## Solutions "H"

Truck "H" Six axle semi combination

The maximum (chart) weight is 80,000 pounds (either 9 or 10 ton). This is determined by going to the gross weight table, and going down the left side to the 43 foot distance. Since the total distance from axle one to axle six is 42 feet 7 inches, this measurement is rounded to 43 feet. At the 43 foot measurement on the chart, go to the right to the 6 axle column which shows 80,000 pounds. Note: This is only one measurement and all axle groups must be measured to determine if the 80,000 pounds can, in fact, be used as the actual maximum weight.

To determine the maximum allowable steering axle weight we must compare the rating to the pounds per inch and use the lesser of the two weights. This is a metric tire size 295mm. As done with trucks C, D, and E this has to be converted to inches by dividing the metric by 25.4. Note the quick reference tire chart handout has the 295 converted to 11.6 inches. Now you multiply the inches (11.6) by the 600 pounds per inch allowed for a steering axle, which would allow 6960 pounds per tire or 13,920 pounds (both tires) for the axle. We must also consider the tire rating. Truck G has steering axle tires rated at 2900kg. This needs to be converted to pounds by multiplying the 2900kg by 2.2 which equals 6380 pounds per tire. 6380 multiplied by two (two tires) gives a converted rating in pounds to 12,760. In this case the rating is less than the pounds per inch (13,920) so the rating weight must be used.

The maximum allowable steering axle weight is 12,760 pounds.

The maximum allowable gross weight on a 9 ton or 10-ton road is 80,000 pounds. When you look at the gross weight table you can see that a 6 axle semi, with properly spaced axles (a minimum of 43 feet) can gross 80,000 pounds.

<u>The tandem weight, on the drive axle is 34,000 pounds</u>. Both the 9 and 10 ton columns on the gross weight table allow that weight.

<u>The tridem weight is 43,000 pounds</u>. The gross weight chart shows 3 axles spaced exactly 9 feet apart can haul 43,000 pounds on both a 9 and 10 ton route. Since all tires are duals with adequate ratings, we don't have the concerns of having a single tire axle to consider. This truck has enough ratings and tire size for 20,000 pounds per axle which is more than is needed. (18,000 pounds on a 9-ton route)

<u>The allowable internal table weight is 67,000 pounds.</u> This is computed by going down the left side of the gross weight table to the 30 foot mark (the distance between the first drive axle and the last trailer axle) and go to the right to the 5 axle column (the number of axles in the measurement) this will show 67,000 pounds. NOTE: Even though, in this measurement the tandem can weigh a maximum of 34,000 pounds and the tridem can weigh a maximum of 43,000 pounds you cannot

add the two together and assume it can haul that totaled amount of weight (77,000 pounds.) The 30 foot internal table distance only allows 67,000 pounds.

<u>The actual legal weight of truck "H" is 79,760 pounds.</u> This is computed by taking the allowed weight on the steering axle (12,760) and add the maximum allowed on the last 5 axles (67,000) which totals 79,760 pounds. The most probable reason this truck cannot haul the allowed maximum of 80,000 pounds is the short distance in the internal axle table weight.

## **Restricted Weights**

On a 5 ton route, the steering axle would have to be reduced to 10,000 pounds maximum weight. (See chart "I") the tandem weight would be allowed a maximum of 18,889, and the tridem would be allowed a maximum of 23,889 pounds. On a 7 ton route, the steering axle would remain at the normal maximum legal weight of 12,760 as there is not enough tire "rated weight" to increase the load to 14,000 pounds (if it were possible to do so). The tandem weight according to chart "I" would be allowed 26,444 and the tridem would be allowed a maximum of 33,444 pounds.

## **10% Weight Increases**

The steering axle is already at its maximum weight of 12,760 as it is at it's maximum weight rating. No increase would be allowed on this axle.

The tandem axle would be allowed an increase from its legal weight (34,000 pounds) by adding 10% (3400 pounds) to a maximum of 37,400 pounds.

The tridem axle would be allowed an increase from its legal weight (43,000 pounds) by adding 10% (4300 pounds) to a maximum of 47,300 pounds. However, one cannot simply load to those weights without considering the internal table weight on the last 5 axles. This truck was previously legal at 67,000 pounds on the last 5 axles, so an increase of 10% (6700 pounds) would set a maximum of 73,700 pounds. This is less than the total of the two increased axle groups (tandem and tridem increased weights would be 84,700 pounds [37,400 + 47,300]).

<u>On either a 9 or 10 ton route the maximum this truck could haul with a 10%</u> <u>increase is 86,460.</u> This is calculated by taking the steering axle weight of 12,760 and adding to it the maximum allowable weight for the internal table weight on the last 5 axles which was increased from 67,000 pounds to 73,700 pounds after the 10% increase.

12,760 + 73,700 = 86,460 pounds.

## **Registration Increase & permit?**

If the registered weight on the cab card is exceeded by more than 1000 pounds, or 4%, (whichever is greater) the registered weight (license plate weight) must be increased to the weight hauled. This is always true.

A transportation permit is needed during harvest for any state highway but not valid on an Interstate highway.

During the winter weight increase a transportation permit is needed ONLY on an Interstate highway. (I-94, I-35 etc).

Always check with local agencies (city, county and township) prior to increasing any weights on their routes.