CICA – Vic / Tas Branch
Crane Safety Bulletin
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Greetings all. Today's topic is about Stability of Loads

The current state of our national Road and Bridge Network has dictated some very strict travel conditions. Generally, it is very difficult to get 12t per axle access on any crane larger than 5 axles. The crane industry has adapted to this by operating boom dolly's to lower axle loads to be under 10t. Unfortunately for 8 and 9 axle cranes this now causes a length issue and the only alternative is to float the entire crane on an 8 or 10 line platform or remove the boom and float it on a platform and drive the crane carrier separately with 8t per axle loads.

It is because of this issue that the Crane industry is reliant on the heavy haulage industry to move crane booms as well as the other components around the network safely and efficiently.

Crane components such as booms are difficult to move and due to their size shape and dunnage which results in a compromise on stability. Any Heavy Vehicle is usually restricted in some way by primarily its mass concentrations/axle loading and its exterior dimensional envelope (Length, Width and Height) There is sometimes a forgotten aspect which is stability. If you comply with your Gazette or Permit and the conditions there in, it is wrong to assume that you can drive your float to the maximum speed allowed on any piece of road.

I refer to the example of a detached Hydraulic Boom from a crane. While this component is not light, it is certainly not as heavy, or mass concentrated as certain loads of counterweight. Also due to its fragility and dunnage it's Centre of Gravity (COG) is quite high as shown below.

On a straight flat road this does not present a problem, however on corners, its lateral acceleration and high COG present a much greater tipping moment than heavier flat counterweights sitting low on the deck of a trailer. See the photo below.

The faster the truck travels around the corner towing the float holding the boom, the greater the sideways force. Even if the lashings are direct or blocked, it doesn't matter how secure the boom is if its going to tip the entire float! Now imagine the float traveling at 80-100kph and then taking sudden evasive action around a slower vehicle or simply not turning smoothly into a bend. Road camber does not help here either. An obvious fix is to widen the float trailer. This provides a greater stability triangle and will in turn improve the tipping moment. The problem is the operator is now hampered by increased road access restrictions, permit/pilot requirements, curfews etc. And all of this when it's 'legal' at the narrower width? The cost equation changes dramatically when there are permit hold ups or equipment modifications. Running the narrowest legal width possible is generally the default option. There is no problem with this if the combination is driven in accordance with its stability characteristics. This means applying an appropriate maximum speed based on the conditions on the day which may be lower than the speed limit of the road and the limit imposed on the permit or gazette, especially on corners. In the event of an incident, It is not only the driver's fault in this day and age with the new Chain of Responsibility (COR) laws. If the driver has not been instructed to reduce speed accordingly, then the liability of an incident could extend up the chain. Also, unrealistic travel timeframes across a long distance could incentivise traveling faster (yet still legal), but at the expense of stability.

At the end of the day every heavy vehicle combination needs to be driven to its safe operational capability not just it's legal allowance.

Stay Safe -CICA