

## Seattle, Ship Canal Bridge

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Like many places, the Seattle area is reconstructing many parts of its freeways. Aside from completing Interstate 90, much of the work involves resurfacing bridges that are 20 years old and showing their age.

To keep track of how each project is affecting traffic and be sure that the two main highways are not closed simultaneously, the Seattle office of the Washington State Department of Transportation (WSDOT) created the Urban Construction Coordination Office.

The staff of this office uses two approaches to coordination:

1. The urban construction coordinator has a background in traffic and handles the day-to-day project coordination. He also reviews traffic control plans for future projects.
2. The urban construction public information officer is responsible for informing the public about the projects, their effects, and what motorists can do to reduce their frustration and confusion.

These officials report to the Urban Construction Impacts Task Force. The task force handles policy issues and directs the work of the coordinator and the information officer. The primary goal is to complete a high-quality job while minimizing the effects on the public.

This new coordination office proved its worth during the summers of 1984 and 1985, when WSDOT resurfaced two bridges with latex-modified concrete on Interstate 5 just north of the Seattle central business district (CBD).

### PROJECT DESCRIPTION

Interstate 5 is the Seattle area's major north-south roadway. The section of I-5 resurfaced carries a total of 210,000 vehicles per day in both directions.

The northbound lanes that were resurfaced are approximately one mile long. The southbound resurfacing covered about two miles.

Interstate 5 includes a separate, reversible roadway called the express lanes. It runs north from the CBD for eight miles. The express lanes were not resurfaced during these projects.

The need for the resurfacing was evident, given the condition of the roadway; the exposed reinforcing steel, extensive delamination, and chloride intrusion threatened the integrity of the bridge decks.

The express lanes became the primary alternate route during the resurfacing. The northbound lanes were resurfaced one year, and the southbound lanes the next.

The northbound lanes on the two structures were resurfaced in the summer of 1984. The afternoon commuters experienced most of the impact as they left the downtown area and drove through the construction area toward the north end or across Lake Washington via SR 520.

The southbound lanes on these structures were resurfaced during the summer of 1985. Morning commuters, residents of the north end or the east side working in Seattle, were affected most by the project.

## TRANSPORTATION SYSTEM MANAGEMENT MEASURES

For the northbound project, planners estimated that about 7,700 vehicles would be required to divert daily from I-5. The effects of the southbound project were expected to be much worse: over 22,000 vehicles would have to divert from I-5.

During these projects, WSDOT was committed to close coordination with enforcement, transit, and local agencies to ease the effects of the construction projects. The objective was to reduce the number of vehicles in the construction area. The department did this by encouraging commuters to

- change their routes;
- change their modes of travel to buses or carpools; and
- travel outside the peak hours.

The department encouraged the use of alternate routes in three ways:

- by retiming signals on parallel routes;
- by restricting access to the freeway before and through the construction area; and
- by extending the hours of operation for the express lanes as an alternate route.

Crossover ramps between the main lanes and the express lanes were built. These ramps increased access to the express lanes and allowed traffic to bypass the construction site and return to the main highway.

Commuters were encouraged to use transit and carpools by establishing high-occupancy-vehicle (HOV) only ramps in critical areas. Riding the bus was encouraged by funding additional bus routes. Some buses were rerouted to avoid the worst of the anticipated congestion.

The department worked with businesses and employee groups to encourage them to permit and use flexible working hours. Up-to-the-minute reports on traffic conditions were given to the media and passed on to the public.

The urban construction coordinator and information officer worked closely with the project office. They kept the traffic control plan as responsive as possible to changing conditions. The Urban Construction Coordination Office also cooperated with other agencies. The coordinator was the focal point for technical interagency coordination. The information officer coordinated information efforts with other agencies.

## CONSTRUCTION/CONTRACTING ISSUES

The department learned a valuable lesson about the phasing of the construction work during the 1984 northbound resurfacing.

Aiming to avoid affecting peak travel times as much as possible, planners scheduled preparation work for off-peak times, reopening lanes to traffic during heavy commute times. Then they closed two lanes at a time to lay down the concrete and let it cure. It was a good idea in theory.

But in fact, the contractor needed a lot of time to deal with daily traffic control setting. The entire project took much longer than expected. Moreover, the public became confused by continual changes in traffic patterns.

For the southbound resurfacing in 1985, the department changed strategies. The barrier went down the first day. The contractor did all preparation and paving work on two lanes and then switched to the other two lanes. As a result, the operation was much smoother and more efficient. Motorists had fairly stable driving conditions. Even though the southbound project was almost twice as long as the northbound project, it was completed much faster.

Incentive clauses were important to both contracts. For the northbound project, the contract provided for a \$10,000 daily bonus for each day ahead of schedule the resurfacing work was completed. Conversely, the contractor had to pay a \$10,000 penalty for each day work continued after the scheduled completion date. For the southbound project, the bonus/penalty was \$20,000 daily.

## **PUBLIC INFORMATION**

Project planners developed an extensive information campaign to give the public enough advance information to be prepared for the project. This campaign described the anticipated effects and how motorists could deal with them.

A second objective of the campaign was to maintain a positive image of WSDOT in the community. Both motorists using I-5 and residents in the project area were targeted to receive special information.

Brochures were prepared to explain the project in detail. Notices were sent to residents, planners of special events, and community groups to address their special circumstances. Presentations were given to business and community groups to respond to their specific concerns.

A 24-hour hotline was put into operation. The hotline was also a helpful internal device, because all WSDOT offices could turn over inquiries to the hotline, and so relieve project and administrative personnel of information duties.

All information pieces were developed in cooperation with Metro Transit, Commuter Pool, and the city of Seattle to present a unified public image.

Media contacts were scheduled to coincide with major project shifts. Project sponsors placed particular emphasis on daily contact with traffic reporters to get accurate information to motorists.

Motorists also received pertinent information by means of variable message signs and the highway advisory radio system.

## **RESULTS**

These efforts brought exceptional results. During 1984, weekday traffic volumes on northbound I-5 decreased 38 percent through the project area. During the 1985 project, weekday traffic volumes were reduced 40 percent.

These results are the product of close coordination of traffic and information efforts. Letting people know in advance gives them time to prepare. A survey of Seattle-

area residents indicated that 89 percent knew about the project and believed the work was necessary.

Efforts to encourage people to try buses and carpools succeeded. The requests for ride matching increased 56 percent in August 1985 compared to August 1983. In the summer of 1985, bus ridership figures showed an increase of 10 percent over those for a usual summer.

## LESSONS LEARNED

The project yielded several valuable lessons for Seattle planners. Based on the Seattle experience, incentive clauses should only be used on critical phases of the contract. The incentives make the contractor more responsive to the schedule. However, they make contract administration more difficult by placing increased importance on the number of working days—claims are virtually unavoidable.

Incentive clauses should only be used on projects with major effects and should be based on the cost of those effects to the public.

Phasing of the construction is critical. It's best to make the entire project as efficient as possible and get the job done on time.

The most critical lesson the department learned was that good public information can prevent many problems. The public was well informed about the project before it began. They understood the need for the work and the anticipated effects. Motorists could plan alternate routes accordingly.

Finally, the Urban Construction Coordination Office was a focal point for project coordination for the public, other agencies, and employees within the department.

This project was one of many going on simultaneously throughout the Seattle area. Closures and other effects had to be coordinated among all these projects. Traffic control plans were modified in response to changing traffic patterns. The public information was kept up to date and to the point.

So after a summer of irritating, congestion-free commuting, it was good to get back to the normal stop-and-go conditions everyone was used to.