

## 4. Project Need

### 4.1 General Information

The concept of the Detroit Intermodal Freight Terminal (DIFT) has existed for several years. The growth of intermodal traffic (Figures 4 and 5), the enormous influx of double-stack trains and marine containers, and the even more recent entry and rapid growth of rail-truckload initiatives have all raised questions about the adequacy of intermodal terminals to handle traffic increases, and to do so efficiently.

In the 1980s, railroads consolidated their intermodal service networks into fewer, larger hub terminals. Railroads saw an opportunity to consolidate facilities duplicated in mergers, a need to consolidate enough volume in one location to justify lift machines, and a tendency for smaller facilities to be unbalanced, unprofitable and, therefore, in need of elimination/consolidation.

Now the challenge facing the industry is to find capacity for future dramatic growth.

Spurred by growth in intermodal freight operations, the Michigan Department of Transportation engaged Mercer Management Consultants in 1993/1994 to respond to the Michigan Legislature's initiative to address intermodal transportation in the Greater Detroit Area (GDA). The results of that, and subsequent work recognized that:

- Detroit is one of the top ten markets in the nation for intermodal freight (trailer or container loads moving by rail).
- One-third of Detroit's intermodal traffic is trucked to and from other cities. This means it travels by rail to Chicago, Toledo, or Windsor for example, and then is trucked to Detroit. Better intermodal service could result in a diversion of 150,000 to 300,000 intermodal loads from other gateway cities to Detroit because of the reduction in transportation costs.
- The improvement of the Detroit-Windsor tunnel and the recent construction of a new Port Huron-Sarnia rail tunnel will enhance intermodal access to/from the Detroit area.
- Because of the auto industry, Detroit leads the nation in its use of "RoadRailer" technology, i.e., a truck trailer becomes a rail car by placing rail wheels underneath.
- The auto industry uses conventional intermodal service to move parts both domestically and internationally. But, the auto industry only uses intermodal service for ten percent of all (domestic and international) shipments. This is almost 50 percent lower than the U.S. average for all types of industry. And, much of the auto intermodal activity is through other gateway cities (i.e., Chicago, Toledo, etc.). So, if the auto industry matched the U.S. average for intermodal shipments, an additional 250,000 to 500,000 loads annually could be expected at the Detroit terminals.

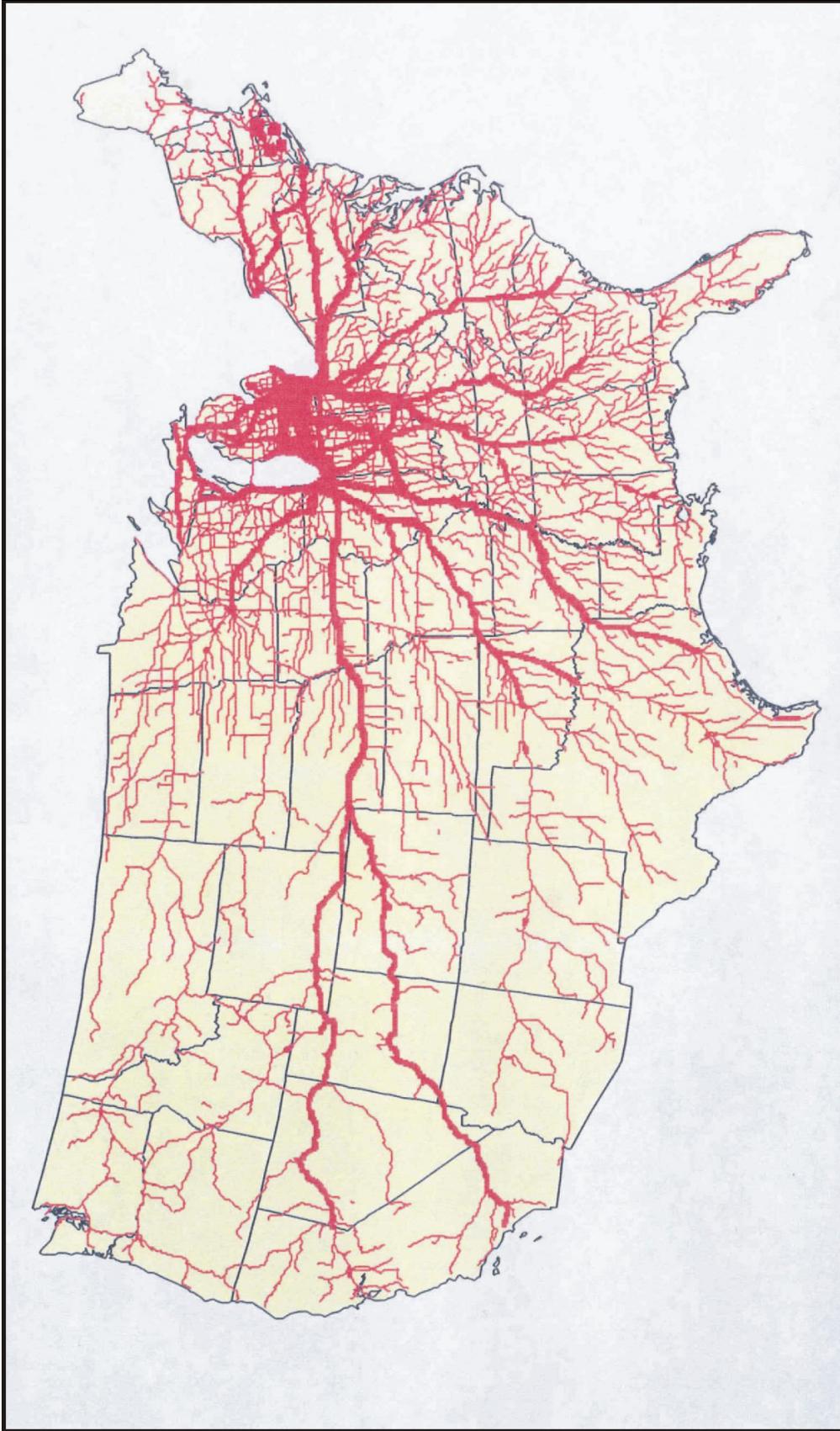
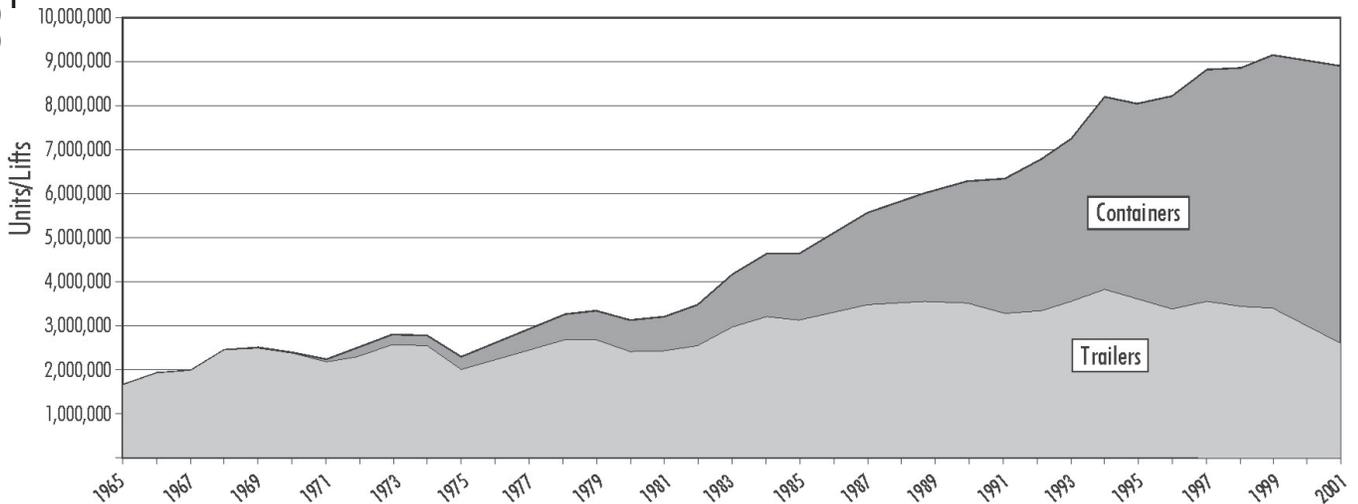


Figure 4  
Highway Flows of Both Domestic and  
International Freight Moving into/from Michigan

SOURCE: Federal Highway Administration, Office  
of Freight Management and Operations

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**Figure 5**  
U.S. Rail Intermodal Traffic



SOURCE: AAR. Container volume estimated prior to 1988

## 4.2 Capacity Versus Demand

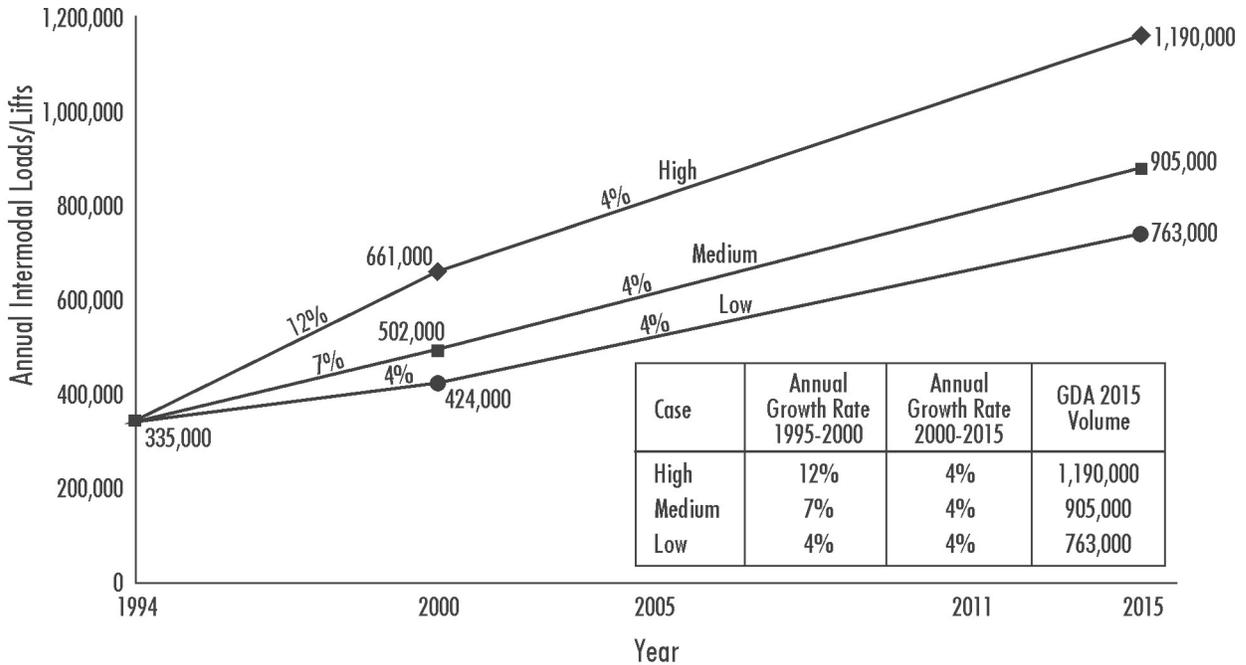
The Michigan Department of Transportation in 1993/1994 engaged Mercer Management Consulting to assess the current conditions of intermodal transportation in the Greater Detroit Area (GDA) and define a course for the future. The study found that the volume of intermodal traffic, called units or lifts,<sup>3</sup> was 335,000 in 1994 which was an 18 percent increase over the 1992 volume of 283,000 lifts. In 1998, the volumes had grown to approximately 400,000 trailers/containers or another 16 percent growth over 1994.

Three growth scenarios studied in 1993/1994 indicated GDA intermodal activity would at least double by 2015 (Figure 6). In 2001, a review of various trends and forecasts was undertaken to assess these earlier forecasts. The latest review indicates:

- The Intermodal Association of North American (IANA), the intermodal industry trade group, indicates that intermodal traffic is expected to grow at an average rate of 4.7 percent a year over the next 10 years. IANA also indicates that the international segment of intermodal is expected to increase faster than domestic intermodal—6.7 percent for exports and 9.9 percent for imports.
- The North American automotive industry is expected to grow at two to three percent annually. Growth is projected to be somewhat greater in Canada and Mexico than in the U.S. Detroit's proximity to, and integration with, the Canadian auto-manufacturing sector should allow it to benefit from higher Canadian growth. The long distances associated with movements between Detroit and Mexico support growth in the rail and the intermodal sector. The global integration of the auto industry is also positive for intermodal.

<sup>3</sup>A lift is the transfer of a trailer or container between a rail car and the ground.

**Figure 6**  
**GDA Intermodal Volume Projections**  
**Made in 1993/1994**



SOURCE: Mercer Management Consulting

- A recent study for the American Trucking Association by DRI-WEFA, Inc. forecasts “domestic” intermodal growth of 4.4 percent annually between 1998-2008.
- Canadian Pacific Railroad and Canadian National are very important players in the Detroit market, and the Canadian ports (i.e., Port of Montreal and Halifax) have been growing rapidly. Canadian intermodal growth has been greater than U.S. intermodal growth. For example, Canadian intermodal traffic was up about eight percent in 2000 whereas U.S. intermodal lift activity was up about three percent. For the second quarter of 2002, U.S. intermodal lift activity was up 8.5 percent while Canadian activity increased 13.4 percent.
- Detroit’s economy, and its location adjacent to the Canadian border, has resulted in dramatic increases in truck traffic. For example, commercial truck traffic over key corridors has increased by about six percent annually over the last eight years. The Ambassador and Blue Water Bridges have seen their truck traffic increase at seven to eight percent annually for the last 10 years.
- The Detroit market has other characteristics that could cause intermodal traffic to grow faster than the national average. These include the following:
  - Chicago Traffic. Studies indicate that 150-300,000 intermodal containers or trailers are trucked annually between Detroit and Chicago. These could be diverted to the DIFT.

- ✓ As a current demonstration of this potential consider the comments of Pacer Stacktrain’s Baumhefner, Vice President of Operations of Pacer Stacktrain, a CSX partner in intermodal operations in the Detroit area that handles 95 percent of the automotive parts business between Detroit and Mexico:

“Basically, it (intermodal service using the Detroit-Livernois Yard) helped make Chrysler more efficient, because they wouldn’t have to dray all of their parts to Chicago for loads coming out of Canada or the upper Midwest and Michigan.” This service has since grown to include Ford and, most recently, GM. “Now it’s a solid train that operates between Detroit and Chicago to Mexico for various production facilities,” says Baumhefner. Pacer currently runs 100 to 150 southbound containers per day, Monday through Saturday, from the Detroit-Livernois Yard, with roughly the same number of northbound container loads from Mexico.<sup>4</sup>

- Automotive industry. The automotive industry does not currently utilize intermodal at the same level as other industries. Work in the mid- to late 1990s with the auto industry indicated that the Detroit market would generate an additional 250,000-500,000 lifts annually if it used intermodal at overall industry norms.
- ✓ Again, as a current demonstration of this potential, consider the following statements by Pete Baumhefner:

“...the thing that made this possible (i.e., the surge of automotive intermodal business) was Pacer sitting down with its automotive customers and listening to their requirements of wanting a more efficient service from the upper Midwest and Canada to Mexico...

...as automotive product grew in Mexico, it became apparent that we’d come up with additional services. It became available when we became partners with CSX and we looked at it very closely after that and decided to initiate a service. It’s something we didn’t look at a whole lot under the Conrail days because the demand wasn’t there.”<sup>5</sup>

Also to be considered in viewing this projected structure to more intermodal use by the automotive industry is the beginning of a trend of replacing high-cube box cars with intermodal containers as a means of hauling auto parts. Many box cars are hitting the end of their 40-year life. They are not being replaced with box cars at a cost of more than \$150,000 per unit but by containers, at roughly \$8,000 per unit. According to Tom Shurstad, President of Pacer Stacktrain, “...whenever (automobile manufacturers) can shift over (to intermodal), they’re doing it...Right now there is just so much traffic flowing with auto parts, we’re trying to take intermodal out of trucks, if we can do it.”

These “automobile” and “Chicago” factors result in potential additional traffic of 400,000-800,000 intermodal lifts annually. This means that the average annual forecast is 600,000 lifts. When this average is added to the normal growth, the potential annual intermodal activity in the Greater Detroit Area by 2025 is placed at two million lifts. This is many times the capacity of the seven

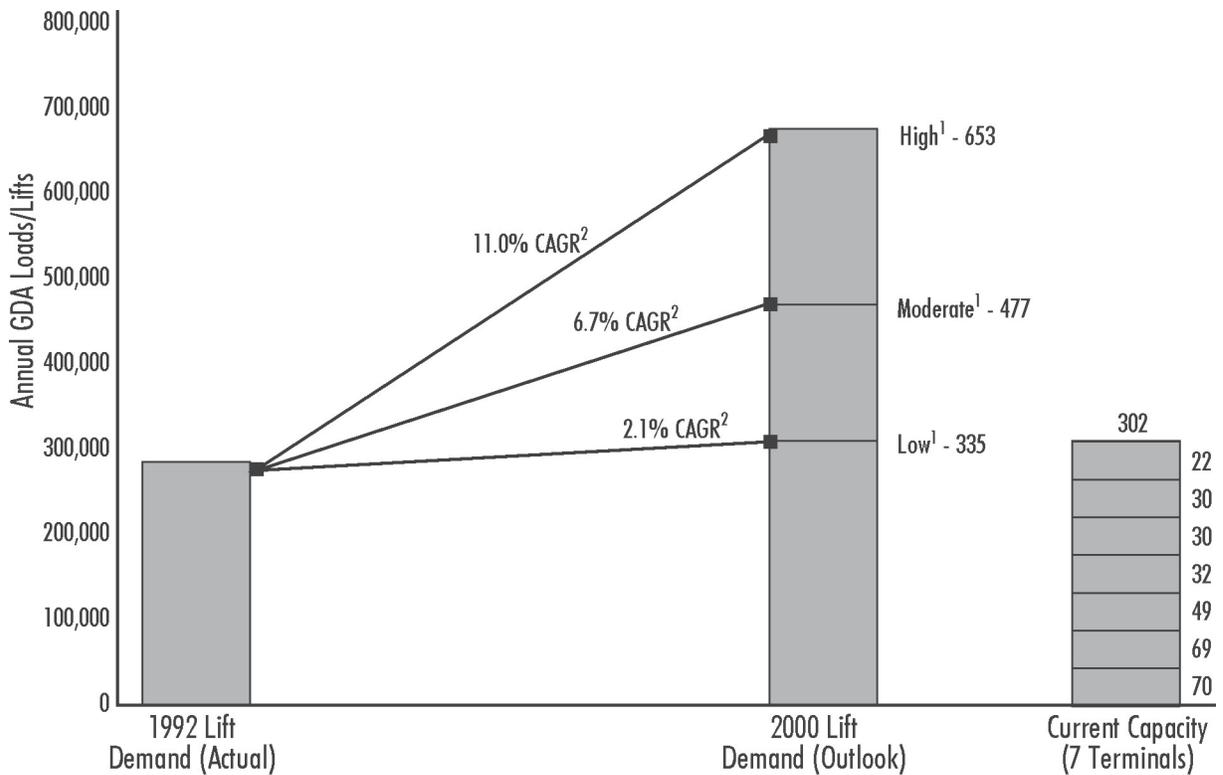
<sup>4</sup>Traffic World, August 23, 2002.

<sup>5</sup>Ibid.

existing terminals, even when “stretched” beyond their theoretical capacity of 300,000 lifts per year. The forecast of 2,000,000 annual lifts translates into 16,000 daily truck trips (8,000 each way) if a consolidated terminal were available.

The MDOT/Mercer studies found that the increased intermodal volume exceeds the theoretical terminal capacity available in the early 1990s in the GDA (Figure 7). Many terminals continue to operate at or near capacity.<sup>6</sup>

**Figure 7**  
**Greater Detroit Intermodal Supply/Demand Outlook**  
**in 1993/1994**



<sup>1</sup>Not considering NAFTA; assumes Western Ontario terminal is in operation.  
<sup>2</sup>Compounded annual growth rate.

SOURCE: Mercer Management Consulting

<sup>6</sup>Currently survey work is underway to determine 2002 lift activity.

In order to handle these increasing intermodal volumes without consolidation, the railroads would have to:

- Expand existing GDA sites – expansion potential at existing GDA sites is limited.
- Shift intermodal to sites outside the GDA (e.g., Chicago), thereby increasing longhaul truck traffic in Michigan. As terminals approach capacity, railroads lose traffic to the highway/truck alternative because service deteriorates and prices increase.
- Purchase or build additional GDA terminals; but new sites would add to fragmentation and inefficiency. Over the past five years, NS has built one terminal in Southeast Michigan, CSX and NS have purchased and filled an underutilized Conrail terminal in Detroit and CPE developed a new terminal in Detroit.

An option to these alternatives is to create a single terminal at which all GDA intermodal activity is consolidated. To quantify the benefits of this consolidated terminal concept, known as the Detroit Intermodal Freight Terminal (DIFT), its expected costs and benefits were compared to a No Action scenario. The No Action scenario is where intermodal growth is accommodated at new or existing GDA terminals, rather than at terminals outside the region.

A summary comparison developed in 1993/1994 of the DIFT and No Action conditions is shown in Table 1 for operating costs and Table 2 for capital costs. The results of implementing the DIFT project on terminal operating costs is shown on Figure 8 and indicates an advantage of the DIFT over the No Action scenario of more than 20 percent.

It is noted that the above-cited costs were based on the assumption MDOT would own the DIFT and lease terminals (“condos”) to the railroads. The current concept under consideration is to have all the respective railroads own and operate their individual terminal within the DIFT. However, it is anticipated that the cost savings determined in 1993/1994 Mercer Report will be an improvement over multiple terminals spread throughout the region because consolidation improves efficiencies.

Another important part of the comparison between No Action and implementing the consolidated terminal concept is of truck operating costs (drayage). To support the analysis of truck operating costs, draymen were interviewed in the 1993/1994 studies. The draymen indicated:

- The location of the DIFT would not have a detrimental impact on costs as long as the terminal was in the GDA and easily accessible to the main highways.
- Drayage costs are much more dependent on time than mileage. The “incremental” mileage cost (reflecting fuel and maintenance) is approximately \$0.35 per mile (essentially fuel and tractor maintenance).
- The “mix” of traffic is such that there are offsetting mileage gains/losses for a given terminal location.

**Table 1**  
**Operating Cost Impact**  
**(in 1993/1994 Terms)**

	<b>No Action</b>	<b>DIFT/Condominium Concept</b>
Management and Other Overhead	<ul style="list-style-type: none"> <li>■ Each terminal has full management staff for RR and contractors.</li> <li>■ Each RR provides its own security, site maintenance, snow removal, equipment repair, and other services.</li> </ul>	<ul style="list-style-type: none"> <li>■ RRs and contractors consolidate management and shift overage.</li> <li>■ Consolidation of support services will reduce average costs.</li> </ul>
Switching	<ul style="list-style-type: none"> <li>■ Large cost for most RRs.</li> </ul>	<ul style="list-style-type: none"> <li>■ Consolidation and better track design will reduce the number of yard switching crews.</li> </ul>
Lift Labor	<ul style="list-style-type: none"> <li>■ Productivity is uneven as layouts and service requirements vary.</li> </ul>	<ul style="list-style-type: none"> <li>■ Better layouts and reduced service peaking will improve productivity.</li> </ul>
Clerical/Gate	<ul style="list-style-type: none"> <li>■ Each RR provides its own gate and clerical staff. Operating hours limited.</li> </ul>	<ul style="list-style-type: none"> <li>■ RRs consolidate gate staff to reduce cost and increase hours of operation.</li> </ul>
Operating Systems	<ul style="list-style-type: none"> <li>■ Each RR provides its own system. Quality varies.</li> </ul>	<ul style="list-style-type: none"> <li>■ Each RR has access to the best available operating system.</li> </ul>
Drayage	<ul style="list-style-type: none"> <li>■ Short gate hours force draymen to operate during congested period.</li> <li>■ Deadheading between separate terminals.</li> <li>■ Fragmented "lane" density to many GDA plants/warehouses.</li> </ul>	<ul style="list-style-type: none"> <li>■ Deadhead time between terminals virtually eliminated.</li> <li>■ 24-hour gates permit draymen to avoid congested period, reduce deadheading.</li> <li>■ Increased lane volume and density to/from major GDA plants/warehouses.</li> </ul>

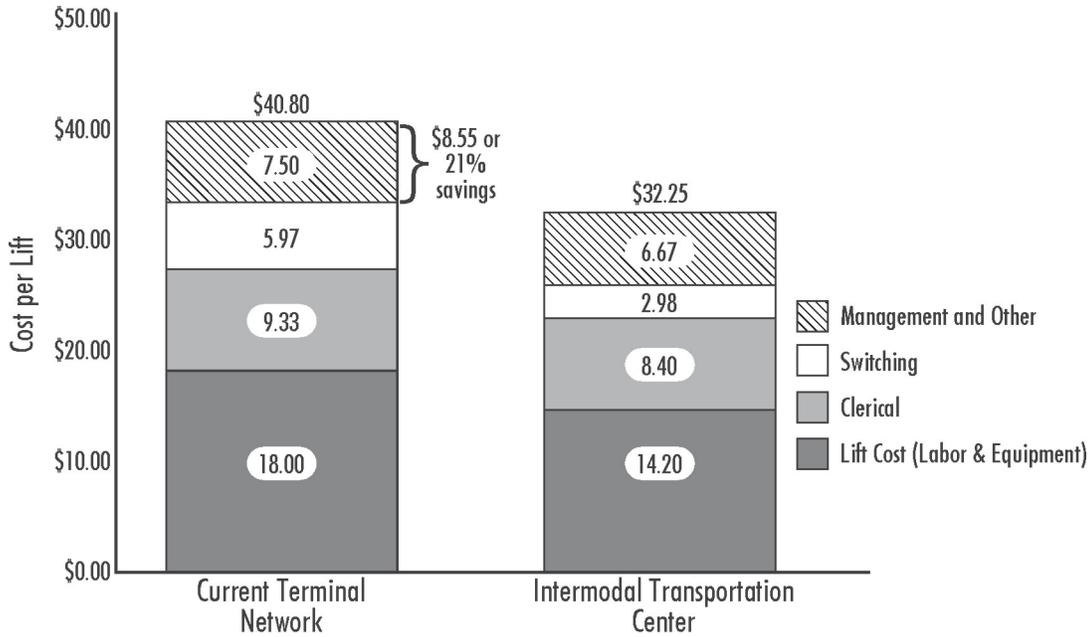
Source: Mercer Management Consultants

**Table 2**  
**Capital Productivity Impact**  
**(in 1993/1994 Terms)**

	<b>No Action</b>	<b>DIFT/Condominium Concept</b>
Rail Cars	Each RR maintains its own cars including a "safety stock."	One safety stock improves rail car velocity and productivity.
Trailers/Containers/Chassis	Each RR maintains its own trailers/containers/chassis including a safety stock.	Opportunity for neutral chassis pool. One safety stock improves velocity and productivity.
Lift Equipment	Each RR provides its own lift equipment. Annual lifts/machine is low.	Fewer, newer machines achieve increased productivity (equal to industry norms).
Parking Area	Each RR provides its own facility. Expansion is difficult.	More efficient use of parking areas and smaller safety stock of empties. Expansion is relatively inexpensive.
Loading and Storage Tracks	Each RR provides its own facility. The amount of track used per lift is higher than industry norms.	More efficient use of loading tracks. Less storage track required.
Gates	Each RR provides its own facility.	One gate complex for each "condo."
Maintenance Facilities	Each RR provides its own facility.	One maintenance facility for the complex.

Source: Mercer Management Consultants

**Figure 8**  
Terminal Cost/Lift Savings  
(1993/1994 dollars)



SOURCE: Mercer Management Consulting

The potential savings in drayage costs were estimated to be substantial. They result primarily from the elimination of cross-town moves and reduced terminal dwell times (Table 3). Dwell is the time trucks wait to load/unload.

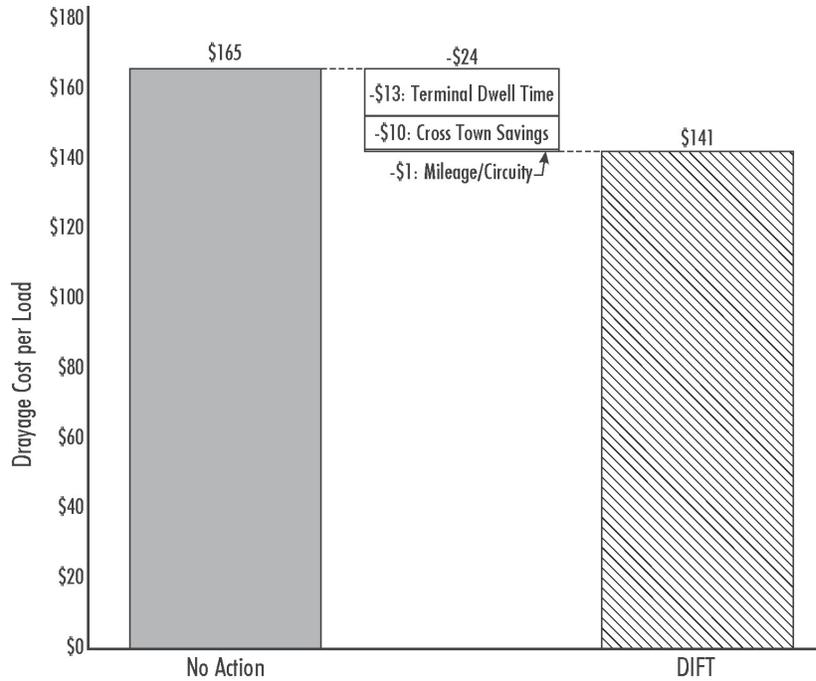
**Table 3**  
Drayage Savings Summary  
(1993/1994 Terms)

Type of Savings	Dollars/Load	Percent of Dray Cost (Base Case = \$165/Load)
Eliminate Crosstowns	\$9.60	6.0%
Terminal Dwell Time	13.00	8.0%
Mileage/Circuitry	1.03	0.5%
<b>Total</b>	<b>\$23.63</b>	<b>14.5%</b>

Total Annual Savings at 335,000 loads/year = \$7,916,050 in 1994 dollars.

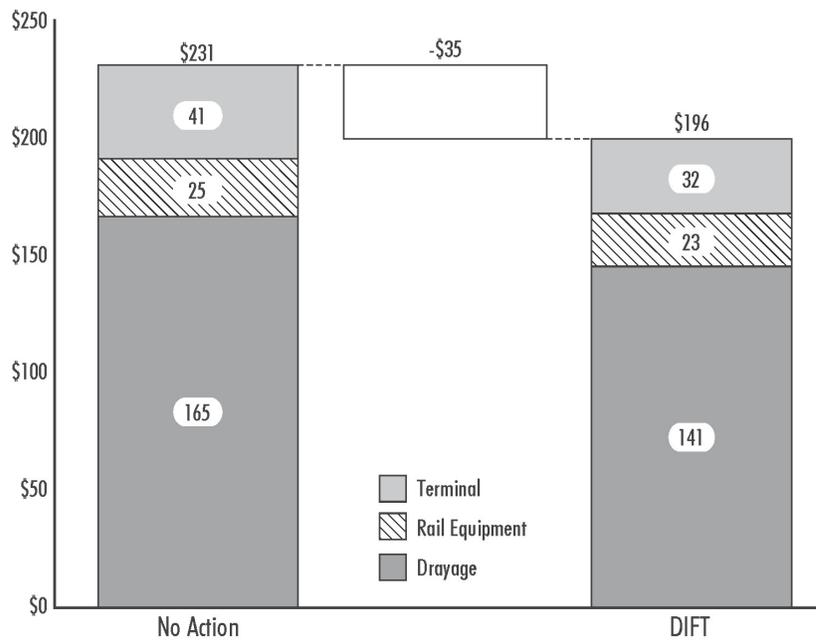
From these data, it was concluded that a consolidated intermodal terminal could reduce GDA drayage costs by more than 14 percent (Figure 9) or \$35/load in 1993/1994 dollars (Figure 10).

**Figure 9**  
**Drayage Cost Savings**  
 (1993/1994 dollars)



SOURCE: Mercer Management Consulting

**Figure 10**  
**Cost per Load Savings**  
 (1993/1994 dollars)



SOURCE: Mercer Management Consulting

The Mercer studies also noted that other benefits to the public exist. And, while they were not quantified in the 1993/1994 work, they will be in the DIFT EIS. These public benefits are cited in Section 2 of this document.

### 4.3 Development Plan

MDOT/Mercer's original concept called for the development of a single, large intermodal terminal which would be utilized by all the Class I railroads serving the Greater Detroit Area market. That terminal concept would possibly be publicly-owned and developed cooperatively by the public and private sectors. The concept was discussed extensively with the railroads, which had concerns about ownership issues and operations of an intermodal terminal that they did not control. As a result, the concept was modified to include a complex of intermodal terminals, each owned or operated by individual railroads. This allows each railroad to control its own service, operations, and reliability, while preserving the benefits of consolidating intermodal services into a single area.

Accounting for land available (i.e., 500 acres controlled by the railroads) at the current Junction/Livernois Yard, and further refinement of space needs on the type of operation (conventional container, trailer on flatcar, or RoadRailer), the estimated need for new land to meet the forecast demand at a consolidated DIFT is approximately 300 to 350 acres. This presumes that CSX and Norfolk Southern (NS) railroads will need all of the land they control south of John Kronk. This is consistent with the recent statements by Pete Rutski, Vice President of Business Planning for CSX:

"...The idea is, at a minimum cost, to create two facilities (at Detroit-Livernois Yard) that allow expansion of what's there today but enable further investment independently."

"That (existing intermodal) facility (at Detroit-Livernois Yard) has now exceeded its capacity and we've been working with the state (of Michigan) to figure a way to expand it (the intermodal operation within its existing boundary)."<sup>7</sup>

So, new land is needed to provide access to the DIFT to the Canadian National (CN) and Canadian Pacific (CP) railroads and their subsidiaries.

The forecast of a need for another 300 to 350 acres, or a total terminal district of 800 to 850 acres, is derived by starting with the industry standard of 2,000 lifts per acre. A facility planned at 2,000 lifts per acre can incorporate all normal intermodal functions including car storage. The land does not need to be a regularly-shaped parcel. RoadRailer facilities can operate at 3,000 lifts per acre. Application of these standards to the proposed project area by intermodal terminal operation yields the need for 800 to 850 acres.

### 4.4 Public Endorsements

The DIFT concept and EIS project have received strong support from Governor John Engler, Congresswoman Kilpatrick, Congressman Dingell, and others. Governor Engler's support has included personal conversations with the CEOs of the Class I railroads and automotive industry executives, as well as approval for continued state planning activities for the project. As a state

<sup>7</sup>Traffic World, August 23, 2002.

legislator, Ms. Kilpatrick sponsored legislation leading to the initial consultant study of the project. As a Congresswoman, she and Congressman Dingell have expressed their support for the project by including it as a high priority project within federal transportation bill known as the Transportation Efficiency Act of the 21st Century, or TEA-21. It provides \$18 million in federal funding. Public Law 105-178 (Transportation Equity Act of the 21st Century), Section 1602, identifies “High Priority Projects for funding under the Act. High Priority Project 1221 is described as, “Construct intermodal freight terminal in Wayne County.” Supporting material, defining Congressional intent, calls for the development and expansion of a single intermodal freight terminal at the “Junction/Livernois Yard” in southeast Michigan.