



**MODEL BRIDGE-TIMBER TRESTLE,  
CLASS 50/80 (BOOKLET)**

**GTA 05-04-032**

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# MODEL BRIDGE-TIMBER TRESTLE, CLASS 50/80 (BOOKLET)

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*\*This GTA supersedes TM 5-260K, 21 June 1948.*

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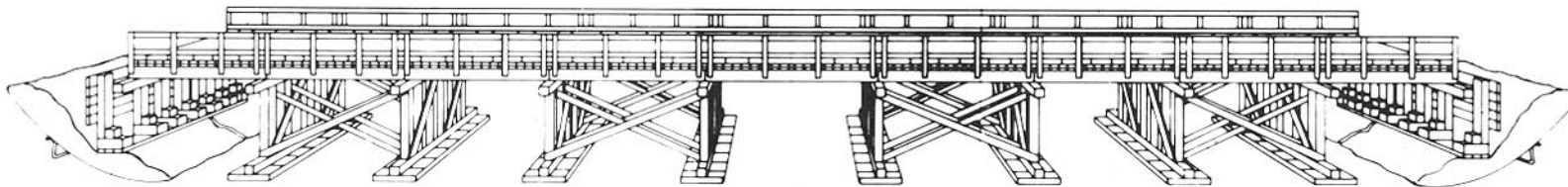
The word "he" or "his" in this publication is intended to include both the masculine and feminine genders and any exception to this will be so noted.

## INTRODUCTION

This GTA describes how to operate and maintain the Model Bridge Training Aid, Timber Trestle, Class 50/80.

# DESCRIPTION

Bridge Model Kit, Training Aid, Timber Trestle, Class 50/80 (two-way class 50; one-way class 80), on a scale of 1 to 12, is a Department of the Army approved training aid. It is designed for demonstrational use by instructors, and for practical work by students in classes of from 30 to 40 students. The model is not designed for demonstrational or practical use in capacity or physical tests. It weighs, including chests, about 210 pounds. When erected, its overall dimensions are: length-11 feet 4 inches; width-2 feet 10 inches; height-1 foot 2 inches. Completely assembled, it consists of 9 spans (fig. 1).



*Figure 1. An assembled model of a timber trestle bridge, class 50/30.*

The major assemblies are two abutments, eight intermediate trestle bents, and the superstructure. Table 1 lists the individual component parts of the kit, number of each furnished, location of parts within the chests, breakdown of components for each major assembly, and dimensions of these prototype parts. The column headed "Storage in Chest" refers to the schematic diagram of the chest, shown in figure 2. Spare components are indicated by note "Number per kit" 2 in table 1.

The kit is packed in two compartmented chests; see figure 2 for layout of chest interiors, and table 1 for contents of each compartment.

To aid the instructor in his presentation, one of each of the major component parts is painted an identifying color. In a separate container, three large-scale charts in corresponding colors show the construction details of the three types of major assemblies.

Table 1. Useful Data on Kit Components.

Nomenclature	Component parts		Number of component parts required for each major assembly					Prototype size
	Number per kit	Storage in chest <sup>1</sup>		Abutment	Trestle bent	Superstructure		
		Chest No.	Compartment			Abutment span	Trestle span	
Abutment, simulated/ (earth fill)	4	2-B	Q (2) R (2)	1 1				
Block, anchor, abutment	20 <sup>2</sup>	2-B	S	8	---	---	---	6"x8"x0'-10"
Block, bearing, abutment	18 <sup>2</sup>	2-T	B	8	---	---	---	10"x10"x2'-0"

Table 1. Continued

Nomenclature	Component parts			Number of component parts required for each major assembly				Prototype size
	Number per kit	Storage in chest <sup>1</sup>		Abutment	Trestle bent	Superstructure		
		Chest No.	Compartment			Abutment span	Trestle span	
Bracing, longitudinal <sup>3</sup>	32	2-T	K	5	---	---	---	4"x8"x16'-6"
Bracing, transverse/(long)	16	1-B	6	---	2	---	---	4"x8"x19'-0"
Bracing, transverse/(short)	16	2-T	G	---	2	---	---	4"x8"x14'-9"
Cap, abutment (long)	2	2-T	D	1	---	---	---	10"x10"x16'-0"
Cap, abutment (short)	2	2-T	S	1	---	---	---	10"x10"x12'-0"
Cap, bent (long)	8	1-B	F	---	1	---	---	12"x12"x16'-0"
Cap, bent (short)	8	1-T	B	---	1	---	---	12"x12"x12'-0"
Curb	18	2-T	M	---	---	2	2	6"x6"x15'-0"
Deck	130 <sup>2</sup>	1-T	D	---	---	14	14	3"x12"x24'-0"
Footing, grillage	24	1-T	A	---	3	---	---	4'-0"x8'-6"
Handrail	20 <sup>2</sup>	2-T	P	---	---	2	2	2"x6"x15'-0"
Nut, #5-40, hex. brass	634 <sup>2</sup>	2-B	V	34	17	14	12	
Pin, 3/4-inch long	1060 <sup>2</sup>	2-B	V	62	50	43	42	
Plank, bulkhead, abutment/(long)	10	2-T	F	5	---	---	---	4"x12"x13'-0"
Plank, bulkhead, abutment/(short)	20	2-T	G	10	---	---	---	4"x12"x10'-0"

Table 1. Continued

Nomenclature	Component parts			Number of component parts required for each major assembly				Prototype size
	Number per kit	Storage in chest <sup>1</sup>		Abutment	Trestle bent	Superstructure		
		Chest No.	Compartment			Abutment span	Trestle span	
Pliers, needle nose	3	2-B	Y					
Post, bearing, abutment	12	2-T	C	6	---	---	---	10"x10"x3'-3"
Post, bent	48	2-T	H	---	6	---	---	12"x12"x7'-0"
Post, handrail	60 <sup>2</sup>	2-T	O	---	---	7	6	4"x4"x4'-0"
Post, wing, abutment	4	2-T	E	2	---	---	---	6"x8"x5'-11"
Riser, curb	56 <sup>2</sup>	2-T	N	---	---	5	6	6"x6"x3'-0"
Riser, curb, end	4	2-B	T	---	---	2	---	6"x"x1'-9"
Riser, post, handrail	60 <sup>2</sup>	2-B	U	---	---	7	6	6"x6"x0'-9"
Scab	36 <sup>2</sup>	2-T	L	---	4	---	---	3"x8"x3'-0"
Screw, machine, RH,/ #5-40x¾-in.	160 <sup>2</sup>	1-B	V	---	---	3	6	
Screw, machine, RH,/ #5-40 x 1-in	100 <sup>2</sup>	2-B	V	10	---	4	4	
Screw, machine, RH,/ #5-40 x 1¼-in	94 <sup>2</sup>	2-B	V	24	---	3	2	
Screw, machine, RH,/ #5-40 x 1½-in	268 <sup>2</sup>	2-B	V	---	16	7	6	
Screw, machine, RH,/ #5-40 x 2-in	12 <sup>2</sup>	2-B	V	---	1	---	---	
Screwdriver	3	2-B	X					
Sill, abutment, timber	12	2-T	A B (1)	6	---	---	---	6"x8"x16'-0"

Table 1. Continued

Nomenclature	Component parts			Number of component parts required for each major assembly				Prototype size
	Number per kit	Storage in chest <sup>1</sup>		Abutment	Trestle bent	Superstructure		
		Chest No.	Compartment			Abutment span	Trestle span	
Sill, bent	16	1-T	C (15)	---	2	---	---	12"x12"x12'-0"
Stringer (exterior)	18	1-B	J	---	---	2	2	6"x16"x15'-0"
Stringer (interior)	126 <sup>2</sup>	1-B	K	---	---	14	14	6"x16"x16'-0"
Tread, diagonal <sup>4</sup>	120 <sup>2</sup>	1-B	K	---	---	---	---	3"x12"x28'-0"
Tread, end (triangular/section)	2	1-T	E	---	---	1	---	---
Wrench, End 5/16-inch	3	2-B	W	---	---	---	---	---

<sup>1</sup>Chest designation also notes whether in tray "T" or bottom of chest "B". Compartment letters refer to letters shown on schematic diagram, figure 2.

<sup>2</sup>Includes spares.

<sup>3</sup>Used between each separate pair of trestle bents. Eight pieces bracing and sixteen 1 ½-inch screws and nuts required to install.

<sup>4</sup>Installed in one operation.



Chest 1

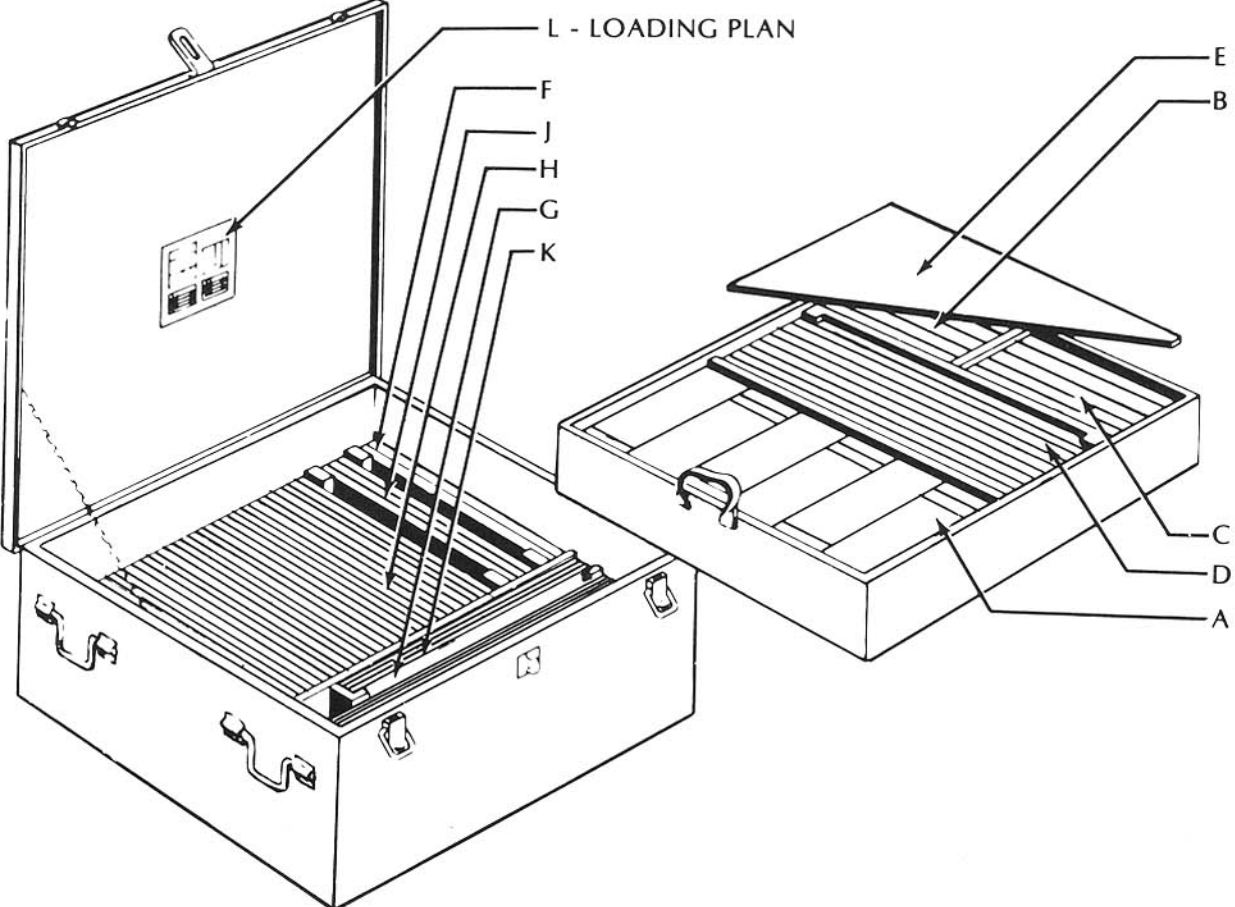
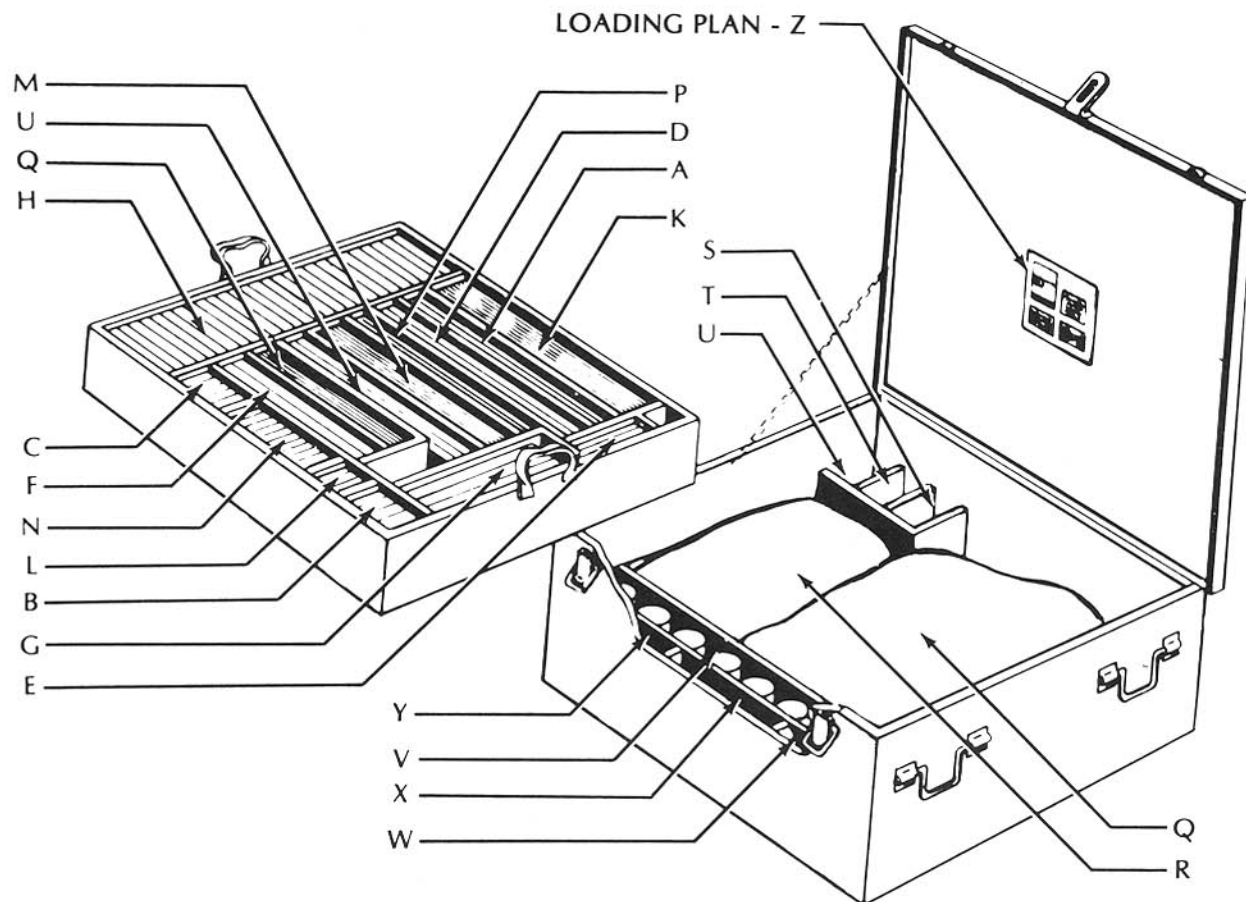


Figure 2. Schematic diagram of chest.

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**Chest 2**



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Figure 2. Continued.

# OPERATING INSTRUCTIONS

This bridge model can be used both in the early phase and in the review phase of timber-trestle bridge instruction. It can also be used for instruction in destruction/demolition of bridges. Appendix B describes a suggested method of instruction and some possible variations.

## Assembly and handling precautions

To avoid damage to the bridge model, the following precautions should be observed in the assembly and handling of the equipment:

- *Handle the component parts of this model with care. They are made of wood impregnated with plastic and will not withstand hard use.*
- *Never use the fasteners, pins, and machine screws, or other parts of the kit for purposes other than those for which they were designed.*
- *In assembly and disassembly, do NOT use any tool other than those provided with the kit.*
- *Screwdrivers are provided to tighten and remove machine screws. Finger tightening of nuts will normally suffice. Do NOT apply pressure when tightening.*

- *Pliers are provided for removing pins only.*
- *Remove pins and machine screws only by direct pull or push through the hole, never by prying or bending with tools or individual pieces of bridge equipment.*
- *All holes should have adequate tolerance for easy insertion of pins and machine screws. In assembly, align holes so that pins and machine screws do not require forcing. If holes cannot be aligned, a pin or machine screw may in some cases be left out without materially affecting the use of the model. Do NOT under any circumstances drive pins or machine screws into holes.*
- *Be careful when carrying preassembled parts or sections to prevent undue stress on the individual parts. Be especially careful to prevent damage to the simulated earth fill (fig. 6).*
- *Always place the abutment and trestle bents so that the deck of the bridge is level.*
- **DO NOT APPLY TEST LOADS TO THE BRIDGE.**
- *When removing and replacing parts in the chest, do so gently. Proper placement of parts in the trays, and trays in the chests, permits easy fitting and closing. Under no circumstances are the chest lids to be forced closed.*

## **Operation details**

In considering how to make use of the model, so that the class will obtain the greatest instructional value from it, the following factors should be kept in mind:

- *Acquaint students with timber bridge nomenclature and construction procedures as outlined in TM 5-551B (1971), Carpenter Manual.*
- *Specific subject matter of the lecture.*
- *Number of students.*
- *Working space available.*
- *Time allotted.*
- *Number of participating instructors.*
- *Reference materials.*

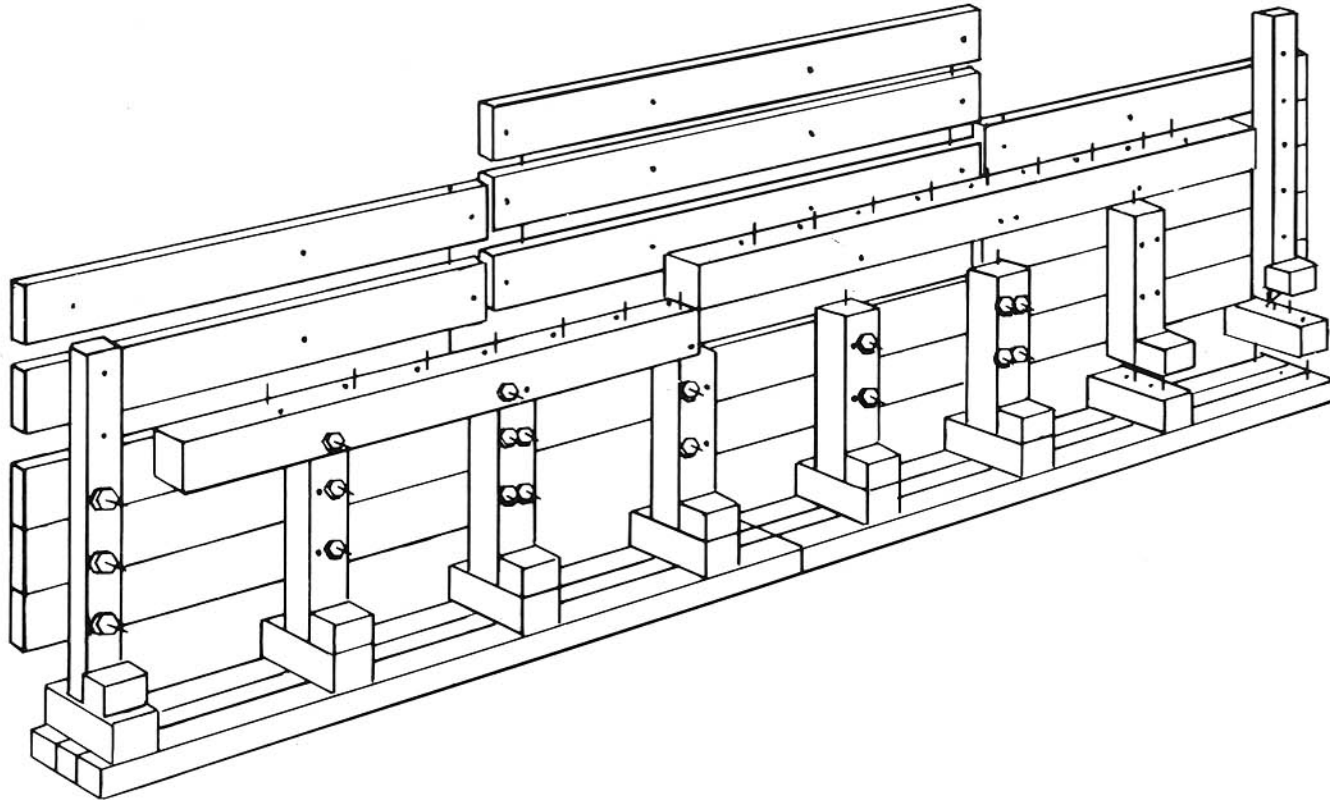
## **Erection of the model**

Instructors must adapt the model in the way that best illustrates the instruction. Construction procedures illustrated in the following figures do not necessarily follow the exact steps used in the construction of an actual bridge, but they do follow the correct procedure as closely as possible. Establish the bridge center line and construct the model bridge as follows:

## Abutment

See figure 3 for step-by-step abutment construction procedure.

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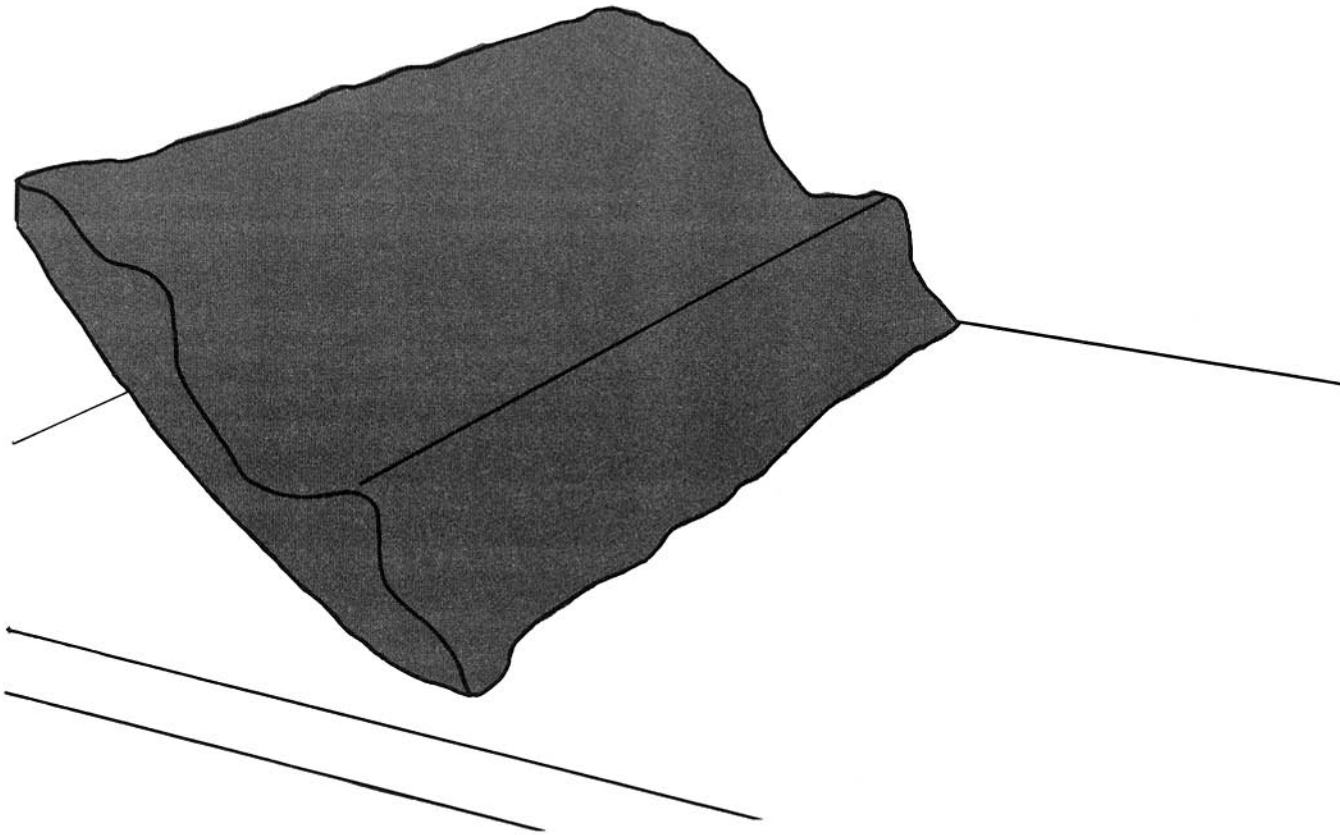
Figure 3. **Abutment.**

**Step 1**

Assemble and position simulated abutment (earth fill).

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**Abutment**



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*Figure 3. Continued.*

## Step 2

Place abutment sills and insert pins in top holes of outside members. Note: Sills are placed so pins closest to the ends are farthest from the proposed bridge center line.

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### Abutment

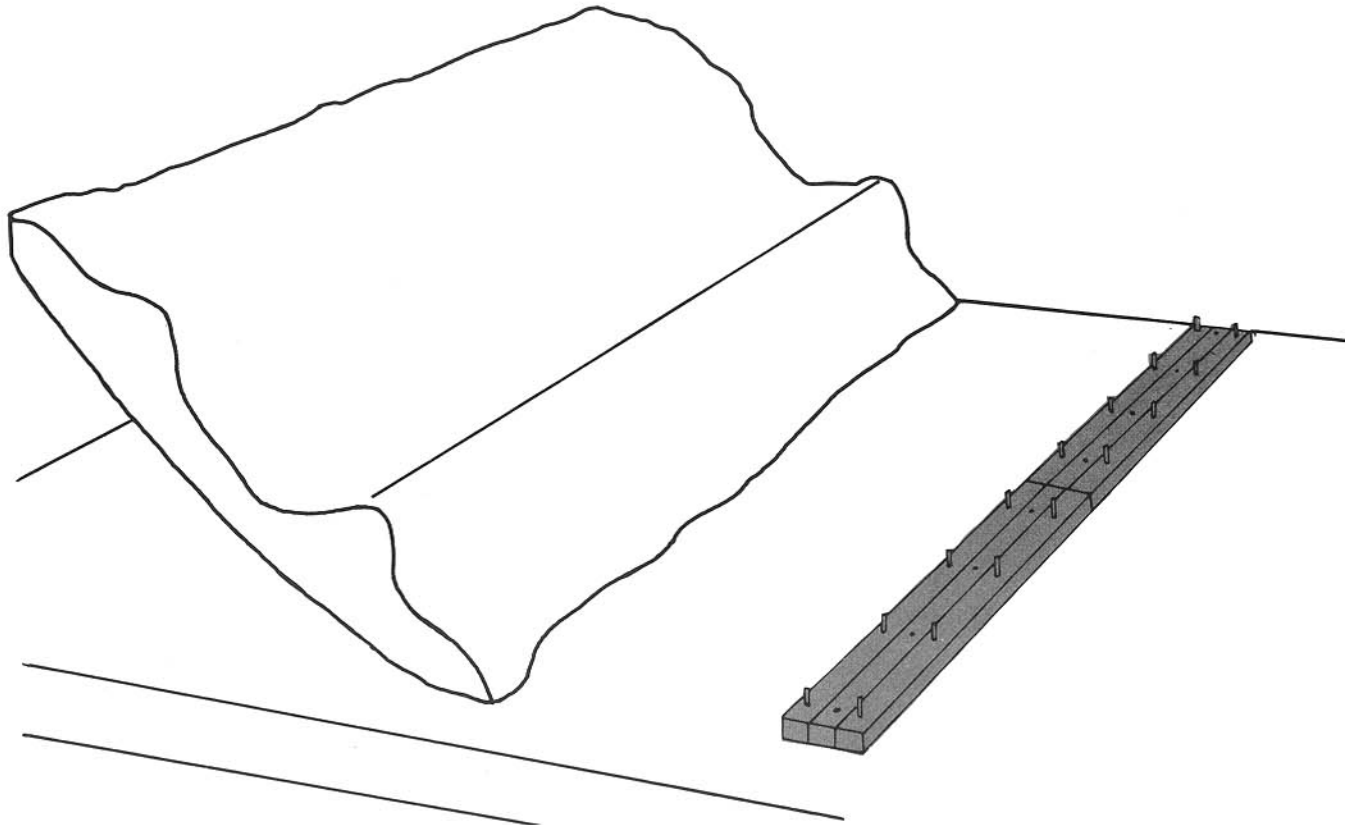


Figure 3. Continued.



Place bearing blocks. Note: Holes in bearing blocks should be positioned as shown.

**Step 3**

**Abutment**

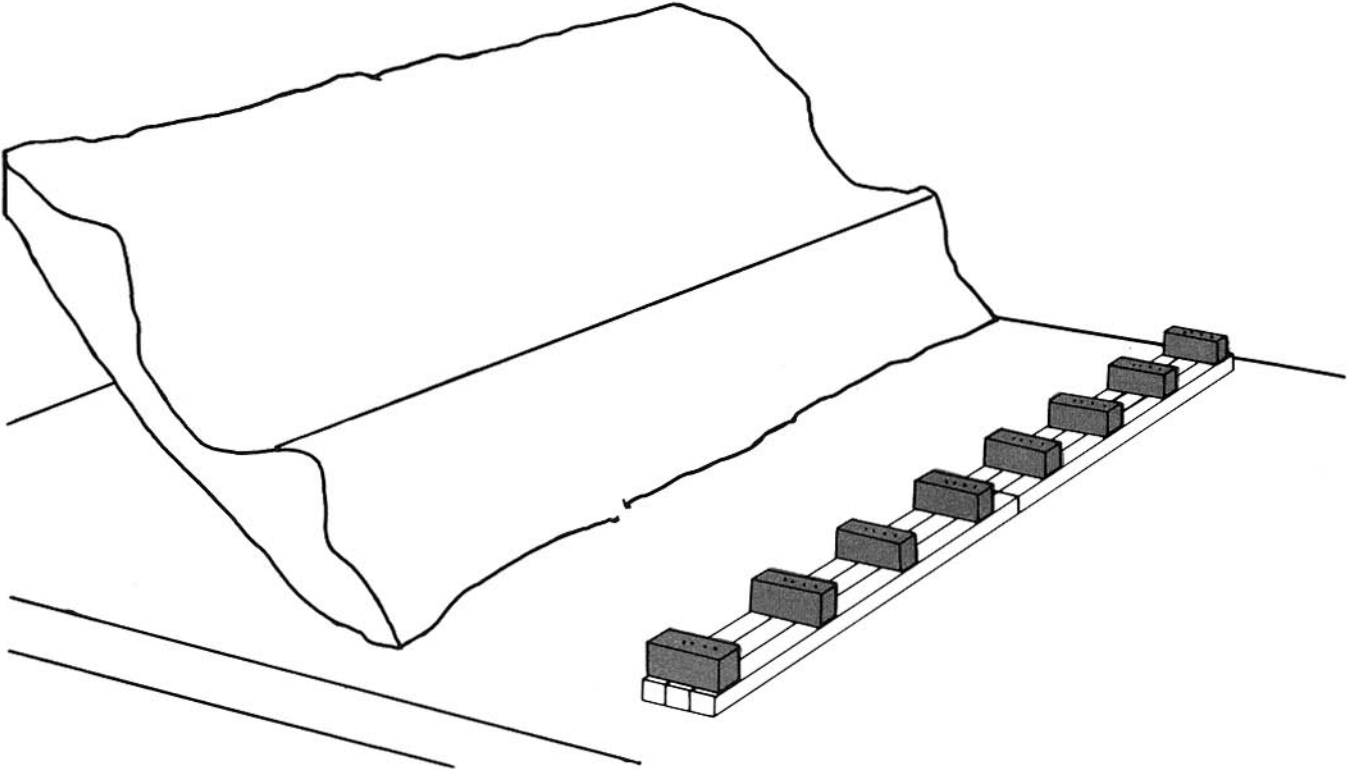


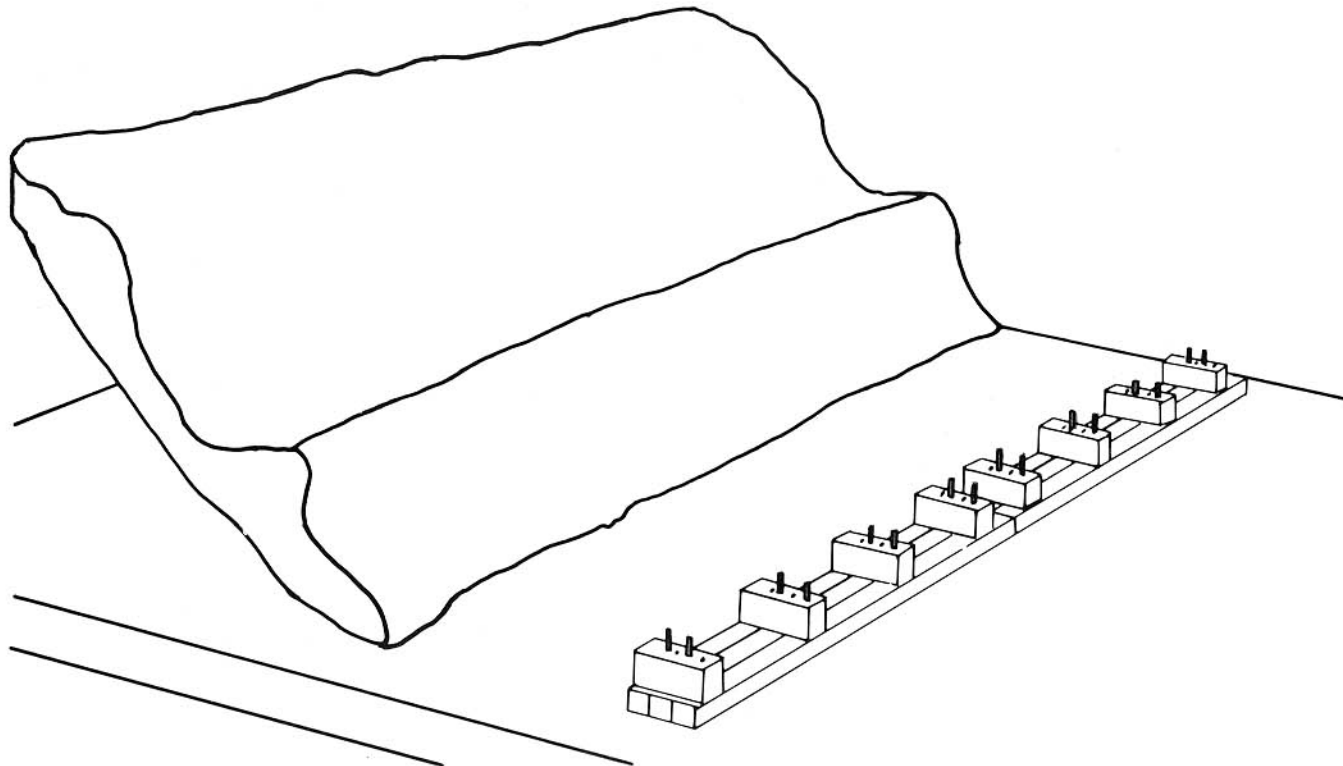
Figure 3. **Abutment.**

Insert pins in top holes of bearing blocks for bearing posts, wing posts, and anchor blocks. Note the difference in location of pins for wing and bearing posts.

**Step 4**

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**Abutment**



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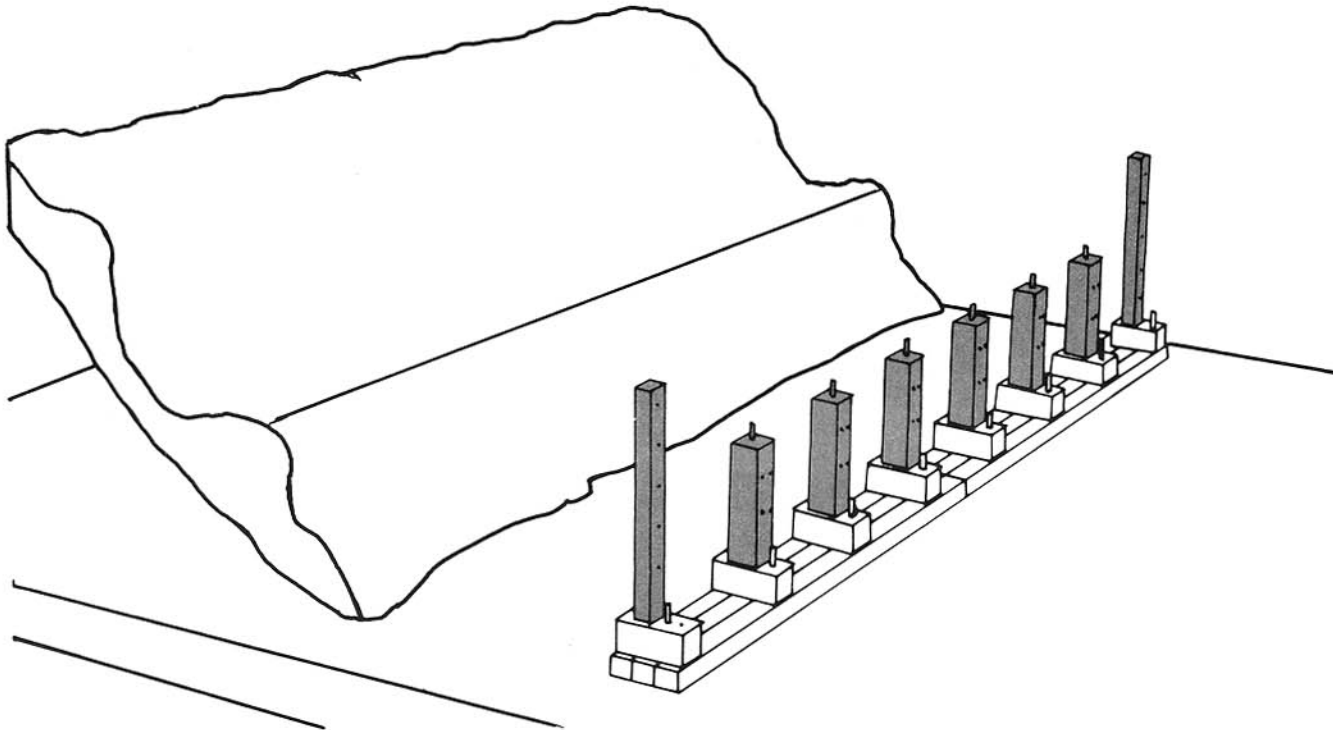
Figure 3. Continued.

**Step 5**

Place bearing and wing posts and insert pins in top holes of bearing posts.

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**Abutment**



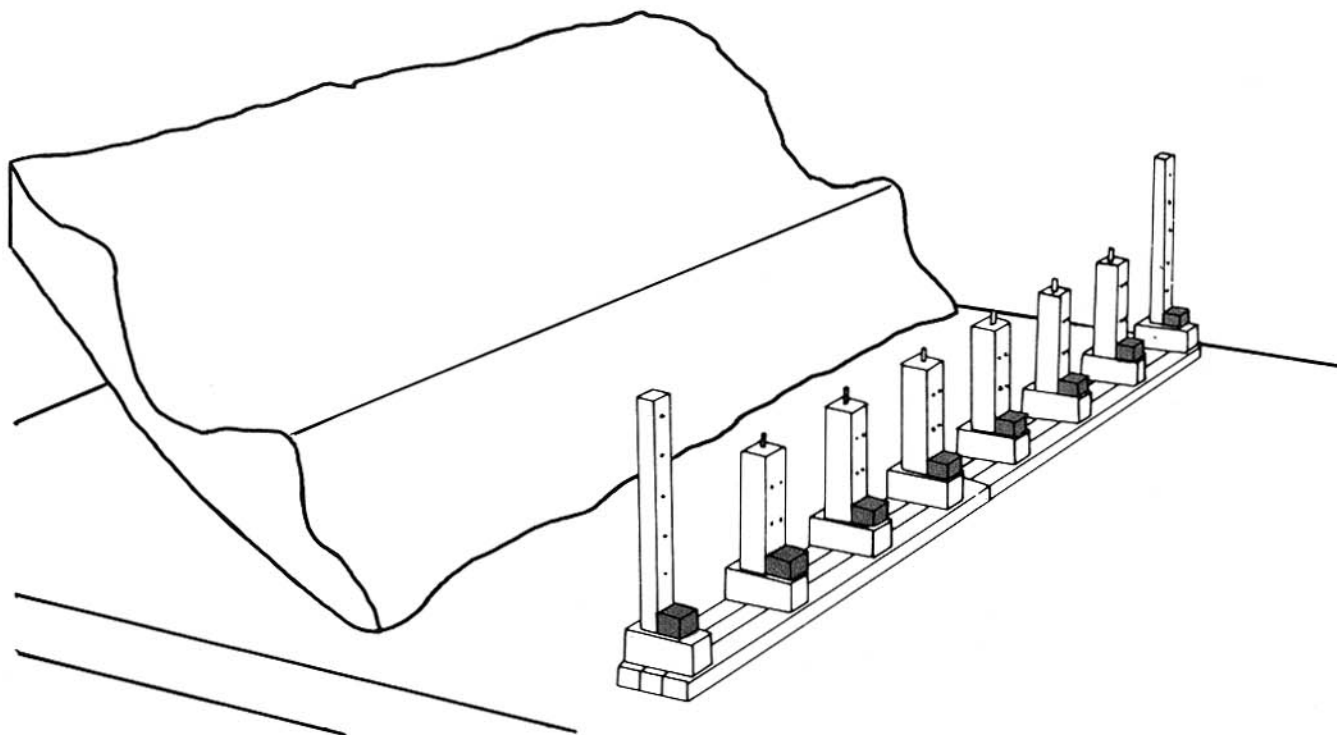
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Figure 3. Continued.

Place anchor blocks.

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**Abutment**



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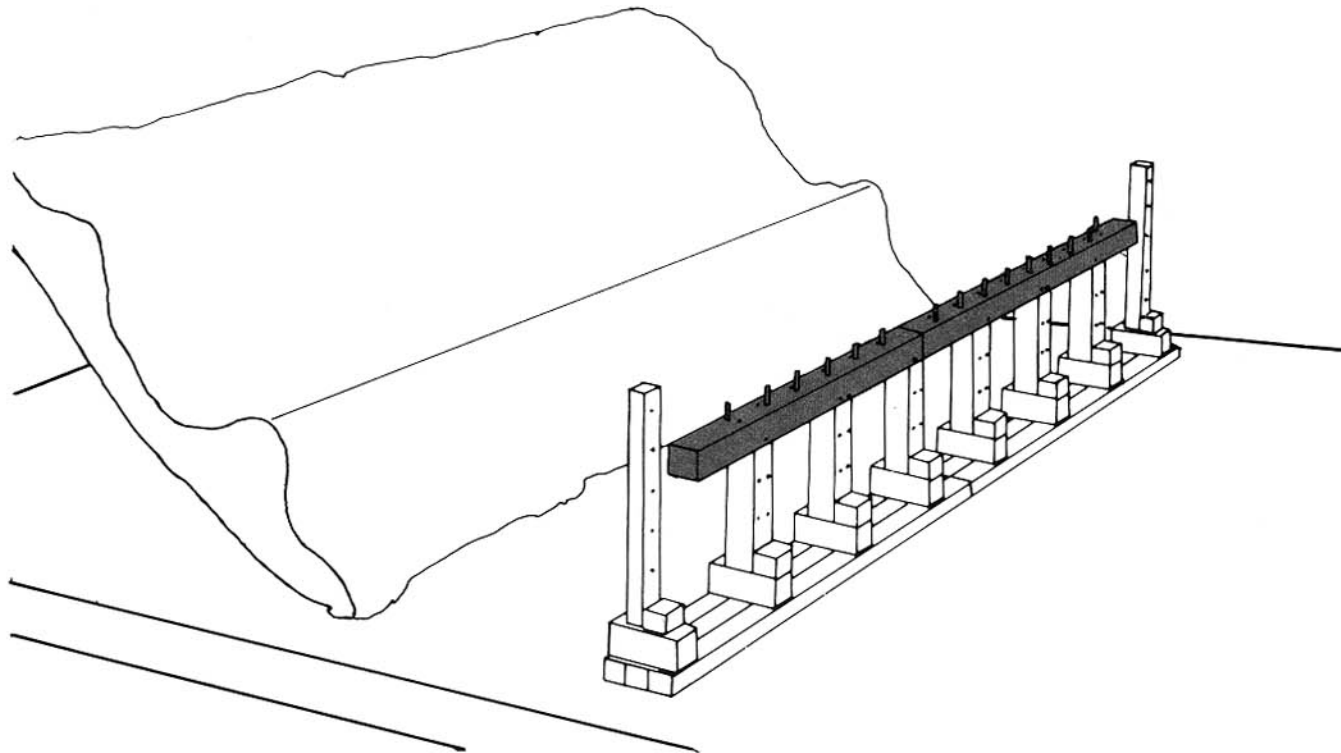
Figure 3. Continued.

Place abutment cap (short and long section) and insert pins in top holes.  
Note the difference in position of pins for exterior and interior stringers.

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**Step 7**

**Abutment**



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Figure 3. Continued.

Attach three bottom rows of bulkhead planks (center or 13-foot section first), see paragraph-2b, appendix B. Insert pins in top holes. Note: One-inch machine screws are used through the wing post and 1 1/4-inch machine screws through the bearing post.

## Step 8

### Abutment

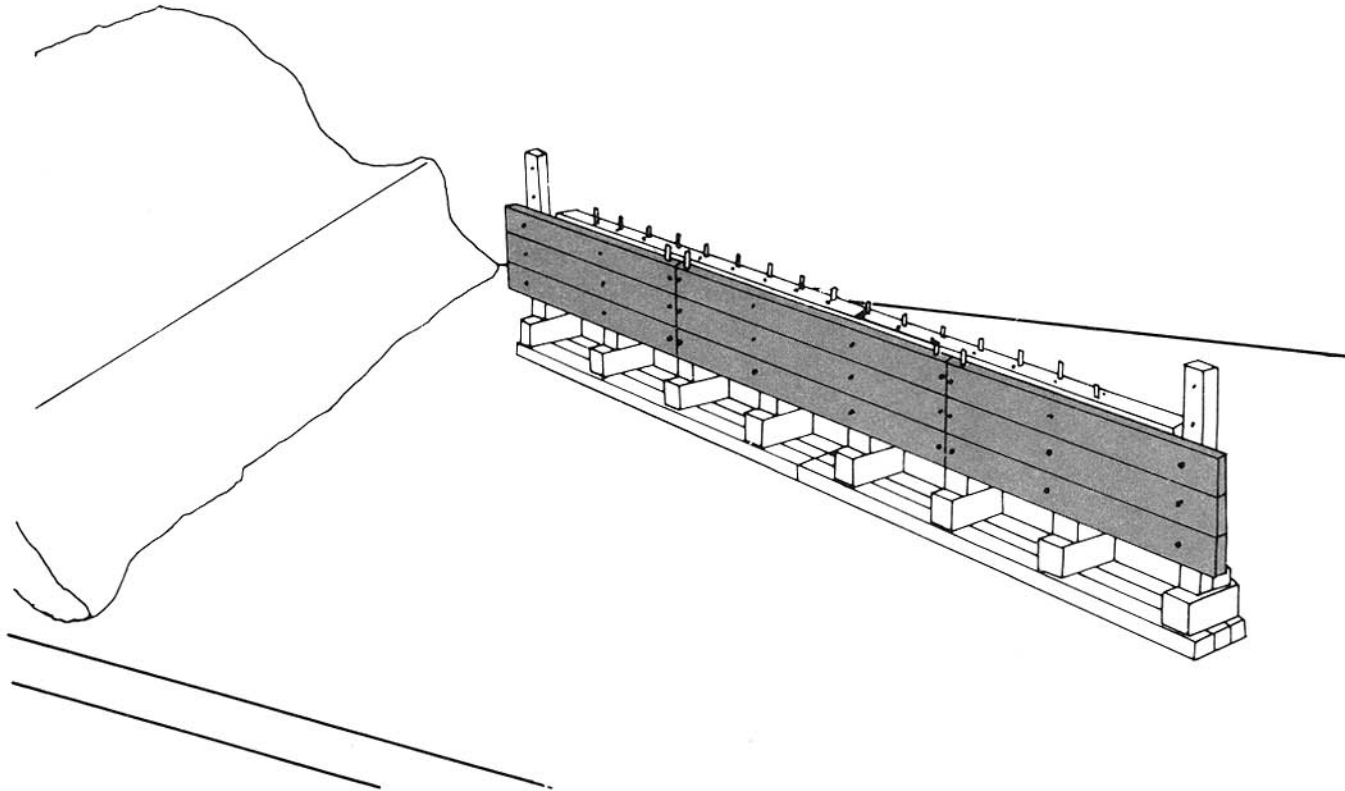


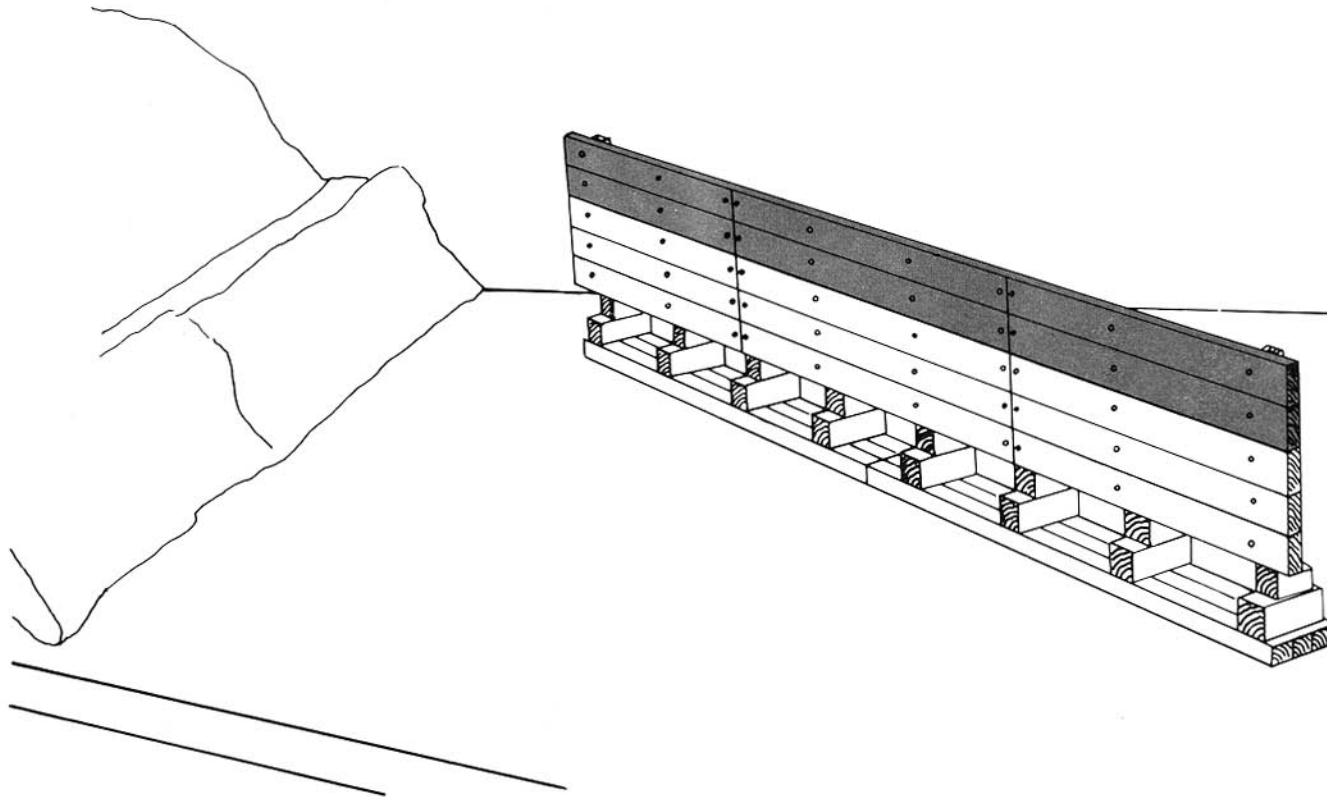
Figure 3. Continued.

## Step 9

Attach two top rows of bulkhead planks, see paragraph 2b, appendix B. Note. Center (long) planks are held with vertical pins only, while outside (short) planks are held with 1-inch machine screws at the wing post and vertical pins at the other end.

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### Abutment



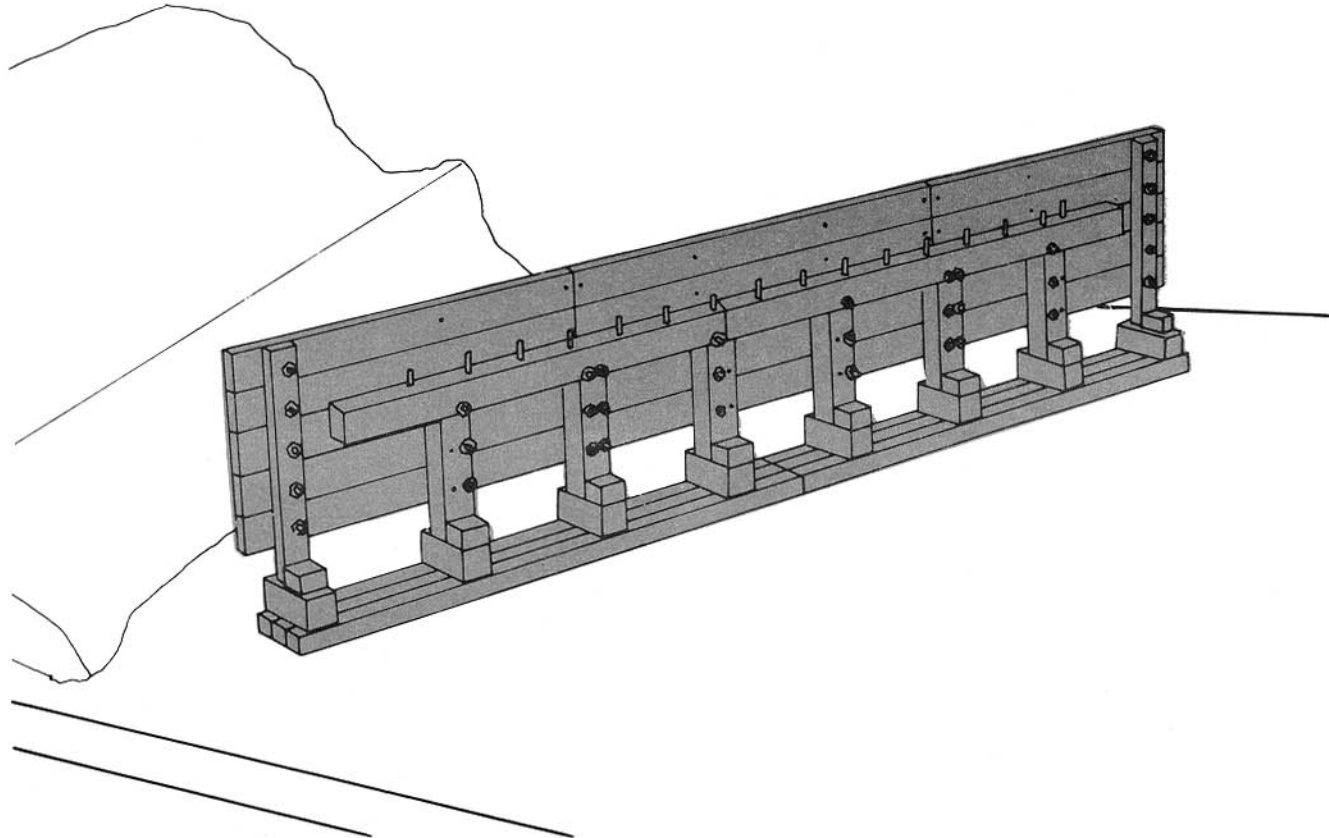
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Figure 3. Continued.

Completed abutment.

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**Abutment**



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Figure 3. Continued.

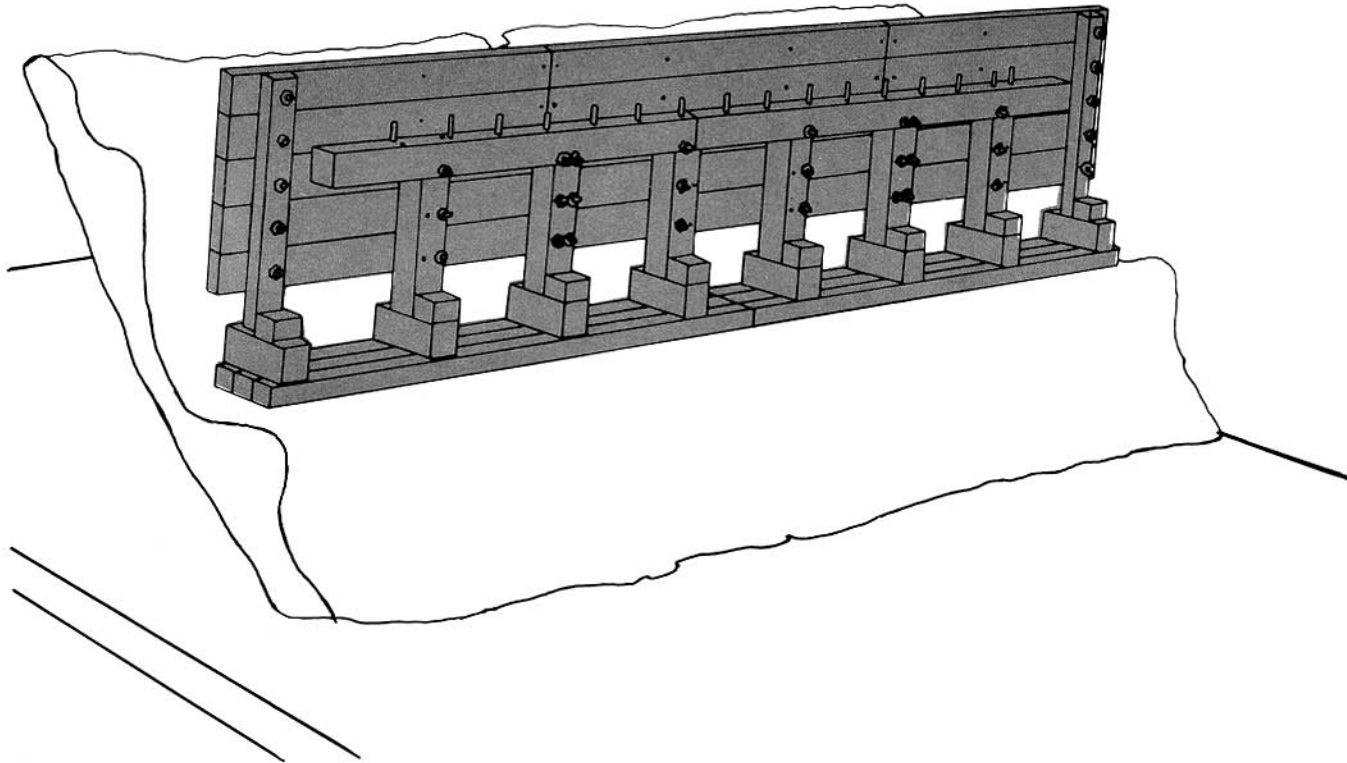


Place completed abutment in position on simulated abutment (earth fill).

**Step 11**

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**Abutment**



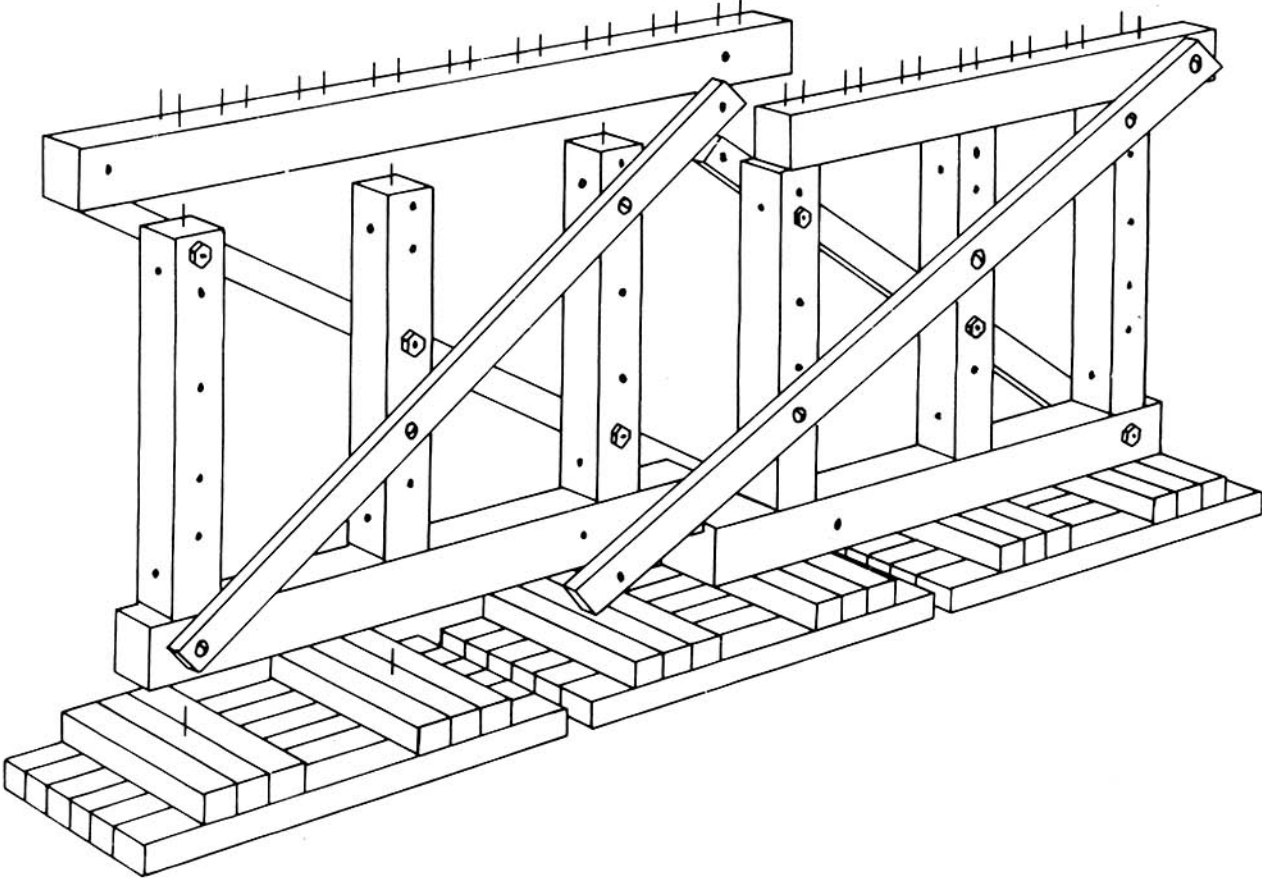
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Figure 3. Continued.

**Trestle bent construction.**

See figure 4 for step-by-step trestle-bent construction procedure.

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Figure 4. Trestle Bent.

Position grillage footings and insert pins in top holes.

**Step 1**

**Trestle Bent**

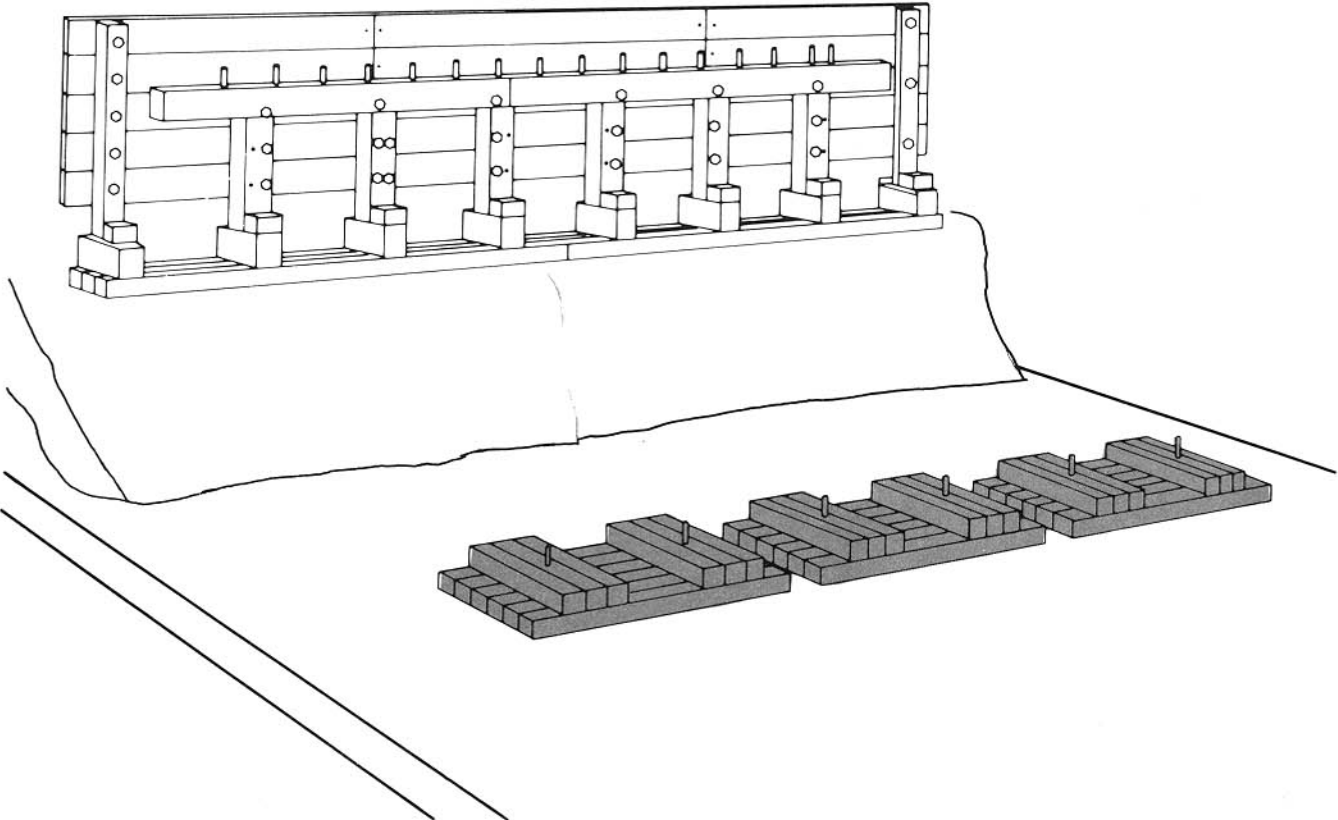


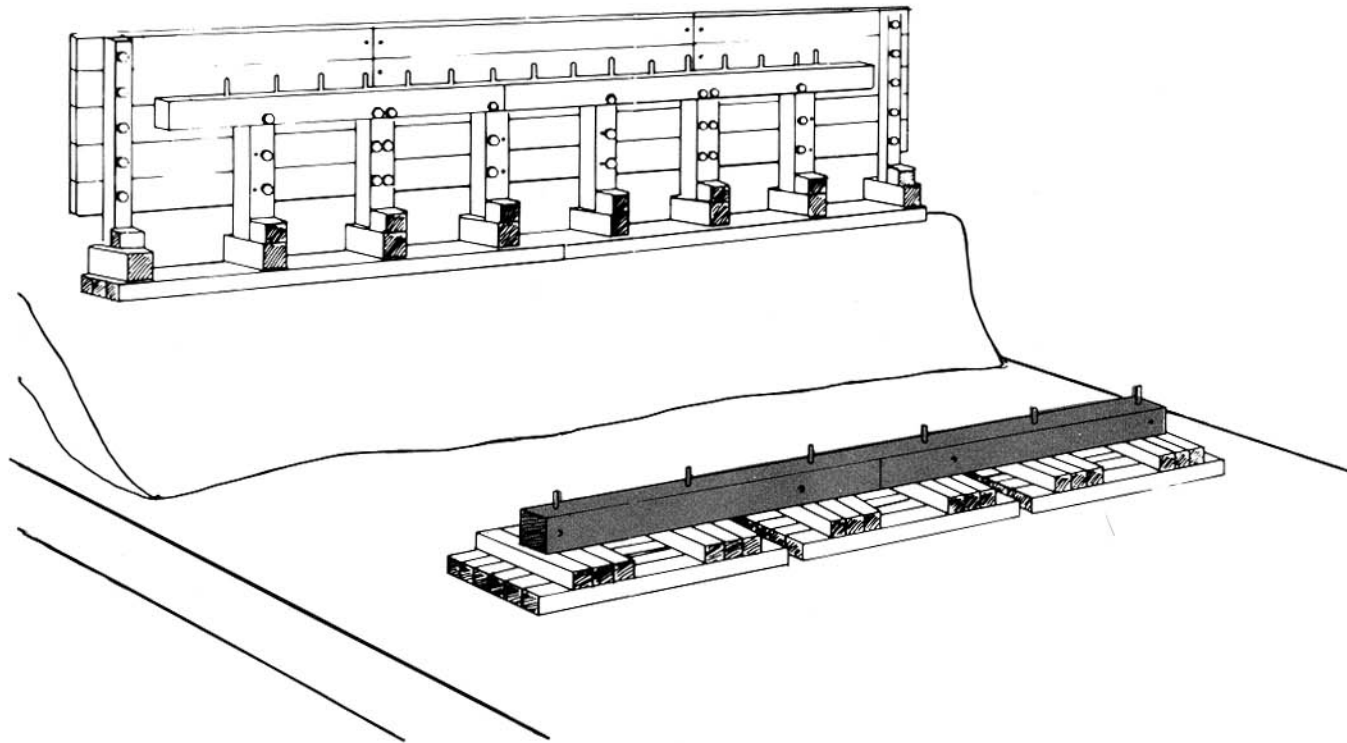
Figure 4. Continued.

Place sill (two 12-foot sections) and insert pins in top holes. Note: Pinholes closest to the ends of the two sections are farthest from the bridge center line.

**Step 2**

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**Trestle Bent**



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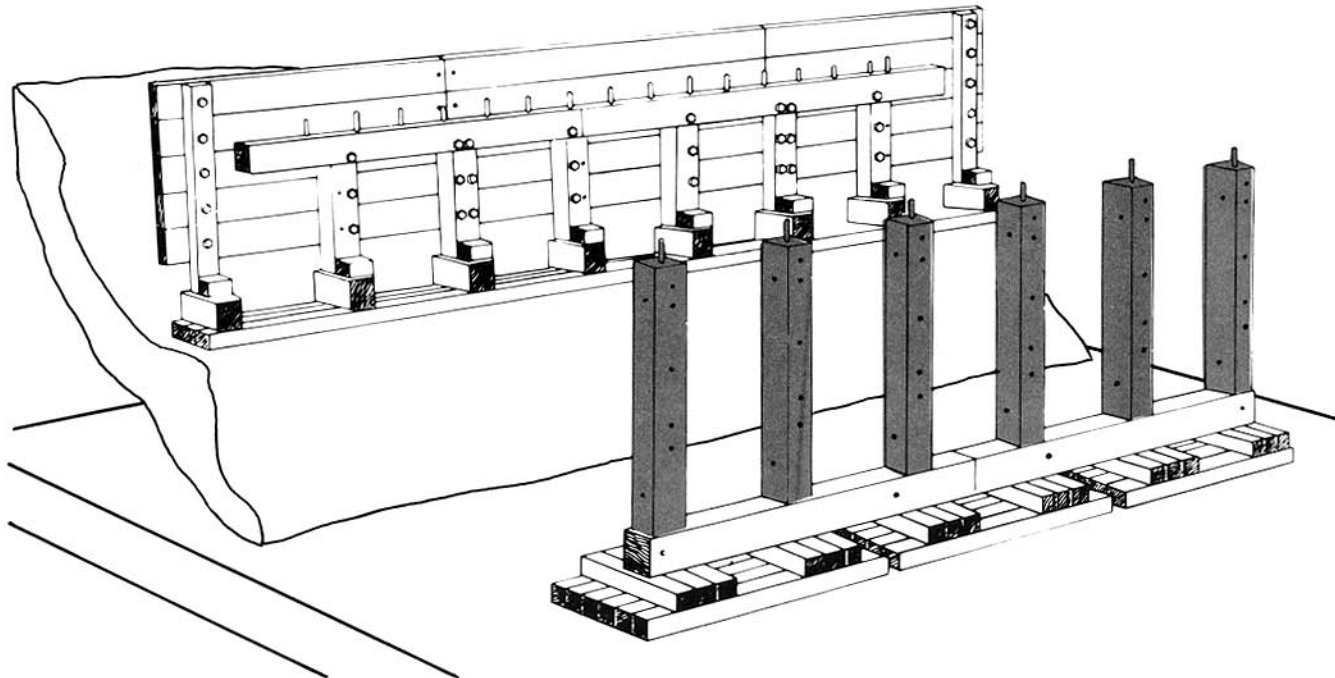
Figure 4. Continued.

Place posts and insert pins in top holes. Note the position of horizontal holes in posts.

**Step 3**

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**Trestle Bent**



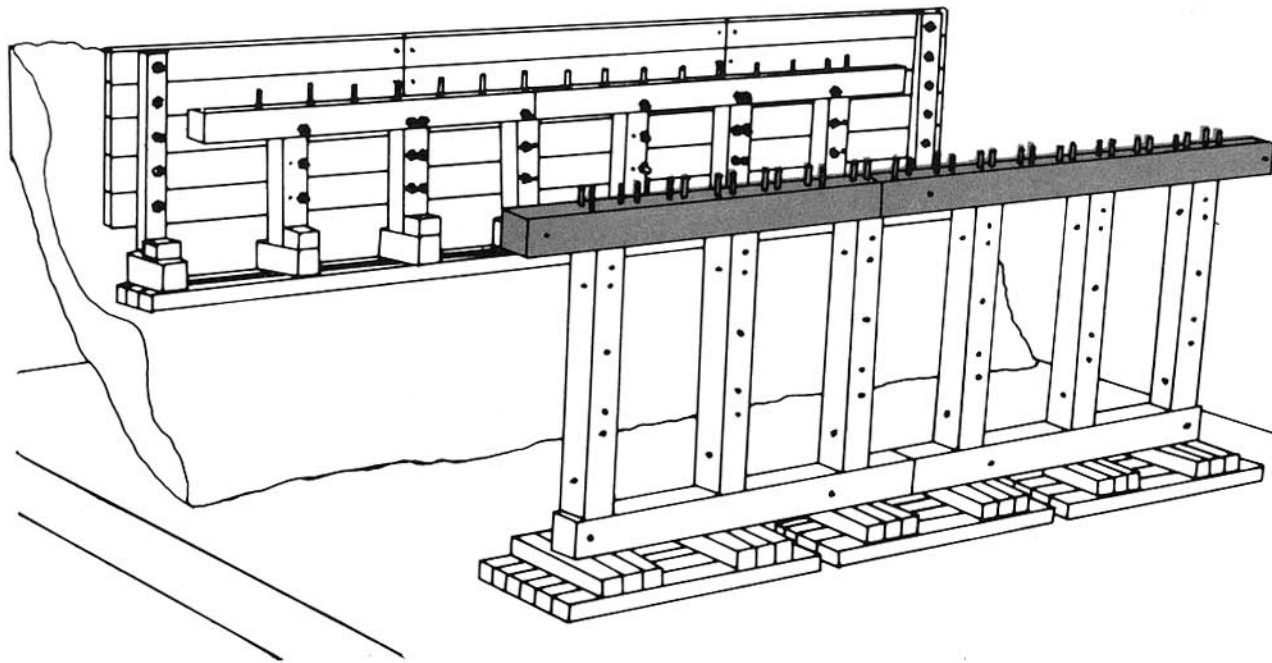
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Figure 4. Continued.

Place cap (one 16-foot and one 12-foot section) and insert pins in top holes. **Step 4**

---

**Trestle Bent**



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Figure 4. Continued.

## Step 5

Attach transverse bracing. Place two pieces of short (15 feet 9 inches) bracing, one on each side, from the center of the joined cap outward to the sill; use a 2-inch machine screw to fasten both pieces at the cap and 1 1/2-inch bolts at each post connection. To complete the bent, place two pieces of long (19 feet) bracing, one on each side, from the exterior ends of the cap inward to the sill, using 1 1/2-inch machine screws at all connections. Be sure to attach bracing so all interior holes match holes in posts crossed.

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### Trestle Bent

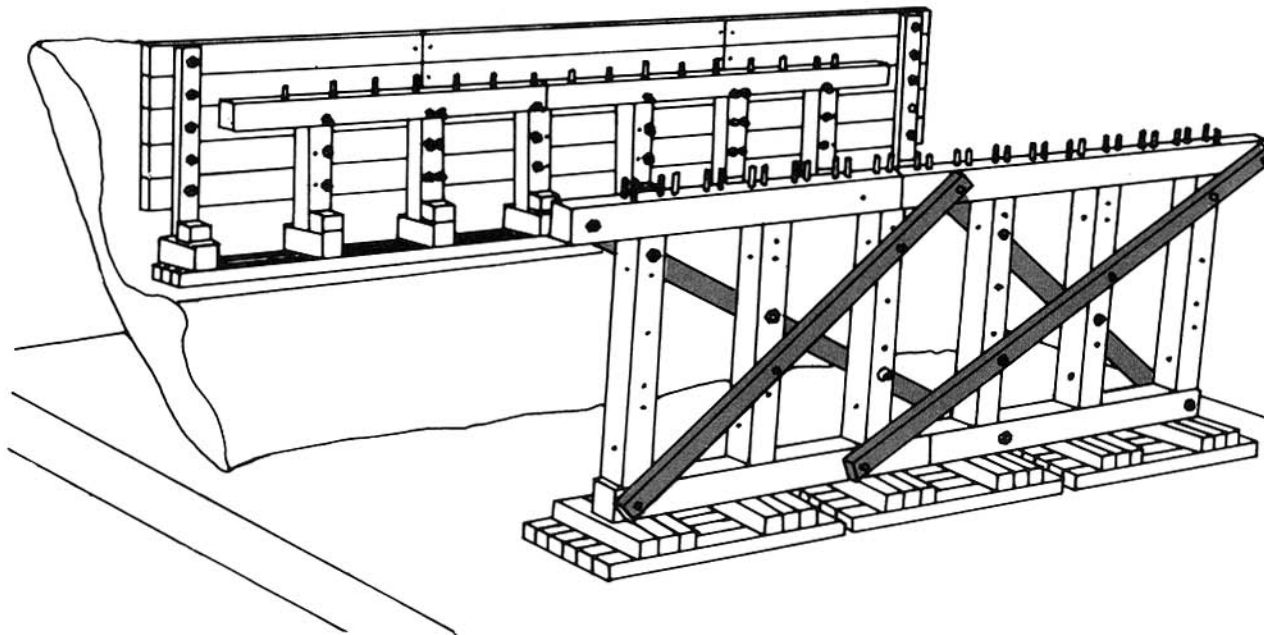
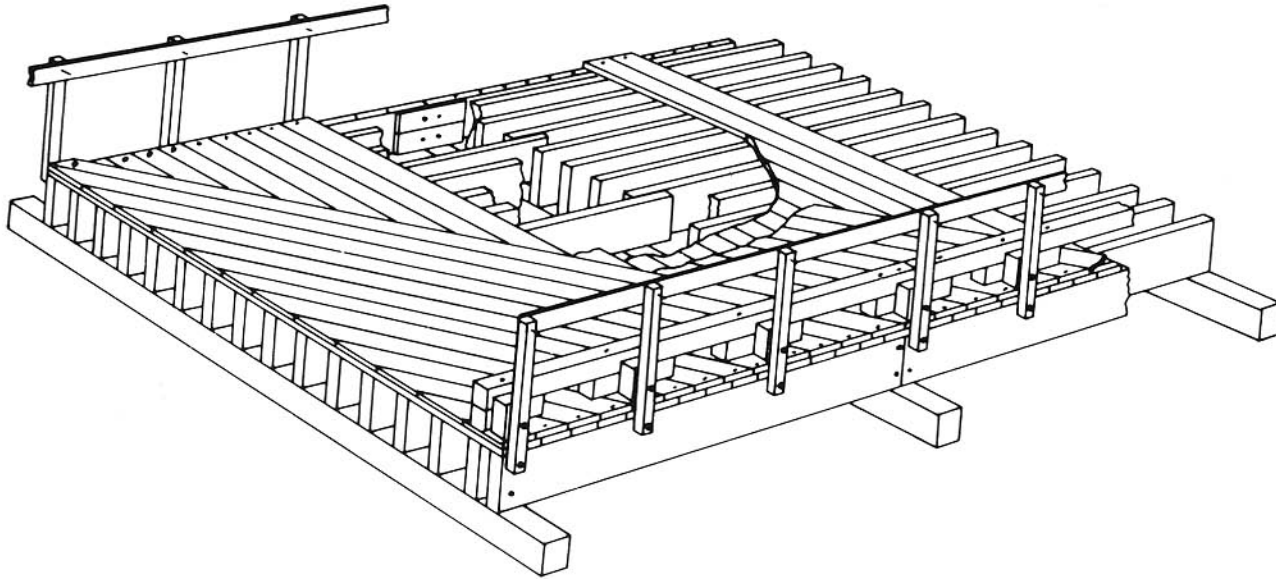


Figure 4. Continued.

## **SUPERSTRUCTURE.**

Installation of stringers from abutment to trestle bent, see figure 5.

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Figure 5. Superstructure.

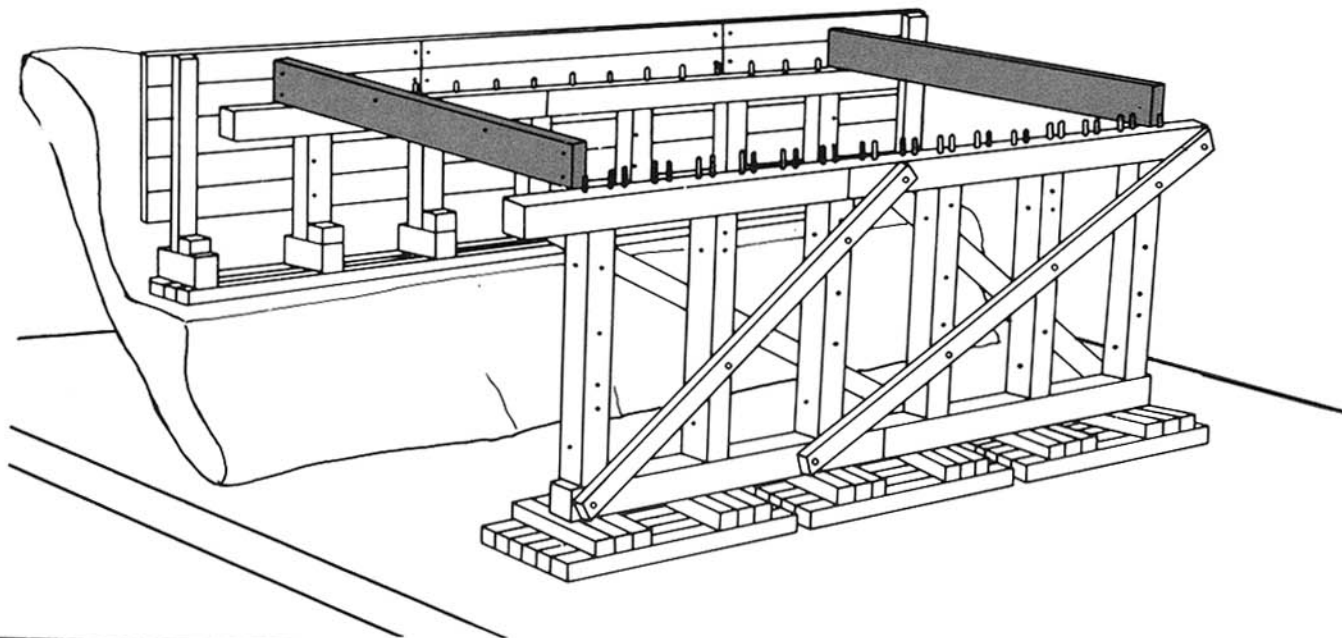


Position completed trestle bent approximately one stringer length from abutment assembly along established center line of the bridge, see paragraph 3a and 3c, appendix. B. Place two exterior (short) stringers from the abutment cap to the bent cap, making sure that the inserts are on the inside face, and place pins in top holes of stringers. Note: The stringers extend from the abutment bulkhead planks to the center of the bent cap.

## Step 1

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### Superstructure



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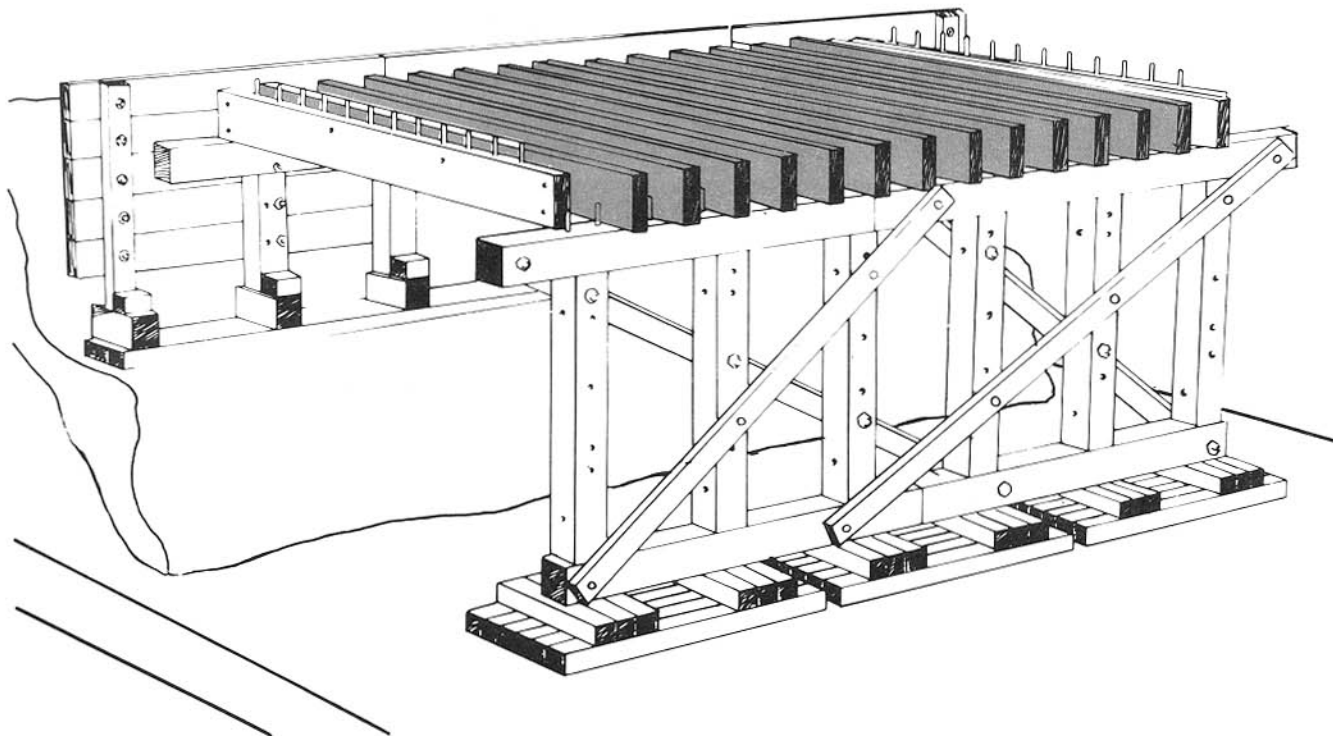
Figure 5. Continued.

Place 14 interior stringers. Note: The stringers are flush with the abutment bulkhead planks, but extend beyond the bent cap.

**Step 2**

---

**Superstructure**



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*Figure 5. Continued.*

Center line approximately a stringer's length from the first bent. Place two exterior (short) stringers and insert pins in top holes. Note: Exterior stringers are butt-jointed abutted over supports as illustrated. Transverse bracing should be arranged identically on all bents, to allow for proper installation of longitudinal bracing. Insert scabbing (see insert) and fasten with 3/4-inch machine screws through exterior stringers.

### Step 3

#### Superstructure

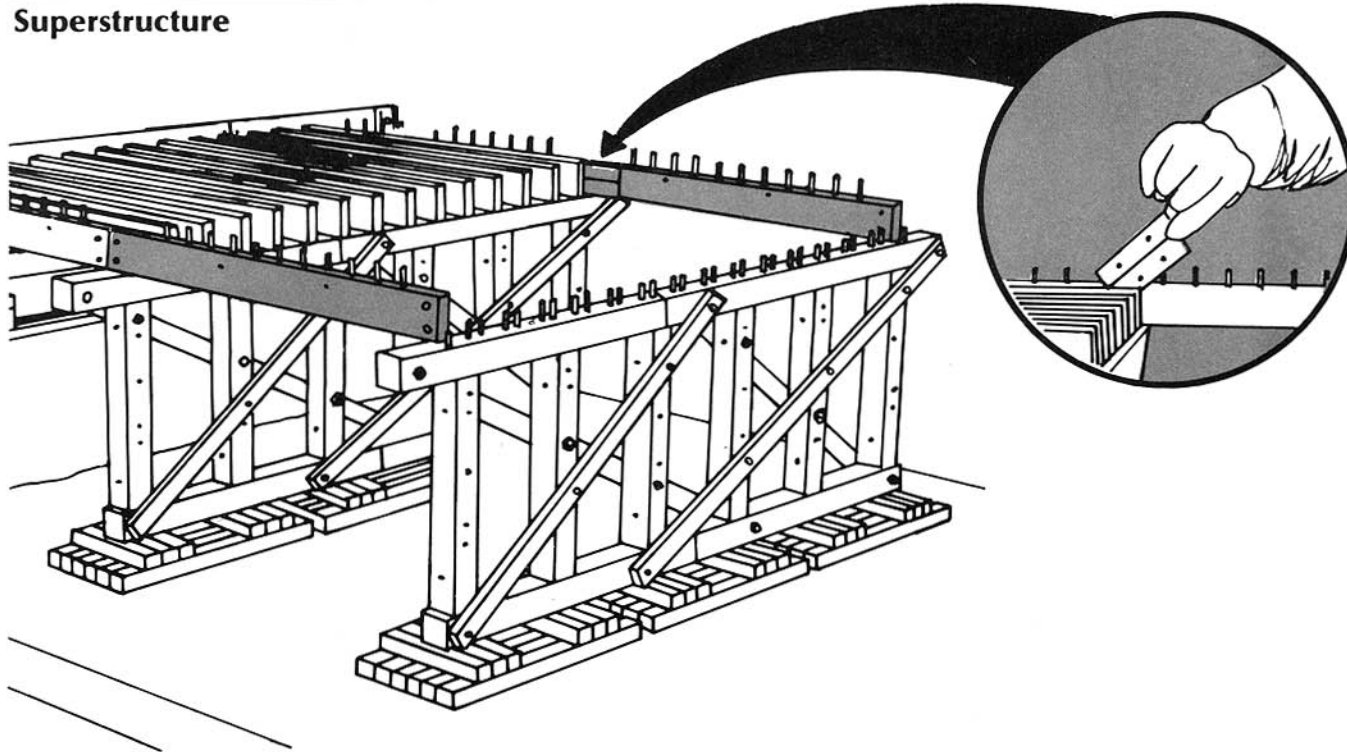


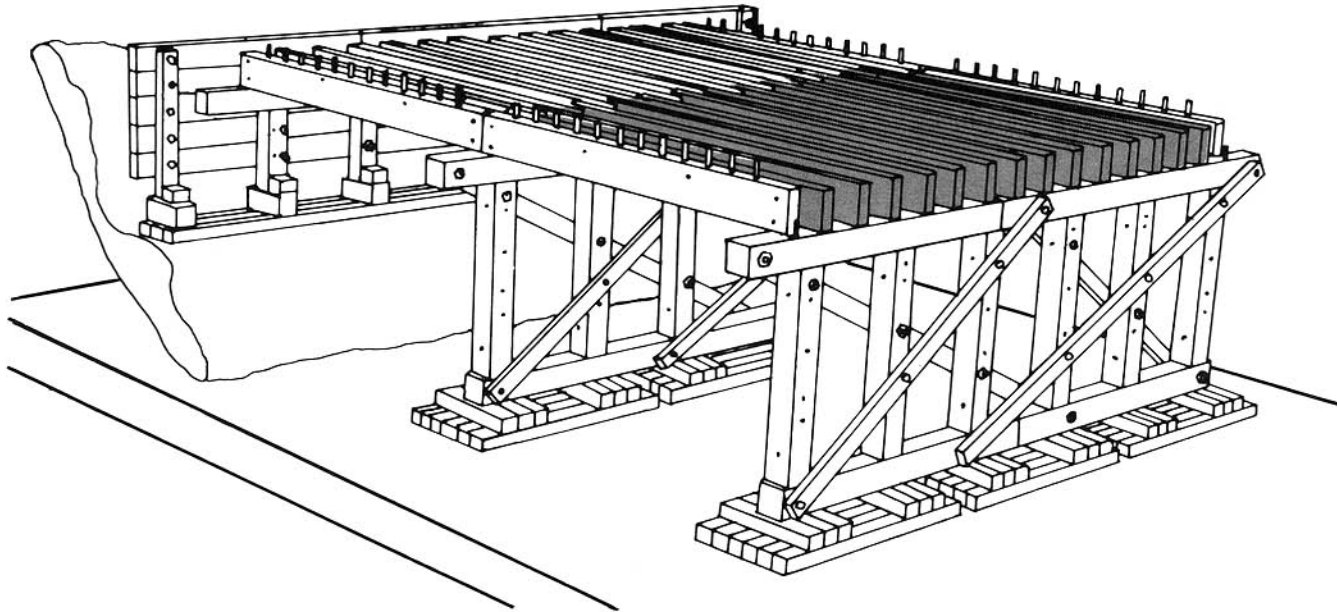
Figure 5. Continued.

Place 14 interior stringers. Note: Interior stringers extend across the full width of the caps on both bents, so each interior stringer end is flush with the vertical edge of each cap.

**Step 4**

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**Superstructure**



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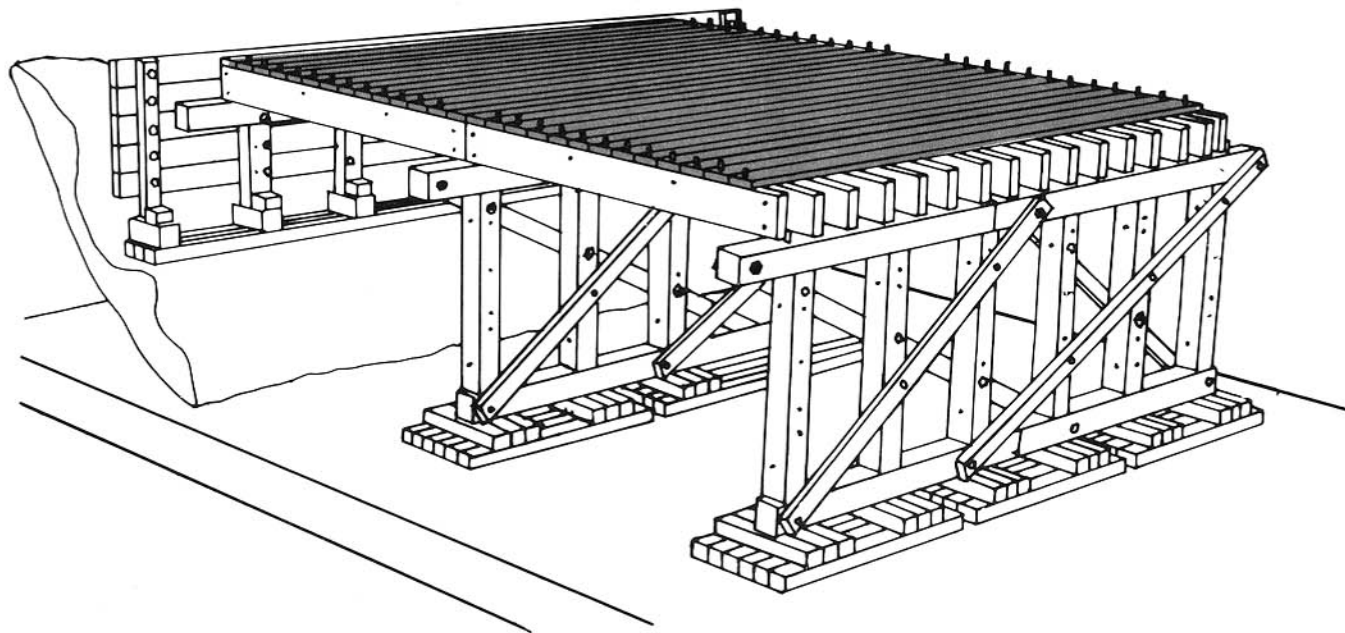
Figure 5. Continued.

Lay 27 deck (transverse) members. Note: No pinholes are provided for the first piece of deck adjacent to the abutment bulkhead plank, or for the two pieces covering stringer joint at trestle bents.

**Step 5**

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**Superstructure**



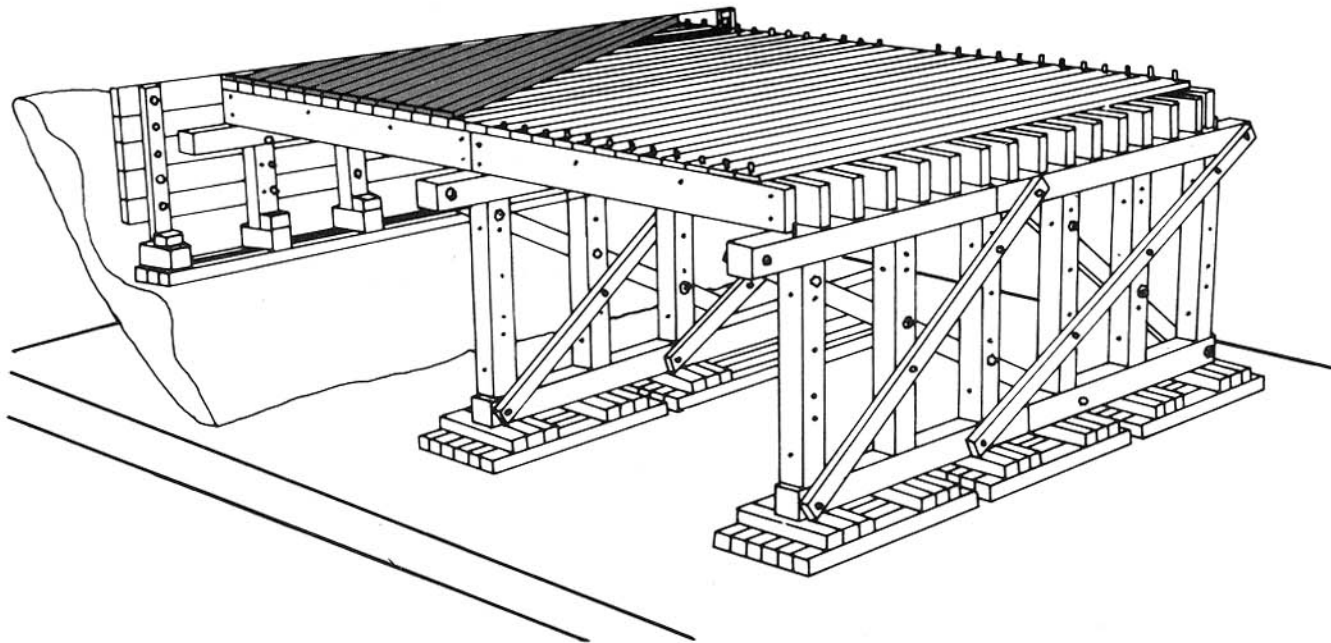
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Figure 5. Continued.

Place triangular section of diagonal tread, see paragraph 2a, appendix B. **Step 6**

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**Superstructure**



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Figure 5. Continued.

Continue laying individual pieces of diagonal tread.

**Step 7**

**Superstructure**

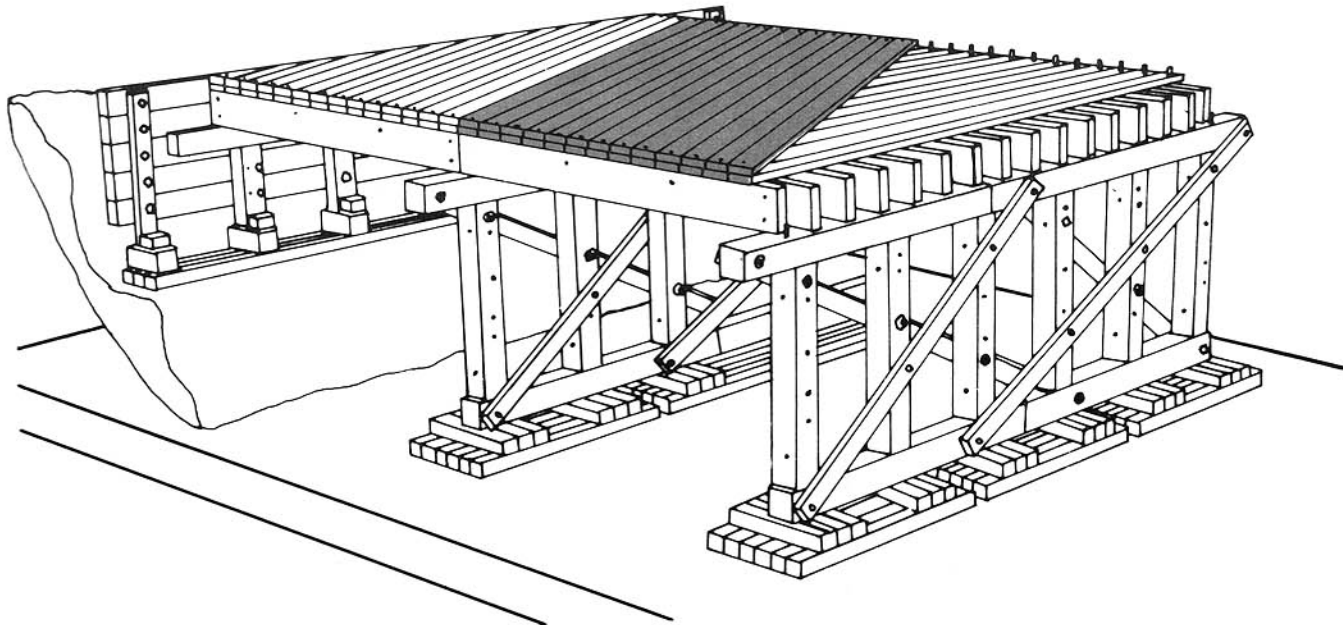


Figure 5. Continued.

Position end curb risers and succeeding curb risers as far as diagonal tread extends. Note: Single hole in risers should be horizontal and positioned vertically above the horizontal holes in exterior stringers.

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**Step 8**

### **Superstructure**

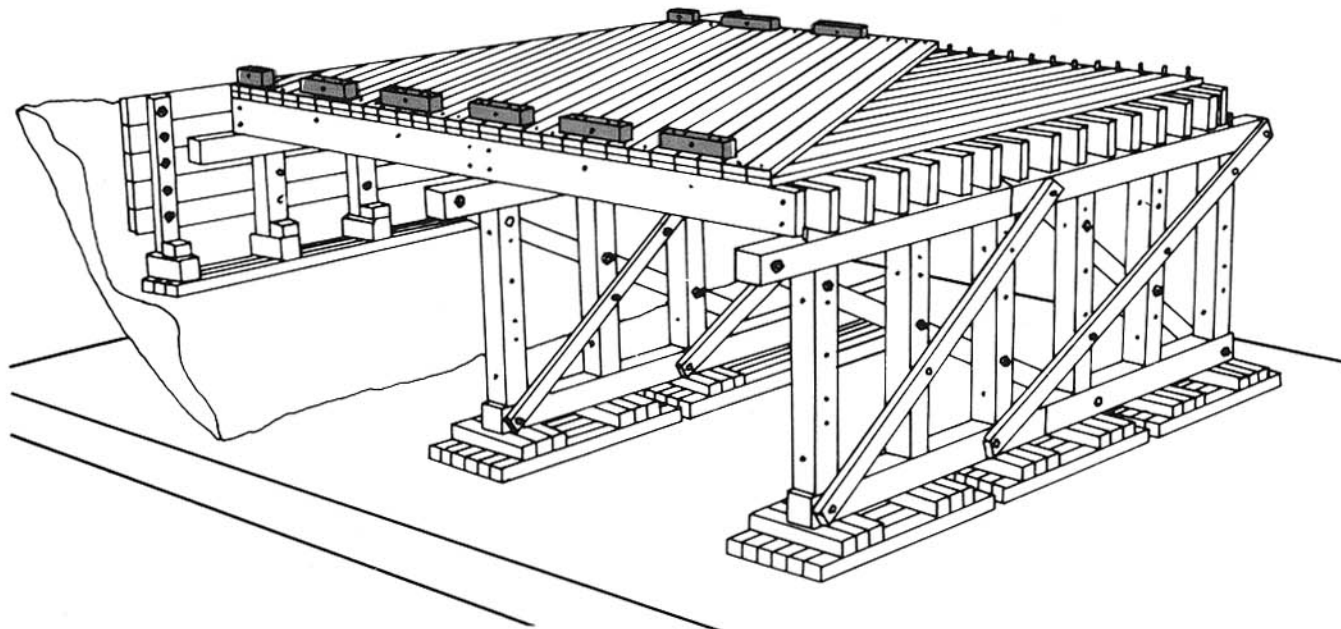


Figure 5. Continued.



Position handrail filler blocks so horizontal holes lines up with horizontal hole of curb risers. **Step 9**

**Superstructure**

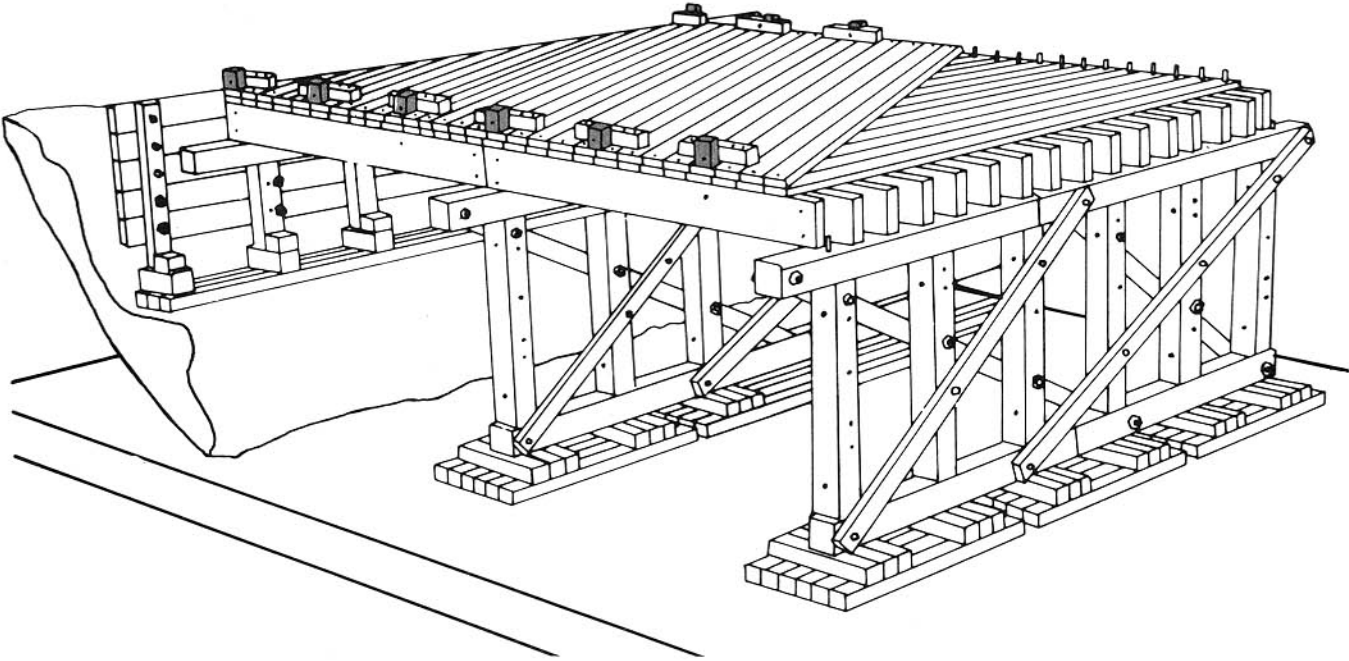


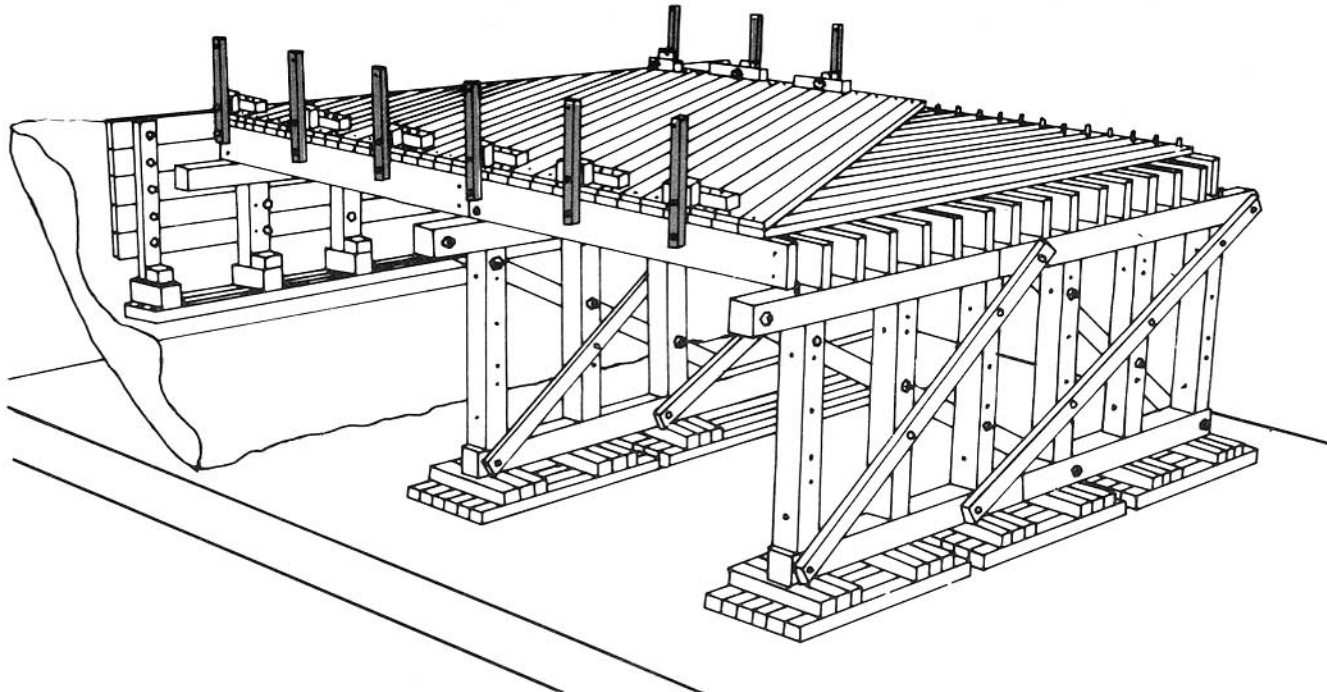
Figure 5. Continued.

Attach handrail post. Note: Use 1-inch machine screw to fasten post to exterior stringer and 1 1/2-inch machine screw through handrail filler blocks and curb riser. Use 1 1/4-inch machine screws to fasten posts to stringers at abutment and scab.

## Step 10

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### Superstructure



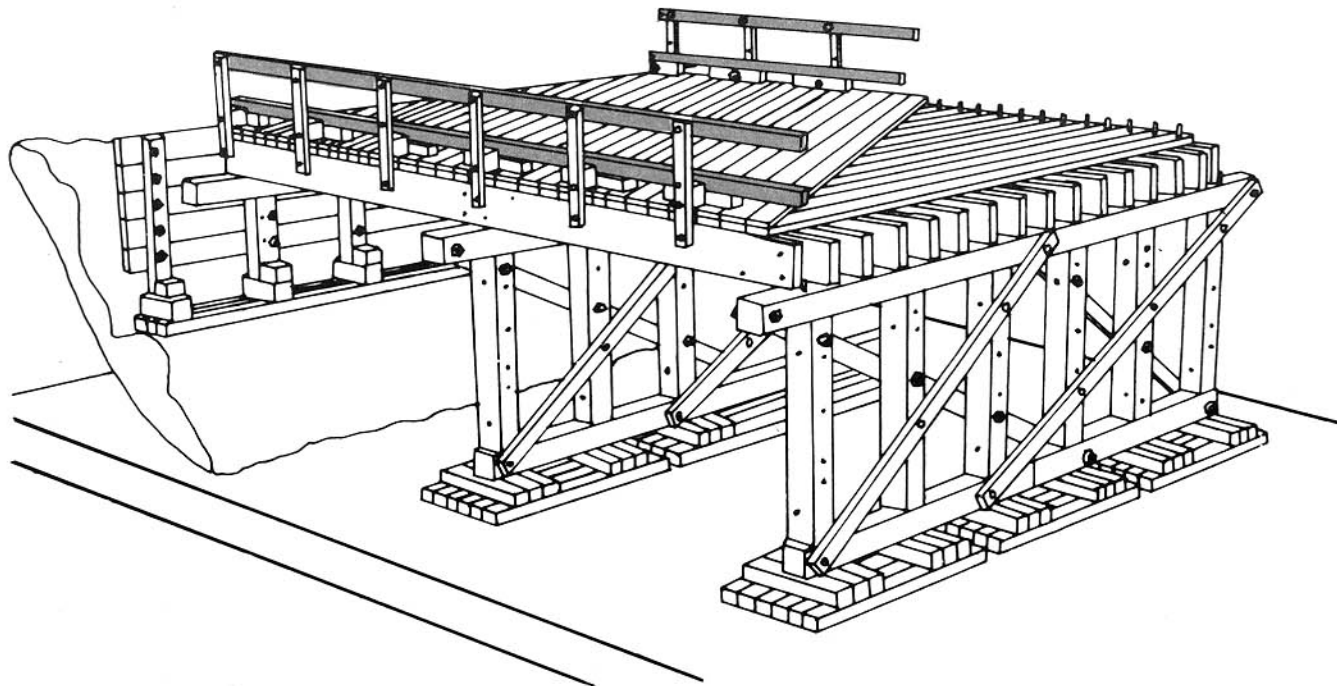
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Figure 5. Continued.

Insert pins in curb risers and handrail posts. Place curbs and handrails.

**Step 11**

**Superstructure**

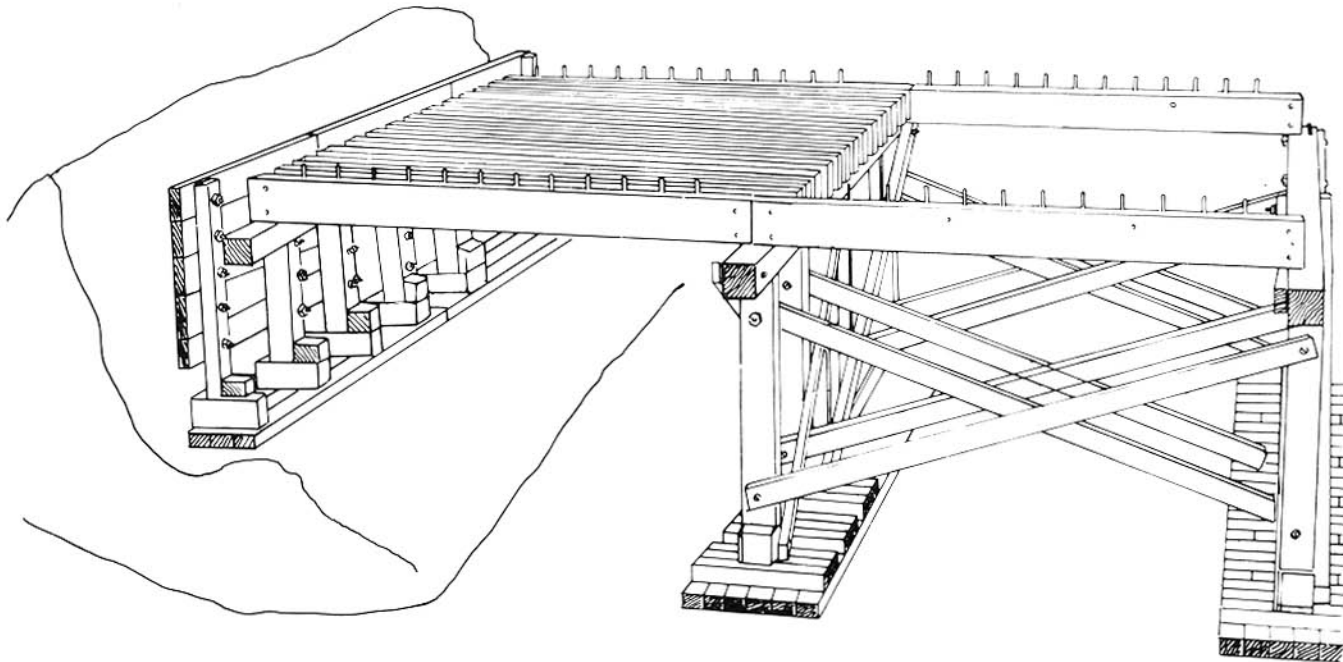


*Figure 5. Continued.*

## LONGITUDINAL BRACING.

After the bridge is completed, longitudinal bracing is installed between bents 1 and 2, 3 and 4; 5 and 6, and 7 and 8, as shown in figure 6. An alternate method is to install the bracing as construction progresses, as shown in figure 7.

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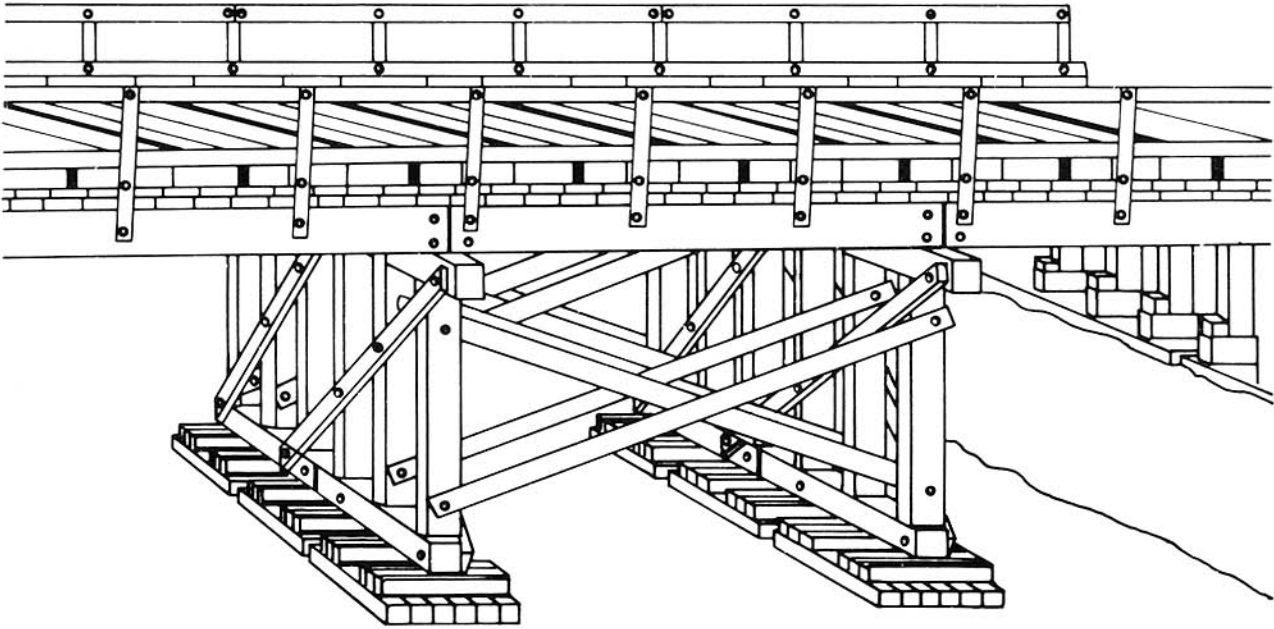


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Figure 6. Longitudinal Bracing.

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**Longitudinal Bracing**



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*Figure 7.* **Alternate Longitudinal Bracing.**

# MAINTENANCE INSTRUCTIONS

## **Maintenance instructions for agency assigned kit.**

Chests must be stored in a cool, dry place away from radiators or other heating devices. Interior and exterior of chests and individual parts must be painted and kept in good repair. Maintain a continuous check of chest contents. See figure 2 and table 1 for proper placement in the chests. Issue necessary instructions to prevent rough handling of chests and component parts.

## **Maintenance instructions for personnel using kit.**

Chests must be stored in a cool, dry place away from radiators or other heating devices. At all times, handle chests and components with care, and keep components clean.

After use, see that all items are replaced in proper compartments as shown on the charts inside the lid of each chest. Take special precaution with tools and fasteners.

Report any lost, damaged, or destroyed parts to the agency to whom the model is assigned.

**Replacement and repair.**

Most parts can be replaced by cutting a new part out of hardwood. Use care in spacing holes in a replacement part. Replacement parts may be obtained through local TASCs.

## REFERENCES

1. **TECHNICAL MANUALS (TM)**
  - TM 5-302-3 Army Facilities Components System-  
Designs, Vol. III
  - TM 5-312 Military Fixed Bridges (Reprinted  
w/Basic Incl. Cl-2)
  - TM 5-551B Carpenter
2. **FIELD MANUAL (FM)**
  - FM 5-34 Engineer Field Data
  - FM 5-36 Route Reconnaissance and Classification
3. **DEPARTMENT OF THE ARMY PAMPHLETS** (DA Pam)
  - DA Pam 310-12 Index and Description of Army Training  
Devices.
4. **ARMY CORRESPONDENCE COURSE  
PROGRAM (ACCP)**
  - EN 0059 Definitions and Nomenclature of  
Nonstandard Fixed Highway Bridges
  - EN 0353 Military Bridges II, Ed. 1



# HINTS TO THE INSTRUCTOR

## **B-1. Aids provided by instructor.**

### **a. Center line.**

A cord 12 feet long, with suitable means of support, should be provided to establish a center line if the entire model is to be assembled.

### **b. Display board.**

When instruction is conducted from a platform, it is desirable to have some means of displaying a section of the model at an angle. This can be done by using a board as illustrated in figure 8. A 36- by 40-inch board permits the use of two spans. Stops are placed on the board to prevent model sections from sliding, and on the support to prevent the board from sliding when it is raised.

### **c. Chart support.**

A frame or other suitable means should be provided to hang the accompanying charts during the instruction.

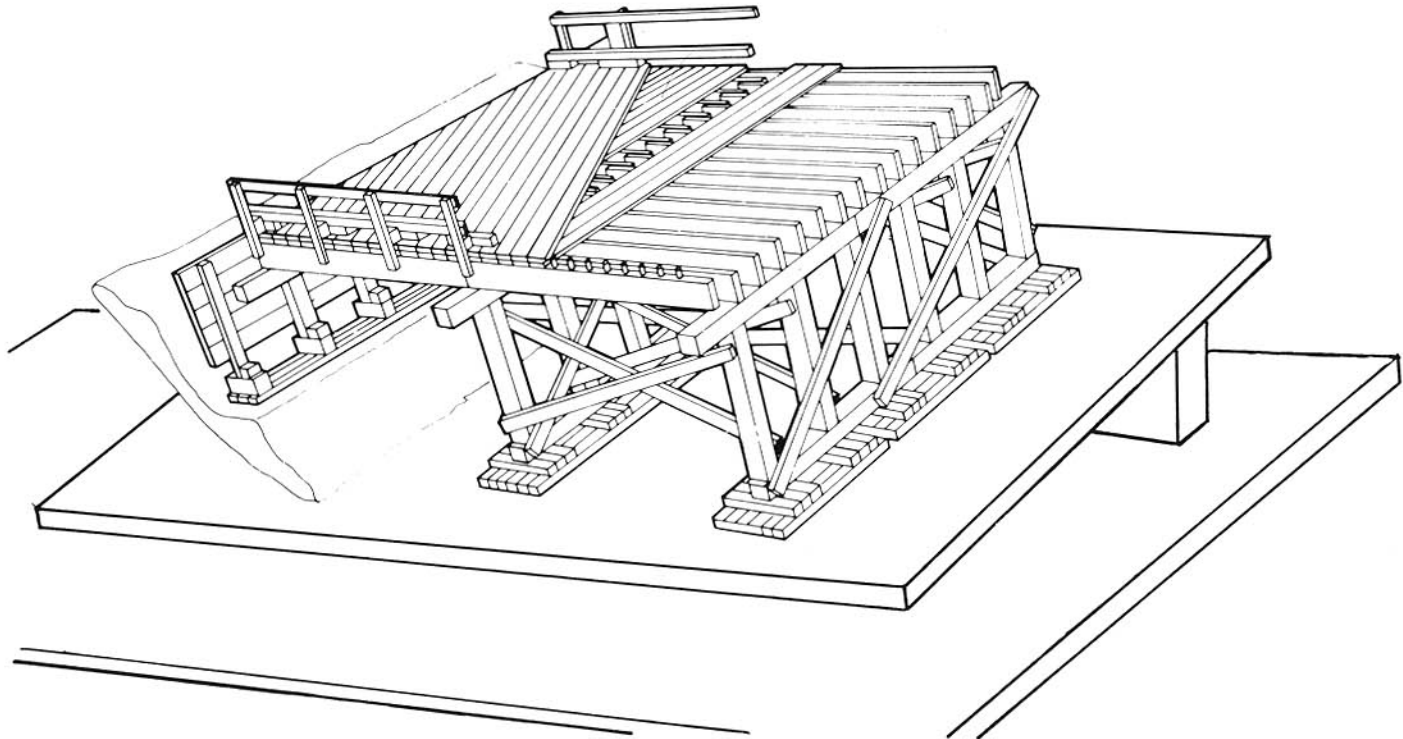


Figure 8. **Display Board.**

**d. Blocking.**

Suitable blocking should be provided under the simulated abutment (bank) for increased rigidity.

**e. Miscellaneous.**

- **Full-scale driftpins, bolts, and other items can be used in the instruction, if available.**
- **Expedient built-up approaches can be improvised.**
- **The model can be erected in a sand box.**

**B-2. Misfitting parts.**

Students should be informed of these parts before beginning practical work.

- a. Triangular section of diagonal tread. Several of the early production models of the kit contain triangular sections of diagonal tread, whose pinholes do not fit properly over all the pins in the stringer. To remedy this condition, remove all the pins from the exterior stringer and lay the triangular section in position; then replace at least two of the pins in holes where they fit, placing the pins as far apart as possible.
- b. Short (10-foot) pieces of abutment bulkhead planks. If it is difficult to attach short lengths of bulkhead planks, do NOT attempt to alter or force these parts to fit. Temporarily, use vertical pins instead of machine screws

at the wing posts, and report the condition for corrective action to the agency assigned the model.

### **B-3. Construction hints.**

**Students should be properly oriented before beginning practical work.**

- a. All exterior stringers should be placed with inserts facing the center line of the bridge. This will cause handrail posts to be in different transverse planes, but will reduce possible installation errors.
- b. If difficulty is experienced in inserting fasteners through the bent post for long transverse bracing members, check to make sure the horizontal hole is not blocked by the pin in the vertical hole in the top (or bottom) of the bent post.
- c. Be sure to position the trestle bents with transverse bracing attached and facing in the direction as shown in Step 5 of figure 4. It is essential to follow this assembly sequence so that the longitudinal bracings can be properly installed.

### **B-4. Suggested Method of Instruction.**

#### **a. General.**

The following procedure is suggested for the instructor to conduct the 3-hour period on the model of the timber trestle bridge, class 50/80. The period

should be divided into two parts, 1 hour for a conference and 2 hours for practical work.

**b. Text References.**

Refer to appendix A.

**c. Procedure prior to conference.**

Procure the items discussed in paragraph B-1 of this appendix. Arrange the platform and four work stations as follows:

**(1) Platform.**

*(a) Construct section of bridge on display board as shown in figure 8.*

*(b) Partially construct the other abutment and one additional trestle bent, and provide the necessary parts to complete the construction in skeleton form, as shown in figure 9. Use the colored model components in assembly.*

*(c) Provide parts to construct the connecting-span superstructure in skeleton form, as shown in figure 9. Use the colored model components.*

*(d) Hang nomenclature charts. During break, disassemble and move skeleton assemblies to station 4.*

Key Component Part	Quantity	Key Component Part	Quantity
① Fasteners	—	⑪ Abutment, bearing block	1
② Abutment, bulkhead plank (short)	1	⑫ Abutment, bearing post	1
③ Abutment, bulkhead plank (long)	1	⑬ Post, handrail	1
④ Stringer (exterior)	2	⑭ Curb fill	1
⑤ Stringer (interior)	2	⑮ Abutment, wing post	1
⑥ Curb	1	⑯ Fill, handrail post	1
⑦ Deck	1	⑰ Cap, bent (short)	1
⑧ Tread, diagonal	1	⑱ Post, bent	1
⑨ Abutment cap (short)	1	⑲ Bracing, transverse (short)	2
⑩ Block, anchor, abutment	1	⑳ Bracing, transverse (long)	1
		¹ Does not include component parts in partially constructed abutment and trestle bent.	

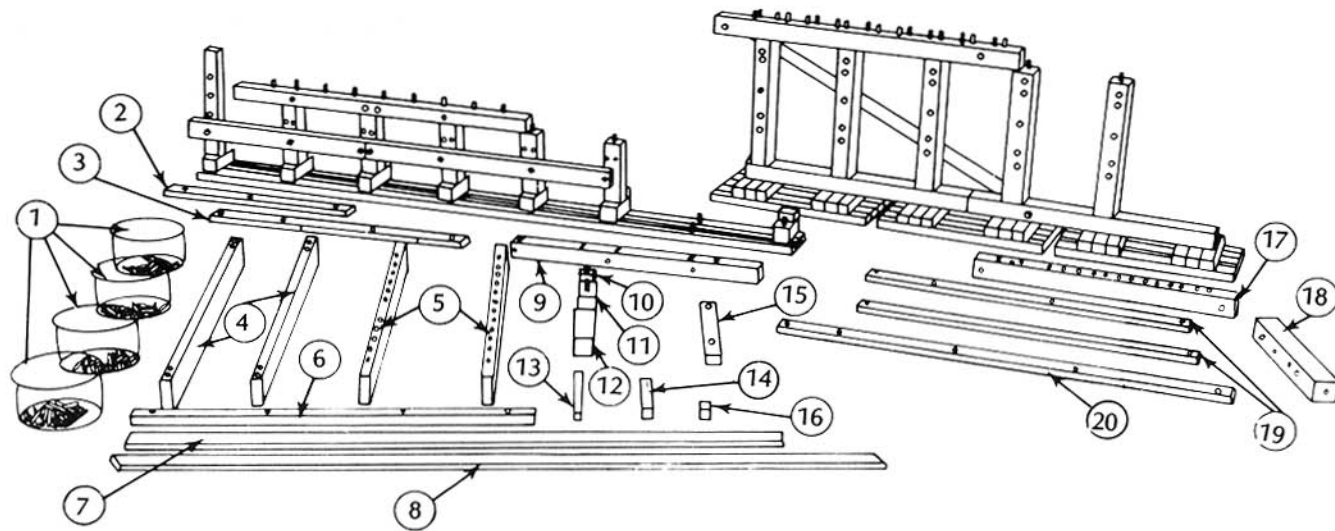


Figure 9. Layout of instructor's station.

**(2) Stations 1, 2, and 3 (fig. 10).**

*Lay out enough material to construct two bents with connecting superstructure. Diagonal tread, curb, and handrail equipment are not included, because individual model spans are not adapted to the installation of the diagonal tread. Inability to install tread also eliminates installing curb or handrails. This equipment should be installed during or after assembly of entire bridge. When all three stations are used, to provide enough material, the second bent in the display section of the model will have to be removed, disassembled, and placed at one of the stations.*

**(3) Station 4 (fig. 11).**

*Lay out material to construct abutment, one trestle bent, and connecting superstructure.*

*Note: After use by instructor, skeleton abutments, skeleton trestle bent, and skeleton superstructure material used on platform will be moved to this station.*

**d. Equipment not in use.**

Keep all pieces of equipment not used up to this point in the proper chest.

Key	Component Part	Quantity
①	Fasteners	—
②	Footings, grillage	6
③	Sill, bent	4
④	„, bent (short)	2
⑤	Cap, bent (long)	2
⑥	Bracing, transverse (short)	4
⑦	Bracing, transverse (long)	4
⑧	Stringer (exterior)	2
⑨	Stringer (interior)	14
⑩	Post, bent	12
⑪	Bracing, longitudinal	8 (optional)
⑫	Deck	14

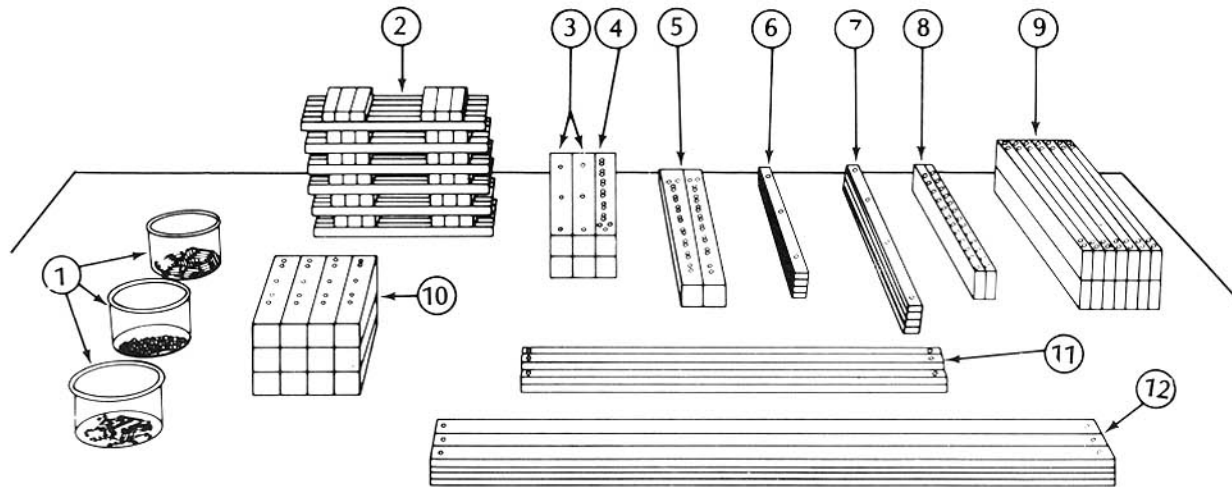


Figure.10. Stations 1, 2, and 3 layout.



Key	Component Part	Quantity
①	Fasteners	—
②	Treads, end	1
③	Post, handrail	2
④	Curb riser	1
⑤	Curb end	1
⑥	Handrail post	2
⑦	Handrail	1
⑧	Deck	13
⑨	Abutment, bulkhead plank (long)	3
⑩	Abutment, bulkhead plank (short)	8
⑪	Stringer (interior)	12
⑫	Abutment, simulated (earthfill)	2 sections

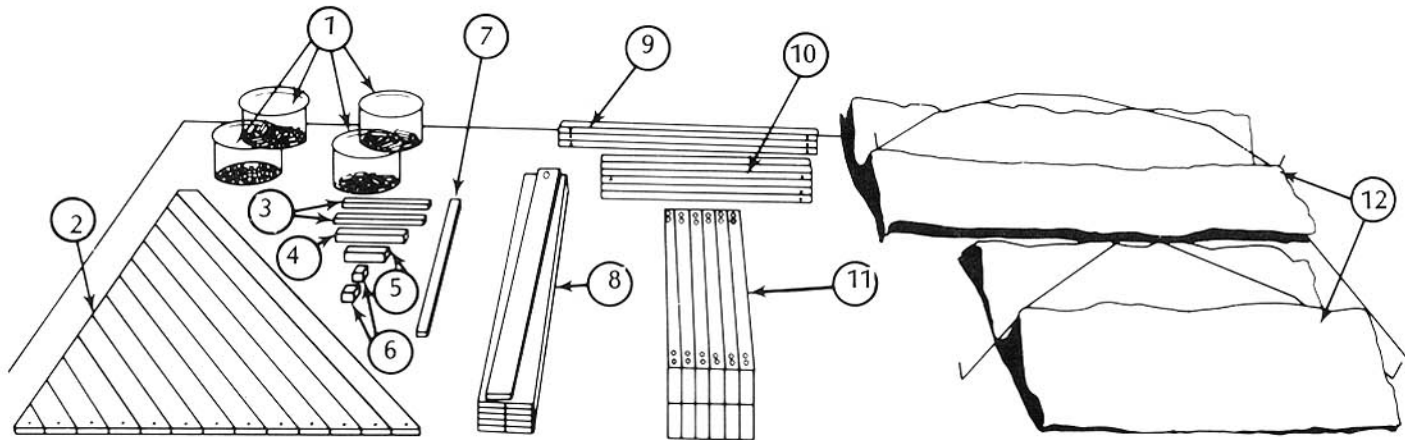


Figure 11. Station 4 layout.

**e. Conference.**

**(1) Introduction to lesson.**

*(a) Point out that this model illustrates most of the features of timber trestle bridge construction using trestle bents for intermediate supports. Also point out that in actual field construction, many variations occur in length of span, bent height, and size of material. Explain that TM 5-302-3 (Army Facilities Components System - Designs Vol. III) presents standard plans for specific types of construction which must be adjusted to theater use, while TM 5-551-B (Carpenter) and TM 5-312 (Military Fixed Bridges) are applicable to any theater use.*

*(b) Generally, the model bridge design is based on TM 5-302-3. For designing actual nonstandard fixed bridges, TM 5-302 must be used. Should design variations arise between the model and the actual fixed bridges, TM 5-312 will provide clarification.*

**(2) Nomenclature.**

*Using the charts and colored components of the model, question or lecture students on nomenclature.*

**(3) Erection.**

*Explain steps in construction of actual bridge. Complete partial erection of the model as illustrated in figures 3 through 7. Discuss variation of individual components in the actual bridge, such as*

*single-piece footings, transverse and diagonal decking (shorter lengths), knee-braced handrails, and the like.*

**f. Practical Work.**

*(1) Divide students into four groups and have them move to the four stations. Have each group at stations 1, 2, and 3 construct two bents with partial connecting superstructure. At station 4, have the group construct one abutment, one trestle bent, and the connecting superstructure. Normally, four students construct a bent or abutment and two students construct the superstructure. Students can be rotated within groups so that all participate.*

*(2) When each group has completed its work, have the parts connected into a single bridge, utilizing additional superstructure from the chest. Students may be rotated. Hold a critique and have students disassemble bridge and replace equipment in chests. If possible, assign students to a different crew or job for disassembly.*

**g. Summary.**

The above procedure can be varied. Divide students into groups at stations with an assistant instructor at each station who silently demonstrates the steps as the instructor explains them from the platform. Have a few students construct an entire bridge while others observe and then alternate with the workers. The instructor may use other effective methods of instruction that will improve the presentation. Instruction in methods of destroying fixed timber bridges, either by explosives or other means, can also be part of this period, or can be covered in a separate period.

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**GTA 5-4-32**  
25 JANUARY 1982

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