

Analysis of Duration of Heavy Vehicle Induced Occlusion of Overhead and Sideway Signs

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Abstract— Traffic signs are used to convey critical information, such as directions, advisories, etc. to drivers however common experience indicates that there exist instances of missing a sign due to visual occlusion. Situation leading to missing a sign typically arise from an obstruction in the cone of vision of the driver because of the presence of a larger vehicle of it. The combination of distance headway, vehicle heights, vehicle speeds and sign characteristics, which may lead to occlusion, have been mathematically analyzed in this thesis. The analysis shows that if a traffic stream is operating in specific regions of a Cartesian space than larger vehicles will occlude a sign from smaller vehicles following or adjacent to them. While studying such occlusion reading time of signs were also taken into account. Given the expected stream behavior on a road one can determine when vehicles will have trouble reading signs.

Key words: Heavy Vehicle, Occlusion

I. INTRODUCTION

Automotive chassis is a skeletal frame on which various mechanical part like engine, tires, axle assemblies, brakes, steering etc. are bolted. The chassis is considered to be the most significant component of an automobile. It is the most crucial element that gives strength and stability to the vehicle under different condition. Automobile frames provide strength and stability to vehicle under different conditions. Automobile frames provide strength and flexibility to the automobile. The backbone of any automobile, it is the supporting frame to which the body of an engine, axle assembling are affixed. Tie bars, that are essential part of automotive frames, are fasteners that bind

Different auto parts together. Automotives chassis is considered to be one of the significant structures of an automobile. It is usually made of steel frame, which hold the body and motor of an automotive vehicle. More precisely automotive chassis or automobile chassis is a skeletal frame on which various mechanical parts like engine, tiers, axle assembling; brakes, steering etc

A. What is the material section?

The honeycomb sandwich construction can comprise an unlimited variety of materials and panel configuration. The composite structure provided great versatility as a wide rang of core and facing material combination can be selected. The following criteria should consider in the routine selection of core facing and adhesive.

II. STRUCTURAL CONSIDERATION

A. Strength:

Honeycomb cores and some facing materials are directional with regard to mechanical properties and care must be taken

to ensure that the materials are orientated in panel to take the best advantage of this attribute.

B. Stiffness:

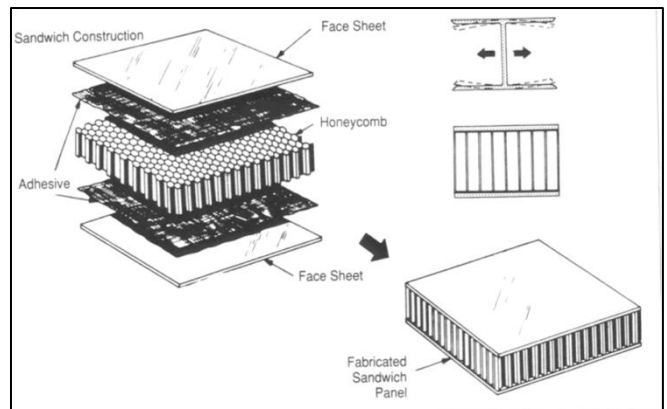
Sandwich structures are frequently used to maximize stiffness at very low weights because of the relatively low shear modulus of most core materials, however, the deflection of the structure in addition to the bending deflection usually considered.

III. OVERHEAD STRUCTURES

Gantries or overhead sign structures are usually built on high-traffic road or routes with several lanes, Where signs posted on the side of the highway would be hard for drivers to see. Gantries may be cantilevered or one sided on the highway would be hard for drivers to see. Gantries may be cantilevered or one sided on the left, and center, or they may be bridges with poles on each side. Structures and steel products provides a wide variety of choices for overhead sign structures available for your next project. Centrally located in Texas we can deliver from coast to coast. Our production also meets all federal and state specifications.



A. Honey Comb Structure



Honey comb Structure are used for design and construction of lightweight transportation system such as satellites transportation system such as satellites, missiles, high speed trains. Structural weight saving is the major consideration and the sandwich construction is frequently used instead of increasing material thickness. This type of construction

consists of thin two facing layers separated by a core material. Potential materials for sandwich facing are aluminum alloys, high tensile steels, titanium and composite depending on the specific mission requirement.

IV. CONCLUSION

In this work, modeled chassis used in a heavy vehicle using solid work. Structural and fatigue analysis are done using three materials is done. Honeycomb present used material for chassis is mild steel. Structural and fatigue analysis was conducted to find stress location, factor of safety and fatigue level's and using mild steel along with honey comb structure. Impact test was conducted to find impact resistance using S2-glass.the honey comb structure weight is reduced up to 75% and quality is improved by 87% than by using steel because density of steel is more than the composites. So better to us above suggested model and material.

REFERENCES

- [1] Chawla A, Mukharjee S, dileep kumar, nakatani T ans Ueno M (2003), "prediction of crushing behavior of honeycomb structure"
- [2] David roylance (2000), "introduction to composite materials", march 24, Cambridge, MA 02139.
- [3] Goolla murali, subramanyam B and Dulam naveen (2013), "Design improvement of a truck chassis based on Thickness", Altair Technology Conference.
- [4] Hemant B Patil, Sharad D Kachave and Eknath R Deore (2013), "Stress Analysis of Automotive Chassis with various Thicknesses", IOSC Journal of mechanical and civil Engineering.
- [5] Kantha Rao K, jayathirtha Rao K, Sarwade A G and Madhava Varma B (2012), "Bending Behavior of Aluminum Honey Comb Sandwich panels".
- [6] Kantha Rao K, Jayathirtha Rao K, Sarwade A G and Sarath Chandra M (2012), "Strength Analysis on Honeycomb Sandwich Panels of Different Materials",
- [7] Manpreet singh Bajwa, sinthiya pundir and Amit joshi (2013), "Static Load Analysis of Tata Super Ace Chassis and Stress Optimisation using Standard Techniques", Directory of Research Journals Indexing.
- [8] Patel vijaykumar V and Patel R I (2012), "StructuralAnalysis of Automotive Chassis Frame and Design Modification for Weight Reduction".
- [9] Rao J G and Srinivasan S A (1995), "the Damping Behaviour of Composites Using FEM", August 14, Chicago, Illinois, USA.
- [10] Roslan Abd Rahman, Mohd Nasir Tamin and Oja Kurdi (2008), "Stress Analysis of Heavy Duty Track Chassis as a Preliminary Data for its Fatigue life Prediction using Fem", Journal Mekanikal.