FREIGHT RAIL IMPROVEMENTS

Description

Relatively straightforward improvements in rail capacity can often encourage some truck freight to shift to rail. These alterations can also keep some through rail traffic on the system for a longer distance rather than shifting the cargo to trucks. Doing so can reduce the number of trucks added to the surrounding highways.

The effects of such rail system improvements are generally felt at the corridor level, rather than in any particular urban area along a parallel rail/highway corridor. Successful coordinated programs to reduce roadway congestion by implementing freight rail often fall outside of the reach of just one metropolitan planning organization (MPO) or other regional planning organization. Some spot improvements such as addressing signal interconnections between rail and adjacent highway intersections or grade separations at highway-rail grade crossings can be implemented through planning at the local level and can improve traffic flow to railroad approaches or along service roads feeding into major roadway congestion points.

In 2007, the Transportation Research Board published National Cooperative Highway Research Program (NCHRP) Report 586, *Rail Freight Solutions to Roadway Congestion—Final Report and Guidebook.*[1] This comprehensive report provides an overview of the infrastructure and policy issues and economic forces surrounding the application of many different types and levels of freight rail options to address congestion. The remainder of this paper primarily reflects the findings of this report.

Target Market

NCHRP Report 586 suggests that freight rail enhancement projects may be most appropriate where:

Cost:	●●●●●
Time:	**Long**
Impact:	**Region**
Who:	**State/City/Private**
Hurdles:	**Coordination & Funding**

- Heavy traffic growth calls for expanding highway capacity, yet highway expansion is made impractical by high cost or engineering difficulties.
- High levels of truck traffic on a corridor lead to severe local congestion problems.
- Problems with the rail network structure restrict rail from offering a viable alternative to trucks for freight movement.
- The rail network structure has at-grade crossings or other features that restrict roadway performance.
- Freight users are too small or scattered for efficient rail use, yet demand consolidation or other strategies could make rail service economically viable.
- The region's economic growth is or will be threatened by an overall lack of goods movement capacity.

For more information, please refer to: http://mobility.tamu.edu/mip/strategies.php.

mobility INVESTMENT PRIORITIES

How Will This Help?

NCHRP Report 586 also suggests that the variety of freight rail solutions can be classified into five general areas with 15 project types that benefit freight and passenger travel congestion.

Rationalize the Center City Rail Network

- Improve rail access to ports.
- Increase the commuter rail capacity.
- Consolidate rail terminal facilities.
- Improve rail and highway access to rail/truck intermodal terminals.
- Upgrade the condition, clearances, and capacity of rail mainlines.

Reduce Conflicts between Traffic Flows

- Enhance capacity and service with less conflict between freight and commuter rail.
- Reduce delays and risks associated with rail/highway grade crossings.

Greater Use of Rail/Truck Intermodal Transportation

- Improve terminal capacity and locations.
- Add or upgrade main line capacity.
- Provide more effective equipment.
- Support short-haul shuttle systems (shuttles between ports and inland terminals, or shuttles to move highway freight through or around urban areas).

Improve Rail Service to Industry

- Support construction of rail sidings.
- Support construction of trans-load facilities that can serve many customers.
- Include rail infrastructure in economic development planning.

Upgrade Facilities to Handle Taller or Heavier Cars

- Rail facility upgrade.

The list in NCHRP Report 586 shows that the choice used to address roadway congestion through freight rail options can also be implemented at a number of levels. These include implementation of a series of projects at the statewide or intercity corridor level, the level of a single urban corridor, the development of a city-level plan to address throughput and capacity of the rail system, or a plan to address freight needs surrounding a single major freight facility such as a seaport or inland port freight trans-load facility. NCHRP Report 586 also points out that it can also stem from a number of motivations such as to address economic development, safety issues, port/regional competition, or to increase throughput through a rail/highway bottleneck.

Implementation Examples

Fort Worth, Texas: One recent example of a major freight rail project implemented within Texas to address congestion is the Tower 55 project in Fort Worth. TxDOT, the City of Fort Worth, the BNSF Railway, and the Union Pacific Railroad have financially partnered to improve the major rail-rail intersection at Tower 55 in downtown Fort Worth by adding additional tracks and rail geometry improvements that will allow more trains to pass through the bottleneck each day. The project will relieve both rail congestion and highway-rail crossing congestion in the area, resulting in less overall roadway congestion.

National: NCHRP Report 586 contains several case study examples of freight rail projects that address congestion.

Pennsylvania Double-Stack Clearance Project

Pennsylvania DOT coordinated the removal of 163 obstacles to double-stack rail car service to the Port of Philadelphia. This project removed or raised low-clearance bridges or lowered the rail rights-of-way along the rail routes serving the port to allow direct rail access rather than truck drayage to and from the port.

Virginia Interstate 81 Marketing Study

The Virginia Department of Rail and Public Transport conducted a study employing "market research, competitive and operational analysis, diversion modeling with traffic data, and cooperative planning with rail officials" to

determine the amount of trucking that could be diverted to rail at a variety of investment levels.

Alameda Corridor
This project, funded largely by the State of California and the Los Angeles County Metropolitan Transportation Authority, consolidated several rail routes owned by individual railroads into a single 20-mile depressed rail corridor between the Ports of Los Angeles and Long Beach and the downtown LA rail yards. The project removed an estimated 15,000 hours of traffic delay from LA roadways and is expected to reduce the rate of growth in future truck trips to and from the ports.

Kansas City Sheffield Flyover
Similar to the Tower 55 project in Fort Worth, this project by Missouri DOT along with the private railroads elevated three miles of track in downtown Kansas City, providing a rail-rail grade separation that resulted in greatly reduced traffic delays at surrounding highway-rail grade crossings.

Vancouver, B.C., Major Commercial Transportation System (MCTS)
The Vancouver, British Columbia, region developed this CAN $6-7 Billion comprehensive set of projects for 17 major highway, rail, port, airport, and international border crossing facilities including highway upgrades, rail links, a new transit line, new road and river rail crossings, and an additional harbor crossing in order to preserve its status as a major West Coast gateway in North America.

Chicago Freight Rail Futures
The City of Chicago DOT, local planning groups, and representatives of the railroads worked together to develop a regional plan to address the passenger and freight rail capacity needs of the region to maximize the use of five rail corridors in the city, provide 25 highway-rail grade separations, and create six rail-rail grade separations to separate freight trains from passenger trains through implementation of the so-called CREATE project.

State Rail Access Programs
Many states provide funding to allow businesses to add spur lines or rail sidings to allow for rail freight delivery directly to facilities, thereby reducing the impacts of trucks on roadway infrastructure and congestion impacts.

Inland Ports
Movement of some port operations away from the congested and geographically-constrained land use areas around seaports can allow for greater ease of port activity in a less congested area. Public sector support of rail options to move freight inland for processing at an inland port area can thus reduce urban traffic congestion and associated problems.

Application Techniques and Principles

Freight rail solutions should be considered under a variety of circumstances where large amounts of freight are generated or on a corridor where a large amount of truck freight is contributing to roadway congestion. It is important to remember, however, that often a single rail improvement project or projects in only one urban area may not be enough to induce the diversion of freight from truck to rail. NCHRP Report 586 goes into great detail on how commodity types, the distance over which the freight is moving, reliability of truck vs. rail service in some areas, and other factors all play into whether freight can be diverted to rail as a means to combat roadway congestion.

Issues

Finding public funding for freight rail projects remains the single biggest implementation issue, though the benefits are often well worth the cost. Finding locations with available right-of-way and gaining public approval sometimes proves difficult, especially in densely-developed areas.

Who Is Responsible?

The regional MPO and TxDOT officials should work together with the private-sector railroads to coordinate and plan improvements to the rail network. It is important to remember that

projects that may seem to be beneficial or desirable to the public may not be as appealing to the private railroads, which may have more pressing needs or better investment projects elsewhere on their multistate networks. Long-term maintenance and operation of the rail infrastructure may also be a concern for the railroads. Working cooperatively and understanding the private-sector motives of the other partners is paramount when considering freight rail improvements to increase highway capacity or reduce congestion.

Project Timeframe

The timeframe of any freight rail diversion, rail corridor relocation, or consolidation project or a relatively simple highway-rail grade separation depends greatly upon the size and scope of the potential project. A project that includes only constructing a two level or a railroad overpass or underpass, will have a much shorter timeframe compared to a multi-project rail network improvement or relocation project. These projects may take a period of years or even decades to materialize.

Cost

The project cost depends on the type and level of rail project undertaken. Additional right-of-way requirements will increase the cost dramatically; however, a rail improvement may ultimately cost less than a highway improvement project with similar impacts. Each project (or program of projects) must be evaluated separately.

Data Needs

Data for evaluating the benefits and costs for freight rail projects is often difficult to obtain. Limited non-confidential public waybill data are available from the federal Surface Transportation Board, and more-detailed confidential public waybill data are available on a statewide basis through the state DOT. Only through cooperation with the railroad companies can their data on past and projected operations be obtained and then be used to model various project options and their impact upon existing freight operations.

Freight Rail Improvement Best Practices

- Type of Location: Corridors over 200 miles in length to attract rail movement or specific rail network problem areas within an urban area that prevent rail use and/or induce truck freight.
- Agency Practices: Cooperative relationships with freight rail companies, ability/willingness to fund needed freight rail improvements in corridors parallel to congested highways.
- Frequency of Reanalysis: Should be considered whenever state transportation and/or state rail planning documents are updated.
- Supporting Policies or Actions Needed: Capability to fund freight rail infrastructure; authority to invest in rolling stock, equipment, etc. that would facilitate truck to rail freight diversion.
- Complementary Strategies: Development of inland port facilities.

For More Information and References

1. Transportation Research Board, *Rail Freight Solutions to Roadway Congestion—Final Report and Guidebook*, NCHRP Report 586, Washington, D.C., 2007.