

## 1957 MODEL NEW PRODUCT SCHOOL INFORMATION

SECTION: CONSTRUCTION

TOPIC: B. CORRECTION OF DAMAGED STAINLESS STEEL ROOF PANELS

### DESCRIPTION

(DRAWINGS REFERRED TO FOLLOW THIS WRITE-UP IN THIS SECTION)

The stainless steel roof panel used on the 1957 Cadillac 7059-X styles is entirely new in appearance and involves new service procedures. The stainless steel used in the fabrication of the roof panel has many characteristics unlike those of mild steel. For example, it is approximately two and one-half times as hard as the mild steel used in other roof panels which results in a noticeable increase in the amount of corrective force required to straighten the metal. As the straightening operations progress, the metal will have a tendency to become increasingly harder due to the work hardening characteristics of this type of stainless steel. If prolonged hammering is performed in one area, the metal will work harden to the extent it may crack or split. For this reason all straightening operations should be carefully organized to minimize the amount of hammering. The effects of heat when applied as a corrective force must also be taken into consideration during the repair operation. The heat distortion problem encountered when working mild steel is much greater when working stainless steel which has a high rate of thermal expansion and a low rate of heat conductivity. Any excessive concentration of heat applied to the panel will cause heat distortion or buckling in the panel. The temperature required to distort this type of stainless steel is far below the normal temperatures used for solder filling operations on mild steel. In view of the above facts, the application of heat as a corrective force is recommended only under carefully controlled conditions. For example, shrinking can be performed by a skilled metal man if only small areas are involved. Do not try to shrink large areas with one large shrink spot; rather use two or three small spots to eliminate the possibility of excessive heat distortion. Avoid rapid quenching of shrinks as much as possible. Many of the small shrinking operations require no quenching at all.

### ROUGHING

The roughing operations recommended for stainless steel are basically the same as those used when working mild steel. All of the characteristics of the metal should be taken into consideration and the damaged area carefully diagnosed before the repair operations are started. The hand tools required are the same as those used on mild steel, with one exception. The vixen file used for mild steel and solder should not be used on stainless steel. The cutting action of this type of file is much too coarse for stainless steel. Use a Heller's #3001 curved lathe file for all filing operations to be performed.

Hydraulic body jacks and various body jack hook ups may be used very successfully on stainless steel, however, the application of these hook ups will be determined by the severity of the damage. Carefully organize all jack hook ups so as not to create additional panel distortion as this could cause additional rework time.

As stated previously heat applied as a corrective force is not recommended, therefore, avoid the use of heat during all phases of the roughing operation.

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6. (1) Guide fixture. See Fig. #3.
7. (1) Aluminum faced sanding block.
8. Aluminum oxide cloth #120 grit.

1. Using a Heller's #3001 curved lathe file, carefully file in the direction of the original abrasive line finish to remove scratch. Use only fore and aft strokes. Considerable rework time is required to eliminate any file marks not in the direction of the original finish. Keep filing operations confined to the smallest possible area.
2. After the filing operations have been completed, the area must be belt sanded to insure proper smoothness of the surface. This can best be accomplished using a belt sander such as the Skill #449 or a comparable type unit. CAUTION: Do not use a disc type sander for this operation. The sanding pattern created by this type of sander is very difficult to remove during final finishing. The belt sanding operation is started with a #80 grit belt, followed by #100, #150, #180 and #220. Begin the belt sanding operation by placing the sander on the roof panel and moving fore and aft in the direction of the original finish. Do not use excessive downward pressure on the sander as this may heat the panel and cause distortion. To insure finishing without heat distortion, the surface should not be permitted to become uncomfortably warm to the touch. The surface can be kept cool by using a sponge or rag and cold water. Continue belt sanding until there are no traces of the original scratch or damage.
3. The belt sanding operation is followed by hand sanding. Use a wood block to which a soft rubber pad has been cemented (see Fig. #1) and #120 aluminum oxide cloth for this sanding operation. Carefully place block on panel in repair area, hold block firmly to panel and use fore and aft strokes as in steps #1 and #2. Continue to block sand in this manner until there are no scratches visible other than those being made by this sanding operation. Any scratches not in the direction of the abrasive line finish still visible must be completely removed. When this point is reached the panel is ready for the application of the final abrasive line finish.

IMPORTANT: The abrasive lines which will be applied to the panel are very important since this will be the final finish. The pattern must blend accurately with the original finish, and the parallelism of the lines must be maintained.

#### Roof Panel Area

The application of the abrasive line finish requires two pieces of equipment; a straight edge guide fixture which makes possible the application of the straight line finish and the aluminum faced sanding block used in conjunction with the guide fixture. Both pieces of equipment must be constructed as shown in figures #2 and #3.

4. With the guide and block completed, continue by placing the guide fixture on the roof panel. Carefully align the straight edge of the guide on one side

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of the repair to the original pattern of abrasive lines. Depress the suction cups to secure guide in position. Load the sanding block with #120 aluminum oxide cloth. Place the block with the aluminum face against the guide and make 3 or 4 strokes in the repair area extending 4" or 5" into the original finish. At the end of each stroke lift block from panel to prevent tails or tiny swirl marks. This will produce the necessary blending of the new finish to the old which is very important if a satisfactory repair is to be achieved.

NOTE: It is important that block be held firmly against the guide during the sanding operation to insure a uniform straight-line finish. Continue by moving the guide fixture across the repair area, overlapping each increment by 1/4 of its width.

IMPORTANT: Change abrasive cloth on block frequently to insure a uniform pattern or cutting action.

5. When step #4 has been completed, remove guide fixture and view the repair area from different angles. This is the most satisfactory method of determining whether the repair is acceptable. The repair area must blend with the original pattern and must pass a visual inspection from normal viewing distances.
6. Perform necessary cleaning and waxing operations.

### Roof Panel Rear Quarter Extension Area

The removal of scratches in the roof panel rear quarter extension area is made possible using a contoured guide fixture and special sanding block. The procedure below describes both the construction of the guide fixture and the repair operation.

- a. Place a protective covering over adjacent body panels.
- b. Remove roof drip and reveal molding.
- c. Remove back window and reveal moldings.
- d. Construct contoured guide fixture as follows:
  - (1) Place a piece of transparent paper over the roof panel extension area covering the damage and extending from front to rear of extension. Secure paper with masking tape.
  - (2) Trace curvature of original abrasive line finish in effected area. Remove paper template from body.
  - (3) Obtain aluminum stock 3/16" thick, 4" wide, and of sufficient length to extend from front to rear of roof panel extension area.
  - (4) Place paper template over aluminum stock and scribe curvature as close as possible to one edge of aluminum stock.
  - (5) Cut aluminum along scribe line and smooth edges using a file and sandpaper.
  - (6) Along straight edge of fixture drill holes 3/4" inboard and approximately 4" apart. Fig. #4
  - (7) Secure suction cups to fixture at hole locations. Fig. #4

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7. Construct special sanding block as shown in Fig. #5.
8. Perform steps #2 and #3 of the roof panel procedure to remove scratch.
9. Place contoured guide fixture in extension area and carefully align contoured edge of guide to the original pattern of abrasive line finish. Depress suction cups to secure guide fixture in position.
10. Place sanding block firmly against contoured edge of fixture and make three or four strokes extending from front to rear of extension. Continue until pattern of abrasive lines being made matches the original finish. Use #120 grit aluminum oxide sandpaper for this operation.
11. Continue by moving guide fixture down extension area overlapping each increment by  $1/4$  of its width.
12. Install previously removed parts.
13. Perform necessary cleaning and waxing operations.

NOTE: In the removal of scuff marks and minor abrasions it is not always necessary to perform file and belt sanding operations. If the abrasion is of a minor nature the finish can be restored using only hand sanding operations. For this type of repair use the rubber cushioned sanding block, followed by the aluminum faced block and guide fixture as outlined in step #3 of the Roof Panel Procedure.

### CLEANING OF STAINLESS STEEL ROOF PANEL

Recommendations for removing the following stains or soils are listed below:

#### 1. PAINT STAINS

Paint stains can be removed using lacquer thinner or lacquer removing solvent. Undercoats if air dried are soluble using a volatile cleaner; if baked, lacquer thinner or removing solvent can be used. When stains have been removed, wash with mild soap and water and wax area.

CAUTION: Care should be taken to prevent thinners or lacquer removing solvents from contacting painted surfaces of the body.

#### 2. BODY ADHESIVES, SEALERS, ROAD TAR, OIL STAINS AND OLD WAX

Body adhesives, sealers, road tar, oil stains and old wax can be removed using a good grade volatile cleaner. After removing stains, the area should be washed using a mild soap and water, dried thoroughly or blown off to prevent water spots. Wax the affected area.

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CAUTION: When using volatile cleaners work in a well ventilated area and avoid breathing fumes. DO NOT USE VOLATILE CLEANERS NEAR SPARKS OR OPEN FLAMES. VOLATILE CLEANERS FOR THE MOST PART ARE HIGHLY INFLAMMABLE MATERIALS.

### 3. ROAD GRIME, HAND PRINTS, PERSPIRATION STAINS, TREE SAP, ETC.

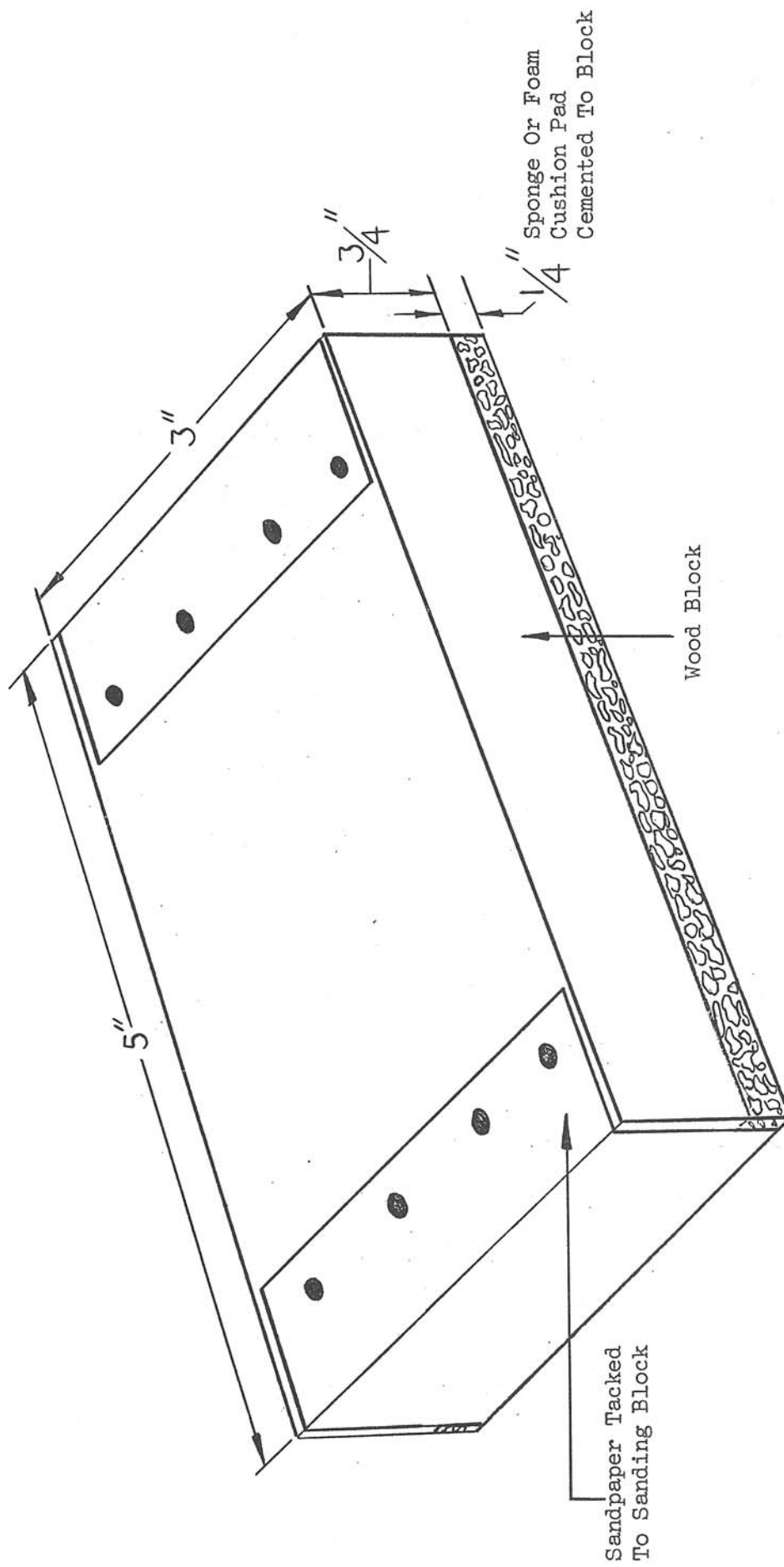
Road grime, hand prints, perspiration stains, tree sap, etc. that cannot be removed with mild soap and water can be removed using a mild cleanser such as Bon Ami. It is important that this material be used in a direction parallel to the abrasive line finish to avoid scratches or highlights on the panel. When stains have been removed, wash area with mild soap and water -- dry and wax surface.

### 4. PROCEDURE FOR WAXING STAINLESS STEEL ROOF PANEL

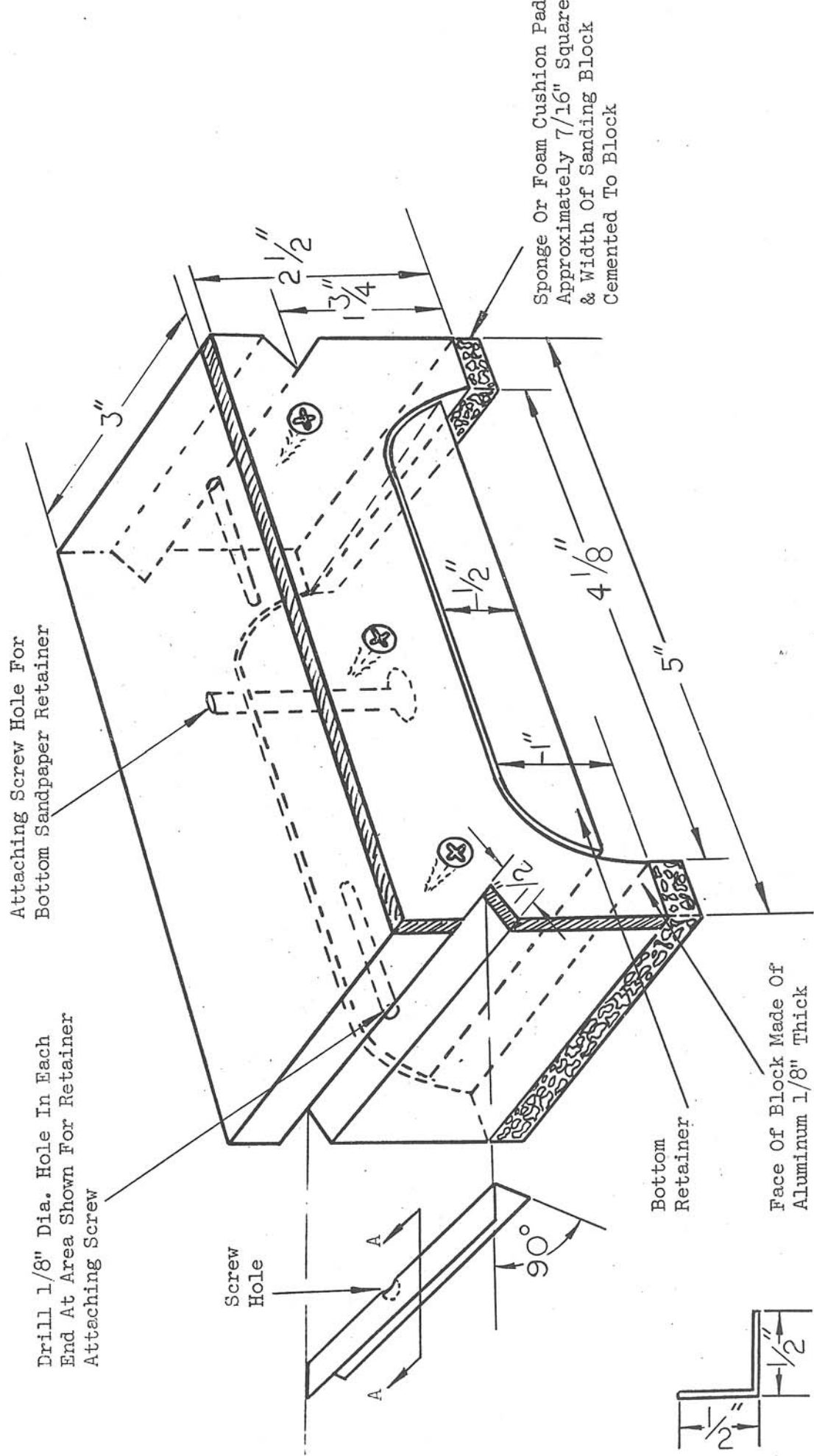
The procedure for waxing the stainless steel roof panel is the same as that used when waxing painted surfaces, with one exception, when removing excess wax do not use a circular motion -- polishing should be done in the direction of the abrasive line finish. The Cadillac Motor Division recommends the use of Cadillac Blue Coral Sealer. DO NOT USE LIQUID OR POWDERED WAXES.

CAUTION: Do not attempt to use a power polisher or buffer for this waxing operation. Power polishing will produce undesirable highlights on the panel.

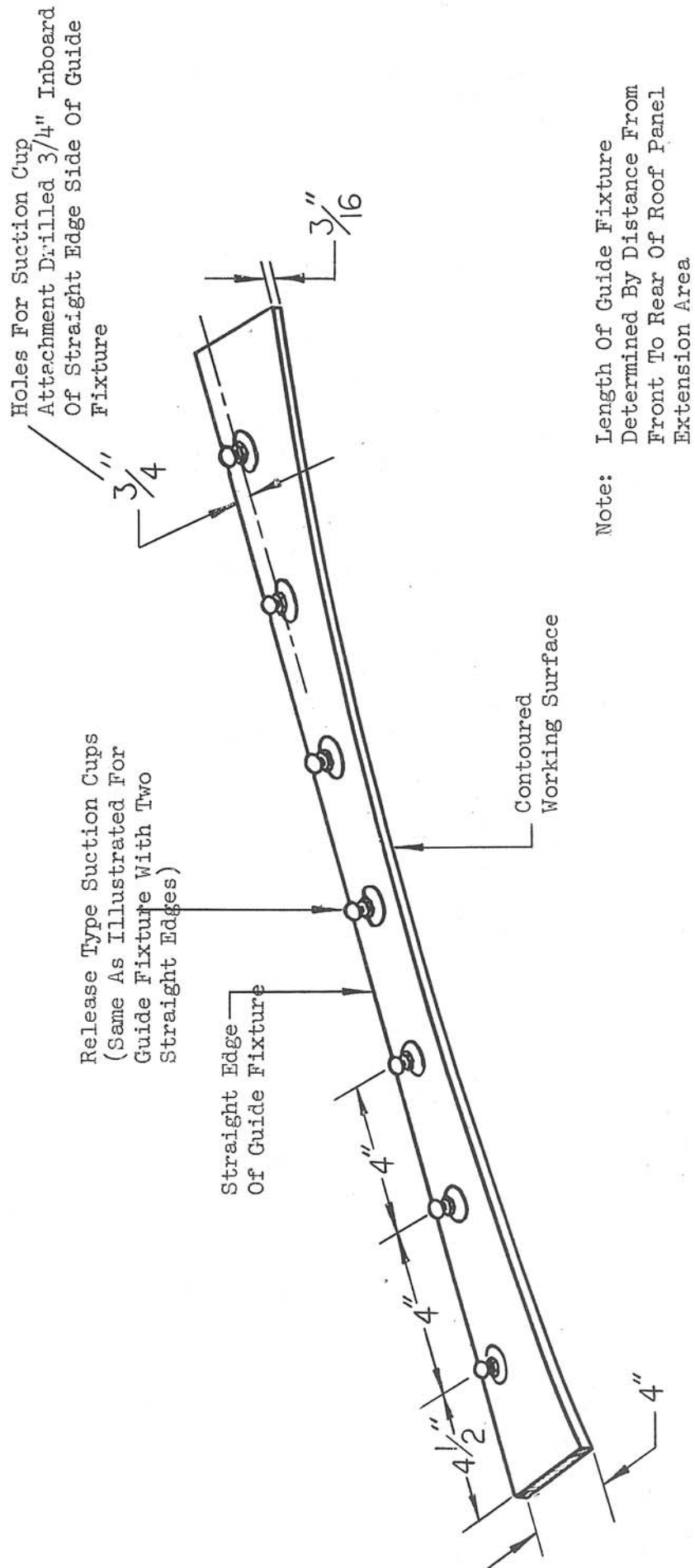




SPECIAL HAND SANDING BLOCK  
**FIG. 1**



SPECIAL HAND SANDING BLOCK  
**FIG. 2**



ROOF PANEL SANDING GUIDE SPECIAL FIXTURE

FIG. 4