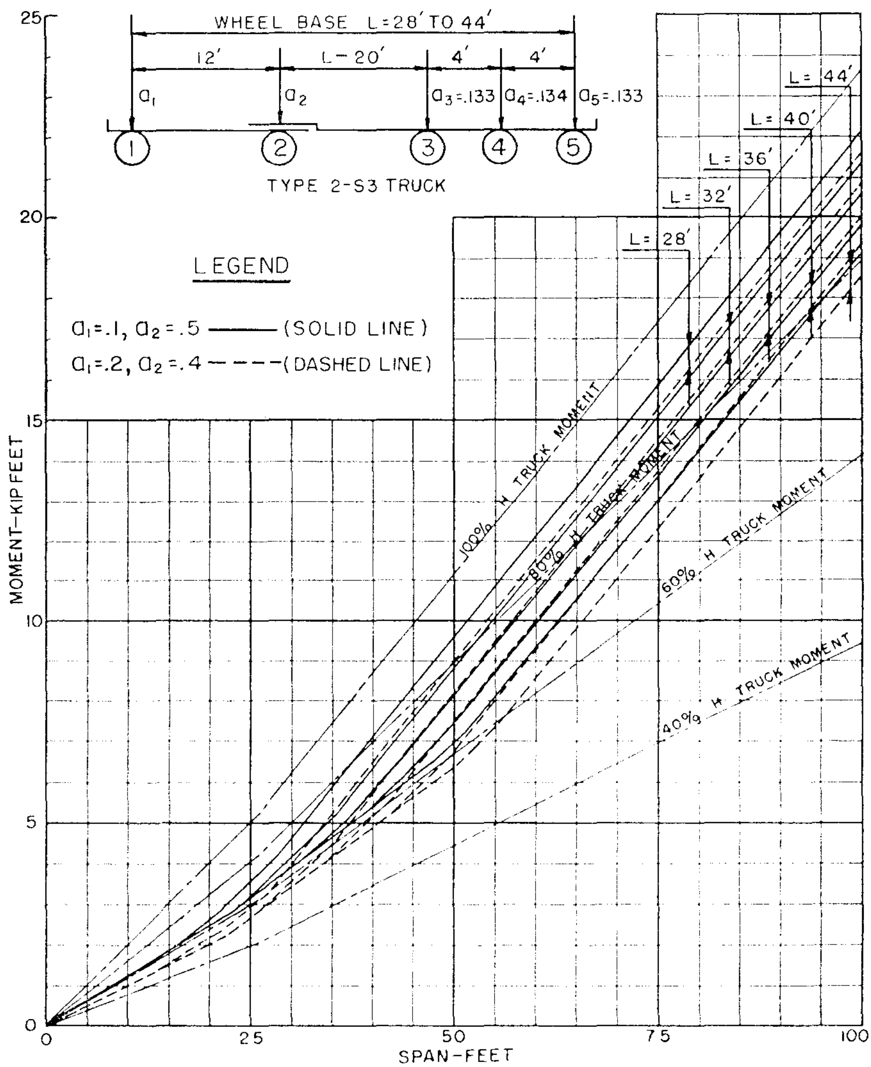


Figure 9.5h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S3 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

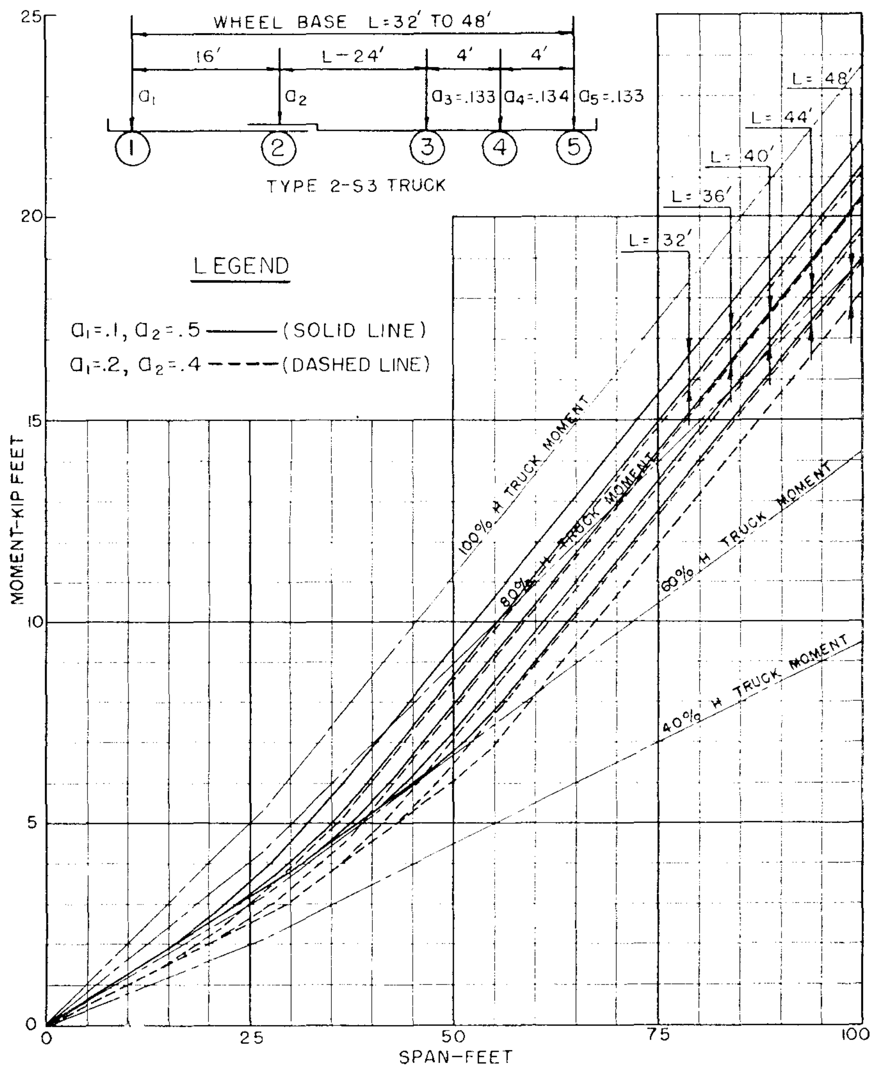


Figure 9.5i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

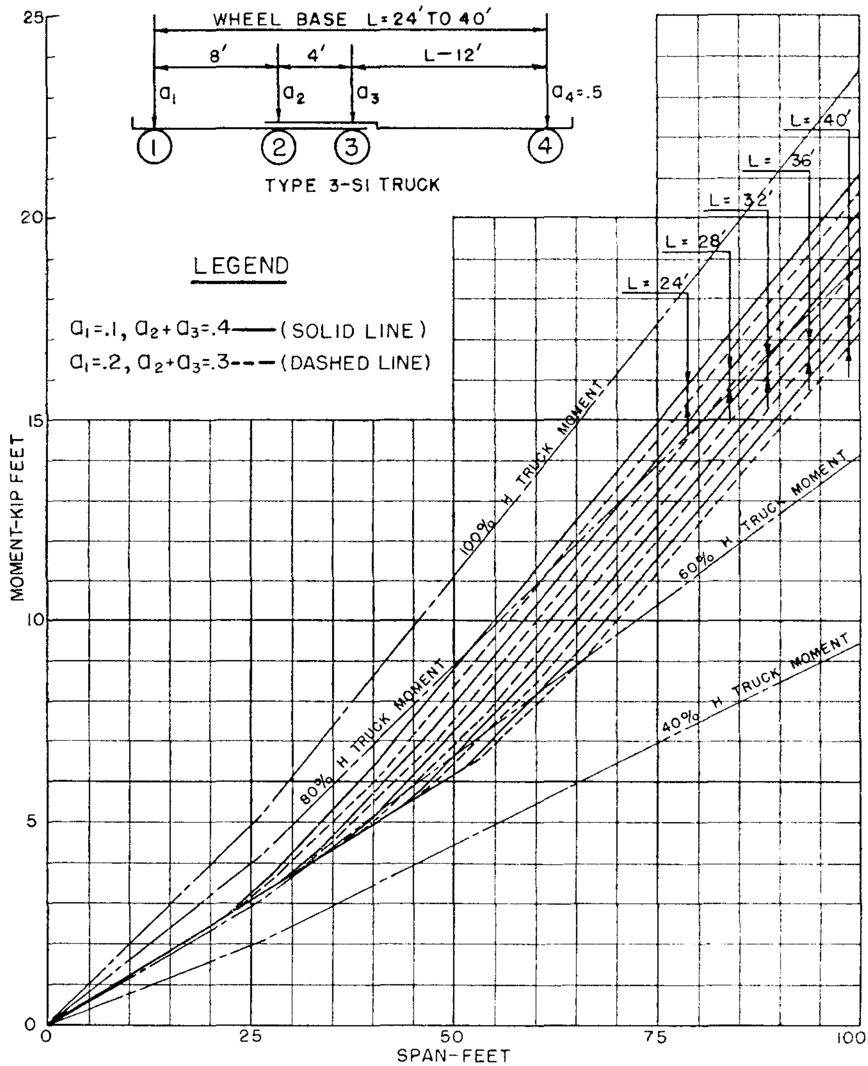


Figure 9.6a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

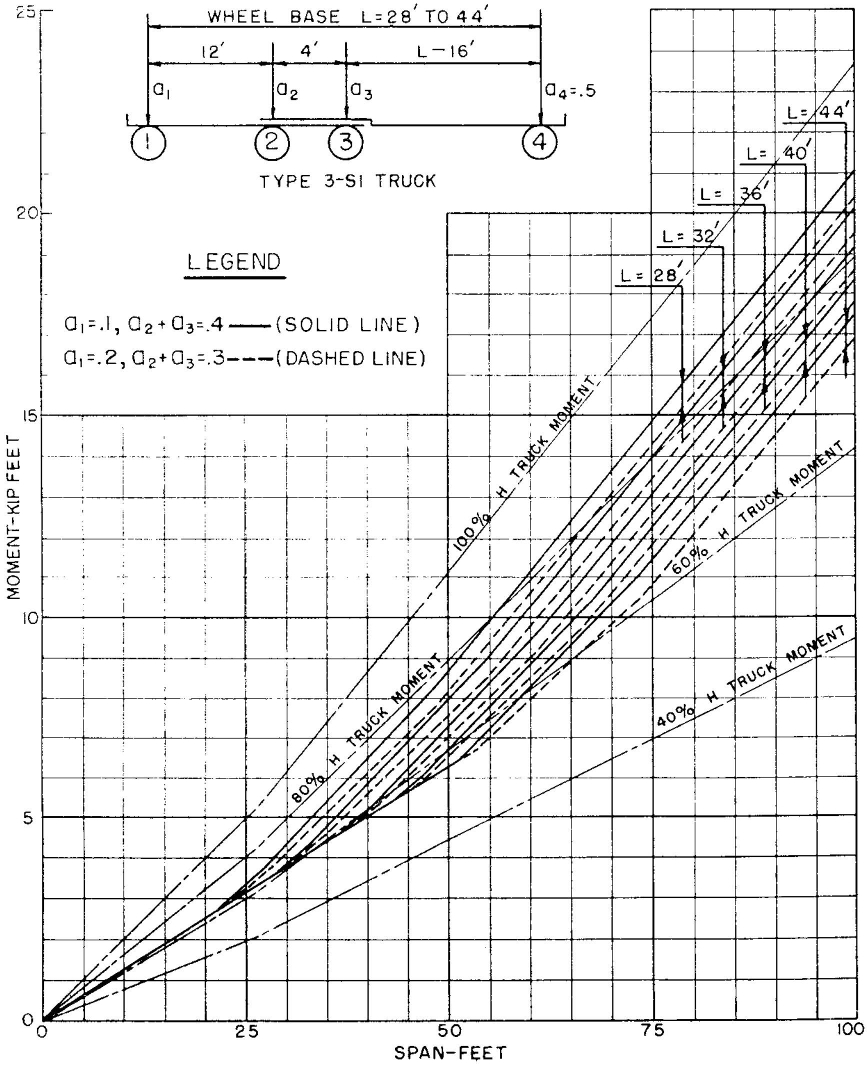


Figure 9.6b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS
WITH 20′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

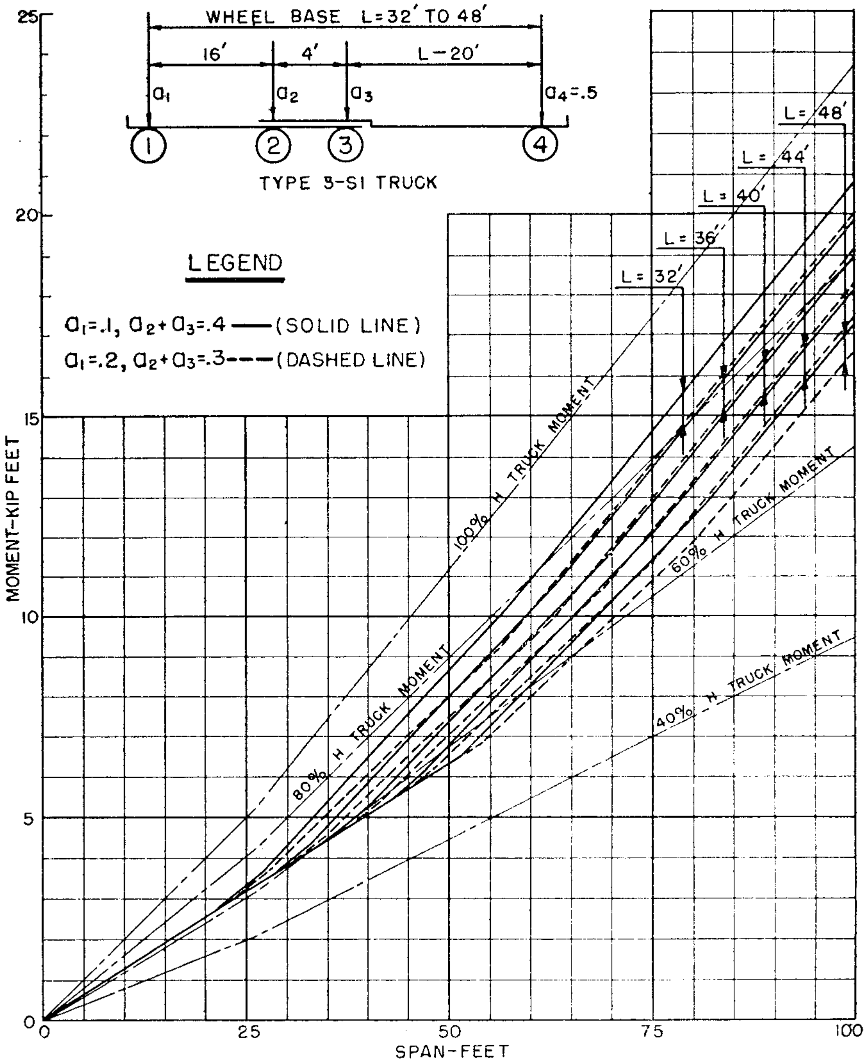


Figure 9.6c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS WITH 12' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

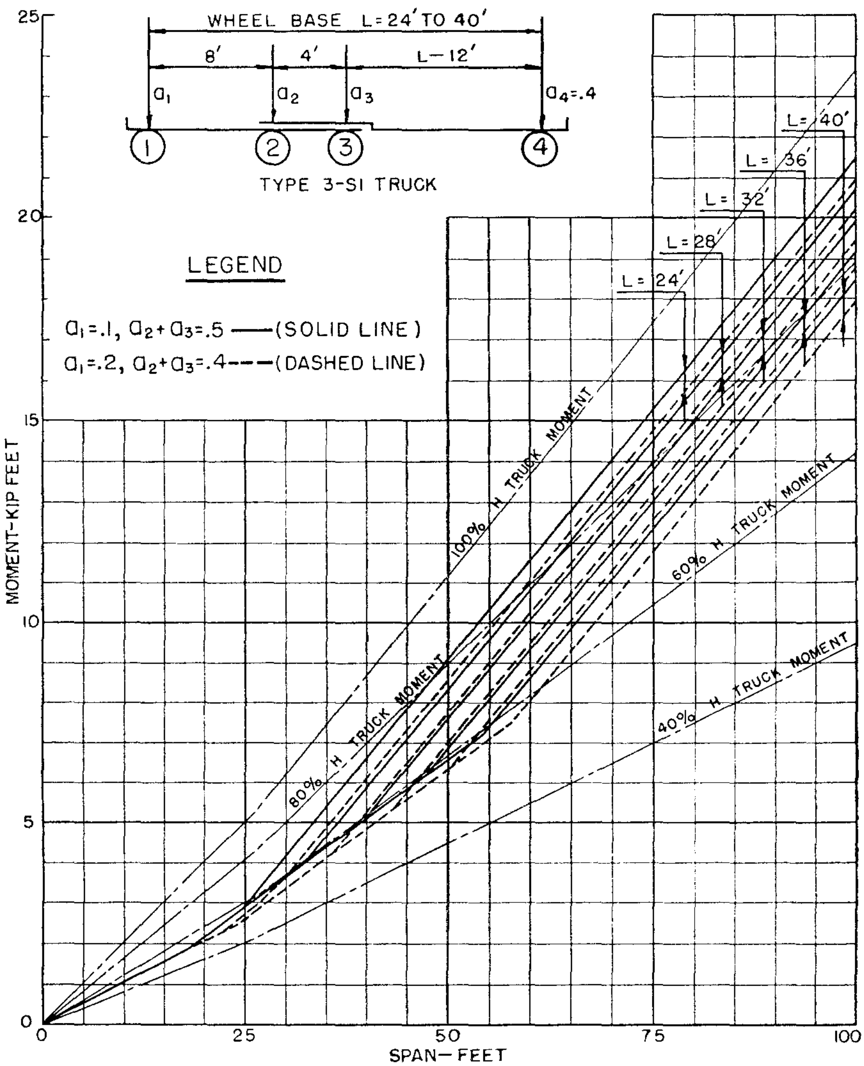


Figure 9.6d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS WITH 16' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

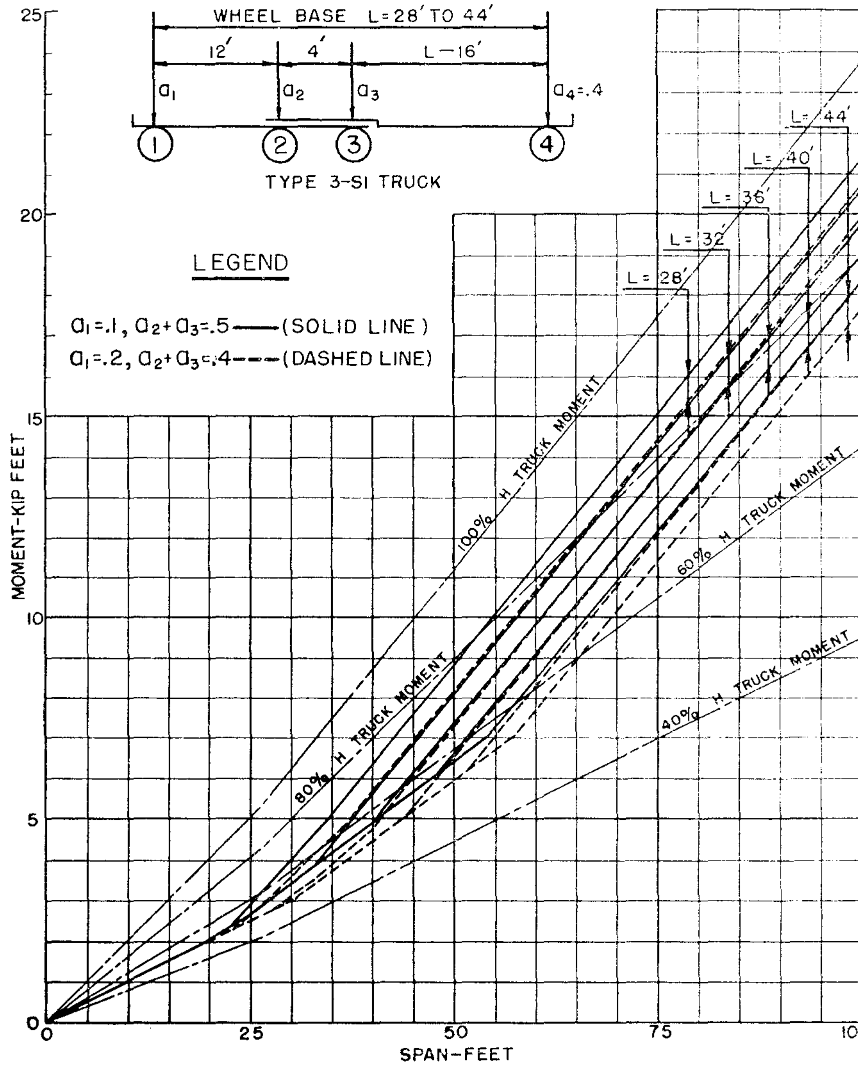


Figure 9.6e

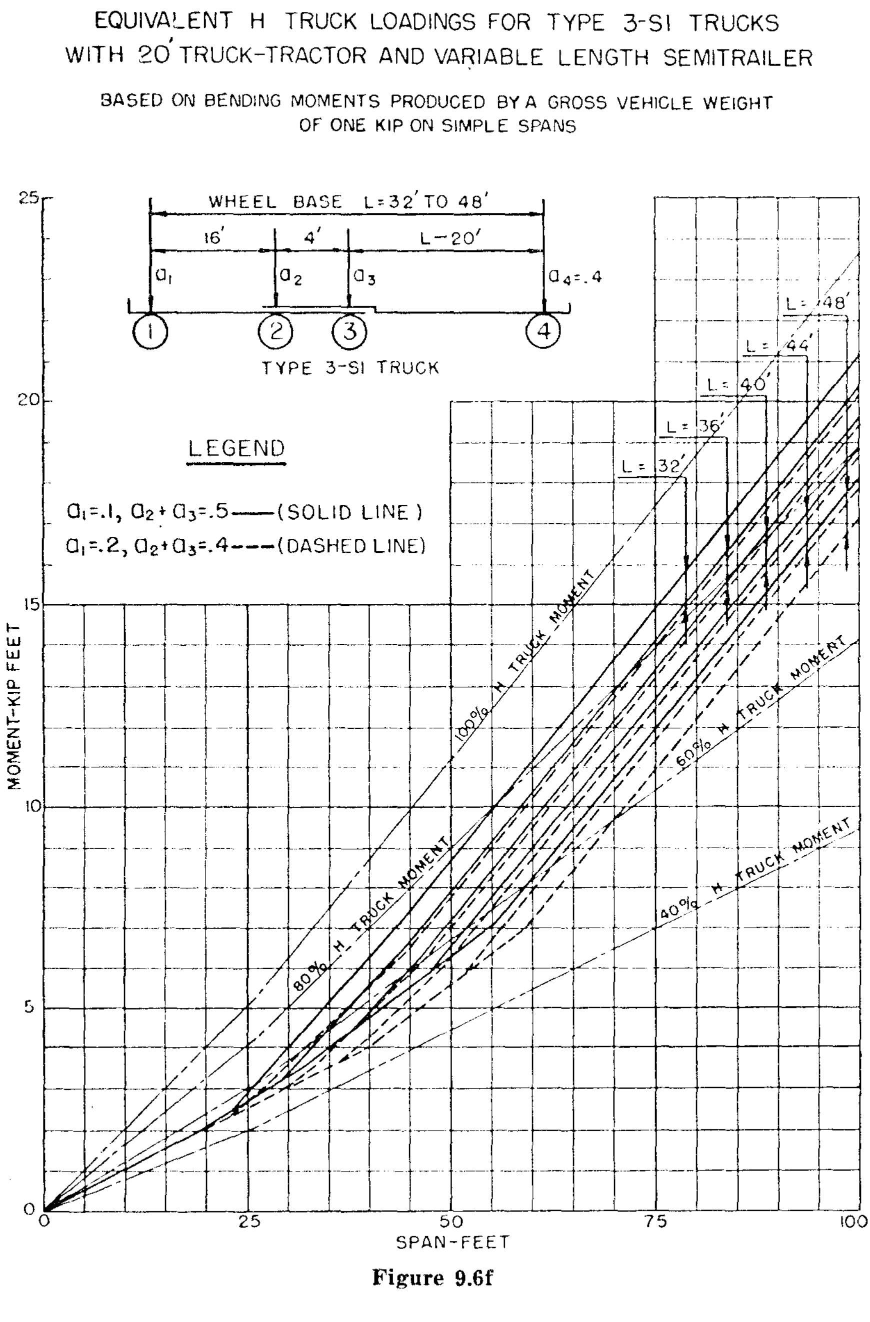

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS
WITH 20' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=32' TO 48'
16'
4'
L-20'
a1
a2
a3
a4=.4
TYPE 3-S1 TRUCK
LEGEND
a1=.1, a2+a3=.5 —— (SOLID LINE)
a1=.2, a2+a3=.4 - - - (DASHED LINE)
L=48'
L=44'
L=40'
L=36'
L=32'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.6f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

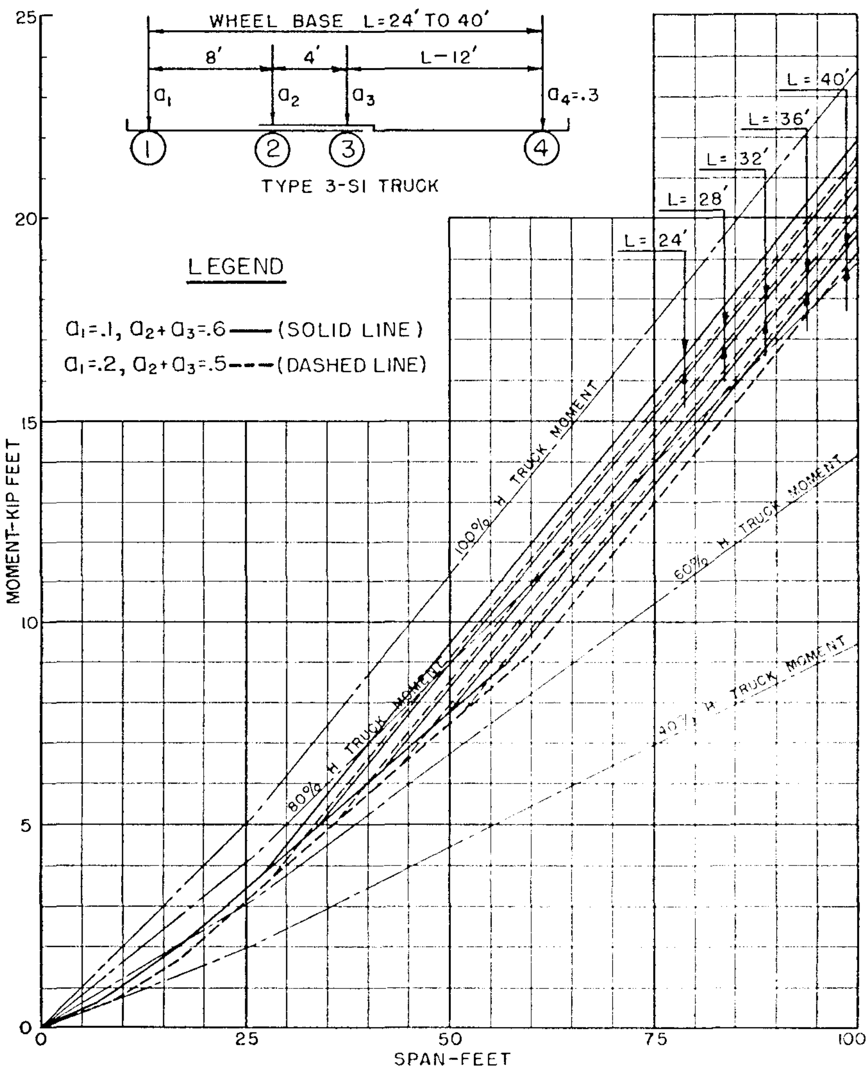


Figure 9.6g

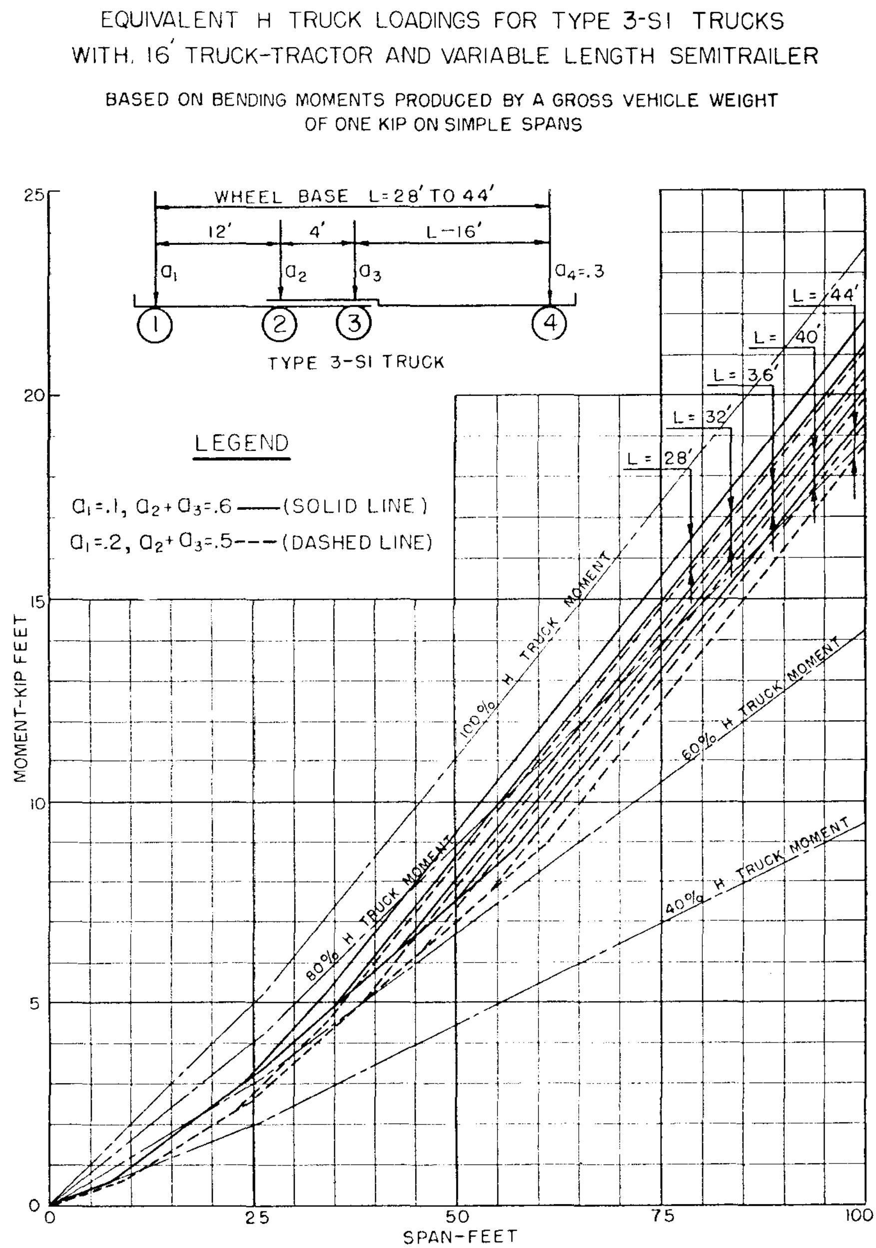

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS
WITH 16' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=28' TO 44'
12'
4'
L-16'
a1
a2
a3
a4=.3
1
2
3
4
TYPE 3-S1 TRUCK
LEGEND
a1=.1, a2+a3=.6 —— (SOLID LINE)
a1=.2, a2+a3=.5 - - - (DASHED LINE)
L = 44'
L = 40'
L = 36'
L = 32'
L = 28'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.6h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S1 TRUCKS WITH 20′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

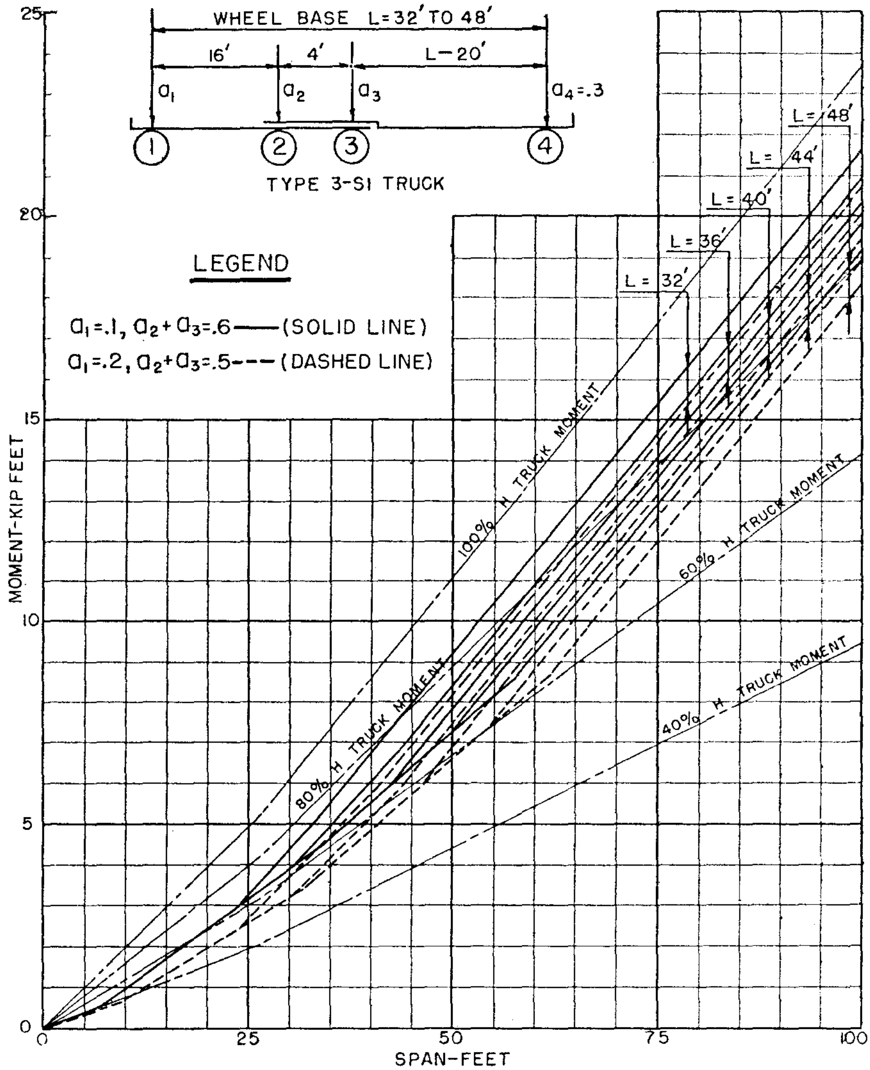


Figure 9.6i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WITH 12′ TRUCK–TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

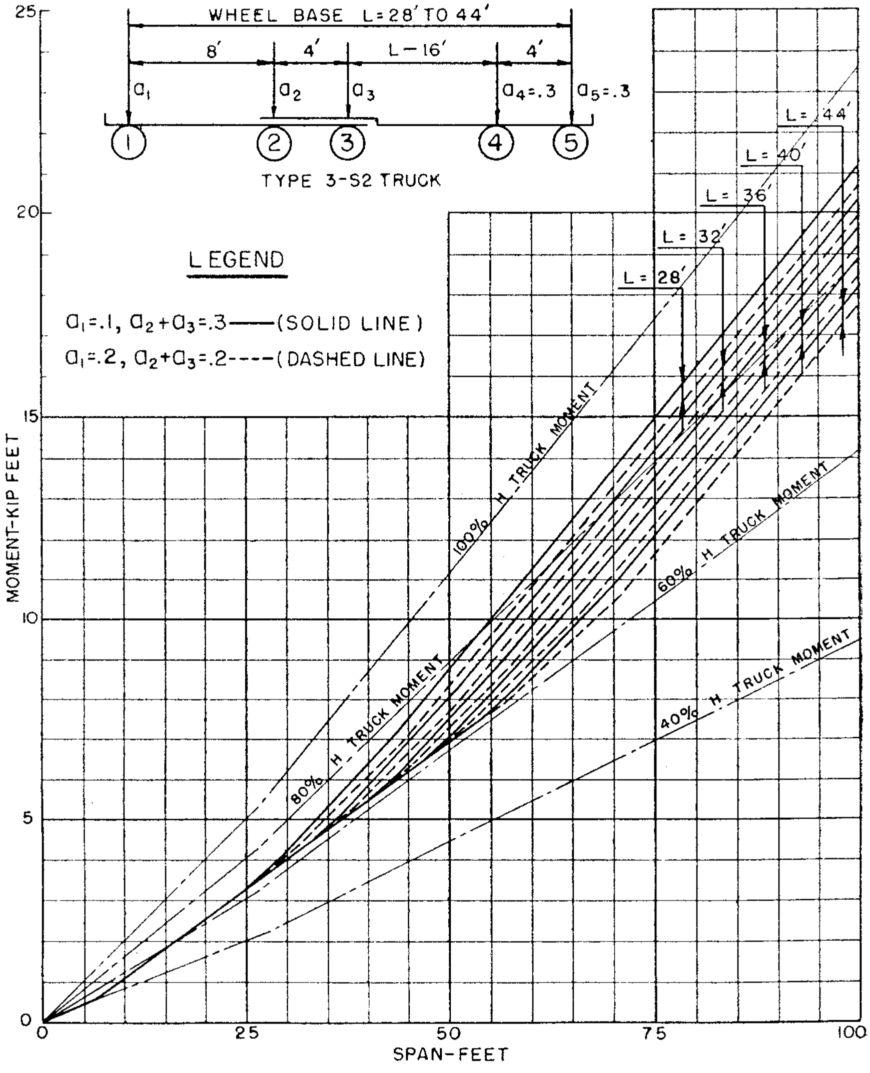


Figure 9.7a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

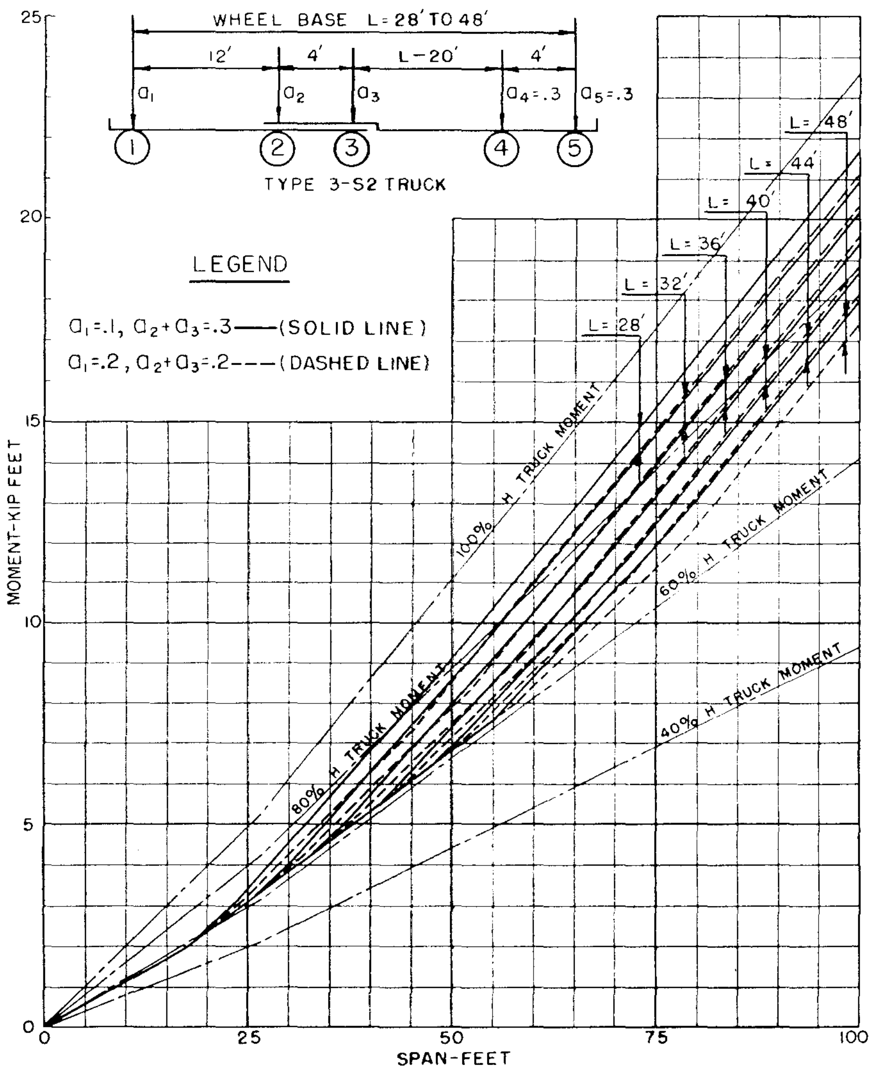


Figure 9.7b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WITH 20′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

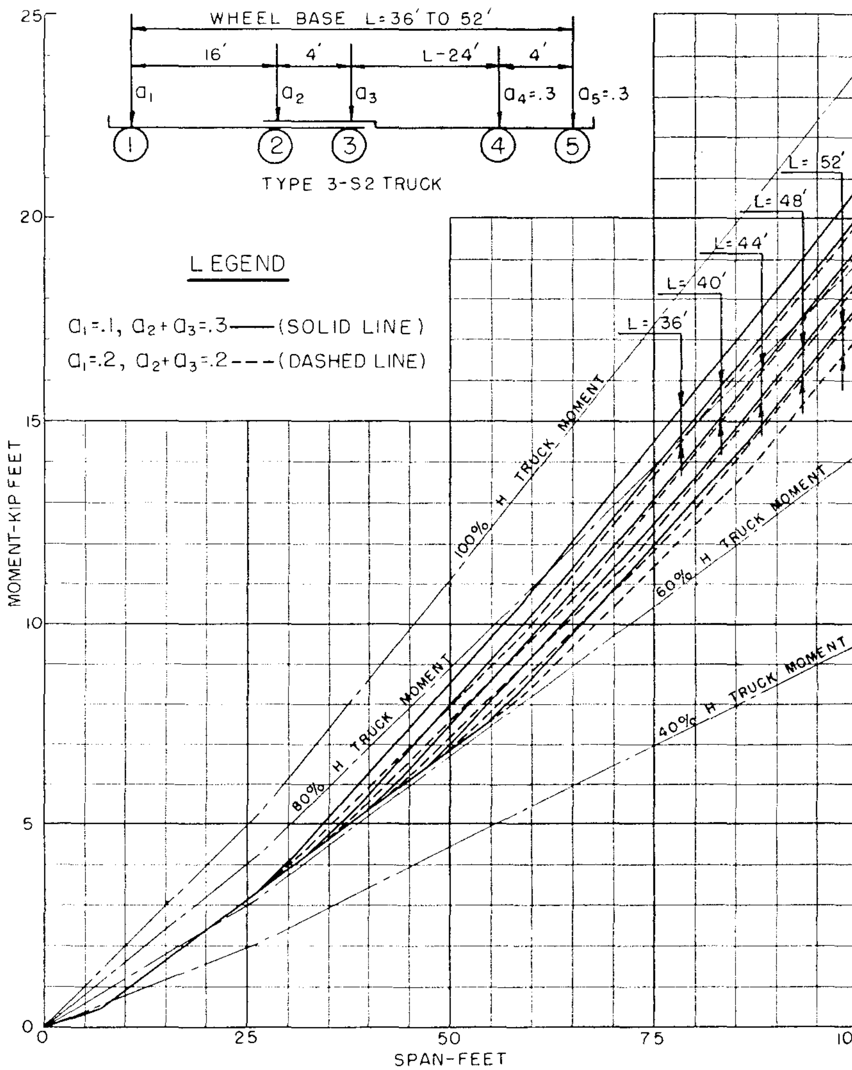


Figure 9.7c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS WITH 12' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

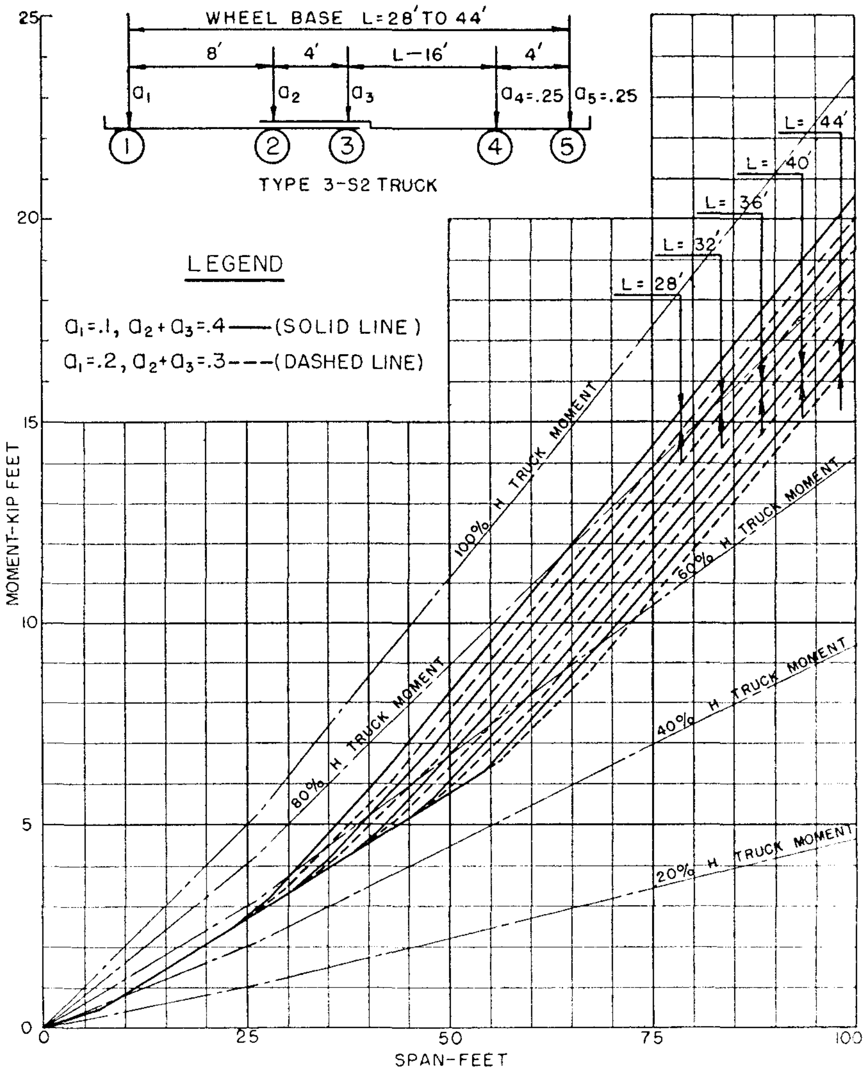


Figure 9.7d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WITH 16' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

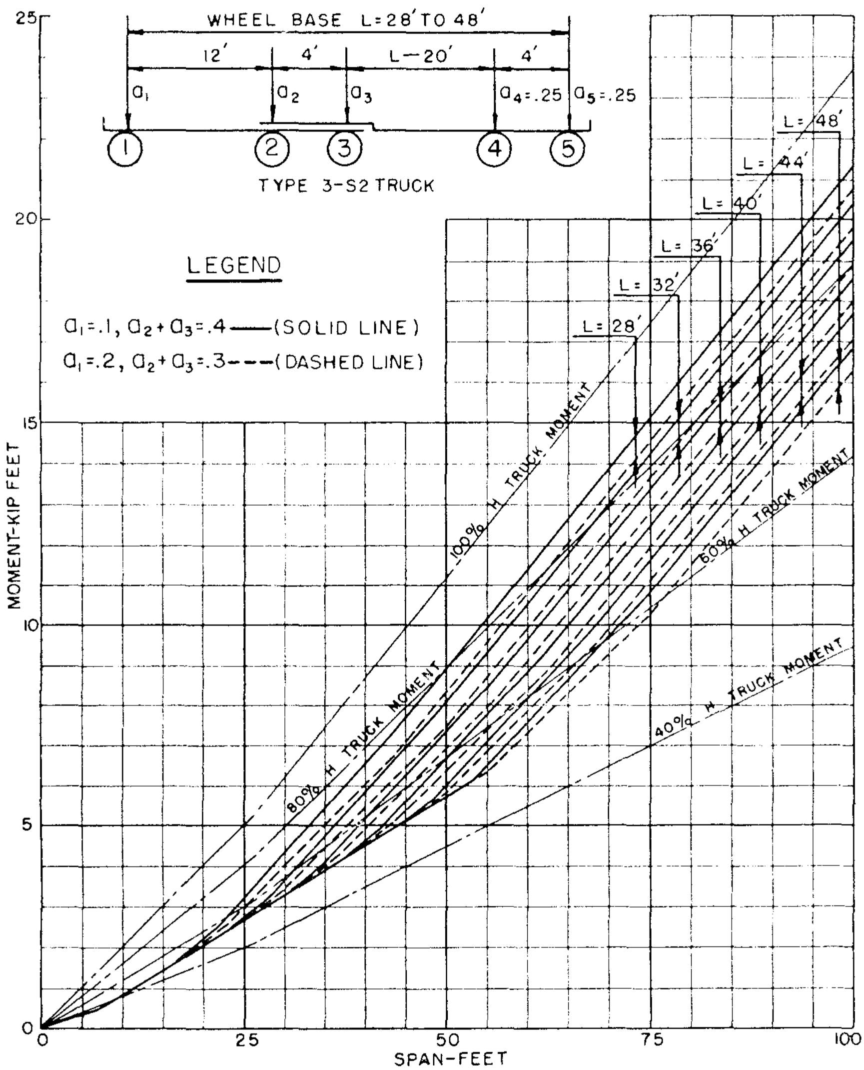


Figure 9.7e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS WITH 20′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

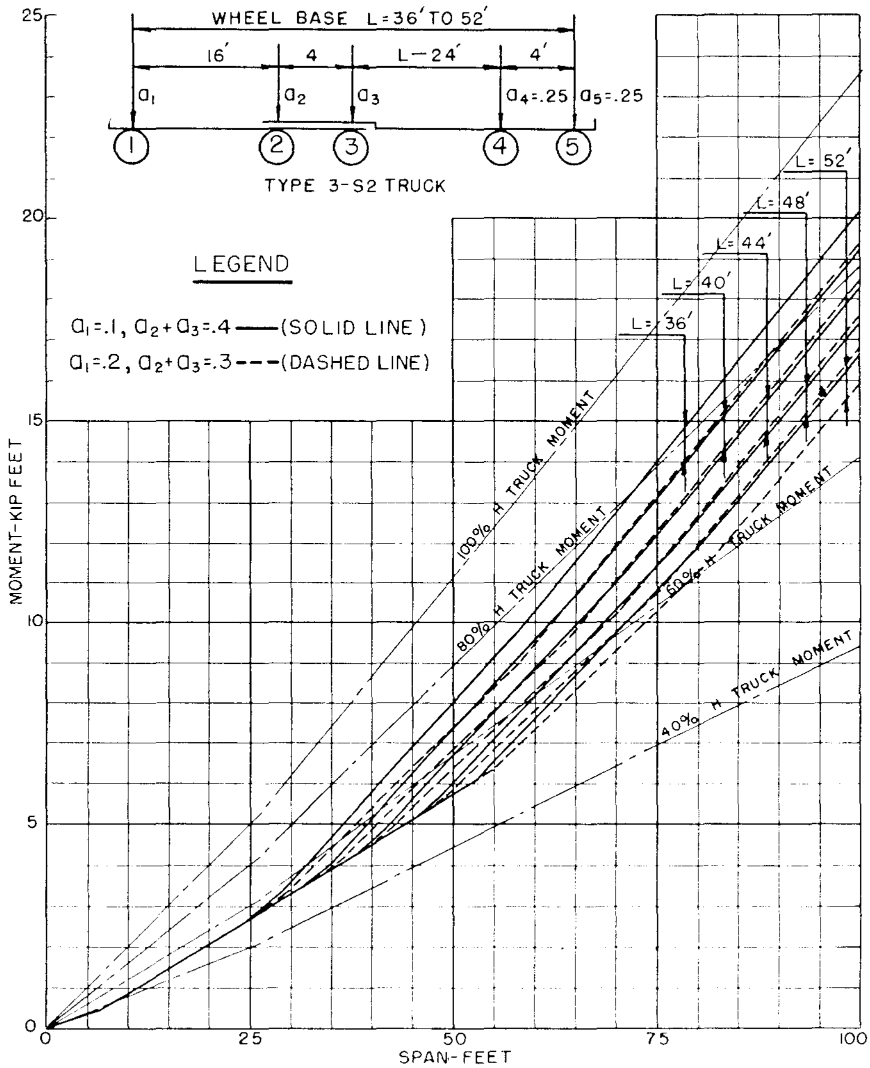


Figure 9.7f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

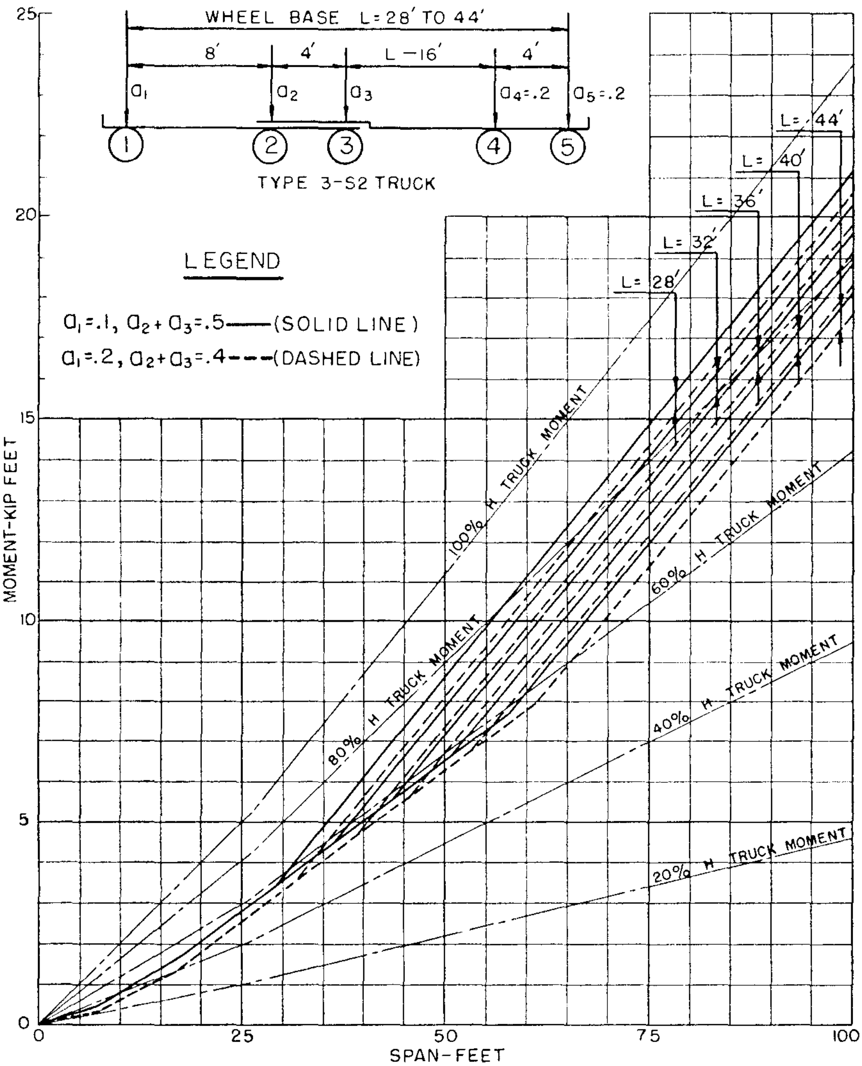


Figure 9.7g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

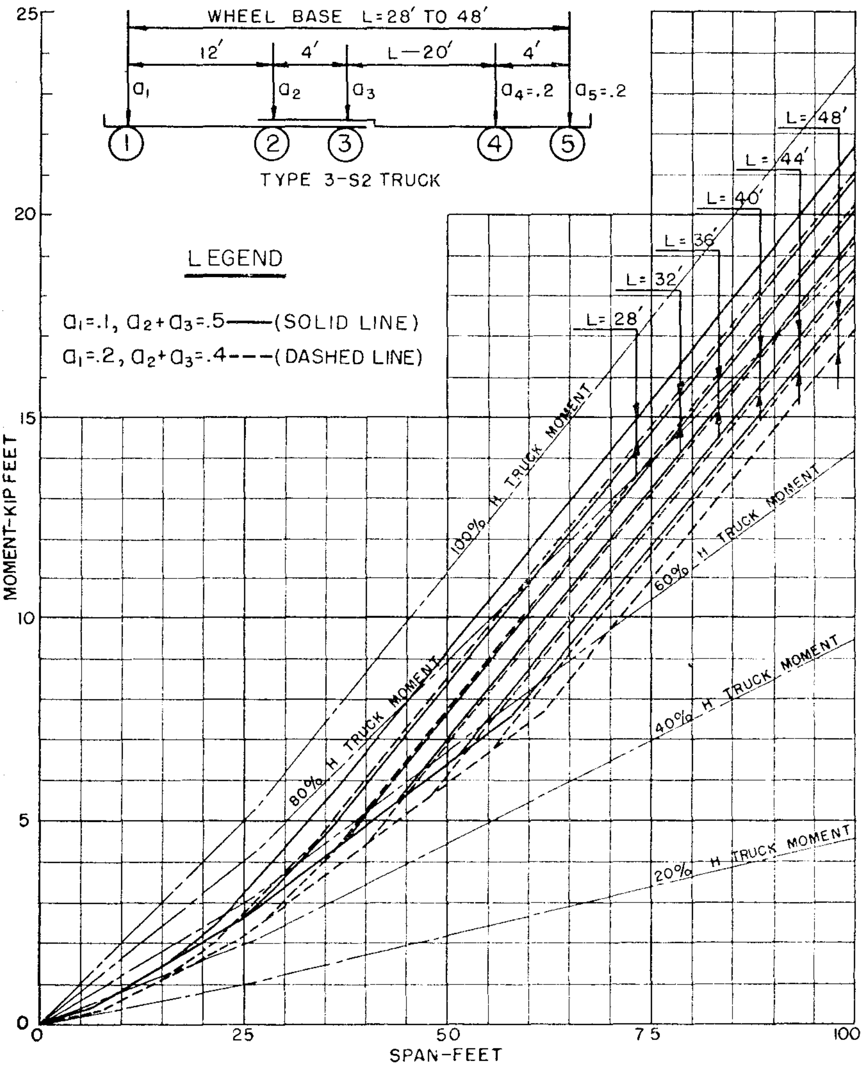


Figure 9.7h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS WITH 20′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

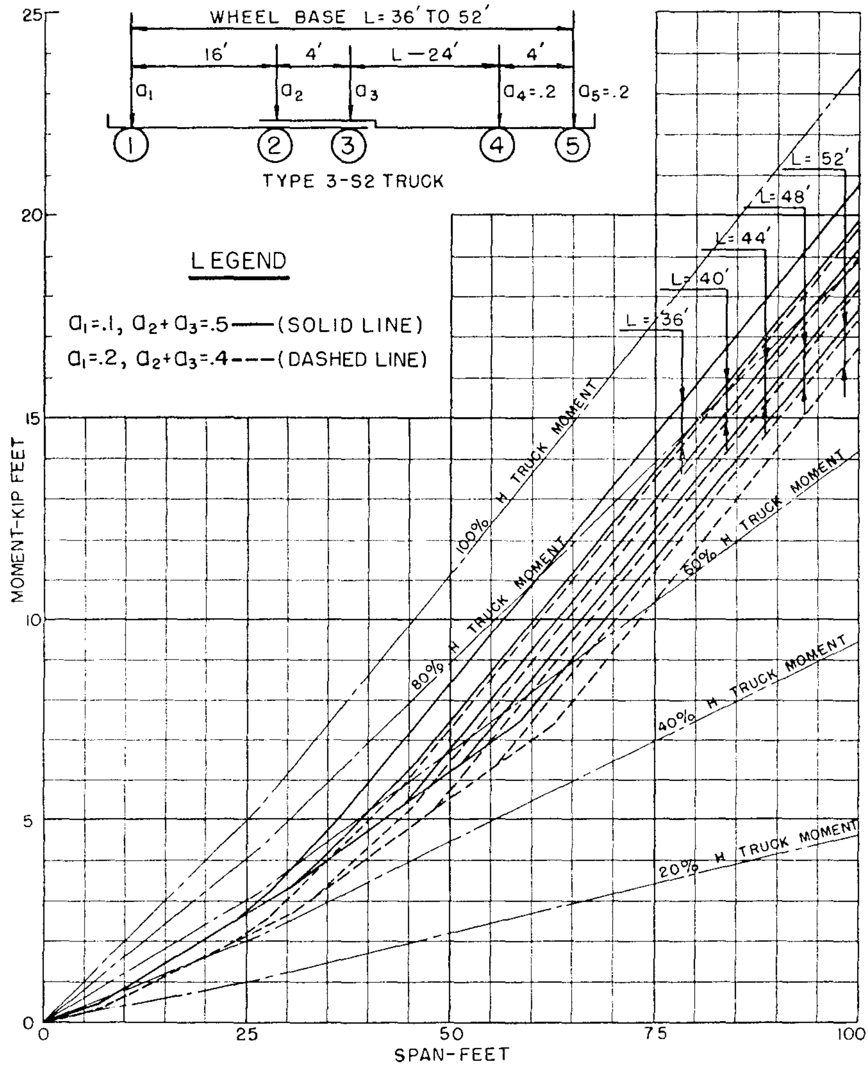


Figure 9.7i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

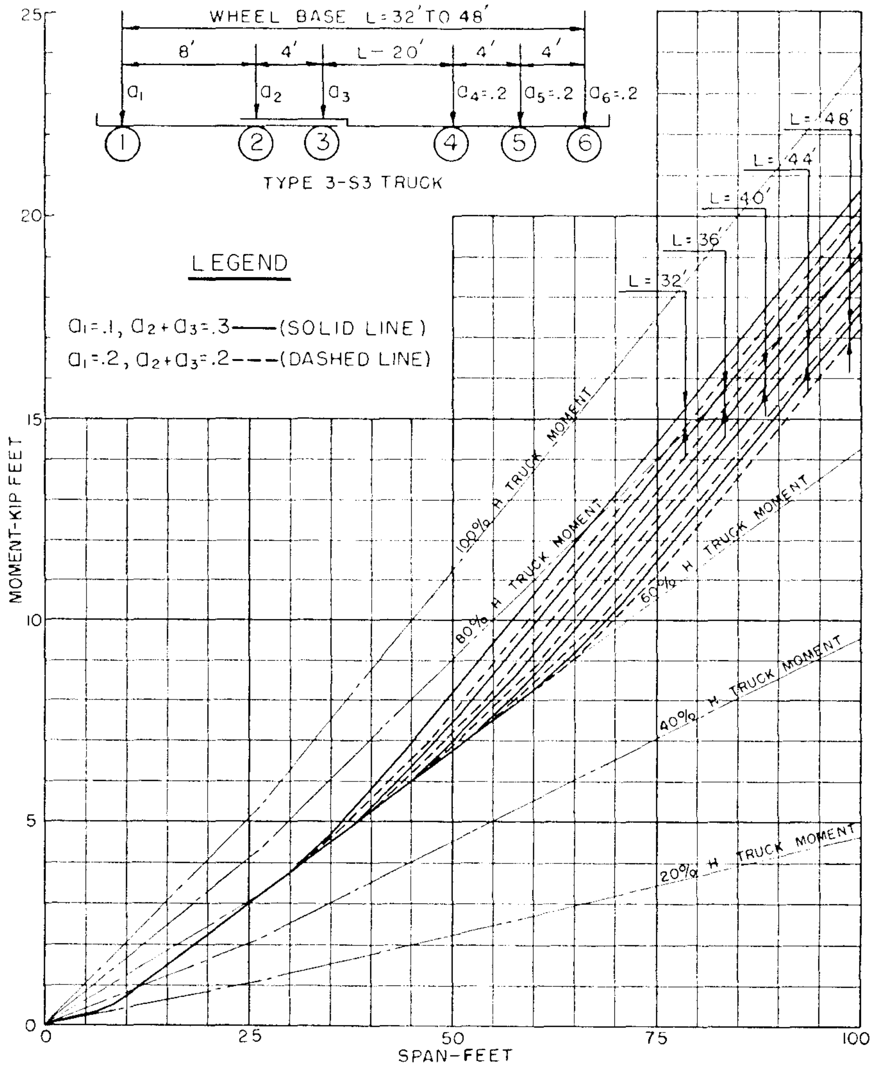


Figure 9.8a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

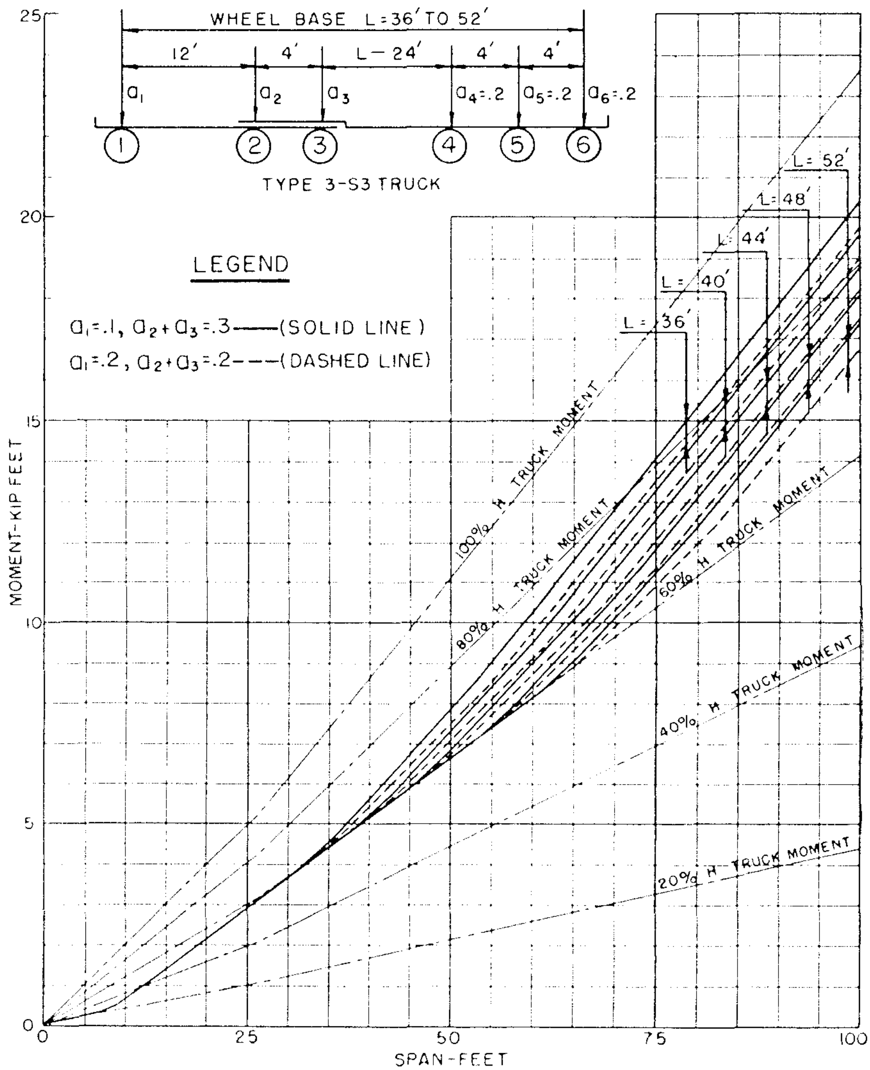


Figure 9.8b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS WITH 20' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

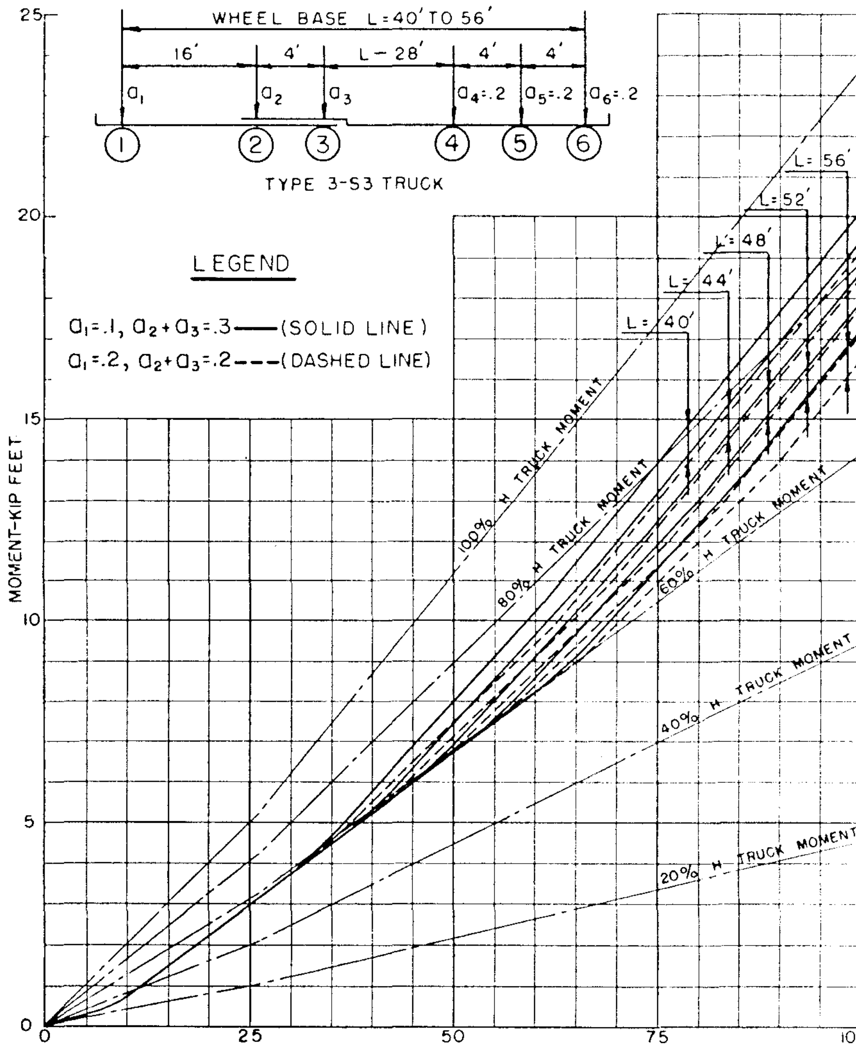


Figure 9.8c

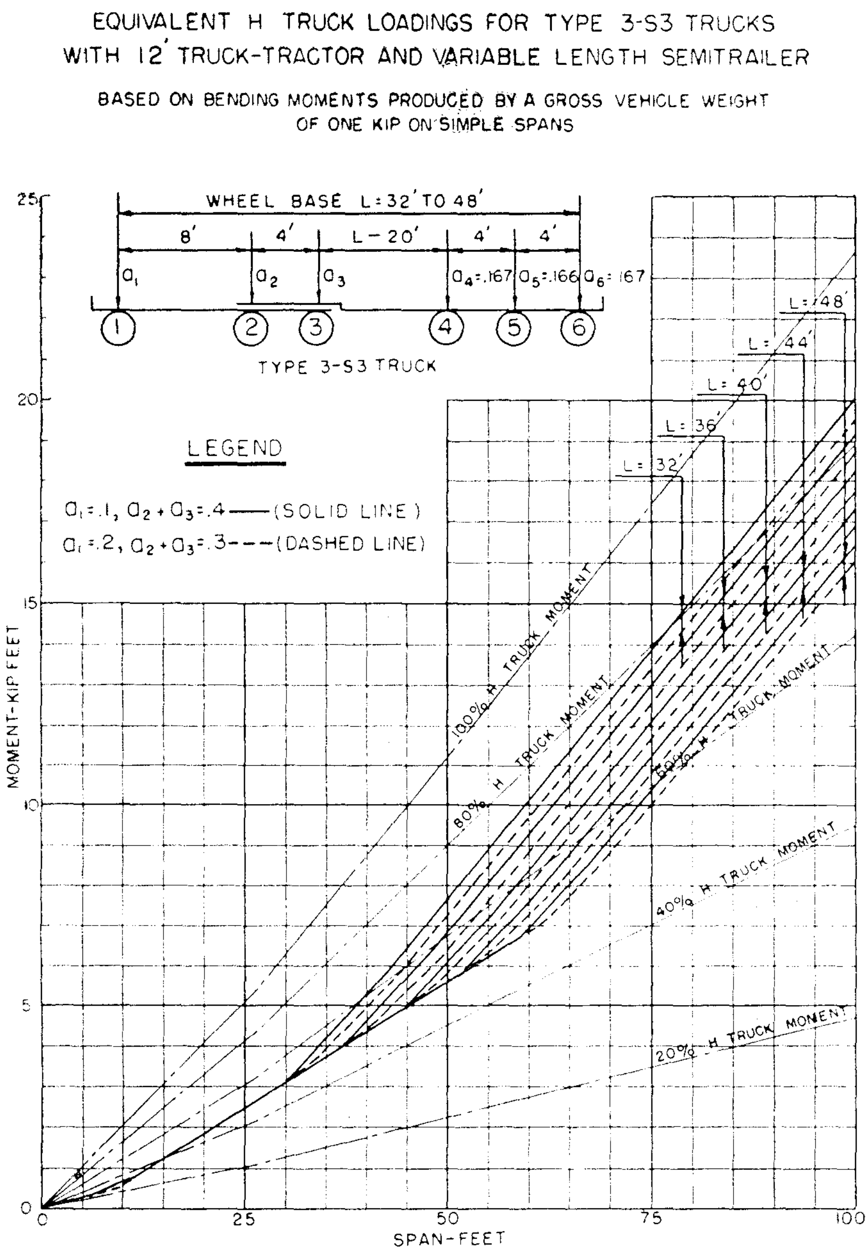

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS
WITH 12' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=32' TO 48'
8'
4'
L − 20'
4'
4'
a1
a2
a3
a4=.167
a5=.166
a6=.167
TYPE 3-S3 TRUCK
LEGEND
a1=.1, a2+a3=.4 —— (SOLID LINE)
a1=.2, a2+a3=.3 - - - (DASHED LINE)
L=32'
L=36'
L=40'
L=44'
L=48'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.8d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

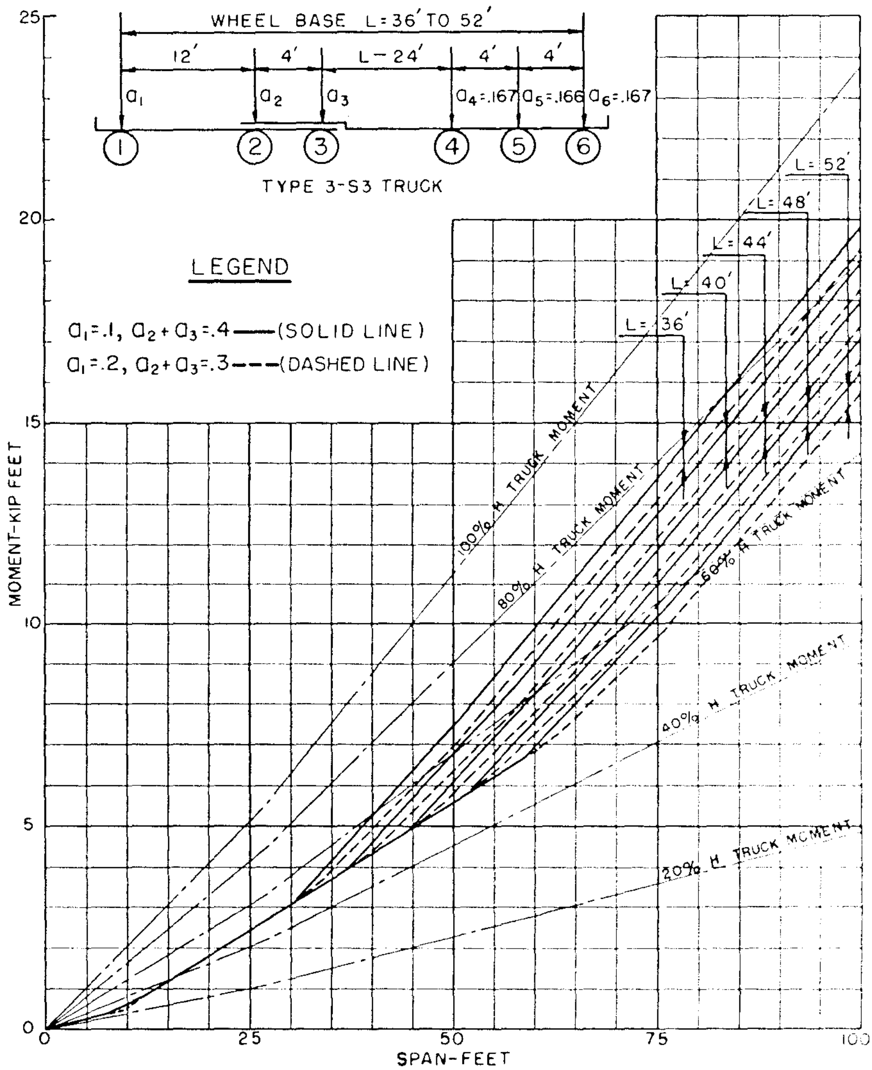


Figure 9.8e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS
WITH 20' TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

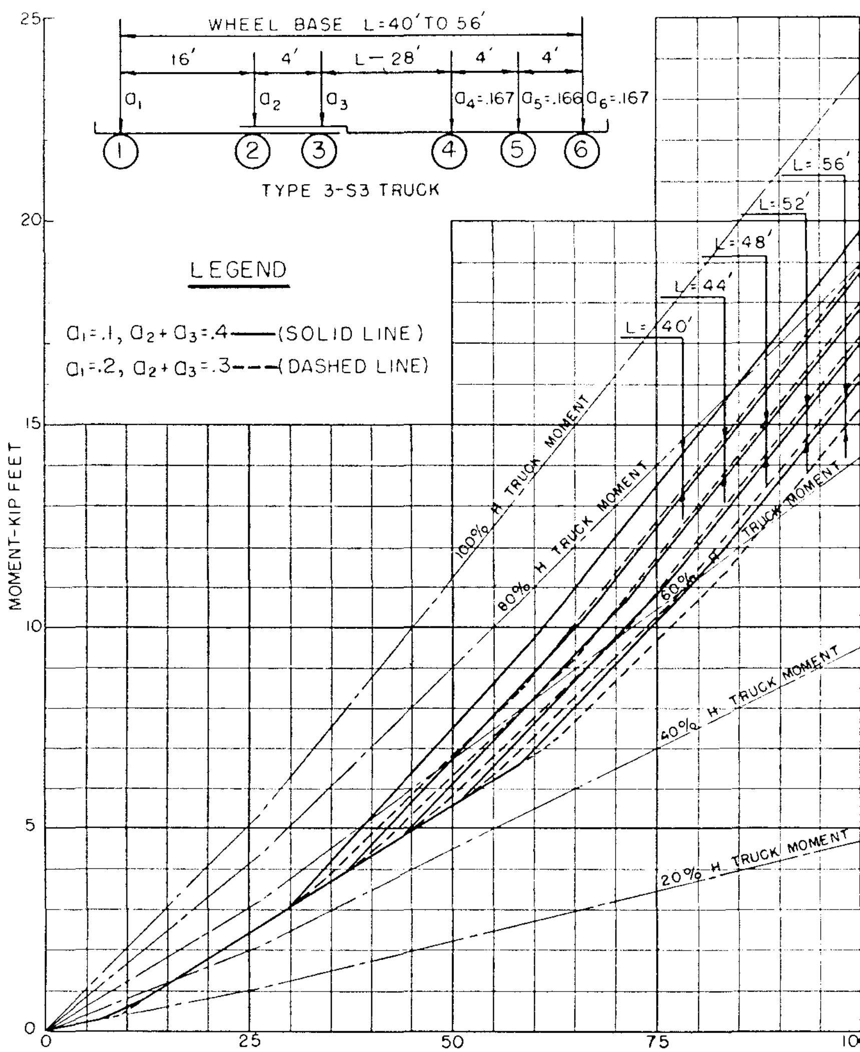


Figure 9.8f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS WITH 12′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

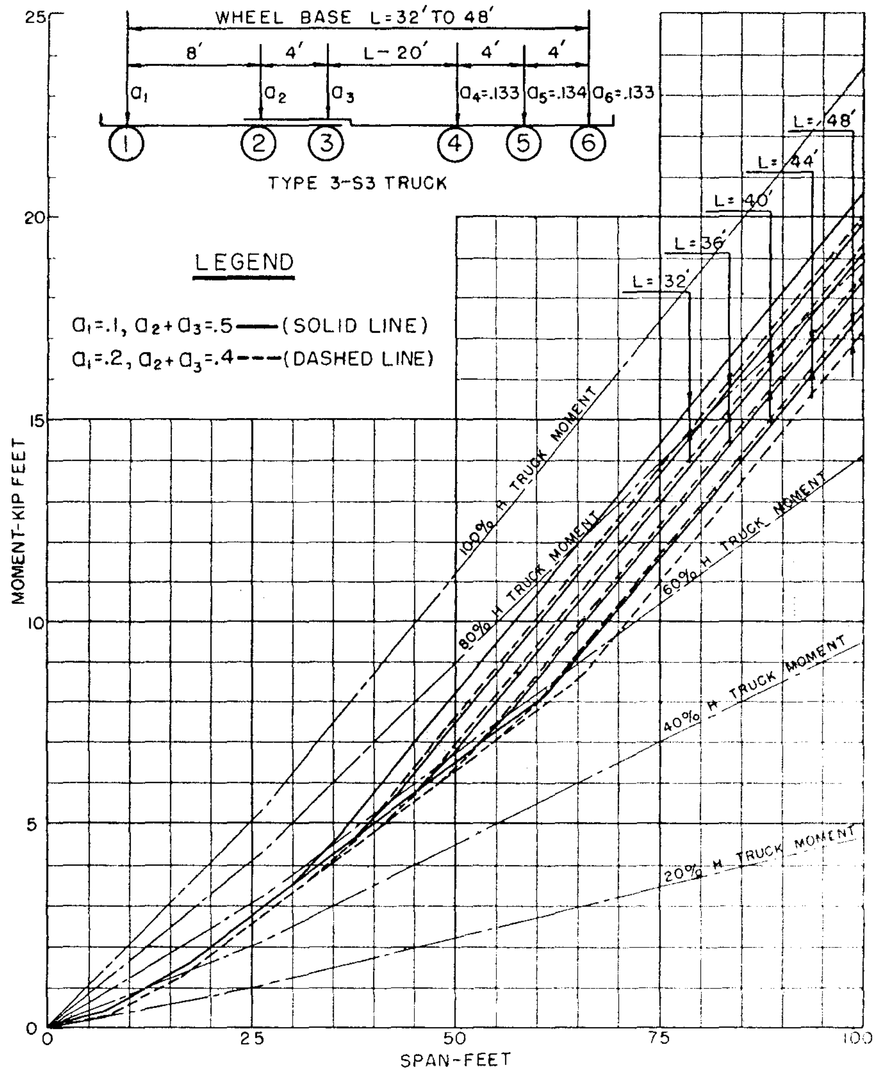


Figure 9.8g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS
WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

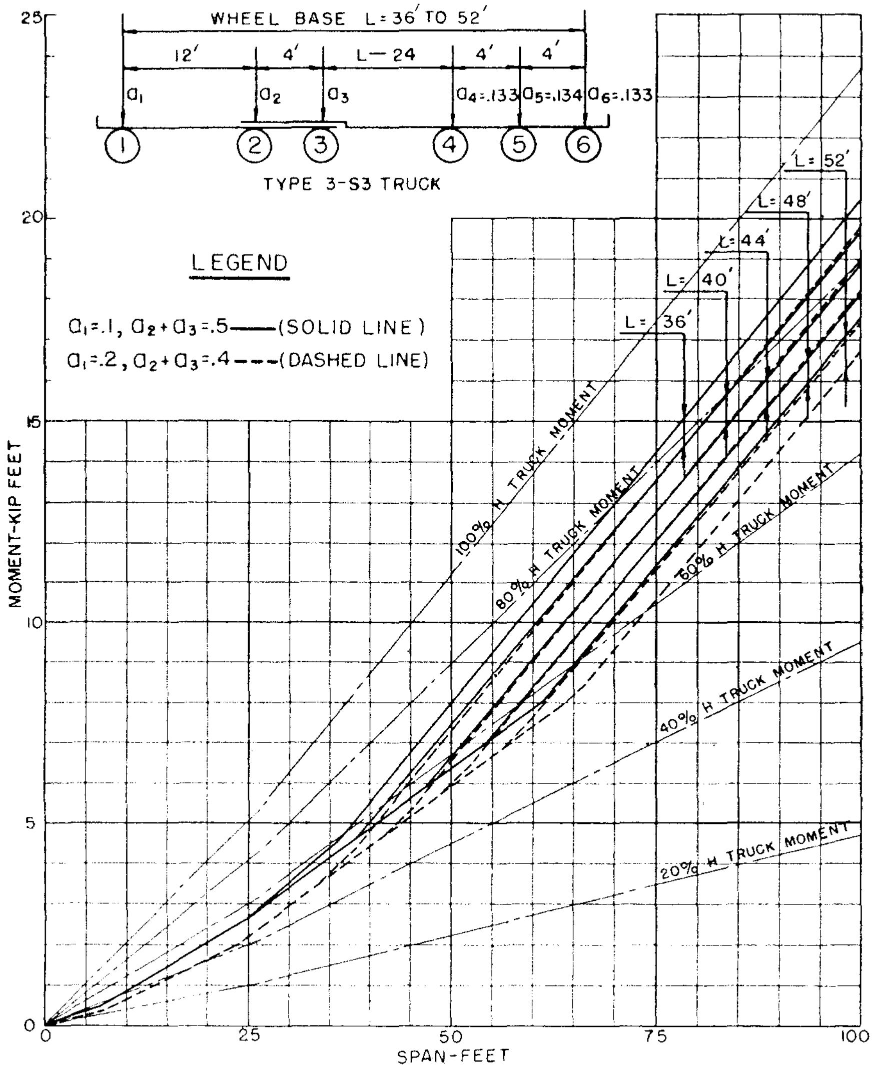


Figure 9.8h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS WITH 20′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

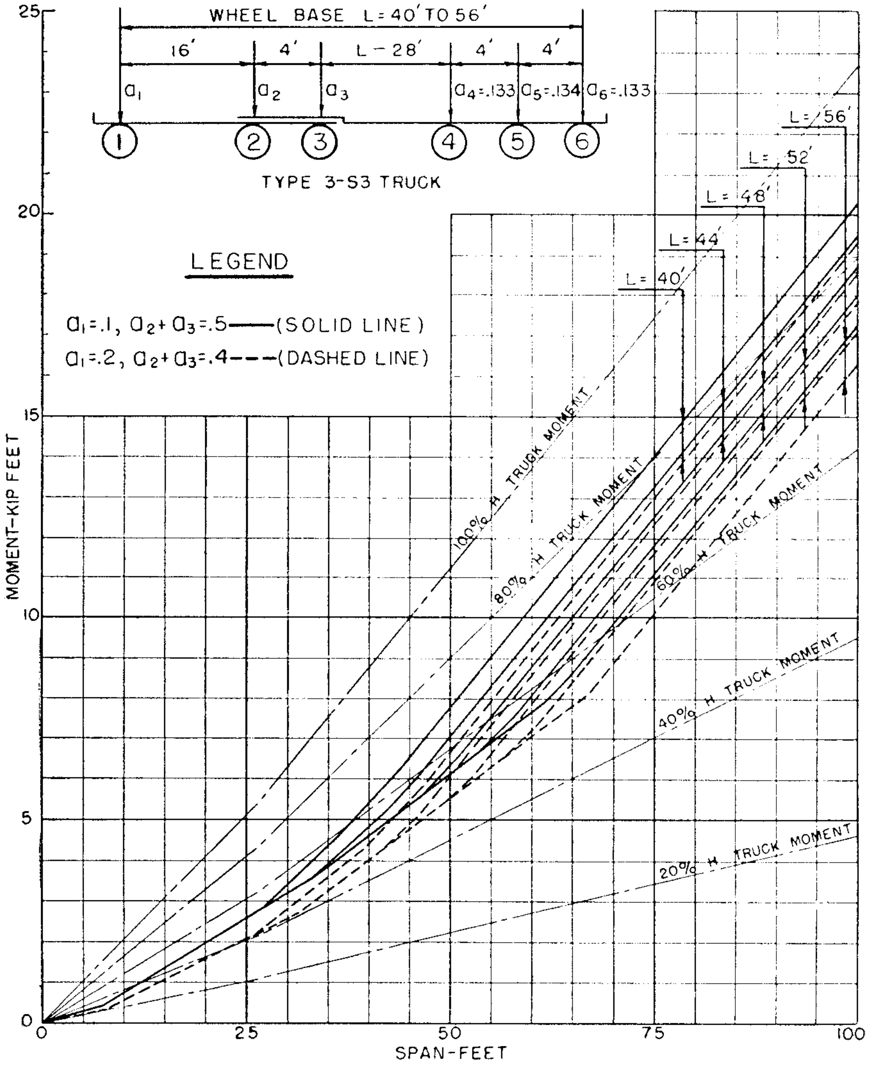
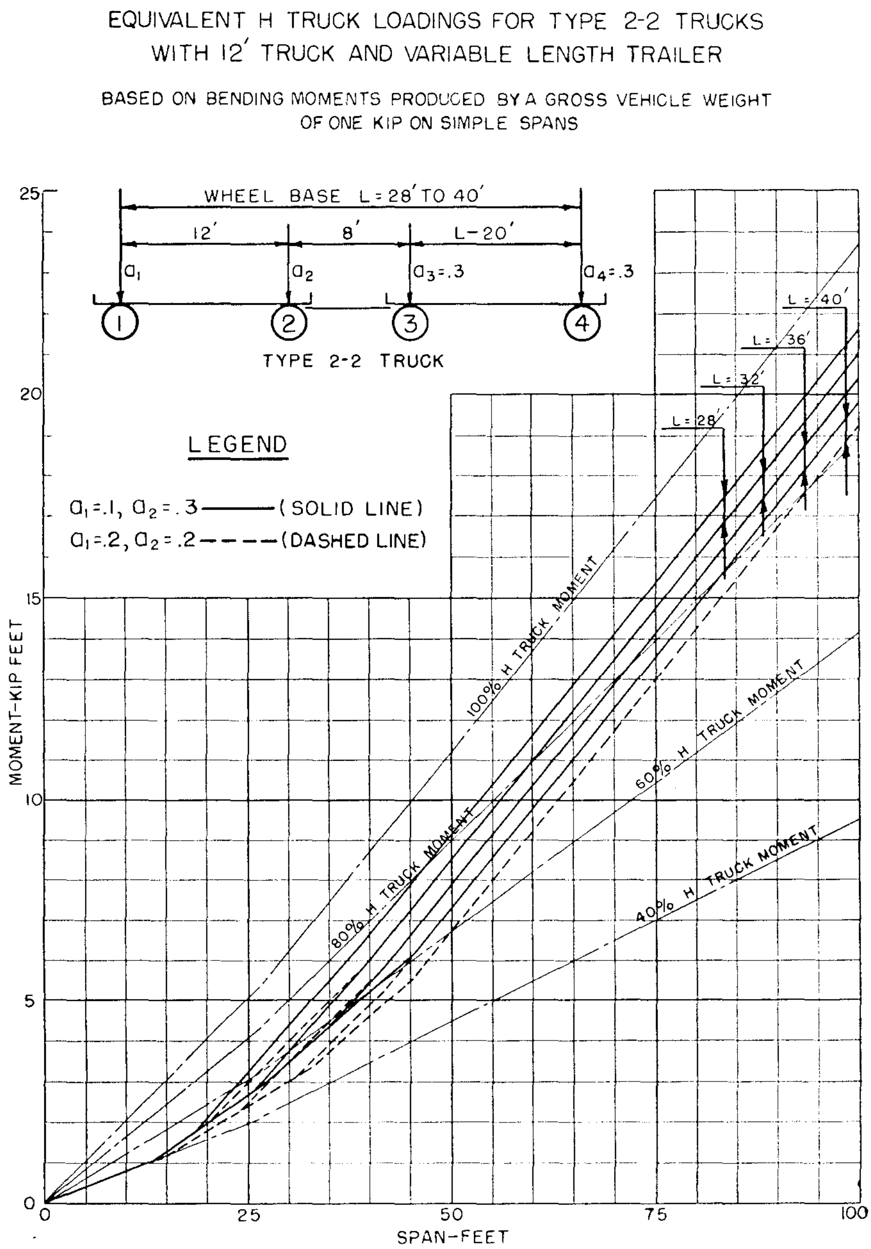


Figure 9.8i



EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS
WITH 12′ TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L = 28′ TO 40′
12′
8′
L−20′
a1
a2
a3 = .3
a4 = .3
1
2
3
4
TYPE 2-2 TRUCK
LEGEND
a1 = .1, a2 = .3 (SOLID LINE)
a1 = .2, a2 = .2 (DASHED LINE)
L = 40′
L = 36′
L = 32′
L = 28′
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.9a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

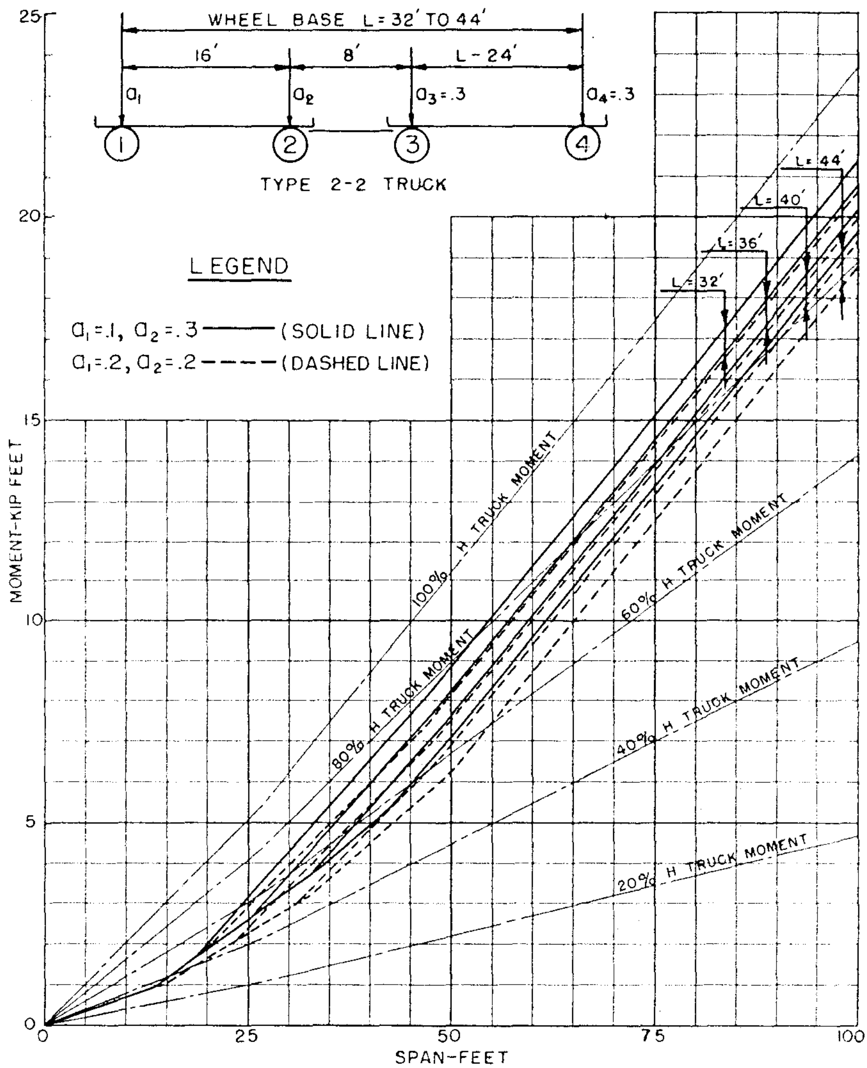


Figure 9.9b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 20' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

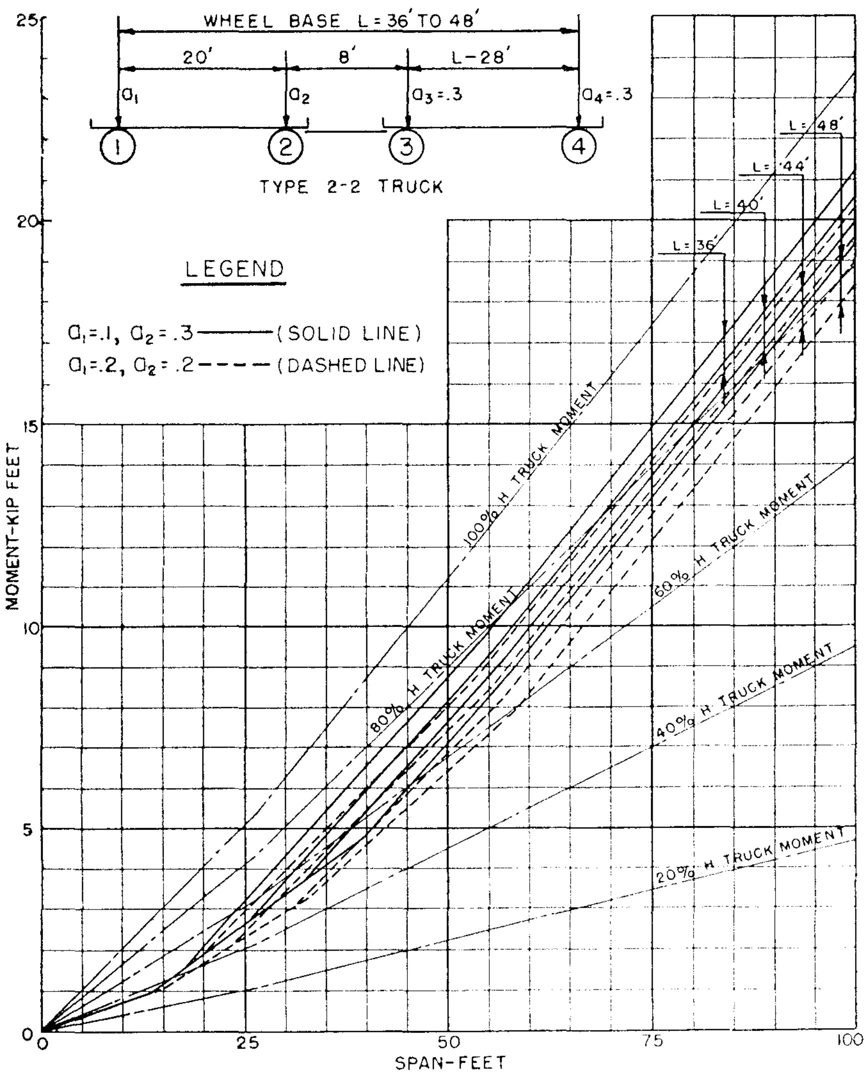


Figure 9.9c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 12′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

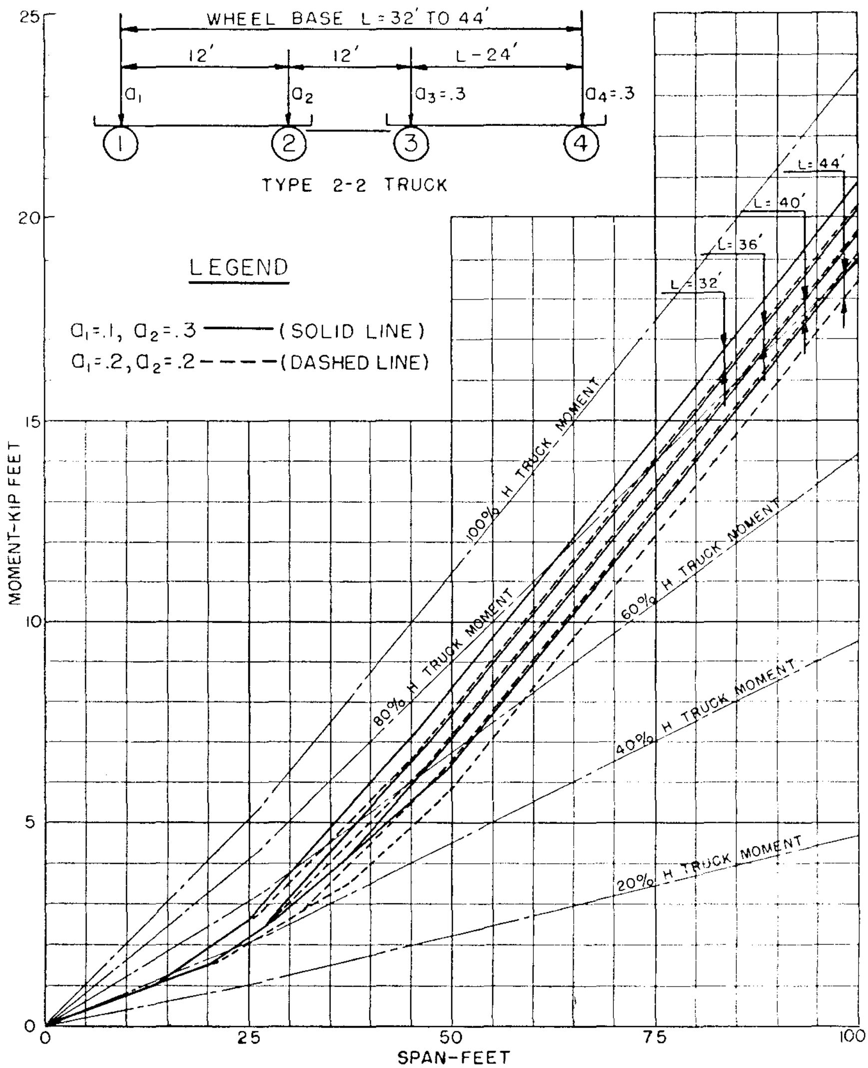


Figure 9.9d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

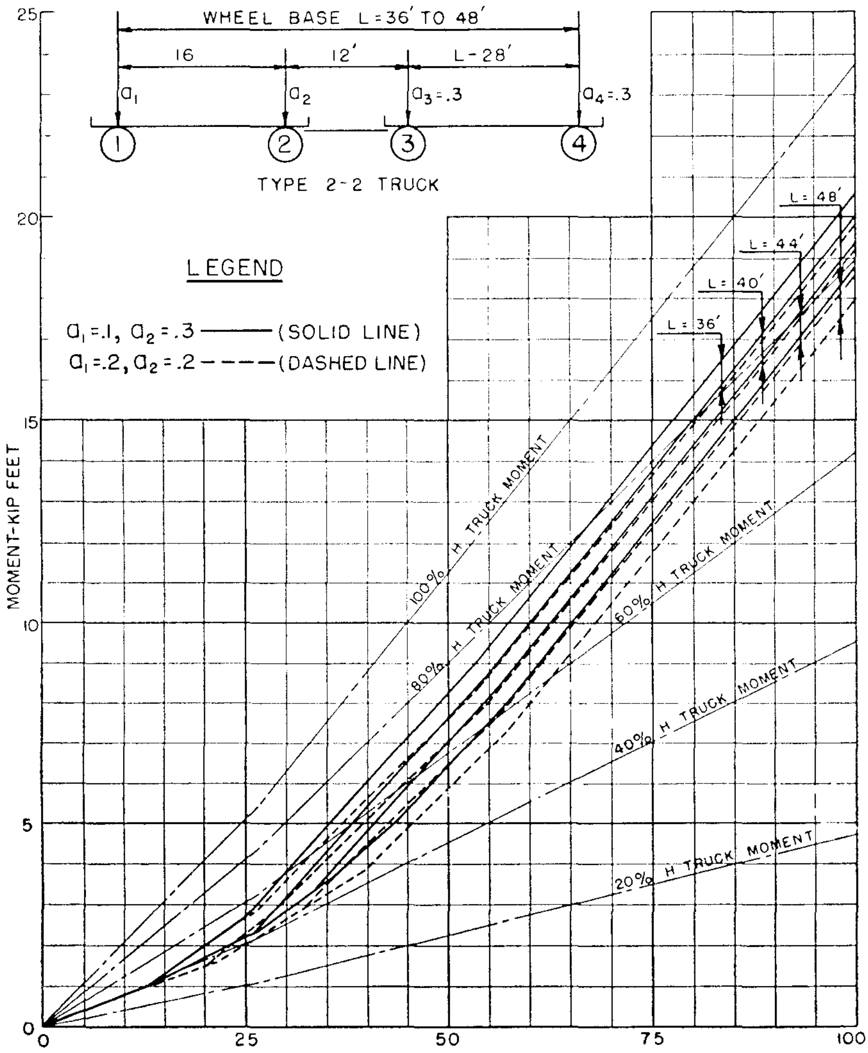


Figure 9.9e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS
WITH 20' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

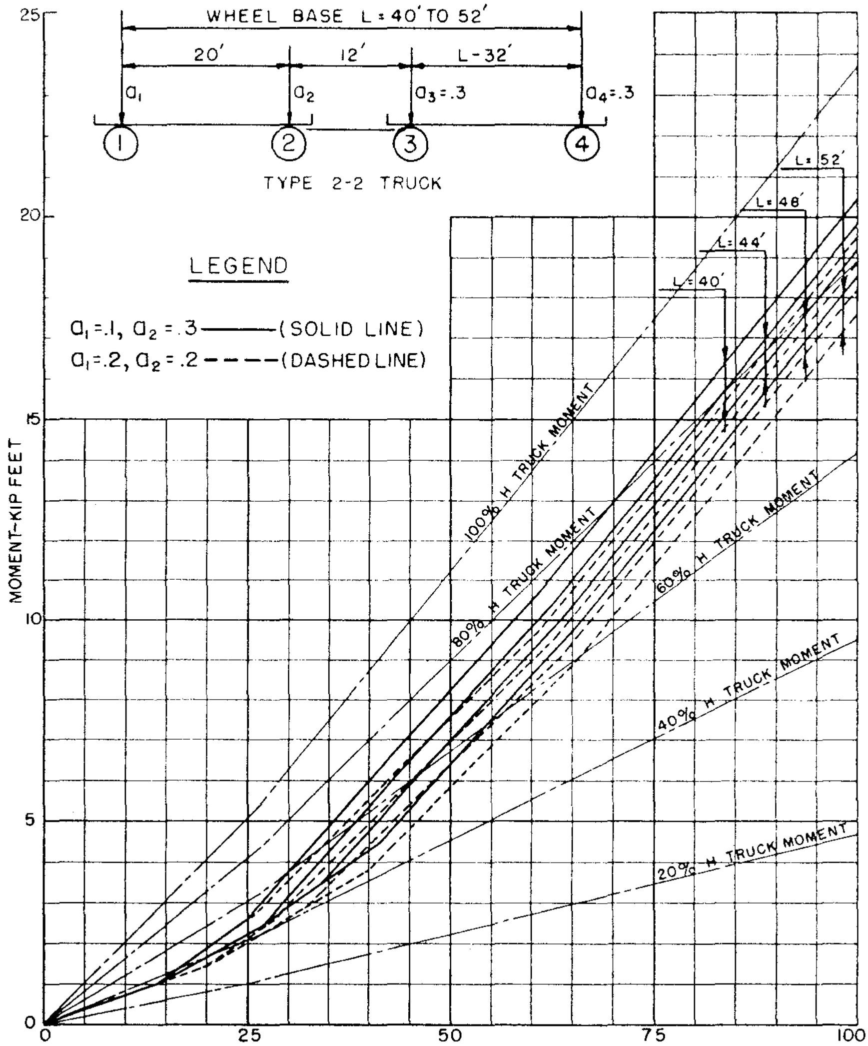


Figure 9.9f

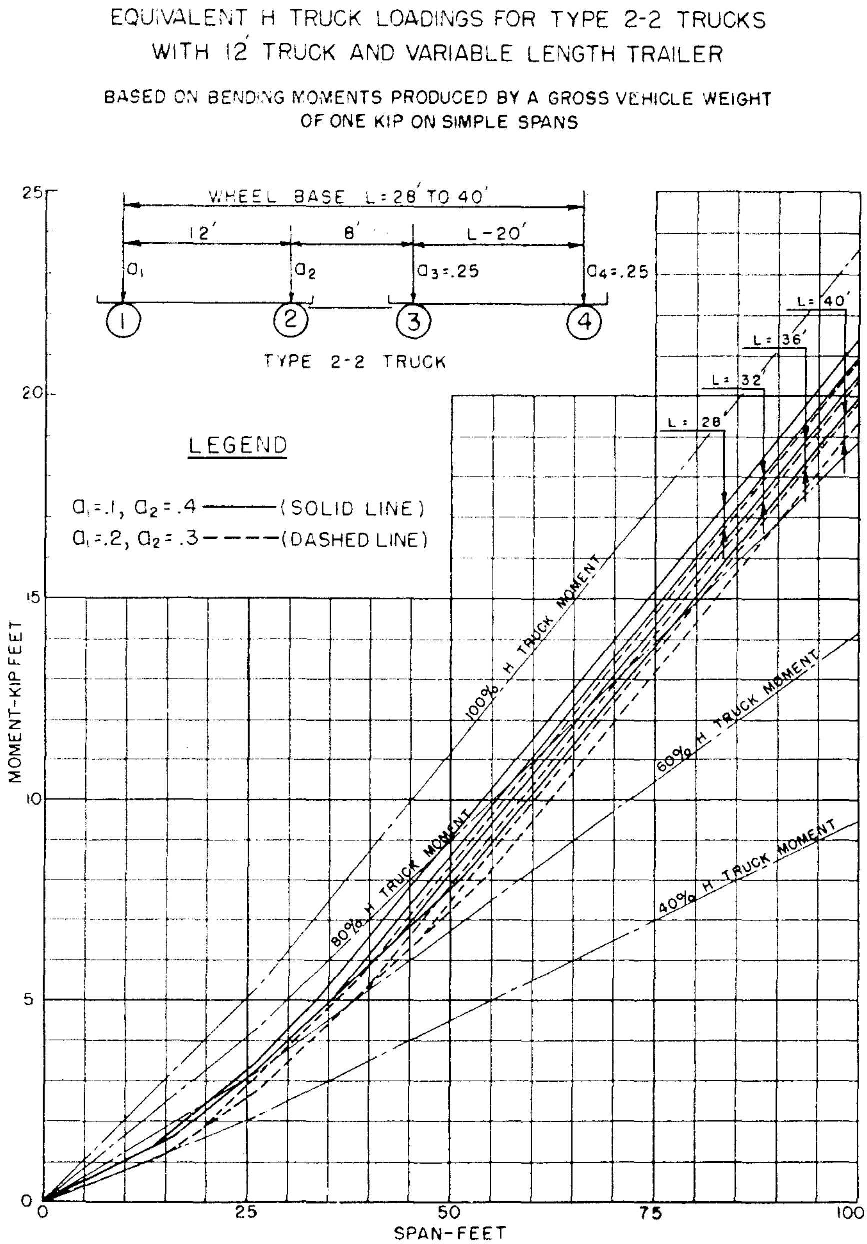

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS
WITH 12' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=28' TO 40'
12'
8'
L-20'
a1
a2
a3=.25
a4=.25
1
2
3
4
TYPE 2-2 TRUCK
LEGEND
a1=.1, a2=.4 (SOLID LINE)
a1=.2, a2=.3 (DASHED LINE)
L=28'
L=32'
L=36'
L=40'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.9g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 16' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

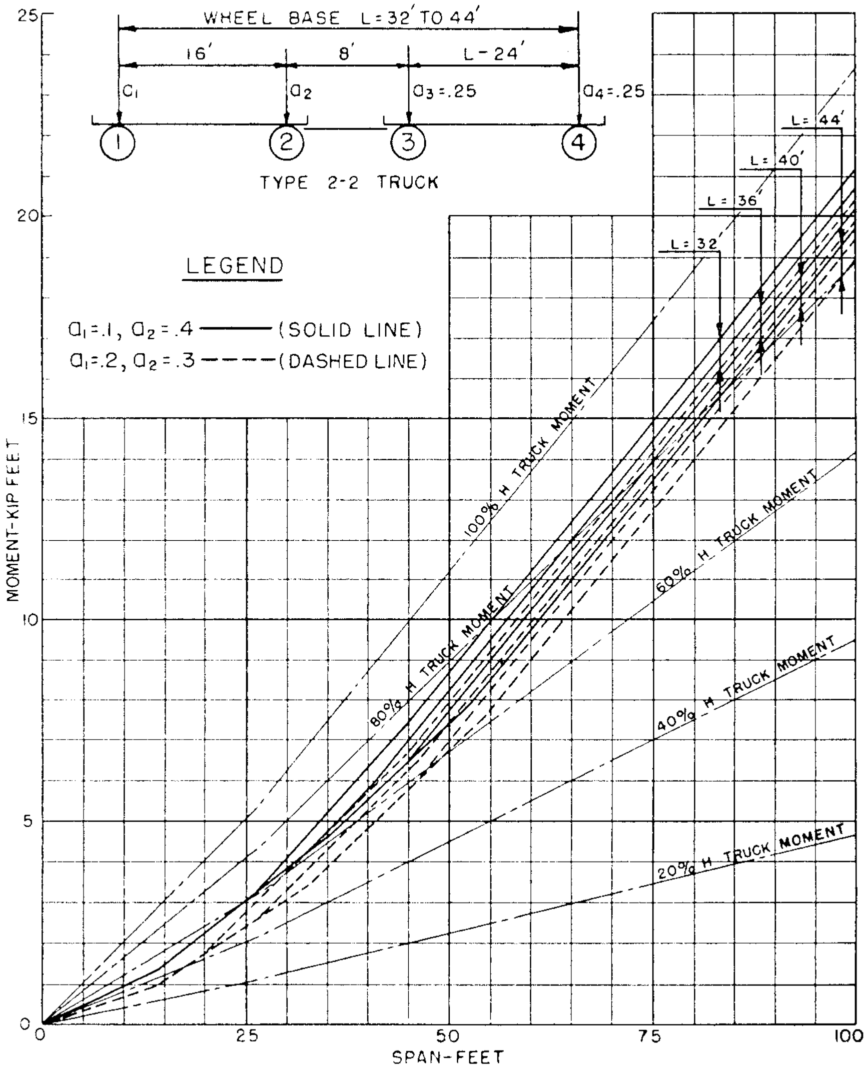


Figure 9.9h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS
WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

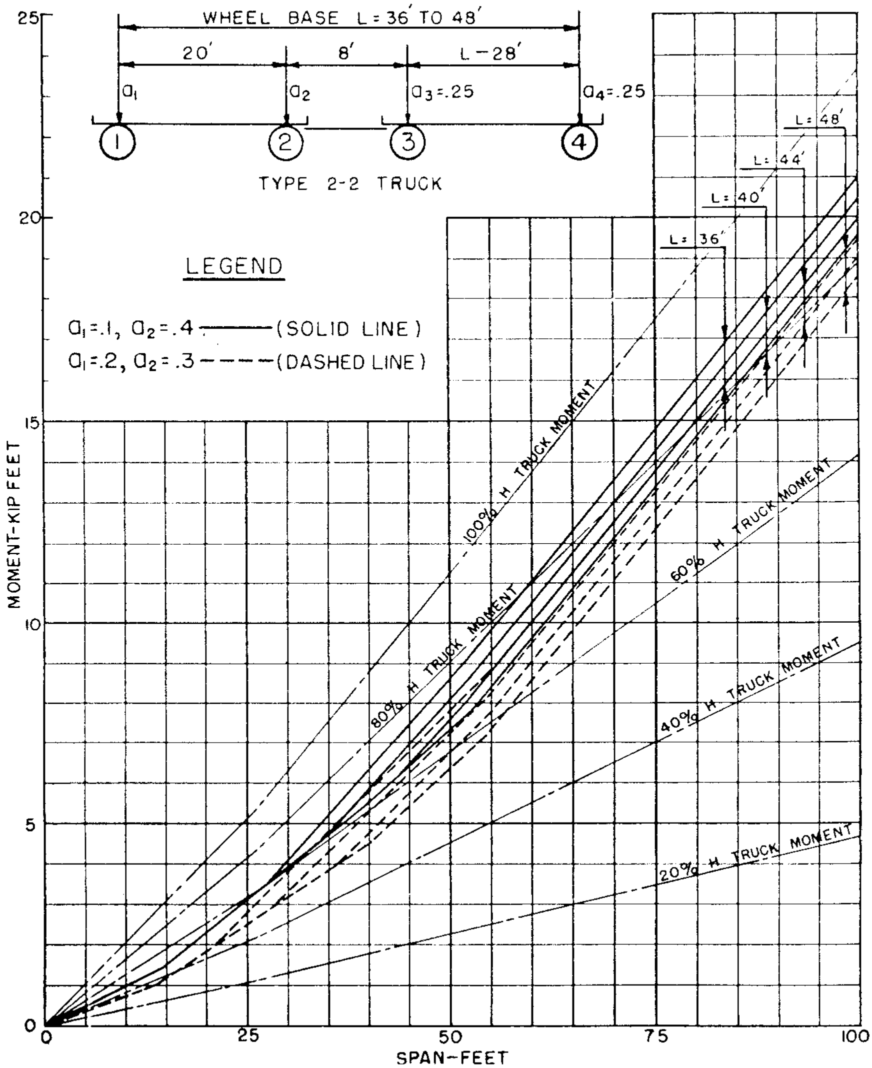


Figure 9.9i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 12′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

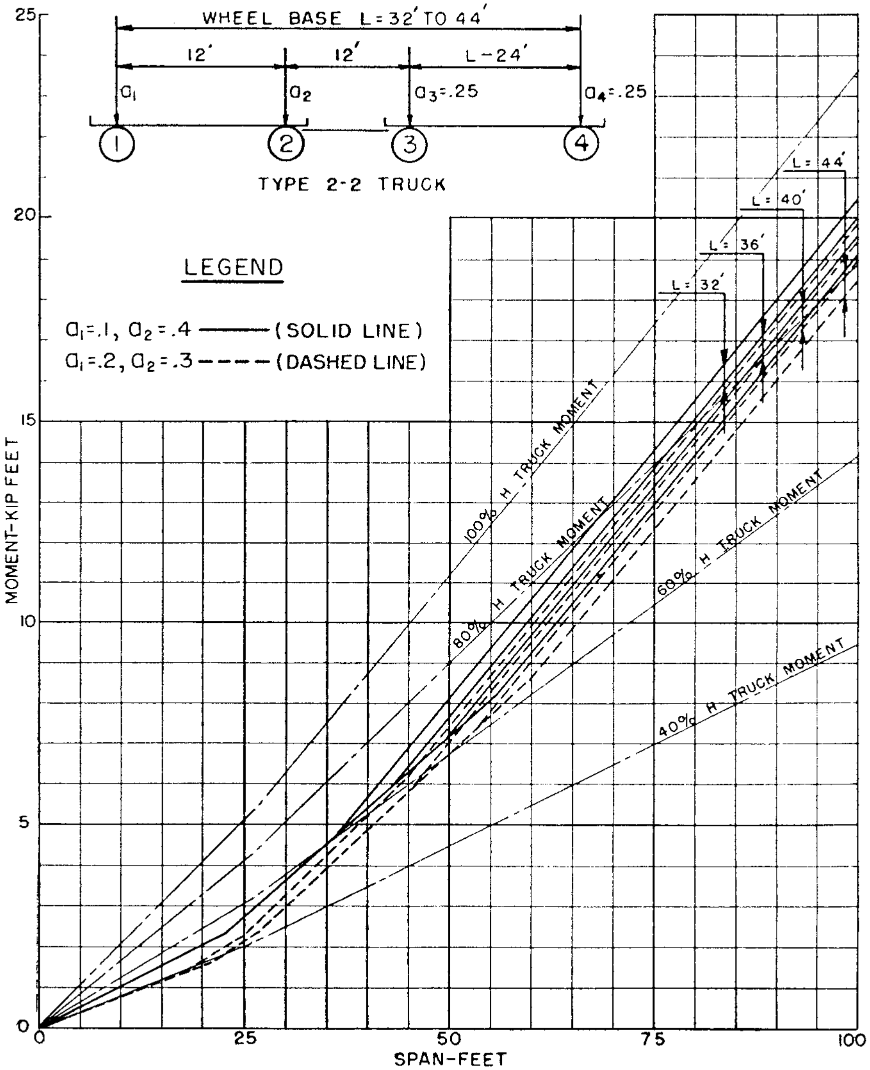
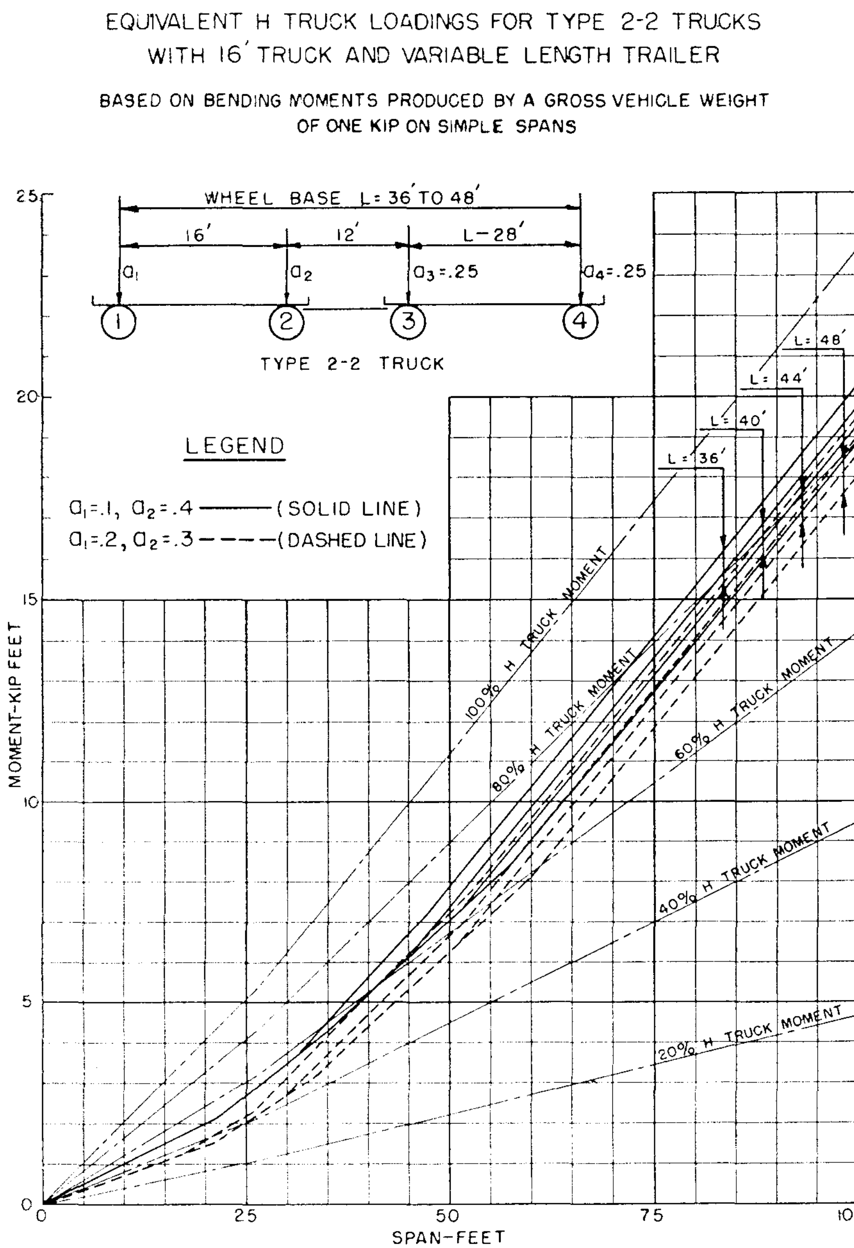


Figure 9.9j



EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS
WITH 16' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L = 36' TO 48'
16'
12'
L − 28'
a1
a2
a3 = .25
a4 = .25
1
2
3
4
TYPE 2-2 TRUCK
LEGEND
a1 = .1, a2 = .4 ——— (SOLID LINE)
a1 = .2, a2 = .3 – – – – (DASHED LINE)
L = 48'
L = 44'
L = 40'
L = 36'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.9k

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS WITH 20' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

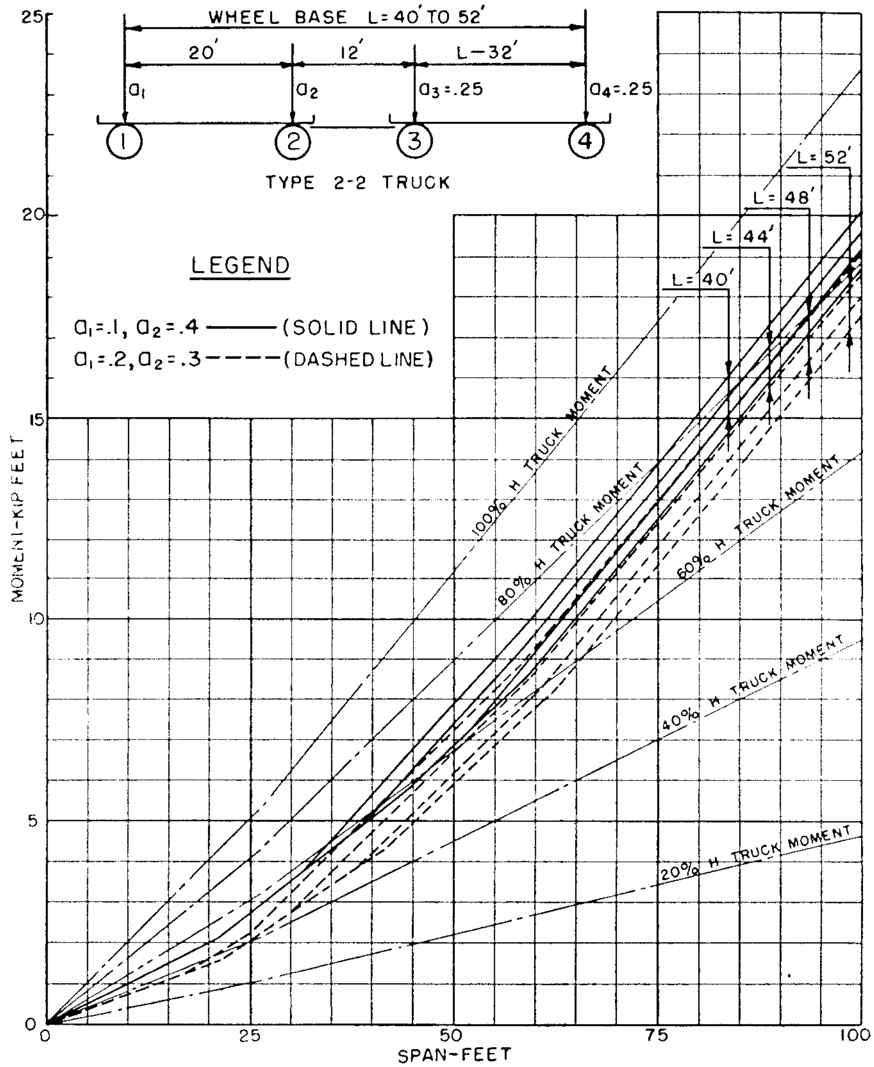


Figure 9.91

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 12′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

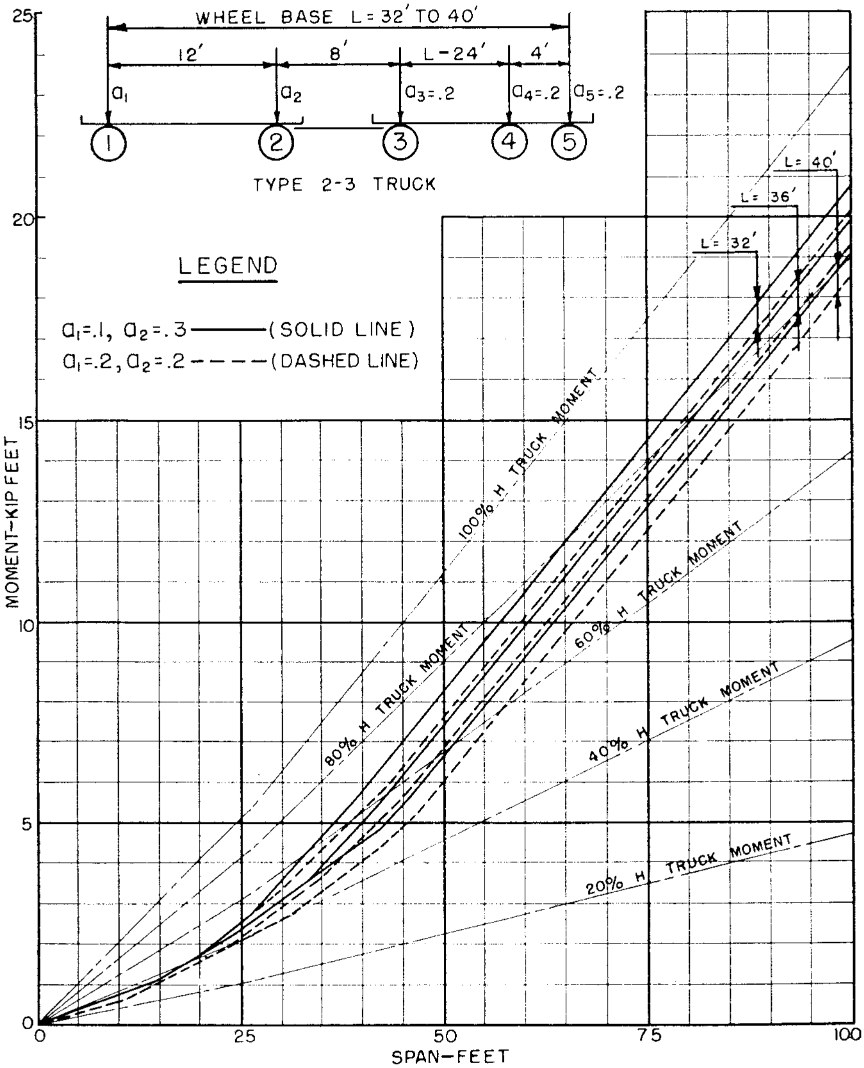


Figure 9.10a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS WITH 12′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

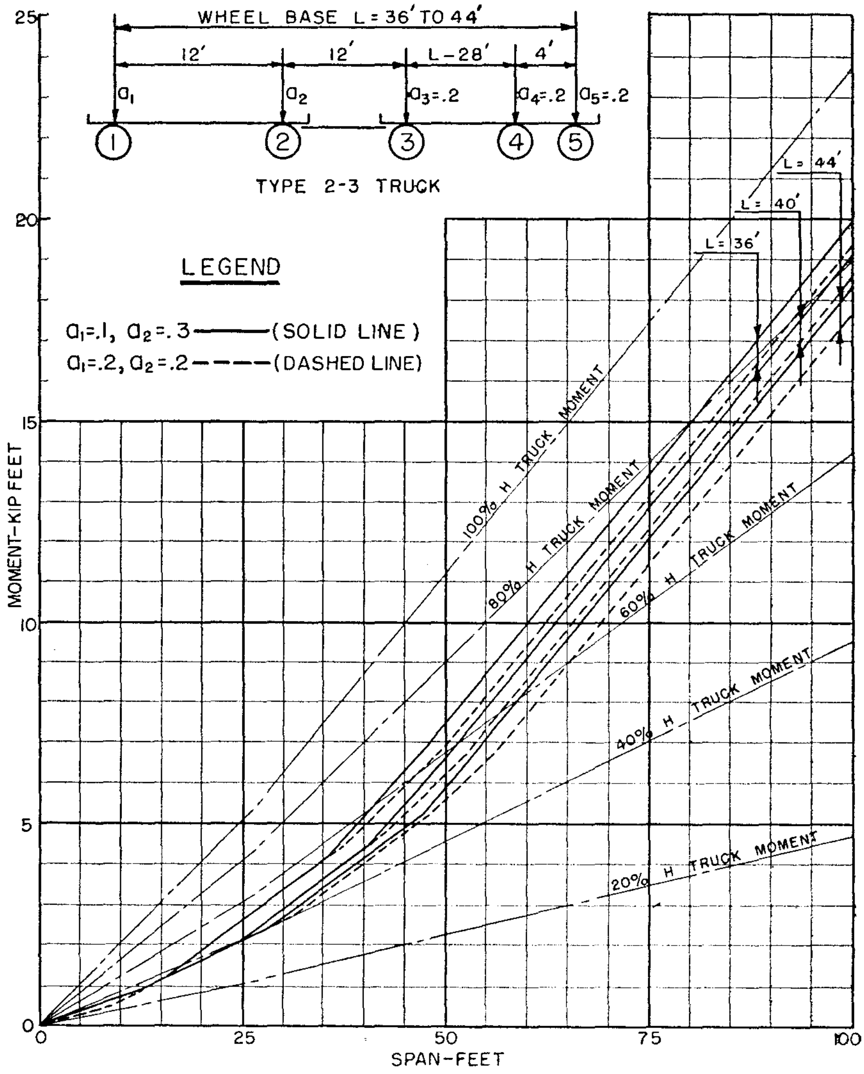


Figure 9.10b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

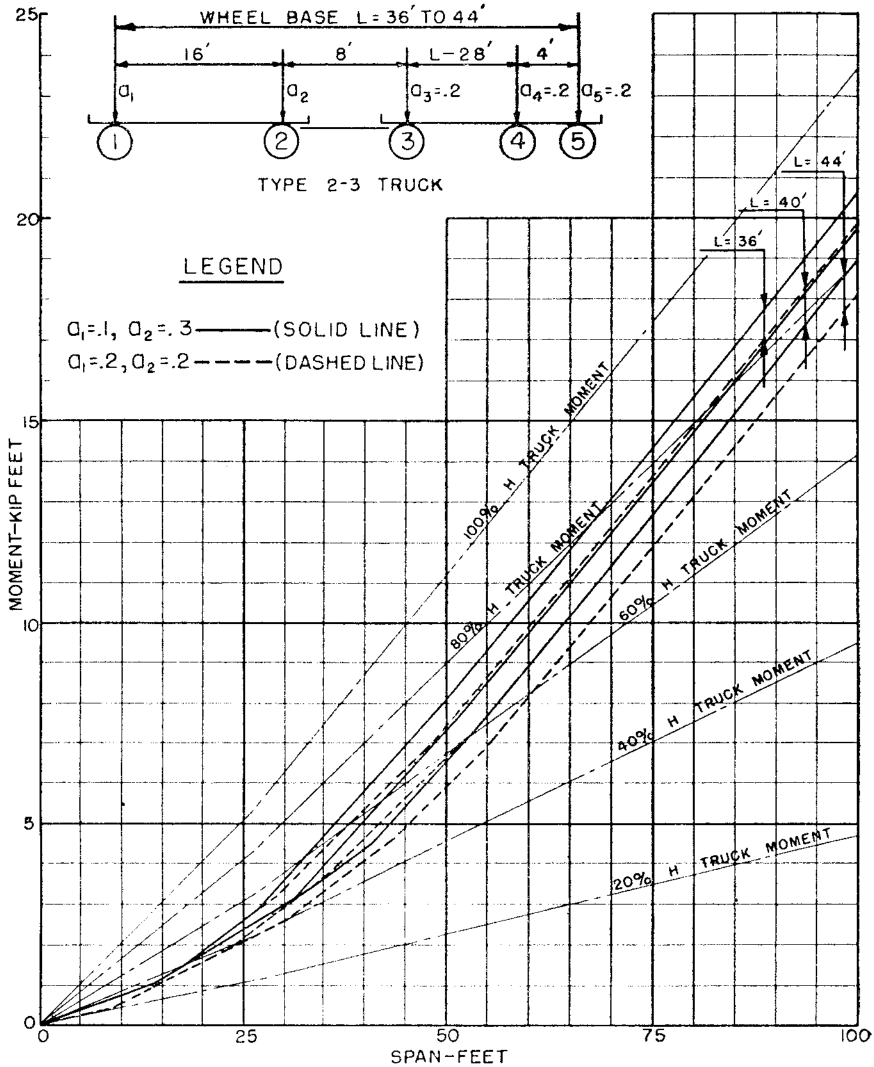


Figure 9.10c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS WITH 16' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

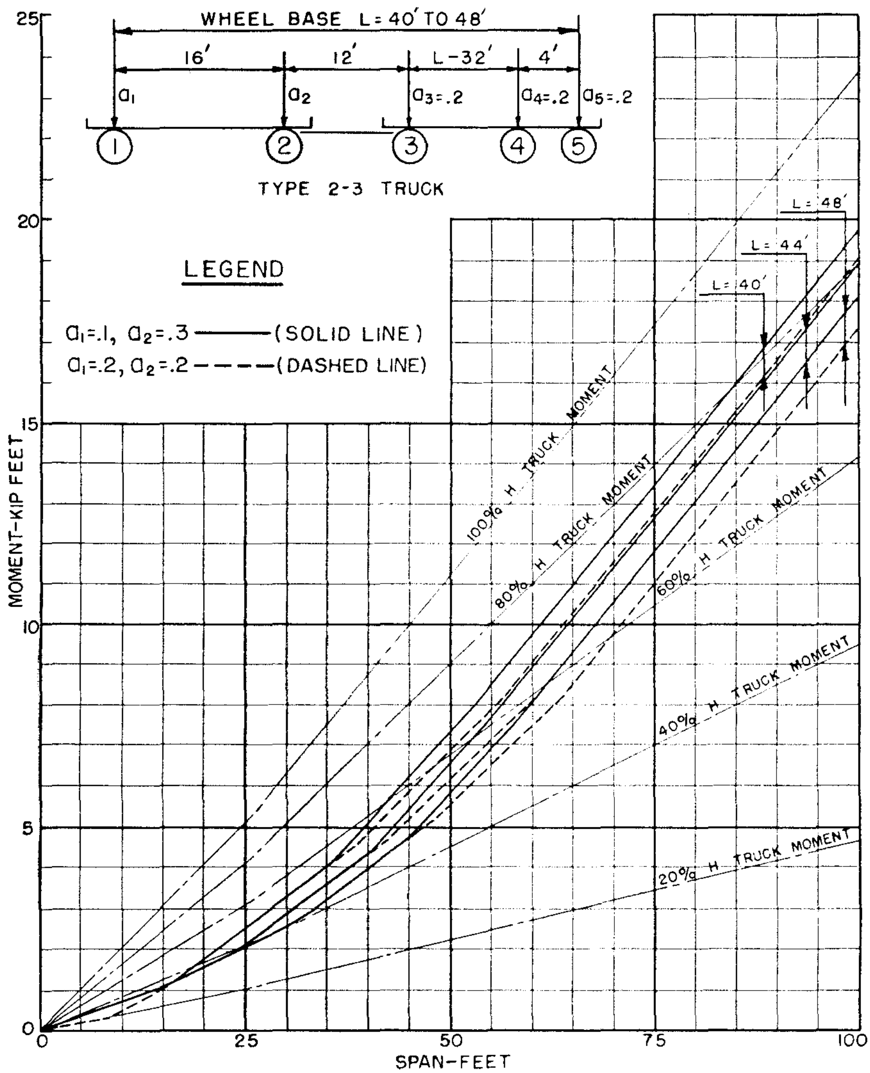
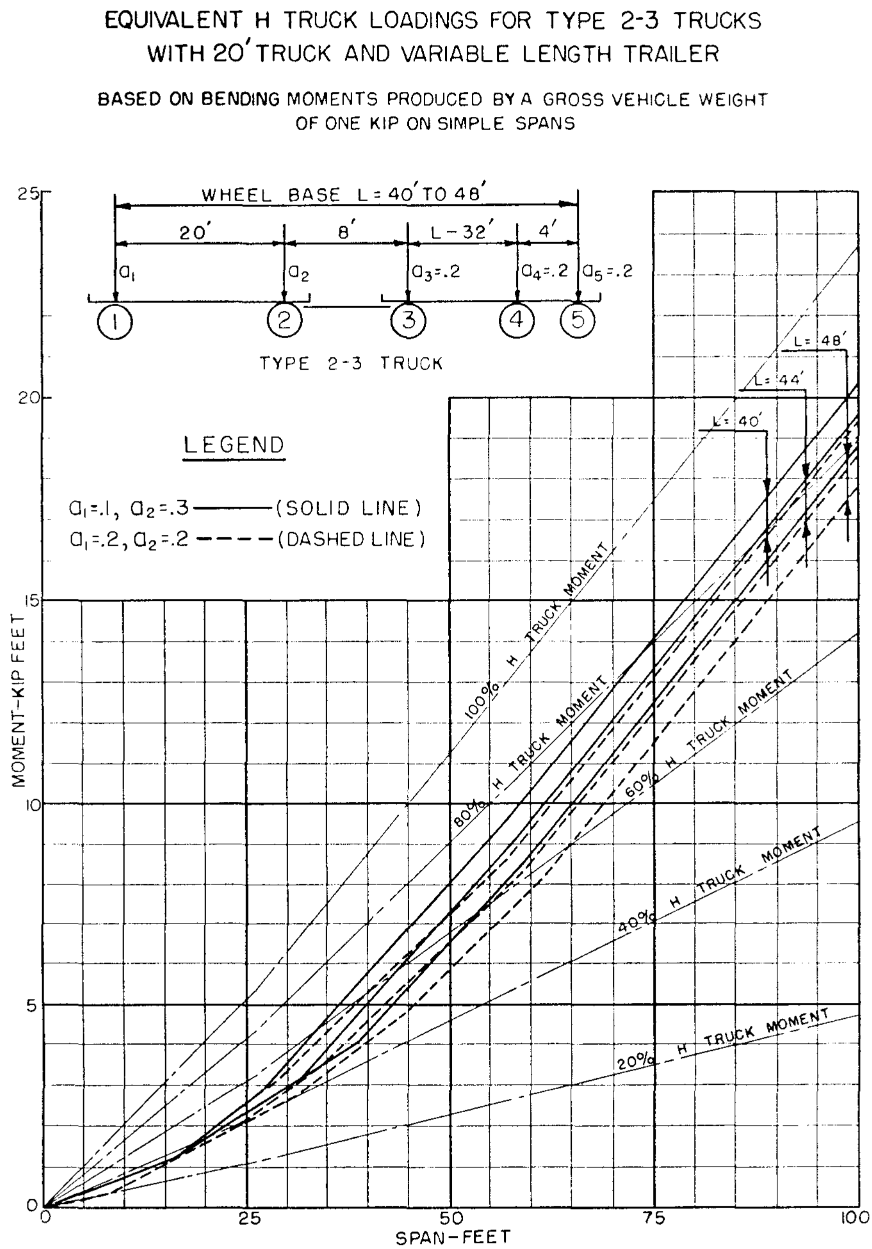


Figure 9.10d



EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 20' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L = 40' TO 48'
20'
8'
L - 32'
4'
a1
a2
a3=.2
a4=.2
a5=.2
TYPE 2-3 TRUCK
LEGEND
a1=.1, a2=.3 (SOLID LINE)
a1=.2, a2=.2 (DASHED LINE)
L = 48'
L = 44'
L = 40'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.10e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

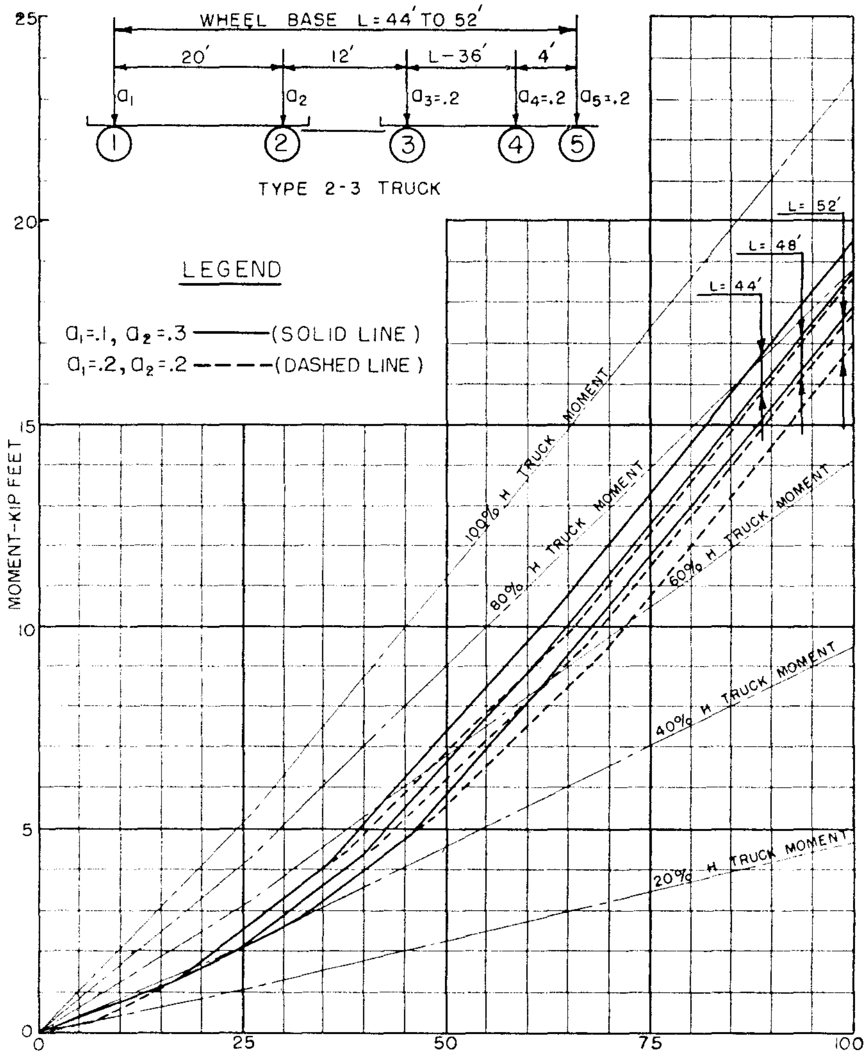


Figure 9.10f

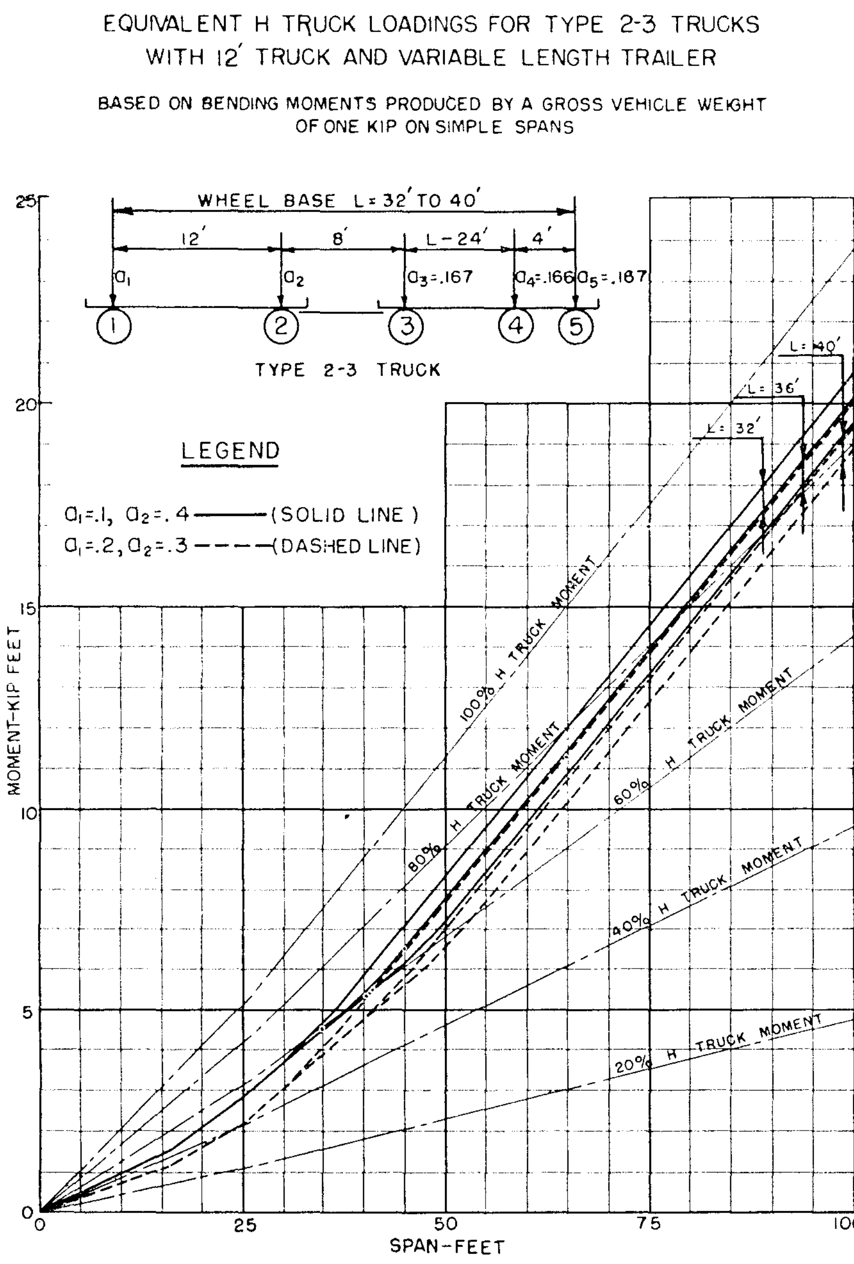

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 12' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L = 32' TO 40'
12'
8'
L-24'
4'
a1
a2
a3=.167
a4=.166
a5=.167
1
2
3
4
5
TYPE 2-3 TRUCK
LEGEND
a1=.1, a2=.4 ——— (SOLID LINE)
a1=.2, a2=.3 – – – – (DASHED LINE)
L=40'
L=36'
L=32'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.10g

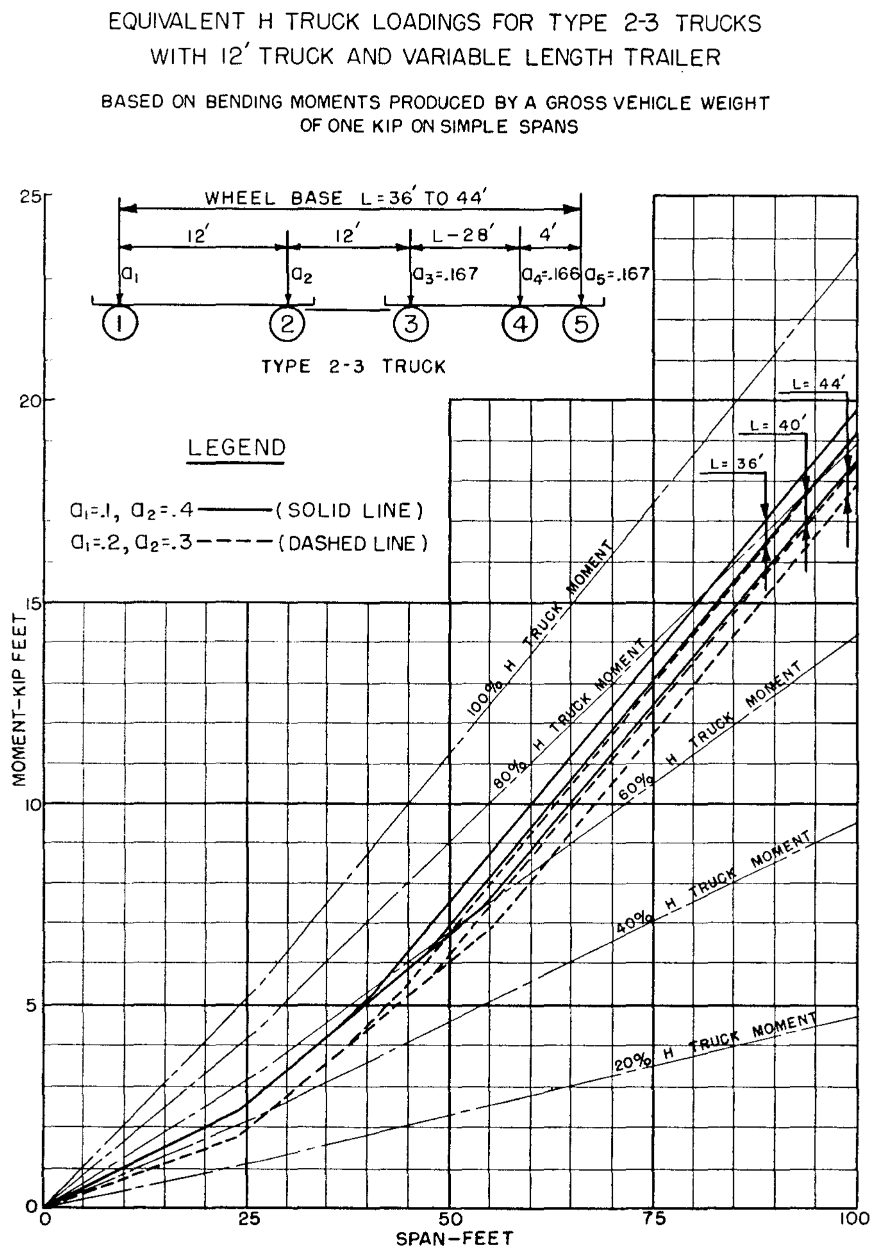

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 12′ TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=36′ TO 44′
12′
12′
L-28′
4′
a1
a2
a3=.167
a4=.166
a5=.167
1
2
3
4
5
TYPE 2-3 TRUCK
LEGEND
a1=.1, a2=.4 (SOLID LINE)
a1=.2, a2=.3 (DASHED LINE)
L=44′
L=40′
L=36′
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.10h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

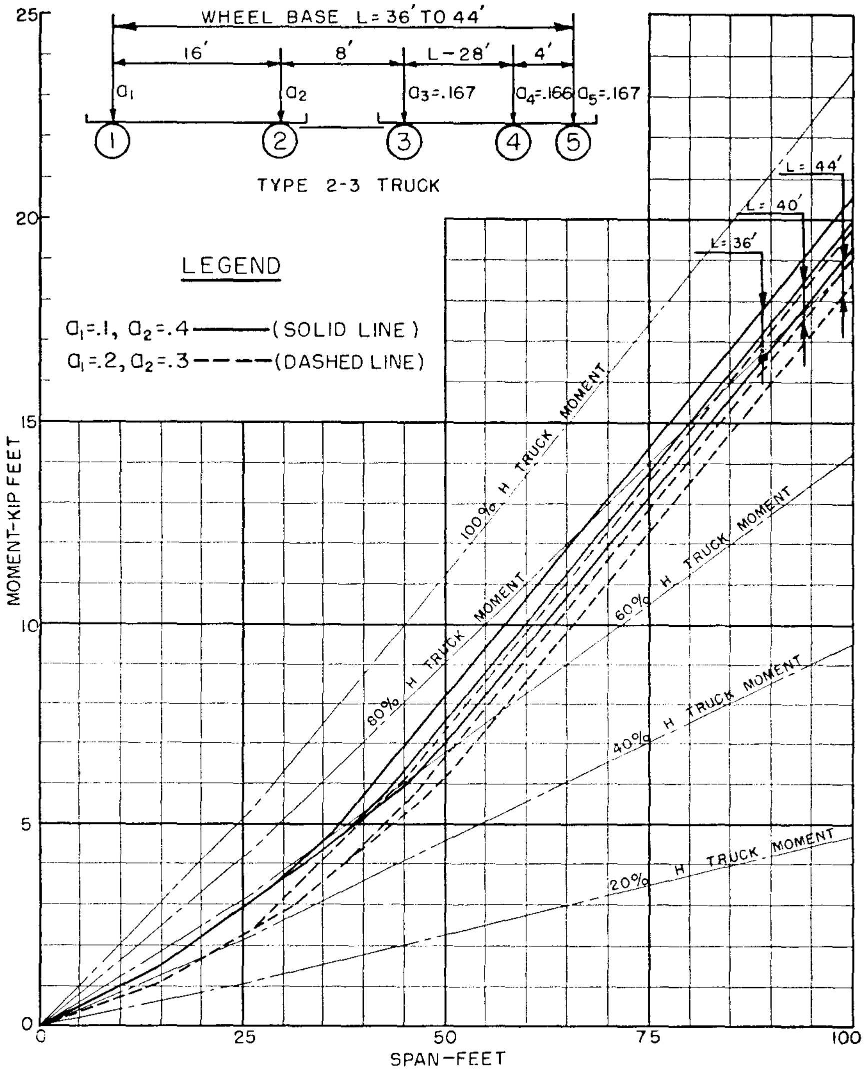


Figure 9.10i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

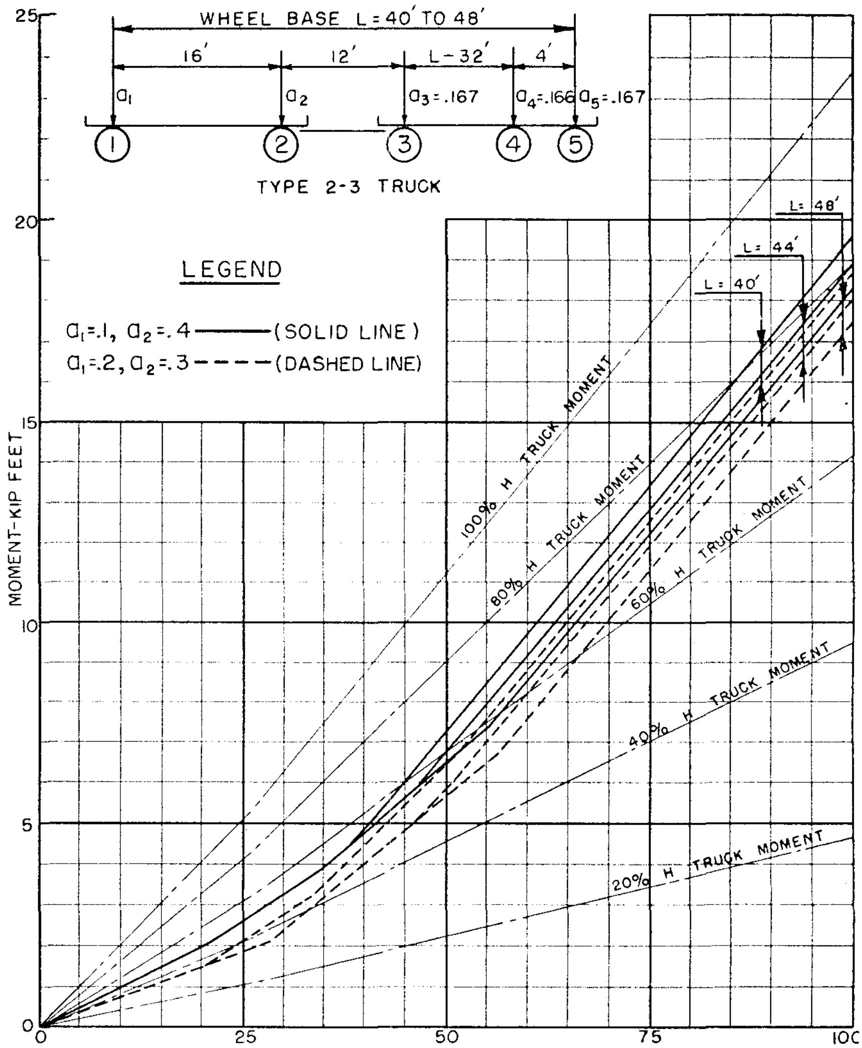


Figure 9.10j

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 20' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

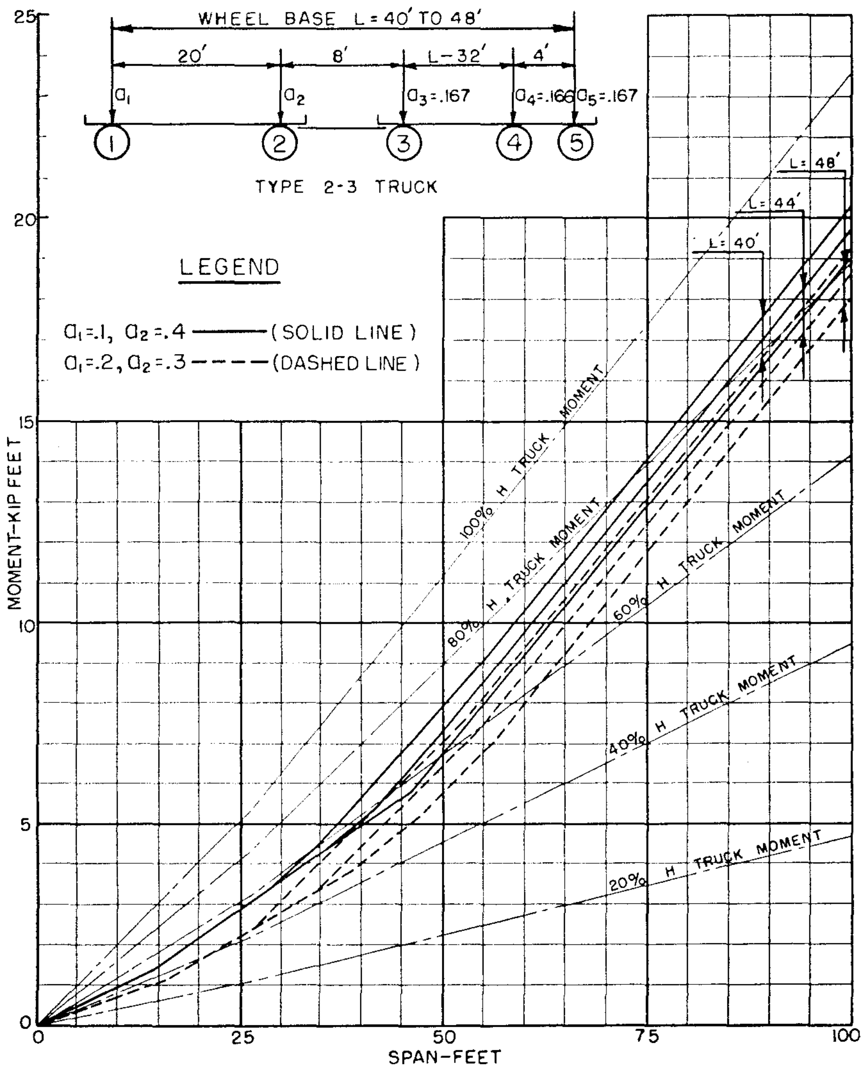


Figure 9.10k

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS
WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

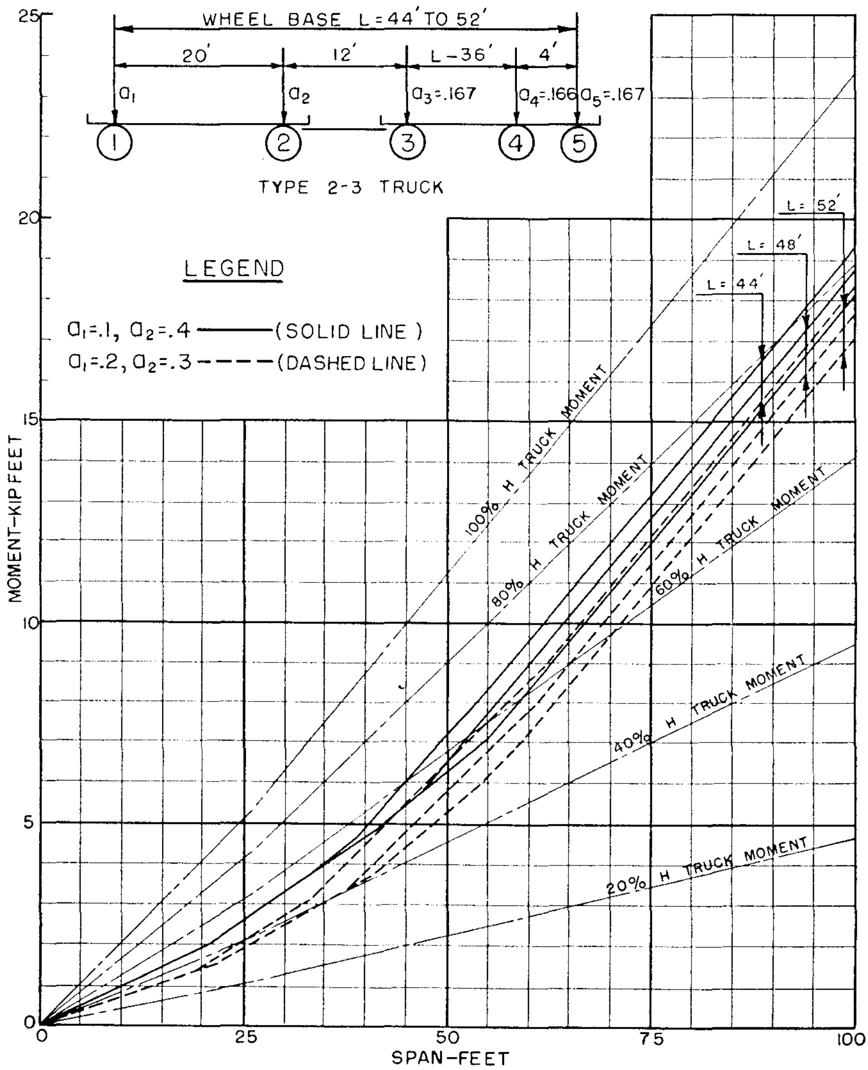


Figure 9.101

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 16' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

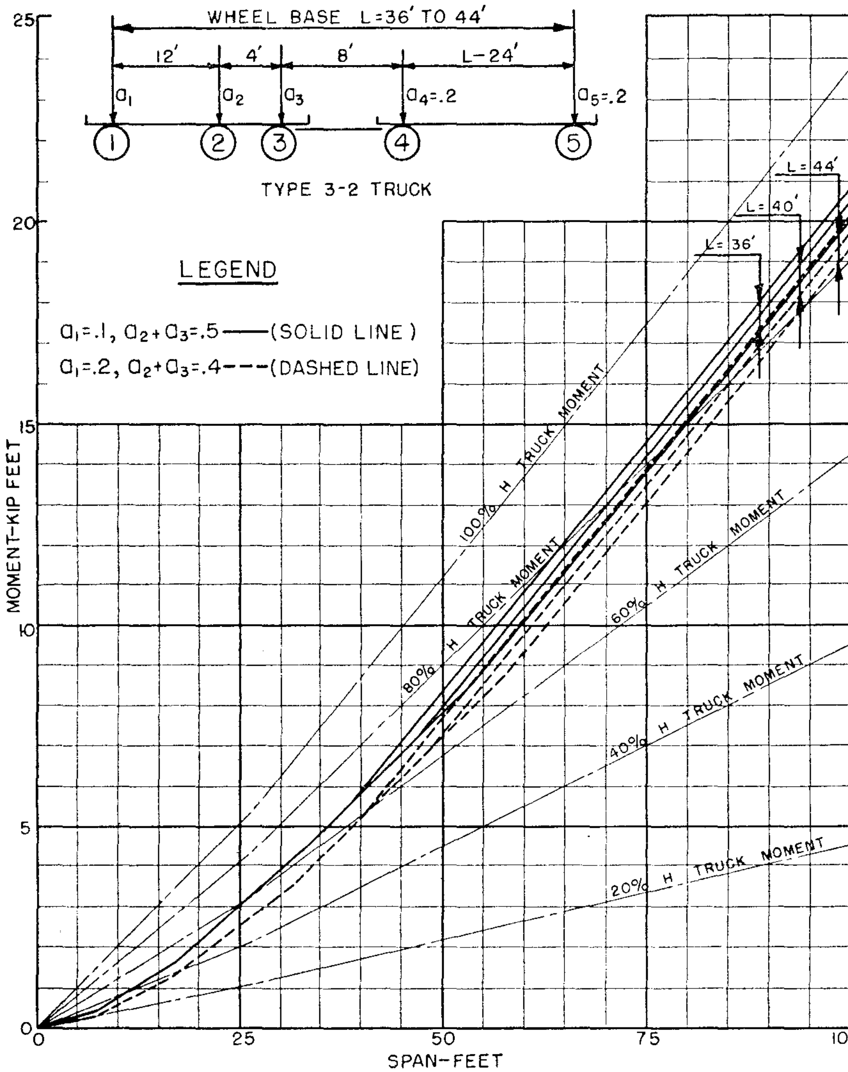


Figure 9.11a

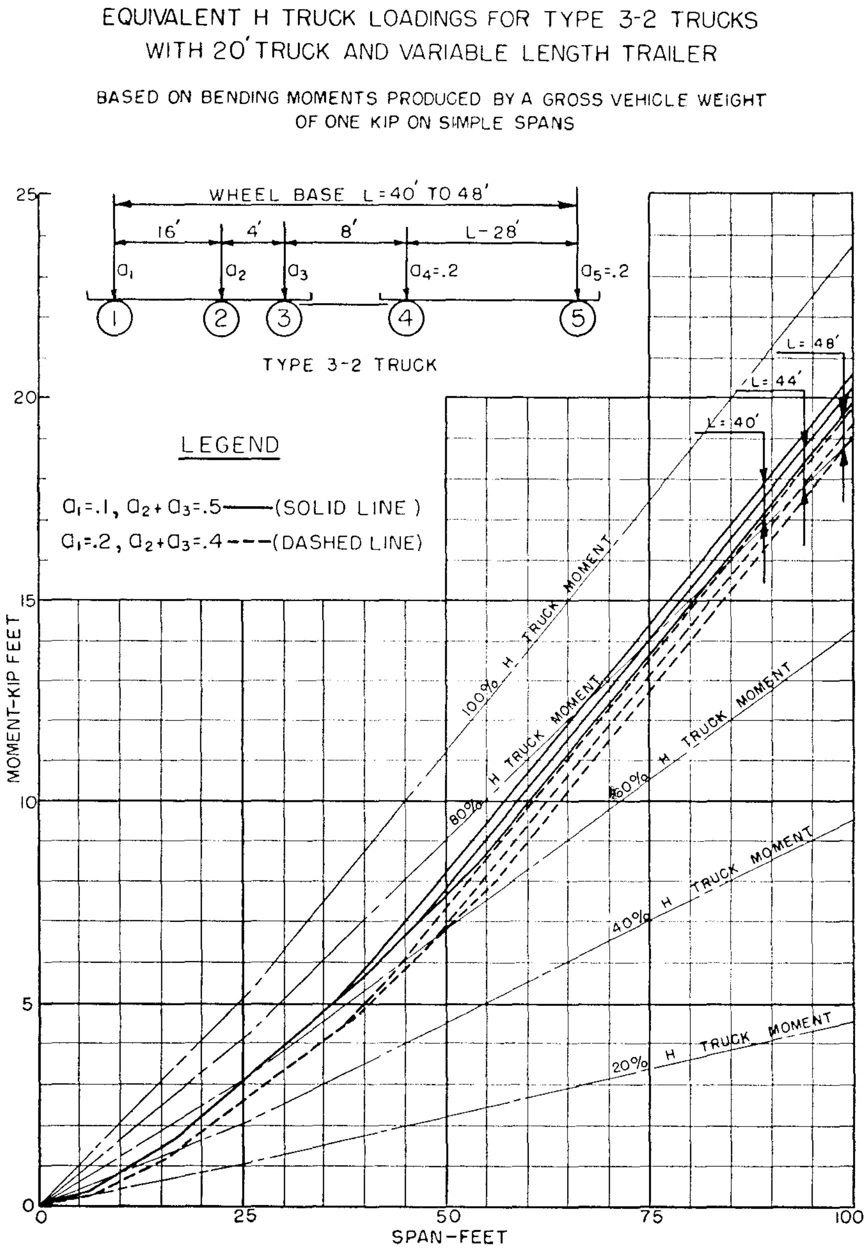

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 20' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=40' TO 48'
16'
4'
8'
L-28'
a1
a2
a3
a4=.2
a5=.2
TYPE 3-2 TRUCK
LEGEND
a1=.1, a2+a3=.5 (SOLID LINE)
a1=.2, a2+a3=.4 (DASHED LINE)
L=48'
L=44'
L=40'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.11b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 24' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

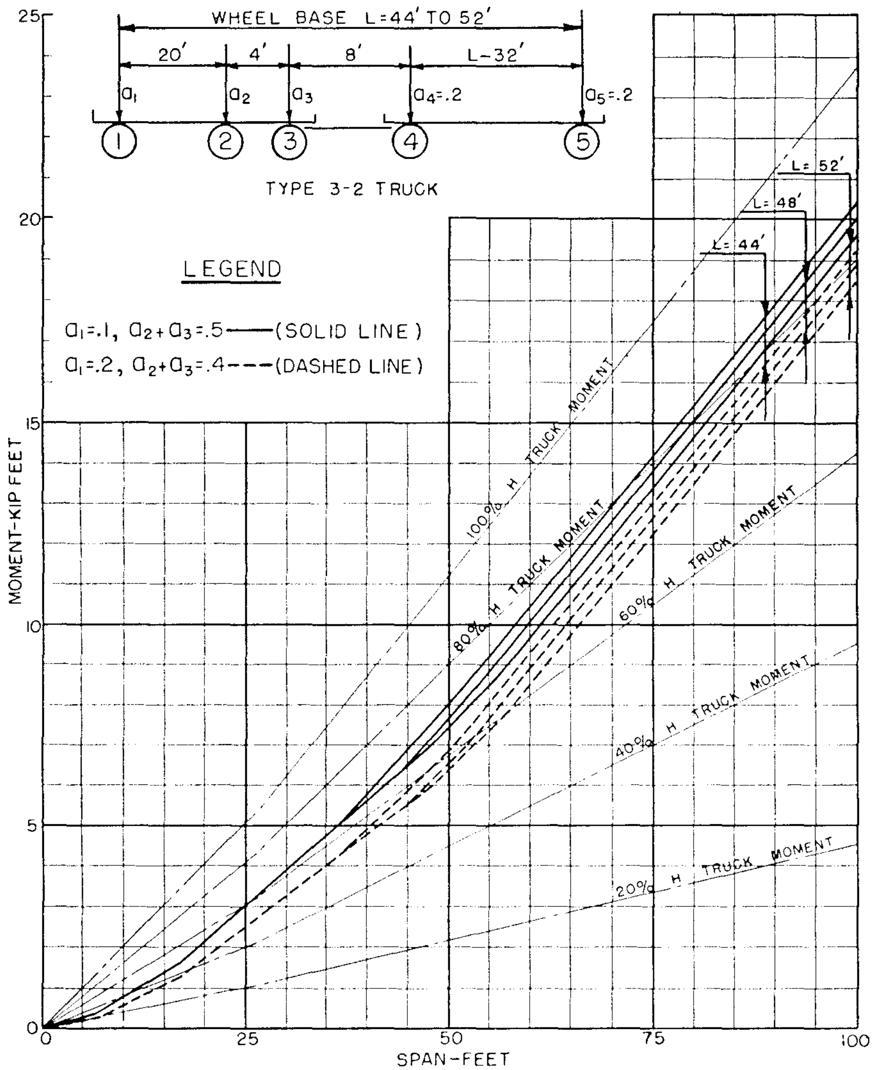


Figure 9.11c

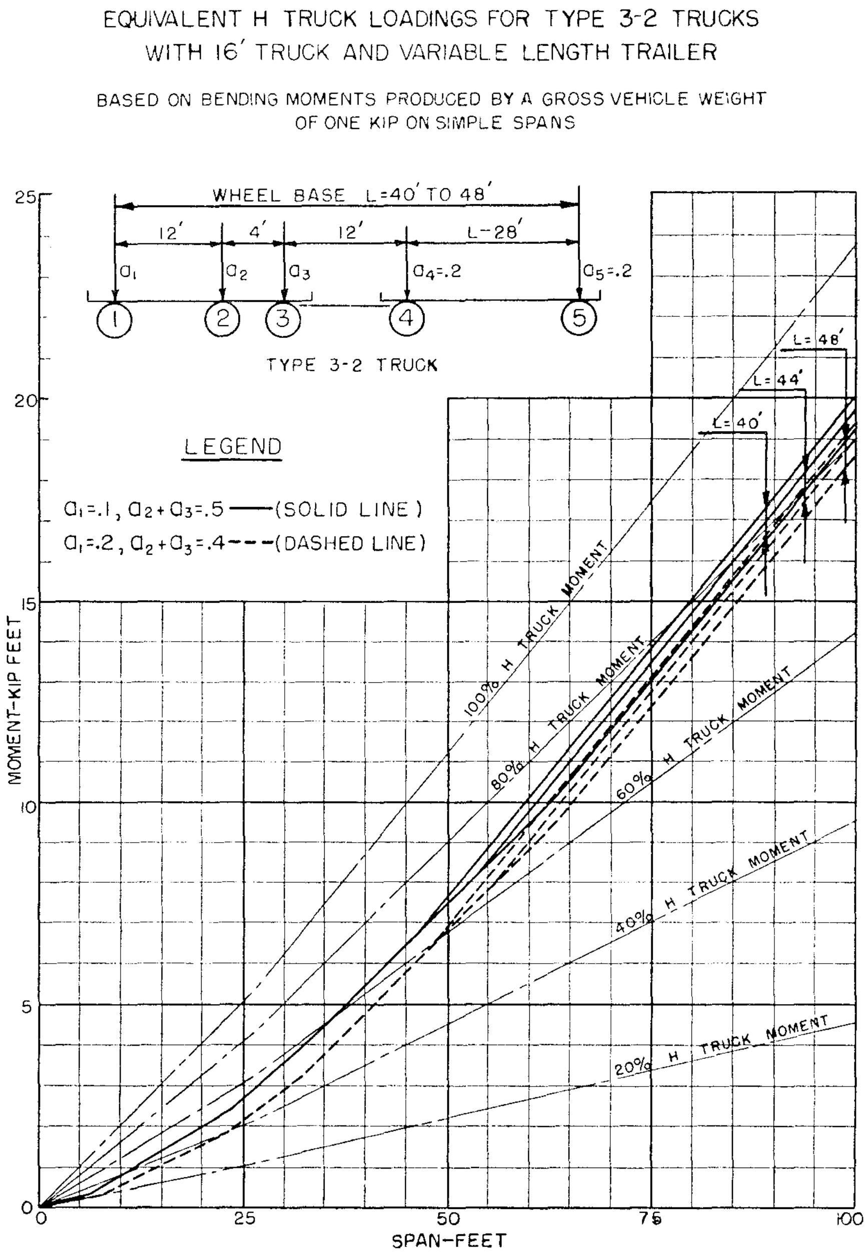

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=40′ TO 48′
12′
4′
12′
L−28′
a1
a2
a3
a4=.2
a5=.2
TYPE 3-2 TRUCK
LEGEND
a1=.1, a2+a3=.5 (SOLID LINE)
a1=.2, a2+a3=.4 (DASHED LINE)
L=40′
L=44′
L=48′
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
50
75
100

Figure 9.11d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

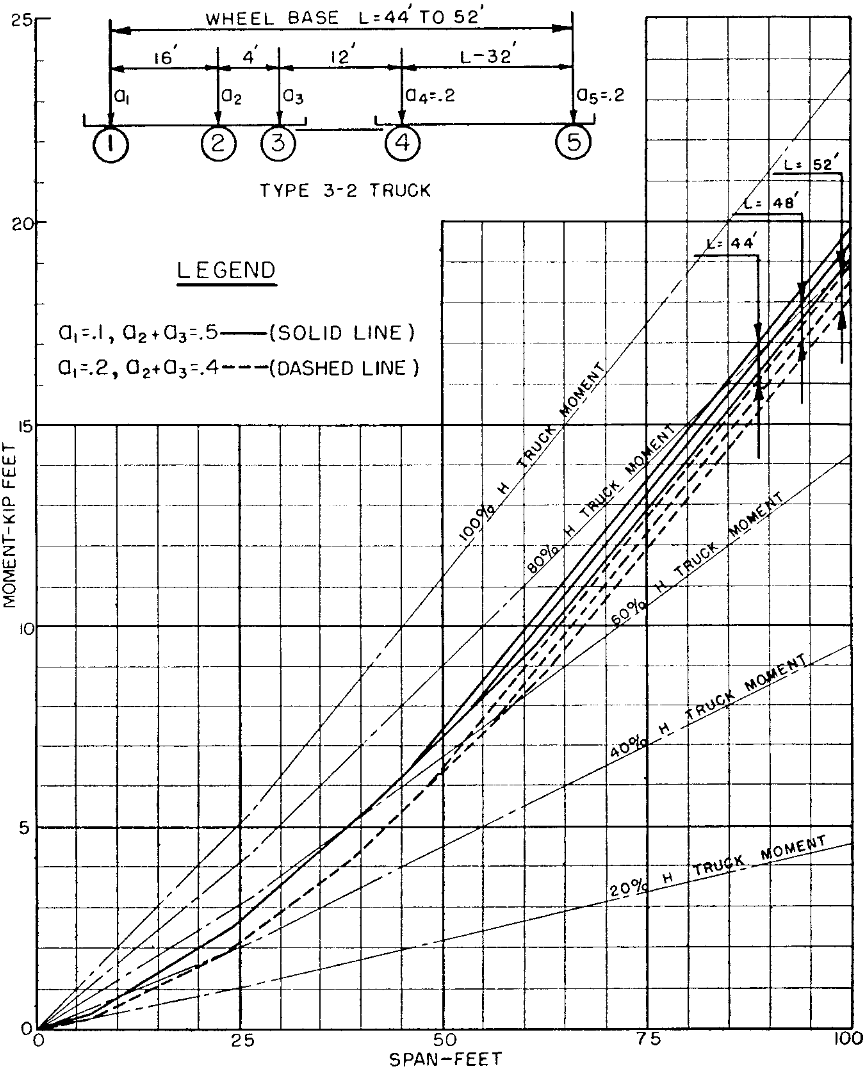


Figure 9.11e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 24′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

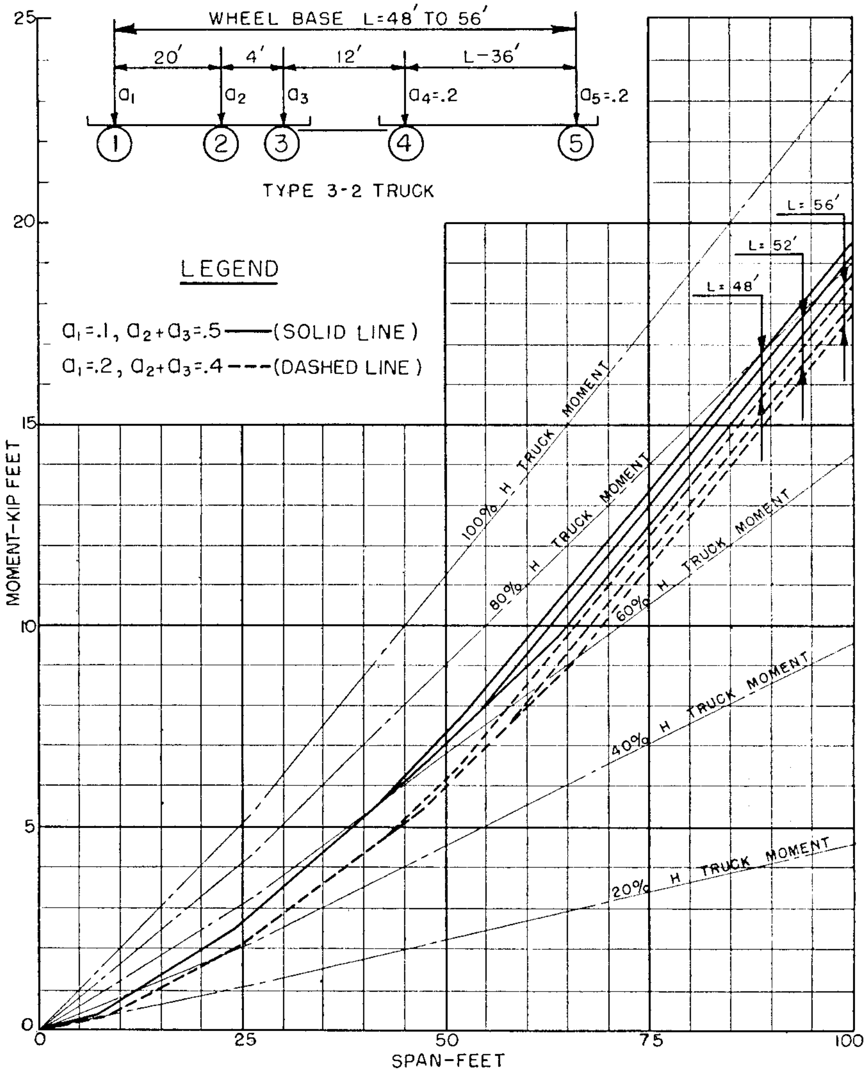


Figure 9.11f

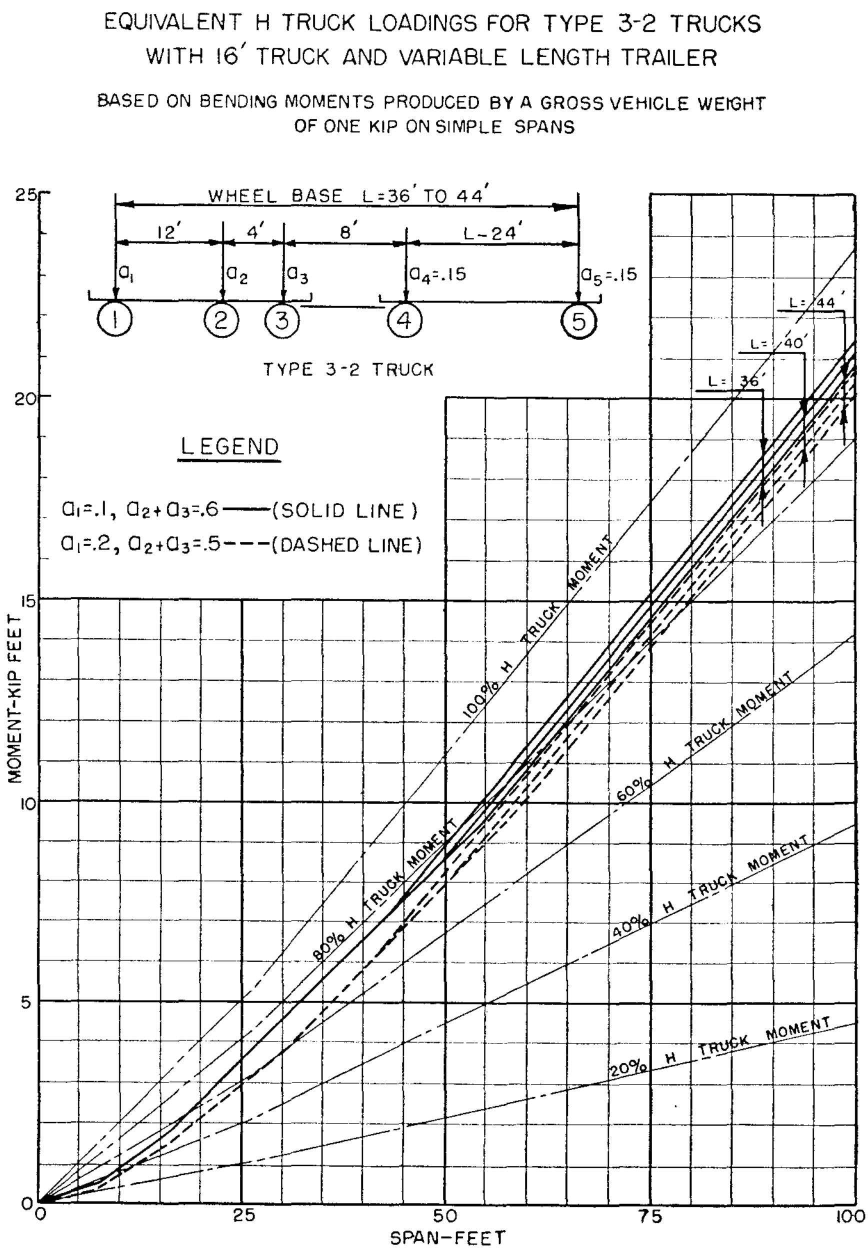

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=36′ TO 44′
12′
4′
8′
L-24′
a1
a2
a3
a4=.15
a5=.15
TYPE 3-2 TRUCK
LEGEND
a1=.1, a2+a3=.6 ——(SOLID LINE)
a1=.2, a2+a3=.5 - - -(DASHED LINE)
L=44′
L=40′
L=36′
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.11g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

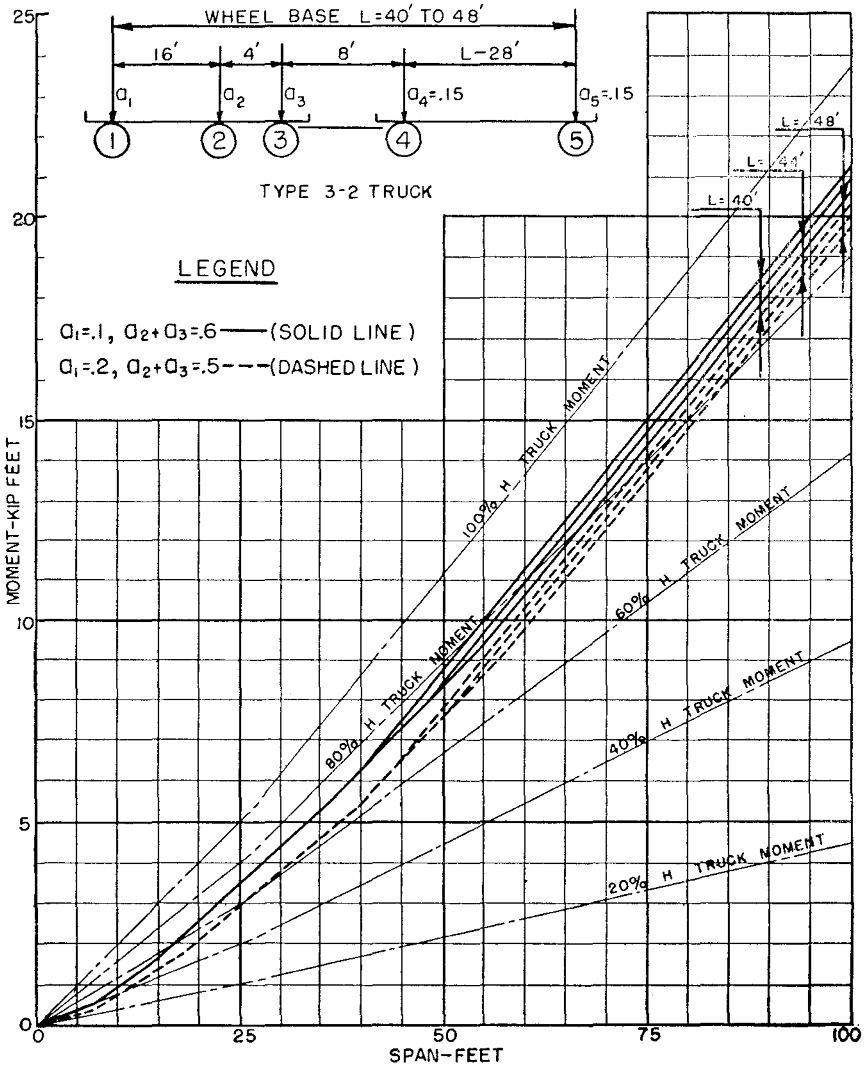


Figure 9.11h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 24' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

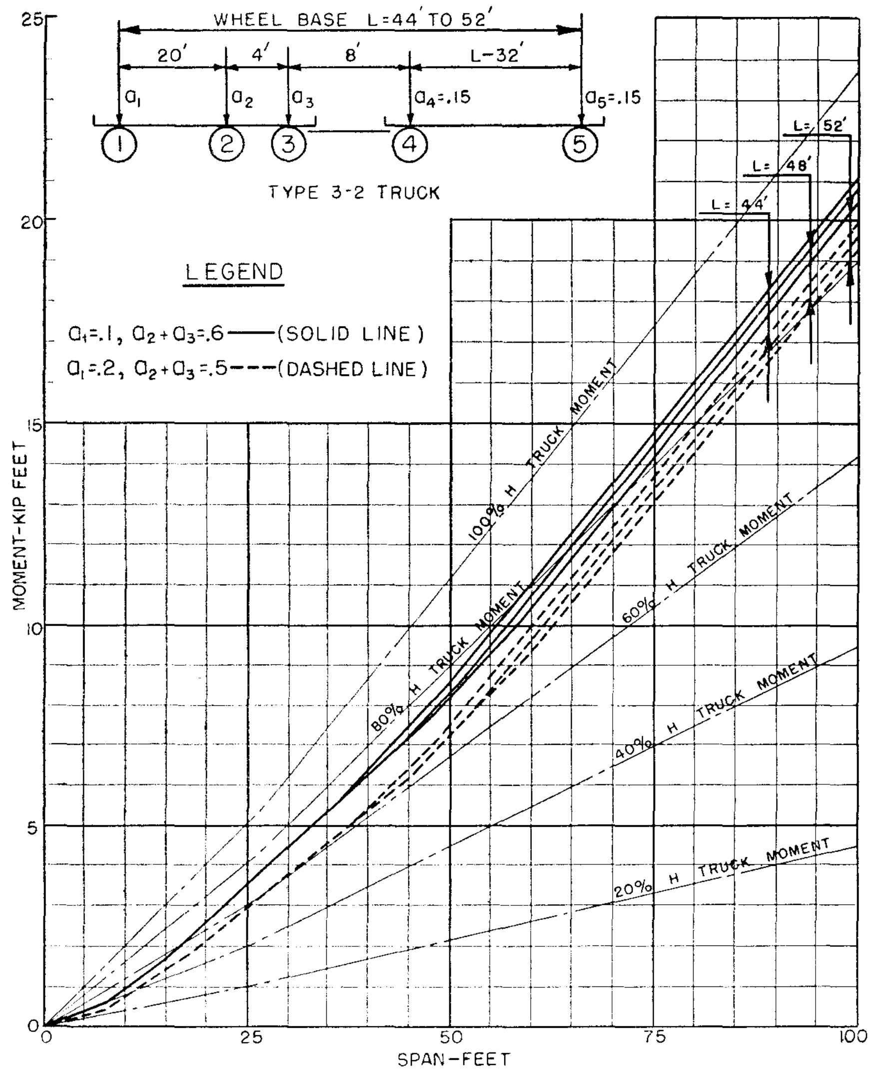


Figure 9.11i

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

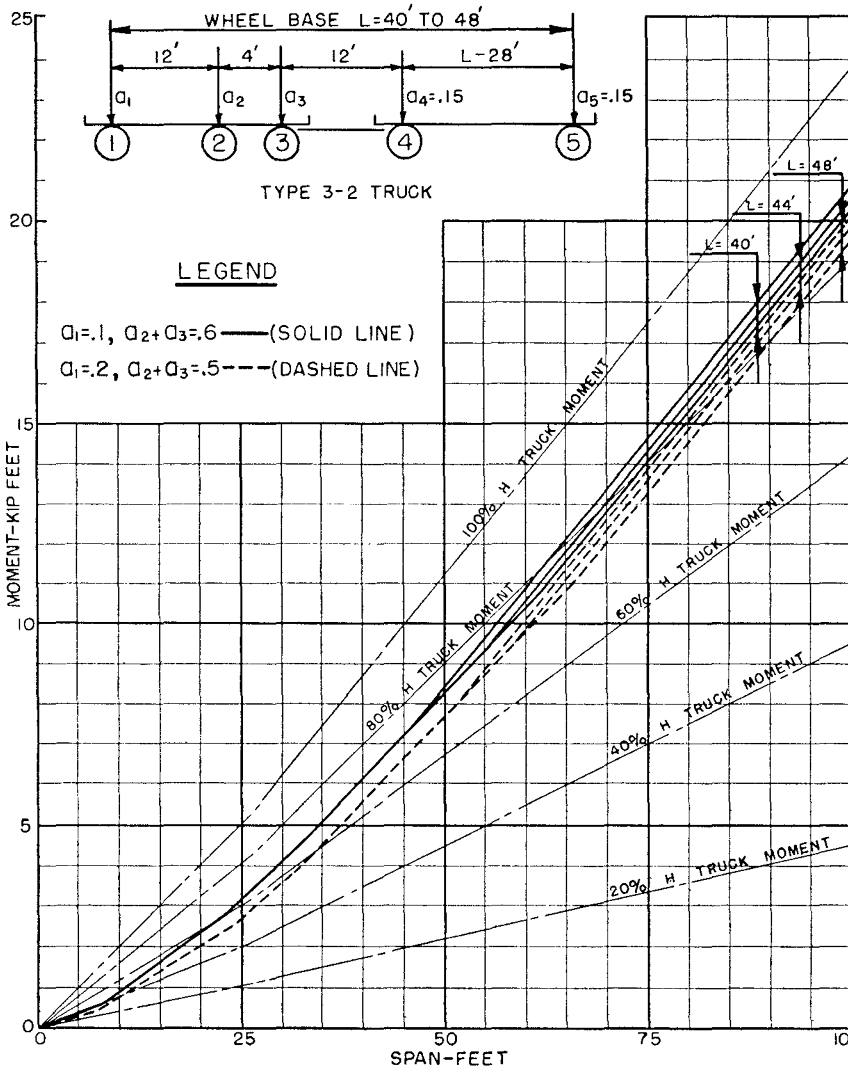


Figure 9.11j

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

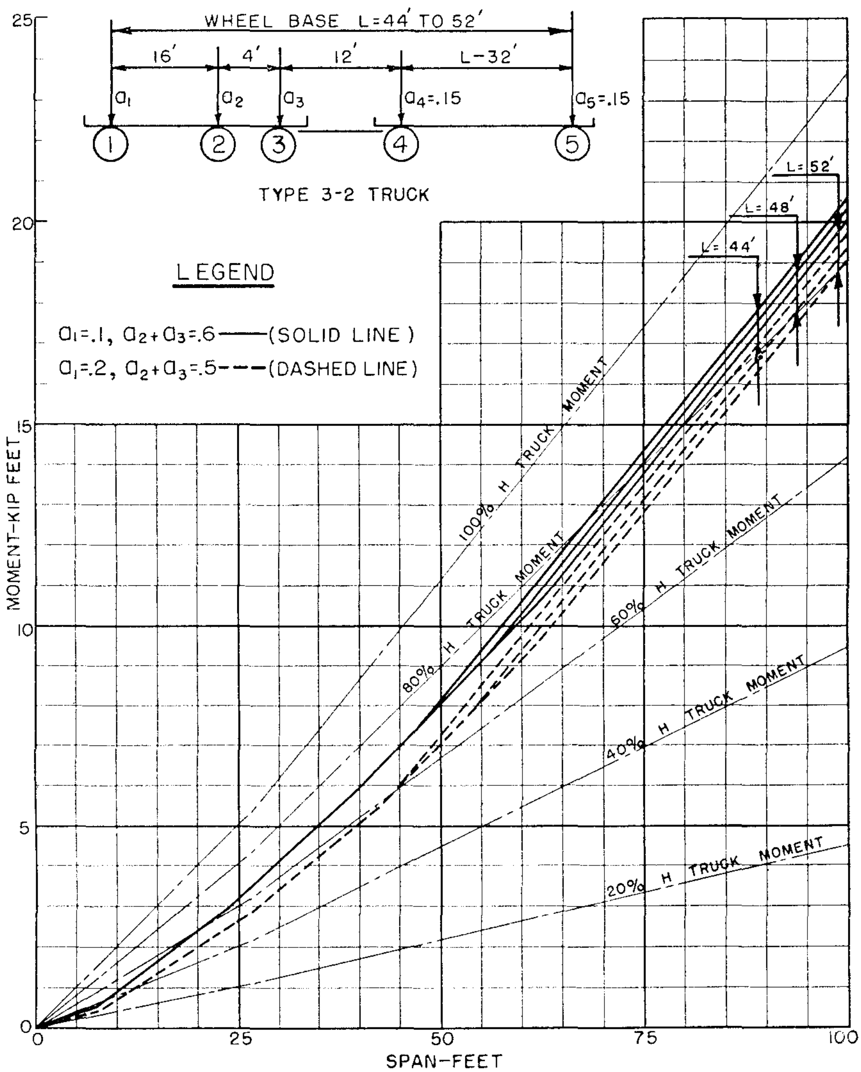


Figure 9.11k

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS WITH 24′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

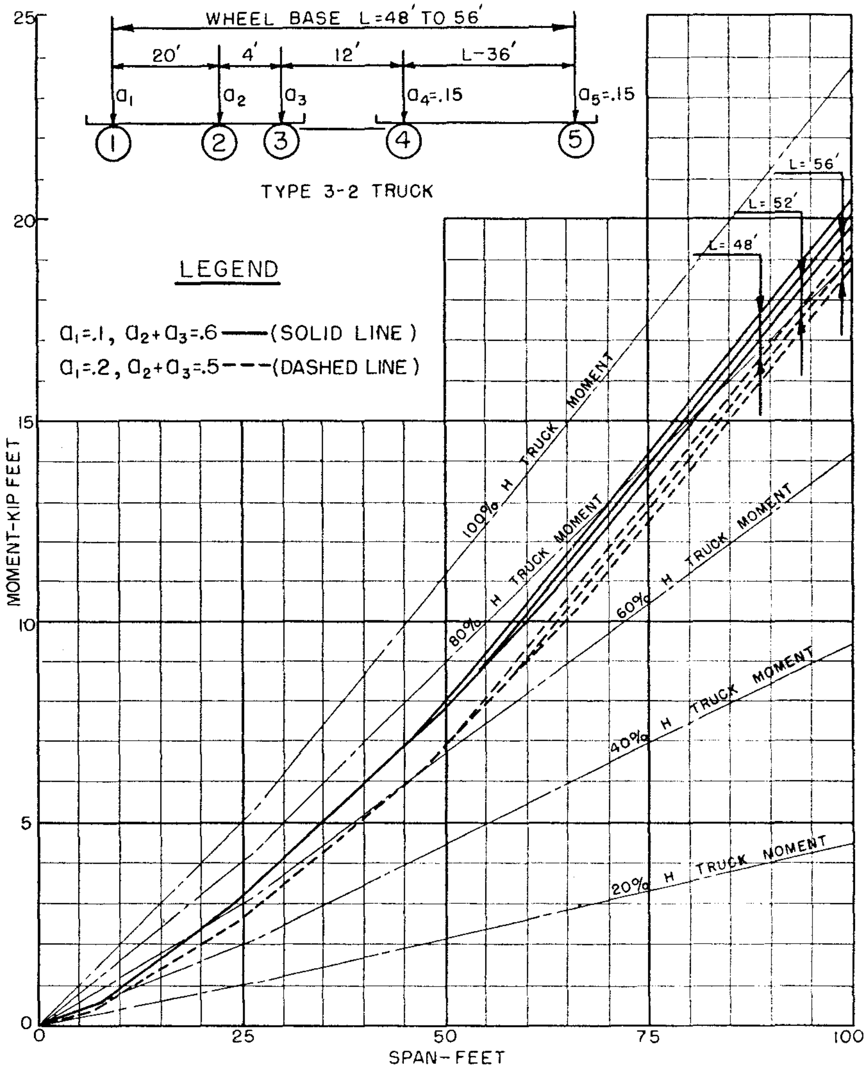


Figure 9.111

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

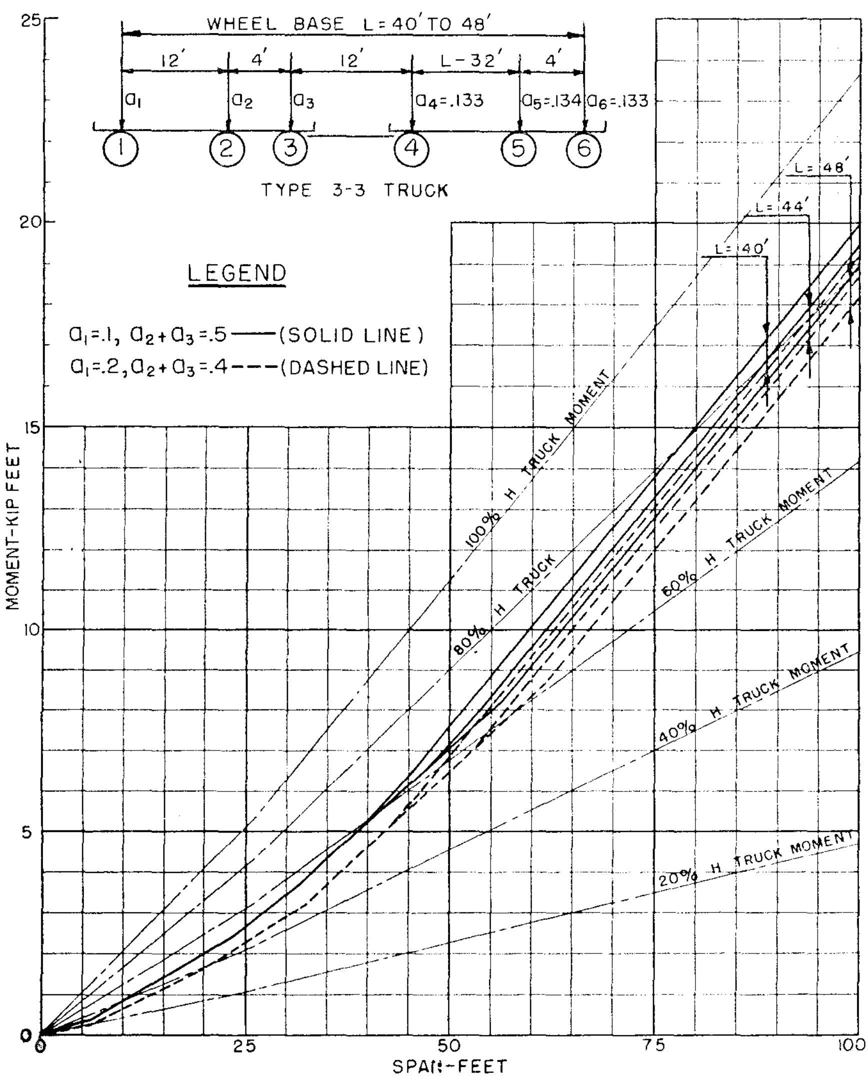


Figure 9.12a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 20' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

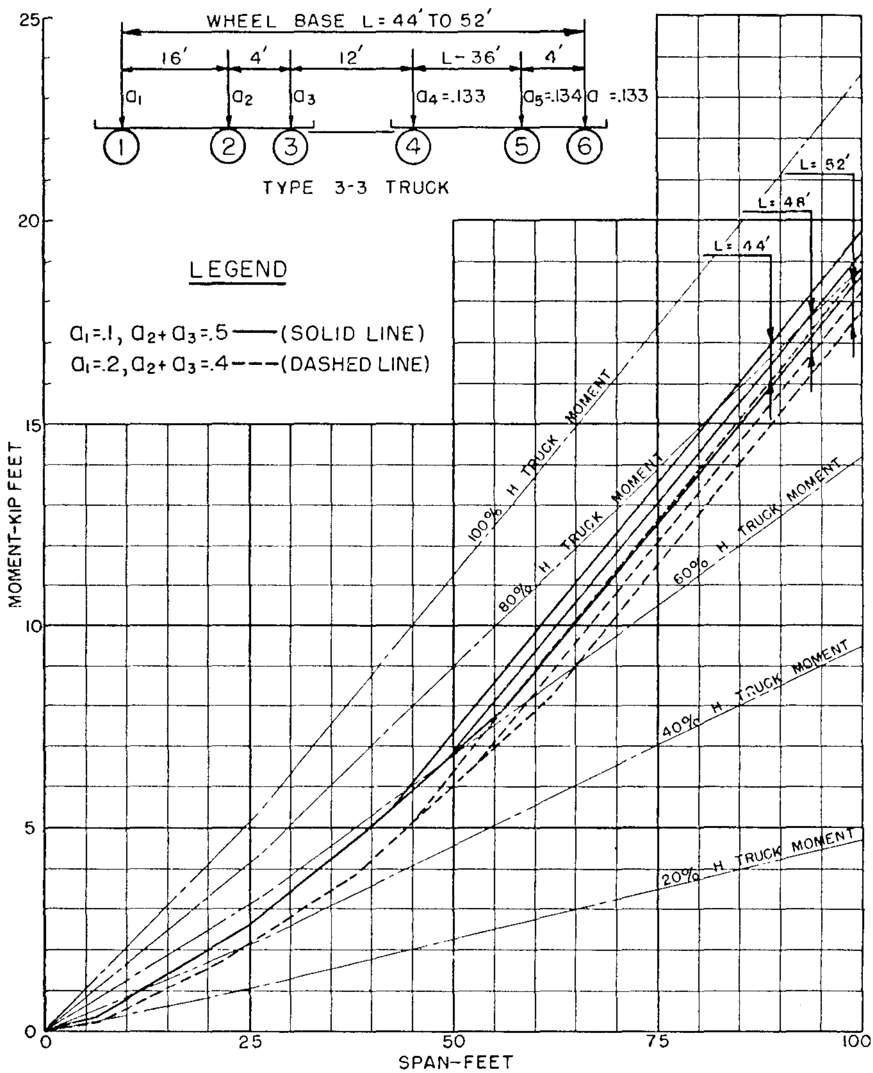


Figure 9.12b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 24′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

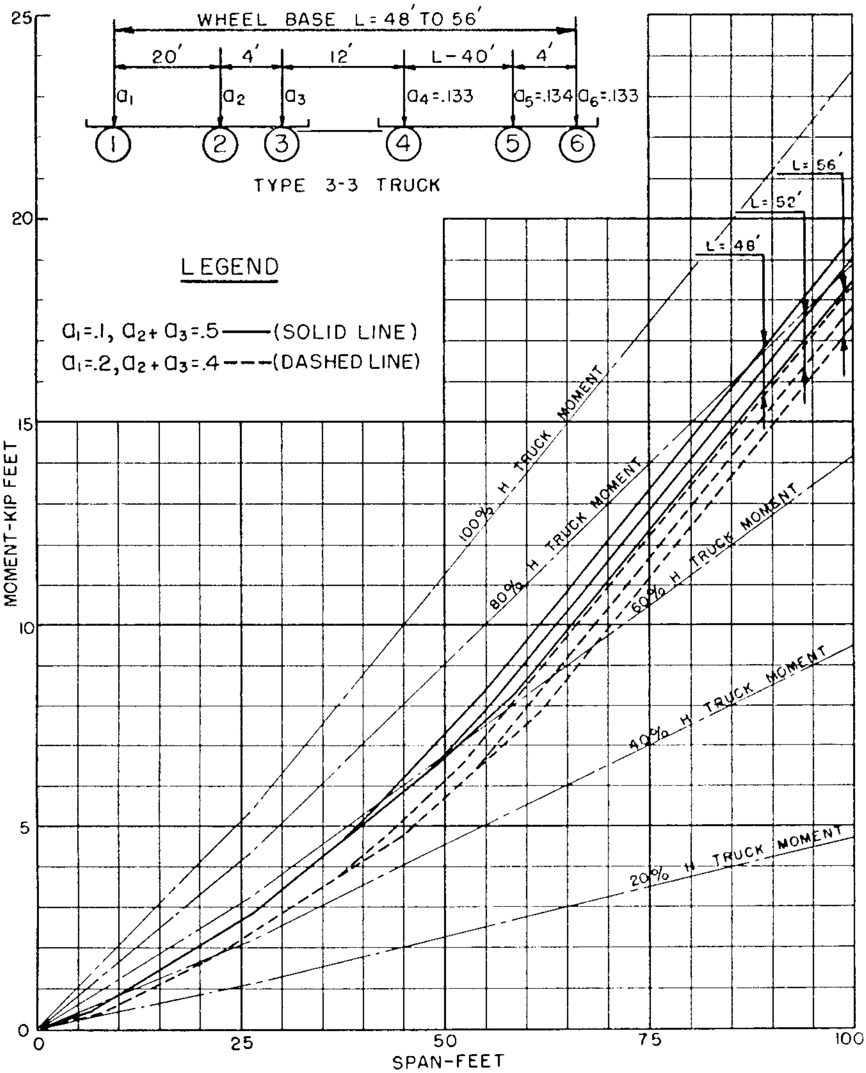


Figure 9.12c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS
WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

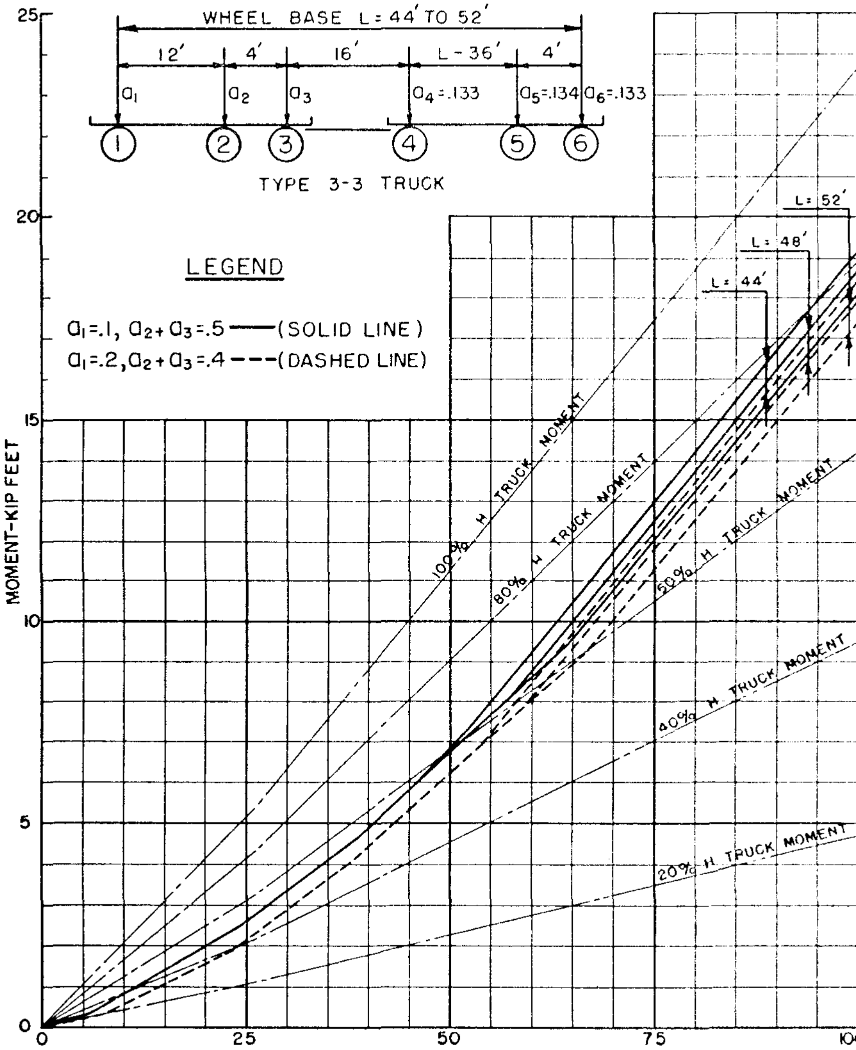


Figure 9.12d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS
WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

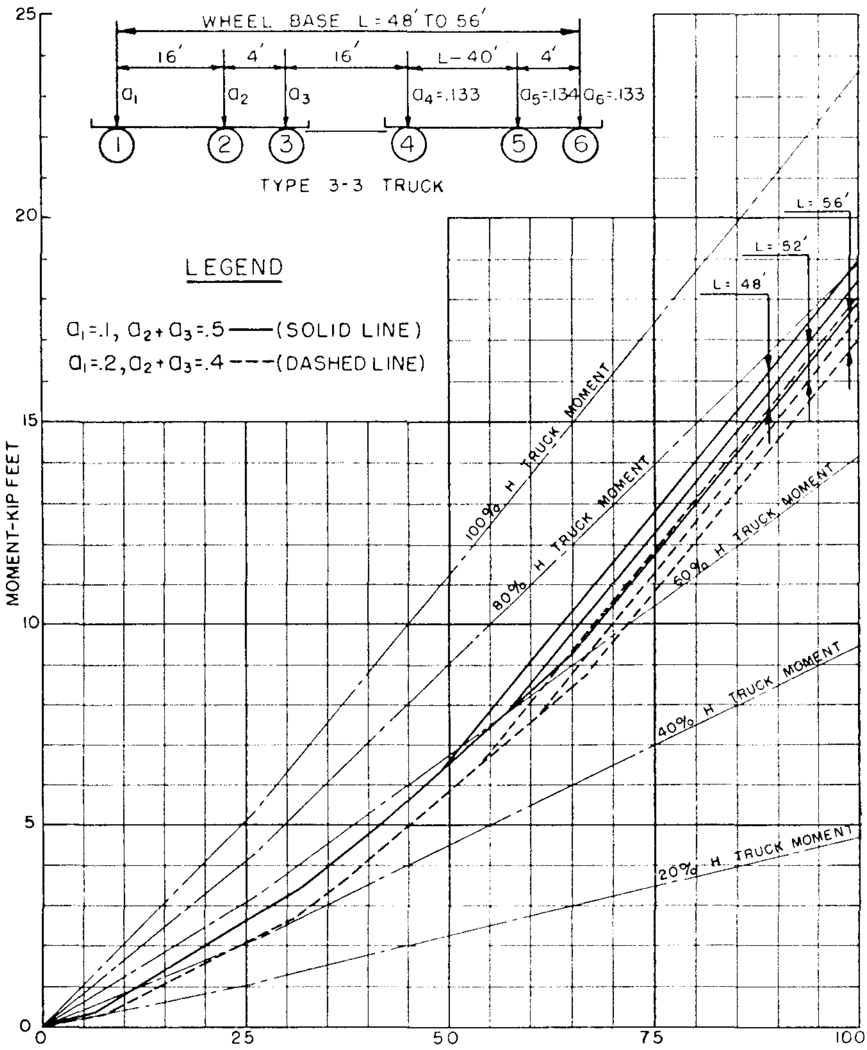


Figure 9.12e

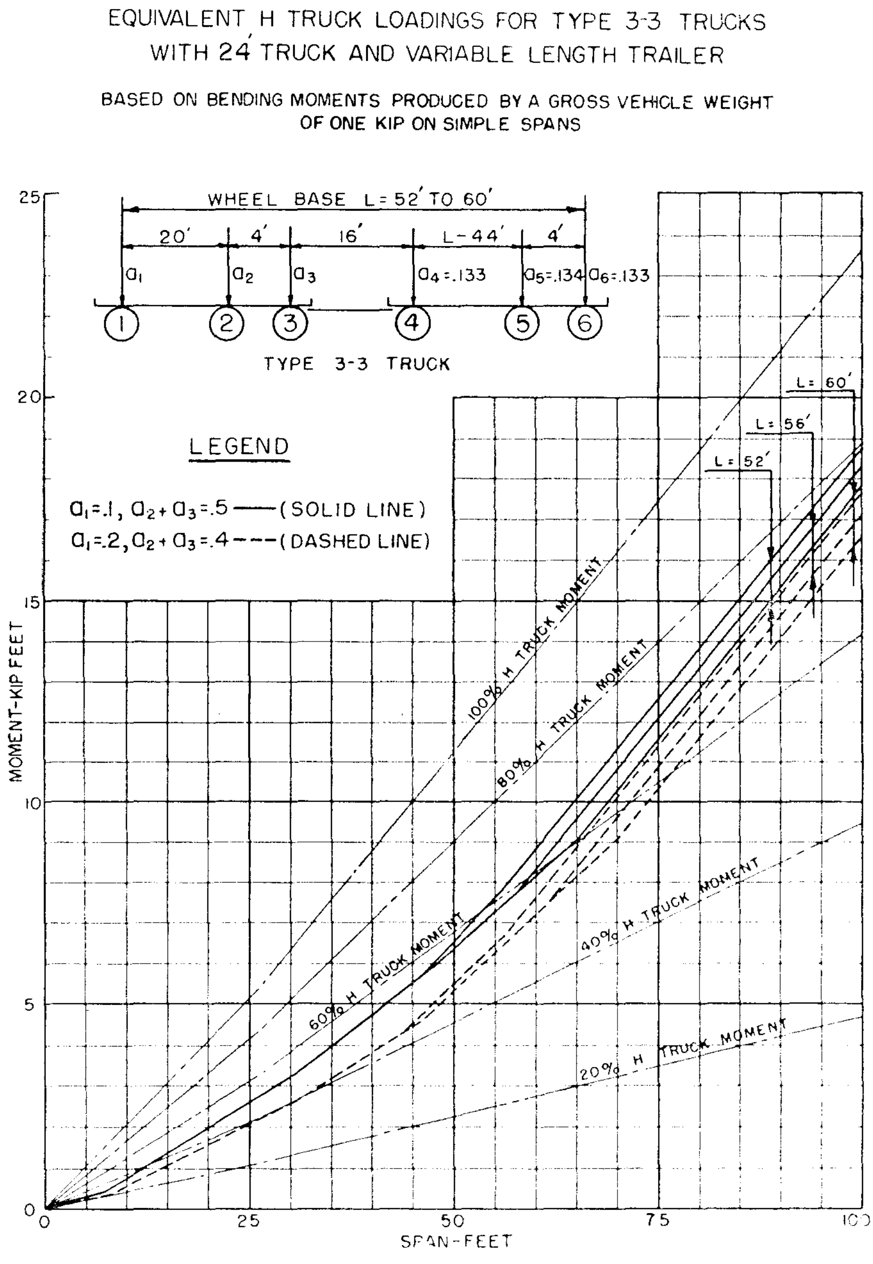

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS
WITH 24' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L = 52' TO 60'
20'
4'
16'
L-44'
4'
a1
a2
a3
a4 = .133
a5 = .134
a6 = .133
TYPE 3-3 TRUCK
LEGEND
a1 = .1, a2 + a3 = .5 —— (SOLID LINE)
a1 = .2, a2 + a3 = .4 - - - (DASHED LINE)
L = 60'
L = 56'
L = 52'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
SPAN-FEET
0
5
10
15
20
25
0
25
50
75
100

Figure 9.12f

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 16′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

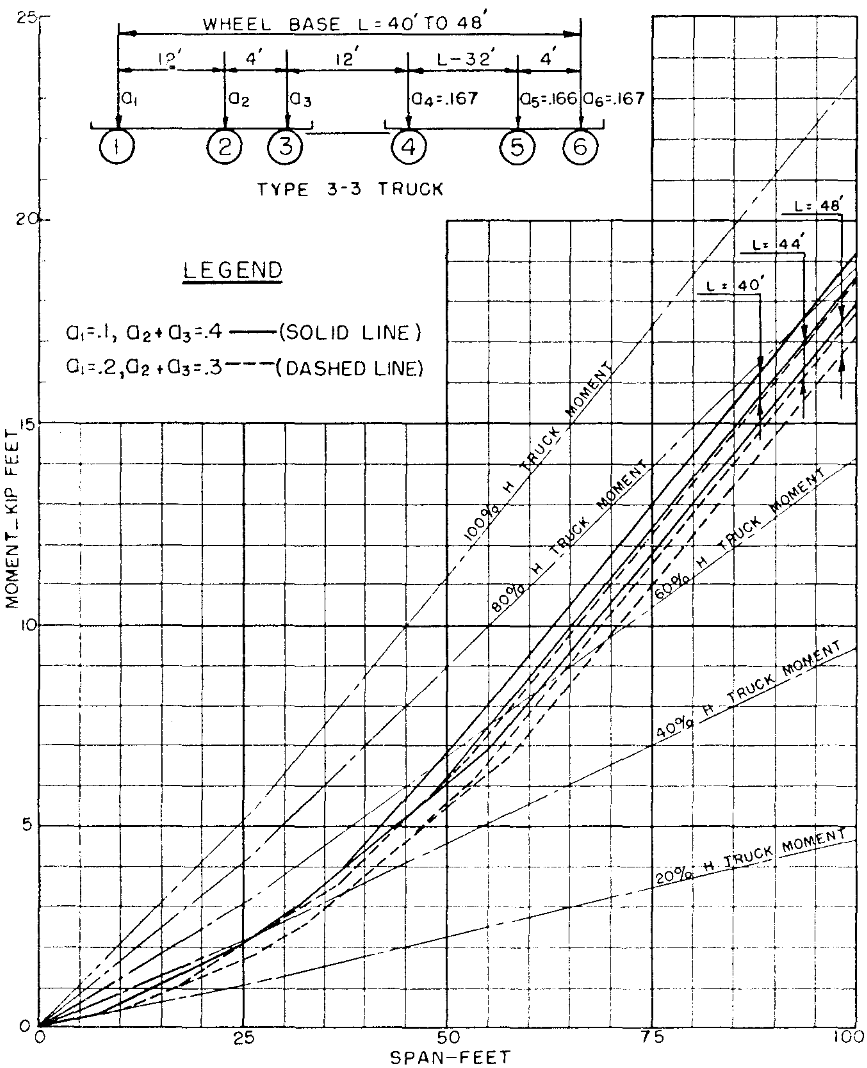


Figure 9.12g

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

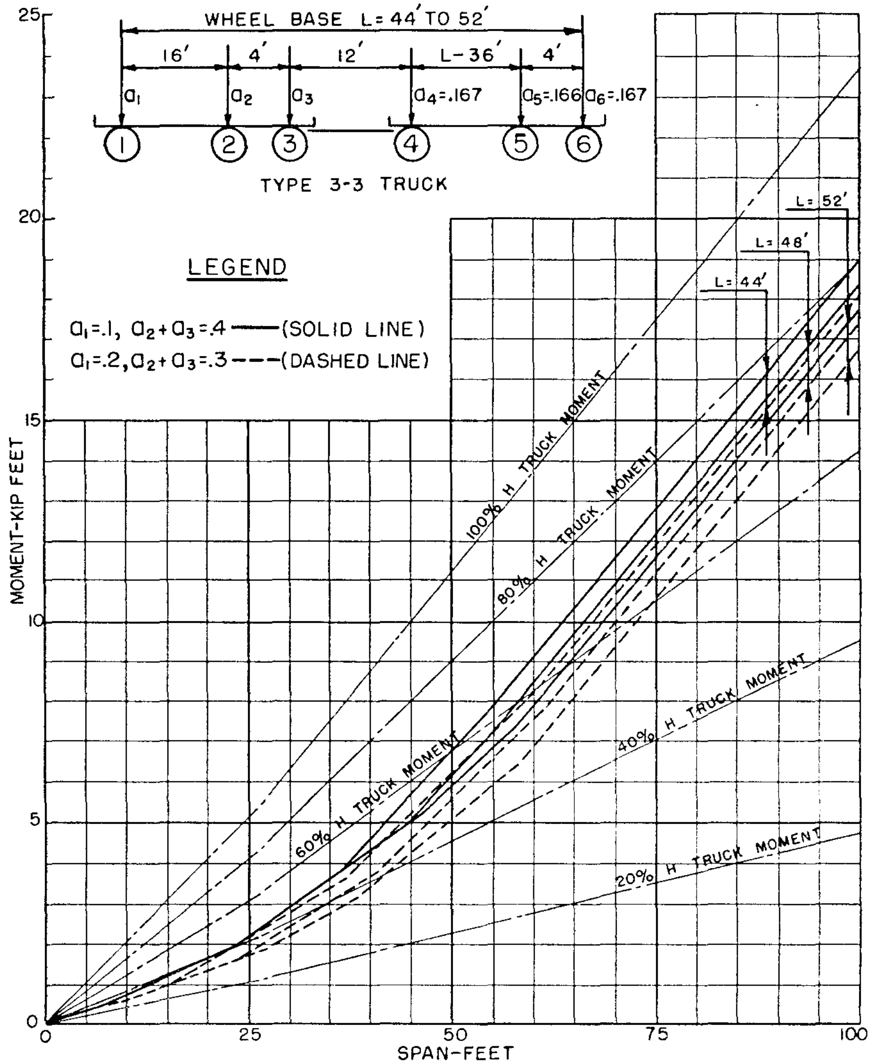


Figure 9.12h

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 24' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

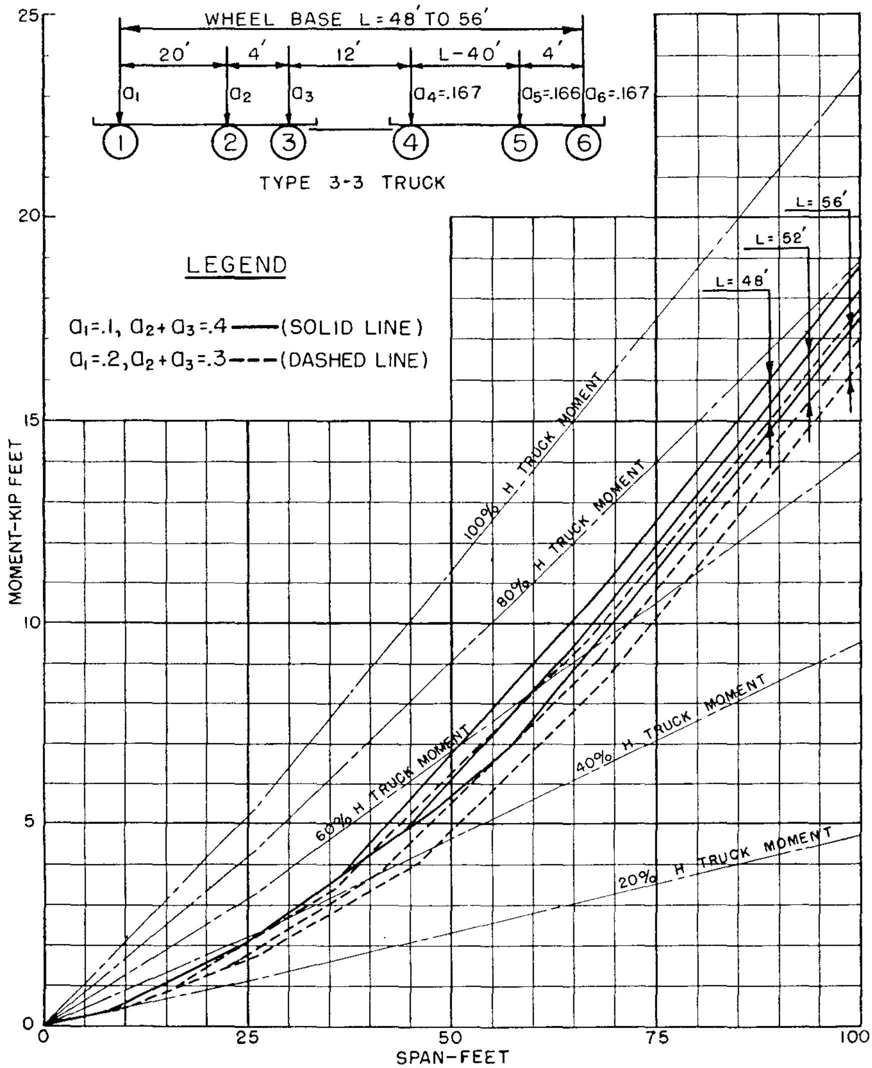


Figure 9.12i

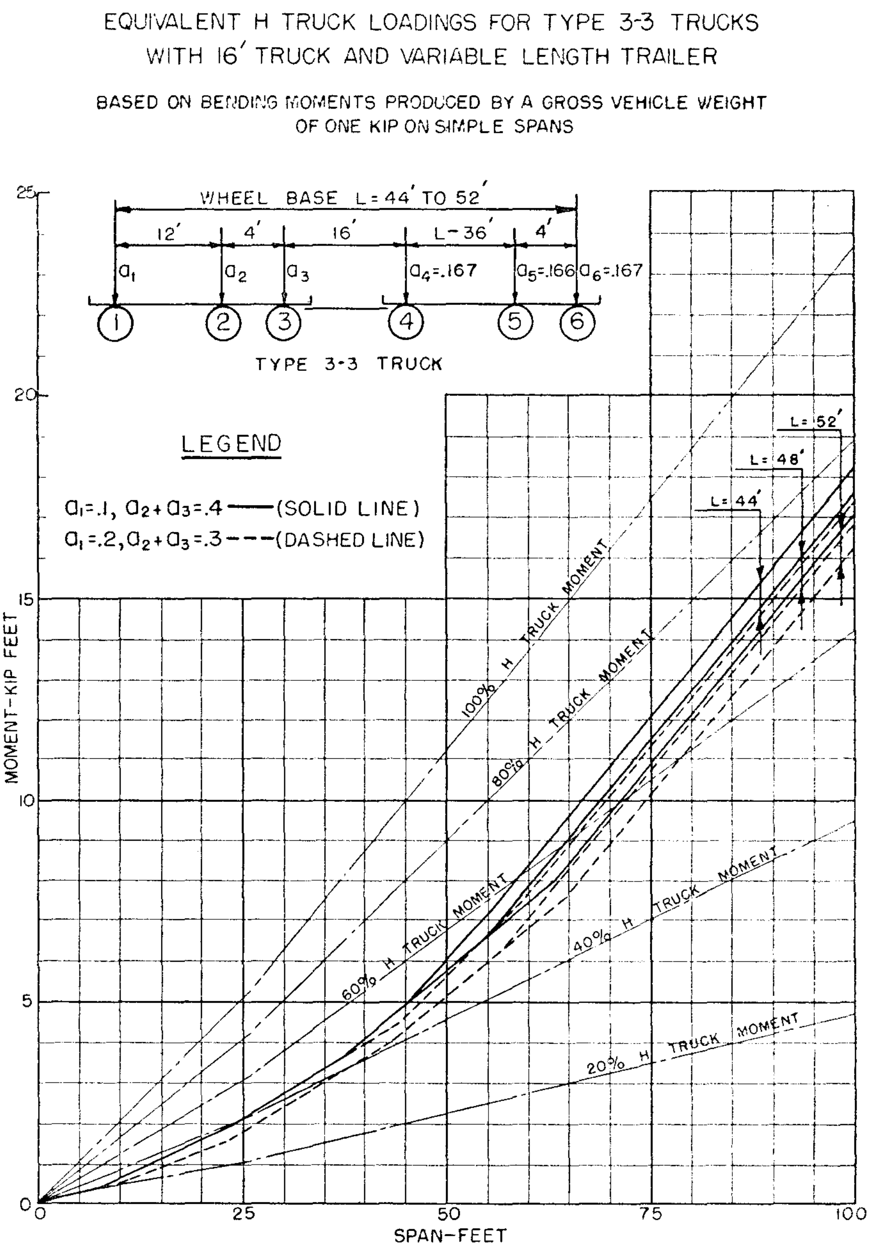

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS
WITH 16' TRUCK AND VARIABLE LENGTH TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=44' TO 52'
12'
4'
16'
L-36'
4'
a_1
a_2
a_3
a_4=.167
a_5=.166
a_6=.167
1
2
3
4
5
6
TYPE 3-3 TRUCK
LEGEND
a_1=.1, a_2+a_3=.4 —— (SOLID LINE)
a_1=.2, a_2+a_3=.3 - - - (DASHED LINE)
L=52'
L=48'
L=44'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
0
5
10
15
20
25
0
25
50
75
100
SPAN-FEET

Figure 9.12j

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 20′ TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

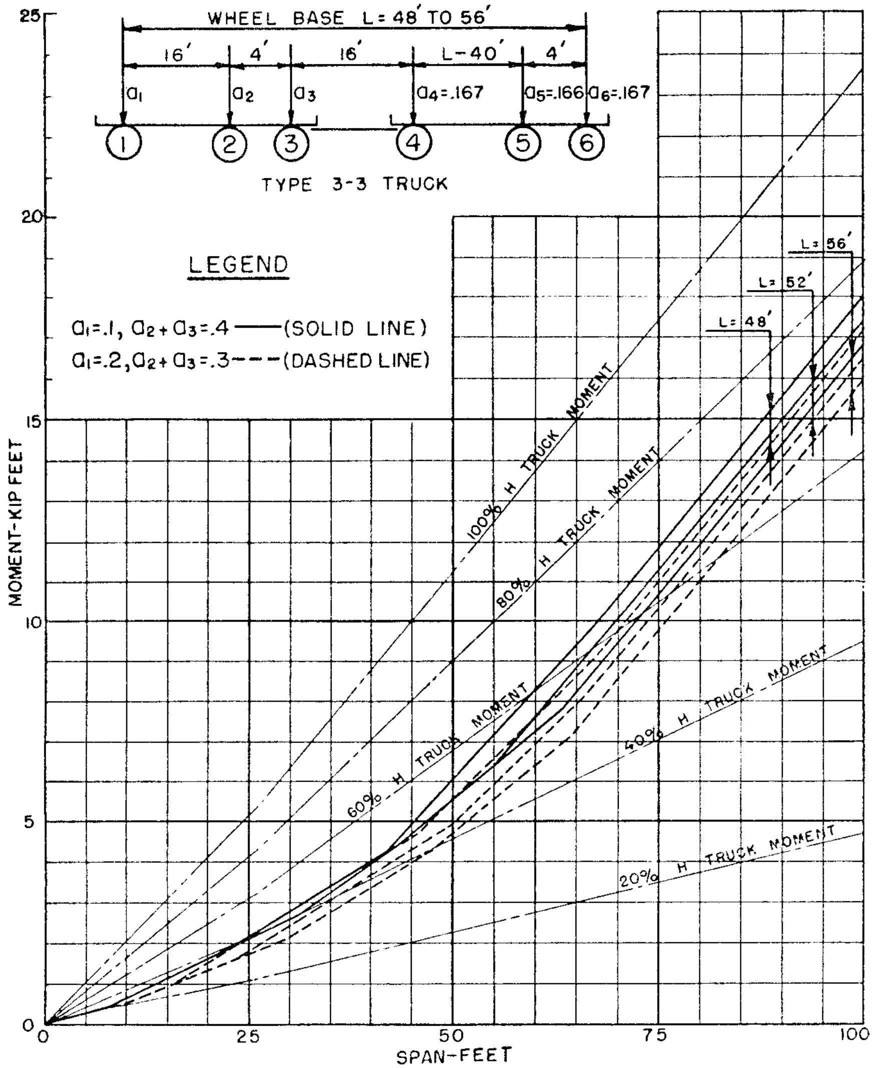


Figure 9.12k

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WITH 24' TRUCK AND VARIABLE LENGTH TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

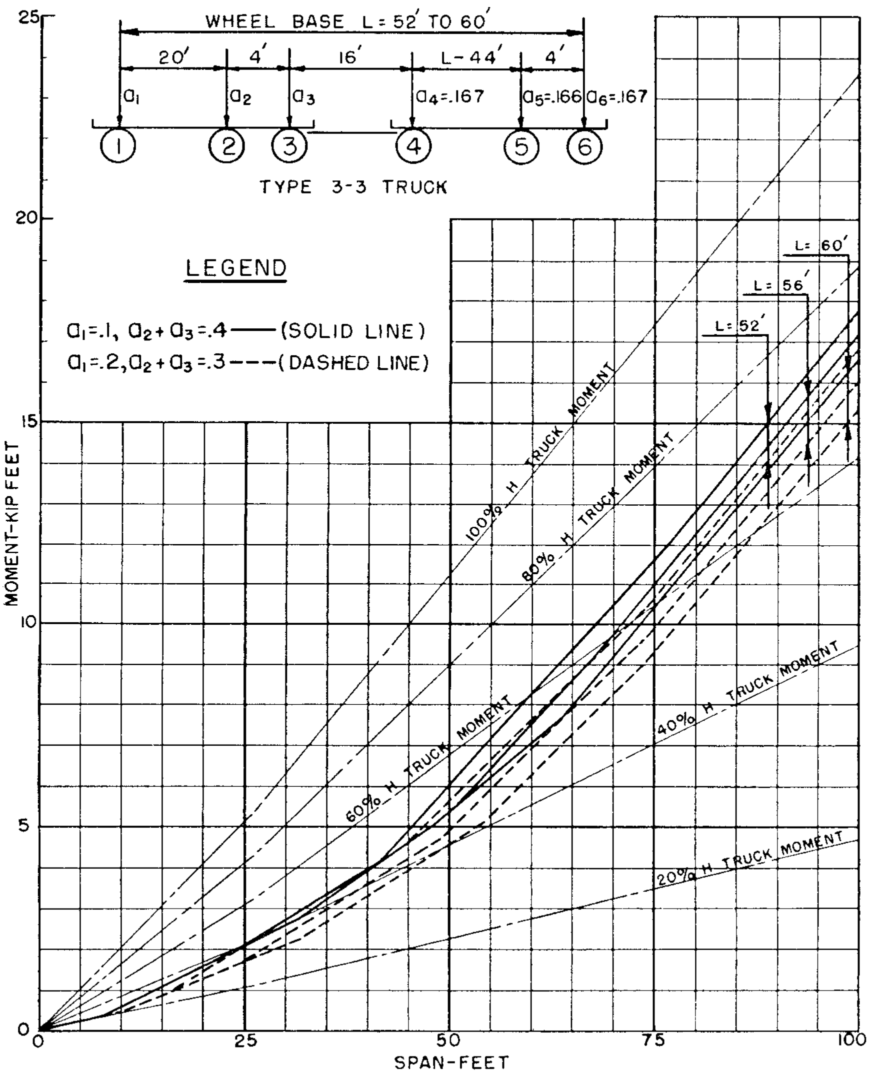


Figure 9.121

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1-2 TRUCKS
WITH 8′ TRUCK-TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

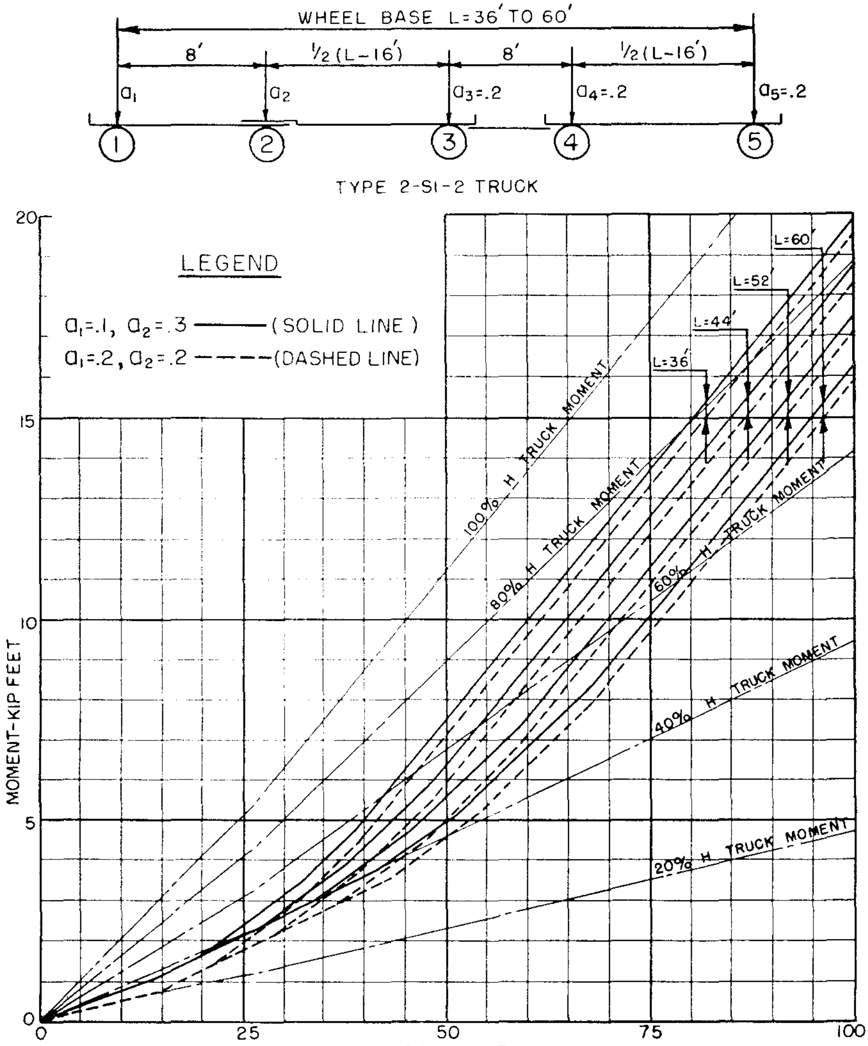


Figure 9.13a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-SI-2 TRUCKS
WITH 12′ TRUCK-TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

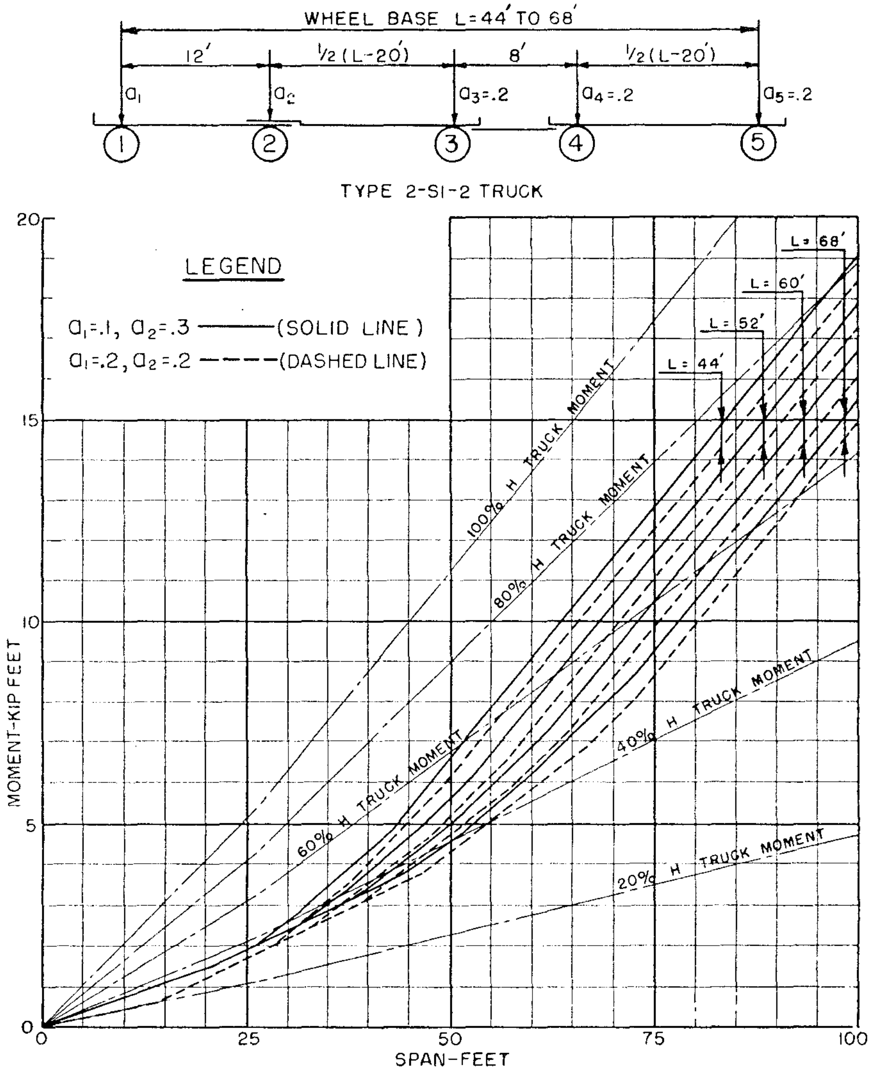


Figure 9.13b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1-2 TRUCKS
WITH 16′ TRUCK-TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

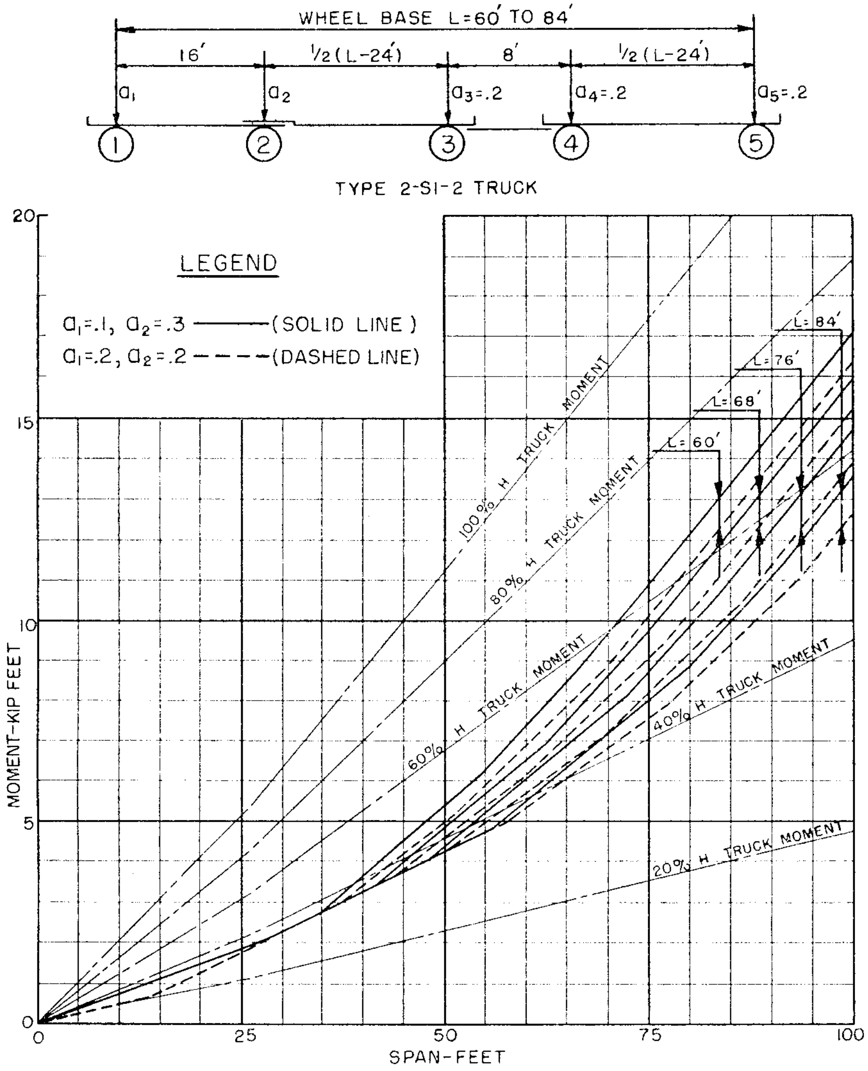


Figure 9.13c

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2-3 TRUCKS
WITH 12′ TRUCK-TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

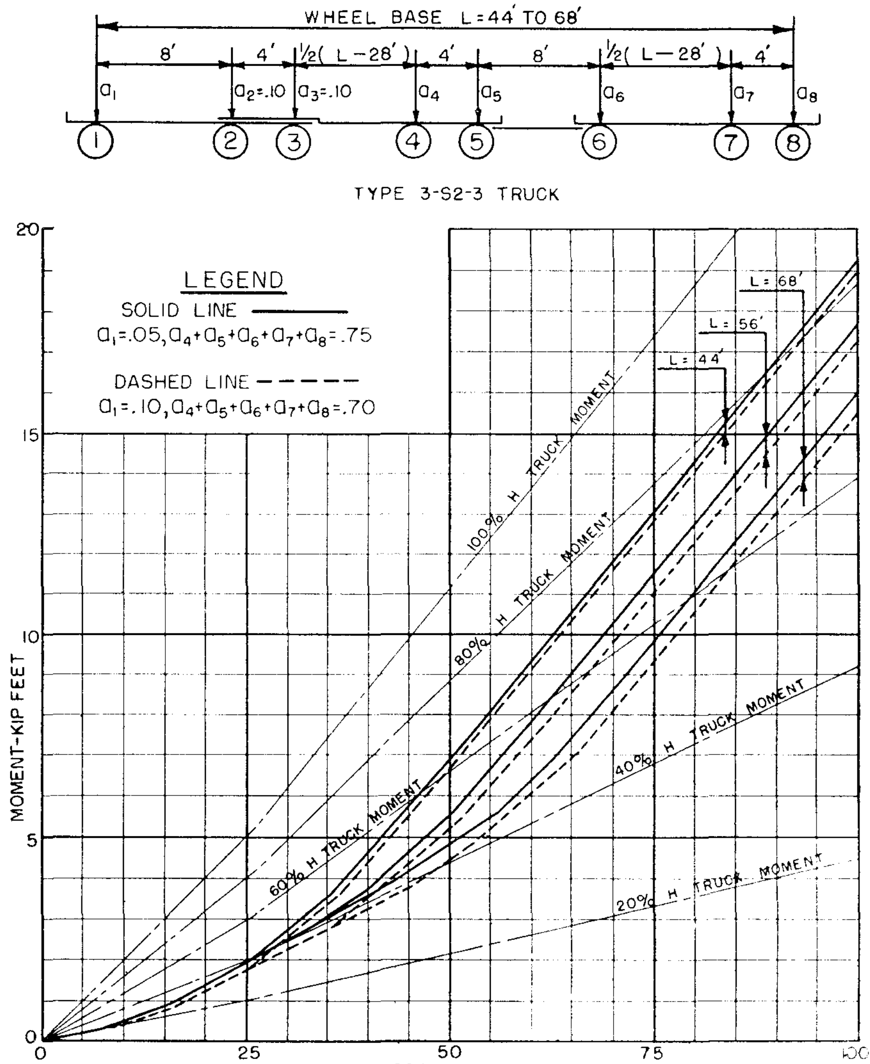


Figure 9.14a

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2-3 TRUCKS
WITH 16′ TRUCK–TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

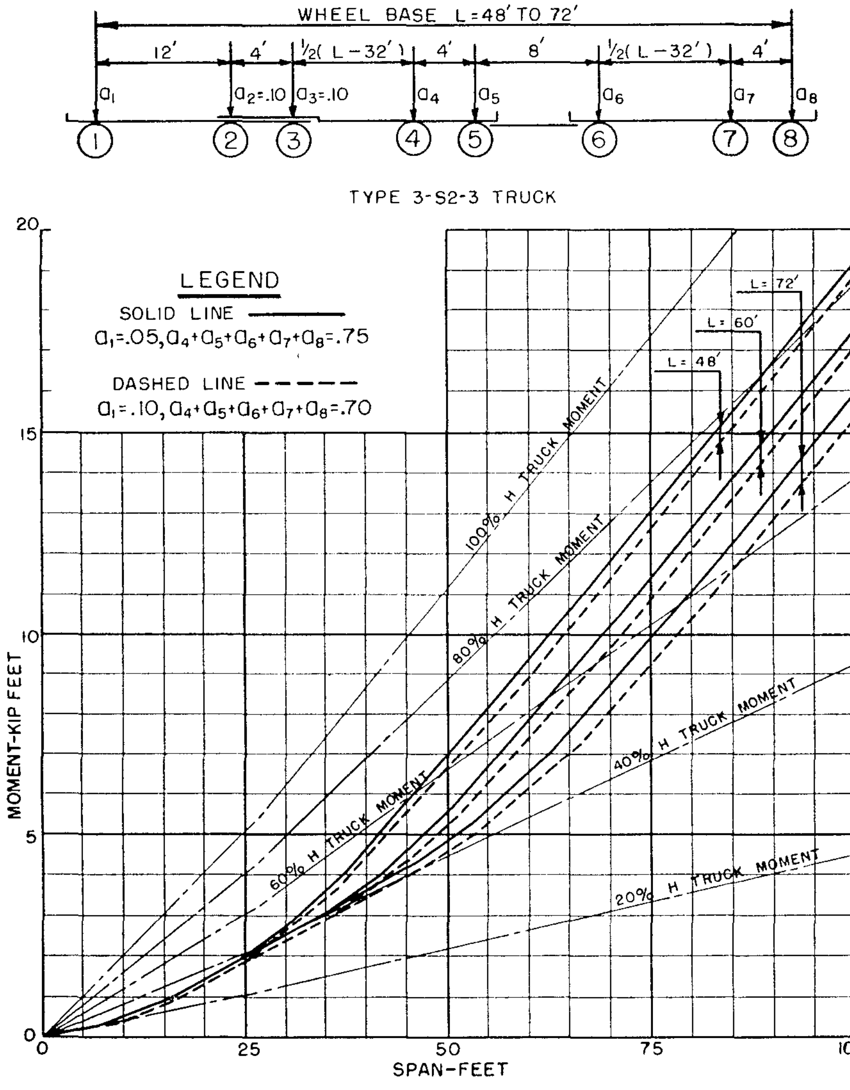


Figure 9.14b

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2-3 TRUCKS
WITH 20' TRUCK-TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS

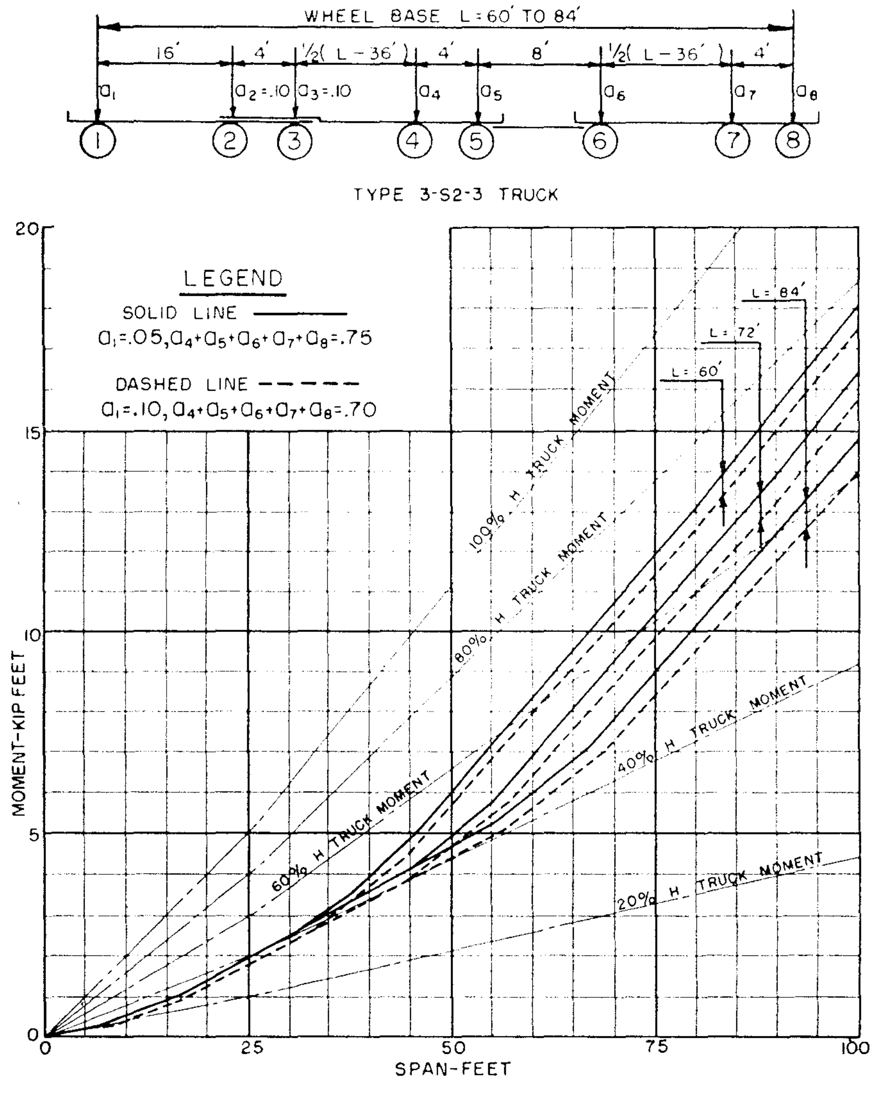
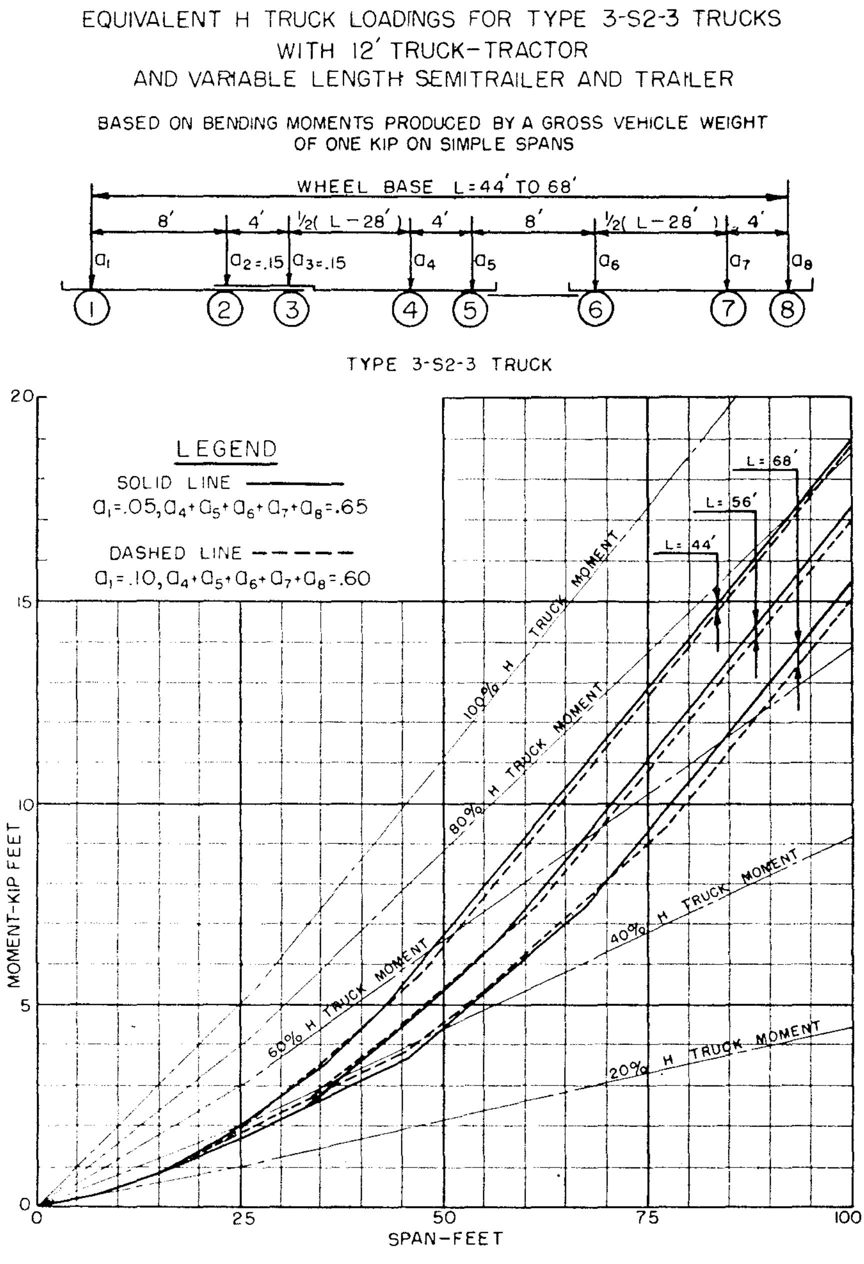


Figure 9.14c



EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2-3 TRUCKS
WITH 12' TRUCK-TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER
BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT
OF ONE KIP ON SIMPLE SPANS
WHEEL BASE L=44' TO 68'
8'
4'
½(L−28')
4'
8'
½(L−28')
4'
a1
a2=.15
a3=.15
a4
a5
a6
a7
a8
1
2
3
4
5
6
7
8
TYPE 3-S2-3 TRUCK
LEGEND
SOLID LINE
a1=.05, a4+a5+a6+a7+a8=.65
DASHED LINE
a1=.10, a4+a5+a6+a7+a8=.60
L=68'
L=56'
L=44'
100% H TRUCK MOMENT
80% H TRUCK MOMENT
60% H TRUCK MOMENT
40% H TRUCK MOMENT
20% H TRUCK MOMENT
MOMENT-KIP FEET
0
5
10
15
20
SPAN-FEET
0
25
50
75
100

Figure 9.14d

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2-3 TRUCKS WITH 16′ TRUCK-TRACTOR AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS

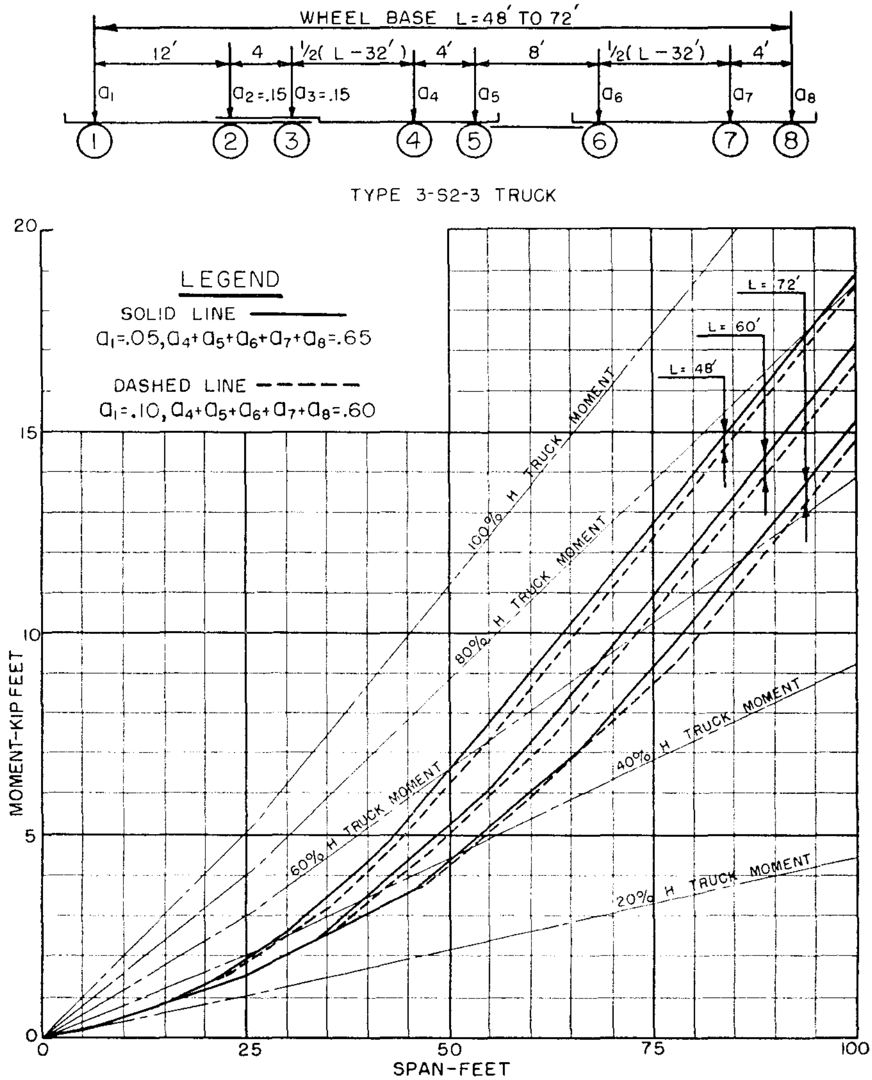
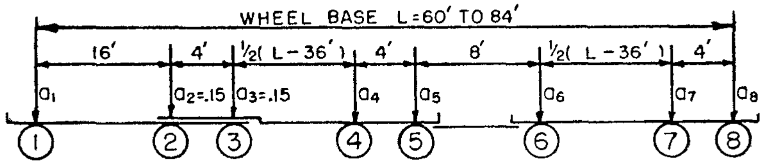


Figure 9.14e

EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2-3 TRUCKS
WITH 20′ TRUCK–TRACTOR
AND VARIABLE LENGTH SEMITRAILER AND TRAILER

BASED ON BENDING MOMENTS PRODUCED BY A GROSS VEHICLE WEIGHT OF ONE KIP ON SIMPLE SPANS



TYPE 3-S2-3 TRUCK

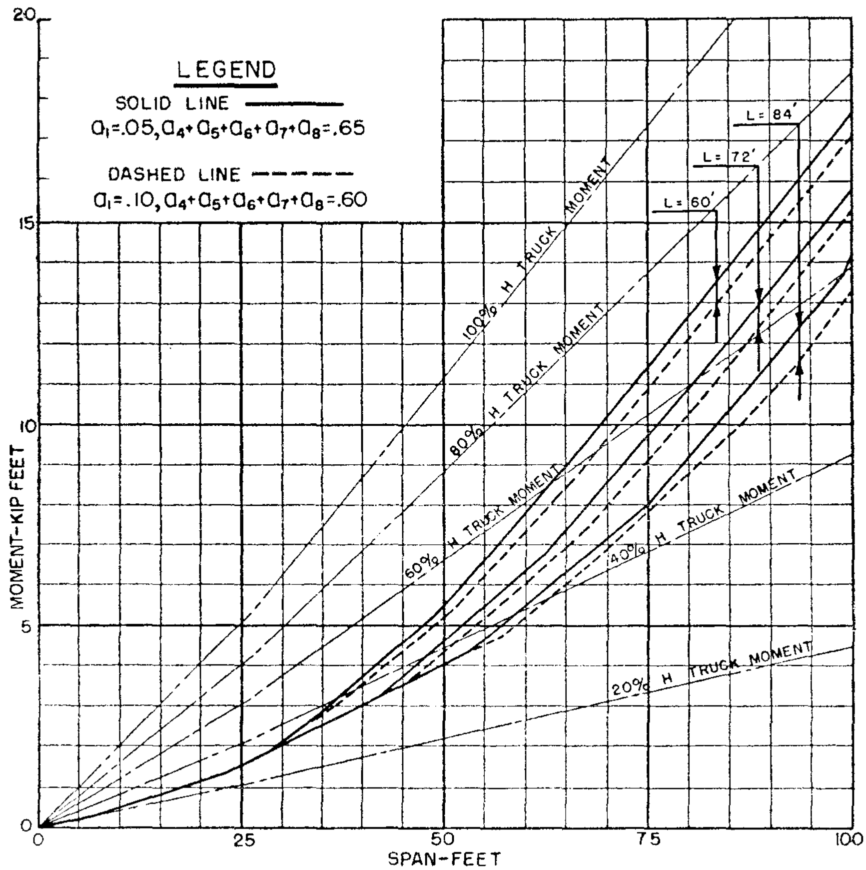


Figure 9.14f

10. EQUIVALENT H TRUCK LOADINGS FOR VEHICLES OF UNIT WEIGHT ON SIMPLE SPAN BRIDGES

Tables 10.1-10.14 give the equivalent H truck loading corresponding to each of the 1303 variations of the 14 heavy vehicle types weighing 1.0 kip each, as shown in identification index Tables 6.1-6.14, on spans of 10, 20, 30, 40, 50, 60, 80, and 100 feet in length. The equivalent H truck loadings corresponding to each of the 1303 heavy vehicle types and loadings on each of the 8 different span lengths makes a total of 10,424 H truck loading equivalents recorded in Tables 10.1-10.14. The table number corresponding to each of the 14 heavy vehicle types is as follows:

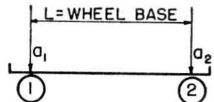
Table No.	Vehicle Type	Table No.	Vehicle Type
10.1	2	10.8	3-S3
10.2	3	10.9	2-2
10.3	2-S1	10.10	2-3
10.4	2-S2	10.11	3-2
10.5	2-S3	10.12	3-3
10.6	3-S1	10.13	2-S1-2
10.7	3-S2	10.14	3-S2-3

An equivalent H truck loading is defined as the gross weight—either in pounds, kips, or tons—on a standard H truck required to produce the same maximum moment on a given span as that produced by the particular heavy vehicle under consideration on the same span. The equivalent H truck loadings given for various span lengths by Tables 10.1-10.14 are those that would result if the particular vehicle under consideration had a gross weight of one kip. Thus, the equivalent H truck loading for any particular vehicle type and loading on a given span may be obtained simply by multiplying the H truck loading equivalent indicated for a gross vehicle weight of one kip by the number of kips carried by the vehicle under consideration.

The use of Tables 10.1-10.14 for converting any particular heavy vehicle type and loading into an equivalent H truck loading on a given span is given in Article 5.

Table 10.1

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2 TRUCK

Thirty six variations in the Type 2 truck are given in this Table. Each truck number, from 1 to 36, represents a different combination of wheel base length, and ratios of gross weight on each axle.

All dimensions are in feet.

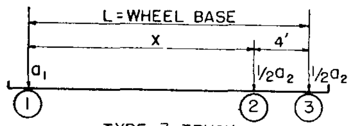
Equivalent H truck loadings are in kips.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a^1	a^2	10	20	30	40	50	60	80	100
	1	.45	.55	.688	.751	.879	.911	.929	.941	.956	.965
	2	.40	.60	.750	.800	.914	.937	.950	.959	.969	.975
L = 10	3	.35	.65	.813	.851	.949	.963	.971	.976	.982	.986
	4	.30	.70	.875	.903	.985	.989	.992	.993	.995	.996
	5	.25	.75	.938	.957	1.022	1.016	1.013	1.011	1.008	1.006
	6	.20	.80	1.000	1.013	1.060	1.044	1.034	1.028	1.021	1.017
	7	.45	.55	.688	.688	.818	.865	.893	.911	.934	.947
	8	.40	.60	.750	.750	.858	.895	.918	.932	.949	.959
L = 12	9	.35	.65	.813	.813	.900	.926	.942	.951	.964	.971
	10	.30	.70	.875	.875	.942	.958	.966	.972	.979	.984
	11	.25	.75	.938	.938	.985	.989	.992	.993	.995	.996
	12	.20	.80	1.000	1.000	1.030	1.022	1.017	1.014	1.011	1.008
	13	.45	.55	.688	.688	.759	.821	.857	.882	.911	.929
	14	.40	.60	.750	.750	.805	.855	.885	.904	.929	.943
L = 14	15	.35	.65	.813	.813	.852	.890	.913	.928	.947	.957
	16	.30	.70	.875	.875	.900	.926	.942	.951	.964	.971
	17	.25	.75	.938	.938	.949	.963	.971	.976	.982	.986
	18	.20	.80	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	19	.45	.55	.688	.688	.703	.777	.822	.852	.889	.912
	20	.40	.60	.750	.750	.753	.816	.853	.878	.909	.927
L = 16	21	.35	.65	.813	.813	.805	.855	.885	.904	.929	.943
	22	.30	.70	.875	.875	.858	.895	.918	.932	.949	.959
	23	.25	.75	.938	.938	.914	.937	.950	.959	.969	.975
	24	.20	.80	1.000	1.000	.973	.979	.983	.986	.990	.992
	25	.45	.55	.688	.688	.669	.735	.788	.823	.868	.894
	26	.40	.60	.750	.750	.730	.777	.822	.852	.889	.912
L = 18	27	.35	.65	.813	.813	.791	.821	.857	.882	.911	.929
	28	.30	.70	.875	.875	.852	.865	.893	.911	.934	9.47
	29	.25	.75	.938	.938	.912	.911	.929	.941	.956	.965
	30	.20	.80	1.000	1.000	.973	.958	.966	.972	.979	.984
	31	.45	.55	.688	.688	.669	.694	.755	.795	.846	.876
	32	.40	.60	.750	.750	.730	.740	.792	.827	.870	.896
L = 20	33	.35	.65	.813	.813	.791	.787	.830	.858	.894	.915
	34	.30	.70	.875	.875	.852	.835	.869	.891	.919	.935
	35	.25	.75	.938	.938	.912	.885	.909	.924	.944	.955
	36	.20	.80	1.000	1.000	.973	.937	.950	.959	.969	.975

Table 10.2

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3 TRUCK

Forty two variations in the Type 3 truck are given in this Table. Each truck number, from 1 to 42, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

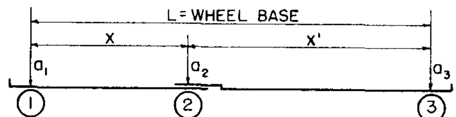
Equivalent H truck loadings are in kips.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
	1	.40	.60	.500	.625	.805	.861	.892	.912	.936	.949
	2	.35	.65	.520	.665	.834	.882	.909	.926	.946	.957
L = 14	3	.30	.70	.560	.709	.863	.904	.926	.940	.956	.966
X = 10	4	.25	.75	.600	.760	.893	.926	.944	.954	.966	.974
	5	.20	.80	.640	.810	.925	.948	.961	.968	.977	.982
	6	.15	.85	.680	.861	.957	.971	.979	.983	.988	.991
	7	.10	.90	.720	.911	.990	.995	.997	.998	.999	.999
	8	.40	.60	.500	.608	.747	.819	.859	.884	.915	.933
	9	.35	.65	.520	.658	.782	.844	.879	.901	.928	.943
L = 16	10	.30	.70	.560	.709	.818	.871	.900	.918	.941	.953
X = 12	11	.25	.75	.600	.760	.855	.898	.921	.936	.954	.964
	12	.20	.80	.640	.810	.893	.925	.943	.954	.966	.974
	13	.15	.85	.680	.861	.933	.954	.965	.972	.980	.984
	14	.10	.90	.720	.911	.974	.983	.988	.990	.993	.995
	15	.40	.60	.500	.608	.691	.777	.826	.857	.895	.917
	16	.35	.65	.520	.658	.731	.807	.850	.877	.910	.929
L = 18	17	.30	.70	.560	.709	.773	.838	.874	.897	.925	.941
X = 14	18	.25	.75	.600	.760	.816	.870	.900	.918	.940	.953
	19	.20	.80	.640	.810	.862	.903	.926	.940	.956	.965
	20	.15	.85	.680	.861	.909	.937	.952	.961	.972	.978
	21	.10	.90	.720	.911	.957	.971	.979	.983	.988	.991
	22	.40	.60	.500	.608	.637	.736	.793	.830	.875	.901
	23	.35	.65	.520	.658	.689	.771	.821	.853	.892	.915
L = 20	24	.30	.70	.560	.709	.742	.806	.849	.877	.910	.929
X = 16	25	.25	.75	.600	.760	.795	.843	.878	.901	.927	.943
	26	.20	.80	.640	.810	.848	.881	.908	.925	.946	.957
	27	.15	.85	.680	.861	.901	.920	.938	.950	.964	.972
	28	.10	.90	.720	.911	.954	.960	.970	.976	.983	.987
	29	.40	.60	.500	.608	.636	.697	.761	.803	.854	.884
	30	.35	.65	.520	.658	.689	.735	.792	.829	.874	.900
L = 22	31	.30	.70	.560	.709	.742	.775	.824	.856	.894	.916
X = 18	32	.25	.75	.600	.760	.795	.816	.857	.883	.914	.932
	33	.20	.80	.640	.810	.848	.859	.891	.911	.935	.949
	34	.15	.85	.680	.861	.901	.903	.926	.939	.956	.965
	35	.10	.90	.720	.911	.954	.948	.961	.968	.977	.982
	36	.40	.60	.500	.608	.636	.658	.730	.777	.835	.869
	37	.35	.65	.520	.658	.689	.700	.764	.806	.856	.886
L = 24	38	.30	.70	.560	.709	.742	.744	.800	.835	.879	.904
X = 20	39	.25	.75	.600	.760	.795	.789	.836	.866	.902	.922
	40	.20	.80	.640	.810	.848	.837	.873	.896	.925	.940
	41	.15	.85	.680	.861	.901	.887	.912	.929	.948	.959
	42	.10	.90	.720	.911	.954	.939	.952	.961	.972	.978

Table 10.3

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S1 TRUCK

One hundred twenty-six variations in the Type 2-S1 truck are given in this Table. Each truck number, from 1 to 126, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

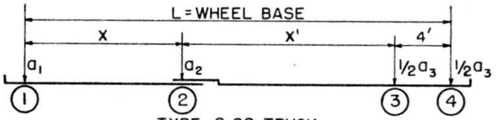
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.750	.750	.822	.855	.885	.904	.929	.943
	2	.10	.40	.50	.625	.625	.740	.797	.838	.865	.899	.919
L = 20	3	.10	.45	.45	.563	.591	.742	.813	.853	.879	.911	.929
X = 8	4	.10	.50	.40	.625	.654	.784	.844	.878	.900	.926	.942
X′ = 12	5	.20	.30	.50	.625	.625	.703	.759	.807	.839	.880	.904
	6	.20	.40	.40	.500	.563	.711	.794	.839	.869	.904	.924
	7	.20	.50	.30	.625	.686	.800	.858	.891	.911	.935	.949
	8	.10	.30	.60	.750	.750	.740	.782	.822	.852	.889	.912
	9	.10	.40	.50	.625	.625	.637	.704	.762	.801	.851	.880
L = 24	10	.10	.45	.45	.563	.591	.623	.723	.781	.819	.866	.893
X = 8	11	.10	.50	.40	.625	.654	.675	.763	.813	.846	.886	.909
X′ = 16	12	.20	.30	.50	.625	.625	.623	.668	.733	.776	.832	.865
	13	.20	.40	.40	.500	.563	.606	.710	.773	.814	.863	.892
	14	.20	.50	.30	.625	.686	.727	.794	.839	.869	.904	.924
	15	.10	.30	.60	.750	.750	.730	.723	.762	.801	.851	.880
	16	.10	.40	.50	.625	.625	.608	.629	.690	.740	.803	.842
L = 28	17	.10	.45	.45	.563	.591	.606	.638	.712	.761	.822	.858
X = 8	18	.10	.50	.40	.625	.654	.667	.685	.750	.793	.846	.878
X′ = 20	19	.20	.30	.50	.625	.625	.608	.611	.662	.716	.785	.827
	20	.20	.40	.40	.500	.563	.606	.631	.710	.761	.823	.860
	21	.20	.50	.30	.625	.686	.727	.731	.790	.827	.873	.900
	22	.10	.30	.60	.750	.750	.730	.694	.713	.752	.813	.850
	23	.10	.40	.50	.625	.625	.608	.578	.625	.681	.758	.805
L = 32	24	.10	.45	.45	.563	.591	.606	.590	.646	.705	.779	.823
X = 8	25	.10	.50	.40	.625	.654	.667	.648	.690	.742	.808	.846
X′ = 24	26	.20	.30	.50	.625	.625	.608	.578	.604	.658	.740	.790
	27	.20	.40	.40	.500	.563	.606	.604	.648	.709	.784	.828
	28	.20	.50	.30	.625	.686	.727	.719	.741	.787	.843	.875
	29	.10	.30	.60	.750	.750	.730	.694	.673	.706	.776	.820
	30	.10	.40	.50	.625	.625	.608	.578	.570	.624	.713	.768
L = 36	31	.10	.45	.45	.563	.591	.606	.590	.583	.651	.737	.790
X = 8	32	.10	.50	.40	.625	.654	.667	.648	.638	.693	.770	.816
X′ = 28	33	.20	.30	.50	.625	.625	.608	.578	.561	.602	.696	.754
	34	.20	.40	.40	.500	.563	.606	.604	.603	.659	.746	.797
	35	.20	.50	.30	.625	.686	.727	.719	.715	.748	.813	.852
	36	.10	.30	.60	.750	.845	.909	.916	.933	.945	.959	.967
	37	.10	.40	.50	.625	.760	.850	.875	.901	.918	.939	.951
L = 20	38	.10	.45	.45	.563	.720	.835	.883	.909	.926	.946	.957
X = 12	39	.10	.50	.40	.625	.760	.865	.905	.926	.940	.956	.966
X′ = 8	40	.20	.30	.50	.625	.723	.788	.816	.853	.878	.909	.927
	41	.20	.40	.40	.500	.640	.763	.833	.871	.895	.924	.940
	42	.20	.50	.30	.625	.723	.827	.879	.907	.924	.945	.957
	43	.10	.30	.60	.750	.750	.822	.843	.869	.891	.919	.935
	44	.10	.40	.50	.625	.625	.740	.782	.822	.852	.889	.912
L = 24	45	.10	.45	.45	.563	.563	.705	.787	.834	.864	.900	.921
X = 12	46	.10	.50	.40	.625	.625	.747	.819	.859	.884	.915	.933
X′ = 12	47	.20	.30	.50	.625	.625	.703	.729	.777	.814	.860	.888
	48	.20	.40	.40	.500	.500	.640	.744	.802	.838	.882	.907
	49	.20	.50	.30	.625	.625	.732	.810	.853	.881	.913	.932

Table 10.3 (Continued)

	50	.10	.30	.60	.750	.750	.740	.782	.807	.839	.880	.904
	51	.10	.40	.50	.625	.625	.637	.704	.747	.789	.841	.873
L = 28	52	.10	.45	.45	.563	.563	.589	.697	.761	.803	.854	.884
X = 12	53	.10	.50	.40	.625	.625	.637	.736	.793	.830	.874	.900
X′ = 16	54	.20	.30	.50	.625	.625	.623	.668	.704	.752	.813	.850
	55	.20	.40	.40	.500	.500	.648	.659	.734	.782	.840	.874
	56	.20	.50	.30	.625	.625	.668	.744	.802	.838	.882	.907
	57	.10	.30	.60	.750	.750	.730	.723	.758	.789	.841	.873
	58	.10	.40	.50	.625	.625	.608	.629	.683	.728	.794	.835
L = 32	59	.10	.45	.45	.563	.563	.576	.610	.692	.745	.810	.849
X = 12	60	.10	.50	.40	.625	.625	.636	.658	.730	.777	.835	.869
X′ = 20	61	.20	.30	.50	.625	.625	.608	.611	.649	.692	.767	.812
	62	.20	.40	.40	.500	.500	.548	.578	.669	.728	.800	.842
	63	.20	.50	.30	.625	.625	.668	.680	.751	.796	.851	.882
	64	.10	.30	.60	.750	.750	.730	.694	.713	.744	.803	.842
	65	.10	.40	.50	.625	.625	.608	.578	.625	.669	.749	.797
L = 36	66	.10	.45	.45	.563	.563	.576	.569	.625	.688	.767	.814
X = 12	67	.10	.50	.40	.625	.625	.636	.626	.669	.726	.796	.837
X′ = 24	68	.20	.30	.50	.625	.625	.608	.578	.604	.636	.722	.776
	69	.20	.40	.40	.500	.500	.548	.562	.607	.676	.760	.810
	70	.20	.50	.30	.625	.625	.668	.676	.702	.755	.820	.858
	71	.10	.30	.60	.750	.750	.730	.694	.673	.706	.767	.812
	72	.10	.40	.50	.625	625	.608	.578	.570	.622	.705	.761
L = 40	73	.10	.45	.45	.563	.563	.576	.569	.565	.634	.725	.780
X = 12	74	.10	.50	.40	.625	.625	.636	.626	.621	.676	.758	.807
X′ = 28	75	.20	.30	.50	.625	.625	.608	.578	.561	.599	.679	.740
	76	.20	.40	.40	.500	.500	.548	.562	.570	.625	.722	.779
	77	.20	.50	.30	625	.625	.668	.676	.681	.715	.761	.834
	78	.10	.30	.60	.750	.750	.730	.694	.673	.670	.731	.783
	79	.10	.40	.50	.625	.625	.608	.578	.561	.576	.662	.726
L = 44	80	.10	.45	.45	.563	.563	.576	.569	.565	.581	.684	.747
X = 12	81	.10	.50	.40	.625	.625	.636	.626	.621	.628	.721	.776
X′ = 32	82	.20	.30	.50	.625	.625	.608	.578	.561	.563	.637	.705
	83	.20	.40	.40	.500	.500	.548	.562	.570	.576	.684	.748
	84	.20	.50	.30	.625	.625	.668	.676	.681	.685	.760	.810
	85	.10	.30	.60	.750	.845	.909	.906	.917	.931	.949	.959
	86	.10	.40	.50	.625	.760	.850	.864	.885	.904	.929	.943
L = 24	87	.10	.45	.45	.563	.720	.822	.858	.891	.911	.935	.949
X = 16	88	.10	.50	.40	.625	.760	.850	.881	.908	.925	.945	.957
X′ = 8	89	.20	.30	.50	.625	.723	.788	.791	.822	.852	.889	.912
	90	.20	.40	.40	.500	.640	.731	.786	.835	.865	.902	.923
	91	.20	.50	.30	.625	.723	.788	.833	.871	.895	.924	.940
	92	.10	.30	.60	.750	.750	.822	.843	.855	.878	.909	.927
	93	.10	.40	.50	.625	.625	.740	.782	.807	.839	.880	.904
L = 28	94	.10	.45	.45	.563	.563	.701	.762	.814	.848	.888	.912
X = 16	95	.10	.50	.40	.625	.625	.740	.794	.839	.869	.904	.924
X′ = 12	96	.20	.30	.50	.625	.625	.703	.729	.747	.789	.841	.873
	97	.20	.40	.40	.500	.500	.623	.696	.764	.808	.859	.889
	98	.20	.50	.30	.625	.625	.703	.763	.817	.851	.891	.914
	99	.10	.30	.60	.750	.750	.740	.782	.806	.826	.870	.896
	100	.10	.40	.50	.625	.625	.637	.704	.743	.776	.832	.865
L = 32	101	.10	.45	.45	.563	.563	.589	.670	.741	.787	.843	.875
X = 16	102	.10	.50	.40	.625	.625	.637	.710	.773	.814	.863	.892
X′ = 16	103	.20	.30	.50	.625	.625	.623	.668	.695	.728	.794	.835
	104	.20	.40	.40	.500	.500	.523	.609	.696	.751	.818	.856
	105	.20	.50	.30	.625	.625	.623	.696	.764	.808	.859	.889
	106	.10	.30	.60	.750	.750	.730	.723	.758	.782	.832	.865
	107	.10	.40	.50	.625	.625	.608	.629	.683	.718	.785	.827
L = 36	108	.10	.45	.45	.563	.563	.547	.585	.671	.728	.798	.840
X = 16	109	.10	.50	.40	.625	.625	.608	.631	.710	.761	.823	.860
X′ = 20	110	.20	.30	.50	.625	.625	.608	.611	.649	.674	.749	.797
	111	.20	.40	.40	.500	.500	.494	.525	.630	.696	.777	.824
	112	.20	.50	.30	.625	.625	.612	.635	.713	.765	.828	.865
	113	.10	.30	.60	.750	.750	.730	.694	.713	.744	.794	.835
	114	.10	.40	.50	.625	.625	.608	.578	.625	.669	.740	.790
L = 40	115	.10	.45	.45	.563	.563	.547	.547	.604	.671	.755	.805
X = 16	116	.10	.50	.40	.625	.625	.608	.604	.648	.709	.784	.828
X′ = 24	117	.20	.30	.50	.625	.625	.608	.578	.604	.636	.705	.761
	118	.20	.40	.40	.500	.500	.494	.521	.566	.643	.737	.792
	119	.20	.50	.30	.625	.625	.612	.635	.663	.724	.797	.840
	120	.10	.30	.60	.750	.750	.730	.694	.673	.706	.758	.805
	121	.10	.40	.50	.625	.625	.608	.578	.570	.622	.696	.754
L = 44	122	.10	.45	.45	.563	.563	.547	.547	.547	.616	.713	.771
X = 16	123	.10	.50	.40	.625	.625	.608	.604	.603	.659	.746	.797
X′ = 28	124	.20	.30	.50	.625	.625	.608	.578	.561	.599	.662	.726
	125	.20	.40	.40	.500	.500	.494	.521	.537	.592	.698	.760
	126	.20	.50	.30	.625	.625	.612	.635	.648	.683	.767	.816

Table 10.4

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S2 TRUCK

One hundred eight variations in the Type 2-S2 truck are given in this Table. Each truck number, from 1 to 108, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

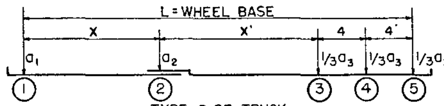
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.480	.680	.805	.861	.892	.912	.936	.949
	2	.10	.40	.50	.500	.617	.770	.834	.870	.893	.921	.938
L = 20	3	.10	.50	.40	.625	.703	.841	.886	.911	.927	.947	.958
X = 8	4	.20	.30	.50	.400	.583	.710	.790	.835	.865	.900	.921
X' = 8	5	.20	.40	.40	.500	.600	.770	.837	.873	.897	.924	.940
	6	.20	.50	.30	.625	.713	.846	.892	.917	.932	.951	.961
	7	.10	.30	.60	.480	.608	.714	.777	.826	.857	.895	.917
	8	.10	.40	.50	.500	.529	.646	.733	.789	.826	.871	.897
L = 24	9	.10	.50	.40	.625	.654	.729	.803	.845	.873	.906	.925
X = 8	10	.20	.30	.50	.400	.506	.612	.690	.756	.798	.850	.881
X' = 12	11	.20	.40	.40	.500	.563	.654	.752	.806	.841	.883	.908
	12	.20	.50	.30	.625	.686	.758	.826	.865	.890	.919	.936
	13	.10	.30	.60	.480	.608	.636	.704	.761	.803	.854	.884
	14	.10	.40	.50	.500	.529	.545	.638	.712	.761	.822	.858
L = 28	15	.10	.50	.40	.625	.654	.667	.723	.781	.819	.866	.893
X = 8	16	.20	.30	.50	.400	.506	.530	.603	.680	.734	.802	.842
X' = 16	17	.20	.40	.40	.500	.563	.606	.670	.741	.787	.843	.875
	18	.20	.50	.30	.625	.686	.727	.762	.814	.848	.888	.912
	19	.10	.30	.60	.480	.608	.636	.643	.699	.751	.815	.853
	20	.10	.40	.50	.500	.529	.545	.559	.639	.699	.774	.820
L = 32	21	.10	.50	.40	.625	.654	.667	.659	.720	.768	.827	.862
X = 8	22	.20	.30	.50	.400	.506	.530	.543	.607	.672	.754	.804
X' = 20	23	.20	.40	.40	.500	.563	.606	.606	.679	.735	.803	.844
	24	.20	.50	.30	.625	.686	.727	.719	.765	.807	.858	.888
	25	.10	.30	.60	.480	.608	.636	.626	.651	.701	.777	.822
	26	.10	.40	.50	.500	.529	.545	.533	.571	.640	.728	.780
L = 36	27	.10	.50	.40	.625	.654	.667	.648	.661	.718	.789	.831
X = 8	28	.20	.30	.50	.400	.506	.530	.522	.551	.613	.709	.766
X' = 24	29	.20	.40	.40	.500	.563	.606	.604	.618	.684	.765	.813
	30	.20	.50	.30	.625	.686	.727	.719	.723	.767	.828	.864
	31	.10	.30	.60	.480	.608	.636	.626	.621	.656	.739	.791
	32	.10	.40	.50	.500	.529	.545	.533	.526	.582	.683	.745
L = 40	33	.10	.50	.40	.625	.654	.667	.648	.638	.669	.751	.801
X = 8	34	.20	.30	.50	.400	.506	.530	.522	.517	.557	.664	.730
X' = 28	35	.20	.40	.40	.500	.563	.606	.604	.603	.635	.727	.782
	36	.20	.50	.30	.625	.686	.727	.719	.715	.728	.798	.840
	37	.10	.30	.60	.480	.680	.805	.840	.875	.898	.925	.941
	38	.10	.40	.50	.500	.617	.762	.810	.852	.878	.910	.929
L = 24	39	.10	.50	.40	.625	.686	.805	.861	.892	.912	.936	.949
X = 12	40	.20	.30	.50	.400	.583	.701	.749	.803	.838	.880	.905
X' = 8	41	.20	.40	.40	.500	.563	.701	.788	.836	.866	.902	.923
	42	.20	.50	.30	.625	.669	.779	.844	.880	.902	.929	.944

Table 10.4 (Continued)

	43	.10	.30	.60	.480	.608	.714	.768	.809	.843	.884	.908
	44	.10	.40	.50	.500	.506	.646	.717	.771	.811	.860	.889
L = 28	45	.10	.50	.40	.625	.625	.691	.777	.826	.857	.895	.917
X = 12	46	.20	.30	.50	.400	.506	.612	.665	.725	.772	.831	.865
X' = 12	47	.20	.40	.40	.500	.500	.584	.701	.768	.810	.861	.890
	48	.20	.50	.30	.625	.625	.694	.777	.827	.859	.897	.919
	49	.10	.30	.60	.480	.608	.636	.704	.747	.790	.844	.876
	50	.10	.40	.50	.500	.506	.539	.636	.694	.747	.811	.850
L = 32	51	.10	.50	.40	.625	.625	.636	.697	.761	.803	.854	.884
X = 12	52	.20	.30	.50	.400	.506	.530	.603	.650	.709	.783	.826
X' = 16	53	.20	.40	.40	.500	.500	.548	.618	.702	.755	.820	.858
	54	.20	.50	.30	.625	.625	.668	.712	.776	.817	.866	.894
	55	.10	.30	.60	.480	.608	.636	.643	.698	.738	.805	.845
	56	.10	.40	.50	.500	.506	.530	.559	.630	.685	.764	.811
L = 36	57	.10	.50	.40	.625	.625	.636	.632	.699	.751	.815	.853
X = 12	58	.20	.30	.50	.400	.506	.530	.543	.598	.649	.736	.789
X' = 20	59	.20	.40	.40	.500	.500	.548	.562	.638	.702	.780	.826
	60	.20	.50	.30	.625	.625	.668	.676	.726	.776	.835	.870
	61	.10	.30	.60	.480	.608	.636	.626	.651	.694	.767	.814
	62	.10	.40	.50	.500	.506	.530	.522	.571	.626	.718	.774
L = 40	63	.10	.50	.40	.625	.625	.636	.626	.636	.701	.777	.822
X = 12	64	.20	.30	.50	.400	.506	.530	.522	.551	.594	.691	.751
X' = 24	65	.20	.40	.40	.500	.500	.548	.562	.578	.650	.741	.794
	66	.20	.50	.30	.625	.625	.668	.676	.685	.735	.805	.846
	67	.10	.30	.60	.480	.608	.636	.626	.621	.656	.730	.784
	68	.10	.40	.50	.500	.506	.530	.522	.517	.578	.673	.737
L = 44	69	.10	.50	.40	.625	.625	.636	.626	.621	.652	.739	.791
X = 12	70	.20	.30	.50	.500	.506	.530	.522	.517	.556	.646	.715
X' = 28	71	.20	.40	.40	.500	.500	.548	.562	.570	.600	.703	.763
	72	.20	.50	.30	.625	.625	.668	.676	.681	.695	.775	.822
	73	.10	.30	.60	.480	.680	.805	.834	.859	.884	.915	.933
	74	.10	.40	.50	.500	.617	.762	.802	.835	.865	.900	.921
L = 28	75	.10	.50	.40	.625	.686	.795	.837	.873	.897	.924	.940
X = 16	76	.20	.30	.50	.400	.583	.701	.730	.771	.811	.860	.889
X' = 8	77	.20	.40	.40	.500	.563	.676	.740	.799	.836	.881	.906
	78	.20	.50	.30	.625	.669	.745	.775	.826	.858	.897	.919
	79	.10	.30	.60	.480	.608	.714	.768	.797	.830	.874	.900
	80	.10	.40	.50	.500	.506	.646	.717	.757	.798	.850	.881
L = 32	81	.10	.50	.40	.625	.625	.688	.752	.806	.841	.883	.908
X = 16	82	.20	.30	.50	.400	.506	.612	.665	.695	.747	.811	.850
X' = 12	83	.20	.40	.40	.500	.500	.572	.652	.730	.779	.839	.873
	84	.20	.50	.30	.625	.625	.662	.729	.790	.829	.875	.902
	85	.10	.30	.60	.480	.608	.636	.704	.747	.777	.835	.869
	86	.10	.40	.50	.500	.506	.539	.636	.692	.734	.802	.842
L = 36	87	.10	.50	.40	.625	.625	.612	.670	.741	.787	.843	.875
X = 16	88	.20	.30	.50	.400	.506	.530	.603	.645	.685	.764	.811
X' = 16	89	.20	.40	.40	.500	.500	.494	.567	.663	.724	.797	.840
	90	.20	.50	.30	.625	.625	.612	.663	.738	.786	.844	.877
	91	.10	.30	.60	.480	.608	.636	.643	.698	.734	.796	.837
	92	.10	.40	.50	.500	.506	.530	.559	.630	.677	.754	.804
L = 40	93	.10	.50	.40	.625	.625	.608	.606	.679	.735	.803	.844
X = 16	94	.20	.30	.50	.400	.506	.530	.543	.598	.633	.718	.774
X' = 20	95	.20	.40	.40	.500	.500	.494	.521	.598	.670	.757	.808
	96	.20	.50	.30	.625	.625	.612	.635	.687	.744	.813	.852
	97	.10	.30	.60	.480	.608	.636	.626	.651	.694	.758	.807
	98	.10	.40	.50	.500	.506	.530	.522	.571	.626	.709	.766
L = 44	99	.10	.50	.40	.625	.625	.608	.604	.618	.684	.765	.813
X = 16	100	.20	.30	.50	.400	.506	.530	.522	.551	.594	.673	.737
X' = 24	101	.20	.40	.40	.500	.500	.494	.521	.540	.617	.717	.776
	102	.20	.50	.30	.625	.625	.612	.635	.649	.703	.782	.828
	103	.10	.30	.60	.480	.608	.636	.626	.621	.656	.721	.776
	104	.10	.40	.50	.500	.506	.530	.522	.517	.578	.664	.730
L = 48	105	.10	.50	.40	.625	.625	.608	.604	.603	.635	.727	.782
X = 16	106	.20	.30	.50	.400	.506	.530	.522	.517	.556	.629	.701
X' = 28	107	.20	.40	.40	.500	.500	.494	.521	.537	.566	.679	.745
	108	.20	.50	.30	.625	.625	.612	.635	.648	.663	.752	.804

Table 10.5

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 2-S3 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S3 TRUCK

Ninety variations in the Type 2-S3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.225	.675	.394	.619	.741	.804	.849	.877	.910	.929
	2	.10	.30	.60	.375	.550	.706	.788	.836	.866	.902	.923
L = 24	3	.10	.40	.50	.500	.568	.701	.782	.829	.859	.896	.917
X = 8	4	.20	.20	.60	.350	.550	.659	.744	.802	.838	.882	.907
X' = 8	5	.20	.30	.50	.375	.467	.626	.730	.789	.827	.873	.899
	6	.20	.40	.40	.500	.585	.712	.794	.840	.869	.904	.924
	7	.10	.225	.675	.394	.619	.676	.739	.792	.830	.876	.902
	8	.10	.30	.60	.375	.550	.610	.701	.768	.810	.861	.890
L = 28	9	.10	.40	.50	.500	.529	.594	.684	.750	.793	.846	.877
X = 8	10	.20	.20	.60	.350	.550	.601	.659	.734	.782	.840	.874
X' = 12	11	.20	.30	.50	.375	.458	.523	.630	.709	.760	.823	.859
	12	.20	.40	.40	.500	.563	.633	.711	.774	.814	.863	.892
	13	.10	.225	.675	.394	.619	.675	.693	.737	.784	.842	.875
	14	.10	.30	.60	.375	.550	.600	.629	.702	.755	.820	.858
L = 32	15	.10	.40	.50	.500	.529	.545	.593	.675	.730	.798	.839
X = 8	16	.20	.20	.60	.350	.550	.600	.616	.669	.728	.800	.842
X' = 16	17	.20	.30	.50	.375	.458	.500	.540	.633	.696	.774	.820
	18	.20	.40	.40	.500	.563	.606	.640	.710	.761	.823	.860
	19	.10	.225	.675	.394	.619	.675	.676	.701	.740	.809	.849
	20	.10	.30	.60	.375	.550	.600	.601	.639	.702	.780	.826
L = 36	21	.10	.40	.50	.500	.529	.545	.539	.603	.669	.751	.801
X = 8	22	.20	.20	.60	.350	.550	.600	.601	.623	.676	.760	.810
X' = 16	23	.20	.30	.50	.375	.458	.500	.501	.560	.634	.727	.782
	24	.20	.40	.40	.500	.563	.606	.604	.649	.710	.784	.828
	25	.10	.225	.675	.394	.619	.675	.676	.677	.707	.776	.823
	26	.10	.30	.60	.375	.550	.600	.601	.601	.650	.741	.794
L = 40	27	.10	.40	.50	.500	.529	.545	.533	.543	.610	.705	.763
X = 8	28	.20	.20	.60	.350	.550	.600	.601	.601	.628	.722	.779
X' = 24	29	.20	.30	.50	.375	.458	.500	.501	.501	.575	.680	.744
	30	.20	.40	.40	.500	.563	.606	.604	.609	.660	.746	.798
	31	.10	.225	.675	.394	.619	.741	.786	.831	.862	.900	.921
	32	.10	.30	.60	.375	.550	.706	.766	.819	.852	.892	.915
L = 28	33	.10	.40	.50	.500	.552	.675	.756	.809	.843	.884	.908
X = 12	34	.20	.20	.60	.350	.550	.659	.701	.768	.810	.861	.890
X' = 8	35	.20	.30	.50	.375	.458	.616	.685	.754	.798	.852	.883
	36	.20	.40	.40	.500	.540	.643	.745	.802	.838	.882	.907
	37	.10	.225	.675	.394	.619	.676	.739	.775	.816	.865	.894
	38	.10	.30	.60	.375	.550	.610	.695	.751	.796	.851	.882
L = 32	39	.10	.40	.50	.500	.500	.557	.657	.730	.777	.834	.868
X = 12	40	.20	.20	.60	.350	.550	.601	.657	.702	.755	.820	.858
X' = 12	41	.20	.30	.50	.375	.458	.523	.603	.674	.731	.802	.843
	42	.20	.40	.40	.500	.500	.569	.660	.735	.783	.841	.874
	43	.10	.225	.675	.394	.619	.675	.693	.737	.771	.832	.867
	44	.10	.30	.60	.375	.550	.600	.629	.690	.742	.810	.850
L = 36	45	.10	.40	.50	.500	.500	.515	.570	.654	.713	.786	.829
X = 12	46	.20	.20	.60	.350	.550	.600	.616	.655	.702	.780	.826
X' = 16	47	.20	.30	.50	.375	.458	.500	.539	.597	.667	.753	.803
	48	.20	.40	.40	.500	.500	.548	.590	.670	.729	.800	.842

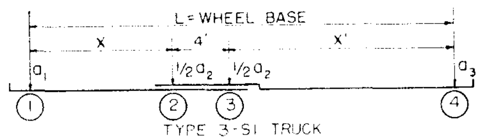
Table 10.5 (Continued)

	49	.10	.225	.675	.394	.619	.675	.676	.701	.736	.799	.841
	50	.10	.30	.60	.375	.550	.600	.601	.639	.689	.770	.818
L = 40	51	.10	.40	.50	.500	.500	.515	.514	.582	.651	.739	.791
X = 12	52	.20	.20	.60	.350	.550	.600	.601	.623	.654	.741	.794
X′ = 20	53	.20	.30	.50	.375	.458	.500	.501	.548	.605	.706	.765
	54	.20	.40	.40	.500	.500	.548	.562	.608	.676	.761	.810
	55	.10	.225	.675	.394	.619	.675	.676	.677	.707	.766	.815
	56	.10	.30	.60	.375	.550	.600	.601	.601	.646	.731	.786
L = 44	57	.10	.40	.50	.500	.500	.515	.511	.522	.592	.693	.754
X = 12	58	.20	.20	.60	.350	.550	.600	.601	.601	.628	.703	.763
X′ = 24	59	.20	.30	.50	.375	.458	.500	.501	.501	.553	.659	.728
	60	.20	.40	.40	.500	.500	.548	.562	.572	.626	.722	.779
	61	.10	.225	.675	.394	.619	.741	.786	.813	.848	.889	.913
	62	.10	.30	.60	.375	.550	.706	.763	.802	.838	.882	.907
L = 32	63	.10	.40	.50	.500	.552	.675	.741	.789	.827	.873	.899
X = 16	64	.20	.20	.60	.350	.550	.659	.699	.734	.782	.840	.874
X′ = 8	65	.20	.30	.50	.375	.458	.616	.671	.721	.771	.831	.867
	66	.20	.40	.40	.500	.540	.623	.696	.765	.808	.860	.890
	67	.10	.225	.675	.394	.619	.676	.739	.774	.802	.855	.886
	68	.10	.30	.60	.375	.550	.610	.695	.741	.782	.840	.874
L = 36	69	.10	.40	.50	.500	.500	.555	.654	.709	.760	.823	.859
X = 16	70	.20	.20	.60	.350	.550	.601	.657	.688	.728	.800	.842
X′ = 12	71	.20	.30	.50	.375	.458	.523	.603	.648	.705	.782	.827
	72	.20	.40	.40	.500	.500	.537	.609	.696	.752	.818	.857
	73	.10	.225	.675	.394	.619	.675	.693	.737	.766	.822	.859
	74	.10	.30	.60	.375	.550	.600	.629	.690	.728	.800	.842
L = 40	75	.10	.40	.50	.500	.500	.500	.570	.643	.696	.774	.820
X = 16	76	.20	.20	.60	.350	.550	.600	.616	.655	.681	.760	.810
X′ = 16	77	.20	.30	.50	.375	.458	.500	.539	.597	.642	.734	.788
	78	.20	.40	.40	.500	.500	.494	.542	.630	.697	.777	.824
	79	.10	.225	.675	.394	.619	.675	.676	.701	.736	.789	.833
	80	.10	.30	.60	.375	.550	.600	.601	.639	.687	.760	.810
L = 44	81	.10	.40	.50	.500	.500	.500	.501	.579	.636	.727	.782
X = 16	82	.20	.20	.60	.350	.550	.600	.601	.623	.654	.722	.779
X′ = 20	83	.20	.30	.50	.375	.458	.500	.501	.548	.593	.687	.750
	84	.20	.40	.40	.500	.500	.494	.521	.569	.644	.738	.792
	85	.10	.225	.675	.394	.619	.675	.676	.677	.707	.757	.807
	86	.10	.30	.60	.375	.550	.600	.601	.601	.646	.722	.779
L = 48	87	.10	.40	.50	.500	.500	.500	.501	.518	.584	.680	.744
X = 16	88	.20	.20	.60	.350	.550	.600	.601	.601	.628	.684	.748
X′ = 24	89	.20	.30	.50	.375	.458	.500	.501	.501	.553	.642	.713
	90	.20	.40	.40	.500	.500	.494	.521	.537	.592	.698	.761

Table 10.6

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS

PRODUCED BY TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 3-S1 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

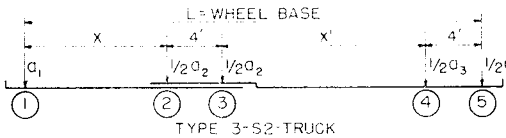
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	.625	.625	.688	.742	.792	.826	.870	.896
	2	.10	.50	.40	.500	.525	.658	.756	.811	.846	.887	.911
L = 24	3	.10	.60	.30	.480	.626	.732	.810	.853	.881	.913	.932
X = 8	4	.20	.40	.40	.500	.500	.572	.696	.764	.808	.859	.889
X′= 12	5	.20	.50	.30	.400	.552	.649	.752	.808	.843	.886	.910
	6	.20	.534	.266	.427	.585	.677	.770	.823	.856	.895	.917
	7	.10	.40	.50	.625	.625	.612	.666	.718	.764	.822	.857
	8	.10	.50	.40	.500	.525	.584	.672	.744	.790	.846	.878
L = 28	9	.10	.60	.30	.480	.626	.690	.744	.802	.838	.882	.907
X = 8	10	.20	.40	.40	.500	.500	.537	.609	.696	.751	.818	.856
X′= 16	11	.20	.50	.30	.400	.552	.642	.684	.755	.800	.854	.885
	12	.20	.534	.266	.427	.585	.677	.709	.775	.817	.866	.895
	13	.10	.40	.50	.625	.625	.608	.595	.654	.704	.776	.820
	14	.10	.50	.40	.500	.525	.584	.591	.679	.736	.806	.846
L = 32	15	.10	.60	.30	.480	.625	.690	.694	.751	.796	.851	.882
X = 8	16	.20	.40	.40	.500	.500	.537	.556	.630	.696	.777	.824
X′= 20	17	.20	.50	.30	.400	.552	.642	.659	.703	.758	.823	.860
	18	.20	.534	.266	.427	.585	.677	.695	.729	.778	.838	.872
	19	.10	.40	.50	.625	.625	.608	.578	.597	.647	.731	.783
	20	.10	.50	.40	.500	.525	.584	.590	.617	.684	.766	.814
L = 36	21	.10	.60	.30	.480	.626	.690	.694	.702	.755	.820	.858
X = 8	22	.20	.40	.40	.500	.500	.537	.556	.566	.643	.737	.792
X′= 24	23	.20	.50	.30	.400	.552	.642	.659	.669	.716	.792	.836
	24	.20	.534	.266	.427	.585	.677	.695	.704	.741	.810	.850
	25	.10	.40	.50	.625	.625	.608	.578	.561	.599	.687	.747
	26	.10	.50	.40	.500	.525	.584	.590	.593	.634	.728	.783
L = 40	27	.10	.60	.30	.480	.626	.690	.694	.696	.715	.790	.834
X = 8	28	.20	.40	.40	.500	.500	.537	.556	.566	.592	.698	.760
X′= 28	29	.20	.50	.30	.400	.552	.642	.659	.669	.675	.761	.811
	30	.20	.534	.266	.427	.582	.677	.695	.704	.710	.783	.829
	31	.10	.40	.50	.625	.625	.688	.742	.777	.814	.860	.888
	32	.10	.50	.40	.500	.506	.646	.732	.792	.830	.876	.902
L = 28	33	.10	.60	.30	.480	.608	.714	.787	.835	.866	.902	.923
X = 12	34	.20	.40	.40	.500	.500	.572	.648	.727	.778	.838	.872
X′= 12	35	.20	.50	.30	.400	.506	.612	.706	.772	.814	.864	.893
	36	.20	.534	.266	.427	.541	.635	.725	.787	.827	.873	.900
	37	.10	.40	.50	.625	.625	.612	.666	.713	.752	.813	.850
	38	.10	.50	.40	.508	.506	.552	.646	.725	.775	.835	.869
L = 32	39	.10	.60	.30	.480	.608	.657	.720	.783	.823	.870	.898
X = 12	40	.20	.40	.40	.500	.500	.494	.559	.658	.721	.796	.839
X′= 16	41	.20	.50	.30	.400	.506	.580	.636	.718	.770	.832	.868
	42	.20	.534	.266	.427	.541	.615	.663	.739	.787	.845	.878

Table 10.6 (Continued)

	43	.10	.40	.50	.625	.625	.608	.595	.654	.694	.767	.812
	44	.10	.50	.40	.500	.506	.552	.567	.659	.720	.794	.837
L = 36	45	.10	.60	.30	.480	.608	.657	.671	.732	.781	.839	.873
X = 12	46	.20	.40	.40	.500	.500	.487	.512	.591	.665	.754	.806
X′ = 20	47	.20	.50	.30	.400	.506	.580	.615	.666	.727	.801	.843
	48	.20	.534	.266	.427	.541	.615	.650	.691	.748	.816	.855
	49	.10	.40	.50	.625	.625	.608	.578	.597	.645	.722	.776
	50	.10	.50	.40	.500	.506	.552	.567	.597	.668	.755	.805
L = 40	51	.10	.60	.30	.480	.608	.657	.671	.682	.739	.809	.849
X = 12	52	.20	.40	.40	.500	.500	.487	.512	.532	.611	.714	.774
X′ = 24	53	.20	.50	.30	.400	.506	.580	.615	.634	.685	.769	.818
	54	.20	.534	.266	.427	.541	.615	.650	.669	.710	.788	.833
	55	.10	.40	.50	.625	.625	.608	.578	.561	.599	.679	.740
	56	.10	.50	.40	.500	.506	.552	.567	.575	.617	.716	.774
L = 44	57	.10	.60	.30	.480	.608	.657	.671	.678	.699	.778	.825
X = 12	58	.20	.40	.40	.500	.500	.487	.512	.532	.559	.674	.742
X′ = 28	59	.20	.50	.30	.400	.506	.580	.615	.634	.646	.739	.794
	60	.20	.534	.266	.427	.541	.615	.650	.669	.681	.760	.811
	61	.10	.40	.50	.625	.625	.688	.742	.774	.801	.851	.880
	62	.10	.50	.40	.500	.506	.646	.717	.773	.815	.865	.894
L = 32	63	.10	.60	.30	.480	.608	.714	.768	.817	.851	.891	.914
X = 16	64	.20	.40	.40	.500	.500	.572	.630	.691	.748	.816	.855
X′ = 12	65	.20	.50	.30	.400	.506	.612	.665	.737	.785	.843	.877
	66	.20	.534	.266	.427	.541	.635	.682	.752	.798	.852	.884
	67	.10	.40	.50	.625	.625	.612	.666	.713	.744	.803	.842
	68	.10	.50	.40	.500	.506	.539	.636	.705	.759	.823	.861
L = 36	69	.10	.60	.30	.480	.608	.636	.704	.764	.808	.859	.889
X = 16	70	.20	.40	.40	.500	.500	.494	.556	.621	.690	.774	.822
X′ = 16	71	.20	.50	.30	.400	.506	.530	.603	.682	.741	.811	.851
	72	.20	.534	.266	.427	.541	.566	.626	.703	.758	.823	.861
	73	.10	.40	.50	.625	.625	.608	.595	.654	.694	.758	.805
	74	.10	.50	.40	.500	.506	.530	.560	.640	.704	.783	.828
L = 40	75	.10	.60	.30	.480	.608	.636	.648	.713	.765	.828	.865
X = 16	76	.20	.40	.40	.500	.500	.487	.486	.552	.634	.732	.789
X′ = 20	77	.20	.50	.30	.400	.506	.530	.572	.629	.697	.779	.826
	78	.20	.534	.266	.427	.541	.566	.606	.655	.718	.794	.838
	79	.10	.40	.50	.625	.625	.608	.578	.597	.645	.713	.768
	80	.10	.50	.40	.500	.506	.530	.544	.576	.651	.743	.796
L = 44	81	.10	.60	.30	.480	.608	.636	.648	.663	.724	.797	.840
X = 16	82	.20	.40	.40	.500	.500	.487	.469	.498	.579	.691	.756
X′ = 24	83	.20	.50	.30	.400	.506	.530	.572	.600	.654	.747	.801
	84	.20	.534	.266	.427	.541	.566	.606	.635	.680	.766	.816
	85	.10	.40	.50	.625	.625	.608	.578	.561	.599	.671	.733
	86	.10	.50	.40	.500	.506	.530	.544	.557	.600	.704	.765
L = 48	87	.10	.60	.30	.480	.608	.636	.648	.660	.683	.767	.816
X = 16	88	.20	.40	.40	.500	.500	.487	.469	.498	.526	.651	.724
X′ = 28	89	.20	.50	.30	.400	.506	.530	.572	.600	.618	.716	.776
	90	.20	.534	.266	.427	.541	.566	.606	.635	.653	.738	.794

Table 10.7

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH



One hundred twelve variations in the Type 3-S2 truck are given in this Table. Each truck number, from 1 to 112, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

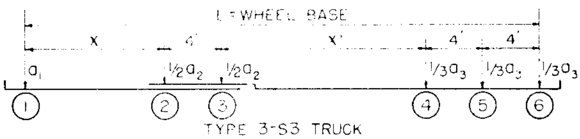
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.480	.608	.671	.736	.785	.823	.869	.896
	2	.10	.40	.50	.400	506	.592	.676	.740	.785	.840	.873
L = 28	3	.10	.45	.45	.360	.475	.559	.683	.753	.798	.851	.882
X = 8	4	.10	.50	.40	.400	.526	.600	.714	.777	.818	.866	.895
X' = 12	5	.20	.30	.50	.400	.506	.569	.634	.702	.753	.816	.854
	6	.20	.40	.40	.320	.454	.537	.652	.730	.779	.839	.873
	7	.20	.50	.30	.400	.551	.641	.717	.781	.822	.870	.898
	8	.10	.30	.60	.480	.608	.636	.673	.722	.770	.830	.865
	9	.10	.40	.50	.500	.506	.530	.597	.665	.722	.792	.834
L = 32	10	.10	.45	.45	.360	.475	.531	.593	.680	.737	.806	.846
X = 8	11	.10	.50	.40	.400	.526	.584	.631	.711	.763	.826	.862
X' = 16	12	.20	.30	.50	.400	.506	.530	.572	.628	.691	.768	.815
	13	.20	.40	.40	.320	.454	.537	.567	.663	.724	.797	.840
	14	.20	.50	.30	.400	.551	.641	.664	.729	.779	.838	.873
	15	.10	.30	.60	.480	.608	.636	.627	.674	.719	.791	.833
	16	.10	.40	.50	.400	.506	.530	.529	.600	.660	.745	.796
L = 36	17	.10	.45	.45	.360	.475	.531	.538	.611	.679	.762	.811
X = 8	18	.10	.50	.40	.400	.526	.584	.590	.648	.710	.786	.830
X' = 20	19	.20	.30	.50	.400	.506	.530	.525	.574	.631	.722	.777
	20	.20	.40	.40	.320	.454	.537	.556	.598	.670	.757	.808
	21	.20	.50	.30	.400	.506	.641	.659	.680	.737	.807	.848
	22	.10	.30	.60	.480	.608	.636	.626	.630	.675	.753	.803
	23	.10	.40	.50	.400	.506	.530	.522	.543	.602	.699	.759
L = 40	24	.10	.45	.45	.360	.475	.531	.538	.544	.622	.719	.776
X = 8	25	.10	.50	.40	.400	.526	.584	.590	.593	.659	.747	.799
X' = 24	26	.20	.30	.50	.400	.506	.530	.522	.529	.575	.677	.740
	27	.20	.40	.40	.320	.454	.537	.556	.566	.617	.717	.776
	28	.20	.50	.30	.400	.551	.641	.659	.669	.695	.776	.823
	29	.10	.30	.60	.480	.608	.636	.626	.621	.637	.716	.773
	30	.10	.40	.50	.400	.506	.530	.522	.517	.555	.655	.722
L = 44	31	.10	.45	.45	.360	.475	.531	.538	.541	.568	.677	.742
X = 8	32	.10	.50	.40	.400	.526	.584	.590	.593	.609	.709	.768
X' = 28	33	.20	.30	.50	.400	.506	.530	.522	.517	.538	.634	.704
	34	.20	.40	.40	.320	.454	.537	.556	.566	.572	.679	.745
	35	.20	.50	.30	.400	.506	.641	.659	.669	.675	.746	.799
	36	.10	.30	.60	.480	.638	.759	.800	.834	.864	.900	.921
	37	.10	.40	.50	.400	.551	.703	.759	.803	.839	.880	.905
L = 28	38	.10	.45	.45	.360	.516	.676	.754	.810	.845	.887	.911
X = 12	39	.10	.50	.40	.400	.551	.703	.776	.827	.859	.897	.919
X' = 3	40	.20	.30	.50	.400	.538	.656	.697	.748	.792	.845	.877
	41	.20	.40	.40	.320	.454	.601	.694	.763	.807	.859	.889
	42	.20	.50	.30	.400	.538	.656	.741	.800	.837	.881	.906

Table 10.7 (Continued)

	43	.10	.30	.60	.480	.608	.671	.736	.772	.810	.859	.888
	44	.10	.40	.50	.400	.506	.592	.676	.725	.772	.831	.865
L = 32	45	.10	.45	.45	.360	.456	.555	.658	.734	.782	.840	.874
X = 12	46	.10	.50	.40	.400	.506	.592	.689	.758	.802	.855	.886
X′ = 12	47	.20	.30	.50	.400	.506	.569	.634	.672	.728	.797	.838
	48	.20	.40	.40	.320	.405	.493	.603	.692	.749	.817	.855
	49	.20	.50	.30	.400	.506	.580	.671	.745	.792	.848	.881
	50	.10	.30	.60	.480	.608	.636	.673	.722	.758	.820	.857
	51	.10	.40	.50	.400	.506	.530	.597	.661	.709	.783	.826
L = 36	52	.10	.45	.45	.360	.456	.499	.566	.660	.721	.795	.837
X = 12	53	.10	.50	.40	.400	.506	.552	.605	.692	.747	.814	.853
X′ = 16	54	.20	.30	.50	.400	.506	.530	.572	.621	.666	.750	.800
	55	.20	.40	.40	.320	.405	.476	.516	.624	.693	.775	.822
	56	.20	.50	.30	.400	.506	.580	.615	.692	.749	.816	.855
	57	.10	.30	.60	.480	.608	.636	.627	.674	.714	.781	.826
	58	.10	.40	.50	.400	.506	.530	.529	.600	.651	.736	.789
L = 40	59	.10	.45	.45	.360	.456	.499	.515	.590	.662	.750	.802
X = 12	60	.10	.50	.40	.400	.506	.552	.567	.628	.694	.774	.821
X′ = 20	61	.20	.30	.50	.400	.506	.530	.525	.574	.613	.704	.762
	62	.20	.40	.40	.320	.405	.476	.512	.558	.638	.734	.790
	63	.20	.50	.30	.400	.506	.580	.615	.642	.706	.785	.830
	64	.10	.30	.60	.480	.608	.636	.626	.630	.675	.744	.795
	65	.10	.40	.50	.400	.506	.530	.522	.543	.602	.691	.751
L = 44	66	.10	.45	.45	.360	.456	.499	.515	.523	.605	.707	.767
X = 12	67	.10	.50	.40	.400	.506	.552	.567	.575	.642	.735	.790
X′ = 24	68	.20	.30	.50	.400	.506	.530	.522	.529	.575	.660	.726
	69	.20	.40	.40	.320	.405	.476	.512	.532	.585	.694	.758
	70	.20	.50	.30	.400	.506	.580	.615	.634	.664	.754	.806
	71	.10	.30	.60	.480	.608	.636	.626	.621	.637	.707	.765
	72	.10	.40	.50	.400	.506	.530	.522	.517	.555	.646	.715
L = 48	73	.10	.45	.45	.360	.456	.499	.515	.523	.550	.665	.733
X = 12	74	.10	.50	.40	.400	.506	.552	.567	.575	.592	.697	.758
X′ = 28	75	.20	.30	.50	.400	.506	.530	.522	.517	.538	.616	.690
	76	.20	.40	.40	.320	.405	.476	.512	.532	.544	.655	.727
	77	.20	.50	.30	.400	.506	.580	.615	.634	.646	.723	.781
	78	.10	.30	.60	.480	.608	.671	.736	.772	.797	.849	.880
	79	.10	.40	.50	.400	.506	.592	.676	.724	.759	.821	.857
L = 36	80	.10	.45	.45	.360	.456	.555	.648	.714	.766	.829	.865
X = 16	81	.10	.50	.40	.400	.506	.592	.676	.739	.787	.844	.877
X′ = 12	82	.20	.30	.50	.400	.506	.569	.634	.670	.703	.778	.823
	83	.20	.40	.40	.320	.405	.493	.576	.656	.719	.795	.838
	84	.20	.50	.30	.400	.506	.569	.634	.709	.763	.827	.864
	85	.10	.30	.60	.480	.608	.636	.673	.722	.754	.810	.849
	86	.10	.40	.50	.400	.506	.530	.597	.661	.703	.773	.819
L = 40	87	.10	.45	.45	.360	.456	.477	.562	.641	.705	.783	.828
X = 16	88	.10	.50	.40	.400	.506	.530	.597	.672	.732	.803	.844
X′ = 16	89	.20	.30	.50	.400	.506	.530	.572	.621	.653	.731	.785
	90	.20	.40	.40	.320	.405	.424	.499	.586	.662	.753	.805
	91	.20	.50	.30	.400	.506	.530	.572	.655	.719	.795	.838
	92	.10	.30	.60	.480	.608	.636	.627	.674	.714	.772	.818
	93	.10	.40	.50	.400	.506	.530	.529	.600	.651	.727	.781
L = 44	94	.10	.45	.45	.360	.456	.477	.492	.570	.646	.738	.793
X = 16	95	.10	.50	.40	.400	.506	.530	.544	.608	.678	.763	.812
X′ = 20	96	.20	.30	.50	.400	.506	.530	.525	.574	.613	.686	.748
	97	.20	.40	.40	.320	.405	.424	.469	.519	.606	.711	.772
	98	.20	.50	.30	.400	.506	.530	.572	.605	.676	.763	.813
	99	.10	.30	.60	.480	.608	.636	.626	.630	.675	.734	.788
	100	.10	.40	.50	.400	.506	.530	.522	.543	.602	.682	.744
L = 48	101	.10	.45	.45	.360	.456	.477	.492	.505	.588	.695	.750
X = 16	102	.10	.50	.40	.400	.506	.530	.544	.557	.625	.723	.781
X′ = 24	103	.20	.30	.50	.400	.506	.530	.522	.529	.575	.642	.712
	104	.20	.40	.40	.320	.405	.424	.469	.498	.552	.671	.740
	105	.20	.50	.30	.400	.506	.530	.572	.600	.633	.732	.788
	106	.10	.30	.60	.480	.608	.636	.626	.621	.637	.704	.758
	107	.10	.40	.50	.400	.506	.530	.522	.517	.555	.640	.708
L = 52	108	.10	.45	.45	.360	.456	.477	.492	.505	.533	.652	.723
X = 16	109	.10	.50	.40	.400	.506	.530	.544	.557	.575	.685	.749
X′ = 28	110	.20	.30	.50	.400	.506	.530	.522	.517	.538	.604	.676
	111	.20	.40	.40	.320	.405	.424	.469	.498	.516	.632	.708
	112	.20	.50	.30	.400	.506	.530	.572	.600	.618	.701	.764

Table 10.8

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH



One hundred five variations in the Type 3-S3 truck are given in this Table. Each truck number, from 1 to 105, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

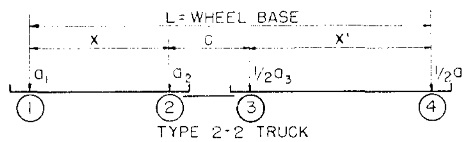
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.350	.550	.600	.662	.726	.776	.835	.870
	2	.10	.36	.54	.315	.495	.541	.631	.704	.757	.821	.858
L = 32	3	.10	.40	.50	.320	.458	.500	.612	.689	.745	.811	.851
X = 8	4	.10	.50	.40	.400	.525	.585	.672	.745	.791	.846	.878
X′ = 12	5	.20	.30	.50	.291	.458	.500	.571	.651	.712	.787	.831
	6	.20	.40	.40	.320	.454	.537	.609	.696	.752	.818	.857
	7	.20	.50	.30	.400	.552	.642	.689	.755	.800	.854	.885
	8	.10	.30	.60	.350	.550	.600	.610	.664	.722	.795	.838
	9	.10	.36	.54	.315	.495	.540	.556	.631	.696	.775	.822
L = 36	10	.10	.40	.50	.320	.458	.500	.530	.612	.680	.762	.811
X = 8	11	.10	.50	.40	.400	.525	.584	.603	.680	.737	.806	.846
X′ = 16	12	.20	.30	.50	.291	.458	.500	.511	.575	.648	.739	.792
	13	.20	.40	.40	.320	.454	.537	.558	.630	.697	.777	.824
	14	.20	.50	.30	.400	.552	.642	.661	.703	.758	.823	.860
	15	.10	.30	.60	.350	.550	.600	.601	.616	.670	.755	.806
	16	.10	.36	.54	.315	.495	.540	.541	.574	.638	.731	.786
L = 40	17	.10	.40	.50	.320	.458	.500	.501	.548	.619	.715	.773
X = 8	18	.10	.50	.40	.400	.525	.584	.590	.618	.685	.767	.815
X′ = 20	19	.20	.30	.50	.291	.458	.500	.501	.524	.587	.692	.754
	20	.20	.40	.40	.320	.454	.537	.556	.575	.644	.738	.792
	21	.20	.50	.30	.400	552	.642	.659	.768	.716	.792	.836
	22	.10	.30	.60	.350	.550	.600	.601	.601	.626	.717	.775
	23	.10	.36	.54	.315	.495	.540	.541	.541	.585	.688	.751
L = 44	24	.10	.40	.50	.320	.458	.500	.501	.501	.559	.669	.735
X = 8	25	.10	.50	.40	.400	.525	.584	.590	.593	.634	.728	.784
X′ = 24	26	.20	.30	.50	.291	.458	.500	.501	.501	.534	.646	.717
	27	.20	.40	.40	.320	.454	.537	.556	.566	.592	.698	.761
	28	.20	.50	.30	.400	552	.642	.659	.669	.764	.761	.811
	29	.10	.30	.60	.350	.550	.600	.601	.601	.601	.679	.744
	30	.10	.36	.54	.315	.495	.540	.541	.541	.542	.645	.716
L = 48	31	.10	.40	.50	.320	.458	.500	.501	.501	.511	.624	.698
X = 8	32	.10	.50	.40	.400	.525	.584	.590	.593	.594	.690	.753
X′ = 28	33	.20	.30	.50	.291	.458	.500	.501	.501	.501	.602	.680
	34	.20	.40	.40	.320	.454	.537	.556	.566	.572	.660	.730
	35	.20	.50	.30	.400	.552	.642	.775	.669	.675	.731	.787
	36	.10	.30	.60	.350	.550	.600	.662	.715	.762	.825	.862
	37	.10	.36	.54	.315	.495	.541	.631	.691	.743	.811	.850
L = 36	38	.10	.40	.50	.320	.458	.500	.612	.675	.731	.802	.843
X = 12	39	.10	.50	.40	.400	.506	.652	.647	.725	.775	.835	.870
X′ = 12	40	.20	.30	.50	.291	.458	.500	.571	.622	.686	.767	.815
	41	.20	.40	.40	.320	.405	.476	.560	.658	.721	.796	.839
	42	.20	.50	.30	.400	.506	.580	.640	.718	.770	.832	.868

Table 10.8 (Continued)

	43	.10	.30	.60	.350	.550	.600	.610	.664	.709	.785	.830
	44	.10	.36	.54	.315	.495	.540	.556	.631	.683	.765	.814
L = 40	45	.10	.40	.50	.320	.458	.500	.530	.611	.667	.753	.803
X = 12	46	.10	.50	.40	.400	.506	.552	.578	.660	.721	.795	.837
X′ = 16	47	.20	.30	.50	.291	.458	.500	.511	.572	.624	.720	.777
	48	.20	.40	.40	.320	.405	.476	.512	.591	.666	.755	.806
	49	.20	.50	.30	.400	.506	.580	.615	.682	.727	.801	.843
	50	.10	.30	.60	.350	.550	.600	.601	.616	.666	.746	.798
	51	.10	.36	.54	.315	.495	.540	.541	.574	.632	.698	.759
L = 44	52	.10	.40	.50	.320	.458	.500	.501	.548	.610	.705	.765
X = 12	53	.10	.50	.40	.400	.506	.552	.567	.598	.668	.755	.806
X′ = 20	54	.20	.30	.50	.291	.458	.500	.501	.524	.573	.673	.738
	55	.20	.40	.40	.320	.405	.476	.512	.537	.612	.714	.774
	56	.20	.50	.30	.400	.506	.580	.615	.638	.685	.769	.818
	57	.10	.30	.60	.350	.550	.600	.601	.601	.626	.707	.767
	58	.10	.36	.54	.315	.495	.540	.541	.541	.584	.678	.743
L = 48	59	.10	.40	.50	.320	.458	.500	.501	.501	.559	.659	.727
X = 12	60	.10	.50	.40	.400	.506	.552	.567	.575	.617	.716	.775
X′ = 24	61	.20	.30	.50	.291	.458	.500	.501	.501	.534	.628	.701
	62	.20	.40	.40	.320	.405	.476	.512	.532	.559	.675	.743
	63	.20	.50	.30	.400	.506	.580	.615	.634	.654	.739	.794
	64	.10	.30	.60	.350	.550	.600	.601	.601	.601	.670	.737
	65	.10	.36	.54	.315	.495	.540	.541	.541	.542	.636	.709
L = 52	66	.10	.40	.50	.320	.458	.500	.501	.501	.510	.614	.691
X = 12	67	.10	.50	.40	.400	.506	.552	.567	.575	.579	.678	.744
X′ = 28	68	.20	.30	.50	.291	.458	.500	.501	.501	.501	.584	.665
	69	.20	.40	.40	.320	.405	.476	.512	.532	.544	.636	.711
	70	.20	.50	.30	.400	.506	.580	.615	.634	.646	.708	.769
	71	.10	.30	.60	.350	.550	.600	.662	.715	.749	.815	.854
	72	.10	.36	.54	.315	.495	.541	.631	.691	.730	.801	.842
L = 40	73	.10	.40	.50	.320	.458	.500	.612	.675	.718	.792	.835
X = 16	74	.10	.50	.40	.400	.506	.562	.637	.706	.759	.824	.861
X′ = 12	75	.20	.30	.50	.291	.458	.500	.571	.622	.660	.748	.799
	76	.20	.40	.40	.320	.405	.461	.538	.621	.691	.774	.822
	77	.20	.50	.30	.400	.506	.552	.603	.664	.726	.800	.843
	78	.10	.30	.60	.350	.550	.600	.610	.664	.707	.775	.822
	79	.10	.36	.54	.315	.495	.540	.556	.631	.680	.756	.806
L = 44	80	.10	.40	.50	.320	.458	.500	.530	.610	.662	.743	.796
X = 16	81	.10	.50	.40	.400	.506	.530	.568	.640	.705	.783	.829
X′ = 16	82	.20	.30	.50	.291	.458	.500	.511	.572	.613	.701	.761
	83	.20	.40	.40	.320	.405	.424	.469	.553	.635	.732	.789
	84	.20	.50	.30	.400	.506	.530	.572	.629	.697	.779	.826
	85	.10	.30	.60	.350	.550	.600	.601	.616	.666	.736	.790
	86	.10	.36	.54	.315	.495	.540	.541	.574	.632	.712	.770
L = 48	87	.10	.40	.50	.320	.458	.500	.501	.548	.610	.696	.757
X = 16	88	.10	.50	.40	.400	.506	.530	.544	.579	.642	.743	.797
X′ = 20	89	.20	.30	.50	.291	.458	.500	.501	.524	.573	.654	.724
	90	.20	.40	.40	.320	.405	.424	.469	.500	.580	.692	.756
	91	.20	.50	.30	.400	.506	.530	.572	.601	.654	.747	.801
	92	.10	.30	.60	.350	.550	.600	.601	.601	.626	.698	.760
	93	.10	.36	.54	.315	.495	.540	.541	.541	.585	.669	.736
L = 52	94	.10	.40	.50	.320	.458	.500	.501	.501	.559	.650	.720
X = 16	95	.10	.50	.40	.400	.506	.530	.544	.557	.601	.704	.765
X′ = 24	96	.20	.30	.50	.291	.458	.500	.501	.501	.534	.610	.687
	97	.20	.40	.40	.320	.405	.424	.469	.498	.527	.652	.725
	98	.20	.50	.30	.400	.506	.530	.572	.600	.624	.716	.776
	99	.10	.30	.60	.350	.550	.600	.601	.601	.601	.669	.729
	100	.10	.36	.54	.315	.495	.540	.541	.541	.542	.632	.702
L = 56	101	.10	.40	.50	.320	.458	.500	.501	.501	.510	.609	.683
X = 16	102	.10	.50	.40	.400	.506	.530	.544	.557	.565	.666	.735
X′ = 28	103	.20	.30	.50	.291	.458	.500	.501	.501	.501	.574	.651
	104	.20	.40	.40	.320	.405	.424	.469	.498	.516	.613	.693
	105	.20	.50	.30	.400	.506	.530	.572	.600	.618	.685	.752

Table 10.9

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



One hundred forty-four variations in the Type 2-2 truck are given in this Table. Each truck number, from 1 to 144, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	.438	.580	.740	.787	.835	.866	.902	.923
L = 28	2	.10	.30	.60	.375	.525	.706	.766	.819	.852	.892	.915
X = 12	3	.10	.40	.50	.500	.582	.675	.757	.809	.843	.884	.908
X' = 8	4	.20	.20	.60	.375	.503	.650	.701	.768	.810	.861	.890
C = 8	5	.20	.30	.50	.375	.460	.617	.685	.754	.798	.852	.883
	6	.20	.40	.40	.500	.563	.650	.744	.802	.838	.882	.907
	7	.10	.20	.70	.438	.502	.635	.711	.772	.814	.864	.893
L = 32	8	.10	.30	.60	.375	.480	.610	.695	.763	.807	.859	.889
X = 12	9	.10	.40	.50	.500	.582	.654	.706	.769	.810	.859	.888
X' = 12	10	.20	.20	.60	.375	.441	.558	.628	.711	.764	.828	.864
C = 8	11	.20	.30	.50	.375	.460	.556	.628	.710	.762	.825	.862
	12	.20	.40	.40	.500	.563	.650	.701	.768	.810	.861	.890
	13	.10	.20	.70	.438	.502	.546	.637	.711	.764	.828	.864
L = 36	14	.10	.30	.60	.375	.480	.562	.629	.709	.763	.827	.864
X = 12	15	.10	.40	.50	.500	.582	.654	.683	.730	.777	.835	.869
X' = 16	16	.20	.20	.60	.375	.441	.485	.564	.656	.719	.795	.838
C = 8	17	.20	.30	.50	.375	.460	.556	.613	.669	.728	.800	.842
	18	.20	.40	.40	.500	.563	.650	.694	.734	.782	.840	.874
	19	.10	.20	.70	.438	.502	.546	.567	.652	.715	.791	.835
L = 40	20	.10	.30	.60	.375	.480	.562	.603	.657	.720	.795	.839
X = 12	21	.10	.40	.50	.500	.582	.654	.683	.698	.745	.810	.849
X' = 20	22	.20	.20	.60	.375	.441	.485	.532	.602	.675	.762	.813
C = 8	23	.20	.30	.50	.375	.460	.556	.613	.644	.695	.775	.822
	24	.20	.40	.40	.500	.563	.650	.694	.719	.755	.820	.858
	25	.10	.20	.70	.438	.560	.673	.740	.783	.823	.870	.898
L = 32	26	.10	.30	.60	.375	.480	.610	.695	.751	.796	.851	.882
X = 12	27	.10	.40	.50	.500	.500	.578	.658	.730	.777	.835	.869
X' = 8	28	.20	.20	.60	.375	.480	.584	.647	.702	.755	.820	.858
C = 12	29	.20	.30	.50	.375	.400	.523	.604	.674	.731	.802	.843
	30	.20	.40	.40	.500	.500	.584	.659	.734	.782	.840	.874
	31	.10	.20	.70	.438	.438	.564	.662	.718	.770	.832	.868
L = 36	32	.10	.30	.60	.375	.375	.511	.624	.694	.750	.817	.856
X = 12	33	.10	.40	.50	.500	.500	.578	.627	.692	.745	.810	.849
X' = 12	34	.20	.20	.60	.375	.375	.489	.579	.643	.708	.786	.831
C = 12	35	.20	.30	.50	.375	.375	.475	.555	.630	.695	.775	.822
	36	.20	.40	.40	.500	.500	.584	.647	.702	.755	.820	.858
	37	.10	.20	.70	.438	.438	.489	.586	.656	.719	.795	.838
L = 40	38	.10	.30	.60	.375	.375	.473	.556	.638	.705	.784	.830
X = 12	39	.10	.40	.50	.500	.500	.578	.627	.655	.713	.786	.830
X' = 16	40	.20	.20	.60	.375	.375	.429	.514	.586	.662	.753	.805
C = 12	41	.20	.30	.50	.375	.375	.475	.555	.599	.663	.751	.802
	42	.20	.40	.40	.500	.500	.584	.647	.682	.728	.800	.842

Table 10.9 (Continued)

	43	.10	.20	.70	.438	.438	.489	.514	.599	.669	.758	.809
L = 44	44	.10	.30	.60	.375	.375	.473	.538	.584	.660	.752	.804
X = 12	45	.10	.40	.50	.500	.500	.578	.627	.655	.682	.762	.810
X′ = 20	46	.20	.20	.60	.375	.375	.429	.464	.530	.617	.720	.779
C = 12	47	.20	.30	.50	.375	.375	.475	.555	.599	.631	.726	.783
	48	.20	.40	.40	.500	.500	.584	.647	.682	.704	.780	.826
	49	.10	.20	.70	.438	.580	.740	.787	.818	.851	.892	.915
L = 32	50	.10	.30	.60	.375	.525	.706	.763	.802	.838	.882	.907
X = 16	51	.10	.40	.50	.500	.582	.675	.741	.790	.827	.873	.900
X′ = 8	52	.20	.20	.60	.375	.503	.650	.694	.734	.782	.840	.874
C = 8	53	.20	.30	.50	375	.460	.617	.671	.721	.771	.831	.867
	54	.20	.40	.40	.500	.563	.623	.696	.764	.808	.859	.889
	55	.10	.20	.70	.438	.502	.635	.711	.754	.799	.854	.885
L = 36	56	.10	.30	.60	.375	.480	.610	.695	.746	.793	.849	.881
X = 16	57	.10	.40	.50	.500	.582	.637	.682	.749	.794	.848	.879
X′ = 12	58	.20	.20	.60	.375	.441	.558	.628	.677	.736	.807	.848
C = 8	59	.20	.30	.50	.375	.460	.536	.613	.672	.732	.803	.844
	60	.20	.40	.40	.500	.563	.606	.652	.730	.779	.839	.873
	61	.10	.20	.70	.438	.502	.546	.637	.695	.749	.817	.855
L = 40	62	.10	.30	.60	.375	.480	.548	.629	.691	.748	.816	.855
X = 16	63	.10	.40	.50	.500	.582	.637	.659	.710	.761	.823	.860
X′ = 16	64	.20	.20	.60	.375	.441	.485	.564	.621	.690	.774	.822
C = 8	65	.20	.30	.50	.375	.460	.517	.568	.630	.696	.777	.824
	66	.20	.40	.40	.500	.563	.606	.650	.696	.751	.818	.856
	67	.10	.20	.70	.438	.502	.546	.567	.638	.700	.780	.827
L = 44	68	.10	.30	.60	.375	.480	.548	.579	.639	.705	.784	.830
X = 16	69	.10	.40	.50	.500	.582	.637	.659	.680	.728	.798	.840
X′ = 20	70	.20	.20	.60	.375	.441	.485	.503	.567	.646	.741	.796
C = 8	71	.20	.30	.50	.375	.460	.517	.568	.609	.663	.752	.804
	72	.20	.40	.40	.500	.563	.606	.650	.684	.724	.797	.840
	73	.10	.20	.70	.438	.560	.673	.740	.777	.809	.860	.890
L = 36	74	.10	.30	.60	.375	.480	.610	.695	.741	.782	.840	.874
X = 16	75	.10	.40	.50	.500	.500	.566	.654	.710	.761	.823	.860
X′ = 8	76	.20	.20	.60	.375	.480	.584	.647	.682	.728	.800	.842
C = 12	77	.20	.30	.50	.375	.400	.523	.604	.648	.705	.782	.827
	78	.20	.40	.40	.500	.500	.548	.609	.696	.751	.818	.856
	79	.10	.20	.70	.438	.438	.564	.662	.715	.756	.822	.860
L = 40	80	.10	.30	.60	.375	.375	.511	.624	.687	.736	.807	.848
X = 16	81	.10	.40	.50	.500	.500	.566	.603	.671	.728	.798	.840
X′ = 12	82	.20	.20	.60	.375	.375	.489	.579	.629	.681	.766	.815
C = 12	83	.20	.30	.50	.375	.375	.448	.544	.602	.665	.753	.804
	84	.20	.40	.40	.500	.500	.548	.602	.663	.724	.797	.840
	85	.10	.20	.70	.438	.438	.489	.586	.656	.704	.784	.830
L = 44	86	.10	.30	.60	.375	.375	.467	.556	.634	.690	.774	.822
X = 16	87	.10	.40	.50	.500	.500	.566	.603	636	.696	.774	.820
X′ = 16	88	.20	.20	.60	.875	.375	.429	.514	.578	.634	.732	.789
C = 12	89	.20	.30	.50	.375	.375	.448	.509	.563	.630	.727	.784
	90	.20	.40	.40	.500	.500	.548	.602	.647	.696	.777	.824
	91	.10	.20	.70	.438	.438	.489	.514	.599	.654	.747	.801
L = 48	92	.10	.30	.60	.375	.375	.467	.513	.582	.646	.741	.796
X = 16	93	.10	.40	.50	.500	.500	.566	.603	.636	.665	.750	.801
X′ = 20	94	.20	.20	.60	.375	.375	.429	.451	.528	.588	.699	.762
C = 12	95	.20	.30	.50	.375	.375	.448	.509	.563	.598	.703	.764
	96	.20	.40	.40	.500	.500	.548	.602	.647	.675	.757	.808
	97	.10	.20	.70	.438	.560	.740	.787	.813	.837	.881	.906
L = 36	98	.10	.30	.60	.375	.525	.706	.763	.795	.824	.871	.898
X = 20	99	.10	.40	.50	.500	.582	.675	.741	.777	.812	.862	.891
X′ = 8	100	.20	.20	.60	.375	.503	.650	.694	.719	.755	.820	.858
C = 8	101	.20	.30	.50	.375	.460	.617	.671	.700	.744	.811	.851
	102	.20	.40	.40	.500	.563	.623	.668	.727	.778	.838	.872
	103	.10	.20	.70	.438	.502	.635	.711	.753	.785	.843	.876
L = 40	104	.10	.30	.60	.375	.480	.610	.695	.741	.778	.838	.872
X = 20	105	.10	.40	.50	.500	.582	.637	.682	.732	.778	.836	.871
X′ = 12	106	.20	.20	.60	.375	.441	.558	.628	.667	.708	.786	.831
C = 8	107	.20	.30	.50	.375	.460	.536	.613	.656	.704	.783	.828
	108	.20	.40	.40	.500	.563	.606	.630	.692	.749	.817	.855
	109	.10	.20	.70	.438	.502	.546	.637	.695	.734	.806	.847
L = 44	110	.10	.30	.60	.375	.480	.548	.629	.690	.734	.805	.847
X = 20	111	.10	.40	.50	.500	.582	.637	.640	.689	.744	.811	.851
X′ = 16	112	.20	.20	.60	.375	.441	.485	.564	.616	.662	.753	.805
C = 8	113	.20	.30	.50	.375	.460	.517	.557	.612	.665	.754	.806
	114	.20	.40	.40	.500	.563	.606	.606	.658	.721	.796	.839
	115	.10	.20	.70	.438	.502	.546	.567	.638	.685	.769	.818
L = 48	116	.10	.30	.60	.375	.480	.548	.565	.639	.690	.773	.821
X = 20	117	.10	.40	.50	.500	.582	.637	.640	.662	.712	.787	.831
X′ = 20	118	.20	.20	.60	.375	.441	.485	.503	.567	.617	.720	.779
C = 8	119	.20	.30	.50	.375	.460	.517	.5[illegible]6	.575	.631	.729	.786
	120	.20	.40	.40	.500	.563	.606	.606	.650	.693	.775	.822

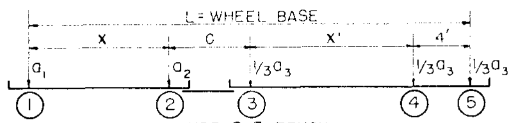
Table 10.9 (Continued)

	121	.10	.20	.70	.438	.560	.673	.740	.777	.800	.850	.881
L = 40	122	.10	.30	.60	.375	.480	.610	.695	.741	.771	.830	.866
X = 20	123	.10	.40	.50	.500	.500	.566	.654	.709	.744	.811	.851
X′ = 8	124	.20	.20	.60	.375	.480	.584	.647	.682	.704	.780	.826
C = 12	125	.20	.30	.50	.375	.400	.523	.604	.648	.680	.762	.811
	126	.20	.40	.40	.500	.500	.548	.592	.658	.721	.796	.839
	127	.10	.20	.70	.438	.438	.564	.662	.715	.749	.811	.851
L = 44	128	.10	.30	.60	.375	.375	.511	.624	.687	.726	.796	.839
X = 20	129	.10	.40	.50	.500	.500	.566	.592	.661	.712	.787	.831
X′ = 12	130	.20	.20	.60	.375	.375	.489	.579	.629	.661	.746	.799
C = 12	131	.20	.30	.50	.375	.375	.448	.544	.602	.638	.733	.788
	132	.20	.40	.40	.500	.500	.548	.562	.624	.693	.775	.822
	133	.10	.20	.70	.438	.438	.489	.586	.656	.700	.773	.821
L = 48	134	.10	.30	.60	.375	.375	.467	.556	.634	.683	.763	.813
X = 20	135	.10	.40	.50	.500	.500	.566	.588	.618	.680	.762	.811
X′ = 16	136	.20	.20	.60	.375	.375	.429	.514	.578	.618	.711	.772
C = 12	137	.20	.30	.50	.375	.375	.448	.486	.557	.602	.704	.766
	138	.20	.40	.40	.500	.500	.548	.562	.612	.665	.754	.806
	139	.10	.20	.70	.438	.438	.489	.514	.599	.653	.736	.792
L = 52	140	.10	.30	.60	.375	.375	.467	.501	.582	.640	.730	.788
X = 20	141	.10	.40	.50	.500	.500	.566	.588	.618	.648	.738	.792
X′ = 20	142	.20	.20	.60	.375	.375	.429	.451	.528	.577	.678	.746
C = 12	143	.20	.30	.50	.375	.375	.448	.474	.528	.569	.679	.746
	144	.20	.40	.40	.500	.500	.548	.562	.612	.646	.734	.790

Table 10.10

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS

PRODUCED BY TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-3 TRUCK

Ninety variations in the Type 2-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

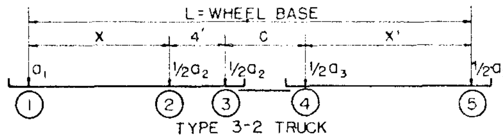
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	.374	.530	.634	.708	.752	.797	.852	.884
L = 32	2	.10	.30	.60	.375	.454	.580	.673	.745	.792	.848	.881
X = 12	3	.10	.40	.50	.500	.552	.606	.690	.756	.799	.851	.882
X′ = 8	4	.20	.20	.60	.320	.454	.546	.616	.692	.749	.817	.855
C = 8	5	.20	.30	.50	.375	.429	.511	.611	.696	.751	.817	.855
	6	.10	.20	.70	.374	.473	.556	.621	.680	.731	.803	.845
L = 36	7	.10	.30	.60	.375	.441	.503	.586	.674	.734	.806	.847
X = 12	8	.10	.40	.50	.500	.552	.606	.635	.704	.755	.818	.856
X′ = 12	9	.20	.20	.60	.320	.405	.476	.537	.619	.689	.773	.821
C = 8	10	.20	.30	.50	.375	.429	.511	.560	.643	.706	.783	.828
	11	.10	.20	.70	.374	.473	.495	.548	.614	.667	.755	.807
L = 40	12	.10	.30	.60	.375	.441	.503	.532	.605	.677	.764	.814
X = 12	13	.10	.40	.50	.500	.552	.606	.625	.654	.713	.786	.830
X′ = 16	14	.20	.20	.60	.320	.405	.424	.469	.549	.632	.731	.788
C = 8	15	.20	.30	.50	.375	.429	.511	.556	.593	.663	.751	.802
	16	.10	.20	.70	.374	.530	.626	.667	.717	.753	.820	.858
L = 36	17	.10	.30	.60	.375	.454	.537	.601	.675	.735	.806	.847
X = 12	18	.10	.40	.50	.500	.500	.553	.601	.679	.734	.802	.842
X′ = 8	19	.20	.20	.60	.320	.454	.537	.576	.624	.693	.775	.822
C = 12	20	.20	.30	.50	.375	.377	.455	.524	.617	.685	.767	.815
	21	.10	.20	.70	.374	.473	.556	.597	.649	.692	.770	.819
L = 40	22	.10	.30	.60	.375	.405	.476	.512	.602	.675	.762	.813
X = 12	23	.10	.40	.50	.500	.500	.553	.587	.630	.692	.770	.817
X′ = 12	24	.20	.20	.60	.320	.405	.476	.512	.562	.632	.731	.788
C = 12	25	.20	.30	.50	.375	.375	.455	.517	.566	.642	.735	.789
	26	.10	.20	.70	.374	.473	.495	.548	.585	.638	.722	.780
L = 44	27	.10	.30	.60	.375	.405	.441	.487	.532	.617	.720	.779
X = 12	28	.10	.40	.50	.500	.500	.553	.587	.517	.652	.739	.791
X′ = 16	29	.20	.20	.60	.320	.405	.424	.469	.503	.572	.687	.754
C = 12	30	.20	.30	.50	.375	.375	.455	.517	.551	.600	.703	.763
	31	.10	.20	.70	.374	.530	.634	.708	.749	.782	.841	.875
L = 36	32	.10	.30	.60	.375	.454	.580	.673	.727	.778	.838	.872
X = 16	33	.10	.40	.50	.500	.552	.597	.664	.736	.783	.840	.873
X′ = 8	34	.20	.20	.60	.320	.454	.546	.616	.658	.721	.796	.839
C = 8	35	.20	.30	.50	.375	.429	.510	.594	.657	.719	.794	.837
	36	.10	.20	.70	.374	.473	.556	.621	.680	.718	.792	.836
L = 40	37	.10	.30	.60	.375	.441	.485	.586	.656	.719	.795	.838
X = 16	38	.10	.40	.50	.500	.552	.586	.610	.684	.739	.807	.846
X′ = 12	39	.20	.20	.60	.320	.405	.476	.537	.592	.660	.752	.804
C = 8	40	.20	.30	.50	.375	.429	.465	.521	.603	.674	.760	.810
	41	.10	.20	.70	.374	.473	.495	.548	.614	.663	.744	.798
L = 44	42	.10	.30	.60	.375	.441	.485	.509	.591	.662	.753	.805
X = 16	43	.10	.40	.50	.500	.552	.586	.602	.633	.696	.774	.820
X′ = 16	44	.20	.20	.60	.320	.405	.424	.469	.532	.602	.709	.771
C = 8	45	.20	.30	.50	.375	.429	.465	.513	.555	.630	.727	.784

Table 10.10 (Continued)

	46	.10	.20	.70	.374	.530	.626	.667	.717	.749	.809	.850
L = 40	47	.10	.30	.60	.375	.454	.537	.601	.669	.721	.796	.839
X = 16	48	.10	.40	.50	.500	.500	.537	.575	.658	.718	.790	.833
X′ = 8	49	.20	.20	.60	.320	.454	.537	.575	.623	.665	.754	.806
C = 12	50	.20	.30	.50	.375	.377	.447	.524	.587	.652	.744	.797
	51	.10	.20	.70	.374	.473	.556	.597	.649	.692	.759	.810
L = 44	52	.10	.30	.60	.375	.405	.476	.512	.599	.660	.752	.804
X = 16	53	.10	.40	.50	.500	.500	.537	.563	.609	.676	.758	.807
X′ = 12	54	.20	.20	.60	.320	.405	.476	.512	.562	.603	.710	.771
C = 12	55	.20	.30	.50	.375	.375	.417	.472	.527	.609	.711	.771
	56	.10	.20	.70	.374	.473	.495	.548	.585	.638	.710	.772
L = 48	57	.10	.30	.60	.375	.405	.429	.469	.532	.602	.709	.771
X = 16	58	.10	.40	.50	.500	.500	.537	.563	.587	.635	.727	.782
X′ = 16	59	.20	.20	.60	.320	.405	.424	.469	.503	.553	.666	.737
C = 12	60	.20	.30	.50	.375	.375	.417	.472	.516	.567	.679	.745
	61	.10	.20	.70	.374	.530	.634	.708	.749	.776	.830	.867
L = 40	62	.10	.30	.60	.375	.454	.580	.673	.724	.763	.827	.864
X = 20	63	.10	.40	.50	.500	.552	.597	.663	.717	.767	.828	.864
X′ = 8	64	.20	.20	.60	.320	.454	.546	.616	.655	.693	.775	.822
C = 8	65	.20	.30	.50	.375	.429	.510	.594	.641	.691	.773	.821
	66	.10	.20	.70	.374	.473	.556	.621	.680	.718	.781	.827
L = 44	67	.10	.30	.60	.375	.441	.485	.586	.656	.704	.784	.830
X = 20	68	.10	.40	.50	.500	.552	.586	.600	.663	.723	.795	.837
X′ = 12	69	.20	.20	.60	.320	.405	.476	.537	.592	.632	.731	.788
C = 8	70	.20	.30	.50	.375	.429	.465	.521	.584	.642	.738	.793
	71	.10	.20	.70	.374	.473	.495	.548	.614	.663	.733	.789
L = 48	72	.10	.30	.60	.375	.441	.485	.504	.591	.647	.742	.796
X = 20	73	.10	.40	.50	.500	.552	.586	.581	.612	.680	.763	.811
X′ = 16	74	.20	.20	.60	.320	.405	.424	.469	.532	.577	.687	.754
C = 8	75	.20	.30	.50	.375	.429	.465	.470	.528	.598	.704	.766
	76	.10	.20	.70	.374	.530	.626	.667	.717	.749	.798	.841
L = 44	77	.10	.30	.60	.375	.454	.537	.601	.669	.712	.785	.831
X = 20	78	.10	.40	.50	.500	.500	.537	.572	.646	.701	.779	.824
X′ = 8	79	.20	.20	.60	.320	.454	.537	.576	.623	.654	.734	.790
C = 12	80	.20	.30	.50	.375	.377	.447	.524	.587	.626	.723	.781
	81	.10	.20	.70	.374	.473	.556	.597	.649	.692	.748	.802
L = 48	82	.10	.30	.60	.375	.405	.476	.512	.599	.654	.741	.796
X = 20	83	.10	.40	.50	.500	.500	.537	.545	.587	.659	.746	.798
X′ = 12	84	.20	.20	.60	.320	.405	.476	.512	.562	.602	.689	.755
C = 12	85	.20	.30	.50	.375	.375	.417	.448	.527	.578	.688	.753
	86	.10	.20	.70	.374	.473	.495	.548	.585	.638	.704	.763
L = 52	87	.10	.30	.60	.375	.405	.429	.469	.532	.599	.698	.762
X = 20	88	.10	.40	.50	.500	.500	.537	.545	.569	.617	.715	.773
X′ = 16	89	.20	.20	.60	.320	.405	.424	.469	.503	.553	.645	.720
C = 12	90	.20	.30	.50	.375	.375	.417	.430	.482	.533	.655	.727

Table 10.11

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 3-2 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

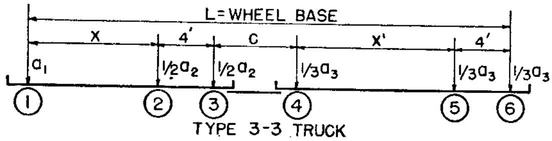
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	.320	.470	.567	.637	.710	.762	.825	.862
L = 36	2	.10	.50	.40	.400	.552	.642	.689	.758	.802	.855	.886
X = 12	3	.10	.60	.30	.480	.638	.718	.754	.809	.844	.886	.910
X′ = 12	4	.20	.40	.40	.320	.454	.537	.606	.692	.749	.817	.855
C = 8	5	.20	.50	.30	.400	.538	.612	.682	.745	.792	.848	.881
	6	.10	.40	.50	.320	.470	.567	.613	.669	.728	.800	.842
L = 40	7	.10	.50	.40	.400	.552	.642	.683	.725	.775	.835	.869
X = 12	8	.10	.60	.30	.480	.638	.718	.754	.783	.823	.870	.898
X′ = 16	9	.20	.40	.40	.320	.454	.537	.606	.658	.721	.796	.839
C = 8	10	.20	.50	.30	.400	.538	.612	.682	.721	.770	.832	.868
	11	.10	.40	.50	.320	.470	.567	.613	.644	.695	.775	.822
L = 44	12	.10	.50	.40	.400	.552	.642	.683	.710	.747	.814	.853
X = 12	13	.10	.60	.30	.480	.638	.718	.754	.776	.802	.855	.886
X′ = 20	14	.20	.40	.40	.320	.454	.537	.606	.650	.693	.775	.822
C = 8	15	.20	.50	.30	.400	.538	.612	.682	.721	.749	.816	.855
	16	.10	.40	.50	.320	.405	.493	.555	.630	.695	.775	.822
L = 40	17	.10	.50	.40	.400	.506	.580	.636	.692	.747	.814	.853
X = 12	18	.10	.60	.30	.480	.608	.670	.718	.757	.802	.855	.886
X′ = 12	19	.20	.40	.40	.320	.405	.476	.557	.624	.693	.775	.822
C = 12	20	.20	.50	.30	.400	.506	.580	.648	.694	.749	.816	.855
	21	.10	.40	.50	.320	.405	.493	.555	.599	.663	.751	.802
L = 44	22	.10	.50	.40	.400	.506	.580	.636	.673	.720	.794	.837
X = 12	23	.10	.60	.30	.480	.608	.670	.718	.748	.781	.839	.873
X′ = 16	24	.20	.40	.40	.320	.405	.476	.557	.612	.665	.754	.806
C = 12	25	.20	.50	.30	.400	.506	.580	.648	.694	.727	.801	.843
	26	.10	.40	.50	.320	.405	.493	.555	.599	.631	.726	.783
L = 48	27	.10	.50	.40	.400	.506	.580	.636	.673	.697	.774	.821
X = 12	28	.10	.60	.30	.480	.608	.670	.718	.748	.767	.824	.861
X′ = 20	29	.20	.40	.40	.320	.405	.476	.557	.612	.646	.734	.790
C = 12	30	.20	.50	.30	.400	.506	.580	.648	.694	.723	.785	.830
	31	.10	.40	.50	.320	.470	.567	.637	.696	.746	.814	.853
L = 40	32	.10	.50	.40	.400	.552	.642	.676	.739	.787	.844	.877
X = 16	33	.10	.60	.30	.480	.638	.718	.736	.790	.829	.875	.902
X′ = 12	34	.20	.40	.40	.320	.454	.537	.576	.656	.719	.795	.838
C = 8	35	.20	.50	.30	.400	.538	.612	.636	.709	.763	.827	.864
	36	.10	.40	.50	.320	.470	.567	.591	.651	.712	.788	.833
L = 44	37	.10	.50	.40	.400	.552	.642	.661	.705	.759	.823	.861
X = 16	38	.10	.60	.30	.480	.638	.718	.732	.764	.808	.859	.889
X′ = 16	39	.20	.40	.40	.320	.454	.537	.564	.621	.690	.774	.822
X = 8	40	.20	.50	.30	.400	.538	.612	.636	.685	.741	.811	.851
	41	.10	.40	.50	.320	.470	.567	.591	.627	.679	.763	.813
L = 48	42	.10	.50	.40	.400	.552	.642	.661	.692	.732	.803	.844
X = 16	43	.10	.60	.30	.480	.638	.718	.732	.758	.786	.844	.877
X′ = 20	44	.20	.40	.40	.320	.454	.537	.564	.616	.662	.753	.805
C = 8	45	.20	.50	.30	.400	.538	.612	.636	.685	.719	.795	.838

Table 10.11 (Continued)

	46	.10	.40	.50	.320	.405	.493	.549	.627	.679	.763	.813
L = 44	47	.10	.50	.40	.400	.506	.580	.615	.672	.732	.803	.844
X = 16	48	.10	.60	.30	.480	.608	.670	.695	.738	.786	.844	.877
X′ = 12	49	.20	.40	.40	.320	.405	.476	.514	.586	.662	.753	.805
C = 12	50	.20	.50	.30	.400	.506	.565	.590	.655	.719	.795	.838
	51	.10	.40	.50	.320	.405	.493	.537	.581	.647	.739	.793
L = 48	52	.10	.50	.40	.400	.506	.580	.615	.656	.704	.783	.828
X = 16	53	.10	.60	.30	.480	.608	.670	.695	.730	.765	.828	.865
X′ = 16	54	.20	.40	.40	.320	.405	.476	.514	.578	.634	.732	.789
C = 12	55	.20	.50	.30	.400	.506	.565	.590	.640	.697	.779	.826
	56	.10	.40	.50	.320	.405	.493	.537	.581	.615	.715	.773
L = 52	57	.10	.50	.40	.400	.506	.580	.615	.656	.682	.763	.812
X = 16	58	.10	.60	.30	.480	.608	.670	.695	.730	.753	.813	.852
X′ = 20	59	.20	.40	.40	.320	.405	.476	.514	.578	.618	.711	.772
C = 12	60	.20	.50	.30	.400	.506	.565	.590	.640	.679	.763	.813
	61	.10	.40	.50	.320	.470	.567	.637	.696	.734	.803	.844
L = 44	62	.10	.50	.40	.400	.552	.642	.676	.724	.772	.833	.868
X = 20	63	.10	.60	.30	.480	.638	.718	.736	.772	.814	.864	.893
X′ = 12	64	.20	.40	.40	.320	.454	.537	.576	.623	.689	.773	.821
C = 8	65	.20	.50	.30	.400	.538	.612	.634	.674	.734	.806	.847
	66	.10	.40	.50	.320	.470	.567	.591	.651	.697	.777	.824
L = 48	67	.10	.50	.40	.400	.552	.642	.659	.692	.744	.812	.852
X = 20	68	.10	.60	.30	.480	.638	.718	.728	.747	.793	.849	.881
X′ = 16	69	.20	.40	.40	.320	.454	.537	.556	.592	.660	.752	.804
C = 8	70	.20	.50	.30	.400	.538	.612	.624	.649	.712	.789	.834
	71	.10	.40	.50	.320	.470	.567	.591	.609	.663	.752	.804
L = 52	72	.10	.50	.40	.400	.552	.642	.659	.675	.716	.792	.836
X = 20	73	.10	.60	.30	.480	.638	.718	.728	.741	.771	.833	.868
X′ = 20	74	.20	.40	.40	.320	.454	.537	.556	.584	.632	.731	.788
C = 8	75	.20	.50	.30	.400	.538	.612	.624	.649	.690	.773	.821
	76	.10	.40	.50	.320	.405	.493	.549	.627	.677	.753	.804
L = 48	77	.10	.50	.40	.400	.506	.580	.615	.661	.716	.792	.836
X = 20	78	.10	.60	.30	.480	.608	.670	.694	.723	.771	.833	.868
X′ = 12	79	.20	.40	.40	.320	.405	.476	.512	.562	.632	.731	.788
C = 12	80	.20	.50	.30	.400	.506	.565	.590	.622	.690	.773	.821
	81	.10	.40	.50	.320	.405	.493	.537	.580	.639	.727	.784
L = 52	82	.10	.50	.40	.400	.506	.580	.615	.638	.689	.771	.819
X = 20	83	.10	.60	.30	.480	.608	.670	.694	.713	.750	.817	.856
X′ = 16	84	.20	.40	.40	.320	.405	.476	.512	.544	.603	.710	.771
C = 12	85	.20	.50	.30	.400	.506	.565	.590	.622	.667	.757	.809
	86	.10	.40	.50	.320	.405	.493	.537	.563	.602	.703	.764
L = 56	87	.10	.50	.40	.400	.506	.580	.615	.638	.668	.751	.803
X = 20	88	.10	.60	.30	.480	.608	.670	.694	.713	.738	.802	.843
X′ = 20	89	.20	.40	.40	.320	.405	.476	.512	.544	.591	.689	.755
C = 12	90	.20	.50	.30	.400	.506	.565	.590	.622	.664	.741	.796

Table 10.12

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS PRODUCED BY TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 3-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.320	.454	.537	.569	.642	.700	.780	.827
L = 40	2	.10	.40	.50	.320	.405	.466	.528	.617	.685	.767	.815
X = 12	3	.10	.50	.40	.400	.506	.560	.607	.681	.738	.808	.848
X′ = 8	4	.20	.30	.50	.267	.377	.447	.490	.560	.635	.732	.788
C = 12	5	.20	.40	.40	.320	.405	.476	.540	.613	.683	.768	.817
	6	.10	.30	.60	.320	.405	.476	.512	.571	.639	.736	.792
L = 44	7	.10	.40	.50	.320	.405	.466	.517	.547	.642	.735	.789
X = 12	8	.10	.50	.40	.400	.506	.560	.606	.643	.703	.781	.826
X′ = 12	9	.20	.30	.50	.267	.338	.396	.444	.500	.584	.693	.757
C = 12	10	.20	.40	.40	.320	.405	.476	.540	.584	.647	.741	.795
	11	.10	.30	.60	.320	.405	.424	.469	.503	.565	.682	.749
L = 48	12	.10	.40	.50	.320	.405	.466	.517	.551	.600	.703	.763
X = 12	13	.10	.50	.40	.400	.506	.560	.606	.635	.668	.754	.805
X′ = 16	14	.20	.30	.50	.267	.338	.374	.444	.494	.541	.661	.731
C = 12	15	.20	.40	.40	.320	.405	.476	.540	.584	.612	.714	.774
	16	.10	.30	.60	.320	.454	.537	.556	.589	.646	.739	.794
L = 44	17	.10	.40	.50	.320	.405	.447	.478	.545	.621	.719	.776
X = 12	18	.10	.50	.40	.400	.506	.552	.574	.620	.685	.768	.816
X′ = 8	19	.20	.30	.50	.267	.377	.447	.463	.508	.567	.680	.746
C = 16	20	.20	.40	.40	.320	.405	.476	.512	.560	.629	.727	.785
	21	.10	.30	.60	.320	.405	.476	.512	.532	.587	.694	.759
L = 48	22	.10	.40	.50	.320	.405	.447	.478	.521	.580	.687	.751
X = 12	23	.10	.50	.40	.400	.506	.552	.574	.610	.651	.741	.795
X′ = 12	24	.20	.30	.50	.267	.338	.396	.426	.465	.520	.645	.718
C = 16	25	.20	.40	.40	.230	.405	.476	.512	.560	.593	.701	.763
	26	.10	.30	.60	.320	.405	.424	.469	.498	.529	.650	.724
L = 52	27	.10	.40	.50	.320	.405	.447	.478	.521	.548	.656	.726
X = 12	28	.10	.50	.40	.400	.506	.552	.574	.610	.633	.716	.774
X′ = 16	29	.20	.30	.50	.267	.338	.374	.409	.465	.502	.614	.693
C = 16	30	.20	.40	.40	.320	.405	.476	.512	.560	.592	.674	.742
	31	.10	.30	.60	.320	.454	.537	.569	.642	.689	.770	.818
L = 44	32	.10	.40	.50	.320	.405	.466	.528	.612	.668	.755	.806
X = 16	33	.10	.50	.40	.400	.506	.560	.592	.661	.722	.796	.839
X′ = 8	34	.20	.30	.50	.267	.377	.447	.490	.560	.605	.709	.769
C = 12	35	.20	.40	.40	.320	.405	.456	.493	.575	.652	.746	.799
	36	.10	.30	.60	.320	.405	.476	.512	.571	.631	.725	.784
L = 48	37	.10	.40	.50	.320	.405	.466	.495	.550	.625	.723	.780
X = 16	38	.10	.50	.40	.400	.506	.560	.584	.624	.687	.769	.817
X′ = 12	39	.20	.30	.50	.267	.338	.396	.426	.500	.555	.670	.739
C = 12	40	.20	.40	.40	.320	.405	.456	.493	.548	.615	.718	.778
	41	.10	.30	.60	.320	.405	.424	.469	.503	.575	.682	.749
L = 52	42	.10	.40	.50	.320	.405	.466	.495	.533	.583	.691	.754
X = 16	43	.10	.50	.40	.400	.506	.560	.584	.617	.651	.743	.796
X′ = 16	44	.20	.30	.50	.267	.338	.363	.397	.458	.508	.637	.713
C = 12	45	.20	.40	.40	.320	.405	.456	.493	.548	.582	.691	.756

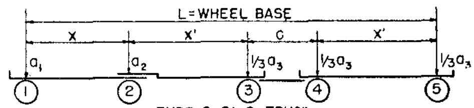
Table 10.12 (Continued)

	46	.10	.30	.60	.320	.454	.537	.556	.589	.646	.729	.786
L = 48	47	.10	.40	.50	.320	.405	.447	.463	.545	.609	.707	.767
X = 16	48	.10	.50	.40	.400	.506	.530	.553	.601	.669	.756	.807
X′ = 8	49	.20	.30	.50	.267	.377	.447	.463	.508	.562	.661	.730
C = 16	50	.20	.40	.40	.320	.405	.424	.469	.524	.597	.705	.767
	51	.10	.30	.60	.320	.405	.476	.512	.532	.587	.684	.751
L = 52	52	.10	.40	.50	.320	.405	.424	.459	.503	.563	.675	.741
X = 16	53	.10	.50	.40	.400	.506	.530	.553	.593	.634	.730	.786
X′ = 12	54	.20	.30	.50	.267	.338	.396	.426	.446	.511	.621	.700
C = 16	55	.20	.40	.40	.320	.405	.424	.469	.524	.563	.678	.745
	56	.10	.30	.60	.320	.405	.424	.469	.498	.529	.639	.716
L = 56	57	.10	.40	.50	.320	.405	.424	.459	.503	.533	.644	.716
X = 16	58	.10	.50	.40	.400	.506	.530	.553	.593	.619	.704	.765
X′ = 16	59	.20	.30	.50	.267	.338	.353	.391	.428	.472	.589	.674
C = 16	60	.20	.40	.40	.320	.405	.424	.469	.524	.562	.651	.724
	61	.10	.30	.60	.320	.454	.537	.569	.642	.689	.759	.810
L = 48	62	.10	.40	.50	.320	.405	.466	.528	.612	.664	.744	.797
X = 20	63	.10	.50	.40	.400	.506	.560	.592	.651	.707	.785	.830
X′ = 8	64	.20	.30	.50	.267	.377	.447	.490	.560	.604	.689	.753
C = 12	65	.20	.40	.40	.320	.405	.456	.491	.552	.622	.724	.782
	66	.10	.30	.60	.320	.405	.476	.512	.571	.631	.715	.775
L = 52	67	.10	.40	.50	.320	.405	.466	.495	.550	.614	.711	.771
X = 20	68	.10	.50	.40	.400	.506	.560	.582	.610	.671	.758	.809
X′ = 12	69	.20	.30	.50	.267	.338	.396	.426	.500	.555	.650	.723
C = 12	70	.20	.40	.40	.320	.405	.456	.479	.512	.584	.696	.760
	71	.10	.30	.60	.320	.405	.424	.469	.503	.575	.671	.741
L = 56	72	.10	.40	.50	.320	.405	.466	.495	.516	.567	.679	.745
X = 20	73	.10	.50	.40	.400	.506	.560	.582	.600	.635	.731	.787
X′ = 16	74	.20	.30	.50	.267	.338	.363	.392	.442	.507	.614	.695
C = 12	75	.20	.40	.40	.320	.405	.456	.479	.512	.553	.668	.738
	76	.10	.30	.60	.320	.454	.537	.556	.589	.646	.719	.778
L = 52	77	.10	.40	.50	.320	.405	.447	.463	.545	.609	.695	.758
X = 20	78	.10	.50	.40	.400	.506	.530	.553	.591	.653	.744	.798
X′ = 8	79	.20	.30	.50	.267	.377	.447	.463	.508	.562	.642	.715
C = 16	80	.20	.40	.40	.320	.405	.424	.449	.493	.566	.682	.749
	81	.10	.30	.60	.320	.405	.476	.512	.532	.587	.674	.742
L = 56	82	.10	.40	.50	.320	.405	.424	.459	.485	.557	.663	.732
X = 20	83	.10	.50	.40	.400	.506	.530	.553	.575	.618	.718	.777
X′ = 12	84	.20	.30	.50	.267	.338	.396	.426	.446	.511	.602	.684
C = 16	85	.20	.40	.40	.320	.405	.424	.449	.488	.533	.655	.727
	86	.10	.30	.60	.320	.405	.424	.469	.498	.529	.629	.708
L = 60	87	.10	.40	.50	.320	.405	.424	.459	.485	.519	.632	.707
X = 20	88	.10	.50	.40	.400	.506	.530	.553	.575	.604	.692	.756
X′ = 16	89	.20	.30	.50	.267	.338	.353	.391	.415	.462	.566	.656
C = 16	90	.20	.40	.40	.320	.405	.424	.449	.488	.533	.628	.706

Table 10.13

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS

PRODUCED BY TYPE 2-S1-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S1-2 TRUCK

Ninety six variations in the Type 2-S1-2 truck are given in this Table. Each truck number, from 1 to 96, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 36	1	.10	.20	.70	.293	.374	.512	.598	.682	.740	.810	.850
X = 8	2	.10	.30	.60	.375	.408	.506	.578	.673	.734	.805	.847
X' = 10	3	.20	.20	.60	.250	.320	.438	.532	.637	.704	.784	.830
C = 8	4	.20	.30	.50	.375	.441	.546	.609	.659	.717	.790	.833
L = 40	5	.10	.20	.70	.293	.374	.475	.547	.634	.701	.781	.827
X = 8	6	.10	.30	.60	.375	.405	.476	.537	.619	.689	.773	.821
X' = 12	7	.20	.20	.60	.250	.320	.407	.483	.584	.660	.752	.804
C = 8	8	.20	.30	.50	.375	.441	.519	.575	.631	.675	.758	.807
L = 44	9	.10	.20	.70	.293	.374	.440	.515	.587	.661	.752	.805
X = 8	10	.10	.30	.60	.375	.405	.447	.499	.566	.646	.741	.796
X' = 14	11	.20	.20	.60	.250	.320	.376	.445	.530	.617	.720	.779
C = 8	12	.20	.30	.50	.375	.441	.493	.544	.604	.645	.727	.782
L = 48	13	.10	.20	.70	.293	.374	.427	.490	.548	.622	.724	.782
X = 8	14	.10	.30	.60	.375	.405	.424	.469	.532	.602	.709	.771
X' = 16	15	.20	.20	.60	.250	.320	.365	.419	.490	.573	.688	.754
C = 8	16	.20	.30	.50	.375	.441	.485	.525	.578	.623	.696	.757
L = 52	17	.10	.20	.70	.293	.374	.427	.465	.517	.583	.695	.760
X = 8	18	.10	.30	.60	.375	.405	.424	.449	.503	.558	.677	.745
X' = 18	19	.20	.20	.60	.250	.320	.365	.398	.460	.529	.656	.729
C = 8	20	.20	.30	.50	.375	.441	.485	.507	.552	.601	.666	.732
L = 56	21	.10	.20	.70	.293	.374	.427	.440	.498	.548	.666	.737
X = 8	22	.10	.30	.60	.375	.405	.424	.429	.474	.528	.645	.720
X' = 20	23	.20	.20	.60	.250	.320	.365	.377	.431	.494	.624	.703
C = 8	24	.20	.30	.50	.375	.441	.485	.489	.529	.580	.645	.708
L = 60	25	.10	.20	.70	.293	.374	.427	.438	.479	.518	.638	.714
X = 8	26	.10	.30	.60	.375	.405	.424	.417	.450	.505	.613	.695
X' = 22	27	.20	.20	.60	.250	.320	.365	.375	.410	.470	.592	.678
C = 8	28	.20	.30	.50	.375	.441	.485	.489	.515	.559	.629	.684
L = 64	29	.10	.20	.70	.293	.374	.427	.438	.460	.503	.609	.692
X = 8	30	.10	.30	.60	.375	.405	.424	.417	.434	.481	.581	.670
X' = 24	31	.20	.20	.60	.250	.320	.365	.375	.394	.446	.560	.653
C = 8	32	.20	.30	.50	.375	.441	.485	.489	.501	.538	.613	.660
L = 40	33	.10	.20	.70	.293	.374	.512	.598	.665	.725	.799	.841
X = 12	34	.10	.30	.60	.375	.400	.482	.570	.655	.719	.795	.838
X' = 10	35	.20	.20	.60	.250	.320	.438	.518	.602	.675	.763	.813
C = 8	36	.20	.30	.50	.375	.394	.482	.559	.621	.685	.767	.815
L = 44	37	.10	.20	.70	.293	.374	.475	.547	.626	.685	.770	.819
X = 12	38	.10	.30	.60	.375	.375	.441	.513	.602	.675	.762	.813
X' = 12	39	.20	.20	.60	.250	.320	.407	.472	.549	.632	.731	.788
C = 8	40	.20	.30	.50	.375	.375	.455	.524	.593	.642	.734	.789
L = 48	41	.10	.20	.70	.293	.374	.440	.515	.587	.644	.689	.755
X = 12	42	.10	.30	.60	.375	.375	.411	.481	.554	.631	.730	.788
X' = 14	43	.20	.20	.60	.250	.320	.376	.441	.508	.588	.699	.762
C = 8	44	.20	.30	.50	.375	.375	.429	.497	.565	.613	.703	.763

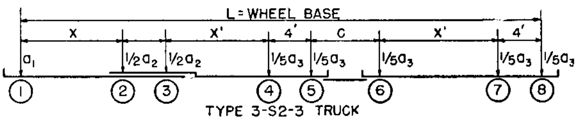
Table 10.13 (Continued)

L = 52	45	.10	.20	.70	.293	.374	.427	.490	.548	.612	.713	.774
X = 12	46	.10	.30	.60	.375	.375	.394	.450	.511	.587	.698	.762
X′= 16	47	.20	.20	.60	.250	.320	.365	.419	.473	.545	.667	.737
C = 8	48	.20	.30	.50	.375	.375	.429	.478	.538	.591	.671	.738
L = 56	49	.10	.20	.70	.293	.374	.427	.465	.517	.580	.684	.751
X = 12	50	.10	.30	.60	.375	.375	.394	.423	.481	.544	.666	.737
X′= 18	51	.20	.20	.60	.250	.320	.365	.398	.443	.503	.635	.712
C = 8	52	.20	.30	.50	.375	.375	.429	.459	.511	.569	.641	.713
L = 60	53	.10	.20	.70	.293	.374	.427	.440	.498	.548	.655	.728
X = 12	54	.10	.30	.60	.375	.375	.394	.403	.457	.511	.634	.712
X′= 20	55	.20	.20	.60	.250	.320	.365	.377	.426	.473	.603	.687
C = 8	56	.20	.30	.50	.375	.375	.429	.448	.491	.547	.622	.688
L = 64	57	.10	.20	.70	.293	.374	.427	.438	.479	.518	.627	.706
X = 12	58	.10	.30	.60	.375	.375	.394	.396	.434	.487	.602	.686
X′= 22	59	.20	.20	.60	.250	.320	.365	.375	.410	.446	.571	.662
C = 8	60	.20	.30	.50	.375	.375	.429	.448	.477	.525	.606	.664
L = 68	61	.10	.20	.70	.293	.374	.427	.438	.460	.503	.598	.683
X = 12	62	.10	.30	.60	.375	.375	.394	.396	.414	.464	.570	.661
X′= 24	63	.20	.20	.60	.250	.320	.365	.375	.394	.431	.540	.637
C = 8	64	.20	.30	.50	.375	.375	.429	.448	.463	.504	.590	.640
L = 56	65	.10	.20	.70	.293	.374	.427	.490	.548	.612	.702	.765
X = 16	66	.10	.30	.60	.375	.375	.376	.450	.508	.580	.688	.754
X′= 16	67	.20	.20	.60	.250	.320	.365	.419	.473	.532	.646	.721
C = 8	68	.20	.30	.50	.375	.375	.376	.432	.499	.559	.647	.719
L = 60	69	.10	.20	.70	[illegible]	.374	.427	.465	.517	.580	.673	.742
X = 16	70	.10	.30	.60	.375	.375	.365	.420	.481	.543	.656	.729
X′= 18	71	.20	.20	.60	.250	.320	.365	.398	.443	.503	.614	.696
C = 8	72	.20	.30	.50	.375	.375	.376	.412	.472	.537	.616	.694
L = 64	73	.10	.20	.70	.293	.374	.427	.448	.498	.548	.645	.720
X = 16	74	.10	.30	.60	.375	.375	.365	.390	.457	.507	.624	.703
X′= 20	75	.20	.20	.60	.250	.320	.365	.377	.426	.473	.583	.671
C = 8	76	.20	.30	.50	.375	.375	.376	.408	.455	.515	.599	.669
L = 68	77	.10	.20	.70	.293	.374	.427	.438	.479	.518	.619	.697
X = 16	78	.10	.30	.60	.375	.375	.365	.375	.434	.480	.592	.678
X′= 22	79	.20	.20	.60	.250	.320	.365	.375	.410	.444	.551	.646
C = 8	80	.20	.30	.50	.375	.375	.376	.408	.440	.493	.582	.645
L = 72	81	.10	.20	.70	.293	.374	.427	.438	.460	.503	.596	.675
X = 16	82	.10	.30	.60	.375	.375	.365	.375	.411	.461	.560	.653
X′= 24	83	.20	.20	.60	.250	.320	.365	.375	.394	.431	.519	.621
C = 8	84	.20	.30	.50	.375	.375	.376	.408	.427	.471	.566	.621
L = 76	85	.10	.20	.70	.293	.374	.427	.438	.444	.487	.572	.652
X = 16	86	.10	.30	.60	.375	.375	.365	.375	.388	.442	.532	.628
X′= 26	87	.20	.20	.60	.250	.320	.365	.375	.380	.417	.496	.596
C = 8	88	.20	.30	.50	.375	.375	.376	.408	.427	.458	.550	.608
L = 80	89	.10	.20	.70	.293	.374	.427	.438	.444	.472	.549	.630
X = 16	90	.10	.30	.60	.375	.375	.365	.375	.380	.424	.505	.603
X′= 28	91	.20	.20	.60	.250	.320	.365	.375	.380	.404	.475	.571
C = 8	92	.20	.30	.50	.375	.375	.376	.408	.427	.446	.534	.596
L = 84	93	.10	.20	.70	.293	.374	.427	.438	.444	.457	.526	.607
X = 16	94	.10	.30	.60	.375	.375	.365	.375	.380	.405	.481	.578
X′= 30	95	.20	.20	.60	.250	.320	.365	.375	.380	.391	.453	.546
C = 8	96	.20	.30	.50	.375	.375	.376	.408	.427	.439	.518	.583

Table 10.14

SUMMARY OF EQUIVALENT H TRUCK LOADINGS IN SIMPLE SPANS

PRODUCED BY TYPE 3-S2-3 TRUCKS WEIGHING ONE KIP EACH



Eighty four variations in the Type 3-S2-3 truck are given in this Table. Each truck number, from 1 to 84, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent H truck loadings are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 44	1	.05	.20	.75	.240	.340	.434	.528	.622	.691	.774	.822
X = 8	2	.05	.30	.65	.240	.334	.438	.508	.600	.673	.761	.812
X′= 8	3	.10	.20	.70	.224	.318	.411	.497	.587	.663	.754	.806
C = 8	4	.10	.30	.60	.240	.331	.439	.506	.577	.654	.747	.801
L = 48	5	.05	.20	.75	.240	.340	.411	.486	.578	.650	.744	.799
X = 8	6	.05	.30	.65	.240	.313	.400	.472	.548	.629	.729	.786
X′= 10	7	.10	.20	.70	.224	.318	.385	.454	.544	.621	.723	.782
C = 8	8	.10	.30	.60	.240	.325	.401	.471	.532	.607	.713	.773
L = 52	9	.05	.20	.75	.240	.340	.403	.452	.534	.610	.715	.775
X = 8	10	.05	.30	.65	.240	.313	.363	.439	.501	.584	.696	.760
X′= 12	11	.10	.20	.70	.224	.318	.376	.426	.501	.578	.692	.757
C = 8	12	.10	.30	.60	.240	.325	.373	.444	.504	.560	.678	.746
L = 56	13	.05	.20	.75	.240	.340	.403	.430	.493	.573	.685	.752
X = 8	14	.05	.30	.65	.240	.313	.349	.408	.473	.539	.663	.735
X′= 14	15	.10	.20	.70	.224	.318	.376	.403	.461	.539	.660	.732
C = 8	16	.10	.30	.60	.240	.325	.373	.419	.475	.526	.643	.719
L = 60	17	.05	.20	.75	.240	.340	.403	.419	.468	.537	.656	.729
X = 8	18	.05	.30	.65	.240	.313	.349	.380	.446	.498	.630	.709
X′= 16	19	.10	.20	.70	.224	.318	.376	.391	.437	.504	.629	.708
C = 8	20	.10	.30	.60	.240	.325	.373	.393	.448	.502	.609	.692
L = 64	21	.05	.20	.75	.240	.340	.403	.417	.444	.501	.627	.706
X = 8	22	.05	.30	.65	.240	.313	.349	.361	.422	.475	.598	.683
X′= 18	23	.10	.20	.70	.224	.318	.376	.389	.418	.469	.598	.683
C = 8	24	.10	.30	.60	.240	.325	.373	.382	.428	.480	.575	.665
L = 68	25	.05	.20	.75	.240	.340	.403	.417	.431	.478	.597	.682
X = 8	26	.05	.30	.65	.240	.313	.349	.361	.398	.453	.565	.657
X′= 20	27	.10	.20	.70	.224	.318	.376	.389	.403	.446	.567	.659
C = 8	28	.10	.30	.60	.240	.325	.373	.382	.409	.457	.540	.638
L = 48	29	.05	.20	.75	.240	.340	.434	.528	.622	.683	.768	.817
X = 12	30	.05	.30	.65	.240	.334	.431	.507	.598	.666	.756	.808
X′= 8	31	.10	.20	.70	.224	.318	.411	.497	.587	.648	.743	.798
C = 8	32	.10	.30	.60	.240	.331	.422	.481	.563	.639	.736	.792
L = 52	33	.05	.20	.75	.240	.340	.411	.486	.578	.646	.739	.794
X = 12	34	.05	.30	.65	.240	.304	.395	.472	.548	.622	.723	.782
X′= 10	35	.10	.20	.70	.224	.318	.385	.454	.544	.609	.712	.773
C = 8	36	.10	.30	.60	.240	.304	.388	.447	.515	.592	.702	.765
L = 56	37	.05	.20	.75	.240	.340	.403	.452	.534	.609	.709	.771
X = 12	38	.05	.30	.65	.240	.304	.360	.439	.499	.580	.691	.756
X′= 12	39	.10	.20	.70	.224	.318	.376	.426	.501	.574	.681	.749
C = 8	40	.10	.30	.60	.240	.304	.355	.420	.484	.546	.667	.738
L = 60	41	.05	.20	.75	.240	.340	.403	.430	.493	.573	.680	.748
X = 12	42	.05	.30	.65	.240	.304	.349	.408	.470	.539	.658	.730
X′= 14	43	.10	.20	.70	.224	.318	.376	.403	.461	.539	.650	.724
C = 8	44	.10	.30	.60	.240	.304	.342	.394	.455	.509	.633	.710

Table 10.14 (Continued)

L = 64	45	.05	.20	.75	.240	.340	.403	.419	.468	.537	.650	.724
X = 12	46	.05	.30	.65	.240	.304	.349	.377	.446	.498	.625	.705
X′= 16	47	.10	.20	.70	.224	.318	.376	.391	.437	.504	.619	.699
C = 8	48	.10	.30	.60	.240	.304	.342	.368	.429	.486	.598	.683
L = 68	49	.05	.20	.75	.240	.340	.403	.417	.444	.501	.621	.701
X = 12	50	.05	.30	.65	.240	.304	.349	.361	.422	.470	.592	.679
X′= 18	51	.10	.20	.70	.224	.318	.376	.389	.418	.469	.587	.675
C = 8	52	.10	.30	.60	.240	.304	.342	.359	.409	.463	.564	.656
L = 72	53	.05	.20	.75	.240	.340	.403	.417	.431	.478	.594	.678
X = 12	54	.05	.30	.65	.240	.304	.349	.361	.398	.450	.560	.653
X′= 20	55	.10	.20	.70	.224	.318	.376	.389	.403	.446	.559	.650
C = 8	56	.10	.30	.60	.240	.304	.342	.359	.389	.440	.529	.629
L = 60	57	.05	.20	.75	.240	.340	.403	.452	.534	.609	.704	.767
X = 16	58	.05	.30	.65	.240	.304	.360	.439	.499	.580	.685	.752
X′= 12	59	.10	.20	.70	.224	.318	.376	.426	.501	.574	.670	.740
C = 8	60	.10	.30	.60	.240	.304	.355	.415	.471	.546	.656	.729
L = 64	61	.05	.20	.75	.240	.340	.403	.430	.493	.573	.674	.743
X = 16	62	.05	.30	.65	.240	.304	.349	.408	.470	.539	.653	.726
X′= 14	63	.10	.20	.70	.224	.318	.376	.403	.461	.539	.639	.716
C = 8	64	.10	.30	.60	.240	.304	.330	.384	.445	.506	.622	.702
L = 68	65	.05	.20	.75	.240	.340	.403	.419	.468	.537	.647	.720
X = 16	66	.05	.30	.65	.240	.304	.349	.377	.446	.498	.620	.700
X′= 16	67	.10	.20	.70	.224	.318	.376	.391	.437	.504	.610	.691
C = 8	68	.10	.30	.60	.240	.304	.322	.358	.420	.469	.587	.675
L = 72	69	.05	.20	.75	.240	.340	.403	.417	.444	.501	.621	.697
X = 16	70	.05	.30	.65	.240	.304	.349	.361	.422	.470	.590	.675
X′= 18	71	.10	.20	.70	.224	.318	.376	.389	.418	.469	.584	.666
C = 8	72	.10	.30	.60	.240	.304	.322	.337	.396	.446	.554	.648
L = 76	73	.05	.20	.75	.240	.340	.403	.417	.431	.478	.594	.674
X = 16	74	.05	.30	.65	.240	.304	.349	.361	.398	.450	.560	.649
X′= 20	75	.10	.20	.70	.224	.318	.376	.389	.403	.446	.559	.642
C = 8	76	.10	.30	.60	.240	.304	.322	.337	.373	.428	.525	.621
L = 80	77	.05	.20	.75	.240	.340	.403	.417	.425	.458	.567	.650
X = 16	78	.05	.30	.65	.240	.304	.349	.361	.375	.430	.529	.623
X′= 22	79	.10	.20	.70	.224	.318	.376	.389	.396	.428	.533	.617
C = 8	80	.10	.30	.60	.240	.304	.322	.337	.351	.405	.496	.594
L = 84	81	.05	.20	.75	.240	.340	.403	.417	.425	.440	.541	.627
X = 16	82	.05	.30	.65	.240	.304	.349	.361	.368	.411	.499	.597
X′= 24	83	.10	.20	.70	.224	.318	.376	.389	.396	.414	.508	.593
C = 8	84	.10	.30	.60	.240	.304	.322	.337	.351	.386	.477	.567

11. GROSS LOAD REQUIRED FOR VARIOUS TRUCK TYPES AND LOADINGS TO PRODUCE SAME MOMENT AS STANDARD H TRUCK OF UNIT WEIGHT ON SIMPLE SPAN BRIDGES

Tables 11.1-11.14 give the gross load on each of the 1303 variants of the 14 heavy vehicle types shown in the identification index Tables 6.1-6.14 on simple spans of 10, 20, 30, 40, 50, 60, 80, and 100 feet in length that would be required to produce the same maximum moment as that produced on the span under consideration by a standard H truck weighing one kip. It will be noted that the values given by Tables 11.1-11.14 are the reciprocals of the corresponding values shown in Tables 10.1-10.14.

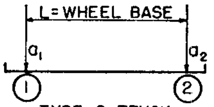
The table number corresponding to each of the 14 heavy vehicle types shown in Figure 6.1 is as follows:

Table No.	Vehicle Type	Table No.	Vehicle Type
11.1	2	11.8	3 S3
11.2	3	11.9	2–2
11.3	2–S1	11.10	2–3
11.4	2–S2	11.11	3–2
11.5	2–S3	11.12	3–3
11.6	3–S1	11.13	2–S1–2
11.7	3–S2	11.14	3–S2–3

The use of Tables 11.1-11.14 for determining the gross load required on a particular vehicle such that it will produce the same moment on a given span as an H truck of given designation is given in Article 5.

Table 11.1

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 2 TRUCK

Thirty-six variations in the Type 2 truck are given in this Table. Each truck number, from 1 to 36, represents a different combination of wheel base length, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

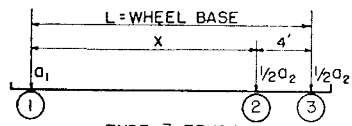
Gross loads are in kips.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
L = 10	1	.45	.55	1.453	1.332	1.138	1.098	1.076	1.063	1.046	1.036
	2	.40	.60	1.333	1.250	1.094	1.067	1.053	1.043	1.032	1.026
	3	.35	.65	1.230	1.175	1.054	1.038	1.030	1.025	1.018	1.014
	4	.30	.70	1.143	1.107	1.015	1.011	1.008	1.007	1.005	1.004
	5	.25	.75	1.066	1.045	.978	.984	.987	.989	.992	.994
	6	.20	.80	1.000	.987	.943	.915	.967	.973	.979	.983
L = 12	7	.45	.55	1.453	1.453	1.222	1.156	1.120	1.098	1.071	1.056
	8	.40	.60	1.333	1.333	1.166	1.117	1.089	1.073	1.054	1.043
	9	.35	.65	1.230	1.230	1.111	1.080	1.062	1.052	1.037	1.030
	10	.30	.70	1.143	1.143	1.062	1.044	1.035	1.029	1.021	1.016
	11	.25	.75	1.066	1.066	1.015	1.011	1.008	1.007	1.005	1.004
	12	.20	.80	1.000	1.000	.971	.978	.983	.986	.989	.992
L = 14	13	.45	.55	1.453	1.453	1.318	1.218	1.167	1.134	1.098	1.076
	14	.40	.60	1.333	1.333	1.242	1.170	1.130	1.106	1.076	1.060
	15	.35	.65	1.230	1.230	1.174	1.124	1.095	1.078	1.056	1.045
	16	.30	.70	1.143	1.143	1.111	1.080	1.062	1.052	1.037	1.030
	17	.25	.75	1.066	1.066	1.054	1.038	1.030	1.025	1.018	1.014
	18	.20	.80	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
L = 16	19	.45	.55	1.453	1.453	1.422	1.287	1.217	1.174	1.125	1.096
	20	.40	.60	1.333	1.333	1.328	1.225	1.172	1.139	1.100	1.079
	21	.35	.65	1.230	1.230	1.242	1.170	1.130	1.106	1.076	1.060
	22	.30	.70	1.143	1.143	1.166	1.117	1.089	1.073	1.054	1.043
	23	.25	.75	1.066	1.066	1.094	1.067	1.053	1.043	1.032	1.026
	24	.20	.80	1.000	1.000	1.028	1.021	1.017	1.014	1.010	1.008
L = 18	25	.45	.55	1.453	1.453	1.495	1.361	1.269	1.215	1.152	1.119
	26	.40	.60	1.333	1.333	1.370	1.287	1.217	1.174	1.125	1.096
	27	.35	.65	1.230	1.230	1.264	1.218	1.167	1.134	1.098	1.076
	28	.30	.70	1.143	1.143	1.174	1.156	1.120	1.098	1.071	1.056
	29	.25	.75	1.066	1.066	1.096	1.098	1.076	1.063	1.046	1.036
	30	.20	.80	1.000	1.000	1.028	1.044	1.035	1.029	1.021	1.016
L = 20	31	.45	.55	1.453	1.453	1.495	1.441	1.325	1.258	1.182	1.142
	32	.40	.60	1.333	1.333	1.370	1.351	1.263	1.209	1.149	1.116
	33	.35	.65	1.230	1.230	1.264	1.271	1.205	1.166	1.119	1.093
	34	.30	.70	1.143	1.143	1.174	1.198	1.151	1.122	1.088	1.070
	35	.25	.75	1.066	1.066	1.096	1.130	1.100	1.082	1.059	1.047
	36	.20	.80	1.000	1.000	1.028	1.067	1.053	1.043	1.032	1.026

Table 11.2

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 3 TRUCK

Forty-two variations in the Type 3 truck are given in this Table. Each truck number, from 1 to 42, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

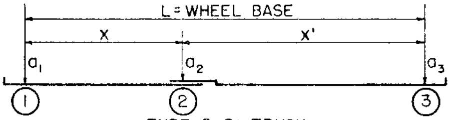
Gross loads are in kips.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
	1	.40	.60	2.000	1.600	1.242	1.161	1.121	1.096	1.068	1.054
	2	.35	.65	1.923	1.504	1.199	1.134	1.100	1.080	1.057	1.045
L = 14	3	.30	.70	1.786	1.410	1.159	1.106	1.080	1.064	1.046	1.035
X = 10	4	.25	.75	1.667	1.316	1.120	1.080	1.059	1.048	1.035	1.027
	5	.20	.80	1.563	1.235	1.081	1.055	1.041	1.033	1.024	1.018
	6	.15	.85	1.471	1.161	1.045	1.030	1.021	1.017	1.012	1.009
	7	.10	.90	1.389	1.098	1.010	1.005	1.003	1.002	1.001	1.001
	8	.40	.60	2.000	1.645	1.339	1.221	1.164	1.131	1.093	1.072
	9	.35	.65	1.923	1.520	1.279	1.185	1.138	1.110	1.078	1.060
L = 16	10	.30	.70	1.786	1.410	1.222	1.148	1.111	1.089	1.063	1.049
X = 12	11	.25	.75	1.667	1.316	1.170	1.114	1.086	1.068	1.048	1.037
	12	.20	.80	1.563	1.235	1.120	1.081	1.060	1.048	1.035	1.027
	13	.15	.85	1.471	1.161	1.072	1.048	1.036	1.029	1.020	1.016
	14	.10	.90	1.389	1.098	1.027	1.017	1.012	1.010	1.007	1.005
	15	.40	.60	2.000	1.645	1.447	1.287	1.211	1.167	1.117	1.091
	16	.35	.65	1.923	1.520	1.368	1.239	1.176	1.140	1.099	1.076
L = 18	17	.30	.70	1.786	1.410	1.294	1.193	1.144	1.115	1.081	1.063
X = 14	18	.25	.75	1.667	1.316	1.225	1.149	1.111	1.089	1.064	1.049
	19	.20	.80	1.563	1.235	1.160	1.107	1.080	1.064	1.046	1.036
	20	.15	.85	1.471	1.161	1.100	1.067	1.050	1.041	1.029	1.022
	21	.10	.90	1.389	1.098	1.045	1.030	1.021	1.017	1.012	1.009
	22	.40	.60	2.000	1.645	1.570	1.359	1.261	1.205	1.143	1.110
	23	.35	.65	1.923	1.520	1.451	1.297	1.218	1.172	1.121	1.093
L = 20	24	.30	.70	1.786	1.410	1.348	1.241	1.178	1.140	1.099	1.076
X = 16	25	.25	.75	1.667	1.316	1.258	1.186	1.139	1.110	1.079	1.060
	26	.20	.80	1.563	1.235	1.179	1.135	1.101	1.081	1.057	1.045
	27	.15	.85	1.471	1.161	1.110	1.087	1.066	1.053	1.037	1.029
	28	.10	.90	1.389	1.098	1.048	1.042	1.031	1.025	1.017	1.013
	29	.40	.60	2.000	1.645	1.572	1.435	1.314	1.245	1.171	1.131
	30	.35	.65	1.923	1.520	1.451	1.361	1.263	1.206	1.144	1.111
L = 22	31	.30	.70	1.786	1.410	1.348	1.290	1.214	1.168	1.119	1.092
X = 18	32	.25	.75	1.667	1.316	1.258	1.225	1.167	1.133	1.094	1.073
	33	.20	.80	1.563	1.235	1.179	1.164	1.122	1.098	1.070	1.054
	34	.15	.85	1.471	1.161	1.110	1.107	1.108	1.065	1.046	1.036
	35	.10	.90	1.389	1.098	1.048	1.055	1.041	1.033	1.024	1.018
	36	.40	.60	2.000	1.645	1.572	1.520	1.370	1.287	1.198	1.151
	37	.35	.65	1.923	1.520	1.451	1.429	1.309	1.241	1.168	1.129
L = 24	38	.30	.70	1.786	1.410	1.348	1.344	1.250	1.198	1.138	1.106
X = 20	39	.25	.75	1.667	1.316	1.258	1.267	1.196	1.155	1.109	1.085
	40	.20	.80	1.563	1.235	1.179	1.195	1.145	1.116	1.081	1.064
	41	.15	.85	1.471	1.161	1.110	1.127	1.096	1.076	1.055	1.043
	42	.10	.90	1.389	1.098	1.048	1.065	1.050	1.041	1.029	1.022

Table 11.3

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2-S1 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 2-S1 TRUCK

One hundred twenty-six variations in the Type 2-S1 truck are given in this Table. Each truck number, from 1 to 126, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

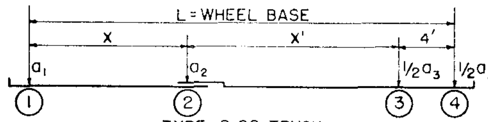
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	1.333	1.333	1.217	1.170	1.130	1.106	1.076	1.060
	2	.10	.40	.50	1.600	1.600	1.351	1.255	1.193	1.156	1.112	1.088
L = 20	3	.10	.45	.45	1.776	1.692	1.348	1.230	1.172	1.138	1.098	1.076
X = 8	4	.10	.50	.40	1.600	1.529	1.276	1.185	1.139	1.111	1.080	1.062
X' = 12	5	.20	.30	.50	1.600	1.600	1.422	1.318	1.239	1.192	1.136	1.106
	6	.20	.40	.40	2.000	1.776	1.406	1.259	1.192	1.151	1.106	1.082
	7	.20	.50	.30	1.600	1.458	1.250	1.166	1.122	1.098	1.070	1.054
	8	.10	.30	.60	1.333	1.333	1.351	1.279	1.217	1.174	1.125	1.096
	9	.10	.40	.50	1.600	1.600	1.570	1.420	1.312	1.248	1.175	1.136
L = 24	10	.10	.45	.45	1.776	1.692	1.605	1.383	1.280	1.221	1.155	1.120
X = 8	11	.10	.50	.40	1.600	1.529	1.481	1.311	1.230	1.182	1.129	1.100
X' = 16	12	.20	.30	.50	1.600	1.600	1.605	1.497	1.364	1.289	1.202	1.156
	13	.20	.40	.40	2.000	1.776	1.650	1.408	1.294	1.229	1.159	1.121
	14	.20	.50	.30	1.600	1.458	1.376	1.259	1.192	1.151	1.106	1.082
	15	.10	.30	.60	1.333	1.333	1.370	1.383	1.312	1.248	1.175	1.136
	16	.10	.40	.50	1.600	1.600	1.645	1.590	1.449	1.351	1.245	1.188
L = 28	17	.10	.45	.45	1.776	1.692	1.650	1.567	1.404	1.314	1.217	1.166
X = 8	18	.10	.50	.40	1.600	1.529	1.499	1.460	1.333	1.261	1.182	1.139
X' = 20	19	.20	.30	.50	1.600	1.600	1.645	1.637	1.511	1.397	1.274	1.209
	20	.20	.40	.40	2.000	1.776	1.650	1.585	1.408	1.314	1.215	1.163
	21	.20	.50	.30	1.600	1.458	1.376	1.368	1.266	1.209	1.145	1.111
	22	.10	.30	.60	1.333	1.333	1.370	1.441	1.403	1.330	1.230	1.176
	23	.10	.40	.50	1.600	1.600	1.645	1.730	1.600	1.468	1.319	1.242
L = 32	24	.10	.45	.45	1.776	1.692	1.650	1.695	1.548	1.418	1.284	1.215
X = 8	25	.10	.50	.40	1.600	1.529	1.499	1.543	1.449	1.348	1.238	1.182
X' = 24	26	.20	.30	.50	1.600	1.600	1.645	1.730	1.656	1.520	1.351	1.266
	27	.20	.40	.40	2.000	1.776	1.650	1.656	1.543	1.410	1.276	1.208
	28	.20	.50	.30	1.600	1.458	1.376	1.391	1.350	1.271	1.186	1.143
	29	.10	.30	.60	1.333	1.333	1.370	1.441	1.486	1.416	1.289	1.220
	30	.10	.40	.50	1.600	1.600	1.645	1.730	1.754	1.603	1.403	1.302
L = 36	31	.10	.45	.45	1.776	1.692	1.650	1.695	1.715	1.536	1.357	1.266
X = 8	32	.10	.50	.40	1.600	1.529	1.499	1.543	1.567	1.443	1.299	1.225
X' = 28	33	.20	.30	.50	1.600	1.600	1.645	1.730	1.783	1.661	1.437	1.326
	34	.20	.40	.40	2.000	1.776	1.650	1.656	1.658	1.517	1.340	1.255
	35	.20	.50	.30	1.600	1.458	1.376	1.391	1.399	1.337	1.230	1.174
	36	.10	.30	.60	1.333	1.183	1.100	1.092	1.072	1.058	1.043	1.034
	37	.10	.40	.50	1.600	1.316	1.176	1.143	1.110	1.089	1.065	1.052
L = 20	38	.10	.45	.45	1.776	1.389	1.198	1.133	1.100	1.080	1.057	1.045
X = 12	39	.10	.50	.40	1.600	1.316	1.156	1.105	1.080	1.064	1.046	1.035
X' = 8	40	.20	.30	.50	1.600	1.383	1.269	1.225	1.172	1.139	1.100	1.079
	41	.20	.40	.40	2.000	1.563	1.311	1.200	1.148	1.117	1.082	1.064
	42	.20	.50	.30	1.600	1.383	1.209	1.138	1.103	1.082	1.058	1.045
	43	.10	.30	.60	1.333	1.333	1.217	1.186	1.151	1.122	1.088	1.070
	44	.10	.40	.50	1.600	1.600	1.351	1.279	1.217	1.174	1.125	1.096
L = 24	45	.10	.45	.45	1.776	1.776	1.418	1.271	1.199	1.157	1.111	1.086
X = 12	46	.10	.50	.40	1.600	1.600	1.339	1.221	1.164	1.131	1.093	1.072
X' = 12	47	.20	.30	.50	1.600	1.600	1.422	1.372	1.287	1.229	1.163	1.126
	48	.20	.40	.40	2.000	2.000	1.563	1.344	1.247	1.193	1.134	1.103
	49	.20	.50	.30	1.600	1.600	1.366	1.235	1.172	1.135	1.095	1.073

Table 11.3 (Continued)

	50	.10	.30	.60	1.333	1.333	1.351	1.279	1.239	1.192	1.136	1.106
	51	.10	.40	.50	1.600	1.600	1.570	1.420	1.339	1.267	1.189	1.145
L = 28	52	.10	.45	.45	1.776	1.776	1.698	1.435	1.314	1.245	1.171	1.131
X = 12	53	.10	.50	.40	1.600	1.600	1.570	1.359	1.261	1.205	1.144	1.111
X′ = 16	54	.20	.30	.50	1.600	1.600	1.605	1.497	1.420	1.330	1.230	1.176
	55	.20	.40	.40	2.000	2.000	1.543	1.517	1.362	1.279	1.190	1.144
	56	.20	.50	.30	1.600	1.600	1.497	1.344	1.247	1.193	1.134	1.103
	57	.10	.30	.60	1.333	1.333	1.370	1.383	1.319	1.267	1.189	1.145
	58	.10	.40	.50	1.600	1.600	1.645	1.590	1.464	1.374	1.259	1.198
L = 32	59	.10	.45	.45	1.776	1.776	1.736	1.639	1.445	1.342	1.235	1.178
X = 12	60	.10	.50	.40	1.600	1.600	1.572	1.520	1.370	1.289	1.198	1.151
X′ = 20	61	.20	.30	.50	1.600	1.600	1.645	1.637	1.541	1.445	1.304	1.232
	62	.20	.40	.40	2.000	2.000	1.825	1.730	1.495	1.374	1.250	1.188
	63	.20	.50	.30	1.600	1.600	1.497	1.471	1.332	1.256	1.175	1.134
	64	.10	.30	.60	1.333	1.333	1.370	1.441	1.403	1.344	1.245	1.188
	65	.10	.40	.50	1.600	1.600	1.645	1.730	1.600	1.495	1.335	1.255
L = 36	66	.10	.45	.45	1.776	1.776	1.736	1.757	1.600	1.453	1.304	1.229
X = 12	67	.10	.50	.40	1.600	1.600	1.572	1.597	1.495	1.377	1.256	1.195
X′ = 24	68	.20	.30	.50	1.600	1.600	1.645	1.730	1.656	1.572	1.385	1.289
	69	.20	.40	.50	2.000	2.000	1.825	1.779	1.647	1.479	1.316	1.235
	70	.20	.50	.30	1.600	1.600	1.497	1.479	1.425	1.325	1.220	1.166
	71	.10	.30	.60	1.333	1.333	1.370	1.441	1.486	1.416	1.304	1.232
	72	.10	.40	.50	1.600	1.600	1.645	1.730	1.754	1.608	1.418	1.314
L = 40	73	.10	.45	.45	1.776	1.776	1.736	1.757	1.770	1.577	1.379	1.282
X = 12	74	.10	.50	.40	1.600	1.600	1.572	1.597	1.610	1.479	1.319	1.239
X′ = 28	75	.20	.30	.50	1.600	1.600	1.645	1.730	1.783	1.669	1.473	1.351
	76	.20	.40	.40	2.000	2.000	1.825	1.779	1.754	1.600	1.385	1.284
	77	.20	.50	.30	1.600	1.600	1.497	1.479	1.468	1.399	1.314	1.199
	78	.10	.30	.60	1.333	1.333	1.370	1.441	1.486	1.493	1.368	1.277
	79	.10	.40	.50	1.600	1.600	1.645	1.730	1.783	1.736	1.511	1.377
L = 44	80	.10	.45	.45	1.776	1.776	1.736	1.757	1.770	1.721	1.462	1.339
X = 12	81	.10	.50	.40	1.600	1.600	1.572	1.597	1.610	1.592	1.387	1.289
X′ = 32	82	.20	.30	.50	1.600	1.600	1.645	1.730	1.783	1.776	1.570	1.418
	83	.20	.40	.40	2.000	2.000	1.825	1.779	1.754	1.736	1.462	1.337
	84	.20	.50	.30	1.600	1.600	1.497	1.479	1.468	1.460	1.316	1.235
	85	.10	.30	.60	1.333	1.183	1.100	1.104	1.091	1.074	1.054	1.043
	86	.10	.40	.50	1.600	1.316	1.176	1.157	1.130	1.106	1.076	1.060
L = 24	87	.10	.45	.45	1.776	1.389	1.217	1.166	1.122	1.098	1.070	1.054
X = 16	88	.10	.50	.40	1.600	1.316	1.176	1.135	1.101	1.081	1.058	1.045
X′ = 8	89	.20	.30	.50	1.600	1.383	1.269	1.264	1.217	1.174	1.125	1.096
	90	.20	.40	.40	2.000	1.563	1.368	1.272	1.198	1.156	1.109	1.083
	91	.20	.50	.30	1.600	1.383	1.269	1.200	1.148	1.117	1.082	1.064
	92	.10	.30	.60	1.333	1.333	1.217	1.186	1.170	1.139	1.100	1.079
	93	.10	.40	.50	1.600	1.600	1.351	1.279	1.239	1.192	1.136	1.106
L = 28	94	.10	.45	.45	1.776	1.776	1.427	1.312	1.229	1.179	1.126	1.096
X = 16	95	.10	.50	.40	1.600	1.600	1.351	1.259	1.192	1.151	1.106	1.082
X′ = 12	96	.20	.30	.50	1.600	1.600	1.422	1.372	1.339	1.267	1.189	1.145
	97	.20	.40	.40	2.000	2.000	1.605	1.437	1.309	1.238	1.164	1.125
	98	.20	.50	.30	1.600	1.600	1.422	1.311	1.224	1.175	1.122	1.094
	99	.10	.30	.60	1.333	1.333	1.351	1.279	1.241	1.211	1.149	1.116
	100	.10	.40	.50	1.600	1.600	1.570	1.420	1.346	1.289	1.202	1.156
L = 32	101	.10	.45	.45	1.776	1.776	1.698	1.493	1.350	1.271	1.186	1.143
X = 16	102	.10	.50	.40	1.600	1.600	1.570	1.408	1.294	1.229	1.159	1.121
X′ = 16	103	.20	.30	.50	1.600	1.600	1.605	1.497	1.439	1.374	1.259	1.198
	104	.20	.40	.40	2.000	2.000	1.912	1.642	1.437	1.332	1.222	1.168
	105	.20	.50	.30	1.600	1.600	1.605	1.437	1.309	1.238	1.164	1.125
	106	.10	.30	.60	1.333	1.333	1.370	1.383	1.319	1.279	1.202	1.156
	107	.10	.40	.50	1.600	1.600	1.645	1.590	1.464	1.393	1.274	1.209
L = 36	108	.10	.45	.45	1.776	1.776	1.828	1.709	1.490	1.374	1.253	1.190
X = 16	109	.10	.50	.40	1.600	1.600	1.645	1.585	1.408	1.314	1.215	1.163
X′ = 20	110	.20	.30	.50	1.600	1.600	1.645	1.637	1.541	1.484	1.335	1.255
	111	.20	.40	.40	2.000	2.000	2.024	1.905	1.587	1.437	1.287	1.214
	112	.20	.50	.30	1.600	1.600	1.634	1.575	1.403	1.307	1.208	1.156
	113	.10	.30	.60	1.333	1.333	1.370	1.441	1.403	1.344	1.259	1.198
	114	.10	.40	.50	1.600	1.600	1.645	1.730	1.600	1.495	1.351	1.266
L = 40	115	.10	.45	.45	1.776	1.776	1.828	1.828	1.656	1.490	1.325	1.242
X = 16	116	.10	.50	.40	1.600	1.600	1.645	1.656	1.543	1.410	1.276	1.208
X′ = 24	117	.20	.30	.50	1.600	1.600	1.645	1.730	1.656	1.572	1.418	1.314
	118	.20	.40	.40	2.000	2.000	2.024	1.919	1.767	1.555	1.357	1.263
	119	.20	.50	.30	1.600	1.600	1.634	1.575	1.508	1.381	1.255	1.190
	120	.10	.30	.60	1.333	1.333	1.370	1.441	1.486	1.416	1.319	1.242
	121	.10	.40	.50	1.600	1.600	1.645	1.730	1.754	1.608	1.437	1.326
L = 44	122	.10	.45	.45	1.776	1.776	1.828	1.828	1.828	1.623	1.403	1.297
X = 16	123	.10	.50	.40	1.600	1.600	1.645	1.656	1.658	1.517	1.340	1.255
X′ = 28	124	.20	.30	.50	1.600	1.600	1.645	1.730	1.783	1.669	1.511	1.377
	125	.20	.40	.40	2.000	2.000	2.024	1.919	1.862	1.689	1.433	1.316
	126	.20	.50	.30	1.600	1.600	1.634	1.575	1.543	1.464	1.304	1.225

Table 11.4

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2-S2 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 2-S2 TRUCK

One hundred eight variations in the Type 2-S2 truck are given in this Table. Each truck number, from 1 to 108, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

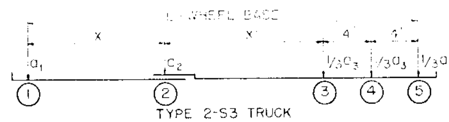
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	2.083	1.471	1.242	1.161	1.121	1.096	1.068	1.054
	2	.10	.40	.50	2.000	1.621	1.299	1.199	1.149	1.120	1.086	1.066
L = 20	3	.10	.50	.40	1.600	1.422	1.189	1.129	1.098	1.079	1.056	1.044
X = 8	4	.20	.30	.50	2.500	1.715	1.408	1.266	1.198	1.156	1.111	1.086
X' = 8	5	.20	.40	.40	2.000	1.667	1.299	1.195	1.145	1.115	1.082	1.064
	6	.20	.50	.30	1.600	1.403	1.182	1.121	1.091	1.073	1.052	1.041
	7	.10	.30	.60	2.083	1.645	1.401	1.287	1.211	1.167	1.117	1.091
	8	.10	.40	.50	2.000	1.890	1.548	1.364	1.267	1.211	1.148	1.115
L = 24	9	.10	.50	.40	1.600	1.529	1.372	1.245	1.183	1.145	1.104	1.081
X = 8	10	.20	.30	.50	2.500	1.976	1.634	1.449	1.323	1.253	1.176	1.135
X' = 12	11	.20	.40	.40	2.000	1.776	1.529	1.330	1.241	1.189	1.133	1.101
	12	.20	.50	.30	1.600	1.458	1.319	1.211	1.156	1.124	1.088	1.068
	13	.10	.30	.60	2.083	1.645	1.572	1.420	1.314	1.245	1.171	1.131
	14	.10	.40	.50	2.000	1.890	1.835	1.567	1.404	1.314	1.217	1.166
L = 28	15	.10	.50	.40	1.600	1.529	1.499	1.383	1.280	1.221	1.155	1.120
X = 8	16	.20	.30	.50	2.500	1.976	1.887	1.658	1.471	1.362	1.247	1.188
X' = 16	17	.20	.40	.40	2.000	1.776	1.650	1.493	1.350	1.271	1.186	1.143
	18	.20	.50	.30	1.600	1.458	1.376	1.312	1.229	1.179	1.126	1.096
	19	.10	.30	.60	2.083	1.645	1.572	1.555	1.431	1.332	1.227	1.172
	20	.10	.40	.50	2.000	1.890	1.835	1.789	1.565	1.431	1.292	1.220
L = 32	21	.10	.50	.40	1.600	1.529	1.499	1.517	1.389	1.302	1.209	1.160
X = 8	22	.20	.30	.50	2.500	1.976	1.887	1.842	1.647	1.488	1.326	1.244
X' = 20	23	.20	.40	.40	2.000	1.776	1.650	1.650	1.473	1.361	1.245	1.185
	24	.20	.50	.30	1.600	1.458	1.376	1.391	1.307	1.239	1.166	1.126
	25	.10	.30	.60	2.083	1.645	1.572	1.597	1.536	1.427	1.287	1.217
	26	.10	.40	.50	2.000	1.890	1.835	1.876	1.751	1.563	1.374	1.279
L = 36	27	.10	.50	.40	1.600	1.529	1.499	1.543	1.513	1.393	1.267	1.203
X = 8	28	.20	.30	.50	2.500	1.976	1.887	1.916	1.815	1.631	1.410	1.305
X' = 24	29	.20	.40	.40	2.000	1.776	1.650	1.656	1.618	1.462	1.307	1.230
	30	.20	.50	.30	1.600	1.458	1.376	1.391	1.383	1.304	1.208	1.157
	31	.10	.30	.60	2.083	1.645	1.572	1.597	1.610	1.524	1.353	1.264
	32	.10	.40	.50	2.000	1.890	1.835	1.876	1.901	1.718	1.464	1.342
L = 40	33	.10	.50	.40	1.600	1.529	1.499	1.543	1.567	1.495	1.332	1.248
X = 8	34	.20	.30	.50	2.500	1.976	1.887	1.916	1.934	1.795	1.506	1.370
X' = 28	35	.20	.40	.40	2.000	1.776	1.650	1.656	1.658	1.575	1.376	1.279
	36	.20	.50	.30	1.600	1.458	1.376	1.391	1.399	1.374	1.253	1.190
	37	.10	.30	.60	2.083	1.471	1.242	1.190	1.143	1.114	1.081	1.063
	38	.10	.40	.50	2.000	1.621	1.312	1.235	1.174	1.139	1.099	1.076
L = 24	39	.10	.50	.40	1.600	1.458	1.242	1.161	1.121	1.096	1.068	1.054
X = 12	40	.20	.30	.50	2.500	1.715	1.427	1.335	1.245	1.193	1.136	1.105
X' = 8	41	.20	.40	.40	2.000	1.776	1.427	1.269	1.196	1.155	1.109	1.083
	42	.20	.50	.30	1.600	1.495	[illegible]	1.185	1.136	1.169	1.076	1.059

Table 11.4 (Continued)

	43	.10	.30	.60	2.083	1.645	1.401	1.302	1.236	1.186	1.131	1.101
	44	.10	.40	.50	2.000	1.976	1.548	1.395	1.297	1.233	1.163	1.125
L = 28	45	.10	.50	.40	1.600	1.600	1.447	1.287	1.211	1.167	1.117	1.091
X = 12	46	.20	.30	.50	2.500	1.976	1.634	1.504	1.379	1.295	1.203	1.156
X′ = 12	47	.20	.40	.40	2.000	2.000	1.712	1.427	1.302	1.235	1.161	1.124
	48	.20	.50	.30	1.600	1.600	1.441	1.287	1.209	1.164	1.115	1.088
	49	.10	.30	.60	2.083	1.645	1.572	1.420	1.339	1.266	1.185	1.142
	50	.10	.40	.50	2.000	1.976	1.855	1.572	1.441	1.339	1.233	1.176
L = 32	51	.10	.50	.40	1.600	1.600	1.572	1.435	1.314	1.245	1.171	1.131
X = 12	52	.20	.30	.50	2.500	1.976	1.887	1.658	1.538	1.410	1.277	1.211
X′ = 16	53	.20	.40	.40	2.000	2.000	1.825	1.618	1.425	1.325	1.220	1.166
	54	.20	.50	.30	1.600	1.600	1.497	1.404	1.289	1.224	1.155	1.119
	55	.10	.30	.60	2.083	1.645	1.572	1.555	1.433	1.355	1.242	1.183
	56	.10	.40	.50	2.000	1.976	1.887	1.789	1.587	1.460	1.309	1.233
L = 36	57	.10	.50	.40	1.600	1.600	1.572	1.582	1.431	1.332	1.227	1.172
X = 12	58	.20	.30	.50	2.500	1.976	1.887	1.842	1.672	1.541	1.359	1.267
X′ = 20	59	.20	.40	.40	2.000	2.000	1.825	1.779	1.567	1.425	1.282	1.211
	60	.20	.50	.30	1.600	1.600	1.497	1.479	1.377	1.289	1.198	1.149
	61	.10	.30	.60	2.083	1.645	1.572	1.597	1.536	1.441	1.304	1.229
	62	.10	.40	.50	2.000	1.976	1.887	1.916	1.751	1.597	1.393	1.292
L = 40	63	.10	.50	.40	1.600	1.600	1.572	1.597	1.572	1.427	1.287	1.217
X = 12	64	.20	.30	.50	2.500	1.976	1.887	1.916	1.815	1.684	1.447	1.332
X′ = 24	65	.20	.40	.40	2.000	2.000	1.825	1.779	1.730	1.538	1.350	1.259
	66	.20	.50	.30	1.600	1.600	1.497	1.479	1.460	1.361	1.242	1.182
	67	.10	.30	.60	2.083	1.645	1.572	1.597	1.610	1.524	1.370	1.276
	68	.10	.40	.50	2.000	1.976	1.887	1.916	1.934	1.730	1.486	1.357
L = 44	69	.10	.50	.40	1.600	1.600	1.572	1.597	1.610	1.534	1.353	1.264
X = 12	70	.20	.30	.50	2.500	1.976	1.887	1.916	1.934	1.799	1.548	1.399
X′ = 28	71	.20	.40	.40	2.000	2.000	1.825	1.779	1.754	1.667	1.422	1.311
	72	.20	.50	.30	1.600	1.600	1.497	1.479	1.468	1.439	1.290	1.217
	73	.10	.30	.60	2.083	1.471	1.242	1.199	1.164	1.131	1.093	1.072
	74	.10	.40	.50	2.000	1.621	1.312	1.247	1.198	1.156	1.111	1.086
L = 28	75	.10	.50	.40	1.600	1.458	1.258	1.195	1.145	1.115	1.082	1.064
X = 16	76	.20	.30	.50	2.500	1.715	1.427	1.370	1.297	1.233	1.163	1.125
X′ = 8	77	.20	.40	.40	2.000	1.776	1.479	1.351	1.252	1.196	1.135	1.104
	78	.20	.50	.30	1.600	1.495	1.342	1.290	1.211	1.166	1.115	1.088
	79	.10	.30	.60	2.083	1.645	1.401	1.302	1.255	1.205	1.144	1.111
	80	.10	.40	.50	2.000	1.976	1.548	1.395	1.321	1.253	1.176	1.135
L = 32	81	.10	.50	.40	1.600	1.600	1.453	1.330	1.241	1.189	1.133	1.101
X = 16	82	.20	.30	.50	2.500	1.976	1.634	1.504	1.439	1.339	1.233	1.176
X′ = 12	83	.20	.40	.40	2.000	2.000	1.748	1.534	1.370	1.284	1.192	1.145
	84	.20	.50	.30	1.600	1.600	1.511	1.372	1.266	1.206	1.143	1.109
	85	.10	.30	.60	2.083	1.645	1.572	1.420	1.339	1.287	1.198	1.151
	86	.10	.40	.50	2.000	1.976	1.855	1.572	1.445	1.362	1.247	1.188
L = 36	87	.10	.50	.40	1.600	1.600	1.634	1.493	1.350	1.271	1.186	1.143
X = 16	88	.20	.30	.50	2.500	1.976	1.887	1.658	1.550	1.460	1.309	1.233
X′ = 16	89	.20	.40	.40	2.000	2.000	2.024	1.764	1.508	1.381	1.255	1.190
	90	.20	.50	.30	1.600	1.600	1.634	1.508	1.355	1.272	1.185	1.140
	91	.10	.30	.60	2.083	1.471	1.572	1.555	1.433	1.362	1.256	1.195
	92	.10	.40	.50	2.000	1.976	1.887	1.789	1.587	1.477	1.326	1.244
L = 40	93	.10	.50	.40	1.600	1.600	1.645	1.650	1.473	1.361	1.245	1.185
X = 16	94	.20	.30	.50	2.500	1.976	1.887	1.842	1.672	1.580	1.393	1.292
X′ = 20	95	.20	.40	.40	2.000	2.000	2.024	1.919	1.672	1.493	1.321	1.238
	96	.20	.50	.30	1.600	1.600	1.634	1.575	1.456	1.344	1.230	1.174
	97	.10	.30	.60	2.083	1.471	1.572	1.597	1.536	1.441	1.319	1.239
	98	.10	.40	.50	2.000	1.976	1.887	1.916	1.751	1.597	1.410	1.305
L = 44	99	.10	.50	.40	1.600	1.600	1.645	1.656	1.618	1.462	1.307	1.230
X = 16	100	.20	.30	.50	2.500	1.976	1.887	1.916	1.815	1.684	1.486	1.357
X′ = 24	101	.20	.40	.40	2.000	2.000	2.024	1.919	1.852	1.621	1.395	1.289
	102	.20	.50	.30	1.600	1.600	1.634	1.575	1.541	1.422	1.279	1.208
	103	.10	.30	.60	2.083	1.471	1.572	1.597	1.610	1.524	1.387	1.289
	104	.10	.40	.50	2.000	1.976	1.887	1.916	1.934	1.730	1.506	1.370
L = 48	105	.10	.50	.40	1.600	1.600	1.645	1.656	1.658	1.575	1.376	1.279
X = 16	106	.20	.30	.50	2.500	1.976	1.887	1.916	1.934	1.799	1.590	1.427
X′ = 28	107	.20	.40	.40	2.000	2.000	2.024	1.919	1.862	1.767	1.473	1.342
	108	.20	.50	.30	1.600	1.600	1.634	1.575	1.543	1.508	1.330	1.244

Table 11.5

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2-S3 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



Ninety variations in the Type 2-S3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

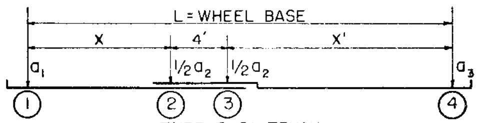
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.225	.675	2.538	1.616	1.350	1.244	1.178	1.140	1.099	1.076
	2	.10	.30	.60	2.667	1.818	1.416	1.269	1.196	1.155	1.109	1.083
L = 24	3	.10	.40	.50	2.000	1.761	1.427	1.279	1.206	1.164	1.116	1.091
X = 8	4	.20	.20	.60	2.857	1.818	1.517	1.344	1.247	1.193	1.134	1.103
X' = 8	5	.20	.30	.50	2.667	2.141	1.597	1.370	1.267	1.209	1.145	1.112
	6	.20	.40	.40	2.000	1.709	1.404	1.259	1.190	1.151	1.106	1.082
	7	.10	.225	.675	2.538	1.616	1.479	1.353	1.263	1.205	1.142	1.109
	8	.10	.30	.60	2.667	1.818	1.639	1.427	1.302	1.235	1.161	1.124
L = 28	9	.10	.40	.50	2.000	1.890	1.684	1.462	1.333	1.261	1.182	1.140
X = 8	10	.20	.20	.60	2.857	1.818	1.664	1.517	1.362	1.279	1.190	1.144
X' = 12	11	.20	.30	.50	2.667	2.183	1.912	1.587	1.410	1.316	1.215	1.164
	12	.20	.40	.40	2.000	1.776	1.580	1.406	1.292	1.229	1.159	1.121
	13	.10	.225	.675	2.538	1.616	1.481	1.443	1.357	1.276	1.188	1.143
	14	.10	.30	.60	2.667	1.818	1.667	1.590	1.425	1.325	1.220	1.166
L = 32	15	.10	.40	.50	2.000	1.890	1.835	1.686	1.481	1.370	1.253	1.192
X = 8	16	.20	.20	.60	2.857	1.818	1.667	1.623	1.495	1.374	1.250	1.188
X' = 16	17	.20	.30	.50	2.667	2.183	2.000	1.852	1.580	1.437	1.292	1.220
	18	.20	.40	.40	2.000	1.776	1.650	1.563	1.408	1.314	1.215	1.163
	19	.10	.225	.675	2.538	1.616	1.481	1.479	1.427	1.351	1.236	1.178
	20	.10	.30	.60	2.667	1.818	1.667	1.664	1.565	1.425	1.282	1.211
L = 36	21	.10	.40	.50	2.000	1.890	1.835	1.855	1.658	1.495	1.332	1.248
X = 8	22	.20	.20	.60	2.857	1.818	1.667	1.664	1.605	1.479	1.316	1.235
X' = 16	23	.20	.30	.50	2.667	2.183	2.000	1.996	1.786	1.577	1.376	1.279
	24	.20	.40	.40	2.000	1.776	1.650	1.656	1.541	1.408	1.276	1.208
	25	.10	.225	.675	2.538	1.616	1.481	1.479	1.477	1.414	1.289	1.215
	26	.10	.30	.60	2.667	1.818	1.667	1.664	1.664	1.538	1.350	1.259
L = 40	27	.10	.40	.50	2.000	1.890	1.835	1.876	1.842	1.639	1.418	1.311
X = 8	28	.20	.20	.60	2.857	1.818	1.667	1.664	1.664	1.592	1.385	1.284
X' = 24	29	.20	.30	.50	2.667	2.183	2.000	1.996	1.996	1.739	1.471	1.344
	30	.20	.40	.40	2.000	1.776	1.650	1.656	1.642	1.515	1.340	1.253
	31	.10	.225	.675	2.538	1.616	1.350	1.272	1.203	1.160	1.111	1.086
	32	.10	.30	.60	2.667	1.818	1.416	1.305	1.221	1.174	1.121	1.093
L = 28	33	.10	.40	.50	2.000	1.812	1.481	1.323	1.236	1.186	1.131	1.101
X = 12	34	.20	.20	.60	2.857	1.818	1.517	1.427	1.302	1.235	1.161	1.124
X' = 8	35	.20	.30	.50	2.667	2.183	1.623	1.460	1.326	1.253	1.174	1.133
	36	.20	.40	.40	2.000	1.852	1.555	1.342	1.247	1.193	1.134	1.103
	37	.10	.225	.675	2.538	1.616	1.479	1.353	1.290	1.225	1.156	1.119
	38	.10	.30	.60	2.667	1.818	1.639	1.439	1.332	1.256	1.175	1.134
L = 32	39	.10	.40	.50	2.000	2.000	1.795	1.522	1.370	1.287	1.199	1.152
X = 12	40	.20	.20	.60	2.857	1.818	1.664	1.522	1.425	1.325	1.220	1.166
X' = 12	41	.20	.30	.50	2.667	2.183	1.912	1.658	1.484	1.368	1.247	1.186
	42	.20	.40	.40	2.000	2.000	1.757	1.515	1.361	1.277	1.189	1.144

Table 11.5 (Continued)

	43	.10	.225	.675	2.538	1.616	1.481	1.443	1.357	1.297	1.202	1.153
	44	.10	.30	.60	2.667	1.818	1.667	1.590	1.449	1.348	1.235	1.176
L = 36	45	.10	.40	.50	2.000	2.000	1.942	1.754	1.529	1.403	1.272	1.206
X = 12	46	.20	.20	.60	2.857	1.818	1.667	1.623	1.527	1.425	1.282	1.211
X′ = 16	47	.20	.30	.50	2.667	2.183	2.000	1.855	1.675	1.499	1.328	1.245
	48	.20	.40	.40	2.000	2.000	1.825	1.695	1.493	1.372	1.250	1.188
	49	.10	.225	.675	2.538	1.616	1.481	1.479	1.427	1.359	1.252	1.189
	50	.10	.30	.60	2.667	1.818	1.667	1.664	1.565	1.451	1.299	1.222
L = 40	51	.10	.40	.50	2.000	2.000	1.942	1.946	1.718	1.536	1.353	1.264
X = 12	52	.20	.20	.60	2.857	1.818	1.667	1.664	1.605	1.529	1.350	1.259
X′ = 20	53	.20	.30	.50	2.667	2.183	2.000	1.996	1.825	1.653	1.416	1.307
	54	.20	.40	.40	2.000	2.000	1.825	1.779	1.645	1.479	1.314	1.235
	55	.10	.225	.675	2.538	1.616	1.481	1.479	1.477	1.414	1.305	1.227
	56	.10	.30	.60	2.667	1.818	1.667	1.664	1.664	1.548	1.368	1.272
L = 44	57	.10	.40	.50	2.000	2.000	1.942	1.957	1.916	1.689	1.443	1.326
X = 12	58	.20	.20	.60	2.857	1.818	1.667	1.664	1.664	1.592	1.422	1.311
X′ = 24	59	.20	.30	.50	2.667	2.183	2.000	1.996	1.996	1.808	1.517	1.374
	60	.20	.40	.40	2.000	2.000	1.825	1.779	1.748	1.597	1.385	1.284
	61	.10	.225	.675	2.538	1.616	1.350	1.272	1.230	1.179	1.125	1.095
	62	.10	.30	.60	2.667	1.818	1.416	1.311	1.247	1.193	1.134	1.103
L = 32	63	.10	.40	.50	2.000	1.812	1.481	1.350	1.267	1.209	1.145	1.112
X = 16	64	.20	.20	.60	2.857	1.818	1.517	1.431	1.362	1.279	1.190	1.144
X′ = 8	65	.20	.30	.50	2.667	2.183	1.623	1.490	1.387	1.297	1.203	1.153
	66	.20	.40	.40	2.000	1.852	1.605	1.437	1.307	1.238	1.163	1.124
	67	.10	.225	.675	2.538	1.616	1.479	1.353	1.292	1.247	1.170	1.129
	68	.10	.30	.60	2.667	1.818	1.639	1.439	1.350	1.279	1.190	1.144
L = 36	69	.10	.40	.50	2.000	2.000	1.802	1.529	1.410	1.316	1.215	1.164
X = 16	70	.20	.20	.60	2.857	1.818	1.664	1.522	1.453	1.374	1.250	1.188
X′ = 12	71	.20	.30	.50	2.667	2.183	1.912	1.658	1.543	1.418	1.279	1.209
	72	.20	.40	.40	2.000	2.000	1.862	1.642	1.437	1.330	1.222	1.167
	73	.10	.225	.675	2.538	1.616	1.481	1.443	1.357	1.305	1.217	1.164
	74	.10	.30	.60	2.667	1.818	1.667	1.590	1.449	1.374	1.250	1.188
L = 40	75	.10	.40	.50	2.000	2.000	2.000	1.754	1.555	1.437	1.292	1.220
X = 16	76	.20	.20	.60	2.857	1.818	1.667	1.623	1.527	1.468	1.316	1.235
X′ = 16	77	.20	.30	.50	2.667	2.183	2.000	1.855	1.675	1.558	1.362	1.269
	78	.20	.40	.40	2.000	2.000	2.024	1.845	1.587	1.435	1.287	1.214
	79	.10	.225	.675	2.538	1.616	1.481	1.479	1.427	1.359	1.267	1.200
	80	.10	.30	.60	2.667	1.818	1.667	1.664	1.565	1.456	1.316	1.235
L = 44	81	.10	.40	.50	2.000	2.000	2.000	1.996	1.727	1.572	1.376	1.279
X = 16	82	.20	.20	.60	2.857	1.818	1.667	1.664	1.605	1.529	1.385	1.284
X′ = 20	83	.20	.30	.50	2.667	2.183	2.000	1.996	1.825	1.686	1.456	1.333
	84	.20	.40	.40	2.000	2.000	2.024	1.919	1.757	1.553	1.355	1.263
	85	.10	.225	.675	2.538	1.616	1.481	1.479	1.477	1.414	1.321	1.239
	86	.10	.30	.60	2.667	1.818	1.667	1.664	1.664	1.548	1.385	1.284
L = 48	87	.10	.40	.50	2.000	2.000	2.000	1.996	1.931	1.712	1.471	1.344
X = 16	88	.20	.20	.60	2.857	1.818	1.667	1.664	1.664	1.592	1.462	1.337
X′ = 24	89	.20	.30	.50	2.667	2.183	2.000	1.996	1.996	1.808	1.558	1.403
	90	.20	.40	.40	2.000	2.000	2.024	1.919	1.862	1.689	1.433	1.314

Table 11.6

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3-S1 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 3-S1 TRUCK

Ninety variations in the Type 3-S1 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

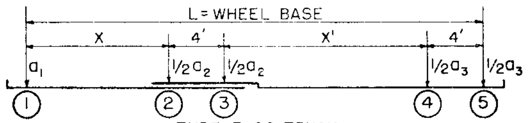
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	1.600	1.600	1.453	1.348	1.263	1.211	1.149	1.116
	2	.10	.50	.40	2.000	1.905	1.520	1.323	1.233	1.182	1.127	1.098
L = 24	3	.10	.60	.30	2.083	1.597	1.366	1.235	1.172	1.135	1.095	1.073
X = 8	4	.20	.40	.40	2.000	2.000	1.748	1.437	1.309	1.238	1.164	1.125
X′ = 12	5	.20	.50	.30	2.500	1.812	1.541	1.330	1.238	1.186	1.129	1.099
	6	.20	.534	.266	2.342	1.709	1.477	1.299	1.215	1.168	1.117	1.091
	7	.10	.40	.50	1.600	1.600	1.634	1.502	1.393	1.309	1.217	1.167
	8	.10	.50	.40	2.000	1.905	1.712	1.488	1.344	1.266	1.182	1.139
L = 28	9	.10	.60	.30	2.083	1.597	1.449	1.344	1.247	1.193	1.134	1.103
X = 8	10	.20	.40	.40	2.000	2.000	1.862	1.642	1.437	1.332	1.222	1.168
X′ = 16	11	.20	.50	.30	2.500	1.812	1.558	1.462	1.325	1.250	1.171	1.130
	12	.20	.534	.266	2.342	1.709	1.477	1.410	1.290	1.224	1.155	1.117
	13	.10	.40	.50	1.600	1.600	1.645	1.681	1.529	1.420	1.289	1.220
	14	.10	.50	.40	2.000	1.905	1.712	1.692	1.473	1.359	1.241	1.182
L = 32	15	.10	.60	.30	2.083	1.600	1.449	1.441	1.332	1.256	1.175	1.134
X = 8	16	.20	.40	.40	2.000	2.000	1.862	1.799	1.587	1.437	1.287	1.214
X′ = 20	17	.20	.50	.30	2.500	1.812	1.558	1.517	1.422	1.319	1.215	1.163
	18	.20	.534	.266	2.342	1.709	1.477	1.439	1.372	1.285	1.193	1.147
	19	.10	.40	.50	1.600	1.600	1.645	1.730	1.675	1.546	1.368	1.277
	20	.10	.50	.40	2.000	1.905	1.712	1.695	1.621	1.462	1.305	1.229
L = 36	21	.10	.60	.30	2.083	1.597	1.449	1.441	1.425	1.325	1.220	1.166
X = 8	22	.20	.40	.40	2.000	2.000	1.862	1.799	1.767	1.555	1.357	1.268
X′ = 24	23	.20	.50	.30	2.500	1.812	1.558	1.517	1.495	1.397	1.263	1.196
	24	.20	.534	.266	2.342	1.709	1.477	1.439	1.420	1.350	1.235	1.176
	25	.10	.40	.50	1.600	1.600	1.645	1.730	1.783	1.669	1.456	1.339
	26	.10	.50	.40	2.000	1.905	1.712	1.695	1.686	1.577	1.374	1.277
L = 40	27	.10	.60	.30	2.083	1.597	1.449	1.441	1.437	1.399	1.266	1.199
X = 8	28	.20	.40	.40	2.000	2.000	1.862	1.799	1.767	1.689	1.433	1.316
X′ = 28	29	.20	.50	.30	2.500	1.812	1.558	1.517	1.495	1.481	1.314	1.233
	30	.20	.534	.266	2.342	1.718	1.477	1.439	1.420	1.408	1.277	1.206
	31	.10	.40	.50	1.600	1.600	1.453	1.348	1.287	1.229	1.163	1.126
	32	.10	.50	.40	2.000	1.976	1.548	1.366	1.263	1.205	1.142	1.109
L = 28	33	.10	.60	.30	2.083	1.645	1.401	1.271	1.198	1.155	1.109	1.083
X = 12	34	.20	.40	.40	2.000	2.000	1.748	1.543	1.376	1.285	1.193	1.147
X′ = 12	35	.20	.50	.30	2.500	1.976	1.634	1.416	1.295	1.229	1.157	1.120
	36	.20	.534	.266	2.342	1.848	1.575	1.379	1.271	1.209	1.145	1.111
	37	.10	.40	.50	1.600	1.600	1.634	1.502	1.403	1.330	1.230	1.176
	38	.10	.50	.40	2.000	1.976	1.812	1.548	1.379	1.290	1.198	1.151
L = 32	39	.10	.60	.30	2.083	1.645	1.522	1.389	1.277	1.215	1.149	1.114
X = 12	40	.20	.40	.40	2.000	2.000	2.024	1.789	1.520	1.387	1.256	1.192
X′ = 16	41	.20	.50	.30	2.500	1.976	1.724	1.572	1.393	1.299	1.202	1.152
	42	.20	.534	.266	2.342	1.848	1.626	1.508	1.353	1.271	1.183	1.139

Table 11.6 (Continued)

	43	.10	.40	.50	1.600	1.600	1.645	1.681	1.529	1.441	1.304	1.232
	44	.10	.50	.40	2.000	1.976	1.812	1.764	1.517	1.389	1.259	1.195
L = 36	45	.10	.60	.30	2.083	1.645	1.522	1.490	1.366	1.280	1.192	1.145
X = 12	46	.20	.40	.40	2.000	2.000	2.053	1.953	1.692	1.504	1.326	1.241
X′ = 20	47	.20	.50	.30	2.500	1.976	1.724	1.626	1.502	1.376	1.248	1.186
	48	.20	.534	.266	2.342	1.848	1.626	1.538	1.447	1.337	1.225	1.170
	49	.10	.40	.50	1.600	1.600	1.645	1.730	1.675	1.550	1.385	1.289
	50	.10	.50	.40	2.000	1.976	1.812	1.764	1.675	1.497	1.325	1.242
L = 40	51	.10	.60	.30	2.083	1.645	1.522	1.490	1.466	1.353	1.236	1.178
X = 12	52	.20	.40	.40	2.000	2.000	2.053	1.953	1.880	1.637	1.401	1.292
X′ = 24	53	.20	.50	.30	2.500	1.976	1.724	1.626	1.577	1.460	1.300	1.222
	54	.20	.534	.266	2.342	1.848	1.626	1.538	1.495	1.408	1.269	1.200
	55	.10	.40	.50	1.600	1.600	1.645	1.730	1.783	1.669	1.473	1.351
	56	.10	.50	.40	2.000	1.976	1.812	1.764	1.739	1.621	1.397	1.292
L = 44	57	.10	.60	.30	2.083	1.645	1.522	1.490	1.475	1.431	1.285	1.212
X = 12	58	.20	.40	.40	2.000	2.000	2.053	1.953	1.880	1.789	1.484	1.348
X′ = 28	59	.20	.50	.30	2.500	1.976	1.724	1.626	1.577	1.548	1.353	1.259
	60	.20	.534	.266	2.342	1.848	1.626	1.538	1.495	1.468	1.316	1.233
	61	.10	.40	.50	1.600	1.600	1.453	1.348	1.292	1.248	1.175	1.136
	62	.10	.50	.40	2.000	1.976	1.548	1.395	1.294	1.227	1.156	1.119
L = 32	63	.10	.60	.30	2.083	1.645	1.401	1.302	1.224	1.175	1.122	1.094
X = 16	64	.20	.40	.40	2.000	2.000	1.748	1.587	1.447	1.337	1.225	1.170
X′ = 12	65	.20	.50	.30	2.500	1.976	1.634	1.504	1.357	1.274	1.186	1.140
	66	.20	.534	.266	2.342	1.848	1.575	1.466	1.330	1.253	1.174	1.131
	67	.10	.40	.50	1.600	1.600	1.634	1.502	1.403	1.344	1.245	1.188
	68	.10	.50	.40	2.000	1.976	1.855	1.572	1.418	1.318	1.215	1.161
L = 36	69	.10	.60	.30	2.083	1.645	1.572	1.420	1.309	1.238	1.164	1.125
X = 16	70	.20	.40	.40	2.000	2.000	2.024	1.799	1.610	1.449	1.292	1.217
X′ = 16	71	.20	.50	.30	2.500	1.976	1.887	1.658	1.466	1.350	1.233	1.175
	72	.20	.534	.266	2.342	1.848	1.767	1.597	1.422	1.319	1.215	1.161
	73	.10	.40	.50	1.600	1.600	1.645	1.681	1.529	1.441	1.319	1.242
	74	.10	.50	.40	2.000	1.976	1.887	1.786	1.563	1.420	1.277	1.208
L = 40	75	.10	.60	.30	2.083	1.645	1.572	1.543	1.403	1.307	1.208	1.156
X = 16	76	.20	.40	.40	2.000	2.000	2.053	2.058	1.812	1.577	1.366	1.267
X′ = 20	77	.20	.50	.30	2.500	1.976	1.887	1.748	1.590	1.435	1.284	1.211
	78	.20	.534	.266	2.342	1.848	1.767	1.650	1.527	1.393	1.259	1.193
	79	.10	.40	.50	1.600	1.600	1.645	1.730	1.675	1.550	1.403	1.302
	80	.10	.50	.40	2.000	1.976	1.887	1.838	1.736	1.536	1.346	1.256
L = 44	81	.10	.60	.30	2.083	1.645	1.572	1.543	1.508	1.381	1.255	1.190
X = 16	82	.20	.40	.40	2.000	2.000	2.053	2.132	2.008	1.727	1.447	1.323
X′ = 24	83	.20	.50	.30	2.500	1.976	1.887	1.748	1.667	1.529	1.339	1.248
	84	.20	.534	.266	2.342	1.848	1.767	1.650	1.575	1.471	1.305	1.225
	85	.10	.40	.50	1.600	1.600	1.645	1.730	1.783	1.669	1.490	1.364
	86	.10	.50	.40	2.000	1.976	1.887	1.838	1.795	1.667	1.420	1.307
L = 48	87	.10	.60	.30	2.083	1.645	1.572	1.543	1.515	1.464	1.304	1.225
X = 16	88	.20	.40	.40	2.000	2.000	2.053	2.132	2.008	1.901	1.536	1.381
X′ = 28	89	.20	.50	.30	2.500	1.976	1.887	1.748	1.667	1.618	1.397	1.289
	90	.20	.534	.266	2.342	1.848	1.767	1.650	1.575	1.531	1.355	1.259

Table 11.7

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3-S2 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



One hundred twelve variations in the Type 3-S2 truck are given in this Table. Each truck number, from 1 to 112, represents a different combination of wheel base length, axle spacing, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

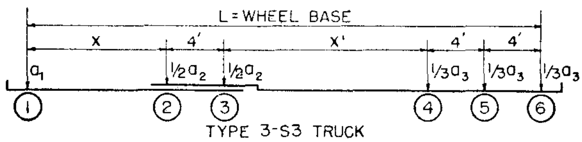
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	2.083	1.645	1.490	1.359	1.274	1.215	1.151	1.116
	2	.10	.40	.50	2.500	1.976	1.689	1.479	1.351	1.274	1.190	1.145
L = 28	3	.10	.45	.45	2.778	2.105	1.789	1.464	1.328	1.253	1.175	1.134
X = 8	4	.10	.50	.40	2.500	1.901	1.667	1.401	1.287	1.222	1.155	1.117
X′ = 12	5	.20	.30	.50	2.500	1.976	1.757	1.577	1.425	1.328	1.225	1.171
	6	.20	.40	.40	3.125	2.203	1.862	1.534	1.370	1.284	1.192	1.145
	7	.20	.50	.30	2.500	1.815	1.560	1.395	1.280	1.217	1.149	1.114
	8	.10	.30	.60	2.083	1.645	1.572	1.486	1.385	1.299	1.205	1.156
	9	.10	.40	.50	2.500	1.976	1.887	1.675	1.504	1.385	1.263	1.199
L = 32	10	.10	.45	.45	2.778	2.105	1.883	1.686	1.471	1.357	1.241	1.182
X = 8	11	.10	.50	.40	2.500	1.901	1.712	1.585	1.406	1.311	1.211	1.160
X′ = 16	12	.20	.30	.50	2.500	1.976	1.887	1.748	1.592	1.447	1.302	1.227
	13	.20	.40	.40	3.125	2.203	1.862	1.764	1.508	1.381	1.255	1.190
	14	.20	.50	.30	2.500	1.815	1.560	1.506	1.372	1.284	1.193	1.145
	15	.10	.30	.60	2.083	1.645	1.572	1.595	1.484	1.391	1.264	1.200
	16	.10	.40	.50	2.500	1.976	1.887	1.890	1.667	1.515	1.342	1.256
L = 36	17	.10	.45	.45	2.778	2.105	1.883	1.859	1.637	1.473	1.312	1.233
X = 8	18	.10	.50	.40	2.500	1.901	1.712	1.695	1.543	1.408	1.272	1.205
X′ = 20	19	.20	.30	.50	2.500	1.976	1.887	1.905	1.742	1.585	1.385	1.287
	20	.20	.40	.40	3.125	2.203	1.862	1.799	1.672	1.493	1.321	1.238
	21	.20	.50	.30	2.500	1.976	1.560	1.517	1.471	1.357	1.239	1.179
	22	.10	.30	.60	2.083	1.645	1.572	1.597	1.587	1.481	1.328	1.245
	23	.10	.40	.50	2.500	1.976	1.887	1.916	1.842	1.661	1.431	1.318
L = 40	24	.10	.45	.45	2.778	2.105	1.883	1.859	1.838	1.608	1.391	1.289
X = 8	25	.10	.50	.40	2.500	1.901	1.712	1.695	1.686	1.517	1.339	1.252
X′ = 24	26	.20	.30	.50	2.500	1.976	1.887	1.916	1.890	1.739	1.477	1.351
	27	.20	.40	.40	3.125	2.203	1.862	1.799	1.767	1.621	1.395	1.289
	28	.20	.50	.30	2.500	1.815	1.560	1.517	1.495	1.439	1.289	1.215
	29	.10	.30	.60	2.083	1.645	1.572	1.597	1.610	1.570	1.397	1.294
	30	.10	.40	.50	2.500	1.976	1.887	1.916	1.934	1.802	1.527	1.385
L = 44	31	.10	.45	.45	2.778	2.105	1.883	1.859	1.848	1.761	1.477	1.348
X = 8	32	.10	.50	.40	2.500	1.901	1.712	1.695	1.686	1.642	1.410	1.302
X′ = 28	33	.20	.30	.50	2.500	1.976	1.887	1.916	1.934	1.859	1.577	1.420
	34	.20	.40	.40	3.125	2.203	1.862	1.799	1.767	1.748	1.473	1.342
	35	.20	.50	.30	2.500	1.976	1.560	1.517	1.495	1.481	1.340	1.252
	36	.10	.30	.60	2.083	1.567	1.318	1.250	1.199	1.157	1.111	1.086
	37	.10	.40	.50	2.500	1.815	1.422	1.318	1.245	1.192	1.136	1.105
L = 28	38	.10	.45	.45	2.778	1.938	1.479	1.326	1.235	1.183	1.127	1.098
X = 12	39	.10	.50	.40	2.500	1.815	1.422	1.289	1.209	1.164	1.115	1.088
X′ = 8	40	.20	.30	.50	2.500	1.859	1.524	1.435	1.337	1.263	1.183	1.140
	41	.20	.40	.40	3.125	2.203	1.664	1.441	1.311	1.239	1.164	1.125
	42	.20	.50	.30	2.500	1.859	1.524	1.350	1.250	1.195	1.135	1.104

Table 11.7 (Continued)

	43	.10	.30	.60	2.083	1.645	1.490	1.359	1.295	1.235	1.164	1.126
	44	.10	.40	.50	2.500	1.976	1.689	1.479	1.379	1.295	1.203	1.156
L = 32	45	.10	.45	.45	2.778	2.193	1.802	1.520	1.362	1.279	1.190	1.144
X = 12	46	.10	.50	.40	2.500	1.976	1.689	1.451	1.319	1.247	1.170	1.129
X′ = 12	47	.20	.30	.50	2.500	1.976	1.757	1.577	1.488	1.374	1.255	1.193
	48	.20	.40	.40	3.125	2.469	2.028	1.658	1.445	1.335	1.224	1.170
	49	.20	.50	.30	2.500	1.976	1.724	1.490	1.342	1.263	1.179	1.135
	50	.10	.30	.60	2.083	1.645	1.572	1.486	1.385	1.319	1.220	1.167
	51	.10	.40	.50	2.500	1.976	1.887	1.675	1.513	1.410	1.277	1.211
L = 36	52	.10	.45	.45	2.778	2.193	2.004	1.767	1.515	1.387	1.258	1.195
X = 12	53	.10	.50	.40	2.500	1.976	1.812	1.653	1.445	1.339	1.229	1.172
X′ = 16	54	.20	.30	.50	2.500	1.976	1.887	1.748	1.610	1.502	1.333	1.250
	55	.20	.40	.40	3.125	2.469	2.101	1.938	1.603	1.443	1.290	1.217
	56	.20	.50	.30	2.500	1.976	1.724	1.626	1.445	1.335	1.225	1.170
	57	.10	.30	.60	2.083	1.645	1.572	1.595	1.484	1.401	1.280	1.211
	58	.10	.40	.50	2.500	1.976	1.887	1.890	1.667	1.536	1.359	1.267
L = 40	59	.10	.45	.45	2.778	2.193	2.004	1.942	1.695	1.511	1.333	1.247
X = 12	60	.10	.50	.40	2.500	1.976	1.812	1.764	1.592	1.441	1.292	1.218
X′ = 20	61	.20	.30	.50	2.500	1.976	1.887	1.905	1.742	1.631	1.420	1.312
	62	.20	.40	.40	3.125	2.469	2.101	1.953	1.792	1.567	1.362	1.266
	63	.20	.50	.30	2.500	1.976	1.724	1.626	1.558	1.416	1.274	1.205
	64	.10	.30	.60	2.083	1.645	1.572	1.597	1.587	1.481	1.344	1.258
	65	.10	.40	.50	2.500	1.976	1.887	1.916	1.842	1.661	1.447	1.332
L = 44	66	.10	.45	.45	2.778	2.193	2.004	1.942	1.912	1.653	1.414	1.304
X = 12	67	.10	.50	.40	2.500	1.976	1.812	1.764	1.739	1.558	1.361	1.266
X′ = 24	68	.20	.30	.50	2.500	1.976	1.887	1.916	1.890	1.739	1.515	1.377
	69	.20	.40	.40	3.125	2.469	2.101	1.953	1.880	1.709	1.441	1.319
	70	.20	.50	.30	2.500	1.976	1.724	1.626	1.577	1.506	1.326	1.241
	71	.10	.30	.60	2.083	1.645	1.572	1.597	1.610	1.570	1.414	1.307
	72	.10	.40	.50	2.500	1.976	1.887	1.916	1.934	1.802	1.548	1.399
L = 48	73	.10	.45	.45	2.778	2.193	2.004	1.942	1.912	1.818	1.504	1.364
X = 12	74	.10	.50	.40	2.500	1.976	1.812	1.764	1.739	1.689	1.435	1.319
X′ = 28	75	.20	.30	.50	2.500	1.976	1.887	1.916	1.934	1.859	1.623	1.449
	76	.20	.40	.40	3.125	2.469	2.101	1.953	1.880	1.838	1.527	1.376
	77	.20	.50	.30	2.500	1.976	1.724	1.626	1.557	1.548	1.383	1.280
	78	.10	.30	.60	2.083	1.645	1.490	1.359	1.295	1.255	1.178	1.136
	79	.10	.40	.50	2.500	1.976	1.689	1.479	1.381	1.318	1.218	1.167
L = 36	80	.10	.45	.45	2.778	2.193	1.802	1.543	1.401	1.305	1.206	1.156
X = 16	81	.10	.50	.40	2.500	1.976	1.689	1.479	1.353	1.271	1.185	1.140
X′ = 12	82	.20	.30	.50	2.500	1.976	1.757	1.577	1.493	1.422	1.285	1.215
	83	.20	.40	.40	3.125	2.469	2.028	1.736	1.524	1.391	1.258	1.193
	84	.20	.50	.30	2.500	1.976	1.757	1.577	1.410	1.311	1.209	1.157
	85	.10	.30	.60	2.083	1.645	1.572	1.486	1.385	1.326	1.235	1.178
	86	.10	.40	.50	2.500	1.976	1.887	1.675	1.513	1.422	1.294	1.221
L = 40	87	.10	.45	.45	2.778	2.193	2.096	1.779	1.560	1.418	1.277	1.208
X = 16	88	.10	.50	.40	2.500	1.976	1.887	1.675	1.448	1.366	1.245	1.185
X′ = 16	89	.20	.30	.50	2.500	1.976	1.887	1.748	1.610	1.531	1.368	1.274
	90	.20	.40	.40	3.125	2.469	2.358	2.004	1.706	1.511	1.328	1.242
	91	.20	.50	.30	2.500	1.976	1.887	1.748	1.527	1.391	1.258	1.193
	92	.10	.30	.60	2.083	1.645	1.572	1.595	1.484	1.401	1.295	1.222
	93	.10	.40	.50	2.500	1.976	1.887	1.890	1.667	1.536	1.376	1.280
L = 44	94	.10	.45	.45	2.778	2.193	2.096	2.033	1.754	1.548	1.355	1.261
X = 16	95	.10	.50	.40	2.500	1.976	1.887	1.838	1.645	1.475	1.311	1.232
X′ = 20	96	.20	.30	.50	2.500	1.976	1.887	1.905	1.742	1.631	1.458	1.337
	97	.20	.40	.40	3.125	2.469	2.358	2.132	1.927	1.650	1.406	1.295
	98	.20	.50	.30	2.500	1.976	1.887	1.748	1.653	1.479	1.311	1.230
	99	.10	.30	.60	2.083	1.645	1.572	1.597	1.587	1.481	1.362	1.269
	100	.10	.40	.50	2.500	1.976	1.887	1.916	1.842	1.661	1.466	1.344
L = 48	101	.10	.45	.45	2.778	2.193	2.096	2.033	1.980	1.701	1.439	1.333
X = 16	102	.10	.50	.40	2.500	1.976	1.887	1.838	1.795	1.600	1.383	1.280
X′ = 24	103	.20	.30	.50	2.500	1.976	1.887	1.916	1.890	1.739	1.558	1.404
	104	.20	.40	.40	3.125	2.469	2.358	2.132	2.008	1.812	1.490	1.351
	105	.20	.50	.30	2.500	1.976	1.887	1.748	1.667	1.580	1.366	1.269
	106	.10	.30	.60	2.083	1.645	1.572	1.597	1.610	1.570	1.420	1.319
	107	.10	.40	.50	2.500	1.976	1.887	1.916	1.934	1.802	1.563	1.412
L = 52	108	.10	.45	.45	2.778	2.193	2.096	2.033	1.980	1.876	1.534	1.383
X = 16	109	.10	.50	.40	2.500	1.976	1.887	1.838	1.795	1.739	1.460	1.335
X′ = 28	110	.20	.30	.50	2.500	1.976	1.887	1.916	1.934	1.859	1.656	1.479
	111	.20	.40	.40	3.125	2.469	2.358	2.132	2.008	1.938	1.582	1.412
	112	.20	.50	.30	2.500	1.976	1.887	1.748	1.667	1.618	1.427	1.309

Table 11.8

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3-S3 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



One hundred five variations in the Type 3-S3 truck are given in this Table. Each truck number, from 1 to 105, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

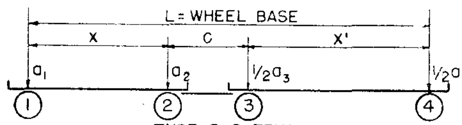
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	2.857	1.818	1.667	1.511	1.377	1.289	1.198	1.149
	2	.10	.36	.54	3.175	2.020	1.848	1.585	1.420	1.321	1.218	1.166
L = 32	3	.10	.40	.50	3.125	2.183	2.000	1.634	1.451	1.342	1.233	1.175
X = 8	4	.10	.50	.40	2.500	1.905	1.709	1.488	1.342	1.264	1.182	1.139
X' = 12	5	.20	.30	.50	3.436	2.183	2.000	1.751	1.536	1.404	1.271	1.203
	6	.20	.40	.40	3.125	2.203	1.862	1.642	1.437	1.330	1.222	1.167
	7	.20	.50	.30	2.500	1.812	1.558	1.451	1.325	1.250	1.171	1.130
	8	.10	.30	.60	2.857	1.818	1.667	1.639	1.506	1.385	1.258	1.193
	9	.10	.36	.54	3.175	2.020	1.852	1.799	1.585	1.437	1.290	1.217
L = 36	10	.10	.40	.50	3.125	2.183	2.000	1.887	1.634	1.471	1.312	1.233
X = 8	11	.10	.50	.40	2.500	1.905	1.712	1.658	1.471	1.357	1.241	1.182
X' = 16	12	.20	.30	.50	3.436	2.183	2.000	1.957	1.739	1.543	1.353	1.263
	13	.20	.40	.40	3.125	2.203	1.862	1.792	1.587	1.435	1.287	1.214
	14	.20	.50	.30	2.500	1.812	1.558	1.513	1.422	1.319	1.215	1.163
	15	.10	.30	.60	2.857	1.818	1.667	1.664	1.623	1.493	1.325	1.241
	16	.10	.36	.54	3.175	2.020	1.852	1.848	1.742	1.567	1.368	1.272
L = 40	17	.10	.40	.50	3.125	2.183	2.000	1.996	1.825	1.616	1.399	1.294
X = 8	18	.10	.50	.40	2.500	1.905	1.712	1.695	1.618	1.460	1.304	1.227
X' = 20	19	.20	.30	.50	3.436	2.183	2.000	1.996	1.908	1.704	1.445	1.326
	20	.20	.40	.40	3.125	2.203	1.862	1.799	1.739	1.553	1.355	1.263
	21	.20	.50	.30	2.500	1.812	1.558	1.517	1.302	1.397	1.263	1.196
	22	.10	.30	.60	2.857	1.818	1.667	1.664	1.664	1.597	1.395	1.290
	23	.10	.40	.50	3.175	2.020	1.852	1.848	1.848	1.709	1.453	1.332
L = 44	24	.10	.40	.50	3.125	2.183	2.000	1.996	1.996	1.789	1.495	1.361
X = 8	25	.10	.50	.40	2.500	1.905	1.712	1.695	1.686	1.577	1.374	1.276
X' = 24	26	.20	.30	.50	3.436	2.183	2.000	1.996	1.996	1.873	1.548	1.395
	27	.20	.40	.40	3.125	2.203	1.862	1.799	1.767	1.689	1.433	1.314
	28	.20	.50	.30	2.500	1.812	1.558	1.517	1.495	1.309	1.314	1.233
	29	.10	.30	.60	2.857	1.818	1.667	1.664	1.664	1.664	1.473	1.344
	30	.10	.36	.54	3.175	2.020	1.852	1.848	1.848	1.845	1.550	1.397
L = 48	31	.10	.40	.50	3.125	2.183	2.000	1.996	1.996	1.957	1.603	1.433
X = 8	32	.10	.50	.40	2.500	1.905	1.712	1.695	1.686	1.684	1.449	1.328
X' = 28	33	.20	.30	.50	3.436	2.183	2.000	1.996	1.996	1.996	1.661	1.471
	34	.20	.40	.40	3.125	2.203	1.862	1.799	1.767	1.748	1.515	1.370
	35	.20	.50	.30	2.500	1.812	1.558	1.290	1.495	1.481	1.368	1.271
	36	.10	.30	.60	2.857	1.818	1.667	1.511	1.399	1.312	1.212	1.160
	37	.10	.36	.54	3.175	2.020	1.848	1.585	1.447	1.346	1.233	1.176
L = 36	38	.10	.40	.50	3.125	2.183	2.000	1.634	1.481	1.368	1.247	1.186
X = 12	39	.10	.50	.40	2.500	1.976	1.534	1.546	1.379	1.290	1.198	1.149
X' = 12	40	.20	.30	.50	3.436	2.183	2.000	1.751	1.608	1.458	1.304	1.227
	41	.20	.40	.40	3.125	2.469	2.101	1.786	1.520	1.387	1.256	1.192
	42	.20	.50	.30	2.500	1.976	1.724	1.563	1.393	1.299	1.202	1.152

Table 11.8 (Continued)

	43	.10	.30	.60	2.857	1.818	1.667	1.639	1.506	1.410	1.274	1.205
	44	.10	.36	.54	3.175	2.020	1.852	1.799	1.585	1.464	1.307	1.229
L = 40	45	.10	.40	.50	3.125	2.183	2.000	1.887	1.637	1.499	1.328	1.245
X = 12	46	.10	.50	.40	2.500	1.976	1.812	1.730	1.515	1.387	1.258	1.195
X′ = 16	47	.20	.30	.50	3.436	2.183	2.000	1.957	1.748	1.603	1.389	1.287
	48	.20	.40	.40	3.125	2.469	2.101	1.953	1.692	1.502	1.325	1.241
	49	.20	.50	.30	2.500	1.976	1.724	1.626	1.466	1.376	1.248	1.186
	50	.10	.30	.60	2.857	1.818	1.667	1.664	1.623	1.502	1.340	1.253
	51	.10	.36	.54	3.175	2.020	1.852	1.848	1.742	1.582	1.433	1.318
L = 44	52	.10	.40	.50	3.125	2.183	2.000	1.996	1.825	1.639	1.418	1.307
X = 12	53	.10	.50	.40	2.500	1.976	1.812	1.764	1.672	1.497	1.325	1.241
X′ = 20	54	.20	.30	.50	3.436	2.183	2.000	1.996	1.908	1.745	1.486	1.355
	55	.20	.40	.40	3.125	2.469	2.101	1.953	1.862	1.634	1.401	1.292
	56	.20	.50	.30	2.500	1.976	1.724	1.626	1.567	1.460	1.300	1.222
	57	.10	.30	.60	2.857	1.818	1.667	1.664	1.664	1.597	1.414	1.304
	58	.10	.36	.54	3.175	2.020	1.852	1.848	1.848	1.712	1.475	1.346
L = 48	59	.10	.40	.50	3.125	2.183	2.000	1.996	1.996	1.789	1.517	1.376
X = 12	60	.10	.50	.40	2.500	1.976	1.812	1.764	1.739	1.621	1.397	1.290
X′ = 24	61	.20	.30	.50	3.436	2.183	2.000	1.996	1.996	1.873	1.592	1.427
	62	.20	.40	.40	3.125	2.469	2.101	1.953	1.880	1.789	1.481	1.346
	63	.20	.50	.30	2.500	1.976	1.724	1.626	1.577	1.529	1.353	1.259
	64	.10	.30	.60	2.857	1.818	1.667	1.664	1.664	1.664	1.493	1.357
	65	.10	.36	.54	3.175	2.020	1.852	1.848	1.848	1.845	1.572	1.410
L = 52	66	.10	.40	.50	3.125	2.183	2.000	1.996	1.996	1.961	1.629	1.447
X = 12	67	.10	.50	.40	2.500	1.976	1.812	1.764	1.739	1.727	1.475	1.344
X′ = 28	68	.20	.30	.50	3.436	2.183	2.000	1.996	1.996	1.996	1.712	1.504
	69	.20	.40	.40	3.125	2.469	2.101	1.953	1.880	1.838	1.572	1.406
	70	.20	.50	.30	2.500	1.976	1.724	1.626	1.577	1.548	1.412	1.300
	71	.10	.30	.60	2.857	1.818	1.667	1.511	1.399	1.335	1.227	1.171
	72	.10	.36	.54	3.175	2.020	1.848	1.585	1.447	1.370	1.248	1.188
L = 40	73	.10	.40	.50	3.125	2.183	2.000	1.634	1.481	1.393	1.263	1.198
X = 16	74	.10	.50	.40	2.500	1.976	1.779	1.570	1.416	1.318	1.214	1.161
X′ = 12	75	.20	.30	.50	3.436	2.183	2.000	1.751	1.608	1.515	1.337	1.252
	76	.20	.40	.40	3.125	2.469	2.169	1.859	1.610	1.447	1.292	1.217
	77	.20	.50	.30	2.500	1.976	1.812	1.658	1.506	1.377	1.250	1.186
	78	.10	.30	.60	2.857	1.818	1.667	1.639	1.506	1.414	1.290	1.217
	79	.10	.36	.54	3.175	2.020	1.852	1.799	1.585	1.471	1.323	1.241
L = 44	80	.10	.40	.50	3.125	2.183	2.000	1.887	1.639	1.511	1.346	1.256
X = 16	81	.10	.50	.40	2.500	1.976	1.887	1.761	1.563	1.418	1.277	1.206
X′ = 16	82	.20	.30	.50	3.436	2.183	2.000	1.957	1.748	1.631	1.427	1.314
	83	.20	.40	.40	3.125	2.469	2.358	2.132	1.808	1.575	1.366	1.267
	84	.20	.50	.30	2.500	1.976	1.887	1.748	1.590	1.435	1.284	1.211
	85	.10	.30	.60	2.857	1.818	1.667	1.664	1.623	1.502	1.359	1.266
	86	.10	.36	.54	3.175	2.020	1.852	1.848	1.742	1.582	1.404	1.299
L = 48	87	.10	.40	.50	3.125	2.183	2.000	1.996	1.825	1.639	1.437	1.321
X = 16	88	.10	.50	.40	2.500	1.976	1.887	1.838	1.727	1.558	1.346	1.255
X′ = 20	89	.20	.30	.50	3.436	2.183	2.000	1.996	1.908	1.745	1.529	1.381
	90	.20	.40	.40	3.125	2.469	2.358	2.132	2.000	1.724	1.445	1.323
	91	.20	.50	.30	2.500	1.976	1.887	1.748	1.664	1.529	1.339	1.248
	92	.10	.30	.60	2.857	1.818	1.667	1.664	1.664	1.597	1.433	1.316
	93	.10	.36	.54	3.175	2.020	1.852	1.848	1.848	1.709	1.495	1.359
L = 52	94	.10	.40	.50	3.125	2.183	2.000	1.996	1.996	1.789	1.538	1.389
X = 16	95	.10	.50	.40	2.500	1.976	1.887	1.838	1.795	1.664	1.420	1.307
X′ = 24	96	.20	.30	.50	3.436	2.183	2.000	1.996	1.996	1.873	1.639	1.456
	97	.20	.40	.40	3.125	2.469	2.358	2.132	2.008	1.898	1.534	1.379
	98	.20	.50	.30	2.500	1.976	1.887	1.748	1.667	1.603	1.397	1.289
	99	.10	.30	.60	2.857	1.818	1.667	1.664	1.664	1.664	1.495	1.372
	100	.10	.36	.54	3.175	2.020	1.852	1.848	1.848	1.845	1.582	1.425
L = 56	101	.10	.40	.50	3.125	2.183	2.000	1.996	1.996	1.961	1.642	1.464
X = 16	102	.10	.50	.40	2.500	1.976	1.887	1.838	1.795	1.770	1.502	1.361
X′ = 28	103	.20	.30	.50	3.436	2.183	2.000	1.996	1.996	1.996	1.742	1.536
	104	.20	.40	.40	3.125	2.496	2.358	2.132	2.008	1.938	1.631	1.443
	105	.20	.50	.30	2.500	1.976	1.887	1.748	1.667	1.618	1.460	1.330

Table 11.9

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2-2 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 2-2 TRUCK

One hundred forty-four variations in the Type 2-2 truck are given in this Table. Each truck number, from 1 to 144, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	2.283	1.724	1.351	1.271	1.198	1.155	1.109	1.083
L = 28	2	.10	.30	.60	2.667	1.905	1.416	1.305	1.221	1.174	1.121	1.093
X = 12	3	.10	.40	.50	2.000	1.718	1.481	1.321	1.236	1.186	1.131	1.101
X' = 8	4	.20	.20	.60	2.667	1.988	1.538	1.427	1.302	1.235	1.161	1.124
C = 8	5	.20	.30	.50	2.667	2.174	1.621	1.460	1.326	1.253	1.174	1.133
	6	.20	.40	.40	2.000	1.776	1.538	1.344	1.247	1.193	1.134	1.103
	7	.10	.20	.70	2.283	1.992	1.575	1.406	1.295	1.229	1.157	1.120
L = 32	8	.10	.30	.60	2.667	2.083	1.639	1.439	1.311	1.239	1.164	1.125
X = 12	9	.10	.40	.50	2.000	1.718	1.529	1.416	1.300	1.235	1.164	1.126
X' = 12	10	.20	.20	.60	2.667	2.268	1.792	1.592	1.406	1.309	1.208	1.157
C = 8	11	.20	.30	.50	2.667	2.174	1.799	1.592	1.408	1.312	1.212	1.160
	12	.20	.40	.40	2.000	1.776	1.538	1.427	1.302	1.235	1.161	1.124
	13	.10	.20	.70	2.283	1.992	1.832	1.570	1.406	1.309	1.208	1.157
L = 36	14	.10	.30	.60	2.667	2.083	1.779	1.590	1.410	1.311	1.209	1.157
X = 12	15	.10	.40	.50	2.000	1.718	1.529	1.464	1.370	1.287	1.198	1.151
X' = 16	16	.20	.20	.60	2.667	2.268	2.062	1.773	1.524	1.391	1.258	1.193
C = 8	17	.20	.30	.50	2.667	2.174	1.799	1.631	1.495	1.374	1.250	1.188
	18	.20	.40	.40	2.000	1.776	1.538	1.441	1.362	1.279	1.190	1.144
	19	.10	.20	.70	2.283	1.992	1.832	1.764	1.534	1.399	1.264	1.198
L = 40	20	.10	.30	.60	2.667	2.083	1.779	1.658	1.522	1.389	1.258	1.192
X = 12	21	.10	.40	.50	2.000	1.718	1.529	1.464	1.433	1.342	1.235	1.178
X' = 20	22	.20	.20	.60	2.667	2.268	2.062	1.880	1.661	1.481	1.312	1.230
C = 8	23	.20	.30	.50	2.667	2.174	1.799	1.631	1.553	1.439	1.290	1.217
	24	.20	.40	.40	2.000	1.776	1.538	1.441	1.391	1.325	1.220	1.166
	25	.10	.20	.70	2.283	1.786	1.486	1.351	1.277	1.215	1.149	1.114
L = 32	26	.10	.30	.60	2.667	2.083	1.639	1.439	1.332	1.256	1.175	1.134
X = 12	27	.10	.40	.50	2.000	2.000	1.730	1.520	1.370	1.287	1.198	1.151
X' = 8	28	.20	.20	.60	2.667	2.083	1.712	1.546	1.425	1.325	1.220	1.166
C = 12	29	.20	.30	.50	2.667	2.500	1.912	1.656	1.484	1.368	1.247	1.186
	30	.20	.40	.40	2.000	2.000	1.712	1.517	1.362	1.279	1.190	1.144
	31	.10	.20	.70	2.283	2.283	1.773	1.511	1.393	1.299	1.202	1.152
L = 36	32	.10	.30	.60	2.667	2.667	1.957	1.603	1.441	1.333	1.224	1.168
X = 12	33	.10	.40	.50	2.000	2.000	1.730	1.595	1.445	1.342	1.235	1.178
X' = 12	34	.20	.20	.60	2.667	2.667	2.045	1.727	1.555	1.412	1.272	1.203
C = 12	35	.20	.30	.50	2.667	2.667	2.105	1.802	1.587	1.439	1.290	1.217
	36	.20	.40	.40	2.000	2.000	1.712	1.546	1.425	1.325	1.220	1.166
	37	.10	.20	.70	2.283	2.283	2.045	1.706	1.524	1.391	1.258	1.193
L = 40	38	.10	.30	.60	2.667	2.667	2.114	1.799	1.567	1.418	1.276	1.205
X = 12	39	.10	.40	.50	2.000	.2000	1.730	1.595	1.527	1.403	1.272	1.205
X' = 16	40	.20	.20	.60	2.667	2.667	2.331	1.946	1.706	1.511	1.328	1.242
C = 12	41	.20	.30	.50	2.667	2.667	2.105	1.802	1.669	1.508	1.332	1.247
	42	.20	.40	.40	2.000	2.000	1.712	1.546	1.466	1.374	1.250	1.188

Table 11.9 (Continued)

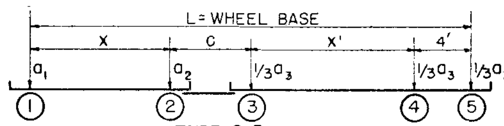
	43	.10	.20	.70	2.283	2.283	2.045	1.946	1.669	1.495	1.319	1.236
L = 44	44	.10	.30	.60	2.667	2.667	2.114	1.859	1.712	1.515	1.330	1.244
X = 12	45	.10	.40	.50	2.000	2.000	1.730	1.595	1.527	1.466	1.312	1.235
X′ = 20	46	.20	.20	.60	2.667	2.667	2.331	2.155	1.887	1.621	1.389	1.284
C = 12	47	.20	.30	.50	2.667	2.667	2.105	1.802	1.669	1.585	1.377	1.277
	48	.20	.40	.40	2.000	2.000	1.712	1.546	1.466	1.420	1.282	1.211
	49	.10	.20	.70	2.283	1.724	1.351	1.271	1.222	1.175	1.121	1.093
L = 32	50	.10	.30	.60	2.667	1.905	1.416	1.311	1.247	1.193	1.134	1.103
X = 16	51	.10	.40	.50	2.000	1.718	1.481	1.350	1.266	1.209	1.145	1.111
X′ = 8	52	.20	.20	.60	2.667	1.988	1.538	1.441	1.362	1.279	1.190	1.144
C = 8	53	.20	.30	.50	2.667	2.174	1.621	1.490	1.387	1.297	1.203	1.153
	54	.20	.40	.40	2.000	1.776	1.605	1.437	1.309	1.238	1.164	1.125
	55	.10	.20	.70	2.283	1.992	1.575	1.406	1.326	1.252	1.171	1.130
L = 36	56	.10	.30	.60	2.667	2.083	1.639	1.439	1.340	1.261	1.178	1.135
X = 16	57	.10	.40	.50	2.000	1.718	1.570	1.466	1.335	1.259	1.179	1.138
X′ = 12	58	.20	.20	.60	2.667	2.268	1.792	1.592	1.477	1.359	1.239	1.179
C = 8	59	.20	.30	.50	2.667	2.174	1.866	1.631	1.488	1.366	1.245	1.185
	60	.20	.40	.40	2.000	1.776	1.650	1.534	1.370	1.284	1.192	1.145
	61	.10	.20	.70	2.283	1.992	1.832	1.570	1.439	1.335	1.224	1.170
L = 40	62	.10	.30	.60	2.667	2.083	1.825	1.590	1.447	1.337	1.225	1.170
X = 16	63	.10	.40	.50	2.000	1.718	1.570	1.517	1.408	1.314	1.215	1.163
X′ = 16	64	.20	.20	.60	2.667	2.268	2.062	1.773	1.610	1.449	1.292	1.217
C = 8	65	.20	.30	.50	2.667	2.174	1.934	1.761	1.587	1.437	1.287	1.214
	66	.20	.40	.40	2.000	1.776	1.650	1.538	1.437	1.332	1.222	1.168
	67	.10	.20	.70	2.283	1.992	1.832	1.764	1.567	1.429	1.282	1.209
L = 44	68	.10	.30	.60	2.667	2.083	1.825	1.727	1.565	1.418	1.276	1.205
X = 16	69	.10	.40	.50	2.000	1.718	1.570	1.517	1.471	1.374	1.253	1.190
X′ = 20	70	.20	.20	.60	2.667	2.268	2.062	1.988	1.764	1.548	1.350	1.256
C = 8	71	.20	.30	.50	2.667	2.174	1.934	1.761	1.642	1.508	1.330	1.244
	72	.20	.40	.40	2.000	1.776	1.650	1.538	1.462	1.381	1.255	1.190
	73	.10	.20	.70	2.283	1.786	1.486	1.351	1.287	1.236	1.163	1.124
L = 36	74	.10	.30	.60	2.667	2.083	1.639	1.439	1.350	1.279	1.190	1.144
X = 16	75	.10	.40	.50	2.000	2.000	1.767	1.529	1.408	1.314	1.215	1.163
X′ = 8	76	.20	.20	.60	2.667	2.083	1.712	1.546	1.466	1.374	1.250	1.188
C = 12	77	.20	.30	.50	2.667	2.500	1.912	1.656	1.543	1.418	1.279	1.209
	78	.20	.40	.40	2.000	2.000	1.825	1.642	1.437	1.332	1.222	1.168
	79	.10	.20	.70	2.283	2.283	1.773	1.511	1.399	1.323	1.217	1.163
L = 40	80	.10	.30	.60	2.667	2.667	1.957	1.603	1.456	1.359	1.239	1.179
X = 16	81	.10	.40	.50	2.000	2.000	1.767	1.658	1.490	1.374	1.253	1.190
X′ = 12	82	.20	.20	.60	2.667	2.667	2.045	1.727	1.590	1.468	1.305	1.227
C = 12	83	.20	.30	.50	2.667	2.667	2.232	1.838	1.661	1.504	1.328	1.244
	84	.20	.40	.40	2.000	2.000	1.825	1.661	1.508	1.381	1.255	1.190
	85	.10	.20	.70	2.283	2.283	2.045	1.706	1.524	1.420	1.276	1.205
L = 44	86	.10	.30	.60	2.667	2.667	2.141	1.799	1.577	1.449	1.292	1.217
X = 16	87	.10	.40	.50	2.000	2.000	1.767	1.658	1.572	1.437	1.292	1.220
X′ = 16	88	.20	.20	.60	2.667	2.667	2.331	1.946	1.730	1.577	1.366	1.267
C = 12	89	.20	.30	.50	2.667	2.667	2.232	1.965	1.776	1.587	1.376	1.276
	90	.20	.40	.40	2.000	2.000	1.825	1.661	1.546	1.437	1.287	1.214
	91	.10	.20	.70	2.283	2.283	2.045	1.946	1.669	1.529	1.339	1.248
L = 48	92	.10	.30	.60	2.667	2.667	2.141	1.949	1.718	1.548	1.350	1.256
X = 16	93	.10	.40	.50	2.000	2.000	1.767	1.658	1.572	1.504	1.333	1.248
X′ = 20	94	.20	.20	.60	2.667	2.667	2.331	2.217	1.894	1.701	1.431	1.312
C = 12	95	.20	.30	.50	2.667	2.667	2.232	1.965	1.776	1.672	1.422	1.309
	96	.20	.40	.40	2.000	2.000	1.825	1.661	1.546	1.481	1.321	1.238
	97	.10	.20	.70	2.283	1.786	1.351	1.271	1.230	1.195	1.135	1.104
L = 36	98	.10	.30	.60	2.667	1.905	1.416	1.311	1.258	1.214	1.148	1.114
X = 20	99	.10	.40	.50	2.000	1.718	1.481	1.350	1.287	1.232	1.160	1.122
X′ = 8	100	.20	.20	.60	2.667	1.988	1.538	1.441	1.391	1.325	1.220	1.166
C = 8	101	.20	.30	.50	2.667	2.174	1.621	1.490	1.429	1.344	1.233	1.175
	102	.20	.40	.40	2.000	1.776	1.605	1.497	1.376	1.285	1.193	1.147
	103	.10	.20	.70	2.283	1.992	1.575	1.406	1.328	1.274	1.186	1.142
L = 40	104	.10	.30	.60	2.667	2.083	1.639	1.439	1.350	1.285	1.193	1.147
X = 20	105	.10	.40	.50	2.000	1.718	1.570	1.466	1.366	1.285	1.196	1.148
X′ = 12	106	.20	.20	.60	2.667	2.268	1.792	1.592	1.499	1.412	1.272	1.203
C = 8	107	.20	.30	.50	2.667	2.174	1.866	1.631	1.524	1.420	1.277	1.208
	108	.20	.40	.40	2.000	1.776	1.650	1.587	1.445	1.335	1.224	1.170
	109	.10	.20	.70	2.283	1.992	1.832	1.570	1.439	1.362	1.241	1.181
L = 44	110	.10	.30	.60	2.667	2.083	1.825	1.590	1.449	1.362	1.242	1.181
X = 20	111	.10	.40	.50	2.000	1.718	1.570	1.563	1.451	1.344	1.233	1.175
X′ = 16	112	.20	.20	.60	2.667	2.268	2.062	1.773	1.623	1.511	1.328	1.242
C = 8	113	.20	.30	.50	2.667	2.174	1.934	1.795	1.634	1.504	1.326	1.241
	114	.20	.40	.40	2.000	1.776	1.650	1.650	1.520	1.387	1.256	1.192
	115	.10	.20	.70	2.283	1.992	1.832	1.764	1.567	1.460	1.300	1.222
L = 48	116	.10	.30	.60	2.667	2.083	1.825	1.770	1.565	1.449	1.294	1.218
X = 20	117	.10	.40	.50	2.000	1.718	1.570	1.563	1.511	1.404	1.271	1.203
X′ = 20	118	.20	.20	.60	2.667	2.268	2.062	1.988	1.764	1.621	1.389	1.284
C = 8	119	.20	.30	.50	2.667	2.174	1.934	1.901	1.739	1.585	1.372	1.272
	120	.20	.40	.40	2.000	1.776	1.650	1.650	1.538	1.443	1.290	1.217

Table 11.9 (Continued)

	121	.10	.20	.70	2.283	1.786	1.486	1.351	1.287	1.250	1.176	1.135
L = 40	122	.10	.30	.60	2.667	2.083	1.639	1.439	1.350	1.297	1.205	1.155
X = 20	123	.10	.40	.50	2.000	2.000	1.767	1.529	1.410	1.344	1.233	1.175
X′ = 8	124	.20	.20	.60	2.667	2.083	1.712	1.546	1.466	1.420	1.282	1.211
C = 12	125	.20	.30	.50	2.667	2.500	1.912	1.656	1.543	1.471	1.312	1.233
	126	.20	.40	.40	2.000	2.000	1.825	1.689	1.520	1.387	1.256	1.192
	127	.10	.20	.70	2.283	2.283	1.773	1.511	1.399	1.335	1.233	1.175
L = 44	128	.10	.30	.60	2.667	2.667	1.957	1.603	1.456	1.377	1.256	1.192
X = 20	129	.10	.40	.50	2.000	2.000	1.767	1.689	1.513	1.404	1.271	1.203
X′ = 12	130	.20	.20	.60	2.667	2.667	2.045	1.727	1.590	1.513	1.340	1.252
C = 12	131	.20	.30	.50	2.667	2.667	2.232	1.838	1.661	1.567	1.364	1.269
	132	.20	.40	.40	2.000	2.000	1.825	1.779	1.603	1.443	1.290	1.217
	133	.10	.20	.70	2.283	2.283	2.045	1.706	1.524	1.429	1.294	1.218
L = 48	134	.10	.30	.60	2.667	2.667	2.141	1.799	1.577	1.464	1.311	1.230
X = 20	135	.10	.40	.50	2.000	2.000	1.767	1.701	1.618	1.471	1.312	1.233
X′ = 16	136	.20	.20	.60	2.667	2.667	2.331	1.946	1.730	1.618	1.406	1.295
C = 12	137	.20	.30	.50	2.667	2.667	2.232	2.058	1.795	1.661	1.420	1.305
	138	.20	.40	.40	2.000	2.000	1.825	1.779	1.634	1.504	1.326	1.241
	139	.10	.20	.70	2.283	2.283	2.045	1.946	1.669	1.531	1.359	1.263
L = 52	140	.10	.30	.60	2.667	2.667	2.141	1.996	1.718	1.563	1.370	1.269
X = 20	141	.10	.40	.50	2.000	2.000	1.767	1.701	1.618	1.543	1.355	1.263
X′ = 20	142	.20	.20	.60	2.667	2.667	2.331	2.217	1.894	1.733	1.475	1.340
C = 12	143	.20	.30	.50	2.667	2.667	2.232	2.110	1.894	1.757	1.473	1.340
	144	.20	.40	.40	2.000	2.000	1.825	1.779	1.634	1.548	1.362	1.266

Table 11.10

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2-3 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 2-3 TRUCK

Ninety variations in the Type 2-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

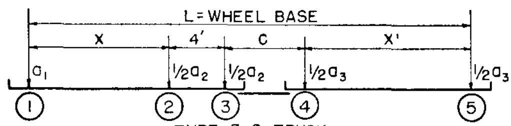
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	2.674	1.887	1.577	1.412	1.330	1.255	1.174	1.131
L = 32	2	.10	.30	.60	2.667	2.203	1.724	1.486	1.342	1.263	1.179	1.135
X = 12	3	.10	.40	.50	2.000	1.812	1.650	1.449	1.323	1.252	1.175	1.134
X' = 8	4	.20	.20	.60	3.125	2.203	1.832	1.623	1.445	1.335	1.224	1.170
C = 8	5	.20	.30	.50	2.667	2.331	1.957	1.637	1.437	1.332	1.224	1.170
	6	.10	.20	.70	2.674	2.114	1.799	1.610	1.471	1.368	1.245	1.183
L = 36	7	.10	.30	.60	2.667	2.268	1.988	1.706	1.484	1.362	1.241	1.181
X = 12	8	.10	.40	.50	2.000	1.812	1.650	1.575	1.420	1.325	1.222	1.168
X' = 12	9	.20	.20	.60	3.125	2.469	2.101	1.862	1.616	1.451	1.294	1.218
C = 8	10	.20	.30	.50	2.667	2.331	1.957	1.786	1.555	1.416	1.277	1.208
	11	.10	.20	.70	2.674	2.114	2.020	1.825	1.629	1.499	1.325	1.239
L = 40	12	.10	.30	.60	2.667	2.268	1.988	1.880	1.653	1.477	1.309	1.229
X = 12	13	.10	.40	.50	2.000	1.812	1.650	1.600	1.529	1.403	1.272	1.205
X' = 16	14	.20	.20	.60	3.125	2.469	2.358	2.132	1.821	1.582	1.368	1.269
C = 8	15	.20	.30	.50	2.667	2.331	1.957	1.799	1.686	1.508	1.332	1.247
	16	.10	.20	.70	2.674	1.887	1.597	1.499	1.395	1.328	1.220	1.166
L = 36	17	.10	.30	.60	2.667	2.203	1.862	1.664	1.481	1.361	1.241	1.181
X = 12	18	.10	.40	.50	2.000	2.000	1.808	1.664	1.473	1.362	1.247	1.188
X' = 8	19	.20	.20	.60	3.125	2.203	1.862	1.736	1.603	1.443	1.290	1.217
C = 12	20	.20	.30	.50	2.667	2.653	2.198	1.908	1.621	1.460	1.304	1.227
	21	.10	.20	.70	2.674	2.114	1.799	1.675	1.541	1.445	1.299	1.221
L = 40	22	.10	.30	.60	2.667	2.469	2.101	1.953	1.661	1.481	1.312	1.230
X = 12	23	.10	.40	.50	2.000	2.000	1.808	1.704	1.587	1.445	1.299	1.224
X' = 12	24	.20	.20	.60	3.125	2.469	2.101	1.953	1.779	1.582	1.368	1.269
C = 12	25	.20	.30	.50	2.667	2.667	2.198	1.934	1.767	1.558	1.361	1.267
	26	.10	.20	.70	2.674	2.114	2.020	1.825	1.709	1.567	1.385	1.282
L = 44	27	.10	.30	.60	2.667	2.469	2.268	2.053	1.880	1.621	1.389	1.284
X = 12	28	.10	.40	.50	2.000	2.000	1.808	1.704	1.934	1.534	1.353	1.264
X' = 16	29	.20	.20	.60	3.125	2.469	2.358	2.132	1.988	1.748	1.456	1.326
C = 12	30	.20	.30	.50	2.667	2.667	2.198	1.934	1.815	1.667	1.422	1.311
	31	.10	.20	.70	2.674	1.887	1.577	1.412	1.335	1.279	1.189	1.143
L = 36	32	.10	.30	.60	2.667	2.203	1.724	1.486	1.376	1.285	1.193	1.147
X = 16	33	.10	.40	.50	2.000	1.812	1.675	1.506	1.359	1.277	1.190	1.145
X' = 8	34	.20	.20	.60	3.125	2.203	1.832	1.623	1.520	1.387	1.256	1.192
C = 8	35	.20	.30	.50	2.667	2.331	1.961	1.684	1.522	1.391	1.259	1.195
	36	.10	.20	.70	2.674	2.114	1.799	1.610	1.471	1.393	1.263	1.196
L = 40	37	.10	.30	.60	2.667	2.268	2.062	1.706	1.524	1.391	1.258	1.193
X = 16	38	.10	.40	.50	2.000	1.812	1.706	1.639	1.462	1.353	1.239	1.182
X' = 12	39	.20	.20	.60	3.125	2.469	2.101	1.862	1.689	1.515	1.330	1.244
C = 8	40	.20	.30	.50	2.667	2.331	2.151	1.919	1.658	1.484	1.316	1.235

Table 11.10 (Continued)

	41	.10	.20	.70	2.674	2.114	2.020	1.825	1.629	1.508	1.344	1.253
L = 44	42	.10	.30	.60	2.667	2.268	2.062	1.965	1.692	1.511	1.328	1.242
X = 16	43	.10	.40	.50	2.000	1.812	1.706	1.661	1.580	1.437	1.292	1.220
X′ = 16	44	.20	.20	.60	3.125	2.469	2.358	2.132	1.880	1.661	1.410	1.297
C = 8	45	.20	.30	.50	2.667	2.331	2.151	1.949	1.802	1.587	1.376	1.276
	46	.10	.20	.70	2.674	1.887	1.597	1.499	1.395	1.335	1.236	1.176
L = 40	47	.10	.30	.60	2.667	2.203	1.862	1.664	1.495	1.387	1.256	1.192
X = 16	48	.10	.40	.50	2.000	2.000	1.862	1.739	1.520	1.393	1.266	1.200
X′ = 8	49	.20	.20	.60	3.125	2.203	1.862	1.739	1.605	1.504	1.326	1.241
C = 12	50	.20	.30	.50	2.667	2.653	2.237	1.908	1.704	1.534	1.344	1.255
	51	.10	.20	.70	2.674	2.114	1.799	1.675	1.541	1.445	1.318	1.235
L = 44	52	.10	.30	.60	2.667	2.469	2.101	1.953	1.669	1.515	1.330	1.244
X = 16	53	.10	.40	.50	2.000	2.000	1.862	1.776	1.642	1.479	1.319	1.239
X′ = 12	54	.20	.20	.60	3.125	2.469	2.101	1.953	1.779	1.658	1.408	1.297
C = 12	55	.20	.30	.50	2.667	2.667	2.398	2.119	1.898	1.642	1.406	1.297
	56	.10	.20	.70	2.674	2.114	2.020	1.825	1.709	1.567	1.408	1.295
L = 48	57	.10	.30	.60	2.667	2.469	2.331	2.132	1.880	1.661	1.410	1.297
X = 16	58	.10	.40	.50	2.000	2.000	1.862	1.776	1.704	1.575	1.376	1.279
X′ = 16	59	.20	.20	.60	3.125	2.469	2.358	2.132	1.988	1.808	1.502	1.357
C = 12	60	.20	.30	.50	2.667	2.667	2.398	2.119	1.938	1.764	1.473	1.342
	61	.10	.20	.70	2.674	1.887	1.577	1.412	1.335	1.289	1.205	1.153
L = 40	62	.10	.30	.60	2.667	2.203	1.724	1.486	1.381	1.311	1.209	1.157
X = 20	63	.10	.40	.50	2.000	1.812	1.675	1.508	1.395	1.304	1.208	1.157
X′ = 8	64	.20	.20	.60	3.125	2.203	1.832	1.623	1.527	1.443	1.290	1.217
C = 8	65	.20	.30	.50	2.667	2.331	1.961	1.684	1.560	1.447	1.294	1.218
	66	.10	.20	.70	2.674	2.114	1.799	1.610	1.471	1.393	1.280	1.209
L = 44	67	.10	.30	.60	2.667	2.268	2.062	1.706	1.524	1.420	1.276	1.205
X = 20	68	.10	.40	.50	2.000	1.812	1.706	1.667	1.508	1.383	1.258	1.195
X′ = 12	69	.20	.20	.60	3.125	2.469	2.101	1.862	1.689	1.582	1.368	1.269
C = 8	70	.20	.30	.50	2.667	2.331	2.151	1.919	1.712	1.558	1.355	1.261
	71	.10	.20	.70	2.674	2.114	2.020	1.825	1.629	1.508	1.364	1.267
L = 48	72	.10	.30	.60	2.667	2.268	2.062	1.984	1.692	1.546	1.348	1.256
X = 20	73	.10	.40	.50	2.000	1.812	1.706	1.721	1.634	1.471	1.311	1.233
X′ = 16	74	.20	.20	.60	3.125	2.469	2.358	2.132	1.880	1.733	1.456	1.326
C = 8	75	.20	.30	.50	2.667	2.331	2.151	2.128	1.894	1.672	1.420	1.305
	76	.10	.20	.70	2.674	1.887	1.597	1.499	1.395	1.335	1.253	1.189
L = 44	77	.10	.30	.60	2.667	2.203	1.862	1.664	1.495	1.404	1.274	1.203
X = 20	78	.10	.40	.50	2.000	2.000	1.862	1.748	1.548	1.427	1.284	1.214
X′ = 8	79	.20	.20	.60	3.125	2.203	1.862	1.736	1.605	1.529	1.362	1.266
C = 12	80	.20	.30	.50	2.667	2.653	2.237	1.908	1.704	1.597	1.383	1.280
	81	.10	.20	.70	2.674	2.114	1.799	1.675	1.541	1.445	1.337	1.247
L = 48	82	.10	.30	.60	2.667	2.469	2.101	1.953	1.669	1.529	1.350	1.256
X = 20	83	.10	.40	.50	2.000	2.000	1.862	1.835	1.704	1.517	1.340	1.253
X′ = 12	84	.20	.20	.60	3.125	2.469	2.101	1.953	1.779	1.661	1.451	1.325
C = 12	85	.20	.30	.50	2.667	2.667	2.398	2.232	1.898	1.730	1.453	1.328
	86	.10	.20	.70	2.674	2.114	2.020	1.825	1.709	1.567	1.420	1.311
L = 52	87	.10	.30	.60	2.667	2.469	2.331	2.132	1.880	1.669	1.433	1.312
X = 20	88	.10	.40	.50	2.000	2.000	1.862	1.835	1.757	1.621	1.399	1.294
X′ = 16	89	.20	.20	.60	3.125	2.469	2.358	2.132	1.988	1.808	1.550	1.389
C = 12	90	.20	.30	.50	2.667	2.667	2.398	2.326	2.075	1.876	1.527	1.376

Table 11.11

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3-2 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 3-2 TRUCK

Ninety variations in the Type 3-2 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

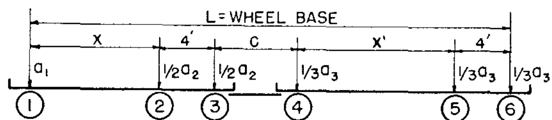
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	3.125	2.128	1.764	1.570	1.408	1.312	1.212	1.160
L = 36	2	.10	.50	.40	2.500	1.812	1.558	1.451	1.319	1.247	1.170	1.129
X = 12	3	.10	.60	.30	2.083	1.567	1.393	1.326	1.236	1.185	1.129	1.099
X' = 12	4	.20	.40	.40	3.125	2.203	1.862	1.650	1.445	1.335	1.224	1.170
C = 8	5	.20	.50	.30	2.500	1.859	1.634	1.466	1.342	1.263	1.179	1.135
	6	.10	.40	.50	3.125	2.128	1.764	1.631	1.495	1.374	1.250	1.188
L = 40	7	.10	.50	.40	2.500	1.812	1.558	1.464	1.379	1.290	1.198	1.151
X = 12	8	.10	.60	.30	2.083	1.567	1.393	1.326	1.277	1.215	1.149	1.114
X' = 16	9	.20	.40	.40	3.125	2.203	1.862	1.650	1.520	1.387	1.256	1.192
C = 8	10	.20	.50	.30	2.500	1.859	1.634	1.466	1.387	1.299	1.202	1.152
	11	.10	.40	.50	3.125	2.128	1.764	1.631	1.553	1.439	1.290	1.217
L = 44	12	.10	.50	.40	2.500	1.812	1.558	1.464	1.408	1.339	1.229	1.172
X = 12	13	.10	.60	.30	2.083	1.567	1.393	1.326	1.289	1.247	1.170	1.129
X' = 20	14	.20	.40	.40	3.125	2.203	1.862	1.650	1.538	1.443	1.290	1.217
C = 8	15	.20	.50	.30	2.500	1.859	1.634	1.466	1.387	1.335	1.225	1.170
	16	.10	.40	.50	3.125	2.469	2.028	1.802	1.587	1.439	1.290	1.217
L = 40	17	.10	.50	.40	2.500	1.976	1.724	1.572	1.445	1.339	1.229	1.172
X = 12	18	.10	.60	.30	2.083	1.645	1.493	1.393	1.321	1.247	1.170	1.129
X' = 12	19	.20	.40	.40	3.125	2.469	2.101	1.795	1.603	1.443	1.290	1.217
C = 12	20	.20	.50	.30	2.500	1.976	1.724	1.543	1.441	1.335	1.225	1.170
	21	.10	.40	.50	3.125	2.469	2.028	1.802	1.669	1.508	1.332	1.247
L = 44	22	.10	.50	.40	2.500	1.976	1.724	1.572	1.486	1.389	1.259	1.195
X = 12	23	.10	.60	.30	2.083	1.645	1.493	1.393	1.337	1.280	1.192	1.145
X' = 16	24	.20	.40	.40	3.125	2.469	2.101	1.795	1.634	1.504	1.326	1.241
C = 12	25	.20	.50	.30	2.500	1.976	1.724	1.543	1.441	1.376	1.248	1.186
	26	.10	.40	.50	3.125	2.469	2.028	1.802	1.669	1.585	1.377	1.277
L = 48	27	.10	.50	.40	2.500	1.976	1.724	1.572	1.486	1.435	1.292	1.218
X = 12	28	.10	.60	.30	2.083	1.645	1.493	1.393	1.337	1.304	1.214	1.161
X' = 20	29	.20	.40	.40	3.125	2.469	2.101	1.795	1.634	1.548	1.362	1.266
C = 12	30	.20	.50	.30	2.500	1.976	1.724	1.543	1.441	1.383	1.274	1.205
	31	.10	.40	.50	3.125	2.128	1.764	1.570	1.437	1.340	1.229	1.172
L = 40	32	.10	.50	.40	2.500	1.812	1.558	1.479	1.353	1.271	1.185	1.140
X = 16	33	.10	.60	.30	2.083	1.567	1.393	1.359	1.266	1.206	1.143	1.109
X' = 12	34	.20	.40	.40	3.125	2.203	1.862	1.736	1.524	1.391	1.258	1.193
C = 8	35	.20	.50	.30	2.500	1.859	1.634	1.572	1.410	1.311	1.209	1.157
	36	.10	.40	.50	3.125	2.128	1.764	1.692	1.536	1.404	1.269	1.200
L = 44	37	.10	.50	.40	2.500	1.812	1.558	1.513	1.418	1.318	1.215	1.161
X = 16	38	.10	.60	.30	2.083	1.567	1.393	1.366	1.309	1.238	1.164	1.125
X' = 16	39	.20	.40	.40	3.125	2.203	1.862	1.773	1.610	1.449	1.292	1.217
C = 8	40	.20	.50	.30	2.500	1.859	1.634	1.572	1.460	1.350	1.233	1.175
	41	.10	.40	.50	3.125	2.128	1.764	1.692	1.595	1.473	1.311	1.230
L = 48	42	.10	.50	.40	2.500	1.812	1.558	1.513	1.445	1.366	1.245	1.185
X = 16	43	.10	.60	.30	2.083	1.567	1.393	1.366	1.319	1.272	1.185	1.140
X' = 20	44	.20	.40	.40	3.125	2.203	1.862	1.773	1.623	1.511	1.328	1.242
C = 8	45	.20	.50	.30	2.500	1.859	1.634	1.572	1.460	1.391	1.258	1.193

Table 11.11 (Continued)

	46	.10	.40	.50	3.125	2.469	2.028	1.821	1.595	1.473	1.311	1.230
L = 44	47	.10	.50	.40	2.500	1.976	1.724	1.626	1.488	1.366	1.245	1.185
X = 16	48	.10	.60	.30	2.083	1.645	1.493	1.439	1.355	1.272	1.185	1.140
X′ = 12	49	.20	.40	.40	3.125	2.469	2.101	1.946	1.706	1.511	1.328	1.242
C = 12	50	.20	.50	.30	2.500	1.976	1.770	1.695	1.527	1.391	1.258	1.193
	51	.10	.40	.50	3.125	2.469	2.028	1.862	1.721	1.546	1.353	1.261
L = 48	52	.10	.50	.40	2.500	1.976	1.724	1.626	1.524	1.420	1.277	1.208
X = 16	53	.10	.60	.30	2.083	1.645	1.493	1.439	1.370	1.307	1.208	1.156
X′ = 16	54	.20	.40	.40	3.125	2.469	2.101	1.946	1.730	1.577	1.366	1.267
C = 12	55	.20	.50	.30	2.500	1.976	1.770	1.695	1.563	1.435	1.284	1.211
	56	.10	.40	.50	3.125	2.469	2.028	1.862	1.721	1.626	1.399	1.294
L = 52	57	.10	.50	.40	2.500	1.976	1.724	1.626	1.524	1.466	1.311	1.232
X = 16	58	.10	.60	.30	2.083	1.645	1.493	1.439	1.370	1.328	1.230	1.174
X′ = 20	59	.20	.40	.40	3.125	2.469	2.101	1.946	1.730	1.618	1.406	1.295
C = 12	60	.20	.50	.30	2.500	1.976	1.770	1.695	1.563	1.473	1.311	1.230
	61	.10	.40	.50	3.125	2.128	1.764	1.570	1.437	1.362	1.245	1.185
L = 44	62	.10	.50	.40	2.500	1.812	1.558	1.479	1.381	1.295	1.200	1.152
X = 20	63	.10	.60	.30	2.083	1.567	1.393	1.359	1.295	1.229	1.157	1.120
X′ = 12	64	.20	.40	.40	3.125	2.203	1.862	1.736	1.605	1.451	1.294	1.218
C = 8	65	.20	.50	.30	2.500	1.859	1.634	1.577	1.484	1.362	1.241	1.181
	66	.10	.40	.50	3.125	2.128	1.764	1.692	1.536	1.435	1.287	1.214
L = 48	67	.10	.50	.40	2.500	1.812	1.558	1.517	1.445	1.344	1.232	1.174
X = 20	68	.10	.60	.30	2.083	1.567	1.393	1.374	1.339	1.261	1.178	1.135
X′ = 16	69	.20	.40	.40	3.125	2.203	1.862	1.799	1.689	1.515	1.330	1.244
C = 8	70	.20	.50	.30	2.500	1.859	1.634	1.603	1.541	1.404	1.267	1.199
	71	.10	.40	.50	3.125	2.128	1.764	1.692	1.642	1.508	1.330	1.244
L = 52	72	.10	.50	.40	2.500	1.812	1.558	1.517	1.481	1.397	1.263	1.196
X = 20	73	.10	.60	.30	2.083	1.567	1.393	1.374	1.350	1.297	1.200	1.152
X′ = 20	74	.20	.40	.40	3.125	2.203	1.862	1.799	1.712	1.582	1.368	1.269
C = 8	75	.20	.50	.30	2.500	1.859	1.634	1.603	1.541	1.449	1.294	1.218
	76	.10	.40	.50	3.125	2.469	2.028	1.821	1.595	1.477	1.328	1.244
L = 48	77	.10	.50	.40	2.500	1.976	1.724	1.626	1.513	1.397	1.263	1.196
X = 20	78	.10	.60	.30	2.083	1.645	1.493	1.441	1.383	1.297	1.200	1.152
X′ = 12	79	.20	.40	.40	3.125	2.469	2.101	1.953	1.779	1.582	1.368	1.269
C = 12	80	.20	.50	.30	2.500	1.976	1.770	1.695	1.608	1.449	1.294	1.218
	81	.10	.40	.50	3.125	2.469	2.028	1.862	1.724	1.565	1.376	1.276
L = 52	82	.10	.50	.40	2.500	1.976	1.724	1.626	1.567	1.451	1.297	1.221
X = 20	83	.10	.60	.30	2.083	1.645	1.493	1.441	1.403	1.333	1.224	1.168
X′ = 16	84	.20	.40	.40	3.125	2.469	2.101	1.953	1.838	1.658	1.408	1.297
C = 12	85	.20	.50	.30	2.500	1.976	1.770	1.695	1.608	1.499	1.321	1.236
	86	.10	.40	.50	3.125	2.469	2.028	1.862	1.776	1.661	1.422	1.309
L = 56	87	.10	.50	.40	2.500	1.976	1.724	1.626	1.567	1.497	1.332	1.245
X = 20	88	.10	.60	.30	2.083	1.645	1.493	1.441	1.403	1.355	1.247	1.186
X′ = 20	89	.20	.40	.40	3.125	2.469	2.101	1.953	1.838	1.692	1.451	1.325
C = 12	90	.20	.50	.30	2.500	1.976	1.770	1.695	1.608	1.506	1.350	1.256

Table 11.12

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3-3 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 3-3 TRUCK

Ninety variations in the Type 3-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

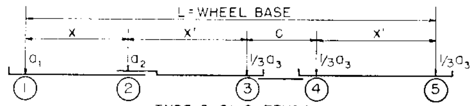
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	3.125	2.203	1.862	1.757	1.558	1.429	1.282	1.209
L = 40	2	.10	.40	.50	3.125	2.469	2.146	1.894	1.621	1.460	1.304	1.227
X = 12	3	.10	.50	.40	2.500	1.976	1.786	1.647	1.468	1.355	1.238	1.179
X' = 8	4	.20	.30	.50	3.745	2.653	2.237	2.041	1.786	1.575	1.366	1.269
C = 12	5	.20	.40	.40	3.125	2.469	2.101	1.852	1.631	1.464	1.302	1.224
	6	.10	.30	.60	3.125	2.469	2.101	1.953	1.751	1.565	1.359	1.263
L = 44	7	.10	.40	.50	3.125	2.469	2.146	1.934	1.828	1.558	1.361	1.267
X = 12	8	.10	.50	.40	2.500	1.976	1.786	1.650	1.555	1.422	1.280	1.211
X' = 12	9	.20	.30	.50	3.745	2.959	2.525	2.252	2.000	1.712	1.443	1.321
C = 12	10	.20	.40	.40	3.125	2.469	2.101	1.852	1.712	1.546	1.350	1.258
	11	.10	.30	.60	3.125	2.469	2.358	2.132	1.988	1.770	1.466	1.335
L = 48	12	.10	.40	.50	3.125	2.469	2.146	1.934	1.815	1.667	1.422	1.311
X = 12	13	.10	.50	.40	2.500	1.976	1.786	1.650	1.575	1.497	1.326	1.242
X' = 16	14	.20	.30	.50	3.745	2.959	2.674	2.252	2.024	1.848	1.513	1.368
C = 12	15	.20	.40	.40	3.125	2.469	2.101	1.852	1.712	1.634	1.401	1.292
	16	.10	.30	.60	3.125	2.203	1.862	1.799	1.698	1.548	1.353	1.259
L = 44	17	.10	.40	.50	3.125	2.469	2.237	2.092	1.835	1.610	1.391	1.289
X = 12	18	.10	.50	.40	2.500	1.976	1.812	1.742	1.613	1.460	1.302	1.225
X' = 8	19	.20	.30	.50	3.745	2.653	2.237	2.160	1.969	1.764	1.471	1.340
C = 16	20	.20	.40	.40	3.125	2.469	2.101	1.953	1.786	1.590	1.376	1.274
	21	.10	.30	.60	3.125	2.469	2.101	1.953	1.880	1.704	1.441	1.318
L = 48	22	.10	.40	.50	3.125	2.469	2.237	2.092	1.919	1.724	1.456	1.332
X = 12	23	.10	.50	.40	2.500	1.976	1.812	1.742	1.639	1.536	1.350	1.258
X' = 12	24	.20	.30	.50	3.745	2.959	2.525	2.347	2.151	1.923	1.550	1.393
C = 16	25	.20	.40	.40	3.125	2.469	2.101	1.953	1.786	1.686	1.427	1.311
	26	.10	.30	.60	3.125	2.469	2.358	2.132	2.008	1.890	1.538	1.381
L = 52	27	.10	.40	.50	3.125	2.469	2.237	2.092	1.919	1.825	1.524	1.377
X = 12	28	.10	.50	.40	2.500	1.976	1.812	1.742	1.639	1.580	1.397	1.292
X' = 16	29	.20	.30	.50	3.745	2.959	2.674	2.445	2.151	1.992	1.629	1.443
C = 16	30	.20	.40	.40	3.125	2.469	2.101	1.953	1.786	1.689	1.484	1.348
	31	.10	.30	.60	3.125	2.203	1.862	1.757	1.558	1.451	1.299	1.222
L = 44	32	.10	.40	.50	3.125	2.469	2.146	1.894	1.634	1.497	1.325	1.241
X = 16	33	.10	.50	.40	2.500	1.976	1.786	1.689	1.513	1.385	1.256	1.192
X' = 8	34	.20	.30	.50	3.745	2.653	2.237	2.041	1.786	1.653	1.410	1.300
C = 12	35	.20	.40	.40	3.125	2.469	2.193	2.028	1.739	1.534	1.340	1.252
	36	.10	.30	.60	3.125	2.469	2.101	1.953	1.751	1.585	1.379	1.276
L = 48	37	.10	.40	.50	3.125	2.469	2.146	2.020	1.818	1.600	1.383	1.282
X = 16	38	.10	.50	.40	2.500	1.976	1.786	1.712	1.603	1.456	1.300	1.224
X' = 12	39	.20	.30	.50	3.745	2.959	2.525	2.347	2.000	1.802	1.493	1.353
C = 12	40	.20	.40	.40	3.125	2.469	2.193	2.028	1.825	1.626	1.393	1.285

Table 11.12 (Continued)

	41	.10	.30	.60	3.125	2.469	2.358	2.132	1.988	1.739	1.466	1.335
L = 52	42	.10	.40	.50	3.125	2.469	2.146	2.020	1.876	1.715	1.447	1.326
X = 16	43	.10	.50	.40	2.500	1.976	1.786	1.712	1.621	1.536	1.346	1.256
X′ = 16	44	.20	.30	.50	3.745	2.959	2.755	2.519	2.183	1.969	1.570	1.403
C = 12	45	.20	.40	.40	3.125	2.469	2.193	2.028	1.825	1.718	1.447	1.323
	46	.10	.30	.60	3.125	2.203	1.862	1.799	1.698	1.548	1.372	1.272
L = 48	47	.10	.40	.50	3.125	2.469	2.237	2.160	1.835	1.642	1.414	1.304
X = 16	48	.10	.50	.40	2.500	1.976	1.887	1.808	1.664	1.495	1.323	1.239
X′ = 8	49	.20	.30	.50	3.745	2.653	2.237	2.160	1.969	1.779	1.513	1.370
C = 16	50	.20	.40	.40	3.125	2.469	2.358	2.132	1.908	1.675	1.418	1.304
	51	.10	.30	.60	3.125	2.469	2.101	1.953	1.880	1.704	1.462	1.332
L = 52	52	.10	.40	.50	3.125	2.469	2.358	2.179	1.988	1.776	1.481	1.350
X = 16	53	.10	.50	.40	2.500	1.976	1.887	1.808	1.686	1.577	1.370	1.272
X′ = 12	54	.20	.30	.50	3.745	2.959	2.525	2.347	2.242	1.957	1.610	1.429
C = 16	55	.20	.40	.40	3.125	2.469	2.358	2.132	1.908	1.776	1.475	1.342
	56	.10	.30	.60	3.125	2.469	2.358	2.132	2.008	1.890	1.565	1.397
L = 56	57	.10	.40	.50	3.125	2.469	2.358	2.179	1.988	1.876	1.553	1.397
X = 16	58	.10	.50	.40	2.500	1.976	1.887	1.808	1.686	1.616	1.420	1.307
X′ = 16	59	.20	.30	.50	3.745	2.959	2.833	2.558	2.336	2.119	1.698	1.484
C = 16	60	.20	.40	.40	3.125	2.469	2.358	2.132	1.908	1.779	1.536	1.381
	61	.10	.30	.60	3.125	2.203	1.862	1.757	1.558	1.451	1.318	1.235
L = 48	62	.10	.40	.50	3.125	2.469	2.146	1.894	1.634	1.506	1.344	1.255
X = 20	63	.10	.50	.40	2.500	1.976	1.786	1.689	1.536	1.414	1.274	1.205
X′ = 8	64	.20	.30	.50	3.745	2.653	2.237	2.041	1.786	1.656	1.451	1.328
C = 12	65	.20	.40	.40	3.125	2.469	2.193	2.037	1.812	1.608	1.381	1.279
	66	.10	.30	.60	3.125	2.469	2.101	1.953	1.751	1.585	1.399	1.290
L = 52	67	.10	.40	.50	3.125	2.469	2.146	2.020	1.818	1.629	1.406	1.297
X = 20	68	.10	.50	.40	2.500	1.976	1.786	1.718	1.639	1.490	1.319	1.236
X′ = 12	69	.20	.30	.50	3.745	2.959	2.525	2.347	2.000	1.802	1.538	1.383
C = 12	70	.20	.40	.40	3.125	2.469	2.193	2.088	1.953	1.712	1.437	1.316
	71	.10	.30	.60	3.125	2.469	2.358	2.132	1.988	1.739	1.490	1.350
L = 56	72	.10	.40	.50	3.125	2.469	2.146	2.020	1.938	1.764	1.473	1.342
X = 20	73	.10	.50	.40	2.500	1.976	1.786	1.718	1.667	1.575	1.368	1.271
X′ = 16	74	.20	.30	.50	3.845	2.959	2.755	2.551	2.262	1.972	1.629	1.439
C = 12	75	.20	.40	.40	3.125	2.469	2.193	2.088	1.953	1.808	1.497	1.355
	76	.10	.30	.60	3.125	2.203	1.862	1.799	1.698	1.548	1.391	1.285
L = 52	77	.10	.40	.50	3.125	2.469	2.237	2.160	1.835	1.642	1.439	1.319
X = 20	78	.10	.50	.40	2.500	1.976	1.887	1.808	1.692	1.531	1.344	1.253
X′ = 8	79	.20	.30	.50	3.745	2.653	2.237	2.160	1.969	1.779	1.558	1.399
C = 16	80	.20	.40	.40	3.125	2.469	2.358	2.227	2.028	1.767	1.466	1.355
	81	.10	.30	.60	3.125	2.469	2.101	1.953	1.880	1.704	1.484	1.348
L = 56	82	.10	.40	.50	3.125	2.469	2.358	2.179	2.062	1.795	1.508	1.366
X = 20	83	.10	.50	.40	2.500	1.976	1.887	1.808	1.739	1.618	1.393	1.287
X′ = 12	84	.20	.30	.50	3.745	2.959	2.525	2.347	2.242	1.957	1.661	1.462
C = 16	85	.20	.40	.40	3.125	2.469	2.358	2.227	2.049	1.876	1.527	1.376
	86	.10	.30	.60	3.125	2.469	2.358	2.132	2.008	1.890	1.590	1.412
L = 60	87	.10	.40	.50	3.125	2.469	2.358	2.179	2.062	1.927	1.582	1.414
X = 20	88	.10	.50	.40	2.500	1.976	1.887	1.808	1.739	1.656	1.445	1.323
X′ = 16	89	.20	.30	.50	3.745	2.959	2.833	2.558	2.410	2.165	1.767	1.524
C = 16	90	.20	.40	.40	3.125	2.469	2.358	2.227	2.049	1.876	1.592	1.416

Table 11.13

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 2-S1-2 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



TYPE 2-S1-2 TRUCK

Ninety-six variations in the Type 2-S1-2 truck are given in this Table. Each truck number, from 1 to 96, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

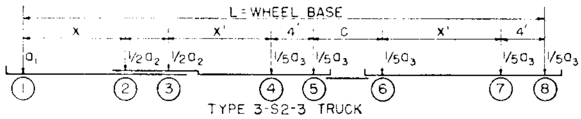
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 36	1	.10	.20	.70	3.413	2.674	1.953	1.672	1.466	1.351	1.235	1.176
X = 8	2	.10	.30	.60	2.667	2.451	1.976	1.730	1.486	1.362	1.242	1.181
X' = 10	3	.20	.20	.60	4.000	3.125	2.283	1.880	1.570	1.420	1.276	1.205
C = 8	4	.20	.30	.50	2.667	2.268	1.832	1.642	1.517	1.395	1.266	1.200
L = 40	5	.10	.20	.70	3.413	2.674	2.105	1.828	1.577	1.427	1.280	1.209
X = 8	6	.10	.30	.60	2.667	2.469	2.101	1.862	1.616	1.451	1.294	1.218
X' = 12	7	.20	.20	.60	4.000	3.125	2.457	2.070	1.712	1.515	1.330	1.244
C = 8	8	.20	.30	.50	2.667	2.268	1.927	1.739	1.585	1.481	1.319	1.239
L = 44	9	.10	.20	.70	3.413	2.674	2.273	1.942	1.704	1.513	1.330	1.242
X = 8	10	.10	.30	.60	2.667	2.469	2.237	2.004	1.767	1.548	1.350	1.256
X' = 14	11	.20	.20	.60	4.000	3.125	2.660	2.247	1.887	1.621	1.389	1.284
C = 8	12	.20	.30	.50	2.667	2.268	2.028	1.838	1.656	1.550	1.376	1.279
L = 48	13	.10	.20	.70	3.413	2.674	2.342	2.041	1.825	1.608	1.381	1.279
X = 8	14	.10	.30	.60	2.667	2.469	2.358	2.132	1.880	1.661	1.410	1.297
X' = 16	15	.20	.20	.60	4.000	3.125	2.740	2.387	2.041	1.745	1.453	1.326
C = 8	16	.20	.30	.50	2.667	2.268	2.062	1.905	1.730	1.605	1.437	1.321
L = 52	17	.10	.20	.70	3.413	2.674	2.342	2.151	1.934	1.715	1.439	1.316
X = 8	18	.10	.30	.60	2.667	2.469	2.358	2.227	1.988	1.792	1.477	1.342
X' = 18	19	.20	.20	.60	4.000	3.125	2.740	2.513	2.174	1.890	1.524	1.372
C = 8	20	.20	.30	.50	2.667	2.268	2.062	1.972	1.812	1.664	1.502	1.366
L = 56	21	.10	.20	.70	3.413	2.674	2.342	2.273	2.008	1.825	1.502	1.357
X = 8	22	.10	.30	.60	2.667	2.469	2.358	2.331	2.110	1.894	1.550	1.389
X' = 20	23	.20	.20	.60	4.000	3.125	2.740	2.653	2.320	2.024	1.603	1.422
C = 8	24	.20	.30	.50	2.667	2.268	2.062	2.045	1.890	1.724	1.550	1.412
L = 60	25	.10	.20	.70	3.413	2.674	2.342	2.283	2.088	1.931	1.567	1.401
X = 8	26	.10	.30	.60	2.667	2.469	2.358	2.398	2.222	1.980	1.631	1.439
X' = 22	27	.20	.20	.60	4.000	3.125	2.740	2.667	2.439	2.128	1.689	1.475
C = 8	28	.20	.30	.50	2.667	2.268	2.062	2.045	1.942	1.789	1.590	1.462
L = 64	29	.10	.20	.70	3.413	2.674	2.342	2.283	2.174	1.989	1.642	1.445
X = 8	30	.10	.30	.60	2.667	2.469	2.358	2.398	2.304	2.079	1.721	1.493
X' = 24	31	.20	.20	.60	4.000	3.125	2.740	2.667	2.538	2.242	1.786	1.531
C = 8	32	.20	.30	.50	2.667	2.268	2.062	2.045	1.996	1.859	1.631	1.515
L = 40	33	.10	.20	.70	3.413	2.674	1.953	1.672	1.504	1.379	1.252	1.189
X = 12	34	.10	.30	.60	2.667	2.500	2.075	1.754	1.527	1.391	1.258	1.193
X' = 10	35	.20	.20	.60	4.000	3.125	2.283	1.931	1.661	1.481	1.311	1.230
C = 8	36	.20	.30	.50	2.667	2.538	2.075	1.789	1.610	1.460	1.304	1.227
L = 44	37	.10	.20	.70	3.413	2.674	2.105	1.828	1.597	1.460	1.299	1.221
X = 12	38	.10	.30	.60	2.667	2.667	2.268	1.949	1.661	1.481	1.312	1.230
X' = 12	39	.20	.20	.60	4.000	3.125	2.457	2.119	1.821	1.582	1.368	1.269
C = 8	40	.20	.30	.50	2.667	2.667	2.198	1.908	1.686	1.558	1.362	1.267
L = 48	41	.10	.20	.70	3.413	2.674	2.273	1.942	1.704	1.553	1.451	1.325
X = 12	42	.10	.30	.60	2.667	2.667	2.433	2.079	1.805	1.585	1.370	1.269
X' = 14	43	.20	.20	.60	4.000	3.125	2.660	2.268	1.969	1.701	1.431	1.312
C = 8	44	.20	.30	.50	2.667	2.667	2.331	2.012	1.770	1.631	1.422	1.311

Table 11.13 (Continued)

L = 52	45	.10	.20	.70	3.413	2.674	2.342	2.041	1.825	1.634	1.403	1.292
X = 12	46	.10	.30	.60	2.667	2.667	2.538	2.222	1.957	1.704	1.433	1.312
X′ = 16	47	.20	.20	.60	4.000	3.125	2.740	2.387	2.114	1.835	1.499	1.357
C = 8	48	.20	.30	.50	2.667	2.667	2.331	2.092	1.859	1.692	1.490	1.355
L = 56	49	.10	.20	.70	3.413	2.674	2.342	2.151	1.934	1.724	1.462	1.332
X = 12	50	.10	.30	.60	2.667	2.667	2.538	2.364	2.079	1.838	1.502	1.357
X′ = 18	51	.20	.20	.60	4.000	3.125	2.740	2.513	2.257	1.988	1.575	1.405
C = 8	52	.20	.30	.50	2.667	2.667	2.331	2.179	1.957	1.757	1.560	1.403
L = 60	53	.10	.20	.70	3.413	2.674	2.342	2.273	2.008	1.825	1.527	1.374
X = 12	54	.10	.30	.60	2.667	2.667	2.538	2.481	2.188	1.957	1.577	1.404
X′ = 20	55	.20	.20	.60	4.000	3.125	2.740	2.653	2.347	2.114	1.658	1.456
C = 8	56	.20	.30	.50	2.667	2.667	2.331	2.232	2.037	1.828	1.608	1.453
L = 64	57	.10	.20	.70	3.413	2.674	2.342	2.283	2.088	1.931	1.595	1.416
X = 12	58	.10	.30	.60	2.667	2.667	2.538	2.525	2.304	2.053	1.661	1.458
X′ = 22	59	.20	.20	.60	4.000	3.125	2.740	2.667	2.439	2.242	1.751	1.511
C = 8	60	.20	.30	.50	2.667	2.667	2.331	2.232	2.096	1.905	1.650	1.506
L = 68	61	.10	.20	.70	3.413	2.674	2.342	2.283	2.174	1.988	1.672	1.464
X = 12	62	.10	.30	.60	2.667	2.667	2.538	2.525	2.415	2.155	1.754	1.513
X′ = 24	63	.20	.20	.60	4.000	3.125	2.740	2.667	2.538	2.320	1.852	1.570
C = 8	64	.20	.30	.50	2.667	2.667	2.331	2.232	2.160	1.984	1.695	1.563
L = 56	65	.10	.20	.70	3.413	2.674	2.342	2.041	1.825	1.634	1.425	1.307
X = 16	66	.10	.30	.60	2.667	2.667	2.660	2.222	1.969	1.724	1.453	1.326
X′ = 16	67	.20	.20	.60	4.000	3.125	2.740	2.387	2.114	1.880	1.548	1.387
C = 8	68	.20	.30	.50	2.667	2.667	2.660	2.315	2.004	1.789	1.546	1.391
L = 60	69	.10	.20	.70	3.413	2.674	2.342	2.151	1.934	1.724	1.486	1.348
X = 16	70	.10	.30	.60	2.667	2.667	2.740	2.381	2.079	1.842	1.524	1.372
X′ = 18	71	.20	.20	.60	4.000	3.125	2.740	2.513	2.257	1.988	1.629	1.437
C = 8	72	.20	.30	.50	2.667	2.667	2.660	2.427	2.119	1.862	1.623	1.441
L = 64	73	.10	.20	.70	3.413	2.674	2.342	2.232	2.008	1.825	1.550	1.389
X = 16	74	.10	.30	.60	2.667	2.667	2.740	2.564	2.188	1.972	1.603	1.422
X′ = 20	75	.20	.20	.60	4.000	3.125	2.740	2.653	2.347	2.114	1.715	1.490
C = 8	76	.20	.30	.50	2.667	2.667	2.660	2.451	2.198	1.942	1.669	1.495
L = 68	77	.10	.20	.70	3.413	2.674	2.342	2.283	2.088	1.931	1.616	1.435
X = 16	78	.10	.30	.60	2.667	2.667	2.740	2.667	2.304	2.083	1.689	1.475
X′ = 22	79	.20	.20	.60	4.000	3.125	2.740	2.667	2.439	2.252	1.815	1.548
C = 8	80	.20	.30	.50	2.667	2.667	2.660	2.451	2.273	2.028	1.718	1.550
L = 72	81	.10	.20	.70	3.413	2.674	2.342	2.283	2.174	1.988	1.678	1.481
X = 16	82	.10	.30	.60	2.667	2.667	2.740	2.667	2.433	2.169	1.786	1.531
X′ = 24	83	.20	.20	.60	4.000	3.125	2.740	2.667	2.538	2.320	1.927	1.610
C = 8	84	.20	.30	.50	2.667	2.667	2.660	2.451	2.342	2.123	1.767	1.610
L = 76	85	.10	.20	.70	3.413	2.674	2.342	2.283	2.252	2.053	1.748	1.534
X = 16	86	.10	.30	.60	2.667	2.667	2.740	2.667	2.577	2.262	1.880	1.592
X′ = 26	87	.20	.20	.60	4.000	3.125	2.740	2.667	2.632	2.398	2.016	1.678
C = 8	88	.20	.30	.50	2.667	2.667	2.660	2.451	2.342	2.183	1.818	1.645
L = 80	89	.10	.20	.70	3.413	2.674	2.342	2.283	2.252	2.119	1.821	1.587
X = 16	90	.10	.30	.60	2.667	2.667	2.740	2.667	2.632	2.358	1.980	1.658
X′ = 28	91	.20	.20	.60	4.000	3.125	2.740	2.667	2.632	2.475	2.105	1.751
C = 8	92	.20	.30	.50	2.667	2.667	2.660	2.451	2.342	2.242	1.873	1.678
L = 84	93	.10	.20	.70	3.413	2.674	2.342	2.283	2.252	2.188	1.901	1.647
X = 16	94	.10	.30	.60	2.667	2.667	2.740	2.667	2.632	2.469	2.079	1.730
X′ = 30	95	.20	.20	.60	4.000	3.125	2.740	2.667	2.632	2.558	2.208	1.832
C = 8	96	.20	.30	.50	2.667	2.667	2.660	2.451	2.342	2.278	1.931	1.715

Table 11.14

SUMMARY OF GROSS LOADS REQUIRED FOR TYPE 3-S2-3 TRUCKS TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS A STANDARD H TRUCK WEIGHING ONE KIP



Eighty-four variations in the Type 3-S2-3 truck are given in this Table. Each truck number, from 1 to 84, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Gross loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 44	1	.05	.20	.75	4.167	2.941	2.304	1.894	1.608	1.447	1.292	1.217
X = 8	2	.05	.30	.65	4.167	2.994	2.283	1.969	1.667	1.484	1.314	1.232
X' = 8	3	.10	.20	.70	4.464	3.145	2.433	2.012	1.704	1.508	1.326	1.241
C = 8	4	.10	.30	.60	4.167	3.021	2.278	1.976	1.733	1.529	1.339	1.248
L = 48	5	.05	.20	.75	4.167	2.941	2.433	2.058	1.730	1.538	1.344	1.252
X = 8	6	.05	.30	.65	4.167	3.195	2.500	2.119	1.825	1.590	1.372	1.272
X' = 10	7	.10	.20	.70	4.464	3.145	2.597	2.203	1.838	1.610	1.383	1.279
C = 8	8	.10	.30	.60	4.167	3.077	2.494	2.123	1.880	1.647	1.403	1.294
L = 52	9	.05	.20	.75	4.167	2.941	2.481	2.212	1.873	1.639	1.399	1.290
X = 8	10	.05	.30	.65	4.167	3.195	2.755	2.278	1.996	1.712	1.437	1.316
X' = 12	11	.10	.20	.70	4.464	3.145	2.660	2.347	1.996	1.730	1.445	1.321
C = 8	12	.10	.30	.60	4.167	3.077	2.681	2.252	1.984	1.786	1.475	1.340
L = 56	13	.05	.20	.75	4.167	2.941	2.481	2.326	2.028	1.745	1.460	1.330
X = 8	14	.05	.30	.65	4.167	3.195	2.865	2.451	2.114	1.855	1.508	1.361
X' = 14	15	.10	.20	.70	4.464	3.145	2.660	2.481	2.169	1.855	1.515	1.366
C = 8	16	.10	.30	.60	4.167	3.077	2.681	2.387	2.105	1.901	1.555	1.391
L = 60	17	.05	.20	.75	4.167	2.941	2.481	2.387	2.137	1.862	1.524	1.372
X = 8	18	.05	.30	.65	4.167	3.195	2.865	2.632	2.242	2.008	1.587	1.410
X' = 16	19	.10	.20	.70	4.464	3.145	2.660	2.558	2.288	1.984	1.590	1.412
C = 8	20	.10	.30	.60	4.167	3.077	2.681	2.545	2.232	1.992	1.642	1.445
L = 64	21	.05	.20	.75	4.167	2.941	2.481	2.398	2.252	1.996	1.595	1.416
X = 8	22	.05	.30	.65	4.167	3.195	2.865	2.770	2.370	2.105	1.672	1.464
X' = 18	23	.10	.20	.70	4.464	3.145	2.660	2.571	2.392	2.132	1.672	1.464
C = 8	24	.10	.30	.60	4.167	3.077	2.681	2.618	2.336	2.083	1.739	1.504
L = 68	25	.05	.20	.75	4.167	2.941	2.481	2.398	2.320	2.092	1.675	1.466
X = 8	26	.05	.30	.65	4.167	3.195	2.865	2.770	2.513	2.208	1.770	1.522
X' = 20	27	.10	.20	.70	4.464	3.145	2.660	2.571	2.481	2.242	1.764	1.517
C = 8	28	.10	.30	.60	4.167	3.077	2.681	2.618	2.445	2.188	1.852	1.567
L = 48	29	.05	.20	.75	4.167	2.941	2.304	1.894	1.608	1.464	1.302	1.224
X = 12	30	.05	.30	.65	4.167	2.994	2.320	1.972	1.672	1.502	1.323	1.238
X' = 8	31	.10	.20	.70	4.464	3.145	2.433	2.012	1.704	1.543	1.346	1.253
C = 8	32	.10	.30	.60	4.167	3.021	2.370	2.079	1.776	1.565	1.359	1.263
L = 52	33	.05	.20	.75	4.167	2.941	2.433	2.058	1.730	1.548	1.353	1.259
X = 12	34	.05	.30	.65	4.167	3.289	2.532	2.119	1.825	1.608	1.383	1.279
X' = 10	35	.10	.20	.70	4.464	3.145	2.597	2.203	1.838	1.642	1.404	1.294
C = 8	36	.10	.30	.60	4.167	3.289	2.577	2.237	1.942	1.689	1.425	1.307
L = 56	37	.05	.20	.75	4.167	2.941	2.481	2.212	1.873	1.642	1.410	1.297
X = 12	38	.05	.30	.65	4.167	3.289	2.778	2.278	2.004	1.724	1.447	1.323
X' = 12	39	.10	.20	.70	4.464	3.145	2.660	2.347	1.996	1.742	1.468	1.335
C = 8	40	.10	.30	.60	4.167	3.289	2.817	2.381	2.066	1.832	1.499	1.355
L = 60	41	.05	.20	.75	4.167	2.941	2.481	2.326	2.028	1.745	1.471	1.337
X = 12	42	.05	.30	.65	4.167	3.289	2.865	2.451	2.128	1.855	1.520	1.370
X' = 14	43	.10	.20	.70	4.464	3.145	2.660	2.481	2.169	1.855	1.538	1.381
C = 8	44	.10	.30	.60	4.167	3.289	2.924	2.538	2.198	1.965	1.580	1.408

Table 11.14 (Continued)

L = 64	45	.05	.20	.75	4.167	2.941	2.481	2.387	2.137	1.862	1.538	1.381
X = 12	46	.05	.30	.65	4.167	3.289	2.865	2.653	2.242	2.008	1.600	1.418
X′ = 16	47	.10	.20	.70	4.464	3.145	2.660	2.558	2.288	1.984	1.616	1.431
C = 8	48	.10	.30	.60	4.167	3.289	2.924	2.717	2.331	2.058	1.672	1.464
L = 68	49	.05	.20	.75	4.167	2.941	2.481	2.398	2.252	1.996	1.610	1.427
X = 12	50	.05	.30	.65	4.167	3.289	2.865	2.770	2.370	2.128	1.689	1.473
X′ = 18	51	.10	.20	.70	4.464	3.145	2.660	2.571	2.392	2.132	1.704	1.481
C = 8	52	.10	.30	.60	4.167	3.289	2.924	2.786	2.445	2.160	1.773	1.524
L = 72	53	.05	.20	.75	4.167	2.941	2.481	2.398	2.320	2.092	1.684	1.475
X = 12	54	.05	.30	.65	4.167	3.289	2.865	2.770	2.513	2.222	1.786	1.531
X′ = 20	55	.10	.20	.70	4.464	3.145	2.660	2.571	2.481	2.242	1.789	1.538
C = 8	56	.10	.30	.60	4.167	3.289	2.924	2.786	2.571	2.273	1.890	1.590
L = 60	57	.05	.20	.75	4.167	2.941	2.481	2.212	1.873	1.642	1.420	1.304
X = 16	58	.05	.30	.65	4.167	3.289	2.778	2.278	2.004	1.724	1.460	1.330
X′ = 12	59	.10	.20	.70	4.464	3.145	2.660	2.347	1.996	1.742	1.493	1.351
C = 8	60	.10	.30	.60	4.167	3.289	2.817	2.410	2.123	1.832	1.524	1.372
L = 64	61	.05	.20	.75	4.167	2.941	2.481	2.326	2.028	1.745	1.484	1.346
X = 16	62	.05	.30	.65	4.167	3.289	2.865	2.451	2.128	1.855	1.531	1.377
X′ = 14	63	.10	.20	.70	4.464	3.145	2.660	2.481	2.169	1.855	1.565	1.397
C = 8	64	.10	.30	.60	4.167	3.289	3.030	2.604	2.247	1.976	1.608	1.425
L = 68	65	.05	.20	.75	4.167	2.941	2.481	2.387	2.137	1.862	1.546	1.389
X = 16	66	.05	.30	.65	4.167	3.289	2.865	2.653	2.242	2.008	1.613	1.429
X′ = 16	67	.10	.20	.70	4.464	3.145	2.660	2.558	2.288	1.984	1.639	1.447
C = 8	68	.10	.30	.60	4.167	3.289	3.106	2.793	2.381	2.132	1.704	1.481
L = 72	69	.05	.20	.75	4.167	2.941	2.481	2.398	2.252	1.996	1.610	1.435
X = 16	70	.05	.30	.65	4.167	3.289	2.865	2.770	2.370	2.128	1.695	1.481
X′ = 18	71	.10	.20	.70	4.464	3.145	2.660	2.571	2.392	2.132	1.712	1.502
C = 8	72	.10	.30	.60	4.167	3.289	3.106	2.967	2.525	2.242	1.805	1.543
L = 76	73	.05	.20	.75	4.167	2.941	2.481	2.398	2.320	2.092	1.684	1.484
X = 16	74	.05	.30	.65	4.167	3.289	2.865	2.770	2.513	2.222	1.786	1.541
X′ = 20	75	.10	.20	.70	4.464	3.145	2.660	2.571	2.481	2.242	1.789	1.558
C = 8	76	.10	.30	.60	4.167	3.289	3.106	2.967	2.681	2.336	1.905	1.610
L = 80	77	.05	.20	.75	4.167	2.941	2.481	2.398	2.353	2.183	1.764	1.538
X = 16	78	.05	.30	.65	4.167	3.289	2.865	2.770	2.667	2.326	1.890	1.605
X′ = 22	79	.10	.20	.70	4.464	3.145	2.660	2.571	2.525	2.336	1.876	1.621
C = 8	80	.10	.30	.60	4.167	3.289	3.106	2.967	2.849	2.469	2.016	1.684
L = 84	81	.05	.20	.75	4.167	2.941	2.481	2.398	2.353	2.273	1.848	1.595
X = 16	82	.05	.30	.65	4.167	3.289	2.865	2.770	2.717	2.433	2.004	1.675
X′ = 24	83	.10	.20	.70	4.464	3.145	2.660	2.571	2.525	2.415	1.969	1.686
C = 8	84	.10	.30	.60	4.167	3.289	3.106	2.967	2.849	2.591	2.096	1.764

12. EQUIVALENT CONCENTRATED LOAD REQUIRED TO PRODUCE SAME MOMENT AS HEAVY VEHICLE TYPES OF UNIT WEIGHT ON SIMPLE SPAN BRIDGES

Tables 12.1-12.14 give the magnitude of a single concentrated load that will produce the same moment on a given span as that produced by each of the 1303 variants of the 14 heavy vehicle types of unit weight shown in identification index Tables 6.1-6.14.

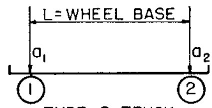
The table numbers corresponding to each of the 14 heavy vehicle types shown in Figure 6.1 are as follows:

Table No.	Vehicle Type	Table No.	Vehicle Type
12.1	2	12.8	3-S3
12.2	3	12.9	2-2
12.3	2-S1	12.10	2-3
12.4	2-S2	12.11	3-2
12.5	2-S3	12.12	3-3
12.6	3-S1	12.13	2-S1-2
12.7	3-S2	12.14	3-S2-3

The use of these tables for converting any particular heavy vehicle type and loading into an equivalent concentrated load on a given span is explained in Article 5.

Table 12.1

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2 TRUCK

Thirty-six variations in the Type 2 truck are given in this Table. Each truck number, from 1 to 36, represents a different combination of wheel base length, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

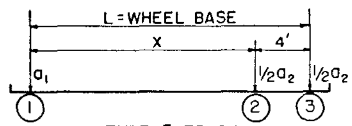
Equivalent concentrated loads are in kips.

a_1 and a_2—Represent the ratios of gross vehicle weight on axles.

Wheel Base Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
	1	.45	.55	.550	.601	.722	.788	.828	.856	.891	.912
	2	.40	.60	.600	.640	.751	.810	.846	.872	.903	.922
	3	.35	.65	.650	.681	.780	.833	.865	.887	.915	.931
L = 10	4	.30	.70	.700	.723	.810	.856	.884	.903	.927	.941
	5	.25	.75	.750	.766	.840	.879	.902	.919	.939	.951
	6	.20	.80	.800	.810	.871	.903	.922	.935	.951	.960
	7	.45	.55	.550	.550	.672	.748	.796	.828	.870	.895
	8	.40	.60	.600	.600	.705	.774	.818	.847	.884	.906
	9	.35	.65	.650	.650	.739	.801	.839	.865	.898	.918
L = 12	10	.30	.70	.700	.700	.774	.828	.861	.884	.912	.929
	11	.25	.75	.750	.750	.810	.856	.884	.903	.927	.941
	12	.20	.80	.800	.800	.846	.884	.906	.922	.941	.952
	13	.45	.55	.550	.550	.624	.710	.764	.802	.849	.878
	14	.40	.60	.600	.600	.661	.740	.789	.822	.865	.891
	15	.35	.65	.650	.650	.700	.770	.814	.844	.882	.904
L = 14	16	.30	.70	.700	.700	.739	.801	.839	.865	.898	.918
	17	.25	.75	.750	.750	.780	.833	.865	.887	.915	.931
	18	.20	.80	.800	.800	.822	.865	.891	.909	.931	.945
	19	.45	.55	.550	.550	.577	.672	.733	.775	.828	.861
	20	.40	.60	.600	.600	.619	.706	.760	.798	.847	.876
	21	.35	.65	.650	.650	.661	.740	.789	.822	.865	.891
L = 16	22	.30	.70	.700	.700	.705	.774	.818	.847	.884	.906
	23	.25	.75	.750	.750	.751	.810	.846	.872	.903	.922
	24	.20	.80	.800	.800	.800	.846	.876	.896	.922	.937
	25	.45	.55	.550	.550	.550	.636	.702	.748	.808	.844
	26	.40	.60	.600	.600	.600	.672	.733	.775	.828	.861
	27	.35	.65	.650	.650	.650	.710	.764	.802	.849	.878
L = 18	28	.30	.70	.700	.700	.700	.748	.796	.828	.870	.895
	29	.25	.75	.750	.750	.750	.788	.828	.856	.891	.912
	30	.20	.80	.800	.800	.800	.828	.861	.884	.912	.929
	31	.45	.55	.550	.550	.550	.601	.672	.723	.788	.828
	32	.40	.60	.600	.600	.600	.640	.706	.752	.810	.846
	33	.35	.65	.650	.650	.650	.681	.740	.780	.833	.865
L = 20	34	.30	.70	.700	.700	.700	.723	.774	.810	.856	.884
	35	.25	.75	.750	.750	.750	.766	.810	.840	.879	.902
	36	.20	.80	.800	.800	.800	.810	.846	.872	.903	.922

Table 12.2

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3 TRUCK

Forty-two variations in the Type 3 truck are given in this Table. Each truck number, from 1 to 42, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

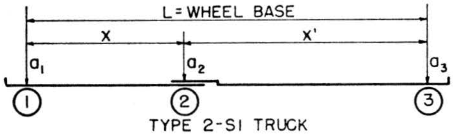
Equivalent concentrated loads are in kips.

a_1 and a_2—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips		Span-Feet							
		a_1	a_2	10	20	30	40	50	60	80	100
	1	.40	.60	.400	.500	.662	.745	.795	.829	.872	.897
	2	.35	.65	.416	.532	.685	.763	.810	.842	.881	.904
	3	.30	.70	.448	.567	.709	.782	.825	.854	.891	.912
L = 14	4	.25	.75	.480	.608	.734	.801	.841	.867	.900	.920
X = 10	5	.20	.80	.512	.648	.760	.820	.856	.880	.910	.928
	6	.15	.85	.544	.689	.786	.840	.872	.894	.920	.936
	7	.10	.90	.576	.729	.814	.860	.888	.907	.930	.944
	8	.40	.60	.400	.486	.614	.708	.765	.804	.852	.881
	9	.35	.65	.416	.533	.643	.730	.783	.820	.864	.891
	10	.30	.70	.448	.567	.672	.753	.802	.835	.876	.900
L = 16	11	.25	.75	.480	.608	.702	.776	.821	.851	.888	.910
X = 12	12	.20	.80	.512	.648	.734	.800	.840	.867	.900	.920
	13	.15	.85	.544	.689	.766	.825	.860	.884	.913	.930
	14	.10	.90	.576	.729	.800	.850	.880	.900	.925	.940
	15	.40	.60	.400	.486	.568	.672	.736	.779	.833	.866
	16	.35	.65	.416	.527	.601	.698	.757	.797	.847	.877
	17	.30	.70	.448	.567	.635	.725	.779	.816	.862	.889
L = 18	18	.25	.75	.480	.608	.671	.753	.802	.835	.876	.900
X = 14	19	.20	.80	.512	.648	.708	.781	.825	.854	.891	.912
	20	.15	.85	.544	.689	.747	.810	.848	.874	.905	.924
	21	.10	.90	.576	.729	.787	.840	.872	.894	.920	.936
	22	.40	.60	.400	.486	.523	.637	.707	.754	.815	.851
	23	.35	.65	.416	.527	.566	.667	.731	.776	.831	.864
	24	.30	.70	.448	.567	.610	.697	.757	.797	.847	.877
L = 20	25	.25	.75	.480	.608	.653	.729	.782	.819	.864	.891
X = 16	26	.20	.80	.512	.648	.697	.762	.809	.841	.881	.904
	27	.15	.85	.544	.689	.740	.795	.836	.864	.898	.918
	28	.10	.90	.576	.729	.784	.830	.864	.887	.915	.932
	29	.40	.60	.400	.486	.523	.603	.678	.730	.796	.836
	30	.35	.65	.416	.527	.566	.636	.706	.754	.814	.850
	31	.30	.70	.448	.567	.610	.670	.734	.778	.833	.866
L = 22	32	.25	.75	.480	.608	.653	.706	.764	.803	.852	.881
X = 18	33	.20	.80	.512	.648	.697	.743	.794	.828	.871	.896
	34	.15	.85	.544	.689	.740	.781	.825	.854	.890	.912
	35	.10	.90	.576	.729	.784	.820	.856	.880	.910	.928
	36	.40	.60	.400	.486	.523	.569	.650	.706	.778	.821
	37	.35	.65	.416	.527	.566	.605	.681	.733	.798	.837
	38	.30	.70	.448	.567	.610	.643	.712	.760	.819	.854
L = 24	39	.25	.75	.480	.608	.653	.683	.745	.787	.840	.871
X = 20	40	.20	.80	.512	.648	.697	.724	.778	.815	.861	.888
	41	.15	.85	.544	.689	.740	.767	.813	.844	.883	.906
	42	.10	.90	.576	.729	.784	.812	.848	.874	.905	.924

Table 12.3

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



One hundred twenty-six variations in the Type 2-S1 truck are given in this Table. Each truck number, from 1 to 126, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratios of gross vehicle weight on axles.

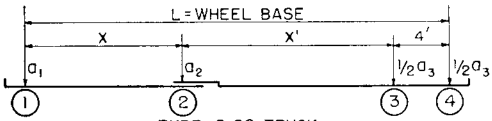
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.600	.600	.676	.740	.789	.822	.865	.891
	2	.10	.40	.50	.500	.500	.609	.689	.746	.787	.837	.869
L = 20	3	.10	.45	.45	.450	.473	.610	.703	.760	.800	.848	.878
X = 8	4	.10	.50	.40	.500	.523	.644	.730	.782	.818	.863	.890
X' = 12	5	.20	.30	.50	.500	.500	.578	.656	.719	.763	.819	.854
	6	.20	.40	.40	.400	.450	.585	.686	.748	.790	.842	.873
	7	.20	.50	.30	.500	.549	.658	.743	.794	.828	.871	.896
	8	.10	.30	.60	.600	.600	.609	.676	.733	.775	.828	.861
	9	.10	.40	.50	.500	.500	.524	.609	.679	.729	.792	.832
L = 24	10	.10	.45	.45	.450	.473	.512	.626	.696	.745	.806	.844
X = 8	11	.10	.50	.40	.500	.523	.555	.660	.725	.769	.825	.859
X' = 16	12	.20	.30	.50	.500	.500	.512	.578	.653	.706	.774	.817
	13	.20	.40	.40	.400	450	.498	.614	.689	.740	.804	.842
	14	.20	.50	.30	.500	.549	.597	.686	.748	.790	.842	.873
	15	.10	.30	.60	.600	.600	.600	.625	.679	.729	.792	.832
	16	.10	.40	.50	.500	.500	.500	.544	.615	.673	.748	.796
L = 28	17	.10	.45	.45	.450	.473	.498	.552	.635	.692	.766	.811
X = 8	18	.10	.50	.40	.500	.523	.548	.592	.669	.721	.788	.829
X' = 20	19	.20	.30	.50	.500	.500	.500	.528	.590	.651	.731	.781
	20	.20	.40	.40	.400	.450	.498	.546	.632	.692	.766	.812
	21	.20	.50	.30	.500	.549	.597	.632	.704	.752	.813	.850
	22	.10	.30	.60	.600	.600	.600	.600	.635	.684	.757	.803
	23	.10	.40	.50	.500	.500	.500	.500	.557	.619	.706	.760
L = 32	24	.10	.45	.45	.450	.473	.498	.511	.576	.641	.726	.778
X = 8	25	.10	.50	.40	.500	.523	.548	.561	.615	.675	.752	.800
X' = 24	26	.20	.30	.50	.500	.500	.500	.500	.538	.598	.689	.746
	27	.20	.40	.40	.400	.450	.498	.523	.578	.645	.730	.782
	28	.20	.50	.30	.500	.549	.597	.622	.661	.716	.785	.827
	29	.10	.30	.60	.600	.600	.600	.600	.600	.642	.723	.774
	30	.10	.40	.50	.500	.500	.500	.500	.508	.568	.664	.726
L = 36	31	.10	.45	.45	.450	.473	.498	.511	.520	.592	.687	.746
X = 8	32	.10	.50	.40	.500	.523	.548	.561	.568	.630	.717	.771
X' = 28	33	.20	.30	.50	.500	.500	.500	.500	.500	.548	.648	.712
	34	.20	.40	.40	.400	.450	.498	.523	.538	.599	.694	.753
	35	.20	.50	.30	.500	.549	.597	.622	.637	.680	.757	.805
	36	.10	.30	.60	.600	.676	.747	.792	.832	.859	.893	.914
	37	.10	.40	.50	.500	.608	.699	.757	.803	.835	.874	.899
L = 20	38	.10	.45	.45	.450	.576	.686	.764	.810	.842	.881	.905
X = 12	39	.10	.50	.40	.500	.608	.711	.783	.826	.855	.891	.912
X' = 8	40	.20	.30	.50	.500	.578	.648	.706	.760	.798	.846	.876
	41	.20	.40	.40	.400	.512	.627	.720	.776	.814	.860	.888
	42	.20	.50	.30	.500	.578	.680	.760	.808	.840	.880	.904
	43	.10	.30	.60	.600	.600	.676	.729	.774	.810	.856	.884
	44	.10	.40	.50	.500	.500	.609	.676	.733	.775	.828	.861
L = 24	45	.10	.45	.45	.450	.450	.579	.681	.743	.785	.838	.870
X = 12	46	.10	.50	.40	.500	.500	.614	.708	.765	.804	.852	.881
X' = 12	47	.20	.30	.50	.500	.500	.578	.630	.692	.740	.801	.839
	48	.20	.40	.40	.400	.400	.526	.644	.714	.762	.821	.857
	49	.20	.50	.30	.500	.500	.601	.701	.761	.801	.850	.880

Table 12.3 (Continued)

	50	.10	.30	.60	.600	.600	.609	.676	.719	.763	.819	.854
	51	.10	.40	.50	.500	.500	.524	.609	.666	.717	.783	.824
L = 28	52	.10	.45	.45	.450	.450	.484	.603	.678	.730	.796	.836
X = 12	53	.10	.50	.40	.500	.500	.524	.637	.707	.755	.814	.851
X′ = 16	54	.20	.30	.50	.500	.500	.512	.578	.627	.684	.757	.803
	55	.20	.40	.40	.400	.400	.451	.570	.654	.711	.783	.826
	56	.20	.50	.30	.500	.500	.549	.644	.714	.762	.821	.857
	57	.10	.30	.60	.600	.600	.600	.625	.676	.717	.783	.824
	58	.10	.40	.50	.500	.500	.500	.544	.608	.662	.740	.789
L = 32	59	.10	.45	.45	.450	.450	.473	.528	.616	.677	.755	.802
X = 12	60	.10	.50	.40	.500	.500	.523	.569	.650	.707	.777	.821
X′ = 20	61	.20	.30	.50	.500	.500	.500	.528	.578	.630	.714	.767
	62	.20	.40	.40	.400	.400	.451	.500	.597	.662	.745	.795
	63	.20	.50	.30	.500	.500	.549	.588	.669	.724	.792	.833
	64	.10	.30	.60	.600	.600	.600	.600	.635	.676	.748	.796
	65	.10	.40	.50	.500	.500	.500	.500	.557	.609	.697	.753
L = 36	66	.10	.45	.45	.450	.450	.473	.492	.557	.626	.714	.769
X = 12	67	.10	.50	.40	.500	.500	.523	.542	.596	.659	.741	.791
X′ = 24	68	.20	.30	.50	.500	.500	.500	.500	.538	.578	.672	.733
	69	.20	.40	.40	.400	.400	.451	.486	.541	.615	.708	.765
	70	.20	.50	.30	.500	.500	.549	.585	.625	.687	.764	.810
	71	.10	.30	.60	.600	.600	.600	.600	.600	.642	.714	.767
	72	.10	.40	.50	.500	.500	.500	.500	.508	.566	.656	.719
L = 40	73	.10	.45	.45	.450	.450	.473	.492	.503	.576	.675	.737
X = 12	74	.10	.50	.40	.500	.500	.523	.542	.553	.615	.706	.762
X′ = 28	75	.20	.30	.50	.500	.500	.500	.500	.500	.545	.632	.699
	76	.20	.40	.40	.400	.400	.451	.486	.508	.568	.672	.736
	77	.20	.50	.30	.500	.500	.549	.585	.607	.650	.709	.788
	78	.10	.30	.60	.600	.600	.600	.600	.600	.609	.681	.740
	79	.10	.40	.50	.500	.500	.500	.500	.500	.524	.616	.686
L = 44	80	.10	.45	.45	.450	.450	.473	.492	.503	.529	.637	.705
X = 12	81	.10	.50	.40	.500	.500	.523	.542	.553	.571	.671	.733
X′ = 32	82	.20	.30	.50	.500	.500	.500	.500	.500	.512	.593	.666
	83	.20	.40	.40	.400	.400	.451	.486	.508	.524	.637	.707
	84	.20	.50	.30	.500	.500	.549	.585	.607	.623	.708	.765
	85	.10	.30	.60	.600	.676	.747	.784	.817	.847	.884	.906
	86	.10	.40	.50	.500	.608	.699	.747	.789	.822	.865	.891
L = 24	87	.10	.45	.45	.450	.576	.676	.743	.794	.828	.871	.896
X = 16	88	.10	.50	.40	.500	.608	.699	.762	.809	.841	.880	.904
X′ = 8	89	.20	.30	.50	.500	.578	.648	.685	.733	.775	.828	.861
	90	.20	.40	.40	.400	.512	.601	.680	.744	.787	.840	.872
	91	.20	.50	.30	.500	.578	.648	.720	.776	.814	.860	.888
	92	.10	.30	.60	.600	.600	.676	.729	.762	.798	.846	.876
	93	.10	.40	.50	.500	.500	.609	.676	.719	.763	.819	.854
L = 28	94	.10	.45	.45	.450	.450	.576	.659	.726	.771	.827	.861
X = 16	95	.10	.50	.40	.500	.500	.609	.686	.748	.790	.842	.873
X′ = 12	96	.20	.30	.50	.500	.500	.578	.630	.666	.717	.783	.824
	97	.20	.40	.40	.400	.400	.512	.602	.681	.734	.800	.840
	98	.20	.50	.30	.500	.500	.578	.660	.728	.774	.830	.864
	99	.10	.30	.60	.600	.600	.609	.676	.718	.752	.810	.846
	100	.10	.40	.50	.500	.500	.524	.609	.662	.706	.774	.817
L = 32	101	.10	.45	.45	.450	.450	.484	.580	.661	.716	.785	.827
X = 16	102	.10	.50	.40	.500	.500	.524	.614	.689	.740	.804	.842
X′ = 16	103	.20	.30	.50	.500	.500	.512	.578	.620	.662	.740	.789
	104	.20	.40	.40	.400	.400	.430	.526	.620	.683	.762	.809
	105	.20	.50	.30	.500	.500	.512	.602	.681	.734	.800	.840
	106	.10	.30	.60	.600	.600	.600	.625	.676	.711	.774	.817
	107	.10	.40	.50	.500	.500	.500	.544	.608	.653	.731	.781
L = 36	108	.10	.45	.45	.450	.450	.450	.506	.598	.662	.744	.793
X = 16	109	.10	.50	.40	.500	.500	.500	.546	.632	.692	.766	.812
X′ = 20	110	.20	.30	.50	.500	.500	.500	.528	.578	.613	.697	.753
	111	.20	.40	.40	.400	.400	.406	.454	.561	.633	.724	.778
	112	.20	.50	.30	.500	.500	.503	.549	.635	.696	.771	.817
	113	.10	.30	.60	.600	.600	.600	.600	.635	.676	.740	.789
	114	.10	.40	.50	.500	.500	.500	.500	.557	.609	.689	.745
L = 40	115	.10	.45	.45	.450	.450	.450	.473	.538	.611	.703	.760
X = 16	116	.10	.50	.40	.500	.500	.500	.523	.578	.645	.730	.782
X′ = 24	117	.20	.30	.50	.500	.500	.500	.500	.538	.578	.656	.719
	118	.20	.40	.40	.400	.400	.406	.451	.504	.585	.686	.748
	119	.20	.50	.30	.500	.500	.503	.549	.590	.658	.743	.794
	120	.10	.30	.60	.600	.600	.600	.600	.600	.642	.706	.760
	121	.10	.40	.50	.500	.500	.500	.500	.508	.566	.648	.712
L = 44	122	.10	.45	.45	.450	.450	.450	.473	.488	.561	.664	.728
X = 16	123	.10	.50	.40	.500	.500	.500	.523	.538	.599	.694	.753
X′ = 28	124	.20	.30	.50	.500	.500	.500	.500	.500	.545	.616	.686
	125	.20	.40	.40	.400	.400	.406	.451	.479	.538	.650	.718
	126	.20	.50	.30	.500	.500	.503	.549	.578	.621	.714	.771

Table 12.4

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S2 TRUCK

One hundred eight variations in the Type 2-S2 truck are given in this Table. Each truck number, from 1 to 108, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

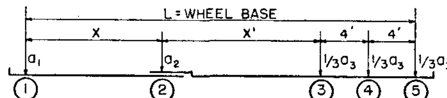
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.384	.544	.662	.745	.795	.829	.871	.897
	2	.10	.40	.50	.400	.494	.633	.721	.775	.812	.858	.886
L = 20	3	.10	.50	.40	.500	.562	.691	.766	.812	.843	.882	.905
X = 8	4	.20	.30	.50	.320	.466	.583	.683	.744	.786	.838	.870
X′ = 8	5	.20	.40	.40	.400	.480	.633	.724	.778	.815	.861	.889
	6	.20	.50	.30	.500	.571	.695	.771	.817	.848	.885	.908
	7	.10	.30	.60	.384	.486	.587	.672	.736	.779	.833	.866
	8	.10	.40	.50	.400	.423	.531	.634	.703	.751	.811	.848
L = 24	9	.10	.50	.40	.500	.523	.599	.694	.753	.793	.844	.874
X = 8	10	.20	.30	.50	.320	.405	.503	.597	.673	.726	.792	.832
X′ = 12	11	.20	.40	.40	.400	.450	.538	.650	.718	.765	.823	.858
	12	.20	.50	.30	.500	.549	.623	.714	.771	.809	.856	.885
	13	.10	.30	.60	.384	.486	.523	.609	.678	.730	.796	.836
	14	.10	.40	.50	.400	.423	.448	.552	.635	.692	.766	.811
L = 28	15	.10	.50	.40	.500	.523	.548	.626	.696	.745	.806	.844
X = 8	16	.20	.30	.50	.320	.405	.435	.521	.606	.668	.747	.795
X′ = 16	17	.20	.40	.40	.400	.450	.498	.580	.661	.716	.785	.827
	18	.20	.50	.30	.500	.549	.597	.659	.726	.771	.827	.861
	19	.10	.30	.60	.384	.486	.523	.556	.623	.683	.759	.806
	20	.10	.40	.50	.400	.423	.448	.484	.570	.636	.721	.774
L = 32	21	.10	.50	.40	.500	.523	.548	.568	.642	.698	.770	.814
X = 8	22	.20	.30	.50	.320	.405	.435	.470	.541	.612	.703	.759
X′ = 20	23	.20	.40	.40	.400	.450	.498	.525	.605	.668	.748	.797
	24	.20	.50	.30	.500	.549	.597	.622	.682	.734	.799	.839
	25	.10	.30	.60	.384	.486	.523	.542	.580	.637	.723	.776
	26	.10	.40	.50	.400	.423	.448	.461	.509	.582	.678	.737
L = 36	27	.10	.50	.40	.500	.523	.548	.561	.589	.653	.734	.785
X = 8	28	.20	.30	.50	.320	.405	.435	.451	.491	.558	.660	.724
X′ = 24	29	.20	.40	.40	.400	.450	.498	.523	.551	.622	.712	.768
	30	.20	.50	.30	.500	.549	.597	.622	.644	.698	.771	.816
	31	.10	.30	.60	.384	.486	.523	.542	.553	.596	.688	.748
	32	.10	.40	.50	.400	.423	.448	.461	.469	.530	.637	.704
L = 40	33	.10	.50	.40	.500	.523	.548	.561	.568	.609	.700	.757
X = 8	34	.20	.30	.50	.320	.405	.435	.451	.461	.506	.618	.689
X′ = 28	35	.20	.40	.40	.400	.450	.498	.523	.538	.577	.677	.739
	36	.20	.50	.30	.500	.549	.597	.622	.637	.662	.744	.793
	37	.10	.30	.60	.384	.544	.662	.726	.780	.817	.862	.889
	38	.10	.40	.50	.400	.494	.626	.701	.759	.799	.848	.878
L = 24	39	.10	.50	.40	.500	.549	.662	.745	.795	.829	.871	.897
X = 12	40	.20	.30	.50	.320	.466	.576	.648	.716	.762	.820	.855
X′ = 8	41	.20	.40	.40	.400	.450	.576	.682	.745	.788	.840	.872
	42	.20	.50	.30	.500	.535	.640	.730	.784	.821	.865	.892

Table 12.4 (Continued)

	43	.10	.30	.60	.384	.486	.587	.664	.721	.767	.824	.858
	44	.10	.40	.50	.400	.405	.531	.620	.687	.738	.801	.840
L = 28	45	.10	.50	.40	.500	.500	.568	.672	.736	.779	.833	.866
X = 12	46	.20	.30	.50	.320	.405	.503	.575	.646	.702	.774	.817
X' = 12	47	.20	.40	.40	.400	.400	.480	.606	.684	.737	.802	.841
	48	.20	.50	.30	.500	.500	.570	.672	.737	.781	.836	.868
	49	.10	.30	.60	.384	.486	.523	.609	.666	.718	.786	.828
	50	.10	.40	.50	.400	.405	.443	.550	.619	.679	.756	.803
L = 32	51	.10	.50	.40	.500	.500	.523	.603	.678	.730	.796	.836
X = 12	52	.20	.30	.50	.320	.405	.435	.521	.579	.645	.729	.781
X' = 16	53	.20	.40	.40	.400	.400	.451	.534	.625	.687	.764	.810
	54	.20	.50	.30	.500	.500	.549	.616	.692	.743	.806	.845
	55	.10	.30	.60	.384	.486	.523	.556	.622	.671	.750	.798
	56	.10	.40	.50	.400	.405	.435	.484	.562	.623	.711	.766
L = 36	57	.10	.50	.40	.500	.500	.523	.546	.623	.683	.759	.806
X = 12	58	.20	.30	.50	.320	.405	.435	.470	.532	.590	.685	.745
X' = 20	59	.20	.40	.40	.400	.400	.451	.486	.568	.638	.726	.780
	60	.20	.50	.30	.500	.500	.549	.585	.647	.705	.778	.822
	61	.10	.30	.60	.384	.486	.523	.542	.580	.631	.714	.769
	62	.10	.40	.50	.400	.405	.435	.451	.509	.570	.668	.731
L = 40	63	.10	.50	.40	.500	.500	.523	.542	.566	.637	.723	.776
X = 12	64	.20	.30	.50	.320	.405	.435	.451	.491	.540	.643	.710
X' = 24	65	.20	.40	.40	.400	.400	.451	.486	.515	.591	.690	.750
	66	.20	.50	.30	.500	.500	.549	.585	.611	.668	.750	.799
	67	.10	.30	.60	.384	.486	.523	.542	.553	.596	.680	.741
	68	.10	.40	.50	.400	.405	.435	.451	.461	.526	.627	.696
L = 44	69	.10	.50	.40	.500	.500	.523	.542	.553	.593	.688	.748
X = 12	70	.20	.30	.50	.320	.405	.435	.451	.461	.506	.602	.676
X' = 28	71	.20	.40	.40	.400	.400	.451	.486	.508	.546	.654	.721
	72	.20	.50	.30	.500	.500	.549	.585	.607	.632	.722	.776
	73	.10	.30	.60	.384	.544	.662	.721	.765	.804	.852	.881
	74	.10	.40	.50	.400	.494	.626	.694	.744	.786	.838	.870
L = 28	75	.10	.50	.40	.500	.549	.653	.724	.778	.815	.861	.889
X = 16	76	.20	.30	.50	.320	.466	.576	.632	.687	.738	.801	.840
X' = 8	77	.20	.40	.40	.400	.450	.555	.640	.712	.761	.820	.856
	78	.20	.50	.30	.500	.535	.612	.670	.736	.780	.835	.868
	79	.10	.30	.60	.384	.486	.587	.664	.710	.755	.814	.851
	80	.10	.40	.50	.400	.405	.531	.620	.674	.726	.792	.832
L = 32	81	.10	.50	.40	.500	.500	.565	.650	.718	.765	.823	.858
X = 16	82	.20	.30	.50	.320	.405	.503	.575	.619	.679	.756	.803
X' = 12	83	.20	.40	.40	.400	.400	.470	.564	.650	.709	.781	.825
	84	.20	.50	.30	.500	.500	.544	.631	.704	.754	.815	.852
	85	.10	.30	.60	.384	.486	.523	.609	.666	.707	.777	.821
	86	.10	.40	.50	.400	.405	.443	.550	.617	.668	.747	.795
L = 36	87	.10	.50	.40	.500	.500	.503	.580	.661	.716	.785	.827
X = 16	88	.20	.30	.50	.320	.405	.435	.521	.575	.623	.711	.766
X' = 16	89	.20	.40	.40	.400	.400	.406	.490	.590	.658	.743	.794
	90	.20	.50	.30	.500	.500	.503	.573	.658	.715	.786	.828
	91	.10	.30	.60	.384	.486	.523	.556	.622	.668	.741	.791
	92	.10	.40	.50	.400	.405	.435	.484	.562	.615	.703	.759
L = 40	93	.10	.50	.40	.500	.500	.500	.525	.605	.668	.748	.797
X = 16	94	.20	.30	.50	.320	.405	.435	.470	.532	.576	.668	.731
X' = 20	95	.20	.40	.40	.400	.400	.406	.451	.533	.609	.705	.763
	96	.20	.50	.30	.500	.500	.503	.549	.613	.677	.757	.805
	97	.10	.30	.60	.384	.486	.523	.542	.580	.631	.706	.762
	98	.10	.40	.50	.400	.405	.435	.451	.509	.570	.660	.724
L = 44	99	.10	.50	.40	.500	.500	.500	.523	.551	.622	.712	.768
X = 16	100	.20	.30	.50	.320	.405	.435	.451	.491	.540	.627	.696
X' = 24	101	.20	.40	.40	.400	.400	.406	.451	.481	.561	.688	.733
	102	.20	.50	.30	.500	.500	.503	.549	.578	.640	.728	.782
	103	.10	.30	.60	.384	.486	.523	.542	.553	.596	.671	.733
	104	.10	.40	.50	.400	.405	.435	.451	.461	.526	.618	.689
L = 48	105	.10	.50	.40	.500	.500	.500	.523	.538	.577	.677	.739
X = 16	106	.20	.30	.50	.320	.405	.435	.451	.461	.506	.586	.662
X' = 28	107	.20	.40	.40	.400	.400	.406	.451	.479	.515	.632	.704
	108	.20	.50	.30	.500	.500	.503	.549	.578	.603	.700	.759

Table 12.5

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2-S3 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S3 TRUCK

Ninety variations in the Type 2-S3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

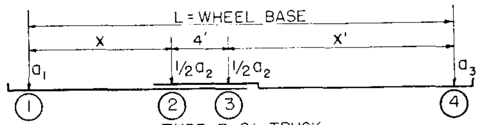
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.225	.675	.315	.495	.609	.695	.756	.797	.848	.878
	2	.10	.30	.60	.300	.440	.580	.682	.745	.788	.840	.872
L = 24	3	.10	.40	.50	.400	.454	.576	.677	.739	.781	.834	.867
X = 8	4	.20	.20	.60	.280	.440	.541	.644	.714	.762	.821	.857
X′ = 8	5	.20	.30	.50	.300	.374	.514	.632	.703	.752	.813	.850
	6	.20	.40	.40	.400	.468	.585	.687	.748	.790	.842	.873
	7	.10	.225	.675	.315	.495	.556	.639	.706	.755	.816	.852
	8	.10	.30	.60	.300	.440	.502	.606	.684	.737	.802	.841
L = 28	9	.10	.40	.50	.400	.423	.488	.592	.668	.721	.788	.829
X = 8	10	.20	.20	.60	.280	.440	.494	.570	.654	.711	.783	.826
X′ = 12	11	.20	.30	.50	.300	.366	.430	.545	.632	.691	.766	.812
	12	.20	.40	.40	.400	.451	.520	.615	.690	.740	.804	.843
	13	.10	.225	.675	.315	.495	.555	.599	.657	.713	.784	.827
	14	.10	.30	.60	.300	.440	.493	.544	.625	.687	.764	.810
L = 32	15	.10	.40	.50	.400	.423	.448	.513	.602	.664	.743	.792
X = 8	16	.20	.20	.60	.280	.440	.493	.533	.597	.662	.745	.795
X′ = 16	17	.20	.30	.50	.300	.366	.411	.467	.564	.633	.721	.775
	18	.20	.40	.40	.400	.451	.498	.554	.633	.692	.767	.812
	19	.10	.225	.675	.315	.495	.555	.585	.625	.673	.753	.802
	20	.10	.30	.60	.300	.440	.493	.520	.570	.638	.726	.780
L = 36	21	.10	.40	.50	.400	.423	.448	.466	.538	.608	.699	.756
X = 8	22	.20	.20	.60	.280	.440	.493	.520	.556	.615	.708	.765
X′ = 20	23	.20	.30	.50	.300	.366	.411	.433	.499	.577	.677	.739
	24	.20	.40	.40	.400	.451	.498	.523	.578	.645	.730	.783
	25	.10	.225	.675	.315	.495	.555	.585	.603	.643	.723	.777
	26	.10	.30	.60	.300	.440	.493	.520	.536	.591	.690	.750
L = 40	27	.10	.40	.50	.400	.423	.448	.461	.484	.555	.657	.721
X = 8	28	.20	.20	.60	.280	.440	.493	.520	.536	.571	.672	.736
X′ = 24	29	.20	.30	.50	.300	.366	.411	.433	.447	.523	.634	.703
	30	.20	.40	.40	.400	.451	.498	.523	.543	.600	.695	.754
	31	.10	.225	.675	.315	.495	.609	.680	.740	.784	.838	.870
	32	.10	.30	.60	.300	.440	.580	.663	.730	.775	.831	.864
L = 28	33	.10	.40	.50	.400	.441	.555	.654	.721	.767	.823	.858
X = 12	34	.20	.20	.60	.280	.440	.541	.606	.684	.737	.802	.841
X′ = 8	35	.20	.30	.50	.300	.366	.507	.592	.672	.726	.793	.834
	36	.20	.40	.40	.400	.432	.529	.644	.715	.762	.821	.857
	37	.10	.225	.675	.315	.495	.556	.639	.690	.742	.806	.845
	38	.10	.30	.60	.300	.440	.502	.601	.669	.724	.792	.833
L = 32	39	.10	.40	.50	.400	.400	.457	.569	.650	.706	.777	.820
X = 12	40	.20	.20	.60	.280	.440	.494	.568	.625	.687	.764	.810
X′ = 12	41	.20	.30	.50	.300	.366	.430	.522	.600	.665	.746	.796
	42	.20	.40	.40	.400	.400	.467	.571	.655	.712	.783	.826

Table 12.5 (Continued)

	43	.10	.225	.675	.315	.495	.555	.599	.657	.701	.775	.819
	44	.10	.30	.60	.300	.440	.493	.544	.615	.675	.754	.803
L = 36	45	.10	.40	.50	.400	.400	.423	.493	.583	.648	.732	.784
X = 12	46	.20	.20	.60	.280	.440	.493	.533	.584	.638	.726	.780
X′ = 16	47	.20	.30	.50	.300	.366	.411	.466	.532	.607	.701	.759
	48	.20	.40	.40	.400	.400	.451	.511	.597	.663	.745	.795
	49	.10	.225	.675	.315	.495	.555	.585	.625	.669	.744	.795
	50	.10	.30	.60	.300	.440	.493	.520	.570	.627	.717	.773
L = 40	51	.10	.40	.50	.400	.400	.423	.444	.518	.592	.688	.747
X = 12	52	.20	.20	.60	.280	.440	.493	.520	.556	.595	.690	.750
X′ = 20	53	.20	.30	.50	.300	.366	.411	.433	.488	.550	.657	.723
	54	.20	.40	.40	.400	.400	.451	.486	.541	.615	.709	.765
	55	.10	.225	.675	.315	.495	.555	.585	.603	.643	.714	.770
	56	.10	.30	.60	.300	.440	.493	.520	.536	.587	.681	.743
L = 44	57	.10	.40	.50	.400	.400	.423	.442	.465	.539	.645	.712
X = 12	58	.20	.20	.60	.280	.440	.493	.520	.536	.571	.654	.721
X′ = 24	59	.20	.30	.50	.300	.366	.411	.433	.447	.503	.614	.687
	60	.20	.40	.40	.400	.400	.451	.486	.510	.569	.673	.736
	61	.10	.225	.675	.315	.495	.609	.680	.725	.771	.828	.862
	62	.10	.30	.60	.300	.440	.580	.660	.714	.762	.821	.857
L = 32	63	.10	.40	.50	.400	.441	.555	.641	.703	.752	.813	.850
X = 16	64	.20	.20	.60	.280	.440	.541	.605	.654	.711	.783	.826
X′ = 8	65	.20	.30	.50	.300	.366	.507	.580	.643	.701	.774	.819
	66	.20	.40	.40	.400	.432	.512	.602	.681	.735	.801	.840
	67	.10	.225	.675	.315	.495	.556	.639	.690	.729	.796	.837
	68	.10	.30	.60	.300	.440	.502	.601	.661	.711	.783	.826
L = 36	69	.10	.40	.50	.400	.400	.456	.565	.632	.691	.766	.812
X = 16	70	.20	.20	.60	.280	.440	.494	.568	.613	.662	.745	.795
X′ = 12	71	.20	.30	.50	.300	.366	.430	.522	.577	.641	.728	.781
	72	.20	.40	.40	.400	.400	.441	.527	.621	.684	.762	.809
	73	.10	.225	.675	.315	.495	.555	.599	.657	.697	.765	.812
	74	.10	.30	.60	.300	.440	.493	.544	.615	.662	.745	.795
L = 40	75	.10	.40	.50	.400	.400	.411	.493	.573	.633	.721	.775
X = 16	76	.20	.20	.60	.280	.440	.493	.533	.584	.619	.708	.765
X′ = 16	77	.20	.30	.50	.300	.366	.411	.466	.532	.584	.683	.745
	78	.20	.40	.40	.400	.400	.406	.468	.562	.634	.724	.779
	79	.10	.225	.675	.315	.495	.555	.585	.625	.669	.735	.787
	80	.10	.30	.60	.300	.440	.493	.520	.570	.624	.708	.765
L = 44	81	.10	.40	.50	.400	.400	.411	.433	.516	.578	.677	.739
X = 16	82	.20	.20	.60	.280	.440	.493	.520	.556	.595	.672	.736
X′ = 20	83	.20	.30	.50	.300	.366	.411	.433	.488	.539	.640	.709
	84	.20	.40	.40	.400	.400	.406	.451	.507	.586	.687	.748
	85	.10	.225	.675	.315	.495	.555	.585	.603	.643	.705	.762
	86	.10	.30	.60	.300	.440	.493	.520	.536	.587	.672	.736
L = 48	87	.10	.40	.50	.400	.400	.411	.433	.462	.532	.634	.703
X = 16	88	.20	.20	.60	.280	.440	.493	.520	.536	.571	.637	.707
X′ = 24	89	.20	.30	.50	.300	.366	.411	.433	.447	.503	.597	.674
	90	.20	.40	.40	.400	.400	.406	.451	.479	.539	.650	.719

Table 12.6

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S1 TRUCK

Ninety variations in the Type 3-S1 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

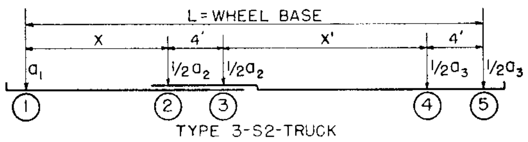
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	.500	.500	.565	.642	.706	.752	.810	.846
	2	.10	.50	.40	.400	.420	.541	.654	.723	.769	.826	.861
L = 24	3	.10	.60	.30	.384	.501	.601	.701	.761	.801	.850	.880
X = 8	4	.20	.40	.40	.400	.400	.470	.602	.681	.734	.800	.840
X' = 12	5	.20	.50	.30	.320	.441	.533	.650	.720	.767	.825	.860
	6	.20	.534	.266	.342	.468	.556	.666	.733	.778	.833	.867
	7	.10	.40	.50	.500	.500	.503	.576	.640	.695	.766	.810
	8	.10	.50	.40	.400	.420	.480	.581	.663	.719	.788	.830
L = 28	9	.10	.60	.30	.384	.501	.567	.644	.714	.762	.821	.857
X = 8	10	.20	.40	.40	.400	.400	.441	.526	.620	.683	.762	.809
X' = 16	11	.20	.50	.30	.320	.441	.527	.591	.673	.727	.795	.836
	12	.20	.534	.266	.342	.468	.556	.614	.691	.743	.807	.845
	13	.10	.40	.50	.500	.500	.500	.514	.582	.640	.723	.774
	14	.10	.50	.40	.400	.420	.480	.511	.605	.670	.750	.799
L = 32	15	.10	.60	.30	.384	.501	.567	.600	.669	.724	.792	.833
X = 8	16	.20	.40	.40	.400	.400	.441	.481	.561	.633	.724	.778
X' = 20	17	.20	.50	.30	.320	.441	.527	.570	.627	.689	.766	.813
	18	.20	.534	.266	.342	.468	.556	.601	.649	.708	.780	.824
	19	.10	.40	.50	.500	.500	.500	.500	.532	.588	.681	.740
	20	.10	.50	.40	.400	.420	.480	.510	.550	.622	.714	.769
L = 36	21	.10	.60	.30	.384	.501	.567	.600	.625	.687	.764	.810
X = 8	22	.20	.40	.40	.400	.400	.441	.481	.504	.585	.686	.748
X' = 24	23	.20	.50	.30	.320	.441	.527	.570	.596	.651	.737	.789
	24	.20	.534	.266	.342	.468	.556	.601	.627	.674	.755	.803
	25	.10	.40	.50	.500	.500	.500	.500	.500	.545	.640	.706
	26	.10	.50	.40	.400	.420	.480	.510	.528	.576	.678	.740
L = 40	27	.10	.60	.30	.384	.501	.567	.600	.620	.650	.736	.788
X = 8	28	.20	.40	.40	.400	.400	.441	.481	.504	.538	.650	.718
X' = 28	29	.20	.50	.30	.320	.441	.527	.570	.596	.614	.709	.767
	30	.20	.534	.266	.342	.468	.556	.601	.627	.646	.729	.783
	31	.10	.40	.50	.500	.500	.565	.642	.692	.740	.801	.839
	32	.10	.50	.40	.400	.405	.531	.633	.706	.755	.816	.852
L = 28	33	.10	.60	.30	.384	.486	.587	.680	.744	.787	.840	.872
X = 12	34	.20	.40	.40	.400	.400	.470	.560	.648	.707	.780	.824
X' = 12	35	.20	.50	.30	.320	.405	.503	.610	.688	.741	.805	.844
	36	.20	.534	.266	.342	.433	.522	.627	.702	.752	.813	.851
	37	.10	.40	.50	.500	.500	.503	.576	.635	.684	.757	.803
	38	.10	.50	.40	.400	.405	.453	.559	.646	.704	.777	.821
L = 32	39	.10	.60	.30	.384	.486	.540	.623	.698	.748	.811	.848
X = 12	40	.20	.40	.40	.400	.400	.406	.484	.586	.655	.741	.793
X' = 16	41	.20	.50	.30	.320	.405	.476	.550	.640	.700	.775	.820
	42	.20	.534	.266	.342	.433	.505	.573	.658	.716	.787	.829

Table 12.6 (Continued)

	43	.10	.40	.50	.500	.500	.500	.514	.582	.631	.714	.767
	44	.10	.50	.40	.400	.405	.453	.490	.588	.655	.740	.791
L = 36	45	.10	.60	.30	.384	.486	.540	.580	.652	.710	.782	.825
X = 12	46	.20	.40	.40	.400	.400	.400	.443	.526	.605	.703	.762
X′ = 20	47	.20	.50	.30	.320	.405	.476	.532	.593	.661	.746	.796
	48	.20	.534	.266	.342	.433	.505	.562	.616	.680	.760	.808
	49	.10	.40	.50	.500	.500	.500	.500	.532	.587	.672	.733
	50	.10	.50	.40	.400	.405	.453	.490	.532	.607	.703	.761
L = 40	51	.10	.60	.30	.384	.486	.540	.580	.608	.672	.753	.802
X = 12	52	.20	.40	.40	.400	.400	.400	.443	.474	.556	.665	.731
X′ = 24	53	.20	.50	.30	.320	.405	.476	.532	.565	.623	.716	.773
	54	.20	.534	.266	.342	.433	.505	.562	.596	.646	.734	.787
	55	.10	.40	.50	.500	.500	.500	.500	.500	.545	.632	.699
	56	.10	.50	.40	.400	.405	.453	.490	.512	.561	.667	.731
L = 44	57	.10	.60	.30	.384	.486	.540	.580	.604	.636	.725	.779
X = 12	58	.20	.40	.40	.400	.400	.400	.443	.474	.508	.628	.701
X′ = 28	59	.20	.50	.30	.320	.405	.476	.532	.565	.588	.688	.750
	60	.20	.534	.266	.342	.433	.505	.562	.596	.619	.708	.766
	61	.10	.40	.50	.500	.500	.565	.642	.690	.729	.792	.832
	62	.10	.50	.40	.400	.405	.531	.620	.689	.741	.806	.844
L = 32	63	.10	.60	.30	.384	.486	.587	.664	.728	.774	.830	.864
X = 16	64	.20	.40	.40	.400	.400	.470	.545	.616	.680	.760	.808
X′ = 12	65	.20	.50	.30	.320	.405	.503	.575	.657	.714	.785	.828
	66	.20	.534	.266	.342	.433	.522	.590	.671	.726	.794	.835
	67	.10	.40	.50	.500	.500	.503	.576	.635	.676	.748	.796
	68	.10	.50	.40	.400	.405	.443	.550	.629	.690	.767	.813
L = 36	69	.10	.60	.30	.384	.486	.523	.609	.681	.734	.800	.840
X = 16	70	.20	.40	.40	.400	.400	.406	.481	.553	.628	.720	.776
X′ = 16	71	.20	.50	.30	.320	.405	.435	.521	.608	.674	.755	.804
	72	.20	.534	.266	.342	.433	.465	.541	.627	.689	.767	.813
	73	.10	.40	.50	.500	.500	.500	.514	.582	.631	.706	.760
	74	.10	.50	.40	.400	.405	.435	.484	.570	.641	.729	.783
L = 40	75	.10	.60	.30	.384	.486	.523	.560	.635	.696	.771	.817
X = 16	76	.20	.40	.40	.400	.400	.400	.421	.492	.576	.682	.745
X′ = 20	77	.20	.50	.30	.320	.405	.435	.494	.560	.634	.725	.780
	78	.20	.534	.266	.342	.433	.465	.524	.584	.653	.740	.792
	79	.10	.40	.50	.500	.500	.500	.500	.532	.587	.664	.726
	80	.10	.50	.40	.400	.405	.435	.470	.513	.592	.692	.752
L = 44	81	.10	.60	.30	.384	.486	.523	.560	.590	.658	.743	.794
X = 16	82	.20	.40	.40	.400	.400	.400	.406	.444	.527	.644	.714
X′ = 24	83	.20	.50	.30	.320	.405	.435	.494	.535	.595	.696	.756
	84	.20	.534	.266	.342	.433	.465	.524	.566	.618	.713	.771
	85	.10	.40	.50	.500	.500	.500	.500	.500	.545	.625	.692
	86	.10	.50	.40	.400	.405	.435	.470	.496	.546	.656	.723
L = 48	87	.10	.60	.30	.384	.486	.523	.560	.588	.621	.714	.771
X = 16	88	.20	.40	.40	.400	.400	.400	.406	.444	.478	.606	.684
X′ = 28	89	.20	.50	.30	.320	.405	.435	.494	.535	.562	.667	.733
	90	.20	.534	.266	.342	.433	.465	.524	.566	.594	.687	.750

Table 12.7

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH



One hundred twelve variations in the Type 3-S2 truck are given in this Table. Each truck number, from 1 to 112, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

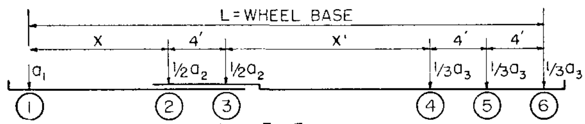
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.384	.486	.551	.636	.700	.749	.810	.847
	2	.10	.40	.50	.320	.405	.486	.585	.660	.714	.783	.825
L = 28	3	.10	.45	.45	.288	.380	.460	.591	.671	.725	.793	.834
X = 8	4	.10	.50	.40	.320	.420	.493	.617	.693	.744	.807	.845
X' = 12	5	.20	.30	.50	.320	.405	.467	.548	.626	.685	.760	.806
	6	.20	.40	.40	.256	.363	.441	.564	.650	.709	.781	.825
	7	.20	.50	.30	.320	.441	.527	.620	.696	.747	.810	.848
	8	.10	.30	.60	.384	.486	.523	.582	.644	.701	.773	.817
	9	.10	.40	.50	.320	.405	.435	.517	.592	.656	.738	.788
L = 32	10	.10	.45	.45	.288	.380	.437	.513	.606	.670	.751	.800
X = 8	11	.10	.50	.40	.320	.420	.480	.546	.634	.694	.769	.815
X' = 16	12	.20	.30	.50	.320	.405	.435	.495	.560	.628	.716	.770
	13	.20	.40	.40	.256	.363	.441	.490	.590	.658	.743	.794
	14	.20	.50	.30	.320	.441	.527	.574	.650	.708	.781	.824
	15	.10	.30	.60	.384	.486	.523	.543	.601	.654	.737	.787
	16	.10	.40	.50	.320	.405	.435	.458	.535	.601	.694	.752
L = 36	17	.10	.45	.45	.288	.380	.437	.465	.544	.617	.710	.766
X = 8	18	.10	.50	.40	.320	.420	.480	.510	.577	.646	.732	.784
X' = 20	19	.20	.30	.50	.320	.405	.435	.454	.512	.574	.673	.734
	20	.20	.40	.40	.256	.363	.441	.481	.533	.609	.705	.763
	21	.20	.50	.30	.320	.441	.527	.570	.606	.670	.752	.801
	22	.10	.30	.60	.384	.486	.523	.542	.561	.614	.701	.758
	23	.10	.40	.50	.320	.405	.435	.451	.483	.548	.651	.717
L = 40	24	.10	.45	.45	.288	.380	.437	.465	.485	.566	.669	.733
X = 8	25	.10	.50	.40	.320	.420	.480	.510	.528	.599	.696	.755
X' = 24	26	.20	.30	.50	.320	.405	.435	.451	.471	.523	.631	.700
	27	.20	.40	.40	.256	.363	.441	.481	.504	.561	.668	.733
	28	.20	.50	.30	.320	.441	.527	.570	.596	.632	.723	.778
	29	.10	.30	.60	.384	.486	.523	.542	.553	.579	.667	.730
	30	.10	.40	.50	.320	.405	.435	.451	.461	.504	.610	.683
L = 44	31	.10	.45	.45	.288	.380	.437	.465	.482	.516	.630	.701
X = 8	32	.10	.50	.40	.320	.420	.480	.510	.528	.554	.660	.726
X' = 28	33	.20	.30	.50	.320	.405	.435	.451	.461	.489	.590	.666
	34	.20	.40	.40	.256	.363	.441	.481	.504	.521	.632	.704
	35	.20	.50	.30	.320	.441	.527	.570	.596	.614	.695	.755
	36	.10	.30	.60	.384	.510	.624	.692	.743	.785	.838	.870
	37	.10	.40	.50	.320	.441	.578	.656	.716	.763	.820	.855
L = 28	38	.10	.45	.45	.288	.413	.556	.653	.722	.768	.826	.860
X = 12	39	.10	.50	.40	.320	.441	.578	.671	.737	.781	.835	.868
X' = 8	40	.20	.30	.50	.320	.430	.539	.603	.666	.720	.787	.829
	41	.20	.40	.40	.256	.363	.494	.600	.680	.734	.800	.840
	42	.20	.50	.30	.320	.430	.539	.641	.713	.761	.820	.856

Table 12.7 (Continued)

	43	.10	.30	.60	.384	.486	.551	.636	.688	.736	.800	.839
	44	.10	.40	.50	.320	.405	.486	.585	.646	.702	.774	.817
L = 32	45	.10	.45	.45	.288	.365	.456	.569	.654	.711	.782	.825
X = 12	46	.10	.50	.40	.320	.405	.486	.596	.676	.730	.796	.837
X′ = 12	47	.20	.30	.50	.320	.405	.467	.548	.599	.662	.742	.792
	48	.20	.40	.40	.256	.324	.405	.522	.617	.681	.760	.808
	49	.20	.50	.30	.320	.405	.476	.580	.664	.720	.790	.832
	50	.10	.30	.60	.384	.486	.523	.582	.644	.689	.764	.809
	51	.10	.40	.50	.320	.405	.435	.517	.589	.645	.729	.781
L = 36	52	.10	.45	.45	.288	.365	.410	.490	.589	.655	.740	.791
X = 12	53	.10	.50	.40	.320	.405	.453	.523	.616	.680	.758	.806
X′ = 16	54	.20	.30	.50	.320	.405	.435	.495	.554	.606	.698	.756
	55	.20	.40	.40	.256	.324	.391	.446	.556	.630	.722	.777
	56	.20	.50	.30	.320	.405	.476	.532	.617	.681	.760	.808
	57	.10	.30	.60	.384	.486	.523	.543	.601	.649	.728	.780
	58	.10	.40	.50	.320	.405	.435	.458	.535	.592	.685	.745
L = 40	59	.10	.45	.45	.288	.365	.410	.445	.526	.602	.699	.758
X = 12	60	.10	.50	.40	.320	.405	.453	.490	.559	.631	.721	.776
X′ = 20	61	.20	.30	.50	.320	.405	.435	.454	.512	.558	.656	.720
	62	.20	.40	.40	.256	.324	.391	.443	.497	.580	.684	.746
	63	.20	.50	.30	.320	.405	.476	.532	.572	.642	.731	.785
	64	.10	.30	.60	.384	.486	.523	.542	.561	.614	.693	.751
	65	.10	.40	.50	.320	.405	.435	.451	.483	.548	.643	.710
L = 44	66	.10	.45	.45	.288	.365	.410	.445	.466	.550	.658	.725
X = 12	67	.10	.50	.40	.320	.405	.453	.490	.512	.584	.685	.746
X′ = 24	68	.20	.30	.50	.320	.405	.435	.451	.471	.523	.614	.686
	69	.20	.40	.40	.256	.324	.391	.443	.474	.532	.646	.716
	70	.20	.50	.30	.320	.405	.476	.532	.565	.604	.702	.761
	71	.10	.30	.60	.384	.486	.523	.542	.553	.579	.658	.723
	72	.10	.40	.50	.320	.405	.435	.451	.461	.504	.602	.676
L = 48	73	.10	.45	.45	.288	.365	.410	.445	.466	.500	.619	.692
X = 12	74	.10	.50	.40	.320	.405	.453	.490	.512	.538	.649	.717
X′ = 28	75	.20	.30	.50	.320	.405	.435	.451	.461	.489	.574	.652
	76	.20	.40	.40	.256	.324	.391	.443	.474	.495	.610	.686
	77	.20	.50	.30	.320	.405	.476	.532	.565	.588	.674	.738
	78	.10	.30	.60	.384	.486	.551	.636	.688	.724	.791	.832
	79	.10	.40	.50	.320	.405	.486	.585	.645	.691	.765	.810
L = 36	80	.10	.45	.45	.288	.365	.456	.560	.637	.697	.772	.817
X = 16	81	.10	.50	.40	.320	.405	.486	.585	.659	.716	.786	.829
X′ = 12	82	.20	.30	.50	.320	.405	.467	.548	.597	.639	.724	.777
	83	.20	.40	.40	.256	.324	.405	.498	.584	.654	.740	.792
	84	.20	.50	.30	.320	.405	.467	.548	.632	.694	.770	.816
	85	.10	.30	.60	.384	.486	.523	.582	.644	.686	.755	.802
	86	.10	.40	.50	.320	.405	.435	.517	.589	.639	.720	.774
L = 40	87	.10	.45	.45	.288	.365	.392	.486	.571	.641	.729	.783
X = 16	88	.10	.50	.40	.320	.405	.435	.517	.599	.665	.748	.798
X′ = 16	89	.20	.30	.50	.320	.405	.435	.495	.554	.594	.681	.741
	90	.20	.40	.40	.256	.324	.348	.432	.522	.602	.701	.761
	91	.20	.50	.30	.320	.405	.435	.495	.584	.654	.740	.792
	92	.10	.30	.60	.384	.486	.523	.543	.601	.649	.719	.773
	93	.10	.40	.50	.320	.405	.435	.458	.535	.592	.677	.738
L = 44	94	.10	.45	.45	.288	.365	.392	.426	.508	.587	.688	.749
X = 16	95	.10	.50	.40	.320	.405	.435	.470	.541	.616	.710	.767
X′ = 20	96	.20	.30	.50	.320	.405	.435	.454	.512	.558	.639	.706
	97	.20	.40	.40	.256	.324	.348	.406	.462	.551	.663	.730
	98	.20	.50	.30	.320	.405	.435	.494	.539	.614	.710	.768
	99	.10	.30	.60	.384	.486	.523	.542	.561	.614	.684	.744
	100	.10	.40	.50	.320	.405	.435	.451	.483	.548	.635	.703
L = 48	101	.10	.45	.45	.288	.365	.392	.426	.450	.535	.647	.709
X = 16	102	.10	.50	.40	.320	.405	.435	.470	.496	.569	.674	.737
X′ = 24	103	.20	.30	.50	.320	.405	.435	.451	.471	.523	.598	.672
	104	.20	.40	.40	.256	.324	.348	.406	.444	.502	.625	.699
	105	.20	.50	.30	.320	.405	.435	.494	.535	.576	.681	.745
	106	.10	.30	.60	.384	.486	.523	.542	.553	.579	.656	.716
	107	.10	.40	.50	.320	.405	.435	.451	.461	.504	.596	.669
L = 52	108	.10	.45	.45	.288	.365	.392	.426	.450	.485	.608	.683
X = 16	109	.10	.50	.40	.320	.405	.435	.470	.496	.523	.638	.708
X′ = 28	110	.20	.30	.50	.320	.405	.435	.451	.461	.489	.563	.639
	111	.20	.40	.40	.256	.324	.348	.406	.444	.470	.588	.669
	112	.20	.50	.30	.320	.405	.405	.494	.535	.562	.653	.722

Table 12.8

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S3 TRUCK

One hundred five variations in the Type 3-S3 truck are given in this Table. Each truck number, from 1 to 105, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

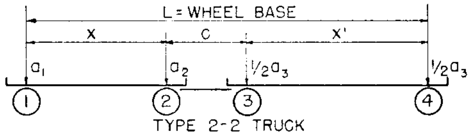
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.280	.440	.493	.572	.647	.705	.778	.822
	2	.10	.36	.54	.252	.396	.445	.546	.627	.688	.764	.811
L = 32	3	.10	.40	.50	.256	.366	.411	.529	.614	.677	.756	.804
X = 8	4	.10	.50	.40	.320	.420	.480	.582	.664	.719	.788	.830
X' = 12	5	.20	.30	.50	.233	.366	.411	.494	.580	.647	.733	.785
	6	.20	.40	.40	.256	.363	.441	.527	.621	.684	.762	.809
	7	.20	.50	.30	.320	.441	.527	.596	.673	.728	.795	.836
	8	.10	.30	.60	.280	.440	.493	.528	.592	.656	.740	.791
	9	.10	.36	.54	.252	.396	.444	.481	.563	.633	.722	.776
L = 36	10	.10	.40	.50	.256	.366	.411	.459	.546	.618	.710	.766
X = 8	11	.10	.50	.40	.320	.420	.480	.522	.606	.670	.751	.800
X' = 16	12	.20	.30	.50	.233	.366	.411	.442	.512	.590	.688	.748
	13	.20	.40	.40	.256	.363	.441	.483	.562	.634	.724	.779
	14	.20	.50	.30	.320	.441	.527	.572	.627	.689	.766	.813
	15	.10	.30	.60	.280	.440	.493	.520	.549	.609	.704	.761
	16	.10	.36	.54	.252	.396	.444	.468	.512	.580	.681	.742
L = 40	17	.10	.40	.50	.256	.366	.411	.433	.489	.563	.666	.730
X = 8	18	.10	.50	.40	.320	.420	.480	.510	.550	.623	.714	.770
X' = 20	19	.20	.30	.50	.233	.366	.411	.433	.467	.534	.644	.712
	20	.20	.40	.40	.256	.363	.441	.481	.512	.586	.687	.748
	21	.20	.50	.30	.320	.441	.527	.570	.684	.651	.737	.789
	22	.10	.30	.60	.280	.440	.493	.520	.536	.569	.668	.732
	23	.10	.36	.54	.252	.396	.444	.468	.482	.532	.640	.709
L = 44	24	.10	.40	.50	.256	.366	.411	.433	.447	.509	.623	.695
X = 8	25	.10	.50	.40	.320	.420	.480	.510	.528	.577	.678	.740
X' = 24	26	.20	.30	.50	.233	.366	.411	.433	.447	.485	.602	.677
	27	.20	.40	.40	.256	.363	.441	.481	.504	.539	.650	.719
	28	.20	.50	.30	.320	.441	.527	.570	.596	.694	.709	.767
	29	.10	.30	.60	.280	.440	.493	.520	.536	.547	.633	.703
	30	.10	.36	.54	.252	.396	.444	.468	.482	.493	.601	.677
L = 48	31	.10	.40	.50	.256	.366	.411	.433	.447	.465	.581	.660
X = 8	32	.10	.50	.40	.320	.420	.480	.510	.528	.540	.643	.712
X' = 28	33	.20	.30	.50	.233	.366	.411	.433	.447	.456	.560	.643
	34	.20	.40	.40	.256	.363	.441	.481	.504	.521	.615	.690
	35	.20	.50	.30	.320	.441	.527	.670	.596	.614	.681	.744
	36	.10	.30	.60	.280	.440	.493	.572	.637	.693	.768	.814
	37	.10	.36	.54	.252	.396	.445	.546	.616	.676	.755	.803
L = 36	38	.10	.40	.50	.256	.366	.411	.529	.602	.665	.746	.796
X = 12	39	.10	.50	.40	.320	.405	.462	.560	.646	.705	.778	.822
X' = 12	40	.20	.30	.50	.233	.366	.411	.494	.554	.624	.715	.770
	41	.20	.40	.40	.256	.324	.391	.484	.587	.656	.741	.793
	42	.20	.50	.30	.320	.405	.476	.553	.640	.700	.775	.820

Table 12.8 (Continued)

	43	.10	.30	.60	.280	.440	.493	.528	.592	.644	.731	.784
	44	.10	.36	.65	.252	.396	.444	.481	.563	.621	.713	.769
L = 40	45	.10	.40	.50	.256	.366	.411	.459	.544	.607	.701	.759
X = 12	46	.10	.50	.40	.320	.405	.453	.500	.588	.656	.740	.791
X′ = 16	47	.20	.30	.50	.233	.366	.411	.442	.510	.567	.670	.734
	48	.20	.40	.40	.256	.324	.391	.443	.527	.605	.703	.762
	49	.20	.50	.30	.320	.405	.476	.532	.608	.661	.746	.796
	50	.10	.30	.60	.280	.440	.493	.520	.549	.606	.695	.754
	51	.10	.36	.54	.252	.396	.444	.468	.512	.575	.650	.718
L = 44	52	.10	.40	.50	.256	.366	.411	.433	.488	.554	.657	.723
X = 12	53	.10	.50	.40	.320	.405	.453	.490	.533	.608	.703	.761
X′ = 20	54	.20	.30	.50	.233	.366	.411	.433	.467	.521	.627	.698
	55	.20	.40	.40	.256	.324	.391	.443	.479	.556	.665	.731
	56	.20	.50	.30	.320	.405	.476	.532	.568	.623	.716	.773
	57	.10	.30	.60	.280	.440	.493	.520	.536	.569	.659	.725
	58	.10	.36	.54	.252	.396	.444	.468	.482	.532	.632	.702
L = 48	59	.10	.40	.50	.256	.366	.411	.433	.447	.509	.614	.687
X = 12	60	.10	.50	.40	.320	.405	.453	.490	.512	.561	.667	.732
X′ = 24	61	.20	.30	.50	.233	.366	.411	.433	.447	.485	.584	.663
	62	.20	.40	.40	.256	.324	.391	.443	.474	.509	.629	.702
	63	.20	.50	.30	.320	.405	.476	.532	.565	.594	.688	.750
	64	.10	.30	.60	.280	.440	.493	.520	.536	.547	.624	.696
	65	.10	.36	.54	.252	.396	.444	.468	.482	.493	.593	.670
L = 52	66	.10	.40	.50	.256	.366	.411	.433	.447	.464	.572	.652
X = 12	67	.10	.50	.40	.320	.405	.453	.490	.512	.527	.632	.703
X′ = 28	68	.20	.30	.50	.233	.366	.411	.433	.447	.456	.544	.629
	69	.20	.40	.40	.256	.324	.391	.443	.474	.495	.593	.672
	70	.20	.50	.30	.320	.405	.476	.532	.565	.588	.660	.727
	71	.10	.30	.60	.280	.440	.493	.572	.637	.681	.759	.807
	72	.10	.36	.54	.252	.396	.445	.546	.616	.664	.746	.796
L = 40	73	.10	.40	.50	.256	.366	.411	.529	.602	.653	.737	.789
X = 16	74	.10	.50	.40	.320	.405	.462	.551	.629	.691	.767	.813
X′ = 12	75	.20	.30	.50	.233	.366	.411	.494	.555	.601	.696	.755
	76	.20	.40	.40	.256	.324	.379	.465	.554	.628	.721	.777
	77	.20	.50	.30	.320	.405	.453	.521	.592	.660	.745	.796
	78	.10	.30	.60	.280	.440	.493	.528	.592	.643	.722	.776
	79	.10	.36	.54	.252	.396	.444	.481	.563	.618	.704	.761
L = 44	80	.10	.40	.50	.256	.366	.411	.459	.544	.602	.692	.752
X = 16	81	.10	.50	.40	.320	.405	.435	.491	.571	.641	.729	.783
X′ = 16	82	.20	.30	.50	.233	.366	.411	.442	.510	.558	.652	.719
	83	.20	.40	.40	.256	.324	.348	.406	.493	.577	.682	.745
	84	.20	.50	.30	.320	.405	.435	.494	.560	.634	.725	.780
	85	.10	.30	.60	.280	.440	.493	.520	.549	.606	.686	.747
	86	.10	.36	.54	.252	.396	.444	.468	.512	.574	.663	.728
L = 48	87	.10	.40	.50	.256	.366	.411	.433	.488	.554	.648	.715
X = 16	88	.10	.50	.40	.320	.405	.435	.470	.516	.593	.692	.753
X′ = 20	89	.20	.30	.50	.233	.366	.411	.433	.467	.521	.610	.684
	90	.20	.40	.40	.256	.324	.348	.406	.446	.527	.644	.715
	91	.20	.50	.30	.320	.405	.435	.494	.536	.595	.696	.756
	92	.10	.30	.60	.280	.440	.493	.520	.536	.569	.650	.718
	93	.10	.36	.54	.252	.396	.444	.468	.482	.532	.623	.695
L = 52	94	.10	.40	.50	.256	.366	.411	.433	.447	.509	.605	.680
X = 16	95	.10	.50	.40	.320	.405	.435	.470	.496	.546	.656	.723
X′ = 24	96	.20	.30	.50	.233	.366	.411	.433	.447	.485	.568	.649
	97	.20	.40	.40	.256	.324	.348	.406	.444	.479	.607	.685
	98	.20	.50	.30	.320	.405	.435	.494	.535	.567	.667	.733
	99	.10	.30	.60	.280	.440	.493	.520	.536	.547	.623	.689
	100	.10	.36	.54	.252	.396	.444	.468	.482	.493	.589	.663
L = 56	101	.10	.40	.50	.256	.366	.411	.433	.447	.464	.567	.646
X = 16	102	.10	.50	.40	.320	.405	.435	.470	.496	.514	.621	.694
X′ = 28	103	.20	.30	.50	.233	.366	.411	.433	.447	.456	.534	.615
	104	.20	.40	.40	.256	.324	.348	.406	.444	.470	.571	.655
	105	.20	.50	.30	.320	.405	.435	.494	.535	.562	.638	.710

Table 12.9

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



One hundred forty-four variations in the Type 2-2 truck are given in this Table. Each truck number, from 1 to 144, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	.350	.464	.608	.681	.744	.787	.840	.872
X = 28	2	.10	.30	.60	.300	.420	.580	.663	.730	.775	.831	.864
X = 12	3	.10	.40	.50	.400	.465	.555	.654	.721	.767	.824	.858
X′ = 8	4	.20	.20	.60	.300	.402	.534	.606	.684	.737	.802	.841
C = 8	5	.20	.30	.50	.300	.368	.507	.592	.672	.726	.793	.834
	6	.20	.40	.40	.400	.451	.534	.644	.714	.762	.821	.857
	7	.10	.20	.70	.350	.402	.522	.615	.688	.741	.805	.844
L = 32	8	.10	.30	.60	.300	.384	.502	.601	.680	.734	.800	.840
X = 12	9	.10	.40	.50	.400	.465	.537	.611	.685	.736	.800	.839
X′ = 12	10	.20	.20	.60	.300	.353	.459	.543	.634	.695	.771	.816
C = 8	11	.20	.30	.50	.300	.368	.457	.543	.632	.693	.768	.814
	12	.20	.40	.40	.400	.451	.534	.606	.684	.737	.802	.841
	13	.10	.20	.70	.350	.402	.448	.551	.634	.695	.771	.816
L = 36	14	.10	.30	.60	.300	.384	.462	.544	.632	.694	.770	.816
X = 12	15	.10	.40	.50	.400	.465	.537	.591	.650	.707	.777	.821
X′ = 16	16	.20	.20	.60	.300	.353	.399	.488	.584	.654	.740	.792
C = 8	17	.20	.30	.50	.300	.368	.457	.530	.597	.662	.745	.795
	18	.20	.40	.40	.400	.451	.534	.601	.654	.711	.783	.826
	19	.10	.20	.70	.350	.402	.448	.490	.581	.650	.737	.789
L = 40	20	.10	.30	.60	.300	.384	.462	.521	.585	.654	.740	.792
X = 12	21	.10	.40	.50	.400	.465	.537	.591	.622	.677	.755	.802
X′ = 20	22	.20	.20	.60	.300	.353	.399	.460	.536	.614	.710	.768
C = 8	23	.20	.30	.50	.300	.368	.457	.530	.574	.632	.722	.776
	24	.20	.40	.40	.400	.451	.534	.601	.640	.687	.764	.810
	25	.10	.20	.70	.350	.448	.553	.640	.698	.748	.811	.848
L = 32	26	.10	.30	.60	.300	.384	.502	.601	.669	.724	.792	.833
X = 12	27	.10	.40	.50	.400	.400	.475	.569	.650	.706	.777	.821
X′ = 8	28	.20	.20	.60	.300	.384	.480	.560	.625	.687	.764	.810
C = 12	29	.20	.30	.50	.300	.320	.430	.522	.600	.665	.746	.796
	30	.20	.40	.40	.400	.400	.480	.570	.654	.711	.783	.826
	31	.10	.20	.70	.350	.350	.464	.572	.640	.700	.775	.820
L = 36	32	.10	.30	.60	.300	.300	.420	.540	.618	.682	.761	.809
X = 12	33	.10	.40	.50	.400	.400	.475	.543	.616	.677	.755	.802
X′ = 12	34	.20	.20	.60	.300	.300	.402	.501	.573	.644	.732	.785
C = 12	35	.20	.30	.50	.300	.300	.390	.480	.561	.632	.722	.776
	36	.20	.40	.40	.400	.400	.480	.560	.625	.687	.764	.810
	37	.10	.20	.70	.350	.350	.401	.507	.584	.654	.740	.792
L = 40	38	.10	.30	.60	.300	.300	.389	.481	.569	.641	.730	.784
X = 12	39	.10	.40	.50	.400	.400	.475	.543	.584	.649	.732	.784
X′ = 16	40	.20	.20	.60	.300	.300	.353	.445	.522	.602	.701	.761
C = 12	41	.20	.30	.50	.300	.300	.390	.480	.534	.603	.699	.758
	42	.20	.40	.40	.400	.400	.480	.560	.608	.662	.745	.795

Table 12.9 (Continued)

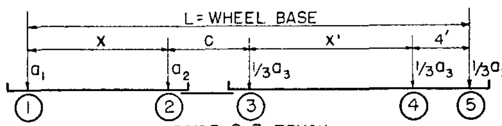
	43	.10	.20	.70	.350	.350	.401	.445	.533	.608	.706	.764
L = 44	44	.10	.30	.60	.300	.300	.389	.465	.520	.600	.700	.760
X = 12	45	.10	.40	.50	.400	.400	.475	.543	.584	.620	.710	.766
X′= 20	46	.20	.20	.60	.300	.300	.353	.401	.473	.561	.670	.736
C = 12	47	.20	.30	.50	.300	.300	.390	.480	.534	.574	.677	.739
	48	.20	.40	.40	.400	.400	.480	.560	.608	.640	.726	.780
	49	.10	.20	.70	.350	.464	.608	.681	.729	.774	.830	.864
L = 32	50	.10	.30	.60	.300	.420	.580	.660	.714	.762	.821	.858
X = 16	51	.10	.40	.50	.400	.465	.555	.641	.704	.752	.813	.850
X′= 8	52	.20	.20	.60	.300	.402	.534	.601	.654	.711	.783	.826
C = 8	53	.20	.30	.50	.300	.368	.507	.580	.643	.701	.774	.819
	54	.20	.40	.40	.400	.451	.512	.602	.681	.734	.800	.840
	55	.10	.20	.70	.350	.402	.522	.615	.672	.727	.795	.836
L = 36	56	.10	.30	.60	.300	.384	.502	.601	.665	.721	.790	.832
X = 16	57	.10	.40	.50	.400	.465	.523	.590	.668	.722	.790	.831
X′= 12	58	.20	.20	.60	.300	.353	.459	.543	.603	.669	.751	.801
C = 8	59	.20	.30	.50	.300	.368	.440	.530	.599	.665	.748	.798
	60	.20	.40	.40	.400	.451	.498	.564	.650	.709	.781	.825
	61	.10	.20	.70	.350	.402	.448	.551	.619	.681	.760	.808
L = 40	62	.10	.30	.60	.300	.384	.451	.544	.616	.680	.760	.808
X = 16	63	.10	.40	.50	.400	.465	.523	.570	.632	.692	.766	.812
X′= 16	64	.20	.20	.60	.300	.353	.399	.488	.553	.628	.720	.776
C = 8	65	.20	.30	.50	.300	.368	.425	.491	.561	.633	.724	.778
	66	.20	.40	.40	.400	.451	.498	.562	.620	.683	.762	.809
	67	.10	.20	.70	.350	.402	.448	.490	.569	.636	.726	.781
L = 44	68	.10	.30	.60	.300	.384	.451	.501	.570	.641	.730	.784
X = 16	69	.10	.40	.50	.400	.465	.523	.570	.606	.662	.744	.793
X′= 20	70	.20	.20	.60	.300	.353	.399	.435	.506	.587	.690	.752
C = 8	71	.20	.30	.50	.300	.368	.425	.491	.543	.603	.700	.759
	72	.20	.40	.40	.400	.451	.498	.562	.609	.658	.743	.794
	73	.10	.20	.70	.350	.448	.553	.640	.692	.735	.801	.841
L = 36	74	.10	.30	.60	.300	.384	.502	.601	.661	.711	.783	.826
X = 16	75	.10	.40	.50	.400	.400	.465	.566	.632	.692	.766	.812
X′= 8	76	.20	.20	.60	.300	.384	.480	.560	.608	.662	.745	.795
C = 12	77	.20	.30	.50	.300	.320	.430	.522	.577	.641	.728	.781
	78	.20	.40	.40	.400	.400	.451	.526	.620	.683	.762	.809
	79	.10	.20	.70	.350	.350	.464	.572	.637	.687	.765	.812
L = 40	80	.10	.30	.60	.300	.300	.420	.540	.612	.669	.751	.801
X = 16	81	.10	.40	.50	.400	.400	.465	.522	.598	.662	.744	.793
X′= 12	82	.20	.20	.60	.300	.300	.402	.501	.561	.619	.713	.770
C = 12	83	.20	.30	.50	.300	.300	.368	.470	.536	.604	.701	.760
	84	.20	.40	.40	.400	.400	.451	.521	.590	.658	.743	.794
	85	.10	.20	.70	.350	.350	.401	.507	.585	.640	.730	.784
L = 44	86	.10	.30	.60	.300	.300	.384	.481	.565	.628	.720	.776
X = 16	87	.10	.40	.50	.400	.400	.465	.522	.567	.633	.721	.775
X′= 16	88	.20	.20	.60	.300	.300	.353	.445	.515	.576	.682	.745
C = 12	89	.20	.30	.50	.300	.300	.368	.440	.502	.573	.677	.741
	90	.20	.40	.40	.400	.400	.451	.521	.576	.633	.724	.778
	91	.10	.20	.70	.350	.350	.401	.445	.533	.595	.696	.756
L = 48	92	.10	.30	.60	.300	.300	.384	.444	.519	.587	.690	.752
X = 16	93	.10	.40	.50	.400	.400	.465	.522	.567	.605	.699	.757
X′= 20	94	.20	.20	.60	.300	.300	.353	.390	.470	.535	.651	.720
C = 12	95	.20	.30	.50	.300	.300	.368	.440	.502	.544	.655	.722
	96	.20	.40	.40	.400	.400	.451	.521	.576	.614	.705	.763
	97	.10	.20	.70	.350	.448	.608	.681	.725	.761	.820	.856
L = 36	98	.10	.30	.60	.300	.420	.580	.660	.708	.749	.811	.849
X = 20	99	.10	.40	.50	.400	.465	.555	.641	.693	.738	.803	.842
X′= 8	100	.20	.20	.60	.300	.402	.534	.601	.640	.687	.764	.810
C = 8	101	.20	.30	.50	.300	.368	.507	.580	.624	.677	.756	.804
	102	.20	.40	.40	.400	.451	.512	.578	.648	.707	.780	.824
	103	.10	.20	.70	.350	.402	.522	.615	.671	.714	.785	.828
L = 40	104	.10	.30	.60	.300	.384	.502	.601	.661	.708	.780	.824
X = 20	105	.10	.40	.50	.400	.465	.523	.590	.652	.707	.779	.823
X′= 12	106	.20	.20	.60	.300	.353	.459	.543	.594	.644	.732	.785
C = 8	107	.20	.30	.50	.300	.368	.440	.530	.584	.641	.729	.783
	108	.20	.40	.40	.400	.451	.498	.545	.617	.681	.760	.808
	109	.10	.20	.70	.350	.402	.448	.551	.619	.667	.750	.800
L = 44	110	.10	.30	.60	.300	.384	.451	.544	.615	.667	.750	.800
X = 20	111	.10	.40	.50	.400	.465	.523	.554	.614	.677	.756	.804
X′= 16	112	.20	.20	.60	.300	.353	.399	.488	.549	.602	.701	.761
C = 8	113	.20	.30	.50	.300	.368	.425	.482	.545	.605	.703	.762
	114	.20	.40	.40	.400	.451	.498	.525	.586	.655	.741	.793
	115	.10	.20	.70	.350	.402	.448	.490	.569	.623	.716	.773
L = 48	116	.10	.30	.60	.300	.384	.451	.489	.570	.627	.720	.776
X = 20	117	.10	.40	.50	.400	.465	.523	.554	.590	.647	.733	.785
X′= 20	118	.20	.20	.60	.300	.353	.399	.435	.506	.561	.670	.736
C = 8	119	.20	.30	.50	.300	.368	.425	.455	.512	.574	.679	.743
	120	.20	.40	.40	.400	.451	.498	.525	.579	.630	.722	.777

Table 12.9 (Continued)

	121	.10	.20	.70	.350	.448	.553	.640	.692	.727	.791	.833
L = 40	122	.10	.30	.60	.300	.384	.502	.601	.661	.701	.773	.818
X = 20	123	.10	.40	.50	.400	.400	.465	.566	.632	.677	.756	.804
X′ = 8	124	.20	.20	.60	.300	.384	.480	.560	.608	.640	.726	.780
C = 12	125	.20	.30	.50	.300	.320	.430	.522	.577	.618	.710	.766
	126	.20	.40	.40	.400	.400	.451	.512	.586	.655	.741	.793
	127	.10	.20	.70	.350	.350	.464	.572	.637	.681	.755	.804
L = 44	128	.10	.30	.60	.300	.300	.420	.540	.612	.660	.742	.793
X = 20	129	.10	.40	.50	.400	.400	.465	.512	.589	.647	.733	.785
X′ = 12	130	.20	.20	.60	.300	.300	.402	.501	.561	.601	.694	.755
C = 12	131	.20	.30	.50	.300	.300	.368	.470	.536	.581	.683	.745
	132	.20	.40	.40	.400	.400	.451	.486	.556	.630	.722	.777
	133	.10	.20	.70	.350	.350	.401	.507	.585	.637	.720	.776
L = 48	134	.10	.30	.60	.300	.300	.384	.481	.565	.621	.711	.768
X = 20	135	.10	.40	.50	.400	.400	.465	.509	.551	.618	.710	.766
X′ = 16	136	.20	.20	.60	.300	.300	.353	.445	.515	.562	.663	.730
C = 12	137	.20	.30	.50	.300	.300	.368	.420	.496	.547	.656	.724
	138	.20	.40	.40	.400	.400	.451	.486	.545	.605	.703	.762
	139	.10	.20	.70	.350	.350	.401	.445	.533	.593	.685	.748
L = 52	140	.10	.30	.60	.300	.300	.384	.434	.519	.582	.680	.744
X = 20	141	.10	.40	.50	.400	.400	.465	.509	.551	.589	.688	.748
X′ = 20	142	.20	.20	.60	.300	.300	.353	.390	.470	.525	.631	.705
C = 12	143	.20	.30	.50	.300	.300	.368	.410	.471	.517	.633	.705
	144	.20	.40	.40	.400	.400	.451	.486	.545	.588	.684	.746

Table 12.10

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-3 TRUCK

Ninety variations in the Type 2-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

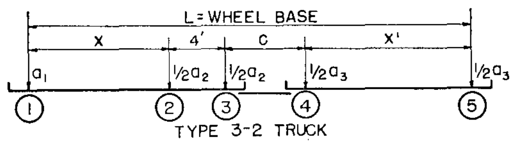
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.20	.70	.299	.424	.521	.612	.670	.725	.794	.835
L = 32	2	.10	.30	.60	.300	.363	.476	.582	.664	.720	.790	.832
X = 12	3	.10	.40	.50	.400	.441	.498	.597	.674	.726	.793	.833
X' = 8	4	.20	.20	.60	.256	.363	.449	.533	.617	.681	.760	.808
C = 8	5	.20	.30	.50	.300	.343	.420	.529	.620	.683	.761	.808
	6	.10	.20	.70	.299	.378	.457	.537	.606	.665	.748	.798
L = 36	7	.10	.30	.60	.300	.353	.413	.507	.601	.667	.750	.800
X = 12	8	.10	.40	.50	.400	.441	.498	.549	.628	.687	.762	.808
X' = 12	9	.20	.20	.60	.256	.324	.391	.465	.552	.627	.720	.776
C = 8	10	.20	.30	.50	.300	.343	.420	.484	.573	.642	.730	.783
	11	.10	.20	.70	.299	.378	.407	.474	.547	.607	.704	.762
L = 40	12	.10	.30	.60	.300	.353	.413	.460	.539	.616	.711	.769
X = 12	13	.10	.40	.50	.400	.441	.498	.540	.583	.649	.732	.784
X' = 16	14	.20	.20	.60	.256	.324	.348	.406	.489	.574	.680	.744
C = 8	15	.20	.30	.50	.300	.343	.420	.481	.528	.603	.699	.758
	16	.10	.20	.70	.299	.424	.515	.577	.639	.685	.763	.811
L = 36	17	.10	.30	.60	.300	.363	.441	.520	.602	.668	.751	.800
X = 12	18	.10	.40	.50	.400	.400	.454	.520	.605	.668	.747	.796
X' = 8	19	.20	.20	.60	.256	.363	.441	.498	.556	.630	.722	.777
C = 12	20	.20	.30	.50	.300	.302	.374	.453	.550	.623	.714	.770
	21	.10	.20	.70	.299	.378	.457	.517	.579	.630	.717	.774
L = 40	22	.10	.30	.60	.300	.324	.391	.443	.536	.614	.710	.768
X = 12	23	.10	.40	.50	.400	.400	.454	.507	.561	.630	.717	.772
X = 12	24	.20	.20	.60	.256	.324	.391	.443	.500	.574	.680	.744
C = 12	25	.20	.30	.50	.300	.300	.374	.447	.505	.584	.684	.746
	26	.10	.20	.70	.299	.378	.407	.474	.521	.580	.672	.737
L = 44	27	.10	.30	.60	.300	.324	.363	.422	.474	.561	.670	.736
X = 12	28	.10	.40	.50	.400	.400	.454	.507	.539	.593	.688	.748
X' = 16	29	.20	.20	.60	.256	.324	.348	.406	.448	.520	.640	.712
C = 12	30	.20	.30	.50	.300	.300	.374	.447	.491	.546	.655	.721
	31	.10	.20	.70	.299	.424	.521	.612	.668	.712	.783	.827
L = 36	32	.10	.30	.60	.300	.363	.476	.582	.648	.707	.780	.824
X = 16	33	.10	.40	.50	.400	.441	.491	.574	.656	.712	.782	.825
X' = 8	34	.20	.20	.60	.256	.363	.449	.533	.586	.655	.741	.793
C = 8	35	.20	.30	.50	.300	.343	.419	.514	.586	.654	.739	.791
	36	.10	.20	.70	.299	.378	.457	.537	.606	.653	.738	.790
L = 40	37	.10	.30	.60	.300	.353	.391	.507	.585	.654	.740	.792
X = 16	38	.10	.40	.50	.400	.441	.481	.527	.609	.672	.751	.800
X' = 12	39	.20	.20	.60	.256	.324	.391	.465	.528	.601	.700	.760
C = 8	40	.20	.30	.50	.300	.343	.382	.451	.537	.613	.708	.766

Table 12.10 (Continued)

	41	.10	.20	.70	.299	.378	.407	.474	.547	.603	.693	.754
L = 44	42	.10	.30	.60	.300	.353	.391	.440	.526	.602	.701	.761
X = 16	43	.10	.40	.50	.400	.441	.481	.520	.564	.633	.721	.775
X′ = 16	44	.20	.20	.60	.256	.324	.348	.406	.474	.547	.660	.728
C = 8	45	.20	.30	.50	.300	.343	.382	.443	.494	.573	.677	.741
	46	.10	.20	.70	.299	.424	.515	.577	.639	.681	.753	.803
L = 40	47	.10	.30	.60	.300	.363	.441	.520	.596	.655	.741	.793
X = 16	48	.10	.40	.50	.400	.400	.441	.497	.587	.653	.736	.787
X′ = 8	49	.20	.20	.60	.256	.363	.441	.498	.556	.605	.703	.762
C = 12	50	.20	.30	.50	.300	.302	.367	.453	.523	.593	.693	.753
	51	.10	.20	.70	.299	.378	.457	.517	.579	.630	.707	.765
L = 44	52	.10	.30	.60	.300	.324	.391	.443	.534	.601	.700	.760
X = 16	53	.10	.40	.50	.400	.400	.441	.487	.542	.614	.706	.763
X′ = 12	54	.20	.20	.60	.256	.324	.391	.443	.500	.549	.661	.729
C = 12	55	.20	.30	.50	.300	.300	.343	.408	.470	.554	.662	.728
	56	.10	.20	.70	.299	.378	.407	.474	.521	.580	.662	.729
L = 48	57	.10	.30	.60	.300	.324	.353	.406	.474	.547	.660	.728
X = 16	58	.10	.40	.50	.400	.400	.441	.487	.523	.577	.677	.739
X′ = 16	59	.20	.20	.60	.256	.324	.348	.406	.448	.503	.620	.696
C = 12	60	.20	.30	.50	.300	.300	.343	.408	.460	.515	.632	.704
	61	.10	.20	.70	.299	.424	.521	.612	.668	.706	.773	.819
L = 40	62	.10	.30	.60	.300	.363	.476	.582	.645	.694	.770	.816
X = 20	63	.10	.40	.50	.400	.441	.491	.573	.639	.697	.771	.816
X′ = 8	64	.20	.20	.60	.256	.363	.449	.533	.584	.630	.722	.777
C = 8	65	.20	.30	.50	.300	.343	.419	.514	.571	.629	.720	.776
	66	.10	.20	.70	.299	.378	.457	.537	.606	.653	.727	.782
L = 44	67	.10	.30	.60	.300	.353	.391	.507	.585	.640	.730	.784
X = 20	68	.10	.40	.50	.400	.441	.481	.519	.591	.657	.740	.791
X′ = 12	69	.20	.20	.60	.256	.324	.391	.465	.528	.641	.680	.744
C = 8	70	.20	.30	.50	.300	.343	.382	.451	.520	.584	.687	.749
	71	.10	.20	.70	.299	.378	.407	.474	.547	.603	.682	.746
L = 48	72	.10	.30	.60	.300	.353	.391	.436	.526	.588	.691	.752
X = 20	73	.10	.40	.50	.400	.441	.481	.502	.546	.618	.710	.766
X′ = 16	74	.20	.20	.60	.256	.324	.348	.406	.474	.525	.640	.712
C = 8	75	.20	.30	.50	.300	.343	.382	.407	.471	.544	.656	.724
	76	.10	.20	.70	.299	.424	.515	.577	.639	.681	.743	.795
L = 44	77	.10	.30	.60	.300	.363	.441	.520	.596	.647	.731	.785
X = 20	78	.10	.40	.50	.400	.400	.441	.495	.576	.638	.725	.779
X′ = 8	79	.20	.20	.60	.256	.363	.441	.498	.556	.595	.684	.746
C = 12	80	.20	.30	.50	.300	.302	.367	.453	.523	.569	.674	.738
	81	.10	.20	.70	.299	.378	.457	.517	.579	.630	.697	.757
L = 48	82	.10	.30	.60	.300	.324	.391	.443	.534	.595	.690	.752
X = 20	83	.10	.40	.50	.400	.400	.441	.471	.523	.599	.695	.745
X′ = 12	84	.20	.20	.60	.256	.324	.391	.443	.500	.548	.642	.713
C = 12	85	.20	.30	.50	.300	.300	.343	.388	.470	.525	.640	.711
	86	.10	.20	.70	.299	.378	.407	.474	.521	.580	.656	.721
L = 52	87	.10	.30	.60	.300	.324	.353	.406	.474	.544	.650	.720
X = 20	88	.10	.40	.50	.400	.400	.441	.471	.507	.561	.666	.730
X′ = 16	89	.20	.20	.60	.256	.324	.348	.406	.448	.503	.600	.680
C = 12	90	.20	.30	.50	.300	.300	.343	.372	.429	.485	.610	.686

Table 12.11

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 3-2 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

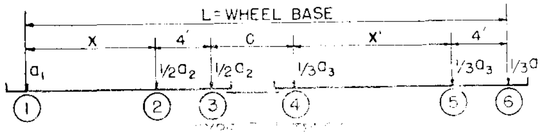
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.40	.50	.256	.376	.466	.551	.632	.693	.768	.814
L = 36	2	.10	.50	.40	.320	.441	.527	.596	.676	.730	.796	.837
X = 12	3	.10	.60	.30	.384	.510	.590	.652	.721	.768	.825	.860
X' = 12	4	.20	.40	.40	.256	.363	.441	.525	.617	.681	.760	.808
C = 8	5	.20	.50	.30	.320	.430	.503	.590	.664	.720	.790	.832
	6	.10	.40	.50	.256	.376	.466	.530	.597	.662	.745	.795
L = 40	7	.10	.50	.40	.320	.441	.527	.591	.646	.704	.777	.821
X = 12	8	.10	.60	.30	.384	.510	.590	.652	.698	.748	.811	.848
X' = 16	9	.20	.40	.40	.256	.363	.441	.525	.586	.655	.741	.793
C = 8	10	.20	.50	.30	.320	.430	.503	.590	.642	.700	.775	.820
	11	.10	.40	.50	.256	.376	.466	.530	.574	.632	.722	.776
L = 44	12	.10	.50	.40	.320	.441	.527	.591	.632	.680	.758	.806
X = 12	13	.10	.60	.30	.384	.510	.590	.652	.691	.729	.796	.837
X' = 16	14	.20	.40	.40	.256	.363	.441	.525	.579	.630	.722	.777
C = 8	15	.20	.50	.30	.320	.430	.503	.590	.642	.681	.760	.808
	16	.10	.40	.50	.256	.324	.405	.480	.561	.632	.722	.776
L = 40	17	.10	.50	.40	.320	.405	.476	.550	.616	.680	.758	.806
X = 12	18	.10	.60	.30	.384	.486	.550	.621	.675	.729	.796	.837
X' = 12	19	.20	.40	.40	.256	.324	.391	.482	.556	.630	.722	.777
C = 12	20	.20	.50	.30	.320	.405	.476	.561	.618	.681	.760	.808
	21	.10	.40	.50	.256	.324	.405	.480	.534	.603	.699	.758
L = 44	22	.10	.50	.40	.320	.405	.476	.550	.600	.655	.740	.791
X = 12	23	.10	.60	.30	.384	.486	.550	.621	.666	.710	.782	.825
X' = 16	24	.20	.40	.40	.256	.324	.391	.482	.545	.605	.703	.762
C = 12	25	.20	.50	.30	.320	.405	.476	.561	.618	.661	.746	.796
	26	.10	.40	.50	.256	.324	.405	.480	.534	.574	.677	.739
L = 48	27	.10	.50	.40	.320	.405	.476	.550	.600	.634	.721	.776
X = 12	28	.10	.60	.30	.384	.386	.550	.621	.666	.697	.767	.813
X' = 20	29	.20	.40	.40	.256	.324	.391	.482	.545	.588	.684	.746
C = 12	30	.20	.50	.30	.320	.405	.476	.561	.618	.657	.731	.785
	31	.10	.40	.50	.256	.376	.466	.551	.620	.679	.758	.806
L = 40	32	.10	.50	.40	.320	.441	.527	.585	.659	.716	.786	.829
X = 16	33	.10	.60	.30	.384	.510	.590	.636	.704	.754	.815	.852
X' = 12	34	.20	.40	.40	.256	.363	.441	.498	.584	.654	.740	.792
C = 8	35	.20	.50	.30	.320	.430	.503	.550	.632	.694	.770	.816
	36	.10	.40	.50	.256	.376	.466	.511	.580	.648	.734	.787
L = 44	37	.10	.50	.40	.320	.441	.527	.572	.629	.690	.767	.813
X = 16	38	.10	.60	.30	.384	.510	.590	.633	.681	.734	.800	.840
X' = 16	39	.20	.40	.40	.256	.363	.441	.488	.553	.628	.720	.776
C = 8	40	.20	.50	.30	.320	.430	.503	.550	.610	.674	.755	.804
	41	.10	.40	.50	.256	.376	.466	.511	.558	.618	.711	.768
L = 48	42	.10	.50	.40	.320	.441	.527	.572	.617	.665	.748	.798
X = 16	43	.10	.60	.30	.384	.510	.590	.633	.676	.715	.786	.828
X' = 20	44	.20	.40	.40	.256	.363	.441	.488	.549	.602	.701	.761
C = 8	45	.20	.50	.30	.320	.430	.503	.550	.610	.654	.740	.792

Table 12.11 (Continued)

	46	.10	.40	.50	.256	.324	.405	.475	.559	.618	.711	.768
L = 44	47	.10	.50	.40	.320	.405	.476	.532	.599	.665	.748	.798
X = 16	48	.10	.60	.30	.384	.486	.550	.601	.658	.715	.786	.828
X′ = 12	49	.20	.40	.40	.256	.324	.391	.445	.522	.602	.701	.761
C = 12	50	.20	.50	.30	.320	.405	.464	.511	.584	.654	.740	.792
	51	.10	.40	.50	.256	.324	.405	.465	.518	.588	.688	.749
L = 48	52	.10	.50	.40	.320	.405	.476	.532	.584	.641	.729	.783
X = 16	53	.10	.60	.30	.384	.486	.550	.601	.651	.696	.771	.817
X′ = 16	54	.20	.40	.40	.256	.324	.391	.445	.515	.576	.682	.745
C = 12	55	.20	.50	.30	.320	.405	.464	.511	.570	.634	.725	.780
	56	.10	.40	.50	.256	.324	.405	.465	.518	.559	.666	.731
L = 52	57	.10	.50	.40	.320	.405	.476	.532	.584	.620	.710	.767
X = 16	58	.10	.60	.30	.384	.486	.550	.601	.651	.684	.757	.805
X′ = 20	59	.20	.40	.40	.256	.324	.391	.445	.515	.562	.663	.730
C = 12	60	.20	.50	.30	.320	.405	.464	.511	.570	.617	.710	.768
	61	.10	.40	.50	.256	.376	.466	.551	.620	.667	.748	.798
L = 44	62	.10	.50	.40	.320	.441	.527	.585	.645	.702	.776	.820
X = 20	63	.10	.60	.30	.384	.510	.590	.636	.688	.741	.805	.844
X′ = 12	64	.20	.40	.40	.256	.363	.441	.498	.556	.627	.720	.776
C = 8	65	.20	.50	.30	.320	.430	.503	.548	.601	.668	.750	.800
	66	.10	.40	.50	.256	.376	.466	.511	.580	.634	.724	.778
L = 48	67	.10	.50	.40	.320	.441	.527	.570	.617	.676	.756	.805
X = 20	68	.10	.60	.30	.384	.510	.590	.630	.666	.721	.790	.832
X′ = 16	69	.20	.40	.40	.256	.363	.441	.481	.528	.601	.700	.760
C = 8	70	.20	.50	.30	.320	.430	.503	.540	.579	.647	.735	.788
	71	.10	.40	.50	.256	.376	.466	.511	.543	.603	.700	.759
L = 52	72	.10	.50	.40	.320	.441	.527	.570	.602	.651	.737	.789
X = 20	73	.10	.60	.30	.384	.510	.590	.630	.661	.701	.776	.820
X′ = 20	74	.20	.40	.40	.256	.363	.441	.481	.520	.574	.680	.744
C = 8	75	.20	.50	.30	.320	.430	.503	.541	.579	.627	.720	.776
	76	.10	.40	.50	.256	.324	.405	.475	.559	.616	.701	.760
L = 48	77	.10	.50	.40	.320	.405	.476	.532	.589	.651	.737	.789
X = 20	78	.10	.60	.30	.384	.486	.550	.600	.644	.701	.776	.820
X′ = 12	79	.20	.40	.40	.256	.324	.391	.443	.500	.574	.680	.744
C = 12	80	.20	.50	.30	.320	.405	.464	.511	.554	.627	.720	.776
	81	.10	.40	.50	.256	.324	.405	.465	.517	.581	.677	.741
L = 52	82	.10	.50	.40	.320	.405	.476	.532	.568	.626	.718	.774
X = 20	83	.10	.60	.30	.384	.486	.550	.600	.636	.682	.761	.809
X′ = 16	84	.20	.40	.40	.256	.324	.391	.443	.485	.549	.661	.729
C = 12	85	.20	.50	.30	.320	.405	.464	.511	.554	.607	.705	.764
	86	.10	.40	.50	.256	.324	.405	.465	.502	.547	.655	.722
L = 56	87	.10	.50	.40	.320	.405	.476	.532	.568	.607	.700	.759
X = 20	88	.10	.60	.30	.384	.486	.550	.600	.636	.671	.746	.797
X′ = 20	89	.20	.40	.40	.256	.324	.391	.443	.485	.537	.642	.713
C = 12	90	.20	.50	.30	.320	.405	.464	.511	.554	.604	.690	.752

Table 12.12

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



Ninety variations in the Type 3-3 truck are given in this Table. Each truck number, from 1 to 90, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

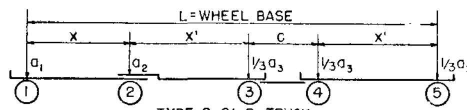
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
	1	.10	.30	.60	.256	.363	.441	.492	.572	.636	.726	.781
L = 40	2	.10	.40	.50	.256	.324	.383	.457	.550	.623	.714	.770
X = 12	3	.10	.50	.40	.320	.405	.460	.525	.607	.671	.752	.801
X′ = 8	4	.20	.30	.50	.213	.302	.367	.424	.499	.577	.681	.744
C = 12	5	.20	.40	.40	.256	.324	.391	.467	.546	.621	.715	.772
	6	.10	.30	.60	.256	.324	.391	.443	.509	.581	.685	.748
L = 44	7	.10	.40	.50	.256	.324	.383	.447	.568	.584	.684	.746
X = 12	8	.10	.50	.40	.320	.405	.460	.524	.573	.639	.727	.781
X′ = 12	9	.20	.30	.50	.213	.270	.326	.384	.446	.531	.646	.715
C = 12	10	.20	.40	.40	.256	.324	.391	.467	.520	.588	.690	.751
	11	.10	.30	.60	.256	.324	.348	.406	.448	.514	.635	.708
L = 48	12	.10	.40	.50	.256	.324	.383	.447	.491	.546	.655	.721
X = 12	13	.10	.50	.40	.320	.405	.460	.524	.566	.607	.703	.761
X′ = 16	14	.20	.30	.50	.213	.270	.307	.384	.441	.492	.616	.691
C = 12	15	.20	.40	.40	.256	.324	.391	.467	.520	.556	.665	.731
	16	.10	.30	.60	.256	.363	.441	.481	.525	.588	.688	.750
L = 44	17	.10	.40	.50	.256	.324	.367	.414	.485	.565	.669	.733
X = 12	18	.10	.50	.40	.320	.405	.453	.497	.553	.623	.715	.771
X′ = 8	19	.20	.30	.50	.213	.302	.367	.400	.453	.516	.633	.705
C = 16	20	.20	.40	.40	.256	.324	.391	.443	.499	.572	.677	.741
	21	.10	.30	.60	.256	.324	.391	.443	.474	.534	.646	.717
L = 48	22	.10	.40	.50	.256	.324	.367	.414	.464	.527	.640	.709
X = 12	23	.10	.50	.40	.320	.405	.453	.497	.544	.592	.690	.751
X′ = 12	24	.20	.30	.50	.213	.270	.326	.369	.415	.473	.601	.679
C = 16	25	.20	.40	.40	.256	.324	.391	.443	.499	.539	.653	.721
	26	.10	.30	.60	.256	.324	.348	.406	.444	.481	.605	.684
L = 52	27	.10	.40	.50	.256	.324	.367	.414	.464	.498	.611	.686
X = 12	28	.10	.50	.40	.320	.405	.453	.497	.544	.576	.666	.731
X′ = 16	29	.20	.30	.50	.213	.270	.307	.354	.415	.457	.571	.654
C = 16	30	.20	.40	.40	.256	.324	.391	.443	.499	.538	.628	.701
	31	.10	.30	.60	.256	.363	.441	.492	.572	.627	.717	.773
L = 44	32	.10	.40	.50	.256	.324	.383	.457	.545	.608	.703	.762
X = 16	33	.10	.50	.40	.320	.405	.460	.512	.589	.657	.741	.793
X′ = 8	34	.20	.30	.50	.213	.302	.367	.424	.499	.551	.660	.727
C = 12	35	.20	.40	.40	.256	.324	.374	.427	.512	.593	.694	.755
	36	.10	.30	.60	.256	.324	.391	.443	.509	.574	.676	.740
L = 48	37	.10	.40	.50	.256	.324	.383	.428	.490	.569	.673	.737
X = 16	38	.10	.50	.40	.320	.405	.460	.505	.556	.624	.716	.772
X′ = 12	39	.20	.30	.50	.213	.270	.326	.369	.446	.505	.624	.698
C = 12	40	.20	.40	.40	.256	.324	.374	.427	.488	.560	.669	.735
	41	.10	.30	.60	.256	.324	.348	.406	.448	.523	.635	.708
L = 52	42	.10	.40	.50	.256	.324	.383	.428	.475	.531	.643	.713
X = 16	43	.10	.50	.40	.320	.405	.460	.505	.550	.592	.692	.752
X′ = 16	44	.20	.30	.50	.213	.270	.298	.343	.408	.462	.594	.674
C = 12	45	.20	.40	.40	.256	.324	.374	.427	.488	.529	.644	.714

Table 12.12 (Continued)

	46	.10	.30	.60	.256	.363	.441	.481	.525	.588	.679	.743
L = 48	47	.10	.40	.50	.256	.324	.367	.400	.485	.554	.658	.725
X = 16	48	.10	.50	.40	.320	.405	.435	.478	.536	.608	.704	.762
X′ = 8	49	.20	.30	.50	.213	.302	.367	.400	.453	.511	.615	.690
C = 16	50	.20	.40	.40	.256	.324	.348	.406	.467	.543	.656	.724
	51	.10	.30	.60	.256	.324	.391	.443	.474	.534	.637	.709
L = 52	52	.10	.40	.50	.256	.324	.348	.397	.448	.512	.629	.700
X = 16	53	.10	.50	.40	.320	.405	.435	.478	.528	.577	.680	.742
X′ = 12	54	.20	.30	.50	.213	.270	.326	.369	.398	.465	.579	.661
C = 16	55	.20	.40	.40	.256	.324	.348	.406	.467	.512	.631	.704
	56	.10	.30	.60	.256	.324	.348	.406	.444	.481	.596	.676
L = 56	57	.10	.40	.50	.256	.324	.348	.397	.448	.485	.600	.677
X = 16	58	.10	.50	.40	.320	.405	.435	.478	.528	.563	.655	.723
X′ = 16	59	.20	.30	.50	.213	.270	.290	.338	.382	.429	.549	.637
C = 16	60	.20	.40	.40	.256	.324	.348	.406	.467	.511	.606	.684
	61	.10	.30	.60	.256	.363	.441	.492	.572	.627	.707	.765
L = 48	62	.10	.40	.50	.256	.324	.383	.457	.545	.604	.693	.753
X = 20	63	.10	.50	.40	.320	.405	.460	.512	.580	.643	.731	.784
X′ = 8	64	.20	.30	.50	.213	.302	.367	.424	.499	.549	.642	.712
C = 12	65	.20	.40	.40	.256	.324	.374	.425	.492	.566	.674	.739
	66	.10	.30	.60	.256	.324	.391	.443	.509	.574	.666	.732
L = 52	67	.10	.40	.50	.256	.324	.383	.428	.490	.558	.662	.728
X = 20	68	.10	.50	.40	.320	.405	.460	.504	.544	.610	.706	.764
X′ = 12	69	.20	.30	.50	.213	.270	.326	.369	.446	.505	.606	.683
C = 12	70	.20	.40	.40	.256	.324	.374	.414	.457	.531	.648	.718
	71	.10	.30	.60	.256	.324	.348	.406	.448	.523	.625	.700
L = 56	72	.10	.40	.50	.256	.324	.383	.428	.460	.515	.632	.704
X = 20	73	.10	.50	.40	.320	.405	.460	.504	.535	.577	.681	.744
X′ = 16	74	.20	.30	.50	.213	.270	.298	.339	.394	.461	.572	.656
C = 12	75	.20	.40	.40	.256	.324	.374	.414	.457	.503	.622	.698
	76	.10	.30	.60	.256	.363	.441	.481	.525	.588	.670	.735
L = 52	77	.10	.40	.50	.256	.324	.367	.400	.485	.554	.647	.716
X = 20	78	.10	.50	.40	.320	.405	.435	.478	.526	.594	.693	.754
X′ = 8	79	.20	.30	.50	.213	.302	.367	.400	.453	.511	.598	.675
C = 16	80	.20	.40	.40	.256	.324	.348	.389	.440	.515	.635	.708
	81	.10	.30	.60	.256	.324	.391	.443	.474	.534	.627	.701
L = 56	82	.10	.40	.50	.256	.324	.348	.397	.432	.507	.617	.692
X = 20	83	.10	.50	.40	.320	.405	.435	.478	.513	.562	.669	.734
X′ = 12	84	.20	.30	.50	.213	.270	.326	.369	.398	.465	.560	.646
C = 16	85	.20	.40	.40	.256	.324	.348	.389	.435	.485	.610	.687
	86	.10	.30	.60	.256	.324	.348	.406	.444	.481	.586	.668
L = 60	87	.10	.40	.50	.256	.324	.348	.397	.432	.472	.588	.668
X = 20	88	.10	.50	.40	.320	.405	.435	.478	.513	.550	.644	.714
X′ = 16	89	.20	.30	.50	.213	.270	.290	.338	.370	.420	.527	.619
C = 16	90	.20	.40	.40	.256	.324	.348	.389	.435	.485	.585	.667

Table 12.13

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 2-S1-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S1-2 TRUCK

Ninety-six variations in the Type 2-S1-2 truck are given in this Table. Each truck number, from 1 to 96, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

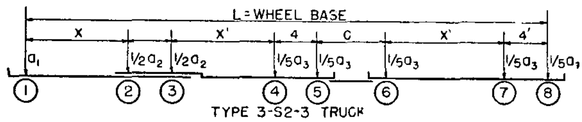
Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 36	1	.10	.20	.70	.234	.299	.421	.517	.607	.673	.754	.803
X = 8	2	.10	.30	.60	.300	.326	.416	.500	.600	.667	.750	.800
X′ = 10	3	.20	.20	.60	.200	.256	.360	.460	.568	.640	.730	.784
C = 8	4	.20	.30	.50	.300	.353	.449	.527	.587	.652	.736	.787
L = 40	5	.10	.20	.70	.234	.299	.391	.474	.565	.637	.727	.782
X = 8	6	.10	.30	.60	.300	.324	.391	.465	.552	.627	.720	.776
X′ = 12	7	.20	.20	.60	.200	.256	.334	.418	.520	.601	.700	.760
C = 8	8	.20	.30	.50	.300	.353	.427	.497	.563	.614	.706	.763
L = 44	9	.10	.20	.70	.234	.299	.361	.445	.523	.602	.701	.760
X = 8	10	.10	.30	.60	.300	.324	.367	.432	.504	.587	.690	.752
X′ = 14	11	.20	.20	.60	.200	.256	.309	.385	.473	.561	.670	.736
C = 8	12	.20	.30	.50	.300	.253	.405	.471	.539	.587	.677	.739
L = 48	13	.10	.20	.70	.234	.299	.351	.424	.488	.566	.674	.739
X = 8	14	.10	.30	.60	.300	.324	.348	.406	.474	.547	.660	.728
X′ = 16	15	.20	.20	.60	.200	.256	.300	.363	.436	.521	.640	.712
C = 8	16	.20	.30	.50	.300	.253	.399	.455	.515	.567	.648	.715
L = 52	17	.10	.20	.70	.234	.299	.351	.402	.461	.530	.647	.718
X = 8	18	.10	.30	.60	.300	.324	.348	.388	.448	.507	.630	.704
X′ = 18	19	.20	.20	.60	.200	.256	.300	.344	.410	.481	.611	.688
C = 8	20	.20	.30	.50	.300	.253	.399	.439	.492	.547	.620	.692
L = 56	21	.10	.20	.70	.234	.299	.351	.381	.444	.499	.621	.696
X = 8	22	.10	.30	.60	.300	.324	.348	.371	.423	.480	.600	.680
X′ = 20	23	.20	.20	.60	.200	.256	.300	.326	.384	.449	.581	.665
C = 8	24	.20	.30	.50	.300	.253	.399	.423	.471	.527	.601	.669
L = 60	25	.10	.20	.70	.234	.299	.351	.379	.426	.471	.594	.675
X = 8	26	.10	.30	.60	.300	.324	.348	.361	.401	.459	.571	.656
X′ = 22	27	.20	.20	.60	.200	.256	.300	.324	.365	.427	.551	.641
C = 8	28	.20	.30	.50	.300	.253	.399	.423	.459	.508	.586	.646
L = 64	29	.10	.20	.70	.234	.299	.351	.379	.410	.457	.567	.654
X = 8	30	.10	.30	.60	.300	.324	.348	.361	.387	.438	.541	.633
X′ = 24	31	.20	.20	.60	.200	.256	.300	.324	.351	.406	.522	.617
C = 8	32	.20	.30	.50	.300	.253	.399	.423	.446	.489	.571	.624
L = 40	33	.10	.20	.70	.234	.299	.421	.517	.593	.659	.744	.795
X = 12	34	.10	.30	.60	.300	.320	.396	.493	.584	.654	.740	.792
X′ = 10	35	.20	.20	.60	.200	.256	.360	.448	.537	.614	.710	.768
C = 8	36	.20	.30	.50	.300	.315	.396	.484	.553	.623	.714	.770
L = 44	37	.10	.20	.70	.234	.299	.391	.474	.558	.623	.717	.774
X = 12	38	.10	.30	.60	.300	.300	.363	.444	.536	.614	.710	.768
X′ = 12	39	.20	.20	.60	.200	.256	.334	.408	.489	.574	.680	.744
C = 8	40	.20	.30	.50	.300	.300	.374	.453	.528	.584	.684	.745

Table 12.13 (Continued)

L = 48	41	.10	.20	.70	.234	.299	.361	.445	.523	.585	.642	.713
X = 12	42	.10	.30	.60	.300	.300	.338	.416	.493	.574	.680	.744
X′ = 14	43	.20	.20	.60	.200	.256	.309	.382	.453	.535	.651	.720
C = 8	44	.20	.30	.50	.300	.300	.353	.430	.504	.558	.654	.721
L = 52	45	.10	.20	.70	.234	.299	.351	.424	.488	.557	.664	.731
X = 12	46	.10	.30	.60	.300	.300	.324	.389	.455	.534	.650	.720
X′ = 16	47	.20	.20	.60	.200	.256	.300	.363	.421	.495	.621	.697
C = 8	48	.20	.30	.50	.300	.300	.353	.414	.479	.537	.625	.697
L = 56	49	.10	.20	.70	.234	.299	.351	.402	.461	.528	.637	.710
X = 12	50	.10	.30	.60	.300	.300	.324	.366	.429	.494	.620	.696
X′ = 18	51	.20	.20	.60	.200	.256	.300	.344	.395	.457	.591	.673
C = 8	52	.20	.30	.50	.300	.300	.353	.397	.456	.517	.597	.674
L = 60	53	.10	.20	.70	.234	.299	.351	.381	.444	.499	.610	.688
X = 12	54	.10	.30	.60	.300	.300	.324	.348	.407	.465	.591	.672
X′ = 20	55	.20	.20	.60	.200	.256	.300	.326	.380	.430	.562	.649
C = 8	56	.20	.30	.50	.300	.300	.353	.387	.438	.497	.579	.650
L = 64	57	.10	.20	.70	.234	.299	.351	.379	.426	.471	.584	.667
X = 12	58	.10	.30	.60	.300	.300	.324	.342	.386	.443	.561	.649
X′ = 22	59	.20	.20	.60	.200	.256	.300	.324	.365	.406	.532	.625
C = 8	60	.20	.30	.50	.300	.300	.353	.387	.425	.478	.564	.628
L = 68	61	.10	.20	.70	.234	.299	.351	.379	.410	.457	.557	.646
X = 12	62	.10	.30	.60	.300	.300	.324	.342	.369	.422	.531	.625
X′ = 24	63	.20	.20	.60	.200	.256	.300	.324	.351	.392	.503	.602
C = 8	64	.20	.30	.50	.300	.300	.353	.387	.412	.459	.549	.605
L = 56	65	.10	.20	.70	.234	.299	.351	.424	.488	.557	.654	.723
X = 16	66	.10	.30	.60	.300	.300	.309	.389	.453	.528	.640	.712
X′ = 16	67	.20	.20	.60	.200	.256	.300	.363	.421	.484	.602	.681
C = 8	68	.20	.30	.50	.300	.300	.309	.374	.444	.509	.603	.680
L = 60	69	.10	.20	.70	.234	.299	.351	.402	.461	.528	.627	.701
X = 16	70	.10	.30	.60	.300	.300	.300	.363	.428	.494	.611	.688
X′ = 18	71	.20	.20	.60	.200	.256	.300	.344	.395	.457	.572	.657
C = 8	72	.20	.30	.50	.300	.300	.309	.357	.420	.488	.574	.656
L = 64	73	.10	.20	.70	.234	.299	.351	.388	.444	.499	.600	.680
X = 16	74	.10	.30	.60	.300	.300	.300	.337	.407	.461	.581	.665
X′ = 20	75	.20	.20	.60	.200	.256	.300	.326	.380	.430	.543	.634
C = 8	76	.20	.30	.50	.300	.300	.309	.353	.405	.468	.558	.632
L = 68	77	.10	.20	.70	.234	.299	.351	.379	.426	.471	.577	.659
X = 16	78	.10	.30	.60	.300	.300	.300	.324	.386	.437	.551	.641
X′ = 22	79	.20	.20	.60	.200	.256	.300	.324	.365	.404	.513	.610
C = 8	80	.20	.30	.50	.300	.300	.309	.353	.392	.448	.542	.609
L = 72	81	.10	.20	.70	.234	.299	.351	.379	.410	.457	.555	.637
X = 16	82	.10	.30	.60	.300	.300	.300	.324	.366	.419	.522	.617
X′ = 24	83	.20	.20	.60	.200	.256	.300	.324	.351	.392	.484	.586
C = 8	84	.20	.30	.50	.300	.300	.309	.353	.380	.428	.527	.587
L = 76	85	.10	.20	.70	.234	.299	.351	.379	.395	.443	.533	.616
X = 16	86	.10	.30	.60	.300	.300	.300	.324	.346	.402	.495	.593
X′ = 26	87	.20	.20	.60	.200	.256	.300	.324	.339	.380	.462	.563
C = 8	88	.20	.30	.50	.300	.300	.309	.353	.380	.416	.512	.575
L = 80	89	.10	.20	.70	.234	.299	.351	.379	.395	.429	.511	.595
X = 16	90	.10	.30	.60	.300	.300	.300	.324	.339	.385	.470	.570
X′ = 28	91	.20	.20	.60	.200	.256	.300	.324	.339	.368	.442	.539
C = 8	92	.20	.30	.50	.300	.300	.309	.353	.380	.406	.497	.563
L = 84	93	.10	.20	.70	.234	.299	.351	.379	.395	.415	.490	.573
X = 16	94	.10	.30	.60	.300	.300	.300	.324	.339	.369	.448	.546
X′ = 30	95	.20	.20	.60	.200	.256	.300	.324	.339	.356	.422	.516
C = 8	96	.20	.30	.50	.300	.300	.309	.353	.380	.399	.482	.551

Table 12.14

SUMMARY OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY TYPE 3-S2-3 TRUCKS WEIGHING ONE KIP EACH



Eighty-four variations in the Type 3-S2-3 truck are given in this Table. Each truck number, from 1 to 84, represents a different combination of wheel base length, axle spacings, and ratios of gross vehicle weight on each axle.

All dimensions are in feet.

Equivalent concentrated loads are in kips.

a_1, a_2, and a_3—Represent the ratio of gross vehicle weight on axles.

Wheel Base and Axle Spacing Feet	Truck No.	Load On Axles Kips			Span-Feet							
		a_1	a_2	a_3	10	20	30	40	50	60	80	100
L = 44	1	.05	.20	.75	.192	.272	.357	.457	.554	.628	.721	.776
X = 8	2	.05	.30	.65	.192	.267	.360	.439	.534	.612	.709	.767
X′ = 8	3	.10	.20	.70	.179	.254	.337	.430	.523	.603	.702	.762
C = 8	4	.10	.30	.60	.192	.265	.360	.437	.514	.595	.696	.756
L = 48	5	.05	.20	.75	.192	.272	.338	.420	.515	.591	.693	.754
X = 8	6	.05	.30	.65	.192	.250	.329	.408	.488	.572	.679	.743
X′ = 10	7	.10	.20	.70	.179	.254	.316	.392	.485	.564	.673	.738
C = 8	8	.10	.30	.60	.192	.260	.330	.407	.474	.552	.664	.731
L = 52	9	.05	.30	.75	.192	.272	.331	.391	.475	.555	.666	.732
X = 8	10	.05	.30	.65	.192	.250	.298	.380	.447	.531	.648	.718
X′ = 12	11	.10	.20	.70	.179	.254	.309	.368	.447	.526	.644	.715
C = 8	12	.10	.30	.60	.192	.260	.307	.384	.449	.509	.631	.705
L = 56	13	.05	.20	.75	.192	.272	.331	.372	.440	.521	.639	.711
X = 8	14	.05	.30	.65	.192	.250	.287	.353	.422	.490	.618	.694
X′ = 14	15	.10	.20	.70	.179	.254	.309	.349	.410	.490	.615	.692
C = 8	16	.10	.30	.60	.192	.260	.307	.362	.424	.478	.599	.679
L = 60	17	.05	.20	.75	.192	.272	.331	.362	.417	.488	.611	.689
X = 8	18	.05	.30	.65	.192	.250	.287	.328	.397	.453	.587	.670
X′ = 16	19	.10	.20	.70	.179	.254	.309	.339	.389	.459	.586	.669
C = 8	20	.10	.30	.60	.192	.260	.307	.340	.399	.457	.567	.654
L = 64	21	.05	.20	.75	.192	.272	.331	.361	.396	.455	.584	.667
X = 8	22	.05	.30	.65	.192	.250	.287	.313	.376	.432	.557	.645
X′ = 18	23	.10	.20	.70	.179	.254	.309	.337	.372	.427	.557	.646
C = 8	24	.10	.30	.60	.192	.260	.307	.330	.382	.436	.535	.628
L = 68	25	.05	.20	.75	.192	.272	.331	.361	.384	.435	.556	.645
X = 8	26	.05	.30	.65	.192	.250	.287	.313	.355	.412	.526	.621
X′ = 20	27	.10	.20	.70	.179	.254	.309	.337	.359	.406	.528	.622
C = 8	28	.10	.30	.60	.192	.260	.307	.330	.364	.416	.503	.602
L = 48	29	.05	.20	.75	.192	.272	.357	.457	.554	.621	.716	.772
X = 12	30	.05	.30	.65	.192	.267	.355	.438	.533	.606	.704	.763
X′ = 8	31	.10	.20	.70	.179	.254	.337	.430	.523	.590	.692	.754
C = 8	32	.10	.30	.60	.192	.265	.347	.416	.502	.581	.686	.748
L = 52	33	.05	.20	.75	.192	.272	.338	.420	.515	.587	.688	.750
X = 12	34	.05	.30	.65	.192	.243	.325	.408	.488	.565	.674	.739
X′ = 10	35	.10	.20	.70	.179	.254	.316	.392	.485	.554	.663	.730
C = 8	36	.10	.30	.60	.192	.243	.319	.387	.459	.538	.653	.723
L = 56	37	.05	.20	.75	.192	.272	.331	.391	.475	.554	.661	.728
X = 12	38	.05	.30	.65	.192	.243	.296	.380	.444	.528	.643	.714
X′ = 12	39	.10	.20	.70	.179	.254	.309	.368	.447	.522	.634	.707
C = 8	40	.10	.30	.60	.192	.243	.292	.363	.431	.496	.621	.697
L = 60	41	.05	.20	.75	.192	.272	.331	.372	.440	.521	.633	.706
X = 12	42	.05	.30	.65	.192	.243	.287	.353	.419	.490	.613	.690
X′ = 14	43	.10	.20	.70	.179	.254	.309	.349	.410	.490	.605	.684
C = 8	44	.10	.30	.60	.192	.243	.281	.341	.406	.463	.589	.671

Table 12.14 (Continued)

L = 64	45	.05	.20	.75	.192	.272	.331	.362	.417	.488	.606	.684
X = 12	46	.05	.30	.65	.192	.243	.287	.326	.397	.453	.582	.666
X′ = 16	47	.10	.20	.70	.179	.254	.309	.339	.389	.459	.576	.661
C = 8	48	.10	.30	.60	.192	.243	.281	.318	.382	.442	.557	.646
L = 68	49	.05	.20	.75	.192	.272	.331	.361	.396	.455	.578	.663
X = 12	50	.05	.30	.65	.192	.243	.287	.313	.376	.427	.552	.641
X′ = 18	51	.10	.20	.70	.179	.254	.309	.337	.372	.427	.547	.638
C = 8	52	.10	.30	.60	.192	.243	.281	.311	.364	.427	.525	.620
L = 72	53	.05	.20	.75	.192	.272	.331	.361	.384	.421	.553	.641
X = 12	54	.05	.30	.65	.192	.243	.287	.313	.355	.409	.521	.617
X′ = 20	55	.10	.20	.70	.179	.254	.309	.337	.359	.406	.520	.614
C = 8	56	.10	.30	.60	.192	.243	.281	.311	.347	.400	.493	.594
L = 60	57	.05	.20	.75	.192	.272	.331	.391	.475	.554	.656	.724
X = 16	58	.05	.30	.65	.192	.243	.296	.380	.444	.528	.638	.710
X′ = 12	59	.10	.20	.70	.179	.254	.309	.368	.447	.522	.624	.699
C = 8	60	.10	.30	.60	.192	.243	.292	.359	.420	.496	.611	.689
L = 64	61	.05	.20	.75	.192	.272	.331	.372	.440	.521	.628	.702
X = 16	62	.05	.30	.65	.192	.243	.287	.353	.419	.490	.608	.686
X′ = 14	63	.10	.20	.70	.179	.254	.309	.349	.410	.490	.595	.676
C = 8	64	.10	.30	.60	.192	.243	.271	.332	.396	.460	.579	.663
L = 68	65	.05	.20	.75	.192	.272	.331	.362	.417	.488	.603	.680
X = 16	66	.05	.30	.65	.192	.243	.287	.326	.397	.453	.577	.662
X′ = 16	67	.10	.20	.70	.179	.254	.309	.339	.389	.459	.568	.653
C = 8	68	.10	.30	.60	.192	.243	.265	.310	.375	.427	.547	.638
L = 72	69	.05	.20	.75	.192	.272	.331	.361	.396	.455	.578	.658
X = 16	70	.05	.30	.65	.192	.243	.287	.313	.376	.427	.549	.637
X′ = 18	71	.10	.20	.70	.179	.254	.309	.337	.373	.427	.544	.630
C = 8	72	.10	.30	.60	.192	.243	.264	.292	.353	.406	.516	.612
L = 76	73	.05	.20	.75	.192	.272	.331	.361	.384	.435	.553	.636
X = 16	74	.05	.30	.65	.192	.243	.287	.313	.355	.409	.521	.613
X′ = 20	75	.10	.20	.70	.179	.254	.309	.337	.359	.406	.520	.606
C = 8	76	.10	.30	.60	.192	.243	.264	.292	.332	.390	.489	.586
L = 80	77	.05	.20	.75	.192	.272	.331	.361	.378	.417	.528	.615
X = 16	78	.05	.30	.65	.192	.243	.287	.313	.334	.391	.493	.589
X′ = 22	79	.10	.20	.70	.179	.254	.309	.337	.353	.389	.497	.583
C = 8	80	.10	.30	.60	.192	.243	.264	.292	.313	.368	.462	.561
L = 84	81	.05	.20	.75	.192	.272	.331	.361	.378	.400	.504	.593
X = 16	82	.05	.30	.65	.192	.243	.287	.313	.328	.374	.465	.564
X′ = 24	83	.10	.20	.70	.179	.254	.309	.337	.353	.376	.473	.560
C = 8	84	.10	.30	.60	.192	.243	.264	.292	.313	.351	.444	.535

13. CONVERSION COEFFICIENTS FOR EQUIVALENT LOADINGS ON SIMPLE SPANS OF VARIOUS LENGTHS

Owing to the fact that an H truck, an H-S truck, and a single concentrated load weighing one kip each produce maximum moments, respectively, on a given span which are definite values, their relative magnitudes may be fully described by the ratios that each one bears to the other two. Thus, if these ratios are known for a given span, they may be thought of as coefficients which may be used for converting any one of the above loadings into equivalent loadings measured in terms of either or both of the other two. These ratios or coefficients for certain selected spans up to 100 feet in length are given in Table 13.1 and shown graphically for all intermediate spans in Figure 13.1.

In the second column of Table 13.1, for example, it will be seen that the coefficient for converting an equivalent H truck loading into an equivalent H-S truck loading on a 50-foot span is given as 1.28. This means that an H truck of given weight will produce 1.28 times as much moment as an H-S truck of equal weight on a 50-foot span. It also means that an H truck of given weight will produce as much moment as an H-S truck weighing 1.28 times as much on a 50-foot span. More specifically, suppose a given heavy vehicle has been found to produce the same moment of a 50-foot span as an H20 truck and rated accordingly as an equivalent H20 truck loading. Now suppose it is desired to convert the given heavy vehicle into an equivalent H-S truck loading. This may be done by noting that $1.28 \times 20 = 25.6$ tons would be required on an H-S truck to produce the same moment as the given vehicle on a 50-foot span. The given vehicle, therefore, would be rated as an equivalent 25.6 (ton) H-S truck loading or an equivalent 51.2 (kip) H-S truck loading.

Table 13.1

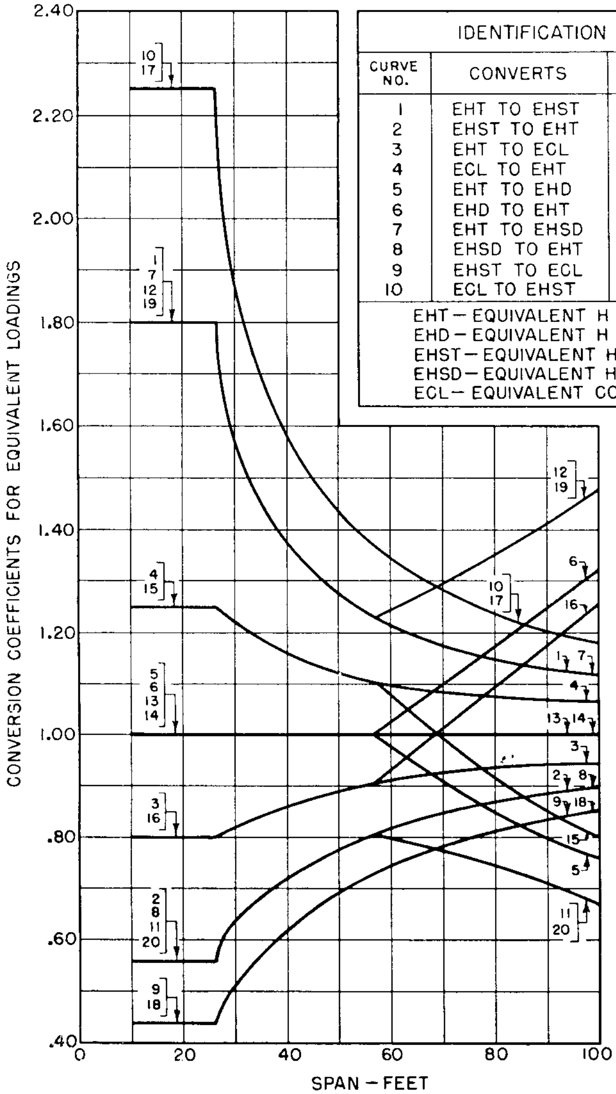
CONVERSION COEFFICIENTS FOR EQUIVALENT LOADINGS ON SIMPLE SPANS OF VARIOUS LENGTHS

For	SPAN									
Converting	10	20	30	40	50	60	70	80	90	100
EHT to EHST	1.80	1.80	1.57	1.38	1.28	1.22	1.18	1.15	1.13	1.12
EHST to EHT	.56	.56	.64	.72	.78	.82	.85	.87	.88	.90
EHT to ECL	.80	.80	.82	.86	.89	.91	.92	.93	.94	.94
ECL to EHT	1.25	1.25	1.22	1.16	1.12	1.10	1.09	1.07	1.07	1.06
EHT to EHD	1.00	1.00	1.00	1.00	1.00	.98	.91	.85	.80	.76
EHD to EHT	1.00	1.00	1.00	1.00	1.00	1.02	1.10	1.17	1.25	1.32
EHT to EHSD	1.80	1.80	1.57	1.38	1.28	1.22	1.18	1.15	1.13	1.12
EHSD to EHT	.56	.56	.64	.72	.78	.82	.85	.87	.88	.90
EHST to ECL	.44	.44	.52	.62	.70	.75	.78	.81	.83	.85
ECL to EHST	2.25	2.25	1.91	1.60	1.43	1.34	1.28	1.24	1.21	1.18
EHST to EHD	.56	.56	.64	.72	.78	.80	.77	.74	.71	.68
EHD to EHST	1.80	1.80	1.57	1.38	1.28	1.25	1.29	1.35	1.41	1.48
EHST to EHSD	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EHSD to EHST	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ECL to EHD	1.25	1.25	1.22	1.16	1.12	1.08	.99	.92	.85	.80
EHD to ECL	.80	.80	.82	.86	.89	.93	1.01	1.09	1.17	1.25
ECL to EHSD	2.25	2.25	1.91	1.60	1.43	1.34	1.28	1.24	1.21	1.18
EHSD to ECL	.44	.44	.52	.62	.70	.75	.78	.81	.83	.85
EHD to EHSD	1.80	1.80	1.57	1.38	1.28	1.25	1.29	1.35	1.41	1.48
EHSD to EHD	.56	.56	.64	.72	.78	.80	.77	.74	.71	.67

EHT—Equivalent H Truck Loading
EHD—Equivalent H Design Loading
EHST—Equivalent H-S Truck Loading
EHSD—Equivalent H-S Design Loading
ECL—Equivalent Concentrated Load

CONVERSION COEFFICIENTS FOR EQUIVALENT LOADINGS

ON SIMPLE SPANS OF VARIOUS LENGTHS



IDENTIFICATION OF CURVES			
CURVE NO.	CONVERTS	CURVE NO.	CONVERTS
1	EHT TO EHST	11	EHST TO EHD
2	EHST TO EHT	12	EHD TO EHST
3	EHT TO ECL	13	EHST TO EHSD
4	ECL TO EHT	14	EHSD TO EHST
5	EHT TO EHD	15	ECL TO EHD
6	EHD TO EHT	16	EHD TO ECL
7	EHT TO EHSD	17	ECL TO EHSD
8	EHSD TO EHT	18	EHSD TO ECL
9	EHST TO ECL	19	EHD TO EHSD
10	ECL TO EHST	20	EHSD TO EHD

EHT — EQUIVALENT H TRUCK LOADING
EHD — EQUIVALENT H DESIGN LOADING
EHST — EQUIVALENT H-S TRUCK LOADING
EHSD — EQUIVALENT H-S DESIGN LOADING
ECL — EQUIVALENT CONCENTRATED LOAD

Figure 13-1

In a similar manner, if it were desired to convert an equivalent 51.2 (kip) H-S truck loading into an equivalent H truck loading on a 50-foot span, it would be done by multiplying the H-S truck rating by the coefficient 0.78 as shown in the third column of Table 13.1, or 51.2 × .78 = 40.0 kips. This means that the given vehicle could be rated as either an equivalent 51.2 (kip) H-S truck loading, or an equivalent 40.0 (kip) H truck loading on a 50-foot span.

Similarly, an equivalent 40.0 (kip) H truck loading may be converted into an equivalent concentrated load on a 50-foot span by multiplying the H truck rating by the coefficient 0.89 as shown in the fourth column of Table 13.1, or 40.0 × .89 = 35.6 kips. This means that the given vehicle would be rated as an equivalent 35.6 (kip) concentrated load on a 50-foot span.

From these illustrative examples, it will be seen that any given equivalent loading may be converted into any other loading equivalency simply by multiplying the rating of the given equivalent loading by the appropriate coefficient indicated for the span under consideration by either Table 13.1 or Figure 13.1.

Part III

METHOD FOR CALCULATING RELATIVE FREQUENCIES OR FREQUENCY DISTRIBUTION OF VARIOUS INTENSITIES OF EQUIVALENT VEHICLE LOADINGS

14. CALCULATED FREQUENCIES OF EQUIVALENT VEHICLE LOADINGS BASED ON THE POISSON FREQUENCY DISTRIBUTION FORMULA

14.1 General

Although it was pointed out in Article 1.1, it might be well to reiterate here that the over-all objective of this bulletin is to develop a simple and accurate mathematical procedure for the rating of heavy motor vehicle types and loadings—such as those reported by a loadometer survey—in terms of equivalent H truck loadings, equivalent concentrated loads, or some other conveniently standardized loading equivalents; and to show how the frequency distributions of these equivalent loads provide a rational means for measuring the levels or level of heavy motor vehicle operation corresponding to given traffic conditions. It was also pointed out that, in order to accomplish these ends, it is first necessary to find a satisfactory way for converting a given heavy vehicle loading into an equivalent load. It was then shown that the maximum moment produced by a given vehicle on a given span provided a convenient means for converting it into any type of equivalent loading as might be desired simply by finding the magnitude of the equivalent load that would be required to produce the same maximum moment on the given span as that caused by the vehicle under consideration. For example, if a given heavy vehicle produced a maximum moment of 259.5 kip-feet on a 40-foot span, it would be found by consulting an AASHO moment table to be the same as that caused by an H15 truck and, therefore, the given vehicle would be rated as an equivalent H15 truck loading on a 40-foot span. Similarly, if it were desired to convert the given vehicle into an equivalent concentrated load it would be found that a single concentrated load of 25.95 kips would be required to produce the same moment on that span and, therefore, the given vehicle would be rated as an equivalent 25.95 (kip) concentrated load on a 40-foot span.

The ratings of heavy vehicle types and loadings in terms of equivalent H truck loadings, equivalent H-S truck loadings, or equivalent concentrated loads—by the procedure outlined in the preceding articles of this bulletin—not only provide the means for determining permissable vehicle weights for bridges of given lengths and design designations, but they also provide a convenient means for analyzing the frequency distributions of various intensities of heavy vehicle loading equivalents on bridges of different lengths. Once all of the heavy vehicles reported by a loadometer survey have been converted into equivalent loads for a given span, the relative frequencies of various intensities of these loading equivalents for the given span may then be obtained rather simply by arranging them into groups or cells of increasing magnitudes and computing the percentage of vehicles thus found in each cell respectively.

Frequency distributions such as these, which have been determined from the heavy vehicle data reported by a given loadometer survey, not only furnish a quantitative measure for evaluating the level or levels of heavy motor vehicle operation corresponding to the traffic conditions at those stations or on those routes covered by the given survey, but they also furnish certain statistical measures or indices which should prove to be of value for correlating the various levels of heavy motor vehicle operation with minimum standards for highway and bridge provision. By way of specific illustration, the frequency distributions and other results obtained from analyses of the heavy vehicle data reported by the special loadometer survey of 1942 are given and discussed in Parts IV and V. For ready comparison, the observed and calculated frequency studies given in Part IV are based on equivalent H truck loadings and those given in Part V are based on equivalent concentrated loads.

Among the more interesting and, potentially, perhaps the most useful of the results obtained from these studies is that the frequency distributions of gross vehicle weights and equivalent loads were found to arrange themselves into statistical patterns which can be mathematically defined with sufficient accuracy to provide satisfactory answers to many of the practical problems associated with heavy vehicle loads and their effects on highway structures. In fact, the observed frequencies of equvialent loads obtained from the heavy vehicle data reported by the 1942 loadometer survey bear such a strong resemblance to the theoretical frequency curves commonly employed for statistical studies in biology, economics, and other branches of science, that one would suspect that the frequencies of various intensities of these loads actually occur in accordance with some mathematical law which is closely approximated by one or another of these theoretical frequency distribution curves.

From a practical standpoint, therefore, the fact that the frequencies of heavy vehicle loading equivalents can be estimated rather accurately on a mathematical basis should prove to be a most powerful tool for the practicing engineer who is concerned with either the actual or relative frequencies of heavy vehicle loads and their effects on highway structures. This means, for example, that with a sufficient backlog of observed heavy vehicle frequency data in a given geographical area, the engineer is provided with a rational procedure for estimating the level of heavy vehicle operation that would likely obtain at a new location or on a new route for which no observed loadometer data were available.

Several of the more commonly used statistical methods for defining theoretical frequencies were investigated in an effort to determine the one best suited to the needs of the practicing engineer for dealing with problems relating to the frequencies of heavy vehicle loads. Although it was found that comparable results might be obtained from any one of the several methods, it was decided that the Poisson frequency distribution formula would provide the most satisfactory procedure for solving these problems, mainly because it would likely prove to be the simplest to apply by those who have had but little or no training in the use of standard statistical methods. Another comparatively simple method that might be used, however, consists merely of plotting the cumulative frequencies of equivalent loadings on probability paper. For the benefit of those who would like to investigate the use of this method further, a complete explanation of its development and use may be obtained from most any standard text on elementary statistical methods.

Owing to the fact that the Poisson distribution is based on discrete variables, some objection might be raised on purely technical grounds concerning its application to a continuous variable such as equivalent vehicle loads. It is believed, however, that this objection may be overcome for practical purposes by grouping the loads having approximately the same magnitudes into cells to which discrete values are assigned. For example, if the gross weights of a given vehicle were found to be within one-half ton, plus or minus, of say 15 tons, it could be defined for practical purposes as a 15-ton load. As to whether this is justifiable or not is a matter on which some mathematicians are not in full agreement. Be this as it may, the above definition provides the means for solving practical problems which are of interest to the practicing engineer.

The rather close agreement between the observed and calculated frequencies given in Parts IV and V is not altogether surprising, however, owing to the fact that both the Binomial and the Poisson distributions have been used successfully as a mathematical means for analyzing and solving a wide range and variety of frequency distribution problems encountered in the several fields of science, industry, statistics, and engineering. The Binomial distribution, for example, has been used successfully for many years in the fields of biology and genetics, and is certainly among the most powerful of the mathematical tools employed in those branches of science. And at the present time, both the Binomial and Poisson distribution furnish a considerable portion of the mathematical background material used in that comparatively recently developed branch of industrial management commonly known as "quality control." At any rate, however, the agreement between the observed and calculated frequencies obtained from the 1942 loadometer data is close enough to justify the conclusion that the Poisson distribution yields mathematical answers which are sufficiently accurate for estimating the frequencies of various intensities of highway loads and evaluating their stress producing effects on simple span bridges and other highway structures.

Fortunately, though, it is not necessary for one to understand the mathematical developments upon which these distributions are based in order to use them for analyzing and solving many of the practical frequency problems to which they may be appropriately applied. Tables are available which greatly simplify the work involved in applying either the Binomial[16] or the Poisson[17] distributions to the solution of practical frequency problems such as those associated with heavy motor vehicle operation as discussed herein. Once the routine procedure has been acquired, these tables may be used in the same way as other mathematical tables. In the case of trigonometric tables, for example, it is not necessary for one to know or understand the mathematical procedures involved in deriving these functions in order to become proficient in their use.

And though a detailed knowledge of the derivations of the Binomial and Poisson distributions is not essential to their use as a mathematical tool for analyzing certain problems, a brief discussion of some of the more elementary considerations involved in their development should contribute toward a better understanding of how they may be applied to the study of heavy motor vehicle frequency problems. Such a discussion is undertaken in the following article. However, it should be explained that the discussion of these distributions is in no sense intended to be complete; nor is it intended to be in the precise language of the mathematician. These reservations are made because only the fundamental concepts of probability theory are considered; and these, in turn, are applied to but a few simple situations which are discussed in everyday language and in such a way as to appeal to the common sense or intuitive judgement of the layman or engineer who is mainly concerned with the solution of practical problems rather than a rigorous mathematical proof of the theorems on which those solutions are based.

14.2 Fundamental Concepts Associated With the Laws of Chance or Probability

Meaning and Measure of Probability—If an urn contains 3 white balls and 5 black balls which are identical except for their color and one ball is drawn out at random, what is the probability that this ball is white?

The **event** in question is said to happen if a white ball is drawn, and to fail if a black ball is drawn. Since there are 8 balls in the urn and the drawing of any one is just as likely as that of another, the total number of possible ways in which the event in question may happen and fail is 8. Of

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[16] T. C. Fry, "Probability and Its Engineering Uses," D. Van Nostrand Co., New York, 1928.
[17] E. C. Molina, "Poisson's Exponential Binomial Limit," D. Van Nostrand Co., New York, 1943.

these 8 ways, 3 are favorable to the drawing of a white ball; or the number of ways in which the event may happen is 3. For this reason, 3/8 is said to be the probability of drawing a white ball. This illustrates the following definition of mathematical probability.

Definition of Mathematical Probability—There are a number of different ways in which mathematical probability has been defined, but in each case the fundamental notions are substantially the same. The following three alternate definitions are typical and, after reading all three, the reader may take his choice or perhaps compose another one that incorporates the same basic ideas which will be more to his liking.

Definition 1(a) Mathematical Probability—If all the happenings and failings of an event can be analyzed into $r + s$ possible ways each of which is equally likely; and if in r of these ways the event will happen, and in s of them fail, the probability that the event will happen is $r/(r + s)$ and the probability that it will fail is $s/(r + s)$.

Definition 1(b) Mathematical Probability—If an experiment can produce n different results all of which are equally likely and if r of these results are defined as favorable, the probability of a favorable result is r/n.

Definition 1(c) Mathematical Probability—If, consistent with a given set of conditions, there are n exhaustive, mutually exclusive, and equally likely cases, and r of them are favorable to an event A, then the mathematical probability of A is defined as the ratio r/n.

From these it will be seen that, in general, the mathematical probability of an event is defined to be the fraction obtained by dividing the number of cases favorable to the event by the total number of equally likely cases. The probability of an impossible event is obviously 0, since there would be no favorable cases; and the probability of an event that is certain to happen is 1, since all the cases would be favorable.

In each of these definitions, it will be noted that the expression "equally likely" cases or events has been used. But what does one mean by equally likely or equally probable events? This is a troublesome question because when one deals with purely mathematical probability, the expression "equally likely cases" is, admittedly, an undefined concept owing to the fact that it is intuitive. It cannot be defined, just as other intuitive concepts such as the theoretical "points" and "lines" of geometry, or time, cannot be defined. From this discussion, it will be seen that only through experience and judgement can one decide whether or not the occurrence of actual events conform to the theory.

In dealing with mathematical probability, therefore, the first step is to answer the question: When may two contingent events be considered equally probable or equally likely? But since the term "equally likely" is not and cannot be defined on a rigorous mathematical basis, the final answer to this question must be decided on the basis of good common sense, intuition, and judgement. In making a decision of this kind in any actual situation, though, it might be helpful to remember that equally likely results have the same expected frequencies and that this notion is consistent with the idea that probability is proportional to expected frequency. In a more formal statement, one may infer the following criterion[18] of equal probability:

"Two contingent events are considered as equally probable if, after taking into consideration all relevant evidence, one of them cannot be expected in preference to the other."

This criterion for equally probable or equally likely events may be illustrated by applying it to certain practical situations such as those described by the following examples.

[18] J. V. Uspensky, "Introduction to Mathematical Probability," McGraw-Hill Book Co., New York, 1937, p. 5.

Example 14.1

Suppose that it is desired to know the probability of throwing a 4 when when a single die is cast.

If the die is a true cube and made of a homogeneous material, and there are no other reasons for believing that any one of the 6 numbers would appear more often than another, one would say that there would be a total of 6 equally likely cases. And of these 6 equally likely cases, only 1 of them would be favorable to throwing a 4; therefore, the ratio 1/6 would be defined as the mathematical probability of the event in question—or, simply, the probability of throwing a 4 when a single die is cast.

Comment

This is a simple case, of course, but it illustrates the point that, in order to determine the mathematical probability of a given event, one must not only be able to arrive at the total number of equally likely cases but also the number of these cases that are favorable to the event under consideration. Once this has been done, the mathematical probability of the event under consideration may be determined by evaluating the ratio of the number of favorable cases to the total number of equally likely cases. When two dice are cast at the same time, however, the determination of the probabilities of the various events becomes a little more involved. Yet, by following the simple rules discussed above, the mathematical probabilities of the various events which may occur when two dice are thrown can be found quite easily as will be seen in the following example.

Example 14.2

Suppose it is desired to know the probability of throwing a 4 if two perfectly true dice are cast at the same time.

In solving this problem, it will be helpful if one die is assumed to be red and the other green. Now, the red die, when considered by itself, can fall in 6 different ways and, by hypothesis, each of these ways is considered equally probable or equally likely since any one way is as likely to happen as any other. Similarly, the green die can fall in 6 different ways and again, by hypothesis, each of these ways is also considered equally likely. Therefore, for each of the 6 ways in which the red die can fall, it may be accompanied by any one of the 6 ways in which the green die can fall when both dice are cast at the same time. This means that the two dice, when cast at the same time, can fall in 6×6 or 36 different ways and again by hypothesis each of these ways is considered equally likely. Therefore, the probability that they will fall in any particular one of these ways when cast simultaneously—for example, the appearance of 3 on the red die and 6 on the green die—would be 1/36 since there would be but 1 of the 36 cases favorable to the occurrence of the specified event.

The next step in the solution of this problem is to determine the number of ways favorable to throwing a 4 when both dice are cast at the same time. This may be done by enumerating all possible combinations of the numbers on each die whose sum is 4, as follows:

Red die	Green die	Total
1	3	4
2	2	4
3	1	4

Since 3 of the 36 ways are favorable to the event in question, 3/36 would be defined as the mathematical probability of throwing a 4 when 2 dice are cast simultaneously.

By the same process of reasoning, the probability of throwing any one of the 11 numbers, from 2 to 12, with a pair of dice may be determined as shown in the following example.

Example 14.3

Suppose it is desired to know the probability of throwing each of the 11 numbers, from 2 to 12, with a pair of dice.

Perhaps the simplest way for solving this problem is to enumerate each of the 36 ways in which a pair of dice—one red and one green—can fall and from this enumeration determine the number of ways favorable to the throwing of each of the 11 numbers, from 2 to 12, that can result. The sum that results from each of the 36 ways in which a pair of dice can fall, may be enumerated as shown in the following table:

Table 14.1

Number of Points That Result for

Each of the 36 Ways In Which a Pair of Dice Can Fall

No. on Red Die	Number on Green Die					
	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

From this table, it will be seen that the number of ways in which the various sums, from 2 to 12, may be obtained and the mathematical probability for obtaining each of the 11 sums is as follows:

Table 14.2

Number of Ways and the Mathematical Probability

for Obtaining Any Possible Sum on a Single Throw of a Pair of Dice

Sum	2	3	4	5	6	7	8	9	10	11	12
No. of Ways	1	2	3	4	5	6	5	4	3	2	1
Math. Prob.	$\frac{1}{36}$	$\frac{2}{36}$	$\frac{3}{36}$	$\frac{4}{36}$	$\frac{5}{36}$	$\frac{6}{36}$	$\frac{5}{36}$	$\frac{4}{36}$	$\frac{3}{36}$	$\frac{2}{36}$	$\frac{1}{36}$

Comment

From this table, it will be seen that a 7 would be expected to appear more often than any of the other numbers, from 2 to 12, when a pair of dice are cast at the same time. This is owing to the fact that 6 of the 36 ways in which a pair of dice can fall are favorable to the throwing of a 7; whereas, the number of ways favorable to any one of the other numbers is less than 6. And since the probability of throwing a 7—which is 6/36—is greater than that for any other number, it would be expected to appear more frequently than any other number. For this reason, 7 is said to be the "most probable" number to appear when 2 dice are cast simultaneously. Similarly, the 2 and 12 would be said to be the least probable numbers since the probability of either would be less than any of the other numbers.

The above table, therefore, shows the relative frequencies or frequency distribution of the various numbers that would be expected to appear if a pair of dice were cast a large number of times. And if these frequencies were represented in the form of a bar chart or histogram—similar to those shown in Parts IV and V—it would be seen that the distribution would be symmetrical about the 7.

The frequency distribution of the numbers expected from the throwing of a pair of dice illustrates an important point which no doubt should be emphasized. It was shown, for example, that the probability of throwing a 4 is 3/36 because 3 of the 36 ways a pair of dice can fall are favorable to that event. Similarly, the probability of throwing a 7 is 6/36 because 6 of the 36 ways are favorable to that event. Now the important point to note here is that even though there are 36 equally likely ways in which a pair of dice can fall, the numbers that result are not all equally likely.

Statistical Probability

In each of the preceding examples, the mathematical probability for the occurrence of a particular event under consideration was determined by enumerating all of the equally likely cases and then evaluating the ratio of the number of favorable cases to the total number of cases. There are many practical situations encountered in the several fields of science, industry, statistics, and engineering, however, for which mathematical probabilities cannot be determined in accordance with the definition and procedure used in the preceding problems owing to the fact that these situations are of such nature that it would be impossible either to enumerate all of the equally likely cases or to find the exact number of cases favorable to the event under consideration.

In situations of this kind, therefore, resort is made to what is known as "statistical probability," which is based on the fundamental concept that equally likely results have the same expected frequencies and that this notion is consistent with the idea that probability is proportional to expected frequencies. On this basis, therefore, it is possible to estimate the probability for the occurrence of a given event from a sufficiently large number of independent trials or observations by the procedure outlined in the following definition.

Definition of Statistical Probability—If it be observed that an event E has happened n times in m independent observations, trials, or cases (provided m is a large number); then, in the absence of further knowledge, it is assumed that the best estimate of the probability that the event E will happen on a given occasion in question is the ratio n/m, and that confidence in this estimate increases as m increases.

Estimates of probability obtained from observed data in accordance with this definition are of immense practical value in many types of statistical and engineering problems. For example, suppose that a particular loadometer station on a given highway had been operated in such a way as to reflect average traffic conditions at that location; and that of the 634 heavy vehicles weighed, during the previous year, 76 of them were found to have a gross vehicle weight of 50,000 pounds or more. Now, on the basis of this information, suppose it is desired to know the probability that the next heavy vehicle to be weighed would have a gross weight of 50,000 pounds or more.

Since 76 of the 634 heavy vehicles weighed during the previous year had a gross weight of 50,000 pounds or more, the best estimate available of the probability that the next heavy vehicle weighed would exceed 50,000 pounds would be the ratio 76/634. This means that approximately 12 percent of the heavy vehicle reported weighed 50,000 pounds or more. Therefore, on the basis of this information, the best estimate of the probability that the next heavy vehicle weighed would equal or exceed 50,000 pounds would be approximately .12, or about 12 chances out of 100.

Another illustration of statistical probability could be selected in connection with life insurance which might be of interest. For example, according to the American Experience Mortality Table, of 78,106 men living at the age of 40, the number living 10 years later is 69,804. Therefore, the probability that a man of age 40 will live the next 10 years is taken to be 69,804/78,106 or about .894, which means that on the average in approximately 894 cases in 1,000, a man at the age of 40 would be expected to live during the next ten years. In other words, the probability that he will live during the next 10 years would be taken as .894.

Comment

The fundamental concepts associated with the laws of chance or probability discussed in the preceding paragraphs provide the basis for certain definitions and rules which may be used in the solution of practical problems. Some of the more elementary of these definitions and theorems, and how they are associated with the Binomial and Poisson distributions are given and briefly discussed in the following article.

14.3 Basic Theorems for Calculating Simple and Compound Probabilities

The fundamental theorems for calculating simple and compound probabilities are fully explained and illustrated in most any book on college algebra.[19-20] For this reason, it will only be necessary here to state these theorems and illustrate how they may be applied to a few simple situations in order to show how they lead more or less automatically to the Binomial and Poisson frequency distributions. Special emphasis is placed on the Poisson distribution because it is the simpler of the two to use in dealing with the frequency distribution of equivalent vehicle loadings, and is the one upon which the frequency distributions of the loading equivalents given in Parts IV and V are based.

Definitions and Theorems

Events of a set are usually classified as being independent, dependent, or mutually exclusive. The definitions and theorems corresponding to these classifications may be stated as follows:

(a) Independent Events—Events of a set are said to be independent if the happening of any one of the events does not affect the happening of the others.

Theorem 1—The probability that all of a set of independent events will happen on a given occasion when each of them is possible is the product of their separate probabilities of occurrence.

(b) Dependent Events—Events of a set are said to be dependent if the occurrence of a first event affects the probability of a second event happening, in which case the second event is said to be dependent on the first event.

Theorem 2—If the probability of a first event is P_1 and if, after this has happened, the probability of a second event is P_2; then the probability that

[19] William L. Hart, "Brief College Algebra," D. C. Heath and Co., New York, 1932.
[20] C. I. Palmer and W. L. Miser, "College Algebra," McGraw-Hill Book Co., New York, 1937.

both events will happen in the order specified is $P_1 \times P_2$ or simply P_1P_2 (the obvious extension of this theorem to m events would result to probability of $P_1P_2 \ldots P_m$).

(c) **Mutually Exclusive Events**—Events of a set are said to be mutually exclusive if the happening of any one excludes the happening of any other.

Theorem 3—The probability that one or the other of a set of mutually exclusive events will occur is the sum of the probabilities of occurrence for the separate events.

14.4 The Binomial Distribution

The Binomial distribution is given by the successive terms of the expansion of the Binomial:

$$(q + p)^m = C^m_m q^m p^o + C^{m-1}_m q^{m-1} p^1 + C^{m-2}_m q^{m-2} p^2 + \ldots + C^o_m q^o p^m \quad \ldots\ldots 14.1$$

in which p = probability of success on any one trial
q = probability of failure on any one trial
and m = number of trials (sample size or lot size)

also $p < 1$, and $q = 1 - p$

In this Binomial expansion, the symbol C^n_m means the number of combinations of m things taken n at a time. This may be expressed algebraically as follows:

$$C^n_m = \frac{m!}{n!(m-n)!} \quad \ldots\ldots 14.2$$

This may be illustrated by inquiring the number of 3 letter combinations that can be obtained from the 4 letters; a, b, c, and d. This may be done in the following 4 ways:

abc, abd, acd, and bcd

and by the above algebraic expression, this would be determined as follows:

$$C^n_m = C^3_4 = \frac{4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1(1)} = 4 \quad \ldots\ldots 14.2a$$

With this in mind, it may now be explained that each term in the above Binomial expansion (Equation 14.1) gives the probability of exactly n successes in a set of m trials and each term may be written thus:

$$P_m(n) = C^n_m q^{m-n} p^n \quad \ldots\ldots 14.3$$

in which the symbol $P_m(n)$ means the probability of n sucesses in a given sample of m trials where n = 0,1,2,3,...,m. In other words, the first term gives the probability of no successes in m trials; the second term, the probability of 1 success in m trials; and so on to the last term which gives the probability of m successes in m trials. In this connection, it should be noted that any given sequence or set of m trials each may be thought of as a sample of size m or a lot of size m.

Perhaps the simplest way to explain the development and meaning of the Binomial distribution is to apply it to the tossing of one or more coins. On a single toss of a coin it can fall in 2 ways, either a head or a tail, each of which is equally likely. Now if 2 coins are tossed at the same time (or one coin tossed twice in succession), they may fall in any one of the following 4 equally likely ways:

TT, TH, HT, HH

Here, it will be noted that 1 of the 4 ways is favorable to 2 tails (no heads); 2 of the 4 ways are favorable to 1 head and 1 tail (one head); and 1 of the 4 ways is favorable to 2 heads.

Now if the tossing of a head is considered a success and a tail considered a failure, then according to the above nomenclature

$$p = .5 \text{ and } q = .5$$

and according to Theorem 2, the probability of throwing 2 tails (2 failures) in 2 successive tosses of a single coin (or when 2 coins are tossed at the same time) would be

$$P(TT) = q \cdot q = .5 \times .5 = .25$$

and similarly

$$P(TH) = q \cdot p = .5 \times .5 = .25$$
$$P(HT) = p \cdot q = .5 \times .5 = .25$$

and $$P(HH) = p \cdot p = .5 \times .5 = .25$$
$$\text{Total} = 1.00$$

In this case the 2 successive tosses of a single coin constitute 2 successive trials or the number of trials per sample m = 2 (it would amount to the same thing if 2 coins were tossed simultaneously; in either case the sample size or lot size would be m = 2). From this it will be seen that the Binomial expansion

$$(q + p)^2 = q^2 + 2qp + p^2$$

gives the same results as were obtained by enumerating all the different combinations that could be obtained from the tossing of a single coin twice in succession (or the tossing of 2 coins simultaneously). The first term of this expansion means that the probability of no successes (2 tails) is q^2; the probability of 1 success (1 head and 1 tail) is 2pq; and the probability of 2 successes (no tails) is p^2. In symbols this would be expressed for m = 2 as follows:

$$P_2(0) = C^0_2\, q^2p^0 = 1 \cdot q^2 \cdot 1 = q^2 = (.5)^2 = .25$$
$$P_2(1) = C^1_2\, q^1p^1 = 2 \cdot qp = 2qp = 2(.5)^2 = .50$$
$$P_2(2) = C^2_2\, q^0p^2 = 1 \cdot 1 \cdot p^2 = p^2 = (.5)^2 = .25$$
$$\text{Total} = 1.00$$

By the same process of reasoning, the probabilities of obtaining no heads, 1 head, 2 heads, and 3 heads in any 3 tosses of a single coin (or a single toss of 3 coins) would be given by the 4 respective terms of the Binomial expansion for 3 trials per sample or sample size of m = 3, thus:

$$(q + p)^3 = q^3 + 3q^2p + 3qp^2 + p^3$$
$$= .125 + .375 + .375 + .125$$

This means that the probability of getting no heads (3 tails) in any 3 successive tosses of a single coin is .125 or once in 8 sequences of 3 trials each; the probability of getting 1 head is .375; the probability of 2 heads is .375; and the probability of getting 3 heads is .125.

From this discussion, it will be readily seen that there is an indefinitely large number of specific Binomial distributions, differing according to the values of p and m in the Binomial. It will also be seen that the use of the Binomial distribution requires calculations which are easily made if the sample size or lot size, m, is small. However, the calculation of values for the successive terms in the expansion of a Binomial becomes quite a laborious process when m is large. This is owing to the fact that the number of terms in a Binomial expansion is always equal to m + 1, or one more than the number of trials per sample. Perhaps a better appreciation of the time involved in making such calculations might be obtained by examining the binomial expansions for several of the smaller values of m, as follows:

$$(1)\quad (q+p)^1 = q + p$$
$$(2)\quad (q+p)^2 = q^2 + 2qp + p^2$$
$$(3)\quad (q+p)^3 = q^3 + 3q^2p + 3qp^2 + p^3$$
$$(4)\quad (q+p)^4 = q^4 + 4q^3p + 6q^2p^2 + 4qp^3 + p^4$$
$$(5)\quad (q+p)^5 = q^5 + 5q^4p + 10q^3p^2 + 10q^2p^3 + 5qp^4 + p^5$$

Now if the number of trials or sample size, m, were increased, to say 100, it will be readily seen that the time required to evaluate the 101 terms of such a Binomial distribution would be considerable to say the least. It is for this reason that resort is made to approximations of the Binomial distribution in many practical problems where the number of trails per sample or sample size is large.

The Poisson distribution, for example, is used in many practical situations to approximate the values of a specific Binomial distribution, particularly in cases where the sample size is large. The agreement between the Binomial and the Poisson distributions, however, increases as the sample size increases. In fact, the Binomial distribution tends to approach the Poisson distribution as a limit as the number of trials or sample size becomes very large. This relationship between the Binomial and Poisson distributions will be discussed in more detail in the following article which is devoted to the development and use of the Poisson distribution.

Before going into the development of the Poisson distribution, however, a few simple illustrations involving the use of Binomial distributions should pave the way toward a better understanding of how some of the fundamental concepts of probability may be applied to the frequency distributions of heavy vehicle loadings and loading equivalents such as those that would result from the analysis of data reported by a loadometer survey. The first illustration in the following is a simple sampling problem which may seem somewhat artificial at first. On further consideration, though, it will be found that the idealized conditions upon which it is based will be very closely approximated in many types of practical sampling situations. Certain of these practical situations will be discussed later.

Example 14.4 Use of Binomial Distribution For Sampling

In order to simulate a continuous process, suppose that a large bin is continuously being supplied or filled as needed with balls which are identical in every respect except that 80 percent of them are white and 20 percent of them are black. Now, if these balls are withdrawn at random from the bin and put into boxes containing 5 balls each, what proportion of the boxes would be expected to contain n black balls, where n = 0,1,2,3,4, and 5 respectively?

If the balls in this bin were well mixed and a single ball is withdrawn, the probability of its being black by hypothesis would be p = .2, and similarly by hypothesis the probability of its being white would be q = .8. Under these conditions, the expected frequency of appearance of 0,1,2,3,4, and 5 black balls among the boxes of 5 balls each (sample size m = 5) can be calculated by evaluating the successive terms of the expansion of the Binomial.

$$(q+p)^m = (.8+.2)^5 = .8^5 + 5x.8^4x.2 + \frac{5\cdot 4}{1\cdot 2} x\ .8^3x.2^2 + \ldots + 5x.8x.2^4 + .2^5$$

If the 6 terms of this distribution are evaluated to 4 decimal places, the results would be as follows:

$$(.8 + .2)^5 = .3277 + .4096 + .2048 + .0512 + .0064 + .0003$$

This means that 32.77 percent of the boxes would be expected to contain no black balls; 40.96 percent would be expected to contain 1 black ball; 20.48 percent, 2 black balls; 5.12 percent, 3 black balls; 0.64 percent, 4 black balls; and only about 3 boxes of each 10,000 boxes would be expected to contain 5 black balls.

Comment

In connection with this problem, if the drawing of a black ball is considered a success, and the letter K is used to indicate the number of successes per sample or box of 5 balls each, then

$$K = mp \qquad \text{14.4}$$
$$= 5 \times .2 = 1$$

which means that the average number of successes (black balls) per sample would be 1. In general, this means that the average number of successes, K, expected per sample is equal to the probability of success on a single trial, p, times the number of trials per sample or sample size m.

Perhaps the most important thing to note in Example 14.4 is that the frequency distribution is very highly skewed to the right. That is: the distribution is not symmetrical but is very short (one cell) to the left of the average, K = 1, and extends a long way (4 cells) to the right of the average. And owing to the fact that this distribution is so highly skewed, it might be worthy of note also that even though the average number of black balls is K = 1 per sample, nearly 1/3 of all samples (32.77 percent) would contain no black balls at all.

In dealing with the Binomial distribution, it is important to have an appreciation for the type and extent of the changes that would be expected in a given distribution as a result of certain variations in the probability of success, p, on a single trial; the size of sample, m; and the average number of successes, K, per sample. The following example will show, to some extent, the effect of sample size on a frequency distribution.

Example 14.5 Use of Binomial Distribution For Sampling

In order to simulate a continuous process—which is the same as for Example 14.4 except for sample size—suppose that a large bin is being continuously supplied or filled as needed with balls which are identical except that 80 percent of them are white and 20 percent of them are black. Now, if these balls are withdrawn at random from the bin and put into boxes containing 10 balls each, what proportion of the boxes would be expected to contain n black balls, where n = 0,1,2,3,4,5,6,7,8,9, and 10, respectively?

By the same process of reasoning discussed in Example 14.4, the expected frequency of appearance of 0,1,2,3,...,10 black balls among the boxes of 10 balls each (sample size m = 10) would be given by the successive terms of the expansion of the Binomial

$$(q+p)^m = (.8+.2)^{10} = .8^{10}+10\text{x}.8^9\text{x}.2+\frac{10\cdot 9}{1\cdot 2}\text{x}.8^8\text{x}.2^2 + \dots + 10\text{x}.8\text{x}.2^9 + .2^{10}$$

If the 11 terms of this distribution are evaluated to 4 decimal places, the result would be as follows:

$$(.8 + .2)^{10} =$$

	.1074+	.2684+	.3020+	.2013+	.0881+	.0264+	.0055+	.0008+	.0001+	.0000+	.0000
for n =	0	1	2	3	4	5	6	7	8	9	10

This means that about 10.74 percent of the boxes would be expected to contain no black balls; 26.84 percent would be expected to contain 1 black ball, and so on. But it will be noted that the probability of getting a box with either 9 or 10 black balls is so small that it does not show up in the 4 decimal places. Actually, though, a box containing 9 black balls would be expected to occur about 4 times for each 1,000,000 boxes, and a box containing 10 black balls would be expected to occur but 1 time for each 10,000,000 boxes.

Comment

In this example, it will be noted that the average number of black balls per box (or per sample of 10 balls each) is equal to

$$K = mp = 10 \times .2 = 2$$

It will be noted also that even though the most probable number of black balls (the term of the Binomial expansion having the greatest probability value) in a given box is 2, as would be expected, only about 30 percent of the boxes would actually be expected to contain exactly 2 black balls.

Much more could be said, of course, concerning the development and uses of the Binomial distributions in connection with practical sampling problems. However, it is believed that the preceding discussion and examples will suffice to indicate the theoretical background and justification for applying such distributions to many types of practical situations where systematic sampling procedures are required. In the preceding problems, for example, where white and black balls were used to illustrate a sampling procedure, it would require but little revision in the description of the physical situation for the method outlined to stimulate a continuous manufacturing process.

The principal difficulty involved in the use of the Binomial distribution, however, is owing to the fact that the time and labor required for evaluating the successive terms of a specific Binomial expansion become almost prohibitive when the number of trials or sample size m is large. In most practical sampling problems, though, this difficulty may be overcome by use of the Poisson distribution since tables[21, 22] are available which cover most of the values ordinarily required for practical work, particularly where the sample size is relatively large, as is generally the case when dealing with heavy vehicle loads reported by a loadometer survey. The development and use of the Poisson distribution for analyzing the frequencies of heavy vehicle loadings and loading equivalents will now be discussed in more detail in the following article.

[21]E. C. Molina, "Poisson's Exponential Binomial Limit," D. Van Nostrand Co., New York, 1943.
[22]T. C. Fry, "Probability and Its Engineering Uses," D. Van Nostrand Co., New York, 1928.

14.5 Development of the Poisson Distribution

In the preceding article, it was shown that the Binomial distribution is given by successive terms of the expansion of the Binomial:

$$(q + p)^m = C^m_m q^m p^o + C^{m-1}_m q^{m-1} p^1 + C^{m-2}_m q^{m-2} p^2 + \dots + C^o_m q^o p^m \quad \text{........14.1}$$

in which p = probability of success on any one trial
q = probability of failure on any one trial
and m = number of trials (sample size or lot size)

also $p < 1$, and $q = 1 - p$

It was also explained that each term in this Binomial expansion (Equation 14.1) gives the probability of exactly n successes in a set of m trials and may be written thus:

$$P_m(n) = C^n_m q^{m-n} p^n \qquad 14.3$$

in which the symbol $P_m(n)$ means the probability of n successes in a given sample of m trials where $n = 0,1,2, ..., m$.

In the case of the Binomial Law, it has already been shown that the average number of successes, K, expected per sample (expectation of n) is equal to

$$K = mp \qquad 14.4$$

With this information it can now be shown that the Binomial distribution approaches the Poisson distribution as a limit as the number of trials m become very large. This development is accomplished by first noting that the probability p may be determined from Equation 14.4, thus:

$$p = \frac{K}{m} \qquad 14.5$$

and if this value of p is now substituted in Equation 14.3, remembering that $q = (1-p)$, it becomes:

$$P_m(n) = C^n_m \left(\frac{K}{m}\right)^n \left(1 - \frac{K}{m}\right)^{m-n} \qquad 14.6$$

Now if the operations indicated by the first 2 factors on the right of Equation 14.6 are carried out, they would become:

$$C^n_m\left(\frac{K}{m}\right)^n = \frac{m!}{n!(m-n)!} \cdot \frac{K^n}{m^n} = \frac{m!}{(m-n)!\,m^n} \cdot \frac{K^n}{n!}$$

$$= \frac{m(m-1)(m-2)\cdots[m-(n-1)]}{m^n} \cdot \frac{K^n}{n!}$$

$$= \frac{m}{m} \cdot \frac{m-1}{m} \cdot \frac{m-2}{m} \cdots \frac{m-(n-1)}{m} \cdot \frac{K^n}{n!}$$

$$= \left(1-\frac{1}{m}\right)\left(1-\frac{2}{m}\right)\cdots\left(1-\frac{n-1}{m}\right) \cdot \frac{K^n}{n!}$$

If the third factor on the right of Equation 14.6 is now separated into its 2 parts, they would be written as follows:

$$\left[\left(1-\frac{K}{m}\right)^m\right]\left[\left(1-\frac{K}{m}\right)^{-n}\right]$$

Now if all of these right hand factors are collected and rearranged, Equation 14.6 would be written as follows:

$$P_m(n) = \left[\left(1-\frac{1}{m}\right)\left(1-\frac{2}{m}\right)\cdots\left(1-\frac{n-1}{m}\right)\right] \times \left[\left(1-\frac{K}{m}\right)^{-n}\right]\left[\left(1-\frac{K}{m}\right)^{m}\right]\frac{K^n}{n!} \qquad 14.6\text{a}$$

By remembering that p is supposed to be rather small, it is obvious that only those values of n are of consequence which are very small as compared to m which is very large. On this basis, therefore, each of the factors enclosed within the first set of brackets become approximately equal to unity, as m becomes larger and larger compared with n. The same is true of the quantity $1 - K/m$ which occurs in the second and third brackets, because K/m, or p, is very small. Therefore, since there are comparatively few of these factors in the first 2 sets of brackets, it follows that their product is also not greatly different from unity and actually approaches unity as m becomes very large compared with n.

The same line of reasoning cannot be applied to the factor within the third bracket, however, owing to the fact that the quantity $1 - K/m$ is raised to a very large power. By consulting most any test on algebra or calculus, it will be found that the expression in the third bracket is equal to e^{-K}, or

$$\left(1 - \frac{K}{m}\right)^m = e^{-K}$$

in which e = 2.71828 (Base of Napierian or natural logarithms).

On the basis of this line of reasoning, therefore, one would be justified in concluding that Equation 14.6 is equivalent to

$$P_m(n) = \frac{K^n e^{-K}}{n!}$$

which is known as the Poisson distribution, and in the limit as m becomes very large it actually becomes

$$P(n) = \frac{K^n e^{-K}}{n!} \quad \text{.......... 14.7}$$

The important thing to note here is that if p is small enough and m is large enough, the Binomial Law reduces approximately to the form given by Equation 14.7, which is exactly the Poisson Law. It should be emphasized also that the Binomial Law approaches the Poisson Law as a limit as m becomes very large.

In other words, the Poisson distribution for any given value of $K = mp$ is the limiting form of the Binomial distribution as m increases while mp remains constant. The successive terms of the Binomial expansion are given by Equation 14.1 as follows:

$$(q + p)^m = C_m^m q^m p^o + C_m^{m-1} q^{m-1} p^1 + C_m^{m-2} q^{m-2} p^2 + \ldots + C_m^o q^o p^m = 1 \text{........ 14.1}$$

and have as their limits the corresponding terms in the Poisson distribution, as follows:

$$P(n) = e^{-K} + Ke^{-K} + \frac{K^2}{2!} \cdot e^{-K} + \frac{K^3}{3!} \cdot e^{-K} + \ldots = 1 \text{.......... 14.7a}$$

for n = 0 1 2 3 ...

The successive terms in this series, which are interpreted as the probabilities that 0,1,2,3, ... occurrences should appear, give the Poisson distribution. They may be interpreted also as the proportion of samples in which 0,1,2,3, ... of some specified event would be expected to occur when the average number of occurrences per sample, as given by Equation 14.4, is $K = mp$.

Comment

One of the principal advantages of using the Poisson distribution as an approximation to a specific Binomial distribution — particularly when p is small and m is large — is the comparative ease with which the successive terms of the Poisson series, as given in Equation 14.7a, may be evaluated. Actually, though, there is rarely ever any occasion for making such calculations since tables [23-24] are available that cover a wide range of values for K = mp (average number of occurrences per sample) which are sufficiently close to any particular value of K to result in a distribution which is sufficiently close to the desired distribution to satisfy the requirements for accuracy in most practical situations.

On the other hand, it would not be at all practical to undertake to develop a satisfactory set of tables that might be used for the Binomial distribution. This is due to the fact that a separate distribution would be required for each pair of the values m and p, as will be seen in Equation 14.1. In other words a satisfactory table for the Binomial distribution would have to include a large number of values for m and p which are covered by a single value of K in the Poisson distribution tables. For example, the distribution given by the Poisson tables for, say K = 4, covers all possible values of m and p whose product mp = 4, such as:

m x p = K	m x p = K	m x p = K
10 x .400 = 4	60 x .667 = 4	200 x .020 = 4
20 x .200 = 4	70 x .572 = 4	300 x .013 = 4
30 x .133 = 4	80 x .500 = 4	400 x .010 = 4
40 x .100 = 4	90 x .444 = 4	500 x .008 = 4
50 x .080 = 4	100 x .040 = 4	800 x .005 = 4

which represent but a few of the possible values for m and p whose product mp = 4. The same thing would be true for any and every other value of K.

14.6 Comparison of The Binomial and Poisson Distributions

As previously pointed out, the Binomial Law approaches the Poisson Law as a limit as the sample size m becomes larger and larger while the value of K = mp remains constant. From a practical standpoint, however, it would be quite informative to know just how rapidly the Binomial distributions approach this limit and how they are affected by the values of m and p. A reasonable satisfactory answer to this would be to the effect that Binomial distribution approach the Poisson form so rapidly as m is increased that the approximations indicated by the Poisson series may be considered very good for practical purposes when p = .1, and excellent when p = .01 or less. The validity of this statement is illustrated by the distributions shown in the following table.

Table 14.3

COMPARISONS OF BINOMIAL AND POISSON DISTRIBUTIONS FOR DIFFERENT VALUES OF m AND CONSTANT VALUES OF K = mp

Number of Term	Binomials with mp = 1				Poisson with K = 1
	m = 5, p = .2	m = 10, p = .1	m = 25, p = .04	m = 100, p = .01	Limit as $m \rightarrow \infty$
0	.3277	.3487	.3604	.3660	.3679
1	.4096	.3874	.3754	.3697	.3679
2	.2048	.1937	.1877	.1849	.1839
3	.0512	.0574	.0600	.0610	.0613
4	.0064	.0112	.0137	.0149	.0153
5	.0003	.0015	.0024	.0029	.0031
6		.0001	.0003	.0005	.0005

[23]T. C. Fry, "Probobility and Its Engineering Uses," D. Van Nostrand Co., New York, 1928.
[24]E. C. Molina, "Poisson's Exponential Binomial Limit," D. Van Nostrand Co., New York, 1943.

Number of Term	Binomials with mp = 2				Poisson with K = 2
	m = 10 p = .2	m = 20 p = .1	m = 50 p = .04	m = 200 p = .01	Limit as $m \to \infty$
0	.1074	.1216	.1299	.1340	.1353
1	.2684	.2702	.2706	.2707	.2707
2	.3020	.2852	.2762	.2720	.2707
3	.2013	.1901	.1842	.1814	.1804
4	.0881	.0898	.0902	.0902	.0902
5	.0264	.0319	.0346	.0357	.0361
6	.0055	.0089	.0108	.0117	.0120
7	.0008	.0020	.0028	.0033	.0034
8	.0001	.0004	.0006	.0008	.0009
9	.0000	.0001	.0001	.0002	.0002

14.7 Use of Poisson Distributions For Analyzing Frequencies of Heavy Vehicle Loadings

In order to illustrate a typical type of physical situation to which the Binomial Law might be applied for determining the relative frequencies with which certain specified events would be expected to occur, it was assumed in Examples 14.4 and 14.5 that a large bin was continuously being supplied or filled as needed with balls which were identical in every respect except that 80 percent of them were white and 20 percent of them were black. In Example 14.4, it was then shown that, if these balls were withdrawn at random from the bin and put into boxes containing 5 balls each (sample size, m = 5), the relative frequencies with which 0,1,2,3,4, and 5 black balls would be expected among these boxes would be given by the successive terms of the expansion of the Binomial

$$= (q + p)^m = (.8 + .2)^5 = \underset{0}{.3277} + \underset{1}{.4096} + \underset{2}{.2048} + \underset{3}{.0512} + \underset{4}{.0064} + \underset{5}{.0003}$$

for n =

Then, by way of illustrating the effect of sample size on the frequencies with which the various numbers of black balls would be expected to occur among different size samples withdrawn from the same bin—or parent population of 80 percent white and 20 percent black balls—it was shown in Example 14.5 that if the sample size were 10 instead of 5, the relative frequency with which n = 0,1,2,3,...,9, and 10 black balls respectively, would be expected among these samples would be given by the successive terms of the expansion of the Binomial

$$(.8 + .2)^{10} = \underset{0}{.1074} + \underset{1}{.2684} + \underset{2}{.3020} + \underset{3}{.2013} + \underset{4}{.0881} + \underset{5}{.0264} + \underset{6}{.0055} + \underset{7}{.0008} + \underset{8}{.0001} + \underset{9}{.0000} + \underset{10}{.0000}$$

for n =

Both of the preceding Binomial distributions are given in Column 2 of Table 14.3 where the probability of success (in this case, the drawing of a black ball) on a single trial, p = .2, is held constant. The upper part of Column 2 gives the distribution expected for samples of size m = 5, and the lower part gives the distribution expected for samples of size m = 10. Columns 3, 4, and 5 of Table 14.3 will also give some idea of the distributions which result from similar variations in sample size for 3 additional values of probability, namely, p = .1, .04, and .01 respectively.

In the upper part of Table 14.3, it will also be noted that the combinations of sample size, m, and probability, p, are such that the average number of specified events per sample mp = 1, and in the lower part, the combinations of m and p are such that the average number of specified events per sample mp = 2. And perhaps the most important thing to note in connection with these distributions is that after the sample size exceeds about 25, for a constant value K = mp, the expected frequencies given by the successive terms of the Binomial expansion are rather closely approximated by the corresponding terms of the Poisson series as shown in the right hand column of Table 14.3.

In order to illustrate how the Binomial Law might be used for analyzing or predicting the results that would be expected from a continuous sampling procedure in Examples 14.4 and 14.5, it was assumed that the composition of the parent population was known in advance. More specifically, it was assumed that the parent population was known to consist of 80 percent white and 20 percent black balls. In most practical situations, however, the composition of the parent population is not known in advance. This is not a serious handicap though because the value of p may be estimated within rather narrow limits, simply by taking a large number of samples of size m and determining the average number of successes, $K = mp$, per sample. When determined in this manner, the estimated value of the probability of success on a single trial, $p = K/m$, is known as "statistical probability."

For example, suppose that the output of an automatic machine consists of small metal rivets which are put into boxes of 100 rivets each. Now suppose that after 150 of these boxes had been inspected for defectives, it was found that they contained a total of 150 defective rivets or an average of 1 defective rivet per box. On this basis the best estimate of the probability that any rivet selected at random would be a defective would be the statistical probability $p = K/m = 1/100 = .01$. If the output of this machine were now analyzed by means of the Binomial and Poisson distributions, the situation would be as given in the following example.

Example 14.6 Binomial and Poisson Distributions For $K = mp = 1$

If the output of an automatic machine consists of small metal rivets which are put into boxes of 100 rivets each, and it has been determined from previous sampling that 1 percent of this machine's production was defective, what proportion of the boxes would be expected to contain 0,1,2,3,4,... defective rivets respectively, according to both the Binomial and Poisson distributions?

According to the Binomial Law, the expected frequency of occurrence of 0,1,2,3,... defectives among the boxes (for $m = 100$ and $p = .01$) would be given by the successive terms (to 4 decimal places) of the expansion of the Binomial (see upper part of Column 5 of Table 14.3)

$$(.99 + .01)^{100} = .3660 + .3697 + .1849 + .0610 + .0149 + .0029 + .0005$$

for $n = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6$

and according to the Poisson Law (for $K = mp = 1$) the corresponding distribution would be given by the successive terms of the Poisson series (see upper right hand column of Table 14.3).

$$K^n e^{-K}/n! = .3679 + .3679 + .1839 + .0613 + .0153 + .0031 + .0005$$

for $n = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6$

By comparing these two distributions, it will be seen that the values indicated by the Poisson series are sufficiently close to those given by the Binomial expansion to provide a satisfactory basis for a practical procedure for sampling the product of the machine under consideration or analyzing the quality level of its performance.

Comment

The Poisson distribution as shown above is also given for $K = 1$ in Table 14.4 which is a reference table that covers all practical values of K from 0.1 to 15.0. For each of these values of K, Table 14.4 gives both the individual and cumulative terms indicated by the Poisson Law. The individual terms shown in Table 14.4 give the proportion of samples that would be expected to contain 0,1,2,3,... specified events when the average number per sample was K = mp. The cumulative terms may be explained rather simply by referring to the distribution for K = 1 in Table 14.4; the top right hand figure means that 100 percent of the samples contain none or more specified events; the second figure means that 63.21 percent of the samples would be expected to contain 1 or more events; the third figure means that 26.42 percent of the samples would be expected to contain 2 or more events, and so on. Table 14.4, therefore, will provide a convenient reference for analyzing future problems.

Application of Poisson Law To Loadometer Survey Data of 1942

In each of the preceding examples only a discrete number of events could occur in a particular sample. In the case of the automatic machine whose output consisted of small metal rivets, the number of defectives in a given box of 100 rivets would of necessity have to be either 0,1,2,3,... because one could not say that a given box contained, say, 2½ defectives. There are other types of problems though where the variable under consideration is continuous, as would be the case if one were considering the variations in weight of heavy motor vehicles. This difficulty may be overcome, however, by dividing the weight scale up into cells of convenient range. In dealing with heavy vehicle weights and heavy vehicle loading equivalents, for example, it has been found convenient for each cell to cover a range of 1 ton or 2,000 pounds. On this basis, a heavy vehicle with a gross weight between 19.50 and 20.49 tons would be put into the 20 ton cell, and one with a gross weight between 20.50 and 21.49 tons would be put into the 21 ton cell, and so on.

Perhaps the simplest way to illustrate how the Poisson Law may be used for analyzing the frequencies of various intensities of heavy vehicle loading equivalents would be to discuss the frequency distribution of equivalent H truck loadings for some particular vehicle type on a given span which has already been determined from the heavy vehicle data reported by the 1942 loadometer survey. For example, Table 16.1a shows that the observed frequencies of equivalent H truck loadings on a 60-foot span for the 171 Type 2 trucks reported were found to be as follows:

Equivalent H Truck Loading Tons		Observed Relative Frequency Per cent
11		7.0
12		14.6
13		24.2
14		23.0
15		17.0
16		8.2
17		3.9
18		2.1
Total	=	100.0

Maximum equiv. H truck loading	=	18.0
Average equiv. H truck loading	=	13.8
Minimum equiv. H truck loading	=	11.0
Range from maximum to minimum	=	7.0
Poisson coefficient K	=	2.8
Standard deviation[25] D	=	1.67

From these results it will be seen that the variation in H truck loading equivalents is from 11.0 tons to 18.0 tons rather than starting with 0,1,2,3,... and so on as was the case in the preceding examples. This simply means

[25]For explanation of Standard Deviation see Article 15.2.

that the variation in H loading equivalents starts with the 11.0 ton cell and covers a total range of 8 cells between the 11.0 and 18.0 ton cells, inclusive.

It will be noted also that the average equivalent H truck loading of 13.8 tons is 2.8 tons or 2.8 cells greater than the 11.0 ton minimum cell. Insofar as applying the Poisson Law to the analysis of these observed frequencies, this means that the 11 ton cell would be considered the zero term; the 12 ton cell would be considered the first term; the 13 ton cell would be considered the second term and so on. In other words, the number of tons that would correspond to the successive terms of the Poisson series would be $11.0 + n$ where $n = 0,1,2,3,\ldots$ and so on. And since the average gross weight per vehicle is 13.8 tons, or 2.8 tons greater than the 11.0 ton minimum, the Poisson distribution would correspond to that found in Table 14.4 for $K = 2.8$. This Poisson distribution, $K = 2.8$, is the one whose average is 2.8 cells greater than the zero cell and is, therefore, the one which would correspond to the given situation. On this basis, a comparison of the observed frequencies, of equivalent H truck loadings for the Type 2 trucks on a 60-foot span, with those given by the Poisson distribution would be as follows:

Equivalent H Truck Loading Tons	Observed Relative Frequency Percent	Calculated Relative Frequency Percent	Calculated Cumulative Frequency Percent
11	7.0	6.1	100.0
12	14.6	17.0	93.9
13	24.2	23.8	76.9
14	23.0	22.2	53.1
15	17.0	15.6	30.9
16	8.2	8.7	15.3
17	3.9	4.1	6.6
18	2.1	1.6	2.5
19	.0	.6	.9
20	.0	.2	.3
21	.0	.1	.1
Total =	100.0	100.0	

A comparison of these distributions will show that the Poisson Law provides a convenient mathematical tool for analyzing the relative frequencies of various intensities of heavy vehicle loads and loading equivalencies that would be expected to obtain for given traffic conditions such as those indicated by the heavy vehicle data[26] reported by the special loadometer survey of 1942 from which this illustration was taken.

The above frequencies of equivalent H truck loadings for the Type 2 trucks on a 60-foot span were selected for this illustration because of the very excellent agreement between the observed and calculated distributions. And though the agreement between some of the other observed and calculated frequencies given in Parts IV and V is not so close as those shown above, a brief review of these data will show that the Poisson Law provides a simple yet reasonably accurate mathematical procedure for analyzing and estimating the relative frequencies of various intensities of heavy vehicle loads or loading equivalencies that would be expected to obtain for any given or anticipated traffic conditions.

14.8 Use of Poisson Law For Converting Frequency Distribution of One Type of Loading Into That of Another

In the preceding article, the observed and calculated frequencies of equivalent H truck loadings for a 60-foot span are shown for the 171 Type 2

[26]Henson K. Stephenson and A. A. Jakkula, "Highway Loads and Their Effects on Highway Structures Based on Traffic Data of 1942," Texas Engineering Experiment Station Bulletin No. 116, 1950.

trucks reported by the special loadometer survey of 1942. These observed and calculated frequency distributions were taken from Tables 16.1a and 16.1b, respectively.

Once such a frequency distribution has been determined—say on the basis of equivalent H truck loadings—it would not be necessary to go through all the detailed work of rating the vehicles again in order to arrive at a different type of frequency distribution based on another type of loading. If the original distribution was based, say, on equivalent H truck loadings, it could very easily be converted into a distribution based on equivalent H-S truck loadings, equivalent concentrated loads, equivalent H design loadings, or any other loading equivalencies as may be desired. The coefficients for converting any one of these equivalent loadings into any one of the others on various span lengths are given in Table 13.1 and the use of them is explained in Article 13. The procedure for converting a given frequency distribution based on one type of loading equivalency into its corresponding distribution based on a different type of equivalent loads will be illustrated in the following example.

Example 14.6 Conversion of Equivalent H Truck Loading Distribution Into Equivalent Concentrated Loading Distribution

The observed and calculated frequencies of equivalent H truck loadings on a 60-foot span for the 171 Type 2 trucks reported by the 1942 loadometer survey are given in the preceding article (Article 14.7) and are identical with the distributions shown for this case in Tables 16.1a and 16.1b, respectively. Suppose now that this distribution of equivalent H truck loadings had been determined and it was then desired to have a frequency distribution for these same vehicles and span based on equivalent concentrated loadings.

In Table 13.1, it will be seen that a conversion coefficient of .91 will convert a given equivalent H truck loading into its equivalent concentrated loading on a 60-foot span. What this conversion coefficient actually means is that a single concentrated load having a weight equal to 91 percent of the weight of a given H truck will produce the same maximum moment on a 60-foot span as the given H truck. On this basis, the average and minimum equivalent concentrated loads for this distribution would be 91 percent, respectively, of those for the equivalent H truck loadings as follows:

Average equivalent concentrated load = 13.8 x .91 = 12.6
Minimum equivalent concentrated load = 11.0 x .91 = 10.0
Poisson coefficient for ECL distribution, K = 2.6

The Poisson distribution for K = 2.6 will be found in Table 14.4 which results in the following frequency distribution of equivalent concentrated loads for the above mentioned 171 Type 2 trucks on a 60-foot span.

Equivalent Concentrated Load Tons	Observed Relative Frequency Percent	Calculated Relative Frequency Percent	Calculated Cumulative Frequency Percent
10	7.0	7.4	100.0
11	17.9	19.3	92.6
12	26.3	25.1	73.3
13	24.2	21.8	48.2
14	14.4	14.1	26.4
15	6.4	7.4	12.3
16	2.7	3.2	4.9
17	1.1	1.2	1.7
18	0.0	.4	.5
19	0.0	.1	.1
Total =	100.0	100.0	

The observed frequencies of equivalent concentrated loads for these 171 Type 2 trucks on a 60-foot span are also shown as they appear in Table 23.1a in order to provide a direct comparison with the above theoretical frequencies which were arrived at by applying the conversion coefficient of .91—as given by Table 13.1 for this situation—to the distribution of equivalent H truck loadings. Incidentally, the observed frequencies shown in Table 23.1a were obtained by converting each of the 171 Type 2 trucks into equivalent concentrated loads for each of the 8 span lengths considered.

Comment

This example will serve to show how simple it is to use the Poisson Law for converting relative frequencies based on one type of equivalent loadings into those of another. Although the conversion illustrated in this example is but one of several that might be desired, it is typical and the same procedure would apply for any of the conversions indicated by Table 13.1 or Figure 13.1 and discussed in Article 13.

Table 14.4

INDIVIDUAL AND CUMULATIVE TERMS OF THE POISSON DISTRIBUTION FORMULA

$$P(n) = \frac{K^n e^{-K}}{n!}$$

	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms
n	K = 0.1		K = 0.2		K = 0.3		K = 0.4		K = 0.5	
0	.9048	1.0000	.8187	1.0000	.7408	1.0000	.6703	1.0000	.6065	1.0000
1	.0905	.0952	.1638	.1813	.2223	.2592	.2681	.3297	.3033	.3935
2	.0045	.0047	.0164	.0175	.0333	.0369	.0537	.0616	.0758	.0902
3	.0002	.0002	.0010	.0011	.0033	.0036	.0071	.0079	.0126	.0144
4			.0001	.0001	.0003	.0003	.0007	.0008	.0016	.0018
5							.0001	.0001	.0002	.0002
n	K = 0.6		K = 0.7		K = 0.8		K = 0.9		K = 1.0	
0	.5488	1.0000	.4966	1.0000	.4493	1.0000	.4066	1.0000	.3679	1.0000
1	.3293	.4512	.3476	.5034	.3595	.5507	.3659	.5934	.3679	.6321
2	.0988	.1219	.1217	.1558	.1438	.1912	.1646	.2275	.1839	.2642
3	.0197	.0231	.0283	.0341	.0383	.0474	.0494	.0629	.0613	.0803
4	.0030	.0034	.0050	.0058	.0077	.0091	.0112	.0135	.0153	.0190
5	.0004	.0004	.0007	.0008	.0012	.0014	.0020	.0023	.0031	.0037
6			.0001	.0001	.0002	.0002	.0003	.0003	.0005	.0006
7									.0001	.0001
n	K = 1.1		K = 1.2		K = 1.3		K = 1.4		K = 1.5	
0	.3329	1.0000	.3012	1.0000	.2725	1.0000	.2466	1.0000	.2231	1.0000
1	.3661	.6671	.3614	.6988	.3543	.7275	.3452	.7534	.3347	.7769
2	.2014	.3010	.2169	.3374	.2303	.3732	.2417	.4082	.2510	.4422
3	.0739	.0996	.0867	.1205	.0998	.1429	.1128	.1665	.1256	.1912
4	.0203	.0257	.0261	.0338	.0324	.0431	.0394	.0537	.0470	.0656
5	.0044	.0054	.0062	.0077	.0085	.0107	.0111	.0143	.0141	.0186
6	.0009	.0010	.0012	.0015	.0018	.0022	.0026	.0032	.0036	.0045
7	.0001	.0001	.0003	.0003	.0003	.0004	.0005	.0006	.0007	.0009
8					.0001	.0001	.0001	.0001	.0002	.0002
n	K = 1.6		K = 1.7		K = 1.8		K = 1.9		K = 2.0	
0	.2019	1.0000	.1827	1.0000	.1653	1.0000	.1496	1.0000	.1353	1.0000
1	.3230	.7981	.3105	.8173	.2975	.8347	.2841	.8504	.2707	.8647
2	.2585	.4751	.2640	.5068	.2678	.5372	.2700	.5663	.2707	.5940
3	.1378	.2166	.1496	.2428	.1607	.2694	.1710	.2963	.1804	.3233
4	.0551	.0788	.0636	.0932	.0723	.1087	.0812	.1253	.0902	.1429
5	.0177	.0237	.0216	.0296	.0260	.0364	.0309	.0441	.0361	.0527
6	.0047	.0060	.0061	.0080	.0078	.0104	.0098	.0132	.0121	.0166
7	.0010	.0013	.0015	.0019	.0020	.0026	.0026	.0034	.0034	.0045
8	.0003	.0003	.0003	.0004	.0005	.0006	.0006	.0008	.0009	.0011
9			.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002

Table 14.4 (Continued)

n	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms
n	K = 2.1		K = 2.2		K = 2.3		K = 2.4		K = 2.5	
0	.1225	1.0000	.1108	1.0000	.1003	1.0000	.0907	1.0000	.0821	1.0000
1	.2571	.8775	.2438	.8892	.2306	.8997	.2177	.9093	.2052	.9179
2	.2700	.6204	.2681	.6454	.2651	.6691	.2613	.6916	.2565	.7127
3	.1890	.3504	.1967	.3773	.2033	.4040	.2090	.4303	.2138	.4562
4	.0993	.1614	.1081	.1806	.1169	.2007	.1254	.2213	.1336	.2424
5	.0417	.0621	.0476	.0725	.0538	.0838	.0602	.0959	.0668	.1088
6	.0145	.0204	.0174	.0249	.0206	.0300	.0241	.0357	.0278	.0420
7	.0044	.0059	.0055	.0075	.0068	.0094	.0083	.0116	.0100	.0142
8	.0012	.0015	.0015	.0020	.0020	.0026	.0024	.0033	.0031	.0042
9	.0002	.0003	.0004	.0005	.0005	.0006	.0007	.0009	.0008	.0011
10	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0003
11									.0001	.0001
n	K = 2.6		K = 2.7		K = 2.8		K = 2.9		K = 3.0	
0	.0743	1.0000	.0672	1.0000	.0608	1.0000	.0550	1.0000	.0493	1.0000
1	.1931	.9257	.1815	.9328	.1703	.9392	.1596	.9450	.1493	.9502
2	.2510	.7326	.2449	.7513	.2384	.7689	.2314	.7854	.2241	.8009
3	.2176	.4816	.2205	.5064	.2224	.5305	.2236	.5540	.2240	.5768
4	.1414	.2640	.1488	.2859	.1558	.3081	.1622	.3304	.1681	.3528
5	.0736	.1226	.0804	.1371	.0872	.1523	.0940	.1682	.1008	.1847
6	.0318	.0490	.0361	.0567	.0407	.0651	.0455	.0742	.0504	.0839
7	.0119	.0172	.0140	.0206	.0163	.0244	.0188	.0287	.0216	.0335
8	.0038	.0053	.0047	.0066	.0057	.0081	.0068	.0099	.0081	.0119
9	.0011	.0015	.0014	.0019	.0017	.0024	.0022	.0031	.0027	.0038
10	.0003	.0004	.0004	.0005	.0005	.0007	.0007	.0009	.0008	.0011
11	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0002	.0002	.0003
12							.0001	.0001	.0001	.0001
n	K = 3.1		K = 3.2		K = 3.3		K = 3.4		K = 3.5	
0	.0450	1.0000	.0408	1.0000	.0369	1.0000	.0334	1.0000	.0302	1.0000
1	.1397	.9550	.1304	.9592	.1217	.9631	.1134	.9666	.1057	.9698
2	.2165	.8153	.2087	.8288	.2008	.8414	.1929	.8532	.1849	.8641
3	.2236	.5988	.2226	.6201	.2209	.6406	.2187	.6603	.2158	.6792
4	.1734	.3752	.1781	.3975	.1823	.4197	.1858	.4416	.1888	.4634
5	.1075	.2018	.1140	.2194	.1203	.2374	.1263	.2558	.1322	.2746
6	.0555	.0943	.0608	.1054	.0661	.1171	.0716	.1295	.0771	.1424
7	.0246	.0388	.0278	.0446	.0312	.0510	.0348	.0579	.0386	.0653
8	.0095	.0142	.0111	.0168	.0129	.0198	.0148	.0231	.0168	.0267
9	.0033	.0047	.0039	.0057	.0047	.0069	.0056	.0083	.0066	.0099
n	K = 3.1		K = 3.2		K = 3.3		K = 3.4		K = 3.5	
10	.0010	.0014	.0013	.0018	.0016	.0022	.0019	.0027	.0023	.0033
11	.0003	.0004	.0004	.0005	.0004	.0006	.0006	.0008	.0007	.0010
12	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0002	.0002	.0003
13							.0001	.0001	.0001	.0001
n	K = 3.6		K = 3.7		K = 3.8		K = 3.9		K = 4.0	
0	.0273	1.0000	.0247	1.0000	.0224	1.0000	.0202	1.0000	.0183	1.0000
1	.0984	.9727	.0915	.9753	.0850	.9776	.0790	.9798	.0733	.9817
2	.1770	.8743	.1692	.8838	.1615	.8926	.1539	.9008	.1465	.9084
3	.2125	.6973	.2088	.7146	.2046	.7311	.2001	.7469	.1954	.7619
4	.1912	.4848	.1930	.5058	.1943	.5265	.1952	.5468	.1953	.5665
5	.1377	.2936	.1429	.3128	.1478	.3322	.1522	.3516	.1563	.3712
6	.0826	.1559	.0881	.1699	.0935	.1844	.0989	.1994	.1042	.2149
7	.0425	.0733	.0466	.0818	.0508	.0909	.0551	.1005	.0596	.1107
8	.0191	.0308	.0215	.0352	.0241	.0401	.0269	.0454	.0297	.0511
9	.0077	.0117	.0089	.0137	.0102	.0160	.0116	.0185	.0133	.0214
10	.0027	.0040	.0032	.0048	.0039	.0058	.0046	.0069	.0053	.0081
11	.0009	.0013	.0011	.0016	.0013	.0019	.0016	.0023	.0019	.0028
12	.0003	.0004	.0004	.0005	.0004	.0006	.0005	.0007	.0006	.0009
13	.0001	.0001	.0001	.0001	.0002	.0002	.0001	.0002	.0002	.0003
14							.0001	.0001	.0001	.0001
n	K = 4.1		K = 4.2		K = 4.3		K = 4.4		K = 4.5	
0	.0166	1.0000	.0150	1.0000	.0136	1.0000	.0123	1.0000	.0111	1.0000
1	.0679	.9834	.0630	.9850	.0583	.9864	.0540	.9877	.0500	.9889
2	.1393	.9155	.1322	.9220	.1255	.9281	.1188	.9337	.1125	.9389
3	.1904	.7762	.1852	.7898	.1798	.8026	.1743	.8149	.1687	.8264
4	.1951	.5858	.1944	.6046	.1932	.6228	.1918	.6406	.1898	.6577

Table 14.4 (Continued)

n	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms
n	K = 4.1		K = 4.2		K = 4.3		K = 4.4		K = 4.5	
5	.1600	.3907	.1633	.4102	.1663	.4296	.1687	.4488	.1708	.4679
6	.1093	.2307	.1144	.2469	.1191	.2633	.1237	.2801	.1282	.2971
7	.0641	.1214	.0686	.1325	.0732	.1442	.0778	.1564	.0823	.1689
8	.0328	.0573	.0360	.0639	.0393	.0710	.0428	.0786	.0463	.0866
9	.0150	.0245	.0168	.0279	.0188	.0317	.0209	.0358	.0232	.0403
10	.0061	.0095	.0070	.0111	.0081	.0129	.0092	.0149	.0104	.9171
11	.0023	.0034	.0027	.0041	.0031	.0048	.0037	.0057	.0043	.0067
12	.0008	.0011	.0010	.0014	.0012	.0017	.0013	.0020	.0016	.0024
13	.0002	.0003	.0003	.0004	.0003	.0005	.0005	.0007	.0005	.0008
14	.0001	.0001	.0001	.0001	.0002	.0002	.0002	.0002	.0002	.0003
15									.0001	.0001
n	K = 4.6		K = 4.7		K = 4.8		K = 4.9		K = 5.0	
0	.0101	1.0000	.0091	1.0000	.0082	1.0000	.0074	1.0000	.0067	1.0000
1	.0462	.9899	.0427	.9909	.0395	.9918	.0365	.9926	.0337	.9933
2	.1063	.9437	.1005	.9482	.0948	.9523	.0894	.9561	.0843	.9596
3	.1631	.8374	.1574	.8477	.1517	.8575	.1460	.8667	.1403	.8753
4	.1875	.6743	.1849	.6903	.1821	.7058	.1789	.7207	.1755	.7350
5	.1726	.4868	.1738	.5054	.1747	.5237	.1753	.5418	.1755	.5595
6	.1322	.3142	.1362	.3316	.1398	.3490	.1432	.3665	.1462	.3840
7	.0869	.1820	.0914	.1954	.0959	.2092	.1002	.2233	.1044	.2378
8	.0500	.0951	.0537	.1040	.0575	.1133	.0613	.1231	.0653	.1334
9	.0256	.0451	.0281	.0503	.0307	.0558	.0335	.0618	.0363	.0681
10	.0117	.0195	.0132	.0222	.0147	.0251	.0163	.0283	.0181	.0318
11	.0049	.0078	.0056	.0090	.0064	.0104	.0073	.0120	.0082	.0137
12	.0019	.0029	.0022	.0034	.0026	.0040	.0030	.0047	.0035	.0055
13	.0007	.0010	.0008	.0012	.0009	.0014	.0011	.0017	.0013	.0020
14	.0002	.0003	.0003	.0004	.0004	.0005	.0004	.0006	.0005	.0007
15	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0001	.0002
16							.0001	.0001	.0001	.0001
n	K = 5.2		K = 5.4		K = 5.6		K = 5.8		K = 6.0	
0	.0055	1.0000	.0045	1.0000	.0037	1.0000	.0030	1.0000	.0025	1.0000
1	.0287	.9945	.0244	.9955	.0207	.9963	.0176	.9970	.0149	.9975
2	.0746	.9658	.0659	.9711	.0580	.9756	.0509	.9794	.0446	.9826
3	.1293	.8912	.1185	.9052	.1082	.9176	.0985	.9285	.0892	.9380
4	.1680	.7619	.1600	.7867	.1515	.8094	.1427	.8300	.1339	.8488
5	.1748	.5939	.1728	.6267	.1698	.6579	.1656	.6873	.1606	.7149
6	.1515	.4191	.1556	.4539	.1584	.4881	.1601	.5217	.1606	.5543
7	.1125	.2676	.1200	.2983	.1267	.3297	.1326	.3616	.1377	.3937
8	.0732	.1551	.0809	.1783	.0887	.2030	.0962	.2290	.1032	.2560
9	.0422	.0819	.0486	.0974	.0552	.1143	.0620	.1328	.0689	.1528
10	.0220	.0397	.0263	.0488	.0309	.0591	.0359	.0708	.0413	.0839
11	.0104	.0177	.0129	.0225	.0157	.0282	.0189	.0349	.0225	.0426
12	.0045	.0073	.0058	.0096	.0074	.0125	.0092	.0160	.0113	.0201
13	.0018	.0028	.0024	.0038	.0031	.0051	.0041	.0068	.0052	.0088
14	.0007	.0010	.0009	.0014	.0013	.0020	.0017	.0027	.0022	.0036
15	.0002	.0003	.0003	.0005	.0005	.0007	.0006	.0010	.0009	.0014
16	.0001	.0001	.0001	.0002	.0001	.0002	.0003	.0004	.0003	.0005
17			.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002
18									.0001	.0001
n	K = 6.2		K = 6.4		K = 6.6		K = 6.8		K = 7.0	
0	.0020	1.0000	.0017	1.0000	.0014	1.0000	.0011	1.0000	.0009	1.0000
1	.0126	.9980	.0106	.9983	.0089	.9986	.0076	.9989	.0064	.9991
2	.0390	.9854	.0340	.9877	.0297	.9897	.0257	.9913	.0223	.9927
3	.0806	.9464	.0726	.9537	.0652	.9600	.0584	.9656	.0522	.9704
4	.1250	.8658	.1162	.8811	.1075	.8948	.0992	.9072	.0912	.9182
5	.1549	.7408	.1486	.7649	.1420	.7873	.1350	.8080	.1277	.8270
6	.1601	.5859	.1586	.6163	.1561	.6453	.1529	.6730	.1490	.6993
7	.1418	.4258	.1450	.4577	.1473	.4892	.1486	.5201	.1490	.5503
8	.1099	.2840	.1160	.3127	.1215	.3419	.1263	.3715	.1304	.4013
9	.0757	.1741	.0825	.1967	.0890	.2204	.0954	.2452	.1014	.2709
10	.0470	.0984	.0528	.1142	.0588	.1314	.0649	.1498	.0710	.1695
11	.0264	.0514	.0307	.0614	.0353	.0726	.0401	.0849	.0451	.0985
12	.0137	.0250	.0164	.0307	.0194	.0373	.0227	.0448	.0264	.0534
13	.0065	.0113	.0080	.0143	.0099	.0179	.0119	.0221	.0142	.0270
14	.0029	.0048	.0037	.0063	.0046	.0080	.0058	.0102	.0071	.0128

Table 14.4 (Continued)

n	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms	Ind. Terms	Cum. Terms
n	K = 6.2		K = 6.4		K = 6.6		K = 6.8		K = 7.0	
15	.0012	.0019	.0016	.0026	.0020	.0034	.0026	.0044	.0033	.0057
16	.0004	.0007	.0006	.0010	.0009	.0014	.0011	.0018	.0014	.0024
17	.0002	.0003	.0003	.0004	.0003	.0005	.0004	.0007	.0006	.0010
18	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003	.0003	.0004
19					.0001	.0001	.0001	.0001	.0001	.0001
n	K = 7.2		K = 7.4		K = 7.6		K = 7.8		K = 8.0	
0	.0007	1.0000	.0006	1.0000	.0005	1.0000	.0004	1.0000	.0003	1.0000
1	.0054	.9993	.0045	.9994	.0038	.9995	.0032	.9996	.0027	.9997
2	.0194	.9939	.0168	.9949	.0145	.9957	.0125	.9964	.0108	.9970
3	.0464	.9745	.0413	.9781	.0366	.9812	.0324	.9839	.0286	.9862
4	.0836	.9281	.0763	.9368	.0695	.9446	.0632	.9515	.0572	.9576
5	.1204	.8445	.1131	.8605	.1058	.8751	.0986	.8883	.0916	.9004
6	.1445	.7241	.1394	.7474	.1339	.7693	.1281	.7897	.1222	.8088
7	.1485	.5796	.1473	.6080	.1454	.6354	.1428	.6616	.0396	.6866
8	.1338	.4311	.1364	.4607	.1382	.4900	.1392	.5188	.1395	.5470
9	.1069	.2973	.1120	.3243	.1167	.3518	.1207	.3796	.1241	.4075
10	.0771	.1904	.0830	.2123	.0886	.2351	.0941	.2589	.0993	.2834
11	.0504	.1133	.0558	.1293	.0613	.1465	.0668	.1648	.0722	.1841
12	.0302	.0629	.0344	.0735	.0388	.0852	.0434	.0980	.0481	.1119
13	.0168	.0327	.0196	.0391	.0226	.0464	.0260	.0546	.0296	.0638
14	.0086	.0159	.0103	.0195	.0124	.0238	.0145	.0286	.0169	.0342
15	.0042	.0073	.0051	.0092	.0062	.0114	.0075	.0141	.0091	.0173
16	.0018	.0031	.0024	.0041	.0030	.0052	.0037	.0066	.0045	.0082
17	.0008	.0013	.0010	.0017	.0013	.0022	.0017	.0029	.0021	.0037
18	.0003	.0005	.0004	.0007	.0005	.0009	.0007	.0012	.0009	.0016
19	.0001	.0002	.0002	.0003	.0003	.0004	.0003	.0005	.0004	.0007
20	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002	.0002	.0003
21							.0001	.0001	.0001	.0001
n	K = 8.2		K = 8.4		K = 8.6		K = 8.8		K = 9.0	
0	.0003	1.0000	.0002	1.0000	.0002	1.0000	.0002	1.0000	.0001	1.0000
1	.0022	.9997	.0019	.9998	.0016	.9998	.0013	.9998	.0011	.9999
2	.0093	.9975	.0079	.9979	.0068	.9982	.0058	.9985	.0050	.9988
3	.0252	.9882	.0223	.9900	.0195	.9914	.0171	.9927	.0150	.9938
4	.0517	.9630	.0466	.9677	.0420	.9719	.0377	.9756	.0338	.9788
5	.0849	.9113	.0784	.9211	.0721	.9299	.0663	.9379	.0607	.9450
6	.1160	.8264	.1097	.8427	.1035	.8578	.0972	.8716	.0910	.8843
7	.1358	.7104	.1317	.7330	.1271	.7543	.1222	.7744	.1172	.7933
8	.1393	.5746	.1382	.6013	.1366	.6272	.1345	.6522	.1318	.6761
9	.1268	.4353	.1290	.4631	.1306	.4906	.1314	.5177	.1317	.5443
10	.1040	.3085	.1084	.3341	.1122	.3600	.1157	.3863	.1186	.4126
11	.0776	.2045	.0828	.2257	.0878	.2478	.0926	.2706	.0970	.2940
12	.0530	.1269	.0579	.1429	.0629	.1600	.0678	.1780	.0728	.1970
13	.0334	.0739	.0374	.0850	.0416	.0971	.0460	.1102	.0503	.1242
14	.0196	.0405	.0225	.0476	.0256	.0555	.0289	.0642	.0324	.0739
15	.0107	.0209	.0126	.0251	.0147	.0299	.0169	.0353	.0195	.0415
16	.0055	.0102	.0066	.0125	.0078	.0152	.0093	.0184	.0109	.0220
17	.0026	.0047	.0032	.0059	.0040	.0074	.0048	.0091	.0058	.0111
18	.0012	.0021	.0016	.0027	.0019	.0034	.0024	.0043	.0029	.0053
19	.0006	.0009	.0006	.0011	.0009	.0015	.0011	.0019	.0013	.0024
20	.0002	.0003	.0003	.0005	.0004	.0006	.0005	.0008	.0007	.0011
21	.0001	.0001	.0001	.0002	.0001	.0002	.0002	.0003	.0002	.0004
22			.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002
23									.0001	.0001
n	K = 9.2		K = 9.4		K = 9.6		K = 9.8		K = 10.0	
0	.0001	1.0000	.0001	1.0000	.0001	1.0000	.0001	1.0000		
1	.0009	.9999	.0008	.9999	.0006	.9999	.0005	.9999	.0005	1.0000
2	.0043	.9990	.0036	.9991	.0031	.9993	.0027	.9994	.0023	.9995
3	.0131	.9947	.0115	.9955	.0100	.9962	.0087	.9967	.0075	.9972
4	.0302	.9816	.0269	.9840	.0240	.9862	.0213	.9880	.0190	.9897
5	.0555	.9514	.0506	.9571	.0460	.9622	.0417	.9667	.0378	.9707
6	.0851	.8959	.0792	.9065	.0736	.9162	.0683	.9250	.0630	.9329
7	.1118	.8108	.1065	.8273	.1010	.8426	.0955	.8567	.0901	.8699
8	.1286	.6990	.1250	.7208	.1212	.7416	.1170	.7612	.1126	.7798
9	.1315	.5704	.1307	.5958	.1293	.6204	.1274	.6442	.1251	.6672

Table 14.4 (Continued)

n	K = 9.2 Ind. Terms	K = 9.2 Cum. Terms	K = 9.4 Ind. Terms	K = 9.4 Cum. Terms	K = 9.6 Ind. Terms	K = 9.6 Cum. Terms	K = 9.8 Ind. Terms	K = 9.8 Cum. Terms	K = 10.0 Ind. Terms	K = 10.0 Cum. Terms
10	.1209	.4389	.1227	.4651	.1240	.4911	.1248	.5168	.1251	.5421
11	.1012	.3180	.1050	.3424	.1083	.3671	.1113	.3920	.1138	.4170
12	.0775	.2168	.0822	.2374	.0867	.2588	.0908	.2807	.0948	.3032
13	.0549	.1393	.0594	.1552	.0640	.1721	.0685	.1899	.0729	.2084
14	.0361	.0844	.0399	.0958	.0438	.1081	.0479	.1214	.0520	.1355
15	.0221	.0483	.0250	.0559	.0281	.0643	.0313	.0735	.0348	.0835
16	.0127	.0262	.0147	.0309	.0168	.0362	.0192	.0422	.0217	.0487
17	.0069	.0135	.0081	.0162	.0096	.0194	.0111	.0230	.0127	.0270
18	.0035	.0066	.0043	.0081	.0050	.0098	.0060	.0119	.0071	.0143
19	.0017	.0031	.0021	.0038	.0026	.0048	.0031	.0059	.0037	.0072
20	.0008	.0014	.0009	.0017	.0012	.0022	.0015	.0028	.0019	.0035
21	.0004	.0006	.0005	.0008	.0006	.0010	.0008	.0013	.0009	.0016
22	.0001	.0002	.0002	.0003	.0002	.0004	.0003	.0005	.0004	.0007
23	.0001	.0001	.0001	.0001	.0001	.0002	.0001	.0002	.0002	.0003
24					.0001	.0001	.0001	.0001	.0001	.0001

n	K = 11.0 Ind. Terms	K = 11.0 Cum. Terms	K = 12.0 Ind. Terms	K = 12.0 Cum. Terms	K = 13.0 Ind. Terms	K = 13.0 Cum. Terms	K = 14.0 Ind. Terms	K = 14.0 Cum. Terms	K = 15.0 Ind. Terms	K = 15.0 Cum. Terms
1	.0002	1.0000	.0001	1.0000						
2	.0010	.9998	.0004	.9999	.0002	1.0000	.0001	1.0000		
3	.0037	.9988	.0018	.9995	.0008	.9998	.0004	.9999	.0002	1.0000
4	.0102	.9951	.0053	.9977	.0027	.9990	.0013	.9995	.0007	.9998
5	.0224	.9849	.0127	.9924	.0070	.9963	.0037	.9982	.0019	.9991
6	.0411	.9625	.0255	.9797	.0152	.9893	.0087	.9945	.0048	.9972
7	.0646	.9214	.0437	.9542	.0281	.9741	.0174	.9858	.0104	.9924
8	.0888	.8568	.0655	.9105	.0458	.9460	.0305	.9684	.0194	.9820
9	.1085	.7680	.0874	.8450	.0660	.9002	.0473	.9379	.0325	.9626
10	.1194	.6595	.1048	.7576	.0859	.8342	.0663	.8906	.0486	.9301
11	.1194	.5401	.1144	.6528	.1015	.7483	.0843	.8243	.0663	.8815
12	.1094	.4207	.1144	.5384	.1099	.6468	.0985	.7400	.0828	.8152
13	.0926	.3113	.1055	.4240	.1099	.5369	.1059	.6415	.0956	.7324
14	.0727	.2187	.0905	.3185	.1021	.4270	.1060	.5356	.1025	.6368
15	.0534	.1460	.0724	.2280	.0885	.3249	.0990	.4296	.1024	.5343
16	.0367	.0926	.0543	.1556	.0719	.2364	.0865	.3306	.0960	.4319
17	.0237	.0559	.0383	.1013	.0550	.1645	.0713	.2441	.0848	.3359
18	.0145	.0322	.0256	.0630	.0397	.1095	.0554	.1728	.0706	.2511
19	.0084	.0177	.0161	.0374	.0271	.0698	.0409	.1174	.0557	.1805
20	.0046	.0093	.0097	.0213	.0177	.0427	.0286	.0765	.0418	.1248
21	.0024	.0047	.0055	.0116	.0109	.0250	.0191	.0479	.0299	.0830
22	.0013	.0023	.0031	.0061	.0065	.0141	.0121	.0288	.0204	.0531
23	.0005	.0010	.0016	.0031	.0036	.0076	.0074	.0167	.0132	.0327
24	.0003	.0005	.0008	.0015	.0020	.0040	.0043	.0093	.0083	.0195
25	.0001	.0002	.0004	.0007	.0010	.0020	.0024	.0050	.0050	.0112
26	.0001	.0001	.0002	.0003	.0005	.0010	.0013	.0026	.0029	.0062
27			.0001	.0001	.0003	.0005	.0007	.0013	.0016	.0033
28					.0001	.0002	.0003	.0006	.0008	.0017
29					.0001	.0001	.0002	.0003	.0005	.0009
30							.0001	.0001	.0002	.0004
31								.0001	.0001	.0002
32									.0001	.0001

Part IV

OBSERVED AND CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES FOR THE HEAVY VEHICLES REPORTED BY THE SPECIAL LOADOMETER SURVEY OF 1942

15. FREQUENCY ANALYSIS OF EQUIVALENT H TRUCK LOADINGS

15.1 General

Owing to the fact that the procedures for arriving at the observed and calculated frequencies or frequency distributions of equivalent H truck loadings given by the tables and figures in the following articles of Part IV (Articles 16 through 21) have already been explained in some detail in Part III, only a brief discussion of them will be needed here to facilitate their interpretation. Before proceeding with the discussion of the tables and figures in these articles, however, a list of their titles will not only serve for convenient reference, but, since they are somewhat self explanatory, they will also serve to indicate the nature of the material presented in each. They are as follows:

Article 16 (Tables 16.1—16.12)	Observed and Calculated Frequencies of Equivalent H Truck Loadings on Simple Span Bridges Based on Gross Vehicle Weights
Article 17 (Figures 17.1—17.13)	Maximum, Minimum, and Average Equivalent H Truck Loadings on Simple Span Bridges Based on Gross Vehicle Weights
Article 18 (Figures 18.1—18.12)	Histograms Showing Frequency Distributions of Equivalent H Truck Loadings on Simple Span Bridges Based on Gross Vehicle Weights
Article 19 (Tables 19.1—19.11)	Observed and Calculated Frequencies of Equivalent H Truck Loadings on Simple Span Bridges Based on Vehicles Weighing One Kip Each
Article 20 (Figures 20.1—20.11)	Frequency Distributions of Equivalent H Truck Loadings on Simple Span Bridges Based on Vehicles Weighing One Kip Each
Article 21 (Figures 21.1—21.11)	Histograms Showing Frequency Distribution of Equivalent H Truck Loadings on Simple Span Bridges Based on Vehicles Weighing One Kip Each

From these titles, it will be noted that the tables and figures given in Articles 16, 17, and 18 are concerned with the frequency analysis of equivalent H truck loadings based on gross vehicle weights and those in Articles 19, 20, and 21 are concerned with a similar frequency analysis of equivalent H truck loadings based on vehicles of unit weight or vehicles weighing one kip each. The observed and calculated frequencies of equivalent H truck loadings based on gross vehicle weights, as given by the tables and figures in Articles 16, 17, and 18, provide a convenient means for analyzing the range and frequencies of the actual live load bending moments that would result on various span lengths from the heavy vehicle loadings reported by the 1942 loadometer survey. Incidentally, if a similar frequency analysis of the heavy vehicle data reported by the loadometer surveys for each succeeding year since 1942 were presently available, it would provide the basic information needed for evaluating the long time trend in heavy motor vehicle operation, measured in terms of its stress producing effects, and how this trend in operation may be related to the minimum standards which presently obtain for highway and bridge provision throughout the several geographical regions of the Nation. Such a study is now in progress as a continuation of the present investigation, and it is hoped that the results will be ready for publication in the not too distant future.

Owing to the fact, however, that the actual bending moments indicated by the above mentioned equivalent H truck loadings include the effect of gross vehicle weights, they do not reflect the stress producing characteristics of the vehicles themselves.

In order to investigate or analyze the stress producing characteristics of the heavy vehicle types and loadings actually found on the highways, therefore, it is necessary to eliminate gross vehicle weight as a variable by holding it constant. This may be accomplished by considering each heavy vehicle investigated to have a gross weight of one kip as was done in the case of the 1303 variations of wheel base, number and spacing of axles, and percentage distribution of load among the axles for the 14 heavy vehicle types given by the identification index Tables 6.1—6.14. The moments produced by these vehicles of unit weight on spans of various length (see Tables 6.1—6.14 and 7.1—7.14, and Figures 9.1—9.14) not only provide a simple means for comparing the stress producing characteristics of one vehicle with those of another but also for comparing or measuring the stress producing effects of any given vehicle type and loading, on a given span, in terms of a standard H truck loading, H design loading, single concentrated load, or any other type of loading as may be desired for use as a basis of comparison.

In the case of measuring the stress producing effects of a given vehicle on a given span, in terms of the standard H truck or a single concentrated load, however, it is simpler to obtain this information directly from Tables 10.1—10.14 and Tables 12.1—12.14, respectively, than by comparing the moments given by Figures 9.1—9.14. For example, if it were desired to rate the stress producing characteristics of a Type 2-S1 truck—with axle spacings of 12 and 24 feet, making an over all wheel-base length of 36 feet, and a percentage distribution of load from front to rear of 10, 45, and 45 percent, respectively—in terms of an equivalent H truck loading on a 60-foot span, it will be found in Table 10.3 that this vehicle (2-S1-66) of unit weight will produce but 68.8 percent as much moment as an H truck of unit weight on this 60-foot span. Therefore, the stress producing effects of this 2-S1-66 truck would be rated at .688 of a standard H truck of equal weight.

An analysis of the stress producing characteristics of the 11 more numerous heavy vehicle types, reported by the 1942 loadometer survey, is given by Tables 19.1a—19.11a and Tables 19.1b—19.11b which present the observed and calculated frequencies of equivalent H truck loadings for these vehicles on a unit weight basis on spans up to 100 feet in length. In Table 19.1a, for example, it will be seen that, of the 171 Type 2 trucks reported, 25.5 percent of them produced as much moment as an H truck of equal weight on a 50-foot span. In the same column for the 50-foot span, it will also be seen that 28.6 percent of them produced 95 percent as much moment as an H truck of equal weight, and so on. At the bottom of this table, however, it will be seen that the average Type 2 truck reported produced 93 percent as much moment as an H truck of equal weight on a 50-foot span. This is but another way of saying that the Type 2 truck is definitely not adapted to the transport of heavy loads because, by comparing its stress producing characteristics with the other vehicle types given by the tables and figures in Articles 19, 20, and 21, it will be found that the Type 2 truck, for a given gross vehicle weight, is the most severe stress producer of all the vehicle types employed for heavy motor vehicles operation in present day highway traffic.

It would appear, therefore, that the maximum use to which this information pertaining to the stress producing characteristics of vehicle types could be put, would be to establish ranges of gross vehicle weight which would be appropriate for any one vehicle type operating under any given level of bridge capacity and, with respect to other heavy vehicle types, where any one of these might be operated with greater propriety in some other range of gross vehicle weight. And though the actual establishment of such ranges and the verification of their correlation with varying levels of bridge capacity is beyond the scope of the present bulletin, it is believed that this method for analyzing the stress producing characteristics of heavy vehicle types and loading distributions provides a rational approach to the accomplishment of those objectives.

In each of the tables in Articles 16 and 19, and the figures in Articles 17 and 20, the maximum, average, and minimum equivalent H truck loadings for each span are given and also the range; the range being the maximum spread of these loadings or the difference between the maximum and minimum. The Poisson coefficient K for each frequency distribution and the standard deviation D for each calculated frequency distribution are also given. The Poisson coefficient K, as explained in Article 14, is equal to the difference

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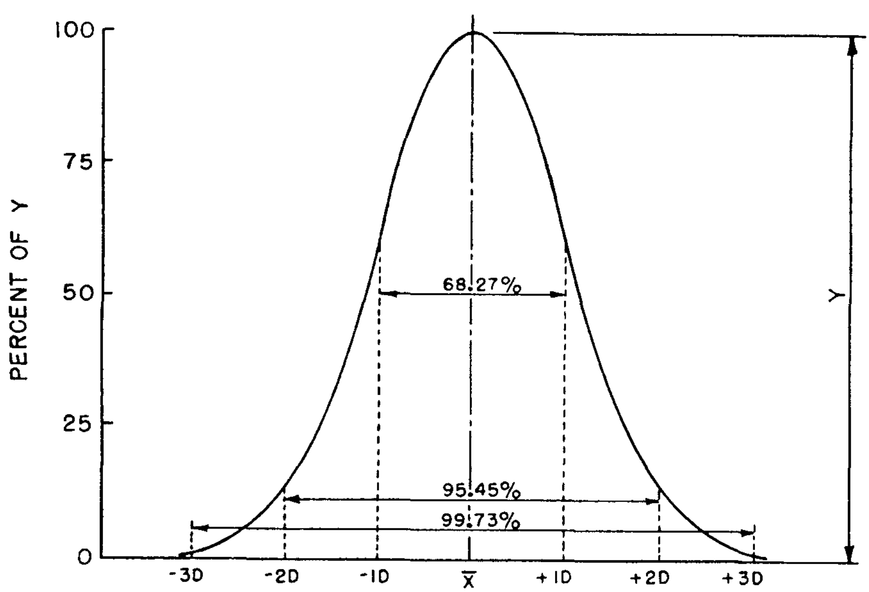

STANDARD DEVIATIONS FROM X̄ AVERAGE

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Figure 15.1

in the number of cells between the average and minimum loading equivalents. The standard deviation, D $\sqrt{K}$, is a statistical index associated with a given distribution which provides a measure for determining just how usual or unusual a given loading equivalent might be considered. Its meaning and use are briefly discussed in the following article.

15.2 Interpretation of Standard Deviation For A Poisson Distribution

The reason for introducing the idea of standard distribution here is to point out how this statistical device or measure may be used to advantage in connection with many types of frequency studies similar to the frequency distributions of equivalent H truck loadings given in the remaining sections of Part IV and those based on equivalent concentrated loads given in Part V. In Figure 18.6 (also see Table 16.6b), for example, it will be noted that the dashed curve, showing the calculated frequency distribution of the Type 3-S2 trucks on an 80-foot span, bears a strong resemblance to the familiar symmetrical bell-shaped curve known as the "Normal Frequency Distribution" as shown in Figure 15.1. Consequently, the variations from the average for a symmetrical "Normal Frequency Distribution" will provide a reasonably accurate estimate for interpreting the meaning of 1 or more standard deviations when used in connection with a Poisson distribution, which is but slightly skewed (unsymmetrical) for the larger values of the coefficient K; say, those equal to about 5 or more.

If the area under the normal curve is equal to unity or 100 percent of the distribution, and it is divided according to standard deviations on either side of the average or mean value, the area under the curve would be divided as follows:

from + 1D to − 1D accounts for 68.27 percent of all items distributed
from + 2D to − 2D accounts for 95.45 percent of all items distributed
from + 3D to − 3D accounts for 99.75 percent of all items distributed

Therefore, if the normal distribution is used as a guide for interpreting the frequency distributions of gross vehicle weights or heavy vehicle loading equivalents on a given span, it would mean that about 70 percent of all the gross weights or loading equivalents would be expected to be within the plus and minus 1D range (tons or kips) of the average. Similarly, about 95 percent would be expected to be within the plus and minus 2D range, and practically all within the plus and minus 3D range. Although these divisions may not be exact in a mathematical sense for any particular Poisson distribution, they do provide a rather simple and reasonably accurate statistical measure for determining just how far any particular gross vehicle weight or loading equivalent deviates from the average.

In other words, the number of deviations that a particular vehicle varies from the average is a measure of just how usual or unusual that vehicle would be considered or how often it would be expected to occur in relation to all the vehicles under consideration. From Figure 15.1, it will be seen that a vast majority (about 95 percent) of all the gross vehicle weights or loading equivalents in a given frequency distribution would be expected to fall within 2 deviations of the average, and practically all of them (about 99.73 percent) within 3 deviations of the average. On this basis, therefore, any gross vehicle weight or equivalent loading that might fall outside of the 3 deviation range would be considered most unusual.

15.3 Observed Frequencies of Equivalent H Truck Loadings Based on Three Item Moving Averages

The observed frequencies of equivalent H truck loadings given in Tables 16.1a—16.12a and shown graphically in the histograms of Figures 18.1—18.12 are based on three item moving averages. The use of moving averages is a common statistical device for smoothing out the local irregularities or unavoidable local fluctuations in observed data. Moving averages are more commonly used in statistical studies of time series which are of a seasonal or cyclical nature wherein the number of items used for determining the moving averages usually corresponds with the number of cells or items included in the length of the time cycle. Moving averages, however, are quite often used in the statistical analysis of other types of observed data than those of a seasonal or cyclical nature.

In the present case, the three item moving average was used in order to smooth out the local irregularities from one cell to the next because few, if any, of the equivalent H truck loading designations fell at the mid-point of a given cell. This tendency toward unbalance within a given cell resulted mainly from the fact that most of the sample sizes were small, and therefore only a few vehicles would fall in each individual cell. For this reason, it was felt that the average of each three adjacent cells represented a better estimate of the value of the center cell than that indicated by the raw data. The practical effect of smoothing the raw data in this way is to establish a frequency value for each cell which would be more nearly representative of the parent truck population, and more closely approximate the value that would result from a much larger sample. Insofar as the present studies are concerned, it should be explained that the use of these three item moving averages in no way changes the statistical characteristics of the resulting frequency distributions. Each of the distributions shown have the same center of gravity, and Poisson coefficient K, as those of the raw observed data.

The following example will serve to illustrate the points brought out in the above discussion concerning the use of three item moving averages for smoothing the observed data. The information shown in Table 15.1 was taken directly from the original calculations for the observed frequencies shown in Table 16.2a for the Type 3 truck on a 40-foot span.

Table 15.1

CALCULATIONS OF THREE ITEM MOVING AVERAGES FOR OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 381 TYPE 3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

Equiv. H Truck Loading	Number of Vehicles	Percent of Total	3-Item Moving Average	
8	0	.00	.17	= .69 in cell H9
9	2	.52	.52	
10	4	1.05	1.40	
11	10	2.63	5.78	
12	52	13.65	11.38	
13	68	17.85	15.57	
14	58	15.22	14.96	
15	45	11.81	12.25	
16	37	9.71	10.41	
17	37	9.71	9.01	
18	29	7.61	7.44	
19	19	4.99	5.08	
20	10	2.63	2.80	
21	4	1.05	1.40	
22	2	.52	.87	
23	4	1.05	.52	= .87 in cell H23
24	0	.00	.35	
	381	100.00	100.00	
Max. H Truck		23.00	23.00	
Avg. H Truck		14.93	14.93	
Min. H Truck		9.0	9.0	
Range		14.0	14.0	
Poissons Coefficient, K		5.93	5.93	

16. OBSERVED AND CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES BASED ON GROSS VEHICLE WEIGHTS

Since the procedures for arriving at the observed and calculated frequency distributions of equivalent H truck loadings given by the tables in this article are adequately explained elsewhere in the bulletin, only a brief discussion of them will be needed here to facilitate their interpretation.

Tables 16.1a—16.11a and Tables 16.1b—16.11b, respectively, give the observed and calculated frequencies of equivalent H truck loadings, on simple spans up to 100 feet in length, for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. Also Table 16.12a and Table 16.12b, respectively, give similar observed and calculated frequencies for all of the 4531 heavy vehicles reported, including the 11 heavy vehicle types whose individual frequencies are given in Tables 16.1a—16.11a and Tables 16.1b—16.11b. As explained in Article 15, the observed frequencies shown in these tables are based on 3-item moving averages which has the effect of smoothing the data from one cell to the next.

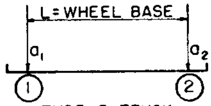
The observed and calculated frequencies of Equivalent H Truck Loadings for each of the 11 more numerous heavy vehicle types reported, and also for all heavy vehicles reported are given in the following tables:

Heavy Vehicle Type	Number of Vehicles Reported	Table Number Observed Frequencies	Table Number Calculated Frequencies
2	171	16.1a	16.1b
3	381	16.2a	16.2b
2-S1	2855	16.3a	16.3b
2-S2	508	16.4a	16.4b
3-S1	9	16.5a	16.5b
3-S2	142	16.6a	16.6b
3-S3	14	16.7a	16.7b
2-2	99	16.8a	16.8b
2-3	24	16.9a	16.9b
3-2	68	16.10a	16.10b
3-3	176	16.11a	16.11b
All	4531	16.12a	16.12b

Each of these tables gives either the observed or calculated frequencies of equivalent H truck loadings on span lengths of 10, 20, 30, 40, 50, 60, 80, and 100 feet, respectively. In addition to these distributions, it will be noted that the frequencies shown in the right hand column are for an infinite span, which is just another way of saying that they represent the frequency distribution of gross vehicle weights. This may be more readily explained perhaps if the discussion were confined to some particular vehicle having a gross weight of, say, 20 tons. A Type 2-S1 truck weighing 20 tons, for example, irrespective of its wheel-base length or distribution of load among its axles, would produce the same maximum moment on an infinite span as a standard H20 truck. Therefore, the equivalent H truck loading for this vehicle would be the same as its gross vehicle weight, or simply an equivalent H20 truck loading.

Table 16.1a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 171 TYPE 2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

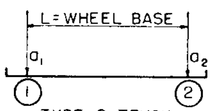


TYPE 2 TRUCK

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite G.V.W.
9	1.4	1.4	2.0						
10	6.4	6.4	4.5	4.3					
11	13.8	13.8	10.3	8.4	7.4	7.0			
12	21.2	20.8	19.3	19.3	16.4	14.6	14.0	12.7	
13	22.0	22.0	23.1	24.1	24.9	24.2	22.8	21.6	22.8
14	17.4	17.4	20.1	21.6	23.2	23.0	26.3	26.4	26.4
15	9.7	10.1	11.3	12.1	15.6	17.0	20.3	20.5	25.1
16	4.7	4.7	5.1	5.7	7.2	8.2	9.9	11.0	15.0
17	2.0	2.0	2.7	3.3	3.7	3.9	4.3	4.7	6.6
18	1.4	1.4	1.6	1.2	1.6	2.1	2.4	3.1	2.7
19									1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	18	18	18	18	18	18	18	18	19
Avg H Truck	12.9	12.9	13.2	13.3	13.7	13.8	14.1	14.2	14.6
Min H Truck	9	9	9	10	11	11	12	12	13
Range	9	9	9	8	7	7	6	6	6
Poisson's Coef. K	3.9	3.9	4.2	3.3	2.7	2.8	2.1	2.2	1.6

Table 16.1b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 171 TYPE 2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2 TRUCK

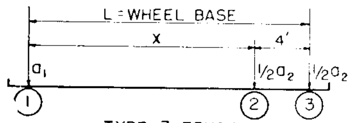
Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite
9	2.0	2.0	1.6						
10	7.9	7.9	6.3	3.7					
11	15.4	15.4	13.2	12.2	6.7	6.1			
12	19.9	19.9	18.5	20.1	18.1	17.0	12.2	11.1	
13	19.5	19.5	19.4	22.0	24.5	23.8	25.7	24.4	20.2
14	15.2	15.2	16.3	18.2	22.0	22.2	27.0	26.8	32.3
15	9.9	9.9	11.4	12.0	14.9	15.6	18.9	19.7	25.8
16	5.5	5.5	6.9	6.6	8.0	8.7	9.9	10.8	13.8
17	2.7	2.7	3.6	3.1	3.6	4.1	4.2	4.8	5.5
18	1.2	1.2	1.7	1.3	1.4	1.6	1.5	1.7	1.8
19	.5	.5	.7	.5	.5	.6	.4	.5	.5
20	.2	.2	.3	.2	.2	.2	.1	.2	.1
21	.1	.1	.1	.1	.1	.1	.1		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	21	21	21	21	21	21	21	20	20
Avg H Truck	12.9	12.9	13.2	13.3	13.7	13.8	14.1	14.2	14.6
Min H Truck	9	9	9	10	11	11	12	12	13
Range	12	12	12	11	10	10	9	8	7
Poisson's Coef. K	3.9	3.9	4.2	3.3	2.7	2.8	2.1	2.2	1.6
Std. Dev. D	1.97	1.97	2.05	1.82	1.64	1.67	1.45	1.48	1.26

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.2a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 381 TYPE 3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

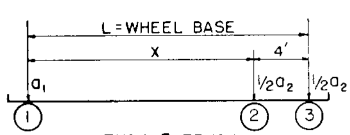


TYPE 3 TRUCK

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
7	4.0								
8	8.4	.8	.4						
9	17.0	1.5	.9	.7	.3				
10	19.3	8.0	2.3	1.4	.7	.4			
11	19.3	13.1	7.4	5.8	4.6	4.6	2.0	1.1	
12	13.6	16.3	13.0	11.4	10.2	9.9	7.8	6.2	
13	9.6	14.5	16.5	15.5	14.8	14.8	13.7	13.0	15.3
14	5.1	13.9	15.9	14.9	15.2	14.4	15.7	16.0	15.1
15	1.9	12.3	12.8	12.3	13.2	12.2	13.7	14.2	14.5
16	1.1	8.8	10.7	10.4	10.2	10.1	11.0	10.9	10.8
17	.7	4.6	7.0	9.0	9.3	9.5	10.0	9.7	9.9
18		2.7	5.3	7.4	7.0	8.1	8.2	8.8	8.8
19		1.6	3.0	5.1	6.3	6.4	6.5	7.0	7.4
20		1.1	2.3	2.9	3.3	3.8	4.4	5.4	6.1
21		.8	1.4	1.4	2.2	2.4	3.0	3.3	4.6
22			1.1	.9	1.0	1.3	1.8	1.8	3.3
23				.9	.8	1.0	1.1	1.1	1.6
24					.9	1.1	1.1	.8	1.1
25								.7	.8
26									.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	17	21	22	23	24	24	24	25	26
Avg H Truck	10.7	13.4	14.4	14.9	15.3	15.4	15.8	16.0	16.5
Min H Truck	7	8	8	9	9	10	11	11	13
Range	10	13	14	14	15	14	13	14	13
Poisson's Coef. K	3.7	5.4	6.4	5.9	6.3	5.4	4.8	5.0	3.5

Table 16.2b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 381 TYPE 3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3 TRUCK

Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
7	2.5								
8	9.1	.5	.2						
9	16.9	2.4	1.1	.3	.2				
10	20.9	6.6	3.4	1.6	1.2	.5			
11	19.3	11.9	7.3	4.8	3.6	2.4	.8	.7	
12	14.3	15.9	11.6	9.4	7.7	6.6	4.0	3.4	
13	8.8	17.2	14.8	13.8	12.1	11.9	9.5	8.4	3.0
14	4.7	15.6	15.8	16.3	15.2	16.0	15.1	14.0	10.6
15	2.2	12.0	14.5	16.0	15.8	17.2	18.2	17.6	18.5

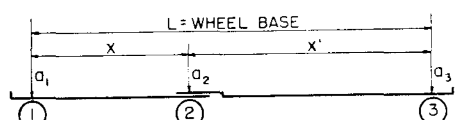
Table 16.2b (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
16	.9	8.1	11.6	13.5	14.4	15.5	17.4	17.6	21.5
17	.3	4.9	8.2	10.0	11.3	12.0	14.0	14.6	18.9
18	.1	2.6	5.3	6.5	7.9	8.1	9.6	10.4	13.2
19		1.3	3.1	3.9	5.0	4.9	5.8	6.5	7.7
20		.6	1.6	2.1	2.9	2.6	3.1	3.6	3.9
21		.2	.8	1.0	1.5	1.3	1.5	1.8	1.7
22		.1	.4	.5	.7	.6	.6	.9	.7
23		.1	.2	.2	.3	.2	.3	.3	.2
24			.1	.1	.1	.1	.1	.1	.1
25					.1	.1		.1	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	18	23	24	24	25	25	24	25	24
Avg H Truck	10.7	13.4	14.4	14.9	15.3	15.4	15.8	16.0	16.5
Min H Truck	7	8	8	9	9	10	11	11	13
Range	11	15	16	15	16	15	13	14	11
Poisson's Coef. K	3.7	5.4	6.4	5.9	6.3	5.4	4.8	5.0	3.5
Std. Dev. D	1.92	2.32	2.53	2.43	2.51	2.32	2.19	2.24	1.87

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.3a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

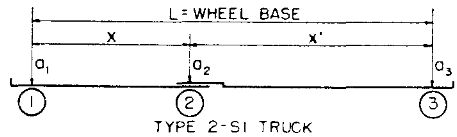


TYPE 2-S1 TRUCK

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
9	11.4	10.0	5.4						
10	20.5	19.9	13.9	5.7	.6				
11	23.7	24.0	21.6	10.7	4.0	.9			
12	19.9	20.6	22.8	20.1	10.8	4.4	.5		
13	10.9	11.5	16.0	21.2	18.8	13.2	3.4	1.1	
14	6.6	6.8	9.7	18.8	21.0	19.1	13.1	6.4	
15	3.5	3.6	4.5	10.2	17.9	20.9	19.4	14.6	
16	1.7	1.7	3.0	6.2	11.2	15.6	21.4	20.8	
17	1.0	1.1	1.4	3.1	6.9	10.9	15.3	19.6	16.7
18	.4	.4	.8	1.6	3.7	6.3	10.4	14.4	18.9
19	.2	.2	.4	1.0	2.1	3.4	6.6	8.8	19.3
20	.1	.1	.2	.6	1.1	1.9	3.7	5.4	14.5
21	0	0	.1	.4	.7	1.2	2.1	2.9	10.0
22	0	0	.1	.2	.6	.8	1.3	1.9	6.8
23	0	0	.1	.1	.3	.6	1.0	1.4	4.2
24	.1	.1		.1	.1	.4	.7	1.0	2.8
25					.1	.2	.5	.7	2.0
26					.0	.1	.3	.4	1.4
27					.1	0	.1	.3	1.1
28						.1	.1	.1	.7
29							0	.1	.5
30							.1	0	.3
31								.1	.3
32									.2
33									.1
34									.1
35									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	24	24	23	24	27	28	30	31	35
Avg H Truck	11.5	11.6	12.1	13.3	14.5	15.4	16.5	17.3	19.8
Min H Truck	9	9	9	14	10	11	12	13	17
Range	15	15	14	10	17	17	18	18	18
Poisson's Coef. K	2.5	2.6	3.1	3.3	4.5	4.4	4.5	4.3	2.8

Table 16.3b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 2855 TYPE 2-S1 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



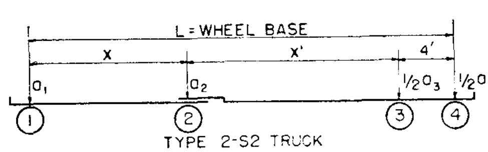
Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
9	8.2	7.4	4.5						
10	20.5	19.3	14.0	3.7	1.1				
11	25.6	25.1	21.6	12.2	5.0	1.2			
12	21.4	21.8	22.4	20.1	11.2	5.4	1.1		
13	13.4	14.1	17.3	22.0	16.9	11.9	5.0	1.4	
14	6.7	7.4	10.7	18.2	19.1	17.4	11.2	5.8	
15	2.8	3.2	5.6	12.0	17.1	19.1	16.9	12.5	
16	1.0	1.2	2.5	6.6	12.8	16.9	19.1	18.0	
17	.3	.4	1.0	3.1	8.2	12.4	17.1	19.3	6.1
18	.1	.1	.3	1.3	4.6	7.8	12.8	16.6	17.0
19			.1	.5	2.3	4.3	8.2	11.9	23.8
20				.2	1.0	2.1	4.6	7.3	22.2
21				.1	.4	.9	2.3	3.9	15.6
22					.2	.4	1.0	1.9	8.7
23					.1	.1	.4	.9	4.1
24						.1	.2	.3	1.6
25							.1	.1	.6
26								.1	.2
27									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	18	18	19	21	23	24	25	26	27
Avg H Truck	11.5	11.6	12.1	13.3	14.5	15.4	16.5	17.3	19.8
Min H Truck	9	9	9	14	10	11	12	13	17
Range	9	9	10	11	13	13	13	13	10
Poisson's Coef. K	2.5	2.6	3.1	3.3	4.5	4.4	4.5	4.3	2.8
Std. Dev. D	1.58	1.61	1.76	1.82	2.12	2.10	2.12	2.07	1.67

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.4a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 508 TYPE 2-S2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY



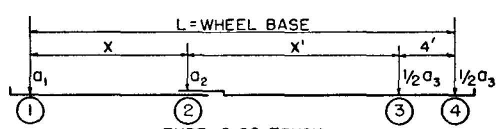
Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
7	1.3								
8	3.6								
9	8.0	4.4	1.7	.5	.2				
10	13.8	6.5	3.2	1.7	.3	.2			
11	20.5	10.5	6.1	2.8	1.1	.3			

Table 16.4a (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
12	20.8	14.3	10.1	5.6	2.4	1.3	.3		
13	17.5	14.1	12.8	8.6	5.2	3.0	.7	.3	
14	8.7	13.1	14.1	12.9	8.6	5.6	2.3	1.4	
15	3.8	11.8	12.0	15.0	12.2	8.3	4.5	2.8	
16	.9	10.0	12.2	14.3	15.3	11.2	7.1	5.1	
17	.4	8.1	10.5	13.3	14.6	14.3	8.9	7.0	2.1
18	.3	4.0	8.9	10.6	13.8	15.3	13.1	9.8	3.7
19	.4	2.7	4.8	7.8	10.6	13.8	14.1	12.7	5.4
20		.5	2.6	3.7	7.9	10.9	14.7	13.4	6.5
21			1.0	1.6	4.1	7.2	11.4	12.9	7.9
22				.9	1.8	4.7	9.5	11.0	9.6
23				.7	1.1	2.1	6.4	9.5	9.6
24					.6	1.0	3.9	6.8	10.7
25					.2	.5	1.8	4.2	10.8
26						.3	.3	1.8	10.0
27							.2	.7	7.7
28								.3	4.9
29								.3	4.9
30									3.1
31									2.2
32									.5
33									.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	19	20	21	23	25	26	28	29	33
Avg H Truck	11.6	13.7	14.8	15.7	16.9	17.9	19.4	20.3	24.0
Min H Truck	7	9	9	9	9	10	12	13	17
Range	12	11	12	14	16	16	16	16	16
Poisson's Coef. K	4.6	4.7	5.8	6.7	7.9	7.9	7.4	7.3	7.0

Table 16.4b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 508 TYPE 2-S2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-S2 TRUCK

Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
7	1.0								
8	4.6								
9	10.6	.9	.3	.1	.1				
10	16.3	4.3	1.8	.8	.3	.1			
11	18.7	10.0	5.1	2.8	1.2	.3			
12	17.3	15.7	9.8	6.2	3.0	1.2	.1		
13	13.2	18.5	14.3	10.3	6.0	3.0	.5	.1	
14	8.7	17.4	16.5	13.8	9.5	6.0	1.7	.5	
15	5.0	13.6	16.0	15.5	12.5	9.5	4.1	1.8	
16	2.6	9.1	13.3	14.8	14.1	12.5	7.6	4.4	
17	1.2	5.4	9.6	12.4	13.9	14.1	11.3	8.0	.1
18	.5	2.8	6.2	9.2	12.2	13.9	13.9	11.7	.6
19	.2	1.3	3.6	6.2	9.7	12.2	14.8	14.2	2.3
20	.1	.6	1.9	3.8	6.9	9.7	13.6	14.7	5.2
21		.3	.9	2.1	4.6	6.9	11.2	13.5	9.1
22		.1	.4	1.1	2.8	4.6	8.3	11.0	12.8

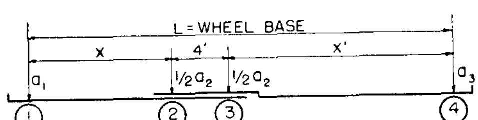
Table 16.4b (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
23			.2	.5	1.6	2.8	5.6	8.0	15.0
24			.1	.2	.8	1.6	3.4	5.3	14.9
25				.1	.4	.8	2.0	3.2	13.0
26				.1	.2	.4	1.0	1.8	10.1
27					.1	.2	.5	.9	7.1
28					.1	.1	.2	.5	4.5
29						.1	.1	.2	2.6
30							.1	.1	1.4
31								.1	.7
32									.4
33									.1
34									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	20	22	24	26	28	29	30	31	34
Avg H Truck	11.6	13.7	14.8	15.7	16.9	17.9	19.4	20.3	24.0
Min H Truck	7	9	9	9	9	10	12	13	17
Range	13	13	15	17	19	19	18	18	17
Poisson's Coef. K	4.6	4.7	5.8	6.7	7.9	7.9	7.4	7.3	7.0
Std. Dev. D	2.14	2.17	2.41	2.59	2.81	2.81	2.72	2.70	2.65

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.5a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 9 TYPE 3-S1 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

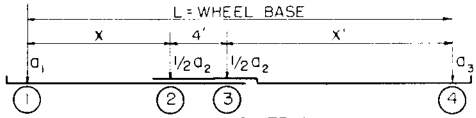


TYPE 3-S1 TRUCK

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
10	22.2	7.4							
11	26.0	3.7	7.4	7.4					
12	18.5	7.4	3.7	3.7	7.4				
13	22.2	11.1	0	0	3.7	7.4			
14	11.1	22.3	7.4	0	0	3.7			
15		18.5	18.6	7.4	0	0	7.4		
16		18.5	18.5	11.1	0	0	3.7	7.4	
17		11.1	18.5	18.6	7.4	0	0	3.7	
18			11.1	11.1	18.6	7.4	0	0	
19			14.8	18.5	18.5	18.6	7.4	0	
20				22.2	14.8	18.5	14.8	7.4	7.4
21					11.1	11.1	18.5	18.5	3.7
22					18.5	11.1	14.8	18.5	0
23						22.2	14.8	14.8	11.1
24							18.6	11.1	18.5
25								18.6	22.3
26									14.8
27									11.1
28									11.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	14	17	19	20	22	23	24	25	28
Avg H Truck	11.7	14.2	16.0	17.3	18.9	20.0	21.1	22.0	24.8
Min H Truck	10	10	11	11	12	13	15	16	20
Range	4	7	8	9	10	10	9	9	8
Poisson's Coef. K	1.7	4.2	5.0	6.3	6.9	7.0	6.1	6.0	4.8

Table 16.5b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 9 TYPE 3-S1 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-S1 TRUCK

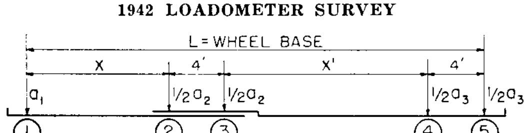
Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite
10	18.3	1.5							
11	31.0	6.3	.7	.2					
12	26.3	13.2	3.4	1.2	.1				
13	15.0	18.5	8.5	3.6	.7	.1			
14	6.4	19.4	14.0	7.7	2.4	.6			
15	2.2	16.3	17.5	12.1	5.5	2.3	.2		
16	.6	11.4	17.5	15.2	9.5	5.2	1.4	.2	
17	.1	6.9	14.7	15.8	13.1	9.1	4.2	1.5	
18	.1	3.6	10.4	14.4	15.1	12.8	8.5	4.5	
19		1.7	6.5	11.3	14.9	15.0	12.9	8.9	
20		.7	3.6	7.9	12.8	14.9	15.8	13.4	.8
21		.3	1.8	5.0	9.8	13.0	16.0	16.1	4.0
22		.1	.8	2.9	6.8	10.1	14.0	16.1	9.5
23		.1	.4	1.5	4.3	7.1	10.7	13.8	15.1
24			.1	.7	2.5	4.5	7.2	10.3	18.2
25			.1	.3	1.3	2.6	4.4	6.9	17.4
26				.1	.6	1.4	2.4	4.1	14.0
27				.1	.3	.7	1.2	2.2	9.6
28					.2	.4	.6	1.1	5.8
29					.1	.1	.3	.5	3.1
30						.1	.1	.2	1.5
31							.1	.1	.6
32								.1	.3
33									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	18	23	25	27	29	30	31	32	33
Avg H Truck	11.7	14.2	16.0	17.3	18.9	20.0	21.1	22.0	24.8
Min H Truck	10	10	11	11	12	13	15	16	20
Range	8	13	14	16	17	17	16	16	13
Poisson's Coef. K	1.7	4.2	5.0	6.3	6.9	7.0	6.1	6.0	4.8
Std. Dev. D	1.3	2.05	2.24	2.51	2.63	2.65	2.47	2.45	2.19

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.6a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 142 TYPE 3-S2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY



TYPE 3-S2-TRUCK

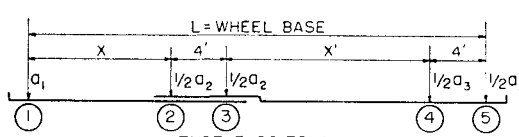
Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite G.V.W.
6	3.5								
7	5.2	1.2							
8	8.7	2.6	1.4						
9	9.6	3.5	2.6	1.2					

Table 16.6a (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
10	11.7	5.9	3.1	2.6	.9				
11	14.3	7.7	6.8	3.8	1.6	.9			
12	17.8	8.7	7.0	5.9	2.6	1.6			
13	14.6	10.1	8.9	6.8	4.0	1.9	1.4		
14	8.5	11.2	9.2	9.4	6.8	3.3	1.6	1.4	
15	2.8	14.9	11.5	9.6	8.9	4.9	1.9	1.4	
16	1.9	13.9	13.5	10.6	10.3	7.3	3.3	1.9	
17	1.4	9.9	12.2	10.7	8.2	9.2	4.2	3.1	1.2
18		4.9	9.2	10.3	9.2	9.6	5.6	3.5	1.2
19		1.9	5.6	8.9	10.8	9.2	6.1	4.9	1.4
20		1.9	3.1	6.3	10.6	9.9	9.6	5.2	1.7
21		1.7	2.8	5.4	9.4	11.0	8.9	7.3	2.6
22			1.7	3.8	5.2	9.6	10.4	8.9	2.8
23			1.4	2.6	5.2	7.3	8.9	9.8	2.6
24				1.2	2.6	4.9	10.9	10.0	2.1
25				.9	2.1	4.5	9.2	9.4	4.5
26					.9	2.8	7.0	9.6	5.6
27					.7	1.2	4.7	8.5	6.3
28						.9	3.1	6.1	6.1
29							1.6	4.0	6.8
30							.9	2.1	8.7
31							.7	1.4	8.8
32								.5	10.0
33								.5	8.0
34								.5	6.8
35									4.2
36									3.8
37									2.4
38									1.2
39									.5
40									.0
41									0
42									0
43									0
44									0
45									.2
46									.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	17	21	23	25	27	28	31	34	46
Avg H Truck	11.1	14.1	15.3	16.5	18.1	19.6	22.0	23.5	29.4
Min H Truck	6	7	8	9	10	11	13	14	17
Range	11	14	15	16	17	17	18	20	29
Poisson's Coef. K	5.1	7.1	7.3	7.5	8.1	8.6	9.0	9.5	12.4

Table 16.6b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 142 TYPE 3-S2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
6	.6								
7	3.1	.1							
8	7.9	.6	.1						
9	13.5	2.1	.5	.1					
10	17.2	4.9	1.8	.4	.1				
11	17.5	8.7	4.4	1.6	.2	.1			
12	14.9	12.4	8.0	3.9	1.0	.1			
13	10.9	14.7	11.7	7.3	2.7	.7			

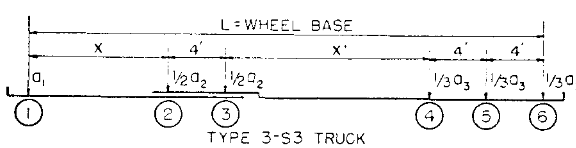
Table 16.6b (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
14	6.9	14.9	14.2	10.9	5.4	2.0	.1		
15	3.9	13.2	14.7	13.7	8.8	4.2	.5	.1	
16	2.0	10.4	13.5	14.6	11.9	7.2	1.5	.3	
17	.9	7.4	11.0	13.7	13.8	10.3	3.4	1.1	
18	.4	4.8	8.0	11.4	13.9	12.7	6.1	2.5	
19	.2	2.8	5.3	8.6	12.6	13.6	9.1	4.8	.1
20	.1	1.5	3.2	5.9	10.2	13.0	11.7	7.6	.1
21		.8	1.8	3.7	7.5	11.2	13.2	10.4	.4
22		.4	.9	2.1	5.1	8.8	13.2	12.3	1.0
23		.2	.5	1.1	3.1	6.3	11.9	13.0	2.1
24		.1	.2	.5	1.8	4.1	9.7	12.3	3.7
25			.1	.3	1.0	2.6	7.3	10.7	5.7
26			.1	.1	.5	1.5	5.0	8.4	7.9
27				.1	.2	.8	3.2	6.2	9.8
28					.1	.4	1.9	4.2	11.0
29					.1	.2	1.1	2.7	11.3
30						.1	.6	1.6	10.8
31						.1	.3	.9	9.6
32							.1	.5	7.9
33							.1	.2	6.2
34								.1	4.5
35								.1	3.1
36									2.0
37									1.3
38									.7
39									.4
40									.2
41									.1
42									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	20	24	26	27	29	31	33	35	42
Avg H Truck	11.1	14.1	15.3	16.5	18.1	19.6	22.0	23.5	29.4
Min H Truck	6	7	8	9	10	11	14	15	19
Range	14	17	18	18	19	20	19	20	23
Poisson's Coef. K	5.1	7.1	7.3	7.5	8.1	8.6	9.0	9.5	12.4
Std. Dev. D	2.26	2.66	2.70	2.74	2.85	2.93	3.00	3.08	3.52

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.7a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 14 TYPE 3-S3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY



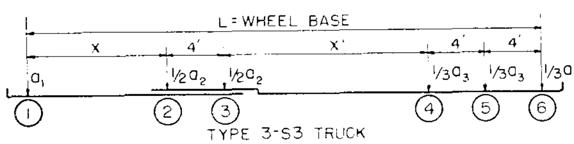
Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
5	4.8								
6	4.8								
7	4.8								
8	4.8	4.8							
9	11.9	4.8	4.8						
10	16.6	4.8	2.4	4.8					
11	23.7	4.8	2.4	4.8	4.8				
12	14.3	4.8	7.1	2.4	2.4	4.8			
13	9.5	7.1	7.1	7.2	0	2.4			
14	4.8	11.9	7.1	4.8	0	0	4.8		
15		14.2	7.1	7.2	7.1	0	2.4	4.8	
16		14.3	11.9	4.8	7.1	4.8	0	2.4	
17		9.5	14.3	7.1	7.1	7.1	0	0	
18		7.1	11.9	4.8	2.4	7.1	4.8	0	4.8
19		4.8	9.5	4.8	7.1	2.4	7.1	2.4	2.4
20		7.1	4.8	11.8	7.1	2.4	7.1	7.1	0
21			4.8	14.2	9.5	9.5	2.4	7.1	0

Table 16.7a (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
22			4.8	14.2	12.0	11.9	2.4	4.8	0
23				7.1	14.4	14.3	7.1	0	0
24					11.9	11.9	7.1	7.1	7.2
25					7.1	9.5	9.5	7.1	7.2
26						7.1	11.9	9.5	7.2
27						4.8	14.4	7.1	0
28							11.9	12.0	0
29							7.1	12.0	4.8
30								9.5	7.2
31								7.1	9.4
32									4.8
33									9.4
34									9.4
35									9.4
36									4.8
37									2.4
38									2.4
39									0
40									0
41									0
42									0
43									2.4
44									4.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	14	20	22	23	25	27	29	31	44
Avg H Truck	10.2	14.6	16.1	17.9	20.0	21.4	23.8	25.3	31.0
Min H Truck	5	8	9	10	11	12	14	15	18
Range	9	12	13	13	14	15	15	16	26
Poisson's Coef. K	5.2	6.6	7.1	7.9	9.0	9.4	9.8	10.3	13.0

Table 16.7b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 14 TYPE 3-S3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
5	.6								
6	2.7								
7	7.5								
8	12.9	.1							
9	16.8	.9	.1						
10	17.5	3.0	.6						
11	15.2	6.5	2.1	.3					
12	11.3	10.8	4.9	1.2	.1				
13	7.3	14.2	8.7	3.0	.5	.1			
14	4.2	15.6	12.4	6.1	1.5	.4			
15	2.2	14.7	14.7	9.5	3.4	1.1	.1		
16	1.0	12.1	14.9	12.5	6.1	2.7	.3		
17	.5	8.9	13.2	14.1	9.1	5.1	.9	.2	
18	.2	5.9	10.4	13.9	11.7	7.9	2.1	.6	
19	.1	3.5	7.4	12.2	13.2	10.6	4.2	1.6	
20		1.9	4.8	9.7	13.2	12.5	6.8	3.2	
21		1.0	2.8	6.9	11.9	13.1	9.6	5.6	.1
22		.5	1.5	4.6	9.7	12.3	11.7	8.2	.3
23		.2	.8	2.8	7.3	10.5	12.7	10.6	.7
24		.1	.4	1.6	5.0	8.2	12.5	12.1	1.5
25		.1	.2	.8	3.2	5.9	11.1	12.5	2.8
26			.1	.4	1.9	4.0	9.1	11.7	4.6
27				.2	1.1	2.5	6.8	10.0	6.6

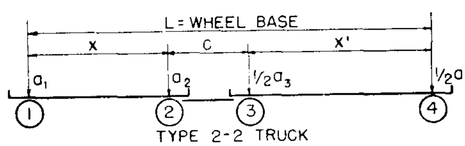
Table 16.7b (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
28				.1	.6	1.5	4.8	7.9	8.6
29				.1	.3	.8	3.1	5.8	10.1
30					.1	.4	1.9	4.0	11.0
31					.1	.2	1.1	2.6	11.0
32						.1	.6	1.6	10.2
33						.1	.3	.9	8.8
34							.2	.5	7.2
35	Equivalent H truck loadings						.1	.2	5.5
36	based on moments produced							.1	4.0
37	by gross vehicle weights.							.1	2.7
38									1.8
39									1.1
40 or greater									1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	19	25	26	29	31	33	35	37	44
Avg H Truck	10.2	14.6	16.1	17.9	20.0	21.4	23.8	25.3	31.0
Min H Truck	5	8	9	11	12	13	15	17	21
Range	14	17	17	18	19	20	20	20	23
Poisson's Coef. K	5.2	6.6	7.1	7.9	9.0	9.4	9.8	10.3	13.0
Std. Dev. D	2.28	2.57	2.66	2.81	3.00	3.07	3.13	3.21	3.61

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.8a

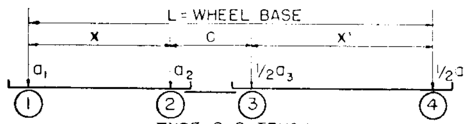
OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 99 TYPE 2-2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY



Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite G.V.W.
6	2.0	1.4							
7	5.7	4.4							
8	12.8	9.1	3.4						
9	19.2	14.8	6.4	3.0					
10	24.7	19.8	8.4	5.4	2.4				
11	19.5	18.9	11.1	6.7	4.7	1.7			
12	12.1	16.8	15.2	9.1	7.8	4.4	.7		
13	3.0	8.4	18.8	12.5	7.4	7.7	3.0	1.7	
14	1.0	4.7	17.7	13.5	10.4	7.7	5.7	3.7	
15		.7	10.8	15.4	10.4	7.7	7.7	6.4	
16		1.0	5.1	12.8	13.8	9.1	7.1	6.7	
17			1.4	10.8	11.8	10.4	8.1	7.1	5.4
18			1.0	6.1	12.5	12.9	8.8	7.4	4.7
19			.7	2.4	9.1	12.1	11.1	9.8	6.1
20				1.7	5.7	12.8	10.8	10.1	5.1
21				.3	2.0	7.7	13.1	9.4	7.7
22				.3	1.0	3.4	11.1	11.7	8.8
23					1.0	1.0	7.8	10.8	9.1
24						1.4	0	9.4	7.4
25							1.0	3.4	4.7
26							1.0	1.7	8.1
27								.7	10.0
28									11.4
29									6.7
30									3.4
31									1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	14	16	19	22	23	24	26	27	31
Avg H Truck	9.9	10.5	12.6	14.4	15.9	17.3	19.0	20.0	23.9
Min H Truck	6	6	8	9	10	11	12	13	17
Range	8	10	11	13	13	13	14	14	14
Poisson's Coef. K	3.9	4.5	4.6	5.4	5.9	6.3	7.0	7.0	6.9

Table 16.8b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 99 TYPE 2-2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-2 TRUCK

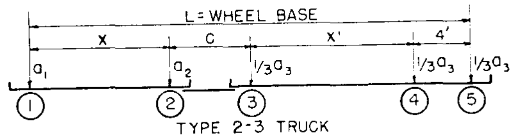
Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100	Infinite
6	2.0	1.1							
7	7.9	5.0							
8	15.3	11.2	1.0						
9	20.0	16.9	4.6	.5					
10	19.5	19.0	10.6	2.4	.3				
11	15.2	17.1	16.3	6.6	1.6	.2			
12	9.9	12.8	18.7	11.9	4.8	1.2	.1		
13	5.5	8.2	17.3	16.0	9.4	3.6	.6	.1	
14	2.7	4.7	13.2	17.2	13.8	7.7	2.3	.6	
15	1.2	2.3	8.7	15.5	16.3	12.1	5.2	2.3	
16	.5	1.0	5.0	12.0	16.0	15.2	9.1	5.2	
17	.2	.4	2.6	8.1	13.5	15.8	12.8	9.1	.1
18	.1	.2	1.2	4.9	10.0	14.4	14.9	12.8	.7
19		.1	.5	2.6	6.5	11.3	14.9	14.9	2.4
20			.2	1.3	3.9	7.9	13.0	14.9	5.5
21			.1	.6	2.1	5.0	10.1	13.0	9.5
22				.2	1.0	2.9	7.1	10.1	13.1
23				.1	.5	1.5	4.6	7.1	15.1
24				.1	.2	.7	2.6	4.6	14.9
25					.1	.3	1.4	2.6	12.8
26						.1	.7	1.4	9.9
27						.1	.3	.7	6.8
28							.2	.3	4.3
29							.1	.2	2.5
30								.1	1.3
31									.6
32									.3
33									.1
34									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	18	19	21	24	25	27	29	30	34
Avg H Truck	9.9	10.5	12.6	14.4	15.9	17.3	19.0	20.0	23.9
Min H Truck	6	6	8	9	10	11	12	13	17
Range	12	13	13	15	15	16	17	17	17
Poisson's Coef. K	3.9	4.5	4.6	5.4	5.9	6.3	7.0	7.0	6.9
Std. Dev. D	1.97	2.12	2.14	2.32	2.42	2.51	2.65	2.65	2.63

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.9a

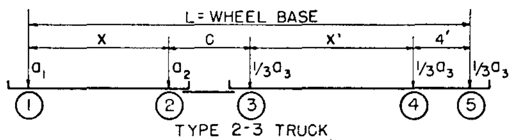
OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 24 TYPE 2-3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY



Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite G.V.W.
6	4.2	4.2							
7	5.6	4.2	5.6						
8	9.7	7.0	4.2	5.6					
9	13.9	11.1	6.9	5.6	5.6				
10	19.3	13.8	6.9	6.9	4.2	4.2			
11	16.7	16.6	13.9	5.6	5.6	4.2			
12	15.3	16.6	18.0	9.7	5.6	4.2	2.8		
13	8.3	12.5	18.0	15.2	8.3	4.2	4.2	2.8	
14	7.0	5.6	12.5	18.0	13.8	5.6	2.8	4.2	
15		1.4	4.2	13.8	15.2	8.3	5.6	2.8	
16		1.4	2.8	5.6	13.8	13.8	4.2	4.2	
17		2.8	2.8	2.8	8.3	13.8	9.7	2.8	2.8
18		2.8	4.2	2.8	4.2	12.4	12.4	5.6	2.8
19				4.2	4.2	8.3	12.5	11.1	2.8
20				4.2	2.8	5.6	9.7	12.4	2.8
21					2.8	4.2	8.3	12.4	1.4
22					2.8	2.8	8.3	8.3	2.8
23					2.8	2.8	6.9	9.7	5.6
24						2.8	2.8	8.3	9.7
25						2.8	2.8	5.6	11.1
26							1.4	2.8	11.0
27							2.8	1.4	6.9
28							2.8	1.4	5.6
29								1.4	8.3
30								2.8	9.7
31									6.9
32									1.4
33									1.4
34									1.4
35									1.4
36									1.4
37									2.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	14	18	18	20	23	25	28	30	37
Avg H Truck	10.3	11.1	12.1	13.5	15.1	17.0	19.4	20.9	26.5
Min H Truck	6	6	7	8	9	10	12	13	17
Range	8	12	11	12	14	15	16	17	20
Poisson's Coef. K	4.3	5.1	5.1	5.5	6.1	7.0	7.4	7.9	9.5

Table 16.9b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 24 TYPE 2-3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



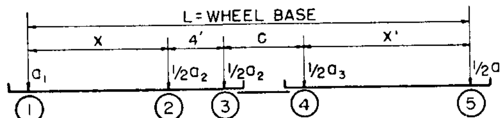
Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite
6	1.4	.6							
7	5.8	3.1	.6						
8	12.5	7.9	3.1	.4					
9	18.0	13.5	7.9	2.2	.2				
10	19.3	17.2	13.5	6.2	1.4	.1			
11	16.6	17.5	17.2	11.3	4.2	.6			
12	11.9	14.9	17.5	15.6	8.5	2.3	.1		
13	7.3	10.9	14.9	17.1	12.9	5.2	.5		
14	4.0	6.9	10.9	15.7	15.8	9.1	1.7	.3	
15	1.9	3.9	6.9	12.3	16.0	12.8	4.1	1.2	
16	.8	2.0	3.9	8.5	14.0	14.9	7.7	3.0	
17	.3	.9	2.0	5.2	10.7	14.9	11.3	6.1	
18	.1	.4	.9	2.9	7.2	13.0	13.9	9.5	.1
19	.1	.2	.4	1.4	4.4	10.2	14.7	12.5	.3
20		.1	.2	.7	2.4	7.1	13.6	14.1	1.1
21			.1	.3	1.2	4.5	11.2	13.9	2.5
22				.1	.6	2.6	8.3	12.2	4.8
23				.1	.3	1.5	5.6	9.7	7.6
24					.1	.7	3.4	6.9	10.4
25					.1	.3	2.0	4.6	12.2
26						.1	1.0	2.8	13.0
27						.1	.5	1.6	12.4
28							.2	.8	10.7
29							.1	.4	8.4
30							.1	.2	6.2
31								.1	4.2
32								.1	2.7
33									1.6
34									.9
35									.5
36									.2
37									.1
38									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	19	20	21	23	25	27	30	32	38
Avg H Truck	10.3	11.1	12.1	13.5	15.1	17.0	19.4	20.9	26.5
Min H Truck	6	6	7	8	9	10	12	14	18
Range	13	14	14	15	16	17	18	18	20
Poisson's Coef. K	4.3	5.1	5.1	5.5	6.1	7.0	7.4	7.9	9.5
Std. Dev. D	2.07	2.26	2.26	2.35	2.47	2.65	2.72	2.81	3.08

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.10a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 68 TYPE 3-2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

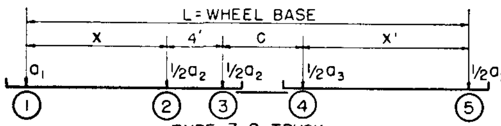


TYPE 3-2 TRUCK

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite G.V.W.
5	4.4								
6	7.4								
7	14.2	6.4							
8	14.7	7.4	3.9						
9	16.2	10.3	6.4	5.4					
10	15.7	12.7	7.8	6.4	5.9				
11	14.2	11.8	11.3	5.9	6.4	4.9			
12	9.3	10.8	10.8	8.3	4.9	5.4	2.9		
13	2.9	13.6	11.3	9.8	7.4	4.9	4.4	2.5	
14	1.0	13.2	9.3	11.2	7.8	8.3	4.9	4.4	
15		8.8	12.3	11.7	9.8	7.4	6.4	4.4	
16		2.5	12.2	10.3	11.2	10.8	6.4	6.4	
17		1.0	8.3	11.3	10.3	8.8	7.4	4.9	3.9
18		1.5	2.9	8.8	11.7	10.7	9.3	7.4	4.9
19			1.0	5.9	9.3	8.8	9.3	7.4	5.4
20			.5	2.0	7.9	10.8	10.2	9.7	4.4
21			1.0	.5	3.4	8.3	7.8	9.7	3.9
22			1.0	.5	1.0	5.4	8.8	8.7	5.4
23				1.0	.5	2.0	7.4	8.8	5.4
24				1.0	.5	1.0	5.9	7.4	9.3
25					1.0	.5	3.4	6.9	8.3
26					1.0	.5	2.0	3.9	9.3
27						.5	1.0	3.0	7.8
28						1.0	.5	1.5	8.3
29							.5	1.0	6.4
30							.5	.5	2.9
31							1.0	.5	2.0
32								1.0	1.5
33									2.9
34									2.5
35									2.5
36									1.0
37									1.0
38									1.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	14	18	22	24	26	28	31	32	38
Avg H Truck	9.1	11.6	13.4	14.7	16.1	17.4	19.4	20.8	25.5
Min H Truck	5	7	8	9	10	11	12	13	17
Range	9	11	14	15	16	17	19	19	21
Poisson's Coef. K	4.1	4.6	5.4	5.7	6.1	6.4	7.4	7.8	8.5

Table 16.10b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 68 TYPE 3-2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-2 TRUCK

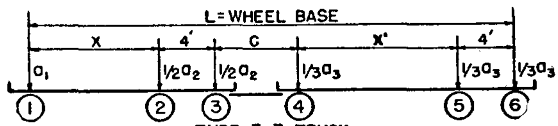
Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite
5	1.7								
6	6.8								
7	13.9	1.0							
8	19.1	4.6	.5						
9	19.5	10.6	2.4	.3					
10	16.0	16.3	6.6	1.9	.2				
11	10.9	18.7	11.9	5.4	1.4	.2			
12	6.4	17.3	16.0	10.3	4.2	1.1	.1		
13	3.3	13.2	17.2	14.7	8.5	3.4	.5	.1	
14	1.5	8.7	15.6	16.9	12.9	7.3	1.7	.3	
15	.6	5.0	12.0	16.0	15.8	11.6	4.1	1.2	
16	.2	2.6	8.1	13.0	16.0	14.8	7.6	3.2	
17	.1	1.2	4.9	9.2	14.0	15.8	11.3	6.3	
18		.5	2.6	5.9	10.7	14.5	13.9	9.9	.2
19		.2	1.3	3.3	7.2	11.6	14.8	12.8	.7
20		.1	.6	1.7	4.4	8.2	13.6	14.2	2.1
21			.2	.8	2.4	5.3	11.2	13.9	4.4
22			.1	.4	1.2	3.1	8.3	12.1	7.5
23				.1	.6	1.6	5.6	9.4	10.7
24				.1	.3	.8	3.4	6.7	12.9
25					.1	.4	2.0	4.3	13.7
26					.1	.2	1.0	2.6	13.0
27						.1	.5	1.5	11.0
28							.2	.8	8.5
29							.1	.4	6.0
30							.1	.2	4.0
31								.1	2.4
32									1.4
33									.7
34									.4
35									.2
36									.1
37									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	17	20	22	24	26	27	30	31	37
Avg H Truck	9.1	11.6	13.4	14.7	16.1	17.4	19.4	20.8	25.5
Min H Truck	5	7	8	9	10	11	12	13	18
Range	12	13	14	15	16	16	18	18	19
Poisson's Coef. K	4.1	4.6	5.4	5.7	6.1	6.4	7.4	7.8	8.5
Std. Dev. D	2.02	2.14	2.32	2.39	2.47	2.53	2.72	2.79	2.92

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.11a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 176 TYPE 3-3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

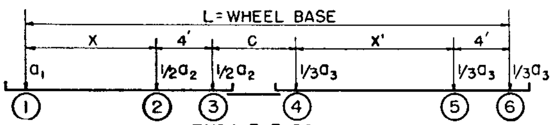


TYPE 3-3 TRUCK

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite G.V.W.
5	5.7								
6	5.3	4.2	1.3						
7	5.1	4.0	3.4	2.5					
8	5.9	4.4	4.2	3.6	2.5				
9	10.2	3.2	4.0	3.8	3.4	2.7			
10	19.1	4.0	3.0	3.4	3.8	3.2			
11	21.8	6.4	2.8	3.0	3.2	3.6	3.2		
12	16.5	12.3	4.9	3.4	2.5	2.5	3.2	2.3	
13	6.8	18.0	9.3	5.5	2.3	2.3	3.0	3.2	
14	1.9	19.2	15.2	8.0	3.8	2.3	1.7	3.0	
15	1.7	12.9	19.3	11.7	6.4	2.9	1.7	2.3	
16		6.3	14.8	17.4	9.7	4.9	1.9	1.1	
17		2.1	9.5	15.9	13.4	7.8	2.3	1.5	3.6
18		1.5	3.2	11.9	14.9	10.6	2.8	1.7	3.4
19		1.5	2.3	4.0	13.7	11.6	4.2	2.7	2.3
20			1.5	2.3	9.5	12.8	5.7	2.8	1.3
21			1.3	1.5	5.1	11.8	8.1	4.2	.8
22				1.1	2.7	9.9	11.2	5.7	.8
23				1.0	1.1	5.1	12.2	8.0	1.0
24					.8	2.7	13.0	8.5	1.1
25					.4	.8	9.9	11.0	1.7
26					.4	.6	7.2	12.6	2.5
27					.4	.6	3.2	11.7	2.5
28						.6	1.7	7.8	4.0
29						.8	1.0	3.0	4.7
30							.6	1.9	5.5
31							.4	1.1	6.1
32							.8	1.0	7.5
33							1.0	1.0	11.1
34								.8	10.5
35								1.1	9.0
36									5.5
37									4.4
38									2.8
39									1.9
40									1.0
41									.6
42									.4
43									1.1
44									1.0
45									1.1
46									.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	15	19	21	23	27	29	33	35	46
Avg H Truck	10.0	12.6	14.0	15.1	16.8	18.5	21.7	23.7	31.3
Min H Truck	5	6	6	7	8	9	11	12	17
Range	10	13	15	16	19	20	22	23	29
Poisson's Coef. K	5.0	6.6	8.0	8.1	8.8	9.5	10.7	11.7	14.3

Table 16.11b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 176 TYPE 3-3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-3 TRUCK

Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite
5	.7								
6	3.4	.1	.1						
7	8.4	.9	.2	.1					
8	14.0	3.0	1.1	.2	.1				
9	17.6	6.5	2.9	1.0	.1				
10	17.6	10.8	5.7	2.7	.6	.1			
11	14.7	14.2	9.1	5.4	1.7	.3			
12	10.4	15.6	12.2	8.8	3.8	1.1	.1		
13	6.5	14.7	13.9	11.9	6.6	2.5	.1		
14	.36	12.1	14.0	13.8	9.7	4.8	.5	.1	
15	1.8	8.9	12.4	13.9	12.2	7.6	1.2	.2	
16	.8	5.9	9.9	12.6	13.4	10.4	2.6	.6	
17	.3	3.5	7.2	10.2	13.1	12.3	4.7	1.5	
18	.1	1.9	4.8	7.5	11.6	13.0	7.2	3.0	
19	.1	1.0	3.0	5.1	9.3	12.3	9.6	4.9	
20		.5	1.7	3.1	6.8	10.7	11.4	7.2	
21		.2	.9	1.8	4.6	8.4	12.1	9.4	.1
22		.1	.5	1.0	2.9	6.2	11.8	11.0	.3
23		.1	.2	.5	1.7	4.2	10.6	11.7	.7
24			.1	.2	.9	2.7	8.7	11.4	1.5
25			.1	.1	.5	1.6	6.7	10.3	2.7
26				.1	.2	.9	4.8	8.6	4.2
27					.1	.5	3.2	6.7	6.1
28					.1	.2	2.0	4.9	7.9
29						.1	1.2	3.4	9.4
30						.1	.7	2.2	10.3
31							.4	1.3	10.6
32							.2	.8	10.1
33							.1	.4	9.0
34							.1	.2	7.6
35								.1	6.0
36								.1	4.5
37									3.2
38									2.2
39									1.5
40									.9
41 or more									1.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	19	23	25	26	28	30	34	36	45
Avg H Truck	10.0	12.6	14.0	15.1	16.8	18.5	21.7	23.7	31.3
Min H Truck	5	6	6	7	8	10	12	14	21
Range	14	17	19	19	20	20	22	22	24
Poisson's Coef. K	5.0	6.6	8.0	8.1	8.8	9.5	10.7	11.7	14.3
Std. Dev. D	2.24	2.57	2.83	2.85	2.97	3.08	3.27	3.42	3.78

Equivalent H truck loadings based on moments produced by gross vehicle weights.

Table 16.12a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 4531 (ALL TYPES) TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite G.V.W.
5	.4								
6	.6	.3	.1						
7	1.2	.4	.2	.1					
8	3.4	1.6	.6	.3	.1				
9	10.1	6.8	4.0	1.1	.3	.1			
10	18.6	15.2	10.1	3.7	.8	.3			
11	21.8	19.2	16.1	8.4	3.7	1.4	.4	.2	
12	18.8	18.3	18.4	15.8	9.0	4.7	1.6	1.0	
13	11.6	12.7	15.2	17.5	15.2	11.2	4.5	2.8	2.2
14	6.8	9.3	11.5	16.6	17.1	15.2	11.1	6.9	2.3
15	3.4	6.4	7.6	11.1	15.4	16.3	15.1	11.9	2.2
16	1.6	4.2	6.0	8.3	11.3	13.2	16.1	15.5	4.3
17	.9	2.7	4.0	6.0	8.3	10.6	12.2	14.6	9.4
18	.4	1.4	2.7	4.2	6.1	7.9	9.6	11.5	13.5
19	.2	.8	1.6	2.8	4.6	5.7	7.2	8.2	13.7
20	.1	.3	.9	1.7	3.1	4.3	5.5	6.1	10.6
21	0	.2	.5	1.0	2.0	3.2	4.1	4.5	7.9
22	0	.1	.3	.6	1.2	2.3	3.5	3.6	6.1
23	0	0	.1	.4	.8	1.4	2.8	3.2	4.3
24	.1	.1	.1	.2	.5	.9	2.2	2.7	3.6
25				.1	.3	.5	1.5	2.1	3.2
26				.1	.1	.3	1.0	1.6	2.8
27					.1	.2	.6	1.3	2.3
28						.1	.4	.9	1.9
29						.1	.2	.5	1.7
30						.1	.1	.3	1.4
31							.1	.2	1.2
32							.1	.1	1.0
33							.1	.1	1.1
34								.1	.9
35								.1	.7
36									.5
37									.4
38									.2
39									.1
40									.1
41									0
42									0
43									.1
44									.1
45									.1
46									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	24	24	24	26	27	30	33	35	46
Avg H Truck	11.4	12.2	13.0	14.1	15.2	16.1	17.4	18.2	21.1
Min H Truck	5	6	6	7	8	9	11	11	13
Range	19	18	18	19	19	21	22	24	33
Poisson's Coef K	6.4	6.2	7.0	7.1	7.2	7.1	6.4	7.2	8.1

Table 16.12b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 4531 (ALL TYPES) TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY, BASED ON POISSON'S DISTRIBUTION LAW

Equivalent H truck loadings which occur less than 1 in 1000, or account for less than 0.1% of total heavy truck traffic, are not shown in this table.

Equivalent H Truck Loadings	Span-Feet								
	10	20	30	40	50	60	80	100	Infinite
5	.2								
6	1.1	.2	.1						
7	3.4	1.3	.7	.1					
8	7.3	3.9	2.2	.6	.1				
9	11.6	8.1	5.2	2.1	.5	.1			
10	14.7	12.5	9.1	4.9	1.9	.6			
11	15.9	15.4	12.8	8.7	4.6	2.1	.2	.1	
12	14.5	16.0	14.9	12.4	8.4	4.9	1.1	.5	
13	11.6	14.1	14.9	14.7	12.0	8.7	3.4	1.9	.1
14	8.2	11.0	13.0	14.9	14.4	12.4	7.3	4.6	.2
15	5.3	7.6	10.2	13.2	14.9	14.7	11.6	8.4	1.0
16	3.1	4.7	7.1	10.4	13.4	14.9	14.7	12.0	2.7
17	1.6	2.6	4.5	7.4	10.7	13.2	15.9	14.4	5.4
18	.8	1.4	2.6	4.8	7.7	10.4	14.5	14.9	8.8
19	.4	.7	1.4	2.8	5.0	7.4	11.6	13.4	11.9
20	.2	.3	.7	1.5	3.0	4.8	8.2	10.7	13.8
21	.1	.1	.4	.8	1.7	2.8	5.3	7.7	13.9
22		.1	.1	.4	.9	1.5	3.1	5.0	12.6
23			.1	.2	.4	.8	1.6	3.0	10.2
24				.1	.2	.4	.8	1.7	7.5
25					.1	.2	.4	.9	5.1
26					.1	.1	.2	.4	3.1
27							.1	.2	1.8
28								.1	1.0
29								.1	.5
30									.2
31									.1
32									.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	21	22	23	24	26	26	27	29	32
Avg H Truck	11.4	12.2	13.0	14.1	15.2	16.1	17.4	18.2	21.1
Min H Truck	5	6	6	7	8	9	11	11	13
Range	16	16	17	17	18	17	16	18	19
Poisson's Coef K	6.4	6.2	7.0	7.1	7.2	7.1	6.4	7.2	8.1
Std. Dev. D	2.53	2.49	2.65	2.66	2.68	2.66	2.54	2.68	2.85

Equivalent H truck loadings based on moments produced by gross vehicle weights.

17. MAXIMUM, AVERAGE, AND MINIMUM EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES BASED ON GROSS VEHICLE WEIGHT

Figures 17.1—17.11 present a graphical representation of the maximum, average, and minimum equivalent H truck loadings on simple span bridges of various lengths for each of the 11 more numerous heavy vehicle types reported by the special loadometer survey of 1942. Figure 17.12 gives the same information for 83 truck-tractor semitrailer trailer combinations (6 different vehicle types) that did not occur in sufficient number to justify individual distributions; and Figure 17.13 gives the information for all heavy vehicles reported representing a combined total of 4531.

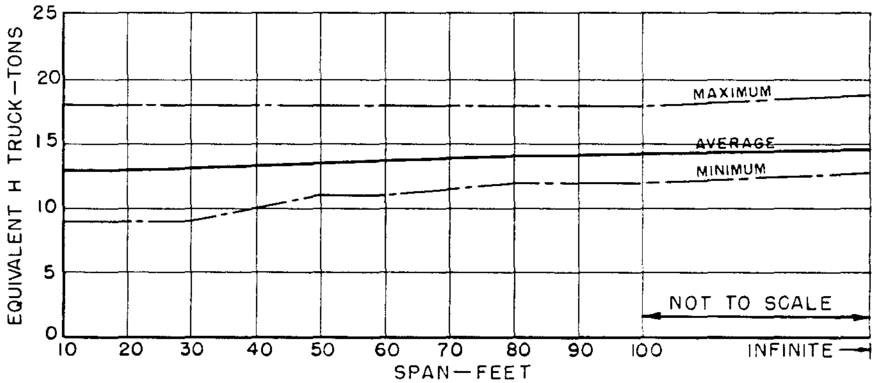
The upper part of each of these figures give the maximum, average, and minimum equivalent H truck loadings for each span length and the lower part shows the range, the Poisson coefficient K and the standard deviation

D for each corresponding span length. The figures on which all of these data are given are as follows:

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	17.1
3	381	17.2
2-S1	2855	17.3
2-S2	508	17.4
3-S1	9	17.5
3-S2	142	17.6
3-S3	14	17.7
2-2	99	17.8
2-3	24	17.9
3-2	68	17.10
3-3	176	17.11
6 types of tractor-truck semitrailer trailer combinations	83	17.12
All	4531	17.13

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS FOR TYPE 2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 171 TYPE 2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SPANS OF VARIOUS LENGTHS

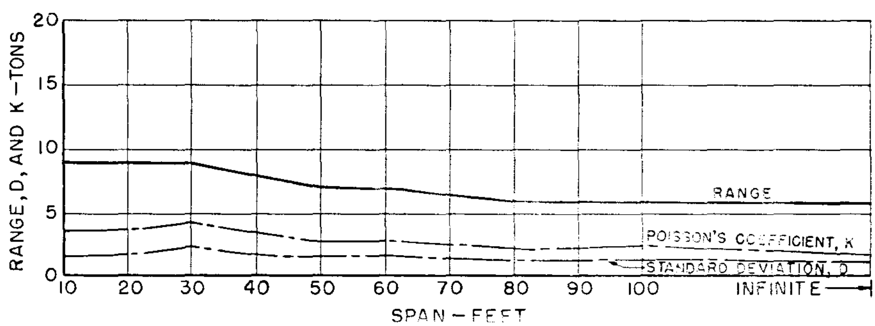


Figure 17.1

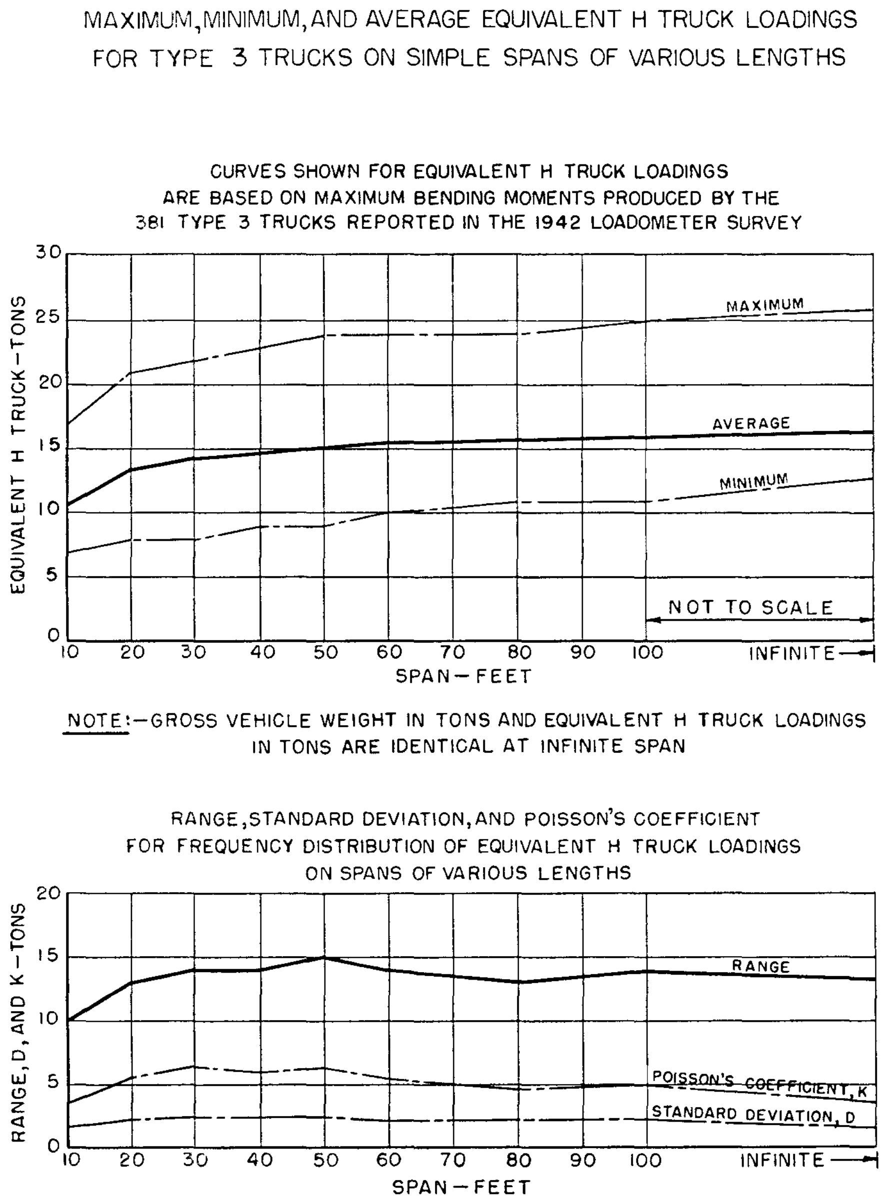
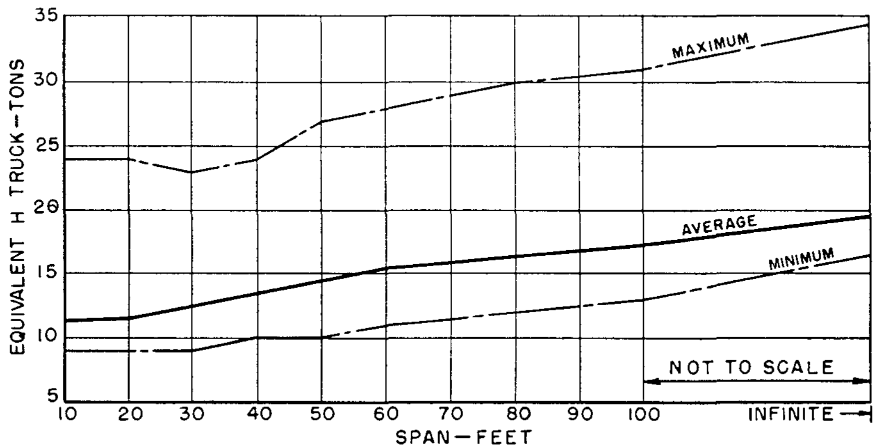

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK-TONS
0
5
10
15
20
25
30
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN—FEET
NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS
IN TONS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE, D, AND K—TONS
0
5
10
15
20
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN—FEET

Figure 17.2

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S1 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SPANS OF VARIOUS LENGTHS

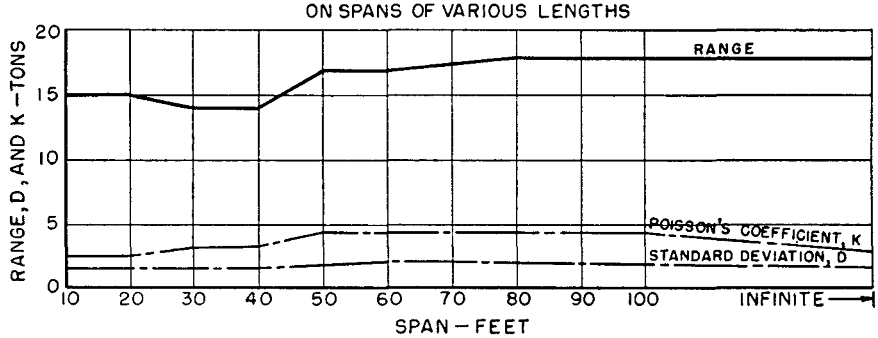
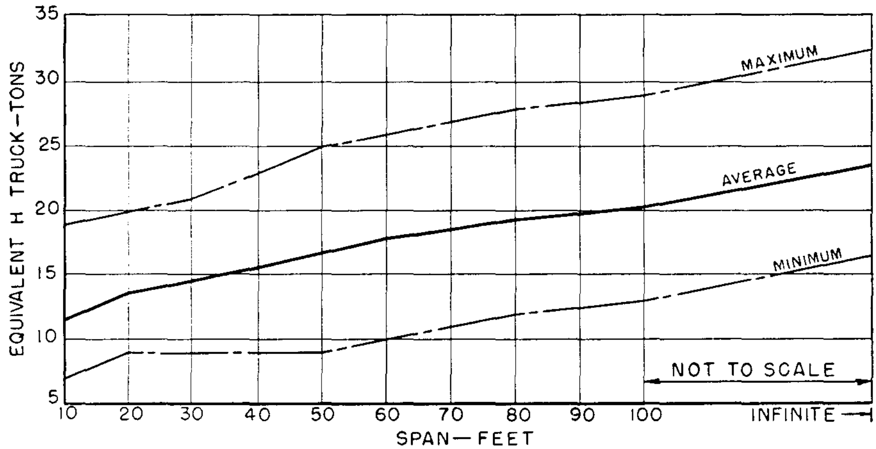


Figure 17.3

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR TYPE 2-S2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS
IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OR EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

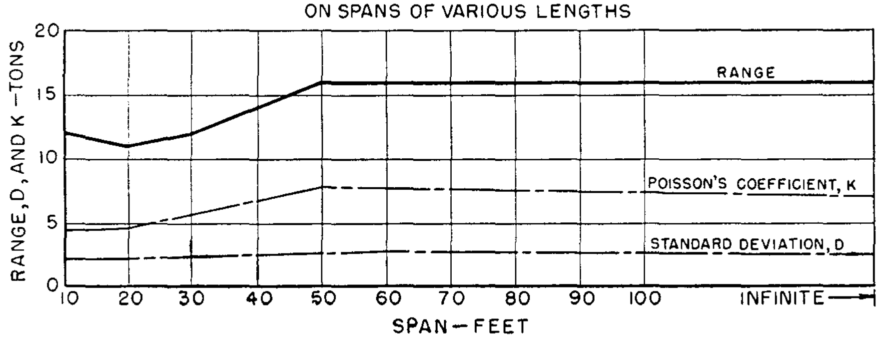
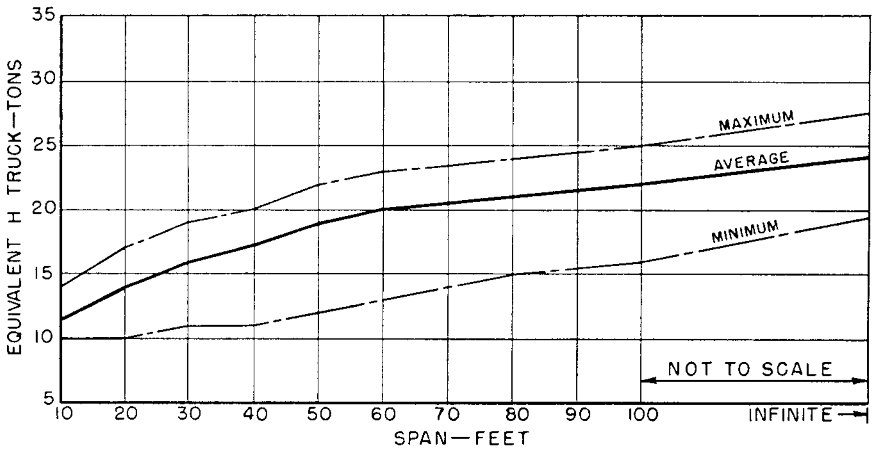


Figure 17.4

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-S1 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
9 TYPE 3-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

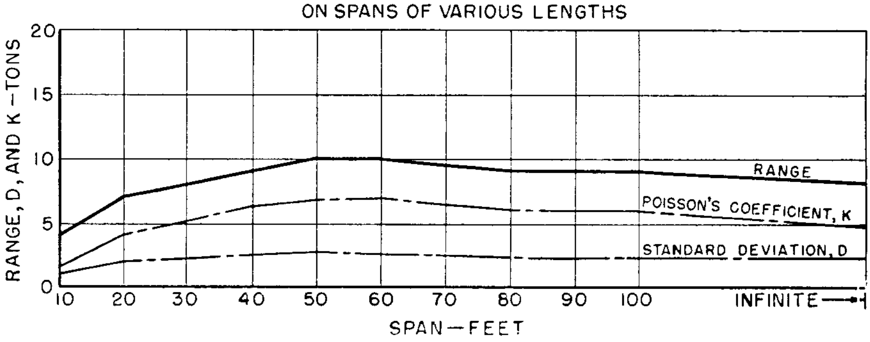
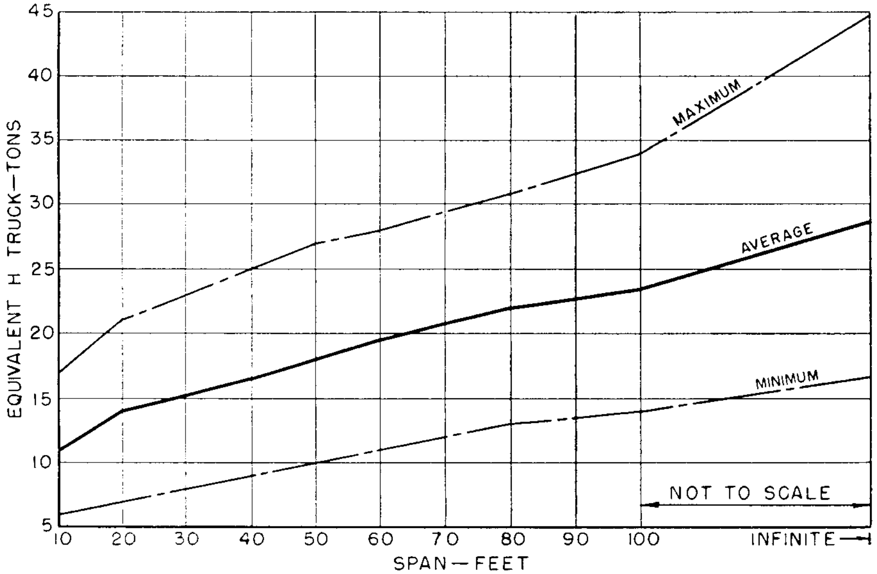


Figure 17.5

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SPANS OF VARIOUS LENGTHS

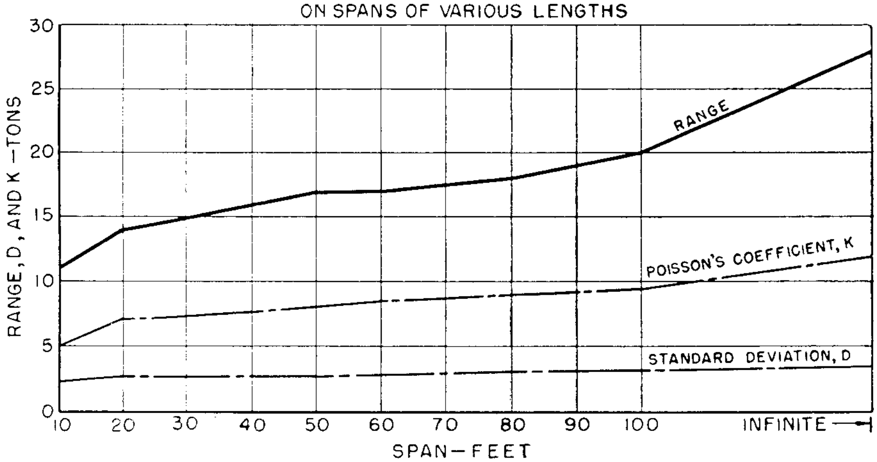


Figure 17.6

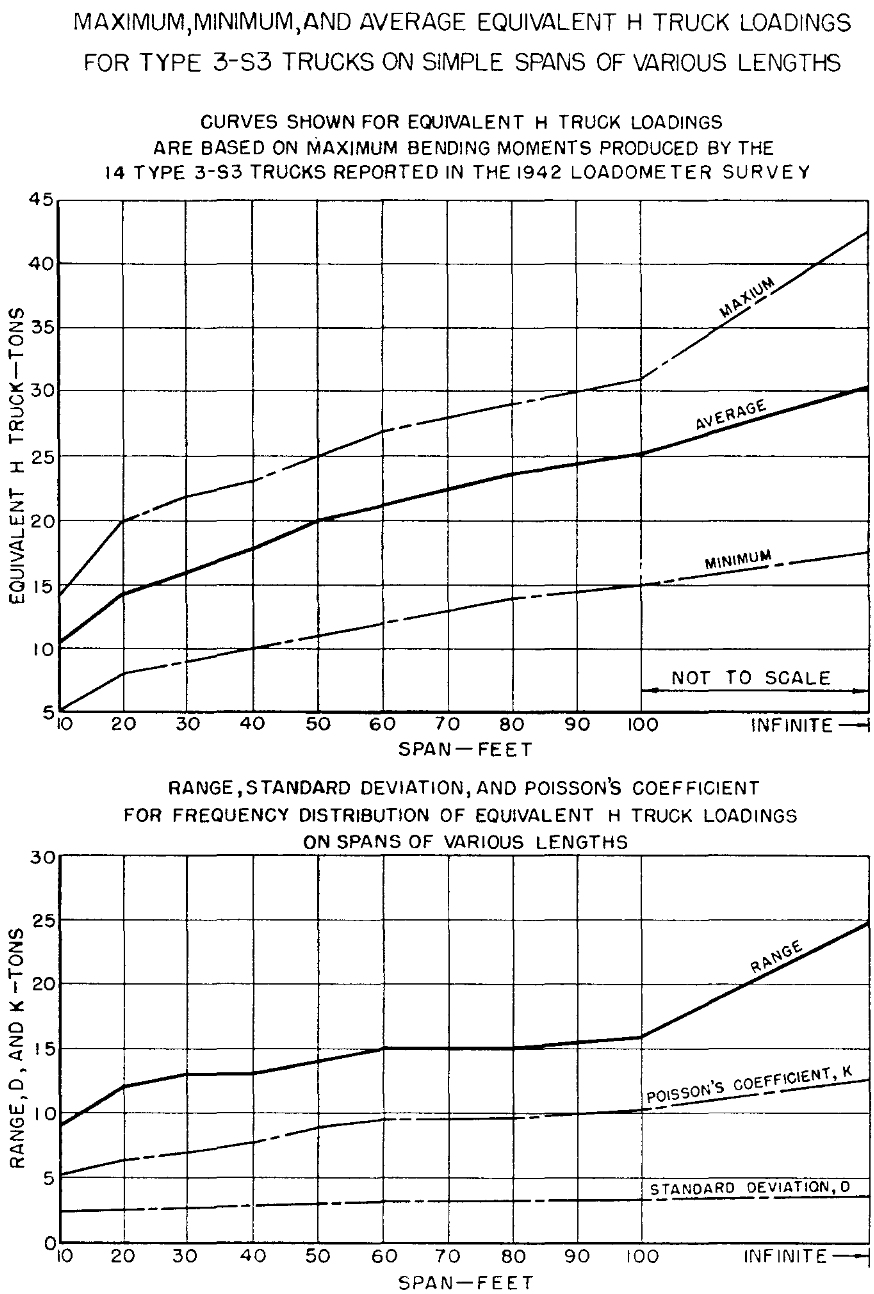
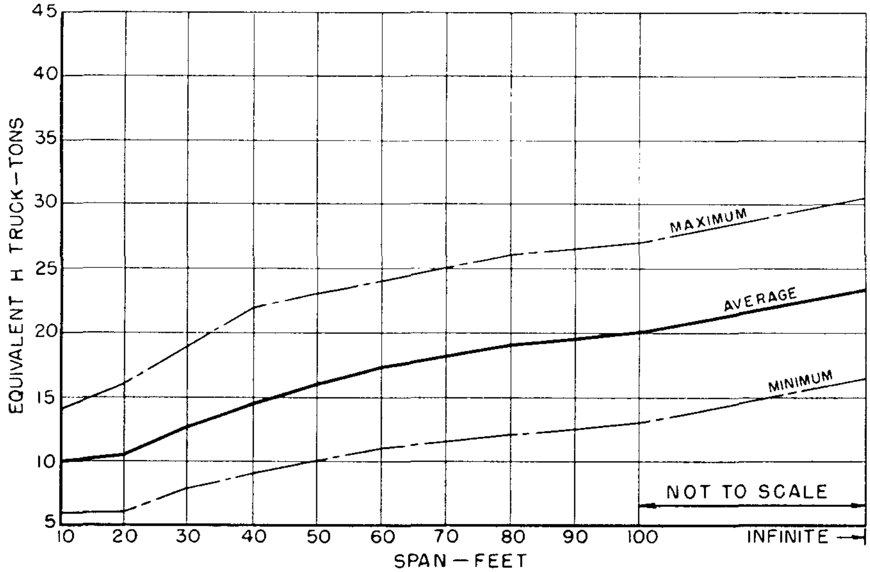

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-S3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK—TONS
MAXIUM
AVERAGE
MINIMUM
NOT TO SCALE
10 20 30 40 50 60 70 80 90 100 INFINITE
SPAN—FEET
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE, D, AND K—TONS
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10 20 30 40 50 60 70 80 90 100 INFINITE
SPAN—FEET

Figure 17.7

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 99 TYPE 2-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SPANS OF VARIOUS LENGTHS

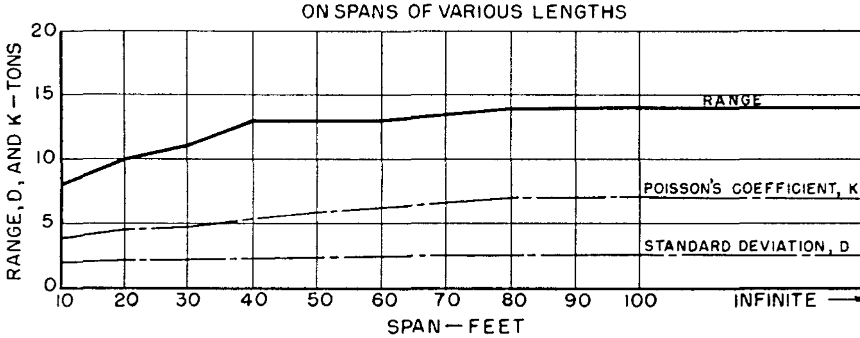
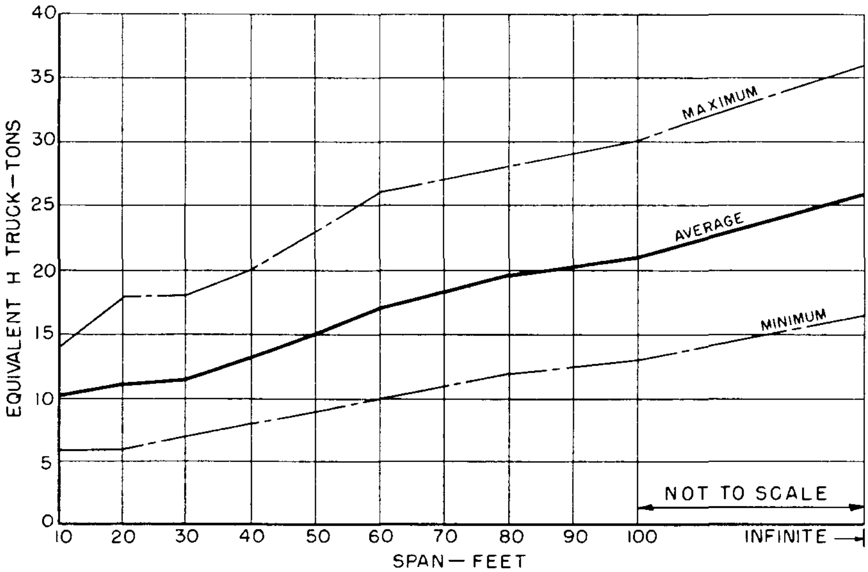


Figure 17.8

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 24 TYPE 2-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SPANS OF VARIOUS LENGTHS

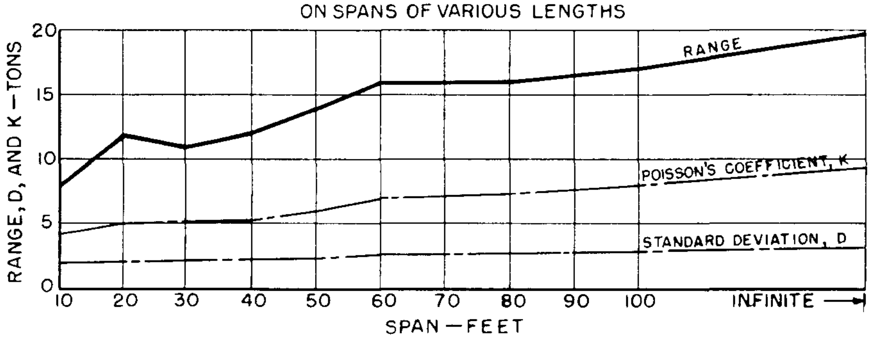
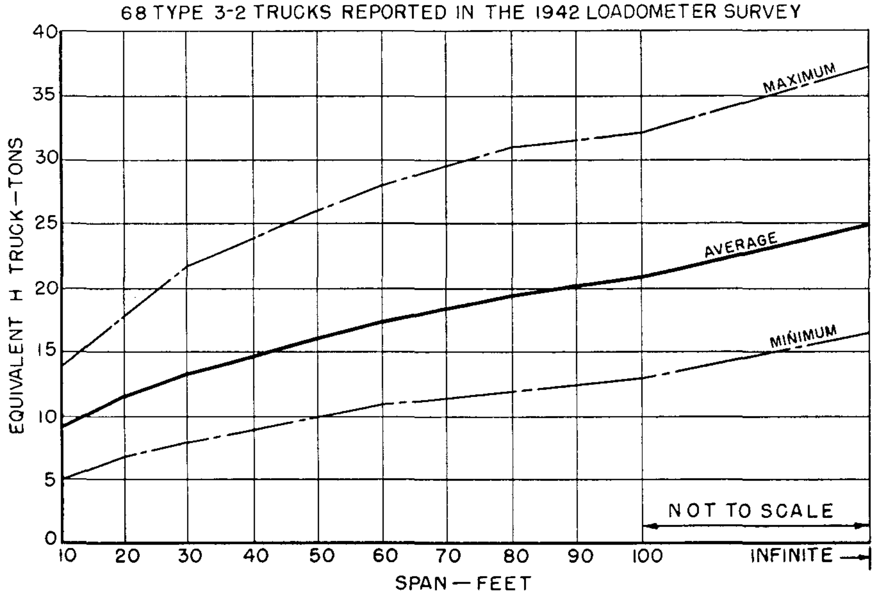


Figure 17.9

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
68 TYPE 3-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:— GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

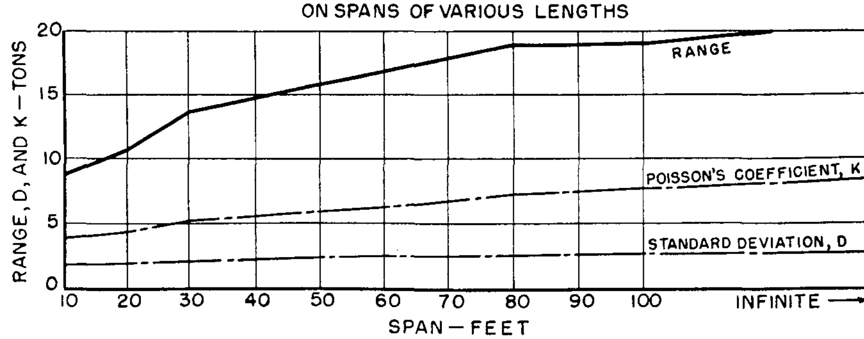
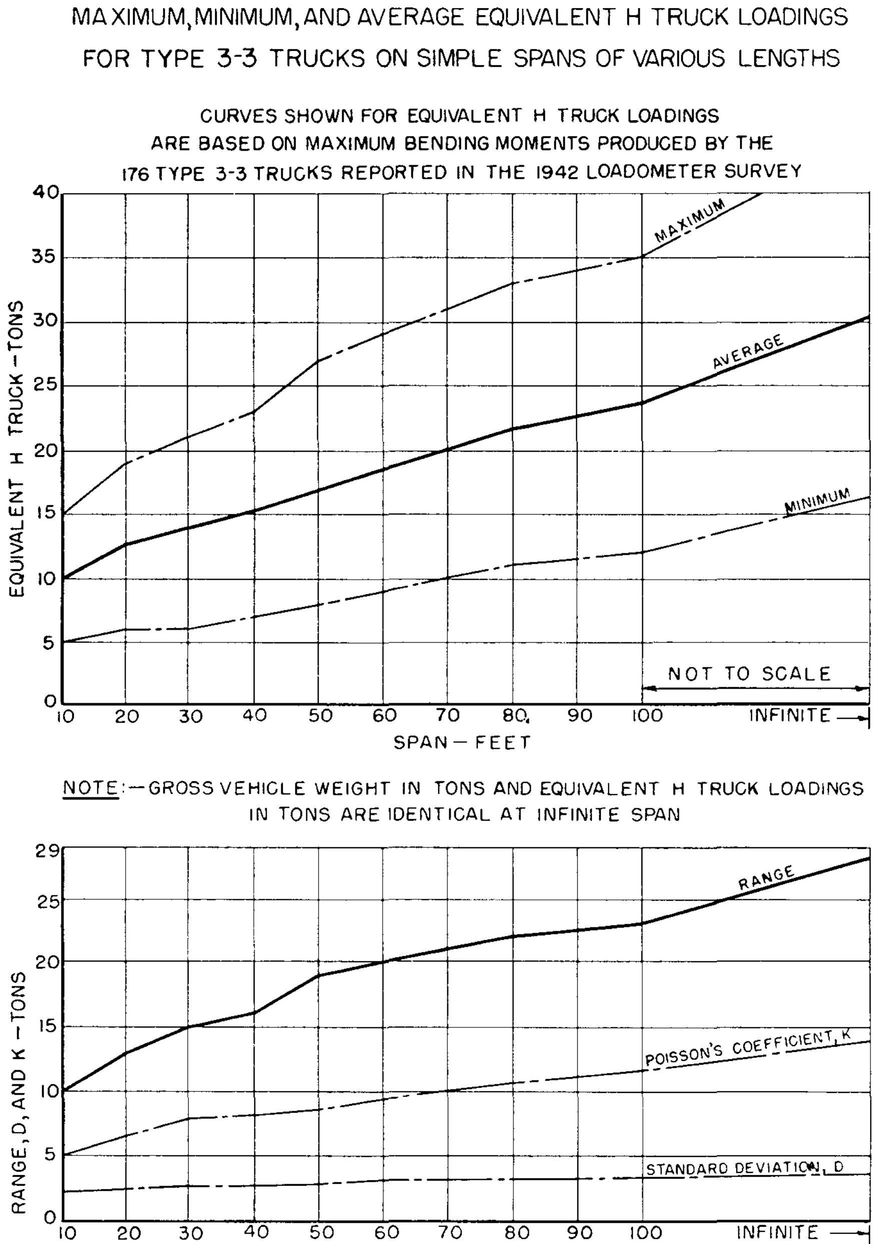


Figure 17.10

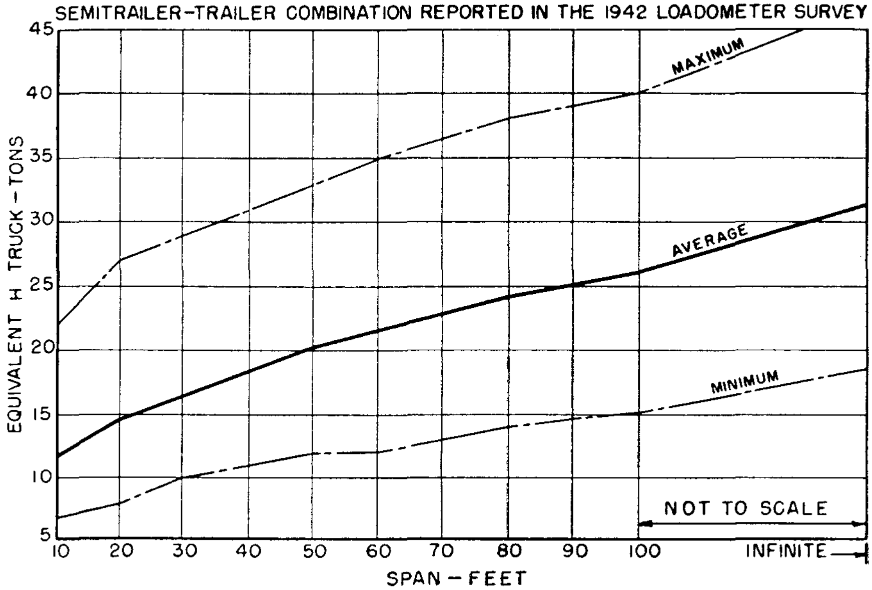


MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
176 TYPE 3-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK - TONS
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
0
5
10
15
20
25
30
35
40
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN - FEET
NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS
IN TONS ARE IDENTICAL AT INFINITE SPAN
RANGE, D, AND K - TONS
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
0
5
10
15
20
25
29
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN - FEET

Figure 17.11

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR THE 83 TRUCK-TRACTOR SEMITRAILER-TRAILER COMBINATIONS
ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 83 TRUCK-TRACTOR SEMITRAILER-TRAILER COMBINATION REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT H TRUCK LOADINGS IN TONS ARE IDENTICAL AT INFINITE SPAN

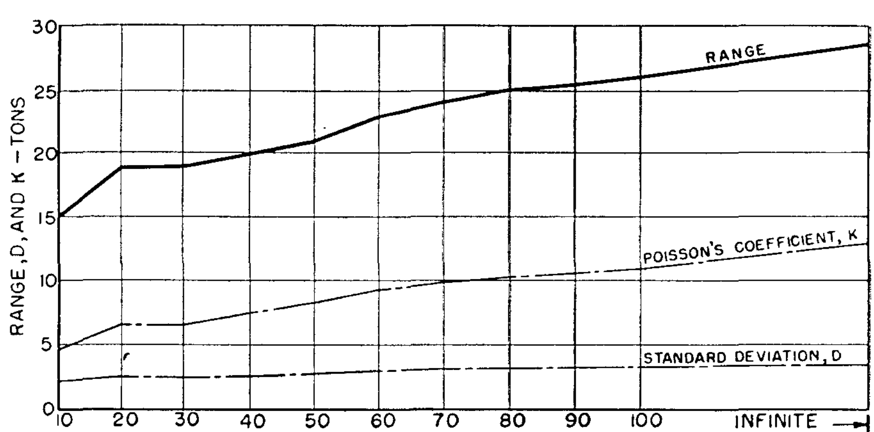


Figure 17.12

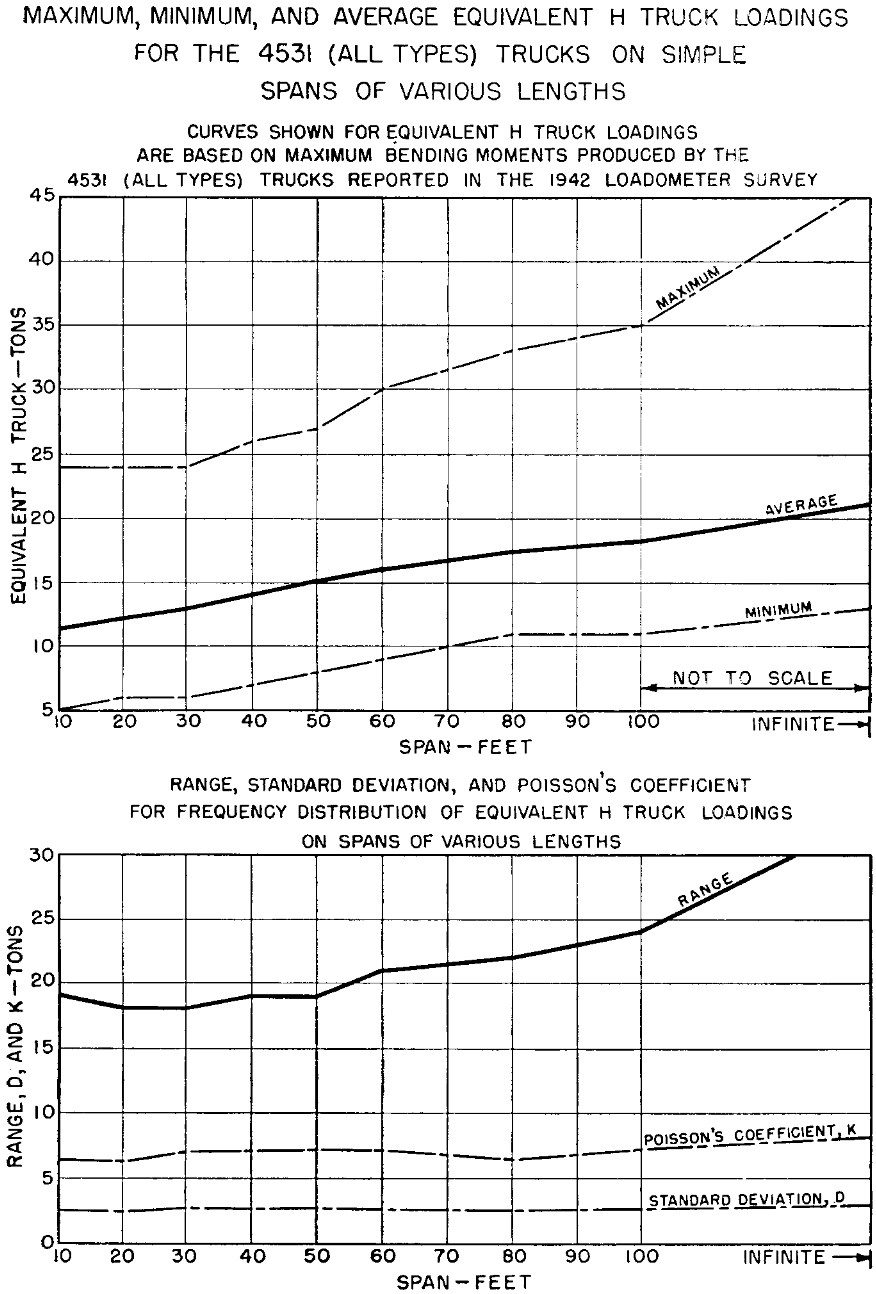

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT H TRUCK LOADINGS
FOR THE 4531 (ALL TYPES) TRUCKS ON SIMPLE
SPANS OF VARIOUS LENGTHS
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
4531 (ALL TYPES) TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK—TONS
45
40
35
30
25
20
15
10
5
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE, D, AND K — TONS
30
25
20
15
10
5
0
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET

Figure 17.13

18. HISTOGRAMS SHOWING FREQUENCY DISTRIBUTIONS OF EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES BASED ON GROSS VEHICLE WEIGHTS

Figures 18.1—18.11 present a graphical representation of the observed and calculated frequencies of equivalent H truck loadings on simple spans up to 100 feet in length for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey; and Figure 18.12 gives the same information for the heavy vehicles reported, representing a combined total of 4531. The histograms represent the observed data, based on 3-item moving averages, and the dashed lines represent the corresponding Poisson distributions. Both the observed and calculated frequencies of equivalent H truck loadings and gross vehicle weights shown in these figures were plotted directly from the corresponding data given by Tables 16.1a—16.12a and 16.1b—16.12b. These distributions are given in the following figures.

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	18.1
3	381	18.2
2-S1	2855	18.3
2-S2	508	18.4
3-S1	9	18.5
3-S2	142	18.6
3-S3	14	18.7
2-2	99	18.8
2-3	24	18.9
3-2	68	18.10
3-3	176	18.11
All	4531	18.12

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE 171 TYPE 2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

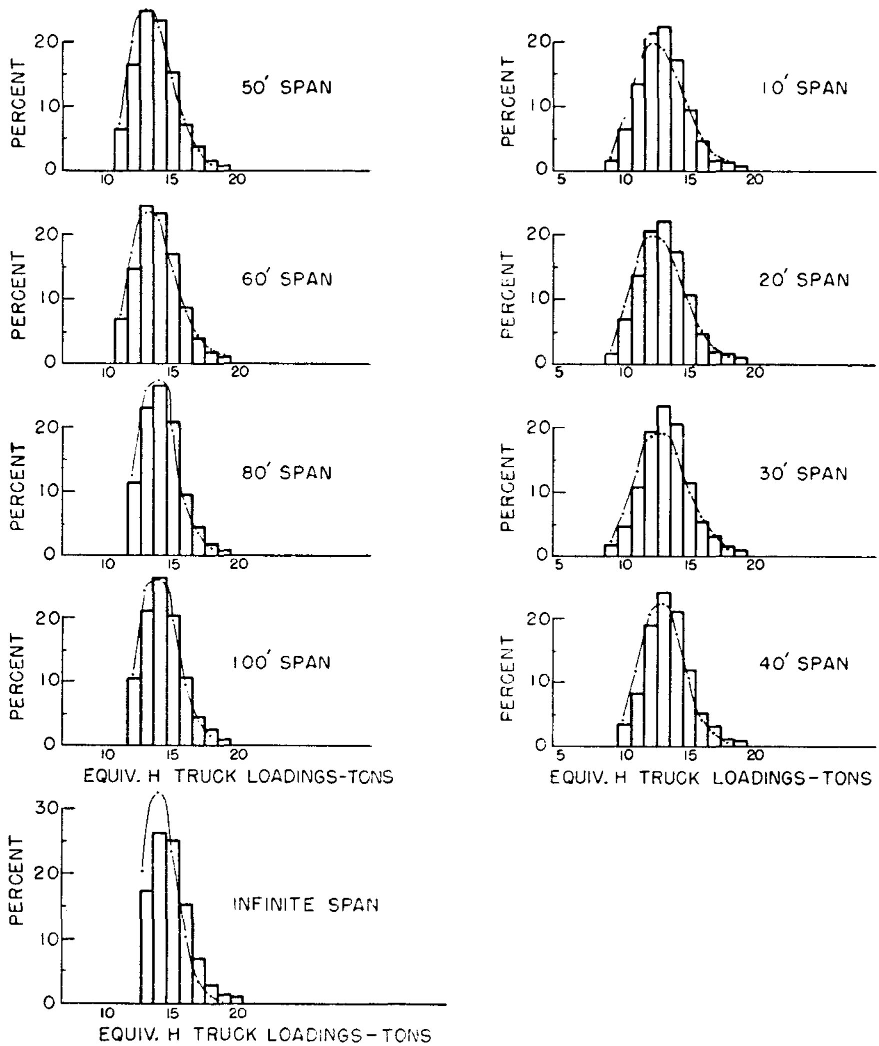


Figure 18.1

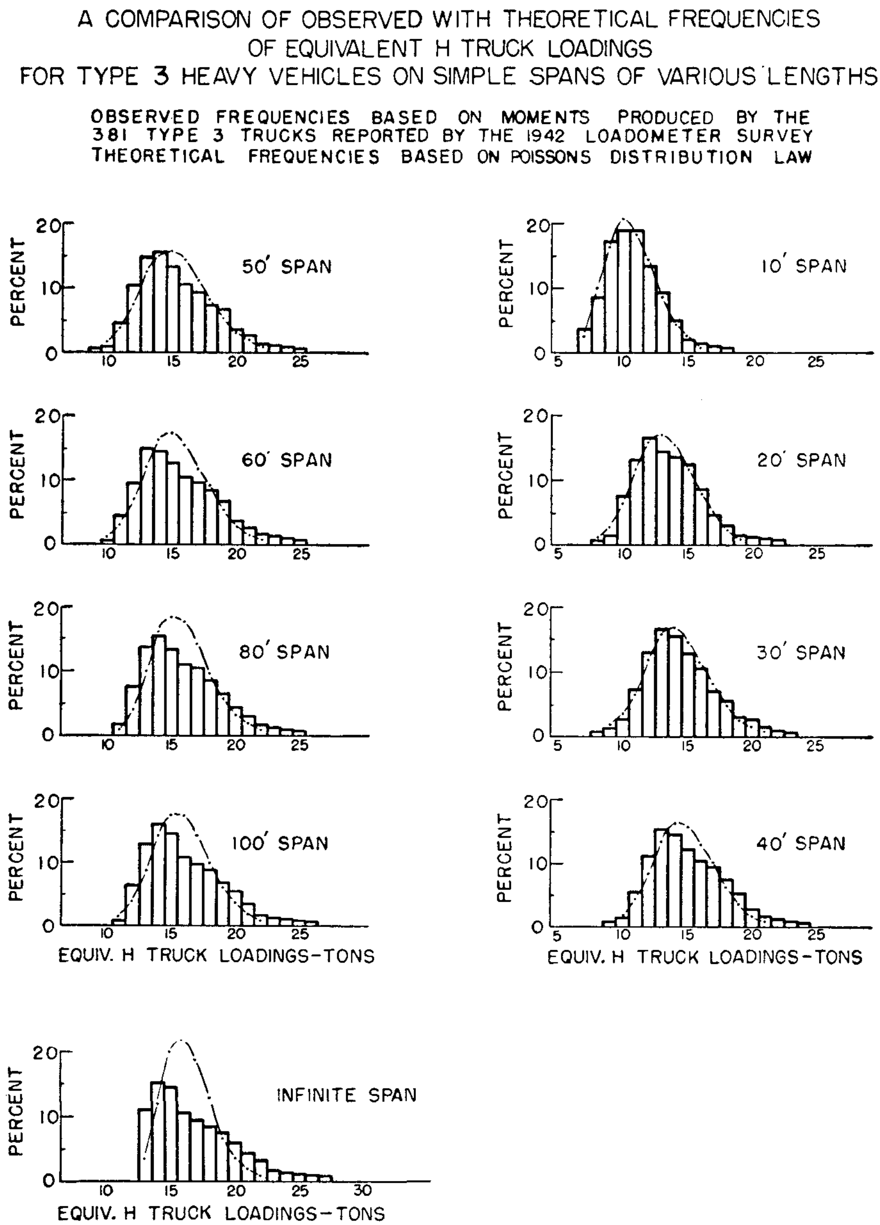

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS
OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
381 TYPE 3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW
PERCENT
50′ SPAN
60′ SPAN
80′ SPAN
100′ SPAN
10′ SPAN
20′ SPAN
30′ SPAN
40′ SPAN
INFINITE SPAN
EQUIV. H TRUCK LOADINGS-TONS

Figure 18.2

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 2-SI HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE 2855 TYPE 2-SI TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

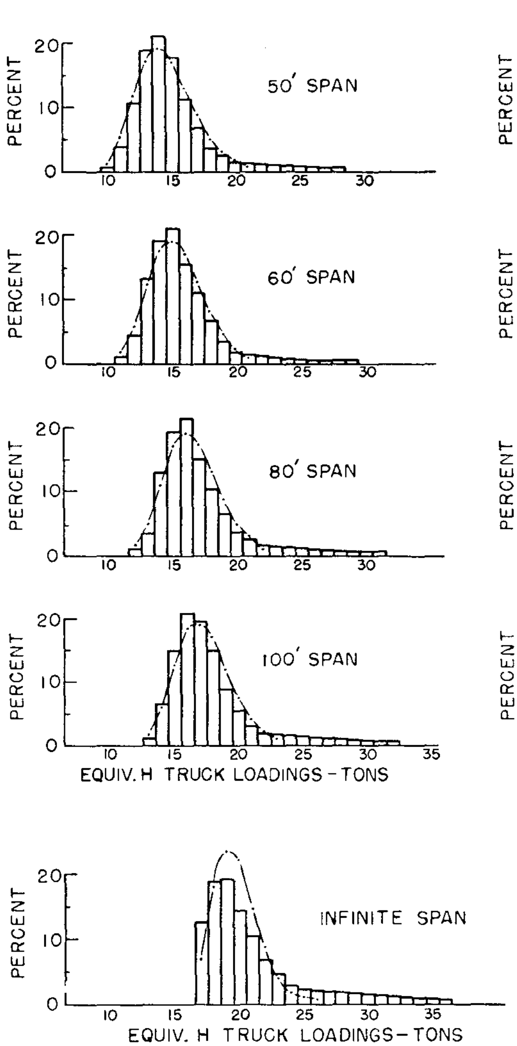


Figure 18.3

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 2-S2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
508 TYPE 2-S2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

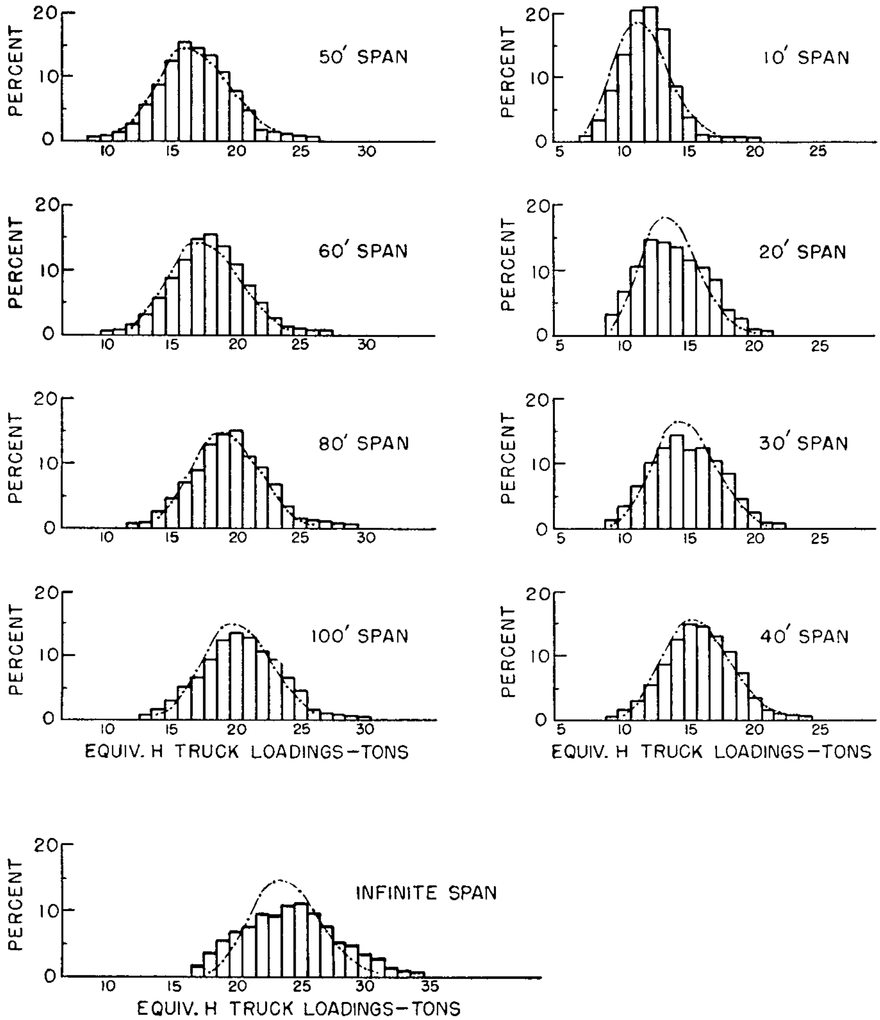


Figure 18.4

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-SI HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS
OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
9 TYPE 3-SI TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

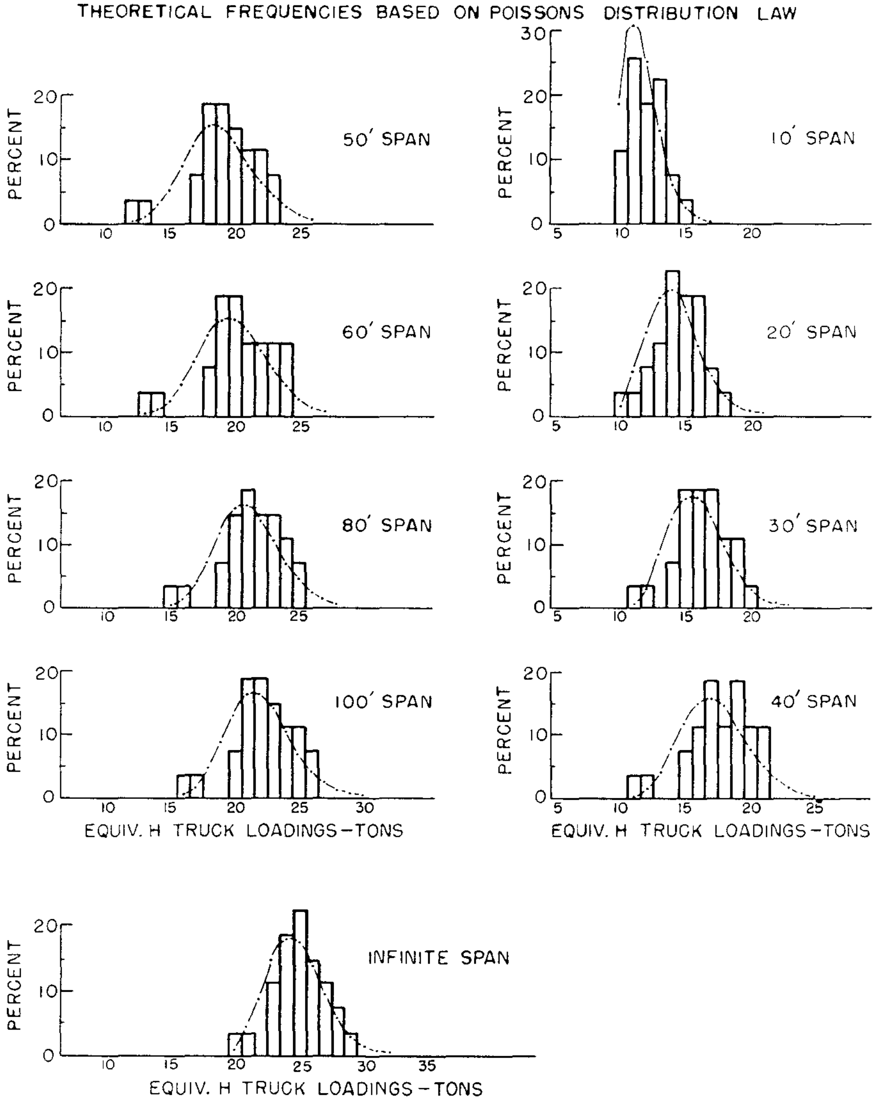


Figure 18.5

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-S2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
142 TYPE 3-S2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

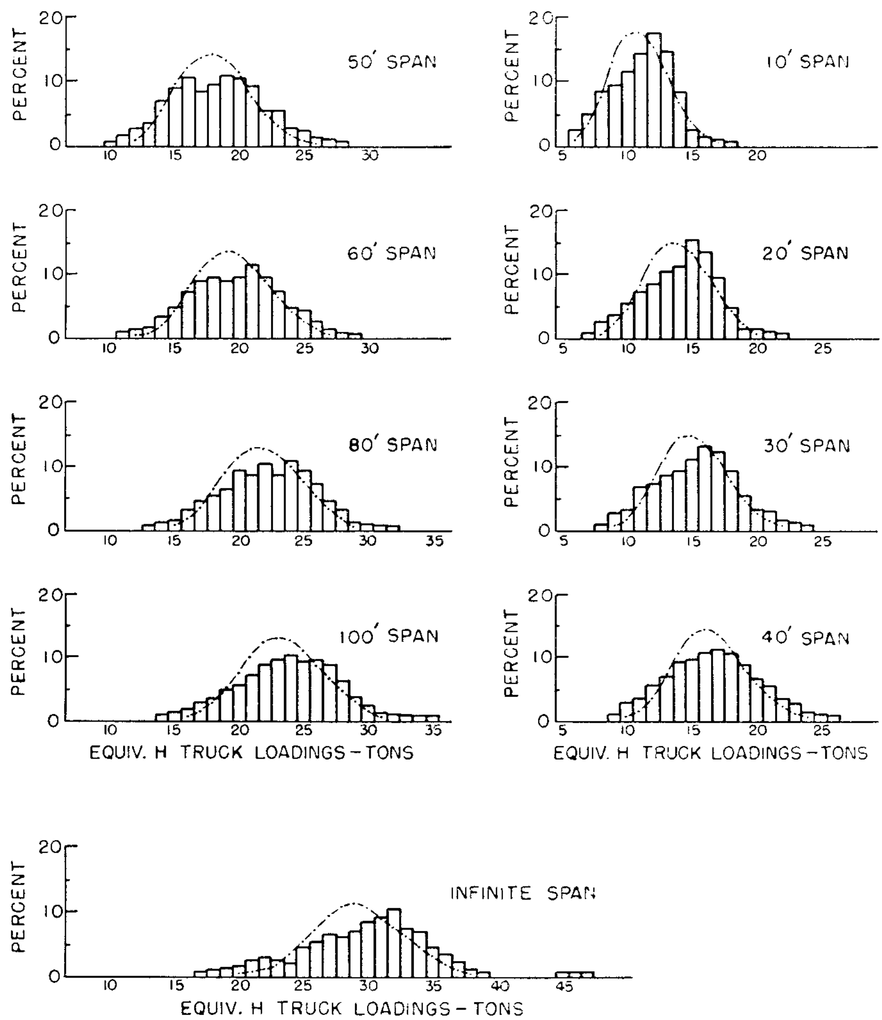


Figure 18.6

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-S3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
14 TYPE 3-S3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

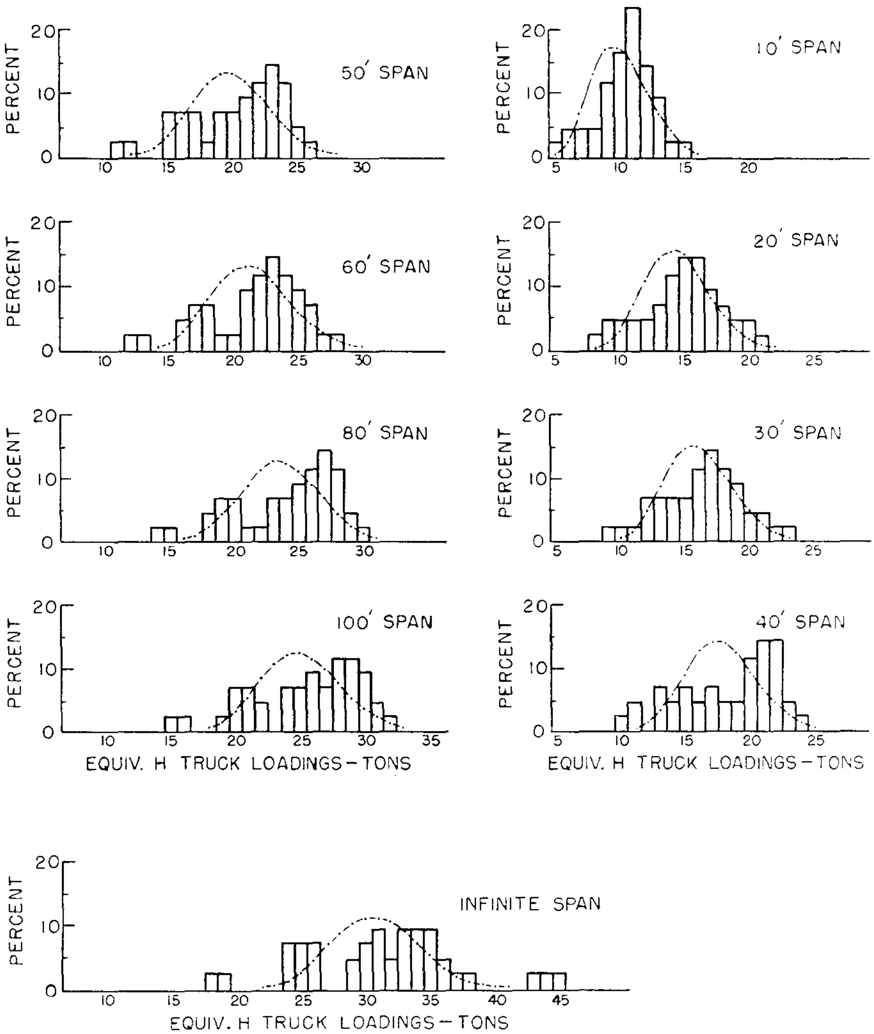


Figure 18.7

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 2-2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE 99 TYPE 2-2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

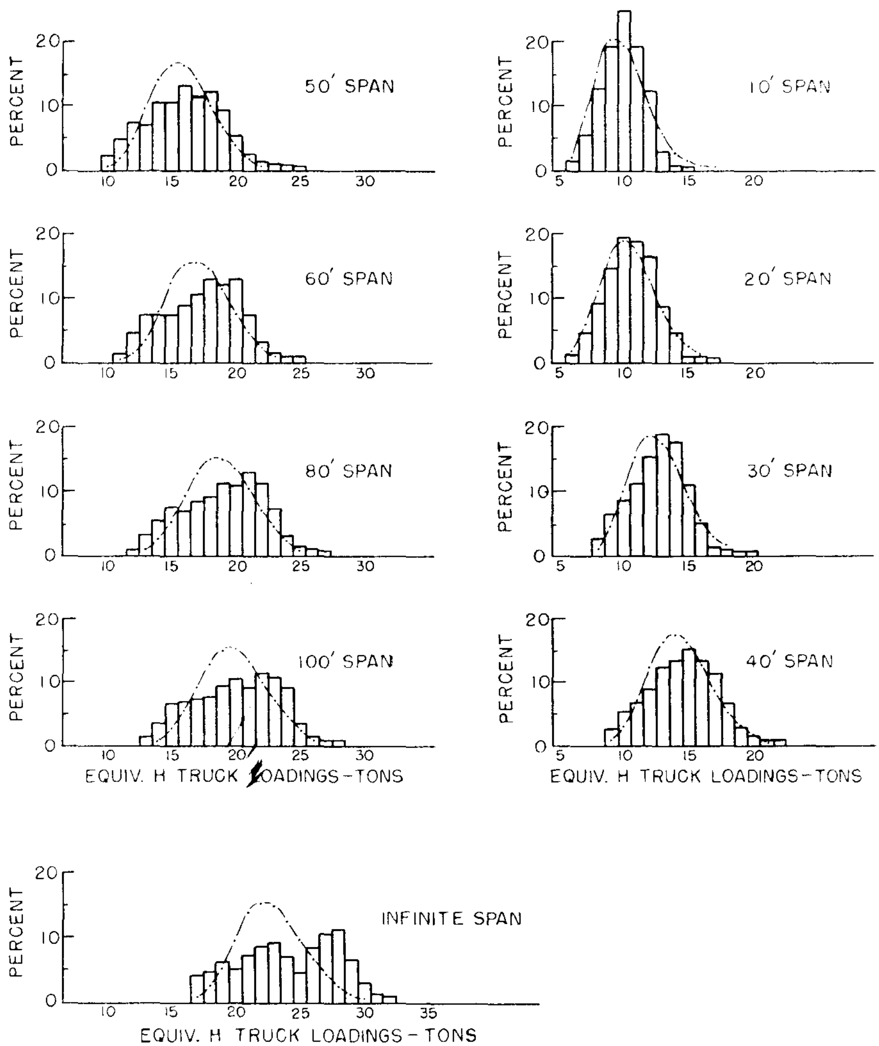


Figure 18.8

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 2-3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE 24 TYPE 2-3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

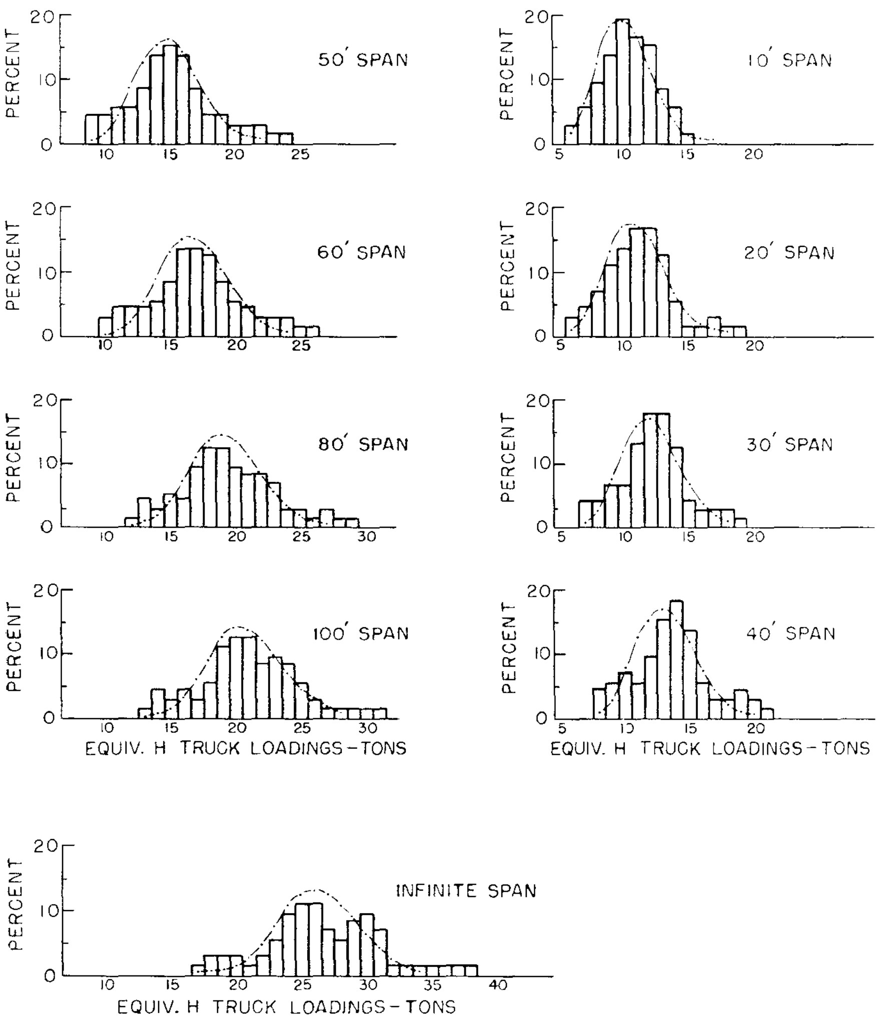


Figure 18.9

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE 68 TYPE 3-2 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

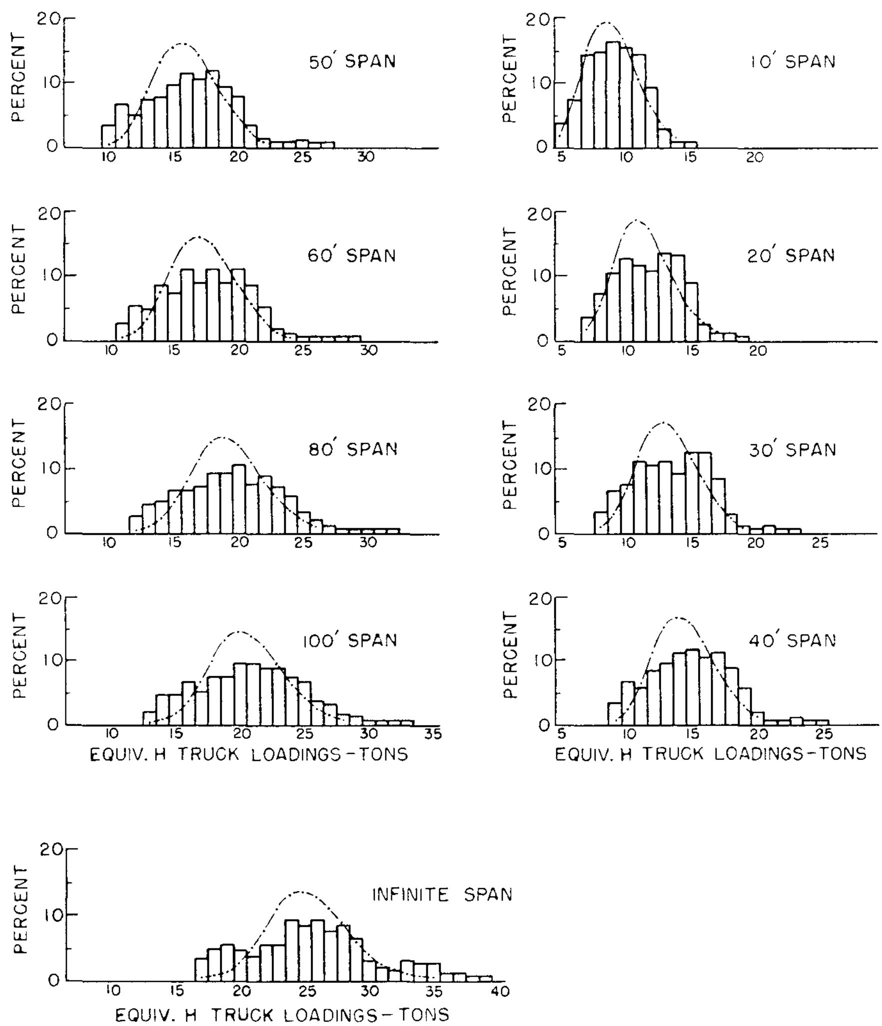


Figure 18.10

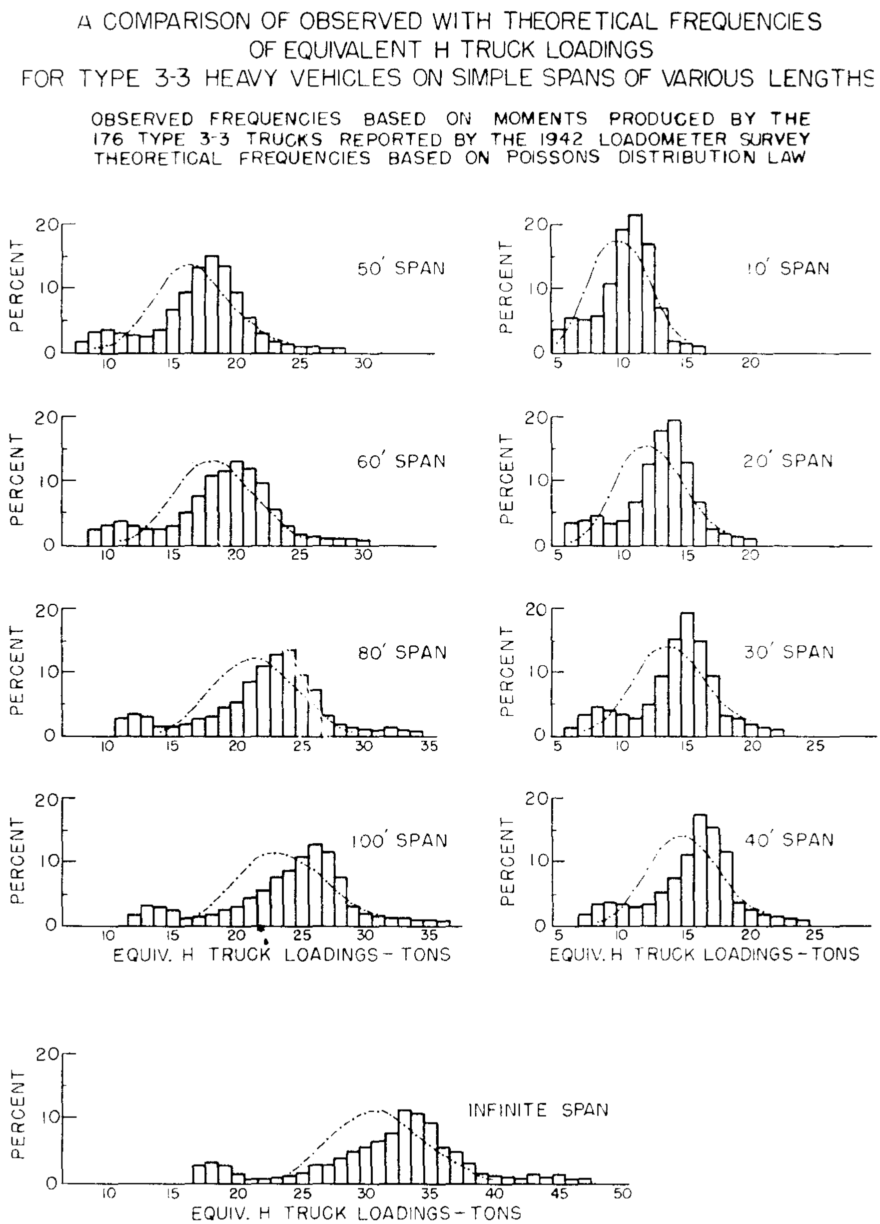

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR TYPE 3-3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS
OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
176 TYPE 3-3 TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW
50' SPAN
10' SPAN
60' SPAN
20' SPAN
80' SPAN
30' SPAN
100' SPAN
40' SPAN
INFINITE SPAN
PERCENT
EQUIV. H TRUCK LOADINGS - TONS

Figure 18.11

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS
FOR ALL HEAVY TYPE VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY THE
4531 HEAVY VEHICLES REPORTED BY THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSONS DISTRIBUTION LAW

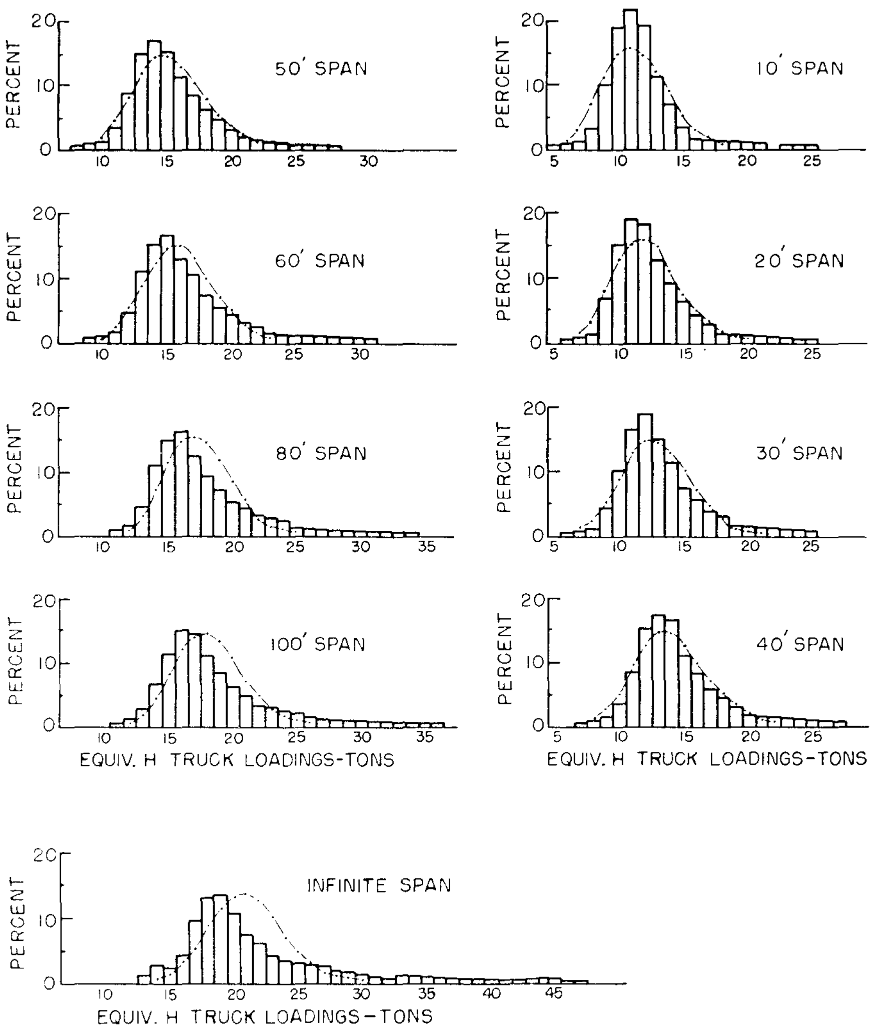


Figure 18.12

19. OBSERVED AND CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES BASED ON VEHICLES WEIGHING ONE KIP EACH

Tables 19.1a—19.11a and Tables 19.1b—19.11b, respectively, give the observed and calculated frequencies of equivalent H truck loadings based on vehicles of unit weight (or vehicles weighing one kip each) on simple spans up to 100 feet in length, for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. The observed frequencies shown in these tables are based on 3-item moving averages which has the effect of smoothing the data from one cell to the next, as explained in Article 15. The implications and potential uses for this type of information are discussed at some length in Article 15.

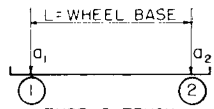
The observed and calculated frequencies of equivalent H truck loadings for each of the 11 heavy vehicle types weighing 1 kip each, on spans up to 100 feet in length are given in the following tables:

Heavy Vehicle Type	Number of Vehicles Reported	Table Number	
		Observed Frequencies	Calculated Frequencies
2	171	19.1a	19.1b
3	381	19.2a	19.2b
2-S1	2855	19.3a	19.3b
2-S2	508	19.4a	19.4b
3-S1	9	19.5a	19.5b
3-S2	142	19.6a	19.6b
3-S3	14	19.7a	19.7b
2-2	99	19.8a	19.8b
2-3	24	19.9a	19.9b
3-2	68	19.10a	19.10b
3-3	176	19.11a	19.11b

The maximum, average, and minimum equivalent H truck loadings, the range, Poisson coefficient, K, and standard deviation, D, shown at the bottom of each of these tables all have the same meaning as explained in Article 15 in connection with the discussion of frequency distributions based either on gross vehicle weights or vehicles weighing one kip each.

Table 19.1a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 171 TYPE 2 TRUCKS WEIGHING ONE KIP EACH



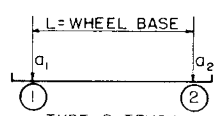
TYPE 2 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
1.00	18.3	18.3	14.5	23.8	25.5	32.2	38.6	45.4
.95	25.5	25.5	19.7	24.2	28.6	31.8	32.7	33.3
.90	20.7	20.9	23.6	23.6	26.3	24.9	23.4	19.7
.85	17.4	17.6	21.8	14.8	13.3	9.2	4.7	1.6
.80	6.6	6.6	13.0	8.8	4.7	1.6	.6	
.75	7.8	7.6	4.9	3.9	1.2	.3		
.70	2.5	2.3	1.6	.6	.4			
.65	1.2	1.2	.6	.3				
.60			.3					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Avg H Truck	.90	.90	.89	.91	.93	.95	.96	.97
Min H Truck	.65	.65	.60	.65	.70	.75	.80	.85
Range	.35	.35	.40	.35	.30	.25	.20	.15
Poisson's Coef. K	2.0	2.0	2.2	1.7	1.4	1.1	.9	.6

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 171 Type 2 trucks reported in the 1942 loadometer survey.

Table 19.1b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 171 TYPE 2 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2 TRUCK

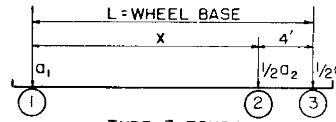
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
1.00	13.5	13.5	11.1	18.2	24.7	33.3	40.7	54.9
.95	27.1	27.1	24.4	31.1	34.5	36.6	36.6	32.9
.90	27.1	27.1	26.8	26.4	24.2	20.1	16.5	9.9
.85	18.0	18.0	19.7	15.0	11.3	7.4	4.9	2.0
.80	9.0	9.0	10.8	6.4	3.9	2.0	1.1	.3
.75	3.6	3.6	4.8	2.2	1.1	.4	.2	
.70	1.2	1.2	1.7	.6	.3	.1		
.65	.3	.3	.5	.1		.1		
.60	.1	.1	.2					
.55	.1	.1						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Avg H Truck	.90	.90	.89	.91	.93	.95	.96	.97
Min H Truck	.55	.55	.60	.65	.70	.65	.75	.80
Range	.45	.45	.40	.35	.30	.35	.25	.20
Poisson's Coef. K	2.0	2.0	2.2	1.7	1.4	1.1	.9	.6
Std. Dev. D	1.414	1.414	1.483	1.304	1.183	1.049	.949	.775

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 171 Type 2 trucks reported in the 1942 loadometer survey.

Table 19.2a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 381 TYPE 3 TRUCKS WEIGHING ONE KIP EACH



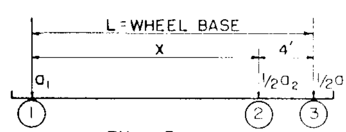
TYPE 3 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
1.00			3.7	15.0	24.0	25.5	34.6	42.4
.95			16.6	26.5	30.6	32.2	32.7	33.1
.90		14.2	27.6	30.5	30.2	30.6	29.5	23.2
.85		25.8	28.2	17.7	10.9	10.2	2.6	1.1
.80		29.0	16.0	6.4	2.7	1.1	.6	.2
.75		20.2	5.3	2.1	1.1	.4		
.70	37.9	7.1	1.5	1.1	.5			
.65	31.2	2.2	.7	.4				
.60	20.2	1.1	.4	.3				
.55	7.5	.4						
.50	2.2							
.45	1.0							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.70	.90	1.00	1.00	1.00	1.00	1.00	1.00
Avg H Truck	.65	.80	.87	.91	.93	.94	.95	.96
Min H Truck	.45	.55	.60	.60	.70	.75	.80	.80
Range	.25	.35	.40	.40	.30	.25	.20	.20
Poisson's Coef. K	1.0	1.9	2.6	1.9	1.4	1.3	1.0	.7

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 381 Type 3 trucks reported in the 1942 loadometer survey.

Table 19.2b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 381 TYPE 3 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3 TRUCK

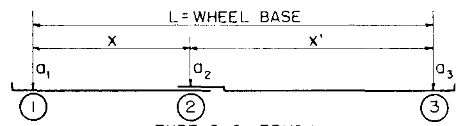
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
1.00			7.4	15.0	24.7	27.3	36.8	49.7
.95			19.3	28.3	34.5	35.4	36.8	34.8
.90		15.0	25.1	27.0	24.2	23.0	18.4	12.2
.85		28.4	21.8	17.1	11.3	10.0	6.1	2.8
.80		27.0	14.1	8.1	3.9	3.2	1.5	.5
.75		17.1	7.4	3.1	1.1	.8	.3	
.70	36.8	8.1	3.2	1.0	.3	.2	.1	
.65	36.8	3.1	1.2	.3		.1		
.60	18.4	1.0	.4	.1				
.55	6.1	.3	.1					
.50	1.5							
.45	.3							
.40	.1							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.70	.90	1.00	1.00	1.00	1.00	1.00	1.00
Avg H Truck	.65	.80	.87	.91	.93	.94	.95	.96
Min H Truck	.40	.55	.55	.60	.70	.65	.70	.80
Range	.30	.35	.45	.40	.30	.35	.30	.20
Poisson's Coef. K	1.0	1.9	2.6	1.9	1.4	1.3	1.0	.7
Std. Dev. D	1.000	1.378	1.612	1.378	1.183	1.140	1.000	.837

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 381 Type 3 trucks reported in the 1942 loadometer survey.

Table 19.3a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



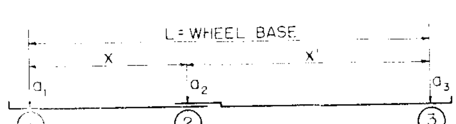
TYPE 2-S1 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.95						.4	4.0	14.5
.90				.4	2.1	5.0	21.5	31.3
.85			.3	2.7	5.3	21.4	31.2	32.8
.80			1.5	4.9	21.3	30.6	29.2	19.3
.75	.3	.7	3.0	17.8	27.5	27.7	11.8	2.0
.70	13.1	13.1	11.3	23.3	27.5	11.8	2.0	.1
.65	12.9	13.6	27.4	27.0	11.7	2.3	.1	
.60	26.6	28.0	30.1	15.3	3.8	.7	.1	
.55	20.3	20.2	21.8	7.3	.6	.1		
.50	20.3	19.5	4.5	1.3	.2			
.45	6.5	4.9	.1					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.75	.75	.85	.90	.90	.95	.95	.95
Avg H Truck	.58	.58	.62	.68	.74	.79	.84	.87
Min H Truck	.45	.45	.45	.50	.50	.55	.60	.70
Range	.30	.30	.40	.40	.40	.40	.35	.25
Poisson's Coef. K	3.4	3.3	4.7	4.5	3.3	3.3	2.3	1.6

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 2855 Type 2-S1 trucks reported in the 1942 loadometer survey.

Table 19.3b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 2855 TYPE 2-S1 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-S1 TRUCK

Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.95						3.7	10.0	20.2
.90				1.1	3.7	12.2	23.1	32.3
.85			.9	5.0	12.2	20.1	26.5	25.8
.80			4.3	11.2	20.1	22.1	20.3	13.8
.75	3.3	3.7	10.0	16.9	22.1	18.2	11.7	5.5
.70	11.3	12.2	15.7	19.0	18.2	12.0	5.4	1.8

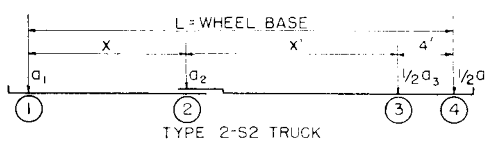
Table 19.3b (Continued)

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.65	19.3	20.1	18.5	17.1	12.0	6.6	2.1	.5
.60	21.9	22.1	17.4	12.8	6.6	3.1	.7	.1
.55	18.6	18.2	13.6	8.2	3.1	1.3	.2	
.50	12.6	12.0	9.1	4.6	1.3	.5		
.45	7.2	6.6	5.4	2.3	.5	.2		
.40	3.5	3.1	2.8	1.0	.2			
.35	1.5	1.3	1.3	.4				
.30	.6	.5	.6	.2				
.25	.2	.2	.2	.1				
.20			.1	.1				
.15			.1					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.75	.75	.85	.90	.90	.95	.95	.95
Avg H Truck	.58	.58	.62	.68	.74	.79	.84	.87
Min H Truck	.25	.25	.15	.20	.40	.45	.55	.60
Range	.50	.50	.70	.70	.50	.50	.40	.35
Poisson's Coef. K	3.4	3.3	4.7	4.5	3.3	3.3	2.3	1.6
Std. Dev. D	1.844	1.817	2.168	2.121	1.817	1.817	1.517	1.265

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 2855 Type 2-S1 trucks reported in the 1942 loadometer survey.

Table 19.4a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 508 TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH

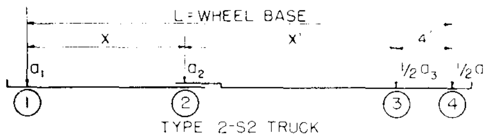


Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.95							4.3	11.6
.90					.9	4.9	16.3	24.5
.85				1.0	4.4	12.9	24.3	31.6
.80			.9	4.4	12.9	22.3	28.0	22.3
.75			4.3	12.4	22.1	25.8	16.9	8.8
.70		1.1	21.2	25.5	25.8	20.3	8.8	1.2
.65	.7	19.2	22.1	24.4	18.9	10.5	1.3	
.60	.4	19.3	28.8	19.3	10.4	3.2	.1	
.55	30.3	32.6	11.8	7.2	3.2	.1		
.50	30.3	14.1	10.8	4.5	1.3			
.45	32.9	13.7	.1	1.3	.1			
.40	2.7							
.35	2.7							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.65	.70	.80	.85	.90	.90	.95	.95
Avg H Truck	.49	.56	.62	.66	.71	.76	.82	.85
Min H Truck	.35	.45	.45	.45	.45	.55	.60	.70
Range	.30	.25	.35	.40	.45	.35	.35	.25
Poisson's Coef. K	3.1	2.8	3.5	3.8	3.9	2.9	2.7	2.0

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 508 Type 2-S2 trucks reported in the 1942 loadometer survey.

Table 19.4b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 508 TYPE 2-S2 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



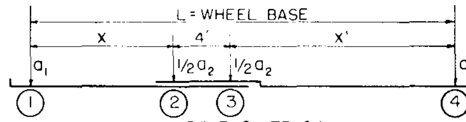
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100
.95							6.7	13.5
.90					2.0	5.5	18.1	27.1
.85				2.2	7.9	16.0	24.5	27.1
.80			3.0	8.5	15.4	23.1	22.0	18.0
.75			10.6	16.2	20.0	22.4	14.9	9.0
.70		6.1	18.5	20.5	19.5	16.2	8.0	3.6
.65	4.5	17.0	21.6	19.4	15.2	9.4	3.6	1.2
.60	14.0	23.8	18.9	14.8	9.9	4.5	1.4	.3
.55	21.6	22.2	13.2	9.4	5.5	1.9	.5	.1
.50	22.4	15.6	7.7	5.1	2.7	.7	.1	.1
.45	17.3	8.7	3.9	2.4	1.2	.2	.1	
.40	10.7	4.1	1.7	1.0	.5	.1	.1	
.35	5.6	1.6	.7	.4	.2			
.30	2.5	.6	.2	.1				
.25	1.0	.2						
.20	.3	.1						
.15	.1							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.65	.70	.80	.85	.90	.90	.95	.95
Avg H Truck	.49	.56	.62	.66	.71	.76	.82	.85
Min H Truck	.15	.20	.30	.30	.35	.40	.40	.50
Range	.50	.50	.50	.55	.55	.50	.55	.45
Poisson's Coef. K	3.1	2.8	3.5	3.8	3.9	2.9	2.7	2.0
Std. Dev. D	1.761	1.673	1.871	1.949	1.975	1.703	1.643	1.414

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 508 Type 2-S2 trucks reported in the 1942 loadometer survey.

Table 19.5a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 9 TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



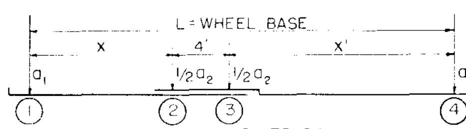
TYPE 3-S1 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.90							37.0	55.6
.85					14.8	37.0	29.6	33.3
.80				11.1	29.6	29.6	25.9	7.4
.75				25.9	25.9	22.2	3.7	3.7
.70			29.6	25.9	18.5	3.7	3.8	
.65			29.6	22.2	3.7	3.7		
.60		44.5	29.6	7.4	3.7	3.8		
.55		33.3	7.4	3.7	3.8			
.50	55.6	14.8	3.8	3.8				
.45	33.3	7.4						
.40	7.4							
.35	3.7							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.70	.80	.85	.85	.90	.90
Avg H Truck	.48	.57	.64	.69	.76	.79	.85	.88
Min H Truck	.35	.45	.50	.50	.55	.60	.70	.75
Range	.15	.15	.20	.30	.30	.25	.20	.15
Poisson's Coef. K	.3	.7	1.2	2.1	1.9	1.1	1.0	.3

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 9 Type 3-S1 trucks reported in the 1942 loadometer survey.

Table 19.5b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 9 TYPE 3-S1 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-S1 TRUCK

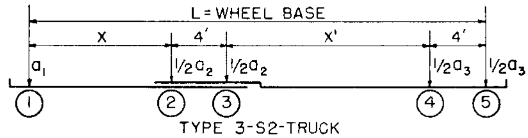
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.90							36.2	74.1
.85					15.0	33.3	36.8	22.2
.80				12.2	28.4	36.6	18.4	3.3
.75				25.7	27.0	20.1	6.1	.3
.70			30.1	27.0	17.1	7.4	1.5	.1
.65			36.1	18.9	8.1	2.0	.3	
.60		49.7	21.7	9.9	3.1	.4	.1	
.55		34.8	8.7	4.2	1.0	.1		
.50	74.1	12.2	2.6	1.5	.3	.1		
.45	22.2	2.8	.6	.4				
.40	3.3	.5	.1	.1				
.35	.3		.1	.1				
.30	.1							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.70	.80	.85	.85	.90	.90
Avg H Truck	.48	.57	.64	.69	.76	.79	.85	.88
Min H Truck	.30	.40	.35	.35	.50	.50	.60	.70
Range	.20	.20	.35	.45	.35	.35	.30	.20
Poisson's Coef. K	.3	.7	1.2	2.1	1.9	1.1	1.0	.3
Std. Dev. D	.548	.837	1.095	1.449	1.378	1.049	1.000	.548

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 9 Type 3-S1 trucks reported in the 1942 loadometer survey.

Table 19.6a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 142 TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH

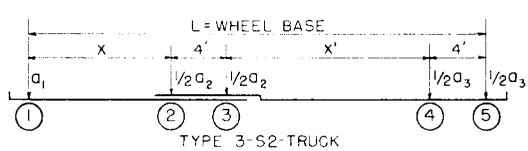


Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.90								9.9
.85						.8	11.5	23.9
.80					1.4	6.3	23.7	32.2
.75				3.3	6.3	15.7	28.4	23.9
.70			1.4	5.9	14.1	23.9	23.0	9.4
.65			4.9	10.3	20.9	23.7	9.6	.7
.60		1.9	17.1	18.1	23.0	17.4	3.3	
.55		15.5	30.3	26.8	19.0	8.9	.5	
.50	1.9	27.0	28.4	22.5	11.3	3.3		
.45	15.0	32.4	16.0	12.4	4.0			
.40	27.0	17.8	1.9	.7				
.35	32.4	5.4						
.30	18.3							
.25	5.4							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.70	.75	.80	.85	.85	.90
Avg H Truck	.37	.47	.53	.56	.61	.67	.75	.80
Min H Truck	.25	.35	.40	.40	.45	.50	.55	.65
Range	.25	.25	.30	.35	.35	.35	.30	.25
Poisson's Coef. K	2.7	2.6	3.3	3.8	3.8	3.7	2.1	2.0

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 142 Type 3-S2 trucks reported in the 1942 loadometer survey.

Table 19.6b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 142 TYPE 3-S2 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.90								13.5
.85						2.5	12.2	27.1
.80					2.2	9.1	25.7	27.1
.75				2.2	8.5	16.9	27.0	18.0
.70			3.7	8.5	16.2	20.9	18.9	9.0

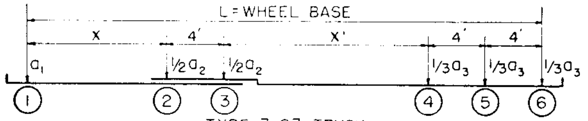
Table 19.6b (Cointinued)

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.65			12.2	16.2	20.5	19.3	9.9	3.6
.60		7.4	20.1	20.5	19.4	14.3	4.2	1.2
.55		19.3	22.1	19.4	14.8	8.8	1.5	.3
.50	6.7	25.1	18.2	14.8	9.4	4.7	.4	.1
.45	18.1	21.8	12.0	9.4	5.1	2.2	.1	.1
.40	24.5	14.1	6.6	5.1	2.4	.9	.1	
.35	22.0	7.4	3.1	2.4	1.0	.3		
.30	14.9	3.2	1.3	1.0	.4	.1		
.25	3.0	1.2	.5	.4	.1			
.20	3.6	.4	.2	.1				
.15	1.4	.1						
.10	.5							
.05	.3							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.70	.75	.80	.85	.85	.90
Avg H Truck	.37	.47	.53	.56	.61	.67	.75	.80
Min H Truck	.05	.15	.20	.20	.25	.30	.40	.45
Range	.45	.45	.50	.55	.55	.55	.45	.45
Poisson's Coef. K	2.7	2.6	3.3	3.8	3.8	3.7	2.1	2.0
Std. Dev. D	1.643	1.612	1.817	1.949	1.949	1.924	1.449	1.414

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 142 Type 3-S2 trucks reported in the 1942 loadometer survey.

Table 19.7a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 14 TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH



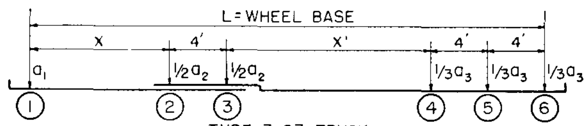
TYPE 3-S3 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.85								47.6
.80							50.0	30.9
.75						28.6	28.6	14.3
.70					35.7	28.6	9.5	4.8
.65				21.4	31.0	23.8	4.8	2.4
.60			11.9	30.9	16.7	7.1	4.7	
.55		11.9	30.9	31.0	11.9	4.8	2.4	
.50		30.9	31.0	14.3	2.4	4.7		
.45		31.0	23.8	2.4	2.3	2.4		
.40	11.9	23.8	2.4					
.35	33.3	2.4						
.30	28.6							
.25	26.2							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.40	.55	.60	.65	.70	.75	.80	.85
Avg H Truck	.32	.46	.51	.58	.65	.68	.76	.82
Min H Truck	.25	.35	.40	.45	.45	.45	.55	.65
Range	.15	.20	.20	.20	.25	.30	.25	.20
Poisson's Coef. K	1.6	1.7	1.7	1.4	1.1	1.5	.7	.6

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 14 Type 3-S3 trucks reported in the 1942 loadometer survey.

Table 19.7b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 14 TYPE 3-S3 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-S3 TRUCK

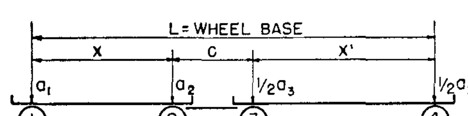
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.85								54.9
.80							49.6	32.9
.75						22.3	34.8	9.9
.70					33.3	33.5	12.2	2.0
.65				24.7	36.6	25.1	2.8	.3
.60			18.3	34.5	20.1	12.6	.5	
.55		18.3	31.1	24.2	7.4	4.7	.1	
.50		31.1	26.4	11.3	2.0	1.4		
.45		26.4	15.0	3.9	.4	.4		
.40	20.2	15.0	6.4	1.1	.1			
.35	32.3	6.4	2.2	.3	.1			
.30	25.8	2.2	.6					
.25	13.8	.6						
.20	5.5							
.15	1.8							
.10	.5							
.05	.1							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.40	.55	.60	.65	.70	.75	.80	.85
Avg H Truck	.32	.46	.51	.58	.65	.67	.78	.82
Min H Truck	.05	.25	.30	.35	.35	.45	.55	.65
Range	.35	.30	.30	.30	.35	.30	.25	.20
Poisson's Coef. K	1.6	1.7	1.7	1.4	1.1	1.5	.7	.6
Std. Dev. D	1.265	1.304	1.304	1.183	1.049	1.225	.837	.775

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 14 Type 3-S3 trucks reported in the 1942 loadometer survey.

Table 19.8a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 99 TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-2 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.90							7.4	26.3
.85						5.7	23.9	32.7
.80					7.1	17.9	31.7	30.0
.75				6.7	15.2	25.3	26.9	10.4
.70			3.3	10.1	24.6	27.9	9.4	.6
.65			7.1	20.2	23.6	15.2	.7	
.60		2.3	15.8	23.2	18.2	7.1		
.55		16.5	21.2	22.9	7.0	.7		

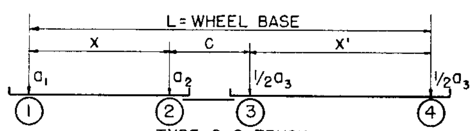
Table 19.8a (Continued)

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100
.50	19.6	16.5	26.3	11.5	4.3	.2		
.45	33.3	31.7	16.5	5.1				
.40	23.9	16.8	9.8	.3				
.35	23.2	16.2						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.70	.75	.80	.85	.90	.90
Avg H Truck	.43	.45	.53	.60	.67	.72	.80	.84
Min H Truck	.35	.35	.40	.40	.50	.50	.65	.70
Range	.15	.25	.30	.35	.30	.35	.25	.20
Poisson's Coef. K	1.4	2.9	3.5	3.0	2.7	2.5	2.1	1.2

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 99 Type 2-2 trucks reported in the 1942 loadometer survey.

Table 19.8b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 99 TYPE 2-2 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-2 TRUCK

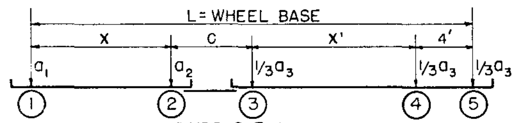
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100
.90							12.2	30.1
.85						8.2	25.7	36.1
.80					6.7	20.5	27.0	21.7
.75				5.0	18.1	25.7	18.9	8.7
.70			3.0	14.9	24.5	21.4	9.9	2.6
.65			10.6	22.4	22.0	13.4	4.2	.6
.60		5.5	18.5	22.4	14.9	6.7	1.5	.1
.55		16.0	21.6	16.8	8.0	2.8	.4	.1
.50	24.7	23.1	18.9	10.1	3.6	1.0	.1	
.45	34.5	22.4	13.2	5.0	1.4	.3	.1	
.40	24.2	16.2	7.7	2.2	.5			
.35	11.3	9.4	3.9	.8	.1			
.30	3.9	4.5	1.7	.3	.1			
.25	1.1	1.9	.7	.1	.1			
.20	.3	.7	.2					
.15		.2						
.10		.1						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.70	.75	.80	.85	.90	.90
Avg H Truck	.43	.45	.53	.60	.67	.72	.80	.84
Min H Truck	.20	.10	.20	.25	.25	.45	.45	.55
Range	.30	.50	.50	.50	.55	.40	.45	.35
Poisson's Coef. K	1.4	2.9	3.5	3.0	2.7	2.5	2.1	1.2
Std. Dev. D	1.183	1.703	1.871	1.732	1.643	1.581	1.449	1.095

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 99 Type 2-2 trucks reported in the 1942 loadometer survey.

Table 19.9a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 24 TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH



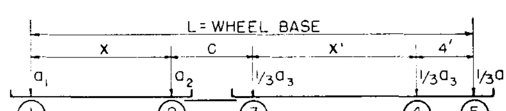
TYPE 2-3 TRUCK

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.85								19.5
.80							19.5	33.3
.75							33.3	30.6
.70						22.2	30.6	16.6
.65					19.5	29.2	16.6	
.60				11.0	29.2	27.8		
.55			18.1	18.1	30.6	16.7		
.50	8.3	12.5	22.2	30.6	16.6	4.1		
.45	29.2	33.3	29.2	25.0	4.1			
.40	27.8	29.2	19.4	15.3				
.35	29.2	25.0	11.1					
.30	4.2							
.25	1.3							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.50	.55	.60	.65	.70	.80	.85
Avg H Truck	.40	.42	.46	.49	.57	.63	.73	.78
Min H Truck	.25	.35	.35	.40	.45	.50	.65	.70
Range	.25	.15	.20	.20	.20	.20	.15	.15
Poisson's Coef. K	1.9	1.6	1.8	2.1	1.5	1.5	1.4	1.4

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 24 Type 2-3 trucks reported in the 1942 loadometer survey.

Table 19.9b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 24 TYPE 2-3 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-3 TRUCK

Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.85								24.7
.80							24.7	34.5
.75							34.5	24.2
.70						22.3	24.2	11.3
.65					22.3	33.5	11.3	3.9
.60				12.2	33.5	25.1	3.9	1.1
.55			16.5	25.7	25.1	12.6	1.1	.3

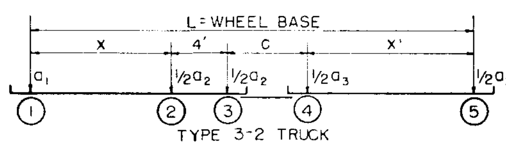
Table 19.9b (Continued)

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.50	15.0	20.2	29.8	27.0	12.6	4.7	.3	
.45	28.4	32.3	26.8	18.9	4.7	1.4		
.40	27.0	25.8	16.1	9.9	1.4	.4		
.35	17.1	13.8	7.2	4.2	.4			
.30	8.1	5.5	2.6	1.5				
.25	3.1	1.8	.8	.4				
.20	1.0	.5	.2	.1				
.15	.3	.1		.1				
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.50	.55	.60	.65	.70	.80	.85
Avg H Truck	.40	.42	.46	.49	.57	.63	.73	.78
Min H Truck	.15	.15	.20	.15	.35	.40	.50	.55
Range	.35	.35	.35	.45	.30	.30	.30	.30
Poisson's Coef. K	1.9	1.6	1.8	2.1	1.5	1.5	1.4	1.4
Std. Dev. D	1.378	1.265	1.342	1.449	1.225	1.225	1.183	1.183

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 24 Type 2-3 trucks reported in the 1942 loadometer survey.

Table 19.10a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 68 TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH

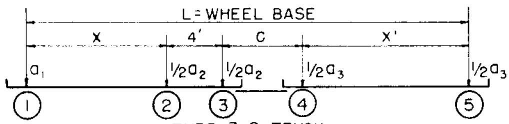


Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.90								12.7
.85							17.7	27.0
.80						7.4	27.0	32.4
.75					9.3	20.1	31.9	21.6
.70				10.8	18.1	26.0	17.1	6.3
.65			9.8	15.7	27.9	27.0	6.3	
.60		1.4	15.7	24.5	25.0	13.2		
.55		14.7	32.8	23.5	15.2	6.3		
.50	1.0	15.2	24.0	17.7	4.5			
.45	14.7	32.4	17.7	7.8				
.40	14.2	18.6						
.35	32.8	17.7						
.30	18.6							
.25	18.7							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.65	.70	.75	.80	.85	.90
Avg H Truck	.35	.45	.54	.58	.63	.68	.77	.81
Min H Truck	.25	.35	.45	.45	.50	.55	.65	.70
Range	.25	.25	.20	.25	.25	.25	.20	.20
Poisson's Coef. K	3.1	3.0	2.2	2.4	2.3	2.4	1.7	1.8

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 68 Type 3-2 trucks reported in the 1942 loadometer survey.

Table 19.10b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 68 TYPE 3-2 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-2 TRUCK

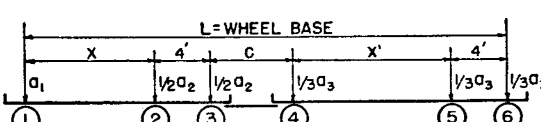
Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100
.90								16.5
.85							18.3	29.8
.80						9.1	31.1	26.8
.75					10.0	21.8	26.4	16.1
.70				9.1	23.1	26.1	15.0	7.2
.65			11.1	21.8	26.5	20.9	6.4	2.6
.60		5.0	24.4	26.1	20.3	12.5	2.2	.8
.55		14.9	26.8	20.9	11.7	6.0	.6	.2
.50	4.5	22.4	19.7	12.5	5.4	2.4		
.45	14.0	22.4	10.8	6.0	2.1	.8		
.40	21.6	16.8	4.8	2.4	.7	.2		
.35	22.4	10.1	1.7	.8	.2	.1		
.30	17.3	5.0	.5	.2		.1		
.25	10.7	2.2	.2	.1				
.20	5.6	.8		.1				
.15	2.5	.3						
.10	1.0	.1						
.05	.4							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.50	.60	.65	.70	.75	.80	.85	.90
Avg H Truck	.35	.45	.54	.58	.63	.68	.77	.81
Min H Truck	.05	.10	.25	.20	.35	.30	.55	.55
Range	.45	.50	.40	.50	.40	.50	.30	.35
Poisson's Coef. K	3.1	3.0	2.2	2.4	2.3	2.4	1.7	1.8
Std. Dev. D	1.761	1.732	1.483	1.549	1.517	1.549	1.304	1.342

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 68 Type 3-2 trucks reported in the 1942 loadometer survey.

Table 19.11a

OBSERVED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS BASED ON MOMENTS PRODUCED BY THE 176 TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-3 TRUCK

Equivalent H Truck Loadings	Span-Feet 10	20	30	40	50	60	80	100
.85								9.9
.80							5.3	27.7
.75							25.6	32.4
.70						8.6	32.0	23.8
.65					5.0	21.6	28.4	5.7
.60				4.7	18.6	31.7	7.8	.5
.55			3.8	18.6	31.6	24.5	.9	

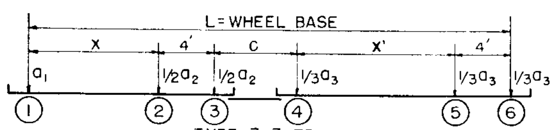
Table 19.11a (Continued)

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.50		2.1	20.1	31.6	28.8	11.8		
.45		30.5	30.5	29.2	14.8	1.3		
.40	1.9	32.4	30.7	14.8	1.2	.5		
.35	29.7	32.2	13.3	1.1				
.30	32.4	2.8	1.6					
.25	32.4							
.20	3.6							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.40	.50	.55	.60	.65	.70	.80	.85
Avg H Truck	.30	.40	.43	.48	.53	.59	.69	.76
Min H Truck	.20	.30	.30	.35	.40	.40	.55	.60
Range	.20	.20	.25	.25	.25	.30	.25	.25
Poisson's Coef. K	2.1	2.0	2.3	2.3	2.3	2.2	2.1	1.9

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 176 Type 3-3 trucks reported in the 1942 loadometer survey.

Table 19.11b

CALCULATED FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS OF THE 176 TYPE 3-3 TRUCKS BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-3 TRUCK

Equivalent H truck loadings based on moments produced by gross vehicle weights. Equivalent H truck loadings which appear less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent H Truck Loadings	Span-Feet							
	10	20	30	40	50	60	80	100
.85								15.0
.80							12.2	28.4
.75							25.7	27.0
.70						11.1	27.0	17.1
.65					10.0	24.4	18.9	8.1
.60				10.0	23.1	26.8	9.9	3.1
.55			10.0	23.1	26.5	19.7	4.2	1.0
.50		13.5	23.1	26.5	20.3	10.8	1.5	.3
.45		27.1	26.5	20.3	11.7	4.8	.4	
.40	12.2	27.1	20.3	11.7	5.4	1.7	.1	
.35	25.7	18.0	11.7	5.4	2.1	.5	.1	
.30	27.0	9.0	5.4	2.1	.7	.2		
.25	18.9	3.6	2.1	.7	.2			
.20	9.9	1.2	.7	.2				
.15	4.2	.3	.2					
.10	1.5	.1						
.05	.6	.1						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max H Truck	.40	.50	.55	.60	.65	.70	.80	.85
Avg H Truck	.30	.40	.43	.48	.53	.59	.69	.76
Min H Truck	.05	.05	.15	.20	.25	.30	.35	.50
Range	.35	.45	.40	.40	.40	.40	.45	.35
Poisson's Coef. K	2.1	2.0	2.3	2.3	2.3	2.2	2.1	1.9
Std. Dev. D	1.449	1.414	1.517	1.517	1.517	1.483	1.449	1.378

The equivalent H truck loadings shown for the unit weight trucks of this table are proportional to the equivalent H truck loadings based on gross weights for corresponding vehicles among the 176 Type 3-3 trucks reported in the 1942 loadometer survey.

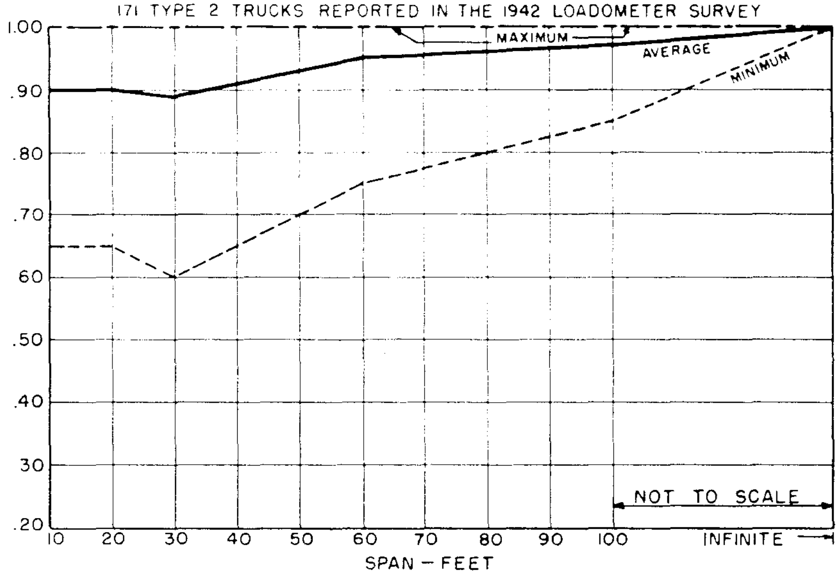
20. MAXIMUM, AVERAGE, AND MINIMUM EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES BASED ON VEHICLES WEIGHING ONE KIP EACH

Figures 20.1—20.11 present a graphical representation of the maximum, average, and minimum equivalent H truck loadings on simple spans of various lengths, based on vehicles weighing one kip each, for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. These figures were plotted from the data given in Tables 19.1a—19.11a. The upper part of each of these figures give the maximum, average, and minimum equivalent H truck loadings for each span length and the lower part shows the range, the Poisson coefficient, K, and the standard deviation, D, for each corresponding span length. The meaning of these terms is fully explained in Article 15. All of these data are given in the following figures.

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	20.1
3	381	20.2
2-S1	2855	20.3
2-S2	508	20.4
3-S1	9	20.5
3-S2	142	20.6
3-S3	14	20.7
2-2	99	20.8
2-3	24	20.9
3-2	68	20.10
3-3	176	20.11

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
171 TYPE 2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE: — GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

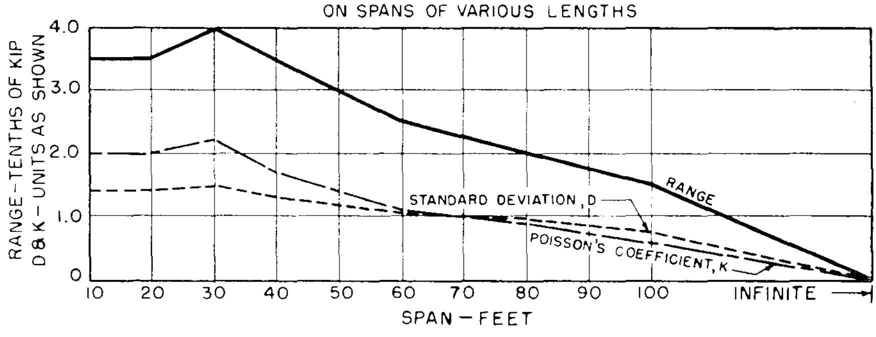


Figure 20.1

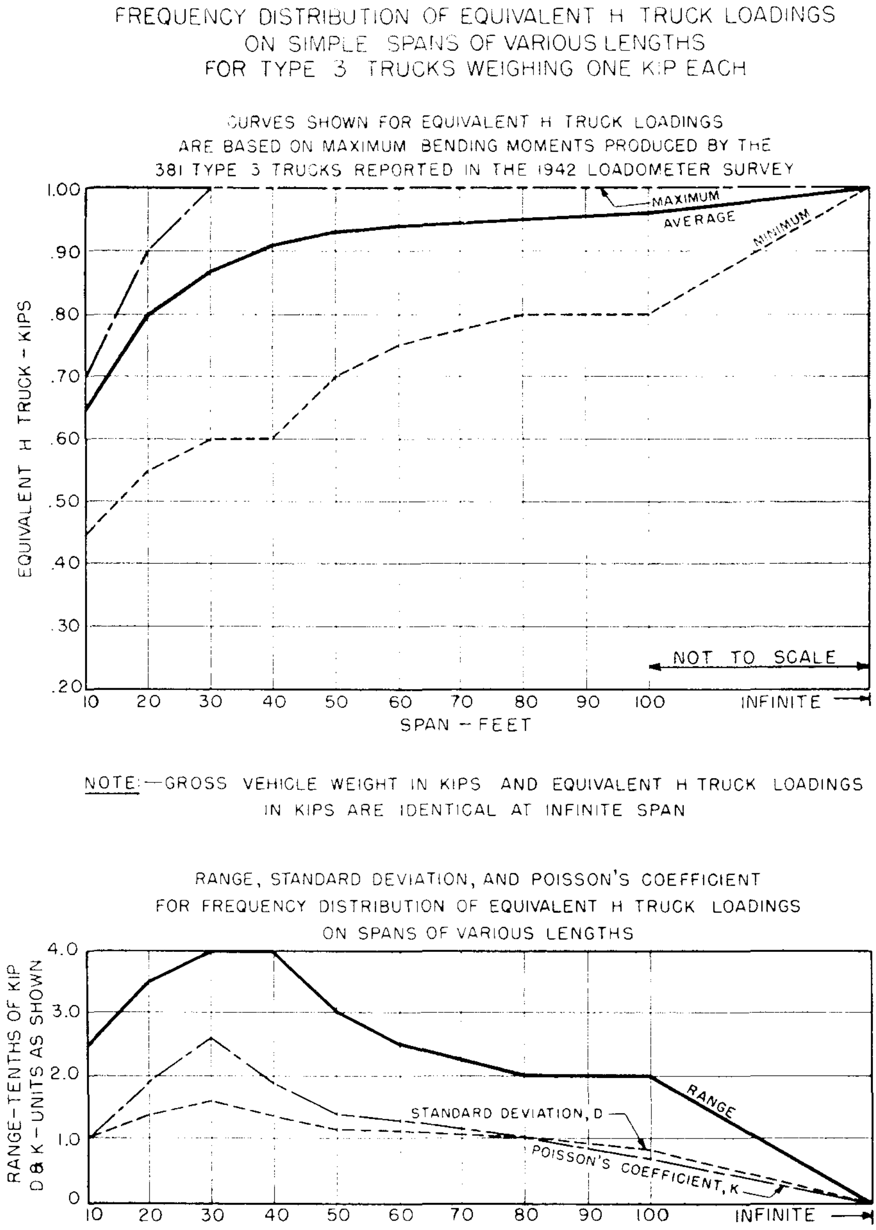
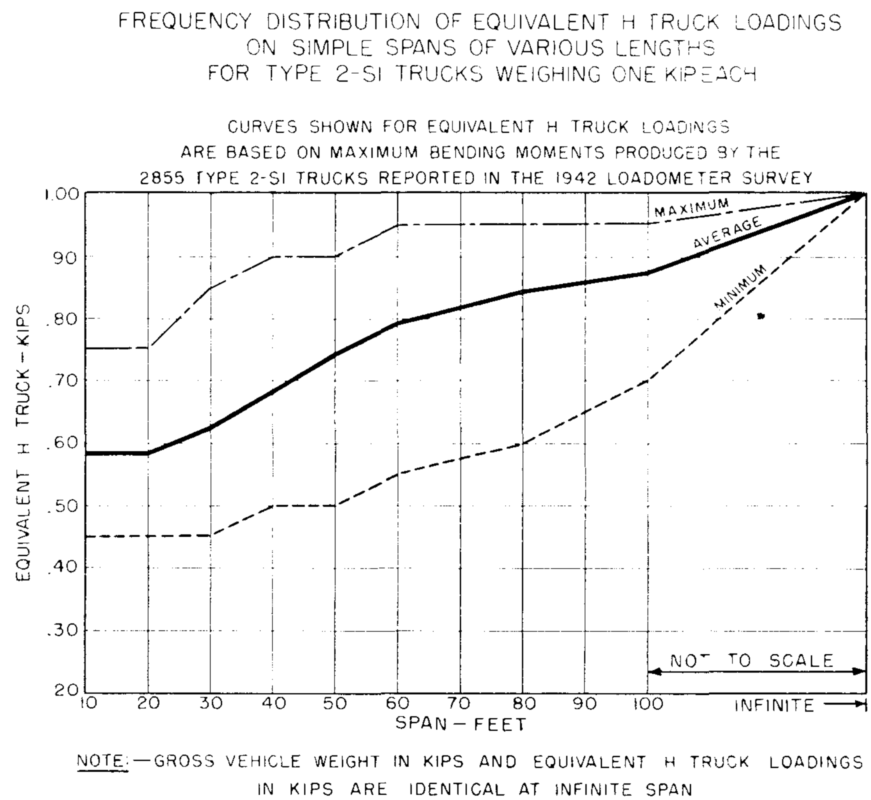

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 3 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
EQUIVALENT H TRUCK - KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN – FEET
NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE-TENTHS OF KIP
D & K - UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
RANGE
STANDARD DEVIATION, D
POISSON'S COEFFICIENT, K
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN – FEET

Figure 20.2


FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 2-SI TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
2855 TYPE 2-SI TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
MAXIMUM
AVERAGE
MINIMUM
EQUIVALENT H TRUCK – KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
20
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN – FEET
NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN

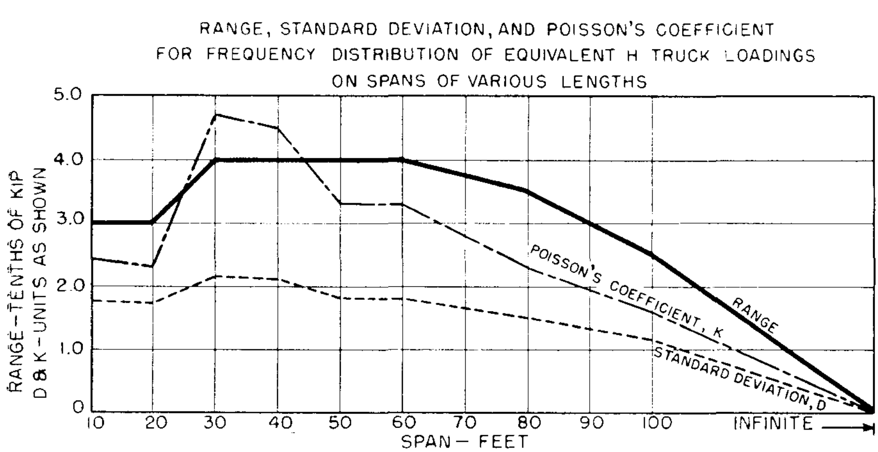
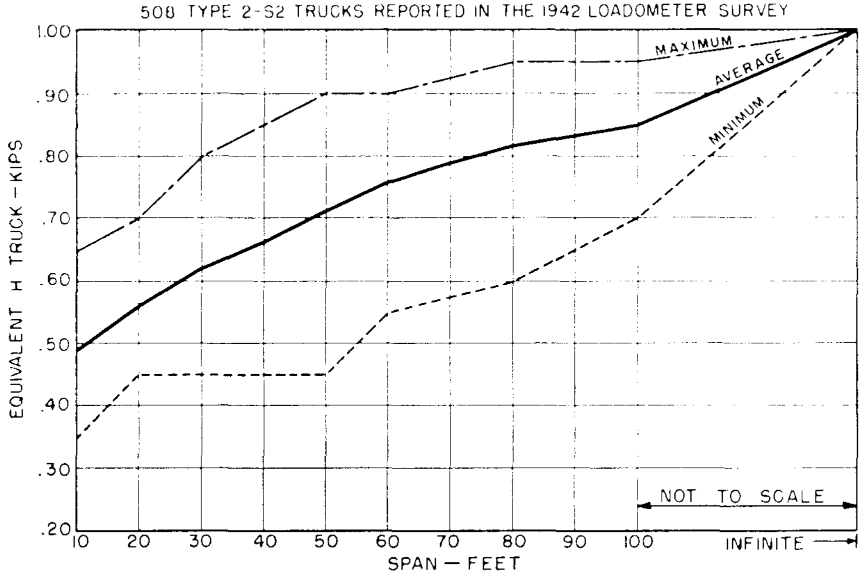

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE – TENTHS OF KIP
D & K – UNITS AS SHOWN
5.0
4.0
3.0
2.0
1.0
0
POISSON'S COEFFICIENT, K
RANGE
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN – FEET

Figure 20.3

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE: — GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

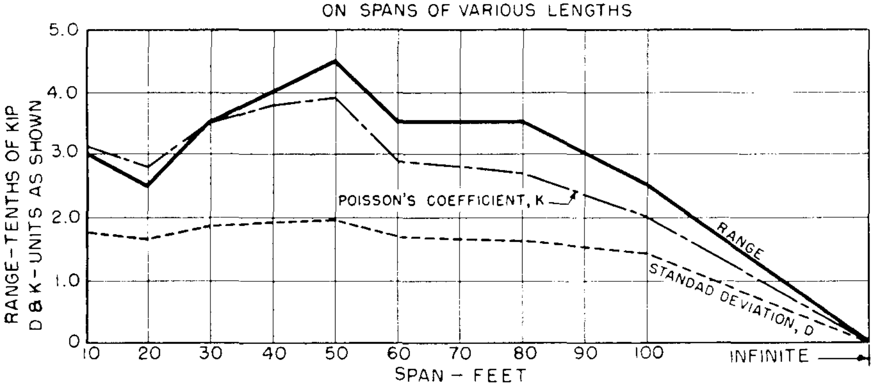
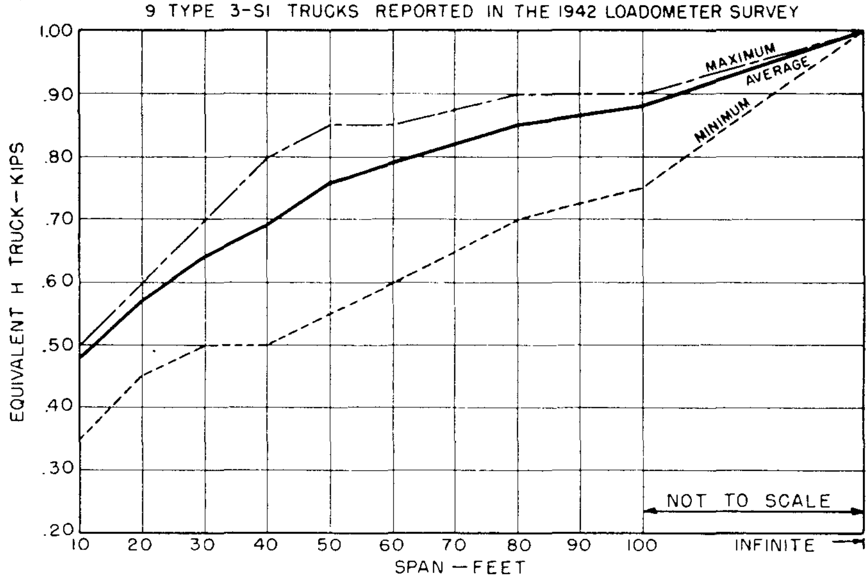


Figure 20.4

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
9 TYPE 3-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE: — GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

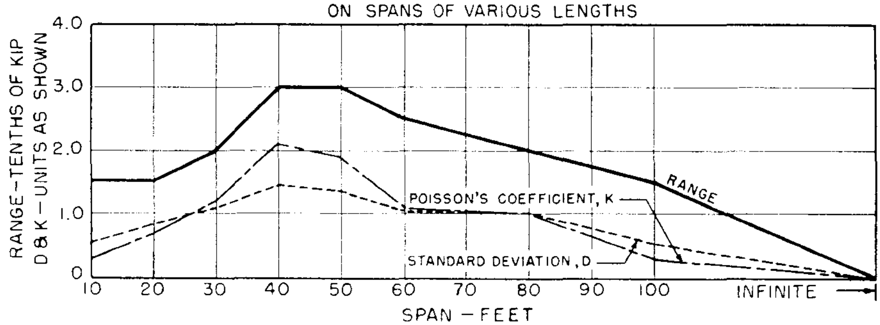


Figure 20.5

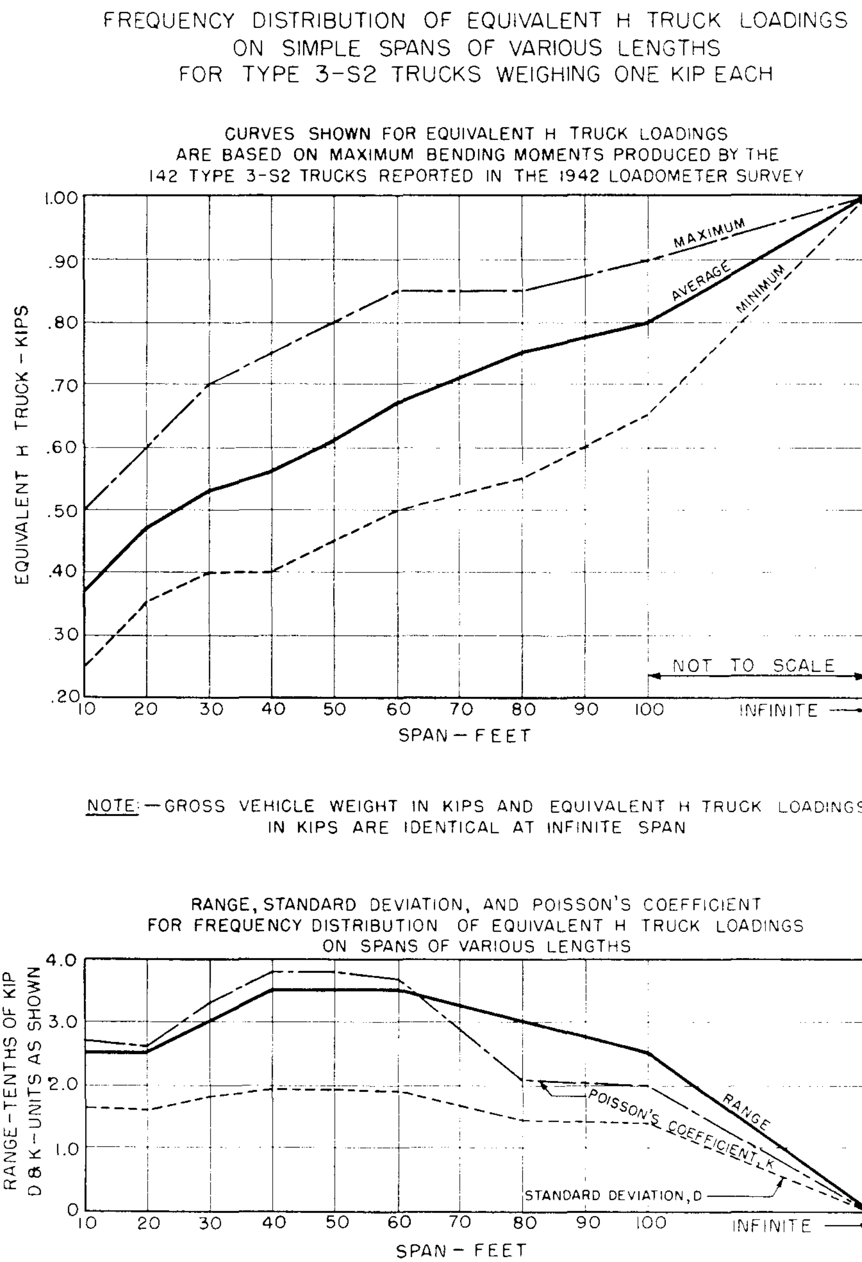

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK - KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET
NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE-TENTHS OF KIP
D & K-UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
POISSON'S COEFFICIENT, K
RANGE
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET

Figure 20.6

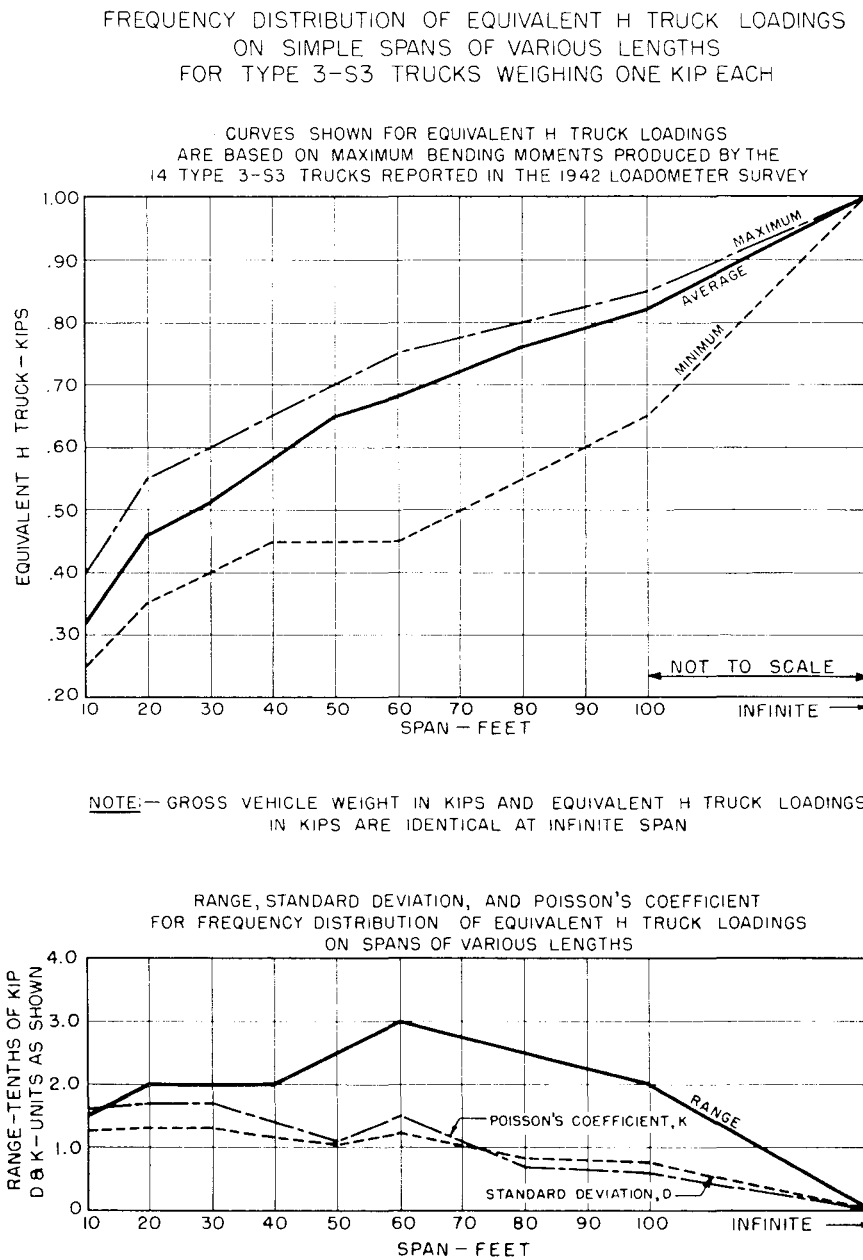
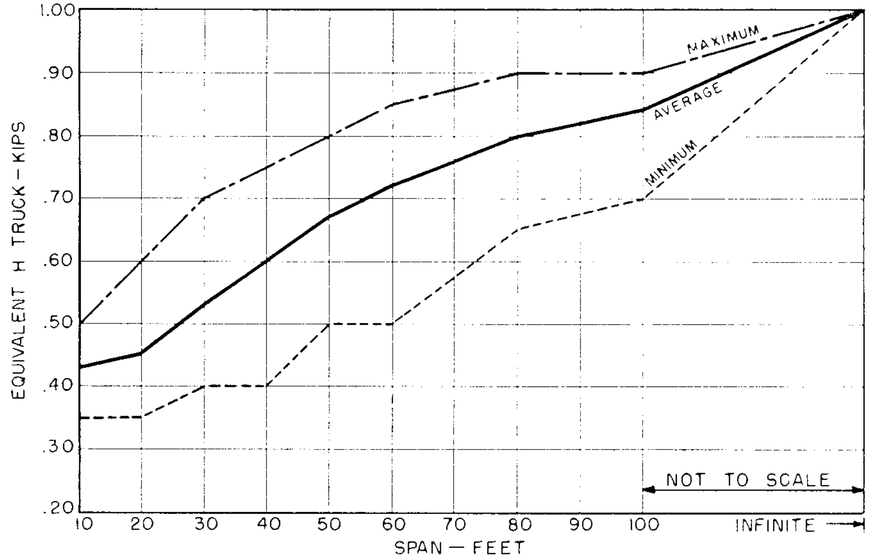

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK - KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN - FEET
NOTE:— GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE-TENTHS OF KIP
D & K-UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN - FEET

Figure 20.7

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
99 TYPE 2-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS

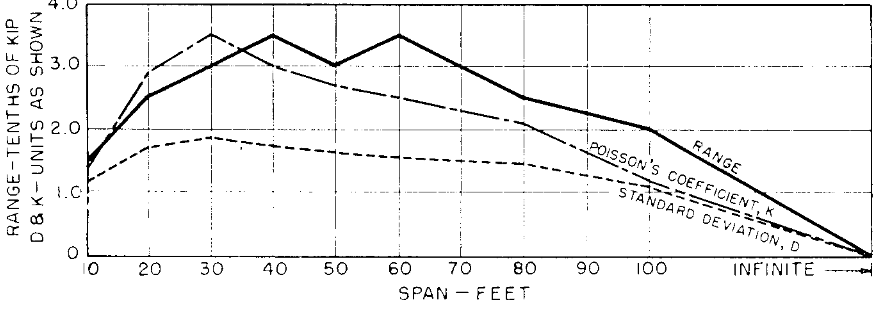
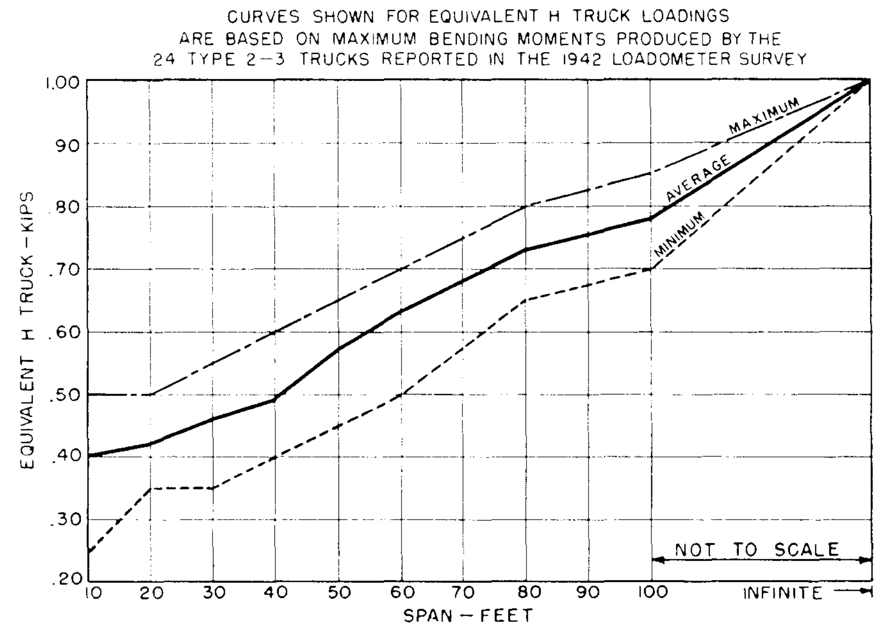


Figure 20.8

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 2—3 TRUCKS WEIGHING ONE KIP EACH



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS IN KIPS ARE IDENTICAL AT INFINITE SPAN

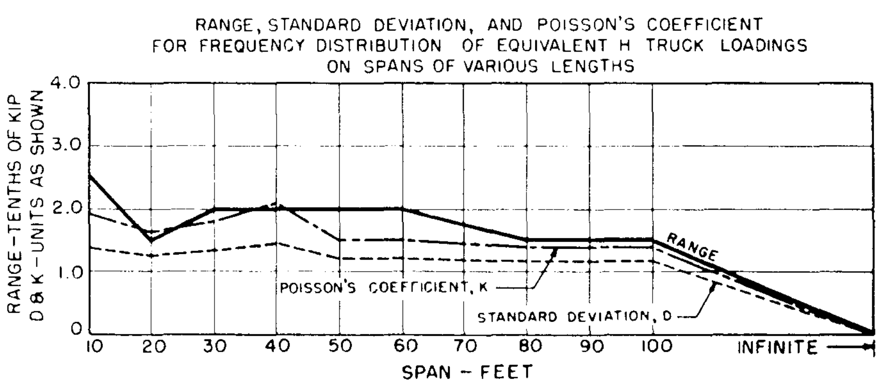
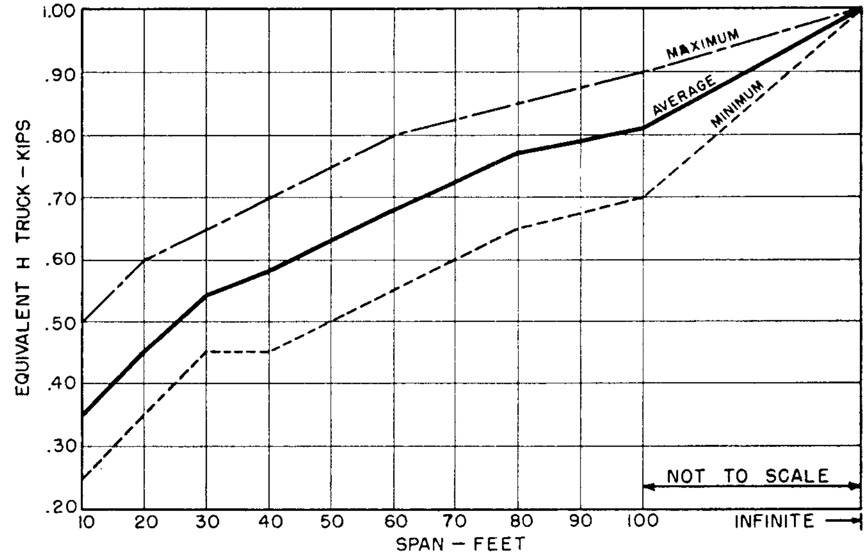


Figure 20.9

FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3—2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE 68 TYPE 3—2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS ON SPANS OF VARIOUS LENGTHS

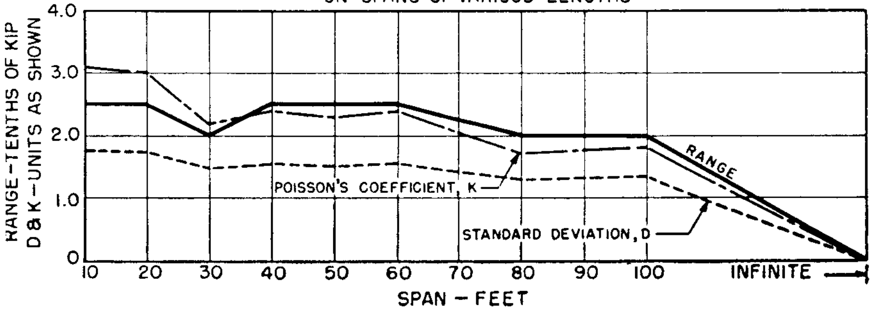
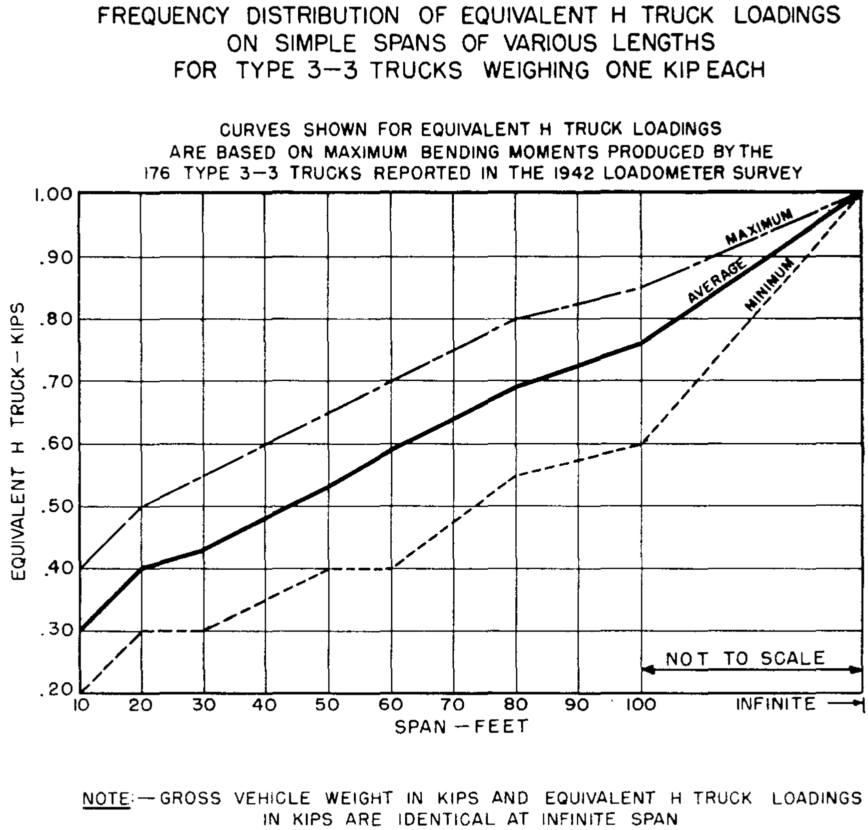


Figure 20.10


FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SIMPLE SPANS OF VARIOUS LENGTHS
FOR TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN FOR EQUIVALENT H TRUCK LOADINGS
ARE BASED ON MAXIMUM BENDING MOMENTS PRODUCED BY THE
176 TYPE 3-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT H TRUCK - KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN - FEET
NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT H TRUCK LOADINGS
IN KIPS ARE IDENTICAL AT INFINITE SPAN

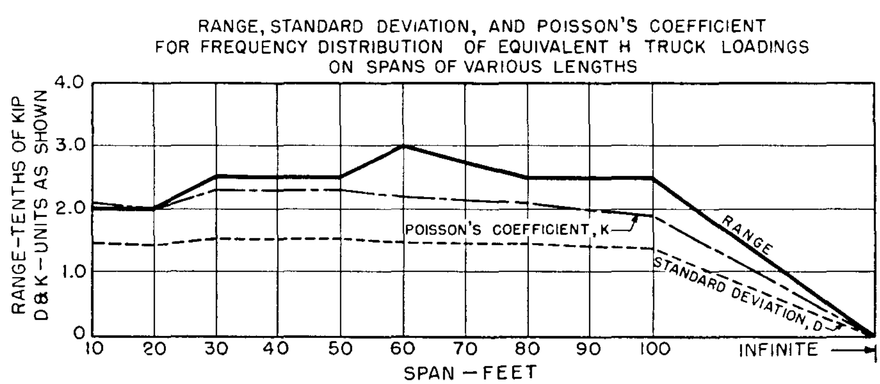

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT H TRUCK LOADINGS
ON SPANS OF VARIOUS LENGTHS
RANGE-TENTHS OF KIP
D & K-UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
POISSON'S COEFFICIENT, K
RANGE
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN - FEET

Figure 20.11

21. HISTOGRAMS SHOWING FREQUENCY DISTRIBUTIONS OF EQUIVALENT H TRUCK LOADINGS ON SIMPLE SPAN BRIDGES BASED ON VEHICLES WEIGHING ONE KIP EACH

Figures 21.1—21.11 present a graphical representation of the observed and calculated frequencies of equivalent H truck loadings for vehicles weighing one kip each on simple spans up to 100 feet in length for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. The histograms represent the observed data, based on 3-item moving averages as explained in Article 15, and the dashed lines represent the corresponding Poisson distributions. Both the observed and calculated frequencies shown in these figures were plotted from the corresponding data given in Tables 19.1a—19.11a and Tables 19.1b—19.11b, respectively. These distributions are given in the following figures.

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	21.1
3	381	21.2
2-S1	2855	21.3
2-S2	508	21.4
3-S1	9	21.5
3-S2	142	21.6
3-S3	14	21.7
2-2	99	21.8
2-3	24	21.9
3-2	68	21.10
3-3	176	21.11

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 2 TRUCKS
WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY
171 TYPE 2 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

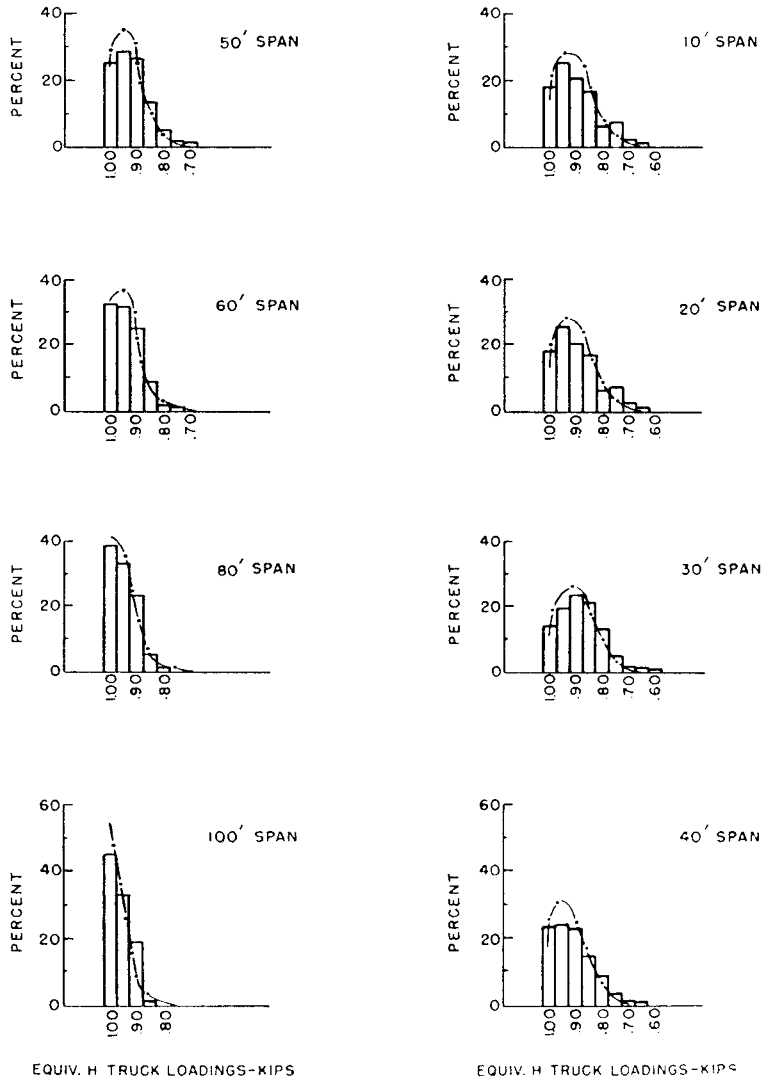


Figure 21.1

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 381 TYPE 3 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

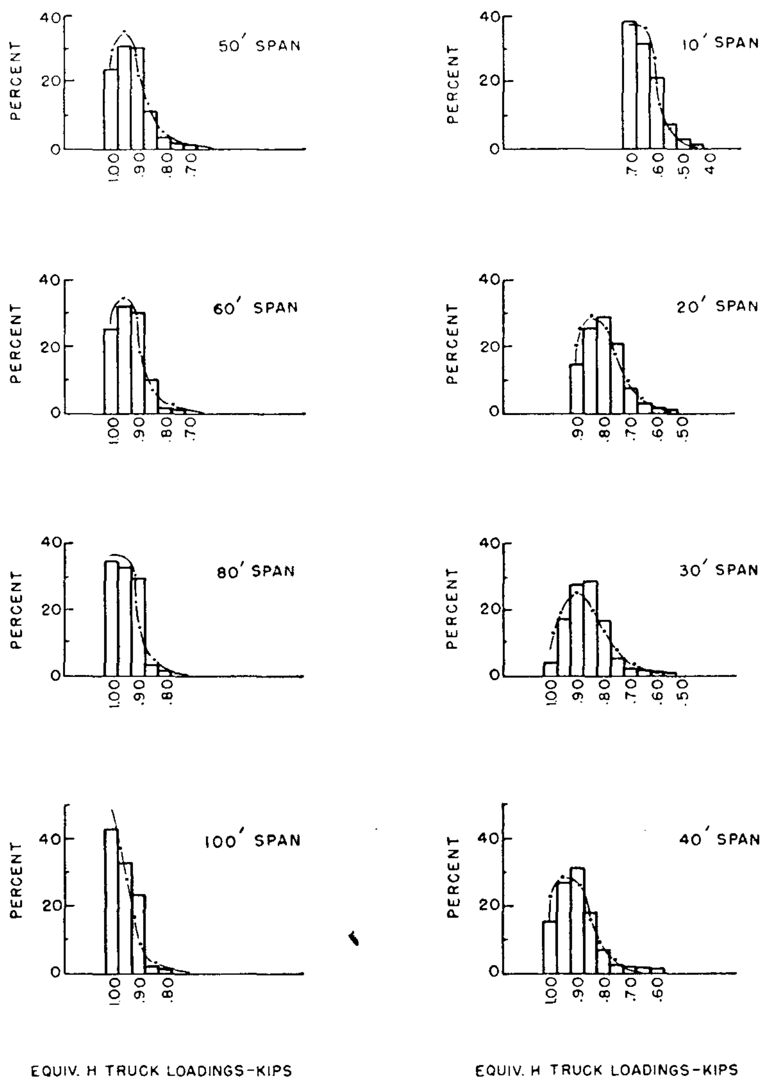


Figure 21.2

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-SI TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 2855 TYPE 2-SI TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

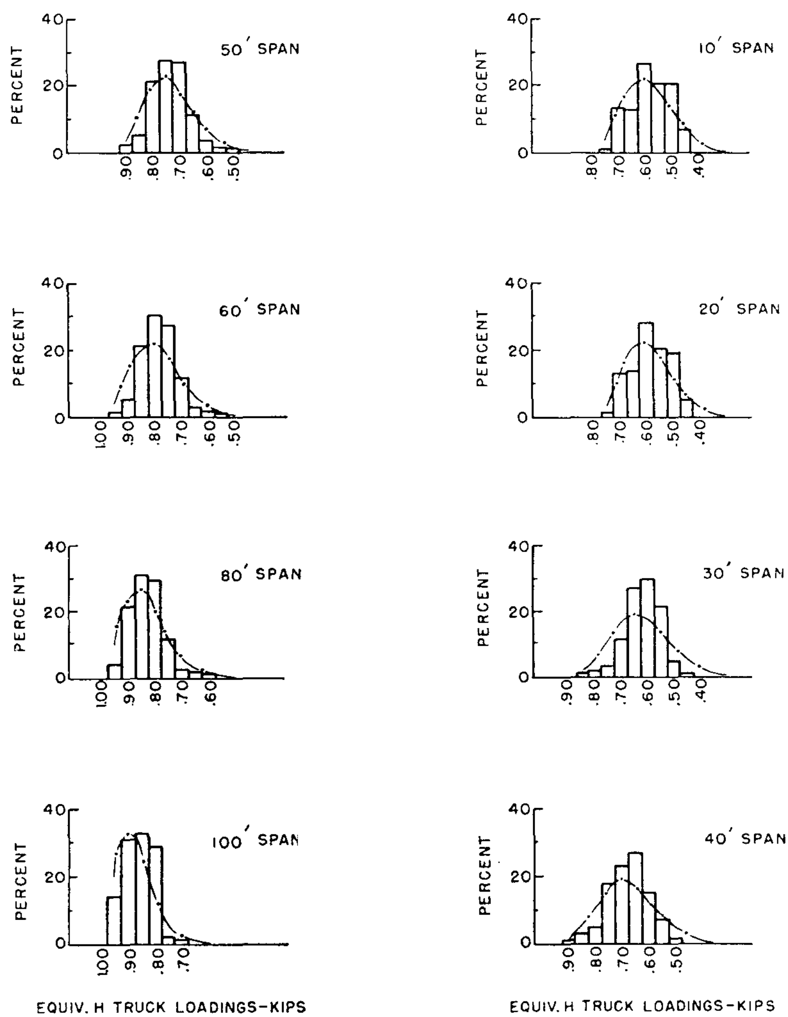


Figure 21.3

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 508 TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

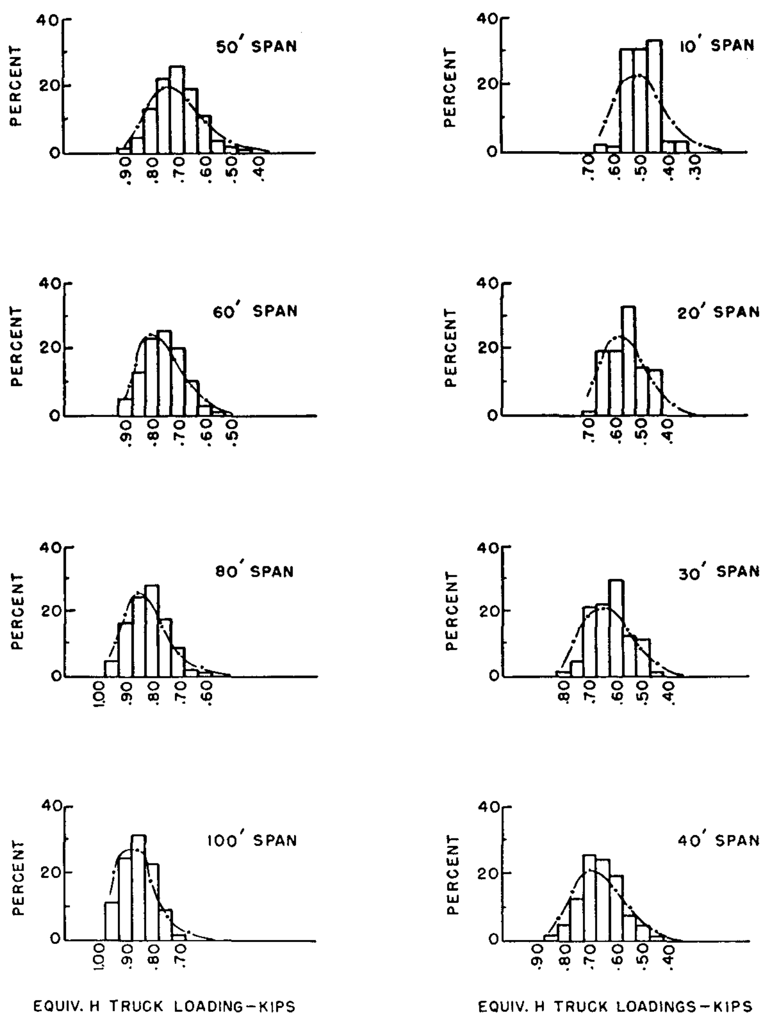


Figure 21.4

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-SI TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 9 TYPE 3-SI TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

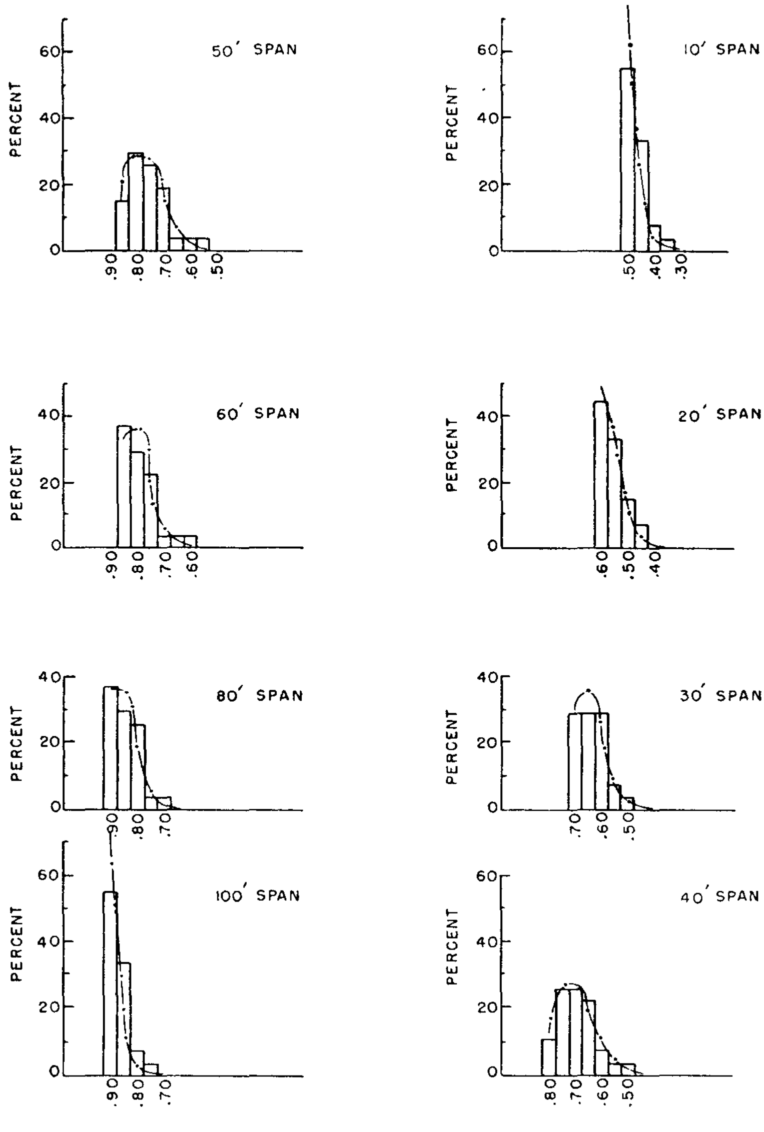


Figure 21.5

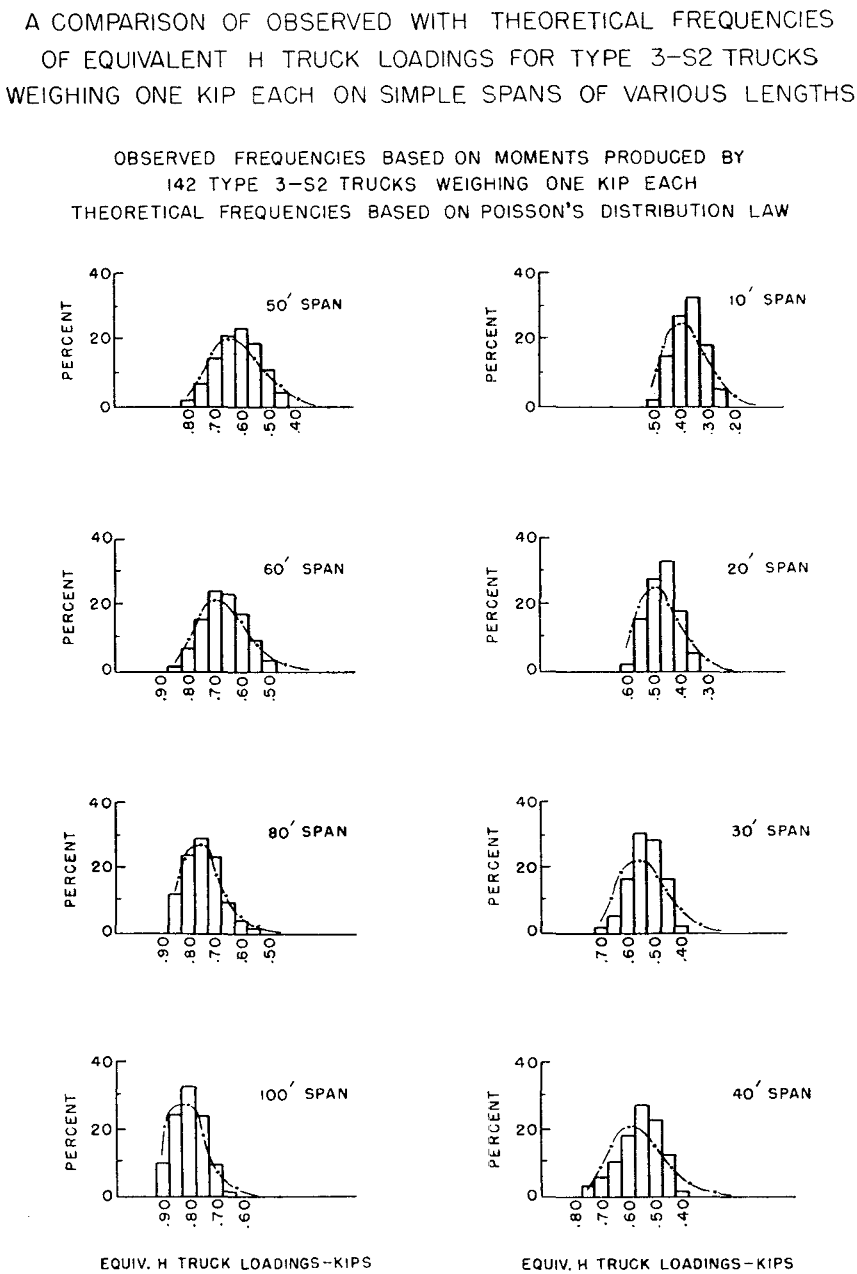

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S2 TRUCKS
WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS
OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY
142 TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW
50′ SPAN
10′ SPAN
60′ SPAN
20′ SPAN
80′ SPAN
30′ SPAN
100′ SPAN
40′ SPAN
PERCENT
EQUIV. H TRUCK LOADINGS-KIPS

Figure 21.6

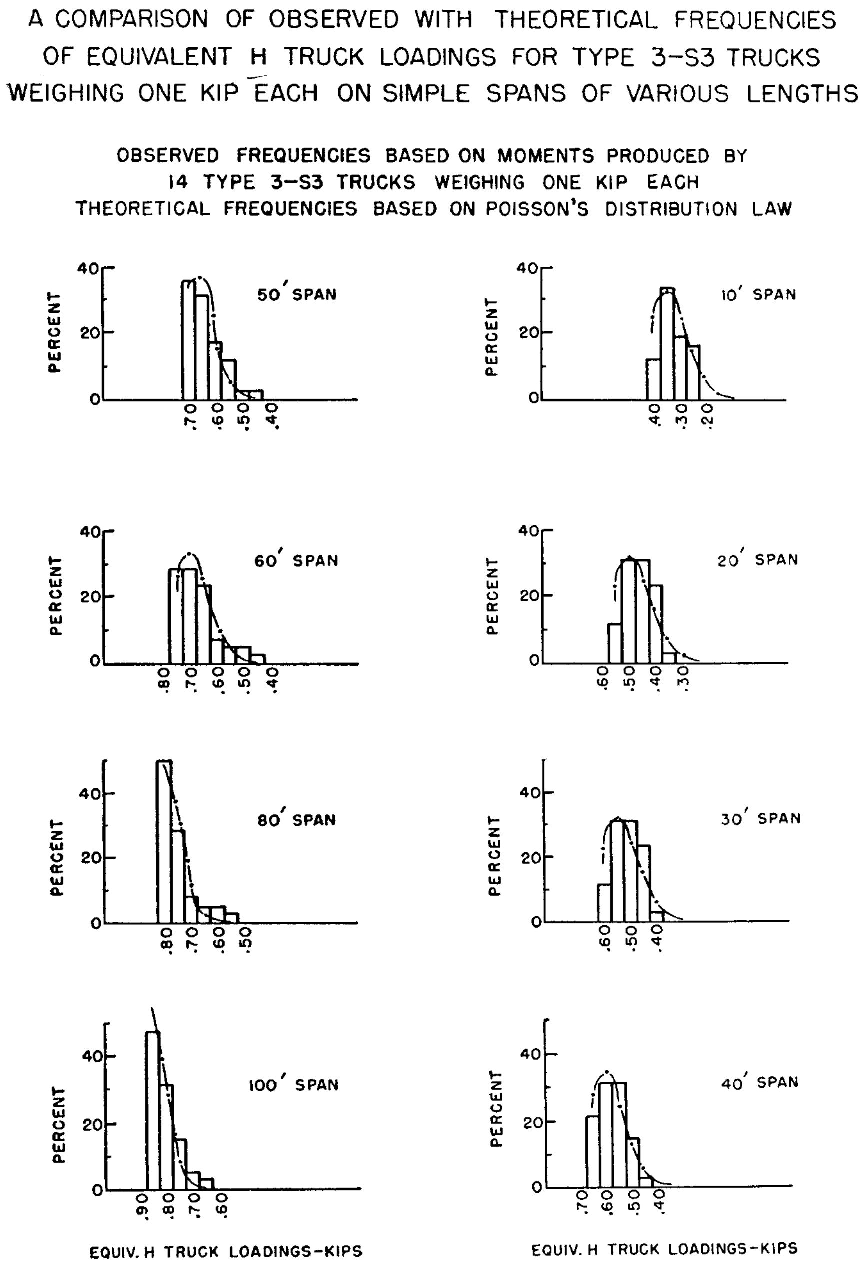

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-S3 TRUCKS
WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS
OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY
14 TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW
50' SPAN
10' SPAN
60' SPAN
20' SPAN
80' SPAN
30' SPAN
100' SPAN
40' SPAN
PERCENT
EQUIV. H TRUCK LOADINGS-KIPS

Figure 21.7

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 2–2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 99 TYPE 2–2 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

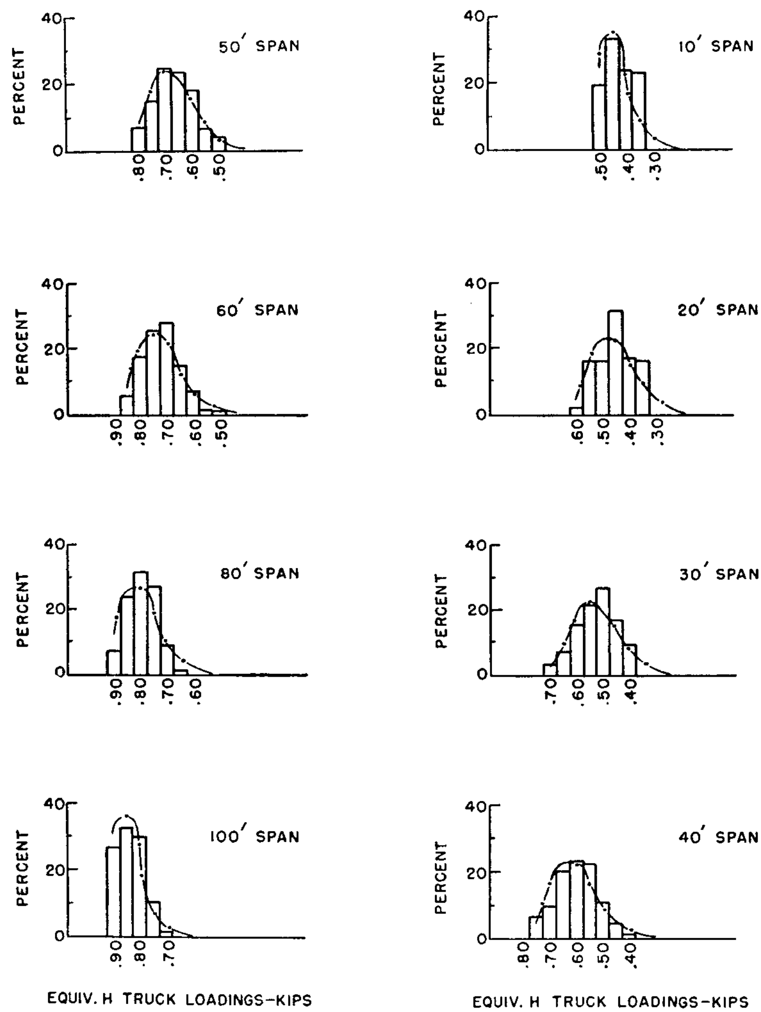


Figure 21.8

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 2—3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 24 TYPE 2—3 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

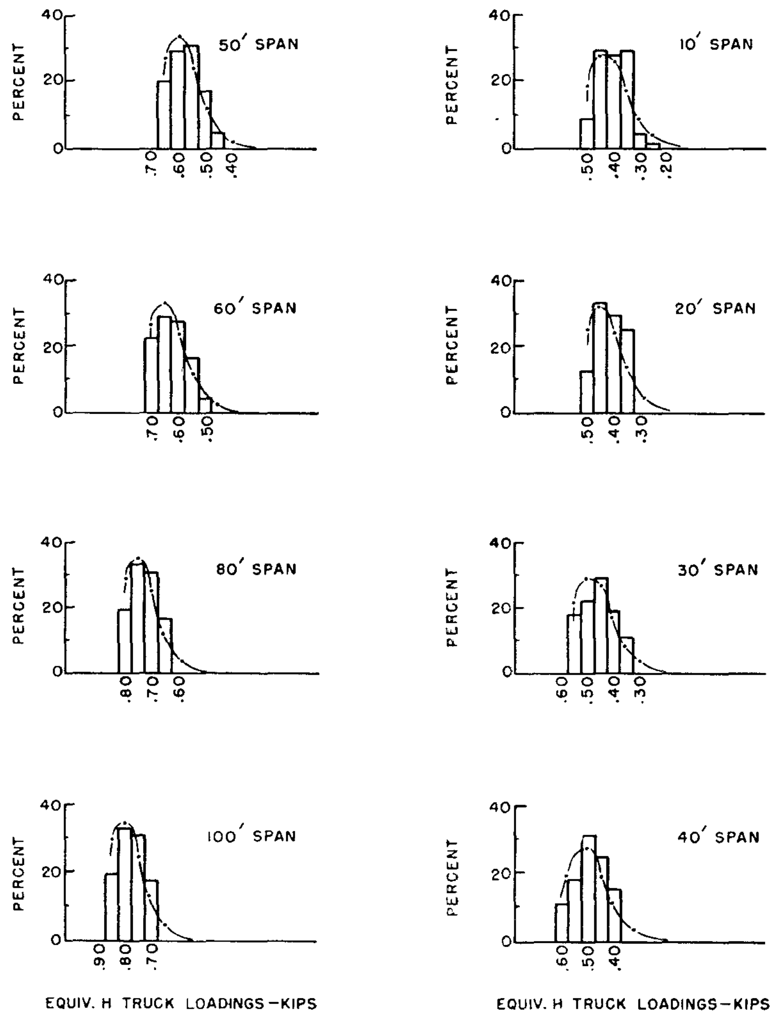


Figure 21.9

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 68 TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

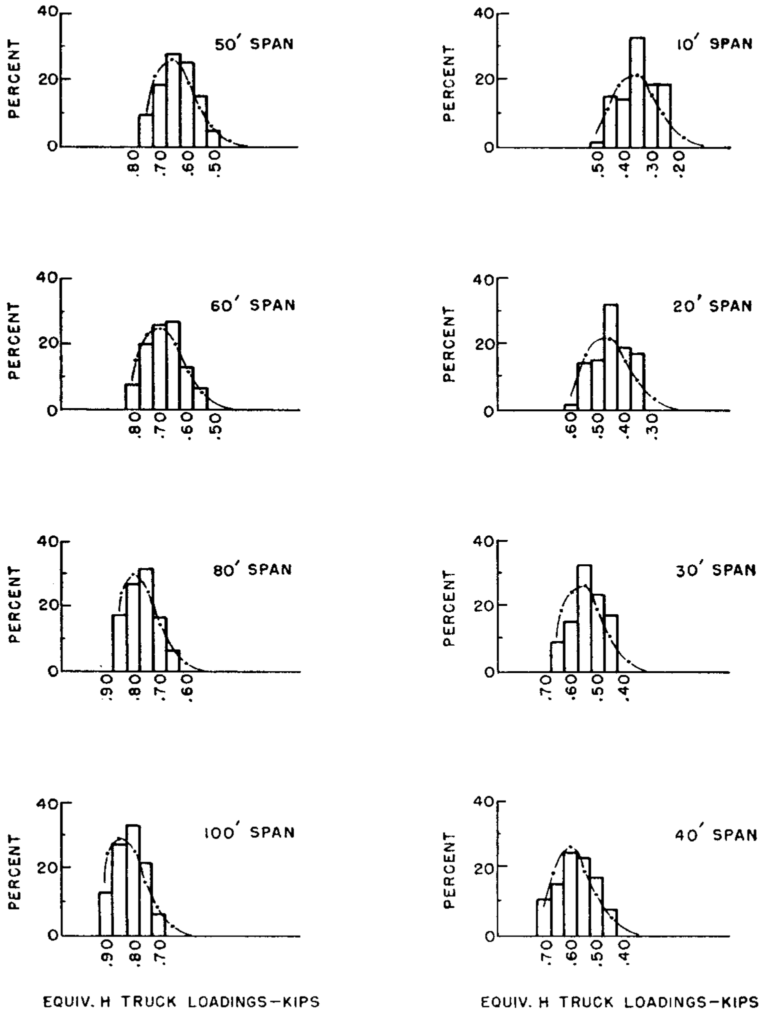


Figure 21.10

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT H TRUCK LOADINGS FOR TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON MOMENTS PRODUCED BY 176 TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

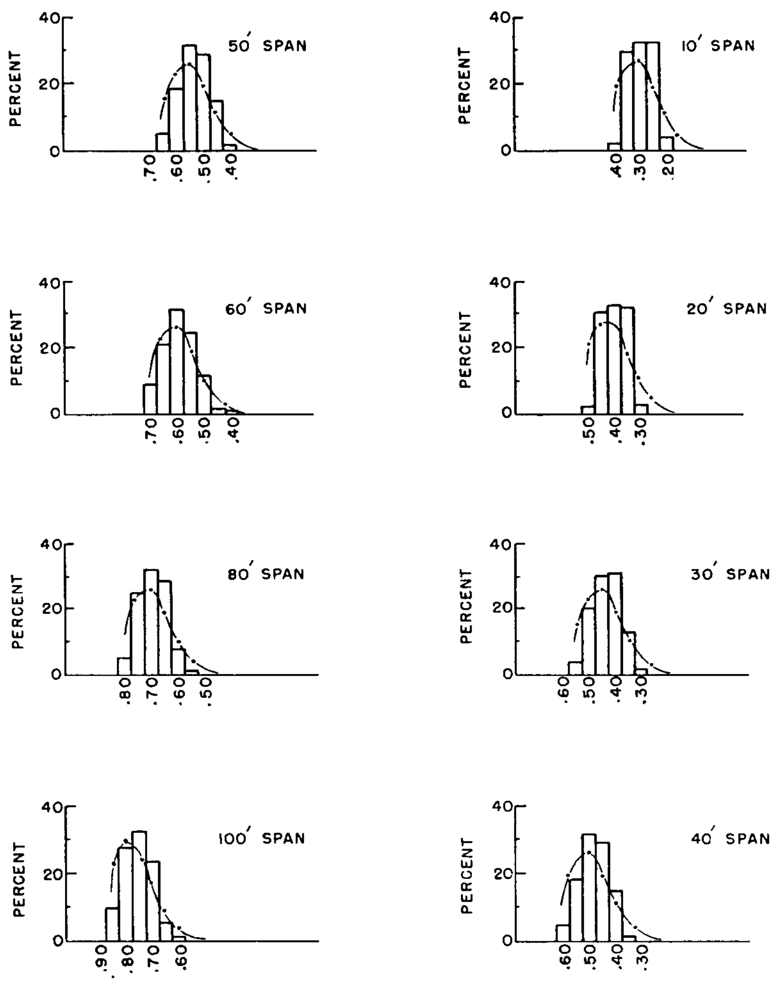


Figure 21.11

PART V

OBSERVED AND CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES FOR THE HEAVY VEHICLES REPORTED BY THE SPECIAL LOADMETER SURVEY OF 1942

22. FREQUENCY ANALYSIS OF EQUIVALENT CONCENTRATED LOADS

Since the procedures for arriving at the observed and calculated frequencies of equivalent concentrated loads given by the tables and figures in the following articles of Part V (Articles 23 through 28) have already been explained at some length in Articles 14 and 15, only a brief discussion of them here will be needed to facilitate their interpretation. Before proceeding with the discussion of the tables and figures in these articles, however, a list of their titles will not only serve as a convenient reference, but since they are somewhat self-explanatory, they will also serve to indicate the nature of the material presented in each. They are as follows:

Article 23 (Tables 23.1—23.12)	Observed and Calculated Frequencies of Equivalent Concentrated Loads on Simple Span Bridges Based on Gross Vehicle Weights
Article 24 (Figures 24.1—24.13)	Maximum, Minimum, and Average Equivalent Concentrated Loads on Simple Span Bridges Based on Gross Vehicle Weights
Article 25 (Figures 25.1—25.12)	Histograms Showing Frequency Distributions of Equivalent Concentrated Loads on Simple Span Bridges Based on Gross Vehicle Weights
Article 26 (Tables 26.1—26.11)	Observed and Calculated Frequencies of Equivalent Concentrated Loads on Simple Span Bridges Based on Vehicles Weighing One Kip Each
Article 27 (Figures 27.1—27.11)	Frequency Distributions of Equivalent Concentrated Loads on Simple Span Bridges Based on Vehicles Weighing One Kip Each
Article 28 (Figures 28.1—28.11)	Histograms Showing Frequency Distribution of Equivalent Concentrated Loads on Simple Span Bridges Based on Vehicles Weighing One Kip Each

It will be seen from these titles that the tables and figures given in Articles 23, 24, and 25 are concerned with the frequency analysis of equivalent concentrated loads based on gross vehicle weights and those in Articles 26, 27, and 28 are concerned with a similar frequency analysis based on vehicles weighing one kip each or vehicles of unit weight. The interpretation of the information given by the frequency distributions of equivalent concentrated loads presented in these articles is substantially the same as for those based on equivalent H truck loadings given in Part IV. The reader, therefore, is referred to Article 15 for a discussion of this subject. He is also referred to Article 5.4 "Use of Tables and Charts For Converting Heavy Vehicles into Equivalent Loads" for a discussion of the present and future potential uses of equivalent concentrated loads.

23. OBSERVED AND CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES BASED ON GROSS VEHICLE WEIGHTS

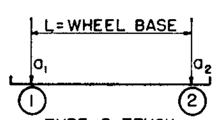
Tables 23.1a—23.11a and Tables 23.1b—23.11b, respectively, give the observed and calculated frequencies of equivalent concentrated loads, on spans up to 100 feet in length, for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. Also, Table 23.12a and Table 23.12b, respectively, give similar observed and calculated frequencies for all of the 4531 heavy vehicles reported, including those whose individual frequencies are given in Tables 23.1a—23.11a and Tables 23.1b—23.11b. The observed frequencies shown in these tables—as previously explained in Article 15—are based on 3-item moving averages which has the effect of smoothing the data from one cell to the next.

The observed and calculated frequencies of equivalent concentrated loads for each of the 11 more numerous heavy vehicle types reported, and for all of the heavy vehicles reported are given in the following tables.

Heavy Vehicle Type	Number of Vehicles Reported	Table Number: Observed Frequencies	Table Number: Calculated Frequencies
2	171	23.1a	23.1b
3	381	23.2a	23.2b
2-S1	2855	23.3a	23.3b
2-S2	508	23.4a	23.4b
3-S1	9	23.5a	23.5b
3-S2	142	23.6a	23.6b
3-S3	14	23.7a	23.7b
2-2	99	23.8a	23.8b
2-3	24	23.9a	23.9b
3-2	68	23.10a	23.10b
3-3	176	23.11a	23.11b
All	4531	23.12a	23.12b

Table 23.1a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 171 TYPE 2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



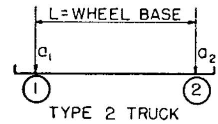
TYPE 2 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
7	3.1	3.1						
8	6.4	6.4	5.7	1.4				
9	15.8	15.4	12.9	5.5	2.3			
10	25.5	25.5	24.7	16.8	10.3	7.0		
11	24.9	24.9	25.1	26.2	22.0	17.9	13.7	8.0
12	16.2	16.6	19.1	24.7	26.7	26.3	21.8	18.7
13	4.9	4.9	7.2	15.4	21.3	24.2	27.0	27.7
14	2.0	2.0	3.7	5.7	10.5	14.4	20.3	23.4
15	1.2	1.2	1.4	3.1	4.7	6.4	10.9	13.8
16			.2	1.0	1.8	2.7	3.9	5.3
17				.2	.4	1.1	1.8	2.3
18							.6	.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	15	15	16	17	17	17	18	18
Avg. ECL	10.5	10.5	10.8	11.6	12.2	12.6	13.1	13.5
Min. ECL	7	7	8	8	9	10	11	11
Range	8	8	8	9	8	7	7	7
Poisson's Coef. K	3.5	3.5	2.8	3.6	3.2	2.6	2.1	2.5

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.1a.

Table 23.1b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 171 TYPE 2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



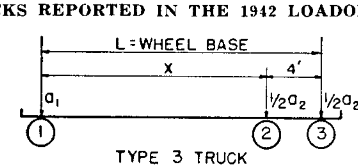
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
7	3.0	3.0						
8	10.6	10.6	6.1	2.7				
9	18.5	18.5	17.0	9.8	4.1			
10	21.6	21.6	23.8	17.7	13.0	7.4		
11	18.9	18.9	22.2	21.2	20.9	19.3	12.2	8.2
12	13.2	13.2	15.6	19.1	22.3	25.1	25.7	20.5
13	7.7	7.7	8.7	13.8	17.8	21.8	27.0	25.7
14	3.9	3.9	4.1	8.3	11.4	14.1	18.9	21.4
15	1.7	1.7	1.6	4.2	6.1	7.4	9.9	13.4
16	.7	.7	.6	1.9	2.8	3.2	4.2	6.7
17	.2	.2	.2	.8	1.1	1.2	1.5	2.8
18			.1	.3	.4	.4	.4	1.0
19				.1	.1	.1	.1	.3
20				.1			.1	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	17	17	18	20	19	19	20	19
Avg. ECL	10.5	10.5	10.8	11.6	12.2	12.6	13.1	13.5
Min. ECL	7	7	8	8	9	10	11	11
Range	10	10	10	12	10	9	9	8
Poisson's Coef. K	3.5	3.5	2.8	3.6	3.2	2.6	2.1	2.5
Std. Dev. D	1.871	1.871	1.673	1.897	1.789	1.612	1.449	1.581

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.1b.

Table 23.2a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	1.8							
6	8.1	.8						
7	17.4	2.8	1.1	.4				
8	23.0	8.2	3.0	.8	.3			
9	22.0	17.0	8.8	3.2	1.1	.4		
10	14.6	19.4	16.3	10.9	6.2	4.8	1.1	
11	8.2	19.3	19.1	16.1	13.3	11.3	7.3	5.2
12	3.3	12.9	17.0	17.7	16.9	15.7	13.1	11.3
13	1.1	10.1	12.7	13.9	16.3	15.8	16.7	15.8
14	.5	4.9	9.4	12.0	12.0	12.8	14.7	15.3
15		2.5	6.4	9.5	11.2	10.9	11.9	12.5
16		1.1	3.0	7.2	8.1	9.0	10.2	11.6

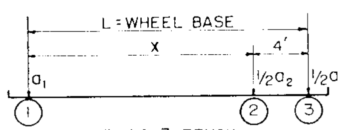
Table 23.2a (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
17		.7	1.8	3.8	6.7	7.5	8.1	8.9
18		.3	.8	2.4	3.4	5.4	6.6	7.4
19			.6	1.1	2.3	3.0	4.5	4.6
20				.6	.9	1.3	2.5	3.3
21				.4	.7	1.0	1.3	1.8
22					.4	.7	.9	1.0
23					.2	.4	.7	.7
24							.4	.4
25								.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	14	18	19	21	23	23	24	25
Avg. ECL	8.6	10.8	11.8	12.9	13.6	14.1	14.8	15.1
Min. ECL	5	6	7	7	8	9	10	11
Range	9	12	12	14	15	14	14	14
Poisson's Coef. K	3.6	4.8	4.8	5.9	5.6	5.1	4.8	4.1

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.2a.

Table 23.2b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3 TRUCK

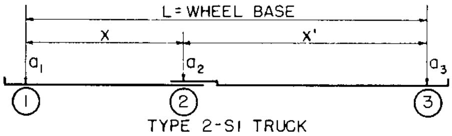
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
5	2.7							
6	9.8	.8						
7	17.7	4.0	.8	.3				
8	21.2	9.5	4.0	1.6	.4			
9	19.1	15.2	9.5	4.8	2.1	.6		
10	13.8	18.1	15.2	9.4	5.8	3.1	.8	
11	8.3	17.5	18.1	13.8	10.8	7.9	4.0	1.7
12	4.2	14.0	17.5	16.3	15.2	13.5	9.5	6.8
13	1.9	9.6	14.0	16.0	17.0	17.2	15.2	13.9
14	.8	5.8	9.6	13.5	15.8	17.5	18.1	19.0
15	.3	3.1	5.8	10.0	12.7	14.9	17.4	19.5
16	.1	1.5	3.1	6.5	8.9	10.9	14.0	16.0
17	.1	.6	1.5	3.9	5.5	6.9	9.6	10.9
18		.3	.6	2.1	3.1	3.9	5.8	6.4
19			.3	1.0	1.6	2.0	3.1	3.3
20				.5	.7	.9	1.5	1.5
21				.2	.3	.4	.6	.6
22				.1	.1	.2	.3	.2
23						.1	.1	.1
24								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	17	18	19	22	22	23	23	24
Avg. ECL	8.6	10.6	11.8	12.9	13.6	14.1	14.8	15.1
Min. ECL	5	6	7	7	8	9	10	11
Range	12	12	12	15	14	14	13	13
Poisson's Coef. K	3.6	4.8	4.8	5.9	5.6	5.1	4.8	4.1
Std. Dev. D	1.897	2.191	2.191	2.429	2.366	2.258	2.191	2.025

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.2b.

Table 23.3a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



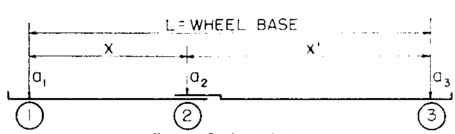
TYPE 2-S1 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
7	12.2	10.7	3.7					
8	22.3	21.9	15.2	1.9				
9	26.3	26.6	24.3	9.4	.9			
10	20.6	21.5	25.0	18.4	5.4	.9		
11	9.9	10.3	16.3	23.6	15.2	6.3	.2	
12	4.8	4.9	8.1	20.5	22.2	14.8	3.3	.4
13	2.2	2.3	4.2	13.1	22.8	22.0	13.2	5.7
14	1.0	1.1	1.7	6.9	15.2	21.2	20.0	14.6
15	.4	.4	.9	3.1	8.8	15.1	22.4	20.8
16	.1	.2	.3	1.5	4.3	8.6	15.8	20.5
17	.1	.1	.2	.9	2.4	4.9	10.6	14.9
18	.1		.1	.4	1.2	2.6	5.8	9.5
19				.2	.7	1.5	3.3	5.2
20				.1	.5	.8	1.9	2.7
21					.3	.6	1.4	2.0
22					.1	.4	.8	1.4
23						.1	.6	.9
24						.1	.4	.5
25						.1	.2	.4
26							.1	.3
27								.1
28								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	18	17	18	20	22	25	26	28
Avg. ECL	9.2	9.3	9.9	11.6	13.0	14.1	15.4	16.3
Min. ECL	7	7	7	8	9	10	11	12
Range	11	10	11	12	13	15	15	16
Poisson's Coef. K	2.2	2.3	2.9	3.6	4.0	4.1	4.4	4.3

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.3a.

Table 23.3b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 2855 TYPE 2-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-S1 TRUCK

Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
7	11.1	10.0	5.5					
8	24.4	23.1	16.0	2.7				
9	26.8	26.5	23.1	9.8	1.8			
10	19.7	20.3	22.4	17.7	7.3	1.7		
11	10.8	11.7	16.2	21.2	14.7	6.8	1.2	
12	4.8	5.4	9.4	19.1	19.5	13.9	5.4	1.4
13	1.7	2.1	4.5	13.8	19.5	19.0	11.9	5.8
14	.5	.7	1.9	8.3	15.6	19.5	17.4	12.5

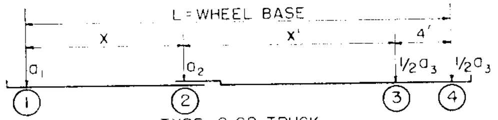
Table 23.3b (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
15	.2	.2	.7	4.2	10.4	16.0	19.2	18.0
16			.2	1.9	6.0	10.9	16.9	19.3
17			.1	.8	3.0	6.4	12.4	16.6
18				.3	1.3	3.3	7.8	11.9
19				.1	.5	1.5	4.3	7.3
20				.1	.2	.6	2.1	3.9
21					.1	.2	.9	1.9
22					.1	.1	.4	.8
23						.1	.1	.3
24								.1
25								.1
26								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	15	15	17	20	22	23	23	26
Avg. ECL	9.2	9.3	9.9	11.6	13.0	14.1	15.4	16.3
Min. ECL	7	7	7	8	9	10	11	12
Range	8	8	10	12	13	13	12	14
Poisson's Coef. K	2.2	2.3	2.9	3.6	4.0	4.1	4.4	4.3
Std. Dev. D	1.483	1.517	1.703	1.897	2.000	2.025	2.098	2.074

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.3b.

Table 23.4a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



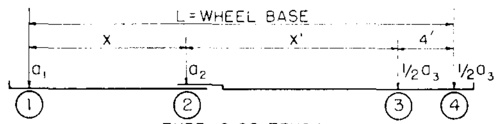
TYPE 2-S2 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	.9							
6	3.6							
7	11.0	4.7						
8	16.7	9.1	4.7	1.1	.2			
9	24.0	13.8	7.2	2.5	.5			
10	21.2	17.1	13.3	4.7	1.7	.5		
11	15.4	15.9	16.2	9.7	4.1	1.5	.3	
12	5.3	14.1	16.0	13.3	8.0	3.3	.5	
13	1.0	10.8	13.6	16.6	11.8	7.1	2.4	1.2
14	.5	8.2	11.3	16.0	15.1	10.2	4.5	2.8
15	.3	4.1	9.5	15.1	15.7	14.4	8.1	5.1
16	.1	2.0	5.1	10.8	16.4	16.1	10.8	7.4
17		.2	2.5	6.4	12.1	16.3	14.6	11.2
18			.6	2.3	8.3	13.3	14.5	12.8
19				1.1	3.0	8.7	14.7	13.5
20				.3	1.9	4.8	11.9	13.1
21				.1	.8	2.1	8.8	11.9
22					.3	1.1	5.0	10.0
23					.1	.5	2.0	5.6
24						.1	1.3	3.3
25							.4	1.3
26							.1	.6
27							.1	.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	16	17	18	20	22	24	27	26
Avg. ECL	9.2	11.0	12.2	13.6	15.0	16.3	18.1	19.2
Min. ECL	5	7	8	8	8	10	11	13
Range	11	10	10	12	14	14	16	13
Poisson's Coef. K	4.2	4.0	4.2	5.6	7.0	6.3	7.1	6.2

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.4a.

Table 23.4b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-S2 TRUCK

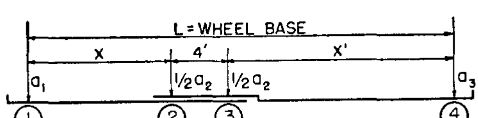
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	1.5							
6	6.3							
7	13.2	1.8						
8	18.5	7.3	1.5	.4	.1			
9	19.4	14.7	6.3	2.1	.6			
10	16.3	19.5	13.2	5.8	2.2	.2		
11	11.4	19.5	18.5	10.8	5.2	1.2	.1	
12	6.9	15.6	19.4	15.2	9.1	3.6	.6	
13	3.6	10.4	16.3	17.0	12.8	7.7	2.1	.2
14	1.7	6.0	11.4	15.8	14.9	12.1	4.9	1.3
15	.7	3.0	6.9	12.7	14.9	15.2	8.7	3.9
16	.3	1.3	3.6	8.9	13.0	15.8	12.4	8.1
17	.1	.5	1.7	5.5	10.1	14.4	14.7	12.5
18	.1	.2	.7	3.1	7.1	11.3	14.9	15.5
19		.1	.3	1.6	4.5	7.9	13.2	15.9
20		.1	.1	.7	2.6	5.0	10.4	14.2
21			.1	.3	1.4	2.9	7.4	11.0
22				.1	.7	1.5	4.8	7.6
23					.3	.7	2.8	4.7
24					.1	.3	1.5	2.6
25					.1	.1	.8	1.4
26					.1	.1	.4	.7
27					.1		.2	.3
28					.1		.1	.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	18	20	21	22	28	26	28	28
Avg. ECL	9.2	11.0	12.2	13.6	15.0	16.3	18.1	19.2
Min. ECL	5	7	8	8	8	10	11	13
Range	13	13	13	14	20	16	17	15
Poisson's Coef. K	4.2	4.0	4.2	5.6	7.0	6.3	7.1	6.2
Std. Dev. D	2.049	2.000	2.049	2.366	2.646	2.510	2.665	2.490

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.4b.

Table 23.5a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 9 TYPE 3-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



TYPE 3-S1 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
8	29.6	7.4						
9	25.9	11.1	7.4	7.4				
10	22.2	11.1	3.7	3.7	7.4			
11	14.8	22.2	3.7	.0	3.7			
12	7.4	18.5	18.5	.0	.0	7.4		
13	.1	18.5	18.5	7.4	.0	3.7		
14		7.4	25.9	18.5	.0	.0	7.4	

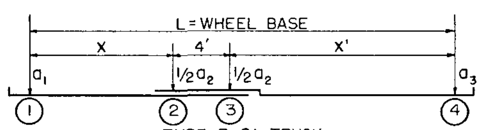
Table 23.5a (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
15		3.7	11.1	18.5	7.4	.0	3.7	7.4
16		.1	11.1	14.8	18.5	3.7	.0	3.7
17			.1	11.1	18.5	14.8	.0	.0
18				11.1	22.2	18.5	11.1	.0
19				7.4	11.1	18.5	18.5	11.1
20				.1	11.1	14.8	18.5	18.5
21					.1	11.1	18.5	18.5
22						7.4	11.1	14.8
23						.1	11.1	11.1
24							.1	11.1
25								3.7
26								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	13	16	17	20	21	23	24	26
Avg. ECL	9.3	11.3	13.1	15.0	16.7	18.2	19.7	20.8
Min. ECL	8	8	9	9	10	12	14	15
Range	5	8	8	11	11	11	10	11
Poisson's Coef. K	1.3	3.3	4.1	6.0	6.7	6.2	5.7	5.8

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.5a.

Table 23.5b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 9 TYPE 3-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-S1 TRUCK

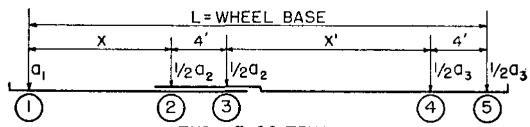
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
8	27.3	3.7						
9	35.4	12.2	1.7	.2				
10	23.0	20.1	6.8	1.5	.1			
11	10.0	22.1	13.9	4.5	.8			
12	3.2	18.2	19.0	8.9	2.8	.2		
13	.8	12.0	19.5	13.4	6.2	1.3		
14	.2	6.6	16.0	16.1	10.3	3.9	.3	
15	.1	3.1	10.9	16.1	13.8	8.1	1.9	.3
16		1.3	6.4	13.8	15.5	12.5	5.4	1.8
17		.5	3.3	10.3	14.8	15.5	10.3	5.1
18		.2	1.5	6.9	12.4	16.0	14.7	9.8
19			.6	4.1	9.2	14.2	16.8	14.3
20			.2	2.3	6.2	11.0	15.9	16.6
21			.1	1.1	3.8	7.6	13.0	16.0
22			.1	.5	2.1	4.7	9.2	13.3
23				.2	1.1	2.6	5.9	9.6
24				.1	.5	1.4	3.3	6.2
25					.2	.7	1.7	3.6
26					.1	.3	.8	1.9
27					.1		.4	.9
28							.1	.4
29							.1	.2
30							.1	
31							.1	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	15	18	22	24	27	26	31	29
Avg. ECL	9.3	11.3	13.1	15.0	16.7	18.2	19.7	20.8
Min. ECL	8	8	9	9	10	12	14	15
Range	7	10	13	15	17	14	17	14
Poisson's Coef. K	1.3	3.3	4.1	6.0	6.7	6.2	5.7	5.8
Std. Dev. D	1.140	1.817	2.025	2.449	2.588	2.490	2.387	2.408

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.5b.

Table 23.6a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



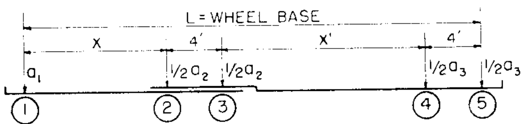
TYPE 3-S2-TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	4.9							
6	7.3	3.5						
7	10.8	4.7	2.6					
8	16.2	7.0	3.5	1.9				
9	20.4	8.7	7.0	2.8	1.4			
10	18.8	12.2	8.7	5.2	1.6	.9		
11	12.7	13.6	11.7	7.5	3.3	1.6		
12	5.6	16.2	11.0	9.4	5.2	1.9	1.4	
13	2.4	14.1	14.6	11.0	7.3	3.8	1.9	1.2
14	.9	10.3	14.1	12.0	9.6	5.2	1.9	1.4
15		5.2	12.7	13.4	10.1	7.0	3.3	1.9
16		2.4	7.0	11.7	11.6	9.6	3.8	3.1
17		1.4	3.8	9.4	11.9	10.3	5.9	3.5
18		.7	1.9	6.6	11.3	11.5	6.3	3.8
19			1.2	4.2	9.9	12.4	8.9	4.9
20			.2	2.8	7.0	10.6	9.9	6.3
21				1.2	5.2	9.9	10.8	8.2
22				.7	2.4	5.6	11.7	10.6
23				.2	1.2	4.7	9.6	11.3
24					.5	2.6	8.9	12.2
25					.5	1.2	5.9	9.4
26						.9	5.2	8.5
27						.2	2.8	5.9
28						.1	.9	4.0
29							.5	2.1
30							.2	.9
31							.2	.2
32								0
33								.2
34								.2
35								.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	14	18	20	23	25	28	31	35
Avg. ECL	8.9	11.3	12.7	14.5	16.4	18.2	20.9	22.6
Min. ECL	5	6	7	8	9	10	12	13
Range	9	12	13	15	16	18	19	22
Poisson's Coef. K	3.9	5.3	5.7	6.5	7.4	8.2	8.9	9.6

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.6a.

Table 23.6b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-S2-TRUCK

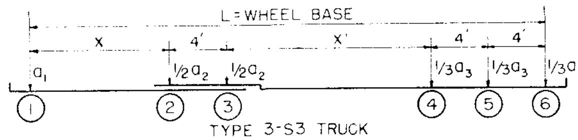
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	2.0							
6	7.9	.5						
7	15.4	2.6	.3					
8	20.0	7.0	1.9	.2				
9	19.5	12.4	5.4	1.0	.1			
10	15.2	16.4	10.3	3.2	.5			
11	9.9	17.4	14.7	6.9	1.7	.2		
12	5.5	15.4	16.8	11.2	4.1	.9	.1	
13	2.7	11.6	15.9	14.5	7.6	2.5	.1	
14	1.2	7.7	13.0	15.7	11.3	5.2	.5	.1
15	.5	4.5	9.2	14.6	13.9	8.5	1.6	.3
16	.2	2.4	5.9	11.9	14.7	11.6	3.6	1.0
17		1.2	3.3	8.6	13.6	13.6	6.3	2.4
18		.5	1.7	5.6	11.2	13.9	9.4	4.6
19		.2	.8	3.3	8.3	12.7	12.0	7.4
20		.1	.4	1.8	5.6	10.4	13.3	10.1
21		.1	.2	.9	3.4	7.8	13.2	12.1
22			.1	.4	2.0	5.3	11.7	12.9
23			.1	.2	1.0	3.3	9.5	12.4
24					.5	2.0	7.0	10.8
25					.2	1.1	4.8	8.7
26					.1	.5	3.1	6.4
27					.1	.3	1.8	4.4
28					.1	.1	1.0	2.8
29						.1	.5	1.7
30							.3	1.0
31							.1	.5
32							.1	.3
33								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	16	21	23	23	28	29	32	33
Avg. ECL	8.9	11.3	12.7	14.5	16.4	18.2	20.9	22.6
Min. ECL	5	6	7	8	9	11	12	14
Range	11	15	16	15	19	18	20	19
Poisson's Coef. K	3.9	5.3	5.7	6.5	7.4	7.2	8.9	8.6
Std. Dev. D	1.975	2.302	2.387	2.550	2.720	2.864	2.983	3.098

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.6b.

Table 23.7a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY

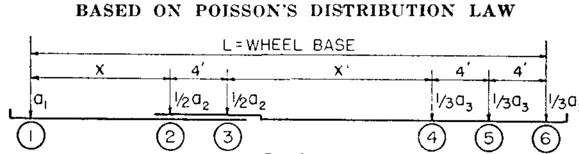


Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
4	4.8							
5	4.8							
6	4.8							
7	14.3	7.1	4.8					
8	19.0	7.1	2.4					
9	23.7	7.1	4.8	4.8				
10	16.7	9.5	7.1	2.5	4.8			
11	9.5	11.9	9.5	7.1	2.4	4.8		
12	2.4	14.3	9.5	7.1	0.0	2.4		
13		14.3	14.3	9.5	7.1	.0	4.8	
14		11.9	16.6	4.8	7.1	2.4	2.5	4.8
15		9.5	11.9	7.1	7.1	7.1	.0	2.4
16		4.8	7.1	7.1	2.4	7.1	.0	.0
17		2.5	4.8	9.5	7.1	4.8	7.1	.0
18			4.8	14.3	9.5	2.4	7.1	2.4
19			2.4	14.3	14.3	9.5	7.1	7.1
20				9.5	14.3	11.9	.0	7.1
21				2.4	14.3	16.6	7.1	4.8
22					7.2	11.9	7.1	.0
23					2.4	11.9	11.9	7.1
24						4.8	9.5	7.1
25						2.4	14.3	9.5
26							11.9	9.5
27							7.2	11.9
28							2.4	14.3
29								7.2
30								4.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	12	17	19	21	23	25	28	30
Avg. ECL	8.4	11.8	13.1	15.7	17.7	19.4	22.1	24.1
Min. ECL	4	7	7	9	10	11	13	14
Range	8	10	12	12	13	14	15	16
Poisson's Coef. K	4.4	4.8	6.1	6.7	7.7	8.4	9.1	10.1

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.7a.

Table 23.7b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
4	1.2							
5	5.4							
6	11.9							
7	17.4	.8	.2					
8	19.2	4.0	1.4					
9	16.9	9.5	4.2	.1				

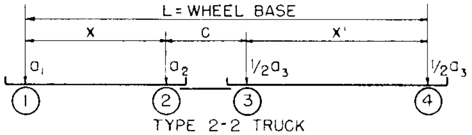
Table 23.7b (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
10	12.4	15.2	8.5	.8	.1			
11	7.8	18.2	12.9	2.8	.3	.1		
12	4.3	17.5	15.8	6.2	1.3	.2		
13	2.1	14.0	16.0	10.3	3.4	.8		
14	.9	9.6	14.0	13.8	6.6	2.2	.1	
15	.4	5.6	10.7	15.5	10.2	4.7	.5	.1
16	.1	3.1	7.2	14.8	13.1	7.8	1.4	.2
17		1.5	4.4	12.4	14.4	11.0	3.2	.7
18		.6	2.4	9.2	13.9	13.2	5.8	1.8
19		.3	1.2	6.2	13.9	13.7	8.8	1.8
20		.1	.6	3.8	9.1	12.9	11.4	6.1
21			.3	2.1	6.4	10.8	13.0	8.7
22			.1	1.1	4.1	8.3	13.2	11.0
23			.1	.5	2.4	5.8	12.0	12.4
24				.2	1.3	3.7	9.9	12.4
25				.1	.7	2.2	7.5	11.5
26				.1	.3	1.3	5.3	9.7
27					.2	.7	3.4	7.5
28					.1	.3	2.1	5.4
29					.1	.2	1.2	3.6
30					.1	.1	.6	2.3
31							.3	1.4
32							.2	.8
33							.1	.4
34								.2
35								.1
36								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	16	20	23	26	30	30	33	36
Avg. ECL	8.4	11.8	13.1	15.7	17.7	19.4	22.1	24.1
Min. ECL	4	7	7	9	10	11	14	15
Range	12	13	16	17	20	19	19	21
Poisson's Coef. K	4.4	4.8	6.1	6.7	7.7	8.4	8.1	9.1
Std. Dev. D	2.098	2.191	2.470	2.588	2.775	2.898	3.017	3.178

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.7b.

Table 23.8a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 99 TYPE 2-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	5.4	4.4						
6	12.1	8.8	2.0					
7	23.9	18.2	5.7	1.0				
8	27.9	23.8	8.8	4.0				
9	20.9	23.2	14.5	7.1	3.1			
10	8.4	13.5	19.5	10.4	5.7	3.1		
11	1.0	5.7	21.2	13.1	7.4	5.7		
12	.4	1.4	15.8	14.8	9.4	7.7	3.4	
13		.7	7.7	16.2	11.1	7.7	6.7	4.0
14		.3	2.4	13.8	14.1	10.4	7.7	6.1
15			1.7	10.4	15.5	10.4	7.4	6.7
16			.4	5.7	14.1	14.1	8.1	7.7
17			.3	2.4	10.4	12.8	10.8	8.8
18				.7	5.4	13.8	11.5	10.1
19				.4	2.4	8.1	12.8	10.1
20					.7	4.0	12.8	10.1

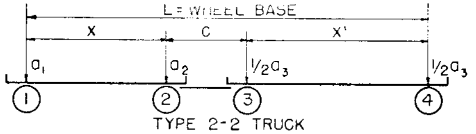
Table 23.8a (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
21					.7	1.0	10.4	13.1
22						.8	5.4	11.5
23						.4	1.7	8.1
24							1.0	2.4
25							.3	1.0
26								.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	12	14	17	19	21	23	25	26
Avg. ECL	7.8	8.3	10.4	12.4	14.3	15.6	17.7	18.9
Min. ECL	5	5	6	7	9	10	12	13
Range	7	9	11	12	12	13	13	13
Poisson's Coef. K	2.8	3.3	4.4	5.4	5.3	5.6	5.7	5.9

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.8a.

Table 23.8b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 99 TYPE 2-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-2 TRUCK

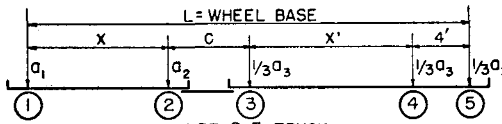
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
5	**6.1**	**3.7**						
6	17.0	12.2	1.2					
7	23.8	20.1	5.4	.5				
8	22.2	22.1	11.9	2.4				
9	15.6	18.2	17.4	6.6	.5			
10	8.7	12.0	19.2	11.9	2.6	.4		
11	4.1	6.6	16.9	16.0	7.0	2.1		
12	1.6	3.1	12.4	17.3	12.4	5.8	.3	
13	.6	1.3	7.8	15.6	16.4	10.8	1.9	.3
14	.2	.5	4.3	12.0	17.4	15.2	5.4	1.6
15	.1	.2	2.1	8.1	15.4	17.0	10.3	4.8
16			.9	4.9	11.6	15.8	14.7	9.4
17			.4	2.6	7.7	12.7	16.8	13.8
18			.1	1.2	4.5	8.9	15.9	16.3
19				.6	2.4	5.5	13.0	16.0
20				.2	1.2	3.1	9.2	13.5
21					.5	1.6	5.9	10.0
22					.2	.7	3.3	6.5
23					.1	.3	1.7	3.9
24					.1	.1	.8	2.1
25							.4	1.0
26							.2	.5
27							.1	.2
28							.1	.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	15	15	18	20	24	24	28	28
Avg. ECL	7.8	8.3	10.4	12.4	14.3	15.6	17.7	18.9
Min. ECL	5	5	6	7	9	10	12	13
Range	10	10	12	13	15	14	16	15
Poisson's Coef. K	2.8	3.3	4.4	5.4	5.3	5.6	5.7	5.9
Std. Dev. D	1.673	1.817	2.098	2.324	2.302	2.366	2.387	2.429

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.8b.

Table 23.9a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 24 TYPE 2-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



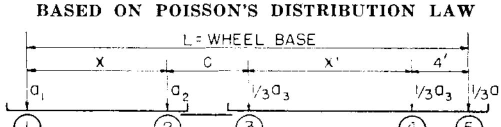
TYPE 2-3 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	5.6	5.6						
6	9.7	8.3	7.0					
7	15.3	13.9	8.3	5.6				
8	23.5	18.1	8.3	5.6	5.6			
9	22.2	20.7	13.9	6.9	4.2	5.6		
10	16.7	15.3	19.4	8.3	6.9	4.2		
11	5.6	8.3	19.4	18.0	5.6	5.6	2.8	
12	1.4	2.8	12.5	19.3	9.7	4.2	4.2	2.8
13		2.8	4.2	16.7	15.2	6.9	2.8	4.2
14		2.8	2.8	7.0	16.6	12.5	5.6	2.8
15		1.4	2.8	4.2	15.2	13.8	4.2	4.2
16			1.4	4.2	5.6	15.2	9.7	2.8
17				2.8	4.2	9.7	12.4	7.0
18				1.4	2.8	6.9	13.8	11.0
19					4.2	4.2	12.5	12.4
20					2.8	2.8	9.7	11.1
21					1.4	2.8	8.3	8.3
22						2.8	4.2	9.7
23						1.4	2.8	8.3
24						1.4	1.4	5.6
25							2.8	2.8
26							1.4	1.4
27							1.4	2.8
28								1.4
29								1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	12	15	16	18	21	24	27	29
Avg. ECL	8.3	8.8	10.0	11.8	13.6	15.3	18.1	19.8
Min. ECL	5	5	6	7	8	9	11	12
Range	7	10	10	11	13	15	16	17
Poisson's Coef. K	3.3	3.8	4.0	4.8	5.6	6.3	7.1	7.8

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.9a.

Table 23.9b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 24 TYPE 2-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 2-3 TRUCK

Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
5	3.7	2.2						
6	12.2	8.5	1.8					
7	20.1	16.2	7.3	.8				
8	22.1	20.5	14.7	4.0	.4			
9	18.2	19.4	19.5	9.5	2.1	.2		

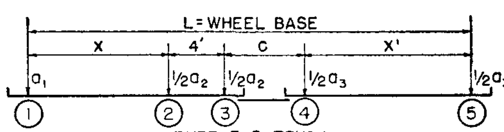
Table 23.9b (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
10	12.0	14.8	19.5	15.2	5.8	1.2		
11	6.6	9.4	15.6	18.2	10.8	3.6	.1	
12	3.1	5.1	10.4	17.5	15.2	7.7	.6	.1
13	1.3	2.4	6.0	14.0	17.0	12.1	2.1	.3
14	.5	1.0	3.0	10.0	15.8	15.2	4.9	1.2
15	.2	.4	1.3	5.8	12.7	15.9	8.7	3.2
16		.1	.5	3.1	8.9	14.4	12.4	6.3
17			.2	1.4	5.5	11.3	14.7	9.9
18			.1	.5	3.1	7.9	14.9	12.8
19			.1		1.6	5.0	13.2	14.2
20					.7	2.9	10.4	13.9
21					.3	1.5	7.4	12.1
22					.1	.7	4.8	9.4
23						.3	2.8	6.7
24						.1	1.5	4.3
25							.8	2.6
26							.4	1.5
27							.2	.8
28							.1	.4
29								.2
30								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	15	16	19	18	22	24	28	30
Avg. ECL	8.3	8.8	10.0	11.8	13.6	15.3	18.1	19.8
Min. ECL	5	5	6	7	8	9	11	12
Range	10	11	13	11	14	15	17	18
Poisson's Coef. K	3.3	3.8	4.0	4.8	5.6	6.3	7.1	7.8
Std. Dev.	1.817	1.949	2.000	2.191	2.366	2.510	2.665	2.793

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.9b.

Table 23.10a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 68 TYPE 3-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



TYPE 3-2 TRUCK

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
4	4.9							
5	9.8	4.4						
6	17.2	7.4						
7	19.1	12.7	8.8					
8	22.0	14.7	8.3	7.8				
9	15.2	14.7	11.3	6.9	7.4			
10	9.8	17.1	12.7	7.8	6.9	6.9		
11	1.5	13.7	15.2	10.8	6.4	5.4		
12	.5	10.3	14.2	13.2	8.3	5.9	6.4	
13		3.0	13.7	13.2	10.2	7.8	5.4	6.4
14		1.0	8.8	12.3	12.7	9.3	6.9	4.9
15		1.0	3.9	10.8	11.2	9.8	6.4	5.9
16			1.0	8.8	12.7	10.3	8.3	5.4
17			1.0	3.9	9.8	11.7	9.8	7.4
18			.5	2.0	7.9	12.2	10.7	7.8
19			.5	.5	2.5	9.3	10.2	9.8
20			.1	1.0	1.5	5.9	9.8	10.2
21				.5	.5	2.0	8.8	9.3
22				.5	.5	1.0	7.9	9.3
23					.5	.5	3.9	7.8

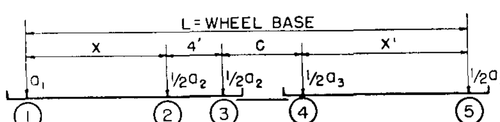
Table 23.10a (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
24					.5	.5	2.0	6.4
25					.5	.5	1.0	3.4
26						.5	.5	2.0
27						.5	.5	1.5
28							.5	.5
29							.5	.5
30							.5	.5
31								.5
32								.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	12	15	20	22	25	27	30	32
Avg. ECL	7.4	9.2	11.0	12.8	14.3	15.8	18.1	19.7
Min. ECL	4	5	7	8	9	10	12	13
Range	8	10	13	14	16	17	18	19
Poisson's Coef. K	3.4	4.2	4.0	4.8	5.3	5.8	6.1	6.7

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.10a.

Table 23.10b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 68 TYPE 3-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-2 TRUCK

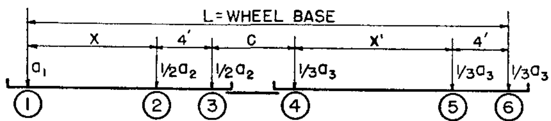
Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
4	3.3							
5	11.3	1.5						
6	19.3	6.3						
7	21.9	13.2	1.8					
8	18.6	18.5	7.3	.8				
9	12.6	19.4	14.7	4.0	.5			
10	7.2	16.3	19.5	9.5	2.6	.3		
11	3.5	11.4	19.5	15.2	7.0	1.8		
12	1.5	6.9	15.6	18.2	12.4	5.1	.2	
13	.6	3.6	10.4	17.5	16.4	9.8	1.4	.1
14	.2	1.7	6.0	14.0	17.4	14.3	4.2	.8
15		.7	3.0	9.6	15.4	16.6	8.5	2.8
16		.3	1.3	5.8	11.6	16.0	12.9	6.2
17		.1	.5	3.1	7.7	13.3	15.8	10.3
18		.1	.2	1.5	4.5	9.6	16.0	13.8
19			.1	.6	2.4	6.2	14.0	15.5
20			.1	.2	1.2	3.6	10.7	14.8
21					.5	1.9	7.2	12.4
22					.2	.9	4.4	9.2
23					.1	.4	2.4	6.2
24					.1	.2	1.2	3.8
25							.6	2.1
26							.3	1.1
27							.1	.5
28							.1	.2
29								.1
30								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	14	18	20	20	24	24	28	30
Avg. ECL	7.4	9.2	11.0	12.8	14.3	15.8	18.1	19.7
Min. ECL	4	5	7	8	9	10	12	13
Range	10	13	13	12	15	14	16	17
Poisson's Coef. K	3.4	4.2	4.0	4.8	5.3	5.8	6.1	6.7
Std. Dev. D	1.844	2.049	2.000	2.191	2.302	2.408	2.470	2.588

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.10b.

Table 23.11a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 176 TYPE 3-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



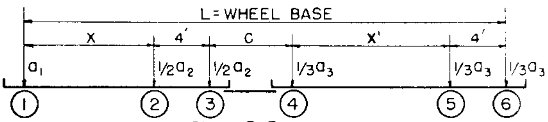
TYPE 3-3 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
4	6.1							
5	6.3	5.5	2.1					
6	6.1	5.1	4.2	2.5				
7	11.6	5.1	4.9	3.8	2.1			
8	22.1	5.9	4.2	4.2	3.4	2.3		
9	23.6	10.2	3.6	4.0	4.0	3.2		
10	17.4	19.1	7.6	3.2	3.8	3.6	2.3	
11	4.9	21.2	12.3	5.3	3.0	3.0	3.2	2.1
12	1.5	16.7	21.5	8.0	2.8	2.5	3.2	3.0
13	.4	7.0	18.3	13.4	6.3	2.5	2.5	3.2
14		2.5	14.0	18.3	9.5	4.2	1.7	2.3
15		1.3	3.4	17.0	14.9	6.1	1.9	1.3
16		.4	2.3	11.2	15.6	9.9	2.5	1.5
17			1.0	4.5	14.6	12.0	2.8	1.7
18			.6	1.9	10.0	14.1	4.7	2.7
19				1.7	5.1	13.4	8.5	3.0
20				.6	2.3	11.1	9.7	4.4
21				.4	.6	6.4	12.7	7.2
22					.8	2.7	12.3	8.9
23					.6	.6	12.8	11.7
24					.4	.6	8.3	11.8
25					.2	.6	4.5	12.4
26						.6	2.1	9.3
27						.4	1.1	5.5
28						.2	.8	2.5
29							.8	1.3
30							.8	1.0
31							.6	.8
32							.2	.8
33								.8
34								.6
35								.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	13	16	18	21	25	28	32	35
Avg. ECL	8.1	10.1	11.5	13.3	15.0	16.9	20.3	22.4
Min. ECL	4	5	5	6	7	8	10	11
Range	9	11	13	15	18	20	22	24
Poisson's Coef. K	4.1	5.1	6.5	7.3	8.0	8.9	10.3	11.4

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.11a.

Table 23.11b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR THE 176 TYPE 3-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW



TYPE 3-3 TRUCK

Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
4	1.7							
5	6.8	.6	.2					
6	13.9	3.1	1.0	.1				
7	19.0	7.9	3.2	.5				
8	19.5	13.5	6.9	1.8	.3	.1		
9	16.0	17.2	11.2	4.4	1.1	.1		
10	10.9	17.5	14.5	8.0	2.9	.5		
11	6.4	14.9	15.7	11.7	5.7	1.6		
12	3.3	10.9	14.6	14.2	9.2	3.6	.2	.1
13	1.5	6.9	11.9	14.8	12.2	6.3	.6	.1
14	.6	3.9	8.6	13.5	14.0	9.4	1.6	.3
15	.2	2.0	5.6	11.0	14.0	12.0	3.2	.8
16	.1	.9	3.3	8.0	12.4	13.3	5.6	1.8
17	.1	.4	1.8	5.3	9.9	13.2	8.2	3.4
18		.2	.9	3.2	7.2	11.7	10.6	5.6
19		.1	.4	1.8	4.8	9.5	12.1	7.9
20			.2	.9	3.0	7.0	12.5	10.0
21				.5	1.7	4.8	11.7	11.4
22				.2	.9	3.1	10.0	11.9
23				.1	.5	1.8	7.9	11.3
24					.2	1.0	5.8	9.9
25						.5	4.0	8.0
26						.3	2.6	6.1
27						.1	1.6	4.4
28						.1	.9	2.9
29							.5	1.8
30							.2	1.1
31							.1	.6
32							.1	.3
33								.2
34								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	17	19	20	23	24	28	32	34
Avg. ECL	8.1	10.1	11.5	13.3	15.0	16.9	20.3	22.4
Min. ECL	4	5	5	6	7	8	12	12
Range	13	14	15	17	17	20	20	22
Poisson's Coef. K	4.1	5.1	6.5	7.3	8.0	8.9	8.3	10.4
Std. Dev. D	2.025	2.258	2.550	2.702	2.828	2.983	3.209	3.376

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.11b.

Table 23.12a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS BASED ON MOMENTS PRODUCED BY THE 4531 (ALL TYPES) TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
4	.5							
5	.8	.5	.1					
6	2.5	1.7	.4	.1				
7	9.6	7.8	3.1	.4	.1			
8	19.5	17.3	11.1	1.9	.3	.1		
9	24.5	22.3	18.4	7.3	1.2	.3		
10	20.5	20.2	21.1	14.5	5.1	1.6	.3	
11	11.6	12.9	16.6	19.5	12.7	6.3	1.4	.8
12	5.7	8.0	11.2	18.2	18.1	12.6	4.4	2.1
13	2.7	4.6	7.4	13.7	19.0	17.6	11.5	6.4
14	1.2	2.6	4.7	9.3	14.1	17.0	15.7	12.1
15	.5	1.3	3.0	6.3	10.1	13.4	17.1	15.7
16	.2	.5	1.5	4.1	7.0	9.6	12.8	15.4
17	.1	.2	.8	2.3	5.0	7.1	10.0	12.1
18	.1	.1	.3	1.2	3.2	5.2	6.9	8.8
19			.2	.7	1.8	3.6	5.4	6.1
20			.1	.3	1.1	2.3	4.0	4.5
21				.2	.6	1.5	3.4	3.9
22					.3	.8	2.4	3.3
23					.1	.5	1.8	2.6
24					.1	.2	1.2	2.0
25					.1	.1	.7	1.5
26						.1	.4	1.1
27						.1	.2	.7
28							.1	.4
29							.1	.2
30							.1	.1
31							.1	.1
32								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	18	18	20	21	25	27	31	32
Avg. ECL	9.3	9.7	10.6	12.2	13.5	14.6	16.2	17.1
Min. ECL	4	5	5	6	7	8	10	11
Range	14	13	15	15	18	19	21	21
Poisson's Coef. K	5.3	4.7	5.6	6.2	6.5	6.6	6.2	6.1

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.12a.

Table 23.12b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS OF THE 4531 (ALL TYPES) TRUCKS REPORTED BY THE 1942 LOADOMETER SURVEY BASED ON POISSON'S DISTRIBUTION LAW

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
4	.5							
5	2.6	.9	.4					
6	7.0	4.3	2.1	.2				
7	12.4	10.0	5.8	1.3	.2			
8	16.4	15.7	10.8	3.9	1.0	.1		
9	17.4	18.5	15.2	8.1	3.2	.9		
10	15.4	17.4	17.0	12.5	6.9	3.0	.2	
11	11.6	13.6	15.8	15.5	11.2	6.5	1.3	.2
12	7.7	9.1	12.7	15.9	14.5	10.8	3.9	1.4
13	4.5	5.4	8.9	14.2	15.6	14.2	8.1	4.2
14	2.4	2.8	5.5	11.0	14.6	15.6	12.5	8.5
15	1.2	1.3	3.1	7.6	11.9	14.7	15.5	12.9
16	.5	.6	1.6	4.7	8.6	12.1	15.9	15.8
17	.2	.2	.7	2.6	5.6	8.9	14.2	16.0

Table 23.12b (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
18	.1	.1	.3	1.4	3.3	5.9	11.0	14.0
19	.1	.1	.1	.7	1.8	3.5	7.6	10.7
20				.3	.9	1.9	4.7	7.2
21				.1	.4	1.0	2.6	4.4
22					.2	.5	1.4	2.4
23					.1	.2	.7	1.2
24						.1	.3	.6
25						.1	.1	.3
26								.1
27								.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	19	19	19	21	23	25	25	27
Avg. ECL	9.3	9.7	10.6	12.2	13.5	14.6	16.2	17.1
Min. ECL	4	5	5	6	7	8	10	11
Range	15	14	14	15	16	17	15	16
Poisson's Coef. K	5.3	4.7	5.6	6.2	6.5	6.6	6.2	6.1
Std. Dev. D	2.302	2.168	2.366	2.490	2.550	2.569	2.490	2.470

The frequency distribution of equivalent concentrated loads on spans of infinite length are omitted from this table since it is the same as the frequency distribution of equivalent H truck loadings for the above truck shown in Table 16.12b.

Each of these tables gives either the observed or calculated frequencies of equivalent concentrated loads on span lengths of 10, 20, 30, 40, 50, 60, 80, and 100 feet, respectively. The frequency distributions of these equivalent concentrated loads on an infinite span were omitted from these tables because they are the same as those given for each corresponding vehicle type and span in the right hand column of Tables 16.1—16.12. Reference to the frequencies of equivalent concentrated loads on an infinite span, however, is just another way of saying that they represent the frequency distribution of gross vehicle weights. This may be more readily explained perhaps if the discussion were confined to some particular vehicle having a gross weight of, say, 20 tons. A Type 2-S1 truck weighing 20 tons, for example, irrespective of its wheel base length or distribution of load among its axles, would produce the same maximum moment on an infinite span as a single concentrated load of 20 tons. Therefore, the equivalent concentrated load corresponding to this vehicle on an infinite span would be the same as its gross vehicle weight, or simply an equivalent concentrated load of 20 tons.

At the bottom of each of the Tables 23.1—23.12, the maximum, average, and minimum equivalent concentrated loads for each span are given and also the range which is the spread or difference between the maximum and minimum. The Poisson coefficient, K, as explained in Article 14, is equal to the difference between the average and minimum loading equivalents. The standard deviation, $D = \sqrt{K}$, is a statistical index associated with a given distribution which provides a measure for determining just how usual or unusual a given loading equivalent might be considered. A brief discussion concerning the meaning and use of the standard deviation, $D = \sqrt{K}$, will be found in Article 15.2.

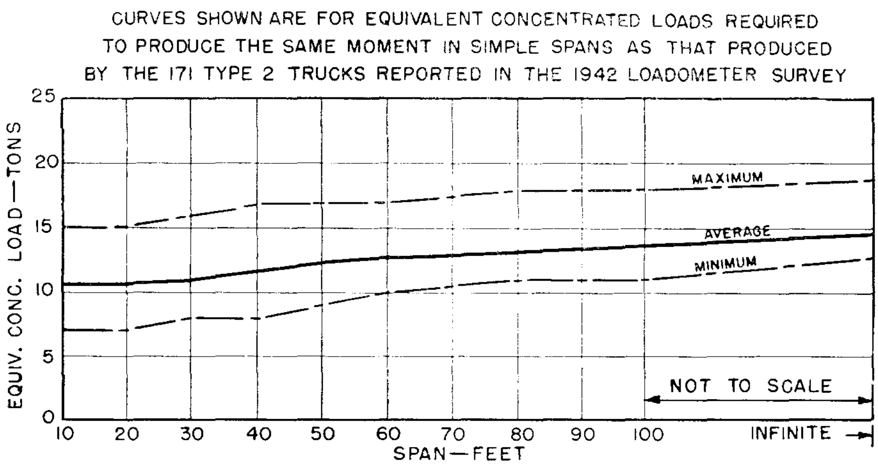
24. MAXIMUM, AVERAGE, AND MINIMUM EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES BASED ON GROSS VEHICLE WEIGHTS

Figures 24.1—24.11 present a graphical representation of the maximum, average, and minimum equivalent concentrated loads on simple span bridges of various lengths for each of the 11 more numerous heavy vehicle types reported by the special loadometer survey of 1942. Figure 24.12 gives the same information for 83 truck-tractor semitrailer trailer combinations (6 different vehicle types) that did not occur in sufficient numbers to justify individual distributions, and Figure 24.13 gives the same information for all heavy vehicles reported, representing a combined total of 4531.

The upper part of each of these figures gives the maximum, average, and minimum equivalent concentrated loads for each span length and the lower part shows the range, the Poisson coefficient, K, and the standard deviation, D, for each corresponding span length. All of these data are given in the following figures:

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	24.1
3	381	24.2
2-S1	2855	24.3
2-S2	508	24.4
3-S1	9	24.5
3-S2	142	24.6
3-S3	14	24.7
2-2	99	24.8
2-3	24	24.9
3-2	68	24.10
3-3	176	24.11
6 types of tractor-truck semitrailer trailer combinations	83	24.12
All	4531	24.13

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN

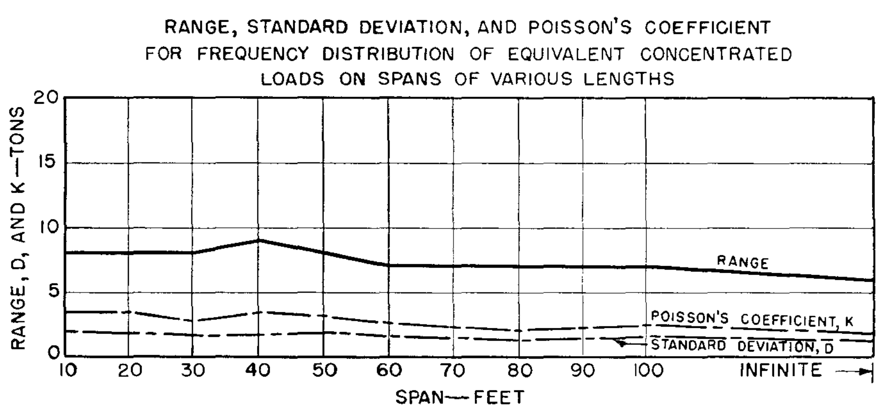


Figure 24.1

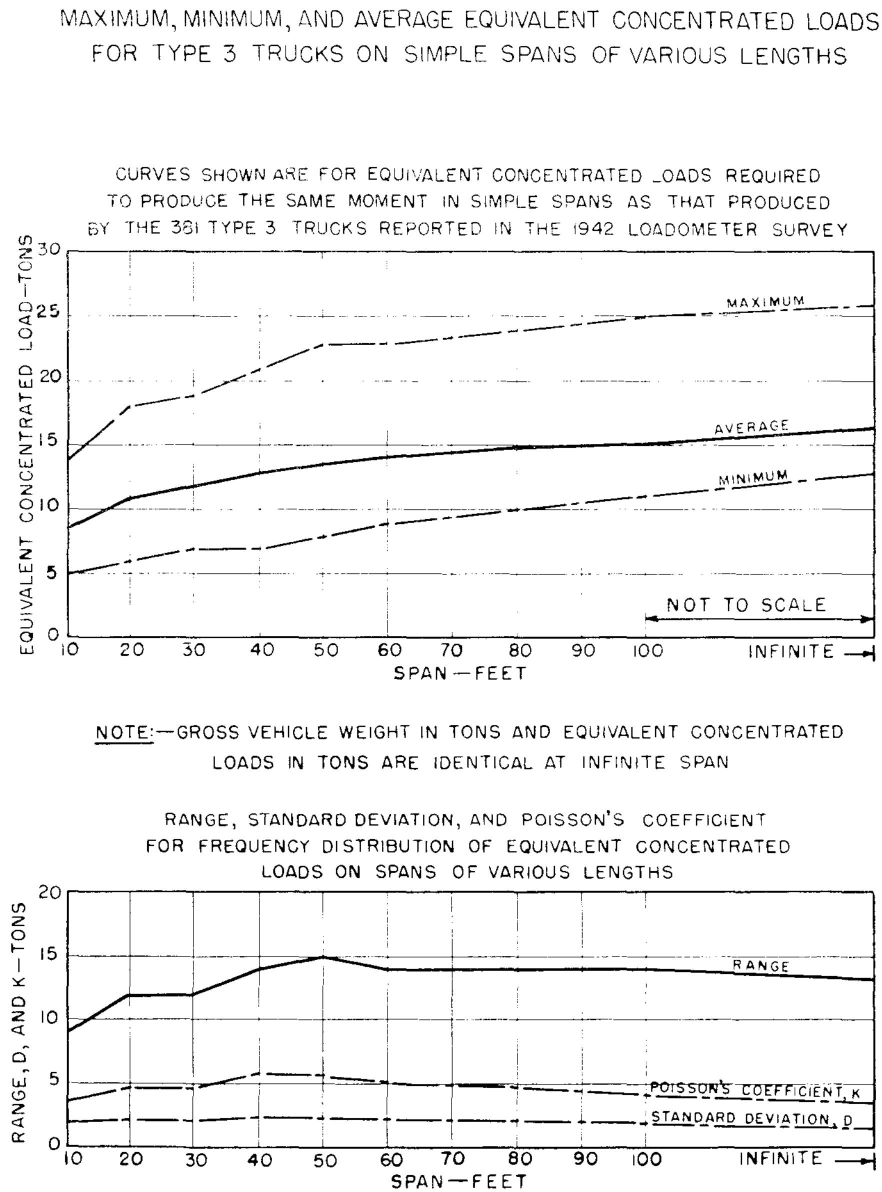
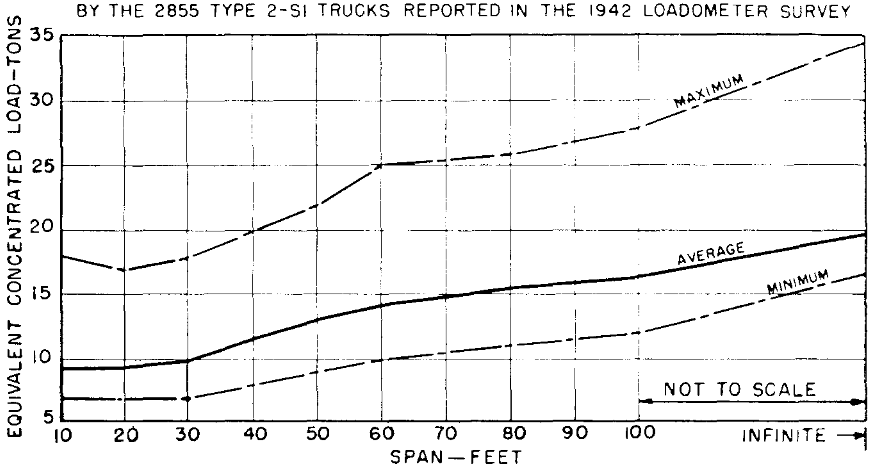

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS
FOR TYPE 3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS
CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED
TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED
BY THE 381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT CONCENTRATED LOAD—TONS
0
5
10
15
20
25
30
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN—FEET
NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED
LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED
LOADS ON SPANS OF VARIOUS LENGTHS
RANGE, D, AND K—TONS
0
5
10
15
20
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN—FEET

Figure 24.2

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-S1 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

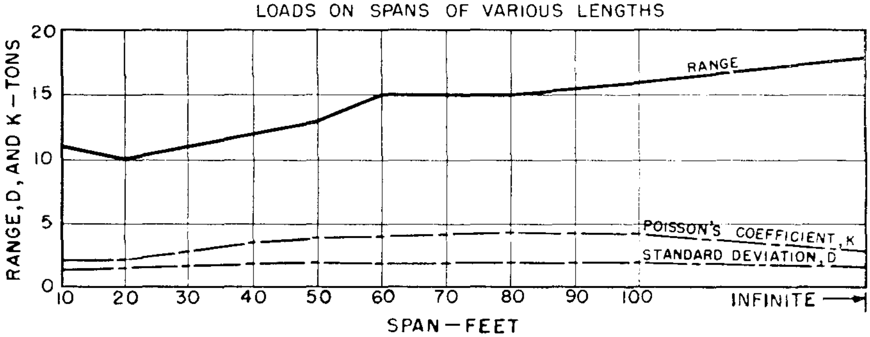
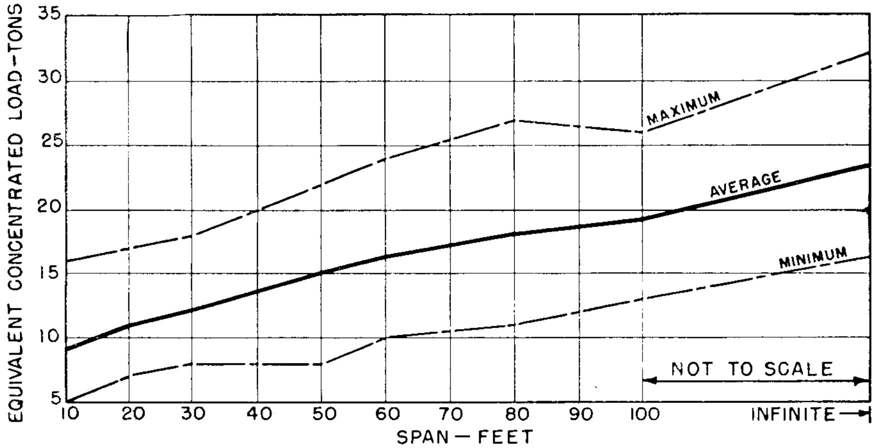


Figure 24.3

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-S2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

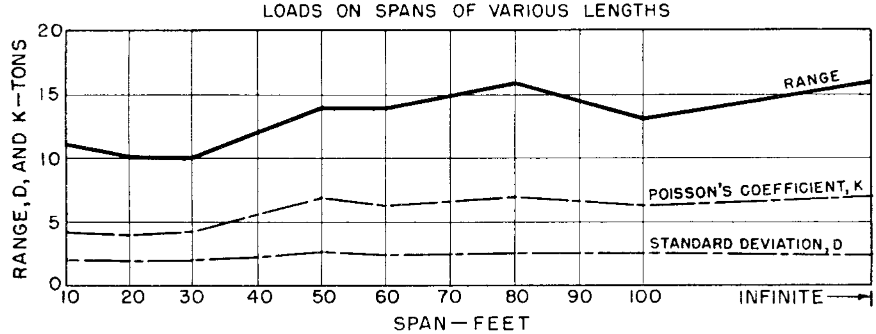
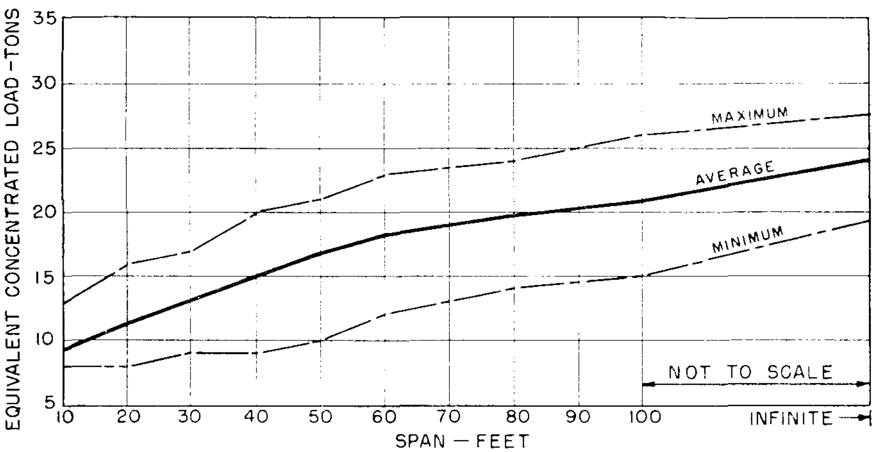


Figure 24.4

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-SI TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 9 TYPE 3-SI TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

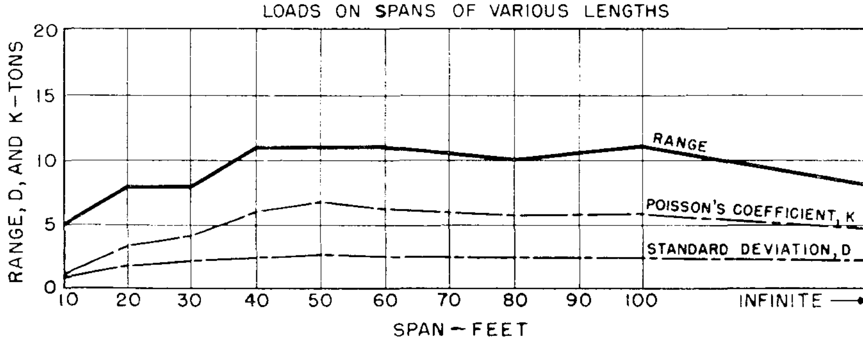
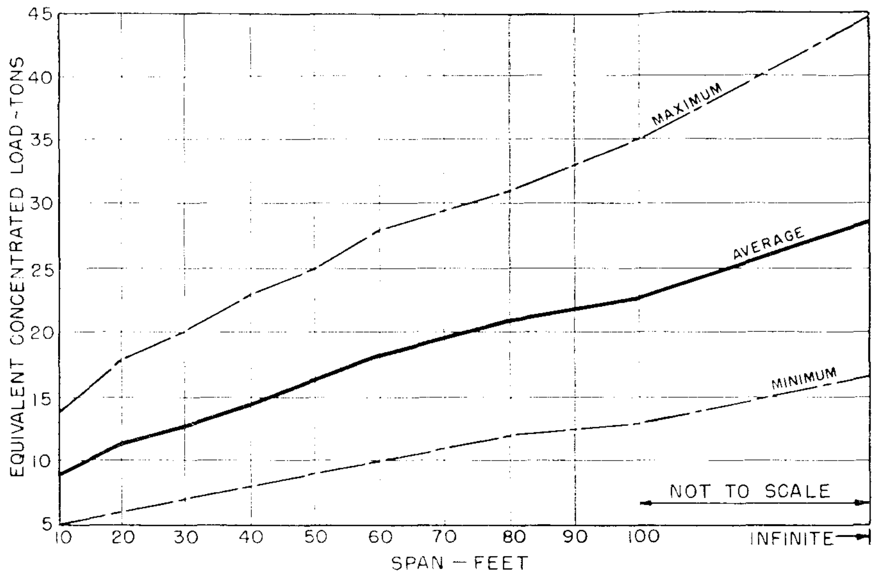


Figure 24.5

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-S2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

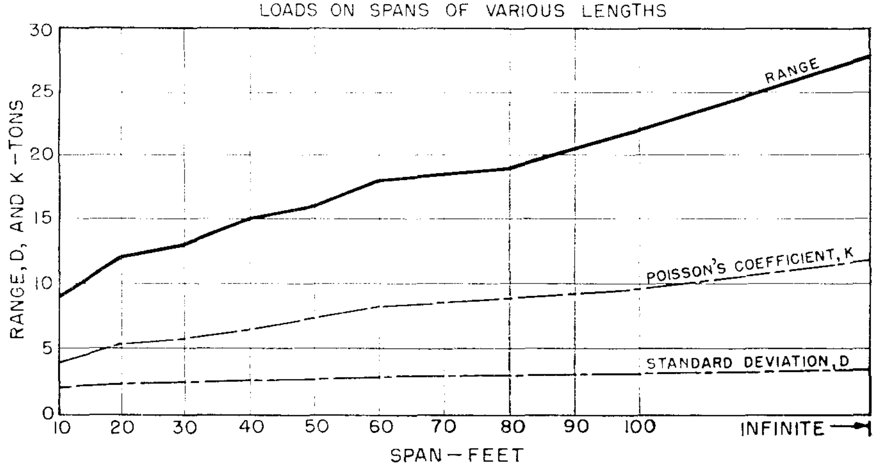


Figure 24.6

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-S3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY

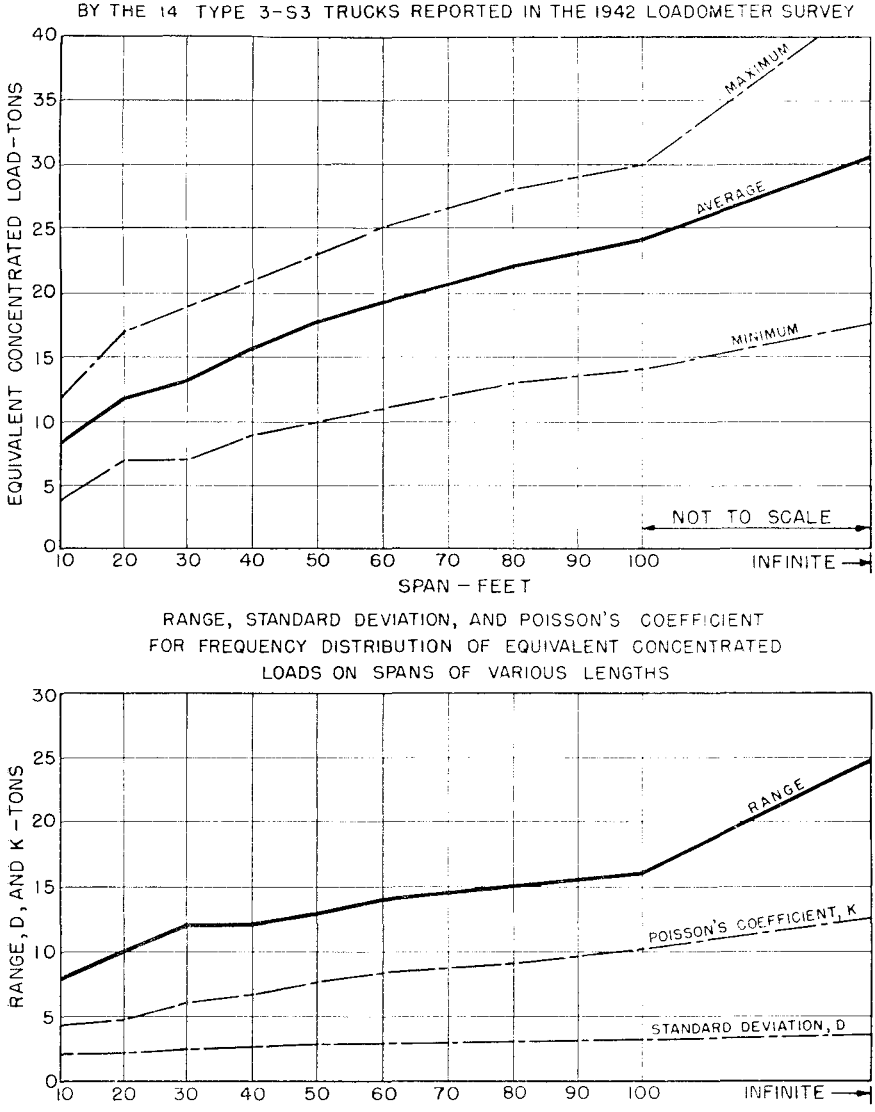
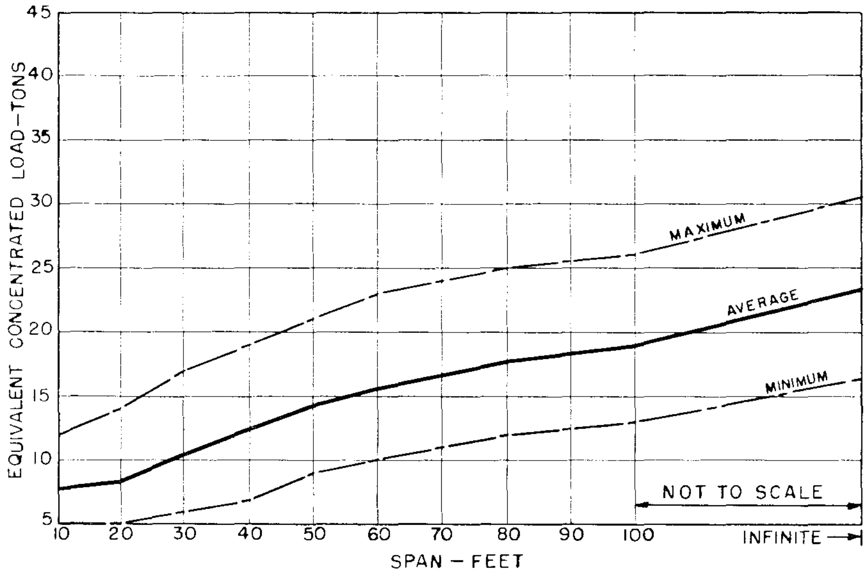


Figure 24.7

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 99 TYPE 2-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:— GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

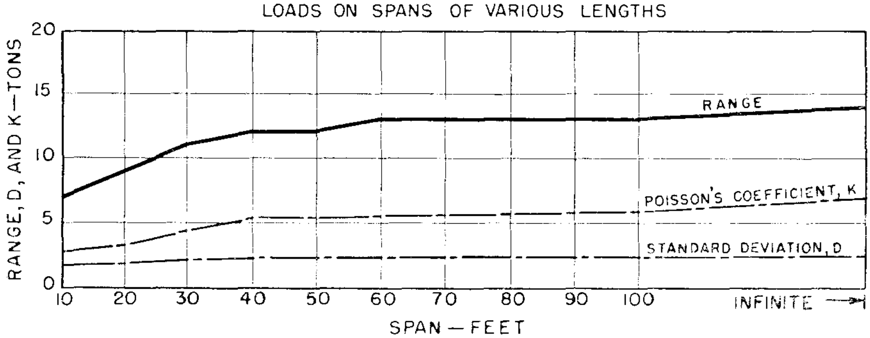


Figure 24.8

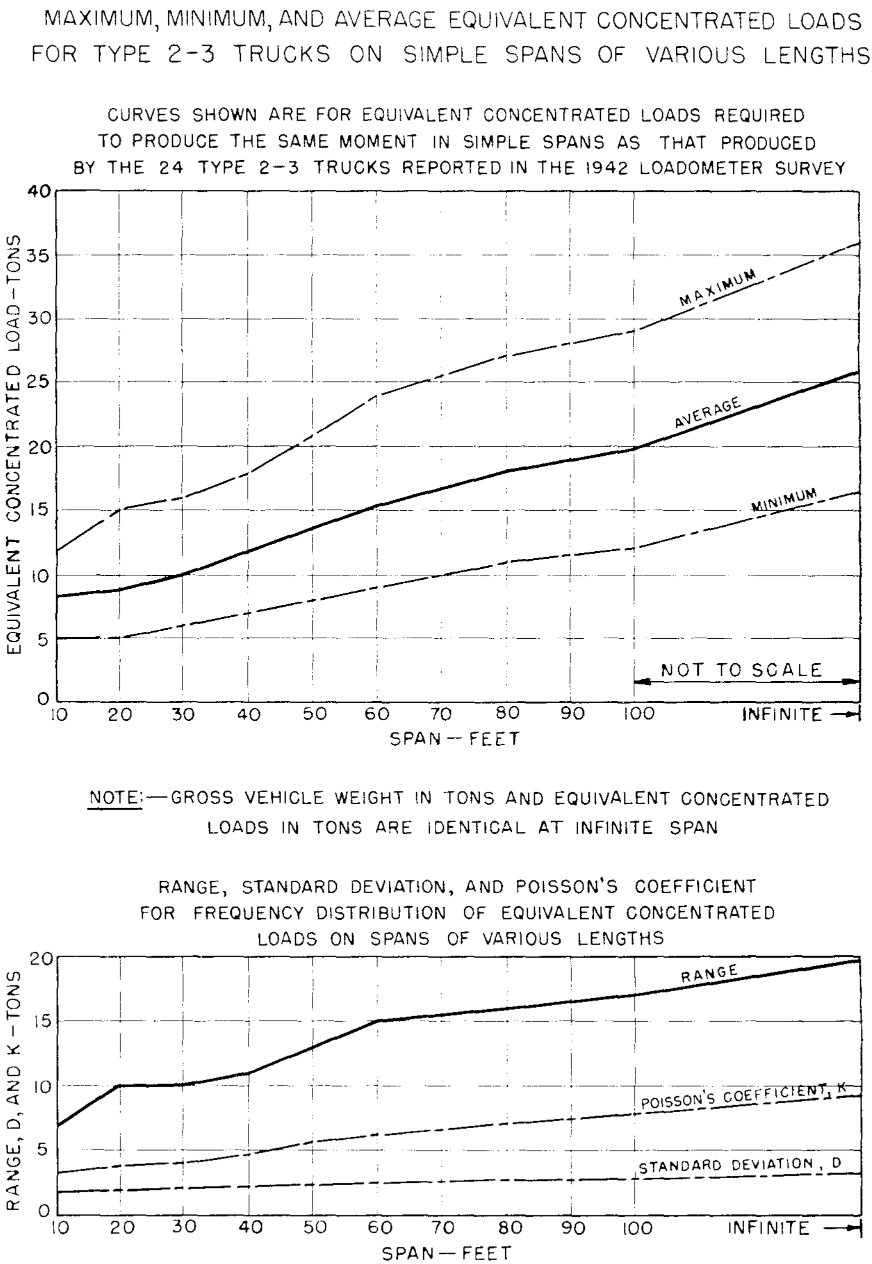
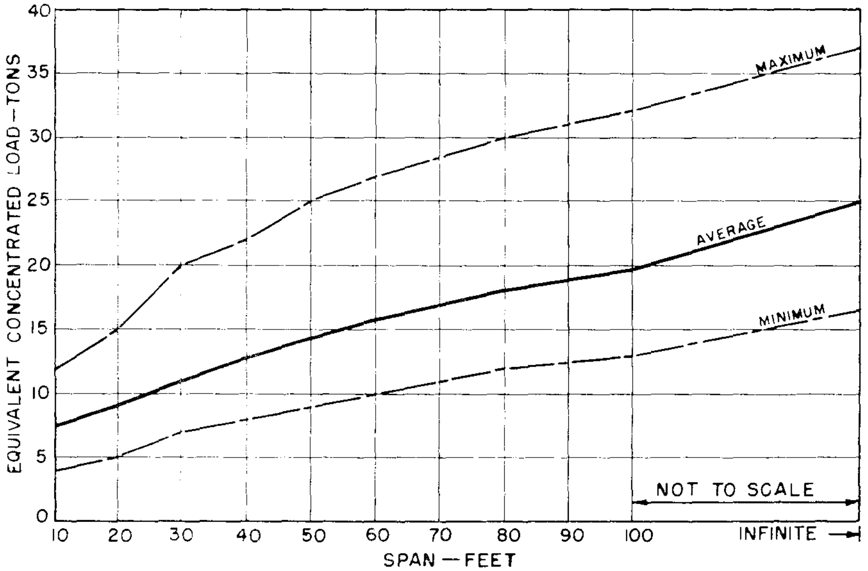

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS
FOR TYPE 2-3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS
CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED
TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED
BY THE 24 TYPE 2-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT CONCENTRATED LOAD - TONS
0
5
10
15
20
25
30
35
40
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET
NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED
LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT
FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED
LOADS ON SPANS OF VARIOUS LENGTHS
RANGE, D, AND K - TONS
0
5
10
15
20
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET

Figure 24.9

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-2 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 68 TYPE 3-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN TONS AND EQUIVALENT CONCENTRATED LOADS IN TONS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

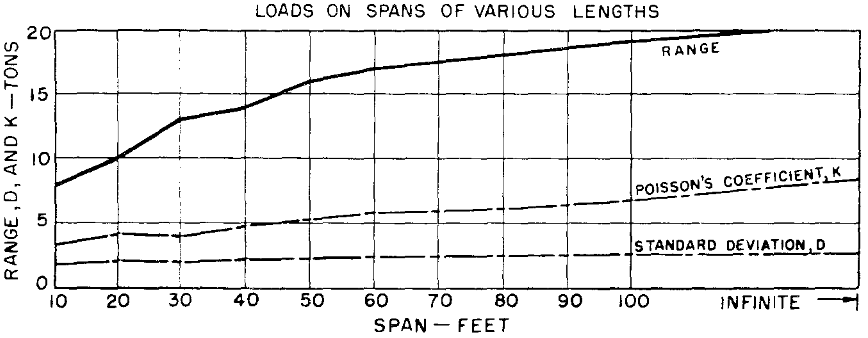
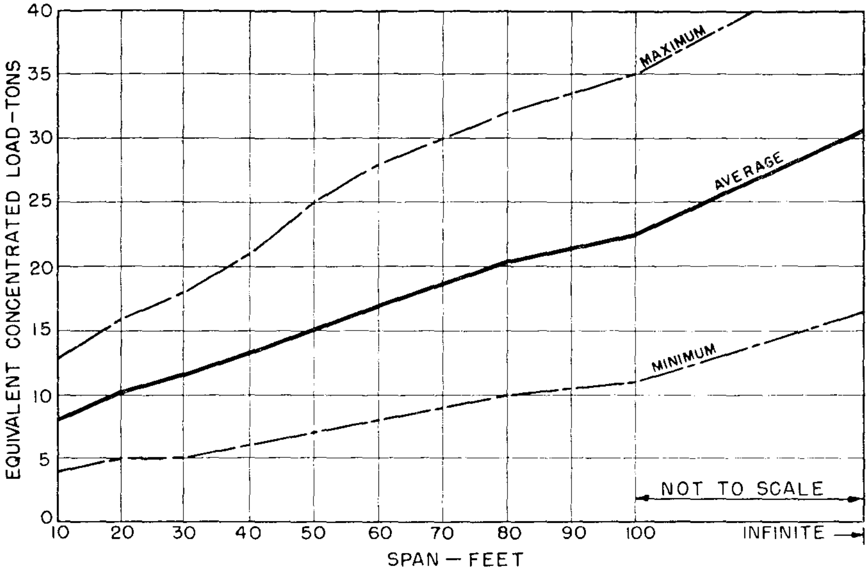


Figure 24.10

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-3 TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 176 TYPE 3-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

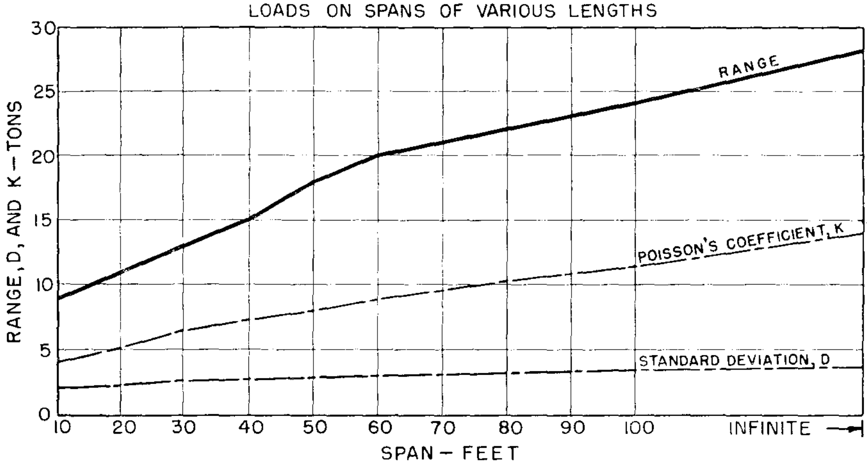
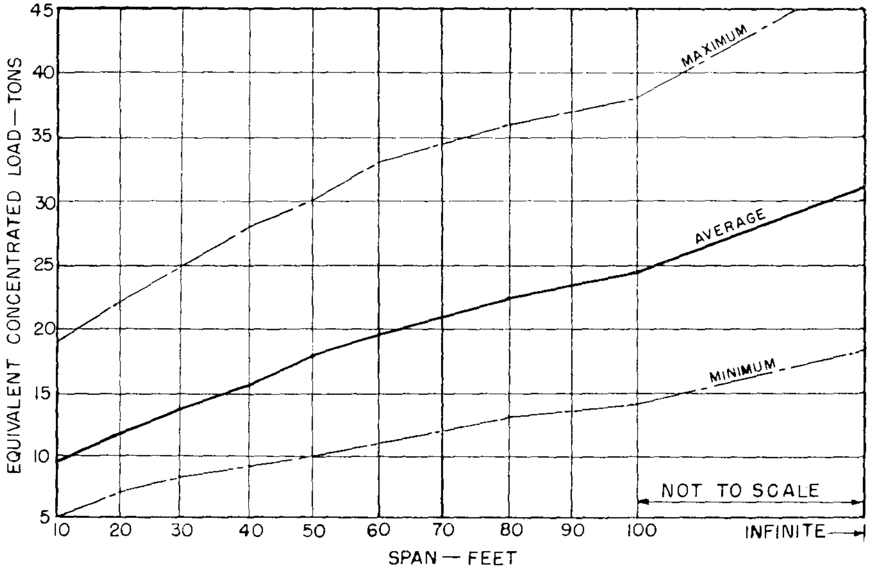


Figure 24.11

MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR THE 83 TRUCK-TRACTOR SEMITRAILER-TRAILER COMBINATIONS ON SIMPLE SPANS OF VARIOUS LENGTHS

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 83 TRUCK-TRACTOR SEMITRAILER-TRAILER COMBINATIONS REPORTED IN THE 1942 LOADOMETER SURVEY



RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

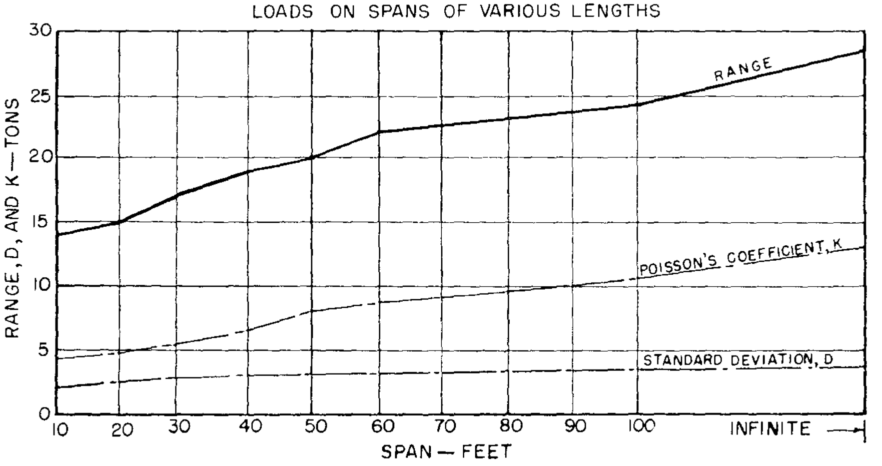
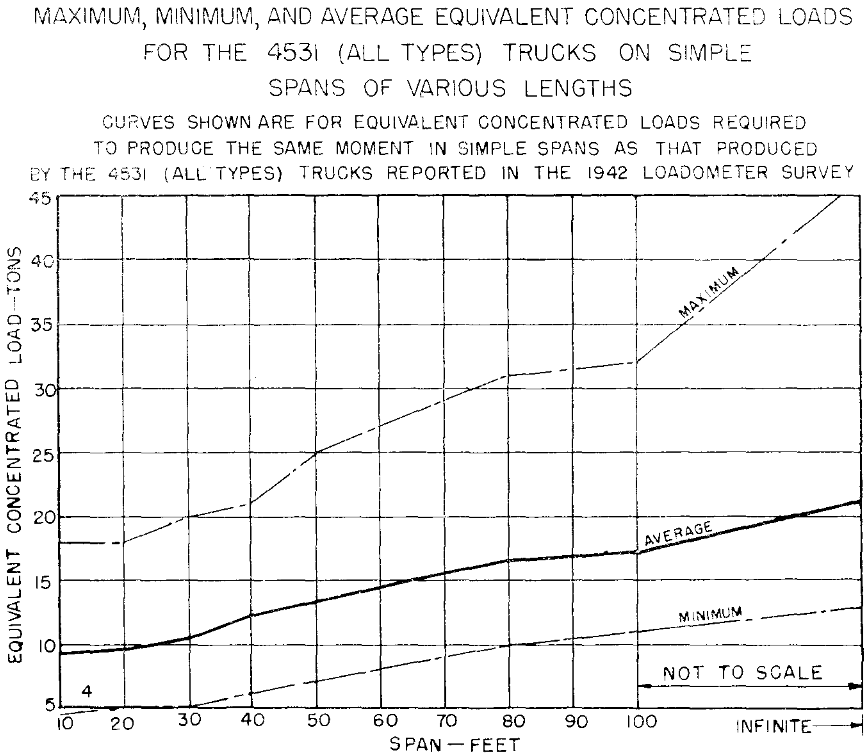


Figure 24.12


MAXIMUM, MINIMUM, AND AVERAGE EQUIVALENT CONCENTRATED LOADS FOR THE 4531 (ALL TYPES) TRUCKS ON SIMPLE SPANS OF VARIOUS LENGTHS
CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 4531 (ALL TYPES) TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT CONCENTRATED LOAD—TONS
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
4
SPAN—FEET
INFINITE

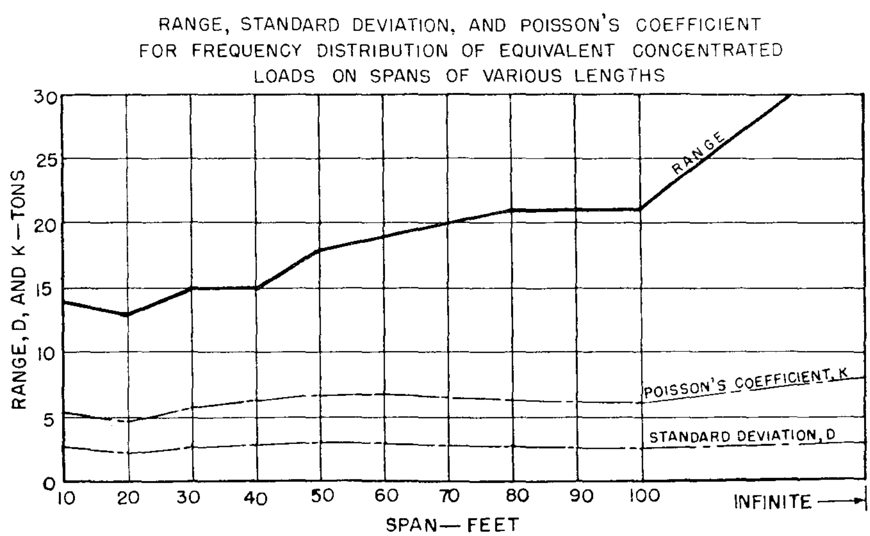

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS
RANGE, D, AND K—TONS
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
SPAN—FEET
INFINITE

Figure 24.13

25. HISTOGRAMS SHOWING FREQUENCY DISTRIBUTIONS OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES BASED ON GROSS VEHICLE WEIGHTS

Figures 25.1—25.11 present a graphical representation of the observed and calculated frequencies of equivalent concentrated loads on simple spans up to 100 feet in length for each of the 11 more numerous heavy vehicle types reported in the 1942 loadometer survey; Figure 24.12 gives the same information for all of the heavy vehicles reported, representing a combined total of 4531. The histograms represent the observed data, based on 3-item moving averages, and the dashed lines represent the corresponding Poisson distributions. Both the observed and calculated frequencies of equivalent concentrated loads were plotted from the corresponding data given by tables 23.1a—23.12a and 23.1b—23.12b. These distributions are given in the following figures:

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	25.1
3	381	25.2
2-S1	2855	25.3
2-S2	508	25.4
3-S1	9	25.5
3-S2	142	25.6
3-S3	14	25.7
2-2	99	25.8
2-3	24	25.9
3-2	68	25.10
3-3	176	25.11
All	4531	25.12

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 171 TYPE 2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

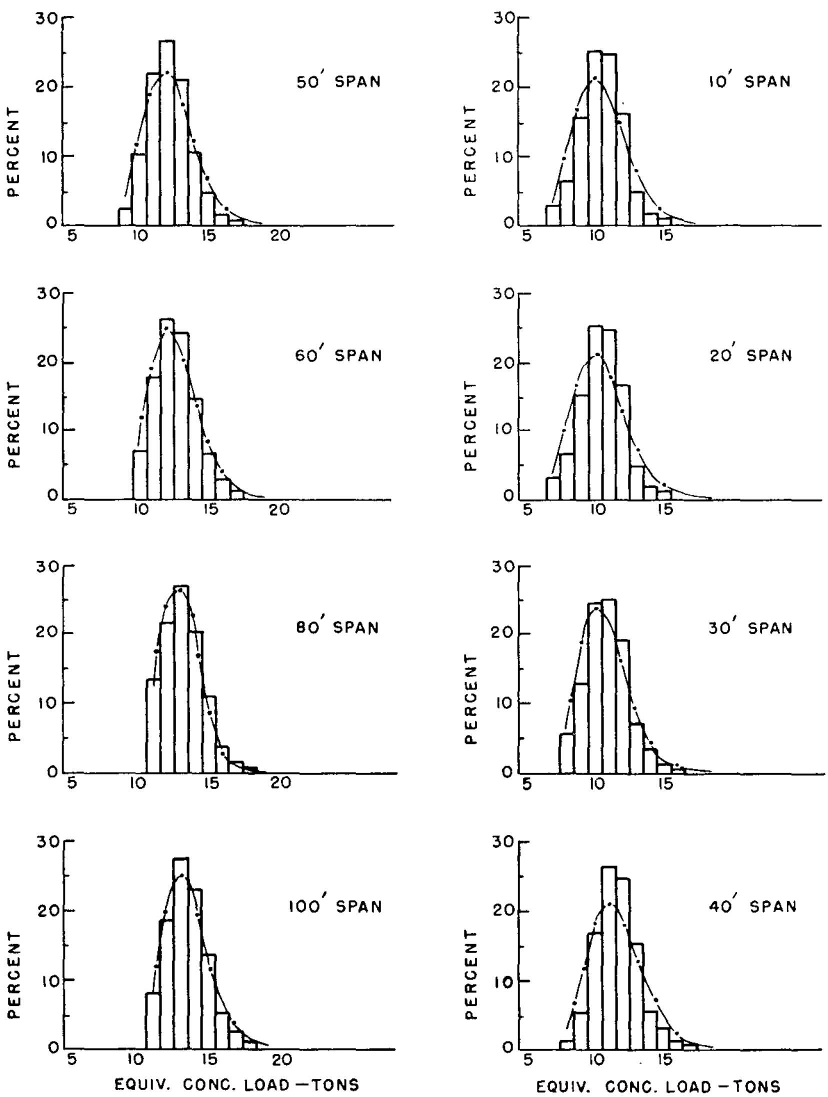


Figure 25.1

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

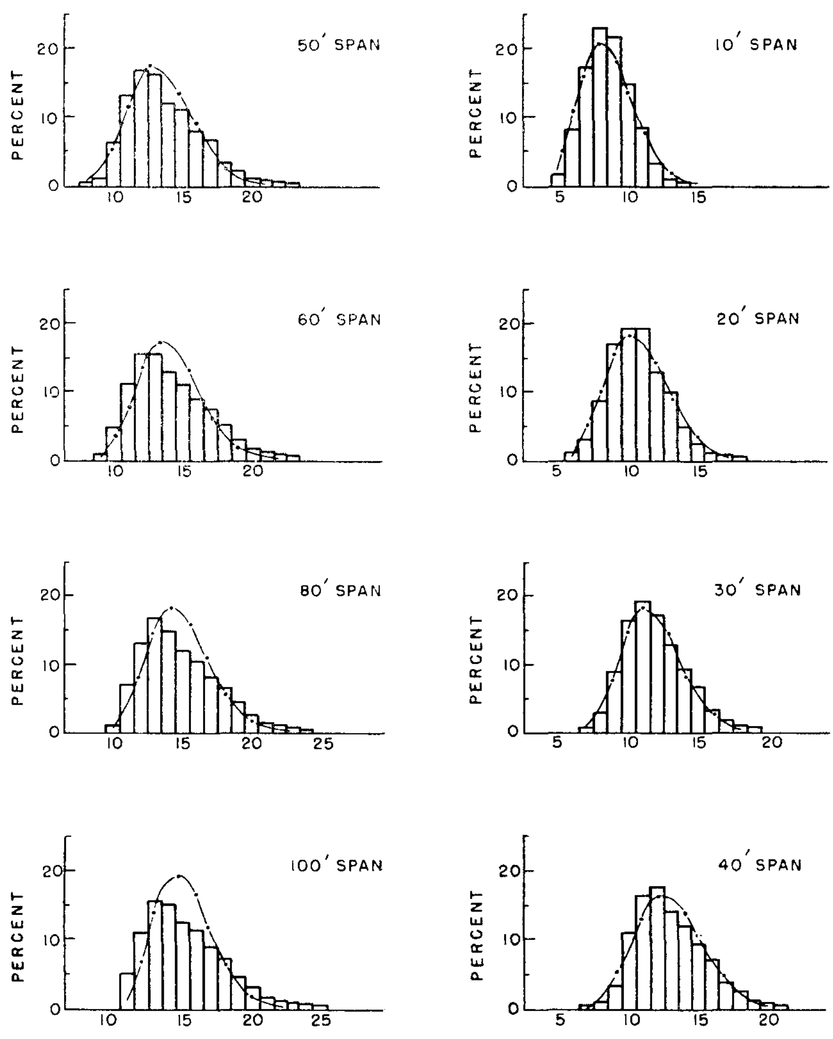


Figure 25.2

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-S1 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

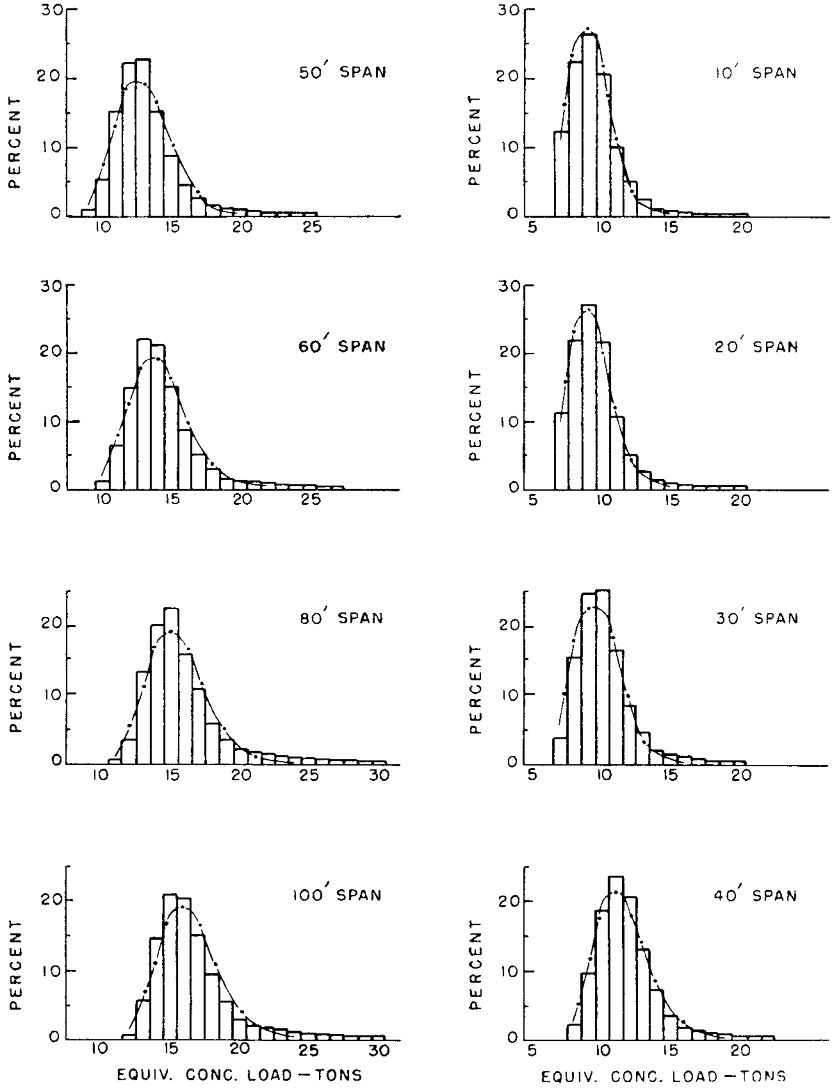


Figure 25.3

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-S2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

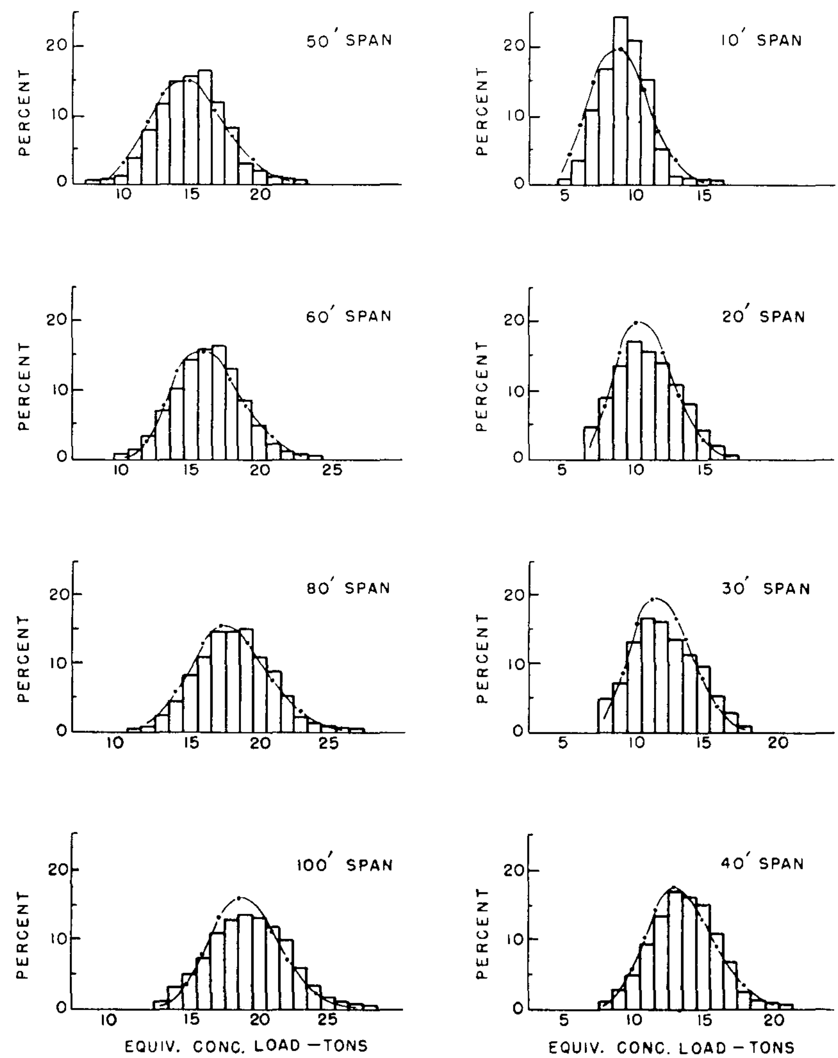


Figure 25.4

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-SI HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 9 TYPE 3-SI TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

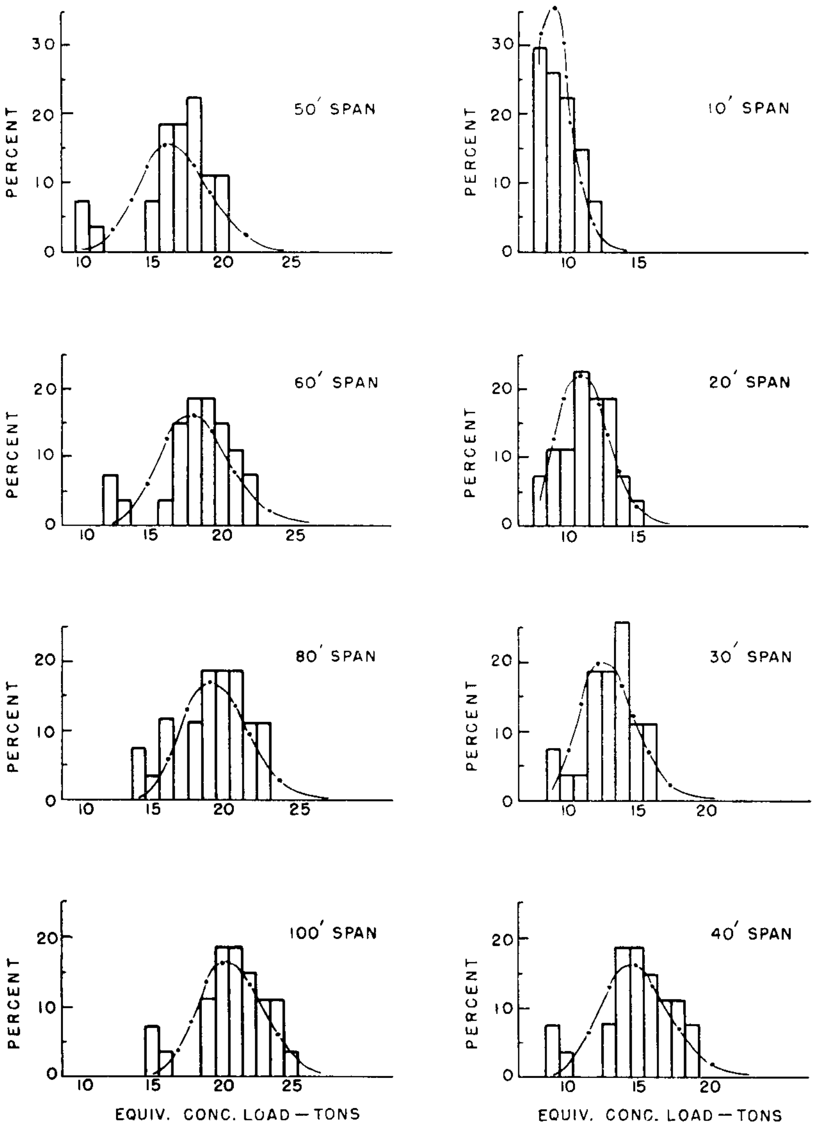


Figure 25.5

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-S2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS'

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

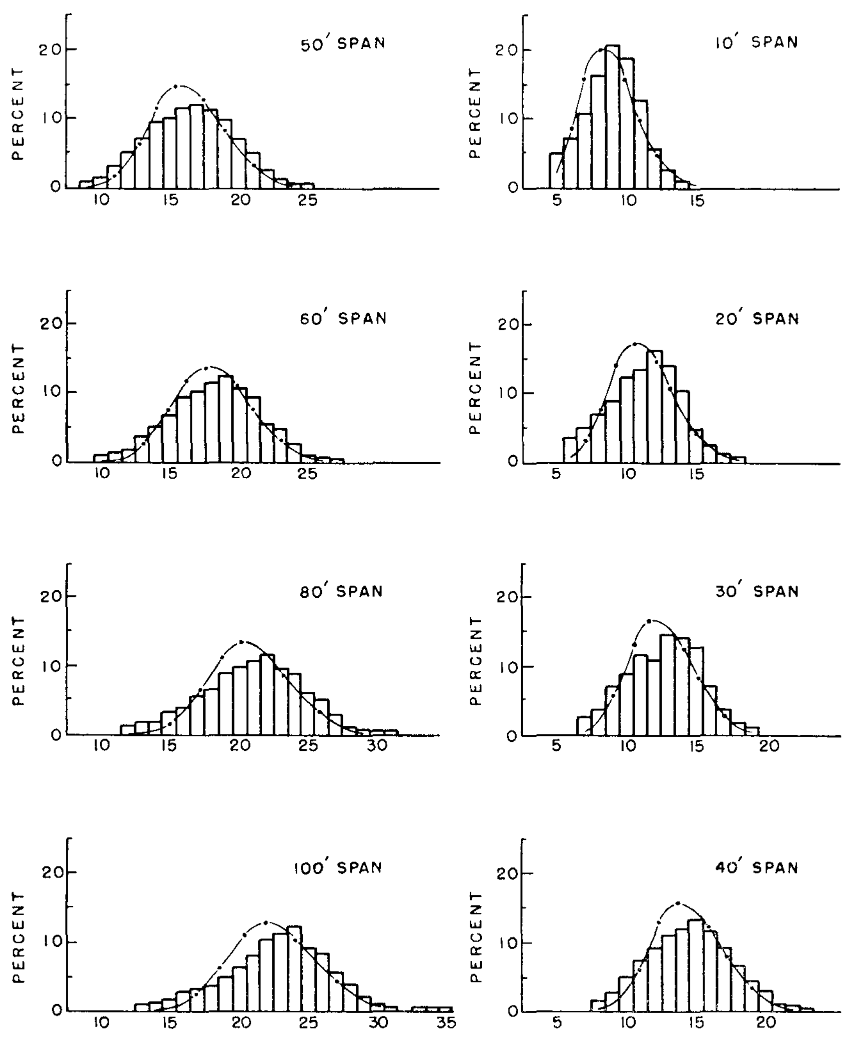


Figure 25.6

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-S3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

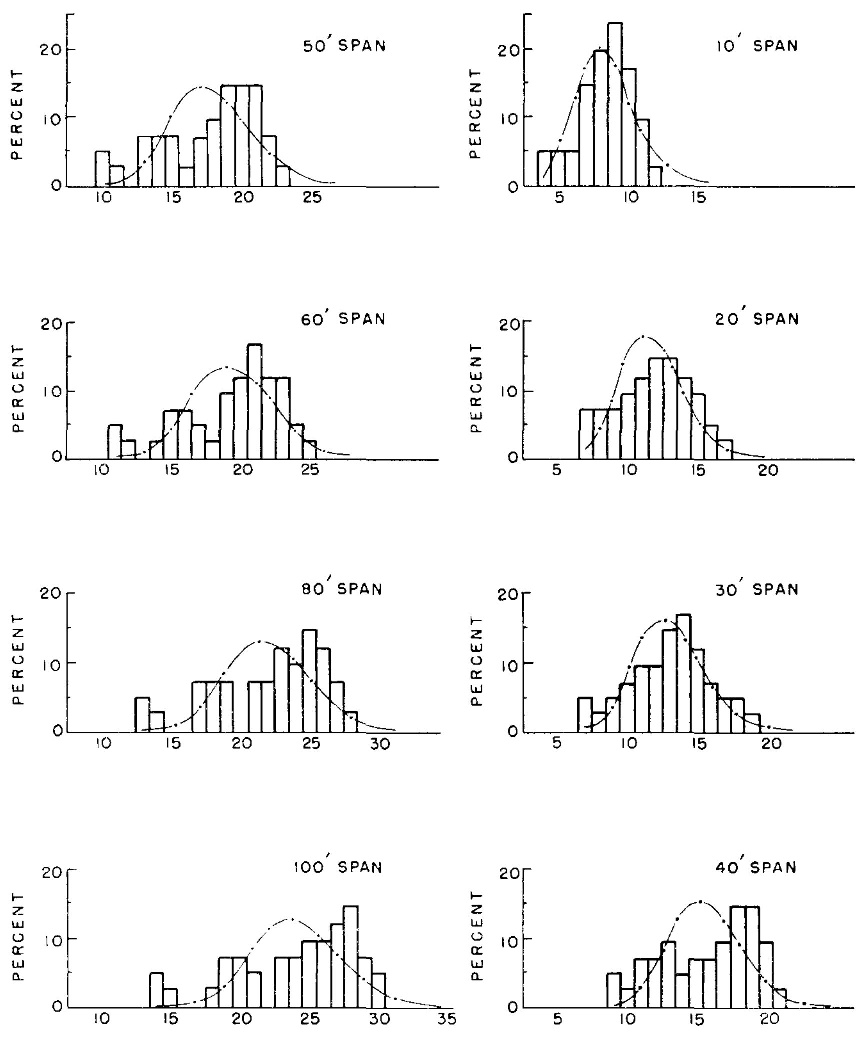


Figure 25.7

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2–2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 99 TYPE 2–2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

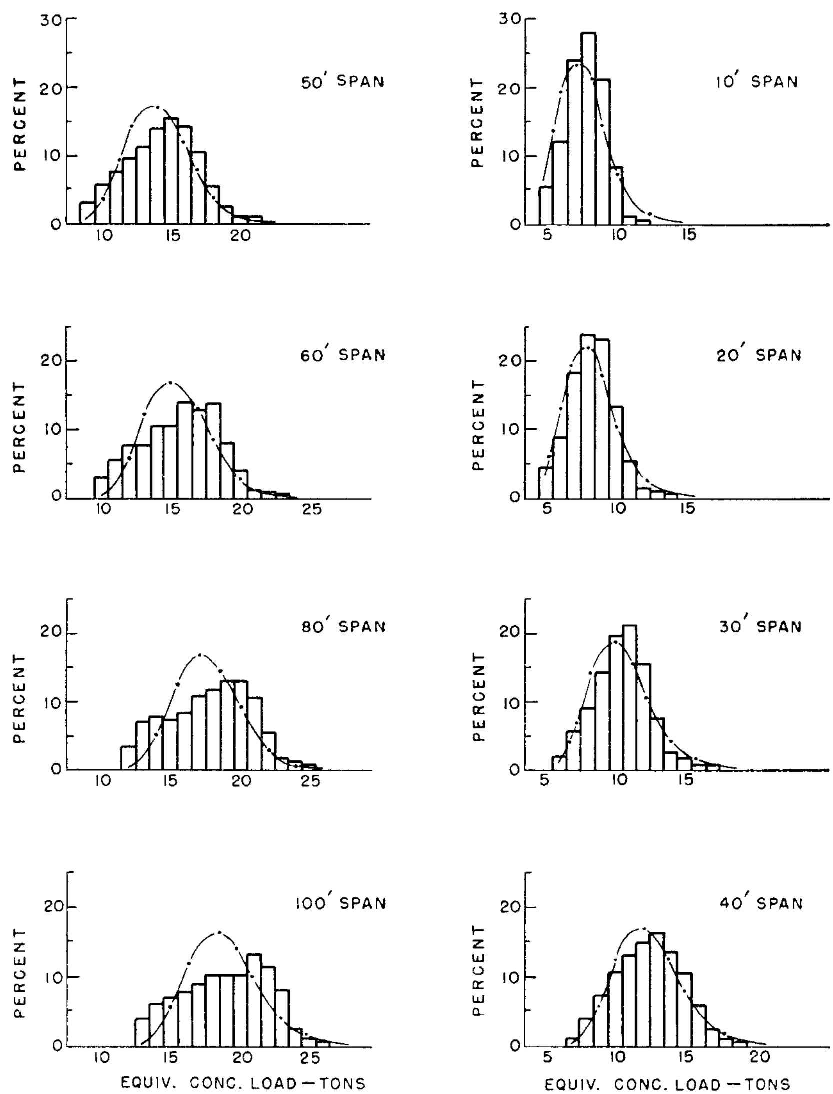


Figure 25.8

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 24 TYPE 2-3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

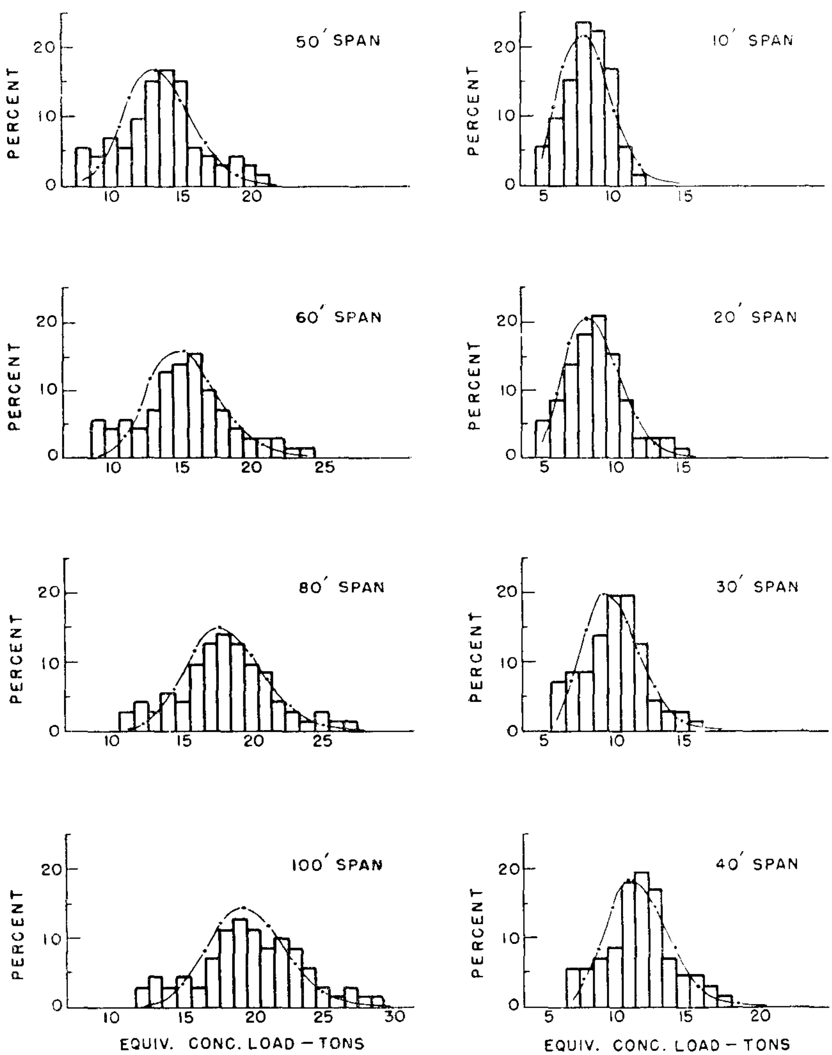


Figure 25.9

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-2 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 68 TYPE 3-2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

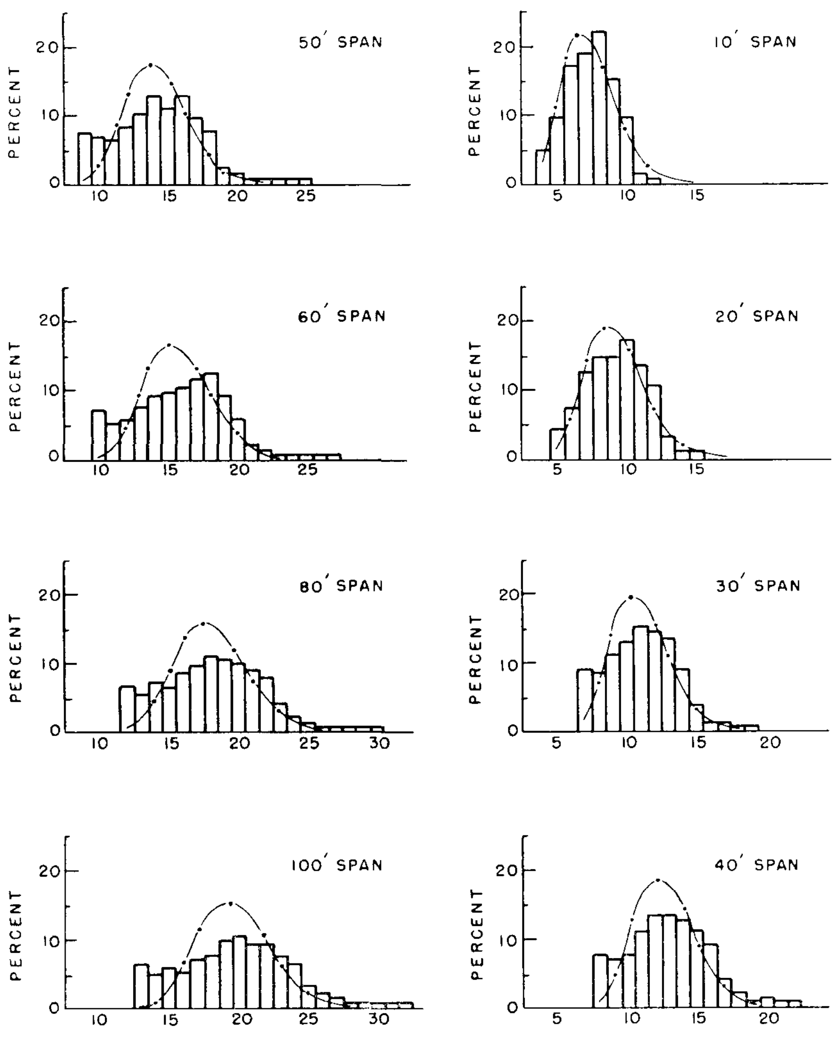


Figure 25.10

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-3 HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 176 TYPE 3—3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

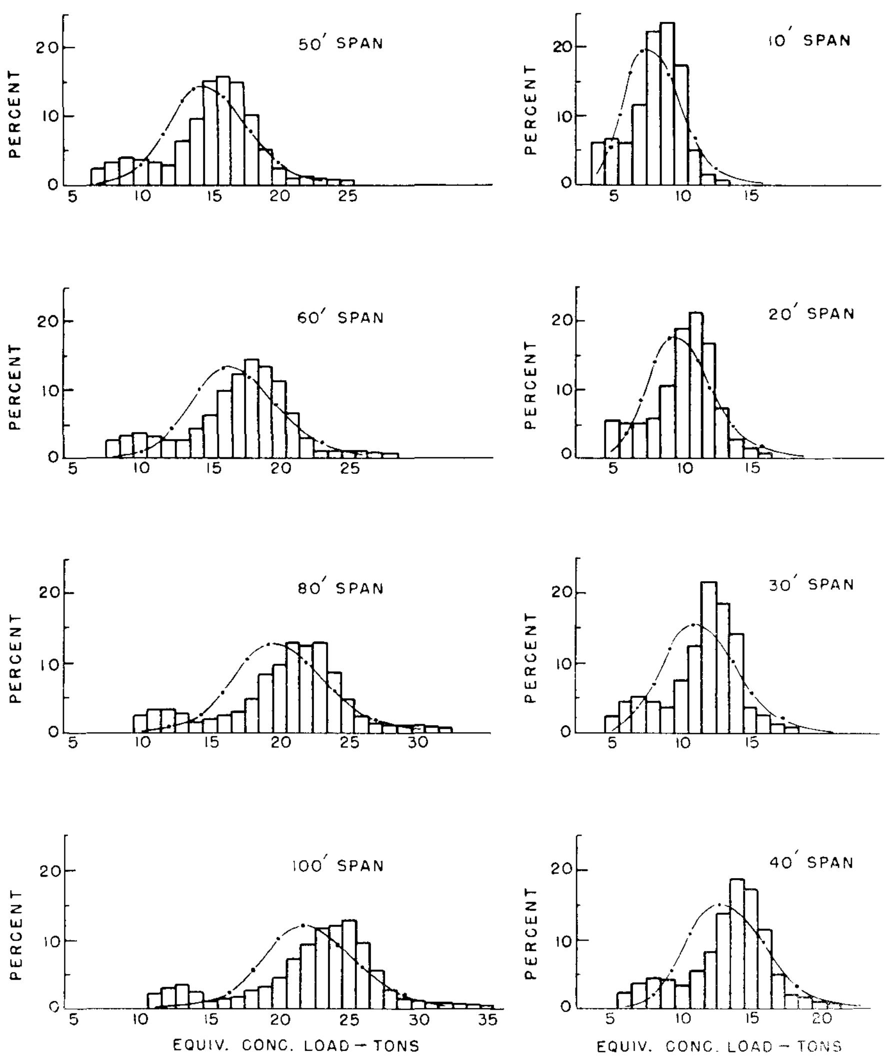


Figure 25.11

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR ALL TYPE HEAVY VEHICLES ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 4531 (ALL TYPES) TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

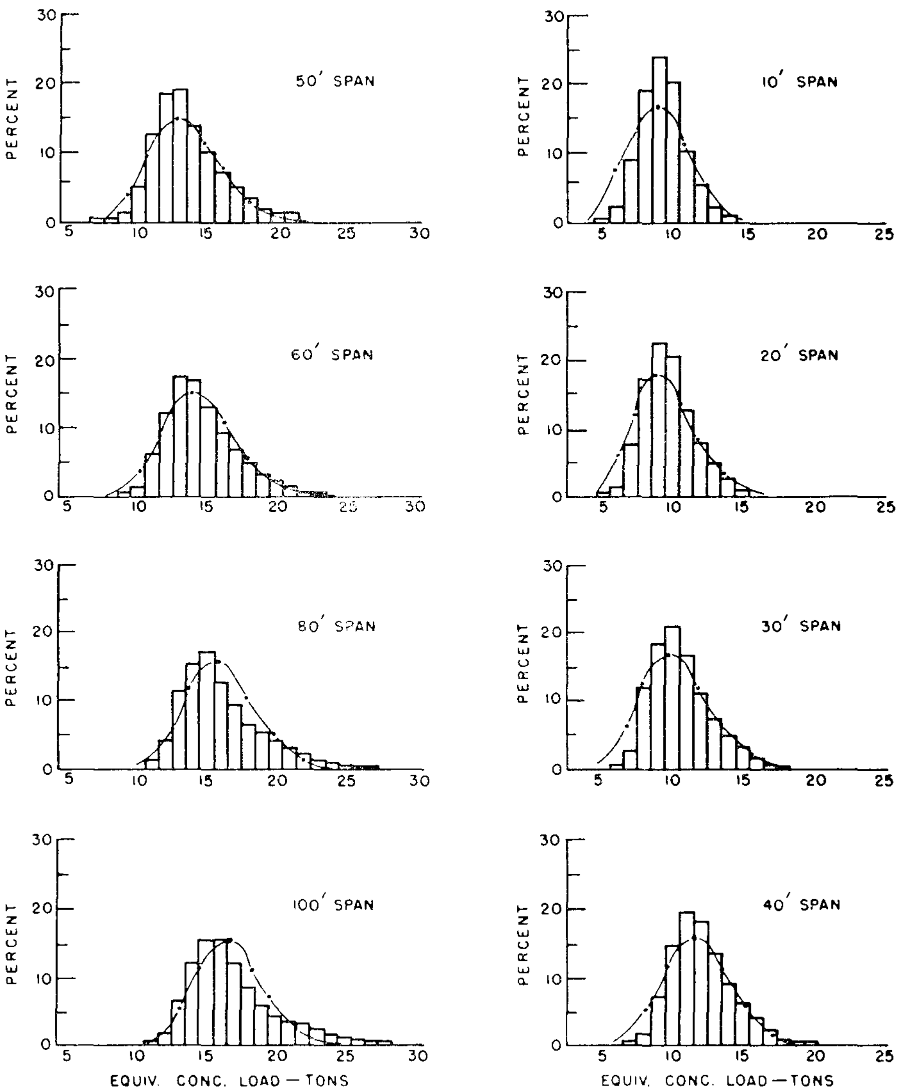


Figure 25.12

26. OBSERVED AND CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES BASED ON VEHICLES WEIGHING ONE KIP EACH

The observed and calculated frequencies of equivalent concentrated loads based on gross vehicle weights, as discussed in Articles 23, 24, and 25, provide a convenient means for analyzing the range and frequencies of the actual live load bending moments that would result on various span lengths from the heavy vehicle loadings reported by the 1942 loadometer survey. Owing to the fact, however, that these moments include the effect of gross vehicle weights, they do not reflect the stress producing characteristics of the vehicles themselves.

In order to investigate or analyze the stress producing characteristics of the heavy vehicle types and loadings actually found on the highways, therefore, it is necessary to eliminate gross vehicle weight as a variable by holding it constant. This may be accomplished by considering each heavy vehicle investigated to have a gross vehicle weight of one kip as was done in the case of the 1303 variations of wheel base, number and spacing of axles, percentage and distribution of load among the axles for the 14 heavy vehicle types given by the identification index Tables 6.1—6.14. The moment produced by these vehicles of unit weight on spans of various lengths (see Tables 6.1—6.14, 7.1—7.14, and Figures 9.1—9.14) not only provide a simple means for comparing the stress producing characteristics of one vehicle with those of another, but also for comparing or measuring the stress producing effects of any given vehicle type and loading, on a given span, in terms of a standard H truck loading, H design loading, single concentrated load, or any other type of loading as may be desired for use as a basis of comparison.

In the case of measuring the stress producing effects of a given vehicle on a given span, in terms of the standard H truck or a single concentrated load, however, it is simpler to obtain this information directly from Tables 10.1—10.14 and Tables 12.1—12.14, respectively, than by comparing the moments given by Tables 9.1—9.14. For example, if it were desired to rate the stress producing characteristics of a Type 2-S1 Truck—with axle spacings of 12 and 24 feet, making an over-all wheel-base length of 36 feet, and a percentage distribution of load from front to rear of 10, 45, and 45 percent, respectively—in terms of an equivalent concentrated load on a 60-foot span, it will be found in Table 12.3 that this vehicle (2-S1-66) of unit weight will produce but 62.6 percent as much moment as a concentrated load of unit weight on this 60-foot span. Therefore, the stress producing effects of this 2-S1-66 truck would be rated at .626 of a single concentrated load of equal weight.

An analysis of the stress producing characteristics of the 11 more numerous heavy vehicle types, reported by the 1942 loadometer survey, is given by Tables 26.1a—26.11a and Tables 26.1b—26.11b which present the observed and calculated frequencies of equivalent concentrated loads for these vehicles on a unit weight basis on spans up to 100 feet in length. In Table 26.1a, it will be seen that of the 171 Type 2 trucks reported, 25.5 percent of them produced 90 percent as much moment as a single concentrated load of equal weight on a 50-foot span. In the same column it will be seen that 28.7 percent of them produced 85 percent as much moment as a single concentrated load of equal weight, and so on.

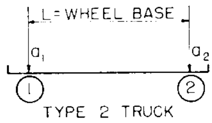
The observed and calculated frequencies of equivalent concentrated loads for each of the 11 heavy vehicle types weighing one kip each on spans up to 100 feet in length are given in the following tables:

Heavy Vehicle Type	Number of Vehicles Reported	Table of Observed Frequencies	Table of Calculated Frequencies
2	171	26.1a	26.1b
3	381	26.2a	26.2b
2-S1	2855	26.3a	26.3b
2-S2	508	26.4a	26.4b
3-S1	9	26.5a	26.5b
3-S2	142	26.6a	26.6b
3-S3	14	26.7a	26.7b
2-2	99	26.8a	26.8b
2-3	24	26.9a	26.9b
3-2	68	26.10a	26.10b
3-3	176	26.11a	26.11b

The maximum, average, and minimum equivalent concentrated loads, the range, Poisson coefficient, K, and standard deviation, D, all have the same meaning as explained in connection with the frequency distributions based on gross vehicle weights in Article 15.

Table 26.1a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 171 TYPE 2 TRUCKS WEIGHING ONE KIP EACH

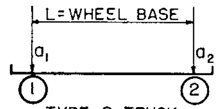


Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.95							28.7	41.7
.90				11.3	25.5	37.4	32.8	33.3
.85			9.7	19.7	28.7	32.8	28.9	23.4
.80	18.4	18.4	19.7	27.3	26.9	23.0	9.1	1.6
.75	25.5	25.7	26.7	22.2	13.3	5.9	.5	
.70	25.9	26.1	23.4	13.3	4.7	.6		
.65	18.7	18.7	13.3	4.7	.6	.3		
.60	7.8	7.6	5.3	1.2	.3			
.55	2.5	2.3	1.5	.3				
.50	1.2	1.2	.4					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.80	.80	.85	.90	.90	.90	.95	.95
Avg. ECL	.71	.71	.73	.79	.83	.85	.89	.91
Min. ECL	.50	.50	.50	.55	.60	.65	.75	.80
Range	.30	.30	.35	.35	.30	.25	.20	.15
Poisson's Coef. K	1.8	1.8	2.3	2.3	1.4	.9	1.2	.7

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 171 Type 2 trucks reported by the 1942 loadometer survey.

Table 26.1b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 171 TYPE 2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2 TRUCK

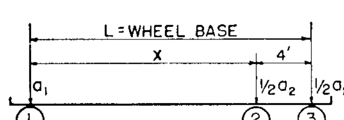
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.95							30.1	49.7
.90				10.0	24.7	40.7	36.1	34.8
.85			10.0	23.1	34.5	36.6	21.7	12.2
.80	16.5	16.5	23.1	26.5	24.2	16.5	8.7	2.8
.75	29.8	29.8	26.5	20.3	11.3	4.9	2.6	.5
.70	26.8	26.8	20.3	11.7	3.9	1.1	.6	
.65	16.1	16.1	11.7	5.4	1.1	.2	.1	
.60	7.2	7.2	5.4	2.1	.3		.1	
.55	2.6	2.6	2.1	.7				
.50	.8	.8	.7	.2				
.45	.2	.2	.2					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.80	.80	.85	.90	.90	.90	.95	.95
Avg. ECL	.71	.71	.73	.79	.83	.85	.89	.91
Min. ECL	.45	.45	.45	.50	.60	.65	.60	.75
Range	.35	.35	.40	.40	.30	.25	.35	.20
Poisson's Coef. K	1.8	1.8	2.3	2.3	1.4	.9	1.2	.7
Std. Dev. D	1.342	1.342	1.517	1.517	1.183	.949	1.095	.837

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 171 Type 2 trucks reported by the 1942 loadometer survey.

Table 26.2a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 381 TYPE 3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.95							29.0	36.1
.90					22.4	33.3	32.6	33.1
.85				26.9	31.0	32.5	32.9	29.5
.80			18.9	30.7	32.1	29.2	4.8	1.1
.75		14.2	27.6	28.5	11.1	3.9	.7	.2
.70		25.8	29.7	9.7	2.4	.8		
.65	29.1	16.0	2.4	.8	.3			

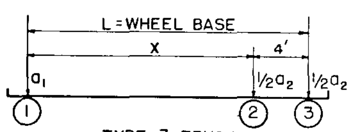
Table 26.2a (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.60	14.2	20.8	5.3	1.1	.2			
.55	31.2	7.5	1.4	.4				
.50	30.2	2.2	.7	.3				
.45	21.3	.4	.4					
.40	2.1							
.35	1.0							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.60	.75	.80	.85	.90	.90	.95	.95
Avg. ECL	.52	.66	.72	.78	.83	.85	.89	.90
Min. ECL	.35	.45	.45	.50	.60	.65	.75	.75
Range	.25	.30	.35	.35	.30	.25	.20	.20
Poisson's Coef. K	1.7	1.9	1.7	1.3	1.4	1.0	1.2	.9

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 381 Type 3 trucks reported by the 1942 loadometer survey.

Table 26.2b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 381 TYPE 3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3 TRUCK

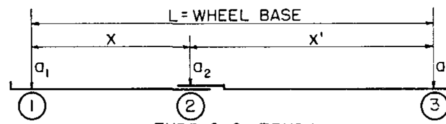
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.95							30.1	40.7
.90					24.7	36.8	36.1	36.6
.85				27.3	34.5	36.8	21.7	16.5
.80			18.3	35.4	24.2	18.4	8.7	4.9
.75		15.0	31.1	23.0	11.3	6.1	2.6	1.1
.70		28.4	26.4	10.0	3.9	1.5	.6	.2
.65		27.0	15.0	3.2	1.1	.3	.1	
.60	18.3	17.1	6.4	.8	.3	.1	.1	
.55	31.1	8.1	2.2	.2				
.50	26.4	3.1	.6	.1				
.45	15.0	1.0						
.40	6.4	.3						
.35	2.2							
.30	.6							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.60	.75	.80	.85	.90	.90	.95	.95
Avg. ECL	.52	.66	.72	.78	.83	.85	.89	.90
Min. ECL	.30	.40	.50	.50	.60	.60	.60	.70
Range	.30	.35	.30	.35	.30	.30	.35	.25
Poisson's Coef. K	1.7	1.9	1.7	1.3	1.4	1.0	1.2	.9
Std. Dev. D	1.304	1.378	1.304	1.140	1.183	1.000	1.095	.949

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 381 Type 3 trucks reported by the 1942 loadometer survey.

Table 26.3a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



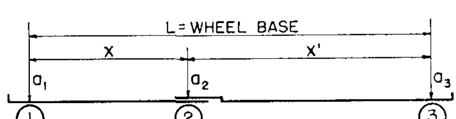
TYPE 2-S1 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.90							2.9	17.0
.85						2.8	21.3	31.4
.80					2.9	13.0	31.2	32.8
.75				2.8	13.1	26.8	30.4	16.7
.70			.3	5.3	23.0	29.6	12.0	2.0
.65			3.0	18.2	28.6	20.2	2.0	.1
.60	.3	.7	5.1	27.3	20.1	6.4	.2	
.55	13.1	13.1	24.1	27.9	10.2	1.1		
.50	26.6	28.2	30.2	15.0	1.9	.1		
.45	33.1	32.9	28.1	3.4	.2			
.40	20.3	20.2	9.1	.1				
.35	6.6	4.9	.1					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.60	.60	.70	.75	.80	.85	.90	.90
Avg. ECL	.46	.46	.50	.58	.66	.71	.78	.82
Min. ECL	.35	.35	.35	.40	.45	.50	.60	.65
Range	.25	.25	.35	.35	.35	.35	.30	.25
Poisson's Coef. K	2.8	2.7	4.0	3.3	2.9	2.8	2.3	1.6

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 2855 Type 2-S1 trucks reported by the 1942 loadometer survey.

Table 26.3b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 2855 TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-S1 TRUCK

Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.90							10.2	20.2
.85						6.1	23.1	32.3
.80					5.5	17.0	26.5	25.8
.75				3.7	16.0	23.8	20.3	13.8
.70			1.8	12.2	23.1	22.2	11.7	5.5
.65			7.3	20.1	22.4	15.6	5.4	1.8
.60	6.1	6.7	14.7	22.1	16.2	8.7	2.1	.5
.55	17.0	18.1	19.5	18.2	9.4	4.1	.7	.1
.50	23.8	24.5	19.5	12.0	4.5	1.6	.2	
.45	22.2	22.0	15.6	6.6	1.9	.6		
.40	15.6	14.9	10.4	3.1	.7	.2		

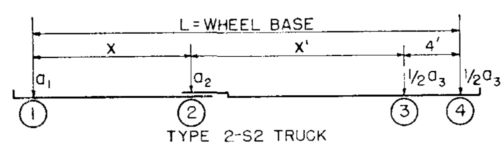
Table 26.3b (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
.35	8.7	8.0	6.0	1.3	.2	.1		
.30	4.1	3.6	3.0	.5	.1			
.25	1.6	1.4	1.3	.2				
.20	.6	.5	.5					
.15	.2	.1	.2					
.10	.1	.1	.1					
.05		.1	.1					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.60	.60	.70	.75	.80	.85	.90	.90
Avg. ECL	.46	.46	.50	.58	.66	.71	.78	.82
Min. ECL	.10	.05	.05	.25	.30	.35	.50	.55
Range	.50	.55	.65	.50	.50	.50	.40	.35
Poisson's Coef. K	2.8	2.7	4.0	3.3	2.9	2.8	2.3	1.6
Std. Dev. D	1.673	1.643	2.000	1.817	1.703	1.673	1.517	1.265

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 2855 Type 2-S1 trucks reported by the 1942 loadometer survey.

Table 26.4a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 508 TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH

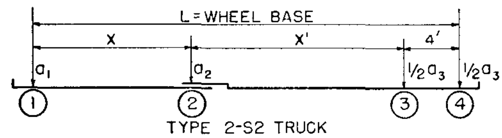


Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
.90								11.7
.85							13.7	24.5
.80					.9	8.3	24.5	32.7
.75				.8	7.3	17.4	31.3	22.3
.70				4.4	13.9	27.2	20.4	8.8
.65			4.8	12.9	27.0	24.5	8.8	.1
.60			6.8	26.6	24.7	15.9	1.3	
.55		19.5	22.0	27.1	19.2	5.5		
.50	.8	19.3	28.9	20.2	5.6	1.2		
.45	30.6	33.0	26.5	6.2	1.3			
.40	30.3	14.2	10.8	1.8	.1			
.35	32.9	14.0	.2					
.30	2.7							
.25	2.7							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.50	.55	.65	.75	.80	.80	.85	.90
Avg. ECL	.39	.46	.50	.57	.62	.68	.76	.80
Min. ECL	.25	.35	.35	.40	.40	.50	.60	.65
Range	.25	.20	.30	.35	.40	.30	.25	.25
Poisson's Coef. K	2.1	1.8	3.0	3.7	3.5	2.4	1.9	1.9

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 508 Type 2-S2 trucks reported by the 1942 loadometer survey.

Table 26.4b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 508 TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH



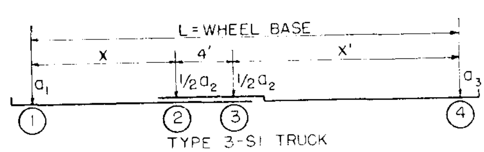
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.90								15.0
.85							15.0	28.4
.80					3.0	9.1	28.4	27.0
.75				2.5	10.6	21.8	27.0	17.1
.70				9.1	18.5	26.1	17.1	8.1
.65			5.0	16.9	21.6	20.9	8.1	3.1
.60			14.9	20.9	18.9	12.5	3.1	1.0
.55		16.5	22.4	19.3	13.2	6.0	1.0	.3
.50	12.2	29.8	22.4	14.3	7.7	2.4	.3	
.45	25.7	26.8	16.8	8.8	3.9	.8		
.40	27.0	16.1	10.1	4.7	1.7	.2		
.35	18.9	7.2	5.0	2.2	.7	.1		
.30	9.9	2.6	2.2	.9	.1	.1		
.25	4.2	.8	.8	.3	.1			
.20	1.5	.2	.3	.1				
.15	.4		.1					
.10	.1							
.05	.1							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.50	.55	.65	.75	.80	.80	.85	.90
Avg. ECL	.39	.46	.50	.57	.62	.68	.76	.80
Min. ECL	.05	.20	.15	.20	.25	.30	.50	.55
Range	.45	.35	.50	.55	.55	.50	.35	.35
Poisson's Coef. K	2.1	1.8	3.0	3.7	3.5	2.4	1.9	1.9
Std. Dev. D	1.449	1.342	1.732	1.924	1.871	1.549	1.378	1.378

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 508 Type 2-S2 trucks reported by the 1942 loadometer survey.

Table 26.5a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 9 TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85							37.0	59.3
.80						29.6	29.6	33.3
.75					25.9	29.6	25.9	3.7
.70				11.1	29.6	25.9	3.7	3.7
.65				29.6	25.9	7.4	3.8	
.60			18.5	25.9	7.4	3.7		

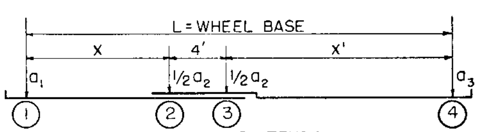
Table 26.5a (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.55			29.6	22.2	3.7	3.8		
.50		40.8	29.6	3.7	3.7			
.45		33.3	18.5	3.7	3.8			
.40	55.6	14.8	3.8	3.8				
.35	33.3	11.1						
.30	7.4							
.25	3.7							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.50	.60	.70	.75	.80	.85	.85
Avg. ECL	.38	.46	.52	.60	.67	.73	.80	.84
Min. ECL	.25	.35	.40	.40	.45	.55	.65	.70
Range	.15	.15	.20	.30	.30	.25	.20	.15
Poisson's Coef. K	.3	.8	1.6	2.0	1.6	1.3	1.0	.2

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 9 Type 3-S1 trucks reported by the 1942 loadometer survey.

Table 26.5b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 9 TYPE 3-S1 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S1 TRUCK

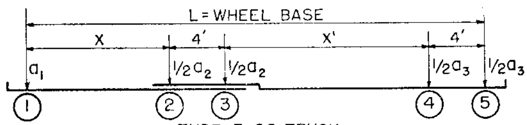
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85							36.8	81.9
.80						27.3	36.8	16.4
.75					20.2	35.4	18.4	1.6
.70				13.5	32.3	23.0	6.1	.1
.65				27.1	25.8	10.0	1.5	
.60			20.2	27.1	13.8	3.2	.3	
.55			32.3	18.0	5.5	.8	.1	
.50		44.9	25.8	9.0	1.8	.2		
.45		35.9	13.8	3.6	.5	.1		
.40	74.1	14.4	5.5	1.2	.1			
.35	22.2	3.8	1.8	.3				
.30	3.3	.8	.5	.1				
.25	.3	.1	.1	.1				
.20	.1	.1						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.50	.60	.70	.75	.80	.85	.85
Avg. ECL	.38	.46	.52	.60	.67	.73	.80	.84
Min. ECL	.20	.20	.25	.25	.40	.45	.55	.70
Range	.20	.30	.35	.45	.35	.35	.30	.15
Poisson's Coef. K	.3	.8	1.6	2.0	1.6	1.3	1.0	.2
Std. Dev. D	.548	.894	1.265	1.414	1.265	1.140	1.000	.447

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 9 Type 3-S1 trucks reported by the 1942 loadometer survey.

Table 26.6a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 142 TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH



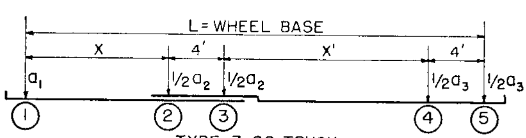
TYPE 3-S2-TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85							1.4	14.3
.80							12.4	31.9
.75						6.6	28.2	32.2
.70					5.9	14.8	31.5	20.2
.65				3.5	10.8	28.6	20.9	1.4
.60				7.3	24.4	26.1	4.9	
.55			5.4	15.0	23.9	18.5	.7	
.50		1.9	17.4	29.6	22.5	4.5		
.45		15.5	31.0	26.1	8.5	.9		
.40	1.9	27.0	28.4	17.8	4.0			
.35	27.9	32.4	16.0	.7				
.30	32.4	17.8	1.8					
.25	32.4	5.4						
.20	5.4							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.50	.55	.65	.70	.75	.85	.85
Avg. ECL	.29	.37	.43	.49	.56	.62	.71	.77
Min. ECL	.20	.25	.30	.35	.40	.45	.55	.65
Range	.20	.25	.25	.30	.30	.30	.30	.20
Poisson's Coef. K	2.1	2.6	2.4	3.2	2.9	2.5	2.8	1.6

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 142 Type 3-S2 trucks reported by the 1942 loadometer survey.

Table 26.6b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 142 TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S2-TRUCK

Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85							6.1	20.2
.80							17.0	32.3
.75						8.2	23.8	25.8
.70					5.5	20.5	22.2	13.8
.65				4.1	16.0	25.7	15.6	5.5
.60				13.0	23.1	21.4	8.7	1.8
.55			9.1	20.9	22.4	13.4	4.1	.5
.50		7.4	21.8	22.3	16.2	6.7	1.6	.1

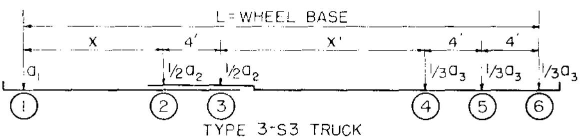
Table 26.6b (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.45		19.3	26.1	17.8	9.4	2.8	.6	
.40	12.2	25.1	20.9	11.4	4.5	1.0	.2	
.35	25.7	21.8	12.5	6.1	1.9	.3	.1	
.30	27.0	14.1	6.0	2.8	.7			
.25	18.9	7.4	2.4	1.1	.2			
.20	9.9	3.2	.8	.4	.1			
.15	4.2	1.2	.2	.1				
.10	1.5	.4	.1					
.05	.6	.1	.1					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.50	.55	.65	.70	.75	.85	.85
Avg. ECL	.29	.37	.43	.49	.56	.62	.71	.77
Min. ECL	.05	.05	.05	.15	.20	.35	.35	.50
Range	.35	.45	.50	.50	.50	.40	.50	.35
Poisson's Coef. K	2.1	2.6	2.4	3.2	2.9	2.5	2.8	1.6
Std. Dev. D	1.449	1.612	1.549	1.789	1.703	1.581	1.673	1.265

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 142 Type 3-S2 trucks reported by the 1942 loadometer survey.

Table 26.7a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 14 TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH

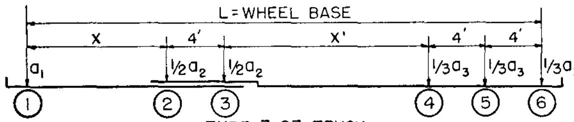


Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.80								54.8
.75							50.0	31.0
.70							31.0	9.5
.65						54.8	11.9	2.4
.60					50.0	31.0	2.4	2.3
.55				42.9	31.0	7.2	2.4	
.50			11.9	33.3	14.3	2.4	2.3	
.45		11.9	33.3	16.7	2.4	2.3		
.40		31.0	31.0	7.1	2.3	2.3		
.35		31.0	23.8					
.30	40.5	23.8						
.25	33.3	2.3						
.20	26.2							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.30	.45	.50	.55	.60	.65	.75	.80
Avg. ECL	.26	.36	.42	.51	.57	.63	.72	.78
Min. ECL	.20	.25	.35	.40	.40	.40	.50	.60
Range	.10	.20	.15	.15	.20	.25	.25	.20
Poisson's Coef. K	.8	1.7	1.6	.7	.6	.5	.6	.4

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 14 Type 3-S3 trucks reported by the 1942 loadometer survey.

Table 26.7b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 14 TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-S3 TRUCK

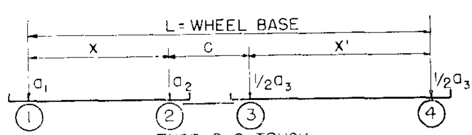
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.80								67.0
.75							54.9	26.8
.70							32.9	5.4
.65						60.7	9.9	.7
.60					54.9	30.3	2.0	.1
.55				49.7	32.9	7.6	.3	
.50			20.2	34.8	9.9	1.3		
.45		18.3	32.3	12.2	2.0	.1		
.40		31.1	25.8	2.8	.3			
.35		26.4	13.8	.5				
.30	44.9	15.0	5.5					
.25	35.9	6.4	1.8					
.20	14.4	2.2	.5					
.15	3.8	.6	.1					
.10	.8							
.05	.2							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.30	.45	.50	.55	.60	.65	.75	.80
Avg. ECL	.26	.36	.42	.51	.57	.63	.72	.78
Min. ECL	.05	.15	.15	.35	.40	.45	.55	.60
Range	.25	.30	.35	.20	.20	.20	.20	.20
Poisson's Coef. K	.8	1.7	1.6	.7	.6	.5	.6	.4
Std. Dev. D	.894	1.304	1.265	.837	.775	.707	.775	.633

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 14 Type 3-S3 trucks reported by the 1942 loadometer survey.

Table 26.8a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 99 TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-2 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85							5.4	30.3
.80						4.0	22.9	32.7
.75					4.0	12.8	32.0	28.6
.70					7.4	24.9	28.6	7.8
.65				5.4	20.9	25.3	10.4	.6
.60			2.4	16.2	24.2	20.2	.7	

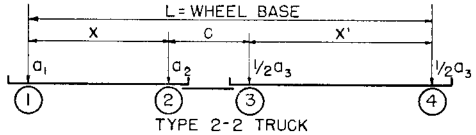
Table 26.8a (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.55			6.4	25.9	25.6	7.8		
.50			19.5	28.3	11.8	4.7		
.45		17.5	25.9	17.2	5.7	.3		
.40	19.5	17.2	26.9	6.4	.4			
.35	33.3	32.3	13.1	.6				
.30	23.9	16.8	5.8					
.25	23.3	16.2						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.45	.60	.65	.75	.80	.85	.85
Avg. ECL	.33	.35	.43	.52	.59	.66	.74	.79
Min. ECL	.25	.25	.30	.35	.40	.45	.60	.65
Range	.15	.20	.30	.30	.35	.35	.25	.20
Poisson's Coef. K	1.4	2.0	3.3	2.6	3.2	2.9	2.2	1.1

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 99 Type 2-2 trucks reported by the 1942 loadometer survey.

Table 26.8b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 99 TYPE 2-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 2-2 TRUCK

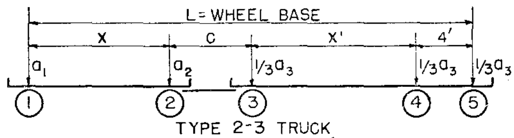
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85							11.1	33.3
.80						5.5	24.4	36.6
.75					4.1	16.0	26.8	20.1
.70					13.0	23.1	19.7	7.4
.65				7.4	20.9	22.4	10.8	2.0
.60			3.7	19.3	22.3	16.2	4.8	.4
.55			12.2	25.1	17.8	9.4	1.7	.1
.50			20.1	21.8	11.4	4.5	.5	.1
.45		13.5	22.1	14.1	6.1	1.9	.2	
.40	24.7	27.1	18.2	7.4	2.8	.7		
.35	34.5	27.1	12.0	3.2	1.1	.2		
.30	24.2	18.0	6.6	1.2	.4	.1		
.25	11.3	9.0	3.1	.4	.1			
.20	3.9	3.6	1.3	.1				
.15	1.1	1.2	.5					
.10	.3	.3	.1					
.05		.2	.1					
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.45	.60	.65	.75	.80	.85	.85
Avg. ECL	.33	.35	.43	.52	.59	.66	.74	.79
Min. ECL	.10	.05	.05	.20	.25	.30	.45	.50
Range	.30	.40	.55	.45	.50	.50	.40	.35
Poisson's Coef. K	1.4	2.0	3.3	2.6	3.2	2.9	2.2	1.1
Std. Dev. D	1.183	1.414	1.817	1.612	1.789	1.703	1.483	1.049

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 99 Type 2-2 trucks reported by the 1942 loadometer survey.

Table 26.9a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 24 TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH

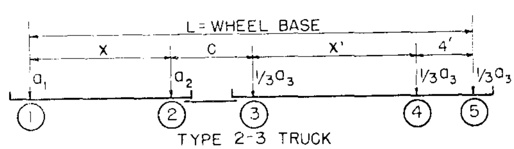


Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.80								29.2
.75							19.5	33.3
.70							33.3	30.6
.65						19.4	30.6	6.9
.60					15.2	29.2	16.6	
.55					18.1	30.6		
.50				23.6	30.6	16.7		
.45			18.1	33.3	20.8	4.1		
.40	8.3	15.3	33.3	27.8	15.3			
.35	31.9	33.3	29.2	15.3				
.30	29.2	26.4	19.4					
.25	29.2	25.0						
.20	1.4							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.40	.45	.50	.60	.65	.75	.80
Avg. ECL	.31	.32	.38	.44	.50	.57	.68	.74
Min. ECL	.20	.25	.30	.35	.40	.45	.60	.65
Range	.20	.15	.15	.15	.20	.20	.15	.15
Poisson's Coef. K	1.8	1.5	1.5	1.3	2.0	1.5	1.4	1.1

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 24 Type 2-3 trucks reported by the 1942 loadometer survey.

Table 26.9b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 24 TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH



Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.80								33.3
.75							24.7	36.6
.70							34.5	20.1
.65						22.3	24.2	7.4
.60					13.5	33.5	11.3	2.0
.55					27.1	25.1	3.9	.4
.50				27.3	27.1	12.6	1.1	.1
.45			22.3	35.4	18.0	4.7	.3	.1

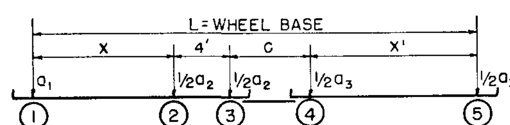
Table 26.9b (Continued)

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
.40	16.5	22.3	33.5	23.0	9.0	1.4		
.35	29.8	33.5	25.1	10.0	3.6	.4		
.30	26.8	25.1	12.6	3.2	1.2			
.25	16.1	12.6	4.7	.8	.3			
.20	7.2	4.7	1.4	.2	.1			
.15	2.6	1.4	.4	.1	.1			
.10	.8	.4						
.05	.2							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.40	.45	.50	.60	.65	.75	.80
Avg. ECL	.31	.32	.38	.44	.50	.57	.68	.74
Min. ECL	.05	.10	.15	.15	.15	.35	.45	.45
Range	.35	.30	.30	.35	.45	.30	.30	.35
Poisson's Coef. K	1.8	1.5	1.5	1.3	2.0	1.5	1.4	1.1
Std. Dev. D	1.342	1.225	1.225	1.140	1.414	1.225	1.183	1.049

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 24 Type 2-3 trucks reported by the 1942 loadometer survey.

Table 26.10a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 68 TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH



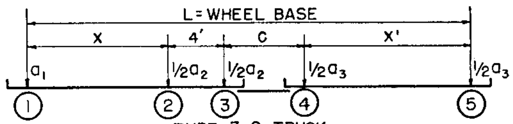
TYPE 3-2 TRUCK

Equivalent Concentrated Loads	Span-Feet 10	20	30	40	50	60	80	100
.85								19.6
.80							12.7	32.4
.75							27.0	32.4
.70						24.5	32.4	14.7
.65					12.3	25.0	21.6	.9
.60				11.3	23.0	27.5	6.3	
.55			9.8	23.0	31.9	14.7		
.50		1.5	15.7	32.4	22.6	8.3		
.45		15.7	32.8	23.0	10.2			
.40	1.1	15.2	24.0	10.3				
.35	14.7	32.4	17.7					
.30	32.8	17.6						
.25	32.8	17.6						
.20	18.6							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.50	.55	.60	.65	.70	.80	.85
Avg. ECL	.27	.35	.44	.50	.55	.62	.71	.78
Min. ECL	.20	.25	.35	.40	.45	.50	.60	.65
Range	.20	.25	.20	.20	.20	.20	.20	.20
Poisson's Coef. K	2.5	3.0	2.2	2.0	1.9	1.5	1.8	1.4

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 68 Type 3-2 trucks reported by the 1942 loadometer survey.

Table 26.10b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 68 TYPE 3-2 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-2 TRUCK

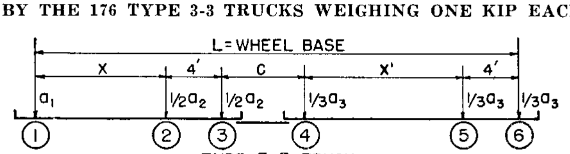
Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.85								24.7
.80							16.5	34.5
.75							29.8	24.2
.70						22.3	26.8	11.3
.65					15.0	33.5	16.1	3.9
.60				13.5	28.4	25.1	7.2	1.1
.55			11.1	27.1	27.0	12.6	2.6	.3
.50		5.0	24.4	27.1	17.1	4.7	.8	
.45		14.9	26.8	18.0	8.1	1.4	.2	
.40	8.2	22.4	19.7	9.0	3.1	.4		
.35	20.5	22.4	10.8	3.6	1.0			
.30	25.7	16.8	4.8	1.2	.3			
.25	21.4	10.1	1.7	.3				
.20	13.4	5.0	.5	.1				
.15	6.7	2.2	.2	.1				
.10	2.8	.8						
.05	1.3	.4						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.40	.50	.55	.60	.65	.70	.80	.85
Avg. ECL	.27	.35	.44	.50	.55	.62	.71	.78
Min. ECL	.05	.05	.15	.15	.30	.40	.45	.55
Range	.35	.45	.40	.45	.35	.30	.35	.30
Poisson's Coef. K	2.5	3.0	2.2	2.0	1.9	1.5	1.8	1.4
Std. Dev. D	1.581	1.732	1.483	1.414	1.378	1.225	1.342	1.183

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 68 Type 3-2 trucks reported by the 1942 loadometer survey.

Table 26.11a

OBSERVED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 176 TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



TYPE 3-3 TRUCK

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.80								12.1
.75							5.3	32.0
.70							26.0	33.0
.65						4.9	32.2	21.6
.60					4.4	19.5	28.4	1.3
.55					18.0	31.6	7.4	
.50				18.8	31.8	28.8	.7	
.45			16.3	31.1	29.2	13.8		

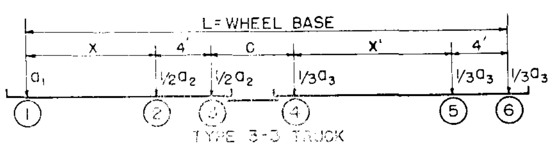
Table 26.11a (Continued)

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.40		2.1	31.6	32.2	15.3	1.4		
.35		30.5	32.2	15.7	1.3			
.30	30.7	32.4	18.2	2.2				
.25	33.3	32.2	1.7					
.20	32.4	2.8						
.15	3.6							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.30	.40	.45	.50	.60	.65	.75	.80
Avg. ECL	.25	.30	.37	.42	.48	.53	.65	.72
Min. ECL	.15	.20	.25	.30	.35	.40	.50	.60
Range	.15	.20	.20	.20	.25	.25	.25	.20
Poisson's Coef. K	1.1	2.0	1.6	1.5	2.4	2.3	2.1	1.7

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 176 Type 3-3 trucks reported by the 1942 loadometer survey.

Table 26.11b

CALCULATED FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS REQUIRED TO PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY THE 176 TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH



Calculated frequencies are based on Poisson's Distribution Law. Equivalent concentrated loads which occur less than 1 in 1000, or account for less than 0.1% of the heavy trucks of this type are not shown in this table.

Equivalent Concentrated Loads	Span-Feet							
	10	20	30	40	50	60	80	100
.80								18.3
.75							12.2	31.1
.70							25.7	26.4
.65						10.0	27.0	15.0
.60					9.1	23.1	18.9	6.4
.55					21.8	26.5	9.9	2.2
.50				22.3	26.1	20.3	4.2	.6
.45			20.2	33.5	20.9	11.7	1.5	
.40		13.5	32.3	25.1	12.5	5.4	.4	
.35		27.1	25.8	12.6	6.0	2.1	.1	
.30	33.3	27.1	13.8	4.7	2.4	.7	.1	
.25	36.6	18.0	5.5	1.4	.8	.2		
.20	20.1	9.0	1.8	.4	.2			
.15	7.4	3.6	.5		.1			
.10	2.0	1.2	.1		.1			
.05	.6	.5						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Max. ECL	.30	.40	.45	.50	.60	.65	.75	.80
Avg. ECL	.25	.30	.37	.42	.48	.53	.65	.72
Min. ECL	.05	.05	.10	.20	.10	.25	.30	.50
Range	.25	.35	.35	.30	.50	.40	.45	.30
Poisson's Coef. K	1.1	2.0	1.6	1.5	2.4	2.3	2.1	1.7
Std. Dev. D	1.049	1.414	1.265	1.225	1.549	1.517	1.449	1.304

The equivalent concentrated loadings shown for the unit weight trucks of this table are proportional to the equivalent concentrated loadings based on gross weights for corresponding vehicles among the 176 Type 3-3 trucks reported by the 1942 loadometer survey.

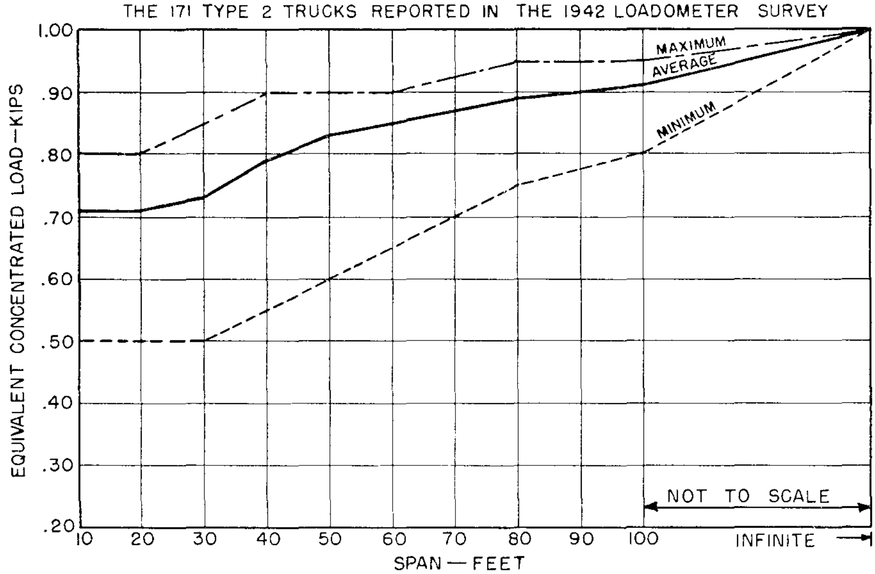
27. MAXIMUM, AVERAGE, AND MINIMUM EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES BASED ON VEHICLES WEIGHING ONE KIP EACH

Figures 27.1—27.11 present a graphical representation of the maximum, average, and minimum equivalent concentrated loads on simple spans of various lengths, based on vehicles weighing one kip each, for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. The upper part of each of these figures give the maximum, average, and minimum equivalent concentrated loads for each span length and the lower part shows the range, the Poisson coefficient, K, and the standard deviation, D, for each corresponding span length. All of these data are given in the following figures.

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	27.1
3	381	27.2
2-S1	2855	27.3
2-S2	508	27.4
3-S1	9	27.5
3-S2	142	27.6
3-S3	14	27.7
2-2	99	27.8
2-3	24	27.9
3-2	68	27.10
3-3	176	27.11

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 171 TYPE 2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE: — GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

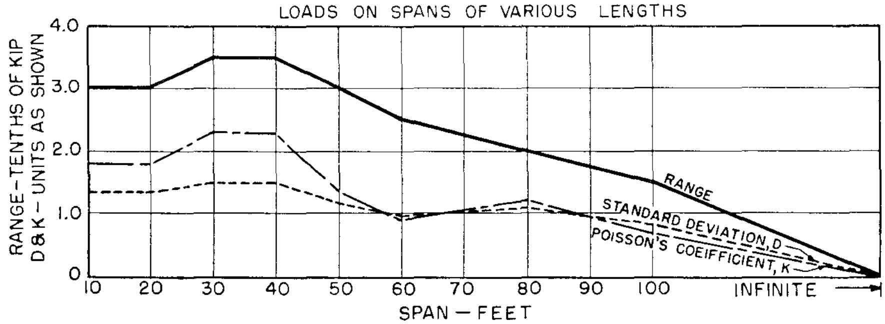
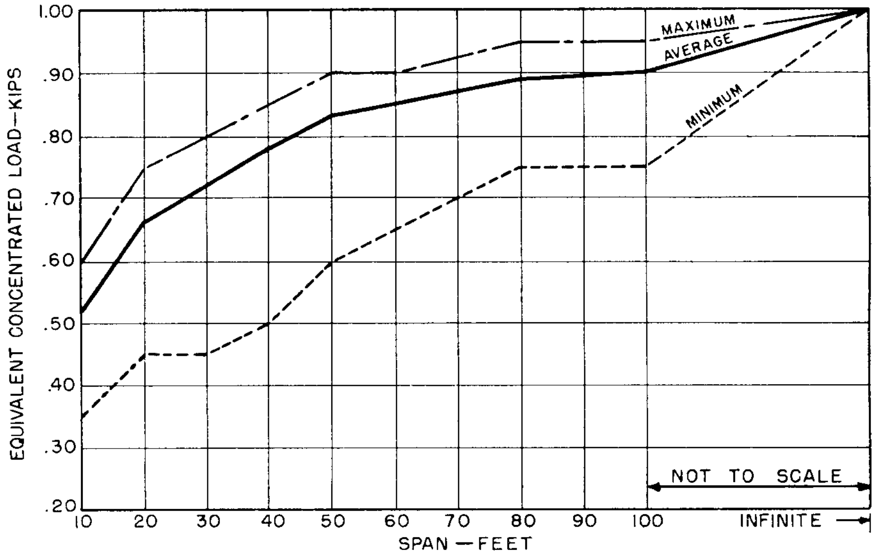


Figure 27.1

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 381 TYPE 3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

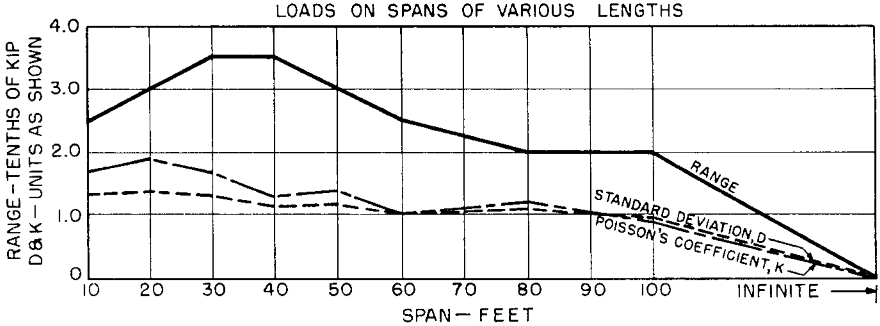
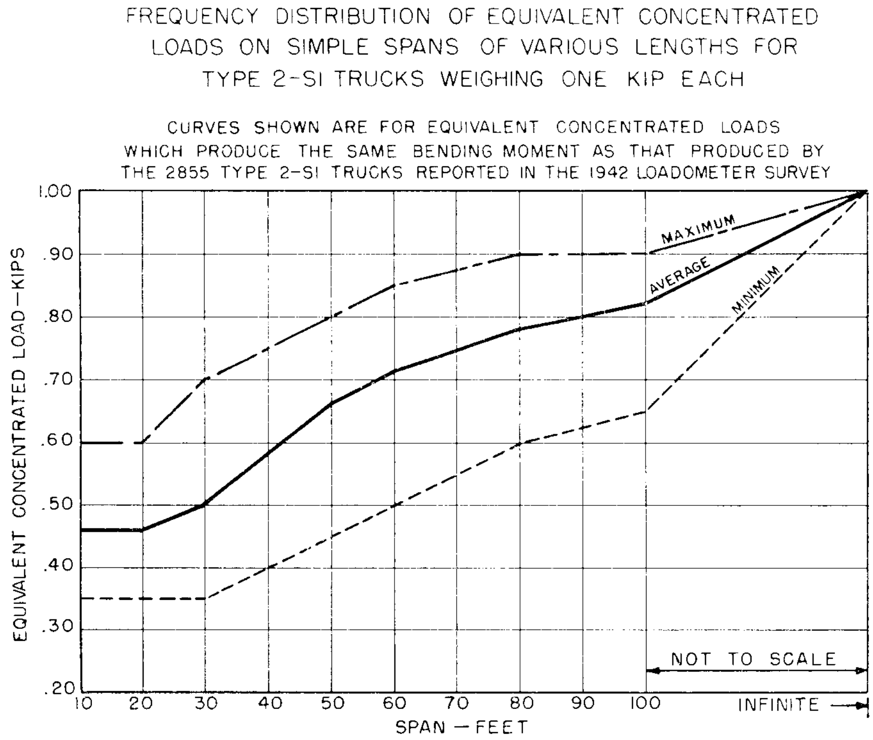


Figure 27.2



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

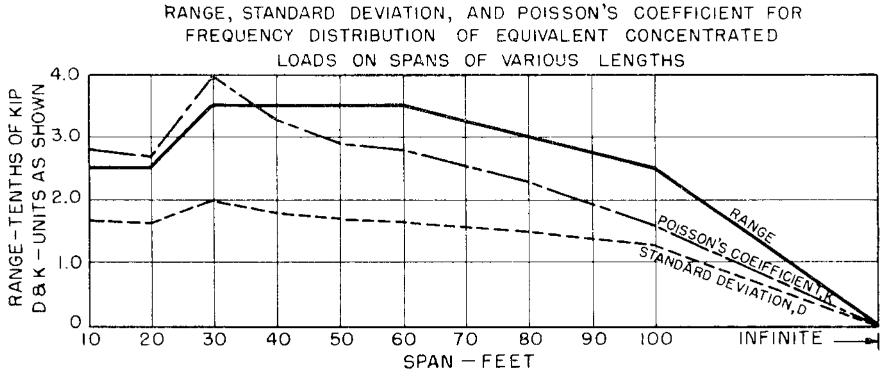
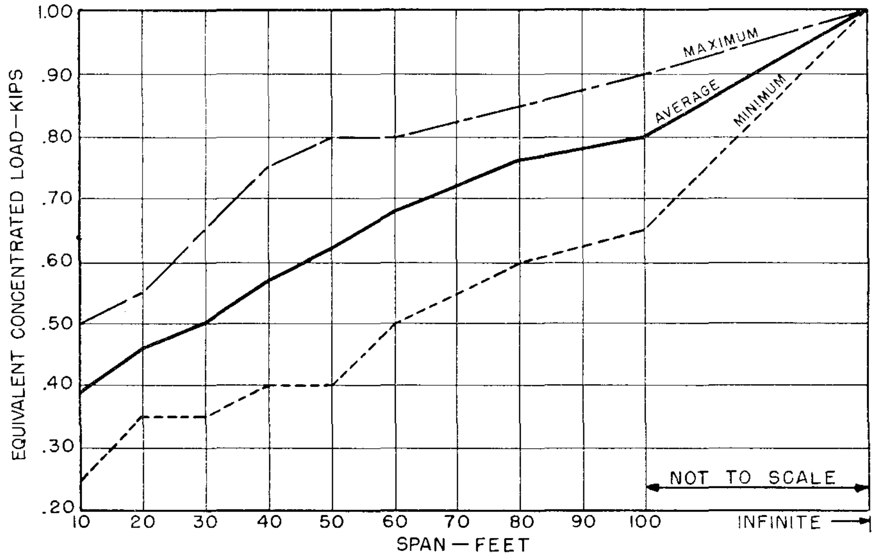


Figure 27.3

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 2-S2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 508 TYPE 2-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

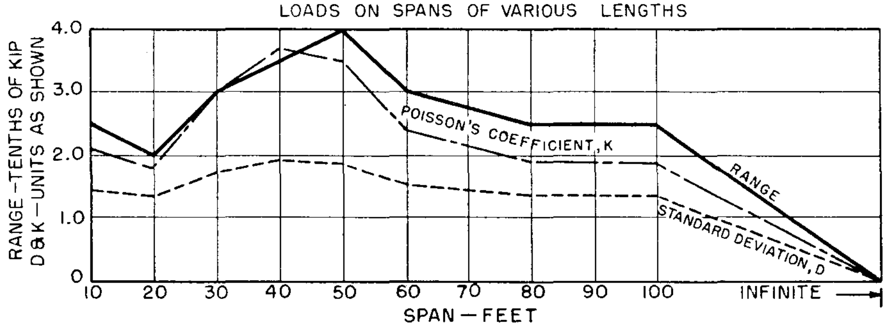
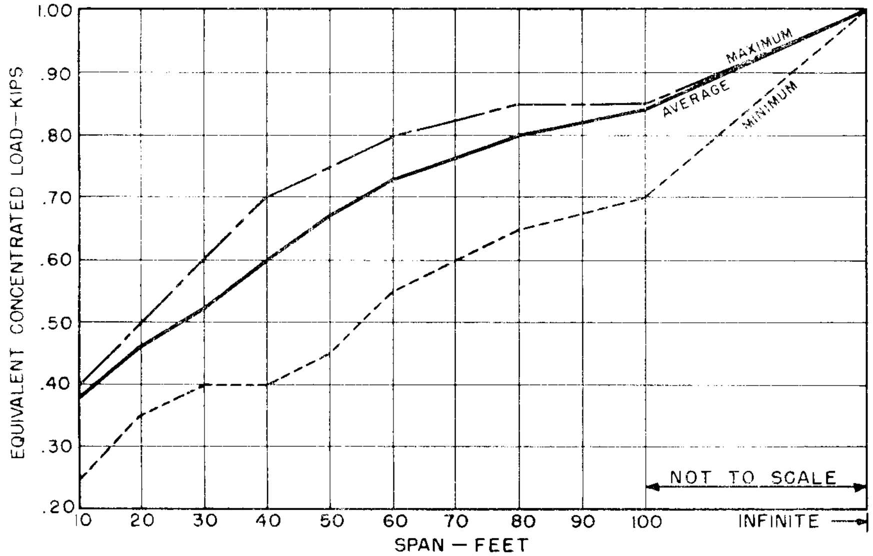


Figure 27.4

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3-SI TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 9 TYPE 3—SI TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

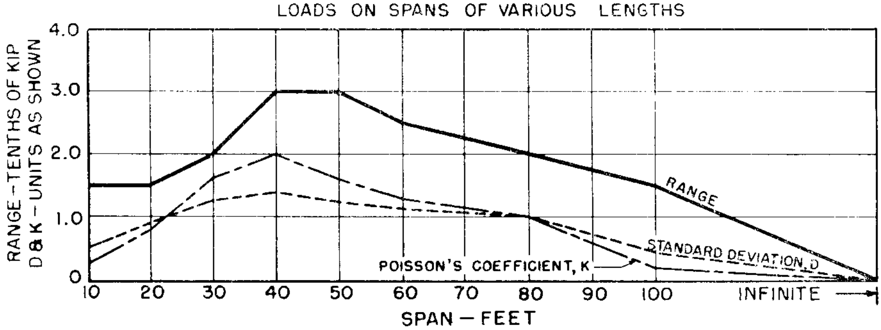
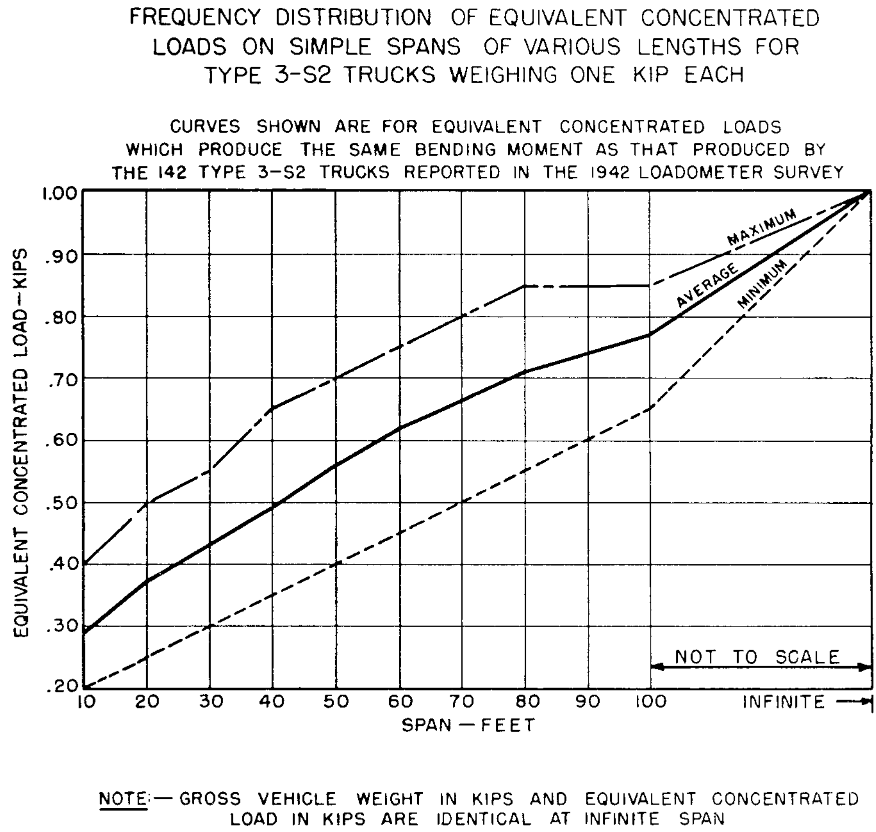


Figure 27.5


FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 142 TYPE 3-S2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT CONCENTRATED LOAD—KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10 20 30 40 50 60 70 80 90 100 INFINITE
SPAN — FEET
NOTE:— GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

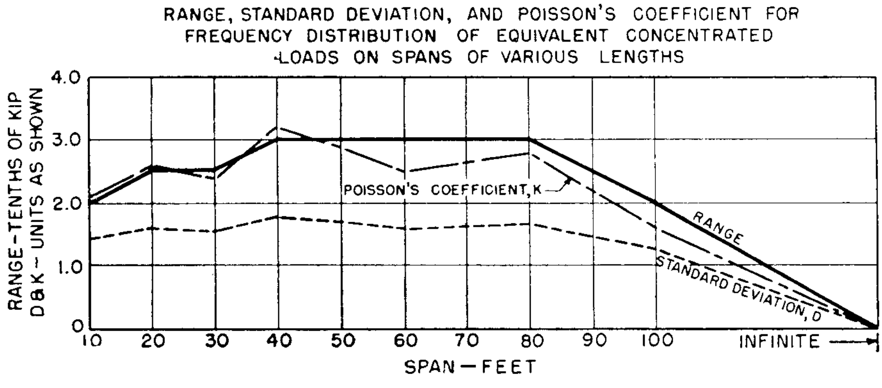
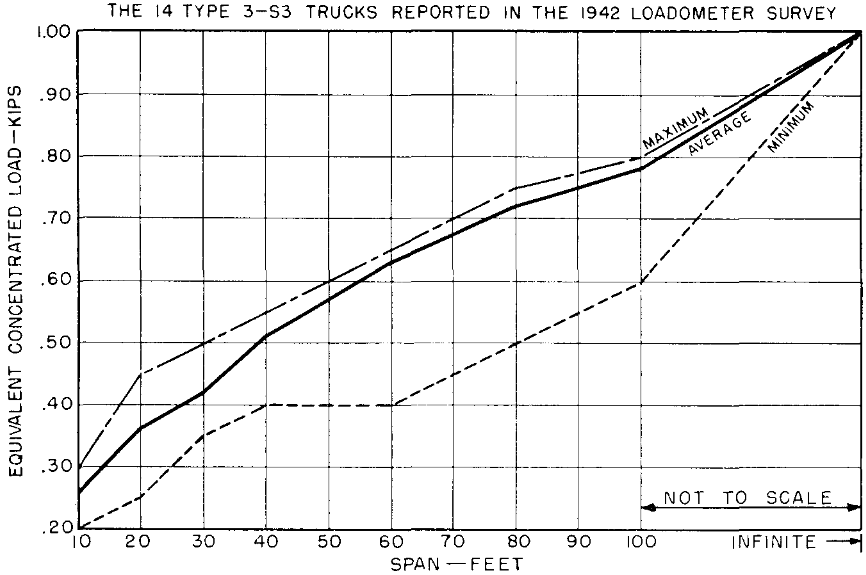

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS
RANGE-TENTHS OF KIP
D & K - UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
POISSON'S COEFFICIENT, K
RANGE
STANDARD DEVIATION, D
10 20 30 40 50 60 70 80 90 100 INFINITE
SPAN — FEET

Figure 27.6

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 14 TYPE 3-S3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:— GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

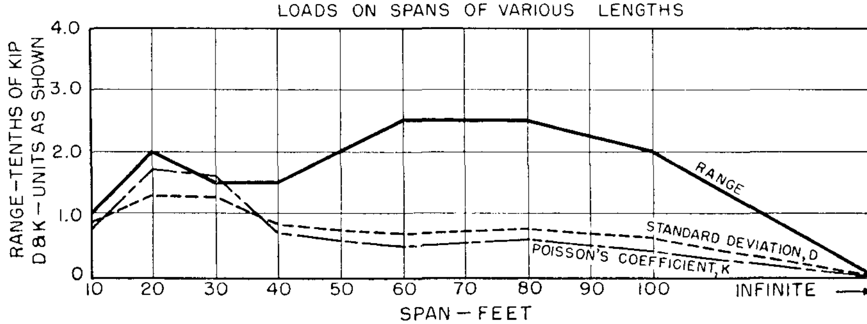


Figure 27.7

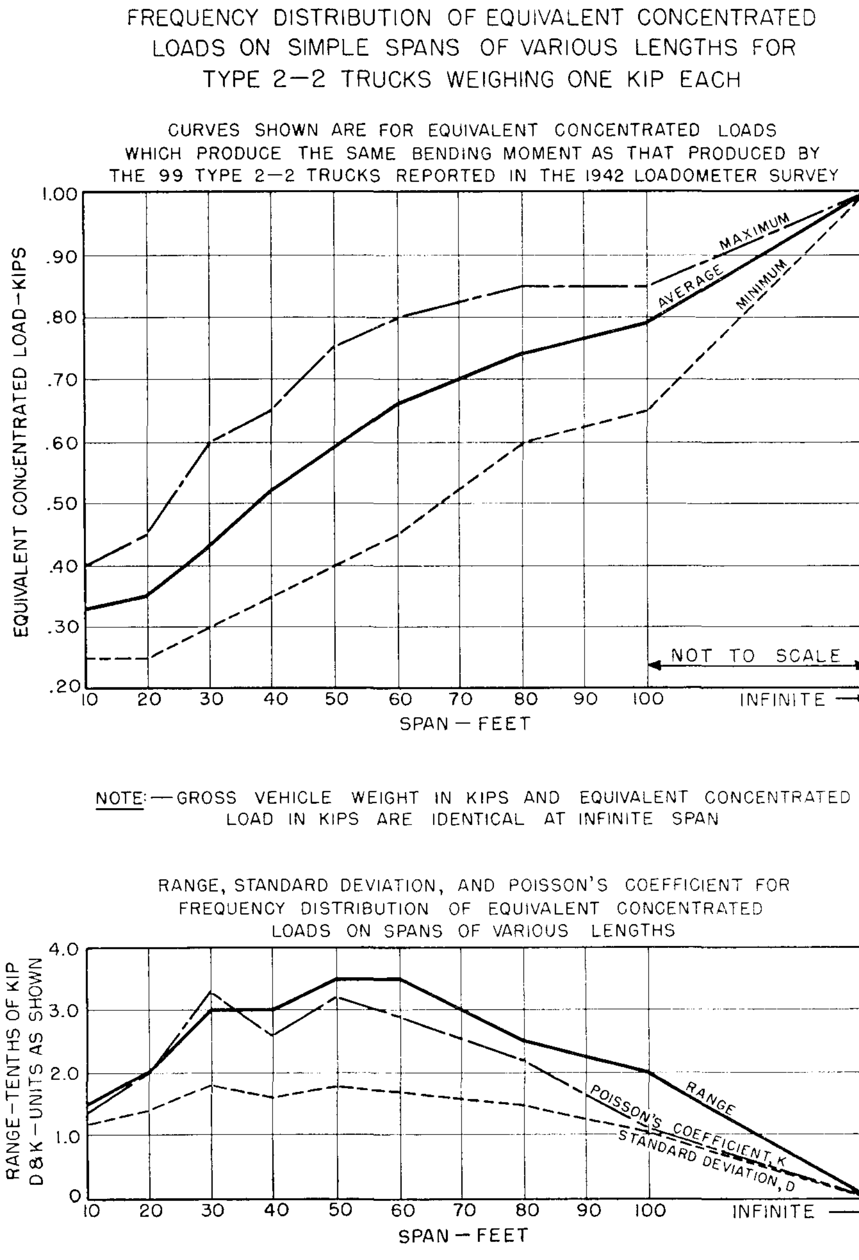
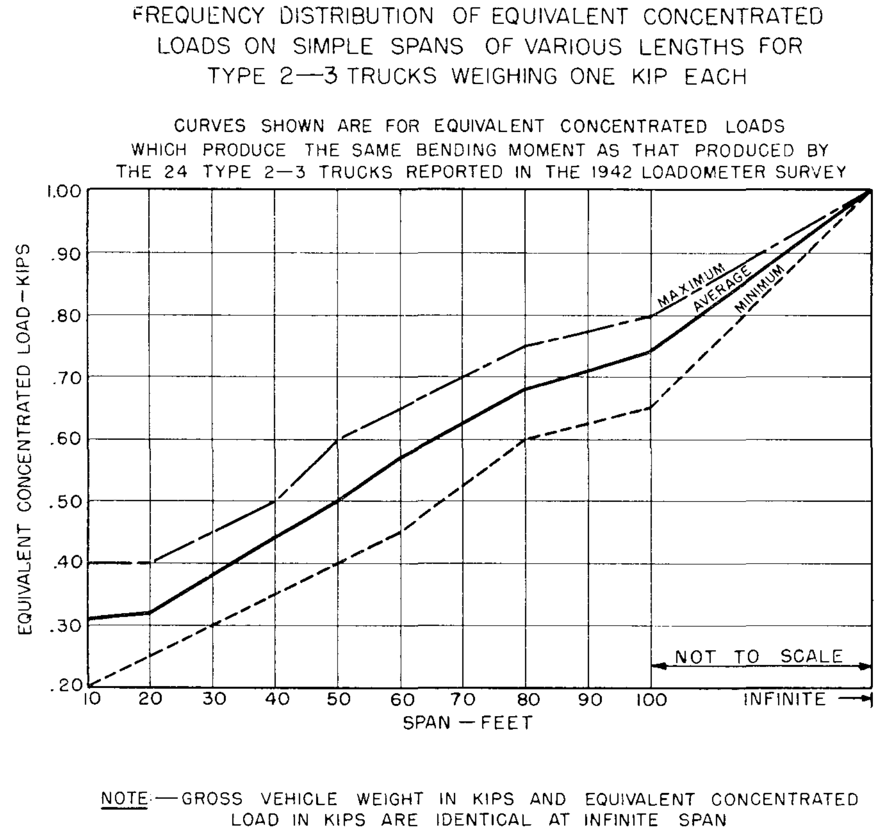

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 2—2 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 99 TYPE 2—2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT CONCENTRATED LOAD—KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET
NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN
RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS
RANGE—TENTHS OF KIP
D & K—UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10
20
30
40
50
60
70
80
90
100
INFINITE
SPAN — FEET

Figure 27.8


FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 2—3 TRUCKS WEIGHING ONE KIP EACH
CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 24 TYPE 2—3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY
EQUIVALENT CONCENTRATED LOAD-KIPS
1.00
.90
.80
.70
.60
.50
.40
.30
.20
MAXIMUM
AVERAGE
MINIMUM
NOT TO SCALE
10 20 30 40 50 60 70 80 90 100 INFINITE
SPAN — FEET
NOTE—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

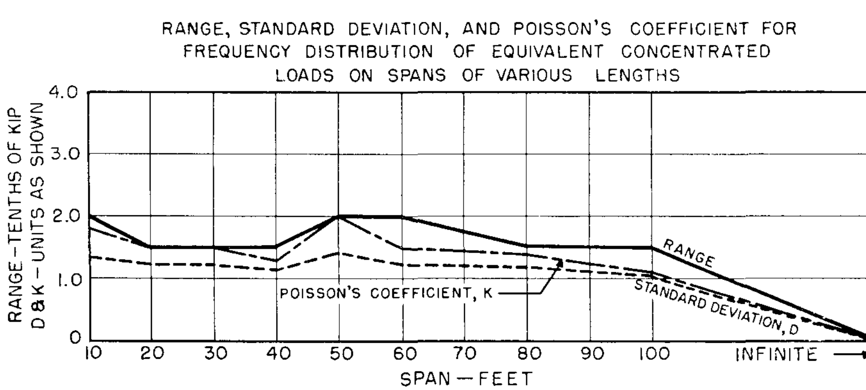
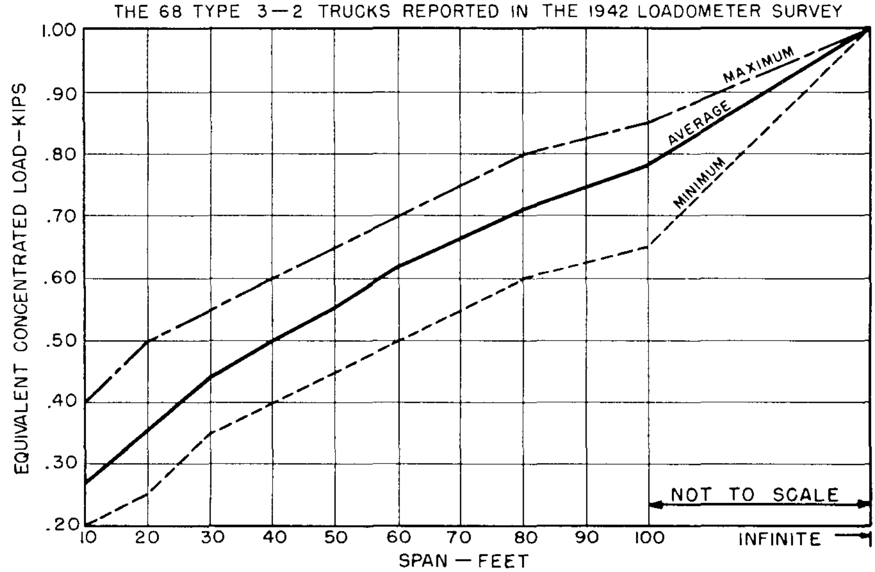

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS
RANGE-TENTHS OF KIP
D & K - UNITS AS SHOWN
4.0
3.0
2.0
1.0
0
RANGE
POISSON'S COEFFICIENT, K
STANDARD DEVIATION, D
10 20 30 40 50 60 70 80 90 100 INFINITE
SPAN — FEET

Figure 27.9

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3—2 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 68 TYPE 3—2 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

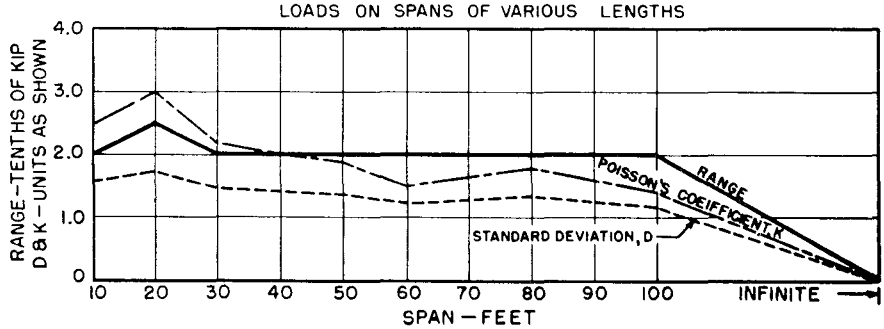
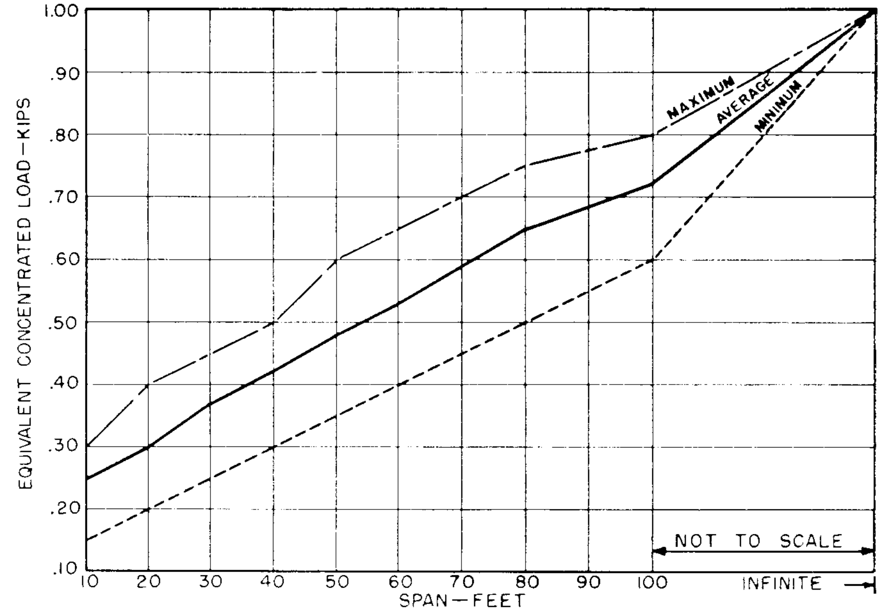


Figure 27.10

FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPANS OF VARIOUS LENGTHS FOR TYPE 3—3 TRUCKS WEIGHING ONE KIP EACH

CURVES SHOWN ARE FOR EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME BENDING MOMENT AS THAT PRODUCED BY THE 176 TYPE 3—3 TRUCKS REPORTED IN THE 1942 LOADOMETER SURVEY



NOTE:—GROSS VEHICLE WEIGHT IN KIPS AND EQUIVALENT CONCENTRATED LOAD IN KIPS ARE IDENTICAL AT INFINITE SPAN

RANGE, STANDARD DEVIATION, AND POISSON'S COEFFICIENT FOR FREQUENCY DISTRIBUTION OF EQUIVALENT CONCENTRATED LOADS ON SPANS OF VARIOUS LENGTHS

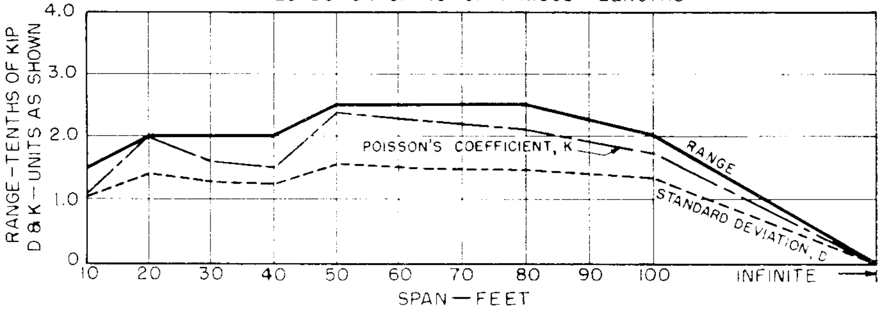


Figure 27.11

28. HISTOGRAMS SHOWING FREQUENCY DISTRIBUTIONS OF EQUIVALENT CONCENTRATED LOADS ON SIMPLE SPAN BRIDGES BASED ON VEHICLES WEIGHING ONE KIP EACH

Figures 28.1—28.11 present a graphical representation of the observed and calculated frequencies of equivalent concentrated loads for vehicles weighing one kip each on simple spans up to 100 feet in length for each of the 11 more numerous heavy vehicle types reported by the 1942 loadometer survey. The histograms represent the observed data, based on 3-item moving averages, and the dashed lines represent the corresponding Poisson distributions. Both the observed and calculated frequencies shown in these figures were plotted from the corresponding data given in Tables 26.1a—26.11a and Tables 26.1b—26.11b, respectively. These distributions are given in the following figures.

Heavy Vehicle Type	Number of Vehicles Reported	Figure Number
2	171	28.1
3	381	28.2
2-S1	2855	28.3
2-S2	508	28.4
3-S1	9	28.5
3-S2	142	28.6
3-S3	14	28.7
2-2	99	28.8
2-3	24	28.9
3-2	68	28.10
3-3	176	28.11

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES
OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2 TRUCKS
WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH
PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED
BY 171 TYPE 2 TRUCKS WEIGHING ONE KIP EACH
THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

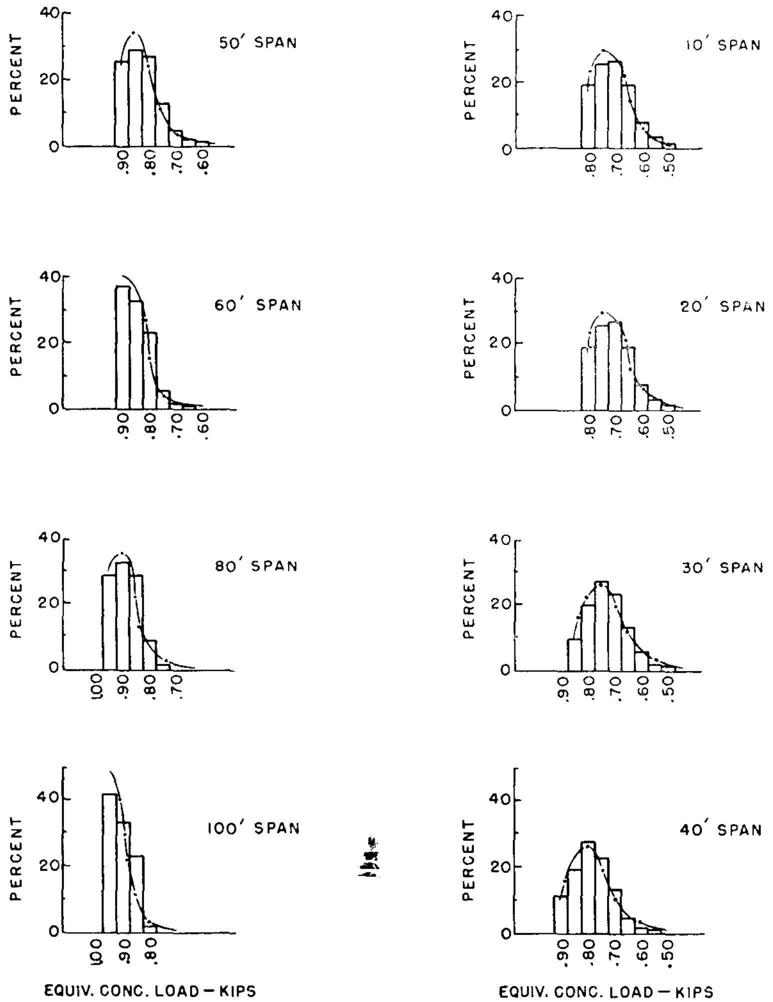


Figure 28.1

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 381 TYPE 3 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

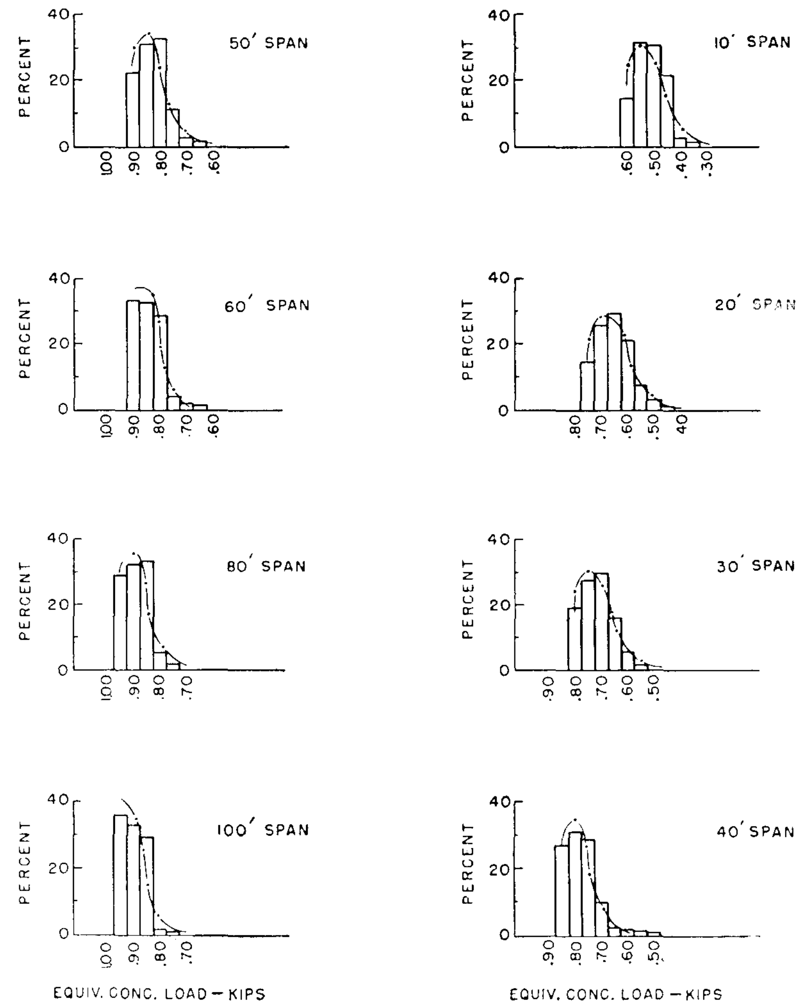


Figure 28.2

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-S1 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

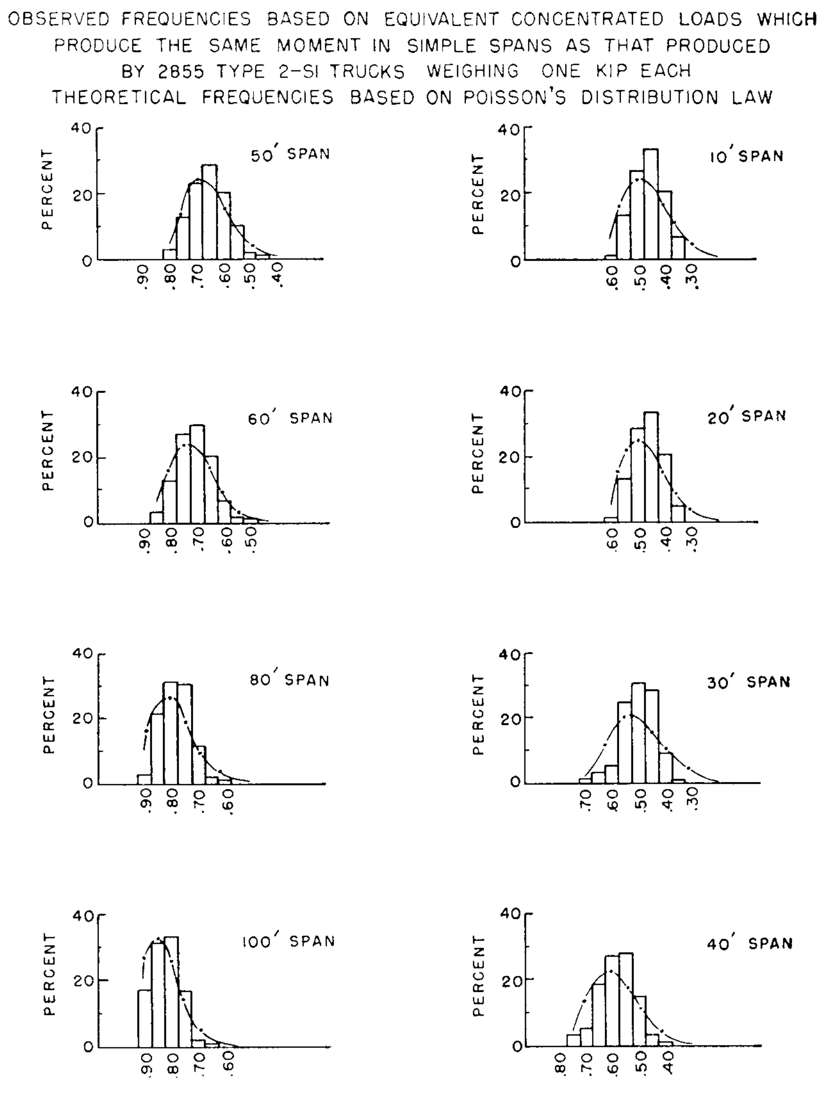


Figure 28.3

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2–S2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 508 TYPE 2–S2 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

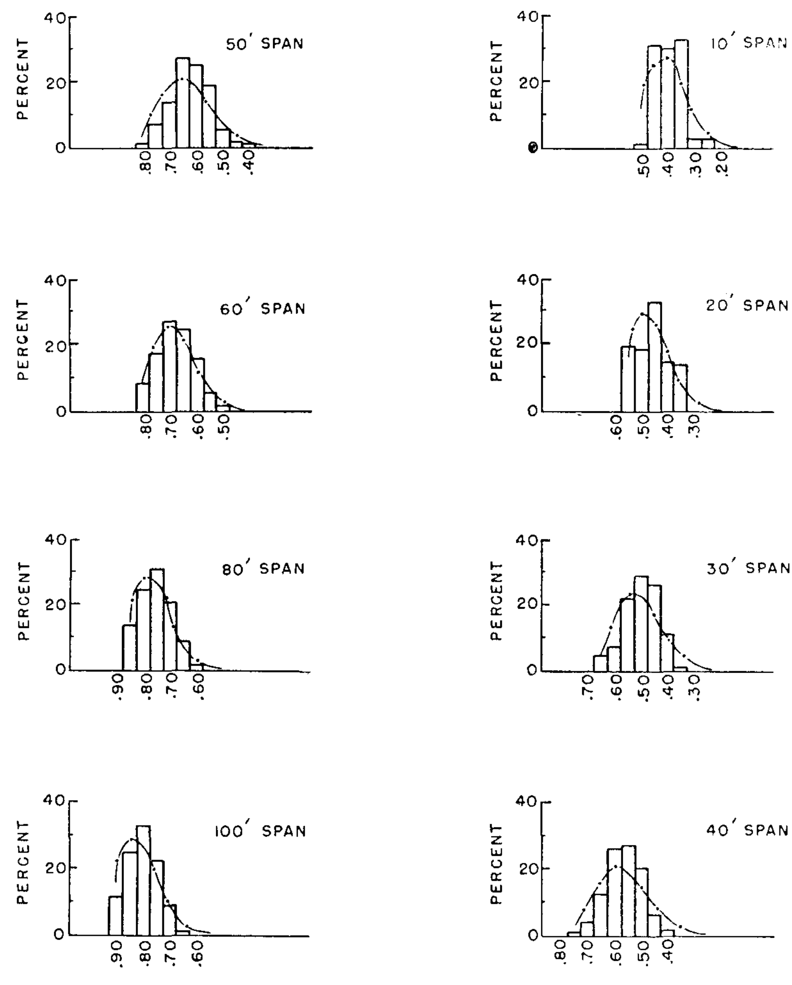


Figure 28.4

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-SI TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 9 TYPE 3-SI TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

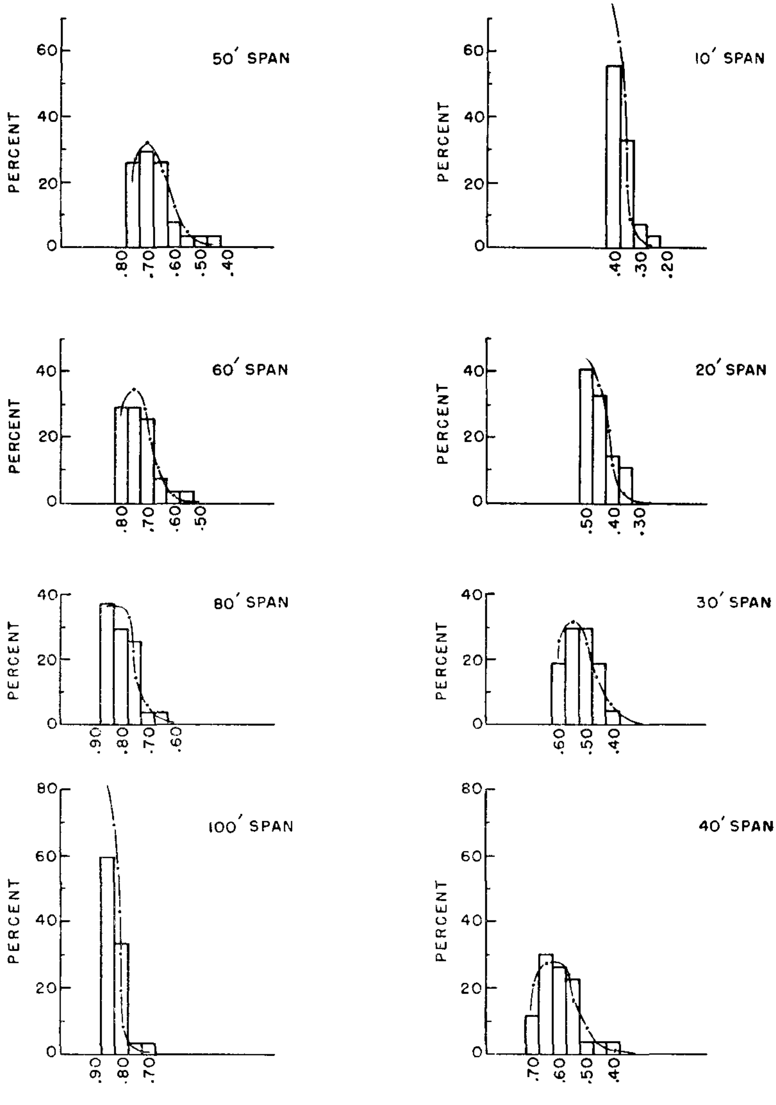


Figure 28.5

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 142 TYPE 3-S2 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

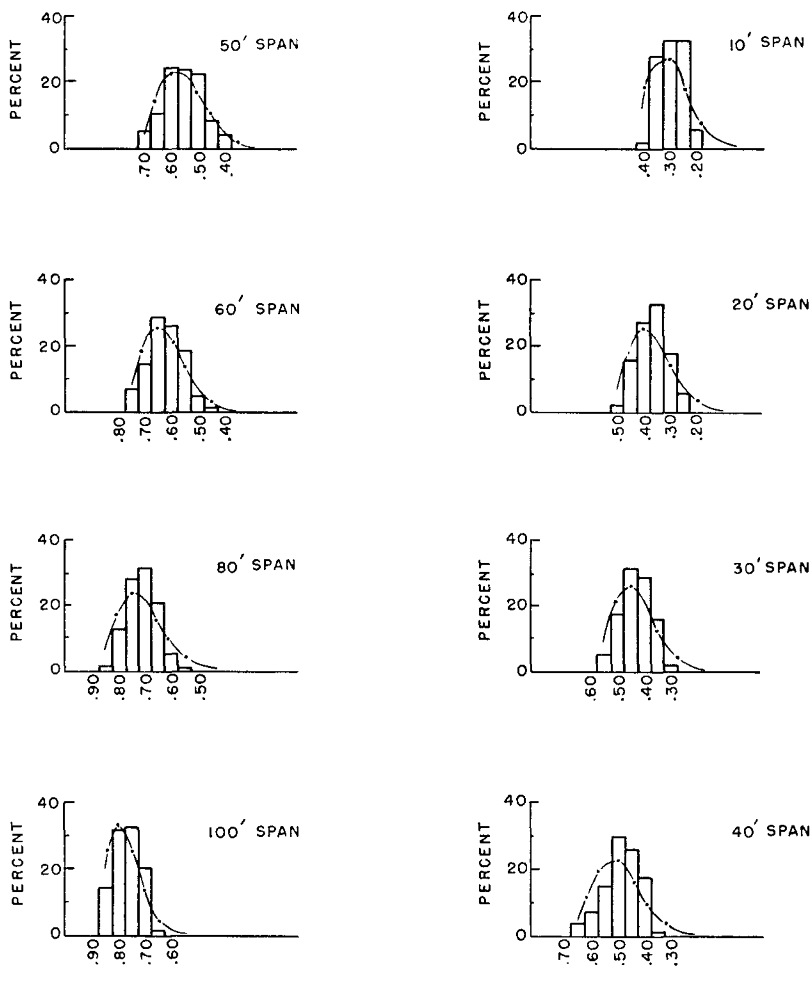


Figure 28.6

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGT

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 14 TYPE 3-S3 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

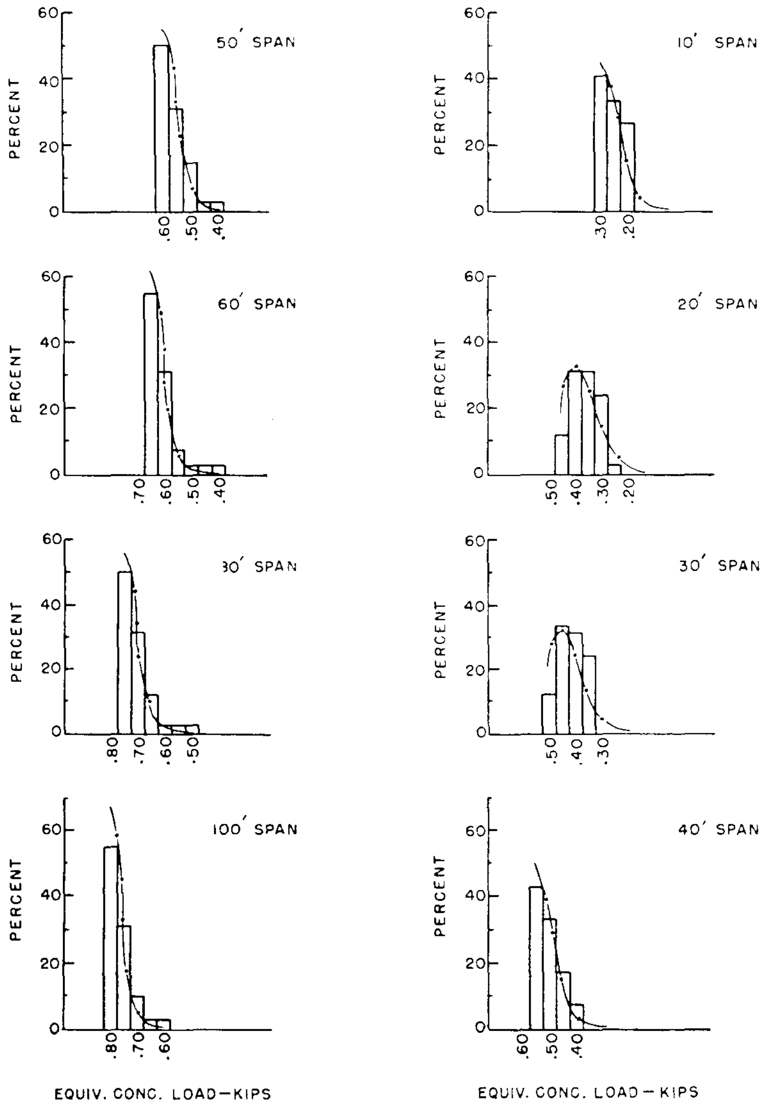


Figure 28.7

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2–2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 99 TYPE 2–2 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

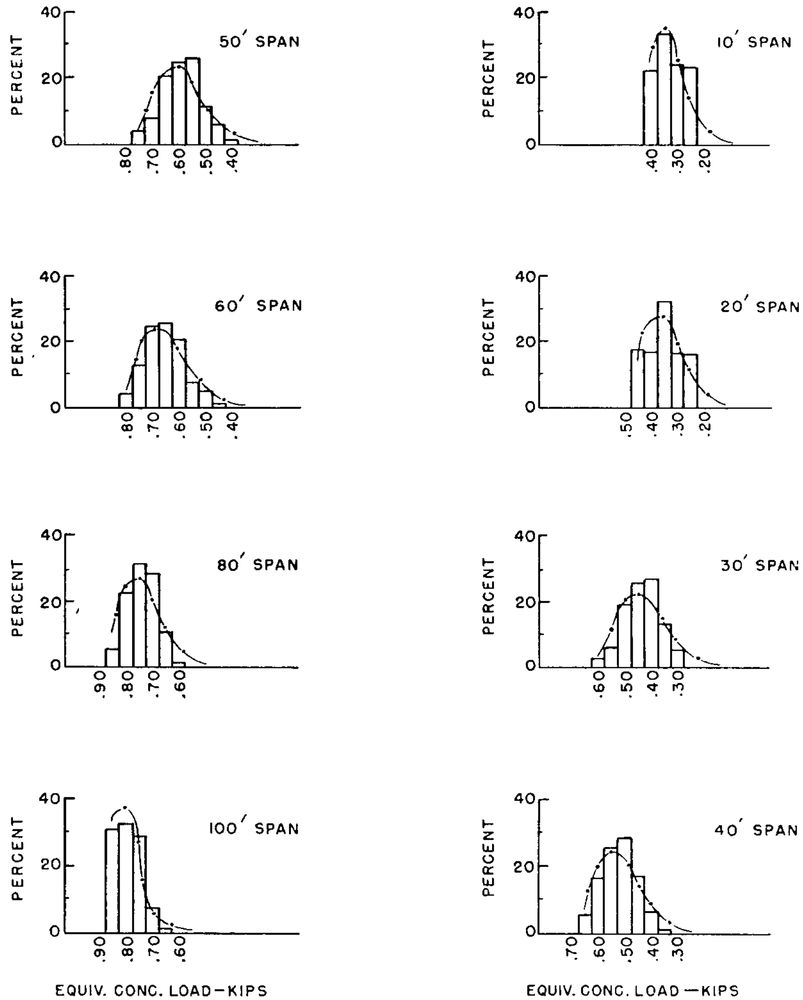


Figure 28.8

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 24 TYPE 2-3 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

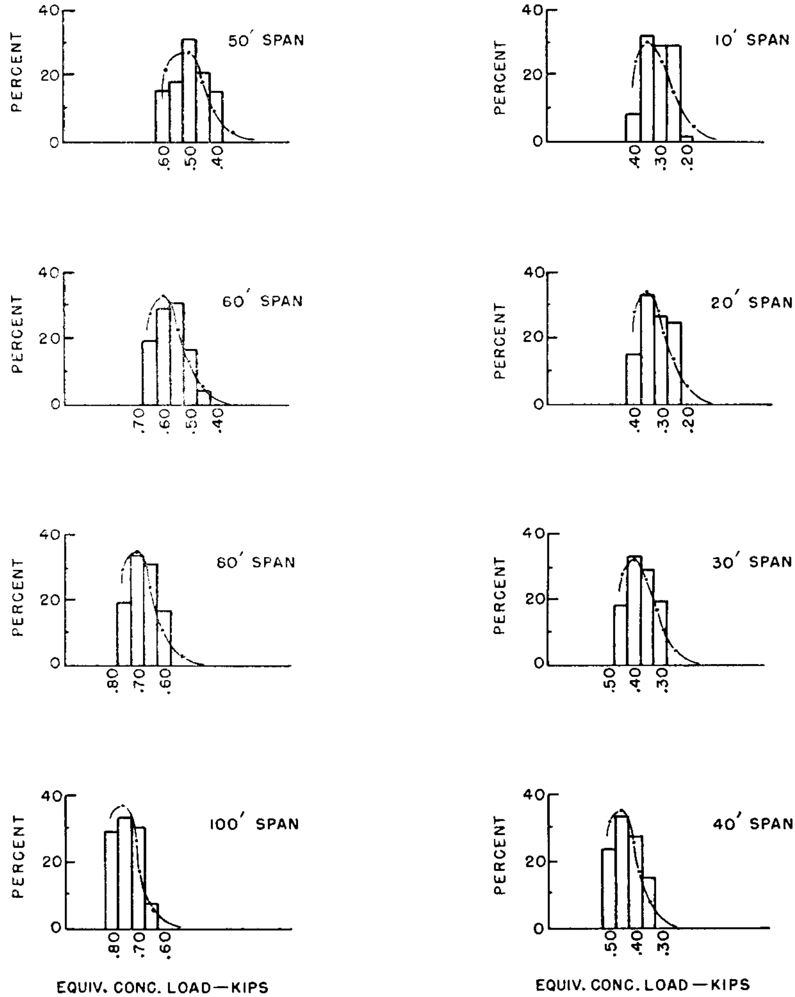


Figure 28.9

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3–2 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 68 TYPE 3–2 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

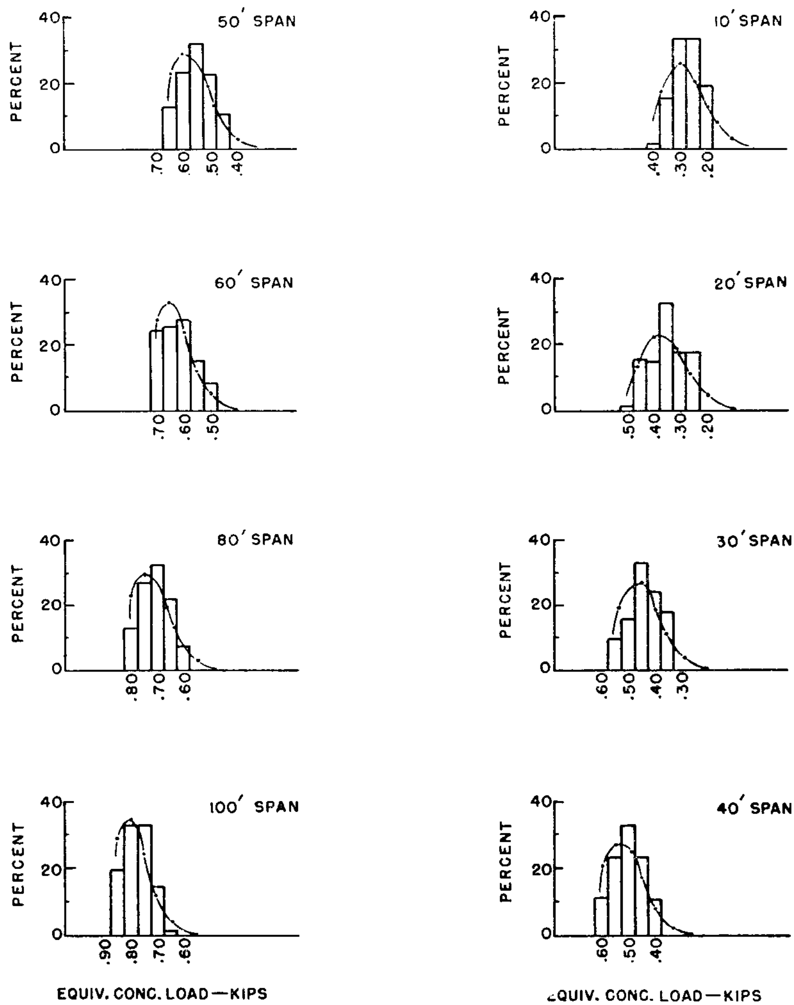


Figure 28.10

A COMPARISON OF OBSERVED WITH THEORETICAL FREQUENCIES OF EQUIVALENT CONCENTRATED LOADS FOR TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH ON SIMPLE SPANS OF VARIOUS LENGTHS

OBSERVED FREQUENCIES BASED ON EQUIVALENT CONCENTRATED LOADS WHICH PRODUCE THE SAME MOMENT IN SIMPLE SPANS AS THAT PRODUCED BY 176 TYPE 3-3 TRUCKS WEIGHING ONE KIP EACH

THEORETICAL FREQUENCIES BASED ON POISSON'S DISTRIBUTION LAW

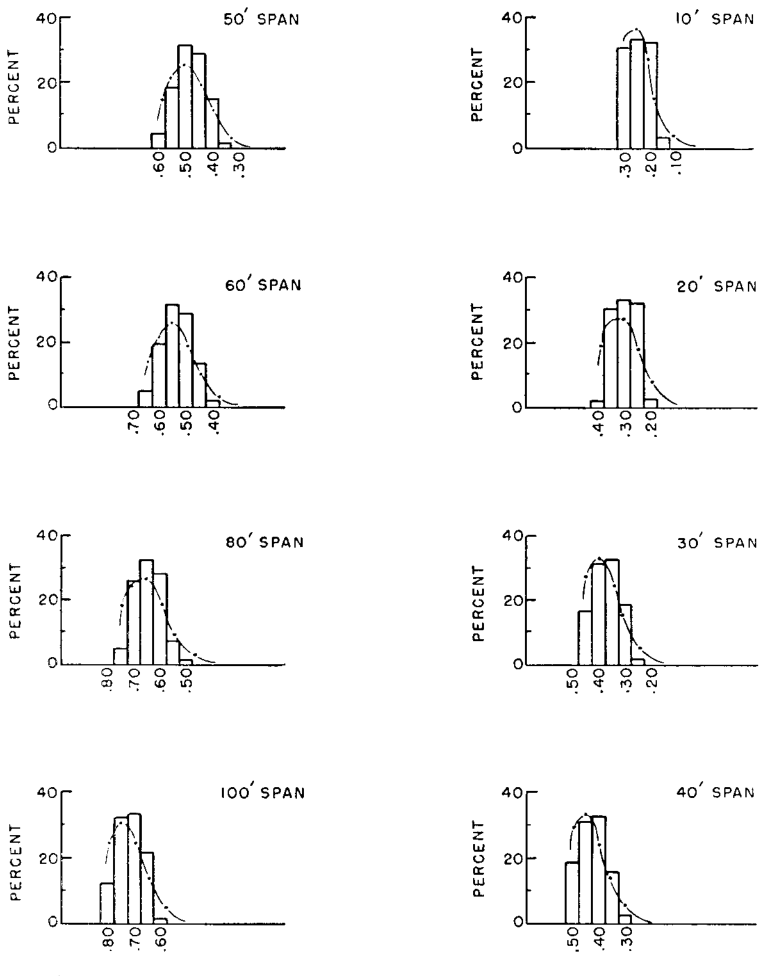


Figure 28.11

Part VI

CONCLUSION

It was pointed out in the introduction and also in Article 1.1, that the over-all objective of this bulletin is to develop a rapid yet simple and accurate mathematical procedure for the rating of heavy motor vehicle types and loadings—such as those reported by a local, state, or national loadometer survey—in terms of equivalent H truck loadings, equivalent H design loadings, equivalent concentrated loads or any other convenient standardized loads, and to show how the frequency distributions of these loads provide a rational means for measuring the level or levels of heavy motor vehicle operation corresponding to given traffic conditions. In order to accomplish these ends, however, it is first necessary to find a satisfactory method for converting a given heavy vehicle loading into, say, an H or H-S truck loading equivalent, an equivalent concentrated load, or into an equivalent design load.

In Article 1.1 it was also suggested, that this may be accomplished by evaluating some stress producing effect—such as the maximum moment or shear caused by a vehicle on, say, a 40-foot simple span bridge—and then finding the gross weight required on, say, a standard H truck to produce the same effect. For example, if a given vehicle caused a maximum moment on this 40-foot span of 259.5 kip-feet, it would produce the same maximum moment as an H15 truck. On this basis, therefore, the given vehicle would be rated as an equivalent H15 truck loading on a 40-foot span. In a similar manner, the given vehicle could be rated in terms of an equivalent H-S truck loading, an equivalent H or H-S design loading, equivalent concentrated load, or any other standardized equivalent load as may be desired. However, owing to the fact that moments caused by these various loadings on a given span bear constant relationships to each other, their loading equivalents may be converted from any one into any one or more of the others by means of the conversion coefficients discussed in Article 13 and given in Table 13.1 or Figure 13.1.

The tables and figures in Part II provide the basic information for rating most any type of heavy vehicle—irrespective of its wheel base length, number and spacing of axles, or distribution of load among the axles—ordinarily encountered in highway traffic, in terms of any one or more of the above mentioned loading equivalents as may be required for the particular situation under consideration. And once all the heavy vehicles reported by a loadometer survey have been converted into loading equivalents on a given span, the frequency distribution of various intensities of these equivalent loads for the given span may then be obtained by arranging them into groups or cells of increasing magnitudes and calculating the percentage of vehicles thus found in each cell, respectively. Frequency distributions of this kind are given in Parts IV and V for each of the more commonly used heavy vehicle types reported by the 1942 special loadometer survey. The distributions given in Part IV are based on the conversion of each of the heavy vehicles reported into equivalent H truck loadings and those in Part V are based on equivalent concentrated loads.

Among the more interesting—and perhaps the most useful—results obtained from these studies is that the frequency distributions of gross vehicle weights, and also the relative frequencies of various intensities of equivalent loads on spans of various lengths, arrange themselves into statistical patterns which bear a very strong resemblance to the theoretical frequencies given by the Poisson distribution formula. In fact, the agreement between the observed and calculated frequencies obtained from the 1942 loadometer data is close enough to justify the conclusion that the Poisson distribution yields mathematical answers which are sufficiently accurate in many practical situations for estimating the frequencies of various intensities of highway loads or loading equivalencies, and for evaluating their stress producing effects on simple span bridges and other highway structures.

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No. 57. A History of Suspension Bridges in Bibliographical Form. A. A. Jakkula. 1941.

No. 58. Two-Span Continuous Beams with Dead Loads. A. A. Jakkula. 1941.

No. 59. Space for Teaching. An Approach to the Design of Elementary Schools for Texas. W. W. Caudill. 1941.

No. 60. Proceedings of the First and Second Annual Conferences of Municipal Engineers. 1941.

No. 61. Proceedings of the Conference on Highway Economics. 1941.

No. 62. Heat Requirements of Intermittently Heated Buildings. Elmer G. Smith. 1941.

No. 63. Solvent Extraction of Cottonseed Oil. W. D. Harris. 1941.

No. 64. Solution of Two-Span Continuous Beams Under Live Loads by Use of Nomographs. A. A. Jakkula. 1941.

No. 65. Water Treatment with Limestone. C. H. Connell, P. J. A. Zeller, and J. H. Sorrels. 1941.

†No. 66. Some Fundamentals of Timber Design. Howard J. Hansen. 1942.

No. 67-71A. ROADWAY AND RUNWAY SOIL MECHANICS DATA. Henry C. Porter. 1942.

- No. 67. Part I—Permanency of Clay Soil Densification.
- No. 68. Part II—Density and Total Moisture Content of Clay Soil.
- No. 69. Part III—Density and Total Density Change of Clay Soils.
  Part IV—Density and Total Volumetric Change of Clay Soils.
- No. 70. Part V—Density and Intermediate Moisture Contents of Consolidated Clay Soils.
  Part VI—Density and Intermediate Volumetric Changes of Consolidated Clay Soils.
  Part VII—Intermediate Moisture Contents and Volumetric Changes of Consolidated Clay Soils.
- No. 71. Part VIII—Method of Preparing Clay Soil Specimens for Physical Tests.
  Part IX—Density and Strength of Clay Soils when Consolidated and Saturated.
- No. 71A. Part X—Density, Moisture Content, and Strength of Consolidated Clay Soils.
  Part XI—Moistures in Clay Soils Beneath Pavements. General Summary—Parts I Through XI.

No. 72. A Study of the Freight Rates Affecting Texas Agriculture. Tom D. Cherry. 1943.

No. 73. X-Ray Studies of Paving Asphalts. C. L. Williford. 1943.

No. 74. Design Loads for Wooden Roof Trusses. Howard J. Hansen. 1942.

No. 75. Rural Water Supply and Sewerage. Part III, The Specific Treatment of "Red Water" for the Removal of Iron and Carbon Dioxide. P. J. A. Zeller and J. H. Sorrels. 1942.

†No. 76. A Low Cost Home for Texas. C. J. Finney. 1943.

No. 77. Friction Heads of Water Flowing in Six-Inch Pipe and the Effects of Pipe Surface Roughness and Water Temperatures on Friction Heads. F. E. Giesecke and J. S. Hopper. 1943.

†No. 78. Reprint of Original Reports on the Failure of the Tacoma Narrows Bridge. Edited by A. A. Jakkula. 1944.

No. 79. A New Approach to Axonometric Projection and Its Application to Shop Drawings. J. G. McGuire. 1944.

No. 80. Proceedings of the Third Wartime Aviation Planning Conference. 1944.

No. 81. Proceedings of the First Annual Short Course and Conference—Airport Management and Planning. 1944.

†No. 82. The Effect of the Present Freight Rate Structure on Five Industries in Texas. Tom D. Cherry. 1944.

†No. 83. Bibliography on the Petroleum Industry. E. DeGolyer and Harold Vance. 1944.

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