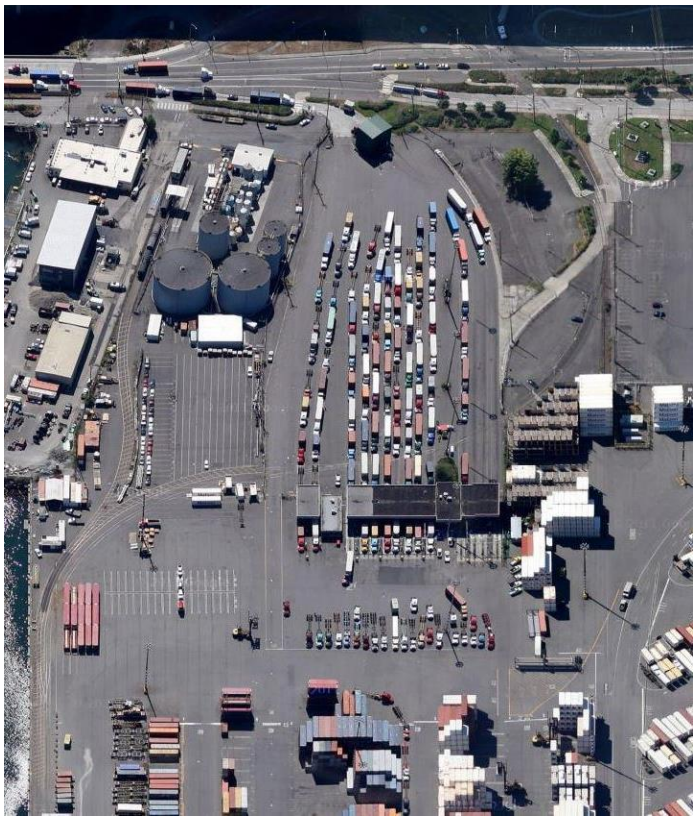
Terminal 18 Bathroom Facility Study

June 30, 2015



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SDOT
Seattle Department of Transportation

Funded with a grant from:

Department of Commerce
Innovation is in our nature.

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Port of Seattle Terminal 18 Bathroom Facility Study
2016 Study Update

The Seattle Department of Transportation (SDOT) performed a study in 2015 to examine the current and future adequacy of bathroom facilities for truck drivers on and approaching the Port of Seattle's Container Terminal 18 (T-18). Terminal 18 is a major intermodal container terminal located on Harbor Island, Seattle. The study was funded with a grant provided by the Washington State Department of Commerce in early 2015. SDOT released the study in July 2015. Thereafter, the Port of Seattle initiated and completed multiple facility improvements at T-18 locations for the benefit of the Terminal workers.

The Port of Seattle initiated and completed significant facility improvements since the 2015 study, including the following betterments:

- Gate 1 (South Gate)
  - Added a third fixed bathroom at Gate 1
  - Repaired and refurbished bathrooms and building at Gatehouse 1
  - Upgraded fixed bathroom plumbing fixtures to increase water flow volume and hot water supply
  - Added toilet seats to the existing toilets in both fixed bathrooms
  - Added a multi-purpose sink on exterior of Gatehouse 1
  - Added various pavement markings to improve safety and operations
  - Added an egress ramp to fixed bathrooms building
- Gate 4 (North Gate)
  - No changes

For more information on the Terminal 18 improvements, please refer to the Grant Annual Report Update to the Washington State Department of Commerce, Grant Number 14-00014-169, Final Report, June 2016.

For more information on the Terminal 18 Bathroom Study, email Ron Borowski at Ron.borowski@seattle.gov.

SDOT, November 2016

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Executive Summary

This document is the result of a Washington Department of Commerce funded study to examine the current and future adequacy of bathroom facilities for truck drivers on and approaching the Port of Seattle's Terminal 18 (T-18).

It intends to answer the following questions:

- Do bathrooms (i.e. restrooms or toilet facilities) serving T-18 truckers meet current needs?
- What are the expected future truck movements and gate queues at T-18 and how will this affect future demand for bathrooms?
- What potential solutions would meet current and future needs and what are the advantages, disadvantages, and potential costs of these solutions?

Problem Statement

Issues were identified through on-site observations, a survey of truck drivers, stakeholder interviews, and a review of the transportation context, including truck movements and queuing. The results are described below.

- Truck drivers need convenient, safe, and quick access to bathrooms on T-18, which can be challenging on an active industrial terminal. This means access to bathrooms along their direction of travel and without losing their place in queue (efficiency is critical to drivers trying to maximize the number of daily trips and income).
- Though the overall number of bathrooms currently provided on T-18 is generally in line with industry standards, truckers have difficulty accessing bathrooms while waiting in the queues before the Gate 1 scales, within the yard, and to a lesser extent when exiting through Gate 4.
- T-18 bathrooms permanent bathrooms are not adequately serviced/cleaned (i.e. currently once per day) for their use levels, particularly the high-use facility near Gate 1.
- Driver access to the highest quality bathrooms on the terminal (along the wharf) is limited due to safety restrictions and parking limitations.
- There are limited feasible opportunities to add bathrooms outside T-18 that would conveniently and safely meet trucker needs.

- In general, bathrooms serving truckers on T-18 are lower quality than those used by other workers on the terminal, but not atypical of bathrooms serving truck drivers at other west coast container terminals.
- Underlying social issues related to tension between truckers and longshoremen, as well as challenging industry conditions, provide a complex backdrop to this facilities question.
- According to the Seattle Department of Transportation, trucks queue outside T-18 in the right lane of Spokane Street as early as 5 A.M., but significant backups of Spokane Street have not been observed as a result. However, during incidents, emergency conditions, and labor slowdowns, such as occurred during early 2015, queues have been reported extending all the way to Interstate 5 (I-5).

Findings Summary

This study explored five alternatives to address the problems identified above. Overall findings are described on page 47.

In summary, the following would help improve the safe and convenient access to bathrooms for truckers using T-18 and improve bathroom conditions and services on the site:

- Increase cleaning/servicing of existing facilities.
- Adjust policy to allow truckers to leave their vehicles in the container yard 15 minutes into the lunch break.
- Add hand washing capabilities to high-use portable toilets.
- Add fixed facilities in the Gate 1 area.
- Add portable toilets with hand washing facilities in the container yard and just outside Gate 4.
- Add an exterior sink that accommodates foot washing.

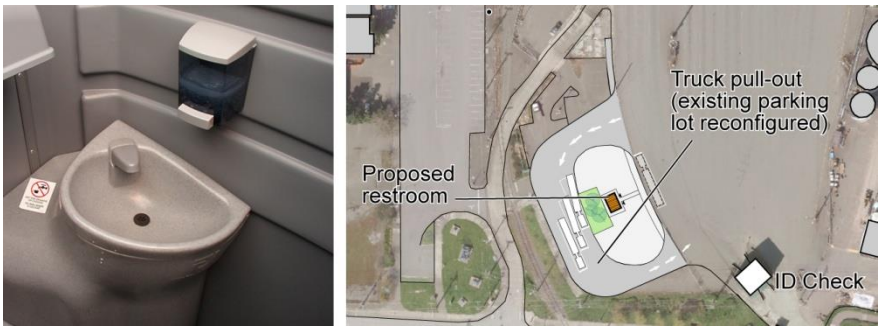


Figure 1. Potential solutions range from the acquisition of portable toilets with sinks to the development of new fixed facilities with dedicated truck parking near the terminal entrance.

Introduction

This report is structured around the following sections:

- **Existing & Projected Operations**: Describes T-18, local travel patterns, current and projected on-terminal truck movements, and queuing at current and projected volumes.
- **Bathroom Facilities**: Describes available bathrooms on and near T-18, summarizes insights from trucker interviews, and analyzes demand for bathrooms.
- **Potential Solutions**: Explores various options to address bathroom facility needs at T-18 and compares performance relative to key metrics, such as cost and accessibility.
- **Conclusions**: Summarizes observations, findings, and general direction for stakeholders and potential implementing parties to consider.

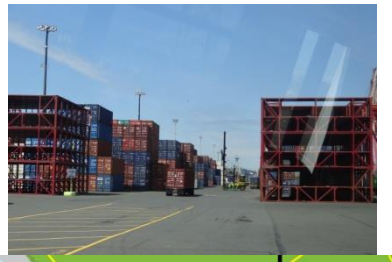
Existing & Projected Operations

trains plus railcar adjacent storage

T-18 FAST FACTS

- 196 acres
- 970 truck entries per day (~275 unique drivers based on median of 3.5 entries per driver)
- Typical daily workforce of 25 SSA employees and 50 longshoreman
- 4 berths and 4,460 berthing feet
- 10 container cranes
- Loading capacity for more than two full Union Pacific Rail Road (UPRR) or Burlington Northern Santa Fe (BNSF)

T-18 is the largest container facility in the Pacific Northwest. Located on the northeast corner of Harbor Island, it is one of four container terminals owned by the Port of Seattle. T-18 is operated by SSA Marine (SSA), which, with its affiliates, operates more cargo terminals than any other company in the world.



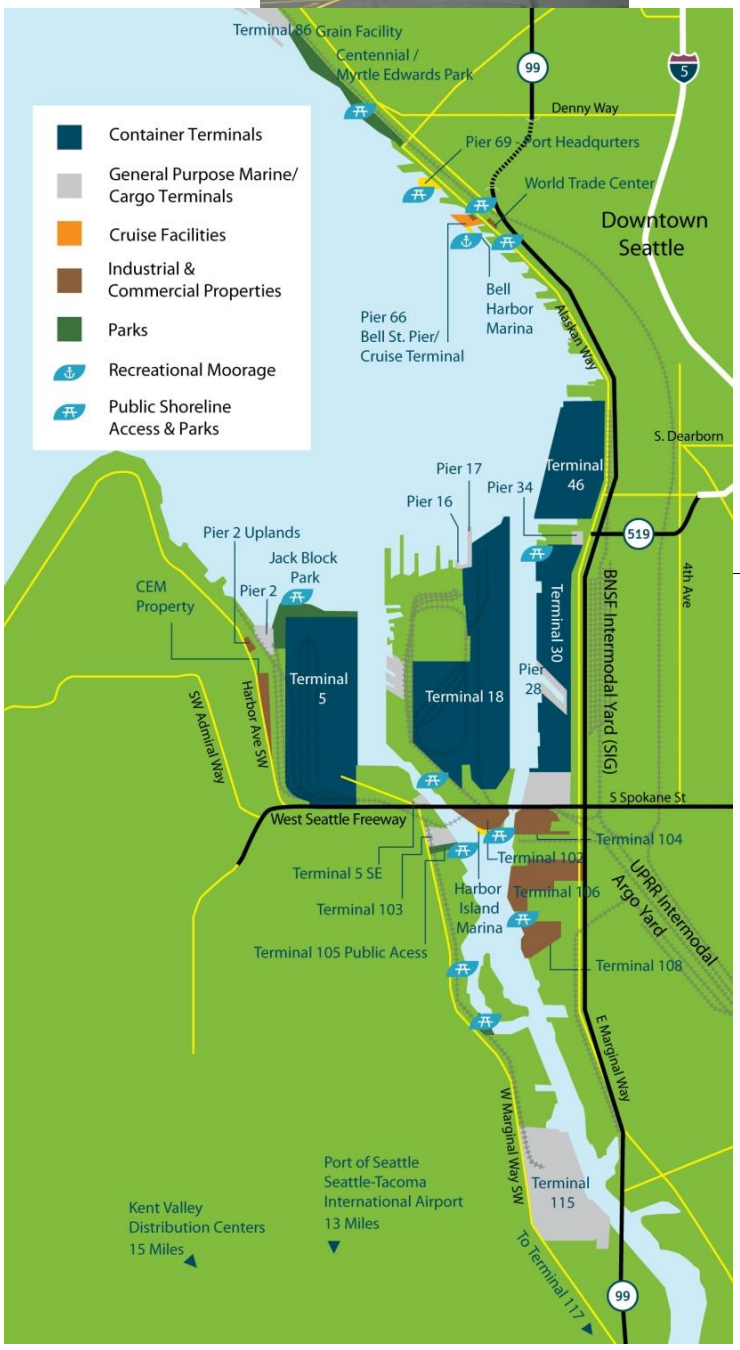


Figure 2.T-18 and its local context.

Source: Adapted from Port of Seattle map. As of study date, T-5 is undergoing modernization and not currently used for container operations.

Containerized freight is transferred between ships and land-side transportation modes at T-18, a process known as transloading. Some of the containers are loaded onto trains directly in the terminal, but the majority of containers (90% to 96%) are trucked to off-site locations, including rail yards (known as intermodal yards), local warehouse and distribution facilities, or other businesses throughout the region.

Historically, about 40% of all T-18 cargo is trucked to two nearby intermodal yards: BNSF's Seattle International Gateway (SIG) Yard and the Union Pacific Argo Yard. Both are located east of SR 99; the SIG Yard is north of Spokane Street and the Argo Yard is south of Spokane Street. When a ship is being unloaded, trucks will pick up a full container at T-18, truck it to one of these railyards, and return "light" (meaning with a bare chassis or just the tractor of a truck, known as a bobtail). Export cargo arriving at these intermodal terminals by rail is trucked to the terminal for loading onto a ship. This short-haul truck movement between the rail and marine terminals is typically referred to as a "dray trip."

The non-intermodal cargo is trucked to and from local (<50 miles) and regional destinations throughout the Pacific Northwest, including Eastern Washington, Canada, and Oregon. Distribution centers and transload (cross-dock) operations reconsolidate the contents of various containers for trucking to a final destination.

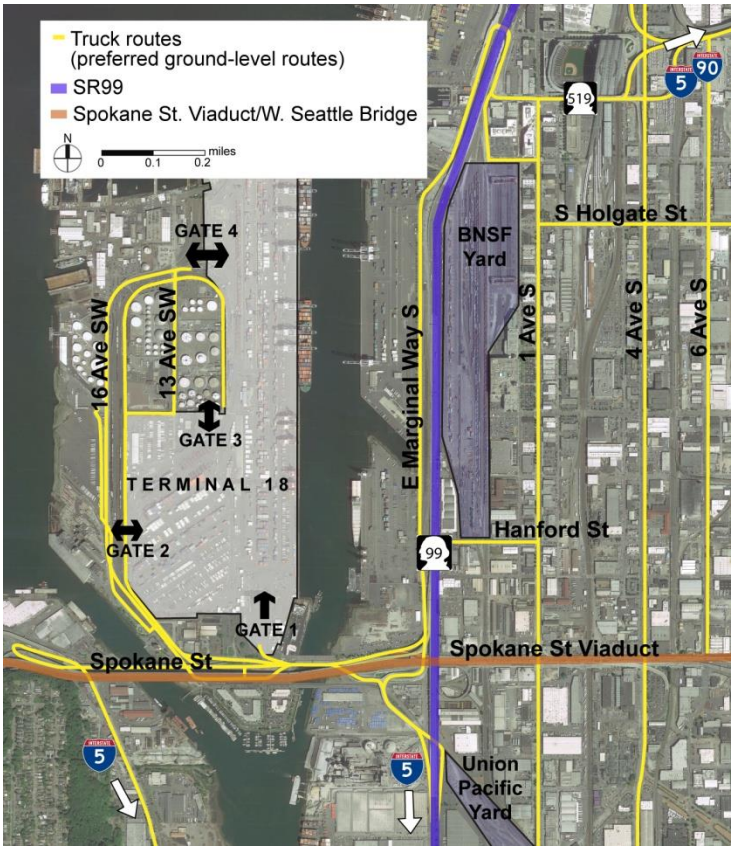


Figure 5. Major circulation routes to and from T-18.

Terminal Circulation & Gate Operations

T-18 has four entry/exit gates (Gate 1/South Gate is entry only). Drivers must have a Transportation Worker Identification Credential (TWIC) issued by the Transportation Safety Administration to access the terminal. Each driver's TWIC is checked by a staff member in the guard shack every time they enter the terminal.

The main terminal entry is located at the South Gate (Gate 1), which is accessed from SW Spokane Street. The main egress from the terminal is through the North Gate (Gate 4). There are two lesser gates: Gate 2, which serves domestic cargo for Matson located on the west side of the terminal, and Gate 3, the “Auto Customers” gate, where personal autos are delivered for ocean transport.

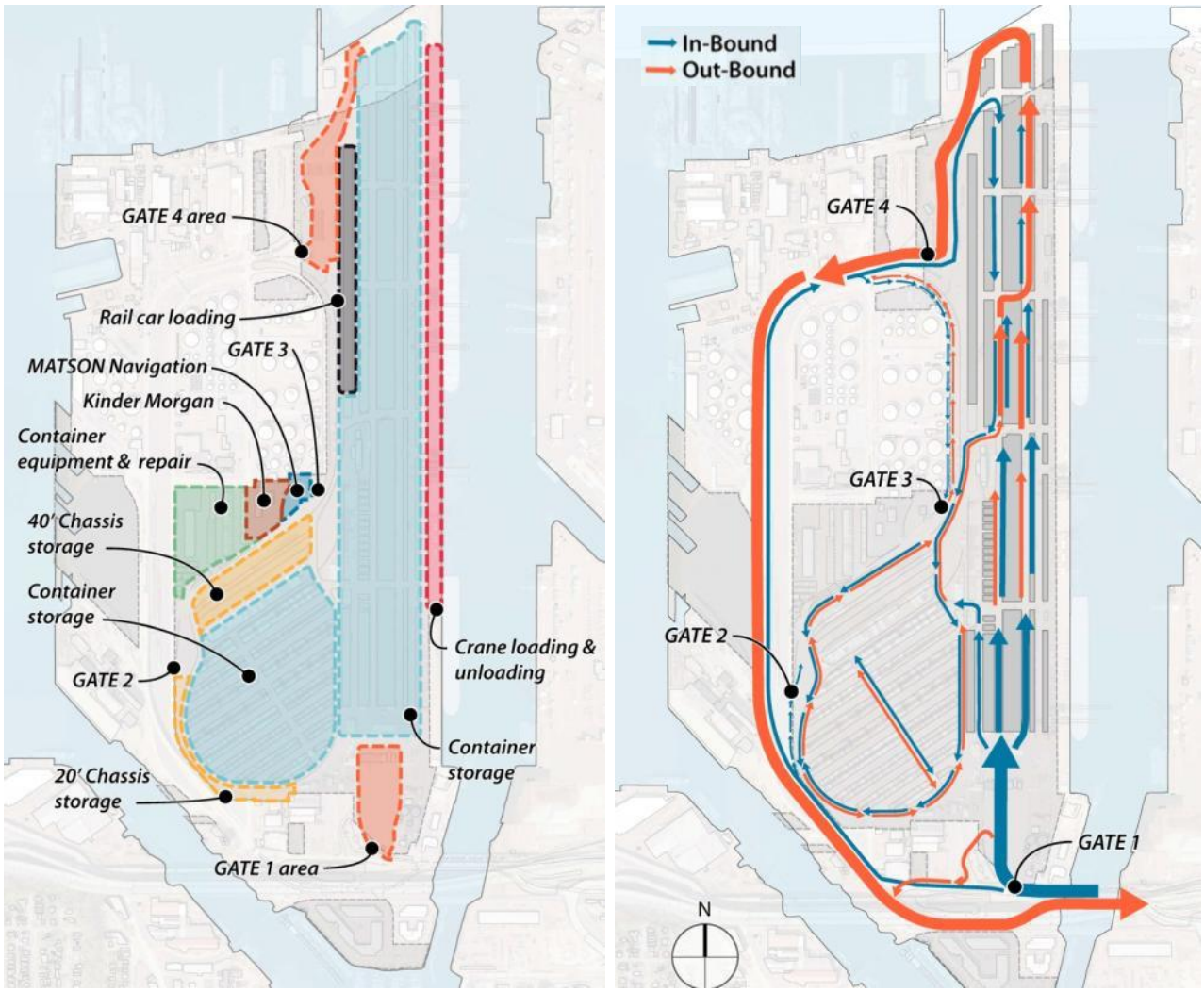
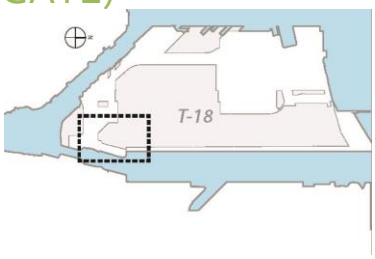


Figure 6. T-18 use zones and truck circulation.

GATE 1 (SOUTH GATE)



Most trucks to T-18 enter through the South Gate. Access is a two-step gate process: identification (ID) check and transaction. The required check of driver TWIC cards is performed at a guard shack just off Spokane Street ("security gate" or "ID gate"). Most trucks are processed very quickly, but if issues arise (e.g. unauthorized driver), the queue can grow quickly, though it will continuously "roll," albeit slowly, toward the gate. During past events with long on-street queues, the terminal operators and/or Port police have directed trucks to enter the terminal through the North Gate. Unpredictable events such as software or labor shutdowns can also cause long queues, but they are relatively rare.

The security gate usually opens at early 5:30 A.M., per the terminal operator. After passing the ID check, trucks stage in the South Gate queue area until the transaction gates opens at 8:00 A.M. The wait time in the queue area can therefore be up to 2½ hours. Inside the South Gate queue area, truck drivers choose from one of 14 lanes (on peak days when all are open) to be processed into the terminal. Each lane can accommodate up to approximately eight trucks with trailers and the queue area can hold a total of about 112 at any time.

Figure 7. Transaction gate at the South Gate.

The transaction gate closes for a one-hour lunch at 12:00 P.M., as well as a mid-morning and mid-afternoon 15-minute breaks. Queues most often form before the gate opens in the morning and during breaks, at which time the queue stands still. Queues beyond the available space can occur on peak days, but have become less frequent in recent years due to operational improvements.

Figure 8. Gate 1 queue at ID gate (top) and transaction gates (bottom).

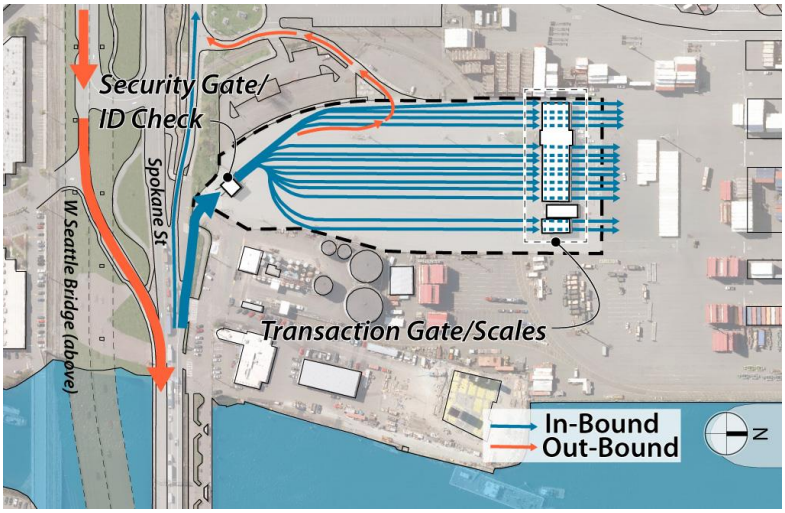
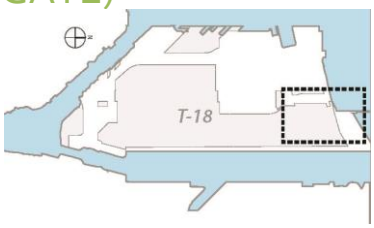


Figure 9. Gate 1 (South Gate) truck circulation.

GATE 4 (NORTH GATE)



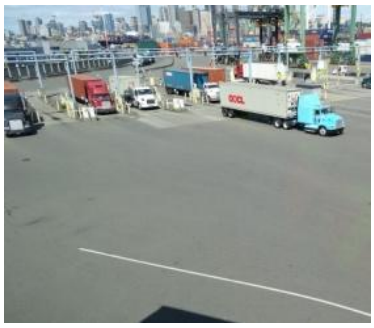


Figure 10. Outbound traffic at the North Gate.

Most trucks exit the terminal through Gate 4 at the far north end of the terminal. The exit process includes a variety of automated scans that record the truck and its load identification numbers (for tracking purposes), a stop at the scales, and finally, a pass through radiation portals to meet national security screening requirements. The overall exit process does not typically result in any significant queuing in and of itself.

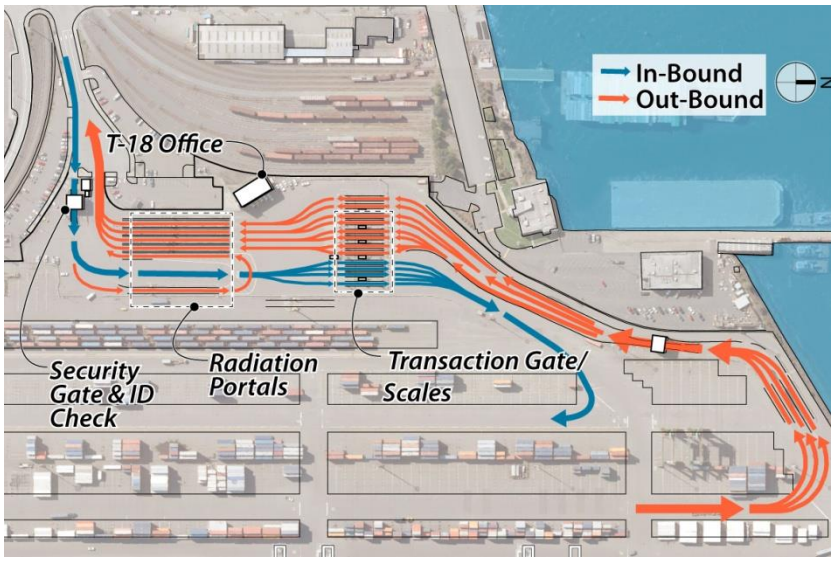
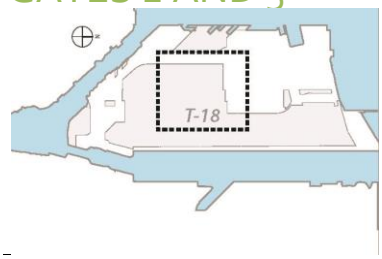


Figure 11. Gate 4 (North Gate) truck circulation.

GATES 2 AND 3



Gate 2 primarily accommodates domestic freight handled by Matson. Gate 3 is a low-volume gate primarily used to deliver or receive personal vehicles shipped to/from Alaska or Hawaii.

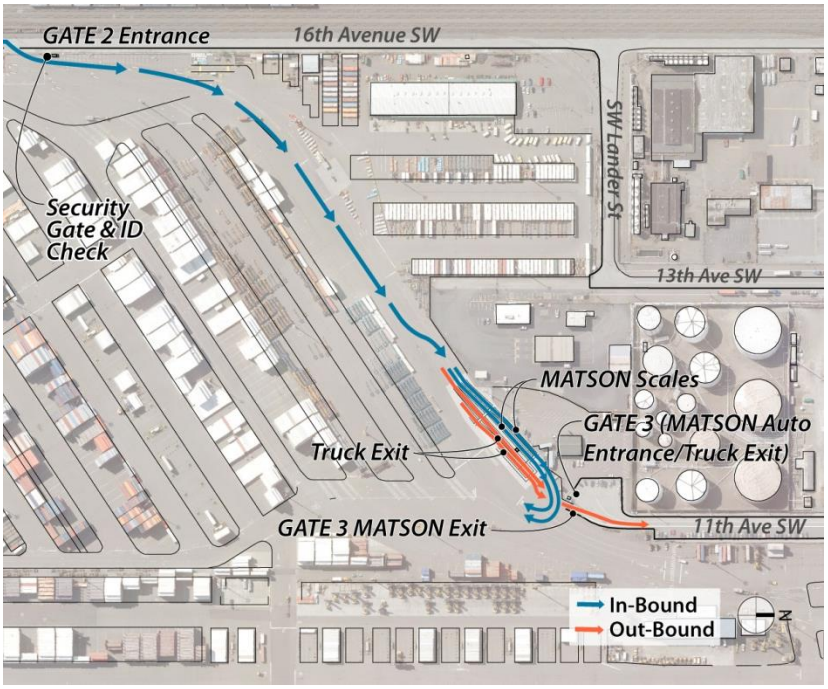


Figure 12. Gate 2 and 3 truck circulation.

Current Travel Patterns to/from T-18

As part of the Port of Seattle's forthcoming 2015 Container Terminal Access Study (CTAS), the Transpo Group collected origin and destination data for T-18, as shown in Figure 13. This study determined that 39% of the truck movements at T-18 are to and from the SIG (32%) and Argo (7%) Intermodal Yard; and 10% are to and from local South Downtown locations (e.g. transloader companies, businesses, etc.). About 25% of all of the trips are regional trips that use Interstates 5 and 90 for trip lengths greater than 50 miles. The rest (26%) are destined to locations within the Puget Sound Region, with most of those to and from businesses south of Seattle such as Kent, Auburn, Sumner, and Lacey. The origin and destination survey determined that 100% of truck arrival and departure traffic flows to/from the east. Traffic from the west does not have direct access to T-18 from Spokane Street and would need to perform an allowed u-turn at East Marginal Way.

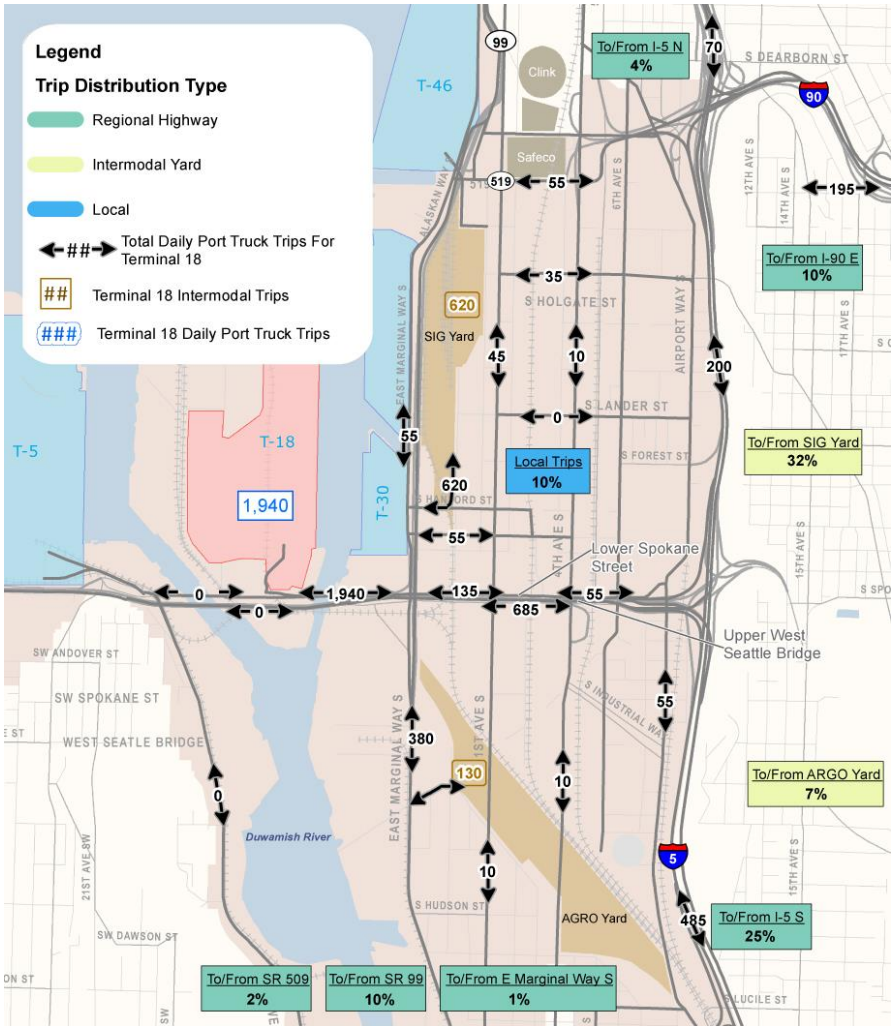


Figure 13. Existing (2014) Design Day truck trips to/from T-18.

Source: Container Terminal Access Study, The Transpo Group, May 2015.

Existing Truck Movements

The soon-to-be-published CTAS collected detailed truck volume data for all Port terminals. These data, collected from radio-frequency identification (RFID) equipment, reflect the period between April 2013 and April 2014. The "design day" truck volume through T-18 during that period was 1,940 truck trips per day (970 entries and 970 exits), which is about 18% higher than the average day over the study period and reflects the 85th percentile volume through the terminal. As shown in Figure 15, truck volumes are lowest March through June, which is typical at the Port given that the peak generally occurs in the fall coincidental with the export of agricultural and import of holiday goods.

The Port-wide RFID data were compiled to show truck arrival at Port of Seattle terminals. Unlike past analyses that recorded when a truck passed the transaction gate, the RFID readers recorded passage through the security gates, which opens 2½ hours earlier. Peak arrivals at the Port occur during the 9:00 A.M. hour when 13% of the day's traffic arrives. At T-18, this is about 126 trucks during that hour on the "design day." Using the arrival distribution in Figure 14, T-18 would receive approximately 100 truck arrivals before 8:00 A.M on the "design day." Given an approximate queuing area capacity of 110 vehicles between the security and transaction gates, a queue would not develop under normal operating conditions.

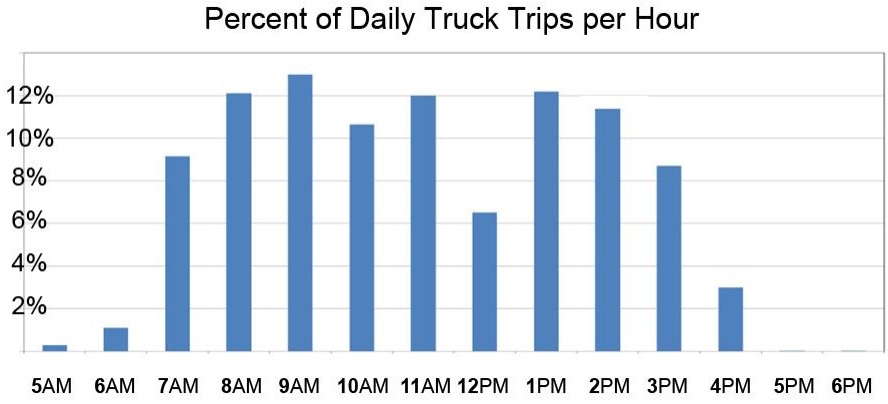


Figure 14. Distribution of truck arrivals at Port terminals by time of day.

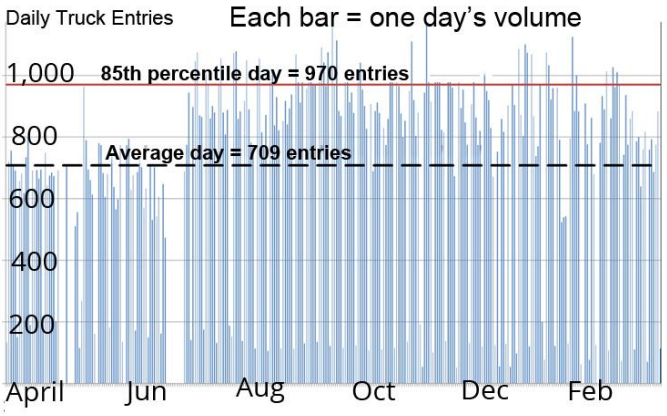


Figure 15. Daily trucks entering T-18 Gate 1 (April 2013 to April 2014).

Future Truck Movements

In the future, container throughput at T-18 could increase as new customers or services locate at this terminal. The Port of Seattle and the Port of Tacoma have formed the Seaport Alliance to jointly manage and market their combined container terminal assets. Although no final decisions have yet been made, it is likely that much of the growth will be targeted to T-5, which has superior intermodal facilities than T-18. When T-5 reopens and tenants are secured, truck traffic along Spokane Street will likely increase.

Forecasts were prepared for the CTAS and assumed that total Port of Seattle throughput would reach 3.5 million TEUs (twenty foot equivalent units) per year, which is predicted to occur 20 to 35 years in the future. Under the Alliance scenario described above, T-18 throughput would still increase and would continue to be focused on dray movements to the off-dock intermodal yards (which generate more truck trips than if the terminal were to convert to more on-dock intermodal usage). A reasonable 10-year forecast for the sake of this bathroom study would assume about 1,300 trucks per day entering T-18 on the design day.

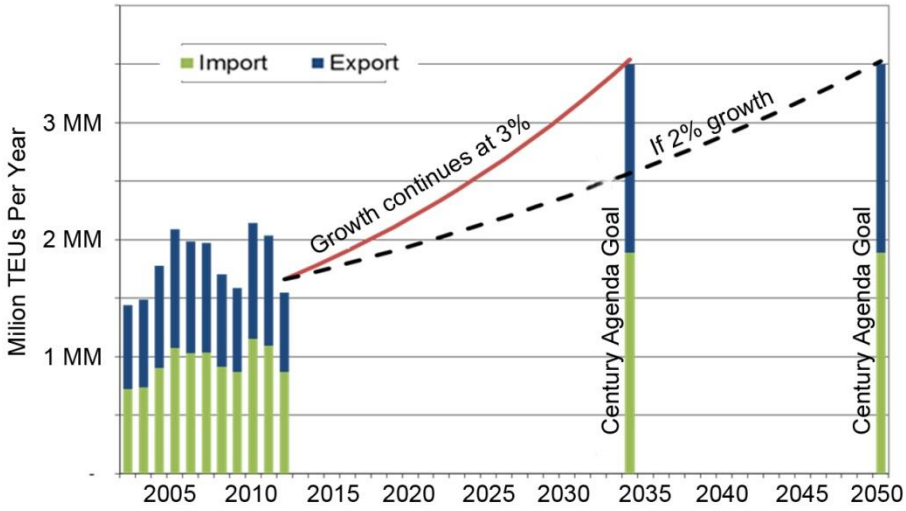


Figure 16. Actual throughput at Port of Seattle compared to long-term growth goal of 3.5 Million TEUs.

Source: Port of Seattle Container Terminal Access Study (CTAS) Throughput, Rail, and Truck Volumes for Growth Scenarios for Sensitivity Analysis (Preliminary Draft), Heffron Transportation, Inc, April 15, 2014.

Existing Gate Queuing

As previously described, the majority of trucks to T-18 enter through Gate 1 (South Gate). There are two points that can create queues: 1) the security/ID gate where identification is checked prior to entering the holding area, and 2) the transaction gate where the scales are located. The Port of Seattle has conducted past studies of gate queuing conditions at T-18. Prior to implementation of the "kitchen counter" system to process trucks through the transaction gate (which allows trucks to self-select the shortest line), trucks were assigned to a particular line or set of lines to enter the terminal. This previous system often resulted in long queues at the transaction gate since there was little flexibility to shift trucks to other lanes as necessary. In the current system, clerks located remotely facilitate the transaction and additional clerks can be added to accommodate increased volumes.

Long queues can form in front of the transaction gates, particularly before the gate opens in the morning and during lunch; drivers often arrive early to maximize their number of trips for the day. Nonetheless, it is relatively infrequent that queues extend onto Spokane Street. These events are generally related to a trouble that clears relatively quickly. Under normal operations, the queue at the ID gate moves at three truck lengths per minute, which makes it difficult for a driver to exit and use a bathroom. The queue in the South Gate holding area is more predictable. Drivers can (and do) exit their trucks to use the bathroom facilities. The service rates are longer, and the queue does not constantly move. In addition, if the queue begins to move before a driver returns from the bathrooms, other trucks behind the driver will attempt to move to another lane.

Bottlenecks at the security gate, when they do occur, are the most frequent cause of on-street truck queues. Prior studies have measured the typical time at the identification check to be about 18 seconds per truck. If this process runs smoothly, that gate can serve about 200 trucks per hour, and queues do not extend onto the street. However, with only one lane and guard, a single "trouble" event, such as a driver with no TWIC card, can quickly cause a queue to form. Once the troubled vehicle clears, the queue line will roll forward at a rate of about three trucks per minute. The average queue here is estimated to be three trucks or 210 feet long. A 95th-perecentile queue is estimated to be 12 trucks or approximately 840 feet long.

A model developed for past studies of T-18 was used to determine the magnitude of queues on an existing "design day" (i.e. about 970 daily truck arrivals). This model assumed an 18-second service time at the security gate and five-minute service times at the transaction gate. It was determined that the peak queue of approximately 100 trucks within the South Gate queue area would occur in the morning before the transaction gates open. Drivers in this peak queue have access to the Gate 1 bathroom throughout their wait.

Future Gate Queuing

If future traffic grows to 1,300 trucks per day at T-18, the security gate would continue to be the most likely source of any truck traffic bottlenecks, and the single lane would not accommodate the peak number of truck trips. Previous studies have identified an option to move the primary access point to the South Gate further west to 13th Avenue W. This location would extend the off-street queue space and allow for a dual-lane security gate. Even if just one security guard were to service both lanes, the queue approaching the security gate would reduce to about four trucks.

Increased truck volumes at the main gate would also likely require the transaction gate to open at 7:00 A.M. on peak days and that service rates be increased, which is possible by adding more clerks. Service rates in the range of 4 minutes per truck were assumed. The analysis also assumes that half of the lanes would be open during the 12:00 P.M. and 1:00 P.M. As shown in Figure 17, in the future, the peak queue is expected to occur during the 1:00 P.M. hour due to reduced capacity over the lunch break. The peak queues would be accommodated by the holding area (i.e. less than 110 trucks).

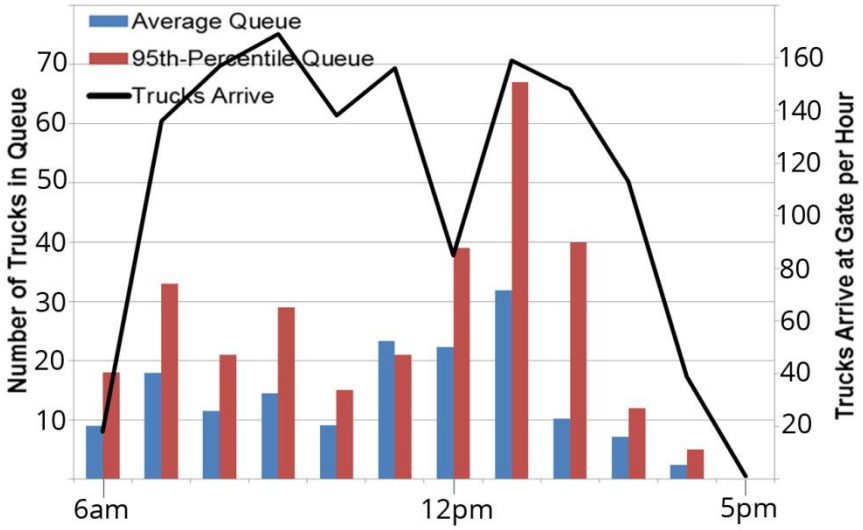


Figure 17. Projected queues at 1,300 trucks per day (Heffron Transportation).

The queue analysis shows that while queues can form approaching the security gate, they are unpredictable and generally related to a trouble that clears relatively quickly. Under normal operations, that queue typically moves at a rate of about three truck lengths per minute. It would be impossible for a truck driver to exit the truck while waiting in this queue. The queue in the South Gate holding area is more predictable. Truck drivers can (and already do) exit their trucks to use the bathroom facilities. The individual service rates are much longer, and the queue does not need to constantly move. If a truck driver were late in returning to their vehicle, other lanes are available that trucks behind can use.

Bathroom Facilities

ON-TERMINAL BATHROOMS

There are 13 bathrooms on T-18 but with varying degrees of access for truckers. At any given location on T-18, a bathroom is always within a 10-minute walking distance, though access and transiting across the terminal is typically limited due to safety restrictions. All bathrooms are managed by SSA or their contractors. The majority are single occupancy portable toilets without hand washing facilities. There are five permanent bathrooms on the site, including one at Gate 1, one at Gate 4 and three within the yard near the dock loading zone, each with men's and women's facilities. All permanent bathrooms are owned by the Port and maintained by SSA. The three dock buildings combine Longshoremen break rooms with bathroom facilities that are, according to policy, available for truckers *when no ship is at the dock*. Per SSA, "vessels normally call on the weekends beginning Friday and concluding on Monday, but sometimes Tuesday. Wednesday and Thursday [T-18] does not have vessels." Access to all T-18 bathrooms, summarized in the table on page 18, is limited to terminal users (no general public).

There are limited bathroom options for truckers in the area near T-18. The closest are the Pacific Pride gas station on Harbor Island and the portable toilet at the T-25 (temporarily used for overnight truck parking). Few drivers indicated using these facilities often.

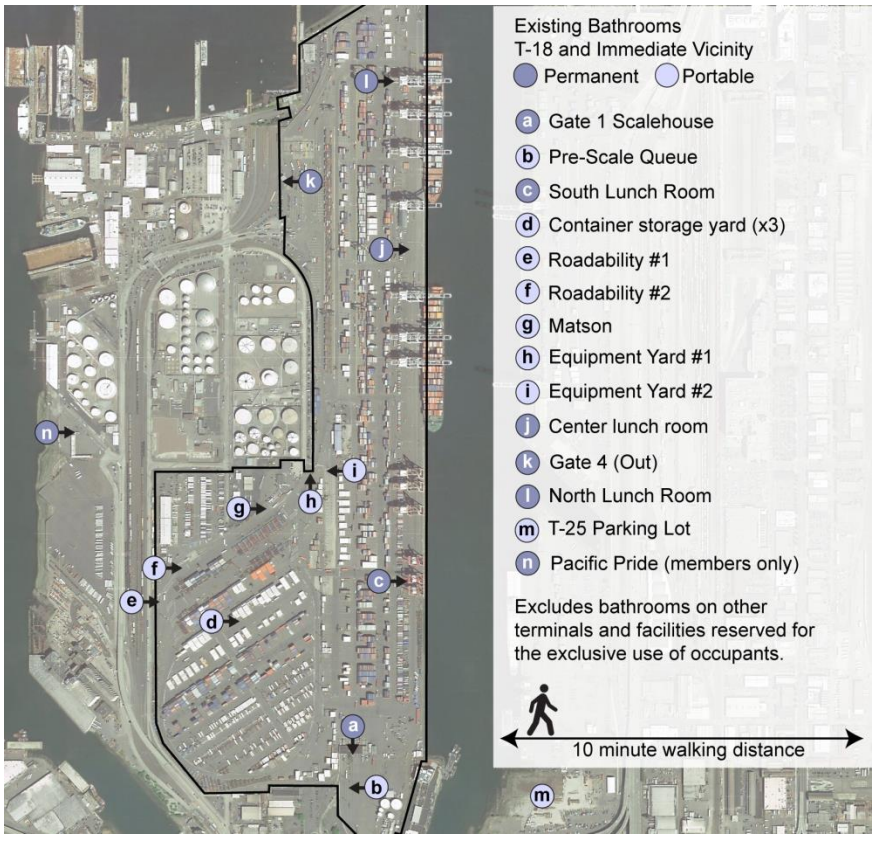


Figure 18. Existing bathrooms for trucker use at T-18 and on Harbor Island. Walking across terminal is not generally allowed; 10-minute distance shown as a point of reference only.

TYPICAL ON-TERMINAL BATHROOMS

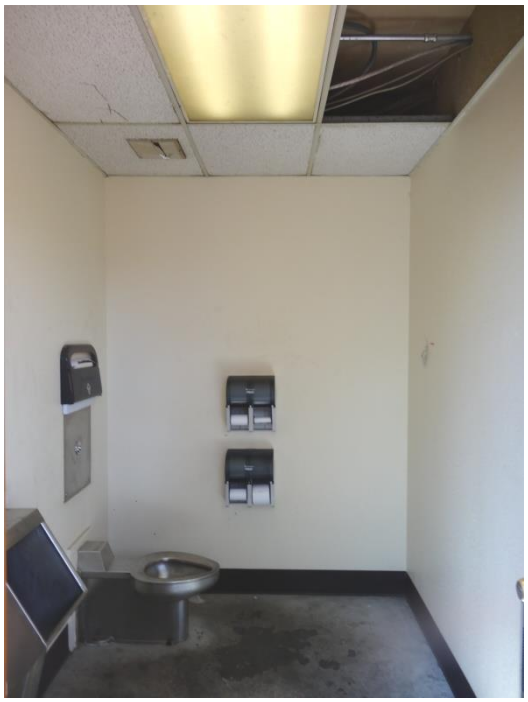


Figure 19. Men's bathroom located at Gate 1 (location a), primarily used by truck drivers. It features stainless steel fixtures, including a toilet with non-operable seat.

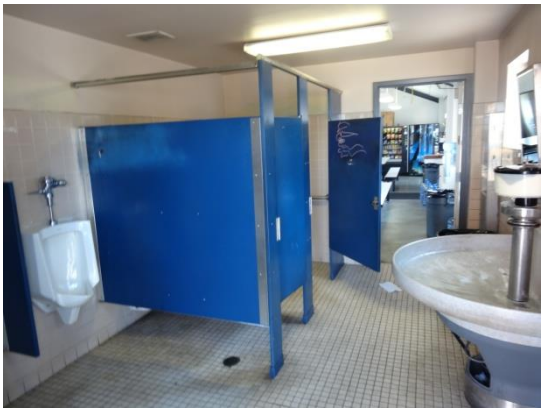


Figure 20. Bathrooms adjacent to the longshoremen (ILWU) break/lunch rooms (locations c, j, and l).

TYPICAL ON-TERMINAL BATHROOMS

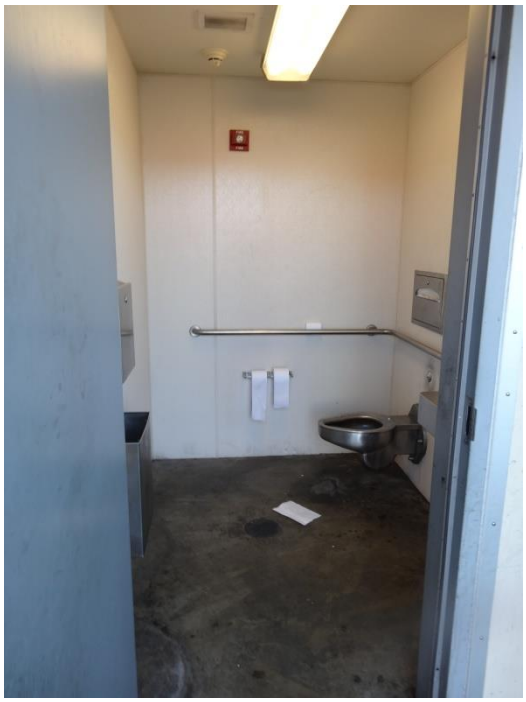


Figure 21. Men's bathroom at Gate 4 (location a in Figure 19), primarily used by drivers. Like the bathrooms at Gate 1, it features stainless steel fixtures, including a toilet with non-operable seat.

Figure 22. A typical portable toilet (location i in Figure 19) near the equipment yard. Parking for truck drivers is informal without designated spaces.

NEARBY BATHROOMS

Local/drayage truckers can use portable toilets located at the Union Pacific and BNSF rail yards or at other origin/destination points (e.g. warehouses) when facilities are made available.

Off-terminal trucker-accessible bathrooms include gas stations at 3215 4th Avenue South, 6760 W Marginal Way SW, and 7801 Detroit Ave SW. See figure 23 below for their locations.

There are bathrooms provided on the Port's other terminals, but these would not be accessible to truckers without business on those terminals. Similarly, there are bathrooms in some local retail establishments there are not accessible due to the lack of truck parking.

Long haul truckers typically use rest stops and/or truck stops off the highways, in addition to their use of on-terminal bathrooms.

Area bathrooms outside T-18 are summarized in a table on page 18.

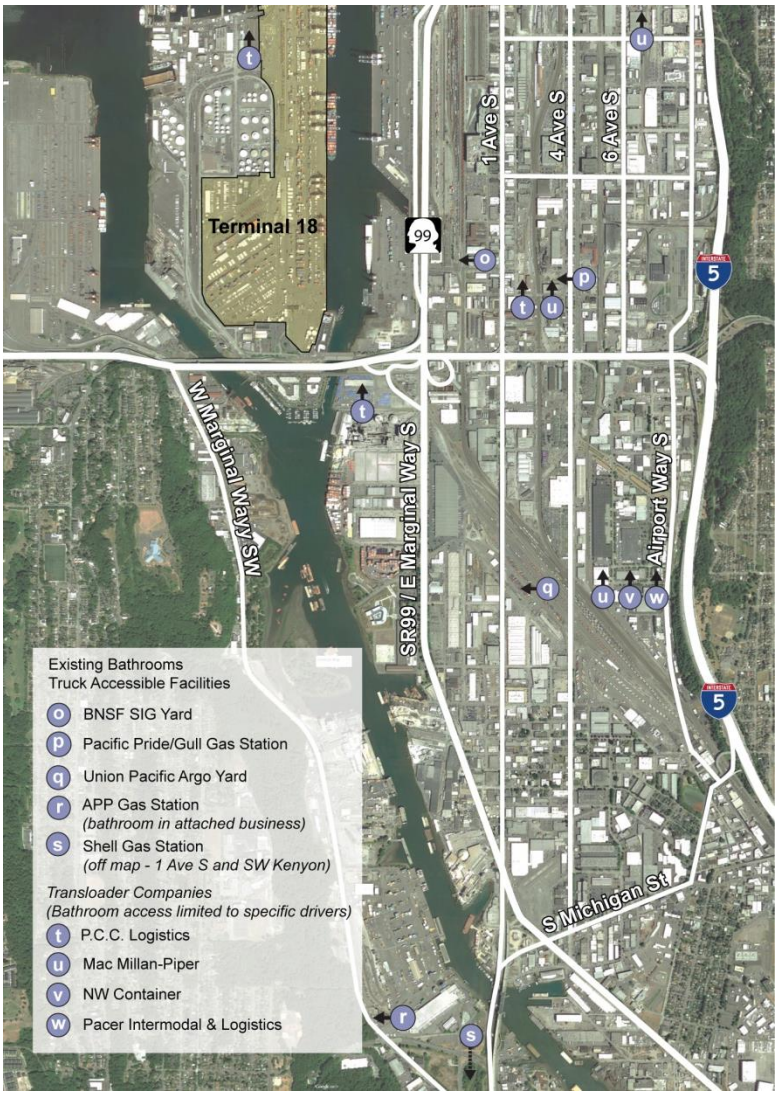


Figure 23. Existing bathrooms accessible to T-18 truck drivers.

Table 1. Area Bathroom Summary (T-18 Bathrooms Most Commonly Used by Truckers Highlighted in Blue)

	Name	Type*	Toilets by Gender			Parking, Safety, and Restrictions***	Predominant User Group
			M	F**	Uni.		
SSA Managed Facilities Available to Truck Drivers (Portable toilets leased from Honeybucket)							
a	Gate 1 Building	Permanent	1	1		May require crossing active truck queues	Truck Drivers
b	Gate 1 Queue Area	Portable			1	May require crossing active truck queues	Truck Drivers
c	South Lunch Room	Permanent	4	4		Not accessible during ship activity due to safety policy; bob-tail (no chassis) parking only	Longshoremen
d	Container Storage Yard	Portable			1	No dedicated parking	Unknown
e	Roadability #1	Portable			1		Unknown
f	Roadability #2	Portable			1		Unknown
g	Matson	Portable			1	Primarily accessible Matson in-gate trucks only	Matson drivers
h	Equipment Yard #1	Portable			1	No dedicated parking; adjacent to active roadway so access may be limited	Unknown
i	Equipment Yard #2	Portable			1	No dedicated parking; adjacent to active roadway so access may be limited	Unknown
j	Center Lunch Room	Permanent	4	4		Not accessible during ship activity due to safety policy; bob-tail (no chassis) parking only	Longshoremen
k	Gate 4 (Out) SSA Bldg	Permanent	1	1		Limited parking for trucks	Truck Drivers
l	North Lunch Room	Permanent	4	4		Not accessible during ship activity due to safety policy; bob-tail (no chassis) parking only	Longshoremen
m	T-25 Parking Lot	Portable			1	Located on Port property but site is unsecured; general public access possible but limited	Truck Drivers
Private Facilities							
n	Pacific Pride	Permanent	1	1		Accessible to Pacific Pride members only	Truck Drivers
o	BNSF SIG	Portable			2		Truck Drivers
p	Pacific Pride/Gull	Permanent	?	?		Access may be limited to paying customers	General Public
q	UP Argo	Portable			3		Truck Drivers
r	APP Gas Station	Permanent	?	?		Bathroom located in attached Subway restaurant; customers only	General Public
s	Shell Gas Station	Permanent	?	?		Access may be limited to paying customers only	General Public
Transloader Companies							
t	P.C.C. Logistics	Permanent	Varies			Accessible to drivers serving company only	Truck Drivers
u	MacMillan Piper	Permanent	Varies			Accessible to drivers serving company only	Truck Drivers
v	NW Container	Permanent			1	Accessible to drivers serving company only	Truck Drivers
w	Pacer	Permanent	?	?		Accessible to drivers serving company only	Truck Drivers

*Portable toilets do not have hand washing facilities; permanent bathrooms have hand washing facilities.

*Some designated women's bathrooms, especially those at Gates 1 and 4, were observed being used by men as a matter of practice.

**None of the existing bathrooms have dedicated truck parking. Access could be limited at any given time due to on-terminal conditions such as container stacking locations and vehicle movement (trucks and trains); this limitation is in addition to the specific safety policies that prohibit truck drivers walking across the terminal or parking at the wharf bathrooms when ship activity is underway.

Bathroom Access Policies

According to the Port of Seattle, as a result of bathroom facility issues brought to the attention of it and SSA over the last several years, the Port updated its policies and issued the following statement regarding T-18 bathroom use:

Per the policy: “No unauthorized pedestrian traffic is allowed on the terminal. Drivers must stay close to their vehicles while in the terminal and should be out of their vehicle only for actual operating needs, e.g., connecting/disconnecting chassis, location/unlocking twist locks in the area near the in- and out-gates. Drivers may leave their vehicles to use [any of the T-18]]provided bathrooms.”

This policy is implemented according to the below:

- Drivers may only leave their vehicles for use of bathrooms when it is safe to do so.
- Drivers waiting in line outside the gate may leave their vehicle to use the renovated restroom at the South Gate. [This applies to trucks that have passed through the initial ID check and entered the main queuing area.]
- Drivers in line inside the terminal may disconnect their chassis and drive their truck to a provided bathroom without losing their place in line, but for safety reasons may not walk across the container yard.
- Drivers may park their trucks and chassis at the north out-gate to use the provided bathroom.
- Drivers may use the bathrooms along the pier, except when ship activity is underway for safety reasons.

At the time, the Port of Seattle committed to distributing this information and an updated map of available bathroom facilities to the owner-operator community, trucking companies, and other interested parties. SSA also posted the statements on the T-18 website (t18.tideworks.com), which is accessible to truckers and other authorized parties.

Truck Driver Outreach

TRUCKER SURVEY STATS

- 54 truckers surveyed in May 2015 (statistical significance varies based on the number of responses received, as indicated)
- Drayage, local, and long-haul drivers represented (71% truckers surveyed were drayage/local)

This was a non-scientific survey limited by the challenges of interviewing drivers on an active industrial terminal.

The consulting team surveyed T-18 truckers and observed activity at Gates 1 and 4 to help understand the issues and identify potential solutions. Major findings are summarized below.

ACCESS TO BATHROOMS

The majority of truckers surveyed (89%) perceived a need for more bathrooms at T-18, primarily due to the inability to safely and efficiently access bathrooms while moving through the terminal. 58% noted issues accessing bathrooms at the south gate and 72% noted issues while in the container yard.

Truckers specifically mentioned the challenges of safely walking across the queue lanes to access the bathrooms at the south gate, safety restrictions on walking to bathrooms in the container yard (and/or a desire not to in order to avoid losing their place in the queue), and limited space for truck parking near the SSA Administrative Building bathroom at the north exit gate. As shown in Figure 24, truckers believed more bathrooms are needed at Gate 1, in the yard, and to a lesser extent at Gate 4. No drivers mentioned a need for bathrooms outside the terminal.

Accessing bathrooms within the yard is particularly complicated. SSA allows drivers inside the terminal to disconnect their chassis and drive to a bathroom without losing their place. However, truckers may be hesitant or unable to do this because it adds time, they are not aware of the closest bathroom location, parking is limited by the bathroom, or ship activity is underway and the nearest bathroom is restricted for safety reasons. An additional issue with the yard is the wide range of truck waiting times, which can range from less than 20 minutes to multiple hours depending on the day's operating conditions.

Notably, difficulties in accessing T-18 bathrooms do not appear to be due to the lack of supply or overwhelming demand—only 18% of truckers interviewed reported having to wait to use a bathroom because it was occupied.

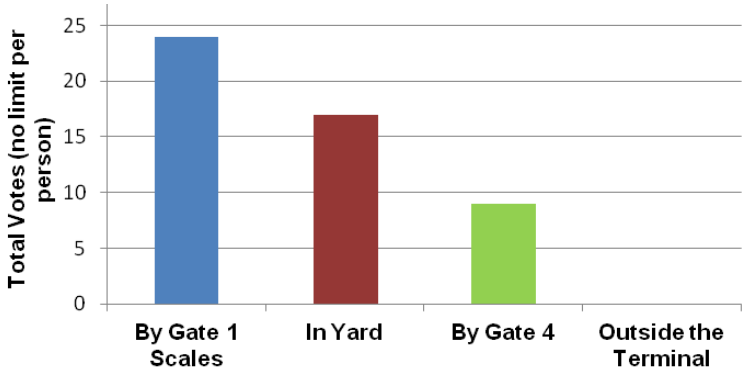


Figure 24. Preferred location for new bathrooms (n=41).

BATHROOM CONDITION AND AMENITIES

Forty-two percent of truckers surveyed said bathrooms were not adequately maintained, with the Gate 1 permanent bathrooms (both men's and women's) located by the transaction gate queues identified as having the most issues. Their level of cleanliness, odor, broken toilets, and lack of supplies were specifically mentioned. The bathrooms were upgraded in mid-2014 with new paint and fixtures as part of an effort to address bathroom issues on the terminal.

Regarding the importance of sinks in bathrooms, 32% said it is not important while 68% said it's somewhat or very important. Many identified sinks as a basic requirement to adequately wash, not only the hands but also the face and other parts of the body, which is not possible with hand sanitizer alone. Several stakeholders mentioned the specific need of some religiously observant trucker drivers to wash before prayer. The lack of adequate (i.e. low and accessible) washing facilities for this purpose can also be problematic when bathroom users attempt to wash their feet or other parts of their bodies in sinks, leading to splashing and creating a mess.

TRUCKER TIME ON TERMINAL

"If the wheels ain't turning, I ain't earning."

- A T-18 driver reflects on the need to move through the terminal quickly.

According to the survey, 63% of truckers reported an average of one to two hours to complete a trip through T-18 (i.e. a "turn"), counting time spent in the entry gate queue, at the in-gate scales, and in the yard itself. However, most truckers have experienced very long waits on occasion, with 60% of those surveyed reporting over four hours spent on this terminal. These unusually long waits are most likely due to conditions within the yard. Many truckers acknowledged that the time through T-18 varies widely based on what they need to do as well as overall traffic volumes on the terminal.

During the observations performed for this study and summarized on pages 22 and 23, it took approximately 50 minutes for a truck to move through the queue at the in-gate scales during peak morning hours; processing averaged seven minutes per transaction and there were seven trucks in queue per lane (Heffron Transportation, May 2015).

OTHER FINDINGS

Stakeholders and truckers reported that conflict between truck drivers and longshore workers negatively affects working conditions at the terminal. According to *Big Rig, Short Haul (2007),* this conflict is due to differences between the two workforces, including race, nationality and language, different pay structures, and labor status (truckers are largely independent owner-operators while longshore workers are union members).

Terminal 30 was identified multiple times during conversations as a site with very limited bathroom facilities and a history of tension (and occasionally violence) during recent years between longshoreman and truckers around bathroom use.

Bathroom Facility Demand

The demand for bathroom facilities was derived by observing current bathroom use, considering current use/truck traffic, projecting future use/truck traffic on T-18, and examining applicable industry standards.

CURRENT BATHROOM USE

Observations were conducted at Gate 1 and Gate 4 to determine how the bathroom facilities were used by truckers. Observations were conducted at Gate 1 on May 6, 2015 from 7:45 A.M. to 12:45 P.M. and again on May 12, 2015 from 8:00 to 9:00 A.M. Observations were conducted at Gate 4 on May 12, 2015 from 9:15 A.M. to 12:30 P.M. According to records provided by the terminal operator, there were 1,127 gate transactions on May 6, 2015, which includes both inbound and outbound movements. This is about 40% lower than the 2013 design day volume described earlier, and reflects the fact that T-18 has recently lost a major customer. Although the volumes are low, the observations provide information about the percentage of truck drivers who used the bathroom facilities. On the days of observation, there were no queues outside the ID gate on Spokane Street at 7:00 A.M. when the observer entered T-18.

At Gate 1, truckers have access to both the permanent facility and the portable toilet located between the security gate and the scales/transaction gate. Trucks queue in the lanes leading to the scales, and on busy days, the queue will extend past the portable toilet. Each transaction/scale process was observed to take an average of six to eight minutes, which includes the time for a truck to pull up to the clerk's window. During that time, drivers were observed exiting trucks that were one or two trucks behind the gate in order to use the bathroom facilities. They could return to their truck before the queue advanced. There lanes located east of the bathroom facility, and few drivers were observed walking from more than three lanes away. Just beyond the scales is an open area for trucks to park and then walk back to the bathroom. This area is also used by bare chassis trucks to park and receive their container pick-up tickets from a service window located in the same building as the bathroom.

During the observations at Gate 4, some drivers stopped their rigs just before the radiation portals in order to use the bathrooms in the ground level of the SSA administrative building (location k in figure 19 on page 14). Generally, other truck drivers were able to pull around and move through the radiation lanes. A pull-out located just north of the administration building is not easily accessible to trucks leaving the out-gates located farthest east. Occasionally, a truck would be stuck behind a stopped rig; however, accessing the bathrooms in this manner did not appear to create back-ups or queuing at the outbound gate.

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The number of truckers using the bathroom at Gate 1 was observed on May 6, 2015 during the operating hours of the terminal (i.e. after 8 A.M.). On this day, Gate 1 had a minimum of seven trucks in queue per lane. Table 2 shows the number of bathroom uses by the truckers and the number of truck transactions per hour. The transactions per hour represent inbound and outbound movements at all of the gates, which is tracked by the terminal's RFID equipment. Data specific to each gate were not available. As shown in Table 2, the number of truckers using the bathroom increased with the decrease in activity at the gates. On May 6th, the gate remained open during lunch, but at a decreased processing rate. The processing time at the gate increased to about 14 minutes allowing the truckers more time to access the facilities. Thus, longer waits generally equate to increased bathroom usage.

Table 2. Truck Drivers Using Bathroom Facilities at Gate 1

Time Period	Total Truck Entries and Exits at All Gates (based on RFID data)	# of Truckers Using this Bathroom	% of Total Entering/Exiting Trucks Using this Bathroom
8:00 A.M. to 9:00 A.M.	208	15	7.2%
9:00 A.M. to 10:00 A.M.	276	11	4.0%
10:00 A.M. to 11:00 A.M.	212	17	8.0%
12:00 P.M. to 1:00 P.M.	90	21	23.5%

Source: Heffron Transportation, Inc., May 2015.

Table 3 summarizes the truck driver use of facilities at Gate 4 on May 12, 2015. In general, the truck traffic moved freely in this area. There were short to no queues at the out gates and no truckers left their vehicles from the out gates to access the bathrooms when there was activity on the terminal.

Table 3. Truck Drivers Using Bathroom Facilities at Gate 4

Time Period	Total Truck Entries and Exits at All Gates (based on RFID data)	# of Truckers Using this Bathroom	% of Total Entering/Exiting Trucks Using this Bathroom
9:00 A.M. to 10:00 A.M.	255	7	2.7%
10:00 A.M. to 11:00 A.M.	227	6	2.6%
11:00 A.M. to 12:00 P.M. [a]	230	9 [b]	3.9%

Source: Heffron Transportation, Inc., May 2015.

a. The lunch period was from 11:45 A.M. to 1:00 P.M. on May 12, 2015. There was a work break during lunch.

b. Six of the nine truckers used the bathroom between 11:45 A.M.to 12:00 P.M.

CURRENT AND FUTURE TRUCK TRAFFIC

The Gate 1 entry area was identified as the highest bathroom demand area on the terminal. The bathroom use rate observed was approximately four uses every 15 minutes (16 per hour) on a day approximating the "design day" volumes identified in the CTAS. The service rate through Gate 1 transaction gate was measured to be six to eight minutes per truck, which was observed to be long enough to allow truck drivers further back in the queue to exit their trucks, use the bathroom, and return without adversely affecting flow through the transaction gate.

Previous studies have shown that off-terminal queuing on public streets is typically minimal for a variety of reasons. Typically, truck lines move continuously, which restricts the ability of truckers to stop and use a bathroom before passing through the T-18 security gate. The exception occurs when the ID checkpoint is closed early in the morning (SSA reports it opens at 5:30 A.M.), if there is a problem processing a driver, or during work slowdowns such as those experienced in early 2015.

DEMAND SUMMARY

For the purpose of this analysis, it is assumed two toilets are needed to support truckers at Gate 1 in the queue area (between the security and transaction gates) to serve projected 10-year volumes. As there are currently two toilets plus a portable toilet, the issue is the lack of safe and convenient access rather than a need for simply more toilets.

Building from observations of current bathroom use (four every 15 minutes with truckers completing their bathroom trip in less than six to eight minutes), an ideal facility would have three truck parking spaces to accommodate two simultaneous bathroom users and one person waiting.

Potential Solutions

To develop potential solutions, MAKERS first researched practices at similar west coast container terminals and reviewed typical bathroom facility types. The team then explored potential location solutions and compared their performance.

Port Industry Practices

MAKERS interviewed the Ports of Oakland, Long Beach, Tacoma and Los Angeles regarding the locations, types, and issues surrounding bathrooms provided for container terminal truck drivers. A short summary is below and Port-specific details are described on the following pages.

TYPICAL PRACTICES

- Toilets are often located along the roadways and queuing lanes before the gates.
- Portable toilets are common at other ports.
- Ports typically take responsibility for trucker bathrooms outside the terminal security gates.
- Other west coast ports typically have terminals that are physically larger with access roadways/queue areas that accommodate little non-truck traffic.

Figure 25. Map of Ports interviewed.

PORT OF OAKLAND

The Port of Oakland has five terminal operators that see a total of approximately 7,500 gate entries per day. Issues related to bathroom facilities have surfaced over the years, including conflicts between drivers and employees working on the terminal (over the use of permanent bathrooms) and the accumulation of urine-filled bottles discarded by drivers.

The Port has 14 portable toilets, generally located along roadway shoulders outside the terminal and often co-located with mobile food vendors. Each portable toilet contains a hand-washing sink served by tanked water. The units are serviced approximately twice per week, with some periodic inspections performed by Port staff. Regardless of the non-secure public location, misuse and vandalism are not major concerns due to the lack of non-terminal foot traffic.

The only permanent bathrooms available for drivers are located in the Customer Service/TWIC Center. The Port has considered the installation of Romtec pre-fabricated toilets, similar to the Portland Loo described on page 29, but postponed the project due to potential site conflicts with future development. The Port generally prefers the use of portable toilets due to easy relocation and replacement and fixed facilities tend to get damaged (then shut down by terminal operators).

The Port of Oakland manages the contract with the portable toilet provider for the toilets not located directly on the terminal, while the terminal operator maintains the on-terminal bathrooms and the permanent facilities, referred to as "blockhouses".

To help increase awareness of bathroom locations, the Port created a map that it distributes at its monthly meeting with truck drivers.

Figure 26. Excerpt of Port of Oakland Bathroom Map and roadside toilet.

Full document at http://www.portofoakland.com/pdf/maritime/ctmp/RestroomFacilityMap.pdf.

PORT OF LONG BEACH

The Port of Long Beach is a multi-terminal facility located adjacent to the Port of Los Angeles. The Port provides a total of 10 portable toilets along the roadways leading to the various terminals. Each toilet is typically serviced twice per week; some heavily used locations are serviced three times per week.

In addition to the portable toilets provided by the Port, each terminal operator provides bathroom facilities at their discretion. At some terminals this includes permanent facilities, such as shown in Figure 28.

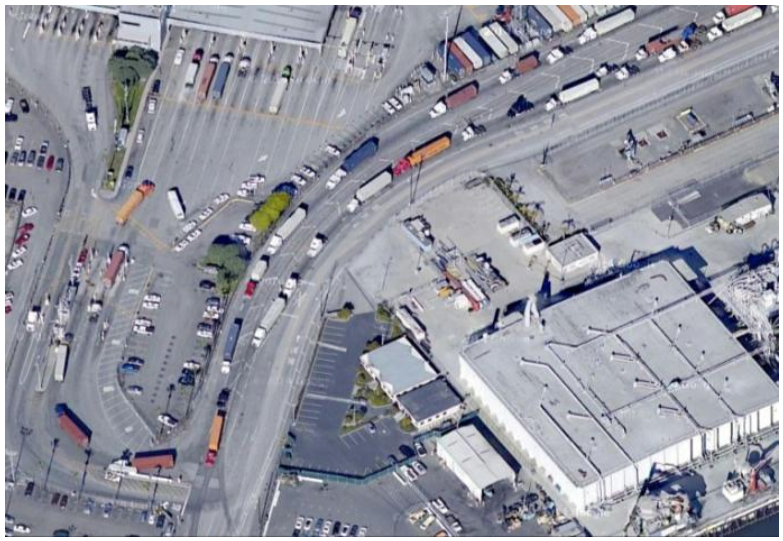


Figure 27. A typical entry gate at the Port of Long Beach. Unlike at T-18, trucks enter from roadways with minimal non-terminal traffic, allowing for placement of portable toilets.

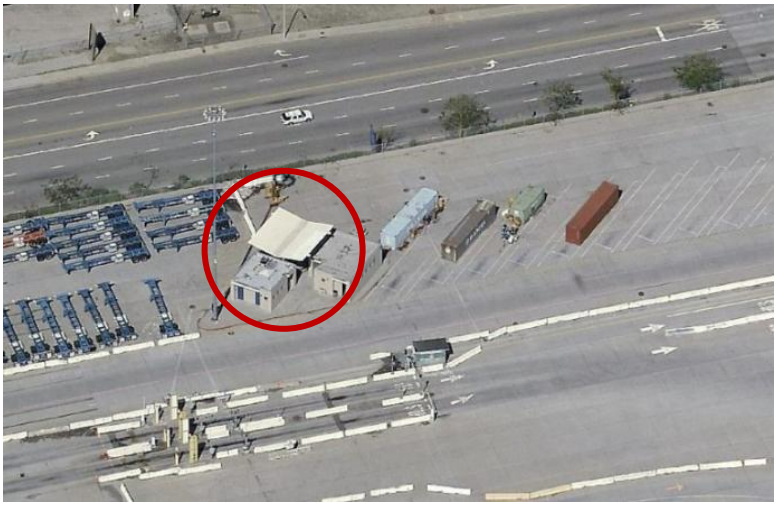


Figure 28. A permanent bathroom with truck parking at the Port of Long Beach's Terminal T.

PORT OF TACOMA

There are both permanent and portable toilets accessible to truck drivers at the Port of Tacoma. A small number of portable toilets are provided off-terminal by the Port, such as in the truck queuing area shown in Figure 29 and on adjacent city streets. On-terminal bathrooms provided by terminal operators are typically found near entry and exit gates. Drivers park their trucks just after passing through the entry gate (or just before exiting) and walk to the bathroom in the gatehouse. Bathrooms are not provided in the container yard and drivers are not allowed to exit their vehicles at any time.

The Port of Tacoma has not documented any history of conflicts or issues related to bathroom facilities at its terminals.

Figure 29. Portable toilet at the Port of Tacoma's off-terminal truck queuing lot.

PORT OF LOS ANGELES

The Port of Los Angeles does not directly provided any bathroom facilities for truck drivers; portable toilets are provided at each terminal by the terminal operators. They can be found in multiple locations, but are not consistently available. Some gates have portable toilets available, while others do not. None of the toilets have dedicated truck parking.

Figure 30. Typical on-terminal portable toilet location at the Port of Los Angeles.

Facility Types & Considerations

This study considers three bathroom types for improvements at T-18: portable, conventional, and kiosk. Portable toilets are free-standing units, commonly referred to as "port-a-potties" or "Honey Buckets." Conventional bathrooms can be pre-fabricated structures or traditionally constructed buildings. Kiosk facilities are designed to maximize security and durability. These types are described below.

Figure 31. Portable (left); kiosk (middle); and conventional (right) bathroom examples.

PORTABLES

- Low initial cost
- Flexible and easy to relocate
- Lowest level of comfort and amenities

Portable toilets are free-standing units without water and sewage connections. Basic units typically have a non-flushing toilet, paper supplies, and often hand sanitizer. Other amenities can be added such as foot-operated sinks served by a water tank. A standard portable toilet accommodates approximately 245 uses before requiring service. The primary cost driver when renting a portable toilet is the frequency with which it must be serviced. A unit with a built-in sink serviced three times per week costs approximately $200 per month (each additional service, if necessary or desired, costs approximately $110 per month). This would accommodate about 18 uses per hour during a standard 40-hour work week. Stand-alone sinks can also be rented that provided 300 hand washes before requiring service.

Portable toilets in non-secure public areas typically remain open during the day, and if desired, secured at night with a padlock.

Figure 32. Portable toilet with built-in sink (left); free-standing portable sink (right).

CONVENTIONAL BUILDINGS

- Higher upfront costs than portable toilets, including design, permitting, construction, and utility connection fees
- Higher amenity and comfort level than portable toilets
- Can include exterior sinks or fountains
- Easiest to secure, including door locks, keypads, etc.

Figure 33. Example multi-use sink.

Conventional bathrooms are fixed facilities with sewer and water connections. They can be free-standing buildings or incorporated into existing structures. Free-standing permanent bathrooms may be custom designed and built or purchased as pre-fabricated units. The size and required number of fixtures for any permanent bathroom, including pre-fabricated models, can be scaled up depending on demand. For the purpose of this study, it assumed that bathrooms will be designed for single occupancy (i.e. one toilet and sink per bathroom), each with approximately 60 square feet of useable floor area. A floor plan for a typical two-module bathroom is shown in figure 35 below.

In addition to toilets, conventional structures can include features to serve user needs, such as multi-use sinks (for hands, feet, etc.) or water fountains.

Figure 34. Pre-fabricated free-standing bathroom with exterior water fountain.

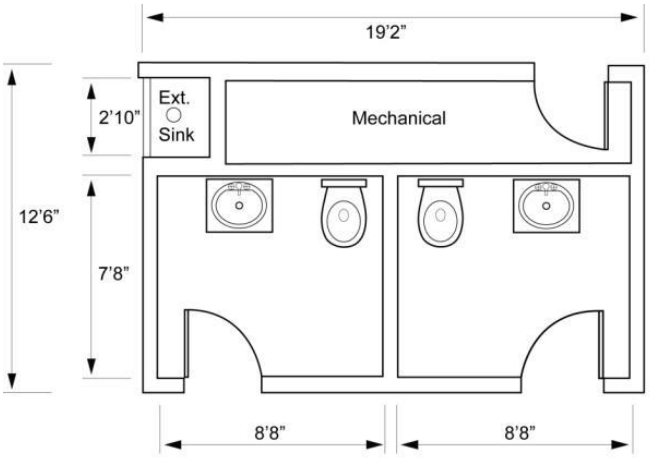


Figure 35. Concept floor plan for a stand-alone bathroom with exterior sink.

KIOSK FACILITIES

- Relatively similar costs to conventional bathrooms
- Emphasize durability; designed for resilience to vandalism and misuse

In recent years, a number of bathroom facilities have been developed that focus on durability and ease of maintenance. Like other permanent bathrooms, these structures are connected to municipal sewer and water systems and powered by electric lines or photovoltaic panels.

Kiosk bathrooms are designed to balance privacy with security features that deter misuse, such as semi-open walls, steel fixtures, and exterior sinks. Examples of this facility type include the Portland Loo sold by Madden Fabrication and the Sidewalk Restroom sold by Romtec, both of which are based in Oregon.

Kiosk bathrooms like the Portland Loo are designed as single-occupant facilities open to both sexes. Depending on the context, separate male and female Loos can be provided.

Figure 36. Exterior and interior of the Portland Loo, one type of kiosk-style toilet.

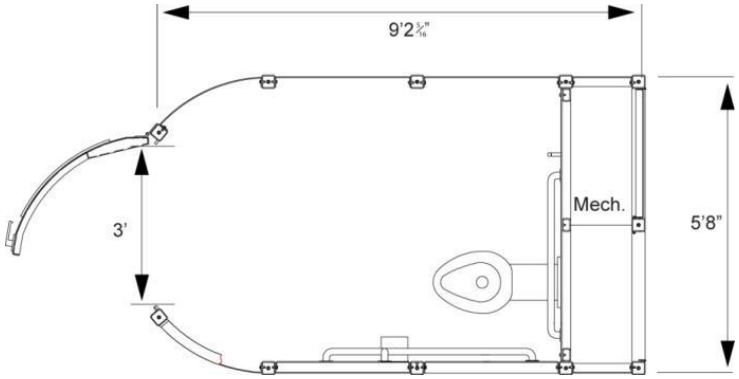


Figure 37. Floor plan for the Portland Loo.

Codes & Operational Practices

BUILDING AND OCCUPATIONAL CODES

Most existing codes and guidelines do not directly address the provision of bathrooms in industrial work environments like T-18 that have a combination of full-time workers and non-stationary workers like truck drivers. Nonetheless, the following references help inform the analysis of bathrooms on T-18.

- Section 2901 of the Seattle Building Code (SBC) requires one toilet per 100 occupants of "structures for the storage of goods, warehouses, storehouses, and freight depots." Toilet allocation by sex is calculated evenly, but may be done otherwise in unique circumstances. At the Port of Seattle, approximately 95% of drivers are males.
- While the overall number of toilets for women may be less per the preceding paragraph, separate bathrooms are required by code unless a variance is issued.
- OSHA Standard 1910.141 regulates workplace toilets but "does not apply to mobile crews... so long as employees working at these locations have transportation immediately available to nearby toilet facilities which meet the other requirements of this subparagraph." According to OSHA, "nearby" is access within approximately 10 minutes. Like with other "mobile crews," such as bus drivers, the interpretation of this requirement remains unresolved in many contexts.
- A typical portable toilet is specified for approximately 245 uses before it requires servicing. For example, a single portable toilet serving all drivers at Gate 1 would require service at least three times per week.

ACCESS AND SAFETY

The placement of portable and permanent facilities on industrial terminals requires a thorough analysis of safety and security factors. This includes ensuring safe access and parking for trucks both with and without chassis. In addition to any codified requirements, the following strategies are also recommended for consideration:

- Toilets should be sited in high-visibility, high-activity areas to maximize passive surveillance and reduce the likelihood of misuse or other undesired activity. [There were no examples of additional security measures (e.g. video security) used by the other west coast ports contacted for the study].
- Permanent facilities should balance openness and natural lighting with the need for privacy; consider placing sinks on the building exterior for ease of use and to help reduce interior cleaning.
- Whenever possible, portable toilets should be placed on elevated pads or include safety bollards to reduce potential conflicts with adjacent industrial activity.
- Placement of portable toilets should retain necessary clearances to allow for service vehicle access.

TYPICAL OPERATIONAL PRACTICES

Figure 38. A Portland Loo being cleaned.

Fixed bathrooms are typically serviced daily; according to SSA, the existing fixed bathrooms at Gates 1 and 4 are serviced nightly. For the sake of this report, it is assumed that each servicing of a bathroom (i.e. a single toilet and sink) takes approximately 15 minutes. For example, the service time to clean and replenish two single-occupant bathrooms twice per day is one hour. Actual time may be less, but this assumption accounts for travel time to each facility. Including the cost of paper products, the monthly expense for servicing two single occupant bathrooms is slightly less than $1,100.

Kiosk-style bathrooms like the Portland Loo have overall maintenance requirements relatively similar to fixed facilities. While interior cleaning may be reduced due to the lack of a finished floor, there are exterior cleaning requirements, as shown in figure 38. This report assumes that the daily time commitment for maintaining a kiosk bathroom is identical to a typical fixed bathroom.

Maintenance costs for portable toilets are dependent on the level of service, as shown in Table 4 below. It is expected that portable toilets at T-18 will require service from the equipment provider at least two times per week, as is currently the practice of the terminal operator.

Table 4. Portable Toilet Monthly Fees (Standard rates provided by Honeybucket)

Services Per Week	Standard Unit	Unit with Foot Operated Sink
One	$117	$157
Two	$208	$248
Three	$299	$339
Four	$390	$430
Daily (weekdays)	$481	$521

Alternatives

Truckers lack safe and convenient access to bathrooms at T-18's South Gate (highest priority), North Gate, and Container Yard.

The following potential solutions are offered to meet these needs:

1. Improve existing permanent bathrooms at Gates 1 and 4; add portable toilets with hand wash facilities.
2. Add bathrooms at South Gate.
3. Add bathrooms plus increase South Gate queuing.
4. Add bathrooms at North Gate.
5. Add bathrooms on Spokane Street.

A bathroom to serve waiting drivers on Spokane Street outside the ID check point is not included. This queue is almost always moving and exiting a vehicle in queue is not safe (see page 12 for more queue information). According to truckers surveyed, a bathroom here is not currently needed. A truck pull-out on Spokane Street to serve westbound traffic was considered but deemed less viable and unnecessary. The Gate 1 ID check opens early in the morning, which allows trucks to queue in the holding area and access the bathrooms located there. Furthermore, a facility in this location could be difficult and costly to design, maintain, and secure due to grade and space issues, conflicts with existing business ingress/egress, a popular bike route, public-access pier, and areas with low visibility.

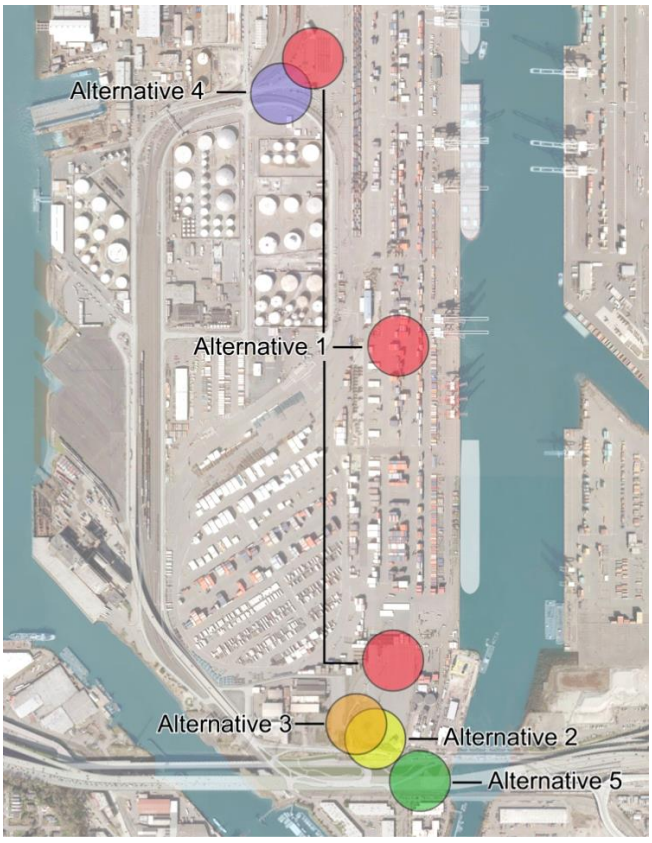


Figure 39. Location of potential solutions described in all alternatives.

COST ASSUMPTIONS FOR ALTERNATIVES

Each alternative's rough order of magnitude initial costs (e.g. construction or acquisition), ongoing annual costs (e.g. cleaning and utilities), and total 20-year total costs are estimated for purposes of relative comparison of the options. A discounted cash flow incorporating these costs was performed to arrive at a net present value (NPV). The lower the NPV, the less the project is estimated to cost in current dollars.

The following assumptions are built into the cost estimates:

- Estimates are probable costs in mid-2015 dollars excluding price escalation (i.e. an increase in costs beyond inflation).
- Estimates are based on conceptual design information included in this study; final costs may vary significantly.
- Soft costs (e.g. design and permitting) are estimates only and should be determined by the owner for any specific project.
- Cleaning costs for conventional and kiosk bathrooms are calculated at one hour per day (i.e. one deep cleaning/ disinfection and one light cleaning).
- This is a 20-year analysis, which reflects a common planning horizon; the length of the planning period could be changed and the relative cost of the alternatives would remain unchanged.
- A discount rate of 1.2% is used to calculate the NPV, which is based on the 20-year real interest rate issued by the U.S. Office of Management and Budget.
- Permanent facilities include utility connection costs.
- Land costs are not included; the analysis assumes facilities will be located on Port or City property. Any associated fees would add cost to the estimates.

See the Construction Cost Details and Life Cycle Cost Calculation Appendices for additional information.

Alt 1

IMPROVE EXISTING PERMANENT BATHROOMS AT GATES 1 AND 4; ADD PORTABLES

Alternative 1 adds portable toilets with hand washing capabilities near the South and North gates and in the container yard (if appropriate locations can be found) in order to increase safe and convenient toilet access. For purposes of this study, six portable toilets are assumed to be added. This alternatives also increases cleaning frequency and refreshes the existing bathrooms (e.g. wall/ceiling/floor repairs, lighting upgrades, fixture repair/upgrade, addition of toilet seats) at the North and South gate permanent bathrooms. Finally, it adds striped truck parking where feasible near each gate.

PROS

- Low initial cost
- Portable toilets are easy to move or expand
- Improves cleanliness and leverages recent investments in Gate 1 bathroom

CONS

- High ongoing costs
- Meets need with portable toilets
- Does not offer truck pullouts or eliminate walking across queues

Table 5. Alt. 1 Cost Estimate

Initial Costs*	
Refresh Gates 1 and 4 bathrooms	$90,000
Provide pads and bollards for locating new portable toilets	$19,000
Stripe parking areas at Gates 1 and 4	$2,000
Subtotal	*$111,000*
On-Ongoing Annual Costs	
Rent six additional portable toilets with sinks (serviced twice times per week)	$18,000
Add second daily cleaning to Gate 1 and Gate 4 bathrooms	$5,000
Subtotal	*$23,000*
Estimated 20-Year Total Cost (Net Present Value)	**$517,000**

**Includes soft costs*

Alt 1

IMPROVE EXISTING & ADD PORTABLES

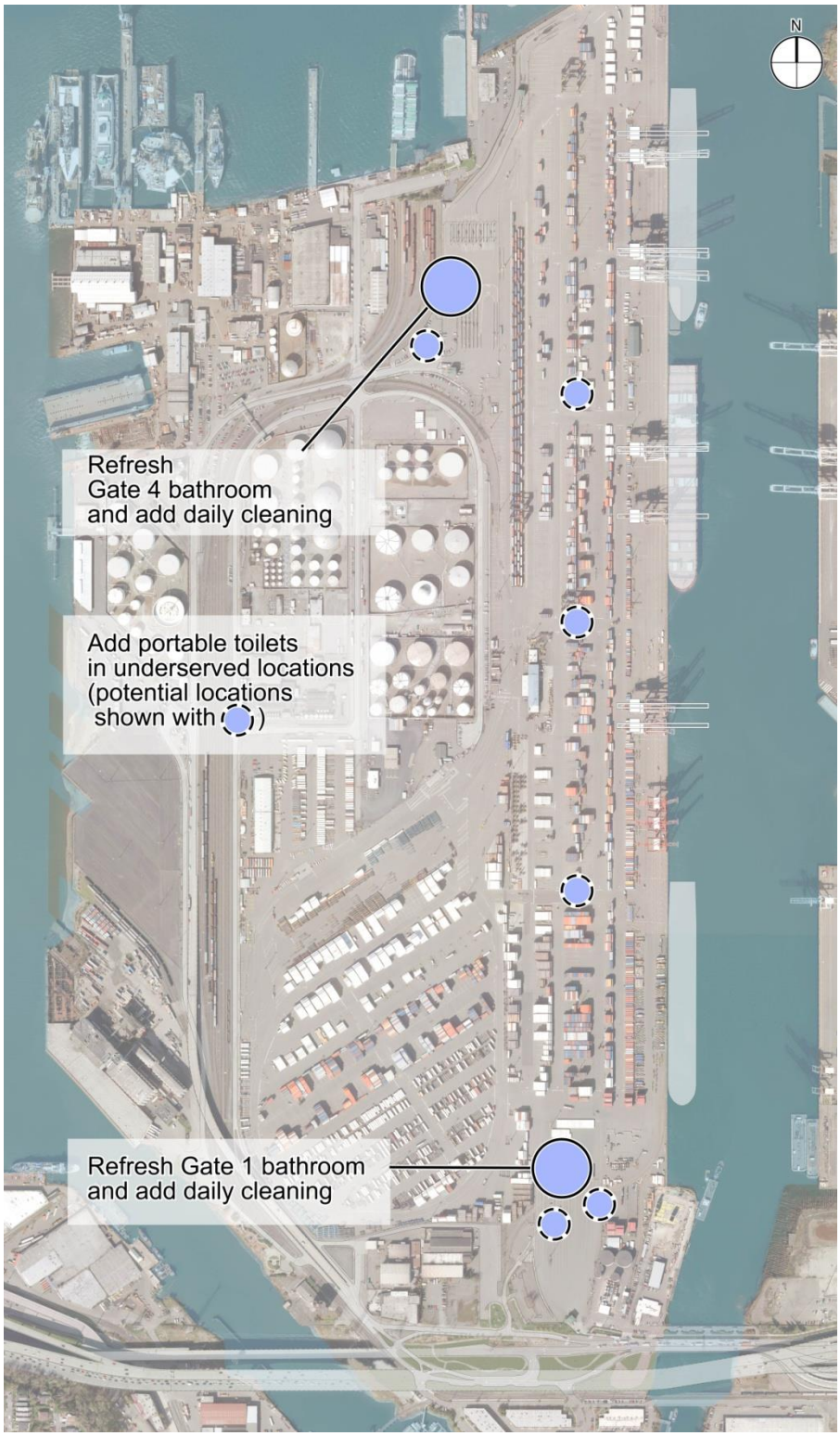


Figure 40. Alternative 1 concept plan.

Alt 2

ADD BATHROOMS AT SOUTH GATE

Alternative 2 provides a dedicated bathroom and truck pull out facility at the South Gate queuing area. The bathroom could be a permanent facility, kiosk facility, or portable toilet.

PROS

- Highest priority location
- Safe driver access with dedicated truck pull outs
- Can be expanded
- Provides opportunity to include exterior sink

CONS

- Uses additional land
- Removes some existing personal vehicle parking
- High initial cost (if a permanent facility)

Table 6. Alt. 2 Cost Estimate - Permanent Facility

Initial Costs*	Traditional Building	Kiosk/Portland Loo
Construct two-toilet traditional bathroom facility or purchase two kiosks (e.g. Portland Loo)	$253,000	$394,000
Improve and pave site for truck access	$65,000	$65,000
Connect new bathroom to utilities	$35,000	$35,000
Subtotal	*$353,000*	*$494,000*
On-Ongoing Annual Costs		
Maintain and operate new facility (clean twice daily)	$13,000	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$579,000**	**$718,000**

**Includes soft costs*

Table 7. Alt. 2 Cost Estimate - Portable Toilets

Initial Costs*	Portable Toilets
Improve and pave site for truck access	$65,000
Provide pads and power for security lighting	$10,000
Subtotal	$75,000
On-Ongoing Annual Costs	
Rent two portable toilets with sinks (serviced daily)	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$296,000**

**Includes soft costs*

Alt 2

ADD BATHROOMS AT SOUTH GATE

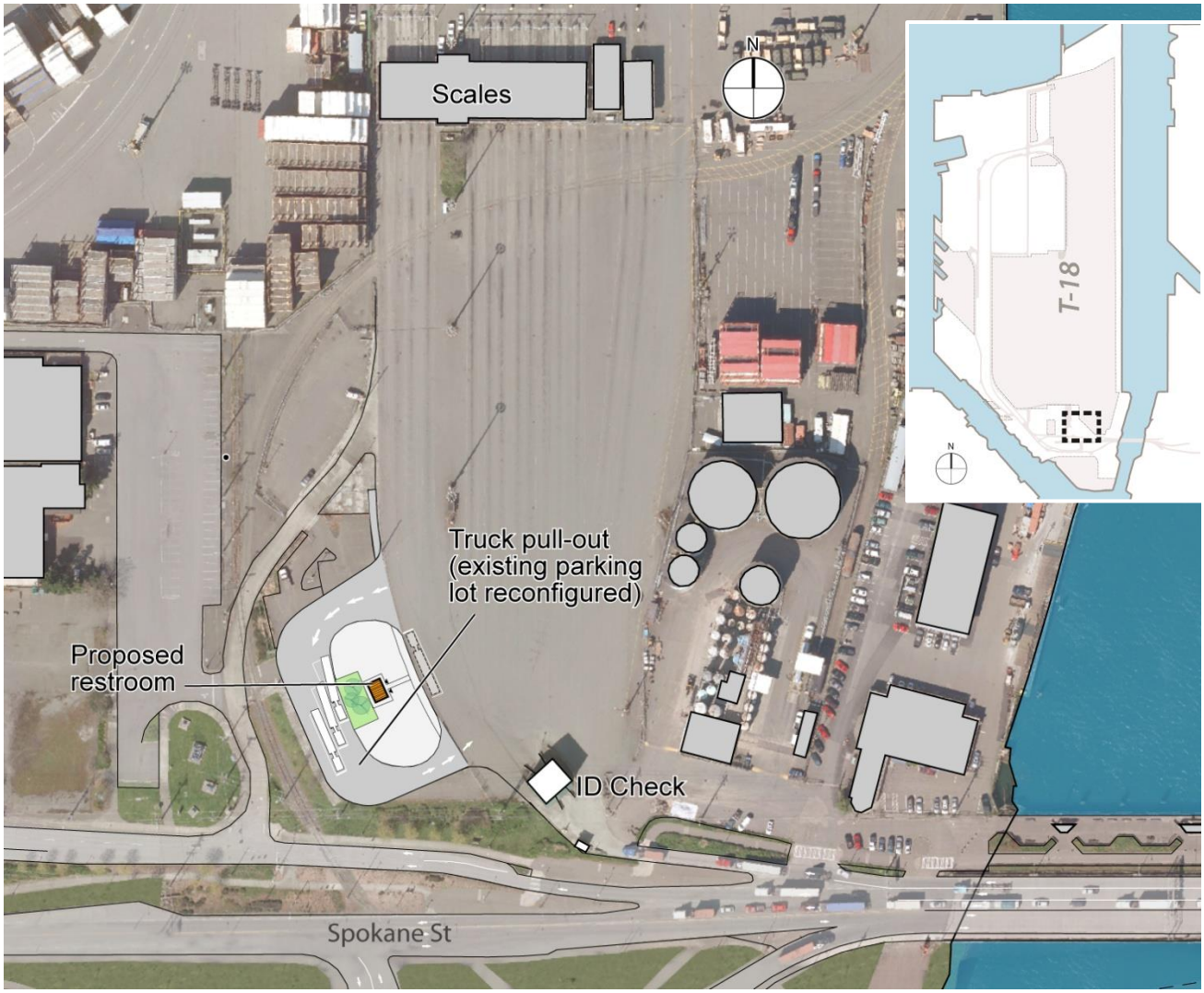


Figure 41. Alternative 2 concept plan.

Alt 3
ADD BATHROOMS + INCREASE SOUTH GATE QUEUEING

Alternative 3 is a potential add-on to a conceptual design that would reconfigure the south gate area to have trucks enter via 13th Ave and Hanford Street, provide a dual-lane security gate to improve the velocity of the security check, and eliminate on-street back-ups. The Port provided conceptual drawings of these improvements as previously envisioned by an engineering consultant. Like Alternative 2, the bathroom could be a permanent facility, kiosk facility, or portable toilet. The Port currently does not have plans to implement this potential reconfiguration project, no funds have been allocated, and it is uncertain whether it will occur.

PROS

- Highest priority location
- Safe driver access with dedicated truck pull outs
- Can be expanded
- Provides opportunity to include exterior sink
- Coordinates with new access concept to reduce truck queues on city streets.

CONS

- Uses additional land
- Removes some existing personal vehicle parking
- High initial cost (if a permanent facility)

Alternative 3 is very similar to Alternative 2 in terms of implementation and life cycle costs, though it would require minor adjustments to circulation at the bathroom as shown in Figure 42. Costs do not include constructing the new access route (e.g. major repaving), which is assumed to be part of a different project.

Table 8. Alt. 3 Cost Estimate - Permanent Facility

Initial Costs*	Traditional Building	Kiosk/Portland Loo
Subtotal	*$353,000*	*$494,000*
On-Ongoing Annual Costs		
Subtotal	$13,000	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$579,000**	**$718,000**

**Includes soft costs*

Table 9. Alt. 3 Cost Estimate - Portable Toilets

Initial Costs*	Portable Toilets
Subtotal	$75,000
On-Ongoing Annual Costs	
Subtotal	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$296,000**

**Includes soft costs*

Alt 3
ADD BATHROOMS AND INCREASE SOUTH GATE QUEUEING

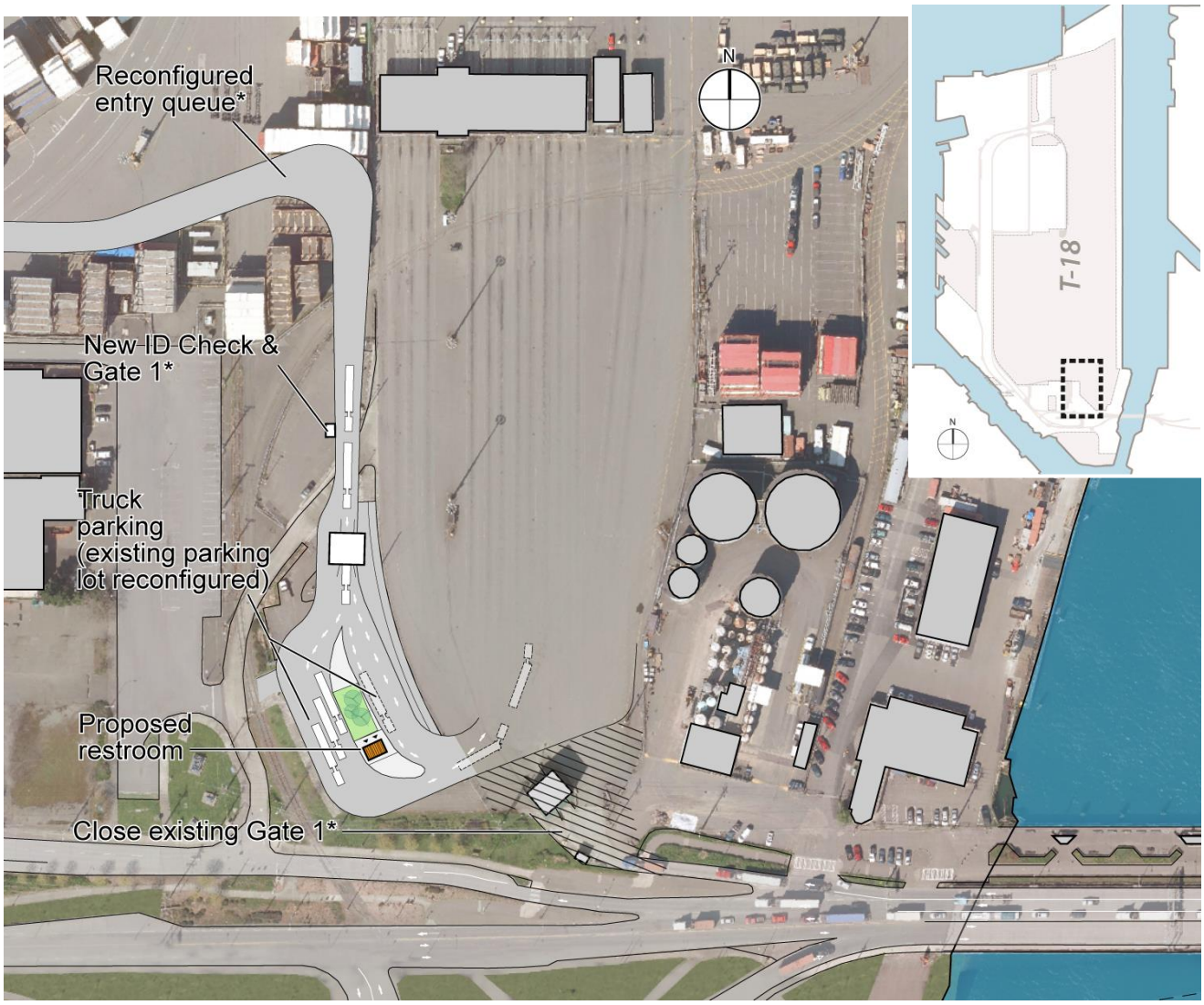


Figure 42. Alternative 3 concept plan.
**Projects part of previously identified conceptual improvements (separate from bathroom improvements).*

Alt 4
ADD BATHROOMS AT NORTH GATE

Alternative 4 provides a dedicated bathroom and truck pull out facility just outside the Terminal's north gate (Gate 4). Like Alternatives 2 and 3, the bathroom could be a permanent facility, kiosk facility, or portable toilet.

PROS

- Second priority location
- Safe outbound driver access with dedicated truck pull outs
- Provides opportunity to include exterior sink

CONS

- Limited expansion potential
- High initial cost if permanent

Table 10. Alt. 4 Cost Estimate - Permanent Facility

Initial Costs*	Traditional Building	Kiosk/Portland Loo
Construct two-toilet traditional bathroom facility or purchase two kiosks (e.g. Portland Loo)	$253,000	$394,000
Stripe truck pull-outs	$9,000	$9,000
Connect new bathroom to utilities	$17,000	$17,000
On-Ongoing Annual Costs		
Maintain and operate new facility (clean twice daily)	$13,000	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$507,000**	**$645,000**

**Includes soft costs*

Table 11. Alt. 4 Cost Estimate - Portable Toilets

Initial Costs*	Portable Toilets
Stripe truck pull-outs	$9,000
Provide pads and power for security lighting	$10,000
On-Ongoing Annual Costs	
Rent two portable toilets with sinks (serviced daily)	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$240,000**

**Includes soft costs*

Alt 4
ADD BATHROOMS AT NORTH GATE

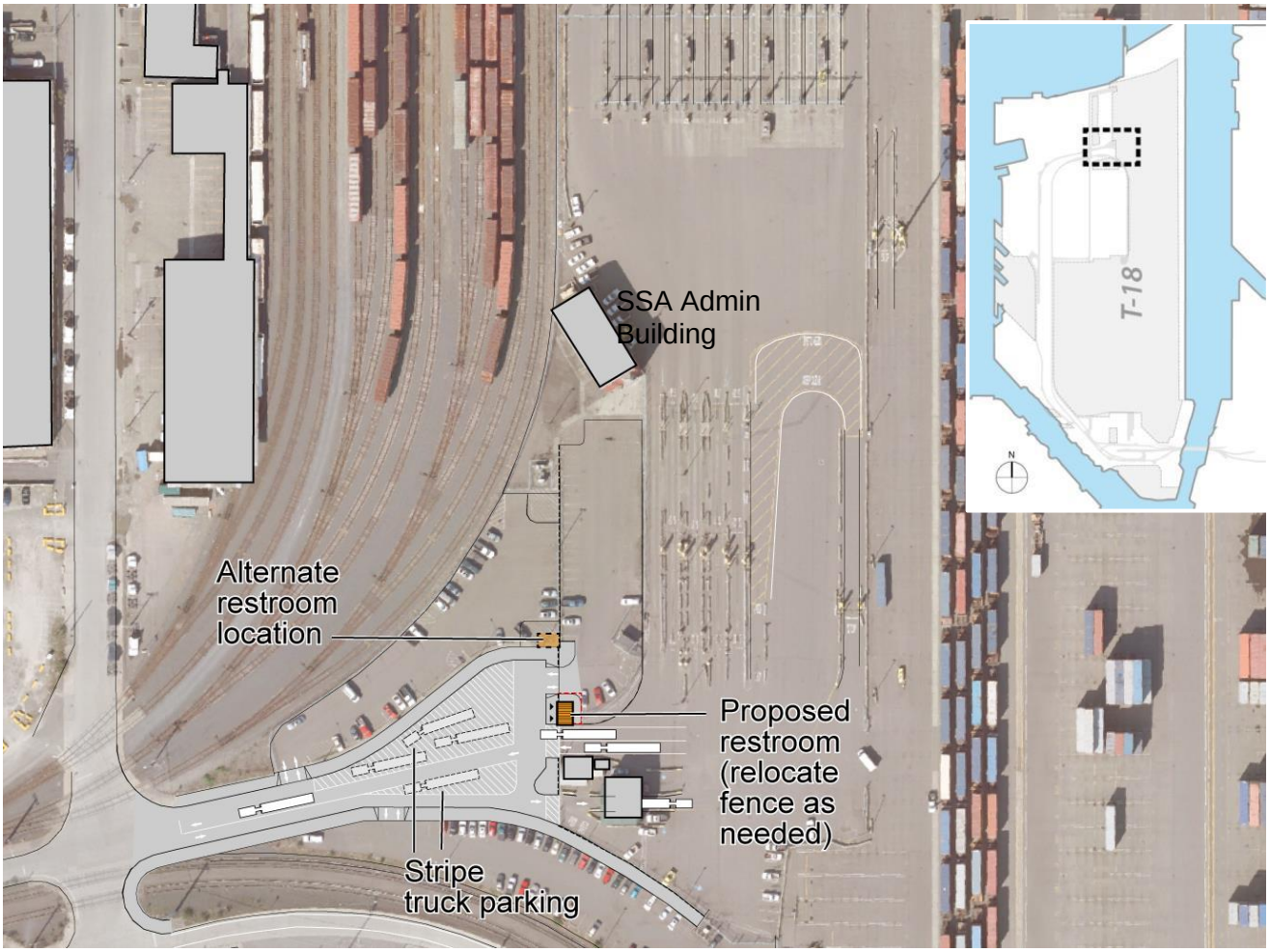


Figure 43. Alternative 4 concept plan.

Alt 5
ADD BATHROOMS ON SPOKANE STREET

Alternative 5 provides a dedicated bathroom near the corner of Spokane and Manning Streets under the West Seattle Bridge, to be accessed from existing truck pull-out spaces. In this low-activity area outside the terminal, any bathroom would need to be a permanent or kiosk facility, not a portable toilet. This would also allow integration of key card or coded entry locks for trucker use, if desired.

PROS

- Outbound driver access with dedicated truck pull outs.

CONS

- Can only be reached on eastbound SW Manning St (i.e. along exit route from the terminal). Westbound traffic would have to perform a one mile looped detour to access the bathroom then return to the T-18 entrance.
- Only one adjacent truck pull-out; other spaces crossing traffic.
- Relatively low visibility and activity area; difficult to secure.
- High initial cost.
- Potentially challenging to limit to truckers only due to location in a public right-of-way.

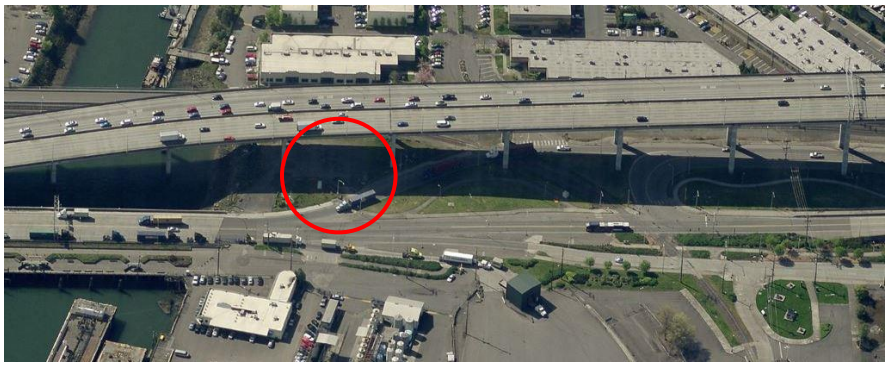


Figure 44. Location on Spokane Street under the West Seattle Bridge (looking south).

Table 12. Alt. 5 Cost Estimate - Permanent Facility

Initial Costs*	Traditional Building	Kiosk/Portland Loo
Construct new two-module facility	$253,000	$394,000
Add key card access to facility	$7,000	$7,000
Connect new bathroom to utilities	$17,000	$17,000
On-Ongoing Annual Costs		
Maintain and operate new facility (clean twice daily)	$13,000	$13,000
Estimated 20-Year Total Cost (Net Present Value)	**$504,000**	**$643,000**

**Includes soft costs; assumes acquisition of no-cost publicly owned site.*

Alt 5
ADD BATHROOMS ON SPOKANE STREET

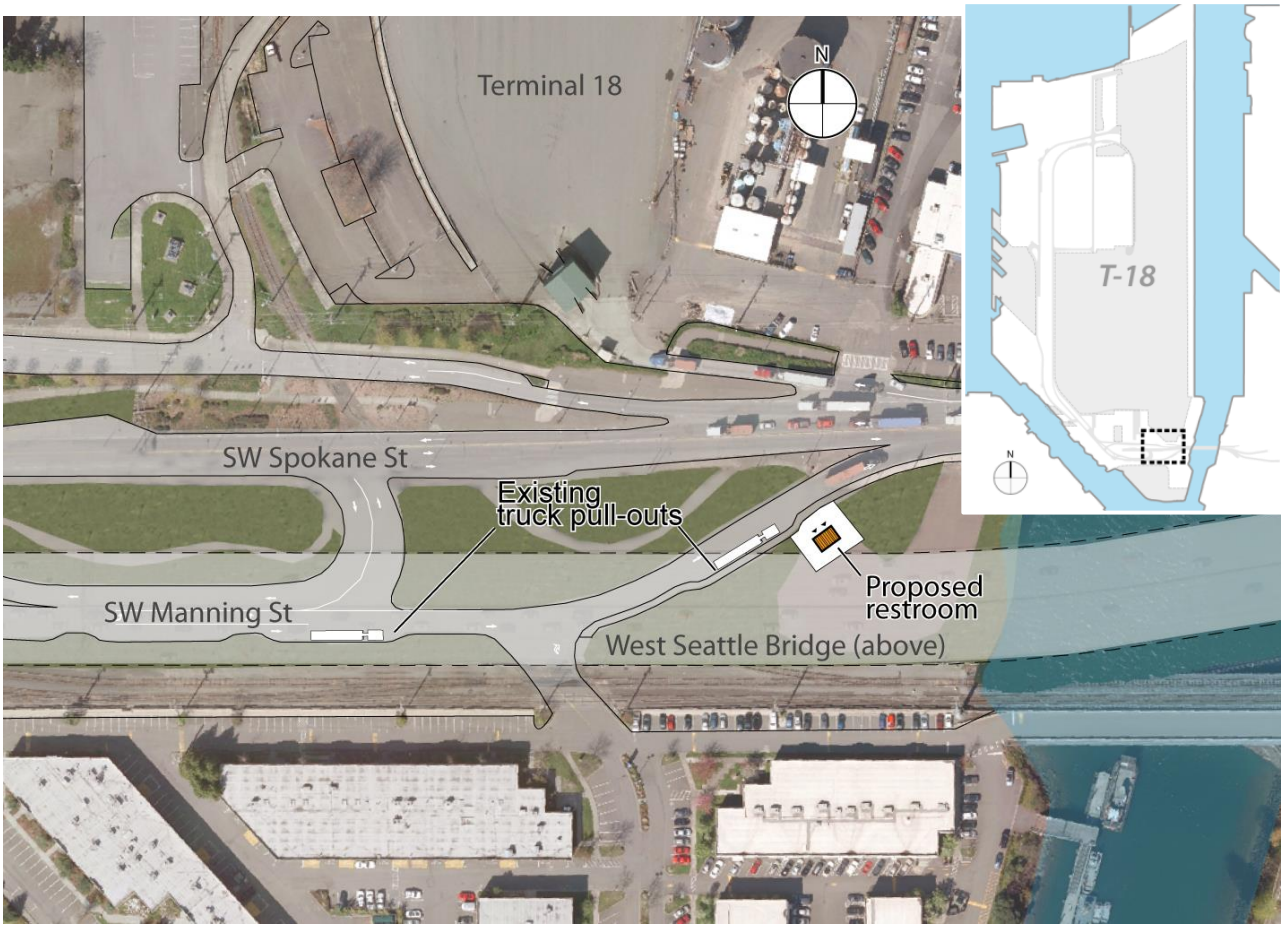


Figure 45. Alternative 5 concept plan.

Comparison

The five potential solutions were evaluated using the criteria described in Table 14. Each solution was given a relative performance rating (i.e. good, fair, poor) through a subjective evaluation. The application of the criteria and resulting performance are shown in Table 15.

Table 13. Facility Type Comparison

Portable	Conven-tional	Kiosk
Quality and comfort for users		
Low	High	Mod.
First-year costs		
<$50k	>$50k	>$50k
Annual costs per toilet		
$3k	$6k	$6k
Includes running water, ability to add exterior sink for washing		
No	✓	✓

Table 14. Evaluation Criteria

	Description of Scoring Criteria		
	Good = 3	**Fair = 2**	**Poor = 1**
Adds facilities where most needed	In the vicinity of the south gate	In the vicinity of the north gate or in container yard	Off the terminal
Is flexible and expandable	Easy to change in response for shifting needs	Somewhat easy to change	Very difficult to change
Is safe to access	Does not require crossing queues, roadways or the yard	Requires minimal queue, roadway, or yard crossing	Requires queue, roadway, or yard crossing
Is convenient to access (e.g. serves truckers in queue, does not require moving against trip direction, etc.)	Located in trip direction with truck parking; serves queued drivers	Located in trip direction but only moderately serves queued drivers; no or limited parking	Located out of trip direction; does not serve queued drivers; no or limited truck parking
Level of terminal impact	Does not impact parking or other uses	Moderate impacts to parking or other uses	Significant impacts to parking or other uses

Table 15. Comparison by location alternatives

	Application of Scoring Criteria to Potential Solutions				
	Alt 1 Improve existing gate bathrooms; add portable toilets	**Alt 2** New South Gate bathroom with truck pull-out	**Alt 3** Same as Alt 2 but with revisions to queuing area	**Alt 4** New North Gate bathroom with striped parking	**Alt 5** New bathroom on Spokane Street
Adds facilities where most needed	**3**	**3**	**3**	**2**	**1**
Flexible and expandable	**3**	**2**	**2**	**2**	**1**
Safe truck access	**1**	**3**	**3**	**2**	**2**
Convenient to access	**2**	**3**	**3**	**2**	**1**
Level of terminal impact	**3**	**2**	**1**	**2**	**3**
Total	**12**	**13**	**12**	**10**	**8**

Summary & Conclusions

Existing Facilities
Currently toilet facilities vary widely in quality and accessibility and do not serve all users on the terminal equally.

The number of toilets provided may appear to be sufficient for the number of users but may not be adequate due to the operational realities of the terminal (e.g. truck parking, safety restrictions, etc.).

Needs
Truck drivers surveyed identified the highest priority area of need is near Gate 1 (South Gate) given the significant queues that occur here. Secondary priorities for more toilets and/or improvements are the container yard and at Gate 4 (North Gate).

Many drivers commented on the condition and cleanliness of existing facilities. Truck drivers and other users would like improved facilities (e.g. operable toilet seats) and more frequent cleaning and servicing of both permanent and portable facilities.

Sinks or other running water are needed by many drivers, including at portable toilets, for reasons of hygiene, social/religious customs, and cleanliness, similar to accommodations previously made by the Port at SeaTac Airport.

Potential Solutions
T-18 is large and complex; adding bathrooms in one area will serve some truckers but not solve all issues. The ideal solution will likely be a multi-pronged approach.

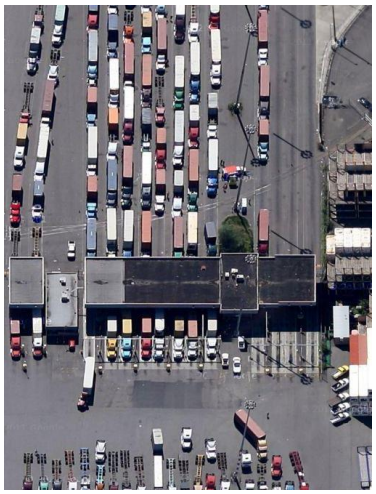


Figure 46.South Gate queue area – a logical location for any improvements.

The Gate 1 area is very constrained, but options to add portable toilets, increase the cleaning frequency of the recently renovated bathrooms, and designate truck parking spaces just past the transaction gates/scales are worth exploring. Further, if terminal volumes or other factors warrant reconfiguration of the queue area in the future, it would be advantageous to include improved bathroom facilities in these projects.

The Port and terminal operators may consider placing portable toilets and sinks in the container yard near truck queuing areas to improve coverage and access. This is especially important considering the safety issues that restrict drivers walking in the yard.

It may be worthwhile to consider adjusting current policies to allow truckers to leave their vehicles 15 minutes into the lunch break, when the yard has been cleared of activity, so drivers can safely access bathrooms.

Portable toilets are the least expensive alternative to add bathrooms, while a traditional building appears to be more cost-effective than a kiosk facility (i.e. Portland Loo), especially within the secure terminal area where vandalism and misuse are less of a concern. As container traffic volumes and operations will continue to change over time, any investment in a permanent facility should carefully consider placement to work with potential changes, such as shifts in traffic to other terminals or changes in gate use.

There is space to add a bathroom just outside the North Gate area if demand warrants, especially as many truckers already stop in this area after exiting the terminal to secure their load.

Placing bathrooms outside T-18 in the public right-of-way would not effectively meet trucker needs because they would be inconvenient to access, expensive/challenging to build and maintain, and could potentially create safety/traffic issues.

Appendices

Stakeholder Interview Summaries

PORT OF SEATTLE, MIKE MERRITT, GERI POOR, STEVE QUEEN, CHRISTINE WOLF

- As the terminal owner, the Port has acted in a mediator-like position in the past, working with the terminal operator, ILWU, and drivers to address bathroom access issues; one result was the joint development of an updated SSA-Port policy in 2014.
- The Port's involvement in any solution to the bathroom issue will need to be discussed in detail; the Port's existing contract with the terminal operator may restrict its ability to fund some improvements.
- As a result of bathroom facility issues being brought to the Port and SSA's attention over the last several years, a new T-18 bathroom policy was issued to be implemented and enforced by SSA:

  "No unauthorized pedestrian traffic is allowed on the terminal. Drivers must stay close to their vehicles while in the terminal and should be out of their vehicle only for actual operating needs, e.g., connecting/disconnecting chassis, location/unlocking twist locks in the area near the in- and out-gates. Drivers may leave their vehicles to use the provided bathrooms."

  - Drivers may only leave their vehicles for use of bathrooms when it is safe to do so.
  - Drivers waiting in line outside the gate may leave their vehicle to use the renovated restroom at the South Gate. [This applies to trucks that have passed through the initial ID check and entered the main queuing area.]
  - Drivers in line inside the terminal may disconnect their chassis and drive their truck to a provided bathroom without losing their place in line, but for safety reasons may not walk across the container yard.
  - Drivers may park their trucks and chassis at the north out-gate to use the provided bathroom.
  - Drivers may use the bathrooms along the pier, except when ship activity is underway for safety reasons.

SEATTLE DEPARTMENT OF PARKS AND RECREATION, MOHAN KHANDEKAR

Does the Parks department do anything special to resist damage and vandalism in its bathrooms?

- The newest bathrooms in parks are typically designed to be as open as possible with lots of natural light and ventilation; the new bathroom at Jefferson Park is a good example of this.
- Bathrooms are specified with stainless steel "prison type" fixtures, sealed concrete floors, and floor drains to allow spray-down washing.

SEATTLE DEPARTMENT OF TRANSPORTATION, SETH GEISER

Please describe the Ballard public bathroom project.

- It is a community-driven project to develop a bathroom for the neighborhood. The project is being led at the City by SDOT because the bathroom is likely to be located in a right-of-way. A similar public bathroom project in Pioneer Square is being managed by DPD because that project was initially conceived as an amenity bonus tied to development of a new building.

Why was the Portland Loo chosen for Ballard?

- SDOT conducted a public outreach process and respondents identified the Portland Loo as the 2-to-1 favorite over other types of bathrooms (i.e., comfort stations and portable toilets). The public felt the Portland Loo provided the "perception of proper use and safety." The Portland Loo was also preferred by SDOT because the bathroom will likely need to be located in the right-of-way and the Loo has a small footprint.

JOSHUA CURTIS, VICE PRESIDENT OF PUBLIC AREA MANAGEMENT, METROPOLITAN IMPROVEMENT DISTRICT

Please describe the MID's relationship to the proposed Portland Loo in Pioneer Square.

- The MID is tentatively planned to be the maintenance provider for the Loo. MID maintenance staff will clean and disinfect the Loo three times per day (8am, 1pm, and 5pm) Monday through Saturday, and twice on Sunday. The current assumption is that each cleaning will take approximately 15-30 minutes. A similar arrangement exists for the Portland Loos in the city of Portland; they are maintained under contract by the local Business Alliance.

DAN DIEMER, CITY OF ARCATA, CALIFORNIA PARKS/FACILITY SUPERINTENDANT

Please describe your experience maintaining the Portland Loo.

- Staff clean the Loo two times per day and it takes approximately ½ hr. per cleaning. It is washed, disinfected, washed again and restocked. Washing is defined as hosing down the site. As it is being disinfected, which takes 10-15 minutes of soaking time, the individual cleans around the site, empties trash, and fills the hand cleaner. Vandalism is also taken care of at this time – most of the vandalism has been graffiti to date. The Parks Department up-sized the toilet paper dispenser to reduce call-backs. The total weekly time commitment is about 10 hours. The City has an employee staffed at an adjacent building so travel time is minimal.
- Also, the bathroom is located close to the town square – the City initiated a rental rate on the Loo for special events in the town square. Because the City requires a certain amount of portable bathrooms during events, it was decided to reduce that requirement by one portable and establish a lease rate of $100/day for use of the Portland Loo, payable by the event sponsor. Currently this brings in about $4,000 per year, which covers most of the Loo's paper products.

CAMERON WILLIAMS, PRESIDENT, INTERNATIONAL LONGSHOREMAN'S WAREHOUSE UNION (ILWU) LOCAL 19

What bathrooms do the Longshoremen use on T-18?

- The Longshoremen use the three bathrooms along the wharf, the bathrooms in the Center(ral?) Tower, and the porta-potties within the equipment area. To a much lesser extent they use the entry and exit gate bathrooms.
- During shift changes or equipment pickup the longshoremen use porta-potties at the equipment staging area.

Do the Longshoremen need more or improved bathrooms on and near T-18?

- The facilities serving Longshoremen are adequate.
- It is important that bathrooms can be accessed safely in the context of an operating industrial facility with moving heavy equipment and vehicles.
- There is room for improvement as far as cleanliness and maintenance of bathrooms; the maintenance / janitorial schedule isn't adequate, given its use.
- Ideally there would be a permanent facility with hand washing capabilities at the equipment staging area (located near the center of the terminal by Gate 3).

How do Longshoremen access the bathrooms?

- Longshoremen access their bathrooms during work breaks.
- Longshoremen take the morning break around 10:00ish – usually when the food truck comes.
- Most Longshoreman wait and use the facilities on the wharf… a foreman or clerk can give them a ride to one of the bathroom locations during the break times.

Have truckers expressed concerns about bathroom facilities at T-18?

- Overall Cameron believes there are adequate facilities and that this is less an actual problem than a bargaining chip to support trucker unionization.
- Cameron has been president of Local 19 since 2011. Over the years during different periods of time there have been issues and discussions about bathroom accessibility; specifically around the policy that truckers must remain in their trucks within the container yard (CY). From the management and ILWU perspective, this policy is in place due to significant safety risks that occur with truckers walking through the CY.

He would be open to exploring the potential to relax the policy during the lunch work break as long as truckers remained in their trucks for the first 5-10 minutes and last 5-10 minutes of the break when equipment moves through the yard. This would only apply on days when there is a complete work stoppage – some days they continue working through the lunch hour.

Are there issues with truckers using on-dock bathrooms?

- For the most part the Longshoremen don't typically use the In Gate facilities and the truckers don't typically use the Longshoremen facilities so it's rare there's a conflict.
- Labor does not prohibit truckers from using the on dock bathrooms.
- SSA makes the terminal use / bathroom policies. They put out fliers and bulletins and set expectations. The trucking companies can also distribute information.

Are there any underlying issues or tensions on the T-18 relevant to this study?

- There was some tension that resulted in violence at T-30 years ago. Cameron believes the violence that occurred was more of an isolated incident than a systemic issue.
- Some truckers were using the bathroom facilities for prayer. They barricaded the doors and washed their feet in the sinks. Longshore busted it open to use the facilities and the situation escalated.
- This was more of an issue than it needed to be because of the limited facilities on T-30; there are mass break time runs because there aren't many bathrooms available to Longshoreman or Truckers on this terminal.
- The economics of the industry play a role in the underlying tension. It is very difficult for an owner-operator to buy a truck, maintain the truck, and provide for his family. Their wage depends on the number of turns they can accomplish in a day. He believes organizing drivers to better their conditions is a good thing, but as far as bathrooms go he believes this is more a perception of a problem than an actual issue.

What are some potential solutions that could improve trucker access to bathroom facilities at T-18?

- Improve bathrooms in the In-Gate area. Existing bathrooms could be improved and better maintained. Add safe pull outs on both sides of the scale if possible, to give truckers the ability to walk to a bathroom if they need one after they pull through.
- Take a look at adding more porta-potties in the CY, but he's unsure they would get a lot of use or could be sited safely.
- Explore the potential to relax the policy for truckers to walk on the CY after the first 15 minutes of the lunch break.
- Consider adding feet washing capabilities if this made sense (he could not speak to whether this was a good idea or not).

ABE TAYLOR, BUSINESS REPRESENTATIVE, TEAMSTERS LOCAL 174

Can you tell me a little bit about your background and involvement with this issue?

- Abe has been trying to organize truck drivers for 30 some years. He is one of the people they send to the Terminal to talk to the truckers to understand their issues.
- He has spent a fair amount of time at T-18 within the last three years but not so much in the last six months.
- Abe believes there are bad working conditions and basic human dignity issues here; truckers are some of the most exploited workers he has seen.
- For example, truckers do not have an adequate rest facility they can use and Muslim truckers do not have anywhere to wash their feet. They fill up water bottles to wash their feet and use those bottles to relieve themselves. Drivers have been assaulted over bathroom use.
- Abe believes his efforts won't result in getting truckers paid more, but could improve their working conditions.

Do Teamsters work at any of the Port of Seattle container terminals?

- There are no Teamsters that work at the container terminals doing drayage.
- The Port Police are Teamsters as well as some of the Port's facilities people (that move equipment from one terminal to another).

Have truckers or trucking companies have expressed concerns about bathroom facilities at T-18?

- Trucking company owners don't care anything about the truckers; they are replaceable.
- Drivers have said quite a bit about inadequate bathrooms on the terminal, including their inability to access bathrooms on the CY and the fact that there's a bathroom on the way out but no where to park.

Do truckers have a contract with trucking companies (that set any working parameter, provide bathrooms, etc.)?

- There are no contracts.
- The overwhelming majority of truckers bought a truck or lease one and spend the day on call to a specific trucking company. The trucker must be available at all times (and may be restricted from being available to multiple companies at once).
- Truckers mostly do not know what they are pulling.
- These days truckers are lucky if they get four loads in a day. Even though a trucking company has 25-30 loads, they'll hire 80+ truckers to have extra coverage and because they can charge all 80 trucks for insurance (even if they never get called to move a load).
- Truckers compete for these loads. They're making less per dray and less overall than they were five years ago.
- Another issue is the limited truck parking. Truckers who have a spot on T-25 will defend these spots (T-25 is being used as an interim parking site until the Port identifies a higher and better use for the property).

Have you heard about issues with truckers using T-18's on-dock bathrooms?

- He has heard about lots of problems with truckers using these facilities.
- If a driver has to leave his truck to use the bathroom in an emergency, terminal security will penalize them by barring them from the terminal for weeks and if they do it again, they are banned. (This policy may have been changed since he has been down to T-18 – he wasn't sure.)

Are there any underlying issues or tensions on the T-18 relevant to this study?

- The ugliest thing I've seen is the racism toward the immigrant truckers, especially the African immigrants from Ethiopia, Somali, Eritrea, etc. They are called names… the atmosphere on the terminal is like something from a different place and time.
- Truckers are some of the most exploited workers he has seen.

ELI BOHM, GENERAL MANAGER T-18 AND T-30

- The terminal operator, SSA, believes current bathroom facilities are adequate; in terms of access, the biggest concern is driver safety in an active industrial area.
- Bathrooms at Gate 1 were upgraded with new fixtures in August of 2014.
- Per the terminal operator, T-18 bathrooms have not seen the issues that occurred at T-30.
- There have been no documented requests for facilities needed to perform religious practices.

TRUCKING COMPANIES

- Bob Edgmon, Edgmon Trucking
- Kent Christopher, Western Ports
- Shaun Garvey, Berry and Smith Trucking
- Unidentified Employee, Wells Trucking

Note: A total of 22 trucking and transloader companies were contacted, with emphasis on the larger companies; most did not respond.

- A representative from one of the trucking companies confirmed that at the gates is "where the highest need [for bathrooms] is and where the bottlenecks can occur."
- Trucking companies appear to be generally aware of issues related to bathroom facilities for drivers on the terminal (e.g. cleanliness, not easy to access).
- One company representative was specifically aware of tensions regarding the use of bathrooms by some Muslim drivers for foot washing.
- Another company said there have been instances of terminal workers being "abusive" to drivers.

OTHER INTERVIEWS

- Jose Santiago, Port of Seattle Police
- Nate Kresley, BNSF
- Damon Larkin, Union Pacific
- Unidentified Officer, U.S. Customs and Border Protection (CBP)

- There are underlying labor issues that inform the relationship between Longshoremen and truckers on the terminal.
- There have been issues at T-30 around bathroom accessibility. In one case, an individual working on the terminal was prosecuted for assaulting a truck driver during an altercation over bathroom access.
- It is more difficult than ever for truckers to make a living wage, primarily because they are paid by the "turn." The average number of turns per day is down, as well as the fee collected per turn.
- Some Muslim truckers need a place to wash face, hands, and feet before prayer. The Port responded to this need at SeaTac for Muslim taxi drivers by providing a grated and drained area within the airport garage. There may be some lessons learned in this case that could apply here.
- There is a need for truck parking within Seattle – the Port is temporarily offering this pro bono at T-25.
- Both railroad companies provide portable toilets for drivers at their respective intermodal yards in Seattle.
- CBP employees working at T-18 use the bathrooms in the SSA Administration building or the one located inside the security building at Gate 4.

Truck Driver Survey Card

Seattle Department of Transportation Bathroom Facility Study | Driver Survey

What type of driver are you?
- ☐ Drayage/Rail Terminal
- ☐ Local (Seattle, Kent, Tacoma, etc.)
- ☐ Over-the-Road/Long Haul (more than 50 miles)

How long does it take you on average to get through T-18? _____

What is the longest it has ever taken? _____

Where do you typically wait the longest at T-18?
☐OCR/entry gate ☐Scale ☐Container yard

Do you ever have trouble getting to a bathroom at the entry gate or scales?
- ☐ Yes (Why?_____)
- ☐ No

Do you ever have trouble getting to a bathroom inside the container yard?
- ☐ Yes (Why?_____)
- ☐ No

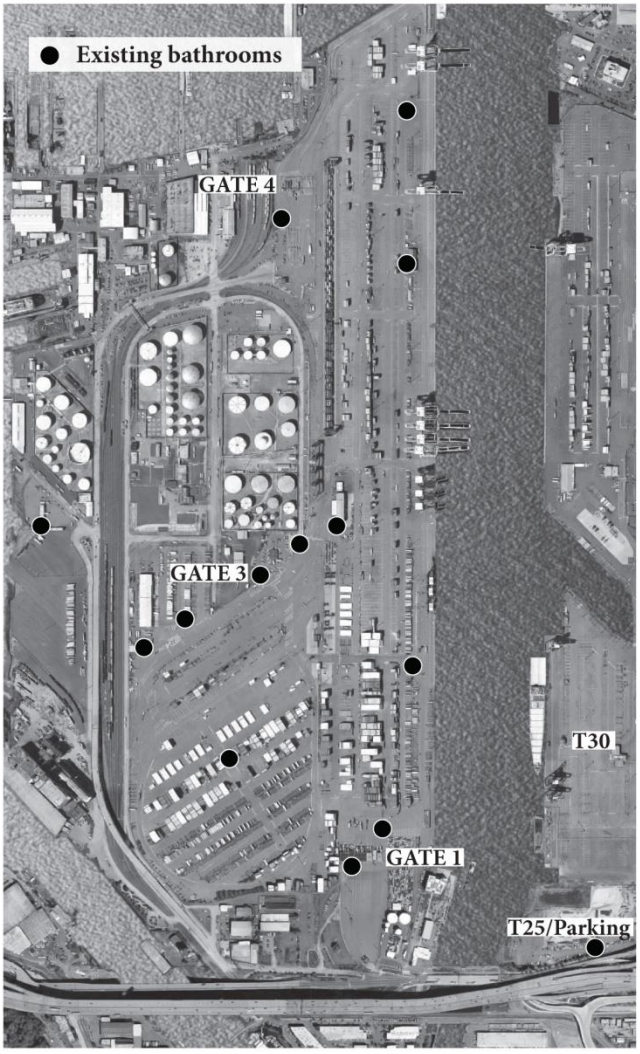
Do you ever have to wait a long time to use a bathroom because it is occupied?
☐ Yes ☐ No

Do you think there needs to be more bathrooms at T-18? ☐ Yes ☐ No **If yes, where?**
- ☐ By the scales at Gate 1 ☐ Before the exit at Gate 4
- ☐ Inside the container yard ☐ Outside the terminal
- ☐ Other _____

Do you think the bathrooms at T-18 are adequately maintained?
☐ Yes ☐ No

How important is it for bathrooms at the T-18 to have sinks with running water?
☐Very important ☐Somewhat important ☐Not important

Do you typically use bathrooms on Terminal 18?
☐No ☐Yes. Please circle/mark on the map below.



What other bathrooms in Seattle (locations off the map) do you use during the day while driving? _____

_____

_____

_____

Amharic/አማርኛ ትግርኛ ਪੰਜਾਬੀ Español
Oromo/ኦሮሞ ру́сский язы́к

If you would like to participate in a language other than English please notify the interviewer. You may also contact Andy Fenstermacher at andyf@makersarch.com or call (206) 652-5080.

This survey is being conducted by MAKERS under contract to the Seattle Department of Transportation with funding provided by a grant from the Washington State Department of Commerce.

Construction Cost Details

The construction cost details were used to estimate the initial costs for each alternative.

PRODIMS
PROJECT MANAGEMENT SERVICES

Name: **SDOT Bathroom Facility Study**
Second Name: **Construction Cost Summary**
Location: **Seattle, WA**

Design Phase: **Conceptual Cost Estimates**
Date of Estimate: **May 18, 2015**

Month of Cost Basis: **May, 2015**

Construction Costs for Traditional Bathroom and Portland Loo

Construction Facility on Site

		Facility by Unit Count - 2, 3 or 4 units.			
		Restroom Building - 2 Unit Facility	Portland Loo	Restroom Building - 3 Unit Facility	Restroom Building - 4 Unit Facility
2015 Construction Costs		**$ 173,455**	**$ 134,821**	**$ 240,117**	**$ 305,530**
See Estimate Detail for Each Facility					
2015 Soft Costs as a percentage of Construction Costs					
Allowance for Soft Costs such as A/E Fees					
A/E Design Fees	15.00%				
Change Order Contingecies	10.00%				
Permitting	4.00%				
Constrction Management	7.50%				
Wa State Sales Tax	9.60%				
Total Soft Costs	**46.10%**				
2015 Project Costs		**$ 253,418**	**$ 196,974**	**$ 350,811**	**$ 446,379**

Optional Costs for Security Door Proximity Card Reader

Security Door - Card Reader Access

Scope: Per Door-Electric Door Strike, Proximity Card Reader, Low Voltage Wiring ($1,800), Prorated Computer, Software & Transmitter per Facility ($6,000)

	Constrction Cost per Facility				
2 Doors	$ 6,600.00	$ 6,600.00	$ 6,600.00		

Name:	**SDOT Bathroom Facility Study**
Second Name:	**Construction Cost Summary**
Location:	**Seattle, WA**
Design Phase:	**Conceptual Cost Estimates**
Date of Estimate:	**May 18, 2015**
Month of Cost Basis:	**May, 2015**

Construction Costs for Traditional Bathroom and Portland Loo

Unit Costs for Site Work:

Description of Work	Unit of Measure	2015 Construction UNIT Cost $/UoM	2015 Project UNIT Cost $/UoM (rounded)
Potable Water	lnft	$ 35.00	$ 51.00
Electrical Service	lnft	$ 45.00	$ 65.00
Sanitary Sewer	lnft	$ 40.00	$ 58.00
Chain link Security Fence	lnft	$ 55.00	$ 80.00
Paint Striping	lnft	$ 0.65	$ 0.95
Traffic Arrow	each	$ 210.00	$ 306.00
Street Light Standard with one head fixture	each	$ 2,600.00	$ 3,798.00
Electrical Service of Street Light - Installed in Trench	lnft	$ 17.00	$ 24.00
Repave Street/Driveway HMA (Asphalt)	sqft	$ 6.50	$ 9.00
Repave Street/Driveway Concrete	sqft	$ 11.00	$ 16.00
New Concrete Curb and Gutter	lnft	$ 15.00	$ 21.00

Notes:

- This estimate is based on the concept design information received May 15, 2015
- Costs are in 2015 dollars. There is not any escalation applied to the costs.
- Soft costs are an estimate. Owner should determine the soft costs they want to include for any project, such as design, permitting, construction management, etc.
- Please see the estimate detail for the constructed on site facilities for development of the unit costs.
- Construction markups are cumulative, not additive. Percentages are added to the previous subtotal rather than the direct cost subtotal.
- Estimated labor is based on an 8 hour per day shift 5 days a week. Accelerated schedule work of overtime has not been included.
- Estimate is based on a competitive public bid with at least 3 bona fide submitted and non-rescinded general contractor bids.
- Estimate is based on a competitive public bid with a minimum 6 week bidding schedule and no significant addendums within 2 weeks of bid opening.
- State of Washington General Contractor/ Construction Manager (GC/CM) contracts typically raises construction costs. It is not included in this estimate.
- Any modifications to the plans via addendums and code review for permits will cause cost increases and are not included in this estimate.
- Sole source supply of materials and/ or installers typically results in a 40% to 100% premium on costs over open specifications.
- Land costs are not included.

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Name: **SDOT Bathroom Facility**
Second Name: **on Cost**
Location: **WA Conceptual Cost**
Design Phase: **Estimates**
Date of Estimate: **May 18, 2015**
Date of Revision:
Month of Cost Basis: **May, 2015**

Construction Cost Estimate Summary 2-Unit Facility

Subtotal Direct Cost From the Estimate Detail Below			**$ 132,478**
	% of Prev. Subtotal	**Amount**	**Running Subtotal**
Sole Source Materials to Match Phase 1	0.0%	$ -	$ 132,478
Scope Contingency	10.0%	$ 13,248	$ 145,726
General Conditions	9.0%	$ 13,115	$ 158,842
Home Office Overhead	4.0%	$ 6,354	$ 165,195
Profit	5.0%	$ 8,260	$ 173,455

Markups Applied to the Direct Cost 30.93%

Markups are multiplied from each subtotal- They are not multiplied from the direct cost

TOTAL ESTIMATED CONSTRUCTION COST $ 173,455

Direct Cost of Construction

WBS	Description	Qty	Unit	Labor	Labor Total	Material	Material Total	Equip.	Equipment Total	Total $/U of M	Direct Cost
Foundations	Standard Spread Footing Shaloow Foundation System	240	sqft	$ 19	$ 4,608	$ 11	$ 2,592	$ 2	$ 432	$ 32	$ 7,632
Substructure	Slab on Grade System -	240	sqft	$ 18	$ 4,368	$ 10	$ 2,352	$ 2	$ 403	$ 30	$ 7,123
Superstructure	Structural Metal Stud System with Metal Deck Roof System	240	sqft	$ 15	$ 3,696	$ 13	$ 3,024	$ 2	$ 403	$ 30	$ 7,123
Exterior Closure											
Exterior Wall System	CMU Wall System - 8" Thick Split Face with Anti Graffi Coating on both faces	633	sqft	$ 22	$ 13,745	$ 13	$ 8,424	$ 2	$ 1,330	$ 37	$ 23,499
Exterior Door System	Exterior Door, Frame, Hardware, painted with anti-graffiti coating	3	each	$ 1,870	$ 5,610	$ 1,530	$ 4,590	$ 204	$ 612	$ 3,604	$ 10,812
Roofing System	Metal Roofing System, Gable End Metal Siding with Insulation, Flashing and Trim, Gutter/Downspout, 1-Skylight	240	sqft	$ 15	$ 3,564	$ 12	$ 2,916	$ 2	$ 389	$ 29	$ 6,869
Interiors											
Interior Wall/Door/Casework/Specialties Systems	CMU Wall System - 8" Thick Split Face with Anti Graffi Coating on both faces	268	sqft	$ 22	$ 5,824	$ 13	$ 3,570	$ 2	$ 564	$ 37	$ 9,958
Interior Finishes System	Finishes-Ceiling Hard Lid - Veneer Plaster/GWB/Epoxy Painted	240	sqft	$ 5	$ 1,296	$ 4	$ 864	$ 1	$ 130	$ 10	$ 2,290
Bathroom Specialties	Metal Grab Bars, Toilet Paper Dispenser, Electrical Hand Dryer	2	sets	$ 540	$ 1,080	$ 360	$ 720	$ 54	$ 108	$ 954	$ 1,908

(Continued on following page)

Plumbing Systems	Water Closet with Auto Flush Prison Grade Stainless Steel with piping supply, insulation, heat tape, waste and vent	2	each	$ 1,800	$ 3,600	$ 2,200	$ 4,400	$ 240	$ 480	$ 4,240	$ 8,480
	Hand Basin with Automatic Faucet Prison Grade Stainless Steel with piping supply, insulation, heat tape, waste and vent	2	each	$ 1,440	$ 2,880	$ 1,760	$ 3,520	$ 192	$ 384	$ 3,392	$ 6,784
	On Demand Hot Water Heater with piping supply, insulation and heat tape	2	each	$ 990	$ 1,980	$ 810	$ 1,620	$ 108	$ 216	$ 1,908	$ 3,816
	Foot Wash Sink Stainless Steel with piping supply, insulation, heat tape, waste and vent	1	each	$ 2,310	$ 2,310	$ 3,190	$ 3,190	$ 330	$ 330	$ 5,830	$ 5,830
HVAC Systems	Ventilation System - Exhaust Fan	2	each	$ 400	$ 800	$ 400	$ 800	$ 48	$ 96	$ 848	$ 1,696
Electrical Systems											
Electrical Service, Branch Wiring and Lighting	Electrical Panel - Allowance for 200A, 208V, up to 42 circuits	1	each	$ 3,600	$ 3,600	$ 3,900	$ 3,900	$ 450	$ 450	$ 7,950	$ 7,950
Electrical Branch Wiring and Lighting	Electrical Circuits/Connections for Autoflush, Autofaucet, on demand water heaters, heat tapes, exhaust fans	15	each	$ 354	$ 5,310	$ 246	$ 3,690	$ 36	$ 540	$ 636	$ 9,540
	Interior Electrical Light Fixture with Motion Activation	3	each	$ 295	$ 885	$ 205	$ 615	$ 30	$ 90	$ 530	$ 1,590
	Exterior Electrical Light Fixture with Motion Activation	2	each	$ 708	$ 1,416	$ 492	$ 984	$ 72	$ 144	$ 1,272	$ 2,544
Site Work	Remove Asphalt Pavement to Construct Building - 5' feet beyond the footprint	656	sqft	$ 1	$ 788	$ 1	$ 853	$ 0	$ 98	$ 3	$ 1,739
	5' wide Concrete Sidewalk outside of building	416	sqft	$ 6	$ 2,398	$ 6	$ 2,598	$ 1	$ 300	$ 13	$ 5,296
Subtotal of the Direct Cost of Construction											**$ 132,478**

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Adapted by MAKERS from 2-Unit Construction Cost Estimate

Name:	SDOT Bathroom Facility Study
Second Name:	Cost
Location:	Seattle, WA Conceptual Cost
Design Phase:	Estimates
Date of Estimate:	May 18, 2015
Date of Revision:	
Month of Cost Basis:	May, 2015

Construction Cost Estimate Summary Portland Loo

Subtotal Direct Cost From the Estimate Detail Below			**$ 102,971**
	Percentage of Previous Subtotal	Amount	Running Subtotal
Scope Contingency	10.0%	$ 10,297	$ 113,268
General Conditions	9.0%	$ 10,194	$ 123,462
Home Office Overhead	4.0%	$ 4,938	$ 128,401
Profit	5.0%	$ 6,420	$ 134,821
Markups Applied to the Direct Cost	30.93%		
Markups are multiplied from each subtotal- They are not multiplied from the direct cost			
TOTAL ESTIMATED CONSTRUCTION COST-			**$ 134,821**

Direct Cost of Construction

WBS	Description	Qty	Unit	Labor	Labor Total	Material	Material Total	Equipment	Equipment Total	Total $/U of M	Direct Cost
Structure	Portland Loo pre-fabricated unit										$ 95,000
Substructure											
	Slab on Grade System - Concrete/Base/Vapor Barrier with Expoy Floor Finish	120	sqft	$ 18	$ 2,184	$ 10	$ 1,176	$ 2	$ 202	$ 30	$ 3,562
	Electrical Branch Wiring and Lighting										
	Motion Activation	2	each	$ 708	$ 1,416	$ 492	$ 984	$ 72	$ 144	$ 1,272	$ 2,544
Site Work											
	Remove Asphalt Pavement to Construct Building - 5' feet beyond the footprint	320	sqft	$ 1	$ 384	$ 1	$ 416	$ 0	$ 48	$ 3	$ 848
	5' wide Concrete Sidewalk outside of unit	80	sqft	$ 6	$ 461	$ 6	$ 499	$ 1	$ 58	$ 13	$ 1,018
Subtotal of the Direct Cost of Construction											**$ 102,971**

Life Cycle Cost Calculations

Alternative 1	Year 1	Years 2 through 20 (per year)
Initial Costs		
Refresh Gates 1 and 4 bathrooms	$ 90,000	
Provide pads and bollards for locating new portable toilets	$ 18,600	
Stripe parking areas at Gates 1 and 4	$ 2,000	
Ongoing Costs		
Lease six portable toilets with twice weekly cleaning	$ 17,856	$ 17,856
Add second daily cleaning to Gates 1 and 4 bathrooms	$ 5,200	$ 5,200
ANNUAL CASH FLOW (COST)	$(133,656)	$(23,056)

Annual Discount Rate 1.2%	Net Present Value = $(517,087)

Alternatives 2/3 Permanent Facility	Year 1	Years 2 through 20 (per year)
Initial Costs		
Construct two-module bathroom facility	$ 253,418	
Improve and pave site for truck access	$ 65,000	
Connect new bathroom to utilities	$ 34,800	
Ongoing Costs		
Clean and maintain twice per day	$ 13,000	$ 13,000
ANNUAL CASH FLOW (COST)	$ (366,218)	$ (13,000)

Annual Discount Rate 1.2%	Net Present Value = $(578,964)

Alternatives 2/3 Portland Loo	Year 1	Years 2 through 20 (per year)
Initial Costs		
Purchase two Portland Loos	$ 393,947	
Improve and pave site for truck access	$ 65,000	
Connect new Loos to utilities	$ 34,800	
Ongoing Costs		
Clean and maintain twice per day	$ 13,000	$ 13,000
ANNUAL CASH FLOW (COST)	$ (506,747)	$ (13,000)

Annual Discount Rate 1.2%	Net Present Value = $(717,827)

Alternatives 2/3 Portables	Year 1	Years 2 through 20 (per year)
Initial Costs		
Improve and pave site for truck access	$ 65,000	
Provide pads and power for security lighting	$ 10,300	
Ongoing Costs		
Lease two portable toilets with daily cleaning	$ 12,504	$ 12,504
ANNUAL CASH FLOW (COST)	$ (87,804)	$ (12,504)

Annual Discount Rate 1.2%	Net Present Value = $(295,569)

Alternative 4 Permanent Facility	Year 1	Years 2 through 20 (per year)
Initial Costs		
Construct two-module bathroom facility	$ 253,418	
Stripe truck pull-outs and lanes	$ 9,200	
Connect new bathroom to utilities	$ 17,300	
Ongoing Costs		
Maintain and operate new facility (clean twice daily)	$ 13,000	$ 13,000
ANNUAL CASH FLOW (COST)	$ (292,918)	$ (13,000)

Annual Discount Rate 1.2%	Net Present Value = $(506,534)

Alternative 4 Portland Loo	Year 1	Years 2 through 20 (per year)
Initial Costs		
Purchase two Portland Loos	$ 393,947	
Stripe truck pull-outs and lanes	$ 9,200	
Connect new bathroom to utilities	$ 17,300	
Ongoing Costs		
Maintain and operate new facility (clean twice daily)	$ 13,000	$ 13,000
ANNUAL CASH FLOW (COST)	$ (433,447)	$ (13,000)
Annual Discount Rate 1.2%	Net Present Value = $(645,396)	

Alternative 4 Portables	Year 1	Years 2 through 20 (per year)
Initial Costs		
Stripe truck pull-outs and lanes	$ 9,200	
Provide pads and power for security lighting	$ 10,300	
Ongoing Costs		
Lease two portable toilets with daily cleaning	$ 12,504	$ 12,504
ANNUAL CASH FLOW (COST)	$ (32,004)	$ (12,504)
Annual Discount Rate 1.2%	Net Present Value = $(240,431)	

Alternative 5 Permanent Facility	Year 1	Years 2 through 20 (per year)
Initial Costs		
Construct two-module bathroom facility	$ 253,418	
Add keycard access security system	$ 6,600	
Connect new bathroom to utilities	$ 17,300	
Ongoing Costs		
Maintain and operate new facility (clean twice daily)	$ 13,000	$ 13,000
ANNUAL CASH FLOW (COST)	$ (290,318)	$ (13,000)

Annual Discount Rate 1.2%	Net Present Value = $(506,534)

Alternative 5 Portland Loo	Year 1	Years 2 through 20 (per year)
Initial Costs		
Purchase two Portland Loos	$ 393,947	
Add keycard access security system	$ 6,600	
Connect new bathroom to utilities	$ 17,300	
Ongoing Costs		
Maintain and operate new facility (clean twice daily)	$ 13,000	$ 13,000
ANNUAL CASH FLOW (COST)	$ (430,847)	$ (13,000)

Annual Discount Rate 1.2%	Net Present Value = $(642,827)

Short-Haul Truck Driver Profile

In 2007, the non-profit organization Port Jobs conducted a survey of drayage, local, and Washington state truck drivers (i.e. short-haul). The survey results, published in *Big Rig, Short Haul* found that the average short-haul driver is an owner-operator who works eleven hours a day and earns $31,341 per year. He has no health benefits or retirement plan. He is 43 years old, married with children, has been working as a truck driver for five years, and he's seriously thinking about getting into some other line of work. He is driving an eleven-year-old rig, and not earning enough to purchase a newer truck or retrofit his current truck to decrease emissions and increase safety.

Gender (N=142)	
Male (n=135)	95%
Female (n=7)	5%
Race/ethnicity (N=136)	
White (n=71)	52%
African/African-American (n=34)	25%
Asian/Asian-American (n=13)	10%
Hispanic/Latino (n=7)	5%
Native American (n=4)	3%
Mixed Race/Other (n=7)	5%
Country of Birth (N=140)	
Foreign Born (n=75)	54%
US Born (n=65)	46%
Education (N=140)	
Did not finish high school (n=26)	19%
High School graduate (n=39)	28%
Vocational/Technical school (n=20)	14%
Some college (n=31)	22%
Associate's degree (n=7)	5%
College/graduate degree(n=17)	12%