CBJ DOCKS & HARBORS BOARD
CIP / PLANNING COMMITTEE MEETING AGENDA
For Thursday, April 22, 2010

I. Call to Order (5:00 pm in **ASSEMBLY CHAMBERS**).

II. Roll Call (Kueffner, Preston, Wostmann, Williams, Donek, and Chair Mehrkens).

III. Approval of Agenda.

MOTION: TO APPROVE THE AGENDA AS PRESENTED OR AMENDED.

IV. Public Participation on Non-Agenda Items.
(not to exceed five minutes per person or twenty minutes total time).

V. Approval of Previous Meetings Minutes.

MOTION: TO APPROVE THE MARCH 18, 2010 CIP/PLANNING COMMITTEE MEETING MINUTES AS PRESENTED OR AMENDED.

VI. Items for Action.

1. PND Consultant Services to prepare concept plans and cost estimate for expansion of the Taku Fisheries Dock
   Presentation by Port Engineer

   Public Discussion

   MOTION: TO BE DEVELOPED AT THE MEETING

   Committee Discussion/Action

2. Consultant services to perform a bathymetric survey of the Cruise Ship Dock area.
   Presentation by Port Engineer

   Public Discussion

   MOTION: TO BE DEVELOPED AT THE MEETING

   Committee Discussion/Action

3. Place a temporary driving surface on the loading ramp at Auke Bay Loading Facility
   Presentation by Port Engineer

   Public Discussion

   MOTION: TO BE DEVELOPED AT THE MEETING

4. Place temporary surfacing at select locations at Marine Park to resolve potential safety issues.
   Presentation by Port Engineer

   Public Discussion

   MOTION: TO BE DEVELOPED AT THE MEETING

   Committee Discussion/Action

5. Review and approval of recommendations contained in the Uplands Operations Analysis Report
   Presentation by Port Engineer

   Public Discussion

   MOTION: TO RECOMMEND TO THE BOARD APPROVAL OF UPLAND IMPROVEMENTS CONTAINED IN THE UPLANDS OPERATIONS ANALYSIS REPORT

   Committee Discussion/Action

VII. Items for Information/Discussion.

1. Douglas Bridge property - potential harbor uses.
   Presentation by Port Engineer

2. Status of Statter Harbor Project
   Presentation by Port Engineer

3. Status of Port-Customs-Visitor Center Project
   Presentation by Port Engineer

4. Status of Auke Bay Loading Facility - Phase I and II
   Presentation by Port Engineer

VIII. Member & Staff Reports.

IX. Committee Administrative Matters.

Next Meeting: May 20, 2010

X. Adjournment.

MOTION: ASK UNANIMOUS CONSENT TO ADJOURN THE CIP/PLANNING COMMITTEE MEETING.

CBJ DOCKS & HARBORS BOARD
CIP/PLANNING COMMITTEE MEETING MINUTES
For Thursday, March 18, 2010

I. Call to Order.

Committee member Mr. Mehrkens called the meeting to order at 5:00 p.m.

II. Roll.

The following members were present: Mr. Williams, Mr. Kueffner, Mr. Donek, Mr. Preston and Mr. Mehrkens.

The following member was absent: Mr. Wostmann.

Also in attendance were: Mr. Stone – Port Director and Mr. Gillette – Port Engineer.

III. Approval of Agenda.

MOTION by Mr. Williams: ASK UNANIMOUS CONSENT TO APROVE THE AGENDA AS PRESENTED. The motion passed without objection.

IV. Public Participation.

There was none at this time.

V. Approval of Previous Meeting Minutes.

MOTION by Mr. Williams: ASK UNANIMOUS CONSENT TO APPROVE THE PREVIOUS MINUTES OF February 18, 2010. The motion passed without objection.

VI. Items for Action.

1. PND Contract Amendment for Upland Improvements.

Mr. Gillette stated that in the committee members packet there is a proposal from PND which is for construction observations and inspections for the harbors uplands projects. These are for Douglas, Harris, Aurora and Statter with concrete work, some fencing and cameras for the dumpsters. This would be an amendment to the existing design contract to carry through construction to assist us with getting this project out.

MOTION by Mr. Williams: ASK UNANIMOUS CONSENT TO FORWARD THIS TO THE FULL BOARD FOR APPOVAL OF AN AMENDMENT TO THE EXISTING PND CONTRACT TO PERFORM CONSTRUCTION SERVICES FOR DOUGLAS, HARRIS, AURORA, AND STATTER HARBORS UPLAND IMPROVEMENTS IN THE AMOUNT OF $33,543.00. The motion passed without objection.

2. Direction to Staff Regarding the Douglas harbor Re-Build.

Mr. Stone stated at this point it is good to say we are not spending a great deal of money on this. He said basically what has happened is that the Corps of Engineers is unable to proceed until we address the issues from the Fish and Wildlife Service, EPA, and the MFS, which they are saying that the proposed project will result in substantial and unacceptable impacts on aquatic resources of national importance.

Mr. Stone met with the local Corps of Engineers office with a lady named Heidi and he basically told her that there is no sense on doing anything more until we can determine how we will address the health issues that the EPA has. In short what the EPA believes is that the bioaccumulation at the disposal site and in the harbor that would occur from the mercury in the soil at typical ingestion rates of fish by Alaskans would be harmful (See attached scale). He stated that our local Fish and Game people said it is way too high, and they have data that shows a lot less. They are putting that data together. Fish and Game is putting together a letter regarding this and will be getting it to us to submit to the Corps.

Further discussion among the committee members and Mr. Stone took place at this time regarding the consumption calculation that was done by EPA. He stated that Mr. Etheridge is taking the issue at a more political stance and trying to get something done.

Mr. Fisk, a past board member spoke regarding the studies that were submitted by the EPA. He has recommended that these findings be put in a letter addressing how obscured these numbers are and distribute this letter to the DEC, Corps of Engineers, City Mayor, the Assembly, and the general public.

Further discussion among the committee members and Mr. Stone took place at this time.

MOTION by Mr. Keuffner: ASK UNANIMOUS CONSENT TO DIRECT STAFF TO COMPOSE A LETTER TO THE EPA WITH A CC TO OTHER AGENCIES ADDRESSING THE FINDINGS BY THE EPA. The motion passed with out objection.

3. Close Out H354-73 Ferry Dock Wharf Widening CIP and Transfer Funds to H354-85 Deferred Maintenance CIP in the Amount of $50,124.00.

Mr. Gillette stated that this project is complete and everything is paid and it is time to close it out. He stated that they are recommending that this money be put into the deferred maintenance CIP account. This is the account that funds things like the Douglas Harbor rebuild, Aurora Harbor rebuild, or any other kind of major maintenance type projects that we have. This will need to go to Public Works Committee, then to the Full Board for their approval, and then to the Assembly.

MOTION by Mr. Keuffner: ASK UNANIMOUS CONSENT TO FORWARD THIS TO THE FULL BOARD FOR APPROVAL TO CLOSE OUT H354-73 AND TRANSFER THESE FUNDS TO H354-85. The motion passed without objection.

VII. Items for Information/Discussion.

1. Request to transfer park property at Statter Harbor to Docks and Harbors for Statter Harbor Boat Launch Project.

Mr. Gillette stated this is relative to the Statter Harbor project. It is the little piece of park property that has a little shelter on it adjacent to the Lehnhart property. Currently Parks and Recreation has it and was purchased in 2001. There is a letter in the committee members packet addressed to Mr. Matsil the Director of Parks and Recreation Department. (See attached) Mr. Gillette explained that basically we are asking to take over management of the property to be able to incorporate it into the project. He went over a little history regarding this property with the committee at this time.

Further discussion among the committee members and Mr. Gillette took place at this time.

Mr. Stone stated that we did reach an agreement with the purchase of the Lehnhart property.

2. Status of Statter Harbor Environmental Assessment.

Mr. Gillette stated that it is at the point of being wrapped up. The local Fish and Wildlife Service, who is the one department that requested we scale the project back from the tidal area and the Bay Creek area, still acknowledge that we have done a lot, but feel that it is a project they can't support. A letter was written indicating such and the letter has to go to Anchorage, and from the Fish and Game people that we have been dealing with in Anchorage they said that the people that are reviewing the letter are working to tone it down because they are in support of the project. We are sort of in a waiting pattern until we receive the letter of support to our preferred alternative and hopefully get a favorable finding of no significant impact.

Further discussion took place at this time.

3. Status of Port-Customs-Visitor Center Project.

Mr. Gillette stated that we have received the ninety five percent construction documents for this project, which he has been reviewing this past week, and have gone over it with the different user groups and everyone seems pleased and excited to see the project move forward. We are still on schedule to advertise this in mid April. We should have a cost estimate by next week.

VIII. Member & Staff Reports.

There were none at this time.

IX. Committee Administrative Matters.

The next meeting is scheduled for April 22, 2010 at 5:00 pm in the City Chambers.

X. Adjournment.

MOTION by Mr. Williams: ASK UNANIMOUS CONSENT TO ADJOURN THE MEETING. The motion passed without objection.

The meeting was adjourned at 5:550 p.m.

Gary Gillette

From: Dick Somerville [DSomerville@pndengineers.com]
Sent: Wednesday, March 31, 2010 3:58 PM
To: Gary Gillette
Subject: Taku Dock

Gary:

I think we can have a couple work sessions and prepare 2-3 design options and cost estimates for a T&M budget NTE $5K. If it gets drawn out we can address later but I don't think that will happen. If we spend less, then only what we spend is invoiced. Let me know if this ok as our proposal. We could do this as a task under the term agreement.

Dick Somerville, P.E., V.P. | Principal
P|N|D Engineers, Inc.
9360 Glacier Hwy, Suite 100, Juneau, AK 99801
p. 907.586.2093 f. 907.586.2099 c.907.321.1660
dsomerville@pndengineers.com | www.pndengineers.com

BID AND SIGNATURE PAGE

Project:

Dated: APRIL 14, 2010

Bidder: PND ENGINEERS, INC.
(Company Name)

By: [signature]
(Signature in ink)

Printed Name: CHARLES R. SOMERVILLE, P.E.

Title: VICE PRESIDENT

Telephone No.: 907-586-2093

Address: 9360 GLACIER HWY
(Street or P.O. Box)

Fax No.: 907-586-2099

JUNEAU, AK. 99801
(City/State and Zip Code)

The Contractor shall provide all labor, equipment, materials and perform all Work as described in the Scope of Work.

COMPLETION TIME FOR THE WORK. The Contractor shall have until June 1, 2010 to complete all Work as described.

Bidder has examined the bid documents, including the following addenda (receipt of all of which is hereby acknowledged by the undersigned). Give number and date of each Addenda below. Failure to acknowledge receipt of all Addenda may cause the Bid to be non-responsive and may cause its rejection. If there are no addenda, "none" or "0" must be filled out.

Addenda No.	Date Issued	Addenda No.	Date Issued
NONE			

TO BE CONSIDERED, ALL BIDDERS MUST COMPLETE AND INCLUDE THE FOLLOWING AT THE DATE AND TIME QUOTES ARE DUE:

- **Signed Bid and Signature Page, (includes Addenda receipt statement)**
- **Completed Bid Schedule**

BID SCHEDULE

BASE BID

ITEM NO.	BID ITEM DESCRIPTION	PAY UNIT	APPROX. QUANTITY	UNIT PRICE		AMOUNT	
				DOLLARS	CENTS	DOLLARS	CENTS
Item 1	**Bathymetric Survey as described in the Scope of Work of RFQ No. DH10-413**	Lump Sum	All Req'd	Lump	Sum	10,000	00

TEN THOUSAND DOLLARS

Total Bid $ $10,000.00

Company Name PND ENGINEERS, INC.

R&M ENGINEERING, INC.

ENGINEERS
GEOLOGISTS
SURVEYORS

6205 GLACIER HWY. • JUNEAU, ALASKA 99801
PHONE: 907-780-6060 • FAX: 907-780-4611
E-MAIL: rmengineering@rmjuneau.com

April 15, 2010

Mr. Gary Gillette, Port Engineer
Port of Juneau Office
2nd Floor, Seadrome Building
76 Egan Drive
Juneau, AK 99801

Re: Cruise Docks Bathymetric Survey
RFQ No. DH10-413

Dear Mr. Gillette,

We are pleased to present you the attached bid for the above referenced project. We look forward to working with City and Borough of Juneau on this important community project.

Should you have any questions, please do not hesitate to contact me at your convenience.

Sincerely,

R&M ENGINEERING, INC.

Carole Ballman

for Mark A. Johnson, L.S.
Land Surveyor

Attachment

BID AND SIGNATURE PAGE

Project:

Dated: April 15, 2010

Bidder: R & M Engineering, Inc.
(Company Name)

By: _____
(Signature in ink)

Printed Name: Mark A. Johnson, L.S.

Title: Corporate Secretary/Treasurer

Telephone No.: (907) 780-6060

Address: 6205 Glacier Highway, Juneau
(Street or P.O. Box)

Fax No.: (907) 780-4611

Juneau, AK 99801
(City/State and Zip Code)

The Contractor shall provide all labor, equipment, materials and perform all Work as described in the Scope of Work.

COMPLETION TIME FOR THE WORK. The Contractor shall have until June 1, 2010 to complete all Work as described.

Bidder has examined the bid documents, including the following addenda (receipt of all of which is hereby acknowledged by the undersigned). Give number and date of each Addenda below. Failure to acknowledge receipt of all Addenda may cause the Bid to be non-responsive and may cause its rejection. If there are no addenda, "none" or "0" must be filled out.

Addenda No.	Date Issued	Addenda No.	Date Issued
None			

TO BE CONSIDERED, ALL BIDDERS MUST COMPLETE AND INCLUDE THE FOLLOWING AT THE DATE AND TIME QUOTES ARE DUE:

- **Signed Bid and Signature Page, (includes Addenda receipt statement)**
- **Completed Bid Schedule**

BID SCHEDULE

BASE BID

ITEM NO.	BID ITEM DESCRIPTION	PAY UNIT	APPROX. QUANTITY	UNIT PRICE		AMOUNT	
				DOLLARS	CENTS	DOLLARS	CENTS
Item 1	**Bathymetric Survey as described in the Scope of Work of RFQ No. DH10-413**	Lump Sum	All Req'd	Lump	Sum	$8,500	.00

Total Bid $ 8,500.00

R & M ENGINEERING, INC.
6205 Glacier Highway
Juneau, AK 99801

Company Name Mark A. Johnson, L.S.

Bicknell Inc.
(907) 789-5727 ph (907) 789-2644 fax

2275 Brandy Lane #1
P.O. Box 33517
Juneau, Alaska 99803

26-Mar-10
Date

Project: Auke Bay Loading Facility
Address:
Co/Name Gary Gillette CBJ D&H
Phone: 586-0398
fax 586-0295
cell

2275 Brandy Lane #1
P.O. Box 33517
Juneau, Alaska 99803

www.bicknellinc.com / sales@bicknellinc.com
*****Now accepting Visa and Mastercard*****

Price will be based on : *Lump Sum*

Description of Work To Be Performed:	Quantity	Price per Unit	Total
GRAVEL			
Option 1 : Minor regrade/smooth out			
2" minus/C1 overlay 4" average			
12'x100'			$4,500.00
(Subject too-> Pot Holes/wash out/tidal action/Waves)			
Option 2: ASPHALT 3" thick			
Minor grading / leveling course D1			$5,600.00
100' X 10'			
Sales Tax will Be Added When Applicable		**Contract Total:**	

EXCLUSIONS: Surveying, Utility structure adjustments of any kind, Engineering, Testing, Permits, Electrical, Plumbing and all necessary traffic control

NOTE: Any alterations or deviations from original specifications involving extra costs will be executed only upon written order and will become an additional charge over and above original estimate. Bicknell Inc. is not responsible for Sub-Grade failures. Quotes are subject to change or cancellation after 30 days. All agreements and start dates are contigent upon weather, accidents, acts of God, and delays beyond our control. Bicknell Inc./SE Paving is not responsible for any damage or repairs to electrical lines, drainage, and or any damage to objects below the surface; including subgrade failures. Bicknell Inc./SE Paving is not responsible for proper drainage or standing water on grades designed on slopes less than 2%. Bicknell Inc./SE Paving will not be responsible for damage to the finish asphalt due to petroleum products, landing jacks, or heavy construction equipment. Costs related to the collection of unpaid accounts will accrue interest at a rate of 1.5% monthly. Any disagreements arising out of this contract will be settled by arbitration.

Customer Signature Date

Printed Name

Southeast Paving Signature 3/26/10
Date

City & Borough of Juneau • Docks & Harbors
155 S. Seward Street • Juneau, AK 99801
(907) 586-0292 Phone • (907) 586-0295 Fax

Port of Juneau
MEMORANDUM

To: D&H CIP Committee
From: Gary Gillette, Port Engineer
Date: April 16, 2010
Re: Uplands Operations Analysis

The Cruise Ship Dock Uplands Operations Analysis is now complete. Consultants for this effort were PND Engineers, Inc. with support from Kittleson and Associates, Inc., Jensen Yorba Lott, Inc., and McDowell Group, Inc.

The project goals were to reduce congestion; improve safety; increase capacity; improve loading zones; improve pedestrian and vehicular circulation; and maintain existing public parking.

The project began over a year ago and included the following major activities:

- Consultants began gathering information in January, 2009.
- Held Open Houses to receive public comment on May 7, May 14, and May 15, 2009. Distributed comment sheets and received comments until July 31, 2009.
- Site observations and video recording of pedestrian and vehicular movement took place on June 16th, 2009 during typical busiest day of the week.
- Project team developed concept-level designs that incorporate concerns and comments received from dock users.
- Public meeting held on October 28, 2009 to present concept designs. Received comments at meeting and distributed comment sheets.
- Presented concept plans to Harbor Board CIP Committee on November 3, 2009.
- Presented concept plans to Assembly Lands Committee on November 9, 2009.
- Received comments and worked with user groups to develop recommended options.
- Worked with Cruise Line Agencies and others to tweek the recommended design.
- Presented recommended design to Harbor CIP Committee on Jan. 21, 2010.

The final report is attached via PDF files which includes a narrative report, overall project drawings, two recommended improvement areas (B Zone staging next to the Red Dog Saloon and reconfiguration of the Cruise Terminal and Columbia Lot area), and related cost estimates.

The next steps in the process are to seek approval of the Harbor Board and in turn seek approval by the Assembly to move forward with the final design and construction of the project.

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 503.228.5230 503.273.8169

MEMORANDUM

Date: August 26, 2009 Project #: 9761.0

To: Kate Mickelson
PND Engineers, Inc.

From: Paul Ryus; Lee Rodegerdts, PE; and Nick Foster
Project: Juneau Cruise Ship Upland Operations
Subject: Field Inventory and Analysis

Kittelson & Associates, Inc. (KAI) has reviewed the existing conditions for pedestrians in and around the Steamship ('E') and Cruise Ship ('D') docks in downtown Juneau. The City and Borough of Juneau (CBJ) intends to reconstruct these docks to accommodate two Panamax-sized vessels simultaneously. This memorandum provides an analysis and inventory of the conditions that exist today and provides a baseline for identifying improvements that will enhance the pedestrian experience in the future when more cruise ship patrons will arrive.

EXECUTIVE SUMMARY

Downtown Juneau experiences high levels of pedestrian demand during the peak summer cruise ship season, when as many as five ships are docked simultaneously. Tourist pedestrian traffic is concentrated largely along Franklin Street in the section near two of the cruise ship docks, Docks 'D' and 'E'. However, this section of Franklin Street has narrow sidewalks with storefront windows and occasional obstructions that reduce the effective width of the sidewalk in many places. When combined with the relatively high pedestrian volumes, this results in pedestrian Level of Service F conditions for sections of both sidewalks along Franklin Street. These congested conditions contribute to jaywalking and people stepping off the sidewalk to get around other people or obstacles, creating both operational and safety challenges for pedestrians and drivers alike. In addition, pedestrians frequently cut through bus staging areas and queue for shuttle buses in places that further impede pedestrian circulation. The next steps in this study are to determine pedestrian demand associated with the proposed dock improvements and to identify associated improvements to the pedestrian circulation in the area.

INTRODUCTION

KAI staff visited Juneau on Wednesday, June 3, 2009 to meet with PND and CBJ staff and to identify locations for videotaping pedestrian activity. The primary data collection work took

place on Tuesday, June 16, 2009, representing a typical peak day of cruise ship activity. Table 1 contains the cruise ship schedule for the day of the visit, including the capacity of each ship.

Table 1 Cruise Ship Schedule – June 16, 2009

Ship	Dock	Time In	Time Out	Capacity (passengers)
Norwegian Star	AJ	7:00 a.m.	1:30 p.m.	2,240
Spirit of Discovery	Sea Drome (F)	8:00 a.m.	5:30 p.m.	84
Ryndam	Steamship (E)	8:00 a.m.	6:00 p.m.	1,260
Sapphire Princess	Franklin (B)	8:00 a.m.	9:00 p.m.	2,600
Infinity	Cruise Ship (D)	9:00 a.m.	7:00 p.m.	2,046
Norwegian Pearl	AJ	2:00 p.m.	10:00 p.m.	2,240

FIELD INVENTORY

Sidewalk Measurements

Spot measurements were taken of sidewalk physical widths along Franklin Street. In addition, effective width estimates were made using the procedures in the *Highway Capacity Manual 2000* (Reference 1). Effective width represents the portion of the sidewalk width available for pedestrian circulation due to obstacles such as lampposts and benches. The measurements are used later in this memorandum, along with the pedestrian traffic counts, to analyze pedestrian operations. Table 2 summarizes these measurements (all measurements are approximate and have been rounded to the nearest half-foot):

Table 2 Sample Sidewalk Measurements (feet)

Location	East Side		West Side	
	Physical Width	Effective Width	Physical Width	Effective Width
Between crosswalks in front of 'D' dock	8.5	3.0[1]	8.5	5.0[2]
By crosswalk north of 'D' dock	5.0	0.5[3]	6.0	1.0[4]
South of crosswalk south of turnabout	10.0	5.5[5]	12.0	6.0[6]
North of the turnabout	5.0	0.5[7]	6.0	1.0[8]

[1]Includes reductions of 1.5 ft for the curb, 1 ft for occasional benches, and 3 ft for storefronts with window displays
[2]Includes reductions of 3 ft for the curb (both sides) and 0.5 ft for occasional lampposts
[3]Includes reductions of 1.5 ft for the curb and 3 ft for storefronts with window displays
[4]Includes reductions of 1.5 ft for the curb, 3 ft for storefronts with window displays, and 0.5 ft for occasional lampposts
[5]Includes reductions of 1.5 ft for the curb and 3 ft for storefronts with window displays
[6]Includes reductions of 1.5 ft for the curb, 1.5 ft for landscaping, and 3 ft for occasional lampposts and benches
[7]Includes reductions of 1.5 ft for the curb and 3 ft for storefronts with window displays
[8]Includes reductions of 1.5 ft for the curb, 3 ft for storefronts with window displays, and 0.5 ft for occasional lampposts

Both the eastside and westside sidewalks feature building faces with window displays along much of their length; the westside sidewalk also has frequent lampposts. These combine to

reduce the effective width of both sidewalks, which affects the level-of-service of the sidewalk. This is discussed later in this memorandum.

Pedestrian Travel Ways and Crossings

Figure 1 illustrates the pedestrian travel ways and marked crosswalks in the study area. The travel ways include the sidewalks on both sides of Franklin Street, the sidewalks ringing the parking lots in front of the docks, the boardwalk between the 'D' and 'E' docks, the connections between the boardwalk and Franklin Street, and walkways within Marine Park. When Maritime Security (MARSEC) Level 2 or higher exists, the boardwalk area in front of the ships is closed. There are eight marked crosswalks of Franklin Street and Marine Way within the study area, as well as marked crosswalks across the parking lot driveways. Two of these crosswalks, Crosswalk #2 at the southern edge of Marine Park and Crosswalk #7 between the Mt. Roberts Tramway and the Alaska Shirt Company, had crossing guards present during peak operating periods. The crossing guards stop traffic to allow pedestrians to cross at those locations.

Despite the presence of the crosswalks and designated travel ways, jaywalking, walking in the street, and other travel outside designated pedestrian areas frequently occurred in certain locations, illustrated in Figure 1. In particular, jaywalking across Franklin Street occurred frequently between Crosswalk #6, north of the 'D' dock parking lot, and Crosswalk #5, opposite the unpaved parking lot to the north, as well as north-south across the turnabout. Pedestrians also frequently travel through the 'D' dock parking lot to walk between the 'D' dock boarding area and Franklin Street.

Figure 1 also illustrates the areas where pedestrian queuing and standing was observed to be the most significant. The most significant pedestrian congestion occurred in front of popular businesses (e.g., Mt. Roberts Tramway, Alaska Shirt Company, Alaska-Juneau Mining Company, and Red Dog Saloon), tour sign-up and boarding areas, and the AJ dock shuttle bus drop-off/pick-up area.

Key Pedestrian Routes

Figure 2 illustrates the travel ways and crossings that were observed to form the key (i.e., most heavily used) pedestrian travel routes. As the figure shows, the majority of these routes connect the pedestrian queuing areas shown in Figure 1. The sidewalk along the west side of Franklin Street heading south toward the 'B' dock is the only walking route from downtown to that dock. Marine Park is a key travel route for visitors walking from the 'E' dock to downtown and the wharf area. The areas with frequent jaywalking are also shown in Figure 2, as they indicate desired pedestrian travel routes.

There is a relatively even split between cruise ship passengers that walk downtown and those that board a tour bus or take the tramway immediately after disembarking. Those taking tours are represented in Figure 2 in the pedestrian queuing areas near the ships. Visitors walking

LEGEND

- PEDESTRIAN TRAVELWAY
- MARKED CROSSWALK
- (#) - MARKED CROSSWALK NUMBER
- AREA OF FREQUENT JAYWALKING
- PEDESTRIAN QUEUING AREAS

PEDESTRIAN TRAVELWAYS, CROSSINGS, AND QUEUING AREAS
JUNEAU, ALASKA

FIGURE 1

LEGEND

- PEDESTRIAN TRAVELWAY
- MARKED CROSSWALK
- (#) - MARKED CROSSWALK NUMBER
- AREA OF FREQUENT JAYWALKING
- PEDESTRIAN QUEUING AREAS

KEY ROUTES
JUNEAU, ALASKA

FIGURE 2

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\profiles\9761 - Juneau Cruise Ship Uplands Operations\dwgs\incoming\Juneau Cruise Ship Project\CBJ waterfront basemap-KAI.dwg Aug 05, 2009 - 6:19pm - nfoster Layout Tab: KeyRoutes

downtown from the ships typically travel directly to Franklin Street from the ships; the boardwalk was not observed to be heavily used.

PEDESTRIAN TRAFFIC

Pedestrian counts were conducted via videotaped observations between 7 a.m. and 7 p.m on June 16. This time period reflects when most cruise ship passenger activity occurs. The counts included the sidewalks on both sides of Franklin Street, the area just north of the "D" dock parking lot, and crossing counts at the following locations:

- Crosswalk #2: The guard-controlled crosswalk north of the parking garage and southeast of Marine Park;
- Crosswalk #4: The crosswalk east of the parking garage and immediately south of the turnabout (including jaywalkers through the turnabout);
- Crosswalk #6: The crosswalk just north of the "D" dock parking lot (including jaywalkers to the north); and
- Crosswalk #7: The guard-controlled crosswalk across from the Alaska Shirt Company.

The weather was fairly typical for a June day, with temperatures in the 50s (Fahrenheit) and with light rain until about 2:30 p.m., when the sun broke out.

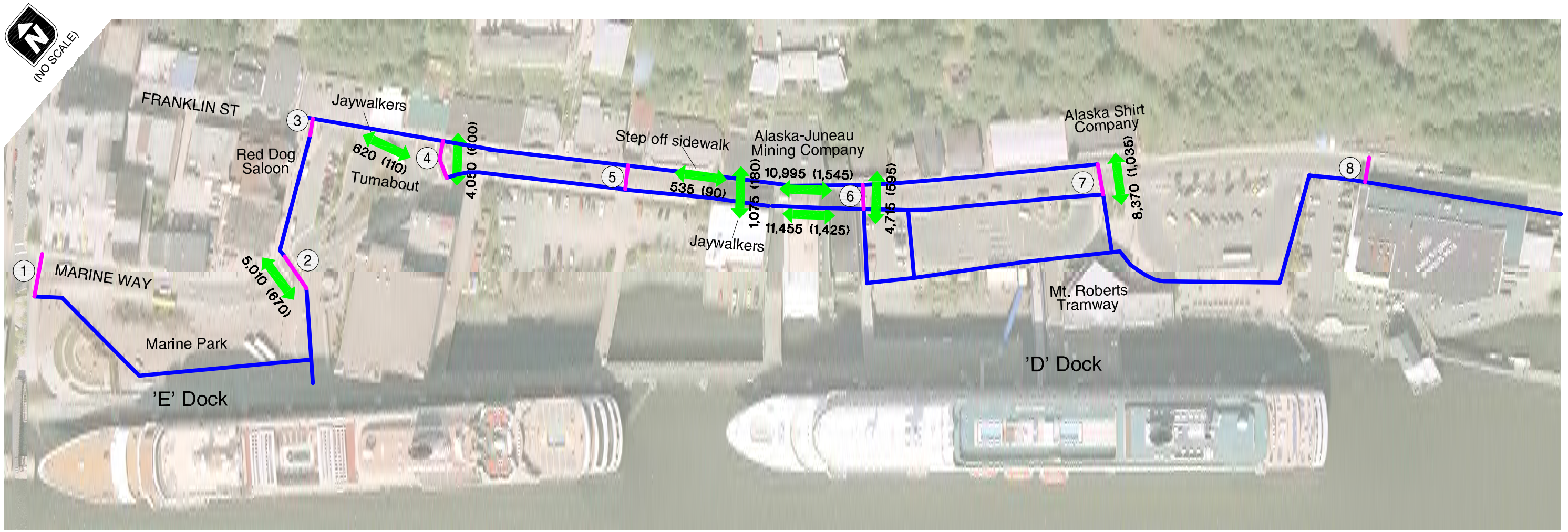
Figure 3 illustrates the peak-hour and 12-hour total pedestrian volumes at these locations. The volumes reflect both directions of travel (e.g., eastbound and westbound crossing volumes), and have been rounded to the nearest five pedestrians. Attachment "A" includes the pedestrian count data.

Crosswalk Counts

Many of the businesses along Franklin Street are located along the east side of the street, and the east-side sidewalk connects directly into downtown Juneau. As cruise ships dock on the west side of the street, passengers must cross Franklin Street to visit many shops or to walk downtown.

Figure 3 shows that the busiest crosswalk is Crosswalk #7, the guard-controlled crosswalk across from the Alaska Shirt Company. Approximately 8,370 pedestrians crossed here from 7 a.m. to 7 p.m., and 1,035 pedestrians crossed during the highest hour of activity. The other guard-controlled crosswalk, Crosswalk #2, had the second-highest volume, with approximately 5,010 pedestrians crossing during the 12-hour period. The third- and fourth-highest-volume crosswalks were Crosswalk #6 and Crosswalk #4, respectively.

Figure 4 profiles crossing activity at the four crosswalks, with counts summarized in 15-minute intervals.



LEGEND

- PEDESTRIAN TRAVELWAY
- MARKED CROSSWALK
- (#) - MARKED CROSSWALK NUMBER
- XX - 12 HOUR VOLUME (7 AM - 7 PM)
- (XX) - PEAK HOUR VOLUME

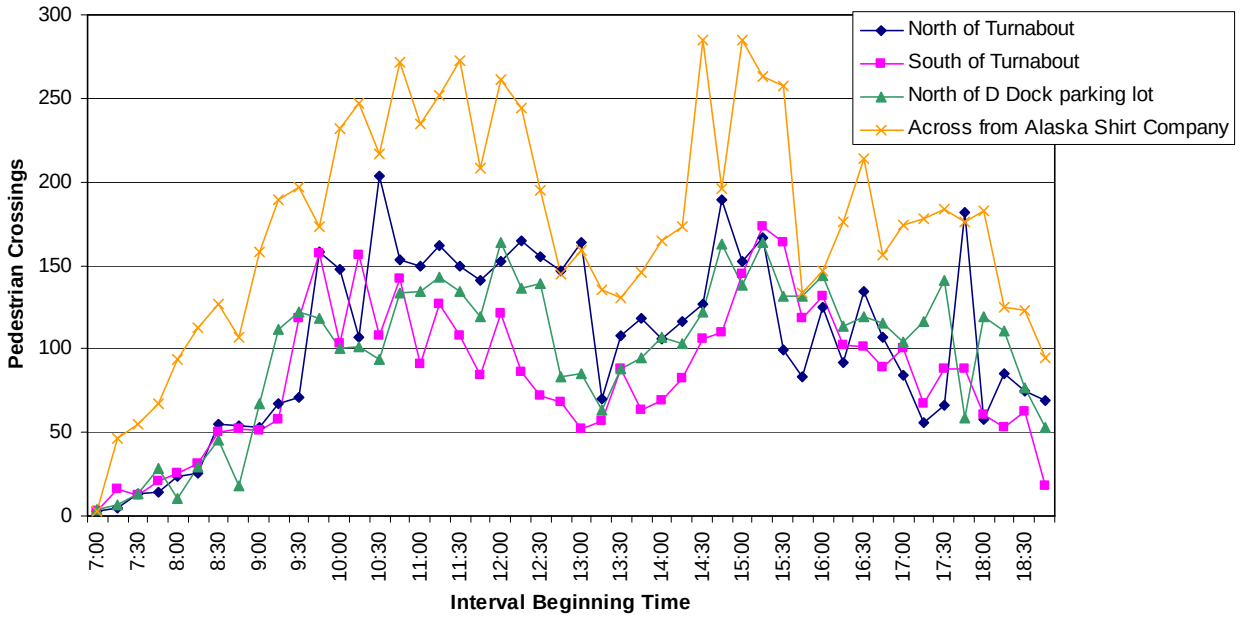
PEDESTRIAN TRAFFIC VOLUMES
7 AM - 7 PM AND PEAK HOUR
JUNEAU, ALASKA

FIGURE 3

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\profiles\9761 - Juneau Cruise Ship Uplands Operations\dwgs\incoming\Juneau Cruise Ship Project\CBJ waterfront basemap-KAI.dwg Aug 05, 2009 - 6:34pm - nfoster Layout Tab: Counts

Figure 4 – Pedestrian Crossing Volumes (15-Minute Intervals)



As Figure 4 shows, the relative intensity of activity at each crosswalk followed a similar pattern. Crossing volumes gradually increased to a peak in the mid-morning and then remained relatively stable until a significant drop-off shortly after noon. This drop-off was likely due to a combination of lunchtime and the transition time between ships at the AJ Dock (see Table 1). Activity peaked again in the mid-afternoon following the arrival of the second ship at the AJ Dock, and then gradually declined with sporadic 15-minute bursts of activity, some of which can be attributed to passengers returning to their ship (e.g., the peak around 6:00 p.m. at the crosswalk north of the turnabout).

The highest 15-minute interval at each crosswalk was closely matched several times during the day by other 15-minute intervals, meaning that "peak" conditions are seen more than once throughout the day at each crosswalk.

Jaywalking

Jaywalking, or pedestrian crossings in locations other than legal crosswalks, was frequently observed in the study area. Jaywalking is mostly concentrated at the turnabout and in the area around the Alaska-Juneau Mining Company building (see Figures 5 through 7). Figure 3 shows that from 7 a.m. to 7 p.m., 1,075 pedestrians jaywalked in front of the Alaska-Juneau Mining Company building (180 during the peak hour) and 620 jaywalked through the turnabout (110 during the peak hour). Another 535 pedestrians stepped off the sidewalk and into the street in front of the Alaska-Juneau Mining Company, including 90 during the peak hour. Most stepping-into-the-street activity occurred on the east side of Franklin Street.

Figure 5 – Jaywalking in Turnabout

Figure 6 – Jaywalking in Front of the Alaska-Juneau Mining Company

Figure 7 – Stepping off the Sidewalk

The crosswalk opposite the unpaved parking lot (Crosswalk #5) is generally underused; most people preferred to cross to the south. This situation likely occurs because there is no pedestrian destination (e.g., retail shops) on the west side of Franklin Street at this location that would encourage people to cross. Crossing illegally through the turnabout provides a more direct route for continuing on the west side of Franklin Street for those coming from/going to the Red Dog Saloon or other destinations along the west side of the street.

People also frequently walked through the 'D' dock parking lot to reach Franklin Street. A likely contributor to this activity is that passengers disembarking at 'D' dock are aimed into the middle of the parking lot by the location and orientation of the gangway where they disembark, as well as a sign directing them that way to tours. Jaywalking through the parking lot leads to the intermixing of pedestrian traffic and tour bus traffic, which creates potential safety hazards for the pedestrians, especially if they are focused on the shops across the street and not on the traffic around them.

Sidewalk Counts

Counts of pedestrian activity along both sides of Franklin Street were conducted just north of the "D" dock parking lot. This location was chosen to due to the observed density of pedestrians in the area. Figure 8 provides a profile of sidewalk pedestrian activity from 7 a.m. to 7 p.m., summarized in 15-minute intervals.

Figure 8 – Sidewalk Pedestrian Volumes (15-Minute Intervals)

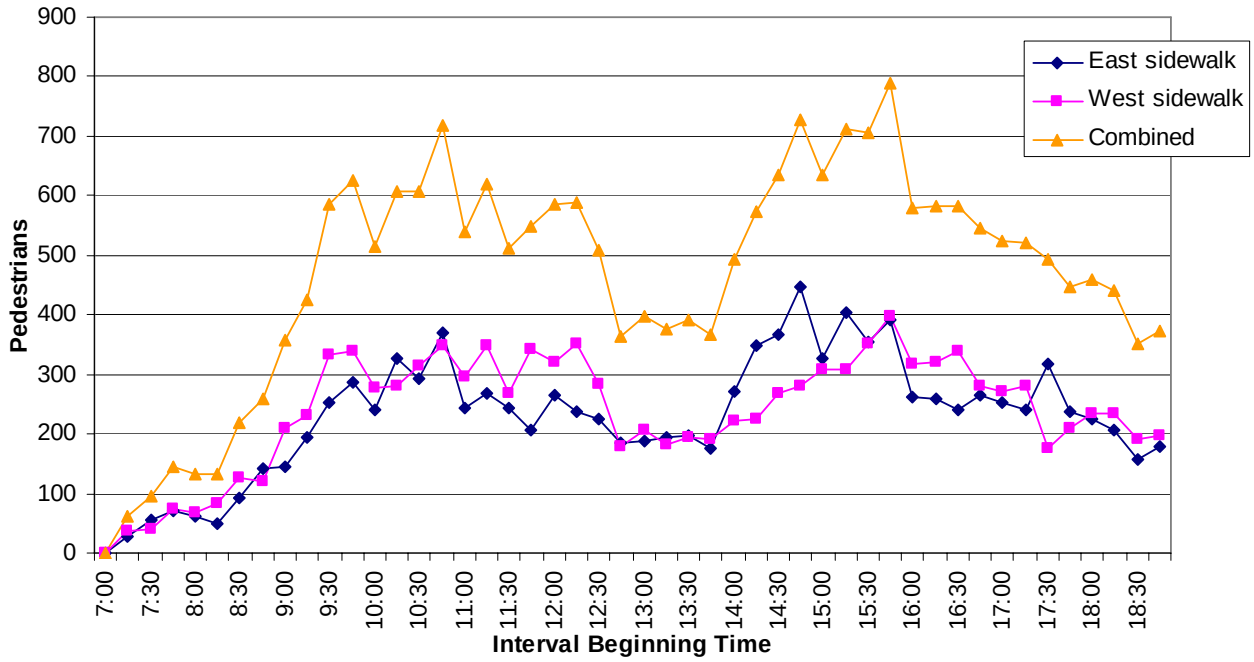


Figure 8 shows that the pedestrian activity on the sidewalk followed a similar pattern to the crossing activity, with similar general peaking times and the same early-afternoon lull during lunchtime and the transition at the AJ Dock. The combined volumes exhibited a general overall peak between 2:45 p.m. and 4:00 p.m., with a slightly lower morning peak between 9:30 a.m. and 12:45 p.m. Volumes were generally similar on the two sides of Franklin Street. The west side had a slightly higher volume over the entire period, while the east side had a higher peak hour, as was shown in Figure 3. Pedestrian volume variability between successive 15-minute intervals was generally less than at the crossing locations.

Level of Service Analysis

The sidewalks along Franklin Street between downtown and the 'D' dock became quite congested during the day. Walking through this area was slow, particularly on the east side of the street where people frequently stopped to look in shop windows or to decide where they wanted to go. This congestion led to people stepping off the sidewalk and into Franklin Street. Similar to jaywalking, people will often step off the sidewalk directly in the path of oncoming vehicles. Obstructions narrowing the effective width of the sidewalk and pedestrians stopped in front of shops seemed to increase the frequency of these incidents.

A pedestrian level-of-service (LOS) analysis was performed for the congested portions of the Franklin Street sidewalks. This analysis is based on the methodology described in the *Highway Capacity Manual 2000* (Reference 1) for sidewalks and walkways. The methodology uses the effective sidewalk width and the peak 15 minute pedestrian count to calculate the peak flow rate in persons per minute per foot of effective sidewalk width. This rate determines the volume-to capacity (v/c) ratio, with an assumed capacity of 23 p/min/ft, and the LOS letter grade ("A"

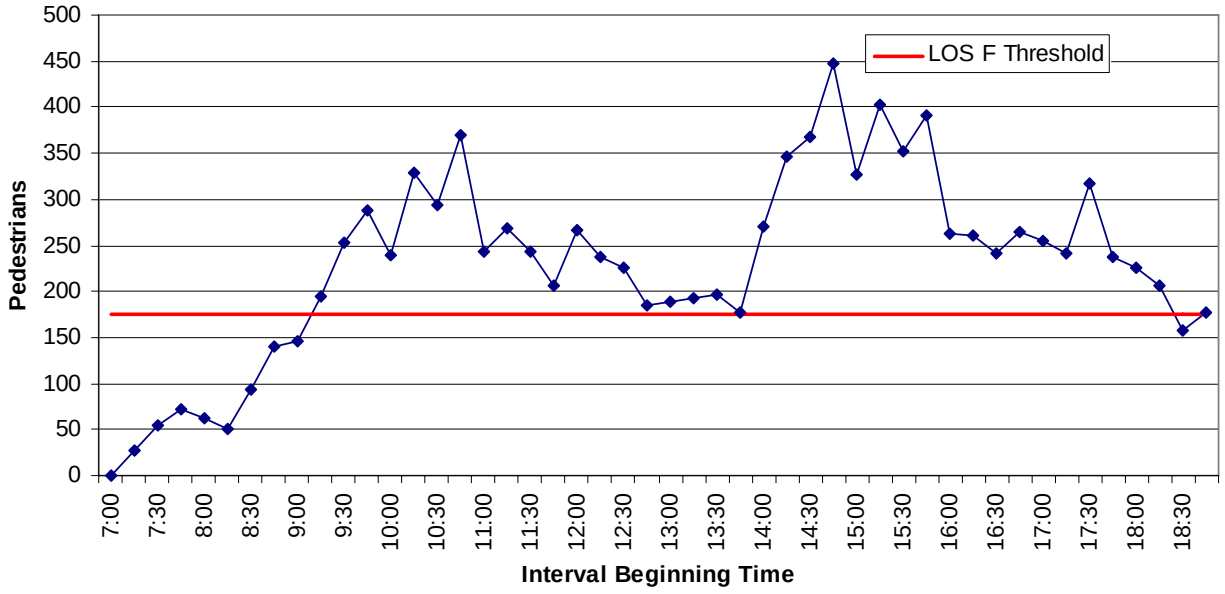
through "F") that is assigned to the sidewalk. Table 3 summarizes the results of this analysis for both sides of Franklin Street.

Table 3 LOS Analysis of Critical Sections of Sidewalk During Peak Periods Along Franklin Street

Location	Peak 15-Minute Count (p)	Effective Sidewalk Width (ft)	Flow Rate (p/min/ft)	V/C	LOS
East Sidewalk, between Crosswalks 5 and 6	447	0.5[1]	60	>1.0	F
West Sidewalk, between Crosswalks 5 and 6	428	1.0[2]	29	>1.0	F

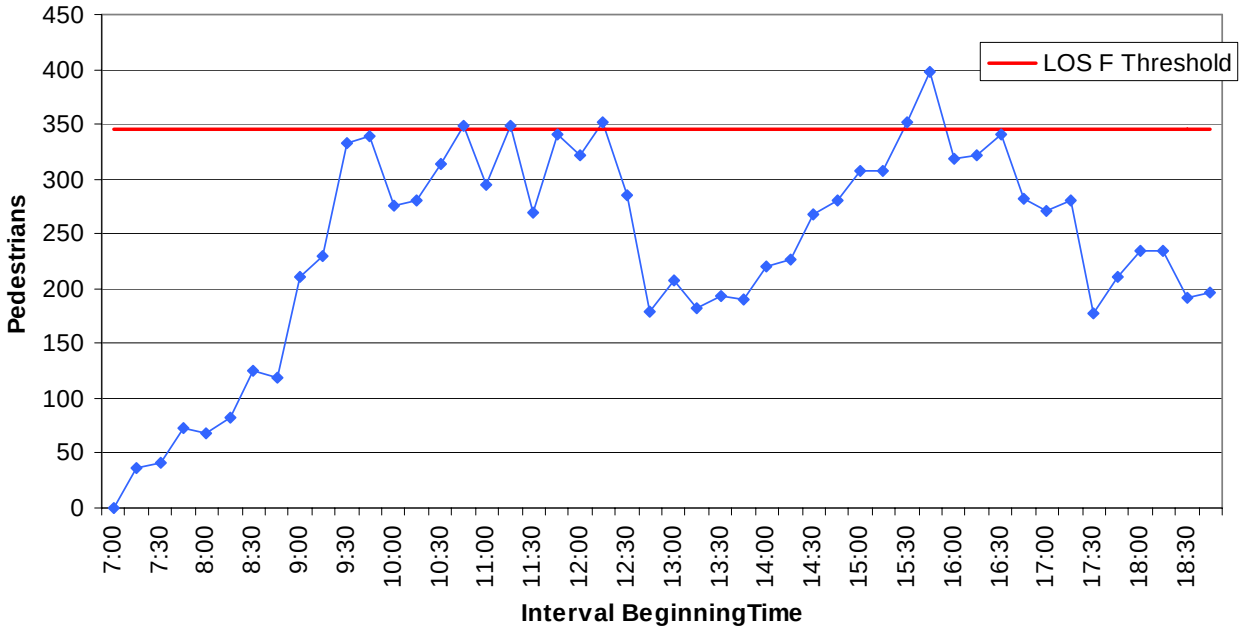
As Table 3 shows, critical sections of both sidewalks currently experience LOS F conditions during the peak 15 minutes. Based on the effective sidewalk widths shown in Table 3, the LOS is E or better when the 15-minute flow is less than 175 pedestrians on the east side and less than 345 pedestrians on the west side. On a peak day, the pedestrian flow rate on the east sidewalk exceeds 175 pedestrians per 15 minutes (700 pedestrians per hour) for most of the day (9:15 a.m. to 6:30 p.m.), as illustrated in Figure 9.

Figure 9 – Duration of LOS F on East Sidewalk (15 Minute Intervals)



Pedestrian flow rates on the west side during most of the day are less than 345 pedestrians per 15 minutes (1,380 pedestrians per hour), with only five 15 minute intervals having more than 345 pedestrians, as shown in Figure 10.

Figure 10 – Duration of LOS F on West Sidewalk (15 Minute Intervals)



KEY SITE OBSERVATIONS

In addition to the observations and counts previously described, qualitative observations were made regarding:

- Guard-controlled crossings;
- Underuse of the boardwalk; and
- Auto traffic operations.

Guard-Controlled Crossings

As Figures 1 and 2 showed, there are two crosswalks where crossing guards stop traffic to allow pedestrians to cross. The guards help ensure that pedestrians can cross safely and comfortably. They also seem to stop traffic frequently, so that queued pedestrians do not have to wait long to cross. This provides a good experience for pedestrians, but slows down vehicular traffic as it is stopped frequently. Adding to the vehicular delay is the occasional occurrence of pedestrians making a last-second dash to enter the crosswalk before the guard walks away, thereby lengthening the time that traffic is stopped.

During the peak 15 minutes of the day, the crossing guard at the crosswalk in front of the Alaska Shirt Company stopped traffic 18 times, which is one stop every 50 seconds. These stops lasted an average of 18 seconds, with a maximum length stop of 35 seconds. The crossing guard north of the turnabout stopped traffic 20 times, or one stop every 45 seconds. These stops were slightly shorter, with an average of 13 seconds per stop and a maximum stop of 32 seconds. These stop

times are relatively similar to what might be seen at a traffic signal, though they occur more frequently than they might at a typical signal.

Boardwalk

The key pedestrian routes shown in Figure 2 can become congested, especially along Franklin Street between downtown and the 'D' dock parking lot. The boardwalk along the docks offers a parallel route; however, it bypasses many popular pedestrian destinations (e.g., shops along Franklin Street and tour kiosks) and is closed off when the security level is MARSEC 2 or higher. The south end of the boardwalk is located at the 'D' dock, where pedestrians are pointed into the middle of a parking lot. Little or no wayfinding signage is provided at the boardwalk exits. Physically separating the ship berths from the boardwalk (thus relieving the potential MARSEC 2 restrictions) and making the boardwalk a desirable alternative to Franklin Street is likely to help in relieving pedestrian and vehicular congestion along Franklin Street.

Vehicular Traffic

Franklin Street is the only street that travels south from downtown. As a result, it experiences a moderate amount of through traffic throughout the day, approximately 5,380 vehicles from 7 a.m. to 7 p.m. in front of 'D' Dock. A noticeable proportion of the through traffic is heavy vehicles (22% of the total): buses serving the cruise ship docks (18%) and trucks serving the shipping docks (4%).

Vehicular travel on Franklin Street through the study area is slow due to the relatively narrow roadway, the number of pedestrians on either side of the roadway, and the frequency of pedestrians crossing (both legally and jaywalking). Vehicular traffic generally moved at about 10 mph and typically yielded quickly to pedestrians waiting to cross at marked crosswalks. However, drivers must be constantly alert due to the number of pedestrians, which further slows speeds and increases risk of a vehicle-pedestrian collision.

Delay to vehicular traffic also comes from northbound vehicles waiting to make a left turn into the parking lots in front of the docks and from northbound traffic queuing up at the Egan Drive/Main Street traffic signal during the late afternoon (queues backed into the turnabout briefly around 4:30 p.m.).

NEXT STEPS

The next steps in this project include the following:

- Assess the impacts of increased pedestrian activity in the study area as a result of having two Panamax-sized ships berthed simultaneously. This will involve estimating the increase in pedestrian volumes that is likely to occur. The existing counts will be factored up according to the increase in passenger volume that will be brought by the additional Panamax-sized ship.

- Identify improvements and strategies to enhance the pedestrian and driver experiences in the study area. Anticipated recommendations include methods to improve the use of marked crossings, minimize pedestrian congestion and the crossing of vehicular paths, and identify pedestrian infrastructure improvements and amenities that address the issues identified in this memorandum.

REFERENCES

1) Transportation Research Board. *Highway Capacity Manual 2000*. Transportation Research Board, National Academies of Science, Washington, D.C., 2000.

Attachment A
Pedestrian Volume Counts

Quality Counts
TRANSPORTATION DATA
COLLECTION SERVICES

Crosswalk 2

			15 Min Totals			1 Hour Totals		
	Crosswalk		Crosswalk			Crosswalk		
	EB Peds	WB Peds	EB Peds	WB Peds	Combined	EB Peds	WB Peds	Combined
7:00	1	0						
7:05	1	0						
7:10	0	1	2	1	3			
7:15	3	0	4	1	5			
7:20	1	0	4	1	5			
7:25	0	1	4	1	5			
7:30	7	2	8	3	11			
7:35	0	2	7	5	12			
7:40	2	0	9	4	13			
7:45	0	2	2	4	6			
7:50	4	0	6	2	8			
7:55	7	1	11	3	14	26	9	35
8:00	18	0	29	1	30	43	9	52
8:05	2	1	27	2	29	44	10	54
8:10	3	0	23	1	24	47	9	56
8:15	5	2	10	3	13	49	11	60
8:20	18	1	26	3	29	66	12	78
8:25	0	0	23	3	26	66	11	77
8:30	8	2	26	3	29	67	11	78
8:35	11	12	19	14	33	78	21	99
8:40	19	3	38	17	55	95	24	119
8:45	11	6	41	21	62	106	28	134
8:50	13	3	43	12	55	115	31	146
8:55	21	0	45	9	54	129	30	159
9:00	18	0	52	3	55	129	30	159
9:05	11	2	50	2	52	138	31	169
9:10	20	2	49	4	53	155	33	188
9:15	17	4	48	8	56	167	35	202
9:20	19	5	56	11	67	168	39	207
9:25	21	1	57	10	67	189	40	229
9:30	17	2	57	8	65	198	40	238
9:35	19	2	57	5	62	206	30	236
9:40	25	6	61	10	71	212	33	245

9:45	53	11	97	19	116	254	38	292
9:50	26	5	104	22	126	267	40	307
9:55	46	17	125	33	158	292	57	349
10:00	46	3	118	25	143	320	60	380
10:05	46	13	138	33	171	355	71	426
10:10	35	5	127	21	148	370	74	444
10:15	29	11	110	29	139	382	81	463
10:20	19	5	83	21	104	382	81	463
10:25	32	11	80	27	107	393	91	484
10:30	55	15	106	31	137	431	104	535
10:35	74	5	161	31	192	486	107	593
10:40	29	25	158	45	203	490	126	616
10:45	23	21	126	51	177	460	136	596
10:50	26	22	78	68	146	460	153	613
10:55	40	21	89	64	153	454	157	611
11:00	56	18	122	61	183	464	172	636
11:05	20	20	116	59	175	438	179	617
11:10	20	16	96	54	150	423	190	613
11:15	29	16	69	52	121	423	195	618
11:20	38	7	87	39	126	442	197	639
11:25	48	24	115	47	162	458	210	668
11:30	17	27	103	58	161	420	222	642
11:35	39	19	104	70	174	385	236	621
11:40	25	23	81	69	150	381	234	615
11:45	26	14	90	56	146	384	227	611
11:50	25	20	76	57	133	383	225	608
11:55	36	20	87	54	141	379	224	603
12:00	27	19	88	59	147	350	225	575
12:05	26	23	89	62	151	356	228	584
12:10	42	15	95	57	152	378	227	605
12:15	55	20	123	58	181	404	231	635
12:20	32	27	129	62	191	398	251	649
12:25	13	18	100	65	165	363	245	608
12:30	39	16	84	61	145	385	234	619
12:35	43	19	95	53	148	389	234	623
12:40	21	17	103	52	155	385	228	613
12:45	45	15	109	51	160	404	229	633
12:50	28	13	94	45	139	407	222	629
12:55	27	19	100	47	147	398	221	619
13:00	52	19	107	51	158	423	221	644
13:05	22	33	101	71	172	419	231	650
13:10	24	14	98	66	164	401	230	631
13:15	6	9	52	56	108	352	219	571
13:20	9	16	39	39	78	329	208	537
13:25	18	12	33	37	70	334	202	536
13:30	24	14	51	42	93	319	200	519

13:35	32	14	74	40	114	308	195	503
13:40	10	14	66	42	108	297	192	489
13:45	24	13	66	41	107	276	190	466
13:50	21	6	55	33	88	269	183	452
13:55	44	10	89	29	118	286	174	460
14:00	16	12	81	28	109	250	167	417
14:05	26	18	86	40	126	254	152	406
14:10	17	17	59	47	106	247	155	402
14:15	12	9	55	44	99	253	155	408
14:20	21	18	50	44	94	265	157	422
14:25	37	19	70	46	116	284	164	448
14:30	30	18	88	55	143	290	168	458
14:35	29	11	96	48	144	287	165	452
14:40	18	21	77	50	127	295	172	467
14:45	40	24	87	56	143	311	183	494
14:50	30	14	88	59	147	320	191	511
14:55	51	30	121	68	189	327	211	538
15:00	20	33	101	77	178	331	232	563
15:05	24	21	95	84	179	329	235	564
15:10	34	20	78	74	152	346	238	584
15:15	30	13	88	54	142	364	242	606
15:20	23	19	87	52	139	366	243	609
15:25	47	35	100	67	167	376	259	635
15:30	13	17	83	71	154	359	258	617
15:35	11	20	71	72	143	341	267	608
15:40	24	14	48	51	99	347	260	607
15:45	12	16	47	50	97	319	252	571
15:50	9	22	45	52	97	298	260	558
15:55	13	11	34	49	83	260	241	501
16:00	26	19	48	52	100	266	227	493
16:05	21	21	60	51	111	263	227	490
16:10	20	18	67	58	125	249	225	474
16:15	9	22	50	61	111	228	234	462
16:20	18	23	47	63	110	223	238	461
16:25	7	13	34	58	92	183	216	399
16:30	31	18	56	54	110	201	217	418
16:35	17	15	55	46	101	207	212	419
16:40	22	31	70	64	134	205	229	434
16:45	8	19	47	65	112	201	232	433
16:50	15	17	45	67	112	207	227	434
16:55	25	23	48	59	107	219	239	458
17:00	13	14	53	54	107	206	234	440
17:05	17	15	55	52	107	202	228	430
17:10	7	18	37	47	84	189	228	417
17:15	13	15	37	48	85	193	221	414
17:20	4	9	24	42	66	179	207	386

17:25	10	5	27	29	56	182	199	381
17:30	10	8	24	22	46	161	189	350
17:35	11	3	31	16	47	155	177	332
17:40	24	10	45	21	66	157	156	313
17:45	51	13	86	26	112	200	150	350
17:50	66	9	141	32	173	251	142	393
17:55	37	6	154	28	182	263	125	388
18:00	11	3	114	18	132	261	114	375
18:05	18	4	66	13	79	262	103	365
18:10	18	4	47	11	58	273	89	362
18:15	5	9	41	17	58	265	83	348
18:20	25	5	48	18	66	286	79	365
18:25	35	6	65	20	85	311	80	391
18:30	37	3	97	14	111	338	75	413
18:35	11	4	83	13	96	338	76	414
18:40	12	8	60	15	75	326	74	400
18:45	10	7	33	19	52	285	68	353
18:50	17	6	39	21	60	236	65	301
18:55	23	6	50	19	69	222	65	287

Crosswalk 6

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

	15 Min Totals										1 Hour Totals					
	Crosswalk				Crosswalk			Crosswalk			Crosswalk			Crosswalk		
	EB Peds	WB Peds	EB Jaywalkers	WB Jaywalkers	EB Peds	WB Peds	Combined	EB Jaywalkers	WB Jaywalkers	Combined	EB Peds	WB Peds	Combined	EB Jaywalkers	WB Jaywalkers	Combined
7:00	3	0	0	0												
7:05	0	0	0	0												
7:10	1	0	0	0	4	0	4	0	0	0						
7:15	2	1	0	0	3	1	4	0	0	0						
7:20	0	1	2	0	3	2	5	2	0	2						
7:25	3	0	0	1	5	2	7	2	1	3						
7:30	4	2	0	0	7	3	10	2	1	3						
7:35	6	1	1	0	13	3	16	1	1	2						
7:40	0	0	0	1	10	3	13	1	1	2						
7:45	8	0	0	3	14	1	15	1	4	5						
7:50	1	10	5	4	9	10	19	5	8	13						
7:55	2	7	0	1	11	17	28	5	8	13	30	22	52	8	10	18
8:00	1	1	2	1	4	18	22	7	6	13	28	23	51	10	11	21
8:05	4	0	0	3	7	8	15	2	5	7	32	23	55	10	14	24
8:10	3	1	2	5	8	2	10	4	9	13	34	24	58	12	19	31
8:15	3	5	3	4	10	6	16	5	12	17	35	28	63	15	23	38
8:20	5	10	4	0	11	16	27	9	9	18	40	37	77	17	23	40
8:25	3	3	5	3	11	18	29	12	7	19	40	40	80	22	25	47
8:30	10	7	0	4	18	20	38	9	7	16	46	45	91	22	29	51
8:35	7	2	9	0	20	12	32	14	7	21	47	46	93	30	29	59
8:40	3	16	7	2	20	25	45	16	6	22	50	62	112	37	30	67
8:45	2	12	3	0	12	30	42	19	2	21	44	74	118	40	27	67
8:50	1	0	3	1	6	28	34	13	3	16	44	64	108	38	24	62
8:55	1	2	0	0	4	14	18	6	1	7	43	59	102	38	23	61
9:00	10	1	1	2	12	3	15	4	3	7	52	59	111	37	24	61
9:05	5	18	2	7	16	21	37	3	9	12	53	77	130	39	28	67
9:10	13	20	0	0	28	39	67	3	9	12	63	96	159	37	23	60
9:15	17	24	12	0	35	62	97	14	7	21	77	115	192	46	19	65
9:20	24	8	1	5	54	52	106	13	5	18	96	113	209	43	24	67
9:25	16	23	3	5	57	55	112	16	10	26	109	133	242	41	26	67
9:30	22	13	4	0	62	44	106	8	10	18	121	139	260	45	22	67
9:35	18	15	7	2	56	51	107	14	7	21	132	152	284	43	24	67
9:40	20	34	4	1	60	62	122	15	3	18	149	170	319	40	23	63
9:45	19	11	1	4	57	60	117	12	7	19	166	169	335	38	27	65
9:50	18	14	1	5	57	59	116	6	10	16	183	183	366	36	31	67
9:55	39	17	5	1	76	42	118	7	10	17	221	198	419	41	32	73
10:00	17	8	3	2	74	39	113	9	8	17	228	205	433	43	32	75
10:05	23	19	10	9	79	44	123	18	12	30	246	206	452	51	34	85
10:10	16	17	4	4	56	44	100	17	15	32	249	203	452	55	38	93
10:15	4	17	3	17	43	53	96	17	30	47	236	196	432	46	55	101
10:20	9	35	1	9	29	69	98	8	30	38	221	223	444	46	59	105
10:25	10	26	3	4	23	78	101	7	30	37	215	226	441	46	58	104
10:30	4	25	17	0	23	86	109	21	13	34	197	238	435	59	58	117
10:35	28	7	11	0	42	58	100	31	4	35	207	230	437	63	56	119
10:40	20	10	32	0	52	42	94	60	0	60	207	206	413	91	55	146
10:45	12	28	17	0	60	45	105	60	0	60	200	223	423	107	51	158
10:50	12	19	53	0	44	57	101	102	0	102	194	228	422	159	46	205
10:55	39	23	3	3	63	70	133	73	3	76	194	234	428	157	48	205
11:00	5	32	3	5	56	74	130	59	8	67	182	258	440	157	51	208
11:05	25	21	3	2	69	76	145	9	10	19	184	260	444	150	44	194
11:10	14	37	7	6	44	90	134	13	13	26	182	280	462	153	46	199
11:15	7	39	2	8	46	97	143	12	16	28	185	302	487	152	37	189
11:20	11	39	11	17	32	115	147	20	31	51	187	306	493	162	45	207

11:25	22	25	6	16	40	103	143	19	41	60	199	305	504	165	57	222
11:30	37	18	2	22	70	82	152	19	55	74	232	298	530	150	79	229
11:35	24	20	3	11	83	63	146	11	49	60	228	311	539	142	90	232
11:40	20	15	0	10	81	53	134	5	43	48	228	316	544	110	100	210
11:45	25	16	3	4	69	51	120	6	25	31	241	304	545	96	104	200
11:50	23	17	1	5	68	48	116	4	19	23	252	302	554	44	109	153
11:55	10	28	6	10	58	61	119	10	19	29	223	307	530	47	116	163
12:00	8	28	3	9	41	73	114	10	24	34	226	303	529	47	120	167
12:05	26	51	22	10	44	107	151	31	29	60	227	333	560	66	128	194
12:10	14	37	4	14	48	116	164	29	33	62	227	333	560	63	136	199
12:15	33	19	4	9	73	107	180	30	33	63	253	313	566	65	137	202
12:20	33	13	7	9	80	69	149	15	32	47	275	287	562	61	129	190
12:25	27	11	11	10	93	43	136	22	28	50	280	273	553	66	123	189
12:30	24	18	0	7	84	42	126	18	26	44	267	273	540	64	108	172
12:35	51	11	6	5	102	40	142	17	22	39	294	264	558	67	102	169
12:40	19	16	2	4	94	45	139	8	16	24	293	265	558	69	96	165
12:45	15	15	3	1	85	42	127	11	10	21	283	264	547	69	93	162
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12:55	13	12	0	2	37	46	83	3	9	12	272	250	522	62	86	148
13:00	19	13	1	0	41	44	85	1	8	9	283	235	518	60	77	137
13:05	7	20	1	2	39	45	84	2	4	6	264	204	468	39	69	108
13:10	14	12	0	2	40	45	85	2	4	6	264	179	443	35	57	92
13:15	5	9	2	3	26	41	67	3	7	10	236	169	405	33	51	84
13:20	13	17	5	2	32	38	70	7	7	14	216	173	389	31	44	75
13:25	8	11	9	8	26	37	63	16	13	29	197	173	370	29	42	71
13:30	14	19	7	9	35	47	82	21	19	40	187	174	361	36	44	80
13:35	11	17	2	7	33	47	80	18	24	42	147	180	327	32	46	78
13:40	12	15	2	5	37	51	88	11	21	32	140	179	319	32	47	79
13:45	19	5	5	5	42	37	79	9	17	26	144	169	313	34	51	85
13:50	17	27	4	3	48	47	95	11	13	24	152	177	329	38	48	86
13:55	7	20	5	4	43	52	95	14	12	26	146	185	331	43	50	93
14:00	10	22	0	0	34	69	103	9	7	16	137	194	331	42	50	92
14:05	8	16	0	0	25	58	83	5	4	9	138	190	328	41	48	89
14:10	22	29	1	0	40	67	107	1	0	1	146	207	353	42	46	88
14:15	16	21	0	1	46	66	112	1	1	2	157	219	376	40	44	84
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14:25	13	23	0	1	37	66	103	1	2	3	157	236	393	27	35	62
14:30	27	20	0	0	48	65	113	1	1	2	170	237	407	20	26	46
14:35	26	20	0	0	66	63	129	0	1	1	185	240	425	18	19	37
14:40	11	18	0	0	64	58	122	0	0	0	184	243	427	16	14	30
14:45	34	31	13	0	71	69	140	13	0	13	199	269	468	24	9	33
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15:55	16	19	5	5	53	79	132	15	33	48	272	294	566	84	154	238
16:00	16	21	2	8	57	69	126	9	25	34	275	293	568	82	160	242
16:05	20	36	1	3	52	76	128	8	16	24	264	311	575	81	158	239
16:10	13	38	1	11	49	95	144	4	22	26	244	328	572	68	154	222
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16:40	15	33	4	2	46	73	119	8	18	26	197	312	509	46	95	141
16:45	20	26	4	6	56	79	135	10	16	26	205	307	512	42	85	127
16:50	13	20	0	5	48	79	127	8	13	21	193	298	491	40	78	118
16:55	12	24	6	8	45	70	115	10	19	29	189	303	492	41	81	122

17:00	17	17	10	10	42	61	103	16	23	39	190	299	489	49	83	132
17:05	19	22	2	3	48	63	111	18	21	39	189	285	474	50	83	133
17:10	11	18	5	5	47	57	104	17	18	35	187	265	452	54	77	131
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17:20	8	17	3	10	36	66	102	10	19	29	173	264	437	50	78	128
17:25	10	33	10	16	35	81	116	15	30	45	173	281	454	50	85	135
17:30	26	30	7	17	44	80	124	20	43	63	189	291	480	55	94	149
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17:40	15	30	4	5	52	89	141	19	27	46	179	297	476	61	94	155
17:45	11	15	7	8	37	74	111	19	18	37	170	286	456	64	96	160
17:50	7	16	8	7	33	61	94	19	20	39	164	282	446	72	98	170
17:55	0	10	13	11	18	41	59	28	26	54	152	268	420	79	101	180
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18:40	10	6	13	12	21	56	77	18	43	61	114	252	366	81	127	208
18:45	4	18	18	24	21	58	79	33	44	77	107	255	362	92	143	235
18:50	8	10	12	17	22	34	56	43	53	96	108	249	357	96	153	249
18:55	8	5	7	5	20	33	53	37	46	83	116	244	360	90	147	237

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Crosswalk 4

	15 Min										1 Hour					
	Crosswalk				Crosswalk			Crosswalk			Crosswalk			Crosswalk		
	EB Peds	WB Peds	EB Jaywalkers	WB Jaywalkers	EB Peds	WB Peds	Combined	EB Jaywalkers	WB Jaywalkers	Combined	EB Peds	WB Peds	Combined	EB Jaywalkers	WB Jaywalkers	Combined
7:00	1	0	3	0												
7:05	0	0	0	0												
7:10	0	2	0	0	1	2	3	3	0	3						
7:15	0	0	0	0	0	2	2	0	0	0						
7:20	7	4	0	1	7	6	13	0	1	1						
7:25	3	2	0	0	10	6	16	0	1	1						
7:30	4	0	4	1	14	6	20	4	2	6						
7:35	1	0	2	0	8	2	10	6	1	7						
7:40	5	2	0	0	10	2	12	6	1	7						
7:45	5	3	0	2	11	5	16	2	2	4						
7:50	2	3	0	0	12	8	20	0	2	2						
7:55	7	1	1	0	14	7	21	1	2	3	35	17	52	10	4	14
8:00	11	0	0	0	20	4	24	1	0	1	45	17	62	7	4	11
8:05	6	1	0	0	24	2	26	1	0	1	51	18	69	7	4	11
8:10	7	1	0	0	24	2	26	0	0	0	58	17	75	7	4	11
8:15	6	4	0	0	19	6	25	0	0	0	64	21	85	7	4	11
8:20	8	2	1	1	21	7	28	1	1	2	65	19	84	8	4	12
8:25	9	2	0	1	23	8	31	1	2	3	71	19	90	8	5	13
8:30	16	8	0	1	33	12	45	1	3	4	83	27	110	4	5	9
8:35	9	5	0	0	34	15	49	0	2	2	91	32	123	2	5	7
8:40	4	8	0	1	29	21	50	0	2	2	90	38	128	2	6	8
8:45	10	4	0	0	23	17	40	0	1	1	95	39	134	2	4	6
8:50	12	6	0	0	26	18	44	0	1	1	105	42	147	2	4	6
8:55	15	5	0	5	37	15	52	0	5	5	113	46	159	1	9	10
9:00	14	1	1	1	41	12	53	1	6	7	116	47	163	2	10	12
9:05	8	8	0	0	37	14	51	1	6	7	118	54	172	2	10	12
9:10	15	5	3	3	37	14	51	4	4	8	126	58	184	5	13	18
9:15	11	5	2	2	34	18	52	5	5	10	131	59	190	7	15	22
9:20	15	4	3	3	41	14	55	8	8	16	138	61	199	9	17	26
9:25	18	5	1	1	44	14	58	6	6	12	147	64	211	10	17	27
9:30	31	15	6	6	64	24	88	10	10	20	162	71	233	16	22	38
9:35	25	2	0	0	74	22	96	7	7	14	178	68	246	16	22	38
9:40	37	8	0	3	93	25	118	6	9	15	211	68	279	16	24	40
9:45	36	11	3	2	98	21	119	3	5	8	237	75	312	19	26	45
9:50	33	15	2	2	106	34	140	5	7	12	258	84	342	21	28	49
9:55	47	15	2	0	116	41	157	7	4	11	290	94	384	23	23	46
10:00	45	14	0	2	125	44	169	4	4	8	321	107	428	22	24	46
10:05	12	10	2	16	104	39	143	4	18	22	325	109	434	24	40	64
10:10	12	10	14	4	69	34	103	16	22	38	322	114	436	35	41	76
10:15	24	19	7	9	48	39	87	23	29	52	335	128	463	40	48	88
10:20	33	18	9	4	69	47	116	30	17	47	353	142	495	46	49	95
10:25	37	25	4	8	94	62	156	20	21	41	372	162	534	49	56	105
10:30	30	13	7	6	100	56	156	20	18	38	371	160	531	50	56	106
10:35	17	16	6	0	84	54	138	17	14	31	363	174	537	56	56	112
10:40	22	10	0	0	69	39	108	13	6	19	348	176	524	56	53	109
10:45	38	17	0	0	77	43	120	6	0	6	350	182	532	53	51	104
10:50	21	22	2	2	81	49	130	2	2	4	338	189	527	53	51	104
10:55	27	17	2	2	86	56	142	4	4	8	318	191	509	53	53	106
11:00	27	5	0	2	75	44	119	4	6	10	300	182	482	53	53	106
11:05	18	18	4	7	72	40	112	6	11	17	306	190	496	55	44	99

11:10	15	8	3	2	60	31	91	7	11	18	309	188	497	44	42	86
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11:20	29	13	6	7	67	40	107	10	24	34	304	183	487	35	51	86
11:25	28	15	5	8	80	47	127	12	30	42	295	173	468	36	51	87
11:30	27	21	0	18	84	49	133	11	33	44	292	181	473	29	63	92
11:35	16	14	1	3	71	50	121	6	29	35	291	179	470	24	66	90
11:40	24	6	0	3	67	41	108	1	24	25	293	175	468	24	69	93
11:45	8	10	8	5	48	30	78	9	11	20	263	168	431	32	74	106
11:50	10	15	2	1	42	31	73	10	9	19	252	161	413	32	73	105
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12:00	22	19	2	3	56	51	107	7	5	12	244	175	419	35	73	108
12:05	26	18	1	1	72	54	126	6	5	11	252	175	427	32	67	99
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15:10	40	17	0	0	102	43	145	0	0	0	301	142	443	14	13	27
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16:10	31	13	2	2	78	54	132	4	13	17	373	214	587	19	33	52
16:15	25	7	0	3	86	39	125	3	5	8	356	207	563	19	32	51
16:20	19	15	1	6	75	35	110	3	11	14	342	194	536	20	37	57
16:25	21	15	1	4	65	37	102	2	13	15	319	197	516	21	38	59
16:30	20	16	3	3	60	46	106	5	13	18	310	197	507	24	40	64

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16:45	21	15	2	0	58	43	101	6	13	19	282	177	459	23	49	72
16:50	21	17	11	2	62	49	111	17	4	21	272	188	460	27	44	71
16:55	5	10	0	0	47	42	89	13	2	15	247	177	424	26	44	70
17:00	31	3	2	2	57	30	87	13	4	17	261	158	419	27	35	62
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17:10	9	24	0	5	55	45	100	3	7	10	224	168	392	25	38	63
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17:25	4	12	3	2	26	41	67	7	7	14	185	172	357	30	32	62
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17:45	16	14	0	5	61	37	98	1	10	11	181	157	338	25	29	54
17:50	18	7	1	0	47	33	80	1	7	8	178	147	325	15	27	42
17:55	22	11	1	0	56	32	88	2	5	7	195	148	343	16	27	43
18:00	12	18	0	3	52	36	88	2	3	5	176	163	339	14	28	42
18:05	16	6	0	6	50	35	85	1	9	10	177	151	328	13	34	47
18:10	2	7	0	12	30	31	61	0	21	21	170	134	304	13	41	54
18:15	10	16	5	11	28	29	57	5	29	34	162	133	295	14	49	63
18:20	10	2	0	5	22	25	47	5	28	33	168	123	291	14	52	66
18:25	11	4	0	0	31	22	53	5	16	21	175	115	290	11	50	61
18:30	11	2	1	4	32	8	40	1	9	10	173	110	283	9	51	60
18:35	12	17	0	0	34	23	57	1	4	5	153	116	269	8	48	56
18:40	9	11	0	1	32	30	62	1	5	6	149	115	264	8	47	55
18:45	5	0	3	5	26	28	54	3	6	9	138	101	239	11	47	58
18:50	3	5	2	4	17	16	33	5	10	15	123	99	222	12	51	63
18:55	1	4	2	1	9	9	18	7	10	17	102	92	194	13	52	65

Quality Counts
TRANSPORTATION DATA COLLECTION SERVICES

Crosswalk 7

	15 Min Totals										1 Hour Totals					
	Crosswalk				Crosswalk			Crosswalk			Crosswalk			Crosswalk		
	EB Peds	WB Peds	EB Jaywalkers	WB Jaywalkers	EB Peds	WB Peds	Combined	EB Jaywalkers	WB Jaywalkers	Combined	EB Peds	WB Peds	Combined	EB Jaywalkers	WB Jaywalkers	Combined
7:00	0	1	0	0												
7:05	0	1	0	0												
7:10	0	1	0	1	0	3	3	0	1	1						
7:15	9	2	0	0	9	4	13	0	1	1						
7:20	24	2	0	0	33	5	38	0	1	1						
7:25	9	0	0	0	42	4	46	0	0	0						
7:30	15	0	0	0	48	2	50	0	0	0						
7:35	12	3	0	0	36	3	39	0	0	0						
7:40	21	4	0	0	48	7	55	0	0	0						
7:45	16	10	2	0	49	17	66	2	0	2						
7:50	14	7	4	1	51	21	72	6	1	7						
7:55	10	10	1	0	40	27	67	7	1	8	130	41	171	7	2	9
8:00	24	7	0	0	48	24	72	5	1	6	154	47	201	7	2	9
8:05	8	24	5	0	42	41	83	6	0	6	162	70	232	12	2	14
8:10	23	8	11	0	55	39	94	16	0	16	185	77	262	23	1	24
8:15	40	12	8	0	71	44	115	24	0	24	216	87	303	31	1	32
8:20	18	20	1	0	81	40	121	20	0	20	210	105	315	32	1	33
8:25	20	3	5	0	78	35	113	14	0	14	221	108	329	37	1	38
8:30	48	0	0	0	86	23	109	6	0	6	254	108	362	37	1	38
8:35	30	17	0	0	98	20	118	5	0	5	272	122	394	37	1	38
8:40	20	12	3	0	98	29	127	3	0	3	271	130	401	40	1	41
8:45	18	20	2	0	68	49	117	5	0	5	273	140	413	40	1	41
8:50	20	14	0	0	58	46	104	5	0	5	279	147	426	36	0	36
8:55	15	20	1	0	53	54	107	3	0	3	284	157	441	36	0	36
9:00	27	12	3	0	62	46	108	4	0	4	287	162	449	39	0	39
9:05	41	33	0	0	83	65	148	4	0	4	320	171	491	34	0	34
9:10	23	22	2	1	91	67	158	5	1	6	320	185	505	25	1	26
9:15	45	13	2	0	109	68	177	4	1	5	325	186	511	19	1	20
9:20	30	23	0	0	98	58	156	4	1	5	337	189	526	18	1	19
9:25	69	9	8	0	144	45	189	10	0	10	386	195	581	21	1	22
9:30	40	16	1	0	139	48	187	9	0	9	378	211	589	22	1	23
9:35	64	16	4	0	173	41	214	13	0	13	412	210	622	26	1	27
9:40	49	12	6	0	153	44	197	11	0	11	441	210	651	29	1	30
9:45	54	10	3	0	167	38	205	13	0	13	477	200	677	30	1	31
9:50	33	20	3	3	136	42	178	12	3	15	490	206	696	33	4	37
9:55	46	10	11	0	133	40	173	17	3	20	521	196	717	43	4	47
10:00	54	26	0	0	133	56	189	14	3	17	548	210	758	40	4	44
10:05	66	16	0	0	166	52	218	11	0	11	573	193	766	40	4	44
10:10	49	21	2	0	169	63	232	2	0	2	599	192	791	40	3	43
10:15	49	19	7	0	164	56	220	9	0	9	603	198	801	45	3	48
10:20	65	41	7	0	163	81	244	16	0	16	638	216	854	52	3	55
10:25	42	31	0	0	156	91	247	14	0	14	611	238	849	44	3	47
10:30	55	29	1	1	162	101	263	8	1	9	626	251	877	44	4	48
10:35	47	26	0	2	144	86	230	1	3	4	609	261	870	40	6	46
10:40	37	23	7	1	139	78	217	8	4	12	597	272	869	41	7	48
10:45	45	38	5	0	129	87	216	12	3	15	588	300	888	43	7	50
10:50	61	48	3	0	143	109	252	15	1	16	616	328	944	43	4	47
10:55	30	50	1	0	136	136	272	9	0	9	600	368	968	33	4	37
11:00	40	46	3	2	131	144	275	7	2	9	586	388	974	36	6	42
11:05	36	51	2	0	106	147	253	6	2	8	556	423	979	38	6	44
11:10	38	24	1	0	114	121	235	6	2	8	545	426	971	37	6	43
11:15	44	57	0	0	118	132	250	3	0	3	540	464	1004	30	6	36
11:20	21	45	1	1	103	126	229	2	1	3	496	468	964	24	7	31

11:25	50	35	1	0	115	137	252	2	1	3	504	472	976	25	7	32
11:30	24	82	0	3	95	162	257	2	4	6	473	525	998	24	9	33
11:35	33	50	2	2	107	167	274	3	5	8	459	549	1008	26	9	35
11:40	30	54	0	0	87	186	273	2	5	7	452	580	1032	19	8	27
11:45	22	48	1	0	85	152	237	3	2	5	429	590	1019	15	8	23
11:50	31	43	1	2	83	145	228	2	2	4	399	585	984	13	10	23
11:55	24	40	6	0	77	131	208	8	2	10	393	575	968	18	10	28
12:00	33	50	4	0	88	133	221	11	2	13	386	579	965	19	8	27
12:05	27	54	3	1	84	144	228	13	1	14	377	582	959	20	9	29
12:10	26	71	2	0	86	175	261	9	1	10	365	629	994	21	9	30
12:15	32	64	2	4	85	189	274	7	5	12	353	636	989	23	13	36
12:20	37	36	1	2	95	171	266	5	6	11	369	627	996	23	14	37
12:25	15	60	0	0	84	160	244	3	6	9	334	652	986	22	14	36
12:30	19	50	2	0	71	146	217	3	2	5	329	620	949	24	11	35
12:35	21	30	0	0	55	140	195	2	0	2	317	600	917	22	9	31
12:40	14	61	0	4	54	141	195	2	4	6	301	607	908	22	13	35
12:45	25	21	0	0	60	112	172	0	4	4	304	580	884	21	13	34
12:50	20	26	1	3	59	108	167	1	7	8	293	563	856	21	14	35
12:55	26	27	4	0	71	74	145	5	3	8	295	550	845	19	14	33
13:00	19	24	1	0	65	77	142	6	3	9	281	524	805	16	14	30
13:05	25	46	0	0	70	97	167	5	0	5	279	516	795	13	13	26
13:10	21	24	1	0	65	94	159	2	0	2	274	469	743	12	13	25
13:15	27	33	0	0	73	103	176	1	0	1	269	438	707	10	9	19
13:20	21	15	0	0	69	72	141	1	0	1	253	417	670	9	7	16
13:25	10	29	0	0	58	77	135	0	0	0	248	386	634	9	7	16
13:30	29	18	0	0	60	62	122	0	0	0	258	354	612	7	7	14
13:35	17	29	0	0	56	76	132	0	0	0	254	353	607	7	7	14
13:40	20	18	0	3	66	65	131	0	3	3	260	310	570	7	6	13
13:45	19	29	1	0	56	76	132	1	3	4	254	318	572	8	6	14
13:50	20	38	1	0	59	85	144	2	3	5	254	330	584	8	3	11
13:55	21	19	0	0	60	86	146	2	0	2	249	322	571	4	3	7
14:00	13	20	0	0	54	77	131	1	0	1	243	318	561	3	3	6
14:05	31	35	0	1	65	74	139	0	1	1	249	307	556	3	4	7
14:10	33	33	3	1	77	88	165	3	2	5	261	316	577	5	5	10
14:15	27	18	2	0	91	86	177	5	2	7	261	301	562	7	5	12
14:20	36	26	0	0	96	77	173	5	1	6	276	312	588	7	5	12
14:25	36	30	0	2	99	74	173	2	2	4	302	313	615	7	7	14
14:30	60	17	0	0	132	73	205	0	2	2	333	312	645	7	7	14
14:35	71	32	4	2	167	79	246	4	4	8	387	315	702	11	9	20
14:40	71	34	1	0	202	83	285	5	2	7	438	331	769	12	6	18
14:45	49	24	1	0	191	90	281	6	2	8	468	326	794	12	6	18
14:50	37	31	2	1	157	89	246	4	1	5	485	319	804	13	7	20
14:55	22	33	1	0	108	88	196	4	1	5	486	333	819	14	7	21
15:00	59	45	3	0	118	109	227	6	1	7	532	358	890	17	7	24
15:05	45	31	2	0	126	109	235	6	0	6	546	354	900	19	6	25
15:10	58	47	0	0	162	123	285	5	0	5	571	368	939	16	5	21
15:15	40	39	0	0	143	117	260	2	0	2	584	389	973	14	5	19
15:20	34	35	1	0	132	121	253	1	0	1	582	398	980	15	5	20
15:25	68	47	3	1	142	121	263	4	1	5	614	415	1029	18	4	22
15:30	36	48	0	0	138	130	268	4	1	5	590	446	1036	18	4	22
15:35	36	63	4	0	140	158	298	7	1	8	555	477	1032	18	2	20
15:40	43	31	1	0	115	142	257	5	0	5	527	474	1001	18	2	20
15:45	21	25	0	4	100	119	219	5	4	9	499	475	974	17	6	23
15:50	20	31	2	1	84	87	171	3	5	8	482	475	957	17	6	23
15:55	5	31	0	0	46	87	133	2	5	7	465	473	938	16	6	22
16:00	22	26	5	0	47	88	135	7	1	8	428	454	882	18	6	24
16:05	20	34	0	0	47	91	138	5	0	5	403	457	860	16	6	22
16:10	19	26	1	2	61	86	147	6	2	8	364	436	800	17	8	25
16:15	23	38	5	0	62	98	160	6	2	8	347	435	782	22	8	30
16:20	19	35	0	1	61	99	160	6	3	9	332	435	767	21	9	30
16:25	17	44	5	0	59	117	176	10	1	11	281	432	713	23	8	31
16:30	26	28	0	0	62	107	169	5	1	6	271	412	683	23	8	31
16:35	47	46	0	0	90	118	208	5	0	5	282	395	677	19	8	27
16:40	32	35	0	0	105	109	214	0	0	0	271	399	670	18	8	26
16:45	8	38	0	0	87	119	206	0	0	0	258	412	670	18	4	22
16:50	30	37	0	0	70	110	180	0	0	0	268	418	686	16	3	19
16:55	18	25	0	0	56	100	156	0	0	0	281	412	693	16	3	19

17:00	24	41	0	0	72	103	175	0	0	0	283	427	710	11	3	14
17:05	23	43	0	1	65	109	174	0	1	1	286	436	722	11	4	15
17:10	12	31	2	0	59	115	174	2	1	3	279	441	720	12	2	14
17:15	11	39	2	2	46	113	159	4	3	7	267	442	709	9	4	13
17:20	25	34	0	3	48	104	152	4	5	9	273	441	714	9	6	15
17:25	26	43	0	1	62	116	178	2	6	8	282	440	722	4	7	11
17:30	23	49	0	1	74	126	200	0	5	5	279	461	740	4	8	12
17:35	25	37	4	0	74	129	203	4	2	6	257	452	709	8	8	16
17:40	10	40	4	0	58	126	184	8	1	9	235	457	692	12	8	20
17:45	13	29	1	0	48	106	154	9	0	9	240	448	688	13	8	21
17:50	31	40	0	0	54	109	163	5	0	5	241	451	692	13	8	21
17:55	21	42	2	2	65	111	176	3	2	5	244	468	712	15	10	25
18:00	28	34	6	0	80	116	196	8	2	10	248	461	709	21	10	31
18:05	36	40	3	0	85	116	201	11	2	13	261	458	719	24	9	33
18:10	28	17	5	0	92	91	183	14	0	14	277	444	721	27	9	36
18:15	13	23	0	0	77	80	157	8	0	8	279	428	707	25	7	32
18:20	23	15	1	3	64	55	119	6	3	9	277	409	686	26	7	33
18:25	23	28	2	0	59	66	125	3	3	6	274	394	668	28	6	34
18:30	15	38	0	0	61	81	142	3	3	6	266	383	649	28	5	33
18:35	10	20	3	0	48	86	134	5	0	5	251	366	617	27	5	32
18:40	12	28	6	0	37	86	123	9	0	9	253	354	607	29	5	34
18:45	17	26	1	2	39	74	113	10	2	12	257	351	608	29	7	36
18:50	6	21	0	0	35	75	110	7	2	9	232	332	564	29	7	36
18:55	3	22	0	0	26	69	95	1	2	3	214	312	526	27	5	32

Quality Counts
TRANSPORTATION DATA
COLLECTION SERVICES

Sidewalk Count

	15 Min Totals					1 Hour Totals		
	East Sidewalk	West Sidewalk	East Sidewalk	West Sidewalk	Combined	East Sidewalk	West Sidewalk	Combined
7:00	0	0						
7:05	0	0						
7:10	0	0	0	0	0			
7:15	9	8	9	8	17			
7:20	8	15	17	23	40			
7:25	10	13	27	36	63			
7:30	15	13	33	41	74			
7:35	20	17	45	43	88			
7:40	20	11	55	41	96			
7:45	18	16	58	44	102			
7:50	24	36	62	63	125			
7:55	30	21	72	73	145	154	150	304
8:00	18	22	72	79	151	172	172	344
8:05	32	22	80	65	145	204	194	398
8:10	13	24	63	68	131	217	218	435
8:15	16	23	61	69	130	224	233	457
8:20	19	32	48	79	127	235	250	485
8:25	15	28	50	83	133	240	265	505
8:30	33	29	67	89	156	258	281	539
8:35	31	36	79	93	172	269	300	569
8:40	29	60	93	125	218	278	349	627
8:45	46	37	106	133	239	306	370	676
8:50	49	49	124	146	270	331	383	714
8:55	46	33	141	119	260	347	395	742
9:00	46	51	141	133	274	375	424	799
9:05	51	83	143	167	310	394	485	879
9:10	49	76	146	210	356	430	537	967
9:15	69	68	169	227	396	483	582	1065
9:20	66	76	184	220	404	530	626	1156
9:25	59	86	194	230	424	574	684	1258
9:30	83	103	208	265	473	624	758	1382
9:35	79	109	221	298	519	672	831	1503
9:40	91	120	253	332	585	734	891	1625
9:45	110	137	280	366	646	798	991	1789

9:50	104	99	305	356	661	853	1041	1894
9:55	73	103	287	339	626	880	1111	1991
10:00	69	97	246	299	545	903	1157	2060
10:05	103	91	245	291	536	955	1165	2120
10:10	68	88	240	276	516	974	1177	2151
10:15	97	94	268	273	541	1002	1203	2205
10:20	124	88	289	270	559	1060	1215	2275
10:25	107	98	328	280	608	1108	1227	2335
10:30	83	96	314	282	596	1108	1220	2328
10:35	113	106	303	300	603	1142	1217	2359
10:40	97	112	293	314	607	1148	1209	2357
10:45	159	117	369	335	704	1197	1189	2386
10:50	137	137	393	366	759	1230	1227	2457
10:55	74	95	370	349	719	1231	1219	2450
11:00	64	102	275	334	609	1226	1224	2450
11:05	79	109	217	306	523	1202	1242	2444
11:10	100	84	243	295	538	1234	1238	2472
11:15	84	95	263	288	551	1221	1239	2460
11:20	110	145	294	324	618	1207	1296	2503
11:25	75	109	269	349	618	1175	1307	2482
11:30	82	83	267	337	604	1174	1294	2468
11:35	82	106	239	298	537	1143	1294	2437
11:40	79	80	243	269	512	1125	1262	2387
11:45	63	106	224	292	516	1029	1251	2280
11:50	63	142	205	328	533	955	1256	2211
11:55	81	93	207	341	548	962	1254	2216
12:00	91	94	235	329	564	989	1246	2235
12:05	113	132	285	319	604	1023	1269	2292
12:10	62	95	266	321	587	985	1280	2265
12:15	64	108	239	335	574	965	1293	2258
12:20	71	123	197	326	523	926	1271	2197
12:25	102	120	237	351	588	953	1282	2235
12:30	82	89	255	332	587	953	1288	2241
12:35	65	97	249	306	555	936	1279	2215
12:40	78	99	225	285	510	935	1298	2233
12:45	56	72	199	268	467	928	1264	2192
12:50	84	64	218	235	453	949	1186	2135
12:55	45	43	185	179	364	913	1136	2049
13:00	70	70	199	177	376	892	1112	2004
13:05	55	62	170	175	345	834	1042	1876
13:10	64	76	189	208	397	836	1023	1859
13:15	58	46	177	184	361	830	961	1791
13:20	70	77	192	199	391	829	915	1744
13:25	65	59	193	182	375	792	854	1646
13:30	50	74	185	210	395	760	839	1599
13:35	73	55	188	188	376	768	797	1565
13:40	73	65	196	194	390	763	763	1526

13:45	65	68	211	188	399	772	759	1531
13:50	55	78	193	211	404	743	773	1516
13:55	57	44	177	190	367	755	774	1529
14:00	73	73	185	195	380	758	777	1535
14:05	94	79	224	196	420	797	794	1591
14:10	104	69	271	221	492	837	787	1624
14:15	143	97	341	245	586	922	838	1760
14:20	110	63	357	229	586	962	824	1786
14:25	94	66	347	226	573	991	831	1822
14:30	119	91	323	220	543	1060	848	1908
14:35	137	87	350	244	594	1124	880	2004
14:40	112	89	368	267	635	1163	904	2067
14:45	136	81	385	257	642	1234	917	2151
14:50	162	101	410	271	681	1341	940	2281
14:55	149	98	447	280	727	1433	994	2427
15:00	92	93	403	292	695	1452	1014	2466
15:05	121	119	362	310	672	1479	1054	2533
15:10	113	96	326	308	634	1488	1081	2569
15:15	152	91	386	306	692	1497	1075	2572
15:20	122	86	387	273	660	1509	1098	2607
15:25	129	131	403	308	711	1544	1163	2707
15:30	122	121	373	338	711	1547	1193	2740
15:35	122	91	373	343	716	1532	1197	2729
15:40	109	140	353	352	705	1529	1248	2777
15:45	127	134	358	365	723	1520	1301	2821
15:50	145	154	381	428	809	1503	1354	2857
15:55	119	109	391	397	788	1473	1365	2838
16:00	72	94	336	357	693	1453	1366	2819
16:05	75	98	266	301	567	1407	1345	2752
16:10	115	126	262	318	580	1409	1375	2784
16:15	97	99	287	323	610	1354	1383	2737
16:20	74	127	286	352	638	1306	1424	2730
16:25	89	95	260	321	581	1266	1388	2654
16:30	90	96	253	318	571	1234	1363	2597
16:35	73	101	252	292	544	1185	1373	2558
16:40	78	143	241	340	581	1154	1376	2530
16:45	93	88	244	332	576	1120	1330	2450
16:50	104	92	275	323	598	1079	1268	2347
16:55	68	102	265	282	547	1028	1261	2289
17:00	89	98	261	292	553	1045	1265	2310
17:05	87	95	244	295	539	1057	1262	2319
17:10	78	78	254	271	525	1020	1214	2234
17:15	89	99	254	272	526	1012	1214	2226
17:20	70	108	237	285	522	1008	1195	2203
17:25	82	74	241	281	522	1001	1174	2175
17:30	127	12	279	194	473	1038	1090	2128

17:35	84	90	293	176	469	1049	1079	2128
17:40	106	75	317	177	494	1077	1011	2088
17:45	93	66	283	231	514	1077	989	2066
17:50	64	70	263	211	474	1037	967	2004
17:55	80	74	237	210	447	1049	939	1988
18:00	89	77	233	221	454	1049	918	1967
18:05	73	78	242	229	471	1035	901	1936
18:10	64	79	226	234	460	1021	902	1923
18:15	53	84	190	241	431	985	887	1872
18:20	78	74	195	237	432	993	853	1846
18:25	75	76	206	234	440	986	855	1841
18:30	61	64	214	214	428	920	907	1827
18:35	46	73	182	213	395	882	890	1772
18:40	51	55	158	192	350	827	870	1697
18:45	62	60	159	188	347	796	864	1660
18:50	72	82	185	197	382	804	876	1680
18:55	44	54	178	196	374	768	856	1624

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
610 SW Alder Street, Suite 700, Portland, OR 97205 503.228.5230 503.273.8169

MEMORANDUM

Date: March 16, 2010 Project #: 9761.0

To: Kate Mickelson
PND Engineers, Inc.

From: Paul Ryus; Lee Rodegerdts, PE; and Nick Foster
Project: Juneau Cruise Ship Upland Operations
Subject: Analysis of Proposed Improvements to Cruise Ship Docks and Recommended Strategies to Address Them

The City and Borough of Juneau (CBJ) intends to reconstruct the Steamship ('E') and Cruise Ship ('D') docks in downtown Juneau, Alaska, to accommodate two Panamax-sized vessels simultaneously. Kittelson & Associates, Inc. (KAI) has analyzed the potential pedestrian traffic impacts of this project. This memorandum summarizes this analysis and identifies potential improvements to mitigate the increase in pedestrian traffic, as well as address existing issues.

Our previous memorandum presented the field inventory and existing conditions analysis. In summary, the following problem areas were identified related to pedestrian traffic:

- High pedestrian traffic volumes combined with narrow sidewalks leads to pedestrian level of service (LOS) F conditions for sections of both sidewalks along Franklin Street near the two docks.
- One consequence of the congested conditions is that people step off the sidewalk into the street to get around other people or obstacles, creating a safety hazard and contributing to traffic congestion on Franklin Street.
- Jaywalking is a frequent occurrence along Franklin Street, particularly at the turnabout.
- Pedestrians frequently cut through bus staging areas, and queues of people waiting to board shuttle buses also impede pedestrian circulation at the 'D' dock.

IMPACTS ASSESSMENT

Reconstruction of the 'D' and 'E' docks to allow two Panamax-sized vessels to simultaneously dock will increase the number of passengers arriving in Juneau and, consequently, the number of pedestrians on Franklin Street. In addition, although the pedestrian counts were conducted on a high-volume day in terms of ship arrivals, most of the ships arriving had a passenger capacity less than the highest capacity of a Panamax ship (approximately 2,600 passengers). Therefore, to

ensure that this memo's recommendations would be based on a maximum pedestrian activity scenario, the ships docked at the 'D', 'E', and 'AJ' docks on the count day were replaced with high-capacity ships. (A Panamax-size vessel, the *Sapphire Princess,* docked at the 'B' dock on the count day and therefore was not replaced.) The passenger capacities of the ships docked on the count day were then compared to the potential capacities of each dock for the purposes of determining a design pedestrian traffic growth scenario.

Table 1 compares the actual and potential passenger capacity of ships docking in Juneau on the count day, while Table 2 summarizes the calculations used to determine a design scenario.

Table 1 Actual vs. Potential Cruise Ship Schedule – June 16, 2009

Cruise Ship Schedule – June 16, 2009 (Actual)				
Ship	**Dock**	**Time In**	**Time Out**	**Capacity (passengers)**
Norwegian Star	AJ	7:00 a.m.	1:30 p.m.	2,240
Spirit of Discovery	Sea Drome (F)	8:00 a.m.	5:30 p.m.	84
Ryndam	Steamship (E)	8:00 a.m.	6:00 p.m.	1,260
Sapphire Princess	Franklin (B)	8:00 a.m.	9:00 p.m.	2,600
Infinity	Cruise Ship (D)	9:00 a.m.	7:00 p.m.	2,046
Norwegian Pearl	AJ	2:00 p.m.	10:00 p.m.	2,240
Total				**10,470**
Cruise Ship Schedule – Design Scenario				
Ship	**Dock**	**Time In**	**Time Out**	**Capacity (passengers)**
Golden Princess[1]	*AJ*	*7:00 a.m.*	-	*2,600*
Spirit of Discovery	Sea Drome (F)	8:00 a.m.	5:30 p.m.	84
Diamond Princess[1]	*Steamship (E)*	*8:00 a.m.*	*6:00 p.m.*	*2,600*
Sapphire Princess	Franklin (B)	8:00 a.m.	9:00 p.m.	2,600
Star Princess[1]	*Cruise Ship (D)*	*9:00 a.m.*	*7:00 p.m.*	*2,600*
Golden Princess[1,2]	*AJ*	--	*10:00 p.m.*	*2,600*
Total				**13,084**

[1]Represents a larger capacity ship taken from the Juneau Convention & Visitors Bureau's *2009 Cruise Ship Roster* than was observed to be present
[2]To be conservative, this ship is analyzed for both time periods at the 'AJ' dock

Table 2 Projected Increase in Pedestrian Traffic

Potential Capacity After Reconstruction (Passengers)	13,084
Existing Observed Capacity (Passengers)	10,470
Potential Increase in Capacity (Passengers)	2,614
Projected Increase in Pedestrian Traffic[1]	**25%**

[1]Projected Increase in Pedestrian Traffic = Potential Increase in Capacity/Existing Observed Capacity

As Table 2 shows, following reconstruction, the docks in Juneau will have the ability to serve cruise ships with a combined capacity of approximately 13,000 passengers in one day. This represents an increase of approximately 2,600 passengers over the combined capacity of the ships present on the day that the pedestrian volumes were measured. Therefore, in a design scenario, pedestrian traffic in downtown Juneau would be 25% higher than that observed on the count day. Note that the actual increase in potential design capacity from what is possible today (approximately 11%) is limited to the difference in passenger capacity of the 'D' and 'E' docks before and after reconstruction, where currently only one Panamax-sized vessel may be docked at one time.

For the purposes of this design analysis, all existing pedestrian volume counts were factored up by 25%. Figure 1 illustrates the projected peak hour and 12-hour total pedestrian volumes at the locations counted for the previous memo. The volumes reflect both directions of travel (e.g., eastbound and westbound crossing volumes), and have been rounded to the nearest five pedestrians.

Given that an across-the-board 25% factor is applied, no changes are expected regarding the locations experiencing the highest levels of pedestrian activity. It is assumed that pedestrian activity after reconstruction will exhibit similar peaking characteristics to those observed on the count day. Please refer to our previous August 26, 2009, memorandum titled *Field Inventory and Analysis* (Reference 1) for a discussion of when pedestrian volumes are highest during the day.

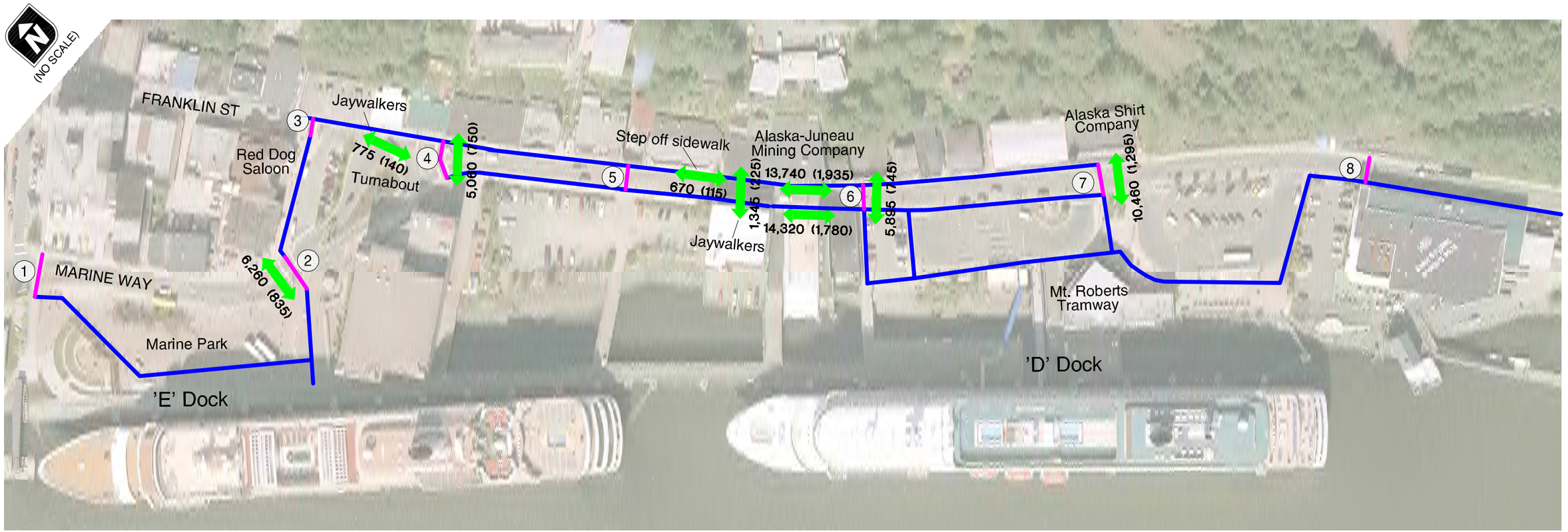
Level of Service Analysis

A pedestrian level of service (LOS) analysis was performed in our previous memo for the congested portions of the Franklin Street sidewalks under existing conditions. An updated analysis is performed here using the projected volumes. This analysis is based on the methodology described in the *Highway Capacity Manual 2000* (Reference 2) for sidewalks and walkways. The methodology uses the effective sidewalk width and the peak 15-minute pedestrian count to calculate the peak flow rate in persons per minute per foot of effective sidewalk width. (As described in our previous memo, the effective sidewalk width is the portion of the sidewalk usable for pedestrian travel, after sidewalk obstacles and shy distances from curbs and building faces are accounted for.) The peak flow rate determines the volume-to capacity (v/c) ratio, using an assumed capacity of 23 p/min/ft, which in turn determines the LOS letter grade ("A" through "F") that is assigned to the sidewalk. Table 3 summarizes the results of this analysis for both sides of Franklin Street.

Table 3 LOS Analysis of Critical Sections of Sidewalk During Peak Periods Along Franklin Street

Location	Peak 15-Minute Count (p)	Effective Sidewalk Width (ft)	Flow Rate (p/min/ft)	v/c	LOS
East Sidewalk, between Crosswalks 5 and 6	559	0.5[1]	75	>1.0	F
West Sidewalk, between Crosswalks 5 and 6	535	1.0[1]	37	>1.0	F

[1]See previous memo for calculation of effective sidewalk width



LEGEND

- PEDESTRIAN TRAVELWAY
- MARKED CROSSWALK
- (#) - MARKED CROSSWALK NUMBER
- XX - 12 HOUR VOLUME (7 AM - 7 PM)
- (XX) - PEAK HOUR VOLUME

PROJECTED MAXIMUM PEDESTRIAN TRAFFIC VOLUMES
7 AM - 7 PM AND PEAK HOUR
JUNEAU, ALASKA

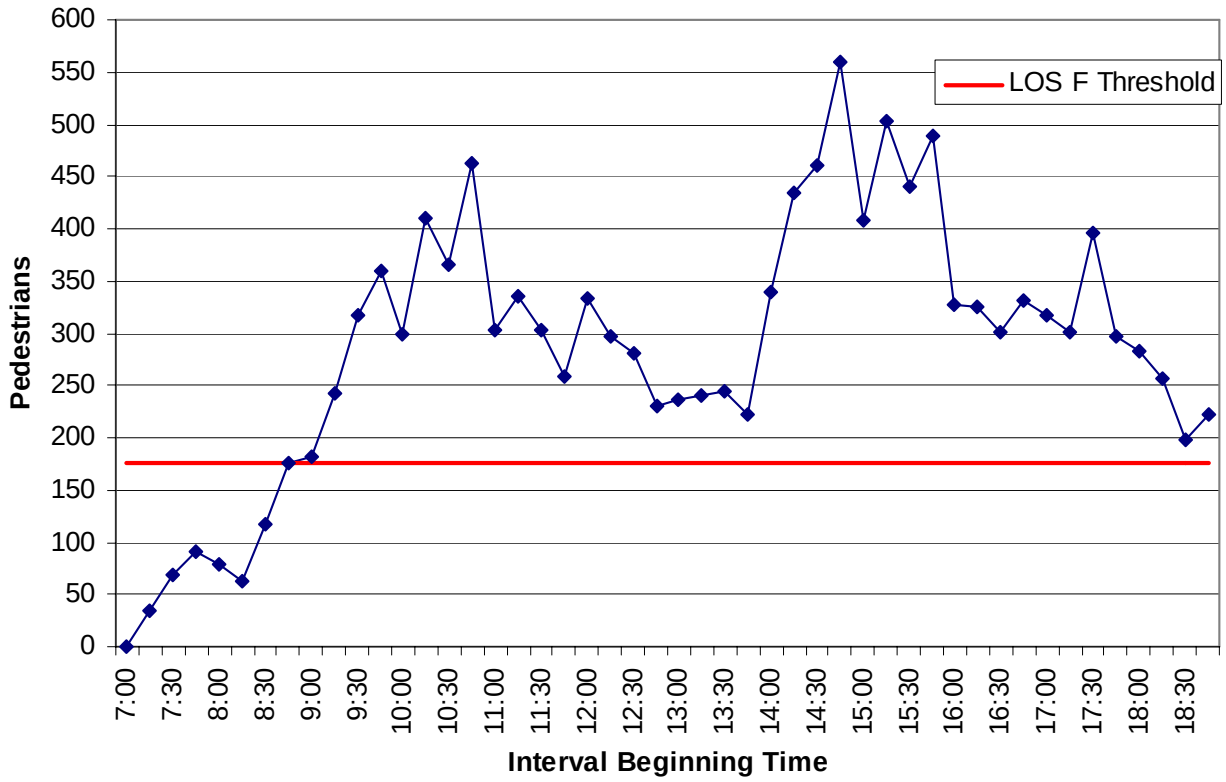
FIGURE 1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING

H:\profiles\9761 - Juneau Cruise Ship Uplands Operations\dwgs\incoming\Juneau Cruise Ship Project\CBJ waterfront basemap-KAI.dwg Mar 16, 2010 - 2:34pm - nfoster Layout Tab: CountsFactored

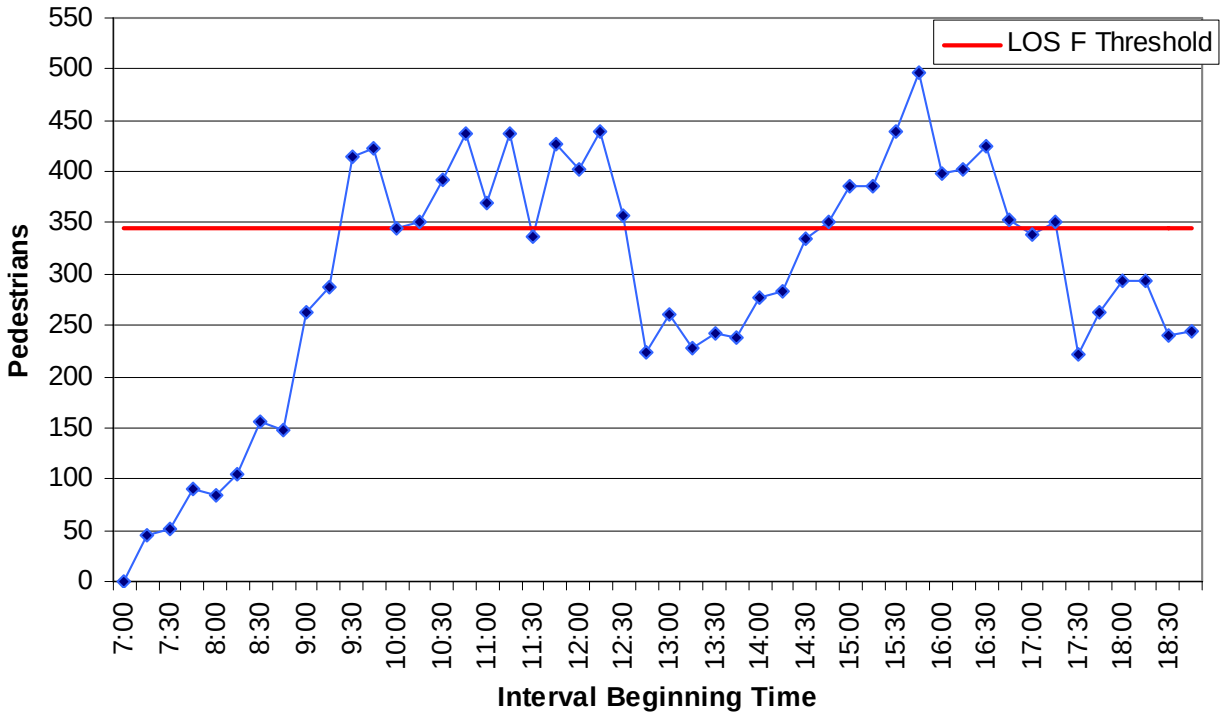
Based on the effective sidewalk widths shown in Table 3, the level of service is E or better when the 15-minute flow is less than 175 pedestrians on the east side and less than 345 pedestrians on the west side. After the docks are reconstructed, it is projected that the pedestrian flow rate on the east sidewalk will exceed 175 pedestrians per 15 minutes (700 pedestrians per hour) for most of the day (8:45 a.m. to 7:00 p.m.) under the design scenario, as is illustrated in Figure 2. This represents an increase of one hour per day that LOS F is experienced, compared to the observed conditions on the count day.

Figure 2 – Projected Duration of LOS F on East Sidewalk (15 Minute Intervals)



Pedestrian flow rates on the west side are projected to continue to be less than 345 pedestrians per 15 minutes (1,380 pedestrians per hour) during much of the day under the design scenario, as is shown in Figure 3. LOS F is expected to be experienced during most of the intervals from 9:30 a.m. to 12:45 p.m. and from 2:45 p.m. to 5:30 p.m. This represents an increase of 4 hours, 15 minutes in the amount of time that LOS F is experienced, compared to observed conditions.

Figure 3 – Projected Duration of LOS F on West Sidewalk (15 Minute Intervals)



POTENTIAL IMPROVEMENTS

As previously mentioned in the introduction, there are four main issues that exist today that will be exacerbated by the increase in pedestrian traffic brought about by the reconstruction of the docks if no improvements are made:

- High pedestrian traffic volumes combined with narrow sidewalks leads to pedestrian level of service (LOS) F conditions for sections of both sidewalks along Franklin Street near the two docks.
- One consequence of the congested conditions is that people step off the sidewalk into the street to get around other people or obstacles, creating a safety hazard and contributing to traffic congestion on Franklin Street.
- Jaywalking is a frequent occurrence along Franklin Street, particularly at the turnabout.
- Pedestrians frequently cut through bus staging areas, and queues of people waiting to board shuttle buses also impedes pedestrian circulation at the 'D' dock.

Potential improvements have been identified to address these issues.

Franklin Street Sidewalks

As was shown in our previous memorandum, the Franklin Street sidewalks are not wide enough to serve pedestrian traffic under existing peak conditions. The design analysis shows that,

assuming no improvements are made, conditions will worsen as larger ships bring in more passengers. Increases in congestion will likely lead to higher frequencies of incidents of people stepping off the sidewalk and into the street and jaywalking. There are two basic ways to address these problems: (1) make improvements on Franklin Street to address the pedestrian demand or (2) develop means to encourage pedestrians to use alternate routes, thereby reducing the pedestrian demand on Franklin Street. Jaywalking is not wholly caused by congestion on the sidewalk, so improvements will need to be made that incorporate elements of both approaches in order to maximize effectiveness.

Potential improvements to discourage stepping-off-into-the-street and jaywalking that were considered consist of:

- Grade-separated crossings (e.g. overpass),
- Barriers along the curb,
- Pedestrian crossing changes at the turnabout, and
- Moving Crosswalk #5 to the alley to the south.

Grade-separated crossings are likely an infeasible solution. There is likely not enough space to construct a fully accessible grade-separated crossing along Franklin Street. The cost would be quite high to construct such a facility even it were possible.

Barriers along the sidewalk to keep people from stepping out into the street would reduce the already narrow effective width of the sidewalk, creating even more crowded conditions in narrow areas. However, they may be feasible in areas with wider sidewalk widths. Observations at the barrier across Marine Way from City Hall, as well as observations in Ketchikan, indicate that low barriers (e.g., a chain strung between posts) do not stop determined pedestrians from jaywalking; however, they can deter some pedestrians who would otherwise jaywalk. Higher barriers are unattractive and can trap pedestrians in the street, if they begin to jaywalk prior to the start of the barrier.

At the turnabout, jaywalking is generally related to pedestrians walking on the west side of Franklin Street who wish to continue walking on the west side of the street on the opposite side of the turnabout. In particular, a number of southbound pedestrians were observed jaywalking. This situation appears to be related to the fact that the west-side sidewalk on Franklin Street north of the turnabout leads pedestrians to a crosswalk across the parking lot access adjacent to the Red Dog Saloon, which in turn leads to a small plaza area with no exit other than turning around and going back across the crosswalk. Having reached this point, many pedestrians choose to walk in the street along the side of the plaza, which leads them directly into the turnabout. To discourage this jaywalking activity, it is recommended that this plaza area be removed and replaced with landscaping, and that additional landscaping, with a low wall, be provided on the north side of the crosswalk, accompanied by wayfinding signage. The purpose of the low wall is to visually indicate the end of the southbound sidewalk and to encourage pedestrians to turn left to cross Franklin Street at Crosswalk #3, or to turn right to reach Crosswalk #2. This should be accomplished by Concept FS1 drawn by PND Engineers, which is included as Attachment 'A.' To discourage the less-frequent northbound jaywalkers, a chain-type barrier is recommended on the

southwest side of the turnabout between Crosswalk #4 and the parking garage entrance, accompanied by wayfinding signage at Crosswalk #4. Because the turnabout is on a state highway, ADOT&PF approval and permits would be required for these recommended improvements.

As noted in our previous memorandum, Crosswalk #5 is currently underutilized in its current location across from the gravel parking lot. Much of the jaywalking and sidewalk congestion occurs to the south of this crosswalk. It is recommended, subject to ADOT&PF approval, that the crosswalk be moved to the south in front of the alley across from the Alaska-Juneau Mining Company. Moving the crosswalk here will likely consolidate many of the current jaywalkers around the Alaska-Juneau Mining Company to this one location. It will also alert drivers to expect pedestrians to cross at this location, which is already an unmarked crosswalk location due to the presence of the alley. If future development is planned for this gravel parking lot that could generate pedestrian traffic, then a crossing may need to be maintained at the current Crosswalk #5 location for this future traffic.

Reducing Congestion

There are two factors that determine the level of congestion experienced on the sidewalk: the effective width of sidewalk available to pedestrians and the number of pedestrians present at any given time in an area. Table 4 shows the minimum number of pedestrians that would have to be diverted from Franklin Street in order to achieve LOS E or better during the peak 15 minutes of the day, assuming the effective width of the sidewalk does not change from what is shown in Table 3. Conversely, the table also shows the width that would be needed to accommodate the peak 15-minute flow rate of pedestrians at LOS E or better, assuming that the projected peak 15-minute flow rate of pedestrians occurs as shown in Table 3.

Table 4 Stand-Alone Changes Necessary to Achieve LOS E or Better on Critical Sections of Sidewalk During Peak Periods Along Franklin Street

Location	Pedestrians Diverted During Peak 15 Minutes	Increase in Effective Sidewalk Width (ft)
East Sidewalk, between Crosswalks 5 and 6	384	1.1
West Sidewalk, between Crosswalks 5 and 6	190	0.6

The reductions in pedestrian volumes shown in Table 4 represent a decrease of approximately 70% on the east sidewalk and 35% on the west sidewalk. These are significant reductions, particularly on the east sidewalk, and would require fairly intensive measures to achieve. At the same time, widening the sidewalks by any amount would be a relatively difficult task given the already-narrow width of Franklin Street and the presence of buildings abutting the sidewalk. Therefore, the ultimate solution needs to include elements of both approaches. That is, provide additional effective sidewalk width along Franklin Street and implement measures to manage pedestrian traffic demand along the sidewalks.

In order to achieve these goals, the following improvements are recommended to be made:

- Wayfinding signage and dock design to encourage the use of the boardwalk as an alternative to Franklin Street; and
- Eliminate obstructions where possible, to increase the effective width of the sidewalks along Franklin Street.

Implementing wayfinding signage and designing the 'D' dock to encourage the use of the boardwalk as an alternative to Franklin Street will be crucial to relieving pedestrian congestion on Franklin Street. The boardwalk is currently very underutilized as a route to downtown Juneau. Little or no wayfinding signage is provided at the boardwalk exits, nor is there signage provided at the end of the transfer bridge at the 'D' dock indicating that it is another route into downtown. Wayfinding signage should be put into place at the end of the transfer bridge from the ship docked at 'D' and at the exits off the boardwalk that indicates that downtown Juneau may be reached by traveling along the boardwalk. The new visitor center area will provide a good opportunity to implement this signage. Signage should focus on informing people that they have options when it comes to choosing a route downtown, so directions to Franklin Street should also be provided. Likewise, wayfinding signage on the way out of downtown back to the ships should indicate that the boardwalk is an alternate route for reaching the docks.

The dock design should also provide cues that an alternate route exists for reaching downtown. One way to accomplish this is to angle the transfer bridge from the ship at the 'D' dock to the boardwalk such that when people come off the transfer bridge, they are already walking in the direction of downtown. By heading arriving passengers in this direction, as opposed to sending them directly out toward the exit into the 'D' dock parking lot, it makes continuing on the boardwalk a natural travel path. Once on the boardwalk, pedestrians must make a conscious decision to turn and exit to Franklin Street. Making the boardwalk a natural path could be further enhanced if the transfer bridge was placed a noticeable distance from the exit to the 'D' dock parking lot, such that people had to walk some distance on the boardwalk toward downtown before having the option to exit toward the parking lot. Placing the transfer bridge on the north side of the first boardwalk exit would force people to have to choose to turn toward the exit and walk away from downtown in order to walk into the parking lot, so that placement is not recommended. Placing information kiosks, historical displays, landscaping, and/or other features along the boardwalk may also serve to make it a more attractive route to pedestrians, particularly since cruise ships tend to create an uninteresting wall on the west side of the boardwalk. Finally, the current plans to connect the 'B' dock to the boardwalk should further increase the utilization of the boardwalk as an alternate route and alleviate congestion along Franklin Street.

In order to increase the effective width of the sidewalk along Franklin Street, obstacles should be removed wherever possible. One set of obstacles that could be removed in certain locations are the ornamental street lights. These are mostly present on the west side, including the section shown in the analysis in Table 3. These lampposts could be replaced with decorative street lights attached to buildings or hung from wire strung between two buildings. Figures 4 and 5 show examples of overhead and building-mounted lights from Copenhagen, Denmark.

Figure 4 – Span-wire Overhead Light

Figure 5 – Building Mounted Overhead Light

These lights illuminate the sidewalk, can still be aesthetically pleasing, and do not encroach on the sidewalk. Removing the existing lampposts could increase the average effective width of the Franklin Street sidewalks by 0.5 feet or more in locations where they are currently present. This addition of 0.5 feet in the location shown in Table 3 in front of the Alaska-Juneau Mining Company would nearly meet the 0.6 feet noted in Table 4 as being needed to bring the capacity of the sidewalk up to the demand experienced during the peak 15-minutes. Essentially, this section of sidewalk would experience LOS E or better for all times of the day except for the peak 15-minutes, when it would be right at capacity on a design day. Benches, garbage cans, and other items would need to be examined on a case-by-case basis to determine the suitability of removing or relocating the item. It is recommended that the CBJ pursue a lighting study to determine the feasibility of replacing the current in-ground lights with lights of a type similar to those shown in Figures 2 and 3.

Removing obstacles does not directly address the pedestrian congestion issues on the east side of Franklin Street in front of the Alaska-Juneau Mining Company, although it does help in other areas. The existing physical width of the sidewalk here is approximately one foot narrower than on the west side and there are only limited obstacles present in the sidewalk. In order to increase the effective width of the sidewalk here, the actual physical width of the sidewalk would need to be increased. Due to abutting buildings and the already narrow width of Franklin Street, which needs to accommodate large trucks, this is not possible in the current configuration. However, if Franklin Street were converted to a one-lane, two-direction road allowing one direction of travel at a time, this could allow for up to ten additional feet of right-of-way to be dedicated to pedestrian travel. Traffic signals would have to be placed at both ends of the one-lane section to control which direction is being allowed through (if placed at adjacent crosswalks, these could also provide signalized pedestrian crossing opportunities). Further analysis would be required to determine if this is a feasible option.

'D' Dock Parking Lot

The previous memorandum noted that significant pedestrian queuing and pedestrians traveling through vehicular paths (i.e. the parking lot itself and driveways) occur around the 'D' dock

parking lot area. The location of tour booths, shuttle pick-up/drop-off zones, the tramway, the number of driveways, and the orientation of the existing boardwalk exit all contribute to these issues. The preferred concept drafted by PND Engineers, which is included as Attachment 'B,' addresses many of these issues. This concept includes angled 'A' zone parking on the seaward side of the lot, removes the transfer bridge, and eliminates the sidewalks on the west side of Franklin Street in front of the lots, as well as most of the crosswalks across the driveways. This should help reduce the problem of pedestrians walking through vehicular paths in and around the lot. Pedestrian queuing should also be lessened due to the provision of additional covered waiting areas away from the tram building and the separation of the 'AJ' dock shuttle pick-up/drop-off location from the tram building and tour booths.

'E' Dock Parking Lot

Through interviews, stakeholders in the area have also expressed concern regarding whether there will be sufficient capacity at the 'E' dock parking lot. 'B' zone parking is located on the other side of Marine Way near the Red Dog Saloon. One option to expand this parking would be to purchase the parcel on the south side of the parking garage. This option would likely be cost-prohibitive, though. The only feasible alternative is the previously mentioned Concept FS 1. This concept provides 6 'B' zone angle parking spaces and two parallel spaces for taxis. The existing public angle parking spaces on the south side of Admiral Way are eliminated. Manila Square is relocated, along with landscaping to discourage pedestrians from crossing Admiral Way and jaywalking into the turnabout.

Currently, the 'E' dock experiences near maximum conditions on certain days when a large ship is docked and a Panamax-sized vessel is tethered away from the dock. The CBJ expects that traffic in this area would be a maximum of 20% higher on a day when two Panamax-sized vessels are docked. This information has been presented to tour operators and they have indicated that Concept FS 1 will be satisfactory for such a situation.

CONCLUSION

On a design scenario day, pedestrian traffic could be 25% higher than observed on June 16th if maximum-capacity ships are berthed at all of the docks at once. The actual increase in maximum potential pedestrian traffic as a result of the dock reconstruction project is 11%, with the remaining increase accounted for by the presence of larger ships, which is something that could occur today. Without any improvements, this will lead to additional hours of congestion along the Franklin Street sidewalks. In turn, this will exacerbate the existing issues of jaywalking and people stepping off the sidewalk into the street.

In order to alleviate congestion along Franklin Street and reduce instances of people walking in the street and jaywalking, the following improvements should be implemented:

- Remove the plaza area at the south end of the crosswalk from the Red Dog Saloon to the adjacent parking lot, replace it with landscaping, and provide landscaping, with a low

wall, on the north side of the crosswalk, accompanied by wayfinding signage, as is planned in Concept FS 1 drawn by PND Engineers;

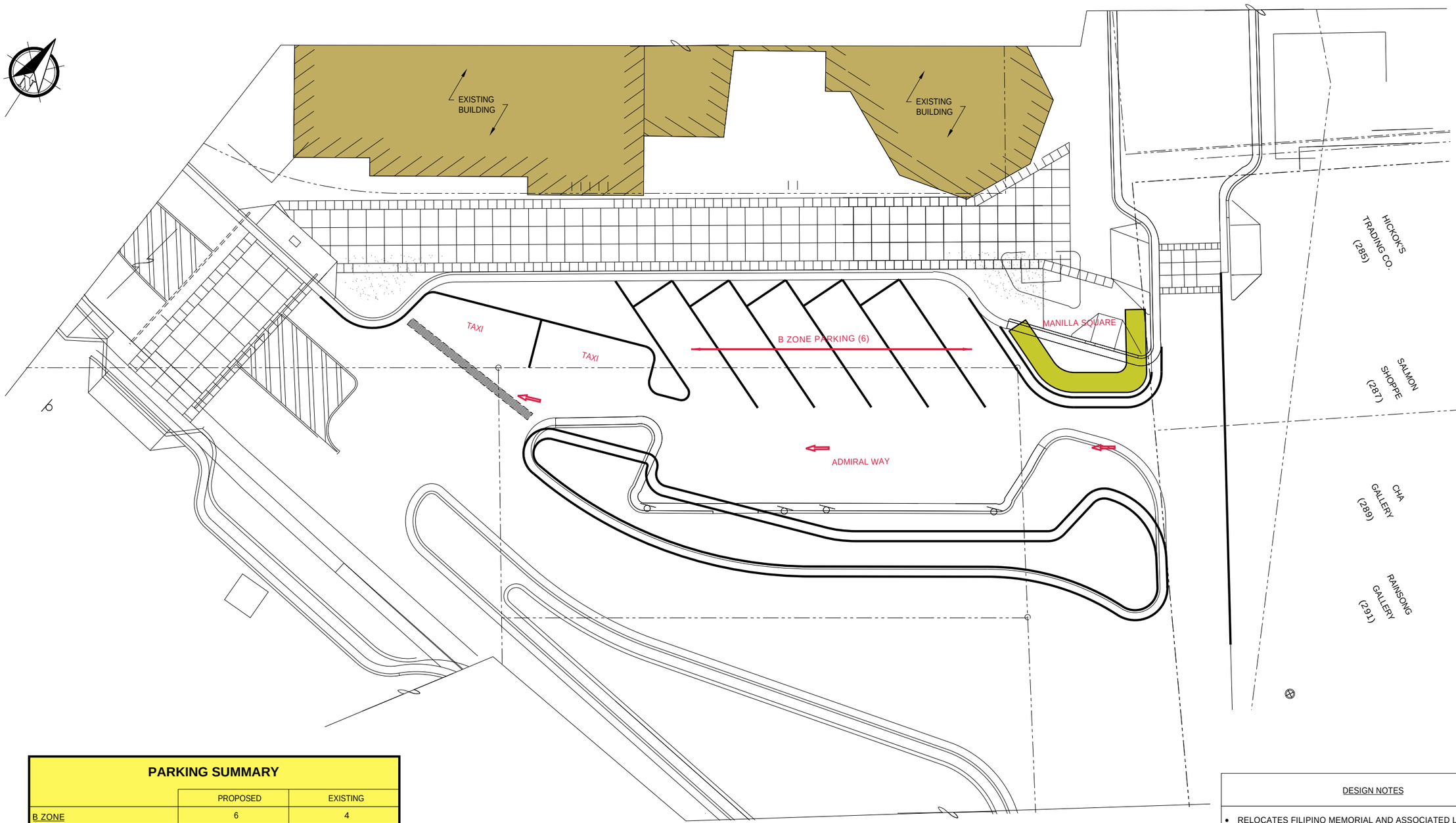
- Provide a chain-type barrier on the southwest side of the turnabout between Crosswalk #4 and the parking garage entrance, accompanied by wayfinding signage at Crosswalk #4;
- Move Crosswalk #5 to the south to the alley north of Crosswalk #6;
- Provide wayfinding signage along the boardwalk, at the end of the 'D' dock transfer bridge (in conjunction with the new visitor's center), and in downtown to inform pedestrians of the boardwalk as an alternate route;
- Locate the 'D' dock transfer bridge in such a way to make the boardwalk a natural route into downtown;
- Pending the results of a feasibility study, replace the in-ground lampposts with overhead or building-mounted lighting to increase the effective sidewalk width along Franklin Street;
- Remove other obstacles in the Franklin Street sidewalk as feasible; and,
- Locate the AJ dock shuttle pick-up/drop-off area away from the tour booths and tramway building as shown in the current preferred concept drawn by PND Engineers.

REFERENCES

1) Kittelson & Associates, Inc. *Field Inventory and Analysis*. August 2009.

2) Transportation Research Board. *Highway Capacity Manual 2000*. Transportation Research Board, National Academies of Science, Washington, D.C., 2000.

Attachment A
Concept FS 1



PARKING SUMMARY

	PROPOSED	EXISTING
B ZONE	6	4
TAXI	2	2
PUBLIC	0	6

SITE PLAN

DESIGN NOTES

- RELOCATES FILIPINO MEMORIAL AND ASSOCIATED LANDSCAPING TO CHANNEL PEDESTRIANS TO CROSSWALK
- PROVIDE CROSSING GUARD AT EXISTING CROSSWALK
- MAINTAINS EXISTING PARKING
- IMPROVES PEDESTRIAN SAFETY
- INCREASES PEDESTRIAN MOVEMENT AREA

Jensen Yorba Lott Inc.
ARCHITECTURE
INTERIORS
LANDSCAPE ARCHITECTURE
522 West 10th Street, Juneau, Alaska 99801
Phone 907-586-1070 www.jensenyorbalott.com

CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
DOCKS & HARBORS DEPARTMENT

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

PND ENGINEERS, INC.
9360 Glacier Highway Ste 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

DESIGN: KIM/CRM CHECKED: CRS
DRAWN: PJD APPROVED: CRS
SCALE: SCALE IN FEET 0 10 20 FT.
DATE: 02/16/2010

STATE OF ALASKA 49TH Charles R. Somerville CE-8845 REGISTERED PROFESSIONAL ENGINEER

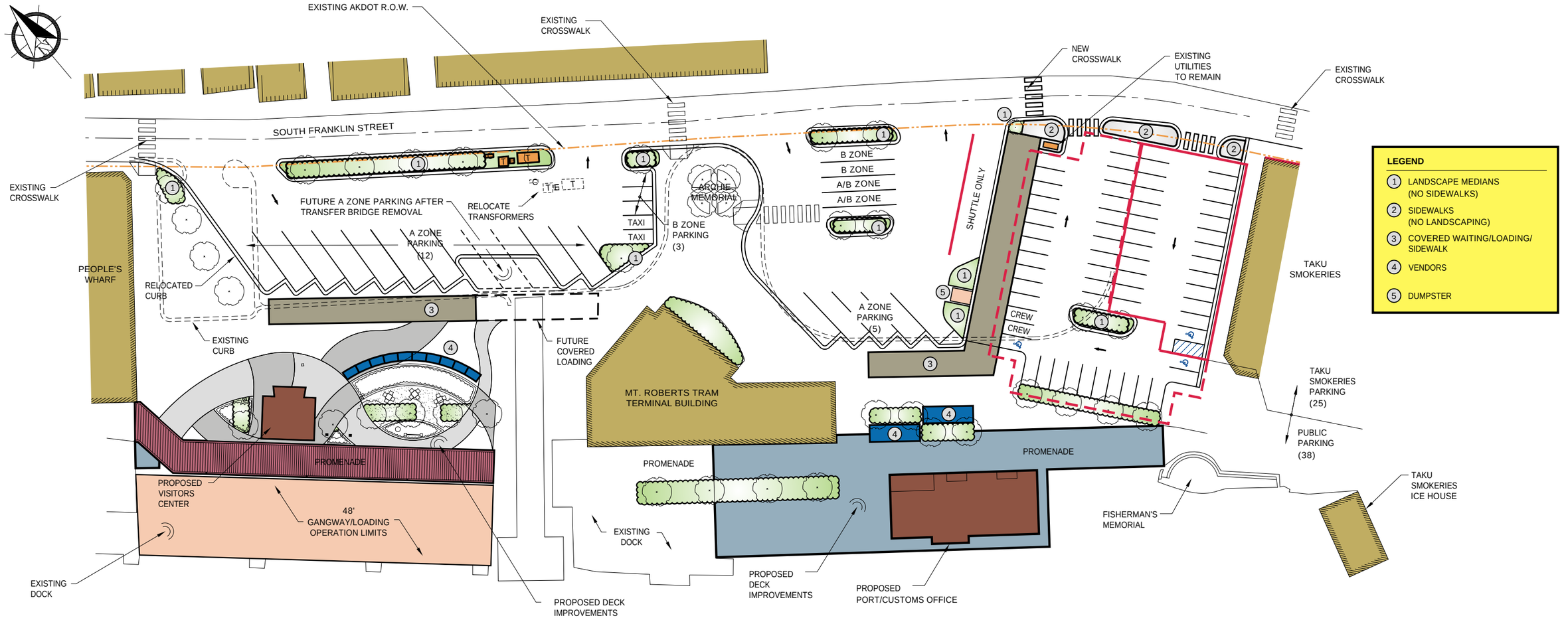
CITY & BOROUGH OF JUNEAU
CRUISE SHIP UPLANDS IMPROVEMENTS

SHEET TITLE: **ADMIRAL WAY PREFERRED CONCEPT**

PND PROJECT NO.: 082066.01 DWG. FILE:

SHEET 1 OF 1

Attachment B
Preferred Concept



LEGEND

1. LANDSCAPE MEDIANS (NO SIDEWALKS)
2. SIDEWALKS (NO LANDSCAPING)
3. COVERED WAITING/LOADING/ SIDEWALK
4. VENDORS
5. DUMPSTER

PARKING CAPACITY

	PROPOSED		EXISTING	
A ZONE	14 (18 AFTER TRANSFER BRIDGE REMOVAL)		12-14	
B ZONE	10		7-8	
A/B ZONE	2		VARIES	
PUBLIC PKG ON SITE	38	38	17	42
PUBLIC PARKING ON-STREET	0		4	
DOCKS & HARBORS	0		21	
TAXI	2		2	
CREW SHUTTLE	2		0	

NOTES

- THUMB KEPT BUT MODIFIED
- CBJ STREETS LOT RELOCATED
- TAKU LOT RECONFIGURED TO PROVIDE PARKING
- ALL A ZONE SPACES ALONG SEAWARD EDGE OF LOTS
- ADDITIONAL PUBLIC & B ZONE PARKING ARE PROVIDED OVER EXISTING LAYOUT
- TRANSFORMERS/ UTILITIES LOCATED NEAR ARCHIE VAN WINKLE MEMORIAL WILL REQUIRE RELOCATION
- CBJ STREET PARKING RELOCATED
- CT LOT SEAWARD CURB RELOCATED SEAWARD TO ACCOMODATE A ZONE NOSE-IN PARKING
- ON-STREET PARKING ON SOUTH FRANKLIN ST RELOCATED TO PUBLIC LOT
- PEDESTRIAN ACCESS REMOVED FROM SOUTH SIDE OF FRANKLIN ST TO ELIMINATE VEHICULAR CONGESTION
- DUMPSTER COULD BE LOCATED IN TAKU PARKING LOT OR DOCKS PARKING AT A COST OF ONE PARKING STALL

Jensen Yorba Lott Inc.
ARCHITECTURE
INTERIORS
LANDSCAPE ARCHITECTURE
522 West 10th Street, Juneau, Alaska 99801
Phone 907-586-1070 www.jensenyorbalott.com

CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY
DOCKS & HARBORS DEPARTMENT

PND ENGINEERS, INC.
9360 Glacier Highway Ste 100
Juneau, Alaska 99801
Phone: 907-586-2093
Fax: 907-586-2099
www.pndengineers.com

REV.	DATE	DESCRIPTION	DWN.	CKD.	APP.

DESIGN: KIM/CM CHECKED: CRS
DRAWN: PJD APPROVED: CRS
SCALE: SCALE IN FEET 0 30 60 FT.

STATE OF ALASKA 49TH
Charles R. Somerville CE-8845
REGISTERED PROFESSIONAL ENGINEER
DATE: 02/08/2010

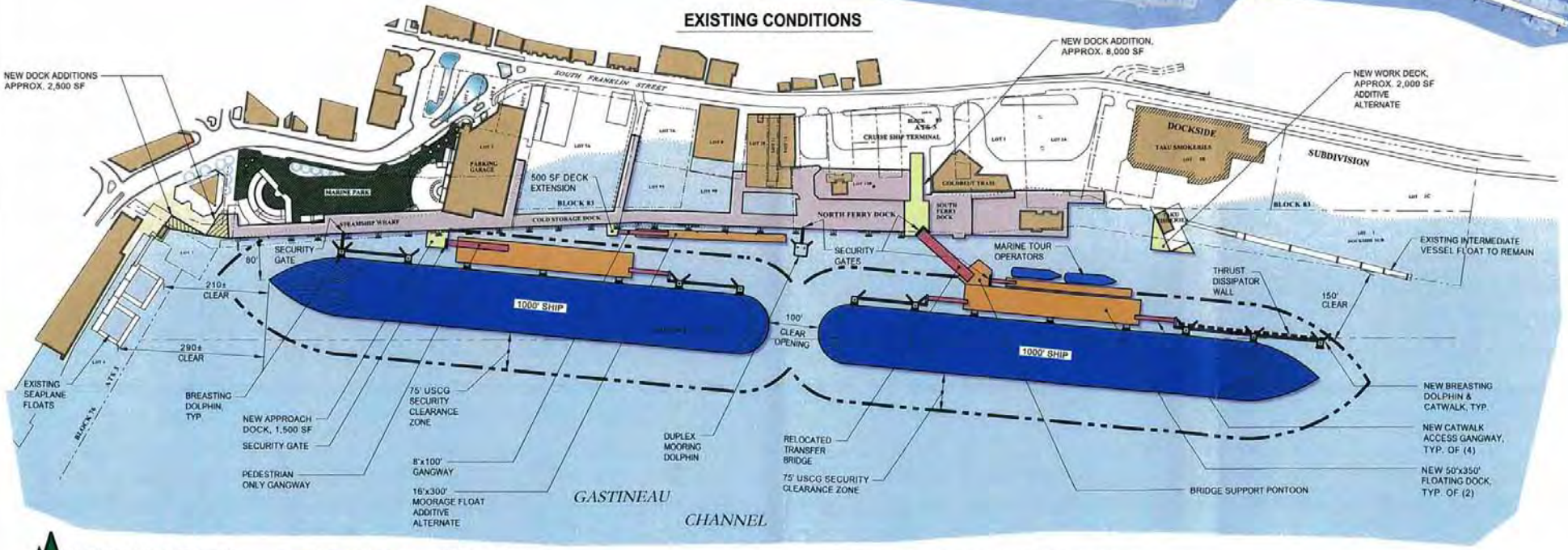
CITY & BOROUGH OF JUNEAU CRUISE SHIP UPLANDS IMPROVEMENTS

SHEET TITLE: **PREFFERED CONCEPT**

PND PROJECT NO.: 082066.01 DWG. FILE:

SHEET 1 OF 1

EXISTING CONDITIONS



CITY/BOROUGH OF JUNEAU
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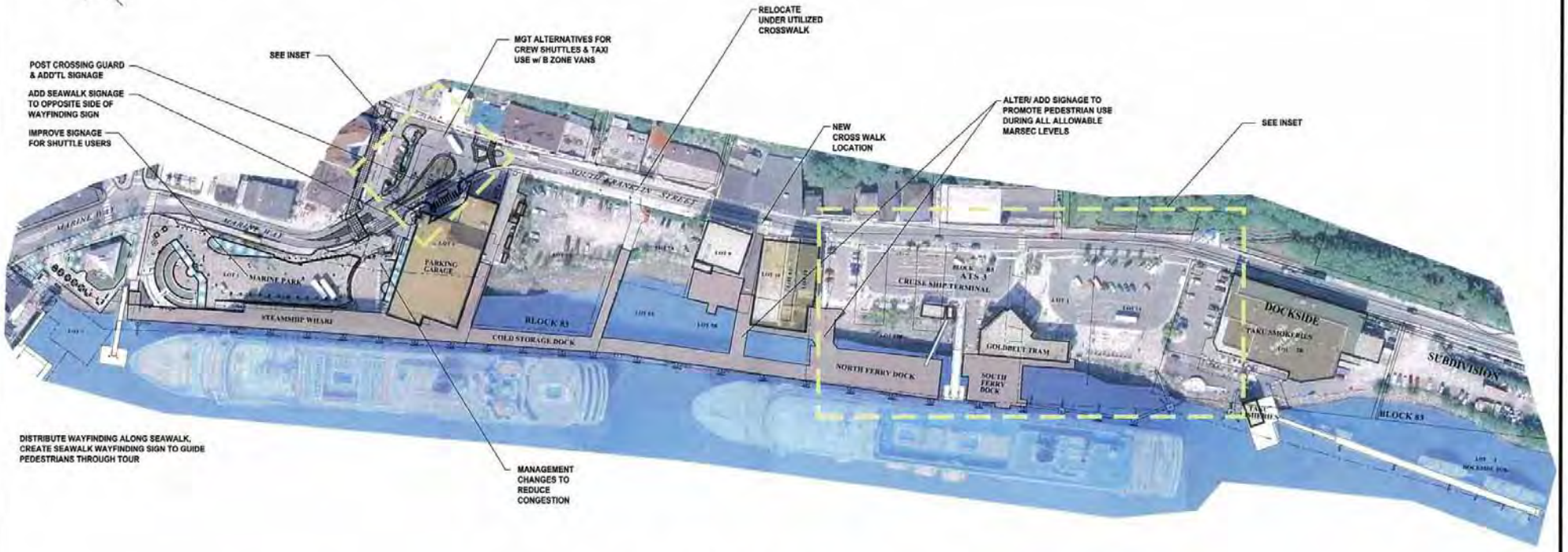
NO.082066.01

PROPOSED DOCK PLAN - CONCEPT 16B

SCALE IN FEET
0 100 200 FT.



EXISTING CONDITIONS

SCALE IN FEET
0 100 200 FT.

CITY/BOROUGH OF JUNEAU
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Fax: 907-586-2099
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CITY & BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

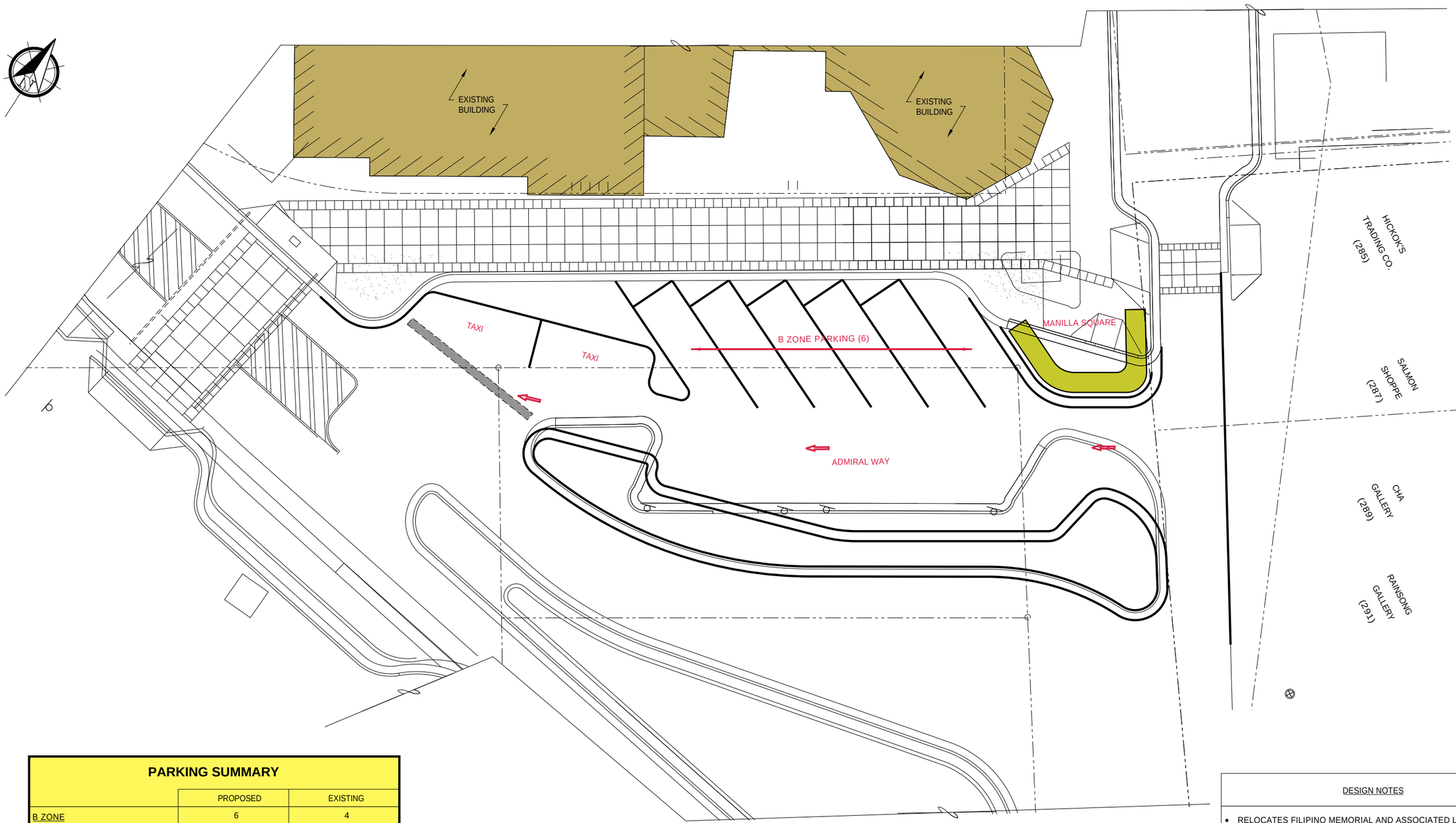
DOWNTOWN CRUISESHIP DOCKS UPLANDS OPERATIONS ANALYSIS
CBJ Project No. DH

PLANNING LEVEL ENGINEER'S ESTIMATE - ADMIRAL WAY
Prepared By: PND Engineers, Inc. on March 1, 2010

Item	Item Description	Units	Quantity	Unit Cost	Amount
1505.1	Mobilization	LS	All Reqd	10%	$20,855
2060.1	Demolition & Disposal	LS	All Reqd	$4,000	$4,000
2204.1	Base Course, Grading D-1	CY	150	$25	$3,750
2702.1	Construction Surveying	LS	All Reqd	$1,500	$1,500
2719.1	Sign Assembly	LS	All Reqd	$1,000	$1,000
2720.1	Painted Traffic Markings	LS	All Reqd	$1,000	$2,000
2801.1	AC Pavement, Type II Class B, 2.25" Thick	TON	80	$180	$160,000
3301.1	Concrete Curb and Gutter	LF	350	$30	$10,500
3301.2a	Concrete Sidewalks, 6" Thick	SY	10	$80	$800
2480.1	Landscaping	LS	All Reqd	$25,000	$25,000
	ESTIMATED CONSTRUCTION BID PRICE				**$229,405**
	CONTINGENCY & OTHER INDIRECT COSTS (30%)				**$68,822**
	TOTAL RECOMMENDED PROJECT BUDGET				**$298,227**

Note: This budget is rough order - for planning purposes only.

P | N | D



PARKING SUMMARY

	PROPOSED	EXISTING
B ZONE	6	4
TAXI	2	2
PUBLIC	0	6

SITE PLAN

DESIGN NOTES

- RELOCATES FILIPINO MEMORIAL AND ASSOCIATED LANDSCAPING TO CHANNEL PEDESTRIANS TO CROSSWALK
- PROVIDE CROSSING GUARD AT EXISTING CROSSWALK
- MAINTAINS EXISTING PARKING
- IMPROVES PEDESTRIAN SAFETY
- INCREASES PEDESTRIAN MOVEMENT AREA

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STATE OF ALASKA 49TH Charles R. Somerville CE-8845 REGISTERED PROFESSIONAL ENGINEER

CITY & BOROUGH OF JUNEAU
CRUISE SHIP UPLANDS IMPROVEMENTS

SHEET TITLE: **ADMIRAL WAY PREFERRED CONCEPT**

PND PROJECT NO.: 082066.01 DWG. FILE:

SHEET 1 OF 1

CITY & BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

DOWNTOWN CRUISESHIP DOCKS UPLANDS OPERATIONS ANALYSIS
CBJ Project No. DH

PLANNING LEVEL ENGINEER'S ESTIMATE - CRUISE SHIP TERMINAL
Prepared By: PND Engineers, Inc. on March 1, 2010

Item	Item Description	Units	Quantity	Unit Cost	Amount
1505.1	Mobilization	LS	All Reqd	10%	$117,100
2060.1	Demolition & Disposal	LS	All Reqd	$30,000	$30,000
2204.1	Base Course, Grading D-1	CY	100	$45	$4,500
2702.1	Construction Surveying	LS	All Reqd	$7,500	$7,500
2719.1	Sign Assembly	LS	All Reqd	$5,000	$5,000
2720.1	Painted Traffic Markings	LS	All Reqd	$5,000	$5,000
2801.1	AC Pavement, Type II Class B, 2.25" Thick	TON	700	$175	$160,000
3301.1	Concrete Curb and Gutter	LF	2,400	$30	$72,000
3301.2a	Concrete Sidewalks, 6" Thick	SY	470	$100	$47,000
3301.2	Concrete Aprons, 6" Thick	SY	150	$100	$15,000
2480.1	Landscaping	LS	All Reqd	$35,000	$35,000
2875.1	Covered Walkways	LS	All Reqd	$750,000	$750,000
16000.1	Relocate Transformers	LS	All Reqd	$40,000	$40,000
	ESTIMATED CONSTRUCTION BID PRICE				**$1,288,100**
	AEL&P SERVICE				**$5,000**
	CONTINGENCY & OTHER INDIRECT COSTS (30%)				**$386,430**
	TOTAL RECOMMENDED PROJECT BUDGET				**$1,679,530**

Note: This budget is rough order - for planning purposes only.

P | N | D

CITY/BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

City & Borough of Juneau • Docks & Harbors
155 S. Seward Street • Juneau, AK 99801
(907) 586-0292 Phone • (907) 586-0295 Fax

Port of Juneau
MEMORANDUM

To: D&H CIP Committee
From: Gary Gillette, Port Engineer
Date: April 16, 2010
Re: Douglas Bridge Property

The CBJ Street's Department is scheduled to move out of the Downtown City Shop that is located under the Juneau-Douglas Bridge in the fall of 2010. The CBJ Engineering Department has started a review of potential future uses of the building and surrounding site and is currently taking public comments for consideration of uses for the property.

Attached is a presentation developed by the Engineering Department that gives some planning information and comments received in CBJ staff meetings about the area. You will see that the Docks and Harbors Department has indicated potential uses of the site. More information is available on the Engineering Department's web site at http://www.juneau.org/engineering/Bridge_Park/Bridge_Park_AreaA.php.

The CIP Committee is asked to consider the potential uses for this property as it relates to Docks and Harbors. The property north of the Douglas Bridge is currently under Docks and Harbors management but some fencing has been installed by the Streets Division. At a minimum Docks and Harbors has expressed retention of that property. Additional considerations include access to and through the Docks and Harbors property and whether or not more of the property is desired for future uses.

PORT ENGINEER'S PROJECT STATUS REPORT

Gary Gillette, Port Engineer/Architect

Project	Status	Schedule	Contractor	Notes
Auke Bay Loading Facility	Construction	Complete 8/20/09	Trucano	Completing final close out
TIGER Grant Application	Awarded	Feb 17, 2010		Awaiting award contract
Conveyance - ADNR Land - Facility	Submitted	Spring 2010		Final determination out for public review
Conveyance - ADNR Land - Mitigation	Submitted	Spring 2010		Preparing supplemental info requested by DNR
Douglas Harbor Floating Breakwater				
Breakwater Construction	Complete		COE	Breakwater in Juneau
Breakwater Installation	Hold	Fall 2010	TBD	Corps will install
Old Douglas Harbor Reconstruction	Hold			
Permitting	Hold	Spring 2010	PND	Awaiting EPA Response
Final Engineering and Design	Design	Spring 2010	PND	Hold for permit
Statter Harbor Improvements				
EA Process	In Progress	Spring 2010	PND	EA Document out for public review
Conveyance - DNR Property at Glacier	In Progress	Spring 2010		Survey in progress
Conveyance - DNR Tideland	In Progress	Spring 2010		Application Submitted
Acquisition - Lehnhart Property	In Progress	Spring 2010		Lands Committee, then Assembly
Acquisition - Park Property	In Progress	Spring 2010		PRAC May 4, 2010
Permitting	Hold	Spring 2010	PND	Awaiting EA FONSI
Final Engineering and Design	Hold	Summer 2010	PND	Awaiting EA FONSI
Begin Construction		Spring 2011	TBD	Awaiting fulll funding
Municipal Harbor Matching Grant	Submitted	July 1, 2009	PND	Awaiting Legislative approval
Cruise Ship Dock Reconfiguration				
Uplands Operations Analysis	Complete		PND	Awaiting Board and Assembly approval
Port-Customs-Visitors Buildings				
Buildings and Decking Design	Bidding	April 21, 2010	JYL Architects	Bid opens May 20, 2010
Port Repair and Major Maintenance				
Transfer Bridge Maintenance	Hold		PND	Awaiting Inspection Report
Transfer Bridge Inspection	In Progress	Apr 27, 2009	PND	Awaiting report
Cathodic Protection	Design	Summer 2010	Norton Corrosion	Joint with Engineering (parking garage)
Harbor Upland Improvements	Construction	Spring 2010	Admiralty Const.	Ready to begin
North Douglas Boarding Float	Construction	June 1, 2010	Moeser	Alpine Lumber & Building Products
Aurora Harbor Reconfiguration	Planning	Spring 2010	PND	Concept plans in progress
Taku Fisheries Dock Expansion	Planning		PND	Awaiting CIP Direction
Miscellaneous - Small Projects				
Norway Point Net Float	Design	Plans Complete		No funds to construct - Est. $50K+/-
Archie Van Winkle Memorial	In Progress			Transfer to City

4/16/2010