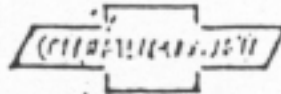


CONFIDENTIAL



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TO	See Below	ADDRESS	Engineering Department
FROM	Mr. A. C. Mair	ADDRESS	Engineering Department
SUBJECT	1967 Safety Program	DATE	March 2, 1964

TO: Messrs. P. E. Hitch  
O. J. Mach  
D. J. Olender  
W. W. Berger

CC: Mr. E. J. Prozo

A Budget Authorization is in the process of being prepared for the 1967 Chevrolet Safety Program. The purpose of this budget is to allow each of you to have sketch type designs for each area of your responsibility that can be costed and then furnished to Mr. Prozo for him to obtain approval from the Corporation to proceed. Meanwhile, the 1967 Truck must proceed in a relatively conventional manner in this area until we have approval to proceed with those items which are quite new or different.

You must work very rapidly on these ideas such that if approved, they can be incorporated in the design without seriously upsetting the program. All designs must be predicated on the fact that the occupants will be wearing seat belts. Listed below are the major areas requiring new design:

- 1. Energy Absorbing Steering Column -
  - A. Must collapse between gear and toe pan.
  - B. Must absorb energy of human impact between steering wheel rim and instrument panel. All effort must be made to reduce unit pressure on the human body to the minimum while collapsing the steering wheel rim, but maintain maximum energy absorption.
- Do sure to co-ordinate steering wheel and steering gear design with Inland, Saginaw Steering Gear, and our own passenger car group, since the problem here is really the same.
- 2. The Instrument Panel must be a collapsible, replaceable energy absorbing unit without protrusions and damaging knobs. Several studies are currently in process with various design approaches, such as a wire mesh or crushing plastics. Such a design practically eliminates the Instrument Panel as a structural member, and compensation for this must be made.

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3. All glass in windshield, side and back light must be the latest material available with high energy absorption, and well restrained so that it does not pop out with human impact. Considerable work is being done currently by increasing the thickness of the film between the two glass layers, which allows more energy to be absorbed before the human head breaks through the glass.
4. The windshield header, the windshield portion of the hinge pillars, and the door opening area at the roof rail and part way down the lock pillar must be covered with, or constructed of, an energy absorbing media to increase the threshold of head injury.
5. The arm rest must be designed into the door as a crushable energy absorbing unit.
6. The seat attachment and its structural strength must be such that it does not break loose from the vehicle in severe accidents.
7. The seat back must not be the folding type such that its energy is not imposed upon the occupant.
8. The fuel tank must be mounted outside the cab and as near the center of the vehicle as practical.
9. For rearward collisions, the cab back inner panel must be covered with, or constructed of, an energy absorbing material in the areas of head impact and, as noted before, the back light must be the best energy absorbing glass available. Incidentally, this is an area of advantage in the truck since no head rest is needed.
10. Improvements must be made to keep the doors closed during collision.

A good starting point for this design criteria is to be able to withstand 45 mph solid impacts in forward collisions and 45 mph vehicle to vehicle rearward collisions. Consider identical weight and configuration vehicles for the rearward collision with a stepped vehicle being struck from the rear by one traveling 45 mph. The forces involved in side collisions are so great that you will have to use as much energy absorbing material as is deemed practical by judgment; that is, the total thickness of the arm rest is really all you can go, and perhaps a 1-1/4" would be the maximum roof rail material that could be added. But, of course, this would be a drastic gain over what we now offer.

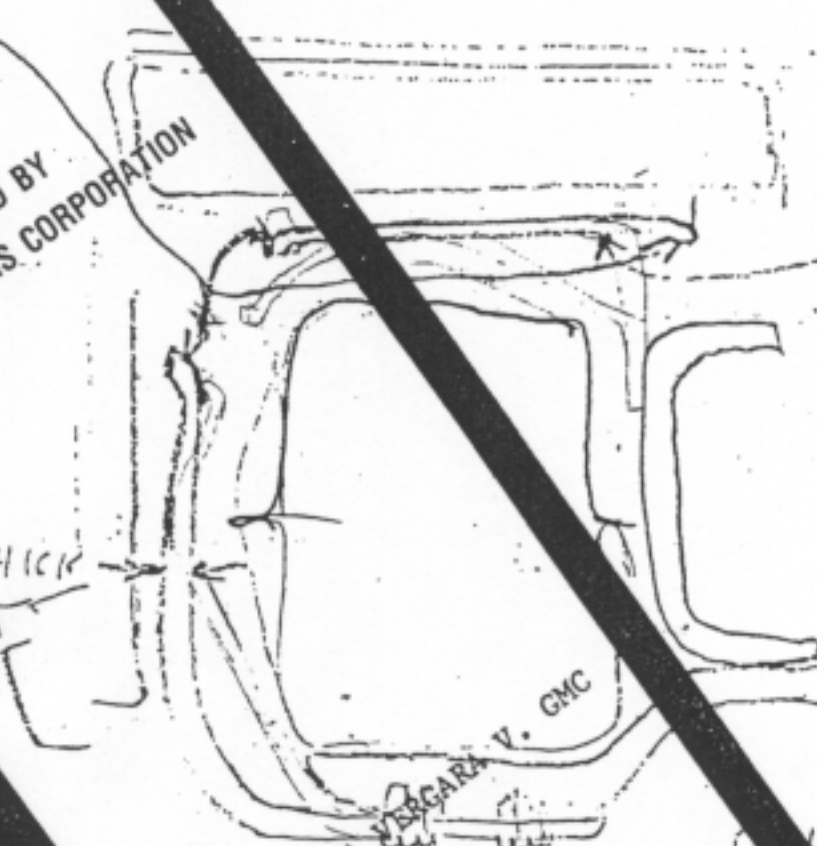
Please obtain these costs as quickly as possible to include in the 1967 design, if approved. Your engineers should begin scheming their thoughts on this immediately.

*A. C. Maier*

A. C. MAIER  
Executive Engineer  
Truck Department

Important  
document  
sample

PRODUCED BY  
GENERAL MOTORS CORPORATION



ABOUT 1 meter long

MM THICK

CRS 1008

PATRICIA VERGARA V. GMC

probablemente easy  
fit  
Ale,

PURSUANT TO PROTECTIVE ORDER

0018244



# "A probable easy fix"

Sketch by Alex Mair  
Vice President General Motors  
1984

