

# Southport Terminal Intermodal Improvement Project

## PROJECT OVERVIEW

The Saint Paul Port Authority (SPPA) owns and manages four barge terminals in Saint Paul along the Mississippi river – Barge Terminal 1, Barge Terminal 2, Southport Terminal Industrial District, and Red Rock Barge Terminal. Each of these terminals are a critical link in a much larger, highly sophisticated intermodal freight transportation system. The terminals handle nearly 5.5 million tons of commodities each year. The largest commodity volume are grains (e.g., corn, soybeans and wheat). However, many other products such as fertilizers and cement are handled within the terminals. These commodities are loaded and unloaded to and from barge, rail and truck via several businesses that lease space from the SPPA within each terminal.

As business grows and customer demand changes, the region faces new opportunities and challenges including:

- **Operational Efficiency** – Increasingly customers prefer just-in-time freight transportation services that require businesses to provide increasing operational agility within, to and from each of their facilities.
- **Competitive Logistic Solutions for Tenants** – Some transportation infrastructure does not necessarily coincide with what is required for efficient operations within each of the terminals, which requires daily adjustments to planning and operational efficiency. Thus, identifying, analyzing and designing highly competitive logistics solutions are key objectives of this project.

- **Providing Economic Opportunities for Tenants** – By identifying, designing and building transportation and supply chain solutions that offer more cost efficient operations, increase throughput and generate increased revenue and jobs. These successes have the potential of translating to improving a multitude of economic and quality of life factors within the City, region and state.

An optimized supply chain network can greatly improve a company's competitiveness and profitability. A supply chain consists of suppliers, plants, warehouses, and flows of products from origin to customers. Typically, 80% of a product's landed costs are locked in by the location of a company's facilities and the determination of product flows between them. Supply chain network design and optimization is the discipline designed to strategically determine the optimal location and size of facilities, and the flow through the network, in order to deliver a company's products to its customers at minimized costs and within the required service level. With supply chain network optimization, companies can typically expect to reduce long-term transportation, warehousing, and other supply chain costs by 5% to 15%, while improving their service level and operational agility.

The Saint Paul ports are a critical leg in America's marine highway system, and the importance of the river to the economic success of key regional commodities, such as agricultural products cannot be overstated. The **Southport Terminal Intermodal Improvement Project (STIIP)** is



Barge Terminal 1



Barge Terminal 2



Southport Terminal Industrial District



Red Rock Barge Terminal



**Saint Paul Port Authority**

SOUTHPORT TERMINAL INTERMODAL IMPROVEMENT PROJECT

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comprised of identified phases/components that have been extensively researched, strategized and designed in an effort to formulate improvement plans that will dramatically increase the competitiveness of port, surrounding businesses and the region. The STIIP directly addresses needs that have been identified through outreach with the shipping community as part of the Minnesota GO Statewide Freight System Plan (dated May 2016). Specifically, the plan calls for future actions that consider ways to attract development that help minimize through trips, such as investments in transload or intermodal facilities, so goods can stop and start in Minnesota<sup>1</sup>. In addition, the STIIP expands upon and emphasizes the river as a critical strategic asset for the region. The project phases/components highlighted below have been identified as critical infrastructure necessary for the users of the Saint Paul ports, its tenants, the surrounding businesses in St. Paul and the region to continue growing and stay competitive in today's rapidly changing marketplace.

A detailed, commodity-based mathematical analysis recently conducted by the Saint Paul Port Authority (SPPA) quantifies economic opportunities that with the completion of the infrastructure components, listed below, the SPPA, its tenants and their customers would be able to:

- Facilitate movement of a significant amount of additional commodities above and beyond what is flowing through the port today promoting economic growth in the region,
- Significantly reduce transportation costs and constraints, while fulfilling supply chain needs throughout the region for additional low-cost, and efficient methods for shipping freight.
- Provide expanded intermodal services, including empty and full container-on-barge service that offer competitive logistics solution and operationally efficient means of shipping the vast majority of commodity types that businesses move into, out of and through the region.

| Designation | Project Phase/Component  | Actual or Anticipated Completion Date (fiscal year) |
|-------------|--|---|
| A           | Heavy Lift Pad   | 2016  |
| B           | Port Multimodal Freight Network Optimization Study                     | 2017  |
| C           | Commodity Storage and Handling Pad                                     | 2018  |
| D           | Grade Separated Access   | 2019  |
| E           | Dock Wall Rehabilitation / Construction                                | 2019  |
| F           | Dock Wall Extension  | 2020  |
| G           | Pad Mounted Crane  | 2020  |
| H           | Multimodal Container Transload and Storage                             | 2020  |
| I           | Raise Existing Pedestrian Bridge                                       | 2020  |
| J           | New Access to North Side of Channel and Reconstruct Barge Channel Road | 2020  |
| K           | Expand Multimodal Facility and Rail Yard                               | 2020  |

The timing of each phase/component is dictated by variety of factors including (but not necessarily limited to) market demand; return on investment relative to increased intermodal interchanges and transfer, safety and access needs; funding, complexity; etc. The businesses utilizing the SPPA's barge terminals are experiencing tremendous growth, but are currently limited in the volume of intermodal interchanges and transfers because of inadequate (or unavailable) infrastructure. Each of the project phases/components listed above will have a significant impact relative to economic, environmental and quality of life factors within on the regions served by the Saint Paul ports.

Each of the project phases and components are described in more detail below.

1 Minnesota GO Statewide Freight System Plan, 2016, P. 50-51



**A) Heavy Lift Pad:** The first phase involved constructing a heavy lift pad along the dock wall in fall 2016. The heavy lift pad consists of approximately 170 concrete piles driven to bedrock. This substantial structure is certified for lifts up to 300 tons. The installation of this pad added new tonnage through the port and is reducing congestion of truck and rail traffic in the area. This site is designated as the only certified heavy lift pad in the Saint Paul metro area and allows local and regional businesses to move their heavy cargoes in a more efficient and cost-effective manner. The facility is also able to trans-load materials from barge, rail, and truck.

**B) Port Multimodal Freight Network Optimization Study:** In a coordinated effort to directly address opportunities and challenges within the regional supply chain, the SPPA is currently conducting a “Port Optimization Analysis” that is providing a foundation for a business case and implementation strategy utilized for strategically developing the STIIP. The Port Optimization Analysis will also include a “living” optimization model that will be maintained and dynamically adjusted to reflect improvements and changes in the port’s supply chain, which will continue to guide necessary improvements and solutions to address high-value opportunities and constraints. The business plan and implementation strategy is also allowing the SPPA to address critical network constraints, as well as prioritize investments more effectively and efficiently.

**C) Commodity Storage and Handling Pad:** Construction documents for a new commodity storage and handling pad are complete, and the process of finalizing the permitting is underway. The proposed 500-foot by 230-foot asphalt pad will be strategically positioned in the area designated for phase/component H - Multimodal Container Transload and Storage, thereby allowing convenient integration into the future facility. New customers have been secured for utilization of this pad and will begin transloading additional commodities in 2018.

**D) Grade Separated Access:** The Southport Terminal is currently served by only one access point from Concord Street/TH 156 to Barge Channel Road. This access point is severely compromised by the existence of an at-grade

mainline rail crossing immediately adjacent to Concord Street. Freight trains on this track often completely block access to the terminal causing serious safety issues and vehicular backups within the terminal. These blockages also cause a significant reduction in the volume of freight throughput within the terminal, accounting for delays in the movement of commodities, as well as causing traffic backups on Barge Channel Road and Concord Street/TH 156, which negatively impacts adjacent neighborhoods.

This is a critical constraint within the Southport terminal to allow for increased commodity flows through the port, where current, known opportunities exist to increase tonnage and/or add new commodities, based upon a Port Optimization analysis of the port’s multimodal transportation network, recently conducted by the SPPA. Additionally, the City of Saint Paul’s adopted comprehensive plan dated February 24, 2010 describes one of the City’s transportation goals regarding freight movement is to pursue funding by seeking to amend the Federal Intermodal Freight Connector System, which links major freight facilities (including Barge Channel Road) with the National Highway System (TH 52). This project, which would provide a grade separated access from Barge Channel Road to Concord/TH 156 directly accomplishes this goal, as TH 52 would be less than a five-minute trip from the Southport Terminal via (grade-separated) Barge Channel Road to Concord/TH 156.

Moreover, the Metropolitan Council’s Regional Truck Highway Corridor Study (dated May 17, 2017) outlines the criticality of the first and last mile in freight transportation and identifies Concord Street/TH156 as a Tier One “Key Truck Freight Corridor”. Tier One corridors include the interstates in the Twin Cities and 300 miles of principal and minor arterials that are the “last mile” connections to freight destinations. Again, various studies including the recently completed Port Optimization Analysis support that constructing a grade separated access from Barge Channel Road to Concord Street/TH 156 will allow for increased truck and freight movements with additional commodity flows along this high-value freight corridor.



**E) Dock Wall Rehabilitation/Construction:** Dock walls serve as the bridges to the river shipping industry. They are a critical component at any port and need to be structurally stable to provide safe access to port facilities. Structural investigation of the Saint Paul Harbor terminals' dock wall has revealed that the current dock wall conditions are unstable and will require substantial repair and/or replacement within the next five years. The STIIP project includes replacing nearly 50-percent (or 1,000 linear-feet) of dock walls that need to be repaired or reinforced to prevent them from collapsing.

**F) Dock Wall Extension:** The STIIP project will construct an additional 600-linear feet of dock wall to accommodate increased intermodal interchanges and transfers of containers and bulk commodities. These modifications can provide tremendous economic benefits to the each of the Saint Paul Port Authority's four terminals and businesses throughout the region. Finally, this phase/component will include constructing an overhead crane to increase efficiency and capacity for lifting freight off barges and transloading onto trucks, as well as support continued growth of the Mississippi River as a critical marine transportation link for Minnesota businesses.

**G) Pad Mounted Crane:** Two overhead cranes are proposed to be constructed along the area of the existing dockwall rehabilitation/reconstruction (see phase/component E) and along the proposed dockwall extension (see phase/component F). These cranes will fill an important need/gap within the terminal for efficiently handling containers and other freight, to and from barges. The site is designed to accommodate direct transfer of containers/freight from barges to truck or rail (and vice versa). The installation of the cranes will allow for the efficient movement of containers and commodities through the port thereby maximizing intermodal exchanges and transfers.

**H) Multimodal Container Transload and Storage:** With Minnesota's status as a net producer state, intermodal capacity and the availability of containers is a critical constraint in the freight network in the Twin Cities and surrounding region. As an outcome of the Saint Paul Port Authority's Port Optimization Analysis, the Southport terminal was identified as having the greatest potential to help address these regional supply chain constraints, cost and service improvements within the Saint Paul Port Authority's river terminal system, via empty container, full container-on-barge and additional commodity storage facilities.

With a deficit of intermodal containers in the Twin Cities region, an opportunity exists to leverage the river to bring empty containers in the region, sort them at the STIIP facility and dray them to local and regional businesses. Typically, containers can be stacked four to six high on shore. The seasonality of river commodity movements also presents opportunities. Approximately 65% of barges that move north on the Mississippi River<sup>2</sup> are moved empty, in order to pick up grain or other commodities and then return to the Gulf for export. This situation provides an opportunity to bring empty containers from southern river ports where there is an excess of empty containers, like in New Orleans, Memphis or St. Louis, to areas where there is a shortage as it does in the Twin Cities and the surrounding area. The intermodal facility in the Twin Cities has been at capacity for the past several years, so Minnesota has had a disproportionate amount of containers being drayed to Chicago. The demand for empty containers in the area and the opportunity to move them on barges into, and out of, the Twin Cities provides an opportunity that this STIIP phase/component will address.

In addition, there are opportunities to move full containers-on-barge outbound from the Twin Cities, to support intermodal transfers of multiple commodities. These services also support the continued growth of containerization of agricultural commodities. Per a report published by the

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<sup>2</sup> The volume of dead head barges coming north may vary by season. In seasons with record harvest, there is a high volume of dead head barges moving north to support grain moving south out of the Gulf. In seasons with lower corn movements and with growth in ethanol, approximately 85%-90% of the barges coming north handled by URS are loaded.



United States Department of Agriculture (USDA) (dated February 2015), the ability of the U.S. grain industry to understand and successfully respond to market signals is key to continued growth for container transportation as a marketing alternative to traditional bulk shipment.

Transloading grain from bulk rail cars and trucks to containers takes advantage of the economies of size associated with moving trainload units of grain from inland production regions to near-port facilities. This minimizes drayage costs because of the proximity to the larger supplies of empty containers at port terminals. However, the USDA also explains that the distance of major grain production areas to the largest container inland terminals and ports remains the largest challenge for the industry. The ability of the U.S. grain industry to adapt to a dynamic market through terminal investments, expanded transload facilities and increased “match-back” traffic will prove challenging, but potentially advantageous in long-term benefits associated with market diversification and an expanded customer base. This project component directly addresses this challenge and will bring long-term benefits to the regional market.

There are also opportunities for additional storage and warehousing as part of the STIIP that would be regionally advantageous. Although the Saint Paul Port Authority’s river terminals support movement of all top, major river commodities, the SPPA’s terminals have significant limitations in their ability to maximize throughput, or the amount of freight passing through the system. These limitations are directly related to inefficient internal configurations (i.e., bottlenecks resulting from train blockages), lack of storage and a lack of empty containers. For example, increases in storage capacity could help reduce transload constraints during peak periods for commodities, like fertilizer. It would also help resolve issues related to backlogs of barges after the river opens in the spring. Additional storage capacity would allow for an increase in commodity flows through the port where current, known opportunities exist to increase tonnage and/or add new commodities.

**I) Raise Existing Pedestrian Bridge:** An existing pedestrian bridge crosses over Concord Street/TH 156 approximately 3,600-feet south of the proposed grade separated intersection with Concord St./TH 156 (see phase/component D). This pedestrian bridge currently is a high-value constraint for moving freight from the port to Interstate 494 (or vice versa) along Concord St./TH 156, as it is too low to allow certain types of freight and loads to clear the structure. Resolving this constraint will serve to reduce the volume of trucks on the roads and will provide a more economical/efficient means of moving freight into and out of the port.

**J) New Access to North Side of Channel and Reconstruct Barge Channel Road:** Creating a new access route to the north side of the Southport terminal channel is a key component to increasing intermodal interchanges and transfers within the terminal. The businesses along the north side of the channel are currently moving up to 200-trucks per day in, and out of their businesses, along an existing access route that is convoluted and highly inadequate. The amount of freight movement will be increased by developing a new access road that provides direct access to the new grade-separated access to Concord Street/TH 156.

Additionally, the City of Saint Paul’s Comprehensive Plan identifies the importance of maintaining a working river. The plan classifies the Saint Paul Harbor as a regional, national, and international shipping port and highlights the importance of ongoing maintenance to the harbor and its facilities to support river-related industrial uses. In an addendum to the Saint Paul Comprehensive Plan, The West Side Community Plan, identifies development of a plan for the Barge Channel Road area as a high priority to, “Mitigate the industrial/residential land use issues and to identify mechanisms to reconnect the neighborhood with the river.” The reconstruction of Barge Channel Road will serve a multitude of purposes including (but not necessarily limited to) accommodating increased vehicular traffic to accommodate the expanded activity resulting from the improvements listed above and to allow seamless integration with construction of the Harriet Island to South St. Paul Regional Trail (HISSP).



The purpose of this trail is to provide improved connections to recreational facilities, as well as better access to jobs. With the completion of the grade separation and Barge Channel Road reconstruction, the associated trail and Barge Channel Road can be designed as a safe passageway for bicyclists and pedestrians to cross Barge Channel Road and the active freight rail lines.

**K) Expanded Multimodal Facility and Rail Yard:** The culmination of each project phase/component listed above results in the development of an expanded multimodal facility and rail yard to fully support growth in commodity and freight movements into, and out of the Saint Paul Port Authority's terminals. In addition, along with the grade separation, the enhanced multimodal facility and rail yard will eliminate several high-value constraints within the Saint Paul Port Authority terminals. The most prominent constraint within the terminals is the current inability to accommodate a unit train within the port. The new logistics park and rail yard will allow for the Saint Paul Port Authority's tenants to accommodate a 100-car unit train, which will have tremendous economic and

efficiency benefits. One of the more critical constraints of the Southport terminal is the stoppage of barge movements in the winter. In the near future, having the ability to continue a high-volume of commodity and freight movements throughout the winter via the new logistics park and rail yard would have a huge economic impact for the Saint Paul Port Authority, their tenants and the region as a whole. In addition, the new logistics park will be situated immediately adjacent to the new container storage and warehousing facility and will be less than a five-minute drive to TH 52, which is the closest freeway access to the site.

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AT-GRADE  
RAILROAD  
CROSSING

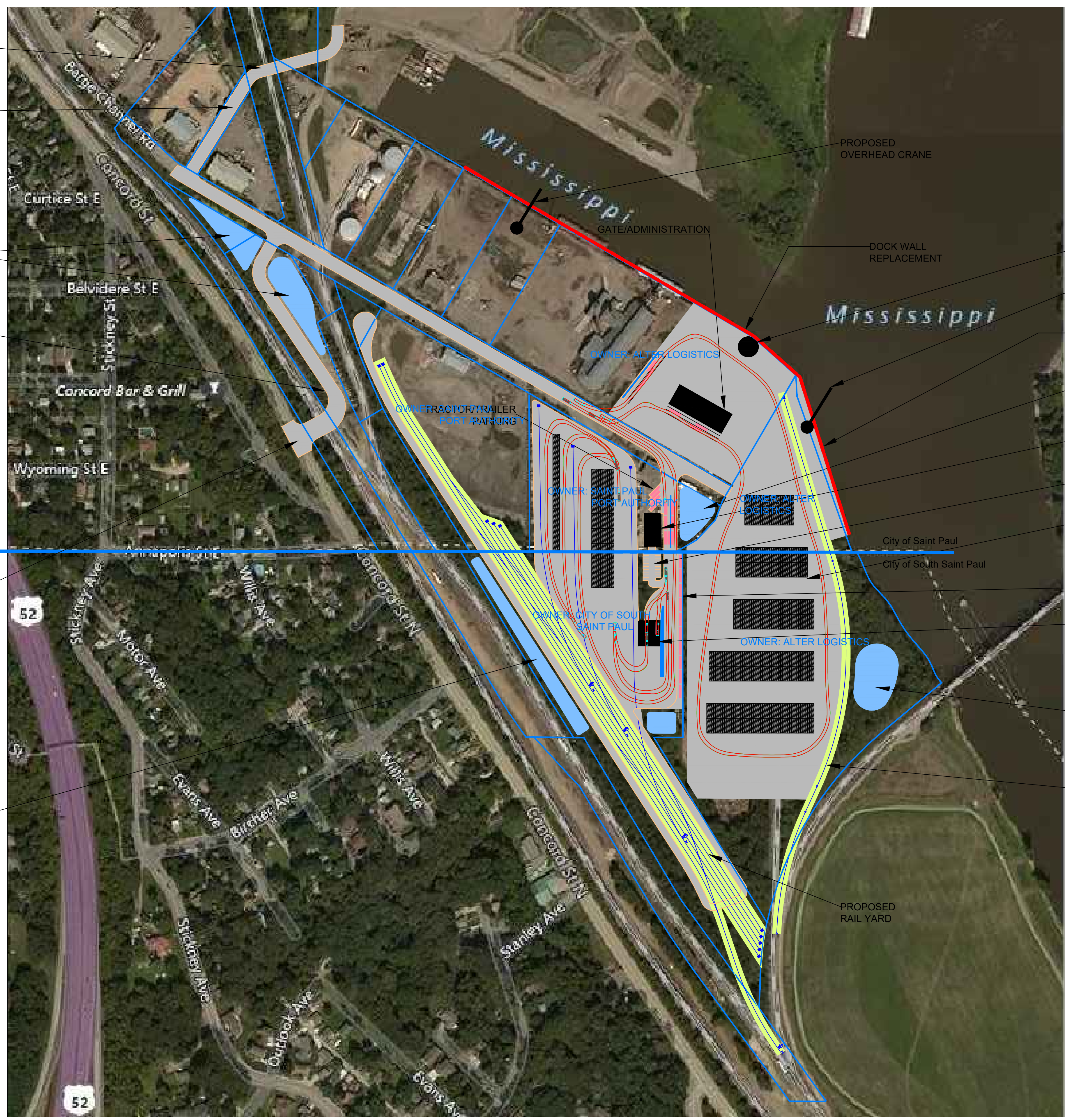
PROPOSED  
ACCESS ROAD

STORMWATER POND

NEW  
ACCESS ROAD AND  
BRIDGE

RECONFIGURE  
CONCORD (TH 156)  
INTERSECTION

PROPOSED  
STORMWATER  
POND



PROPOSED  
OVERHEAD CRANE

DOCK WALL  
REPLACEMENT

EXISTING  
HEAVY  
LIFT PAD

PROPOSED  
OVERHEAD CRANE

DOCK WALL  
EXTENSION

PROPOSED  
STORMWATER  
POND

GATE/ADMINISTRATION

EMPLOYEE PARKING

CONTAINER STORAGE  
AND/OR  
WAREHOUSING (TYP.)

CHASSIS STORAGE

PROPOSED  
MAINTENANCE/REPAIR FACILITY

PROPOSED  
STORMWATER  
POND

RELOCATED  
SPUR  
TRACK

PROPOSED  
RAIL YARD

CONFIDENTIAL

PROJECT NO.: 17100  
DRAWN BY: E. Beasley  
CHECKED BY: E. Beasley  
DATE: 06/10/17  
REVISION: 0

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
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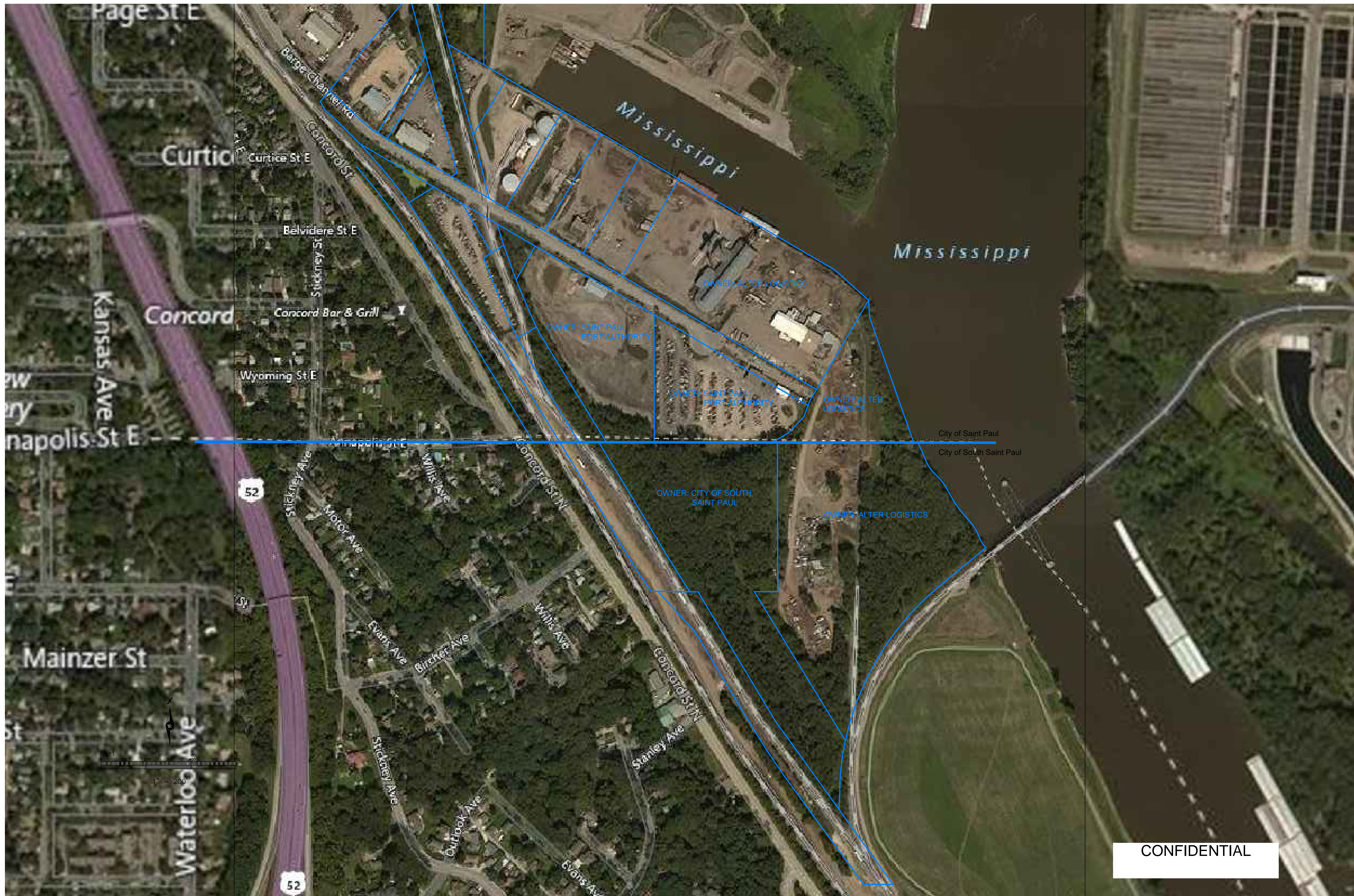
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SOUTHPORT TERMINAL INTERMODAL  
IMPROVEMENT PROJECT  
ST. PAUL, MN




EXHIBIT  
2





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|---|--|--|--|
|  | <b>SOUTHPORT TERMINAL INTERMODAL<br/>IMPROVEMENT PROJECT</b><br>ST. PAUL, MN   |  | PROJECT NO. 17100<br>DRAWN BY: E. Beasley<br>CHECKED BY: E. Beasley<br>DATE: 08/10/17<br>REVISION: 0 |
|   | I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.<br>ERIC W. BEZLEY, PE      Date: _____ Registration No. 43012 |  |  |