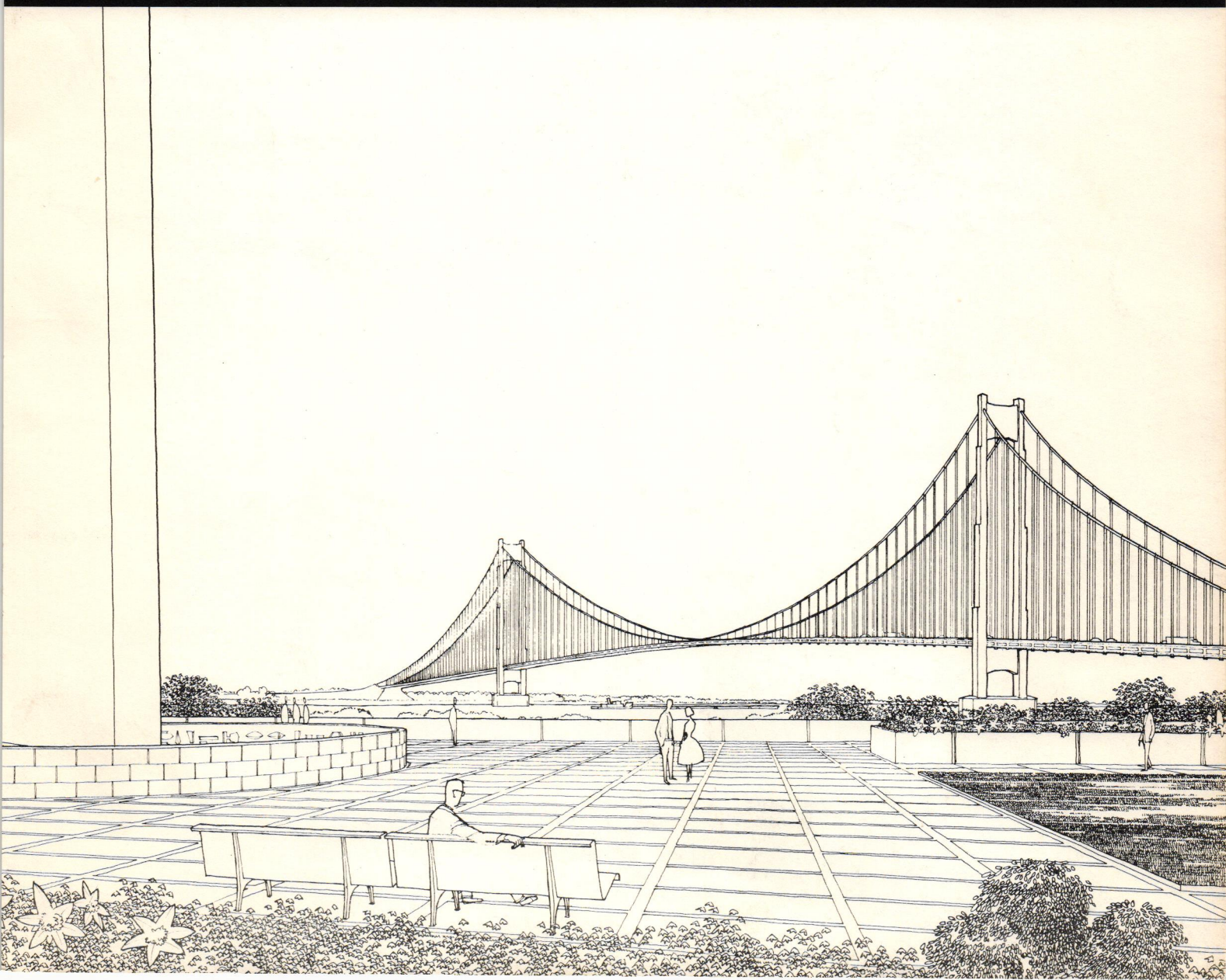
ARCHITECTURE + MEMPHIS

Duplicate

SEPTEMBER, 1964



News of quality products from Mid-South Manufacturers

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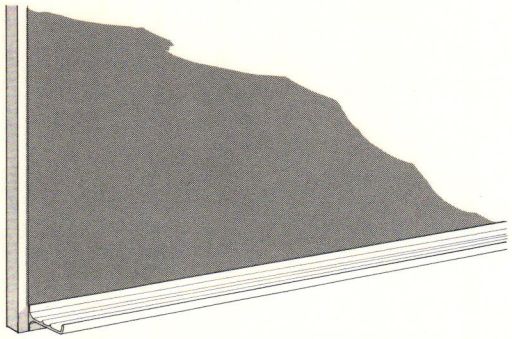

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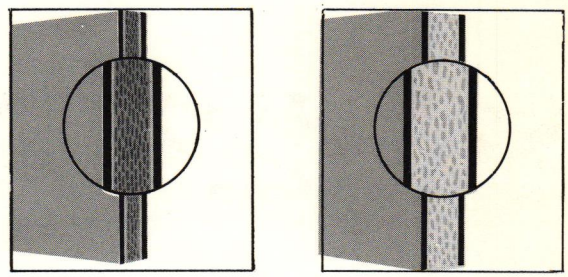

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CONSIDER THE APPEARANCE. PLEASE

This issue of **Architecture-Memphis** has one goal — to show that bridges can be attractive, even beautiful. We are not attempting to suggest a specific design or material for the new bridge across the Mississippi. To the contrary, we have gone to some lengths to obtain photographs and information on bridges constructed of both steel and concrete.

Frankly, as architects we do not care what materials go into the new bridge. Whatever is economically and structurally feasible and at the same time offers some esthetic quality will make us happy. We emphasize, however, that the appearance of the new bridge as it forms a gateway to the Civic Center should receive consideration. We feel it would be an insult to Memphis and Arkansas to repeat the sins that caused the existing eyesores that span the great river.

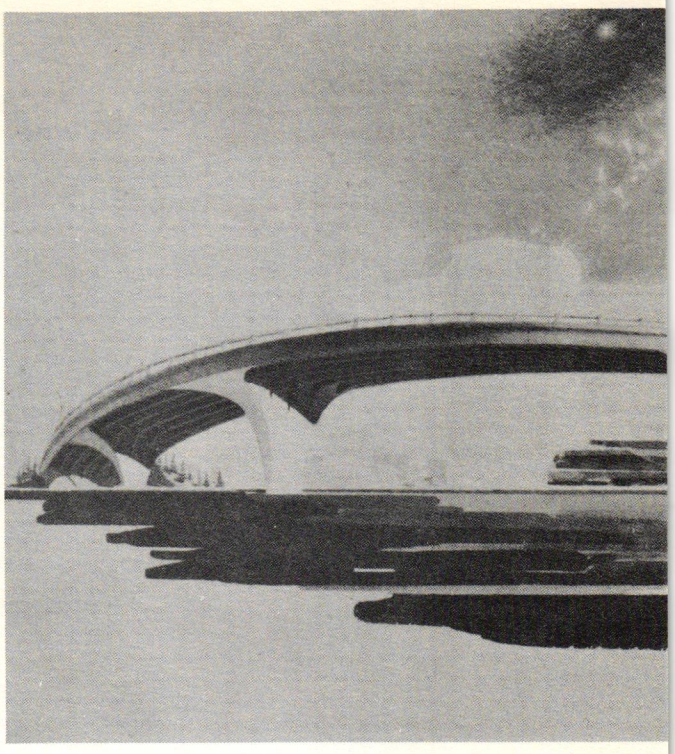
Tennessee is ready to pick up a portion of Arkansas' tab on the bridge project. If this state can absorb part of Arkansas' expense, it surely can, if necessary, help pay the price for beauty. It has often been noted that the final decisions rest with the Federal Government. Do we in Memphis, Arkansas and Tennessee not have a voice in the proceedings in Washington? It would seem that in the long run the citizens will pay for the bridge regardless of how the money is administered.

Some course of action definitely is in order. The Chamber of Commerce has shown interest in the new bridge design as has the Downtown Association. The City Beautiful Commission and the engineering organizations would likely be concerned. And Memphis Chapter, American Institute of Architects, has publicly proclaimed its interest. It would be appropriate for representatives of those groups to discuss the situation.

Meanwhile, **Architecture-Memphis** offers this special edition devoted to bridges. On the following pages readers will see a variety of bridges generally conceded to meet at least minimum standards of beauty and attractiveness. They are of varied design and materials, but most important, they show some consideration for appearance.

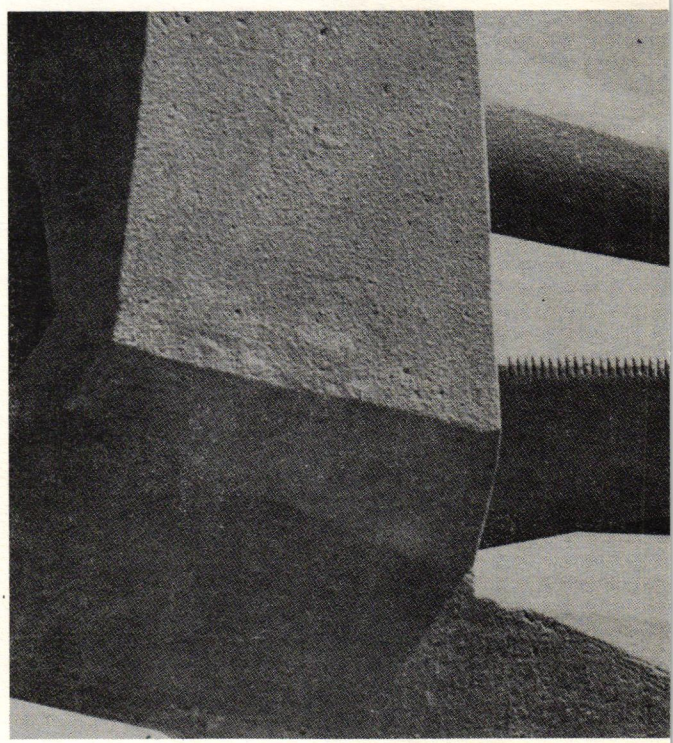
Cover: From 1959 Memphis Civic Center Design

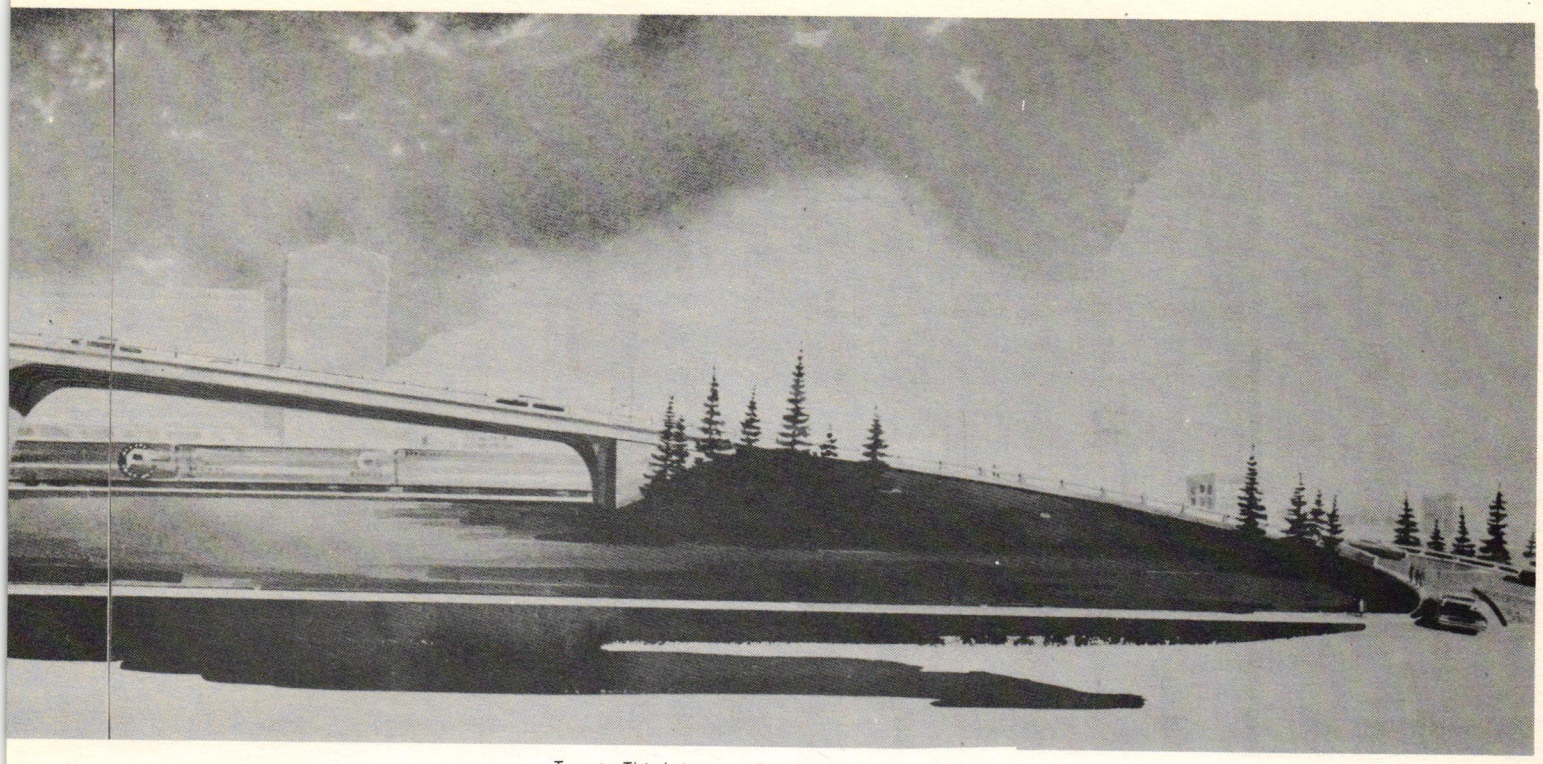
AM
1



AM
2

BRIDGES NEED NOT BE UGLY . . .
MANY MEET VISUAL STANDARDS





Twenty-Third Avenue Overhead, Oakland, Calif.

THERE is a certain fascination to bridges. They have character. They are connecting links where no other mechanism could serve a similar purpose. They often are literal gateways to the future of the people they serve. Bridges are among the most permanent of man's creative achievements.

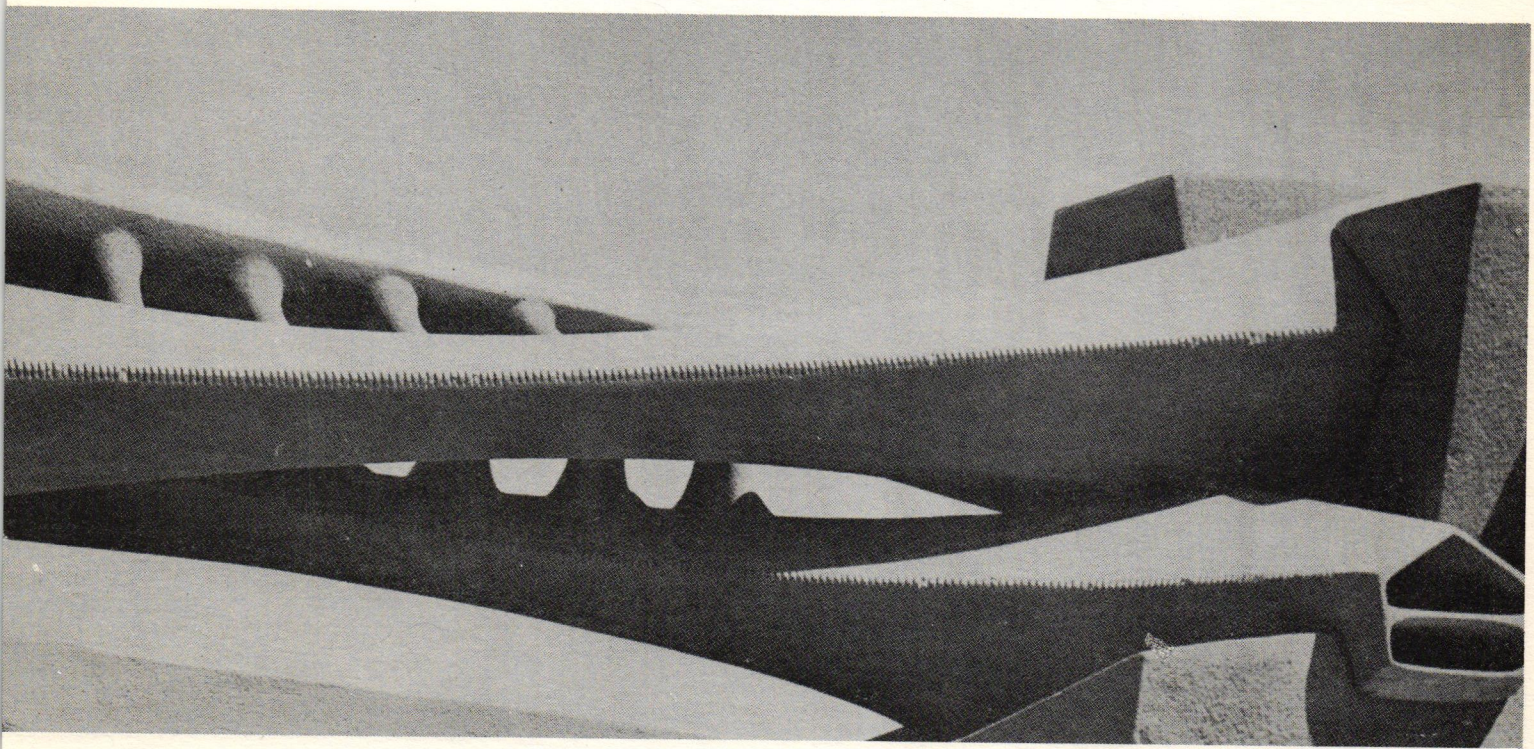
In many places throughout the world the existence of entire communities could not continue without bridges. It is true that boats and aircraft can "bridge" a gap. But, like the hanging vine that swings over a narrow chasm, such substitutes cannot accomplish the full work of a bridge.

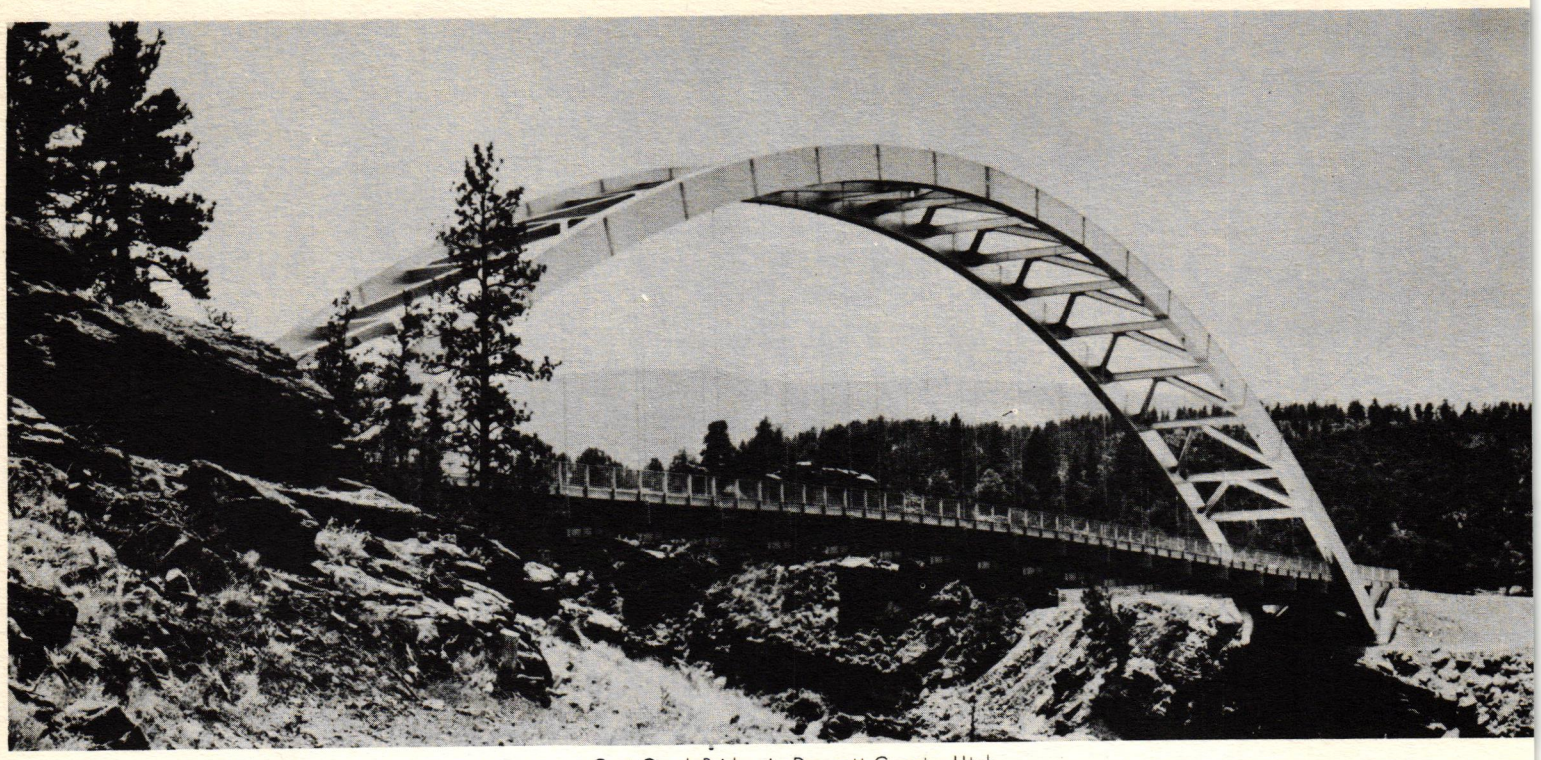
Nature provided the earliest bridges known to man. An unusual rock formation or a fallen tree sometimes served to unite two otherwise separate points. Moving through history, the craftsmen of the Roman Empire saw the necessity of bridges and produced some masterpieces that still exist today. Great Britain's picturesque foot bridges of centuries past still are objects of intense interest. Sound sometimes phenomenal engineering, has given durability and lasting beauty to some of the world's oldest existing bridges.

Technically, the art of designing and building

AM 3

From Paolo Soleri's visionary Mesa City





Cart Creek Bridge in Daggett County, Utah

bridges continues to progress. Longer and longer spans are possible with improved materials and construction equipment. And the increasing size of bridges does not necessarily preclude their being articles of engineering and architectural beauty.

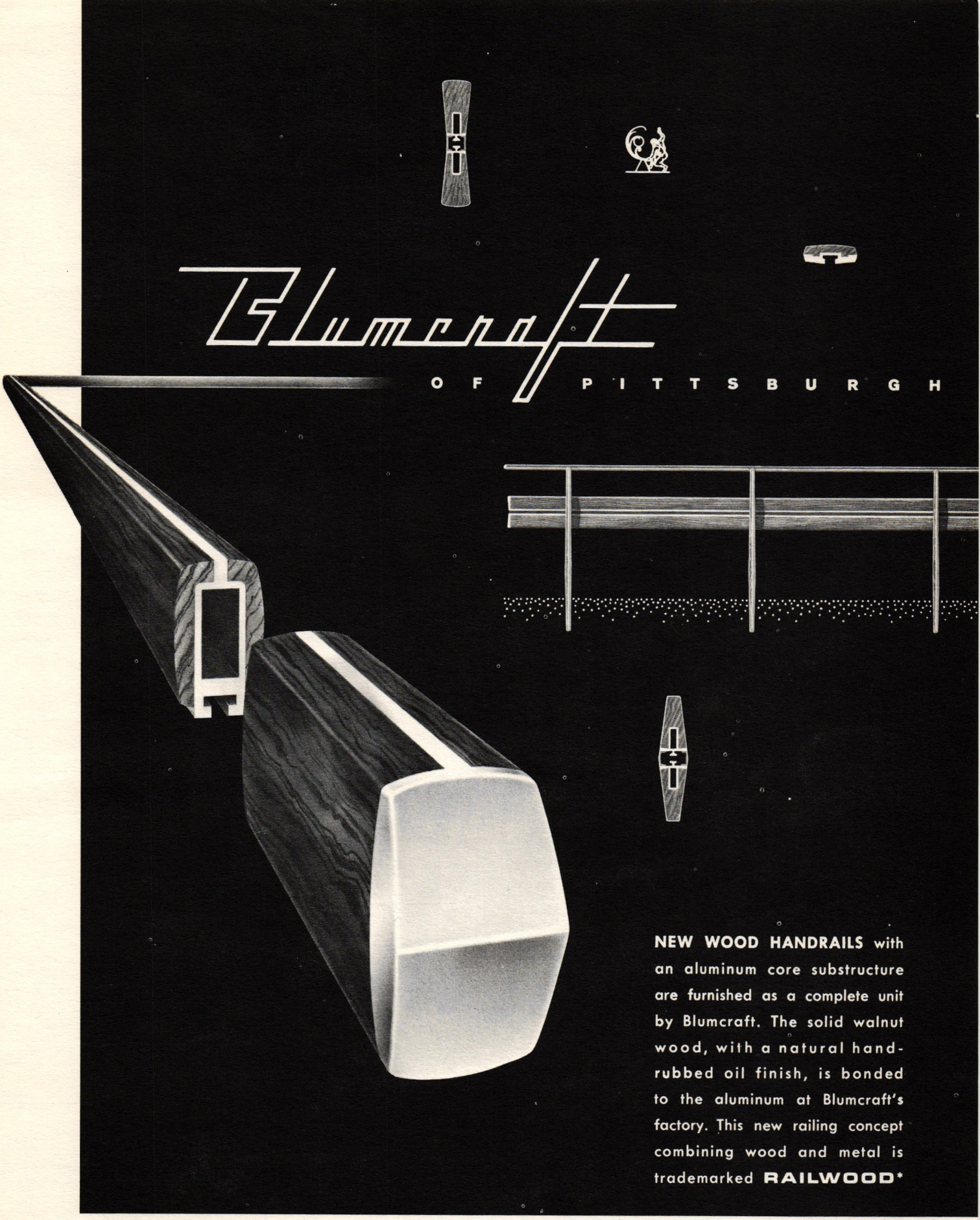
AM 4

The new Verrazano-Narrows Bridge linking the Fort Hamilton section of Brooklyn with Staten Island will, when completed, be the world's champion of suspension bridges. That colossus will have a center span of 4,260 feet, 60 feet longer than San Francisco's Golden Gate.

With its double-deck, 12-lane roadway hanging gracefully over the entrance to the New York Harbor, the Narrows Bridge likely will become the new gateway to America. In spite of its gigantic structure that spans almost three miles, the Narrows Bridge is highly acclaimed as a thing of beauty.

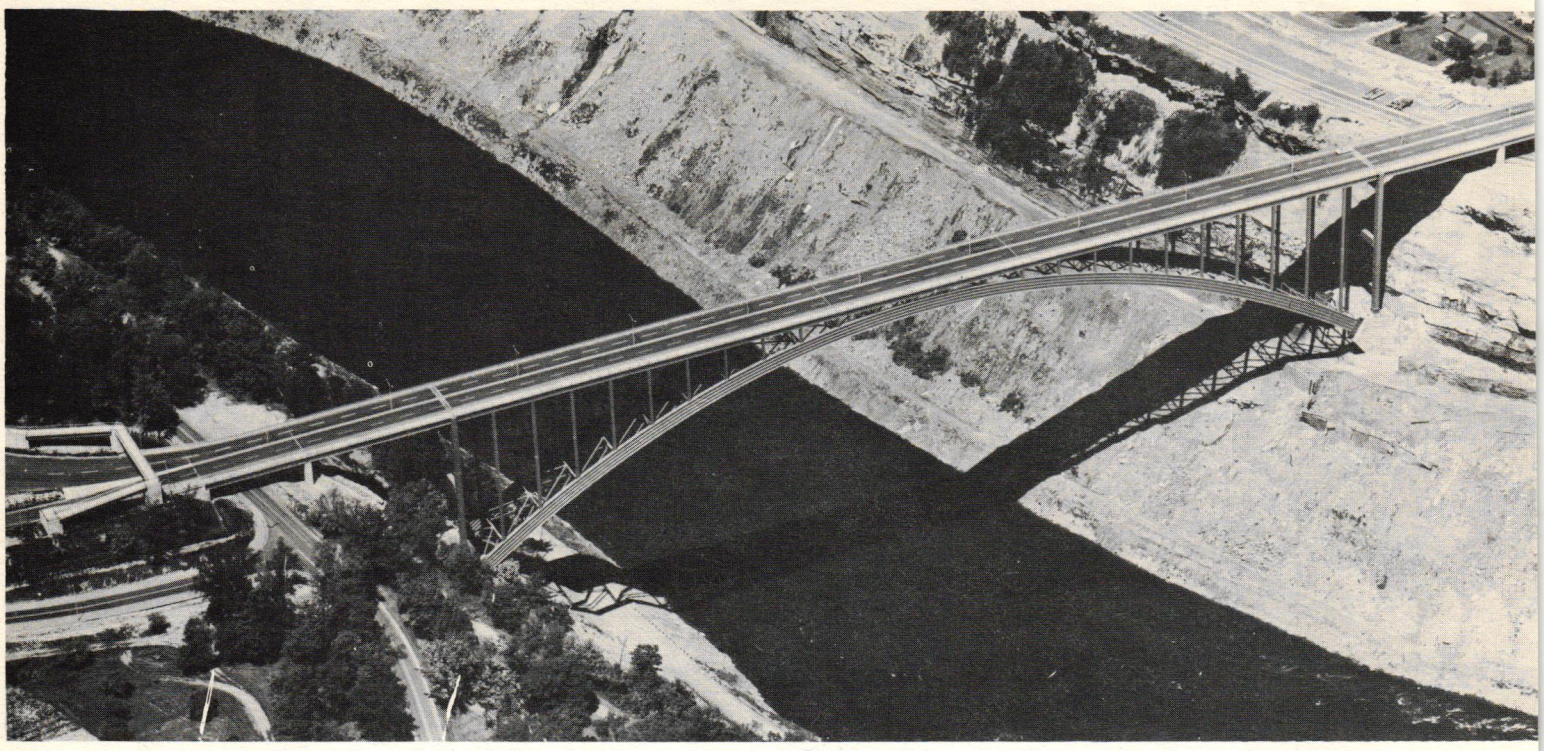
New York does not have a monopoly on outstanding bridges, but it does have a large share of the better known ones generally accepted in the esthetic sense. George Washington, Triborough, Brooklyn, Manhattan and Bronx-Whitestone bridges all show strong consideration for visual appeal. The arched overhead supports of Hell Gate and Bayonne also

Bayonne (N.J.) Bridge, a 1931 award winner



NEW WOOD HANDRAILS with an aluminum core substructure are furnished as a complete unit by Blumcraft. The solid walnut wood, with a natural hand-rubbed oil finish, is bonded to the aluminum at Blumcraft's factory. This new railing concept combining wood and metal is trademarked **RAILWOOD***

Complete 1964 catalogue available from Blumcraft of Pittsburgh, 460 Melwood St., Pittsburgh 13, Pa.



Lewiston-Queenston Bridge over Niagara River

are departures from the routine.

Brooklyn Bridge has become one of the most celebrated bridges in this country. Designed by the late John A. Roebling and completed in 1883, the bridge was termed the greatest wonder of early modern architecture by the late Frank Lloyd Wright.

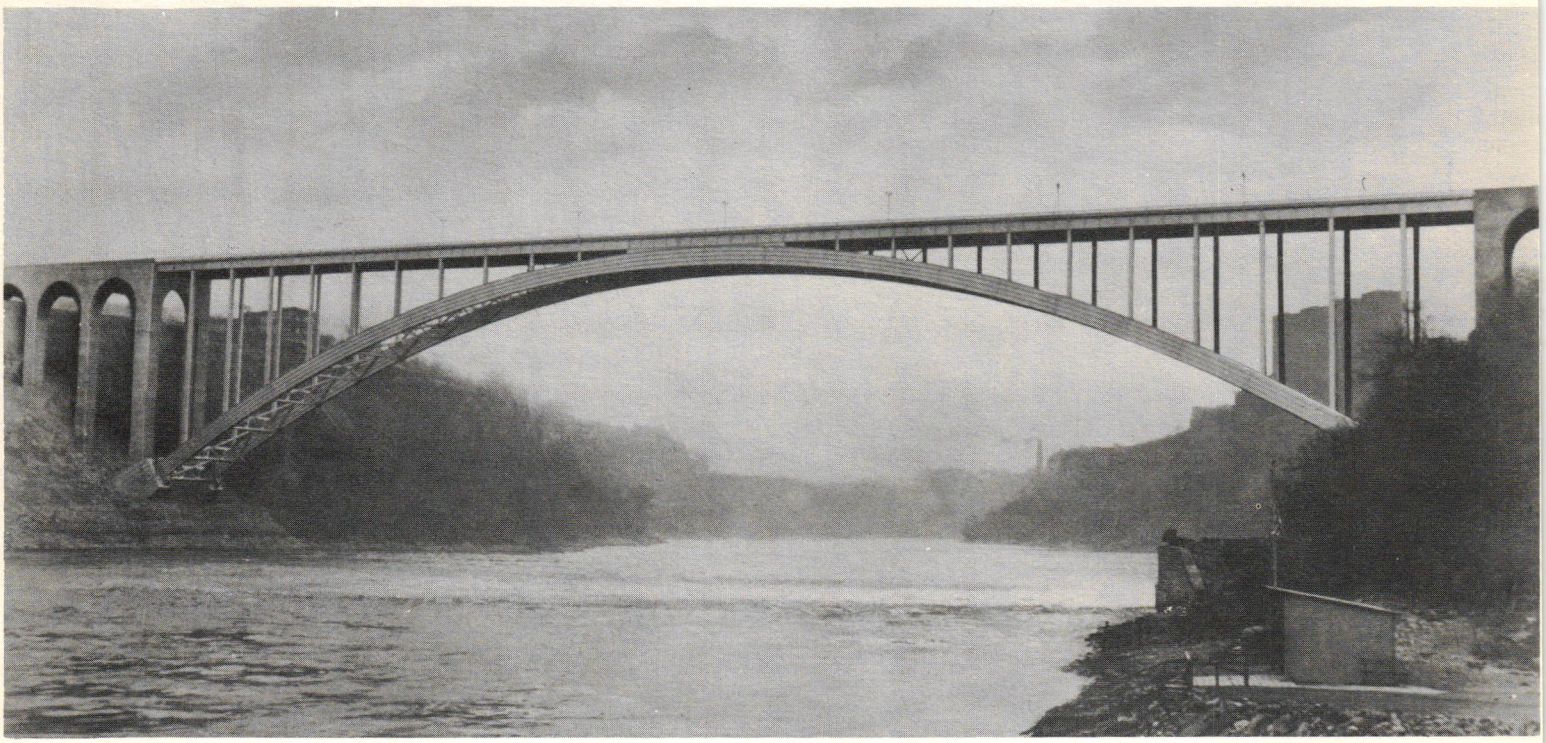
AM 6

The George Washington Bridge, fourth largest ever built, was opened in 1931. It is a delicate reflection of the great Italian architect-engineer, Pier Luigi Nervi.

It is not too difficult to find examples of bridges that have found at least general approval among people of technical and non-technical backgrounds. A trip across Michigan through the Straits of Mackinac brings travelers face-to-face with what is proclaimed as "The World's Greatest Bridge." Although "world's greatest" claims are often open to debate, there is no denying that Mackinac Bridge is a masterpiece.

Conditions surrounding construction of the Mackinac may have been the most difficult encountered on a bridge project in modern times. To support its total suspension span from cable anchorage to cable anchorage, 33 marine foundations were built. All

Rainbow Bridge over Niagara River

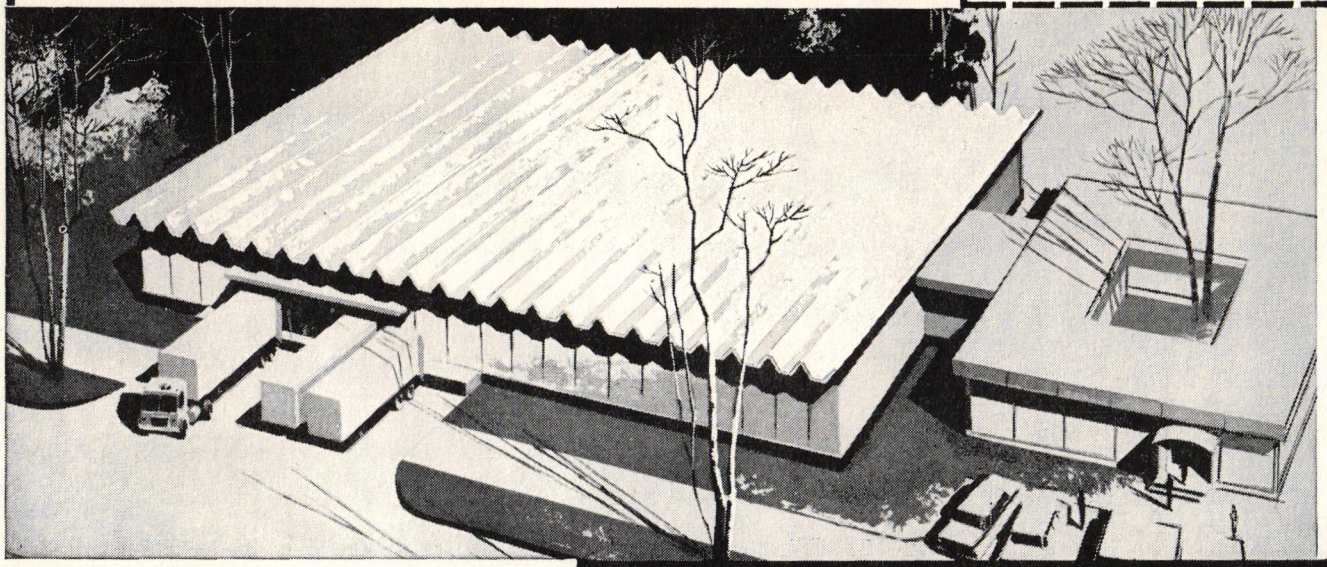


folded plates

a.i.a. file: 4-a

Prepared as a service to architects by Portland Cement Association

clip along dotted line



Tremendous span and load-carrying abilities characterize concrete shell roofs in the form of folded plates—also known as F/P's. In industrial construction folded plates are being used more and more to provide great areas of column-free space for manufacturing or storage.

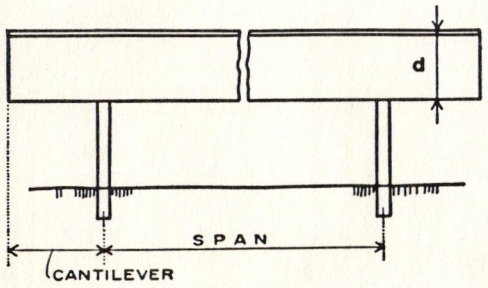
The ability of folded plates to cantilever can be applied advantageously in the design of schools, stores and hangars.

There are three basic types (two shown below) of folded plate shells—V-shaped, Z-shaped and a modified W-shape. The economy of F/P's is increased with form re-usage.

Typical span data for V- and W-shaped plates are shown in the tables below.

For more information, write for free technical literature. (U.S. and Canada only.)

CROSS SECTION



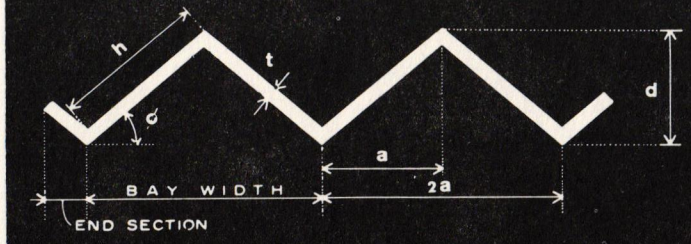
Sufficient cantilever can help to counterbalance the span. The usual span-to-depth ratio varies from 1:10 to 1:15. Example: If span is 40′ long, the usual minimum depth is about $\frac{40}{10}$ or 4′.

Formula:

VOLUME OF CONCRETE IN $\frac{\text{CU. YARDS}}{\text{SQ. FEET}} = \frac{th}{324a}$

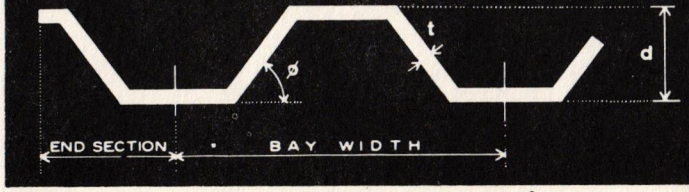
h = ft.
t = in.
a = ft.

TWO SEGMENT F/P



SPAN	ø* max.	ø* min.	d max.	d min.	2a (1)	t (2)	reinforcing (3)
40′	45°	25°	4′-0″	2′-9″	15′	4″	1.2-1.6
60′	45°	25°	6′-0″	4′-0″	20′	4″ 6″	1.9-2.7
75′	45°	25°	7′-6″	5′-0″	25′	4″ 6″	2.6-3.7
100′	45°	25°	10′-0″	6′-9″	30′	5″ 6″	4.0-5.2

FOUR SEGMENT F/P

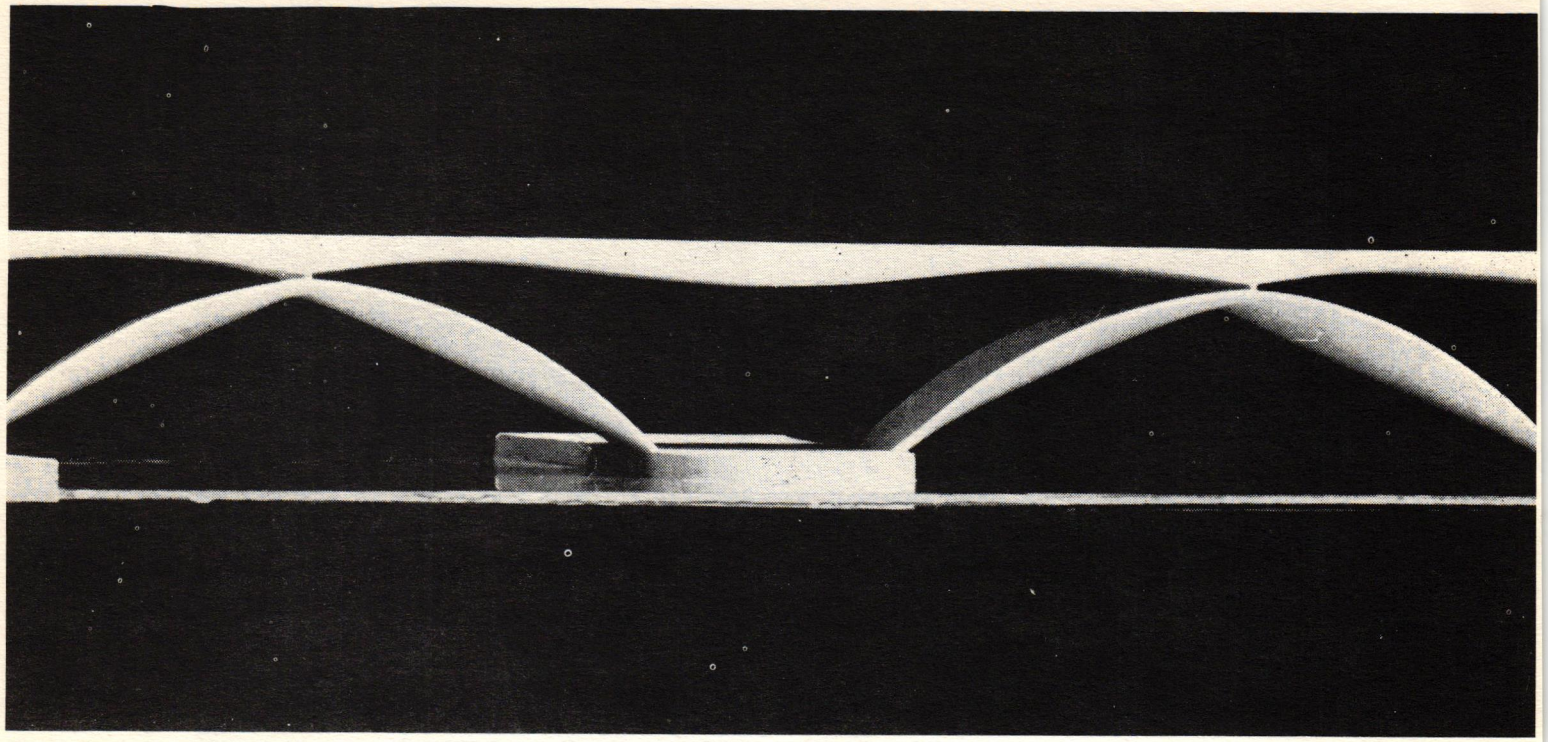


40′	45°	30°	5′	2′-6″	20′	3″	1.5-2.0
60′	45°	30°	6′	4′	25′	3″ 3½″	2.0-3.0
75′	45°	30°	7′-6″	5′	30′	3″ 4″	2.5-4.0
100′	45°	30°	10′	6′-6″	40′	4″ 5″	4.0-6.0

* max. recommended slope is 45°
(1) values shown may vary with architectural design
(2) average thickness in inches
(3) pounds per square foot of projected area

PORTLAND CEMENT ASSOCIATION

815 Falls Building, Memphis, Tennessee 38103 *A national organization to improve and extend the uses of concrete*



Competition Entry for Garibaldi Bridge in Rome, Italy

piers are on bedrock, and the two tower foundations are more than 200 feet below the water. All were built out on the water with boats, barges and ships handling the men, machinery and materials.

AM 8

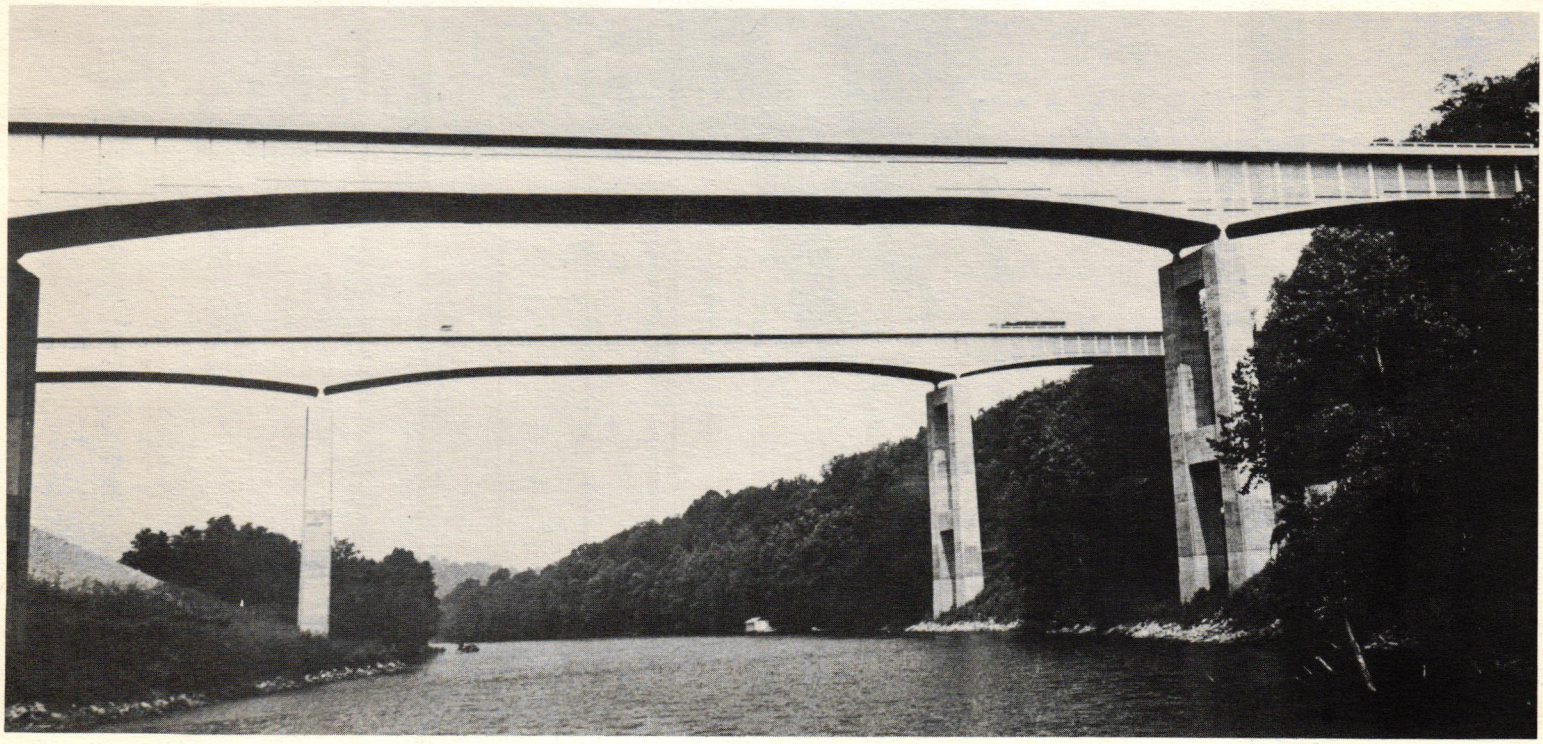
Mac'kinac Bridge (pronounced by residents of that area as Mackinaw) was built with proceeds of bonds sold to private investors. The principal of $99,800,000 and annual interest of $4,242,000 are paid out of toll revenues. Mackinac Bridge and its approaches are 26,444 feet long. Clearance between water and bridge at midspan is 155 feet.

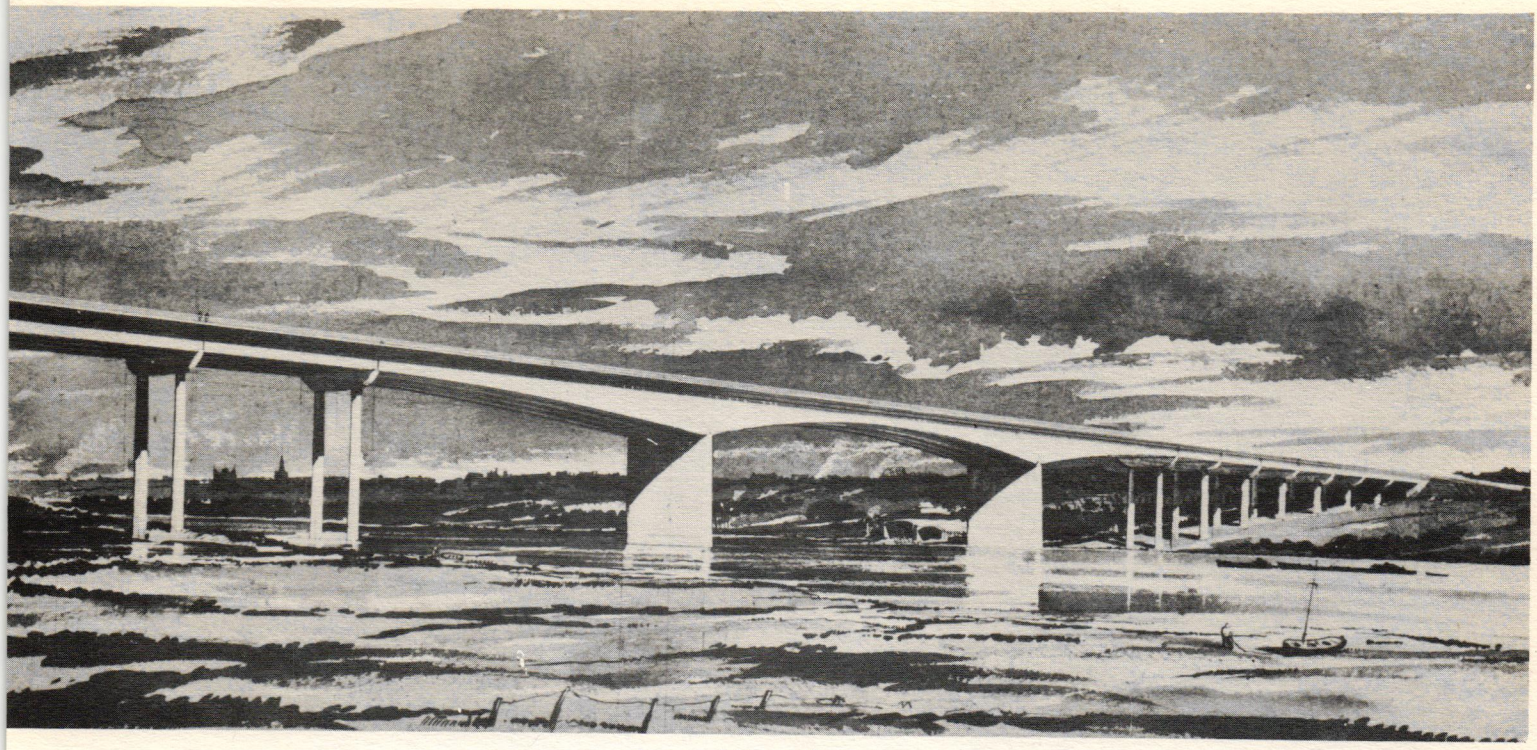
This country's bridge designers are confronted with some outstanding projects in other lands. Attractive and sizeable contributions to bridge development are being made in many foreign countries.

One of the foremost of the foreign bridges was scheduled for completion across the Paramatta River, three miles from its junction with the Sydney Harbor, New South Wales. The Australian project has the longest concrete span in the world at 1,000 feet. Called the Gladesville Bridge, the structure will have six traffic lanes totaling 72 feet in width and two six-foot sidewalks.

The bridge deck of the Gladesville Bridge at the

Interstate 64, Frankfort, Ky.





Medway Bridge in England

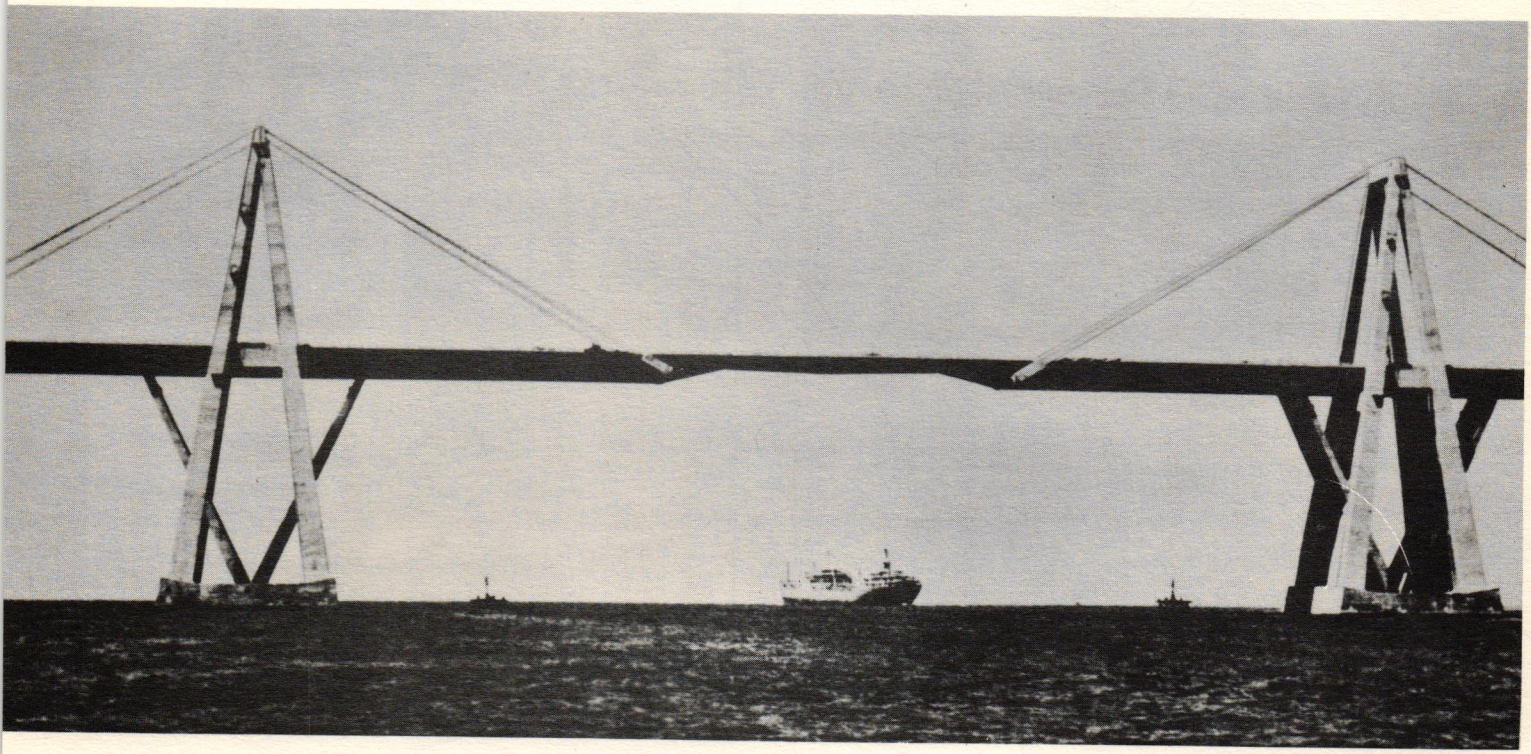
crown of the arch will be 150 feet above water. Design of the arch is in four separate Voissior ribs, each comprising 64 pairs of giant precast hollow box units joined in place. The box units used in the arch ribs weigh up to 50 tons. They are cast in a yard on the river bank, loaded on barges, floated to mid-stream and winched up to the crown of the arch for centering.

Although it is not a large bridge when compared to some in the United States, the link over Peace River at Hudson Hope, B.C., has eye appeal. A two-lane suspension structure, it carries a 680-foot single span with unloaded backstays and a prestressed deck.

In the opposite direction, at the northernmost tip of South America, stands the Maracaibo Bridge that extends 5½ miles over Lake Maracaibo. The bridge, which since completion in August of 1962 was rammed and severely damaged by an ocean-going tanker, has 135 spans. Five of the spans are 770 feet long and were designed to span the navigation channel. Maximum clearance for navigation under the highest spans is 148 feet.

It is difficult today to move in any direction without seeing pleasing results of modern bridge tech-

Maracaibo Bridge in Venezuela

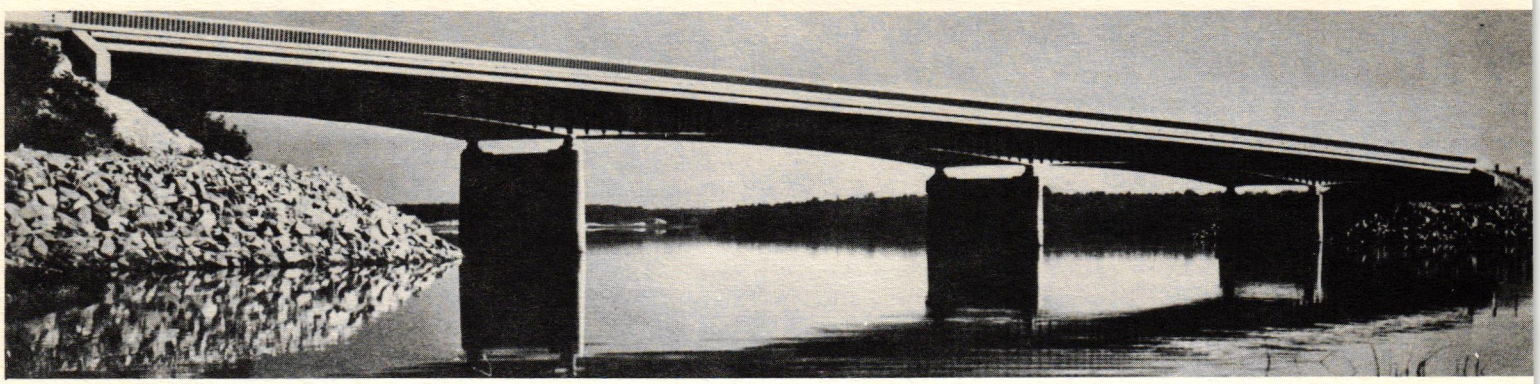


Golden Gate Bridge, San Francisco

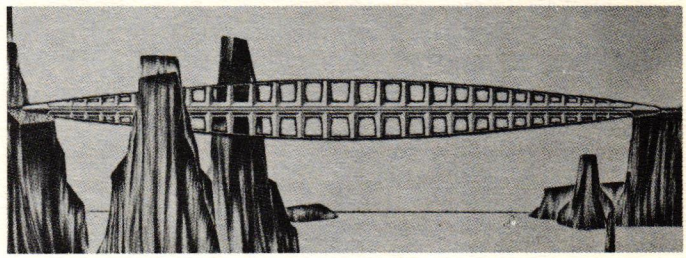
nology. Yugoslavia has its new road bridge over the River Tisa at Titel, and Great Britain has its Medway Bridge between London and Dover. The center span over the River Tisa is 505 feet, 3 inches. Medway's center span of 500 feet joins side spans of slightly more than 312 feet. The sleek roadway over Medway River is part of a new 25-mile highway in an area that has long been congested by holiday traffic to and from the English Channel ports and the north Kent coast.

Bridge designers and builders face different problems with each project. Water currents, wind, soil, load limits, temperatures, atmospheric conditions, clearance requirements, distance and many other factors must be considered. Despite their problems, those who design and build bridges have proven time and again under extremely difficult circumstances that "bridges don't have to be ugly."

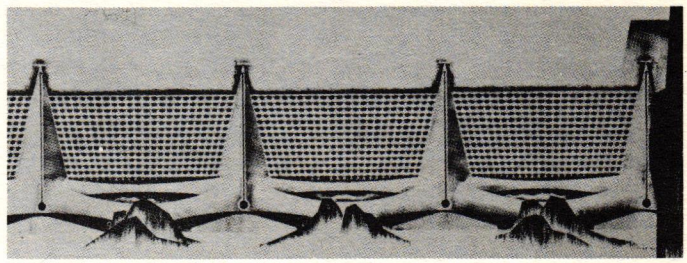
(Editor's Note: **Architecture-Memphis** is indebted to the American Institute of Steel Construction, Inc., and the Portland Cement Association for their prompt and valuable assistance in providing material for this article. Without their photographs and verbal matter this bridge issue would have been impossible. Our added "thanks" to Cossitt Library and to the architects who submitted information.)

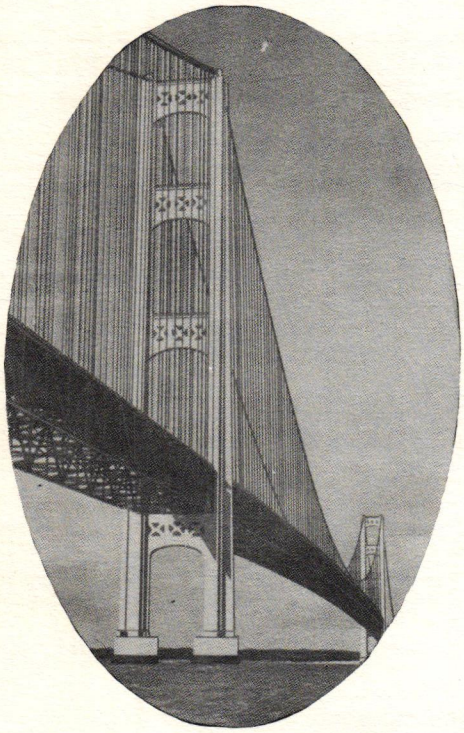


Morris Ferry Bridge, Franklin County, Tenn.



Two more Soleri designs, a bridge and a dam





Mackinac Bridge over Straits of Mackinac

AM
12

The father of the first building of our land, the United States Capitol, was Dr. William Thornton. He was a physician, born in the West Indies in 1761, educated in London, and a travelled gentleman. The date of his arrival in America from London is given as 1793. He was selected by Washington to design on the superb site chosen by L'Enfant, the French architect, the first official home of our government. This original Capitol building, burned by the British in 1814, was a typical design of the post-colonial school, and, when Latrobe, the father of the Greek Revival, rebuilt it, he adhered, curiously enough, to Thornton's original design. In addition to the Capitol the good doctor designed the Octagon House in Washington and Montpelier, James Madison's home in Orange County, Virginia.

—The Story of Architecture in America

Soon we should see still other upcoming changes in tomorrow's house foreshadowed in today's changing apartment standards. Most young couples live in apartments when they first start housekeeping. So what they learn to like and expect in these apartments can be used as a sort of "time machine" to see today what they will expect and want in the houses they buy tomorrow.

—House & Home

"Abstract art" is as misleading a term for the different movements which depart from the spatial approach as "cubism" is for the beginnings of the contemporary image. It is not the "abstract," it is not the "cubical," which are significant in their content. What is decisive is the invention of a new approach, of a new spatial representation, and the means by which it is attained.

—Space, Time and Architecture

AM 14

THAT TOWER AGAIN

Plans for stopping the Leaning Tower of Pisa from leaning any farther (it could never be straightened for it was built to incline) fill an entire set of shelves along a wall of the Ministry of Public Works in Rome. Now Professor Gustavo Colonnetti has come up with a project which has at least an 80 per cent chance of enactment.

Professor Colonnetti is President Emeritus of the National Research Council. Because of his fame, he has been able to call on a team of leading experts to work out the details for his project.

Basically the whole problem of the tower boils down to this: how to lift it off the ground long enough to build a concrete platform that will spread its weight over a wider surface of the Pisan earth than it now stands on.

Colonnetti's idea: erect above ground a giant temporary concrete ring around the tower; clinch the tower's base with a steel band after having made the inside practically solid; use 15 jacks of the kind which were blueprinted for the Italian plan (abandoned because too expensive) to lift the Egyptian granite temples at Abu Simbel out of the waters of the Assuan Dam. These jacks planted on the concrete ring and acting on the steel band can then lift the tower's weight off the ground. Actually, the tower need only be lifted a couple of millimeters (the width of a 'w' on this page).

All Colonnetti needs is to be able to see the combined gauges of the jacks registering the sum total of fifteen thousand tons of carrying stress (the tower's calculated weight). When this happens, he will know that the tower is no longer standing on its present flimsy foundations. At this point engineers can safely dig down and start pouring their wide concrete platform under the tower.

The Leaning Tower, whose every move is observed as carefully as if it were a patient running a high fever, is now almost 19 feet off the perpendicular. This inclination is of course partly compensated by the fact that Mastro Bonanno and the other unknown men who built it 800 years ago perceived, when it was only a few meters off the ground, that the soil was giving on one side. Instead of tearing down the tower and starting all over again they went on, correcting the weight and symmetry of the tubular structure to compensate for its deviation from the vertical.

In recent years the tower has increased its lean by about 1½ millimeters per annum (the width of a 'u'). This year however, the increase has been three millimeters. Though Colonnetti admits that the tower might last another 50 years, he thinks that there is not a minute to lose. With a step-up of the yearly inclination, the tower could crash before the ink is dry on still another blueprint to save it.

—From **The Italian Scene**

ASPEN CONFERENCE URGES MORE PUBLIC CRITICISM

This country needs more public criticism of city planning, architecture and all other aspects of design in order to eliminate "physically dangerous, psychologically harassing and esthetically offensive" environmental problems. That was the gist of a resolution endorsed by a majority of the 650 participants at last month's International Design Conference at Aspen, Colo. The conference, chaired by Eliot F. Noyes, FAIA, of New Canaan, Conn., had as its theme "Design '64: Directions and Dilemmas."

The resolution, which was later ratified by the organization's board of directors, deplores the existence of "too many failures of taste or functions that can be traced back either to the failure of professional designers to maintain their own standards, or to the failure of the general public to demand standards of esthetics or performance that are their due." Claiming that these situations are "largely due to failures of criticism, within the professions of design, on the one hand, and in the organs of mass opinion, on the other," the resolution recommends: 1) "A lively interchange of well-informed critical opinion"; 2) the relaxation of "all restrictive rules which subject the public good to a narrow concept of loyalty to the profession by prohibiting designers from commenting on one another's work"; 3) encouragement by manufacturing corporations of "the most free and uninhibited public critical discussion of their products"; and 4) reversal by the mass media of "their present indifferent approach to design problems."

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Gay Nineties In Review At A.I.A. Summer Party

"Beauty Review" contestants in serving line (above); Chapter President William Gaskill chats with Mrs. James Adams (above right), and Mr. and Mrs. Joseph T. Barnett ready for the beach (lower right).

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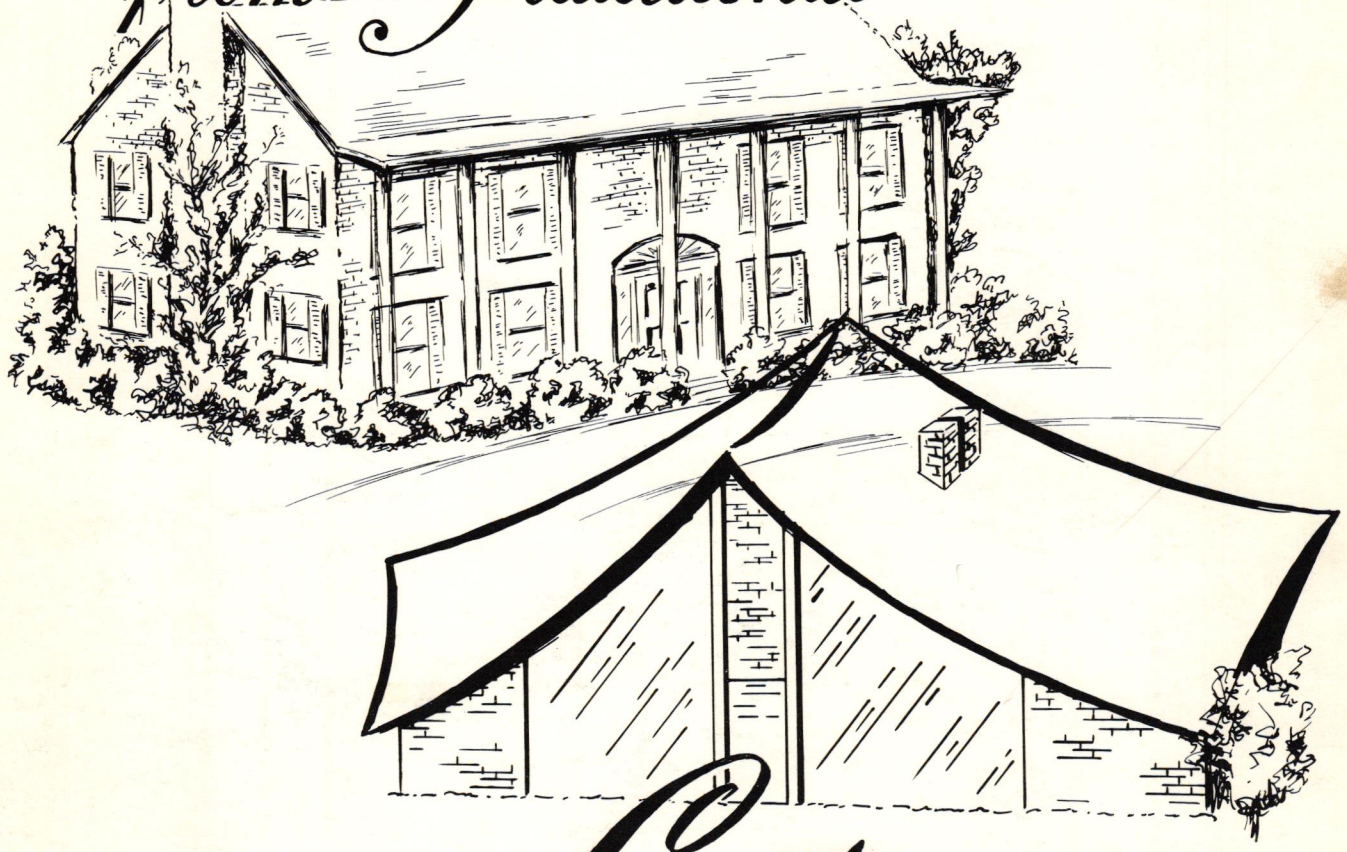

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