KRECH OJARD Baird SRF VICKERMAN & ASSOCIATES, LLC

DULUTH-SUPERIOR CRUISE SHIP TERMINAL FACILITY STUDY

PRELIMINARY SITE ASSESSMENT

FOR THE ARROWHEAD REGIONAL DEVELOPMENT COMMISSION
DULUTH-SUPERIOR METROPOLITAN INTERSTATE COUNCIL(ARDC/MIC)

May 2013

PHOTO TAKEN BY LYNN WEGNER

Table of Contents

May 17, 2013
Arrowhead Regional Development Commission/
Duluth-Superior Metropolitan Interstate Council (ARDC/MIC)
221 W. 1st Street
Duluth MN 55802

Executive Summary

The team of Krech Ojard & Associates, Vickerman and Associates, SRF Consulting Group, and WF Baird & Associates is pleased to present the results of the Duluth-Superior Cruise Ship Terminal Facility Study.

The study team was tasked to investigate the options and budgetary considerations for the construction of a cruise ship terminal to accommodate new security requirements for passenger cruise ships visiting the Duluth-Superior Port. Out of our research and discussions we have determined that the terminal needs to be located in an area that is close to existing amenities and part of an existing and robust infrastructure with easy access to Air, Bus, Car, Bike, and Pedestrian travel and possibly access to Rail travel in the future. Ultimately, the chosen location needs to be a good location for attracting Cruise Lines to the Duluth-Superior area.

During the research process of determining the size of the terminal facility, it became clear that additional work would need to be completed outside of this study. This additional information needs to come from an econometric study looking at the Cruise industry on the entirety of the Great Lakes. This additional study would need to also include how the industry would affect the economy of the states of Minnesota and Wisconsin, the cities of Duluth and Superior, and this study could be considered as part of a much larger conversation regarding cruise ships on the Great Lakes.

The following document is broken out into four sections. The initial section provides an overview of the programmatic requirements needed to determine how many people would be visiting the facility, what the largest ship to be used would be, and the minimum size (in square feet) the building needs to be. All other aspects of the study will be based on this initial information. To determine the number of passengers that would be using this facility, the study team looked at historic passenger throughput from 2010 to 2012. Then based on these numbers this information was cross referenced with the growth of the cruise ship industry on the Great Lakes and a passenger forecast for 10 years and 20 years was developed. This was done to make sure that any construction that happens today would take into account the growth of the industry 20 years from now.

The size of the ship that would call on the Duluth-Superior port is dependent on the number of passengers a terminal facility can handle and how deep the harbor is. Currently the MS Hamburg (formerly MS C. Columbus) is calling on Duluth-Superior and has the passenger capacity (420) with a draft (approximately 17’-0”) to fit the 10 year forecast of this study. To meet the 20 year forecast for passengers, a lager ship such as the MA Braemar needs to be able to call on the harbor. This ship has a passenger capacity of 733 and of draft of less than 18’-0”. Currently the depth of the port where the MS Hamburg has docked (adjacent to the DECC) has a depth of 19’-0”. Dredging would most likely need to happen at other locations around the Duluth-Superior harbor.

Executive Summary

Continued

Once the number of passengers was determined, the study team started to look at what the security requirements for the facility would be. If any foreign flagged ship was to make Duluth-Superior its first stop in the United States, then the facility would need to meet the United States Customs and Boarder Protection (USCBP) Design Standards. Currently the DECC and Aquarium has been able to address these issues in an ad hoc sort of arrangement. The USCBP allowed foreign flagged ships to dock in the Duluth-Superior harbor, but any future ships would need to disembark its passengers in a permanent, secured facility (and thus one of the major requirements to proceed with this study).

The USCBP classifies cruise ship passenger processing facilities by determining the maximum number of passengers processed at the peak hour of operation. Based on the study team's 20 year forecast, less than 600 passengers will be processed per hour. USCBP would then classify Duluth-Superior as a Small Cruise Ship Facility (a facility that processes less than 800 passengers per hour). Using the Space Requirement Matrix from the USCBP Cruise Terminal Design Standards, the total amount of square feet needed for USCBP Federal Inspection Services (FIS) would be 13,279 sf. Once all of the passenger/baggage handling square footage is added, the final tally for a stand-alone Terminal Facility building would be approximately **22,279 sf.**

Section 2 of the report looks at five different sites around the Duluth-Superior harbor and their benefits and concerns each site offers. Each site was evaluated for its connectivity to the surrounding urban areas, the existing amenities that are on or near the site, size of site for expansions to the terminal building, location within the urban centers, views and waterside considerations. The five sites that were picked were based on adjacency to the harbor, their capacity to handle a 23,000sf facility and infrastructure needs; some have been used as terminal sites in the past, and their adjacency to existing amenities. The five sites which included land adjacent to the Duluth Aquarium, Barker's Island in Superior, land behind the Bayfront Festival Park stage in Duluth, the Duluth Entertainment and Convention Center, and the Duluth Economic and Development Agency land called Lot D. Of these sites, the DECC was chosen as the top development site and Lot D was chosen as an alternate.

Section 3 takes a look at existing and upgrades to the infrastructure of the area and specific sites. The goal of the site evaluation is to identify a site that maximizes the use of existing infrastructure while accommodating the future needs of the Duluth-Superior Cruise Ship Terminal. The landside infrastructure needs study took into account the existing roadway network, the connection to the public transit system, public parking facilities, pedestrian/biking facilities and how truck routes would affect the different sites. These items were applied to each site and a matrix is used to review the existing conditions and the future needs of each site. The conclusion of this Landside Infrastructure Needs includes a summary of each of the sites, as well as an estimated cost per location.

Section 4 is the final portion of the report and is a discussion of our team's opinion of probable construction costs. For this estimate, only the square footage for a stand-alone cruise ship terminal facility is used. If another development is attached to the project, these costs will change based on the function of the facility. This estimate looks at the cost of construction for an addition and remodel of the DECC (the preferred choice) and a stand-alone building at Lot D. This is a 10,000 foot high estimate based on the known total square feet, basic function of the facility, infrastructure needs and waterside needs.

The sections outlined in this study have emerged from numerous meetings, site visits, e-mails and phone conversations regarding the development of a Cruise Ship Terminal Facility in the Twin Ports. The study team would like to thank you for all of the work that you, your staff and all of the stakeholders for their assistance in putting this comprehensive document together. Based on your ideas, we are hopeful that the Cruise Ship industry will make the Duluth-Superior area a permanent stop on their travels.

Please feel free to contact me at any time and we are anticipating a successful project in the future.

Sincerely,

Kane Tewes, AIA, LEED AP
Krech Ojard & Associates
227 W. 1st Street
Suite 200
Duluth, MN 55802

(218) 727-3282
kane.tewes@krechojard.com

ACRONYM DEFINITION GUIDE

AAPA	American Association of Port Authorities
ADA	Americans with Disabilities Act
ADIT	"Alien Documentation, Identification and Telecommunication System"
APHIS	Animal and Plant Health Inspection Service
ARDC	Arrowhead Regional Development Commission
B&A	"Bermello, Ajamil & Partners"
BCBP	Bureau of Customs and Border Protection
CBP	Customs and Boarder Protection
CTDS	Cruise Terminal Design Standards
DECC	Duluth Entertainment and Convention Center
DEDA	Duluth Economic Development Authority
DFO	Director of Field Operations
DHS	Department of Homeland Security
DLH	Duluth Airport
DSPA	Duluth-Superior Seaway Port Authority
DTA	Duluth Transit Authority
FIS	Federal Inspection Facilities
GIS	Geographical Information System
GLCC	Great Lakes Cruising Coalition
GRT	Gross Registered Tonnage
GT	Gross Tonnage
HP	Home Port
HQ	Headquarters
IAME	International Association of Maritime Economists
ICE	U.S. Immigration and Customs Enforcement
IMO	International Maritime Organization
INS	Immigration and Naturalization Service
ISPS	International Ship and Port Facility Security Code
JABS/IDENT	Joint Automated Booking System / Identification Room
JACC	Joint Admission/Congestion Control
LOA	Length Over All
MIC	Metropolitan Interstate Council
MnDOT	Minnesota Department of Transportation
MSA	Municipal State Aid
MSP	Minneapolis Airport
MTSA	Maritime Transportation Security Act
NSF	Net Square Footage
PC	Port of Call
PHS/CDC	Public Health Service / Centers of Disease Control and Prevention
SAC	Study Advisory Committee
SCS	Sterile Corridor System
SOLAS	Safety of Life at Sea
TDM	Travel Demand Management
TDMP	Travel Demand Management Plan
TIP	Transportation Improvement Program
TRB	Transportation Research Board
USCBP	U.S. Customs and Boarder Protection
USCS	United States Customs Service
WisDOT	Wisconsin Department of Transportation
WOA	Window of Accessibility

SECTION I

Mid-America's Gateway Cruise Terminal

Duluth-Superior Cruise Terminal Programmatic Requirements:

Project Overall Objective: The project study team established a security and facility program to create an environment that safeguards the Duluth-Superior Cruise Terminal Facility (hereinafter referred to as the "Cruise Terminal") people, property, and operations using the latest security requirements while protecting the terminal from exposure to threat or security incident-related liabilities.

Cruise Terminal Historical Throughput: The following table depicts the historical cruise passenger operational throughput for the years 2010, 2011, 2012.

Historical Cruise Terminal Passenger Throughput 2010 to 2012

Year	Actual Vessel Arrivals & Departures	Vessel Passenger Capacity	Home Port (HP) or Port of Call (PC)	Actual Pax. Processed in Duluth-Superior	Maximum Passenger per Vessel
2010	5 arrivals 5 departures	100 passengers	HP	401 inbound 292 outbound	500 inbound 500 outbound
2011	2 arrivals 2 departures	420 passengers	HP	400 inbound 400 outbound	420 inbound 420 outbound
2012	2 arrivals 2 departures	100 passengers	HP/PC	0 inbound * 0 outbound *	200 inbound 200 outbound

* US Flag Vessel under 300 GRT and exempt from security screening

Using the 2011 maximum figures above and assuming that the passengers were processed in a two hour period, the peak passenger per hour throughput per hour results in a 200 passenger per hour throughput factor.

Cruise Terminal Programmatic Requirements: The following analysis defines the general architectural and operational facility based program requirements for the proposed new Cruise Terminal considering a strategic planning horizon of approximately 10 to 20 years. These following program requirements should be viewed assuming that the Cruise Terminal facility operations will be incremental in nature and phased in over time as the cruise market demands using a market driven requirement for cruise terminal needs.

All phases of the Cruise Terminal should be market driven and should strive to fully employ all elements of any existing facility. The initial Cruise Terminal may be appreciatively smaller than the full build out Cruise Terminal operational needs.

SECTION I
DULUTH-SUPERIOR CRUISE TERMINAL PROGRAMMATIC REQUIREMENTS

Continued

The following table depicts a hypothetical phased Cruise Terminal development program predicated on the most recent historical Cruise Terminal throughput data:

Cruise Terminal Potential Development Program *
(A rough, cursory order of magnitude Cruise Terminal Passenger & Vessel Throughput)

Duluth-Superior Seaway Port Authority	Number of Cruise Vessel Calls	Cruise Passengers Peak / Hour USCBP Class	Vessel Home Port (HP) and /or Port of Call (PC)	Cruise Season or Planning Horizon
Actual Vessel Calls*	1 - 2	200	HP	2010
Actual Vessel Calls*	1 - 2	200	HP	2011
Actual Vessel Calls*	2	100 - 200	HP/PC	2012
10 Year Forecast	3 - 4	Estimated: 200 - 400	HP/PC	2022
20 Year Forecast	6 - 8	Estimated: < 600	HP/PC	2032

* Data and information partially derived from the Cruise Terminal Study Kick-Off Meeting on October 11, 2012 and Port of Duluth-Superior information.

Cruise Vessel Operating Parameters for Duluth-Superior Harbor: Lake Superior, the largest of the five Great Lakes, is an emerging market for cruise and ferry passengers. The Port of Duluth-Superior is located at the far western edge of Lake Superior and is the navigational western anchor for the Great Lakes/St. Lawrence Seaway navigational system, being the number one Great Lakes/St. Lawrence Seaway Port by tonnage with over a 1,000 vessels calls a year.

The navigational season for the Great Lakes is generally March 25 to January 16 each year and is seasonally adjusted. The constraining vessel dimensions for the St. Lawrence Seaway Locks is a maximum length of 740 ft., a beam of 78 ft. and a draft of 26 ft. 9 in. Duluth-Superior Harbor is an ideal naturally protected harbor sanctuary for navigational vessels and has full St. Lawrence Seaway channel (27 feet) depth.

Cruise vessels have called on the Twin Ports in recent years, but it has been decades since the Port of Duluth-Superior enjoyed regular cruise vessel service or served as an origin/destination hub for cruise passengers and cruise vessels.

The Need for a Cruise Passenger Market Forecast Econometric Study

Cruise Terminal Passenger Market Forecast Econometric Study Requirements: Prior to any site development or initiation of design or construction activity for the proposed new Cruise Terminal, it is highly recommended that a market driven comprehensive cruise passenger econometric market forecast be prepared with a planning horizon of approximately 20 years. The contemplated Cruise Terminal development program should only be undertaken based on reliable, defendable, and pragmatic market demand forecasts and market driven requirements.

SECTION I
DULUTH-SUPERIOR CRUISE TERMINAL PROGRAMMATIC REQUIREMENTS

Continued

The new Cruise Terminal development should be market driven in all respects. In general the Great Lakes Cruise Marketplace is a small vessel market with vessels currently in the 100 to 500 passenger capacity range. Any future cruise market analysis must recognize the unique limited inventory of the seaway size vessel.

The future estimate of Cruise Terminal throughput projections and vessel sizes included in this study is based on professional opinion and subjective programmatic estimates not based on econometric forecasts and cruise passenger market projections. The Cruise Terminal throughput projections in this study are provided only as a rough order of magnitude and cursory indicator of potential Cruise Terminal passenger and vessel throughput in order to determine the appropriate security and facility requirements.

The Duluth-Superior Seaway Port Authority (DSPA) is a member of the Great Lakes Cruising Coalition (GLCC) which was established in 1997 and is an organization which advocates passenger cruising on the Great Lakes. It represents the publicly owned assets and is comprised of American and Canadian port cities and towns, various significant Port Authorities, several U.S. States, the Canadian Province of Ontario and the St. Lawrence Seaway.

The GLCC was formed as a result of imaginative thinking, which envisaged world class cruise ships "steaming" along the St. Lawrence Seaway, navigating the fascinating system of locks, thereby “climbing the Niagara Escarpment” and cruising into the Great Lakes. The Great Lakes Cruising Coalition (GLCC) is committed to supporting world class passenger ship cruising on the Great Lakes.

What the Great Lakes Cruise Line Industry is looking for:
Generally every cruise terminal project must begin with a market driven passenger econometric forecast of future market demand. The following are additional expectations of cruise lines as they search for new itineraries and ports of call:

- A financial package that makes economic sense for the cruise line.
- A location where the cruise line is wanted and welcomed.
- Stability in agreements associated with the cruise ship terminal.
- An atmosphere where all parties work together to achieve mutual benefits.
- A port experience that enhances the cruise passenger experience.
- A real commitment from the port and community to work together for mutual benefit.

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Conceptual Design Vessel Requirements:

Design Cruise Vessel Characteristics by Development Year (Planning Horizon):
The study team reviewed the cruise vessel call history for the Duluth-Superior Seaway Port Authority from 2010 to 2012. The following chart depicts the various Cruise Terminal - Conceptual Design Vessels at various cruise seasons/planning horizons (development years).

Cruise Terminal - Conceptual Design Vessel Characteristics:
(by Cruise Season - Planning Horizon Data)

Design Vessel	Vessel Length Over All (LOA)	Vessel Maximum Draft	Vessel Gross Tonnage (GRT)	Vessel Beam	Vessel Passenger Capacity	Cruise Season - Planning Horizon
Current Year: MS Columbus / MS Hamburg	**472 ft. - 10 in.**	**16 ft. - 11 in.**	**15,067**	**70 ft. - 6 in.**	**420**	**2012**
10 Year Design Vessel (MS Hamburg)	**472 ft. - 10 in.**	**16 ft. - 11 in.**	**15,607**	**70 ft.- 6 in.**	**420**	**2022**
20 Year Design Vessel (MS Braemar)	**537 ft.**	**17.7 ft.**	**19,089**	**74 ft.**	**733**	**2032**

2012 to 2022 Cruise Terminal - Conceptual 10 Year Design Vessel: MS Hamburg
The 2012 to 2022 Planning Horizon conceptual design vessel is the **MS Hamburg** (Formerly MS C. Columbus), Built: 1977, Owned by Hapag-Lloyd, Operated by Plantours & Partner of Bremen (Plantours) and registered in the Bahamas. The MS Hamburg is also the largest cruise vessel to call within Duluth-Superior Harbor. This is the design vessel for the Planning Horizon of 2012 to 2022 and remains the same as it is for today's operations of the cruise terminal. The MS Hamburg was also the design vessel for the new Detroit Cruise Terminal project.

MS Hamburg (Formerly MS C. Columbus) - Design Vessel for Planning Horizon of 2022:

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Continued

The Evolution of Today's Cruise Vessel Fleet:
Cruise vessels have undergone a dramatic evolution in vessel size and complexity from the 1960 through the 1990s as illustrated below.

Length Overall	Passengers	Draft (feet)
400 ft. (1960s)	400 - 500	Up to 30
500 ft. (1970s)	500	20 - 36
800 ft. (1980s)	1,200	26 - 30
900 ft. (1990s)	2,500	Less than 28

This cruise vessel evolution continues today. Today the largest cruise vessel in the world is the ***MS Oasis of the Seas*** with a Gross Registered Tonnage (GRT) of 225,282; a Beam 122 ft. and a Passenger Capacity of 5,400 not including the dedicated 1,800 crew.

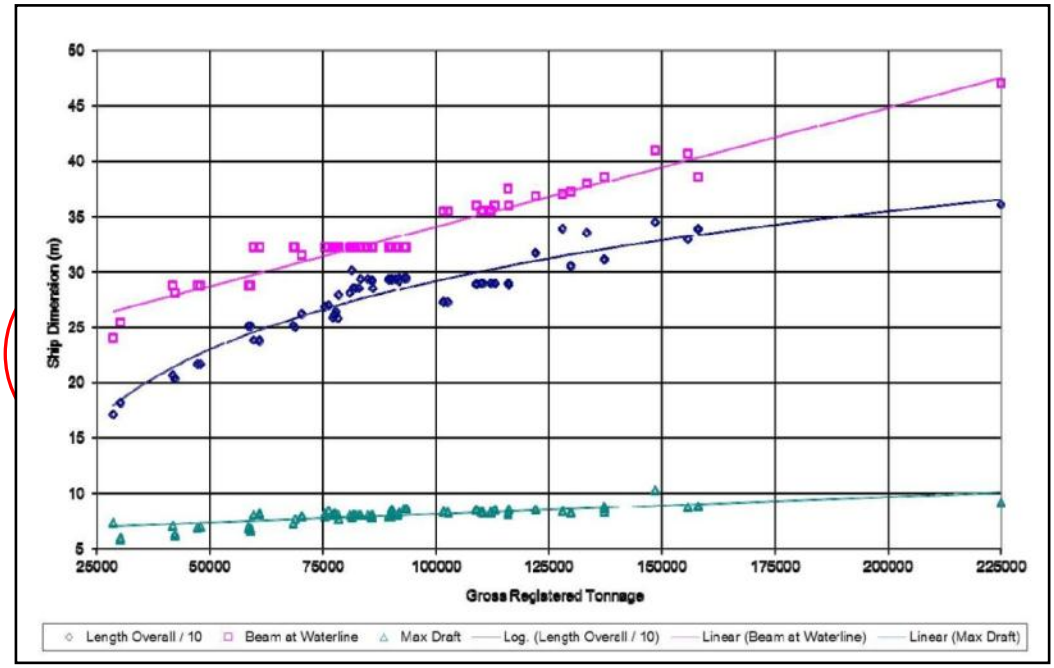
The cruise giant Royal Caribbean has confirmed it has negotiated to build another sister vessel to the MS Oasis of the Seas. The first MS Oasis of the Seas and a previously built sister ship, MS Allure of the Seas, debuted in 2009 and 2010, respectively and are pictured below.

The Oasis of the Seas vessel is nearly five times the size of the Titanic.

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Continued

A graphical summary of the size and capacity trends in cruise ships built since 1997 and for those ships under construction or contract through 2012 are presented below. The trend data is based on dimensions and Gross Registered Tonnage (GRT) for 116 ships. The data comes from various sources including Lloyd's Register of Ships, the cruise lines, and cruise industry publications. Note that the beam limitation of 78ft (23.7 m) is at the extreme low end of the curve with very few vessels in this range.



Overview of Selective Current Great Lakes Cruise Vessel Characteristics: The following five cruise vessels generally describe the current range of the Great Lakes cruise ship fleet and is presented here to illustrate the type and size of cruise vessel currently active in the Great Lakes cruise industry.

1. **Pearl Sea Cruise Vessel** (Under Construction)

Pearl Sea Cruise Vessel Side Profile

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Continued

Pearl Sea Cruise Vessel Deck Plans

Pearl Sea Cruise Vessel Characteristics (Under Construction: Ship Registry: Republic of the Marshall Islands)				
Gross Tonnage	**Length Over All (LOA)**	**Beam**	**Draft**	**Passenger Capacity**
19,089 GT	335 ft.	56 ft.	12 ft.	210

2. MS Hamburg (Formerly MS C. Columbus) Selected Design Vessel for the Duluth-Superior Cruise Ship Terminal.

MS Hamburg Vessel Characteristics (Formerly MS C. Columbus Built: 1977, Owned by Hapag-Lloyd, Operated by Plantours & Partner of Bremen (Plantours)					
Gross Tonnage	**Length Over All (LOA)**	**Beam**	**Draft**	**Passenger Capacity**	**Crew Capacity**
15,067 GT	472 ft. - 10 in.	70 ft. - 6 in.	16 ft. - 11 in.	420	170

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Continued

The MS Hamburg is the largest ship to cruise the Great Lakes in recent years; she first came into the Great Lakes in 1997. MS Hamburg is owned by the Hapag-Lloyd cruise line. Hapag-Lloyd Cruises' 14,903-ton Columbus became Plantours' Hamburg in the spring of 2012.

3. MS Le Levant

MS Le Levant Vessel Characteristics (Expeditionary Cruise Ship, Class & type: Germanischer Lloyd 100 A5 E3)					
Gross Tonnage	**Length Over All (LOA)**	**Beam**	**Draft**	**Passenger Capacity**	**Crew Capacity**
3 504 UMS	330 ft.	46 ft.	11.5 ft.		

4. MV Orion (Expeditionary Cruise Ship)

MV Orion Vessel Characteristics (Expeditionary Cruise Ship, Class & type: Germanischer Lloyd 100 A5 E3)					
Gross Tonnage	**Length Over All (LOA)**	**Beam**	**Draft**	**Passenger Capacity**	**Crew Capacity**
4,050 GT	337 ft.	46 ft.	12.6 ft.	106	75

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Continued

5. MS Yorktown

MS Yorktown Vessel Characteristics
(Expeditionary Cruise Ship, Class & type: Germanischer Lloyd 100 A5 E3)

Gross Tonnage	Length Over All (LOA)	Beam	Draft	Passenger Capacity	Crew Capacity
GT	257 ft.	43 ft.	8 ft.	138	

2032 Cruise Terminal - Conceptual 20 Year Design Vessel for the Port of Duluth-Superior:
The assumption is made that the future Great Lakes Cruise Vessels will follow the general industry trend and gradually increase in size and passenger capacity although not as rapidly as the general industry. Estimating a design vessel for a Planning Horizon out 20 years is difficult but provides a meaningful guide to insure that the Cruise Terminal designed in 2013/2014 will provide flexibility and expandability to handle the future 20-year Design Cruise Vessel or so that the infrastructure can be designed to easily be adapted (at low cost) to accommodate such a design vessel.

With full St. Lawrence Seaway Channel depth at 27 feet, it is possible that larger deeper draft cruise vessels as compared to today's cruise vessels could be deployed within in the Great Lakes. The seaway size vessel restrictions are generally a length over all (LOA) of 740 ft., a beam of 78 ft., a draft of 26.3 ft. and an air draft of 116.5 ft. As general information, the Soo Locks dimensions are: 1,100 ft. length, 105 ft. beam and a draft of 27 ft. The Soo Locks may fluctuate with Great lakes water levels.

The 2032 Cruise Terminal Conceptual Design Vessel was selected to meet seaway size ship dimensions (LOA: 740 ft., beam: 78 ft., draft: 26.3 ft. and an air draft of 116.5 ft.)

Consideration of Current Water Depth Along Side Wharf Infrastructure in Duluth - Superior Harbor: Considering the enormous cost of new dredging and the regulatory hurdles that are faced by increasing current quay side navigational water depth, it is recommended that that the water depth of 19 feet be maintained as the controlling water depth. Thus the recommendation is to limit the vessel draft to 19 feet or less.

SECTION I
CONCEPTUAL DESIGN VESSEL REQUIREMENTS

Continued

An example of an illustrative conceptual design vessel follows conforming to a seaway size vessel limitation (maximum length of 740 ft., maximum beam of 78 ft. and a maximum draft of 26 ft. 9 in. with a draft of less than 19 ft. being preferable). This following 2032 Conceptual Design Vessel is a hypothetical assumption and is used for descriptive purposes to illustrate the maximum theoretical design vessel characteristics to the Planning Horizon of 2032 for the cruise terminal.

2032 Conceptual Design Vessel Example: MS BRAEMAR

Cruise Line: Fred Olsen Cruise Line, Registered: The Bahamas. Formerly: Crown Dynasty; Norwegian Dynasty; Crown Majesty; Cunard Dynasty.

Conceptual 2032 Design Cruise Vessel Characteristics:

MS Braemar Vessel Characteristics (Since 2001, built in 1993 by Union Navale de Levante)				
Gross Tonnage	**Length Over All (LOA)**	**Beam**	**Draft**	**Passenger Capacity**
19,089 GT	537 ft.	74 ft.	17.7 ft.	733

SECTION I
CRUISE TERMINAL EMERGING FACILITY TRENDS AND IMPACTS

Cruise Terminal Emerging Facility Trends and Impacts

Cruise Terminal Emerging Facility Trends:

This section discusses emerging facility trends in the cruise ship industry throughout North America handling passengers both domestically and internationally. The following trends identify some of the key elements included in completed cruise terminals that are setting future design and facility standards for the cruise industry. The trends considered include wharf design, vessel size considerations, passenger/cargo-handling techniques, cargo storage methods, gate design, security measures, and modes of operation for landside cargo handling. Many if not most of these trends are applicable to the new cruise terminal planned for the Duluth-Superior Harbor and as such should be incorporated into the planning and design of the new cruise terminal.

General cruise industry trends predicts increasing cruise ship lengths and larger cruise passenger capacities for the facility design vessel, the Study Team is therefore recommending that the cruise terminal infrastructure be designed to accommodate the future requirements of this larger projected design vessel.

SECTION I
CRUISE TERMINAL EMERGING FACILITY TRENDS AND IMPACTS

Continued

One of the industry trends involves use of gangway systems and multiple story cruise terminal infrastructure which could influence the Duluth-Superior Cruise Terminal Planning.

Cruise terminal facilities need to consider several trends for having significant impacts on terminal facility elements, namely:

- Type and number of passenger boarding bridges (gangways).
- Limits of gangway "window of accessibility" (WOA).
- The capacity of the passenger and baggage drop-off and pick-up area, called the intermodal zone, which provides access for the buses, automobiles, vans, taxis, and other vehicles that carry passengers and their baggage to and from the cruise terminal.
- Baggage-handling areas.
- Federal Inspection Facilities (FIS).

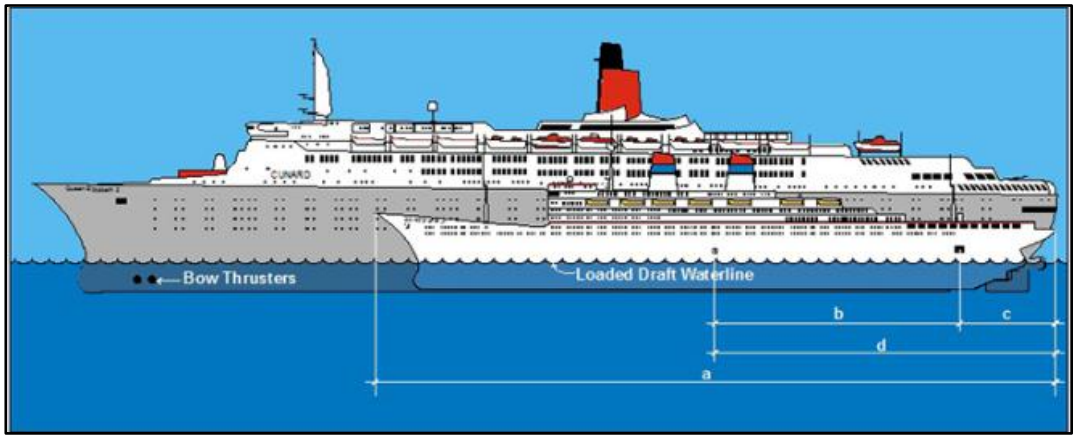
Passenger Gangway Boarding Bridges and Window of Accessibility (WOA): The following gangway boarding bridge requirements and access requirements were generally derived from information and graphics in the Port Everglades Cruise Terminal Master Plan.

The WOA is defined by both a vertical and a horizontal dimension as illustrated in the following graphics. The maximum WOA with the greatest range of vertical and horizontal dimension provides access to the largest number of cruise ship side ports in today's cruise vessel fleets as well a maximum flexibility for future cruise vessel operations.

Because of the difficulty of predicting long term facility needs cruise terminals must be sufficiently flexible to accommodate a wide range of cruise ship geometries that may call at the cruise terminal in the future.

Using previous cruise terminal design illustrations, the graphics below depict the wide possible range of geometries for cruise vessel side access ports and the need for a flexible WOA.

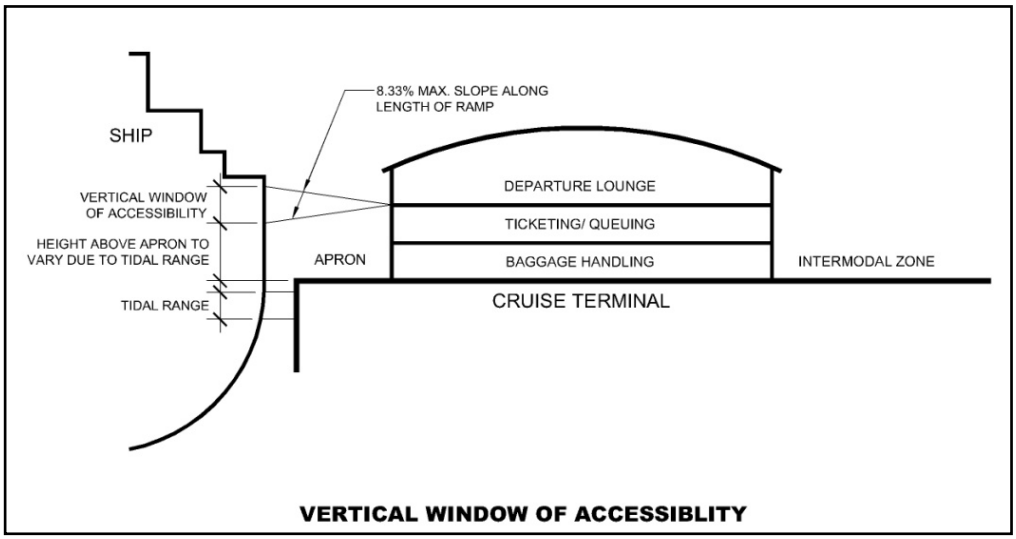
The example is from Honolulu Harbor - Aloha Tower Development Corporation Project, illustrating substantial variances for vessel side-port access.



SECTION I
CRUISE TERMINAL EMERGING FACILITY TRENDS AND IMPACTS

Continued

The vertical WOA is illustrated below for a three level cruise terminal design:



VERTICAL WINDOW OF ACCESSIBLITY

The WOA is also determined by the ramp slope of the boarding bridge, inasmuch as the slope must comply with Americans with Disabilities Act (ADA) requirements. The ramp slope must not exceed 1 vertical unit in 12 horizontal units. The WOA is also affected by the harbor tidal and surge range, which determines the vertical height of the passenger break above the apron.

The passenger gangway bridge provides passenger connection to the ship and must be designed to allow both horizontal and vertical ship movements and be provided with specific safety equipment such as a safety net and devices warning of ship movement and other requirements such as local labor agreements and work rules.

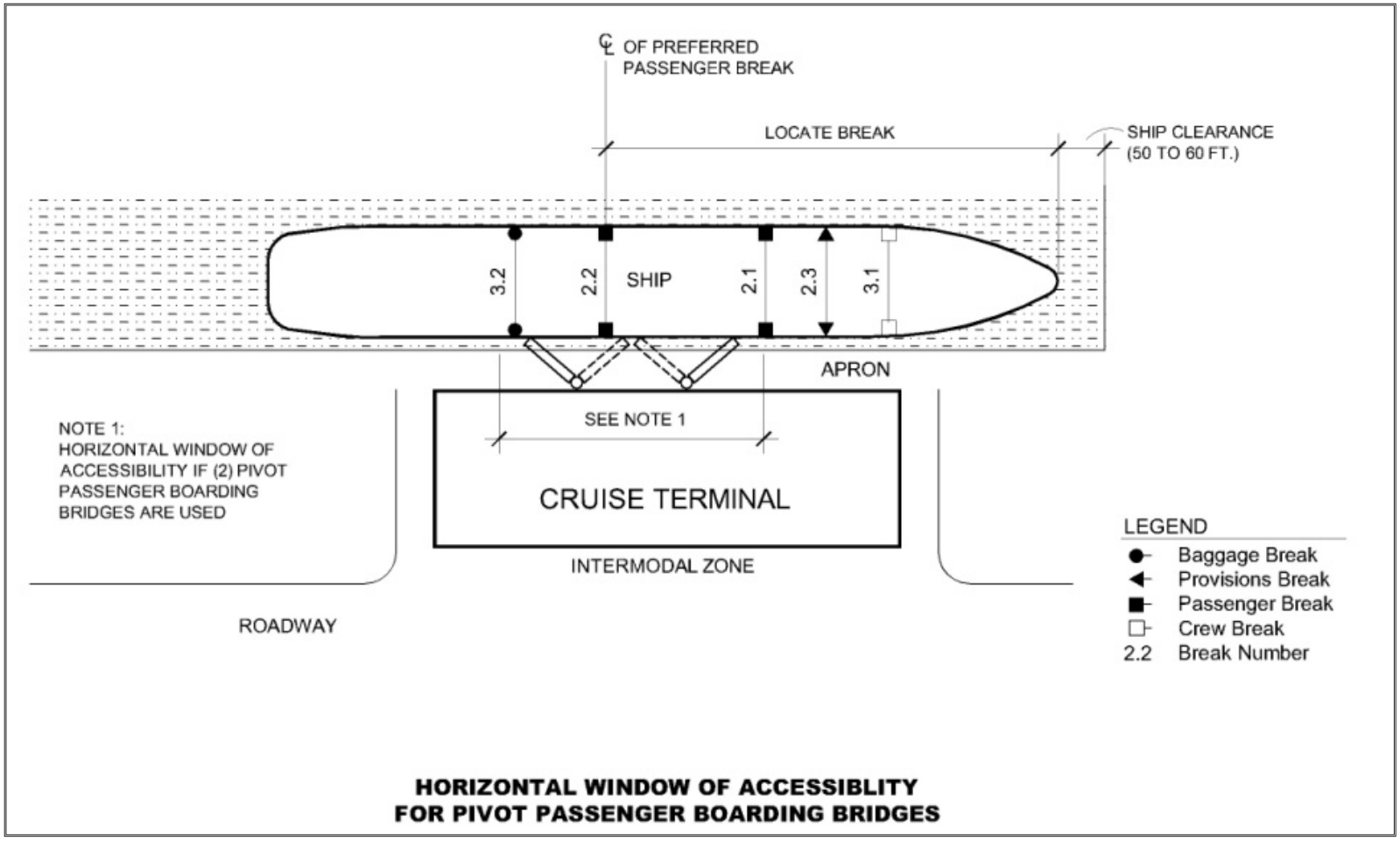
A cruise terminal must thus maximize the WOA for passengers to enter and leave the current cruise vessel calling at the port as well as accommodate the new generation of cruise ships. Because all ships have different side access port locations, which also differ from port side to starboard side on the same ship, and because cruise vessels are of different lengths, it is critical to allow access to as many passenger access port openings as possible on the various cruise ships via the passenger gangway boarding bridge.

Many cruise terminals today deploy passenger-boarding bridges that are of the pivot type. The horizontal WOA for a pivot type gangway bridge is illustrated on the next page.

SECTION I
CRUISE TERMINAL EMERGING FACILITY TRENDS AND IMPACTS

Continued

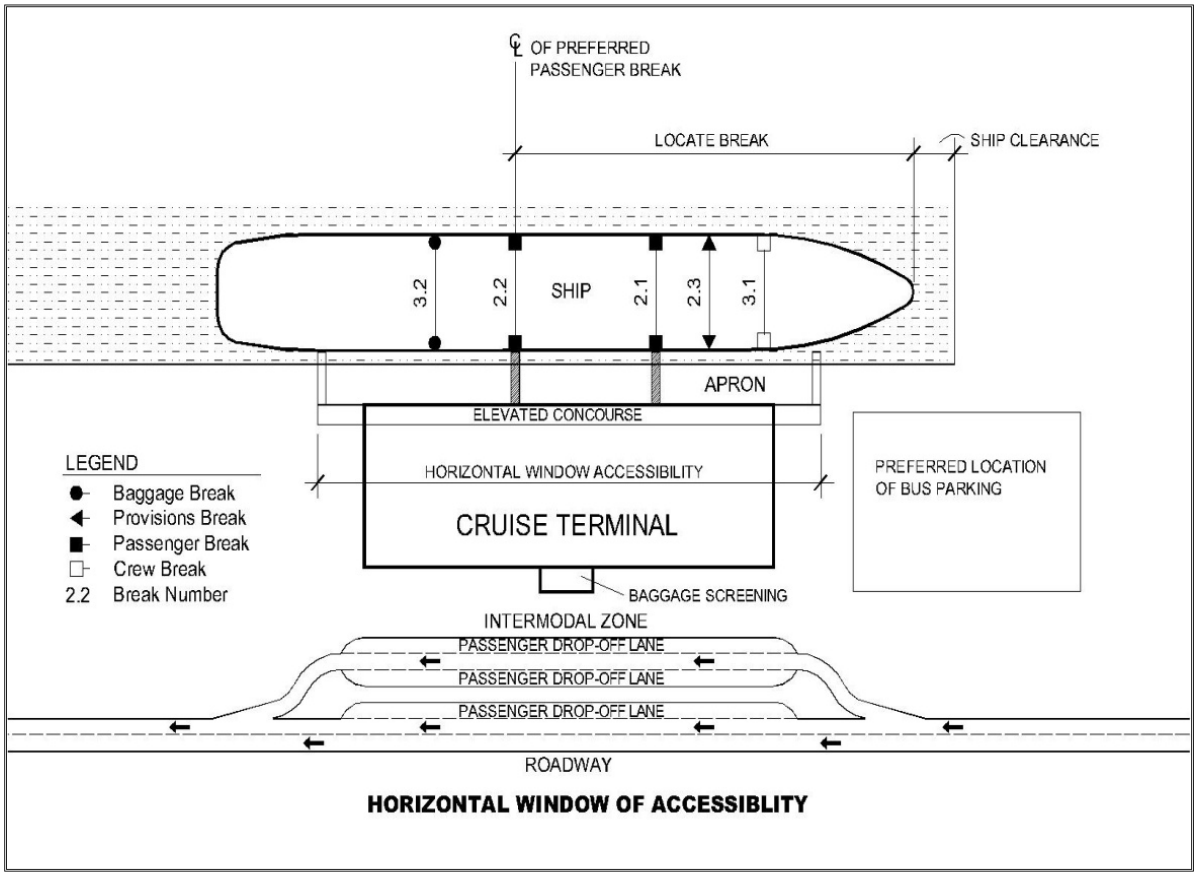
The Horizontal WOA is illustrated below for a three level cruise terminal design:



HORIZONTAL WINDOW OF ACCESSIBLITY FOR PIVOT PASSENGER BOARDING BRIDGES

Intermodal Transportation Zone - Passenger Drop Off and Pick Up:

A cruise passenger's first and last experience at the cruise terminal is the intermodal zone where buses, taxis, shuttles, and private automobiles load and unload those taking the cruise and their baggage.



Some cruise lines offer their customers the opportunity to have their baggage transported to their departure airport through a private carrier. This procedure allows cruise passengers to hand their baggage over to the carrier, after processing through the federal inspection services at the cruise terminal, and pick up their baggage at their destination airport. Cruise lines may also offer through baggage services from the departure airport to the cruise ship and on-board airline check-in for the return home.

Baggage-Handling Areas.

When planning the footprint cruise terminals, the baggage-handling area will be the largest area to program. Generally, one square meter or 10 square feet per passenger is the minimum needed to lay down the baggage. To this floor area, main circulation aisles, egress, and vertical circulation elements need to be added along with federal inspection service requirements, restrooms, etc.

Federal Inspection Facilities:

A "USCBP Cruise Terminal Design Standards" have been developed. The design standards should be implemented into the planning and final design of future cruise terminals at the Port, including any renovations to existing waterfront facilities. Please refer to the following Facility Security Requirements Section.

USCBP FIS Facility Security Requirements:

Background: Great Lakes Cruising Industry Security Impacts:

The following section is taken from the published document titled "*Regulations and Policies That Limit the Growth of the US Great Lakes Cruising Market*" published by the University of Wisconsin-Superior, Paper No. 02-21:1 National Center for Freight & Infrastructure Research & Education College of Engineering, Department of Civil and Environmental Engineering, authored by Richard Stewart, Ph.D. University of Wisconsin-Superior, at the 2011 IAME Conference.

The New Maritime Transportation Security Act (MTSA) rules that took effect in July of 2004 forced U.S. ports to handle foreign-flagged cruise ships that carry a large number of foreign citizens more carefully to guard against terrorism. While the MTSA aims to enhance port security, and requires ports and vessels to control access to their sites, monitor activity, and screen baggage, cargo, personnel and vehicles; port cities are forced to find ways to cover the expenses of security enhancements and meet the implementation deadlines necessary to remain in compliance with changing regulations.

Great Lakes ports that service passenger ships need to meet new and stringent U.S. Customs and U.S. Coast Guard requirements for passenger terminals. For ports such as Ft. Lauderdale that handle significant passenger traffic the added cost of new or retrofitted passenger terminals can be absorbed through the high traffic volume. Because the cruise trade has been slight for so many years on the smaller Great Lakes ports most have no terminal facilities much less U.S. Customs approved ones.

Great Lakes ports that want to induce cruise ships to visit face a significant cost barrier to becoming cruise stops even if the port is currently an approved U.S. Customs Port of Entry. In the spring of 2011 the Detroit/Wayne County Port Authority opened a $21.5 million riverfront facility to attract cruise ships. The project has taken nearly 20 years to get off the ground.

SECTION I
USCBP FIS FACILITY SECURITY REQUIREMENTS

Continued

The Duluth-Superior Port Authority has taken a very proactive and cooperative approach in working with U.S. Customs and the U.S. Coast Guard adapting at a significant cost to the Port Authority a waterfront sited facility such as the Great Lakes Aquarium as a modified cruise terminal. This adaptation was only temporary and the federal agencies have made it clear that this was only a short term fix to grow the cruise business.

For the most part, the U.S. Customs has been very helpful to Great Lakes ports by granting temporary exemptions, but the agency is bound by laws that were designed with large passenger volume costal ports in mind. Coupled with the cost of new terminals is the reality that U.S. Customs districts may elect to have different standards for clearing passenger ships calling at different ports of entry on the Great Lakes.

The President of Great Lakes Cruise Company, acknowledged that security concerns have complicated non-domestic cruise operations and that constantly changing rules have added to the confusion. In September 2007, the German cruise ship M/V Columbus had planned to disembark passengers in Chicago, IL, but according to a Duluth-Superior News Tribune article in February of 2008, “Homeland Security Officials rejected the itinerary, saying the city lacked a marine terminal with appropriate security and screening facilities to receive foreign travelers. Efforts to reroute the vessel to Milwaukee or Duluth-Superior apparently met with the same objection." Passengers eventually had to be transferred into lifeboats while the Columbus was anchored in the St. Mary’s River. The lifeboats docked in Canada where the cruise line operator, Hapag-Lloyd, chartered a bus to bring the passengers to an established border crossing to clear customs before they could return to the Columbus and continue their trip to Chicago.

During the summer and early fall of 2009, the M/V Clelia II, a 100 passenger overnight vessel, made voyages between Duluth-Superior and Toronto. Pearl Seas Cruise Line's M/V Pearl Mist, an all-suite 214 - passenger luxury vessel, made its inaugural cruise in March of 2009. While most of the Great Lakes itinerary for the M/V Pearl Mist was near the St. Lawrence Seaway, two extended trips (10 and 11 nights) included Georgian Bay in Lake Huron.

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

USCBP Design Standards For Cruise Ship Passenger Processing Facilities Requirements:

The USCBP Design Standards for Cruise Ship Passenger Processing Facilities herein referred to as Cruise Terminal Design Standards (CTDS) reflect US national policy, procedures and facility development standards for the design and construction of USCBP Cruise Ship Passenger Processing Facilities. These technical design standards are to serve as the primary reference document for Municipal Port Authorities, Architect / Engineering consultancies, port operators, transportation lines, and all USCBP personnel involved with the planning, design, renovation and development of USCBP Cruise Ship Passenger Processing Facilities.

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

Alternate or equivalent means, exceptions and deviations to these standards may be proposed to meet a specific requirement of the CTDS for review and approval by the Director, Field Operations (DFO) with concurrence from USCBP Headquarters (HQ). In many cases it may be beneficial to conduct an initial planning workshop session with key stakeholders in the design and operations of the proposed Cruise Terminal including local USCBP officials as well as other governmental agencies. This workshop session can result in mutual agreement on design parameters and requirements that may be variance to the CTDS standards.

At USCBP Cruise Ship Passenger Processing Facilities in the United States, the sterile USCBP Federal Inspection Services (FIS) area includes ship arrival gangway vestibules, the Sterile Corridor System (SCS), baggage claim, passenger processing areas and the CBP / FIS office and support areas.

The USCBP passenger processing facility must be separated physically and visually from the non-sterile / public areas and other outside areas. This separation includes a wall structure that goes from the floor to the underside of slab of the structure above to establish a sterile environment. The FIS area must be designed so that arriving passengers or crewmembers cannot bypass the processing area or interact with the public prior to USCBP processing.

After disembarking, the passengers move through the sterile corridor to the USCBP Primary Processing Area and then to baggage claim to collect their baggage. Beyond the baggage claim area, passengers proceed to the secondary processing area or to the main USCBP Exit Control Area.

A USCBP Cruise Ship Terminal FIS Facility is located within cruise ship terminals utilized for USCBP primary and secondary passenger processing operations. The facility may be used to accommodate permanent USCBP staff or personnel dispatched from a nearby location on a temporary or as needed basis.

USCBP classifies cruise ship passenger processing facilities by determining the maximum number of passengers processed at the **peak hour of operation**:

Small cruise ship facilities: Processes less than 800 passengers per hour

Mid-size cruise ship facilities: Processes 800 to 2,000 passengers per hour

Large cruise ship facilities: Processes 2,000 passengers or more per hour

Based on the above criteria and considering past cruise ship terminal throughput within Duluth-Superior Harbor as well as the previous study section discussion on design vessel designations, the Cruise Terminal in Duluth-Superior Harbor will be rated as a "Small Cruise Ship Facility by USCBP.

The study team has selected the 400 and 600 passenger per hour criteria respectfully as the 2022 and 2032 passenger throughput factors.

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

Using the "**Space Requirements Matrix**" from Section 3.2 of the USCBP CTDS the following table provides a summary of the USCBP FIS minimum facility space requirements for the Duluth-Superior Harbor Cruise Terminal.

USCBP CTDS Table of Minimum FIS Space Requirements

USCBP FIS Component	Net Square Footage (NSF) at 400 PPH	Net Square Footage (NSF) at 600 PPH	Remarks
Gangway/Sterile Corridor System (SCS)	Required - Varies	Required - Varies	
Primary Processing Area	6,004 sf.	8,644 sf.	Primary Booths increase from 4 to 6
Secondary Processing	2,836 sf.	2,986 sf.	Increase in secondary passenger queue & referral
Secondary Operations and Support Area	310 sf.	310 sf.	
USCBP Officer/Staff Areas	931 sf.	1,079 sf.	Increase in USCBP offices from 4 to 6
Exit Podium	180 sf.	180 sf.	
Preclearance Facilities	80 sf.	80 sf.	
Total USCBP FIS Area	**10, 341 sf.**	**13,279 sf.**	
Recommended Duluth-Superior Cruise Terminal USCBP FIS Floor Space Requirement: 13,279 square feet			

The 600 passenger peak hour throughput factor may be the most applicable for the development of the Duluth-Superior Cruise Terminal which would permit the FIS function to accommodate anticipated future cruise vessel size increases and vessel call frequencies.

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

Figure 2-2 from the USCBP CTDS recommends the following flow of traffic in single floor (one level) passenger processing facilities at U.S. seaports:

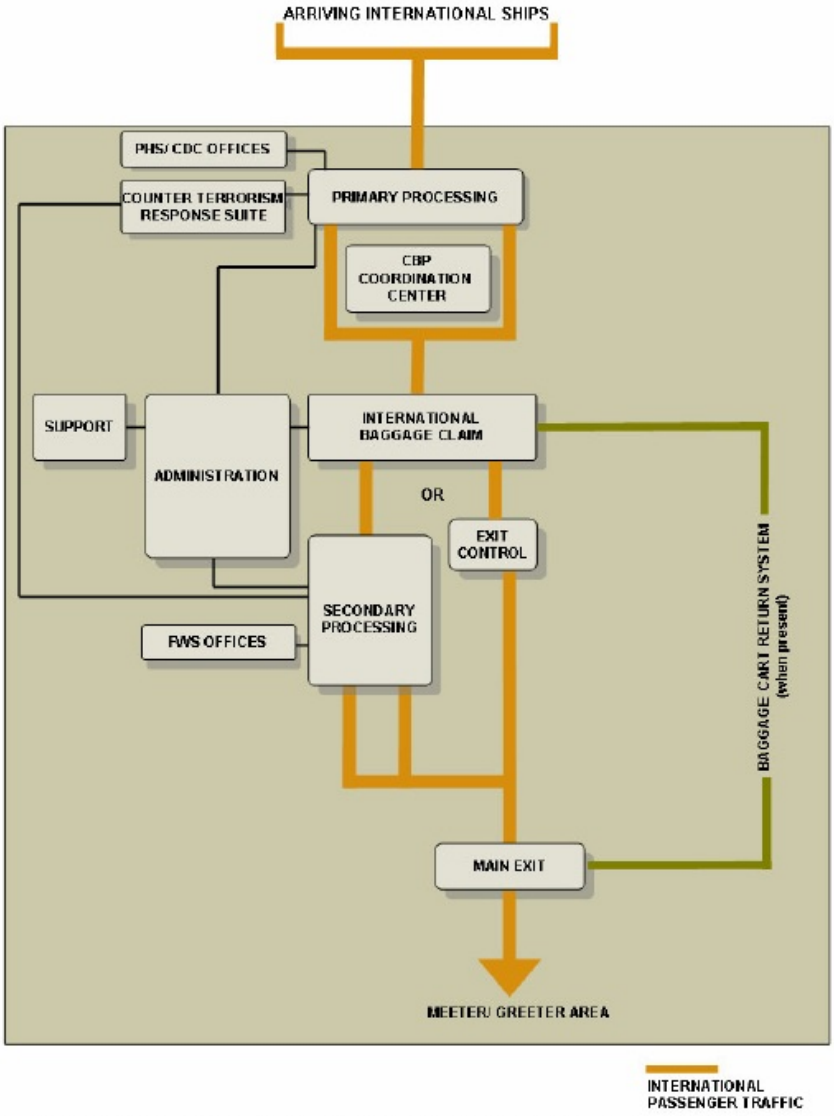


Figure 2-2 Flow of traffic in single level passenger processing facilities at U.S. seaports

In response to a significant increase in border control mandated by the DHS and a heightened awareness of the growing risk to the safety of CBP officers working in foreign countries, CBP has substantially altered the required design standards for all preclearance locations.

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

Before entering the CBP Preclearance facility, all passengers and crewmembers, regardless of country of origin, must pass through host country security screening processes. Passengers and crewmembers will be screened by host country security screening officials for weapons and explosives. CBP will screen each checked bag for radioactive material. Under this new design standard checked baggage will be permitted to by-pass the CBP area providing that the individual weight and a digital photo of each checked bag be readily available at each primary processing counter. In addition, checked baggage must be capable of being re-delivered to the CBP area in a timely manner upon demand by a CBP officer. When completed, passengers and crew are then permitted to enter the facility and proceed to the CBP Primary Processing Area.

Figure 2-4 from the USCBP CTDS recommends the following preclearance cruise ship passenger processing facility traffic flow:

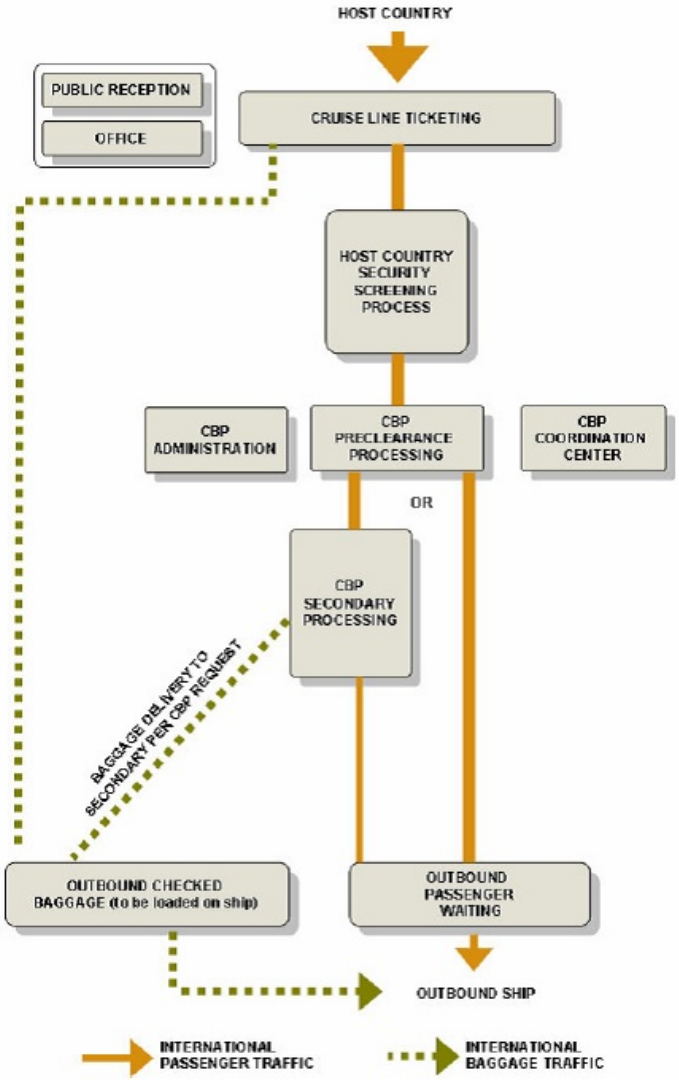


Figure 2-4 from the USCBP CTDS recommends the following preclearance cruise ship passenger processing facility traffic flow:

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

International Ship and Port Facility Security Code (ISPS):

The International Ship and Port Facility Security (ISPS) Code is an amendment to the Safety of Life at Sea (SOLAS) Convention (1974/1988) on minimum security arrangements for ships, ports and government agencies. The ISPS code came into force in 2004. It prescribes responsibilities to governments, shipping companies, shipboard personnel, and port/facility personnel to "detect security threats and take preventative measures against security incidents affecting ships or port facilities used in international trade.

The International Maritime Organization (IMO) states that "The International Ship and Port Facility Security Code (ISPS Code) is a comprehensive set of measures to enhance the security of ships and port facilities, developed in response to the perceived threats to ships and port facilities in the wake of the 9/11 attacks in the United States".

Development and implementation of the ISPS Code was greatly accelerated due to the reaction to the September 11, 2001 attacks and the bombing of the French oil tanker Limburg. The U.S. Coast Guard, as the lead agency in the United States delegation to the International Maritime Organization (IMO), advocated for the measure.

The ISPS Code was agreed to at a meeting of the 108 signatories to the SOLAS convention in London in December 2002. The measures agreed under the Code were brought into force on July 1, 2004.

The ISPS Code does not specify specific measures that each port and ship must take to ensure the safety of the port facility against terrorism because of the many different types and sizes of these facilities. Instead it outlines "a standardized, consistent framework for evaluating risk, enabling governments to offset changes in threat with changes in vulnerability for ships and port facilities."

For ships the framework includes requirements for:

- Ship security plans
- Ship security officers
- Company security officers
- Certain onboard equipment

For port facilities, the requirements include:

- Port facility security plans
- Port facility security officers
- Certain security equipment

In addition the requirements for ships and for port facilities include:

- Monitoring and controlling access
- Monitoring the activities of people and cargo
- Ensuring security communications are readily available

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

The United States has issued regulations to enact the provisions of the Maritime Transportation Security Act of 2002 and to align domestic regulations with the maritime security standards of SOLAS and the ISPS Code. These regulations are found in Title 33 (http://www.access.gpo.gov/nara/cfr/waisidx_03/33cfrv1_03.html) of the Code of Federal Regulations, Parts 101 through 107. Part 104 (http://www.access.gpo.gov/nara/cfr/waisidx_03/33cfr104_03.html) contains vessel security regulations, including some provisions that apply to foreign ships in U.S. waters.

Cruise Terminal Federal Inspection Service (FIS) Facilities Requirements:
In September 2003, the American Association of Port Authorities (AAPA) published a report titled "*The Impact of Federal Inspection Service (FIS) Facilities At Cruise Terminals Recommendations for Streamlining Inspections And Reducing Construction Costs*" prepared by Bermello, Ajamil & Partners (B&A) to review and resolve cruise terminal passenger and baggage inspection procedural conflicts, inconsistencies in FIS design standards and propose solutions for more efficiency in the inspection process, and encourage a partnership between industry and the Department of Homeland Security (DHS) to address future challenges and suggest restructuring solutions.

The study reviewed the latest US guidelines and regulations, conducted a survey of twelve U.S. cruise ports, interviewed customs and immigration officials, prepared a forecast of total North American cruise industry and facility demand over the next decade and an analysis of the industry-wide economic impact, including general inspection staffing requirements. The following information is taken from the AAPA study and provided here as guidance for the planning and design of the Cruise Terminal. Although the goal of this report is not to accomplish detailed design of the Cruise Terminal the excerpts from the AAPA Study will greatly influence and optimize the final planning and design of the Cruise Terminal.

Under current Federal regulations, facilities must be provided for Federal inspectors to conduct immigration, customs and agriculture inspections for passengers entering the United States. This accounts for 23-30% of the total facility space at a given terminal. These spaces are used on a temporary basis — in the typical cruise season a homeport operation is used on average from 2 to 5 times per week, 8-12 hours per vessel – making the requirements of the agencies elaborate, excessive and duplicative.

For example, in addition to queuing and inspection areas, the Federal agencies currently require administrative spaces, break rooms, workout facilities, locker rooms, separate bathrooms, and many other nonessential elements, despite the fact that virtually no cruise facilities are used on a full-time basis. In some cases, ports have spent millions of dollars constructing these facilities to comply with the current requirements and the facilities have never been used at all. The study revealed that efficient streamlining and consolidation of agency requirements can mean a substantial savings.

SECTION I
USCBP DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES

Continued

AAPA Cruise Study Key Findings:

- FIS space accounts for an estimated 23-30% of the total facility square footage at each cruise facility.

- Most of the terminals being built do not have the appropriate manpower assigned by the Federal agencies to utilize the space; therefore FIS spaces are frequently unoccupied, underutilized or abandoned, even after being newly built. As a result, FIS areas are not used as originally designed.

AAPA Cruise Study Recommendations:

- Conduct a top-down review of all office needs to eliminate "overbuilding." Determine whether those offices and support spaces are even necessary within a cruise facility, given that the majority of cruise passengers are U.S. citizens, passenger manifests are provided 96 hours in advance of arrival (allowing for pre-screening by the Bureau of Customs and Border Protection (BCBP)), and ship arrivals usually occur weekly, generally resulting in temporary BCBP staffing.

- Centralize all FIS support offices (and "back-of-house" spaces) into a single location or "headquarters" within a port or region (where multiple ports are in close proximity), in lieu of requiring each terminal to house redundant spaces that are used only for a limited time.

- Provide flexibility into the design of FIS processing to allow for future implementation of the latest advances in security technology and electronic information capture, including biometrics that will speed up processing time. Ultimately, over time, the overall goal is to eliminate the need for face to face passenger processing as well as reduce the size of or eliminate all FIS areas within cruise terminals.

- Consolidate the support or "back-of-house" functions between the former INS, USCS and APHIS agencies in order to provide a reduction of space that achieves efficiency and teamwork. The study showed that consolidating redundant space can reduce the overall FIS square footage by 29% to 58%, representing in a savings that can total as much as $175 million.

- Consolidate passenger processing to a single area in lieu of the current requirement of separate areas for customs and immigration, thus cutting queuing and processing time by half. This concept supports the integration of the three agencies into the BCBP.

The following tables depict various cruise terminal minimum facility requirements against design cruise vessel capacity. This guideline provides the minimum physical area in sq. ft. for the core components of a functioning cruise terminal. Table 4-2 includes a range of 1,800, 2,600, 3,600 and Mid-Size (average of all three) passengers per ship with the minimum square footage standards.

Table 4-2: Terminal Guidelines

Source: B&A, 2003

PROGRAM	1,800 PAX	2,600 PAX	3,600 PAX	MID-SIZE
Baggage	24,000	39,000	54,000	30,000
Customs / APHIS	2,000	4,000	4,000	4,000
Customs Offices	2,000	4,000	4,000	4,000
INS	3,000	6,000	8,000	8,000
INS Offices	8,000	8,000	8,000	8,000
Check-in	9,000	14,000	18,000	14,000
Lounge	7,000	11,000	16,000	11,000
Support	10,000	10,000	10,000	5,000
TOTALS	**65,000**	**96,000**	**118,000**	**84,000**

Table 4-3: Terminal Guidelines – Customs and INS Only

Source: B&A, 2003

FIS PROGRAM	1,800 PAX	2,600 PAX	3,600 PAX	MID-SIZE
Customs / APHIS	**2,000**	**4,000**	**4,000**	**4,000**
Customs Offices	**2,000**	**4,000**	**4,000**	**4,000**
INS	**3,000**	**6,000**	**8,000**	**8,000**
INS Offices	**8,000**	**8,000**	**8,000**	**8,000**
Percentage of FIS to Total	**30%**	**23%**	**20%**	**28%**

Red box highlights the applicable data for the Cruise Terminal in Duluth-Superior Harbor.

As identified in Table 4-3 above, the percentage of U.S. Customs and INS represents 23% to 30% of the total terminal program. This percentage represents a significant impact to the construction cost of a cruise terminal that ports are required to pay for.

The impact of FIS is exacerbated by the limited time a cruise terminal is in actual operation; a cruise terminal is not a 24-hour operation. Although each port is different, the typical cruise season extends from May to October and the average (homeport) calls range from 2 to 5 times per week, 8-12 hours per vessel. This limited timeframe of a terminal building use reinforces the need for eliminating elaborate, excessive and redundant programs.

FIGURE 6-2: BCBP DISEMBARKATION PASSENGER FLOW SEA PORTS OF ENTRY

Source: B&A, 2003

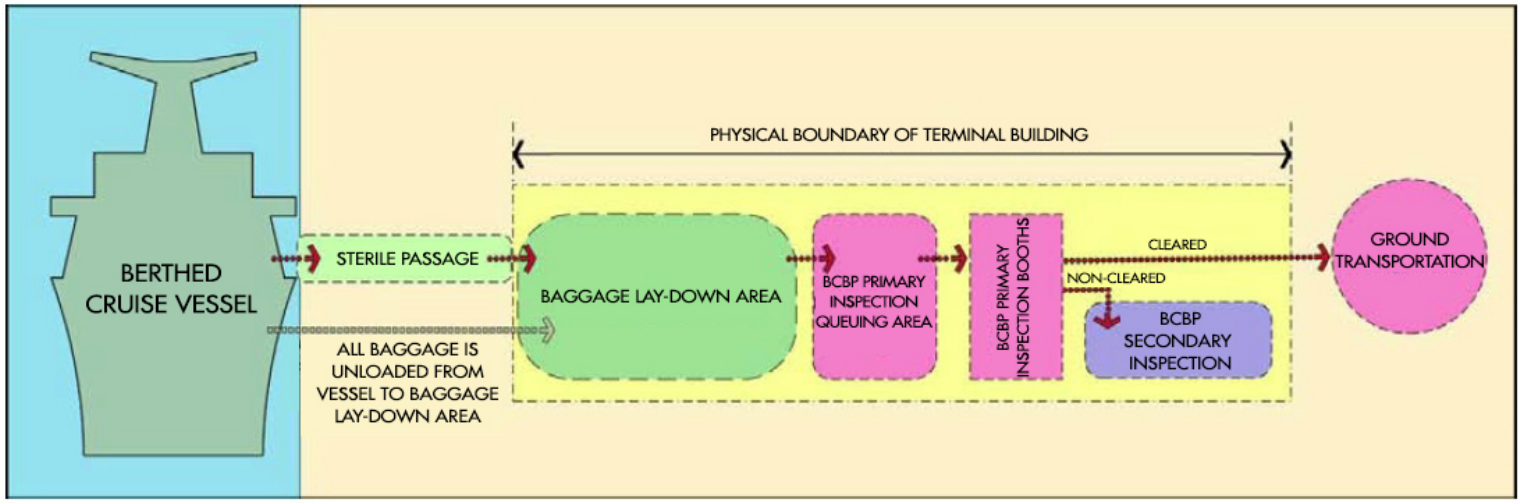


Figure 6-2 above illustrates the concept of co-locating INS, USCS and APHIS into a single location as a result of the formation of the BCBP. This concept eliminates the necessity to physically separate INS with USCS and APHIS.

The following strengths of this concept have been identified:

Strengths:

- **Fulfilling the goals of the BCBP** — The consolidation of INS, USCS and APHIS into a single location supports the underlying goals of unifying these three agencies, that have historically been separate operations, into a single entity.
- **Reduction of Terminal Space** — The consolidation can reduce the overall space requirements, therefore reducing construction and operation cost and providing savings to ports.
- **Reduction of Passenger Queuing** — The consolidation eliminates one queuing area during disembarkation, which can decrease the total time for disembarkation.
- **Consolidation FIS Manpower** — The consolidation provides a reduction of FIS manpower and offers the ability of a BCBP officer to perform all functions of INS, USCS and APHIS, therefore reducing costs to the Department of Homeland Security.
- **Reduction of Support Spaces** — The consolidation of manpower inherently allows for the reduction of certain support spaces that currently cause redundancies among INS, USCS and APHIS.
- **Single Agency for Design Approval** — The creation of the BCBP eliminates the current problem and difficulty for design professionals and ports attempting to gain design approval from three different agencies during the design process and project construction. The creation of a single source will streamline the process and greatly reduce unnecessary time delays and added construction cost.

Designating Security Levels for FIS Spaces in Cruise Terminals:

The current guidelines for the design and construction of FIS spaces do not allow ports and/or operators of a cruise ship terminal access to certain areas of the FIS that could be "shared use" or "alternative use" during off season or non-cruise days. This creates the following concerns for ports:

- Existing and future facilities are underutilized for alternative uses that can generate additional revenue for ports. Many ports could offset the cost of terminal construction by alternative facility uses during off-season or non-cruise days.
- Certain spaces for FIS are used very little, but could be shared by other users of the terminal.

In recognition of this, the following are recommendations for designation of security levels for FIS spaces (See Table 6.2) to allow sharing of certain spaces by other personnel in the terminal, while providing security for sensitive spaces that must remain off-limits to non-FIS staff or the public. The security levels are divided into the following:

- **Level I – Low-Level Security:** Spaces or rooms within the FIS area that require only a low level of security or security that is equal to the general public spaces of the terminal. These are spaces that during off-season or non-cruise days may be accessed by the general public when these spaces have been set up for an alternate use.

- **Level II – Medium-Level Security:** Spaces or rooms within the FIS area that require a medium level of security and are accessible to approved port or operations staff with proper identification.

- **Level III – High-Level Security:** Spaces or rooms within the FIS area that require a high level of security and are accessible to FIS officers only. These spaces remain in the sole control of FIS.

The goal of designating security levels is to separate spaces that can be shared or used for alternative functions from those that cannot. Many terminals are located on prime waterfront land, and the combination of large open spaces with waterfront views allows ports to use a terminal during off-hours or non-cruise days for alternative uses to generate additional revenue.

Table 6-2: Designation of Security Levels

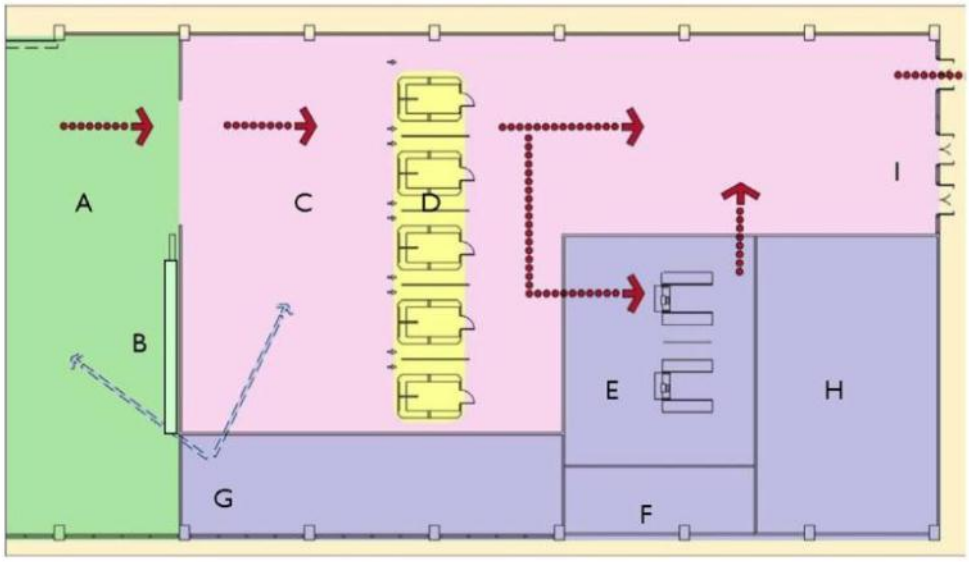
Source: B&A, 2003

Description	Security Level
Primary Inspection Queuing Area	I
Coordination Center	III
Secondary Inspection / Counters	III
Interview Rooms	III
Search Rooms	III
JABS / IDENT	III
ADIT / Lab	III
Passenger Public Bathrooms	I
Labs	III
Detention Rooms	III
Offices	II
Rover Command Center / JACC	III
Port Directors	III
Directors Secretary	III
Mail / Copy / Fax Room	II
Reception Area	II
Canine	III
Work Room	II
Break Room	II
Staff Toilets / Showers Lockers	II
ID Room	III
TECS / Computer Room	III
Storage	III

Improvements to Layout Design and Space Planning

The following diagram explores solutions building operational layouts allowing the processing of passengers to evolve to a faster and more efficient operation. Option One (Figure 6-3) locates the support spaces within the processing area for current or existing facilities.

Figure 6-3: Option One – Passenger Processing and Support Spaces
Source: B&A, 2003



A. Passengers collect their personal luggage in the Baggage Lay-Down Area.

B. All required BCBP forms are filled out prior to entering into the BCBP Queuing Area.

C. Passengers gather in the Primary Inspection Queuing Area and line up at the Primary Inspection Booths. This area may also include male and female public restrooms that passengers can use prior to primary inspection. The depth of this area must allow for adequate queuing to prevent a bottleneck of passengers into the baggage lay-down area.

D. BCBP officers perform the Primary Inspection of all passengers at the booths. Passengers who are "cleared" beyond the Primary Inspection make their way to the Ground Transportation Area (I).

E. Passengers who fail clearance are escorted to the Secondary Inspection Area for further inspection.

F. The Secondary Inspection Area shall have all secured Interview / Search Rooms.

G. The BCBP area shall have a central control / viewing area to observe the baggage and BCBP operation. Option One located this room adjacent to the baggage area and primary queuing area.

H. The BCBP area shall include all support areas including office, administration, storage, etc.

I. Cleared passengers circulate directly out to the Ground Transportation Area

SECTION I
TOTAL FACILITY REQUIREMENTS

Recommended Duluth-Superior Harbor Cruise Terminal Total Facility Requirements (Per USCBP FIS Standards)

Project Overall Cruise Terminal Facility Requirements: The following section describes the total Cruise Terminal facility recommended requirements by integrating the USCBP FIS requirements covered earlier in this study with other cruise terminal non-security operational requirements.

The Study Team is recommending a one floor level concept for the Duluth-Superior Cruise Terminal facility to avoid the expense of passenger gangway(s) and building vertical transport costs. The following operational recommendations are based on average industry rules of thumb and professional opinion and are only an approximate estimate of final Cruise Terminal facility needs.

Traditionally, approximately 6 - 8 square feet per cruise passenger is the minimum needed to lay down the baggage in the baggage processing area (with & without use of luggage tables). Using "*Compartmentalized Baggage Lay Down*" operations would result in 4 - 5 square feet of needed lay down area per cruise passenger. For the purposes of this report, 6 square feet of lay down area per cruise passenger was used. Using a peak passenger throughput load of 700 per hour approximately 4,200 sq. ft. of baggage lay down area will be the minimum needed. To this floor area, main circulation aisles, egress, restrooms, and related circulation elements need to be added along with federal inspection service requirements covered earlier in this report.

The baggage lay-down method works well and is recommended for the initial Duluth-Superior Cruise Terminal facility requirements to avoid mechanical conveyor systems cost.

Duluth-Superior Cruise Terminal Total Facility Square Footage Requirement for a Single Story Cruise Terminal Concept (Alternative A):

USCBP FIS requirements, covered earlier in this study:	**13,279 sq. ft.***
Minimal Cruise Terminal baggage operational needs: (Area includes potential multipurpose use areas possibilities)	**5,000 sq. ft.**
Total Minimal Cruise Terminal Requirement:	**18,279 sq. ft.**
Cruise Terminal Check-In, Lounge and Support Area : (Functions as Optional multipurpose community use conference & meeting area).	**4,000 sq. ft.**
Total Potential Cruise Terminal Facility Footprint requirement:	**22,279 sq. ft.**

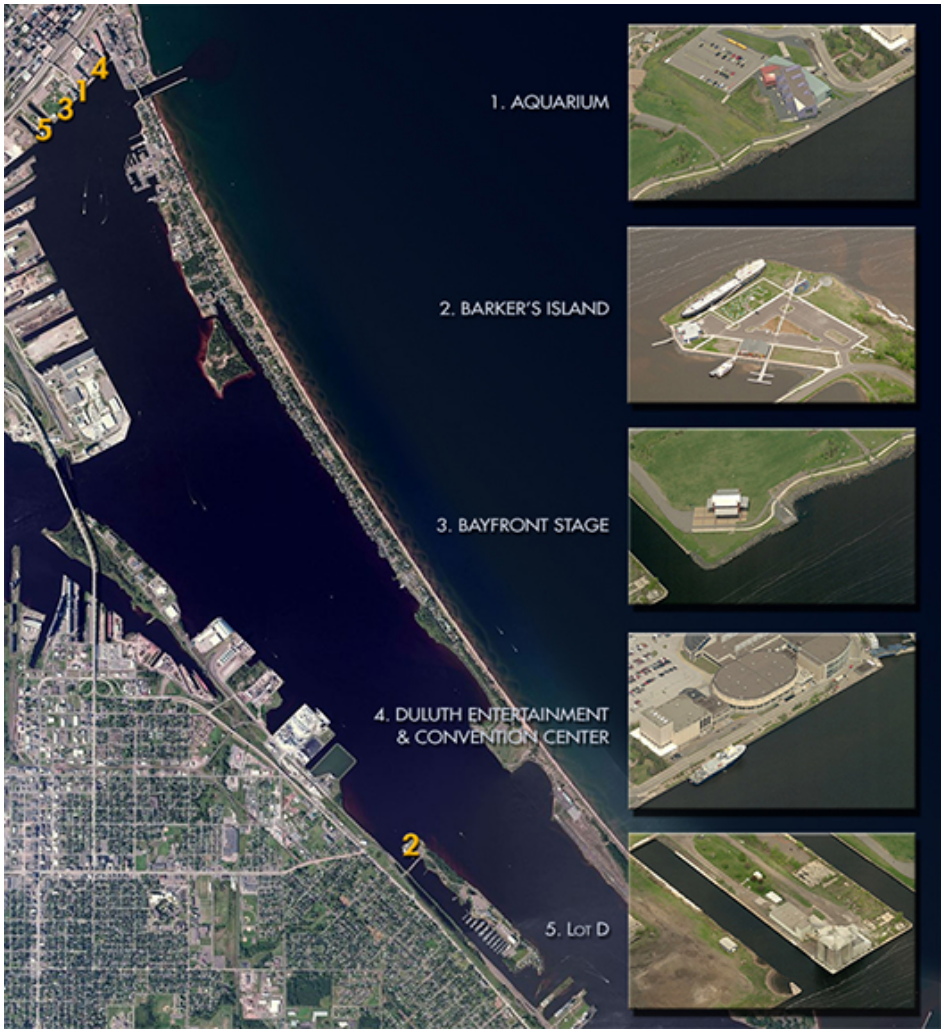
* Because of the high percentage of USCBP FIS space (60%), the Study Team believes that the FIS requirements could be negotiated to around 8,500 sq. ft. allowing the remainder (4,779 sq. ft.) to be added to the Cruise Terminal baggage lay-down area permitting a single baggage processing operation and greater multipurpose space potential.

SECTION II

SECTION II
FACILITY LOCATION OPTIONS

One of the main tasks of this study was to determine the best location for a Cruise Ship Terminal Facility. The team did an original drive through around the Duluth-Superior Harbor and came up with five different sites that could be potential locations for the terminal. The five sites that were chosen include:

1. A site adjacent to the existing Duluth Aquarium (Aquarium)
2. Barker's Island in Superior
3. A site behind the Bayfront Festival Park stage (Bayfront)
4. An addition to the Duluth Entertainment and Convention Center (DECC)
5. Duluth Economic and Development Agency (DEDA) owned land called Lot D



These sites were chosen because the cruise ship industry is looking for a number of amenities when evaluating Home Ports and/or Ports of Call. They want "a port experience that enhances the cruise passenger experience". These experiences include access to area amenities such as the north shore, biking and hiking trials, connections to urban centers (shopping, lodging, eating), area attractions (Glensheen Mansion, SS Meteor Museum, Fairlawn Museum), and access to local transit systems and airports.

SECTION II
FACILITY LOCATION OPTIONS

Continued

The following matrix takes a snap shot of the five sites outlining the pros and cons of each site. At the end of this study, one site, the DECC came out as the site to look at further development for a Cruise Ship Terminal. Lot D also provides a number of benefits and should be included as an alternate site for development.

1. AQUARIUM

Site	Issues	Pros	Cons
Aquarium	Connectivity	• Adjacent to existing Lakewalk • Near the Duluth Skywalk system • Adjacent to bike routes • DTA service • Good access to the airport	• New access to and from S. 5th Ave. W. will need to be created • The Lakewalk will need to be redirected around the facility • Improvements to Railroad Street. are needed
	Existing Amenities	• Cruise lines have used the existing Aquarium in the past	• There is an existing covenant that may not allow for the facility • Parking needs could affect the existing Aquarium and/or Bayfront Festival Park
	Expansion Possibilities	• Can accommodate the facility and limited expansion • Possible permanent public restrooms and green room for Bayfront Park	• Limited expansion possibilities • Location would not allow for the expansion of the Aquarium
	Location	• Adjacent to the existing Aquarium • Adjacent to Canal Park • Adjacent to an urban center • Adjacent to Bayfront Festival Park	
	Views	• Excellent views of harbor and lift bridge	• Potential of blocking some of the Bayfront views of the lift bridge
	Waterside Considerations	• Adjacent to harbor and shipping lanes	• Will need waterside upgrades • New Wharf

SECTION II
FACILITY LOCATION OPTIONS

Continued

2. BARKER'S ISLAND

Site	Issues	Pros	Cons
Barkers Island	Connectivity	• Easy access to WI Highway 53 • DTA access	• No Lakewalk connection • No Skywalk connection
	Existing Amenities	• USS Meteor Museum • Site is already developed	• Extended parking is over ½ mile away
	Expansion Possibilities	• Limited expansion • Shared parking	• Limited expansion • Shared parking (more may be needed)
	Location	• Near shopping areas • Adjacent to shipping lane	• Tourists would need to use other means of transportation • Not adjacent to an urban downtown • Isolated site
	Views	• Limited View	• No views of Lake Superior
	Waterside Considerations	• Adjacent to shipping lanes	• Dredging will be needed • No pier structure exists • A new wharf may be needed

3. BAYFRONT

Site	Issues	Pros	Cons
Bayfront	Connectivity	• Easily connected to the Lakewalk • Near the Duluth Skywalk system • Adjacent to existing bike routes • Existing DTA service	• Improvements to Railroad Street are needed
	Existing Amenities	• Bayfront Festival Park • Existing gravel parking	• Parking not adjacent to the facility • Upgrades to the existing parking lot will be needed
	Expansion Possibilities	• None	• Site is limited to the size of the cruise ship facility only
	Location	• Dual use with the park's festivals and concerts • Adjacent to Canal Park	• Scheduling will be an issue with cruise lines and Bayfront Park
	Views	• Great views of the harbor and the lift bridge	• Will block view of the harbor from the park
	Waterside Considerations	• Adjacent to existing shipping lanes	• Extensive pier upgrades • New wharf needed

4. DECC

Site	Issues	Pros	Cons
DECC	Connectivity	• Directly connected to the Lakewalk • Adjacent to existing bike routes • Existing DTA service	• A skywalk would need to be built to connect to ships and keep Harbor Drive open
	Existing Amenities	• Connected to the DECC • Existing utility infrastructure can be used • Directly attached to the Duluth Skywalk system and downtown	• Coordination needed with the DECC for use of shared space • Need to coordinate with the DECC regarding parking, utilities, availability, and intermodal zone needs
	Expansion Possibilities	• None beyond the terminal facility	• The only expansion would be inside the existing DECC
	Location	• The closest Duluth site to Canal Park	• Harbor Drive needs to remain open for deliveries to the DECC
	Views	• Excellent views of the harbor and the lift bridge • The addition would be on the West side of Harbor Drive thus keeping pedestrian views open to the harbor	
	Waterside Considerations	• Cruise ships have docked in this location in the past	• Minimal reworking of the waterside structure

* The Study Committee has recommended that the cruise ship terminal be attached to the existing DECC. This location will need to be brought to the DECC Board of Directors for consideration before final plans could begin.

5. LOT D

Site	Issues	Pros	Cons
Lot D	Connectivity	• Adjacent to the existing Lakewalk • Near the Duluth Skywalk system access • DTA services to be extended to the facility	• Would need to build an extension to the Lakewalk • Improvements to Railroad Street will be needed
	Existing Amenities	• Up to 12 acres for development • Near downtown Duluth • A proposed marina may fit will with the terminal facility	• Not a green site with many unknowns (there have been existing investigations of the site by the EPA that does provide more information)
	Expansion Possibilities	• Plenty of open site for almost limitless expansion beyond the facility • Great location for private/public partnerships	• Extension of utilities from Railroad Street will need to be extended into the site
	Location	• Near Canal Park • Adjacent to the proposed marina • Adjacent to the proposed Pier B development	• Farthest Duluth site from Canal Park
	Views	• Excellent views of the harbor and the lift bridge	
	Waterside Considerations	• Adjacent to existing shipping lanes	• Needs extensive waterside upgrades • New wharf face needed

SECTION II
FACILITY LOCATION OPTIONS

Continued

The following narratives discuss how a Cruise Ship Terminal Facility may work with the DECC and Lot D sites. These sites both offer advantages and disadvantages in terms of expansion opportunities, connectivity and construction cost (which will be looked at later in this document).

DECC

The DECC was reviewed as a potential site to develop a Cruise Ship Terminal Facility based on existing amenities, the fact that cruise ships have docked here in the past, there is an existing infrastructure and an existing wharf. **This location will need to be approved by the DECC Board of Directors before any planning can begin to take place.** In the past, this was not an ideal for the USCBP to process passengers at this location (which ultimately prompted this study), but it has worked in the past. Some issues that will have to be addressed in design include how to keep Harbor Drive open during a passenger loading and unloading, and how to share space with the DECC when a cruise ship is in port. It is important to note that the DECC site would only be able to support the terminal operations and would not allow for expansion because the existing foot print is limited.

The unique element of the DECC site would be designing a skywalk from the Terminal Facility to the ships. Per the requirements of the CBP this skywalk would need to be a sterile environment. There is to be no communication between cruise ship passengers and the general public, until the passengers have been processed. The skywalk could be used as an observation deck at times when cruise ships are not in port, and could have direct access to the pedestrian/bike paths along the Duluth Harbor.

There is a potential for a stand-alone facility to be located in the footprint of an existing park to the South West of the DECC. This might provide for a cleaner transition between the terminal requirements and the DECC. If the structure is stand alone, the DECC would be able to maintain their existing square footage while possibly being able to expand into shared space in the new facility. Once again, this option would need to be vetted with the DECC Board of Directors, the City of Duluth, the CBP and the Cruise Lines, to see if it would be a viable option.

SECTION II
FACILITY LOCATION OPTIONS

Continued

LOT D

Lot D is unique in that there has already been a study completed as to what this site may look like in the future. It is located in an area where there is a synergy of development already happening (Pier B development) and the cruise ship terminal would fit in well with this expansion.

In July of 2011, a development plan was released that showed some options for what Lot D could look like. One of the main amenities would be to include a Transient Boat Facility that would tie into the Pier B development, Bayfront Festival Park and Duluth business district. The development of the Cruise Ship Terminal needs to be woven in to these early studies to enhance and compliment the entire area.

Lot D has a lot of advantages in that the terminal building could be part of a much larger development. A terminal building that only functions as passenger processing would be open only when cruise ships are in port. If the terminal was an addition to an existing building or part of a larger development, then some spaces could be shared thus minimizing the impact of the cost of construction that is required for the passenger processing portion of the building. In a stand-alone building, the CBP's dedicated percentage of space could be close to 60% of the building. In a multi-use building, this percentage would be less than in the stand-alone option and there would be options to share space between a specific tenant and the CBP.

Ultimately either of these sites could be a great location for the Cruise Ship Terminal Facility, but the building cannot happen without partnerships with existing entities (the DECC) and/or private/public funding from such sources that could include federal, state and/or city financing.

SECTION III

SECTION III
LANDSIDE
INFRASTRUCTURE
NEEDS

Landside Infrastructure Needs

OVERVIEW

A transportation study of each of the five potential sites was completed to provide a high-level overview of the existing multimodal transportation infrastructure and future landside infrastructure needs. The transportation study includes:

- A review the existing multimodal infrastructure.
- An evaluation of landside infrastructure needs based on multimodal connectivity and continuity.
- Recommendations regarding future landside infrastructure needs.
- Identification of potential travel demand management (TDM) strategies to improve multimodal system efficiency.

The goal of the site evaluation process with respect to future landside needs is to identify a site that maximizes the use of existing infrastructure while accomodating the future needs of the Duluth-Superior Cruise Ship Terminal (see Figure 1).

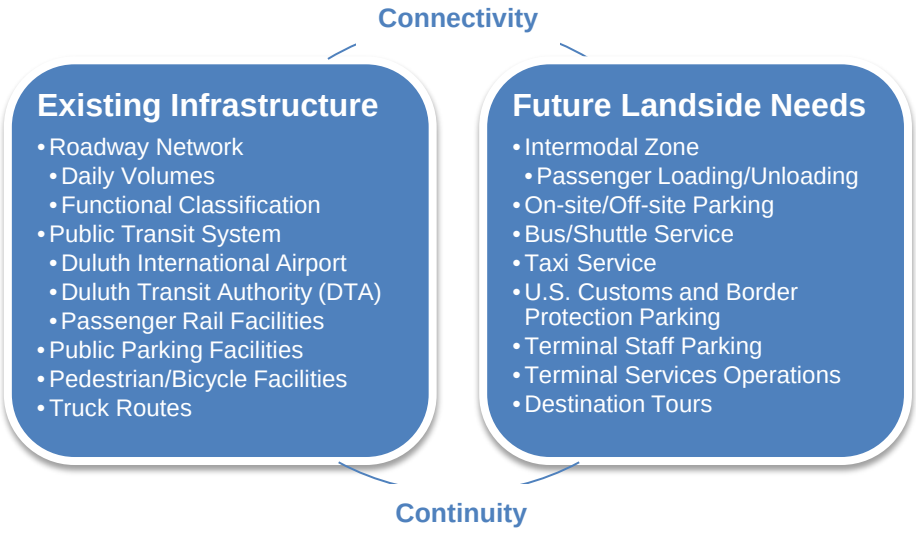


Figure 1: Multimodal Integration

Daily traffic expected to be generated by the new terminal will vary depending on the use of the facility. Passenger cruise calls to the new terminal will be seasonal within the typical navigational season (March 25-January 16); therefore, the trips generated by a call will only occur on a limited number of days during the year.

As previously recommended, the new terminal should be constructed as a multi-use facility. As such, a transportation study, including updated trip generation estimates as development assumptions are identified, should be completed to evaluate the impacts of traffic generated by the various uses.

ASSUMPTIONS

Research was conducted to determine how landside infrastructure needs have been accommodated at other recently built passenger cruise terminals. More specifically, the cruise terminal at Pier 27 in San Francisco, California and the Half Moone Cruise Terminal in Norfolk, Virginia were considered. Due to the lack of available documentation, site plan observations from the aforementioned terminals and industry experience by the Study Team were used to develop the assumptions. The following assumptions are for a new terminal only and do not consider needs associated with a terminal that is constructed as a multi-use facility.

Passengers:

The terminal is planned to operate as both a Home Port and Port of Call. A Home Port is where passengers either begin or end their trip. A Port of Call is where a vessel calls the port; passengers and cruise staff disembark the vessel for landside activities; and, passengers and cruise staff then return to the vessel for departure. As previously recommended, the strategic planning horizon is both 10 and 20 years into the future and the recommended terminal design will allow for processing of 400 passengers per hour in year 2022 and 600 passengers per hour in year 2032. Two passenger parties were assumed with 0.5 cruise staff per passenger.

Cruise Operations:

Typical cruise vessel operations for both inbound and outbound passenger cruise vessels are summarized in Figure 2.

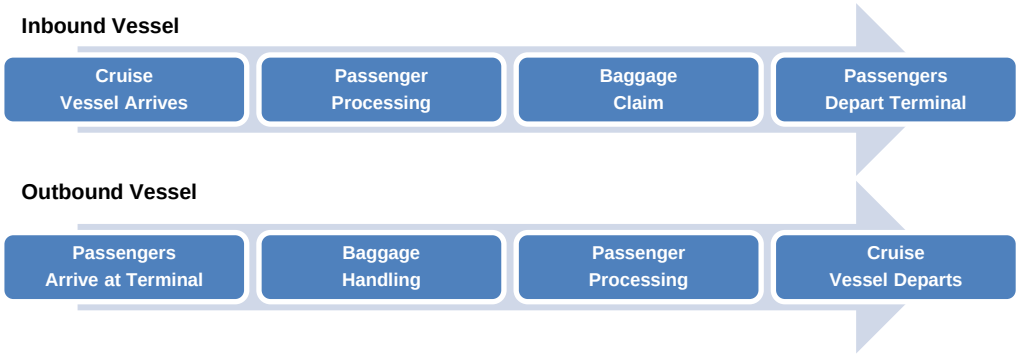


Figure 2: Typical Cruise Operations

Terminal Services:

Terminal service operations include additional baggage handling vehicles, ship re-provisioning, and waste management. It is assumed the vessels will refuel offsite from the terminal. A total of three to six trucks were assumed to accommodate the terminal service operations thereby occupying 6,000 square feet.

SECTION III
LANDSIDE INFRASTRUCTURE NEEDS

Continued

Intermodal Zone:
The intermodal zone includes the passenger baggage drop-off and pick-up area that provides access for the private cars, buses, vans, taxis and other vehicles that carry passengers and their baggage to and from the cruise terminal. A total of 25 to 35 spaces were assumed to accommodate the intermodal zone thereby occupying 12,000 square feet.

Ground Transportation:
Trips generated by ground transportation will vary depending on Home Port or Port of Call operations.

Home Port ground transportation includes passengers traveling by private vehicle, buses or taxis. Cruise staff is assumed to arrive or depart the new terminal before or after the peak passenger arrival or departure, respectively. The following summarizes the trip generation assumptions for Home Port operations:

Home Port	
Private vehicles	85% of passengers (5% are drop-off only)
Taxis	10% of passengers
Buses	5% of passengers

Port of Call ground transportation includes passengers and cruise staff travelling by public transit, private tour buses, excursion buses and taxis. The following summarizes the trip generation assumptions for Port of Call operations:

Port of Call	
Private tour buses	73% of passengers/staff (occupancy of 30)
Excursion buses	12% of passengers/staff (occupancy of 30)
Taxis	12% of passengers/staff (occupancy of 3)
Public transit	3% of passengers/staff (occupancy of 15)

Parking:
Non-passenger parking needs for the terminal include the required U.S. Customs and Border Protection on-site parking requirements and terminal staff parking. A total of 10 to 20 spaces were assumed to accommodate on-site parking needs thereby occupying 6,500 square feet. Off-site parking was assumed for cruise staff.

Based on the ground transportation trip generation for Home Port operations, 160 parking spaces are needed for passengers in year 2022 and 240 parking spaces are needed in year 2032. These parking spaces are not required to be provided on-site at the terminal.

SECTION III
LANDSIDE INFRASTRUCTURE NEEDS

Continued

SITE EVALUATIONS

Each site was evaluated with respect to how the future landside infrastructure needs can be integrated with the following existing infrastructure (see Appendix C):

- Roadway Network
- Public Transit System
- Public Parking Facilities
- Pedestrian/Bicycle Facilities
- Truck Routes

Roadway Network:

The roadway network infrastructure needs were evaluated with respect to the functional hierarchy of the system and planning level volume-to-capacity ratios. Potential access issues for each site were also considered.

Public Transit System:

The public transit system needs were evaluated with respect to potential gaps in the system and how the existing system could be modified to provide service to the new terminal.

Public Parking Facilities:

The public parking facility needs were evaluated with respect to how existing facilities could provide a benefit to the new terminal to limit the need for costly parking improvements or provide overflow parking as needed for parking that may only be needed on limited basis for a limited number of times a year.

Pedestrian/Bicycle Facilities:

The pedestrian and bicycle facilities were evaluated with respect to potential gaps in the facilities and how the existing facilities could be modified to provide service to the new terminal.

Truck Routes:

The truck route needs were evaluated with respect to identification of additional truck routed designations as needed to provide efficient access to the terminal for trucks that are related to the terminal service operations.

SECTION III
LANDSIDE INFRASTRUCTURE NEEDS

Continued

Potential Sites:

As previously detailed, the following potential sites were identified and evaluated with respect to future landside infrastructure needs:

1. Duluth Entertainment and Convention Center – DECC (Duluth, MN)
2. Bayfront Stage (Duluth, MN)
3. Bayfront Aquarium (Duluth, MN)
4. DEDA/Lot D (Duluth, MN)
5. Barker's Island (Superior, WI)

The DECC site has previously been used as a temporary passenger cruise terminal.

Redevelopment of the DEDA/Lot D is being considered as a part of the Bayfront Master Plan.

The following tables (see Tables 1-5) summarize the future landside infrastructure needs for each potential site.

Table 1: DECC Site Evaluation

Infrastructure	Existing Conditions	Future Needs
Roadway Network	• Access to I-35 (nearest major roadway) is provided via S 5th Ave W immediately adjacent to the site. • Railroad Street, which provides local access to the site, is a 4-lane divided roadway that is classified as a Major Collector and is an MSA Route.	• No regional needs expected. • Encourage the use of S 5th Ave W to access I-35 and downtown Duluth. • Harbor Drive, which runs between the site and the waterfront, needs to remain open at all times.
Public Transit System	• Port Town Trolley transit routes (seasonal) currently runs along Harbor Drive serving the site. • Site is approximately 9 miles (15 to 20 minute drive) from the Duluth International Airport. • Site is approximately 0.5 mile (5 to 10 minute walk) from the potential Northern Lights passenger rail station.	• Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.
Public Parking Facilities	• DECC has approximately 1,800 total on-site parking spaces.	• USCBP requires on-site parking for staff, which will need to be accommodated at the DECC. • DECC has adequate on-site parking spaces to accommodate terminal parking needs for both Home Port and Port of Call. • DECC has existing on-site facility for intermodal zone use. • Need to coordinate parking utilization and availability, and intermodal zone needs, with the DECC.
Pedestrian/Bicycle Facilities	• Site connects into existing downtown Duluth Skywalk system. • Site connects into existing Duluth Lakewalk system. • Site connects into existing bike route system.	• None expected.
Truck Routes	• Railroad Street is a designated truck route and serves truck traffic to and from the Twin Ports.	• No regional needs. • Trucks currently deliver to the site using Harbor Drive.

Table 2: Bayfront Stage Site Evaluation

Infrastructure	Existing Conditions	Future Needs
Roadway Network	• Access to I-35 (nearest major roadway) is provided via Railroad Street to 5th Avenue W. • Railroad Street, which provides local access to the site, transitions from a 2-lane undivided roadway to a 4-lane divided roadway immediately adjacent to the site and it is classified as a Major Collector and is an MSA Route.	• No regional needs expected. • Encourage the use of S 5th Ave W to access I-35 and downtown Duluth. • Potential need to expand Railroad Street to 3-lane roadway by year 2032 if terminal is Home Port.
Public Transit System	• No DTA transit routes currently run along Railroad Street adjacent to the site. • Site is approximately 9 miles (15 to 20 minute drive) from the Duluth International Airport. • Site is approximately 0.5 mile (5 to 10 minute walk) from the potential Northern Lights passenger rail station.	• Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.
Public Parking Facilities	• Bayfront Park has an on-site undeveloped parking area. • DECC has approximately 1,800 total on-site parking spaces, which is within 0.5 mile walking distance of the site.	• USCBP requires on-site parking for staff, which will need to be accommodated on-site. • Undeveloped parking area has adequate space to accommodate long-term parking needs and intermodal zone needs for both Home Port and Port of Call; however, this would greatly reduce the parking availability for Bayfront Park. • DECC could serve as overflow parking and it is within 0.5 mile walking distance of the site. Coordination would be needed with the DECC regarding parking utilization and availability.
Pedestrian/Bicycle Facilities	• Site does not directly connect into existing downtown Duluth Skywalk system. • Sites connects into existing Duluth Lakewalk system. • Site connects into existing bike route system.	• Site is within walking distance to the DECC, which provides access to the downtown Duluth Skywalk system.
Truck Routes	• Railroad Street is a designated truck route and serves truck traffic to and from the Twin Ports.	• No regional needs. • Incorporate truck circulation needs into site plan.

Table 3: Bayfront Aquarium Site Evaluation

Infrastructure	Existing Conditions	Future Needs
Roadway Network	• Access to I-35 (nearest major roadway) is provided via Railroad Street to S 5th Ave W. • Railroad Street, which provides local access to the site, transitions from a 2-lane undivided roadway to a 4-lane divided roadway immediately adjacent to the site and it is classified as a Major Collector and is an MSA Route.	• No regional needs expected. • Encourage the use of S 5th Ave W to access I-35 and downtown Duluth. • Potential need to expand Railroad Street to 3-lane roadway by year 2032 if terminal is Home Port.
Public Transit System	• No DTA transit routes currently run along Railroad Street adjacent to the site. • Site is approximately 9 miles (15 to 20 minute drive) from the Duluth International Airport. • Site is approximately 0.5 mile (5 to 10 minute walk) from the potential Northern Lights passenger rail station.	• Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.
Public Parking Facilities	• Site has undeveloped land between Bayfront Park and the Aquarium. • DECC has approximately 1,800 total on-site parking spaces, which is within 0.5 mile walking distance of the site.	• USCBP requires on-site parking for staff, which will need to be accommodated on-site. • Undeveloped land has adequate space to accommodate intermodal zone needs for both Home Port and Port of Call and potentially all of the long-term parking needs. This would require coordination with the Aquarium land. • DECC could serve as off-site parking and it is within 0.5 mile walking distance of the site. Coordination would be needed with the DECC regarding parking utilization and availability.
Pedestrian/Bicycle Facilities	• Sites does not directly connect into existing downtown Duluth Skywalk system. • Site connects into existing Duluth Lakewalk system. • Site connects into existing bike route system.	• Site is within walking distance to the DECC, which provides access to the downtown Duluth Skywalk system.
Truck Routes	• Railroad Street is a designated truck route and serves truck traffic to and from the Twin Ports.	• No regional needs. • Incorporate truck circulation needs into site plan.

Table 4: DEDA/Lot D Site Evaluation

Infrastructure	Existing Conditions	Future Needs
Roadway Network	• Access to I-35 (nearest major roadway) is provided via Railroad Street to S 5th Ave W. • Railroad Street, which provides local access to the site, transitions from a 2-lane undivided roadway to a 4-lane divided roadway immediately adjacent to the site and it is classified as a Major Collector and is an MSA Route.	• No regional needs. • Encourage the use of S 5th Ave W to access I-35 and downtown Duluth. • Potential need to expand Railroad Street to 3-lane roadway by year 2032 if terminal is Home Port.
Public Transit System	• No DTA transit routes currently run along Railroad Street adjacent to the site. • Site is approximately 9 miles (15 to 20 minute drive) from the Duluth International Airport. • Site is approximately 0.5 mile (5 to 10 minute walk) from the potential Northern Lights passenger rail station.	• Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.
Public Parking Facilities	• Site redevelopment is currently under review as a part of the Bayfront Master Plan. • DECC has approximately 1,800 total on-site parking spaces, which is within 0.5 mile walking distance of the site.	• USCBP requires on-site parking for staff, which will need to be accommodated on-site. • Coordination of parking and intermodal zone needs with Bayfront Master Plan redevelopment is needed. • DECC could serve as off-site parking and it is within 0.5 mile walking distance of the site. Coordination would be needed with the DECC regarding parking utilization and availability.
Pedestrian/Bicycle Facilities	• Site does not directly connect into existing downtown Duluth Skywalk system. • Site does not connect into existing Duluth Lakewalk system. • Site connects into existing bike route system.	• Site is within walking distance to the DECC, which provides access to the downtown Duluth Skywalk system. • Coordinate Duluth Lakewalk system needs with the Bayfront Master Plan redevelopment.
Truck Routes	• Railroad Street is a designated truck route and serves truck traffic to and from the Twin Ports.	• No regional needs. • Incorporate truck circulation needs into site plan.

Table 5: Barker's Island Site Evaluation

Infrastructure	Existing Conditions	Future Needs
Roadway Network	• Access to Highway 53 (nearest major roadway) is provided via Marina Drive. • Marina Drive, which provides local access to the site, is a 2-lane undivided roadway and it is classified as a Major Collector.	• Terminal traffic could impact operations of I-535/Highway 53 bridge under year 2032 conditions if terminal is Home Port.
Public Transit System	• No DTA transit routes currently run along Marina Drive adjacent to the site. DTA route 16 runs along E 5th Street in Superior with the nearest stop at E 5th Street and 9th Avenue E (over 0.5 mile walk from site). • Site is approximately 13 miles (20 to 25 minute drive) from the Duluth International Airport. • Site is approximately 7 miles (10 to 15 minute drive) from the potential Northern Lights passenger rail station.	• Consider expansion of DTA route 16 (with a stop) to the site. This will also benefit the Barker's Island users. • Ensure expansion of DTA route 16 provides service to or connections to potential Northern Lights passenger rail station.
Public Parking Facilities	• No public parking facilities are within 0.5 mile walking distance of the site. • Barker's Island has approximately 500 private parking spaces within 0.5 mile walking distance of the site.	• USCBP requires on-site parking for staff, which will need to be accommodated on-site. • No public parking facilities are within 0.5 mile walking distance of the site.
Pedestrian/Bicycle Facilities	• Site connects to sidewalks to downtown Superior. • Site does not connect into existing downtown Duluth Skywalk system. • Site does not connect into existing Duluth Lakewalk system. • Site connects into existing bike route system.	• Connections to downtown Duluth Skywalk system are not feasible. • Connections to Duluth Lakewalk system are not feasible.
Truck Routes	• Highway 53, which is immediately adjacent to the site, is a designated truck route. • Marina Drive, which provides local access to the site, is not a designated truck route.	• No regional needs. • Verify no truck and weight restrictions on Marina Drive. • Incorporate truck circulation needs into site plan.

SITE EVALUATIONS SUMMARY

The following summarizes the site evaluations based on multimodal connectivity and continuity, and future landside infrastructure needs:

- The DECC site predominately uses existing infrastructure and it has been the location of the temporary terminal facility used in the past. Harbor Drive, which runs between the site and the waterfront, needs to remain open at all times. Coordination with the DECC is needed regarding parking utilization and availability, and intermodal zone needs. The DECC site has minimal challenges regarding multimodal connectivity and continuity.

- The Bayfront Stage and Bayfront Aquarium parking needs could impact the existing Bayfront Park parking if all on-site passenger parking is provided at the new terminal. Additionally, improvements to Railroad Street are needed for both sites. Both Bayfront sites have minimal challenges regarding multimodal connectivity and continuity.

- It is recommended to coordinate the future infrastructure needs with future redevelopment plans as a part of the Bayfront Master Plan. This includes potential redevelopment of the DEDA/Lot D site and also the potential Pier B development. Additionally, improvements to Railroad Street are needed. The DEDA/Lot D site has slightly more challenges regarding multimodal connectivity and continuity with respect to pedestrian facilities.

- The Barker's Island site is expected to predominately use existing infrastructure, but the isolated nature of the site poses challenges for multimodal connectivity and continuity.

TRAVEL DEMAND MANAGEMENT STRATEGIES

Potential Travel Demand Management (TDM) strategies were identified that may be implemented to improve multimodal system efficiency (see Table 6). The purpose of TDM strategies is to identify ways to transport passengers while limiting the number of trips needed, with a focus on reducing private vehicle trips. This greatly reduces the need for on-site parking at the terminal.

Table 6: Travel Demand Management Strategies

Home Port	Port of Call
Coordinate cruise schedules with events to minimize traffic and parking impacts: • Downtown Duluth/Superior • DECC • Aquarium • Bayfront Park • Barker's Island	Passenger greeting and tourist information center: • Shuttle/trolley to attractions • Destination tours • Excursion trips • Transit maps • Walking/biking maps
Free Transit or Transit subsidies: • Duluth International Airport • Hotels • Downtown Duluth/Superior • Park and rides • Future DTA multimodal facility	Free Transit or Transit subsidies: • Attractions • Downtown Duluth/Superior • Canal Park • Barker's Island • Future DTA multimodal facility
Parking info and guidance systems: • Signing • Maps	Bikeshare program: • Nice Ride

In addition to implementing TDM strategies, it is recommended to develop a Travel Demand Management Plan (TDMP) to identify policies and procedures for travel management during a passenger cruise ship call at the Duluth-Superior Cruise Ship Terminal regardless of the site on which the terminal is located. This will assist in multi-agency coordination to minimize impacts to non-terminal users in the area.

ESTIMATED COSTS

Based on the future infrastructure needs for each potential site, Table 7 summarizes the estimated costs in current year dollars for terminal ground transportation needs, potential roadway improvements, and potential passenger parking needs.

Table 7: Estimated Costs

Infrastructure	DECC (Duluth)	Bayfront Stage (Duluth)	Bayfront Aquarium (Duluth)	DEDA (Duluth)	Barker's Island (Superior)
Terminal Ground Transportation	Minimal	$85,000	$85,000	$85,000	$85,000
Potential Roadway Improvements	Minimal	$190,000	$190,000	$300,000	Unknown*
Potential Passenger Parking	Minimal	$245,000	$245,000	$245,000	$245,000
Total	**Minimal**	**$520,000**	**$520,000**	**$630,000**	**$330,000***

The DECC site has the least amount of anticipated costs as a result of maximizing the use of existing infrastructure.

The Bayfront Stage and Bayfront Aquarium sites also predominately use existing infrastructure, but improvements to Railroad Street are needed resulting in higher associated costs compared to the DECC site.

As previously noted, it is recommended to coordinate the future infrastructure needs with future redevelopment plans as a part of the Bayfront Master Plan. This includes potential redevelopment of the DEDA/Lot D site and also the potential Pier B development. This could minimize costs associated with the new terminal. Improvements to Railroad Street are needed resulting in higher associated costs compared to the other Duluth sites.

Depending on the site layout for Barker's Island, a portion of the passenger parking may need to be off-site potentially resulting in higher associated costs for parking than what is shown in Table 7. Additionally, improvements to Marina Drive may be needed resulting in higher associated costs for potential roadway improvements.

LANDSIDE SUMMARY

SECTION III
LANDSIDE INFRASTRUCTURE NEEDS

Continued

The following summarizes the results of the future landside infrastructure needs evaluation and provides potential next steps:

- On-site parking for non-passengers, which includes the required U.S. Customs and Border Protection parking and terminal staff parking, is needed regardless of the site on which the terminal is located.

- Terminal service operations, which include additional baggage handling vehicles, ship re-provisioning, and waste management, are needed regardless of the site on which the terminal is located.

- From a future landside infrastructure needs perspective, the DECC site is the preferred site because it predominately uses existing infrastructure. However, coordination with the DECC is needed regarding parking utilization and availability, and intermodal zone needs. Also, Harbor Drive, which runs between the DECC and the waterfront, needs to remain open at all times.

- If the DEDA/Lot D site is considered as an alternative site, it is recommended to coordinate the future infrastructure needs with future redevelopment plans as a part of the Bayfront Master Plan to minimize costs. This includes potential redevelopment of the DEDA/Lot D site and also the potential Pier B development.

SECTION IV

SECTION IV
ESTIMATED OPINION OF CONSTRUCTION COSTS

Costs associated with the addition to the DECC include new construction, remodeling, and a new skywalk connection from the Design Cruise Vessel to the DECC. Since the infrastructure and wharf are already constructed, the costs for the cruise ship terminal facility will be the least costly than the other four sites. The structure of the new additions is expected to be concrete masonry units (cmu) with a brick and stone veneer to match the existing DECC. The lower level will be a slab on grade with the second level and roof being a metal deck with steel joist structure. The interior partitions will mostly be cmu (for security) with furred gypsum wall board and low maintenance finishes. The security line item is 20% the total cost of construction. The security needs include USCBP required equipment, furnishings, temporary/permanent security gates, fences, lighting and cameras.

Estimated Opinion of Probable Cost DECC

	Name	Quantity	Unit	Cost	Sub-Total
Building	Terminal (New Construction)	15,350	sf	300	$4,605,000
	DECC (Remodel)	6,926	sf	150	$1,038,900
				Sub-Total	**$5,643,900**
	Security (USCBP, Gates, Fences, etc.)	1	ls	$1,128,780	$1,128,780
Infrastructure	Terminal Ground Transportation	0	ls	1	$0
	Potential Roadway Improvements	0	ls	1	$0
	Potential Passenger Parking	0	ls	1	$0
				Sub-Total	**$0**
Waterside	Dredging (no contamination)	0	ls	1	$0
	Wharf Structure Costs	0	ls	1	$0
				Sub-Total	**$0**
				Construction Total	**$6,772,680**
	Construction Contingency			10%	$677,268.00
	Design Fees			10%	$677,268.00
	Contractor General Requirements, Overhead & Profit			25%	$1,693,170.00
				Total	**$9,820,386**

Costs for a Stand Alone Building at the DECC site

Building	Stand-alone	(22,297 sf New Construction)	300	$6,689,100
Infrastructure	Improvements			$245,000
Waterside	Wharf Structure Costs/Budget			$1,000,000
Soft costs	Contingency and Fees			$3,570,345

Total Costs for a Stand-alone building at the DECC site $11,504,445

The Lot D site will be easier to build on, but will cost more due to the increased costs associated with new infrastructure and wharf costs. Like the DECC, the structure of the new facility is expected to be concrete masonry units (cmu) with a brick and stone veneer to match the character of Duluth. The lower level will be a slab on grade with the second level and roof being a metal deck with steel joist structure. The interior partitions will mostly be cmu (for security) with furred gypsum wall board and low maintenance finishes. The facility will make use of the views of the harbor by using curtain walls on the waterside of the facility. The security line item will be the same as at the DECC which is 20% of the total cost of construction. The security needs include USCBP required equipment, furnishings, temporary/permanent security gates, fences, lighting and cameras.

Estimated Opinion of Probable Cost

Lot D

	Name	Quantity	Unit	Cost	Sub-Total
Building	Terminal	22,279	sf	300	$6,683,700
				Sub-Total	**$6,683,700**
	Security (USCBP, Gates, Fences, etc.)	1	ls	$1,336,740	$1,336,740
Infrastructure	Terminal Ground Transportation	1	ls	85000	$85,000
	Potential Roadway Improvements	1	ls	300000	$300,000
	Potential Passenger Parking	1	ls	245000	$245,000
				Sub-Total	**$630,000**
Waterside	Dredging (no contamination)	1	ls	636500	$636,500
	Wharf Structure Costs	1	ls	5500000	$5,500,000
				Sub-Total	**$6,136,500**
				Construction Total	**$14,786,940**
	Construction Contingency			10%	$1,478,694.00
	Design Fees			10%	$1,478,694.00
	Contractor General Requirements, Overhead & Profit			25%	$3,696,735.00
				Total	**$21,441,063**

SECTION IV
CONCLUSION
(NEXT STEPS)

Additional soft costs for both projects are a percentage of the total construction cost. Architectural fees include Mechanical, Electrical, Structure and Civil engineering design. A typical construction contingency for unforeseen conditions is generally around 10%. The General Requirements (under the contractor's fees) include but are not limited to:

- Field personnel
- Insurance
- Performance bond
- Permits
- Testing
- Temporary utilities
- Field office
- Temporary scaffolding and platforms
- Equipment mobilization
- Temporary roads
- Winter protection
- Final cleaning
- Basic Commissioning

SECTION IV
CONCLUSION
(NEXT STEPS)

Continued

This report has laid out the requirements for a new Cruise Ship Terminal Facility for the Duluth-Superior Harbor. The size of the building has been determined, a site(s) has been identified, and the infrastructure has been studied as well as an estimated opinion of probable cost. The next question is "What's next?" The study team feels strongly that, prior to any site development or initiation of design or construction activity for the proposed new Cruise Terminal, **it is highly recommended that a market driven comprehensive cruise passenger econometric market forecast be prepared with a planning horizon of approximately 20 years.** The contemplated Cruise Terminal development program should only be undertaken based on reliable, defendable, and pragmatic market demand forecasts and market driven requirements.

The study group needs to identify a champion for this project to follow through with coordinating this effort. This study not only needs to look at the Cruise industry on the Great Lakes as a whole, but they need to make sure that this econometric study is specific to the Duluth-Superior port. An investment of $10 million to $20 million needs the backing of additional study and due diligence to proceed. If this econometric study does show a robust industry then a totally public building could be funded, but more likely a private/public partnership may pave the way for the construction of a new Cruise Ship Terminal Facility.

In addition to the econometric study, two other additional evaluations need to be completed:

- A transportation study should be completed to evaluate the impacts of traffic generated by the various uses of a multi-use facility as development assumptions are identified.

- It is recommended to develop a Travel Demand Management Plan (TDMP) to identify policies and procedures for travel management during a passenger cruise ship call at the Duluth-Superior Cruise Ship Terminal regardless of the site on which the terminal is located. This will assist in multi-agency coordination to minimize impacts to non-terminal users in the area.

SECTION IV
CONCLUSION
(NEXT STEPS)

Continued

Additional Funding Sources: To make this project successful it is the Study Team's recommendation to look at a number of different funding sources. This is only a partial list of agencies that fund projects. Many other types of funding are one time grants (i.e. the American Recovery and Reinvestment Act – ARRA) that gave money to shovel ready projects. The following is a list of potential funding sources that may aid in the design and construction of the Cruise Ship Terminal Facility.

1. **Economic Development Administration**

   Website: http://www.eda.gov

   Leads the federal economic development agenda by promoting innovation and competitiveness preparing American regions for growth and success in the worldwide economy.

2. **Port Security Funding Grants** (funding through the Port Authority)

   Website: http://www.fema.gov/port-security-grant-program

   Port Security Grant Program (PSGP) provides funding for transportation infrastructure security activities to implement Area Maritime Transportation Security Plans and facility security plans among port authorities, facility operators, and state and local government agencies required to provide port security services.

   The purpose of the FY 2012 PSGP is to support increased port-wide risk management; enhanced domain awareness; training and exercises; expansion of port recovery and resiliency capabilities; and further capabilities to prevent, detect, respond to, and recover from attacks involving improvised explosive devices and other non-conventional weapons; and competitively award grant funding to assist ports in obtaining the resources required to support the National Preparedness Goal's associated mission areas and core capabilities.

3. **Lease Revenue Bonds –** Lease Revenue Bonds are a variant of revenue bonds used in the state's capital outlay program. The revenue stream backing the bond is created from lease payments made by the occupying department to the governmental financing entity which constructs the facility. The financing authority constructs the facility, issues financing bonds, and retains title to the facility until the debt is retired.

4. **General Municipal Bonds -** General bonds are issued with the belief that a municipality will be able to repay its debt obligation through taxation or revenue from projects. No assets are used as collateral.

5. Transportation Economic Development (TED)

Website: http://www.dot.state.mn.us/funding/ted.html

Grant Description: The program specifically targets transportation improvements that support one or more of the following industries: manufacturing, technology, warehousing and distribution, research and development, agricultural processing, bioscience, tourism/recreation. Projects that support industrial park development or high-density multimodal development are also eligible for the program.

As in past solicitations, the program could provide up to 70 percent of funding for eligible infrastructure projects. Additional restrictions that would further limit the available state share from TED funding and require a greater percentage local match may also apply based on MnDOT's "cost participation" policy, DEED's policies regarding the matching requirements for state general obligation bonding authority, or other factors related to the program's funding sources.

The matching funds offered by the local applicant may come from other federal, state, local and/or private funding sources. Inclusion of any private sector contribution that reflects the benefit to private industry is given special consideration in the application review process. The maximum amount of funding that any project can receive from TED is $7 million. Projects will be selected on the basis of evaluation criteria in four broad categories: 1) transportation impact; 2) statewide economic impact; 3) project financial plan; and 4) project readiness.

6. Local Trail Connections Program

Website: http://www.dnr.state.mn.us/grants/recreation/trails_local.html

Grant Description: Eligible projects include acquisition and development of trail facilities. Projects must result in a trail linkage that is immediately available for use by the general public. Trail linkages include connecting where people live (e.g. residential areas within cities, entire communities) and significant public resources (e.g. historical areas, open space, parks and/or other trails). Acquisition of trail right-of-way is eligible only when proposed in conjunction with trail development. Acquisition projects require a perpetual easement for recreational purposes. Development projects require a 20 year maintenance commitment by the project sponsor. Projects inside state park boundaries, state recreation areas, on state trail corridors and elements of the Regional Open Space System in the Twin Cities Metro System are not eligible.

SECTION IV
CONCLUSION
(NEXT STEPS)

Continued

7. **Department of Homeland security -** The Department of Homeland Security enhances the ability of states, local, tribal and territorial jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs.

   FEMA provides state and local governments with preparedness program funding in the form of Non-Disaster Grants to enhance the capacity of state and local emergency responders to prevent, respond to, and recover from a weapons of mass destruction terrorism incident involving chemical, biological, radiological, nuclear, and explosive devices and cyber-attacks.

8. **Minnesota Port Development Assistance Program**

   The need:
   The physical infrastructure of Minnesota's River and Lake Superior public port terminals have been in need of rebuilding and updating to keep Minnesota competitive with other waterway states.

   The solution:
   Recognizing this need, the 1996 Minnesota Legislature began funding the Port Development Assistance Program. The Program involves a maximum state match of 80% and a local match of 20% for each port improvement project. The Ports & Waterway Section of MnDOT administers the Program.

   To date the State has invested $25 million in terminal infrastructure improvements of its public ports on Lake Superior and the Mississippi River. Projects include:

   - Dredging in the dock areas
   - Dock wall construction
   - Building rehabilitating or new construction
   - Improving road and rail access to port areas
   - Upgrading to meet safety codes
   - (The private sector benefits as they operate all public port facilities.)

SECTION IV
CONCLUSION
(NEXT STEPS)

Continued

One additional avenue for funding for this facility will be to develop a Public/Private partnership where both funding sources can leverage their dollars together to develop a beneficial project for both parties. In the past, Cruise Lines have participated in these types of relationships where they enter into an agreement with a city, state and/or port authority to develop the facility.

Please note that partnerships will be very important for continuing discussions of locating the cruise ship terminal facility. If the DECC is determined to be the final location for the cruise ship terminal facility, then extensive work will need to be done to insure the DECC Board of Directors that an addition and remodel will not hinder the use of the existing facility. Up to 11,000 sf in the DECC would need to be repurposed to create a secure and sterile environment that meets the requirements of the USCBP. This location will not work unless the DECC Board of Directors has major input in the development of the work.

Other partnerships to help in developing the terminal building could include the Great Lakes Cruising Coalition, the Great Lakes Ports and the Cruise Ship Industry as broad supporters of the industry as a whole. Locally the Great Lakes Maritime Research Institute could be a resource in possibly helping to determine the economic impact of the cruise ship industry on the Great Lakes.

Finally, as this process of developing an econometric market forecast moves forward, along with site evaluation, determining funding sources, and developing partnerships (i.e. the DECC Board of Directors), all of this has to be done in collaboration with the USCBP. Without the guidance and support of the USCBP, there will be major road blocks in developing the project and the project may not succeed at all. As with everything, team work means everything, and it will take a team to make this facility a jewel in the Duluth-Superior harbor.

APPENDIX A

MEETING MINUTES

KRECH OJARD & ASSOCIATES, P.A. Engineers & Architects

Date: 10.15.12

Duluth Superior Cruise Ship Terminal Facility Study
Kick-Off Meeting Minutes for 10.11.12

KOA Project #121178.01

Attendees

x	Jim Sharrow, Duluth Seaway Port Authority	jsharrow@duluthport.com
x	Ron Chicka, Duluth Superior MIC	rchicka@ardc.org
x	Andy McDonald, Duluth Superior MIC	amcdonald@ardc.org
x	Pat Henderson, ARDC	phenderson@ardc.org
x	Steve Eliason, Customs and Border Protection	Steven.d.eliason@cbp
x	Mary Nelson, Visit Duluth	mnelson@visitduluth.com
x	Jason Serck, City of Superior	serckj@ci.superior.wi.us
x	Steve Sydow, Daniels Shipping	agency@danielsshipping.com
x	LT. Judson Coleman, US Coast Guard	Judson.A.Coleman@uscg.mil
x	Kyle Weitzel, US Coast Guard	
x	John Vickerman, Vickerman and Associates	john@vickermanassociates.com
	Craig Vaughn, SRF Consulting Group	cvaughn@srfconsulting.com
x	Leif Garnass, SRF Consulting Group	lgarnass@srfconsulting.com
x	Kane Tewes, KOA	kane.tewes@krechojard.com

The following is my understanding of the items discussed regarding the Kick-off Meeting for Duluth Superior Cruise Ship Terminal Study which was held at the Duluth Seaway Port Authority conference room.

Item #	Description	Action Item
	Before the meeting began Kane T. gave Jim S. and Steve S. a Passenger Cruise Terminal Data Questionnaire to provide more detailed information regarding the function of the terminal facility.	
	General Discussions	
1	The meeting began with Jim Sharrow showing a Power Point presentation on how cruise ships are currently handled in the port.	
2	The Duluth Entertainment and Convention Center is currently handling the cruise ships in the Twin Ports.	
3	The Duluth Aquarium site has not been used for docking because the port is not deep enough and would need to be dredged.	
4	The harbor is 19'-0" deep in front of the DECC.	
5	When the Clelia II docked at the deck, Harbor Drive was blocked off. This is the main loading dock for the DECC and this road needs to remain open.	

6	A temporary tent was used to process passengers for the Clelia II. This can work for 100 passengers, but not for 400.	
7	The dock is low at the DECC site.	
8	The power point showed a floor plan of how Customs and Border Patrol would process small vessel passengers.	
9	The existing port is a bulk commodity port.	
10	The Port Authority is trying to attract the cruise ship industry.	
11	The cruise ship industry is a small but growing industry on the great lakes.	
12	State may support the cruise ship terminal in the future. There is not enough private funding that would support the cruise ship industry.	
13	The Columbus is a 480' long, 400 passenger ship. This represents the top end in size that would come to the Twin Ports.	
14	The cruise ship industry likes to be downtown.	
15	The study team asked what other facilities on the Great Lakes would be something that could be looked at as part of this study. John V. suggested that the Half Moon facility in Norfolk, VA., the facilities in Erie, Pennsylvania, and/or the facility in Detroit, would be good facilities to look at.	
16	A question was asked as to what other uses could be used in this facility: Museums, Retail, Amphitheater, University use, public and private offices, and the Tall Ships were mentioned. The use would depend on where the facility is located.	
17	The facility needs to be multi-use.	
18	The study team asked if the CBP has specific plans.	
19	A question was raised as to whether foreign passengers could be cleared in Detroit. The answer was most likely no, since Detroit is so far away from Duluth, the ships would not travel this route.	
20	The cruise line industry has a preference to call at Thunder Bay which is a reason why Duluth would need to process international passengers.	
21	Will this facility be a Home Port or a Port of Call?	
22	Can this facility be marketed to 1-line that has many ships (similar to how the airport works), and can this line help pay for the facility?	
23	The facility could probably lease space to cruise ship companies.	
24	The port would prefer a private/public partnership in the new facility.	
25	Who would fund this building? It would depend on where the building is located. It could be a mixture of the Federal Government, a State Government, local City Government(s), and the Port Authority.	
26	A temporary facility could be built for the processing of passengers, however some aspects of the facility would need to be permanent based on CBP requirements.	
	Sites Discussed	
27	The first site discussed was **Rice's Point**. One of the major benefits of this site is that land could be readily available and that a wharf would not have to be built. The down side is that passengers would be dropped off in an industrial area. Passengers would rather be in a down town setting. Passengers would also have to be bused or take a ferry to a down town. The consensus was that Rice's point would not	

	be an appropriate site.	
28	Customs and the Border Patrol aspects add a level of complexity to the project. A question was raised as to whether Customs has, or will become wireless on secure networks thus allowing Customs to process passengers on the ships. Steve E. did not believe the technology was here for this to happen.	
29	The next site discussed was the **DECC**. Harbor Drive cannot be closed because the main loading dock is accessed off of this road. A suggestion was made as to whether a sterile gangway could be built like a skywalk above Harbor Drive. It would need to be approximately 15'-0" clear, but this could work. An addition could be added on to the DECC that would process passengers, but it would also need to be able to be used when cruise ships are not in the port.	
30	The passengers would either board in Duluth with no-return, or end in Duluth. This facility would be a Port of Call.	
31	The ships would be supplied 'just in time'.	
32	There will be no bunkering at any of the sites. Bunkering will take place away from the new terminal.	
33	The DECC has parking for 2,600 vehicles.	
34	The study team will look at a small FIS with the expansion to a large FIS. The Clelia would have about 1200 passengers a year at this facility. A small FIS is below 800 passengers in a year.	
35	This site as well as the Bayfront sites would be a great opportunity to connect to the Duluth Depot and the potential Northern Lights Express (HSR) connection to Minneapolis/St. Paul.	
36	**Bayfront** was discussed as another potential site.	
37	The building could be used in conjunction with festivals when ships were not in town. The facility could be a green room for the stage that exists on the site.	
38	Passengers have multiple options for tours in the Duluth area. They may go to Glensheen, the Depot or Canal Park (to name a few locations). Visit Duluth works with the cruise ships to set these tours up.	
39	This study needs to help convince funders, cruise ship companies, and local governments that this is a viable industry for Duluth-Superior.	
40	**The following locations were identified as potential sites:** The DEDA property adjacent to the Lafarge site Barker's Island in Superior DECC Bayfront (behind the stage) Bayfront (open area adjacent to the Aquarium)	
	After the meeting Jon C., Andy M., Jim S., John V., Leif G. and Kane T. toured the Bayfront and DECC sites.	

This in my understanding of the items discussed in the Duluth-Superior Cruise Ship Terminal Facility Study Kick-off meeting. Please let me know if any changes, additions or corrections need to be made.

KRECH OJARD & ASSOCIATES, P.A. Engineers & Architects

Date: 12.07.12

Duluth Superior Cruise Ship Terminal Facility Study
Kick-Off Meeting Minutes for 12.05.12

KOA Project #121178.01

Attendees

x	Jim Sharrow, Duluth Seaway Port Authority	jsharrow@duluthport.com
x	Ron Chicka, Duluth Superior MIC	rchicka@ardc.org
x	Andy McDonald, Duluth Superior MIC	amcdonald@ardc.org
x	Derek Krivinchuk, MIC	dkrivin2@uwsuper.edu
x	Pat Henderson, ARDC	phenderson@ardc.org
x	Steve Eliason, Customs and Border Protection	Steven.d.eliason@cbp
x	Heidi Timm-Bjold, City of Duluth	htimm@duluthmn.gov
x	Gene Shaw, Visit Duluth	gshaw@visitduluth.com
	Mary Nelson, Visit Duluth	mnelson@visitduluth.com
	Jason Serck, City of Superior	serckj@ci.superior.wi.us
x	Steve Sydow, Daniels Shipping	agency@danielsshipping.com
x	LT. Judson Coleman, US Coast Guard	Judson.A.Coleman@uscg.mil
x	Chris Friese, US Coast Guard	Christopher.r.friese@uscg.mil
	Kyle Weitzel, US Coast Guard	
	John Vickerman, Vickerman and Associates	john@vickermanassociates.com
	Craig Vaughn, SRF Consulting Group	cvaughn@srfconsulting.com
x	Leif Garnass, SRF Consulting Group	lgarnass@srfconsulting.com
x	Lars Barber, Baird and Associates	lbarber@baird.com
x	Kane Tewes, KOA	kane.tewes@krechojard.com

The following is my understanding of the study group meeting at the Duluth Seaway Port Authority conference room.

Item #	Description	Action Item
	Kane T., Leif G., and Lars B. presented their PowerPoint slides that were shown at the HTAC meeting earlier in the day.	
	General Discussions	
1	As Kane T. presented the History of use slide, Jim S. mentioned that in the past, 400 passengers were processed in less than 1 hr., through 6 stations, and the baggage was checked on the ship.	
2	The projection of use for cruise ships using the Duluth-Superior port is 3-4 ships/year in 2022 and 6-8 ships/year in 2032. At this time these are broad guesses. If the proposed terminal is to be viable, the consensus would be that many more than 6-8 ships would make a visit.	

3	Could the port handle a maximum of 1 vessel per day per season?	
4	The study team would highly recommend that a market driven comprehensive cruise passenger econometric forecast be prepared with a planning horizon of approximately 20 years, be completed prior to any site development for the new terminal building.	
5	The question was raised as to who would fund the econometric study, which most if not all of the study group thought that planning for the next 20 years was good idea.	
6	The waterfront in Thunder Bay is currently being developed and may be a good example of what Duluth-Superior would like to do. Additionally, Canada follows the ISPS and would have similarities to what Duluth-Superior is doing.	
7	The Great Lakes Cruise Coalition has completed some market studies. If this study is available, it may be a good base for a local market study.	
8	The study team discussed the largest cruise ship that may visit the Duluth-Superior port (the Braemar, 18' draft). It was suggested that instead of basing the forecast on the largest ship visiting the port maybe it is more important to look at what family of ships would visit the port.	
9	The cruise ships that visited last year were the Yorktown and the Grand Mariner as well as the tall ships.	
10	Dredging is an important discussion since this will determine the size of ships and where they can dock. Depth and contaminated soils make removal more difficult and more expensive. Additionally, removing material next to an existing below water wall will put un-designed stresses on the wall.	
11	The City of Duluth is replacing the wall at the DECC. It is important to know what the city is planning on for the design of this upgraded wall.	
12	The length of the Braemar is approximately 643 feet. For this study, this would be the largest cruise ship visiting the port.	
13	Jim S. asked if there were sub-categories for the Small Cruise Ship Facility that is defined under the USCBP FIS Facility Security Requirements.	
14	It was estimated that a cruise ship passenger pays $5,000 to $10,000 per person per trip.	
15	The US Coast Guard security plans for the Great Lakes ports are risk based.	
16	After the HTAC meeting earlier in the day, the study team was asked if we had looked at Anchoring the Ships off shore, thus reducing the need for a terminal. A transfer vessel could ferry passengers into town from the anchored ship.	
17	USCBP would have to weigh in on this option. Steve S. felt that this would be a hard sell for the cruise lines. This has been done at other ports, because they have had to (i.e. Bar Harbor in Maine). Passengers on cruise lines like to have direct access to the cities that they are staying in.	
18	Heidi T. stated that the Pier B development is not going to use the silos as part of their Phase 1 development. Could the silos be used as part of	

	the terminal? At this point every option is on the table. The use of the silos would be a great amenity, but square footage and passenger flow would need to be investigated further.	
19	Heidi T. also discussed that the MPCA has a Contaminated soils report that may be of interest to the study team.	
20	Heidi T. noted the City of Duluth is committed to maintaining connectivity of the pedestrian facilities between the existing infrastructure and the future Pier B development. Detailed information regarding the future improvements is not yet available.	
21	The stage site was developed using TIF money. There may be some legal ramifications as to whether the site could have future development on it.	
22	The Aquarium owns the land between itself and the Bayfront Festival Park. Given this, any use of the land would need to be approved by the Aquarium Board of Directors (this would be true of all sites).	
23	The Customs and Border Patrol office does not lease nor does it buy the property that it uses to process passengers. They provide a service to the organization that requites passenger processing.	

Next meeting date and time: January, 16th at 3:00 pm.

This in my understanding of the items discussed in the Duluth-Superior Cruise Ship Terminal Facility Study Kick-off meeting. Please let me know if any changes, additions or corrections need to be made.

Kane Tewes

KRECH OJARD & ASSOCIATES, P.A. Engineers & Architects

Date: 01.21.13

Duluth Superior Cruise Ship Terminal Facility Study
Meeting Minutes for 01.16.13

KOA Project #121178.01

Attendees

x	Jim Sharrow, Duluth Seaway Port Authority	jsharrow@duluthport.com
	Ron Chicka, Duluth Superior MIC	rchicka@ardc.org
x	Andy McDonald, Duluth Superior MIC	amcdonald@ardc.org
	Derek Krivinchuk, MIC	dkrivin2@uwsuper.edu
	Pat Henderson, ARDC	phenderson@ardc.org
	Steve Eliason, Customs and Border Protection	Steven.d.eliason@cbp
x	Heidi Timm-Bjold, City of Duluth	htimm@duluthmn.gov
x	Ross Lovely, City of Duluth	rlovely@duluthmn.gov
x	Gene Shaw, Visit Duluth	gshaw@visitduluth.com
	Mary Nelson, Visit Duluth	mnelson@visitduluth.com
	Jason Serck, City of Superior	serckj@ci.superior.wi.us
x	Steve Sydow, Daniels Shipping	agency@danielsshipping.com
	LT. Judson Coleman, US Coast Guard	Judson.A.Coleman@uscg.mil
	Chris Friese, US Coast Guard	Christopher.r.friese@uscg.mil
	Kyle Weitzel, US Coast Guard	
x	John Vickerman, Vickerman and Associates	john@vickermanassociates.com
	Craig Vaughn, SRF Consulting Group	cvaughn@srfconsulting.com
x	Leif Garnass, SRF Consulting Group	lgarnass@srfconsulting.com
	Lars Barber, Baird and Associates	lbarber@baird.com
x	Kane Tewes, KOA	kane.tewes@krechojard.com

The following is my understanding of the study group meeting at the Duluth Seaway Port Authority conference room.

Item #	Description	Action Item
	Kane T., Leif G., and John V. presented their PowerPoint slides that were to be shown at the MIC meeting later in the day.	
	General Discussions	
1	When the design of terminal building begins, the design team needs to work closely with Customs and Board Patrol (CBP) to make sure the security needs of the facility are being met and the functioning spaces are adequate and flexible for the end users.	
2	For this project to continue, the Cruise Ship Terminal needs to make market sense.	

3	A question was raised as to why the econometric study was not done first. The reason was that the size of the building, ships and number of passengers needed to be determined before market research could begin. Doing the market study first may have concluded that a much larger or smaller facility would work than what the Duluth-Superior market could accommodate.	
4	Cruise Lines are looking for unique offerings for their passengers. The Duluth-Superior area has many unique amenities to offer cruise line tourists.	
5	It is better for the local economies to have the cruise lines define the Duluth Superior area as a Home Port. This means that passengers will start and end their trips in the Twin Ports.	
6	Cruise lines are looking for amenities that are not the 'same old cruise', i.e. biking, hiking, and other outdoor activities. Duluth and Superior is an excellent area for these types of activities.	
7	A lot of work needs to be done to convince the cruise lines to come to the twin ports. The questions is whose role it this? Who will be the end-users of the building? Will retail be a part of this project?	
8	For a project like this to succeed a Private/Public partnership may be the best option, but there needs to be a champion from the public side to put this together.	
9	The proposed building is approximately 23,000 sf. Security (non flexible space) could take up to 13,500 sf of space leaving around 10,000sf for use when there are no cruise ships in the port. The design team will need to sit down with the CBP to work out final square footages based on actual use.	
10	Lot D, southwest of Pier B, has up to 12 acres available for development.	
11	There is no need for additional roads at all of the proposed sites. The DECC has the only transit line available. Sites southwest of the DECC would need transit turn-a-rounds.	
12	When the Pier B development is completed, the Duluth Transit Authority will extend their lines to link with the development.	
12	Since all of the Pier B development details are not known at this time, the final report will recommend coordination with the development at Pier B.	
13	Barkers Island does not have a public parking lot within a ½ mile walk.	
14	The cruise lines may have to negotiate with the DECC to reserve parking stalls for their passengers.	
14	All five sites have different parking impacts and the parking impacts will be further evaluated in detail in the final report.	
14	The 4 Duluth sites have the least amount of challenges connecting into the existing Lakewalk, Skywalk and existing Bike systems.	
15	The Duluth Aquarium is starting a land use survey for the land to the southwest of their building. This would be a good tie in for the terminal building. The study team will make contact with the Aquarium to discuss future development.	
16	There has been discussion of bikers being able to use the new Northwest Passage when it is complete in 2015.	
17	DEDA would like to see a development on Lot D that would include	

	the terminal building and a much larger retail attraction. This area may become a destination area.	
18	A champion of this project needs to make contacts with future stakeholders. This will then inform the design team as to which site will be the most suited for the terminal.	
19	The City of Duluth coordinates all designs along the waterfront.	
20	A question was raised as to whether the local universities could to the econometric studies. They can as long as they take into account the entire great lakes cruise line industry and show how it relates to this specific project. There is a consortium called the Great Lakes Maritime Research Institute that may be an interested party regarding this study.	
21	Any market study needs to have this project 'glued' to it.	

This is my understanding of the items discussed in the Duluth-Superior Cruise Ship Terminal Facility Study meeting. Please let me know if any changes, additions or corrections need to be made.

Kane Tewes

APPENDIX B

STUDY TEAM SURVEYS

PASSENGER CRUISE TERMINAL DATA QUESTIONNAIRE

***Explanatory Note**: Where applicable, please circle or provide the appropriate physical dimensions for your answers to the following questions.*

*** Indicates questions which are essential for the terminal throughput capacity analysis.*

Project Name _____ **Project Number** _____

Questionnaire Completed By _____

Phone Number _____ **Date** _____

Interviewed By_____

Terminal Name _____**Terminal Operator** _____

Terminal Stevedore_____ **Landlord Port? ____Yes**, **_____No**

Longshore Labor Union?_____ **Union Local No**._____

Gross Total Terminal Area_____ (Acres, Hectares)

Units of Measure _____ (i.e. Passengers, Passenger Revenue)

Yearly Throughput _____ **Estimated current annual growth** _____%

Future Estimates of Annual Growth:

Year _____ **Estimated annual growth** _____%
Year _____ **Estimated annual growth** _____%
Year _____ **Estimated annual growth** _____%
Year _____ **Estimated annual growth** _____%
Year _____ **Estimated annual growth** _____%
Year _____ **Estimated annual growth** _____% (Out 10 years)

General Passenger Cruise Terminal Information:

1. What % of Year is Terminal Used For Passengers & Cruise Ops _____
2. What % of Scheduled Vessels Are "Home Ported" _____
3. What % of Passenger Luggage Area is Secure for USCBP _____
4. What % of Passengers Arrive/Depart By Auto or Bus _____

Factors affecting passenger cruise terminal throughput based on Vickerman & Associates capacity model six throughput components:

1. Vessel and Berth Activities
2. Ship-to-Terminal Transfer
3. Vessel Hotelling and Luggage Transfer
4. Passenger Lounge and Luggage Claim
5. Passenger Check-In and Customs
6. Passenger Arrival and Departure

1. Cruise Vessel and Berth Activities

1.1 Average Berth Length _____(ft, m), with water depth of _____MLLW(ft, m)

1.2 Number of Berths _____, Total Berth Length_____(ft)

1.3 Average Vessel Length _____(ft, m)

1.4 Average Vessel Passenger Capacity _____

1.5 Average Passenger Seasonal Occupancy Rate _____

1.6 Average percent of Shore Excursions by Passengers From Port of Call Vessels _____

1.7 Average Vessel Draft _____(ft, m)

1.8 Minimum Water Depth at Berth _____(ft, m) MLLW

1.9 Days per Week Scheduled Vessels are at Berth _____

1.10 Typical Vessel Calls per Berth per Day _____

1.11 Average Berth Down Time Percentage _____

1.12 Hours from Vessel Arrival to Passenger Disembark _____

1.13 Hours from Passenger Cut-off to Vessel Departure _____

1.14 Ratio to Peak to Average Passenger Bookings _____

2. Cruise Ship to Terminal Transfer

2.1 Average Passengers Per Hour per Gangway _____

2.2 (a) Berth Operating Days Per Week _____

(b) Berth Operating Hours Per Week _____

2.3 Number of Gangways Used Per Vessel _____

2.4 Hours From First Passenger Check in to Cut-off _____

2.5 Hours Allotted for Passenger Boarding _____

2.6 Hours Allotted for Passenger Disembarkation _____

3.0 Vessel Hotelling and Luggage Transfer

3.1 Productivity of Luggage Conveyors/Loaders (TPH) _____

3.2 Productivity of Hotelling Conveyors/Loaders (TPH) _____

3.3 Percent Conveyor/Loader Down Time _____

3.4 Average Pieces of Luggage Per Passenger _____

3.5 Average Pounds of Luggage Per Passenger _____

3.6 Average Pounds of Hotelling Supplies Required per Passenger _____

3.7 Average Number of Luggage Conveyors/Loaders used Per Vessel _____

3.8 Average Number of Hotelling Conveyors/Loaders Used per Vessel _____

4.0 Passenger Lounge and Luggage Claim Operations

4.1 Average Waiting Hours in Boarding Lounge Area _____

4.2 Average Time Required to Claim Luggage (Hrs.) _____

4.3 Total Terminal Area (Acres) _____

4.4 Boarding Lounge Waiting Area (Sq. Ft.) _____

4.5 Luggage Claim Waiting Area (Sq. Ft.) _____

4.6 Other Waiting Area (Sq. Ft.) _____

4.7 Boarding Lounge Passenger Capacity _____

4.8 Luggage Claim Passenger Capacity _____

4.9 Other Waiting Area Passenger Capacity _____

5.0 Cruise Passenger Check-in and Customs Verification (USCBP)

5.1 Average No. of Check-in Lanes Available _____

5.2 Average Minutes Required to Check In _____

5.3 Check-in Lane Operating Hours Per Day _____

5.4 Average Hours of Peak Check-in Activity _____

5.5 Peak to Average Ratio of Passenger Check-in _____

5.6 Number of Customs Lanes Available _____

5.7 Average "Green Lane" Customs Clearance Mins _____

5.8 Average Red Lane Customs Inspection Mins _____

5.9 Average Percent of Red Lane Inspections _____

6.0 Cruise Passenger Arrival and Departure Operations

6.1 Percent Passengers Who Arrive/Depart by Bus _____

6.2 Percent Passengers Who Arrive/Depart by Auto or Taxi _____

6.3 Percent Passengers Who Arrive/Depart by Other Means _____

6.4 Average Minutes Required to Check Luggage _____

6.5 Percent of Luggage Pre-Checked at Airport _____

6.6 Average Bus (Un)Loading Minutes _____

6.7 Average Auto or Taxi (Un)Loading Minutes _____

6.8 Number of Bus Loading Spaces _____

6.9 Number of Auto and Taxi Loading Spaces _____

6.10 Number of Other Loading Spaces _____

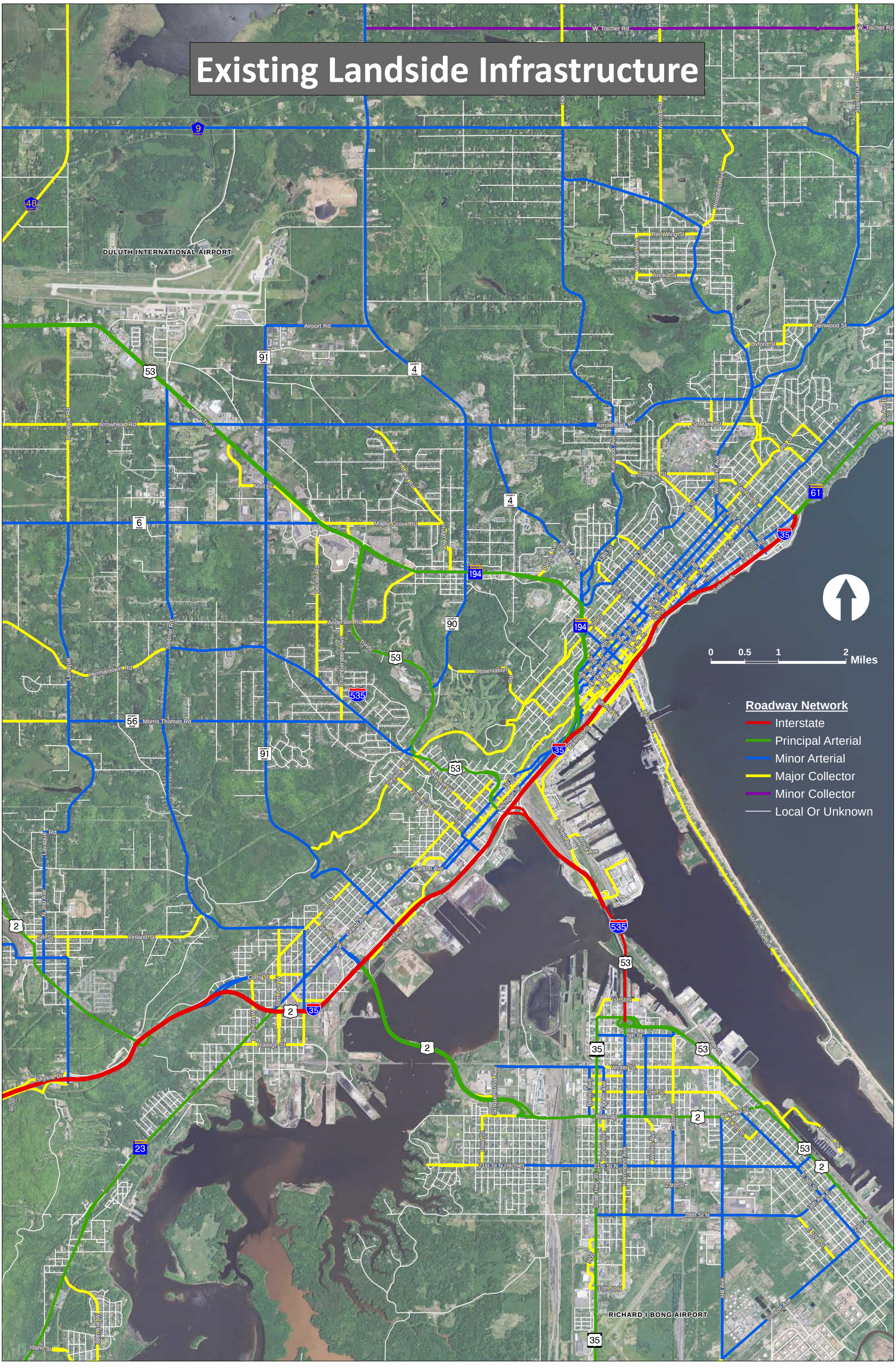
7.0 Other passenger cruise terminal facility features and comments:

_____
_____
_____
_____
_____
_____

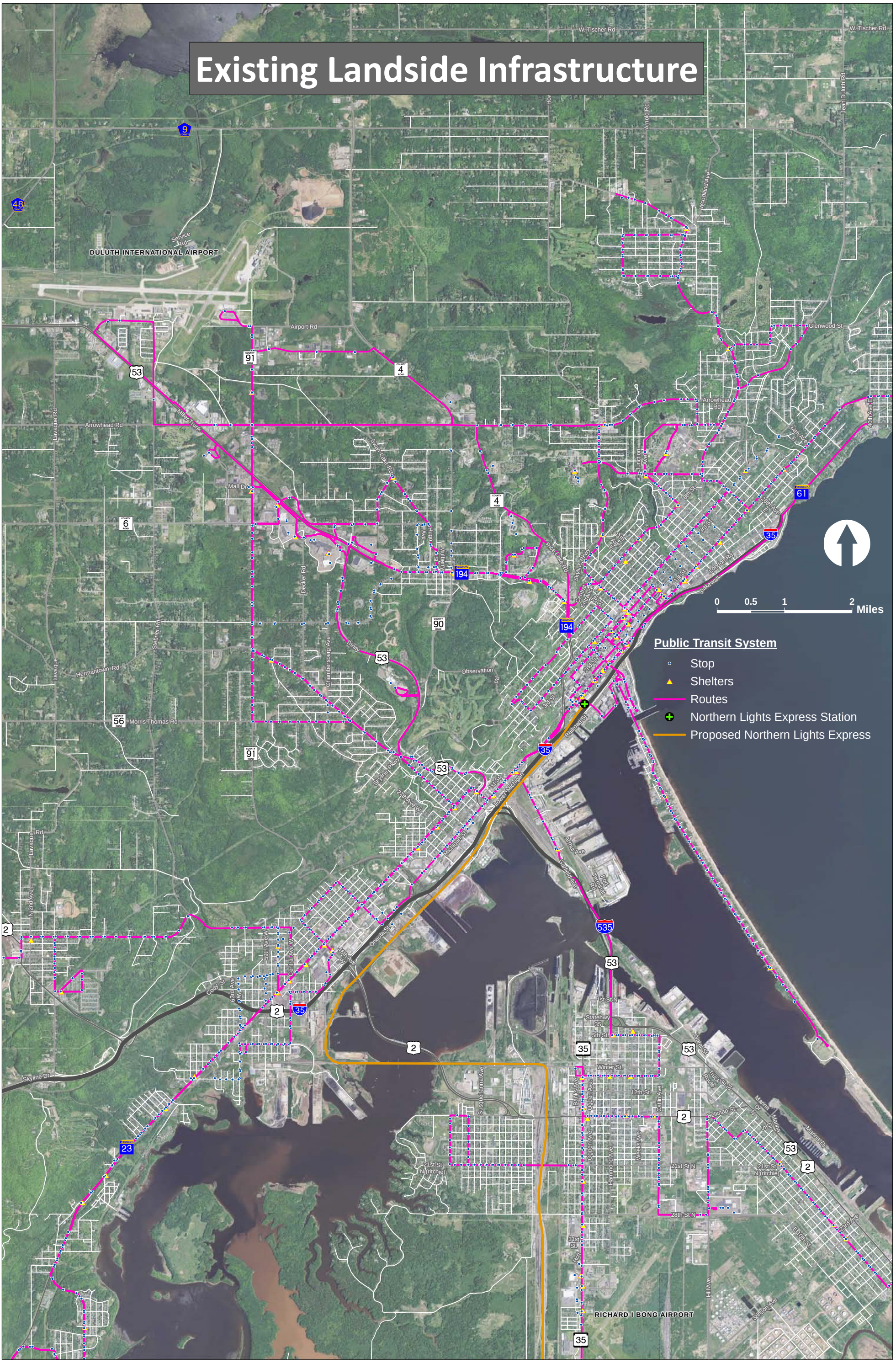
APPENDIX C

EXISTING & FUTURE INFRASTRUCTURE

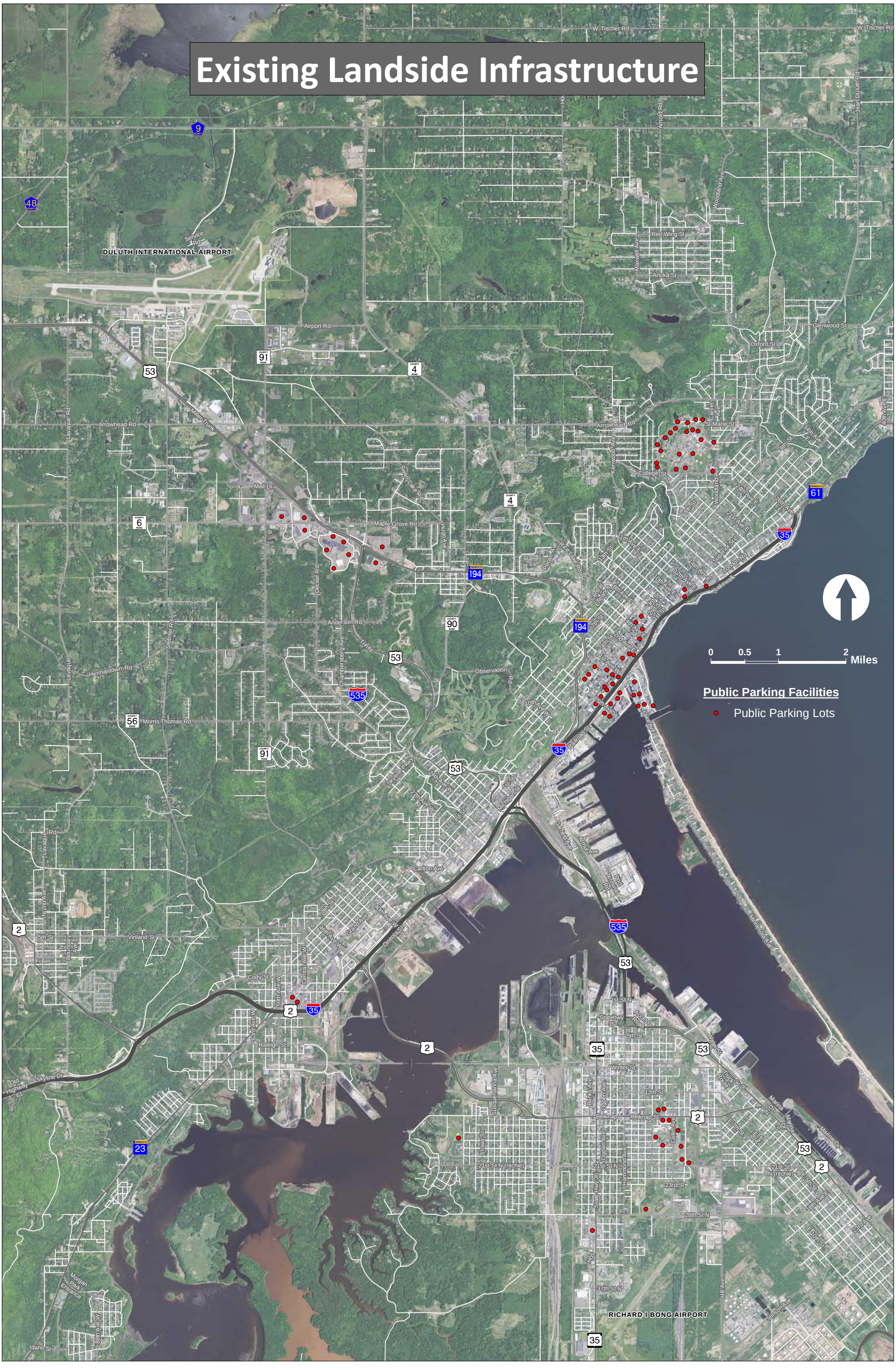
Existing Landside Infrastructure



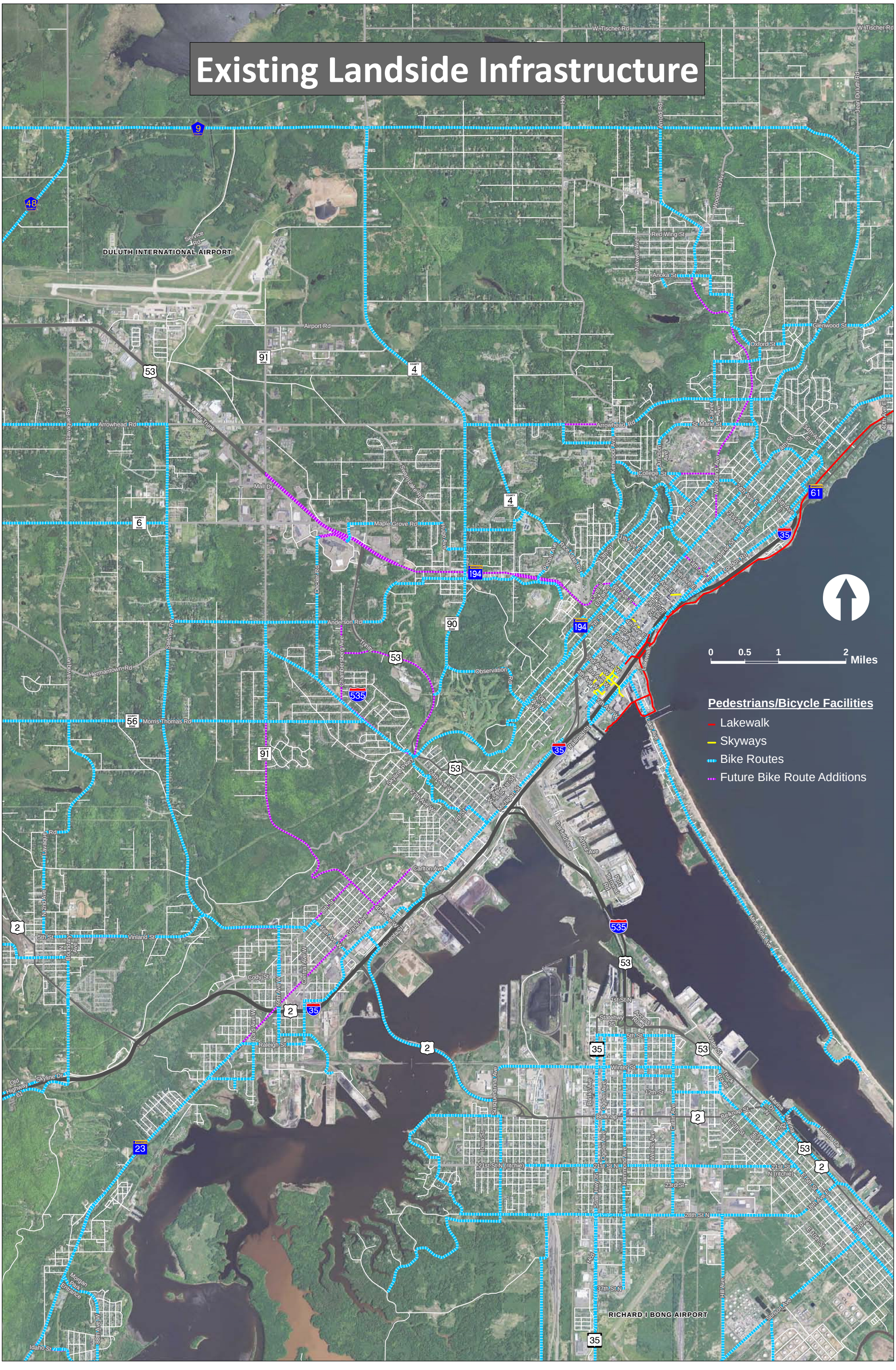
Existing Landside Infrastructure



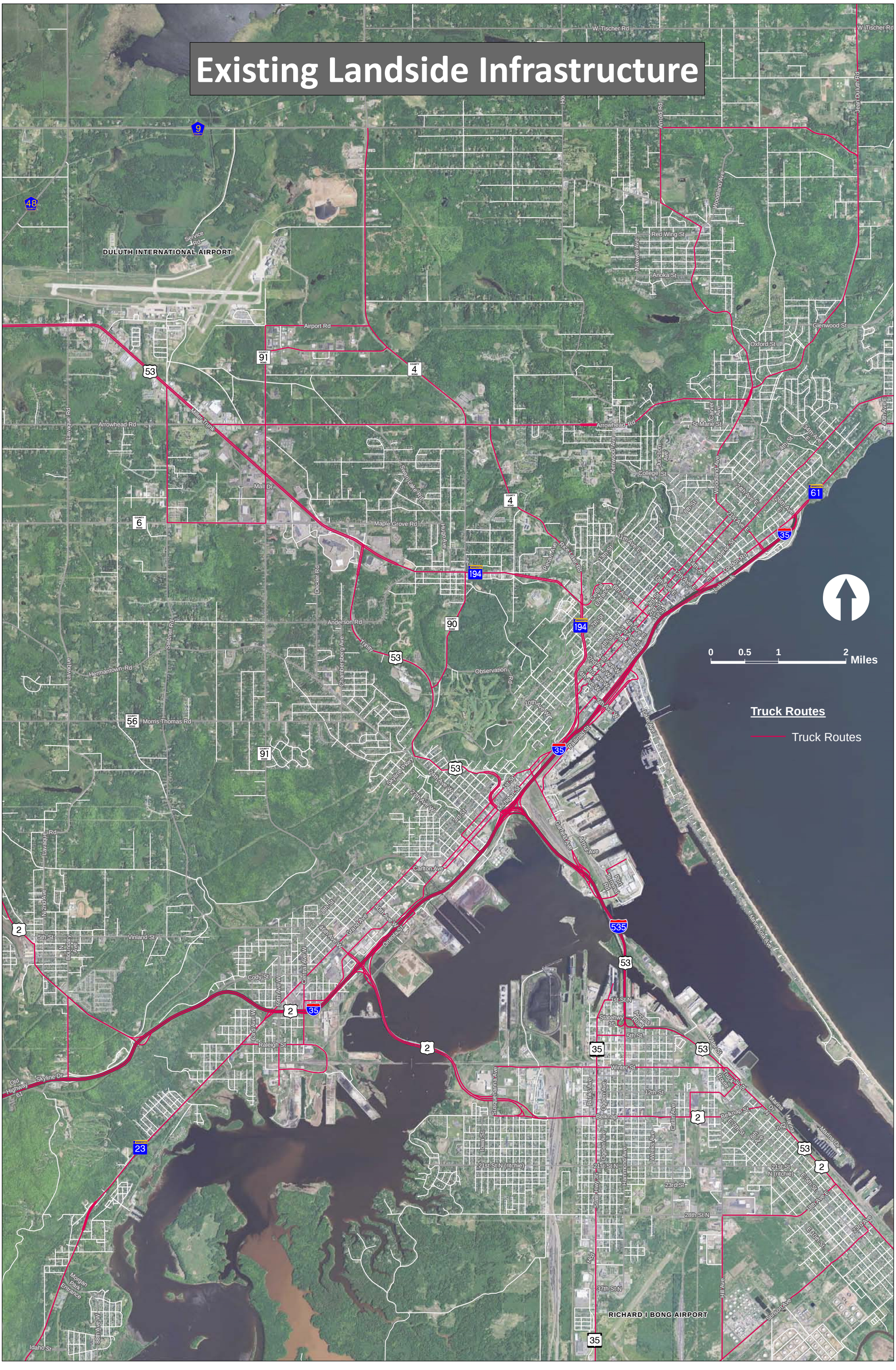
Existing Landside Infrastructure



Existing Landside Infrastructure



Existing Landside Infrastructure



Future Infrastructure Needs

DECC (Duluth, MN)

0 250 500 1,000 Feet

DECC has adequate on-site parking spaces to accommodate terminal parking needs for both Home Port and Port of Call.
Need to coordinate parking utilization and availability, and intermodal zone needs, with the DECC.

DECC has existing on-site facility for intermodal zone use.
Need to coordinate parking utilization and availability, and intermodal zone needs, with the DECC.

Trucks currently deliver to the site using Harbor Drive.

Harbor Drive, which runs between the site and the waterfront, needs to remain open at all times.

Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.

Public Parking Lots

Truck Routes

Transit System
- Stop
- Shelters
- Routes
- Northern Lights Express Station
- Proposed Northern Lights Express

Pedestrian/Bicycle Facilities
- Lakewalk
- Skyways
- Bike Routes
- Future Bike Route Additions

Future Infrastructure Needs

Bayfront Stage (Duluth, MN)

0 250 500 1,000 Feet

DECC could serve as overflow parking and it is within 0.5 mile walking distance of the site. Coordination would be needed with the DECC regarding parking utilization and availability.

Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.

Potential need to expand Railroad Street to 3-lane roadway by year 2032 if terminal is Home Port.

Undeveloped parking area has adequate space to accommodate long-term parking needs and intermodal zone needs for both Home Port and Port of Call; however, this would greatly reduce the parking availability for Bayfront Park.

Incorporate truck circulation needs into site plan.

Public Parking Lots

Truck Routes

Transit System

- Stop
- Shelters
- Routes
- Northern Lights Express Station
- Proposed Northern Lights Express

Pedestrian/Bicycle Facilities

- Lakewalk
- Skyways
- Bike Routes
- Future Bike Route Additions

Future Infrastructure Needs

Bayfront Aquarium (Duluth, MN)

0 250 500 1,000 Feet

DECC could serve as off-site parking and it is within 0.5 mile walking distance of the site. Coordination would be needed with the DECC regarding parking utilization and availability.

Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.

Potential need to expand Railroad Street to 3-lane roadway by year 2032 if terminal is Home Port.

Undeveloped land has adequate space to accommodate intermodal zone needs for both Home Port and Port of Call and potentially all the long-term parking needs. This would require coordination with the Aquarium. Incorporate truck circulation needs into site plan.

Public Parking Lots

Truck Routes

Transit System

- Stop
- Shelters
- Routes
- Northern Lights Express Station
- Proposed Northern Lights Express

Pedestrian/Bicycle Facilities

- Lakewalk
- Skyways
- Bike Routes
- Future Bike Route Additions

Future Infrastructure Needs

DEDA / Lot D (Duluth, MN)

0 295 590 1,180 Feet

DECC could serve as off-site parking and it is within 0.5 mile walking distance of the site. Coordination would be needed with the DECC regarding parking utilization and availability.

Consider expansion of DTA routes/stops to the site. This will also benefit non-cruise terminal facilities such as the DECC, the Aquarium, and Bayfront Park.

Potential need to expand Railroad Street to 3-lane roadway by year 2032 if terminal is Home Port.

Coordinate Duluth Lakewalk system needs with potential Bayfront Master Plan redevelopment.

Undeveloped land has adequate space to accommodate intermodal zone needs for both Home Port and Port of Call and potentially all the long-term parking needs. Coordinate future needs with potential Bayfront Master Plan redevelopment. Incorporate truck circulation needs into site plan.

Public Parking Lots

Truck Routes

Transit System

- Stop
- Shelters
- Routes
- Northern Lights Express Station
- Proposed Northern Lights Express

Pedestrian/Bicycle Facilities

- Lakewalk
- Skyways
- Bike Routes
- Future Bike Route Additions

Future Infrastructure Needs

Barker's Island (Superior, WI)

0 375 750 1,500 Feet

Connections to downtown Duluth skyway system are not feasible.
Connections to Duluth Lakewalk system are not feasible.

Verify no truck and weight restrictions on Marina Drive.

USCBP requires on-site parking for staff, which will need to be accommodated on-site.
No public parking facilities are within 0.5 mile walking distance of the site.
Incorporate truck circulation needs into site plan.

Consider expansion of DTA route 16 (with a stop) to the site. This will also benefit the Barker's Island users.
Ensure expansion of DTA route 16 provides service to or connections to potential Northern Lights passenger rail station.

Public Parking Lots

Truck Routes

Railroad Network

Transit System
- Stop
- Shelters
- Routes
- Northern Lights Express Station
- Proposed Northern Lights Express

Pedestrian/Bicycle Facilities
- Lakewalk
- Skyways
- Bike Routes
- Future Bike Route Additions

APPENDIX D | USCBP REFERENCE DOCUMENTS

APPENDIX D

USCBP REFERENCE DOCUMENTS:

a. *Synopsis of Customs and Boarder Protection Sea/Cruise Port of Entry Federal Inspection Services (FIS) Facility Requirements for:*

    i. *Small Sea/Cruise Port of Entry FIS (less than 800 passengers)*

b. *U.S. CUSTOMS AND BORDER PROTECTION DESIGN STANDARDS FOR CRUISE SHIP PASSENGER PROCESSING FACILITIES - CRUISE TERMINAL DESIGN STANDARDS*

APPENDIX E CRUISE TERMINAL BUILDING PROGRAM COMPARISONS

APPENDIX E
CRUISE TERMINAL BUILDING PROGRAM COMPARISONS

Cruise Terminal Building Program Comparisons

The Study Team reviewed several recent North American cruise terminal planning projects for a single cruise berth facility to evaluate and compare other cruise terminal design approaches and features for a new Cruise Terminal for Duluth-Superior .

Case A: Single Berth, Two Story, Cruise Terminal (USCBP Classification: 800 to 2,000 passengers per hour) Example:

The James R. Herman Cruise Terminal Project at Pier 27, Port of San Francisco, CA

The Port of San Francisco intends to develop a single berth primary cruise terminal at Pier 27 to replace the existing facility at Pier 35 and be fully operational by Spring of 2014. The existing primary terminal at Pier 35 has neither the sufficient capacity to allow for the increasing length and passenger capacity of new cruise ships nor the amenities needed for an international cruise terminal. Under the approved design scheme, the proposed plan calls construction of an approximately 80,000 to 88,000 square foot, two-level cruise terminal facility and the Northeast Wharf Plaza. The proposed size of the terminal was defined as optimal to serve current and anticipated ship berthing requirements and associated passenger flows. The level of improvements and equipment proposed in the Pier 27 cruise terminal would be designed to optimally handle vessels carrying 2,600 passengers (base design load).

Passengers departing and arriving in San Francisco would pass through the terminal, which would house ticketing, baggage and Customs and Border Protection Area and security operations. The cruise terminal improvements would include installation of new maritime equipment, including a mobile overhead gangway for boarding passengers along the Pier 27 apron. The project includes cruise ship shore-side power infrastructure to provide electricity to power the ship while in berth, allowing cruise ships to cease running their on-board engines and substantially reduce air emissions.

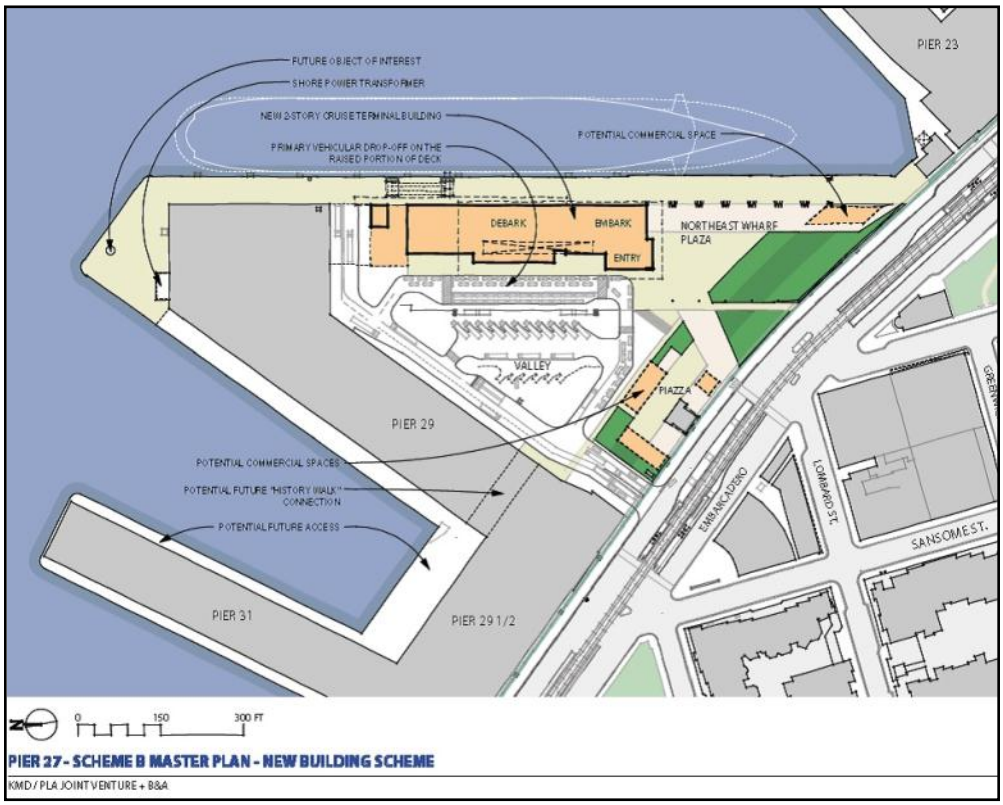
This new construction cruise terminal had a total space allocated to the cruise terminal of approximately 80,000 square feet. The Pier 27 cruise terminal facility had a breakdown of space as follows:

• Lobby & Security Screening	10,300 square feet
• Embarkation – Check-In	16,500
• Vertical Circulation Core	5,900
• Disembarkation Services	20,300
• Security	900
• Operations	2,900
• Customs and Border Protection	10,700
• Subtotal—Total Programmed Area	67,500
• Building Envelope/Partitions/Shaft	3,400
• Terminal Program Area	70,900
• Mechanical, Electrical, Plumbing Systems	8,600
Total Cruise Terminal Programmatic Area:	79,500 square Feet

APPENDIX E
CRUISE TERMINAL BUILDING PROGRAM COMPARISONS

Continued

The current construction budget is **$49.9 million**. A rendering of the cruise terminal and a schematic of the current site plan follows:



Pier 27 Cruise Terminal Architectural Rendering

APPENDIX E
CRUISE TERMINAL BUILDING PROGRAM COMPARISONS

Continued

Case B: Single Berth, Two Story, Cruise (USCBP Classification: < 800 passengers per hour) Terminal Example:

Detroit's Public Dock and Boat Terminal, Detroit/Wayne County Port Authority

A new 21,000 square foot $21 million cruise terminal on the city's riverfront was opened in July 2011. Formerly a General Motors parking lot, the 1.2 acre site links two segments of the city's public riverfront that were previously disconnected, adding 300 feet of walkway.

The buildings four programmatic areas include a 5,000 square foot event space that will also convert to a boarding and luggage area when ships dock. The building has a passenger lounge, a Border Control office and the Port Authority's offices. The downtown site is next to the international car tunnel that runs under the Detroit River to Windsor, Canada.

Architectural renderings of the cruise terminal follow:

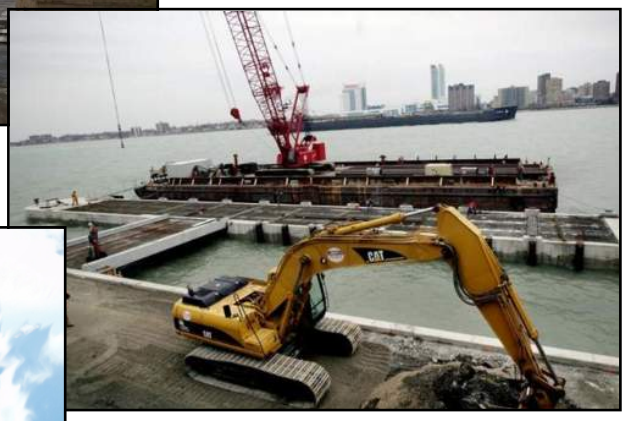
APPENDIX E
CRUISE TERMINAL BUILDING PROGRAM COMPARISONS

Continued

The Port Authority is also working on a plan to bring in ferries, water taxis, tall ships, dinner boats, and naval vessels. The 250-foot off-shore wharf is designed to accommodate up to a 450-foot vessel. Boats are expected to run from April to October but the building, with expansive river views and 5,000 square feet of space to rent, will be open year round.

A unique structural engineering system for the project building and wharf includes:

- 95 H-piles which support the Terminal building. Each pile is rated at a nominal 100 tons bearing on the glacial till overlying the bedrock at a depth of 95 feet below the ground surface.
- The 23-ft. diameter coffer cells on the upstream and downstream ends of the wharf are 60 feet long and extend 35 feet below the river bottom. The coffer cells are filled with stone.
- The deck of the wharf is supported by 17 95-ft. long, 20-inch diameter pipe piles rated at 200 tons capacity and two battered H-piles bearing on the glacial till.



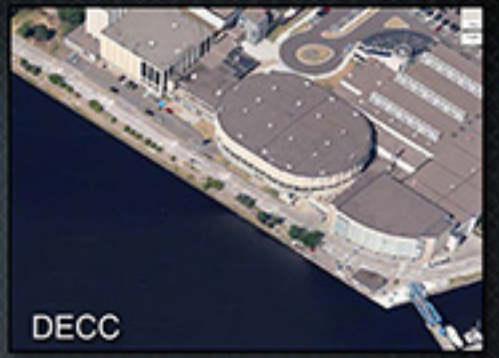
Detroit's Public Dock Single Berth Cruise Terminal Development

APPENDIX F HARBORSIDE CONSIDERATIONS

Proposed Berthing Locations

- Preliminary Project Review

Baird



Navigation Requirements/ Considerations

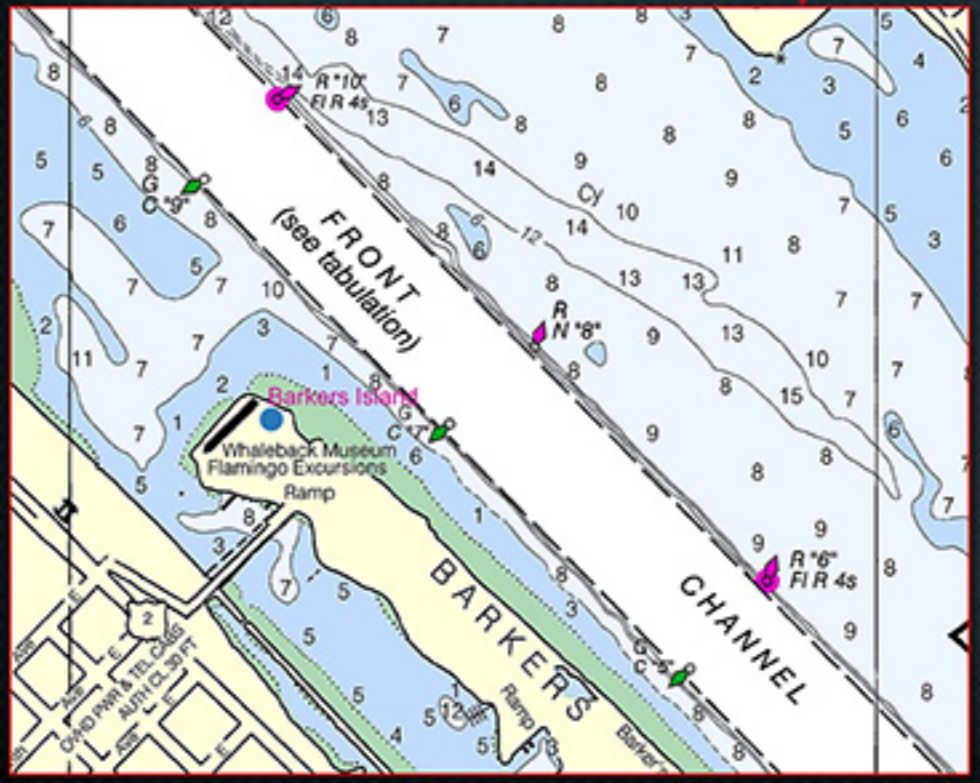
- Preliminary Project Review

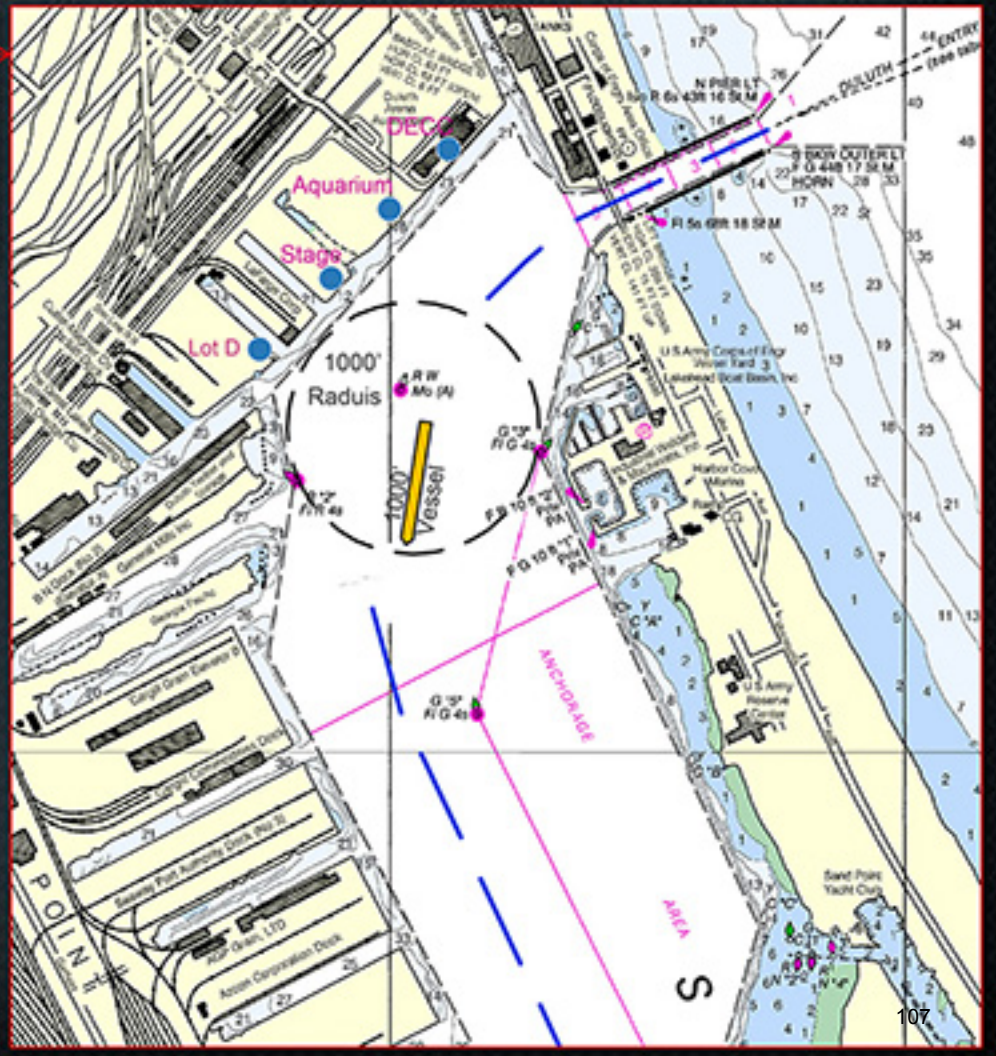
Baird

Preliminary Design Vessel MS Braemer

537 ft (LOA)
74 ft (Beam)
18 ft (Draft)

- Navigable depth & horizontal/ vertical requirements to accommodate design vessel
- Existing shipping/navigation channel requirements
- Regulatory concerns

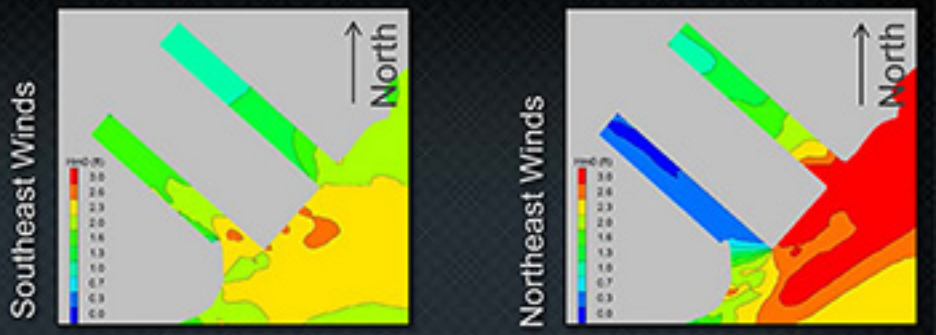




Mooring Requirements/ Considerations

- Preliminary Project Review

Baird



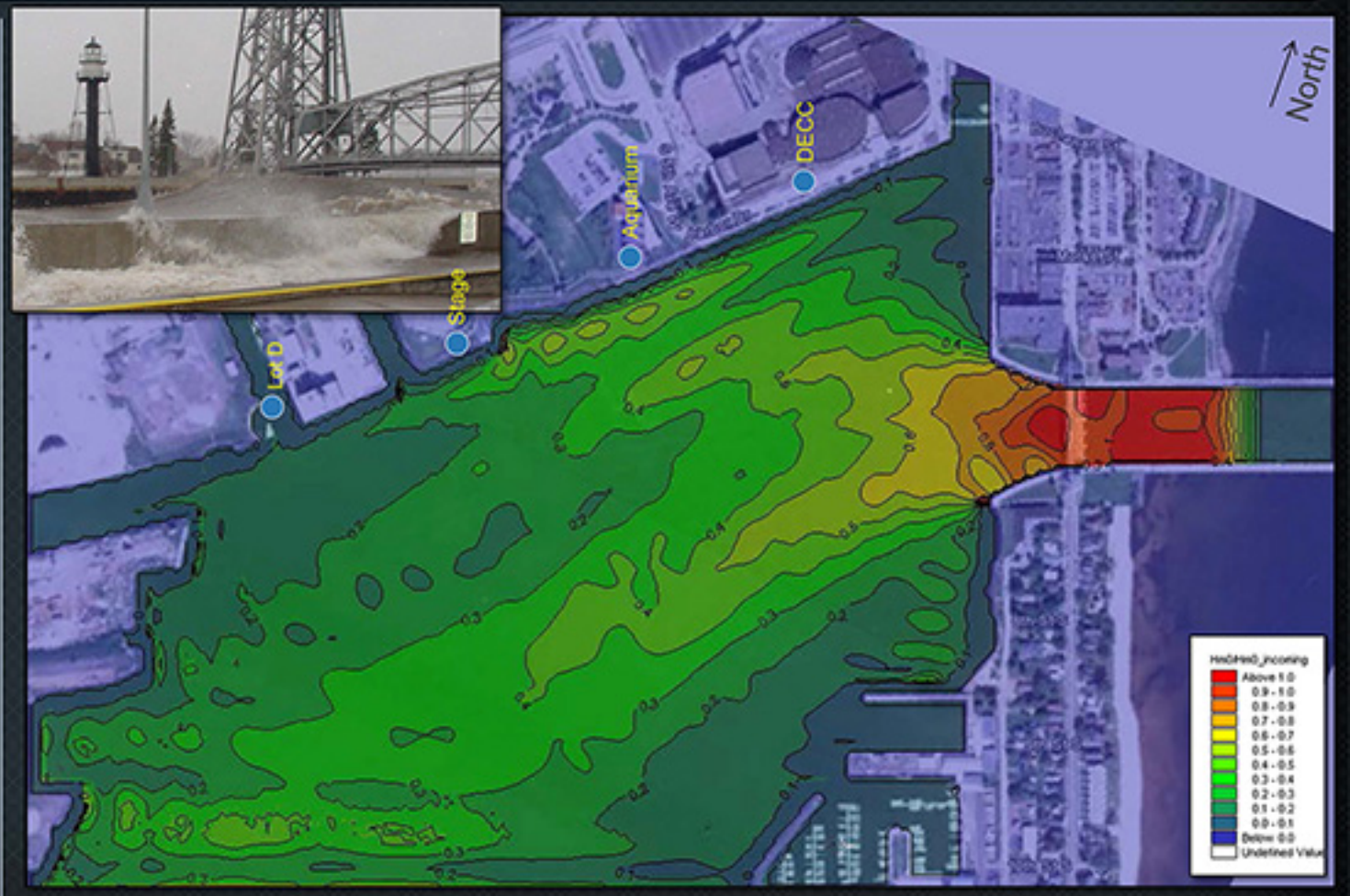
Wind Generated Waves Within the Harbor

Design Vessel Requirements
- Water depth at mooring
- Vessel (LOA, Beam, Draft)
- Clearance to existing navigation channel

Mooring Structures
- Rehabilitate, retrofit, new
- Loads, bollards, fenders, boarding piers/gangways

Land Based Access
- Passenger/provision/ infrastructure

Other Requirements
- Wind, wave, water levels (seasonal, long-term, surge, seiche)
- Ship motion, downtime, alternative emergency mooring
- Sedimentation, dredging, scour protection
- Cost/Maintenance



Offshore Waves Entering Through Harbor Entrance

APPENDIX G STUDY TEAM CONTACT INFORMATION

Full Contact Information for Mailing List 'MIC - Cruise Ship Terminal Study

Monday, October 29, 2012

1. CMDR KENNETH BRYAN - US COAST GUARD	DULUTH MSU 600 LAKE AVE S DULUTH, MN 55802	Work: 218.720.5286 Ext. 130 Email: Kenneth.r.bryan@uscg.mil
2. RON CHICKA - ARDC	MIC DIVISION	Work: 218.529.7506 Home: 715.398.6168 Mobile: 218.349.8625 Email: rchicka@ardc.org
3. STEVEN ELIASON - US CUSTOMS & BORDER PROTECTION	FEDERAL BUILDING, ROOM 209 515 WEST FIRST STREET DULUTH, MN 55802	Work: 218.720.5203 Ext. 230 Email: steven.eliason@dhs.gov
4. PAT HENDERSON - ARDC	OPERATIONS DIVISION	Work: 218.529.7547 Email: phenderson@ardc.org
5. RON JOHNSON - DULUTH SEAWAY PORT AUTHORITY	1200 PORT TERMINAL DRIVE DULUTH, MN 55802-2609	Work: 218.727.8525 Email: rjohnson@duluthport.com
6. JACK LAVOY - GREAT LAKES AQUARIUM	353 HARBOR DRIVE DULUTH, MN 55802	Work: 218.740.3474 Email: jlavoy@glaquarium.org
7. ANDY MCDONALD - ARDC	MIC DIVISION	Work: 218.529.7514 Home: 218.724.5883 Email: amcdonald@ardc.org
8. MARY NELSON - VISIT DULUTH	21 W. SUPERIOR STREET STE 100 DULUTH, MN 55802	Work: 218.625.8102 Email: mnelson@visitduluth.com
9. MARK REISWIG - US COAST GUARD	DULUTH MSU 600 LAKE AVE S DULUTH, MN 55802	Work: 218.720.5286 Email: mark.d.reiswig@uscg.mil
10. DAN RUSSELL - DECC	350 HARBOR DR DULUTH, MN 55802	Work: 218.722.5573 Ext. 203 Email: drussell@decc.org
11. JASON SERCK - CITY OF SUPERIOR	STE 210 1316 N 14TH ST SUPERIOR, WI 54880	Work: 715.395.7217 Alternate: 715.395.7335 Email: serckj@ci.superior.wi.us
12. JIM SHARROW - DULUTH SEAWAY PORT AUTHORITY	1200 PORT TERMINAL DRIVE DULUTH, MN 55802-2609	Work: 218.727.8525 Email: jsharrow@duluthport.com
13. GENE SHAW - VISIT DULUTH	21 WEST SUPERIOR ST DULUTH, MN 55802	Work: 218.722.4011 Email: gshaw@visitduluth.com
14. STEPHEN SYDOW - DANIEL'S SHIPPING SERVICES INC./FEDMAR I	605 BOARD OF TRADE BLDG DULUTH, MN 55802	Work: 218.722.7461 Email: agency@danielsshipping.com
15. KANE TEWES - KRECH OJARD	227 WEST FIRST ST STE 200 DULUTH, MN 55802	Work: 218.727.3282 Email: kane.tewes@krechojard.com
16. HEIDI TIMM-BIJOLD - CITY OF DULUTH	BUSINESS & ECONOMIC DEVELOPMENT 411 W FIRST ST, ROOM 402 DULUTH, MN 55802	Work: 218.730.5324 Email: htimm@duluthmn.gov
17. RONDI WATSON - ARDC	MIC DIVISION	Work: 218.529.7511 Home: 218.310.3025 Email: rwatson@ardc.org

Policy Board Members

January 2013

MINNESOTA

CITY OF DULUTH

LINDA KRUG
City Council
P.O. Box 92
Duluth MN 55801
218-206-9903
lkrug@duluthmn.gov
Term Expires September 2014

BRANDON MAURISAK
DTA Board
1025 Glen Place; Apt B19
Duluth, MN 55806
218-724-3465 (h)
brandon.maurisak@gmail.com
Term Expires July 2014

JENNIFER JULSRUD
City Council
4920 Woodlawn Street
Duluth MN 55804
218-525-2409 (h)
jjulsrud@duluthmn.gov
Term Expires January 2014

DAVID MONTGOMERY
Minnesota Co-Chair
Citizen Representative
402 City Hall
411 West First Street
Duluth MN 55802
218-730-5370 (w)
dmontgomery@duluthmn.gov
Term Expires January 2014

CITY OF HERMANTOWN

WAYNE BOUCHER
Mayor
4263 LaVaque Road
Hermantown, MN 55811
218-729-3675 (w) / 218-590-9932 (m)
mayorboucher@hermantownmn.com
Term Expires January 2013

CITY OF PROCTOR

DAVID BRENNA
Mayor
307 N. Ugstad Road
Proctor, MN 55810
218-393-1174 (m)
dbrenna@mail.com
Term Expires January 2013

ST. LOUIS COUNTY SUBURBAN TOWNSHIPS

EARL ELDE
Secretary
Midway Township Official
2781 Midway Road
Duluth, MN 55810
218-628-1323 (h)
eelde@msn.com
Term Expires May 2014

CINDY MOE
SolwayTownship Official
3887 Pine Ridge Drive
Proctor, MN 55810
218-728-7665 (w) / 729-5559 (h)
cmoe@duluthperkins.com
Term Expires December 2013

ST. LOUIS COUNTY

FRANK JEWELL
County Commissioner
St. Louis County Courthouse
100 North 5th Avenue West
Duluth, MN 55802
218-726-2450 (w)
jewellf@stlouiscountymn.gov
Term Expires December 2013

WISCONSIN

CITY OF SUPERIOR

ED ANDERSON
Citizen Representative
607 East 7th Street
Superior, WI 54880
715-395-1504 (w) / 392-4155 (h)
ltcoledanderson.cap@gmail.com
Term Expires May 2014

WARREN BENDER
City Council
2428 Ogden Avenue
Superior, WI 54880
715-394-7453 (h) /
218-590-4464 (m)
bttt817@hotmail.com
Term Expires May 2014

DENISE MCDONALD
City Council
705 3rd Avenue E
Superior, WI 54880
715-394-5712 (w)
218-348-0986 (m)
denisemcdonald@live.com
Term Expires May 2014

CITY OF SUPERIOR, cont'd

DAN OLSON
City Council
6001 Cumming Avenue
Superior, WI 54880
218-728-5151 (w) / 715-399-0189 (h)
218-348-2346 (m)
LOCAL1091@aol.com
Term Expires May 2014

DOUGLAS COUNTY

KEITH ALLEN
County Board
5220 E First St
Superior, WI 54880
715-398-6507 (w) / 218-393-7462 (m)
keith522@yahoo.com
Term Expires May 2014

NICK BAKER
Wisconsin Co-Chair
County Board
2623 Pennsylvania Avenue
Superior, WI 54884
715-392-1083 (h) / 391-9256 (m)
nick.baker@douglascountywi.org
Term Expires May 2014

ROSEMARY L. LEAR
County Board
2902 E. Second Street
Superior, WI 54880
715-398-6745 (h)
218-269-5241 (m)
rlear54880@aol.com
Term Expires May 2014

JIM PAINE
County Board
2203 Hughitt Avenue
Superior, WI 54880
218-348-9411 (m)
jimofsuperior@gmail.com
Term Expires June 2014

DOUGLAS COUNTY SUBURBAN TOWNSHIPS

BROC ALLEN
Citizen Rep
6428 S. Allen Road
Foxboro, WI 54836
715-399-2133 (h)
claymanallen@aol.com
Term Expires May 2014

--continued--

Policy Board Alternates

(If appointed by jurisdiction)

CITY OF PROCTOR

SHAWN MCGOVERN
City Council
100 Pionk Drive
Proctor, MN 55810
218-390-0409 (w)
Smcgov7904@aol.com
Term Expires December 2012

ST. LOUIS COUNTY

STEVE O'NEIL
County Commissioner
St. Louis County Courthouse
100 N 5th Avenue West
Duluth, MN 55802
218-726-2359 (w) / 348-0473 (m)
oneils@stlouiscountymn.gov
Term Expires December 2013