

# Rail Transportation

The United States freight railroad network includes seven Class I railroads and 623 regional, shortline, and local railroads that account for 140,000 miles of rail. Class I railroads, as defined by the Federal Railroad Administration (FRA), are railroads with operating revenues of \$900 million or more (2021). The Class I's are: CSX, Norfolk Southern, BNSF, Union Pacific, Canadian National, Kansas City Southern, and Canadian Pacific. Shortline railroads (Class II and III) are defined by operating revenues as well and serve 47,500 miles of the total freight rail mileage in the United States. The shortline railroads are an extension of the Class I railroads that they connect or interchange with and provide access to the local markets they serve.

## THREE RAIL TRANSPORTATION SOLUTIONS

**Direct:** Class I railroads may refer to direct service as “manifest or merchandise” service as these are commodities that move in a rail car (typically in bulk) or rail equipment. Railroads will price by the carload or by tonnage in cars either owned/provided by the railroad or in “private” equipment that is either owned outright by the shipper/freight payer or leased from a separate entity and provided as part of the overall delivered cost by that car owner. This type of service is the fixed rail component that requires rail on site, achieved by a direct physical connection to the mainline track (commonly referred to as a “turnout”). This is the only rail service that requires infrastructure to be built or be on site for the transport of the inbound or outbound shipment of materials.

**Intermodal:** Intermodal service is the movement of containers within a terminal network between railroads or to and from a port to a terminal location. Domestic containers (e.g. 53-foot containers) are only used for land transport (rail and truck), while international containers (e.g. 20-foot or 40-foot containers) are moved via container ship and land transport. Intermodal service does not require the track to be located at the customer's site as the containers are drayed or moved by truck to and from a terminal. Additionally, inland ports have been built to provide a direct link from a specific port to an inland dock distribution point for a shorter truck dray. Intermodal is a great solution for containerized shipments being moved more than 400-500 miles from point to point. Generally, certain products tend to be better suited for intermodal service versus merchandise service largely driven by the nature of the product and broader supply chain considerations.

**Transloading:** Transloading is another method of indirect rail service that provides companies with the flexibility of locating in a non-rail-served location by utilizing a local railcar-to-truck or truck-to-railcar terminal or track for the transfer of products. Examples of materials that are moved using transload rail service include plastic resins, chemicals, forest products and paper goods, bulk materials, and other rail-centric commodities. The transfer and transport can either be performed by one company or the transfer can be done by one source at a terminal and the trucking performed by another company. Transloading is feasible for customers that can achieve cost-savings from using rail but are located in buildings or sites that cannot accommodate physical rail.

## RAIL CONSIDERATIONS IN THE SITE SELECTION PROCESS

### Early Involvement

If a project may utilize rail transportation, involving rail carriers early in the process is important. Rail carriers can assist during a site selection process by confirming a potential location is on an active line, calculating available capacity on a line, analyzing conceptual designs, and more. Typically, railroads want to understand the commodities and volumes that will be transported. Similar to other infrastructure, like an electric power line, a rail line has limited capacity with existing service. Volume data helps the rail carrier analyze whether the existing service has the capacity to handle this new volume. The commodities provide input on what type of interaction the rail will need to have with building facilities and assists with rail design which impacts infrastructure investment.



Early communication with railroads is critical for several additional reasons: 1) Depending on location, there can be a long lead time for approvals for construction and specific service considerations, especially with track construction on Class I rail lines. 2) Railroads can provide input on supply chain solutions that could reduce transport cost, identify sources of supply, provide transit times for specific lanes, and estimate pricing. 3) Ports and intermodal solutions need to be vetted and validated early for projects with high container volume and reliance on this solution.

### Track Construction + Site Design

Class I's typically have longer construction timelines and significantly higher rail construction costs, especially if a site requires signaling to be included in the turnout. A turnout connects the mainline to the industry track and includes a switching device and other components. If the mainline is signaled, there are federally mandated safety components involved in the equipment that connects to the mainline, known as Positive Train Control or PTC. PTC systems are designed to prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and movements of trains through switches left in the wrong position. Shortline railroads utilize similar track components to connect industry tracks to mainline tracks at a lower cost and reduced timeline as they are not constricted, in most cases, by the need for PTC signaled components. One major consideration for working with railroads early is conceptual site design. The rail design can be value engineered with the building layout to reduce the potential for additional costs and delays that result from adding rail later in a project. Additionally, if rail is not designed initially, it can be difficult to add it later based on site layout.

### Service

Class I's provide local service typically as fixed days per week service to and from the customer. The frequency of service will vary based on multiple factors, for example: distance to and from a local serving yard and amount of customer shipment activity on the line. When shortlines are the local service provider, they often have the flexibility to tailor a customer's first or last mile service needs. This may involve multiple switches per day when necessary for seasonal increases in volume or value-added services such as online storage, storage in transit (SIT) and special switching services. However, service will need to be confirmed with any rail carrier to verify that it can support the needs of a new project.

## BENEFITS OF RAIL TRANSPORTATION

Potential benefits of rail, and key reasons why it is worth exploring, include both efficiencies and cost savings. From an efficiency standpoint, one railcar can account for four truck loads of product. On average, one ton of freight can move 470 miles on one gallon of fuel. These efficiencies translate to a reduction of up to 75% of greenhouse gas emissions versus truck. Cost savings can be realized as a result of having multiple transportation options versus one single mode. Navigating freight rail transportation can be a daunting task for companies for a new project but engaging with rail carriers early in the process help streamline the process and provide long term benefits to a company.

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