INDIANA's INTERMODAL MANAGEMENT SYSTEM

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Indiana is in the process of developing an Intermodal Management System (IMS) to evaluate the performance of intermodal transportation investment alternatives as part of the statewide transportation planning process. The nation's transportation system is experiencing a major shift from our historical emphasis on individual modes to that of intermodalism as a means of increasing economic competitiveness by minimizing the cost of transportation. Since 1980 transportation spending relative the Gross National Product has declined from approximately 20 percent to 16 percent. A portion of this decrease in the relative cost of transportation is due to the improvements in transportation productivity due to increased intermodal operations. Examples of the productivity increases resulting from intermodal operations can be seen in the rail industry, where rail container and truck-trailer-on-flat-car movements increased by 80 percent over the last 10 years. The development of the IMS is intended to enable the Indiana Department of Transportation (INDOT) to strengthen the state's economy and competitiveness by identifying the most effective transportation improvements.

The Transportation Planning Division is taking the lead in the development of the IMS. This work is an extension of the Division's earlier statewide transportation plan Transportation In Indiana: Multimodal Plan Development For The 1990's and Beyond, adopted December 21, 1994. The IMS development will involve the cooperative effort of the Divisions of Information Services, Intermodal Transportation and Roadway Management. Coordination will also occur with the Metropolitan Planning Organizations (MPOs) which conduct a comprehensive transportation planning process in the states twelve (12) urbanized areas (population over 50,000). Each MPO prepares a transportation plan to develop a integrated intermodal transportation system that facilitates the efficient movement of people and goods. The IMS will provide a planning resource for the MPO planning efforts and a coordinating mechanism for the planning of intermodal facilities and systems of statewide significance.

The IMS is one of the six (6) management systems mandated by the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). The federal regulations require each state to prepare a work program by October 1, 1994, develop performance measures and have data collection underway by October 1, 1995, and have a fully operational IMS by October 1, 1996. In addition, special efforts are also required to coordinate the development of the IMS with the Congestion Management System, and the Public Transportation Facilities and Equipment Management System. Currently the department has prepared a work program to develop the IMS and is in process of retaining the services of a consultant to assist INDOT in implementing the system.

INTERMODAL MANAGEMENT SYSTEM ADVISORY GROUP

The IMS will establish an Advisory IMS Committee made up of key private sector modal spokespersons, intermodal association representatives, and MPOs to provide policy direction. The establishment of the Advisory IMS Committee is especially critical due to the need to develop an understanding of the private sector decision making for modal and intermodal transportation improvements. In is envisioned that the Advisory IMS Committee will play a major role throughout the entire study in the identification of intermodal problem areas, developing private sector data sources, and overseeing the evaluation of alternative strategies and actions.

IMS DEFINITION

The Intermodal Management System (IMS) is a systematic process that provides efficient, safe, and convenient movement of people and goods through the integration of transportation facilities and systems. Such a system improves the coordination in planning, and implementation of air, water, and various land-based transportation facilities and systems.

An intermodal transportation system should be viewed from the perspective of the total trip. In intermodal planning, transfers between modes, as well as the policy and service interactions among modes, are identified.

The IMS is a systematic process of:

- Identifying key linkages between one or more modes of transportation, where the performance of one mode will affect another.
- Defining strategies for improving the effectiveness of these modal interactions.
- Evaluating and implementing these strategies to enhance the overall performance of the transportation system.

IMS COMPONENTS

Delineate Transportation Corridors

Identifying the transportation corridors traversing the State is a key initial step in defining the system. This process will identify all the corridors that have regional and multimodal significance and serve large volumes of demand. The following modal system corridors will be defined both by commodity movement (for example the volume of steel, coal, manufactured goods by standard industrial code, and agricultural products) and vehicular movement:

1. Rail Infrastructure-freight and passenger rail service
2. Highway Infrastructure-motor vehicle-commercial trucking and private auto
3. Waterways and marine transportation
4. Air service-freight and passenger
5. Pipelines
6. Communication linkages-fiber optic networks

The identification of statewide transportation corridors of freight movements was initiated in 1992 through the sponsoring of a research effort with the Indiana University Transportation Research Center entitled, Transportation Flows in the State of Indiana: Commodity Database Development and Traffic Assignment. This research effort has resulted in a statewide commodity travel demand model identifying flows of manufactured goods, major grains, and coal on highway, rail, and waterway networks. The previous identification of major statewide commodity flow patterns has given the Indiana IMS a significant head start in delineating transportation corridors.

Identification of Intermodal Facilities

Intermodal facilities serve the movement of both freight and passengers and range from a simple bus terminal to a international airport or major waterway port. The primary purpose of these facilities is to perform intermodal transfers so that the most appropriate mode can be used for each portion of the trip. In terms of freight transportation, the four basic intermodal connections are:

1. Rail-Truck
2. Ship-Truck/Rail
3. Pipeline/Ship-Truck-Rail
4. Truck-Air connections at airports

Identification of Performance Measures

Performance measures will be developed to allow the identification of performance impacts of different investment alternatives and the valuational of the associated trade-offs.
The following classes of indicators and measures will be used to evaluate projects and monitor system performance:

1. Mobility
2. Financial costs
3. Environmental impacts
4. Economic Impacts
5. Safety
6. Quality of life

Data Collection And System Monitoring

This task will involve the use of geographic information system (GIS) technology to provide for the visual display of spatial and non-spatial data in the intermodal system's database. This capability will allow modal analysis, corridor analysis, or terminal by terminal analysis by displaying a variety of data in map form and providing flexible access to information on transfer points and corridors. The GIS will pull together the various elements of the IMS and will be easily accessible from a personal computer using the Windows interface. Data elements will include:

Attribute Data Items-for example:

1. Ton miles of various commodities
2. Person miles of travel
3. Number of containers

Performance Data Items-for example:

1. Volume/capacity ratios
2. Delay times
3. Mobility index

System and Facility Access Efficiency Evaluation

This activity will evaluate the IMS system performance data relative to established standards. Benchmarks will be established to gauge the performance of key facilities, infrastructure elements, and modal operations. Forecasts will be made of future travel demand to assess system performance. Where present service levels are adequate, estimates will be made of the point in time where rising demand will result in a performance threshold being reached.

Strategy and Action Identification

This activity will focus on consensus building in the identification and evaluation of a strategy and action plan for the IMS. The information developed from the earlier tasks will be used in the identification of strategies to best correct deficiencies and optimize overall system performance. Potential strategies will include:

1. Connection of network linkages to provide access to intermodal terminals. For example, missing links on the arterial highway system or rail system and may be incorporated as part of the National Highway System or National Transportation System.

2. Safety maximization by improving modal coordination at points of grade-crossing and interchange.

3. Removal of all physical impediments to the movement of freight and passengers. This includes raising clearances for overpasses and rail bridges with low clearance, improving turning radius of freight lanes, and rebuilding heavy vehicle access to highways and bridges with inadequate weight limits. This could include the replacement of bridge structures to allow double-stack rail operations.

4. Improvement of the transfer of freight and passengers at terminal facilities and interchange points.

5. Enhancement of economic efficiency of freight and passenger movements by facilitating a diversion of traffic to modes with lower costs, better travel time, and better service.