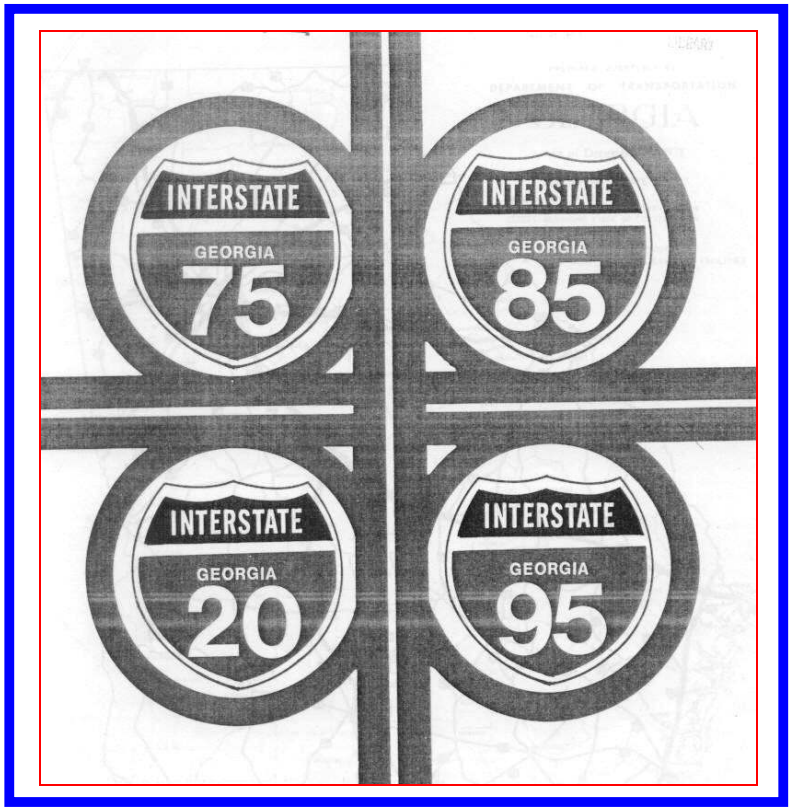
Georgia Department of Transportation
Office of Environment/Location
Project Task Order No. 94
Contract EDS-0001-00(755)

Historic Context of the Interstate Highway System in Georgia



Prepared by:
Lichtenstein Consulting Engineers
1 Oxford Valley, Suite 818
Langhorne, PA 19047
(215) 752-2206

March 2007

Table of Contents

List of Figures

HISTORIC CONTEXT OF THE INTERSTATE HIGHWAY SYSTEM IN GEORGIA

Introduction

Although the story of Georgia's interstate highways reflects the unique aspects of local history and politics, the effort to build approximately 1,100 miles of interstate highway also mirrors a much wider national context. Elements of the story include the passage of the 1956 federal legislation establishing the funding mechanism that facilitated construction of the interstate network, the rise of the environmental movement and its effect on construction, the use of new technologies and design standards for accelerated construction, and the effort to reconstruct many miles of the earliest-completed urban interstates during the 1980s. All of the issues that characterize the national story played out in their own way in Georgia. And, as in many other states with a dominant metropolitan center, the Georgia story is very much about Atlanta and the great effort expended on solving its traffic problems.

What stands out in the Georgia context, and distinguishes it from the rest of the nation, is the administration of the state's interstate program under the leadership of Thomas D. Moreland, P.E., State Highway Engineer starting in 1973 and State Highway Commissioner from 1975 to 1987. Moreland brought to his dual responsibilities a drive for excellence and a vision for the mission that moved the Georgia Department of Transportation (GADOT) to a proactive position capable of doing the seemingly impossible – completing the original routes by early 1979 and then rebuilding and upgrading the metro Atlanta interstates, one of the largest urban reconstruction campaigns of its day, by 1989. In many ways, Georgia was the envy of the nation because of its aggressive and innovative programs that allowed the state to first complete its interstate system and then begin reconstruction of the most heavily used sections in the metro Atlanta region.

This is the context of the Georgia Department of Transportation's responses to the challenges associated with construction of more than 1,100 miles of interstate highway in the 32 years from 1956 through 1988.

The National Interstate Context: Federalism and Standards

In 1956, Congress passed the Federal-Aid Highway Act that established the goal of constructing a 41,000-mile National System of Interstate and Defense Highways using an accelerated schedule over the next 13 years. By and large, the national system was completed as planned, although construction took longer and cost much more than originally anticipated. Urban areas proved particularly problematic for a variety of reasons. Prior to 1944, federal funds were largely prohibited from use in municipalities with populations greater than 2,500, and absent federal aid, there simply wasn't the means for most urban centers, like Atlanta or Macon, to keep pace with the demand for

adequate highway planning and construction. And even when federal aid for urban roads finally became available, the scale and the costs of urban highways, like the Atlanta Expressway, were so massive that few cities could begin much less complete such projects until the infusion of federal money. And then, shortly after sufficient funds finally arrived, so did the opposition that blocked construction of many sections of interstate routes through established neighborhoods starting in the mid- to late-1960s.[1]

Congress approved the means for interstate system construction in 1956, but the program has a much longer history. The origins of the effort date to the mid 1930s when thinking about limited-access highways was linked with solving traffic congestion. Several congressmen repeatedly proposed legislation authorizing a scheme of six north-south and three east-west cross-country toll roads, justified mainly as a way of putting people to work during the Great Depression. The German *autobahn* influenced their proposal, but it never came into being largely because federal Bureau of Public Roads (BPR) officials had always opposed toll financing of highway construction. BPR considered tolls a double taxation against motorists, whose gas taxes were used to pay for road improvements. Starting in 1933, states were allowed to use work-relief federal funds for urban extensions of federal-aid highways, but it was not until 1938 that non-work relief federal funds could be used to address urban traffic congestion. That same year, the BPR mandated that state highway departments conduct traffic planning surveys in an effort to have road-improvement decisions based on objective data, which proved that the greatest need was exactly in those urban areas that heretofore had been excluded from federal aid. As more Americans moved to cities, BPR officials were finding that the largest challenge facing road builders was ever-increasing urban traffic congestion, but their response was slow as was states' ability to take advantage of federal funds in urban areas. The two issues of trunk highways and the urban traffic problem came together in the BPR's 1938 report entitled *Toll Roads and Free Roads*, which proposed a system of about 25,000 miles of free roads connecting and, importantly, running into the nation's cities.

The war in Europe quickly distracted attention from highways, but President Franklin Delano Roosevelt appointed a National Interregional Highway Committee in 1940 to study this and other ideas. The committee's 1944 report entitled *Interregional Highways* endorsed BPR's *Toll Roads and Free Roads* vision but with 40,000 miles of high-standard, high-speed express highways to and through the nation's cities, including the five routes radiating from Atlanta toward Spartanburg, Chattanooga, Birmingham, Montgomery, and Macon. The committee's report gained a sympathetic hearing among congressmen worried that the nation might slip back into a depression with the end of war and the stand down starting in 1945. In response, many state

[1] For a more detailed overview of Georgia's pre-1956 urban highway development, Lichtenstein Consulting Engineers, "Historic Context for Dualized Highways in Georgia, 1935-56," (Dec. 2004), prepared for the Georgia Department of Transportation, Office of Environment/Location.

highway departments, including Georgia's, began preliminary planning for the tentative interregional routes shown in *Toll Roads and Free Roads* and *Interregional Highways*. With the end of the war, more serious planning began, and in 1947 the states and the BPR released the first map identifying the routes of an interstate system of limited-access, high-speed highways (Figure 1). But political bickering about the cost of such a system would result in nearly a decade of uncertainty about its size and shape. The uncertainty was not resolved until passage of the Federal-Aid Highway Act of 1956.

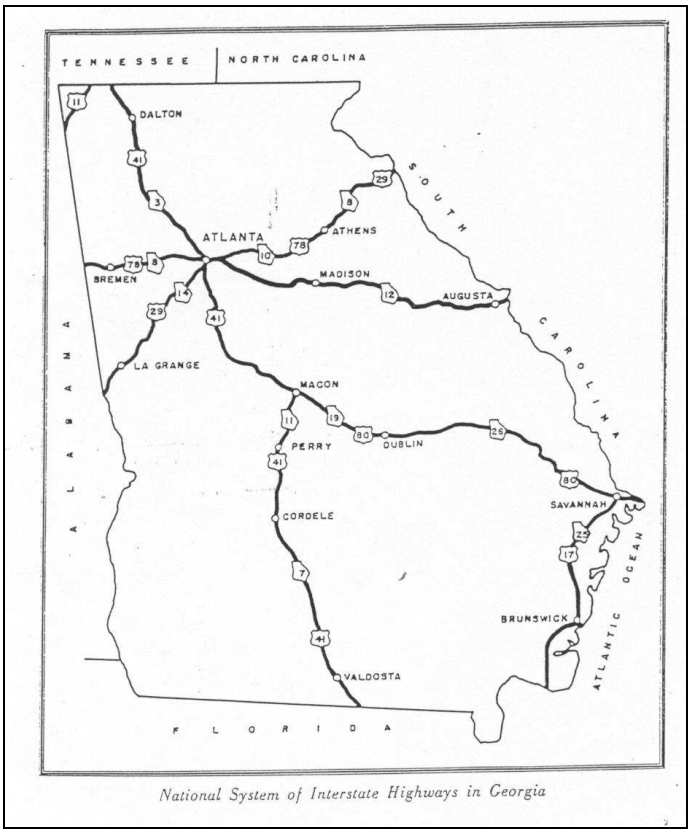


Figure 1. Preliminary map of the National System of Interstate Highways in Georgia, adopted in 1944 and approved by the BPR in 1947. The expressways radiating from Atlanta formed the nucleus of the system and were incorporated in the 1947 Lochner Plan. Source: GSHD, Biennial Report (1944).

The Federal-Aid Highway Act of 1944 did rectify the exclusion of federal aid from urban areas by providing substantial funding, and it was considered a milestone in federal highway legislation at the time of passage. It provided for the first national program of highway improvements integrating urban roads into the existing primary and secondary rural roads systems. It significantly altered how the states and the federal government approached transportation planning because, at long last, the worst problem – urban traffic congestion – could start to be systematically addressed. During the last years of World War II, BPR engineers worked with state and municipal officials to prepare plans for urban expressways that would be started with the cessation of hostilities.[2] The BPR's chief urban design engineer reviewed the plans for at least 100 major urban centers, including Atlanta, the southeast's transportation hub. But even with the ability to address urban traffic congestion, the problems were still not easily solved. Indeed, some argued that they would never be solved. The historic struggle between urban interests and the rural interests that controlled BPR thinking and policy until the late 1930s, which also played out in state legislatures, profoundly affects urban centers to this day, especially in metropolitan regions, like Atlanta, that experienced explosive post-World War II growth. Due to the relatively slow start on

[2] Urban expressway planning continued into the postwar period.

construction of urban highways, followed by the post-1965 effects of the environmental movement, urban highways in such cities have rarely been able to match capacity with demand.

Getting Started

The Federal-Aid Highway Act of 1956 marks the beginning of large-scale construction efforts on the National System of Interstate and Defense Highways. Rather than creating the system, it is more accurate to say that this landmark legislation resolved major problems related to funding a national uniform system of superhighways that had been authorized in 1944 and initially mapped in 1947. Thus, the 1956 legislation culminated 20 years of thinking about highway engineering and urban traffic congestion. Most significantly, the 1956 act established the 90% federal and 10% state funding formula for the accelerated construction of the interstate system. That network was expanded in 1955 to include urban distributing and circumferential routes. The act of 1956 thus inaugurated this nation's largest public works project that has so influenced people's lives and the nation's economy. But the federal government did not build the interstate highway system – the states did, each using their own approaches, policies and preferences.

Essential to understanding Georgia's interstate highway system is the organizational and administrative structure that guided its development. Interstate highways were built under *federalism*, in which the national government shared power and decision making with the individual states. Although the federal government paid the lion's share of construction costs under the 90/10 federal-aid formula, state highway departments performed and oversaw the actual work of locating, designing, and building the interstates, albeit to federal standards. Federal engineers approved state-prepared plans and allowed each state flexibility within the national design guidelines. As a result of the ability for variation under federalism, the historical pattern of interstate development differed from state to state, but every state worked within the same general administrative framework.[3]

The Origin of Interstate Highways in Georgia: The Lochner Plan and Atlanta Expressway

The plan prepared in 1946 to address metro Atlanta's traffic congestion represents the start of the interstate highway era in Georgia. Late in 1944, the Georgia State Highway Department, in cooperation with the City of Atlanta, Fulton County, and the BPR, turned to H. W. Lochner & Company, a newly founded transportation planning firm in Chicago,

[3] For a definitive overview of the origins of the federalist system of highway administration, Bruce Seely, Building the American Highway System: Engineers as Policy Makers (Philadelphia: Temple University Press, 1987).

to prepare a comprehensive highway and transportation plan for the region based on traffic survey data gathered by BPR and the department from 1936 to 1945. In keeping with *Toll Roads and Free Roads* with its combination of interregional and through urban routes, the plan identified what would be the "urban portions of the interstate highways identified on the 1944 map . . . [as] major arteries radiating from Atlanta toward Spartanburg, Chattanooga, Birmingham, Montgomery, and Macon" and a sixth arterial route toward Augusta identified by the Georgia State Highway Department as the nucleus of the state's interstate highway network (Figure 2). The plan also developed that network's most problematic feature – the section through downtown Atlanta that connects four of the six radiating routes. Interestingly, the radiating expressways were based on the existing regional railroad network plan and is just a later iteration of the historic transportation patterns laid down in the railroad era.[4]

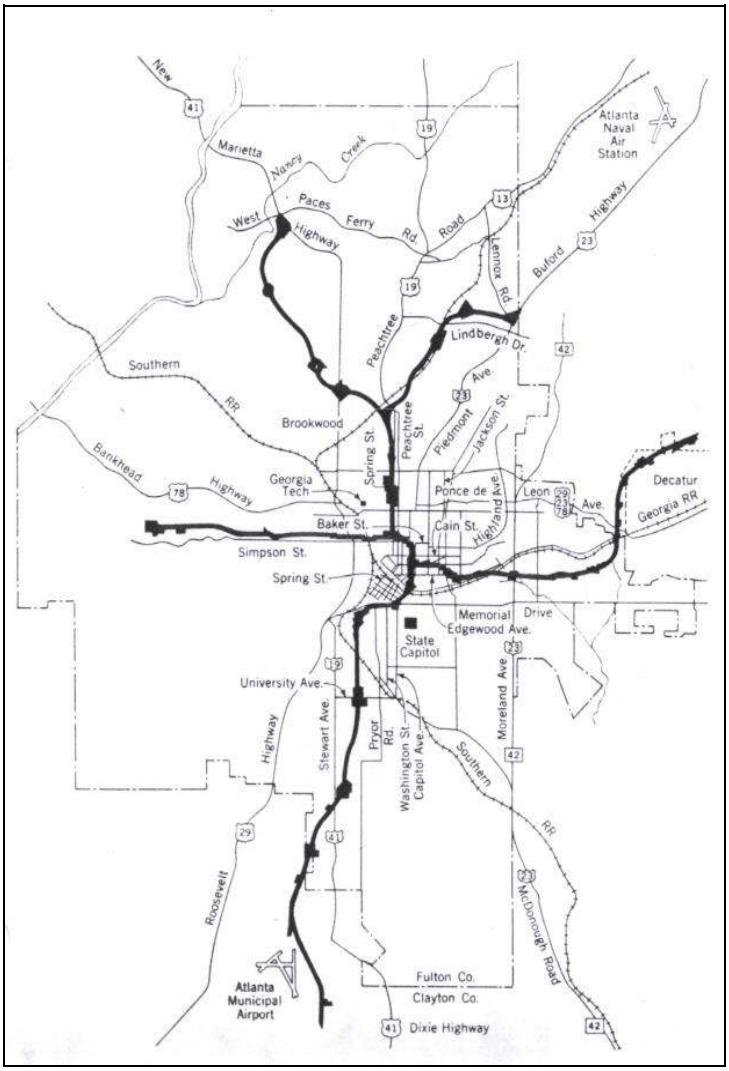


Figure 2. The 1947 Lochner plan for the metro-Atlanta expressway system showing radial freeways and downtown connector. Source: Lochner (1947).

The Lochner plan was hailed in the late 1940s as the solution to the worst of Atlanta's traffic congestion and safety problems, and its main component, the Atlanta Expressway, was to be the most "modern" highway ever in Georgia. The primary link of this radiating system of expressways was to be a below-grade, limited-access connector through the heart of the city and extending around the north, east, and south sides of the central business district. The goal of the plan was to locate the radiating expressways along existing traffic flows in order to be able to serve the greatest

[4] H. W. Lochner & Company and De Leuw, Cather & Company, Highway and Transportation Plan for Atlanta, Georgia, prepared for the State Highway Department of Georgia and the Public Roads Administration, Federal Works Agency (January 1946).

feasible number of vehicles within the urban core, as well as around it. The initial estimate was that 60% of the traffic using the connector would be local in nature, bound for downtown. To the greatest extent possible, the routes were intended to go through "marginal neighborhoods," and the radiating expressways were to conform to the "most modern highway design standards as developed by the Federal Interregional Highway Committee."[5] Such layouts reflected the thinking of most urban road builders, and many planners as well, since marrying road construction and "slum clearance" (later named urban renewal) offered the best chance of minimizing property acquisition costs for the new highways.[6]

Construction on the Atlanta Expressway began in 1948 using pre-interstate highway design standards, but higher than anticipated right-of-way acquisition and construction costs, public relations problems, and changes in the highway design stymied notable progress for most of the years prior to 1956. There was a spurt of construction activity between 1948 and 1952, but the city and county had to approve an additional $12.7 million in bonds to keep the project going after 1952. As many as 3,000 parcels had to be assembled for a mile-long section of the route. Additionally there were difficult and politically controversial decisions to make about the alignment of the downtown connector, and the region's explosive growth caused the engineers to rethink the roadway geometry. Additional lanes were recommended, and that decision caused further delays and, of course, higher costs. By the summer of 1958, ten years after construction was started, only 18 miles of the state's premier urban project were actually open to traffic. It was only with passage of the 1956 Federal-Aid Highway Act and its infusion of funds for interstate highways that the 1.2-mile long downtown connector was opened in September 1964 at a cost of $33 million (Figure 3). It was dedicated with a great fanfare, including a special expressway section in the Atlanta Times with articles on topics like how to negotiate the connector.[7]

---

[5] Ibid., pp. xiii, 14.

[6] Mark H. Rose and Bruce E. Seely, "Getting the Interstate System Built: Road Engineers and the Implementation of Public Policy, 1955-1985," Journal of Policy History, Vol. 2, No. 1 (1990), pp. 36-7.

[7] Sam Allison, "Atlanta Expressway to Move Rapidly During 1958," Georgia Highways (Jan. 1958), n.p.; Atlanta Times (Oct. 15, 1964). The design standards used starting in 1948 did include 12'-wide travel lanes but not full shoulders or sufficient acceleration and deceleration lanes. The wide median was quickly eliminated for additional lanes separated by a chain-link fence, and the Brookwood interchange between the Northeast (I-85) and Northwest (I-75) Expressways with the Connector and local streets had sharp curves and steep grades. Between 1948 and 1952, the section from Baker Street north to Lindbergh Drive on the northeast leg and to near Paces Ferry Road on the northwest leg were completed as was the southern leg from University Avenue to the Clayton County line.

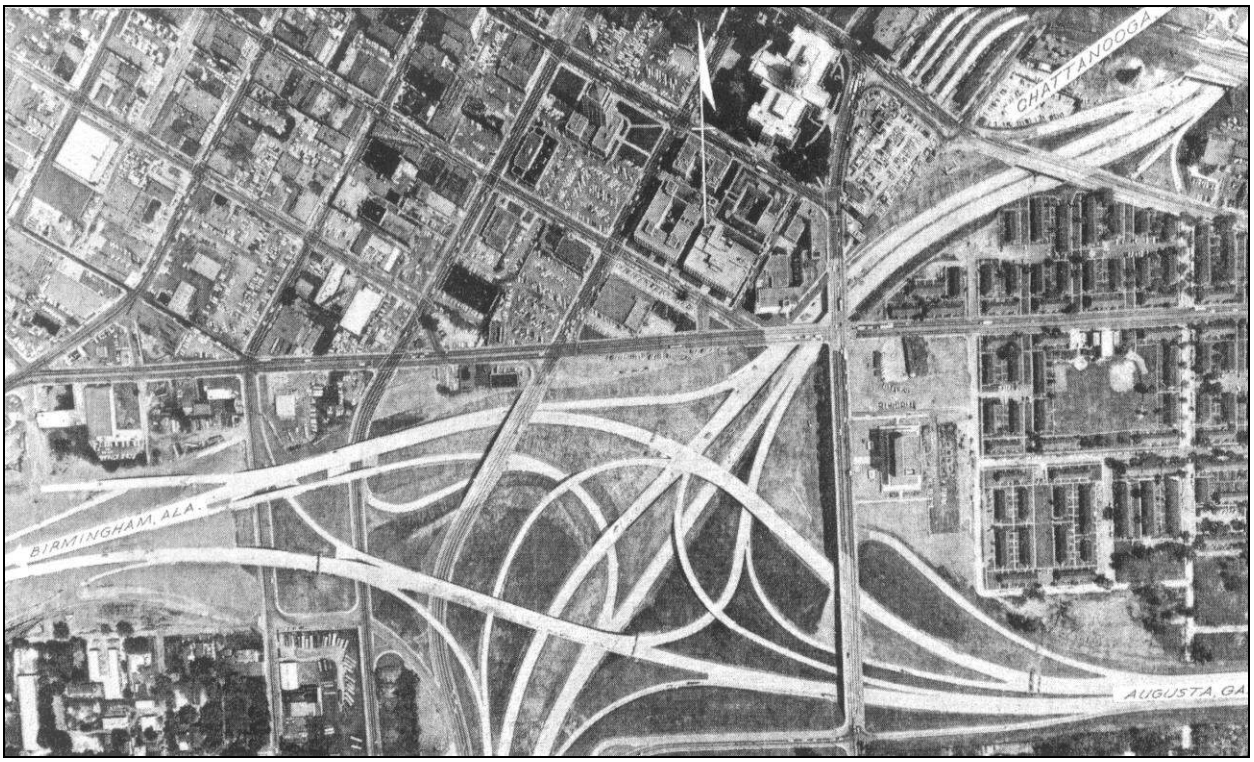


Figure 3. Aerial photo of the downtown connector at the interchange of I-20, I-75, and I-85, near the State Capitol (top right) shortly after the connector was completed in 1964. Source: GSHD, Biennial Report (1964).

Initial Impact of the Atlanta Expressway

The impact of the Atlanta Expressway on the history of the metro Atlanta region and the state of Georgia was and continues to be tremendous. Longtime Atlanta police chief Herbert Jenkins in his 1977 memoir recounts that the era of the expressway changed Atlanta as much as the coming of the automobile, and that the Lochner plan moved the city from small town to great international city because traffic could now move about it. He recounts that "people were incredulous that a road in the center of the city did not have stop lights." The expressway and upgrading of local streets to feed it also represented a major reorientation in thinking about the region's transportation systems by making the highway, and not the railroad, the dominant system. Implementation of the Lochner plan transformed the Atlanta region into a vast trucking terminal with expressways radiating from the city center hub (just as the railroads had done) and connecting to major cross-state and interregional routes.[8]

[8] Herbert T. Jenkins, Atlanta and the Automobile (Atlanta: Center for Research and Social Change, Emory University, 1977), pp. 133-41; Lichtenstein Consulting Engineers, "Georgia Dualized Highways" (Dec. 2004), pp. 24-25.

Well before the downtown connector was finished in 1964, planners and engineers knew that the Atlanta Expressway, particularly the connector, had reached capacity despite having been upgraded during construction from a four-lane to a six-lane facility. Traffic volumes on the expressway's north leg topped 65,000 vehicles per day and 8,000 vehicles per hour during the morning rush. Amazingly, the daily traffic counts in 1958 were greater than the Lochner plan projection for traffic volumes in 1970 with enough traffic between Fourteenth Street and the Brookwood interchange at the evening peak to justify a 16-lane-wide roadway. The numbers were a sure sign of continued traffic congestion problems ahead and the need for improvements, but circumstances and attitudes would change making it impossible to remedy those late-1940s decisions based on the Lochner plan.[9]

Establishing the National System of Interstate and Defense Highways in 1956

Many if not most states, including Georgia, struggled to complete their urban expressways. The reasons for slow progress on these desperately needed urban highways were many, including materials shortages, first because of inflation and then the Korean Conflict. State road organizations, like the Georgia State Highway Department, were also challenged by a shortage of civil and structural engineers. Engineering "manpower" had been affected by the war, but even as the GI Bill led to dramatic increases in student populations, many new fields of engineering (computers, materials, aviation and aerospace, nuclear power) were attracting students away from civil training. Thus as state construction programs geared up to meet traffic demands and to spend the larger appropriations coming from Washington, highway departments like Geogia's scrambled for enough trained engineers and bridge designers.

As demonstrated by the Atlanta Expressway, the more difficult problem was paying for the expensive, limited-access highways. State highway department budgets simply did not grow as fast as federal-aid allocations, which initially required a 50% state match. In addition to the urban expressways, there was much work to do to redress road and bridge maintenance that had been deferred during World War II. Many state highway departments failed to claim all of their federal-aid highway funds for 1947 and 1948 because they could not meet the 50/50 match, leaving an unobligated backlog of more than $500 million. That prompted President Harry S. Truman to eliminate all federal-aid highway funds from the 1949 budget and to propose sharp reductions in the appropriations for 1950 and 1951.

One solution to paying for superhighways was toll financing. The success of the Pennsylvania Turnpike, which opened in 1940, illustrated that motorists and truckers

---

[9] Metropolitan Planning Commission, Crosstown and By-Pass Expressways, Expressway Policy Study, Report No. 2 (June 1959), pp. 12-16.

were willing to pay for the convenience of faster, limited-access highways, and that tolls could generate sufficient revenue to pay off the construction bonds. In 1945, New York proposed a toll thruway across the state, while Maine actually opened the first postwar turnpike in 1947. In 1947 New York officially created the Thruway Commission, and other states like New Hampshire, West Virginia, New Jersey and Maryland followed suit. By 1953, 762 miles of toll road had opened, with another 1,077 miles under construction, mostly in the Northeast and Midwest. The peak year of turnpike construction came in 1954. Georgia lawmakers, like those in most southern states, discussed toll financing but did not authorize turnpikes.

That so many states resorted to toll financing was a clear indication of serious disarray in the nation's highway policy in the late 1940s and early 1950s. Highway and motor vehicle lobbying groups ever more loudly demanded improvements for every type of road, from main routes between cities to secondary roads and the new interstate system. But Congress, distracted first by the challenges of returning to peacetime, and then by the cost of meeting the demands of the Cold War, could not agree on how to resolve the impass. While the 1950 and 1952 highway appropriation bills totaled $550 million and $575 million respectively, there was no solution to the problems states faced providing the required 50% match for those larger amounts.

After years of congressional squabbling and public insistence on the need for building a better national highway system, the federal legislation establishing the National System of Interstate and Defense Highways finally passed in 1956. The Federal-Aid Highway Act of 1956 set up programs to build the interstate highway system and at the same time increase allocations for construction of other categories of federal-aid highways to more than $800 million per year after 1956. All were to be funded by user taxes locked in the Highway Trust Fund. The most significant aspect of the 1956 act was that the federal government agreed to provide 90% of the cost of interstate highways, the step that finally provided the money states needed to make real progress on a network of those very expensive, high-standard, express highways between and into the nation's cities. In 1958 it was estimated that urban mileage constituted 11% of the total interstate highway system, but that its construction would require 42% of the funding.[10]

With the passage of the 1956 act, the states launched the largest highway construction program in history. In 1955, in recognition of the traffic congestion that was gripping American cities, circumferential and distributing highways, like metro Atlanta's I-285 perimeter road, had been added to the interstate system (Figure 4). That was also the year that the Georgia legislature belatedly passed an act allowing for limited-access highways (previously permitted only in Fulton County to facilitate construction of the

[10] "What's Right with the Interstates," Engineering News-Record, Vol. 165 (Aug 25, 1960), pp. 24-25).

Altanta Expressway), which was a federal requirement in order for the states to receive interstate highway funds. Many other states had passed such legislation in the early 1940s. But the benefit was clear, for under the 1956 act, Georgia was to receive $840 million over the next 13 years for approximately 1,100 miles of interstate highways. The amount was determined by an allocation formula involving each state's land area and population. The Atlanta Expressway was the only existing limited-access highway taken into the interstate system in 1956, while other urban bypasses, like the one under construction in Tifton, were redesigned to near interstate standards and thus designated interstate routes.

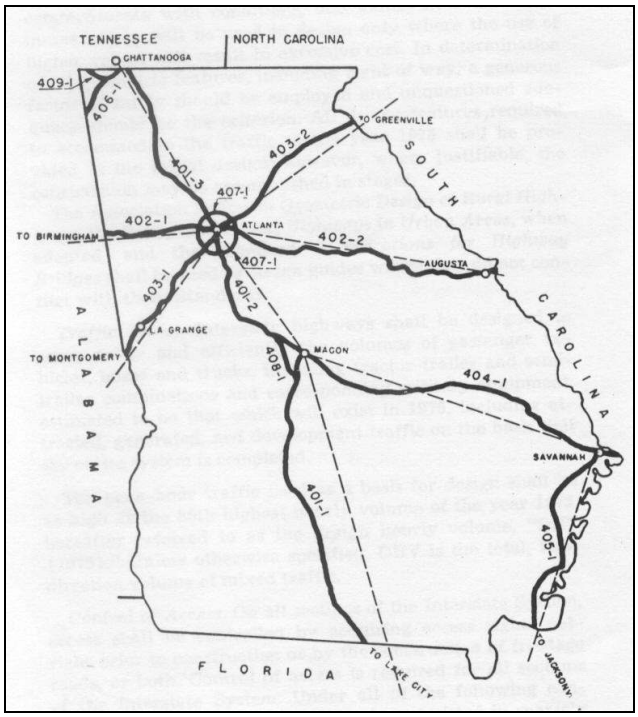


Figure 4. Georgia's interstate highway map (1956) showing the addition of Atlanta's circumferential highway (I-285). Source: Roy A. Flynt, "The Meaning of "Interstate Highways" and "Limited Access," Proceedings of the 5th Annual Georgia Highway Conference (1956).

Interstate Highway Design Standards

A key component of building the interstate highway system after 1956 was agreement at the national level on the basic design standards. These standards were worked out cooperatively through the American Association of State Highway Officials (AASHO, now AASHTO) and were set down in a uniform design policy in July 1956. The uniform design policy was an example of "balanced design," meaning that every element – curve radius, sight distance, super-elevation, and gradient – were to be determined by speed so that drivers could easily anticipate road conditions and not encounter surprises. All at-grade crossings were eliminated, and access to and from the highway was restricted to interchanges. Many of the nation's postwar urban expressways, like the Atlanta Expressway, had been built to lesser standards, particularly roadway geometry and interchange designs, but they were taken into the interstate system anyway because they were "near" interstate standards (Figure 5).[11]

[11] The major items of the national policy include complete control of access throughout the entire system with access and egress only at designated locations; design speeds of 50, 60, and 70 mph respectively for mountainous, rolling, or flat terrains; curvatures, super-elevation, and gradients to match design speeds; 12'-wide minimum travel lanes; 10' minimum graded shoulder width; elimination of all at-grade intersections; separated traffic lanes with medians or barriers appropriate for the setting; and 300'-wide right of way whenever possible.

Balanced design was a crucial step in the evolution of safe, high-speed highways. The leading developer and advocate of balanced design was Joseph Barnett, an engineer with the BPR, who had as much to do with the standardized geometry of the interstate system as any individual. Barnett cut his teeth on the Westchester County (New York) parkway system during the 1920s and early 1930s. He joined the BPR as a senior engineer in 1933, and he quickly became its high-speed highway specialist. Barnett's influence was enormous; in 1937, to facilitate acceptance and popularization of the balanced-design concept, he developed a table for transition curves, which provide for a gradual and safe change in the roadway's curvature and super-elevation from a straight to a circular path. Between 1938 and 1944, in his capacity as secretary of AASHO's Committee on Planning and Design Policies, Barnett was the primary author of seven policies on geometric design, ranging from highway classification to sight distances. The AASHO policies were developed cooperatively by the state highway officials, but the influence of Barnett and the BPR was as unmistakable as it was profound and ubiquitous. The committee officially approved the policies in 1945 and published them in 1950 as its *Policies on Geometric Highway Design*. The policies were the basis for the one issued by the committee for the interstate highway system in July 1956 and used by the BPR to approve interstate projects. Georgia officially adopted the national uniform design policy as its standard for interstate highways in 1956.

Figure 5. Atlanta Expressway, ca. 1952. The early design standards did not include such features as wide medians, improved shoulders, and lengthy acceleration and deceleration ramps that would be required of post-1956 interstate highways. Nonetheless, the pre-1956 roads were incorporated into the interstate highway system with plans to upgrade them at a later date. Source: Biennial Report (1952).

The design standards initially used for interstate highways were intended to meet demand through 1975 and featured elimination of all at-grade intersections/crossings, medians not less than 4'-wide in urban areas, right-of-way between 150' and 300'-wide depending on urban or rural setting, design speeds between 50 and 70 miles per hour, and bridge decks with no overhead obstructions. Vertical clearance above the roadway would be 14'. To save money, bridges on interstate highways did not originally have shoulders and there were left-hand exits. But as construction progressed, it became apparent that minor modifications to the design standards were in order. In 1960, for instance, vertical clearance was increased to 16' and interchanges had to be two miles apart in urban sections and four miles apart in rural areas.

Georgia Interstate Construction 1956-1973

When Congress finally passed legislation in 1956 that provided the mechanism for accelerated construction of the interstate highway system, many of the administrative and technical pieces needed to tackle the herculean task of planning, designing and constructing Georgia's 1,100 miles of interstate highway were already in place or were about to be implemented. The Georgia State Highway Department had been established in 1916 to administer federal aid, and in 1920, it had established the bridge division with the brilliant Searcy B. Slack from LaGrange as the state's first state bridge engineer.[12] Like state highway departments all across the country, the Georgia State Highway Department had also positioned itself to address challenges of building urban expressways since the late 1930s, when federal aid was extended to include urban roads as well as upgrading existing roads. The Division of Highway Planning headed by Roy A. Flint was established in 1936 to conduct traffic counts, economic investigations and fiscal studies that supported the proposed location of those urban roads. It also obtained data on truck weights and prepared highway maps. The Division of Right of Way was created in 1944 to handle acquisition of right of way in advance of the construction program. Division engineer R. E. Adams noted that his greatest concern in complying with the federal-aid program was securing the necessary 200'- to 300'-wide right of ways preferred by federal engineers for dualized highways and urban expressways, and personnel in the division increased from 15 men in 1954 to 70 just four years later in 1958. The Division of Urban Projects headed by S. P. Allison was created in the summer of 1947 for projects using federal-aid urban funds. The Division of Public Relations was established in the fall of 1956, ostensibly to deal with right of way acquisition problems. One of its initial efforts was the monthly publication of *Georgia Highways*, a 20-page magazine that stressed the political neutrality of the engineer but only continued for one year in 1958. The bridge division continued its well-established tradition of identifying which materials, designs, and details would provide the state with the most efficient and economical bridges. In the mid 1950s, it developed its own designs for shear details to make rolled beams and concrete decks composite.[13]

The Department used technology to increase the ability of its cadre of designers to provide the plans needed for the expanding highway programs of the 1950s, particularly the large volume of work needed for the interstate highways. One of the

---

[12] For a history of the Georgia Department of Transportation through 1956, please refer to the modern roadways chapter in the Development of Transportation Networks in Georgia section of the Department's *Historic Bridge Inventory Update Historic Contexts* (June 2001) by Lichtenstein Consulting Engineers, Inc.

[13] Georgia State Highway Department (GSHD), Biennial Reports, 1920-1956; Proceedings of the 7th Annual Georgia Highway Conference (1958), p. 166; Douglas Hudson, Personal communication with Mary McCahon (LCE), April 2006.

most important tools in efficiently locating and designing new highways was photogrammetry, an aerial mapping technique that relied upon two cameras in an airplane to produce images that, when viewed together, created stereo images that could be turned into accurate plans and drawings (Figure 6). This photo equipment affected large economies in construction costs and engineering manpower required for the interstate highways for both location and specific design problems. The department purchased its own plane in 1953 and led all southeastern states in use of photogrammetry.[14]

Figure 6. Georgia State Highway Department employees load a camera on the department's airplane. Aerial photography eliminated the need for labor intensive ground surveys and was one of the new technologies employed to improve the efficiency of locating and designing interstate highways. Source: Georgia Highways (Jan. 1958).

Georgia was one of the first states to utilize the timesaving advantages of computers in bridge and highway design. By 1957, the department was using a computer, the IBM 650, to solve earthwork and bridge design problems. Bridge engineer Russell Chapman, who started with the department in 1947 and served as state bridge engineer from 1968 until 1974 when he became a preconstruction engineer, went to programmer school and developed programs that solved geometry problems and the design of continuous beams with variable moments of inertia. The advantage of the computer was that it could accomplish big calculation problems quickly.[15] The bridge division was constantly studying new bridge types and designs to determine if they were more economical. Types and designs that were studied included the continuous reinforced concrete T beam design favored in Alabama and the cast-in-place post-tensioned box beam bridge that worked so well for Florida DOT. Neither, however, proved to be more economical than rolled steel stringer bridges, which was used almost exclusively on the interstates until the mid 1970s.[16]

Use of technologies like photogrammetry and computer-generated calculations, coupled with greater reliance on standard bridge and roadway designs, greatly assisted the state highway department's goal to produce the plans for the interstate highways and their associated bridges as fast as possible. Uniformity and standardization were the names of the game in Georgia as in most of the country. Indeed, the adoption of

---

[14] GSHD, Biennial Report (1958), p. 103.

[15] Russell Chapman, Personal communication with Mary McCahon (LCE), April 2006.

[16] Hudson, April 2006.

standard drawings and specifications simplified the process of getting the approval of the federal highway bureaucracy, since there were few variations to be concerned about and inspected.

Construction Begins on I-Designated Highways

Passage of the Federal-Aid Highway Act of 1956 meant that in addition to applying the 90/10 funding formula to dualized highways like the Atlanta Expressway already under construction, work could now begin locating and designing all the interstate routes identified on the 1944 map and the 63.3-mile-long circumferential loop around Atlanta (I-285) added to the system in 1955. The precise alignments of the interstate highways in Georgia were generally not influenced by politics and reflected the original agreements between the BPR and the state in 1944 with the exception of I-85 east of Suwanee. Its route to Greenville, SC was changed from through Gainesville to its present route via Lavonia, the hometown of Ernest Vandiver, governor from 1959 to 1963.

Initially progress was slow and was focused on survey, property acquisition, and design. While specific interstate routes had been approved, they had not been specifically located, so surveying dominated initial efforts. By the middle of 1958, 776 miles of Georgia's 1,100 interstate miles had been surveyed, while plans were completed for 32 miles with another 200 miles in various stages of completion.[17] Dualized (but not limited access) highway plans in hand when the act was signed in June of 1956, like those for the Tifton Bypass, required extensive revisions to bring them up to or near interstate design standards. The 5-mile-long Tifton Bypass, which is commonly but erroneously held as the first section of interstate constructed using an "I" designation in Georgia, was actually started in 1953 using 40/60 funding. When it was taken into the interstate system as part of I-75, it was brought up to interstate standards by adding a frontage road in order to make the dualized highway section limited access. The first section of highway to be let with an "I" designation, and thus could be considered the "first" section of interstate built as such in Georgia, was the nearby 3.3-mile-long Forsyth Bypass that was let in December of 1956 and completed by the end of 1958.[18]

The design and construction of the original interstate routes (I-16, I-20, I-75, I-85, I-95, and I-285) were broken into short-mileage sections and then designed and let incrementally (Figure 7). Work proceeded on both urban and rural segments in this piecemeal fashion through the early 1970s with segments opened to traffic as they were completed. When one segment was let, work would begin on preparing the plans for the next segment as funds became available. Work continued on the Atlanta

[17] GSHD, Biennial Report (1958), pp. 101, 105.

[18] Emory Parrish, Personal communication with Mary McCahon (LCE), April 2006.

Expressway, which was designated I-20, I-75 and I-85 after 1956. I-75 was open to West Paces Ferry Road in 1957, and the first section of I-285, a 2.5-mile-long segment near the General Motors plant in Doraville, was let in June 1958, but it was not completed until 1963. By 1964, only 19.7 miles of the perimeter road had been completed. Design work commenced in 1958 on the 125-acre I-20 interchange at Memorial Drive and Capitol Avenue, which included 18 bridges. By the middle of 1966, some 33% of the right-of-way needed to complete the system still had to be acquired.[19] An indication of slow progress was reflected by the fact that in 1968, one year before the entire system was to have been completed, only about 800 of Georgia's 1,100 interstate miles were complete with, not surprisingly, the urban sections proving to be much more challenging than the rural sections. This pace was typical of other states that were experiencing similar problems completing their border-to-border systems.

Figure 7. Governor Vandiver (third from left) and State Highway Board Chairman Jim L. Gillis, Sr., preside over the dedication of 37 miles of I-75 in Tift and Turner counties, Oct. 9, 1959. In the early years of the interstate program, such celebrations were common, but became less so as the politicians and public became accustomed to the piecemeal development of the interstate highway system. Source: GSHD, Biennial Report (1960), p. 86.

A significant change within the department itself during the first 13 years of interstate construction was Governor Carl Sander's 1963 replacement of the three-man state transportation board with a ten-member board appointed by the governor and a director/commissioner elected by the board. This made the board less political and more businesslike in conducting its affairs.[20] Jim L. Gillis, Sr. of Soperton was the first commissioner, and he served from 1963 through much of the state's interstate construction campaign until 1971 when he was succeeded by Bert Lance.

The Freeway Revolt Changes Everything

Actual construction of the interstate highways, particularly through urban residential areas, and urban renewal programs triggered a groundswell of concern about the effect of federal programs on the built and natural environment. This groundswell, which was being played out all across the country, gained momentum in the early 1960s and

[19] GSHD, Biennial Report (1966), p. 101.

[20] Parrish, Apr. 2006.

culminated in passage of precedent-setting environmental legislation starting in 1966. The new laws established procedures for transportation agencies to consider the impact of their projects on everything from minority employment requirements to the effect on historic buildings, and the laws permitted the public and affected parties to participate in that process. Local groups that had been battling the department during the 1960s over expressways planned for the eastern side of Atlanta used the newly enacted federal environmental laws in the early 1970s to stop construction of I-485 and the Stone Mountain Freeway. Both were important sections of the proposed intermediate loop-east that had been envisioned since the early 1950s as a way to relieve congestion on the downtown connector.

Long-Recognized Limitations of the Lochner Plan

That the connector (I-75/I-85) was inadequate was apparent by the early 1950s as Atlanta experienced unprecedented growth. In 1952, the Metropolitan Plan Commission (MPC), predecessor to the Atlanta Regional Commission (ARC), called for expanding the Lochner Plan of radiating expressways from the city core by adding inner and outer loop highways.[21] Ambitious as that plan may have seemed in 1952, passage of the Federal-Aid Highway Act of 1956 made augmentation of the city's expressway network possible, and the outer loop, intended to tie together the then-sparse but fast-growing suburban centers and to bypass the urban core, was programmed as I-285 in 1955. The proposed inner loop was not programmed as part of the original interstate system, but it would be added in time.

The MPC's 1959 plan, *Crosstown and By-pass Expressways*, reexamined the need for the envisioned but as yet unprogramed urban expressways. It also considered alternative modes of transportation. Even with the 63-mile-long outer loop (I-285), the study recommended about 104 more miles of freeways in the metro region, including the inner loop (now dubbed the intermediate loop) and a new, much-needed north expressway (the Roswell Expressway/GA 400). The most controversial of the 1959 recommendations proved to be the intermediate loop (east) that would link with the proposed Roswell Expressway at its northern terminus and the Lakewood Expressway near the federal penitentiary at its south end. There were to be major interchanges with I-20 and Ponce de Leon Avenue. This route, which was distilled from similar loop freeways proposed in the 1952 and 1954 plans, was seen as best for achieving two goals; taking through traffic off the connector and linking right-of-way acquisition and redevelopment with urban renewal in what were considered "blighted neighborhoods" in East Altanta (Figure 8). Regardless of alignment, the intermediate loop (east) was going to affect some of Atlanta's oldest residential neighborhoods, making the

[21] Metropolitan Planning Commission, Crosstown and By-pass Expressways, Expressway Policy Study, Report Number Two (June 1959), p. ii.

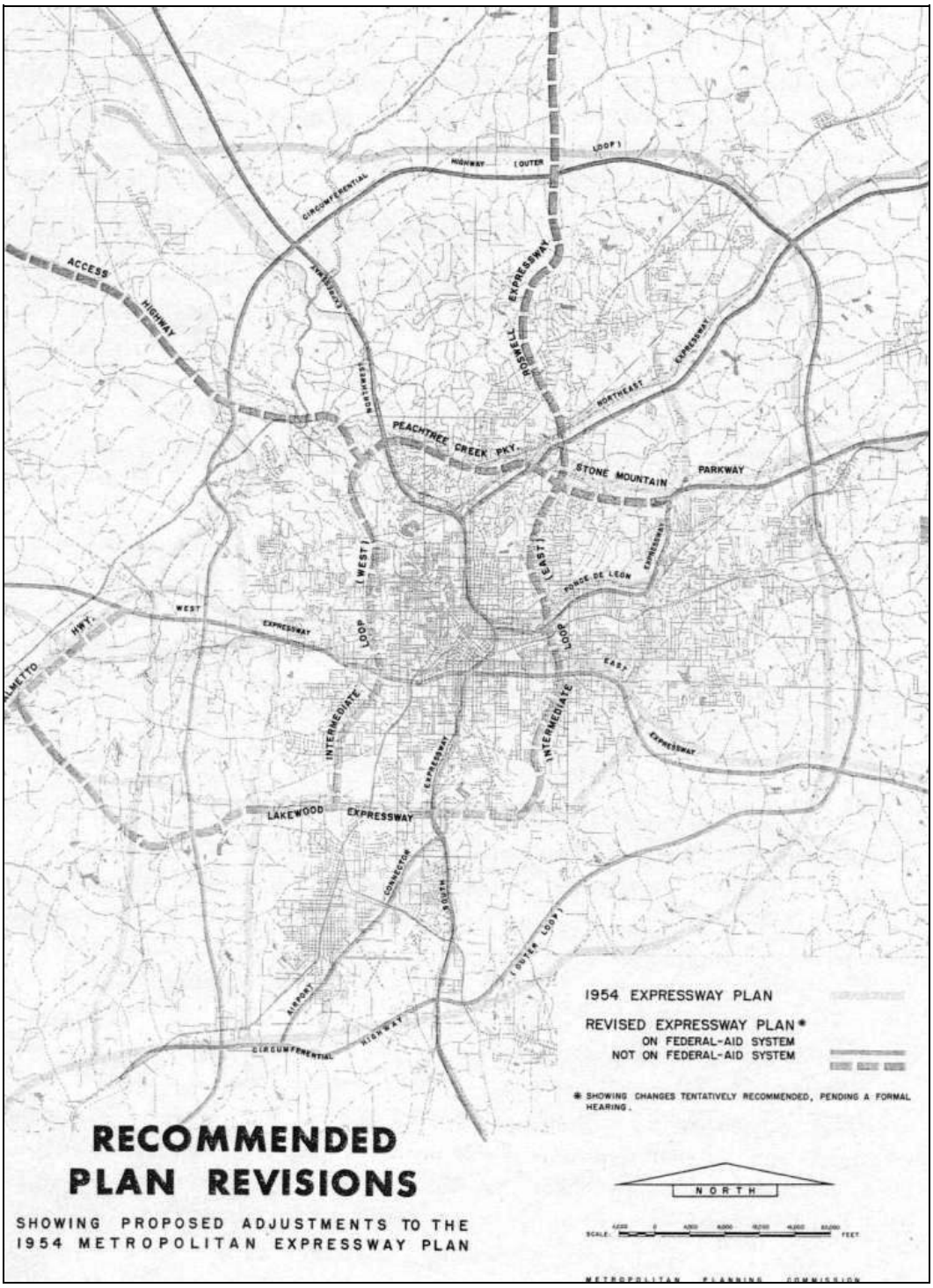


Figure 8. The 1959 Metropolitan Plan Commission (MPC) called for expanding the 1947 Lochner Plan of radiating expressways from Atlanta's city core by adding inner and outer loop highways. The plan's recommendations for expressways, especially on the east side of Atlanta, would become the flashpoint for Georgia's "Freeway Revolt" in the 1960s and 1970s. Source: MPC, Crosstown and By-pass Expressways (1959), p. 30.

proposed eight-lane-wide facility one of the most expensive highway projects in the state.[22]

A critical 5.2-mile-long segment of the intermediate loop (east) was formally added to the interstate system in 1965 as I-485. It broke out from the downtown connector at Boulevard and passed through inner city neighborhoods like Candler Park, Inman Park and Morningside to Lindbergh Drive/Cheshire Bridge Road and I-85, where it would also connect with the proposed Roswell Expressway. Another 5.3-mile-long expressway was proposed across Decatur and Druid Hills to link with the Stone Mountain Freeway on the east side of I-285. That road was to meet I-485 at a 120-acre interchange near the present intersection of North Avenue and Barnett Street in the Virginia Highlands neighborhood. Local opposition to both expressways was immediate and strong.

By the early 1960s, the demolition and displacement occurring in American cities as a result of interstate highway construction spawned a dramatic change in the public's attitude toward engineers as policy makers. The once-trusted transportation engineers and the agencies for whom they worked were increasingly questioned by a public that was turning to city halls, state houses, the courts, and Congress to press their opinions. Through the 1960s engineers watched as their long-held position as the expert, apolitical decision makers was eroded. Steadily, decisions once controlled almost exclusively by engineers began to be made with input from others. The actual control of decisions began to shift from the engineering arena. While public hearings for the urban bypass and then intra-urban highways were required under the federal-aid highway acts of 1950 and 1956, and then extended to interstate highway projects in 1958, these rules did not suggest meaningful input was solicited or that it had an effect on engineering decision making. In 1962, however, in response to ever-increasing public and political pressure, BPR tied federal-aid funds to a requirement that cities with a population greater than 750,000 prepare long-term, multi-modal, comprehensive regional transportation plans. Funds would be withdrawn after 1965 if a city did not comply.[23]

Then, in recognition of the fact that the nation's cities could not build enough highway lanes to solve their traffic congestion problems, Congress passed the Urban Mass Transportation Act in 1964 for construction of mass transit systems. Allocated funds were initially limited, but two years later, in 1966, funding for both construction and operation of mass transit systems was to be provided by the Highway Trust Fund – another blow to the influence of highway engineers who now saw their once-exclusive funding source shared with fixed rail systems.

---

[22] Ibid., p. 31.

[23] U.S. Department of Transportation, Federal Highway Administration, America's Highways 1776-1976: A History of the Federal Aid Program (Washington, DC: 1976), p. 371.

In 1966, just ten years after the federal legislation initiating construction of the great national system of high-speed, limited-access highways, Congress passed two pieces of legislation that illustrated just how different the climate had become for transportation engineers and agencies trying to complete the interstate system as originally envisioned. One was the National Historic Preservation Act (NHPA) that gave standing to those concerned about changes to historic properties and provided a process for them to comment, which is codified in Section 106 of the act. The other was the US DOT Act of 1966 that, to better administer the multi-modal character of transportation, created the Department of Transportation from 30 different federal transportation-related agencies. The BPR became the Federal Highway Administration (FHWA) in 1967, and mass transit moved to the Urban Mass Transit Administration (UMTA).[24]

The US DOT Act of 1966 also made a strong commitment to preservation of the scenic and built environment by restricting all US DOT agencies from using certain types of properties, including publicly owned park or recreation land, wildlife refuges and historic properties, as part of building their projects unless no other prudent and feasible alternative existed. Because so many highways involved demolishing historic buildings and taking land from parks, this provision, known today as section 4(f), significantly altered interstate highway construction programs all across the country. It also forced state and federal transportation officials to now consider and reflect the perspectives and values of many stakeholders, particular affected citizens and elected officials.

In 1968, federal highway legislation strengthened the long-standing policy on public hearings, now requiring them for both the location and design phases of all federal-aid projects not yet actually under construction, including those for which right-of-way had been acquired. In Georgia that included I-485 and the Stone Mountain Freeway through Decatur and Druid Hills, two projects that had been highly controversial since the early 1960s. The department went on record opposing the policy because of the perception that it would delay projects.[25]

---

[24] There were several federal agencies that managed the nation's highway programs before 1967. The original agency was the Office of Road Inquiry established in the Department of Agriculture in 1893. While in the Department of Agriculture the agency changed its name four times. In 1899 it became the Office of Public Road Inquiries, in 1905 it became the Office of Public Roads, in 1915 it changed to the Office of Public Roads and Rural Engineering, and in1918 it was the Bureau of Public Roads (BPR), which it remained through 1966. BPR was moved to the Federal Works Agency in 1939 and renamed the Public Roads Administration. In 1949, the BPR name was restored and the agency was put under the Department of Commerce where it remained until the Federal Highway Administration was established within the Department of Transportation in 1967.

[25] "H'wy Board Opposes New Federal Regulations," Survey, Vol. 3, No. 12 (Dec. 1968), p. 2.

The 1960s groundswell of concern about what was happening to the environment culminated in passage in December 1969 of the National Environmental Policy Act (NEPA). It was signed into law by President Richard M. Nixon on January 1, 1970. NEPA enunciated for the first time a broad and overarching national policy toward preventing environmental degradation by federal actions. Federal agencies were now required to consider the consequences of their actions on the environment, both natural and manmade. Detailed, multidisciplinary, written assessments called environmental impact statements (EIS) were to be prepared for all substantial federal activities, like constructing new highways. The EIS included addressing the provisions of the NHPA and the US DOT Act of 1966.

Understanding how the freeway revolt played out in Georgia is instructive to appreciating the climate of the times and its lasting consequences. Most highway engineering bureaucracies in the United States resisted these changes, considering them sources of inefficiency and delay. Many did not grasp the political dynamics underlying all of the legislative acts, and this, in turn, added fuel to what came to be called the "freeway revolt." In Atlanta, the new laws threatened nearly 20 years of planning that had sought to redress deficiencies of the Lochner Plan. Then about 1970, a Morningside neighborhood group brought suit against the department to force implementation of the newly passed NEPA and to address FHWA's policies of addressing neighborhood integrity and multimodal solutions to urban traffic congestion. In 1971 the group prevailed in federal court, and I-485 was put on hold until the department could complete an EIS, including assessment of the proposed MARTA rapid transit lines through the northeast corridor.

When the EIS was submitted early in 1973, it was rejected by US DOT because the mass transit component was insufficient. Citizens continued to work the political side of the equation, and the Atlanta Board of Aldermen voted against the proposed expressway on June 18, the same day the EIS was rejected by US DOT. The fate of I-485 was not known for certain until the Atlanta Regional Commission (ARC) revised its Altanta Area Transportation Study (AATS).[26] The 1974 revision called for deleting I-485 (which ARC had endorsed as part of the 104 miles of new urban expressways included in its 1969 AATS). With that decision the State Transportation Board voted to withdraw the mileage from the interstate system, and FHWA accepted the withdrawal in 1975.[27] In 1977, I-485 had come full circle as GADOT moved to dispose of all of the

[26] John York, "I-485 All Tied Up in Controversy," Atlanta Journal (Aug. 19, 1973), p. 19-A.

[27] FHWA gave states several options for dealing with sections of interstate highway that could never be constructed. The one Georgia selected was to substitute different projects that could be constructed. Those included I-175 (Albany Connector), I-420 (Lakewood Extension), and I-675 (South Altanta Freeway). Some states returned funds, and those returned funds would come back to factor significantly in Atlanta.

property that it had acquired for construction and cleared north of St. Charles. The area has been largely redeveloped for residential use.[28]

The Stone Mountain Freeway shared a similar fate. In 1972, Governor Jimmy Carter appointed a commission to study the issues associated with the highly divisive project that would cut across viable historic neighborhoods and impact schools and the local science center. The commission argued that building the expressway was an irreversible action while the reversible step it recommended was to wait for the assessment of the impact of the proposed MARTA lines in accordance with FHWA guidance.[29] Governor Carter accepted the commission's recommendation late in 1972, and his action meant that the Stone Mountain Freeway, like I-485 with which it was to connect, was no longer a viable option for GADOT because of environmental considerations. Again, transportation decisions were being driven by preservation and other issues. Other segments of interstate routes were also affected by environmental and political considerations, including former mayor Maynard Jackson's position that I-675 linking I-20 with I-75 through southeast Atlanta would never be built.[30] Largely as a result of federal environmental legislation, only 32 miles of the 104 miles of urban freeways proposed during the 1950s and 1960s were ever built. Another environmentally and politically derived decision was that I-75 northwest of Atlanta would not cross Lake Allatoona. Its alignment was finally settled on the west side of the lake close to Cartersville to mollify politicians and environmentalists.

Constructing interstate highways to and through other cities in Georgia, like Macon, Columbus, Augusta, and Savannah, were not nearly as problematic as in Altanta for a variety of reasons, including that those cities' circumferential and distributing routes were not part of the original interstate system or, as in the case of Macon, the interstate routes through the city proper had been constructed prior to the freeway revolt and federal environmental laws.

The Moreland Era, 1973-87

Into this very different climate that had evolved by the mid 1970s – one where engineers now had to accommodate the perspectives of other disciplines and meet rigorous legislative mandates to justify actions that not long before had been their nearly exclusive domain – came Thomas D. Moreland (Figure 9), who was appointed commissioner by the state highway board in 1975. He had been promoted to state highway engineer in 1973. His charge, as both state highway engineer and

---

[28] "Houses Rise from the Ashes of I-485," Atlanta Journal (May 10, 1981), p. C-8.

[29] US DOT, FHWA and GADOT, "Final Environmental Impact Statement, Georgia Project M-9152(2), Fulton/Dekalb Counties (May 22, 1984).

[30] Parrish, Apr. 2006.

commissioner, was to lead the department in completing the gaps in the interstate highway system in addition to addressing other pressing transportation demands, like improving other classifications of federal-aid highways and implementing metro Atlanta's mass transit system. His already challenging job was compounded by the 1973 Arab oil embargo and the resultant dramatic drop in gasoline tax revenue, which is what Georgia depended upon to fund its pay-as-you-go road and bridge construction activities. The tax was also the primary source of its contribution to the federal Highway Trust Fund. Matters were further complicated by the 25% increase in the costs of building materials between 1973 and 1975 caused by rampant inflation. And since the interstate highways were nearing completion, the department had initiated staff reductions through attrition from an all-time high of 9,000 to 7,500 by the end of 1975.[31]

Figure 9. Thomas D. Moreland. Source: GDOT Translator, Vol. 6 (Aug. 1977).

After graduating from Georgia Tech, Moreland started with the department in their new training program in 1957. Charles Marmelstein, the state bridge engineer, encouraged him to return to Tech to study soil mechanics with noted geologist and engineer George W. Sowers. He then came back to the department and the material laboratory where he made the soils lab pre-eminent. He was appointed state materials engineer, and in this position he moved the department to emphasize materials performance data. The information was used to support and justify materials specifications and testing procedures to ensure that they met the state's standards. Like he had done with the soils lab, Moreland moved Georgia's materials laboratory to national prominence. His position as head of the lab and the fact that materials permeated most everything that the department did, as well as his promotion to direct operations, put him in a position to be involved in nearly all the department's activities, so it was not surprising that in 1973 he was promoted to the position of state highway engineer, the most senior career position in the agency.

Against this backdrop of scarcity and pluralistic decision making that hamstrung many other state departments of transportation, Thomas Moreland managed to not only complete Georgia's interstate highways by the fall of 1978, but he also led the 1975-1988 reconstruction and upgrading of the interstate system in the metro Atlanta region – an accomplishment that was the envy of the nation, particularly in states with urban

[31] GADOT, Annual Report (1975), pp. 6-7.

centers that had experienced tremendous growth after World War II. Under his leadership the department adapted to the new realities of the changing attitudes and policies of the times and found innovative and effective ways to get business done. In fact, Georgia's transportation department began to move at an accelerated rate that drew national attention. Moreland pushed Georgia's highway system to the forefront nationally by being a capable decision maker, politically and technically savvy, and absolutely dedicated to getting as much out of every federal dollar as he could.[32] Enjoying the confidence and trust of progressive Governor George Busbee,[33] he worked closely and effectively with the state legislature, the congressional delegation, and the department's federal partners at FHWA to leverage federal money, without which Georgia would not have accomplished what it did.

Moreland's transformation of the department started when he became state highway engineer in 1973. He moved research to the materials lab and then used the data to support and defend decisions from material specifications to department policies. For instance, rather than relying on outside contractors, he had department personnel learn to perform their own welding inspections, making the lab a national leader in that area.[34] Perhaps his greatest change was a plan to complete the gaps in the state's interstate highway system (some 23% of the total mileage) by the end of fiscal year 1979. Moreland stated that it could be done because of the capabilities of the department but only if financing could keep pace with the department's preconstruction activities.[35]

Even more changes occurred when Thomas Moreland became commissioner in the spring of 1975. The biennial report, previously a traditionally dry report, took on the look of public relations material appropriate to a general audience with each issue based on a theme and containing quantitative summary information and catchy graphics. The department was reorganized into five operating divisions (planning and programming, administration, operations, preconstruction, and construction) that reflected the linear progression of how projects were advanced.

---

[32] Paul Liles, Personal communication with Mary McCahon (LCE), Sept. 2006.

[33] George Busbee (1927-2004) was the first Georgia governor to serve two consecutive terms; 1975-1983. When he was first elected governor in 1974, the state constitution did not permit a governor to succeed himself; governors were not permitted consecutive terms. Largely because of Governor Busbee's effective administration, the Georgia constitution was amended in 1976 to permit a governor to succeed himself for an additional four-year term. When the intention of completing the gaps in the interstate highway system during his administration was set, that he would serve two terms was not known.

[34] Liles, Sept. 2006.

[35] Moreland's definition of "finished" in 1973 was having all of sections under contract, not necessarily done. Moreland to State Highway Board, Nov. 30, 1973 in GADOT, Commissioner Records, State Archives of Georgia, Atlanta.

The story of Moreland's successful tenure as commissioner represents more than the accomplishments of one man. He benefitted from a talented and dedicated staff, including Hal Rives his assistant commissioner who was named as his successor in 1988, and Emory Parrish, executive assistant director.[36] Moreland generally engendered great loyalty among the rank-and-file, from whom he expected long hours and work of the highest quality. Not one to be told no, he was constantly striving for efficiencies in order to achieve desired results, like convincing the state legislature to change from the pay-as-you-go approach to funding highway construction and approve advance funding in order to secure federal aid to finish the interstates, or moving the bridge division to prestressed concrete for long bridges so that interstate construction would not be held up by steel delivery disruptions caused by labor strikes and the like. That decision did much to start Georgia's now nearly total transition away from steel bridges.

Finishing the Interstates

The pace of interstate construction had slowed when Moreland became state highway engineer in 1973. Activity in each state was predicated on several factors including the amount of a state's allocation from the Highway Trust Fund. The fund was not adequate to cover the actual cost of interstate construction in a timely manner, which is one of the main reasons why it took so long to complete the national system. He recognized this dilemma, as did transportation officials in other states. In 1973, he calculated for the state transportation board that finishing the system border-to-border by the end of fiscal year 1979 would require $350 million more that the projected federal-aid allocations and that by relying solely on federal apportionments, the interstate work would not be finished until 1987.

To meet his goals, Moreland proposed pre-financing interstate construction using bonds that would be retired with future federal apportionments. Debt service on the bonds would be funded by the state's general funds.[37] Impetus for this approach came in the form of the opportunity to leverage additional federal funds. By 1974, it was apparent that interstate funds allocated to some states were never going to be spent, for a variety of reasons including new environmental regulations that were blocking construction of some routes. FHWA made those turned-back funds, now called "discretionary funds," available to states that (1) had construction plans ready and (2) could be let for construction starting in the summer of 1975.

In 1975, now-Commissioner Moreland was in a position to follow through on his 1973 claim that, with advanced funding, the department could complete the interstate

---

[36] Emory Parrish retired in 1982.

[37] Moreland to Broome, Nov. 11, 1973. Letter in GADOT, Commissioner Files, State Archives.

highway system by the end of fiscal year 1979. The effort was made a centerpiece of Governor George Busbee's first administration, which ended in January 1979. Moreland and his staff, working through the governor's office and the state legislature and aided by the congressional delegation in Washington, set up the advance funding program that leveraged discretionary federal dollars and facilitated completion and opening of all sections of the original interstate routes by the fall of 1978. Starting in 1975, the state legislature authorized the sale of state bonds for pre-financing construction, and the program continued with great success through the mid 1980s. Georgia's first discretionary funds award in 1975 was $8 million. Because of the pre-financing and the accelerated preconstruction program, successive awards to the state were larger and larger until 1983 when the state received $2.50 for every gas-tax dollar it sent to Washington.[38]

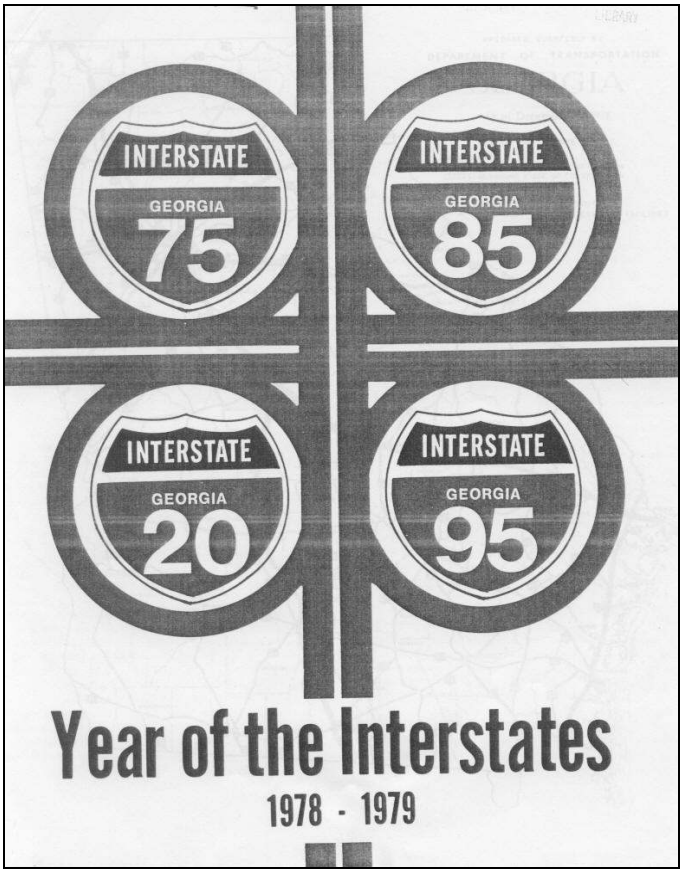


Figure 10. Source: Cover, GADOT, Biennial Report 1978-79.

By the end of 1977, all four of the major border-to-border interstate highways (I-20, I-75, I-85, and I-95) were complete, and additional urban bypass sections like I-520 in Augusta, I-575 in Cherokee County, and I-185 to Columbus were also under construction. The original system was officially finished with the September 1978 opening of the last section 1-16. The biennial report covering fiscal year 1978-79 declared it the "Year of the Interstate" (Figure 10), and between November 22 and December 23, 1977 alone, the department celebrated the completion of interstates 20, 75, 85, and 95. The frenetic pace of completion was highlighted when Moreland and Governor Busbee attended four ribbon cuttings in one week.[39]

[38] Thomas Moreland Folder (1987) in Government Office Clippings, Record Group 27-6-6, State Archives.

[39] GADOT, Biennial Report (1979), p. 8.

Without Moreland's vision and leadership, it is not likely that the accelerated completion of the interstates would have been accomplished. In addition to his acknowledged ability to motivate his staff,[40] he never lost focus of the big picture. In order to finish the interstates during Governor Busbee's first administration, Moreland set up a letting schedule that was held to be inviolate. He directed a logical progression of staged designs and contract awards. For instance, bridges needed to haul materials to a site were designed and let ahead of overpasses, which could wait until the earthwork associated with grading and preparing the roadway bed was well underway. In this manner, like a general leading his troops, Moreland orchestrated an efficient and effective construction campaign that put the state's interstate highway program in the national spotlight.

To be considered for discretionary funds meant that the department had to use all of its annual interstate federal allocation nine months into each federal fiscal year.[41] This meant that the department's engineers and specialists had to complete a year's worth of work in nine months and then complete the plans for discretionary-funded work. It was a hectic pace. Moreland reasoned that he could leverage even more production by using his staff to supervise work being done by consulting engineers with each engineer supervising several projects rather than doing the actual design himself.[42]

Freeing the Freeways

While the accelerated completion of the interstate system certainly was an outstanding accomplishment for the department, Moreland's and the state's national reputation for modernizing its transportation systems was further burnished by the massive 1976-1988 campaign to reconstruct the metro Atlanta interstate system. The work was desperately needed as actual traffic volumes far exceeded design projections, and some sections were approaching 30 years of age and the end of their design life. Despite incremental rehabilitation projects, most of the sections still had deficient geometry and safety features, and the inadequacy of the downtown connector continued to stymie traffic flow through the region. The success of the $1.4 billion "freeing the freeways [of congestion]" campaign, the largest urban interstate reconstruction program of its day, was, again, based on Moreland's shrewd ability to

---

[40] Paul V. Liles, Jr., who started with the Department in their training program in 1970 and became state bridge engineer in 1988, remembers Moreland's ability to instill his staff with great personal responsibility for production. "You felt like everything depended on you and that you did not want to be the one that let the project down." Although he is remembered by many as being a strong leader, Liles stated that he would also be the first person to commend a job well done. (Personal communication to Mary E. McCahon, April, 2006).

[41] Award of interstate discretionary funds was predicated on the following criteria; spent all allocation, have plans in hand ready to let, and have 10% state matching funds in hand.

[42] Liles, Sept. 2006.

make use of shifts in federal priorities and policies and leverage millions of federal dollars to complete the project.

Pursuing the freeing the freeways campaign was a pragmatic acknowledgment that reconstruction of existing expressways, not new construction, was the way to address Atlanta's severe traffic congestion problems. Environmental laws from the 1960s, like the NHPA and NEPA and subsequent court decisions, meant that no more superhighways were going to be constructed inside the perimeter road. The department correctly reasoned that instead of fighting for new roads, they would expand the ones they had – a decision that has served the state well as lane capacity in and around Atlanta was significantly expanded at a time when it was possible to do so.[43] And starting about 1976, mass transit was included as part of that rebuilding effort.

The mid-1970s decision to pursue reconstruction was based, in part, on national shifts in thinking about both design of interstate highways and what types of work should be allowed using interstate construction funds. Beginning about 1960, research was proving that traffic fatalities could be significantly reduced by changing unyielding roadsides to forgiving ones free of obstructions such as light poles, signs, blunt ends of bridge railings, and confusing geometry. Mounting evidence that all manner of highway geometry and roadside appliances from culverts in medians to maintaining the roadway section across bridges made a dramatic difference in safety led to the 1966 Highway Safety Act. The act placed the federal government and the newly established FHWA in the leadership role to guide and finance highway safety activities for all types of highways, particularly the interstates. The American Association of State Highway and Transportation Officials (AASHTO) quickly followed with its influential 1967 *Highway Design and Operational Practices Related to Highway Safety* report that established the 30'-wide clear zone. The clear zone was intended to provide vehicles leaving the road a safe recovery area free of obstructions that could cause injury or death.[44] The recommendations in the report, from break-away poles to carrying shoulders through access ramps and placement of signs, affected such dramatic reductions in fatalities that a FHWA engineer working in Ohio in 1969 stated that old (pre-1967) design features like guide rails and light poles were replaced with the new, safer ones on any project that was less than 95% complete, even if the roadside features were brand

---

[43] The Clean Air Act of 1990 and the Intermodal Surface Transportation Enhancement Act (ISTEA) of 1991 mandate that all transportation projects consider their impact on ambient air quality. The result has been that in areas of nonattainment, like Atlanta, additional highway lanes cannot be constructed unless it can be demonstrated that emissions will not exceed the 1990 level. The result has been that additional lanes cannot be added to interstate or any other classification of highways in areas of nonattainment, and this has severely affected urban areas that did not upgrade their urban interstate highways before the provisions of the two acts were implemented in the mid 1990s.

[44] Hayes E. Ross, Jr., "Evolution of Roadside Safety," in Roadside Safety Issues, Transportation Research Circular, Transportation Research Board/National Research Council, 1994.

new.[45] The findings and recommendations in the initial 1967 report were refined and expanded through the 1970s and resulted in a revised version in 1974 and FHWA issuing the *Handbook of Highway Safety Design and Operating Practices* in 1973 (revised 1978). Interestingly, the 1978 publication included a photograph of the I-75/85 and I-20 split to illustrate deficient nose recovery area (Figure 11).

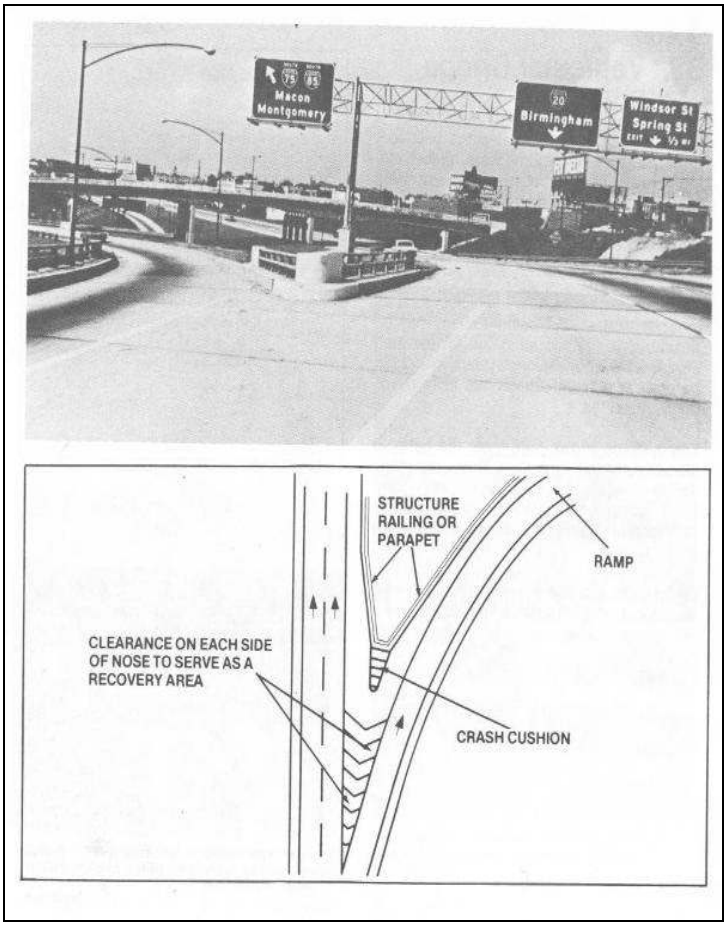


Figure 11. The I-75/85 and I-20 split in downtown Atlanta was used in FHWA's *Handbook of Highway Safety Design and Operating Practices* (1978) to illustrate deficient recovery areas and how they could be retrofitted for improved safety.

In Georgia, as in the rest of the country, much of the interstate highway system predated 1967. Common deficient features, which are so apparent in historic views of the Atlanta Expressway (Figure 5), included left-hand exiting, lack of shoulders on bridges, acceleration and deceleration lanes that were too short, grades that were too steep, insufficient median barriers, and skid-prone riding surfaces. They also had unyielding roadsides. Additionally, traffic volumes had increased far beyond 1940s and 1950s projections, further compounding the inefficiencies of the older designs and contributing to fatalities.

The push for applying the new safety and operational features to existing interstate highways came in 1973 when Congress authorized for the first time using money from the Highway Trust Fund for safety improvement programs, like pavement markings and removal of roadside hazards, on all classes of highways including the interstates.[46] In 1975, FHWA released its study that compared fatality statistics on old and new sections of interstate highway. The findings demonstrated the merit of redressing old

[45] Wright Aldridge, "A Lesson in Safety," Internet On-line, <http://fhwa.dot.gov/interstates/memories.htm. [Oct. 13, 2006].

[46] Ross (1994), p. 6.

design standards. Using the watershed year of 1967 as the break, the study proved that interstates designed after 1966 were much safer in both urban and rural sections. The report concluded that upgrading pre-1967 sections of interstate to post-1967 standards would contribute to "overall safety of the system." At that time, "older sections" comprised 77% of the total system miles nationwide.[47] In response to the cumulative safety data and the fact that some of the oldest sections of interstate highway were approaching the end of their design life, the Federal-Aid Highway Act of 1976 expanded the definition of what work could be done using interstate construction funds to include resurfacing, rehabilitation and restoration (known as the 3 Rs in highway parlance) for sections that were greater than five years old.

The 1976 expansion of allowable work marked a sea change in the evolution of the interstate highway system as it now permitted adding lanes, improving geometry, building new interchanges, or significantly improving existing ones – all of the enhanced maintenance items needed to bring the entire system, regardless of date of original construction, into compliance with modern design and safety feature standards. The Surface Transportation Assistance Act (STAA) of 1978 further strengthened the policy shift by earmarking interstate construction funding for 3R work, and this at a time when many states had not even completed all of their original mileage.

The timing of the policy change could not have been better for Georgia. It meant that rather than marking the end of its interstate construction early in 1978 with the border-to-border completion of the original routes, Georgia could now apply the same immensely successful approach of pre-financing and accelerated preconstruction activities to rebuilding the metro Atlanta interstates using the 90/10 funding formula. The allowable 3R activities would make it possible to provide a higher level of service by increasing the number of lanes and improving interchanges, as well as upgrading a host of roadside and operational features.

To appease varied interests, the Federal-Aid Highway Act of 1981 clarified the distinction between the two types of allowable interstate construction by defining work to complete the gaps in the original system as interstate construction (IC) and adding reconstruction (the fourth R) to allowable work to bring old, existing sections up to current design and safety standards. A funding formula for 4R work was established using the 90/10 ratio, and the Surface Transportation Assistance Act (STAA) of 1982 established a mechanism for dispersing any lapsed I-4R funds to states that could obligate them. The dispersal criteria were the same as for earlier lapsed interstate

[47] U.S. General Accounting Office, "Report to the Congress by the Comptroller General of the United States, Costs and Problems of Completing the Interstate Highway System," (Sept. 4, 1975), p. 14.

discretionary funds – having plans in hand and being able to quickly let contracts for that work.[48]

Thomas Moreland and the Georgia delegation played a significant part in the drafting and passage of the federal highway legislation that was favorable to Georgia's reconstruction program. With the same deftness used to secure funds for completing the original routes, the department set out again to get discretionary funds. Due to inflation and dramatic drops in gas-tax revenue in the late 1970s and early 1980s, some states were not able to obligate their I-4R allocations, which meant that fairly large sums of turned back money was available for states, like Georgia, that could. While Georgia was not the only state making use of discretionary I-4R fund, by the end of 1981 it was far and away the leader in pre-financing, with the federal government owing it $476,525,000 – more than three times that owed Florida, the next closest state.[49] So successful was Georgia's approach to financing the hugely expensive freeway reconstruction program that by 1983 Georgia had moved from a donor state to a recipient state receiving $2.50 returned for every Georgia dollar sent to Washington.[50]

Moreland directed his staff to complete the metro Atlanta reconstruction with minimum disruption to the traveling public. Work to increase lanes from six to eight on I-20, I-75, I-85, and I-285 and ten lanes on the downtown connector involved 126 total miles and was phased over 13 years between 1976 and 1988. The improvement campaign also included elimination of sharp curves and grades, left-hand exists, excessive interchanges, and short acceleration/deceleration lanes. About 30 miles of HOV lanes were also provided on the northeast leg of I-85 as part of the reconstruction as were park-and-ride facilities. So as to offer a bypass around construction through the center of the city, the perimeter road (I-285) was completed first. The radiating expressways were then upgraded, and the last phase was reconstruction of the depressed sections through downtown Atlanta. By June 1983, some $252 million in discretionary funds had been used to complete most of the highways save for some major interchanges and the downtown section (Figure 12).

The eight miles of the downtown section, which includes the 4.4-mile long downtown connector, was the most complicated section of the entire reconstruction. Work was started on it in 1984, and it included redesigning the massive interchange between I-20

---

[48] Richard F. Weingroff, "Origins of the Interstate Maintenance Program," Internet On-line, FHWA, Highway History <http://www.fhwa.dot.gov/infrastructure/intmaint.cfm>, [Oct. 18, 2006].

[49] U.S. Secretary of Transportation, "A Revised Estimate of the Cost of Completing the National System of Interstate and Defense Highways (March 1983), pp. 11-13.

[50] Thomas Moreland Folder (1987) in Government Office Clippings, Record Group 27-6-6, State Archives.

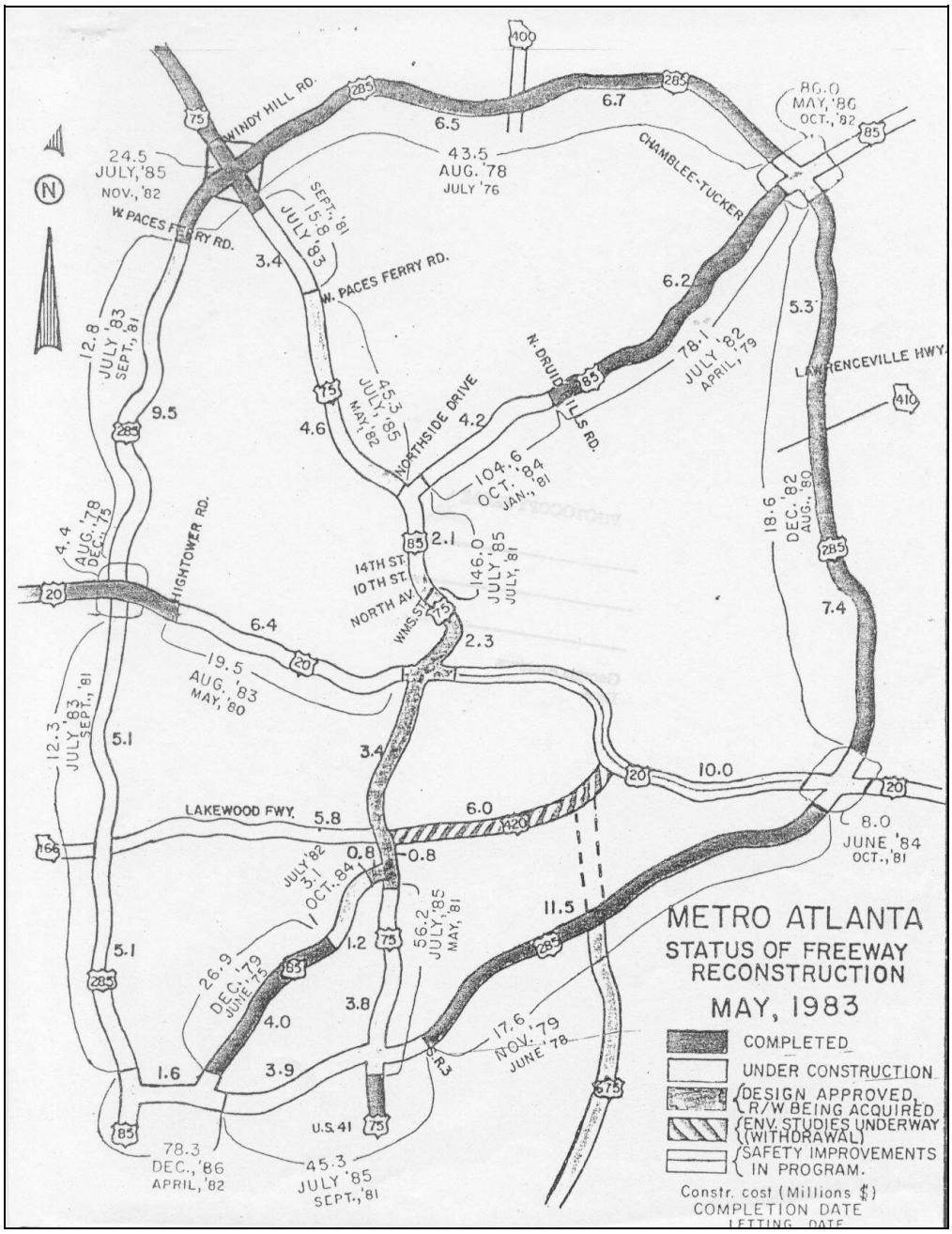


Figure 12. GADOT progress map of reconstruction of the Atlanta interstate highways, 1983. Source: GADOT, Commissioners Records, State Archives.

and I-75/85 at Memorial Drive where much of the mileage was on structure. The downtown connector was to be widened to ten lanes, and this required quite a bit of right of way acquisition. Many bridges, including the 55 over the connector portion alone, had to be designed and built.

With completion of the Memorial Drive interchange in November 1988, one of the nation's premier interstate urban expressway reconstruction projects of the late 20th century was completed. It marked the end of an era – an era dominated by the vision and drive of Thomas D. Moreland who, more than any other person, was responsible for Georgia's nationally recognized, modern interstate highway system, especially the metro Atlanta expressway system that stands out for its lane capacity and high design standards. The $1.4 billion estimated cost price tag to rebuild the metro Atlanta interstates nearly equals what was expended on the construction of the rest of the statewide system.

Figure 13. Thomas D. Moreland Interchange (I-85/I-285). Source: GADOT Web site, 2007.

Reconstruction of the metro Atlanta expressways marked the zenith of Moreland's effectiveness. Immensely popular on the local level, he was considered by many the most powerful non-elected official in the state. For years he exercised his considerable influence over the state legislature for the betterment of the department, thanks to the support of his many friends in the state house, including Zell Miller and Michael Bowers. During the mid 1980s that support eroded and relations between the department and legislature changed, and the political contentiousness that had marked road work in so many states caught up with Georgia. Longtime department lobbyist Emory Parrish recalled that "our best friends in the legislature started voting against the department" and that "they stopped coming over to the department to talk" because of the pressure for support that Moreland applied to them.[51]

In the early and mid 1980s, Moreland and his allies on the federal level had lobbied hard for a two-and-half-cent increase in the state gas tax to be used for highways to stimulate economic development throughout the state. Its failure to pass coupled with other changes, including federal legislation that limited Georgia's ability to secure discretionary funds, replacement of FHWA Georgia Division personnel that had been instrumental in completing the Atlanta reconstruction work, and increasingly contentious political battles, prompted Moreland to announce his retirement in May 1987, ending his 40-year career with the department. His legacy is the remarkable interstate highway system that was completed by the department under his leadership to the highest standards of the day and to the envy of most of the other states. Indeed, as fitting recognition of all that he accomplished, the technically complicated

[51] Parrish, Apr. 2006.

interchange between I-285 and I-85 with its graceful sweeps of prestressed concrete box beam bridges was named the Thomas D. Moreland Interchange in his honor (Figure 13). The interchange, which encompasses some 311 acres, was built between 1982 and 1987 and cost $86 million. It and similarly designed interchanges in the metro region are the most dramatic elements of the building campaign that sets Georgia apart during the last half of the era of interstate highway construction.