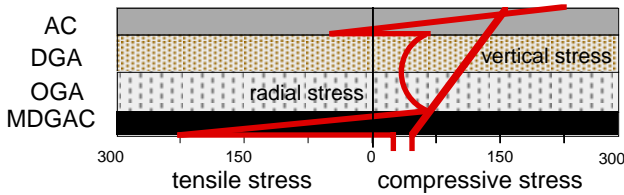
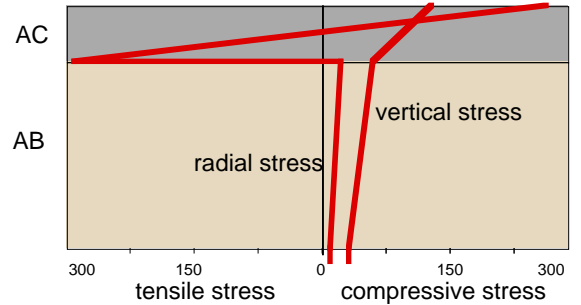


## CRAM'S FAVORABLE FULL BEAM-LIKE ACTION



The stress distribution in the CRAM Pavement showing the full beam-like action



The stress distribution in the Conventional Pavement where the beam-like action is only in the asphalt concrete.

The **FULL BEAM-LIKE ACTION** of the **CRAM** pavement was first evident from computer model analyses.



Port of LA CRAM Pavement, typical deformation measurement indicates 1/4" or less rutting in the wheel paths of the top-loader...

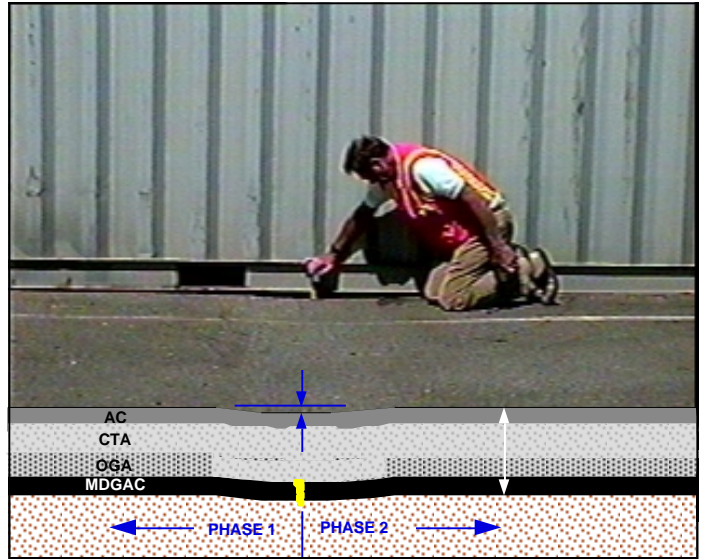
Using formulas based on the 1960 Illinois AASHO Road Test which shows the relation between rut depth,  $\Delta$ , load repetitions,  $N$ , and pavement thickness,  $T$ :

$$\Delta = K N^{1/2} / T^{7/2} \quad (3)$$

we compute the equivalent pavement thicknesses for the different rut depths for the CRAM Pavement at the Inter-modal yard for the interior of the phases and where the joint between Phases 1 and 2 occurs:

$$T_2 = T_1 (\Delta_1 / \Delta_2)^{2/7}$$

for  $\Delta_1$  and  $\Delta_2$  equal 0.25 and 1.25, respectively and  $T_1$  equal to 15 inches,  $T_2$  equals 9.5 inches.



...except in a wheel path that occurred directly atop the construction joint separating Phases 1 & 2, where the measured deformation was 1.25".

The **FULL BEAM-LIKE ACTION** of the **CRAM** pavement is now empirically confirmed from field measurements and engineering analyses. Where we do not have continuity of the base asphalt layer the beam-like action is not achieved and the material effectiveness is only 63 percent of what it is in the true CRAM Section. Conversely, where there is continuity there is almost no rutting! Substantial proof of the CRAM concept!

## CRAM'S FAVORABLE RESISTANCE TO THE STATIC CHASSIS LANDING GEAR



CRAM Pavement; Port of Los Angeles, Berths 127 - 131, supporting loaded chassis landing gear



Depressions in the NYK Terminal Conventional Pavement at the Port of Los Angeles caused by loaded chassis landing gear

In the **CRAM** pavement, under loaded chassis, we may see indentations caused by the wheeled landing gear, but **no evidence of depressions**. And, in fact if only the plate landing gear were used, we would be hard pressed to know that the pavement had ever been in use! This is in contrast to the **conventional pavement** which can typically have depressions of 2 to 3 inches after only a few years in service.