CTPAC-SC Proposal

SUBJECT: **Crane Boom Dolly Weight Limits**

DATE: **November 12, 2003**

POLICY: **WG9-111203-001**

I. OBJECTIVE

To change the allowable weights a boom support vehicle (boom dolly/boom trailer) can carry on a single axle or axle groups to conform to the current allowable loading limits of other transportation vehicles and to establish a practice of using the Advanced Highway Maintenance and Construction Technology Research Center Study Simulation Model to issue extra legal weight permits.

II. BACKGROUND

Caltrans set the allowable loading on a boom support vehicles at no more than legal load limits. At that time, the single axle load limit was 18,000 pounds and a dual axle load limit was 32,000 pounds. When the state increased the allowable load limits to 34,000 pounds on a dual axle, the boom dolly maximum allowable weight was not also increased and remains at 32,000 pounds.

Over the years, numerous discussions between Caltrans and industry occurred on this issue. In 2000, Caltrans, through the Advanced Highway Maintenance and Construction Technology Research Center, sanctioned a study by the engineering department of University of California, Davis, to better understand the effects on roadway surfaces and structures caused by cranes utilizing boom support vehicles. A computer program to simulate the effects of different transportation vehicles and suspension systems was created. Based on the input data utilized, the report concluded that the effects of dynamic loading on carriers and boom support vehicles were not as significant as originally believed, especially for the newer cranes/boom support vehicles utilizing hydro-pneumatic and air ride suspensions systems.

III. EXISTING DOCUMENTATION

A. Transportation Permit Manual

Section 305.3.6 of the Transportation Permit Manual states, in pertinent part, the following:
The gross weight imposed on the highway by the wheels of any one axle of a boom dolly or boom trailer shall not exceed 18,000 pounds and the gross

weight upon any one wheel or wheels supporting one end of such axle, and resting upon the roadway, shall not exceed 9,500 pounds.

The total gross weight with load imposed on the highway by any group of two or more consecutive axles of a boom dolly or boom trailer shall not exceed that given for the respective distance given below.

Distance in feet between First and Last Axle Group	Allowed Load in Pounds On Group of Axles
4	32,000
5	32,000
6	32,200
7	32,900
8	33,600
9	34,300
10	35,000
11	35,700
12	36,400
13	37,100
14	43,200
15	44,000
16	44,800
17	45,600
18	46,400
19	47,200
20	48,000
21	48,800
22	49,600
23	50,400
24	51,000
25	55,250
26	56,100

B. California Vehicle Code (CVC)

California Vehicle Code sections 35000 et seq. contain information related to size, weight and load limits.

C. Caltrans Memo

The Requestors are unaware of any Caltrans Memo(s) on the subject.

IV. CURRENT PRACTICE

The current practice of Caltrans is to allow boom support vehicles only 18,000 pounds on single axle and a dual axle load limit of 32,000 pounds. Extra legal weight is granted on a case by case basis based on historical practices and evaluation of new equipment.

V. PROPOSED CHANGES

A. Transportation Permit Manual

This proposal seeks to: (1) change Section 305.3.6 of the Transportation Permit Manual regarding allowable weights on boom support vehicles to make it consistent with other transportation vehicles; and (2) establish the Advanced Highway Maintenance and Construction Technology Research Center Study Simulation Model as the basis for granting extra legal weights on boom support vehicles.

The specific changes to Section 305.3.6 are as follows:

> "The gross weight imposed on the highway by the wheels of any one axle of a boom dolly or boom trailer shall not exceed ~~18,000~~ **20,000** pounds and the gross weight upon any one wheel or wheels supporting one end of such axle, and resting upon the roadway, shall not exceed 10,000 pounds.
>
> The total gross weight with load imposed on the highway by any group of two or more consecutive axles of a boom dolly or boom trailer shall be **in accordance with the provisions of Section 302.5.3 or the results of analysis under the Advanced Highway Maintenance and Construction Technology Research Center Study Simulation Model.** ~~not exceed that given for the respective distance given below.~~

~~Distance in feet between First and Last Axle Group~~	~~Allowed Load in Pounds On Group of Axles~~
~~4~~	~~32,000~~
~~5~~	~~32,000~~
~~6~~	~~32,200~~
~~7~~	~~32,900~~
~~8~~	~~33,600~~
~~9~~	~~34,300~~
~~10~~	~~35,000~~
~~11~~	~~35,700~~
~~12~~	~~36,400~~

~~13~~	~~37,100~~
~~14~~	~~43,200~~
~~15~~	~~44,000~~
~~16~~	~~44,800~~
~~17~~	~~45,600~~
~~18~~	~~46,400~~
~~19~~	~~47,200~~
~~20~~	~~48,000~~
~~21~~	~~48,800~~
~~22~~	~~49,600~~
~~23~~	~~50,400~~
~~24~~	~~51,000~~
~~25~~	~~55,250~~
~~26~~	~~56,100~~

VI. BENEFITS/IMPACT/JUSTIFICATION

Limiting the allowable weight for boom support vehicles to less than the weight allowed for other transportation vehicles without a clear showing that the dynamic loading effects of boom support vehicles is any more detrimental is to unjustifiably discriminate against the industry utilizing such vehicles. For years the truck crane industry has been forced to operate under more stringent load limit rules than other industries without sufficient scientific or engineering justification. With the results of the Advanced Highway Maintenance and Construction Technology Research Center Study, there is a rational basis to increase the allowable weights for boom support vehicles to those granted to other transportation vehicles (20,000 pounds for single axle and 34,000 for dual axles) as well as extra legal weight permits based on the results of the simulation program based on the specific characteristics of the carrier and boom support vehicle.

The benefits of granting the requested change would be improved safety, reduced costs of companies operating in the truck crane industry and greater efficiency. Granting the additional weight to bring the truck crane industry in line with other industries utilizing California's transportation system simplifies the rules and brings consistency to their application. Utilizing the Research Center's simulation model to support permits for extralegal weights establishes a legitimate, non-discriminatory basis for issuing permits and gives manufacturers some guidelines and confidence in designing equipment for use in California.

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