N.L. EQUIPMENT

ASSEMBLY MANUAL FOR PONTOON GEAR

REVISED

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PREPARED BY THE BUREAU OF YARDS AND DOCKS
NAVY DEPARTMENT
WASHINGTON, D.C.
JUNE 1942
(REVISION OF AUGUST 1942)

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INTRODUCTION

The Pontoon Gear, which is a part of the Naval Lightered (NL) Equipment, has been developed for the purpose of providing a rapid means of establishing landing and docking facilities for advance bases, where no facilities exist. It is a mechano set of interchangeable parts, which can be assembled in many ways.

The Pontoon Gear has been designed and tested to meet the following basic requirements:

(a) Pontoons are required to meet following loads:

Internal pressure
Ultimate: Over 52# per sq. in.
Proof of each pontoon manufactured: 25# per sq. in.

External pressure
28 feet of water

Deck load
Ultimate: More than 50,000# on any 20" square (load spread with 2" sand cushion)
Working load: Heaviest wheel loads for which civil highway bridges are normally designed.

(b) The assembly angles are designed sufficiently strong to carry a stress developed by the submersion of the string by a load applied at its center. On test, individual strings of 11 pontoons acting as a bridge supported at the ends carried between 50 and 60 tons at the center, plus 25 to 30 tons near the end. Two 12-pontoon strings secured side by side and supported at the ends are therefore strong enough to carry a 40-ton vehicle.

(c) The pontoon strings are stiff in torsion, and structures assembled from them are highly rigid. On test, a string of 11 pontoons supported at three corners and carrying 20 tons live load at the center dropped a little over 2 inches at the unsupported corner.

(d) The corner connections are designed to carry the full load either on the A6 bolts or on the wedges. A broken A6 bolt or a missing wedge does not therefore reduce the working strength of the structure. In some assemblies some of the A6 bolts may need to be omitted. This can safely be done if the wedges are all in place.

CHAPTER I

ASSEMBLY OF PONTOON STRINGS

1. These explanatory notes are intended to assist men who have had no previous experience in assembling pontoon units, and are based on experience from past performances in assembling and disassembling pontoons with civilian and enlisted personnel. This outline, together with the plans and drawings that are supplied with every pontoon shipment, should be sufficient to enable a crew of men to assemble any pontoon unit.

2. Pontoons are manufactured in two types and sizes identified as T6 and T7. (See Y&D Drawings 143074, 143075, and 143076.) They are shipped in unit groups such as barges, bridges, wharfs, etc. (See Appendices B to M inclusive for packing and shipping lists.) Each shipment includes all necessary parts to make a complete unit. All necessary tools (See Appendix N) accompany each shipment with the exception of the lifting device for handling and placing pontoons. For this operation, a small crane may be used, or any other similar gear capable of handling about two tons, and will have to be provided at the assembly site.

3. The individual pontoons are designed to be connected with 4 structural steel angles to form a string of pontoons.

4. It is well to give some thought to the matter of launching before the assembly of a string is commenced. Assembly may be made on shore, on the deck of a ship or lighter, or on any wharf or floating unit constructed of combinations of pontoon strings. Launching may be accomplished by means of rollers which pass the pontoon string into the water endwise, or by tipping it sidewise over the edge of a deck or wharf. In either case the string must be assembled on its side. The assembly bolts, A6, are thus more readily inserted, and the string is more easily launched.

5. The pontoons are connected to the assembly angles by means of 1-1/2" assembly bolts, identified as A6 in the drawings, through the assembly angles to each corner of the pontoons. The diameter of the holes in the angle is larger than the diameter of the bolts to allow for convenient and speedy assembling. The play of the connection is taken out by means of diagonal wedges. These wedges are placed in each corner of the pontoons between the beveled blocks (wedge guides) welded to the pontoon and the bars that are welded to the assembly angles, and are drawn into place by means of removable wedge bolts with handwheel nuts. The hand wheels are tightened by hand so that excessive strain will not be applied to the wedges. (For details see Y&D Drawing 143,058).

6. The procedure that has been found to be most practical in the assembling of these pontoon strings is outlined briefly in the following subparagraphs.

(a) Place two assembly angles on wooden blocks, so that the legs with the bolt holes are vertical (Fig. I-1). The horizontal legs should extend toward each other with a clear distance of 5'-2" between the interior faces of the vertical legs. The wooden blocks should be spaced in such a way as to prevent any appreciable deflection in the angles that may be caused by the weight of the pontoons.

(b) By means of a crane or any other lifting device, place the T6 pontoons on end in the trough formed by the angles and the wedge bars, which are welded on to the angles (Figs. I-2 & I-3). The decks of the pontoons, which are characterized by tread plate, should be on the same side. The plugged holes in all pontoons should face the same direction and should all be tightened before launching. Line up the pontoons using drift pins and screw in the assembly bolts part way, using the hexagonal socket wrench if necessary.

(c) Place the other two assembly angles in corresponding positions on the top of the pontoons and set-up assembly bolts. It may be necessary to use drift pins as well as jacks to line up the bolt holes before inserting the assembly bolts. Fig. I-4 indicates clearly the difficulties that will be encountered in setting these upper angles if the lower angles are not supported in a manner to keep them straight, i.e., to keep them from sagging. The setting of the upper angles on the assembly shown in Fig. I-5 was made without any difficulty because the angles on the blocks had been lined up. It can be seen that the tops of the pontoons lay in a straight line in this assembly. If a crane is not available to prevent these upper angles from slipping during the lining up, they should for safety be lashed in place until several bolts are inserted.

(d) Tighten all assembly bolts by means of the ratchet wrench to be found among the assembly tools.

(e) Insert a wedge bolt and a wedge at each corner of each pontoon. Care should be taken to insure the proper seating of the wedge bolt on the mandrel or boss of the angle wedge bar. Fig. I-6 shows the angle wedge bar and the pontoon wedge guide before the wedge bolt is placed. Fig. I-7 shows the wedge bolt in place, properly seated on the mandrel on the underside of the wedge bar. Fig. I-8 shows wedge bolt and wedge properly placed, and Fig. I-9 shows hand wheel nut put on and tightened. In order that unnecessary strain shall not be put on any part of the joint, the hand wheel nut shall be tightened by hand,

rather than with a wrench.

(f) To place the wooden bottom closure planks (W2)(Y&D Drawing 124962) in the slots between pontoons, remove one end bolt from the closure. Slide the end from which the bolt was removed under the upper angle between pontoons on the side of the string which will form the bottom of the barge, then lower the closure until the head of the bolt at the bottom end rests on the lower angle. Finally, replace bolt at the top of the closure. Bottom Closures are shown in Fig. I-10.

7. With the placing of the bottom closures, the work to be done on the string assembly is completed and it is ready to be launched. The string can be assembled with one side close to the edge of a bulkhead and tipped overboard sidewise (Figs. I-11, I-12, I-13), or raised on rollers and rolled overboard endwise. The endwise launching is best where practicable (Figs. I-10, I-14, I-15, I-16). However, if equipment is available strings may be lifted by a crane or derrick and lowered into the water.

8. After the strings are in the water, it is well to recheck all hand wheel nuts to be sure none of them have loosened excessively during the process of launching.

9. The joining of groups of pontoon strings to form various kinds of floating equipment is done after launching of the strings and is described in the following chapters.

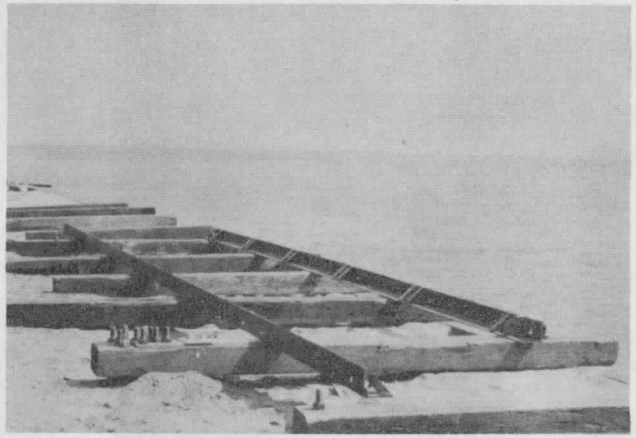


Fig. I-1

Assembly angles properly placed for pontoons.

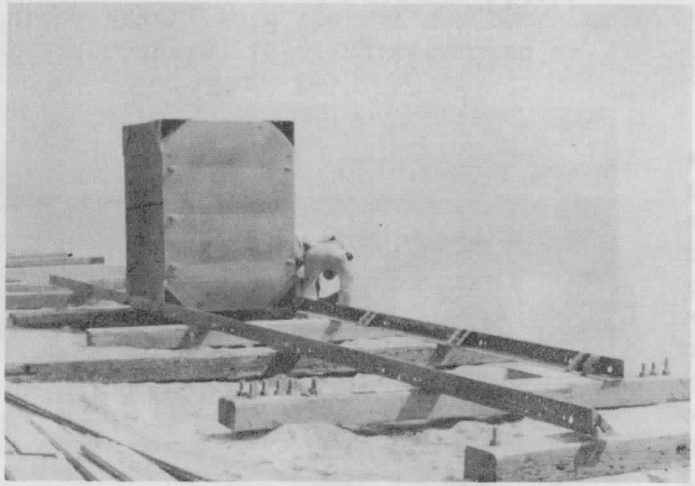


Fig. I-3

Assembly bolts being placed through the assembly angles into the corner of the pontoon.

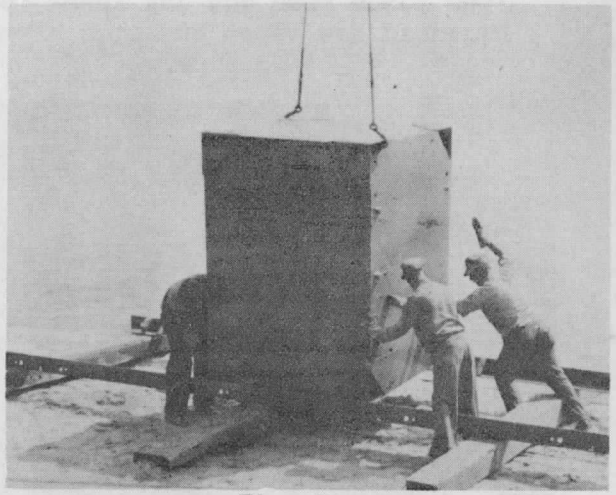


Fig. I-2

A pontoon is being placed on the assembly angles by means of a crane.

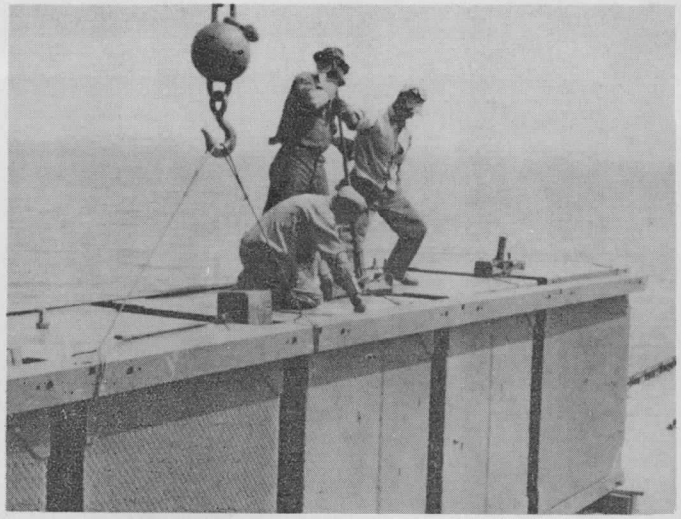


Fig. I-4

Pontoons being jacked at the top to allow the top assembly angles to fall into place.

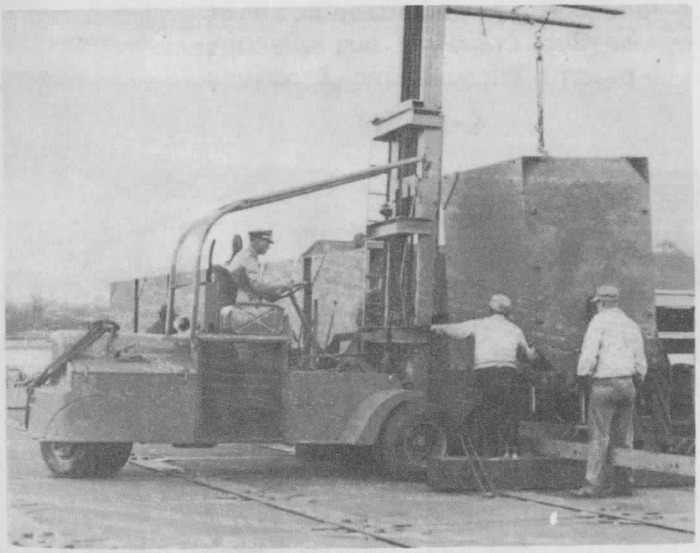


Fig. I-5
The pontoon string is being assembled on a pontoon wharf. Note the way the pontoons are lining up, and the use of the lifter.

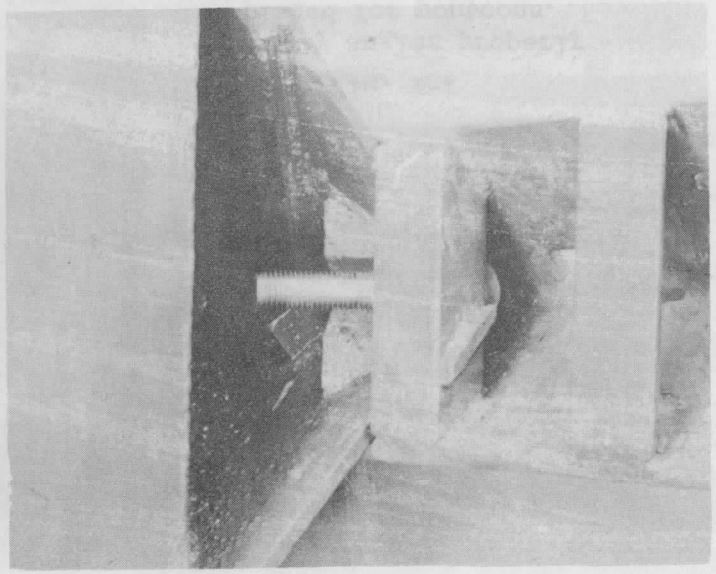


Fig. I-6

The pontoon has been placed in the angle. Note the positions of the pontoon wedge guide and the angle wedge bar. The assembly at this point is ready for the wedge bolt.

Fig. I-7

The wedge bolt is in place & is properly seated on the mandrel on the under side of the wedge bar.

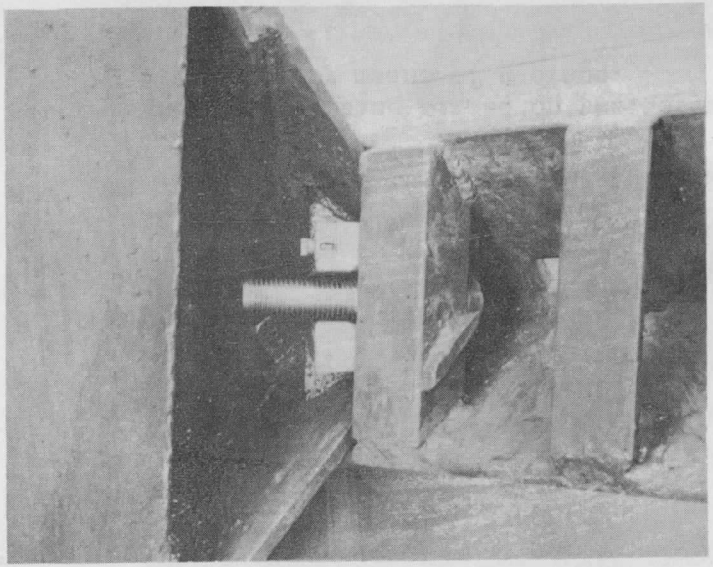


Fig. I-8
The wedge bolt and wedge are properly placed, ready for the hand wheel nut.

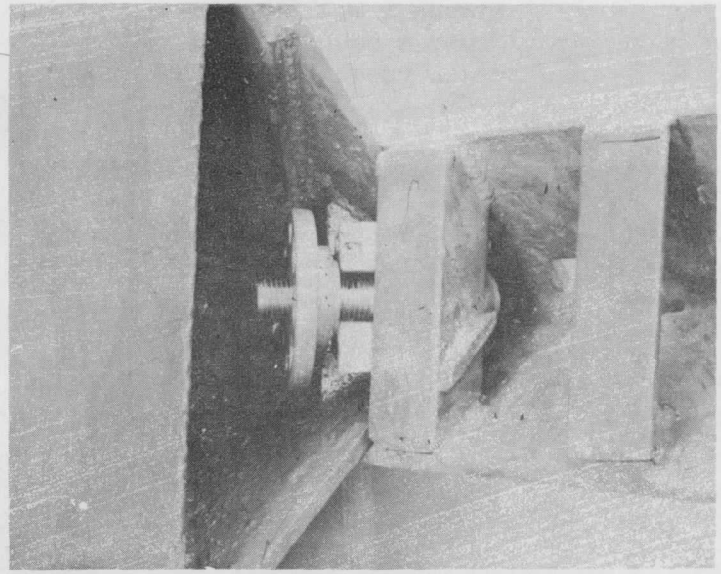


Fig. I-9
The wedge assembly is completed with the hand wheel nut in place.

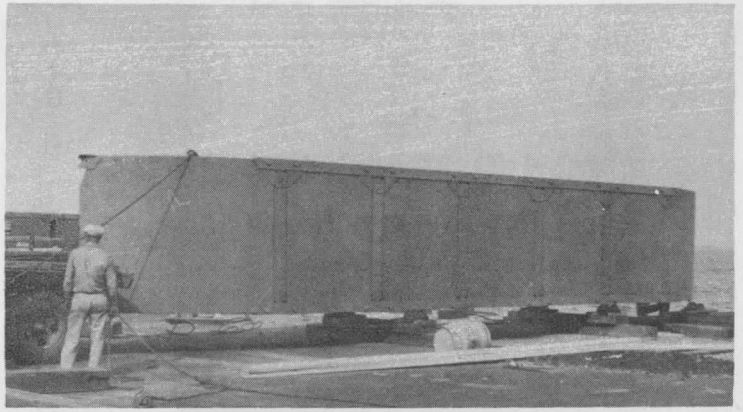


Fig. I-10
A barge pontoon string is ready for launching by means of rollers. Note the bottom closures are already in place.

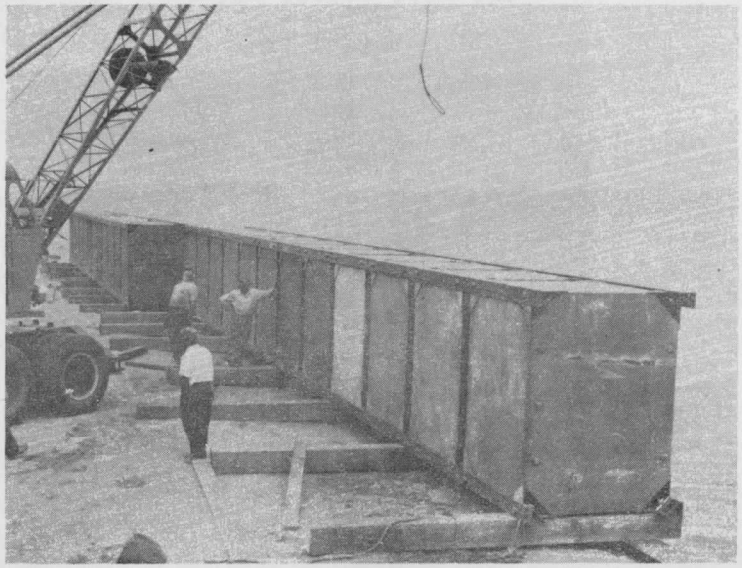


Fig. I-11
A bridge assembly string is ready for launching from the wharf.

Fig. I-12
A barge assembly string is being launched from a wharf.

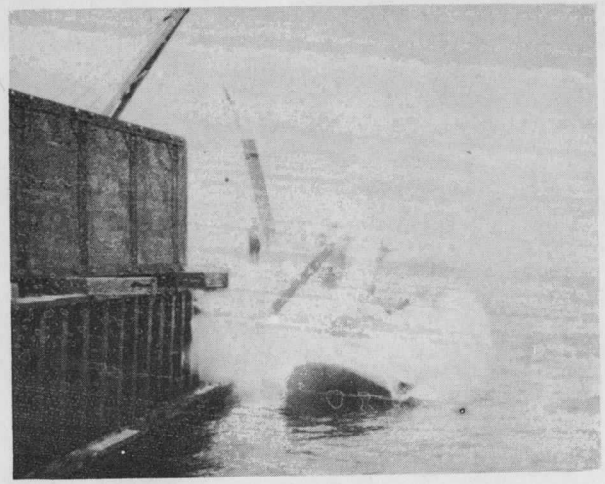


Fig. I-13

An assembly string hits the water after being launched from a wharf.

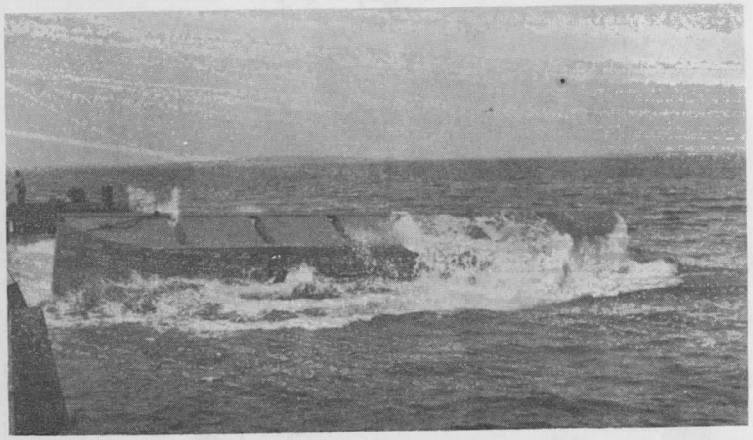


Fig. I-15

A barge pontoon string has been launched by means of rollers from a wharf.

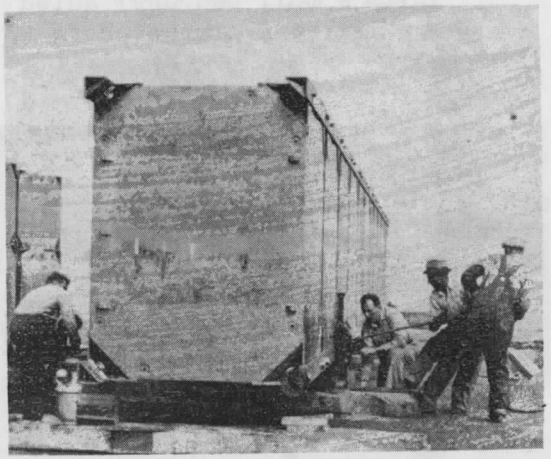


Fig. I-14

A bridge pontoon string is ready to be launched by means of rollers.

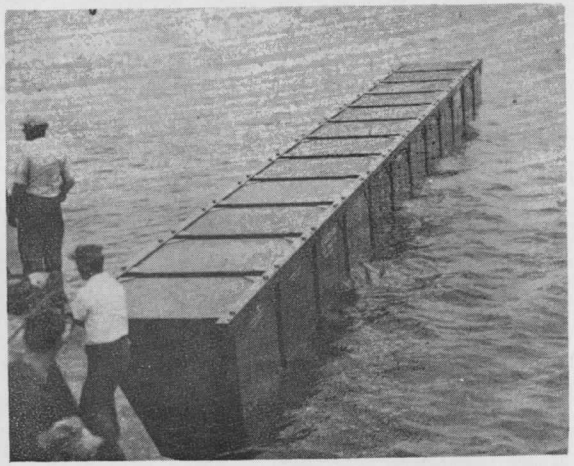


Fig. I-16

A bridge pontoon string is in the water after having been launched.

CHAPTER II

BARGE ASSEMBLIES

1. One of the pontoon units mentioned in the previous chapter is the barge. Barges are assembled in three standard sizes, namely the 50-ton, the 100-ton and the 250-ton capacity. It is possible to make several different assembly arrangements to obtain these capacities, but the units selected have been found to be the most suitable for these requirements, and their characteristics are as follows:

Capacity	50 Tons	100 Tons	250 Tons
(No. of pontoons in width)x(No. of pontoons in length)	3x7	4x12	6x18
Beam	21 ft.	28 ft.	43 ft.
Length	43 ft.	72 ft.	107 ft.
*Draft, Light	20 inches	20 inches	20 inches
*Draft, fully loaded	48 inches	44 inches	48 inches
Speed Light, 1 Eng.	6.10K O.B.C.	5.41K O.B.C.	3.40K O.B.W.
Speed Loaded, 1 Eng.	4.46K "	3.52K O.B.C.	**
Speed Light, 2 Eng.	6.13K "	6.86K O.B.C.	4.68K O.B.W.
Speed Loaded, 2 Eng.	5.22K "	4.96K O.B.C.	**
Speed Light, 3 Eng.	7.28K "	7.72K O.B.C.	5.91K O.B.W.
Speed Loaded, 3 Eng.	6.51K "	5.87K O.B.C.	**
Speed Light, 4 Eng.	(Not applicable)	7.98K O.B.C.	**
Speed Loaded, 4 Eng.	(")	6.52K O.B.C.	**
Speed Light, 1 Eng.	5.95 I.B.C.	**	**
Speed Loaded, 1 Eng.	4.25 I.B.C.	**	**

Note. O.B.C. - Outboard propelling unit; Chrysler Engine.
O.B.W. - Outboard propelling unit; Waukesha Engine.
I .B.C. - Inboard sea tractor, Chrysler Engine.

*Propeller blade of outboard unit extends 24" below bottom of barge. Drafts shown are to bottom of barge. "Fully loaded" equals "capacity" load plus 5 1/2 tons for propelling unit.
**Test data unavailable.

2. For purposes of description the 50-ton pontoon barge will be outlined and described in detail, together with any additional or different operations that are involved in the assembling of the other two sizes.

3. The 50-ton barge string consists of five T6 pontoons and two T7 pontoons connected by means of two B2 (top) angles and two B3 (bottom) angles. (See Y&D Drawings 124957 and 124961). The B2 or deck angles are 6"x6"x3/8", 43' -8 1/2" long, and the B3 or bottom angles are 6"x6"x3/8", 31' -6 1/2" long. This string weighs about 11 tons.

4. The procedure for assembling a barge string is basically as described in Chapter I. The same assembly bolts, wedges, wedge bolts and handwheel nuts are used to connect the pontoons to the assembly angles. The following paragraphs are intended mainly to clarify operations that are necessary in the barge assembly.

5. It should be noted that the B2 and B3 angles differ in length as well as in detail due to the shape of the T7 pontoons. As the strings are assembled on their sides, there should be one B2 and one B3 angle placed on the wooden blocks for the pontoons to be set into. The decks of the pontoons should face the B2 deck angles, which are longer than the B3 or bottom angles.

6. The T6 pontoon connections are made by using 8 assembly bolts and 8 wedge sets, i.e., one assembly bolt and one wedge set at each of the 8 corners of the box-like pontoon. The T7 or curved pontoon connections require only 6 assembly bolts and 4 wedge sets. In addition, the T7 is connected to the end of B3 angle by a 1 1/2" bolt and lock washer (identified as A17 and A18).

7. Figs. I-1, I-2, I-3, I-4, I-10, I-12, and I-15, show various stages in the assembling and launching of a barge string.

8. Fig. II-1 shows three barge strings in the water ready to be joined together to form a barge. The strings can be snugged together by using lines and the top angles may be temporarily lashed together, if necessary, while connections are being inserted. The plugs in the pontoons of all three strings should face the same direction.

9. The deck connection is made by means of links identified as A1 in the plans, and secured with driven pins identified as A2. (See Y&D Drawing 124958). One link is placed in the rectangular matching holes in the vertical legs of the assembly angles, which butt back to back at the seam between two strings. These holes occur between each two adjacent pontoons. The pin is driven like a spike through the hole in the link which is accessible through a hole in the horizontal leg of one of the deck angles. (Figs. II-2 and II-3).

10. These links and pins are inserted in all the matching holes provided in the two pairs of adjacent angles that form the two seams in the deck. The top connection thus made is very rigid. The final step in joining the strings at the deck level is to place the 1" round bolts through the vertical legs of the pairs of deck angles--one at each end of each pair.

11. The bottom of the barge is held together by means of six tie rod units which are located one in each slot. Each tie rod unit consists of parts identified as A7, A8, A9, A-11, and A15. (For details and connection see Y&D Drawings 124959, 124961 and Fig. II-4).

12. These units are assembled on deck and worked into the slot below the deck angles. They are then lowered until the yokes rest on the bottom angles (see Fig. II-5). The A-11 bolt at each end is engaged in the nut in the tie rod before lowering. The A-11 bolts at the opposite ends are tightened with the tie rods in place. The tie rods should not be allowed to rotate while tightening these bolts. This operation is performed just under the surface of the water. The use of a float or small boat is desirable for this operation. The A-11 bolts should be checked after the last one is drawn taut to insure tension on all tie rods.

13. Place side closure planks, identified as W1 (Y&D Drawing 124962), in every slot on both sides of the barge. This operation is easily performed from the deck of the barge by placing the top of the closure inside the deck angle, lifting it above its normal position, then lowering it so that the holes in the base slip over and seat on the lugs of the tie rod yokes. See Fig. II-6. The flat head bolt is then pushed out and the cotter pin inserted to secure the side closure against any vertical movement.

14. The slots in the deck between the pontoons are filled by means of deck closure channels, identified as A13. (See Y&D Drawing 143066). They are inserted the same way as the bottom closures. The flanges of these channels rest on the lugs that are provided on the pontoons and are held against lengthwise movement by the heads of the bolts in the closure that butt against the assembly angles. See Fig. II-7.

15. Life lines may be installed along the edges of the deck. Pipe stanchions with base plates that can be connected to the pontoon assembly bolts are available. To install life lines, the assembly bolt is loosened, the base of the stanchion is slid under it, and the bolt is re-tightened. Wire rope or other line may be run between these stanchions, enclosing the deck of the barge. (See Fig. II-8 and Y&D Drawing 143069).

16. Flash-boards shown in Fig. II-8 are not a standard part of the barge. However, provisions have been made to bolt 2" x 12" flash-boards along the bottoms of the stanchions.

17. The barge can be made self-propelling by the installation of a specially designed inboard or outboard propulsion unit, or it can be towed by other self-propelled units. Speed data for self-propelled barges are given in paragraph 1 above.

18. The 100-ton barge is essentially the same as the 50-ton barge, differing only in sizes and lengths of angles and the number of pontoons required. (See Y&D Drawing 143044). This size consists of four strings, each twelve pontoons long. Ten T6 pontoons and two T7 pontoons are connected together with two B8 angles and two B9 angles to form each string. See Fig. II-12.

19. The B8 or deck angles are 6"x6"x1/2"-72' -8" long and the B9 or bottom angles are 6"x6"x1/2", 60'-6" long. (See Y&D Drawing 143085). In order to facilitate storage and handling of these angles they are each shipped and stored in two pieces (B8A, B8B, B9A, B9B) with a splice in the center which fully develops the strength of the angles. (For details of this splice see Y&D Drawings 143060, 143061, 143062 and Fig. II-9.) The two parts of each angle are spliced together before assembling the pontoon strings.

20. There is a special bottom closure plank provided for the slot at the splice. This closure is identified as W9 and can be found on Y&D Drawing 143066.

21. Heavier tie rods made up of A12, A29, and A30 are used to join the strings at the bottom. (For details see Y&D Drawing 143086 and Fig. II-10). Because of the size and weight of these tie rods, it is easier to make the pin connection just under the deck assembly angles. Then place the end yokes and bolts and lower the whole tie, until the lugs on the yokes rest on the top of the lower pontoon straps. Then tighten the bolts to put the tension on the tie rods. It is necessary that the yokes be properly placed; otherwise the side closures will not fit.

22. Special side closures for the slot at the splice are provided and identified as W7 shown on Y&D Drawing 143066. The special deck closure channel to be used at the splice is identified as A34, also shown

on Y&D Drawing 143066.

23. The 250-ton barge (Y&D Drawing 143088) consists of six strings each eighteen pontoons long. These strings are composed of sixteen T6 pontoons and two T7 pontoons with elongated decks and bottom angles. The deck angle is made up by using angle B10 between B8A and B8B. Angle B10 is 8"x8"x1/2", 34' -9" long and takes 6 pontoons. Its ends are fitted for the breech plug splice, and it may readily be inserted between any angles which are spliced. The bottom angle is made up of B9A, B10 and B9B. See Fig. II-11 for a 250-ton barge fully loaded.

24. Special bottom closures identified as W8 and special deck closures A33 are provided for the center of the assembly where the 8" assembly angles are used. (Y&D Drawing 143066).

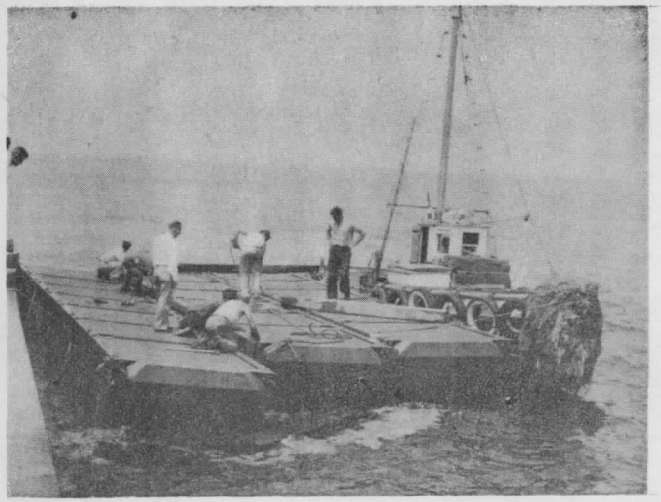


Fig. II-1

Three barge pontoon strings are being brought together to have the top angles secured by means of the link and pin.

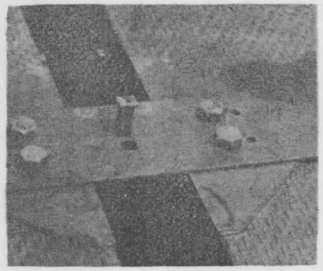


Fig. II-3

The link has been placed through the slots in the angles and the link pin is ready to drop into place.

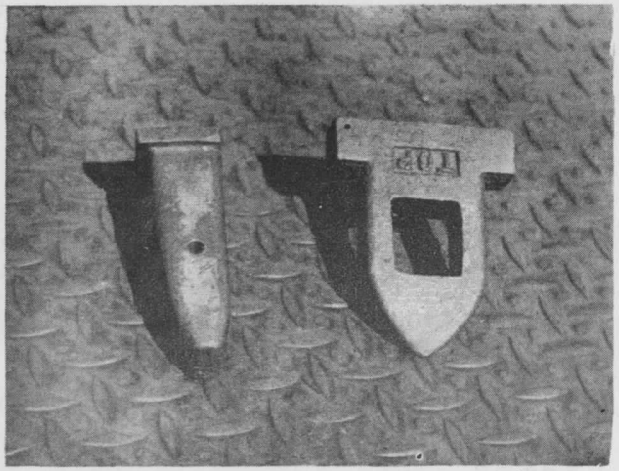


Fig. II-2

The link and link pin which are used to connect the top angles of the assembly strings together.

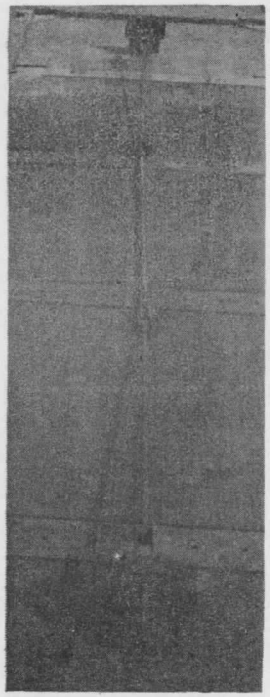


Fig. II-4

The light tie rod assembly, used to secure the bottoms of a 50-ton barge. The bolt and yoke are identified as A 11 and A15 respectively, and the rod sections are A9, intermediate, and A7 and A8 end sections.

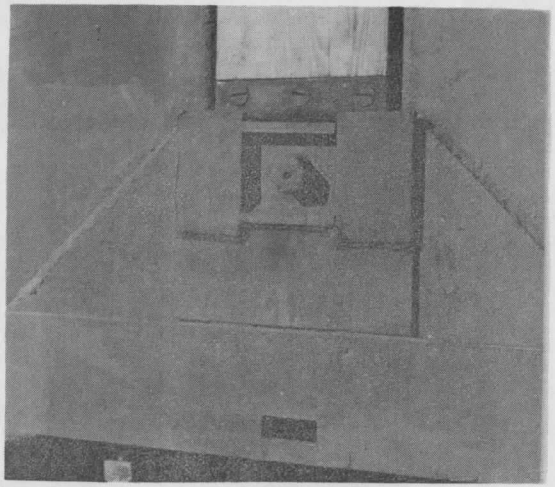


Fig. II-5

The yoke (A15) of the light tie rod assembly is shown in its proper position on top of the bottom angle. Note the side closure (W1) resting on the top of the yoke.

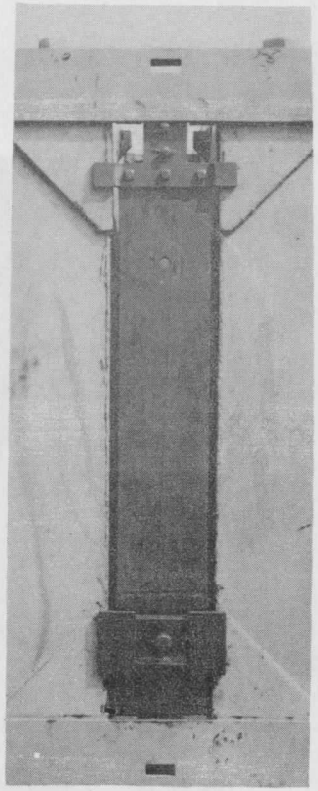


Fig. II-6

The regular side closure (W1) is in place.

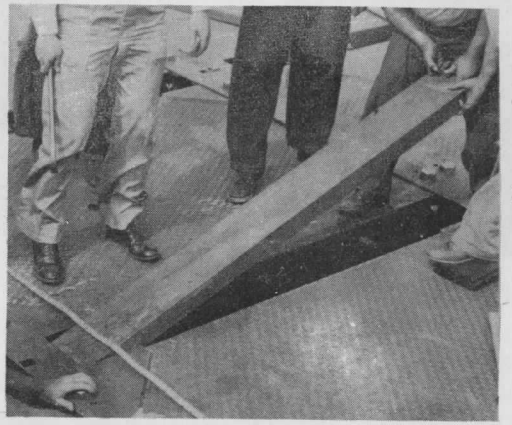


Fig. II-7

The deck closure, A13, is being placed in the opening between the pontoons. Note the dogs on the sides of the pontoon on which the closure rests.

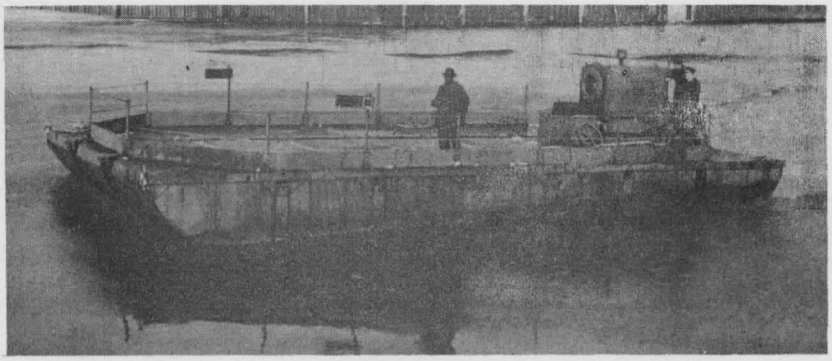


Fig. II-8

A 50 ton barge is shown with propulsion unit, pipe posts, cable and flash boards.

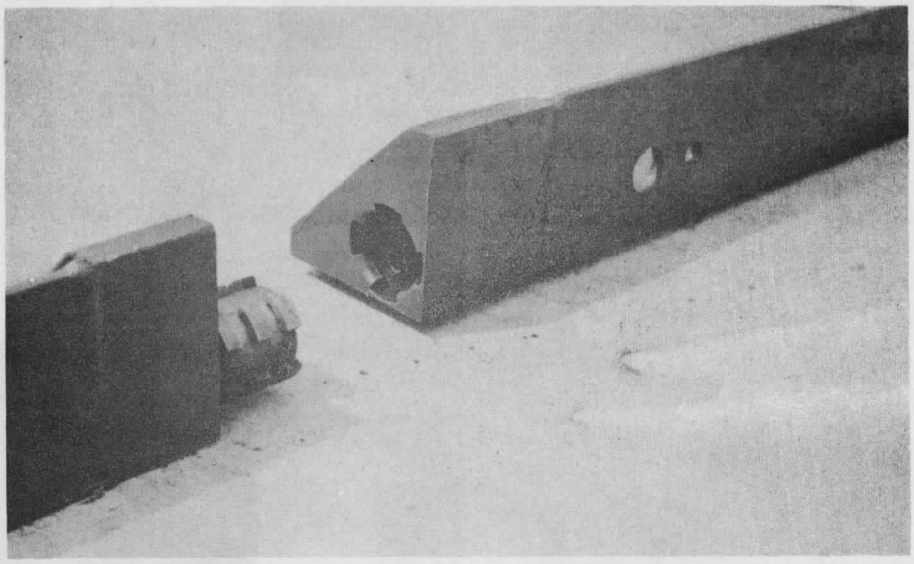


Fig. II-9

The breech plug type of assembly angle splice.

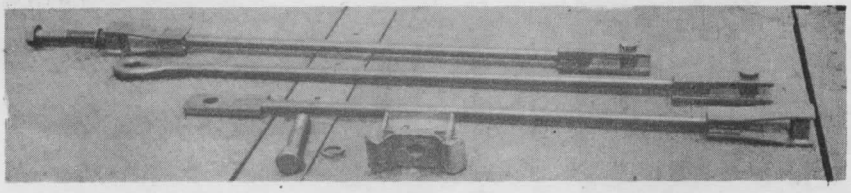


Fig. II-10

The parts used in making up the heavy tie rod assembly. This is used on wharves, drydocks, 100-ton and 250-ton barges. The rods, left to right, are end section (A29), intermediate section (A12), and end section (A30). The heavy tie rod bolt is A10, and the yoke, A14.

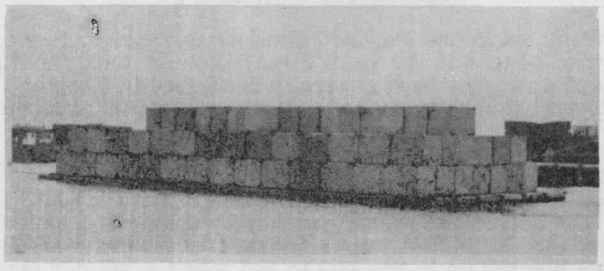


Fig. II-11

A 250-ton barge loaded
with 198 T6 pontoons.

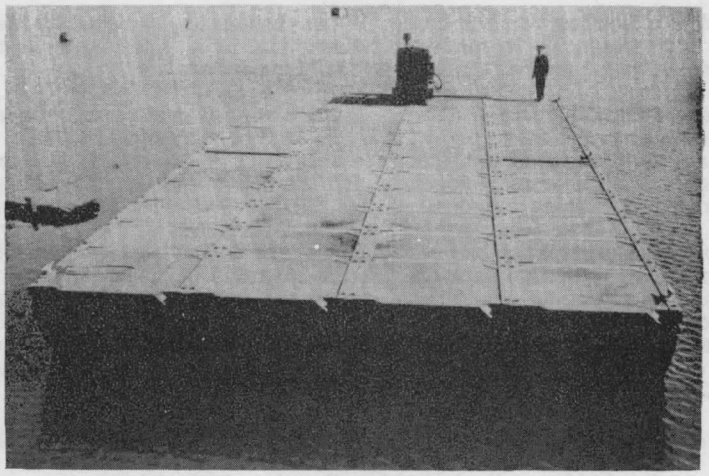


Fig. II-12

A 100-ton barge with a propelling
unit.

CHAPTER III

BRIDGE UNIT ASSEMBLY

1. Bridge units are assembled in one standard size, namely two pontoons wide by twelve pontoons long, with overall dimensions of 14 ft. 4 in. by 70 ft. 3 in. This unit consists of two pontoon strings of 12 pontoons each, the assembly of which has been generally described in Chapter I. This unit is shown on Y&D Drawing 124960. The following paragraphs will clarify operations necessary for the assembly of the bridge unit.

2. Since only T6 pontoons are used, the top and bottom angles in this assembly are the same. This angle is identified as B1, (see Y&D drawing 124957). It is 6"x 6"x 1/2", 70-3" long, and is cut in half length for ease of handling. The halves are joined together by means of a breech plug splice. See Figs. II-9 and III-1. (Y&D Drawings 143060, 143061, and 143062). It is a simple matter to make up this splice. The two half length angles are blocked up in line end to end with the splices facing each other. One half of the angle is rolled 1/8 turn to one side, the splice is inserted and the angle is rolled back the 1/8th turn to lock the splice and line up the legs of the two half lengths of the angle.

3. The same general procedure of pontoon string assembly outlined in Chapter I is followed. The pontoons are placed and bolted, and the same wedges, wedge bolts, and hand wheel nuts are used. The Fig. I-1, I-2, I-3, I-4, I-5, I-8, I-11 and I-13 show various stages in the assembly of a bridge pontoon string.

4. The bottom closures are put in place before launching. The regular closure W2 is used at all slots except at the splice where closure W9 is used. (See Y&D Drawing 124962 and 143066 and Fig. III-2). The string is now ready for launching. Launching procedure is described in Chapter I (Figs. I-10 to I-16 inc.)

5. After launching, the bridge pontoon strings are joined together at the top with the links and link pin (see Figs. II-2 & II-3) as described for the barges in Chapter II.

6. The strings are secured at the bottom by the bottom ties, which in this case consists of two tie rods (A7 & A8), two yokes (A15) and two end bolts (A11). This assembly is similar to the tie assembly described in the barge assembly Chap. II, paragraph 11, except that the center rod, (A9) is not used, A7 being attached directly to A8, (see Fig. II-4 and Y&D Drawings 124959 and 124960). The manner in which these ties are put in place is described in Chapter II.

7. The deck closure channels (A13) and the splice deck closure channel (A34) (see Fig. III-3 Y&D Drawings 124962 and 143066) are then placed in the slots. (Fig. II-4). This operation has been described in detail in Chapter II.

8. The shore end of a floating pontoon bridge is beached and is secured by means of cables. An approach to the bridge will ordinarily be made with earth fill. It is helpful to hold back the earth embankment with a timber abutment so that the bridge can hinge freely.

9. Bridge units are ordinarily joined end to end by means of cable suspenders, (A51), which hold the adjacent ends of the units at the same level. (Fig. III-4, Y&D Drawing 143064). The lower ends of the cables A51 (Fig. III-5) are first secured in the square holes in the ends of the bottom angles of the strings. Then the bridge units are brought together and the upper ends of the cables are secured in the top angles of the opposite unit running diagonally. (Fig. III-6). The units are then jacked apart and the wooden bumpers (A45) (Fig. III-7 are dropped into place. These bumpers are secured by fastening their cables, which are supplied as part of the bumpers, around the wedge bars at the ends of the deck assembly angles, then the top bridge to bridge deck joint filler channels (A73) which narrow the slot in the deck (Fig. III-8), are placed and bolted up. These narrow the opening between the bridge units so that vehicles with small sized wheels can readily pass from one unit to another. The horizontal cable connections, A76, are then placed to resist horizontal angular movement of the bridge units with respect to each other as a result of wave action, tides, or other forces. Fig. III-9 shows the filler channels and cable connections in place,

10. The bridge to wharf connection is described under the wharf assembly chapter.

Fig. III-10 shows two bridge units joined together in a typical hook up.

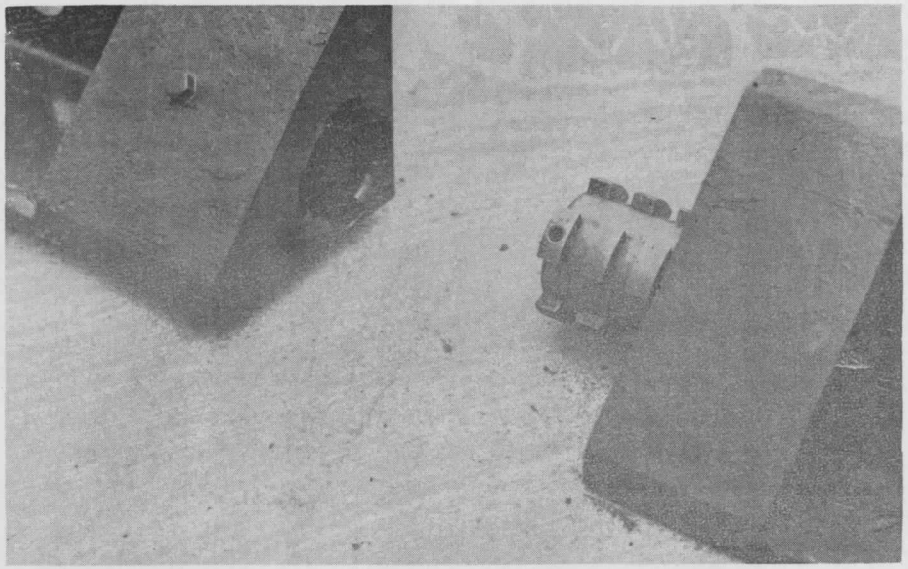


Fig. III-1

The breech plug type of assembly angle splice.

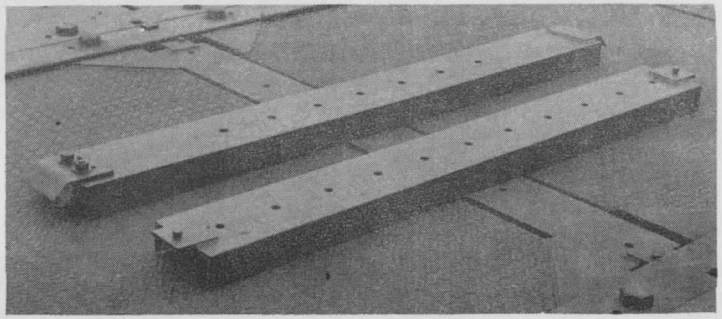


Fig. III-3

The different types of deck closures. On the left is the closure used at the breech plug splice, A34. On the right is the regular deck closure, A13.

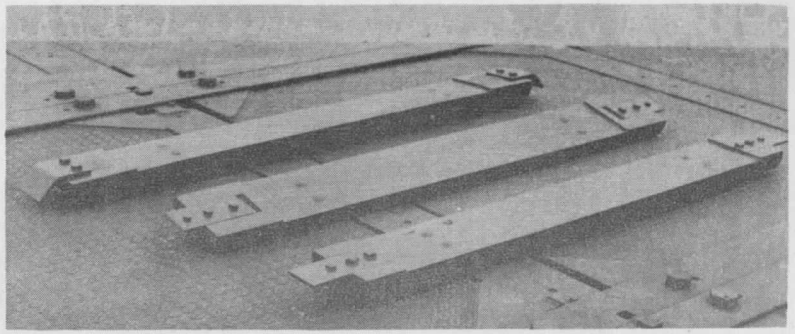


Fig. III-2

The different types of bottom closures, left to right, W9, W2 and W8.

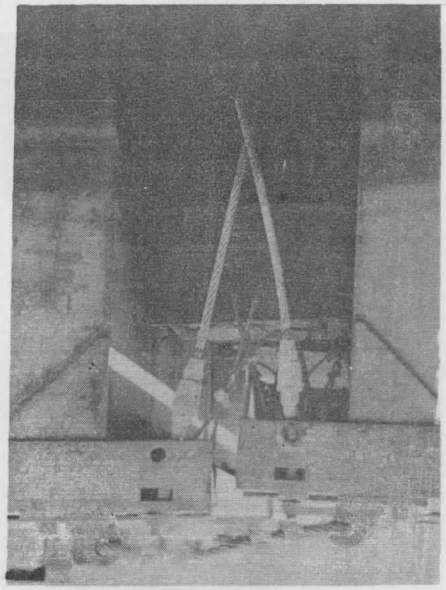


Fig. III-4

A typical bridge to bridge connection job.

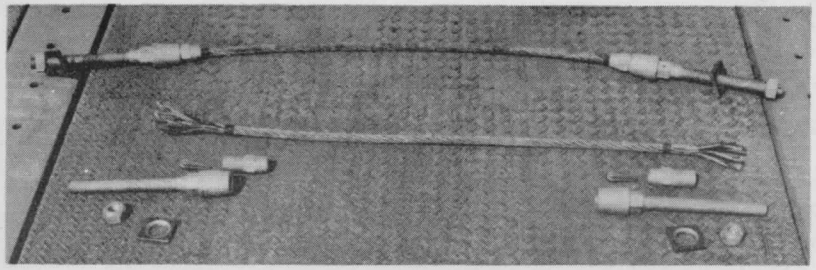


Fig. III-5

Bridge to bridge and bridge to wharf diagonal connection cable suspenders A51.

Fig. III-7

Wooden bumpers (A45) used with the bridge to bridge and bridge to wharf connections.

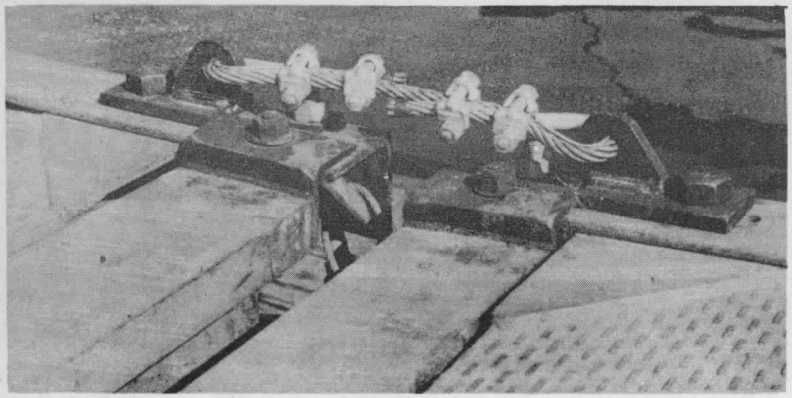


Fig. III-9

The horizontal cable connectors, A76, are in place, also the Bridge to bridge channels A73.

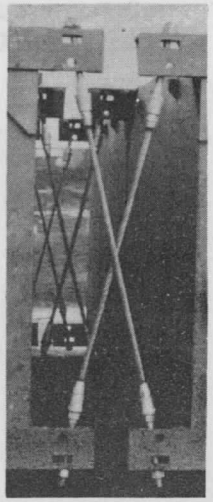


Fig. III-6

Bridge to bridge connection showing the diagonal connection cables properly placed.

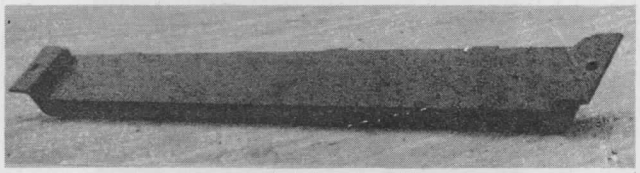


Fig. III-8

The connection angle A73, of the Bridge to bridge connection, which fills the opening at the end of the pontoon between the angles. Fig. III-9 shows these angles in place.

Fig. III-10

Two bridge units joined together, also a typical shore end abutment.

CHAPTER IV

WHARF ASSEMBLY

1. Wharf units of various sizes may be used. The size adopted as a standard is five pontoons wide by twelve pontoons long. (Y&D Drawing 143089). This gives an overall measurement of 35 ft. 10 in. by 70 ft. 3 in. This wharf unit, attached to the shore by two bridge units described in Chapter III, is shown in Fig. IV-1. This wharf is made up of five strings of twelve pontoons each.

2. The assembly of the pontoon strings is performed as described in Chapter I, with modifications as in Chapter III.

3. It is usual to run bridge connections from the shore to the wharf in the manner shown in Fig. IV-1 The end of each bridge is accordingly joined to the side of a wharf string. In this case, one pontoon string of the wharf should have the bottom angle A74 of the wharf to bridge connection (Fig. IV-2) put on before launching, otherwise the bottom angle will have to be put on under water. This member is attached with links and pins to the bottom assembly angle of the wharf at the location where the bridge is to be connected.

4. It is also easier as a rule to put on the top angle (A44) of the wharf to bridge connection (Fig. IV-3) before launching, as handling facilities are usually better at the assembly site ashore.

5. After launching, the wharf strings are tied together at the top with link and link pin, in the manner described in Chapter II, paragraphs 9 and 10.

6. The bottom ties are then put in to hold the strings together at the bottom. The tie in this case consists of one end rod, A29, one end rod, A30, 3 intermediate rods, A12, two yokes, A14, two end bolts and washers, A10. These members are shown in Fig. II-10 (Y&D Drawings 143085 and 143086) and are put in place as described in Chapter II.

7. The deck closure channels, A13, and the splice deck closure channel, A34, (Fig. III-3, Y&D Drawing 143066) are then placed in the openings. See Chapter II.

8. The wharf is then joined to the bridge. If the top angle of the bridge to wharf connection is not already in place, it is put on at this time. Then the lower ends of the cable suspenders, A51, (Fig. III-5) are secured in the square holes on the ends of the angles of the bridge unit and in the angle (A74) which is bolted to the bottom angle of the wharf unit. The units are then brought together, and the cables are attached in a diagonal manner (Fig. IV-2). The units are then jacked apart and the wooden bumpers, A45 (Fig. IV-3) are dropped into place. These are secured through the openings under the wedge bars at the ends of the deck assembly angles on the bridge unit and to the top angle, A44, of the wharf unit. The top bridge to bridge joint filler, A73, is then placed and bolted. Fig. IV-3 shows these in place. The connection is then finished except that horizontal cable connections may be placed as shown in Fig. III-9 if necessary.

9. It is sometimes considered advisable to have two bridge unit approaches to a wharf, one being on the shore side of each end. This stabilizes the whole job, reduces the amount of anchoring necessary on the wharf, and gives an opportunity to facilitate the traffic problem when the wharf is busy.

10. If it is desired to connect a barge to a wharf this may best be done by means of the barge hinge, A 40 and A41 (Fig. 40, Y&D Drawing 143064). Fig. IV-4 shows the hinge used in pairs. The assembly of this hinge is very simple; it merely requires bolting to the ends of the assembly angles. The barge may be detached by merely removing the pins.

11. Each wharf is equipped with four anchors and chains, which, in most cases, should be run diagonally under the wharf. Thus, the portion of the anchor chain which is near enough to the surface to cause trouble is under the wharf, and there is sufficient clearance around the wharf to insure safety from entangling with the chains.

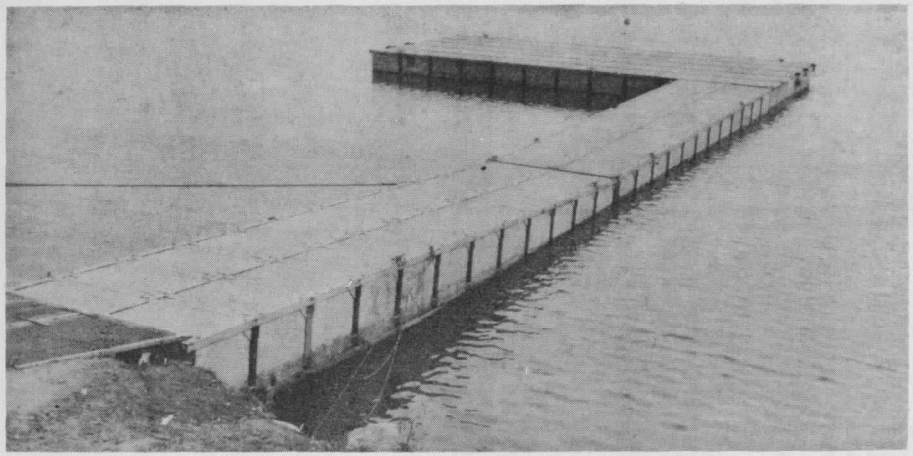


Fig. IV-1

A typical wharf assembly, 5 pontoons by 12 pontoons, with an approach of 2 bridge units.

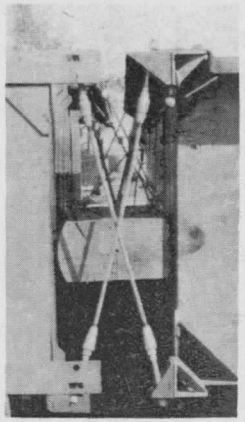


Fig. IV-2

The bridge to wharf connection.

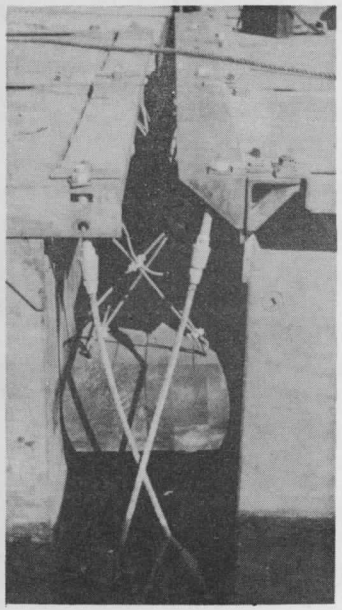


Fig. IV-3

Bridge to wharf connection showing top connection angle A44, and bridge to bridge deck joint filler channel (A73), at the left in place.

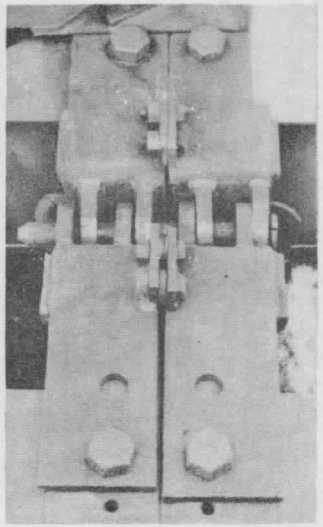


Fig. IV-4

Typical barge to wharf hinge made up of 2 parts A40, 2 parts A41, and the hinge pin, A70.

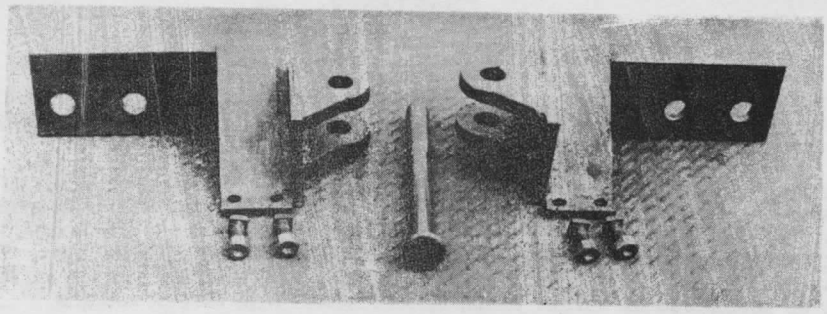


Fig. IV-5
The hinge parts A40 and A41, and the hinge pin, A70.

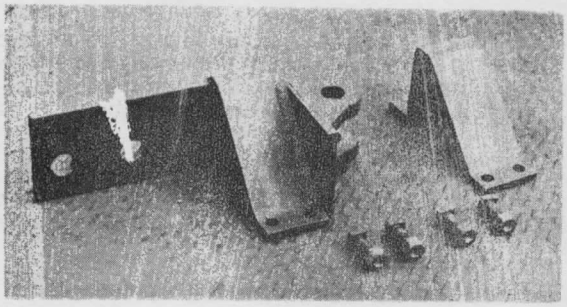


Fig. IV-6
The angle used with a hinge part for proper support, when it is used singly.

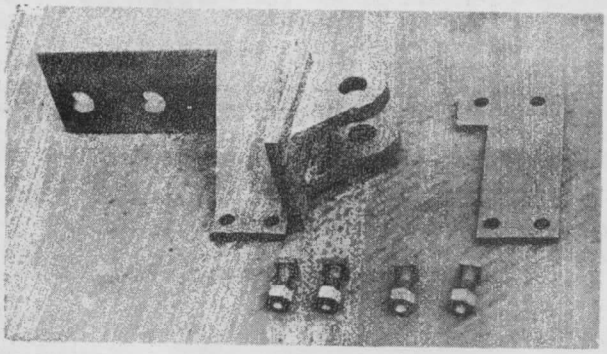


Fig. IV-7
The plate used with a hinge part for proper support, when it is used singly and on the extreme outside angle.

CHAPTER V

PONTOON FLOATING DRYDOCK

1. In order to provide drydocking facilities for small craft, (up to about 350 tons) the pontoon drydock has been developed. The 100-ton size has been used with satisfactory results. The larger sizes are available but have not yet been used.

2. The pontoon drydock is a floating structure comprising a main deck structure, built like a floating wharf, with side towers. The main deck is like the wharf, made of parallel bridge strings of pontoons, each pontoon being provided with water inlets and air connections. The drydock can be lowered by admitting water to the deck pontoons and raised by expelling the water from them. The 100-ton size has a deck 4 pontoons wide by 12 pontoons long, being made up of 4 bridge pontoon strings. Longer and wider decks may be assembled for larger craft, in accordance with bureau designs.

The towers serve as stabilizers when the deck is under water, and, in addition, support catwalks which facilitate the handling of lines and other gear necessary for docking the ship.

3. The bridge assemblies are joined at the top in the same manner as are those for a barge, bridge or wharf, by use of the link and pin connection, A1 and A2. At the bottom, the same heavier tie rod system, as is used on the 100-ton and 250-ton barges and on the wharf assemblies, is used here.

4. The side towers are made up of two pontoons connected end to end and set vertically, with the bottom pontoon connected to the side of the deck by clip angles or brackets, A61, and struts or knee braces, A60. Catwalks are framed between the tops of the towers and form continous walks along both sides of the dock.

5. Adjustable bilge supports and keel blocks are connected to blocking frames which in turn are erected upon and locked to the deck assembly angles. These bilge frames and keel blocks are spaced at variable intervals suitable for the ship to be docked.

6. A pontoon barge carrying the equipment necessary for the operation of the drydock is used as a tender. This equipment includes the compressors, a manifold, and a small crane for lifting and moving any of the ship's gear which needs to be handled. It also carries the air hose to make the connections between the manifold and the main feed lines of the drydock. A ramp or hinged bridge, is hinged to both the barge and the drydock.

7. The speed and uniformity of the lowering and raising of the drydock is controlled by valves in the feed lines at the manifold. The pressure at the manifold is maintained at 25 lbs. per square inch by means of a safety valve. Care should be taken to avoid kinks in the air hose, as these will slow up the operation of lowering and raising the deck.

8. The various steps to be taken in assembling a 4 x 12 pontoon drydock, in their recommended sequence, are as follows:

(a) Make four bridge strings on land. Before these are launched, provide the proper water inlet connections in every pontoon of the assembly. These are made by removing the plug at the lower left hand corner of the pontoon and inserting a 2" street ell in its place. A 2" pipe about 4' -7" long is then screwed into the outer end of the ell and disposed perpendicularly or diagonally to the deck of the pontoon. (Y&D Drawing 143053). The bottom closures, W2, regular, and W9, at the splice openings are are next placed. The strings are now ready for launching.

(b) Connect the four assemblies together, using links and pins, A1 and A2, for the top assembly angle connections. Use two A12, and one A29 and one A30 tie rods, and two each of A10 bolts and A14 yokes for each bottom connection. The instructions for placing these ties are included in Chapter II. It is very important to make sure that the inlets of all assemblies are facing in the same direction.

(c) Connect Towers: Each tower consists of two pontoons placed end to end and secured together together by means of 4 tower connection angles, A28. A6 Assembly Bolts are used to secure these angles to the pontoons. The bolts should be tightened before the towers are placed. There are four towers on each side of the drydock. Connect angles, A61, to the deck assembly angles at the slots at each side of the second and fourth pontoons from each end of the two outside strings. Fig. V-1 shows this member in place. It will be noted that these angles come in rights and lefts and that they are secured by link and pin A1 and A2 at the same slots and above brackets A62, using links and pins. (Fig. V-1). Now connect two pontoons at the ends by means of four tower connection clip angles, A28, and four assembly bolts,A6. Float these pontoons between the A61 angles and bolt with A6 bolts from the angles to the pontoon strap. Do not tighten these bolts at once but take enough thread so that the pontoons can be pivoted about them. With block and tackle and an A-Frame, raise the tower to a vertical position. (Figs. V-2 and V-3). Connect the two struts, A60, to the outer straps of the pontoon with A6 bolts, and secure the ends of A60 to the side of the bottom angles by means of the link and pin, A1 and A2. If a crane is available the towers may be set in place directly without the use of the A-Frame. As soon as the towers are placed, all bolts are tightened. Fig. V-4 shows the angle, A61, and the strut, A60, in place supporting a tower.

Fig. V-5 shows all eight towers of this pontoon drydock secured to the dock in positions found very satisfactory from the point of view of stabilitly.

(d) Erect catwalks: The catwalk for the long, center span is assembled on deck before erection The two short, end span catwalks, which are untrussed wood panels, are merely dropped into place. Before erecting the center span catwalk, seat angles (A64, Fig. G-21) are secured to the tops of the upper pontoons by bolts, A6 at the point indicated on Y&D Drawing 143063. The catwalk unit, which consists of a sectional wood deck in four panels supported by two parallel open web steel joints, A67, braced laterally by X-braces, A69, Fig. G-19 is, after final assembly, placed upon and bolted to seat angles, A64. Fig. V-6 shows the center span catwalk in place. The wooden panels for the end spans are now dropped into place and bolted to the A64 angles. Then end tower cleats (A65) are bolted to the corner towers at the points indicated on the design drawing (Y&D Drawing 143054 and Figs. V-7 and G-20).

(e) Connect hinges, A40 and A41, to the end of the drydock. This connection is made by removing the end A6 bolt and bolting the hinges to the drydock assembly angles.

(f) The ramp is made up of 2 steel stringers, S2, Y&D Drawing 143,069, which support the wooden deck made of sectional panels. This ramp is assembled on deck and is then lifted into place, the ends of the stringers, S2, being fitted into the hinge parts on the barge and on the drydock, and being secured to the hinges by means of hinge pins.(A71). A discussion of these hinge parts will be found in Chapter IV. Fig. V-9 shows the ramp in place, and Fig. V-10 shows the ramp position with the drydock slightly lowered.

(g) Assemble the 2" pipe feed lines as are shown in detail in Y&D Drawing 143053, and hang one of each along each side of the drydocks. Before these feed lines are located,1", quick-make-and-break air hose couplings should be placed in all the tee outlets. When the pipes are attached in their position a pair of couplings will be located at each of the slots of the pontoon strings. Each one of the feed lines will supply air to twelve pontoons or one quarter of the deck, thus providing flexibility of control. Two-inch air hose lines from the manifold may be connected at either end of the pipes to supply the air pressure necessary for the operation. To make the air hose connections to the individual pontoons, remove the single plug at the upper right-hand corner of each pontoon and in its place insert a 2" x 1" bushing and a 1" ell. Then place a quick-make-and-break air hose coupling in the ell. After these connections have been made in every pontoon the air hose may be installed. This hose is furnished in sections of the required lengths; each section has couplings at both ends. One of these sections of hose will be connected from each pontoon to the proper tee outlet of one of the main air lines, there being two hose lines running to each side of the drydock in every slot. See Y&D Drawing 143,053.

(h) Place boat supports on the deck of the drydock: Set blocking frames on deck and connect them to the assembly angles by means of the clip angles provided for the purpose. The clip angles are bolted to the channels of the blocking frames. Set adjustable boat supports on the blocking frames at positions required for the ship to be docked. These connections of the boat supports to the deck are shown in detail on Y&D Drawing 187484 and 143053. Fig. V-12 shows a drydock of the size described with the boat support in place.

9. The operation of the drydock depends upon the admission and expulsion of water. Careful control of the water flow will result in uniform operation and easy submersion and raising. To sink the drydock, lower the open ends of the 2" pipes connected to each pontoon to below water level so that water will flow into the pontoons. The drydock will now begin to sink as the water rises in the individual pontoons. Open all the air valves in the feed lines so that the air in the pontoons can escape through the manifold. Any excessive list or trim of the dock can be controlled by the air valves. If one of the corners is going down faster than the others, close the air valve controlling the group of pontoons in the low corner and the resultant pressure in those pontoons will reduce the rate of water flow into them or stop it completely. However, it is always advisable to keep one of the air compressors in operation as the dock begins to go down. In a serious uneven sinking this compressor can be turned on to the group or groups of pontoons that are going down faster than the others, pump the water out of them and level and stabilize the deck as desired. When the drydock has been lowered to the depth desired, shut off all air valves. Back pressure will develop in the pontoons and prevent any additional inflow of water. If there are serious leaks in the air hose it might be necessary to pump air to keep the dock at that level.

10. The boat may then be docked. It is advisable to provide a gage by marking the corner pontoons of the towers vertically at every six-inch interval beginning at the deck of the drydock so that the depth of the water on the deck can be seen at all times. (Fig. V-7). Fig. V-13 shows a small boat floated in a pontoon drydock. When the boat is lined up in the proper position with respect to the frame supports, its lines can be tied to the cleats on the towers so that the boat will remain in that position. All the compressors should be turned on and the valves in all lines should be opened. The operator of the valves should control the inflow of air at all times, and while watching the gages at the corner pontoons, take care to bring the dock up evenly. Figs. V-13 and V-14 show a boat in the dock at two different levels while the water is being forced out from the deck pontoons. The drydock should be raised until the deck has at least six to eight inches freeboard. After the deck has been raised to the level desired the inlet pipe of each pontoon should be raised so that the inlet ends are out of the water.

11. Four drydock cleats, A65, Fig. G-20 are provided for the ends of the catwalks, and four

all-purpose cleats, A68, Fig. G-23 are provided for the corners of the drydock deck. They are necessary for the men handling the lines during docking and floating. Fig. V-11 shows another craft in the same drydock, and shows catwalks and cleats on the towers.

12. In order to lower the dock to undock the boat, the procedure previously outlined should be followed.

13. It is suggested that this drydock be operated up and down several times before the actual docking of a boat is attempted. These trials will acquaint the operator with the various actions of the structure in and out of the water. For example, it should be noted that the rate of sinking is considerably faster when the deck is under water than when the deck has some freeboard. Also, the time required to raise the dock a certain distance is much less than that required to submerge it the same distance. The most critical time, from the point of view of stability of this drydock, is when the dock is going down and the deck breaks the water surface. The operator should then watch all four corners to see that the dock is level at this instant. All these operations are very simple, and it requires only two or three trials before an operator becomes sure of his control and expert in the operation of the dock.

14. If a railing is desired to give additional security to men working on the top of the towers and the connecting catwalks, life lines or pipe stanchions may be installed. This feature has been discussed in Chapter II, and a typical application to a drydock is shown in Fig. V-15-

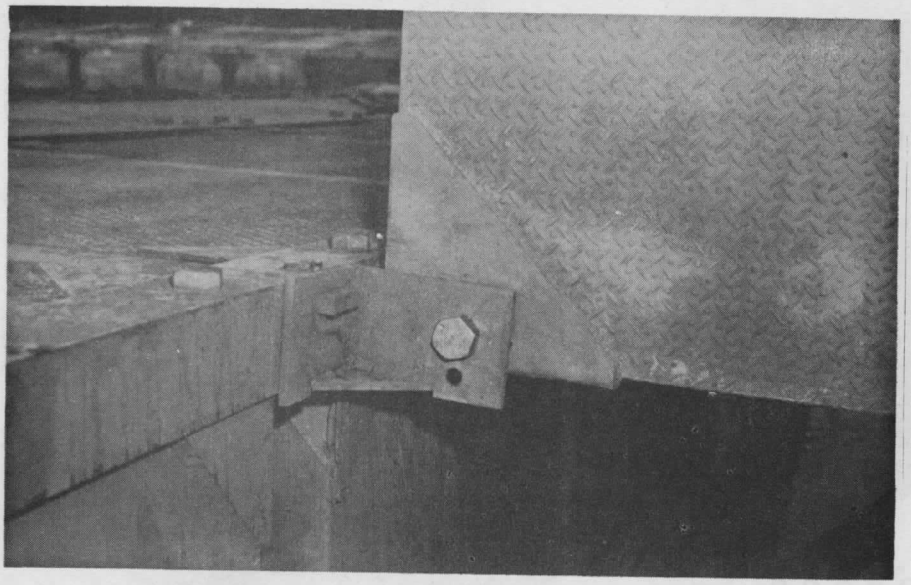


Fig. V-1

Angle A61, connecting the base of the drydock tower to the upper deck angle.

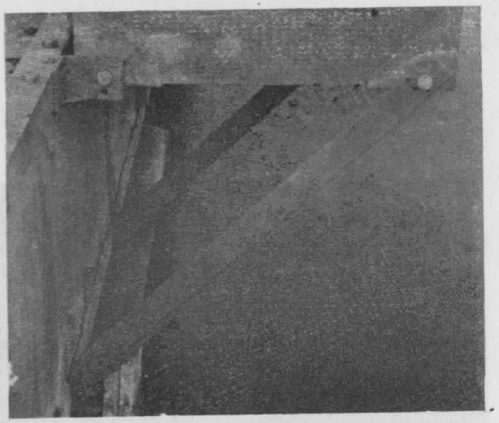
Fig. V-2

A tower being lifted up into place. It is being pivoted on the two bolts in angles A61 the bolts having been left loose enough to allow movement.

Fig. V-3
A tower lifted to a nearly upright position.

Fig. IV-4

The strut, A60, which connects the base of the tower with the bottom assembly angle of the string.



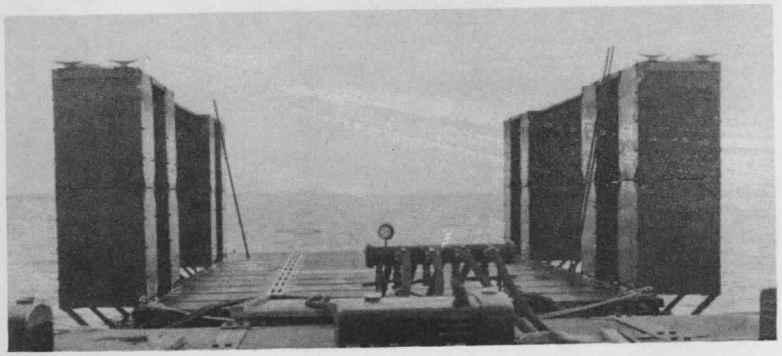


Fig. V-5
A drydock with all 8 towers in place, showing also catwalks, cleats, ladders, ramp and air expulsion unit.

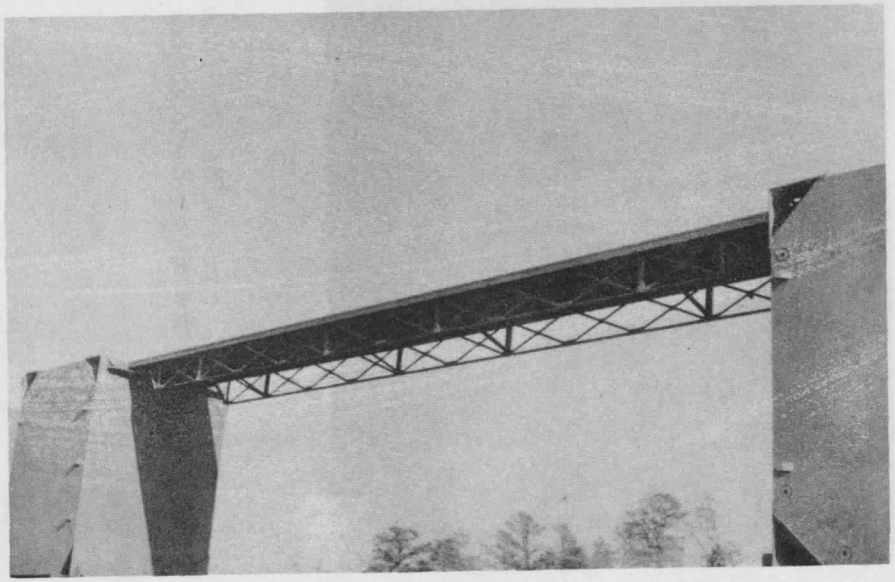


Fig. V-6

The long catwalk, made up of the expanded beam, A67, the braces, A69, and supported by the brackets. A64.

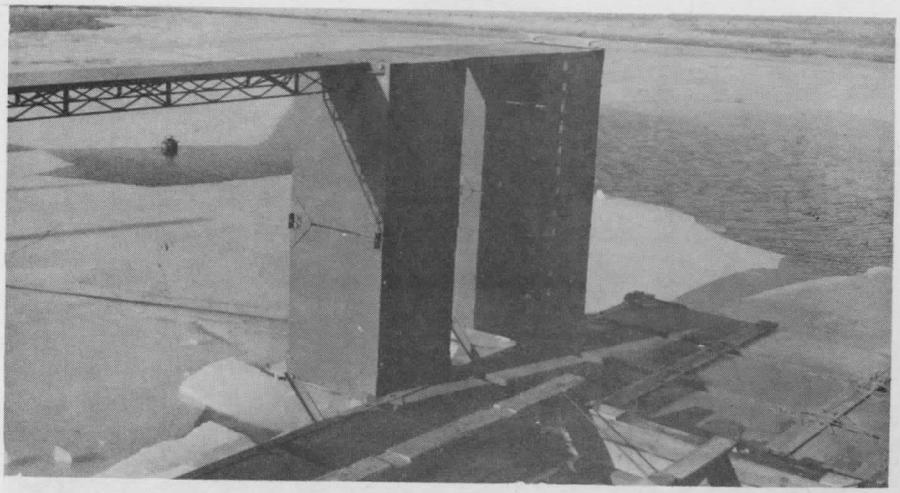


Fig. V-7

Another view of the catwalks, showing the short catwalk, which is also supported by the A64 catwalk bracket.

Fig. V-8

The stability of the tower and catwalk assembly is demonstrated.

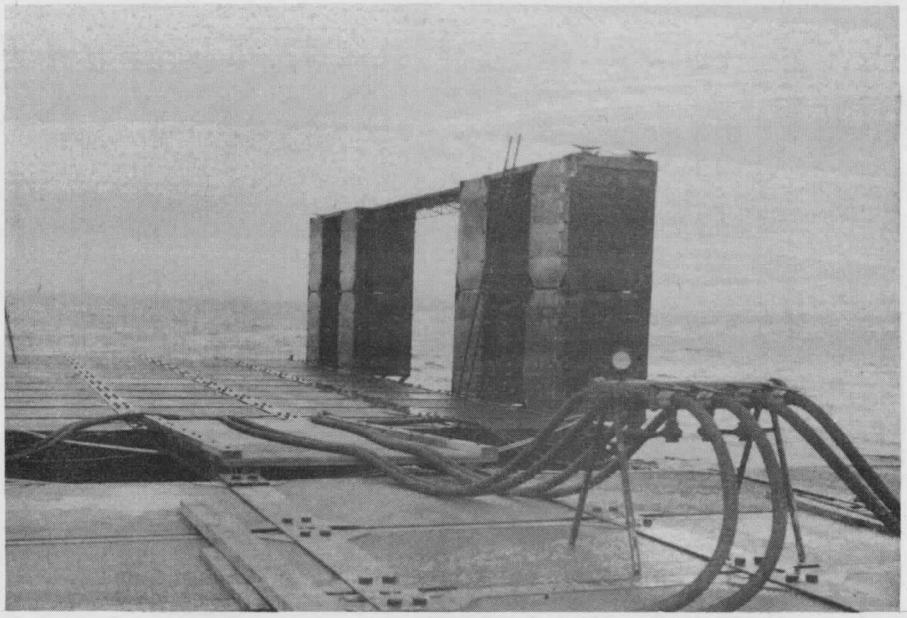


Fig. V-9
The ramp is shown in place and the dock is ready to be submerged.

Fig. V-10
The drydock is partly submerged, and the ramp support and hinge assembly is shown in action.

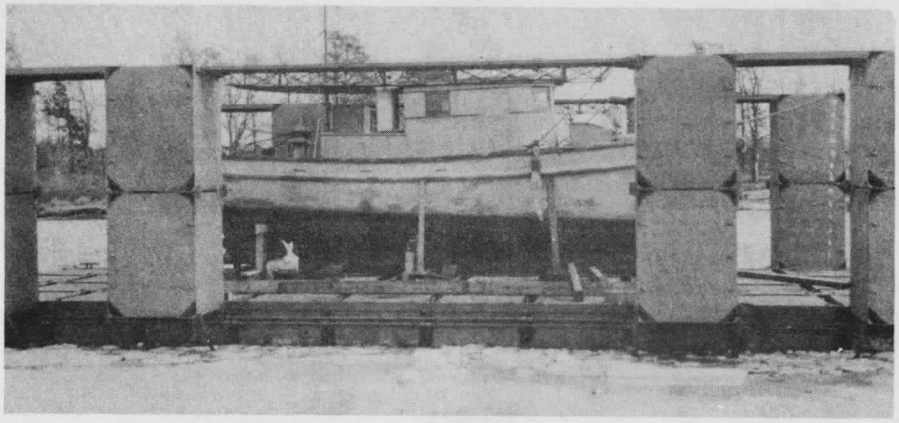


Fig. V-11

A small boat is shown on improvised supports. Note the piping on the side of the drydock.

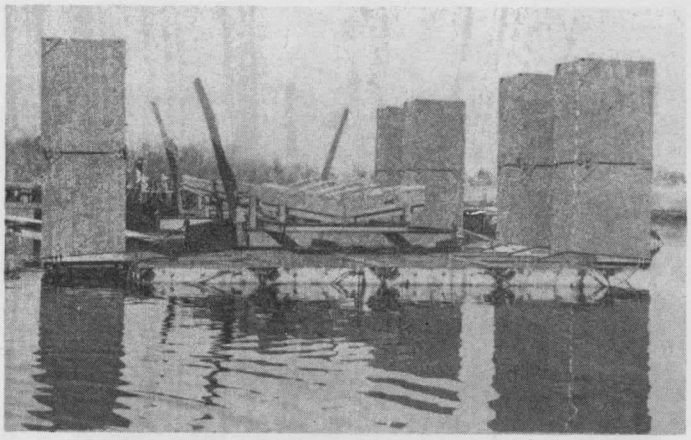


Fig. V-12

A boat cradle is in place on a drydock

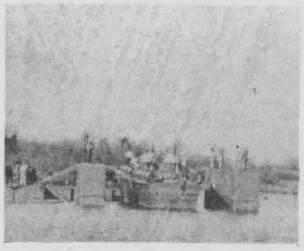


Fig. V-13

The drydock is in action, with a boat being lifted.

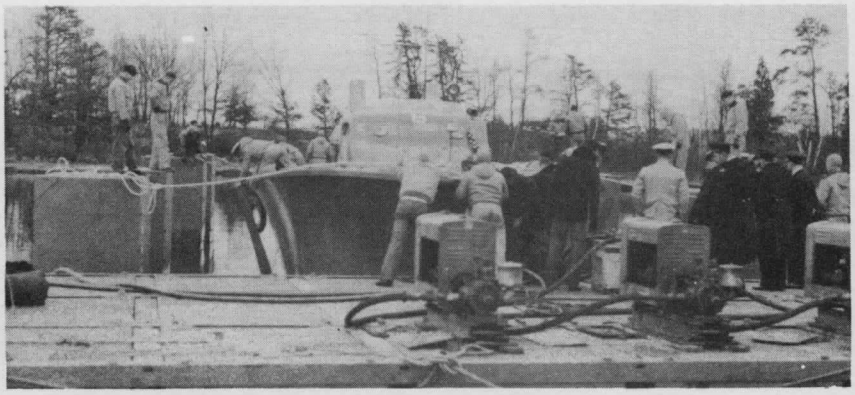


Fig. V-14
Another view of a boat in the drydock.

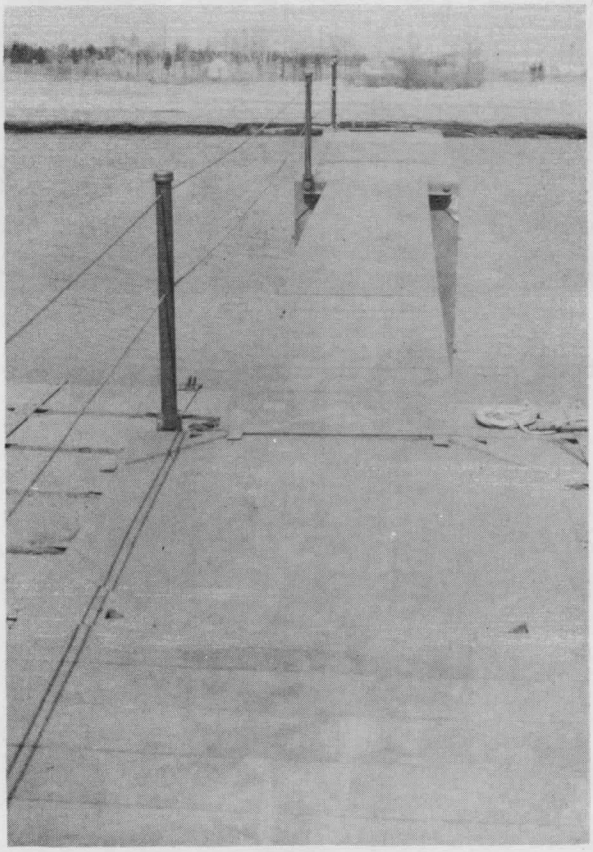


Fig. V-15

Pipe and cable lifelines on a catwalk.

CHAPTER VI

REVOLVING FLOATING CRANES (5, 10, and 20 ton)

1. Floating crane units are assembled in four standard sizes:

   (a) 5-ton capacity crawler crane, used on barge 3 pontoons wide by 7 pontoons long. (Y&D Drawing 143045).
   (b) 10-ton capacity revolving type, used on barge 4 pontoons wide by 7 pontoons long. (Y&D Drawing 143055).
   (c) 20-ton capacity revolving type, used on barge 5 pontoons wide by 12 pontoons long. (Y&D Drawing 143051).
   (d) 75-ton capacity, fixed boom type, used on barge 6 pontoons wide by 18 pontoons long. (This unit is not described in this Chapter but will be the subject of a later Chapter.

The assembly of the 10-ton floating crane will be described first in detail, followed by variations therefrom that are encountered in the assembly of the other two revolving crane units.

2. The assembly of the 4 x 7 barge is similar to that of the 3 x 7 barge, as described in Chapters I and II, except for the additional width, and for the use of the heavy tie rod system instead of the light one. (See figures VI-1 and VI-2 and Y&D Drawings 124,959, 143,055, and 143,086). A propulsion unit may be installed for motive power on any of the cranes, as indicated on Y&D Drawing 143,055. (See also Chapter II, paragraphs 17 and 18, and Y&D Drawing 145,706A).

3. The base by which the crane is mounted on the barge consists of an X-frame, A63, of which the ring gear and bull ring is an integral part. The center of the frame is located at the intersection of the longitudinal center line of the barge and the second slot from the bow. There are two approved methods of fastening this base to the barge. Where the link yokes, A21A (Y&D Drawings 143055 and 143086) are used, it will be noted that the bolt holes in the ends of the frame come directly in line with the wedge bars of the assembly angles at the slots. The yokes are then so placed that the "V" bears against the wedge bars of the barge angles. The one-inch bolts are passed through both of the holes in the crane base and in the yoke and are tightened to complete the anchorage. In the second method of securing the base (see Y&D Drawing 143055), the bolt holes in the base of the crane line up with the bolt holes of the A6 bolts in the assembly angles of the barge. The A6 assembly bolts of the barge are removed before the base is placed, and slightly longer 1-1/2" bolts are used in their place to secure the crane base to the barge.

4. After the base has been secured, the cab may be dropped over the center shaft or king pin of the bull ring. The counterweights are placed after the cab has been secured. Complete manufacturer's instructions are contained in a booklet furnished with every crane. They should be consulted before the crane is assembled. Fig. VI-1 shows a 10-ton crane mounted on a 4 x 7 barge and ready for test.

5. A sectional crane boom is employed, consisting of two end sections each 15 feet long and one center section 20 feet long. This permits assembling it as either a 30' or 50' boom. Figure VI-1 shows a 50' boom. Figure VI-2 shows a 10-ton crane with a 30' boom and a clam shell bucket. Rigging and cable connections are outlined in the manufacturer's crane assembly instructions.

6. Tables of stability and freeboard at various loadings and boom positions are shown on Y&D Drawing 143055. These are based on a maximum deck slope of 10% when the barge is not equipped with a propulsion unit. Fig. VI-3 shows a 10-ton crane unit lifting a barge string.

7. A 3/4-yard clam shell bucket for digging or dredging is available for use with the 10-ton crane unit. See figure VI-2.

8. The 20-ton crane is mounted on a 5 x 12 barge and has a base similar to that of the 10-ton unit. This base is made up of parts A79, A80, and A81 and is assembled and mounted on the barge as shown in Y&D Drawing 143051. Figure VI-4 shows a 20-ton floating crane making a test lift. The boom may be adjusted to a 60', 70', or 80' length. Figures VI-4 and VI-5 show a lift of 21 tons with a 60' boom. Fig. VI-6 shows a load of 14 tons with an 80' boom which has a correspondingly longer reach. Data as to stability and freeboard at various loadings are given on Y&D Drawing 143051* A 1 1/2-yard clam shell bucket is available for use with the 20-ton crane.

* Due to the weight of the 20-ton crane, the barge will trim towards the crane end, and in order to obtain a level deck the pontoons at the other end should be ballasted as shown in Y&D Drawing 143051. It should be noted that ballasting is necessary only with the 20-ton crane.

9. The 5-ton crane is mounted on a standard 3 x 7 barge. No base is furnished with this unit, but lashing cables, lashing pad eyes and wooden blocks are furnished for securing the regular crawler base to the deck. Figure VI-7 shows these lashing cables properly placed (Y&D Drawing 143045). The pad eyes for the lashings are secured to the barge by means of the regular A6 assembly bolts of the barge, (Y&D Drawing 143045). The crane may be readily disconnected and moved from the barge to the shore, or vice versa, should occasion arise.

10. The boom of the 5-ton crane may be adjusted to a 30' or 40' length. Data as to stability and freeboard at various loadings are given on Y&D Drawing 143045. Figure VI-8 shows a 5-ton crane unit making a test lift of 4 tons with a 40' boom.

11. Figures VI-9, VI-10, VI-11 show safe lifting capacities of these cranes at various radii. These capacities are based on a maximum deck-slope of 10 percent.

Fig. VI-1

A 10-ton crane on a 4X7 barge.

Fig. VI-2

A 10-ton crane unit with a 30' boom and a clamshell bucket.

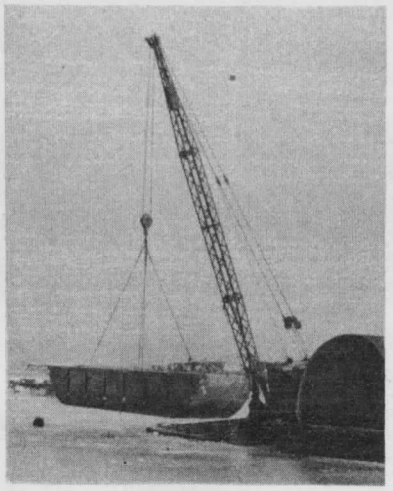


Fig. VI-3

A 10-ton crane lifting a barge string as a test load.

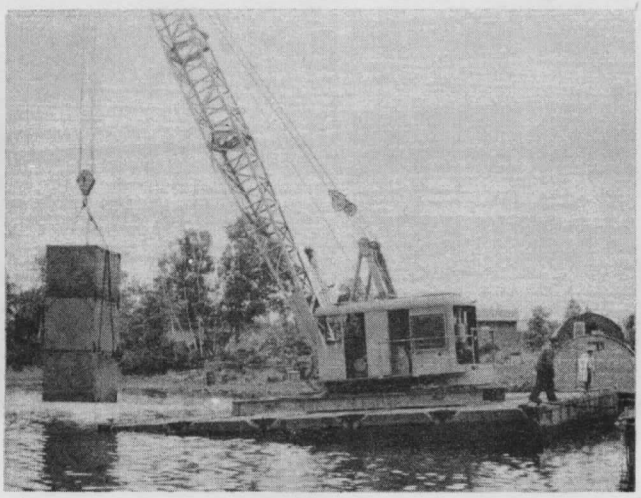


Fig. VI-4

A 20-ton crane on a 5X12 barge. A test lift of 21 tons is being made.

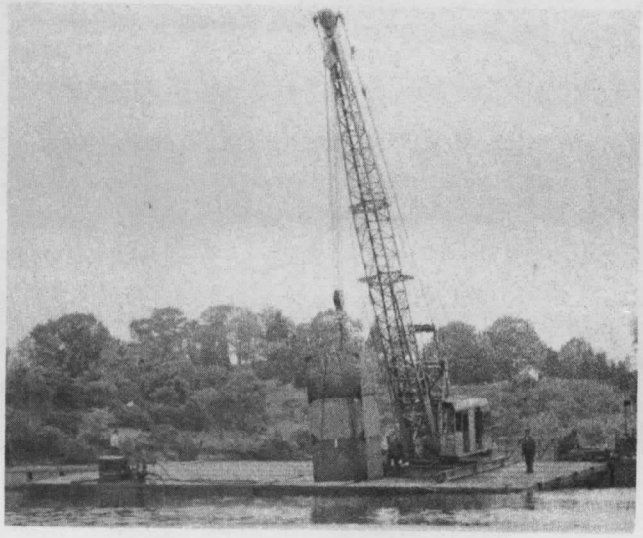


Fig. VI-5

A 20-ton crane making a test lift of 21 tons with a 60' boom.

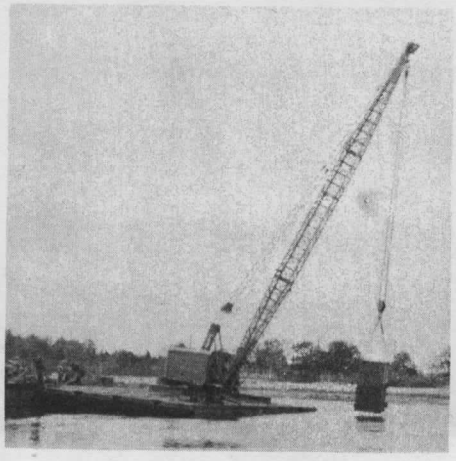


Fig. VI-6

A 20-ton crane making a test lift of 14 tons with an 80' boom.

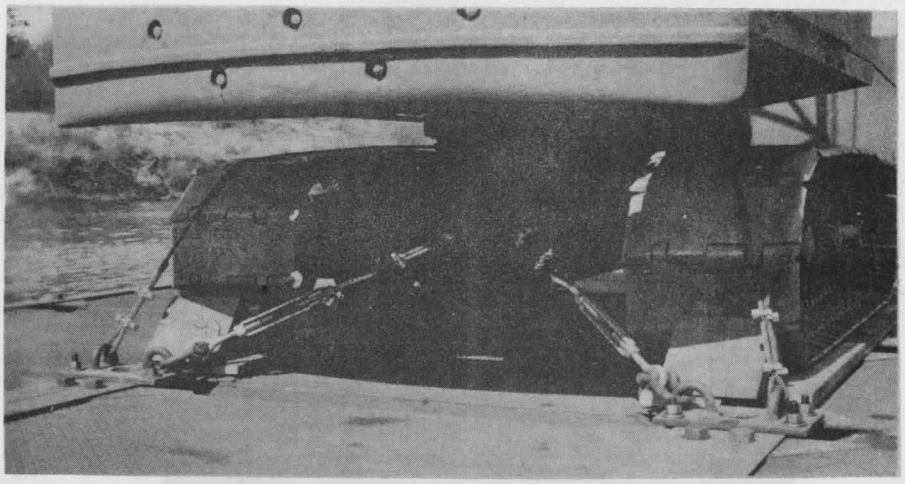
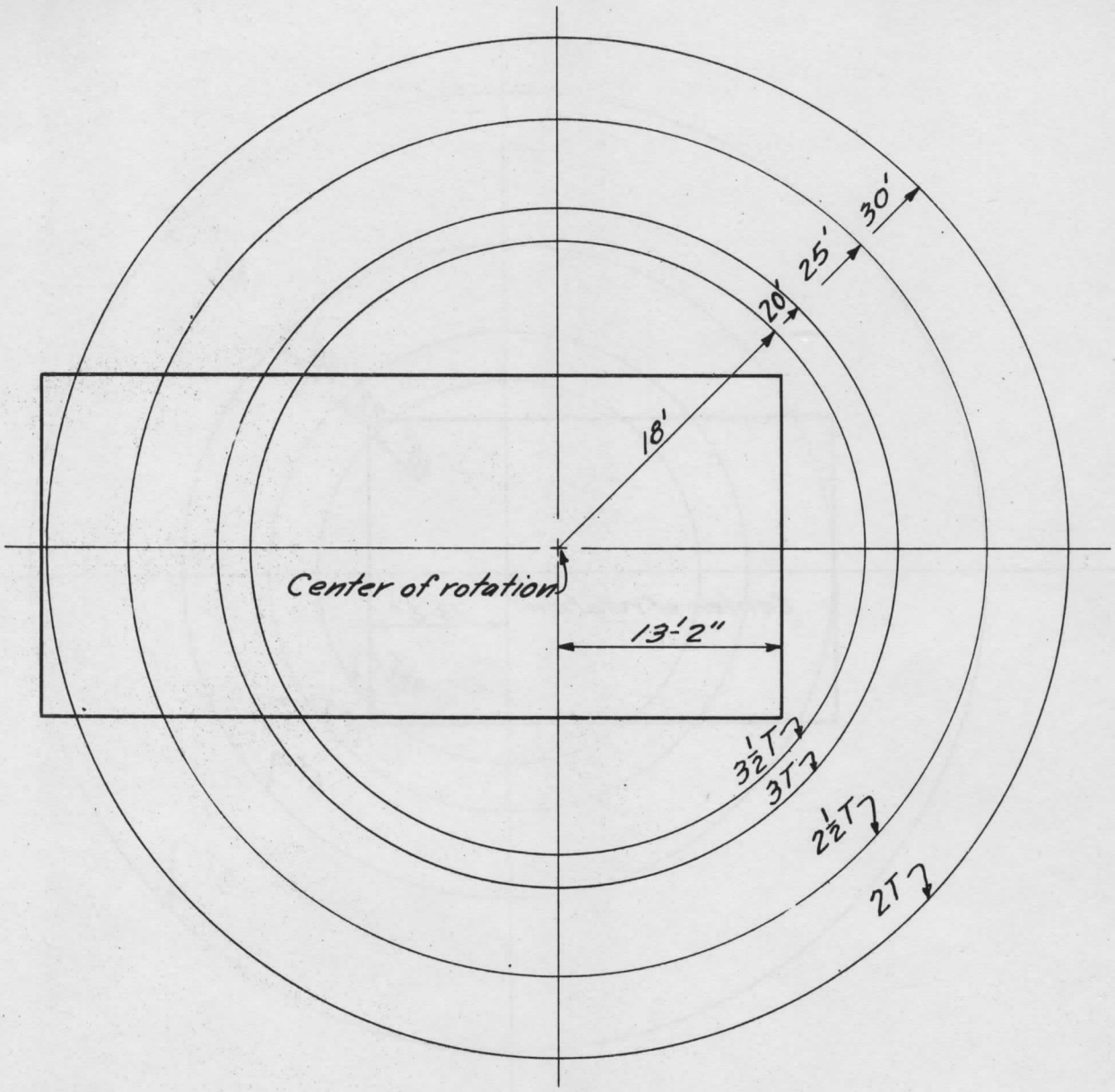


Fig. VI-7

The crawler base of a 5-ton crane, secured to a barge by means of lashing cables.

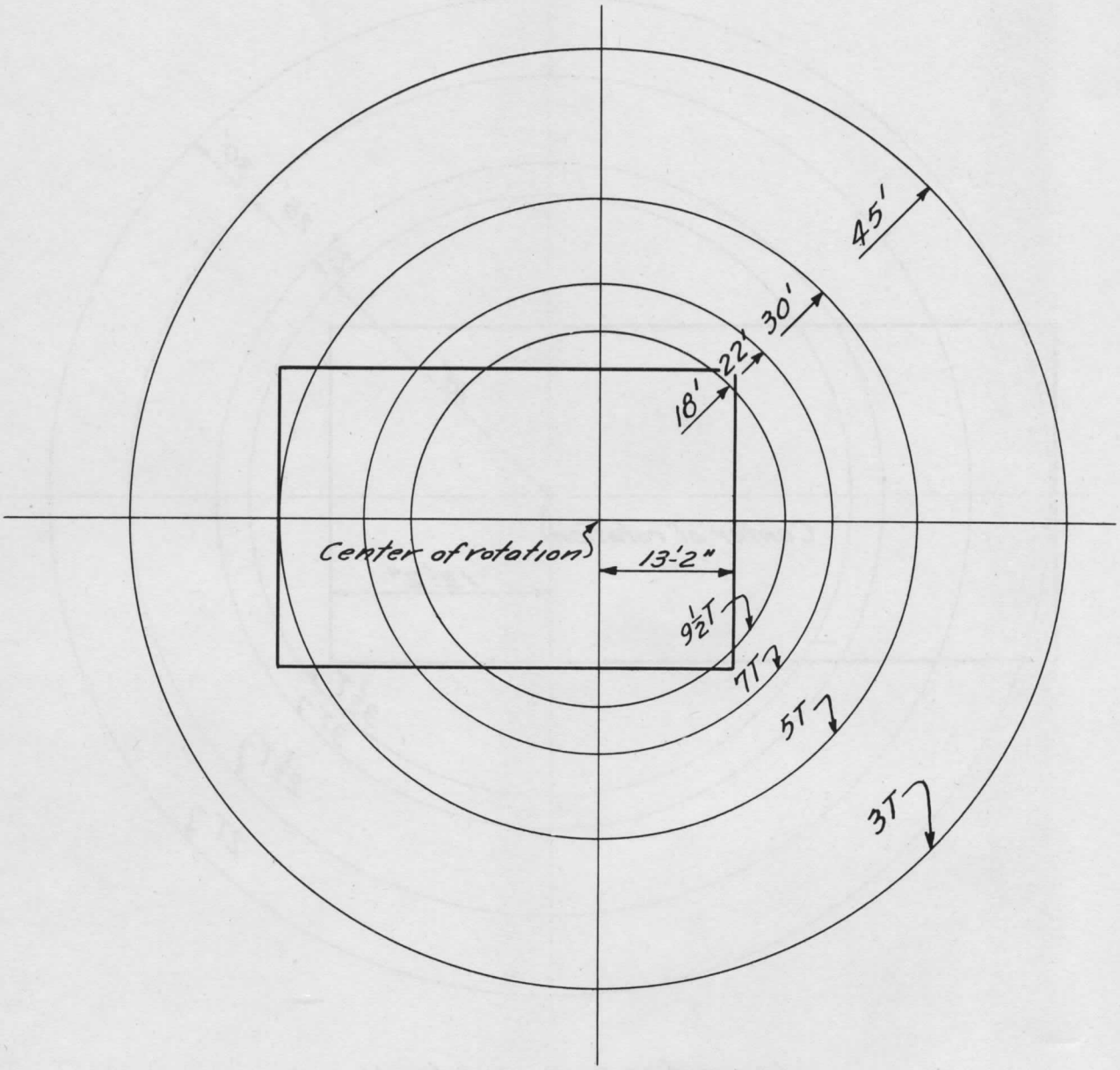
Fig. VI-8

A 5-ton crane unit making a test lift of 4 tons with a 40' boom.



Capacities given are loads that may be lifted at tip of boom exclusive of dead load of boom. All capacities are in tons of 2000#

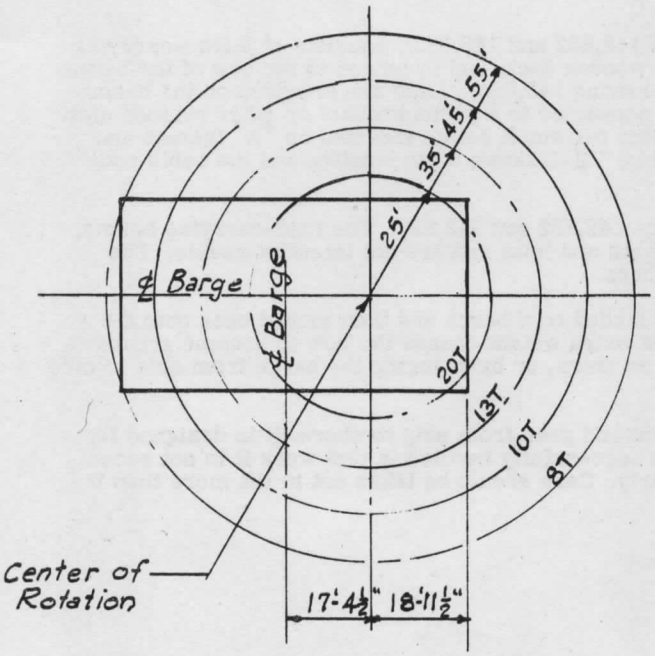
Fig. VI-9
Capacity Diagram for 5-Ton Crane



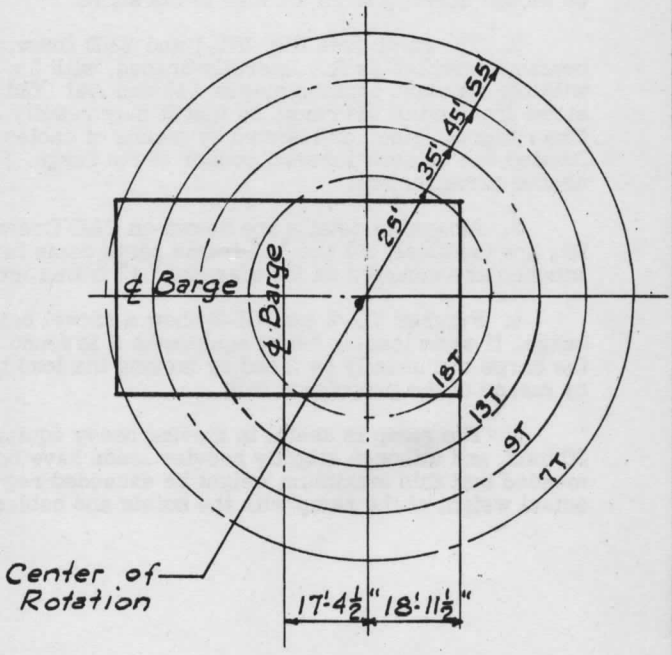
Capacities given are loads that may be lifted at tip of boom exclusive of dead load of boom. All capacities are in tons of 2000 #

Fig. VI-10.

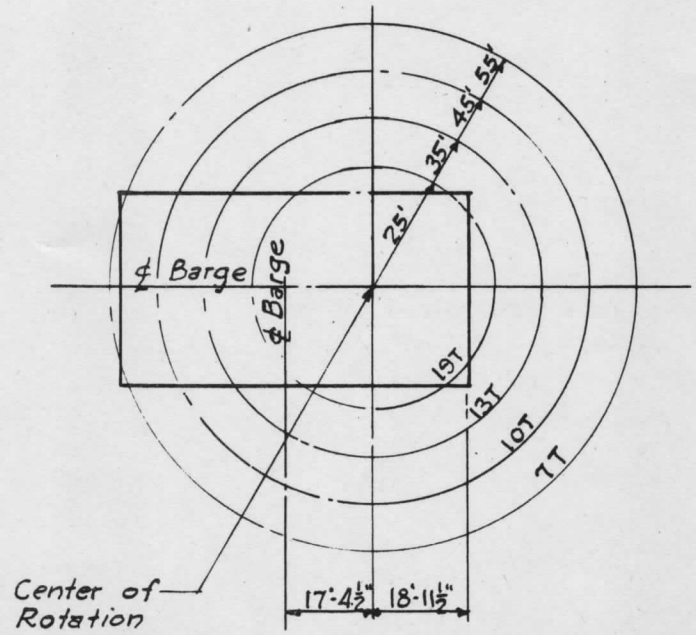
Capacity Diagram for 10-Ton Crane



CRANE WITH 60 FT. BOOM



CRANE WITH 80 FT. BOOM



CRANE WITH 70 FT. BOOM

Note! Values given in capacity diagrams are loads that may be lifted at tip of boom exclusive of dead load of boom. All capacities are in Tons of 2000 lbs.

Fig. VI-11.

Capacity Diagrams for 20-Ton Crane

CHAPTER VII

LANDING RAMP

1. For locations where no docking facilities are available to land heavy equipment, a landing ramp is provided, in the form of a drawbridge, over which objects weighing up to a maximum of 30 tons may be moved directly from a barge to the shore.

2. The ramp (see Fig. VII-1 and Y&D Drawings 142,832 and 142,833), consists of 2 load-carrying beams, identified as R1, laterally braced, with 3 x 10 wooden deck, and is hinged to the bow of the barge with the standard pontoon hinges A40 and A41 (Y&D Drawing 143,064). Lugs are provided on the beams at the free end of the ramp, so that it may readily be connected to a pontoon wharf or other pontoon unit. The ramp is raised or lowered by means of cables from two small hoists mounted on "A" frames and located one on each forward corner of the barge. Figure VII-1 shows their location and the cable and sheave arrangement.

3. Assembly details are shown on Y&D Drawings 142,832 and 142,833. The load-carrying beams, R1, are identical, but the "A" frame parts come in rights and lefts and are not interchangeable. The winches are mounted on the diagonal "A" frame members.

4. Figures VII-2 and VII-3 show a shovel being landed on a beach and then moved back onto the barge. If when loading heavy equipment it is found that extra weight causes the bow to become grounded, the barge can usually be freed by moving the load to the stern, or by swinging the barge from side to side by means of the propulsion unit.

5. The ramp is useful in moving heavy equipment and gear from ship to shore. It is designed for 30 tons, and although slightly heavier loads have been successfully handled in test work it is not recommended that this maximum weight be exceeded regularly. Care should be taken not to lift more than the actual weight of the ramp with the hoists and cables.

Fig. VII-1

The landing ramp, hinged to a 3X7 barge. Note the "A" frame, winch, and cable assembly.

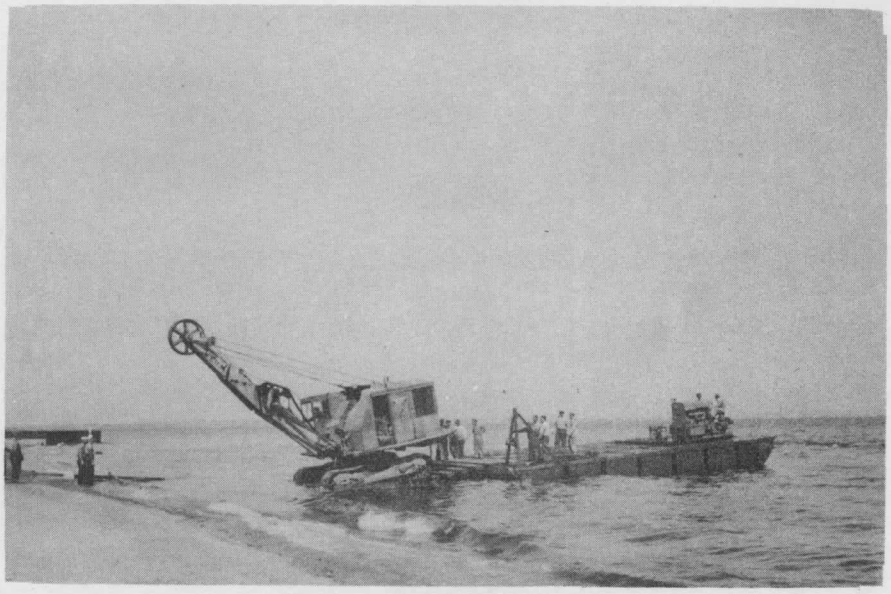


Fig. VII-2

A shovel being landed on a beach from a barge by means of a landing ramp.

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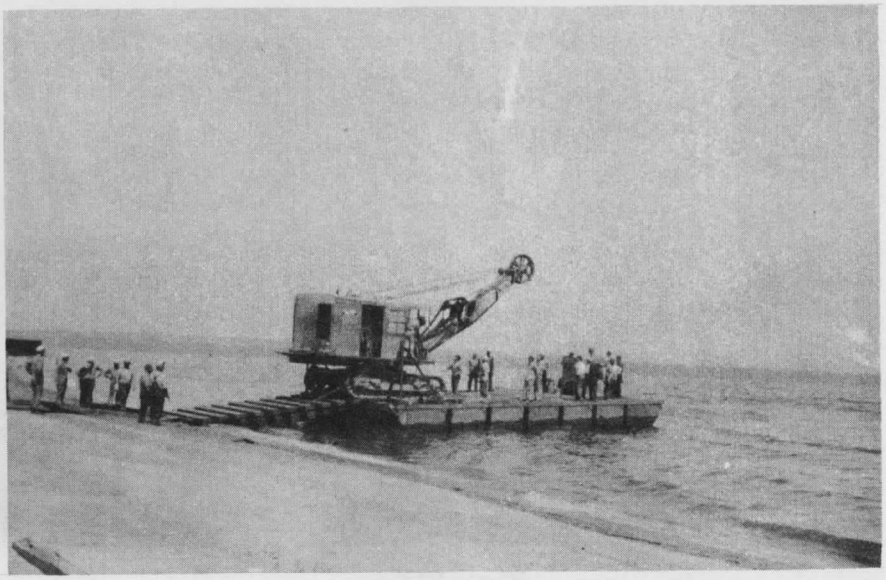

Fig. VII-3

A shovel being loaded from a beach
to a barge by use of a landing ramp.

APPENDIX A

Glossary of Parts

Index Number	Description	Drawing No.	Figure No.
A1	Link	124958	G-4
A2	Link pin	124958	G-4
A3	Wedge	143058	G-5
A4	Wedge bolt	143058	G-5
A5	Hand wheel nut	143058	G-5
A6	Assembly bolt	124959	..
A7	Light tie rod member (end)	124959	G-6
A8	" " " " "	124959	G-6
A9	" " " " " (intermediate)	124959	G-6
A10	Heavy tie rod bolt	143086	G-7
A11	Light tie rod bolt	124959	G-6
A12	Heavy tie rod member (intermediate)	143086	G-7
A13	Deck closure channel	143066	G-8
A14	Heavy tie rod yoke	143086	G-7
A15	Light tie rod yoke	124959	G-6
A16	Deck closure channel, wedge splice	143066	..
A17	Bolt (bottom of T7)	124959	..
A18	Washer for A17	124959	..
A19	Clevis for 3x7 barge	143076	..
A20	Plugs for pontoons	143075	..
A21	Link yoke	143086	..
A22	Link yoke strap	143086	..
A28	Tower connection angle	143069	G-17
A29	Heavy tie rod member (end)	143086	G-7
A30	" " " "	143086	G-7
A32	Bracket for S-2	143069	..
A33	Deck closure for 8" angle	143066	..
A34	Deck closure for breech plug splice	143066	G-8
A35	Bridge connection joint cover	143069	..
A40	Right hand hinge	143064	G-24
A41	Left hand hinge	143064	G-24
A42	Hinge plate	143064	G-24
A44	Top angle bridge to wharf connection	143064	G-15
A45	Bumper (including 3/8" cable suspenders)	143064	G-12
A51	Bridge to bridge diagonal cable suspender	143064	G-12
A52	Drydock deck closure	143066	..
A60	Drydock tower strut	143063	G-18
A61	Top drydock tower connection	143063	G-18
A62	Strut bottom connection	143063	..
A63	10 ton crane base	143055	..
A64	Catwalk seat angle	143063	G-21
A65	Drydock cleat	143063	G-20
A66	Drydock ladder	143063	..
A67	Expanded steel catwalk truss	143063	G-19
A68	21" cleat (all purpose)	143064	G-23
A69	Diagonal catwalk brace	143063	G-19
A70	Long hinge pin	143064	G-24
A71	Short hinge pin	143064	..
A72	Assembly angle guard	143064	..
A73	Bridge connection joint filler	143064	G-14
A74	Bottom angle bridge to wharf connection	143064	G-16
A75	Barge connection angle to side of wharf	143089	..
A76	Horizontal bridge to bridge cable connection	143064	G-13
A79	20 ton crane anchorage beam	143051	..
A80	" " " bull ring frame	143051	..
A81	" " " anchorage tie rods	143051	..
B1	Bridge assembly angle	124957	..
B2	Top barge assembly angle	124957	..
B3	Bottom barge assembly angle	124957	..
B5	Girder support for bridge to bridge	143078	..
B6	" " " " "	143078	..

Index Number	Description	Drawing No.	Figure No.
B7	Girder, bridge to wharf	143077	..
B8	12-pontoon top barge assembly angle	143085	..
B9	12-pontoon bottom barge assembly angle	143085	..
B10	Multi-purpose insertion angle 6 pontoons long	143085	..
B13	Multi-purpose insertion angle 3 pontoons long	143059	..
F1	Fenders	143069	..
F2	"	143069	..
F3	"	143069	..
F4	"	143069	..
G1	Bridge girder	143073	..
H1	Pipe hanger	143053	..
S2	Drydock ramp beam	143069	..
T6	Rectangular pontoon	143074) 143075)	G-1
T7	Curved barge pontoon	143076	G-2
W1	Side closure, 6" and 8" angles	124962	G-9
W2	Bottom closure, 6" angle	124962	G-11
W4	Drydock ramp panel	143069	..
W5	Bottom closure wedge splice	124962	..
W6	Cover plate for heavy tie rod yoke (with A14)	143086	..
W7	Side closure, breech plug splice	143066	G-10
W8	Bottom closure, 8" angle	143066	G-11
W9	Bottom closure, breech plug splice	143063	G-11
Y1	Handrail stanchion	143069	..
DBS1	Block support	187484	..
DBS2	" "	187484	..
DBS3	Clamps	187484	..
DBS4	Pins	187484	..
DBS5	Block support	187484	..
DBS6	Keel blocks	187484	..
DBS7	Hooks for DBS-5	187484	..
DBS8	Blocking frame	187484	..
DBS9	" "	187484	..
DBS10	Tie plate	187484	..
DBS11	Hook for keel blocks	187484	..
R1	Landing ramp beam	142833	..
R2	Landing ramp beam strut	142833	..
R3	" " " "	142833	..
R4	" " " derrick sill	142833	..
R5	" " " " mast	142833	..
R6	" " " " stiffleg	142833	..
R7	" " " "	142833	..
OB7	Engine bed front cross beam	145706A	..
OB12	" " back " "	145706A	..

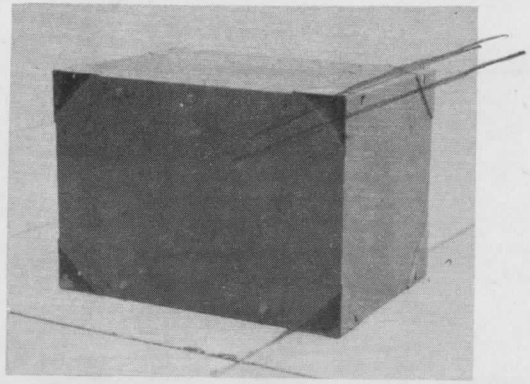

Fig. G-1

T6 Rectangular pontoon

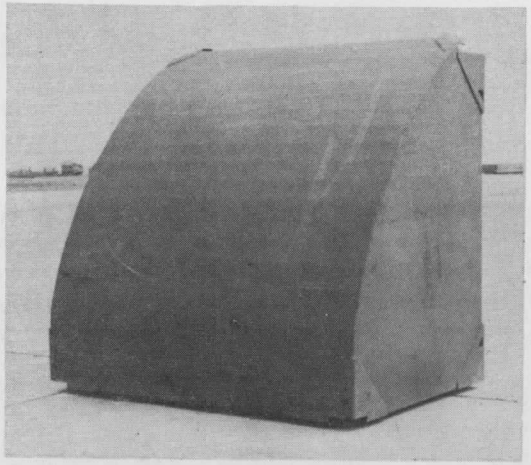

Fig. G-2

T7 Curved pontoon for barges

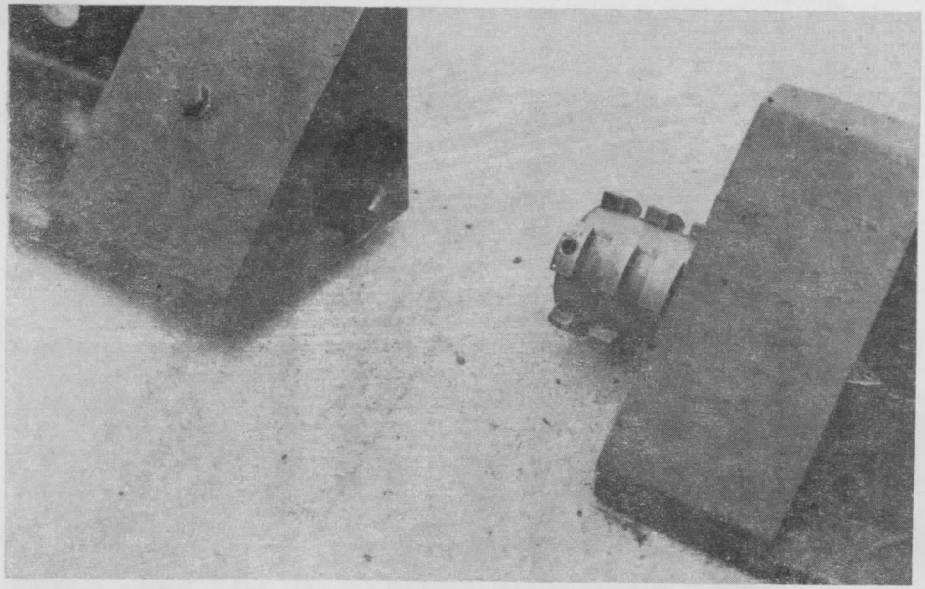

Fig. G-3

Breech plug splice for assembly angles

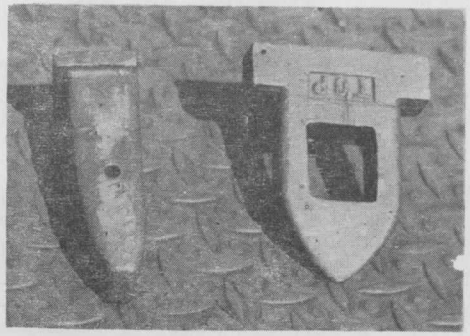

Fig. G-4

(Right) A1 Link
(Left) A2 Link pin

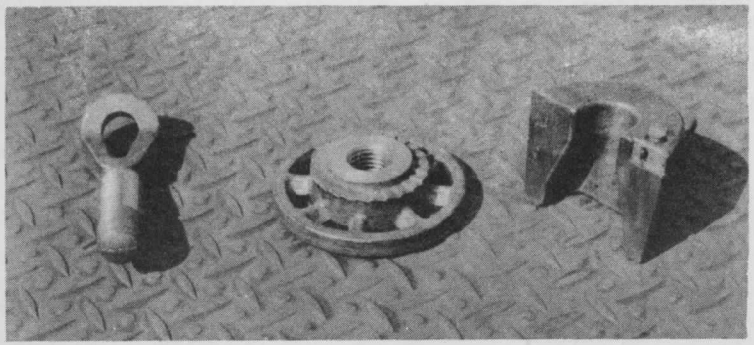

Fig. G-5

(Right) A3 Wedge (Dwg. 124958)
(Left) A4 Wedge bolt (143058)
(Center) A5 Hand wheel nut

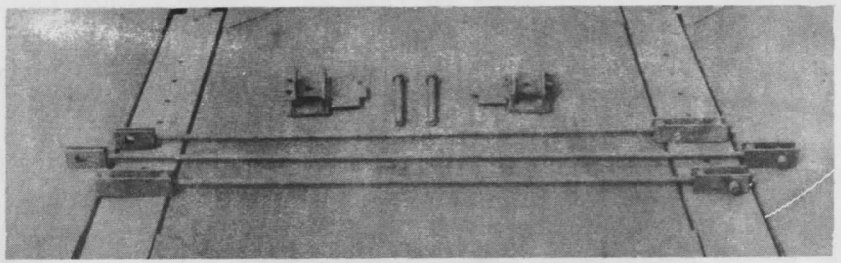

Fig. G-6

Light tie rod assembly

(Top) A11 Tie rod bolt
A15 Tie rod yoke
(Top rod) A7 End tie rod
(Center) A9 Intermediate tie rod
(Bottom) A8 End tie rod

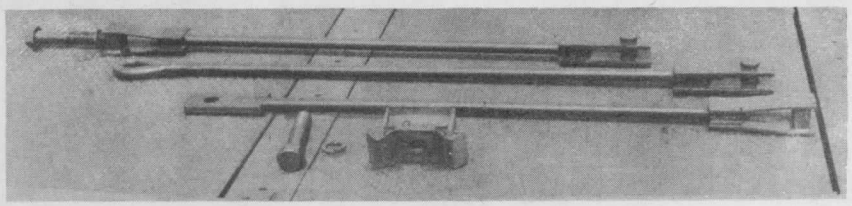

Fig. G-7

Heavy tie rod assembly

(Top) A29 End tie rod
(Center) A12 Intermediate tie rod
(Lower) A30 End tie rod
(Bottom) A10 Tie rod bolt
A14 Tie rod yoke

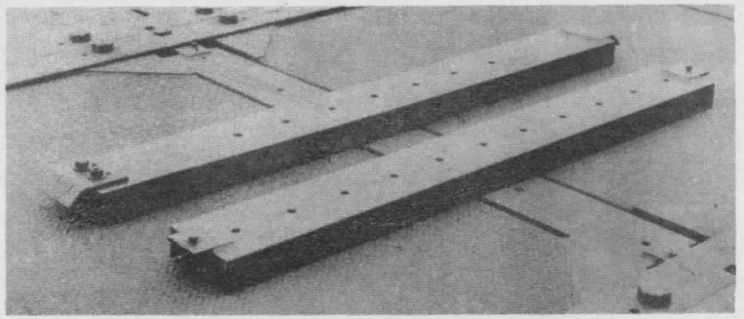

Fig. G-8

(Left) A34 Deck closure for breech plug splice
(Right) A13 Regular deck closure

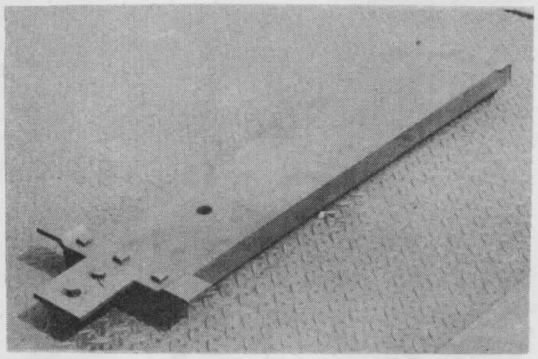

Fig. G-9

W1 Regular side closure

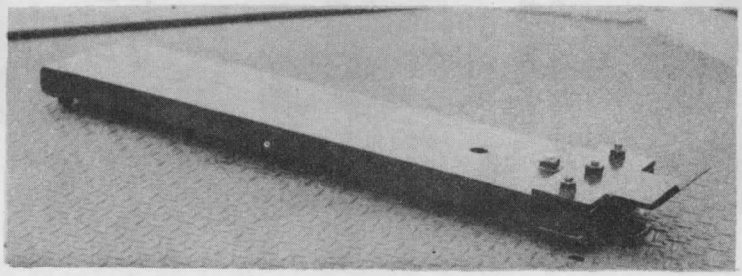

Fig. G-10

W7 Side closure for breech plug splice

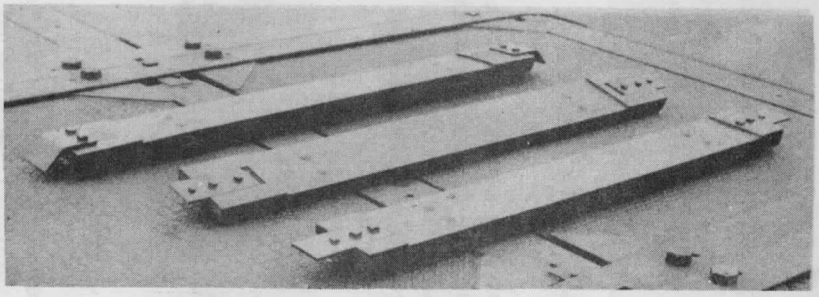

Fig. G-11

(Top) W9 Bottom closure for breech plug splice
(Center) W2 Bottom closure, regular
(Lower) W8 Bottom closure for 8" assembly angles

Bridge to Bridge and Bridge to Wharf Connections

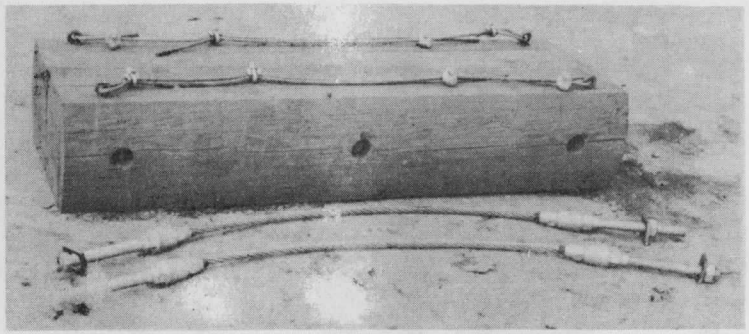

Fig. G-12

(Top) A45 Bumper for bridge to bridge and bridge to wharf connections

(Bottom) A51 Diagonal suspender cable for bridge to bridge and bridge to wharf connections.

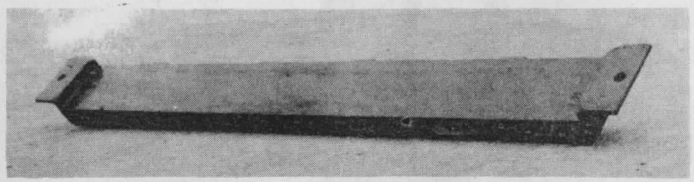

Fig. G-14

A73 Joint filler - bridge to bridge connection and bridge side of bridge to wharf connection.

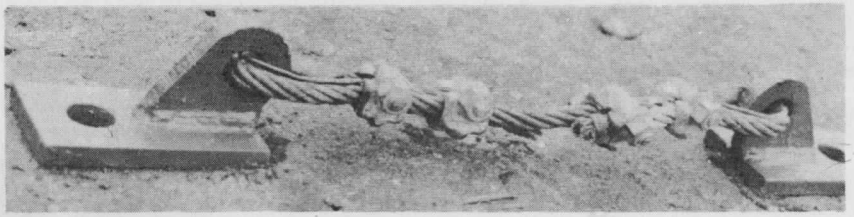

Fig. G-13

A76 Horizontal cable connection - bridge to bridge connection.

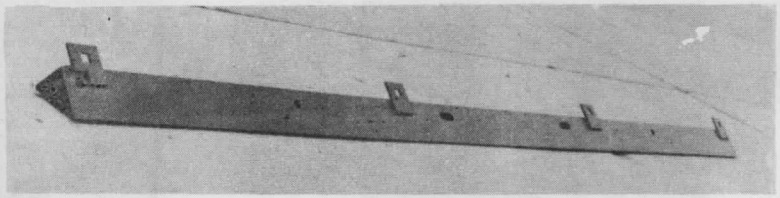

Fig. G-15

A44 Top angle - wharf side of bridge to wharf connection.

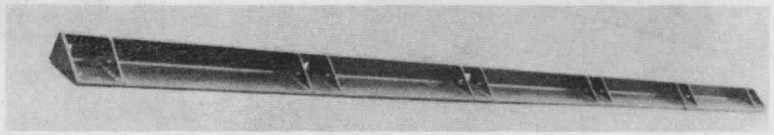

Fig. G-16

A74 Bottom angle - wharf side of bridge to wharf connection.

Dry Dock Fittings

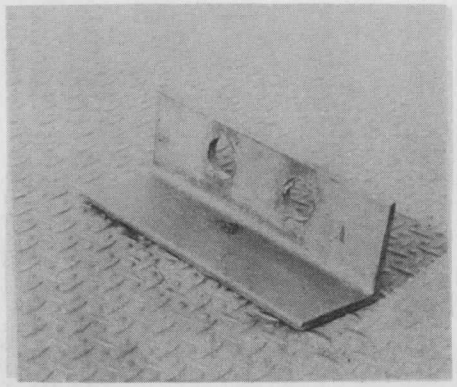

Fig. G-17

A28 Tower connection angle

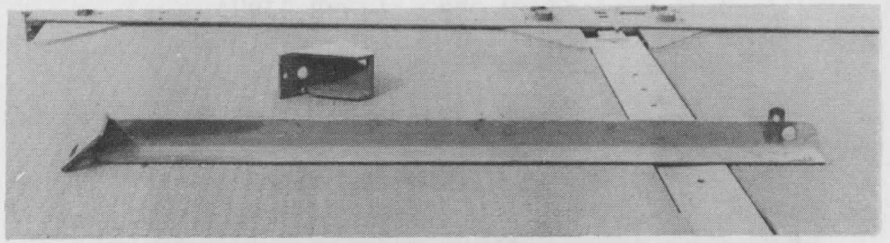

Fig. G-18

(Top) A61 Top drydock tower connection (Clip angle or bracket)
(Bottom) A60 Drydock tower strut

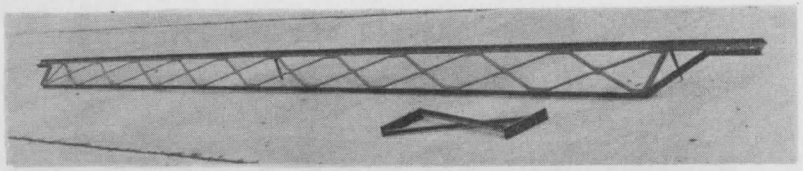

Fig. G-19

(Top) A67 Expanded steel catwalk truss
(Bottom) A69 Diagonal catwalk brace

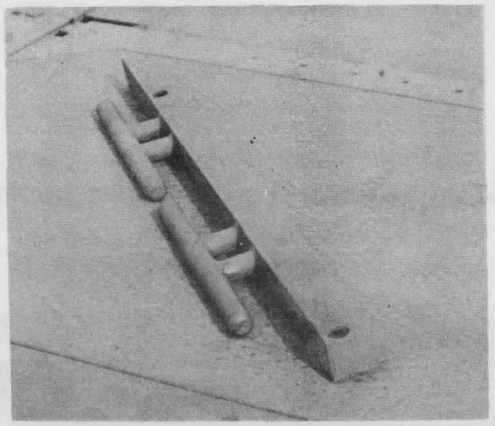

Fig. G-20

A65 Drydock cleat

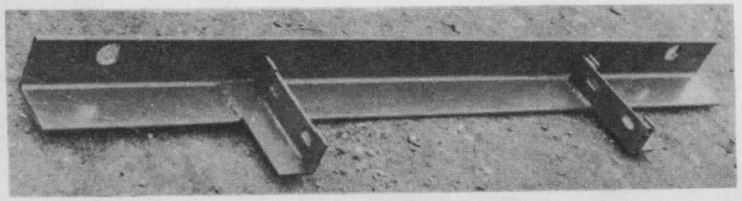

Fig. G-21

A64 Catwalk bracket (seat)

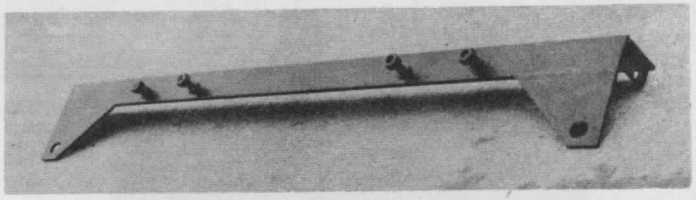

Fig. G-22

Angle to support barge propulsion units

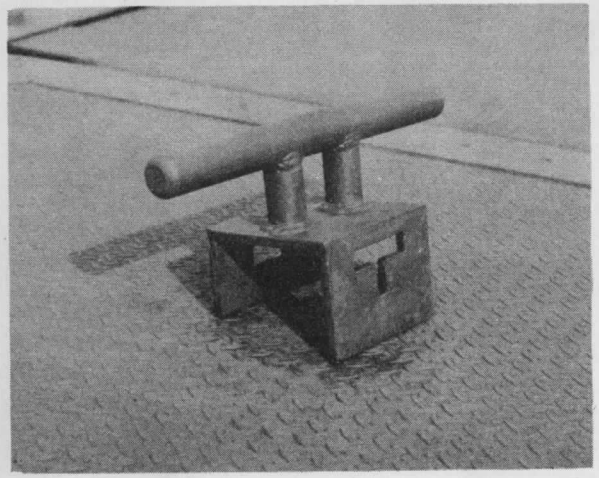

Fig. G-23

A68 All-purpose cleat

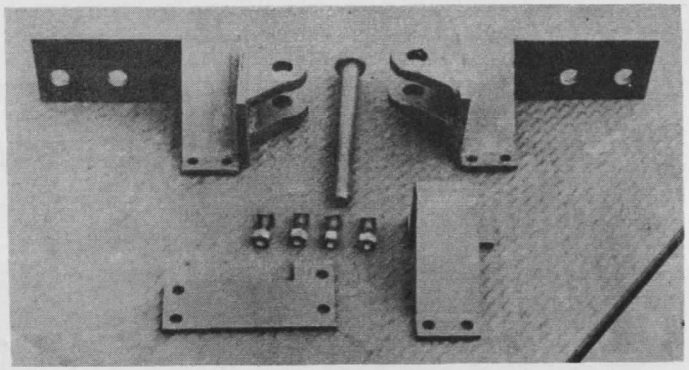

Fig. G-24

Hinge Parts

(Left Rear)	A40	Hinge part (right)
(Center Rear)	A70	Hinge pin
(Right Rear)	A41	Hinge part (left)
(Left Front)	A42	Hinge plate
(Right Front)		Hinge plate

Appendix B

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE BARGE

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-34 PONTOON BARGE, 3 x 7 AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu. Ft.	Pounds
5-F-34	1	Box	1	16.9	2,300
5-F-34	1	Box	2	27.1	1,315
5-F-34	1	Box	3	10.8	1,250
5-F-34	3	Pkg	4	30.6	2,325
5-F-34	1	Pkg	5	31.8	850
5-F-34	1	Pkg	6	12.0	375
5-F-34	2	Anchors	-	10.0	400
5-F-34	6	Angles	B-2	65.4	4,350
5-F-34	6	Angles	B-3	47.4	3,450
5-F-12	15	Pontoons Rect	T-6	2940.0	39,750
5-F-13	6	Pontoons Curved	T-7	1626.0	19,500
TOTAL	43			4818.0	75,865

Index	No.	Type	Cu.Ft.	Pounds	Units required
5-F-34	1	Box	16.9	2,300	1

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge (Pawl, Spring, Pin)	151
A-4	Wedge Bolt	151
A-5	Hand Wheel	151
A-6	Assembly Bolt	164
A-17	End Bolt	14
A-18	End Bolt Lock Washer	14
A-20	2" Screw Plug Extra for T-64T-7	10
A-68	Cleat (Modified to be welded on B-2 Angles at Base	4
Prints	Y & D Print No. 124,961	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34	2	Box	27.1	1,315	1

(Cont'd on next page)

Contents

Mark	Description	No.pcs.Per Box
A-1	Link	14
A-2	Link Pin	14
A-7	End Tie Rod No Pin	7
A-8	End Tie Rod with 1-1/4" x 4" Pin and Cotter	7
A-9	Tie Rod Typical with 1-1/4" x 4" Pin and Cotter	7
A-11	Tie Rod Bolt and Washer	13
A-15	Yoke for A-11	13
A-19	Clevis	2
Bolts	1" x 2-1/2" Bolt, Hex Nut and Lockwasher for B-2	6
Y-1	Hand Rail Stanchon	20
	3/8" Galv. Wire Rope LI. Ft.	300
	3/8" Galv. Wire Rope Clips	8

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34	3	Box	10.8	1,250	1

Contents

Mark	Description	No.Pcs.Per Box
	5/8" Anchor Chain 150' Length	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34	4	Pkg	10.2	775	3

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, nuts and Lock Washers	6

Index	No.	Type	Cu.Ft.	Pounds	Units required
5-F-34	5	Pkg	31.8	850	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom Closure with two 1/2" x 1-1/2" Bolts, Nuts, and Lockwashers	18

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34	6	Pkg	12.0	375	1

Contents

(Cont'd on next page)

Mark	Description	No.Pcs.Per Pkg.
W-1	Side Closure with 1/2" x 2" Bolt, Nut, Washer & Cotter	12

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34		Anchor	5.0	200	2

Contents

Mark	Description	No.Pcs.Per Unit
	200 lb. Navy Anchor 5/8" Shackle	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34	B-2	Angle	10.9	725	6

Contents

Mark	Description	No.Pcs.Per Unit
B-2	Top Assembly Angle 6" x 6" x 43'-8-1/2" Long	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-34	B-3	Angle	7.9	575	6

Contents

Mark	Description	No.Pcs.Per Unit
B-3	Bottom Assembly Angle 6" x 6" x 31'-6-1/2" Long	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2650	15

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6 - A20 Plugs	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-13	T-7	Pontoon	271.0	3250	6

Contents

Mark	Description	No.Pcs.Per Unit
T-7	Curved Pontoon with 4 A20 Plugs	1

Appendix C

T.A.F. ESTIMATING DEPARTMENT

AUGUST 5, 1942
REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE BARGE

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-40 PONTOON BARGE - 4 x 7 AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu. Ft.	Pounds
5-F-40	1	Box	1	16.9	2,925
5-F-40	1	Box	2	48.4	3,425
5-F-40	1	Box	2-A	6.5	250
5-F-40	1	Box	3	10.8	1,250
5-F-40	4	Pkg.	4	40.8	3,100
5-F-40	1	Pkg.	5	31.8	850
5-F-40	1	Pkg.	5-A	14.5	325
5-F-40	1	Pkg.	6	12.0	375
5-F-40	2	Anchors		10.0	400
5-F-40	8	Angles	B-2	87.2	5,800
5-F-40	8	Angles	B-3	63.2	4,600
5-F-12	20	Pontoons Rect.	T-6	3,920.0	53,000
5-F-13	8	Pontoons Curved	T-7	2,168.0	26,000
TOTAL	57			6,430.1	102,300

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	1	Box	16.9	2,925	1

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge (Pawl, Spring, Pin)	202
A-4	Wedge Bolt	202
A-5	Hand Wheel	202
A-6	Assembly Bolt	219
A-17	End Bolt	18
A-18	End Bolt Lock Washer	18
A-20	2" Screw Plugs Extra for T-6 & T-7	10
A-68	Cleat (Modified to be Welded on B-2 Angle at Base)	4
Prints	Y & D Print No. 143,056	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	2	Box	48.4	3,425	1

(Cont'd on next page)

5-F-40 PONTOON BARGE - 4 x 7 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Box
A-1	Link	20
A-2	Link Pin	20
A-10	Tie Rod Bolt & Washer	13
A-14	Yoke for A-10	13
A-12	Tie Rod Typical with 2" x 4-3/8" Pin and Cotter	13
A-29	End Tie Rod with 2" x 4-3/8" Pin and Cotter	7
A-30	End Tie Rod no Pin	7
Bolts	1" x 2-1/2" Bolt, Hex. Nut & Lock Washer for B-2	8
Y-1	Hand Rail Stanchon	22
	3/8" Galv. Wire Rope	300
	3/8" Galv. Wire Rope Clips	8

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	2-A	Box	6.5	250	1

Contents

Mark	Description	No.Pcs.Per Box
A-40	Hinge R.H.	3
A-41	Hinge L.H.	3
A-70	Hinge Pin	3

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	3	Box	10.8	1,250	1

Contents

Mark	Description	No. Pcs.Per Box
	5/8" Anchor Chain - 150 Ft. Length	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	4	Pkg.	10.2	775	4

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, Nuts & Lock Washers	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	5	Pkg.	31.8	850	1

Contents

(Cont'd on next page)

5-F-40 PONTOON BARGE - 4 x 7 AND ASSEMBLY (CONT'D)

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts, Nuts and Lock-washers	18

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	5-A	Pkg.	14.5	325	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts, Nuts, and Lock-washers	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	6	Pkg	12.0	375	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-1	Side closure with 1/2" x 2" Bolt, Nut, Washer & Cotter	12

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40		Anchor	5.0	200	2

Contents

Mark	Description	No.Pcs. Per. Unit
	200 Lb. Navy Anchor 5/8" Shackle	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	B-2	Angle	10.9	725	8

Contents

Mark	Description	No.Pcs.Per Unit
B-2	Top Assembly Angle 6"x6" x 43'-8-1/2" Long	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-40	B-3	Angle	7.9	575	8

Contents

Mark	Description	No.Pcs. Per Unit
B-3	Bottom Assembly Angle	1

5-F-40 PONTOON BARGE - 4 x 7 AND ASSEMBLY (CONT'D)

6" x 6" x 31'-6-1/2" Long 1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2,650	20

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6-A20 Plugs	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-13	T-7	Pontoon	271.0	3,250	8

Contents

Mark	Description	No.Pcs.Per Unit
T-7	Curved Pontoon with 4-A20 Plugs	1

Appendix D

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE BARGE

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-41 PONTOON BARGE - 4 x 12 AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu. Ft.	Pounds
5-F-41	2	Box	1	33.8	5,200
5-F-41	1	Box	2	36.4	3,100
5-F-41	1	Box	2-A	49.6	2,635
5-F-41	1	Box	2-B	6.5	250
5-F-41	1	Box	3	10.8	1,250
5-F-41	6	Pkg.	4	61.2	4,650
5-F-41	1	Pkg.	4-A	7.3	550
5-F-41	1	Pkg.	4-B	7.3	550
5-F-41	2	Pkg.	5	63.6	1,700
5-F-41	1	Pkg.	5-A	17.2	400
5-F-41	1	Pkg.	6	12.0	375
5-F-41	1	Pkg.	6-A	10.5	325
5-F-41	2	Anchors		10.0	400
5-F-41	8	Angles	B8-M	72.0	6,400
5-F-41	8	Angles	B8-F	72.0	6,400
5-F-41	8	Angles	B9-M	60.0	5,600
5-F-41	8	Angles	B9-F	60.0	5,600
5-F-12	40	Pontoons Rect.	T-6	7,840.0	106,000
5-F-13	8	Pontoons Curved	T-7	2,168.0	26,000
TOTAL	101			10,598.2	177,385

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	1	Box	16.9	2,600	2

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge (Pawl, Spring, Bin)	185
A-4	Wedge Bolt	185
A-5	Hand Wheel	185
A-6	Assembly Bolt	193
A-17	End Bolt	9
A-18	End Bolt Lockwasher	9
A-20	2" Screw Plugs extra fro T-6 & T-7	10
Prints	Y & D Print No. 143,044	1

(Cont'd on next page)

5-F-41 PONTOON BARGE - 4 x 12 AND ASSEMBLY (CONT'D)

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	2	Box	36.4	3,100	1

Contents

Mark	Description	No.Pcs.Per Box
A-1	Link	36
A-2	Link Pin	36
A-10	Tie Rod Bolt and Washer	23
A-29	End Tie Rod with 2" x 4-3/8" Pin and Cotter	12
A-30	End Tie Rod No Pin	12
A-14	Yoke for A-10	23
Bolts	1" x 2-1/2" Bolt, Hex. Nut & Lockwasher for B8-M & B8-F	8
A-68	Cleats	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	2-A	Box	49.6	2,635	1

Contents

Mark	Description	No.Pcs.Per Box
A-12	Tie Rod Typical with 2" x 4-3/8" Pin and Cotter	23
Y-1	Hand Rail Stanchon	32
	3/8" Galv. Wire Rope	425
	3/8" Galv. Wire Rope Clips	8

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	2-B	Box	6.5	250	1

Contents

Mark	Description	No.Pcs.Per Box
A-40	Hinge R.H.	3
A-41	Hinge L.H.	3
A-70	Hinge Pin	3

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	3	Box	10.8	1,250	1

Contents

Mark	Description	No.Pcs.Per Box
	5/8" Anchor Chain 150' Length	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	4	Pkg.	10.2	775	6

(Cont'd on next page)

5-F-41 PONTOON BARGE - 4 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, Nuts,and Lockwashers	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	4-A	Pkg.	7.3	550	1

Contents

Mark	Description	No.Pcs. Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, Nuts, and Lockwashers	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	4-B	Pkg.	7.3	550	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-34	Deck Channel at Splice in B8-M & B8-F with bent plate each end	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	5	Pkg.	31.8	850	2

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts,Nuts, & Lockwashers	18

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	5-A	Pkg.	17.2	400	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts,Nuts, & Lockwashers	4
W-9	Bottom closure at splice in B(-M & B9-F with bent plate each end)	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	6	Pkg.	12.0	375	1

Contents

(Cont'd on next page)

5-F-41 PONTOON BARGE - 4 x 12 AND ASSEMBLY (CONT'D)

Mark	Description	No.Pcs.Per Pkg.
W-1	Side Closure with 1/2" x 2" Bolt, Nut, Washer & Cotter	12

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	6-A	Pkg.	10.5	325	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-1	Side Closure with 1/2'' x 2" Bolt, Nut, Washer & Cotter	8
W-7	Side Closure at Splice in B8-M & B8-F with 2" x 1/4" x 11-1/2" Plate, 1/2" x 3-1/4" Bolt, Nut, Flatwasher, and Lockwasher	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41		Anchor	5.0	200	2

Contents

Mark	Description	No.Pcs.Per Unit
	200 Lb. Navy Anchor 5/8" Shackle	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	B8-M	Angle	9.0	800	8

Contents

Mark	Description	No.Pcs. Per Unit
B8-M	Male Half Top Assembly Angle 6" x 6" x 36'-4" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	B8-F	Angle	9.0	800	8

Contents

Mark	Description	No.Pcs.Per Unit
B8-F	Female Half Top Assembly Angle 6" x 6" x 36'-4" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	B9-M	Angle	7.5	700	8

(Cont'd on next page)

5-F-41 PONTOON BARGE - 4 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Unit
B9-M	Male Half Bottom Assembly Angle 6" x 6" x 30'-3" Long Breech Block Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-41	B9-F	Angle	7.5	700	8

Contents

Mark	Description	No.Pcs.Per Unit
B9-F	Female Half Bottom Assembly Angle 6" x 6" x 30'-3" Long Breech Block Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2,650	40

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6-A20 Plugs	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-13	T-7	Pontoon	271.0	3,250	8

Contents

Mark	Description	No.Pcs.Per Unit
T-7	Curved Pontoon with 4-A20 Plugs	1

Appendix E

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE BARGE

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-53 PONTOON GEAR - 6 x 18 BARGE AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu. Ft.	Pounds
5-F-53	4	Box	1	67.6	12,000
5-F-53	1	Box	2	52.0	4,370
5-F-53	2	Box	2-A	104.0	7,750
5-F-53	1	Box	2-B	31.4	935
5-F-53	2	Box	3	21.6	2,500
5-F-53	10	Pkg.	4	102.0	7,750
5-F-53	5	Pkg.	4-A	51.0	3,875
5-F-53	2	Pkg.	4-B	20.4	1,550
5-F-53	3	Pkg.	5	95.4	2,550
5-F-53	1	Pkg.	5-A	31.8	850
5-F-53	1	Pkg.	5-B	31.8	850
5-F-53	1	Pkg.	5-C	22.0	600
5-F-53	2	Pkg.	6	24.0	750
5-F-53	1	Pkg.	6-A	10.5	325
5-F-53	4	Anchors		20.0	800
5-F-53	12	Angles	B8-M	108.0	9,600
5-F-53	12	Angles	B8-F	108.0	9,600
5-F-53	12	Angles	B9-M	90.0	8,400
5-F-53	12	Angles	B9-F	90.0	8,400
5-F-53	24	Angles	B-10	372.0	24,000
5-F-12	96	Pontoon Rect.	T-6	18,816.0	254,400
5-F-13	12	Pontoon Curved	T-7	3,252.0	39,000
TOTAL	220			23,521.5	400,855

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	1	Box	16.9	3,000	4

Contents

Mark	Description	No. Pcs. Per Box
A-3	Wedge (Pawl, Spring, Pin)	214
A-4	Wedge Bolt	214
A-5	Hand Wheel Nut	214
A-6	Assembly Bolt	221
A-17	End Bolt	7
A-18	End Bolt Lockwasher	7

Box No. 1 Cont'd

A-20	2" Screw Plugs Extra for T-6 & T-7	10
Prints	Y & D Print No. 143,088	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	2	Box	52.0	4,370	1

Contents

Mark	Description	No. Pcs. Per Box
A-1	Link	86
A-2	Link Pin	86
A-10	Tie Rod Bolt and washer	36
A-29	End Tie Rod with two 2"x 4-3/8" Pin and cotter	18
A-30	End Tie Rod no Pin	18
Bolts	1"x 2-1/2" Bolts Hex, Nuts & Lockwashers for B8-M & B8-F	14

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	2-A	Box	52.0	3,875	2

Contents

Mark	Description	No. Pcs. Per Box
A-12	Tie Rod Typical with 2" x 4-3/8" Pin and Cotter	35
A-14	Yoke for A-10	18
A-68	Cleats	4

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	2-B	Box	31.4	935	1

Contents

Mark	Description		No. Pcs. Per Box
Y-1	Hand Rail Stanchons		44
	3/8" Galv, Wire Rope	L F	650
	3/8" Galv. Wire Rope Clips		8

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	3	Box	10.8	1,250	2

Contents

Mark	Description	No. Pcs. Per Box
	5/8" Anchor Chain 150' Lengths	2

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	4	Pkg.	10.2	775	10

Pkg. No. 4 Cont'd

Contents

Mark	Description	No. Pcs. Per Pkg.
A-13	Deck Channels with two 1/2"x 1-1/2" Bolts, Nuts, & Lockwashers	6

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	4-A	Pkg.	10.2	775	5

Contents

Mark	Description	No. Pcs. Per Pkg.
A-33	Deck Channels with two 1/2"x 1-1/2" Bolts, Nuts & Lockwashers for 8"x 8" Angle	6

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	4-B	Pkg.	10.2	775	2

Contents

Mark	Description	No. Pcs. Per Pkg.
A-34	Deck Channel at Splice B8-M & B8-F with bent plates each end	6

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	5	Pkg.	31.8	850	3

Contents

Mark	Description	No. Pcs. Per Pkg.
W-2	Bottom closure with two 1/2"x 1-1/2" Bolts, Nuts & Lockwashers	18

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	5-A	Pkg.	31.8	850	1

Contents

Mark	Description	No. Pcs. Per Pkg.
W-2	Bottom closure with two 1/2"x 1-1/2" Bolts, Nuts, & Lockwashers	6
W-9	Bottom Closure at Splices in B9-M & B9-F with Bent Plate each end	12

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	5-B	Pkg.	31.8	850	1

Pkg. No. 5-B Cont'd

Contents

Mark	Description	No. Pcs. Per Pkg.
W-8	Bottom Closure with 1/2"x 1-1/2" Bolts, Nuts, and Lockwashers for 8" x 8" Angle	18

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	5-C	Pkg.	22.0	600	1

Contents

Mark	Description	No. Pcs. Per Pkg.
W-8	Bottom Closure with 1/2"x 1-1/2" Bolt, Nut, & Lockwasher for 8"x 8" Angle	12

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	6	Pkg.	12.0	375	2

Contents

Mark	Description	No. Pcs. Per Pkg.
W-1	Side Closure with 1/2"x 2" Bolt, Nut, Washer & Cotter	12

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	6-A	Pkg.	10.5	325	1

Contents

Mark	Description	No. Pcs. Per Pkg.
W-1	Side Closure with 1/2"x 2" Bolt, Nut, Washer & Cotter	6
W-7	Side Closure at splice in B8-M & B8-F with 2"x 1/4" x 11-1/2" Plate 1/2"x 3-1/4" Bolt, Nut, Flatwasher and Lockwasher	4

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53		Anchor	5.0	200	4

Contents

Mark	Description	No. Pcs. Per Unit
	200 Lb. Navy Anchor 5/8" Shackle	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53		Anchor	5.0	200	4

Contents

Mark	Description	No. Pcs. Per Unit
	200 Lb. Navy Anchor 5/8" Shackle	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	B8-M	Angle	9.0	800	12

Contents

Mark	Description	No. Pcs. Per Unit
B8-M	Male Half Top Assembly Angle 6" x 6" x 36'-4" Long Breech Block Splice	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	B8-F	Angle	9.0	800	12

Contents

Mark	Description	No. Pcs. Per Unit
B8-F	Female Half Top Assembly Angle 6"x 6" x 36'-4" Long Breech Plug Splice	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	B9-M	Angle	7.5	700	12

Contents

Mark	Description	No. Pcs. Per Unit
B9-M	Male Half Bottom Assembly Angle 6" x 6" x 30'-3" Long Breech Plug Splice	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-53	B9-F	Angle	7.5	700	12

Contents

Mark	Description	No. Pcs. Per Unit
B9-F	Female Half Bottom Assembly Angle 6" x 6" x 30'-3" Long Breech Plug Splice	1

5-F-55 PONTOON BARGE - 5 x 12 AND ASSEMBLY (CONT'D)

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	2	Box	36.4	3,100	1

Contents

Mark	Description	No.Pcs.Per Box
A-1	Link	46
A-2	Link Pin	46
A-10	Tie Rod Bolt and Washer	23
A-29	End Tie Rod with 2" x 4-3/8" Pin and Cotter	12
A-30	End Tie Rod No Pin	12
Bolts	1" x 2-1/2" Bolt, Hex. Nut & Lockwasher for B8-M & B-8-F	10
A-68	Cleats	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	2-A	Box	52.4	4,150	1

Contents

Mark	Description	No.Pcs.Per Box
A-12	Tie Rod Typical with 2" x 4-3/8" Pin and Cotter	35
A-14	Yoke for A-10	23

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	2-B	Box	23.0	725	1

Contents

Mark	Description	No.Pcs.Per Box
Y-1	Hand Rail Stanchons	34
	3/8" Galv. Wire Rope L.F.	460
	3/8" Galv. Wire Rope Clips	8

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	2-C	Box	8.0	325	1

Contents

Mark	Description	No.Pcs.Per Box
A-40	Hinge R.H.	4
A-41	Hinge L.H.	4
A-70	Hinge Pin	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	3	Box	10.8	1,250	1

(Cont'd on next page)

5-F-55 PONTOON BARGE - 5 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Box
	5/8" Anchor Chain 150' Lengths	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	4	Pkg.	10.2	775	8

Contents

Mark	Description	No.Pcs.Per Box
A-13	Deck Channel with two 1/2" x 1-1/2" Bolts,Nuts, & Lockwashers	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	4-A	Pkg.	11.1	850	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts,Nuts, & Lockwashers	2
A-34	Deck Channel at splice in B8-M & B8-F with bent plate each end	5

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	5	Pkg.	31.8	850	2

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts, Nuts, & Lockwashers	18

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	5-a	Pkg.	35.4	900	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts, Nuts, & Lockwashers	14
W-9	Bottom closure at splice in B9-M & B9-F with Bent Plates each end	5

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	6	Pkg.	12.0	375	1

(Cont'd on next page)

5-F-55 PONTOON BARGE - 5 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Pkg.
W-1	Side Closure with 1/2" x 2" Bolt, Nut, Washer & Cotter	12

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	6-A	Pkg.	10.5	325	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-1	Side Closure with 1/2" x 2" Bolt, Nut, Washer & Lockwasher	8
W-7	Side Closure at splice in B8-M & B8-F with 2" x 1/4" x 11-1/2" plate, 1/2" x 3-1/2" Bolt, Nut, Flatwasher and Lockwasher	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55		Anchor	5.0	200	2

Contents

Mark	Description	No.Pcs.Per Unit
	200 Lb. Navy Anchors 5/8" Shackle	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	B8-M	Angle	9.0	800	10

Contents

Mark	Description	No.Pcs.Per Unit
B8-M	Male Half Top Assembly Angle 6" x 6" x 36'-4" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	B8-F	Angle	9.0	800	10

Contents

Mark	Description	No.Pcs.Per Unit
B8-F	Female Half Top Assembly Angle 6" x 6" x 36'-4" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	B9-M	Angle	7.5	700	10

(Cont'd on next page)

5-F-55 PONTOON BARGE - 5 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Unit
B9-M	Male Half Bottom Assembly Angle 6" x 6" x 30'-3" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-55	B9-F	Angle	7.5	700	10

Contents

Mark	Description	No.Pcs.Per Unit
B9-F	Female Half Bottom Assembly Angle 6" x 6" x 30'-3" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2,650	50

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6-A20 Plugs	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-13	T-7	Pontoon	271.0	3,250	10

Contents

Mark	Description	No.Pcs.Per Unit
	Curved Pontoon with 4-A20 Plugs	1

Appendix G

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE BRIDGE

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-35 PONTOON BRIDGE - 2 x 12 AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu.Ft.	Pounds
5-F-35	1	Box	1	16.9	2,950
5-F-35	1	Box	2	25.0	1,290
5-F-35	3	Pkg.	4	30.6	2,325
5-F-35	1	Pkg.	4-A	7.3	550
5-F-35	1	Pkg.	5	31.8	850
5-F-35	1	Pkg.	5-A	9.0	210
5-F-35	8	Angles	B1-M	76.0	6,000
5-F-35	8	Angles	B1-F	76.0	6,000
5-F-12	24	Pontoon Rect.	T-6	4,704.0	63,600
TOTAL	48			4,976.6	83,775

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	1	Box	16.9	2,950	1

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge (Pawl, Spring Pin)	202
A-4	Wedge Bolt	202
A-5	Hand Wheel Nut	202
A-6	Assembly Bolt	202
A-20	2" Screw plug Extra for T-6 & T-7	10
Prints	Y & D Print No. 124,960	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	2	Box	25.0	1,290	1

Contents

Mark	Description	No.Pcs.Per Box
A-1	Link	19
A-2	Link Pin	19
A-7	End Tie Rod No Pin	12
A-8	End Tie Rod with 1-1/4" x 4" Pin and Cotter	12
A-11	Tie Rod Bolt & Washer	23
A-15	Yoke for A-11	23
A-68	Cleat	4

5-F-35 - PONTOON BRIDGE - 2 x 12 AND ASSEMBLY (CONT'D)

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	4	Pkg.	10.2	775	3

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, Nuts, & Lockwashers	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	4-A	Pkg.	7.3	550	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channel with two 1/2" x 1-1/2" Bolts,Nuts, & Lockwashers	2
A-34	Deck Channels at splice in B-1 with bent plates each end	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	5	Pkg.	31.8	850	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts,Nuts & Lockwashers	18

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	5-A	Pkg.	9.0	210	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts,Nuts, & Lockwashers	2
W-9	Bottom Closure at splice in B-1 with Bent Plates each end	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	B1-M	Angle	9.5	750	8

Contents

Mark	Description	No.Pcs.Per Unit
B1-M	Male Half Assembly Angle 6" x 6" x 35'-1-1/2" Long Breech Plug Splice	1

(Cont'd on next page)

5-F-35 PONTOON BRIDGE - 2 x 12 AND ASSEMBLY (CONT'D)

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-35	B1-F	Angle	9.5	750	8

Contents

Mark	Description	No.Pcs.Per Unit
B1-F	Female Half Assembly Angle 6" x 6" x 35'-1-1/2" Long	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2,650	24

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6-A20 Plugs	1

Appendix H

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE CONNECTION

BRIDGE TO BRIDGE

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-56 - CONNECTION BRIDGE TO BRIDGE AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu.Ft.	Pounds
5-F-56	1	Pkg.	1	14.4	880
5-F-56	1	Pkg.	2	24.1	630
TOTAL	2			38.5	1,510

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-56	1	Pkg.	14.4	880	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-73	End Deck Channel with two 1" x 3" Bolts and Nuts	4
A-51	Vertical connections with two Convex Hex. Nuts, two 3/16" x 2-1/2" Cotters	6
A-76	Horizontal Connections	2
A-21	Yokes	4
A-22	Yoke Straps with two 2" x 2" Washers, two 1" Lockwashers & two 1" Hex. Nuts	4
Prints	Y & D Print No. 143,064	1
Prints	Y & D Print No. 143,089	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-56	2	Pkg.	24.1	630	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-45	Bumper with four pcs. 3/8" Wire Rope 3'-6" Long and eight 3/8" Wire Rope Clips	2

Appendix I

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE WHARF

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-37 PONTOON WHARF - 5 x 12 AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu.Ft.	Pounds
5-F-37	2	Box	1	33.8	5,750
5-F-37	1	Box	1-A	9.0	1,450
5-F-37	1	Box	2	38.7	2,700
5-F-37	1	Box	2-A	52.4	4,150
5-F-37	2	Box	3	21.6	2,500
5-F-37	8	Pkg.	4	81.6	6,200
5-F-37	1	Pkg.	4-A	11.1	850
5-F-37	2	Pkg.	5	63.6	1,700
5-F-37	1	Pkg.	5-A	35.4	900
5-F-37	4	Anchors		20.0	800
5-F-37	20	Angles	B1-M	190.0	15,000
5-F-37	20	Angles	B1-F	190.0	15,000
5-F-12	60	Pontoons Rect.	T-6	11,760.0	159,000
TOTAL	123			12,507.2	216,000

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	1	Box	16.9	2,875	2

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge (Pawl,Spring,Pin)	202
A-4	Wedge Bolt	202
A-5	Hand Wheel Nut	202
A-6	Assembly Bolt	202
A-20	2" Screw Plug Extra for T-6 & T-7	10
Prints	Y & D Print No. 143,089	1
	Contractors Print QN - 5-14	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	1-A	Box	9.0	1,450	1

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge (Pawl, Spring, Pin)	101
A-4	Wedge Bolt	101
A-5	Hand Wheel Nut	101

(Cont'd on next page)

5-F-37 PONTOON WHARF - 5 x 12 AND ASSEMBLY (CONT'D)

A-6	Assembly Bolt	101
A-20	2" Screw Plug Extra for T-6 & T-7	5

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	2	Box	38.7	2,700	1

Contents

Mark	Description	No.Pcs.Per Box
A-1	Link	62
A-2	Link Pin	62
A-10	End Bolt and Washer	23
A-29	End Tie Rod with 2" x 4-3/8" Pin and cotter	12
A-30	End Tie Rod No Pin	12
A-68	Cleat	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	2-A	Box	52.4	4,150	1

Contents

Mark	Description	No.Pcs.Per Box
A-12	Tie Rod Typical with 2" x 4-3/8" Pin and Cotter	35
A-14	Yoke for A-10	23

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	3	Box	10.8	1,250	2

Contents

Mark	Description	No.Pcs.Per Box
	5/8" Anchor Chain 150' Lengths	2

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	4	Pkg.	10.2	775	8

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, Nuts, & Lockwashers	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	4-A	Pkg.	11.1	850	1

(Cont'd on next page)

5-F-37 PONTOON WHARF - 5 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Pkg.
A-13	Deck Channels with two 1/2" x 1-1/2" Bolts, Nuts, and Lockwashers	2
A-34	Deck Channel at Splice in B1 with Bent Plates each end	5

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	5	Pkg.	31.8	850	2

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts, Nuts, & Lockwashers	18

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	5-A	Pkg.	35.4	900	1

Contents

Mark	Description	No.Pcs.Per Pkg.
W-2	Bottom closure with two 1/2" x 1-1/2" Bolts, Nuts, & Lockwashers	14
W-9	Bottom closure at splice in B1 with Bent Plates each end	5

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37		Anchors	5.0	200	4

Contents

Mark	Description	No.Pcs.Per Unit
	200 Lb. Navy Anchors 5/8" Shackle	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	B1-M	Angle	9.5	750	20

Contents

Mark	Description	No.Pcs.Per Unit
B1-M	Male Half Assembly Angle 6" x 6" x 35'-1-1/2" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-37	B1-F	Angle	9.5	750	20

(Cont'd on next page)

5-F-37 PONTOON WHARF - 5 x 12 AND ASSEMBLY (CONT'D)

Contents

Mark	Description	No.Pcs.Per Unit
B1-F	Female Half Assembly Angle 6" x 6" x 35'-1-1/2" Long Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2,650	60

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6-A20 Plugs	1

Appendix J

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE CONNECTION

BRIDGE TO WHARF

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-57 - CONNECTION BRIDGE TO WHARF AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu.Ft.	Pounds
5-F-57	1	Pkg.	1	32.3	1,520
5-F-57	1	Pkg.	2	24.1	630
TOTAL	2			56.4	2,150

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-57	1	Pkg.	32.3	1,520	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-73	End Deck Channel with two 1" x 3" Bolts and Nuts	2
A-74	Bottom connection angle	1
A-44	Top connection angle	1
A-51	Vertical connections with two Convex Hex.Nuts, two 3/16" x 2-1/2" Cotters	6
A-21	Yokes	2
A-22	Yoke Strap with two 2" x 2" Washers, two 1" Lockwashers, two 1" Hex. Nuts	2
A-1	Links	10
A-2	Link Pins	10
Prints	Y & D Print No. 143,064	1
Prints	Y & D Print No. 143,089	

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-57	2	Pkg.	24.1	630	1

Contents

Mark	Description	No.Pcs.Per Pkg.
A-45	Bumper with four pcs. 3/8" Wire Rope 3'-6" Long and eight 3/8" Wire Rope Clips	2

Appendix K

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR ONE DRYDOCK

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-39 PONTOON DRYDOCK - 4 x 12 AND ASSEMBLY

SUMMARY

Index	Pieces	Type	No.	Cu.Ft.	Pounds
5-F-39	2	Box	1	33.8	5,850
5-F-39	1	Box	2	30.0	2,250
5-F-39	1	Box	2-A	32.5	2,800
5-F-39	2	Box	3	21.6	2,500
5-F-39	7	Pkg.	4	71.4	5,425
5-F-39	1	Pkg.	4-A	4.0	275
5-F-39	2	Pkg.	5	63.6	1,700
5-F-39	1	Pkg.	5-A	17.2	400
5-F-39	1	Box	6	34.5	1,750
5-F-39	1	Box	7	14.0	1,060
5-F-39	1	Crate	8	37.6	780
5-F-39	1	Pkg.	9	40.6	465
5-F-39	1	Pkg.	10	39.3	480
5-F-39	1	Crate	11	40.4	1,350
5-F-39	1	Box	12	24.0	810
5-F-39	1	Box	13	22.9	975
5-F-39	4	Anchors		20.0	800
5-F-39	16	Angles	B1-M	152.0	12,000
5-F-39	16	Angles	B1-F	152.0	12,000
5-F-12	64	Pontoons Rect.	T-6	12,544.0	169,600
TOTAL	125			13,395.4	223,270

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	1	Box	16.9	2925	2

Contents

Mark	Description	No.Pcs.Per Box
A-3	Wedge	202
A-4	Wedge Bolt	202
A-5	Hand Wheel Nut	202
A-6	Assembly Bolt	202
A-20	2" Screw Plugs Extra For T-6&T-7	10
Prints	Y&D Print No. 143.053	1
Prints	Y&D Print No. 143,054	1

(Cont'd on next page)

5-F-39 PONTOON DRYDOCK - 4 x 12 AND ASSEMBLY (CONT'D)

A-67	Walkway Truss	4
A-69	Walkway Bracing	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	9	Pkg.	40.6	465	1

Mark	Contents Description	No.Pcs.Per Pkg.
Bridge Walkway	Bridge Walkway Section	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	10	Pkg.	39.3	480	1

Mark	Contents Description	No.Pcs.Per Pkg.
Tank Walkway	Tank Walkway Sections	4

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	11	Crate	40.4	1350	1

Mark	Contents Description	No.Pcs.Per Crate
Air Feed Line	Made Up of Following	One Set
	2" Std Pipe 5'-2 3/8" Long T.B.E.	22
	2" Std Pipe 14'-10 3/4" Long T.B.E.	2
	2" Std Pipe 20'-0" Long T.B.E.	6
	2" Nipples 2 1/2" Long	28
	2" Couplings	6
	2"x2"x1" Mall Tees	50
	2" Pipe Caps	10
	1" Air Hose Couplings with 1"Male Pipe Thread End	53
	1" Rubber Air Hose Gaskets	53
H-1	Pipe Hangers Complete	12

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	12	Box	24.0	810	1

Mark	Contents Description	No.Pcs.Per Box
Air Hose	Made up of Following	One Set
	1" Air Hose 0'-10 1/2" long	8
	1" Air Hose 1'-0 1/2" Long	8
	1" Air Hose 5'-0" long	15
	1" Air Hose 7'-11" Long	15
	1" Air Hose 12'-0 1/2" Long	15
	1" Air Hose Couplings	122
	1" Air Hose Clamps with 2 Bolts,Pr.	122
	1" Air Hose Couplings with 1" Male Pipe Thread End	53
	1" Rubber Air Hose Gaskets	175
	1" Street Ells	53
	2" to 1" Hex Reducer Bushings	53

(Cont'd on next page)

5-F-39 PONTOON DRYDOCK - 4 x 12 AND ASSEMBLY (CONT'D)

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	13	Box	22.9	975	1

Contents

Mark	Description	No.Pcs.Per Box
Water Inlet	Made up of Following	One Set
	2" Std. Pipe 4'-7" Long T.B.E.	53
	2" Street Ells	53
	2" Pipe Caps	6

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	Loose	Anchors	5.0	200	4

Contents

Mark	Description	No.Pcs.Per Unit
	200 Lb. Navy Anchor 5/8" Shackle	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	B1-M	Angles	9.5	750	16

Contents

Mark	Description	No.Pcs.Per Unit
B1-M	Male Half Assembly Angle 6"x6"x35'-1 1/2"	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-39	B1-F	Angles	9.5	750	16

Contents

Mark	Description	No.Pcs.Per Unit
B1-F	Female Half Assembly Angle 6"x6"x35'-1 1/2"	
	Breech Plug Splice	1

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-12	T-6	Pontoon	196.0	2650	64

Contents

Mark	Description	No.Pcs.Per Unit
T-6	Rectangular Pontoon with 6-A20 Plugs	1

Appendix L

REVISED AUGUST 1, 1942

PACKING LIST

MATERIAL FOR DRYDOCK OPERATION

N. L. EQUIPMENT

T. PONTOON GEAR

5-F-33.2 OPERATING EQUIPMENT DRYDOCK SETUP

SUMMARY

Index	Pieces	Type	No.	Cu.Ft.	Pounds
5-F-33.2	4	Crate	1	140.8	3,700
5-F-33.2-5	1	Box	1-A	12.9	280
5-F-33.2	1	Box	2	15.4	410
5-F-33.2	1	Box	3	50.7	485
5-F-33.2	1	Box	4	52.0	775
TOTAL:	8			271.8	5,650

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-33.2	1	Crate	35.2	925	4

Mark	Contents Description	No.Pcs.Per Crate
Drydock Compressor	Air Compressor 100 C.F. Yoeman Bros.	1
	Air Intake Silencer	1
	Crank	1
	2" Street Ell	1
	2" Nipple 2-1/2" Long	3
	2" x 2" x 1" Tee	1
	2" Hor. Bronze Check Valve	1
	1" Safety Valve	1

Engine Make _____ Serial No. _____
" " _____ " _____
" " _____ " _____
_____ _____

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-33.2-5	1-A	Box	12.9	280	1

Mark	Contents Description	No.Pcs.Per Box
	Cartons	13

Carton No. 1

PART NUMBER	DESCRIPTION
F600G-207	Bushing
D600G-217	Bushing
F600G-208	Bushing

(Cont'd on next page)

5-F-33.2 OPERATING EQUIPMENT DRYDOCK SETUP (CONT'D)

Carton No. 7

X13073	Bearings
Y400K-405	Body
D600G-283	Bushing
Y400K-231	Shaft
Y400K-332	Impeller
Y400K-3330	Seal
H9V-213	Air Cleaner
Y91F-302	Carburetor

Carton No. 8

C143F-309	Choke Control
Y91K-302	Fan
Y91K-200	Fan Belt
P57A-204	Radiator Inlet Hose
X2354	Radiator Hose Clamps
C143F-310	Throttle Control
F124L-300	Gauge
Y91S-3002	Governor
No. 7	Champion Spark Plugs

Carton No. 9

FAA-761 (M-728)	Composition Blades
SKF-NS-30	Roller Bearings
Y-1574	Set Collars and Screws for shaft seal assemblies
M-181	Seal Springs for shaft seal assemblies
M-180	Seal Sleeves for shaft seal assemblies
M-182	Seal Rings for shaft seal assemblies
M-179	Bearing Spacers for shaft seal assemblies
M-99	Flexible Coupling Pins
A-128	Flexible Coupling Bushings

Carton No. 10

PY91-400	Radiator (Loose)

Carton No. 11

PY91-401	Gas Tank (Loose)

Carton No. 12

Y91U-101	Gasket Set

Carton No. 13
Engine Instruction Book and Service Manual. (Loose)

Index	No.	Type	Cu.Ft.	Pounds	Units Required
5-F-33.2	2	Box	15.4	410	1

(Cont'd on next page)

5-F-33.2 OPERATING EQUIPMENT DRYDOCK SETUP (CONT'D)

Y400H-301	Cam Gear
Y400D-4001	Connecting Rods
Y400D-3001	Connecting Rods
Y400G-304	Bearings
Y400G-303	Bearings

Carton No. 2

Y400G-2121	Bearing
Y400G-2151	Bearing
Y400G-2161	Bearing
D600B-323	Block
D600B-406	Block
D600B-305	Guard
Y400H-205	Gear
10EO-201	Jaw

Carton No. 3
Simplex No. 6
A-253 Oil Lubricator Assemblies

Carton No. 4

Y400H-3021	Idler Gear
Y400-203	Bushing
Y400H-206	Gear
Y91M-406	Magneto

Carton No. 5

Y400L-403	Body
F600H-205	Gear
Y400L-245	Shaft
Y400G-208	Bushing
C400H-213	Gear
Y400H-209	Gear
Y400A-4011 ESF	Pistons and Pins

Carton No. 6

Y400A-207	Pins
PYG-203	Bushings
PYA-202	Pistons Pin Retaining Rings
Y400A-310	Rings
Y400A-309	Rings
Y91A-301	Rings
Y400I-210	Valves
Y400I-301	Valves
Y400I-209	Guides
Y400I-205	Keys
Y400I-204	Seats
F600I-237	Tappets
Y400I-215	Springs

(Cont'd on next page)

5-F-33.2 OPERATING EQUIPMENT DRYDOCK SETUP (CONT'D)

Contents

Mark	Description	No.Pcs.Per Box
Drydock Manifold	Made up of following material	
	6" Std. Pipe 4'-0" Long T.B.E.	1
	6" Pipe Caps	2
	2" Pipe Couplings	12
	2" Nipples 2-1/2" Long	12
	1-1/4" Pipe Couplings	4
	1-1/4" Std. Pipe 3'-0" Long T.O.E.	4
	4" x 4" x 3/8" Steel Plate	4
	1/4" Pipe Coupling	1
	1/4" Air Gauge 30 lbs.	1
	1/4" Pipe Plug	1
	2" Bronze Gate Valves 125#	12
	Gate Valve Handles 8-F	12
Prints	Y & D Print No. 143,053	1
"	" " 143,054	1

Index	No.	Type	Cu.Ft.	Pounds	Units required
5-F-33.2	3	Box	50.7	485	1

Contents

Mark	Description	No.Pcs.Per Box
Air Hose Compressor Manifold	Made up of following material	
	2" 6 Ply Air Hose 25'-0" Long	6
	2" "Boss" Air Hose Couplings with 2" Male Pipe Thread	6
	2" "Boss" Air Hose Couplings with Union and Spud for 2" Female Pipe Thread	6
	2" Air Hose Clamps Pair with 4 Bolts	12

Index	No.	Type	Cu.Ft.	Pounds	Units required
5-F-33.2	4	Box	52.0	775	1

Contents

Mark	Description	No.Pcs.Per Box
Air Hose Manifold to Drydock	2" 6 Ply Air Hose 50'-0" Long	6
	2" "Boss" Air Hose Couplings with 2" Male Pipe Thread	6
	2" "Boss" Air Hose Couplings with Union and Spud for 2" Female Thread	6
	2" Air Hose Clamps with 4 Bolts	12

Appendix M

REVISED August 1, 1942

PACKING LIST

MATERIAL FOR P. T. BOAT SUPPORTS

AND KEEL BLOCKS FOR ONE 4x12 DRYDOCK

N. L. EQUIPMENT

T POONTON GEAR

5-F-33.17 P. T. BOAT SUPPORTS & KEEL BLOCKS

SUMMARY

Index	Pieces	Type	No.	Cu. Ft.	Pounds
5-F-33.17	1	Box	1	13.4	1,410
5-F-33.17	6	Pkg.	DBS-5	44.4	4,080
5-F-33.17	12	Framed Channels	DBS-1	62.4	2,980
5-F-33.17	20	Framed Timbers	DBS-8	498.0	11,500
5-F-33.17	10	Framed Channels	DBS-9	190.0	3,750
TOTAL	49			808.2	23,720

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Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-33.17	1	Box	13.4	1,410	1

Contents

Mark	Description	No. Pcs. Per Box
DBS-2	Block Supports	12
DBS-3	Clamps with two 2-1/2"x 2-1/2"x 1/4" washers and two 3/4"x 3" bolts & washers	12
DBS-4	Pin with two 2-1/2" Dia. x 1/8" washer and two 1/4" x 2-1/2" cotters	36
DBS-10	Tie Plate with four 3/4" x 1-1/2" bolts and nuts	18
Prints	Y&D Print No. 143,053	1
"	Y&D " " 187,484	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-33.17	DBS-5	Pkg.	7.4	680	6

Contents

Mark	Description	No. Pcs. Per Box
DBS-5	Block Supports 6" Channel 20'-6" Long with	One set

Pkg. No. DBS-5 Cont'd

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four DBS-7 connectors, four 3/4" x 2-1/2" bolts & nuts
Eight 3/4" Flat Washers — 2

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-33.17	DBS-1	Framed Channels	5.2	265	12

Contents

Mark	Description	No. Pcs. Per Unit
DBS-1	Block Supports	1

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-33.17	DBS-8	Framed Timbers	24.9	575	20

Contents

Mark	Description	No. Pcs. Per Unit
DBS-8	Blocking Frame	1
aR	Angles	2
aL	Angles	2
	3/4" x 2" Bolts & Nuts	8

Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-33.17	DBS-9	Framed Channels	19.0	375	10

Contents

Mark	Description	No. Pcs. Per Unit
DBS-9	Blocking Framing	1
aR	Angles	2
aL	Angles	2
	3/4" x 2" Bolts & Nuts	8

- - - - - -

Box No. 1 Cont'd

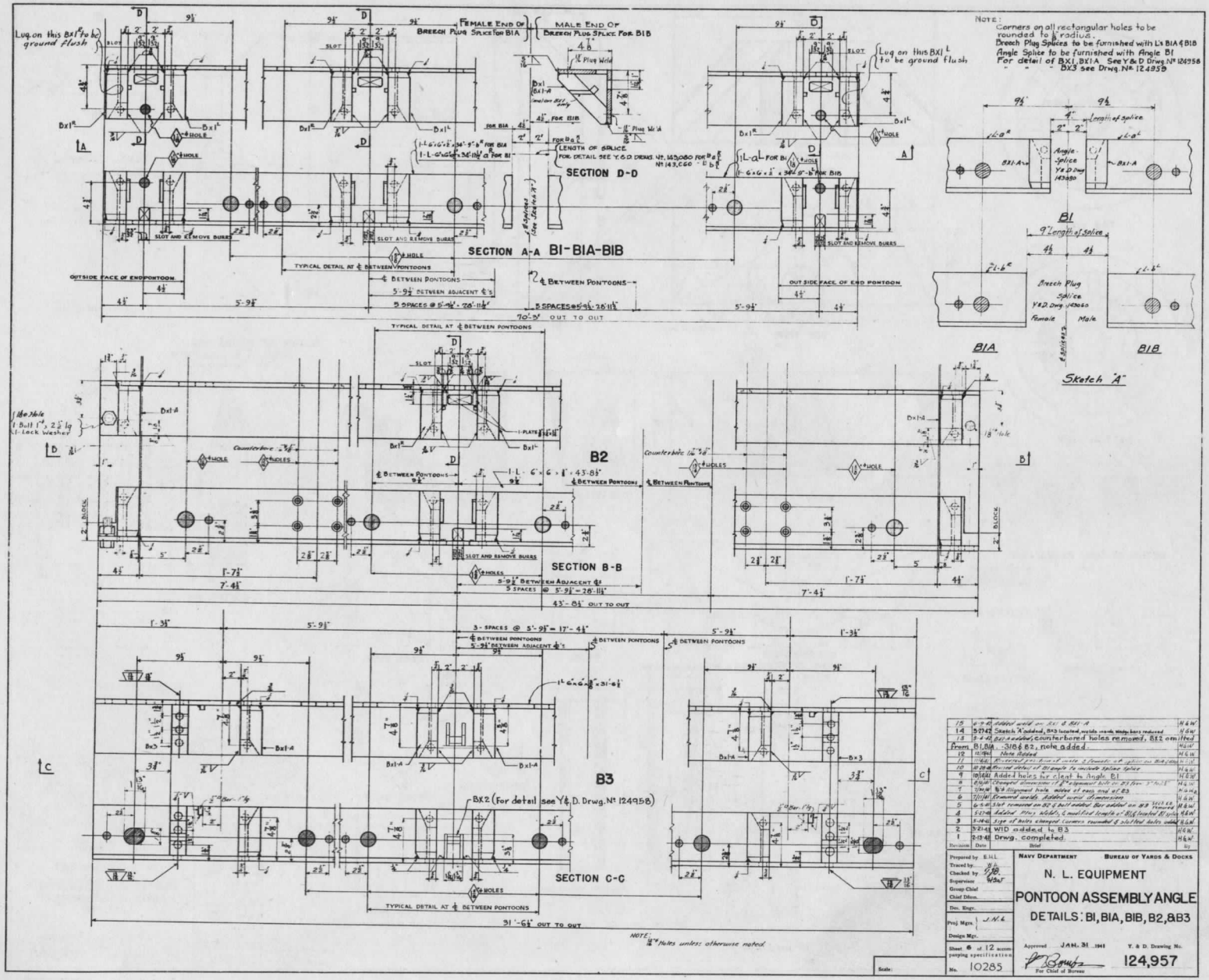
Drop Forged Steel Swivel Hooks	2
7/8" Manila Rope (600 ft. Coils)	1 Coil
Cable Clips for 5/8" Wire Rope (Galv.)	40
Cable Thimbles for 5/8" Wire Rope (Galv.)	12
Shackles, U Bolts Screw Pin 5/8" Dia. (Galv.)	10
Pliers, Slip Joint 8"	2
Special Triple Offset Wrench for Removing 2" Recessed Brass Screw Plugs	1
Wood Snatch Blocks, 6" Steel, 3" Sheaves for 7/8" Rope	2
1/4" Asphalt Treated Hemp Rope for Heaving Lines (1600' per coil)	1 Coil

Mark	Description	No. Pcs. Per Box
	3/4" Backing Out Maul "B&O"	2
	Offset Socket Wrench for 1/2" Std. Hex Nuts	1
	200 ft. 5/8" Wire Rope (Galv.) Plow Steel Hemp center	1 Coil
	Pull Lift 1-1/2 Ton Yale and Towne	1
	15-Ton Track Jack Duff-Norton #110 Wood Handles	2
	Push-Pull 1-1/2 Ton	1
	48" Ratchet Wrenches (Lowell 2-1/2 each complete with 2-2-3/8", 1-2-9/16" and 1-3-1/8" Chucks	2
	Round Nose Chisel, 1/2" Point	2
	Round Nose Chisel, 3/4" Point	2
	Flat Cold Chisels, 1/2" Bit	2
	Flat Cold Chisels, 1" Bit	2
	Cape Chisels, 1/2" Point	2
	1-1/2" Plug Tap U.S. Std. Bolt Thread	1
	1-1/2" Dia. Nut U.S. Std. Bolt Thread (rethreading die)	1
	1" Plug Tap U.S. Std. Bolt Thread	1
	1" Die Nut U.S. Std. Bolt Thread (rethreading die)	1
	Files, 12" Square Taper Bastard Cut	2
	Files, 12" Half Round Bastard Cut	2
	#2 Graphite Grease, 25# Pail	1
	Assembly Manual for Pontoon Gear	1

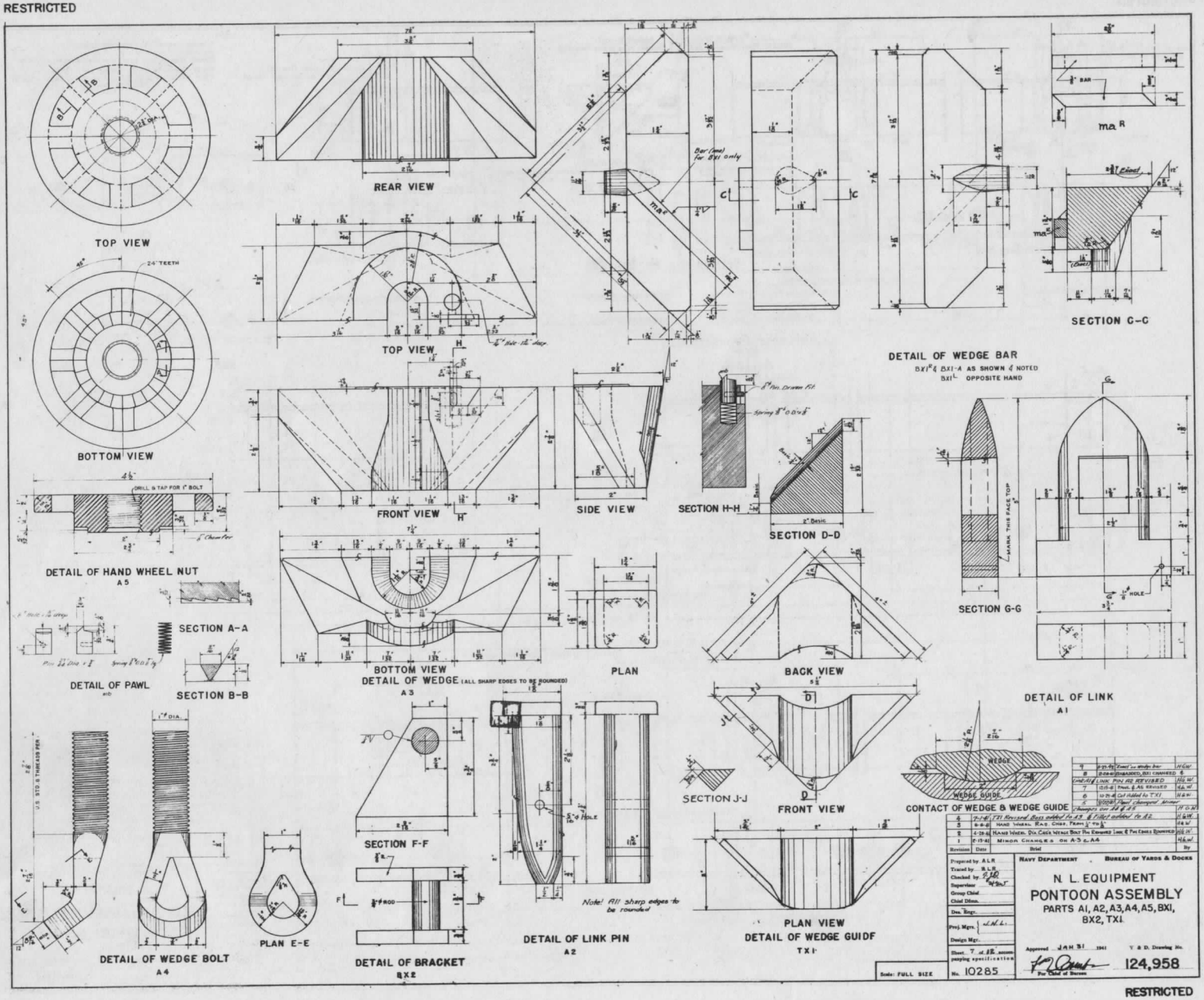
Index	No.	Type	Cu. Ft.	Pounds	Units Required
5-F-32	2	Pkg.	29.0	600	1

Contents

Mark	Description	No. Pcs. Per Pkg.
	Launching Rollers as per Y & D Sketch No. 142 or 143	

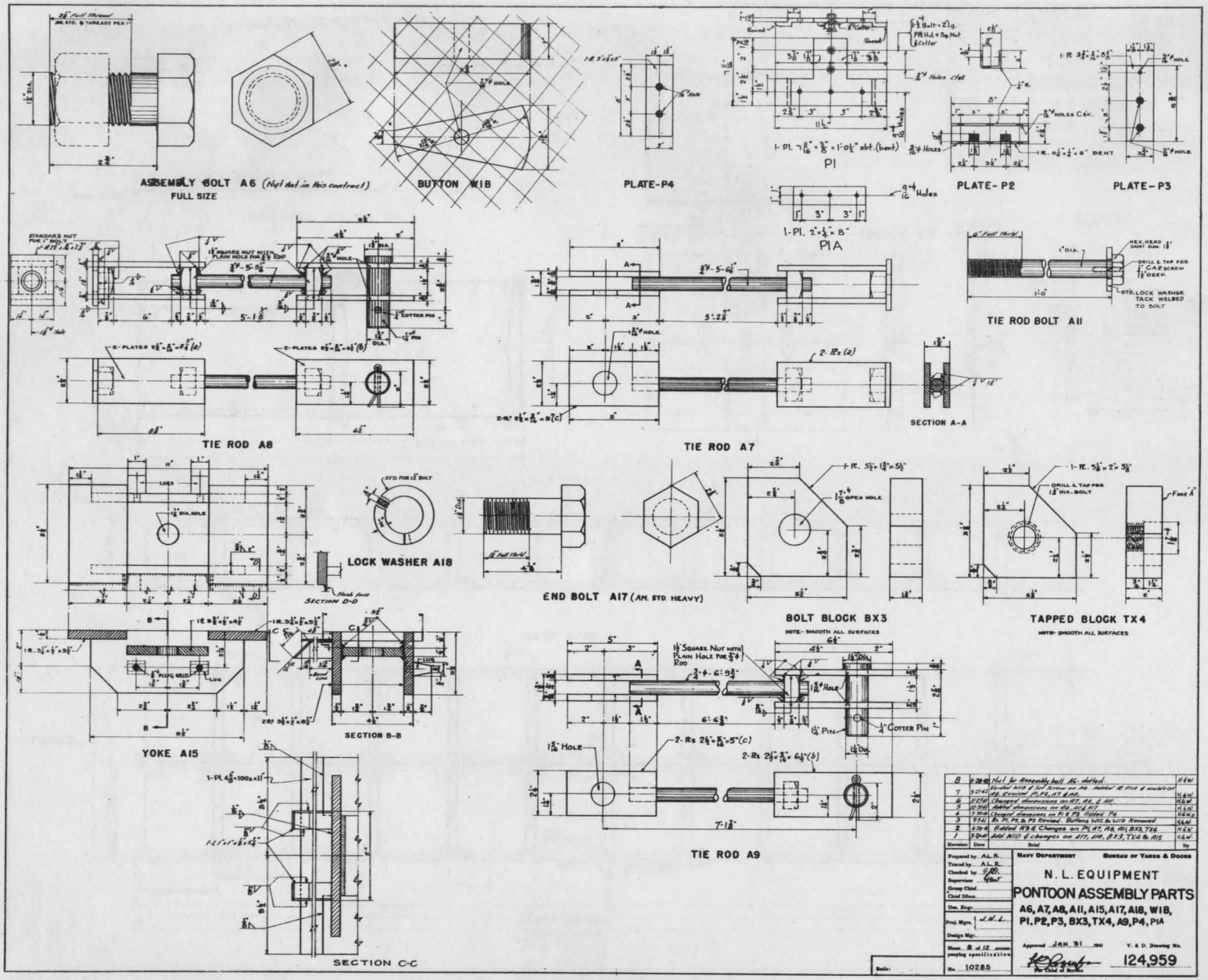

Lug on this BXI to be ground flush
FEMALE END OF BREECH PLUG SPLICE FOR BIA
MALE END OF BREECH PLUG SPLICE FOR BIB
NOTE: Corners on all rectangular holes to be rounded to ½" radius. Breech Plug Splices to be furnished with L's BIA & BIB Angle Splice to be furnished with Angle BI For detail of BXI, BXIA See Y&D Drwg. Nº 124958 BX3 See Drwg. Nº 124959
SECTION D-D
SECTION A-A BI-BIA-BIB
SECTION B-B
SECTION C-C
B1
BIA
BIB
Sketch "A"
B2
B3
BX2 (For detail see Y&D. Drwg. Nº 124958)
TYPICAL DETAIL AT ℄ BETWEEN PONTOONS
OUTSIDE FACE OF END PONTOON
70'-5" OUT TO OUT
43'-0½" OUT TO OUT
31'-6½" OUT TO OUT
SLOT AND REMOVE BURRS
NOTE: ¾" Holes unless otherwise noted.
N. L. EQUIPMENT
PONTOON ASSEMBLY ANGLE
DETAILS: BI, BIA, BIB, B2, &B3
NAVY DEPARTMENT BUREAU OF YARDS & DOCKS
Y. & D. Drawing No. 124,957
Approved JAN. 31 1941
No. 10285

RESTRICTED



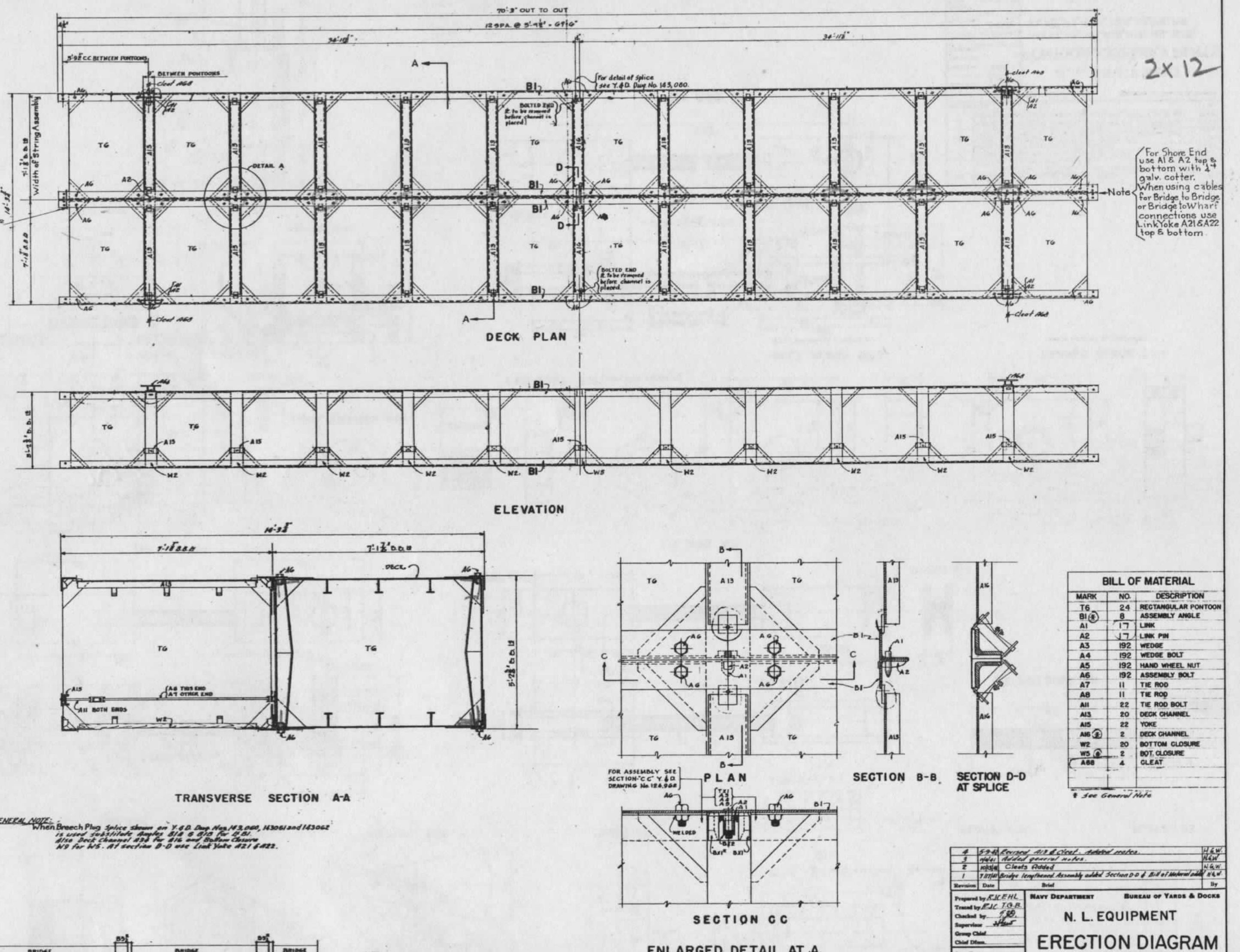
RESTRICTED

RESTRICTED

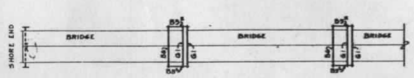


RESTRICTED

2X12



GENERAL NOTE:
When Breech Plug Splice shown on Y. & D. Dwg. Nos. 143,060, 143061 and 143062 is used substitute Angles B18 & B10 for B1. Also Deck Channel A34 for A16 and Bottom Closure W9 for W5. At section D-D use Link Yoke A21 & A22.



KEY PLAN (SHOWING GIRDER CONNECTIONS)
(FOR CABLE CONNECTIONS SEE Y.&D. DWG. NO. 143,064)

NOTE:
For detail of B9 & B4 see Y. & D. Dwg. No. 143,035
For " " 61 " " " 143,035

BILL OF MATERIAL

MARK	NO.	DESCRIPTION
T6	24	RECTANGULAR PONTOON
B1 (*)	8	ASSEMBLY ANGLE
A1	17	LINK
A2	17	LINK PIN
A3	192	WEDGE
A4	192	WEDGE BOLT
A5	192	HAND WHEEL NUT
A6	192	ASSEMBLY BOLT
A7	11	TIE ROD
A8	11	TIE ROD
A11	22	TIE ROD BOLT
A13	20	DECK CHANNEL
A15	22	YOKE
A16 (*)	2	DECK CHANNEL
W2	20	BOTTOM CLOSURE
W5 (*)	2	BOT. CLOSURE
A68	4	CLEAT

* See General Note

Revision	Date	Brief	By
4	5-9-42	Revised A13 & Cleat. Added notes.	H.G.W.
3	9/4/41	Added general notes.	H.G.W.
2	10/13/41	Cleats Added	H.G.W.
1	7/17/41	Bridge lengthened. Assembly added Section D-D & Bill of Material added	H.G.W.

Prepared by R.J.C. E.H.L.
Traced by R.J.C. T.G.B.
Checked by T.G.B.
Supervisor
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs. W.N.L.
Design Mgr.
Sheet 9 of 12 accompanying specification No. 10285

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT

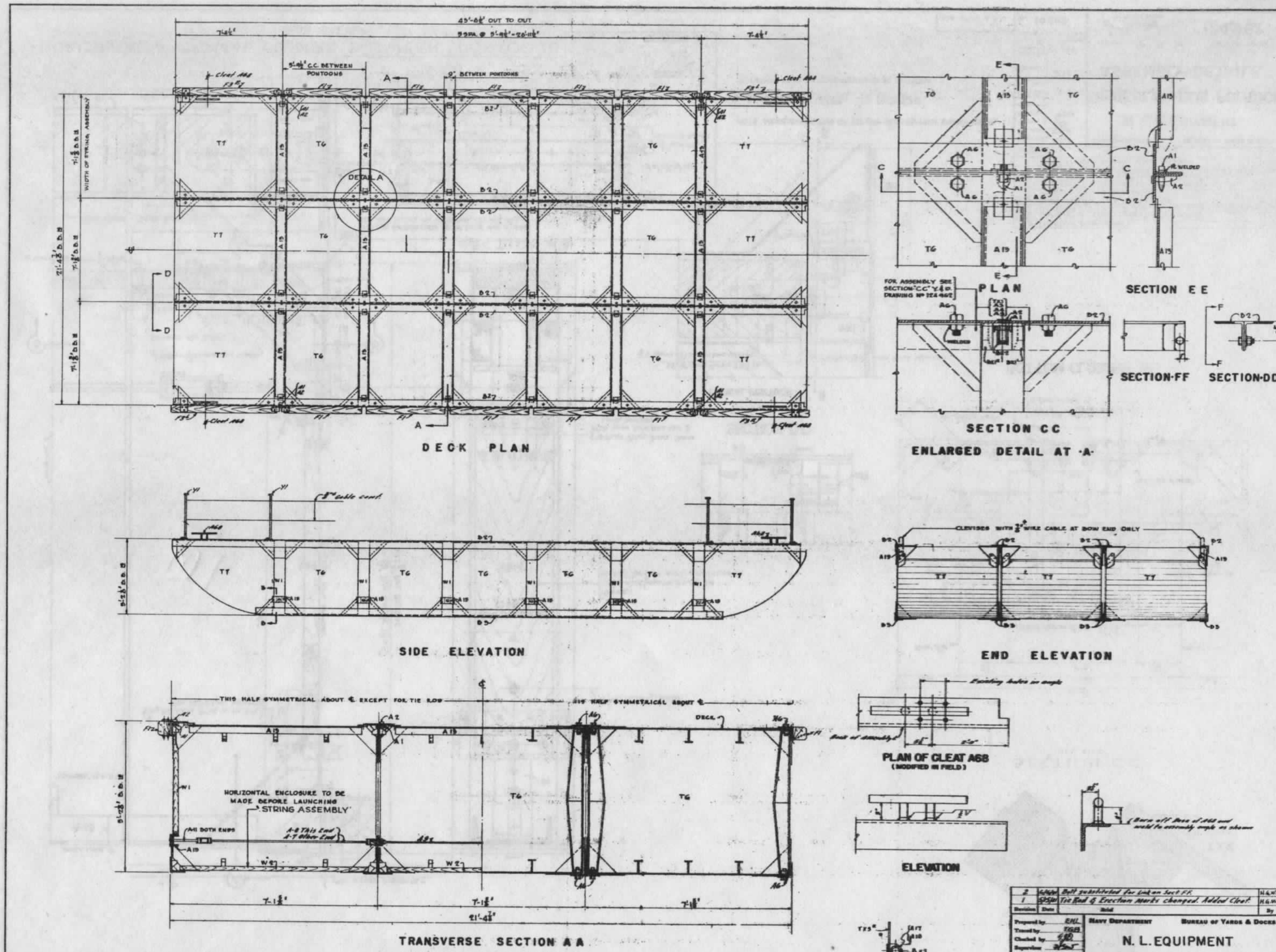
ERECTION DIAGRAM BRIDGE

Approved JAN 31 1941

For Chief of Bureau

Y. & D. Drawing No. 124,960

Scale:



TRANSVERSE SECTION A A

TYPICAL EXCEPT A6 SHOWN AT SECTION DD

BILL OF MATERIAL

MARK	NO.	DESCRIPTION	MARK	NO.	DESCRIPTION	MARK	NO.	DESCRIPTION	MARK	NO.	DESCRIPTION	MARK	NO.	DESCRIPTION
T6	15	RECT. PONTOON	A3	144	WEDGE	A9	6	TIE ROD	A19	2	CLEVISES COMPLETE	CHAIN	2	180' L'GTH. CLOSE LINK
T7	6	CURVED PONTOON	A4	144	WEDGE BOLT	A11	12	TIE ROD BOLT	W1	12	SIDE CLOSURE	CABLE		300' L'GTH
B2	6	TOP ASSEMBLY ANGLE	A5	144	HAND WHEEL NUT.	A13	18	DECK CHANNEL	W2	18	BOTTOM CLOSURE	F3		END FENDER
B3	6	BOT. " ANGLE.	A6	156	ASSEMBLY BOLT	A15	12	YOKE	71	20	PIPE RAIL	F1	10	FENDER
A1	24	LINK	A7	6	TIE ROD	A17	12	END BOLT	A68	4	CLEAT			
A2	24	LINK PIN	A8	6	TIE ROD	A18	12	LOCK WASHER	ANCHOR	2	KEDGE TYPE, 200#			

Revision	Date	Brief	By
5	5-1-41	Revised Cleat & B/M. Added Fenders & Pipe Rail	H.G.W.
4	3-4-41	Detail of Cleat changed	H.G.W.
3	2-15-41	Added Bill of Material & minor changes	H.G.W.
2	2-13-41	Bolt substituted for Link on Sect FF.	H.G.W.
1	2-5-41	Tie Rod & Erection Marks changed. Added Cleat	H.G.W.

Prepared by EHL
Traced by TGH
Checked by GHD
Supervisor
Group Chief
Chief Diam.
Des. Engr.
Proj. Mgrs. J.N.L.
Design Mgr.
Sheet 10 of 12 accompanying specification
No. 10285
Scale:

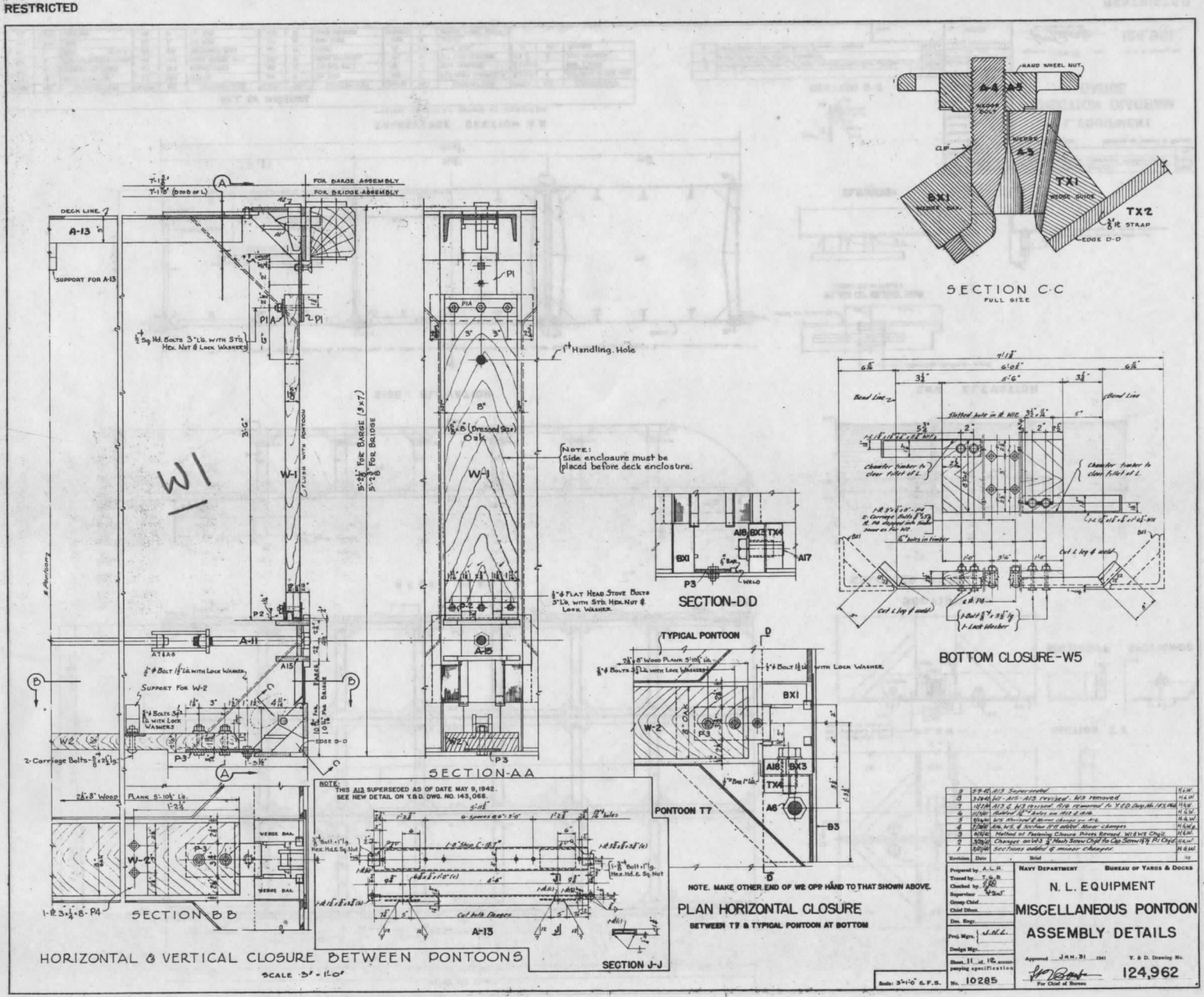
NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT
ERECTION DIAGRAM BARGE

Approved JAN. 31 1941 — For Chief of Bureau

Y. & D. Drawing No. 124,961

RESTRICTED



No.	Date	Revision	By
9	5-9-42	A13 Superseded	H.&W.
8	3-24-42	W1 - A15 - A13 revised. W3 removed	H.&W.
7	12-12-41	A13 & W3 revised. A18 removed to Y.&D. Dwg. No. 143,066	H.&W.
6	10-7-41	Bolted 4" Angles on A13 & A18.	H.&W.
5	9-24-41	W3 Revised & Minor changes on A18.	H.&W.
4	7-28-41	Sht. No. 5 of Section A10 added. Minor changes	H.&W.
3	6-16-41	Method of Fastening Closure Pieces Revised. W1 & W2 Chgd.	H.&W.
2	5-26-41	Changes on W3 & Mach. Screw Chgd. to Cap Screw 1/2" Rt. Chgd.	H.&W.
1	5-12-41	Sections added & minor changes.	H.&W.

Prepared by A. L. H.
Traced by T. C. B.
Checked by
Supervisor
Group Chief
Chief Draft.
Des. Engr.
Proj. Mgrs. H.&W.
Design Mgr.
Sheet 11 of 12 sheets pertaining specification No. 10285
Scale: 3"=1'-0" & F.S.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT

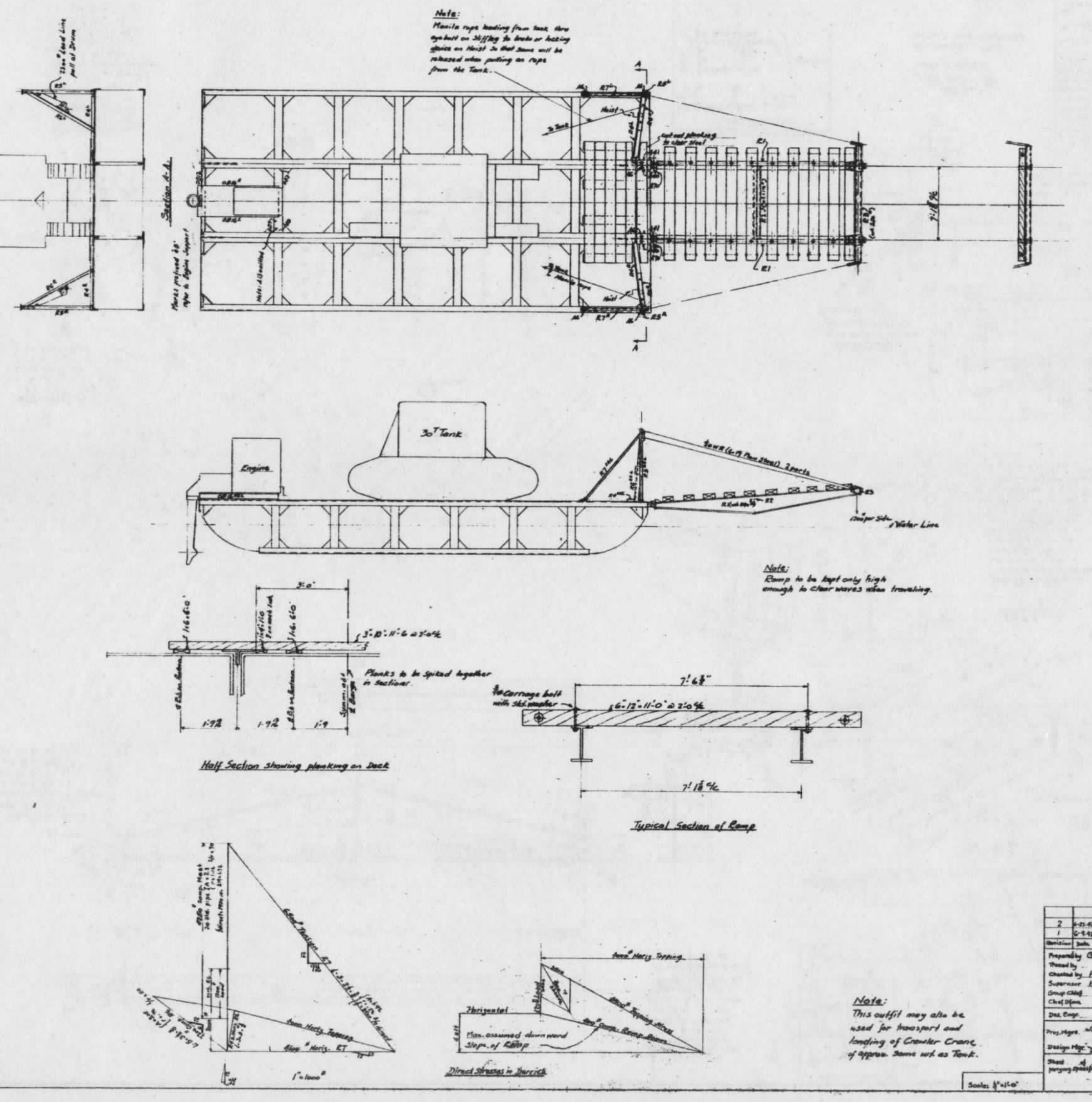
MISCELLANEOUS PONTOON ASSEMBLY DETAILS

Approved JAN. 31 1941
For Chief of Bureau

Y. & D. Drawing No. 124,962

RESTRICTED

RESTRICTED



Bill of Material

No	Description	Mk.	Detailed on Y. & D. Dwg. No.
1	3-7 Barge (1-13 omitted)		128961
1	Engine with support & bolts		145364A
2	Booms	R1	142833
1	Strut	R2	do
1	"	R3	do
2	Masts	R5 R&L	do
2	Sills	R4 R&L	do
2	Stifflegs	R6 R&L	do
2	Stifflegs	R7 R&L	do
	Field Bolts as per dwg 142833 + extra's		
2	Hinges	A40	143064
2	do	A41	do
2	Pins	A70	do
2	Two Ton "Lightweight" Beebe Hoists or equal Drum 4" ø × 6" wide, Hand driven		
2	1/2" ø W.R. 6×19 Plow steel × 65 ft with Thimble spliced on one end		
10	Timbers 6"×12"×11'-0"		
4	Planks 3"×10"×11'-6"		
4	" 1"×6"×6'-0"		
4	" 1"×4"×1'-0"		
26	3/4" ø carriage bolts - 7 1/2" lg with washers		
20	3/4" ø Bolts - 14" lg with 2 washers each		
	Misc. Nails		

Revision	Date	Brief	By
2	6-23-42	0B17 omitted	H.G.W.
1	6-9-42	Minor changes	H.G.W.

Prepared by G. L.
Traced by
Checked by H.G.W.
Supervisor H.G.W.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgr.
Design Mgr.
Sheet of accompanying specifications

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT

LANDING RAMP FOR 30T TANK

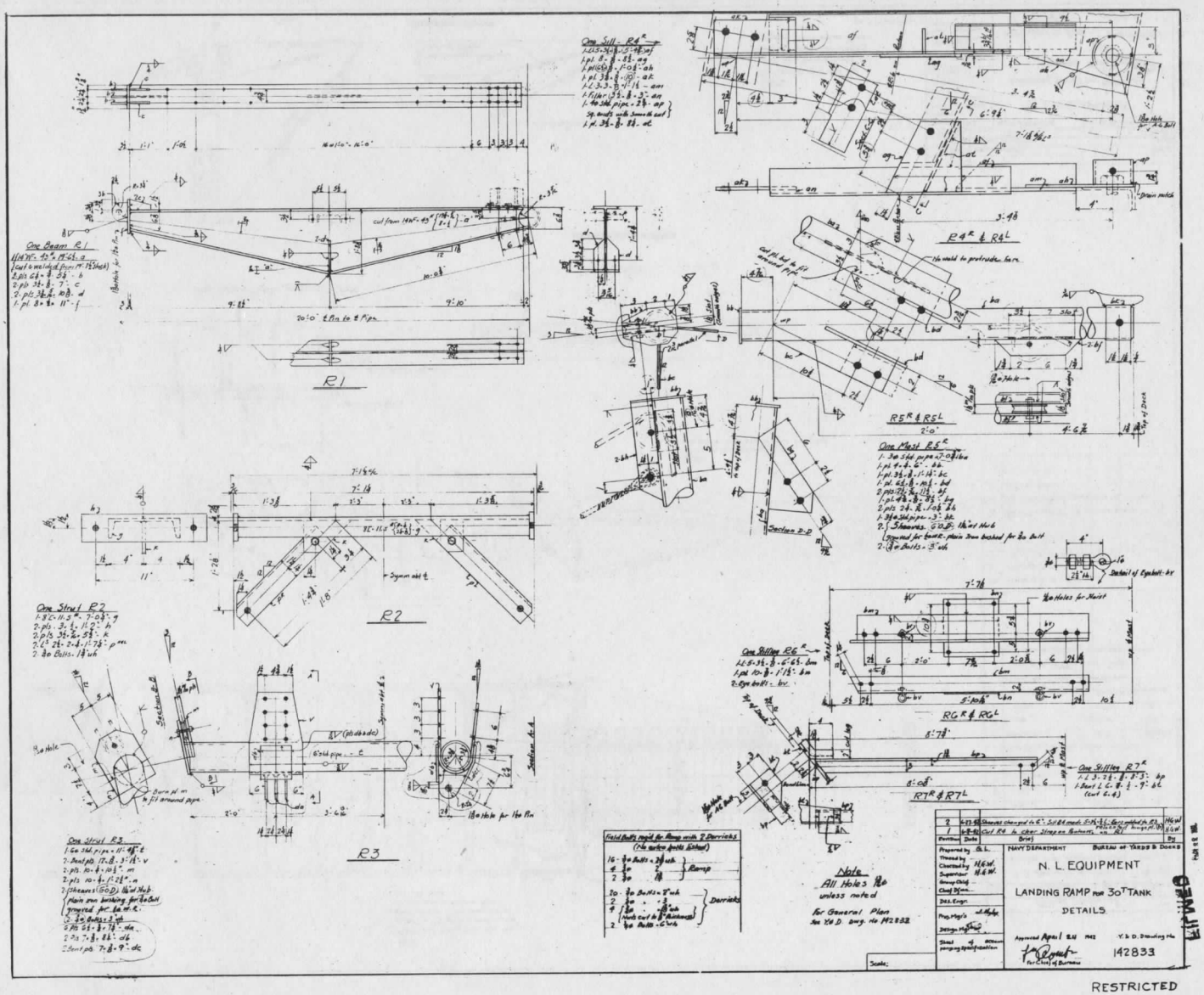
GENERAL PLAN

Approved April 24 1942

For Chief of Bureau

Y. & D. Drawing No. 142832

RESTRICTED



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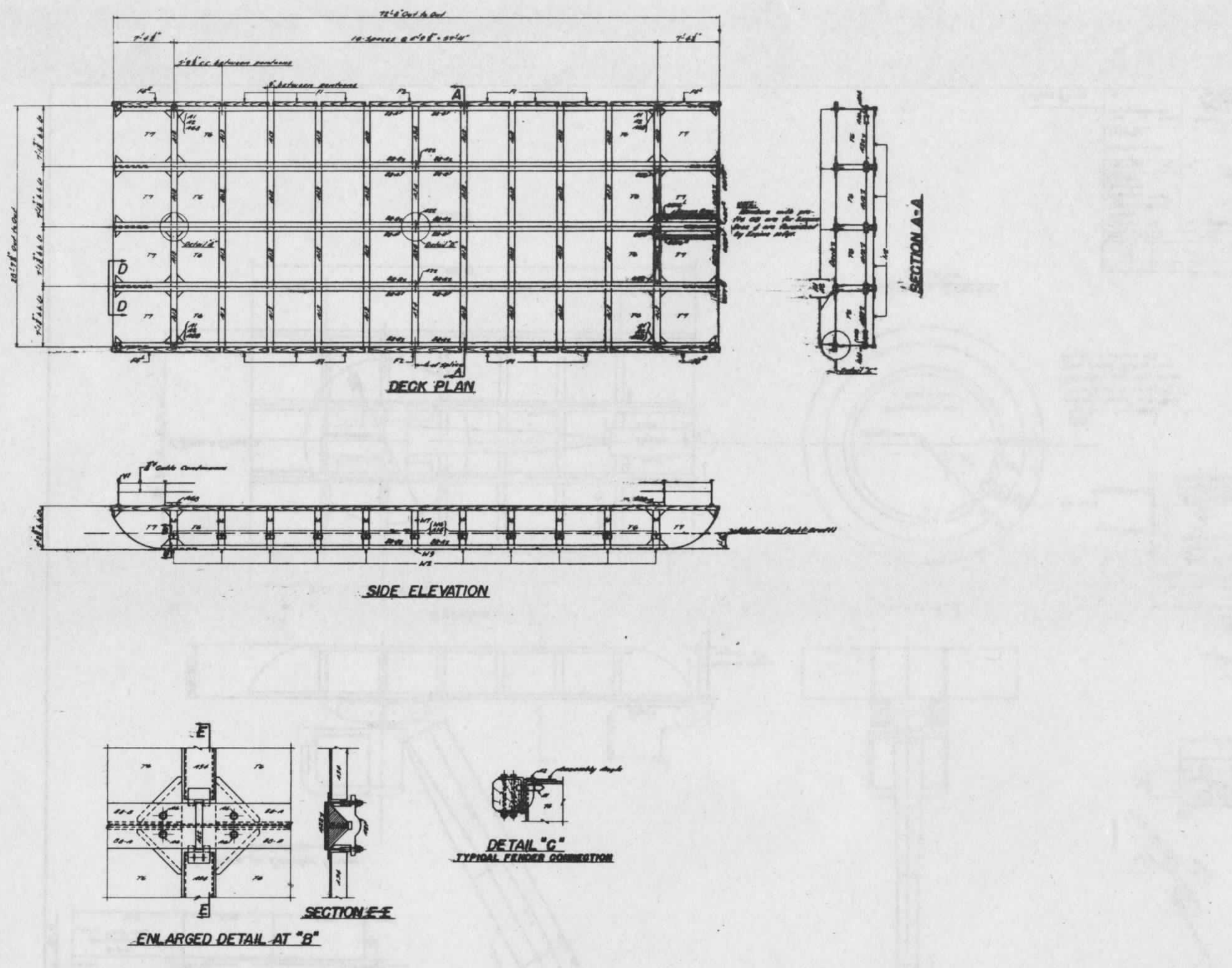


BILL OF MATERIAL

MARK	NO.	DESCRIPTION
T6	40	RECTANGULAR PONTOON
T7	8	CURVED PONTOON
B8-A	6	ASSEMBLY ANGLE
B8-B	6	" "
B9-A	8	" "
B9-B	6	" "
A1	50	LINK
A2	50	LINK PIN
A3	382	WEDGE
A4	352	WEDGE BOLT
A5	352	HAND WHEEL NUT
A6	368	ASSEMBLY BOLT
A11	22	TIE ROD BOLT
A12	22	TIE ROD
A13	58	DECK CHANNEL
A16	22	YOKE
A17	16	END BOLT
A18	16	LOCK WASHER
A21	3	LINK YOKE
A22	3	BENT PLATE & ROD
A23	11	TIE ROD
A34	11	" "
A36	4	DECK CHANNEL
A40	3	MALE HINGE
A41	3	FEMALE HINGE
A43	4	CLEAT
A70	3	HINGE PIN
W1 ⊕	20	SIDE CLOSURE
W2 Δ	40	BOTTOM CLOSURE
W6	22	SHEET METAL COVER
W7	2	SIDE CLOSURE
W9	4	BOTTOM CLOSURE
F1	12	FENDER
F2	2	"
F4R	2	"
F4L	2	"
V1	32	PIPE RAIL
ANCHOR	2	200# NAVY TYPE
3/4" CHAIN	2	180 FT. (CLOSE LINK)

⊕ W1 INCLUDES P1, P20, & P3
Δ W2 " P3

NOTE:
Y.&D. Dwg. No. 143,056 to be used in conjunction with this dwg. for detail "B" and sections D-D & D-D.
For anchors of Engine Bkts see Y.&D. Dwg. No. 126,969 and 145706

Revision	Date	Brief	By

Prepared by Clark
Traced by Clark
Checked by J.R.D.
Supervisor H.S.K.
Group Chief
Chief Draftsman
Des. Engr.
Proj. Mgrs. { at N.L.
Design Mgr.
Sheet of accompanying specification
No.
Scale

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

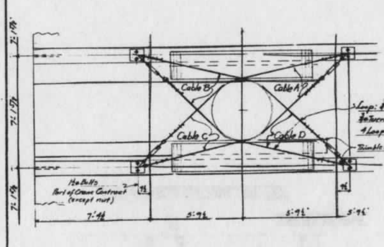
N.L. EQUIPMENT

ERECTION DIAGRAM
4x12 PONTOON BARGE

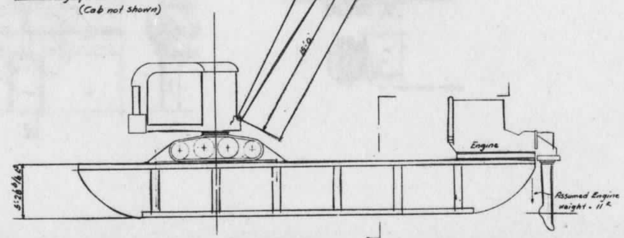
Approved April 6 1942
For Chief of Bureau

Y. & D. Drawing No. 143,044

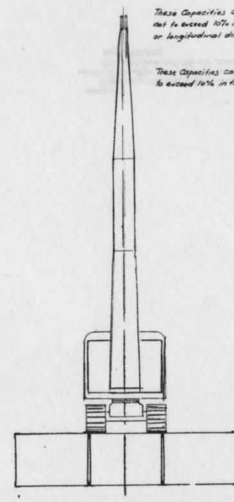
Restricted



Lashing for Crawler Crane.
(Cab not shown)



-Elevation-



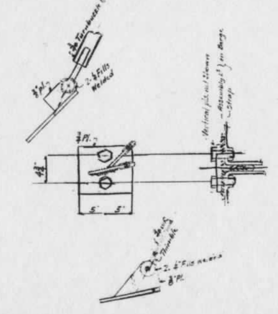
Section A-A

Table of Approximate Freeboard under various Load Conditions.

Load in Tons (2000#)	Over Side: Distance from ℄ Barge	Over Side: Bow Corner Load Side	Over Side: Bow Corner away from Load	Over Side: Stern Corner Load Side	Over Side: Stern Corner away from Load	Over Bow: Distance from ℄ Rotation	Over Bow: Bow	Over Bow: Stern
3½	18'	17"	41"	19"	43"	18'	25"	35"
3	20'	18	42	18	42	20'	26	34
2½	25'	19	43	19	43	25'	27	35
2	30'	19	43	19	43	30'	27	35
5	18'	9	47	13	51	18'	22	38
4	20'	13	45	15	47	20'	24	36
3	25'	16	44	16	44	25'	23	37
2½	30'	16	46	16	46	30'	27	35

These Capacities cause slope of Deck not to exceed 10% in either transverse or longitudinal direction (loads 3½, 3, 2½, 2).

These Capacities cause slope of Deck to exceed 10% in transverse direction (loads 5, 4, 3, 2½).

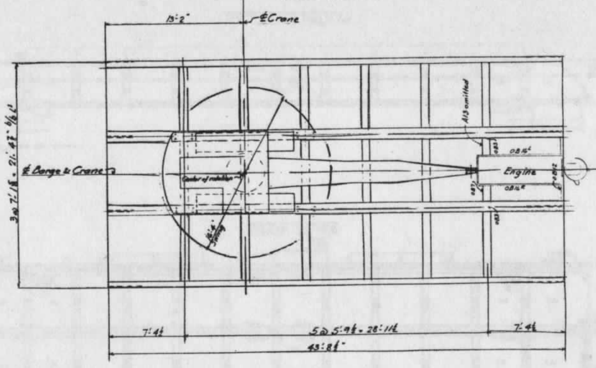


Clip for Lashing
(Part of Crane Contract)

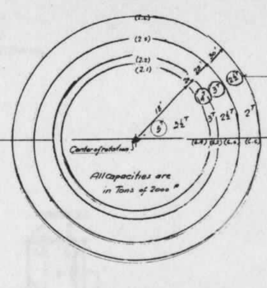
Bill of Material

No	Description	Mark Detail on Y&D Dwg. (Accompanying Dwg.)
1	3-7 Barge (1-A13 omitted) (2495)	
1	Engine	
2	Engine Support	0816 14570 & A
1	do.	087 do
1	do.	0812 do
2	do	083 do
1	5T Crawler Crane with rigging boom for H. Swing	
	Complete Lashing for Crawler Crane as per this drawing	

Engine Contract (Engine, Engine Supports)
Crane Contract (Crawler Crane, Lashing)



-Plan-



Capacity Diagram
Scale 1/16 = 1

Note:
Figures in parentheses indicate moments in Foot Tons (1^T = 2000#) req'd to trim or list 1."
Capacities encircled cause slope of deck in transverse direction to exceed 10%

Revision	Date	Brief	By

Prepared by G.L.
Traced by
Checked by H.G.W.
Supervisor H.G.W.
Group Chief
Chief Dftsmn.
Des. Engr.
Proj. Mgrs. W.H.L.
Design Mgr.
Sheet of accompanying specification
No

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT

3 x 7 PONTOON BARGE WITH 5T CRAWLER CRANE

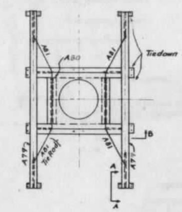
Approved July 17 1942
For Chief of Bureau

Y&D Drawing No. 143045

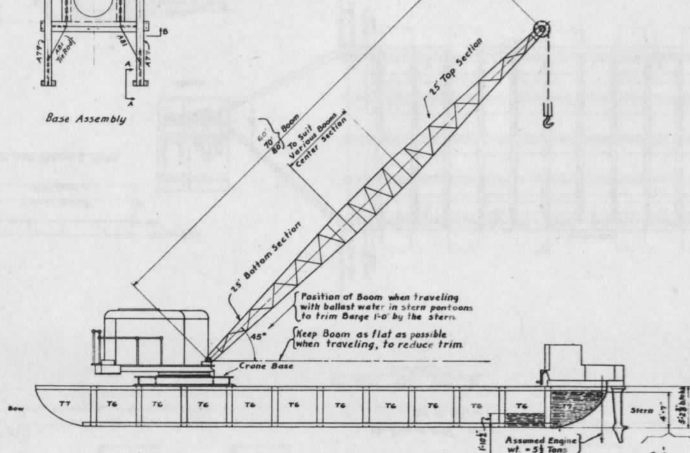
Scale 1/8" = 1'-0

Restricted

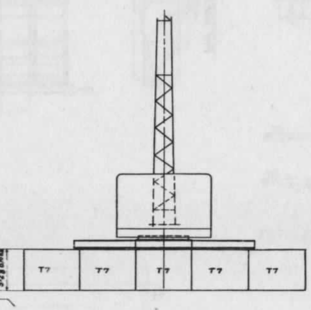
RESTRICTED



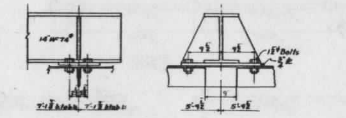
Base Assembly



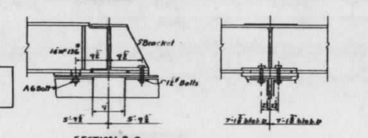
SIDE ELEVATION
SCALE - ⅛" = 1'-0"



BOW ELEVATION
SCALE - ⅛" = 1'-0"



SECTION A-A
SCALE - 1" = 1'-0"

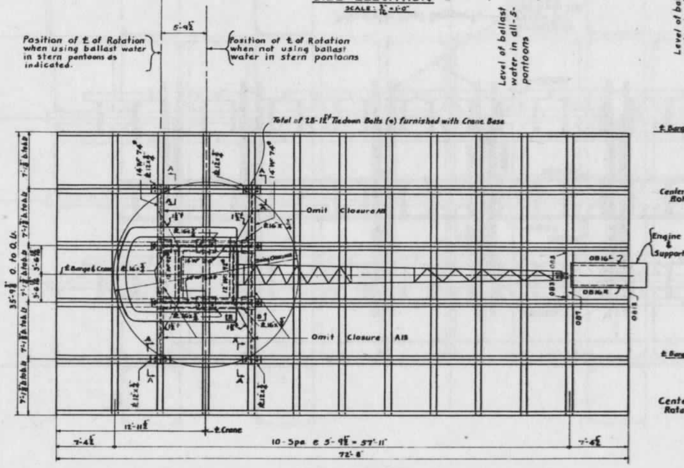


SECTION B-B
SCALE - 1" = 1'-0"

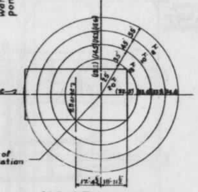
TABLE OF APPROXIMATE FREEBOARD UNDER VARIOUS LOAD CONDITIONS

	Load in Tons (2000#)	Ballast water in stern pontoons as indicated on side elevation: Over side: Distance from ℄ barge	Over side: Bow corner load side	Over side: Bow corner away from load	Over side: Stern corner load side	Over side: Stern corner away from load	Over bow: Distance from ℄ rotation	Over bow: Bow	Over bow: Stern	No ballast water: Over side: Distance from ℄ barge	Over side: Bow corner load side	Over side: Bow corner away from load	Over side: Stern corner load side	Over side: Stern corner away from load	Over bow: Distance from ℄ rotation	Over bow: Bow	Over bow: Stern
60' Boom	20	25'	5"	35"	12"	42	25'	14"	34"	25	2"	34"	26	52"	25'	12"	48"
	13	35'	11"	37	13	34	35'	18"	31"	35'	7"	35"	27"	55"	35'	16"	46"
	10	45'	11"	39	11"	39	45'	19"	31	45	10	36"	28	54	45'	17"	47"
	8	55'	14"	40"	12"	38	55'	21"	31	55	12	38	28	54	55'	19	47"
70' Boom	19	25'	7"	35	13"	41	25'	16"	32"	25	3	33	27	57	25	12	48"
	13	35'	11"	37	13"	39"	35'	18"	32"	35'	7"	35	27"	55"	35	15"	47"
	10	45'	11"	39	11"	39	45'	19"	31"	45	9"	37	27	55	45	17"	47"
	7	55'	13"	37	13	39	55'	22"	30"	55'	13	37	29	53	55	19"	47
80' Boom	18	25'	7"	35"	13"	41"	25'	15"	33"	25	4"	31	28"	56"	25	13"	47"
	13	35'	10"	38"	12"	40"	35'	18"	32"	35'	7"	35	27	55"	35	15"	47"
	9	45'	15"	37"	13"	37"	45'	20"	30"	45'	11	35"	29	53"	45'	18"	46
	7	55'	14"	38"	12"	36"	55'	20"	30"	55'	[illegible]	38	28"	54	55	19"	47"

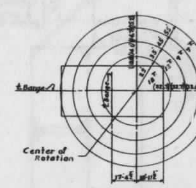
NOTE - ABOVE VALUES DO NOT EXCEED ALLOWABLE 10% DECK SLOPE IN EITHER TRANSVERSE OR LONGITUDINAL DIRECTION



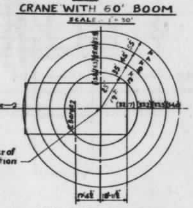
PLAN OF DECK
SCALE - 3/16" = 1'-0"



CAPACITY DIAGRAM
FOR
CRANE WITH 60' BOOM
SCALE - 1" = 30'



CAPACITY DIAGRAM
FOR
CRANE WITH 80' BOOM
SCALE - 1" = 30'



CAPACITY DIAGRAM
FOR
CRANE WITH 70' BOOM
SCALE - 1" = 30'

NOTE -
Values given in
CAPACITY DIAGRAMS
Are loads that may be lifted at tip of Boom exclusive of dead load of Boom.
Figures in parentheses indicate moments in foot-tons to trim or list Barge one inch. (2000# = 1-Ton)

BILL OF MATERIAL

	NO.	MARK	DESCRIPTION	REMARKS
	ONE		5x12 PONTOON BARGE	
BY CRANE CONTRACTOR	ONE		20 TON CRANE WITHOUT CARRIER	PILING & SOFT HAL. BOOM
BY ENGINE CONTRACTOR	ONE		ENGINE	
	2	0816 R/L	ENGINE SUPPORT	Y. & D. DWG. # 145706-A
	ONE	087	-do-	-do-
	ONE	0812	-do-	-do-
	2	083	-do-	-do-
BY CRANE CONTRACTOR	ONE		CRANE BASE (INCL. TIEDOWN BOLTS)	

Revision	Date	Sheet	By
2	8-8-47	Drawing Traced	HGW
1	7-3-46	Base Assembly added	HGW

Job No. D45-57
Scale: As Noted

Prepared by E.H.L.
Traced by RMB
Checked by G.L.
Supervisor HGW
Group Chief
Chief Dftsman JTM.
Des. Eng.
Proj. Mgrs. J.H.L.
Design Mgr.
Sheet of accompanying specification No.

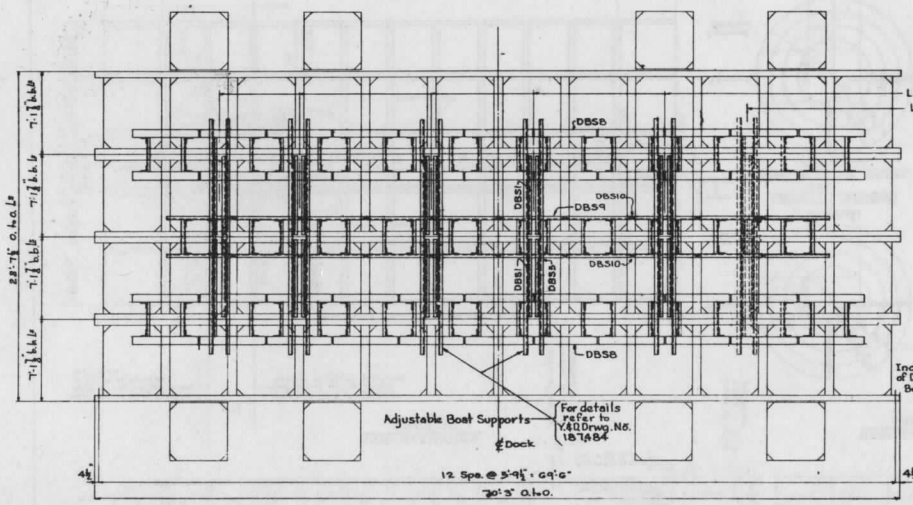
NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT
5×12 PONTOON BARGE
WITH
20 TON CRANE & ENGINE

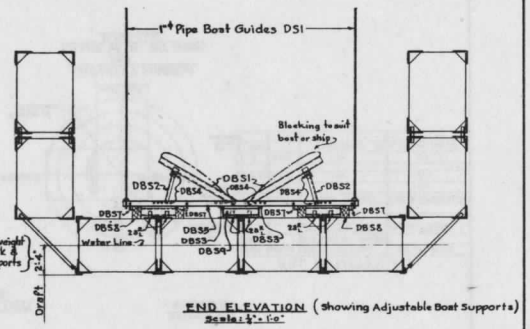
Approved June 26, 1943
For Chief of Bureau
Y. & D. Drawing No. 143051

RESTRICTED

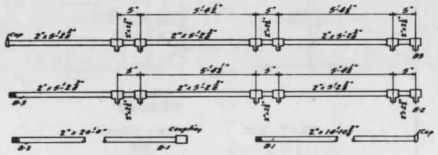
RESTRICTED



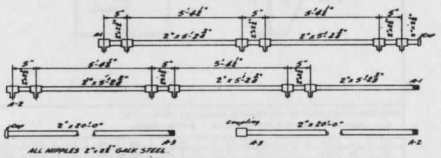
PLAN OF DECK
Scale ½" = 1'-0"



END ELEVATION (Showing Adjustable Boat Supports)
Scale: ½" = 1'-0"



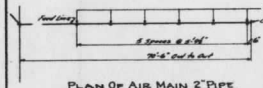
PIPE #1



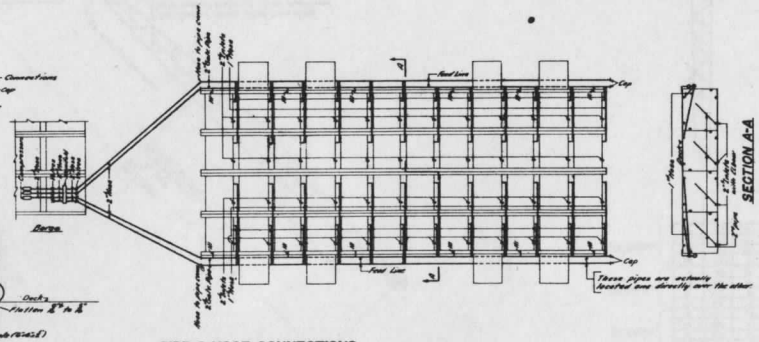
ALL NIPPLES 2"x28" OPEN STEEL.
ALL PIPE 2" STD BLK STEEL.
ALL COUPLINGS 2" BLK.
ALL CAPS 2" BLK MALL IRON
ALL TEES 2"x1" BLK MALL IRON

PIPE #2
2 of each pipe required for one dry dock

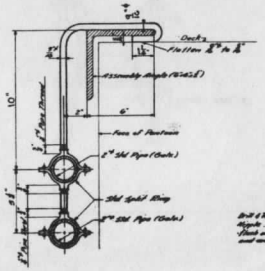
ALTERNATE FEED LINE



PLAN OF AIR MAIN 2" PIPE

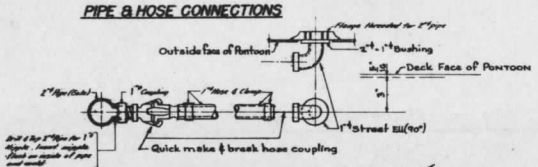


SECTION A-A



Detail of Pipe Hanger-H1
Scale: 3"=1'-0"

PIPE & HOSE CONNECTIONS



Typical hose connection between 2" Pipe & 2" Boiler Flange Outlet on Pontoon.
Scale: 3"=1'-0"

Note:
At bottom opening on Pontoon use 2" Street Ell with 2" Pipe Outlet or 2" Hose & Coupling.

NOTE: This drawing to be used in conjunction with Y&D Dwg. No. 143,054. (Drydock).

Revision	Date	Brief	By
1	5-42	deleted alternate feed line & extra boat supports	H.E.W.

Prepared by E.N.L. clerk
Traced by E.N.L. clerk
Checked by H.E.W.
Supervisor
Group Chief
Chief Draftsman
Des. Engr.
Prod. Mgr. 3042
Design Mgr.
Sheet of sheets
Approved by specification
No.
Scale

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

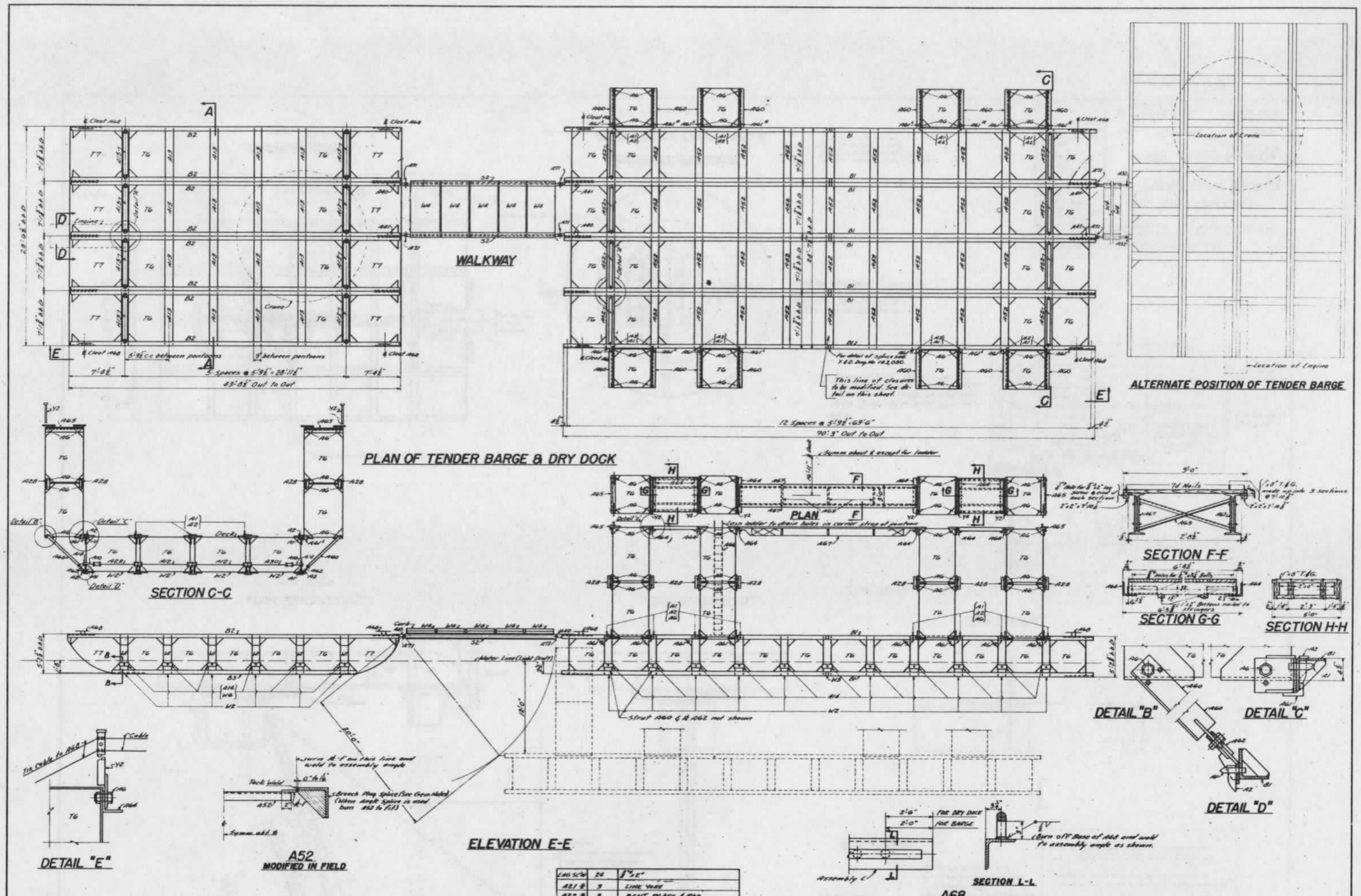
N.L. EQUIPMENT

ASSEMBLY DIAGRAM OF BOAT SUPPORTS & PIPING LAYOUT FOR 4X12 PONTON DRY DOCK

Approved Feb 2, 1942
Y. & D. Drawing No. 143,053
Chief of Bureau

RESTRICTED

RESTRICTED



BILL OF MATERIAL TENDER BARGE

MARK	NO	DESCRIPTION
T6	20	RECTANGULAR PONTOON
T7	8	CURVED PONTOON
B2	8	TOP ANGLE
B3	8	BOTTOM ANGLE
A1	18	LINK
A2	18	LINK PIN
A3	192	WEDGE
A4	192	WEDGE BOLT
A5	192	HAND WHEEL NUT
A6	208	ASSEMBLY BOLT
A29	6	TIE ROD
A30	6	" "
A12	12	" "
A10	12	TIE ROD BOLT
A13	24	DECK CHANNEL
A14	12	YOKE
A17	16	END BOLT
A18	16	LOCK WASHER
A41	1	FEMALE HINGE
W1	12	SIDE CLOSURE
W2	24	BOTTOM CLOSURE
W6	12	SHEET METAL COVER
A68	4	CLEAT
ANCHOR	2	200# NAVY TYPE
CHAIN	2	$\frac{3}{8}$"-150 FT LENGTH (CLOSE LINK)
A71	2	PIN
A52	2	BRACKET (ALT. SCHEME)
A40	1	HINGE
A41	1	"

NOTE:
Above bill is duplicate of that shown on Y. & D. Dwg. No. 143,056 except for Pin A70, Bracket A52, Fenders, and Pipe Rail.

DRY DOCK

MARK	NO	DESCRIPTION
T6	64	RECTANGULAR PONTOON
B1 *	16	BRIDGE ANGLE
W2	60	BOTTOM CLOSURE
W4	5	WALKWAY SECTION
W5 *	4	BOTTOM CLOSURE
A71	4	PIN
52	2	WALKWAY BEAM
A1	48	LINK
A2	48	LINK PIN
A3	384	WEDGE
A4	384	WEDGE BOLT
A5	384	HAND WHEEL NUT
A6	512	ASSEMBLY BOLT
A10	22	TIE ROD BOLT
A12	22	TIE ROD
A52	44	DECK CLOSURE
LAG SC'W	24	$\frac{3}{8}$" x 2"
A21 *	3	LINK YOKE
A22 *	3	BENT PLATE & ROD.
A69	6	WALKWAY BRACING
Y2	12	PIPE RAIL
A28	32	CASTLE CONN. ANGLE
A29	11	TIE ROD
A30	11	" "
A40	2	HINGE
A41	2	"
A60	16	OUTRIGGER ANGLE STRUT
A61	8	OUTRIGGER UPPER CONN.
A62	16	" LOWER "
A64	12	WALKWAY SUPPORT ANGLE
A66	1	LADDER
A67	4	WALKWAY TRUSS
A65	4	CLEAT FOR DRY DOCK
A14	22	YOKE
A68	4	CLEAT
ANCHOR	4	200# NAVY TYPE
CHAIN	4	$\frac{3}{8}$"-150 FT. LENGTH (CLOSE LINK)
BOLT	16	$\frac{5}{8}$" x 3$\frac{1}{2}$" WITH STD. WASHERS

* See General Notes.

GENERAL NOTES

For enlarged detail "A" on Barge see Y. & D. Dwg. No. 124,961
For section A-A see Y. & D. Dwg. No. 143,056
For " B-B " " " " 124,961
For " D-D on Barge see Y. & D. Dwg. No. 124,961
For enlarged detail "A" on Dry Dock see Y. & D. Dwg. No. 124,960
For section D-D on Dry Dock see Y. & D. Dwg. No. 124,960
For misc. pontoon assembly details see Y. & D. Dwg. No. 124,962
* When Breech plug splice shown on Y. & D. Dwg. No. 143,060, 143,061, & 143,062 is used substitute angles B1A & B1B shown on Y. & D. Dwg. No. 124,957 for angles B1. Also bottom closure W9 for W5 and A21 & A22 at splice only in place of Link & Pin.
For A60, A61, A62, A64, A65, A66, A67, and A69 see Y. & D. Dwg. No. 143,063

For Pipe & Hose connections & cradle details see Y. & D. 143,053

Revision	Date	Brief	By
2	5-21-42	Added Y2. Substituted A52 for A13. Details added	H.G.W.
1	3-17-42	Dwg. traced. Walkways revised. Cleat modified.	H.G.W.

Prepared by Clark
Traced by Clark
Checked by G.J.B.
Supervisor H.G.W.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs.
Design Mgr.
Sheet of accompanying specification
No.
Scale:

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

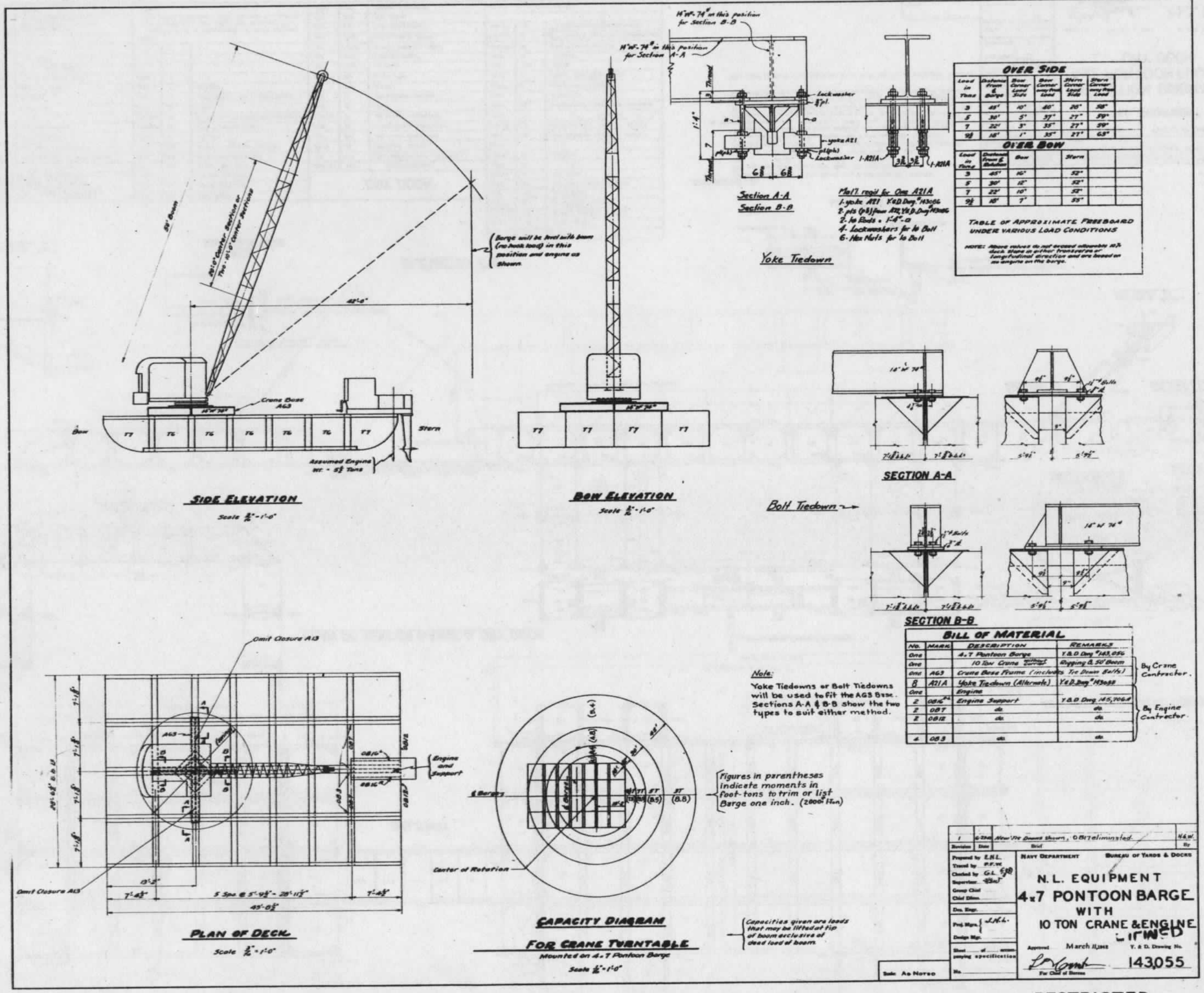
ERECTION DIAGRAM
4x12 PONTOON FLOATING
DRY DOCK

Approved Feb. 2 1942
For Chief of Bureau

Y. & D. Drawing No. 143,054

RESTRICTED

RESTRICTED



OVER SIDE					
Load in Tons	Distance from ℄ Barge	Bow Corner Load Side	Bow Corner away from Load	Stern Corner Load Side	Stern Corner away from Load
3	45'	10"	40"	26"	58"
5	30'	5"	37"	27"	59"
7	22'	3"	35"	27"	59"
9½	18'	1"	35"	27"	63"

OVER BOW			
Load in Tons	Distance from ℄ Rotation	Bow	Stern
3	45'	16"	52"
5	30'	12"	52"
7	22'	10"	52"
9½	18'	7"	55"

TABLE OF APPROXIMATE FREEBOARD UNDER VARIOUS LOAD CONDITIONS

NOTE: Above values do not exceed allowable 10% deck slope in either transverse or longitudinal direction and are based on no engine on the barge.

Note:
Yoke Tiedowns or Bolt Tiedowns will be used to fit the A63 Base. Sections A-A & B-B show the two types to suit either method.

BILL OF MATERIAL			
No.	Mark	Description	Remarks
One		4 x 7 Pontoon Barge	Y.&D. Dwg #143,056
One		10 Ton Crane without carrier	Rigging & 50' Boom
One	A63	Crane Base Frame (includes Tie Down Bolts)	
8	A21A	Yoke Tiedown (Alternate)	Y.&D. Dwg #143088
One		Engine	
2	OB16	Engine Support	Y.&D. Dwg 145,706
2	OB7	do	do
2	OB12	do	do
4	OB3	do	do

By Crane Contractor. By Engine Contractor.

Revision	Date	Brief	By
1	6-7-42	New Tie Downs shown, OB17 eliminated.	H.&W.

Prepared by E.H.L.
Traced by P.F.W.
Checked by G.L.
Supervisor
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgr. J.H.L.
Design Mgr.
Sheet ___ of ___ accompanying specification No. ___
Scale As Noted

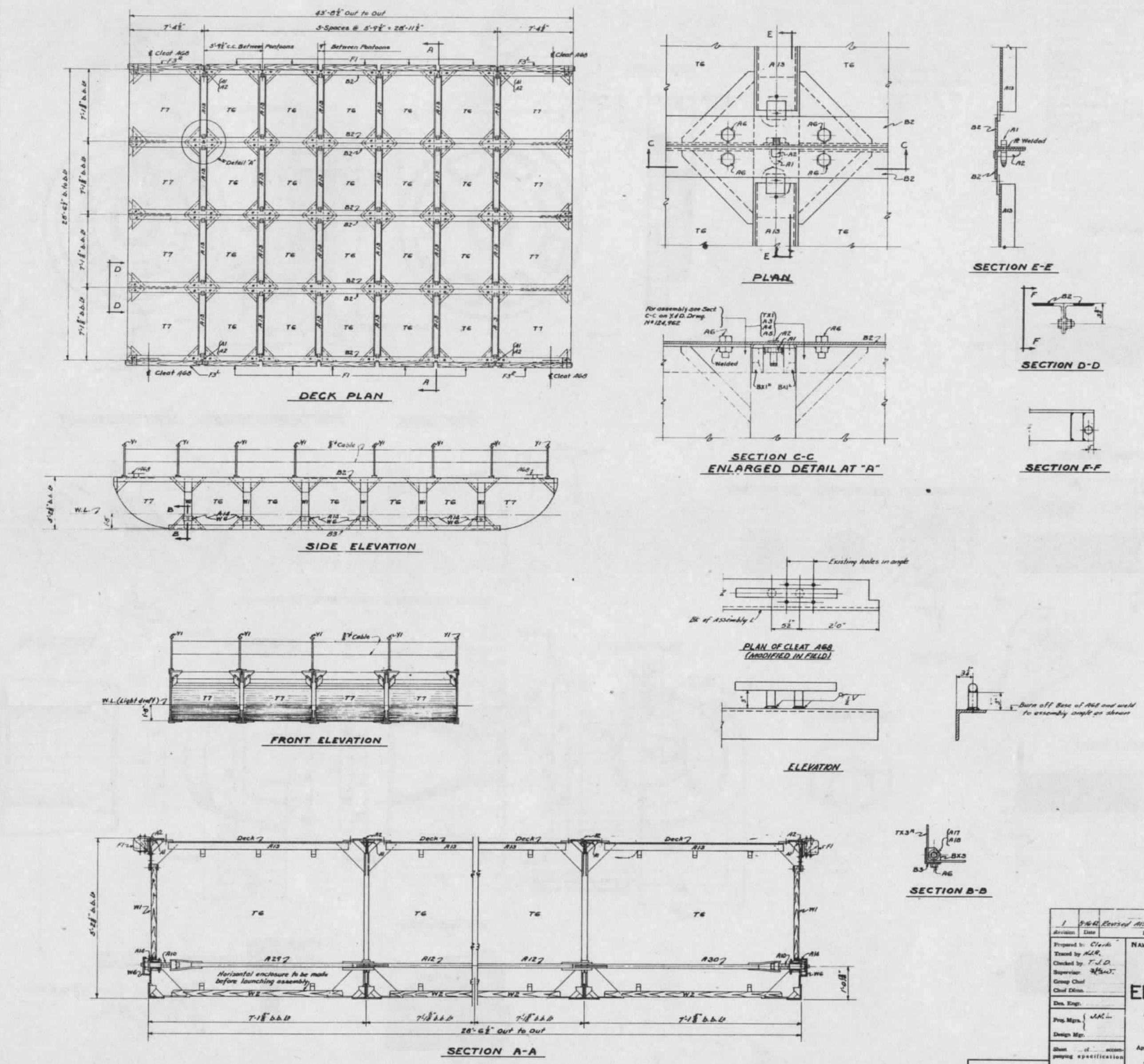
NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT
4 x 7 PONTOON BARGE
WITH
10 TON CRANE & ENGINE

Approved March 11, 1942
For Chief of Bureau
Y. & D. Drawing No. 143,055

RESTRICTED

RESTRICTED



BILL OF MATERIAL

MARK	Nº REQD.	DESCRIPTION
T6	20	RECTANGULAR PONTOON
T7	8	CURVED PONTOON
B2	8	ASSEMBLY ANGLE (TOP)
B3	8	" " (BOTTOM)
A1	30	LINK
A2	30	LINK PIN
A3	192	WEDGE
A4	192	WEDGE BOLT
A5	192	HAND WHEEL NUT
A6	208	ASSEMBLY BOLT
A12	12	TIE ROD
A13	24	DECK CHANNEL
A14	12	YOKE
A17	16	END BOLT
A18	16	LOCK WASHER
A29	6	TIE ROD
A30	6	" "
W1	12	SIDE CLOSURE
W2	24	BOTTOM CLOSURE
W6	12	SHEET METAL COVER
A40	3	MALE HINGE
A41	3	FEMALE HINGE
A70	3	PIN
Y1	22	PIPE RAIL
A68	4	CLEAT
ANCHOR	2	200# NAVY TYPE
A10	12	TIE ROD BOLT
⅜" CABLE		300 FT. LENGTH
⅝" CHAIN	2	150 FT. LENGTHS (CLOSE LINK)
F1	10	FENDER
F3R	2	"
F3L	2	"

Revision	Date	Brief	By
1	5-16-42	Revised A13 Minor changes on A68.	

Prepared by: Clark
Traced by N.L.R.
Checked by T.J.D.
Supervisor
Group Chief
Chief Drftm.
Des. Engr.
Proj. Mgrs.
Design Mgr.
Sheet of accompanying specification
No.

NAVY DEPARTMENT BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

ERECTION DIAGRAM 4X7 PONTOON BARGE

Approved Mar 24 1942

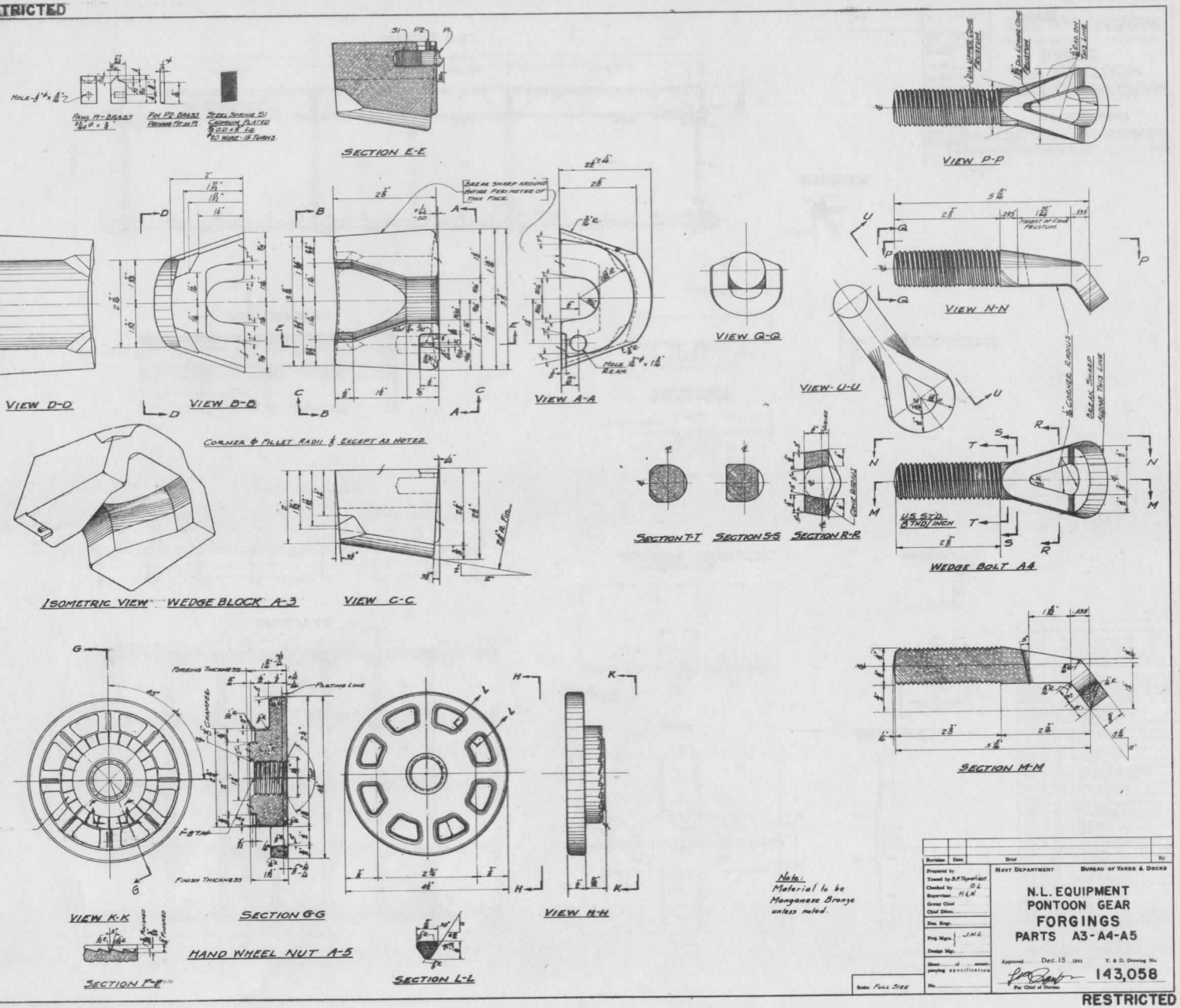
Y. & D. Drawing No. 143,056

Per Chief of Bureau

Scale:

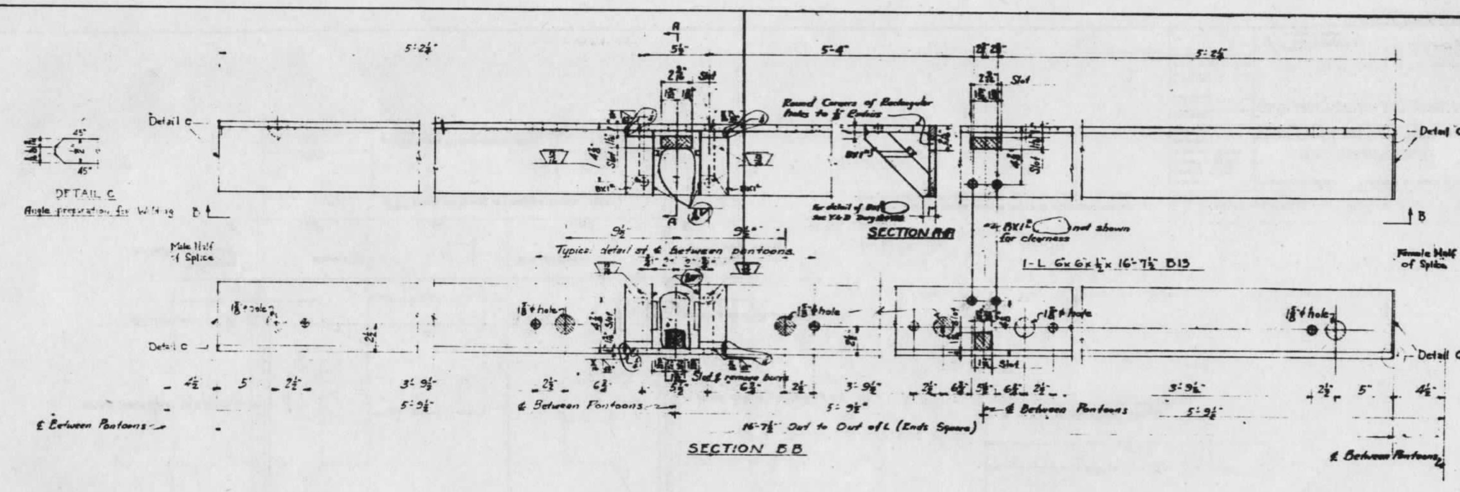
RESTRICTED

RESTRICTED



RESTRICTED

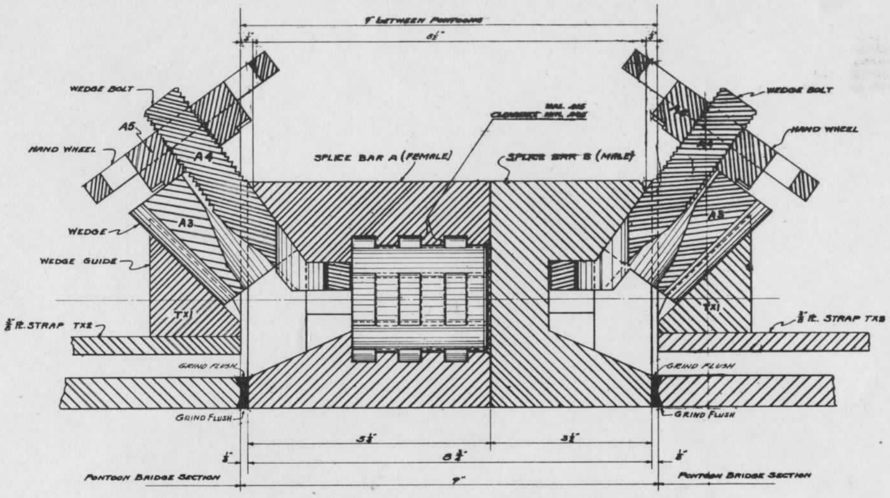
RESTRICTED



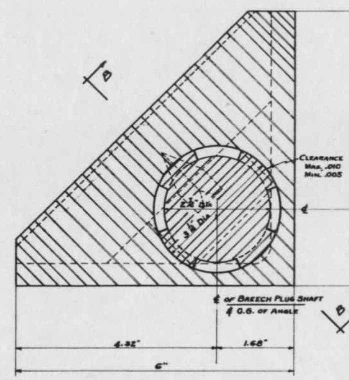
Note! All holes 13/16" ϕ unless otherwise noted
Breech Plug Splice to be furnished with Angle B13
For details of Breech Plug Splice see Y&D drwg's No 143060, 143061, 143062

Prepared by T.J.D.	NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS
Checked by G.L.	N. L. EQUIPMENT
	PONTOON ASSEMBLY ANGLE DETAIL B13
	Approved Dec. 18, 1941
	Y. & D. DRAWING No. 143,059

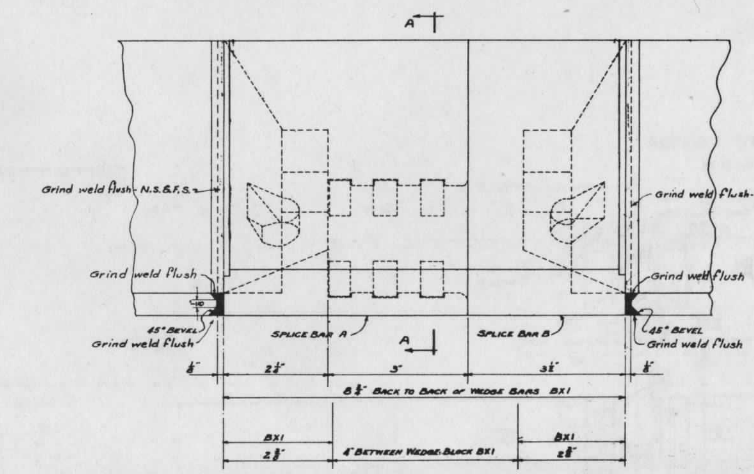
RESTRICTED



SECTION B-B OF SPLICE & ADJACENT PARTS



SECTION A-A



NOTE:
FOR DETAILS OF SPLICE BAR A SEE Y. & D. DWG.# 143061
FOR DETAILS OF SPLICE BAR B SEE Y. & D. DWG.# 143062

Revision	Date	Brief	By
1	6-1942	Notched diagonal face. Weld note added.	H.G.W.

Prepared by
Traced by H.J.R.
Checked by G.J.D.
Supervisor H.G.W.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs. J.H.L.
Design Mgr.
Sheet ___ of ___ accompanying specification
No.
Scale

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

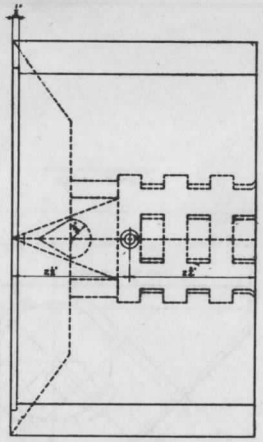
BREECH PLUG SPLICE

ASSEMBLY OF SPLICE BARS A&B

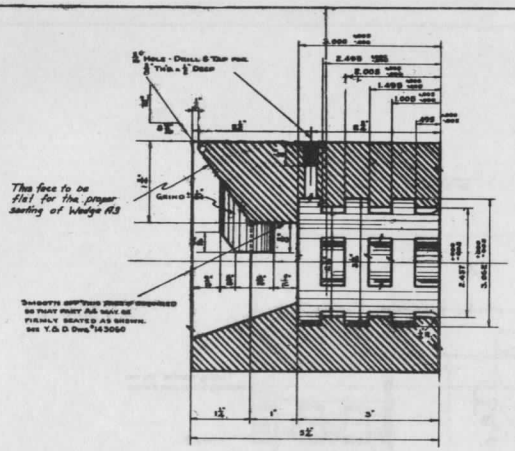
Approved Dec. 13 1941

For Chief of Bureau

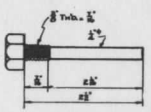
Y. & D. Drawing No. 143,060



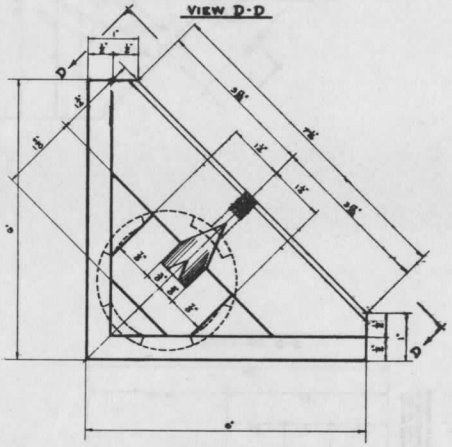
VIEW D-D



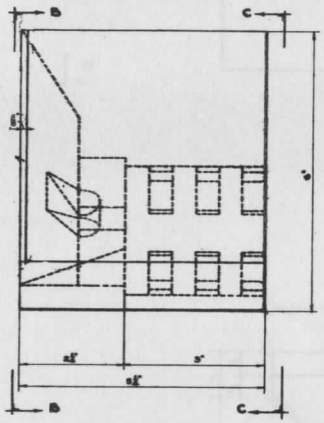
SECTION A-A



PIN 1/2" ø x 2 3/4" LONG
1 PER SPLICE

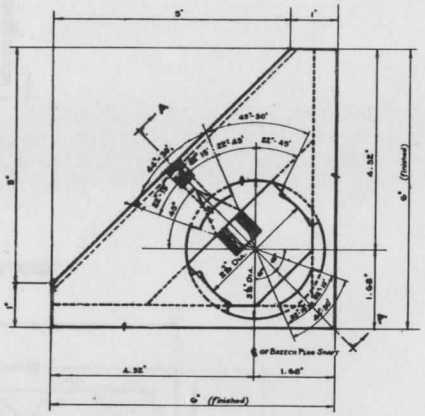


VIEW B-B



SPLICE BAR A

(See Y. & D. Dwg. #143060)



VIEW C-C

STEEL CASTINGS ASTM A81-37 GR
GRADE B1W ANNEALED
ALLOW 1/8" FOR FINISH

No.	Date	Revision	By
2	9-1-42	Notched alignment face.	H.A.W.
1	7-21-42	Dimension sheet & Note added.	H.A.W.

Prepared by
Traced by
Checked by
Supervised by H.A.W.
Group Chief
Chief Draftsman
Elec. Engr.
Prod. Engr. A.M.A.
Design Engr.
Sheet ... of ... sheets
Shipping specification
No.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

BREECH PLUG SPLICE

SPLICE BAR A

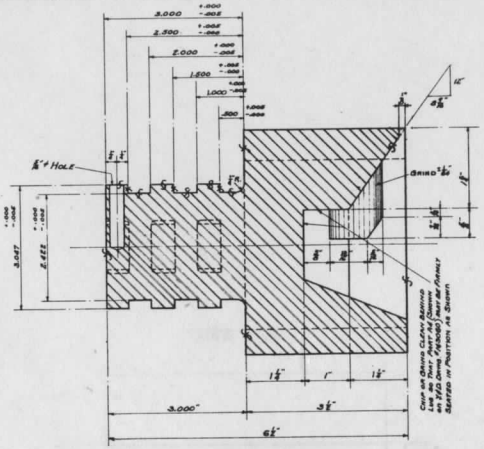
Approved Dec. 15 1941

Y. & D. Drawing No. 143,061

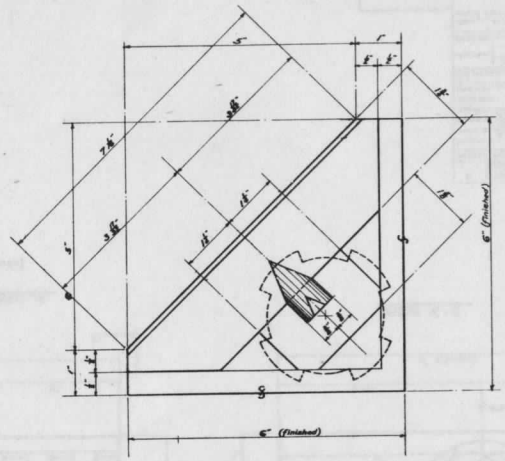
For Chief of Bureau

RESTRICTED

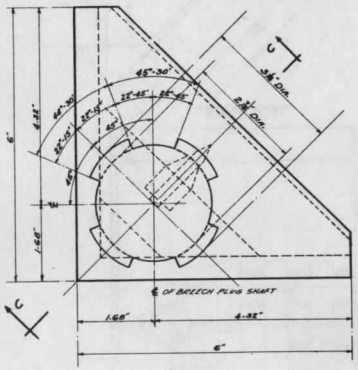
RESTRICTED



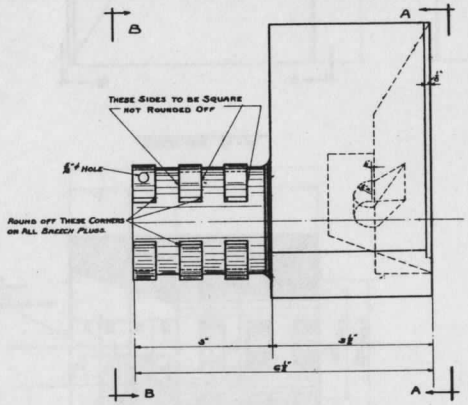
SECTION C-C



VIEW A-A



VIEW B-B



SPLICE BAR B

NOTE:
SEE Y & D. DRWG. 143080 FOR ASSEMBLY DETAILS.
SEE Y & D. DRWG. 143081 FOR SPLICE BAR A.

STEEL CASTINGS ASTM A235-39T.
GRADE B.W. ANNEALED.
ALLOW $\frac{1}{8}$" FOR FINISH.

1	6-12-41	Machined diagonal face.	H.L.W.
Revision	Date	Detail	By

Prepared by:
Traced by H.L.B.
Checked by H.L.B.
Supervisor H.L.W.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs. J.M.L.
Design Mgr.
Sheet ___ of ___ sheets
Specification
No.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

BREECH PLUG SPLICE

SPLICE BAR B

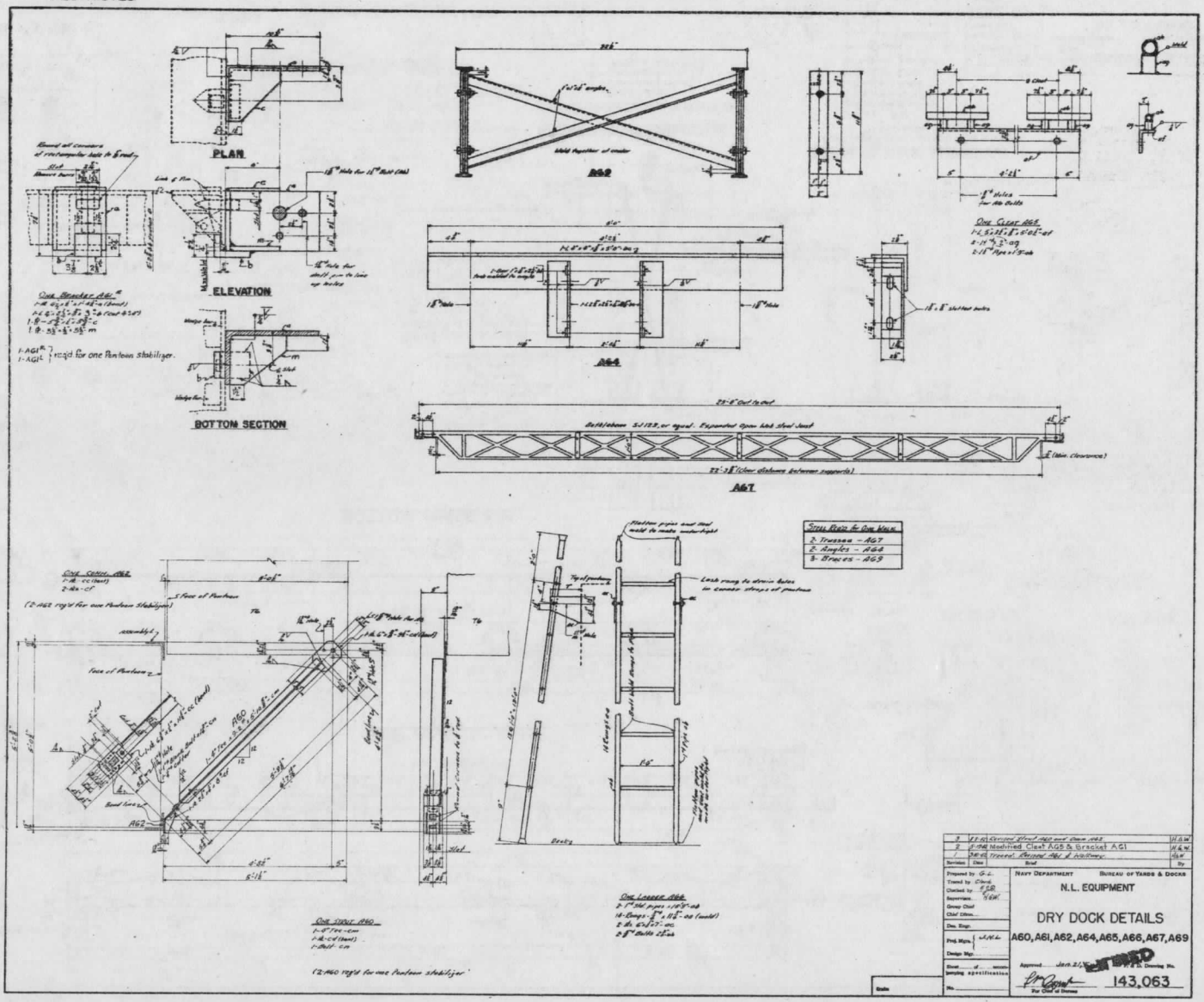
Approved Dec. 13 1941
For Chief of Bureau

Y. & D. Drawing No.
143062

Scale:

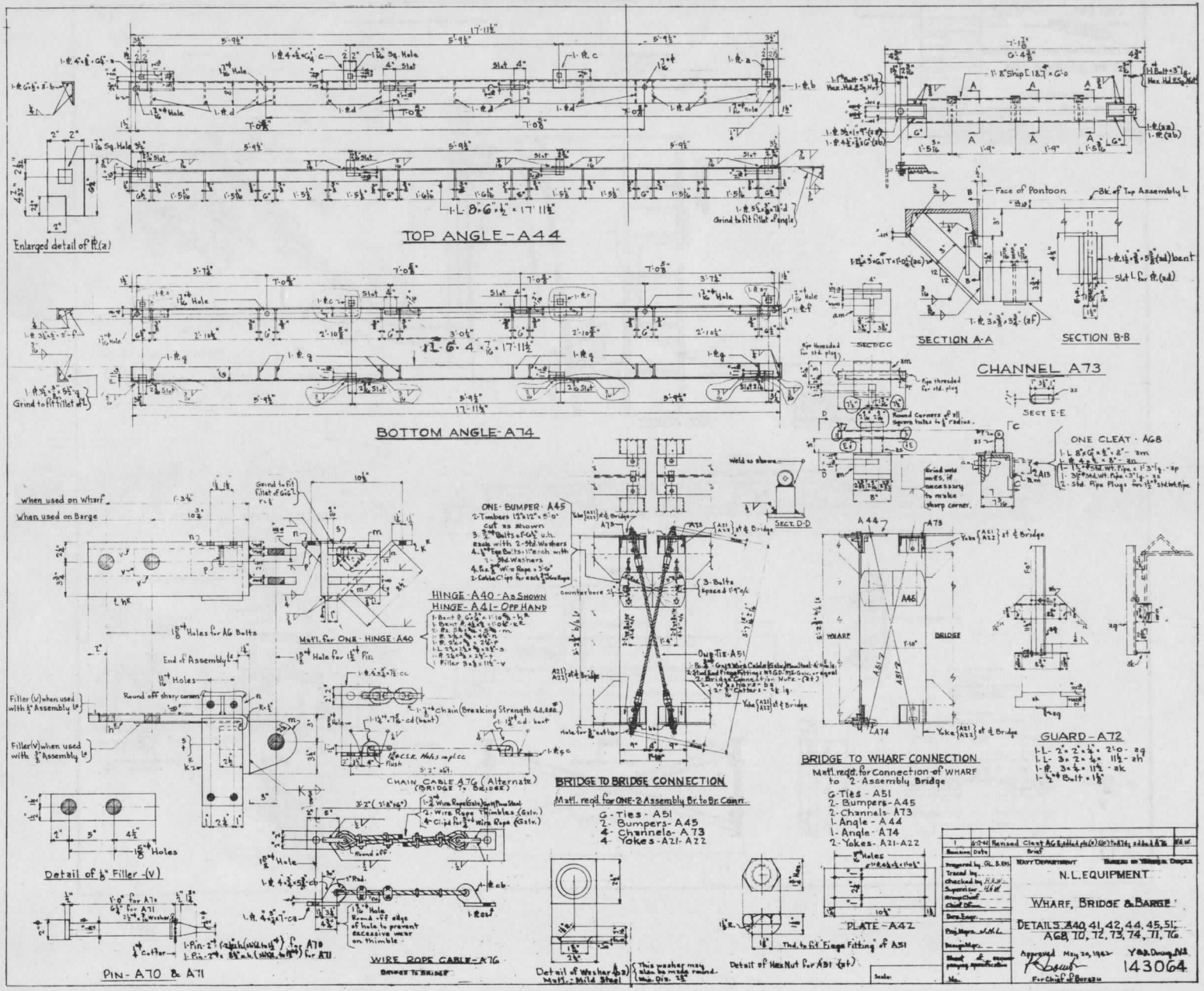
RESTRICTED

RESTRICTED



RESTRICTED

RESTRICTED



RESTRICTED

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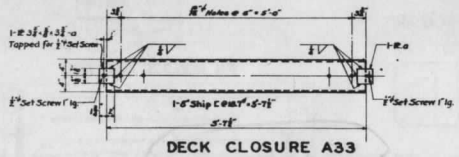
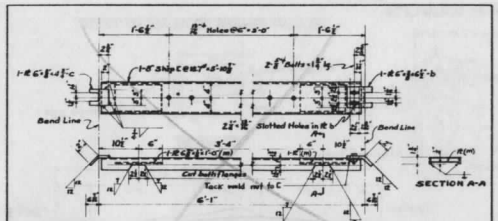
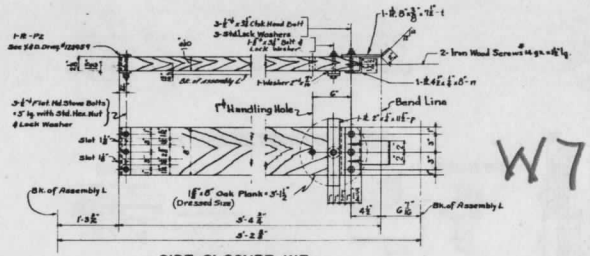


DECK CLOSURE A33
AT 8' ASSEMBLY S



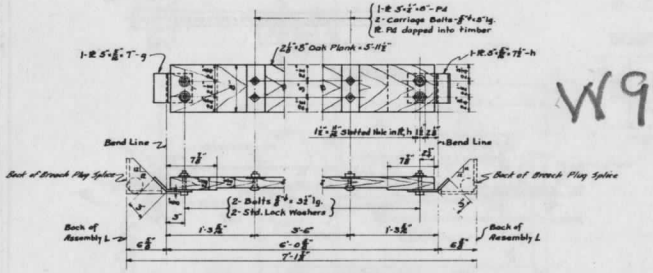
DECK CLOSURE A34
AT BREECH PLUG SPLICE

NOTE:
THIS DETAIL SUPERSEDED BY NEW DETAIL OF A34 ON THIS SHEET.



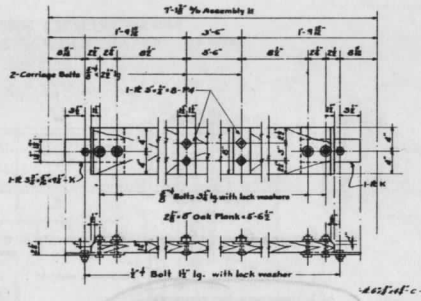
SIDE CLOSURE W7
AT BREECH PLUG SPLICE

W7

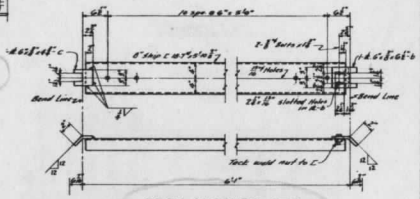


BOTTOM CLOSURE W9
AT BREECH PLUG SPLICE

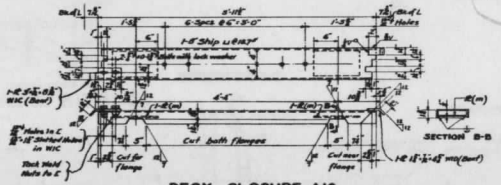
W9



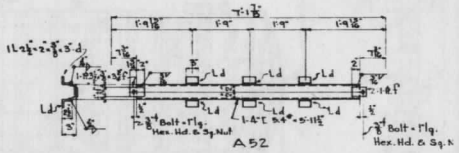
BOTTOM CLOSURE W8
AT 8' ASSEMBLY S



DECK CLOSURE A34
AT BREECH PLUG SPLICE

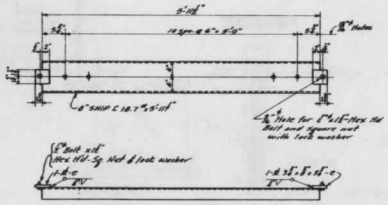


DECK CLOSURE A16
AT L SPLICE (SEE Y.&D. DRWG. 143080)



A52

DECK CLOSURE FOR DRY DOCK



A13
(THIS DETAIL OF A13 SUPERSEDES A13 ON Y.&D. DWG. NO. 124,982)

G	5-9-41	A34 superseded, A52 & new detail of A13 & A16 added	H.L.W.
5	8-1-41	Side closure W7 revised	H.L.W.
4	7/31/41	Drawing traced	H.L.W.
3	10/30/40	Cut holes in flanged and reinforcing Pls. in A34. A16 added	H.L.W.
2	9/20/41	Cut holes in flange of A34 Minor Chg's.	H.L.W.
1	9/4/41	Added $\frac{3}{4}$" holes in A33 & A34	H.L.W.
Revision	Date	Brief	By

Prepared by E.N.L.
Traced by H.L.W.
Checked by [illegible] H.L.W.
Supervisor
Group Chief
Chief Draftsm.
Des. Engr.
Proj. Mgrs. W.N.L.
Design Mgr.
Sheet ... of ... accompanying specification
No.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

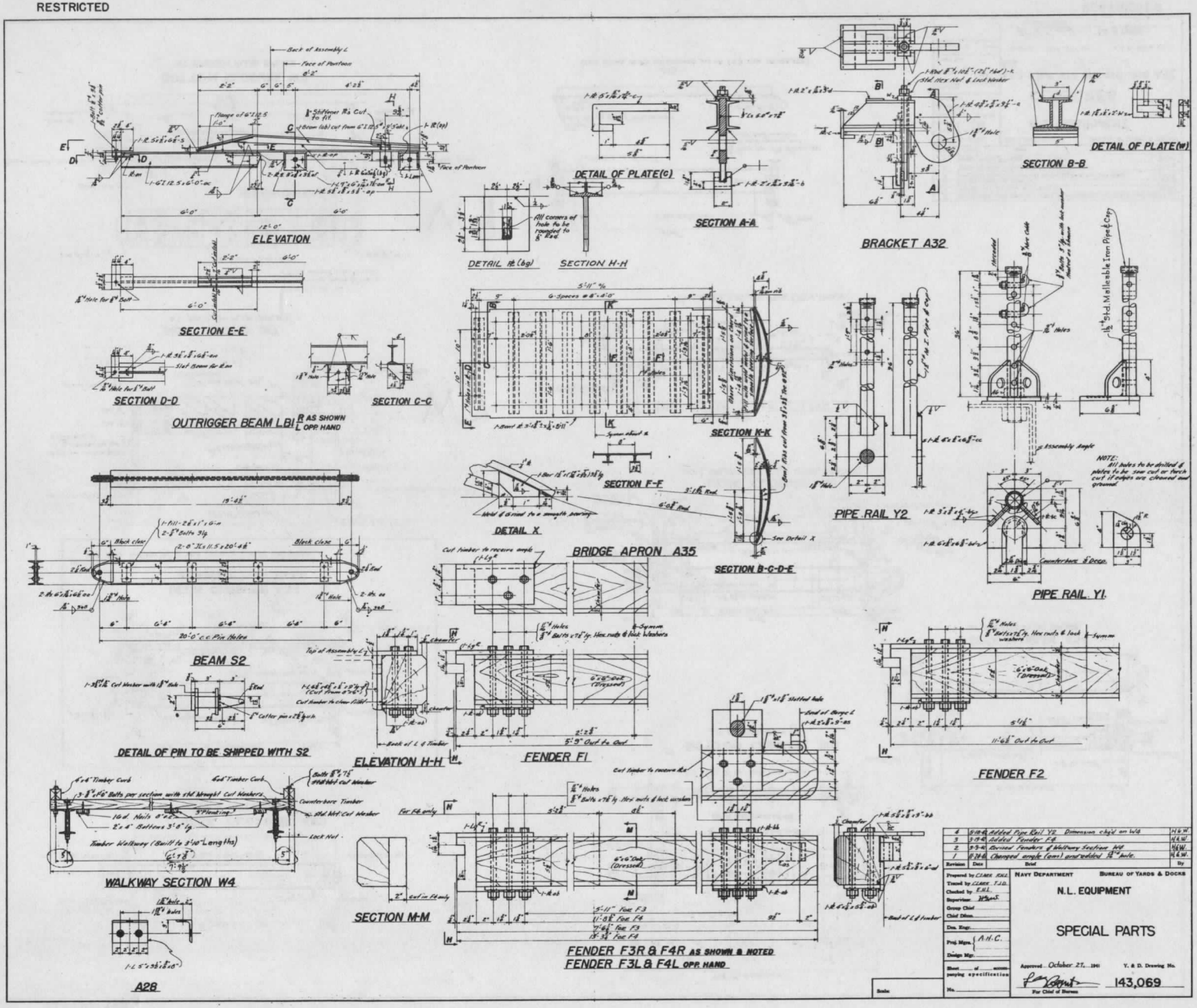
CLOSURES

A33 A34 W7 W8 W9 A16 A52
A13

Approved Oct 27 1941
Y. & D. Drawing No. 143066
For Chief of Bureau

Scale:

RESTRICTED



Revision	Date	Brief	By
4	6-42	Added Pipe Rail Y2. Dimension chg'd on W8	H&W
3	3-42	Added Fender F4	H&W
2	2-42	Revised Fenders & Walkway Section W4	H&W
1	7-41	Changed angle from 1 and welded 12" pole.	H&W

Prepared by CLARK JULL
Traced by CLARK T.J.D.
Checked by E.H.L.
Supervisor W. Hunt
Group Chief
Chief Draftsman
Des. Engr.
Proj. Mgrs. A.H.C.
Design Mgr.
Sheet ___ of ___ sheets
Supplying specifications
No. ___
Scale

NAVY DEPARTMENT BUREAU OF YARDS & DOCKS

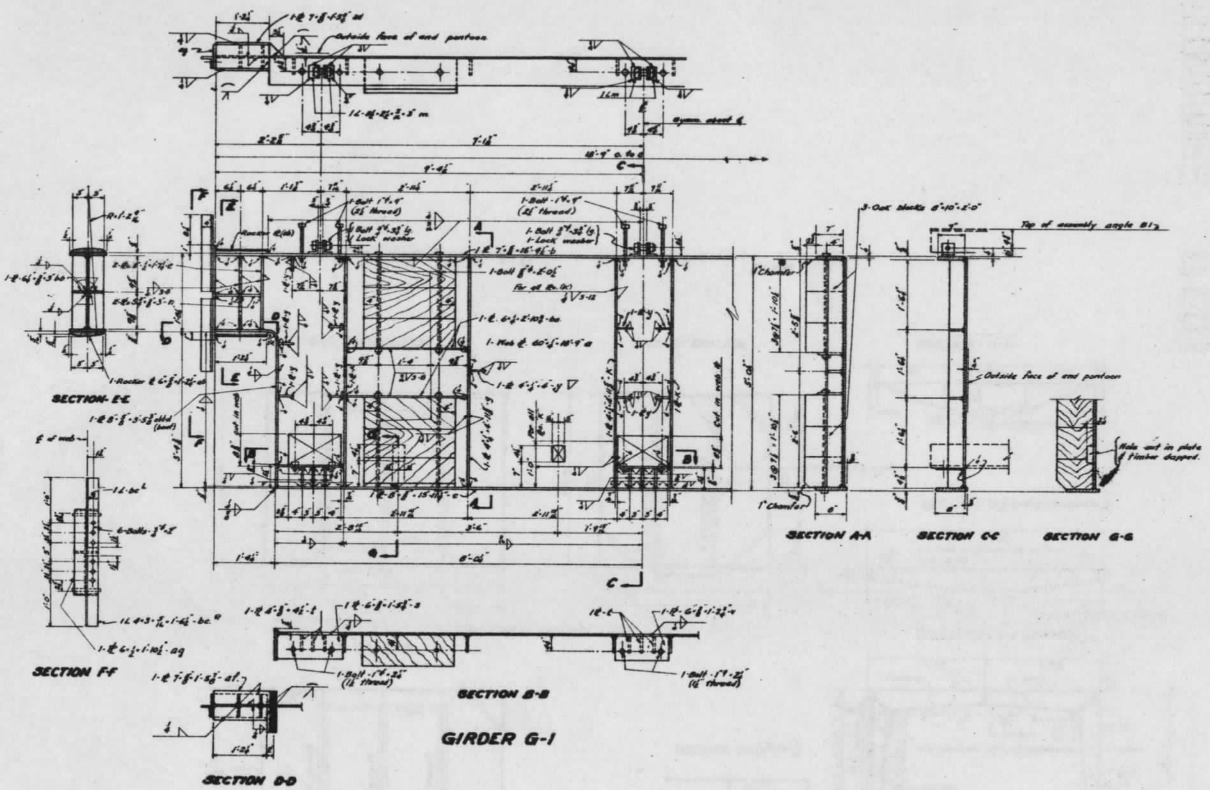
N.L. EQUIPMENT

SPECIAL PARTS

Approved October 27, 1941 Y. & D. Drawing No.

For Chief of Bureau 143,069

RESTRICTED



Revision	Date	Brief	By
2	11-31-46	Drawing Traced	H.G.W.
1	9-11-46	Openings in Web & added to contain Pontoon Closure Bracket	H.G.W.

Prepared by E.H.L.
Traced by F.T.M.
Checked by G.J.B.
Supervisor H.G.W.
Group Chief
Chief Draftsman
Div. Engr.
Proj. Mgrs.
Design Mgr.
Sheet ___ of ___ accompanying specification
No.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

GIRDER DETAILS FOR BRIDGE

Approved May 6 1941

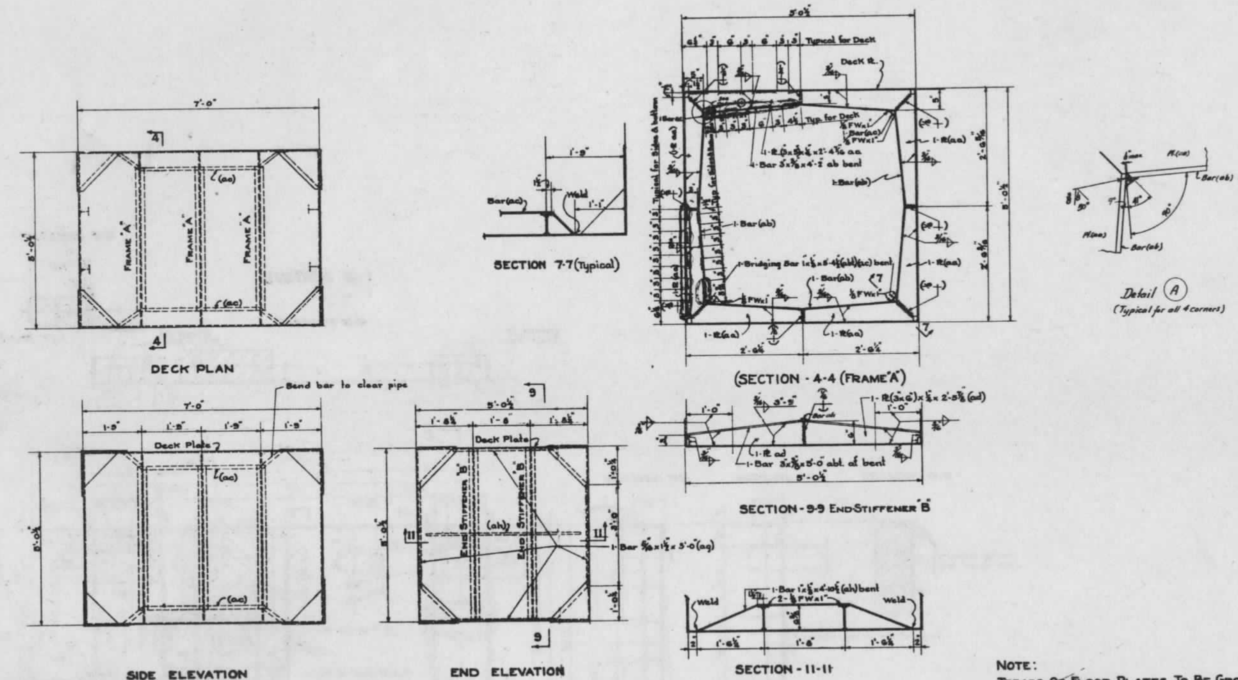
For Chief of Bureau

Y. & D. Drawing No. 143073

Scale

RESTRICTED

RESTRICTED



NOTE:
TREADS OF FLOOR PLATES TO BE GROUND FLUSH IN WAY OF STRAPS TX2 IF NECESSARY TO CLEAR STRAPS
SLOPE OF ALL FILLET WELDS TO BE 45°

THIS DRAWING TO BE USED IN CONJUNCTION WITH Y & D. DRWG'S. No. 124,968 & 143,075

Revision	Date	Brief	By
4	5-27-42	Welds made clear	H.G.W.
3	11-10-41	Drawing Traced	H.G.W.
2	10-18-41	Changed Corner Cuts in Frame "A" & length of Bs (aa) & (ad)	H.G.W.
①	6-4-41	Changes indicated by Circles	H.G.W.

Prepared by E.H.L.
Traced by N.G.
Checked by H.G.W.
Supervisor H.G.W.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

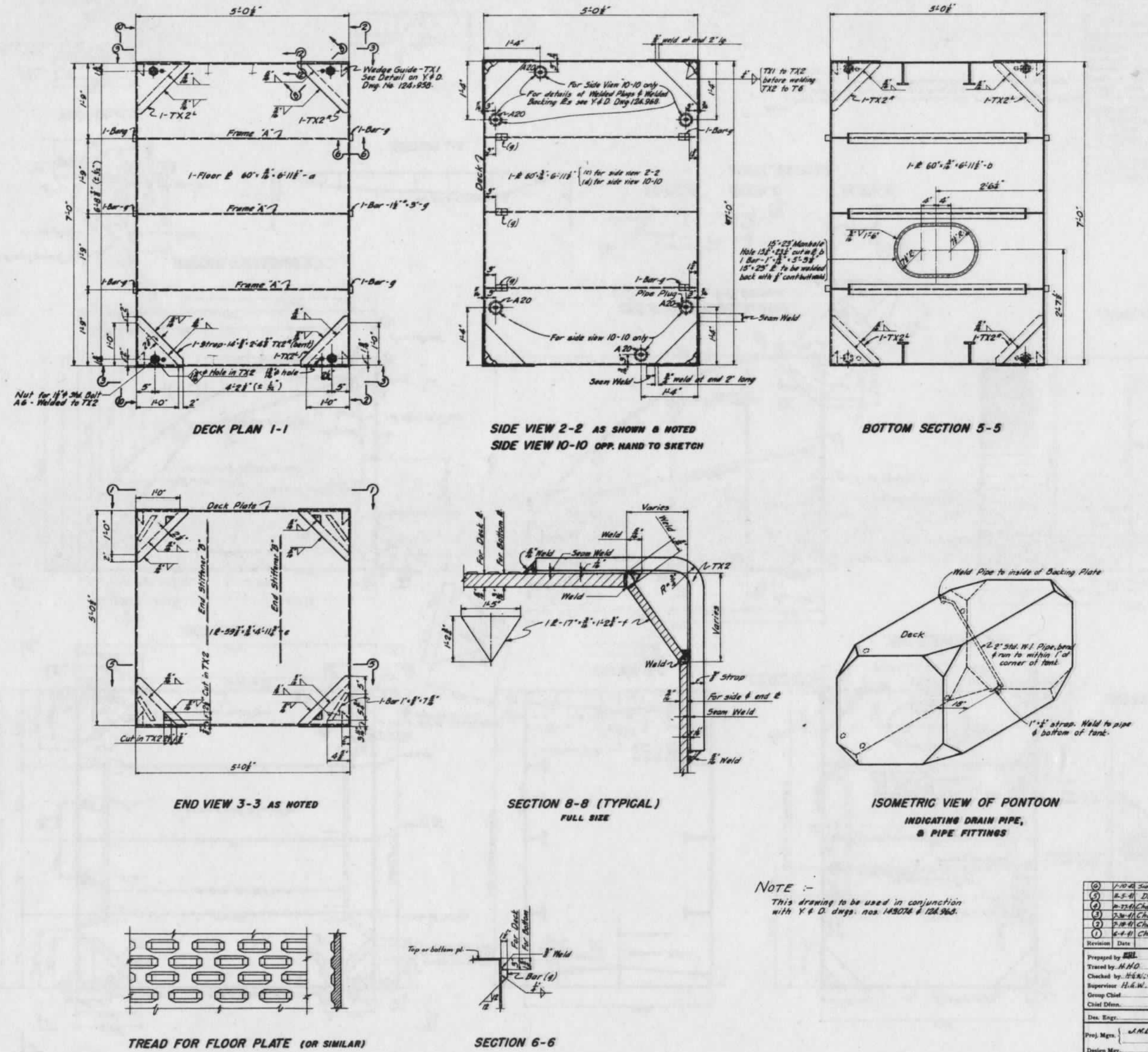
N.L. EQUIPMENT

PONTOON T-6

Approved May 6th 1941
For Chief of Bureau
Y. & D. Drawing No. 143074

RESTRICTED

RESTRICTED



NOTE :-
This drawing to be used in conjunction with Y & D. dwgs. nos. 143074 & 124,963.

Revision	Date	Brief	By
6	1-10-42	Side View 10-10 as shown & noted changed, opp. hand to sketch	H.G.W.
5	11-5-41	Drawing traced	HGW
4	10-27-41	Changed type of pipe. Relocated Bar (g) at bottom	HGW
3	7-30-41	Changed bar (ab) to bar (g)	HGW
2	7-18-41	Changes to bar on strap TX2	HGW
1	6-4-41	Changes indicated in circles	HGW

Prepared by
Traced by H.H.O.
Checked by H.G.W.; G.L.
Supervisor H.G.W.
Group Chief
Chief Dftmn.
Des. Engr.
Proj. Mgrs. J.H.L.
Design Mgr.
Sheet of accompanying specification
No.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N. L. EQUIPMENT

PONTOON T-6
DETAILS

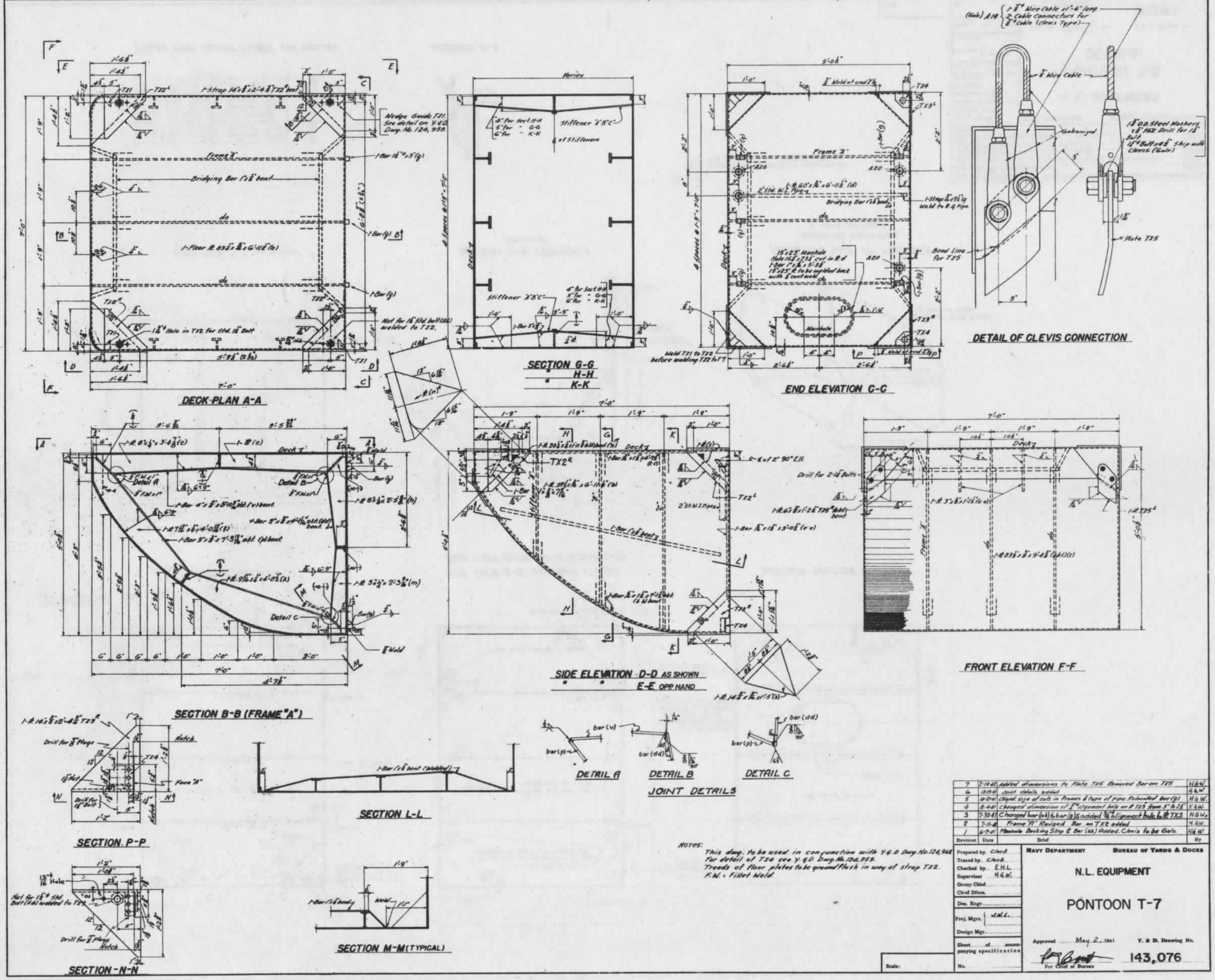
Approved May 6th 1941
For Chief of Bureau

Y. & D. Drawing No. 143,075

Scale:

RESTRICTED

RESTRICTED



NOTES:
This dwg. to be used in conjunction with Y.&D. Dwg. No. 124,968
For detail of TX4 see Y.&D. Dwg. No. 124,959.
Treads of floor plates to be ground flush in way of strap TX2.
F.W. = Fillet Weld

Revision	Date	Brief	By
7	2-14-42	Added dimensions to Plate TX6 Removed Bar on TX5	H.G.W.
6	12-15-41	Joint details added	H.G.W.
5	10-27-41	Chgd. size of cuts in frames & type of pipe. Relocated Bar (g)	H.G.W.
4	8-6-41	Changed dimension of ⅝" alignment hole on Pl. TX3 from 5" to 2½"	H.G.W.
3	7-30-41	Changed bar (ab) to bar (g) & added ¾" alignment hole to Pl. TX3	H.G.W.
2	7-11-41	Frame "A" Revised Bar on TX2 added	H.G.W.
1	6-7-41	Manhole Backing Strip & Bar (ab) Added. Clevis to be Galv.	H.G.W.

Prepared by. Clark
Traced by. Clark
Checked by. E.H.L.
Supervisor H.G.W.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs. E.H.L.
Design Mgr.
Sheet of accompanying specification
No.
Scale:

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

PONTOON T-7

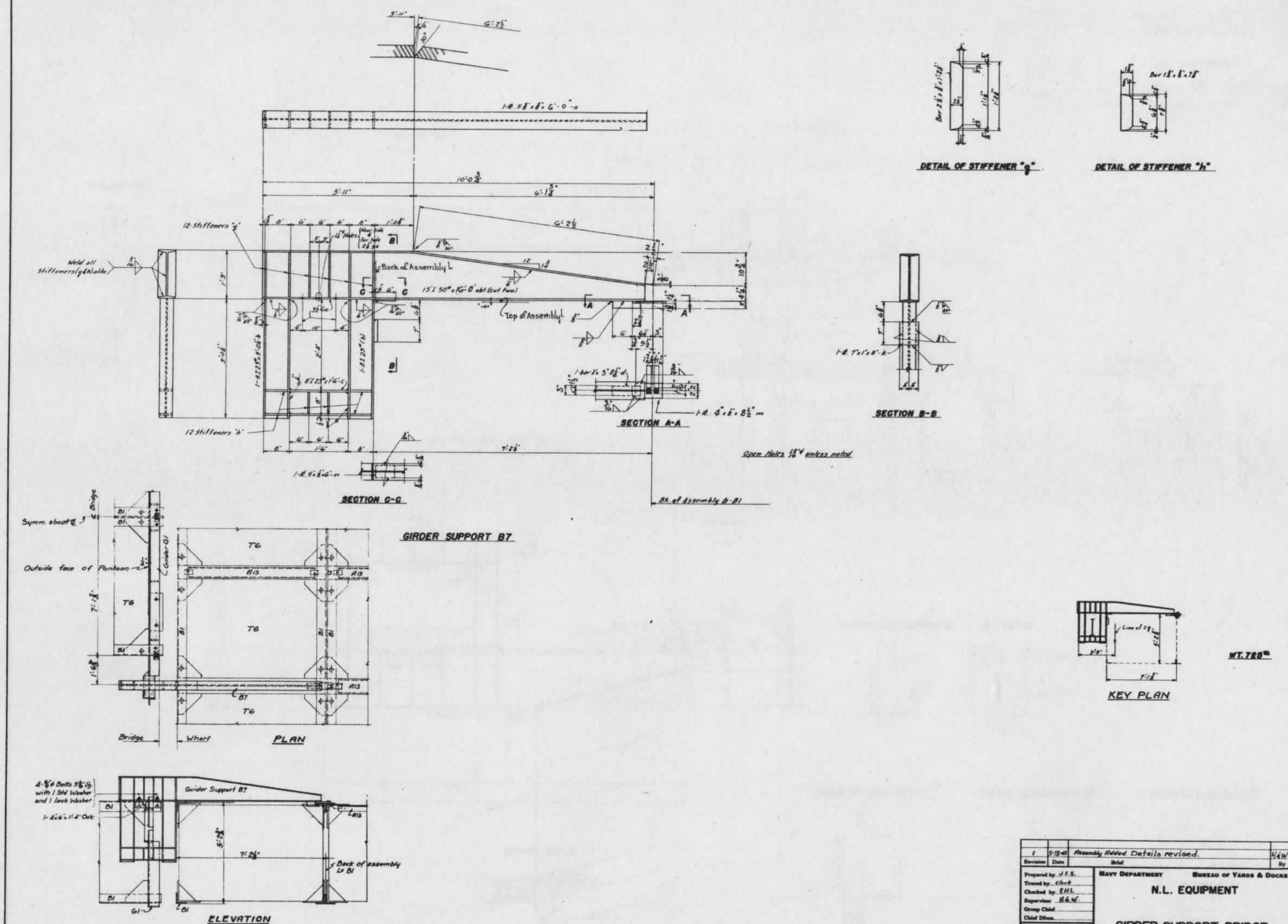
Approved May 2, 1941

For Chief of Bureau

Y. & D. Drawing No. 143,076

RESTRICTED

RESTRICTED



Revision	Date	Brief	By
1	5-18-42	Assembly Added Details revised.	H.G.W.

Prepared by J.F.S.
Traced by clark
Checked by E.H.L.
Supervisor H.G.W.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs. { E.H.L.
Design Mgr.
Sheet ___ of ___ accompanying specification's
No.
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NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

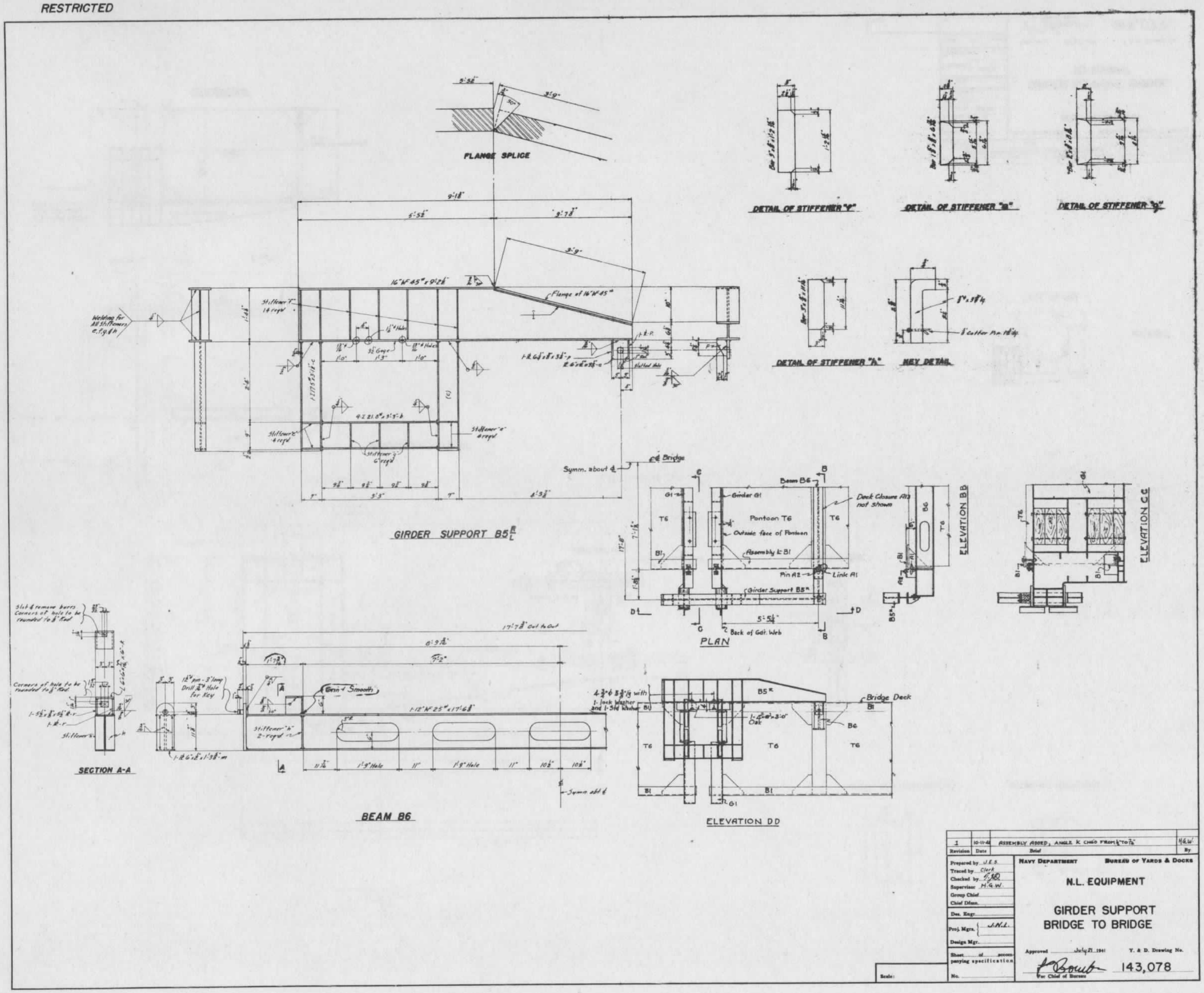
N.L. EQUIPMENT

GIRDER SUPPORT BRIDGE TO WHARF

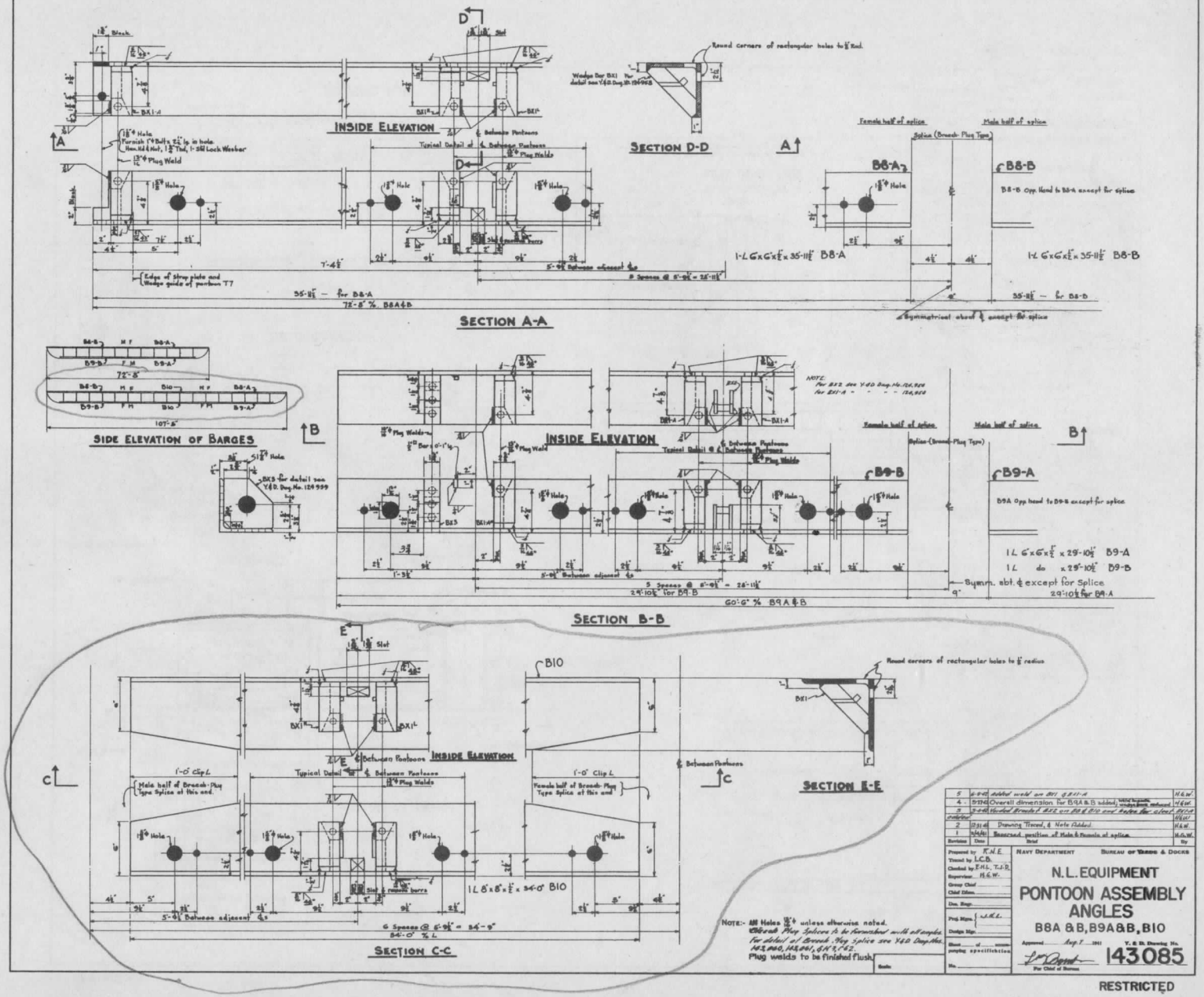
Approved July 21 1941 — For Chief of Bureau

Y. & D. Drawing No. 143,077

RESTRICTED

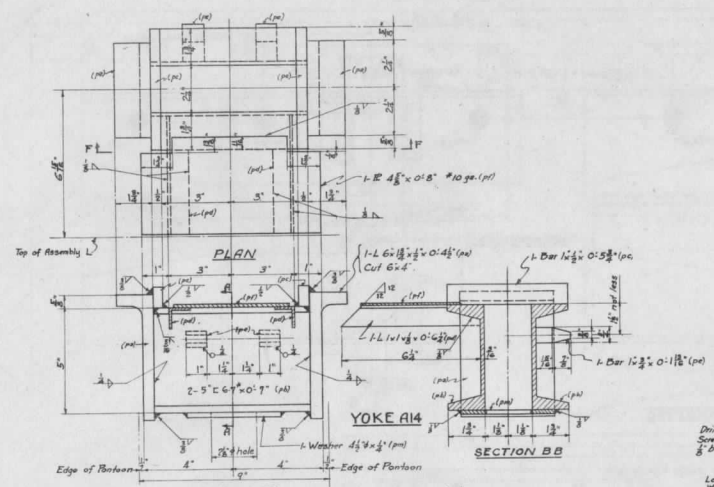

FLANGE SPLICE
DETAIL OF STIFFENER "f"
DETAIL OF STIFFENER "e"
DETAIL OF STIFFENER "g"
DETAIL OF STIFFENER "h"
KEY DETAIL
GIRDER SUPPORT B5
Symm. about ℄
℄ Bridge
Beam B6
Girder G1
Deck Closure A10 not shown
Pontoon T6
Outside face of Pontoon
Assembly ℄ B1
Pin A2
Link A1
Girder Support B5
Back of Gdr. Web
PLAN
ELEVATION B-B
ELEVATION C-C
SECTION A-A
BEAM B6
Bridge Deck
ELEVATION DD
ASSEMBLY ADDED, ANGLE K CHGD
NAVY DEPARTMENT
BUREAU OF YARDS & DOCKS
N.L. EQUIPMENT
GIRDER SUPPORT
BRIDGE TO BRIDGE
Y. & D. Drawing No.
143,078

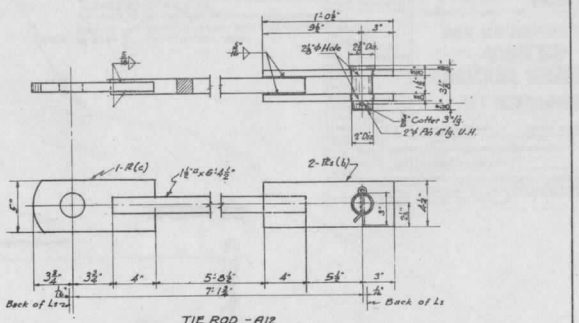
RESTRICTED

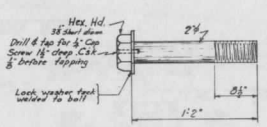


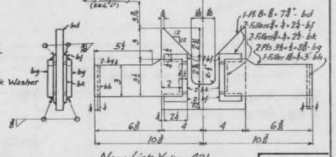
RESTRICTED

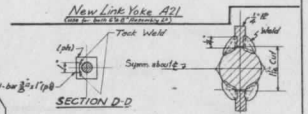
RESTRICTED

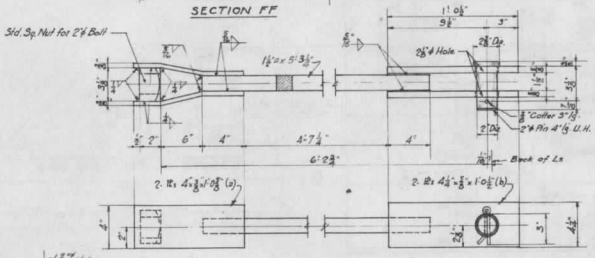


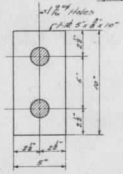


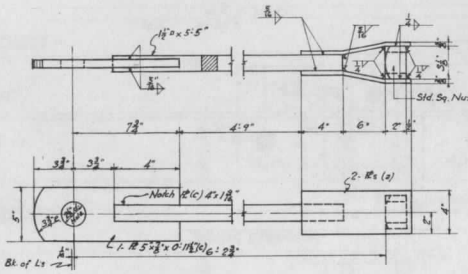


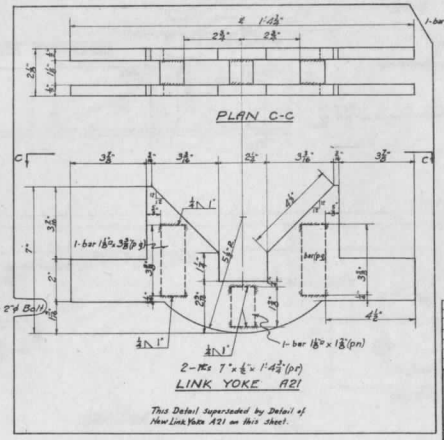


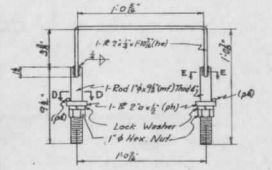












No.	Date	Revision	By
6	8-1-45	Yoke A14 Revised	W.G.W.
5	7-7-45	Added Yoke A22	W.G.W.
4	6-26-45	Bolt (ph) No. 1 added to Assembly, Item No. 22 changed	W.G.W.
3	11-15-44	Dimensions Changed on A21	W.G.W.
2	11-9-44	Bolt Head dimension on A16, Section E-E, and A22 added	W.G.W.
1	9-22-44	Bar pin added to Yoke A14	W.G.W.

Prepared by E.M.L. & T.J.D.
Traced by T.J.D.
Checked by R.M.F.
Supervisor W.G.W.
Group Chief
Chief Elect.
Des. Engr.
Proj. Mgr. ARC
Design Mgr.
Sheet ___ of ___ sheets
Scale
No. ___

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

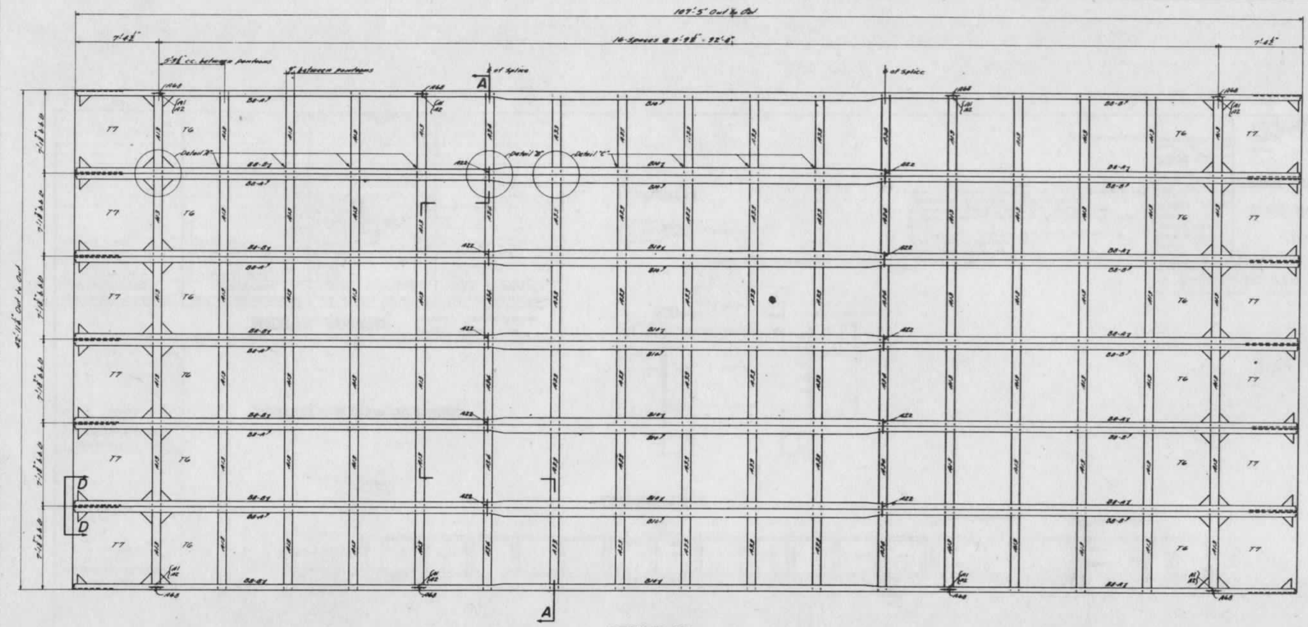
N.L. EQUIPMENT

PONTOON ASSEMBLY PARTS
A10, A12, A14, A29, A30, W6, A21, A22 A22A

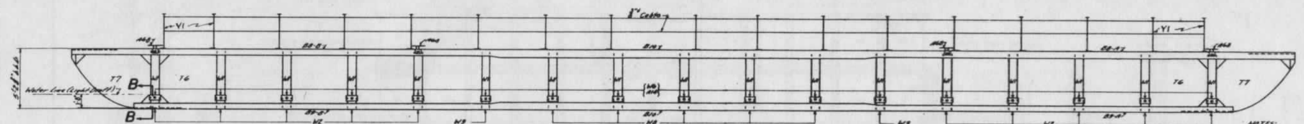
Approved Sept. 22 1944 — Y. & D. Drawing No. 143,086

For Chief of Bureau

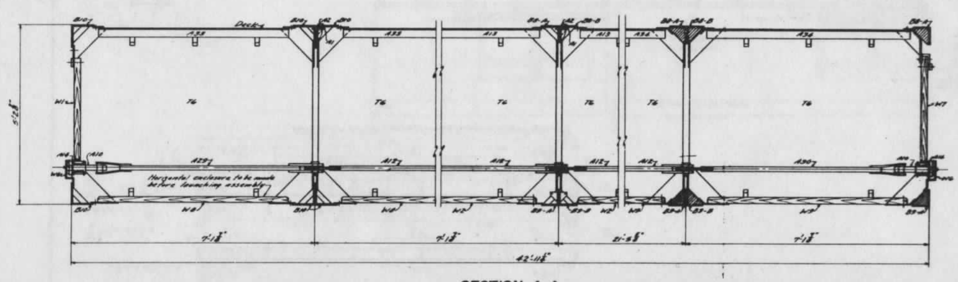
RESTRICTED



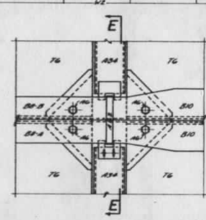
DECK PLAN



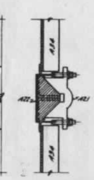
SIDE ELEVATION



SECTION A-A



ENLARGED DETAIL AT "B"



SECTION E-E

BILL OF MATERIAL

MARK	NO.	DESCRIPTION
T6	94	RECTANGULAR PONTOON
T7	12	CURVED PONTOON
B8-A	12	ASSEMBLY ANGLE
B8-B	12	" "
B9-A	12	" "
B9-B	12	" "
B10	24	" "
A1	83	LINK
A2	83	LINK PIN
A3	816	WEDGE
A4	816	WEDGE BOLT
A5	816	HAND WHEEL NUT
A6	840	ASSEMBLY BOLT
A10	34	TIE ROD BOLT
A12	68	TIE ROD
A14	34	YOKE
A13	60	DECK CHANNEL
A17	24	END BOLT
A18	24	LOCK WASHER
A29	17	TIE ROD
A30	17	" "
A33	30	DECK CHANNEL
A34	12	" "
A21	10	LINK YOKE
A22	10	BENT PLATE & ROD
Y1	44	PIPE RAIL
ANCHOR	6	300# NAVY TYPE
CABLE		650 LIN FT.
W1	30	SIDE CLOSURE
W2	60	BOTTOM CLOSURE
W6	34	SHEET METAL COVER
W7	4	SIDE CLOSURE
W8	30	BOTTOM CLOSURE
W9	12	" "
A68	8	CLEAT

FOR ANCHOR HOIST PARTS SEE Y & D DWG NO. 142,444.

NOTES:
For enlarged detail at "A" see Y & D Dwg. No. 124,961
Detail "C" same as "A" except for deck closure & size of assembly angles
For section B-B see Y & D Dwg. No. 124,961
For " C-C showing Wedge, Wedge Guide, & Wedge Bar see Y & D Dwg. No. 124,962
For section D-D see Y & D Dwg. No. 124,961

Revision	Date	Brief	By

Prepared by Clark
Traced by Clark
Checked by G.D.
Supervisor H.E.W.
Group Chief
Chief Dftmn.
Des. Engr.
Proj. Mgrs. J.N.L.
Design Mgr.
Sheet ___ of ___ accompanying specification
No.
Scale:

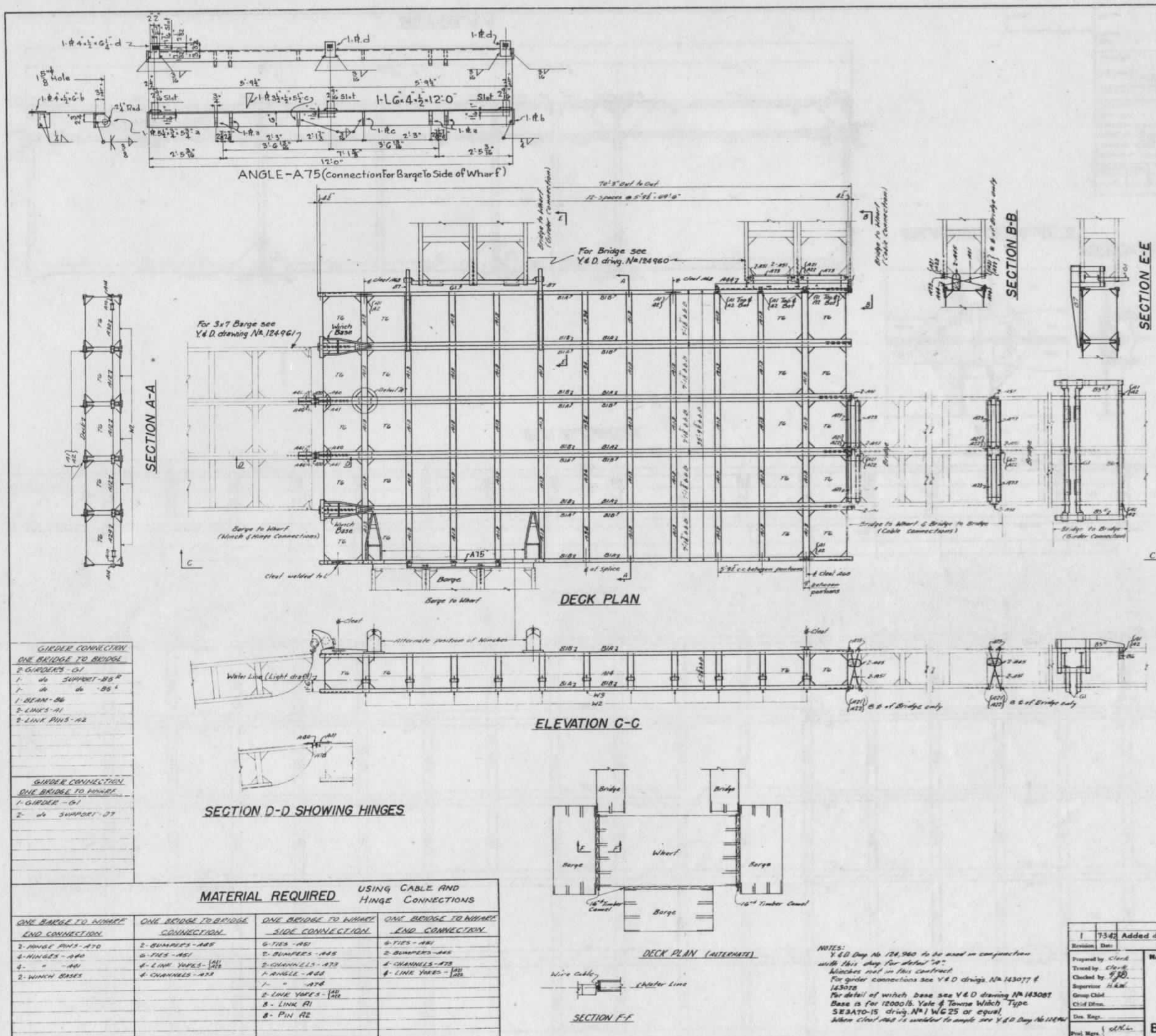
NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

ERECTION DIAGRAM
6x18 PONTOON BARGE

Approved JUNE 10, 1942 — Y. & D. Drawing No. 143,088

For Chief of Bureau



BILL OF MATERIAL WHARF ONLY

MARK	No	DESCRIPTION
T6	60	RECTANGULAR PONTOON
B1A	29	ASSEMB. ANGLE
B1B	20	" "
A1	58	LINK
A2	58	LINK PIN
A3	480	WEDGE
A4	480	WEDGE BOLT
A5	480	HAND WHEEL NUT
A6	480	ASSEMBLY BOLT
A12	33	TIE ROD
A13	50	DECK CHANNEL
A18	22	YOKE
A10	22	TIE ROD BOLT
A29	11	TIE ROD
A30	11	" "
A38	5	DECK CHANNEL
A68	4	CLEAT
W2	50	BOTTOM CLOSURE
W9	5	" "
ANCHOR	4	200# NAVY TYPE
CHAIN	4	¾" 150 FT. LENGTHS (STUD LINK)

GIRDER CONNECTION ONE BRIDGE TO BRIDGE
2-GIRDERS-G1
1- do SUPPORT-B5 R
1- do do -B5 L
1-BEAM-B6
2-LINKS-A1
2-LINK PINS-A2

GIRDER CONNECTION ONE BRIDGE TO WHARF
1-GIRDER-G1
2- do SUPPORT-27

MATERIAL REQUIRED USING CABLE AND HINGE CONNECTIONS

ONE BARGE TO WHARF END CONNECTION	ONE BRIDGE TO BRIDGE CONNECTION	ONE BRIDGE TO WHARF SIDE CONNECTION	ONE BRIDGE TO WHARF END CONNECTION
2-HINGE PINS-A70	2-BUMPERS-A85	6-TIES-A81	6-TIES-A81
4-HINGES-A40	6-TIES-A81	2-BUMPERS-A85	2-BUMPERS-A85
4- " -A41	4-LINK YOKES-A81/A72	2-CHANNELS-A73	4-CHANNELS-A73
2-WINCH BASES	4-CHANNELS-A73	1-ANGLE-A68	4-LINK YOKES-A81/A72
		1- " -A74	
		2-LINK YOKES-A81/A72	
		8-LINK A1	
		8-PIN A2	

For above details see Y&D Dwg. No. 143,064

NOTES:
Y&D Dwg. No. 124,960 to be used in conjunction with this dwg. for detail "A".
Winches not in this contract.
For girder connections see Y&D drwgs. No 143077 & 143078
For detail of winch base see Y&D drawing No 143087
Base is for 12000 lb. Yale & Towne Winch Type SE3A70-15 drwg. No 1 WG25 or equal.
When Cleat A68 is welded to angle see Y&D Dwg. No 128961

Revision	Date	Brief	By
1	7-3-42	Added detail of A75	H.S.M.

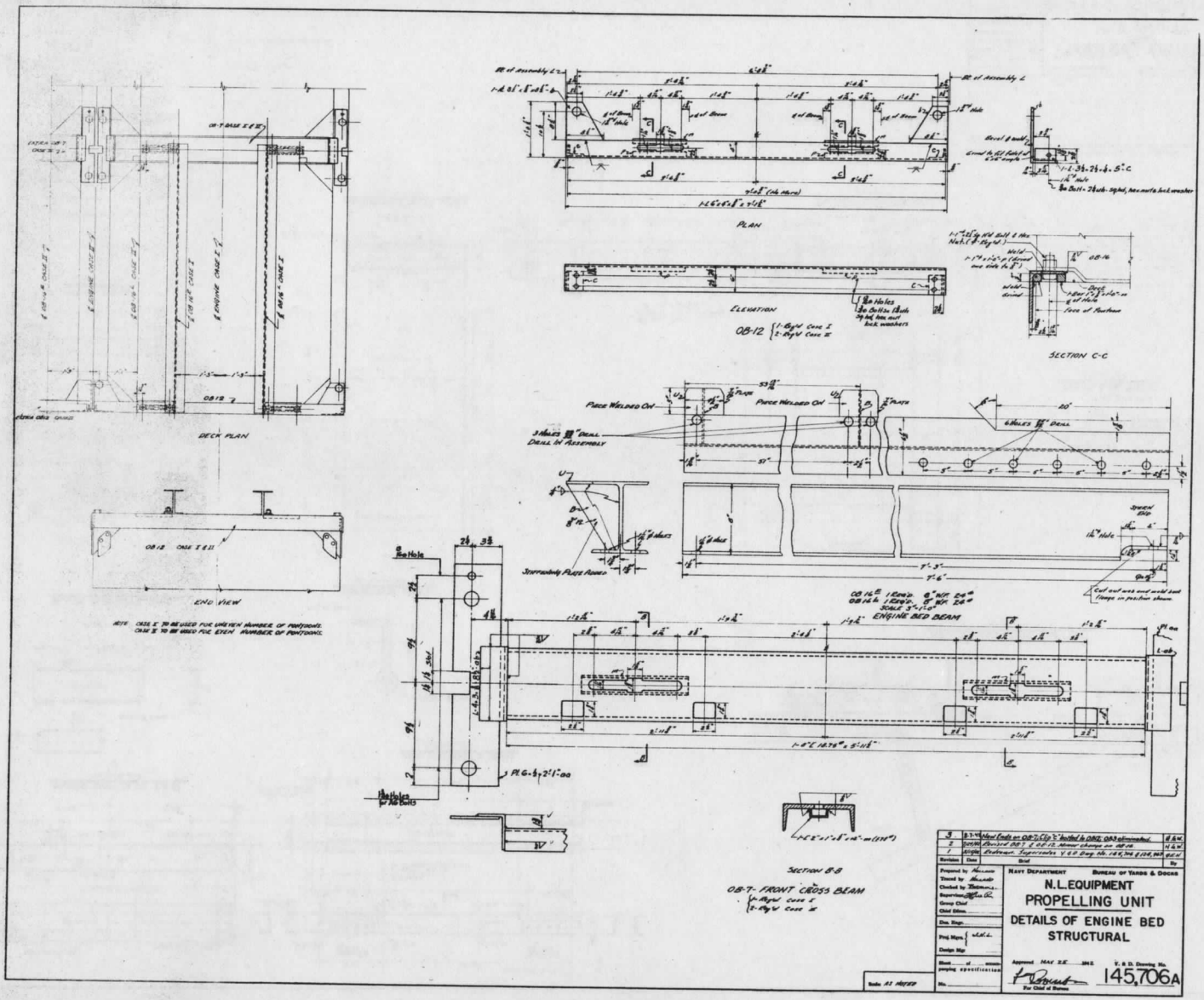
Prepared by Clark
Traced by Clark
Checked by F.J.D.
Supervisor H.A.M.
Group Chief
Chief Dftsm.
Des. Engr.
Proj. Mgrs. A.H.L.
Design Mgr.
Sheet of accompanying specification No.
Scale:

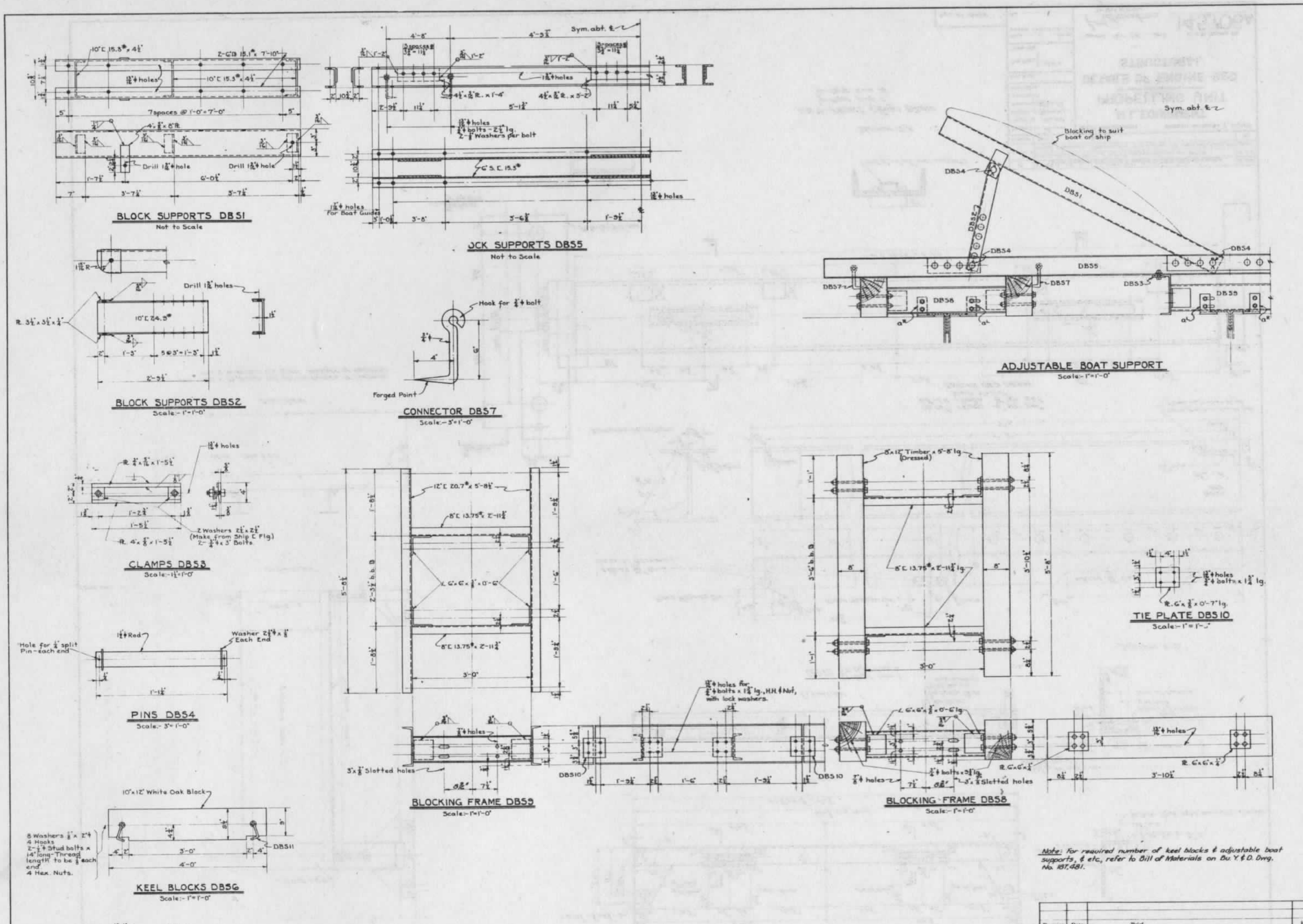
NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

N.L. EQUIPMENT

5 x 12 PONTOON WHARF WITH BRIDGE & BARGE CONNECTIONS

Approved June 3, 1942
For Chief of Bureau
Y. & D. Drawing No. 089


DECK PLAN
END VIEW
PLAN
ELEVATION
SECTION C-C
SECTION B-B
ENGINE BED BEAM
FRONT CROSS BEAM
NOTE: CASE I TO BE USED FOR UNEVEN NUMBER OF PONTOONS.
CASE II TO BE USED FOR EVEN NUMBER OF PONTOONS.
N.L. EQUIPMENT
PROPELLING UNIT
DETAILS OF ENGINE BED
STRUCTURAL
NAVY DEPARTMENT
BUREAU OF YARDS & DOCKS
145,706A



Note: For required number of keel blocks & adjustable boat supports, & etc., refer to Bill of Materials on Bu. Y. & D. Dwg. No. 187,481.

Revision	Date	Brief	By

Prepared by H.E.H.
Traced by F.T.K.
Checked by F.T.K. RRR
Supervisor M.G.A. CHJ
Group Chief AEF
Chief Dftsm. JTM
Des. Engr.
Proj. Mgrs. J.N.L.
Design Mgr. Ewl
Sheet 4 of 7 accompanying specification No.

Scale: As Noted

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

FLOATING DRYDOCK FOR P.T. BOATS

DETAILS OF ADJUSTABLE BOAT SUPPORTS AND KEEL BLOCKS

Approved Jan. 5 1942 — Y. & D. Drawing No. 187484

For Chief of Bureau

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