University of Minnesota, Duluth
Department of Theatre

Mask Restoration

Undergraduate Research Opportunity Program

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Summary

For my *Undergraduate Research Opportunity Program* project I restored masks for the University of Minnesota Duluth's Theatre Department's costume shop and masks class. I restored 21 masks that belong to Professor William E. Payne. The existing masks needed repair from years of being used by students in his mask classes and in productions. Some of the masks had small repairs but lacked the structure and surface detail that they once had. The materials that I ended up using were the thermoplastics varaform gauze and medium weight altraform, *Liquitex* molding paste, and *Basics/ Liquitex* acrylic paints. In addition to the restoration of the masks I also improved our shops knowledge of different thermoplastic resources.

Original Materials:

Plaster and cheese cloth
Plaster Bandages
Acrylic Paints
Elastic

Restoration Materials Used:

Medium Weight Altraform
Varaform Gauze
Molding Paste
Barge Instant Cement
Acrylic paints

Restoration Tools Used:

Pencil/Pen
Sharpie
Paint Brushes
Exacto Knife
Sanding Block/Paper
Tweezers
Heat Gun
Liquitex Molding Paste
Barge Instant Cement
At least 1 Plaster Face/Armature

Number of Masks Restored : 21

The original masks were made by Peter Grahame and notated for the year of 1995.
All original masks restored had a special notation and Peter Grahame's information:

Peter Grahame
Studio 17
17 Mesquite Dr.
Silver City NM
88061
(505) 538.2535

Mask Labeling:

	New Assigned Restoration Mask Number	Peter Grahame's Original Mask Number
Test #1	**P.1**	10
Test #2	P. 2	11
Test #3	P. 3	13
Test #3	P. 4	21
	P. 5	1
	P. 6	4
	P. 7	5
	P. 8	6
	P. 9	8
	P. 10	16
	P. 11	17
	P. 12	18
	P. 13	19
	P. 14	2
	P. 15	3
	P. 16	12
	P. 17	15
	P. 18	20
	P. 19	22
	P. 20	23
Test #4	P. 21	24

Process

(Prep, Repair, Final)

1. Remove foam from inner surface of mask.
2. Remove felt from inner surface of mask.
3. Inspection of both outer and inner surfaces to generate a preliminary fix list.
4. Proceed to make preliminary fixes:
    - Add necessary medium weight altraform to inner surface.
    - Add necessary varaform gauze outer surface.
    - Apply *Liquitex* molding paste to outer surface where necessary.
    - Sand smooth the outer surface (molding paste) where necessary.
8. Inspection of both outer and inner surfaces to generate a secondary fix list.
9. Proceed to make secondary fixes.
10. Paint the new outer surface of mask.
11. Add felting to the inner surface of the mask.

Colors

During inspection of the masks, the observation that the masks had been repainted was made. The colors once included a pale organic green, a vibrant red, a vibrant blue-robin's egg, ivory, an iridescent copper, and a golden color. Later a skin color, pale light blue, a copper and antique golden bronze. The colors discussed and used after repairs were a pale grey-blue, a golden tan, a peach, a cream-ivory, and an iridescent copper.

Color swatches used for this project consisted of those below:

Copper Blue Tan Peach Ivory

Paint Names used for the color swatches consisted of the following:

Liquitex:

Iridescent Rich Gold
Iridescent Rich Copper
Payne's Grey
Turner's Yellow
Yellow Oxide

Basics:

Cobalt Blue
Titanium White
Unbleached Titanium

Material Trial Masks

Material Test Results

All original masks were plaster based made of either plaster bandages or plaster and cheesecloth that were then painted with acrylic paints.

A list of possible materials that could be used for restoration was made. On the list compiled were the materials of plaster bandages, friendly plastic, medium weight altraform, and varaform gauze. To determine what materials will work best I performed some test on masks with similar fixes needed.

In my first test I repaired masks P. 3 and 4 with plaster bandages. The plaster bandages melded well to the surface and gave a realistic texture. The plaster bandages created good structural support once dried. Unfortunately the plaster bandages weren't as flexible as desired. Next, I went on to do some research on other repairing materials and decided to pursue thermoplastics. There was an excess of a thermoplastic called *Friendly Plastic* in the costume shop. I proceeded to test our material on mask P.21 and found that once it was cooled, the *Friendly Plastic* was very strong and remained flexible. However while applying the *Friendly Plastic* the paint peeled and mixed in with the *Friendly Plastic* making it very difficult to create a smooth surface. It also dried very quickly and left a very short working time frame.

I went on to research other thermoplastics and ordered a sampler kit from *Douglas and Sturgess* and contained 6 samples of different thermoplastics. The samples included light and heavy varaform, light and heavy fuzzform, medium weight altraform and varaform gauze. After these samples were looked at the light and heavy weight varaform were eliminated because of their thick open weave that would leave inhuman like textures on the front and would need thicker cushioning on the inside - Which was not true to the original design. The light and heavy fuzzform was eliminated because it did not meld well without an adhesive. The varaform gauze and medium weight altraform were the top two of the samples. The varaform gauze was tested on mask P.1 and melded well to the surface of the mask with a nice working time frame. Once it cooled it was strong and flexible. The results were the same with the medium weight Altraform tested on mask P.2.

I made the decision to use the altraform for support on the inner structure because it was thicker and had a little bit more resistance while still staying flexible. I also decided that I would use the thinner gauze to patch over larger cracks on the outer surface of the masks. On some masks the varaform gauze was not necessary. I used molding paste to fill and smooth smaller cracks. After the molding paste dried it resembled plaster which made it easy to sand down and form a smoothing surface while still having texture that may read as human skin.

Material Test #1: Plaster Bandages

P. 3

Original Fixes Needed:

- Weak forehead support
- Broken upper and mid edges
- Crack along left side of mask
- Tip of nose needs reshaped
- Paint chipping

Materials Used:

- Medium Weight Altraform:
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Test Results & Observations:

Pros:

- Melded well to original surface
- Easy to work with
- Strong

Cons:

- Heavier than desired.
- Not as flexible as desired

Secondary:

Changes Made:

No changes were made

Final:

Material Test #1: Plaster Bandages

P. 4

Original Fixes Needed:

- Large cracks in forehead and along nose
- Broken mid edges
- Tip of nose needs touched up
- Paint chipping

Materials Used:

- Medium Weight Altraform:
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Test Results & Observations:

Pros:

- Melded well to original surface
- Easy to work with
- Strong

Cons:

- Heavier than desired.
- Not as flexible as desired

Secondary:

Changes Made:

No changes were made

Final:

Material Test #2: Friendly Plastic

P. 21

Original Fixes Needed:

- Weak forehead support
- Broken edges
- Tip of nose needs touched up
- Cracks in the right cheek and lip
- Paint chipping

Materials Used:

- Medium Weight Altraform: 7” x 5”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Test Results & Observations:

Pros:

- Held well once cooled
- Peeled paint during application
- Strong, yet still flexible
- Medium weight in comparison

Cons:

- To much texture for desired look

Secondary:

Changes Made:

- *Liquitex* Molding Paste was added to reduce texture on outer surface

Final:

Material Test #3: Varaform Gauze

P. 1

Original Fixes Needed:

- Weak forehead support
- Broken upper and lower cheek edges
- Cracking along nose and cheek areas
- Tip of nose needs reshaped
- Paint chipping

Materials Used:

- Medium Weight Altraform: 9” x 6”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

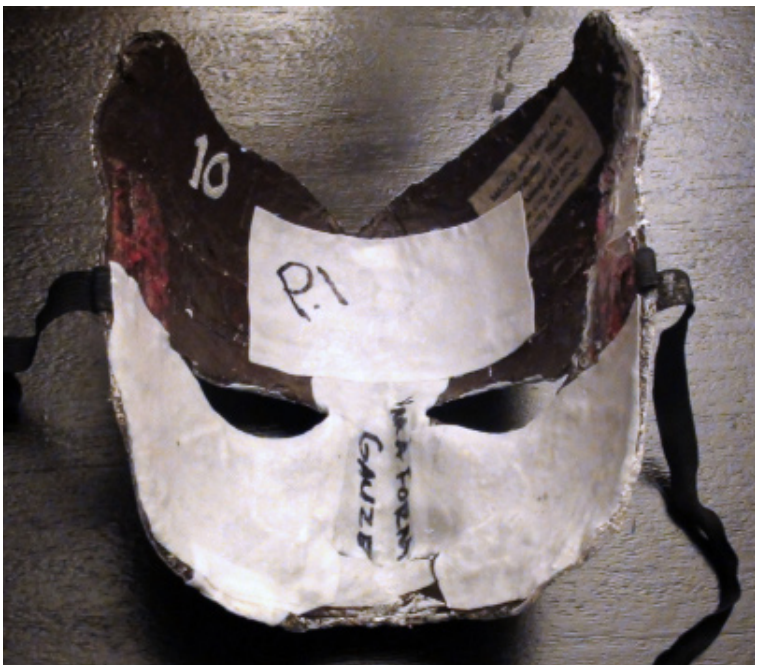
Test Results & Observations:

Pros:

- Melded well to original surface
- Easy to work with
- Strong, yet still flexible
- Lightweight

Cons:

- Slightly more flexible than desired



Secondary:

Changes Made:

- Replaced varaform gauze (from inner surface) with medium weight altraform.
- Additional molding paste added.

Final:

Material Test #4: Medium Weight Altraform

P. 2

Original Fixes Needed:

- Weak forehead support
- Broken lower cheek edges
- Bad cracking along nose
- Tip of nose needs reshaped
- Paint chipping

Materials Used:

- Medium Weight Altraform: 9” x 3.5”
  5” x 3”
- Varaform Gauze: 1” x 2”
- Molding Paste
- Acrylic Paint
- Felt

Test Results & Observations:

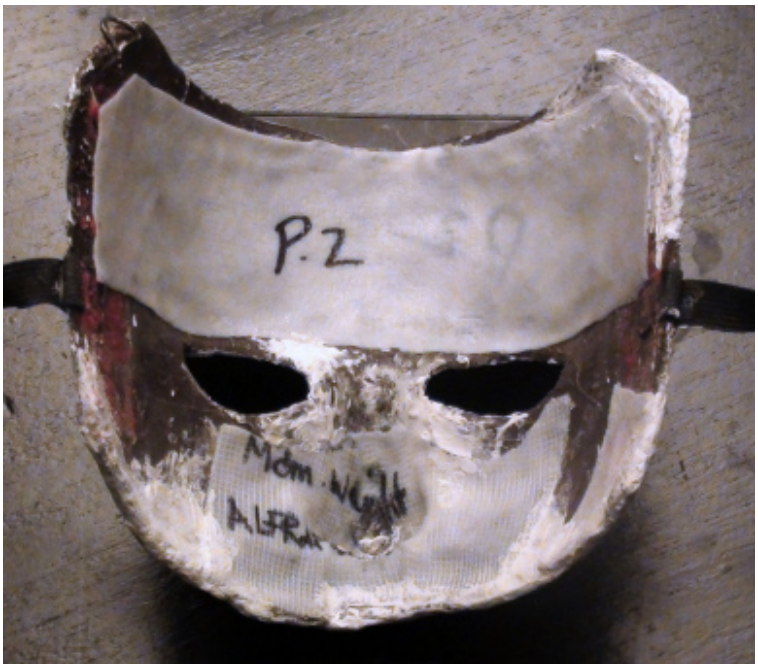
Pros:

- Melded well to original surface
- Easy to work with
- Strong, yet still flexible

Cons:

- Is slightly thicker than desired (Outer surface)

Secondary:



Changes Made:

- Additional medium weight altraform
- Additional molding paste added.

Final:

Repaired Masks

Original Fixes Needed:

- Weak forehead support
- Broken edges
- Tip of nose needs touched up
- Cracks in the right cheek and lip
- Paint chipping

Materials Needed:

- Medium Weight Altraform: 8.5” x 2.5”
  7” x 2”
  3” x 3”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:

Final:

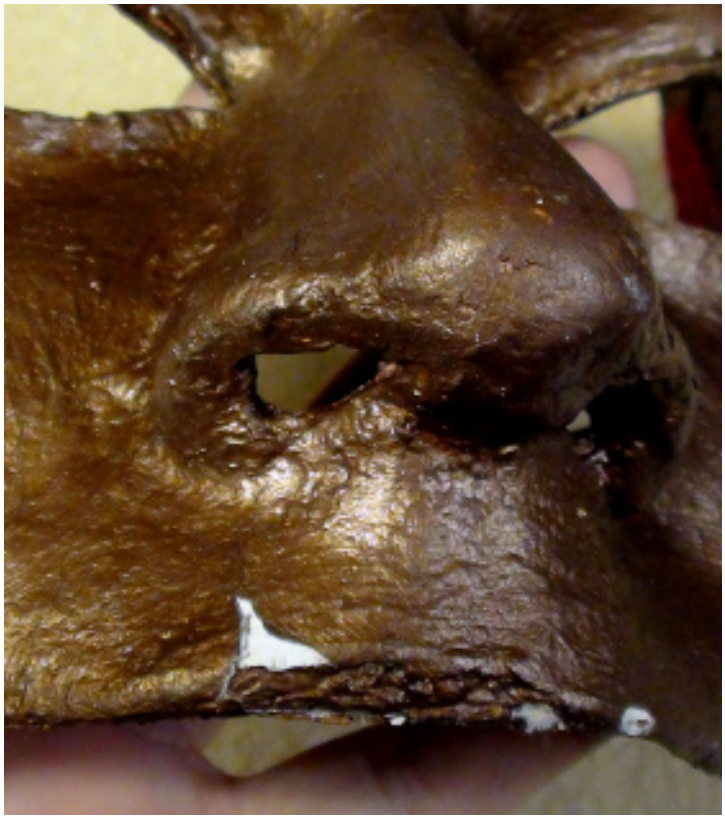
Original Fixes Needed:

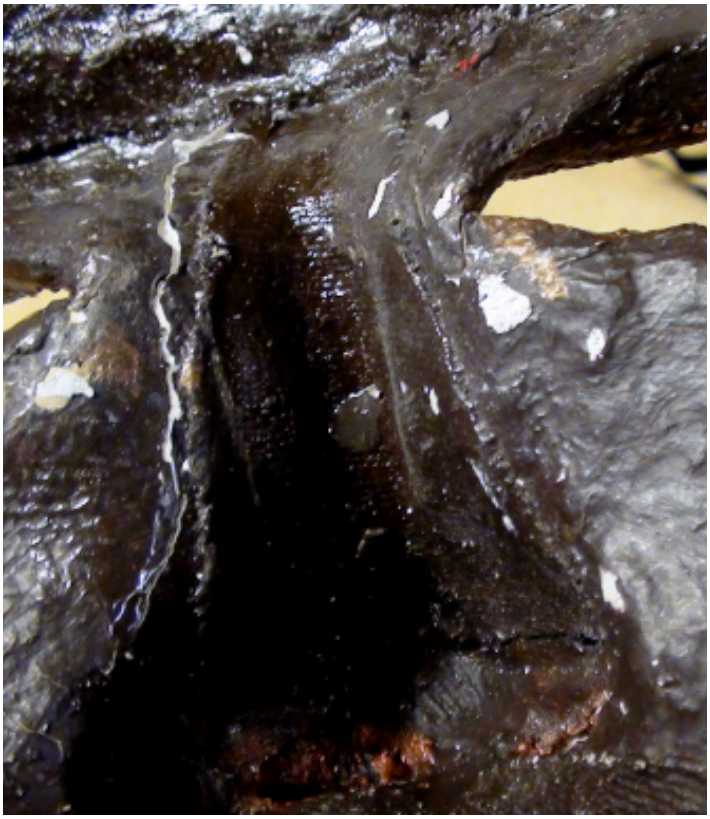
- Strengthen around nose and cheeks
- Fill in small cracks
- Paint chipping

Materials Needed:

- Medium Weight Altraform: 7” x 5”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:





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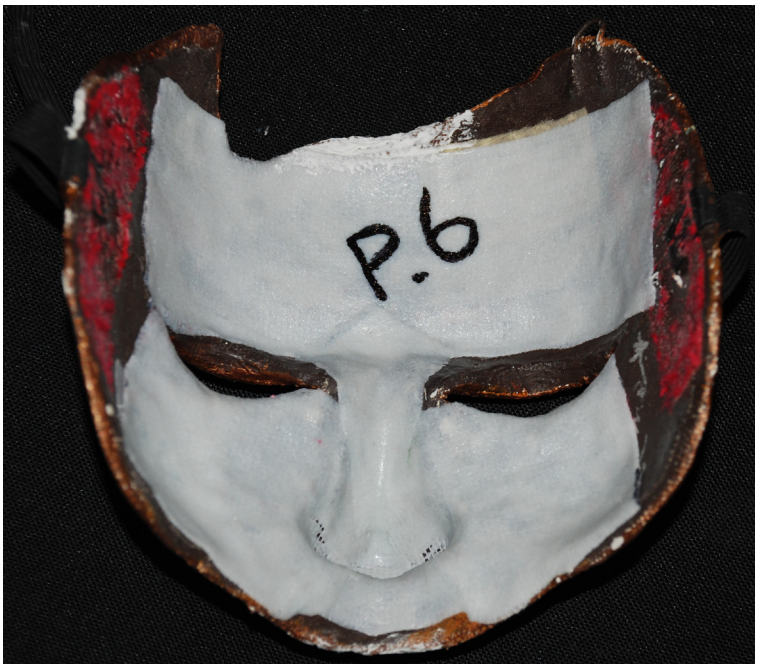


Final:

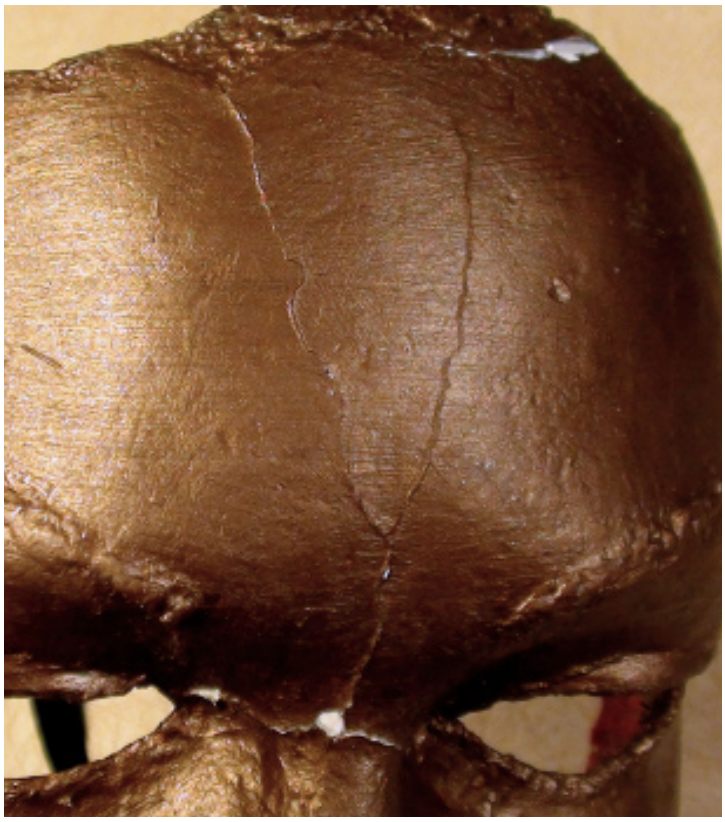
Original Fixes Needed:

- Slightly weak structure
- Large crack in forehead and nose area
- Broken edges
- Cracks in lip
- Paint chipping

Materials Used:

- Medium Weight Altraform: 4.5” x 6”
- Varaform Gauze: 1” x 2.5”
  1” x 2”
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:



Preliminary:

Final:

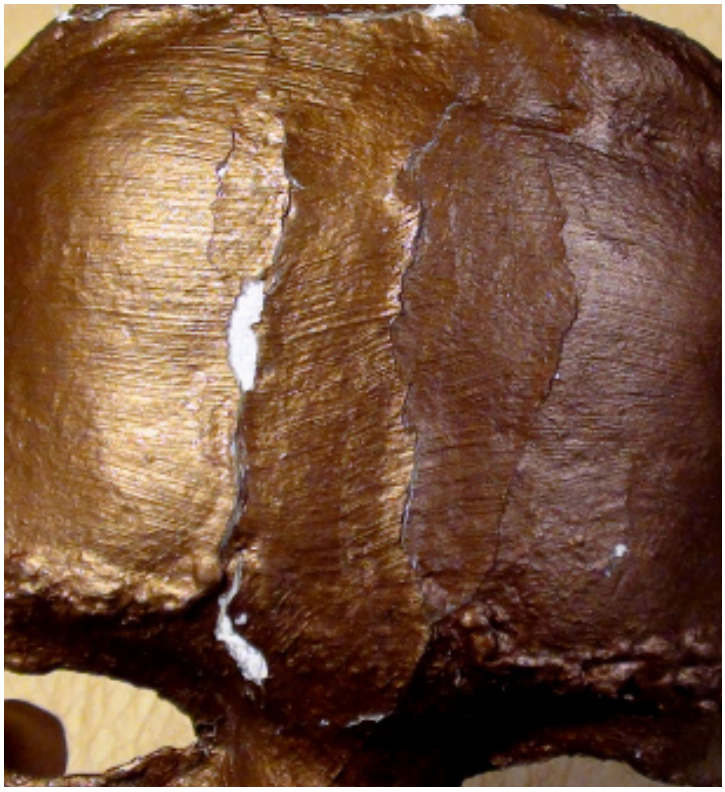
Original Fixes Needed:

- Weak forehead support
- Broken edges
- Tip of nose needs touched up
- Cracks in the right cheek and lip
- Paint chipping

Materials Used:

- Medium Weight Altraform: 5” x 4.5”
  5” x 3”
- Varaform Gauze: 2” x 3.5”
  1” x 3”
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:



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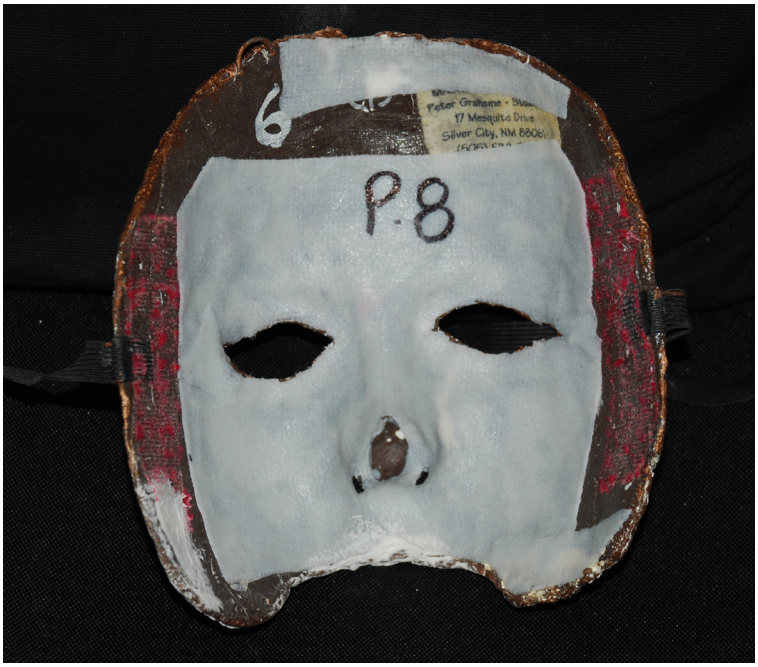


Final:

Original Fixes Needed:

- Weak structure support
  (Forehead, nose and cheeks)
- Brace outer brow areas
- Crack in the right lower cheek and lip
- Broken edges
- Remove previous restoration
- Remove excess cheesecloth
  (Inner surface on mask's right cheek)
- Paint chipping

Materials Used:

- Medium Weight Altraform: 5.5" x 4.5"
  (Scrap-lower cheek)
- Varaform Gauze: 2" x 2"
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:

Final:

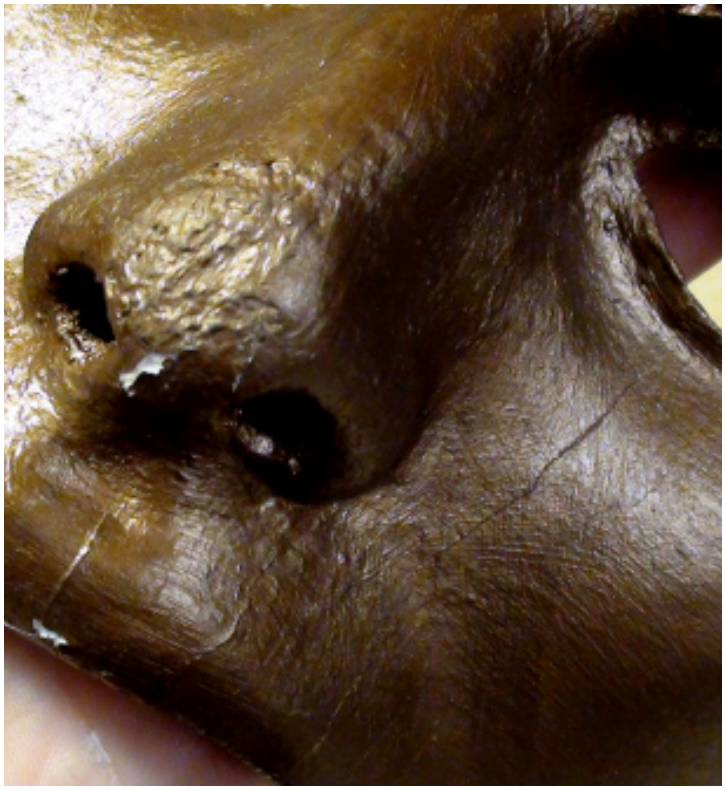
Original Fixes Needed:

- Weak structural support
- Cracks in the right cheek and lip
- Remove previous restoration
- Remove excess cheesecloth
  (Inner surface on mask's right cheek)
- Paint chipping

Materials Used:

- Medium Weight Altraform: 4" x 4.5"
  2.5" x 1"
  1" x 2"
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:



Preliminary:

Final:

Original Fixes Needed:

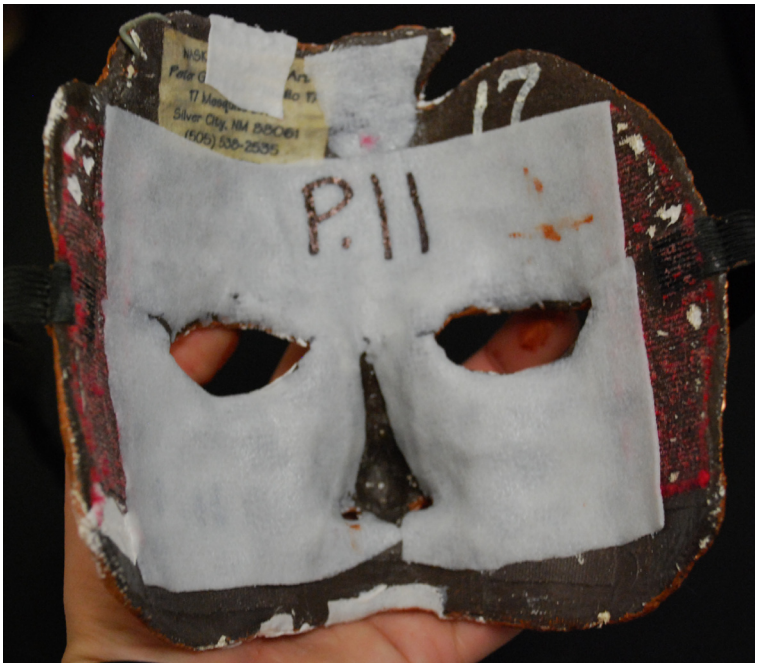
- Weak forehead support
- Large cracks in forehead and nose
- Broken edges
- Cracks in lip
- Paint chipping

Materials Used:

- Medium Weight Altraform: 5” x 8”
- Varaform Gauze: 3” x 3”
  (Scrap- lip)
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:



Final:

P. 12

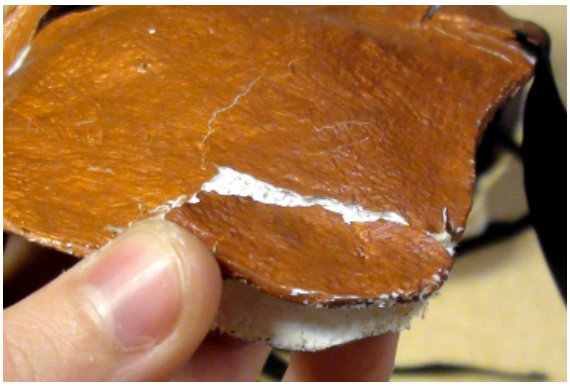
Original Fixes Needed:

- Weak forehead support
- Broken edges and lip
- Cracks along the left side and cheek
- Paint chipping

Materials Used:

- Medium Weight Altraform: 8” x 5”
  3” x 2”
- Varaform Gauze: 2” x 6”
  1” x 4”
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:



Preliminary:

Final:

P. 13

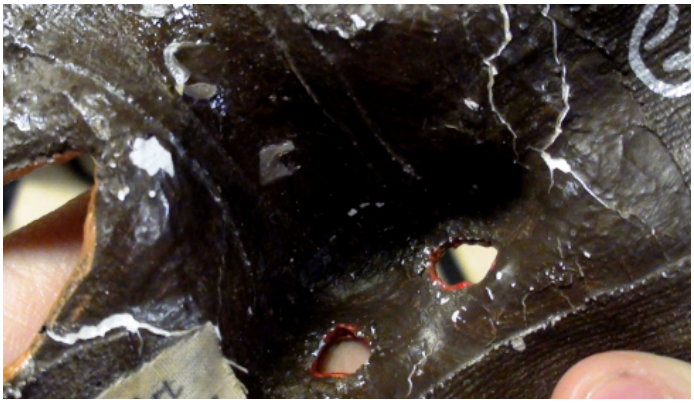
Original Fixes Needed:

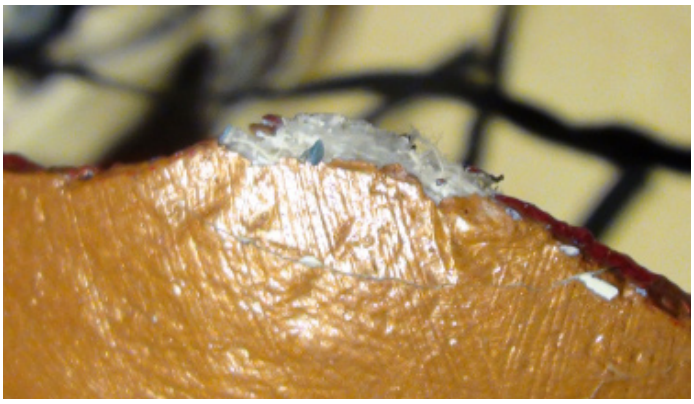
- Weak forehead support
- Extra support for nose-to-eyes areas
- Paint chipping

Materials Used:

- Medium Weight Altraform: 7” x 6”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:





Preliminary:

Final:

P. 14

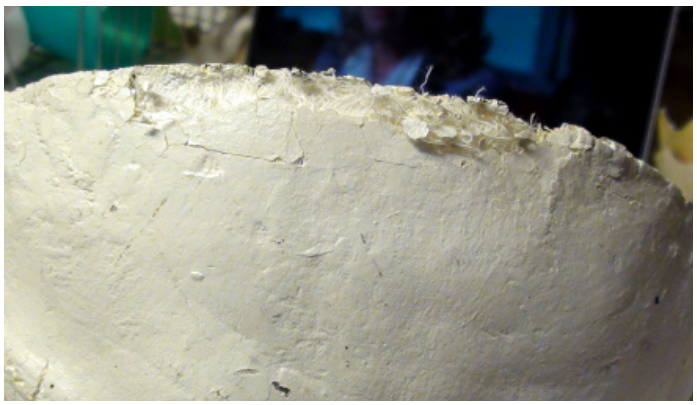
Original Fixes Needed:

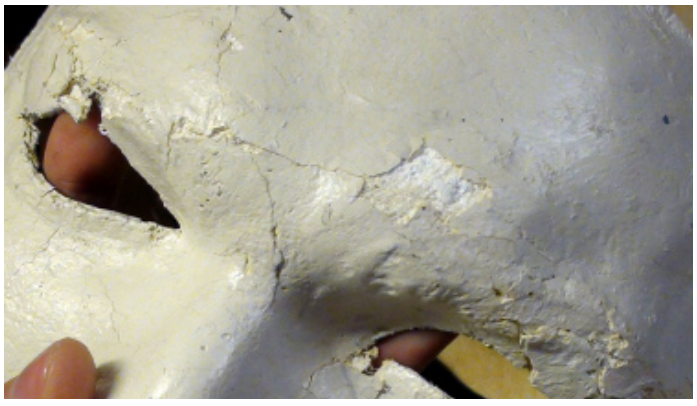
- Weak structural support
- Broken edges
- Left front cheek
- Cracks left of nose, and upper brows
- Paint chipping

Materials Used:

- Medium Weight Altraform: 9.5” x 7.5”
- Varaform Gauze: 1” x 3” (x2)
  1” x 6”
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:





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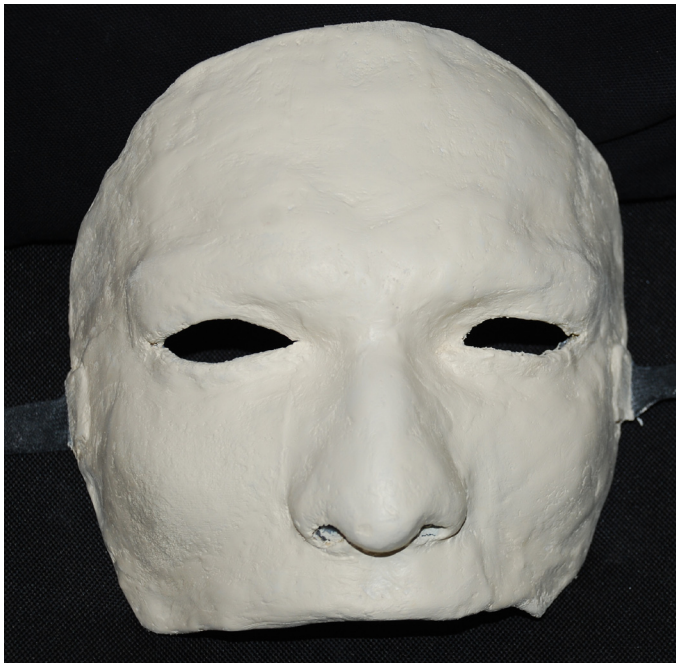


P. 15

Original Fixes Needed:

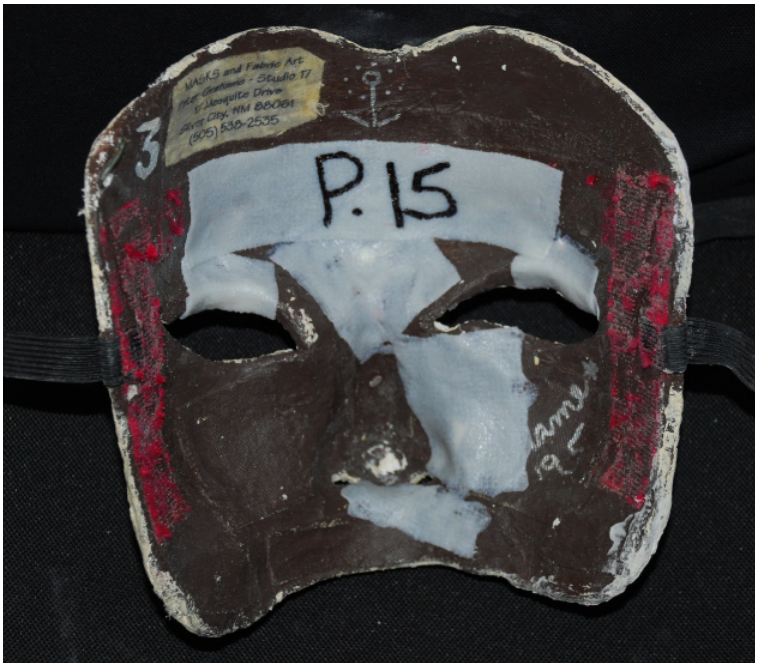
- Weak forehead support
- Broken edges
- Tip of nose
- Upper eyelids
- Paint chipping

Materials Used:

- Medium Weight Altraform: 5” x 7”
- Varaform Gauze: 1” x 1”
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:



Final:

Original Fixes Needed:

- Weak central structure support
- Broken edges
- Tip of nose
- Paint chipping

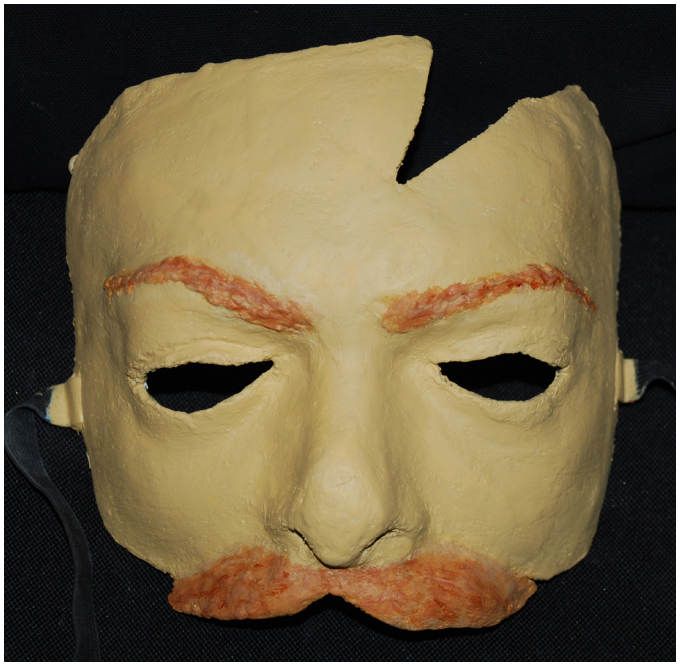
Materials Used:

- Medium Weight Altraform: 7” x 9.5”
- Varaform Gauze: 3” x 3”
  1” x 2”
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:

Final:



P.17

Original Fixes Needed:

- Weak forehead support
- Broken edges
- Large Cracks
  (Lip, nose, forehead and lower cheeks)
- Paint chipping

Materials Used:

- Medium Weight Altraform: 6” x 7”
- Varaform Gauze: 2” x 5”
  2” x 3” (x2)
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:

Final:

P. 18

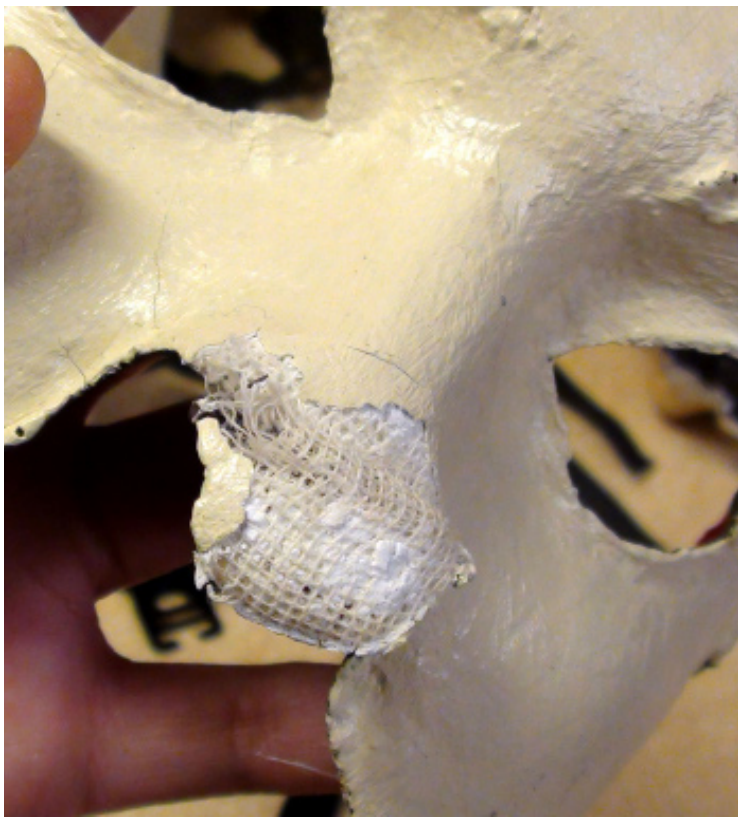
Original Fixes Needed:

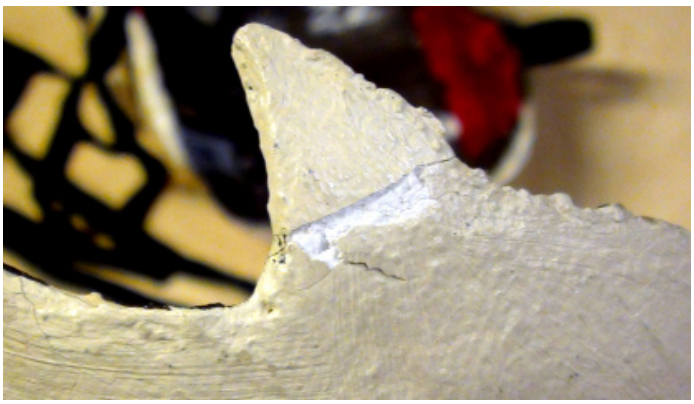
- Weak forehead support
- Broken edges
- Tip of nose needs touched up
- Cracks in the right cheek and lip
- Paint chipping

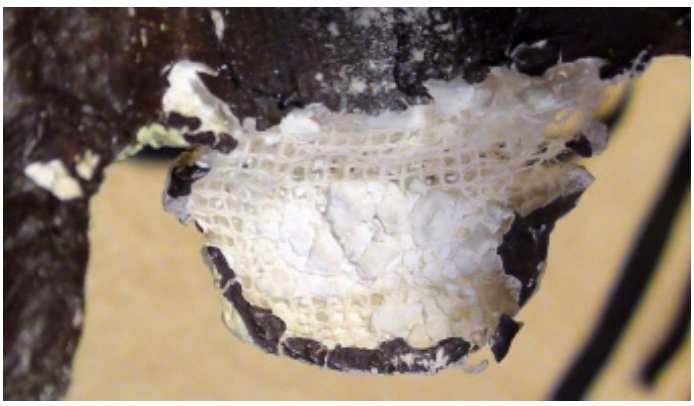
Materials Used:

- Medium Weight Altraform: 7” x 5”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:







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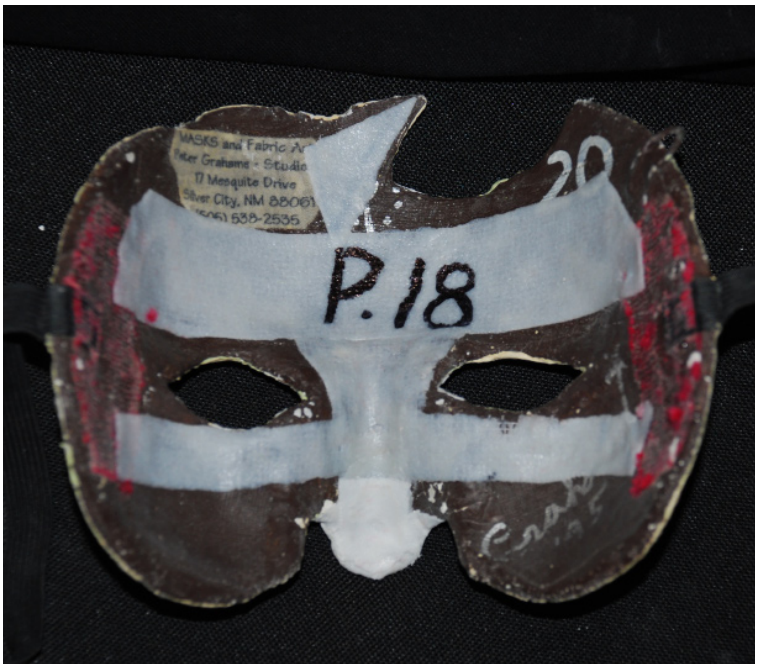

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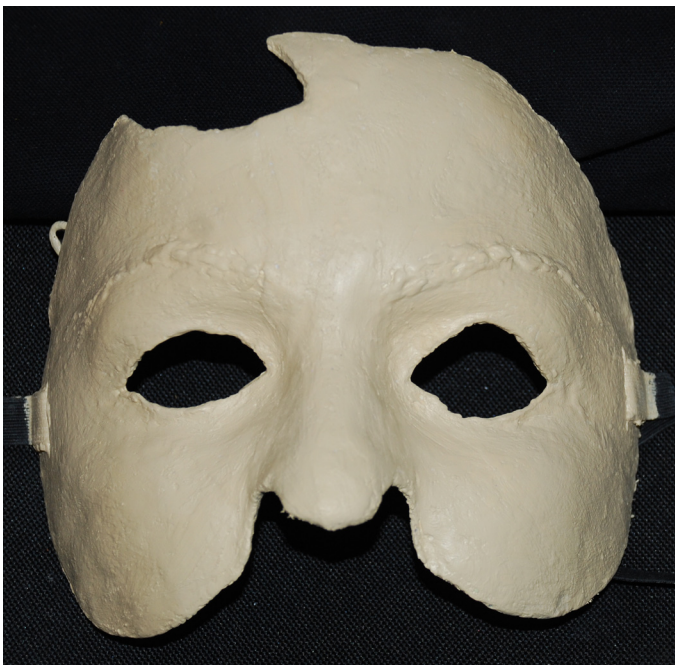


P.19

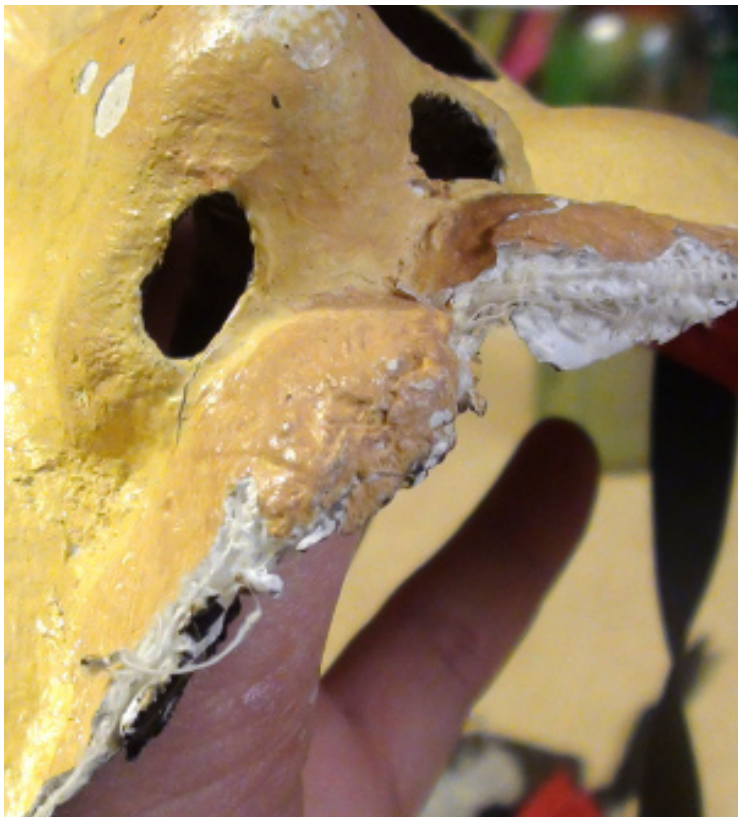
Original Fixes Needed:

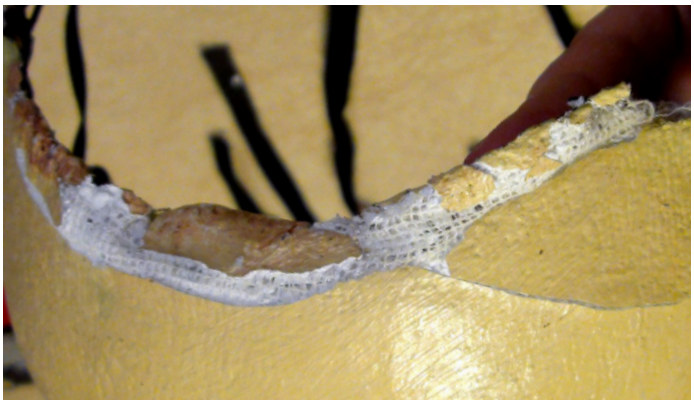
- Weak forehead support
- Broken edges
- Tip of nose needs touched up
- Cracks in the right cheek and lip
- Paint chipping

Materials Used:

- Medium Weight Altraform: 7” x 5”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:





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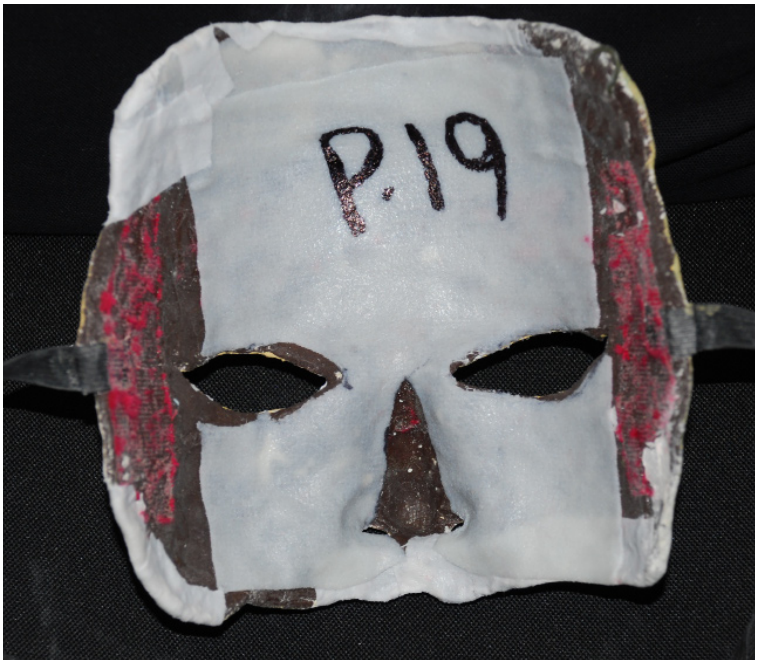


Final:

P.20

Original Fixes Needed:

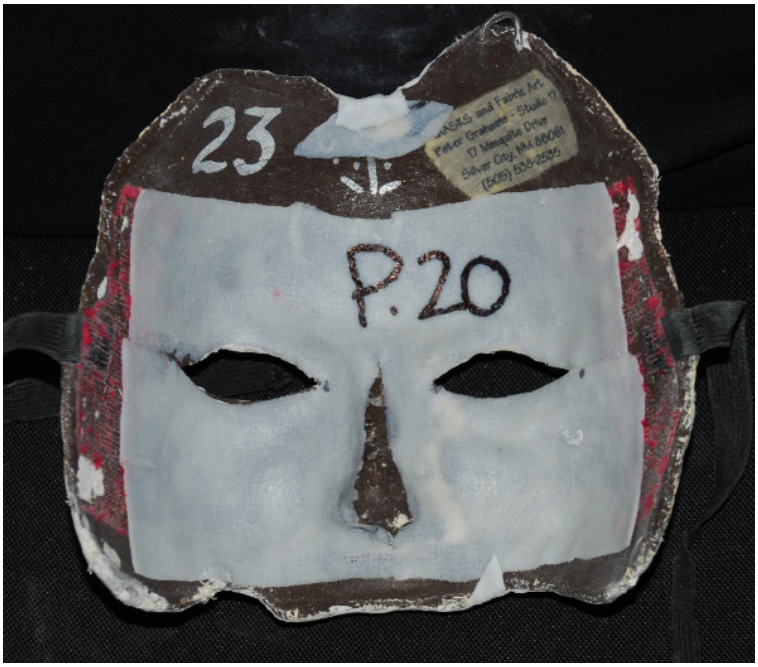
- Weak forehead support
- Broken edges
- Tip of nose needs touched up
- Cracks in the right cheek and lip
- Paint chipping

Materials Used:

- Medium Weight Altraform: 7” x 5”
- Varaform Gauze: None
- Molding Paste
- Acrylic Paint
- Felt

Additional Damage Images:

Preliminary:



Final: