PROJECT INFORMATION DOCUMENT

Chapter 4. The Proposed Action

Gateway Pacific Terminal

Whatcom County, Washington

Pacific International Terminals, Inc.
1131 SW Klickitat Way
Seattle, Washington 98134

February 28, 2011

Available online at:
https://secureaccess.wa.gov/ofm/iprmt24/site/alias__1357/22894/review_documents.aspx

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FIGURES

CHAPTER 4 THE PROPOSED ACTION

This chapter presents a detailed description of the proposed action to construct and operate the Gateway Pacific Terminal. This project description is intended for consideration by agencies with jurisdiction during the environmental review and permitting process and to provide information to other stakeholders and interested parties.

4.1 PROJECT OVERVIEW

The Gateway Pacific Terminal will be a multimodal, deep-water Terminal to provide storage and handling for the export and import of dry bulk commodities. The Terminal would be developed on approximately 350 acres within a total project area of 1,200 acres (Figure 1-2). The project area is zoned for Heavy Impact Industrial use and is located in Whatcom County's Cherry Point Industrial Urban Growth Area. The Terminal would be designed to minimize impacts to associated resources while meeting the purpose and need for the project.

Terminal construction would be completed in two development stages. Construction of Stage 1 is expected to commence in 2013 when all required federal, state, and local permits and authorizations have been obtained and environmental review under NEPA and SEPA has been completed. Pacific International Terminals currently anticipates that Stage 1 will be completed by 2015 and Stage 2 by 2017 (see Section 4.4).

The Terminal would be designed to handle up to 54 million metric tons per year of dry bulk commodities. Commodities would be transferred to and from the Terminal by rail on the BNSF Railway's Custer Spur. Modern material handling equipment would be installed and effective practices would be implemented to protect the safety of Terminal employees and protect the environment during Terminal operations.

The type and quantity of dry bulk commodities managed during the operating life of the Terminal would likely change over time depending upon customer and market demands. The Terminal's commodities storage and handling infrastructure would enable the Terminal to handle the export and import of a wide range of commodities, including grain products, coal, potash, calcined petroleum coke, and other bulk commodities. It is anticipated that the Terminal would initially manage export of calcined petroleum coke and potash from the west loop storage area and low-sulfur, low-ash coal and other coal products from the east loop storage area.

4.2 PROPERTY OWNERSHIP

Approximately 1,109 acres of the approximately 1,200-acre project area is land owned by Pacific International Terminals. The project area also includes Whatcom County road rights-of-way, state-owned tidelands, and a small parcel of land owned separately (Table 4-1; Figure 1-3). In addition, a number of utility easements cross the project area. Major portions of the trestle and wharf would be located on state lands leased from the Washington Department of Natural Resources.

Table 4–1 Summary of Land Ownership and Acreage in the Project Area

Land Owner	Upland (acres)	Marine (acres)	Total (acres)
Pacific International Terminals, Inc.	1,090.5	18.2	1,108.7
Whatcom County rights-of-way	19.9	0.0	19.9
Parcel 14	29.6	0.0	29.6
State lands managed by Department of Natural Resources	0.0	43.3	43.3
Total	**1,140.0**	**61.5**	**1,201.5**

BNSF Railway would provide rail service via the Custer Spur, the only existing rail line serving the Cherry Point industrial UGA. The Custer Spur branches west from the BNSF Railway’s Bellingham Subdivision main line at Custer, then travels west, then south approximately 6.2 miles. The width of the BNSF Railway’s existing right-of-way ranges from 70 feet to over 150 feet. BNSF Railway expects to acquire approximately 43 additional acres of contiguous rights-of-way adjacent to its currently owned rights-of-way. The additional rights-of-way would be used for rail improvements required to support the Terminal and for compensatory mitigation. The estimated area of acquisition is based on an average 40-foot linear embankment along the Custer Spur, additional width for an access road parallel to the Spur between Ham Road (BNSF Railway Milepost 1.86) and Brown Road (BNSF Railway Milepost 4.95), and extra width for construction of additional receiving and departure trackage.

4.3 THE PROPOSED PROJECT

As a deep-water, multimodal marine terminal for the export and import of dry bulk commodities, the Terminal has been designed to meet the operational needs of Pacific International Terminals and to successfully service dynamic international bulk commodity markets over the long term. The Terminal design provides maximum flexibility to handle a wide range of commodities as market needs and customer demands change over time. The deep-draft wharf and storage and handling areas allow the Terminal to load large, oceangoing vessels efficiently for shipment of commodities to Asian and other international markets.

Because the Terminal would handle a broad range of dry bulk commodities during its functional life, it will be designed so that only minor changes in infrastructure would be required to accommodate different commodities, or to change from export to import. As discussed in Section 3.2.4, for successful operation, a large land area is needed to provide sufficient space to store cargo temporarily at the Terminal and to support the required rail infrastructure. In addition, a deep-draft wharf is necessary to accommodate the large Panamax and Capesize vessels that currently service the import/export commodity trade.

For safe and effective operation, the Terminal requires extensive infrastructure and facilities, including:

- Two independently operational, industrial service rail loops (the "East Loop" and "West Loop") with sufficient trackage to handle projected bulk volumes by rail; both loops would be connected to BNSF Railway's Custer Spur, and each loop would house associated commodity storage capacity, material handling equipment, and other required bulk handling infrastructure;
- A Shared Services Area providing access from the East and West Loops to the access trestle and wharf;
- A three-berth, deep-draft wharf with ship-loading equipment and an access trestle extending from the shoreline to the wharf;
- Stormwater management systems and other utilities;
- Specific design features to avoid, minimize, or compensate for the environmental effects of the Terminal; and,
- Improvements to the existing BNSF Railway's Custer Spur, including rail receiving/departing infrastructure and, eventually, a double track from the Custer Wye to the proposed Terminal.

The project layout and the locations of these general functional areas are shown in Figure 1-2.

4.3.1 East Loop

The Gateway Pacific Terminal East Loop would handle a wide variety of dry bulk commodities in its lifetime. Initially, it is anticipated that the East Loop would predominantly handle low-sulfur, low-ash coal.

The general layout of the East Loop is shown in Figure 4-1. The East Loop would include the following facilities:

- Service rail loop and unloading station;
- 80-acre stockyard and associated machinery, including stacking and reclaiming machines;
- Approximately 8,000 square feet of new buildings;
- Conveyors for outloading and inloading commodities; and

- Access roadways.

The East Loop would also include development of utilities, such as stormwater treatment facilities, electrical power, lighting, water, communications, and wastewater facilities. Features that are common throughout the Terminal are described in Sections 4.3.6 through 4.3.8.

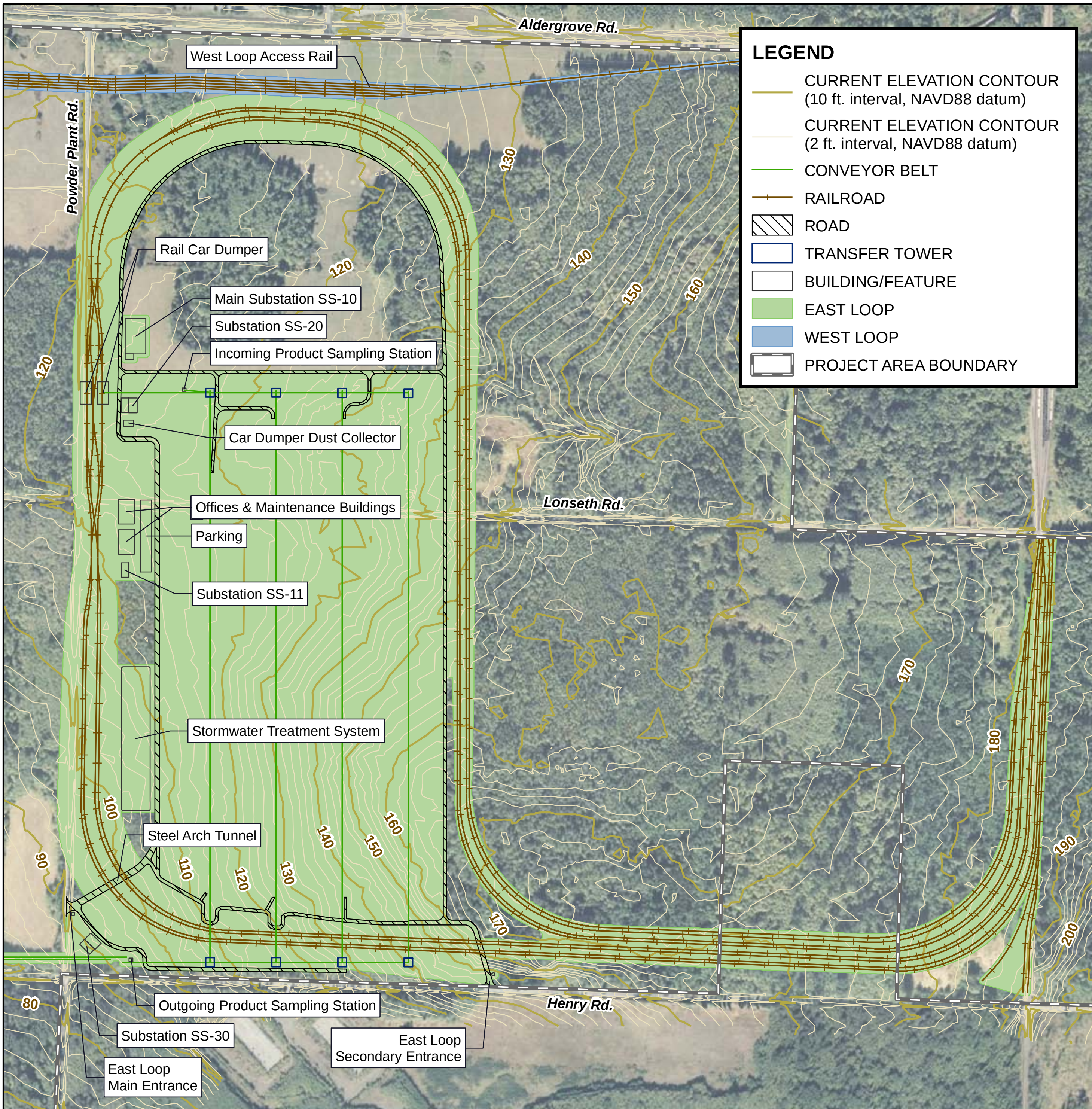
4.3.1.1 *East Loop Rail and Unloading Station*

Rail access to the East Loop would be provided from the Custer Spur. A new multiple-switch connection and new connecting trackage would join the Custer Spur just north of BNSF Railway's existing Elliot Rail Yard, located between Aldergrove Road and Lonseth Road (Section 4.3.5). The East Loop would be designed to allow unobstructed unloading of rail cars. The loop would also support staging of both loaded, inbound bulk commodity trains preparing for dumping, and empty, outbound trains being inspected for departure. When developed to its full capacity, the East Loop rail facilities would be capable of accommodating multi-train dumping of bulk commodities, with capacity to stage up to eight trains for either inbound or outbound Terminal movements. The rail would be built on an engineered embankment to provide a level rail surface, thereby minimizing fuel consumption and improving rail operations and safety.

The East Loop would include a commodities unloading station incorporating appropriate dust controls. The station would house a single unloading shed employing a tandem rotary dumper to unload two gondola-style railway cars into a dumper pit simultaneously. The shed at the unloading station would allow commodities to be unloaded within a covered structure. At full buildout, the East Loop would house a second unloading station with a second shed to allow two trains to be unloaded simultaneously.

The proposed unloading stations would be built over a conveyor that moves the delivered commodity to the stockyard. This conveyor would also be covered and operated to control dust during cargo transfer operations. A certified scale would be integrated into the rail bed to determine the amount of commodities delivered or loaded.

To support rail-loading operations for import of commodities, a loading facility could be added to the rail loop, and the proposed outloading conveyor systems could be replaced with conveyors that feed instead to a train-loading station from the stockpiles. If a different commodity were to be handled at the East Loop, the unloading station would be modified to handle the type of rail cars used for that commodity. The remaining infrastructure would remain largely the same to manage any other bulk commodity..



Source:
Ausenco Sandwell, 154199-A100-42S01.dwg (Rev. J), 12/24/2010.
David Evans & Associates, 2010-04-14-svTPXpiti0006-DEGROSS.dwg, 07/20/2010.

0 400 800 1,600
Feet

N

Pacific International Terminals

CLIENT:
PACIFIC INTERNATIONAL TERMINALS, INC.

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DWN BY: SD	DATUM: NAD83	DATE: FEBRUARY 2011
TITLE: EAST LOOP	CHK'D BY: KD	REV. NO.: 1	PROJECT NO.: 091515338C-18-01
	PROJECTION: WA SP North, Ft.	SCALE: 1 inch=800 feet	FIGURE No.: FIGURE 4-1

4.3.1.2 *East Loop Stockyard and Material Handling Equipment*

The East Loop would include infrastructure required for handling dry bulk commodities. For coal, these would include a single large, open-air stockyard serviced by stacking and reclaiming machines (called “stacker/reclaimers”) and outloading/inloading conveyor lines with surge bins. The stockyard would be created on a “patio”—an approximately 80-acre, unpaved, level area with gravel-surfaced lanes between commodity stockpiles. If commodities were stored in continuous piles, the total capacity of the stockyard would be approximately 2.75 million metric tons. Initially, two stacker/reclaimers would service three stockpiles (approximately 1.25 million metric tons). At maximum capacity, the East Loop stockyard would have the capacity for five stockpiles, managed with four stacker/reclaimer lines. Stockpiles would be approximately 2,500 feet long and up to about 62 feet high; the stacker/reclaimers would be approximately 115 feet high. The rail-mounted stacker/reclaimers would move along the lanes between stockpiles to service the stockpiles. Commodities would be stockpiled by the stacker/reclaimers.

4.3.1.3 *East Loop Conveyors*

The East Loop would have multiple belt conveyor lines connected at transfer towers to move materials from one location to another (Figure 4-2). A transfer conveyor would move material from the unloading station to the infeed transfer conveyor. The infeed transfer conveyor would connect at a transfer tower to one of the four stockyard conveyor lines. These stockyard conveyors would in turn feed materials to the stacker/reclaimers that service the stockpiles.

From the stacker/reclaimers, separate conveyors would move material to other transfer towers that connect to the outfeed transfer conveyor line. The outfeed conveyor would move material from the stockpiles to a surge bin that regulates the flow of material onto the shipping conveyor line. Lying outside the East Loop, the shipping conveyor would move material out of the East Loop to conveyors in the Shared Services Area, and subsequently to a final set of conveyors on top of the trestle serving shiploaders at the wharf.

Figure 4-2 shows a typical conveyor gallery and a cross section of the conveyor housing. All conveyors used for materials handling at the Terminal would be constructed with covers to control dust (Figure 4-3). The conveyor belts would be driven by electric motors. Transfer points between conveyor belts at transfer towers and at the surge bin would be equipped with passive enclosure dust control systems, including staggered conveyor curtains and covered chuting.

4.3.1.4 *East Loop Service Buildings*

The East Loop would have four buildings: a maintenance building (3,900 square feet), a single-story administration building that includes changing facilities (4,500 square feet), and two security gatehouses (250 square feet each).

The maintenance building would be an industrial-style, slab-on-grade, structural steel building with a painted, corrugated steel roof. The administration/changing facility would be a modular building with painted steel roof. A paved parking area with lighting would be located adjacent to these buildings. While the maintenance building is currently planned as a separate structure, it could be combined with the common administration/changing facility into a single structure with the same approximate total square footage.

4.3.1.5 *Access Roadways*

A new paved road would be constructed to provide primary access to the East Loop (Figure 4-1). The paved access road would connect near the intersection of Gulf and Henry Roads and would be considered the Terminal's main entrance. Other East Loop roads, including a loop road paralleling the rail tracks, would be paved and would provide access to the stockyard patio and other facilities. Approximately 4 miles of roads would be built within the East Loop. The new roads would be 18 feet wide with 4-foot shoulders on both sides.

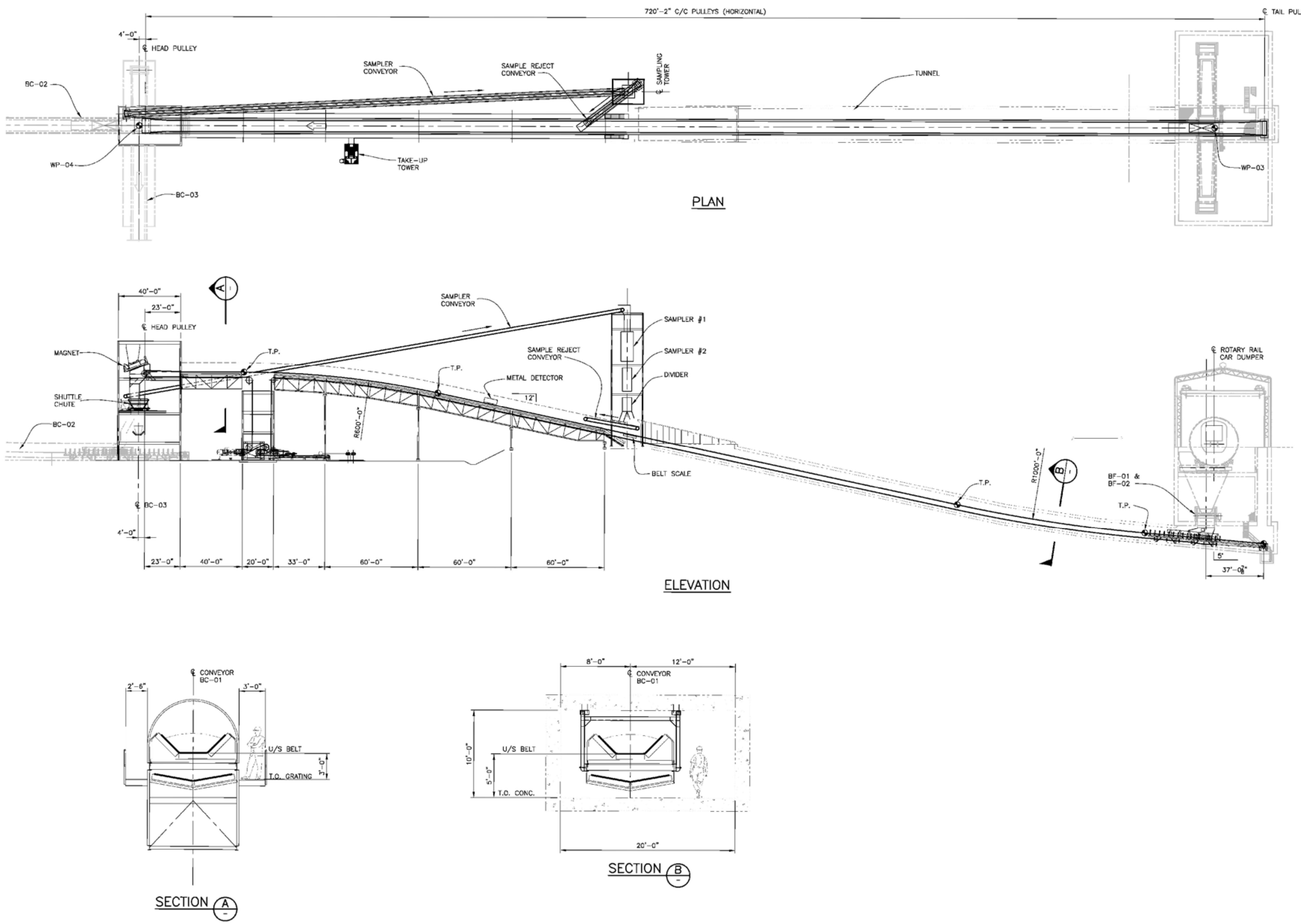
Near the main entrance, a steel-arch tunnel conveying the access road beneath the rail bed embankment would be provided to allow unobstructed access to the East Loop at all times, including when the rail lines are in use. The structure would have a span of 28 feet, an interior height of 17 feet, and a length of 50 feet from headwall to headwall. To serve as a secondary access point, an at-grade crossing connecting to Henry Road would be located at the southeast corner of the East Rail Loop. This access point would be blocked approximately 50 percent of the time at full buildout due to the presence of trains.

4.3.2 West Loop

The Gateway Pacific Terminal West Loop would be designed to handle multiple types of dry bulk commodities. Similar to the East Loop, the West Loop would be designed so that changes in types of commodities or a change from export to import operation would require only minor changes in infrastructure. The West Loop is initially planned to handle export of calcined petroleum coke and potash. The West Loop would provide rail infrastructure and covered bulk commodity storage areas. The area would include stacking and reclaiming conveyors, an unloading station, and outloading/inloading conveyor lines.

The West Loop would house the following features (Figure 4-4):

- Rail loop and unloading station;
- 752,500 square foot storage area and associated machinery;



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	DWN BY: SD		PROJECT NO.: 091515338C-18-01
	CHK'D BY: KD	TITLE: EXAMPLE CONVEYOR CROSS-SECTION	REV. NO.: 1
	DATUM: -		FIGURE NO.: FIGURE 4-2
	PROJECTION: -		
	SCALE: NOT TO SCALE		

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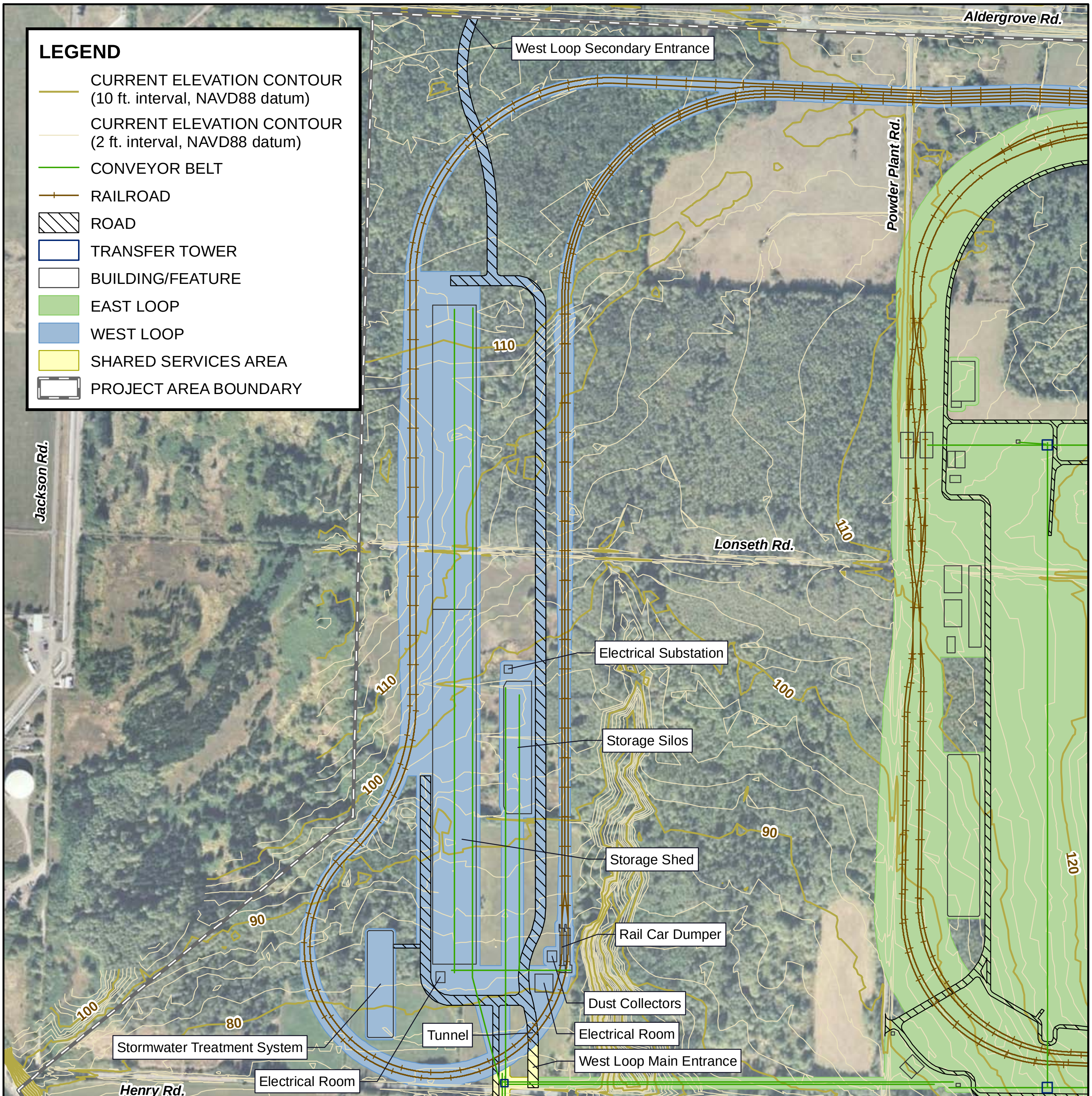
Source: Pacific International Terminals, Inc.	Pacific International Terminals.	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD CHK'D BY: KD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: FEBRUARY 2011 PROJECT NO.: 091515338C-18-01
			DATUM: - PROJECTION: - SCALE: -	TITLE: EXAMPLE OF COVERED CONVEYOR	REV. NO.: - FIGURE NO.: FIGURE 4-3



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David Evans & Associates, 2010-04-14-svTPXpiti0006-DEGROSS.dwg, 07/20/2010.

0 350 700 1,400
Feet

N

Pacific International Terminals.

CLIENT:
PACIFIC INTERNATIONAL TERMINALS, INC.

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL

TITLE: WEST LOOP

DWN BY:	SD	DATUM:	NAD83	DATE:	FEBRUARY 2011
CHK'D BY:	KD	REV. NO.:	1	PROJECT NO.:	091515338C-18-01
PROJECTION:	WA SP North, Ft.	SCALE:	1 inch=700 feet	FIGURE No.:	FIGURE 4-4

- Conveyors and conveyor lines; and
- Access roadways.

Development of the West Loop would also include electrical power, water, stormwater, lighting, communications, and wastewater facilities. These features are described in Sections 4.3.6 through 4.3.8.

4.3.2.1 *West Loop Rail and Unloading Station*

Rail access to the West Loop would branch from the Custer Spur from BNSF Railway's BP lead (also called ARCO lead) via a new switch just north of Aldergrove Road. The switch would be located approximately 4,000 feet east of Powder Plant Road (Figure 1-2). From this new switch, the West Loop track would cross Aldergrove Road diagonally with a barrier-style, at-grade crossing and extend westward, running parallel to Aldergrove Road and avoiding an existing utility corridor.

The West Loop rail infrastructure would provide two inbound and two outbound tracks leading to the rail unloading station, with a third track along the east side of the loop for empty trains leaving the Terminal. This proposed rail configuration would enable two trains to be filled or unloaded at the same time, while a third train is staged on site (Figure 4-4).

The rail infrastructure along the south end of the loop would be built on an engineered embankment, while the existing grade near and along Aldergrove Road would be cut and filled to provide level elevations at the rail unloading station.

The proposed unloading station would incorporate two bottom dumper systems to allow simultaneous unloading of up to four closed-top hopper rail cars carrying commodities such as potash (see Figure 4-4). The unloading station would be built on a concrete structure designed to support the trains on continuous welded rails. The working area of each of the bottom dumper systems would be protected by a shed with timber frame sidewalls and metal roofs, with the ends of the sheds left open. A conveyor in the receiving hopper below the dumper would move delivered materials to the storage shed. The unloading station would be equipped with dust control facilities. A certified scale would be integrated into the rail bed to determine the amount of commodity delivered or loaded.

If in the future trains were to be loaded rather than unloaded, a railcar loading facility could be added to the rail loop and the conveyors replaced to provide train-loading capability from the storage area.

4.3.2.2 *West Loop Storage and Material Handling Equipment*

Covered storage facilities are planned for the West Loop, assuming that potash and calcined petroleum coke would be initially handled in this area. Storage facilities to be constructed would include a single A-frame potash storage shed with a total capacity of approximately 360,000 metric tons and six storage silos for calcined petroleum coke. The area would also be capable of housing other types of storage, such as grain silos, flat bottom sheds, or covered bins.

The A-frame potash storage shed would be supported by a concrete perimeter foundation, which also would form part of the shed's retaining walls. The shed would be constructed of laminated wood main beams with plywood walls and roof. The shed floor would be asphalt. Inside the ridgeline of the shed's roof, a gallery structure would support a conveyor, tripper, and soft drop chutes for moving materials into the structure. At the base of the walls and on top of the concrete retaining walls, a crane rail would support a portal-style reclaim machine to feed material onto a reclaim conveyor (Figure 4-5).

Six storage silos are currently anticipated for the storage of calcined petroleum coke at the West Loop (Figure 4-6). The cast-in-place silos would each have a capacity of 13,500 metric tons for a total storage capacity of 81,000 metric tons. Each silo would be approximately 100 feet in diameter and 180 feet tall and built on steel pilings with concrete foundations. The calcined coke would be delivered at the unloading station and fed onto a conveyor that moves the material into the top of each silo. The bottom of each silo would have a steel hopper system that opens to feed onto an out-loading conveyor that connects to the conveyors in the Shared Services Area. Both the in-loading and out-loading equipment would be covered and fitted with dust control systems.

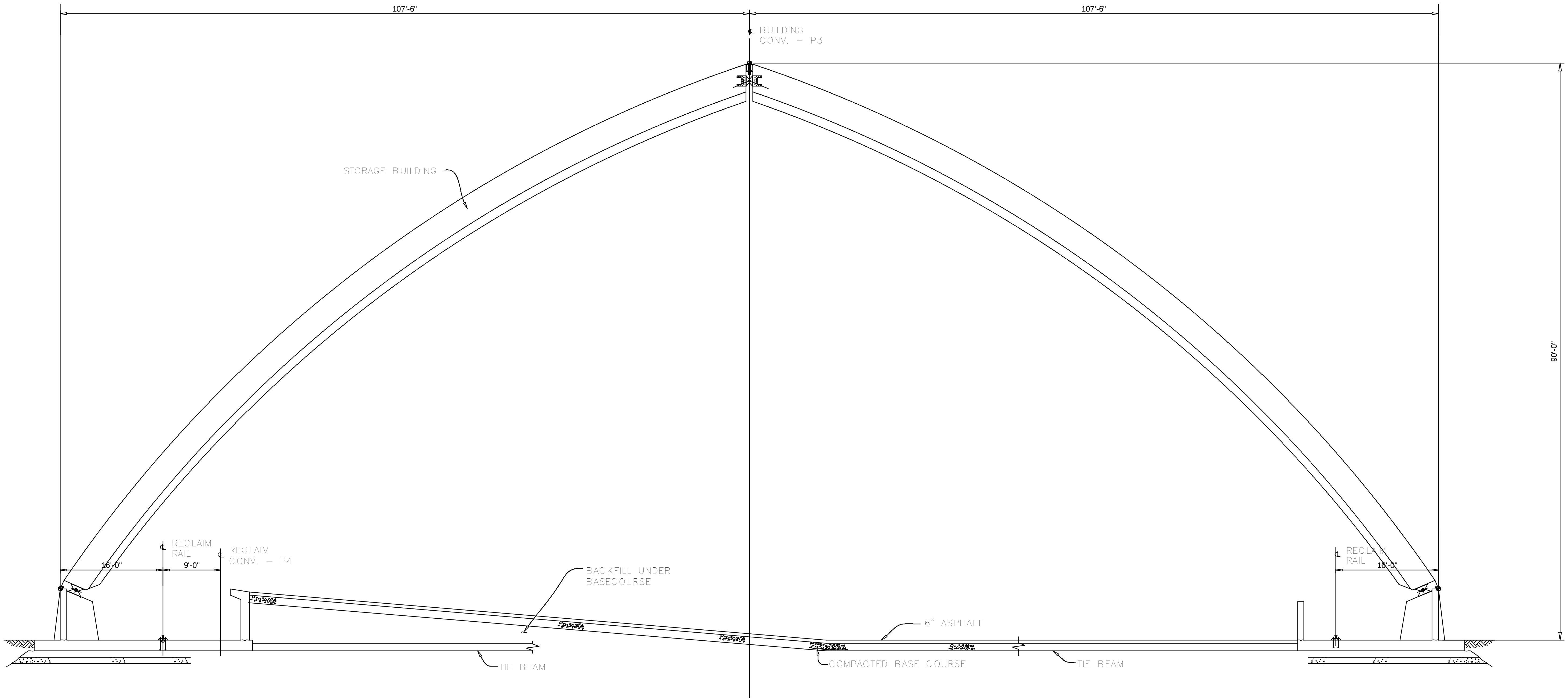
4.3.2.3 *West Loop Conveyors*

In addition to the conveyors from the unloading station (Section 4.3.2.1), those operating inside the shed (Section 4.3.2.2), and those managing materials to and from the silos, covered transfer conveyors would move materials from the storage area to the Shared Services Area (Figure 4-4).

4.3.2.4 *West Loop Access Roadways*

A new paved road would be constructed to provide primary access to the West Loop from Henry Road. This location would be considered the main entrance for the West Loop (Figure 4-4). Other West Loop roads would include a paved road paralleling the length of the storage shed and continuing on to the secondary entrance on Aldergrove Road. The roadways would be approximately 18 feet wide with 4-foot shoulders on both sides. Approximately 2.8 miles of asphalt roadway would be built within the West Loop.

A concrete box tunnel would be constructed near the main entrance at Henry Road to convey the access road beneath the rail bed embankment, allowing unobstructed access to the East Loop at all times, including when the rail lines are is in use. The structure would have a span of 15 feet, an interior height of 20 feet, and a length of 100 feet from headwall to headwall. To serve as a secondary access point, an at-grade crossing connecting to Aldergrove Road would be located at the northern



Source:
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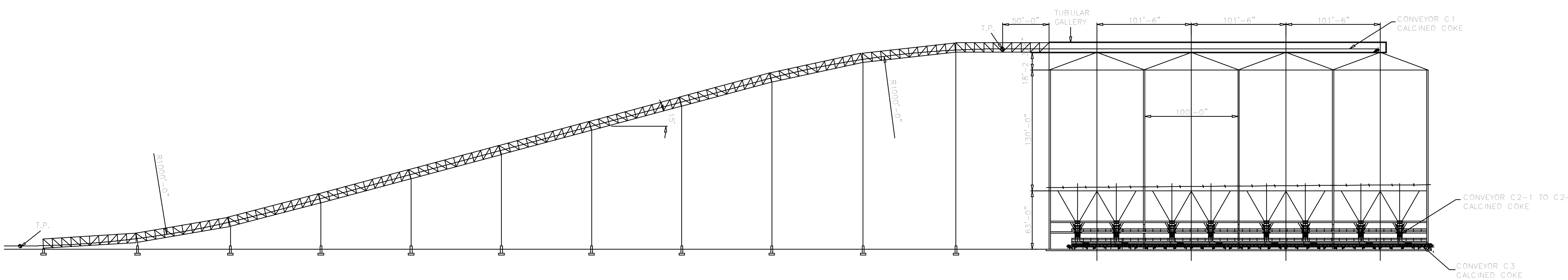
CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.

DWN BY: SD
CHK'D BY: KD
DATUM: -
PROJECTION: -
SCALE: NOT TO SCALE

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL

TITLE: EXAMPLE SHED DIMENSIONS

DATE: FEBRUARY 2011
PROJECT NO.: 091515338C-18-01
REV. NO.: 1
FIGURE NO.: FIGURE 4-5



NOTE: Although drawing only shows 4 storage silos,
6 storage silos will actually be constructed.

ELEVATION

SCALE : 1

Source: Ausenco Sandwell, 154020-2391.dwg (Rev. P1), 08/21/2006.	Pacific International Terminals. A Carrix Enterprise	CLIENT: PACIFIC INTERNATIONAL TERMINALS	DWN BY: SD	PROJECT: GATEWAY PACIFIC TERMINAL
			CHK'D BY: KD	DATE: FEBRUARY 2011
			DATUM: -	PROJECT NO.: 091515338C-18-01
			PROJECTION: -	TITLE: EXAMPLE STORAGE SILOS
			SCALE: NOT TO SCALE	REV. NO.: 1
				FIGURE NO.: FIGURE 4-6

extent of the West Loop. When the Terminal is in full operation, this access point would be blocked approximately 20 to 30 percent of the time due to the presence of trains.

4.3.3 Shared Services Area

The linear corridor that begins at Henry Road and extends to the abutment of the access trestle would be used as a Shared Services Area (Figure 4-7). The corridor would include an access roadway as well as conveyor lines running from the East and West Loops to the access trestle. The East Loop's shipping conveyor would terminate in the Shared Services Area, and the West Loop conveyor would deliver material to the north end of the Shared Services Area.

A service building, which would serve as a longshoreman's services and administration building, would be located next to the roadway. In addition, the Shared Services Area would include a water treatment plant next to the administration building to treat sanitary wastewater from the building, an electrical substation, and a parking area.

No rail access is planned for this area.

4.3.4 Wharf and Access Trestle

Gateway Pacific Terminal would incorporate a three-berth, deep-draft wharf with ship loading equipment and an access trestle extending from the shoreline to the wharf (Figure 4-8).

The wharf and part of the access trestle would be built on state aquatic lands. The area proposed for construction of the wharf and trestle has been designated in the state's *Cherry Point Environmental Aquatic Reserve Management Plan* (WDNR 2010). The Shoreline Substantial Development Permit issued in 1997 by Whatcom County authorized the design and configuration for the wharf and trestle described here. As specified in that permit, the wharf would be 2,980 feet long and 105 feet wide, with access provided by a 1,100-foot-long, 50-foot-wide access trestle.

4.3.4.1 *Access Trestle*

The access trestle would begin at a constructed abutment inland of the shoreline bluff, cross above the bluff, and descend to the wharf (Figure 4-8). With this design, the trestle would cross over the water from above the bluff, which would remain largely undisturbed at its existing elevation. The trestle is designed to provide access to the wharf where the vessels berth; it will not have any docking facilities.

The trestle's 50-foot width would allow two vehicles to pass each other as one enters and one leaves the wharf. The side section is designed to accommodate two enclosed conveyor lines running parallel at deck height (see Figure 4-9). At full buildout, a third enclosed conveyor line would be added to increase transfer capacity. The third conveyor would be either stacked above the other two or cantilevered off to the side (third conveyor not shown in figure). Trestle conveyors would be fully enclosed in a gallery. The design of the first two spans of the access trestle over the nearshore area will use steel deck grating to minimize shading in the intertidal zone.

4.3.4.2 *Wharf*

The wharf would be located at the trestle head and generally parallel to the shoreline; it would be designed to berth up to three vessels (Figure 4-9). The wharf would have one berth southeast of the trestle head and two berths to the northwest of the trestle head.

The wharf would have three berths, each of different lengths (Figure 4-8):

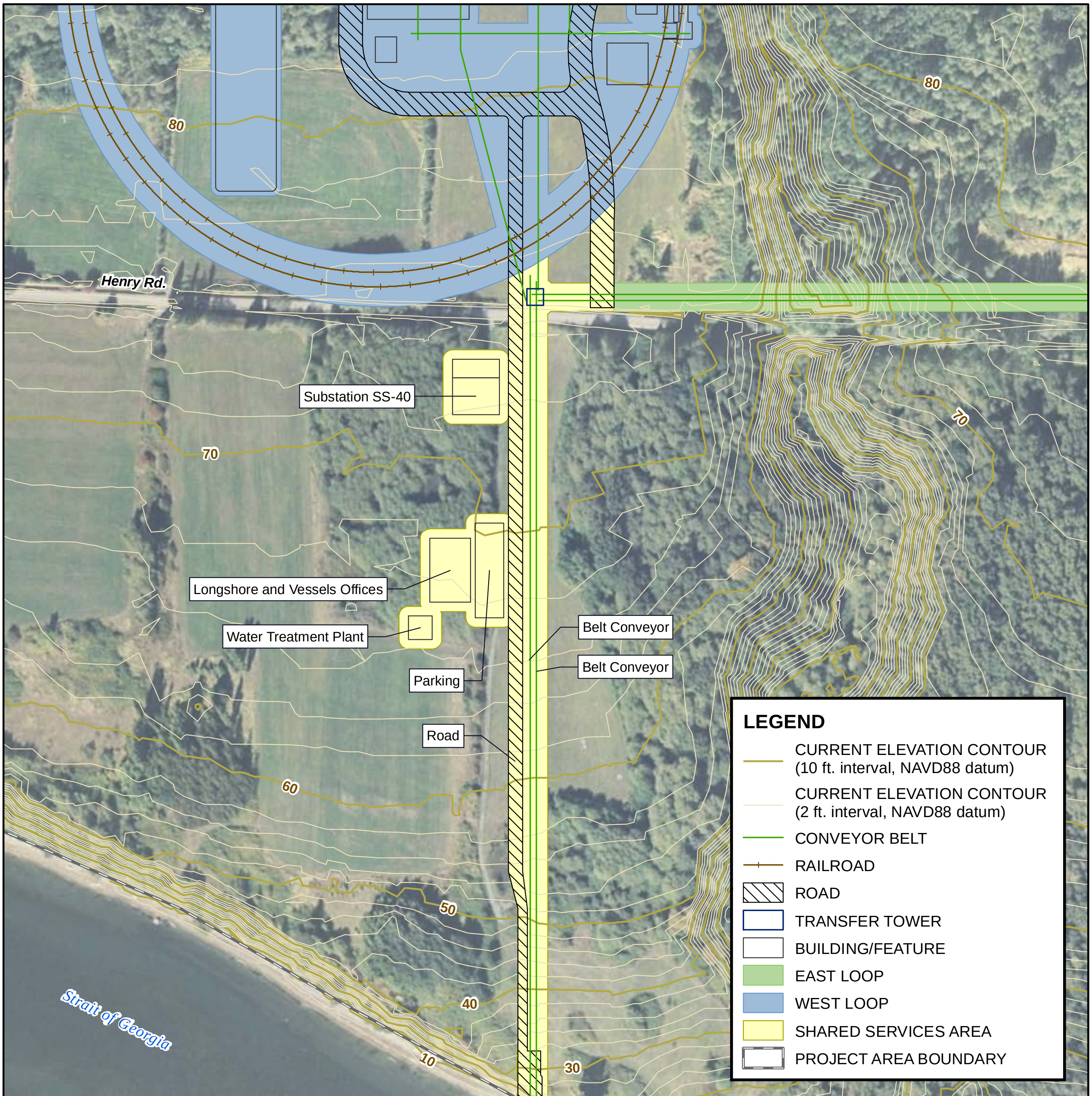
- Berth 1—1,137 feet long
- Berth 2—1,227 feet long, and
- Berth 3—636 feet long

Berth 1 is the northwestern-most berth.

The wharf would support up to three shiploaders, belt conveyors in an enclosed elevated gallery leading to each of the shiploaders, berthing fenders, and a vessel-mooring system. The wharf would be sufficiently wide to allow two lanes of vehicle access beneath the legs of the shiploaders. The elevated gallery would be located on the shore side of the wharf behind the shiploaders. The wharf would include containment for control of potentially contaminated stormwater. Uncontaminated stormwater runoff from the wharf and trestle would be discharged to the water.

Shiploaders are machines specifically designed to fill the holds of vessels with bulk commodities (Figure 4-10). Material travels on enclosed conveyor belts to the shiploader, where it is fed on a boom onto the ship and into the hold. The shiploader travels the length of the berth on rails and the boom moves up, down, inward, outward, and side-to-side to fill the vessel's hold completely and evenly while accommodating changing vessel heights from tidal change. The material discharges at the end of the boom though a chute that is designed specifically to reduce dust generation by containing the product flow into a tight stream. In addition, the shiploader would be equipped with a dust suppression system to minimize fugitive dust from both the transfer of the commodity from the wharf conveyor to the shiploader and at the discharge at the end of the boom.

The wharf's mooring configuration would meet Puget Sound Pilots' standards for berthing, with three headlines, two breast lines, and two backsprings fore and aft on standard bollards for each berth. Each of the three berths would have embedded junction boxes and conduits for future "cold ironing"



Source:
Ausenco Sandwell, 154199-A100-42S01.dwg (Rev. J), 12/24/2010.
David Evans & Associates, 2010-04-14-svTPXpiti0006-DEGROSS.dwg, 07/20/2010.

0 150 300 600 Feet

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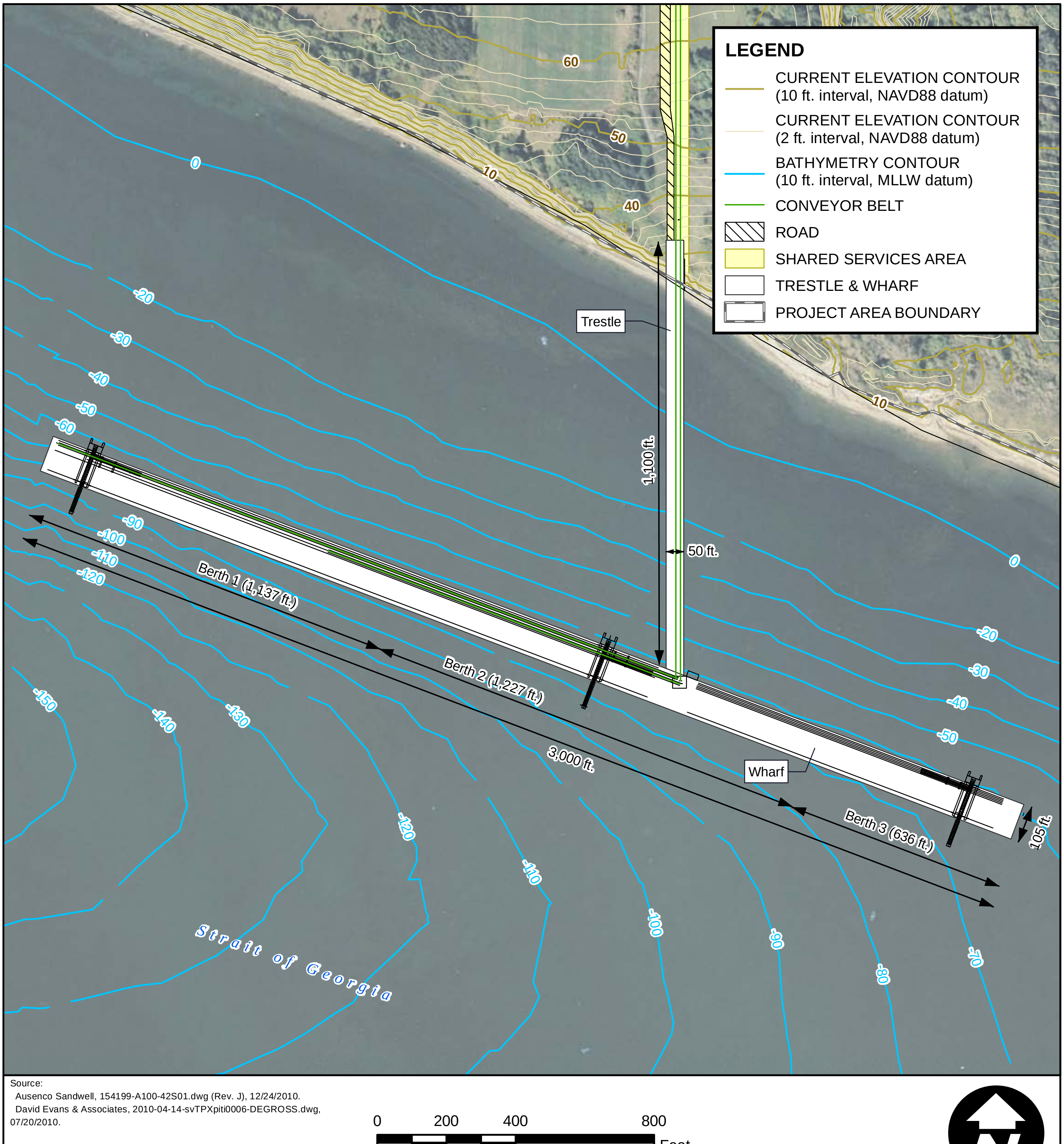
Pacific International Terminals

CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DWN BY: SD	DATUM: NAD83	DATE: FEBRUARY 2011
TITLE: SHARED SERVICES AREA	CHK'D BY: KD	REV. NO.: 1	PROJECT NO.: 091515338C-18-01
	PROJECTION: WA SP North, Ft.	SCALE: 1 inch=300 feet	FIGURE No.: FIGURE 4-7



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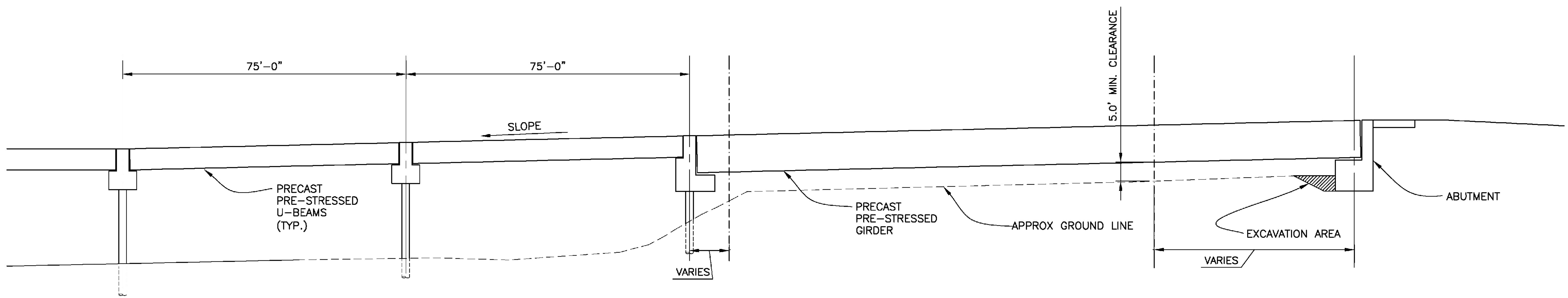
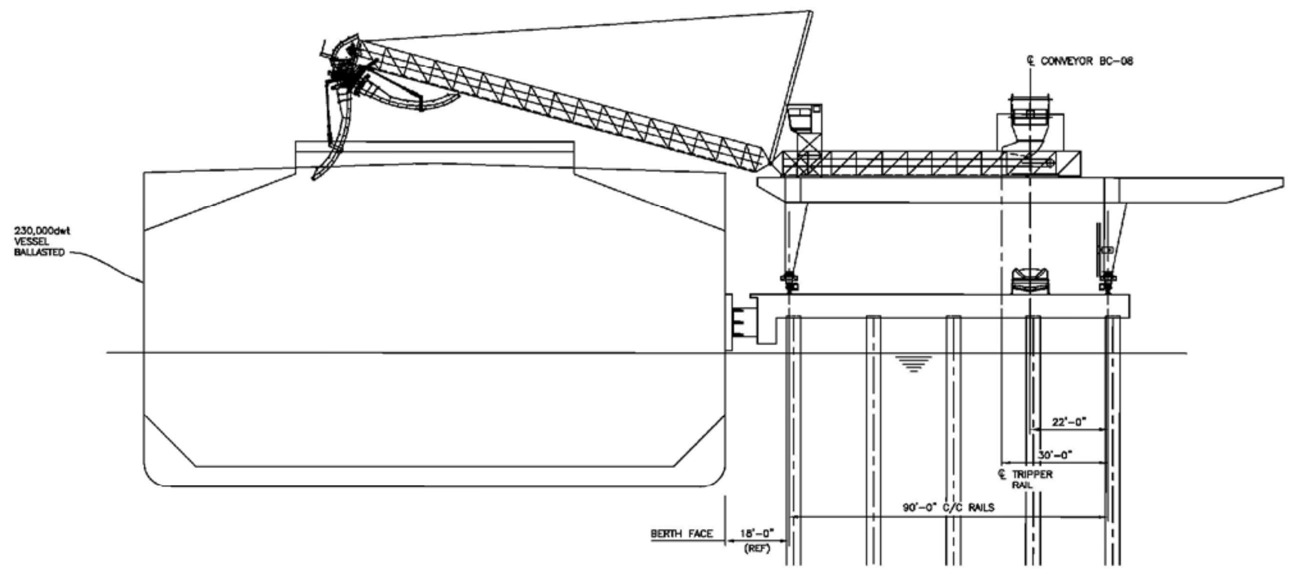
David Evans & Associates, 2010-04-14-svTPXpiti0006-DEGROSS.dwg, 07/20/2010.

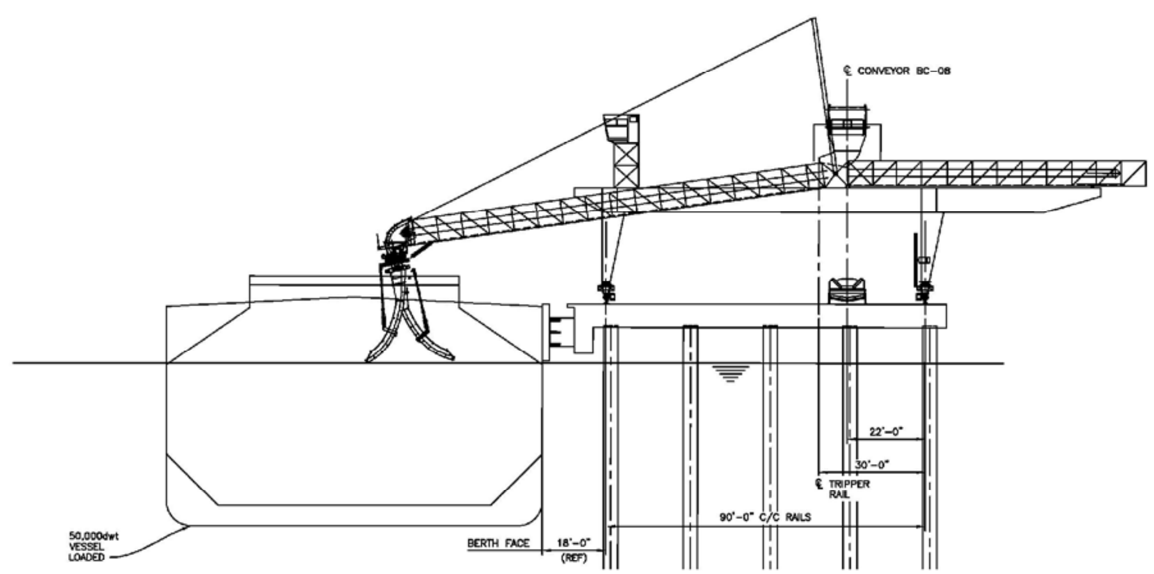
CLIENT:	PACIFIC INTERNATIONAL TERMINALS, INC.
PROJECT:	PROPOSED GATEWAY PACIFIC TERMINAL
TITLE:	WHARF AND ACCESS TRESTLE
DWN BY:	SD
CHK'D BY:	KD
PROJECTION:	WA SP North, Ft.
DATUM:	NAD83
REV. NO.:	1
SCALE:	1 inch=400 feet
DATE:	FEBRUARY 2011
PROJECT NO.:	091515338C-18-01
FIGURE No.:	FIGURE 4-8



Source: Ausenco Sandwell, 154199-A700-50107.dwg (Rev. B), 12/13/2010.	Pacific International Terminals. A Carrix Enterprise	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: FEBRUARY 2011
			CHK'D BY: KD		PROJECT NO.: 091515338C-18-01
			DATUM: -	TITLE: EXAMPLE CROSS-SECTION OF ACCESS TRESTLE	REV. NO.: 1
			PROJECTION: -		FIGURE NO.: FIGURE 4-9
			SCALE: NOT TO SCALE		



SHIPLOADER SHOWN @ MAX. UP AND MAX. FORWARD POSITION



SHIPLOADER SHOWN @ MAX. DOWN AND MAX. RETRACTED POSITION

Source:
Ausenco Sandwell, 154199-A600-42040-1.dwg (Rev. B), 05/21/2010.

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DATUM: -

PROJECTION: -

SCALE: NOT TO SCALE

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL

TITLE: EXAMPLE SHIPLOADER

DATE: FEBRUARY 2011

PROJECT NO.: 091515338C-18-01

REV. NO.: 1

FIGURE NO.: FIGURE 4-10

connections, which would allow vessels to use shore power while at berth. The arrangement of mooring equipment on the wharf would allow vessels to berth with either side against the dock, depending on the direction of the prevailing wind and current. The wharf would accommodate vessels with capacities of up to 250,000 dwt.

4.3.5 Rail Access

The BNSF Railway would provide the main inland freight access via BNSF Railway's existing Pacific Northwest rail network. Specifically, the existing BNSF Railway's Bellingham Subdivision runs approximately north-south roughly parallel to Interstate 5 in the project vicinity. This main line feeds the Custer Spur, the only existing rail line developed to service the Cherry Point Industrial UGA. The Custer Spur branches west from the Bellingham Subdivision main line at Custer, then travels west, then south approximately 6 miles, terminating in the Cherry Point rail yard near the ConocoPhillips Refinery, the southernmost industrial facility in the Heavy Impact Industrial zone (Figure 4-11). Improvements to the Custer Spur are necessary to accommodate the number, length, and weight of trains that are anticipated to access the Terminal (Figure 4-11). Initially 7,000-foot-long trains are expected and longer trains up to 8,500 feet long may service the Terminal ultimately. To support the expected tonnages of bulk commodities to be handled at the Terminal, the following improvements would be made to the Custer Spur:

- Up to three receiving and departure tracks (called "receive/departure" tracks) would be developed on the south side of the BNSF Railway's Cherry Point Subdivision line starting from the Custer Wye through the Intalco Yard, Valley View Road, and to Ham Road (Figure 4-12). Each receive/departure track would be long enough to provide a holding area for trains up to 8,500 feet long to avoid blockage of at-grade public crossings or blocking of the BNSF Railway's main lines. Construction of the receive/departure tracks would include a new rail embankment, trackage, bridge, and drainage structures. A schematic cross section of the receive/departure tracks is shown in Figure 4-13.
- The Custer Spur's rails would be upgraded from the existing jointed light-rail sections to 141-pound, continuous-welded rail. This upgrade is needed to accommodate the expected tonnage of transported commodities and to manage efficiently the required maintenance demands resulting from increased numbers of trains while maintaining current service levels. This rail upgrade would also include any required rehabilitation of the existing rail ties and other existing railbed structural improvements.
- Pending terminal volume, a second track would be added along the complete length of the Custer Spur from the Custer Wye approximately 6 miles to the new proposed Terminal connection point (Figure 4-11). The Custer Spur currently services several existing industries by way of a single main line track. A second track would protect existing rail service and

switching capabilities for all customers along the line and efficiently accommodate increased rail traffic to and from the Gateway Pacific Terminal.

- A new terminal lead to connect existing tracks to the proposed Terminal would also be installed, and improvements would be made to BNSF Railway's existing Elliot Yard to support the additional rail connectivity (Figure 4-14).

No interdependent projects have been identified on the BNSF Railway's mainline—Bellingham Subdivision, or any other portion of BNSF Rail's infrastructure. BNSF would be the permitting applicant for any needed permits to complete improvements on the Custer Rail Spur. BNSF Railway would rely on this document to provide disclosure of potential effects under the requirements of NEPA and SEPA. Therefore, the description of the proposed action and affected environment for the Custer Spur improvements is provided and potential effects are analyzed in this document.

4.3.6 Stormwater Management Systems

The Gateway Pacific Terminal would require significant earthmoving during construction in an area with a number of known wetlands, streams, and drainage areas. As such, effective and active management of stormwater is essential to protecting local and downstream water quality and quantity.

This section describes the conceptual plan for a permanent stormwater management system to manage stormwater during both construction and operation of the Gateway Pacific Terminal. Specific procedures to protect water quality and temporary stormwater management systems that would be employed only during construction are described in Section 4.6.4.

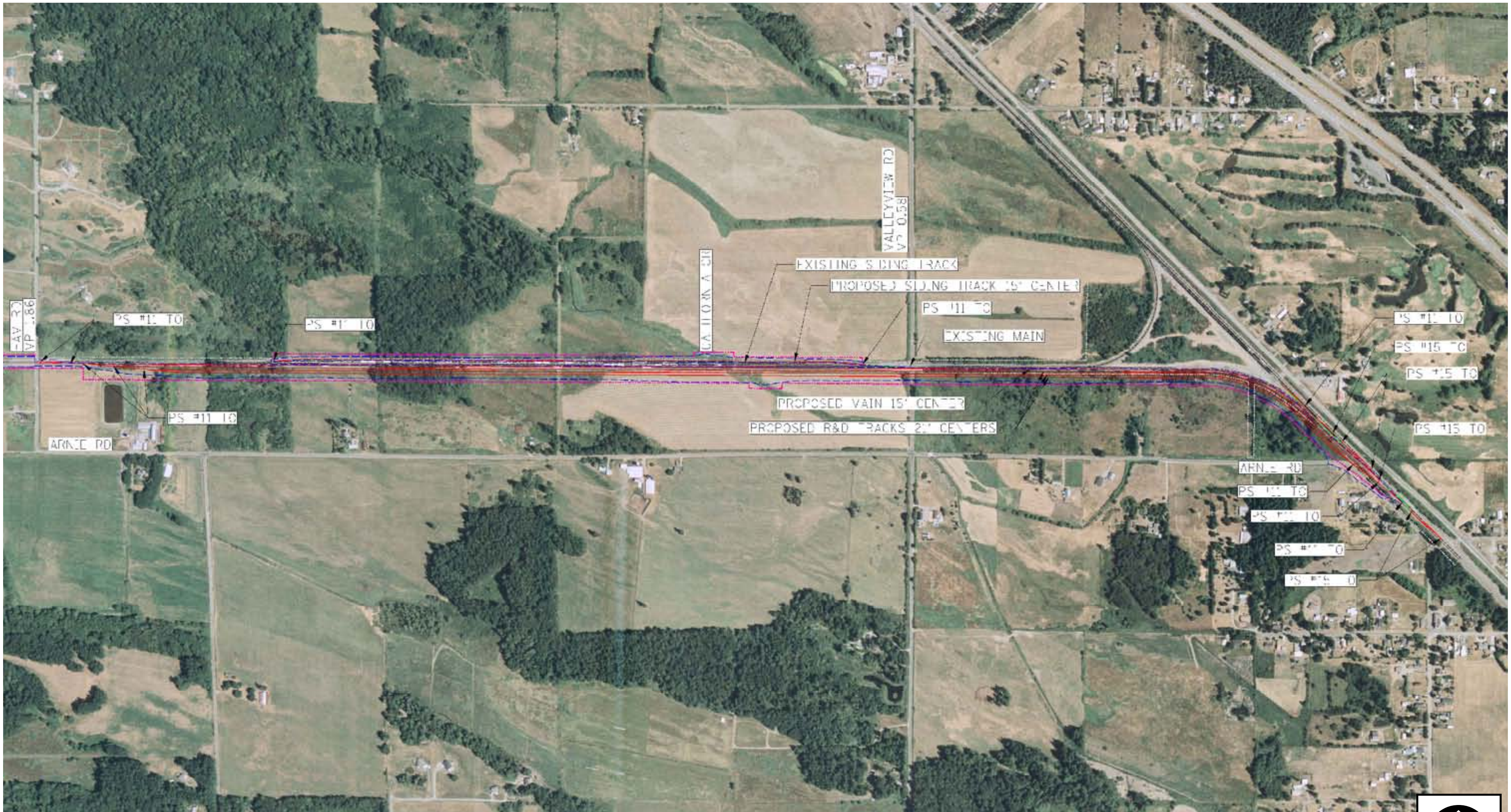
To protect water quality and to regulate the volume of stormwater discharge from the facility during Terminal operations, a comprehensive stormwater management system would be constructed at the Gateway Pacific Terminal. As noted in Chapter 2, National Pollutant Discharge Elimination System (NPDES) industrial and construction stormwater general permits would be required from Ecology. The stormwater management system will be designed pursuant to the requirements of Whatcom County code and Ecology stormwater requirements.

The stormwater management system would be an integral part of the civil and geotechnical design of the Terminal, and would be developed pursuant to requirements of the Stormwater Manual for Western Washington (Ecology 2005). A feasibility study and conceptual design for a stormwater management system have been completed. A preliminary conceptual stormwater plan is presented in Figure 4-15. The final design and specifications for the stormwater management system would be completed as part of the facility design, environmental review, and NPDES permitting processes.

SOURCE:
Burlington Northern Santa Fe Railway(BNSF), C-1X0003-Site Layout.dgn, 02/11/2011.

CLIENT:
PACIFIC INTERNATIONAL TERMINALS, INC.

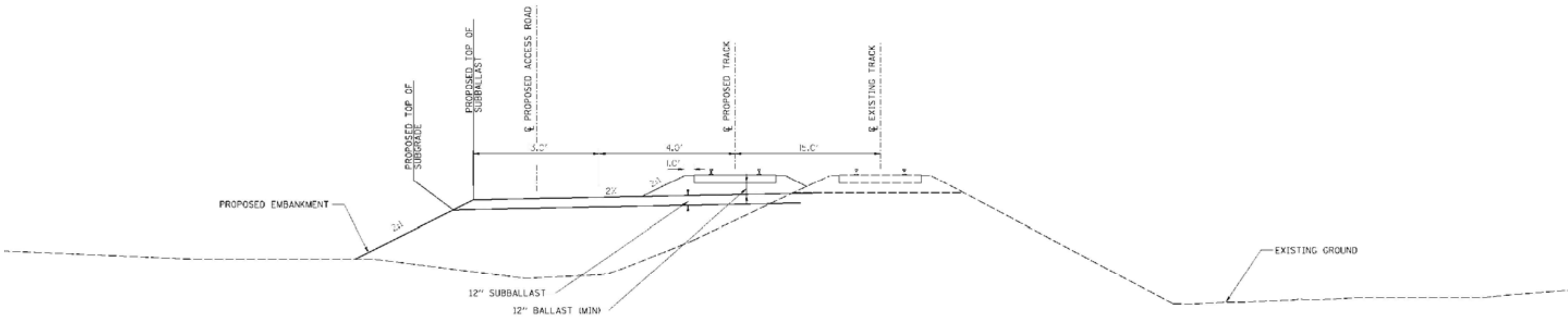
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DWN BY: SD	DATUM: -	DATE: FEBRUARY 2011
TITLE: EXISTING RAIL FACILITIES AND PROPOSED CUSTER SPUR IMPROVEMENTS	CHK'D BY: KD	REV. NO.: 1	PROJECT NO.: 091515338C-18-01
	PROJECTION: -	SCALE: NOT TO SCALE	FIGURE No.: FIGURE 4-11



Source:
Burlington Northern Santa Fe Railway(BNSF), C-1X001-R&D_Tracks.dgn, 02/01/2011.

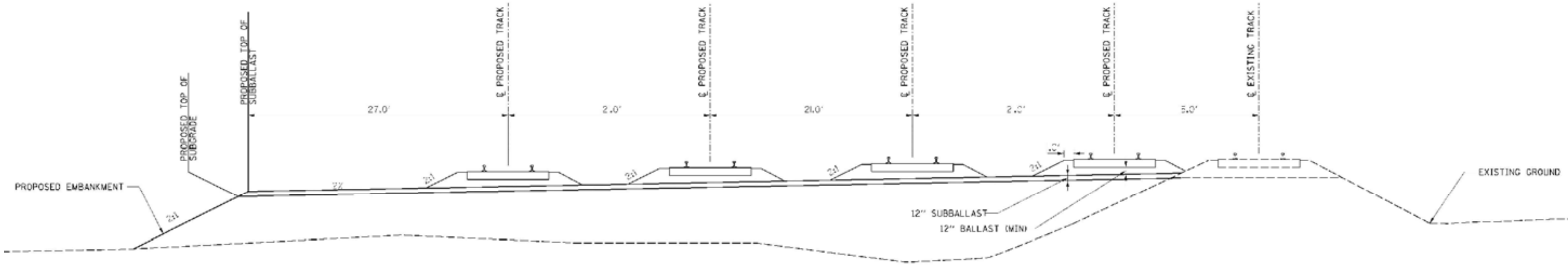
Pacific International Terminals.

CLIENT:	PACIFIC INTERNATIONAL TERMINALS, INC.
DWN BY:	SD
CHK'D BY:	KD
DATUM:	-
PROJECTION:	-
SCALE:	NOT TO SCALE
PROJECT:	PROPOSED GATEWAY PACIFIC TERMINAL
TITLE:	PROPOSED BNSF R/D IMPROVEMENTS
DATE:	FEBRUARY 2011
PROJECT NO.:	091515338C-18-01
REV. NO.:	-
FIGURE NO.:	FIGURE 4-12



DOUBLE TRACK TYPICAL SECTION

N.T.S.



R&D TRACKS TYPICAL SECTION

N.T.S.

Source:
Burlington Northern Santa Fe Railway(BNSF), C-3X001-TYP.dgn, 02/01/2011.

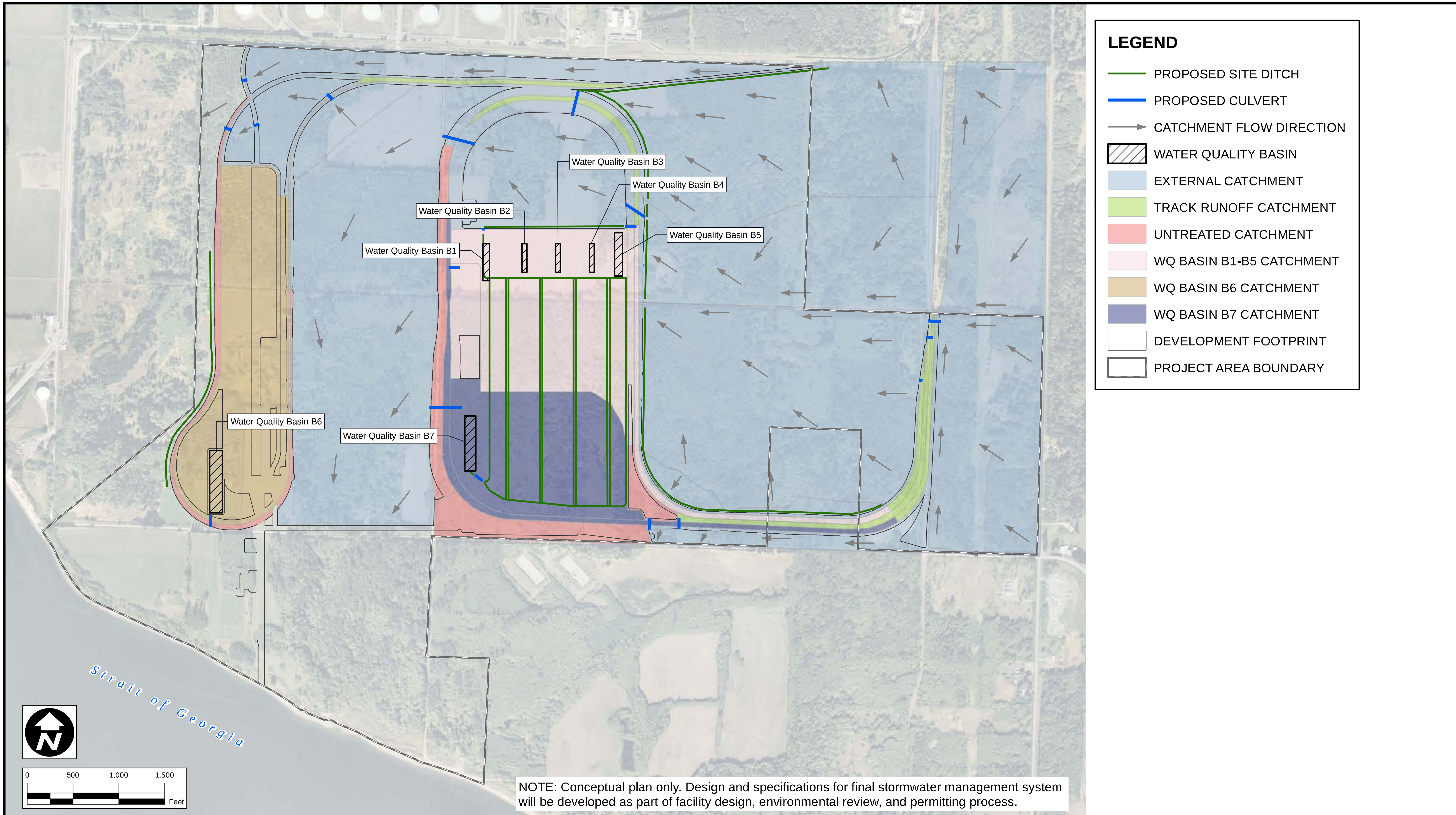
Pacific International Terminals.

CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD CHK'D BY: KD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: FEBRUARY 2011 PROJECT NO.: 091515338C-18-01
	DATUM: - PROJECTION: - SCALE: NOT TO SCALE	TITLE: PROPOSED BNSF TYPICAL RAILROAD SECTION	REV. NO.: - FIGURE NO.: FIGURE 4-13

Source:
Burlington Northern Santa Fe Railway(BNSF), C-1X002-Elliott Yard.dgn, 02/01/2011.

Pacific International Terminals.

CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: FEBRUARY 2011
	CHK'D BY: KD		PROJECT NO.: 091515338C-18-01
	DATUM: -	TITLE: PROPOSED BNSF ELLIOTT YARD IMPROVEMENTS	REV. NO.: -
	PROJECTION: -		FIGURE NO.: FIGURE 4-14
	SCALE: NOT TO SCALE		



Source:
Ausenco Sandwell, 154199-A100-42S01.dwg (Rev. J), 12/24/2010.
Ausenco Sandwell, 143166-A100-48S01.dwg (Rev. P2), 02/04/2011.
Ausenco Sandwell, 143166-A100-48S02.dwg (Rev. P2), 02/04/2011.

Pacific International Terminals. A Carrix Enterprise

CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.

DWN BY: SD
CHK'D BY: KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch = 1,000 feet

PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL

TITLE: STORMWATER DRAINAGE PLAN

DATE: FEBRUARY 2011
PROJECT NO.: 091515338C-18-01
REV. NO.: 1
FIGURE NO.: FIGURE 4-15

As currently conceived (Figure 4-15), the stormwater management system would consist of the following features:

- A number of sediment-trapping stormwater management basins for detention and treatment of stormwater generated within the commodities-handling areas prior to discharge from the Terminal;
- A series of bioswales to capture and treat stormwater;
- A system of drainage ditches to convey stormwater to and from the sediment-trapping stormwater management basins and/or to existing natural drainage features;
- A water quality mitigation pond (covering about 36 acres) in the East Loop to receive treated stormwater from the treatment ponds as well as manage runoff from undeveloped portions of the Terminal property for the overall benefit of hydrologic functions (Section 5.4.6); and
- Created and enhanced streams and riparian systems to detain and filter significantly more stormwater than under current conditions, which would have a net benefit on wetlands hydrology.

It is currently anticipated that runoff from any area within the stockyards, commodity storage areas, roadways, parking and vehicle maintenance, and loading and unloading areas would be directed to the stormwater treatment systems (Figure 4-15). After collection and treatment, the treated stormwater would be released to the water quality mitigation pond or to constructed wetlands (see Section 5.4.6). Stormwater from undeveloped portions of the Terminal property or from areas within the development footprint that do not have the potential for becoming contaminated with pollutants, would be directed to natural and restored drainages and streams. Sheet flow on vegetated surfaces would be encouraged and concentrated flows avoided for natural drainage, allowing additional protection from sedimentation and erosion.

Construction stormwater management ponds would be built in the same locations as the containment areas for the final permanent stormwater management systems. Installation of the construction stormwater system will be among the first steps in site development and would be completed before other heavy earthwork is initiated at the Terminal (Section 4.6.4). Individual components of the stormwater management system would be designed to manage water quality for a wide range of particulates that may be entrained in stormwater during Terminal operations. Stormwater sediment-trapping basins would be designed to trap soil sediment effectively during construction. These basins would also be designed to contain runoff so that the volumes of stormwater runoff are maintained at pre-development levels. Finally, the runoff collection trenches would be aligned to follow existing and natural watercourse routes as much as possible.

4.3.6.1 *Stormwater Management Basins*

All runoff generated within the loading areas and storage areas in the East Loop and West Loop would be collected by low-velocity interceptor ditches and conveyed to a system of sediment-trapping stormwater management basins for detention and treatment prior to discharge from the Terminal (Figure 4-15).

Sediment-trapping basins would be located in both the East Loop and West Loop. The basins would be sized to manage the characteristics of specific commodities, for example, fine particles.

It is currently anticipated that the stormwater management basins would consist of a series of three individual bays separated by finger dikes. The three bays would provide sequential stormwater treatment consisting of:

- Bay 1: Initial settlement of coarse particles;
- Bay 2: Fine particle settlement and flocculation area; and
- Bay 3: “Polishing” bay.

It is anticipated that stormwater management basins would be developed using the following preliminary design criteria:

- Detain runoff volumes to maintain stormwater discharge at the regulatory predevelopment rates; and
- Provide sufficient dwell time so that fines or other suspended solids with diameters as small as 0.025 millimeters (mm) will settle.

Final design criteria will be established during the design and environmental review process. Treated stormwater from the sediment-trapping basins would be conveyed either to the water quality mitigation pond near the northern end of the commodities stockpile area or to restored or currently existing drainages. The water quality mitigation pond in the northern end of the East Loop would drain via a culvert installed in the existing watercourse as the embankment for the new railway is constructed.

The stormwater management basins would be functional during construction to control construction stormwater. Following construction activities, the stormwater management basins would be converted to permanent stormwater management basins for use during Terminal operations.

4.3.6.2 *Natural Drainage System*

A system of perimeter ditches, interceptor ditches, and collector swales would convey runoff toward water quality mitigation pond, or other natural drainages. These ditches and swales would be constructed as much as practical along the existing, permanent ditch and swale alignments. Vegetative lining would be provided in conveyance ditches and around the stormwater management ponds. The vegetative lining would help to reduce increases in water temperatures during sunny periods, trap sediment and possibly adsorb some deleterious constituents in the runoff, and minimize erosion. Open ditches would generally be V-shaped, with a maximum side slope of 2H: 1V. Catch basins may be required at remote low points. Where used, underground pipes would run parallel and perpendicular to the roads, from catch basins to the nearest ditches.

4.3.6.3 *Shared Services Area*

The Shared Services Area will not house commodities storage or handling facilities. It is currently anticipated that stormwater runoff from roads and parking lots in the Shared Services Area would be treated by infiltration using roadside bioswales.

4.3.6.4 *Access Trestle and Wharf*

A stormwater management plan for the trestle and wharf would be included in the facility stormwater management system. It is anticipated that a piped system to collect stormwater would be installed in areas on the access trestle and wharf where oils or fluids would be likely to occur, such as near the shiploaders. The industrial stormwater from these locations would be collected and piped to a treatment plant located in the Shared Services Area or West Loop. It is anticipated that stormwater from other portions of the access trestle and wharf that are not exposed to potential pollutants could be drained to the adjacent upland or into the water.

4.3.7 Lighting

All roads within the Terminal would be illuminated with 150-watt, pole-mounted lighting fixtures along the roadways and trestle to provide security for traffic movement. Stanchion, ceiling, or wall-mounted, 100-watt lighting fixtures would also be installed along the conveyor walkways and transfer towers to provide illumination for worker safety, and 400-watt floodlights mounted along the wharf conveyor would provide illumination for the working areas on the wharf. Marine directional lighting would be used to minimize lighting impacts on the marine environment.

4.3.8 Utilities

This section describes utilities and other ancillary facilities proposed to support the handling of dry bulk commodities at the Terminal.

4.3.8.1 *Wastewater Management*

Sanitary wastewater from buildings would be treated in separate treatment areas adjacent to each building. Three prefabricated (“package”) wastewater treatment systems would be established, one each for the East and West Loop facilities and one for the Shared Services Area. Treated wastewater from the treatment systems would be discharged to septic fields pursuant to applicable permits. Sanitary sewage from the washroom facility to be installed on the wharf would be treated, and the treated effluent would be trucked off site for treatment and disposal in accordance with applicable regulatory requirements.

4.3.8.2 *Industrial Water*

Whatcom County Public Utility District No. 1 is the designated water purveyor within the industrial area. Water supplied by Whatcom County Public Utility District No. 1 is not considered potable. Industrial, non-potable water would be supplied to the Terminal via a new, 12-inch underground pipe that connects to the existing industrial water main near the intersection of Henry Road and Kickerville Road. Water would be supplied throughout the Terminal from the main at Henry Road via several connection points. An 8-inch supply line would service the Shared Services Area, access trestle, and wharf.

4.3.8.3 *Drinking Water*

Potable domestic water for use at the facility would be provided by treating the industrial water provided by Whatcom County Public Utility District No. 1. Prefabricated (“package”) reverse osmosis treatment systems would be used to service each group of buildings. Potable water would not be provided for use on ships docked at the wharf.

4.3.8.4 *Electrical Supply*

Incoming electrical power would be provided at 115 kilovolts (kV). A new, dedicated 115 kV overhead line would interconnect to the existing Bonneville Power Administration (BPA) utility transmission system located adjacent to Aldergrove Road. A new main substation would be built near the connection point east of the East Loop rail embankment. The power would be distributed from this location at 34.5 kV to five large substations and at 4.16 kV to two smaller substations. One of the small substations would serve the administration and maintenance buildings and the second would serve the wharf. Preliminary estimated electrical demand, based on nominal capacity, is 25 megavolt amperes (MVA).

4.3.8.5 *Communications Infrastructure*

A central control room/operations center would be housed in the main administration building in the East Loop to provide communication control between all areas of the Terminal. Fiber optic cables would be used for communications. A site radio network and a land-based telephone network would also be installed. A closed circuit video system would be installed to allow security surveillance. The security system would use dedicated fiber optic and/or radio channels in the communications infrastructure.

4.4 PLANNED TERMINAL CONSTRUCTION STAGING

Large infrastructure involves large capital expenditures and large-scale construction activities. To spread the capital expenditures over time and reduce potential environmental effects associated with the large-scale construction, the Terminal would be constructed in two stages. During Stage 1 construction, the East Loop and other infrastructure required for opening the Terminal would be developed, including the trestle and wharf, while the West Loop area would be completed during Stage 2.

4.4.1 Stage 1 Terminal Construction

Stage 1 would involve construction of all infrastructure needed to support initial bulk-handling operations at the Terminal. Stage 1 would include construction of the East Loop, the Shared Services Area, and the access trestle and wharf. Together these components would provide the infrastructure required to support dry bulk handling capacities approaching 25 Mtpa with open-air storage.

Stage 1 construction would include installation of the following elements:

- Access trestle and wharf with one shiploader connected to one belt conveyor line;
- The Shared Services Area, including the Longshoreman’s services building;
- Compensatory mitigation for the fully developed facility (to address potential impacts of both Stage 1 and Stage 2 construction);
- Rail infrastructure required at full terminal capacity for the East Loop, including:
  - All bulk earthwork required for full terminal capacity, including the earthworks required to support four inbound rail lines and four outbound rail lines;
  - Tracks for two inbound rail lines and two outbound rail lines (two tracks would be installed at a later date), and
  - One rail unloading station;
- The entire East Loop stockpile patio area;
- Two stacker/reclaimer lines;

- Covered, elevated conveyor systems leading to and from the stacker/reclaimers and to the Shared Services Area;
- Access roadways and parking areas for the East Loop and Shared Services Area;
- Stormwater management facilities at the East Loop, Shared Services Area, wharf, and access trestle;
- Administration and maintenance buildings for the East Loop;
- All utilities that would be required at complete development, including water, electrical, wastewater management, and communications;
- Up to three receiving/departure tracks on the Custer Rail Spur near the Valley Yard; and
- Upgrade of the existing Custer Spur tracks to include structural hardening and continuous welded rail from the Valley Yard to the Terminal.

4.4.2 Stage 2 Terminal Construction

Stage 2 construction would complete the West Loop infrastructure, and provide improvements to the wharf to increase the material handling capacity by an additional 6 Mtpa of commodities. This stage of construction would add operating capacity and flexibility to handle different types and quantities of commodities at the Terminal.

Stage 2 construction would include installation of the following facilities:

- All of the West Loop's infrastructure including:
  - All bulk earthwork for the West Loop rail lines;
  - Construction of the West Loop rail lines;
  - One rail loading/unloading station;
  - Access roadways;
  - A-frame storage shed;
  - Bulk storage silos;
  - Conveyor lines; and
  - A stormwater management system;
- A second shiploader on the wharf connected to a new conveyor line on the access trestle; and
- A second conveyor line in the Shared Services Area.

4.4.3 Operational Phasing

Four operational phases dictated by the growth in capacity of the Terminal (nominal maximal throughput) are anticipated (Table 4-2).

Table 4–2 Commodity Handling Capacity by Terminal Development Phase and Location

Operational Phase	Approximate Year (estimated)	Capacity at West Loop (Mtpa)	Capacity at East Loop (Mtpa)	Total Nominal Maximum Terminal Capacity (Mtpa)
1	2015	0	25	25
2	2017	6	25	31
3	2021	6	39	45
4	2026	6	48	54

Mtpa millions of metric tons per year

The Terminal would begin operations at completion of Stage 1 construction with an operational capacity of approximately 25 Mtpa (Table 4-2). At the completion of Stage 2 construction, Terminal capacity would reach 31 Mtpa. Two subsequent operational thresholds are envisioned (achieved approximately by 2021 and 2026), with the maximum capacity of the Terminal (54 Mtpa) reached during Operational Phase 4.

Capacity would grow from 25 to 45 Mtpa during Phase 3 by addition of a third stacker/reclaimer at the East Loop to manage an additional stockpile of 1 million metric tons within the existing East Loop patio area. Additional equipment upgrades needed to accomplish this level of capacity would likely include:

- Two additional rail lines adjacent to the two existing lines in the East Loop (no new embankment would be needed because all earthwork was completed during Stage 1 construction);
- An additional shipping conveyor with its own surge bin, running from the East Loop to the Shared Services Area;
- An additional (third) conveyor in the Shared Services Area, access trestle, and wharf; and
- A third shiploader added to the wharf.

It is also anticipated that increasing the Terminal's capacity to 45 Mtpa would require a second main track along Custer Spur.

To reach the full operational capacity of 54 Mtpa, all of the infrastructure described above would be needed along with one additional stacker/reclaimer installed at the East Loop.

4.5 TERMINAL OPERATION

The terminal would operate to move large quantities of fairly uniform, granular, materials from rail transportation to oceangoing vessels. Single-commodity trains are made up of specific and consistent rail car types designed for efficient loading and unloading of commodities. Trains of this type are often called “Unit” trains as they travel as a “unit” from the production site to the Terminal. Unit trains support efficient routing, loading, and unloading and are typically designed for a specific commodity. The rail cars used to haul bulk commodities have varying lengths, and the Terminal will be designed to accommodate these variances with capabilities to handle train lengths up to 8,500 feet. Initially, unit trains approximately 7,000 feet long are expected to serve the Terminal, and the Terminal would provide capacity to potentially handle trains up to 8,500 feet long as volumes increase.

Once a train arrives at the Terminal, it would pass through the enclosed unloading station, and rail cars would be emptied two or more at a time into a bin beneath the rails. Some types of rail cars unload through bottom doors, while rotary gondola-style cars are flipped upside down to empty.

Once unloaded, the commodity would be moved from the dumper bin along large conveyor belts to a storage area, either open or covered. At the storage area, stacker/reclaimers would place the material in storage piles managed to minimize commodity loss and maximize the efficiency of handling. Enough material would be stored in the stockpiles at the Terminal so that a vessel could be loaded immediately once at berth. A “reclaimer” would scoop commodities from open stockpiles, or from inside storage structures, onto a conveyor that connects to a “shiploader.” Both machines are specifically designed for their purpose. A reclaimer needs to be able to reach almost all portions of a pile and move material quickly onto the conveyor belts. The shiploader is specifically designed to load a floating vessel safely, subject to tides and sensitive to load balance.

4.5.1 Employment

Operating hours for the Terminal are anticipated to be 24 hours a day, 365 days a year. When fully developed the Terminal is expected to employ 213 people. Table 4–3 shows the anticipated numbers of Terminal employees for each operational phase.

Table 4–3 Estimated Number of Terminal Employees by Shift for Each Operational Phase

Phase	Approximate Year (estimated)	Operational Capacity (Mtpa)	Number of Terminal Employees by Shift			
			7 AM–4 PM	3 PM–12 AM	11 PM-8 AM	Total
1	2015	25	39	26	24	89
2	2017	31	67	48	45	160
3	2021	45	83	61	57	201
4	2026	54	88	65	60	213

4.5.2 Commodities Likely to be Handled

A number of different dry bulk commodities are expected to be handled by the Terminal during its operational lifetime. Commodities handled would be driven by customer and market needs and by the specific terms of contracts negotiated with customers. Table 4–4 lists some of the most likely commodities that could be handled at the Terminal within the foreseeable future, and provides some of the physical properties for these materials.

It is anticipated that in the first 10 years, the Terminal would likely manage exports of low-sulfur, low-ash coal, Canadian potash, and locally produced calcined petroleum coke.[1] In the future, various grains are also likely export commodities because of increased overseas demand and high US production rates. Aggregate materials could likely be imported during terminal construction. Other dry bulk commodities listed in Table 4–4 could be handled for import or export.

Based on the physical properties, such as solubility or degradation when wet, covered storage would be required for some products for safe handling and to reduce potential environmental impacts. The East Loop is currently planned to provide uncovered storage and the West Loop to provide covered storage so that suitable facilities are available for various types of commodities.

4.5.3 Rail Operations Characteristics

The Terminal is designed to support sufficient and scalable rail infrastructure for efficient rail operations. Table 4-5 lists the number of trains anticipated to arrive at and depart the Terminal daily during the four operational phases, based on the assumption of trains up to approximately 7,000 feet long. The rail cars initially serving the East Loop would be rotary aluminum gondolas with a net carrying capacity of approximately 109 metric tons/car. Cars initially servicing the West Loop would be closed-top hopper cars with a net carrying capacity of approximately 102 tons/car. To manage up to 25 Mtpa, approximately five loaded trains per day would arrive at the Terminal. When the Terminal is developed to its full operating capacity, up to nine trains would arrive per day.

At approach to the Terminal and traversing the proposed terminal rail loops, trains would travel at average speeds of approximately 6 miles per hour (mph) unimpeded. It is estimated that a single train up to 125 cars long would be unloaded, on average, in 4 to 6 hours at the unloading station.

1. Calcined coke is a by-product of oil refining and is used as an energy source or a carbon-rich starting material for other manufacturing processes.

Table 4–4 Likely Commodities to Be Handled at the Terminal and Their Properties

Commodity	Solubility (mg/L)	Particle Size Range Generally as handled	Bulk Density (kg/m³)	Specific gravity
Industrial Minerals				
Alumina	very low	15% greater than No. 100 mesh 5% less than No. 300 mesh	961	3.4 - 3.6
Lime rock (crushed limestone)	negligible	Less than 3/8 inch diameter to very fine	1,550	1.7 - 3.0
Phosphate rock	negligible	Greater than No. 200 mesh	1,762	2.3- 2.6
Potash	Soluble: approx 357,000 mg/L @ 25°C	25% greater than No. 6 mesh 0.5% less than No. 14 mesh	1,281	2.0
Sulfur (prilled)	not soluble	Prilled pellets – varies by source	1,920 – 2,070	2.07 at 21°C
Salts	Soluble: approx 359,000 mg/L @ 25°C	1 – 5 mm	2,165	
Grain Products				
Barley	not soluble	Unhulled, dried, grain size	varies	See note 1
Corn	not soluble	Shucked, dried, grain size	varies	
Feed pellets/meal	Varies with product type	2 cm to 7 cm range	varies	
Soybeans	not soluble	Cleaned, dried beans	750	
Wheat	not soluble	Dried wheat berries	varies	
Oil seeds	not soluble	Clean seeds – size varies with type	varies	
Carbon Products				
Coal	not soluble	4% greater than 2 inch 29% less than No. 4 mesh	880	1.2
Petroleum coke (green)	not soluble	20% 6-inch minus 80% 3-inch minus	881	>1.0
Calcined petroleum coke	not soluble	40% less than No. 35 mesh 100% less than 18 mm	945	2.07
Aggregates				
Sand	negligible	<2 to 20 mm	1,650	2.3 - 2.5
Gravel	negligible	<1/2 inch	1,650	2.3 - 2.5
Crushed	negligible	<1/2 to 8 inch	1,650	2.3 - 2.5
Wood Products				
Wood chips		95% greater than 0.21 mm 96% less than 4 mm	varies	0.1 - 0.7
Wood pellets		1/4 inch to 2 inches	varies	
Ores				
Pelletized Ore	not soluble	4% greater than 16 mm 2% less than 5 mm	5,000	
Concentrate	0.01 - 1.4	lump: less than 38 mm fines: greater than 100 mesh	2,595	

Note 1. Grain products will generally sink. However, some individual grains will float for a short time until saturated, then will sink. The proportion that will sink or float depends in part on moisture content, which varies with grain, season, and source.

Table 4–5 Trains per Day by Operation Phase

			Serving West Loop				Serving East Loop				Total Terminal
Phase	Approximate Year (estimated)	Operational Capacity (Mtpa)	Loaded Trains	Cars / train	Metric tons/ car	Metric tons/ train	Loaded Trains	Cars / train	Metric tons / car	Metric tons / train	Loaded Trains
1	2015	25	0.0	0.0	0.0	0.0	5.0	125	109	13,625	5.0
2	2017	31	1.0	170	101.6	17,272	5.0	125	109	13,625	6.0
3	2021	45	1.0	170	101.6	17,272	6.5	150	109	16,350	7.5
4	2026	54	1.0	170	101.6	17,272	8.0	150	109	16,350	9.0

4.5.4 Wharf Operational Characteristics

Upon initial development, commodities would be loaded into vessels at a rate of up to 10,000 metric tons per hour using a dedicated shiploader. Individual vessels would be loaded using a single shiploader. Typical operations for arriving vessels would include tug-assisted berthing, mooring, and preloading inspections. Once a vessel was cleared for loading, an operator would control the shiploader motions. The cargo selection and vessel loading plan would be managed though a central control room. Complete vessel loading typically takes multiple shifts over several days. Post-loading operations include a draft survey to confirm shipment size, releasing mooring lines, and tug-assisted deberthing.

4.5.5 Dust Control Measures during Operations

Procedures would be implemented and equipment would be installed to control dust during operations at the Terminal. While different commodities may require specialized handling practices, the equipment and operating procedures identified below represent potential options to effectively address the management of dust in connection with wide-ranging commodities handling operations, including the storage and transfer of coal at the East Loop during initial operations.

As commodities handled at the Terminal change over time, Pacific International Terminals will continue to review and reassess the appropriateness and effectiveness of existing systems and implement other measures when appropriate to properly manage dust at the Terminal.

4.5.5.1 *Dust Control During Loading and Unloading Operations*

Many commodities brought to the Terminal, including coal and potash, would be unloaded inside an enclosed rail car shed building at the unloading station. The shed would be equipped with a dust collection system to control dust during rail car unloading activities. The system would consist of internal baffles to capture dust for collection in fabric filters associated with the system. The system would effectively reduce dust emissions vented from the shed during rail car unloading activities to less than 10 percent opacity. Figure 4-16 provides a photograph of an example rail car unloading shed with an associated dust collection system.

4.5.5.2 *Dust Control at Conveyors and Transfer Points*

Other than stacker/reclaimer conveyors at the commodities storage pile, all process conveyors designed to transfer commodities throughout the Terminal would be covered to minimize exposure to external conditions, thus reducing the potential for dust production. Only the conveyors associated with the stacker/reclaimers at the commodities storage pile would be uncovered. Figure 4-3 shows a photograph of a representative similar covered conveyor system. All conveyors over water would be fully enclosed in a gallery.

Specially designed passive enclosure dust controls, including staggered conveyor curtains and curved chuting, would be employed at transfer points to manage dust effectively during these operations. Figure 4-17 shows a schematic representation of this system and a photograph of an example system. For certain commodities, such as coal, a fog-based dust collection system would be used as needed during commodity transfer operations at the Terminal. These fogging systems generate water vapor droplets that adhere to the particles of a given commodity to reduce dust. Figure 4-18 provides a schematic diagram of an example fogger system.

4.5.5.3 *Dust Control at Commodities Stockpiles*

Uncovered storage of large quantities of dry particulate commodities has the potential to generate windblown dust. Dust control measures to be implemented at stockpiles would consist of a combination of compaction, fogging systems, water sprays, perimeter soil berms, regular pavement sweeping, and/or application of chemical surfactants. A water cannon would be located along the stacker/reclaimer lanes in the stockpile patio area. The water cannon would also be used to apply surfactant for additional dust suppression in the stockpile area when needed. Windscreens would be employed as needed to minimize dust generation during operations.

Water conservation features to be implemented would include controlling the dust suppression sprinkler system through an on-site meteorological station so that it would not operate during or just after rainfall, or when the stockpiled materials are sufficiently damp. The sprinkler would operate only during sunny periods, while also taking into account the drying effect of wind.

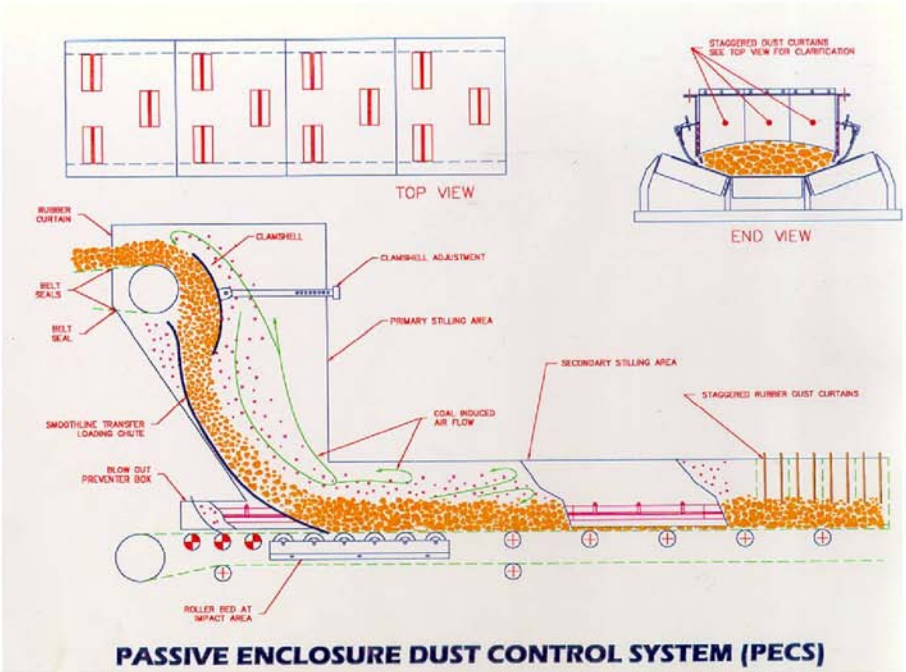
4.5.6 Vessel Traffic

Commodities would be moved by oceangoing vessel to and from the Terminal. Approximately 221 vessels (144 Panamax vessels and 77 Capesize vessels) are expected to call at the Gateway Pacific Terminal per year during Phase 1 operations. At full operational capacity, approximately 487 vessels per year are expected to call at Gateway Pacific Terminal (Table 4–6).

Source:
Pacific International Terminals, Inc.

Pacific International Terminals.

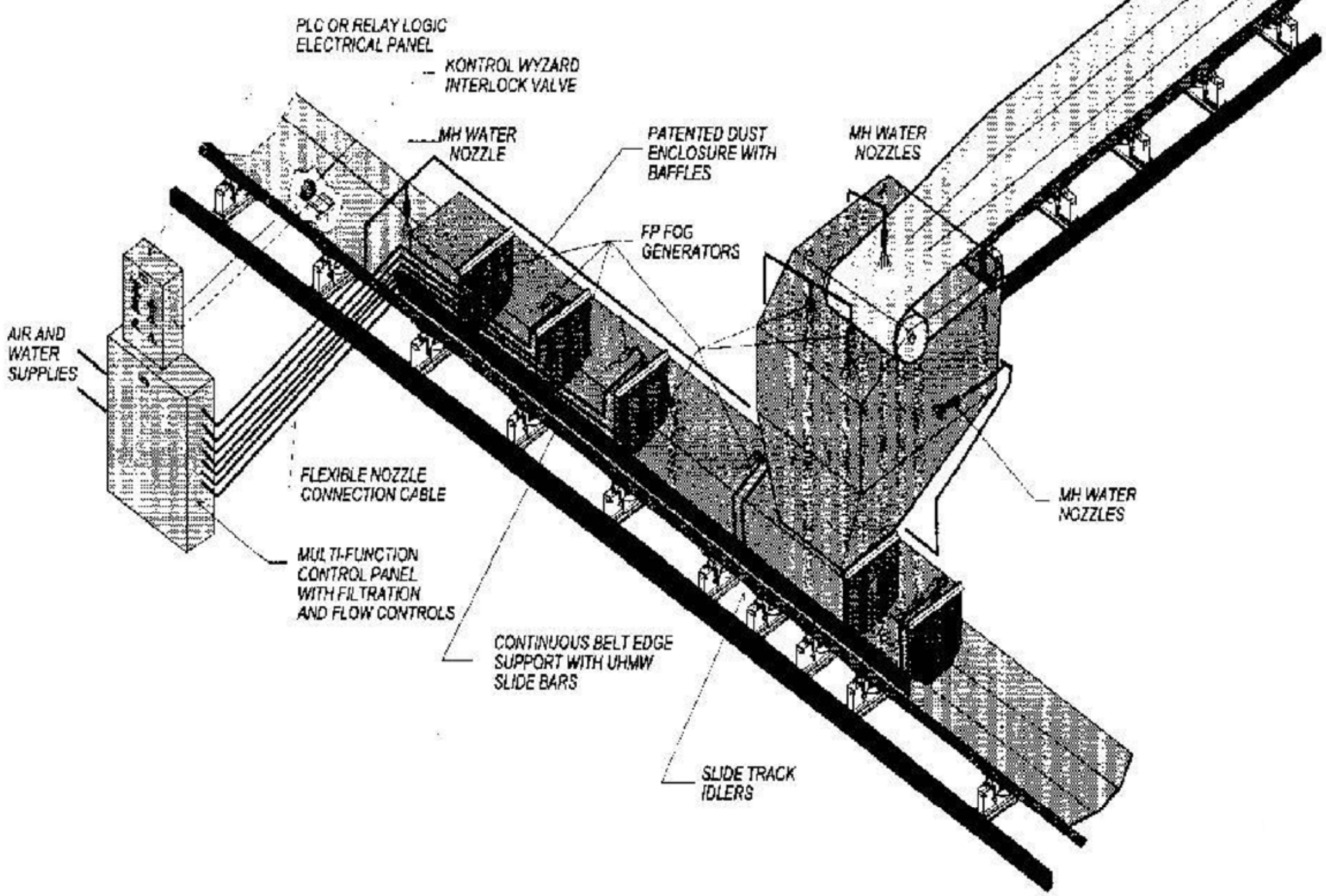
CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD CHK'D BY: KD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: FEBRUARY 2011 PROJECT NO.: 091515338C-18-01
	DATUM: - PROJECTION: - SCALE: -	TITLE: EXAMPLE RAIL CAR UNLOADING SHED	REV. NO.: - FIGURE NO.: FIGURE 4-16



Source:
Pacific International Terminals, Inc.

CLIENT:	PACIFIC INTERNATIONAL TERMINALS, INC.	
PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DWN BY: SD	DATUM: -	DATE: FEBRUARY 2011
TITLE: SCHEMATIC DRAWING AND PHOTOGRAPH OF EXAMPLE PASSIVE ENCLOSURE DUST SYSTEM	CHK'D BY: KD	REV. NO.: 1	PROJECT NO.: 091515338C-18-01
	PROJECTION: -	SCALE: -	FIGURE No.: FIGURE 4-17

Atomizer/Fogger System



Source: Pacific International Terminals, Inc.	Pacific International Terminals.	CLIENT: PACIFIC INTERNATIONAL TERMINALS, INC.	DWN BY: SD CHK'D BY: KD	PROJECT: PROPOSED GATEWAY PACIFIC TERMINAL	DATE: FEBRUARY 2011 PROJECT NO.: 091515338C-18-01
			DATUM: - PROJECTION: - SCALE: -	TITLE: SCHEMATIC DRAWING OF EXAMPLE FOGGER SYSTEM	REV. NO.: - FIGURE NO.: FIGURE 4-18

Table 4–6 Vessels per Year by Vessel Class and Operations Phase

Operation Phase	Approximate Year (estimated)	Operational Capacity (Mtpa)	Capesize/yr		Panamax/yr		Total
			Serving East Loop	Serving West Loop	Serving East Loop	Serving West Loop	
1	2015	25	77	0	144	0	221
2	2017	31	77	31	144	59	311
3	2021	45	122	31	229	59	441
4	2026	54	138	31	259	59	487

4.5.7 Emergency Response

A site-specific emergency response plan would be developed and kept available at the Terminal at all times. The emergency response plan would specify safety procedures and spill and response measures to be implemented following an emergency or release of dangerous materials. The plan would also describe procedures for reporting and notification following an incident in a manner that is consistent with local, state, and federal rules and regulations.

Development of emergency response procedures would be coordinated with adjacent industries (BP and ALCOA), Whatcom County, the US Coast Guard, and other relevant agencies and individuals. Such coordination would include first responder protocols, notification plans, and contingency plans. The emergency response plans would define personnel responsibilities, actions to be taken, evacuation routes, and assembly areas, and would identify the location of water shutoff valves. A separate safety and emergency response plan would be developed for each specific commodity handled at the Terminal.

4.5.7.1 *Upland Spill Response*

In the event of a spill of regulated petroleum products or hazardous materials, the appropriate Gateway Pacific Terminal personnel would contact the individuals and agencies identified in the site-specific emergency response plan, alert them to the status of the situation, and work closely with the supervising agency to address the matter appropriately.

The facility design and operational plans include a number of measures to reduce the risk of hazardous materials spills:

- Hopper doors on the rail cars would be closed after they have been emptied.
- An emergency cable would be deployed along the length of each conveyor so that the conveyors can be stopped immediately in the event of an emergency.

Additional spill response procedures would be described in the Emergency Response Plan and the Spill Prevention Control and Countermeasures (SPCC) Plan to be developed for the facility prior to initiating operations.

4.5.7.2 *Marine Spill Response*

A port operations manual including procedures for port operations, emergency response will be developed for operation of the marine terminal facility. The operations manual would define the responsibilities of vessel owners and operators calling at the Gateway Pacific Terminal including condition and safe operations of the vessel and spill response and countermeasures. A Spill Prevention Control and Countermeasures Plan for wharf and trestle operations would be developed and implemented and will include positioning of appropriate spill containment equipment.

4.5.8 Energy Conservation

The facility has been designed to include measures for electrical energy conservation:

- Capacitor banks would be used for power factor correction, which reduces the reactive component of current and losses.
- The primary distribution system would deliver power throughout the facility at 34.5 kV to reduce feeder losses with lower annual cost.
- Other energy conservation measures being considered include:
  - Loss evaluation of transformers to determine lowest life cycle cost,
  - Use of high efficiency motors,
  - Variable frequency conveyor drives; and
  - Use of energy-efficient lighting systems.

The use of variable frequency drives would help to reduce energy peaks when starting large motors by gradually ramping the motor up to speed thus reducing the current drawn.

4.6 CONSTRUCTION

This section describes the projected construction schedule, the preliminary site preparation work needed to prepare the site for construction, and appropriate construction practices to be implemented to protect worker health and safety and the environment during the construction phase.

In general, the proposed project represents a combination of civil, site, and structural improvements to include both in-water and upland bulk handling infrastructure.

4.6.1 Terminal Construction Logistics

Terminal construction would proceed in two stages to reduce environmental effects associated with construction and optimize fiscal management (Section 4.4). Stage 1 construction activities are anticipated to begin in 2013, after all permits and approvals are obtained, and to take approximately two years to complete. All construction for the East Loop, Shared Services Area, and access trestle would be completed during Stage 1. Remaining construction for the West Loop would be completed during Stage 2. No further earthwork would be needed within the Terminal to expand operations capacity beyond Stage 2 construction. Achieving full operational capacity following Stage 2 construction would involve installation of additional rail infrastructure, conveyors, stacker/reclaimers, and shiploaders to increase total freight-handling capacity. Because of the size of the in-water structures, it would take an estimated 18 months to complete the wharf and access trestle. The first commodities would be moved through the facility in early 2015 with the completion of the East Loop's initial rail infrastructure, and the wharf and trestle.

The nominal finished elevation of the East Loop would be 130 feet. The top of the rail embankment near the eastern-most portion of the East Loop rail embankment would be excavated to lower the elevation. This material removed would be used to fill the western portion of the East Loop area and to form the East Loop railway embankments. Based on current earthwork estimates, it is anticipated that excavated material in the East Loop would total approximately 7.3 million cubic yards, with the same volume required for fill, so that overall quantities of cut and fill are balanced.

Similarly, during Stage 2 construction of the West Loop, existing higher elevations in the northern vicinity of the West Loop would be cut to fill and raise the southern loop sections and to build rail embankments.

It is currently anticipated that any excavated overburden material would be stockpiled on site, and then later be incorporated into the constructed embankments. However, soil at the site is sensitive to moisture content, and preliminary analysis indicates it is not suitable for fill when wet. Therefore, most earthwork would be carried out during the summer months when the soil can be spread, worked, and dried if necessary to reduce its moisture content before final placement and compaction.

4.6.2 Wharf and Trestle Construction Logistics

The access trestle and wharf would be constructed using floating equipment including one or more barge-mounted pile drivers, workboats, barges, and tugs. Equipment would also include concrete pumps and booms, welding and other miscellaneous equipment.

The trestle would be built by driving a combination of approximately 64 precast concrete piles and/or steel-pipe piles into the seabed using an impact and/or vibratory hammer. Piles are estimated to be

24 to 30 inches square, or in diameter, and estimated to average 122 feet long. Piling would be placed approximately 75 feet apart to minimize the number needed.

The wharf would be built by driving approximately 730 steel-pipe piles, each estimated to be up to 48-inches in diameter and estimated to average about 172 feet long. Piles would be driven into the seabed using an impact and/or vibratory hammer.

Piling will be delivered to the construction site by barge and driven to the proper depth. Deck construction is similar for the access trestle and wharf, and begins with construction of cast-in-place pile caps on the piling. Concrete deck beams span between the pile caps and are either cast-in-place or can consist of pre-cast beams placed with a marine derrick. Following the deck beams, the deck structure can also be cast-in-place concrete or constructed by placing pre-cast pre-stressed deck panels with a derrick. The wharf's piled foundations would provide support beneath the shiploaders, and lateral and transverse support to berthing forces. The deck would be overlaid, except in the grated area of the access trestle, with a wearing surface of up to 4-inches of asphalt. Conduits and electrical vaults would be built into the wharf structure to support potential future powering of vessels at berth with shore power. The wharf would also include crane rails to support the shiploaders, vessel mooring bollards, and a fender system.

4.6.3 Custer Spur Rail Construction Logistics

Custer Spur construction sequencing is anticipated to progress as follows and will be based on Terminal volume requirements, with the objective of limiting impacts on future rail operations, the public, and the environment as additional freight volumes are realized during future operational phases at the Terminal.

- Civil/structural improvements for both the proposed receive/departure tracks as well as the double track along the Custer Spur would be completed concurrently with Stage 1 Terminal Construction.
- Rail infrastructure would be added as Terminal volumes warrant, starting first with the proposed receiving/departure tracks and eventually the proposed double track.
- Considering potential site and soil sensitivities, all heavy civil, grading, and embankment work is projected to be completed during the summer months and outside of the local wet season.

Preliminary construction sequencing for the railway improvements are summarized below:

- Mobilization, installation of work staging areas, and stormwater/sediment management facilities;
- Clearing/grubbing the entire construction footprint;

- Heavy civil construction work, including rough grading of construction footprint;
- Structural construction, including culverts and bridges along both R/D and double track segments (California and Terrell Creeks);
- Drainage profiling, including outfall protection and potential site mitigation;
- Final grading to include sub-ballast placement;
- Track construction to include surfacing; and
- Clean-up of the construction area and right-of-way.

Preliminary estimates project that construction of the BNSF Railway improvements would involve the following quantities of construction materials:

- 83,000 cubic yards of material imported for embankments,
- 36,000 cubic yards of excavated material moved to on-site embankments,
- 29,000 cubic yards of excavated material disposed off site,
- 140,000 cubic yards of rock fill material,
- 75,000 cubic yards of sub-ballast base material, and
- 100,000 cubic yards of rail ballast material.

4.6.4 Construction Practices

Construction will be planned to reduce environmental effects. Work would be scheduled to reduce effects to sensitive wildlife species and protect water quality, and effective management practices would be implemented to reduce potential effects due to stormwater runoff and dust generation.

Construction of the wharf and in-water portions of the approach trestle would occur during allowed in-water construction periods from approximately July 15 through February 15 in order to reduce potential effects on marine species. No in-water work would occur below the level of mean higher high water (MHHW) between February 16 and July 14 of any year.

Prior to commencing construction, a complete construction stormwater management plan, including a spill prevention, control, and countermeasures plan, would be prepared, and an NPDES General Construction Stormwater Management Permit would be obtained. The stormwater management plan would be designed to minimize the impacts to local water and environmental features associated with stormwater runoff during construction. The stormwater management plan would specify effective management practices to be implemented during construction, including sediment and erosion control and water quality protection. While erosion hazards at the site are expected to be minimal due to moderate slopes in construction areas, appropriate erosion and sediment management practices would be implemented during construction to monitor and control the turbidity of runoff discharging from the project area and to control fugitive dust. The first steps of site development would be to build temporary construction-related stormwater management features. The final design and specifications for the construction stormwater management system would be developed as part of the environmental review and design process. Typically, a sediment-trapping geotextile filter cloth fence ("silt fence") would be installed around the perimeter of the construction area and/or around the perimeter of any isolated, standalone work area. The geotextile fabric would be embedded into the soil, with a sandy gravel berm installed along the toe at the upgradient side of the silt fence. Other temporary erosion and sediment control features identified in the construction stormwater management plan would also be established.

Following establishment of the temporary stormwater and erosion control features, sediment-trapping basins would be constructed. The outlets of these construction stormwater management basins would discharge treated water to selected discharge points that lead to the water quality mitigation ponds or to original watercourses. Next, the perimeter and interceptor ditches and collector swales that will all drain into the basins would be constructed. These ditches and swales would be constructed as much as practical along the existing, permanent ditch and swale alignments. No other bulk earthwork would commence prior to establishment of the stormwater management system.

During construction, site preparation, including earthmoving, cutting, and filling, would proceed consistent with the construction management plan. The ditches, sediment-trapping basins, and perimeter silt fences would all be monitored for sediment accumulation, which would be removed periodically. The ditches and swales would be regraded as required during construction until finished grade is achieved. Any sediment disturbed in the ditches would end up in the sediment-trapping basin, if it does not settle in the ditches. Permanent exposed cut surfaces would be vegetated, including those portions of the ditches that do not require smooth hard surfaces.

During earthmoving work, appropriate construction practices to control dust and sedimentation would be followed, as specified in the construction stormwater management plan. These practices could include stabilizing areas quickly following earthwork, using water-spraying trucks in work areas to control dust, sweeping/and or installing wheel washes at truck entrance and egress areas, and other appropriate housekeeping procedures.

During construction, spill containment facilities would be constructed and maintained around the equipment fueling area, to supplement drip trays and other control works.