History and Institutional Arrangements of Selected High-Occupancy Vehicle Projects

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High-occupancy vehicle (HOV) facilities are one technique being used in many metropolitan areas to address mobility, traffic congestion, and air quality concerns. The 1990 Clean Air Act amendments, the Intermodal Surface Transportation Efficiency Act, and initiatives at the state and local levels all indicate that HOV facilities will play an even more important role in the future. Providing a better understanding of the characteristics and institutional arrangements that have resulted in the development and operation of successful HOV lane projects can benefit areas initiating the planning and development process, as well as those with projects already in operation. The history and institutional arrangements associated with the development of HOV projects in six case study sites were examined as part of the Assessment of Freeway High-Occupancy Vehicle Lane Projects funded by the Federal Transit Administration through the Texas Department of Transportation. The history and institutional arrangements associated with the development of HOV projects in six case study sites are summarized in this study. They include an examination of the reasons behind the development of the projects, the background and history of the facilities, relevant issues associated with the projects, and the factors and responsibilities of the different agencies and organizations involved in the process. The results of this study can be of potential benefit to other areas initiating the planning and development process for HOV facilities, as well as those areas with operating HOV projects. This research advances the current understanding of the characteristics that appear to be significant in the development of HOV projects as well as those characteristics that assist in ensuring the successful implementation and operation of these facilities.

OVERVIEW OF COMMON ELEMENTS

The assessment of the history and institutional arrangements associated with HOV projects in the six case study sites identified a number of common elements. Although these were not present in all case studies to the same degree, the elements occurred often enough to represent common features that appear to be significant in the development of HOV projects. The characteristics that resulted in the decision to implement the HOV facilities; the latter elements relate to similarities during the development of the actual projects. Table 1 presents a summary of the major characteristics common to multiple HOV case study projects.

Common Characteristics of Decision Making

Corridor and Areawide Characteristics

All the case study sites are in major metropolitan areas in the United States. In terms of population, all fall within the coun-

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A major highway improvement had been identified in all the corridors and, in many cases, the examination of alternatives and the development of detailed plans had been initiated. HOV facilities became one of the alternatives examined to address the anticipated travel demand and ultimately emerged as a major element of the final recommendation. Thus, an awareness of the need to address increasing traffic congestion problems in a major travel corridor had developed in all of the case studies.

Lack of Fixed-Guideway Transit Plan for Corridor

Another similarity among the case sites was the lack of an agreed-upon or approved long-range fixed-guideway transit plan for the corridor. An approved fixed-guideway transit plan did not exist for most of the case studies. In many instances there was disagreement among different agencies over the role transit should play in the corridor and the technology that should be used. In some cases there had been an ongoing debate over this issue.

In addition, in some instances, such as in Seattle, Houston, and Minneapolis, the lack of consensus over the role of transit and the technology to be used applied not just to the corridor, but to the metropolitan area as a whole (2–4). In these cases, the debate (which continues today) relates to the implementation of a rail transit component as one element of the overall public transportation system. Thus, in most of the case study sites, no decision had been made on the development of a fixed-guideway transit system in the corridor in which the HOV facility was ultimately developed.

Planned or Scheduled Highway Improvements

Some type of highway improvements was either planned or scheduled in most of the corridors in which the HOV projects were eventually built. These ranged from major new freeways, such as I-394 in Minneapolis, I-66 in Northern Virginia, and I-90 in Seattle, to pavement rehabilitation projects such as Katy (1-10) in Houston and Route 55 in Orange County (2–6). Thus, consideration of the HOV project was often initiated as one approach to increasing the person-movement efficiency of the roadway facility.

Once the decision had been made to include the HOV element, steps were initiated to coordinate the planning, design, and construction of both the freeway and HOV elements with maximized available resources and minimized disruptions to the traveling public. Thus, HOV projects in many of the case study sites were considered and implemented as part of larger highway improvements. These ranged from new freeway facilities to pavement rehabilitation projects. This coordination helped maximize available resources and minimize the impacts of implementation on the traveling public.

Project Champions

In most of the case studies one individual, or a small group of individuals, was identified as being instrumental in the development, promotion, and support of the HOV project. These were people, usually within the state transportation department or local transit agency, who had the authority and position to influence the outcome of the process. Their support was often noted as a major reason for the development

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**TABLE 1 Important Factors in the Development of the Case Study HOV Projects**

<table>
<thead>
<tr>
<th>Features Common to Multiple Projects</th>
<th>Case Study Sites</th>
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<tbody>
<tr>
<td></td>
<td>Houston</td>
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<tr>
<td>Decision Making Process</td>
<td></td>
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<tr>
<td>Intense Congestion in Corridor</td>
<td>X</td>
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<tr>
<td>Lack of Agreed upon Fixed-Guideway Transit Plan</td>
<td>X</td>
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<tr>
<td>Planned or Scheduled Highway Improvement</td>
<td>X</td>
</tr>
<tr>
<td>Project Champion Within Implementing Agency</td>
<td>X</td>
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<tr>
<td>Legislative or Policy Direction</td>
<td>X</td>
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<tr>
<td>Implementation Process</td>
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<td>Lead Agency in Implementation</td>
<td>X²</td>
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<tr>
<td>Intergency Cooperation</td>
<td>X</td>
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<tr>
<td>Joint Funding</td>
<td>X</td>
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<tr>
<td>Support of Federal Agencies, Incl. Funding</td>
<td>X</td>
</tr>
<tr>
<td>Flexibility and Adaptability</td>
<td>X</td>
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</tbody>
</table>

¹In the I-66 corridor, the Washington Metropolitan Transit Authority adopted a plan in 1988 which included a Metro line in the median of I-66 for a portion of the corridor.
²The development of the Houston transitways can best be described as multi-agency projects requiring multi-agency decisions.
of the HOV projects in many of the case study areas. These individuals showed a willingness to try new and innovative approaches to dealing with growing traffic congestion problems and to move the projects forward. Many of the projects represented the first use of the different types of HOV facilities in the country, so some risk was associated with their implementation. Thus, individuals in positions of authority in highway and transit agencies supported the HOV project concept and promoted it through the project development and implementation process.

Legislative Direction and Policy Support

In many of the case study sites, the consideration of HOV facilities was supported by legislative or policy directives. This took the form of policy directives from the federal level on the I-66 facility in Northern Virginia and the state level on I-394 in Minneapolis (4, 5). These legislative and policy directives assisted in ensuring that HOV facilities were one of the alternatives considered in the planning process, the directives supported the implementation of the ultimate recommendation. The involvement of Congress and federal agencies in the many aspects of planning, designing, implementing, and operating the HOV facilities in the Washington, D.C., area represents a unique feature not found in the other case study sites (5, 7). Thus, legislative or agency policies and directives played an important role in the decision-making process in some of the HOV case study projects.

Common Characteristics of Implementation

Lead Agency

In general, the agency responsible for making the decision to proceed with the development of the HOV project also had the overall responsibility for implementing the project. In all cases, the state department of transportation or the state highway department was responsible for construction of the actual facility. However, transit agencies were also actively involved in different aspects of many of the case study HOV projects. Thus, while the state department of transportation usually took the lead role, other agencies were actively involved in the process.

The Houston transitways can best be described as multiagency projects requiring multiagency decisions. The Houston Office of Transit, the predecessor agency to the Metropolitan Transit Authority of Harris County (METRO), was the lead agency in the initial contraflow demonstration project. However, on this and subsequent HOV projects, extensive agreements between METRO and TxDOT were used to identify the roles, responsibilities, and financial participation of the two agencies.

Most of the case study projects used some type of project management team or coordinating group. In many cases, other agencies also participated in funding some elements of the projects. Thus, one agency, usually the state department of transportation, had overall responsibility for implementing the HOV project. However, transit and other agencies were often involved in some aspects of planning, designing, and, in a limited number of cases, financing the projects.

Interagency Cooperation

All of the HOV projects in the case study sites involved some degree of interagency cooperation. The exact nature and level of this involvement varied substantially between projects. Some type of interagency coordination structure, such as a project management team, was used with many of the HOV projects. These coordinating groups were identified as an important component in ensuring that all groups were adequately involved in the implementation process.

This coordination was noted as especially important because of the unique nature of the HOV projects and the need to involve highway, transit, enforcement, and other groups in the process. In most cases, these committees were active in many aspects of planning, designing, implementing, and operating the facilities. These groups usually involved all the relevant agencies and groups associated with the projects. In several case study sites, the metropolitan planning organization (MPO) was actively involved in the process and openly supportive of the HOV project. Thus, interagency cooperation, including the use of multiagency project management groups, played an important part in the coordinated implementation of most of the case study HOV projects.

Joint Funding

A variety of funding sources were used for many of the HOV projects in the case study sites. Different combinations of funds were obtained from FHWA, FTA, and state and local highway and transit agencies. In addition, many areas, such as Houston and Minneapolis, used a variety of funding approaches and institutional arrangements to develop the HOV projects (3, 4). Thus, multiple funding sources and innovative financing approaches were used with some of the case study HOV projects.

Support of Federal Agencies

FHWA and FTA were supportive of the HOV projects in the case study sites. This involvement included providing funding for initial demonstration programs, construction of the HOV lanes and supporting elements, and research and evaluation programs; participating in project management teams; providing technical assistance; and providing policy guidance. Thus, support from FHWA and FTA was evident, although in different degrees, in the development of some of the case study HOV facilities.

Flexibility and Adaptability

All the case studies seem to indicate that flexibility and the ability to adapt to change were important elements in both the development and ongoing operation of the HOV facilities. Almost every project has experienced some change in the operating requirements of the HOV facility. These changes have been the result of experience and policy directives. In either case, the need to maintain flexibility to respond to changing travel demands and policies appears to be an important element of the HOV projects in the case study sites.
OVERVIEW OF UNIQUE ELEMENTS

The history and institutional arrangements associated with HOV projects in each of the case study sites identified a few features unique to individual projects.

Congressional Involvement

A unique feature of the two HOV facilities included in the Washington, D.C./Northern Virginia case study, I-66 and the Shirley Highway, is the role that the U.S. Congress and the Secretary of Transportation played in their development and continue to play in their ongoing operation (5,7). Other HOV projects, such as I-394 in Minneapolis and I-90 in Seattle, have been influenced by state legislative action, but the I-66 and Shirley Highway HOV facilities are the only projects to draw the specific attention of the federal government in such a significant way (2,4). Thus, congressional involvement has been a unique and major feature in the planning, implementation, and operation of the I-66 and Shirley Highway HOV facilities.

Dealing with Past Issues

The development of the Route 55 project in Orange County appears to have been partially influenced by the issues associated with the Santa Monica Diamond Lanes. The approach taken by the California Department of Transportation and other agencies on the Route 55 project appears to have reflected the experience gained from the Santa Monica project. The HOV facility on the San Bernardino Freeway has generally been considered successful since the early 1970s, but the termination of the HOV project on the Santa Monica Freeway in 1976 may have influenced a lack of consideration of HOV projects on other facilities in the Los Angeles–Orange County area (6). Thus, the development of HOV projects in Los Angeles and Orange County appear to have been influenced by the termination of the Santa Monica Diamond Lane project.

CONCLUSION

The common elements associated with the development and implementation of HOV facilities in six case study sites have been summarized. The following 10 characteristics, common to all or most of the case studies, appear to be significant in the decision-making and implementation processes.

Decision Making

- Corridor and areawide traffic congestion and growth in travel demand,
- Lack of fixed-guideway transit plan for the corridor,
- Planned or scheduled highway improvements,
- Project champion or champions in positions of authority, and
- Legislative direction and agency policy support.

Implementation

- Lead agency,
- Interagency cooperation,
- Joint funding,
- Flexibility and adaptability, and
- Support of federal agencies.

The analysis of these characteristics presented in this paper should be of benefit to areas considering the development and implementation of HOV projects. Consideration can be given to the extent to which these characteristics are present. Although they do not ensure the success of HOV facilities, these characteristics appear to serve as good benchmarks to assist in measuring the potential for the successful development of HOV facilities. As such, they provide valuable guidelines for the consideration of the potential for successful HOV facilities.

ACKNOWLEDGMENTS

The work described in this paper was undertaken by the Texas Transportation Institute (TTI), a part of the Texas A&M University System. The examination of the history and institutional arrangements associated with HOV projects in six case study cities was one element conducted as part of the larger Assessment of Freeway High-Occupancy Vehicle Lane Projects. This assessment is being funded by FTA through TxDOT.

To ensure accuracy in the documentation of the history and institutional arrangements for the six HOV case study sites, TTI contracted with individuals and organizations knowledgeable with local situations. The following individuals and organizations contributed to this effort: Richard J. Kabat, TTI, Houston, Texas; Charles Fuhs, Orange County, California; Kilareski and Mason, P.C., Pittsburgh, Pennsylvania; G. Scott Rutherford, Seattle, Washington; JHK & Associates, Washington, D.C./Northern Virginia.

The contributions of these individuals and organizations are both acknowledged and appreciated. In addition, the assistance of June Housman, TTI, in the preparation of this paper is acknowledged and greatly appreciated.

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7. JHK & Associates, Inc. History and Institutional Arrangements:

The opinions expressed in this paper are those of the authors, not FTA, TxDOT, or the individual case study authors.

Publication of this paper sponsored by Committee on High-Occupancy Vehicle Systems.