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**Subtask 32B: NEPA Process Engineering Reviews**

**Grantee: City and County of Honolulu**

**HONOLULU HIGH-CAPACITY TRANSIT CORRIDOR PROJECT  
(Airport Alternative)**

**Date Issued: July 2009 (DRAFT)**

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## LIST OF ACRONYMS

AA	▪ Alternatives Analysis
AFEIS	▪ Administrative Final Environmental Impact Statement
DEIS	▪ Draft Environmental Impact Statement
EPA	▪ Environmental Protection Agency
FTA	▪ Federal Transit Administration
HDOT	▪ State of Hawaii Department of Transportation
LPA	▪ Locally Preferred Alternative
MOS	▪ Minimum Operating Segment
MSF	▪ Maintenance and Storage Facility
NEPA	▪ National Environmental Policy Act
PE	▪ Preliminary Engineering
PMOC	▪ Project Management Oversight Contractor
PMP	▪ Project Management Plan
ROW	▪ Right-of-Way
UH Manoa	▪ University of Hawaii at Manoa

## **1.0 EXECUTIVE SUMMARY**

### **1.1 Introduction**

The City and County of Honolulu (“City” or “Grantee”) has provided FTA with an Administrative Final Environmental Impact Statement (AFEIS) dated June 18, 2009 for the Honolulu High-Capacity Transit Corridor Project (“Project”).

### **1.2 Project Description**

The proposed First Project is an approximately 20-mile alignment extending from East Kapolei to Ala Moana Center. The majority of the Project is to be built on aerial structure but the Project also includes a short at-grade section (0.7 miles). The proposed investment also includes 21 stations (20 aerial and 1 at-grade), 76 transit vehicles, administrative/operations facilities, and maintenance facilities. The specific modal technology for this project is steel wheel on steel rail. The First Project is planned to be delivered in four construction segments.

- Segment I – West Oahu/Farrington Highway
- Segment II – Kamehameha Highway
- Segment III – Airport Stations
- Segment IV – City Center

The City’s Base Cost Estimate for the Airport Alternative is approximately \$5.171 billion in Year-of-Expenditure dollars. The City’s target Revenue Operations Date for the First Project is March 2019.

### **1.3 NEPA Process Engineering Review**

Under this Work Order, Jacobs is to provide the deliverable for Subtask 32B: NEPA Process Engineering Review. Jacobs completed a review of the AFEIS to identify inconsistencies between the National Environmental Policy Act (NEPA) document and the system design; project scope, cost, and schedule of the build alignment; and construction methodology, impacts, and mitigations.

The AFEIS presents a description of the Project that is generally in conformance with the plans and documentation presented to the PMOC. The PMOC’s specific comments are included as Appendix A of this Spot Report, including AFEIS page and section numbers.

## 2.0 INTRODUCTION

Report Date	July 29, 2009 (DRAFT)
Project Name / Location	Honolulu High-Capacity Transit Corridor Project (Airport Alternative) Honolulu, Hawaii
Project Sponsor	City and County of Honolulu
Project Management Oversight Contractor (PMOC) firm	Jacobs Engineering Group Inc.
Person providing this report	Tim Mantych, PE (MO, IL)
Length of time PMOC has been assigned to this project:	Since August 11, 2008

The Federal Transit Administration (FTA) has contracted Jacobs to provide Project Management Oversight Contractor (PMOC) services on FTA's New Starts and major capital projects. This Task Order provides FTA's Office of Program Management in Washington, DC with Project Management Oversight services for programmatic services and products for contract level plans, quality management systems and reporting, white papers, ancillary support, information technology services and status reporting. Subject to the issuance of individual Work Orders by the Contracting Officer's Technical Representative, the Contractor shall also provide PMO services for FTA's Regional Offices' grantees and their major capital projects to the extent that the PMOC has no conflicts of interest. Task Order No. 12 was executed by FTA on July 10, 2007 for the performance of on-going PMOC oversight services.

Under this Work Order, which was issued July 10, 2009, Jacobs is to provide the deliverable for Subtask 32B: NEPA Process Engineering Review. This report provides the PMOC observations and comments regarding scope issues addressed in the Administrative Final Environmental Impact Statement (AFEIS) dated June 18, 2009 for the City and County of Honolulu's ("City" or "Grantee") High-Capacity Transit Corridor Project ("Project").

### 2.1 Project Background

The Project is intended to provide improved mobility in the highly-congested east-west corridor along Oahu's south shore between Kapolei and the University of Hawaii at Manoa (UH Manoa). The Project would provide faster, more reliable public transportation services than those currently operating in mixed-flow traffic. The project also would provide an alternative to private automobile travel and improve linkages between Kapolei, Honolulu's urban center, UH Manoa, Waikiki, and the surrounding urban area.

The Alternatives Analysis (AA) for the Project was initiated in August 2005 and the Honolulu High-Capacity Transit Corridor Project Alternatives Analysis Report was presented to the Honolulu City Council in October 2006. The purpose of the report was to provide the City Council with the information necessary to select a mode and general alignment for high-capacity transit service on Oahu. The report summarized the results of the AA that was conducted following the FTA's planning guidance. The report provided information on the costs, benefits, and impacts of four alternatives:

- No Build Alternative

- Transportation Systems Management Alternative
- Managed Lane Alternative
- Fixed Guideway Alternative

During November and December 2006, public meetings were held on the AA. On December 22, 2006, the Honolulu City Council enacted Ordinance No. 07-001, which approved a fixed guideway alternative from Kapolei to the UH Manoa and Waikiki as the Locally Preferred Alternative (LPA) for the Project. Ordinance 07-001 identified a specific alignment for the majority of the corridor but left options open in two locations. At the western end of the corridor, the LPA selection identified two alignments (described in the AA Report as Section I – Saratoga Avenue/North-South Road and Kamokila Boulevard), with the notation “as determined by the city administration before or during Preliminary Engineering (PE).” In the center of the corridor, the LPA selection also identified two alignments (described in the AA Report as Section III – Salt Lake Boulevard and Aolele Street), also with the notation “as determined by the city administration before or during preliminary engineering.”

The LPA selection was made recognizing that currently-identified revenue sources, including revenues from the 0.5 percent General Excise Tax surcharge in place from January 1, 2007 through December 31, 2022, and a reasonable expectation of FTA New Starts funds, would not be sufficient to fund the capital cost of the LPA. Thus a financially feasible Minimum Operable Segment (MOS) needed to be chosen. On February 27, 2007, the Honolulu City Council approved as the MOS, East Kapolei to Ala Moana Center, via Salt Lake Boulevard (Resolution 07-039, FD1(c)). On January 28, 2009, the Honolulu City Council voted to revise the MOS to include the Airport Alternative in lieu of the Salt Lake Alternative. The revised MOS is referred to as the “First Project”.

## 2.2 Project Description

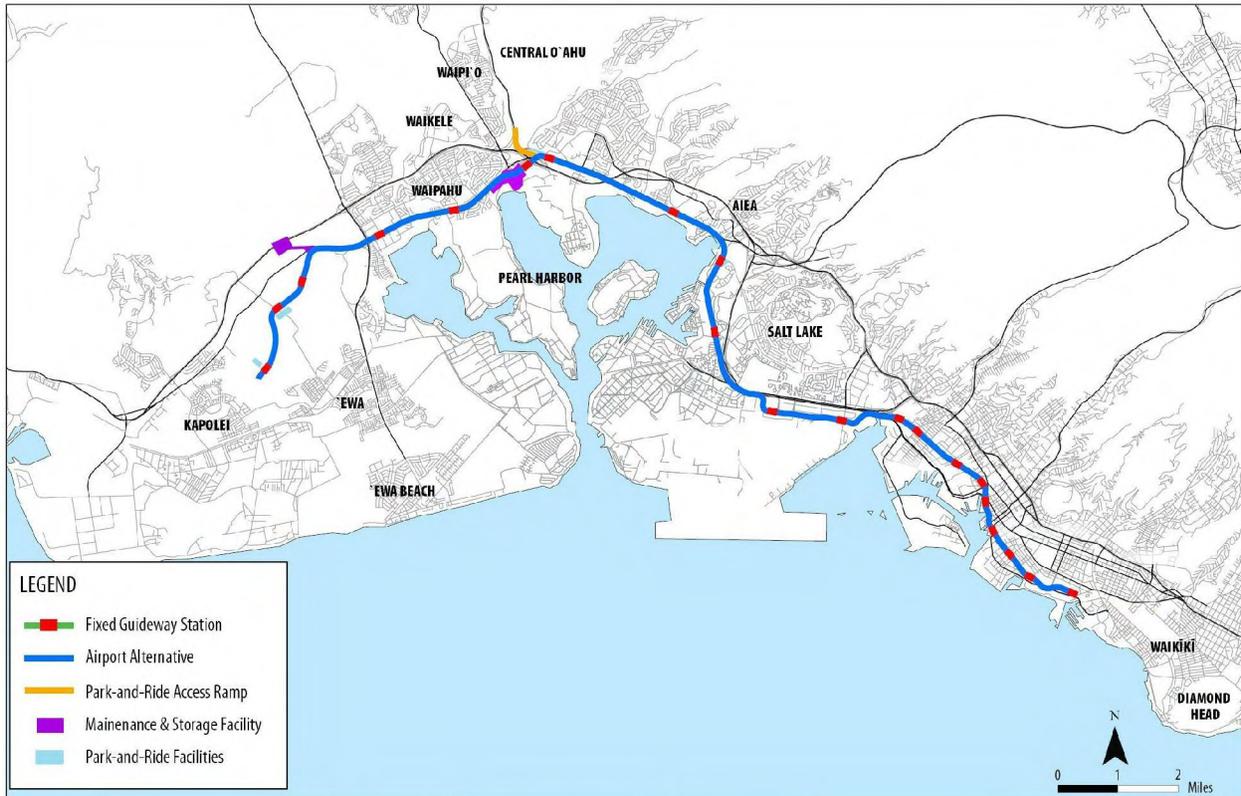
The First Project (Figure 2-1) is an approximately 20-mile alignment extending from East Kapolei to Ala Moana Center. The majority of the Project consists of aerial structure but also includes a short at-grade section (0.7 miles). The proposed investment also includes 21 stations (20 aerial and 1 at-grade), 76 transit vehicles, administrative/operations facilities, and maintenance facilities. The specific modal technology for this project is steel wheel on steel rail. The City has referred to the mode as a “Light Metro” vehicle. However, the vehicles can be described as automated short heavy rail vehicles with a tight turning radius.

The First Project is planned to be delivered in four construction segments.

- Segment I – West Oahu/Farrington Highway
  - East Kapolei to Pearl Highlands
- Segment II – Kamehameha Highway
  - Pearl Highlands to Aloha Stadium (Airport)
- Segment III – Airport Stations
  - Aloha Stadium to Lagoon Station
- Segment IV – City Center
  - Lagoon Station to Ala Moana Center

The City's Base Cost Estimate for the Project (Airport Alternative) is approximately \$5.171 billion in Year-of-Expenditure dollars. The City's target Revenue Operations Date for the First Project is March 2019.

**Figure 2-1. First Project as Identified in AFEIS**



Following is a summary of the proposed Project component characteristics at the time this Spot Report was prepared (as compiled from various City-provided documents):

Guideway

- Exclusive guideway:
  - Majority of guideway will be elevated structure consisting of concrete box sections
  - 0.70-mile at-grade section in location of Maintenance and Storage Facility will include no grade crossings
- Double-track mainline
- Maximum speed: 55 miles per hour
- Crossovers spaced at approximately 2 miles
- Pocket Track at Aloha Stadium Station
- Third Track at Ala Moana Station
- At-grade Junction for Merging and Diverging Routes
- Seamless Merging of Parallel Main Lines and Branch Lines

### Stations

- 20 aerial stations (13 with concourses)
- One at-grade station (access from below platform circulation space)
- Station length: 240 feet
- Barrier-free

### Maintenance and Storage Facility

- Initial construction will accommodate 80 revenue vehicles
- Maximum capacity of site is 150 revenue vehicles
- Yard movements will be manually controlled, except for departure/receiving tracks
- Shop Facility will include administrative and operational offices for the agency, including Operations Control Center
- Facility will be designed and commissioned to achieve Leadership in Energy and Environmental Design Green Building Rating System Silver Certification, and will be operated in accordance with FTA Sustainable Maintenance and Operational Standards

### Revenue Vehicles

- Heavy rail
- Approximate number of vehicles: 76 (required for initial operations in 2019)
- Standard gauge, steel wheel on steel rail
- Fully automated, manual operation possible (hostler panel)
- Nominal vehicle dimensions:
  - Length: 60 feet
  - Width: 10 feet
  - Height: Up to 13.3 feet
  - Floor Height: 3.77 feet above top of rail (at entry)
- Nominal Passenger Capacity: 190 per vehicle (AW2 load)
- Electric traction via third rail, nominal 750-volt direct current supply, all axles powered
- Semi-permanently coupled, bi-directional trainsets
- Wide gangways between end and middle cars
- 2 to 3 double passenger plug doors per side (per car)
- Manual crew doors with steps
- Dynamic / regenerative braking
- Alternating current propulsion
- 30+ year design life

### Systems

- Traction power
  - Distribution system will consist of substations and main line track power distribution facilities
  - Approximately 20 Traction Power Substations will be spaced at approximately one mile intervals along the alignment with ratings in the range of 2 to 5 megawatts

- Power distribution system will be based on a 750-volt direct current third rail system
- Train control
  - Automatic train control technology
  - Driverless train operation
  - Two-minute Design Headway
  - Bi-directional operation
  - Fall-back manual train operation
  - Parallel and branch main lines
  - Mid-line Maintenance and Storage Facilities
  - Accurate station stopping
  - Operations Control Center
- Communications
  - Supervisory Control and Data Acquisition System
  - Optical Fiber Transmission System
  - Radio System
  - Telephone System
  - Public Address System
  - Variable Message Sign System
  - Closed Circuit Television System
  - Fire and Intrusion Alarm Systems
  - Maintenance Management Information System
- Fare Collection
  - Fare system will be integrated with the fare structure on the City's existing bus system
  - Proof of payment system

### **2.3 Project Status**

The City has requested approval to enter into PE for the Project in accordance with the FTA's New Starts requirements. The City has also provided FTA with an Administrative Final Environmental Impact Statement (AFEIS) dated June 18, 2009 in accordance with NEPA.

### **3.0 SUBTASK 32B: NEPA PROCESS ENGINEERING REVIEW**

#### **3.1 Methodology**

The PMOC followed the requirements outlined in the *FTA Program Guidance #32: Project Scope, Definition and Capacity Review Procedures*, dated March 29, 2007 and *Oversight Procedure 32B – NEPA and Design Document Comparison*, Revision 1 dated June 2009 to assess and evaluate the AFEIS dated June 18, 2009.

#### **3.2 Review**

The objective of this review was for the PMOC to characterize the level to which the project design documents reflect the NEPA findings and recommendations. The PMOC reviewed the AFEIS document for consistency to help ensure that the impacts and mitigations have been adequately identified through the NEPA process. The review focused on the system design; project scope, cost, schedule of the build alignment; and construction methodology, impacts, and mitigations. Comments provided as a result of this review will help resolve project issues prior to publication of the FEIS or during PE.

The AFEIS presents a description of the Project that is generally in conformance with the plans and documentation presented to the PMOC. The PMOC's specific comments are included as Appendix A of this Spot Report, including AFEIS page and section numbers.

## APPENDIX A: PMOC REVIEW COMMENTS

Comment No.	Page	Section	Category	Comment
1	General	General	Design	The AFEIS contains a level of specificity not supported by the plans provided. While the plans in Appendices B (Preliminary Alignment Plans and Profiles) and C (Preliminary Right-of-Way Plans) show only minimal information about the guideway, the AFEIS contains discussion regarding street widening, locations of columns, turn lanes, station configurations, etc., that is not shown in any detail on the plans provided. The right-of-way drawings typically show only the easements and takings along with the locations of tracks, platforms and substations. The alignment plan and profile shown in Appendix B shows the track centerlines, track profiles, curve points (for Koko-Head bound track only), stationing, crossovers, curve radii, substations, station footprints and a minimal amount of road improvements.
2	General	General	Design	The PMOC previously identified concerns with the proximity of the guideway to end of the runways at the Honolulu International Airport specifically with regard to the Runway Protection Zone, Part 77 Approach surface, the runway departure surface, and the One Engine Inoperative Surface. The PMOC understands the Project staff has been coordinating with the Airports Division of Hawaii Department of Transportation (HDOT) with regard to the portion of the fixed guideway near the airport. We also understand that a coordination meeting is to be held that involves both HDOT and the Federal Aviation Administration. However, the AFEIS does not indicate that there is an issue with the flight path zones approaching Honolulu International Airport. In fact, there is little discussion at all in the AFEIS about airport related issues.
3	2-1 thru 2-3	Introduction	Scope, Cost and Schedule	Grantee discusses the planning and design process followed by FTA, and as it relates to the NEPA requirements, even including a graphic (Fig. 2.1, pg. 2-2) which clearly shows FTA process diagram with PE and preparation of FEIS. On pg. 2-3, the following sentence is misleading since the FTA has not yet approved the Project for entry into PE: "This Final EIS addresses the Build Alternative approved by FTA for PE." Fig. 2.1 should be updated to indicate the current status. The PMOC is also concerned that the Project has advanced sufficiently to presume this AFEIS has adequately addressed the comments/concerns expressed by those that reviewed the DEIS.
4	2-3	2.1 thru 2.3	Design	Essentially the discussion matches PMOC current understanding of the Project. Figures used and Plans included in Appendices B & C generally replicate what the Project has been described as, but in a number of areas there is more discussion about particular design solutions than evidenced from the Plans provided. Where warranted, the Plans in Appendices (and possibly some of the figures as well) should be updated with PE-level design work apparently completed by the Grantee.

Comment No.	Page	Section	Category	Comment
5	2-19	2.4	Design and Scope	The AFEIS states that the Airport Alternative will require less ROW than the Salt Lake Alternative. It is difficult to fully assess in this AFEIS the full extent of the ROW requirements and the analysis thereof. Appendix C is not easily assessable to complete this assessment. Nonetheless, this information appears to match the PMOC's understanding of the Project.
6	2-19 thru 2-25	2.5	Scope	Generally matches the PMOC's understanding of the Project.
7	2-25	2.5.1	Scope	The fleet size requirements of 75 (2019 peak) and 85 (2030 peak) vehicles identified in the AFEIS match the vehicle quantities as presented in City's "Fixed Guideway Fleet Sizing Report" June 2009. The PMOC confirmed the fleet sizing is adequate per the guidelines of Transit Cooperative Research Program Report 100.
8	2-26	2.5.2	Design	The AFEIS indicates that the system may be "manually operated by a driver or fully automated (driverless)". However, the PMOC has been informed by the Grantee that the vehicles will be fully automated with manual operation possible only through a hostler panel.
9	2-26 & 2-27	2.5.1 and 2.5.3	Design	Section 2.5.1 indicates that the fare system proposed for the Project will be proof of payment. However, Section 2.5.3 states that the stations will "accommodate fare gates and station manager's booths". The PMOC understands from discussion with the City that the system will be proof of payment. It is unclear why fare gates would then be required.
10	2-30	Alternatives Considered	Design	<p>Figures 2-14 and 2-15 labels are reversed: Figure 2-14 shows a typical center platform with a concourse and Figure 2-15 shows typical side platforms with a concourse.</p> <p>It is worth noting that the side platform with concourse configuration shows a platform level extending out to the station entrance structures on the outside of the roadway, which would be unnecessary if a set of elevators (from concourse to platform) could be placed within the footprint of the functional parts of the platforms. The placement of elevators in the station entrance buildings is less convenient than it could be, causing longer travel paths for those with disabilities.</p>
11	2-39	2.5.8	Scope	The AFEIS states that the Vehicle Maintenance and Storage Facility (MSF) will "store up to 100 vehicles." The Project Management Plan (PMP) states that the MSF will accommodate up to 150 vehicles.
12	2-39	2.5.8	Scope	The AFEIS states two alternate sites for the MSF are being considered: a 44-acre site near Leeward Community College (Navy Drum Site); and the 41-acre site in Hoopili. However, the PMP states that the MSF will be constructed on 43 acres of land at the Navy Drum site. If the decision has been made for one site, the FEIS should reflect this.
13	2-41	2.5.9	Design	The AFEIS should clarify whether the TPSS sites will require any aesthetic treatment based on community input.

Comment No.	Page	Section	Category	Comment
14	2-41	2.5.10	Scope	The statement that “Construction of stations in under-developed areas may be deferred until those areas are developed” had not previously been discussed with the PMOC. It is PMOC’s understanding that all stations shown on the drawings are to be constructed in their entirety and operated as part of the Project.
15	2-42	Fig. 2-41	Construction Methodology	The PMOC was provided a DRAFT Contract Packaging Plan (Revision 2) dated February 5, 2009 and preliminary contract documents that demonstrate a fairly advanced contract packaging methodology that would include Design-Bid-Build, Design-Build, and Design-Build-Operate-Maintain.. However, the AFEIS is fairly silent on this fact, particularly given that procurement activities are underway for three construction or equipment procurement contracts. The AFEIS could provide more detail of the contracting methodology in Appendix E and discuss the implications of the various methods of contracting that would allow for greater transparency.
16	2-42	2.5.10	Design	Under <i>Construction Schedule</i> , the AFEIS states “Preliminary Engineering for the Project is underway...” This statement is not currently accurate, although it likely will be by the time the FEIS is made available for public comment.
17	Chapter 3	Transportation	Construction Impacts/Mitigations	Generally the construction methodology described in the AFEIS is consistent with the PMOC understanding as presented by the City.
18	Chapter 4	Environmental Analysis, Consequences and Mitigation	Construction Impacts/Mitigations	For an elevated railroad in a scenic area, it would seem that “Visual & Aesthetics” should be a major issue. While it’s difficult to quantify subjective observations, such as moderate or severe effects on mauka or makai views, perhaps such degradations at receptor locations could be identified and counted. More renderings showing the changing of views could be included. Unlike impacts such as noise and vibration, mitigations are less available for visual and aesthetic effects.
19	4-6	Environmental Analysis, Consequences and Mitigation	Construction Impacts/Mitigations	The AFEIS does not define the relocation of the Banana Patch community as an environmental justice issue. Since the community is 100% minority and relies at least partially on subsistence farming in an area with no water or sewer service, the subject of justice can only be addressed after the adequacy of compensation and accommodation or dismantlement of this community is known.
20	4-134	4.14	Design	EPA Comments to the DEIS, dated February 12, 2009, had concerns that quantitative information was not included in the DEIS with respect to all water impacts. The AFEIS still contains no quantitative information regarding impacts to floodplains, streams, or riparian areas.
21	5-35	Section 4F Evaluation	Design	The AFEIS presents photos showing the Dillingham Transportation Building and the outdoor plaza which connects it to the Pacific Guardian Building to its east. The guideway is planned to pass near the historic Dillingham Building but will require 2400 square feet of the lush plaza for a station entrance building. While the document discusses optional alignments, its lack of detailed plans for the station makes its arguments ineffective.

Comment No.	Page	Section	Category	Comment
22	5-53	Section 4F Evaluation	Construction Impacts/ Mitigations	The AFEIS claims minimal visual impact when evaluating the Project's effect on views from Mother Waldron Park but ignores the devastating effects on makai views of and over the park from mid-rise structures immediately north of the guideway.
23	6-3	6.3.1	Cost	Tables 6-1 and 6-2 do not match the information provided in June 2009 to PMOC (within the SCC workbook). The differences are not significant, but the AFEIS table should contain the most current data.
24	Appendix A			No additional comments
25	Appendix B			No additional comments
26	Appendix C			No additional comments
27	Appendix D			No comments
28	Appendix E			No additional comments
29	Appendix E			All references to Draft EIS, including the footer, should be updated to reflect "Final Environmental Impact Statement".
30	Appendix F			No comments
31	Appendix G			No comments
32	Appendix H			Programmatic Agreement is not included in this appendix.