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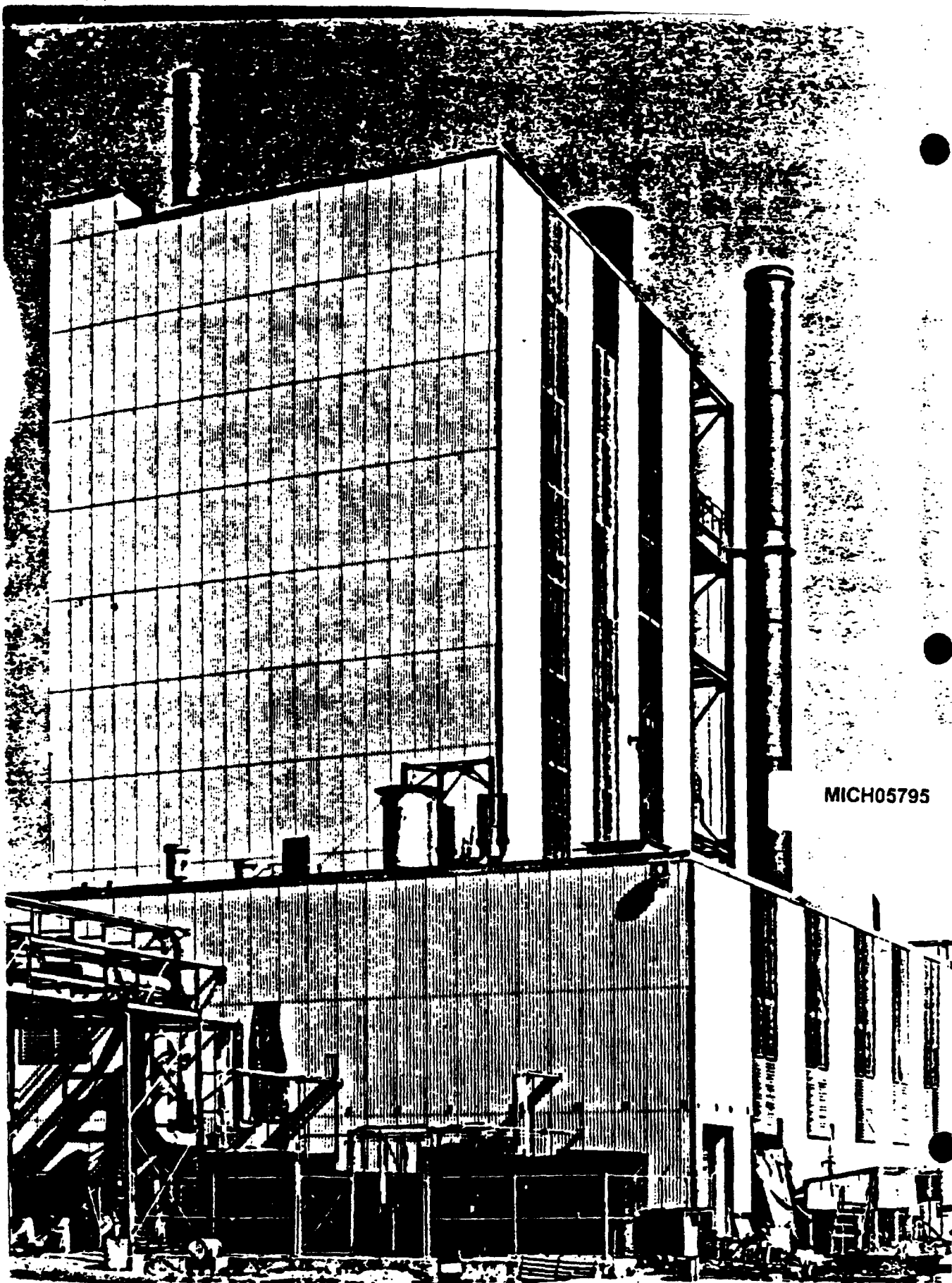
PLAINTIFF'S
EXHIBIT
GF-1494

RUEDY CORRUGATED ASBESTOS CEMENT SHEETS

for fireproof, permanent, economical and
attractive roofing and siding construction



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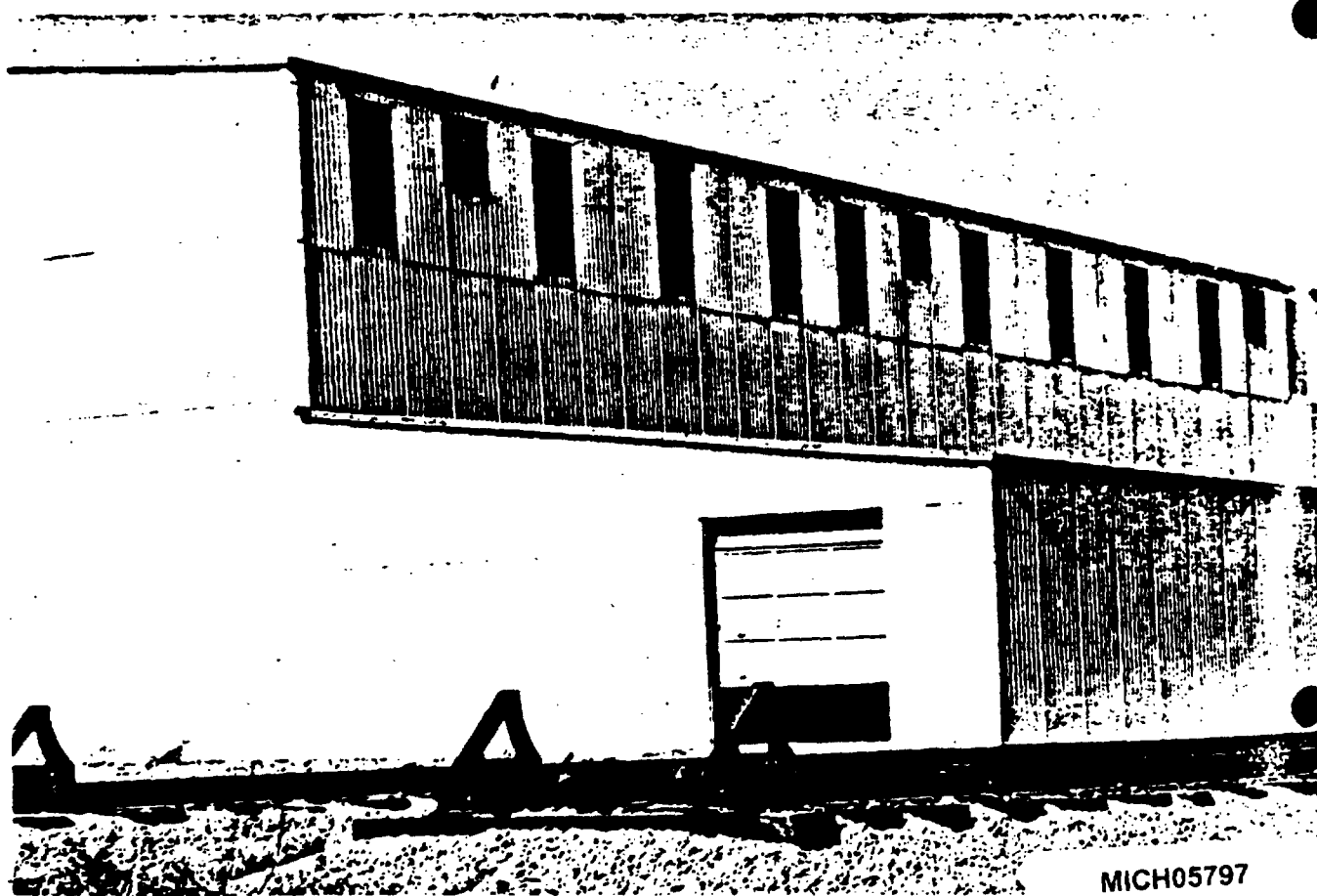
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RUBEROID® CORRUGATED ASBESTOS CEMENT SHEETS

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INTRODUCTION

RUBEROID CORRUGATED ASBESTOS SHEETS



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Ruberoid Corrugated Asbestos Cement Sheets provide economical and long lasting roofs and sidings for industrial, commercial and institutional buildings. Dependable performance is assured because of remarkable weathering qualities and resistance to corrosion. Ruberoid Corrugated Asbestos Cement Sheets are scientifically cured under high steam pressure (autoclaved) to produce a material of exceptional strength, dimensional stability and lighter, more uniform color.

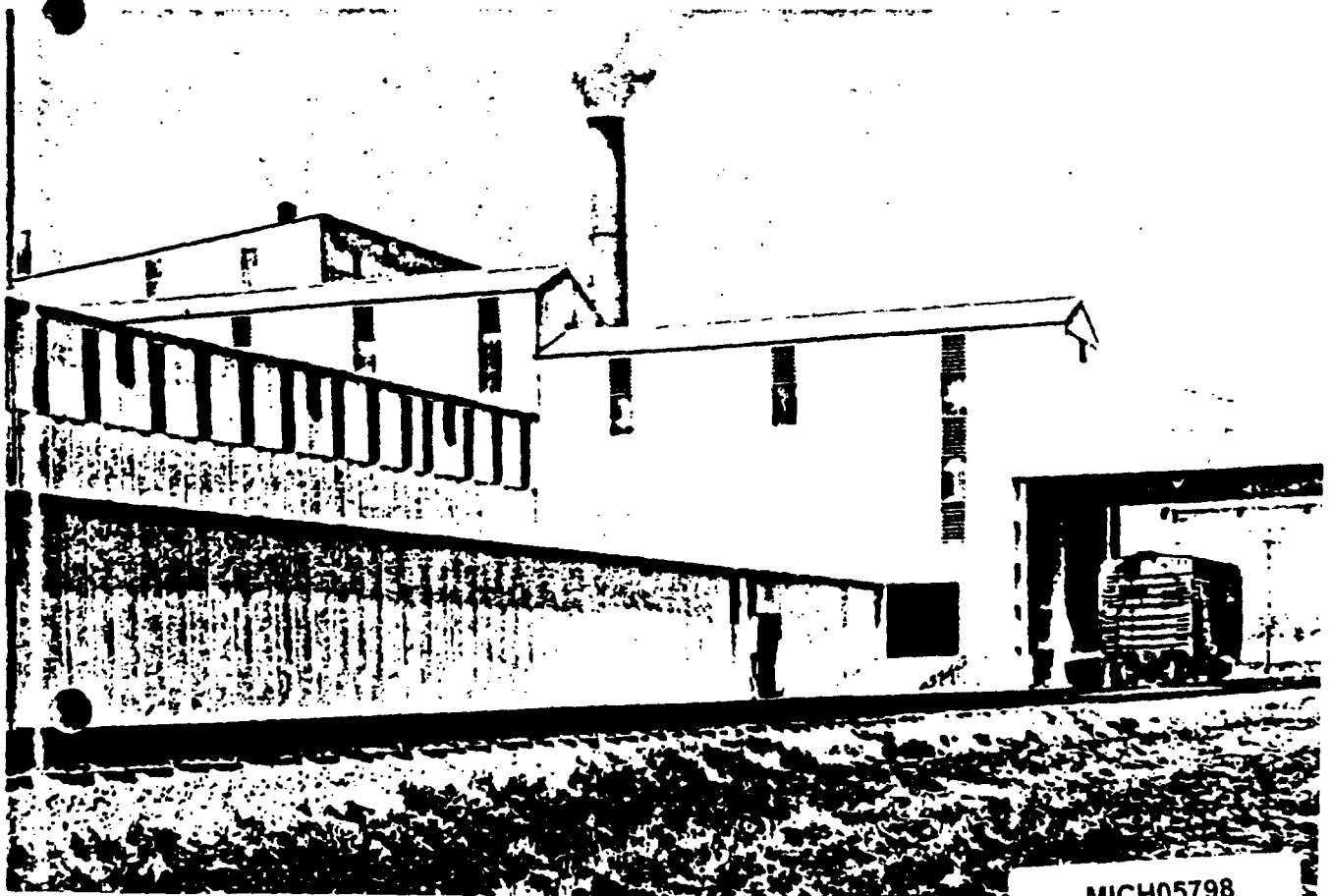
Ruberoid Corrugated Asbestos is made of a combination of Portland cement, silica, and selected asbestos fibre which serves the dual purpose of aggregate and reinforcing. By its special manufacturing process Ruberoid controls the asbestos fibres so that they reinforce the corrugated sheets in much the same manner that steel reinforcing bars strengthen ordinary concrete. After the sheet is developed, it is subjected to high hydraulic pressures. The result is a dense, waterproof, rock-like, corrugated sheet of great strength and durability, incombustible and practically indestructible.

Ruberoid Corrugated Asbestos permits the use of light weight supporting members of steel or timber. The overall weight of the structure is reduced, thus lighter foundations and footings are required.

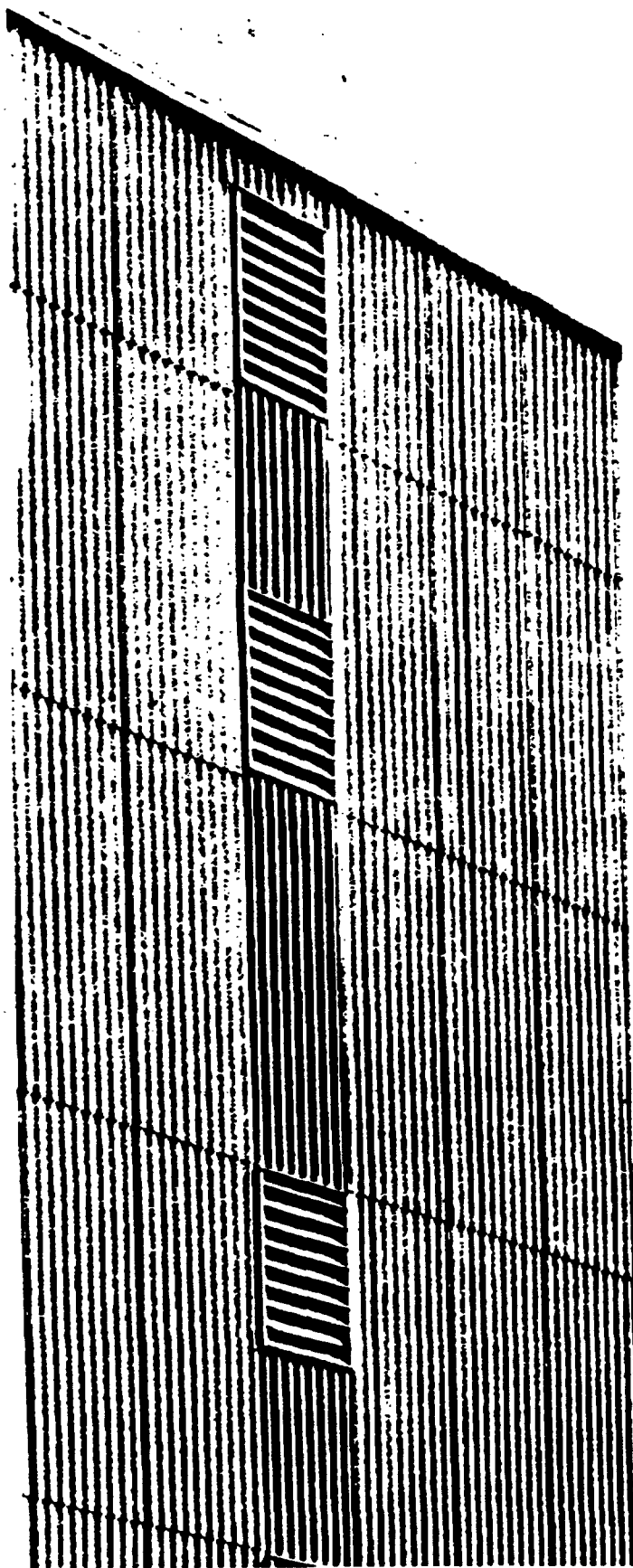
The application and erection of Ruberoid Corrugated Asbestos roofing and siding is easy and rapid.

The sheets are shipped from the factory cut to the proper length for the supporting structure — thus field cutting is limited to trimming sheets at rakes, gable ends and around projections. They are attached by efficient specialized fasteners. The material is easily handled, cut, and drilled. No special tools are required to erect Ruberoid Corrugated Asbestos Sheets.

The use of Ruberoid Corrugated Asbestos Sheets is not limited to exterior use on industrial construction. Architects are quick to see its artistic value for interior use and decoration. Properly designed interiors and store fronts of Ruberoid Corrugated Asbestos Sheets are unusual, striking and modern in appearance.



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• FIREPROOF

Because they are made of three materials which cannot burn—Portland cement, silica, and asbestos fibres, Ruberoid Corrugated Asbestos Sheets are fireproof.

Industry demands the use of fire-safe structures, composed of material that cannot ignite, burn, contribute to a fire or produce toxic smoke and fumes. The Underwriters' Laboratories in its research Bulletin No. 32, designates asbestos-cement as, 0 combustibility, 0 flame spread, and 0 smoke production. Nothing can be more fire-safe than that, and no material can have a lower rating.

Oil and chemical companies, where fire is a distinct hazard, use large quantities of Ruberoid Corrugated Asbestos Sheets.

• CORROSION RESISTANT

Modern industrial roofing and siding must be corrosion resistant to a high degree. Resistance to industrial fumes, alkalis, smoke, and chemical fumes of many types is of great importance. Ruberoid Corrugated Asbestos roofing and siding has justly earned its reputation for resistance to corrosion, durability and long life in industrial atmospheres.

Ruberoid Corrugated Asbestos cannot rust or corrode and resists electrolytic corrosion. It never needs paint to preserve it from the weather. Ruberoid Corrugated Asbestos can be erected in direct contact with all kinds of building materials, masonry, plaster, steel, wood, copper, brass, zinc, lead, and many alloys, and there will be no corrosion electrolytic action or deterioration. The elimination of maintenance painting or coating makes a big saving, and pays important dividends every year.

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FEATURES RUBEROID CORRUGATED ASBESTOS SHEETS

Ruberoid Corrugated Asbestos Sheets have the same resistance to chemical reaction as has normal concrete of equal section. Our Research Laboratories will be glad to give an opinion based on the information you give them about special cases of chemical exposure.

• WEATHERPROOF

Any roofing or siding material is expected to keep out weather but its true value is dependent upon how long it will give this protection without deteriorating. Ruberoid Corrugated Asbestos Sheets will withstand heavy rains, rapid changes in temperature, humid atmosphere and salt air—indefinitely.

• INSULATING QUALITY

While Ruberoid Corrugated Asbestos is not an insulating material, its light gray color reflects heat rays. The interior of a building on which Ruberoid Corrugated Asbestos Sheets are used is likely to be more comfortable, both winter and summer. They are readily adaptable for application in conjunction with many types of insulating material.

• SANITARY

Ruberoid Corrugated Asbestos Sheets are sanitary. They cannot harbor vermin because these pests cannot subsist on them. They are rodent and termite proof.

• EASILY APPLIED

Ruberoid Corrugated Asbestos Sheets are easily, quickly and economically applied. The sheets are 42 in. wide up to 12 ft. 0 in. long.

• ECONOMICAL

From every standpoint Ruberoid Corrugated Asbestos Sheets are economical.

The first cost is nominal because they can be applied directly to framing without sheathing.

Their economy is still more striking when measured by the length of maintenance-free service they will give.

• FEDERAL & A.S.T.M. SPECIFICATIONS

Ruberoid Corrugated Asbestos-Cement Sheets are maintained at the high quality necessary to meet the latest Federal and ASTM Specifications.

*Federal Specification SS-B-755a-Type A, Standard
A.S.T.M. C221-61-Type A, Standard*

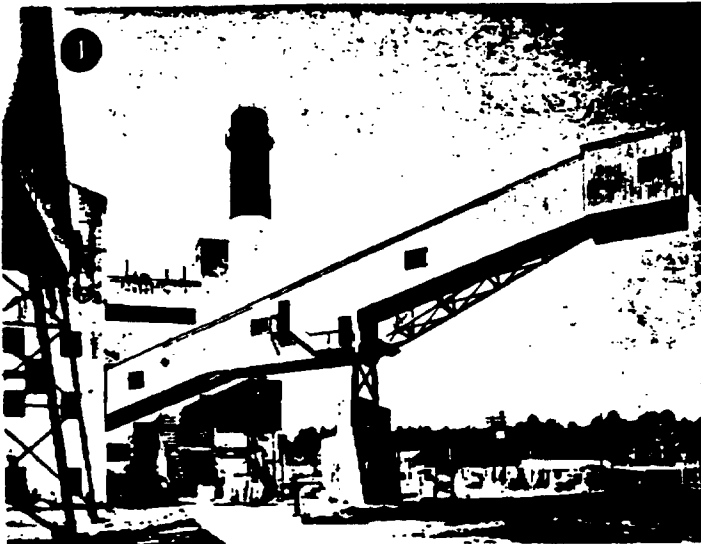
• ENGINEERING AND SERVICE

This catalog has been carefully prepared to provide architects and engineers with the information necessary for them to conveniently and easily specify and detail the lengths and types of Ruberoid Corrugated Asbestos roofing and siding sheets, accessories and fasteners to cover or complete any job.

Where it is desired to obtain cost estimates covering the furnishing and erecting of Ruberoid Corrugated Asbestos roofing and siding materials, we will be pleased to furnish you with the names of experienced Ruberoid Approved Erecting Contractors suitably located to serve you.

Our Engineering Department will be glad to assist you in solving any unusual problems or conditions involving the use of Ruberoid Corrugated Asbestos Sheets.

TYPICAL RUBEROID CORRUGATED METAL

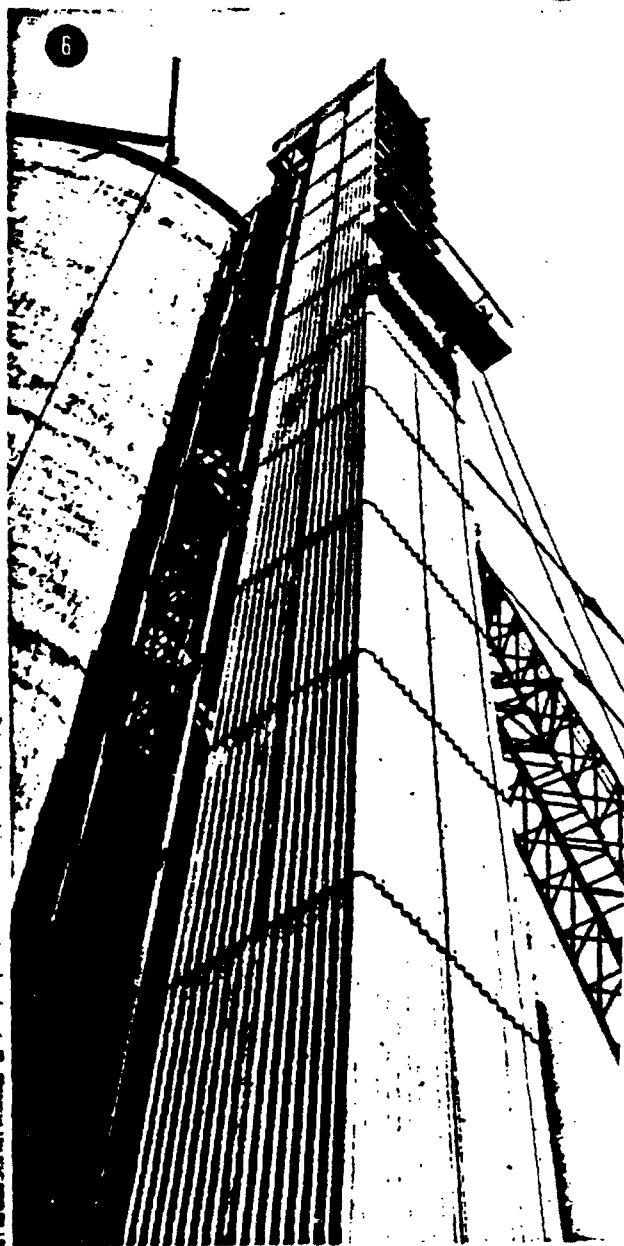
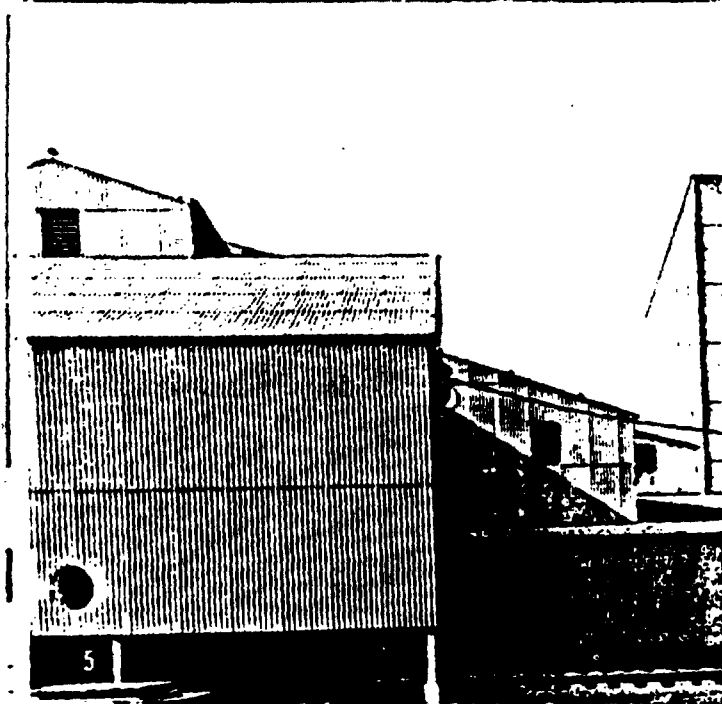


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INSTALLATIONS ASBESTOS SHEETS

Large industrials, oil and utility companies, railroads, concerns in the chemical and metallurgical fields and innumerable others have used Ruberoid Corrugated Asbestos Sheets because they recognized the desirability and economy of using a structural material which is permanent, fireproof and non-corrodible.

Installations on these pages: 1. Gulf Power Company, Pensacola, Florida; 2 & 4. Nipak, Inc. fertilizer complex, Kewanee, Texas; 3. American Cyanamid Company, Warren, N. J.; 4. Miami International Airport, Miami, Florida; 5. W. E. Grace Co., Henry, Illinois.



RUBEROID CORRUGATED



Standard Sheet Type "X"

STANDARD SHEETS Type X

For Standard Staggered Joint Application

(For details refer to page 12.)

LENGTH: Up to 12 ft.—0 in.

WIDTH: 42 in. comprising 10 corrugations.

WEIGHT: 4 lbs. per sq. ft. (approx.)

CORRUGATION PITCH: 4.2 in.

OVERALL DEPTH: Face of sheet to back 1.5 in. approx.

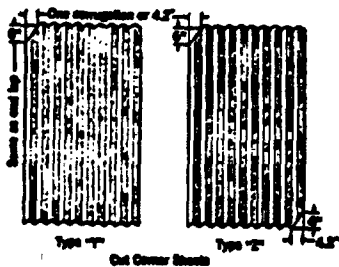
SHEET THICKNESS: Crest and vale corrugation is $\frac{3}{8}$ in. approx.

Side of corrugation $\frac{1}{4}$ in. approx.

Recommended Maximum Span—roofs: 4 ft.—6 in.

Recommended Maximum Span—sidewalls: 5'-9"

If snow and ice accumulation is possible, it is recommended that purlin spans be 4'-3" or less and that roof pitch be 4" in 12" minimum.



Type "Y"

Type "Z"

Cut Corner Sheets

CUT CORNER SHEET Types Y & Z and V & W

For Straight Joint Application

(For details refer to page 14.)

Same as Standard X type sheets, except having one or more corners cut 6 in. down and 4.2 in. in.

To be applied from left to right.

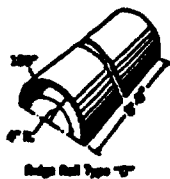
TYPE Y = cut at upper L.H. corner or lower R.H. corner.

TYPE Z = cut at both upper L.H. and lower R.H. corners.

To be applied from right to left.

TYPE V = cut at upper R.H. corner or lower L.H. corner.

TYPE W = cut at both upper R.H. corner and lower L.H. corner.



Ridge Roll Type "C"



Ridge Batten Type "C"

RIDGE ROLL and BATTENS Type C

Ridge Finishing Piece

(For details refer to page 18.)

Requires ridge roll, inside batten and filler strip type R.

Ridge Roll Type C

LENGTH: 8 ft.—0 in.; 10 ft.—0 in.

RADIUS, O.D.: 4 in. complete $\frac{1}{2}$ circle—180°.

WEIGHT: 2.5 lbs. per lin. ft. (approx.).

COVERAGE: 8 lin. ft. or 10 lin. ft.

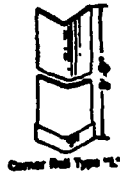
Ridge Batten Type C

LENGTH: 6 in.

RADIUS: Nests within the ridge roll, 150° curve.

WEIGHT: Approx. 1.5 lbs. each.

SPECIFICATION ASBESTOS SHEETS AND ACCESSORIES



Corner Roll Type "L"

CORNER ROLL Type L

Corner Finishing Piece, All with Bell Ends
(For details refer to page 19.)

LENGTH: 8 ft.—0 in. covers 7 ft.—8 in. net.

WINGS: 6 3/4 in. wide outside face.

WEIGHT: 3 lbs. per lin. ft. (approx.).

CURVED SHEETS

For information concerning Ruberoid Curved Corrugated, please consult the Ruberoid Industrial Products Division, 733 Third Ave., New York, N. Y., 10017.



Louvre blades

CORRUGATED LOUVRE BLADES

(For details refer to page 20.)

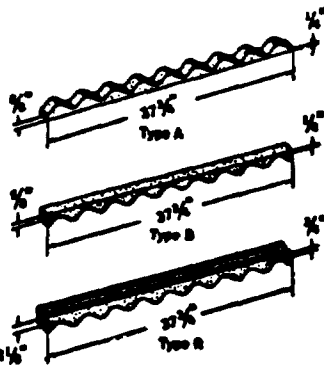
LENGTH: Up to 12 ft.—0 in.

WIDTH: 2.5 corrugations; 3.5 corrugations.

THICKNESS: Same as standard sheet.

CORRUGATIONS: Same as standard sheet.

WEIGHT: 3.3 lbs./lin. ft.; 4.6 lbs./lin. ft. (approx.).



FILLER STRIPS

Accessory preformed filler strips are used for effecting closure between corrugated sheets and plane surfaces.

TYPE A—For under side of corrugated—under the sheet at opening heads, etc.

TYPE B—For out side of corrugated—on top of sheet under straight metal flashing, etc.

TYPE R—Between lower edge of ridge roll and top of roof sheets.

DIMENSIONS: All are 37 1/4 in. long. Properly tapered and fluted to fit where intended.

FASTENERS

(For details refer to page 15, 16, 17.)



PUTTY and CEMENTS

Ruberoid Black Asbestos Roof Putty, for sealing end laps, side laps and general invisible use. Available in cans containing 10 lbs., 50 lbs., or 100 lb. drums.

Ruberoid Gray Asbestos Putty, remains plastic for an unusually long time. For sealing fastener heads, caulking, grouting exposed edges and all visible caulking. Available in cans containing 14 lbs. or 65 lbs.

Dimensions and Weights

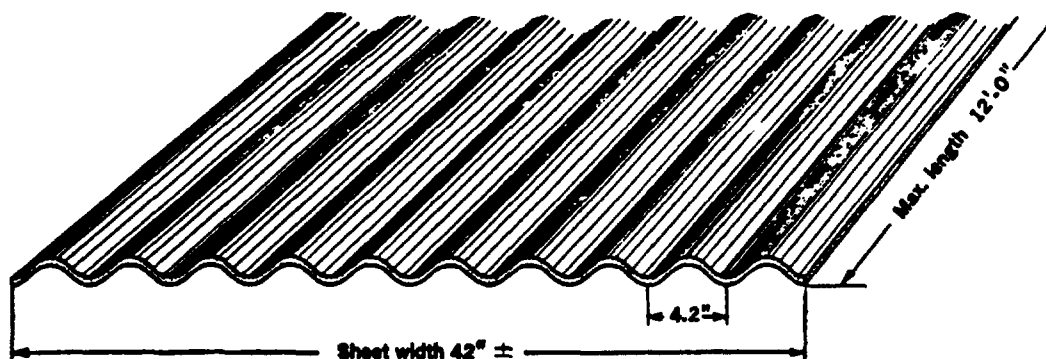


Fig. 1—Ruberoid Corrugated Asbestos Sheet

Types of Sheets. See page 8 and Figs. 3 and 6 on pages 12 and 14. There are only two basic types of Ruberoid Corrugated Asbestos Sheets. Those for staggered joint application are all of the "X" type and have square corners.

Type X Sheets: Are used for the universally accepted and strongly recommended "standard method" of staggered joint application. These sheets have square corners.

Sheets for the seldom used straight joint application are of the Y and Z, and the V and W types and have one or more corners mitered 6 in. down and 4.2 in. in (corresponding to one corrugation) to make the necessary mitered joinings. End laps must be exactly six inches deep.

Type Y Sheets: Application from left to right. One corner cut, i.e., the upper L.H. or lower R.H. corner.

Type Z Sheets: Application from left to right. Two corners cut—both the upper L.H. and the lower R.H. corners.

Type V Sheets: Application from right to left. One corner cut, i.e., the upper R.H. or lower L.H. corner.

Type W Sheets: Application from right to left. Two corners cut—both the upper R.H. and the lower L.H. corners.

Sheet Size: See Fig. 1. All sheets are the same width, 42 in., comprising 10 corrugations with a pitch of 4.2 in. Standard length sheets are from 0 ft.—6 in. long to 12 ft.—0 in. long, but sheets of any length up to 12 ft.—0 in. long can be furnished.

Thickness: See Fig. 2. The overall thickness of the sheet from the top of the crests on one side, to the top of the crests on the other is $1\frac{1}{2}$ in. The section of the sheet is $\frac{3}{8}$ in. thick at the crest of the corrugations and $\frac{1}{8}$ in. thick at the side of the corrugations.

Weight: Uncrated sheets weigh approximately 4.0 lbs. per square foot. When crating is necessary, it is charged as an extra and shipping weights are increased.

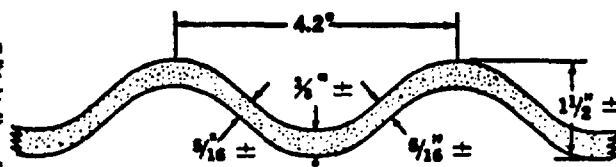
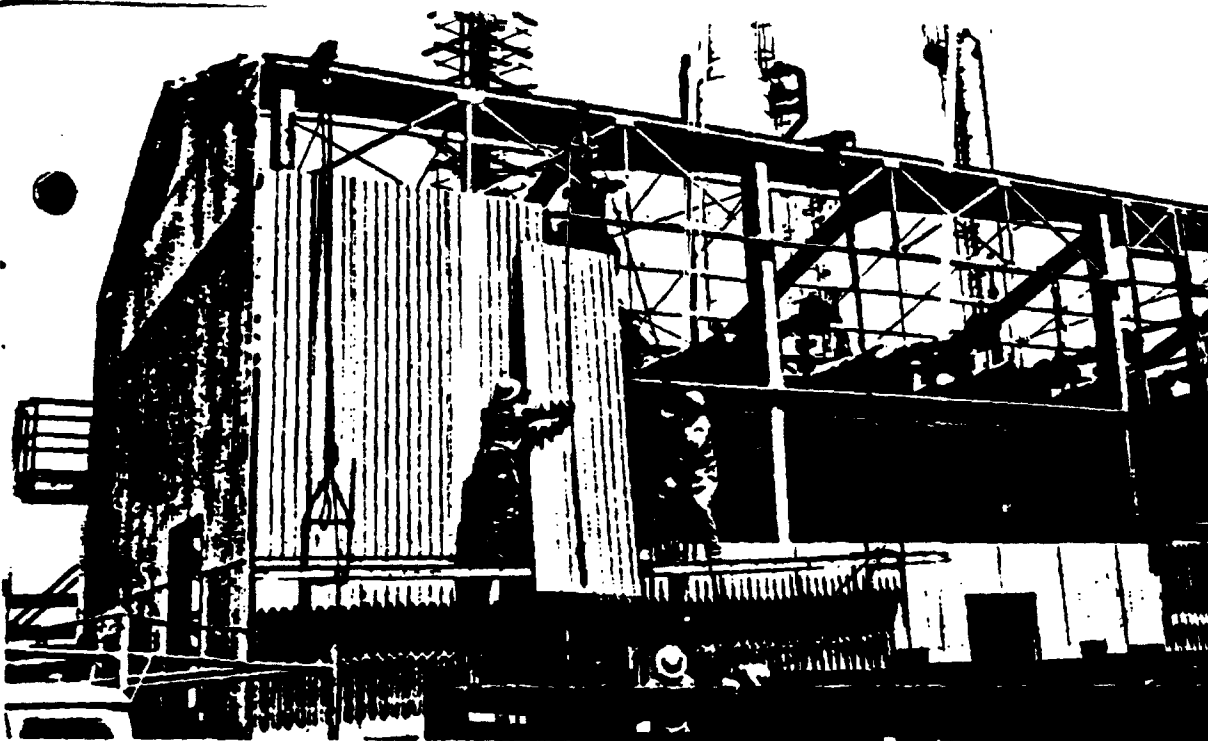


Fig. 2—Ruberoid Corrugations

STANDARD SHEETS 42 IN. WIDE, Type X

Length	Area in sq. ft.	Weight—approx. uncrated—lbs.
0 ft.—6 in.	1.75	7
1 ft.—0 in.	3.50	14
1 ft.—6 in.	5.25	21
2 ft.—0 in.	7.00	27
2 ft.—6 in.	8.75	34
3 ft.—0 in.	10.50	41
3 ft.—6 in.	12.25	48
4 ft.—0 in.	14.00	55
4 ft.—6 in.	15.75	62
5 ft.—0 in.	17.50	69
5 ft.—6 in.	19.25	75
6 ft.—0 in.	21.00	82
6 ft.—6 in.	22.75	89
7 ft.—0 in.	24.50	96
7 ft.—6 in.	26.25	103
8 ft.—0 in.	28.00	110
8 ft.—6 in.	29.75	117
9 ft.—0 in.	31.50	123
9 ft.—6 in.	33.25	130
10 ft.—0 in.	35.00	137
10 ft.—6 in.	36.75	144
11 ft.—0 in.	38.50	151
11 ft.—6 in.	40.25	158
12 ft.—0 in.	42.00	165



APPLICATION RUBEROID CORRUGATED ASBESTOS SHEETS APPLICATION

There are sound reasons why the Staggered Joint method of applying Ruberoid Corrugated Asbestos is best. See Figs. 3 and 4.

FIRST: The staggered joint method of application saves money, in the factory and on the job. Because only standard X type Ruberoid Corrugated Asbestos Sheets are used, the cost of mitering the corners is eliminated. On the job, the necessity for searching for a certain type and size sheet, and the exact fitting

and matching of mitered corners is eliminated.

SECOND: The staggered joint method affords the full advantage of the maximum waterproof protection provided by full length—unmitered—end and side laps. A staggered joint job is inherently more waterproof. The straight joint method provides only one-half the protection of the end lap because the miter joint rises to the crest of the corrugation in one-half the length of the end lap.

Material Handling—Scaffolds—Safety

Modern construction must proceed like a production line. The proper organization of and utilization of men, methods and materials is essential if a good job is to be done safely.

Proper and safe scaffolding should be used. While

Ruberoid Corrugated Asbestos possesses ample strength, like any other building material it should not be subjected to overloading or undue shocks. Workmen must use proper chicken ladders and walk boards on all roofing work.

General Instructions Applying To All Application Methods

Purlins & Girts: All purlins and girts should be set with their flanges pointing up the roof or up the wall, thus permitting the use of the efficient and economical Ruberoid Crowned Z Clip.

Roof Pitch: Ruberoid Corrugated Asbestos Sheets are not recommended for roofs having a slope of less than 3 in. rise to one foot of run.

Span, Reef: The maximum recommended roof span for Ruberoid Corrugated Asbestos Sheets is 4 ft.-6 in.

Span, Sidewall: Maximum 5'-9".

Side Laps: One corrugation.

End Laps—For Roofing and Sidewalls: Six (6 in.) inches minimum. When "Staggered Joint" construction is used, the amount of end lap may be increased as much as desired, but should not be decreased to less than six (6 in.) inches. When "Cut Corner" construction is used, the end lap must be maintained at exactly six (6 in.) inches throughout. Otherwise the factory cannot cut the corners of the sheets. The location of the center of the lap depends upon the type

of fastener used. See Figs. 26, 27, 33, 34, 35 on pages 16 and 17.

Eave: Overhang: Unsupported sheet overhang at eaves and rakes should not exceed nine (9 in.) inches.

Fasteners: Spacing: For roofing application, all holes for fasteners must be drilled in the crest of corrugations. On sidewall application the fasteners may be installed at either the crest or the vale of the corrugation.

When fastener heads having lead washers are used (see Fig. 30), a generous supply of gray asbestos putty should be placed under the lead washer and around the top of the bolt before it is inserted in the hole in the Ruberoid corrugated asbestos sheets. When the fastener is pulled tight, the gray putty will be forced into the hole around the fastener, sealing same. When the application is complete and there is no more traffic on the roof, the exposed heads of such fasteners should be covered with a mound of Ruberoid gray asbestos putty.

Fasteners (see Figs. 3 and 6) securing the sheets to the structure (see Fig. 32) should be placed in the side lap of the sheets over all purlins and girts and

Staggered Joint Method of Application

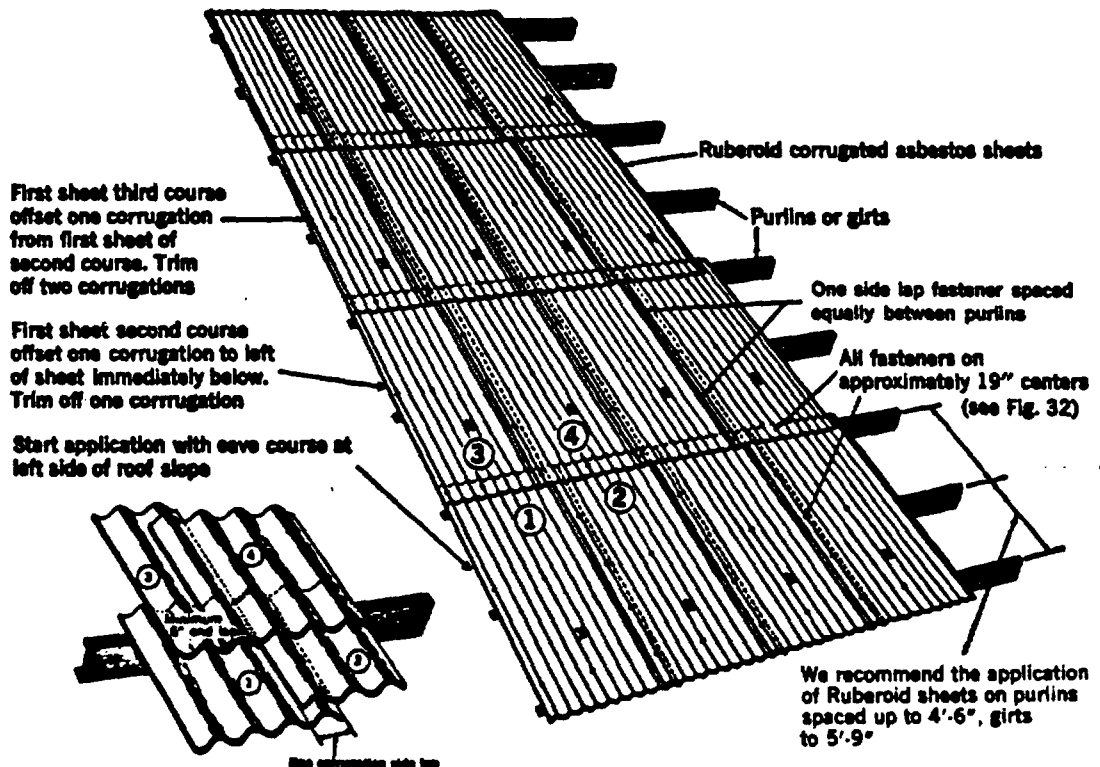


Fig. 4—Detail of Staggered Joint

Fig. 8—Staggered Joint Construction

one such additional fastener should be placed in approximately the center of the sheets between the fasteners in the side laps. Side lap fasteners (see Fig. 28) should be spaced equally between purlins and girts, always at least one such fastener between supporting members. Side lap fasteners may sometimes be omitted in special sidewall construction. Contact an approved Ruberoid Corrugated Erector for advice.

Caulking: Between the roofing sheets under end laps and under side laps. Ruberoid Black Asbestos Putty should be used. The use of a caulking gun equipped with a 1/2 in. nozzle is recommended. It is of utmost importance to apply caulking material uniformly and in continuous, unbroken strips or ropes.

On end laps, apply caulking along the top edge of the under sheet, but down sufficiently so that the caulk will not squeeze out and be visible from the under or back side of the sheets. Extend the caulk along the top edge to the center of the side lap corrugation—but not beyond that point.

On side laps, apply the caulk on the crest of the lapped corrugation of the under sheet. The caulk applied to the side lapped corrugation must join with, but not extend beyond the strip of caulk applied along the top edges of each sheet and the top of the lower course sheet.

Use Ruberoid Grey Asbestos Putty for all visible

caulking. Use Ruberoid Black Asbestos Putty for all invisible caulking.

Ridge Finish: Ruberoid has developed an all-purpose one-piece, ridge finish—Type C ridge roll. Its 180°—half round construction, permits it to be used on a ridge of any angle without fitting or adjusting. See page 18.

Ruberoid Corrugated Asbestos Sheets in the ridge courses, on both sides of the roof, approximately meeting at the ridge, are applied with their top edges about one inch apart, thus allowing the ridge roll clip and bolt, to be applied.

The lower edge of the Ruberoid Ridge Roll fits into a special groove in the Type R Filler Strip which is used as a closure between the bottom edge of the ridge roll and the corrugations of the roof sheets. The gable ends of the ridge roll are effectively closed with a plug of cement grout.

Expansion Joints: There is always unpreventable movement in all structures occasioned by well known causes. Good engineering practice dictates the use of properly designed and located expansion joints in such structures.

In any case an expansion joint should always be used whenever one occurs in the supporting structure. See page 23 and Fig. 60.

This efficient, quick and easy method of application is illustrated in Figs. 3 and 4.

This method uses only one type of sheet—Type X, of the proper length to cover the spans between supports. Supports should be spaced to provide a minimum of end laps. Because Ruberoid Corrugated Asbestos Sheets can be obtained up to 12 ft.-0 in. long, the number of end laps in a roof or sidewall can be kept to a minimum.

FIRST COURSE

Start application with a full width sheet placed at the left hand end of the eave, or first course on the roof, or the lowest sidewall course. Set the first sheet in place. Place and secure all fasteners except those that will occur in the end laps and the side laps. Apply continuous beads of black asbestos putty to the crest of the corrugation along the right hand side of the sheet, when applying roofing.

Place succeeding sheets in the same course in the same manner, lapping their left hand sides one corrugation over the corrugation along the right hand side of the preceding sheet. Place and secure all bolts and fasteners, including those in the left-hand side lap between the sheets, but do not yet place end-lap bolts and fasteners.

SECOND AND SUCCEEDING COURSES

Start all courses from the same, or left-hand end. The first sheet in each upper course is trimmed to be one corrugation less in width than the corresponding first sheet in the next lower course.

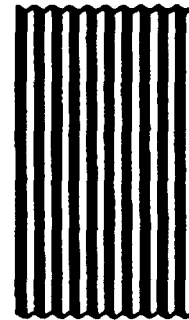


Fig. 3
Standard
Sheet
Type
X

Before placing an upper course roofing sheet over lower course sheets, apply a continuous bead of Ruberoid Black Asbestos Putty along, and close to, the upper end of the lower course sheet. As each sheet is set in its proper location, place and secure all bolts and fasteners as described, including the end lap bolts and fasteners.

FILLER STRIPS

Place necessary filler strips as each sheet is applied. It may be necessary to hold type A and B fillers in place with No. 14-1 1/4" long self-tapping screws (see Figs. 58 and 65). Cover the heads with gray putty.

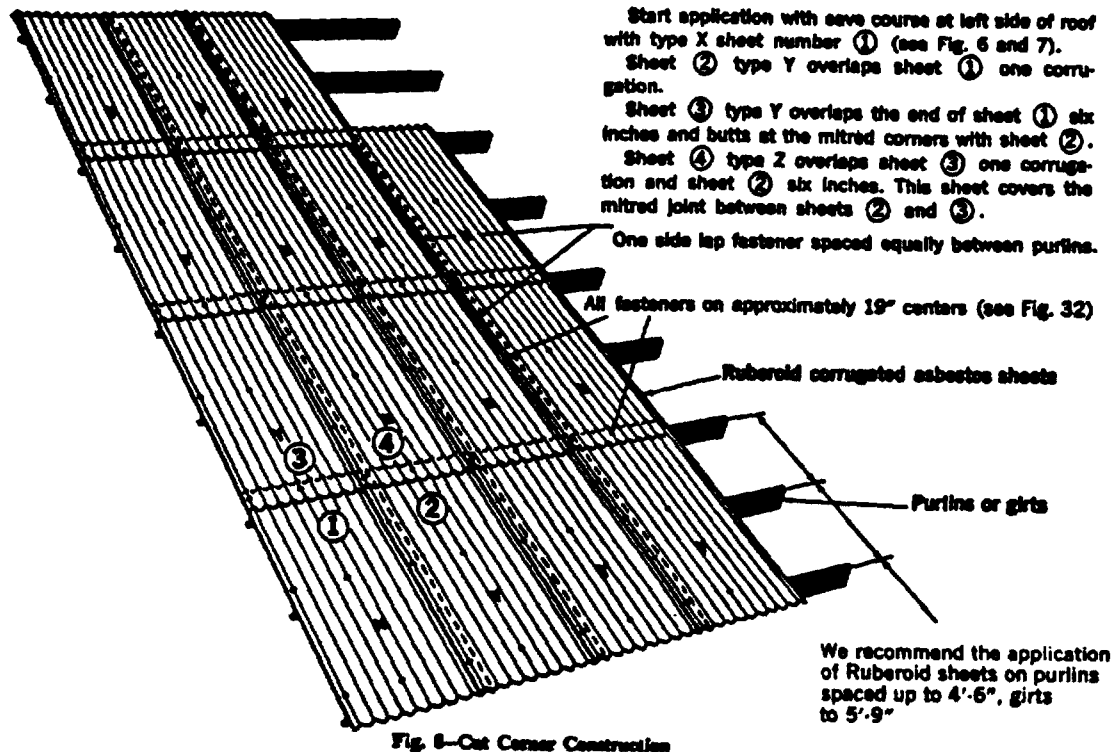
FLASHING

Place necessary flashing as the work proceeds.

FINISHING PIECES

Place finishing pieces, Ridge Roll and Corner Finish as the work proceeds.

Straight Joint or Cut Corner Method of Application



This method results in straight or aligned vertical joinings between sheets from eave to ridge and for the full height on side walls. This is a matter of personal preference which allows better appearance of the completed job if desired. Its disadvantages are (1) greater cost of the completed job. Sheets must be factory cut to exact dimensions to allow for a 6 in. end lap throughout. This may be costly because the steel framework often varies slightly from drawings and the exact size sheets allow no leeway to take up inaccuracies. (2) It reduces the water tightness of the roof as effective end laps are reduced 50%.

The lower right hand, cut corner of all upper course sheets, meets and miters with the upper left hand cut corner of lower course sheets, as illustrated in Fig. 7. This mitred joining is covered by the succeeding sheet in the upper course, designated as No. 4, Fig. 7. This figure clearly indicates why this method of application reduces the effective end-lap by 50%.

Other than the points explained above the application of straight joint or cut corner sheets is the same as set forth under General Instructions and Staggered Joint Method of Application. All finishing

pieces and accessories are applied in the same manner as for the staggered joint method.

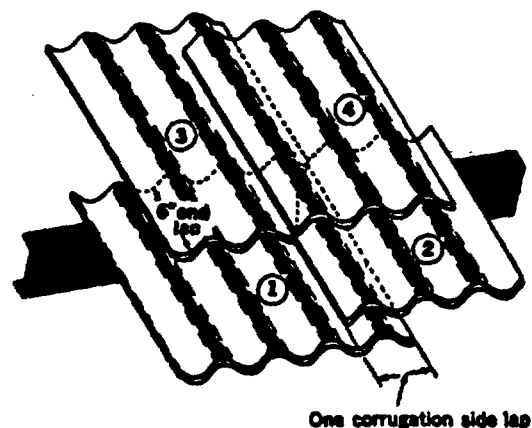


Fig. 7—Detail of Cut Corner Joint

Standard Fasteners for Ruberoid Corrugated Asbestos

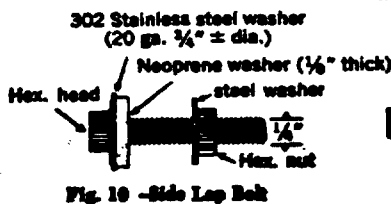
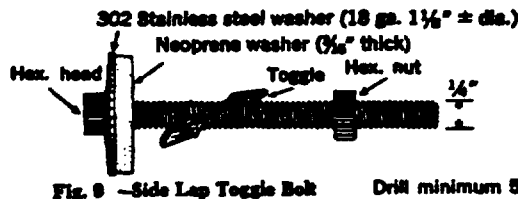
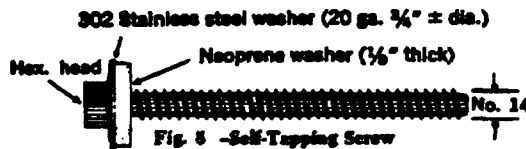
All Ruberoid standard fasteners are made of selected high quality materials, best suited to the purpose. They are made corrosion-resistant by plating the threaded bolts and nuts, and hot dip galvanizing the clips, flat steel washers, and drive screws.

STANDARD FASTENERS—are illustrated here.

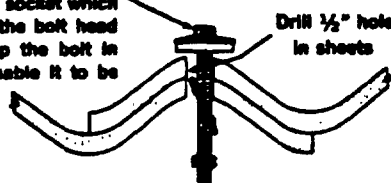
SPECIAL FASTENERS—Consult the nearest Ruberoid office.

BOLTS are supplied in lengths of 2" to 15" in one inch increments.

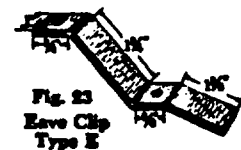
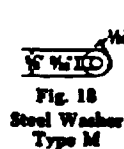
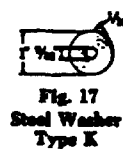
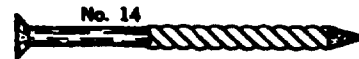
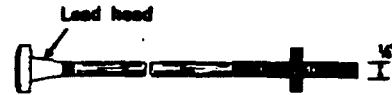
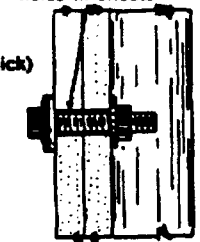
SELF-TAPPING SCREW FASTENERS—(S.T.S.), toggles and bolts are all supplied with hexagon heads and neoprene washers covered with stainless steel washers. They are all available in cadmium plated carbon steel or stainless steel.



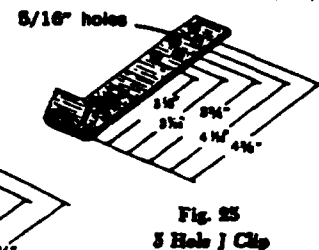
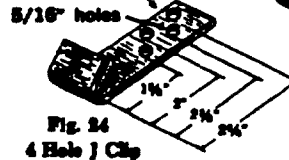
This fastener requires a special nut runner with a mechanical socket which will clamp the bolt head and pick up the bolt in order to enable it to be tightened.



Drill minimum $\frac{5}{16}$ " holes in sheets



Used on any structural channel up to 10" — 15.5"



Fastening Methods for .b

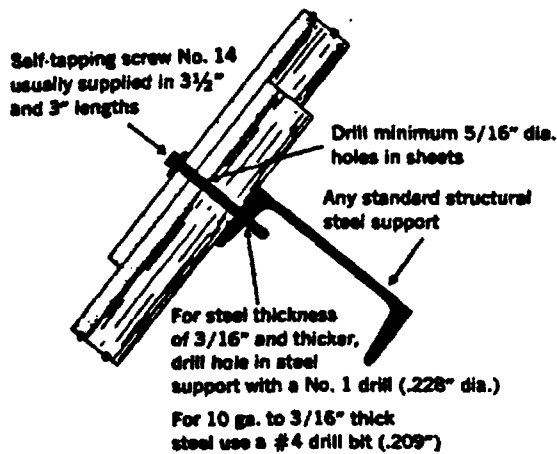


Fig. 26—Self-Tapping Screw Fastener

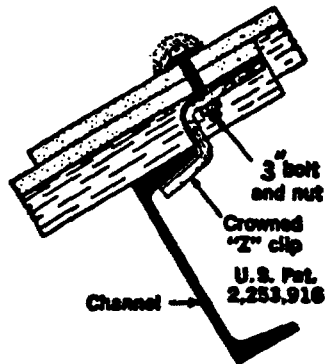


Fig. 27—Ruberoid Crowned Z Clip

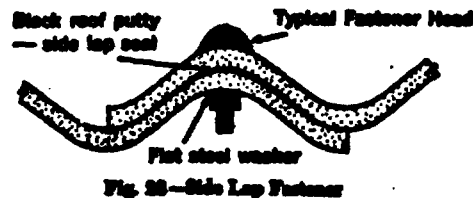


Fig. 28—Side Lap Fastener

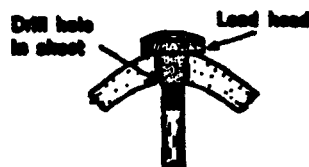


Fig. 29—Lead Head Bolt Typical Fastener Head

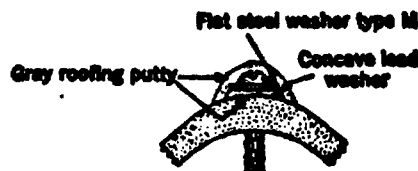


Fig. 30—Typical Fastener Head

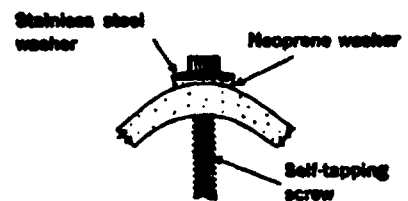


Fig. 31—Self-Tapping Screw Typical Fastener Head

Fastener Heads: It is usual practice to supply the same type fastener heads throughout the job. With self-tapping screw fasteners, all self-tapping screws, bolts and toggles are supplied with a head consisting of a hexagon head under which is the 302 stainless steel washer, and under the washer is a neoprene washer. When round slotted head bolts are used with steel washers and lead washers, this detail is used throughout. If lead-headed bolts are specified, they are used throughout. However, it is always necessary, of course, to follow the customer's specification and since lead headed bolts are difficult to make and keep water tight on roofing, the customer may specify their use only for siding.

Timber Framing: See Figs. 32 and 33. Roofing and siding sheets are fastened to wood framing with #14 x 4 in. galvanized flat head drive screws used with flat steel and concave lead washers. The gray putty as usual is placed under the lead washer and over the fastener head when completed. Lead head drive screws may also be used.

Side Lap Fasteners: See Fig. 28. The side lap of the sheets between the purlins and girts are secured together by standard side lap bolts. These bolts are applied in the center of all purlins and girt spans. If Self Tapping Screws are applied on roofing, side lap toggles are usually used so as to permit topside application.

Steel Framing: Structural steel is erected in a variety of sizes and shapes to meet many conditions. Standard Ruberoid fasteners are available to apply Ruberoid Corrugated Asbestos over all standard types and sizes of steel framing.

The use of self-tapping screws for securing the Corrugated Asbestos sheets to steel framing is now in wide use. Early attempts to use this type of fastener were only partly successful and it took an engineering development over several years before the solutions were obtained to give satisfactory results. This experience has indicated that in order to successfully use the No. 14 self-tapping screw fasteners, all holes drilled in the Corrugated Asbestos sheets for self-tapping screws, bolts, etc., are to be at least 5/16 in. in dia. Also the fasteners are not to be pulled excessively tight. They should be tightened only to the point

e1 Corrugated Asbestos

where the neoprene washers begin to bulge. If they are pulled tight enough to cause the $\frac{3}{4}$ in. 20 ga. 302 stainless steel washer, which is used over the $\frac{1}{4}$ in. thick neoprene washer, to cup up instead of down, the fastener is probably tight enough to cause injury to the sheets.

This self-tapping fastener is now generally accepted and has advantages when used to secure Corrugated Asbestos sheets, however, it does require more careful and experienced erection. The Corrugated Asbestos sheets should be dry when erected.

If clip and bolt fasteners are to be used, special attention should be given to the design of the steel framing to be covered with Ruberoid Corrugated Asbestos in order to take full advantage of the savings made. One important feature of the steel framing design we recommend is to mount all steel purlins and girts with their flanges pointing up the roof slope, or up the wall. This makes it possible to have all the advantages offered by the use of the Ruberoid Crowned Z Clip illustrated in Figs. 22 and 27.

The Ruberoid Crowned Z Clip can be used on any size or shape of steel member placed with its flanges pointing up. Ruberoid developed the Crowned Z Clip to prevent troubles caused by the inherent weakness of clips of this type that were made of flat bar stock. The Ruberoid Crowned Z Clip is much the stronger, and requires only one bolt; thus effecting important savings in application costs.

The sharp offset of this clip is a very important special feature, because it places the bolt as close as possible to the steel member. While the Ruberoid Crowned Z Clip fastens the Ruberoid Corrugated Asbestos Sheets with ample firmness and security, its special shape permits it to automatically allow a slight movement to help offset expansion and contraction in either the framing or the covering.

Here are the basic recommendations for the use of clips.

Crowned Z Clips—when flanges point up-roof (or wall).

J Clips—when flanges point down-roof (or wall).

Hook Clips—when flanges are perpendicular to surface of sheets.

The methods of using these clips are best explained graphically in Figs. 27, 34, and 35.



Standard spacing — used almost exclusively for all standard fasteners.

Special spacing — used for drive screws (see Fig. 33) and on extremely exposed structures.

Fig. 33—Location of Fasteners

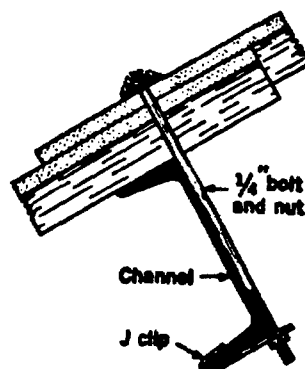


Fig. 35—J Clip

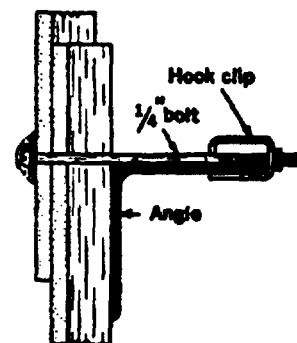


Fig. 34—Hook Clip

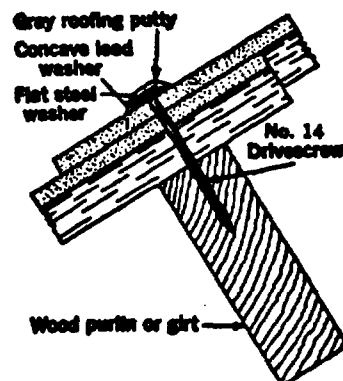


Fig. 33 Drive screw

NOTE: AS THE SELECTION AND INSTALLATION OF FASTENING DEVICES AND ACCESSORIES IS BEYOND OUR CONTROL WE CANNOT ACCEPT RESPONSIBILITY FOR DAMAGE TO SHEETS WHEN RELATED TO FASTENERS.

Ridge Roll Installation

RIDGE ROLL Type C

This is a one piece, half-round (180°) ridge finishing unit supplied in 8 ft.-0 in. lengths, and is curved on a 4 in. radius, O.D., and weighs approximately 2½ lbs. per lineal foot. It fits roofs of all pitches without requiring any fitting or adjustment. The lower edge of the ridge roll units fits in a special groove in the Type R Ridge Filler Strips (see Figs. 36 and 38).

Each length of Ruberoid Ridge Roll is applied, butted end for end, and firmly secured at the joint by a Ridge Roll Batten, Type C, designed to nest inside the butted joint, see Figs. 36, 37 and 38, and is firmly locked in place by Ridge Roll Clips and bolts or self-tapping screws. The result is the fast application of a smooth, unbroken finish along ridges.

RIDGE ROLL BATTEN Type C

6 in. long, and is trimmed to 150°, weight 1.5 lbs. each. It nests under the butted joint of the ridge roll as shown at Figs. 36, 37 and 38.

RIDGE ROLL CLIPS

See Fasteners (Page No. 15).

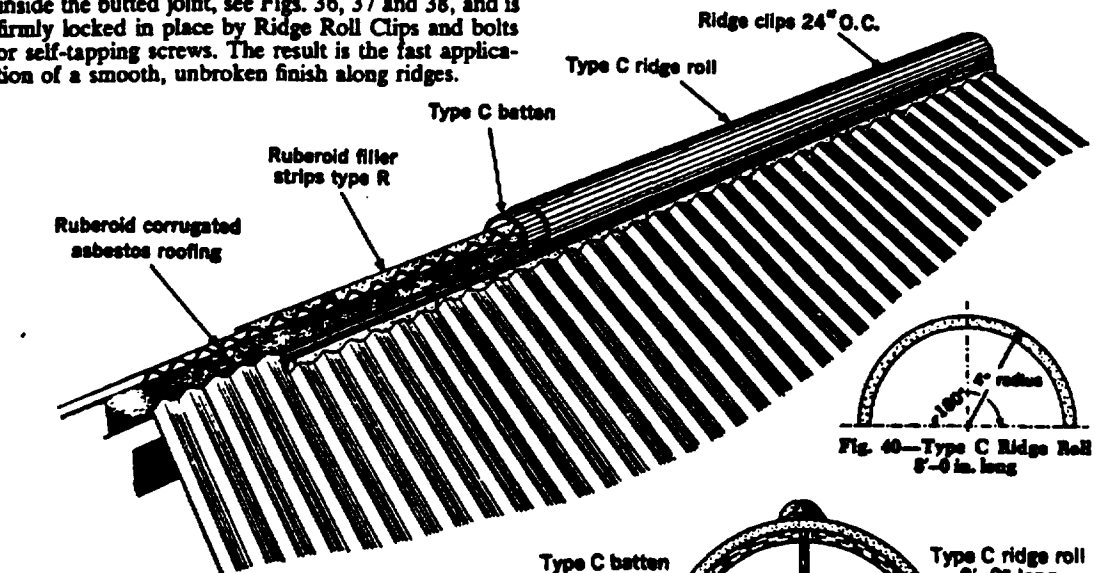


Fig. 36—Ruberoid Type C Ridge Roll-Assembly

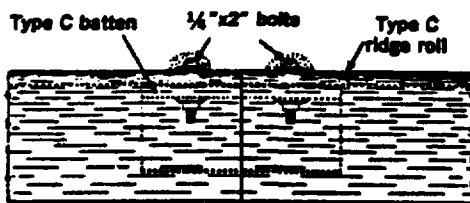


Fig. 37—Type C Ridge Roll Joint

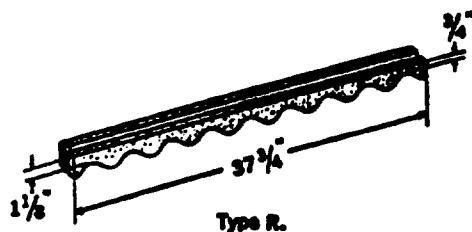


Fig. 38—Ruberoid Type R Filler Strip

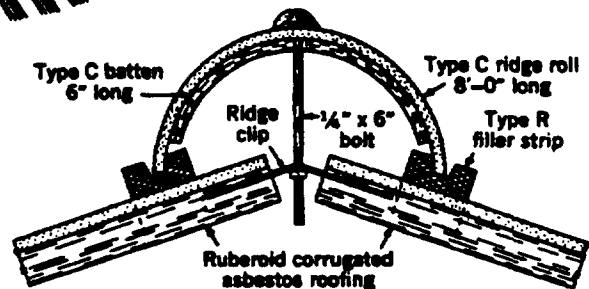


Fig. 38—Cross-Section Type C Ridge Roll Using Clip and Bolt Fasteners

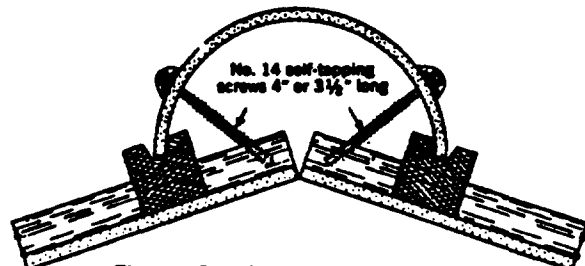


Fig. 41—Cross-Section Type C Ridge Roll Using Self-Tapping Screw Fasteners

Corner Roll Installation

CORNER ROLL Type L

Ruberoid Corrugated Asbestos corner finishing piece is a two-purpose piece, and can be used (1) to finish outside corners (Figs. 42 and 43), by application over the siding sheets, and (2) to finish inside corners, under the siding sheets. It is easy and fast to apply.

With Ruberoid Type L corner finish it is not necessary to waste material by making the laps in corner roll occur at the horizontal lap between siding sheets, as the "bell end" on Ruberoid corner finish pieces permits lapping the corner piece anywhere. This saves time, material and money.

It is not necessary to use filler strips when finishing corners. Merely fill in any visible void between the corner unit and siding sheets with asbestos cement grout or grey asbestos putty.



Fig. 42—Type L Corner Roll Assembly

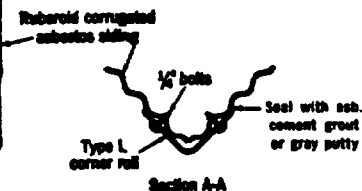


Fig. 43—Cross Section Type L Corner Roll Assembly



Fig. 44—Cross Section End Lap Detail



Fig. 45—Cross Section Type L Corner Roll

Filler Strips

Fig. 46. When Ruberoid Corrugated Asbestos Sheets are applied against a steel member or a timber, the corrugations form openings. These normally occur at opening heads, where sheets rest on the roof purlins at the eaves, where siding sheets overhang the foundation curb and similar places.

Two methods can be used to close such openings: (1) Cement grout, and (2) Ruberoid Filler Strips, designed for the purpose and held in place by screws. Ruberoid Filler Strips are placed at right angles to the run of the corrugations on the sheets.

Type A FILLER STRIPS

Are designed as a closure between the under side of a sheet of corrugated asbestos and a plane surface.

Type B FILLER STRIPS

Are designed as a closure between the top side of a sheet of corrugated and a plane surface.

Type R FILLER STRIPS

Are designed as a closure between the bottom edges of Type C Ridge Roll and the top of the corrugated roof sheets. See Figs. 36 and 38.

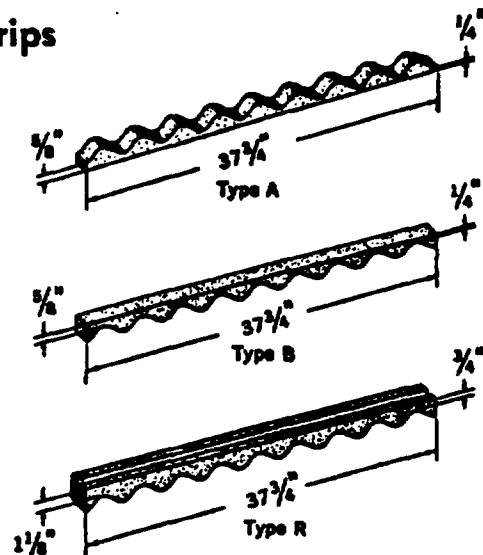


Fig. 46—Ruberoid Filler Strips

RUBEROID ASBESTOS PUTTY

For use with Ruberoid Corrugated Asbestos application—supplied in two colors: black and grey. See application specifications paragraph under Caulking.

Corrugated Asbestos Louvre Installation

Ruberoid Corrugated Asbestos louvre blades are of the same material as the roofing sheets. The sections are up to 12 ft.-0 in. long, and contain $2\frac{1}{2}$ or $3\frac{1}{2}$ corrugations.

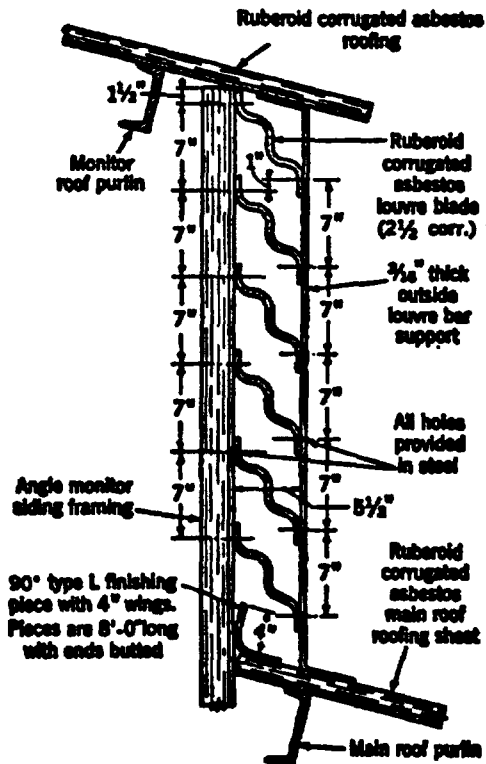
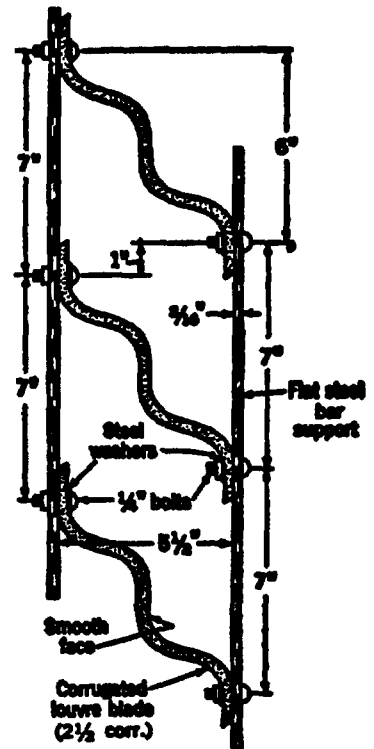


Fig. 47—Louvre Assembly for $2\frac{1}{2}$ corr.



Cross section of corrugated louvre assembly

Fig. 48—Spacing of Vertical Louvre Supports for $2\frac{1}{2}$ corr.

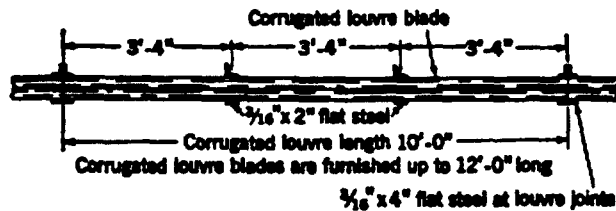


Fig. 49—Louvre Spacing

Gable Finish for Corrugated Asbestos Installation

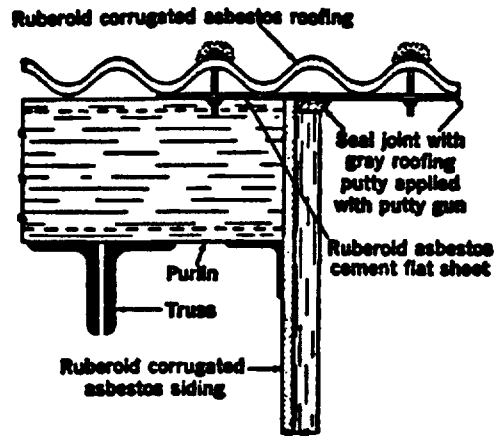


Fig. 50

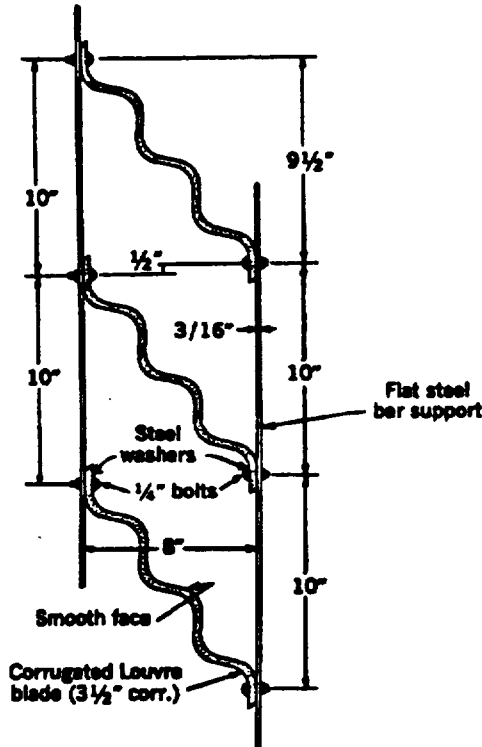


Fig. 51—Spacing of Vertical Louvre Supports for 3 1/2" Corrugated

TYPICAL GABLE DETAILS

It is not necessary on some types of buildings to trim the gable ends or close the opening formed by corrugations in roofing and siding. When it is desired to do so, a few typical methods are illustrated here.

The most economical and satisfactory design is to stop the purlins at the siding. With this kind of construction, a strip of Ruberoid Flat Asbestos-Cement Board may be placed as illustrated here. The edges are sealed so as to completely close the corrugations. The same result may also be obtained at an increased cost, with lead flashing. With these gable details the corrugated asbestos roofing sheets must not overhang more than approximately 6 in. beyond the siding line.

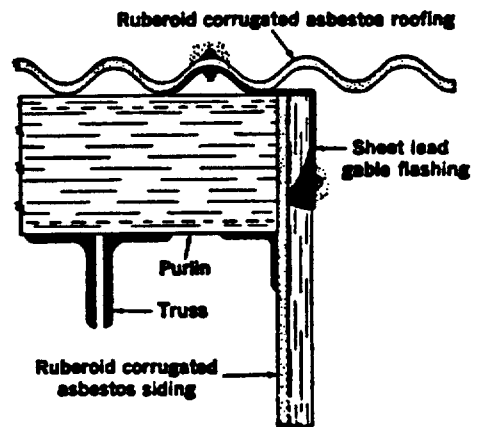


Fig. 52

Details When Purlins Stop at Siding Line

Eave Finish for Corrugated Asbestos Installations

When Ruberoid Corrugated Asbestos Sheets overhang the side wall at the eave of a building, the corrugations form openings. On some buildings, the open

corrugations are not objectionable. When it is desired to close the corrugations, three alternate designs are illustrated.

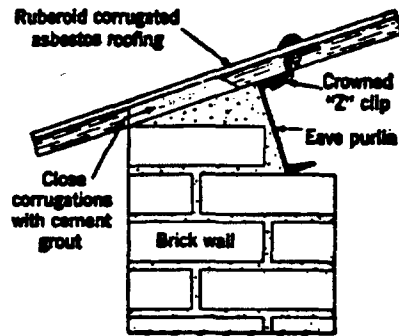


Fig. 53

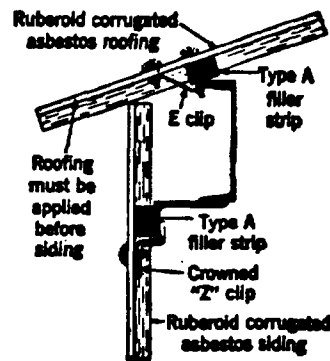


Fig. 54

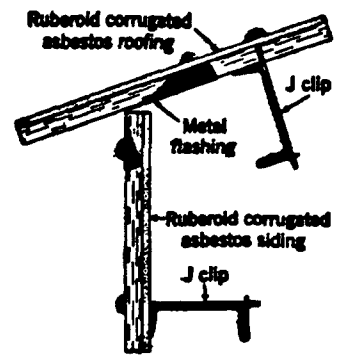


Fig. 55

Typical Eave Finish Details

Ridge Ventilator Details

When metal ridge ventilators are used on Corrugated Asbestos roofs, it is recommended that structural steel framing be employed as a curb or base for

the ventilator. The steel frame should be designed to support the ventilator 2 in. above the purlin line, as illustrated below.

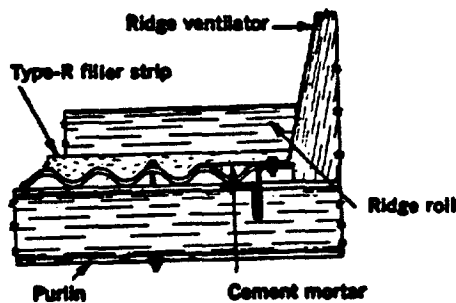


Fig. 56

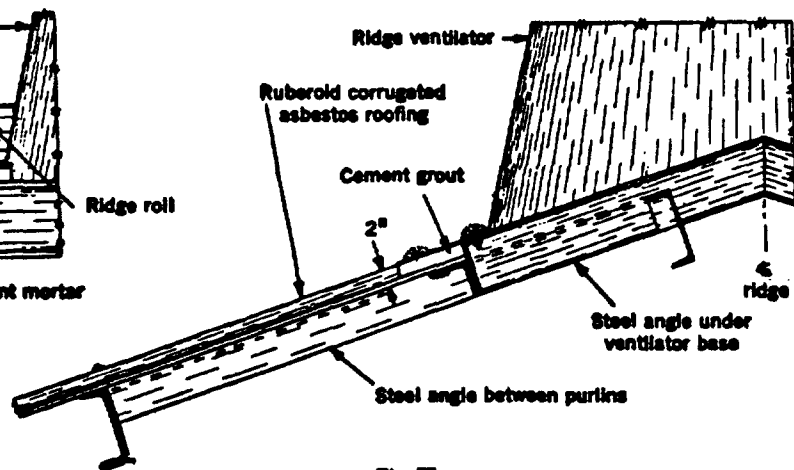


Fig. 57

Cross-Section Ventilator Base and Steel Framing Detail

Typical Siding Ground Details

If it is desired to close the corrugations of the Ruberoid Corrugated asbestos siding sheets at the

ground line, either of the two methods illustrated below may be employed.

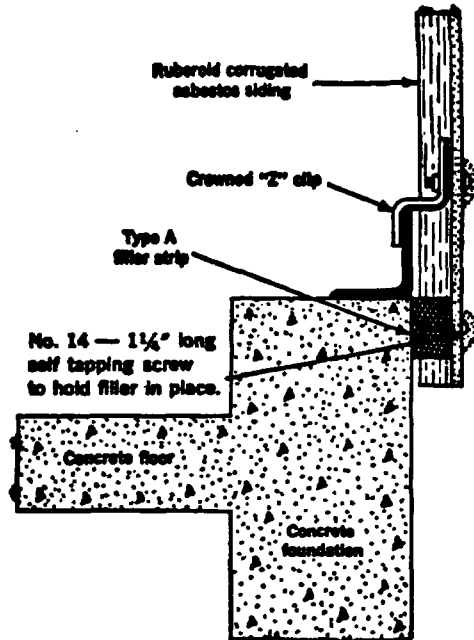


Fig. 58

Base Construction Details

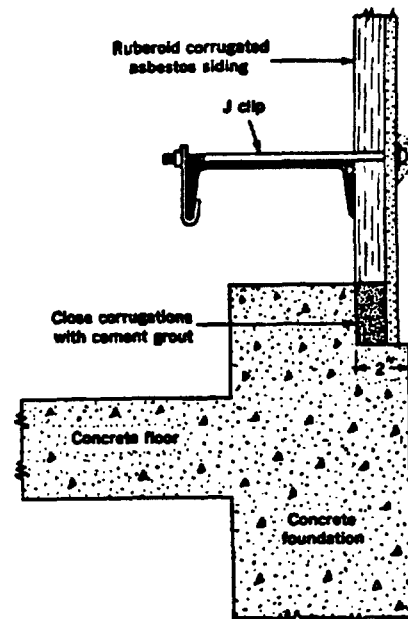


Fig. 59

Expansion Joints

Due to the location, use and design of some buildings, it may be necessary to provide expansion joints. An expansion joint should be placed over all expansion joints in the building structure. A typical metal expansion joint is illustrated below.

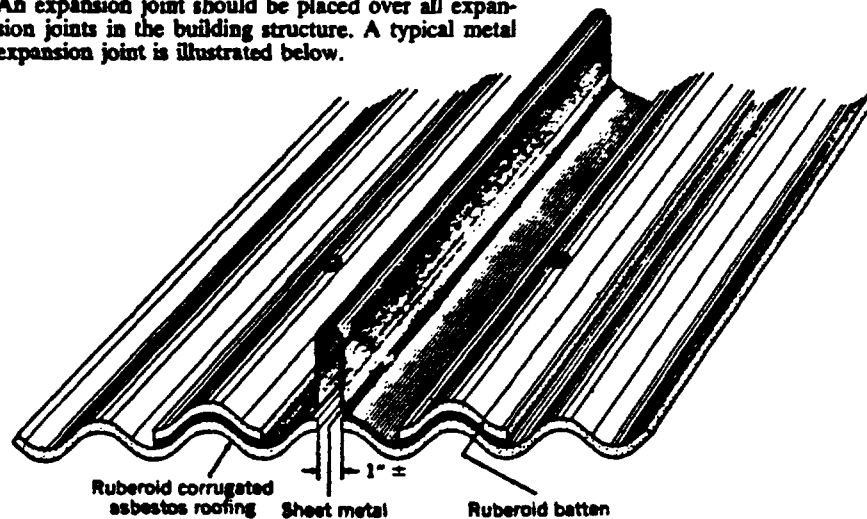


Fig. 60—Spring Joint Detail

Typical Gutter Details

Several types of gutters may be used for various conditions. The most common are half round metal hanging gutters, the gutter at the junction of corrugated asbestos roofing sheets and parapet walls, and that formed by the junction of two gable type roofs. Two of the most usual types are illustrated below.

The half round metal hanging gutter can be sup-

ported by metal brackets, fastened directly to the eave strut or roofing sheets.

There are two alternates for the inside gutters, at the junction of Ruberoid roofing sheets with parapet walls, and the junction of gable roofs. The metal box type is the most economical, but when the conditions of the building require an insulated gutter, the alternate design is recommended.

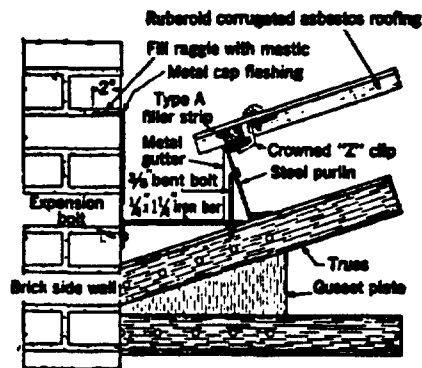


Fig. 61

Gutter Detail Junction Ruberoid Corrugated Asbestos Sheets and Parapet Walls

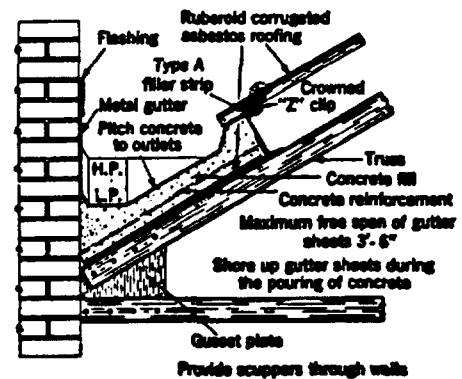


Fig. 62

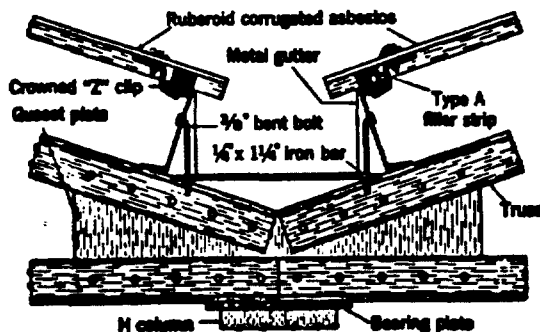


Fig. 63

Gutter Detail Junction Two Gable Roofs

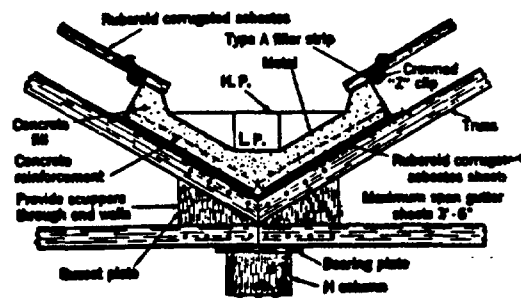


Fig. 64

Window and Door Finish

SILL, JAMB AND HEAD DETAILS

There are various methods of flashing and finishing the junction of Ruberoid Corrugated Asbestos with window and door frames. The kind and use of the building determines the selection of these details.

When weather tightness is the prime consideration, we recommend the use of lead flashing at the sills and jambs, with Type A filler strips at the heads. The jamb flashing may be placed either on the outside or inside

of the Ruberoid Corrugated Asbestos sheets.

An excellent design is to provide structural steel members, so as to finish the jamb and sill, with Type A filler strips used at the heads. This method presents an attractive appearance, but requires painting of the exposed steel. When self-tapping screw fasteners are used the inside vertical flange in Fig. 68 must extend lower than the outside flange in order to permit the placing of the fastener.

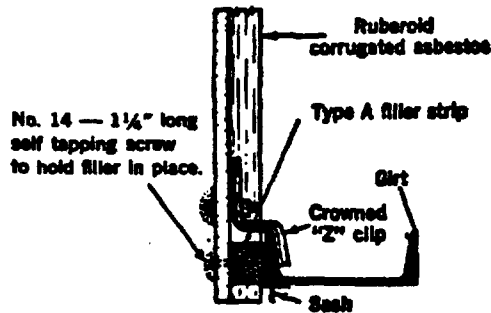


Fig. 65—Head

WITHOUT METAL FLASHING

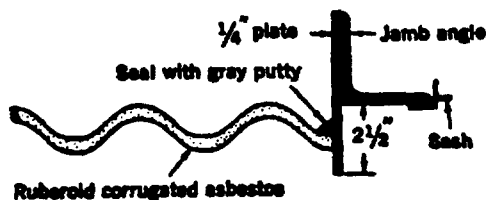


Fig. 66—Jamb

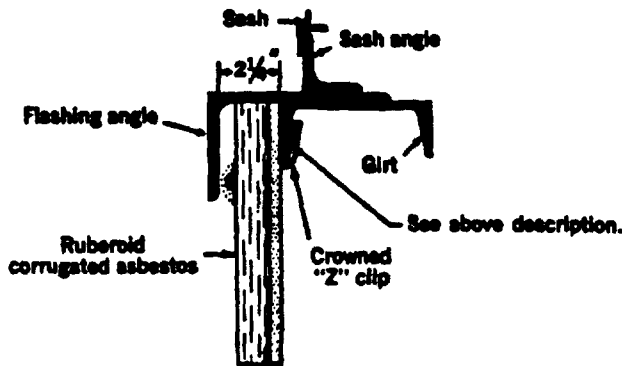


Fig. 68—Sill

WITH METAL FLASHING

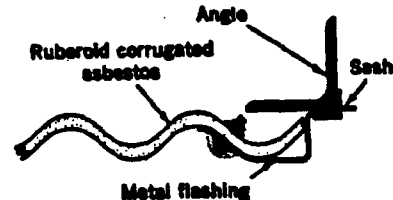


Fig. 67—Jamb

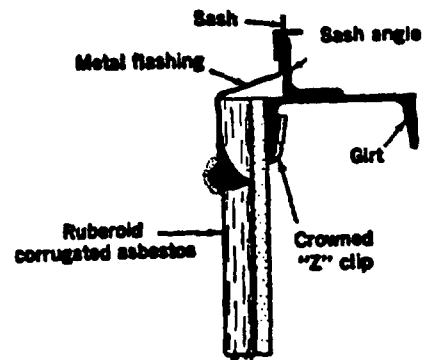


Fig. 69—Sill

Flashing Details

Ruberoid Corrugated Asbestos is usually flashed, with corrosion-resistant, non-staining sheet metal. The most commonly used are illustrated below.

The metal flashing must not be bent at sharp angles, but should be worked to as large a radius as possible. These round bends materially assist the flashing

in withstanding the strain, due to expansion, contraction and vibration. Maximum lengths of base and cap flashings should be 8 feet.

The selection of the proper flashing metal should be determined by the conditions at the building.

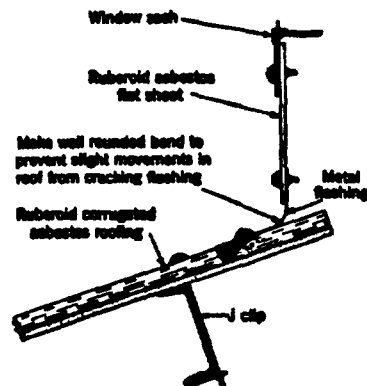


Fig. 70—Cross-Section Monitor Base Flashing

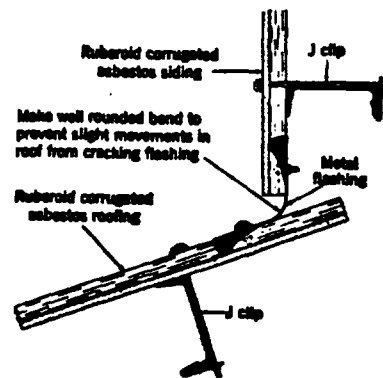


Fig. 71—Standard Detail

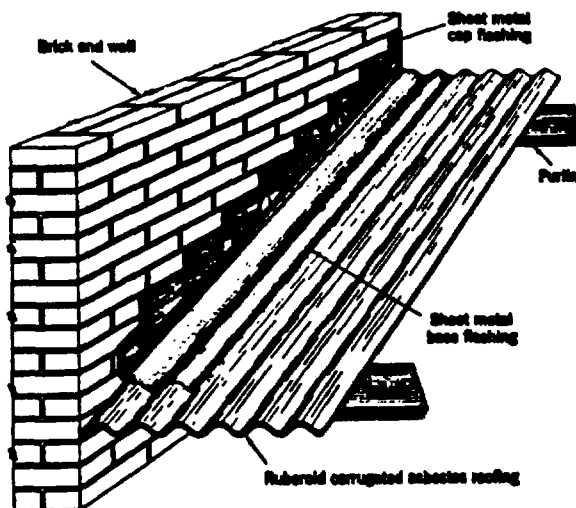


Fig. 72—End Wall Flashing

Flashing Details (cont'd)

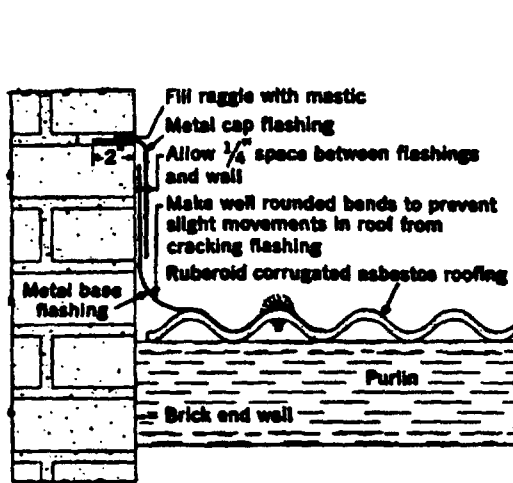


Fig. 73—Standard Detail

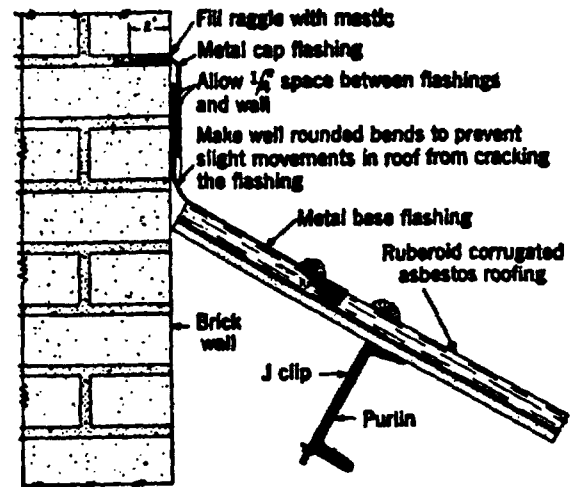


Fig. 74—Cross-Section Side Wall Flashing

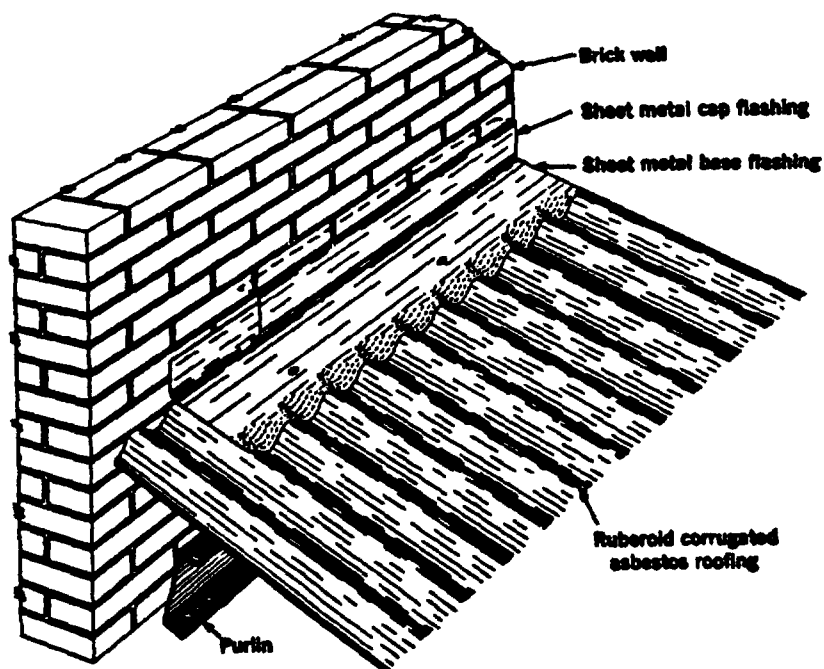


Fig. 75—Side Wall Flashing

RUBEROID

CORRUGATED

Architects Specifications

The roof and/or sidewalls of all buildings shown on the drawings shall be covered with Ruberoid Corrugated Asbestos Sheets, finishing units, and accessories furnished by GAF Corporation, Industrial Products Division.

The roofing and/or siding sheets shall be made with 4:2 pitch corrugations.

The roofing and/or siding materials shall be erected as indicated on the drawings or as recommended by The Ruberoid Co. Either the staggered joint method or the straight joint method of application may be used, and shall be installed in accordance with the recommendations of the manufacturer. In event the application specifications conflict or disagree with manufacturer's recommendations, the latter shall take precedence.

All finishing pieces, accessories, fasteners, filler strips, flashing, etc., shall be as recommended by the manufacturer. All metal work including flashing, gutters, down-spouts, skylights, ventilators, and the like, are to be supplied and warranted by the owner and be separate from the Ruberoid Corrugated Asbestos roofing and/or siding, but shall properly meet or match with the Ruberoid Corrugated Asbestos whenever necessary.

If the manufacturer of the corrugated sheets is to make the engineering erection drawings, guaranteed correct final steel or architectural drawings must be supplied before the engineering drawings can be prepared.

General Instructions and Information

1. **Shipment.** Ruberoid Corrugated Asbestos is generally shipped in rail cars, but may be shipped in trucks at shipper's option. When shipments involve less than carload lots and are to be moved by rail cars, it may be necessary for the sheets to be crated. In that case fasteners are shipped in bags and putty is shipped in drums or pails depending upon the quantity. Export crating specifications are to be specified by the customer.

2. **Unloading.** Suitable job storage space should be selected convenient to the building site and where the material may be properly stacked and protected from the weather until erected, and guarded from mechanical injury, damage, and pilferage. The material should be handled carefully so as not to be damaged during unloading. Sheets should be arranged in stacks on a strong, unbending, solid level base, so that the sheets do not bend, and shall not be piled more than two feet high. Piles should be restricted to sheets of one length and one type. Since the finishing pieces are usually used during the latter stages of the application they should be stored in a safe place until they are needed. Different types of fasteners should be kept in their containers until used.

SPECIAL CARE SHOULD BE TAKEN TO KEEP ALL MATERIALS CLEAN AND DRY BEFORE ERECTION.

3. **Equipment.** The proper selection of drilling and cutting and hoisting equipment can save a great deal of time and money and our recommendations thereon follow.

Drilling: To assure correct location, fastener holes must be drilled on the job after the sheet has been set in place. Fastener holes must be drilled (NOT PUNCHED) in the crest of the corrugation viewed from the weather-exposed side of the sheet. Drilling from the underside of the sheet assures proper location of holes for standard clip and bolt fasteners.

For standard 1/4 in. fastener bolts use 1/4 in. twist drill bit. Ordinary twist drill bits may be used, but longer wear and cheaper drilling will be obtained by using High Speed, Carbaloy Tip or similar drill bits.

When drilling along the side of a structural steel shape it is frequently necessary to use drills with extra long shanks or use a shank extension rod. Drill extension rods may be made of 3/4 in. round rod bored to receive the shank of the drill which may be brazed, welded or shrunk into the extension rod.

It is strongly recommended that portable electric drills be used. Because of the possibility of voltage drop an ample power source should be provided at intervals of 200 ft. throughout the job.

Cutting: Ruberoid Corrugated Asbestos may be readily cut by a standard make of hardened wrecking or nail cutting saw having six to eight teeth to the inch. Ordinary hand saws may be used and should be rip saws with four to five teeth per inch. Teeth should have ample set. Coarse hack saws may be used. Faster cutting can be done by equipping portable electric hand saws with suitable abrasive

ASBESTOS SHEETS

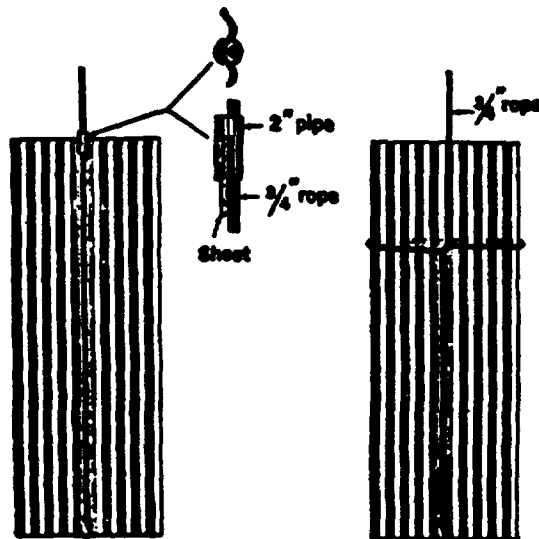


Fig. 76—Suggested Method of Slings Sheets

wheels $\frac{1}{2}$ in. or more thick and approximately 7 in. in diameter or carbide tipped circular saw blades, which while expensive to buy are economical to use.

Care should be taken that the wheels do not bind while cutting. Abrasive wheels are brittle and will break readily if binding occurs.

A portable electric drill, fitted with a hack saw attachment, and a coarse blade is excellent for detail cutting of this material.

Rectangular Cutouts: (Into edge of sheet). When fairly large size rectangular cutouts are to be made, electrically driven saws may be used. Start from the edge and allow the wheel to run approximately to the corner. Lower the wheel to the surface of the sheet and cut approximately to the corner. Finish the corner of the cut with a hand saw or with a portable electrically driven hack saw attachment on an electric drill.

Rectangular Cutouts: (Inside the sheet). Small rectangular cuts away from the edges, or inside the sheet may be made by drilling holes at each corner of the cutout, large enough to permit the entry of the blade of a power hack saw or a hand power saw. Circular or curved cuts may be made by a portable

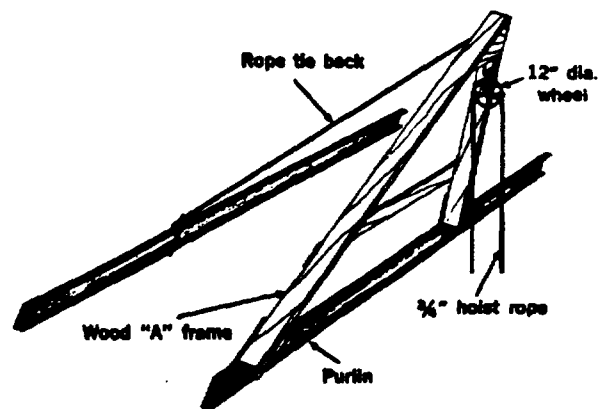


Fig. 77—Suggested A Frame for Hoisting Sheets

power hack saw or by drilling a series of $\frac{1}{4}$ in. holes on $\frac{1}{4}$ in. centers along the curve and knocking out the center piece.

Nut Running: Torque wrench attachments for electric drills speed the running-up of fastener bolt nuts, or driving screws.

4. Hoisting Sheets: For convenience in hoisting Ruberoid Corrugated Asbestos Sheets it will be found economical to construct an "A" frame which can rest on an appropriate place on the steel structure or on the roof. The "A" frame should be made so it may be slid along the steel members to any desired position. The "A" frame should be equipped with a 12" diameter single pulley wheel for a $\frac{3}{4}$ in. manila rope. See Fig. 77 for design.

The working end of the hoisting cable should be equipped with an appropriate hook and a sliding clamp made of a 6 in. length of 2 in. iron pipe which is notched at its lower end sufficiently wide and deep to be slipped over the edge of the sheet as shown in Fig. 76. Other methods of making rope slings are also used; however, the single hook and slotted pipe nipple is very practical.

Architectural and Engineering Information

The following engineering data has been compiled by our Engineering Department, and is used by them in estimating or calculating job coverage. By use of this data, architects, engineers and structural designers can properly design structures to receive Ruberoid Corrugated Asbestos Sheets and can prepare proper and accurate bills of materials.

Our Engineering Department is always available for consultation. See pages 8 and 9 for product dimensions.

SPECIFICATIONS, STANDARD APPLICATION—

Sheets—

Sheets are applied directly over skeleton frame, using one corrugation side lap and a 6 in. minimum end lap.

Sheets shall be of such length that all end laps will fall over structural supports.

Use Ruberoid Black Putty in the side and end laps of all roofing sheets only. Not in laps of siding sheets.

Maximum recommended (roof) purlin span is 4 ft.-6 in., and (siding) girt span is 5 ft.-9 in.

Fasteners, Quantity (see Fig. 32)—

Use 2 fasteners per sheet, per purlin or girt.

Use 3 fasteners per sheet, per eave strut, purlin or girt, on extremely exposed and open structures or edges, with very large overhangs.

Use 3 drive screws per sheet, per purlin or girt, on wood framed structures.

Use 1 side lap fastener in the center of all spans, for both roofing and siding.

Fastener holes in the sheet must be drilled, not punched.

Fastener holes must be placed in the crest of the weather side of corrugations.

Heads of round head bolt fasteners (Fig. 30) are to be sealed with a mound of Ruberoid Gray Putty. Bed the lead washers in this putty. Such sealing is not necessary with lead head bolts and neoprene washers. See Figs. 29 and 31.

Pitch of Roof—

In general, the minimum recommended roof pitch is 3 in. in 12 in.

Application on roofs having less pitch should be submitted to our Engineering Department for special consideration.

QUANTITY CALCULATIONS—

Sheets—

Number of sheets per course = length of roof in feet X 0.3174.

Fasteners—

Approximate number of fasteners = number of sheets per course, X number of purlins or girts, X 2.

Approximate number of fasteners = number of sheets per course, X number of eave struts, X 3. (For extreme exposure.)

Approximate number of drive screws = number of sheets per course, X number of wood purlins or girts, X 3.

Approximate number of side lap fasteners = number of sheets per course, X number of spans.

Approximate number of nuts = number of bolts, plus 5%.

Approximate number of cupped lead washers = number of bolts plus 5%.

Approximate number of flat, galvanized, steel washers = number of bolts plus 15%.

Ridge Roll—

Number of pieces of ridge roll = length of roof in feet X 0.125.

Number of pieces of ridge roll battens = number of pieces of ridge roll, minus 1.

Number of ridge roll filler strips Type R = number of sheets per course, X 2.

Number of ridge clips and 6 in. bolts = number of ridge rolls, X 5.

Number of 2 in. long bolts = number of battens, X 2.

Corner Roll—

Number of pieces of corner roll = length of corner in feet, X 0.131.

Number of 3 in. bolts = number of pieces of corner roll, X 10.

Gray Asbestos Putty—

One pound covers an average of 30 bolt heads.

Black Asbestos Putty—

For laps. Four pounds per 100 sq. ft. of covered area.

Safety Factor—

In order to allow for possible breakage, loss, etc., and prevent shortages on the job an overage of all materials should be included in the shipment.

● RUBEROID UTILITY CORRUGATED

Ruberoid Utility Corrugated fills a special building need. Often a wood frame building requires a fireproof, permanent roofing and siding material. The intended use of the building, however, does not justify the cost of the heavier corrugated sheets. The answer? These Utility sheets that have the same general characteristics of the heavier sheets at less thickness, weight and cost.

Utility corrugated sheets are used for roofing and siding as a final covering over wood frame construction. It may be used also over metal framing by using the appropriate fastening devices. The application methods are substantially the same. It is a general utility material and is also used for partitions, walls and ceilings, and may even be buried in the ground as a rodent stop. It is an ideal, economical material for farm buildings such as barns, sheds, animal and chicken shelters, etc.

The sheets never require painting and are easily applied using ordinary carpenter tools.

GENERAL INFORMATION

FEDERAL & A.S.T.M. SPECIFICATIONS — Ruberoid Utility Corrugated Sheets are maintained at the high quality necessary to meet the latest Federal and ASTM Specifications (Fed. Spec. SS-B-753a, Type B; ASTM C221-61, Type B).

BUILDING LIMITATIONS — Maximum spans — roofing = 2'-6" Siding = 3'-6" and minimum roof pitch 3" to the foot.

SHEETS — are the same as the heavier sheets except they are 3/16" thick at crest and vale and are made in lengths 3 ft. to 12 ft. in 1 ft. increments.

FASTENERS FOR SHEETS — Hot dipped galva-

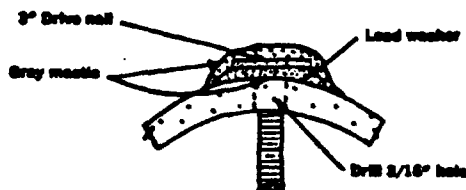


Fig. 78—Nail Head Detail

nized ring-shanked nails 3" long with lead washers are used to fasten the sheets to wood roof purlins or siding girts. They are located as indicated by the special spacing, shown in Fig. 32. The head detail is illustrated in Fig. 78.

FILLER STRIPS — are the same as used with the heavier sheets — See Fig. 46.

During erection, the type A fillers can be nailed to the wood supports by the 3" ring-shanked nails specified above. Galvanized 6D common wire nails can be used at the corrugations not secured by the above nails.

RIDGE ROLL — The same type C ridge roll (see page 18) and accessories as supplied with the heavier sheets are used.

If a wood ridge pole is supplied with the wood framing, the ridge roll can be fastened with the fastener nails described above. When the intended use of the building permits, a metal flashing may be used in place of the ridge roll.

CORNER ROLL — The same type L corner roll (see page 19) as supplied with the heavier sheets is used. It may be secured by either bolts or the 3" nails described above.

APPLICATION RECOMMENDATIONS

SAFETY FIRST — Same as for heavier standard weight sheets (see page 11). The unsupported overhang at eaves should not exceed 6" and at gables, one corrugation.

DRILLING & CUTTING — Same as for the heavier sheets (see page 28).

CAULKING LAPS — It usually is not necessary to seal the side and end laps of roofing sheets. When it is desirable to do so, the method used is the same as for the heavier sheets (see pages 12 and 13).

UNLOADING and STORAGE — Same as for heavier sheets. (see page 28).

ERECTION — The sheets are applied with a one-corrugation side lap and at least a 6" end lap. No fastener hole should be less than 2" from the end of any sheet.

STAGGERED JOINT METHOD — Same as for the heavier sheets (see pages 12 and 13).

For further information write your nearest Ruberoid Sales Office (see back of catalog) for "Application Recommendations—Ruberoid Utility Corrugated".

Estimating Asbestos Corrugated Roofing and Siding

Calculations—To determine the number of sheets per course and square foot areas, keeping proper allowance for laps, proceed as follows:

Asbestos Corrugated (4.2" pitch)—To determine the number of sheets per course with one corrugation side lap—multiply the length of the course in feet by the unit .3175, rounding out to the next full sheet.

To determine gross square footage of sheets—multiply the number of sheets by the length of the sheets in feet and multiply the product by the unit 3.5.

Type R Ridge Roll—To determine the required quantity of sections 8'-0" long, divide the length of the ridge in feet by 8 and round out to the next full section.

Corner Roll—To determine the required quantity of 8'-0" lengths, multiply the length of corner in feet by the unit .129 (which allows 3" lap) and round out to the next full section.

Fasteners—Figure 2 fasteners of proper size with accessories per sheet per purlin or girt except on intermediate purlins or girts. On intermediate purlins or girts figure half this quantity. At eaves figure 3 fasteners per sheet.

Cement—Figure 1 lb. gray cement to cover 50 bolt heads or 200 sq. feet of covered area. Figure ½ lb. of gray cement per joint for Corner Roll (allows 3" lap). Figure 5 lbs. black lap cement per 100 square feet of roof area when required.

Note—It is recommended that 5% be added to actual quantities of all fastener items including cement for any loss or waste in the field.

Table showing number of asbestos corrugated sheets required for one row of sheets for various building lengths.

Length of Building in Feet	Asbestos Corrugated Sheets 4.2" Number of Sheets 1 Corrugation	Complete Sections Type C Ridge Roll	Length of Building in Feet	Asbestos Corrugated Sheets 4.2" Number of Sheets 1 Corrugation	Complete Sections Type C Ridge Roll
1-0	1	1	51-0	17	7
2-0	1	1	52-0	17	7
3-0	1	1	53-0	17	7
4-0	2	1	54-0	18	7
5-0	2	1	55-0	18	7
6-0	2	1	56-0	18	7
7-0	3	1	57-0	18	8
8-0	3	1	58-0	19	8
9-0	3	2	59-0	19	8
10-0	4	2	60-0	19	8
11-0	4	2	61-0	20	8
12-0	4	2	62-0	20	8
13-0	5	2	63-0	20	8
14-0	5	2	64-0	21	8
15-0	5	2	65-0	21	9
16-0	5	2	66-0	21	9
17-0	6	3	67-0	22	9
18-0	6	3	68-0	22	9
19-0	6	3	69-0	22	9
20-0	7	3	70-0	23	9
21-0	7	3	71-0	23	9
22-0	7	3	72-0	23	9
23-0	8	3	73-0	24	10
24-0	8	3	74-0	24	10
25-0	8	4	75-0	24	10
26-0	9	4	76-0	25	10
27-0	9	4	77-0	25	10
28-0	9	4	78-0	25	10
29-0	10	4	79-0	25	10
30-0	10	4	80-0	26	10
31-0	10	4	81-0	26	11
32-0	11	4	82-0	26	11
33-0	11	5	83-0	27	11
34-0	11	5	84-0	27	11
35-0	11	5	85-0	27	11
36-0	12	5	86-0	28	11
37-0	12	5	87-0	28	11
38-0	12	5	88-0	28	11
39-0	13	5	89-0	29	12
40-0	13	5	90-0	29	12
41-0	13	6	91-0	29	12
42-0	14	6	92-0	30	12
43-0	14	6	93-0	30	12
44-0	14	6	94-0	30	12
45-0	15	6	95-0	31	12
46-0	15	6	96-0	31	12
47-0	15	6	97-0	31	13
48-0	16	6	98-0	31	13
49-0	16	7	99-0	32	13
50-0	16	7	100-0	32	13



The following is a partial list of U. S. Government Departments, Prominent Industrial Concerns and Public Utilities who have expressed their confidence in Ruberoid Corrugated Asbestos Sheets on their own Buildings:

A. C. Spark Plug Division
 Addressograph-Multigraph Corp.
 Allentown Portland Cement Co.
 Allis Chalmers
 Alpha Portland Cement Co.
 American Cyanamid
 American Gas Furnace Co.
 American Oil Company
 American Smelting & Refining Co.
 American Steel & Wire Co.
 American Viscose Corp.
 Arabian Oil Co.
 Armour & Co.
 Atlantic & Pacific Tea Co.
 Atlas Powder Co.
 Baker Chemical Co.
 Bethlehem Steel Corp.
 Bickelstaff, Inc.
 Braddock Light & Power Co., Inc.
 Bridgeport Brass Co.
 The Budd Company
 C. B. & O. Railroad
 Carolina Nitrogen Corp.
 Central Nitrogen Corp.
 Chemstrand Corp.
 Chesapeake-Camp Corp.
 City of Joplin, Memorial Hall
 Drive Corp., Engineering Works
 Division

E. I. du Pont de Nemours & Co., Inc.
 The Flatkote Co.
 Ford Bacon & Davis, Inc.
 Ford Motor Co.
 Foster Wheeler Corp.
 General Electric Co.
 General Motors Corp.
 Gilman-Cornick-Olsen Co.
 Goodyear Aircraft Corp.
 Goodyear Tire & Rubber Co., Inc.
 Gulf Oil Corp.
 Hercules, Inc.
 Interchemical Corp.
 International Container Corp.
 Kansas Boys Products Co., Inc.
 Karmes Potash Co.
 Lever Bros. Co.
 Lens Star Producing Company
 Lord & Burnham, Div. Burnham
 Corp.
 Mack Mfg. Co.
 Marion Power Shovel Co.
 Marquette Cement Mfg. Co.
 Merck & Co., Inc.
 Minnesota Mining & Mfg. Co.
 Mississippi River Fuel Cement Co.
 Missouri Pacific Railroad
 Missouri Portland Cement Co.
 Mobile Pully & Machine Works

Monasno Chemical Co.
 National Advisory Committee on
 Aeronautics
 National Carbon Co.
 National Guard
 National Lead Co.
 New Jersey Zinc Company
 New Orleans Public Service Co.
 Newport News Shipbuilding & Dry
 Dock Co.
 New York, New Haven & Hartford
 R.R. Co. Warehouse
 New York State Electric & Gas Corp.
 Nitrogen Fertilizer Co.
 North Carolina Shipbuilding Co.
 Northern States Power Co.
 Olin Mathieson Chemical Corp.
 Pittsburgh Corning Corp.
 Pullman Mfg. Corp.
 Pure Oil Company
 Quaker Oats Co.
 Quartermaster Corps.
 Dept. of the Army
 Ralston Purina Co.
 Republic Steel Corp.
 Ross Gear & Tool Co.
 Savannah Shipyards
 Scott Paper Co.
 Shell Oil Co.

Shelco Oil Corp.
 Secony Vacuum Oil Co.
 Southwest Forest Industries, Inc.
 E. R. Squibb & Sons
 Standard Oil Co. of N. J.
 Stone Container Corp.
 Stone & Webster Engineering Corp.
 Sun Shipbuilding & Drydock Co.
 Sunray DX Oil Company
 Tampa Electric Co.
 Tecton Ltd.
 Tennessee Corp.
 Tuxedo Inc.
 Thatcher Mfg. Co.
 Thermal Products Co.
 Todd Shipyards Corp.
 U. S. Dept. of Defense
 a. Dept. of the Army
 b. Dept. of the Navy
 c. Dept. of the Airforce
 Universal Oil Products Co.
 W. R. Grace & Co.
 Western Ammonia Corp.
 Westinghouse Electric Corp.
 Worthington Corp.
 Wright Aeronautical, Div. of
 Curtiss-Wright Corp.
 Wyandotte Chemical Corp.
 Wyatt & Kipper Fabricators, Inc.

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