Library Files
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635/D-215

19 NOVEMBER 1993

TO: Regional Director, Southeast Region
FROM: Superintendent, Gulf Islands National Seashore
SUBJ.: Project Completion Report - Cultural Resources
reference 106 project # GUIS-92-11

Attached for the information and use of the Regional Office is a completion report on the mounting of historic ordnance on reproduction aluminum carriages at Fort Pickens and Fort Barrancas, Gulf Islands National Seashore.
Also included are photographs and drawings, and original and/or revised specifications and scopes of work related to the project.

signed

attachments

635/D-215

Section 106 Completion Report

Project Number: GUIS-92-11

Project Name: MOUNT ORDNANCE IN HISTORIC FORTS

Date of Completion: 19 NOVEMBER 1993

Description of Work Done:
Fabrication by contractor of aluminum barbette carriage and chassis for M1840 24-pounder seacoast cannon.
Fabrication by contractor of aluminum barbette carriage and chassis for M1861 10-inch Rodman gun (converted to 8-inch rifle).
Preservation work on 24-pounder seacoast gun (cat.# GUIS-1157) and two 8-inch Rodman rifles (cat.# GUIS-1150-1151).
Preservation work on iron of 2 gun emplacements at Ft. Pickens, and 1 gun emplacement at Ft. Barrancas.
Installation of 24-pounder on new carriage at Ft. Barrancas.
Installation of one 8-inch Rodman rifle on new carriage at Ft. Pickens.
Installation of one 8-inch Rodman rifle on new concrete pedestal on parade ground of Ft. Pickens.

Were additional requirements (if any) fulfilled? If so, how? If not, why?

New aluminum carriage has not yet been fabricated for 32-pounder gun en casemate at Ft. Pickens. Funding not yet programmed.
New aluminum carriage has not yet been fabricated for a flank carronade at Ft. Barrancas. Ordnance not available.

Additional documentation attached: [X]Photos [X]Site plan [X]Drawings [ ]Archeological report

Narrative report.
Specifications and scope of work.

Jeffrey L. Parsons
Prepared By

18NOV1993
Date

Superintendent

Date

MOUNTING OF HISTORIC ORDNANCE AT FORT PICKENS AND FORT BARRANCAS
GULF ISLANDS NATIONAL SEASHORE

In the spring of 1992, the project was sparked by the recommendation of the Gulf Islands National Seashore Advisory Commission that the park display one of its historic artillery pieces on the ramparts of Fort Pickens, so that it would be visible to visitors approaching the fort. Park staff entertained a number of ideas for placing a gun barrel over the fort wall, recognizing, at the time, that funding might not be available for an authentic reproduction carriage. Suggestions ranged from simple wood blocking to a concrete pedestal to a cast concrete mock-up of a barbette carriage. When limited funding was actually made available, the decision was made to attempt a reproduction barbette carriage for a 24-pounder seacoast gun. In addition, if costs could be contained, an 8-inch Rodman rifle (converted from 10-inch smoothbore) would be mounted enbarbette at Fort Barrancas. Emplacements of reasonably good condition existed at the forts for the ordnance on hand but detail drawings of the carriages had to be located and the question of materials resolved.

Since 1988, the policy in the Southeast Region has been to utilize aluminum in new purchases of reproduction carriages for outside display of artillery. Fearing that use of aluminum for the Rodman carriage would drive the cost above our funding limit, we requested a waiver from the Regional Director allowing us to use iron, the material used historically for Rodman mounts. When the waiver was denied we proceeded with a Request for Quotations from three potential vendors, specifying aluminum as the construction material. After many phone calls, detail drawings of the subject carriages were finally located at, and provided by, the good folks at the Office of Library, Archives and Graphic Research, Harpers Ferry Center.

Still concerned about the ultimate costs of both manufacturing the carriages and mounting the heavy ordnance, we elected to eliminate some specific details from the carriage designs.

As the original intent was to simply provide a static display of a gun on its historic barbette emplacement, we chose to make the carriages, chassis' and elevating mechanisms immobile. In the case of the 24-pounder carriage, certain parts such as rail plates, prop, lunette, maneuvering loop, bolt and staple, bolt heads, nuts and washers, and linch pins were left off the design. The end product was to be a dimensionally correct, static barbette mount for a 24-pounder gun. In the strictest sense of the term, it would not be an "authentic replica". Rather, we sought a durable representation of the historic mount, less susceptible to climatic damage and vandalism, lower in production cost, and easier to maintain.

For mounting the Rodman rifle, an early carriage design for smooth-bore guns (m1861) was selected for its simplicity (historically, the rifles were mounted on somewhat more complicated carriages while still retaining the basic smoothbore carriage form). The only parts eliminated from the design were stay chains, chassis steps, and eccentric axel.

In August and September, 1992, purchase orders were prepared for fabrication of the two carriages by Bell Steel Company, Pensacola, Florida. Also in September, a 106 compliance package was submitted to SERO for approval of the gun mounting project.

Working from the original drawings, Bell Steel architects drafted and submitted for approval shop drawings and paint specifications for the carriages in January and May of 1993. Park staff examined the drawings, made numerous measurements of the ordnance and emplacements and recommended only a few changes or additions to ensure that the guns fit the carriages and the carriages fit the emplacements. Coating types and tints were agreed upon.

The material for the carriages would be aluminum 6061-T6 in plate, bar, pipe and rod form. For the 24-pounder carriage, the uprights, braces, transoms, rails and tongue would be produced in box form from 1/4" plate to simulate the original wood timbers. For the Rodman carriage, 3/8" plate would form the cheek plates, 1/2" and 3/4" bar the I-beam chassis rails, 1" bar the wheel forks, 1 1/4" bar bent to form the wheels, etc.

On the 24-pounder carriage, the boxed members would be welded together to form the top carriage and the lower chassis, those two componenets to be fitted together during installation on the emplacement. On the Rodman carriage, the individual pieces would be bolted together (as in the original design) using stainless steel 3/4" bolts. Here we compromised and allowed hex head bolts instead of the orignal (and now difficult to find) square head. The I-beam chassis rails would have to be built up from 1/2" and 3/4" plate and bar stock as no aluminum I-beams of the necessary dimensions are available.

Shop work began at Bell Steel in spring 1993 with creation of templates for the individual components, and receipt of necessary aluminum stock. The cutting, bending, shaping, welding, fitting and painting of the pieces took place until October, 1993. The completed 24-pounder carriage was delivered to the park on 17 August. The Rodman carriage was finished on 22 October 1993.

To our knowledge, this is the first time artillery carriages of this size have been produced in aluminum, at least for the NPS, and all credit is given to the skillful and clever craftsmen at Bell Steel Company. We are very pleased with the quality of their work.

In our original proposal, the 24-pounder gun and carriage were to be installed on the ramparts of Bastion E, Fort Pickens, and the Rodman rifle and carriage on the south rampart of Fort Barrancas. In soliciting a local crane company (Tex Edwards Co., Inc.) to move and mount the ordnance, certain complications developed. At Fort Barrancas, the terrain, accessibility and location of the intended emplacement limited heavy equipment use to a 60-ton, all-terrain crane. To lift the 16,000 pound Rodman rifle up 30 feet and 30+ feet over to the emplacement would stretch the capability of the crane to its extreme limit and endanger the equipment, operator, and historic resources. Consequently, it was decided that the lighter 24-pounder gun (6000 pounds) would be mounted at Fort Barrancas, and the Rodman at Fort Pickens.

Historical records showed that Rodman rifles were in place on the northwest channel front of Fort Pickens as late as 1900, and 24-pounder guns were mounted on Fort Barrancas before the Civil War. The appropriate emplacements were located, measured, iron work cleaned and coated, and otherwise prepared to receive their ordnance. On 27 August 1993, the 24-pounder was transported to Fort Barrancas and mounted on its new aluminum carriage. Two months later, on 27 October 1993, the 8-inch Rodman rifle and carriage were lifted and set in place on the walls of Fort Pickens, overlooking Pensacola Pass.

A year and a half in planning, preparation, fabrication and installation, the project involved much more than that mentioned in the bare-bones narration of this report. The 24-pounder had to be moved from the confines of a Fort Pickens casemate to an open area outside the fort where is could undergo preservation work and be lifted and transported the 30 miles to Fort Barrancas. The Rodman rifle, likewise, required some preservation treatment; and a second Rodman was to be preserved and relocated to the center of Fort Pickens on a new concrete pedestal. Park staff moved the 24-pounder from the fort, formed and poured the concrete pedestal, blasted and coated the iron tubes and emplacement pintle, transported carriages, removed and replaced fences for crane access, and performed a score of other sundry chores in the preparation for, and final installation of, the weapons. Research, documentation, inquiry, solicitation, procurement, consultation, public relations, and seemingly endless measurements involved further staff time, energy and expertise. The professionalism and dedication of NPS personnel, the manufacturer, and the crane operators and riggers have produced a result that justifies the long effort.

Some final notes and observations:

approximate weight of 24-pounder barbette carriage and chassis:
est. 2000 lbs.

approximate weight of Rodman carriage and chassis:
est. 3000 to 4000 lbs.

Manufacturer: **BELL STEEL COMPANY**
530 SOUTH "C" STREET
PENSACOLA, FL 32501

contact person: **Mr. Dan Davis (904) 432-1545**

Cost of 24-pounder barbette carriage of 6061 aluminum produced for Gulf Islands National Seashore:

lower chassis - **$8,162.00**
upper carriage - **$11.263.00**
total - **$19,425.00**

Cost of 8-inch Rodman barbette carriage and chassis of 6061 aluminum produced for Gulf Islands National Seashore:

carriage and chassis - **$24,925.00**

Cost of crane rental with operator and riggers: **$6,100.00**

Cost of miscellaneous equipment rental and supplies: **est. $1,000**

Park staff time/cost not calculated.

The manufacturer (Bell Steel Co.) has expressed an interest in receiving additional orders for aluminum gun carriages from the NPS or other agencies. The high quality of the work performed for Gulf Islands demonstrates their capability of delivering a good product.

As the company is not in the primary business of producing gun carriages, interested parks should know that they must provide detailed historic drawings of the desired carriage, accurate dimensions of the gun barrel, (and emplacement - if appropriate) and be specific about small details where they are considered important. For example, the wheel spokes on our 24-pounder barbette carriage were made of round pipe - not beveled spokes as on the original. Also, as mentioned before, we did not request that bolt heads be added to the principal members of the 24-pounder carriage to simulate the original method of construction, nor did we require that all welds be ground perfectly smooth to give more of an original appearance. If these details are important to an ordering agency, they would have to be clearly stated in the specifications.

Again, we did not want the carriages to be operational. Therefore, the design and construction of axels and hubs was simplified, particularly in the case of the top carriage for the Rodman where, originally, an eccentric axel allowed the gun to be rolled in and out of battery. For the safety of visitors and preservation of the carriage, we have made the guns and carriages stationary.

The current craftsmen at Bell Steel are capable of producing a functional and authentic carriage in aluminum if a client desires it and is prepared to pay the cost and spend some time with the designers and fabricators.

For additional information, contact Bell Steel directly, or call me at (904) 934-2636.

Jeffrey L. Parsons
Cultural Resource Specialist
Gulf Islands National Seashore
17 November 1993

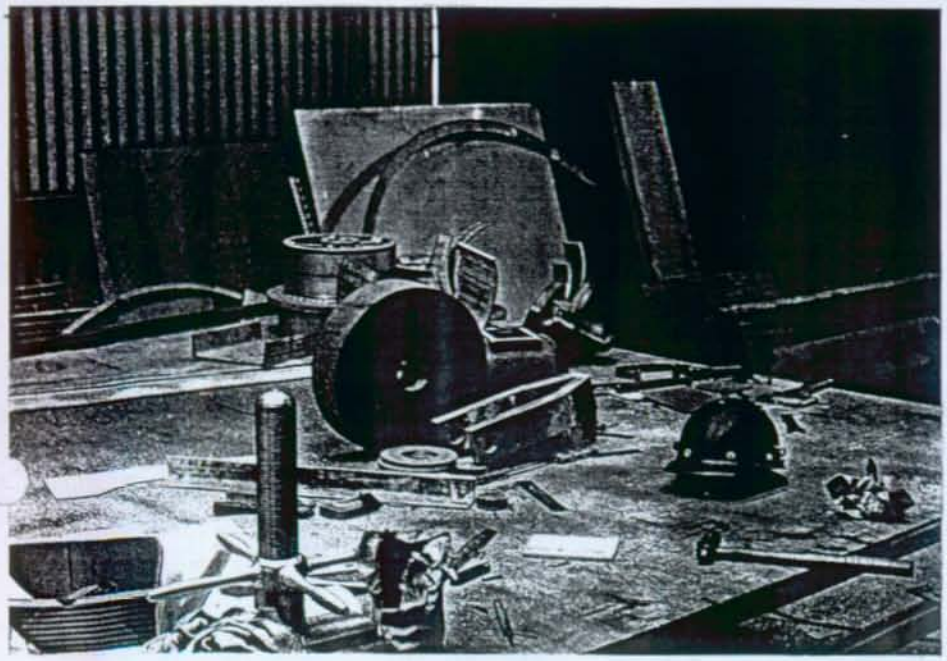


4 JUN 1993
Moving 24-pdr out of
Ft. Pickens casemate

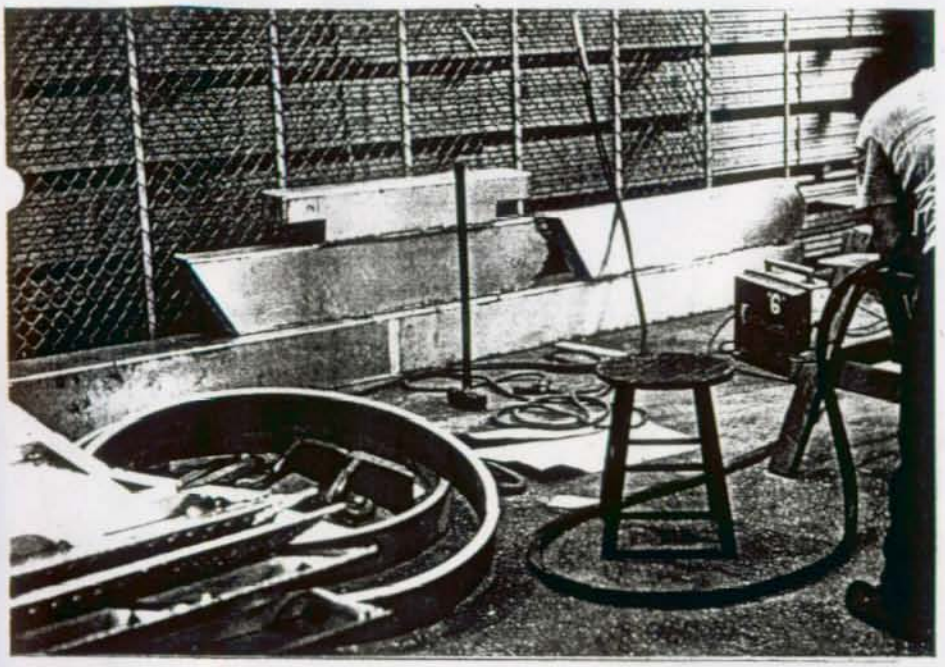
JUL 1993
Bell Steel Company
Pensacola, Florida

Fabricating components
of aluminum barbette
carriage for 24-pdr.

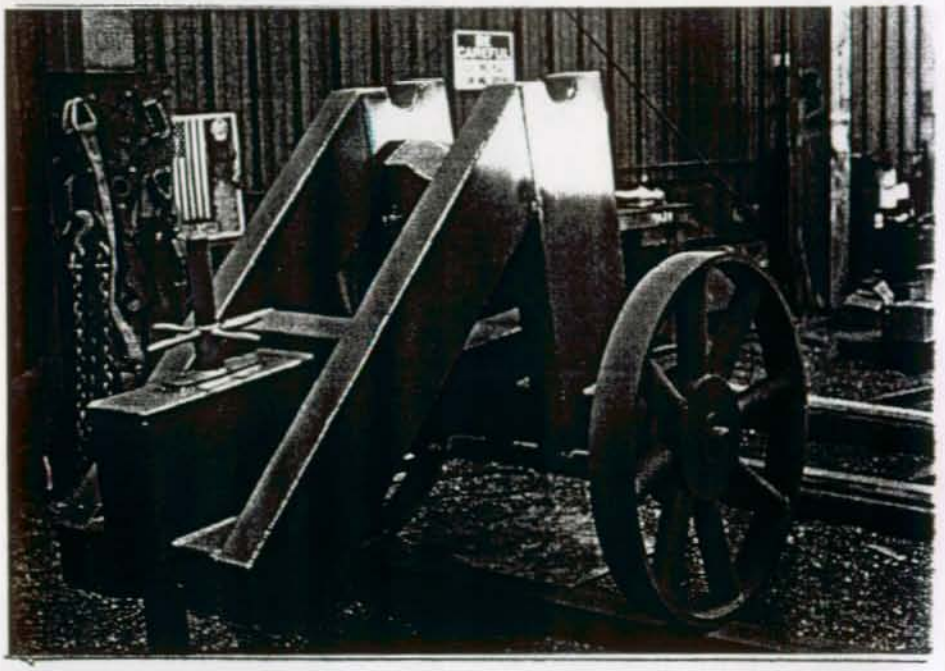




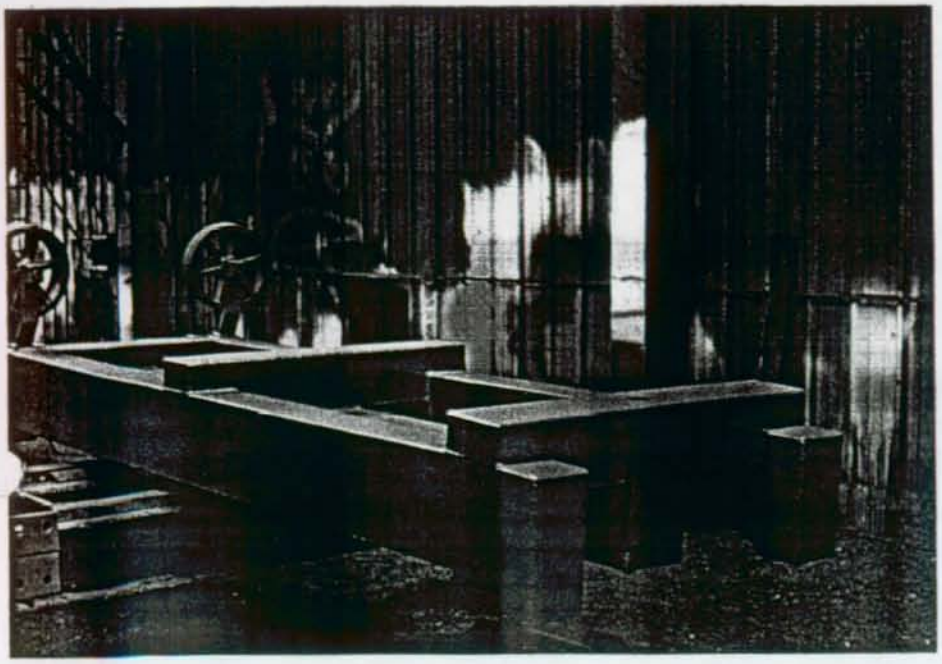
JUL 1993
Bell Steel Co.
24-pdr. carriage components.
Note elevating screw,
lower left.



JUL 1993 BELL STEEL
Carriage transom and braces,
Chassis tongue,
Wheel rims.



Finished top carriage
in Bell Steel paint
shop, AUG 1993.



Finished chassis in
Bell Steel paint shop,
AUG 1993

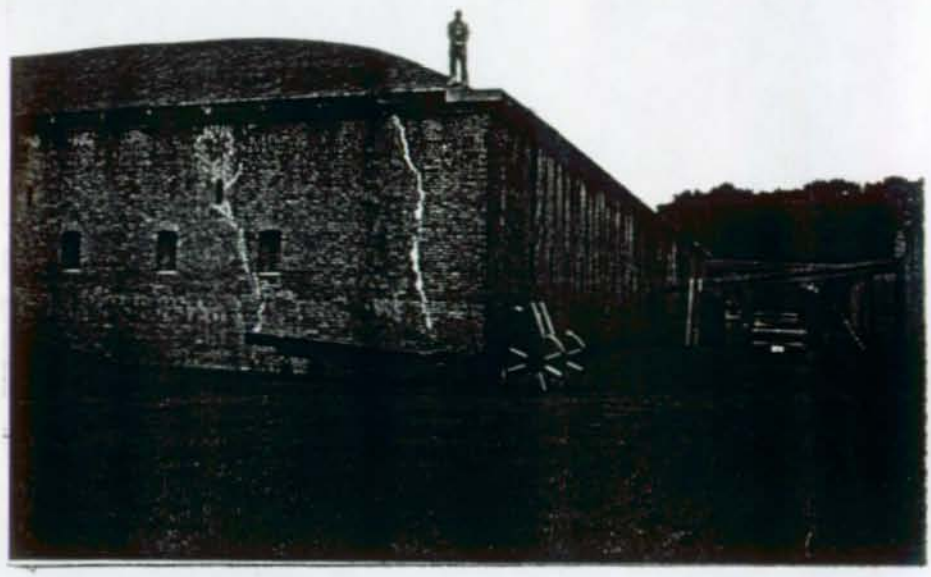


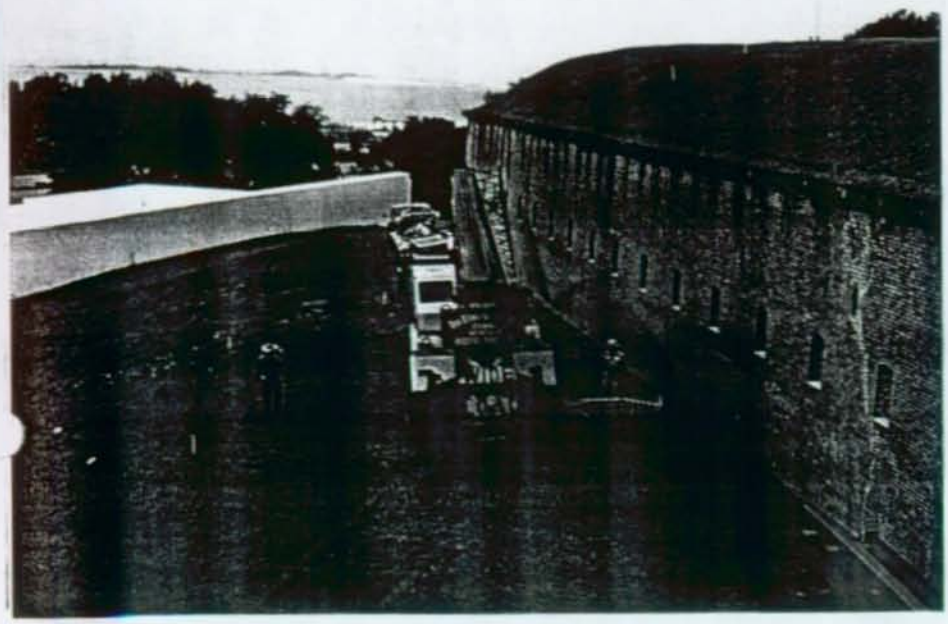
A"G 1993 Ft. Pickens
Checking fit of top carriage
to lower chassis -

VERY tight; one weld
had to be slightly filed
to provide perfect fit.

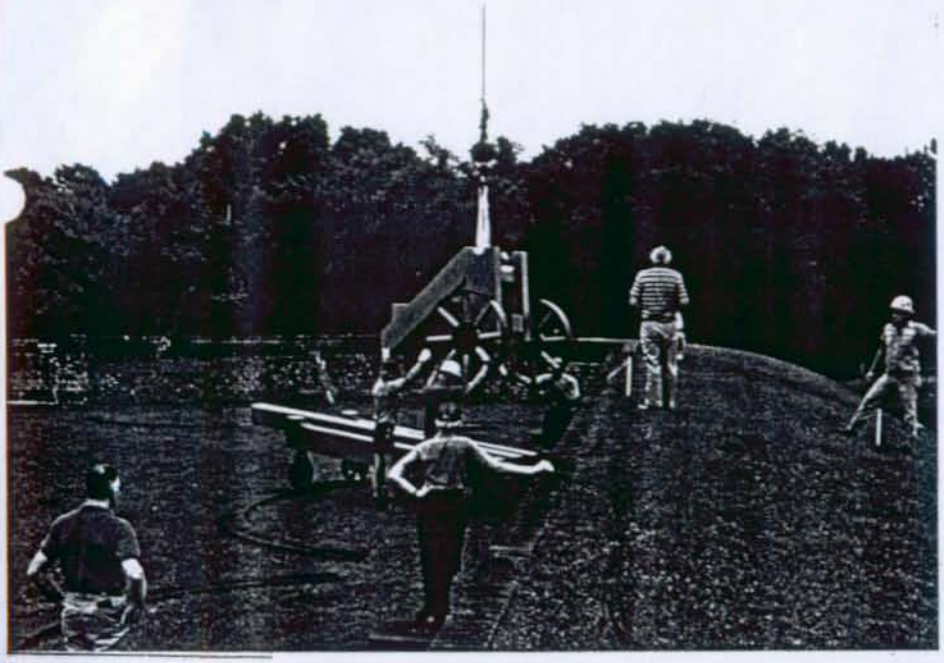
27 AUG 1993

Carriage and chassis
transported to Ft.
Barrancas await
arrival of crane.

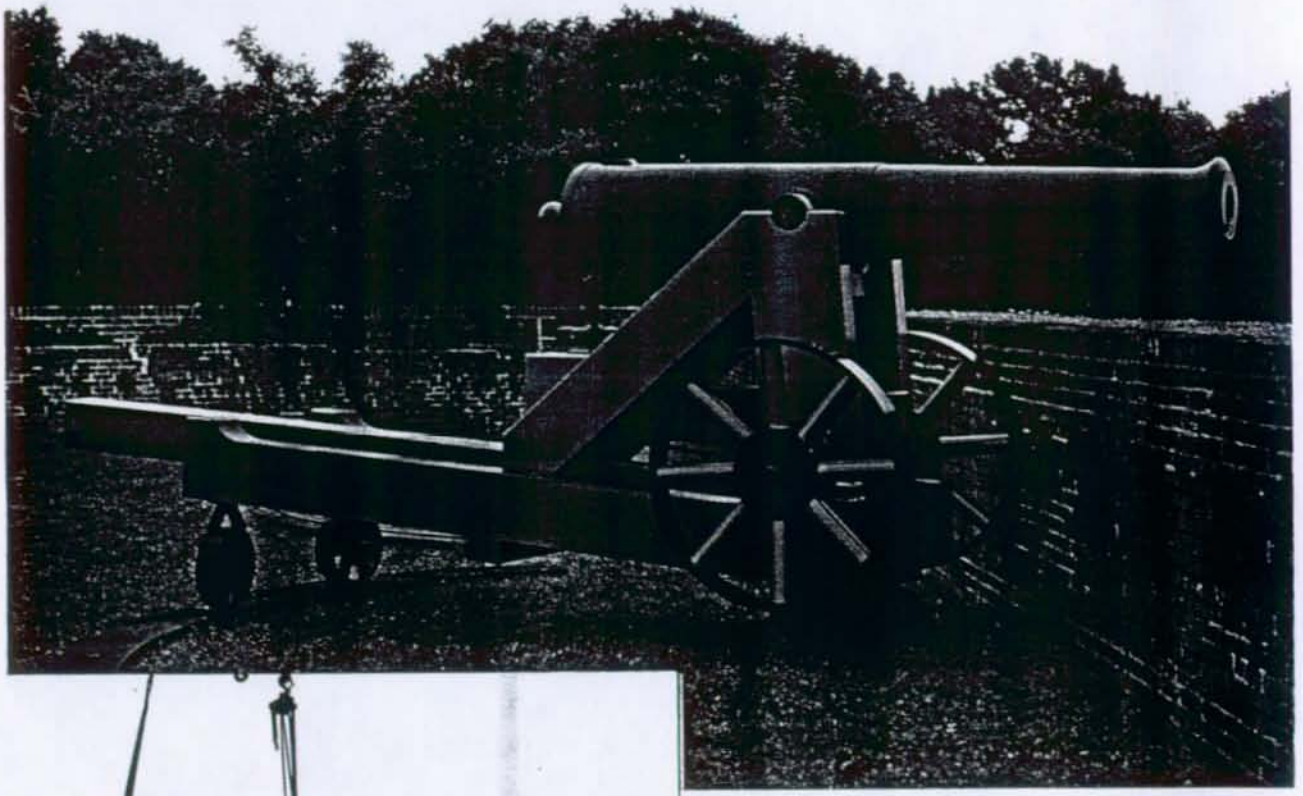


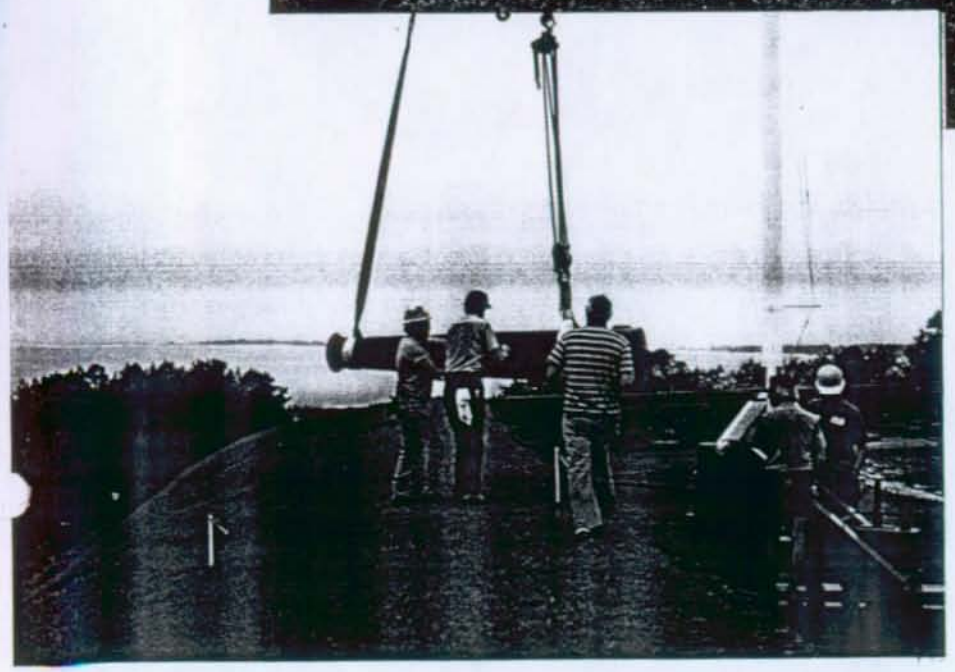


27AUG 1993 Ft. Barrancas
Crane sets up to hoist
carriage and gun over wall.

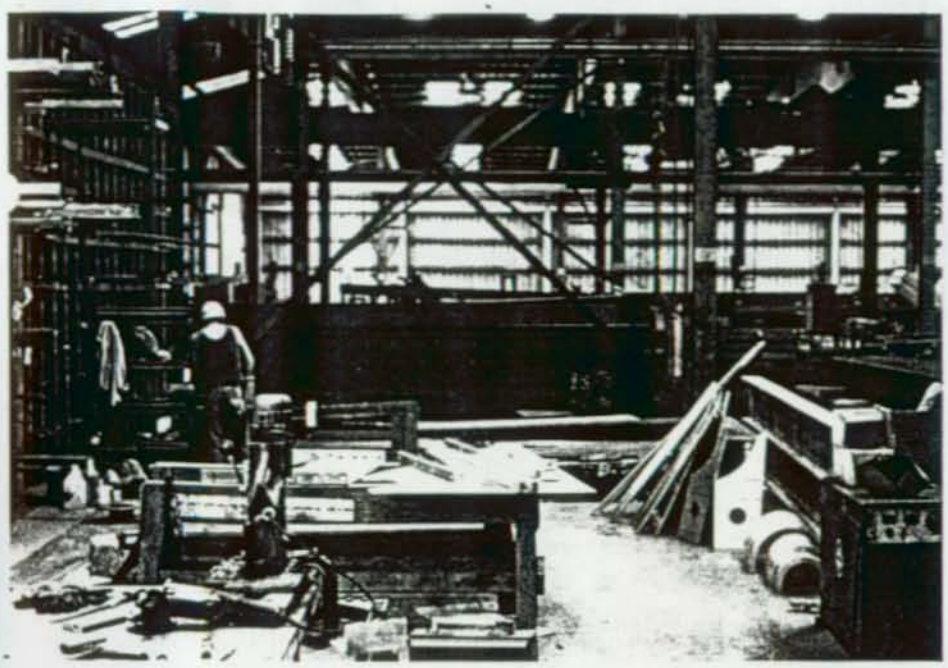


27 AUG 1993 Ft. Barrancas
Chassis in place, top carriage is next lowered onto chassis.

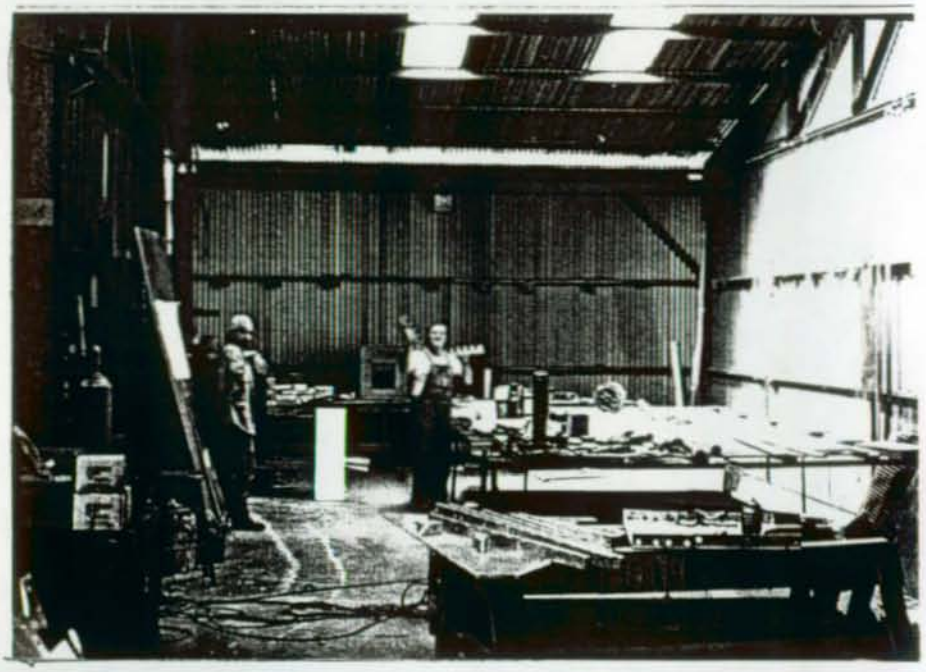




27 AUG 1993 Ft. Barrancas
24-pdr. gun tube is prepared for mounting on carriage.

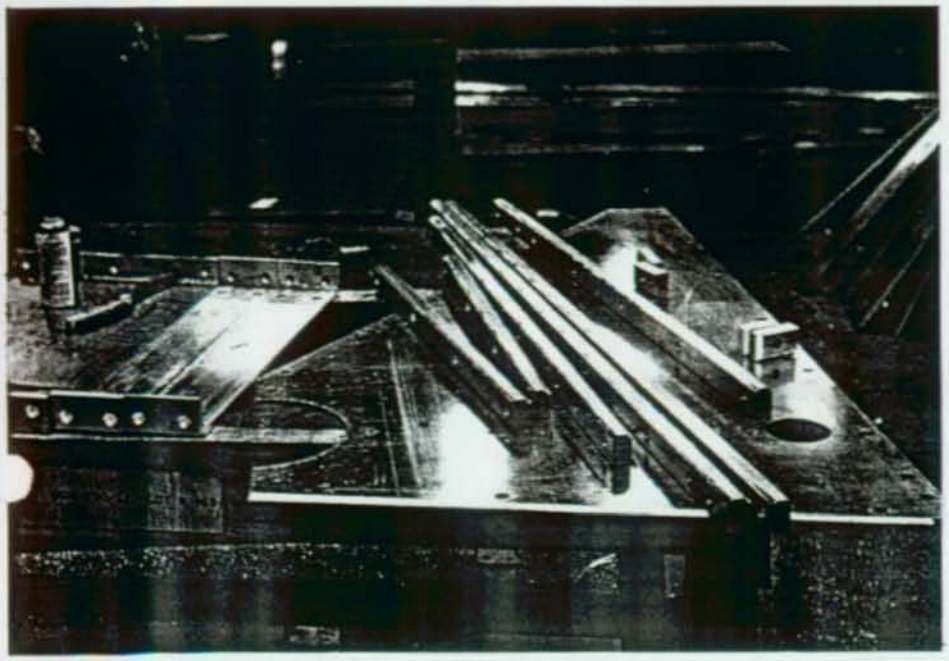


Bell Steel Co.
Production of components
for Rodman carriage.
October 1993

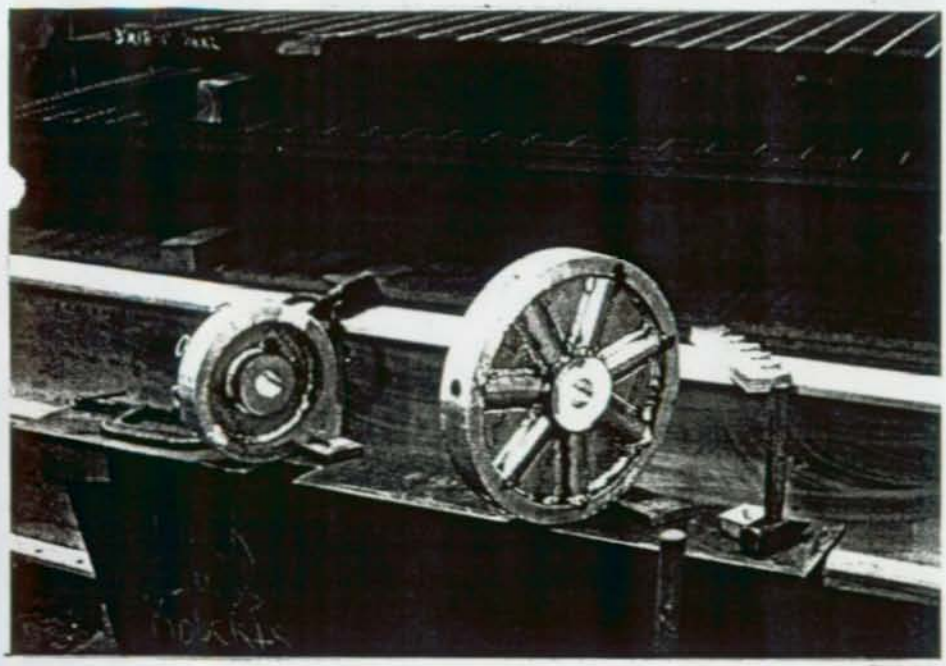


Shop area of Bell Steel Co. where aluminum gun carriages were produced. October 1993.

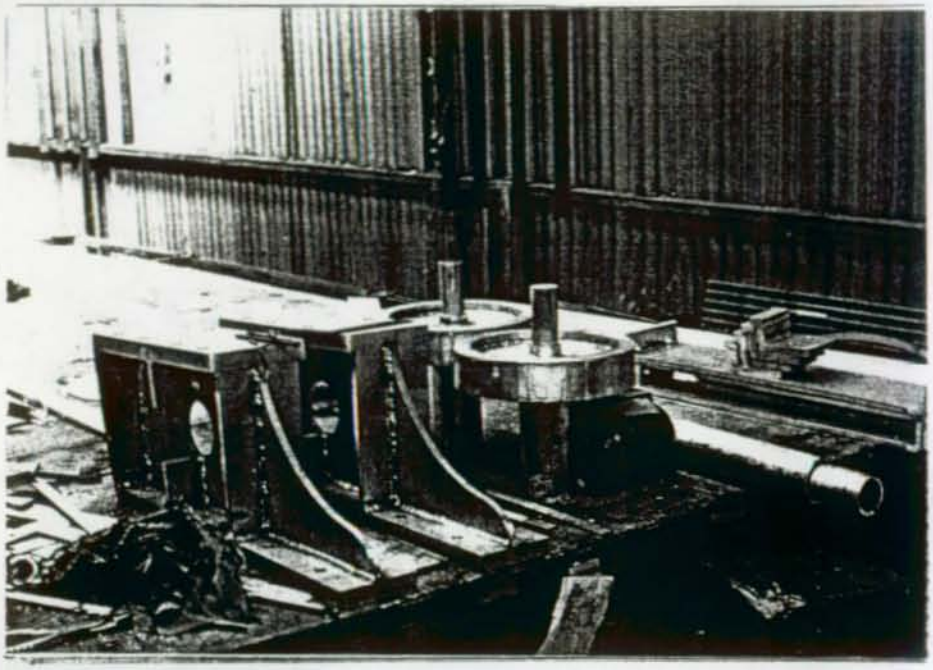
Craftsman Joe Eaton at center.



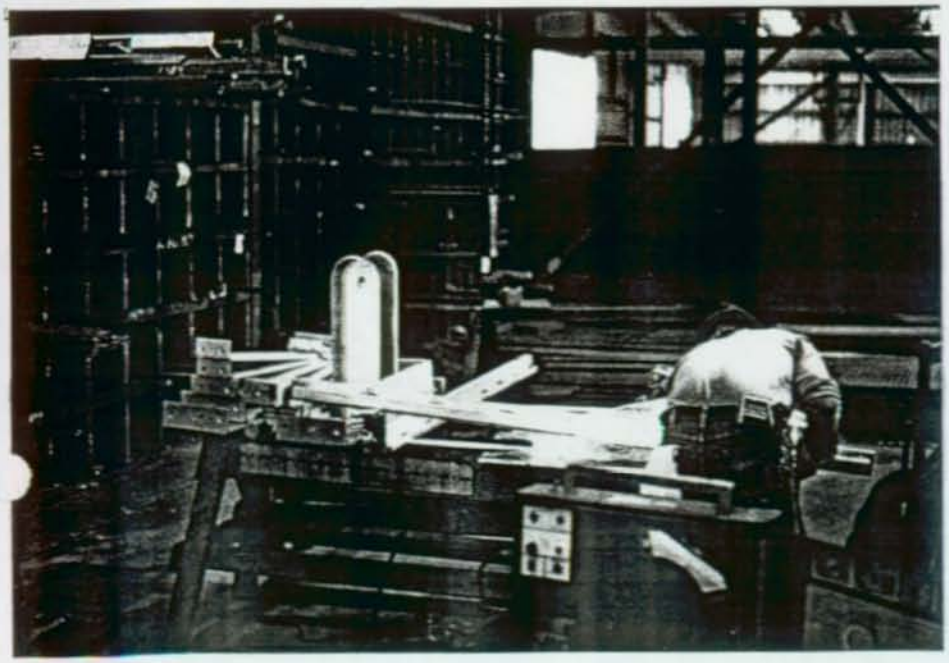
Cheek plate, transoms, braces and caps.



Truck and traverse wheels;
Chassis rail behind.



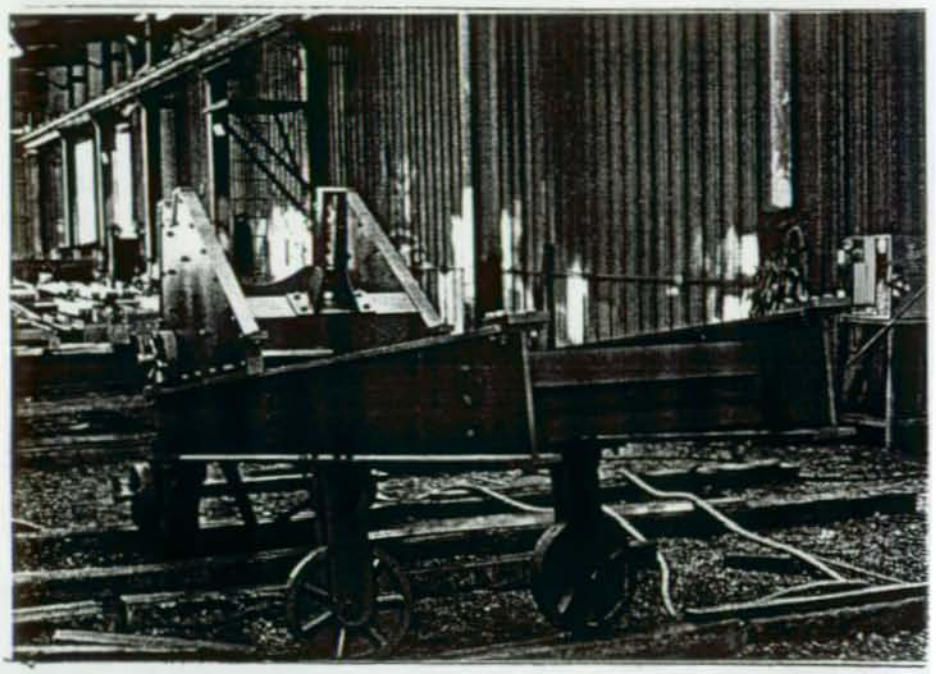
Bolsters and platform
wneels/axel; transoms
and guides in background.



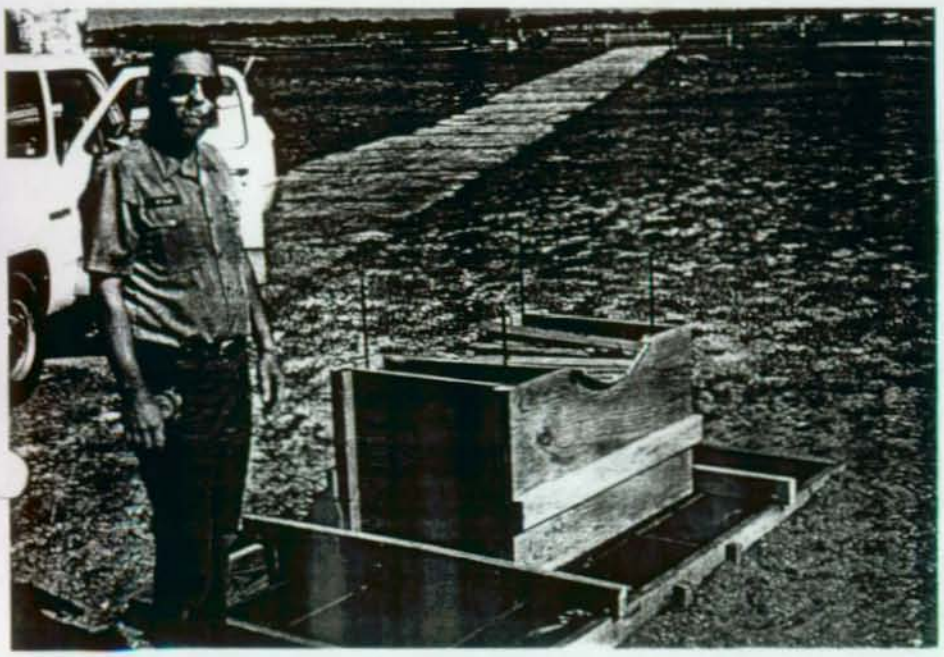
Aluminum welding on
Rodman carriage components,
Bell Steel, OCT 1993



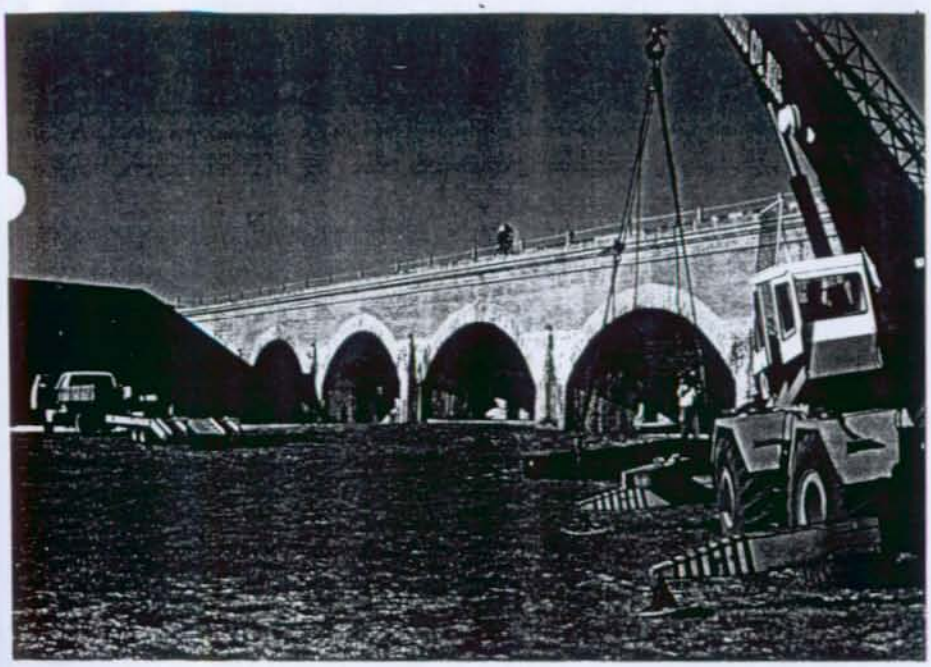
Assembling pieces of chassis at Bell Steel. OCT 1993



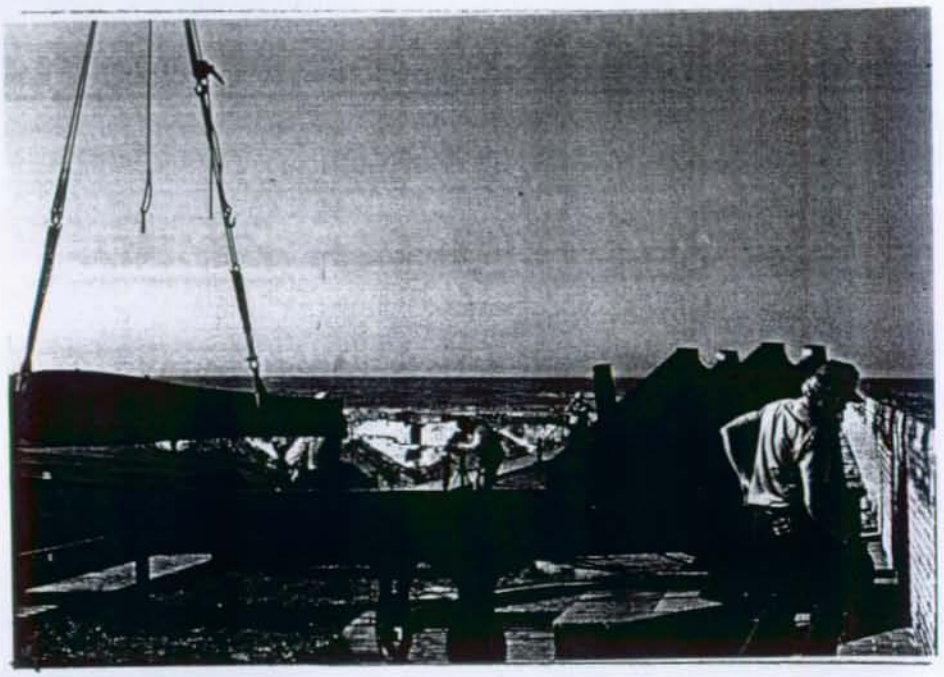
Assembled and primed Rodman chassis and top carriage, Bell Steel OCT 1993.



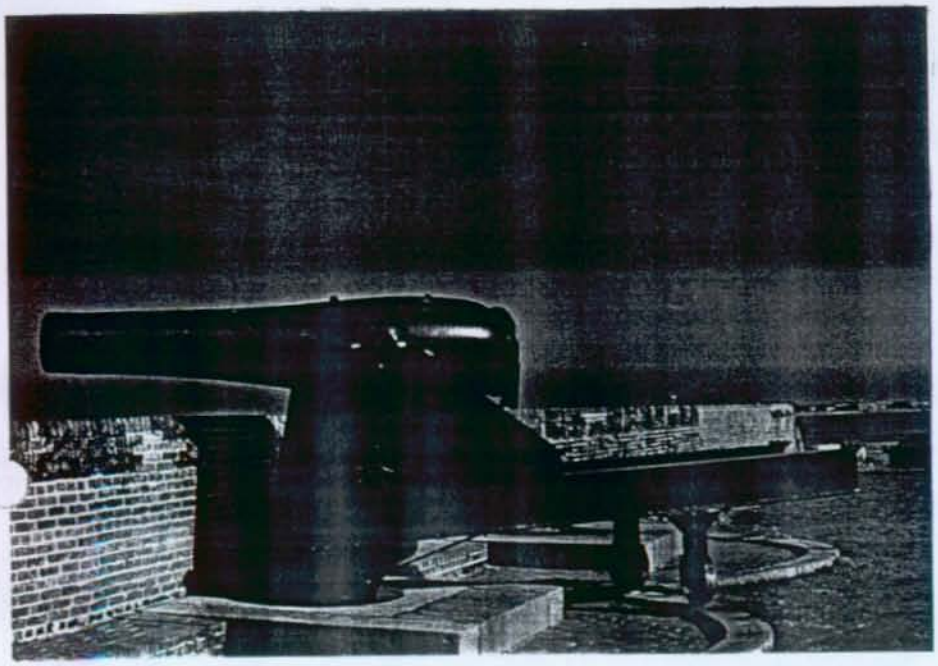
Form for display pedestal for second Rodman, Ft. Pickens parade ground, OCT 1993.



Moving the 16,000 lb. Rodman tube; carriage on trailor at left. Ft. Pickens, 27OCT1993.



Carriage has been installed on platform, tube on the way. Ft. Pickens, 27OCT1993.



Converted 8-inch Rodman rifle on aluminum reproduction of front pintle barbette carriage. Ft. Pickens, Gulf Islands National Seashore, Florida. 27OCT1993

ALUMINUM REPRODUCTION OF FRONT PINTLE BARBETTE GUN-CARRIAGE AND CHASSIS (circa model 1840) FOR 24-POUNDER GUN

The major components of the chassis and gun-carriage (ie. rails, transoms, uprights and braces) will be fabricated from 1/4 inch plate aluminum utilizing 1100 aluminum, or 5086 aluminum alloy if load calculations require a greater tensile strength. Components requiring greater mass (ie. wheels, rollers, forks, axel, elevating screw, etc.) will be cast utilizing 319 aluminum.

Eliminate from construction design the following components as shown on the attached drawings:

PLATE VI - Lunette
Mauoeuvering staple
Axle and tie brace (if deemed not necessary)
Axle stirrup (if deemed not necessary)

NOTE: Axle tree, rollers, wheels and elevating screw will be immovable when installed. Construction design may modify these components to achieve the appearance of authenticity without creating functional use.

PLATE VII - Mauoeuvering bolts
Bevel washers

PLATE XII - Rail plates
Pintle plate and pintle
Pipes
Prop plate, bolt and key
Manoeuvering loop

NOTE: Traverse wheels will be immovable when installed. Construction design may modify these components (wheels and forks) to achieve the appearance of authenticity without creating functional use.

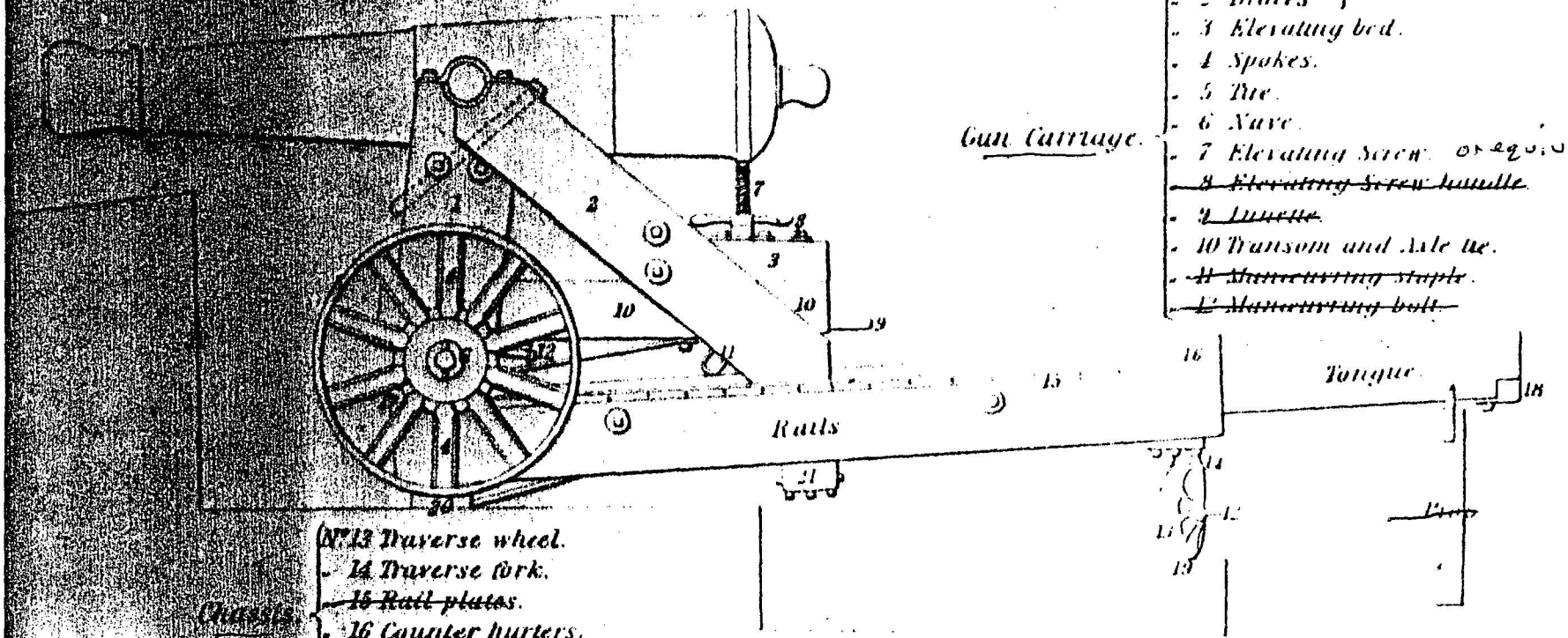
PLATE IX - Prop

In the original wood construction of this type carriage, the heavy timber members (uprights, braces, chassis rails, tongue, etc.) were assembled with long bolts. Reproduction is aluminum will require that the members be simulated in box form with interior bracing as necessary and probable welding of members together to form the unit. We will entertain other practical methods of assembly as offered. Specify on quote any other optional assembly methods and costs.

FINISH: All aluminum components will receive a seal coat of epoxy primer at 2 mils (dry film thickness) and a top coat of polyurethane (color to be determined) at 1.5 mils.

PARTS TO BE ELIMINATED FROM DESIGN

24 pdr. Gun mounted on a Barbette Carriage.



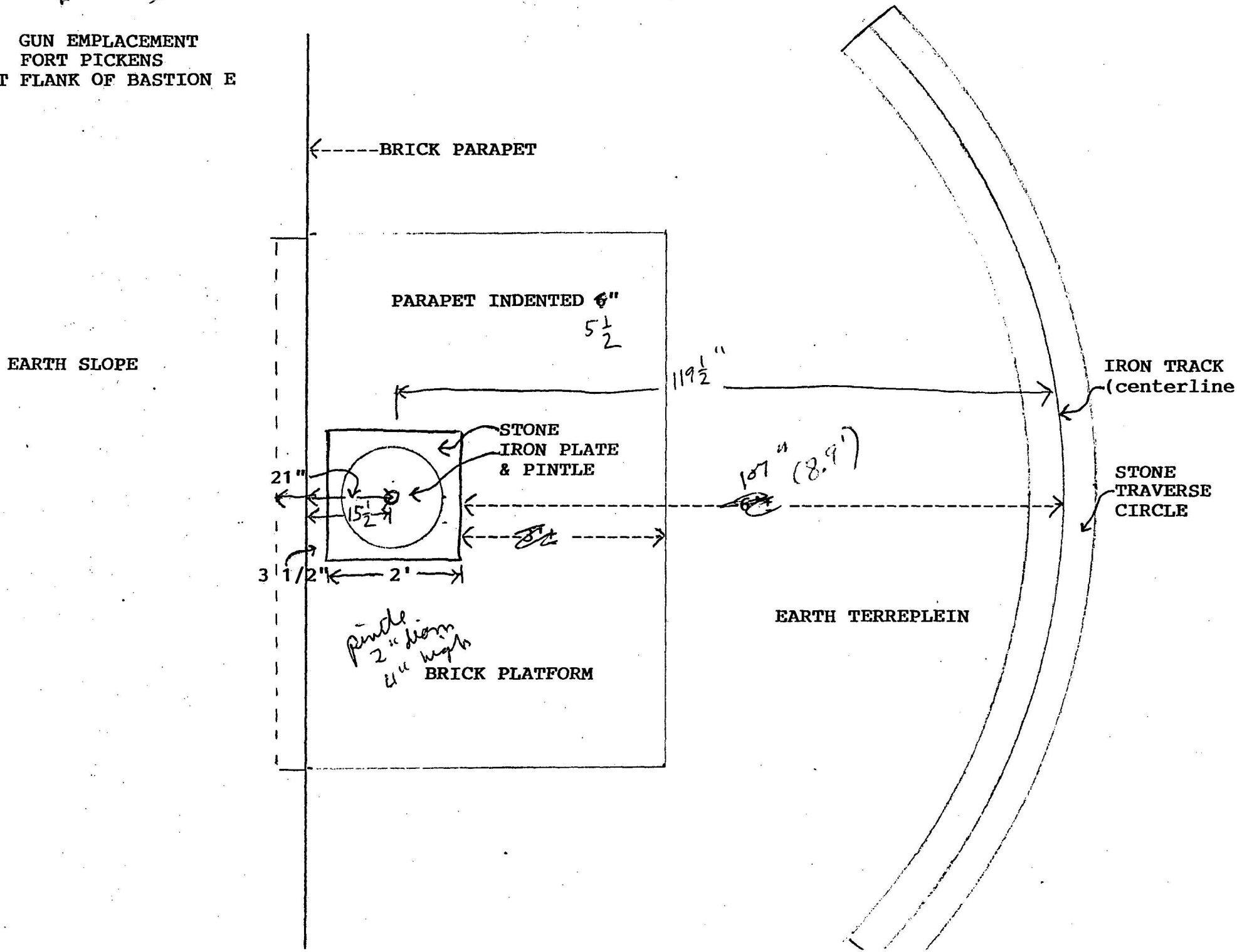
Gun Carriage.

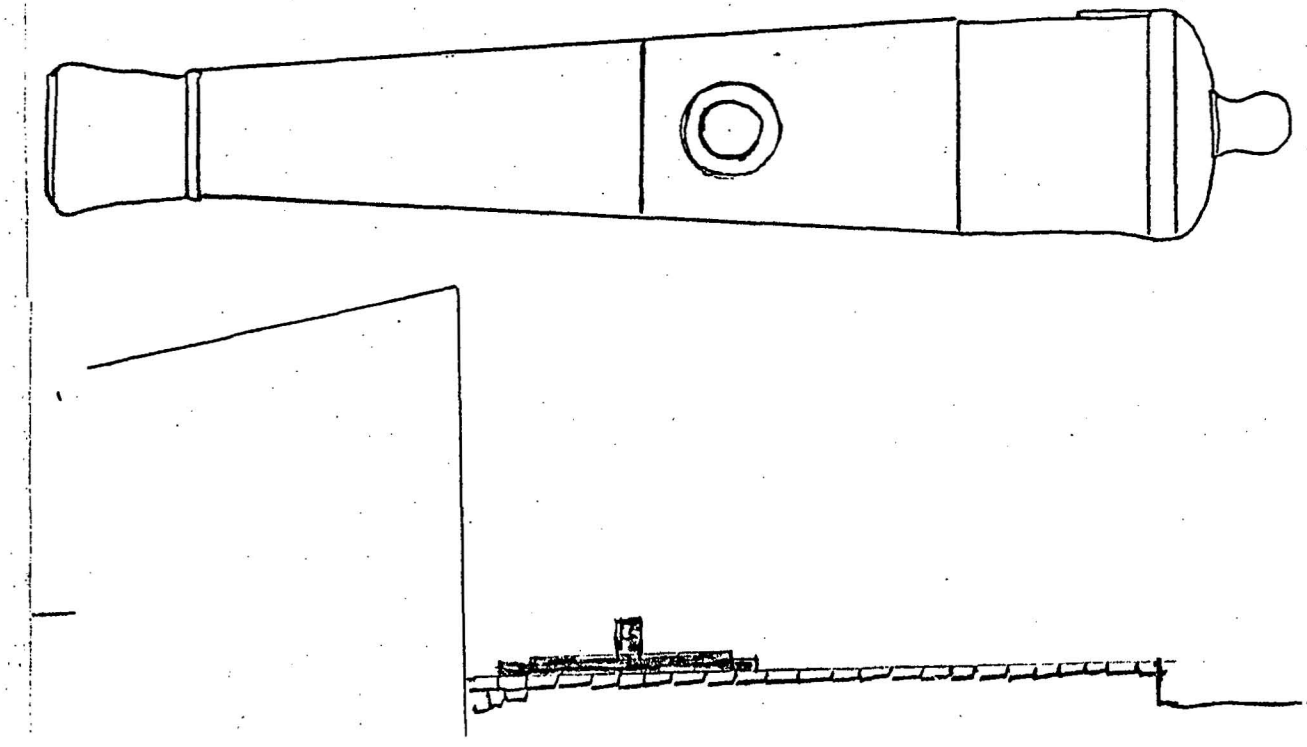
- N°1 Uprights } Cheeks.
- 2 Braces }
- 3 Elevating bed.
- 4 Spokes.
- 5 Tire.
- 6 Nave.
- 7 Elevating Screw or equivalent
- ~~8 Elevating Screw handle~~
- ~~9 Trunnion~~
- 10 Transom and Axle tie.
- ~~11 Manœuvring staple~~.
- ~~12 Manœuvring bolt~~.

Chassis.

- N°13 Traverse wheel.
- 14 Traverse fork.
- ~~15 Rail plates~~.
- 16 Counter hurters.
- 17 Hurters.
- ~~18 Manœuvring loop~~.
- 19 Traverse circle.
- 20 Limber block.
- 21 Middle transom.
- ~~22 Parapet~~.

GUN EMPLACEMENT
FORT PICKENS
IGHT FLANK OF BASTION E





PLAN TRANSMITTAL FORM

BELL STEEL COMPANY

P. O. BOX 12109
PENSACOLA, FLORIDA 32590
PHONE 432-1545

DATE 1/8/92

TO: GULF ISLANDS NATN'L SEASHORE

OUR ORDER NO. 474-92

YOUR ORDER NO.

ATTN: JEFF PARSONS

GENTLEMEN:

WE ARE SENDING YOU HEREWITH ☒ BELL STEEL CO. ☐ (OTHER) DRAWINGS AS FOLLOWS:

DRAWING NO.	REVISION NO.	NO. COPIES	DESCRIPTION
E1, 2, & E3		3	ASSEMBLY & DETAILS
1, THRU 4		3	DETAILS
		3	Paint Specs.

THESE DRAWINGS ARE:

☒ 1. FOR YOUR APPROVAL (RETURN ONE COPY)*
☐ 2. FOR JOB USE.
☐ 3. RETURNED APPROVED.
☐ 4. RETURNED APPROVED AS NOTED. DRAWING TO BE RESUBMITTED FOR FINAL APPROVAL.
☐ 5. RESUBMITTED FOR YOUR FINAL APPROVAL. (RETURN ONE COPY)*
☐ 6. FOR QUOTATION OF:
☐ 7. RETURNED FOR YOUR FILES.
☐ 8. _____

REMARKS: Chassis & Carriage for 24 pdr.

*FABRICATION WILL NOT BEGIN UNTIL RECEIPT OF APPROVED SHOP DRAWINGS.

YOURS VERY TRULY,
BELL STEEL COMPANY
BY D. E. Hightower

33 IM

Alumiprep

Acid Pretreatment for Aluminum

A non flammable phosphoric acid based cleaner and prepaint conditioner which will lightly etch aluminum. The cleaning and conditioning chemical leaves the aluminum surface chemically clean and corrosion free.

Consult Porter International Representative for system best suited to environment.

Application Instructions

Limitations :

Apply when material, surface and air temperatures are above 45°F (7°C). Do not use on high copper-bearing aluminum alloys or aluminum castings.

Surface Preparation

Treat only clean, dry surfaces. Remove all grease, oil, dirt or other foreign matter by solvent or detergent cleaning. Remove all loose or scaling paint and/or loose or heavy rust, rust scale or other corrosion products by hand or power tool cleaning.

Dilution .

Dilute one part Alumiprep 33 with 3 parts water by volume in a non-metallic container. One gallon of Alumiprep 33 will etch approximately 1000-1500 square feet. Allow for losses due to application methods, conditions and surface irregularities.

Application

Apply by spray, brush or dipping. Selection of the size area to be treated at one time will depend on method of application, condition of the metal surface, temperature, chemical dilution and part configuration. In a typical treatment, the Alumiprep 33 cleaning and conditioning chemical is in contact with the metal surface between one and two minutes. Alumiprep 33 should not be allowed to dry nor to reoxidize on a metal surface before the surface has been thoroughly rinsed. If drying does occur, rewet the surface with the diluted Alumiprep 33 prior to rinsing with clean water.

Note: Alumiprep 33 cleaning and conditioning chemicals aggressively attack and completely remove aluminum oxidation and corrosion, leaving a bright, clean metal surface. Removal of heavy corrosion may require scrubbing with a Scotch-Brite type pad.

Cleaning Sequence

Step 1 – Remove surface contamination.
Step 2 – Apply the diluted Alumiprep 33.
Step 3 – Allow the solution to react.
Step 4 – Thoroughly rinse the treated surface with water.
Step 5 – Dry the surface.

Cleanup

Flush all equipment immediately after use with clean water. Unused, diluted Alumiprep 33 can be returned to its original container for future use, or it should be immediately disposed of in a safe manner recommended for acidic materials.

Safety

This product (and any recommended thinners) contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safe usage, user is specifically directed to consult the current *"Material Safety Data Sheet"* for this product.

FOR APPROVAL

JAN 0 8 1993

PI8198 (1/89)

The technical data furnished herein are true and accurate to the best of our knowledge. All products are offered and are sold subject to Porter International's Standard Conditions of Sale. Published technical data and instructions are subject to change without notice.

General Offices
400 S. 13th Street
Louisville, KY 40203
502-588-8200

PRODUCT

Porter International

4300 ™

PRODUCT DATA

M.C.R.-43 Epoxy Primer
Polyamide-Epoxy

Service

A two component, rust-inhibitive primer for use on properly prepared steel surfaces. Exhibits excellent abrasion and chemical resistance. Offers fast dry and ease of application.

Typical Uses

Industrial, marine and process environments. Topcoat is required for more severe exposures. *Dry Temperture Resistance 200°F (93°C)*

Fabricator fast recoat primer. Ideal for use in shops where the finish coat will be applied. Excellent primer for epoxy topcoats used in pulp and paper mills, waste water, chemical processing, refineries and food processing plants.

Color/Gloss

Color	Oxide Red, Gray - 4301
Sheen	Flat

Physical Constants

Volume Solids	48.1% ± 2%
VOC	3.84 lbs/gal (460 g/ltr)
Flash Point	Part A, 85°F (29°C); Part B, 85°F (29°C); Mixed 85°F (29°C) (P-M Closed Cup)

Application

Recommended Thickness	2.0 mils dry, 4.2 mils wet.
Theoretical Coverage	(2.0 mils DFT) 385 sq ft/gal
Method	Brush, roll or spray.
Induction/ Sweat-in Time	30 minutes
Thinner	T-3
Compatibility	M.C.R.-43 Epoxy Primer 4300 is an excellent primer for epoxy, coal tar and polyurethane coatings.

Typical System Drying Time (hours)	4300/4361 50°F (10°C)	75°F (24°C)	90°F (32°C)
• to touch	6	2	1
• to handle	8	6	2
• to recoat*	30	20	12
Pot Life (hours)	30	24	16

*Times listed above are for normal recoating situations. For fast recoat applications consult Porter International Fabricator Fast Recoat System Guide.

Unit Size

	2 Gallon Unit (7.6 ltr)	10 Gallon Unit (37.8 ltr)
Part A	1 Gallon	5 Gallon
Part B 4300	1 Gallon	5 Gallon

Unit Shipping Weight

28 lbs (11.4 kg) — 121 lbs (55 kg)

Storage

Shelf Life: One year minimum from date of manufacture when maintained in protected storage at 40-100°F (4-38°C) (subject to reinspection thereafter).

Regulatory Data

USDA	Approved for incidental food contact surfaces
VOC	3.84 lbs/gal (460 g/ltr)

FOR APPROVAL
JAN 08 1993

4300

Application Instructions

Consult Porter International Representative for system best suited to environment

Limitations:
Apply in good weather when air and surface temperatures are above 50°F (10°C). Surface temperature must be at least 5°F (3°C) degrees above dew point. For optimum application properties, bring material to 70-80°F (21-27°C) temperature range prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage between 40 and 100°F (4-38°C).

Surface Preparation:
Paint only clean, dry surfaces. Remove all grease, oil, dirt, mildew or other foreign matter by solvent or detergent washing

Previously Painted Surfaces:
Remove all rust, rust scale, other corrosion products, loose or heavy chalk and loose or scaling paint by *"Hand or Power Tool Cleaning"* (SSPC-SP2 or 3 respectively). Sand or *"Brush Blast"* (SSPC SP7) any glossy areas until dull. Spot prime bare areas as recommended. To check compatibility apply coating to representative area of at least 25 square feet and allow to cure and age several weeks. Then inspect for adhesion failure, wrinkling, lifting, blistering or any other sign of incompatibility present. Coating work may then proceed.

Steel:
Apply to blasted steel unless otherwise specified. Blasting shall be done with a centrifugal wheel or compressed air blasting equipment, using proper abrasives to attain an average profile depth of 1.5 mils (38 microns). Do not reuse sand or flint abrasives. Shot abrasives must be thoroughly clean of contamination before reuse. Blow dust and grit from surface with clean, dry air. Coat within 8 hours or before rust contamination occurs.

Immersion Service:
Steel Structures Painting Council No. 5 *"White Metal Blast Cleaning"* (SSPC SP5). Round all welds, sharp edges and prominences to a smooth curve and remove all weld spatter before blasting.

Non-Immersion Service:
Steel Structures Painting Council No. 6 *"Commercial Blast Cleaning"* (SSPC-SP6).

Galvanize:
Steel Structures Painting Council No. 7 *"Brush Blast Cleaning"* (SSPC-SP7) or *"Acid Etch"* with Galvaprep as per manufacturer's printed instructions.

Mixing:
Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Part A with a power agitator; (2) Agitate Part B with a power agitator; (3) Combine entire contents of Part A and B and mix thoroughly with a power agitator. Allow the coating a 60 minute sweat-in period before using at material temperatures below 70°F (21°C).

Thinning:
Material is supplied at spray viscosity and normally needs no thinning. If thinning is necessary, thin up to ½ pint (237 ml) per gallon with Porter International T-3 Thinner.

Application:
Apply by conventional or airless spray. Application by other methods, brush or roller, may require more than one coat. Apply M.C.R.-43 Epoxy primer at 4.2 mils (105 microns) which will give 2.0 mils (50 microns) dry film thickness

Equipment:
Brush: inexpensive 4" (10 cm) wide commercial brush.
Roller: use the *"All Purpose Roller Cover."*
Conventional Spray: DeVilbiss MBC-510 gun; E tip and 704 air cap, ¼" (1.0 cm) ID material hose; double regulated pressure tank with oil and moisture separator.
Airless Spray: minimum 28:1 ratio pump; .015" (381 microns) orifice tip; ¼" (.6 cm) ID Teflon material hose.

Work Stoppages: *(Lunch, Breaks, etc.)*
Do not allow material to remain in hoses. Release pressure from pressure tank and disconnect material hose. Thoroughly flush hose and spray gun with Porter International T-3 Thinner and reconnect to tank. Maintain material in tank under constant low speed agitation, but do not repressurize tank until ready to resume work.

Cleanup:
Clean all equipment immediately after use with Porter International T-3 Thinner or Ketone solvents. Spray equipment requires flushing with either of these solvents. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency should depend upon amount sprayed, temperature, elapsed time including delay, etc.

Welding:
In the event welding or flame cutting is performed on metal coated with this product, do so in accordance with instructions in U.S.A. Standard Z 49.1, *"Safety in Welding and Cutting."* All welded, burned, or otherwise damaged areas should be reprepared to base metal and recoated as specified.

Safety:
This product (and any recommended thinners) contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safe useage, user is specifically directed to consult the current *"Material Safety Data Sheet"* for this product. When using this product in a confined space or closed area, consult the current OSHA, or ANSI bulletins on safety requirements.

PIS138 (1/89)

The technical data furnished herein are true and accurate to the best of our knowledge. All products are offered and sold subject to Porter International's Standard Conditions of Sale. Published technical data and instructions are subject to change without notice.

General Offices
400 S. 13th Street
Louisville, KY 40203
502 589 9200

FT. BARRANCAS 24 PDR BARBETTE CARRIAGE

Porter International

4610™

PRODUCT DATA

Hythane®

Aliphatic Polyurethane

Service		A two component, interior/exterior finish coat for use over properly prepared steel and masonry surfaces. Exhibits excellent abrasion and chemical resistance.
Typical Uses		Severe industrial, marine and process environments exposed to acids, alkalis, salts and solvents. Exhibits excellent gloss and color retention in exterior exposures. *Dry Temperature Resistance 200°F (93°C)* Gloss topcoat for transportation equipment, handrails, pipe racks, tank exteriors, process vessel exteriors in chemical and petroleum plants, marine environments and pulp and paper mills.
Color/Gloss	Color	White, Black - 4602. Also available in Chromascan® II colors. Special colors can be matched to meet customer specifications. OSHA colors available.
	Sheen	Gloss
Physical Constants	Volume Solids	43.4% ± 2%
	VOC	4.08 lbs/gal (489 g/ltr)
	Flash Point	Part A, 79°F (26°C); Part B, 91°F (33°C); Mixed, 79°F (26°C) (Setaflash)
Application	Recommended Thickness	1.5 mils dry, 3.5 mils wet.
	Theoretical Coverage	(1.5 mils DFT) 464 sq ft/gal
	Method	Brush, roll or spray
	Induction/ Sweat-in Time	None
	Thinner	T-24 (use T-4 below 60°F)
	Compatibility	Hythane® 4610 is an excellent high gloss finish coat over epoxy primer/intermediate coats.

FOR APPROVAL
JAN 0 8 1993

PORTER HYTHANE BA355P
OLIVE GREEN
MUNSELL #10Y4/2

Typical System Drying Time (hours)	308/4351/4610		
	50°F (10°C)	75°F (24°C)	90°F (32°C)
• to touch	2	¾	¼
• to handle	4	2	1
• to recoat	24	12	4
Pot Life (hours)	24	12	4

Unit Size	1 Gallon Unit (3.8 ltr)	5 Gallon Unit (18.9 ltr)
	Part A	1 Gallon (short filled)	5 Gallon (short filled)
	Part B 4646	1 Pint (short filled)	½ Gallon (short filled)
Unit Shipping Weight		11 lbs (5 kg)	54 lbs (25 kg)
Storage	Shelf Life	One year minimum from date of manufacture when maintained in protected storage at 40-100°F (4-38°C) (subject to reinspection thereafter).
Regulatory Data	USDA	Approved for incidental food contact surfaces.
	VOC	4.08 lbs/gal (489 g/ltr)

4610

Application Instructions

Consult Porter International Representative for system best suited to environment.

Limitations:
Apply in good weather when air and surface temperatures are above 35°F (2°C). Surface temperature must be at least 5°F (3°C) degrees above dew point. For optimum application properties, bring material to 70-80°F (21-27°C) temperature range prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage between 40 and 100°F (4-38°C).

Surface Preparation:
Paint only clean, dry surfaces. Remove all grease, oil, dirt or other foreign matter by solvent or detergent washing.

Unpainted Surfaces:
Prepare surface and prime, seal, fill or otherwise coat.

Previously Painted Surfaces:
Remove all rust, rust scale, other corrosion products, loose or heavy chalk and loose or scaling paint by *"Hand or Power Tool Cleaning"* (SSPC-SP2 or 3 respectively). Sand or *"Brush Blast"* (SSPC-SP7) any glossy areas until dull. Spot prime bare areas as recommended. To check compatibility apply coating to representative area of at least 25 square feet and allow to cure and age several weeks. Then inspect for adhesion failure, wrinkling, lifting, blistering or any other sign of incompatibility present. Coating work may then proceed.

Concrete:
(1) *"Brush-Blast Cleaning"* (SSPC-SP7) can be used to prepare the concrete by removing all foreign matter and provide a tooth for bonding. Remove all of the dust from the surface before starting the application of the coating.
(2) *"Acid-Etching"* Surfaces shall be clean, dry and free from curing compounds, oil, grease, dirt, chalk or previously applied coatings. All surfaces shall be acid etched with Muriatic Acid solution (1 part acid to 7 parts water). Apply solution by brush or spray until surface is thoroughly wetted. When bubbling ceases (5-10 minutes), wash down surface with fresh water and scrub with a stiff brush. Rinse with plenty of water. If surface is acidic (pH below 7), neutralize surface by washing with 1-2% ammonia solution. Allow surface to dry below 8% moisture content before coating.

Tinting:
Consult Chromascan® II Color Card for color availability. Most colors require that containers be slightly short filled to accomodate the addition of colorant. Actual coverage will depend upon amount of colorant added and should be taken into consideration when ordering. Some colors may require more than one coat for complete hiding.

Mixing:
Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Part A with a power agitator; (2) Combine entire contents of Part A and B and mix thoroughly with a power agitator.

Thinning:
Material is supplied at spray viscosity and normally needs no thinning. If thinning is necessary, thin up to 1 pint (473 ml) per gallon. Use Porter International T-24 Thinner above 50°F (10°C). Use Porter International T-4 Thinner below 50°F (10°C).

Application:
Apply by brush or spray. Apply at 4-5 mils (100-125 microns) which will give 1.5-2.0 mils (38-50 microns) dry film thickness.

Equipment:
Brush: inexpensive 4" (10 cm) wide commercial brush with short hair bristle.
Roller: use the *"All Purpose Roller Cover"*
Conventional Spray: DeVilbiss MBC-510 gun; F tip and 704 air cap; ⅜" (1.0 cm) ID material hose; double regulated pressure tank with oil and moisture separator.
Airless Spray: minimum 28:1 ratio pump; .011"-.015" (279-381 microns) orifice tip; ¼" (.6 cm) ID Teflon material hose.

Work Stoppages: *(Lunch, Breaks, etc.)*
Do not allow material to remain in hoses. Release pressure from pressure tank and disconnect material hose. Thoroughly flush hose and spray gun with T-24 Thinner and reconnect to tank. Maintain material in tank under constant low speed agitation, but do not repressurize tank until ready to resume work.

Cleanup:
Clean all equipment immediately after use with Porter International T-24 Thinner or Ketone solvents. Spray equipment requires flushing with either of these solvents. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency should depend upon amount sprayed, temperature, elapsed time including delay, etc.

Welding:
In the event welding or flame cutting is performed on metal coated with this product, do so in accordance with instructions in U.S.A. Standard Z 49.1, *"Safety in Welding and Cutting."* All welded, burned, or otherwise damaged areas should be repreparred to base metal and recoated as specified.

Safety:
This product (and any recommended thinners) contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safe usage, user is specifically directed to consult the current *"Material Safety Data Sheet"* for this product. When using this product in a confined space or closed area, consult the current OSHA, or ANSI bulletins on safety requirements.

Hydrhane® and Chromascan® II are registered trademarks

PI:165 (1/89)

All technical data furnished herein are true and accurate to the best of our knowledge. All products are offered and sold subject to Porter International's Standard Conditions of Sale. Published technical data and instructions are subject to change without notice.

General Offices
400 S. 13th Street
Louisville, KY 40203
(502) 589-9200

ALUMINUM OR STEEL REPRODUCTION OF FRONT PINTLE BARBETTE GUN-CARRIAGE AND CHASSIS FOR 10-INCH GUN (Rodman pattern m1861 - converted to 8-inch rifle).

The form and appearance of the gun-carriage and chassis will conform (except as noted below) to the attached drawings of Barbette Carriage for 10-inch Rodman Gun.

The gun-carriage as constructed will include:
Left and Right cheeks - each cheek consisting of inner and outer cheek plates, shoe, front cap, rear cap, trunnion bed, front and rear brace (between cheek plates).

Diagonal braces (2).
Front and rear bottom transoms.
Front top transom.
Guide hooks.
Axle boxes (2)
Axle.
Wheels (2) with handspike sockets.
Fulcrum elevating mechanism.

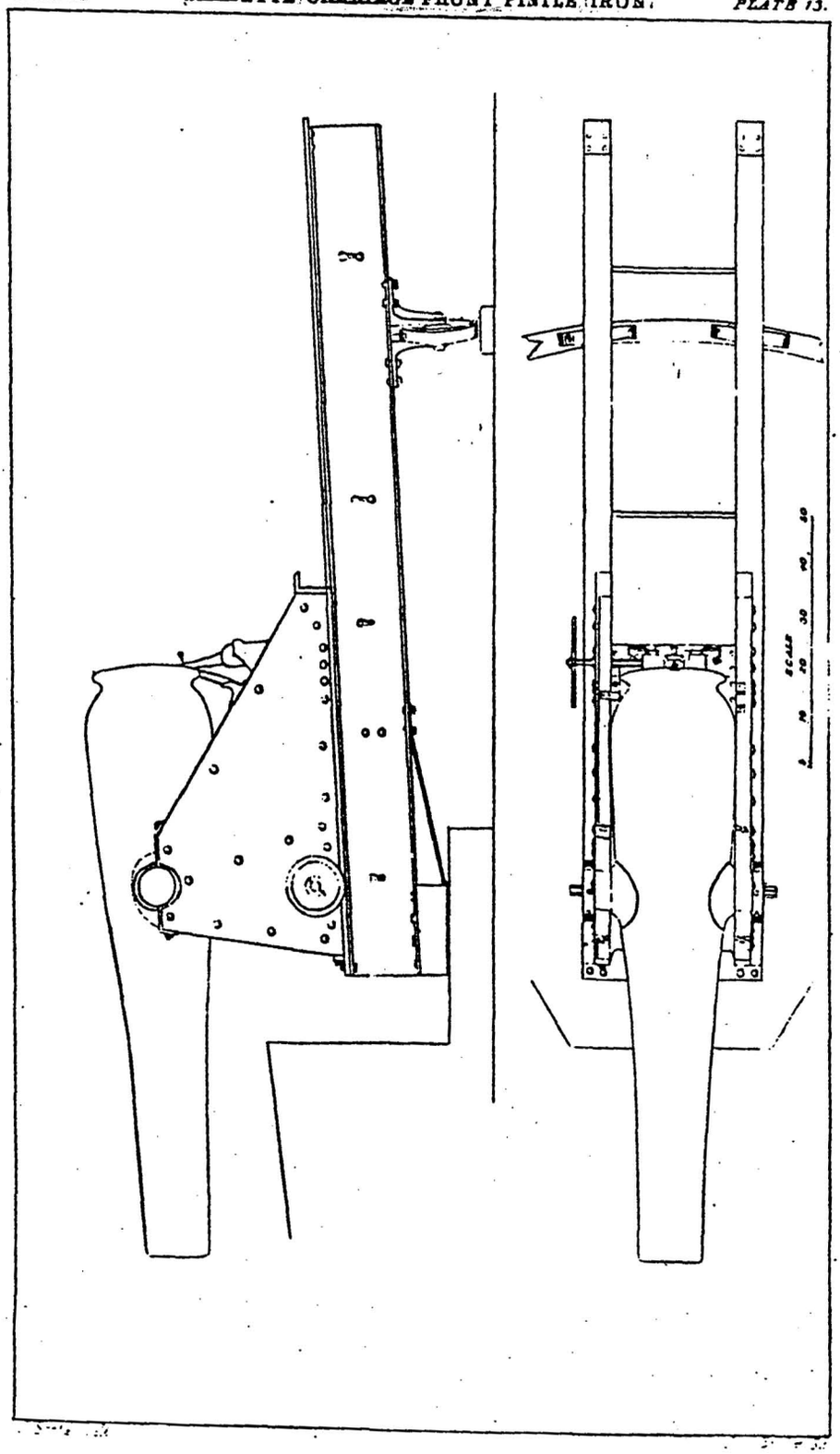
The chassis as constructed will include:
Left and right rails (15" x 5" I beams).
Front hurter (2).
Rear hurter (2).
Front, middle, and rear transom (3).
Diagonal braces (2).
Pintle transom.
Traverse wheel forks (2).
Traverse wheels (2).
Bolsters (2).
Front Axle (1 axle, 2 wheels).

Fasteners: Bolts are to be 3/4" with square head (if available) and hex nuts, ceramic coated (preferred) or galvanized. Bolt threads to be treated with anti-seize compound at final assembly/installation.

Location of rear traverse wheels on chassis will be governed by dimensions of existing c1890 gun platform at Ft. Barrancas. **Note:** Drawings will be provided to the successful vendor.

See attachments for dimensions and weight of 10-inch gun, drawings and photos of guns and carriages.

FINISH: Steel and iron components will be sandblasted to remove any rust bloom and to provide anchor profile for application of zinc primer with dry film thickness of 2.5 mils. Intermediate coat of high-build epoxy will be applied at 5 mils, and top coat of polyurethane (gloss or semi-gloss black) at 1.5 mils. See attached product data sheets for recommended coatings.
For aluminum, a seal coat of epoxy primer will be applied at 2 mils and a plyurethane top coat at 1.5 mils.


SCALE
0
10
20
30
40

8 INCH RIFLE No 1 converted, wrought iron tube.

Fig. 2.

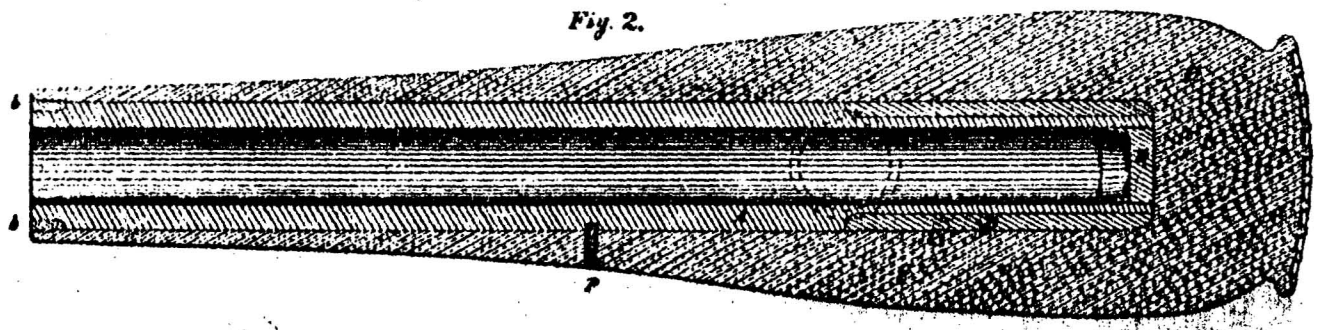
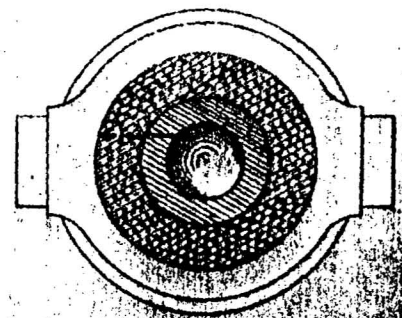


Fig. 4.



Section on ef.

Fig. 1.

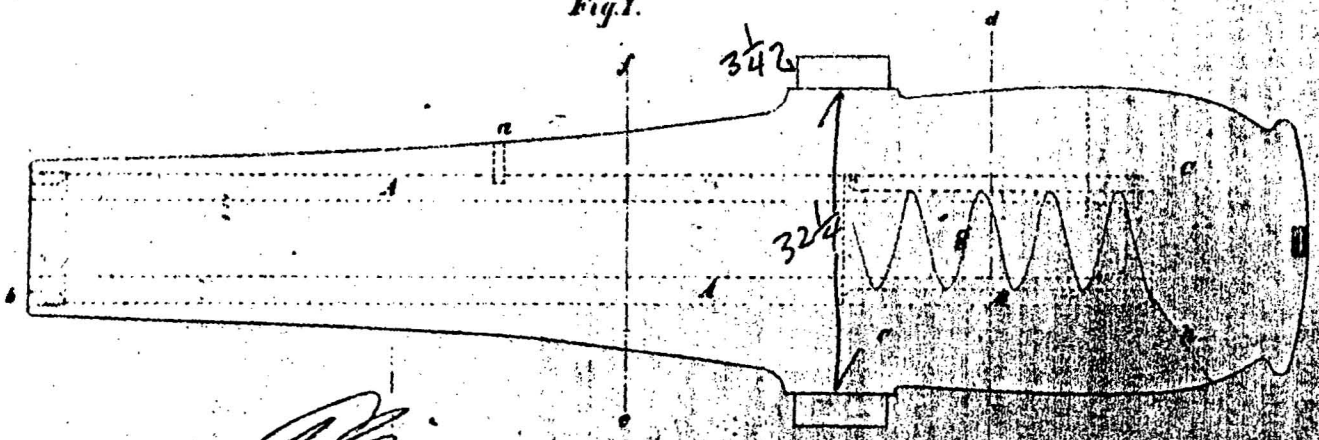
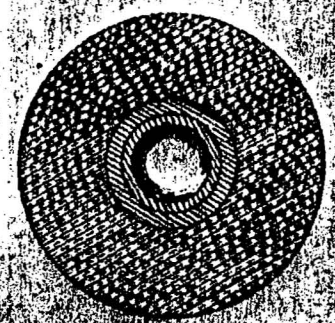


Fig. 3.



Section on cd.

Wrought iron.

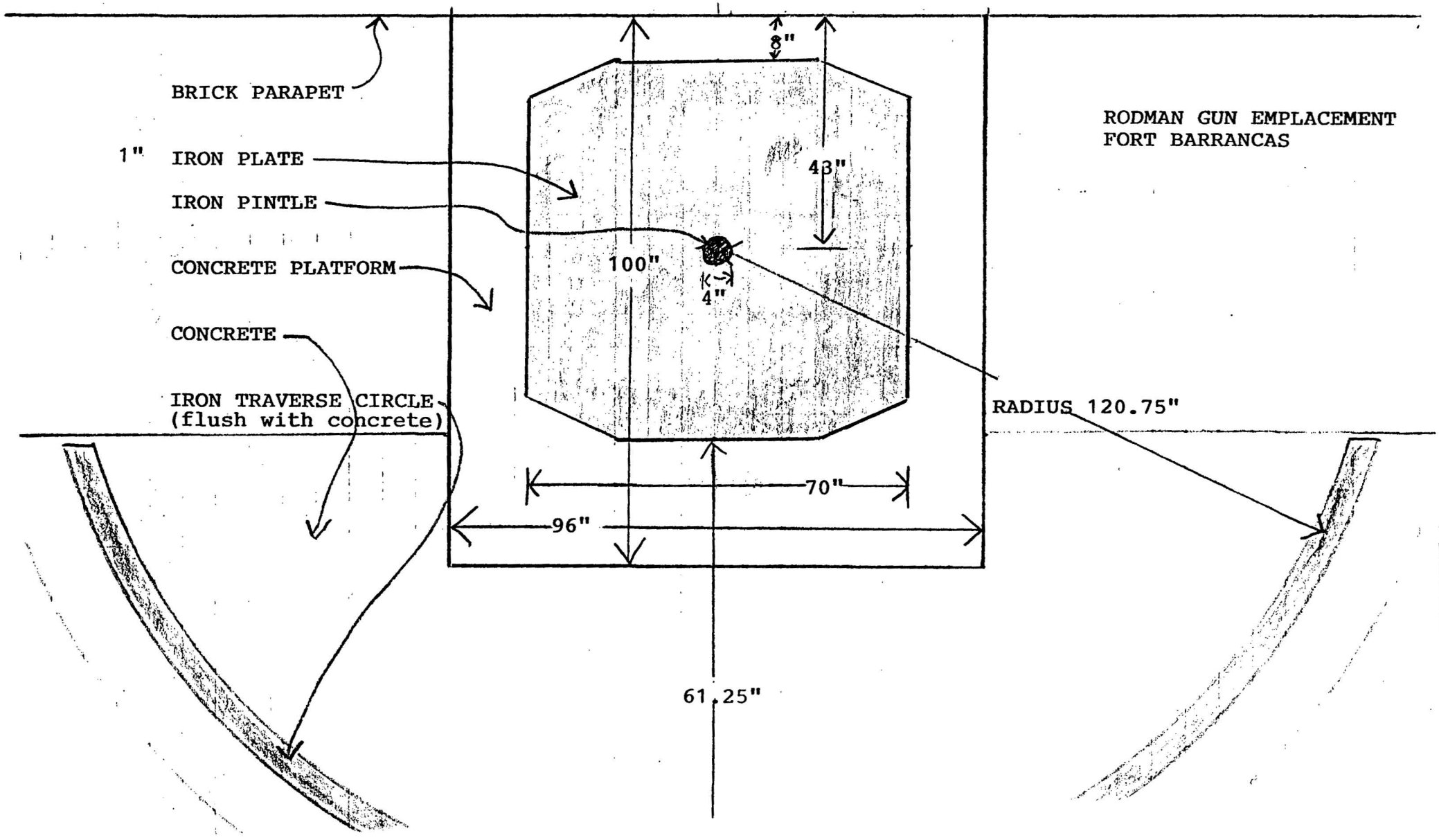
Cast iron.

C. Simpson
Bvt Col. late Superintendent
Construction Dept

$$38\tfrac{3}{4} - 6\tfrac{3}{4} = 32\tfrac{1}{4} \qquad 38\tfrac{7}{8} - 6\tfrac{4}{8} = 32\tfrac{3}{8}$$

RODMAN GUN EMPLACEMENT
FORT BARRANCAS

PINTLE DIAM. 4"



RODMAN GUN EMPLACEMENT
FORT BARRANCAS

PLAN TRANSMITTAL FORM

BELL STEEL COMPANY

P. O. BOX 12109
PENSACOLA, FLORIDA 32590
PHONE 432-1545

DATE 5-18-93

TO: GULF ISLANDS NATN'L SEASHORE

OUR ORDER NO. 4747-92

YOUR ORDER NO. _____

ATTN: MR. JEFF PARSONS

GENTLEMEN:

WE ARE SENDING YOU HEREWITH ☐ BELL STEEL CO. ☐ _____ (OTHER) DRAWINGS AS FOLLOWS:

DRAWING NO.	REVISION NO.	NO. COPIES	DESCRIPTION
ONE THRU 5	-	3	DETAILS
6		3	ASSEMBLY

THESE DRAWINGS ARE:

☒ 1. FOR YOUR APPROVAL (RETURN ONE COPY)*
☐ 2. FOR JOB USE.
☐ 3. RETURNED APPROVED.
☐ 4. RETURNED APPROVED AS NOTED. DRAWING TO BE RESUBMITTED FOR FINAL APPROVAL.
☐ 5. RESUBMITTED FOR YOUR FINAL APPROVAL. (RETURN ONE COPY)*
☐ 6. FOR QUOTATION OF:
☐ 7. RETURNED FOR YOUR FILES.
☐ 8. _____

REMARKS: BARBETTE CARRIAGE - 10" ROOMAN GUN

*FABRICATION WILL NOT BEGIN UNTIL RECEIPT OF APPROVED SHOP DRAWINGS.

YOURS VERY TRULY,
BELL STEEL COMPANY

BY D. E. HIGHTOWER

Porter International

33™

Alumiprep

Acid Pretreatment for Aluminum

A non flammable phosphoric acid based cleaner and prepaint conditioner which will lightly etch aluminum. The cleaning and conditioning chemical leaves the aluminum surface chemically clean and corrosion free.

PRODUCT DATA

Application Instructions

Consult Porter International Representative for system best suited to environment.

Limitations

Apply when material, surface and air temperatures are above 45°F (7°C). Do not use on high copper-bearing aluminum alloys or aluminum castings.

Surface Preparation

Treat only clean, dry surfaces. Remove all grease, oil, dirt or other foreign matter by solvent or detergent cleaning. Remove all loose or scaling paint and/or loose or heavy rust, rust scale or other corrosion products by hand or power tool cleaning.

FOR APPROVAL

JAN 0 8 1993

Dilution

Dilute one part Alumiprep 33 with 3 parts water by volume in a non-metallic container. One gallon of Alumiprep 33 will etch approximately 1000-1500 square feet. Allow for losses due to application methods, conditions and surface irregularities.

Application

Apply by spray, brush or dipping. Selection of the size area to be treated at one time will depend on method of application, condition of the metal surface, temperature, chemical dilution and part configuration. In a typical treatment, the Alumiprep 33 cleaning and conditioning chemical is in contact with the metal surface between one and two minutes. Alumiprep 33 should not be allowed to dry nor to reoxidize on a metal surface before the surface has been thoroughly rinsed. If drying does occur, rewet the surface with the diluted Alumiprop 33 prior to rinsing with clean water.

Note: Alumiprep 33 cleaning and conditioning chemicals aggressively attack and completely remove aluminum oxidation and corrosion, leaving a bright, clean metal surface. Removal of heavy corrosion may require scrubbing with a Scotch-Brite type pad.

Cleaning Sequence

Step 1 – Remove surface contamination.
Step 2 – Apply the diluted Alumiprep 33.
Step 3 – Allow the solution to react.
Step 4 – Thoroughly rinse the treated surface with water.
Step 5 – Dry the surface.

Cleanup

Flush all equipment immediately after use with clean water. Unused, diluted Alumiprep 33 can be returned to its original container for future use, or it should be immediately disposed of in a safe manner recommended for acidic materials.

Safety

This product (and any recommended thinners) contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safe usage, user is specifically directed to consult the current *"Material Safety Data Sheet"* for this product.

P8198 (1/89)

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General Offices
400 S. 13th Street
Louisville, KY 40203
502-588-8200

Porter International

4300

PRODUCT DATA

M.C.R.-43 Epoxy Primer

Polyamide-Epoxy

Service		A two component, rust-inhibitive primer for use on properly prepared steel surfaces. Exhibits excellent abrasion and chemical resistance. Offers fast dry and ease of application.
Typical Uses		Industrial, marine and process environments. Topcoat is required for more severe exposures. *Dry Temperture Resistance 200°F (93°C)*
		Fabricator fast recoat primer. Ideal for use in shops where the finish coat will be applied. Excellent primer for epoxy topcoats used in pulp and paper mills, waste water, chemical processing, refineries and food processing plants.
Color/Gloss	Color	Oxide Red. Gray - 4301.
	Sheen	Flat
Physical Constants	Volume Solids	48.1% ± 2%
	VOC	3.84 lbs/gal (460 g/ltr)
	Flash Point	Part A, 85°F (29°C); Part B, 85°F (29°C); Mixed 85°F (29°C) (P.M Closed Cup)
Application	Recommended Thickness	2.0 mils dry, 4.2 mils wet.
	Theoretical Coverage	(2.0 mils DFT) 385 sq ft/gal
	Method	Brush, roll or spray.
	Induction/ Sweat-in Time	30 minutes
	Thinner	T-3
	Compatibility	M.C.R.-43 Epoxy Primer 4300 is an excellent primer for epoxy, coal tar and polyurethane coatings.

Typical System Drying Time (hours) 4300/4361	75°F (24°C)	90°F (32°C)
50°F (10°C)	2	1
• to touch 8	6	2
• to handle 8	20	12
• to recoat * 30	24	16
Pot Life (hours) 30		

*Times listed above are for normal recoating situations. For fast recoat applications consult Porter International Fabricator Fast Recoat System Guide.

Unit Size	2 Gallon Unit (7.6 ltr)	10 Gallon Unit (37.8 ltr)
Part A	1 Gallon	5 Gallon
Part B 4300	1 Gallon	5 Gallon
Unit Shipping Weight	28 lbs (11.4 kg)	121 lbs (55 kg)
Storage Shelf Life	One year minimum from date of manufacture when maintained in protected storage at 40-100°F (4-38°C) (subject to reinspection thereafter).	
Regulatory Data USDA	Approved for incidental food contact surfaces	
VOC	3.84 lbs/gal (460 g/ltr)	

FOR APPROVAL
JAN 0 8 1993

4300

Application Instructions

Consult Porter International Representative for system best suited to environment

Limitations:
Apply in good weather when air and surface temperatures are above 50°F (10°C). Surface temperature must be at least 5°F (3°C) degrees above dew point. For optimum application properties, bring material to 70-80°F (21-27°C) temperature range prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage between 40 and 100°F (4-38°C).

Surface Preparation:
Paint only clean, dry surfaces. Remove all grease, oil, dirt, mildew or other foreign matter by solvent or detergent washing

Previously Painted Surfaces:
Remove all rust, rust scale, other corrosion products, loose or heavy chalk and loose or scaling paint by *"Hand or Power Tool Cleaning"* (SSPC-SP2 or 3 respectively). Sand or *"Brush Blast"* (SSPC SP7) any glossy areas until dull. Spot prime bare areas as recommended. To check compatibility apply coating to representative area of at least 25 square feet and allow to cure and age several weeks. Then inspect for adhesion failure, wrinkling, lifting, blistering or any other sign of incompatibility present. Coating work may then proceed.

Steel:
Apply to blasted steel unless otherwise specified. Blasting shall be done with a centrifugal wheel or compressed air blasting equipment, using proper abrasives to attain an average profile depth of 1.5 mils (38 microns). Do not reuse sand or flint abrasives. Shot abrasives must be thoroughly clean of contamination before reuse. Blow dust and grit from surface with clean, dry air. Coat within 8 hours or before rust contamination occurs

Immersion Service:
Steel Structures Painting Council No. 5 *"White Metal Blast Cleaning"* (SSPC SP5). Round all welds, sharp edges and prominences to a smooth curve and remove all weld spatter before blasting.

Non-Immersion Service:
Steel Structures Painting Council No. 6 *"Commercial Blast Cleaning"* (SSPC-SP6).

Galvanize:
Steel Structures Painting Council No. 7 *"Brush Blast Cleaning"* (SSPC-SP7) or *"Acid Etch"* with Galvaprep as per manufacturer's printed instructions.

Mixing:
Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Part A with a power agitator; (2) Agitate Part B with a power agitator; (3) Combine entire contents of Part A and B and mix thoroughly with a power agitator. Allow the coating a 60 minute sweat-in period before using at material temperatures below 70°F (21°C)

Thinning:
Material is supplied at spray viscosity and normally needs no thinning. If thinning is necessary, thin up to ½ pint (237 ml) per gallon with Porter International T-3 Thinner.

Application:
Apply by conventional or airless spray. Application by other methods, brush or roller, may require more than one coat. Apply M.C.R.-43 Epoxy primer at 4.2 mils (105 microns) which will give 2.0 mils (50 microns) dry film thickness

Equipment:
Brush: inexpensive 4" (10 cm) wide commercial brush.
Roller: use the *"All Purpose Roller Cover."*
Conventional Spray: DeVilbiss MBC-510 gun; E tip and 704 air cap, ⅛" (1.0 cm) ID material hose; double regulated pressure tank with oil and moisture separator.
Airless Spray: minimum 28:1 ratio pump; .015" (381 microns) orifice tip; ¼" (.6 cm) ID Teflon material hose.

Work Stoppages: *(Lunch, Breaks, etc.)*
Do not allow material to remain in hoses. Release pressure from pressure tank and disconnect material hose. Thoroughly flush hose and spray gun with Porter International T-3 Thinner and reconnect to tank. Maintain material in tank under constant low speed agitation, but do not repressurize tank until ready to resume work.

Cleanup:
Clean all equipment immediately after use with Porter International T-3 Thinner or Ketone solvents. Spray equipment requires flushing with either of these solvents. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency should depend upon amount sprayed, temperature, elapsed time including delay, etc.

Welding:
In the event welding or flame cutting is performed on metal coated with this product, do so in accordance with instructions in U.S.A. Standard Z 49.1, *"Safety in Welding and Cutting."* All welded, burned, or otherwise damaged areas should be reprepared to base metal and recoated as specified.

Safety:
This product (and any recommended thinners) contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safe useage, user is specifically directed to consult the current *"Material Safety Data Sheet"* for this product. When using this product in a confined space or closed area, consult the current OSHA, or ANSI bulletins on safety requirements.

PI8138 (1/89)

The technical data furnished herein are true and accurate to the best of our knowledge. All products are offered and sold subject to Porter International's Standard Conditions of Sale. Published technical data and instructions are subject to change without notice

General Offices
400 S. 13th Street
Louisville, KY 40203
502 (589 9200

Porter International

4610

PRODUCT DATA

Hythane®

Aliphatic Polyurethane

A two component, interior/exterior finish coat for use over properly prepared steel and masonry surfaces. Exhibits excellent abrasion and chemical resistance.

Service

Severe industrial, marine and process environments exposed to acids, alkalis, salts and solvents. Exhibits excellent gloss and color retention in exterior exposures. *Dry Temperature Resistance 200°F (93°C)*

Typical Uses

Gloss topcoat for transportation equipment, handrails, pipe racks, tank exteriors, process vessel exteriors in chemical and petroleum plants, marine environments and pulp and paper mills.

Color/Gloss

Color: White, Black - 4602. Also available in Chromascan® II colors. Special colors can be matched to meet customer specifications. OSHA colors available.

Sheen: Gloss

Physical Constants

Volume Solids	43.4% ± 2%
VOC	4.08 lbs/gal (489 g/ltr)
Flash Point	Part A, 79°F (26°C); Part B, 91°F (33°C); Mixed, 79°F (26°C) (Setaflash)

Application

Recommended Thickness	1.5 mils dry, 3.5 mils wet.
Theoretical Coverage	(1.5 mils DFT) 464 sq ft/gal
Method	Brush, roll or spray
Induction/ Sweat-in Time	None
Thinner	T-24 (use T-4 below 50°F)
Compatibility	Hythane® 4610 is an excellent high gloss finish coat over epoxy primer/intermediate coats.

Typical System Drying Time (hours)	308/4351/4610 50°F (10°C)	75°F (24°C)	90°F (32°C)
• to touch	2	¾	¼
• to handle	4	2	1
• to recoat	24	12	4
Pot Life (hours)	24	12	4

Unit Size

	1 Gallon Unit (3.8 ltr)	5 Gallon Unit (18.9 ltr)
Part A	1 Gallon (short filled)	5 Gallon (short filled)
Part B 4645	1 Pint (short filled)	½ Gallon (short filled)

Unit Shipping Weight

	11 lbs (5 kg)
	54 lbs (25 kg)

Storage

Shelf Life: One year minimum from date of manufacture when maintained in protected storage at 40-100°F (4-38°C) (subject to reinspection thereafter).

Regulatory Data

USDA: Approved for incidental food contact surfaces.

VOC: 4.08 lbs/gal (489 g/ltr)

FOR APPROVAL
JAN 0 8 1993

4610

Application Instructions

Consult Porter International Representative for system best suited to environment.

Limitations:
Apply in good weather when air and surface temperatures are above 35°F (2°C). Surface temperature must be at least 5°F (3°C) degrees above dew point. For optimum application properties, bring material to 70-80°F (21-27°C) temperature range prior to mixing and application. Unmixed material (in closed containers) should be maintained in protected storage between 40 and 100°F (4-38°C).

Surface Preparation:
Paint only clean, dry surfaces. Remove all grease, oil, dirt or other foreign matter by solvent or detergent washing.

Unpainted Surfaces:
Prepare surface and prime, seal, fill or otherwise coat.

Previously Painted Surfaces:
Remove all rust, rust scale, other corrosion products, loose or heavy chalk and loose or scaling paint by *"Hand or Power Tool Cleaning"* (SSPC-SP7 or 3 respectively). Sand or *"Brush Blast"* (SSPC-SP7) any glossy areas until dull. Spot prime bare areas as recommended. To check compatibility apply coating to representative area of at least 25 square feet and allow to cure and age several weeks. Then inspect for adhesion failure, wrinkling, lifting, blistering or any other sign of incompatibility present. Coating work may then proceed.

Concrete:
(1) *"Brush-Blast Cleaning"* (SSPC-SP7) can be used to prepare the concrete by removing all foreign matter and provide a tooth for bonding. Remove all of the dust from the surface before starting the application of the coating.
(2) *"Acid-Etching"* Surfaces shall be clean, dry and free from curing compounds, oil, grease, dirt, chalk or previously applied coatings. All surfaces shall be acid etched with Muriatic Acid solution (1 part acid to 7 parts water). Apply solution by brush or spray until surface is thoroughly wetted. When bubbling ceases (5-10 minutes), wash down surface with fresh water and scrub with a stiff brush. Rinse with plenty of water. If surface is acidic (pH below 7), neutralize surface by washing with 1-2% ammonia solution. Allow surface to dry below 8% moisture content before coating.

Tinting:
Consult Chromascan® II Color Card for color availability. Most colors require that containers be slightly short filled to accomodate the addition of colorant. Actual coverage will depend upon amount of colorant added and should be taken into consideration when ordering. Some colors may require more than one coat for complete hiding.

Mixing:
Material is supplied in 2 containers as a unit. Always mix a complete unit in the proportions supplied. (1) Agitate Part A with a power agitator; (2) Combine entire contents of Part A and B and mix thoroughly with a power agitator.

Thinning:
Material is supplied at spray viscosity and normally needs no thinning. If thinning is necessary, thin up to 1 pint (473 ml) per gallon. Use Porter International T-24 Thinner above 50°F (16°C). Use Porter International T-4 Thinner below 50°F (16°C).

Application:
Apply by brush or spray. Apply at 4-5 mils (100-125 microns) which will give 1.5-2.0 mils (38-50 microns) dry film thickness.

Equipment:
Brush: inexpensive 4" (10 cm) wide commercial brush with short hair bristle.
Roller: use the *"All Purpose Roller Cover"*
Conventional Spray: DeVilbiss MBC-510 gun; F tip and 704 air cap; ⅜" (1.0 cm) ID material hose; double regulated pressure tank with oil and moisture separator.
Airless Spray: minimum 28:1 ratio pump; .011"-.015" (279-381 microns) orifice tip; ¼" (.6 cm) ID Teflon material hose.

Work Stoppages: *(Lunch, Breaks, etc.)*
Do not allow material to remain in hoses. Release pressure from pressure tank and disconnect material hose. Thoroughly flush hose and spray gun with T-24 Thinner and reconnect to tank. Maintain material in tank under constant low speed agitation, but do not repressurize tank until ready to resume work.

Cleanup:
Clean all equipment immediately after use with Porter International T-24 Thinner or Ketone solvents. Spray equipment requires flushing with either of these solvents. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency should depend upon amount sprayed, temperature, elapsed time including delay, etc.

Welding:
In the event welding or flame cutting is performed on metal coated with this product, do so in accordance with instructions in U.S.A. Standard Z 49.1, *"Safety in Welding and Cutting."* All welded, burned, or otherwise damaged areas should be reprepared to base metal and recoated as specified.

Safety:
This product (and any recommended thinners) contains solvents and/or other chemical ingredients. Adequate health and safety precautions should be observed during all storage, handling, use and drying periods. For safe useage, user is specifically directed to consult the current *"Material Safety Data Sheet"* for this product. When using this product in a confined space or closed area, consult the current OSHA, or ANSI bulletins on safety requirements.

Urethane® and Chromascan® II are registered trademarks

P-5165 (1/89)

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General Offices
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MOUNTING OF HISTORIC ORDNANCE AT FORT PICKENS AND FORT BARRANCAS

SCOPE OF WORK (rev. 2AUG1993)

JOB 1:
Objective: At Fort Pickens, lift two Rodman cannon tubes (weight approx. 16,000 lbs each) from concrete pedestals and set, upside down, on blocks, for preservation work on undersides.
Transport one historic iron seacoast gun (weight approx. 6000 lbs.) from Fort Pickens to Fort Barrancas (at NAS Pensacola).
At Fort Barrancas, lift historic seacoast gun over fort wall and mount on replica barbette carriage on east rampart.
[see attached drawings for existing location of ordnance, and proposed location for mounting]

TASKS:

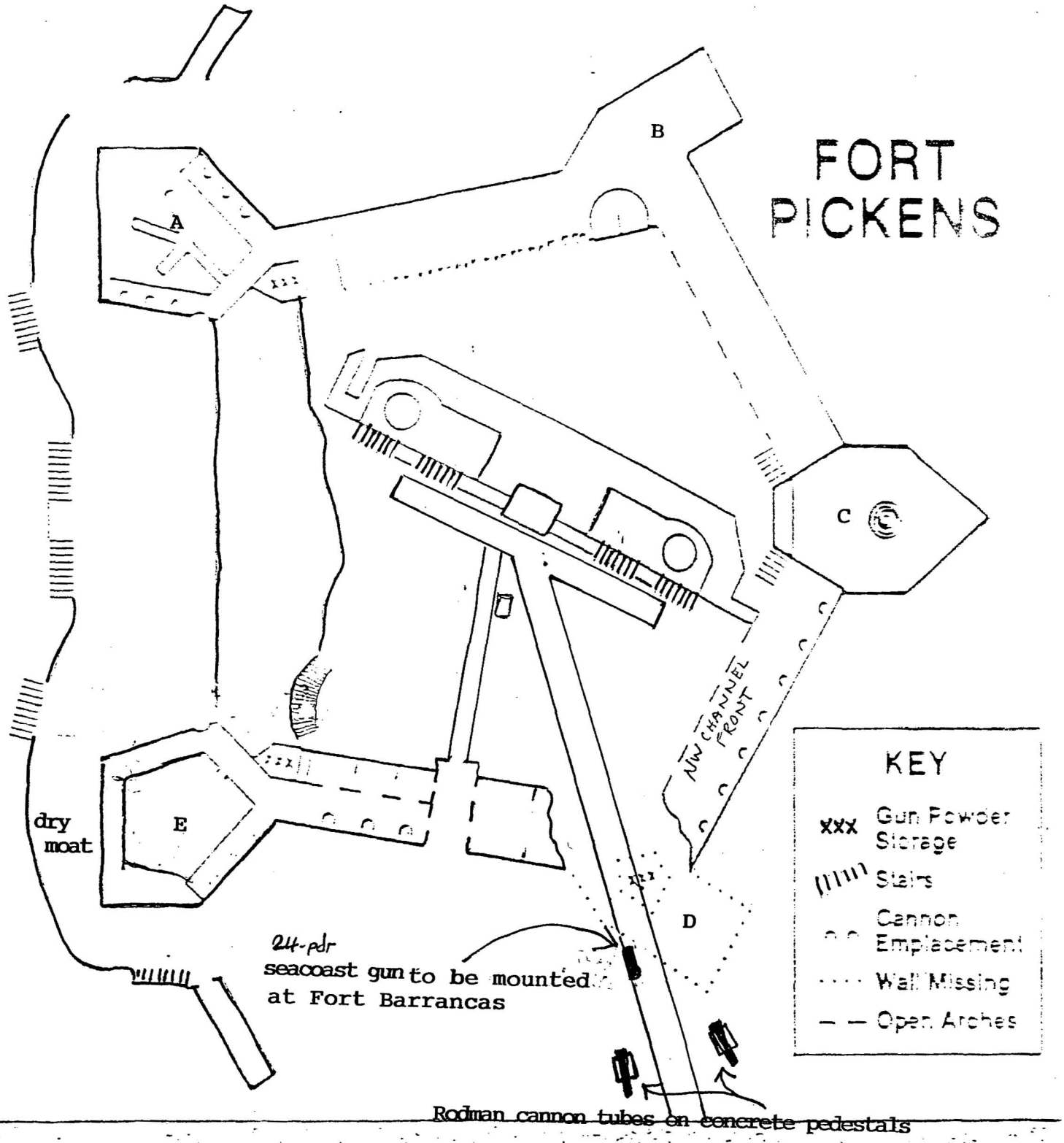
1. At Fort Pickens, lift two Rodman cannon tubes from concrete pedestals and set, bottom side up, on adjacent wood blocks. [blocking provided by NPS]

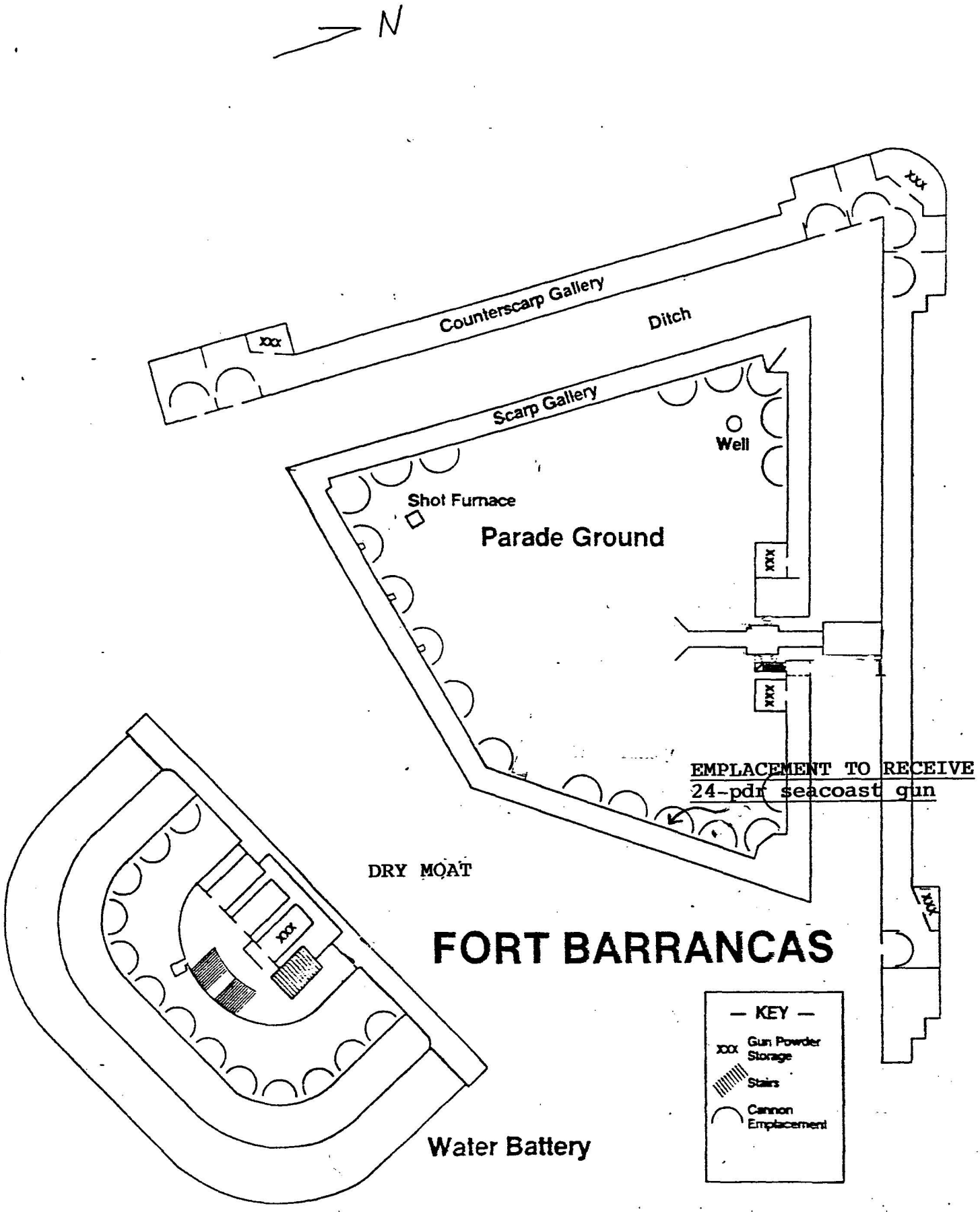
2. Transport one historic iron 24-pdr seacoast cannon tube (weight 6000 lbs) from Fort Pickens to Fort Barrancas (distance about 30 miles).

3. At Fort Barrancas, move 24-pdr cannon tube to east wall of fort and lift tube over wall (approx. 30' high and 30' wide) to emplacement on east rampart.

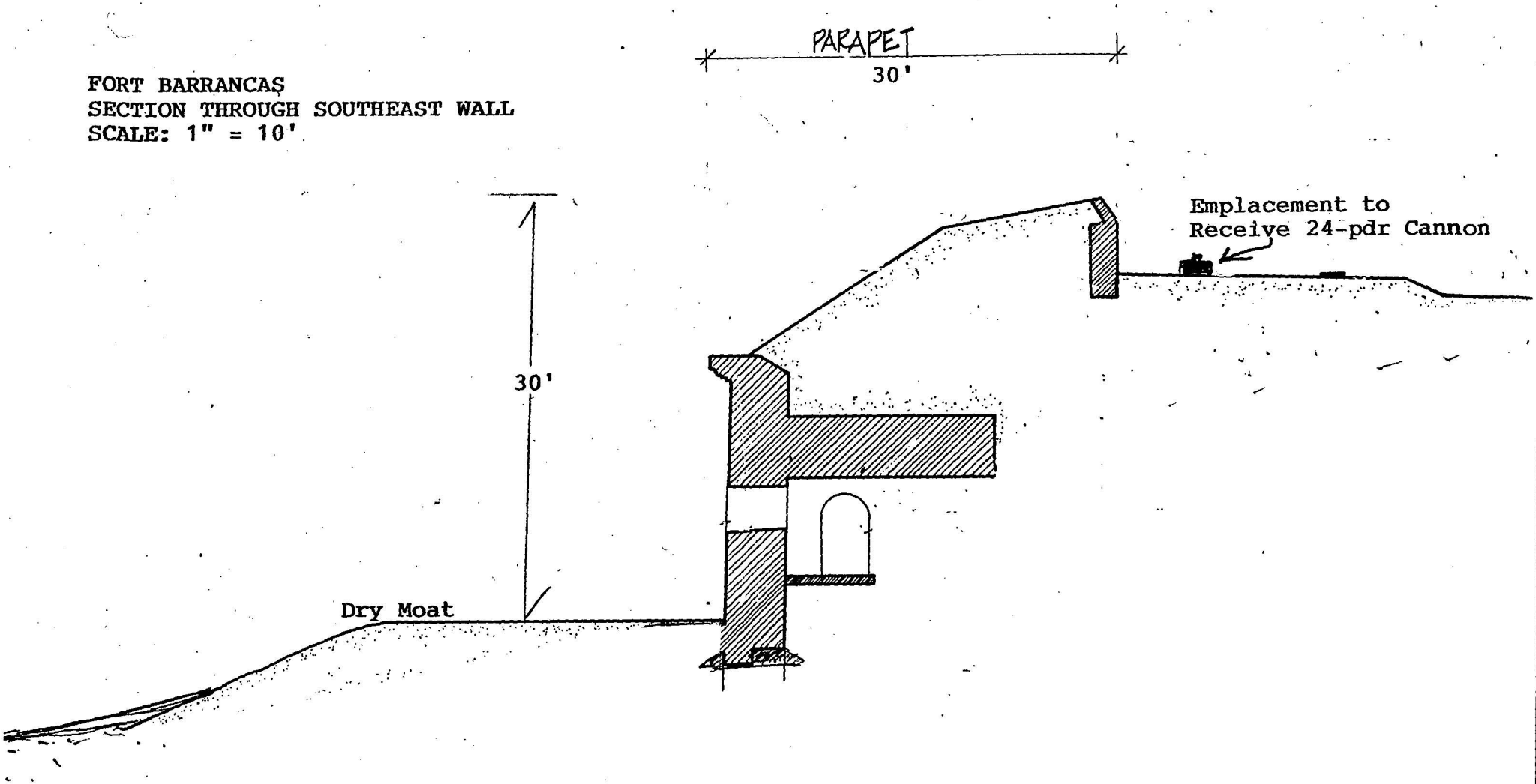
4. Mount tube on replica gun carriage.

NOTE: Nylon, or equivalent, slings must be used for lifting historic ordnance.
Care must be taken at Fort Barrancas to avoid or minimize damage to irrigation system pumps, lines and heads.


FORT PICKENS
A
B
C
D
E
dry moat
NW CHANNEL FRONT
24-pdr seacoast gun to be mounted at Fort Barrancas
Rodman cannon tubes on concrete pedestals
KEY
XXX Gun Powder Storage
Stairs
Cannon Emplacement
Wall Missing
Open Arches


N
Counterscarp Gallery
Ditch
Scarp Gallery
Well
Shot Furnace
Parade Ground
EMPLACEMENT TO RECEIVE
24-pdr seacoast gun
DRY MOAT
FORT BARRANCAS
Water Battery
— KEY —
Gun Powder Storage
Stairs
Cannon Emplacement

FORT BARRANCAS
SECTION THROUGH SOUTHEAST WALL
SCALE: 1" = 10'



JOB 2:

OBJECTIVE: Lift, move and set concrete pedestal (weight approx. 6500 lbs.) from in front of Fort Pickens to prepared site in center of fort parade ground.
Lift, move and set one Rodman cannon tube (weight approx. 16,000 lbs.) on above pedestal.

Lift, move and set replica Rodman gun carriage (weight approx. 1000 lbs.) on emplacement on top of NW channel front of Fort Pickens.
Lift, move and set one Rodman cannon tube (weight approx. 16,000 lbs.) on above replica gun carriage.

[see attached drawings of pedestal, existing locations of ordnance and pedestal, and proposed locations for mounting]

TASKS:

1. Lift, move and set concrete pedestal/slab on NPS prepared site on parade ground of Fort Pickens. Distance approx. 100 yds.

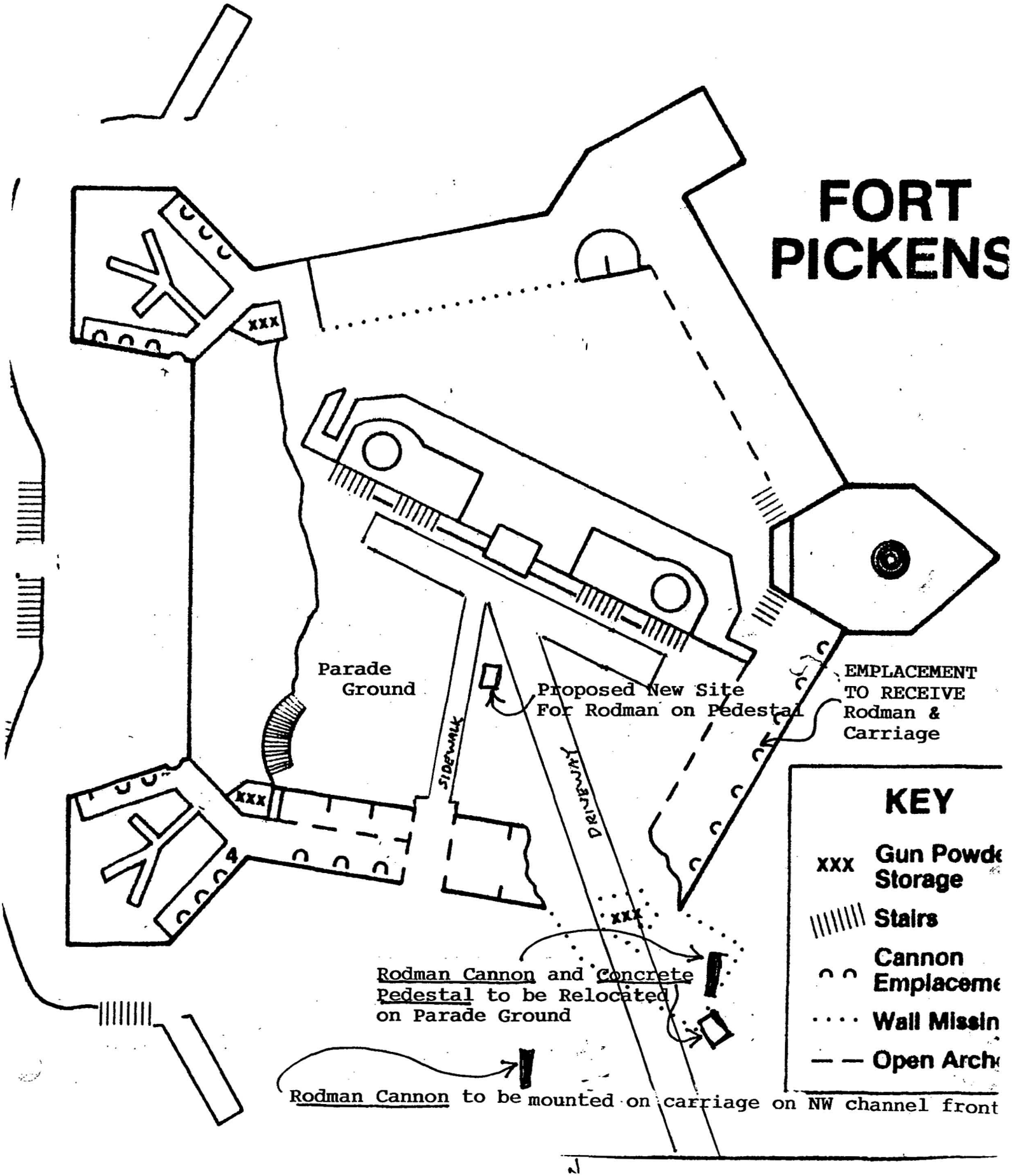
2. Lift, move and set one 16,000 lb Rodman cannon tube on concrete pedestal in parade ground of Fort Pickens. Distance approx. 100 yds.

3. Lift and move aluminum gun carriage/chassis (replica) to dry moat of Fort Pickens, vicinity south end of northwest channel front. Distance approx. 200 yds. Moat has sand fill surface.

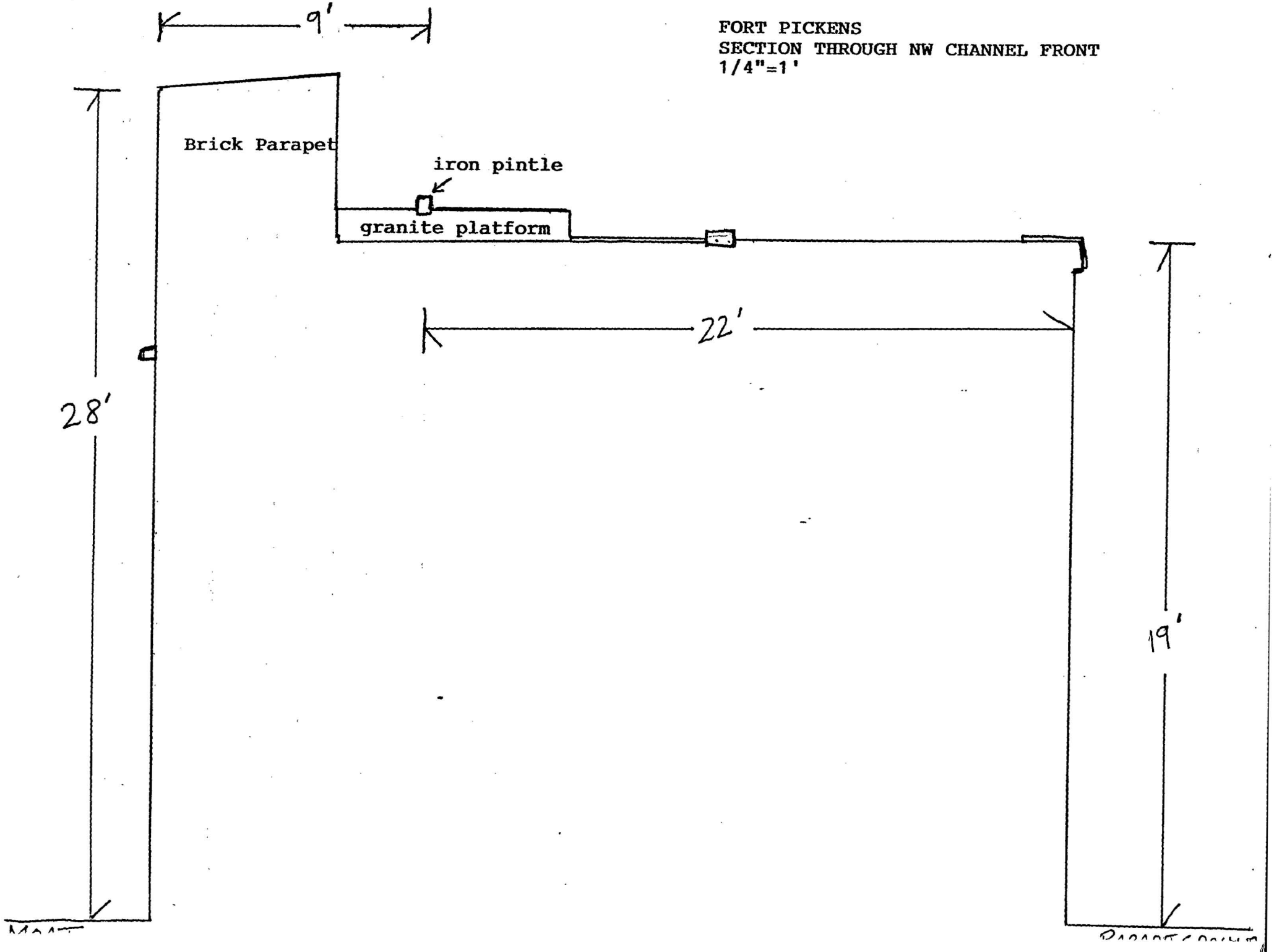
4. Lift carriage over fort wall (28' high) and set on emplacement (approx. 10' inside wall).

5. & 6. Repeat process with 16,000 lb. Rodman cannon tube, setting tube on carriage.

NOTE: Nylon, or equivalent, slings must be used for lifting ordnance.
NPS will prepare pedestal for moving, and site for placement.
Contractor to provide necessary rigging for lifting and setting pedestal.


FORT PICKENS
XXX
XXX
XXX
Parade Ground
Proposed New Site For Rodman on Pedestal
EMPLACEMENT TO RECEIVE Rodman & Carriage
SIDEWALK
DRIVEWAY
Rodman Cannon and Concrete Pedestal to be Relocated on Parade Ground
Rodman Cannon to be mounted on carriage on NW channel front
KEY
XXX Gun Powde Storage
Stairs
Cannon Emplaceme
Wall Missin
Open Arch

FORT PICKENS
SECTION THROUGH NW CHANNEL FRONT
1/4"=1'



A

B

C

D

Front 1

Front 2

Front 3

Front 4

Front 5

Same as No. 1

Same as No. 1

Magazine Floor area 1897 sq ft

Magazine Floor area 1615 sq ft

12" Ct. Steel R.Ds. Model of 1895, mounted on Carriage, Model of 1897, L.F. disappearing carriage Ready for service.

12" Ct. Steel R.Ds. Model of 1895, mounted on Carriage, Model of 1897, L.F. disappearing carriage Ready for service.

4 guns with 15° reinforced with shims 20° traverse limited 270° the remaining guns mounted nearly the reverse.

Gateway

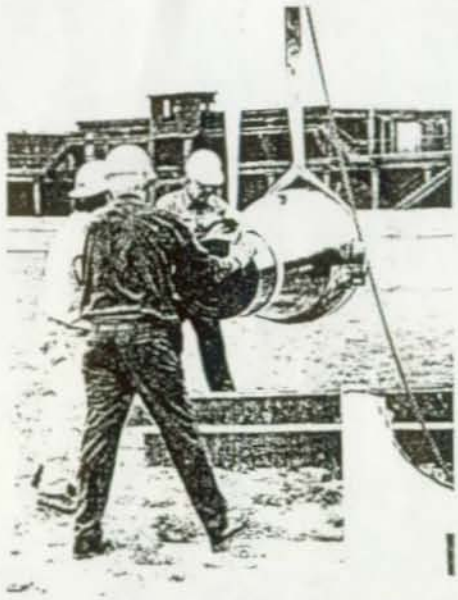
Gateway

...ment.
...on hand for those recently sold.

U. S. Engineer Office
Montgomery Ala. Dec 31st 1900
To accompany armament report of this date.
W. [illegible]
Capt. Corps of Engineers U.S.A

Fort Pickens
Pensacola Harbor Fla.

Scale 1in = 30ft



(Left) Workers from Tex Edwards Inc. move a seacoast cannon at Fort Pickens before loading a 6,000 pounder to move to NAS.

(Right) Precariously loaded on a trailer, the historic Rodman cannon is transported through downtown Pensacola en route to Fort Barrancas.



Photo feature by Scott D. Hallford

6,000 pound history

There's an added piece of history to the ramparts of Fort Barrancas that makes the installation look much the way it did more than 100 years ago.

Through the efforts of the Gulf Islands National Seashore, a 6,000 pound, Rodman seacoast cannon points menancingly, yet quietly, in a southeasterly direction toward Fort Pickens on Santa Rosa Island, just as cannons of its type did during the Civil War when Union forces held Pickens and Confederate forces held Barrancas.

"The project was suggested by our 14-member advisory commission," said Judy Stice, management assistant with Gulf Islands National Seashore.

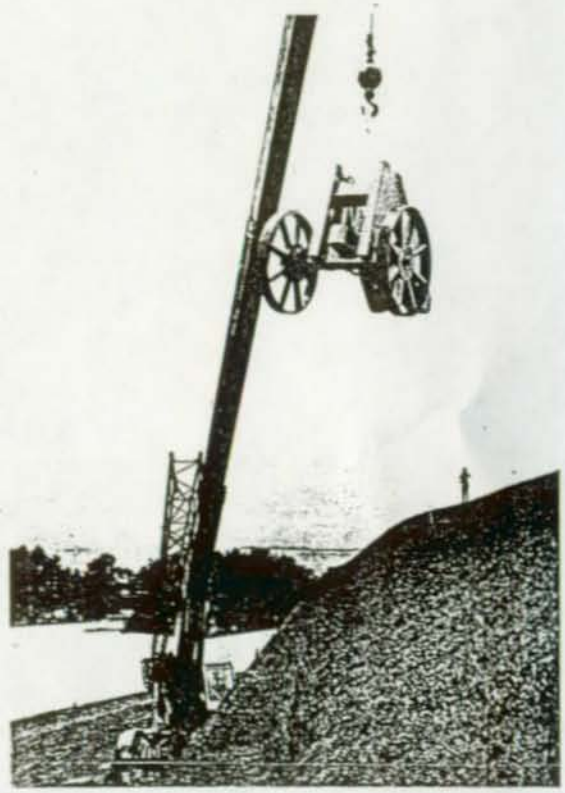
"It was mentioned that it would be nice to have cannons on top of the forts to give the parks more effect, more the way they looked when operational," she said.

Bell Steel of Pensacola constructed the $19,425 reproduction of an 1840 front pintle barbette gun carriage and chassis.

Tex Edwards Inc. was contracted to move the cannon tube from Fort Pickens last Friday to Fort Barrancas, and lift the carriage and gun over the east wall of the fort by crane to mount them.

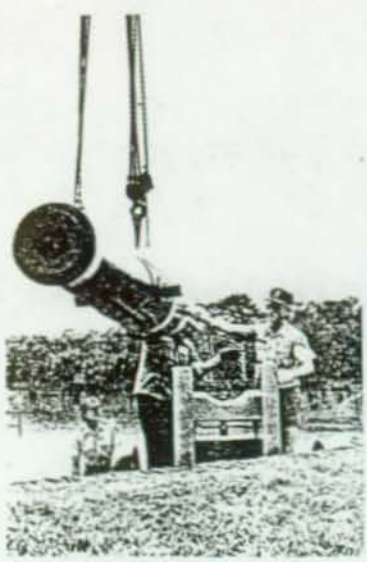
In late September, another carriage is expected to be completed that will hold a 16,000 pound seacoast gun at Fort Pickens. That gun will face in a northwesterly direction toward Fort Barrancas.

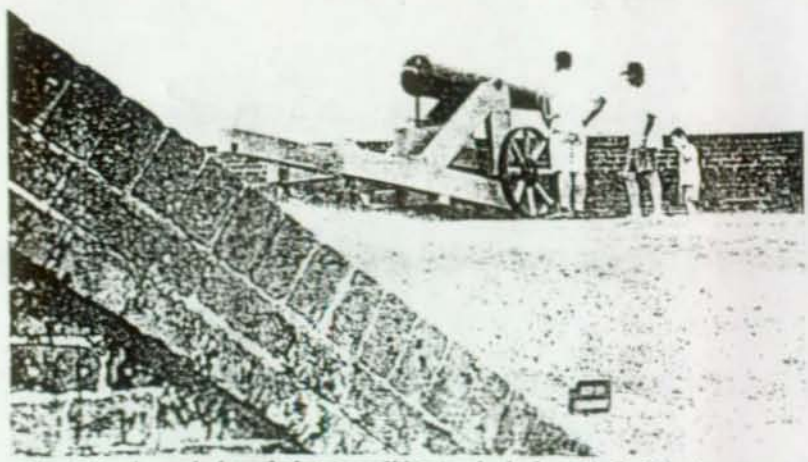
The guns will be silent, but are a vivid reminder of the history of the Pensacola area.



(Right) Part of a replica, one-ton gun carriage is hoisted over the east wall at Fort Barrancas. The carriage is a non-historic (not exact detail) reproduction of a circa 1840 cannon mount.

(Below) Methodically placing the 6,000-pound cannon tube in the carriage was an important and challenging feat.





(Above) After thousands of pounds of moving and lifting in only a few hours, the Tex Edwards company and Gulf Islands National Seashore park rangers had the cannon at Fort Barrancas ready for its first look by tourists.