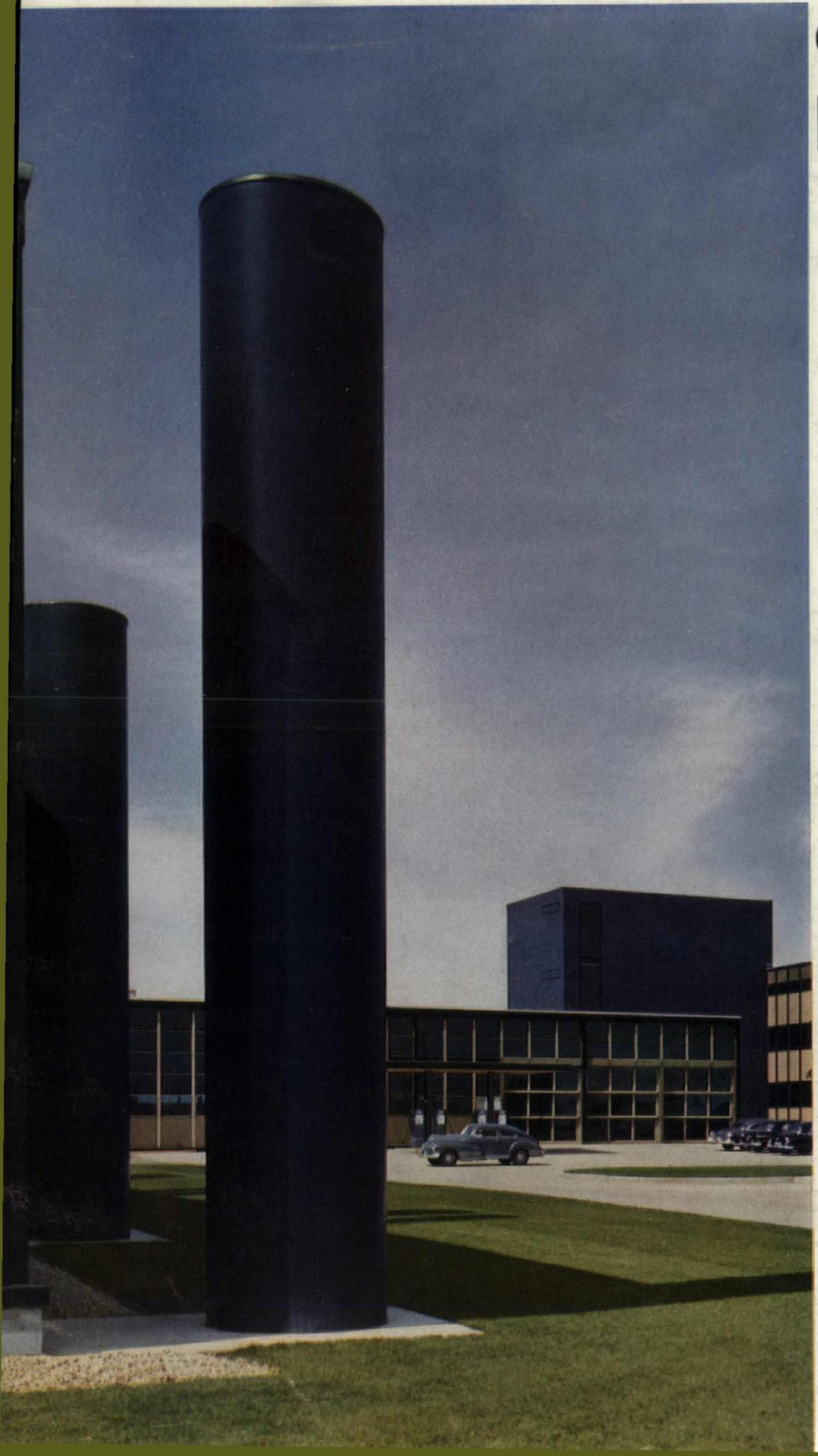
VEMBER 1951 95.5 ARCHITECTURAL FORUM

THE MAGAZINE OF BUILDING



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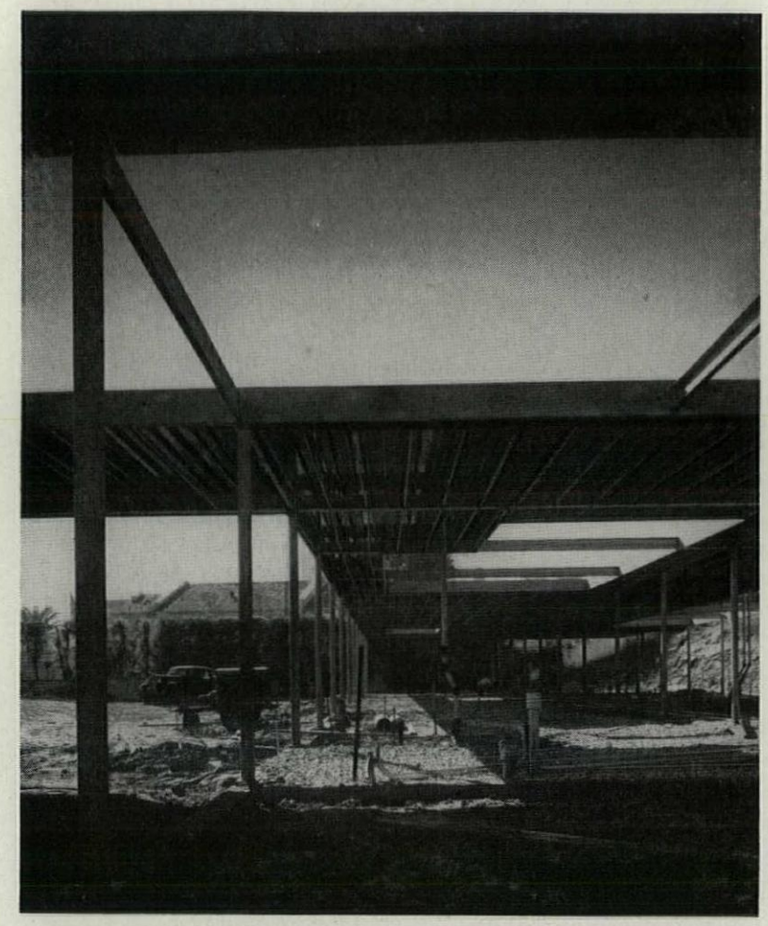


Steel frame and roof deck seen from east

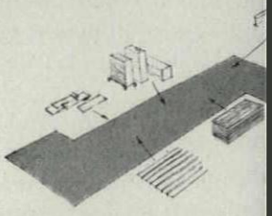
PREVIEW OF THE

under a steel umbrella—a further step toward th

RAPHAEL S. SORIANO, Architect and Builder
LOCATION: Bel Air, Los Angeles, Calif.

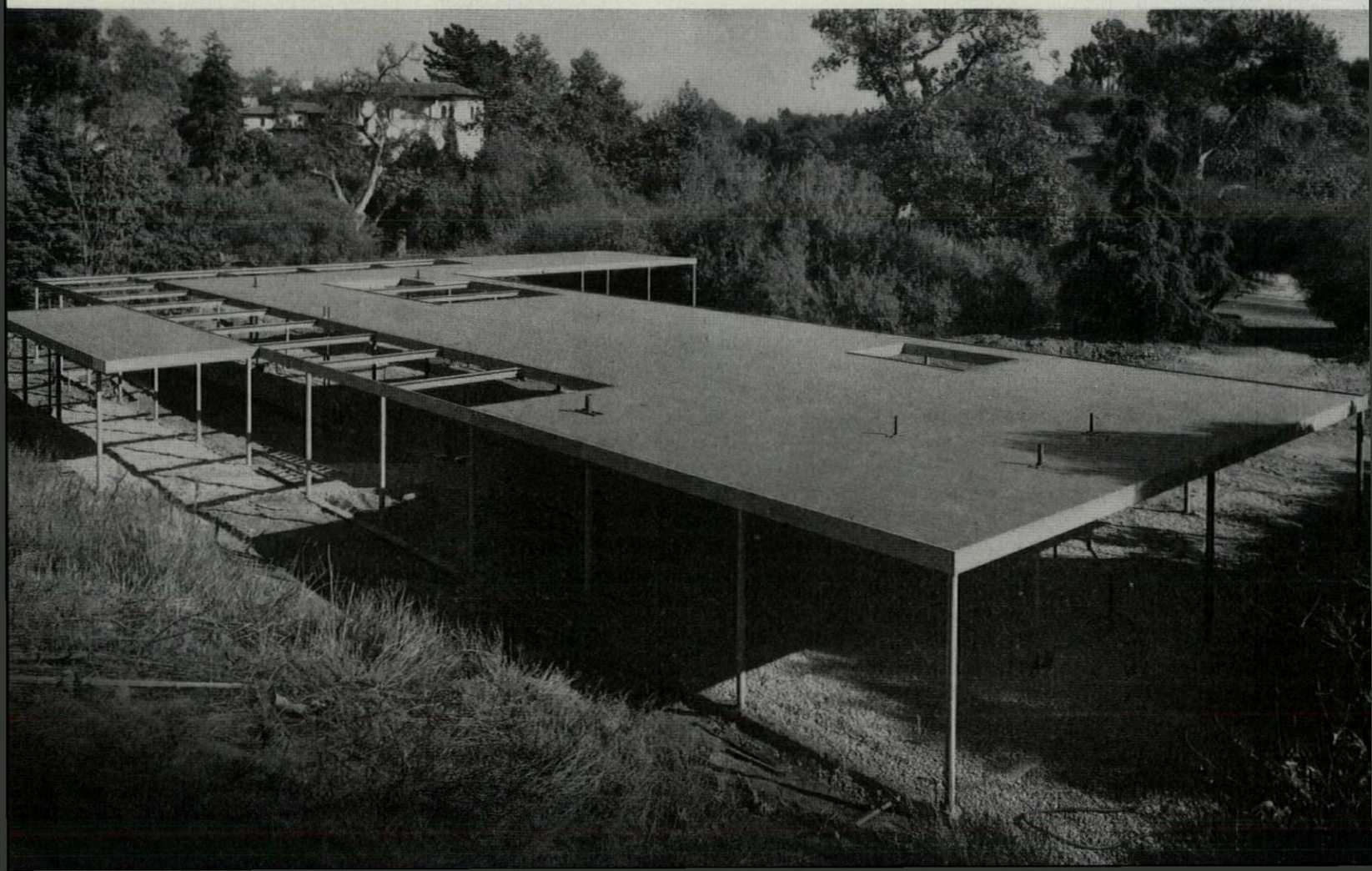
Perhaps more clearly than any other house in America, this "experimental" building by Architect Raphael Soriano demonstrates three major lines of advance in U.S. architecture and building:

1. This is an assembled house. It was assembled out of prefabricated industrial parts—steel sections, storage walls, glass panels and sheets of corrugated plastic, among others. Except for the floor slab, almost every part was factory-built and trucked to the site ready-fitted for quick assembly.



2. This is a flexible house. All partitions (except those around toilets) can be moved around and regrouped as easily as furniture, to meet changing needs and conditions. The "partitions" are created solely with storage walls that were

Photos: Julius Shulman

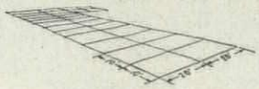


FUTURE Experimental house is a flexible space

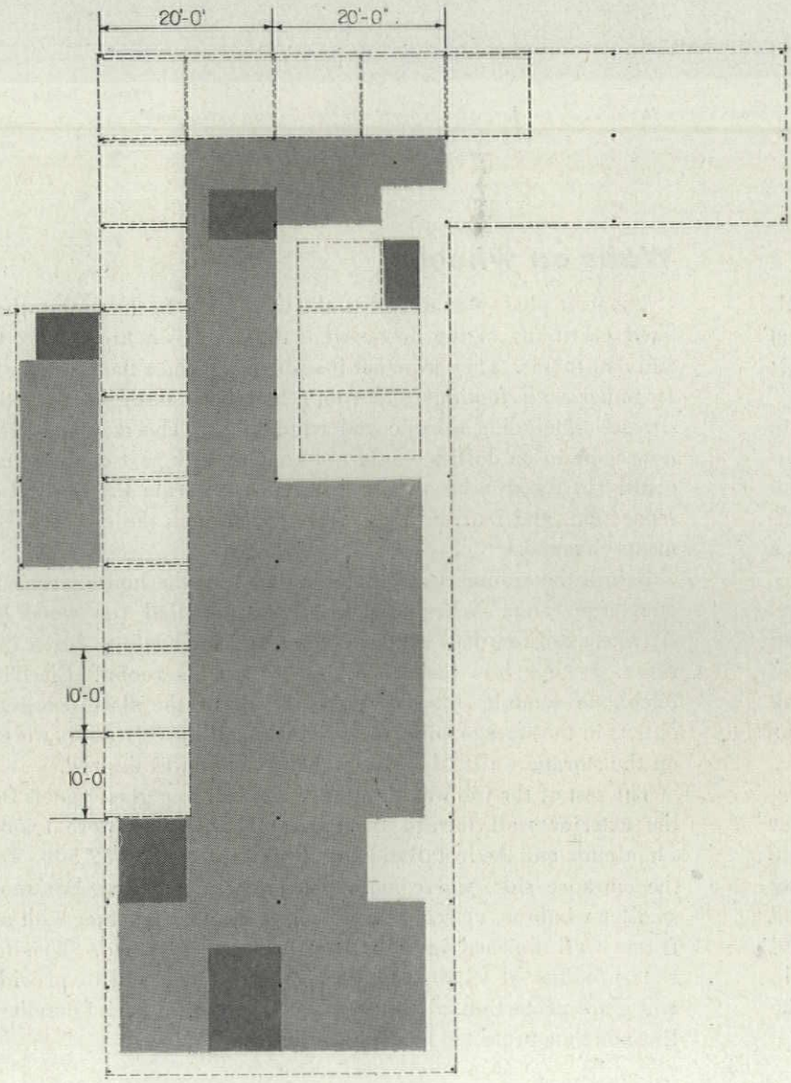
industrialization of home building

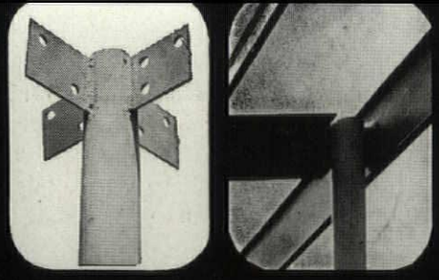
rolled into the house on dollies after the floor and ceiling had been finished.

3. This house is modular in design. Its 10′ x 20′ structural steel bays are just as important visually as they are physically. The pattern of the lally columns at regular intervals gives rhythm to the architecture, besides making possible the standardization of parts and the flexibility of plan.

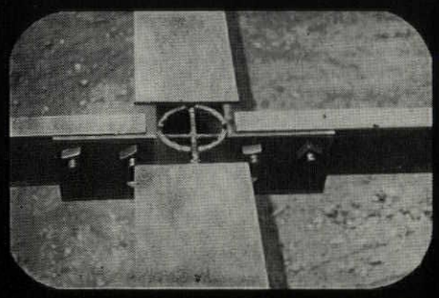


Today these three features—industrialization, flexibility and modular order—are found only in a handful of custom-designed houses. Ten years from now they may well be found in half the houses in the U.S.—and the home building industry will be able to point to higher quality, lower costs and better living as a result. If this prophecy proves accurate, then Architect Soriano's house for Alexandra Curtis is a preview of the future, well worth studying by all those whose plans are big, long-range and bold.



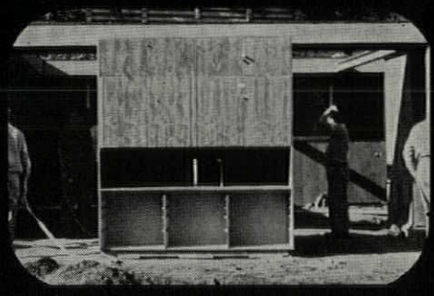


Erection of columns, I-beams and channels took 4 men and crane operator a total of

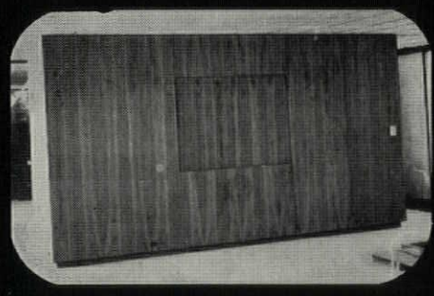


8-hours. Complete frame was bolted. Facia channels were added later.

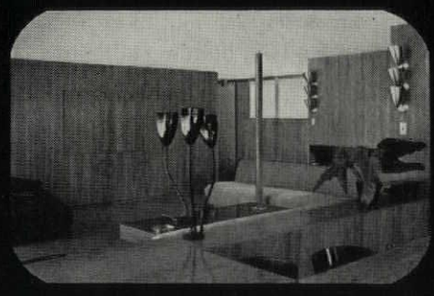
Complete steel deck was erected in 10-hours by 2 welders.



Prefabricated storage walls were rolled in on dollies.



Storage walls were designed in great variety of sizes and types within building module.



All storage units are in place. House is now complete (see next page).

Photos: Julius Shulman

Dark blue-gray steel facias, canary yellow columns and blue corrugated plastic screens (seen in the rear, to close off carport) are testimony to Soriano's excellent color sense

Steel umbrella

The first thing Architect Soriano did when he started out on his experiment was to order a great many industrial parts from a great many different factories. He ordered 49 3½″ lally columns, 8′ long; 32 6″ I-beams, 20′ long; some 4″ channels and 4,500 sq. ft. of 1½″ deep, 18 gauge steel decking. He also ordered about $3,500 worth of storage walls, about $1,300 worth of glass, some sheets of corrugated plastic, of plywood, of gypsum board, and of ½″ thick insulating cork. These items, together with all the other odds and ends that go into a building, were scheduled to arrive on the site in a steady flow.

This flow started the moment the column footings were in place. First to go up was the steel frame—lally columns, I-beams and channels. Four men and one crane operator put it up in 8 hrs. Next came the steel decking: two welders had it in place in 10 hrs. It took exactly 18 hrs. to put up a 4,500 sq. ft. steel umbrella—and thus give the other trades a protected place to work.

Facia channels (which had to be welded in place with great precision to assure a trim building silhouette) took longest of all to put up: a total of 76 man-hours were spent to do a perfect job. But while the facias were being welded in place, other men were busy pouring the floor slab with its electric conduits, glass fiber insulation and electric radiant heating system; and when the slab had been topped off with a 3/16″ layer of cork, and the ceilings had been finished in gypsum board, the stage was set for the next major phase of the experiment.

Walls on wheels

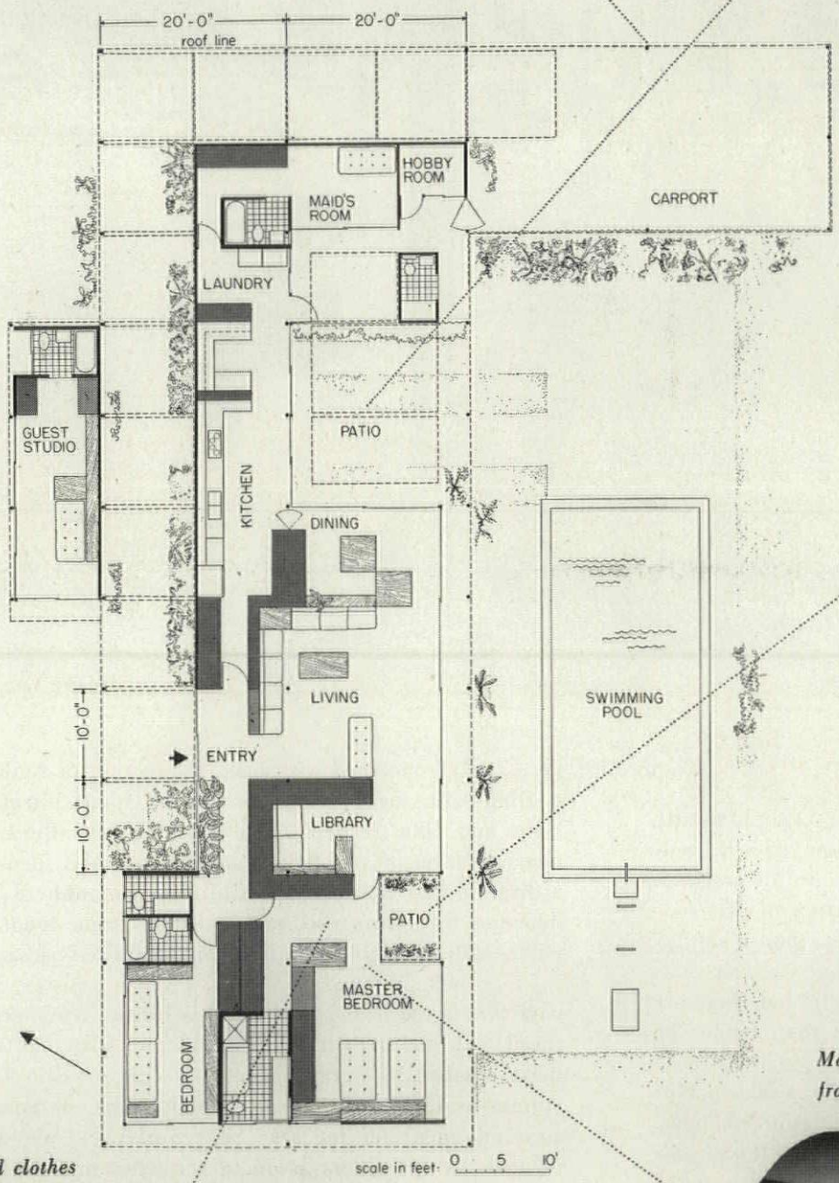
The next phase was to roll in the walls. Up to that point, the only fixed partitions in the house were those thrown around six toilets and bathrooms. They were not load-bearing, since the modular frame (together with footings and roof) had been designed to resist all stresses—including seismic and wind loads. The storage walls that now came in on dollies would not hold up any part of the structure, could (in theory) be set up anywhere to create the desired space separation, and rearranged at will if and when the owners' requirements changed.

Before the storage walls were brought in, the house was in effect one large room. When they had been installed (on wood bases) Architect Soriano had a house clearly divided into a dozen distinct areas. It took him just a week to set up his rooms. Electric and telephone conduits were brought up out of the slab, connected to outlets in the storage units. And floor-to-ceiling (8′) doors were hung on the storage walls wherever added privacy was desired.

The rest of the job was simple: 8′ x 10′ sliding glass panels formed the exterior wall toward the garden side. They were framed in aluminum, and the installation of sliding frames cost $2,500. Toward the entrance side, where more privacy was required, Soriano used smaller windows, closed off part of his house altogether with a light frame wall finished in insulating cork on plywood. To simplify waterproofing at window heads and roof soffits and to provide sun and glare protection, all exterior panels were set back from the facia line and thus protected by deep overhangs.

Carport at east end of house

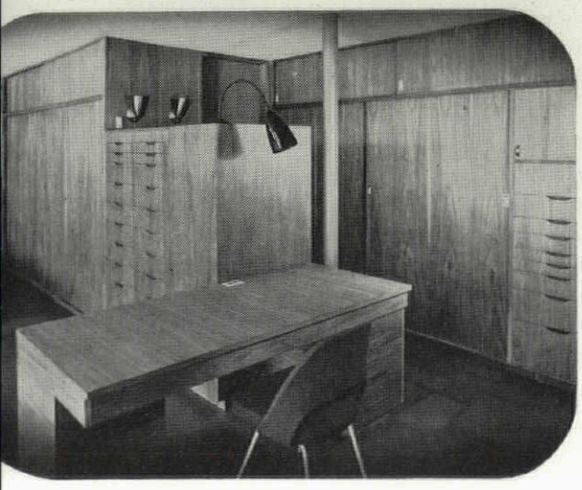
Above two patios, Soriano omitted roof deck left I-beams to form trellis. This is dining patio.

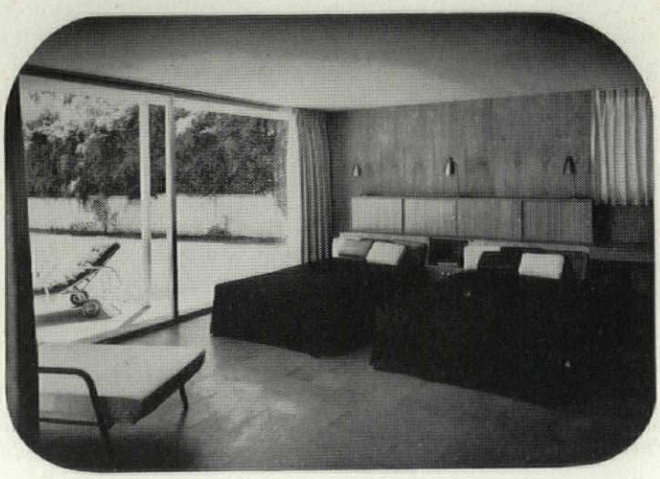


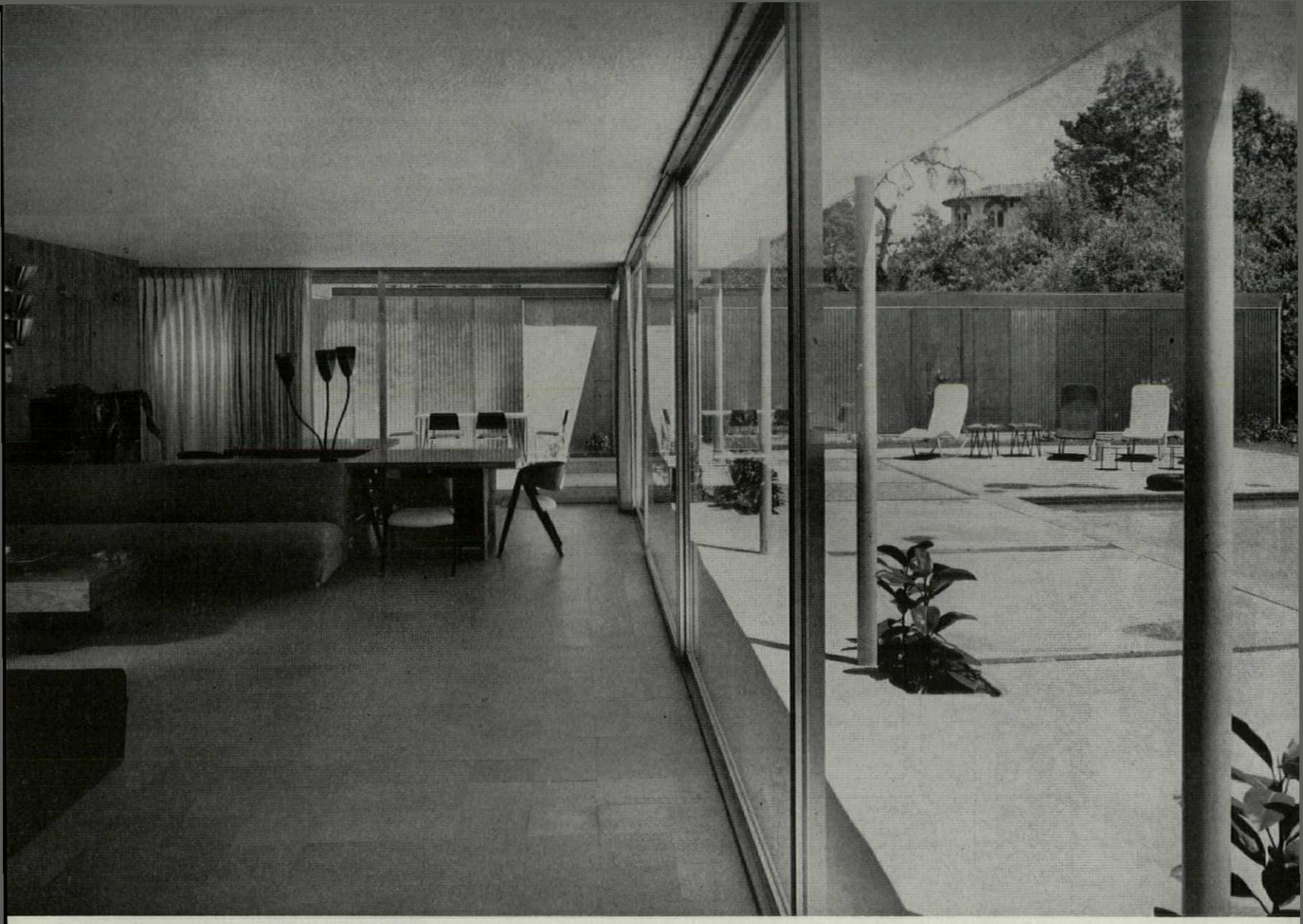
Smaller patio adjoins master bedroom

Master bedroom has 8' x 10' sliding glass walls framed in aluminum.

Dressing table and clothes storage in master bedroom.







Toward a new industry . . .

The kind of industrialized house Architect Soriano got could hardly have been produced in anything but steel. No other material will permit such working to close tolerances and such speed of erection. Actually, Soriano found that his steel frame complete with steel roof decking came to less than $1 per sq. ft.—or 5% less than a similar lally-column structure supporting a more traditional wooden roof. But while this small, tangible saving might seem negligible, there are important *intangible* advantages to a steel house that cannot be measured in dollars and cents.

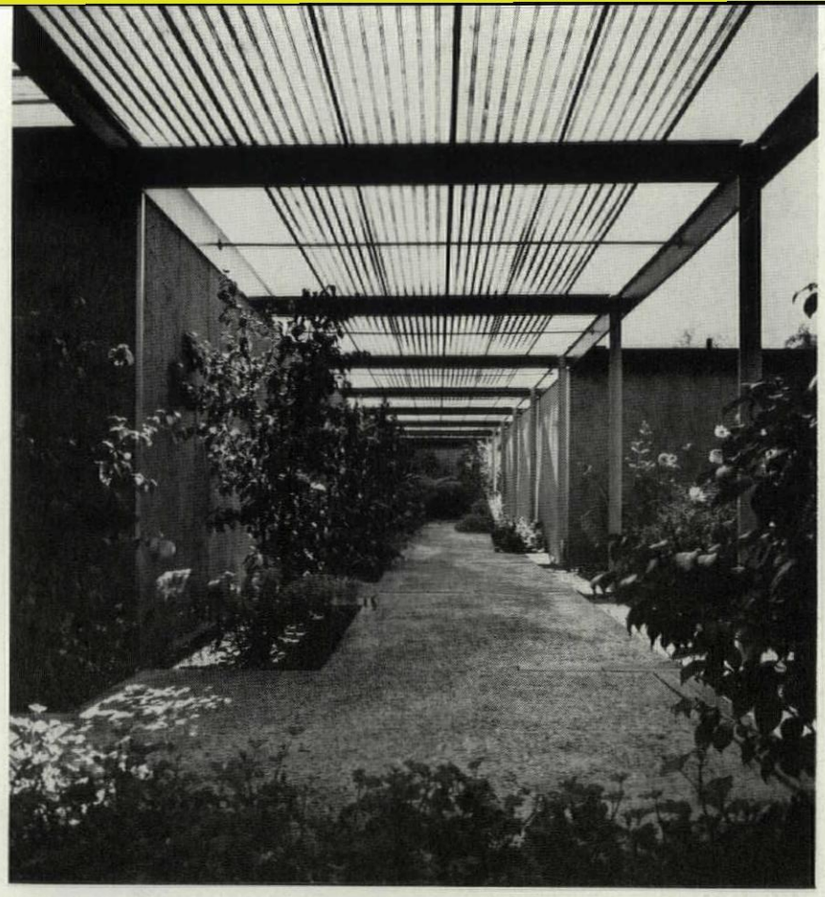
These are concerned with the increased per-man-hour efficiency of other trades working under the steel umbrella (which, as noted above, took only 18 hrs. to erect.) They are concerned, too, with the greater precision of steel—not only a practical asset where other parts of the building are prefabricated elsewhere and must fit perfectly when moved into place; but also an esthetic asset in the crisp and neat kind of architecture for which Soriano is famous. It is unfortunate that the advantages of steel construction are being driven home by men like Soriano and Eames (Sept. issue, '50) at the very time when steel in building is again becoming scarce; but since the points have been made so handsomely, architects and builders will remember them well when steel is again available.

. . . and toward a new flexibility

To the merchant builder, especially, Architect Raphael Soriano has a good many things to say. For while the merchant builder is necessarily concerned with mass-production of buildings, he is also dealing with many hundreds of individual clients with different tastes and different needs. To him, therefore, the Curtis House is a demonstration of two factors once considered incompatible: Standardization and individual flexibility. From where Soriano sits, the house of the future will be a modular frame made up of standard parts, with movable walls that can be shifted as easily as furniture.

If that is the lesson of the Curtis House, Architect Soriano is still faced with one or two minor problems: First, he found that it was more practical to spray his ceiling with acoustic asbestos *after* the storage walls were in place—which tends, of course, to fix their location once and for all. Says Soriano: "We decided to bring cabinets in *first*—thus avoiding scratches and dents in the ceiling. With a plywood ceiling, this would not happen." Second, Soriano might have introduced a network of electric and telephone outlets throughout his floor slab to correspond to the modular grid—again an aid to future flexibility.

But apart from such minor refinements (which were omitted because the developed plan as it stood satisfied his client's program) the Curtis House is a remarkable demonstration of the most up-to-date building techniques. Admittedly, Soriano's umbrella is not as advanced as Buckminster Fuller's; but within the framework of American technology in 1951 (and, probably, for some years to come) the Curtis House is perhaps the finest industrial product that American home building can boast.



Pergola along entrance wall is covered with blue corrugated plastic sheets resting on I-beams. Planting beds are integral part of design, fit into structural module. Small guest house is at right. Wall panels along entrance side are faced with ½" insulating cork left in its natural color.

View across living room shows 8' x 10' sliding glass panels, swimming pool beyond. Carport with blue corrugated plastic screen is at left. Floor is of cork tile throughout, ceiling of acoustic asbestos sprayed on gypsum board.

Photos: Julius Shulman