I – CONSIDERATIONS FOR AND FUNCTIONS OF A TRANSLOAD FACILITY

A. Planning a Flexible Transload Facility is Key

The purpose of a rail to truck transfer facility in Perry is to facilitate the transfer of various commodities to and from rail cars to trucks, both imports and exports, as well as to warehousing and open ground storage. The various materials would then be moved the seven miles to and from the pier by trucks as required by ship calls at the Port. Since it is not fully known what commodities would be moved through and stored at the transload site, it is prudent to consider a range of product types, rail equipment and storage requirements in planning for a new transload facility to serve the Port of Eastport. Another unknown is the volume of material that may need to be transloaded and stored at the site in the future. It is therefore imperative to identify a site that would allow room to expand if and as required without significant reconstruction to the initial facility. These unknown variables dictate that a transload facility at Perry be designed to accommodate a wide range of commodities at a site that has room to expand.

B. Commodity Types and Transload Facility Requirements

There are many potential commodities that require various rail & unloading equipment and storage requirements. Following is a brief review of some typical transload facility operations and requirements to consider in planning a multipurpose facility.

1. <u>International and Domestic Containers</u>.
   Although containers are not transferred to and from ships at Eastport, this may be a possibility in the future. On rail, these containers are typically moved double stacked on special rail flat cars with low platforms or wells between the truck assemblies. Two of the higher domestic containers require vertical clearance of at least 20' – 8" under bridges along the rail route traversed. It appears that the rail connections to Perry would provide this type of vertical clearance with routings west out of Maine. At the transload, special, oversized rubber tired packers (side loaders or reach stackers – (Figure 3-4) may be used to lift the containers on and off the trains, placing the containers directly on the ground or onto truck chasses. Terminals also use rubber tired gantry cranes (Figure 3-3) that straddle the tracks and run along parallel to them or rail mounted gantry cranes. From a rail planning perspective the ideal layout is long parallel tracks with adjacent, wide paved areas for lift equipment to operate and to stage the containers and chasses.

Figure 3-1 Double Stacked Domestic Containers in Well Car

Figure 3-2 Double Stacked International Containers in Well Cars

Figure 3-3 Rubber Tired Gantry Crane Loading a Container on to a Chassis

Figure 3-4 Side Loader Lowering a Container into a Well Car

2. <u>Centerbeam Flat Cars – For lumber and other building materials</u>
   These specialized rail cars (Figure 3-5) have a steel truss down the middle of the car to support heavy loads while maintaining a thin deck so that the amount of material loaded is maximized. Because the product is on both sides of the truss, access must be provided to both sides of the car for loading and unloading and care must be taken to keep the load on each side relatively balanced both in transit and while loading and unloading. Figure 3-6 shows a small transload facility where centerbeam flats are being unloaded on three paved tracks at the top. The lumber is wrapped in protective plastic and is being stored in the open paved area below the unloading area. At the bottom of the photo, box cars are being delivered to an adjacent warehouse. Besides dimensional lumber; plywood, sheet rock, oriented strand board and roofing materials are some of the commodities moved on these types of cars. Paved areas on both sides of the unloading position and nearby ground storage free of water ponding are the primary requirements.

Figure 3-5 Center Beam Flat Car

Figure 3-6 Centerbeam Flats at a Building Materials Transload Facility

3. Dry Bulk Transfer
Dry bulk transfer to and from rail cars either directly to trucks or storage silos may involve a number of commodities and facilities depending on the material being handled and volumes. Some of the commodities could be plastic resins (pellets), cement, flour, sugar, wood pellets, grain, animal, poultry and fish feeds, fish meal, fly ash, fertilizer and various dry chemicals. To load or unload the rail cars compressed air is required for most dry material transfers. Often the compressed air system is contained on the truck if transfer is being made directly to or from rail car to truck. If the product is transferred to or from a storage silo, a separate compressor system may be required. The most common type of rail car for dry bulk material is the covered hopper which comes in a number of variants optimized for the type of material and unloading method. Tracks for this type of rail operation need to be able to be accessed by trucks along side when material is transferred directly (See Figure 3-7). Or, piping for the compressed air and transfer piping is placed between adjacent tracks with the material transferred to or from storage silos either adjacent to or removed from the rail car area.

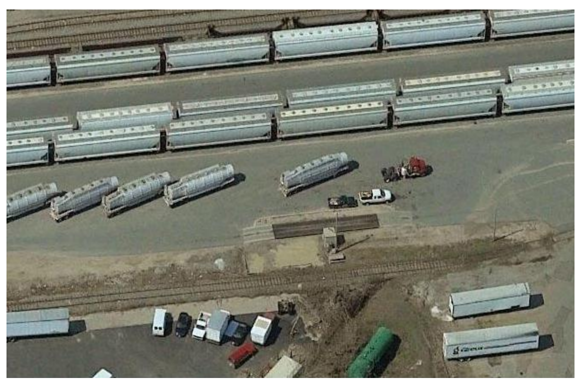

Figure 3-7 Rail Car to Truck Plastic Resin Transfer Facility. Note alternate paved areas between tracks for truck access

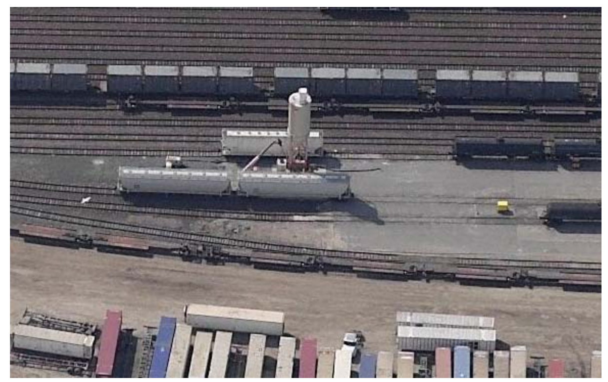

Figure 3-8 Dry Bulk Transfer to Intermediate Silo

4. Liquid Bulk Transfer
Railroad tank cars carry a vast variety of liquid and gaseous commodities and often are specialized to carry one or two specific products. These may include all manner of petroleum products, chemicals, liquefied gases, limestone and clay slurries used in paper and paint manufacture and many food grade products such as corn sweeteners and vegetable oils. Transfer may be directly to or from trucks along-side the rail car or to and from storage tanks that may be close by or at some distance from the rail car. Some commodities may require heating in colder weather to flow freely enough to be pumped.

Paved areas between tracks are required if transfer is made directly between rail cars and trucks or just a grouping of tracks if transferred to storage tanks. See Figure 3-9 and 3-10.

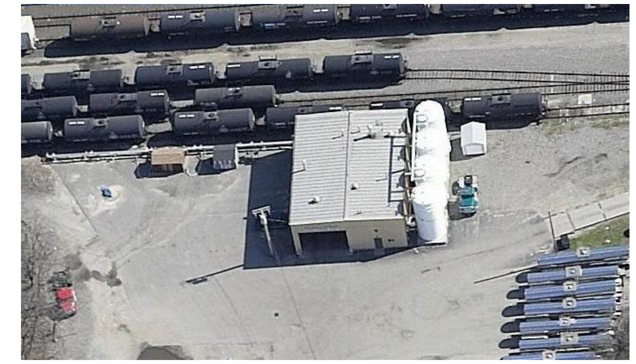

Figure 3-9 A Corn Sweetener Transfer & Distribution Facility. Direct Truck Access to Rail Cars not Required

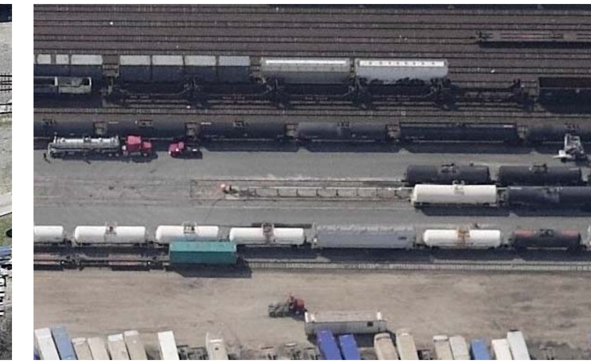

Figure 3-10 A Liquid Bulk Transfer Facility with Direct Truck Access to Railcars

5. Warehouse for Dry Goods, Distribution
There are a number of commodities that may move in railroad boxcars and sometimes insulated or refrigerated cars. These are products that need to be protected from moisture, freezing or high temperatures. Warehouses are also key elements of logistic centers where various modes of transportation deliver goods, store them and then distribute them. This may be to multiple locations as the goods are ordered, going to either to the end user, suppliers or retail outlets. Warehouses may also consolidate smaller loads into car load or truckload shipments or for marine transport. In the case of a marine terminal, a warehouse may simply provide secure, covered storage before or after transfer to ships.

Typical products that move in rail box cars or refrigerator cars to warehouses include:

- Paper
- Wood Pulp
- Canned Beer
- Bottled Wine and Liquors
- Canned Goods
- Bagged Cement
- Bagged Animal Feeds
- Bagged Fertilizer
- Baled Peat Moss
- Baled Bark Mulch
- Root Vegetables including Potatoes
- Many types of manufactured goods such as machinery, home goods, office supplies, unassembled furniture, engineered wood products

6. Over Dimension and Overweight Shipments
These can be a wide range of either fully or partially assembled machinery, electrical equipment such as transformers and switchgear. Sometimes specialized rail cars are needed for very large, heavy loads. Moving this material on and off of rail cars and onto trucks

requires open areas for cranes to make the transfer and perhaps to store the equipment for a short time; either in the open or perhaps covered.

7. Ferrous and Non-ferrous Scrap Metals
The scrap metal industry ships large quantities of scrap metals to markets in railroad gondola cars. These markets are either domestic steel mills, both large and small, and foreign markets. The United States exports substantial volumes of scrap metals to industrial nations around the world. Many seaports have terminals where ships load scrap metals. A rail to truck transload needs tracks to set off the loaded cars with space along side for cranes to transfer the material to open top trailers for movement to dockside or perhaps into open storage bins for specific types of scrap such a steel, aluminum, brass, copper, etc.

II. PLANNING A MULTI-USE RAIL TRANSLOAD FACILITY

On the following pages, three plans (Figures 3-11 to 3-13) show progressively larger transload facility footprints, each building on the previous plan. The smallest (Figure 3-11) is suggested as the minimum facility at Perry. This plan shows a warehouse served by two tracks and two additional tracks, one half of one track to be used as a center beam flatcar track with the other track and half of the center beam track functioning as multi-purpose general transload tracks. The intent of these three plans is to define a minimal sized footprint and operational requirements inherent to choosing a suitable site and to select a site that allows room to grow to the largest layout presented, or perhaps; even larger, if that ever became necessary. This also provides the Port of Eastport the ability to market a multi-faceted rail transload facility with the ability to expand its services as demand dictates.

Before discussing the four potential sites identified in Perry for the transload facility, a basic understanding of typical rail operations that would occur is necessary because rail operations play a major role in the site selection screening process. That is because in addition to the actual footprint of the facility, space is required for rail operations on the incoming end to allow a train to exchange inbound and outbound cars. In other words, the footprint must include a long incoming switching lead and other support tracks.

A. Rail Operational Considerations

In addition to planning for a number of different commodity types and internal transload operations it is equally important to plan for the actual rail operations that need to occur as rail cars are transferred to and from the site. There are two elements that must be an integral part of the overall facility. These are:

1. A switching lead in advance of the facility at least as long as the longest track in the facility, or; preferably, as long as the maximum number of cars pulled out of the facility in a switching cycle.
2. Provide a runaround track adjacent to the incoming lead equal in clear length to the longest train arriving or departing from the facility.

Some definitions:

- **Switching** – the process of moving rail cars from one track to another, re-ordering the cars to specific tracks or sorting inbound and outbound cars.
- **A switching lead** is a track used in switching; a series of back and forth train movements as a locomotive pulls cars out of tracks and then shoves (pushes) cars into other tracks.
- **A runaround track** is a track generally parallel to and connected to an adjacent track with turnouts (switches) at both ends; in other words, a double ended siding as opposed to a stub ended siding, connecting to an adjacent track on one end only with a "dead end" such as a bumping post on the other end. During switching it is often necessary for the locomotive to change ends on a group of cars. This is done by spotting the cars to clear both of the turnouts connecting to the adjacent runaround track. The locomotive then uncouples from the cars, pulls back to clear the turnout, uses the turnout to move over onto the runaround track, moves along the runaround track to the other end and crosses back to the track with the cars but now on the other end of the cars. The runaround track has to be as long as the longest number of cars that need to be "runaround" with room for the locomotive to clear the cars on both ends.

B. Description of Typical Train Operation

A transload facility at Perry would be an "end of the line terminal" as opposed to a terminal alongside a through route that continues past. In the case of Perry, the incoming single track rail line would act as the switching lead and no provision is necessary to allow other trains to pass by unimpeded. However, the arrangement at Perry will require at least one runaround track that is as long as the longest train that is received or departed from the site.

Assuming that the initial facility would be similar to Figure 3-11 on the following page, let us describe the rail operation necessary. Figure 3-11 shows four stub ended tracks inside the facility. Assuming that all four tracks had some number of cars on them, let's say a total of 24 cars with an average length of 55 feet each. Let's assume that 19 of those cars are ready to be moved out by the next train. The next train inbound has 18 cars to be distributed on the various tracks, more or less in the same places as the 19 cars to be "lifted". The locomotive is on the head end (front) of the train and approaches on the incoming lead track. If that track were the only track approaching the facility, an obvious problem would exist. The locomotive could pull the outbound cars out of the facility if the incoming cars were left far enough back on the incoming lead, but the locomotive would now be sandwiched between the incoming outgoing cars and could not shove the incoming cars into the facility. In fact, it would be trapped with nowhere to go except to backup, shoving the cars just brought in back to where it came from.

That is where the runaround track comes into play. If that second track existed, the locomotive would have pulled the outbound cars onto that track. With all the outbound cars on the runaround track, the locomotive would simply exit that track at the end removed from the facility, and; assuming that the incoming cars would fit on the adjacent incoming lead between the turnouts (switches) connecting to the runaround track, start to shove those cars into the appropriate tracks and locations within the facility. At the conclusion of placing the inbound cars the locomotive would run the length of the incoming lead past the outbound cars standing on the runaround track, throw the switch on the far end, come back onto the end of those cars and pull out now headed back towards Ayers Junction and Calais. In this example, the runaround track would need to have a clear length of at least 19 -55 foot cars or 1,050 feet.

In the case of largest facility, shown as Figure 3-13, most of the tracks in the facility are connected on the far end (double ended rather that stub or single ended) with a short "tail track" on the far end, long enough to hold several locomotives and a car or two plus a "buffer". An incoming train could pull cars directly into the facility, provided the track was clear of cars. Presumably, most tracks would have cars on them and the operation described for the smaller facility would still be required. In fact, it may be desirable to have several double ended sidings outbound of the facility rather than just the incoming lead and a single runaround track. It is also important to note that if the locomotive pulled cars into the facility, an "escape track" within the facility would need to be kept clear of cars so the locomotive could move through the facility back to the inbound end to continue switching or to return back towards Calais. So even with a "doubled ended" track layout, a runaround track or multiple double ended sidings would be necessary in advance of the facility itself.

All of this switching activity needs to be done on tracks that do not have a steep gradient and it would be very undesirable to have a road crossing that would be blocked during extensive switching operations that occur each time a train exchanges cars at the facility.

III. DESCRIPTION AND FUNCTIONAL ANALYSIS OF FOUR SITES

A total of four sites within Perry have been identified for the transload facility and are depicted on Figure 3-14. The minimum facility footprint shown on Figure 3-11 has been superimposed at the general location of each site to assess how it fits, determine if there is room for expansion and assess rail operational issues that will result from grade crossings at the switching end, excessively steep grades on tracks approaching the facility and large earthwork excavation and filling required due to the site elevation being dictated by the need to keep the railroad from being too steep. The sites have been identified in numerical order going counterclockwise around Figure 3-14. The numbers have no bearing on their ranking, only a means of identification and in the counterclockwise progression. Sites 1-3 were pre-determined locations selected for evaluation and Site 4 was identified by HNTB during the evaluation process.

A. Site 1

Site 1 lies east of Route US 1 and south of Route 190 where it intersects Route 1. Rail access would be to continue the tracks across Route 1 to the north of the site but instead of continuing along the bicycle trail the tracks would swing to the south to come more or less parallel to Route 1 and then cross Route 190. The major advantages of Site 1 is that it the closest to Eastport, would provide ready access to Route 190 without the need to cross Route 1 and could, in the future, access a future relocated Route 190 that may access Route 1 to the south of the facility rather than to the north as at present.

Site 1 has a number of major negative issues which are summarized as follows:

1. The switching lead would be across Route 1 unless a bridge for Route 1 was built over the railroad.
2. Due to the difference in elevation between the railroad at the Route 1 grade crossing and the point where the new track would cross Route 190 (45 feet higher), Route 190 would have to bridge over the railroad. If Route 190 were ever relocated, this bridge may be redundant.
3. The site is not large enough for a major expansion if that should become necessary.
4. There would be a large volume of excavation because even with a 1% grade on the incoming lead (12" rise in 100 feet), the facility would be at elevation 25 and the site has an average existing elevation of about 75, ranging from a high of 104 to a low of 46 near its southeast corner.

These are compelling reasons to not consider Site 1 further.

B. Site 2

Site 2 lies west of Route 1 and north of the railroad right-of-way and the Little River tidal estuary. At first glance, the primary parcel is fairly large (about 80 acres). However, most is not useable due to the tidal Little River and a long tidal finger that slices the site almost in half on a diagonal of the sites longer north-south axis. Maine environmental regulations protecting tidal boundaries are strict and require a setback of 250 feet from the high water mark. The narrow tidal stream, the Little River itself and a smaller tidal offshoot near the rail bridge over the Little River combine to reduce the useable portion of the site to barely able to accommodate the minimal facility footprint.

Rail access itself is an issue because the long axis of the site, which is north south, is at right angles to the railroad right-of-way. It is not possible to fit a suitable curve in the space available without taking additional property to the west. Even at that the curve would be very sharp and with the restriction of the narrow tidal finger, only the northern portion of the site past the tidal finger would be useable.

The incoming lead track would cross Golding Road at grade so that switching operations would block traffic unless a bridge was constructed that would impact properties along Golding Road.

Due to track curvature issues we have shown the footprint of the minimal facility on the east west axis of the site with a potential spur to the north. This site has too many limitations and issues to warrant further serious consideration.

C. Site 3

Site 3 is located along the rail corridor between Golden Road and South Meadow Road. The minimal sized footprint barely fits in the available space and incoming switching lead would be across South Meadow Road. Based on these considerations, Site 3 is not a viable option.

D. Site 4

Site 4 occupies a wooded upland further along the rail corridor towards Ayers Junction. Based on the maximum footprint depicted on Figure 5-13, a maximum width of about 1,000 feet could easily be accommodated. Of greater significance is the overall length of space available, in excess of 8,000 feet from the rail right of way to Route 1. This potential length allows room for expansion of the facility to accommodate growth to more than twice the size of the largest facility footprint indicated on Figure 3-13, if ever that were necessary.

The site is removed from the developed areas of Perry, any tidal watercourses, grade crossings and potential impacts to residents. Since the site is 1 mile or more closer to Ayers Junction than the other sites, savings from building less railroad, grade crossings and the bridge over the Little River in the case of Site 1, would be realized.

The only potential visible impact would be where the facility access road intersects Route 1. Initially, we have shown two possible connection points for the access road. One near the southerly intersection of Maher Lane and Route 1 and the second as an extension of the west end of Davis Road. In that case, Davis Road would need to be upgraded out to its intersection of Route 1.

In the long term, the easterly end of Site 1 lines up with a possible re-alignment of Route 190 out of the Tribal Lands and onto the general alignment of Old Eastport Road. If that were to occur, a short segment of new road alignment from Old Eastport Road to Route 1 could be accomplished to provide a direct connection to the Site 4 access road, perhaps with a bridge over Route 1. Such future changes to Route 190 would minimize the slightly longer distance versus Site 1 and provide considerably reduced travel time versus Sites 2 and 3.

A more detailed plan of Site 4 is depicted on Figure 3-15.

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