Dealing with the Traffic Impacts of Urban Freeway Reconstruction: Mitigation Measures

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In discussing plans for managing traffic in highway construction zones, we need to be very clear about our goals: Exactly what effects are we trying to mitigate? To begin the discussions, six areas of impact quickly come to mind:

1. Actual delay to motorists, especially peak period commuters, involving significant increases in daily travel time.
2. Day-to-day uncertainty in travel time—“Will it take me 30 minutes or an hour to get to work today because of construction?”
3. Losses to businesses adjacent to highway work zones whose normal access has been disrupted.
4. Major delays and disruptions to truckers and to those businesses throughout an urban area that rely on regular, timely truck deliveries.
5. Accidents and safety problems for motorists and highway construction workers.
6. Political problems that arise when the public’s perception of construction impacts may hamper completion of needed highway programs.

CATEGORIES OF MITIGATION MEASURES

A broad range of possible mitigation measures can be proposed to deal with these six areas, and many will be discussed at this conference. Rather than attempting an exhaustive list, we can categorize them into four somewhat arbitrary groupings that relate primarily to who has responsibility:

1. Mitigation Through Design Techniques. These measures should be taken at the very beginning of design work on the facility, not as afterthoughts once construction is underway. Examples include:
   —Use of pre-cast concrete or steel girders instead of the usual cast-in-place concrete structures over main traffic lanes. These can avoid the need to narrow or shut down lanes, and may reduce construction time.
   —Bridge rehabilitation or widening instead of demolition and replacement.
   —Specification of faster placement materials, such as asphalt or fast-curing concrete substitutes at critical locations.
—Construction of new frontage roads or other parallel facilities to act as detours during main lane reconstruction.
—Incentive/disincentive clause in contracts.

2. Mitigation Through Construction Techniques. These are actions taken during construction, which usually involve a shared responsibility and close coordination between the contractor and the owner. Examples are:
—Night-time or weekend activity to replace peak-hour construction activities.
—Total highway shutdown for certain activities, such as major demolition, in order to finish the work and reopen the highway quickly.
—Greatly improved construction signing, lighting, and striping, together with contractor work-crew training in these areas.
—Incident management plans for accidents that include the contractor's responsibilities.

3. Mitigation Through Traffic System Management Techniques. These are the kinds of traffic engineering practices that are usually considered, but not consistently used. They also are most successful when they involve a team approach—owner, contractor, other agencies, business community, and the traveling public:
—Temporary or permanent intersection and traffic signal improvements on parallel routes to increase capacity and improve travel time.
—Public transit improvements such as special park-and-ride lots, use of peak period high-occupancy-vehicle (HOV) lanes, and preferential treatment for buses at on-ramps or other congestion points.
—Promotion of ride sharing through assistance in vanpool and carpool formation, HOV lanes, special central business district parking locations and rates, and similar incentives.

4. Mitigation Through Improved Public Communication. This category involves consistent, thoughtful, and effective provision of advance information to the parties affected by construction activities. It can include such techniques as:
—Cooperative efforts with radio and TV traffic-watch reporters and daily newspapers. The media can not only inform motorists in advance of construction changes, but can advise them of proper courses of action during unforeseen incidents.
—Effective roadside signing to advise motorists of upcoming lane and ramp closures.
—Advance work with affected businesses to let them know exactly what to expect and to alleviate problems where possible.
—Advance planning with school districts to revise school bus routes or provide safer crosswalk locations.
—Provision of information to elected officials and other public leaders so that they are not taken by surprise when construction begins.

EFFECTIVENESS OF MITIGATION MEASURES

This conference should also be looking hard at how to measure the effectiveness—and the cost-effectiveness—of the various mitigation measures. Participants need to review experiences elsewhere to assist in predicting effectiveness. As we try new ideas, we should plan in advance exactly what we expect to accomplish and on how to measure and judge whether the measures actually achieve our goals. This is much harder than it might seem and will not happen without real thought and effort. Here are some of the issues:
Mitigation Measures

1. How do we measure congestion levels before, during, and after reconstruction?
   - Perceived levels of service? Length of peak periods?
   - Corridor throughput of persons per unit of time?
   - Corridor throughput of vehicles per unit of time?
   - Average travel time per vehicle passing through the construction zone? Through the corridor?

2. How do we measure safety?
   - Accident records on facility being rebuilt?
   - Accident records in the corridor?
   - Insurance costs and tort claims to owner and contractor?

3. How do we measure effects on businesses?
   - Unsupported statements of business owners?
   - Actual sales volume records or customer counts?
   - Number of business days when normal access routes are disrupted?
   - Trucker travel times or delivery costs?

4. How do we measure public acceptance and response?
   - Number of complaints to highway agency offices?
   - Number of complaints to elected officials?
   - Attitude of media news stories and editorials?
   - Public opinion polls and surveys?

FINANCING MITIGATION

The last subject surrounding mitigation measures that this conference must address is how to pay for them. There is no doubt that the effects of urban highway reconstruction are real, and that they may be costly to highway users and businesses. Effective mitigation measures may reduce these costs substantially, but these measures may, in turn, cost something. How do we ensure that their costs will be met?

Historically, highway agencies have tried to achieve the lowest cost to themselves for the design and construction of a needed facility. However, if the total cost, including construction costs to users and businesses are taken into account, different design and construction techniques should apply. Clearly, planners must change their outlook. We must work together to achieve these changes as more and more of the major highways in our urban centers undergo necessary rebuilding.