

Redacted

Safety Oversight Agency (SSOA). It was noted that a letter from FTA to the Governor is pending regarding the need to establish the SSOA early in the Project.

2.1.3 Compliance with Applicable Statutes, Regulations, Guidance and FTA Agreements

National Environmental Policy Act (NEPA)

- Section 106 Programmatic Agreement (PA) was submitted to the FTA and minor comments were provided in December 2009. The City will review the comments and present the PA to designated signatories.
- Airport Runway Protection Zone (RPZ) – In a December 11, 2009 letter to FTA, the FAA expressed an interest in becoming a cooperating agency in the development of the HHCTC project Environmental Impact Statement. The FTA welcomed FAA as a Federal Agency with jurisdiction by law to the HHCTC environmental process as a cooperative agency. Under the procedural provisions of NEPA and administration of the NEPA process, the FAA has special expertise regarding environmental matters at Honolulu International Airport. The FAA is aware of the sensitivity of the schedule and has committed to providing timely comments. The FAA regional office in Los Angeles received the Administrative Draft of the FEIS for review on December 13, 2009. The City is awaiting comments. The FTA has requested a copy of the backup information to support the City's assertion of cost impacts if the alignment is modified to mitigate the RPZ issue and 4(f) issue associated with Ke'Ehi Lagoon Park.
- The City included a new Chapter 5 in the Final Environmental Impact Statement (FEIS) to address Section 4(f) comments from the FTA.
- The City has indicated that it may delete the Pearl Harbor Naval Base Station from the scope due to issues with respect to State Historic Preservation Office's (SHPO) concerns over adjacent sites. The City and the Navy are continuing to communicate with the SHPO in an attempt to mitigate the SHPO's concerns. The City has noted that this station accounts for 1% of the daily ridership.
- The City's schedule for receiving a ROD by March 2010 is not realistic due to the issues mentioned above.

Letters of No Prejudice (LONP)

- The City is still developing an LONP approach for the Project and will send a letter when ready. In a December 1, 2009 letter to the City, the FTA clarified its policies and procedures related to LONPs. The letter states, "After completion of NEPA, FTA will consider LONPs for activities not covered by automatic pre-award authority on a case by case basis. Absent of pre-award authority or an LONP, no project cost can be incurred and be eligible for reimbursement or as local matching for any portion of the entire 20 mile alignment."

2.2 Project Scope

The Project is a 20-mile fixed guideway rail system along Oahu's south shore between East Kapolei and Ala Moana Center. This Project is based on the Airport Alignment, which currently includes 21 stations. The alignment is elevated, except for a 0.5-mile at-grade portion at the Leeward Community College Station. The Airport alignment will average a total of 97,500

weekday boardings at the Revenue Operations Date in the year 2019 and 116,300 weekday boardings in the year 2030. It will provide two significant areas with potential for Transit Oriented Development, one near the Airport and one in the surrounding industrial areas. It is anticipated that the initial fleet will include 76 "light metro" rail vehicles.

2.2.1 Status of Design/Construction Documents

The City has developed a Compendium of Design Criteria for all design elements along with its standard specification and standard and directive drawings. The PMOC's initial review finds these documents to be well prepared. However, the PMOC has yet to complete a thorough review of all design and design support documents. This review is ongoing and will be completed in advance of the City's request to enter Final Design.

2.2.2 Status of Third-Party Agreements

The following is a summary of utility coordination efforts ongoing by the City:

- Utility Design Coordination
 - Agencies: Navy, Air Force, DOIM, HDOT, City Departments
 - Companies: HECO, Chevron, Tesoro, TGC, HTI, OTWC, AT&T, SIC, TWTC, PNLI
- Attend Regular Utility Meetings
 - City Monthly Government and Public Utility Task Force Meeting
 - HDOT Bi-Monthly Utility Coordination Meeting
 - Hawaii Pipeline Corrosion Control Coordination Committee Quarterly Meeting

The following is the status of the Utility Engineering Service Agreements:

- Being circulated within the City for signature:
 - AT&T Corporation
 - Chevron Products Company
 - Oceanic Time Warner Cable
 - The Gas Company
 - TW Telecom Inc
 - Sandwich Isles Communications Inc.
- Comments being resolved with Utility Company:
 - Hawaiian Electric Company, Inc
 - Hawaiian Telecom, Inc
- Not yet returned by Utility:
 - Pacific LightNet Inc
 - Tesoro Hawaiian Corporation

The following is the status of the Intergovernmental Agency Agreements that the City has identified:

- Hawaii Department of Transportation – undergoing final review
- Hawaii Department of Education (for Waipahu High School) – draft agreement and Consent to Construct are under internal review

- University of Hawaii (West Oahu Campus) and Leeward Community College – draft agreements under internal review

2.2.3 Delivery Method

In accordance with the Contract Packaging Plan developed by the City, the project guideway is to be implemented in four segments. A summary of the Contract Packaging Plan for PE is currently included in the PMP as the project delivery approach for the Project. The four segments and method of delivery identified are:

- Segment I – East Kapolei to Pearl Highlands – DB
- Segment II – Pearl Highlands to Aloha Stadium – DB
- Segment III – Aloha Stadium to Middle Street Station – DBB
- Segment IV – Middle Street Station to Ala Moana Center – DBB

The DB approach is being planned to advance the project schedule in order to minimize escalation costs and start construction of the initial portion of the project while the remainder of the project proceeds through the DBB process. Work on these early contracts (Segments I & II, Maintenance and Storage Facility and Vehicle/Core Systems) is planned to be initiated after the ROD but ahead of the FFGA, utilizing excise tax funding. However, as noted above, any design activities beyond PE or construction activities not covered by automatic pre-award authority would require an LONP, which would be considered on a case by case basis.

Appendix B provides the status of the various design and construction contracts associated with this Project. The following is a list of contracts, delivery methods and contract packages anticipated for the project (number in parentheses indicates number of anticipated contracts if more than one):

- Professional Services
 - Project Management Support Consultant
 - General Engineering Consultant
 - Legal Services
 - LEED Commissioning
 - Insurance Consulting for Owner Controlled Insurance Program
 - Drilled Shaft Load Testing
- Design and Construction Services
 - Guideway & Utilities Design (2)
 - Stations Design (8)
 - Design-bid-build (DBB) Construction Engineering Inspection (5-7)
- Construction and Procurement Contracts
 - 3 Design-Build Contracts – Guideway (2) and MSF
 - Design-Bid-Build Contracts
 - Stations (8) – 1-3 stations each contract
 - Utility Relocation (2)
 - Guideway Construction (2)
 - System-wide Landscaping
 - Vehicle/Core Systems Design-Build-Operate-Maintain (DBOM)
 - Elevator/Escalator

2.2.4 Vehicle Status

Vehicle procurement is included in the Core Systems DBOM Contract. The current assumptions for the vehicles include a total active rail car fleet of 76 "light metro" railcars. The railcar being proposed is an automated light metro car, similar to railcars currently in operation in Vancouver, Copenhagen, and Oslo, but not in the United States. The railcar would have three doors per side and a length of approximately 60 feet. Vehicles could run in two-, three-, or four-railcar trains. Following is a summary of the anticipated vehicle characteristics (subject to change based on proposals that will be received from DBOM contractors):

- 76 light metro vehicles (identified as heavy rail in SCC workbook)
- 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 750V 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

2.3 Project Management Plan and Sub-Plans

2.3.1 Project Management Plan (PMP)

Revision 2 of the PMP, dated March 1, 2009, was prepared to support the City's request to enter PE. Revision 3 is in final internal circulation and is anticipated to be submitted for review in February 2010. This update will address key items associated with management of the Project during PE. The PMP update will also address recommendations identified in the PE approval letter and all prior PMOC review comments. It is anticipated that Revision 3 will address the following specific items:

- Update the PMP to be consistent with the current status of the Project
- Prepare a Staffing Plan and revise the organization chart due to changes in PMSC positions and City staff, and address the transition from PMSC staff to City staff during the PE and FD Phases of the Project
- Update the Project Delivery approach to reflect alignment, station locations, and segment delivery methods, once finalized
- Expand cost, schedule and claims management sections as the requirements and the processes are further defined

- Expand the Configuration Management Plan and Document Control Procedures to incorporate the roles of the consultants (engineering, design, and construction) and contractors at the various stages of the project, and to include document response durations, tracking, turnover, retention, storage and retrieval.
- Expand the process for Procurement and Contracts and change order procedures to incorporate the roles of the GEC and contractors at the various stages of the Project.
- Expand the Construction Management and Testing and Start-Up sections as the requirements and the processes are further defined.

2.3.2 Quality Management Plan (QMP)

Revision 1 of the QMP, issued on May 11, 2009, was prepared to support the City's request to enter PE. The PMSC has hired a new Quality Manager who is scheduled to begin working on the Project on February 1, 2010. It is anticipated that Revision 3 of the QMP will be issued in April 2010. The update is to address the QA/QC procedures to be implemented by the design consultants, the GEC II, as well as DB and DBB contractors.

2.3.3 Rail Fleet Management Plan (RFMP)

The RFMP Draft, dated May 2009, was submitted to support the request to enter PE. The City will be required to submit a fully-developed RFMP for review in support of entry into FD, to ensure that the City will have adequate service to meet the transit demand for the years following construction of the New Starts project. The City has provided the PMOC with an informational copy of the RFMP and has requested the PMOC's preliminary input prior to its next submittal.

The PMOC notes that the RFMP format is generally acceptable and appears to address requisite topics related to rail fleet management. Specifically, the RFMP follows FTA's 8-step guidance in computing Peak Vehicle Requirements and Operating Spares Ratio. The PMOC recommends that the details of the railcar be included in the RFMP update once the award of the Core Systems Contract is complete. The PMOC anticipates that the City will submit an update of the RFMP in May 2010.

2.3.4 Bus Fleet Management Plan (BFMP)

Revision 0 of the BFMP, dated April 2008, was submitted to support the request to enter PE. The City is in the process of updating the document. The City had requested the PMOC's preliminary input prior to its next submittal. The PMOC notes that the content is generally acceptable and appears to address requisite topics related to bus fleet management. The PMOC does recommend the following be considered to enhance the BFMP:

- Add details related to load factor policy, basis of ridership forecast, funding plans and sources for procurement/rehab of buses and maintenance facilities capacity/expansion plans
- Add description to definitively state how bus service will not be degraded as a result of the rail project

- To the maximum extent practicable, use a consistent time frame for all exhibits, tables, spreadsheets, etc. (e.g., 3-5 years prior to the start of design phase or after the start revenue operation of the rail project).

The City will be required to submit a fully developed BFMP for review in support of entry into FD to ensure that the City will have adequate service to meet the transit demand for the years following construction of the New Starts project. The PMOC anticipates the City to submit an update in May 2010.

2.3.5 Real Estate Acquisition and Management Plan (RAMP)

Revision 3 of the RAMP, dated October 2009, was submitted to support the request to enter PE. The City is in the process of updating the document. The PMOC has provided high-level review comments on Revision 3 of the RAMP. Some of the key findings include:

- There is no discussion of the appraisal Scope of Work
- Methodology for evaluating contaminated properties is not clearly described
- Real personalty (i.e. movable assets) determinations are not adequately addressed
- There are no relocation procedures

It is anticipated that a Real Estate Workshop will be scheduled for the second quarter of 2010 that would include FTA Headquarters and Region staff and the PMOC's real estate expert. The PMOC anticipates the City to submit Revision 4 in February 2010.

2.4 Project Schedule Status

The City developed a Master Project Schedule (MPS) and "baselined" the MPS at the request of the PMOC in the fall of 2009. The most recent MPS update was issued on October 19, 2009. The City will continue to providing monthly progress updates and expand the MPS detail as the project scope and definition are refined during the PE and final design phases. The project alignment contains four geographical segments, from east to east: West Oahu/Farrington, Kamehameha, Airport, and City Center. The City plans to open each segment in the same easterly direction as construction. The MPS "interim milestone" operational dates and the project Revenue Operation Date (ROD) are included in the table below.

Activity ID	Delivery Method	Milestone Description	Baseline Finish Date	Latest Update Finish Date	Variance (Weeks)
West Oahu / Farrington Highway Segment					
I997	DB	Open Waipahu to Leeward Section	14DEC12	14DEC12	0
M999	DB	Maintenance Service Facility	01OCT13	01OCT13	
I998	DB	Open East Kapolei to Leeward CC Section	31JUL14	31JUL14	0
I999	DB	Open Leeward CC - Pearl Highlands Section	27APR15	27APR15	0
Kamehameha Segment					
J999	DB	Open Kamehameha Section	14SEP16	14SEP16	0
Airport Segment					
Z999	DBB	Open Airport Section	31OCT17	31OCT17	0
City Center					
9999	DBB	Open to Ala Moana Center *** (ROD) ***	03MAR19	03MAR19	0

The City is using multiple contract delivery methods: Design-build and the conventional design-bid-build method. It is using design-build on the first two contract sections to achieve the aggressive interim milestone operation date of December 2012 and July 2014 respectively. The interim milestone operation dates for the Kamehameha, Airport, and Ala Moana Segments may be achievable with proper project management.

The City must populate the FTA Roadmap for Final Design with realistic dates and incorporate key milestones from the Roadmap into its Master Project Schedule. The City must include realistic dates for resolution of all NEPA-related issues (Programmatic Agreement, Section 4(f), and Runway Protection Zone at the Honolulu International Airport). It is the PMOC's professional opinion that the near-term project schedule provided by the City is unrealistic. At this time, a date for the resolution of these issues and publication of the FEIS cannot be determined. The City must remain cognizant of the limits of the pre-award authority granted with the receipt of Record of Decision. The City intends to issue multiple NTPs for its DB contracts. However, as noted in a December 1, 2009 letter to the City, the FTA will consider LONPs for activities not covered by automatic pre-award authority on a case-by-case basis following completion of NEPA.

The following is a 90-day look ahead for important activities associated with the Project:

Period: January - March 2010		
Activity	Responsibility	Date
Kamehameha DB RFP Part 1 Proposals Due	City	January 5, 2010
MSF RFP Part 2 Proposals Due	City	January 22, 2010
Monthly Progress Meeting (conference call)	FTA, PMOC and City	February 2010 (TBD)
Publish FEIS/NOA*	FTA, City	TBD
Determine Priority List for KH DB	City	February 22, 2010
FTA Issues ROD*	FTA	TBD
Monthly Progress Meeting	FTA, PMOC and City	March 3, 2010
Begin ROW Purchasing*	City	TBD
NTP #2 WOFH DB Contract*	City	TBD

*Note: Dates are dependent on adequate resolution of all issues identified in Section 2.1.3.

2.5 Project Cost Status

The Project Budget submitted with the City's request to enter PE is as follows:

Base Cost Estimate	\$3.838 billion
Total Contingency	\$1.219 billion (31.8% of Base Cost Estimate)
Finance Charges	\$0.290 billion
Total Project Cost	\$5.348 billion

Additional project costs include the following:

Pre-PE Expenditures	\$0.082 billion
Financing Charges	\$0.103 billion (post-revenue operations)
Grand Total Project Cost	\$5.532 billion

With the following potential changes, the City feels the Total Project Cost could be reduced from \$5.532 billion to \$5.391 billion:

- Advancing the Kamehameha Highway Guideway & Utilities Contract through the use of DB procurement
- Incorporating costs from the accepted WOFH DB Contract price proposal

The City is preparing a bottoms-up cost estimate for the Project. It is anticipated that this estimate will be available for review by the PMOC in February or March 2010.

2.5.1 Standard Cost Category (SCC)

The SCC Workbook, including Main and Inflation worksheets, is submitted as a separate electronic file. The City is in the process of preparing a detailed bottoms-up estimate. In addition, the PMOC recommends the City perform quality assurance checks to verify scope inclusivity and escalation of SCC categories in accordance with the MPS. The cost estimate and Basis of Estimate should provide more justification and backup documentation supporting the quantification and assumptions for the "soft costs" and related General Conditions for the project.

2.5.2 Funding Sources

The following are the project capital revenue (funding) sources provided by the City during the January 2010 Progress Meeting:

General Excise Tax (GET)	\$3.698 billion
Section 5309	\$1.550 billion
Section 5307	\$0.300 billion
ARRA (Section 5307)	\$0.004 billion
Interest	\$0.011 billion
Total	\$5.563 billion

The City is hopeful that it will be able to reduce the need for Section 5307 funds through project development (i.e. refined Base Cost Estimate and revenue estimates during PE) and an aggressive bidding environment.

The GET surcharge receipts received to date are approximately \$429 million. Additional surcharge revenues are received approximately 30 days following the end of each quarter.

2.6 Project Risk

The PMOC completed a scope, schedule, and cost review in advance of completing a risk assessment of the Project as part of the evaluation of the Grantee's request to enter PE. A FINAL Spot Report was submitted in July 2009. The Spot Report included recommendations for cost and schedule contingency and identified key risks. However, this effort did not include development of risk management tools (e.g., Primary Mitigation Deliverables, Secondary Mitigation Activities, or a Risk and Contingency Management Plan). It is anticipated that the risk management tools will be developed in conjunction with an update of the risk assessment to support the City's request to enter Final Design.

2.7 Action Items

Item No.	Item	Responsible Party	Date Identified	Date Due	Date Completed	Status
1	Provide Quarterly Report samples	PMOC	4-Nov-09	Dec-09		
2	Provide presentation of what is described in the FEIS for the airport and analysis of Master Plan for the Airport	City	4-Nov-09	Nov-09	16-Dec-09	Deleted as Action Item
3	Schedule real estate workshop	PMOC	4-Nov-09	Dec-09		Open
4	Provide FTA with "making the case" approach letter for LONP	City	4-Nov-09	Dec-09		Open
5	Provide FTA with a report on reduction of performance bond requirements	PMOC	4-Nov-09	Dec-09	29-Dec-09	Complete
6	Provide FTA with OCIP Bid Protest notification	FTA	4-Nov-09	Nov-09	Dec-09	Complete
7	[Update: Procurement terminated and will be re-solicited; letter will be sent to FTA Regional Counsel]	City	4-Nov-09			Open
8	Provide PMOC with GEC II Request For Qualifications	City	16-Dec-09	Dec-09	Dec-09	Complete
9	Provide PMOC with backup for WOFH Contract basis for NIP #1 scope and budget	City	16-Dec-09	Jan-10	13-Jan-10	Complete
10	FTA preparing a memo to Corporation Council on confidentiality	FTA	16-Dec-09	Jan-10		
11	Schedule Road Map meeting for Entry into FD	FTA/PMOC	16-Dec-09	Jan-10		PMOC will schedule a conference call after the City reviews the Road Map
12	Provide the FTA with Navy covenant (deed)	City	16-Dec-09	Dec-09	Dec-09	Complete
13	Provide the PMOC with Operational Peer Review Report	City	16-Dec-09	Jan-10	Jan-10	Complete
14	Provide the FTA with Transit Authority Resolution	City	16-Dec-09	Dec-09	Dec-09	Complete
15	Provide signed MOA with DHL for Navy Drum Site	City	Jan-10	Feb-10		
16	Provide Section 106 Programmatic Agreement comments	City	Jan-10	Feb-10		

Item No.	Item	Responsible Party	Date Identified	Date Due	Date Completed	Status
17	Provide sample Force Account and Claims Avoidance Plans	PMOC	Jan-10	Feb-10		
18	Provide draft Operating Plan	City	Jan-10	Mar-10		
19	VE requirement for Design Build contracts	PMOC	Jan-10	Feb-10	26-Jan-10	PMOC provided response from EIA
20	High level review of RAMP Rev 3	PMOC	Jan-10	Feb-10	25-Jan-10	PMOC provided Job Memorandum
21	Populate Road Map	City	Jan-10	Feb-10		
22	Check on status of FTA SSOA Letter	PMOC	Jan-10	Feb-10		Jan-10 - Per information from TPM, letter is still pending.

3.0 APPENDICES

Appendix A: Acronym List

BFMP	▪ Bus Fleet Management Plan
DB	▪ Design-Build
DBB	▪ Design-Bid-Build
DBOM	▪ Design-Build-Operate-Maintain
DHHL	▪ Department of Hawaiian Homelands
FD	▪ Final Design
FEIS	▪ Final Environmental Impact Statement
FPGA	▪ Full Funding Grant Agreement
FONSI	▪ Finding of No Significant Impact
FTA	▪ Federal Transit Administration
FY	▪ Fiscal Year
GEC	▪ General Engineering Consultant
GET	▪ General Excise Tax
HAR	▪ Hawaii Administrative Rules on Procurement
HDOT	▪ Hawaii Department of Transportation
HHCTC	▪ Honolulu High Capacity Transit Corridor Project
LCC	▪ Leeward Community College
LONP	▪ Letter of No Prejudice
MSF	▪ Maintenance and Storage Facility
NEPA	▪ National Environmental Policy Act
NOA	▪ Notice of Availability
NTP	▪ Notice to Proceed
PA	▪ Programmatic Agreement
PE	▪ Preliminary Engineering
PMOC	▪ Project Management Oversight Contractor
PMP	▪ Project Management Plan
PMSC	▪ Project Management Support Consultant
QMP	▪ Quality Management Plan
RAMP	▪ Real Estate Acquisition and Management Plan
RFMP	▪ Rail Fleet Management Plan
RFP	▪ Request for Proposals
RFQ	▪ Request for Qualifications
ROD	▪ Record of Decision
ROD	▪ Revenue Operation Date
RPZ	▪ Runway Protection Zone
SCP	▪ Safety Certification Plan
SHPO	▪ State Historic Preservation Office
SSMP	▪ Safety and Security Management Plan
SSOA	▪ State Safety Oversight Agency
SSPP	▪ System Safety Program Plan
WOFH	▪ West Oahu/Farrington Highway
YOE	▪ Year of Expenditure

Appendix B: Contract Status

The following sections provide the scope and status of the various contracts identified for this Project.

Project Management Support Consultant (PMSC) Contract.

- Scope – The consultant will serve as a program manager in providing oversight of the PE, FD, and construction activities for the DB and DBB contracts.
- Status – The City issued a contract amendment in late 2009 to extend the PMSC for another ten years.

General Engineering Consultant (GEC) II Contract

- Scope – The consultant will provide services related to elevated guideway engineering, systems engineering, rail station design, construction management oversight, procurement, contract administration, configuration control, claims support, scheduling, project financing and environmental planning. After the qualifications are evaluated and the top qualifier is selected, the City will develop the detailed scope of the contract. The GEC II Contract will include a ten year period of performance. The City expects to hire separate Construction Engineering and Inspection firms to provide field services for the DBB contracts.
- Status – This contract is on hold until after the Record of Decision (ROD) is issued. The City will issue a contract amendment to extend the GEC I Contract until the GEC II consultant is selected.

West Oahu/Farrington Highway (WOFH) DB Contract

- Scope – This contract includes the design and construction of a portion of the guideway alignment from the initial station at East Kapolei and continuing approximately 6.8 miles to a point just east of the planned Pearl Highlands station. The alignment runs along the east side of North South Road. This portion of the guideway is being identified as the West Oahu/Farrington Highway Design-Build Contract. The guideway is comprised mostly of a two-track aerial structure with a 0.3-mile portion of twin single-track guideways and a 0.3-mile section of guideway at grade.

As the alignment approaches Leeward Community College (LCC), the guideway alignment traverses from the median of Farrington Highway to the makai side of the highway where it transitions to an at-grade section. Once at grade, the entrance(s) to the Maintenance and Storage Facility (MSF) is (are) encountered. The Guideway crosses Ala Ike Road at two locations, with the roadway passing under the guideway alignment in box-culverts. At the LCC Station, a station plaza area is planned to allow passengers to walk under the guideway to access either platform.

- Status – Kiewit Constructors was awarded a \$482,924,000 contract on November 18, 2009. Notice to Proceed (NTP) #1 was issued on December 1, 2009 to Kiewit. The maximum reimbursable amount under NTP #1 is \$27 million. NTP #1 is for approximately 90 days and the scope of work for Kiewit is limited to the elements of PE whose principal purpose is refinement and validation of information supporting the

NEPA process. NTP #2 will be issued shortly following the issuance of the Record of Decision (ROD). Should NTP #2 not be issued within the required timeframe per the contract, the City will meet with the contractor to re-evaluate the work schedule and make adjustments as deemed necessary. NTP #3 will be issued for Final Design work activities, as defined by the City. NTP #4 and any subsequent NTPs will be issued for all remaining work in the contract.

- Schedule – The contract schedule was provided by Kiewit with its proposal. With the City's issuance of NTP #1 on December 1, 2009, Kiewit has 45 calendar days, or until January 14, 2010, to submit a detailed baseline schedule to the City for review and approval. The PMOC requested a copy of the schedule electronic file once approved by the City.
- Cost
 - Original Contract Value – \$482,924,000
 - Current Contract Value – \$482,924,000
 - Expended to Date – \$0
 - % Expended – 0%
- Issues or Concerns
 - The executed agreement calls for issuance of all four NTPs within 120 calendar days of the December 1, 2009 NTP #1 date, or by March 1, 2010. If that does not occur, the City will review Kiewit's schedule of milestones and the baseline schedule to determine whether there has been a time or a cost impact. It is unlikely the 120 calendar day schedule for issuance of all NTPs will be met.
 - The PMOC cautioned that the City should share future NTPs with the FTA and PMOC in advance of their issuance. The purpose of this review is to ensure City remains within the constraints of the New Starts requirements.

Kamehameha Highway Guideway DB Contract

- Scope – The contractor will design and construct a portion of the guideway alignment from the initial station at East Pearl Highlands to a point just east of the planned Aloha Stadium Station, a distance of approximately 3.9 miles. This portion of the guideway is being identified as the Kamehameha Highway Design-Build Contract. The guideway is comprised of a two-track aerial structure.
- Status – The Kamehameha Highway Guideway was originally to be constructed using DBB, but the City decided to utilize DB to take advantage of the perceived favorable bid climate. RFP Part 1 was issued on November 18, 2009, with responses received on January 5, 2010. RFP Part 2 will be issued on March 9, 2010. RFP Part 2 proposals are due on July 16, 2010. The City will make a selection on September 3, 2010 and issue NTP #1 on October 8, 2010. The contract is set up for multiple NTPs, if needed.
- Cost – The budget for this contract is \$323.5 million.

- Schedule – The Kamehameha Guideway DB project is approximately 48 months in duration.
- Issues or Concerns
 - The PMOC is concerned that FTA and the PMOC will not be afforded an opportunity to review RFP Part II documents in advance of their issuance due to the City's confidentiality requirements for DB procurement.

Maintenance and Storage Facility DB Contract

- Scope – The contractor will design and construct the MSF to accommodate 80 revenue vehicles. The maximum capacity of the site is 100 revenue vehicles. The Shop Facility will include administrative and operational offices for the agency, including an Operations Control Center. The MSF will be designed and commissioned to achieve Leadership in Energy and Environmental Design (LEED) Green Building Rating System Silver Certification, and will operate in accordance with FTA Sustainable Maintenance and Operational Standards. The scope of the contract includes the procurement of all rail materials.
- Status – RFP Part 1 was issued on May 28, 2009. RFP Part 2 was issued on July 24, 2009 and proposals were received on January 22, 2010. The City expects to make a selection on March 5, 2010 and issue NTP #1 following receipt of a ROD.
- Cost – The budget for this contract is \$234 million, of which approximately \$156 million is for MSF design and construction and the remainder is for track material procurement.
- Issues or Concerns
 - The City is including two separate MSF sites, which are identified in the NEPA document as a 44-acre vacant site near Leeward Community College and a 41-acre agricultural site in Hoopili. The City continues to identify two potential sites since the DEIS did so as well. The Navy Drum Site is the City's preferred location for the MSF and the current RFP documents reflect the Navy Drum site.
 - The City must sign a lease with the Department of Hawaiian Homeiands (DHHL) for the Navy Drum Site. To do so, they must first execute a Memorandum of Agreement (MOA). The MOA has been approved by the City Council, but has not been executed by DHHL. DHHL has reviewed the MOA and has begun its approval process, which takes approximately one month.
 - The PMOC is concerned that FTA and the PMOC have not been afforded an opportunity to review RFP Part II documents in advance of their issuance due to the City's confidentiality requirements for DB procurement.

Vehicle/Core Systems DBOM Contract

- Scope – A Design-Build-Operate-Maintain (DBOM) contract is anticipated to be awarded by the City in June 2010 and will include the following:
 - Design and manufacture of vehicles
 - Design, manufacture, and installation of systems components including train control communications, traction power, and fare vending equipment

- Operations and Maintenance.

The Operations and Maintenance contract will extend 5 years beyond the full build revenue date (2019), with an additional 5 year option. The Operations and Maintenance contractor will be responsible for Intermediate Operating Section Openings (6 sections including the demonstration section opening in 2012).

- Status – RFP Part 1 was issued on April 8, 2009. RFP Part 2 was issued on August 17, 2009, with responses originally due in February 2010. However, the proposals are now due on March 19, 2010. The City expects to make a selection on June 2, 2010 and issue NTP #1 on July 9, 2010.
- Cost – The budget for this contract is \$650 million, including equipment and installation.
- Issues or Concerns
 - The PMOC is concerned that FTA and the PMOC have not been afforded an opportunity to review RFP Part II documents in advance of their issuance due to the City's confidentiality requirements for DB procurement.

Airport Guideway & Utility Relocation DBB Contract

- Scope – The project delivery method for the guideway and utility relocations will be DBB. The City anticipates awarding separate construction contracts for the utility relocation and guideway. This segment extends from Aloha Stadium Station to Lagoon Drive Station.
- Status – This segment is in the PE phase. The PE drawings are under final review by the City, and the GEC is completing quantity take-offs. Utility relocation and guideway construction are anticipated to begin in late 2011 and early 2012, respectively.
- Cost – The estimated contract value will be available when the bottoms-up estimate is complete.
- Issues or Concerns
 - None identified at this time.

City Center Guideway & Utility Relocation DBB Contract

- Scope – The project delivery method for the guideway and utility relocations will be DBB. The City anticipates awarding separate construction contracts for the utility relocation and guideway. This segment extends from Lagoon Drive Station to Ala Moana Center Station.
- Status – This segment is in the PE phase and the GEC II contract will be performing the PE/FD drawings for this project. The PE drawings are under final review by the City, and the GEC is completing quantity take-offs. Utility relocation and guideway construction are anticipated to begin in late 2011 and early 2012, respectively.

- Cost – The estimated contract value will be available when the bottoms-up estimate is complete.
- Issues or Concerns
 - None identified at this time. The City is in the process of finalizing third party agreements for utility relocations.

Station Packages

- Scope – All stations will be implemented using DBB. The City has developed station group packages for design, and it intends to issue construction contracts based on those station packages. Following are the packages that the City is currently considering:
 - The West Oahu Station Group, consisting of three stations: East Kapolei, UH-West Oahu and Hoopili.
 - The Farrington Station Group, consisting of three stations: West Loch, Waipahu Transit Center and Leeward Community College.
 - The Pearl Highlands Station, H2 Ramps and Garage Group, consisting of one station at Pearl Highlands, new ramps from H2 to access the station and a multi-level parking structure.
 - The Kamehameha Station Group, consisting of two stations: Pearlridge and Aloha Stadium.
 - The Airport Station Group, consisting of three stations: Pearl Harbor Navy Base, Honolulu International Airport, and Lagoon Drive.
 - The Dillingham Station Group DBB contract, consisting of three stations: Middle Street Transit Center, Kalihi and Kapalama.
 - The City Center Group, consisting of three stations: Iwilei, Chinatown and Downtown.
 - The Kakaako Station Group, consisting of three stations: Civic Center, Kakaako and Ala Moana Center .
- Status – Design is procured in a one-step Request for Qualifications (RFQ) process. The RFQ for Farrington Stations Design was released on October 13, 2009. Responses were received in early January 2010. The RFQ for West Oahu Stations has been delayed and has not yet been rescheduled.
- Cost
 - The estimated contract values for each package will be available when the bottoms-up estimate is complete.
- Issues or Concerns
 - None identified at this time. The City is in the process of finalizing third party agreements for utility relocations.

Elevators and Escalators

- Scope - The City intends to issue a DB contract to furnish, install, test, and commission all elevator and escalator equipment.

- Status – The City anticipates procuring this contract in 2011.
- Schedule – Following are the key contract dates:
 - Prepare Procurement Packages – January 2011
 - Bid-Award Elevator Packages – May 2011
 - Elevator & Escalators Construction – September 2011
- Cost – The estimated contract values will be available when the bottoms-up estimate is complete.
- Issues or Concerns
 - None identified at this time.

Appendix C: PE Approval Letter Requirements

No.	Item	City Responsible Person	Date Due	Completion Date	Comments
Project Scope, Design and Development					
1	Identify any third party agreements necessary for project completion, including utility agreements with private and public owners and military	LR / HLB	Jan-10		Status Matrix being sent to the PMOC on a monthly basis
2	Resolve the specific regarding proximity of the guideway to runways 22R/4L and 22L/4R at the Honolulu International Airport with HDOT and FAA	HLB	Ongoing		
3	Fully develop vehicle basis of design and functional sizing	JS	Mar-10		PMOC will review selected proposal to determine whether it meets operational criteria
4	Determine rail fleet size requirement	JS	May-10		Delayed due to change in CORE Systems proposal due date
5	Fully develop scope for the administration building and operations control center	JS / HLB	Jul/Aug-10		
6	Determine the final location of the maintenance and storage facility	FM			Address in FEIS reconciliation table
7	Finalize a contracting/packaging plan which includes a source selection plan(s) and contract specific work plans	SZ	Jan-10		On Schedule
8	Develop strategies to streamline the City's process to award contracts and to enter into grant agreements, especially as applicable to FTA grants	LR	Apr-10		Transit Authority Resolution 09-252 CD 1 passed on 12/16/09. Goes to public vote during November elections.
9	Develop a preliminary operation plan	JS	Mar-10		Final operations plan will be submitted following election of the Core Systems Contractor.
10	Ensure the service velocity does not erode over the next course of design changes	JS	Mar-10		On Schedule - currently being evaluated
Project Schedule					
11	Provide a baseline of the master Project Schedule (MPS) early in PE which will be used for monthly progress updates and tracking schedule variances	MH	Jan-10	10/29/2009	Uploaded to PS site including horse blanket schedule.
12	Address the utilization manpower and equipment resource loading and budget and cost loading	MH	Mar-10		On schedule; cost loaded, waiting for resource loading

No.	Item	City Responsible Person	Date Due	Completion Date	Comments
13	Include critical activities in the MPS: utility activities, real estate acquisitions, system integration, starting and testing, operational commissioning and training, vehicle procurement, major construction material procurement, FTA review and comment, detail activities for early construction packages	MH	Apr-10		Delayed until after the CORE Systems proposals are submitted and contractor selected
14	Develop a right-of-way schedule	MH	Jan-10	10/29/2009	Uploaded to PS site.
15	Modify the Work Breakdown Structure to cross over with the project budget and cost breakdown structure	MH	Jan-10	01/06/10	Complete
Project Cost					
16	Develop a detailed bottoms-up-style project cost estimate to Standard Cost Category format. The estimate should be detailed sufficiently to determine distributions of materials, labor, equipment and general conditions elements at a minimum. The soft cost estimates should be based on staffing plans, force account plans, contracts and so forth rather than solely on percentages. The estimate should eliminate parametric-style values, cost estimating relationships, and lump sums as much as possible during PE	MH	Mar-10		On schedule
17	Escalate the cost estimate in accordance with the MPS	MH	Mar-10		Need to wait until Item No. 16 is complete
18	Provide justification and backup documents to support the quantification and assumptions for the "soft costs" and related general conditions of the project	MH	Feb-10		On schedule
Technical Capacity					
19	Update the Project Management Plan to bring it into full conformance with FTA requirements, and implement the configuration management and change control mechanism	SZ	Jan-10		On schedule for January update
20	Develop detailed staffing plans for all remaining phases of the project to ensure adequate technical capacity. The plans should include the dates by which the City will fill each key position. All key City management positions should be filled during PE.	TH/PR	Jun-10		
21	Work with the State of Hawaii to establish a State Safety Oversight Agency office to oversee the project	KA	Apr-10		Still waiting for FTA letter to the Governor before work can proceed.

No.	Item	City Responsible Person	Date Due	Completion Date	Comments
22	Submit a fully developed Rail Fleet Management Plan	JS	Apr-10		On Schedule
23	Have a quantifiable metrics for measuring the real status of work, both cost and schedule of all professional service contracts, and any inter-local agreements for participatory services	MH	Apr-10		
24	Develop a Contingency Management Plan which will identify the specific risks and implement the anticipated mitigation measures	SZ			Hold off until January
25	Develop an Environmental Mitigation Plan that identifies required environmental mitigation actions and the party responsible for the mitigation and that will eventually become the basis for quarterly mitigation monitoring and quarterly mitigation reports	JA/FM	Mar-10		Being worked on; will be complete in first quarter 2010
26	Update and implement the: Real Estate and Acquisition Plan	JL	Mar-10		Being updated; next revision will be completed after the PMOC-FTA ROW meeting in Honolulu
	Bus Fleet Management Plan	PK	Jun-10		
	Safety and Security Management Plan	KA	Jan-10		
	Quality Management Plan	SZ	Apr-10		On Schedule

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PMOC MINI-MONTHLY REPORT

Honolulu High-Capacity Transit Corridor Project
City and County of Honolulu
Honolulu, HI

January 2010 (FINAL)

PMOC Contract Number: DTFT60-09-D-00012
Task Order No. 2: Honolulu High-Capacity Corridor Project
Project No: DC-27-5140
Work Order No. 1
OPs Referenced: OP 1 and 25

Jacobs Engineering Group, Inc., 501 North Broadway, St. Louis, MO 63102
Tim Mantych, P.E., (314) 335-4454, tim.mantych@jacobs.com
Length of Time Assigned: Five Years (November 18, 2009 through November 17, 2014)

Appendix E: Safety and Security Checklist

Project Overview			
Project mode (Rail, Bus, BRT, Multimode)	Rail		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	PE		
Project Delivery Method (Design/Build, Design/Build/Operate Maintain, CMGC, etc)	DB and DBB		
Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan	1.0		Update due Feb-10
Safety and Security Certification Plan			Submittal due Mar-10
System Safety Program Plan			Submittal date TBD
System Security Plan or Security and Emergency Preparedness Plan (SSEPP)			Submittal date TBD
Construction Safety and Security Plan			
Safety and Security Authority	Y/N	Status	
Is the grantee subject to 49 CFR Part 659 state safety oversight requirements?	Y		
Has the state designated an oversight agency as per Part 659.9		Establishment of SSOA is pending	
Has the oversight agency reviewed and approved the grantee's SSPP as per Part 659.17?		Establishment of SSOA is pending	
Has the oversight agency reviewed and approved the grantee's Security Plan or SEPP as per Part 659.21?		Establishment of SSOA is pending	
Did the oversight agency participate in the last Quarterly Program Review Meeting?		Establishment of SSOA is pending	
Has the grantee submitted its safety certification plan to the oversight agency?		Establishment of SSOA is pending	
Has the grantee implemented security directives issues by the Department Homeland Security, Transportation Security Administration?		Pending	
SSMP Monitoring			
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?		Pending review of updated plan	
Grantee reviews the SSMP and related project plans to determine if updates are necessary?		Pending review of updated plan	
Does the grantee implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.		Pending review of updated plan	
Does the grantee maintain a regularly scheduled report on the status of safety and security activities?		Pending review of updated plan	
Has the grantee established staffing requirements, procedures and authority for safety and security activities throughout all project phases?		Pending review of updated plan	
Does the grantee update the safety and security responsibility matrix/organization chart as necessary?		Pending review of updated plan	
Has the grantee allocated sufficient resources to oversee or carry out safety and security activities?		Pending review of updated plan	
Has the grantee developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?		Pending review of updated plan	

Does the grantee implement regularly scheduled meetings to track to resolution any identified hazards and/or vulnerabilities?		Pending review of updated plan
Does the grantee monitor the progress of safety and security activities throughout all project phases? Please describe briefly.		Pending review of updated plan
Does the grantee ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.		Pending review of updated plan
Has the grantee ensured the development of safety design criteria?		Pending review of updated plan
Has the grantee ensured the development of security design criteria?		Pending review of updated plan
Has the grantee verified conformance with the safety and security requirements in the design?		Pending review of updated plan
Has the grantee identified conformance with safety and security requirements in equipment and materials procurement?		Pending review of updated plan
Has the grantee verified construction specification conformance?		Pending review of updated plan
Has the grantee identified safety and security critical tests to be performed prior to passenger operations?		Pending review of updated plan
Has the grantee verified conformance with safety and security requirements during testing, inspection and start up phases?		Pending review of updated plan
Does the grantee evaluate change orders, design waivers, or test variances for potential hazards and/or vulnerabilities?		Pending review of updated plan
Has the grantee ensured the performance of safety and security analyses for proposed work-arounds?		Pending review of updated plan
Has the grantee demonstrated through meetings or other methods, the integration of safety and security in the following: <ul style="list-style-type: none"> • Activation Plan and Procedures • Integrated Test Plan and Procedures • Operations and Maintenance Plan • Emergency Operations Plan 		Pending review of updated plan
Has the grantee issued final safety and security certification?		Pending review of updated plan
Has the grantee issued the final safety and security verification report?		Pending review of updated plan
Construction Safety		
Does the grantee have a documented/implementation Contractor Safety Program with which it expects contractors to comply?		Submittal pending
Does the grantee's contractor(s) have a documented company-wide safety and security program plan?		Submittal pending
Does the grantee's contractor(s) have a site-specific safety and security program plan?		Submittal pending
Provide the grantee's OSHA statistics compared to the national average for the same type of work?		Submittal pending
If the comparison is not favorable, what actions are being taken by the grantee to improve its safety record?		Submittal pending
Does the grantee conduct site audits of the contractor's performance versus required safety/security procedures?		Submittal pending
Federal Railroad Administration		

If the shared track: has the grantee submitted its waiver request application to FRA? (Please identify any specific regulations for which waivers are being requested)	NA	
If the shared corridor: has grantee specified specific measures to address shared corridor safety concerns?	NA	
Is the Collision Hazard Analysis underway?	NA	
Other FRA required Hazard Analysis – fencing, etc?	NA	
Does the project have Quiet Zones?	NA	
Does FRA attend Quarterly Review Meetings?	NA	

Appendix F: PE Approval Letter Requirements

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	Bus Fleet Management Plan	PK	Jun-10		
	Safety and Security Management Plan	KA	Jan-10		
	Quality Management Plan	SZ	Apr-10		On Schedule

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PMOC MINI-MONTHLY REPORT

Honolulu High-Capacity Transit Corridor Project
City and County of Honolulu
Honolulu, HI

January 2010 (FINAL)

PMOC Contract Number: DTFT60-09-D-00012
Task Order No. 2: Honolulu High-Capacity Corridor Project
Project No: DC-27-5140
Work Order No. 1
OPs Referenced: OP 1 and 25

Jacobs Engineering Group, Inc., 501 North Broadway, St. Louis, MO 63102
Tim Mantych, P.E., (314) 335-4454, tim.mantych@jacobs.com
Length of Time Assigned: Five Years (November 18, 2009 through November 17, 2014)

Appendix D: Project Overview and Map

Date: January 27, 2010
Project Name: Honolulu High-Capacity Transit Corridor Project
Grantee: City and County of Honolulu
FTA Regional contact: Catherine Luu
FTA HQ contact: Kim Nguyen

SCOPE

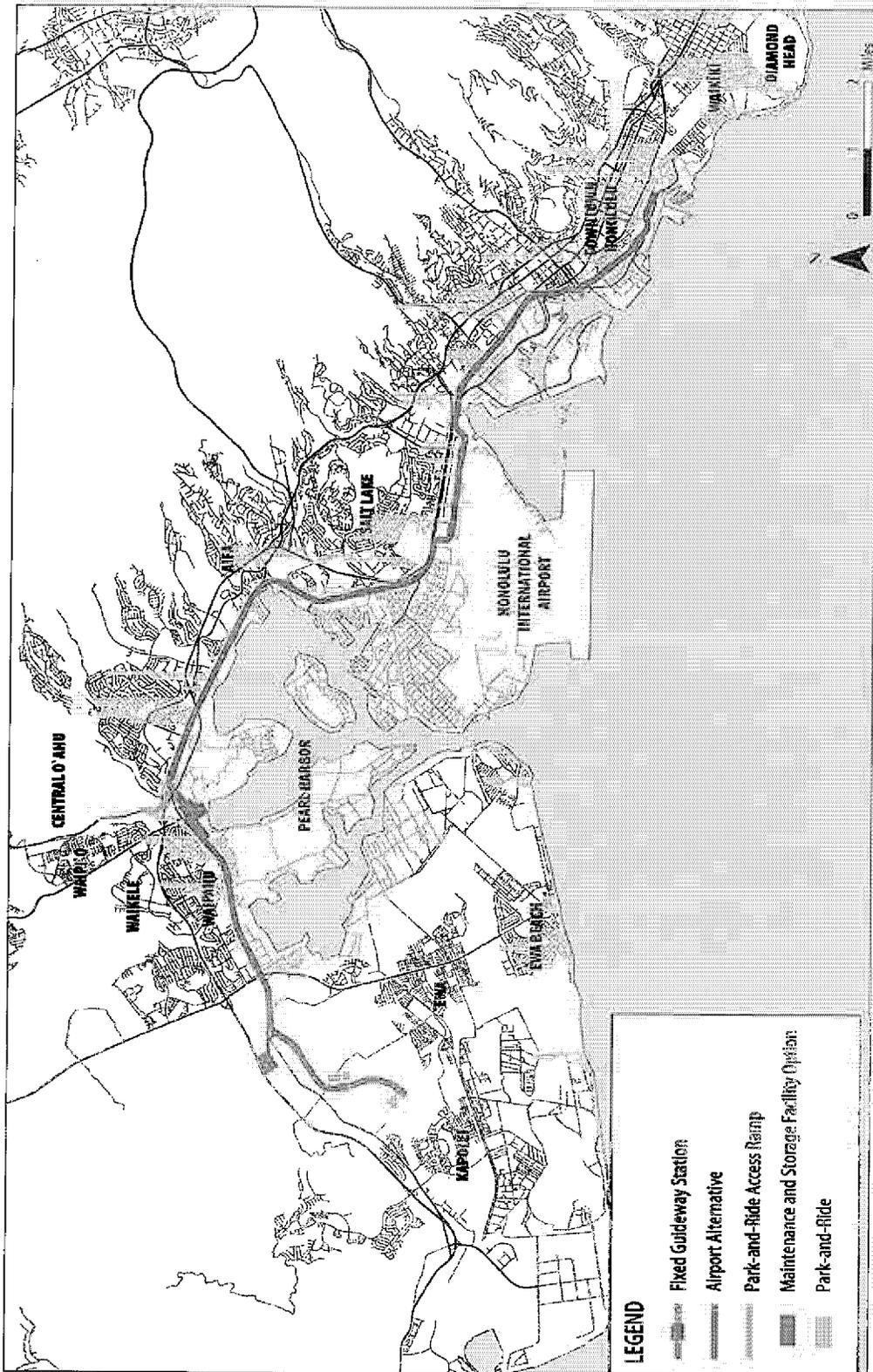
Description The proposed Project is an approximately 20-mile rail alignment extending from East Kapolei to Ala Moana Center.
Guideway The majority of the Project is to be built on aerial structure, but the Project also includes a short at-grade section (0.7 miles).
Stations 21 stations (20 aerial and 1 at-grade)
Support Facility Maintenance and Storage Facility located near Leeward Community College
Vehicles 76 light metro rail (identified as a "heavy rail" in the SCC workbook)

RIDERSHIP 97,500 weekday boardings in 2019; 116,300 weekday boardings in 2030

SCHEDULE 10/09 Approval Entry to PE 03/19 Estimated Rev Ops at Entry to PE

COST \$5.348 B Total Project Cost (\$YOE) at Approval Entry to PE
\$5.348 B Total Project Cost (\$YOE) at date of this report including \$290.294 M in Finance Charges
\$92.918 M Amount of Expenditures at date of this report from Total Project Budget of \$5.348 B

Honolulu High-Capacity Transit Corridor Project Map



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Sipes, Nancy (FTA)

From: Nguyen, Kim (FTA)
Sent: Tuesday, September 14, 2010 3:43 PM
To: Sipes, Nancy (FTA)
Subject: Honolulu FOIA
Attachments: Glacier Bkgrd.jpg; FINAL - Honolulu Final Report - October 2009.pdf.zip

Attached, please find the Final Monitoring Report for the Honolulu High-Capacity Transit Corridor Project.

FEDERAL TRANSIT ADMINISTRATION
PROJECT MANAGEMENT OVERSIGHT PROGRAM

Contract No. DTFT60-04-D-0013
Project No. DC-27-5041
Task Order No. 10

Final Monitoring Report

Grantee:
City and County of Honolulu

Honolulu High-Capacity Transit Corridor
Project
Final Report – October 2009

By: Booz Allen Hamilton
8283 Greensboro Drive
McLean, Virginia 22102

Table of Contents

LIST OF ACRONYMS.....	ii
I. EXECUTIVE SUMMARY	1
A. Project Information/Background.....	1
B. Cost and Schedule Performance Data	2
C. Description of PMOP Activities	2
D. Discussion on Findings/Results	3
E. Open Issues to be Resolved.....	3
II. OVERVIEW OF PROJECT.....	4
A. Introduction	4
B. Project Description.....	4
C. Project History.....	5
D. Honolulu High-Capacity Transit Corridor Project Map.....	11
E. Funding.....	12
F. Budget	12
G. Schedule	14
H. Cost and Schedule Performance (as completed).....	16
I. Project Management Plan (PMP).....	16
J. Other Management Plans (RFMP, QMP, etc.).....	17
K. Ridership	23
L. City-GEC Organizational Chart	24
III. PMOC ACTIVITIES.....	25
A. Implementation Plan and Annual Updates.....	25
B. Initial Technical Teview of Grantee's Technical Capacity/Capability.....	25
C. Summary of PMOC Findings and Recommendations	27
IV. ITEMS TO BE RESOLVED.....	28
V. CONCLUSIONS AND RECOMMENDATIONS.....	31
VI. LESSONS LEARNED	32

LIST OF ACRONYMS

AA	Alternatives Analysis
BFMP	Bus Fleet Management Plan
DB	Design-Build
DBB	Design-Bid-Build
DEIS	Draft Environmental Impact Statement
DTS	City & County of Honolulu Dept. of Transportation Services
FD	Final Design
FEIS	Final Environmental Impact Statement
FFGA	Full Funding Grant Agreement
FMOC	Financial Management Oversight Contractor
FMP	Fleet Management Plan
FTA	Federal Transit Administration
GCM	General Construction Manager
GEC	General Engineering Consultant
GET	General Excise Tax
HAR	Hawai'i Administrative Rules on Procurement
HDOT	State of Hawai'i Department of Transportation
HHCTC	Honolulu High-Capacity Transit Corridor (Project)
LONP	Letter of No Prejudice
LPA	Locally Preferred Alternative
MOS	Minimum Operating Segment
MPS	Master Project Schedule
NEPA	National Environmental Policy Act
NTP	Notice to Proceed
PB	PB Americas, Inc.
PDP	Project Development Plan
PE	Preliminary Engineering
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
PMSC	Project Management Support Consultant
QA/QC	Quality Assurance / Quality Control
QMP	Quality Management Plan
RAMP	Real Estate Acquisition Management Plan
RFMP	Rail Fleet Management Plan
RFQ	Request for Qualifications
RFP	Request for Proposals
ROD	Record of Decision
ROW	Right-of-Way
RTD	DTS Rapid Transit Division
SCC	Standard Cost Category
SSCP	Safety and Security Certification Plan
SSMP	Safety and Security Management Plan
SSOA	State Safety Oversight Agency
SSORC	Safety and Security Oversight and Review Committee
UH	University of Hawai'i
WO/FH	West O'ahu/Farrington Highway
YOE	Year of Expenditure

I. EXECUTIVE SUMMARY

The Honolulu High-Capacity Transit Corridor (HHCTC) Project is scheduled to enter into Preliminary Engineering (PE) in October 2009. In order to determine whether the Federal Transit Administration (FTA) guidelines and requirements are being satisfied for entry into PE, the Project Management Oversight Consultant (PMOC) conducted a review and evaluation of the grantee's management, organization and project definition data to determine whether the grantee possessed the technical capacity and capability to efficiently and effectively implement the proposed HHCTC project, and to determine whether the grantee is ready to receive Federal funds for further project development.

The main concern that will require continued monitoring is the City's capability to manage the work presently being performed by the Project Management Support Consultant (PMSC) and the General Engineering Consultant (GEC) by the current City staff. As work progresses into PE, the City will need to add the necessary staff to be directly accountable for the development of the project design, budget, and schedule. Development of the project design will include quality review and audit of the GEC as well as any engineering design consultants assigned to the project; the monitoring of safety and security design requirements and implementation; and continued oversight of the real estate acquisition process.

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A. Project Information/Background

The HHCTC Project is a 34-mile elevated fixed guideway rail system along O'ahu's south shore between Kapolei and the University of Hawai'i (UH) at Mānoa, including a spur to Waikīkī. The Locally Preferred Alternative (LPA) identified by the City Council on December 22, 2006 included various areas/alignments to be decided on as the project progressed – West Kapolei, Salt Lake Boulevard, Airport, and Waikīkī/UH at Mānoa alignments. On January 28, 2009 the City Council voted to include the Airport alignment in the Minimum Operating Segment (MOS).

The Airport alignment is approximately a 20-mile portion of the 34-mile LPA, extending from East Kapolei to Ala Moana Center via the Airport. The Airport alignment includes 21 stations. The alignment is elevated, except for an at-grade portion of 2,400 linear feet at the Leeward Community College station. The Airport alignment will average a total of 97,500 boardings at Revenue Operations in the year 2019, 116,300 boardings in the year 2030, and will provide two significant areas with potential for Transit Oriented Development, near the Airport and in the surrounding industrial areas.

It is anticipated that the initial fleet size will be 76 vehicles. The Waipahu/Leeward Section, which is a 1-1/2-mile portion of the MOS between the Waipahu Transit Center and Leeward Community College Stations, will be the first section scheduled to be in limited operation at the end of 2012. Construction of the Waipahu/Leeward Section is scheduled to begin in April 2010.

I. EXECUTIVE SUMMARY

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Based on meetings and workshops with the City management and staff, documentation reviews, and site visits and tours,

B.5

A. Project Information/Background

The HHCTC Project is a 34-mile elevated fixed guideway rail system along O'ahu's south shore between Kapolei and the University of Hawai'i (UH) at Mānoa, including a spur to Waikīkī. The Locally Preferred Alternative (LPA) identified by the City Council on December 22, 2006 included various areas/alignments to be decided on as the project progressed – West Kapolei, Salt Lake Boulevard, Airport, and Waikīkī/UH at Mānoa alignments. On January 28, 2009 the City Council voted to include the Airport alignment in the Minimum Operating Segment (MOS).

The Airport alignment is approximately a 20-mile portion of the 34-mile LPA, extending from East Kapolei to Ala Moana Center via the Airport. The Airport alignment includes 21 stations. The alignment is elevated, except for an at-grade portion of 2,400 linear feet at the Leeward Community College station. The Airport alignment will average a total of 97,500 boardings at Revenue Operations in the year 2019, 116,300 boardings in the year 2030, and will provide two significant areas with potential for Transit Oriented Development, near the Airport and in the surrounding industrial areas.

It is anticipated that the initial fleet size will be 76 vehicles. The Waipahu/Leeward Section, which is a 1-1/2-mile portion of the MOS between the Waipahu Transit Center and Leeward Community College Stations, will be the first section scheduled to be in limited operation at the end of 2012. Construction of the Waipahu/Leeward Section is scheduled to begin in April 2010.

B. Cost and Schedule Performance Data

The Master Project Schedule (MPS) is still under development and will continue to be so through the PE phase of the project. The June 2, 2009, MPS (MA5E) issue by the City and County of Honolulu (City) depicts revenue service dates for the Waipahu/Leeward section of Segment I and East Kapolei to Pearl Highlands Segment that are aggressive. The revenue service dates for the Kamehameha, Airport, and Ala Moana Segments are reasonable. The City is working to fast-track the schedule through a civil/guideway Design-Build (DB) delivery for Segment I in order to achieve its project delivery goals.

On May 4, 2009, the City submitted their request to enter PE to the FTA, and anticipates approval from the FTA for entry into PE in October 2009. Other current critical milestones include issuance of the Final Environmental Impact Statement (FEIS) on October 23, 2009; receipt of the Record of Decision (ROD) on December 4, 2009; project groundbreaking (Segment I guideway utilities) on April 25, 2010; and Revenue Service for the Waipahu/Leeward section of Segment I by December 24, 2012. Project completion is currently scheduled in March 2019.

The Full Funding Grant Agreement (FFGA) Project Cost Estimate for the Airport alignment, as estimated in the August 2009 update of the Financial Plan for Entry into Preliminary Engineering Submittal, is \$5,057 million in Year-of-Expenditure (YOE) dollars, excluding finance charges. The anticipated finance charges for the Airport alignment is \$291 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to \$5,348 million. Consistent with the FTA Guidance, these costs do not include estimated costs for Professional Services incurred prior to entry into PE, which is currently planned by the City for October 2009.

The New Starts Federal share, as stated in the August 2009 update of the Financial Plan for Entry into Preliminary Engineering Submittal, is \$1.55 billion (YOE). In the June 18, 2009 Administrative FEIS, the City provided a project cost effectiveness for the Airport alignment of \$17.78, which is currently under evaluation by FTA. There is currently no FFGA for this project.

C. Description of PMOP Activities

Under contract to the FTA, Booz Allen Hamilton has provided Program Management Oversight Contractor (PMOC) services on the HHCTC Project as assigned by Task Orders for the period of performance of March 27, 2007 to September 23, 2009. The following is a brief summary of some of the primary PMOP activities performed for the HHCTC Project:

- Provided staff support to FTA.
- Monitored the project through a series of document reviews, site visits, interviews with grantee(s), and discussion with appropriate staff to determine technical capability and capacity, reasonableness of the project scope, schedule and budget, compliance with all applicable statutes, regulations, and FTA guidance.
- Developed spot reports as the result of an investigation, evaluation, or assessment of the grantee's project management activities. Examples include Spot Report #1, Cost

Validation Report, submitted in May 2007, which assessed the reasonableness of the HHCTC cost estimate at the time, identified potential sources of cost risk, and confirmed the absence of bias in cost estimation between the Fixed Guideway and Managed Lanes alternatives. Another example is the Readiness to Enter PE Spot Report, which documented the PMOC's review of the technical capacity and capability of the City to enter into PE for the HHCTC Project in accordance with the FTA New Starts requirements and to provide an overall project status of the project.

- Participated in FTA/PMOC project progress review meetings with the grantee and project tours.
- Provided oversight of activities in the performance of authorized work to ensure quality of all deliverables.
- Prepared specialized monitoring reports, project status updates, and spot reports, as necessary.

D. Discussion on Findings/Results

The PMOC has documented its observations and findings in specialized monitoring reports, project status updates, and spot reports regarding project management, project schedule, budget, and technical capacity. The PMOC's recommendations for actions required by the City are contained in this report.

E. Open Issues to be Monitored during Preliminary Engineering

E.1. Technical Capacity:

Currently, the City's organizational structure includes City staff supplemented with PMSC staff. PMSC staff will fill key project roles pending the hiring of full-time City staff. The City's long-term strategy is to hire locally to replace all positions currently held by the PMSC. The City does not have a set timetable for replacing the PMSC with City staff. The Project Management Plan (PMP) needs to be updated to address, through a staffing plan, the transition of PMSC staff to City staff during the PE and Final Design (FD) Phases of the project. The staffing plan must include, at a minimum, all required positions and the dates by which the City intends to staff each of the positions.

The PMOC recommends the hiring of additional City staff in order to develop the internal capability needed to effectively manage all consultants throughout the PE phase. At present, the PMOC recommends that the following be filled by City staff during the PE phase, but prior to entry into FD – Chief Project Officer, Manager of Quality Assurance, Manager of Safety and Security, Chief Project Controls, Contracts Administrator, and Manager of Real Estate.

OVERVIEW OF PROJECT

A. Introduction

This final report covers the PMOC activities as provided by Booz Allen Hamilton for the HHCTC Project and was prepared in accordance with Project Management Oversight Program Operating Guidance PG-15, dated March 7, 2004 – Final Monitoring Report. Included within this Final Report are Lessons Learned as enumerated in PG-14, dated March 7, 2004 – Lessons Learned Program. The FTA assigned PMOC services for this project to Booz Allen Hamilton in March 27, 2007.

This final report represents the oversight activities assumed by Booz Allen Hamilton in March 2007 and completed in September 2009. Oversight activities include the monitoring of Pre-Preliminary Engineering (PE) activities and progress for the HHCTC Project in order to determine whether FTA guidelines and requirements were being satisfied by the review and evaluation of the grantee's management, organization and project definition data to determine whether the grantee possessed the technical capacity and capability to efficiently and effectively implement the proposed Federal project, and to determine whether the grantee was ready to receive Federal funds for further project development. Evaluation of the grantee's technical capacity and capability will be based on a review of the grantee's PMP, Fleet Management Plans (FMPs), Quality Management Plan (QMP), Safety and Security Management Plan (SSMP), and other required deliverables.

B. Project Description

The HHCTC Project is a 34-mile elevated fixed guideway rail system along O'ahu's south shore between Kapolei and the University of Hawai'i (UH) at Mānoa, including a spur to Waikīkī. The LPA identified by the City Council on December 22, 2006, included various areas/alignments to be decided on as the project progressed – West Kapolei, Salt Lake Boulevard, Airport, and Waikīkī/UH at Mānoa alignments. On January 28, 2009 the City Council voted to include the Airport alignment in the MOS.

The Airport alignment is approximately a 20-mile portion of the 34-mile LPA, extending from East Kapolei to Ala Moana Center via the Airport. The Airport alignment includes 21 stations. The alignment is elevated, except for an at-grade portion of 2,400 linear feet at the Leeward Community College station. The Airport alignment will average a total of 97,500 boardings at Revenue Operations in the year 2019, 116,300 boardings in the year 2030, and will provide two significant areas with potential for Transit Oriented Development, near the Airport and in the surrounding industrial areas.

It is anticipated that the initial fleet size will be 76 vehicles. The Waipahu/Leeward Section, which is a 1-1/2-mile portion of the MOS between the Waipahu Transit Center and Leeward Community College Stations, will be the first section scheduled to be in limited operation at the end of 2012. Construction of the Waipahu/Leeward Section is scheduled to begin in April 2010.

The Full Funding Grant Agreement (FFGA) Project Cost Estimate for the Airport alignment, as estimated in the August 2009 update of the Financial Plan for Entry into Preliminary Engineering Submittal, is \$5,057 million in YOE dollars, excluding finance charges. The anticipated finance

charges for the Airport alignment are \$291 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to \$5,348 million. Consistent with the FTA Guidance, these costs do not include estimated costs for Professional Services incurred prior to entry into PE, which is currently planned by the City for October 2009.

The New Starts Federal share, as stated in the August 2009 update of the Financial Plan for Entry into Preliminary Engineering Submittal, is \$1.55 billion (YOE). In the June 18, 2009 Administrative FEIS, the City provided a project cost effectiveness for the Airport alignment of \$17.78, which is currently under evaluation by FTA. There is currently no FFGA for this project.

C. Project History

The LPA selected is a 34-mile elevated fixed guideway system along O'ahu's south shore between Kapolei and the UH at Mānoa, including a spur to Waikīkī.

In July 2005, the state legislation authorized a 0.5-percent General Excise and Use Tax (GET) Surcharge as a source of revenue to build the transit corridor project. The GET surcharge went into effect on January 1, 2007 and has an end date of December 31, 2022. An Alternatives Analysis (AA) was initiated in August 2005 and the AA Report was presented to the Honolulu City Council in October 2006. Public meetings concerning the AA were held in November and December 2006, and on December 22, 2006, the City Council selected the fixed guideway alternative as the LPA. The four alternatives evaluated in the AA process were:

- No-Build
- Transportation System Management
- Managed Lanes
- Fixed Guideway

In selecting Fixed Guideway as the LPA, the City Council left some areas and portions of the alignment open, which will be decided upon as the project progresses. These include West Kapolei, Salt Lake Boulevard, the Airport alignment, and the Waikīkī/UH at Mānoa branches.

Conditions for selecting the LPA alignment included:

- Providing the west terminus of the alignment at East Kapolei, where there are plans for significant future development (UH West O'ahu and State Department of Hawaiian Home Lands)
- Serving Waipahu, which is primarily a highly dense residential area with some commercial development along the main road
- Serving the Pearl Harbor area and Aloha Stadium
- Serving the Salt Lake Boulevard area, which is highly residential and currently very congested, with several areas of very dense development including commercial, business, and residential land uses
- Serving downtown Honolulu and Kalihi, both of which are high-density commercial and residential areas, including two community colleges.

The assumptions made for the operation of the Fixed Guideway in the AA report were:

- System will operate from 4 a.m. to 12 a.m., with 3- to 10-minute headways.
- Maximum speed will be about 60 mph, in a fully dedicated right-of-way with dedicated vehicles, mainly on aerial/elevated guideway with columns in existing roadway medians, although at-grade may be possible in some areas
- Guideway is less than 30-feet wide between stations, and approximately 50-feet plus vertical circulation at stations
- Stations will be spaced approximately at every mile and be approximately 270-feet long
- Cost to ride will be the same as “TheBus” with transfer available from one to the other.

In 2006, the City Council identified a 19-mile alignment from East Kapolei, through Salt Lake Boulevard and downtown, and with an eastern terminus at the Ala Moana (Shopping) Center as the selected MOS, which would be built first with the current funding/revenue available. The Project did not include the alignment from West Kapolei to East Kapolei, the Airport, Ala Moana Center to Waikīkī, or to the UH at Mānoa.

On July 1, 2007, the City created the Rapid Transit Division (RTD) within the Department of Transportation Services (DTS) through enactment of the City’s Fiscal Year 2008 Executive Operating Budget and Program. The RTD’s responsibilities include project development, management and implementation. New staff members continue to be added to the City’s organization within RTD and through InfraConsult, LLC, the City’s Project Management Support Consultant (PMSC). The City’s long-term strategy is to replace the PMSC staff positions by hiring locally, and having the PMSC train new City staff using the consultant’s expertise in an effort to ensure that the new hires are capable of managing the City’s consultants effectively.

On August 24, 2007, the City executed a GEC contract for \$85 million with PB Americas, Inc. (PB) to perform National Environmental Policy Act (NEPA) documentation and PE activities. The City combined the activities needed to support NEPA and to conduct PE into the GEC contract with separate Notices to Proceed (NTP).

In conjunction with AA, an initial scope was developed for the project, which included preliminary alignment development reflecting all alternatives, typical sections for the guideway and structures (both elevated and at-grade), typical station design, and a preliminary cost estimate. The City’s GEC held several workshops in advance of PE in an effort to determine the most effective alternatives for execution of the project. These workshops allowed the GEC to analyze and evaluate structural and geotechnical options for both the guideway foundations and the aerial structure and architectural alternatives for the stations, as well as station area interface and design to maximize circulation. The workshops also address project constructability and systems interface. The GEC also completed several environmental studies, performed initial soil boring testing, and studied alignment refinements including station and support facility locations.

On April 17, 2008, the Mayor directed DTS to move forward with steel-wheel on steel-rail technology. On August 1, 2008, the City issued the Administrative Draft Environmental Impact Statement (DEIS) to FTA for review and comment. The DEIS was completed and issued on October 30, 2008. The DEIS includes three fixed guideway build alternatives:

- Salt Lake only
- Airport only
- Airport and Salt Lake

On January 28, 2009 the City Council voted to revise the MOS alignment to the Airport alignment in lieu of the Salt Lake alignment. Since both the Airport and Salt Lake Alignments are included in the DEIS, no change in the DEIS document was required. The comment period for the DEIS closed on February 6, 2009. The City developed responses to public comments and prepared the FEIS document, which reflects the decision of the City to switch to the Airport alignment. The Administrative FEIS was issued to FTA on June 18, 2009 for review and comment, and identifies the Airport alignment as the MOS. The FEIS is scheduled to be issued on October 23, 2009.

The City has developed a Compendium of Design Criteria for all design elements along with their standard specifications and standard and directive drawings. In accordance with the Contract Packaging Plan developed by the City and received for review on February 19, 2009, the City intends to implement the Project in four segments. A summary of the Contract Packaging Plan for PE is currently included in the PMP as the project delivery approach for the Project. The four segments and method of delivery identified are:

- **Segment I** – East Kapolei to Pearl Highlands – Design-Build
- **Segment II** – Pearl Highlands to Aloha Stadium – Design-Bid-Build
- **Segment III** – Aloha Stadium to Middle Street Station – Design-Bid-Build
- **Segment IV** – Middle Street Station to Ala Moana Center – Design-Bid-Build

The Design-Build (DB) approach is being planned to advance the project schedule in order to minimize escalation costs and start construction of the initial portion of the project while the remainder of the project will proceed through the Design-Bid-Build (DBB) process. Work on these early contracts is planned to be initiated after ROD, but ahead of the FFGA, utilizing local excise tax funding.

On February 4, 2009, the City released Request for Proposal (RFP) Part 1 – West Oahu/Farrington Highway Guideway Design-Build Contract - Request for Qualifications, for the first guideway segment from East Kapolei to Pearl Highlands. The Part 1 RFP is the first of two RFP parts issued to identify qualified proposers to submit proposals for the West Oahu/Farrington Highway Guideway Design-Build Contract. The Part 1 RFP required potential proposers to provide organizational and technical capacity and capability for completing the Segment 1 design-build guideway at an approximate cost of \$550 to \$600 million.

A pre-proposal conference for Part 1 RFP was held on February 18, 2009 for all potential proposers, and responses to Part 1 RFP were received on March 13, 2009. The City determined a Priority List that included the top four highest/qualified ranked firms from the proposers

deemed eligible for consideration, who then received the RFP Part 2, Request for Technical and Price Proposals. On August 28, 2009, sealed proposals for the West Oahu/Farrington Highway Guideway Design-Build Contract were received; however, they were not open to the public. The City has not released the number and names of offerors that provided technical and cost proposals in response to the Part 2 RFP. The City has initiated the "best value" process, which is scheduled to last approximately 6 weeks.

In accordance with the Hawai'i Administrative Rules on Procurement (HAR), the City did not release how many proposers provided submittals in response to the Part 1 RFP, and the Priority List was not published prior to the release of the Part 2, Request for Proposal, on April 3, 2009. The HAR (HRS 103D-701) require the City to keep all competitive sealed proposals confidential. Sealed proposals can only be made available for public inspection upon posting of the award.

On April 9, 2009, the City released the Vehicle/Core Systems Design-Build-Operate-Maintain Contract RFP Part 1, Request for Qualifications, which includes the procurement and installation of vehicles, traction power, train control, and communications. Proposals were received by the City on June 5, 2009, and the RFP Part 2, Request for Technical and Price Proposals, was issued to proposers pre-qualified by the Part 1 process and deemed eligible for consideration for the Priority List on August 17, 2009. Vehicles and systems elements are planned to be manufactured, delivered, and installed as single contracts with multiple NTPs to meet the specific needs of each phase. Sealed proposals in response to the Vehicle/Core Systems Design-Build-Operate-Maintain Contract RFP Part 2 are currently due on January 15, 2010.

The Maintenance and Storage Facility was also issued as a DB Contract. The RFP Part 1, Request for Qualifications was released on May 29, 2009. Proposals were received by the City on July 2, 2009, and the RFP Part 2, Request for Technical and Price Proposals, was issued to proposers pre-qualified by the Part 1 process and deemed eligible for consideration for the Priority List on July 24, 2009. Sealed proposals in response to the Maintenance and Storage Facility Design-Build Contract RFP Part 2 are currently due on November 20, 2009.

The PMOC reviewed the Part 1 RFPs and determined that the information required of each potential bidder is sufficient to determine whether or not each submitting firm has the financial and technical capacity and capability to perform the services required by the RFP. Comments were provided to the City for review and consideration. In accordance with the HAR (HRS 103D-701) the PMOC did not receive the Part 2 RFPs for review and comment.

The City is also requesting Letters of No Prejudice (LONPs) to proceed with the DB contracts prior to issuance of a FFGA. The following is a list of the LONPs currently being considered:

- Issuance of NTP for West Oahu/Farrington Highway Guideway Design-Build
- Issuance of NTP for Final Design Services for Farrington Station Group
- Issuance of NTP for Final Design Services for Pearl Highlands Station and Garage Group
- Issuance of NTP for Final Design Services for Kamehameha Guideway and Utilities
- Issuance of NTP for Final Design Services for Airport Guideway and Utilities

- Issuance of NTP for Maintenance and Storage Facility Design-Build
- Issuance of NTP for Core Systems/Vehicles Design-Build-Operate-Maintain
- Issuance of NTP for Construction of Farrington Station Group

On January 21, 2009, the City requested a Waiver of the FTA Design-Build Interim Guidelines (September 2000) on Project Delivery in order to issue a Part 2 RFP requesting technical and cost proposals from pre-qualified proposers. FTA advised the City that a waiver would not be required and cautioned the City not to award any contracts until after obtaining a ROD. At present, the City is anticipating a ROD on December 4, 2009. The City has advised that no contract award will be authorized until after the ROD is received.

On February 25, 2009, the City requested a waiver for a proposed reduction of the 100% performance bond requirements of 49 CFR Section 18.36(h), as permitted by the regulations and Section 2.h.(1)(e) of FTA Circular 4220.1 F, Third Party Contracting Guidance. The City has determined that the potential for increased competition relative to the potential increased financial risk in accepting bonds of less than 100 percent of the contract price is in the City's best interest. Therefore, the City is requesting a reduction in the contract performance and payment bonds for the West Oahu/Farrington Highway Guideway Design-Build Contract to not less than 50% of the contract price, pursuant to the HAR Section 3-1 22-225(a)(1).

A Project Development Plan (PDP) to be developed by the City will detail the proposed project delivery methods and interfaces between utility, facility, systems and vehicle contracts for review by FTA and the PMOC. The City will further evaluate the project delivery approach and methods as they progress in PE to reflect alignment, station facility and ancillary structure locations, and segment delivery methods once finalized.

The City is currently performing several tasks in an effort to further define the project scope and, as a result, the Master Project Schedule (MPS). The City has prepared plan and profile drawings, and is identifying right-of-way for the guideway, stations, and ancillary facilities. The City has also begun utility coordination and relocation activities, environmental studies, and foundation and aerial structural analysis in order to determine the most effective alternatives for execution of the project. The City has also developed track line diagrams, simulated traction power requirements to determine the number and spacing of traction power substations and further defined the communications and fare collection requirements.

The City has begun to hold public meetings with the various affected communities to finalize the station characteristics and interface with the local communities.

As the City makes preparations to acquire right-of-way (ROW) immediately following the issuance of the ROD, they are currently working to secure rights-of-entry to progress geotechnical, corrosive control, and environmental and archeological surveys along with property survey and mapping. The procurement of property appraisal services is underway. The ROW team is working closely with Scheduling to refine the real estate acquisition schedule. Additionally, the ROW team is working with the engineers to better define the property requirements for the project.

On May 4, 2009, the City submitted their request to enter PE to the FTA, and anticipates approval from the FTA for entry into PE in October 2009. Other current critical milestones include issuance of the FEIS on October 23, 2009; receipt of the ROD on December 4, 2009; project groundbreaking (Segment I guideway utilities) on April 25, 2010; and Revenue Service for the Waipahu/Leeward section of Segment I by December 24, 2012. Project completion is currently scheduled in March 2019.

D. Honolulu High-Capacity Transit Corridor Project Map

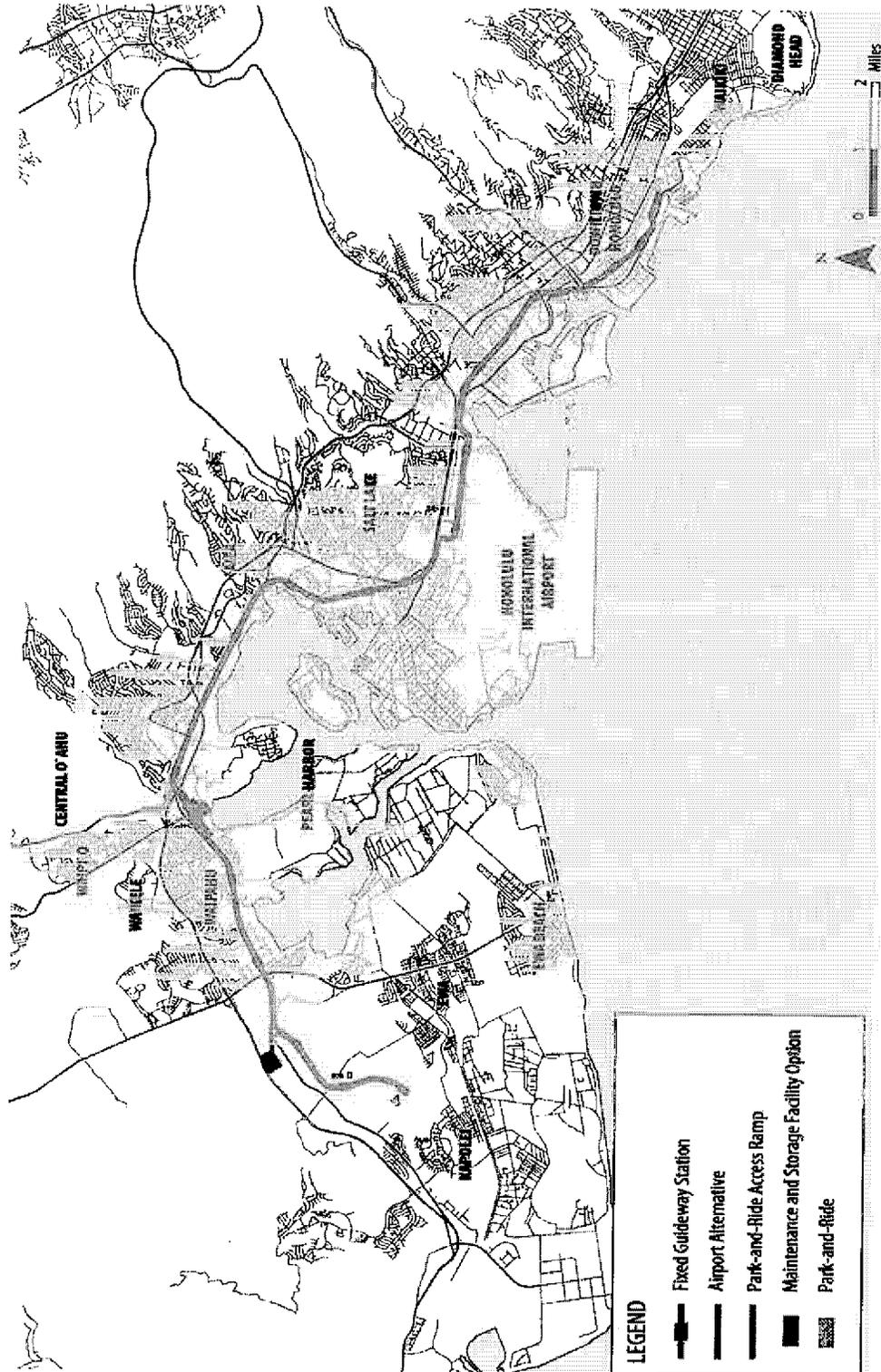


Figure 1: Project Map

E. Funding

There is currently no FFGA for this project. The City anticipates being eligible for the FFGA Funding in fiscal year 2011.

F. Budget

The October 30, 2008 DEIS cost estimate for the Airport alignment as expressed in 2008 dollars, excluding finance charges, was \$4,125 million. In YOE dollars, the estimated cost was \$4,927 million, excluding finance charges. The anticipated finance charges for the Airport alignment was \$506 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to \$5,433 million.

On May 7, 2009, the City issued a revised FFGA Project Cost Estimate in the Standard Cost Category (SCC) format. The FFGA Project Cost Estimate, expressed in 2009 dollars, excluding finance charges, was shown as \$4,268 million. In YOE dollars, the estimated cost provided was \$4,942 million, excluding finance charges. The anticipated finance charges for the Airport alignment was \$231 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to \$5,173 million. Consistent with the FTA Guidance, these costs did not include estimated costs for Professional Services incurred prior to entry into PE. The updated Financial Plan for Entry into Preliminary Engineering Submittal dated May 1, 2009, increased the New Starts Federal share from \$1.2 billion (YOE) to \$1.55 billion (YOE) as a result of the MOS change to the Airport alignment. The Administrative FEIS submitted by the City on June 18, 2009 provided a project cost effectiveness for the Airport alignment of \$17.78, which is currently under evaluation by FTA.

The PMOC performed a review of the May 7, 2009 FFGA Project Cost Estimate and determined that the methodology used to develop the current Airport Alignment FFGA estimate was prepared in accordance with generally accepted estimating principles and practices. The cost estimate appeared reasonable for a project at the Pre-PE stage of development, and the estimate's level of detail is commensurate with a project at the Pre-PE Phase. The following observations were also noted:

- A sampling of the unit cost in the Airport Alignment FFGA estimate indicated that the unit costs were the same in all segments of the Airport Alignment. Thus, the unit costs did not take into account varying site conditions along the alignment. Similarly, the estimate did not account for unforeseen site, ground, or geotechnical conditions.
- Station costs were based on generic line items and parametrically derived quantities and costs. Thus, the scope needs to be better defined to allow a more accurate portrayal of the station-related costs. This also applies to the four new stations on the Airport Alignment.
- The previous 2006 and current 2008 hazardous materials and environmental mitigation costs were lump sums, with minimum definition of scope. In order to develop a more accurate estimate these hazmat/environmental costs, the PMOC recommended in 2007 that a detailed site assessment be performed early in the PE Phase to better quantify the type, limits, and extent of any soil or groundwater contamination.

Because the project is in the Pre-PE stage, major cost elements and risk items should be reviewed as the design and engineering mature and the construction schedule is refined. Such items include utility relocations, real estate acquisitions and ROW considerations, environmental remediation, and geotechnical impacts to foundation design and construction.

The PMOC also identified the following risks in the current Airport Alignment FFGA estimate:

- The availability and retention of labor, as well as the availability of materials and equipment, may adversely impact cost and schedule.
- Geotechnical information is not sufficient. Additional geotechnical and boring data are needed for the foundation design of structures.
- Real estate acquisitions are not completely known.
- Precast yards and laydown/staging areas need to be identified.
- Traction power supply and distribution requirements, station communications, and intelligent transportation systems need better definition.
- Fare collection system and equipment need better definition.

On June 9, 2009, the City issued a slightly revised FFGA Project Cost Estimate in the SCC format reflecting refinements in the cost data. The FFGA Project Cost Estimate, expressed in 2009 dollars, excluding finance charges, was shown as \$4,266 million. In YOE dollars, the estimated cost provided was \$4,941 million, excluding finance charges. The anticipated finance charges for the Airport alignment was \$231 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to \$5,172 million. The City also provided a detailed build-up of escalation rates to support the YOE dollars calculated in the FFGA Project Cost Estimate.

Overall, the Expected FFGA Project Cost estimate for the HHCTC Project was found to be reasonable at this stage of the project. The provisions for contingencies were found to be adequate and appropriate for a project in the Pre-PE phase. Also, the assumed inflation rates used to adjust project costs from 2009 dollars to YOE dollars were found to be trending low and may not be sufficiently conservative, based on recent cost inflation for construction projects nationally and local Honolulu consumer cost inflation.

FTA requires a Financial Plan be submitted by grantees as part of the New Starts process. An updated Financial Plan was submitted by the City in August 2009, to FTA for review and acceptance. The Full Funding Grant Agreement (FFGA) Project Cost Estimate for the Airport alignment, as estimated in the August 2009 update of the Financial Plan for Entry into Preliminary Engineering Submittal, is \$5,057 million in YOE dollars, excluding finance charges. The anticipated finance charges for the Airport alignment is \$291 million in YOE dollars, bringing the total estimated cost of the project, including finance charges, to \$5,348 million. Consistent with the FTA Guidance, these costs do not include estimated costs for Professional Services incurred prior to entry into PE. The Financial Plan is currently being reviewed by FTA and its Financial Management Oversight Contractor (FMOC).

G. Schedule

The City has developed an MPS for the HHCTC Project. On September 21, 2008, the City provided a consolidated MPS for PMOC review, to which the PMOC provided detailed review comments to the City on October 1, 2008. An integrated MPS was provided by the City on October 13, 2008. On March 21, 2009, the City provided an updated integrated MPS (MA05) for PMOC review, which reflected the change of alignment from Salt Lake to the Airport alignment.

On June 2, 2009, the City issued an updated MPS (MA5E) with minor revisions to contract dates based on ongoing refinement of the MPS as a result of the DB RFPs currently issued for public response. The MPS is still under development and will continue to be so through the PE phase of the project. The MPS depicts revenue service dates for the Waipahu/Leeward section of Segment I and East Kapolei to Pearl Highlands Segment that are aggressive, but shows achievable revenue service dates for the Kamehameha, Airport, and Ala Moana Segments. The City is working to fast-track the schedule through a civil/guideway DB delivery for Segment I in order to achieve its project delivery goals.

The schedule is evolving rapidly and needs further development as the project moves towards and through PE, in order to provide a sound basis to manage the project. Areas of schedule development are:

- The schedule needs to clearly identify relationships among land acquisition, utility relocation, vehicle procurement, civil/systems DB, station FD, and construction.
- The schedule needs more detailed activities for civil/guideways, systems, and station construction work.
- The schedule needs to more accurately define the design, procurement, construction, and testing activities required for the opening of the Waipahu/Leeward Section in December 2012, including coordination with operations/maintenance activities.
- The schedule needs to further define the activities and durations and critical path at a deeper level, one more commensurate with a project of this size.
- The schedule needs to include activities for long-lead items such as running rail, special trackwork, elevators/ escalators, rail maintenance equipment, etc.

In addition to the ongoing technical development of the MPS, it is suggested that the City work to reduce and mitigate some of the potential risk to the project. Areas that the City needs to review and address are:

- Vehicle and Systems – The combined Vehicle and Systems contract is unusually large, showing a duration of approximately nine years. The size of this package results in risk to all MOS openings if there is a delay from this single DB contractor.
- Maintenance Facility – the Maintenance and Storage Facility will not be fully functional and operational for service by December 2012 for the Waipahu/Leeward section of the Segment I alignment.
- Vehicle Production – Delivery of the first production vehicles is scheduled for November 2011, which is aggressive. Vehicle testing and storage assumptions require clarification given that the Maintenance and Storage Facility will not be operational.

- Operations Control Center – There are no activities scheduled for the Operations Control Center; and it is not clear when the facility will be installed and tested. Detailed planning of the Operations Control Center is necessary, particularly since the grantee is a new operator.
- Staffing – Operations and Maintenance staff training is at risk given that Maintenance and Storage Facility completion is not consistent with Waipahu/Leeward Segment service requirements.

Table 1 presents a summary of the planned schedule of milestones activities provided by the City on October 5, 2009. Table 2 provides the dates for the start of construction and revenue operations for each of the segments in the Project also provided by the City on October 5, 2009.

Table 1. Summary Schedule of Milestone Activities

Activity Description	Planned Schedule	Actual Schedule
Select Vehicle Technology	03/12/08	04/17/08
Finalize DEIS/Publish Notice of Availability	12/24/08	10/30/08
Issue RFP Part 1 – WO/FH DB Contract	02/04/09	02/04/09
Issue RFP Part 2 – WO/FH DB Contract	04/03/09	04/03/09
Issue RFP Part 1 – Systems DB Contract	04/09/09	04/09/09
Issue RFP Part 1 – Maintenance Storage Facility DB Contract	05/29/09	05/29/09
Issue RFP Part 2 – Maintenance Storage Facility DB Contract	07/24/09	07/24/09
Issue RFP Part 2 – Systems DB Contract	07/31/09	08/17/09
Start PE for Project	10/09/09	
Finalize FEIS/Publish Notice of Availability	10/23/09	
Record of Decision (ROD)	12/04/09	
Issue NTP#1 for WO/FH DB Contract	11/30/09	
Start Right-of-Way Relocation and Acquisition	02/24/10	
Issue NTP for Maintenance Storage Facility	03/05/10	
Start Final Design (FD) for Project	07/06/10	
Start WO/FH Construction / Start Utility Relocation	04/25/10	
Issue NTP for Systems (vehicles, traction power, train control, and communications)	05/07/10	
City Executes FFGA	08/07/11	
Vehicles – First Delivery (2 Prototype Vehicles)	11/20/11	
Open Waipahu/Leeward Section	12/24/12	
Vehicles – Delivery (Remaining Vehicles)	03/24/15	
Open (Revenue Operation) for the Project	03/04/19	

Table 2. Milestone Dates for Project Segments

Segment	Utility Relocation/ Construction Date	Revenue Operations Date
	Segment I: East Kapolei to Pearl Highlands	04/25/2010 04/25/2010
Segment II: Pearl Highlands to Aloha Stadium	10/21/2011 11/15/2011	01/21/2017
Segment III: Aloha Stadium to Middle Street Station	10/21/2011 04/18/2012	10/16/2017
Segment IV: Middle Street Station to Ala Moana Center	10/21/2011 02/24/2013	03/04/2019

The City continues to progress the schedule in an effort to formulate the appropriate project delivery methods to achieve an initial operating segment by the end of year 2012. Ongoing updates of the MPS will occur as more detailed activities are added supporting each different project phase, starting from Pre-PE, PE, FD, Procurement, and Construction phases.

Overall, the MPS provided on June 2, 2009 is mechanically sound and acceptable as a Preliminary Master Project Schedule; however, it will need to be continuously monitored through PE.

H. Cost and Schedule Performance (as completed)

At present this project is still in the Pre-PE phase and there is no FFGA for this project.

I. Project Management Plan (PMP)

The City submitted a preliminary working draft of the PMP on June 12, 2007. The PMP needed further development to meet the FTA guidelines *Section 49 USC 5327 and 49 CFR 633 Project Management Oversight, FTA Grant Management Guidelines, FTA Circular 5010.1D and FTA's Project and Construction Management Guidelines 2003 Update*.

The City resubmitted the PMP on September 14, 2007, and based on this submission, the PMOC and the City conducted a review/workshop on October 16, 2007, to further develop the plan prior to formal submittal. The City resubmitted the PMP on December 20, 2007, which the PMOC reviewed and provided its comments to the City in January 2008.

The final draft of the PMP was provided by the City on March 17, 2008. The PMOC provided comments to this version of the PMP on April 25, 2008 and the City submitted a final baseline version of the PMP (revision 0) on May 21, 2008, which covered all of the 13 elements of FTA's *Project and Construction Management Guidelines, 2003 Update*, required to be included in a PMP for entry into PE, and reflecting the City's updates to the PMP in response to all previous PMOC comments. The PMP was also reviewed for overall consistency and usability of the document as a reference for the City's Project staff and its consultants. As this project is preparing to move into the PE Phase, the PMOC review of the PMP was focused on the requirements for the PE Phase.

On October 31, 2008, the City issued a Rev. 1 to the PMP, which updated the PMP to reflect project progress through October 2008. On January 28, 2009, the City revised the MOS alignment for the Project, prompting the City to issue Rev. 2 of the PMP on March 1, 2009, to update the project description and delivery methods due to the change in alignment. Spot Report #3R, PMP Plan Review, was transmitted to the City in July 2009.

The City continues to advance several areas of the project as they prepare to move into PE. As a result of the most recent updates to the project delivery method, revisions to the organizational chart as a result of staff changes, and concerns with City staff transition, further development of the PMP in the following areas will be required during the PE phase of the project:

- Update the PMP to be consistent with the current status of the project.
- Develop a PDP providing the essential processes to be used, anticipated costs and schedule, and various metrics to satisfactorily measure performance in attaining the planned delivery of products and completion during the period between the completion of the AA Phase through the completion of the PE Phase
- Prepare a Staffing Plan and revise the organization chart due to changes in PMSC positions and City staff, and to address the transition of PMSC staff to City staff during the PE and FD Phases of the Project
- Update the Project Delivery approach during PE to reflect alignment, station locations, and segment delivery methods once finalized.
- Expand cost, schedule, and claims management sections during PE as the requirements and the processes are further defined.
- Expand the Configuration Management Plan and Document Control Procedures during PE to incorporate the roles of the Consultants (engineering, design, and construction) and Contractors at the various stages of the project, and to include document response durations, tracking, turnover, retention, storage, and retrieval.
- Expand the process for Procurement and Contracts and change order procedures during PE to incorporate the roles of the GEC, GCM, and Contractors at the various stages of the project.
- Expand the Construction Management and Testing and Start-Up sections during PE as the requirements and the processes are further defined.

J. *Other Management Plans (RFMP, QMP, etc.)*

J.1. Quality Management Plan (QMP)

The City submitted an initial working draft QMP on January 3, 2008. The PMOC reviewed this draft against FTA *Quality Assurance and Quality Control Guidelines, FTA-IT-90-5001-02.1, dated February 2002*, which provide quality program guidance to grantees undertaking design, construction, or equipment acquisition in the management of federally funded projects. The PMOC and the City discussed comments on the draft QMP during a workshop held on January 16, 2008.

The City submitted a revised QMP addressing the PMOC initial comments on March 26, 2008 (dated March 25, 2008). Although the PMOC provided the City comments to this version of the

QMP on April 15, 2008, the QMP submitted covered all of the requirements required in the FTA *Quality Assurance and Quality Control Guidelines, FTA-IT-90-5001-02.1* and was therefore acceptable for entry into PE in its current version. On May 15, 2009, revision 1 of the QMP was submitted for PMOC review, revising the project description to reflect the MOS change to the Airport alignment. The PMOC completed a review and compiled its findings in Spot Report #2R, PE Entry Readiness Report, in July 2009.

The QMP is currently under development and an updated plan will be issued in early PE to further address the Quality Assurance/Quality Control (QA/QC) procedures to be implemented by the FD Consultants, the General Construction Manager (GCM), as well as DB and DBB Contractors.

J.2. Rail Fleet Management Plans (RFMP)

The City has not fully developed a RFMP at this time. They have developed a set of assumptions that will form the basis of a RFMP once final decisions on vehicle type and operating parameters are developed. Based on the current assumptions, the total active rail car fleet will consist of 76 "Metro Light" railcars as proposed. The "Metro Light" railcar being proposed is an automated light metro car, similar to railcars currently in operation in Vancouver, Copenhagen, and Oslo, but not in the United States. The railcar would have three doors per side and be approximately 60-feet long. Trains could run in two-, three-, or four-railcar trains. Using the "Metro Light" vehicle is based on the following assumptions:

- 6,277 peak riders during the peak hour-peak direction
- Car capacity of 162 passengers (50 seated +112 standees) based on 3.4 sq ft/person and assuming a load factor of 125%
- 3-minute headways, with 3-car consists.
- 40-minute runtime end-to-end, 87-minute round trip

Based on the above, the proposed fleet of 76 railcars can be broken down as follows:

- 31 trains in revenue service (62 railcars based on 2-car trains)
- 2 trains at ready (4 railcars)
- 15% spare ratio (10 railcars)
- 21 trains in revenue service (57 railcars based on 3-car trains)
- 2 trains at ready (4 railcars)
- 20% spare ratio (15 railcars)

The use of a 15% spare ratio at this time appears to be adequate based on the assumptions; however, the FTA recommended 20% spare ratio is preferred. Based on the opening of the new service coupled with new technology, the higher spare ratio provides an adequate safety net should fleetwide problems or issues arise. The higher ratio will permit the City to still meet the forecasted ridership demand. Car capacity, load factor, train configuration, and ridership projections/simulations will assist in determining design of the railcar itself to meet peak vehicle demand. However, until the technology of the vehicle is finalized, the City cannot determine what maintenance cycles will be required to include in the formula for calculating the spare ratio.

The City will be required to submit a fully developed RFMP for review in support of entry into FD to ensure that the City will have adequate service to meet the transit demand for the years following construction of the New Starts project.

J.3. Bus Fleet Management Plans (BFMP)

The City submitted an initial draft BFMP on June 12, 2007. The PMOC reviewed this draft and advised the City that the plan needed further development to meet the FTA's *Guidance on Bus Fleet Management Plans for New Starts Projects dated April 8, 1999* and FTA's *Guidance for Transit Financial Plans, dated June 2000*, which requires that the number of buses in service, vehicle retirements, acquisitions and overhauls, and the associated annual costs are documented in the BFMP. The PMOC and the City discussed comments on the draft BFMP on June 13, 2007, and the City resubmitted a revised BFMP on January 03, 2008 (dated December 2007); however, the plan did not address a number of the PMOC's comments. After further discussions with the City on January 15, 2008 and formal review comments transmitted on January 23, 2008, the City resubmitted the BFMP on April 4, 2008, which incorporated the PMOC's review comments and addressed the FTA requirements for development of a BFMP. The PMOC completed a review and compiled its findings in Spot Report #2R in July 2009.

Based upon PMOC review of the revised BFMP submitted on April 4, 2008, the plan now provides sufficient data, discussion, and documentation in the following areas:

- Peak levels of service by year with the number of vehicles required while satisfactorily meeting FTA requirements for spare ratios
- Fleet average age, composition, vehicle requirements, and purchase plan
- Current and projected bus ridership using load factor policy
- A description of maintenance facilities, practices, and procedures to maintain and adequately address the existing and expansion of the fleet
- Service quality and reliability measures including but not limited to vehicle reliability
- Load factors and on-time performance
- A projected annual project that coincides with the financial capacity review.
- Spare ratio averages approximately 20 percent from current year through 2020.

J.4. Real Estate Acquisition Management Plan (RAMP)

The City submitted an initial draft RAMP on January 3, 2008. The PMOC reviewed the draft against FTA policies and procedures that conform to the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* as amended and implementing the regulations at *49 CFR Part 24* (collectively "the Uniform Act") and *FTA Circular 5010.1D*. The PMOC provided and discussed its comments with the City during a workshop held on January 16, 2008.

During the months of February and March 2008, the PMOC had several informal discussions with the City and provided informal comments to assist the City with the development of the RAMP. On March 12, 2008 the City resubmitted the RAMP (dated February 29, 2008) for PMOC review and comment. Based on comments received from H.C. Peck, as a subcontractor to the PMOC, the City revised the RAMP and issued the final draft submission on April 17, 2008, which was significantly revised to address previous comments and concerns of the PMOC. On May 22, 2008, the final baseline version (revision 1) of the RAMP was transmitted to the

PMOC. On May 14, 2009, revision 2 of the RAMP was submitted for PMOC review. This submittal revised the project description to reflect the MOS change to the Airport alignment and updated the RAMP to reflect the current status of the project.

The April 14, 2009 RAMP final submittal is acceptable for entry into PE. Overall, the RAMP:

- Provides an overview of the acquisition process
- Defines roles for the City, project personnel, consultants, and subconsultants involved in all phases of the right-of-way acquisition and relocation activities
- Outlines acquisition strategies and decision-making processes
- Identifies coordination requirements and processes
- Defines tasks and assigns responsibilities for those tasks
- Describes the project controls that will be utilized to monitor the acquisition schedule, costs, and quality control.
- Identifies 193 total parcels, 33 of which are full takes involving displacements (18 Residential, 65 Commercial, and 1 Church).

Resolution of the following areas of concerns needs to occur prior to the next RAMP submittal and prior to the ROD:

- A revised organization chart and new resumes should be made a part of the RAMP prior to the next submission. The PMOC recommends continued monitoring to ensure that the current staffing is adequate to meet the MPS.
 - While the RAMP final version for Pre-PE provides adequate descriptions of the reporting and working relationships between the Chief Land Division, Manager of Real Estate and Relocation Specialist, these key positions report to different Directors. The City has developed an issue resolution process to elevate disputes between these two key positions to the Managing Director or the Mayor, if necessary. The PMOC recommends that this organizational structure continue to be monitored to evaluate its effectiveness as identified.
 - Permanent staffing of a Manager of Real Estate with sufficient previous experience with federally-funded projects to successfully implement the project in compliance with Uniform Act regulations and applicable FTA requirements. The City has assigned a retired City/County staff person, to serve as Manager of Real Estate until a permanent replacement can be found.
 - The organization chart identified a Right-of-Way Coordinator however, while this individual has had experience overseeing the implementation of Capital Projects in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, this individual has had no direct responsibility for real property acquisitions or relocation. The role of Right-of-Way Coordinator is critical to ensure that the right-of-way and relocation activities are successfully implemented.
- The Real Estate Acquisition and Relocation schedule has not been defined and could potentially impact the current critical path identified.
 - Update and complete the ROW Acquisition Tracking Report, which adequately addresses all tasks required for land acquisition and relocation. The ROW

Acquisition Tracking Reports submitted by the City did not contain current and complete information. There were also inconsistencies between the Acquisition Tracking Report and the Parcel Acquisition Schedule. The tracking tools and procedures described in the RAMP are adequate to implement the project; however, if they are not monitored and updated with current information they have no value. The PMOC recommends that the City provide additional detail on how the City anticipates this process to work including the projected timeframe for making final decisions

- The Parcel Acquisition Schedule needs to include the possibility of engaging in condemnation activities and the expected time required to gain possession of the property through this method. This is necessary even if the City is not anticipating the need to file condemnations at this time. In the event that there is a failure to agree, or an unresolved title issue, it is necessary to understand what the impact will be on the project schedule. The schedule must reflect the amount of time required to file condemnation and receive possession through the courts, and the schedule must be revised to reflect this prior to ROD. Currently, the Parcel Acquisition Schedule indicates that approximately 369 days are required for parcels with no relocation and 509 days are required for parcels with relocation. The City has indicated that they do not expect condemnations in the first phase because a majority of the property is owned by governmental entities. The PMOC recommends that the City provide additional detail on what type of agreements are being executed between the City and other governmental agencies. This should include the status of each specific parcel as to current negotiations and agreements.
- Develop a ROW Acquisition Tracking Report and Parcel Acquisition Schedule for subsequent segments. The Parcel Acquisition Schedule and ROW Acquisition Tracking Reports need to be continuously updated and monitored to insure that the MPS can be met.
- Development of the Relocation Policies and Procedures in compliance with the new rule 49 CFR Part 24, and with the specific requirements of FTA Circular 5010.1D. The PMOC received Chapter 4 of the Hawai'i Department of Transportation (HDOT), Highways Division Right of Way Manual on Relocation Assistance from the City on June 18, 2009. A brief review by the PMOC shows some areas in which the manual is not in compliance with the new rule 49 CFR Part 24, and other areas where it is not in compliance with specific requirements of FTA Circular 5010.1D. In April 2008, the City advised that they would review the HDOT policies and procedures and make any modification(s) that would be necessary to meet the FTA and City requirements. These crucial revisions have not yet been accomplished by the City. The manual also references attachments A-S, which are made up of forms that must be utilized during the relocation process, and these were not included in the City's submission. These attachments, drafts of the required notices at 49 CFR Section 24.203 (a), (b), and (c), and a draft of the City's Relocation Assistance Brochure, which will explain the City's Relocation Assistance Program to potential displacees (as a mandatory element of the General Information Notice), must also be incorporated into the RAMP. All of this information is vital in assessing the City's ability to successfully implement the Relocation Assistance Program as required.

- A Relocation Plan needs to be submitted for review and approval prior to the ROD being issued for the project. This relocation plan will become a supplement to the RAMP. Per 49 CFR Section 24.205, such relocation planning must be completed prior to any action by the Agency (such as land acquisition activities) that would result in displacement. The PMOC recommends that the RAMP and Relocation Plan be reviewed for sufficiency by the PMOC as soon as they are available.

Based on a planned ROD date of December 4, 2009, these items need to be provided to the PMOC with sufficient time for review and acceptance prior to the ROD date. It is expected that the City would update the RAMP periodically as the project design proceeds and there is further refinement of the right-of-way plans to maintain compliance with the Uniform Act and other regulatory requirements as well as project development. While the RAMP is sufficient for entry into PE, the PMOC cannot overemphasize the importance of continued monitoring to ensure that the City is providing continuing evidence of further development of the schedule, acquisition and relocation tracking reports, updated cost estimating, and ongoing information regarding staffing issues and relocation requirements.

J.5. Safety and Security Management Plan (SSMP)

The PMOC held a workshop with the City on October 17, 2007 to review the updated FTA requirements for the development of the SSMP. The City submitted a draft SSMP on January 3, 2008 (dated December 28, 2007), and the PMOC discussed its review and comments with the City on January 16, 2008, with formal review comments transmitted on January 23, 2008.

The City completed and submitted a final draft of the SSMP on March 11, 2008. The PMOC used the FTA guidelines checklist to evaluate the SSMP for readiness to enter into PE and provided comments to the City on April 15, 2008. Based on this review, the PMOC recommended that the SSMP policy statement include a statement on completing a safety and security certification program and that the SSMP be signed and approved by the City prior to issuance of the baseline document for entry into PE. The final signed baseline, dated May 12, 2008, of the SSMP was received on June 16, 2008 and included the PMOC comments as well as comments from the Honolulu Police Department.

On September 8, 2009, the City submitted a revision (Revision 1.0) of the SSMP dated August 24, 2009 for review. On September 18, 2009, the PMOC provided review comments to Revision 1.0 of the SSMP. In summary, as the safety and security organization becomes more defined, the SSMP needs to be updated to capture the current organization.

The SSMP incorporates the role of the State Safety Oversight Agency (SSOA) as required by the FTA Guidelines for SSMPs contained in Circular 5800.1. FTA requires states to designate an agency to oversee the safety of any fixed guideway transit (non-commuter rail) system within the state. The process for establishing an SSOA has been identified by the City and on May 13, 2009 the City met with the HDOT Director concerning the start-up of the SSOA based on the FTA's State Safety Oversight Rule transmitted to the Governor of the State of Hawai'i in February 2009. An Executive Order is needed to establish the SSOA office and possible

legislation action may be necessary for staffing the office due to current budget constraints. The PMOC has expressed concern that the time required to establish an SSOA in the State of Hawai'i is still undefined at this time; however, HDOT is moving forward with the establishment of an SSOA to oversee the project.

A Safety and Security Oversight and Review Committee (SSORC) has been established by the City for the project with the primary purpose of coordinating the activities of the SSMP and providing oversight of the Safety and Security Certification Program. The first meeting of the SSORC was held in January 2008 and meetings continue bi-monthly. The Safety and Security Certification Plan will be developed and submitted for review in early PE.

K. Ridership

The Airport alignment will average a total of 97,500 boardings at Revenue Operations in the year 2019, 116,300 boardings in the year 2030, and will provide two significant areas with potential for Transit Oriented Development, near the Airport and in the surrounding industrial areas.

L. *City-GEC Organizational Chart*

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II. PMOC ACTIVITIES

In accordance with FTA's Project Management Oversight Program (PMOP) Operating Guidance, the PMOC provided management oversight in compliance with 49 CFR Part 633. The role of the PMOC is to serve as an extension to FTA staff. At the time the PMOC responsibilities were assigned to Booz Allen Hamilton in March 27, 2007, the project was in Pre-PE. Beginning in April 2007 and continuing through September 2009, the results of the PMOC's reviews have been documented in specialized monitoring reports, project status updates, and spot reports to FTA. The PMOC's activities included monitoring the HHCTC Project, which entailed:

- Providing staff support to FTA.
- Monitoring the project through a series of document reviews, site visits, interviews with grantee(s) and discussion with appropriate staff to determine technical capability and capacity, reasonableness of the project scope, schedule and budget, compliance with all applicable statutes, regulations, and FTA guidance.
- Developing spot reports as the result of an investigation, evaluation, or assessment of the grantee's project management activities. Examples include Spot Report #1, Cost Validation Report, submitted in May 2007 which assessed the reasonableness of the HHCTC cost estimate at the time, identified potential sources of cost risk and confirmed the absence of bias in cost estimation between the Fixed Guideway and Managed Lanes alternatives. Another example is the Readiness to Enter PE Spot Report, which documented the PMOC's review of the technical capacity and capability of the City to enter into PE for the HHCTC Project in accordance with the FTA New Starts requirements and to provide an overall project status of the project.
- Participating in FTA/PMOC project progress review meetings with the grantee and project tours.
- Providing oversight of activities in the performance of authorized work to ensure quality of all deliverables.
- Preparing specialized monitoring reports, project status updates, and spot reports, as necessary.

A. *Implementation Plan and Annual Updates*

Booz Allen was assigned responsibility as the PMOC of the HHCTC project in March 2007. An Implementation Plan was issued to the FTA on May 23, 2007 outlining the PMOC's planned responsibilities and activities.

B. *Initial Technical Review of Grantee's Technical Capacity/Capability*

At the start of the FTA/PMOC oversight in April 2007, the DTS presented 26 staff positions for the HHCTC Project, 21 of which were filled by staff from InfraConsult, LLC, the PMSC. However, over the past two years the City has made tremendous progress in providing the staff needed to demonstrate the technical capacity and capability necessary to design, construct, and operate the HHCTC Project.

On June 5, 2007, the City issued a Request for Qualifications (RFQ) for a GEC for PE services, including the NEPA work. The City combined the activities needed to support NEPA and conduct PE into the GEC contract with separate NTPs. NTP #1, issued on August 24, 2007, is for work required to prepare a DEIS and the documents required by the FTA to support the City's application to advance to PE. NTP #2 would cover the PE effort needed once FTA has approved entry into PE. NTP #3 would be issued for the remainder of the contract work not included in NTP #1 or NTP #2. In August 2007, the City executed a contract with PB and issued NTP #1 on August 24, 2007. All PB key managers are currently on site. The addition of PB to the project provides the City with the ability to obtain any necessary technical expertise to complete both the PE and the Environmental Impact Statement (EIS) process effectively.

On July 1, 2007, the City formed the RTD that falls under DTS. The RTD is responsible for the management and oversight of the project from PE through construction, including all actions and project deliverables required by the FTA New Starts Program, and will interface with other City departments as needed. The RTD is headed by Mr. Toru Hamayasu, who will direct the project staff. The project staff will consist of full-time City employees supplemented with staff from the PMSC, who will fill key project roles pending the hiring of full-time City staff. The PMSC will continue to staff all required City positions in the interim.

The current City staff has the capability to manage the work presently being performed by the PMSC and the GEC. As work progresses into PE, the City will need to add the necessary staff to be directly accountable for the development of the project design, budget, and schedule. Development of the project design will include quality review and audit of the GEC as well as any engineering design consultants assigned to the project; the monitoring of safety and security design requirements and implementation; and continued oversight of the real estate acquisition process.

Currently, the project's organizational structure includes City staff along with PMSC and GEC staff. The current organizational structure provides the experience and expertise to manage the project at this phase of the work and the assigned City staff are sufficiently qualified to manage and monitor all current project activities including the third-party consultants/contractors to be procured during PE Phase of the Project.

The City's long-term strategy is to hire locally and have the PMSC train new City staff using the consultant's expertise in an effort to ensure that the new hires are capable of managing the City's consultants effectively. As the abilities of City staff increase, the need for PMSC staff will diminish until the PMSC staff is no longer necessary. Currently, the City does not have a set timetable for replacing the PMSC with City staff. The current PMSC contract expires in October 2009 and the City intends to issue a Request for Proposal (RFP) for a second PMSC in order to augment the City staff beyond the end of the current PMSC contract through FD. In the interim, the City plans to extend the existing PMSC contract until the second PMSC contract is executed. The City continues to advertise city positions currently filled by the PMSC.

Additionally, the current GEC contract is scheduled to expire in February 2010. The City is planning to issue an RFP for the services of a GCM to support the City in managing the final design and construction of the Project. The City plans to issue an RFP for a GCM later this year, for a period of performance beginning in January 2010 through the completion of revenue operations for the project in March 2019.

C. Summary of PMOC Findings and Recommendations

The PMOC has some concern that the City may encounter difficulty acquiring the experienced staff needed for the long-term assignment given Hawai'i's cost of living and distance from the mainland. The PMOC is also concerned that at present, the City does not have a staffing plan that addresses the transition of the positions currently held by the PMSC. In the early part of PE, the City needs to include a staffing plan in the PMP to address the transition of staff during the PE and FD phases of the Project for positions currently occupied by PMSC staff to City staff, and the dates by which the City intends to staff each of the positions.

At a minimum, the PMOC recommends that the City strive to fill the key management positions currently occupied by the PMSC as early as possible once they are in PE. The key positions the City should focus on filling are Chief Project Officer, Manager of Quality Assurance, Manager of Safety and Security, Chief Project Controls, and Contracts Administrator. The position of Manager of Real Estate Acquisition must be filled prior to the issuance of ROD, which is currently scheduled for December 4, 2009.

The PMOC recommends continued monitoring of the City's project management process to ensure that the City is effectively managing the HHCTC Project and continues to be responsible for all decisions affecting project design, cost, and schedule until all key management positions identified are transitioned to full-time City staff. The transition from PMSC staff to full-time City staff should be monitored throughout the PE phase of the project.

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III. ITEMS TO BE RESOLVED

After a review of the required FTA deliverables for entry into PE, it is recommended that the City address the following concerns during the PE Phase of the Project. The recommendations were divided into three categories; concerns to be addresses prior to the issuance of ROD, concerns to be addressed in early PE, and concerns to be addressed during the PE Phase but before entry into FD. Be advised that all the recommendations provided below were included in Spot Report #2R, Preliminary Engineering (PE) Entry Readiness Report, dated July 2009.

Concerns to be addressed 60 days prior to the issuance of an ROD:

- A revised organization chart and new resumes should be made a part of the RAMP prior to the next submission.
 - Permanent staffing of a Manager of Real Estate with sufficient previous experience with federally-funded projects to successfully implement the project in compliance with Uniform Act regulations and applicable FTA requirements. The City has assigned a City/County staff person to serve as Manager of Real Estate until a permanent replacement can be found.
 - While the RAMP final version for Pre-PE provides adequate descriptions of the reporting and working relationships between the Chief Land Division, Manager of Real Estate, and Relocation Specialist, these key positions report to different Directors. The City has developed an issue resolution process to elevate disputes between these two key positions to the Managing Director or the Mayor, if necessary. This organizational structure should be monitored to evaluate its effectiveness as identified.
 - The ROW Coordinator has had no direct responsibility for real property acquisitions or relocation. The role of ROW Coordinator is critical to ensure that the ROW and relocation activities are successfully implemented.
- The Real Estate Acquisition and Relocation schedule has not been defined and could potentially impact the current critical path identified.
 - Update and complete the ROW Acquisition Tracking Report, which adequately addresses all tasks required for land acquisition and relocation.
 - The Parcel Acquisition Schedule needs to include the possibility of engaging in condemnation activities and the expected time required to gain possession of the property through this method. In the event that there is a failure to agree, or an unresolved title issue, it is necessary to understand what the impact will be on the project schedule.
 - Develop a ROW Acquisition Tracking Report and Parcel Acquisition Schedule for subsequent segments. The Parcel Acquisition Schedule and ROW Acquisition Tracking Reports need to be continuously updated and monitored to ensure that the MPS can be met.

- Development of the Relocation Policies and Procedures in compliance with the new rule 49 CFR Part 24, and with the specific requirements of FTA Circular 5010.1D. A Relocation Plan needs to be submitted for review and approval prior to the ROD being issued for the project. This relocation plan will become a supplement to the RAMP.

Concerns to be addressed early in the PE Phase of the Project (within the first 120 days):

- Further development of the role and responsibilities of the City's Quality Manager to include participation in QA/QC audits, reviews, inspections, and testing to ensure compliance from PE through Revenue Operations. The Quality Manager should have the ultimate responsibility for the Project QA and QC; however, the position does not currently have a significant role defined in the various project phases.
- Update the PMP to be consistent with the current status of the project and to include a PDP as a sub-plan to the PMP, a staffing plan, and an updated organization chart.
 - The PDP provides the essential processes to be used, anticipated costs and schedule, and various metrics to satisfactorily measure performance in attaining the planned delivery of products and completion during the period between the completion of the AA Phase through the completion of the PE Phase.
 - Prepare a Staffing Plan and revise the organization chart due to changes in PMSC positions and City staff, and to address the transition of PMSC staff to City staff during the PE and FD Phases of the Project.
 - Further develop the Configuration Management Plan, Document Control Procedures, Procurement process, Change Order and Claims procedures, Construction Management, and Testing and Start-Up procedures to incorporate the roles of the Consultants (engineering, design, and construction) and Contractors at the various stages of the project. The Document Control Procedures should include sections on document response durations, tracking, turnover, retention, storage, and retrieval.
- Continued development of a technically sound and properly integrated MPS.
 - More accurately define the design, procurement, construction, and testing activities required for the opening of the Waipahu/Leeward Section in December 2012, including coordination with operations/maintenance activities.
 - Identify relationships among land acquisition, utility relocation, vehicle procurement, civil/systems DB, station FD, and construction.
 - Further detail activities for civil/guideways, systems, and station construction work.
 - Include activities for long-lead items such as running rail, special trackwork, elevators/ escalators, rail maintenance equipment, etc.
 - Further define the activities and durations and critical path at a deeper level, one more commensurate with a project of this size.

General Concerns to be addressed during the PE Phase but before entry into FD:

- Further define the project scope, final Airport alignment location, maintenance yard location, station locations, and support facilities.
- Implement and update the PMP, RAMP, BFMP, SSMP, and QMP as the project progresses.
- Develop a Rail Fleet Management Plan (RFMP), Contingency Management Plan and Safety and Security Certification Plan (SSCP).
- Hire additional City staff in order to develop the internal capability needed to effectively manage all consultants throughout the PE phase. At present, the PMOC recommends that the following be filled by City staff during the PE phase, but prior to entry into FD – Chief Project Officer, Manager of Quality Assurance, Manager of Safety and Security, Chief Project Controls, Contracts Administrator, and Manager of Real Estate
- Evaluate and develop the project delivery approach and methods for the procurement of utility, facility, and system design and construction/installation contracts including the interface requirements between procurement contracts.
- Conduct third-party negotiations and obtain agreements.

IV. CONCLUSIONS AND RECOMMENDATIONS

The HHCTC Project is scheduled to enter into PE in October 2009. In order to determine whether the FTA guidelines and requirements are being satisfied for entry into PE, the PMOC conducted a review and evaluation of the grantee's management, organization, and project definition data to determine whether the grantee possessed the technical capacity and capability to efficiently and effectively implement the proposed HHCTC project, and to determine whether the grantee is ready to receive Federal funds for further project development.

The main concern that will require continued monitoring is the City's capability to manage the work presently being performed by the PMSC and the GEC by the current City staff. As work progresses into PE, the City will need to add the necessary staff to be directly accountable for the development of the project design, budget, and schedule. Development of the project design will include quality review and audit of the GEC as well as any engineering design consultants assigned to the project; the monitoring of safety and security design requirements and implementation; and continued oversight of the real estate acquisition process.

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IV. CONCLUSIONS AND RECOMMENDATIONS

The HHCTC Project is scheduled to enter into PE in October 2009. In order to determine whether the FTA guidelines and requirements are being satisfied for entry into PE, the PMOC conducted a review and evaluation of the grantee's management, organization, and project definition data to determine whether the grantee possessed the technical capacity and capability to efficiently and effectively implement the proposed HHCTC project, and to determine whether the grantee is ready to receive Federal funds for further project development.

The main concern that will require continued monitoring is the City's capability to manage the work presently being performed by the PMSC and the GEC by the current City staff. As work progresses into PE, the City will need to add the necessary staff to be directly accountable for the development of the project design, budget, and schedule. Development of the project design will include quality review and audit of the GEC as well as any engineering design consultants assigned to the project; the monitoring of safety and security design requirements and implementation; and continued oversight of the real estate acquisition process.

B-5

V. LESSONS LEARNED

There are several “lessons learned” that are beneficial to the FTA. FTA, the transit industry, and fellow PMOCs can benefit from the lessons learned on this project. Throughout the PMOC assignment of the HHCTC Project, lessons learned were gathered and Booz Allen Hamilton has summarized these topics as follows:

- Assigning a PMOC to perform oversight of the grantee during the Pre-PE Phase of the Project allows the PMOC to assist the grantee in preparing their FFGA Roadmap Schedule and understanding the requirements to developing acceptable deliverables for the Project that meet the current FTA guidelines. The relatively minimal investment will be returned many times over in that these documents will be invaluable to the grantee, the FTA, and the PMOC during the course of the project.
- Early in the assignment, the PMOC should conduct Review Workshops for the PMP, SSMP, QMP, FMP, and RAMP to assist the City with the development of associated FTA-required deliverables prior to final submittal and review. As a result of the Review Workshops, there has been significant advancement of all FTA deliverables received.
- Grantees must ensure that they have sufficient resources to manage and oversee contractual issues. For grantees that have inadequate/inexperienced staff to implement a large project, it is important to procure a PMSC to supply experience and expertise to manage the project until the grantee can post and hire permanent staff capable of managing the project.
- Use dedicated State and Local funds to advance the project schedule in order to minimize escalation costs and start construction of the project in advance of FTA funding.
- Implement a document sharing website to transmit FTA-required deliverables and documentation to the FTA and the PMOC for review and acceptance.
- In an effort to reduce the PMOC review time on updated/revised deliverables (i.e., PMP, QMP, SSMP, FMP, RAMP, etc.) the grantee should be required to provide the updated/revised deliverables with “track changes.” This applies especially when the updates/revisions are minor in nature, or apply to a specific section of the document.

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MAIN WORKSHEET - BUILD ALTERNATIVE

City and County of Honolulu

Honolulu Rail Transit Project, East Kapiolani to Ala Moana Center via Airport

Preliminary Engineering

Today's Date: 01/08/10

FY 2009

FY 2010

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	FOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (in miles)	20.09	1,126,932	261,746	1,408,728	\$ 70,108	43%	32%	1,577,817
10.01 Guideway, At-grade exclusive right-of-way				0				0
10.02 Guideway, At-grade semi-exclusive (allows cross-traffic)				0				0
10.03 Guideway, At-grade in mixed traffic				0				0
10.04 Guideway, Aerial structure	19.75	988,406	247,116	1,235,522	\$ 62,561			1,471,598
10.05 Guideway, Built-up fill				0				0
10.06 Guideway, Underground cut & cover				0				0
10.07 Guideway, Underground tunnel				0				0
10.08 Guideway, Retained cut or fill	0.34	5,597	1,332	6,929	\$ 20,390			2,229
10.09 Track, Direct fixation		123,329	30,632	154,162				183,699
10.10 Track, Embedded				0				0
10.11 Track, Bolted				0				0
10.12 Track, Special (switches, turnouts)		9,680	2,415	12,095				14,382
10.13 Track, Vibration and noise dampening				0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (in miles)	21	244,604	51,126	305,630	\$ 14,554	11%	7%	389,152
20.01 At-grade station, stop, shelter, mall, terminal, platform				0				0
20.02 Aerial station, stop, shelter, mall, terminal, platform	21	166,268	46,567	212,835	\$ 11,087			236,494
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators		59,236	14,559	73,795				92,583
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		97,290	24,320	121,600	\$ 6,052	4%	3%	138,469
30.01 Administrative Building: Office, sales, storage, revenue counting		16,655	4,166	20,821				23,726
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		80,615	20,154	100,769				114,773
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS		575,617	181,636	757,256	\$ 37,836	27%	17%	885,470
40.01 Demolition, Clearing, Earthwork		25,830	8,579	34,500				40,915
40.02 Site Utilities, Utility Relocation		331,739	116,109	447,848				523,589
40.03 (Soil, fill), contain'd soil remediation, ground water treatments		10,130	3,349	13,479				16,196
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		9,835	3,242	13,077				15,701
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping				0				0
40.07 Accessible bus, van accessways including roads, parking lots		199,275	49,569	248,844				293,079
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 TRAFFIC		203,330	50,853	254,183	\$ 12,649	9%	6%	311,215
50.01 Traffic control and signals		34,610	8,652	43,262				52,974
50.02 Traffic signals and crossing protection		24,225	6,056	30,281				37,075
50.03 Traction power supply: substations		41,360	10,497	51,857				64,289
50.04 Traction power distribution: secondary and third rail		86,478	17,119	103,597				124,711
50.05 Communications		29,841	5,203	35,044				43,252
50.06 Fare collection system and equipment		4,351	1,000	5,351				6,678
50.07 Control Control		8,828	2,214	11,042				13,664
Construction Subtotal (10-50)		2,247,714	593,663	2,841,377	\$ 141,705	100%	64%	3,412,153
60 ROW, LAND, RIGHTS REPAIR/DEVELOPMENT		65,634	42,497	108,131	\$ 6,393		3%	128,635
60.01 Purchase or lease of real estate		63,264	41,632	104,897				125,075
60.02 Relocation of existing households and businesses		2,370	1,185	3,555				4,560
70 VEHICLES (in miles)	76	276,230	66,958	343,188	\$ 4,491		8%	398,825
70.01 Light Rail				0				0
70.02 Heavy Rail	76	245,678	59,963	305,641	\$ 4,008			365,307
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-motorized vehicles		4,956	1,199	6,155				7,739
70.07 Spare parts		24,366	5,836	30,202				37,399
80 PROFESSIONAL SERVICES (regardless to Class 10-80)		589,372	157,338	746,710	\$ 37,134	26%	17%	823,589
80.01 Preliminary Engineering		17,752	4,736	22,488				28,051
80.02 Final Design		93,331	26,597	119,928				157,119
80.03 Project Management for Design and Construction		37,823	28,945	66,768				84,461
80.04 Construction Administration & Management		220,743	53,892	274,635				349,116
80.05 Professional Liability and other Non-Construction Insurance		32,111	8,834	41,945				52,397
80.06 Legal, Permits, Review Fees by other agencies, cities, etc.		38,111	8,834	46,945				59,297
80.07 Surveys, Testing, Investigation, Inspection		11,037	2,945	13,982				17,565
80.08 Start up		77,260	20,612	97,872				122,250
Subtotal (10-80)		3,193,568	855,503	4,049,071	\$ 292,277		31%	4,873,284
90 UNALLOCATED CONTINGENCY				193,629			3%	193,629
Subtotal (10-90)				4,242,700	\$ 209,922		98%	5,066,913
100 FINANCE CHARGES				244,834			5%	244,834
Total Project Cost (10-100)				4,487,534	\$ 222,806	100%		5,311,747
Allocated Contingency as % of Base Yr Dollars w/o Contingency				27.67%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				4.80%				
Total Contingency as % of Base Yr Dollars w/o Contingency				32.47%				
Unallocated Contingency as % of Subtotal (10-90)				4.70%				
FOE Construction Cost per Mile (X000)								\$169,819
FOE Total Project Cost per Mile Not including Vehicles (X000)								\$246,788
FOE Total Project Cost per Mile (X000)								\$266,137

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Appendix D: Project Overview and Map

Date: February 2010
Project Name: Honolulu High-Capacity Transit Corridor Project
Grantee: City and County of Honolulu
FTA Regional contact: Catherine Luu
FTA HQ contact: Kim Nguyen

SCOPE

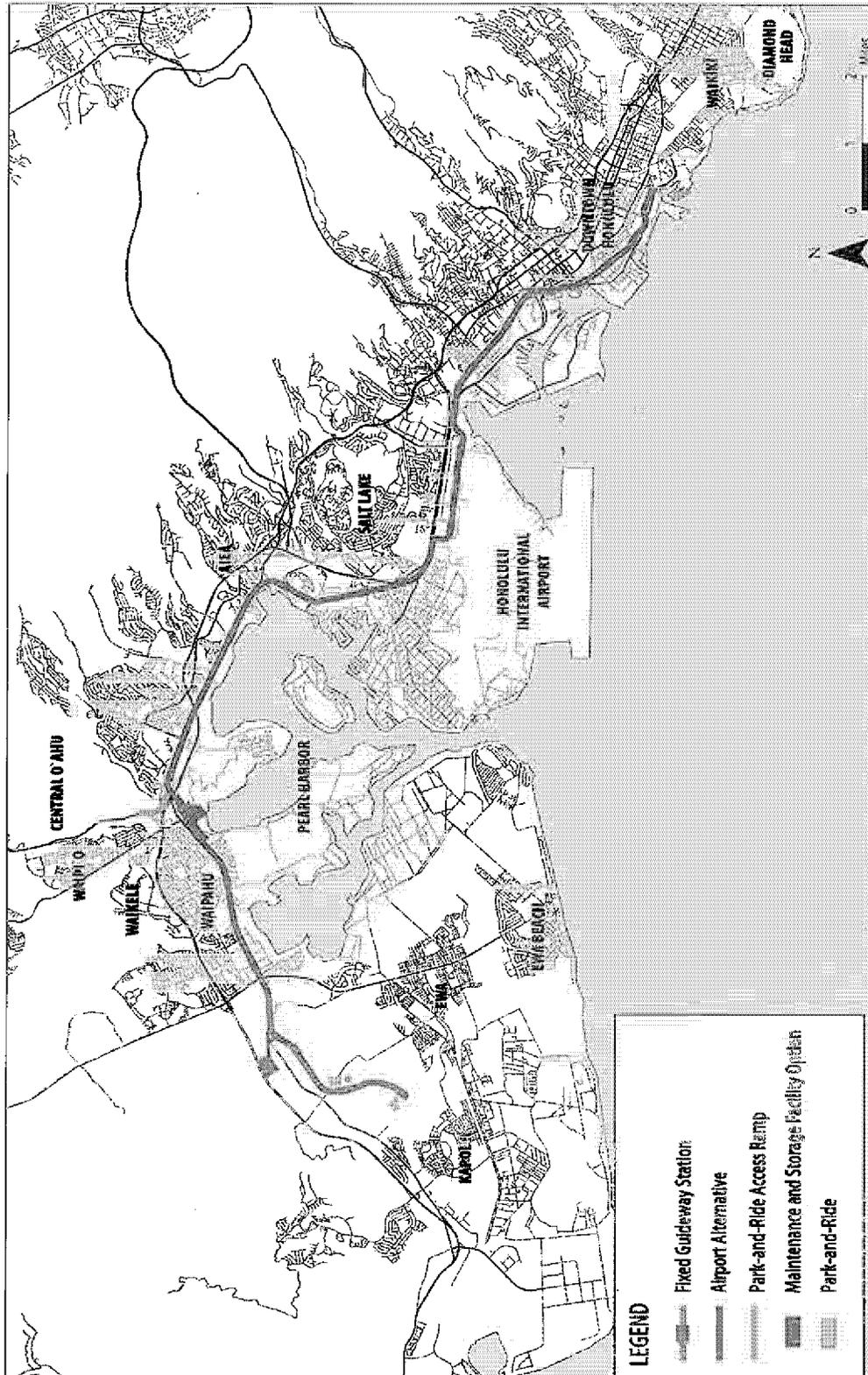
Description The proposed Project is an approximately 20-mile rail alignment extending from East Kapolei to Ala Moana Center.
Guideway The majority of the Project is to be built on aerial structure, but the Project also includes a short at-grade section (0.7 miles).
Stations 21 stations (20 aerial and 1 at-grade)
Support Facility Maintenance and Storage Facility located near Leeward Community College
Vehicles 76 light metro rail (identified as a "heavy rail" in the SCC workbook)

RIDERSHIP 97,500 weekday boardings in 2019; 116,300 weekday boardings in 2030

SCHEDULE 10/09 Approval Entry to PE 03/19 Estimated Rev Ops at Entry to PE

COST \$5.348 B Total Project Cost (\$YOE) at Approval Entry to PE
\$5.348 B Total Project Cost (\$YOE) at date of this report including \$290.294 M in Finance Charges
\$92.918 M Amount of Expenditures at date of this report from Total Project Budget of \$5.348 B

Honolulu High-Capacity Transit Corridor Project Map



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Appendix E: Safety and Security Checklist

Project Overview			
Project Name	Honolulu High-Capacity Transit Corridor		
Project mode (Rail, Bus, BRT, Multimode)	Rail		
Project phase (Preliminary Engineering, Design, Construction, or Start-up)	PE		
Project Delivery Method (Design/Build, Design/Build/Operate Maintain, CMGC, etc)	DB and DBB		
Project Plans	Version	Review by FTA	Status
Safety and Security Management Plan	1.0		Update due Feb-10
Safety and Security Certification Plan			Submittal due Mar-10
System Safety Program Plan			Submittal date TBD
System Security Plan or Security and Emergency Preparedness Plan (SSEPP)			Submittal date TBD
Construction Safety and Security Plan			
Safety and Security Authority	Y/N	Status	
Is the grantee subject to 49 CFR Part 659 state safety oversight requirements?	Y		
Has the state designated an oversight agency as per Part 659.9		Establishment of SSOA is pending	
Has the oversight agency reviewed and approved the grantee's SSPP as per Part 659.17?		Establishment of SSOA is pending	
Has the oversight agency reviewed and approved the grantee's Security Plan or SEPP as per Part 659.21?		Establishment of SSOA is pending	
Did the oversight agency participate in the last Quarterly Program Review Meeting?		Establishment of SSOA is pending	
Has the grantee submitted its safety certification plan to the oversight agency?		Establishment of SSOA is pending	
Has the grantee implemented security directives issues by the Department Homeland Security, Transportation Security Administration?		Pending	
SSMP Monitoring			
Is the SSMP project-specific, clearly demonstrating the scope of safety and security activities for this project?		Pending review of updated plan	
Grantee reviews the SSMP and related project plans to determine if updates are necessary?		Pending review of updated plan	
Does the grantee implement a process through which the Designated Function (DF) for Safety and DF for Security are integrated into the overall project management team? Please specify.		Pending review of updated plan	
Does the grantee maintain a regularly scheduled report on the status of safety and security activities?		Pending review of updated plan	
Has the grantee established staffing requirements, procedures and authority for safety and security activities throughout all project phases?		Pending review of updated plan	
Does the grantee update the safety and security responsibility matrix/organization chart as necessary?		Pending review of updated plan	
Has the grantee allocated sufficient resources to oversee or carry out safety and security activities?		Pending review of updated plan	
Has the grantee developed hazard and vulnerability analysis techniques, including specific types of analysis to be performed during different project phases?		Pending review of updated plan	

Does the grantee implement regularly scheduled meetings to track to resolution any identified hazards and/or vulnerabilities?		Pending review of updated plan
Does the grantee monitor the progress of safety and security activities throughout all project phases? Please describe briefly.		Pending review of updated plan
Does the grantee ensure the conduct of preliminary hazard and vulnerability analyses? Please specify analyses conducted.		Pending review of updated plan
Has the grantee ensured the development of safety design criteria?		Pending review of updated plan
Has the grantee ensured the development of security design criteria?		Pending review of updated plan
Has the grantee verified conformance with the safety and security requirements in the design?		Pending review of updated plan
Has the grantee identified conformance with safety and security requirements in equipment and materials procurement?		Pending review of updated plan
Has the grantee verified construction specification conformance?		Pending review of updated plan
Has the grantee identified safety and security critical tests to be performed prior to passenger operations?		Pending review of updated plan
Has the grantee verified conformance with safety and security requirements during testing, inspection and start up phases?		Pending review of updated plan
Does the grantee evaluate change orders, design waivers, or test variances for potential hazards and/or vulnerabilities?		Pending review of updated plan
Has the grantee ensured the performance of safety and security analyses for proposed work-arounds?		Pending review of updated plan
Has the grantee demonstrated through meetings or other methods, the integration of safety and security in the following: <ul style="list-style-type: none"> • Activation Plan and Procedures • Integrated Test Plan and Procedures • Operations and Maintenance Plan • Emergency Operations Plan 		Pending review of updated plan
Has the grantee issued final safety and security certification?		Pending review of updated plan
Has the grantee issued the final safety and security verification report?		Pending review of updated plan
Construction Safety and Security		
Does the grantee have a documented/implementation Contractor Safety Program with which it expects contractors to comply?		Submittal pending
Does the grantee's contractor(s) have a documented company-wide safety and security program plan?		Submittal pending
Does the grantee's contractor(s) have a site-specific safety and security program plan?		Submittal pending
Provide the grantee's OSHA statistics compared to the national average for the same type of work?		Submittal pending
If the comparison is not favorable, what actions are being taken by the grantee to improve its safety record?		Submittal pending
Does the grantee conduct site audits of the contractor's performance versus required safety/security procedures?		Submittal pending
Federal Railroad Administration		

If the shared track: has the grantee submitted its waiver request application to FRA? (Please identify any specific regulations for which waivers are being requested)	NA	
If the shared corridor: has grantee specified specific measures to address shared corridor safety concerns?	NA	
Is the Collision Hazard Analysis underway?	NA	
Other FRA required Hazard Analysis – fencing, etc?	NA	
Does the project have Quiet Zones?	NA	
Does FRA attend Quarterly Review Meetings?	NA	

MAIN WORKSHEET - BUILD ALTERNATIVE

#REF!

City and County of Honolulu

Today's Date: 9/16/10

Honolulu Rail Transit Project, East Kapolei to Ala Moana Center/Keolu Airport

Yr of Base Year: FY 2010

Preliminary Engineering

Yr of Revenue Cos: FY 2018

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	20.09	1,126,692	281,746	1,408,438	\$ 70,108	49%	32%	1,677,817
10.01 Guideway, At-grade exclusive right-of-way				0				0
10.02 Guideway, At-grade semi-exclusive (allows cross-traffic)				0				0
10.03 Guideway, At-grade in mixed traffic				0				0
10.04 Guideway, Aerial structure	19.75	998,466	247,116	1,245,582	\$ 62,561			1,471,599
10.05 Guideway, Built-up fill				0				0
10.06 Guideway, Underground cut & cover				0				0
10.07 Guideway, Underground tunnel				0				0
10.08 Guideway, Retained cut or fill	0.34	6,627	1,382	8,009	\$ 20,058			8,228
10.09 Track, Dred location		123,329	30,672	154,002				183,869
10.10 Track, Embedded				0				0
10.11 Track, Ballasted				0				0
10.12 Track, Special (switches, turnouts)		9,600	2,415	12,015				14,392
10.13 Track, Vibration and noise dampening				0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	21	244,001	61,326	305,326	\$ 14,554	11%	7%	389,152
20.01 At-grade station, stop, shelter, mall, terminal, platform				0				0
20.02 Aerial station, stop, shelter, mall, terminal, platform	21	198,263	46,567	244,830	\$ 11,667			298,461
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, shelters, terminals, intermodal, entry, rotary, etc				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators		58,738	14,859	73,597				92,698
30 SUPPORT FACILITIES; YARDS, SHOPS, ADMIN. BLDGS		17,280	24,320	41,600	\$ 6,052	4%	3%	138,459
30.01 Administration Building, Office, sales, storage, revenue counting		16,666	4,166	20,832				23,726
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		80,610	20,154	100,764				114,773
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS		675,617	181,639	857,256	\$ 37,686	27%	17%	995,470
40.01 Demolition, Clearing, Earthwork		28,530	8,979	37,509				40,515
40.02 Site Utilities, Utility Relocation		331,799	116,109	447,908				529,589
40.03 Fill, mat, contain, soil erosion/retention, ground water treatment		10,139	3,549	13,687				16,186
40.04 Environmental mitigation, e.g. wetlands, historical/archeology, parks		9,835	3,442	13,277				16,701
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping				0				0
40.07 Automobile, bus, van accessways including roads, parking lots		198,275	48,588	246,863				293,079
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS		203,330	50,833	254,163	\$ 12,649	9%	6%	311,215
50.01 Train control and signals		33,610	8,612	42,222				52,974
50.02 Traffic signals and crossing protection		24,225	6,036	30,261				37,079
50.03 Traction power supply, substations		41,990	10,497	52,487				64,269
50.04 Traction power distribution, catenary and third rail		69,478	17,119	86,597				104,811
50.05 Communications		20,011	5,203	25,214				31,052
50.06 Fare collection system and equipment		4,351	1,090	5,441				6,676
50.07 Central Control		8,856	2,214	11,070				13,564
Construction Subtotal (10-50)		2,247,714	593,663	2,841,377	\$ 141,705	100%	64%	3,412,153
60 ROW, LAND, EXISTING IMPROVEMENTS		25,634	12,617	38,251	\$ 6,393		3%	128,835
60.01 Purchase or lease of real estate		83,284	41,632	124,917				128,879
60.02 Relocation of existing households and businesses		2,370	1,185	3,555				3,560
70 VEHICLES (number)	76	275,209	66,058	341,267	\$ 4,491		8%	388,825
70.01 Light Rail				0				0
70.02 Heavy Rail	76	245,676	68,963	314,639	\$ 4,088			355,987
70.03 Converter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles		4,856	1,199	6,055				7,238
70.07 Spare parts		24,868	5,886	30,754				35,599
80 PROFESSIONAL SERVICES (applies to Cmts. 10-50)		569,972	107,329	677,301	\$ 37,194	28%	17%	933,560
80.01 Preliminary Engineering		17,752	4,736	22,488				28,031
80.02 Final Design		95,334	26,501	121,835				152,190
80.03 Project Management for Design and Construction		97,623	26,045	123,668				154,491
80.04 Construction Administration & Management		280,743	68,859	349,602				443,310
80.05 Professional Liability and other Non-Construction Insurance		33,111	8,834	41,945				52,397
80.06 Legal, Permits, Review Fees by other agencies, cities, etc.		33,111	8,834	41,945				52,397
80.07 Surveys, Testing, Investigation, Inspection		11,037	2,945	13,982				17,466
80.08 Start up		77,209	20,612	97,821				122,259
Subtotal (10-80)		3,168,560	865,536	4,034,096	\$ 202,277		91%	4,873,201
90 UNALLOCATED CONTINGENCY				50,620			3%	184,186
Subtotal (10-90)				4,218,116	\$ 209,922		95%	5,057,387
100 FINANCE CHARGES				244,434			5%	290,294
Total Project Cost (10-100)				4,462,550	\$ 222,886		100%	5,347,681
Allocated Contingency as % of Base Yr Dollars w/o Contingency				27.0%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				4.8%				
Total Contingency as % of Base Yr Dollars w/o Contingency				31.8%				
Unallocated Contingency as % of Subtotal (10-80)				1.6%				
YOE Construction Cost per Mile (X000)								\$166,812
YOE Total Project Cost per Mile Not Including Vehicles (X000)								\$216,288
YOE Total Project Cost per Mile (X000)								\$283,112

INFLATION WORKSHEET

City of Harrisburg
 Department of Public Works
 Infrastructure, Rail, Transit Project, East Expansion to Air Mass Center via Airport
 Preliminary Engineering

BASE YEAR DOLLARS (\$X5000)	Base Yr Dollars	Double-Dollar 1968	Year																																																																																														
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025																																																																															
10 GLENDALEWAY & TRACK ELEMENTS	1,468,720	1,009,728	25,578	138,316	209,371	305,842	417,841	549,424	707,239	904,854	1,151,424	1,454,854	1,824,854	2,274,854	2,814,854	3,454,854	4,204,854	5,074,854	6,074,854	7,214,854	8,504,854	9,954,854	11,574,854	13,374,854	15,354,854	17,524,854	20,004,854	22,704,854	25,634,854	28,804,854	32,224,854	35,904,854	39,854,854	44,084,854	48,604,854	53,424,854	58,554,854	63,994,854	69,744,854	75,804,854	82,174,854	88,854,854	95,854,854	103,174,854	110,824,854	118,804,854	127,124,854	135,794,854	144,814,854	154,184,854	163,904,854	173,974,854	184,404,854	195,194,854	206,344,854	217,854,854	229,724,854	241,954,854	254,544,854	267,494,854	280,804,854	294,474,854	308,504,854	322,894,854	337,644,854	352,754,854	368,224,854	384,054,854	400,244,854	416,794,854	433,704,854	450,974,854	468,604,854	486,594,854	504,944,854	523,654,854	542,724,854	562,154,854	581,944,854	602,094,854	622,604,854	643,474,854	664,704,854	686,294,854	708,244,854	730,554,854	753,224,854	776,254,854	799,644,854	823,384,854	847,484,854	871,944,854	896,754,854	921,924,854	947,454,854	973,344,854	1,000,000,000

YEAR OF EXPENDITURE DOLLARS (\$X5000)	Yr of Exp	Year																														
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025															
10 GLENDALEWAY & TRACK ELEMENTS	1,871,817	28,559	150,261	235,477	319,053	417,841	549,424	707,239	904,854	1,151,424	1,454,854	1,824,854	2,274,854	2,814,854	3,454,854	4,204,854	5,074,854	6,074,854	7,214,854	8,504,854	9,954,854	11,574,854	13,374,854	15,354,854	17,524,854	20,004,854	22,704,854	25,634,854	28,804,854	32,224,854	35,904,854	40,000,000

BASE YEAR DOLLARS (\$X5000)	Base Yr Dollars	Double-Dollar 1968	Year																																																																																																																																																																																														
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025																																																																																																																																																																															
10 GLENDALEWAY & TRACK ELEMENTS	1,058,564	1,078,571	1,152,625	1,172,211	1,219,983	1,283,948	1,315,537	1,399,854	1,420,325	1,475,009	1,539,854	1,614,854	1,699,854	1,784,854	1,869,854	1,954,854	2,039,854	2,124,854	2,209,854	2,294,854	2,379,854	2,464,854	2,549,854	2,634,854	2,719,854	2,804,854	2,889,854	2,974,854	3,059,854	3,144,854	3,229,854	3,314,854	3,399,854	3,484,854	3,569,854	3,654,854	3,739,854	3,824,854	3,909,854	3,994,854	4,079,854	4,164,854	4,249,854	4,334,854	4,419,854	4,504,854	4,589,854	4,674,854	4,759,854	4,844,854	4,929,854	5,014,854	5,099,854	5,184,854	5,269,854	5,354,854	5,439,854	5,524,854	5,609,854	5,694,854	5,779,854	5,864,854	5,949,854	6,034,854	6,119,854	6,204,854	6,289,854	6,374,854	6,459,854	6,544,854	6,629,854	6,714,854	6,799,854	6,884,854	6,969,854	7,054,854	7,139,854	7,224,854	7,309,854	7,394,854	7,479,854	7,564,854	7,649,854	7,734,854	7,819,854	7,904,854	7,989,854	8,074,854	8,159,854	8,244,854	8,329,854	8,414,854	8,499,854	8,584,854	8,669,854	8,754,854	8,839,854	8,924,854	9,009,854	9,094,854	9,179,854	9,264,854	9,349,854	9,434,854	9,519,854	9,604,854	9,689,854	9,774,854	9,859,854	9,944,854	10,029,854	10,114,854	10,199,854	10,284,854	10,369,854	10,454,854	10,539,854	10,624,854	10,709,854	10,794,854	10,879,854	10,964,854	11,049,854	11,134,854	11,219,854	11,304,854	11,389,854	11,474,854	11,559,854	11,644,854	11,729,854	11,814,854	11,899,854	11,984,854	12,069,854	12,154,854	12,239,854	12,324,854	12,409,854	12,494,854	12,579,854	12,664,854	12,749,854	12,834,854	12,919,854	13,004,854	13,089,854	13,174,854	13,259,854	13,344,854	13,429,854	13,514,854	13,599,854	13,684,854	13,769,854	13,854,854	13,939,854	14,024,854	14,109,854	14,194,854	14,279,854	14,364,854	14,449,854	14,534,854	14,619,854	14,704,854	14,789,854	14,874,854	14,959,854	15,044,854	15,129,854	15,214,854	15,299,854	15,384,854	15,469,854	15,554,854	15,639,854	15,724,854	15,809,854	15,894,854	15,979,854	16,064,854	16,149,854	16,234,854	16,319,854	16,404,854	16,489,854	16,574,854	16,659,854	16,744,854	16,829,854	16,914,854	17,000,000

BASE YEAR DOLLARS (\$X5000)	Base Yr Dollars	Double-Dollar 1968	Year																																																																																																																																																																																														
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025																																																																																																																																																																															
10 GLENDALEWAY & TRACK ELEMENTS	1,058,564	1,078,571	1,152,625	1,172,211	1,219,983	1,283,948	1,315,537	1,399,854	1,420,325	1,475,009	1,539,854	1,614,854	1,699,854	1,784,854	1,869,854	1,954,854	2,039,854	2,124,854	2,209,854	2,294,854	2,379,854	2,464,854	2,549,854	2,634,854	2,719,854	2,804,854	2,889,854	2,974,854	3,059,854	3,144,854	3,229,854	3,314,854	3,399,854	3,484,854	3,569,854	3,654,854	3,739,854	3,824,854	3,909,854	3,994,854	4,079,854	4,164,854	4,249,854	4,334,854	4,419,854	4,504,854	4,589,854	4,674,854	4,759,854	4,844,854	4,929,854	5,014,854	5,099,854	5,184,854	5,269,854	5,354,854	5,439,854	5,524,854	5,609,854	5,694,854	5,779,854	5,864,854	5,949,854	6,034,854	6,119,854	6,204,854	6,289,854	6,374,854	6,459,854	6,544,854	6,629,854	6,714,854	6,799,854	6,884,854	6,969,854	7,054,854	7,139,854	7,224,854	7,309,854	7,394,854	7,479,854	7,564,854	7,649,854	7,734,854	7,819,854	7,904,854	7,989,854	8,074,854	8,159,854	8,244,854	8,329,854	8,414,854	8,499,854	8,584,854	8,669,854	8,754,854	8,839,854	8,924,854	9,009,854	9,094,854	9,179,854	9,264,854	9,349,854	9,434,854	9,519,854	9,604,854	9,689,854	9,774,854	9,859,854	9,944,854	10,029,854	10,114,854	10,199,854	10,284,854	10,369,854	10,454,854	10,539,854	10,624,854	10,709,854	10,794,854	10,879,854	10,964,854	11,049,854	11,134,854	11,219,854	11,304,854	11,389,854	11,474,854	11,559,854	11,644,854	11,729,854	11,814,854	11,899,854	11,984,854	12,069,854	12,154,854	12,239,854	12,324,854	12,409,854	12,494,854	12,579,854	12,664,854	12,749,854	12,834,854	12,919,854	13,004,854	13,089,854	13,174,854	13,259,854	13,344,854	13,429,854	13,514,854	13,599,854	13,684,854	13,769,854	13,854,854	13,939,854	14,024,854	14,109,854	14,194,854	14,279,854	14,364,854	14,449,854	14,534,854	14,619,854	14,704,854	14,789,854	14,874,854	14,959,854	15,044,854	15,129,854	15,214,854	15,299,854	15,384,854	15,469,854	15,554,854	15,639,854	15,724,854	15,809,854	15,894,854	15,979,854	16,064,854	16,149,854	16,234,854	16,319,854	16,404,854	16,489,854	16,574,854	16,659,854	16,744,854	16,829,854	16,914,854	17,000,000

INFLATION WORKSHEET

City and County of Honolulu
Honolulu Rail Transit Project, East Kahe to Ala Moana Stations and Airport
Preliminary Engineering

BASE YEAR DOLLARS (\$K000)	Date	Base Yr	Date	Base Yr	YEAR OF EXPENDITURE DOLLARS (\$K000)														
					2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
10 GUIDEWAY & TRACK ELEMENTS	1/01/20	1,406,729	1,408,728	25,673	138,316	200,375	365,842	317,641	510,664	102,862	9,257	0	0	0	0	0	0	0	
20 STATIONS, STOPS, TERMINALS, INTERMODAL	3/01/20	305,620	305,620	0	1,428	27,243	48,458	34,082	38,973	62,002	57,008	95,337	0	0	0	0	0	0	
30 SUPPORT FACILITIES, YARDS, STOPS, ADMIN BLDGS	1/01/20	121,800	121,800	0	28,588	28,070	29,949	26,347	30,901	29,351	11,282	2,696	0	0	0	0	0	0	
40 SYSTEMS	7/07/20	257,236	257,236	0	8,701	150,572	285,959	192,870	30,901	29,351	11,282	2,696	0	0	0	0	0	0	
50 VEHICLES	1/01/20	128,452	128,452	50,887	44,528	33,559	0	0	0	0	0	0	0	0	0	0	0	0	
60 ROW LAND, EXISTING IMPROVEMENTS	3/4/20	341,297	341,297	0	14,839	4,948	29,678	148,380	148,380	0	0	0	0	0	0	0	0	0	
70 VEHICLES	7/47/20	747,370	747,370	76,648	121,392	83,497	100,572	85,070	89,503	81,250	54,382	52,461	33,693	0	0	0	0	0	
80 PROFESSIONAL SERVICES (applies to Cals. 10-50)	1/01/20	163,020	163,020	6,872	16,455	20,308	34,371	28,235	20,382	10,798	6,098	4,927	2,946	0	0	0	0	0	
90 UNALLOCATED CONTINGENCY	2/4/20	244,434	244,434	0	0	595	6,682	24,974	39,393	16,029	45,408	45,692	33,467	0	0	0	0	0	
Total Project Cost (10 - 100)		4,482,550	4,482,550	174,985	435,266	642,097	949,405	823,720	590,327	342,454	212,008	169,936	84,494	0	0	0	0	0	

Professional Fees

YEAR OF EXPENDITURE DOLLARS (\$K000)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
10 GUIDEWAY & TRACK ELEMENTS	1,677,917	1,602,261	2,364,977	493,068	587,931	777,428	135,031	12,604	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	386,182	1,541	30,592	58,815	41,568	49,102	23,441	77,801	40,932	0
30 SUPPORT FACILITIES, YARDS, STOPS, ADMIN BLDGS	139,499	6,684	33,301	34,619	32,013	0	0	0	0	0
40 SYSTEMS	545,470	50,654	216,321	437,995	193,012	50,899	29,047	15,600	3,213	0
50 VEHICLES	311,215	30,055	32,501	33,597	34,706	38,897	37,131	28,405	84,790	28,506
60 ROW LAND, EXISTING IMPROVEMENTS	128,652	44,002	33,660	0	0	0	0	0	0	0
70 VEHICLES	288,925	15,757	5,413	33,483	172,438	171,761	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cals. 10-50)	933,389	1,520,889	1,672,290	120,780	106,098	80,193	84,498	78,424	79,405	63,283
90 UNALLOCATED CONTINGENCY	184,186	1,251	30,411	30,411	35,447	23,523	4,280	8,415	8,383	3,383
Total Project Cost (10 - 100)	5,209,524	6,630	595	912	812	29,585	55,811	57,510	55,023	48,423

Construction Materials

YEAR OF EXPENDITURE DOLLARS (\$K000)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
10 GUIDEWAY & TRACK ELEMENTS	1,03854	1,03854	1,04275	1,04409	1,03854	1,03854	1,03854	1,03854	1,03854	1,03854
20 STATIONS, STOPS, TERMINALS, INTERMODAL	1,03851	1,03857	1,04678	1,04143	1,03851	1,03851	1,03851	1,03851	1,03878	1,03851
30 SUPPORT FACILITIES, YARDS, STOPS, ADMIN BLDGS	1,03855	1,03855	1,04650	1,04281	1,03855	1,03855	1,03855	1,03855	1,04095	1,03855
40 SYSTEMS	1,03883	1,03883	1,04667	1,04692	1,03883	1,03883	1,03883	1,03883	1,04095	1,03883
50 VEHICLES	1,03831	1,03831	1,04437	1,03831	1,03831	1,03831	1,03831	1,03831	1,03831	1,03831
60 ROW LAND, EXISTING IMPROVEMENTS	1,00000	1,00194	1,00194	1,00194	1,00194	1,00194	1,00194	1,00194	1,00194	1,00194
70 VEHICLES	1,03884	1,03884	1,03884	1,03884	1,03884	1,03884	1,03884	1,03884	1,03884	1,03884
80 PROFESSIONAL SERVICES (applies to Cals. 10-50)	1,03882	1,03882	1,04287	1,04287	1,03882	1,03882	1,03882	1,03882	1,04284	1,03882
90 UNALLOCATED CONTINGENCY	1,03800	1,03800	1,04309	1,04309	1,03800	1,03800	1,03800	1,03800	1,04284	1,03800
Total Project Cost (10 - 100)	1,03957	1,04233	1,04678	1,04692	1,03957	1,03957	1,03957	1,03957	1,04286	1,03957

INFLATION WORKSHEET

City and County of Honolulu
 Honolulu Rail Transit Project: East Kapolei to Ala Moana Center via Airport
 Preliminary Engineering

BASE YEAR DOLLARS (\$2000)	Base Yr Dollars	Double-Track Total	Year																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
20 GUIDEWAY & TRACK ELEMENTS	1,409,728	1,305,728	25,573	1,331,316	1,357,804	1,384,292	1,410,780	1,437,268	1,463,756	1,490,244	1,516,732	1,543,220	1,569,708	1,596,196	1,622,684	1,649,172	1,675,660	1,702,148	1,728,636	1,755,124	1,781,612	1,808,100	1,834,588	1,861,076	1,887,564	1,914,052	1,940,540	1,967,028	1,993,516	2,020,004	2,046,492	2,072,980	2,100,000																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
20 STATIONS, STOPS, TERMINALS, INTERMEDIARY	205,630	191,630	14,000	196,630	201,630	206,630	211,630	216,630	221,630	226,630	231,630	236,630	241,630	246,630	251,630	256,630	261,630	266,630	271,630	276,630	281,630	286,630	291,630	296,630	301,630	306,630	311,630	316,630	321,630	326,630	331,630	336,630	341,630	346,630	351,630	356,630	361,630	366,630	371,630	376,630	381,630	386,630	391,630	396,630	401,630	406,630	411,630	416,630	421,630	426,630	431,630	436,630	441,630	446,630	451,630	456,630	461,630	466,630	471,630	476,630	481,630	486,630	491,630	496,630	501,630	506,630	511,630	516,630	521,630	526,630	531,630	536,630	541,630	546,630	551,630	556,630	561,630	566,630	571,630	576,630	581,630	586,630	591,630	596,630	601,630	606,630	611,630	616,630	621,630	626,630	631,630	636,630	641,630	646,630	651,630	656,630	661,630	666,630	671,630	676,630	681,630	686,630	691,630	696,630	701,630	706,630	711,630	716,630	721,630	726,630	731,630	736,630	741,630	746,630	751,630	756,630	761,630	766,630	771,630	776,630	781,630	786,630	791,630	796,630	801,630	806,630	811,630	816,630	821,630	826,630	831,630	836,630	841,630	846,630	851,630	856,630	861,630	866,630	871,630	876,630	881,630	886,630	891,630	896,630	901,630	906,630	911,630	916,630	921,630	926,630	931,630	936,630	941,630	946,630	951,630	956,630	961,630	966,630	971,630	976,630	981,630	986,630	991,630	996,630	1,001,630	1,006,630	1,011,630	1,016,630	1,021,630	1,026,630	1,031,630	1,036,630	1,041,630	1,046,630	1,051,630	1,056,630	1,061,630	1,066,630	1,071,630	1,076,630	1,081,630	1,086,630	1,091,630	1,096,630	1,101,630	1,106,630	1,111,630	1,116,630	1,121,630	1,126,630	1,131,630	1,136,630	1,141,630	1,146,630	1,151,630	1,156,630	1,161,630	1,166,630	1,171,630	1,176,630	1,181,630	1,186,630	1,191,630	1,196,630	1,201,630	1,206,630	1,211,630	1,216,630	1,221,630	1,226,630	1,231,630	1,236,630	1,241,630	1,246,630	1,251,630	1,256,630	1,261,630	1,266,630	1,271,630	1,276,630	1,281,630	1,286,630	1,291,630	1,296,630	1,301,630	1,306,630	1,311,630	1,316,630	1,321,630	1,326,630	1,331,630	1,336,630	1,341,630	1,346,630	1,351,630	1,356,630	1,361,630	1,366,630	1,371,630	1,376,630	1,381,630	1,386,630	1,391,630	1,396,630	1,401,630	1,406,630	1,411,630	1,416,630	1,421,630	1,426,630	1,431,630	1,436,630	1,441,630	1,446,630	1,451,630	1,456,630	1,461,630	1,466,630	1,471,630	1,476,630	1,481,630	1,486,630	1,491,630	1,496,630	1,501,630	1,506,630	1,511,630	1,516,630	1,521,630	1,526,630	1,531,630	1,536,630	1,541,630	1,546,630	1,551,630	1,556,630	1,561,630	1,566,630	1,571,630	1,576,630	1,581,630	1,586,630	1,591,630	1,596,630	1,601,630	1,606,630	1,611,630	1,616,630	1,621,630	1,626,630	1,631,630	1,636,630	1,641,630	1,646,630	1,651,630	1,656,630	1,661,630	1,666,630	1,671,630	1,676,630	1,681,630	1,686,630	1,691,630	1,696,630	1,701,630	1,706,630	1,711,630	1,716,630	1,721,630	1,726,630	1,731,630	1,736,630	1,741,630	1,746,630	1,751,630	1,756,630	1,761,630	1,766,630	1,771,630	1,776,630	1,781,630	1,786,630	1,791,630	1,796,630	1,801,630	1,806,630	1,811,630	1,816,630	1,821,630	1,826,630	1,831,630	1,836,630	1,841,630	1,846,630	1,851,630	1,856,630	1,861,630	1,866,630	1,871,630	1,876,630	1,881,630	1,886,630	1,891,630	1,896,630	1,901,630	1,906,630	1,911,630	1,916,630	1,921,630	1,926,630	1,931,630	1,936,630	1,941,630	1,946,630	1,951,630	1,956,630	1,961,630	1,966,630	1,971,630	1,976,630	1,981,630	1,986,630	1,991,630	1,996,630	2,001,630	2,006,630	2,011,630	2,016,630	2,021,630	2,026,630	2,031,630	2,036,630	2,041,630	2,046,630	2,051,630	2,056,630	2,061,630	2,066,630	2,071,630	2,076,630	2,081,630	2,086,630	2,091,630	2,096,630	2,101,630	2,106,630	2,111,630	2,116,630	2,121,630	2,126,630	2,131,630	2,136,630	2,141,630	2,146,630	2,151,630	2,156,630	2,161,630	2,166,630	2,171,630	2,176,630	2,181,630	2,186,630	2,191,630	2,196,630	2,201,630	2,206,630	2,211,630	2,216,630	2,221,630	2,226,630	2,231,630	2,236,630	2,241,630	2,246,630	2,251,630	2,256,630	2,261,630	2,266,630	2,271,630	2,276,630	2,281,630	2,286,630	2,291,630	2,296,630	2,301,630	2,306,630	2,311,630	2,316,630	2,321,630	2,326,630	2,331,630	2,336,630	2,341,630	2,346,630	2,351,630	2,356,630	2,361,630	2,366,630	2,371,630	2,376,630	2,381,630	2,386,630	2,391,630	2,396,630	2,401,630	2,406,630	2,411,630	2,416,630	2,421,630	2,426,630	2,431,630	2,436,630	2,441,630	2,446,630	2,451,630	2,456,630	2,461,630	2,466,630	2,471,630	2,476,630	2,481,630	2,486,630	2,491,630	2,496,630	2,501,630	2,506,630	2,511,630	2,516,630	2,521,630	2,526,630	2,531,630	2,536,630	2,541,630	2,546,630	2,551,630	2,556,630	2,561,630	2,566,630	2,571,630	2,576,630	2,581,630	2,586,630	2,591,630	2,596,630	2,601,630	2,606,630	2,611,630	2,616,630	2,621,630	2,626,630	2,631,630	2,636,630	2,641,630	2,646,630	2,651,630	2,656,630	2,661,630	2,666,630	2,671,630	2,676,630	2,681,630	2,686,630	2,691,630	2,696,630	2,701,630	2,706,630	2,711,630	2,716,630	2,721,630	2,726,630	2,731,630	2,736,630	2,741,630	2,746,630	2,751,630	2,756,630	2,761,630	2,766,630	2,771,630	2,776,630	2,781,630	2,786,630	2,791,630	2,796,630	2,801,630	2,806,630	2,811,630	2,816,630	2,821,630	2,826,630	2,831,630	2,836,630	2,841,630	2,846,630	2,851,630	2,856,630	2,861,630	2,866,630	2,871,630	2,876,630	2,881,630	2,886,630	2,891,630	2,896,630	2,901,630	2,906,630	2,911,630	2,916,630	2,921,630	2,926,630	2,931,630	2,936,630	2,941,630	2,946,630	2,951,630	2,956,630	2,961,630	2,966,630	2,971,630	2,976,630	2,981,630	2,986,630	2,991,630	2,996,630	3,001,630	3,006,630	3,011,630	3,016,630	3,021,630	3,026,630	3,031,630	3,036,630	3,041,630	3,046,630	3,051,630	3,056,630	3,061,630	3,066,630	3,071,630	3,076,630	3,081,630	3,086,630	3,091,630	3,096,630	3,101,630	3,106,630	3,111,630	3,116,630	3,121,630	3,126,630	3,131,630	3,136,630	3,141,630	3,146,630	3,151,630	3,156,630	3,161,630	3,166,630	3,171,630	3,176,630	3,181,630	3,186,630	3,191,630	3,196,630	3,201,630	3,206,630	3,211,630	3,216,630	3,221,630	3,226,630	3,231,630	3,236,630	3,241,630	3,246,630	3,251,630	3,256,630	3,261,630	3,266,630	3,271,630	3,276,630	3,281,630	3,286,630	3,291,630	3,296,630	3,301,630	3,306,630	3,311,630	3,316,630	3,321,630	3,326,630	3,331,630	3,336,630	3,341,630	3,346,630	3,351,630	3,356,630	3,361,630	3,366,630	3,371,630	3,376,630	3,381,630	3,386,630	3,391,630	3,396,630	3,401,630	3,406,630	3,411,630	3,416,630	3,421,630	3,426,630	3,431,630	3,436,630	3,441,630	3,446,630	3,451,630	3,456,630	3,461,630	3,466,630	3,471,630	3,476,630	3,481,630	3,486,630	3,491,630	3,496,630	3,501,630	3,506,630	3,511,630	3,516,630	3,521,630	3,526,630	3,531,630	3,536,630	3,541,630	3,546,630	3,551,630	3,556,630	3,561,630	3,566,630	3,571,630	3,576,630	3,581,630	3,586,630	3,591,630	3,596,630	3,601,630	3,606,630	3,611,630	3,616,630	3,621,630	3,626,630	3,631,630	3,636,630	3,641,630	3,646,630	3,651,630	3,656,630	3,661,630	3,666,630	3,671,630	3,676,630	3,681,630	3,686,630	3,691,630	3,696,630	3,701,630	3,706,630	3,711,630	3,716,630	3,721,630	3,726,630	3,731,630	3,736,630	3,741,630	3,746,630	3,751,630	3,756,630	3,761,630	3,766,630	3,771,630	3,776,630	3,781,630	3,786,630	3,791,630	3,796,630	3,801,630	3,806,630	3,811,630	3,816,630	3,821,630	3,826,630	3,831,630	3,836,630	3,841,630	3,846,630	3,851,630	3,856,630	3,861,630	3,866,630	3,871,630	3,876,630	3,881,630	3,886,630	3,891,630	3,896,630	3,901,630	3,906,630	3,911,630	3,916,630	3,921,630	3,926,630	3,931,630	3,936,630	3,941,630	3,946,630	3,951,630	3,956,630	3,961,630	3,966,630	3,971,630	3,976,630	3,981,630	3,986,630	3,991,630	3,996,630	4,001,630	4,006,630	4,011,630	4,016,630	4,021,630	4,026,630	4,031,630	4,036,630	4,041,630	4,046,630	4,051,630	4,056,630	4,061,630	4,066,630	4,071,630	4,076,630	4,081,630	4,086,630	4,091,630	4,096,630	4,101,630	4,106,

Xerox WorkCentre 7328
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Nancy.Sipes

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Start Page

INFLATION WORKSHEET

City and County of Honolulu
Honolulu Rail Transit Project, East Kapolei to Ala Moana Center via Airport
Stationing: Engineering

BASE YEAR DOLLARS (X\$100)	Base Yr Dollars	Double-Track 100%	Year												
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,409,728	1,409,728	26,573	130,319	249,371	385,632	517,861	653,064	788,264	923,464	1,058,664	1,193,864	1,329,064	1,464,264	1,599,464
20 STATIONS, STOPS, TERMINALS, INTERMODAL	205,630	205,630	0	1,429	27,241	49,456	71,671	93,886	116,101	138,316	160,531	182,746	204,961	227,176	249,391
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	121,800	121,800	6,004	28,688	50,870	73,052	95,234	117,416	139,599	161,782	183,964	206,147	228,330	250,513	272,696
40 SITEWORK & SPECIAL CONDITIONS	767,958	767,958	3,703	36,128	67,972	99,816	131,660	163,504	195,348	227,192	259,036	290,880	322,724	354,568	386,412
50 SYSTEMS	264,163	264,163	0	28,651	50,373	72,095	93,817	115,539	137,261	158,983	180,705	202,427	224,149	245,871	267,593
60 ROW LAND EXISTING IMPROVEMENTS	120,452	120,452	50,367	44,526	33,666	22,806	11,946	1,086	0	0	0	0	0	0	
70 VEHICLES	341,287	341,287	0	14,839	4,946	29,678	148,309	143,124	0	0	0	0	0	0	
80 PROFESSIONAL SERVICES (applies to Cost 10-50)	747,870	747,870	78,512	121,334	83,487	109,572	65,072	63,303	61,290	54,333	52,401	33,683	4,627	2,040	
90 UNALLOCATED CONTINGENCY	163,620	163,620	6,372	16,435	28,869	34,371	28,325	20,342	10,786	6,068	4,627	2,040	0	0	
100 FINANCE CHARGES	244,434	244,434	0	0	0	0	0	0	0	0	0	0	0	0	
Total Project Cost (10 - 100)	4,462,530	4,462,530	174,985	451,265	642,091	949,409	625,720	699,327	242,454	212,895	189,936	94,484	0	0	

YEAR OF EXPENDITURE DOLLARS (X\$1000)	YOE Dollars	Year												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,677,847	20,569	161,261	290,477	453,058	597,351	774,339	951,031	1,127,614	1,304,206	1,480,798	1,657,390	1,833,982	2,010,574
20 STATIONS, STOPS, TERMINALS, INTERMODAL	389,150	0	1,541	30,530	55,915	81,301	106,686	132,071	157,456	182,841	208,226	233,611	259,000	284,385
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	139,489	8,691	31,915	57,301	82,686	108,071	133,456	158,841	184,226	209,611	235,000	260,385	285,770	311,155
40 SITEWORK & SPECIAL CONDITIONS	895,470	10,087	69,004	126,321	193,706	261,091	328,476	395,861	463,246	530,631	598,016	665,401	732,786	800,171
50 SYSTEMS	311,215	0	37,030	62,415	87,800	113,185	138,570	163,955	189,340	214,725	240,110	265,495	290,880	316,265
60 ROW LAND EXISTING IMPROVEMENTS	128,839	0	20,367	41,002	61,637	82,272	102,907	123,542	144,177	164,812	185,447	206,082	226,717	247,352
70 VEHICLES	398,925	0	15,757	5,413	33,468	179,428	171,781	0	0	0	0	0	0	
80 PROFESSIONAL SERVICES (applies to Cost 10-50)	833,539	241,134	120,993	107,960	131,720	106,939	84,135	78,454	70,205	59,229	48,253	37,277	26,301	
90 UNALLOCATED CONTINGENCY	184,150	6,388	17,463	28,538	39,613	50,688	61,763	72,838	83,913	94,988	106,063	117,138	128,213	
100 FINANCE CHARGES	240,121	0	0	0	0	0	0	0	0	0	0	0	0	
Total Project Cost (10 - 100)	5,377,931	460,268	484,408	700,340	1,116,667	988,817	746,646	646,190	283,680	233,280	193,450	94,726	0	

YEAR OF EXPENDITURE DOLLARS (X\$1000)	YOE Dollars	Year												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
20 STATIONS, STOPS, TERMINALS, INTERMODAL	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
40 SITEWORK & SPECIAL CONDITIONS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
50 SYSTEMS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
60 ROW LAND EXISTING IMPROVEMENTS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
70 VEHICLES	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
80 PROFESSIONAL SERVICES (applies to Cost 10-50)	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
90 UNALLOCATED CONTINGENCY	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
100 FINANCE CHARGES	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
Total Project Cost (10 - 100)	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112

YEAR OF EXPENDITURE DOLLARS (X\$1000)	YOE Dollars	Year												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
20 STATIONS, STOPS, TERMINALS, INTERMODAL	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
40 SITEWORK & SPECIAL CONDITIONS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
50 SYSTEMS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
60 ROW LAND EXISTING IMPROVEMENTS	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
70 VEHICLES	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
80 PROFESSIONAL SERVICES (applies to Cost 10-50)	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
90 UNALLOCATED CONTINGENCY	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
100 FINANCE CHARGES	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112
Total Project Cost (10 - 100)	1,038,664	1,038,664	1,078,871	1,124,430	1,170,000	1,215,568	1,261,136	1,306,704	1,352,272	1,397,840	1,443,408	1,488,976	1,534,544	1,580,112

INFLATION WORKSHEET

City and County of Honolulu

Honolulu Rail Transit Project - East Expansion Air Massing, Calfway via Airport

Rail Transit Engineering

BASE YEAR DOLLARS (\$'000)	Base Yr Dollars	Double Dollars	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
YEAR OF EXPENDITURE DOLLARS (\$'000)												
10 GULFWAY & TRACK ELEMENTS	1,677,317	36,659	159,267	225,477	453,058	507,557	277,430	135,031	12,664	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	386,157	1,439	20,552	33,301	34,619	32,013	0	0	0	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN. BLDGS	103,488	6,697	31,915	50,004	215,321	337,653	153,642	37,032	15,500	3,033	0	0
40 SITEMWORK & SPECIAL CONDITIONS	665,170	10,057	39,650	32,501	33,537	31,100	33,857	37,131	39,405	39,700	28,502	0
50 SYSTEMS	311,215	0	44,002	33,096	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	128,592	258,322	18,757	5,413	33,456	171,428	171,747	0	0	0	0	0
70 VEHICLES	358,322	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	893,535	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226
90 UNALLOCATED CONTINGENCY	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
100 FINANCE CHARGES	297,734	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	5,247,661	4,062,550	174,865	451,266	642,097	949,485	626,720	939,327	342,454	212,805	169,036	94,424

YEAR OF EXPENDITURE DOLLARS (\$'000)	Base Yr Dollars	Double Dollars	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
YEAR OF EXPENDITURE DOLLARS (\$'000)												
10 GULFWAY & TRACK ELEMENTS	1,677,317	36,659	159,267	225,477	453,058	507,557	277,430	135,031	12,664	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	386,157	1,439	20,552	33,301	34,619	32,013	0	0	0	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN. BLDGS	103,488	6,697	31,915	50,004	215,321	337,653	153,642	37,032	15,500	3,033	0	0
40 SITEMWORK & SPECIAL CONDITIONS	665,170	10,057	39,650	32,501	33,537	31,100	33,857	37,131	39,405	39,700	28,502	0
50 SYSTEMS	311,215	0	44,002	33,096	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	128,592	258,322	18,757	5,413	33,456	171,428	171,747	0	0	0	0	0
70 VEHICLES	358,322	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	893,535	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226
90 UNALLOCATED CONTINGENCY	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
100 FINANCE CHARGES	297,734	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	5,247,661	4,062,550	174,865	451,266	642,097	949,485	626,720	939,327	342,454	212,805	169,036	94,424

YEAR OF EXPENDITURE DOLLARS (\$'000)	Base Yr Dollars	Double Dollars	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
YEAR OF EXPENDITURE DOLLARS (\$'000)												
10 GULFWAY & TRACK ELEMENTS	1,677,317	36,659	159,267	225,477	453,058	507,557	277,430	135,031	12,664	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	386,157	1,439	20,552	33,301	34,619	32,013	0	0	0	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN. BLDGS	103,488	6,697	31,915	50,004	215,321	337,653	153,642	37,032	15,500	3,033	0	0
40 SITEMWORK & SPECIAL CONDITIONS	665,170	10,057	39,650	32,501	33,537	31,100	33,857	37,131	39,405	39,700	28,502	0
50 SYSTEMS	311,215	0	44,002	33,096	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	128,592	258,322	18,757	5,413	33,456	171,428	171,747	0	0	0	0	0
70 VEHICLES	358,322	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	893,535	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226
90 UNALLOCATED CONTINGENCY	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
100 FINANCE CHARGES	297,734	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	5,247,661	4,062,550	174,865	451,266	642,097	949,485	626,720	939,327	342,454	212,805	169,036	94,424

YEAR OF EXPENDITURE DOLLARS (\$'000)	Base Yr Dollars	Double Dollars	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
YEAR OF EXPENDITURE DOLLARS (\$'000)												
10 GULFWAY & TRACK ELEMENTS	1,677,317	36,659	159,267	225,477	453,058	507,557	277,430	135,031	12,664	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	386,157	1,439	20,552	33,301	34,619	32,013	0	0	0	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN. BLDGS	103,488	6,697	31,915	50,004	215,321	337,653	153,642	37,032	15,500	3,033	0	0
40 SITEMWORK & SPECIAL CONDITIONS	665,170	10,057	39,650	32,501	33,537	31,100	33,857	37,131	39,405	39,700	28,502	0
50 SYSTEMS	311,215	0	44,002	33,096	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	128,592	258,322	18,757	5,413	33,456	171,428	171,747	0	0	0	0	0
70 VEHICLES	358,322	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	893,535	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226
90 UNALLOCATED CONTINGENCY	184,184	20,133	152,908	107,287	120,190	108,950	90,135	54,439	78,434	79,405	35,226	0
100 FINANCE CHARGES	297,734	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	5,247,661	4,062,550	174,865	451,266	642,097	949,485	626,720	939,327	342,454	212,805	169,036	94,424

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INFLATION WORKSHEET

City and County of Honolulu

Honolulu Rail Transit Project - East Segment to Ala Moana Center via Airport
Engineering

BASE YEAR DOLLARS (\$5000)	Base Yr Dollars	Dollar- Corrected	YEAR OF EXPENDITURE DOLLARS (\$5000)												
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
10 GUIDEWAY & TRACK ELEMENTS	1,400,238	1,400,238	25,573	158,316	200,371	295,872	317,641	210,024	102,084	2,757	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	305,630	305,630	0	1,438	27,244	48,450	34,084	38,673	63,042	57,036	35,337	0	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	121,600	121,600	6,464	29,589	20,670	28,589	26,347	0	0	0	0	0	0	0	0
40 STEWARK & SPECIAL CONDITIONS	757,256	757,256	8,701	56,123	150,512	295,059	130,870	28,381	28,381	11,202	2,656	0	0	0	0
50 SYSTEMS	254,163	254,163	0	28,657	29,373	29,353	29,293	29,373	29,293	29,293	29,293	29,293	29,293	29,293	29,293
60 ROW LAND, EXISTING IMPROVEMENTS	126,152	126,152	50,207	44,523	33,506	0	0	0	0	0	0	0	0	0	0
70 VEHICLES	341,297	341,297	0	14,533	4,946	28,618	148,303	143,143	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cate. 10-50)	747,370	747,370	76,542	121,354	93,437	100,512	93,078	68,503	51,200	56,333	52,461	33,983	4,592	2,040	0
90 UNALLOCATED CONTINGENCY	150,820	150,820	0,072	16,433	43,359	34,071	29,454	20,532	10,766	8,008	6,008	4,592	4,592	4,592	4,592
100 FINANCE CHARGES	224,131	224,131	0	0	0	5,612	22,974	39,832	40,029	40,029	40,029	40,029	40,029	40,029	40,029
Total Project Cost (10 - 100)	4,462,530	4,462,530	174,385	451,286	642,687	849,405	625,720	690,327	649,424	712,693	169,936	92,465	92,465	92,465	92,465

YEAR OF EXPENDITURE DOLLARS (\$5000)	YOE Dollars	INDEXED CATE													
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020			
10 GUIDEWAY & TRACK ELEMENTS	1,827,417	26,500	150,361	235,477	458,045	507,951	277,423	135,031	12,644	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	393,162	0	54	30,600	56,515	41,368	49,103	42,441	77,561	49,930	0	0	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	138,199	6,654	31,815	33,304	34,910	32,113	0	0	0	0	0	0	0	0	0
40 STEWARK & SPECIAL CONDITIONS	895,470	10,087	48,623	115,833	337,993	153,042	50,039	39,041	15,520	3,985	0	0	0	0	0
50 SYSTEMS	311,215	0	30,697	32,601	33,037	33,703	33,937	37,131	38,408	39,700	39,700	39,700	39,700	39,700	39,700
60 ROW LAND, EXISTING IMPROVEMENTS	126,655	60,267	41,072	30,695	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES	341,297	0	15,757	5,472	33,463	171,125	171,125	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cate. 10-50)	938,589	90,132	132,032	107,230	120,783	109,555	84,458	78,137	79,079	69,226	69,226	69,226	69,226	69,226	69,226
90 UNALLOCATED CONTINGENCY	150,186	1,365	17,533	23,214	43,114	35,133	27,237	22,237	12,237	9,237	6,237	3,237	3,237	3,237	3,237
100 FINANCE CHARGES	227,304	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	5,247,167	468,293	464,037	730,224	1,119,227	709,577	648,133	648,133	648,133	648,133	228,326	228,326	228,326	228,326	228,326

INDEXED CATE	Index	INDEXED CATE													
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020			
10 GUIDEWAY & TRACK ELEMENTS	1.03854	1.03854	1.04276	1.04403	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854
20 STATIONS, STOPS, TERMINALS, INTERMODAL	1.03851	1.03851	1.04018	1.04143	1.03851	1.03851	1.03851	1.03851	1.03851	1.03851	1.03851	1.03851	1.03851	1.03851	1.03851
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	1.03855	1.03855	1.04080	1.04241	1.03855	1.03855	1.03855	1.03855	1.03855	1.03855	1.03855	1.03855	1.03855	1.03855	1.03855
40 STEWARK & SPECIAL CONDITIONS	1.03883	1.03883	1.04497	1.04697	1.03883	1.03883	1.03883	1.03883	1.03883	1.03883	1.03883	1.03883	1.03883	1.03883	1.03883
50 SYSTEMS	1.03431	1.03431	1.04331	1.04331	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431
60 ROW LAND, EXISTING IMPROVEMENTS	1.00000	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164	1.00164
70 VEHICLES	1.03431	1.03431	1.04331	1.04331	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431
80 PROFESSIONAL SERVICES (applies to Cate. 10-50)	1.00832	1.04934	1.03048	1.04324	1.04834	1.03048	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834
90 UNALLOCATED CONTINGENCY	1.00832	1.04934	1.03048	1.04324	1.04834	1.03048	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834	1.04834
100 FINANCE CHARGES	1.01500	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300	1.02300
Total Project Cost (10 - 100)	1.03687	1.04253	1.04373	1.04182	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854	1.03854

INDEXED CATE	Index	INDEXED CATE													
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020			
10 GUIDEWAY & TRACK ELEMENTS	1.03854	1.07657	1.12439	1.17421	1.23232	1.29043	1.31027	1.36538	1.42005	1.47308	1.47308	1.47308	1.47308	1.47308	1.47308
20 STATIONS, STOPS, TERMINALS, INTERMODAL	1.03851	1.07880	1.12153	1.16832	1.21357	1.26006	1.31057	1.35898	1.41538	1.46739	1.46739	1.46739	1.46739	1.46739	1.46739
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	1.03855	1.07859	1.12238	1.16832	1.21508	1.26132	1.31057	1.36108	1.41602	1.47061	1.47061	1.47061	1.47061	1.47061	1.47061
40 STEWARK & SPECIAL CONDITIONS	1.03932	1.08124	1.12868	1.18155	1.23936	1.29788	1.32877	1.38170	1.43918	1.49543	1.49543	1.49543	1.49543	1.49543	1.49543
50 SYSTEMS	1.03431	1.06880	1.10821	1.15357	1.20436	1.25956	1.29758	1.31706	1.35733	1.40023	1.40023	1.40023	1.40023	1.40023	1.40023
60 ROW LAND, EXISTING IMPROVEMENTS	1.00000	1.00164	1.00329	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429	1.00429
70 VEHICLES	1.03431	1.03431	1.04331	1.04331	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431	1.03431
80 PROFESSIONAL SERVICES (applies to Cate. 10-50)	1.04934	1.05587	1.12762	1.17262	1.23152	1.29152	1.31762	1.37062	1.43062	1.48762	1.48762	1.48762	1.48762	1.48762	1.48762
90 UNALLOCATED CONTINGENCY	1.04934	1.05587	1.12762	1.17262	1.23152	1.29152	1.31762	1.37062	1.43062	1.48762	1.48762	1.48762	1.48762	1.48762	1.48762
100 FINANCE CHARGES	1.01500	1.03530	1.12173	1.17837	1.23232	1.29232	1.31232	1.36232	1.42232	1.48232	1.48232	1.48232	1.48232	1.48232	1.48232
Total Project Cost (10 - 100)	1.03687	1.07471	1.12171	1.17837	1.23232	1.29232	1.31232	1.36232	1.42232	1.48232	1.48232	1.48232	1.48232	1.48232	1.48232

INFLATION WORKSHEET

City and County of Honolulu
Honolulu Rail Transit Project - East Kapolei to Ala Moana Center via Airport
Professional Engineering

BASE YEAR DOLLARS (X\$000)	Base Yr Dollars	Double-Track	Year											
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
10 GUIDEWAY & TRACK ELEMENTS	1,400,728	1,400,728	25,573	139,316	209,371	385,822	317,831	515,034	102,884	9,257	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL	305,630	305,630	0	1,429	29,241	48,456	34,524	26,977	63,032	57,095	33,937	0	0	0
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	141,800	141,800	6,404	28,689	29,670	28,589	26,977	0	0	0	0	0	0	0
40 SYSTEMS	157,235	157,235	0	0	0	0	0	0	0	0	0	0	0	0
50 VEHICLES	294,183	294,183	0	23,693	29,375	29,203	29,203	29,203	29,203	29,203	29,203	29,203	29,203	29,203
60 ROW, LAND, EXISTING IMPROVEMENTS	126,452	126,452	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES	341,297	341,297	0	14,533	1,945	29,672	149,390	143,434	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	747,810	747,810	0	121,324	68,457	100,572	85,078	68,502	61,280	54,383	52,451	33,853	0	0
90 UNALLOCATED CONTINGENCY	153,620	153,620	0	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	244,434	244,434	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	4,462,650	4,462,650	174,962	451,265	642,097	949,401	625,120	599,327	342,454	212,865	169,936	94,494	0	0

YEARS OF EXPENDITURE DOLLARS (X\$000)	VOE Dollars	Year												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,677,917	26,595	150,297	235,477	453,058	397,351	577,436	135,091	12,844	0	0	0	0	
20 STATIONS, STOPS, TERMINALS, INTERMODAL	389,152	0	1,541	30,550	58,815	41,328	48,105	62,447	77,557	45,836	0	0	0	
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	136,499	6,851	31,315	34,619	33,902	32,013	0	0	0	0	0	0	0	
40 SYSTEMS	606,470	10,007	59,684	216,321	337,955	163,042	59,989	39,041	15,680	3,949	0	0	0	
50 SYSTEMS	511,815	0	30,633	32,921	33,657	34,708	35,997	37,131	38,405	39,760	26,615	0	0	
60 ROW, LAND, EXISTING IMPROVEMENTS	126,052	0	0	0	0	0	0	0	0	0	0	0	0	
70 VEHICLES	338,825	0	15,757	5,415	33,465	172,432	171,161	0	0	0	0	0	0	
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	332,588	60,134	1,208,888	140,745	120,790	103,435	84,433	64,433	79,432	79,203	53,292	0	0	
90 UNALLOCATED CONTINGENCY	184,168	0	0	0	0	0	0	0	0	0	0	0	0	
100 FINANCE CHARGES	281,234	0	0	0	0	0	0	0	0	0	0	0	0	
Total Project Cost (10 - 100)	5,277,501	190,732	1,609,133	1,200,342	1,115,523	1,049,577	748,554	485,100	287,882	169,936	103,524	42,423	0	0

GUIDEWAY & TRACK ELEMENTS	VOE Dollars	Year												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,677,917	26,595	150,297	235,477	453,058	397,351	577,436	135,091	12,844	0	0	0	0	
20 STATIONS, STOPS, TERMINALS, INTERMODAL	389,152	0	1,541	30,550	58,815	41,328	48,105	62,447	77,557	45,836	0	0	0	
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	136,499	6,851	31,315	34,619	33,902	32,013	0	0	0	0	0	0	0	
40 SYSTEMS	606,470	10,007	59,684	216,321	337,955	163,042	59,989	39,041	15,680	3,949	0	0	0	
50 SYSTEMS	511,815	0	30,633	32,921	33,657	34,708	35,997	37,131	38,405	39,760	26,615	0	0	
60 ROW, LAND, EXISTING IMPROVEMENTS	126,052	0	0	0	0	0	0	0	0	0	0	0	0	
70 VEHICLES	338,825	0	15,757	5,415	33,465	172,432	171,161	0	0	0	0	0	0	
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	332,588	60,134	1,208,888	140,745	120,790	103,435	84,433	64,433	79,432	79,203	53,292	0	0	
90 UNALLOCATED CONTINGENCY	184,168	0	0	0	0	0	0	0	0	0	0	0	0	
100 FINANCE CHARGES	281,234	0	0	0	0	0	0	0	0	0	0	0	0	
Total Project Cost (10 - 100)	5,277,501	190,732	1,609,133	1,200,342	1,115,523	1,049,577	748,554	485,100	287,882	169,936	103,524	42,423	0	0

GUIDEWAY & TRACK ELEMENTS	VOE Dollars	Year												
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
10 GUIDEWAY & TRACK ELEMENTS	1,677,917	26,595	150,297	235,477	453,058	397,351	577,436	135,091	12,844	0	0	0	0	
20 STATIONS, STOPS, TERMINALS, INTERMODAL	389,152	0	1,541	30,550	58,815	41,328	48,105	62,447	77,557	45,836	0	0	0	
30 SUPPORT FACILITIES, YARDS, SHOPS, ADMIN BLDGS	136,499	6,851	31,315	34,619	33,902	32,013	0	0	0	0	0	0	0	
40 SYSTEMS	606,470	10,007	59,684	216,321	337,955	163,042	59,989	39,041	15,680	3,949	0	0	0	
50 SYSTEMS	511,815	0	30,633	32,921	33,657	34,708	35,997	37,131	38,405	39,760	26,615	0	0	
60 ROW, LAND, EXISTING IMPROVEMENTS	126,052	0	0	0	0	0	0	0	0	0	0	0	0	
70 VEHICLES	338,825	0	15,757	5,415	33,465	172,432	171,161	0	0	0	0	0	0	
80 PROFESSIONAL SERVICES (applies to Cat. 10-50)	332,588	60,134	1,208,888	140,745	120,790	103,435	84,433	64,433	79,432	79,203	53,292	0	0	
90 UNALLOCATED CONTINGENCY	184,168	0	0	0	0	0	0	0	0	0	0	0	0	
100 FINANCE CHARGES	281,234	0	0	0	0	0	0	0	0	0	0	0	0	
Total Project Cost (10 - 100)	5,277,501	190,732	1,609,133	1,200,342	1,115,523	1,049,577	748,554	485,100	287,882	169,936	103,524	42,423	0	0

Xerox WorkCentre 7328
Banner Sheet

Nancy.Sipes

Date & Time : 09/15/2010 06:27 AM

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File Name : Honolulu SCC Workbook 10-06.xls

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MAIN WORKSHEET - BUILD ALTERNATIVE

(PREP)

City and County of Honolulu

Today's Date: 04/09/18

Honolulu Rail Transit Project, East Kapolei to Ala Moana Center via Airport

Yr. of Base Year: FY 2019

Preliminary Engineering

Yr. of Revenue Ops: FY 2019

	Quantity	Base Year Dollars w/o Contingency (X'000)	Base Year Dollars Allocated Contingency (X'000)	Base Year Dollars TOTAI (X'000)	Base Year Dollars Unit Cost (X'000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X'000)
15 GIDDEWAY & TRACK ELEMENTS (w/alloc)	20.93	1,126,992	281,748	1,408,728	\$ 70,168	49%	32%	1,077,817
15.01 Guideway: At-grade exclusive right-of-way				0				0
15.02 Guideway: At-grade semi-exclusive (atown cross-trails)				0				0
15.03 Guideway: At-grade in mixed traffic				0				0
15.04 Guideway: At-grade structure	18.75	988,765	247,118	1,235,882	\$ 62,561			1,477,998
15.05 Guideway: Built-up fill				0				0
15.06 Guideway: Underground cut & cover				0				0
15.07 Guideway: Underground tunnel				0				0
15.08 Guideway: Retained cut or fill	0.34	5,827	1,362	8,509	\$ 20,099			8,228
15.09 Track: Direct fixation		723,329	30,882	754,182				183,809
15.10 Track: Embedded				0				0
15.11 Track: Ballasted				0				0
15.12 Track: Special trackbeds, turnouts		8,660	2,419	12,075				14,982
15.13 Track: Vibration and noise dampening				0				0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	21	241,504	81,126	305,830	\$ 14,564	11%	7%	339,152
20.01 At-grade station, stop, shelter, mat, terminal, platform				0				0
20.02 At-grade station, stop, shelter, mat, terminal, platform	21	186,269	46,567	252,836	\$ 11,087			295,164
20.03 Underground station, stop, shelter, mat, terminal, platform				0				0
20.04 Other stations, terminals, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators		54,236	14,559	72,795				82,088
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS		97,280	24,320	121,600	\$ 6,052	4%	3%	138,499
30.01 Administration Building: Office, sales, storage, revenue counting		16,685	4,166	20,831				23,726
30.02 Light Maintenance Facility				0				0
30.03 Heavy Maintenance Facility		80,615	20,154	100,769				114,722
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track				0				0
40 SITEWORK & SPECIAL CONDITIONS		575,817	191,820	757,259	\$ 37,688	27%	17%	895,470
40.01 Demolition, Clearing, Earthwork		25,639	8,970	34,609				40,916
40.02 Site Utilities, Utility Relocation		331,732	116,163	447,895				529,589
40.03 Haz. (incl. potential soil remediation), ground water treatment		18,138	1,546	19,684				18,188
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		9,835	3,442	13,277				15,701
40.05 Structures/joints including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping				0				0
40.07 Automobile, bus, van accessways including roads, parking lots		199,275	49,569	247,843				293,079
40.08 Temporary Facilities and other indirect costs during construction				0				0
50 SYSTEMS		203,330	50,825	254,153	\$ 12,849	9%	6%	311,215
50.01 Train control and signal		34,610	8,952	43,562				52,074
50.02 Traffic signals and crossing protection		24,725	6,056	30,781				37,079
50.03 Traction power supply, substations		41,990	10,497	52,487				64,269
50.04 Traction power distribution, safety and third rail		63,478	17,119	80,597				104,811
50.05 Communications		20,811	5,203	26,013				31,852
50.06 Fare collection system and equipment		4,361	1,000	5,361				6,670
50.07 General Control		8,856	2,214	11,070				13,554
Construction Subtotal (10-50)		2,247,714	699,683	2,847,377	\$ 141,705	100%	84%	3,412,153
60 ROW, LAND, EXISTING IMPROVEMENTS		65,634	42,817	128,452	\$ 6,393		3%	128,636
60.01 Purchase or lease of real estate		83,284	41,632	124,917				125,075
60.02 Relocation of existing households and businesses		2,370	1,185	3,555				3,560
70 VEHICLES (number)	76	275,232	66,036	341,297	\$ 4,491		8%	398,825
70.01 Light Rail				0				0
70.02 Heavy Rail	76	243,679	58,893	304,638	\$ 4,158			356,187
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles		4,998	1,109	6,106				7,238
70.07 Spare parts		24,560	5,999	30,559				35,599
80 PROFESSIONAL SERVICES (applies to Cols. 10-50)		289,972	107,390	747,370	\$ 37,184	26%	17%	933,889
80.01 Preliminary Engineering		17,752	1,736	22,488				24,011
80.02 Final Design		99,534	36,501	125,836				157,190
80.03 Project Management for Design and Construction		97,623	26,049	123,668				154,381
80.04 Construction Administration & Management		280,743	69,852	350,595				418,310
80.05 Professional Liability and other Non-Construction Insurance		33,111	8,834	41,945				52,397
80.06 Legal/Permits: Borrow Fees by other agencies, cities, etc.		33,111	8,834	41,945				52,397
80.07 Surveys, Testing, Investigation, Inspection		11,032	2,515	13,547				17,888
80.08 Start-up		27,269	20,612	47,872				122,259
Subtotal (10-80)		3,198,660	865,936	4,064,436	\$ 202,277		91%	4,870,201
90 UNALLOCATED CONTINGENCY				153,620			3%	184,186
Subtotal (10-90)				4,218,116	\$ 209,922		98%	5,057,387
100 FINANCE CHARGES				244,434			5%	280,284
Total Project Cost (10-100)				4,462,550	\$ 222,086		100%	5,347,671
Allocated Contingency as % of Base Yr. Dollars w/o Contingency				27.07%				
Unallocated Contingency as % of Base Yr. Dollars w/o Contingency				4.89%				
Total Contingency as % of Base Yr. Dollars w/o Contingency				31.69%				
Unallocated Contingency as % of Subtotal (10-80)				1.78%				
YOE Construction Cost per Mile (X'000)								\$169,312
YOE Total Project Cost per Mile (incl. Vehicles) (X'000)								\$248,283
YOE Total Project Cost per Mile (X'000)								\$256,137