ERECTION INSTRUCTIONS
FOR THE
U.S. NAVY
STEEL ARCH RIB
UTILITY BUILDINGS

40'-0" x 100'-0"
CONVERSION TYPE
BASIC UNIT

MANUFACTURED FOR NAVY DEPARTMENT
BUREAU OF YARDS AND DOCKS
BY STRAN-STEEL DIVISION
GREAT LAKES STEEL CORPORATION

DESIGN
NOVEMBER
1944
1. **Foundation.** Set anchor bolts, pour concrete. Lay channel plate. (See pages 2 and 3.)

2. **Frame.** Assemble and raise ribs. Install purline. (See pages 4 and 5.)

3. **Bulkhead.** Assemble bulkhead frame from steel studs. Hang doors, install windows and apply corrugated iron sheets, louvre, and flashing. (See pages 6 and 7; 8 and 9.)

4. **Covering.** Nail corrugated sheets on the sides of the building to the purlings. (See pages 10 and 11.)

5. **Clean Up.** Save all scraps, bands, blocks, nails, screws and crating material not used. Sort and store for future use.
PLAN OF ANCHOR BOLTS AND CHANNEL PLATES

FOUNDATIONS IN PLACE

CORNER DETAIL

CHANNEL PLATE

PLATE AND ANCHOR BOLT
Place the 6" channel plates over the anchor bolts set in the concrete, square and level the plates and bolt them down. The 33/4" channel plates at the ends of the building will be placed when the bulkhead framing is erected.

1. Place concrete forms, pour the concrete. Place the ½" round by 8" long anchor bolts accurately (see foundation plan), using the 6" channel plates as templates or measuring along forms and using points on the forms as off-sets to position off center lines of anchor bolts.

2. After the concrete has hardened remove the wooden formwork.

3. Lay the 6" channel plates, which are punched to fit over the bolts, in position down the sides of the building, starting with the end channels at each side. These are marked P-1 (4' 2" long) and should be placed 3' 10" apart.

4. Square the plate layout and line up the plates so that the 40' 6" dimension across the building, centerline to centerline of plates, is maintained. If the anchor bolts have been improperly set so the plates cannot be laid square, cut new holes in the channels with a cold chisel or a torch. Plates must be square so later work will fit.

5. Carefully level the plates with small wedges at the bolts. When plates are level, grout underneath them with cement mortar, slip washers over tops of anchor bolts and draw nuts down tight. Suggestions—floor slab can be poured conveniently in four longitudinal strips about ten feet wide to make screeding easy.
BASIC UNIT
FRAME

TYPICAL RIB AND
PURLIN FRAMING DIAGRAM

SPLICING RIB

END RIB

CORNER DETAIL

COMPLETED SPLICE
The frame consists of a series of semi-circular ribs assembled from three sections and spaced at 4' 0" on center. The ribs are secured to the channel plate at the bottom. At the top of the building there are twelve rows of steel purlins which run lengthwise of the building and are screwed to the ribs.

1. Assemble all the ribs on the ground. Each rib consists of three sections, each marked "R1." Assemble the ribs near their location in the building. To do this, place the sections on the ground near their location in the plates and join the sections with two splice plates at each joint, one on each side of the rib, and 3/4" x 1 1/2" bolts with washers. (See photos.)

2. To raise the ribs construct three light, movable platforms out of crating lumber, two sections 13' 0" high and one section 15' 6" high will be satisfactory. The ribs can then be easily raised in the manner shown in the accompanying photographs.

Raise the ribs. Raise an end rib first, then follow with the others in sequence, securing each rib as it is raised to the channel plate with four Holtite screws. (See detail.)

3. As successive ribs are raised, install the purlins between them, noting that the 2nd bay from each end of the building receives two pieces of 6" channel marked P6, punched for brace marked L1. Slip the ends of these pieces over the flanges of the ribs, bend around rib flange and nail to nailing groove.

4. After the first four ribs have been raised, plumb them and brace them with planks crossed diagonally and nailed to the inside of the ribs. With this bracing in place, raise the remaining ribs attaching purlins as the successive ribs are erected.

5. Attach the purlins marked PR-1 to the ribs with two Holtite screws placed diagonally on each rib (see detail), but use four screws where two purlins join. The purlins should be erected as the ribs are raised, using the staging that is then in position for the rib raising operation.
Assemble the bulkhead frame on the ground. Raise the complete frame, utilizing the staging previously built for erecting the ribs.

1. Lay the channel plates, P-2, near their location at either side of the doorway. Then lay the vertical studs with their lower ends at their positions in the channels and their upper ends resting on saw horses.

2. Attach the channel jambs marked P-8 to the jamb studs marked S-4, then secure the channel header marked P-7 to the jambs and insert studs marked S-5 and fasten with Holtite screws.

3. To the frame thus assembled, add the vertical studs S-1, S-2, S-3 and S-4, and the horizontal girts T-24 and T-48, using Holtite screws at each connection. (See detail.)

4. Connect the wind girts marked TIL and T1R with splice plates marked B-6. Secure to bulkhead frame with four Holtite screws at each stud.

5. Bolt the angle brackets marked L-2 and L-3 to wind girt through holes provided for this purpose. Do not connect braces marked L-1 until bulkhead is raised.

6. Attach the rafter clips marked RC1 to the tops of the vertical studs marked S-1, S-2, S-3, S-4 and S-5. Slip these clips over the studs, clinch the tabs of the clips over the flanges of the studs, and bend the projecting part of the clips to the approximate angle it will assume when in place. Do not nail the clips to the studs until later, since they may have to be adjusted in length after the frame is raised. (See detail.)

7. Square the entire bulkhead assembly before raising. Hold it square by means of boards crossed diagonally and nailed directly to the frame, on either side of the door opening. Leave this bracing in place until the framing is raised and secured.

8. Raise the frame evenly and slowly to its vertical position. After the frame is in position, plumb it carefully. Then level it with small wedges at the studs and grout under the channel plate with cement mortar. Bulkhead must be level so doors will operate.


10. Adjust rafter clips until the projecting part of the clip is snug against the underside of the rib then nail each clip to the studs and the rib with 8d nails.

11. Install the braces marked L-1, bolting them to 6" channel marked P-5 through the holes provided for that purpose, and to bracket angle marked L-3 on "C" section header. (See details.)
BASIC UNIT
BULKHEAD COVERING, DOORS AND WINDOWS

DETAILS OF LOUVRE

DETAIL SHOWING BULKHEAD CORRUGATED SHEET LAP

DOOR STAY ROLLER

ONE HALF BULKHEAD ELEVATION SHOWING CORRUGATED SHEETS
(OTHER HALF SIMILAR BUT OPPOSITE HAND)
Install the doors and windows before applying the bulkhead covering. The bulkhead covering then must be applied before the sides of the building are covered.

1. Doors. Bolt the brackets that support the door track to the door header (see detail). Attach a tab marked W101 and a wedge marked W100R or W100L to the bottom of each door leaf. These serve, respectively, to keep the door clear of the screw heads in the channel plate and to hold it tight against the jamb when closed. Hang the doors, then locate the center door stop and secure it to the concrete. With the door in closed position, locate the door stay rollers at each jamb so the doors are held firmly against the jambs. (See detail.)

2. Windows. Assemble the window frames from the knocked-down parts. Fasten these members together with clip angles and metal screws provided. Attach stay bars to the muntins, and hinge sash at top of frame so it will swing to outside of building. After the frames have been assembled, slide them into place between the studs with bottom of sills 6' 0 1/2" above floor and nail to studs through holes provided in frames. Caulk mullion joint and install sill flashing F2.

3. Covering. The following description applies to the half of the bulkhead shown in drawing, the corrugated sheets of which are marked with a number and the suffix "L." The corrugated sheets on the other half are applied in the same manner and order as on this half; the numbers of these sheets, however, carry the suffix "R." Start with the 26' x 56" sheet at lower outside edge of bulkhead. Turn this sheet so that bottom corrugation appears convex from outside of building, and allow it to project 3" below bottom of channel plate P-2. Fasten to rib with fislhie nail and nail to stud marked S-1, with edge projecting 3" beyond center line of stud S-1.

Next apply 26' x 124" sheet, keeping door edge 3 1/4" back from face of jamb channel. Now install sheet 2-L and 26' x 124' sheet, lapping them one corrugation over sheets below, and 6" at vertical joints. Continue in this manner, placing the sheets as shown.

Apply the 26' x 54' sheet under the louvre first, nailing it to vertical studs S-5. Fasten the sill flashing to bottom of louvre frame with Holtite screws, and attach the operating lever bracket. (See detail.) Then set the louvre in place between the studs marked S-5 so that the sill flashing laps over the corrugated sheet below, and bolt it to the studs with stove bolts. When the louvre is secured, apply sheets 9-L and 10-L, nailing them to studs and ribs.

Complete the bulkhead by applying sheet 11, attaching to rib with fislhie nails.

4. Curved Flashing. Nail the curved flashing F-3 to purlins and fasten to corrugated sheets with Holtite screws. Start with the lowest piece (marked F-3) lining it with the bottom of the corrugated sheets, then lap each succeeding piece over the one below.
BASIC UNIT
SIDE AND ROOF COVERING

LAYOUT OF CORRUGATED ROOFING SHEETS

END OF BOTTOM ROW

START OF BOTTOM ROW

SHEETS IN PLACE
The sides and roof of building are covered with 459 corrugated metal sheets, 27½” wide by 92” long, nailed to purlins with 8d double headed nails and fibre and steel washers at 8” o.c. Start with bottom row of sheets at side wall, keeping bottom of sheets 3” below bottom of channel plate. Typical side lap is 3½”. See details for special laps and overhang at ends. Install second, third and fourth rows of sheets, then repeat this process on other side of building before applying top row.
SUGGESTED METHOD OF BUILDING ERECTION STAGING
Organization. The erection of the SSAR Utility Building is simple and fast. One operation follows another—if the operations are done in sequence and properly. It is important to get off to the right start by being careful to get the channel plates square and level and the starting ribs plumb. Likewise the bulkhead framing must be square and level so the windows and corrugated iron will fit and so the doors will operate.

A logical division of personnel is into crews for (1) setting the channels, (2) raising the ribs, (3) framing the bulkhead and (4) applying the covering.

The instructions give each operation complete in its proper order; it is not always necessary, however, to finish an operation throughout the entire building before the next one is begun. Much time can be saved by having the crews working on their respective portions of the work simultaneously, for example, the rib crew can be assembling ribs, and the bulkhead crew can be assembling the bulkhead framing while the channels are being laid. Then, after the first four ribs from the end have been raised, plumbed, and braced, the bulkhead can be pulled up into position while the erection staging is still near the end of the building. The crew applying the corrugated iron covering can begin their work after the first bulkhead is raised and their work should follow closely behind that of the crew raising the remainder of the ribs. Meanwhile, the bulkhead crew should assemble the other bulkhead framing and have it ready for erection when the last rib is in position.

Hints. If any of the steel members have become damaged in shipment, the easiest way to straighten them is by placing the bent part over a crate or sawhorse and having a man bear down on each end. The hardest way to straighten is by using a hammer.

There is a trick to opening the banded crates. When this is known and used, much time and effort can be saved. Take one of the screwdrivers furnished for assembling the frame, insert flat side under steel band about an inch or inch-and-half. Turn the screwdriver about the handle roughly an eighth turn. This brings the sharp edge of the screwdriver in contact with quickly. This motion cuts the band rather than breaking it. When the knack of using a screwdriver is learned, opening the crates is an easy job. Open crates carefully so lumber can be reused in building erection staging.

The importance of using the right nails, screws and attachments cannot be too strongly stressed. Follow the instructions closely in this regard.

Tools. A complete set of necessary tools is furnished for erecting the complete buildings. They should be supplied to the men who will use them. If there are many buildings to be erected at one location, the best scheme is to open all the boxes containing tools and pool them. Then issue by tool check.

Take good care of the tools.
The drawings reproduced on the following pages are the working drawings from which the basic building was manufactured. On these drawings all the parts necessary to assemble the building appear along with their piece markings. These drawings should be studied in conjunction with the erection instructions and illustrations appearing in other parts of the book. When so used they will help the erector understand the entire building and see the reason for each successive operation. We caution the erector not to cut, or repunch any part without first making sure that cutting or punching is necessary as each member was fabricated to fit into its respective position in the building without additional cutting, etc.
1/16" actual clearance between head channel & top channel of door.

Scale 1/8 full size

4 holite screws at each stud

corr. siding

3 1/4" - 16 ga. channel plate

grade

sill beyond opening

scale 1/8 full size
DETAIL "K"

INTERIOR ELEVATION

SCALE 1/8"—1'-0"

PAINT NOTE

PAINT ALL SURFACES OF DOOR LEAVES 1 (ONE) STANDARD SHOP COAT OF METALLIC PRIMING PAINT BEFORE SHIPMENT. SEE R/W FOR SPECIFICATION OF FINISH COAT OF PAINT.

NOTE

HARDWARE TO BE RICHARD-WILCOX OR EQUAL
PADLOCKS ARE NOT FURNISHED UNDER THIS CONTRACT.
**BILL OF MATERIAL FOR 1 BUILDING**

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<th>Item</th>
<th>No. of Pieces</th>
<th>Crate Contents</th>
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<td>6</td>
<td>#HD816 American Fork &amp; Hoe Claw Hammer</td>
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<tr>
<td>6</td>
<td>#1510 Mayhew Steel 10&quot; Screw Drivers</td>
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<td>¾&quot; x 8½&quot; Endres Center Punches</td>
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**BULKHEAD SHEETS (Continued)**


**BULKHEAD FRAMING**

- Angles 3½" x 3¼" x 14 Ga. Brace 8½/4
- Channels 4½" x 3½" x 1" 14 Ga. Girt 15½/4
- Channels 4½" x 3½" x 1" 14 Ga. Girt 15½/4
- 3½" x 16 Ga. S.S. Studs 11½
- 3½" x 16 Ga. S.S. Studs 15½
- 3½" x 16 Ga. S.S. Studs 18½
- 3½" x 16 Ga. S.S. Studs 19½
- Half Stud Trimmers 11½
- Half Stud Trimmers 3½
- 3½" x 1½" x 16 Ga. Channel Pl. 14° Long
- 6½" x 13½" x 13 Ga. Channel 4½
- 3½" x 16 Ga. Channel Pl. 11½
- 3½" x 16 Ga. Channel Pl. 11½

**NOTE:** Tool Kits—5 Tool Kits Required for 8 Buildings.
<table>
<thead>
<tr>
<th>PR1</th>
<th>60</th>
<th>2½&quot; x 18 Ga. Purlins 19'11½''</th>
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<tbody>
<tr>
<td>R1</td>
<td>20</td>
<td>6' x 16 Ga. 21'5½'' Ribs</td>
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<td>2 Crates Reqd.</td>
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<td>R1</td>
<td>19</td>
<td>6' x 16 Ga. 21'5½'' Ribs</td>
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<td>2 Crates Reqd.</td>
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<td>Curved to 20'6'' Rad. Inside</td>
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<td>5 Crates Reqd.</td>
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**BULKHEAD SHEETS**

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<td>2R</td>
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<td>8R</td>
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<tr>
<td>T3</td>
<td>8</td>
<td>Window Sash</td>
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<td>B3</td>
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<td>Window Heads</td>
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<tr>
<td>JR3</td>
<td>8</td>
<td>Window Sills</td>
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<tr>
<td>JL3</td>
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<td>Window Jambs</td>
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<td>32</td>
<td>Splice Plates</td>
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<tr>
<td>SB2</td>
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<td>Stay Bars</td>
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<td>#8—32 x ⅜'' R.H.M.S.</td>
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<td>F2</td>
<td>10</td>
<td>6⅜'' x 28 Ga. Galv. Flashing 54''</td>
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<td>28</td>
<td>3½'' x 5⅜'' x 28 Ga. Galv. Flashing (Curved) 64''</td>
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<td>5 Gal. Can Paint</td>
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<td>4'' Wide Paint Brush</td>
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<td>44</td>
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<td>2½'' Corr. Asphalt Strip 2'' Wide 2'4'' Lg.</td>
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<td>Metal Louvers Complete with Frame</td>
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<td>24 Ga. Sill Flashing</td>
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<tr>
<td>28</td>
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<td>⅜'' x 1'' Stove Bolts with Nut &amp; Washer</td>
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<tr>
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<td>⅜'' x ⅜'' Stove Bolts with Nut &amp; Washer</td>
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<td>8</td>
<td></td>
<td>#14 x ⅜'' Sheet Metal Screws, Type &quot;A&quot;</td>
</tr>
<tr>
<td>104</td>
<td></td>
<td>Splice Plates 5⅜'' x ⅜'' x 12 Ga. x 2'1''</td>
</tr>
</tbody>
</table>
1. Foundations. Lay out building, set anchor bolts, and pour concrete. Place channel plates. (See pages 20 and 21.)

2. Columns, Girders, and Struts. Assemble and erect interior columns and beams, bulkhead studs S4 and S6 with girts P5 and T48, install rod and knee bracing. Plumb, brace and guy free standing columns. (See pages 22, 23, 24 and 25.)

3. Ribs and Purlins. Assemble and raise ribs, install purlins. (See pages 26 and 27.)

4. Bulkheads. Assemble remainder of bulkhead framing from steel studs and girts, hang doors, install windows, and apply corrugated metal sheets, louvres and flashing. (See pages 28 and 29.)

5. Exterior Covering. Install gutters. Nail corrugated roofing sheets to purlins. (See pages 30 and 31.)
ADAPTATION FOUNDATION

PLAN IS SYMMETRICAL ABOUT $\phi$

CONCRETE FLOOR SLAB

ONE HALF FOUNDATION AND ANCHOR BOLT PLAN
OTHER HALF SIMILAR EXCEPT OPPOSITE HAND
A. Level the site and lay out building accurately to dimensions shown on foundation plan.

Excavate for wall and column footings, set anchor bolts, noting that all anchor bolts project 1 1/2" above finished floor line, and pour concrete. (The engineer in charge of erection must design the footings to suit local soil conditions.) If anchor bolts have been improperly set, cut new holes in channel plates with torch or cold chisel.

B. Level the plates with small wedges at the bolts. When plates are true and level, grout in under them with lean cement mortar and tighten bolts. See basic unit for details not shown on these pages.
ADAPTATION
COLUMNS, GIRDERS AND STRUTS

COLUMNS AND GIRDERS SHOWING ORDER OF ERECTION

DETAIL AT COLUMN BASE

DIAGRAM SHOWING LOCATION OF STITCH BOLTS
ADAPTATION
COLUMNS, GIRDERs AND STRUTS

DETAIL 1
A. Assemble columns, girders and struts (from "C" sections) on the ground, close to their position in the building. Bolt the "C" sections together with 3/4" x 1 1/2" stitch bolts, staggered, leaving one open hole opposite each bolt.

B. Build wooden staging similar to that shown on drawings. Then assemble, on the ground, the bent marked "A" on drawing, complete with girders, columns, column caps and bases, knee bracing, batter plates, clip angles, and bent plates for rib connections. Raise the bent into position, brace and guy, and secure section bolts.

C. Next, assemble the bent marked "B" on drawings, erect in the same way, install struts 3-A2, and rod bearing N1. This frame will now stand alone, and after installing the four rib sections R1 with their pulleys, wood staging can be moved to even bents F1 and F2 in the manner just outlined.
ADAPTATION
COLUMNS, GIRDERS AND STRUTS

DETAIL 3

DETAIL 4

DETAIL OF TIE RODS

WASHERS FOR TIE RODS

DETAIL SHOWING ANGLE CONNECTION

COLUMN BASE
(Continued) D. Now assemble bulkhead frames, each consisting of two studs S6, two S4, (connected with batten plates B1) with rafter clips RC1, channel girt P5, and half stud girts T48. Erect these frames complete, fasten to channel plate with Holtite screws, brace and guy.

E. Erect the remainder of the girders in the braced bay, and install balance of rod sway bracing N1. Check for plumb, and true up entire braced bay before proceeding.

F. Assemble the free-standing columns in pairs, and erect by bents, complete with girder and knee bracing in the order used at braced bay. Make sure that bent plates B3, B4 and B5 are attached to girder before bents are raised.

G. As each bent is erected, install rib sections R1 and purlins PR1 between braced bay and free-standing column row. This will brace column row until outer row of ribs is in place.
ADAPTATION
RIBS AND PURLINS

ONE HALF RIB AND PURLIN FRAMING DIAGRAM
(OTHER HALF SIMILAR)

SPlicing Ribs
KNEE BRACES
A. Working on the ground, assemble all the ribs that span between braced bay and channel plates P1. Using wood staging, erect these ribs. Raise an end rib first, then follow with the others in sequence, securing each rib as it is raised to channel plate P1 at bottom, and bent plate B3, B4 or B5, as the case may be, at the girder. As successive groups of ribs are raised, install the purlins between them using two Holtite screws placed diagonally in each rib, and four screws where purlins join. Install channel sections P6 in second purlin haps from each end of building.

B. Now move wood staging to other side of building and assemble and erect the remainder of the ribs, purlins, and channel sections P6 in the manner just outlined. For details see sheets on these pages of Basic Unit.
ADAPTATION
BULKHEADS

RIB SPLICE PLATE

IT~

ADAPTATION
BULKHEADS

RCI
RCI

ONE HALF ELEVATION OF BULKHEAD FRAMING
(OTHER HALF SIMILAR BUT OPPOSITE HAND)

WIND GIRTS AND BATTEN PLATES AT STUDS S6

WIND GIRTS AND BATTEN PLATES AT STUDS S6

WIND GIRT SPLICE

BULKHEAD FRAMING

STUD AND GIRT
4

A. To the bulkhead frame already erected, add the studs S1, S2, S3, S4, S5 and S7, complete with rafter clips RC1. Add girts T24, remainder of girts T48, and wind girt. Note details of wind girt splice and connection to end rib. Connect wind brace L1 to girt and channel section P6. Install channel door frames P7 and P8, hang doors and install windows. For door and window details not shown on these sheets, see Basic Unit.

B. The following description applies to the half of the bulkhead shown in drawing, the corrugated sheets of which are marked with a number and the suffix “L.” The corrugated sheets on the other half are applied in the same manner and order as on this half; the numbers of these sheets, however, carry the suffix “R.” Start with the 26” x 56” sheet at lower outside edge of bulkhead. Turn this sheet so that bottom corrugation appears convex from outside of building, and allow it to project 3” below bottom of channel plate P4. Hammer or drive filishie nail and nail to stud marked S4, with edge projecting 3” beyond center line of stud P4.

C. Next apply 26” x 124” sheet, keeping clear clips 3/4” back from face of channel channel. Note: install sheet 2-L and 26” x 124” sheet, lapping these one corrugation over sheets below, and 6” at vertical joints. Continue in this manner, placing the sheets as shown until all sheets are in place. For work around leaves, and sheet details not shown here, see Basic Unit, pages 6 and 7.

D. Nail the curved flashing F-3 to vertical and horizontal to corrugated sheets with Huston screws. Start with the lowest piece (marked F-3) laying it with the bottom of the corrugated sheets, then lay each succeeding piece over the one below. (See detail showing necessary field cutting of flashing F-3 at gutter.)
ADAPTATION
EXTERIOR COVERING

ONE HALF LAYOUT OF CORRUGATED ROOFING SHEETS
(OTHER HALF SIMILAR)

BOTTOM VIEW OF GUTTER AT BULKHEAD

TOP VIEW OF GUTTER AT BULKHEAD

INSTALLING GUTTER

PLAN OF GUTTER

20 GA. GUTTER
MK-F6
CORRUGATED ROOF SHEETS
FIELD CUT FLASHING F3 TO FIT AROUND GUTTER

BULKHEAD

FIELD CUT FLASHING F3 TO FIT AROUND GUTTER
A. The roof area is drained by means of sheet metal gutters at each row of columns. These gutters must be installed before roofing sheets are applied. Place gutter sections (F6 to F12 inclusive) according to plan, starting at outside walls and working toward center of building. Nail gutters to purlins at either side of girders. See detail of gutter overhang at end walls.

B. The sides and roof of building are covered with 918 corrugated metal sheets, 27 1/2" wide by 92" long, nailed to purlins with double headed nails and fibre washers at 8" o.c. Start with bottom row of sheets at side walls, keeping bottom of sheets 3" below bottom of channel plate. Typical side lap is 13 1/2". See details for special laps and overhang at ends. Install second, third and fourth rows of sheets, then install sheets at gutters before applying top row. Continue in this manner until building is covered, noting that top row laps both side rows. See Basic Unit for details not shown on these pages.
ADAPTATION
ADDITIONAL MATERIAL FOR CONVERSION

ONE HALF ELEVATION SHOWING ADDITIONAL FRAMING
(OTHER HALF SIMILAR EXCEPT OPPOSITE HAND)

ONE HALF ELEVATION SHOWING ADDITIONAL CORRUGATED SHEETS
(OTHER HALF SIMILAR EXCEPT OPPOSITE HAND)
To convert 3 — 40' x 100' utility buildings into one 100' x 102' utility building adaptation as indicated on diagrammatical section, there are certain framing members and corrugated sheets to be added and discarded.

(A) The additional framing members required are shown cross hatched and marked on the framing elevation.

The following members are to be discarded for each two 40' x 100' bulkheads: 2—studs MK.S1; 2—studs MK.S2; 2—studs MK.S3; 2—half studs MK.T24; 1—wind girt MK.T1R and 1—wind girt MK.T1L.

(B) The additional corrugated sheets required are shown cross hatched and sizes given on the bulkhead elevation.

The following corrugated sheets are to be discarded for each two 40' x 100' bulkheads—one each of the following sheets. MK.2R, 2L, 3R, 3L, 4R, 4L, 5R, 5L, 6R, 6L, 8R, 8L, 9R, 9L, and four sheets 26" x 26".

Note that all flashings and windows are used in this adaptation, also some of the sheets will have considerable lap.

(C) For the main framing, all members will be used except one row of rib spice plates for each 40' x 100' building, which will be discarded. The additional framing members required are shown on other drawings.

(D) For the main shell, all the corrugated sheets will be used. The only new material required will be three rows of gutters for each 100' x 102' building.
WORKING DRAWING

The drawings reproduced on the following pages are the working drawings from which the adaptation was manufactured. On these drawings all the parts necessary to assemble the building appear along with their piece markings. These drawings should be studied in conjunction with the erection instructions and illustrations appearing in other parts of the book. When so used they will help the erector understand the entire building and see the reason for each successive operation. We caution the erector not to cut, or repunch any part without first making sure that cutting or punching is necessary as each member was fabricated to fit into its respective position in the building without additional cutting, etc.
FOUNDATION & ANCHOR BOLT PLAN

Refer to sheets CE & C-4 for framing, corrugated sheets and elevation.

DIAGRAMMATIC SECTION SHOWING CONVERTING TWO 40' x 100' SSAR CONVERSION TYPE UTILITY BLOGS INTO ONE 120' x 100' 5,5A BUILDING.

ALL PLAN OF TYPICAL CORNER

SECTION

DETAIL OF TYPICAL COLUMN BASE

FOUNDATION & ANCHOR BOLT PLAN
PLAN OF TRACK BRACKETS

ELEVATION OF BULKHEAD FRAMING  UNIT 'A'

PLAN OF BULKHEAD FRAMING  UNIT 'A'

SECTION

DEVELOPED DETAIL

LONGITUDINAL SECTION

DETAI1

STRAN STEEL DIVISION
GREAT LAKES STEEL CORPORATION
SUITS, MICHIGAN

9880 UTILITY BUILDING
ADAPTATION
DRAWING PLAN & DETAILS UNIT 'A'

REVISIONS
MODIFIED DRAWING
DATE
10-27-50

GREAT LAKES STEEL CORPORATION
DEPARTMENT

12/750

C-2
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THE STRAN-STEEL NAILING GROOVE
The distinctive feature of Stran-Steel is
the nailing groove. This groove is in all
Stran-Steel joists, arch ribs and studs,
which are made by welding two pieces of steel
together. The small space remaining between
these pieces is just large enough to admit an
ordinary nail. When a nail is driven into the
groove, it is deformed and clinched in a grip
of steel with a holding power much greater
than that of wood. In this manner collateral
materials are secured to the steel framework
with the ordinary hammer-and-nails method.
Construction in which Stran-Steel framing is
used proceeds in the same way as with ordinary
framing. Dimensions of Stran-Steel members
conform exactly to the requirements of the
collateral materials used with it.

PHANTOM VIEW SHOWING NAIL IN NAILING GROOVE