

The Motorcar and Texas Urban Form

From the Friction of the Grid to the 'Architecture' of the Highway Itself

By Michael McCullar

It is fast becoming a popular notion that the singular root evil behind the energy crunch, personal debt, suburban sprawl and midriff bulge is the automobile, a kind of "single-family" form of transportation that has at once blessed us with an easy individual mobility and cursed us with an addiction to that mobility. Now, as the car consumes an inordinate proportion of gasoline, money and land, it's beginning to seem more trouble than it's worth.

The popular belief remains, however, whether the car drove us into this fix or not, that we can scarcely do without it. The automobile has had a firm hand in molding the 20-century built world, which is hardly surprising even in hindsight. The first horseless carriage to roll off an assembly line represented "progress on wheels," a machine to take the sweat and manure out of travelling. And as roads were improved and the technology of the motorcar fine-tuned, the city took on new scale and form to accommodate the growing range of its inhabitants. While criticism of "changing a culture to fit automobiles instead of people" is a legitimate complaint, it should not be overlooked that the car was intended to *free* people, not constrain them—to make our culture *better*. None other than Frank Lloyd Wright, certain of the motorcar's unlimited potential to improve the quality of life and broaden its horizons, based his 1930s utopian vision "Broadacre City" on the advancing technology of the motorcar and other forms of rapid transportation.

While the car has done much to shape the scale and breadth of the 20th-century built environment, for better or worse, it could be pointed out that transportation and circulation have always been prime determinants of urban form. Long before the automobile, rivers, footpaths, roads and railways left lasting influence upon the land through which they passed, giv-

ing birth to rest stops, villages, towns, cities, and architecture. And the rectilinear, or "gridiron," plotting of streets and squares in cities of ancient Greece, China and the Roman Empire is basically the same two-dimensional framework for human settlement that is with us today in Dallas, Houston and Austin.

But with the automobile came unprecedented speed and distance, and its impact as another form of transportation on the landscape and cityscape proved deeper and far more pervasive than its slower forerunners. Ultimate effects of the car upon both urban and natural form are encyclopedic, but a few of the most obvious might be: congestion of the age-old urban gridiron; the proliferation and clutter of roadside signage; the visual blight of the junkyard; amorphous growth of the city and the resulting deterioration of the urban core; not to mention air pollution and the very real physical danger of driving a large machine at high speed among, along with—and too often *against*—thousands of other large machines.

It would be unfair in any discussion to ignore the *benefits* of the Auto Age—the common mobility it has provided, the freedom of the open road, even the engineering and aesthetics of the roadway itself, the sweeping interstates and interchanges and bridges that make it not only easy and safe but often a visual delight to go somewhere by car. While the gasoline shortage may limit the public benefits of the vast network of American highways, the system was designed in part to facilitate the transport of goods by truck over the long haul, which presumably will continue after the highways are empty of private motorists.

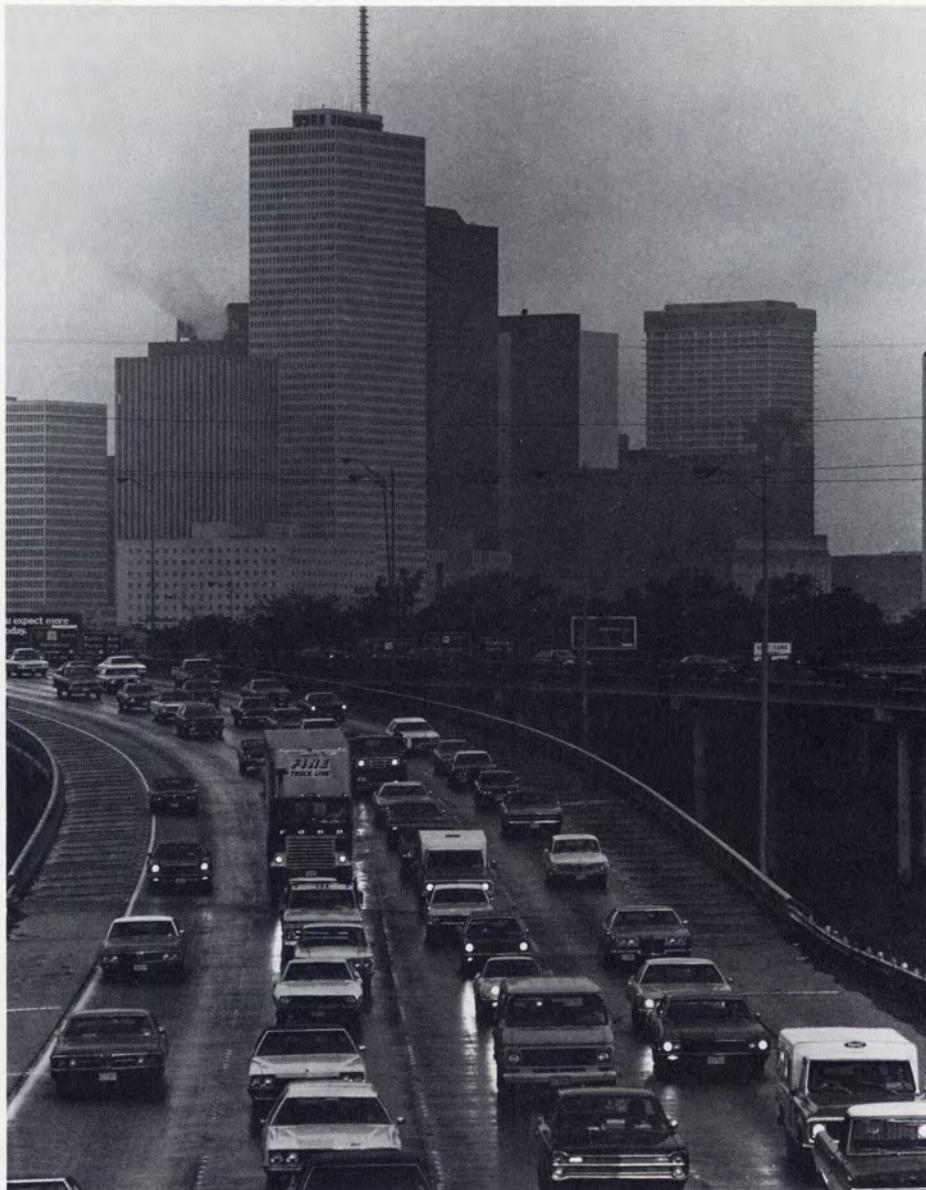
In Texas, a look at the mutual influences of the automobile and architecture provides a predictably expansive image. Texas' major topographical features, in addition to downtown Dallas

and the Davis Mountains, include some 3,215 miles of interstate highways, out of a total of 42,000 nationwide. In addition, 7,700 miles of urban highways loop around and bisect Texas cities, presenting the motorist with a major dimension of the state's urban form while being an inherent part of the urban form themselves. And within the city—notably, within Dallas, Houston and San Antonio, three of the largest and fastest-growing metropolitan areas in the country—countless boulevards, avenues, streets, blocks, alleys and squares comprise much of what city scholar Kevin Lynch calls the "skeleton of the city image."

Herewith, then, in exploration of the nexus between car and architecture in Texas, is a look through the windshield at the "imageability" of that architecture, from the basic framework of the urban form to the highway as "architecture" itself.

Dallas Gridirons

When Dallas founding father John Nealy Bryan gave first form to his prairie settlement in 1846, he plotted the town in classic gridiron pattern, dividing his 580-acre land grant into 200-square-foot blocks, with main streets running more or less east and west, cross streets north and south. Another parcel of land to the northeast, belonging to John Grigsby, was surveyed in like manner, only Grigsby's plotting was 30 degrees out of sync with Bryan's. The result, where the two patterns happened to meet, is an east-west seam (now Pacific Avenue in downtown Dallas) which features an assortment of oddly shaped city blocks. And in recent years, according to Dallas urban planner Walter Dahlberg, these left-over pieces of prime urban real estate have offered the architect and urban planner a host of interesting design opportunities,



LEFT: All-too-typical urban miasma of freeway traffic in Houston.

within the chaotic restrictions, of course, of an urban grid that was laid out for anything but the automobile.

To begin with, Dahlberg says, the urban grid in Dallas, as elsewhere, is a regulator of building form and technology. Traditionally, due to the common geometry of street and square, the architecture that has emerged from the standard city block has been a standard city block in plan, more or less. And building technology hasn't ventured very far out of that standard mold. But when that mold is broken, Dahlberg says, as it is along the grid seam in downtown Dallas, "it opens up the architectural cavern, providing a variety of vistas to consider when orienting and designing a building and a variety of open spaces for parks and landscaped setbacks."

Dahlberg cites I.M. Pei's One Dallas Centre, the first of three Dallas Centres to be completed on two Grigsby blocks just north of the seam, as an example of a new generation of downtown architecture in Dallas that is beginning to respond to the triangular forms and diagonal vistas provided by the seam.

"The visibility from the building," Dahlberg says, "turned on an angle with the grid as it is, is much greater than if it were perpendicular with the grid as are most of the other buildings around it. The angle provides a longer and wider vista, allowing you to see the change of light and the movement of clouds across the city."

The visual key for orientation of the new architecture downtown is Philip Johnson's ThanksGiving Square, a one-acre park on a triangular block bounded



Squire Haskins



ABOVE, TOP: Bird's-eye view of clashing grids in downtown Dallas. BOTTOM: ThanksGiving Square and downtown vista, looking west.

by Ervay, Pacific and Bryan, completed in 1977. And preserving that oddly-shaped piece of real estate as open green space, Dahlberg says, has given the motorist and pedestrian an observation and reference point for viewing and appreciating downtown architecture from within, "the people who are so used to walking and driving around within the cavern of the downtown grid that they haven't been able to see the forest for the trees."

Away from the Pacific Avenue seam, where the friction of two grids clashing has provided a certain spark of design opportunity, the limitations of the urban grid are more apparent. Branching ever outward, Bryan's and Grigsby's early-19th century gridirons eventually grew into an entangled web of pedestrian-vehicular conflict as the automobile replaced the streetcar and city blocks began to shrink.

"The resulting conflict between pedestrian and car at every turn makes it hard for the city to be a truly pleasant place in which to live," Dahlberg says. "The snarling of urban circulation by the automobile, in fact, is the root problem in the corrosion of any urban core."

There are remedies, however, some of which have already been implemented in downtown Dallas. "We had to accept the fact that we're stuck with the grid," Dahlberg says, "then work around it." One remedial step has been the "mega-block," simply closing certain streets to form larger grid squares, then turning the enlarged block into a mixed-use development—hotel, offices, retail and recreational facilities. The Akard Street project, for example, by the Dallas urban planning firm Myrick-Newman-Dahlberg (of which Dahlberg is a principal), transformed a four-block area downtown into a quasi-pedestrian mall and tied the core of the Central Business District (CBD) to the Convention Center and the new City Hall.

Dahlberg points out that the mega-block is much more feasible on the perimeters of the urban core, however, where land is less expensive and its ownership less fractured. The Hyatt Regency-Reunion project, for example, which was able to tie up a sizable chunk of less densely gridded real estate on the southwest edge of the CBD, includes a 14-acre inner city park linking the hotel with a special events center now under construction.

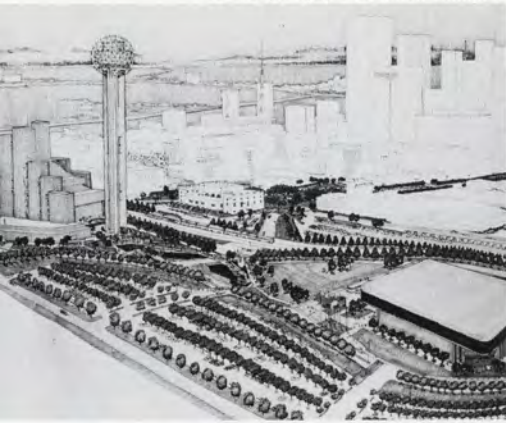
Signs of the Times

"Naked children have never played in our fountains, and I.M. Pei will never be happy on Route 66."

Learning from Las Vegas

Nor, it is a safe bet, would he be happy westbound on Westheimer Boulevard in Houston, the "Billboard capital of the World" and one of the earliest breeding grounds for the infamous commercial Strip. Due largely to no zoning and a traditional city passion for unfettered *laissez-faire*, Houston's new magnificent skyline is often approached through, or framed or obstructed by a clutter of commercial signage, in all shapes, sizes and messages. Regardless of the legitimacy of the message or the visual "taste" of the medium, commercial signs in Houston represent a predominant visual effect of the car on urban form, one which relegates architecture to the back seat, as Robert Venturi *et al* observe in *Learning from Las Vegas*, where "the big sign and little building is the rule."

It wasn't always like that in Houston, but almost. The city's rapid growth over the last several decades has come hand-in-hand with the evolution of the car as



LEFT: Hyatt Regency-Reunion project on the perimeter of Dallas' urban core. BELOW: Westheimer Boulevard in Houston.

a basic human necessity. As Yolita Schmidt points out in *The Moderne Style in Architecture: A Houston Guide* (part of the Houston Public Library's urban profile "City!: Our Urban Past, Present and Future"), flat, open, undeveloped space and a growing population with cars made Houston prime ground for development of the Strip. As early as 1915, Schmidt says, widespread use of the private automobile in Houston began to affect streetcar profits. In 1919, Houston's first drive-in restaurant opened, and by the 1920s, one-way streets and signal lights began to appear on the Houston streetscape for the convenience of the motorist. In 1937, one of the first "shopping centers" in the country went up on West Grey, the River Oaks Shopping Center designed by Oliver Winston, Staton Nunn and Milton McGinty. The design of the complex revolved around the new-fangled idea that major access would be provided by the automobile and facilitated by ample parking. By 1940, Schmidt says, South Main and Old Spanish Trail were well on their way to becoming Houston's first—but by no means last—full-fledged commercial strips, complete with drive-ins, motor courts, car dealerships and gas stations.

The more typical urban grid in Houston did much to shape its cityscape. In his study of commercial signage in Houston, *Icons and Eye-Cons: Signs in the Houston Landscape* (also part of the public library's urban profile series), Peter Papademetriou begins by tracing the common expansion of the urban grid in America: "The street and its extensions . . . eventually evolved into a radially concentric city plan, a kind of wagon wheel derived from the historic central core (downtown) and evenly spaced radiating arterial roadways. The freeways interconnected these radiating arms at an appropriate distance where speed facilitated interchange within the total system,



Paul Hester

completing the connections between the spokes."

And this form, Papademetriou says, is almost perfectly "embodied in the organization of Houston's urban pattern. . . . As one travels westbound along Westheimer from Main Street to Addicks, there is presented a near history of contemporary building-street relationships. From buildings defining the streetscape (Bagby to Montrose), to buildings set slightly back for parking in front (Montrose to Kirby), to buildings with some parking in front, most in back (Kirby to Loop 610), to buildings set in space (Galleria-Post Oak), to the advanced strip, where signs define the road and the small buildings are set way back (Chimney Rock to Gessner). The relationships are nearly a history of the loosening up of urban space in the last half-century, with nearly half of the actual length of the roadway having developed since 1965."

Ironically, that was the year the first national legislation was passed to clean up visual pollution on American roadways. The Federal Highway Beautification Act (or "Lady Bird Act") of 1965,

chaunchly promoted by then-First Lady Lady Bird Johnson, required states that received federal funds for highway construction to prohibit erection of billboards within 660 feet of interstate highways, except on industrial or commercial land, and to screen junkyards from view along the interstates. Otherwise, the U.S. Department of Transportation could withhold 10 percent of the Highway Trust Fund allocated to the state.

Two years later, in 1967, a group of Houston architects, landscape architects, garden clubbers, lawyers and business people formed "Billboards Limited!," largely to uphold the spirit of that national legislation on the state and local levels.

In 1972, the group was successful in having a state highway beautification act signed into law, although it wasn't easy. The bill's passage was a harrowing one, due largely to intensive lobbying by the Association of Outdoor Advertisers and states-rights sentiment among legislators. Some lawmakers also doubted whether the federal government would go through with its threat to withhold allocated highway funds. As it turned out, the bill floundered in the Texas House until the

RIGHT, TOP: "Larger Canvas Two" billboard in Houston, painting by Houston artist Philip Renteria. BOTTOM: Oil-derrick rest stop on I-20 near Tyler, circa 1967.

session adjourned. Shortly thereafter, the U.S. Department of Transportation notified the Texas Highway Department that approximately \$26 million in highway funds allocated to Texas would not be forthcoming. Gov. Preston Smith called a special session, and the bill was passed and signed in short order.

More recently, Billboards Limited! has come up in arms over a 1978 amendment to the national legislation, engineered by the billboard lobby, which requires states to pay for any roadside signs they remove. This appeased the billboard lobby and led to a current move to abolish the federal act and allow state and local governments to control outdoor advertising on their own, a move spearheaded, ironically, by Sen. Robert Stafford of Vermont, a state that has been most successful in controlling outdoor advertising.

On the city level, Billboards Limited! has been a vociferous voice in urging the city to adopt local billboard legislation. So far, however, while the group's efforts have been widely lauded, sign-control ordinances passed to date have had limited effectiveness, and the group admits that since its founding, "efforts to deal with the problem of sign control have been tedious, frustrating and only partially successful."

One novel twist of billboard communication in Houston, which Billboards Limited! generally views as "questionable," is Houston National Bank's "Larger Canvas Two," a program in which outdoor billboards traditionally used for advertising are transformed into giant canvases for original Texas art on Houston freeways. The works of seven Texas artists are now on display on various freeway approaches to the city and will rotate location monthly, according to sponsors, to enable freeway travellers to view all of the works.



Texas Dept. of Highways and Public Transportation

Architecture of the Roadway

Texas, true to the popular myth, is as big on highways as anything else. The postwar boom put an already well-organized highway department (founded in 1917) into overdrive as more people took to the highway either in migration to the city from the farm or to spend more of their leisure time—which they were beginning to have more of—vacationing in a car.

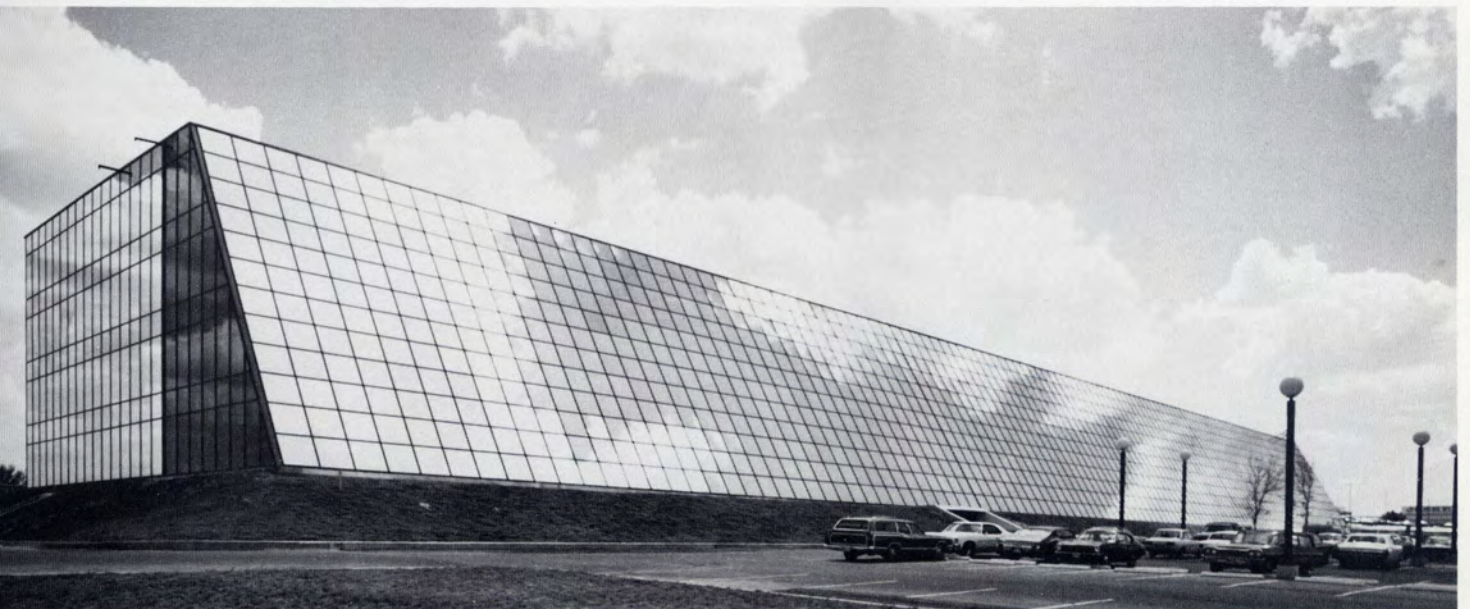
Between 1945 and 1950, according to the department, Texas motor vehicle registrations increased from 1.7 million to 3.1 million. To meet the growing demand, which didn't end in 1950, the highway department spent nearly 10 times as much for highway construction between 1942 and 1967 as it did during the first 25 years of its existence.





LEFT: U.S. Home Building on West Loop South in Houston, designed by the Houston firm Caudill Rowlett Scott. BELOW: Century Center on Loop 410 in San Antonio, designed by the Houston firm 3D/International.

Payne





LEFT, TOP: Big Sandy Creek Bridge, Stephens County near Breckenridge, circa 1963. BOTTOM: Award-winning pedestrian overpass over U.S. 87 in San Angelo.

The grand scale of highway system development in Texas is due largely to favorable legislation, as well as geographic necessity and economic climate. The state Colson-Briscoe Act of 1949 earmarked an annual appropriation of \$15 million for construction of Farm-to-Market (FM) Roads, now a system of some 50,000 miles of roadway considered one of the best rural highway grids in the country. In 1951, the legislature set aside one-half of the state's motor fuel tax for the construction of trunk highways. Then, in 1956, came the passage of the Federal Aid Highway Act, which designated 41,000 miles of limited-access interstates nationwide to link every American city of 50,000 or more population. Texas' 3,027-mile share of that network was larger than any other state.

With so much to work with, in terms of both dedicated funding and mileage of its roadbuilding mission, the highway department was intent to do it right. Even before the postwar boom, in the '30s, when state highway engineer Gibb Gilchrist sent a reprint of Joyce Kilmer's poem "Trees" to the field, along with word to save as many of them as possible in the roadbuilding process, the aesthetics of the roadway was an important concern. Landscaping, scenic overlooks, rest stops, all were designed to help the roadway look as good through the windshield as it felt through the seat cushion.

The fact remains, however, that highway design—aside from roadside amenities—is inherently an engineering discipline, speaking more of an industrial vernacular than that of an applied art. Safety, cost, efficiency and mobility come first; aesthetic form, more often than not, follows the function as a happy by-product.

Nevertheless, says senior highway engineer Harold Cooner, there is a prevailing aesthetic sensibility within the highway design section, a consideration of

Texas Dept. of Highways and Public Transportation





LEFT: I-45/Loop 635 interchange in Dallas.
BELOW: I-610/Southwest Freeway interchange in Houston, circa 1964.

“something more than just safety and mobility.” The department has come to recognize the increasingly sophisticated tastes of the motoring public, which has prompted designers to consider color, texture and blending structure with terrain, as well as environmental impact. The design process, in the process, has become increasingly complicated, Cooner says, but is not without its satisfactions.

U.S. 281, the McAllister Freeway in San Antonio which skirts Brackenridge Park, is a prime example, Cooner says, of a roadbuilding project that responded with painstaking sympathy to its natural context and to the people who use it. Exposed aggregate on the bridge over Los Olmos Basin, which serves also as a park shelter; placement of locally quarried limestone boulders as part of the landscaping; noise abatement—all were factors in the design process. Although Cooner concedes that the design response was aimed primarily at appeasing local opposition to the freeway coming in in the first place, highway designers and landscape architects involved in the project were gung-ho about the opportunity to be creative, and extremely proud of the final product.

A more obvious link between architecture and the roadway, of course, is the building beside the highway, whether it's a highway department rest stop or an office building shimmering beside an urban freeway. From metaphorical oil-derrick rest stops near Tyler to limestone comfort stations in the Hill Country, highway department architecture beside the roadway is designed to be simple, clean, convenient, low-maintenance, with a regional touch. (The highway department says it doesn't foresee a drastic reduction in demand for these facilities as private auto use declines, pointing out that as service stations close along the highways, demand will rise for convenient restrooms, for use by bus riders and

truckers, if no one else.) And on the urban freeway, the sophisticated office building detached from the downtown core—Oak Cliff Bank in Dallas, for example, or the U.S. Home Building in Houston, or Century Center in San Antonio—directly relates to the roadway by design, one way or another.

Although Century Center project architect Charles Burgess, of 3D/International, says the project is not “pure freeway architecture” in his mind (its low-slung, linear form, he says, is as much an attempt to maximize office space near the flight pattern of the San Antonio airport as it is to present a 70-m.p.h. facade to the motorist) it does “grab the motorist's attention long enough to make an impression.” On the other hand, Burgess says, freeway architecture doesn't necessarily have to be horizontal at all. The landmark value of the freeway highrise, looming in the distance, can forwarn the freeway motorist of an upcoming exit, which he or she would appreciate on a limited-access freeway. “The main thing,” Burgess says, “is to catch someone's eye, to be distinctive.”

Successful on both counts is the new 18-story U.S. Home Building on Houston's West Loop South, designed by Caudill Rowlett Scott, which presents a reflective parabolic curve to motorists passing by on the Loop on the southwest side of the building, a curve that forms one of the building's two “sides” and one that expresses the “deliberate distinction between the two facades,” according to CRS architect Norman Hoover. (The northeast face, clad in dark bronze glass, is a series of obtuse angles designed to create six corner offices overlooking Memorial Park).

A less obvious relationship between architecture and the roadway, but closer and perhaps even more mutually influential, is the “architectural” quality of



Texas Dept. of Highways and Public Transportation

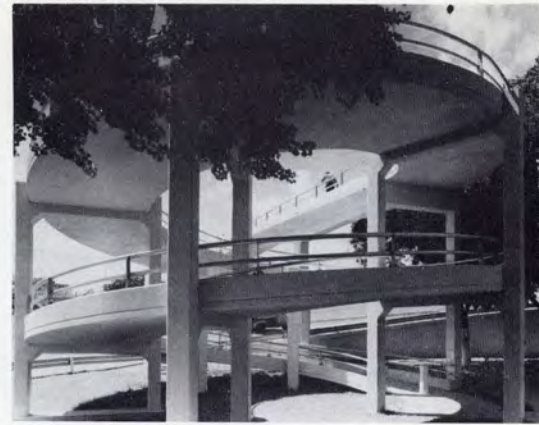
RIGHT: Pedestrian bridge in Corpus Christi, circa 1960. BELOW, LEFT: Detail, "inside" the I-45/Loop 635 interchange in Dallas.

Texas Dept. of Highways and Public Transportation



the roadway itself: the *Béton Brut* of a prestressed concrete bridge, the array of "doric columns" supporting a sweeping overpass. The architectural excitement of the highway itself, while usually not by design and often only appreciable from a certain angle, is as inherent a facet of the built environment as a silo or rice dryer standing tall on a rural Texas highway. And the influences work both ways. As Venturi, again, points out in *Learning from Las Vegas*, "Le Corbusier loved grain elevators. . . . Mies refined the details of American steel factories for concrete buildings. . . . Modern architects work through analogy, symbol and image. . . . and they derive insights, analogies and stimulation from unexpected images." On the other hand, elaborate highway bridges and interchanges at some point cease to be structures of pure function and become predominant forms in space, influenced, if not by the surface quality of architecture, at least by some deeper essence that distinguishes architecture from mere building.

Direct influence by architecture on bridge design occurred in Austin recently when TSA chapter architects helped persuade highway department engineers to modify the original box design of the planned Loop 360 bridge over Lake Austin. (Also in Austin, repair of the Congress Avenue Bridge, now underway, includes historic restoration of the original support arches, for purely cosmetic purposes.) Other bridges in Texas distinguished by a certain quality of design include the Twin Bridges (U.S. 90) over Buffalo Bayou in Houston, "beauty in steel," according to John Robinson, author of *Highways and our Environment*, and the award-winning pedestrian bridge over U.S. 87 in San Angelo, which the American Institute of Steel Construction cited in 1972 as "one of the seven most beautiful bridges in the country."



There's something, too, about the highway interchange that transcends function as though by design. The I-35/Loop 635 interchange near Dallas, for example, virtually encloses the motorist, who doesn't pass under the interchange even on the ground level as much as he passes *through* it, experiencing a fleeting yet awesome sense of shelter.

The relationship between architecture and the roadway from all angles—between car and building, roadway and building, sign and building, even their common qualities of the sublime—is an intimate one, more often than not seen as a marriage of convenience, however, rather than a romance. While Frank Lloyd Wright may well be spinning in his grave, potential for improvement of urban form as it relates to the automobile has not gone completely by the wayside since Broadacre City did. As architect Paul Spreiregen points out in *Urban Design: The Architecture of Towns and Cities*, a balance still exists between problem and opportunity: "The automobile creates problems of intersection . . . which require new systems of movement; the automobile can corrode a city . . . or stimulate new building forms; the automobile requires many directional devices . . . which require simplified design; the automobile causes confusion of urban form . . . but can create a whole new order of urban form."