

Textile Preservation Associates, Inc.

P.O. BOX 60 • KEEDYSVILLE, MARYLAND 21756 • PHONE (301) 432-4160 FAX (301) 432-8797

TREATMENT REPORT

Date November 30, 2001

TPA No. 1161
Object 28 star U. S. flag
Cat. No. M-75-81

Client Texas State Archives
P. O. Box 12927
1201 Brazos Street
Austin, TX 78711-2927

Contact Chris LaPlante
Phone (512) 463-5467
FAX (512) 463-5436

DOCUMENTATION

2 Kodachrome 200, 35mm color slides were taken before treatment.
6 Digital photos were taken during and after treatment.
Analysis: See attached report.

Description

Size: Leading edge: 116 1/2" Fly: 165"

The flag is a U. S. National color constructed of one layer of wool and cotton fabrics. The blue wool canton measures 65" on the hoist and 81" on the fly and rests on the eighth (white) stripe. The canton is constructed of four pieces of fabric seamed horizontally and is decorated with twenty-eight white cotton stars inserted into the canton in four rows of seven stars. The stars have five points and are approximately 6" point to point. There is a 7 1/8" x 7 1/4" reinforcement patch on the reverse at the top of the canton at the hoist. The fly has thirteen red and white stripes constructed of wool fabric, with seven stripes adjacent to the canton and six below. There is a 7 1/4" x 8" reinforcement patch on the reverse at the hoist edge of the bottom stripe. The top and bottom edges of the flag have a 3/8" red wool twill tape binding. The fly end has

been turned to the reverse to form a 1/2" hem. The leading edge has a 2 3/4" wide off-white linen hoist with a 7/8", two-part silver colored metal grommet at the top and bottom. The hoist is constructed of two pieces of fabric seamed 49 1/4" from the top. Written in script below the top grommet on the obverse hoist in 1 1/2" letters in brown ink is "En(s)i(g)n 10 1(5)".

Condition

Previous Treatment

There are four different types of previous treatment evident on this flag.

1. Three stars, the fourth from the hoist in the top row and the fourth and fifth from the hoist in the bottom row were covered on the obverse with a star patch of a plain weave white cotton fabric similar to the that used in the stars. The patches were attached to the canton with running stitches using 3 ply S off-white cotton thread.
2. There are patches of red transparent fabrics attached to the reverse of the top and bottom stripes of the fly. A bright red plain weave silk fabric was used to fill in losses at the top and bottom corners of the fly. The patch at the top corner is approximately 4 1/2" to 9 3/4" x 15" finished, and the patch at the bottom corner is approximately 9 5/8" x 16" finished. The edges of these patches are turned under and they are attached to the flag with running stitches using 3 ply Z synthetic red thread. These patches are folded over approximately 1/2" at the fly end and are stitched with two rows of running stitches using 3 ply Z white cotton thread to duplicate the original hem and stitching. A separate strip of the red fabric is folded over at the top and bottom edges to duplicate the binding and are stitched with the same stitches and threads as the patch hem.

A 4 3/4" x 34" finished patch of light red cotton plain weave fabric was placed over the bright red patch in the top corner, and attached into the patch hem. A second, approximately 35" long, patch of the same fabric was attached over the leading edge of the previous patch, and a third, approximately 14" long patch was attached over the leading edge of the second patch. Other than the leading edges which were left unturned, the edges of these patches were turned under and attached to the flag with whip and blind stitches using the 3 ply Z synthetic red thread. Another approximately 5 1/2" x 15 3/4" finished patch of light red cotton plain weave fabric was placed over the bright red patch in the bottom stripe, and attached into the patch hem. There is a second patch of the light red plain weave cotton fabric, approximately 3 1/2" to 5" x 41 1/2" finished, in the bottom stripe near the hoist. The edges of these patches were turned under and attached to the flag with whip and blind stitches using the 3 ply Z synthetic red thread. There are rows of running stitches around some areas of loss into

the second patch in the bottom stripe, and into the first patch in the upper stripe using the same red thread.

3. There is an approximately 3" x 1 1/2" patch of white plain weave synthetic fabric behind an "L" shaped tear in the sixth star from the hoist in the first row of stars. The patch has raw edges and is attached to the flag with pieces of fusible web and whip stitches using 3 ply Z cotton thread.

4. There is an approximately 7" section of the seam between the canton and the eighth stripe which has been re-stitched with running stitches using blue 3 ply Z synthetic thread.

Present Condition

The flag appears to be intact with minor damage and areas of patching. It is soiled and discolored overall to a yellowish color, most evident in the white stripes, stars, and the hoist. There are many large lighter yellow-brown and grey stains, and many small dark brown and black stains scattered overall, including the binding and the hoist. There are three stars, the fourth from the hoist in the top row and the fourth and fifth from the hoist in the bottom row, which are stained to a brown color with black streaks.

The hand of the fabric is very stiff and there are two small holes and breaks in the fourth star in each row. These stars are covered with patches on the obverse as described previously. The wool fabric of the canton and stripes is weakened and the fibers are thin in areas overall resulting in many areas of loss, including approximately 4" x 8" of the top corner and 6" x 8" to 14" of the bottom corner of the fly. These areas of loss in the top and bottom corners of the fly are patched, as described in the previous treatment section above. There are other patches in the top and bottom stripes, as described in the previous treatment section above. There are a few pinprick sized holes in the stars.

Threads have broken in the seam between the third and fourth canton lengths causing an approximately 3" unstitched section between the third and fourth stars and approximately 5 1/2" between the fourth and fifth stars. There are soft vertical folds approximately 14" apart across the flag. The hoist has long sharp vertical folds extending approximately 11 1/2" from the top edge and 44 1/2" from the bottom edge of the hoist. There are some spits in the outer fold and scattered small holes overall. The inscription on the hoist is faded and difficult to read. Threads stitching the horizontal seam and the top and bottom seams of the hoist have broken leaving those seams partially unstitched. The hoist fabric is tearing away from the top grommet. The grommets are tarnished to black and green with a white encrustation.

REPORT OF TREATMENT

Documentation

1. The flag, as received, was photographed on both sides (see photos 1-2). The condition of the fabrics was evaluated to determine the stability of the fibers and they were found to be stable.

2. The fibers, fabrics, and sewing threads were analyzed. Information about the construction of the flag, and any evidence of alterations to the original were noted. Scale drawings were made of the flag and an analysis report prepared. The patches in the stripes appeared to be a modern addition. Particle samples were taken for the files for later reference to insure all of the particulate evidence was not lost in the vacuum cleaning.

Stabilization

3. The flag was vacuum cleaned on both sides through a screen to remove all airborne particles and loose accumulations of soil. This was done to remove modern contaminants that may attract insects and cause an infestation.

4. Stitches holding the patches in the stripes were clipped and the threads removed with tweezers so that the patches could be removed from the flag. Detail photos of the patch in the lower fly corner were taken before and after removal (see photos 3-5).

Preparation for Exhibition

5. The grommets were cleaned with Stoddard's solvent and waxed with Renaissance Wax¹ diluted with Stoddard's solvent.

6. Four lengths of Stabiltex², a sheer, plain woven polyester fabric, were laid on the obverse of the flag, the edges overlapped, and they were stitched to the flag through the seams using 3 ply Z silk thread in the color of the original stitching threads. To distribute the weight evenly across the flag, the flag was handsewn to the remaining seams in a series of vertical, random running stitches in the seams using the same 3 ply Z silk thread. The Stabiltex was wrapped around the hoist to provide protection to the areas of loss and to provide additional stabilization. The edges of the lengths and the perimeter were hot melt cut for strength.

7. Areas of loss in the flag were attached to the layer of Stabiltex with rows of running stitch, hand-sewn, using an undyed 1 ply Z silk thread. Loose threads in areas were attached with couching stitches using the same threads. A detail photo of the patch with Stabiltex was taken (see photo 6).

8. A 28" length of an off-white, plain woven cotton airwing fabric³ was cut for the hanging mechanism. In addition, a 1" x 2" powdercoated aluminum hanging pole was constructed with holes for three brackets also made of the powdercoated aluminum. It was laid on the obverse of the leading edge of the flag and attached with rows of running stitch, hand sewn, using a 3 ply Z silk thread of the appropriate color. For support of the hoist, it was attached on each side of the grommets. The top edge of the fabric was turned to accommodate the pole and stitched to the portion already attached to the flag with running stitches. Holes to accommodate the brackets used to hold the pole to the wall were cut, the edges turned under, and hand stitched with overcast stitches using the same silk thread.
9. A length of 118" wide plain woven white Polyester fabric was cut and the edges hot melt cut to act as a protective lining for the flag when hanging. It was attached to the bottom edge of the pole sleeve with running stitches using 3 ply Z silk thread (see photos 7-8).
10. An 8" Sonotube was padded with polyester batting⁴ and covered with airwing fabric³.
11. The flag was rolled on the tube and a protective cover was made of two lengths of Archivek⁵ heat sealed at the edges which was then slipped over the tube.
12. The tube was bubble wrapped for shipment and a treatment report prepared.

PROGNOSIS

The object should be exhibited under less than five foot-candles of light. Because any light is damaging, it is recommended that the piece be rotated between exhibit and storage. To best preserve the object, the temperature and humidity level should be kept fairly constant, with temperatures of less than 70 degrees Fahrenheit and a relative humidity of 45% plus or minus 5%. Avoid hanging the object against an outside wall, or place spacers between the wall and the flag to prevent humidity transfer.

The flag was prepared to hang in a vertical direction. Protocol for display of the U. S. flag necessitated preparing the flag to view the reverse. The vertical display will allow the seams joining the stripes (which are stronger than the fabric) to carry the weight of the flag. The flag should not be hung in a horizontal direction without additional support to the fabrics. The hanging mechanism for vertical storage remains with the flag. The pole sleeve should be left in place during storage for future exhibition. The brackets can be attached to the display surface and the pole slipped into the pole sleeve for exhibition.

A large archival tube was prepared for storage of the flag. After periods of display, the flag should be vacuum cleaned through a plastic mesh screen on both sides to remove airborne contaminants, before it is rolled on the tube (See attachment 1). A white Polyester lining was prepared to isolate the flag fabric from the exhibit wall. This fabric can be used as an interleaving when the flag is rolled. Care must be taken to avoid wrinkles in the fabric while rolling. Areas of excess fabric can be supported by inserting crumpled archival tissue while rolling. The flag should always be rolled starting from the fly end (See attachment 2).

The Stabiltex was added to the fly end to support damaged areas. It should be left in place during exhibit and storage. Once rolled the flag can be inserted in the Archivek⁵ bag for storage. Wooden supports were fabricated for supporting the flag tube if laid horizontally. The supports will prevent the weight of the tube and flag from resting on the flag.

Total treatment hours: 106

Work on the object was carried out by Teresa Knutson, PA AIC, Conservator, Textile Preservation Associates, Inc. under the review of the Director.

Signed:  Date: 11/30/01
Fonda Ghiardi Thomsen, Fellow AIC,
Director, Textile Preservation Associates, Inc.

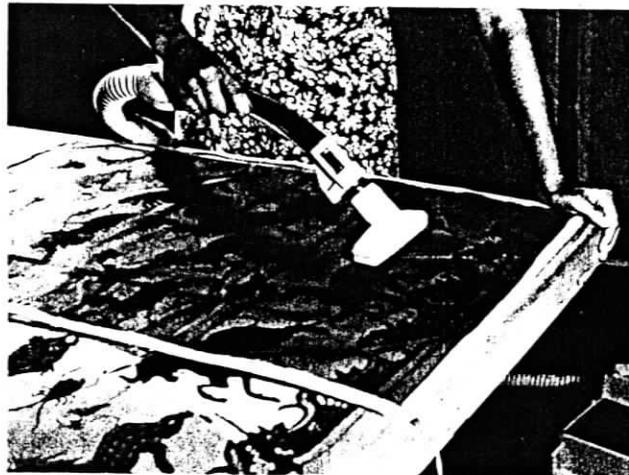
Reference list of materials used in the conservation of this object

1. "Renaissance Micro-crystalline Wax" Picreator Renaissance Products, Picreator Enterprises Ltd., 44 Park View Gardens, London NW4, England.
2. Stabiltex, a sheer, multifilament, plain weave, polyester: Sefar America, Inc., 333 South Highland Avenue, Briarcliff Manor, NY 10510 (914) 941-7767.
3. Cotton, a 100% airwing grade fabric: Fox Reich Textiles, Inc., 54 Danbury Road, Suite 228, Ridgefield, CT 06877 (914) 533-2445.
4. Batting, "Jasztex" a thermo bonded polyester batting: Museum Services Corp., 1107 East Cliff Road, Burnsville, MN 55337-1514 (612) 895-5199
5. Archivek: Distributed by Talas, 568 Broadway, New York, NY 10012 (212) 219-0770.

CLEANING

One of the prime concerns in the care of textile collections is maintaining the pieces in a stable and neutral state. This can be accomplished by storing clean textiles in a clean, inert housing. Unfortunately, most textiles come into a collection in various states of usage, cleanliness and disrepair, and have, after many years of neglect, lost their original appearance. The soil, stains, and dust not only dull the (appearance) of the textiles, but also aid in accelerating the gradual destruction of the fibers through chemical and abrasive action. To halt or reverse this process, the cleaning of the piece should be considered. Among the possibilities are vacuuming, wet cleaning and dry cleaning.

Vacuuming is the easiest and most readily available approach. The textile should be laid flat on a clean, smooth surface. Use the low power setting, or open the venting slots to reduce suction on a regular domestic canister model, or use a low-powered hand-held vacuum. Use the small, smooth-edged attachment and gently pass over both sides. Clean the support surface before turning over the textile. Place fibreglas screening, edged in twill tape, on top of extremely fragile or heavily abraded textiles. This procedure acts as a protective device against further abrasion and loss. Vacuum textiles carefully before and after exhibition.



An Indonesian textile in the process of being vacuumed with a low power setting. The textile is being protected with a layer of fibreglas screening edged in cotton twill tape.

NOTE: Any vacuum cleaner can be used. Variable rheostats (which can be used with any electrical equipment) should be used and can be purchased from Fisher Scientific, www.fishersci.com or 800-766-7000

Introduction

A cardboard tube can form the basis of an excellent space-saving storage system for textiles which can be rolled. Pieces ranging from narrow lace yardage to large and heavy carpets can be accommodated. The tubes most frequently used are from 5 cm to 15 cm in diameter, but some are much larger. (The diameter of any tube can be increased by wrapping the outside of the tube with bubble cushioning material.)

Mailing, paper towel and toilet paper tubes are ideal for smaller items. Larger tubes are often obtainable, free of charge, from carpet stores. Sono tubes (used in building construction) are 360 cm long and range in diameter from 15 cm to 150 cm. All of the above tubes contain acidic materials, which may, over time, adversely affect the textiles in storage. It is preferable, if possible, to use acid-free tubes, which can be purchased from archival supply stores. Acid-free tubes are 8 cm in diameter and range in length from 90 cm to 300 cm.

Many types of support systems can be used to store the rolls. By inserting a wooden dowel or a pipe through the cardboard tube, the roll can be supported by brackets in cupboards (figure 1), or in drawers (figure 2), or suspended with chains anchored at floor and ceiling (figure 3). A number of small rolls, such as toilet paper tubes, can be slipped onto one long dowel.

Instructions

Select the tube which has a diameter most suitable for the object, e.g., a toilet paper tube for narrow lace and a large-diameter Sono tube for carpets and coverlets. If necessary, add bubble cushioning material to increase the tube's diameter.

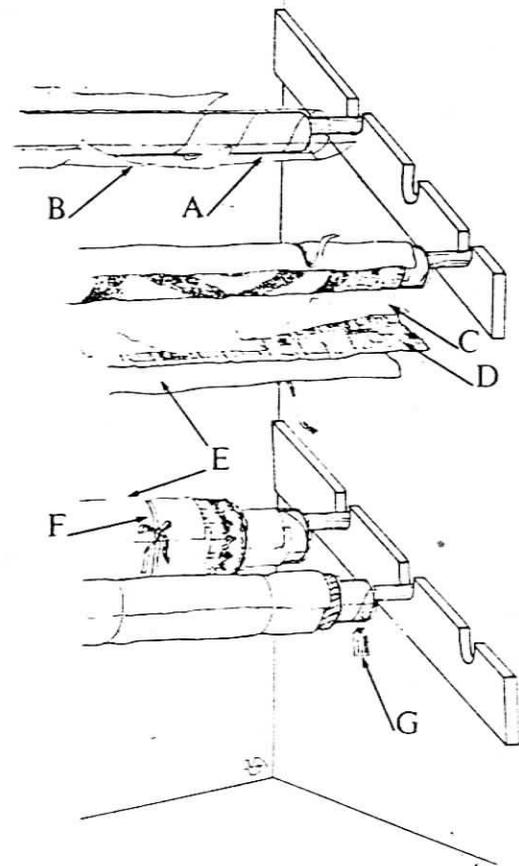


Figure 1

Bracket storage system (in a cupboard)

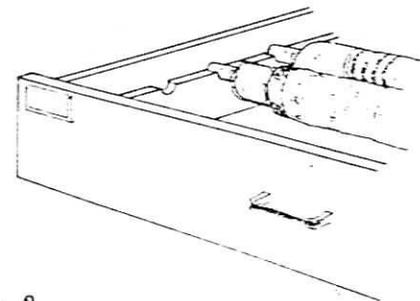


Figure 2

Bracket storage system (in a drawer)

- A - Mylar covering tube
- B - Acid-free tissue over Mylar
- C - Interleaving of neutral pH tissue
- D - Textile with pile on outside
- E - Unbleached cotton cover
- F - Cotton tape
- G - Identification tag

Textile Preservation Associates, Inc.

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ADDENDUM TO TREATMENT REPORT

Date June 5, 2002

TPA No. 1161

Object 28 star U. S. flag

Cat. No. M-75-81

Client Texas State Archives
P. O. Box 12927
1201 Brazos Street
Austin, TX 78711-2927

Contact Chris LaPlante
Phone (512) 463-5467
FAX (512) 463-5436

REPORT OF TREATMENT

At the completion of the Museum of Fine Arts, Houston Exhibit, the flag was returned to Textile Preservation Associates, Inc. to be vacuum cleaned and re-rolled for storage.

Preparation for Storage

1. The flag was vacuum cleaned on both sides through a screen to remove all airborne particles and loose accumulations of soil. This was done to remove modern contaminants that may attract insects and cause an infestation.
2. The flag was rolled on the previously constructed padded 8" Sonotube using tissue paper at the ends to secure them. Five 6" wide pieces of muslin were wrapped around the tube at regular intervals to hold the flag in place.
3. The protective Archivek cover was then slipped over the tube.

4. The tube was bubble wrapped for shipment and an addendum to the treatment report prepared.

PROGNOSIS

The object should be exhibited under less than five foot-candles of light. Because any light is damaging, it is recommended that the piece be rotated between exhibit and storage. To best preserve the object, the temperature and humidity level should be kept fairly constant, with temperatures of less than 70 degrees Fahrenheit and a relative humidity of 45% plus or minus 5%. Avoid hanging the object against an outside wall, or place spacers between the wall and the flag to prevent humidity transfer.

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A large archival tube was prepared for storage of the flag. After periods of display, the flag should be vacuum cleaned through a plastic mesh screen on both sides to remove airborne contaminants, before it is rolled on the tube. A white Polyester lining was prepared to isolate the flag fabric from the exhibit wall. This fabric can be used as an interleaving when the flag is rolled. Care must be taken to avoid wrinkles in the fabric while rolling. Areas of excess fabric can be supported by inserting crumpled archival tissue while rolling. The flag should always be rolled starting from the fly end. (See attachments sent with Treatment Proposal for instructions.)

The Stabiltex was added to the fly end to support damaged areas. It should be left in place during exhibit and storage. Once rolled the flag can be inserted in the Archivek bag for storage. Wooden supports were fabricated for supporting the flag tube if laid horizontally. The supports will prevent the weight of the tube and flag from resting on the flag.

Total treatment hours: 12

Work on the object was carried out by Mary Jo Clemens and Mary Ogle, Conservation Technicians, Textile Preservation Associates, Inc. under the review of the Director.

Signed: Fonda Ghiardi Thomsen Date: 05/21/03
Fonda Ghiardi Thomsen, Fellow AIC,
Director, Textile Preservation Associates, Inc.

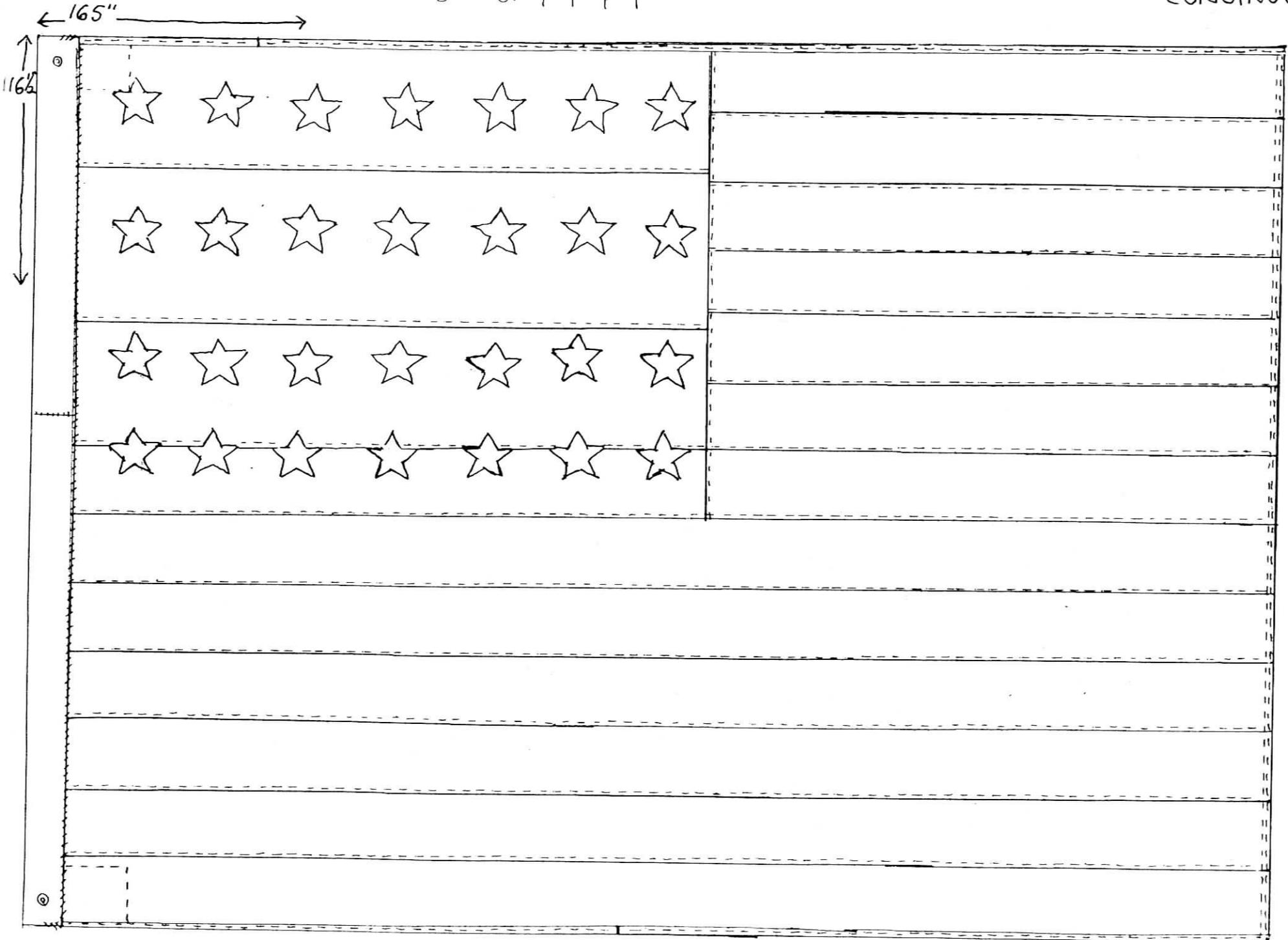
TPA# 1161
CAT # M-75-81

28 STAR US NATIONAL

$\frac{1}{8}'' = 2'' \frac{04812}{1}$

OBVERSE

DRAWING# 1
CONSTRUCTION




star
detail
6"

TPA # 1161

CAT # M-75-81

28 STAR US NATIONAL

$\frac{1}{8}'' = 2''$ 0 4 8 12

REVERSE

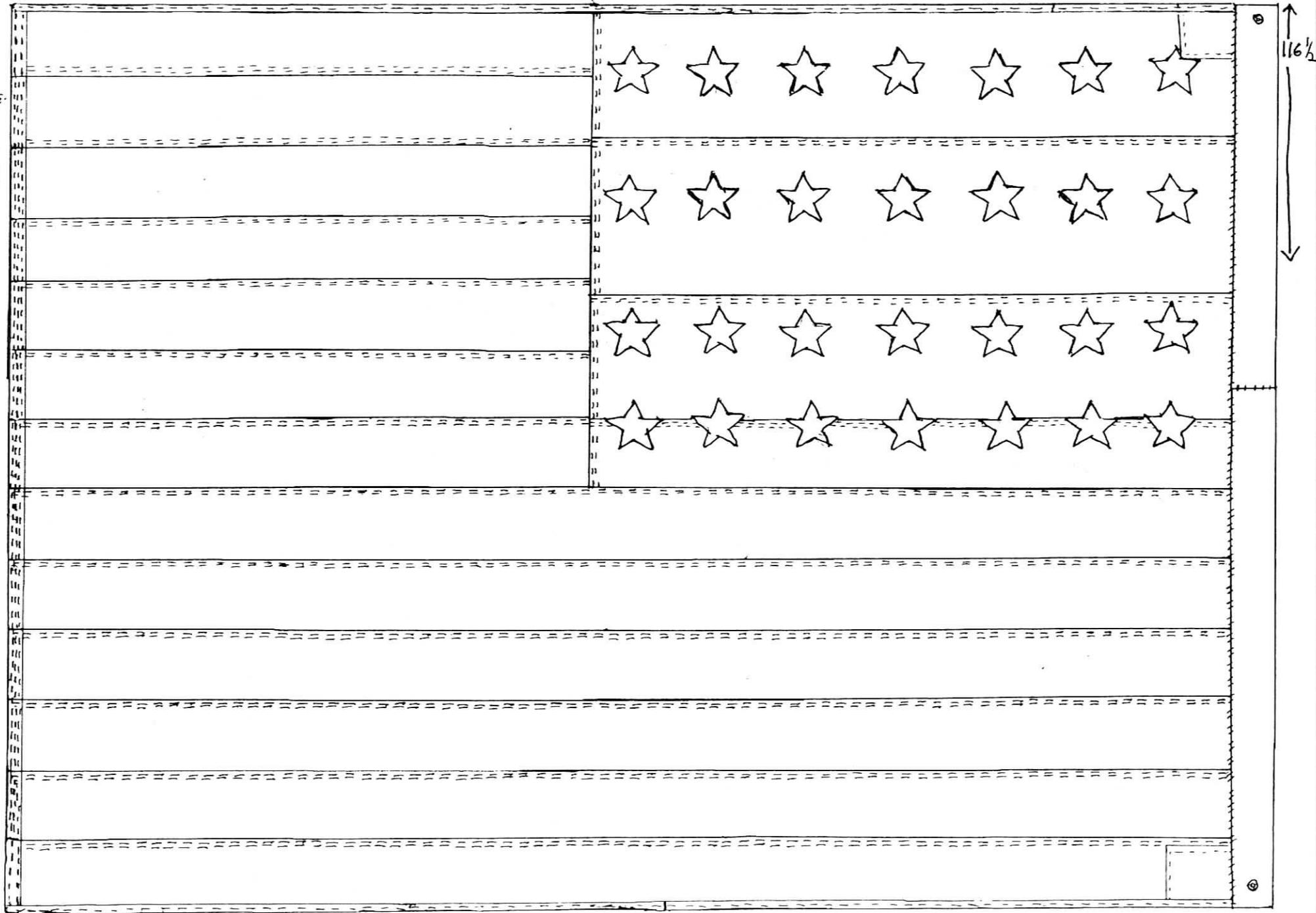
DRAWING # 2

CONSTRUCTION

← 165'' →



star
detail
6''



116 1/2

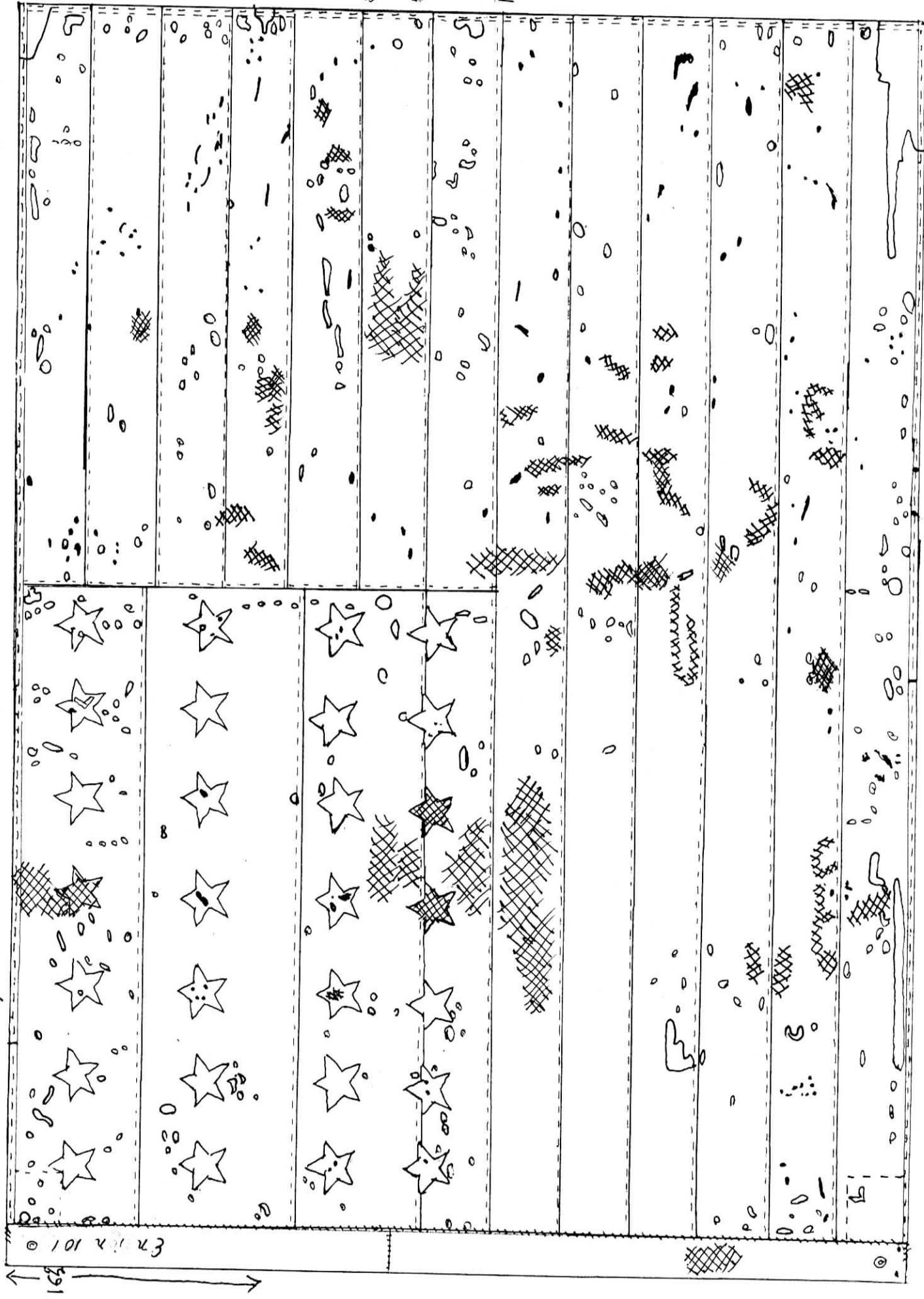
TPA # 1161
CAT # M-75-81

28 STAR US NATIONAL

1/8" = 2" 0 4 8 12

OBVERSE

DRAWING # 3
CONDITION



☆ star detail
 ○ 6"
 ○ loss
 ● dark stain
 ▒ light stain (in 3 stars, under patches)

← 165" →

← 115" →

23 101

▒

TPA # 1161

28 STAR U.S. NATIONAL

REVERSE

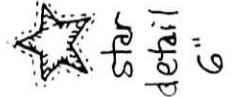
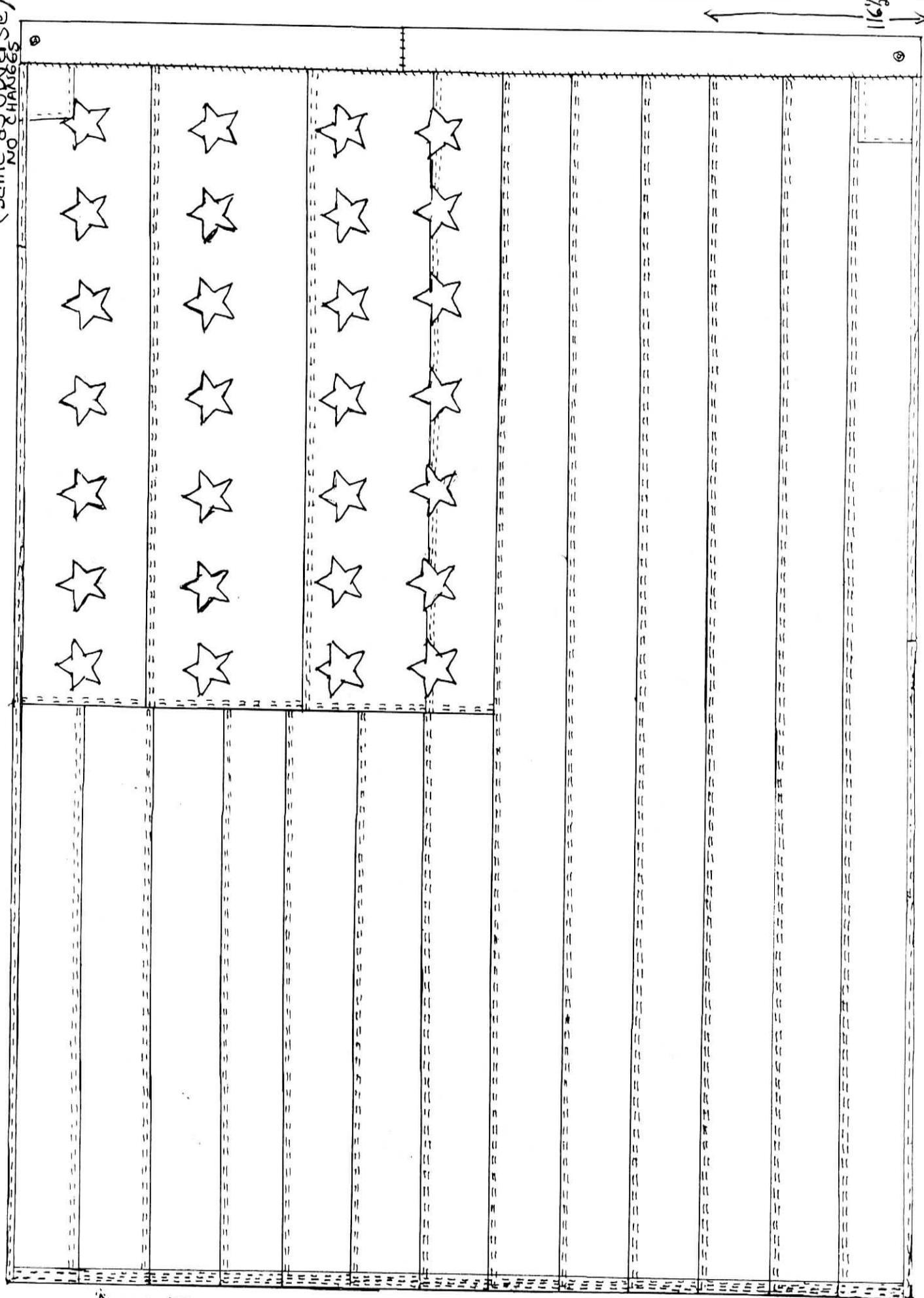
DRAWING # 4

CAT # M-75-81

1/8" = 2"

0 4 8 12

CONDITION
(same as obverse)
NO CHANGES



← 165" →

16 1/2"

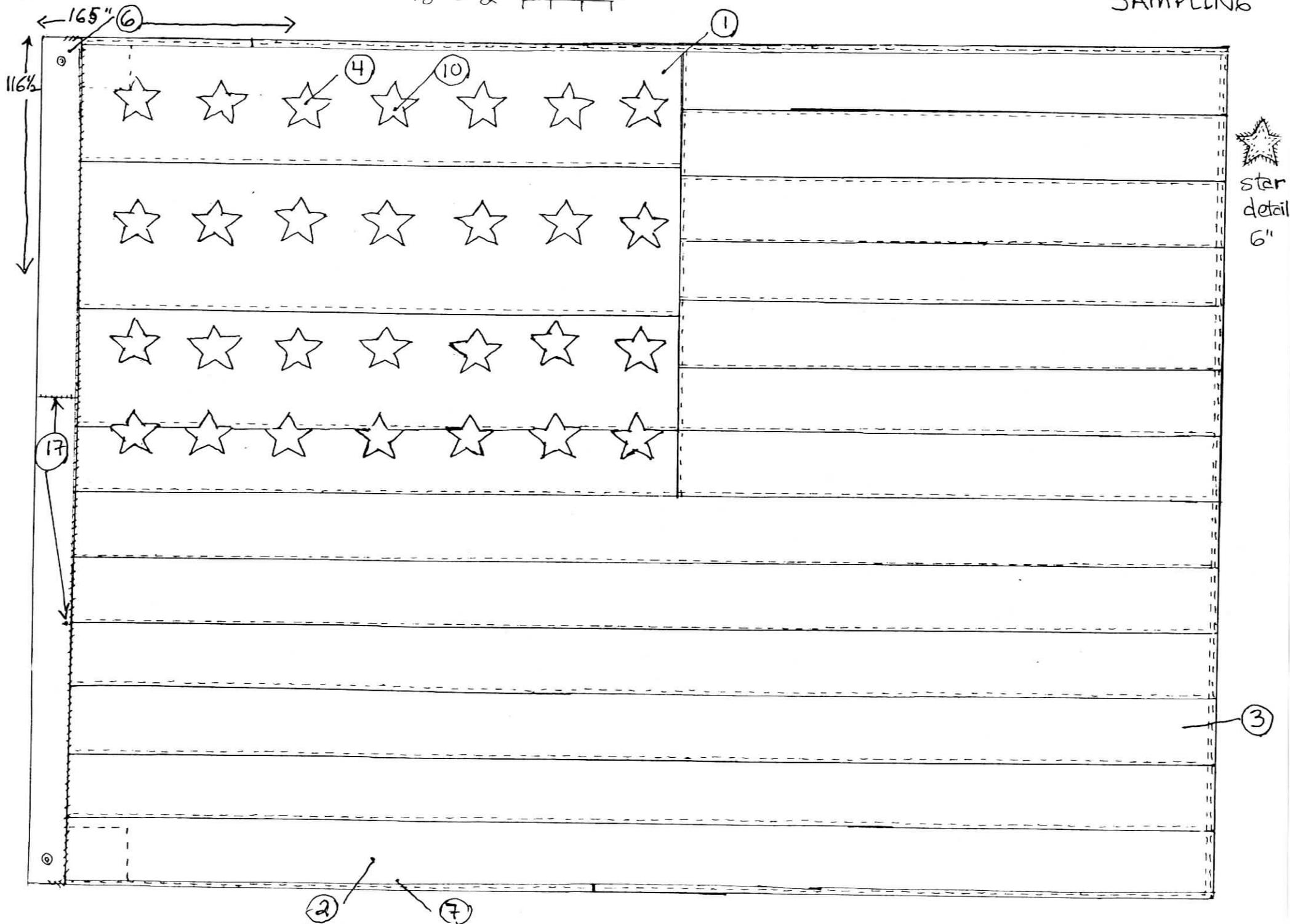
TPA # 1161
CAT # M-75-81

28 STAR US NATIONAL

OBVERSE

DRAWING # 5
SAMPLING

$\frac{1}{8}'' = 2'' \begin{array}{|c|c|c|c|} \hline 0 & 4 & 8 & 12 \\ \hline \end{array}$

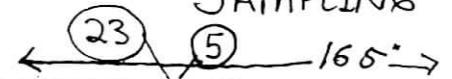


TPA # 1161
CAT # M-75-81

28 STAR US NATIONAL
 $\frac{1}{8}'' = 2''$ 0 4 8 12

REVERSE

DRAWING # 6
SAMPLING



☆
star
detail
6"

14

12 11

18 9

19 13

112



15

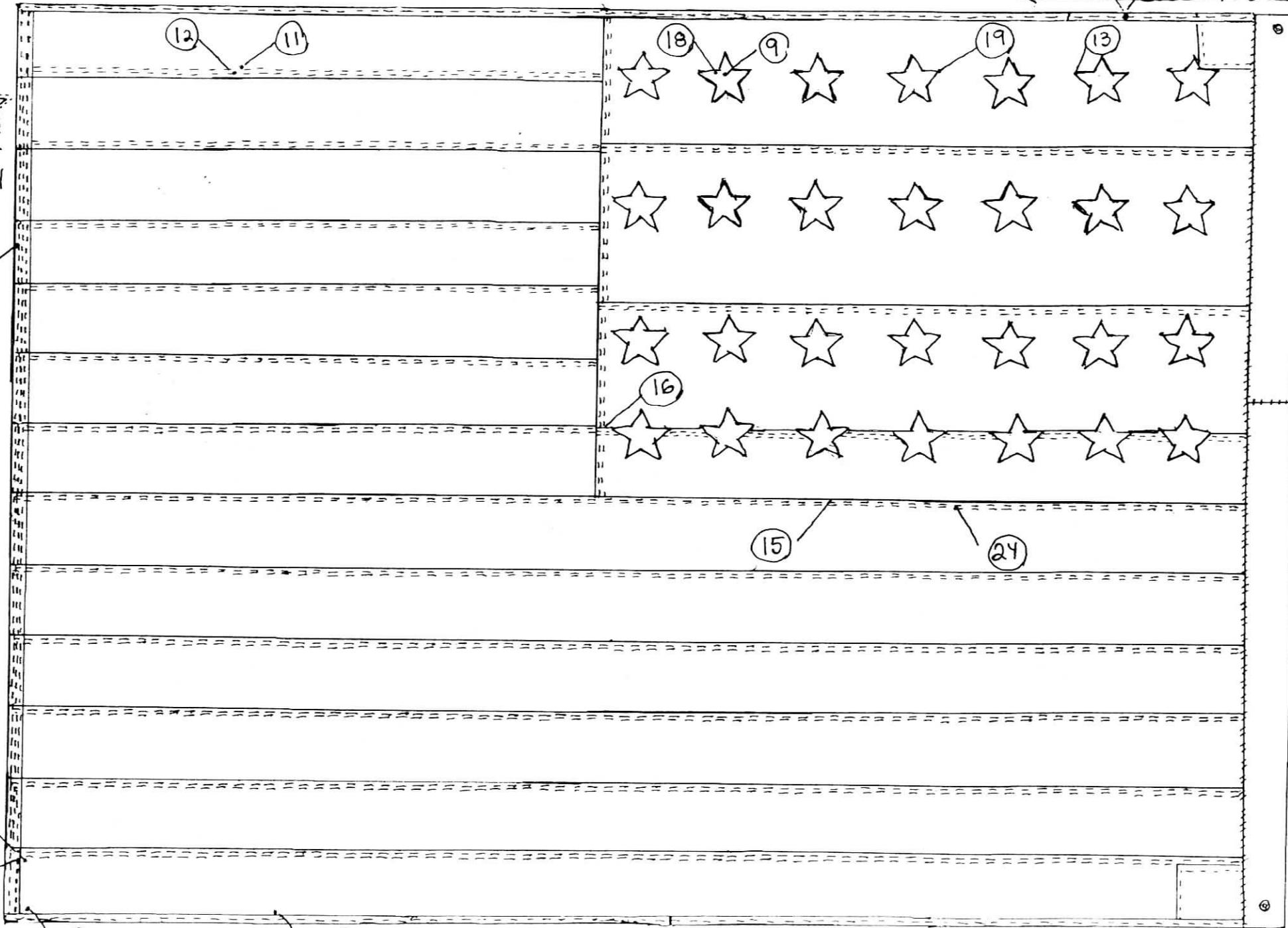
24

20

22

8

21



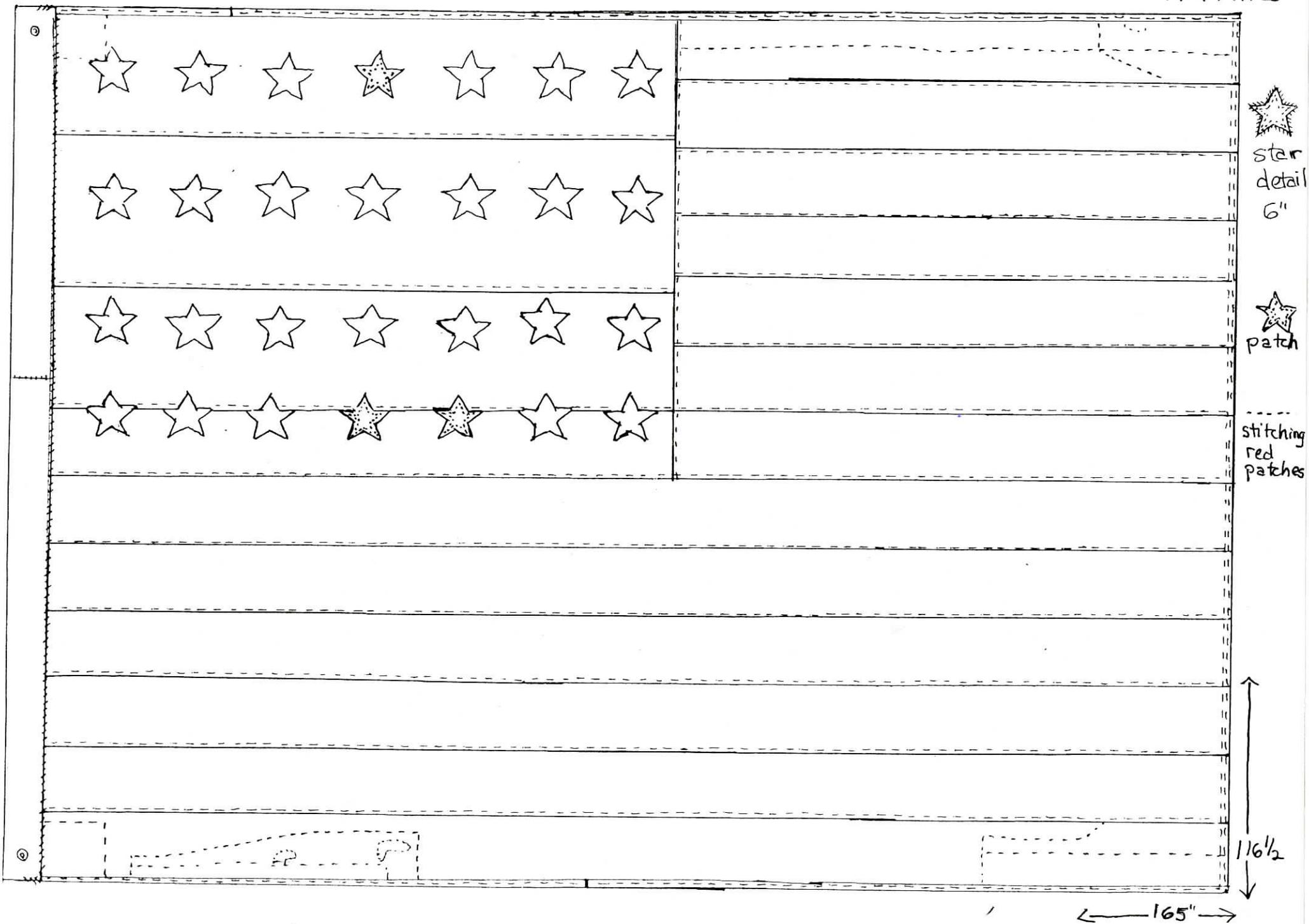
TPA# 1161
CAT# M-75-81

28 STAR US NATIONAL

$\frac{1}{8}'' = 2'' \begin{array}{|c|c|c|c|} \hline 0 & 4 & 8 & 12 \\ \hline \end{array}$

OBVERSE

DRAWING# 9
PREVIOUS
REPAIRS



TPA # 1161

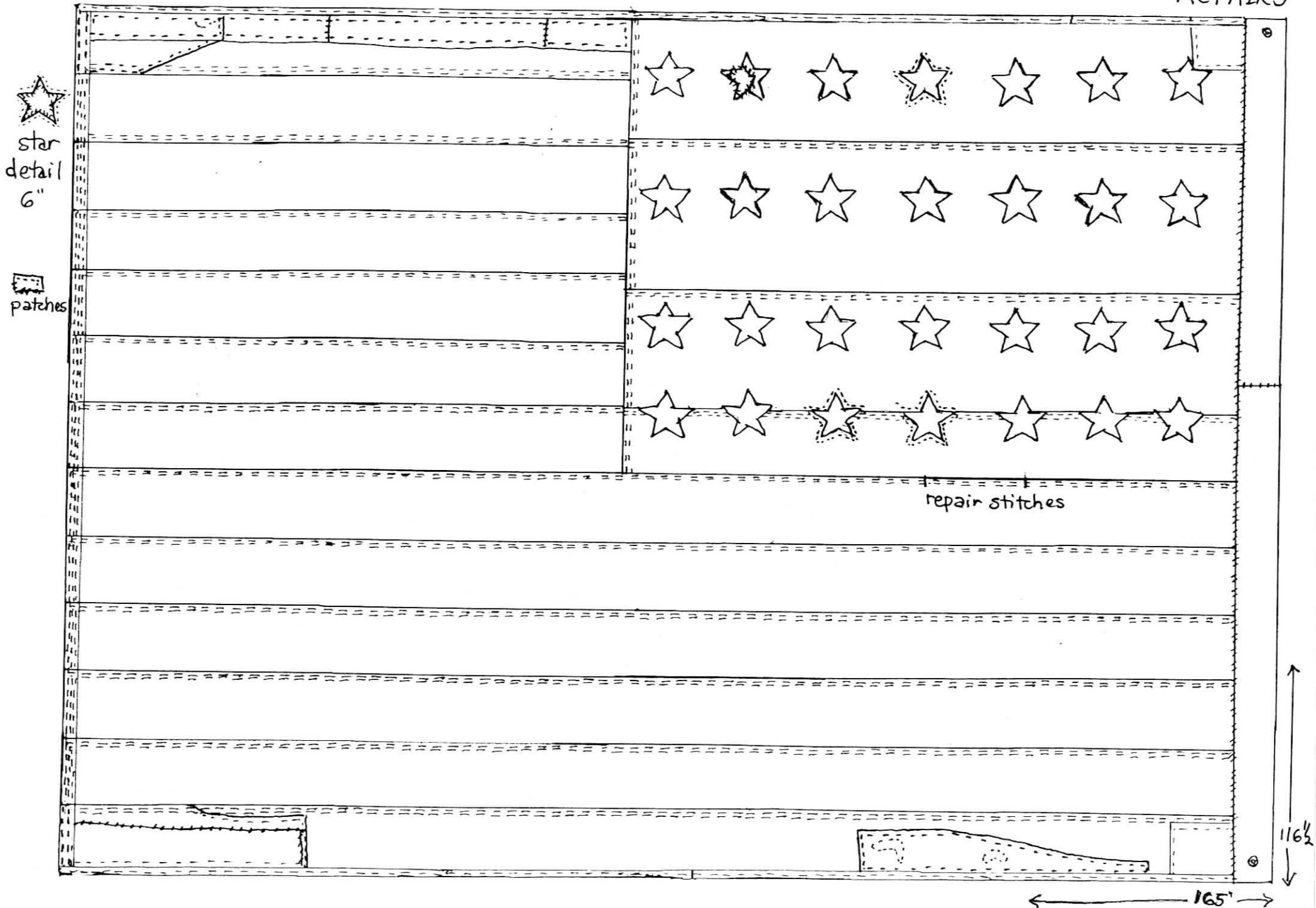
CAT # M-75-81

28 STAR US NATIONAL

$\frac{1}{8}'' = 2''$ 0 4 8 12

REVERSE

DRAWING # 10
PREVIOUS
REPAIRS



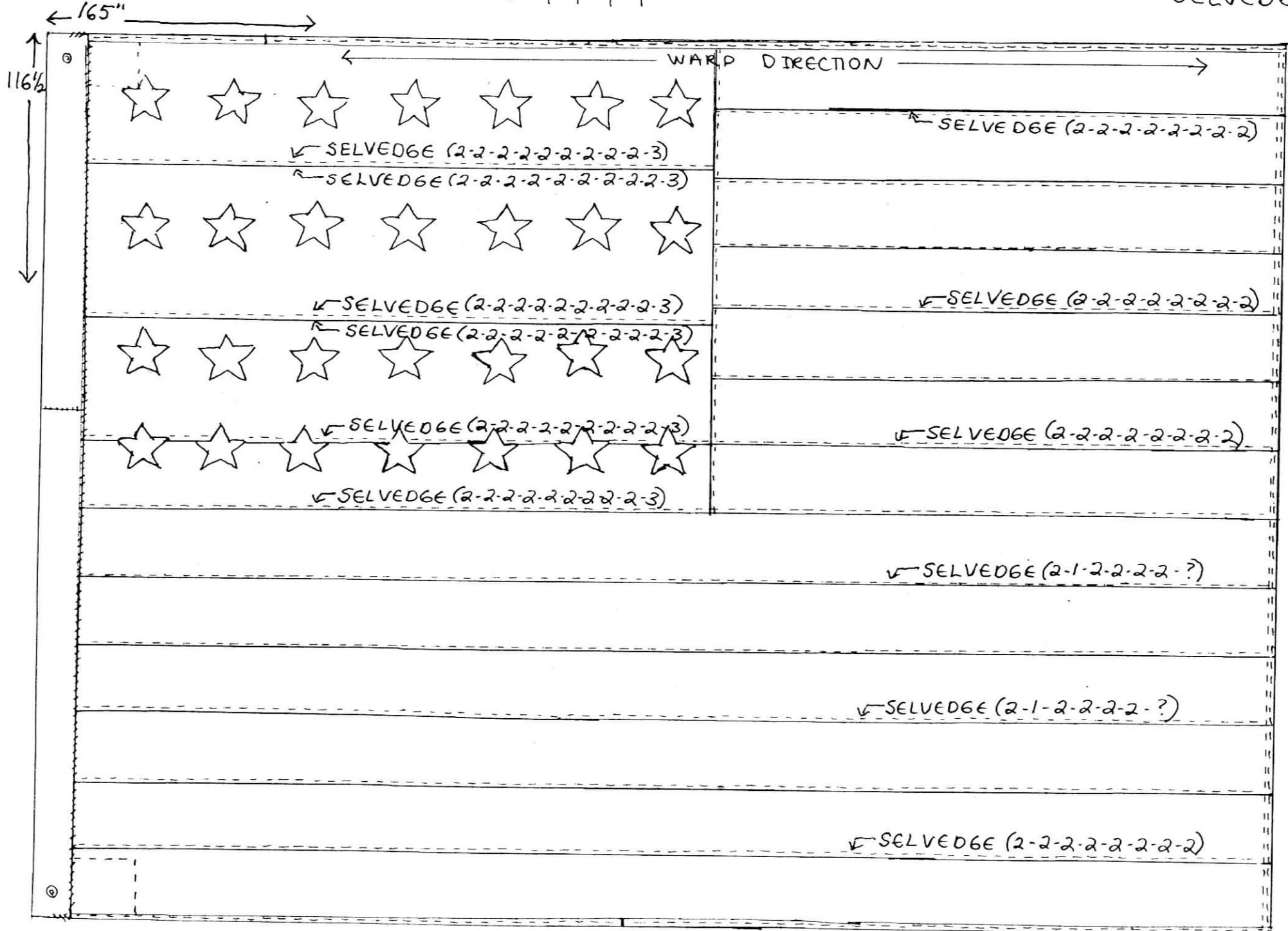
TPA# 1161
CAT # M-75-81

28 STAR US NATIONAL

$\frac{1}{8}'' = 2'' \begin{array}{|c|c|c|c|} \hline 0 & 4 & 8 & 12 \\ \hline \end{array}$

OBVERSE

DRAWING# 13
SELVEDGES



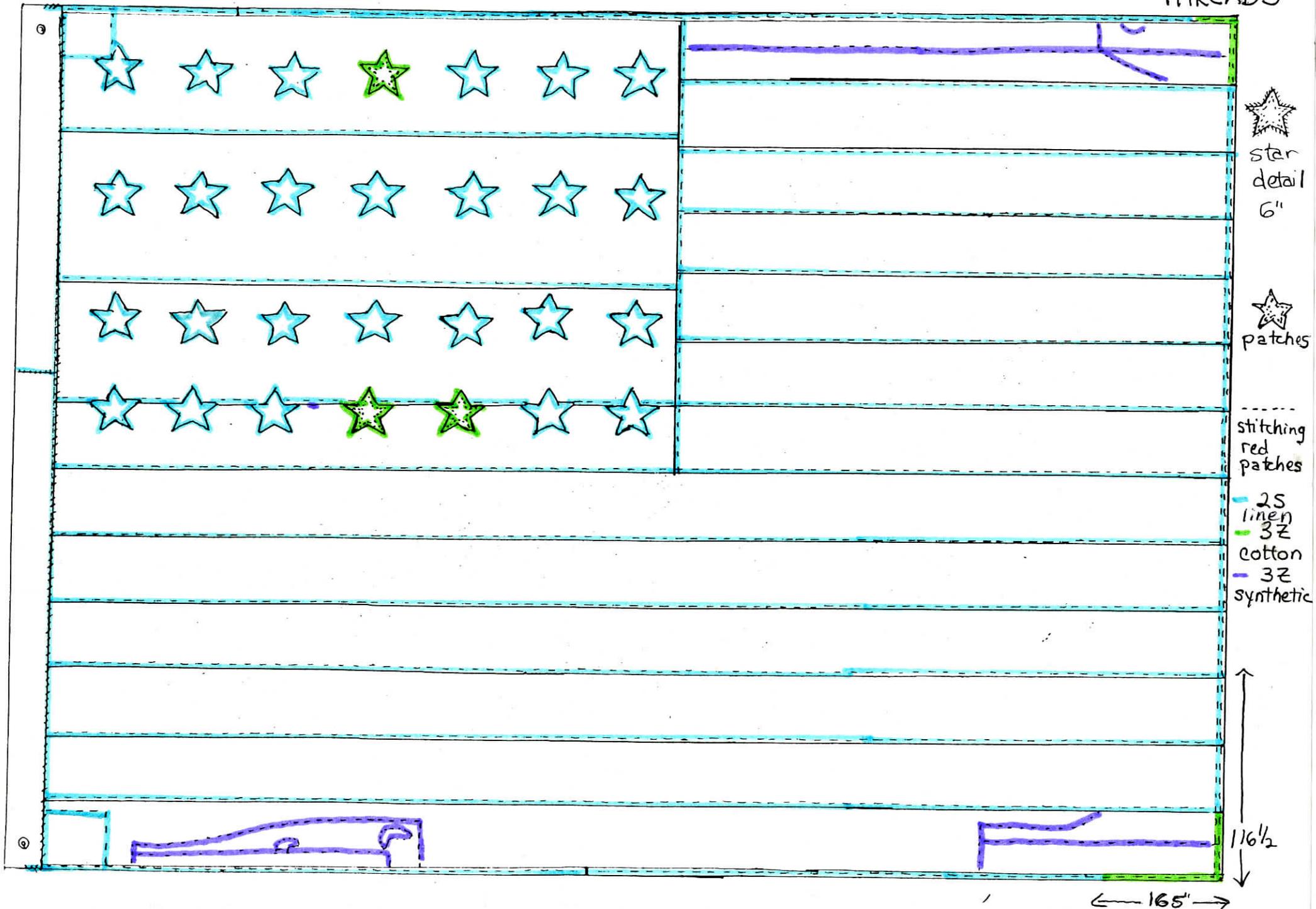
TPA# 1161
CAT # M-75-81

28 STAR US NATIONAL

$\frac{1}{8}" = 2" \begin{array}{|c|c|c|c|} \hline 0 & 4 & 8 & 12 \\ \hline \end{array}$

OBVERSE

DRAWING# 7
SEWING
THREADS



☆
star
detail
6"

☆
patches

stitching
red
patches

— 25
linen
— 32
cotton
— 32
synthetic

↑
116 1/2
↓

← 165" →

TPA # 1161
CAT # M-75-81

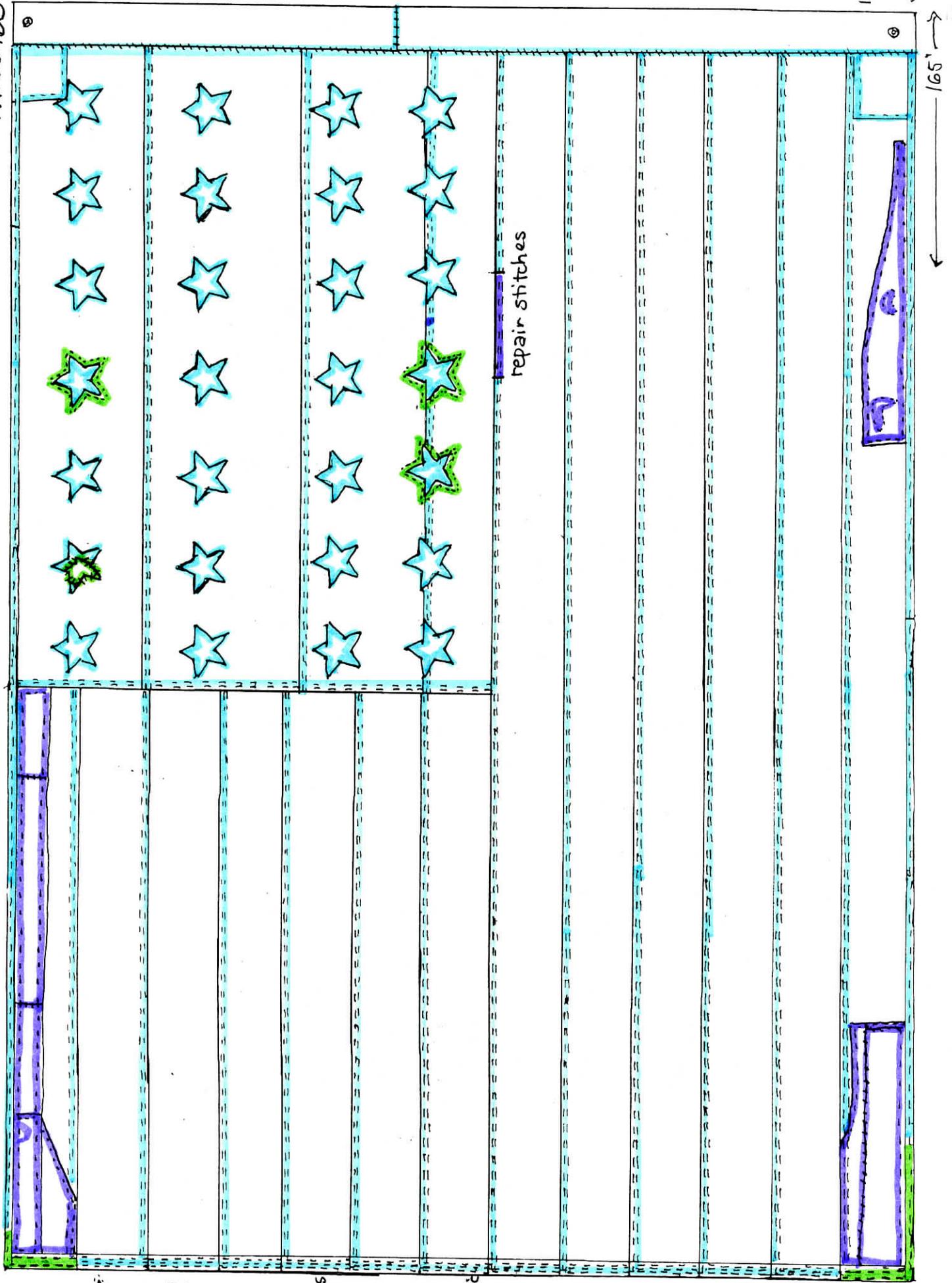
28 STAR U.S. NATIONAL

REVERSE

DRAWING # 8

SEWING
THREADS

$\frac{1}{8}'' = 2''$
1 4 8 12

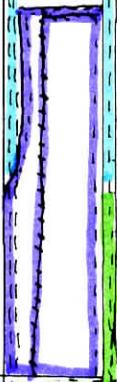


star
detail
6"

patches

- 2S linen
- 3Z cotton
- 8Z synthetic

repair stitches



116 1/2

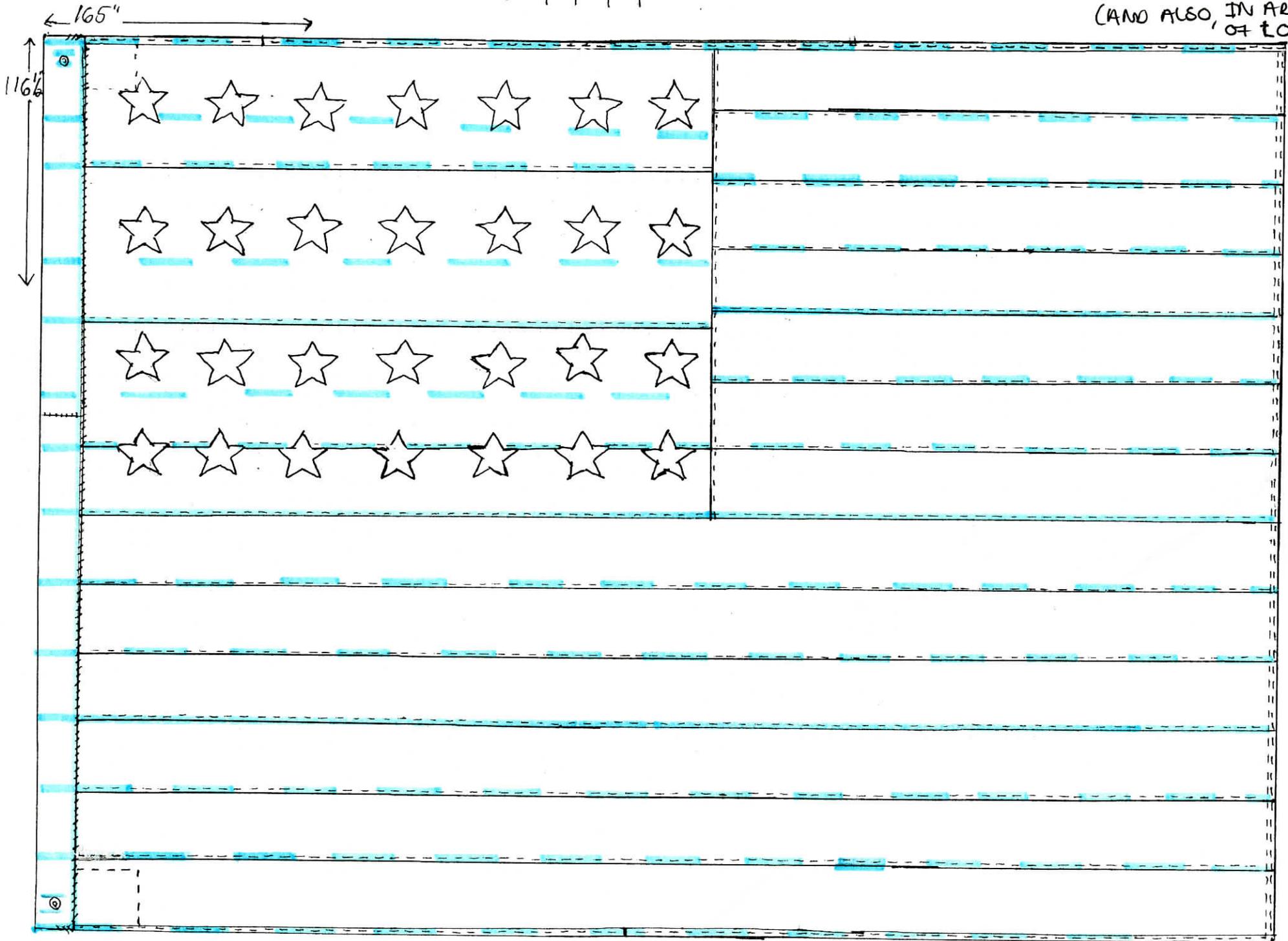
165

TPA# 1161
CAT# M-75-81

28 STAR US NATIONAL

$\frac{1}{8}'' = 2'' \quad 4'' \quad 8'' \quad 12''$

OBVERSE DRAWING# 14
TREATMENT STITCHING
(AND ALSO, IN AREAS
OF LOSS)



star
detail
6"