

## Merritt Parkway Gateway Project Greenwich, Connecticut

### Setting

The Merritt Parkway (the Parkway) was constructed in the 1930s and opened to traffic in 1940. The facility, a four-lane divided arterial highway, was originally designed and continues to function as an essential component of Connecticut's transportation system.

The Parkway has long been recognized for its unique design features and scenic character. Its park-like setting, majestic bridges, and scenic landscaping make it a distinct and appreciated asset to the state. The bridge architecture utilizes motifs that were popular in the 1930s, including Art Moderne, Art Dec, Classical, Gothic, and Renaissance.

The Parkway was placed on the National Register of Historic Places in 1991, and in 1993, was designated a State Scenic Road. In 1996, it achieved designation as a National Scenic Byway.

When first constructed, the land use through which the Parkway was built was primarily rural, agricultural, and open space uses. Over time, the landscape has matured and changed. Development has occurred in the vicinity of the Parkway, bringing with it both increased traffic and residences near the Parkway.

Both the volume of traffic and its character and operations have changed over time. The Parkway now carries traffic in excess of 50,000 vehicles per day in some segments. Originally designed for speeds prevalent in the 1930s (35 to 40 mph), it now operates at speeds in excess of 60 mph, and with greater density of traffic. The Parkway has evolved into now serving as a commuter route.

Not surprisingly, the substantive safety history of the Parkway has become an increasing concern to the Connecticut DOT. Both the terrain and context, as well as the character of the original design, produce relatively high risk of severe roadside collisions with obstacles such as trees and rock outcropping. Shoulders are typically only 2 feet wide, and clear areas and offsets to fixed objects generally less than 6 feet. The narrow median was not originally designed with a physical barrier. The heavier traffic and speeds greater than the Parkway was designed for are also issues of concern.

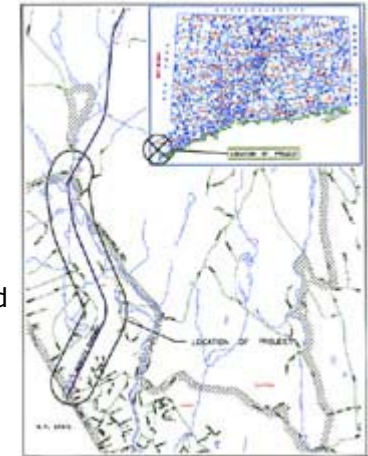
From 1986 through 1990, there was one reported crash every 8 hours, one injury every 20 hours, one fatality every 52 days, and a guide rail struck every 36 hours along the 38-mile corridor. This alarming history of both frequent and severe crashes indicated a need for action.

### Problems to be Solved

The problems to be solved were improving the safety and operational efficiency of the Parkway while maintaining its unique and valued characteristics. Related to these problems were resolving the long-term role of the Parkway relative to development and its attendant pressures, and with respect to other transportation system features in the area.

These problems were articulated in a series of questions and issues developed by a stakeholder working group that was convened by the Connecticut DOT.

- The Parkway's future as it relates to its capacity to carry vehicles cannot be separated from the land uses allowed or encouraged by local zoning entities and towns.
- Pressures for an expanded transportation facility and the desire for increased local development are not separate and unrelated. The future of the Parkway was



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viewed as being inextricably driven by the land use decisions made by towns and others.

- A fundamental question to be resolved (a choice to be made) was stated simply - Is the Merritt Parkway a major transportation facility or is it simply a beautiful place?

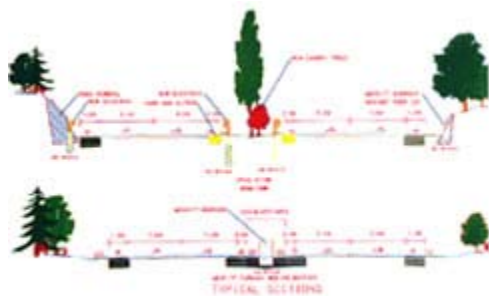
The project in which these issues were addressed involved the development of guidelines for resurfacing, safety improvements, and enhancement projects for the Parkway. These guidelines would in effect provide firm direction for the scope, nature, and types of improvements considered appropriate for the Parkway over the long term.

### Stakeholders

- Connecticut Department of Transportation
- Fairfield County, CT
- Merritt Parkway Working Group (comprised of DOT staff in engineering, traffic, landscape design, maintenance, construction and planning; outside experts in architecture and preservation)
- Local town officials
- General public

### CSD/CSS Approach

Much work and many meetings were held to wrestle with the conflicting issues of providing for safety (and in particular, roadside safety) and maintaining landscaping and other visual features. Extensive research was conducted, including thorough site reviews and interviews with the original landscape architect, W. Thayer Chase, to fully understand and confirm his philosophies and intentions.



Deliverables to be used by the DOT included 'Merritt Parkway Guidelines' and 'A Landscape Master Plan For the Merritt Parkway.'

### Design Flexibility and the Application of Design Criteria

The Connecticut DOT, through its Merritt Parkway Working Group, in effect established corridor-specific design criteria that reflected the consensus best efforts to balance safety and aesthetic considerations.

- The DOT chose a design speed of 60 mph for the facility, intending to post a 50 mph legal speed limit.
- The DOT chose not to view the Parkway as a route to be used for increasing through regional east-west capacity.

- The DOT chose to address the safety issue by focusing primarily on roadside crash severity. Design solutions (see attached typical sections) incorporated 4-foot shoulders and enhanced crash tested barrier systems that were visually less obtrusive than standard guiderail. Barrier or rail was placed in the median depending on the presence of mature trees, which for the most part were retained. Some rock outcroppings were selectively removed, but the general overall roadside character was retained.

Note that, were this a new freeway or expressway, or a similar route in a different context, the DOT would apply more stringent design criteria for the roadside. The *AASHTO Roadside Design Guide* suggests up to 30-foot clear as a target dimension from the edge of pavement, with mild slopes and free of obstacles. Such a design, or use of continuous barrier, was not considered appropriate for the context of the Parkway.

Part of the design process was the development of a new, aesthetic median barrier. To be acceptable, the barrier needed to pass vehicle crash tests based on criteria established in *NCHRP Report 350*, which specifies speeds, angles of collision, and vehicle types, as well as defines success or failure in the testing. The DOT also selected a steel-back timber guide rail system after researching many other systems. This unique system was also crash tested to assure conformance with *NCHRP Report 350* criteria.

Finally, detailed studies of crash types and locations were performed. Based on these studies, selected high risk trees were removed, or identified for preservation, but with protection afforded them.

As projects have been implemented, the DOT has monitored their performance. A key measure, improvement in safety, has been successfully addressed. Although the frequency of crashes has not decreased, the severity has. In fact, this outcome could have been expected, as the placement of improved barrier systems is intended to address severity and not crash frequency.



### **Stakeholder Involvement**

The Working Group recommended establishment of a Merritt Parkway Advisory Committee. This group would review actual design and other plans and assure their conformance with the guidelines and master plan. (It was noted that in some cases direction was vague, and in others contradictory. Location-specific interpretation required some discussion.) Issues of long-term roadside maintenance were reviewed and some changes made as a result.

Community involvement was extensive during development of the guidelines and master plan. Elected officials helped identify key stakeholders. Issues of invasive species, noise attenuation, visual effects, and loss of privacy were discussed. Techniques included development of renderings to illustrate design and landscaping concepts.

One group of stakeholders that in retrospect should have been included but was not initially was construction experts. The close working areas and special design features created unforeseen problems when the actual individual projects were implemented. Based on construction experiences, minor changes in design of curbing, rock outcropping removal, and other features were made for future projects.

Public information meetings and workshops were held to explain the vision and the approaches. These served to further highlight the attention of the general public on the Parkway, its future, and the need for improvements.

### **Lessons Learned**

This case study shows the importance of arriving at a vision or framework for problem solving before developing the solution. In the case here, articulating what the Merritt Parkway was (and was not) was necessary before beginning design investigations.

Another lesson learned was the importance of being flexible in the development and use of design criteria. Also, addressing a safety problem with specific actions is illustrated here. The key safety problem, severity of roadside crashes, was directly addressed through a series of treatments. Also note that a realistic view of what could be accomplished (a choice of aesthetics over safety) should be a part of overall thinking and solution development.

A final lesson learned was the importance of involving construction and maintenance staff in the development and evaluation of solutions.

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