KAHULUI HARBOR DEVELOPMENT PLAN

HAWAI'I DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION

Final Development Plan
December 2012 (v2)

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KAHULUI HARBOR DEVELOPMENT PLAN
KAHULUI, MAUI, HAWAIʻI

State of Hawaiʻi

Department of Transportation

Harbors Division

Job H.C. 90032

Final Development Plan

December 2012 (v2)

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ACRONYMS

AIS	Archaeological Inventory Survey
A&B	Alexander and Baldwin
CIP	Capital Improvement Program
DBEDT	State Department of Business, Economic Development and Tourism
DLNR	State Department of Land and Natural Resources
DOA	State Department of Agriculture
DOH	State Department of Health
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Environmental Site Assessment
FIRM	Flood Insurance Rate Map
HABS	Historic American Buildings Survey
HC	Hawaiian Cement
DOT	State Department of Transportation
DOT-H	State Department of Transportation, Harbors Division
HHUG	Hawaii Harbors User Group
HMP	Harbors Modernization Plan
HVAC	heating, ventilation, and air conditioning
LCL	Less-than-Container Loads
mbm	Thousand Feet Board Measure (Measurement for Lumber)
MECO	Maui Electric Company
MGD	Millions of Gallons per Day
NCL	Norwegian Cruise Line
NEPA	National Environmental Policy Act
OCR	optical character recognition
POV	Privately Owned Vehicles
psf	Pounds per Square Foot
PUC	Public Utilities Commission
REC	Recognized Environmental Condition
RO/RO	Roll-on/Roll-off
RTG	rubber tired gantry cranes
SHPD	State Historic Preservation Division
TEU	Twenty Foot Equivalent
TMK	Tax Map Key
TWIC	Transportation Worker Identification Credential
TSA	Transportation Security Administration
YB	Young Brothers

INTRODUCTION

The *Kahului Harbor Development Plan* (*Development Plan*) identifies specific actions designed to improve the infrastructure of Kahului Harbor by addressing existing deficiencies and by providing for short-term future needs, which are defined as those projects and improvements needed within the next ten years. The *Development Plan* is based on the *Kahului Commercial Harbor 2035 Master Plan* (*Master Plan*) which was completed in 2007. The *Master Plan* projected the future demand for cargo, the requirements for decreasing congestion, and the importance of creating an appropriate balance between multiple cargo operators, tourism (cruise), and recreation users. The *Development Plan* looks at the short term, ten year strategies in the context of the long term, twenty five year needs.

Kahului Harbor is one of ten commercial harbors within the state system. It is Maui's only deep draft commercial harbor and is the third busiest in the state system. Most goods used by Maui residents and visitors alike arrive through this harbor. It is the destination for visiting cruise ships, including the interisland cruise vessel that arrives weekly. There is an ongoing need to improve operational efficiency.

Harbor operations are frequently constrained due to limited land capacity, which causes multiple harbor users to work in close proximity to each other. These conditions will worsen by 2035 when the amount of goods shipped to Maui is expected to increase beyond the current working capacity of the harbor. Therefore, there is a need to expand the harbor through land acquisition to accommodate the anticipated growth of mixed uses, including but not limited to cargo, container and automobile storage, passenger operations, fuel discharge, and bulk and cement unloading. Because it can take 10-15 years to plan, design, fund, and construct new facilities, it is prudent to start that process within the short term.

Development of the west side of the harbor for an interisland ferry and cruise ship berths was included as an objective in the *Master Plan*. However, this has become less pressing due to reduction in cruise service by carriers and the cessation of the interisland ferry. Therefore, the *Master Plan* recommendations regarding developing piers and operational space at West Kahului Harbor are not being pursued in this *Development Plan.*

The objectives of the Kahului Harbor Development Plan are to:

- Address short-term needs identified in the *Master Plan* for Kahului Harbor and update *Master Plan* recommendations to meet current conditions
- Identify and analyze harbor expansion opportunities
- Identify best space utilization for expanded lands
- Identify improvements that do not require the expansion of land
- Identify specific actions and phasing for implementation

The scope of the Kahului Harbor Development Plan includes:

- An assessment of container and automotive storage needs for current and future operations, including by a third carrier
- An assessment of best space utilization for land acquired in 2007 between East Kaʻahumanu Avenue and Pier 2 identified as Tax Map Keys (TMK) 3-7-10: 001 and 036, totaling 3.96 acres
- A condition assessment of the Old Kahului General Store and Old Kahului Railroad Building fronting East Kaʻahumanu Avenue; and alternate layouts for re-use of the Old Kahului Railroad Building for office space by the Maui District Office and others
- A civil engineering assessment of pavement options for Pier 2B; and structural engineering assessment of strengthening options for Pier 2B
- An evaluation of operational improvements within Kahului Harbor's existing footprint
- An evaluation of four parcels of land owned by Alexander & Baldwin (A&B) and potentially available for purchase
- A review of the *Statewide Fuel Facilities Development Plan* relating to fueling requirements, fuel pier and piping concepts presented in the report, and development of dredging requirements

Development Plan Summary:

The alternatives and recommendations provided in this *Development Plan* are based on technical studies (see Technical References listed in the Table of Contents), site visits, analysis of current facilities, and interviews with harbor users and with the Maui District Manager. Constraints on the existing facilities, current operations, as well as emerging issues are considered. These are called out as findings and summarized in Section 2.4.

Short-term improvements recommended in this *Development Plan* are based on the findings presented. Improvements include: cover the open drainage channel near Pier 2, strengthen pavement at Pier 2B, integrate 3.96 acres of previously purchased land, re-use the Old Kahului Railroad Building for harbor user offices, and acquire two parcels totaling 10.5 acres for expansion of cargo storage and possibly a new common gate.

A presentation of findings and recommendations was made to the Hawaiʻi Harbors User Group (HHUG) on May 24, 2012, at the Oahu District Office. A public information meeting on *Development Plan* alternatives was conducted on June 19, 2012, at the Maui Arts & Cultural Center in Kahului, Maui. Input gathered from these meetings and from harbor users has been incorporated into the *Development Plan*.

Chapter 1.0
Existing Facilities and Operations

1.1 General Description

Kahului Harbor is located on the north side of the Island of Maui within Kahului Bay, 89 nautical miles southeast of Honolulu Harbor. It is situated near Kahului, the industrial and commercial center of Maui and only two miles from Wailuku, the county seat. It is close to Kahului Airport and has easy access to the island's highway system.

Vessels enter the harbor between the east and west breakwaters. Current operations are along the east side of the harbor area; the west side is not currently used and is characterized by recreation activities. Landside access is from secured and gated entrances that use local roads off of the main thoroughfares of Ka'ahumanu Avenue and Hana Highway. Vehicles destined for Pier 1 use Hobron Avenue to Perimeter Road. Vehicles destined for harbor offices or Pier 3 use Hobron Avenue to Ala Luina Street. Vehicles going to Pier 2 may enter either from Hobron Avenue or from Wharf Street, which leads directly to the various areas around Pier 2 and to the lands surrounding the former Depot building.

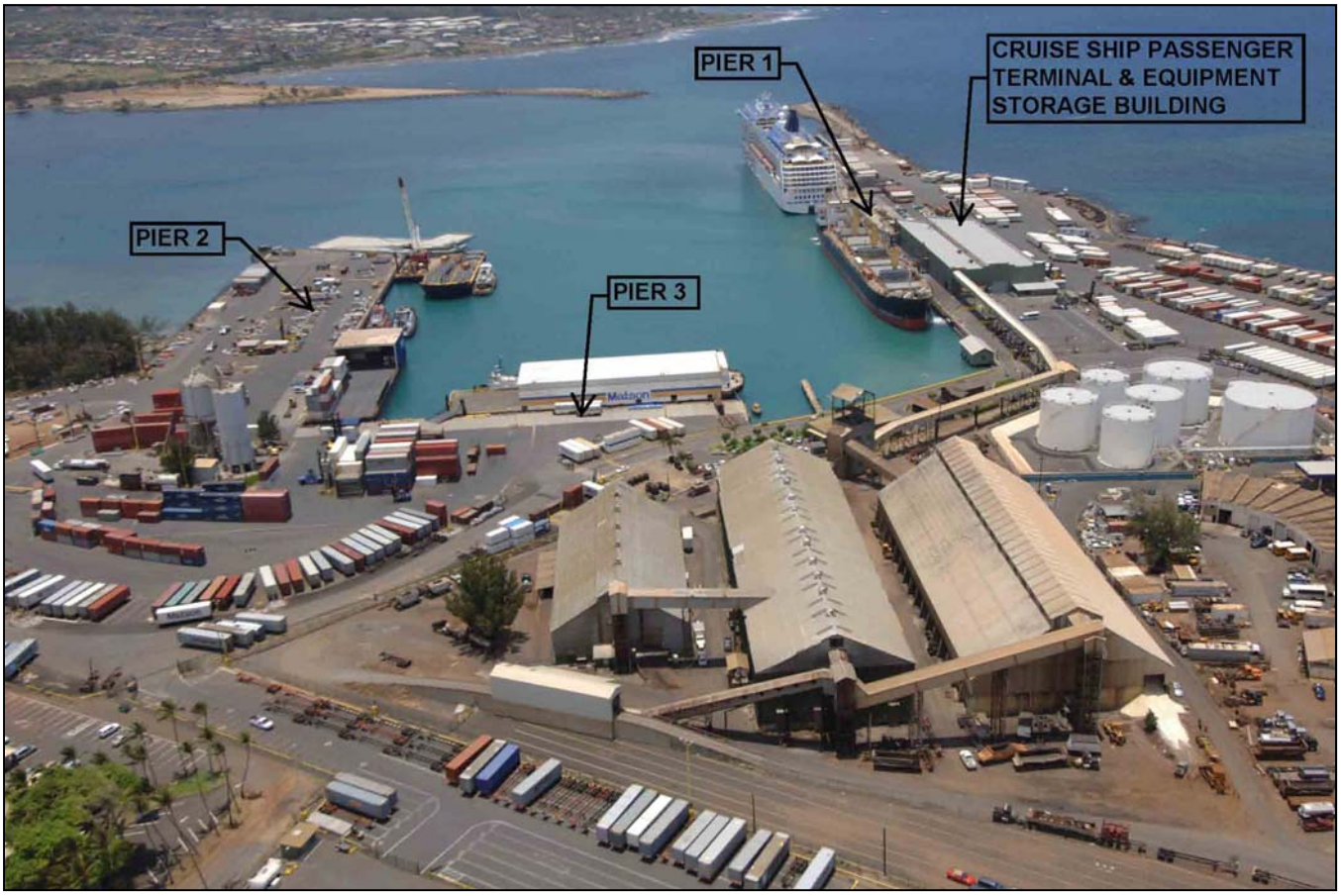
The Kahului Harbor's secured facility area is 45 acres in size. It currently consists of three piers totaling 3,532 feet in length, nine berths, and 44 total acres of yard space spread throughout the port. Two adjacent lots acquired in 2007 added 3.96 acres and two buildings. Currently, the Maui District Office is across from Pier 3, and beside it, Matson has their offices. Young Brothers and Horizon offices are located off Wharf Street near Pier 2. Pasha has sales office space in Building C of the Old Kahului Railroad Building.

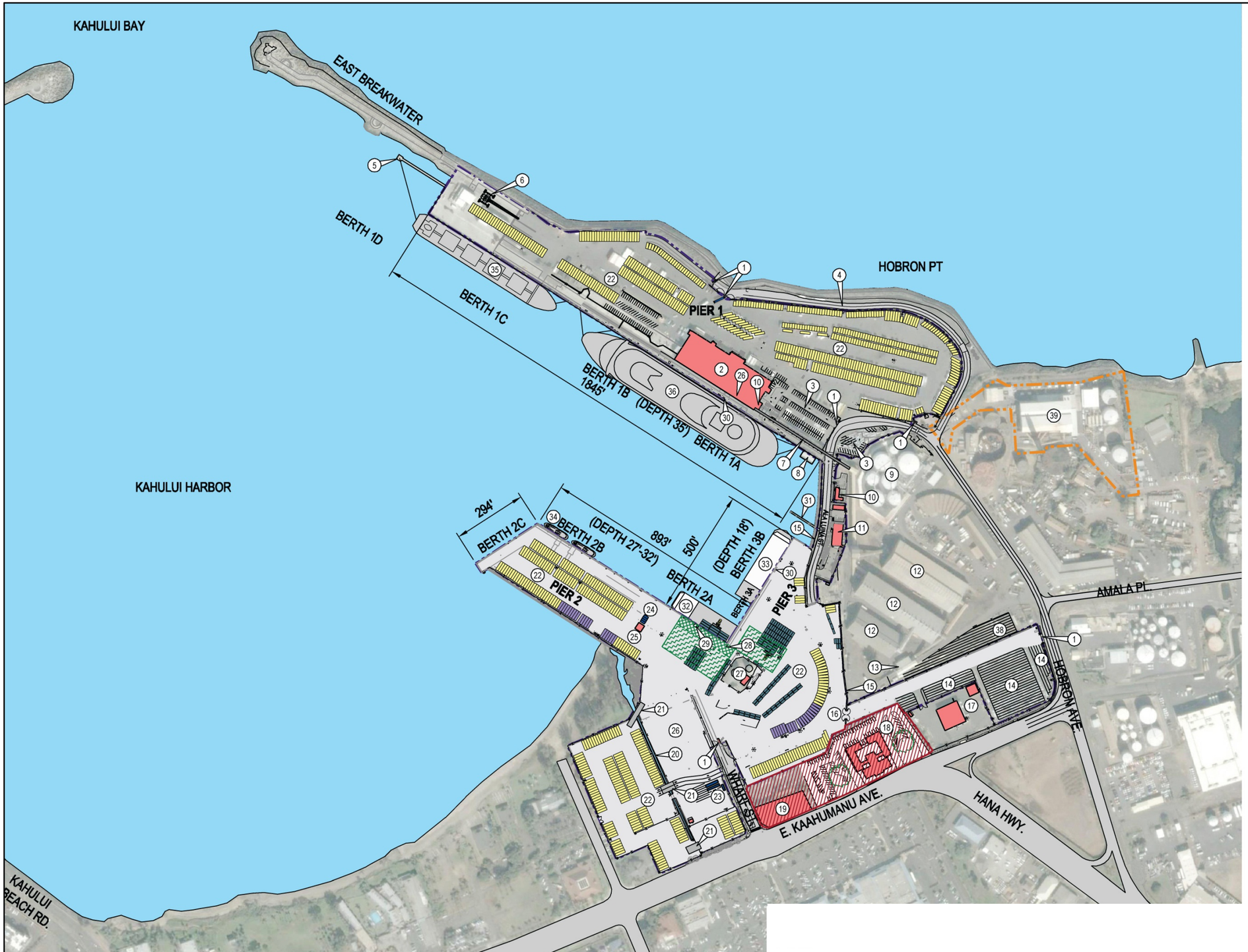
Capacity of the harbor is measured by the annual throughput capacity from a single 40-foot wheeled slot on the terminal. The harbor has approximately 1,000 slots for 40-foot wheeled containers, plus another 200 slots for 20-foot grounded containers, equating to a theoretical terminal capacity at Kahului Harbor of approximately 127,000 TEU (twenty-foot equivalent units).

The harbor is owned and operated by the State of Hawai'i, Harbors Division (DOT-H) and is managed as a common use facility. Major users are assigned space by DOT-H, but the boundaries of each tenant's operational area shift according to demand over time. Types of cargo handled include cargo in containers, less-than container load (LCL) or break bulk cargo, liquid and dry bulk cargo, automobiles, and fuel. Kahului is also a port of call for cruise vessels, including the weekly Norwegian Cruise Line ship and others. Cruise vessels share Pier 1 and yard with cargo vessels.

This chapter provides a description of each of the pier areas, with maps highlighting their features. It also describes operations at the harbor with aerial photos showing the areas being discussed. Operational features covered include cargo, commodities, vehicle handling and storage, fuel, cruise, harbor offices, roads, gates, and circulation. Findings of issues and constraints are provided. These findings are the reason and basis for various alternative projects described in later chapters. Figure 1.1 shows an aerial overview of Kahului Harbor and Figure 1.2 is a site plan showing existing conditions.

Figure 1.1: View of Existing Facilities





KEYNOTES

1. SECURITY GATE
2. CRUISE TERMINAL
3. CRUISE / POV PARKING - 1.5 ACRES
4. PERIMETER ROAD
5. MOORING DOLPHIN
6. MOBILE HARBOR CRANE
7. ELEVATED CONVEYOR
8. BOAT HOUSE
9. FUEL TANK FARM
10. MATSON OFFICE
11. DOT HARBOR OFFICE
12. SUGAR STORAGE SHED
13. TRUCK SCALE / SUGAR OFFLOAD RAMP
14. AUTO STORAGE - 2.5 ACRES
15. PEDESTRIAN WALKWAY
16. GATE 10
17. DOT MAINTENANCE FACILITY
18. OLD KAHULUI RAILROAD BUILDING
19. OLD KAHULUI GENERAL STORE
20. CONCRETE DRAINAGE DITCH
21. CONCRETE RAMP OVER DRAINAGE DITCH
22. CONTAINER STORAGE
23. TENANT OFFICE TRAILERS
24. YOUNG BROTHERS BREAK ROOM
25. RESTROOM BUILDING
26. LCL CARGO AREA
27. CEMENT STORAGE SITE
28. IN-GROUND CEMENT CONNECTION
29. IN-GROUND PROPANE CONNECTION
30. IN-GROUND FUEL CONNECTION
31. CONCRETE PIER
32. CONTAINER BARGE
33. RO/RO BARGE
34. TUG BERTHS
35. BULK SHIP
36. CRUISE SHIP
37. NOT USED
38. OWNED BY A & B
39. MAUI ELECTRIC CO.

LEGEND

- SECURE AREA BOUNDARY - 45 ACRES
- MAUI ELECTRIC CO. BOUNDARY - 4 ACRES
- POTENTIAL EXPANSION AREA - 3.96 ACRES
- STRENGTHENED PORTION OF PIER
- STRENGTHENED PAVEMENT AREA - 1.1 ACRES
- WHEELED CONTAINER STORAGE 916 STALLS
- WHEELED REEFER STORAGE 40 STALLS
- GROUNDED CONTAINER STORAGE TOP PICK - 165 TGS
- BUILDING
- TRAILER
- AUTO STORAGE STRIPING

TRUE N

0' 200' 400' 600'

SCALE: 1" = 200' FULL SIZE
1" = 400' HALF SIZE

EXISTING CONDITIONS OVERALL SITE PLAN

Kahului Harbor Development Plan

State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 1.2

Drawing Source:
AECOM Conceptual Design , 2012

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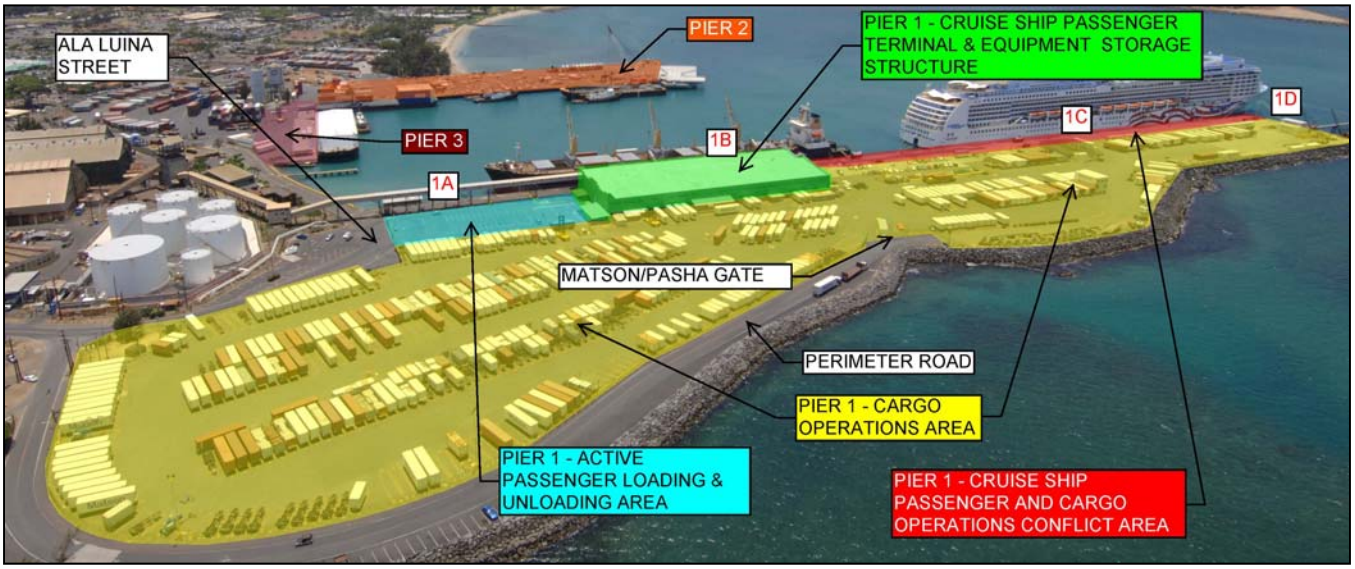
1.2 Pier 1 Facilities

Pier 1 is a multiple-use pier primarily used by Matson, Pasha, and cruise ships. It can also be used for specialty vehicles carrying fuel, molasses, sugar barges, sand, gravel, pineapple, or scrap material. Pier 1 is 1,845 feet long and has approximately 23 acres for container handling and storage. It's facilities include paved areas for cargo operations and parking; transmission pipelines for gasoline, kerosene, diesel, fuel oil and molasses; and a conveyor system for sugar.

A majority of Pier 1 is reserved for cargo container loading, unloading, and container storage (shaded in yellow in the Figure 1.3). There is a large shed, measuring approximately 374-ft long by 132-ft wide, that is currently used as the cruise ship passenger terminal and for equipment storage (shaded in green in Figure 1.3).

Public access to Pier 1 occurs from Ala Luina Street or Perimeter Road, which are both connected to Hobron Avenue. Authorized vehicles are allowed to park in designated stalls. Other vehicles (buses, trucks, etc.) are permitted to load and unload passengers in a designated area (shaded in blue on Figure 1.3) adjacent to the passenger terminal/storage shed. This area is isolated by security fencing, separating the loading areas from the cargo operations occurring on Pier 1. Cruise ships can moor at either Berths 1A or 1C, but are more likely to use Berth 1A to reduce conflicts with cargo operations. Passengers disembarking from cruise ships moored at Berth 1C are separated from cargo operations (shaded in red) by movable concrete barriers supplemented by empty containers as needed. Chain-link fencing (mounted on top of the barriers with an approximate height of 5 feet) ends mid-way of Pier 1, between Berths 1B and 1C. Figure 1.3 shows the location of berths 1A, 1B, and 1C.

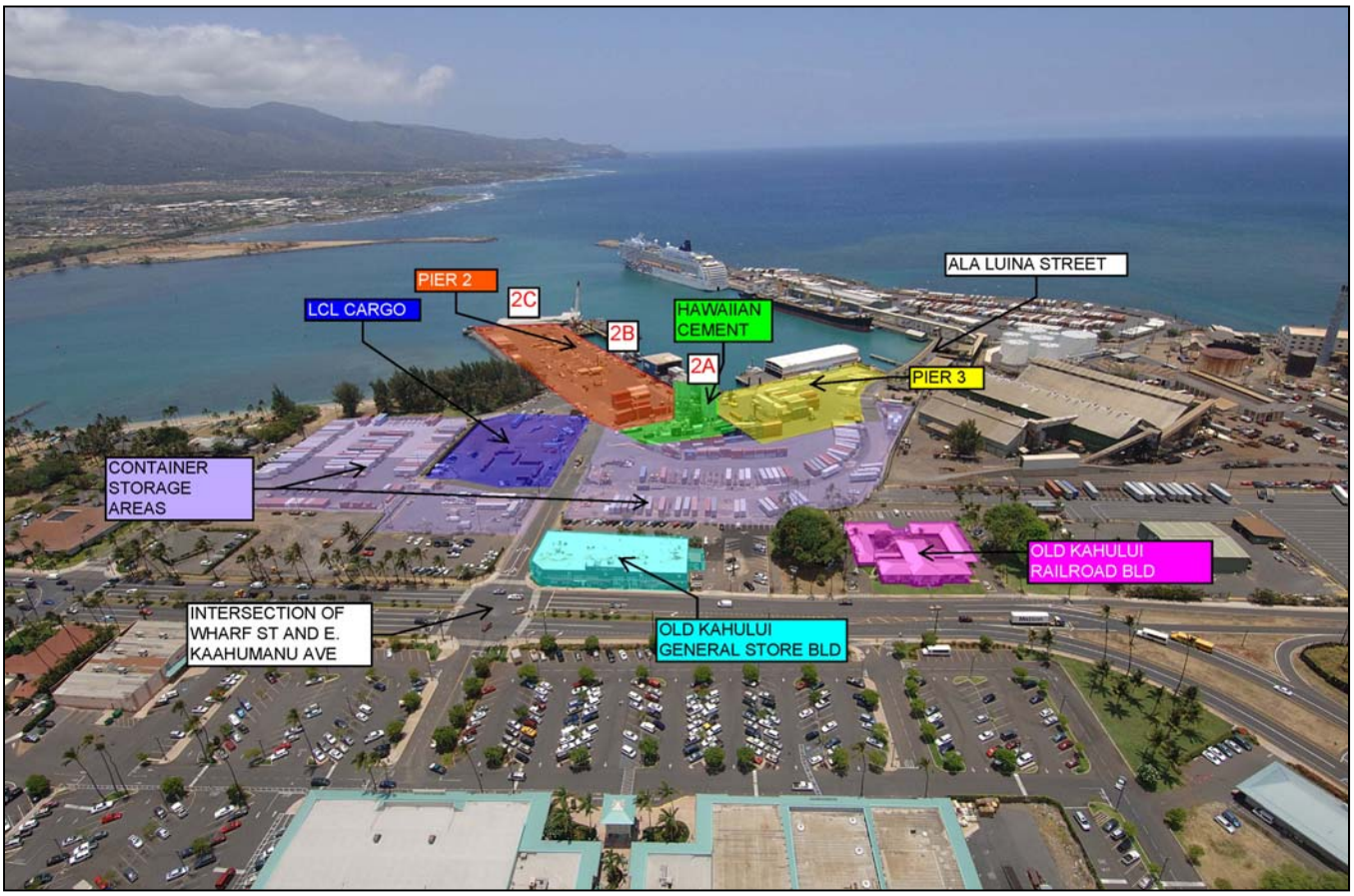
Figure 1.3: Existing Uses at Pier 1



1.3 Pier 2 Facilities

Pier 2 was originally constructed in 1926 and has undergone a number of structural improvements. It is 893 feet long with a width of 270 feet, including a 42-foot extension constructed in 1963 at the west end. Pier 2 facilities include paved surfaces for cargo operations and transmission pipelines for cement and propane (See Figure 1.4). Cement is stored in a silo owned by Hawaiian Cement located near the corner of Piers 2 and 3.

Figure 1.4: Existing Uses at Pier 2 and Pier 3



Young Brothers (YB) operates forty-ton lifts to load and unload barges at Pier 2. Currently, YB is able to utilize Pier 2A and occasionally Pier 3 based on their standard of operation. Pier 2C is not regularly used by YB due to surge conditions and it being the farthest berth from the yard. The berth at Pier 2B was identified for structural analysis because it cannot sustain a loaded forty-ton lift. YB is limited to using lighter vehicles and unloading only one container at a time, but this is inefficient and a serious constraint on their operation. Ideally, YB would utilize Pier 2B with a two-ramp concurrent operation that could support continuous loading and unloading of barges.

Finding: Pier 2B cannot sustain modern equipment that supports YB's current operational needs. Having to use dated equipment because of weight restrictions for loading and unloading, creates inefficiencies in their operations.

1.4 Pier 3 Facilities

Pier 3, located between Piers 1 and 2, is used for bulk and fuel operations. It was constructed in 1979 and measures 500 feet long with widths tapering from 36 feet to 44 feet. Facilities at Pier 3 include transmission pipelines for gasoline, jet fuel, fuel oil, and ethanol.

1.5 Piers 2 and 3 Storage Area

Piers 2 and 3 have a combined storage area of about 21 acres. The storage area is used for chassis parking, grounded 20-foot containers and grounded 40-foot containers. An open drainage channel crosses Pier 2, as shown on Figure 3.8. There are three (3) bridges used by YB to cross the drainage channel located at both ends and middle. The location of the channel reduces the storage capacity of Pier 2 and constricts flexibility of the operation by forcing traffic onto narrow bridge crossings.

Finding: The open drainage channel constrains use of the Pier 2 storage areas and reduces the storage area available.

1.6 Operations at Kahului Harbor

Kahului Harbor is actively used throughout the year, at most times of the day and week. The major uses include: cargo (both container and less-than-container-load (LCL) shipments) which require separate space for handling and processing; vehicles; fuel; bulk commodities including sugar and sand; and cruise passengers. Flexible scheduling of users by the Maui District Manager allows for multiple uses.

1.6.1 Cargo Operations

Cargo handling at Pier 1 generally consists of an all-wheeled operation with most of the loaded containers mounted on chassis. Empty containers are grounded and stacked as much as four high to increase storage density. Cargo handling equipment includes top-picks and yard hustlers.

Three cargo carriers operate at Kahului Harbor: Matson, Young Brothers (YB) and Pasha. Matson and YB use barges to transport cargo between Honolulu and Kahului, Pasha currently uses a ship. Matson has used mainline vessels to serve Kahului in the past but discontinued this practice as volumes declined from peak highs in 2007.

<u>Matson</u>

Matson operates from the Pier 1 area, as shown in Figure 1.5. Matson stores loaded containers on street legal chassis. This type of operation, also known as wheeled storage, is cost efficient and simple to operate. It is convenient for the local trucking community because truck drivers can pick up a container without any assistance from a crane on the terminal. However, it does require a relatively large amount of land for container storage. Matson plans to continue as a wheeled operation and is opposed to converting to a grounded operation requiring containers to be stored in stacks.

<u>Pasha</u>

Pasha also operates at Pier 1. Up until 2012 they called every other week handling interstate automobiles and rollingstock at Kahului Harbor. In 2012 Pasha began handling both interstate and interisland automobiles and rollingstock under a temporary license from the Public Utilities

Commission (PUC). Pasha handling and storage needs have increased. The Maui District Manager allocates the storage space on Pier 1 between Matson and Pasha for container storage.

Finding: With the expansion of Pasha handling cargo, more storage and operation area is needed to support two carriers at Pier 1.

Figure 1.5: Matson Wheeled Storage at Pier 1

Young Brothers

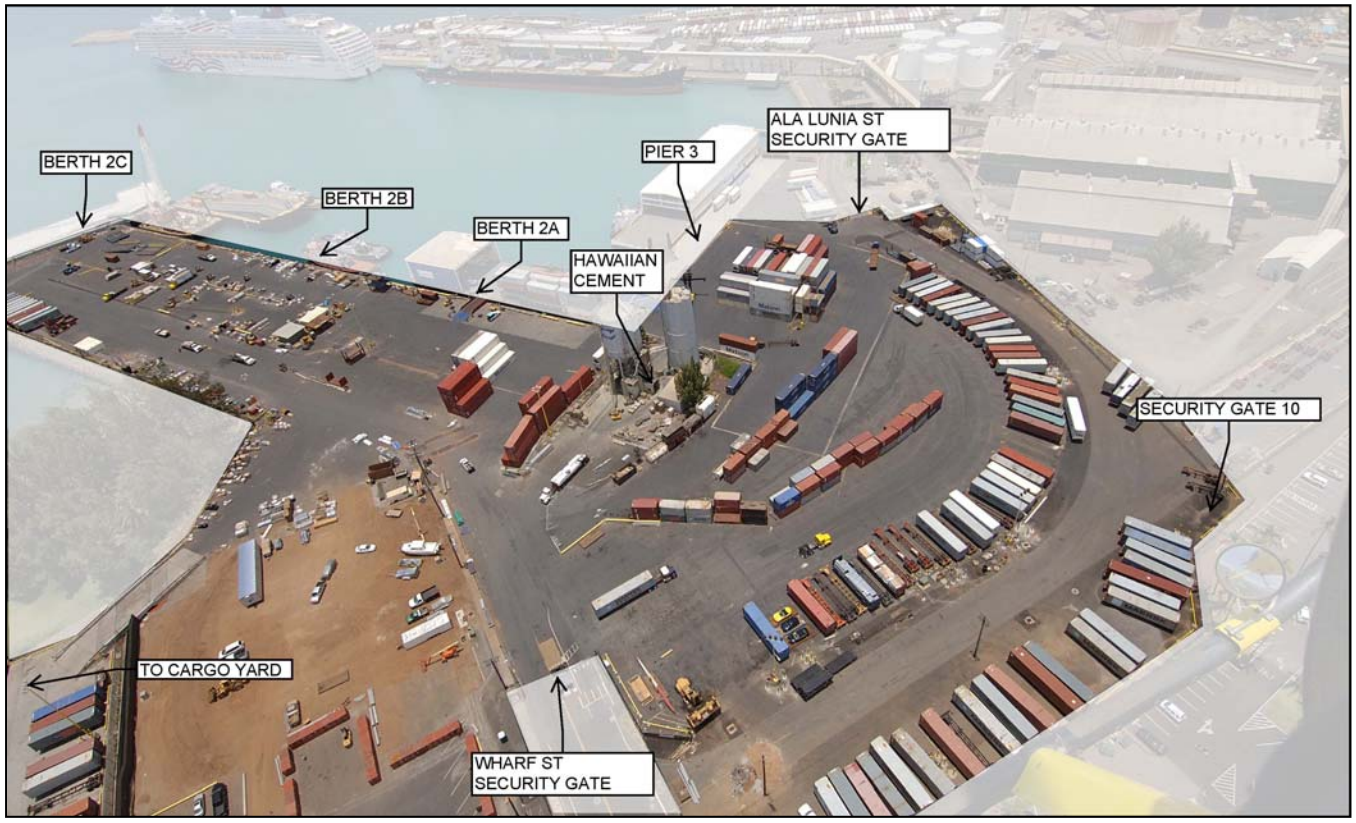
Young Brothers (YB) uses Pier 2 for cargo operations, storage of cargo containers on truck trailers, LCL and circulation. As shown in Figure 1.6, YB operations at Pier 2 include:

- Berth 2A – loading by top-picks onto truck trailers, unloading and storage of goods from cargo containers (via smaller forklifts), and loading of flatbed trucks and other commercial vehicles.
- Berth 2B – storage of cargo containers mounted on chassis, circulation of trucks and trailers.
- Berth 2C – storage of empty trailers along Berth 2C, circulation of trucks and trailers.

LCL cargo is handled by YB within the open space near Pier 2. Members of the public can pick up crates of goods in this area using smaller vehicles such as pickup trucks. The Department of Agriculture (DOA) conducts agricultural inspection in this area as needed. Access to Pier 2 is restricted for security reasons. Inspection of vehicles, proper identification and access badges is performed at the Wharf Street Gate. Unloading containers at Pier 2 to the yard is constrained by the location of the Hawaiian Cement silo. A top-pick forklift carrying a 40-foot container cannot easily travel through the narrow corridor between the cement silo and Piers 2 and 3.

Finding: LCL operations are constrained by limited space. The location of the Hawaiian Cement silo in the center of the cargo yard creates operational limitations for container transport and storage.

Figure 1.6: YB Operation on Pier 2



Various other freight commodities, including fuel and sugar, are also moved through the harbor. The backland required to store these commodities in specialized facilities is located on private property outside the harbor and is adequate for the foreseeable future.

1.6.2 Cement and Commodity Operations

Kahului Harbor also serves Hawaiian Cement which brings in cement in bulk on barges. Cement is transferred from the barges to the silo utilizing a special hatch and pipe system located near the corner of Pier 2 and Pier 3.

Figure 1.7: Cement Silo on Pier 2

The photo in Figure 1.7 shows the cement silo with a truck receiving cement. Hawaiian Cement uses this silo to move approximately 10,000 tons of cement per month. The cement arrives by barge and is transported out of the harbor by truck. Trucks must drive forward under the silo to receive cement. Each truck has the capacity to accommodate approximately 25 tons of cement. Cement operations require around 400 truckloads per month, or 20 truckloads per day.

As discussed in Section 1.6.1, the location of the cement silo is in conflict with YB's unloading operations and therefore represents a significant constraint to operations and safety at Pier 2 where YB's top-picks "pick and carry" containers between the yard and the barge. There is very little clearance between a top-pick with a 40 foot container and the cement silo.

Finding: Cement is an important commodity that needs an area for unloading from barges, storage, and re-loading to trucks.

1.6.3 Vehicle Handling and Storage

Both Pasha and Matson ship vehicles through Kahului. Matson and Pasha operate roll-on/roll-off (RO/RO) vessels for vehicle transport, where vehicles are driven from the vessel to a storage area. Some of Matson's vehicles arrive in containerized vehicle frames, which are unloaded on the terminal and driven to storage area for pickup. The size and location of areas used for vehicle storage varies considerably in response to peaks in demand. Vehicle storage is coordinated with the Maui District Manager and requires using a shared auto lot. With supervision from Matson or Pasha management personnel, both Matson and Pasha drive vehicles over public roads as part of normal stevedoring activity. The area shown in Figure 1.8 is typically used for vehicle storage.

Figure 1.8: Vehicle Storage Lot

Finding: Area needed to store vehicles varies, but can be considerable at peak times. The Maui District Manager must frequently assign areas for vehicle versus cargo storage.

1.6.4 Fuel Operations

Kahului Harbor is the only commercial harbor facility on Maui to accommodate fuel transfer and is a critical link in the Island's fuel and energy supply. Liquefied petroleum gas (LPG) shipments are received at Pier 2-Berth 2A which is connected by underground pipeline to storage tanks located outside of the harbor. Pier 1-Berth 1A and Pier 3-Berth 3B are the only two berths that handle petroleum fuel (non-LPG) transfer. Berth 1A has a draft of 35 feet and can accommodate fuel barges with full loads. Berth 3B has a draft of 18 feet and can only accommodate fuel barges with partial loads.

At this time, there is a need to continually monitor fuel demand and fuel storage capacities for the Island of Maui. Pier 1-Berth 1A is the current primary berth for petroleum fuel transfer because it can accommodate full fuel barges. Pier 3-Berth 3B is the secondary berth utilized only when scheduling conflicts do not permit fuel transfer at Berth 1A. Booked cruise ships have first priority for Pier 1, but otherwise the fuel barges have priority to relocate to Berth 1A especially when adverse weather or heavy harbor surges affect fuel discharge operations at Berth 3B. When this happens, the sugar ship (Moku Pahu) or the bulk coal carrier must vacate the berth for the fuel barges. When the fuel barge is required to use Berth 3B it requires the additional calls because it cannot bring in a full load.

Finding: Berth space needed for fuel transfers is managed through scheduling by the Maui District Manager. The addition of a new dedicated fuel berth is not seen as an immediate need. However, conditions can change that would trigger the need to assess whether additional berth space is needed. If the demand for fuel increases, or if the competition for berth space increases because of more cruise ship activity, a new evaluation of adding berth space would then be required.

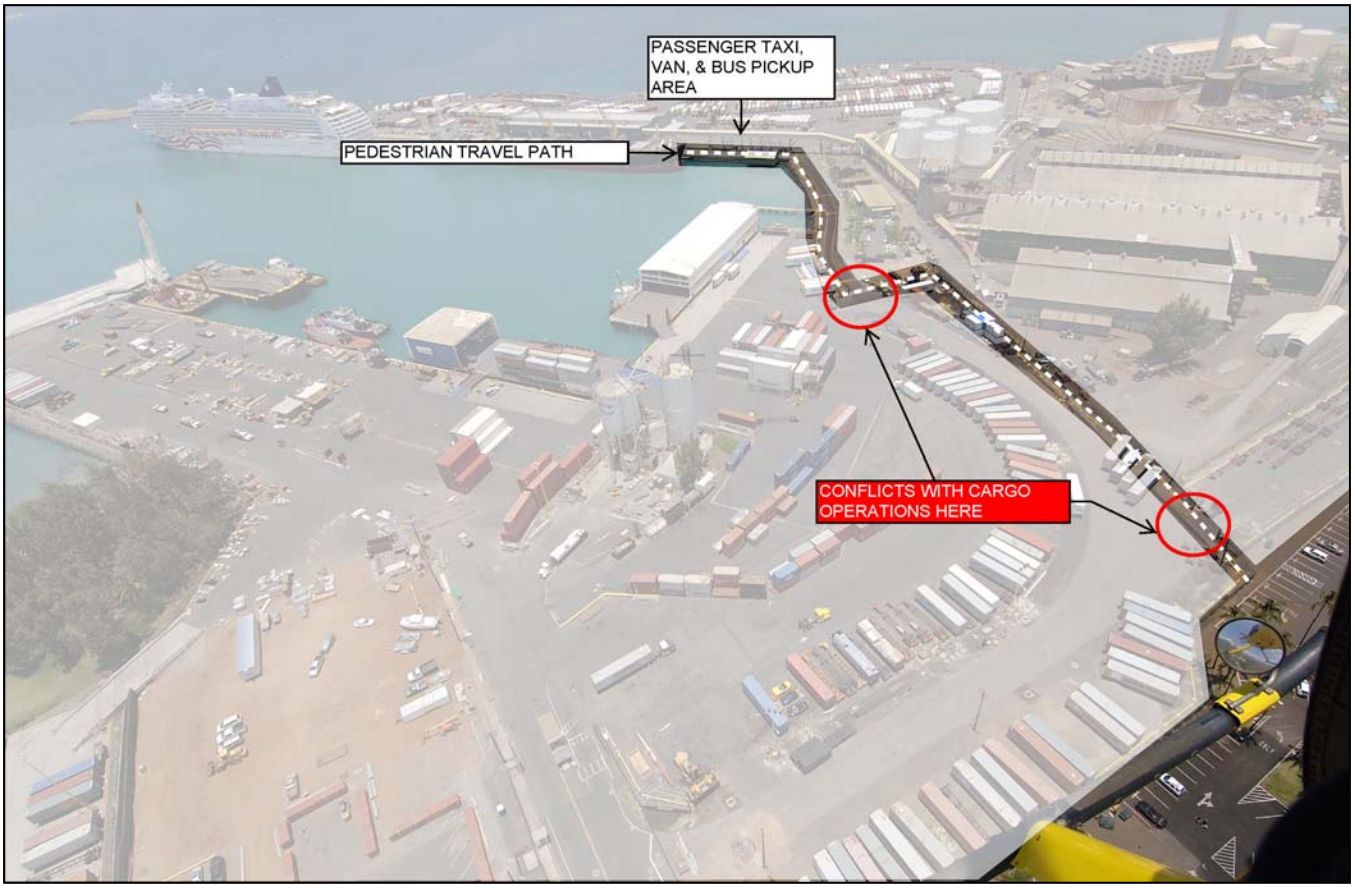
1.6.5 Cruise Operations and Passengers

The interisland cruise vessel operated by Norwegian Cruise Lines (NCL) arrives at Kahului on Sunday evening and leaves on Monday evening. They sail once a week, 52 weeks a year, with a capacity of 2,138 passengers. In addition to NCL, Carnival Cruise Lines, Disney Cruise Line, and Oceanic Cruises stop at Kahului Harbor on a less frequent basis. In 2011, Maui handled 105,011 cruise passengers according to statistics kept by the State Department of Business, Economic Development and Tourism.

To accommodate cruise ship land-side activities when passengers disembark, a fenced walkway from the Pier 1 shed passes along Pier 3, through the Pier 2 yard, ending at the property on East Ka'ahumanu Street. From there, passengers cross the street to visit the shopping malls (see Figure 1.9). Taxis, vans, buses and other vehicles pick up and discharge passengers at the foot of Pier 1A for tours. Cruise passengers walking out of the secured harbor space must cross two vehicle access roads associated with YB's yard. This is not an ideal situation because of safety concerns created by the mix of pedestrian and vehicle traffic. One of YB's secured access gates is typically closed to vehicle traffic when the walkway is in use.

Finding: A dedicated fenced walkway is used to give passengers safe passage through the harbor to East Ka'ahumanu Avenue. However there are two vehicle access gates that must be crossed or closed when the pedestrian walkway is in use.

Figure 1.9: Cruise Passenger Path and Pickup Areas



1.6.6 Existing Harbor Offices

The Maui Harbor District Office is currently located outside of the secured area across from Pier 3, as shown on Figure 1.10. DOT-H utilizes 2,742 square feet of space which includes offices for the District Manager, Maintenance Supervisor and Office Manager; two other office spaces; reception; a conference room; storage; and restroom facilities as listed in Table 1.1.

Table 1.1: Functional Uses of the Harbor Office (in square feet)

Break Room/Restrooms (3)	144/193
Storage closets (3)	181
Conference Room	400
Reception/office	518
District manager office	304
Maintenance Supervisor office	209
Office Manager office	195
Marine Patrol	261
Private offices (2)	337

Although the Maui District Office building is located close to both Piers 1 and 2, it is outside the secured perimeter of Kahului Harbor. Visitors can drive into the Maui District Office parking lot with no security check. Next to the District office are Matson offices. The area within Kahului Harbor occupied by these offices is underutilized because this space is not being used for cargo or cruise operations. These offices do not need to be located near operations or within the secured harbor boundary.

Finding: The Maui District Office and Matson Office have frequent public visitors and do not need to be located directly in the harbor area. The current location creates an inefficient use of valuable storage areas close to the berths.

Figure 1.10: Existing Harbors District Office

1.6.7 Roads, Access, Gates and Circulation

Roads

The major road adjacent to the harbor is East Kaʻahumanu Avenue, as shown on Figure 1.12. Wharf Street intersects East Kaʻahumanu Avenue at a traffic signal and leads into Pier 2. East Kaʻahumanu Avenue ends at Hobron Avenue which leads to Perimeter Road and Amala Place. East Kaʻahumanu Avenue, Wharf Street and Hobron Avenue are all under the jurisdiction of HDOT Highways Division. Perimeter Road is owned in part by Maui Electric Company (MECO) and in part by DOT-H as shown in Figure 1.11.

Amala Place is a two-lane road owned by Alexander & Baldwin (A&B). Ala Luina Street, which runs between Pier 3 and the Maui District Office, are both within the Kahului Harbor property. Wharf Street and Hobron Avenue merit consideration by DOT to be transferred from DOT Highways Division to DOT Harbors Division. The roadway system, access, gates and circulation are shown in Figure 1.12.

Figure 1.11: Perimeter Road Ownership

Gates and Circulation

Kahului Harbor currently has three separate gates plus a passenger gate and parking area for cruise traffic. There is one gate located about mid-way down the north side of Pier 1. This is the first point of contact between truck drivers and the terminal. In order to reach this gate, trucks drive along Perimeter Road, which is also used by members of the general public to access the Pier 1 breakwater for fishing and sightseeing. A second gate is located off of Hobron Avenue and a third is located off of Wharf Street. Figure 1.12 highlights the location of the existing gates at Kahului Harbor, and their corresponding truck circulation paths.

Matson/Pasha Gate via Hobron Avenue

All Matson and Pasha container traffic accesses Harbor property by way of Hobron Avenue. From Hobron Avenue, the secured area at Pier 1 is accessed from Perimeter Road. Perimeter Road is a two-way road located outside the secured harbor boundary separating the Pier 1 yard from the breakwater. There are public parking spaces along the Perimeter Road that are used by the general public when fishing off of the north side of Pier 1. Some cruise passengers also use these parking spaces.

Matson and Pasha have both expressed some concern over the high level of ocean spray that occasionally occurs on the breakwater side of Pier 1 during storms. Depending on the frequency and severity of this storm spray, vehicles or cargo parked closer to the breakwater side can suffer rust or water damage.

Cruise Access via Hobron Avenue

Cruise passengers who rent cars can park cars in vehicle parking lots located across the cruise terminal and around the Old Kahului Railroad Building. No security screening or ID check is required to access these lots. Passengers walk from these lots to and from the cruise terminal. Cruise passenger rental vehicles mix with container traffic along Hobron Avenue while driving to and from the terminal.

Maui District Office access via Hobron Avenue

Visitors to the Maui District Office or Matson Office can access the buildings by way of Hobron Avenue onto Ala Luina Street. The office parking locations have the same drawbacks as the cruise passenger parking, which is inefficient use of valuable storage areas close to the berths.

Hawaiian Cement access via Wharf Street and Hobron Avenue

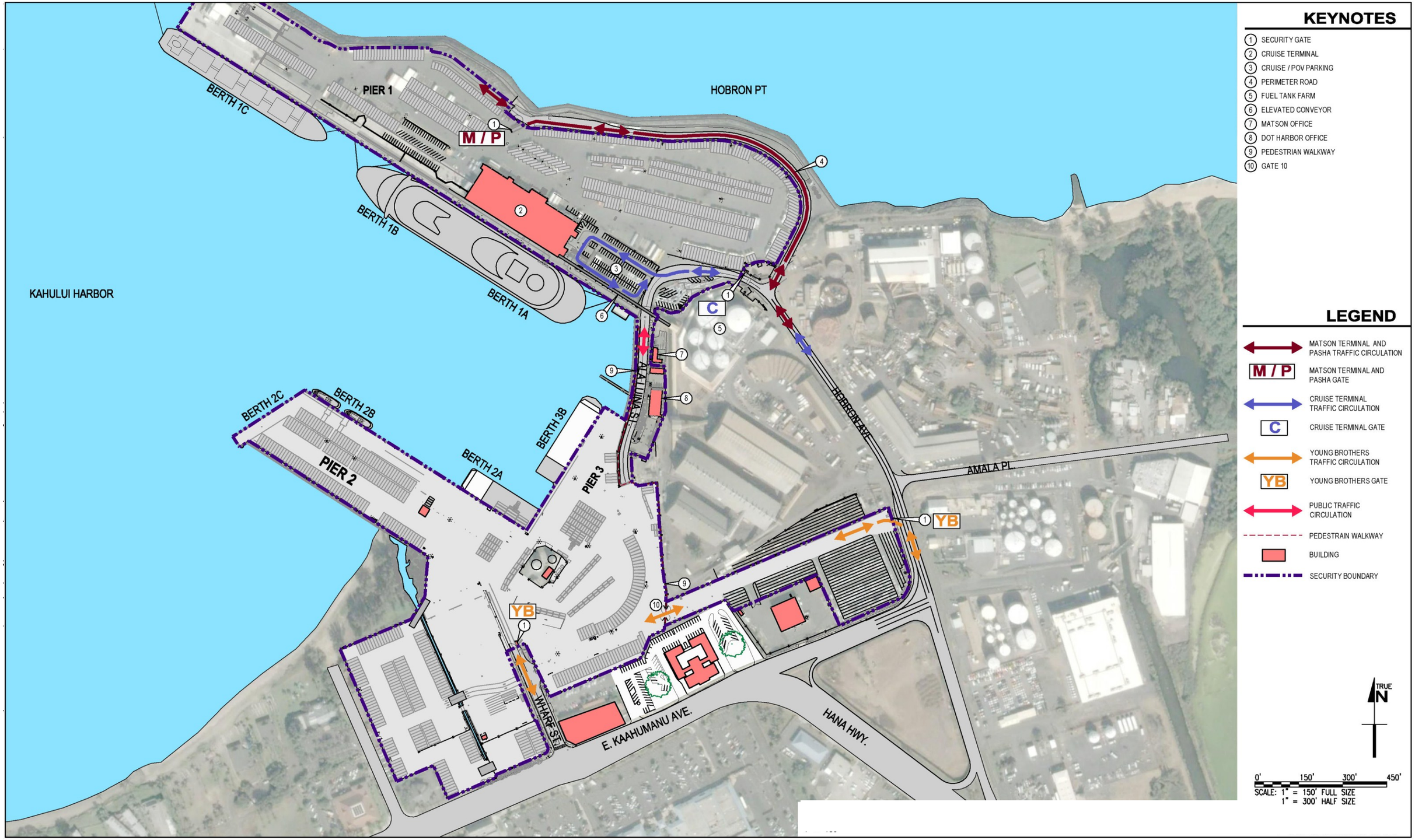
Trucks for Hawaiian Cement access Pier 2 yard by way of Wharf Street. These trucks leave by way of Wharf Street.

Young Brothers (YB) at Security Gate (9) on Hobron Avenue and Security Gate (12) on Wharf Street

YB container trucks enter via Hobron Avenue Security Gate (9) with a left turn off of Hobron Avenue where security can check the Transportation Worker Identification Credential (TWIC) cards of truck drivers. The drivers then proceed through a second gate into the Pier 2 area via Security Gate (10) where they exchange information with YB representatives. Container trucks exit YB by way of the Wharf Street Security Gate (12).

Drivers picking up or dropping off LCL cargo at Pier 2 enter and exit by way of the Wharf Street Security Gate (11). LCL drivers currently interface with YB staff at trailers located near the Wharf Street Security Gate (11).

Finding: The existing system of multiple gates requires that a relatively large amount of space be used for entry and circulation outside of Kahului Harbor's security boundary, especially at Pier 1. Multiple gates decrease efficiency for trucks that are doing multiple transactions at different terminals. Each gate requires staffing, which increases operational costs.



Gates and Circulation

Kahului Harbor Development Plan

State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 1.12

Drawing Source:
AECOM Conceptual Design , 2012

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1.7 Parcel Adjacent to East Ka‘ahumanu Avenue

In 2007, the State acquired 3.96 acres from A&B immediately adjacent to Pier 2 and fronting both Ka‘ahumanu Avenue and Wharf Street (see Figure 1.13). There are two vacant buildings on the property: the Old Kahului Railroad Building and the Old Kahului General Store.

Finding: The additional acreage adjacent to East Ka‘ahumanu Avenue presents an opportunity for moving certain functions and reducing congestion in areas of the harbor yard.

Figure 1.13: Acquired Area Adjacent to East Ka‘ahumanu Avenue

1.8 Land Constraints

Operations at Kahului Harbor are geographically constrained in several ways. Mauka (landward) expansion is limited by East Ka‘ahumanu Avenue, a major thoroughfare between Kahului and Wailuku, which borders the 3.96 acre parcel purchased by the State.

Westerly expansion has limitations due to the recreational use of this area and lack of piers, berths and yard facilities. Due to the decline of passenger and interisland cruise services from peak highs in 2007 there is no current need for expansion to the west.

Easterly expansion is the most viable possibility for harbor growth. Nevertheless, easterly expansion is not without constraints and challenges as discussed in Chapter 4.

Finding: Geographic constraints limit opportunities for expansion of the harbor yard.

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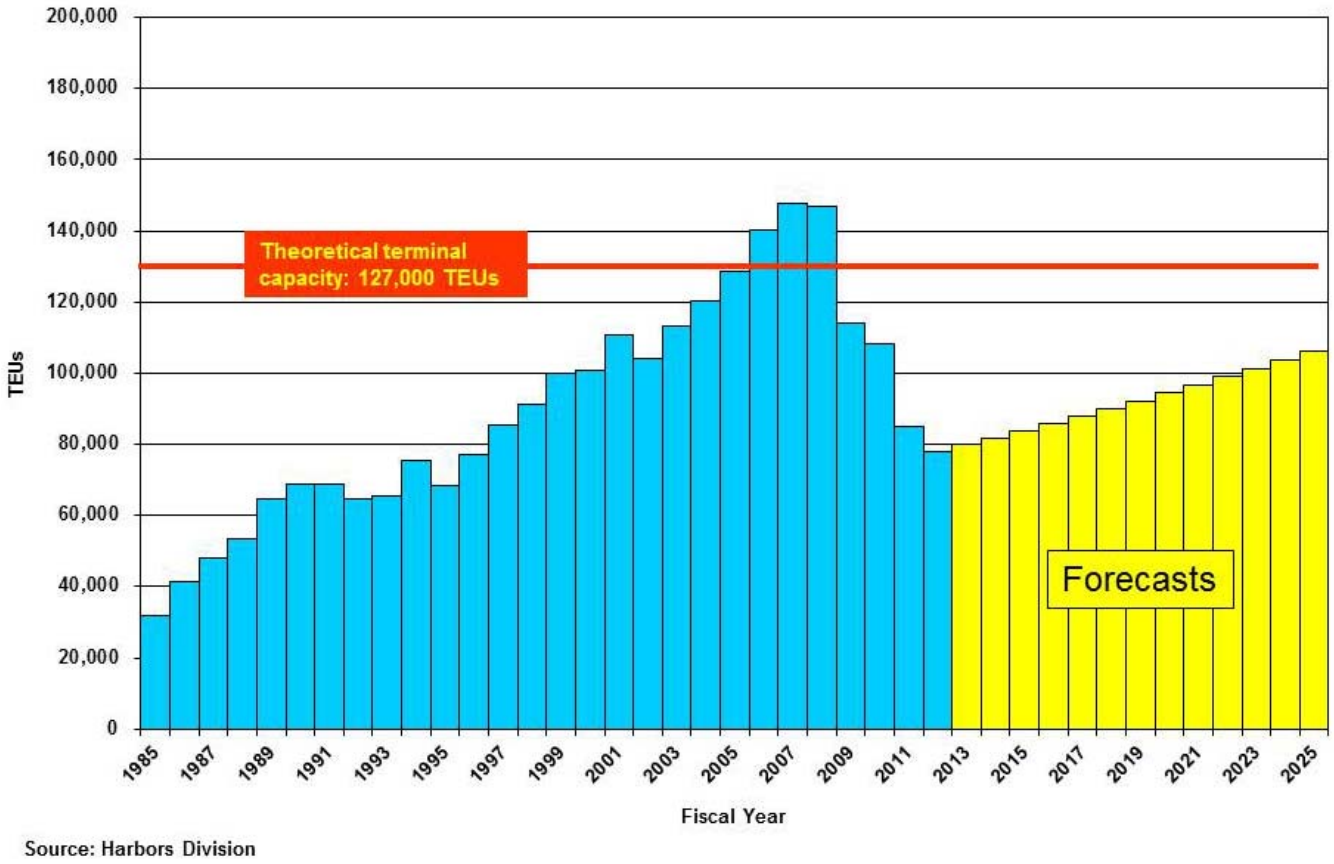
Chapter 2.0
Future Demand, New Issues and Summary of Findings

2.1 Current and Future Cargo Demand

The historic annual cargo volumes, as measured in twenty-foot container equivalent units (TEU) are shown in Figure 2.1. The theoretical terminal capacity of Kahului Harbor is estimated to be approximately 127,000 TEU. This conforms to the conditions around 2005 through 2007 when the harbor was crowded and over its capacity, according to users and the Maui District Manager.

Figure 2.1: Historical Cargo Volumes and Forecasts at Kahului Harbor



Source: Harbors Division

Kahului Harbor has approximately 1,000 slots for 40-foot wheeled containers, plus another 200 slots for 20-foot grounded containers. The current capacity of the facility is measured by the annual throughput capacity from a single 40-foot wheeled slot on the terminal. With an average storage height of three containers, a 20-foot grounded slot has approximately the same throughput capacity as 1.5 40-foot wheeled slots, equating an overall capacity of approximately 127,000 TEU.

In 2005, the terminal handled 126,600 TEU. According to then Maui District Manager, in 2005 the terminal was effectively "full." This opinion is well supported by the terminal capacity calculations above. From 2005 to 2009, two changes have occurred that alleviated the congestion at the terminal:

first, container volume has decreased to 113,434 in 2009, and second, YB has expanded their container operations on Pier 2 into space previously used for an interisland ferry service.

The *Master Plan* forecasts that storage requirements at Kahului Harbor will increase from 12.4 acres (area required in 2005) to 18.3 acres by 2030. This represents a significant shortfall from the current 3.7 acres.

Finding: Current Kahului Harbor facilities do not have sufficient cargo and auto storage space to accommodate forecasted growth.

2.2 Pasha Expansion from Auto Only to Auto plus Containers

A Pasha vessel currently arrives at Kahului Harbor Pier 1C every other Wednesday. At the present time, Pasha operates a wheeled operation. Automotive operations are RO/RO and pick up is pre-staged.

Pasha is expected to need at least two or more acres for operations and storage when a second vessel begins service to Kahului, thereby increase their calls to every Wednesday. Separation from Matson operations is of some future concern. The Maui District Manager will be required to schedule operations with each company to allow sufficient separation.

Finding: Pasha will need additional acreage for container shipping operations.

2.3 Need for Inspection Area by Department of Agriculture

The State of Hawai‘i Department of Agriculture (DOA) is responsible for preventing the importation of high risk invasive species. Furthermore, new federal regulations regarding food safety are being promulgated and Hawai‘i will need to follow these regulations as they are issued. While overseas cargo is inspected on O‘ahu, DOA still must inspect, quarantine and treat cargo at Kahului Harbor. Current DOA inspections at Kahului Harbor are ad hoc and conducted as needed, however DOA intends to improve inspection procedures to meet new regulations.

On July 8, 2011, Act 202 was signed into law by the State of Hawai‘i Legislature, relating to the transportation of agriculture commodities and the implementation of biosecurity facilities at Hawai‘i’s ports. As mandated by this Act and the amended Chapter 266, Hawai‘i Revised Statues, the Department of Transportation shall now provide space at commercial harbors for biosecurity and inspection facilities. Funding for the planning, design and construction of these facilities will be handled by the State DOA.

Finding: DOA has no dedicated space within the Harbor to allow for inspection, quarantine and treatment of cargo to ensure food safety, as needed and required.

2.4 Summary of Findings

Table 2.1 provides a summary of the findings within this *Development Plan* that were used to refine and update the near-term needs of Kahului Harbor. Alternatives and recommendations in Chapters 3 - 5 of this *Development Plan* are based on these findings.

Table 2.1: Summary of Findings

Section:	Topic:	Finding:
1.3	Pier 2	Pier 2B cannot sustain modern equipment that supports YB's current operational needs. Having to use dated equipment because of weight restrictions for loading and unloading, creates inefficiencies in their operations.
1.5	Pier 2 & 3 Storage Areas	The open drainage channel constrains use of the Pier 2 storage areas and reduces the storage area available.
1.6.1	Cargo Operations (Pasha)	With the expansion of Pasha handling cargo, more storage and operation area is needed to support two carriers at Pier 1.
1.6.1	Cargo Operations (Young Brothers)	LCL operations are constrained by limited space. The location of the Hawaiian Cement silo in the center of YB's yard creates operational limitations for container transport and storage.
1.6.2	Cement Operations	Cement is an important commodity that needs an area for unloading from barges, storage, and re-loading to trucks.
1.6.3	Vehicle Storage	Storage area for vehicles varies but can be considerable at peak times. The Maui District Manager must frequently assign areas for vehicle versus cargo storage.
1.6.4	Fuel Operations	Berth space needed for fuel transfers is managed through scheduling by the Maui District Manager. The addition of a new dedicated fuel berth is not seen as an immediate need. However, conditions can change that would trigger the need to assess whether additional berth space is needed. If the demand for fuel increases, or if the competition for berth space increases because of more cruise ship activity, a new evaluation of adding berth space would then be required.
1.6.5	Cruise Passengers	A dedicated fenced walkway is used to give passengers safe passage through the harbor to East Kaʻahumanu Avenue. However there are two vehicle access gates that must be crossed or closed when the pedestrian walkway is in use.
1.6.6	Harbor Offices	The current location of the Maui District Office and Matson Office have frequent public visitors and do not need to be located directly in the harbor area. The current location creates an inefficient use of valuable storage areas close to the berths.
1.6.7	Gates and Circulation	The existing system of multiple gates requires that a relatively large amount of space be used for entry and circulation outside of Kahului Harbor's security boundary, especially at Pier 1. Multiple gates decrease efficiency for trucks that are doing multiple transactions at different terminals. Each gate requires staffing, which increases operational costs.
1.7	Parcel Adjacent to East Kaʻahumanu Avenue	The additional acreage adjacent to East Kaʻahumanu Avenue presents an opportunity for moving certain functions and reducing congestion in areas of the harbor yard.
1.8	Land Constraints	Geographic constraints limit opportunities for expansion of the harbor yard.
2.1	Future Cargo Demand	Current Kahului Harbor facilities do not have sufficient cargo and auto storage space to accommodate forecasted growth.
2.2	Pasha Expansion	Pasha will need additional acreage for container shipping operations.
2.3	Department of Agriculture	DOA has no dedicated space within the Harbor to allow for inspection, quarantine and treatment of cargo to ensure food safety, as needed and required.

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Chapter 3.0
Alternatives to Improve Operations and Safety on Existing Footprint

Chapter Overview:

The previous chapter in this *Development Plan* identified a number of findings about current conditions. This Chapter discusses alternatives that will increase capacity and efficiency within the existing footprint of Kahului Harbor. Many alternatives for improvement address short-term operational needs for Kahului Harbor. Chapter Four discusses alternatives that involve property acquisition for harbor expansion. The recommendations and alternatives discussed in these chapters were developed with the intention to fulfill near-term capacity needs of the harbor.

The alternatives to improve the operations within the existing footprint are:

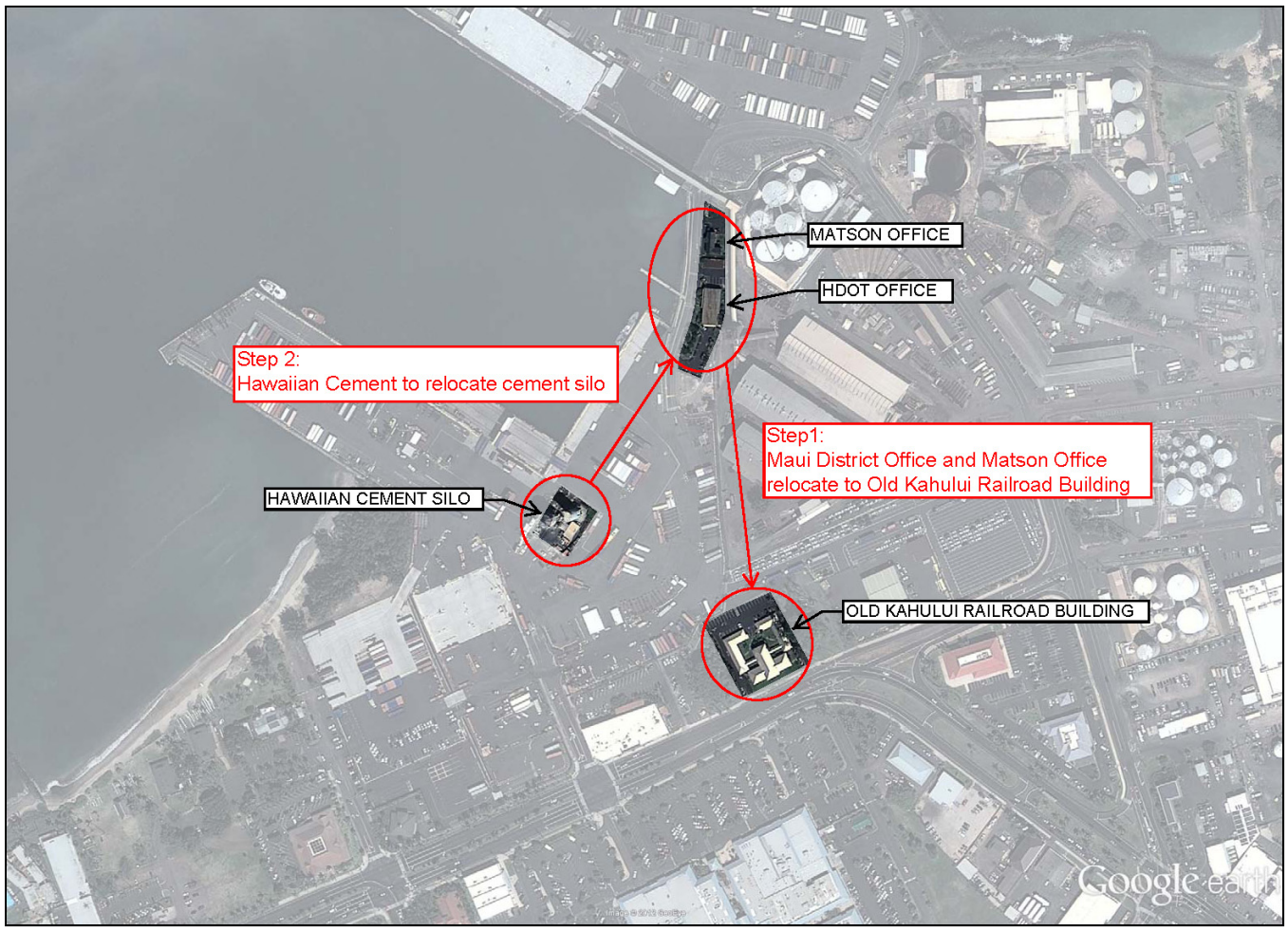
3.1 Relocate the Maui District Office and the offices of other harbor users, away from the operational cargo yard
3.2 Relocate the Hawaiian Cement silo facility to the current location of the Maui District Office in order to increase the efficiency and safety of the Pier 2 cargo storage area.
3.3 Demolish the Old Kahului General Store building to provide space for potential use by the Department of Agriculture (DOA) for inspections and storage and LCL operations.
3.4 Cover the open drainage channel that bisects the storage yard adjacent to Pier 2.
3.5 Remediate pavement for entire Pier 2 and reinforce substructure at Pier 2B.

3.1 Relocate Offices into Old Kahului Railroad Building

This activity addresses the finding that Maui District Office and Matson Office do not need to be located inside the harbor property and the current area is best utilized for harbor dependent activities. The Maui District Office and Matson Office are currently located across from Pier 3 and close to the beginning of Pier 1A. Moving these offices would create additional space for operational activities, which addresses the finding that operations are constrained by space.

Both of the Maui District Office and Matson Office could potentially be relocated to the Old Kahului Railroad Building as shown in Figure 3.1. Once the relocation of the offices takes place, the existing structures can be removed and the area prepared for cargo storage or for the relocation of the cement silo currently located on Pier 2. The benefits associated with the relocation of this silo are discussed in more detail later in this chapter.

Figure 3.1: Potential New Location for Maui District Office and Matson Offices



A *Property Condition Assessment*, conducted by WCIT Architecture (WCIT), analyzed the square footage needed by the Maui District Office and found that the Old Kahului Railroad Building has sufficient space to accommodate the office. Among the several considerations were: to maintain convenient access to parking and accessible walkways by preserving the building's existing entry; locate new restrooms near the existing plumbing; situate the marine patrol office at the end of the building to allow for immediate access to the exterior; use the windowless vault space for new file storage; and create a conference space in a central location.

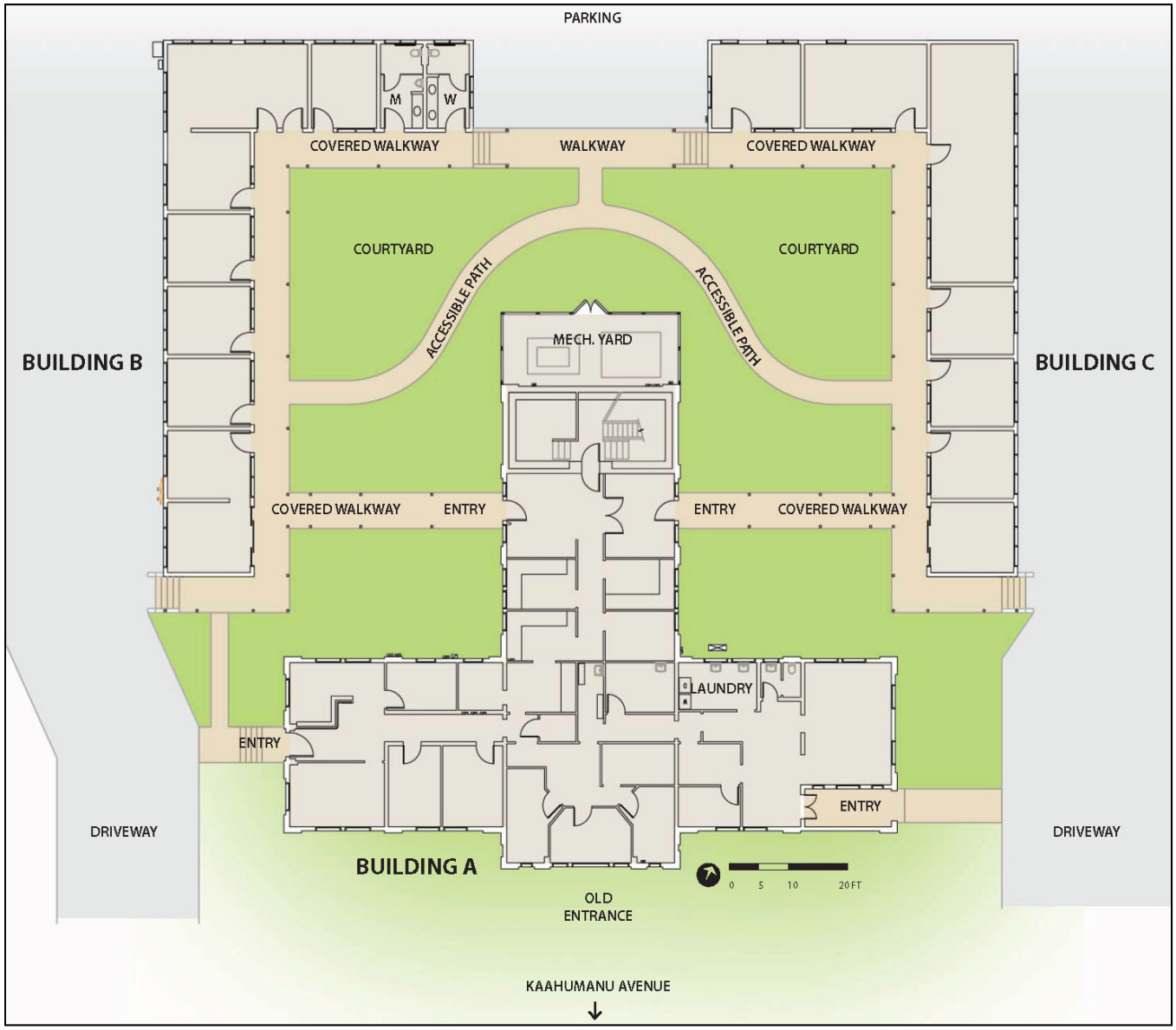
Figure 3.2: Old Kahului Railroad Building

There is sufficient space for DOT-H to move into Building A and for other users (such as Matson sales offices, YB receiving clerks, and others) to move into the nearby Buildings B and C. See Figure 3.3 for a floor plan of the Old Kahului Railroad Building.

The *Property Condition Assessment* of the Old Kahului Railroad Building found Building A to be structurally intact and sound. There is minor termite damage in some window casings. The interior non-load bearing walls can be demolished to create a more flexible floor plan. Exterior fixtures and finishes should remain sensitive to the historic nature of the building. The HVAC and roof drainage system, interior lighting and telecommunications can be replaced and testing conducted for hazardous materials. Adding restrooms to Building A is recommended. This building is ideal for offices uses. The cost of renovating Building A is estimated at $780,000 exclusive of any new furnishings.

Total area for Buildings B and C are 1,943 square feet each and would be renovated to suit tenant needs; tenants could include Matson, YB, and Pasha. According to WCIT, renovation costs of $200 per square foot would result in renovation costs of $388,600 for each building, with variations depending on the interior uses. General renovations to Buildings B and C would occur prior to DOT-H offering spaces for lease.

Figure 3.3: Old Kahului Railroad Building Floor Plan



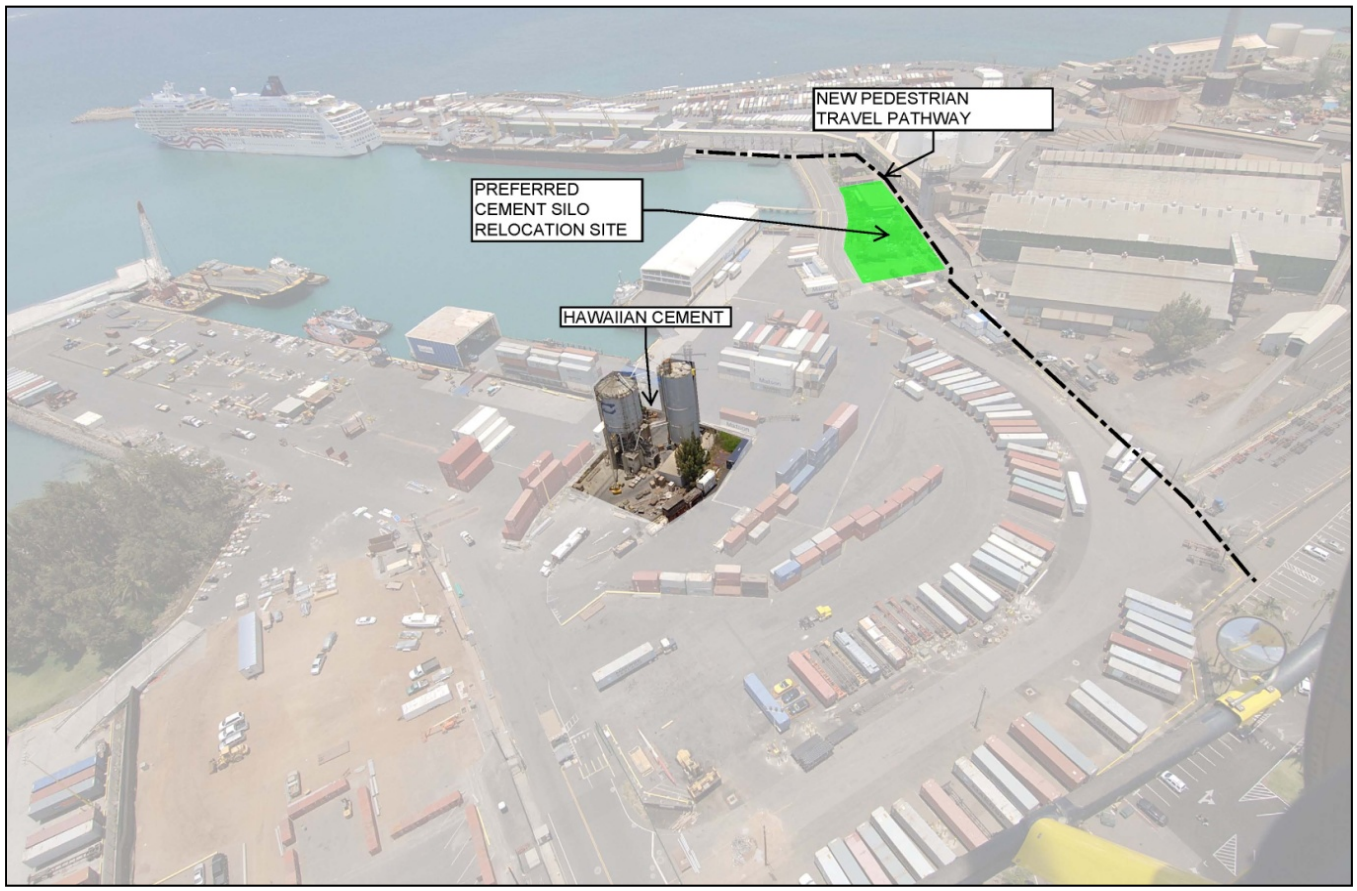
3.2 Relocate Hawaiian Cement Silo

Hawaiian Cement owns and operates the cement silo located at the corner of Piers 2 and 3. One of the review findings is that the cement silo is situated in a location that constricts YB operations to unload barges. This represents a significant constraint to operations and safety at Pier 2, where YB's top-picks "pick and carry" containers between the yard and the barge. There is very little clearance between a top-pick with a 40 foot container and the cement silo. Figure 3.4 shows an aerial of Pier 2 with the cement silo highlighted.

The need for relocating the Hawaiian Cement silo was also discussed in the *Kahului Commercial Harbor 2035 Master Plan,* which identified the Maui District Office site as the preferred location for relocation (see Figure 3.4).

Relocation of the cement silo is likely to impact the current pedestrian pathway used by cruise passengers because cement truck traffic enters and exits the silo area. One suggestion to minimize this impact is to have the pathway relocated to the backside of the relocation site as shown on Figure 3.4. Another option is for the walkway to be moved to Hobron Street but that option presents even greater safety concerns because there are no pedestrian facilities on Hobron Street and is a longer walk path.

Figure 3.4: Cement Silo on Pier 2 and Preferred Relocation Site



The new cement silo location will increase the distance between the cement berth on Pier 2 and the silo. This increase in cement transport distance has been raised as an issue. However, as the aerial view of the Port of Sacramento cement facilities in Figure 3.5 shows, it is possible to locate cement storage facilities a considerable distance from the wharf. The Port of Sacramento installed a pneumatic loading facility in 2007 that features over 1,000 feet of below ground transfer pipe with three separate 90 degree bends.

For planning purposes, the relocated site assumes the same footprint as the existing facility which is approximately 12,796 square feet. However, that is not meant to preclude an alternate footprint if

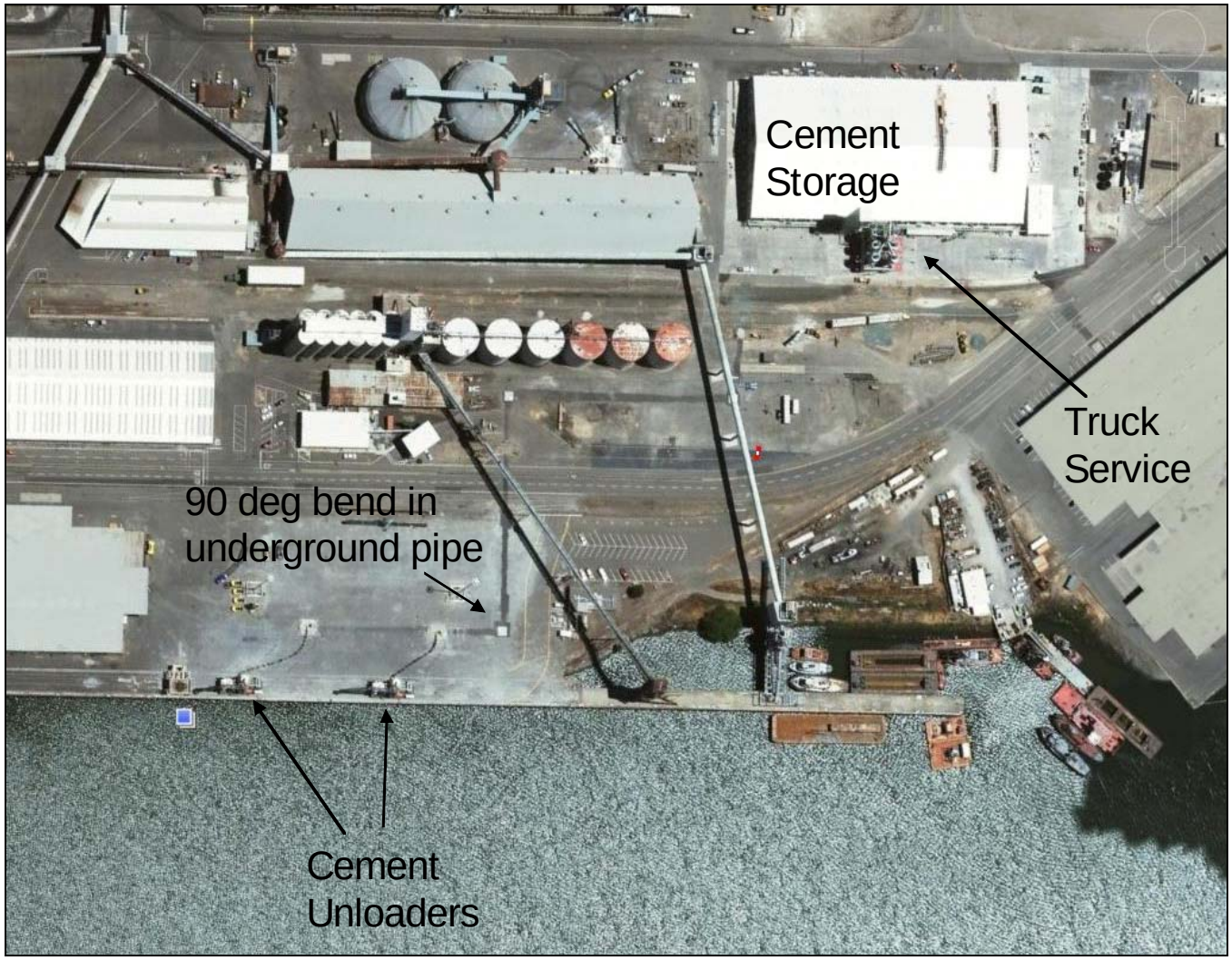
mutually desirable. The use of Ala Luina Street for two-way traffic needs to be preserved in the ultimate configuration.

As part of planning for the *Development Plan*, three other cement silo relocation sites, all located further away from the cement berth on Pier 2, were considered and assessed. In summary, the results of this assessment show that, while it is possible for the cement silo to be relocated to other areas within Kahului Harbor, this would place the silo further away from the pier than the preferred site which would require longer cement transport lines, which in turn means that the cement barge will take longer to unload.

While locating the silo further away is possible, the *Master Plan*'s preferred silo relocation site remains the best option. Any excess land in the vacated office area would be used for parking and/or storage.

Modern cement transfer facilities use an internal dust collection system within the truck loading spout so there is very little dust released into the environment as a result of cement handling operations. A properly designed cement transfer silo should not create a dust related nuisance to any adjacent users.

Figure 3.5: Example of Cement Handling Operations (Port of Sacramento)



3.3 Demolish the Old Kahului General Store Building and Re-Use Space

Demolition of the Old Kahului General Store would addresses the findings that current cargo operations are constrained by space and that future cargo demand will add to and exacerbate space limitations.

The former Old Kahului General Store Building is vacant, in poor condition, and not considered appropriate for renovation according to the WCIT *Property Condition Assessment*. There is major termite damage and water infiltration through the roof. The structure and façade are in deteriorated condition. HVAC, exhaust fans, ductwork, piping, electrical and branch circuiting, fire alarm and communications would need to be completely replaced. Long-term maintenance would be substantial. The exterior paint may have lead content. For these reasons, demolition is recommended. The County of Maui Planning Department indicated after preliminary review that it is not required to preserve the building as a historic resource, as it was previously rebuilt.

Figure 3.6: Old Kahului General Store Building

Demolition of the Old Kahului General Store building creates 2.0 acres of space. This amount of space would work well for less-than-container loads (LCL) activity because of added room for equipment to maneuver readily over to Pier 2. The space can be potentially used for agriculture inspections and/or for storage. Figure 3.7 shows a conceptual plan for use of the space which would be located inside of the secured harbor boundary but would not require Transportation Worker Identification Credential (TWIC) for access. Demolition cost of the Old Kahului General Store Building is estimated at $180,000.

Wharf Street would continue as a two-way ingress/egress road to access the LCL area as in the current condition. Access to the refrigerated LCL area would also be from Wharf Street. Some adjustments may be made for employee access patterns, but public access to the non-secure areas would come from a consolidated driveway system off of East Ka‘ahumanu Avenue. Alternate access needs will remain under the purview of DOT-H.

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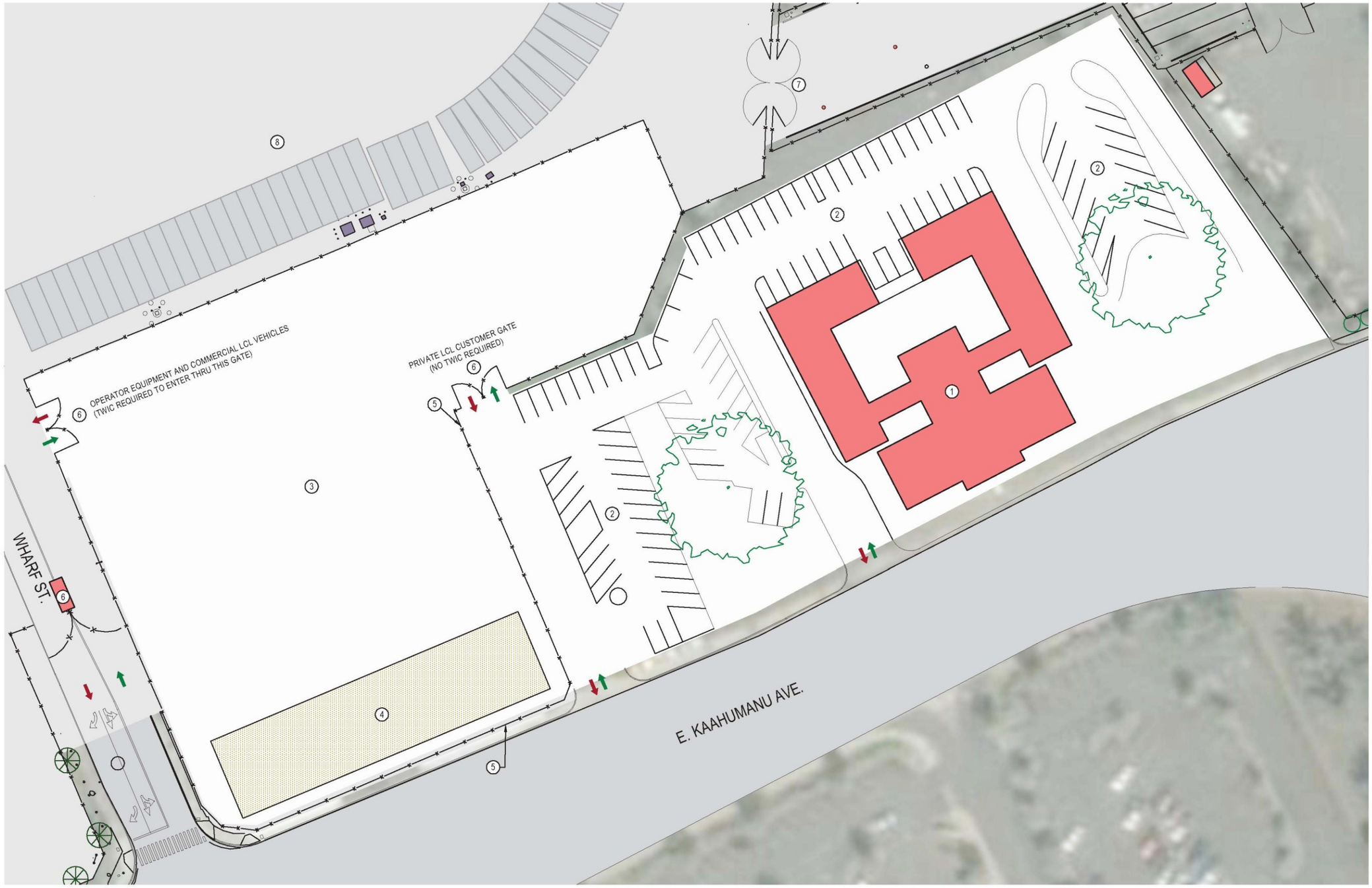

KEYNOTES

1. RAILROAD BUILDING
   - MATSON OFFICE
   - DOT HARBOR OFFICE
   - YOUNG BROTHERS OFFICES
2. POV PARKING
3. NEW LCL CARGO AREA W/ OPTIONAL FORKLIFT VALET TO POV PARKING
4. 10,000 SF DEPARTMENT OF AGRICULTURE LAYDOWN AREA
5. SECURITY FENCE
6. SECURITY GATE
7. GATE 10
8. CONTAINER STORAGE

LEGEND

- BUILDING
- ENTRY TRAFFIC FLOW
- EXIT TRAFFIC FLOW
- DEPARTMENT OF AGRICULTURE LAYDOWN AREA

TRUE N

0' 30' 60' 90'

SCALE: 1" = 30' FULL SIZE
1" = 60' HALF SIZE

Flex Space Area for Department of Agriculture and LCL

Kahului Harbor Development Plan

State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 3.7

Drawing Source:
AECOM Conceptual Design , 2012

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3.4 Cover the Open Drainage Channel

This activity addresses the finding that operations are constrained by limited space and can be inefficient. Figure 3.8 shows an oblique level view of the channel (circled) that intersects Pier 2 cargo yard.

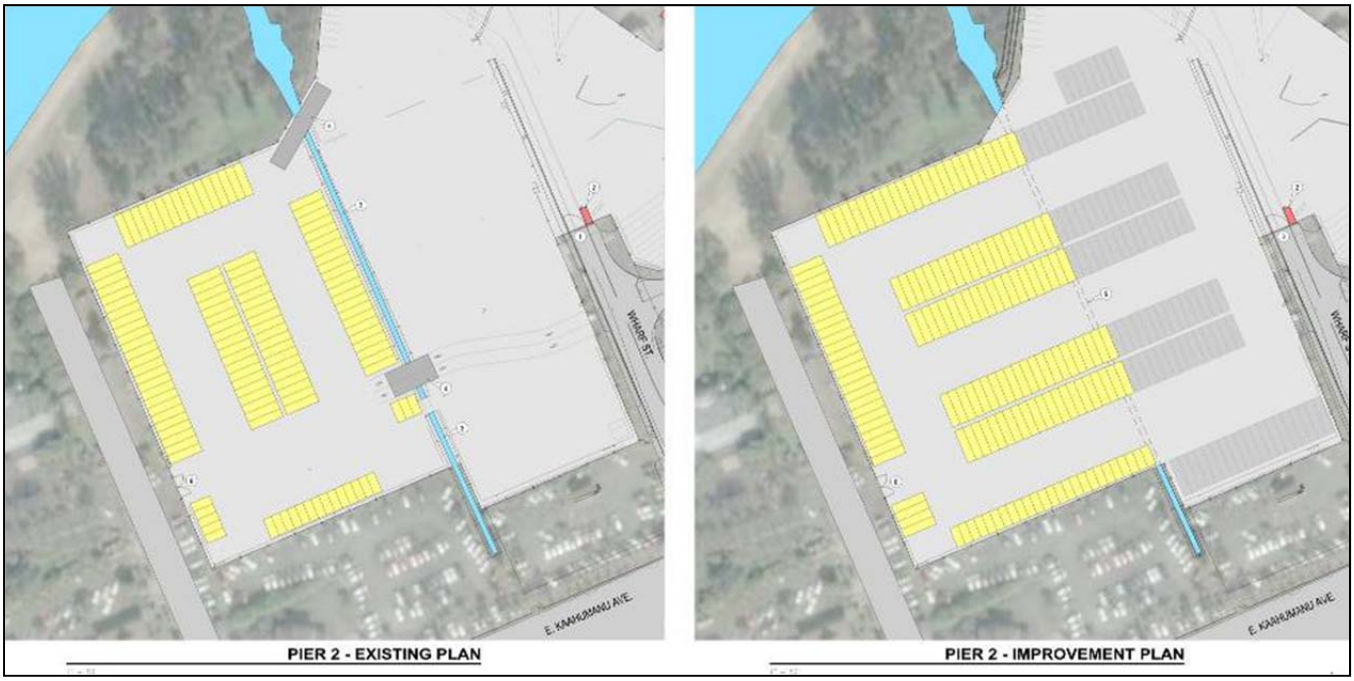
The channel reduces the storage capacity of the Pier 2 backland and decreases the flexibility of operations by forcing traffic into three narrow bridges at either end of the channel. It is recommended that the existing open channel either be covered or demolished and replaced with a new box culvert. The cost estimate for this work is approximately $1.7 million. Design of the new box culvert or alternative should be done to a specification which accommodates current and future cargo handling operations and loads.

Figure 3.8: Open Drainage Channel near Pier 2

Figure 3.9 shows how the covered channel behind Pier 2 can become a level contiguous working yard. By covering the open channel, approximately forty additional 40-ft wheeled slots can be striped on the existing terminal area. This additional capacity should be capable of handling 3,900 TEU per year of container throughput, or approximately 3% of the existing volume. In addition to greater capacity, the removal of the channel and the unrestricted traffic flow will result in a more flexible terminal. This will allow the terminal operator to make much better use of the property in the long term.

Because the terminal gates are unchanged by covering the channel, there will be no significant changes to harbor-wide circulation or security. No new fencing will be required; in fact several hundred linear feet of fencing will be removed in this option.

Figure 3.9: Pier 2 Yard With and Without Channel



3.5 Remediate Pavement for the entire Pier 2 and Reinforce Pier 2B

This activity addresses the finding that use of Pier 2B is limited to lighter equipment which causes operational inefficiencies.

SSFM International Inc. (SSFM) prepared a *Civil Basis of Design Report* which includes a description of current pavement deficiencies on Pier 2 and recommendations for surface improvements. SSFM also prepared a *Structural Basis of Design Report* to identify Pier 2B structural improvements for strengthening.

3.5.1 Remediate Pavement for entire Pier 2

In normal conditions, cargo operations can cause "wear and tear" of pavement areas adjacent to berths at Kahului Harbor. However, Pier 2 is regularly being overloaded with heavier vehicles (58 tons) than what were assumed during the pavement design (47 tons). Rutting and wear has resulted in portions of the pavement areas, along with indications of pavement surface damage due to heavy loading and depressions in the asphalt due to containers not being uniformly supported. Young Brothers (YB) confirmed that the Hyster 1150 is currently the heaviest lift used. This lift on-site is projected to last through the foreseeable short-term future, or at least for the next 10 years.

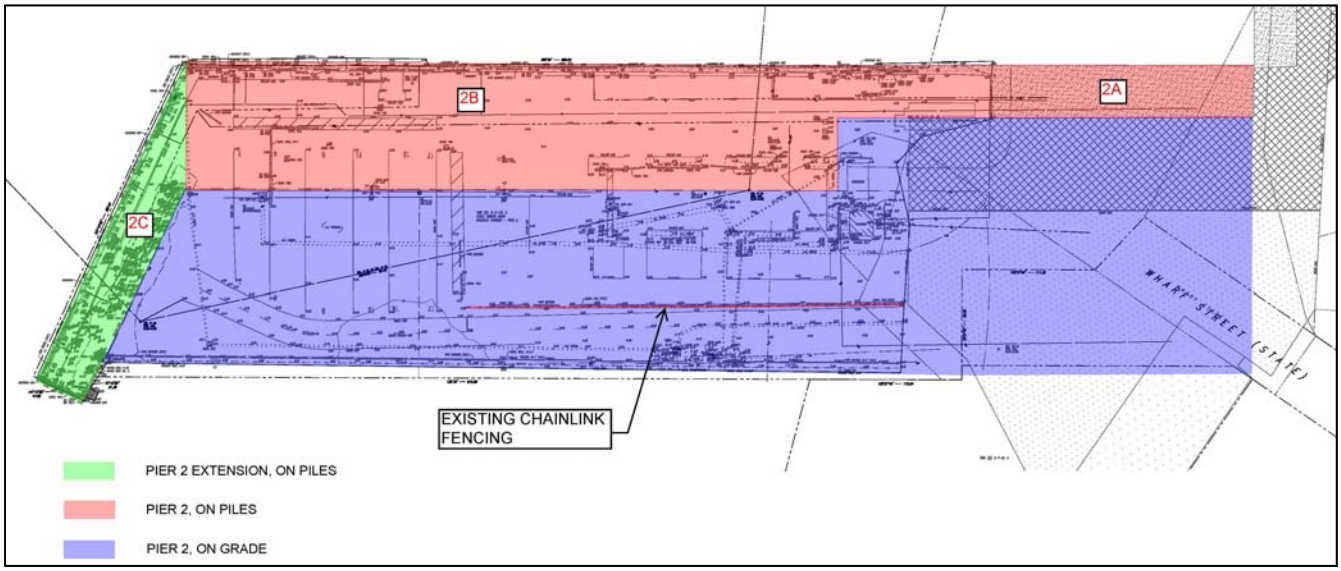
There are operational changes that could be made to reduce future pavement deterioration, which include, but are not limited to:

- Complete removal of container footings, known as "cones" prior to placing containers directly on the pier pavement thereby reducing indentations caused by "point loading."

- Use vehicles operating on the pier that do not exceed the pavement design capacities and keep vehicles within the pavement limits designed for them.

The above recommendations are only operational and do not address the long-term deterioration of pavement caused by overloading. Based on the pavement assessment in the *Civil Basis of Design Report*, two types of pavement remediation treatments are recommended to remediate the surface rutting and wear of the existing pavement areas. The recommendations are based on the two different substructure components of Pier 2 shown in Figure 3.10: on-grade or on-piles. No pavement remediation is required for the Pier 2 extension (shown in green) since this was the most recent addition to Pier 2.

Figure 3.10: Structural Components of Pier 2



Pavement remediation recommendations are as follows:

- **For the On-Grade portions** needing remediation, remove 6 to 8-inches of the existing asphalt and replace with an 8-inch reinforced concrete surface course over the existing base course material. Appropriate height adjustments of about 2 inches may be needed.
- **For the On-Piles portions**, remove 2-inches of the existing asphalt concrete overlay and replace with a 4-inch reinforced concrete surface. Height adjustments of about 2 inches may be required for restroom, utility box, and other surface features.

The estimated construction cost for the Pier 2 full pavement improvements is $4.27 million.

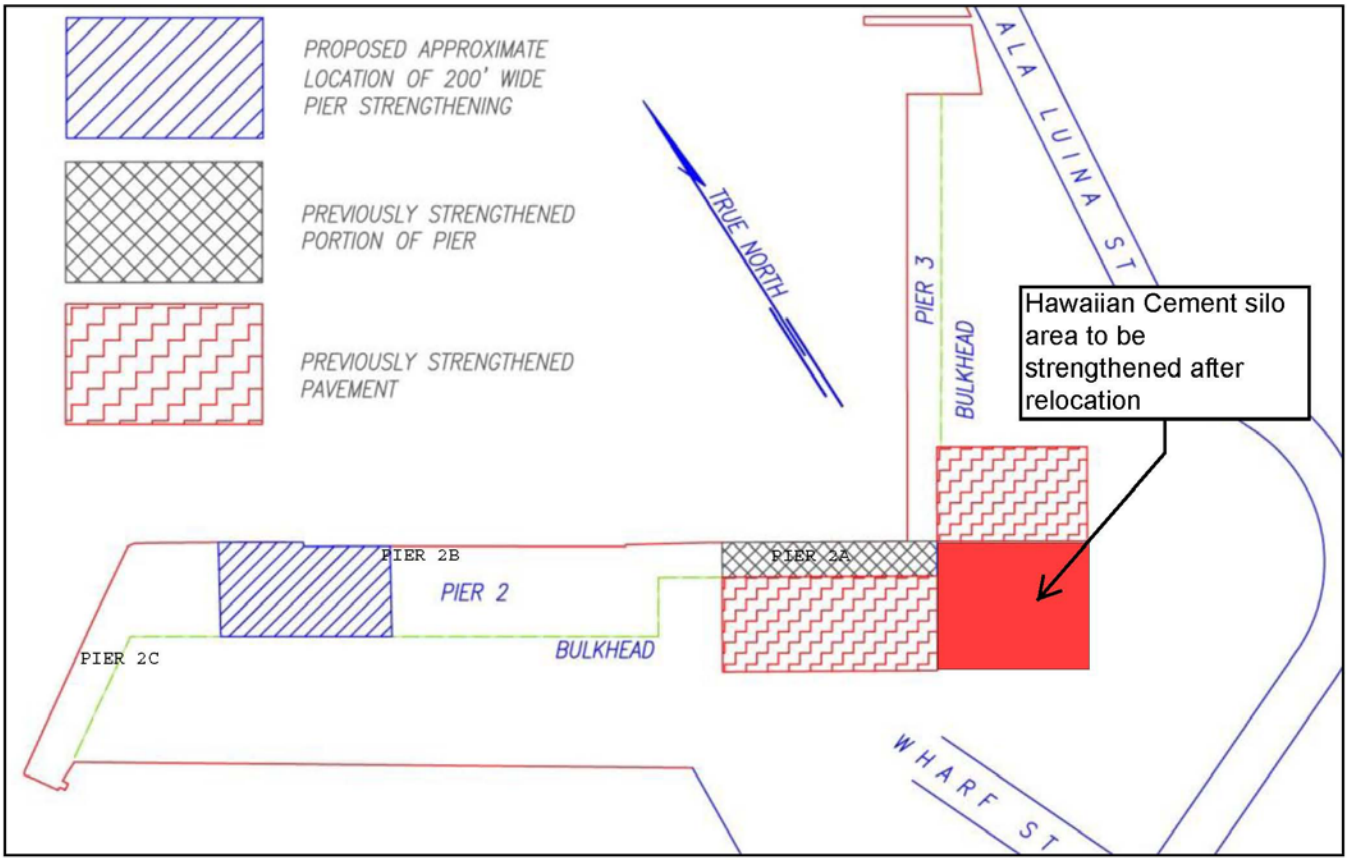
3.5.2 Reinforcement of Pier 2B

A structural evaluation of the pile-supported Pier 2B was conducted for the *Development Plan*. The berth at Pier 2B required structural analysis because it cannot sustain a forty-ton machine with load; therefore YB is limited to using lighter vehicles for one-on-one-off movements. This is inefficient and a serious constraint on their operation. Ideally, YB would like to utilize Pier 2B with a two-ramp concurrent operation with continuous loading and unloading of barges.

The *Structural Basis of Design Report* includes two options to update the load capacity of Pier 2B to meet current operational needs which would support a loading of 1,000 pounds per square foot (psf) or a CAT V925 forklift / Hyster 920 axle loading. The first option involves strengthening of the existing substructure. The second option involves the demolition and construction of a new, higher load capacity Pier 2B.

The structural improvements for Pier 2B would involve reinforcing an area measuring 200 feet long based on the operational needs of Young Brothers (YB). Figure 3.11 shows the areas of Pier 2 requiring strengthening to accommodate a higher load capacity.

Figure 3.11: Pier 2B area requiring Structural Improvements for Reinforcement



The approach to the strengthening of the existing pier ultimately depends on the load carrying capacity of the existing piles under Pier 2B. If the piles have the adequate capacity to resist the increased loading, the existing slabs and girders may be reinforced by adding reinforcing steel and building-up their section properties by adding concrete to the bottom of the members. With this approach, additional piles will not be required.

In order to determine the capacity of the existing piles under Pier 2B, testing, such as a static load test, will be required. It is recommended that a geotechnical engineer develop the testing program to assess the load that piles can support and whether lateral load capacities are adequate or if batter piles must be considered.

Option 1 - Reinforce Existing Piles under Pier 2B

Option 1 improves the load capacity of the existing slab and girders through reinforcement. A reinforcement scheme would consist of selective demolition of a portion of the concrete deck adjacent to each existing pile bent. The new piles would then be installed and the slab reconstructed, effectively tying the new piles to the existing piles and increasing the load carrying capacity.

Reinforcement of the existing slab would require careful selective demolition in order to avoid damage to remaining structural members. However, the contractor would be able to use the existing deck as a working platform rather than utilizing a barge.

The approximate construction cost of this alternative is $4.46 million.

Option 2 - Reconstruct Pier 2B

Another alternative to increase the strength and load capacity of Pier 2 is to demolish the portion of Pier 2B and construct a new section with the required design loading. This would involve demolition of the existing pier superstructure and cutting of the existing piles at the mud line.

The conceptual framing for this alternative could be similar to the strengthening project constructed in 1998. New piles would be driven to avoid the existing piles. Precast concrete planks could be utilized to ease construction issues over water and minimize the amount of formwork required.

This alternative would not require selective demolition and would not rely on the existing structural members. Therefore, testing to determine the capacity of the piles would not be required. Similar to the strengthening project done in 1998, the reconstruction of the pier could be completed in phases, expanding the high capacity area incrementally with pier operator needs.

The approximate construction cost of this alternative is $6.55 million.

3.6 Fuel Review

There are several influences affecting the demand for fuel berth space and storage space capacity on Maui. First, there is a steady growth in demand for fuel. Second, there may be substantial changes in the types of fuel that are going to be shipped. Third, there is the potential for berth space competition in Maui similar to the conditions in 2007. Fourth, some fuel vendors, such as Costco, use delivery practices that limit the need for storage. It is possible that multiple vessels may call at the same time, or a different sized fuel vessel could call on Maui, consisting of either articulated barges, Handysize (15,000–35,000 tons deadweight) or Handymax (typically 35,000 - 58,000 tons deadweight) tankers. Many of these potential scenarios affect the need for expansion of fuel facilities at Kahului Harbor.

As part of this *Development Plan*, AECOM conducted a review of the *Statewide Fuel Facilities Development Plan* (*Fuel Plan*) dated May 2008. The *Fuel Plan* looked at various alternate improvements to handle fuel at Kahului, including an extension and additional hatches of Pier 1 or expansion and additional hatches at the end of Pier 3. At the present time, Kahului Harbor is able to handle multiple fuel vessels at the same time on a limited basis. AECOM has found that Kahului Harbor may not be able to handle the size and type of vessels that may be used in the future for alternative fuels. AECOM concluded that future fuel needs for Maui remain valid and may ultimately require the development of a new dedicated fuel facility.

As discussed here and in Section 1.6.4, there is a potential need for additional berth space for fuel operations under certain conditions. Since 2007, the reduction in calls by cruise ships to Kahului Harbor has reduced competition for berth space at Berth 1A. Currently fuel transfer berthing needs are addressed through scheduling by the Maui District Manager. The recommendation of this *Development Plan* is to continue to use Berth 1A and Berth 3B for petroleum fuel transfer and Berth 2A for LPG transfer, until the demand for berth space is confirmed to increase significantly. When demands are expected to maintain projected increases, an evaluation would then be conducted to determine if new berth space or a dedicated fuel berth is warranted. The actual location of a dedicated fuel facility can remain flexible at this time and will be revisited by DOT-H when timing is appropriate.

Chapter 4.0
Alternatives for Expanding the Harbor through Land Acquisition

Chapter Overview:

According to the *Master Plan*, Kahului Harbor will require more area to support cargo operations. The *Master Plan* forecasts that by 2035 container volumes will double over 2005 levels and vehicle volumes will increase by 33%. The alternatives that involve Kahului Harbor expansion through land acquisition are estimated to be needed within the next ten years as based on the *Master Plan* forecast. The alternative uses for expanded land area include: added storage capacity, a new common gate for enhanced security, or a combination of storage and common gate.

The 3.96-acre parcel adjacent to East Ka'ahumanu Avenue adds some capacity to improve LCL cargo operations, and it is recommended elsewhere in this *Development Plan* that the Maui District Office move to the former Old Kahului Railroad Building.

The Development Plan reviewed three possible parcels for acquisition, all in nearby proximity and approximately 10 acres in size. They were compared for cost, constraints and flexibility of use. Parcel B was found to be most advantageous.

DOT-H could opt to defer expansion and decline the opportunity to purchase any new land, but future operations will be significantly constrained. This is not a hypothetical condition. If Kahului Harbor does not increase in size, operators will eventually be forced to shift to higher density modes of operation, such as using rubber tired gantry (RTG) cranes. Using RTG cranes for container handling will increase operating costs and delays for truck pick-ups compared with current operations. A RTG crane operation in the Kahului Harbor cargo yards would create additional conflicts with other harbor uses and passengers. Kahului Harbor has previously experienced congestion when both economic activity and cruise demand were high. If Kahului Harbor is not improved, the constrained condition would have a detrimental effect on Maui's economic growth. Therefore, land side expansion of the harbor is recommended.

It is important to note that the option of expansion through land acquisition recommended in this *Development Plan* adds only approximately one third of the cargo capacity predicted to be needed by 2035, so further expansion or increases in operating density will be required prior to 2035 in order to meet projected demand. A relocation of the cruise terminal to the west side of the harbor would be a beneficial project for both cargo capacity and operating efficiency, but the detailed implementation study of that option was beyond the scope and timeframe of this *Development Plan*.

4.1 Parcels Considered

Early in the planning for this *Development Plan*, the project team met with A&B who identified three nearby parcels (subsequently referred to as Parcels A, B, and C) as potential expansion areas. Parcel A contains 10.5 acres and three large existing concrete warehouses, an integrated conveyor system for sugar operations, and the historic Kahului Railroad Roundhouse. Parcel B consists of two lots totaling 10.5 acres situated adjacent to Pier 1 along the Hobron Avenue entrance. Parcel C contains 8.6 acres and a large amount of wetlands, and is the most remote location from Pier 1. These parcels are shown in Figure 4.1.

Figure 4.1: Expansion Parcels Considered

4.2 Parcel Assessments and Best Overall Strategy

Reviews of historic properties and hazardous materials also show Parcel B as a preferred property. Parcel B has the greatest amount of usable land and became the preferred acquisition strategy. One major current user on Parcel B, KT&S, would need to be relocated. A&B indicated this was possible by moving it to Parcel A. Other businesses behind KT&S are on month-to-month leases and could be moved with notice, making those lands available for re-use. Several abandoned storage tanks would need to be de-commissioned, and one that is still in use would have to be moved.

It is also recommended to purchase an adjacent "notch" area, which is a separate parcel, currently with a storage tank not in use. Including the notch, shown on Figure 4.2, helps to "square off" Parcel B, making it more usable.

Acquisition of Parcel A is not recommended due to the continued need by Alexander & Baldwin (A&B) to use much of the parcel for ongoing sugar operations as well as the constraints posed by the historic properties including the Kahului Railroad Roundhouse. Two of the three warehouses are still in active sugar operations use, leaving little area on Parcel A that can effectively be converted to cargo storage area for Kahului Harbor. Only the central warehouse can potentially be demolished and converted to cargo storage area, but it would be inefficient and difficult to use because it is situated between two large buildings. Acquisition of a portion of this parcel would require subdivision approval by the County and require extensive coordination with the State Historic Preservation Division (SHPD) due to historic resources onsite.

Acquisition of Parcel C is not recommended due to the severe constraints posed by existing wetlands, availability of only a small usable land area, and because it is furthest from current operations of the harbor.

On the basis of technical studies, land planning, environmental and operational analysis, it was determined that acquisition of Parcel B including the "notch" was the best overall strategy. Acquisition of Parcel B is recommended due to its size, potential value for harbor operations, and flexibility in re-use. Further details about Parcel B are explained in Section 4.2.

Figure 4.2: Aerial photo showing Proposed Acquisition: Parcel B and Notch

4.3 Parcel B Description

Parcel B (address 180 Hobron Avenue) is a total of 10.5 acres and identified as TMK (2) 3-7-011: 017 (9.99 acres) and TMK (2) 3-7-011: 023 (.51 acres). It is shown as B-1 in Figure 4.2.

It had a County of Maui tax assessment of $7.896 million in 2012; the notch parcel had a tax assessment of $770,200. It was analyzed for its qualities that would need to be addressed as part of acquisition and implementation of its use. Descriptions of Parcel B features are provided below:

4.3.1 Existing Users

The major operating business on Parcel B is KT&S a truck repair facility, which is a subsidiary of owner A&B. They would likely move to the adjacent Parcel A. Other existing business tenants on the property are on short-term leases to A&B. The Royal Order of Kamehameha has a short-term lease for use of the beach house which is a historic property. The KT&S facility is shown in Figure 4.2 as B-2.

The Royal Order of Kamehameha Beach House is shown as B-3. Subdivision of the beach house sub-parcel is an option for consideration. Another possibility for the beach house section of the parcel is to provide public access to the shoreline. This is especially useful if Perimeter Road is closed to public use/access.

4.3.2 Maui Electric Company (MECO)

Parcel B surrounds MECO facility and may impact MECO's facility access depending how Parcel B is developed.

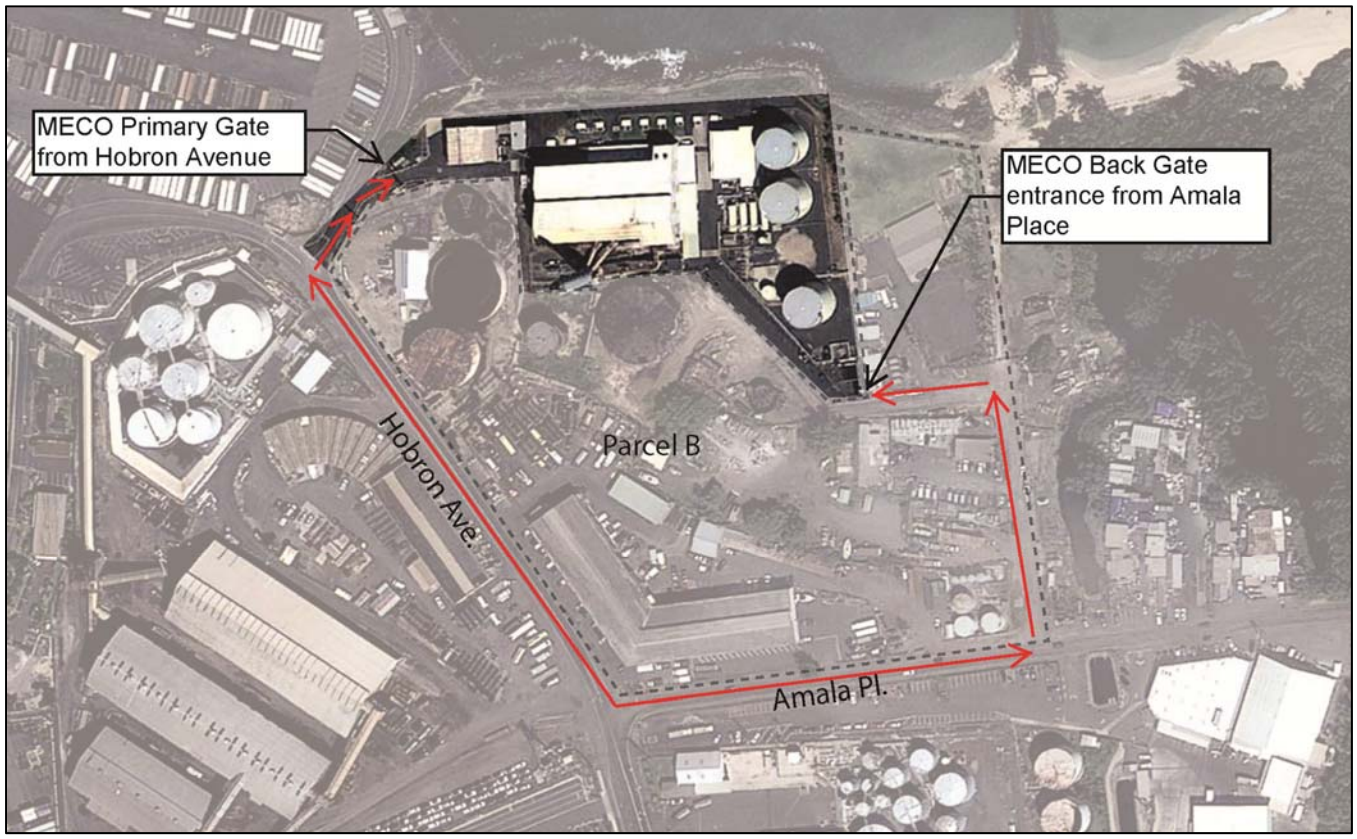
MECO owns the parcel between Parcel B and Pier 1 and they have an active power plant and associated uses on the parcel. A small number of employees work at the plant, around twenty, and there are deliveries that occur, and waste that has to be removed.

MECO currently has two access points, shown on Figure 4.3. The current main access is off of Hobron where Perimeter Road begins. This entry has fencing and a security guard. In addition, approximately biweekly, they require delivery access to utility boxes in a triangle area just opposite their driveway on Hobron Avenue. A secondary access to the MECO parcel comes through Amala Place and Parcel B. This access is used by trucks picking up waste, vehicles that do not otherwise fit through the main entrance.

The alternatives for using Parcel B affect MECO property in different ways. If the use involves storage of containers and automobiles, the impact is from that traffic moving between Pier 1 and Parcel B, crossing over Hobron near the MECO driveway. If the use of Parcel B involves the new security gate, there are several impacts and options for dealing with them. First, if MECO continues with its primary access in the current location, then they would need an easement to enter through the harbor common security gate. Accommodation could be made for a preferred lane (ideally the right most lane), but MECO bound traffic alone does not warrant an exclusive gate unless MECO prefers that and is willing to pay for a manned guard booth. Second, it is desirable to transfer a portion of Perimeter Road now owned by MECO to Harbors as part of the harbor security system. Discussions with MECO led to an additional option, which is to have the now secondary access become the primary access. This option would involve design of the end of Parcel B to include access off Amala for MECO, thereby reducing some of the storage area, and providing security fencing between MECO and the harbor storage areas. The (former) primary access would still be available during emergencies.

Exact details of these options would be part of the negotiation and design process. Preliminary meetings with MECO show them as willing to continue to talk and to identify options that benefit both the state and MECO in the short term and the long term.

Figure 4.3: MECO Gates



4.3.3 Hazardous Materials

A *Phase 1 Environmental Site Assessment* was completed for the project in January 2012 by Kevin Kennedy Consulting, LLC. Based on the findings in the report, the parcel has sixteen (16) recognized environmental conditions (REC). The REC features were primarily associated with petroleum storage and used oil. Remediation may be necessary during development.

KSK identified the following RECs at the Site:

1. Current and historic truck repair activities and bulk oil, lube oil, paint and solvent (parts cleaning) use and storage inside the KTS Service Shop.
2. The storage and use of bulk fuel/petroleum products at Parcel B for several decades at the former Standard Oil AST.
3. Oil storage and truck maintenance and repair activities at both Maui Crane and DeCoite Trucking areas of Parcel B.
4. 500-gallon used oil AST inside KTS Truck Maintenance & Repair Shop. 55-gallon drums of lube oil, oil, spent filters and other inside KTS Truck Maintenance & Repair Shop.

5. Truck wash and associated oil/water separator located at the KTS Truck Wash Area.
6. Former bulk fuel storage and pipeline operations at the fuel loading rack/station the Molasses Tank area of Parcel B associated with the off-Parcel Tosco Black Oil AST, which are likely still present and may contain residual fuel are current and historic RECs. Buried fuel pipelines running beneath the western wing of Parcel B associated with the former off-site Tosco Black Oil Tank. Oil-impacted soil at the former fuel loading rack associated with the off-Parcel Tosco Black Oil AST located on Parcel B near the molasses ASTs.
7. Stockpiled petroleum-impacted soil in the KTS Open Storage Area just southeast of the Molasses Tank Area.
8. Miscellaneous buckets and containers of unknown liquids/petroleum throughout the KTS Open Storage and Maui Crane areas.
9. Oil-impacted soil stored in two 55-gallon drums stored in the Olekoi area.
10. The three 288-gallon and approximately 350-gallon oil/fuel ASTs in the KTS Open Storage Area behind (north of) the KTS Storage Sheds.
11. Former asphalt plant operations, spilled asphalt tar still present in soil and the remnant asphalt tar within the remains of the smaller, partially demolished AST within the former Hawaiian Bitumuls Area.
12. 55-gallon drums of sludge collected from KTS Truck Wash Area.
13. Bulk liquid fertilizer ASTs at the BEI Hawaii fertilizer tank farm.
14. Buried Chevron fuel line running along the western boundary, parallel to Hobron Avenue.
15. Former junk car disposal at the LenGo construction area may have resulted in petroleum-impacted soil. Possible heavy metal in soil at former sandblasting in Olekoi area. Possible impacted soil, soil vapor and groundwater from petroleum products from solid/hazardous waste, leaking drums and junk vehicle storage at the Olekoi area.
16. Unlabeled poly drums of unknown liquid at Maui Crane.

4.3.4 Historic Properties

There are seven (7) historic properties identified to be on the site, most dating to the 1930s. These include a pumphouse, two molasses storage tanks, two other storage tanks (abandoned), a garage and repair shop building, and a beach clubhouse. An Archaeological Inventory Survey (AIS) should be prepared, followed by consultation with the State Historic Preservation Division to determine the significance and treatment strategies for the historic resources. The likely treatments are data recovery and preparation of HABS Study for the historic building. See Figure 4.4 which shows the locations of each historic property on Parcel B.

Figure 4.4: Parcel B Historic Properties

4.4 Phase 1 with Alternative 1: Remote Yard for Cargo and Auto Storage

If DOT-H desires to keep the existing system of separate gates for Pier 1 and Pier 2, Parcel B can be converted to cargo storage area within the existing security system. Matson believes that direct stevedoring to and from Parcel B will not be a problem from a security perspective. Some type of perimeter gate on Parcel B along Amala Place may be required to facilitate cargo pickup if the harbor chooses to retain the existing multi-gate operation.

The acquisition strategy allows for phased implementation of new uses. Almost six acres of currently vacant land between MECO and the KT&S building can be made available upon acquisition, clearing and fencing (as needed) along Amala Place as shown in Figure 4.5. Once KT&S is relocated, then work can begin on paving additional areas and a central gateway system. This additional area should be

capable of handling 46,700 TEU per year of container throughput, or approximately 37% of the existing volume. Alternative 1 is provided in the end of this chapter as Figure 4.6.

Because the terminal gates are unchanged, there will be no significant changes to harbor-wide circulation or security. Approximately 3,800 linear feet of security fence will be required to enclose the container storage area striped in Figure 4.6.

Figure 4.5: Parcel B Vacant Land

Impacts to MECO

Under Alternative 1, there is minimal impact to MECO because Perimeter Road would remain open and MECO's primarily access would remain as is. MECO's back gate would also remain open and utilize the same travel way through Parcel B.

Impacts to Shoreline Access

Under Alternative 1, there would be no impact to shoreline access since Perimeter Road would remain open to the public including the parking spaces along the breakwater.

4.5 Phase 2 with Alternative 2: Contiguous Yard for Cargo and Auto Storage with Central Gate

Harbor operations and security will be improved if a single entry gate is developed on Parcel B as shown in Figure 4.7. Single entry provides the harbor with economies of scale for both staff and equipment entering at the gate. In addition, the software used to run the terminal and keep track of truck entries and exits will be easier to manage with only one point of entry and exit for the entire harbor. A single gate will allow a considerable amount of unsecured space to be brought within the harbors security perimeter and used for cargo storage as opposed to vehicle circulation.

As envisioned in Alternative 2, Hobron Avenue will remain open as a two-way road and Perimeter Road would be closed and incorporated into the Harbor. All trucks entering the Harbor will pass through a single gate located on Parcel B. The exact gate process used will be up to Harbors to define, but this gate would likely be equipped with features such as automatic truck ID and optical character recognition (OCR) scanners for automatic container ID. Gate pedestals could automatically read a driver's TWIC card and biometric scanners which verify truck driver ID can be used if desired.

Impacts to MECO

Since Parcel B surrounds the MECO facility, development of Alternative 2 would have an impact on MECO's primary access point off of Perimeter Road. Perimeter Road would be closed and vehicles accessing MECO would need to enter the secured harbor boundary through the new gate on Parcel B or through a new access point.

This alternative would require the transfer or acquisition of property currently owned by MECO because all of Perimeter Road is needed in Alternatives 2. The recommended action is that this land be transferred in fee simple to Harbors Division. However DOT-H will need to work with MECO to determine access to the MECO facility through the main gate. A minimal secondary gate for the MECO facility could be used to allow access only to authorized personnel. MECO personnel could be issued identification tags that could be used to trigger an automatic gate. A remote communication system could be used to allow visitor access if MECO did not want to construct a manned guard booth at the perimeter of their facility.

To address MECO's access needs, a new rear access would be built for their use. As an alternative, MECO could continue to use the forward access through the common security gate, using the right-most entry lane.

Impacts to Shoreline Access

When the improvements to Parcel B are fully implemented, the current access along Perimeter Road will be blocked for privately operated vehicles (POV) and recreational fishing users. Perimeter Road would be incorporated into the secure container storage area for Pier 1.

4.6 Phase 3 with Alternative 3: Contiguous Yard with Common Gate and New MECO Access and Public Shoreline Access

Alternative 3 carries all the gate and yard features of Alternative 2 and it provides a new public access for fishermen and others to access the shoreline adjacent to Parcel B. This new public access would be from Amala Place, adjacent to the edge of the parcel. At the shoreline, the access would provide a small amount of parking for vehicles. A variation on Alternative 3, Alternative 3A, adds a new main access point for MECO in the same approximate location as their current secondary rear access. The

harbor security fence line would shift under either Alternative 3 or 3A, provided in Figures 4.8 and 4.9, respectively.

Impacts to MECO

The new driveway would run along the same edge of Parcel B as the recreational access roadway. This would become MECOs primary access, although the current access at Perimeter Road would be maintained for emergency and for access to their valve area. As an alternative, MECO could continue to use the forward access through the common security gate, using the right-most entry lane.

Impacts to Shoreline Access

When the improvements to Parcel B are fully implemented, the current access along Perimeter Road will be blocked for privately operated vehicles (POV) and recreational fishing users. To mitigate this impact, an alternative was developed which provides alternate access and parking for fisherman. This is located only a short distance away, and would be accessed through a new road built along the perimeter of Parcel B.

Better security

Developing a central gate on Parcel B creates better security for the harbor. All vehicles entering the harbor would pass a single point of entry. The current operations in Kahului allow unchecked vehicles to drive into the center of the harbor operating area. This is undesirable from a security perspective in general and a counter-terrorism perspective in particular. The location of the proposed central gate makes it possible to reject entries if necessary at a location relatively far from the cargo operations area.

Cruise passengers with rental cars could access the terminal in a designated lane enter the harbor as they do now, or a more remote parking area could be established on Parcel B with shuttle bus service to the cruise terminal. Cruise passenger management system can be made for effective though providing a remote lot for rental cars on Parcel B and a shuttle service to the cruise terminal. Shuttle busses can also be used instead of the current system of allowing pedestrians to cross the Pier 2 area under the supervision of terminal guards. The long term harbor goal of relocating cruise traffic to the other side of the Harbor would eliminate this traffic at Pier 1 altogether.

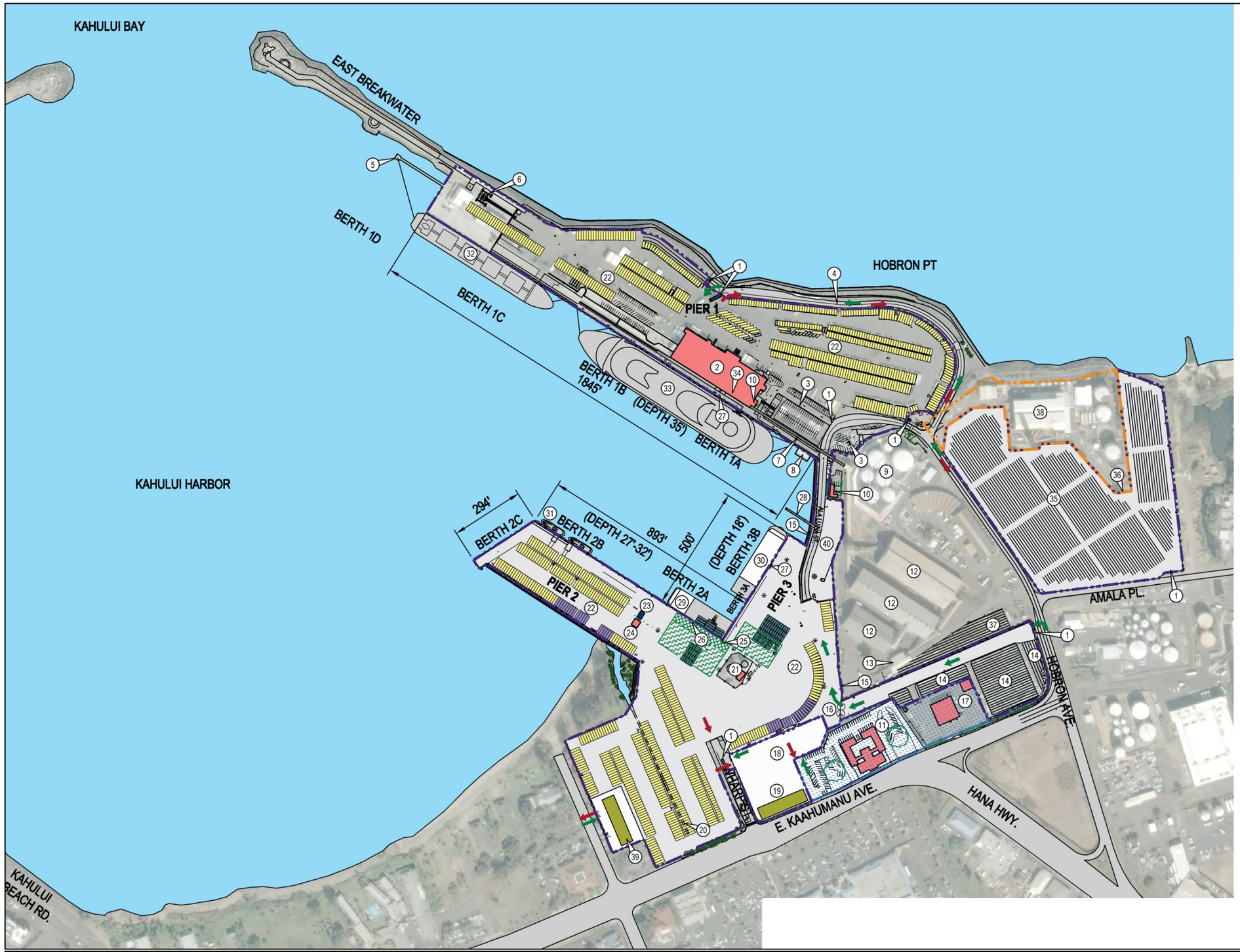
Economies of scale for gate personnel

A single common gate will save labor cost for Matson, YB, and Pasha compared with the multi-gate system employed at present.

More efficient use of cargo area

By moving the gate functions farther from the wharves, valuable backland that is currently used for gates and access roadways, especially on Pier 1, can be converted into storage area.

Under Alternative 3, the entire perimeter of Parcel B will be within a Homelands Security certified security fence. Trucks in the gate area will be restricted by fencing on either side to prevent them from entering the secured area without passing through the gate. Approximately 4,800 linear feet of new fencing will be required. This Alternative would add capacity that should be capable of handling 49,700 TEU per year of container throughput, or approximately 39% of the existing volume.



KEYNOTES

1. SECURITY GATE
2. CRUISE TERMINAL
3. CRUISE / POV PARKING - 1.5 ACRES
4. PERIMETER ROAD
5. MOORING DOLPHIN
6. MOBILE HARBOR CRANE
7. ELEVATED CONVEYOR
8. BOAT HOUSE
9. FUEL TANK FARM
10. MATSON OFFICE
11. OLD KAHULUI RAILROAD BUILDING
    - DOT HARBOR OFFICE
    - YOUNG BROTHERS OFFICES
12. SUGAR STORAGE SHED
13. TRUCK SCALE / SUGAR OFFLOAD RAMP
14. AUTO STORAGE - 2.5 ACRES
15. PEDESTRIAN WALKWAY
16. GATE 10
17. DOT MAINTENANCE FACILITY
18. NEW LCL CARGO AREA
19. 10,000 SF DEPARTMENT OF AGRICULTURE LAYDOWN AREA
20. NEW DRAINAGE CULVERT
21. CEMENT STORAGE SITE
22. CONTAINER STORAGE
23. YOUNG BROTHERS BREAK ROOM
24. RESTROOM BUILDING
25. IN-GROUND CEMENT CONNECTION
26. IN-GROUND PROPANE CONNECTION
27. IN-GROUND FUEL CONNECTION
28. CONCRETE PIER
29. CONTAINER BARGE
30. RO/RO BARGE
31. TUG BERTHS
32. BULK SHIP
33. CRUISE SHIP
34. LCL CARGO AREA
35. AREA "B" (10.5 ACRES) AUTO STORAGE
36. SECONDARY ENTRANCE TO MECO
37. OWNED BY A & B
38. MAUI ELECTRIC CO.
39. ALTERNATE DEPARTMENT OF AGRICULTURE LAYDOWN AREA
40. ADDITIONAL STORAGE (VARIOUS)

LEGEND

- SECURE AREA BOUNDARY
  - TERMINAL 46.3 ACRES
  - AREA "B" 10.5 ACRES
  - TOTAL 56.8 ACRES
- MAUI ELECTRIC CO. BOUNDARY - 4 ACRES
- NON-SECURE AREA BOUNDARY - 3.7 ACRES
- STRENGTHENED PORTION OF PIER
- STRENGTHENED PAVEMENT AREA - 1.1 ACRES
- DEPARTMENT OF AGRICULTURE LAYDOWN AREA
- WHEELED CONTAINER STORAGE
  - PIER 1 550 STALLS
  - PIER 2 / 3 488 STALLS
  - TOTAL 1,038 STALLS
- WHEELED REEFER STORAGE 40 STALLS
- GROUNDED CONTAINER STORAGE TOP PICK - 90 TGS
- BUILDING
- TRAILER
- AUTO STORAGE STRIPING
- PREDOMINANT ENTRY TRAFFIC FLOW
- PREDOMINANT EXIT TRAFFIC FLOW
- PEDESTRIAN WALKWAY

Phase 1 with Parcel B Alternative 1

Kahului Harbor Development Plan

State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 4.6

Drawing Source:
AECOM Conceptual Design , 2012

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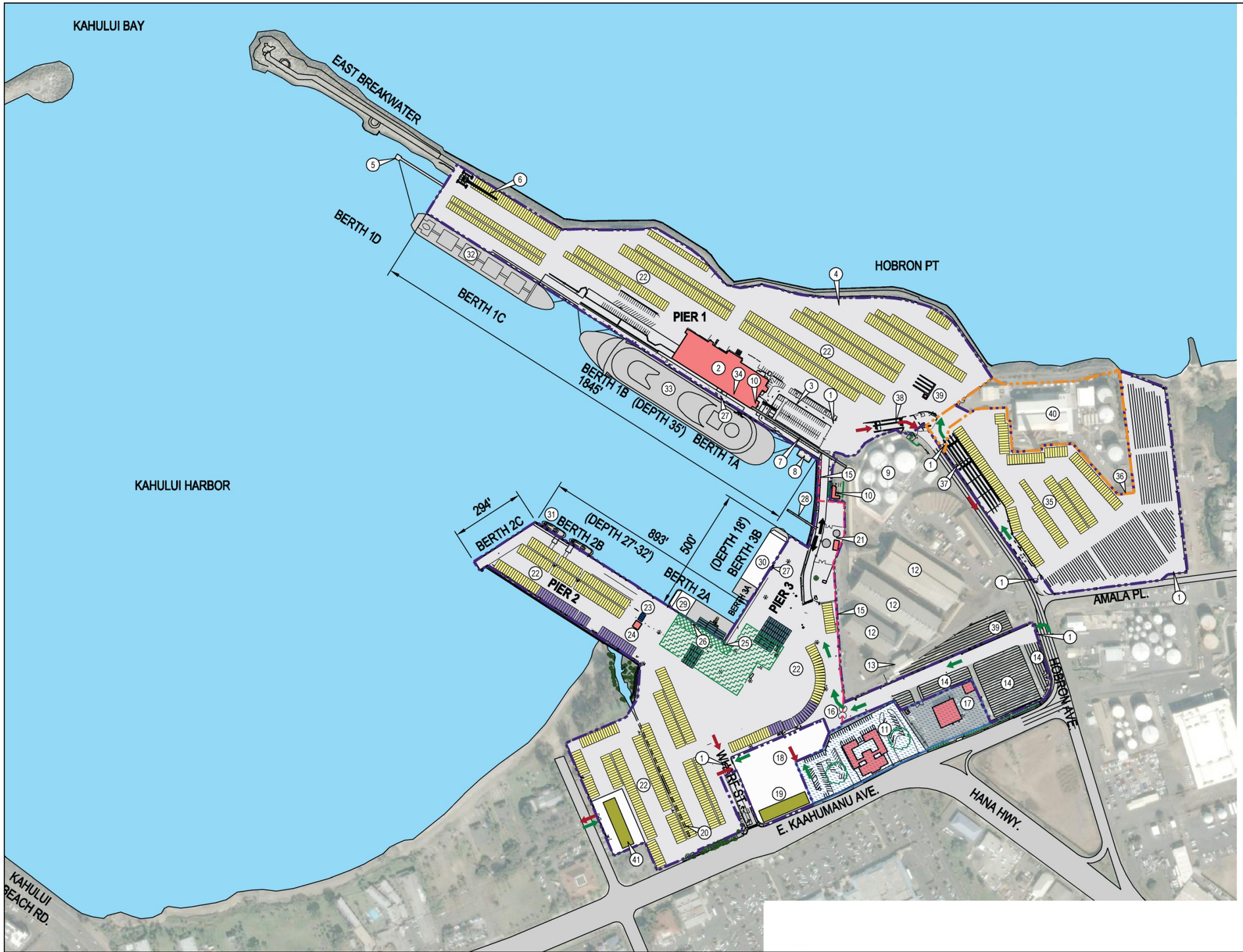

KEYNOTES

1. SECURITY GATE
2. CRUISE TERMINAL
3. CRUISE / POV PARKING - 1.5 ACRES
4. PERIMETER ROAD INCORPORATED INTO TERMINAL
5. MOORING DOLPHIN
6. MOBILE HARBOR CRANE
7. ELEVATED CONVEYOR
8. BOAT HOUSE
9. FUEL TANK FARM
10. MATSON OFFICE
11. RAILROAD BUILDING
    - DOT HARBOR OFFICE
    - YOUNG BROTHERS OFFICES
12. SUGAR STORAGE SHED
13. TRUCK SCALE / SUGAR OFFLOAD RAMP
14. AUTO STORAGE - 2.5 ACRES
15. PEDESTRIAN WALKWAY
16. GATE 10
17. DOT MAINTENANCE FACILITY
18. NEW LCL CARGO AREA
19. 10,000 SF DEPARTMENT OF AGRICULTURE LAYDOWN AREA
20. NEW DRAINAGE CULVERT
21. NEW CEMENT STORAGE SITE
22. CONTAINER STORAGE
23. YOUNG BROTHERS BREAK ROOM
24. RESTROOM BUILDING
25. IN-GROUND CEMENT CONNECTION
26. IN-GROUND PROPANE CONNECTION
27. IN-GROUND FUEL CONNECTION
28. CONCRETE PIER
29. CONTAINER BARGE
30. RO/RO BARGE
31. TUG BERTHS
32. BULK SHIP
33. CRUISE SHIP
34. LCL CARGO AREA
35. AREA "B" AUTO STORAGE / WHEELED CONTAINER STORAGE
36. SECONDARY ENTRANCE TO MECO
37. NEW ENTRY GATE
38. NEW EXIT GATE
39. NEW TROUBLE PARKING
39. OWNED BY A & B
40. MAUI ELECTRIC CO.
41. ALTERNATE DEPARTMENT OF AGRICULTURE LAYDOWN AREA

LEGEND

- SECURE AREA BOUNDARY - 60.3 ACRES
- MAUI ELECTRIC CO. BOUNDARY - 4 ACRES
- NON-SECURE AREA BOUNDARY - 3.7 ACRES
- STRENGTHENED PORTION OF STRENGTHENED PAVEMENT AREA - 1.5 ACRES
- STRENGTHENED PAVEMENT AREA - 1.3 ACRES
- DEPARTMENT OF AGRICULTURE LAYDOWN AREA
- WHEELED CONTAINER STORAGE
  - PIER 1 629 STALLS
  - PIER 2 / 3 468 STALLS
  - AREA "B" 209 STALLS
  - TOTAL 1,306 STALLS
- WHEELED REEFER STORAGE 60 STALLS
- GROUNDED CONTAINER STORAGE TOP PICK - 90 TGS
- BUILDING
- TRAILER
- AUTO STORAGE STRIPING
- PREDOMINANT ENTRY TRAFFIC FLOW
- PREDOMINANT EXIT TRAFFIC FLOW
- GENERAL TRAFFIC FLOW
- CEMENT STORAGE TANKS
- PEDESTRIAN WALKWAY

TRUE N

0' 200' 400' 600'
SCALE: 1" = 200' FULL SIZE
1" = 400' HALF SIZE

Phase 2 with Parcel B Alternative 2

Kahului Harbor Development Plan

State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 4.7

Drawing Source:
AECOM Conceptual Design , 2012

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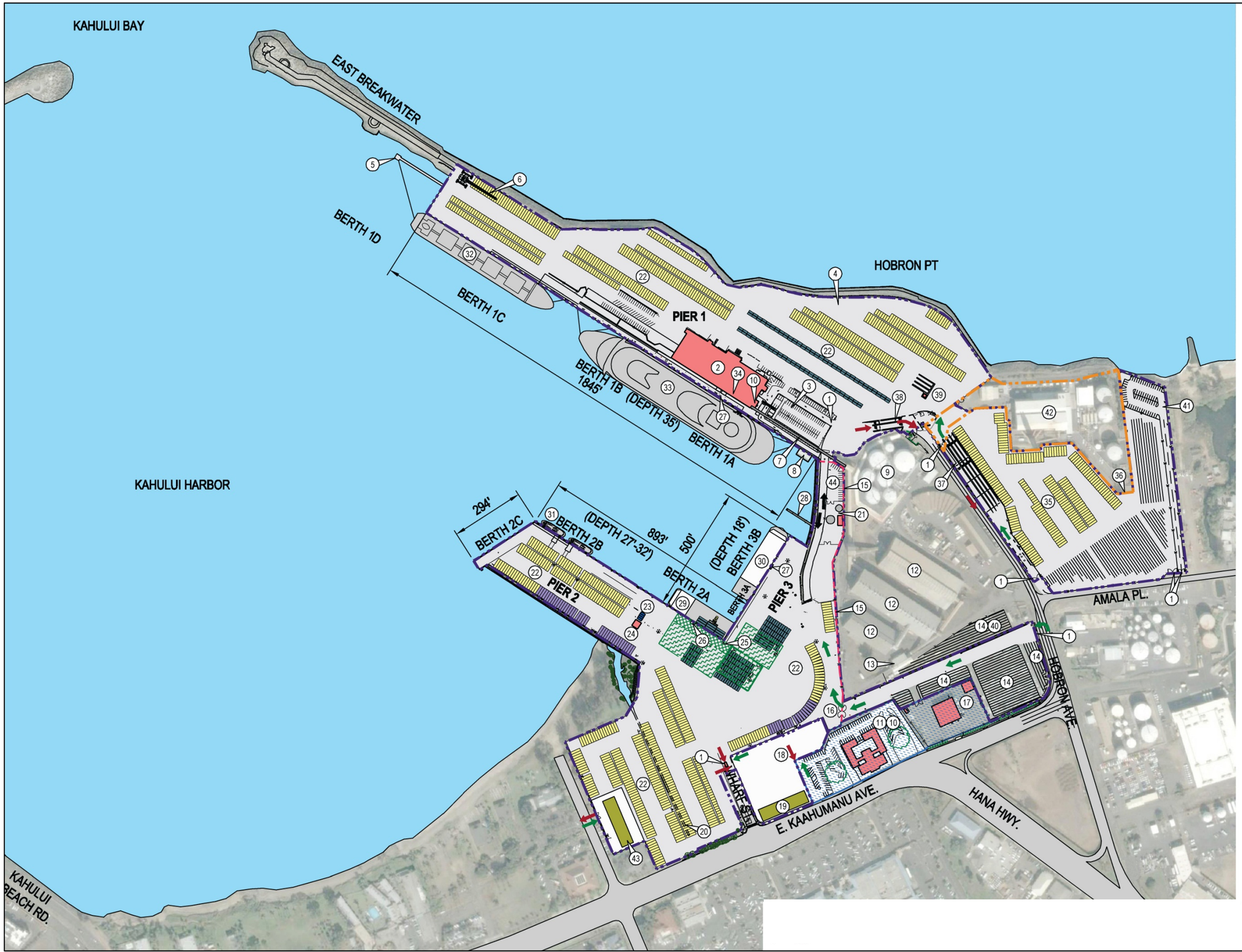

KEYNOTES

1. SECURITY GATE
2. CRUISE TERMINAL
3. CRUISE / POV PARKING - 1.5 ACRES
4. PERIMETER ROAD INCORPORATED INTO TERMINAL
5. MOORING DOLPHIN
6. MOBILE HARBOR CRANE
7. ELEVATED CONVEYOR
8. BOAT HOUSE
9. FUEL TANK FARM
10. MATSON OFFICE
11. OLD KAHULUI RAILROAD BUILDING
    - DOT HARBOR OFFICE
    - YOUNG BROTHERS OFFICES
12. SUGAR STORAGE SHED
13. TRUCK SCALE / SUGAR OFFLOAD RAMP
14. AUTO STORAGE - 2.5 ACRES
15. PEDESTRIAN WALKWAY
16. GATE 10
17. DOT MAINTENANCE FACILITY
18. NEW LCL CARGO AREA
19. 10,000 SF DEPARTMENT OF AGRICULTURE LAYDOWN AREA
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26. IN-GROUND PROPANE CONNECTION
27. IN-GROUND FUEL CONNECTION
28. CONCRETE PIER
29. CONTAINER BARGE
30. RO/RO BARGE
31. TUG BERTHS
32. BULK SHIP
33. CRUISE SHIP
34. LCL CARGO AREA
35. AREA "B" AUTO STORAGE / WHEELED CONTAINER STORAGE / ADDITIONAL CRUISE TERMINAL POV PARKING
36. SECONDARY ENTRANCE TO MECO
37. NEW ENTRY GATE
38. NEW EXIT GATE
39. NEW TROUBLE PARKING
40. OWNED BY A & B
41. POV PARKING
42. MAUI ELECTRIC CO.
43. ALTERNATE DEPARTMENT OF AGRICULTURE LAYDOWN AREA
44. ADDITIONAL CRUISE TERMINAL POV PARKING

LEGEND

- SECURE AREA BOUNDARY - 60.5 ACRES
- MAUI ELECTRIC CO. BOUNDARY - 4 ACRES
- NON-SECURE AREA BOUNDARY - 3.7 ACRES
- STRENGTHENED PORTION OF PIER
- STRENGTHENED PAVEMENT AREA - 1.3 ACRES
- DEPARTMENT OF AGRICULTURE LAYDOWN AREA
- WHEELED CONTAINER STORAGE
  - PIER 1 510 STALLS
  - PIER 2 / 3 468 STALLS
  - AREA "B" 209 STALLS
  - TOTAL 1,187 STALLS
- WHEELED REEFER STORAGE 60 STALLS
- GROUNDED CONTAINER STORAGE TOP PICK
  - PIER 1 120 TGS
  - PIER 2 / 3 166 TGS
  - 286 TGS
- BUILDING
- TRAILER
- AUTO STORAGE STRIPING
- PREDOMINANT ENTRY TRAFFIC FLOW
- PREDOMINANT EXIT TRAFFIC FLOW
- GENERAL TRAFFIC FLOW
- CEMENT STORAGE TANKS
- PEDESTRIAN WALKWAY

TRUE N

0' 200' 400' 600'
SCALE: 1" = 200' FULL SIZE
1" = 400' HALF SIZE

Phase 3 with Parcel B Alternative 3

Kahului Harbor Development Plan
State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 4.8

Drawing Source:
AECOM Conceptual Design , 2012

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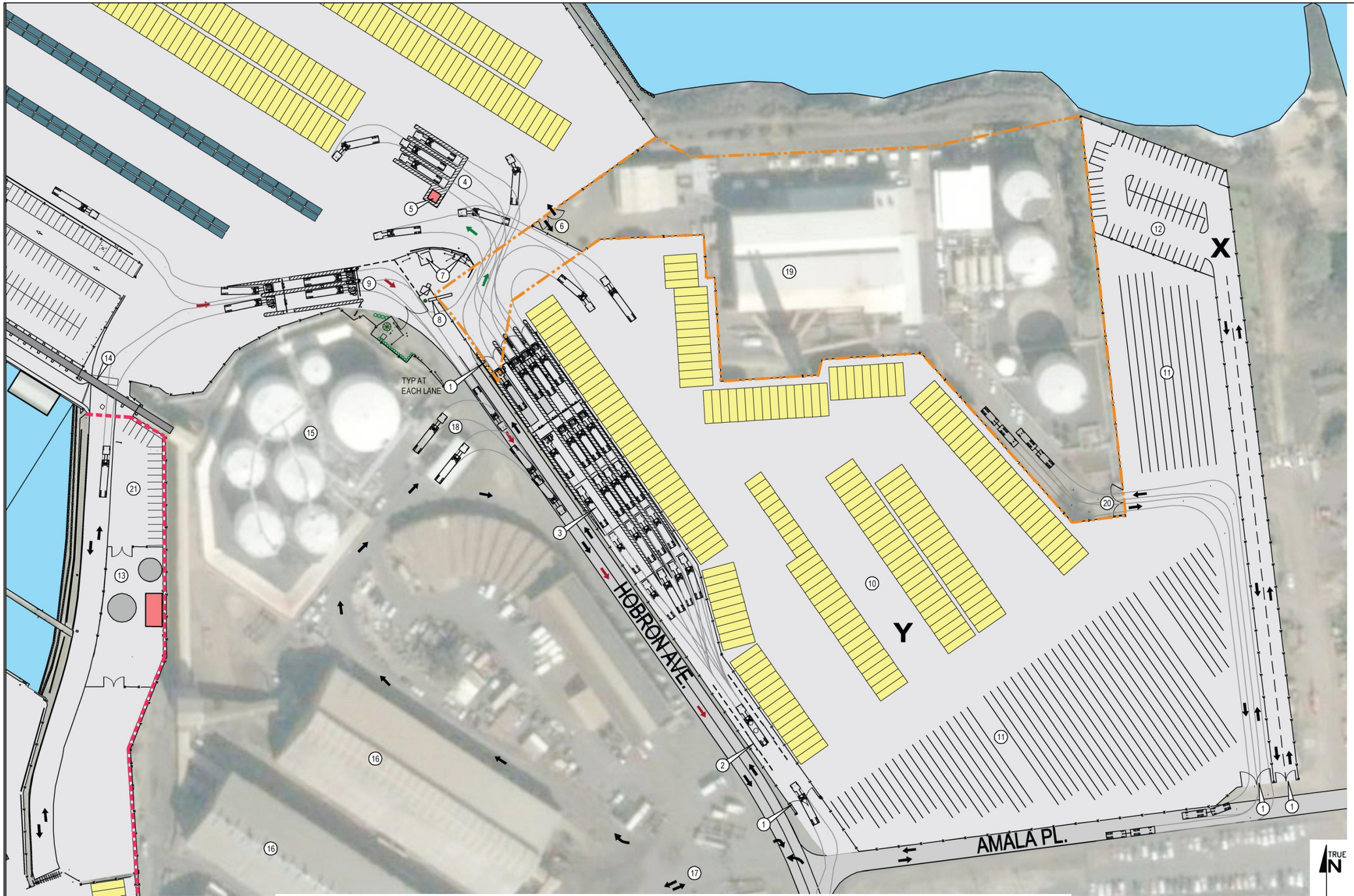

KEYNOTES

1. SECURITY SWING GATE
2. OCR PORTAL
3. ENTRY GATE - 4 LANES (1 OVERSIZED)
   - SIGN / CAMERA / LIGHT BRIDGE
   - CHASSIS CAMERA PEDESTALS
   - COMMUNICATION PEDESTALS
   - 2 - PLATFORM SCALES
   - LICENSE PLATE CAMERAS
4. TROUBLE PARKING - 3 SPOTS
5. DRIVER SERVICE KIOSK W/ CONCRETE BARRIER PROTECTION
6. ACCESS GATE TO MAUI ELECTRIC CO.
7. EXISTING SUBSTATION AND POWER POLES W/ TRANSFORMERS (ACCESSED BY MECO)
8. "PORT OF KAHULUI" SIGN
9. EXIT GATE - 2 LANES (1 OVERSIZED)
   - OCR PORTAL - ONE PER LANE
   - SIGN / CAMERA BRIDGE
   - CHASSIS CAMERA PEDESTALS
   - COMMUNICATION PEDESTALS
   - TRAFFIC CONTROL ARMS
10. NEW WHEELED CONTAINER STORAGE
11. NEW AUTO STORAGE
12. POV PARKING (58 STALLS)
13. NEW CEMENT STORAGE SITE
14. ELEVATED CONVEYOR
15. FUEL TANK FARM
16. SUGAR STORAGE SHED
17. ACCESS TO TRUCK SCALE / SUGAR OVERLOAD RAMP
18. TESORO FUEL LOADING RACK
19. MAUI ELECTRIC CO.
20. MAUI ELECTRIC CO. ACCESS GATE
21. ADDITIONAL CRUISE TERMINAL POV PARKING

LEGEND

- MAUI ELECTRIC CO. BOUNDARY - 4 ACRES
- SECURITY FENCE
- CONCRETE BARRIER
- PREDOMINANT ENTRY TRAFFIC FLOW
- PREDOMINANT EXIT TRAFFIC FLOW
- GENERAL TRAFFIC FLOW
- WHEELED CONTAINER STORAGE
- GROUNDED CONTAINER STORAGE TOP PICK
- BUILDING
- CEMENT STORAGE TANKS
- AUTO PARKING STRIPING
- PEDESTRIAN WALKWAY

AREA		ACRES
X	POV PARKING AND ACCESS ROAD	1.0
Y	CARGO HANDLING	9.5
	PARCEL "B" TOTAL	10.5

Phase 3 with Parcel B Alternative 3A

Kahului Harbor Development Plan

State of Hawai'i, Department of Transportation, Harbors Division

FIGURE 4.9

Drawing Source:
AECOM Conceptual Design , 2012

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Chapter 5.0
Recommendations and Implementation Steps

This Chapter summarizes the recommended actions for each area of the harbor (Sections 5.1 - 5.4). It also provides a brief description of capacity added (Section 5.5) and estimated costs (Section 5.6) for each action. Finally, this Chapter provides a description of implementation actions (Section 5.7), and in the case of Parcel B, provides a phasing plan (Section 5.8).

5.1 Recommended Use of the Acquired Parcel off of East Ka‘ahumanu Avenue

1. Renovate and re-use the Old Kahului Railroad Building A interior for use by the DOT-H Maui District Office. The estimated cost for this work is $780,000.
2. Renovate Buildings B and C. Offer space available to harbor users for rent in Buildings B and C. General renovation costs are estimated at $388,600 for each Building, depending on interior uses.
3. Demolish the Old Kahului General Store. The estimated cost for this work is $180,000.
4. Pave and sign the 2.0 acres for use as space by DOA, LCL and/or storage. Should Young Brothers move their activities, they would need approximately 1,440 square feet and 46 parking spaces.
5. DOA requests 10,000 square feet inspection area with water, electricity, and communications outlets. This could be on the 2 acres, or in the vacated YB area adjacent to Pu‘unēnē Street.
6. Continue to accommodate the cruise passenger walking path taking care to shift the path out of the operational area as much as possible.
7. Transfer Wharf Street from DOT Highways Division to DOT Harbors Division.

5.2 Recommended Improvements for Pier 2

1. Cover over the open drainage channel to provide 3,900 TEUs of added capacity in addition to making the space more usable and efficient. The estimated cost for this work is $1.7 million.
2. Conduct pavement remediation to allow heavy equipment to access all or most of the Pier 2 which increases safety and operational efficiency. The estimated cost for this work is $4.27 million. Additional pavement remediation will be needed once the cement silo is moved.
3. Have Hawaiian Cement relocate the silo at its expense to make operations safer and more efficient and add an additional 6,400 TEUs of capacity.

5.3 Recommended Structural Improvements to Reinforce Pier 2B

If Option 1 (reinforcement) is selected:

1. Before reinforcement is initiated, perform a detailed condition survey.
2. Perform a geotechnical investigation including static load testing to determine the load carrying capacity of the piles prior to the commencement of the strengthening design, including an assessment of current lateral support capabilities and consideration of batter piles.
3. Utilize selective demolition to allow the existing deck to be used during construction to minimize dependence on barge-based construction methods.
4. Estimated cost for this option is $4.46 million.

If Option 2 (reconstruction) is selected as recommended:

1. Replace the existing nearly 90-year-old pier with a new higher capacity structure to eliminate the need for remedial work to the existing structure and the testing program to determine the existing pile capacity.
2. Maximize use of precast members to limit formwork and speed erection of the structure.
3. Phase reconstruction to allow incremental expansion of the high capacity area as needed by pier operators.
4. Estimated cost for this option is $6.55 million.

5.4 Recommended Expansion through Land Acquisition

1. Acquire both Parcel B (TMK 3-7-011: 017) and the notch area (TMK 3-7-011: 023) from A&B to add approximately 47,000 TEU of capacity (477 wheeled slots). The County of Maui 2012 tax assessment values for these parcels are $7.896 million and $770,200, respectively.

   While there are several options available for using Parcel B, the general recommended use strategy includes:

2. Clear the open area and remove abandoned vehicles to make the area almost immediately usable for storage of autos and containers. Grade and pave for storage (Phase 1).
3. Stripe for cargo storage (autos and/or containers).
4. Develop a consolidated central gate for the entire Kahului Harbor to maximize efficiency, security, and space utilization.
5. Consult with County of Maui Planning Department and State Historic Preservation Division to demolish existing abandoned fuel tanks and conduct any environmental cleanup required.
6. Relocate existing uses.
7. Determine the usefulness and value of the area currently occupied by the Hale Nanea beachfront site of the Royal Order of Kamehameha I (B-1 in Figure 4.2). Options include, but are not limited to, acquisition and subdivision.
8. Transfer section of Perimeter Road from MECO to DOT-H.

5.5 Capacity Added by the Recommended Improvements

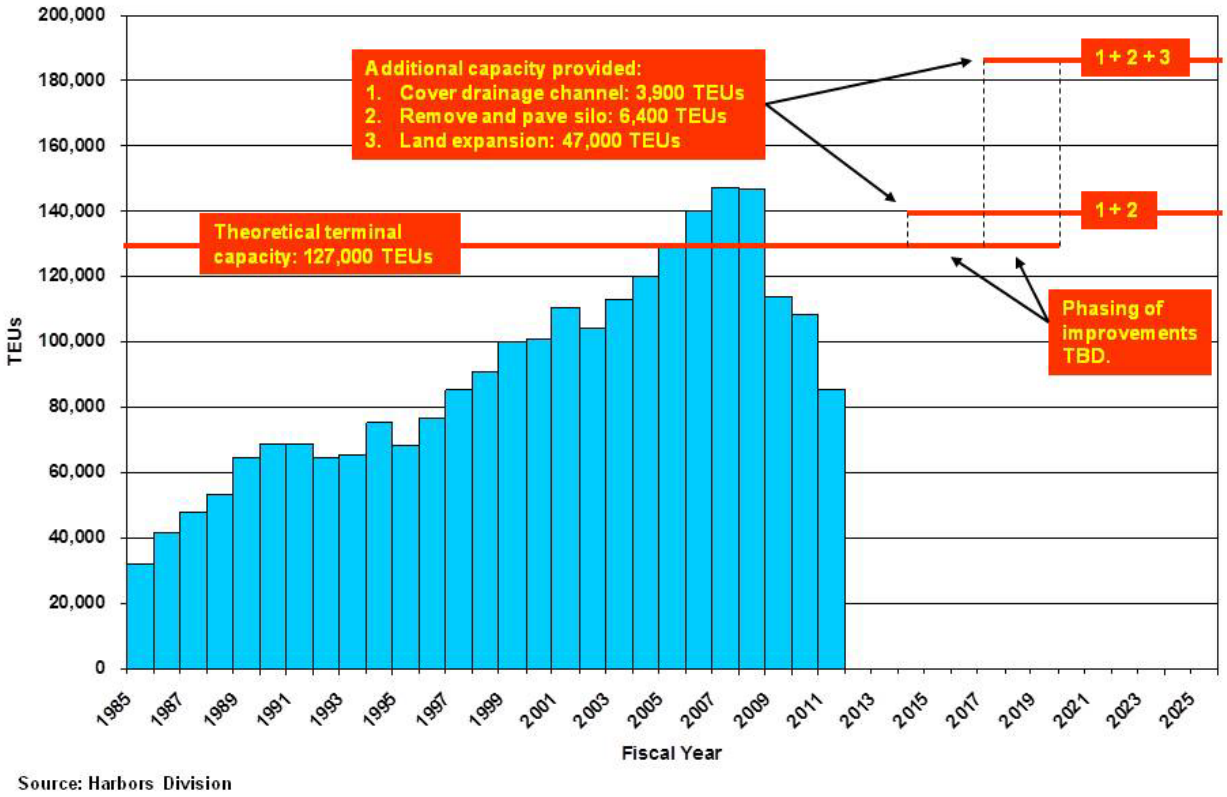
Table 5.1 and Figure 5.1 summarize the expected additional capacity of the recommendations, using wheeled container storage as the measurement unit for comparision. Based on the growth forecasts from the *Master Plan*, container and vehicle volumes will increase to 233% over 2005 volumes. The harbor will need to at least double today's capacity by 2035 in order to maintain the same type of operation. The harbor is also expected to see a 33% increase in vehicle volume by 2035, so an expansion plan that accommodates the four items shown in Table 5.1 (44%) of the required container increase only accommodates one third of the total port expansion needed.

Table 5.1: Capacity Summary for Development Plan Recommendations

Item	Description	Net increase in number of wheeled slots	Increase in TEU/yr	% Increase vs. 2005 volume	Years of growth at 3% per year
1	Cover Pier 2 channel	40	3,900	3%	1
2	Pave Pier 2 channel and move cement silo	65	6,400	5%	2
3	Items 1 and 2; and stripe Parcel B for storage	542	53,100	42%	12
4	Items 1 and 2; and new entry gate and storage on Parcel B	572	56,100	44%	12

Even the most aggressive option only adds space for just over 40% growth compared to existing volumes. Nevertheless, from a capacity standpoint, any increase will be welcome in the long run. Capacity on Parcel B that results from demolishing the structures is cheaper on a cost per slot basis than new capacity on the other parcels considered.

Figure 5.1: Historical Cargo Volumes with Improvements



Source: Harbors Division

Acquisition and development of Parcel B should be a top priority because it is the only option that adds significant capacity to the harbor from an operational standpoint and this capacity increase is needed

within ten to twenty years. Furthermore, acquisition and redevelopment of Parcel B could take 5-10 years or more, so this strategy needs to begin as soon as possible.

Parcel B provides the equivalent of 477 wheeled slots. The use of Parcel B must provide access for MECO to its property, as it cannot be land-locked. The benefit of this alternative is that it keeps uses inside the secure perimeter of the harbor.

Relocation of the administration buildings to outside the current harbor boundary into the depot building on Ka'ahumanu Avenue, paving of the open channel on Pier 2, and consolidation of the gates into a central structure all are recommended. Although this series of improvements will only add a modest amount of capacity, they should not cost a great deal and will make the harbor much more safe, secure, and efficient.

Relocation of the cement silo is also desirable and will make the operation both safer and more efficient. YB will derive considerable operating benefit from a clear backland area directly behind their primary berthing area at Pier 2.

5.6 Summary of Estimated Costs

All costs are preliminary estimates and subject to future design work.

- The estimated construction cost for the entire Pier 2 pavement rehabilitation improvements is $4.27 million.
- Pier 2B strengthening cost estimates range between $4.46 (reinforcement) and $6.55 million (reconstruction).
- Covering the drainage canal is estimated at $1.7 million.
- Rehabilitation of the former railroad building (Building A only) is estimated at $780,000.
- Renovation of Buildings B and C estimated at $388,600 for each building.
- Demolition of the Old Kahului General Store Building is estimated at $180,000.
- Purchase of Parcel B and the notch based on County of Maui tax assessed values would cost between $8 million to $9 million. Development costs would be determined by type of action and phase.

5.7 Implementation Steps for Recommended Actions

5.7.1 Steps involved in moving Harbor District offices to the Old Kahului Railroad Building

Fortunately, this land and building are already owned by the State. The state would want to hire an architect to complete drawings for adaptive re-use of Building A. These plans would then be put out for construction. During the design phase, consultation would occur with the County of Maui Planning Department and with the State Historic Preservation Office to ensure that the historic elements are properly treated.

Once renovations are completed, then preparations for the actual move can be made. Disposition of the former District Office would be decided upon, whether to demolish or move it to another location.

5.7.2 Steps involved in demolition of the Old Kahului General Store

A demolition plan would be prepared, identifying whether any hazardous materials are anticipated and how they would be disposed of. Some elements, for example the light fixtures, may be of interest to

others and should be made available by auction or other method. The State will need to work closely with the County of Maui Planning Department and the State Historic Preservation Division to make a final determination of any features of historic interest worth documenting. Once this is determined and resolved, then Harbors may apply for a Demolition Permit from the County. The demolition would be put out to bid.

Once the land is vacated, then it can be graded and paved for re-use as flex space. This may require striping, fencing, and delineation of the circulation and entry requirements through signage and other means.

5.7.3 Covering the Drainage Channel

A conceptual plan for a box culvert was prepared for this *Development Plan*. However, other methodologies for covering the channel are possible which may be less expensive or less intrusive. The State would contract for a final design and bid package. This would include preparing a temporary construction work plan which ensures that harbor operations can continue unimpeded during the construction period. The design phase would include early consultation with agencies such as USACE. Studies such as a drainage capacity analysis will be conducted to understand the impacts of changing the current design. All regulatory requirements would be addressed during the design phase.

5.7.4 Rehabilitation of Pavement on Pier 2

A conceptual pavement rehabilitation plan was developed as part of this *Development Plan*. When ready to proceed, the state will need to contract for final design and preparation of bid documents. This work needs to include interim access and circulation plans for continued operation while the construction work is underway. Staging and work areas will need to be identified.

5.7.5 Steps involved in Land Acquisition

The Harbors Division would follow state requirements for acquisition through negotiation or condemnation. Steps include: completion of a Phase II ESA (Environmental Study Assessment) which identifies the hazardous material present and remediation required; completion of archaeological and historic properties Archaeological Inventory Survey (AIS) and consultation with the County of Maui Planning Department and the State Historic Preservation Division to determine what actions are required under preservation laws; obtaining a current appraisal; and compliance with the State Hawai‘i Revised Statures Chapter 343 through preparation of either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). The environmental document would identify all necessary permits.

5.7.6 Relocation of Cement Operations

After Harbor offices are relocated to the Old Kahului Railroad Building and the existing offices are moved or demolished, this site can be made available for lease to Hawaiian Cement. The Ala Luina Street should remain as a two-way road and may need to be resurfaced. Pavement at the corner of Pier 2 and Pier 3 may need to be strengthened after the cement silo and ancillary facilities are removed.

5.8 Phasing

The state budget for DOT-H does not allow everything to be done at once. There is some time flexibility in implementing actions. However, planning and design should proceed, as should land acquisition since it is a favorable period for these activities. Many of the recommendations of this plan were made for improved safety and more efficient operations, and there is every reason to move forward with those. Nevertheless, the combined costs of these actions suggest that phasing will be required. A phasing plan is shown in table 5.2.

Table 5.2: Phasing Plan

Phase	*Actions Required*	*Est. Costs ($)*
1	Acquire parcels TMK 3-7-011: 017 and the notch area TMK 3-7-011: 023.	$8,000,000 to $9,000,000
	Consult with Maui County and State Historic Preservation Division to complete data recovery of historic properties.	N/A
	Complete Phase II ESA for remediation of hazardous materials.	$160,000
	Clear the 6-acre area behind Kahului Trucking & Storage Building.	N/A
	Install security fencing.	N/A
	Grade, pave and stripe six (6) acres.	N/A
	Cover the drainage canal.	$1,700,000
	Renovate Old Kahului Railroad Building, Building A	$780,000
	Renovate Old Kahului Railroad Building, Buildings B and C.	$777,200
	Move offices to renovated Old Kahului Railroad Building.	N/A
2	Demolish Old Kahului General Store.	$180,000
	Flex space available for DOA and LCL	N/A
	Demolish structures following relocation of KT&S and storage tanks.	N/A
	Acquire or transfer perimeter road segment from MECO.	N/A
	Build new driveway to MECO facility from Amala Place.	N/A
	Work with Hawaiian Cement to relocate its operations.	N/A
	Rehabilitate Pavement at Pier 2	$4,270,000
	Structural Improvements at Pier 2B (Reinforce or Reconstruct)	$4,460,000 or $6,550,000
3	Design and build common gate.	N/A
	Create a parking area and entry for public access off Amala Place to shoreline (near Royal Order of Kamehameha building).	N/A
	Strengthen pavement at corner of Pier 2 and Pier 3 (former Hawaiian Cement silo site)	N/A
	Create cruise passenger parking and pick up area after Matson offices are relocated.	N/A
Key: "N/A" = Not Available. These costs would be determined at a later time by DOT-H.		

Chapter 6.0
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