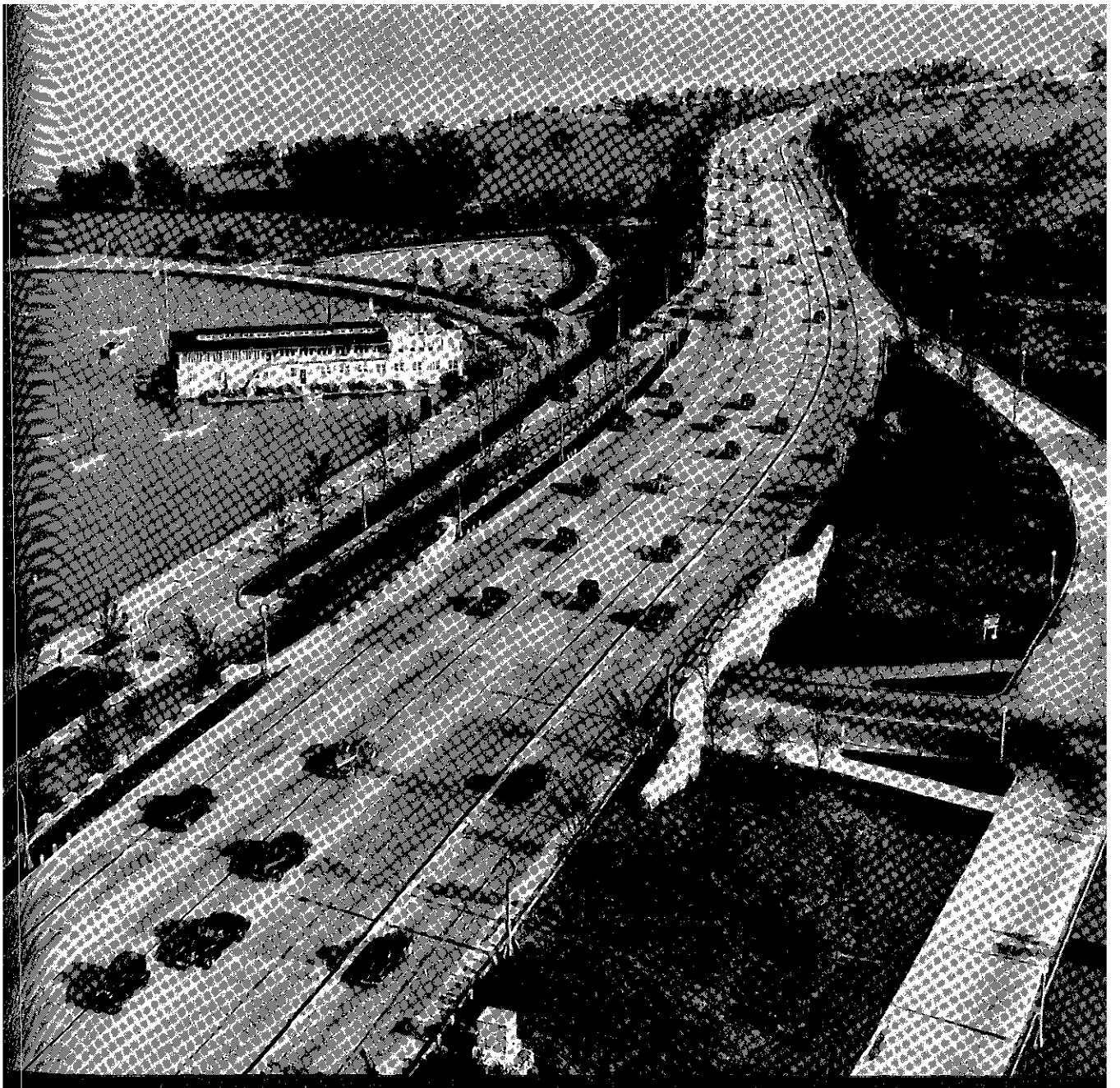
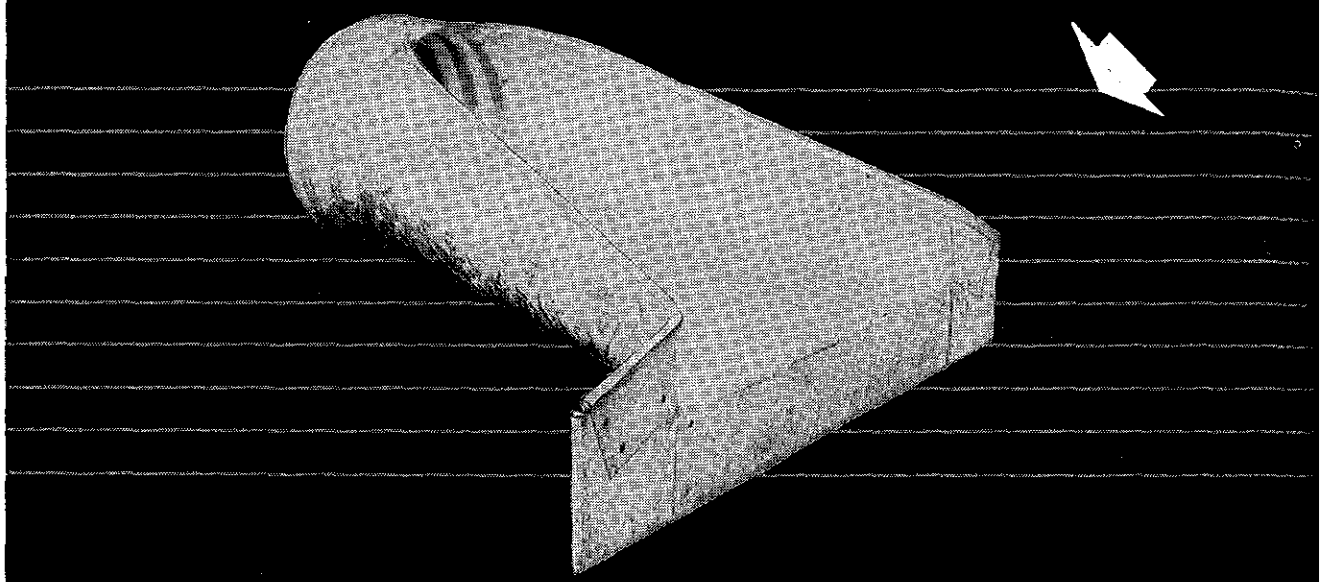


Highway

36 YEARS DEVOTED TO THE IMPROVEMENT OF HIGHWAYS, RAILWAYS, MUNICIPALITIES

Finish off your culverts



with these NEW END SECTIONS

Here's new end protection for corrugated metal culverts. It meets all requirements for present day road design—provides added safety, economy, efficiency and beauty.

ARMCO End Sections fit the slope to blend perfectly with any landscaping treatment. There are no obstructions above the shoulder grade—an important safety feature—and nothing to interfere with regular maintenance operations such as mowing or snow removal. Tightly banded to the culvert pipe, ARMCO End Sections resist settlement and frost action and withstand transverse pressures. The toe plate can be extended to any depth to prevent undermining and undercutting. On the upstream end the flared design reduces entrance loss—takes more water faster.

ARMCO End Sections require but little excavation and are easily installed with a minimum of unskilled labor. Curing or follow-up operations are not needed. These End Sections will last as long as the culvert and should conditions change, they can be salvaged for re-use. Write for data.

Armco Drainage & Metal Products, Inc.
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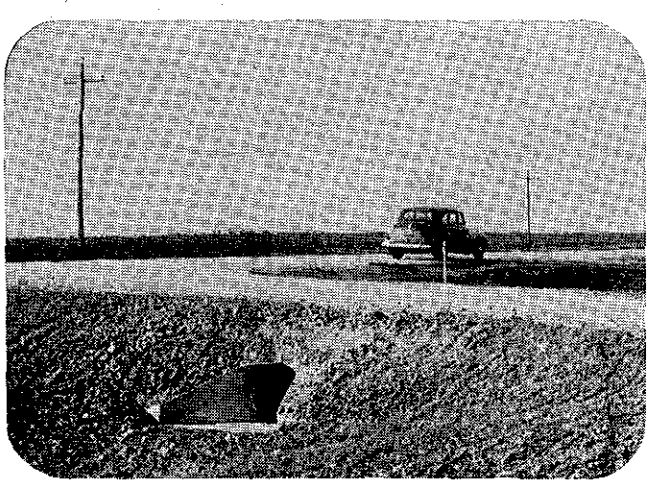

ARMCO

Armco

End Sections

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CONSTRUCTION IS SYMBOL OF PROGRESS

"Progress in a nation depends upon the pioneering spirit of its people. In this country, we have developed the genius for the transmission of new ideas through research and engineering into new and better products and into new and better services for the people." So spoke E. P. Palmer in a recent address before the 34th annual meeting of the Chamber of Commerce of the United States.

Fortunately we live in a country that has been friendly and encouraging to individuals and organizations whose inventiveness and industry have opened up new opportunities for employment and higher standards of living.

Because these wealth producing processes have required new buildings, new transportation and other facilities, the construction industry is pointed out as being essential to all physical progress. The skill of craftsmen, engineers and manufacturers of equipment and materials are in demand because of this progress.

But Mr. Palmer adds this warning, "The industry's past achievements and the abundant evidence which they provide of its progressive character is no reason, however, for complacency. On the contrary, the industry today faces new problems which will put to a severe test its capacity to carry on its activities as heretofore with a minimum of government regulation and a maximum of private initiative and private risk-taking."

The construction industry needs to be freed as rapidly as possible of present-day restrictive measures so that it can again set the pace in building those facilities which are so badly needed everywhere.

BETTER HIGHWAYS AHEAD

Standards of constructing our principal highways have gone through a distinct evolution during the past quarter of a century. The trend is clearly outlined in this issue by Deputy Commissioner H. S. Fairbank of the Public Roads Administration.

So great have been past changes that the authorities no longer think in terms of the *ultimate* which was formerly called "permanence" but which proved elusive as change followed on the heels of change. Designing for the safe movement of traffic during a period of 20 years is about as far as the authorities will now commit themselves.

Here is a practical recognition of possible future progress. It is better to build with the idea of adapting construction to future requirements than to build with the permanence of the Pyramids only to find that obsolescence or out-moding of the facilities has left us with an economic monument.

FOUNDATION PILING

Of interest to road builders who think of corrugated pipe as used primarily for culverts, sewers and subdrains, is the article in this issue on the use of nearly two million feet of this pipe as piling shells for a single building project. The Stuyvesant Town project in New York City is establishing several records with reference to size and to quantity of materials used.

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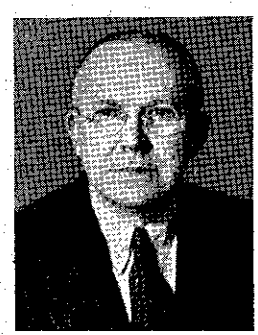
Highways of the future

by H. S. Fairbank
Deputy Commissioner, Public Roads Administration



H. S. Fairbank

HIGHWAYS of the future will differ from highways familiar to the past mainly in a better adjustment of their design and capacity to the character, purposes and volume of their usage. This, I believe to be the broadest possible characterization of the change that is likely to occur in the kind and condition of the entire highway system in the coming years.

It is applicable at the one extreme to the relatively small part of the total road and street mileage that serves, and will continue to serve, the principal arterial traffic streams between and within the cities. It is equally applicable at the other extreme to the much greater mileage the function of which will remain, as in the past, the gathering of the great arterial streams from, and their distribution to, the farms and the city homes and places of business and industry that are both the sources and the destinations of all highway movement.

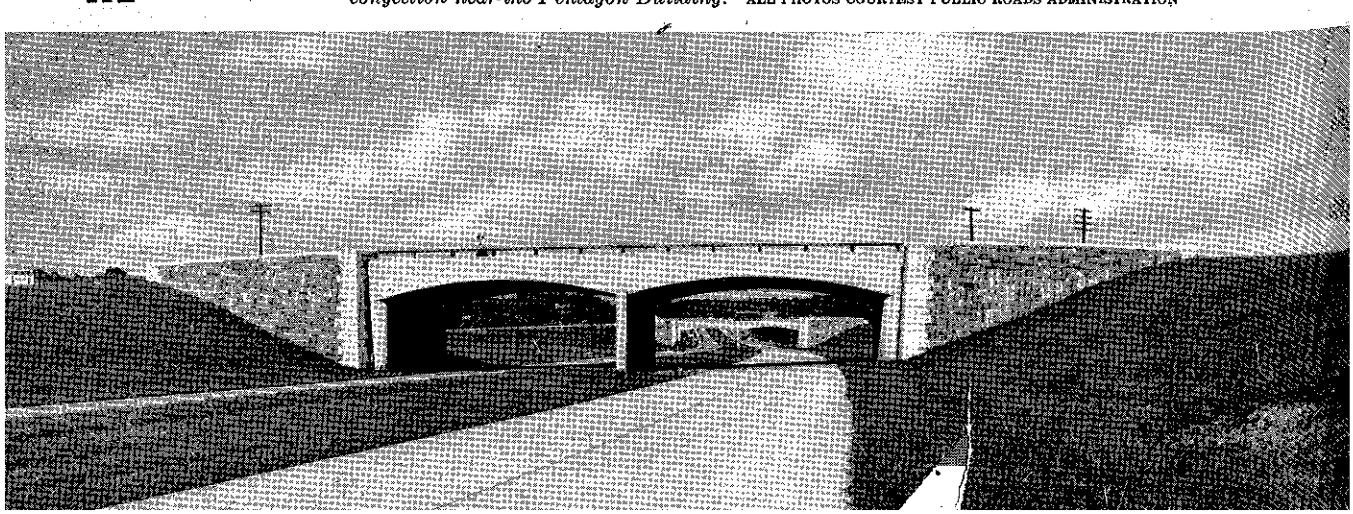
The achievement of this change is the central purpose of the plan or integrated highway improvement envisaged in the Federal Aid Highway Act of 1944.

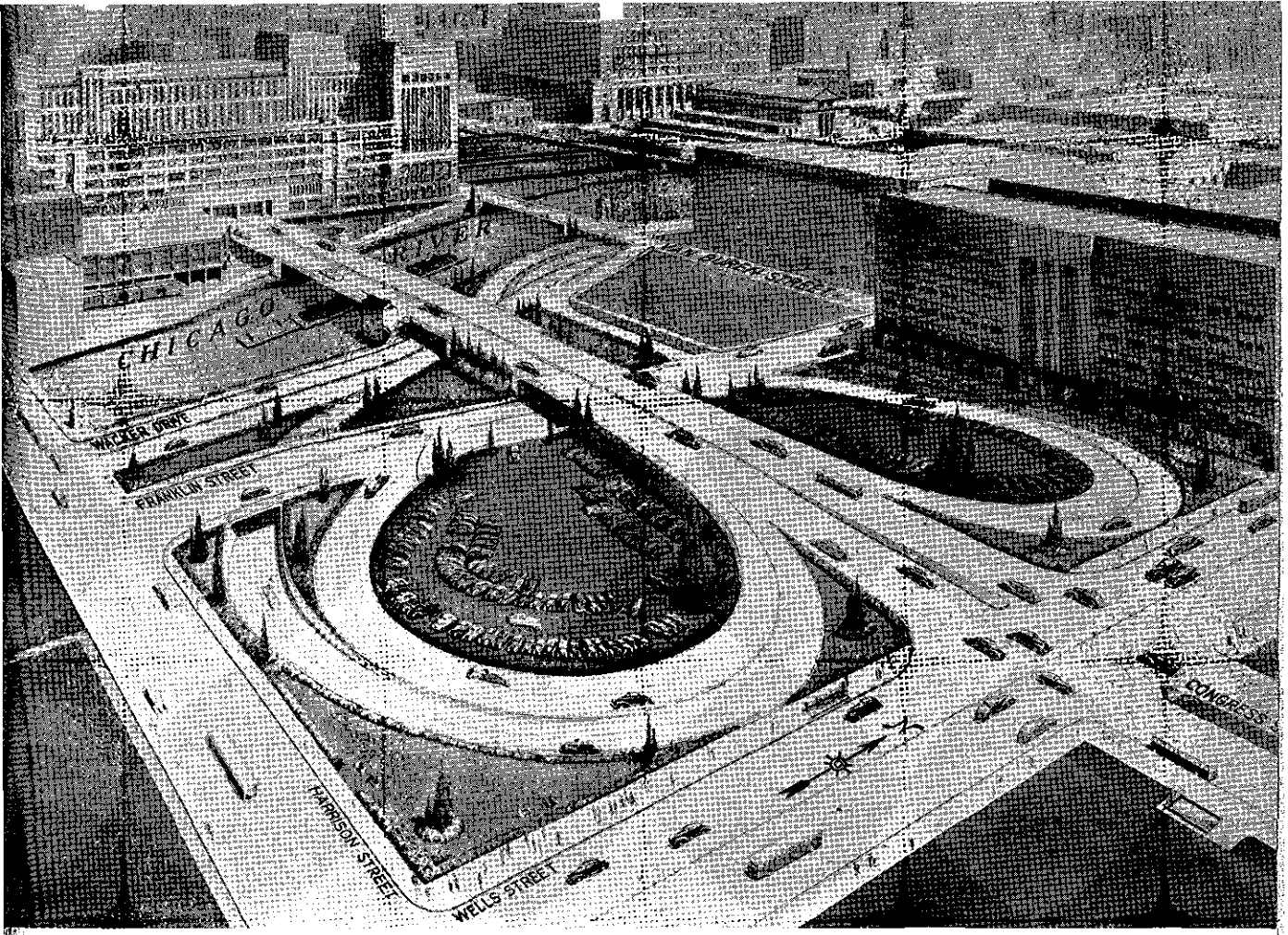
What, in detail, will be the character of the future highways? How and at what rate will the evolution of superior adaptation of facility to function occur? To these questions no single answer can be given.

The first need as we enter upon a new period of activity in highway building is to recognize clearly that the streets of our cities, the main rural highways, and the lesser rural roads are elements of a composite whole—a total system of highways—serving as a whole the totality of highway transportation that should be unaffected in its natural development by political boundaries and the partitionment of highway administrative authority. It should be the aim of all future road building, by whatever authority and financial provision it may be accomplished, to progress steadily toward the eventual creation of an appropriate balance between the needs of efficient and economical highway transportation and the condition of every part of the entire road and street system serving those needs.

The report to Congress in 1944 by the National Interregional Highway Committee will be especially effective in determining the character of the principal arterial highways of the future. It proposes standards in great detail to

OVERPASS on Henry G. Shirley Highway near Arlington, Virginia, which was built during the war to relieve traffic congestion near the Pentagon Building.—ALL PHOTOS COURTESY PUBLIC ROADS ADMINISTRATION





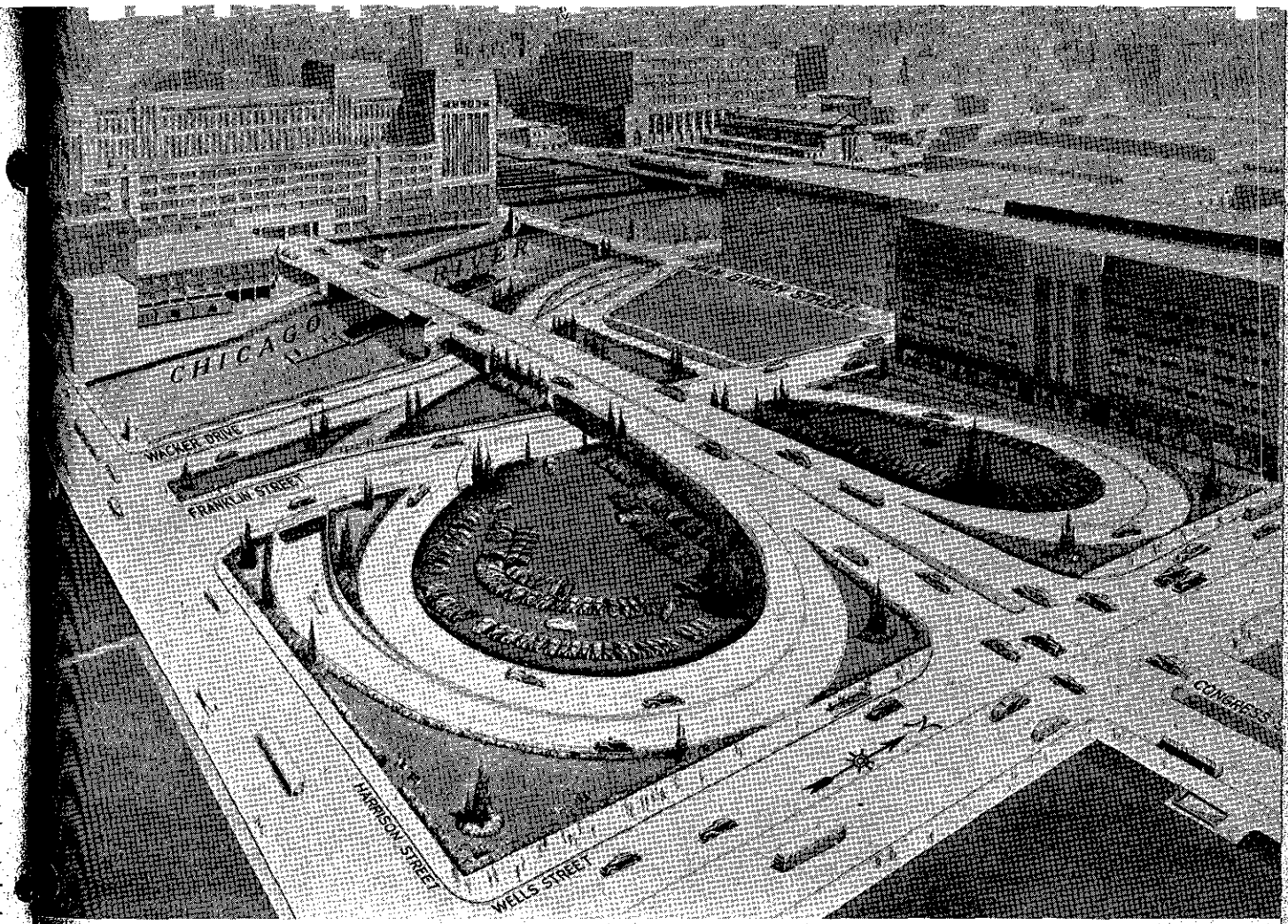
PROPOSED DESIGN for half-mile elevated section of the Congress Street expressway in Chicago, showing provision for traffic in the Loop area. The eight-lane highway will pass through the new post office building.

which the design of such highways should conform. They are standards informed by a long view ahead, and are not yet generally accepted in all details for present application, but time will bring their more complete acceptance.

These standards of the future call for a judicious employment of the device of controlled access to protect the arterial traffic from dangers of frequent and unheralded emergence of vehicles from abutting property. They call for wide rights of way, not less than 224 and up to 300 feet wide. They require shoulders wide enough to accommodate standing vehicles clear of the traffic lanes, firm enough to withstand infrequent use in emergency by vehicles moving at high speed, and free of dangerous difference of level at the line of junction with the paved surface.

They prescribe flat slopes for the sides of embankments to lessen the danger of accidental departures from the roadway, and curvature, spiraled and superelevated for safe negotiation at expected vehicular speeds. They specify the provision of sight distance everywhere sufficient to permit the safe stopping of vehicles moving at the design speed, and wherever financially feasible, on 2-lane sections, sufficient to permit the long view ahead which is necessary to allow the faster vehicles to pass slower ones without danger of collision with vehicles moving in the opposite direction.

Lane width of 12 feet is the uniform requirement of these standards and two lanes are specified for roads carrying traffic less than 2,000 vehicles per day, a volume that will not be exceeded in many years even on most of the more important rural highways. Roads serving between 2,000 and 3,000 vehicles a day would



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be constructed with two lanes where it is possible to provide safe passing sight distance, but with four lanes, two for each direction separated by a median strip, where safe passing sight distance is unobtainable. For traffic volumes between 3,000 and 15,000 vehicles daily in rural areas and all lesser volumes in cities, divided four-lane highways would be provided; and volumes above 15,000 vehicles daily in rural areas and above 20,000 in urban areas would be served by six lanes divided.

The standards recommended by the Interregional Highway Committee contemplate the separation of grades at all railroad crossings, and on the more heavily traveled routes a similar separation at intersections with other highways, with interchange ramps to provide for turning traffic. Where intersection grades are not separated, the proposal calls for a median strip 40 feet wide, enough to provide safe central stopping space for most vehicles.

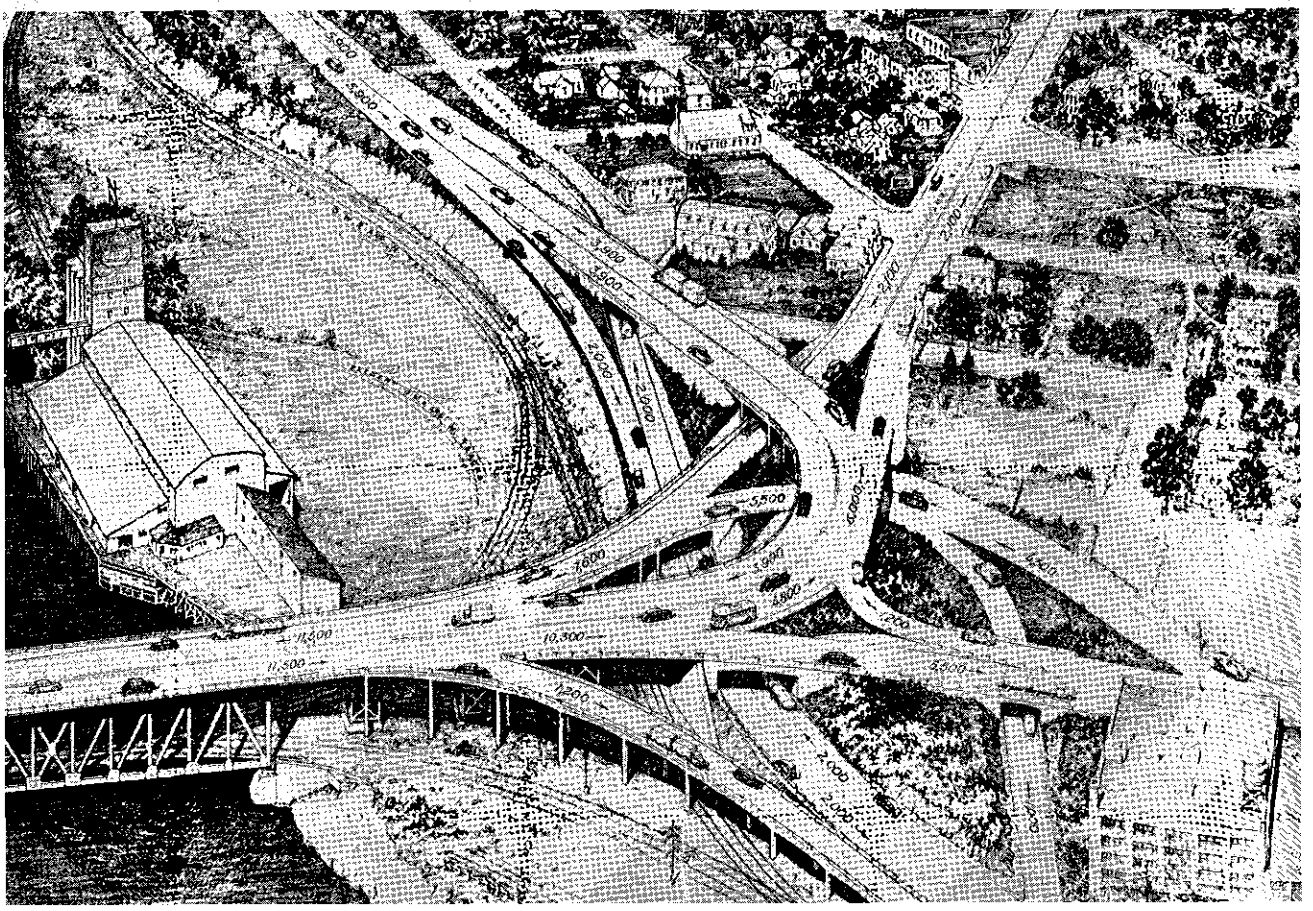
Minimum height clearance of 14 feet and generous side clearance would be provided at all bridges and underpasses. On short bridges carrying the highway the width between curbs or rails would be sufficient to accommodate the full width of the approach pavement and its shoulders.

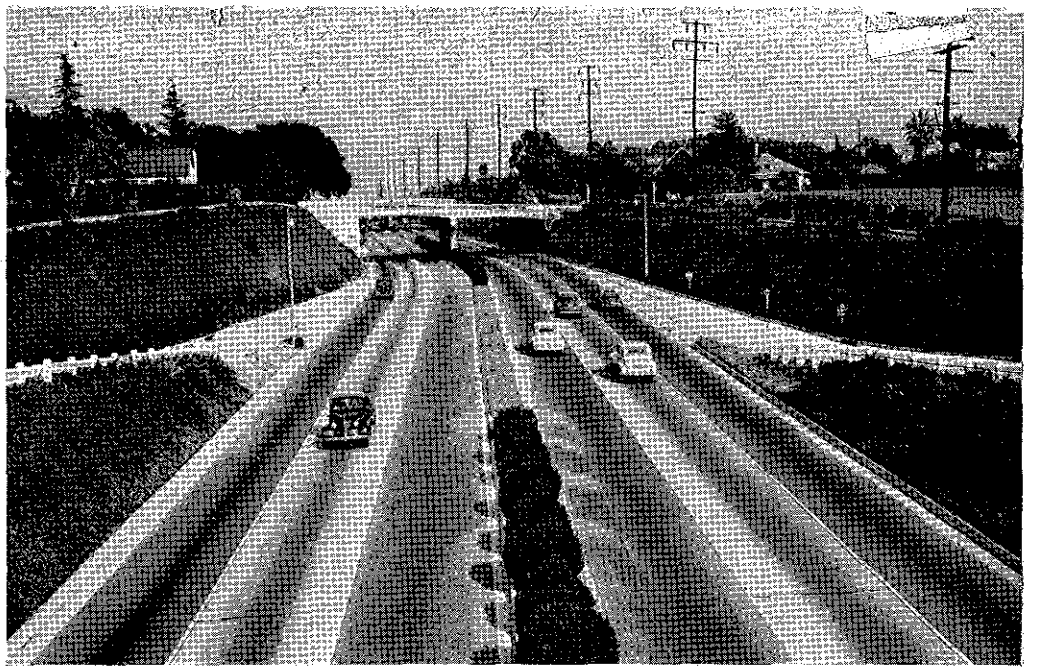
The standards contemplate a complete avoidance of the necessity for stop-and-go signals to halt traffic on the international highways, and a minimum of essential cautionary signing. They suggest in detail the form and placement of direction, route identification and speed limit signs.

It will be apparent that these proposals look to the creation of highways superior in geometric design to the best existing highways. They look for provision for utmost freedom of safe movement for traffic of the volumes for which they are designed which, at the suggestion of the Committee, would be that estimated to develop in a 20-year future.

They would be highways fitted to accommodate vehicles as wide, as high, and as long as the most liberal of state laws now permit. Highway officials anticipate no future need for

TRAFFIC INTERCHANGE proposed for the east end of steel bridge at Portland, Oregon.



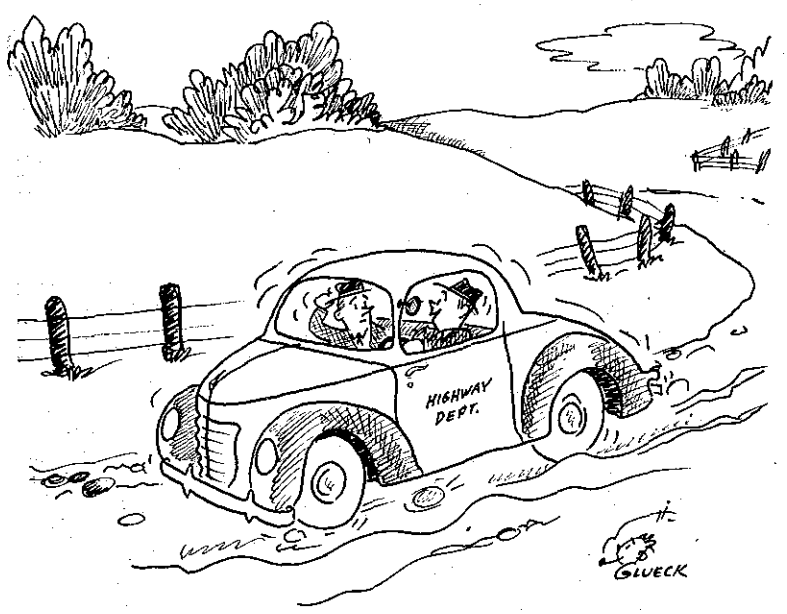


ARROYO SECO PARKWAY, South Pasadena, California. This six-lane thoroughfare with center strip is typical of the expressways built before the war.

greater vehicular dimensions. The strength of bridges as proposed would be sufficient to carry all essential and economically defensible gross and group-axle loads. The one feature in which designers of vehicles are most likely to find disappointment is the proposal for strength of pavements and road foundations. In this respect the Committee concurred with the virtually unanimous opinion of highway authorities that there should be no effort now or in the future to provide pavement support for axle loads exceeding 18,000 pounds.

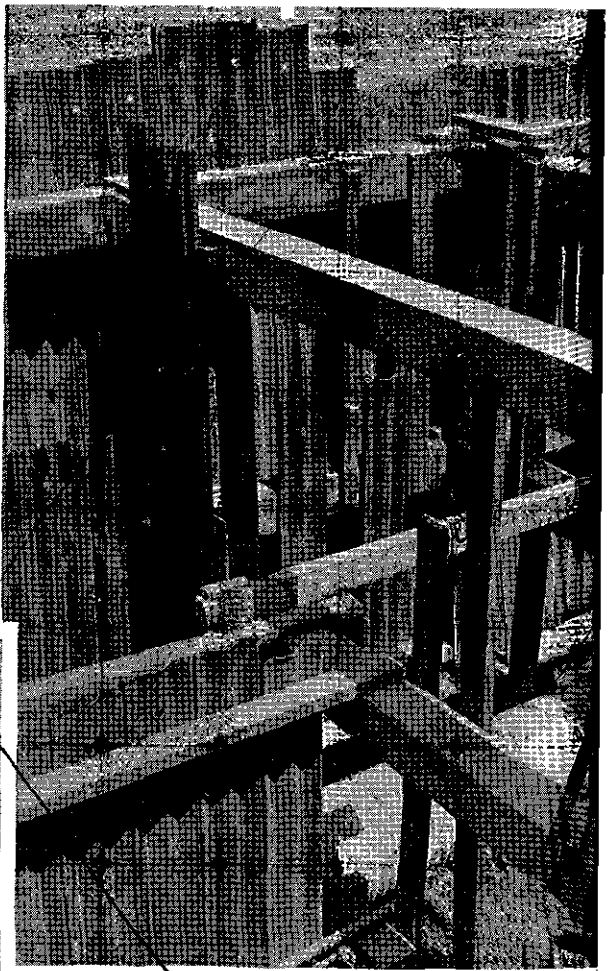
The proposals of the Committee were addressed to a definition of the desirable character of roads forming sections of the interregional system it recommended for designation and construction. A practically identical system is now in process of official designation as the interstate highway system. The standards appropriate for this system of most important highways will be much too exacting for lesser roads, nor will they be needed for the safe and efficient functioning of such roads. The objective to be sought in modification of the maximum standards for applicability to roads of subordinate categories will be that of providing an economically supportable facility of movement for traffic of the kind and volume to be accommodated.

The incentive to closer cooperative action by authorities of the federal, state, city and county governments provided by the Federal Aid Highway Act of 1944, continuance of the research and fact gathering of the highway planning surveys, and the harmonizing influence of the American Association of State Highway Officials and the Public Roads Administration will promote the better adjustment of design and capacity to the character, purposes and volume of usage which I have ventured to describe as likely to be the principal distinction of the highways of the future.



"This used to be an old dirt road which was never maintained—would you believe it?"—BY R. W. GLUECKSTEIN

Newport sewer outfall renewed by using corrugated steel sheeting



Across the surge chamber (see above and below), a 30-inch Armco corrugated pipe was used to temporarily span the area. Two and three rows of the steel sheeting were needed at this point. The lengths of sheeting varied from 10 to 18 feet, all 10 gage. At the left is a general view where the trench approaches the river.

Across the lazy Ohio River from Cincinnati lies the industrious city of Newport, Kentucky. Part of its modernization program includes the renewal and enlargement of a sewer outfall. Armco corrugated steel sheeting was selected by the contractor to speed the installation.