

# **SPECIAL PROVISIONS**

**HONOLULU RAIL TRANSIT PROJECT**

**AIRPORT SEGMENT GUIDEWAY AND UTILITIES CONTRACT**

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These Special Provisions to the Agreement for Professional Services (“Special Provisions”), shall be incorporated into and be a part of that certain Agreement for Professional Services, by and between the HONOLULU AUTHORITY FOR RAPID TRANSPORTATION (“HART”) and AECOM TECHNICAL SERVICES, INC. (the “CONSULTANT”), dated December 22, 2011 (the “Agreement”). HART and the CONSULTANT are hereinafter collectively referred to as the “Parties” and either may be referred to individually as a “Party”, all as governed by the context in which such words are used. These Special Provisions and the General Terms and Conditions for Contracts for Professional Services for the City and County of Honolulu dated 8/2000 (“General Terms and Conditions”) shall apply to, and are incorporated by reference into the Agreement, except as modified by reference herein. All defined terms in the Agreement shall have the same meaning as in these Special Provisions.

## **I. PROJECT**

The Honolulu Rail Transit Project (“HRTP”) is identified in the Final Environmental Impact Statement. It is described as a twenty (20) mile grade-separated fixed guideway transit system between East Kapolei and Ala Moana. The CONSULTANT will provide architectural and engineering services necessary for the design and preparation of final construction plans, detailed specifications and other contract documents for the Airport Segment Guideway and Utilities Contract for the HRTP, hereinafter referred to as the “PROJECT”.

## **II. SERVICES**

The services that the CONSULTANT shall provide under the Agreement are set forth in the Scope of Work attached hereto and incorporated herein as Exhibit 1.

## **III. TIME**

Work under this Agreement shall be completed under multiple and overlapping Notices to Proceed (“NTPs”). Work authorized under NTP #1a, NTP #1b, NTP #2 and NTP #3 shall be completed within five hundred seven (507) calendar days from issuance of NTP #1a. The duration of performance for Work authorized under NTP #4 and NTP #5 shall be determined at the discretion of HART.

## **IV. LIQUIDATED DAMAGES**

Liquidated damages are not applicable to this Agreement.

## **V. INSURANCE REQUIREMENTS**

See Paragraph 4.3., Insurance, of the General Terms and Conditions as modified by Section VII (D) below.

## **VI. COMPENSATION AND INVOICING**

A. Subject to the General Terms and Conditions, the compensation of the CONSULTANT shall be the amount stated in the Agreement and upon completion and

acceptance of each stage, payment shall be made in accordance with Exhibits 2B and 2B-1, attached hereto and incorporated herein, inclusive of all taxes.

B. Final acceptance of the Work contracted for herein and payment therefore shall not excuse the CONSULTANT from any liability for defects in performance of the Work which may subsequently appear.

## VII. MODIFICATIONS TO THE GENERAL TERMS AND CONDITIONS FOR CONTRACTS FOR PROFESSIONAL SERVICES FOR THE CITY AND COUNTY OF HONOLULU (8/2000)

The General Terms and Conditions for Contracts for Professional Services for the City and County of Honolulu (8/2000) shall apply to, and are incorporated by reference into this Agreement, except as modified herein.

### A. DEFINITIONS

The following definitions are added to the General Terms and Conditions:

**“BASELINE DESIGN SCHEDULE”** means the time-scaled and cost-loaded critical path network, updated monthly in accordance with the Agreement and depicting the Price Items and subordinate activities and their respective prices (distributed over time), durations, sequences, and interrelationships that represent the CONSULTANT’s Work plans, Work Breakdown Structure (“WBS”) for designing and completing the PROJECT and the cost of all Work to be performed under the Agreement, distributed over the duration of the Agreement.

**“C.F.R.”** means the Code of Federal Regulations.

**“FEDERAL GOVERNMENT”** means the United States of America and any executive department or agency thereof.

**“FTA”** means the Federal Transit Administration, United States Department of Transportation. The Federal Transit Administration is the current designation for the former Urban Mass Transportation Administration. Any reference in any law, map, regulation, document, paper, or other record of the United States to the Urban Mass Transportation Administration or its acronym UMTA is deemed a reference to the Federal Transit Administration.

**“HART”** means the Honolulu Authority for Rapid Transportation. The acronym “HART” shall be substituted for the “City and County of Honolulu”, “CITY”, “Rapid Transit Division”, and “RTD” wherever those terms appear in the General Terms and Conditions, unless the context clearly indicated otherwise.

**“MILESTONE”** means a defined step toward the completion of Work in the Schedule of Milestones. The Schedule of Milestones, once achieved, shall serve as the basis of payments.

**“PMOC”** means the FTA’s Project Management Oversight Contractor.

**“PROJECT”** means Work performed as set forth in the Agreement, including furnishing all services, labor, materials, supplies, equipment and other incidentals

reasonably necessary for the successful completion of the Work contemplated under the Agreement.

**“PAY ITEM”** means a component of the Schedule of Milestones for which the CONSULTANT provides a Pay Item Value for all Work included in a schedule milestone. A Pay Item may be activities, deliverables or a series of interrelated items as identified in the Schedule of Milestones and corresponding with activities from the CONSULTANT’s Baseline Design Schedule.

**“PAY ITEM VALUE”** means that value allocated by the CONSULTANT to a Pay Item that represents the dollar value to be achieved or achieved upon the completion of a schedule milestone as indicated in the Schedule of Milestones and the CONSULTANT’s Baseline Design Schedule.

**“SCHEDULE OF MILESTONES”** means a table of schedule milestones, organized by NTP, which specifies Pay Items, Pay Item descriptions, Pay Item Values, planned or actual achievement dates and serves as a basis for monthly payment.

**“SCHEDULE OF MILESTONES PAY ITEM”** means a series of activities contained in a Pay Item that depicts the associated Work leading to the payment milestone and shall contain unique coding to facilitate progress reporting of the Schedule of Milestones.

**“STANDARD OR REQUIREMENT”** means any provision of any Federal, State or local law, including City law, ordinance, code, rule, regulation, guideline, directive, order, circular, agreement, practice, policy, notice, plan, statement, or other standard or requirement, and any amendment or revision thereto made in the future, including any mandatory provision, term, condition, clause, representation, certification, assurance or other statement required thereunder.

**“U.S.C.”** means the United States Code.

**“U.S. DOT”** means the United States Department of Transportation, including its operating administrations.

**“WORK”** in addition to the definition described in the Agreement for Professional Services, paragraph 1, means all of the design, engineering, administration, testing, inspection and other duties and services that the CONSULTANT shall provide under the Agreement, which are set forth in the Scope of Work attached hereto and incorporated herein as Exhibit 1. In certain cases, the term is also used to mean the products of the Work.

**“WORK BREAKDOWN STRUCTURE” (“WBS”)** means a hierarchal breakdown of the scope of Work into components. HART shall provide the WBS that reflects its breakdown of the scope and associated code structure at NTP #1a.

The following definitions in the General Terms and Conditions are modified as follows:

**“CONFORMANCE CHECKLIST”** is the formal checklist used by the Project team to verify design criteria and construction specification conformance for each

certifiable element in accordance with the HHCTCP Safety and Security Management Plan dated, June 1, 2011.

“**CONTRACT**” shall be replaced with the term “Agreement”.

“**CONSULTANT**” OR “**CONTRACTOR**” means any corporation, partnership, individual, sole proprietorship, joint stock company, joint venture, or other private legal entity engaged by HART to perform the Work under this Agreement. For the purposes of this Agreement, “Contractor” shall mean “CONSULTANT”.

“**OFFICER-IN-CHARGE**” means the HART Executive Director or designee.

#### **B. DESIGNATION OF PROJECT MANAGERS**

The Officer-in-Charge shall designate, in writing, a key representative to coordinate the Work under this Agreement, to coordinate work under other HART contracts with the Work under this Agreement, and to act as the liaison between HART and the CONSULTANT in order to assist in expediting the resolution of questions or controversies, the making of HART decisions, and the review and approval by HART of documents, progress reports, requests, and other matters as required.

The CONSULTANT shall, subject to written approval from HART, designate a key representative, who shall maintain close and frequent communications with HART’s key representative and be authorized to act on behalf of the CONSULTANT. Any change in the CONSULTANT’s key representative will be made by request, in writing, to be approved by HART. The CONSULTANT’s key representative shall be experienced and qualified in the type of work involved and shall be directly responsible for the prosecution of the Work under this Agreement.

The Parties to this Agreement will make all reasonable efforts to retain the same key representative in order to maintain continuity of effort and control.

#### **C. NO THIRD PARTY BENEFICIARY**

The Parties are entering into this Agreement for the sole benefit of the Parties in exclusion of any third Party, and no third Party beneficiary is intended or created by execution of this Agreement.

#### **D. INSURANCE**

Section 4.3.2, paragraph 5 of the General Terms and Conditions is hereby deleted in its entirety and replaced with the following:

“5. Be provided by insurers authorized to provide insurance in the State of Hawaii, and with a current A.M. Best’s rating of not less than A-, or otherwise as approved by HART;”

#### **E. CHANGE ORDERS**

Section 5.1.1 (c) of the General Terms and Conditions is hereby deleted in its

entirety and replaced with the following:

“(c) *Within thirty (30) days* after receipt of a written change order, unless the period is extended by the Officer-in-Charge in writing, the CONSULTANT shall respond with a claim for an adjustment. The requirement for a timely written response cannot be waived and shall be a condition precedent to the assertion of a claim.”

**F. DELAY**

Section 6.2 of the General Terms and Conditions is hereby deleted in its entirety and replaced with the following:

“**6.2 DELAY.** If any excusable delay occurs, it shall be dealt with in accordance with subsection 9.2.3, Excuse for nonperformance or delayed performance. No extension of time however, shall be granted unless the written application therefore stating in detail the cause or causes of delay is filed by the CONSULTANT with the Officer-in-Charge *within thirty (30) days* after the commencement of the delay. No such extension shall be deemed a waiver of the right of the Officer-in-Charge to require the completion of services under the contract within the time required herein as so extended by the specific terms of such extension or extensions, nor a waiver of right to terminate the contract for any other or additional delay not covered by the specific terms of such extension or extensions. The number of days of each extension of time shall be determined by the Chief Procurement Officer upon the recommendation of the Officer-in-Charge.”

**G. LIQUIDATED DAMAGES**

Section 6.6 of the General Terms and Conditions, entitled "LIQUIDATED DAMAGES", is hereby deleted in its entirety.

**H. SAFETY AND SECURITY CERTIFICATION**

A new Section 6.8 of the General Terms and Conditions, entitled "SAFETY AND SECURITY CERTIFICATION ", is hereby inserted.

“**6.8 SAFETY AND SECURITY CERTIFICATION.**

- (a) The purpose of the safety and security certification is to ensure that:
  - 1. The design, construction, fabrication, installation, testing, and commissioning of all safety- and security-certifiable elements (civil, structural, and systems) have been evaluated for conformance with the safety and security design criteria and

specifications requirements and to verify their readiness for operational use; and

2. The rail system is operationally safe and secure for customers, employees, emergency responders, and the general public.
- (b) The objective is to achieve an acceptable level of risk through a systematic approach to safety hazard and security vulnerability management, design criteria adherence, specification and construction compliance, and testing and commissioning verification.
- (c) The CONSULTANT shall implement and successfully complete safety and security certification for all certifiable elements contained in the Agreement. Safety and security certification shall be conducted in accordance with the latest version of the Federal Transit Administration (FTA) Handbook for Transit Safety and Security Certification as tailored to the CONSULTANT's scope of work. HART has developed a Project Safety and Security Certification Plan (SSCP) based on FTA guidelines to describe how these activities will be implemented for the H RTP. The CONSULTANT's activities include, but are not limited to, the following:
1. Participate on safety and security committees and working groups established by HART to perform safety and security certification activities as requested.
  2. Demonstrate within its schedule the integration and completion of safety and security certification activities, including the development and completion of Conformance Checklists.
  3. Develop and support the development of safety and security analyses for safety and security certifiable elements as needed.
  4. Support the resolution of identified safety hazards and security vulnerabilities identified through safety and security analyses.
  5. Submit completed and signed Conformance Checklists to HART for review and acceptance.
  6. Submit supporting verification documentation to demonstrate that the design has incorporated and complies with safety and security design criteria

and requirements provided in the technical specifications and contract documents.

7. Submit required documents using HART's document management system for safety and security certification.
  8. Identify on its organization chart the representative assigned to manage and facilitate the CONSULTANT's implementation of the safety and security certification process.
- (d) The safety and security certification process for each certifiable element is not complete until Conformance Checklists completed, signed, and submitted by the CONSULTANT have been reviewed and accepted by HART. Additional requirements for safety and security certification are detailed in the Project SSCP. The CONSULTANT shall refer to Engineering Data for a copy of the Project SSCP."

## **I. PAYMENT**

Section 8.2 of the General Terms and Conditions, entitled "PROGRESS PAYMENT", is hereby deleted in its entirety and replaced with the following:

### **"8.2 PAYMENT**

- (a) Payments to the CONSULTANT for Work satisfactorily performed will be made monthly:
  1. Scope of Payment. The CONSULTANT shall receive and accept compensation provided for in the Agreement as full payment for performing all Work under the Agreement in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the Work or the prosecution thereof.
  2. Payment Concept. Payment will be calculated using the Schedule of Milestones ("SM") Pay Item table.
  3. Payment does not imply acceptance of the Work. The granting of any payment by HART, or the receipt thereof by the CONSULTANT, shall in no way imply acceptance of the Work. Such Work, equipment, components or workmanship that do not conform to the requirements of this Agreement may be rejected by HART and in such case must be replaced by the CONSULTANT without delay.
- (b) Payment will be based on the SM.

Within ten (10) days upon receipt of NTP #1a, the CONSULTANT is required to breakdown the Work into milestones and submit the SM for approval and acceptance by HART. The SM is intended to provide linkage between the Baseline Design Schedule and the PROJECT Work Breakdown Structure (“WBS”) provided by HART. The SM is to be organized by NTP and itemized by Pay Items. The CONSULTANT is to be paid upon satisfactory completion of SM Pay Item(s).

1. Pay Item measurement and payment shall be based on lump sum values assigned to all SM Pay Items. Completion of Milestones is the basis for payment.
2. Request for Monthly Payment. The CONSULTANT shall submit monthly pay requests using Contract Management System procedures for HART to review. The request shall consist of the SM Pay Items for the current month and cumulative to date. An updated SM, Baseline Design Schedule, and a progress narrative addressing, at a minimum, areas of concern shall be included with each pay request.

- (c) HART’s obligation to make timely payment and the statutory interest that accrues to any late unpaid balance shall be according to HRS § 103-10.”

**J. RETAINAGE**

Section 8.5 of the General Terms and Conditions, entitled "RETAINAGE", is hereby deleted in its entirety.

**K. PROMPT PAYMENT TO SUBCONTRACTORS**

Section 8.6 of the General Terms and Conditions, entitled "PROMPT PAYMENT TO SUBCONTRACTORS," is hereby deleted in its entirety and replaced with the following:

**“8.6 PROMPT PAYMENT TO SUBCONTRACTORS**

- (a) Any money, other than retainage, paid to a contractor shall be dispersed to subcontractors within ten (10) days after receipt of the money in accordance with the terms of the subcontract; provided that the subcontractor has met all the terms and conditions of the subcontract and there are no bona fide disputes.
- (b) Upon final payment to the contractor, full payment to the subcontractor, including retainage, shall be made within ten (10) days after receipt of the money; provided that there are

no bona fide disputes over the subcontractor's performance under the subcontract. *See* HAR § 3-125-33.

- (c) A payment request made by a contractor to the Officer-in-Charge that includes a request for sums that were withheld or retained from a subcontractor and are due to the subcontractor may not be approved, unless the payment request includes:
  - 1. Substantiation of the amounts requested; and
  - 2. Certification by the contractor, to the best of the contractor's knowledge and belief; that:
    - i) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the Agreement;
    - ii) The subcontractor has made payments due to its subcontractors and suppliers from previous payments received under the Agreement and will make timely payments from the proceeds of the payment covered by the certification, in accordance with their subcontract agreements and the requirements of this section; and
    - iii) The payment request does not include any amounts that the contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of their subcontract.
- (d) Prompt Payment of Retainage to Subcontractors upon Satisfactory Completion of Subcontractor Work. Upon satisfactory completion of accepted work by a subcontractor, the contractor shall request sums that were withheld or retained from a subcontractor and are due to the subcontractor pursuant to subsection (c). The contractor shall pay all retainage owed to the subcontractor within ten (10) days after payment to the contractor.”

## **VIII. FEDERAL CLAUSES**

### **FEDERAL FUNDING, INCORPORATION OF FTA TERMS, AND CHANGES TO FEDERAL REQUIREMENTS**

This Agreement includes, in part, certain standard terms and conditions required by the FTA, whether or not expressly set forth in the Agreement provisions. All provisions required by the FTA, as set forth in FTA Circular 4220.1F, dated November 1, 2008 (including any changes), will be incorporated by reference. Anything to the contrary notwithstanding, all FTA mandated

terms and conditions will be deemed to control in the event of a conflict with other provisions contained in the Agreement. The CONSULTANT shall not perform any act, fail to perform any act, or refuse to comply with any HART requests which would cause HART to be in violation of FTA terms and conditions. This Agreement will be subject to any financial assistance agreement between HART and the FTA and all laws, regulations, guidelines, and provisions of the financial assistance agreement will apply to the Agreement and will be incorporated by reference as if fully set forth therein.

The CONSULTANT shall at all times comply with all applicable Federal Government laws and regulations, including without limitation FTA regulations, policies, procedures and directives, including those listed directly or by reference in Applicable Grant Agreements between HART and FTA, as they may be amended or promulgated from time to time during the term of the Agreement (collectively, "Federal Requirements"). These Federal Requirements may change and the changed Federal Requirements will apply to this Agreement as required unless the Federal Government determines otherwise. The CONSULTANT's failure to comply with the Federal Requirements shall constitute a material breach of the Agreement.

The Federal Requirements are contained in Exhibit 8, attached hereto and incorporated herein by reference.

#### **IX. ASSIGNMENT**

This Agreement is non-transferable and non-assignable in whole or in part, except by an instrument, in writing, signed by each of the Parties.

#### **X. HEADINGS; GENDER; NUMBER**

The titles of headings of Sections, Subsection and Paragraphs are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.

All words used in the singular shall extend to and include the plural. All words used in the plural shall extend to and include the singular. All words used in any gender shall extend to and include all genders.

#### **XI. REFERENCES TO THE CITY AND COUNTY OF HONOLULU**

The acronym "HART" shall be substituted for "City and County of Honolulu", "CITY", "Rapid Transit Division", and "RTD" wherever those terms appear in the Request for Qualifications and Contract Documents inclusive of all Addendums, unless the context clearly indicates otherwise.

**SPECIAL PROVISIONS  
EXHIBIT 1**

**HONOLULU RAIL TRANSIT PROJECT  
AIRPORT SEGMENT GUIDEWAY AND UTILITIES CONTRACT**

**SCOPE OF WORK**

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This Exhibit 1 to the Special Provisions to the Agreement for Professional Services ("Exhibit 1") shall be incorporated into and be a part of that certain Agreement for Professional Services, by and between the HONOLULU AUTHORITY FOR RAPID TRANSPORTATION ("HART") and AECOM TECHNICAL SERVICES, INC., (the "CONSULTANT"), dated December 22, 2011 (the "Agreement"). All defined terms in the Agreement and the Special Provisions shall have the same meaning in this Exhibit 1.

### **Project Purpose and Description**

The CONSULTANT will provide architectural and engineering services necessary for the design and preparation of final construction plans, detailed specifications and other contract documents for the Airport Segment Guideway and Utilities Contract (the "PROJECT") for the Honolulu Rail Transit Project ("HRTTP").

A description of the Scope of Work (SOW) to be performed under this Agreement and deliverables is set forth in this Exhibit 1.

This SOW and accompanying budget/fee estimate assumes that the Design Schedule and durations of the Notice to Proceed ("NTP") phases will not require revision due to the schedules of interfacing contracts such as the West O'ahu Farrington Highway ("WOFH") Guideway Design-Build Contract, the Maintenance and Storage Facility Design-Build Contract, and the Core Systems Design-Build-Operate-Maintain ("DBOM") Contract. If changes to the durations or sequencing of the design work due to interfaces with other contracts are required, HART will consider adjustment to the NTP phases and durations stated herein.

The Airport Segment of the HRTTP is a 5.2-mile, grade-separated fixed guideway transit system. The Airport Segment starts just past the Aloha Stadium Station along the south side of Kamehameha Highway, continues to Nimitz Highway and turns south along Aolele Street toward the Honolulu International Airport terminal. It then follows Aolele Street east to Ualena Street and Waiwai Loop east to reconnect to Nimitz Highway near Moanalua Stream and continues on to terminate past the Middle Street Transit Center Station.

Four (4) Stations are located along the route: Pearl Harbor Naval Base Station, Honolulu International Airport Station, Lagoon Drive Station, and the Middle Street Transit Center Station. The designs of these stations are part of the Airport Stations Group (ASG) and are not part of the SOW for this Contract.

The design of the Airport Segment will require the widening of portions of Kamehameha Highway and other streets to accommodate the guideway columns, provide bus stops, improve sidewalks and medians, relocate traffic signals, address environmental mitigation commitments, and other related improvements which are a part of this SOW. The SOW includes the installation of guideway lighting, a design that will accommodate miscellaneous electrical/mechanical wayside equipment, switch machines and the applicable sleeves and underground ductbanks/conduits to support the equipment. Design of barrier walls attached to the guideway, running rails and all related appurtenances are part of this SOW.

Numerous utilities along the proposed alignment require relocation to allow for the guideway construction. There are both public and private utilities including, but not limited to, power, sewer, water, and cable.

#### **Phased Design and Duration of Contract**

The work in this Contract will be phased to allow development of the design to occur in accordance with Federal Transit Administration (FTA) procedural requirements. The design phases will be initiated by a NTP issued by HART. A total of six (6) NTPs are anticipated:

#### **NTP #1a – (Expected duration Forty-two (42) calendar days) Workshop, Design Schedule, and Schedule of Milestones (“SM”)**

- Provide HART within twenty-two (22) calendar days of receipt of NTP #1a with a draft Baseline Design Schedule and a Schedule of Milestones (SM) that includes all work for which the CONSULTANT expects to be compensated. The SM is to be organized by NTP and will serve as the basis for payment. The CONSULTANT’s Baseline Design Schedule must be conformed to the SM. HART will review and provide comments to the CONSULTANT within ten (10) calendar days of receipt of the draft Baseline Design Schedule and SM. HART and the CONSULTANT shall reach agreement on the proposed SM within ten (10) calendar days from receipt of HART’s comments, at which time HART will approve the SM and issue NTP #1b. The SM format shall follow the sample SM provided to the CONSULTANT.
- A two (2)-day Design Workshop is to be included in this phase.
- The right of entry permitting request process for field investigations will also be initiated during this phase.

#### **NTP #1b – (Expected duration one hundred Forty-five (145) calendar days) Revisions to Preliminary Engineering (“PE”)**

- Commencing with NTP #1b, revise current PE design and drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable, and other HART preferences.
- Review site constraints and identify additional alignment changes/pier placement changes which improve the design consistent with the approved Environmental Documents; incorporate changes approved by HART.
- Update the Basis of Design to be consistent with current versions of relevant design codes/standards/regulations and verify compliance of PE design with this document.
- Develop column footprint to become the basis of design for Interim and Final Design Tasks.
- Duration for Airport Segment Guideway and Utilities design: one hundred fifteen (115) calendar days.
- HART Review: thirty (30) calendar days.

- Resolution of HART/Other Agency comments: Not to exceed thirty (30) calendar days, and may start concurrently with NTP #2. Agreed upon revisions will be addressed in NTP #2 deliverables.
- Conduct field investigations for ground surveys, utility potholing, and geotechnical.

**NTP #2 – (Expected duration two hundred (200) calendar days) Interim Design (“ID”)**

- Commence ID drawings and detailed working drawings and specifications and incorporate revisions resolved from NTP #1b HART/Agency review.
- Incorporate H RTP standard details provided by HART and develop Airport Segment-specific details as required; provide consistent material selection that considers pedestrian safety, durability, maintenance, sustainability, and aesthetics relating to the transit environment.
- Duration for Airport Segment Guideway and Utilities design: one hundred seventy (170) calendar days.
- HART Review: thirty (30) calendar days.
- Resolution of HART/Other Agency comments: not to exceed thirty (30) calendar days, and may start concurrently with NTP #3. Agreed upon revisions will be addressed in NTP #3 deliverables.

**NTP #3 – (Expected duration one hundred twenty (120) calendar days) Final Design (“FD”)**

- Commence FD and preparation of construction contract documents, incorporating revisions resolved from NTP #2 HART/Agency review.
- Provide detailed construction contract documents to permit accurate cost estimating and expedite construction activities.
- The NTP #3 duration assumes the following:
  - Sixty (60) calendar days for Airport Segment Guideway and Utilities design from NTP #3 for submittal of camera-ready final documents to HART.
  - Thirty (30) calendar days for HART review; and thirty (30) calendar days for the CONSULTANT to incorporate review comments and prepare final advertisement-ready (“ad-ready”) construction documents.

**NTP #4 – (Expected duration TBD) Design Support During Bidding**

- As requested, assist HART in the construction solicitation process.
- As requested, assist HART during the solicitation of the construction contract including provision of technical design support for questions or RFIs posed by potential bidders.
- Duration is based on HART’s advertisement and bidding schedule.

**NTP #5 – (Expected duration TBD) Design Support During Construction**

- As requested, assist HART in responding to RFIs, reviewing shop drawings, resolving design issues during construction including site visits (as necessary), and incorporation of as-constructed changes into as-built drawings.
- Duration is based on HART's approved construction schedule.

### Project Team

The CONSULTANT will be organized to provide a structure that will seamlessly integrate with HART. The Project Team is populated with personnel with direct relevant experience in transit system design, with a particular emphasis on the unique requirements of this PROJECT: segmental bridge design, local geotechnical and civil expertise, as well as community outreach and coordination and design system integration.

The CONSULTANT will establish a dedicated project office at its Honolulu Corporate office location at 1001 Bishop Street, in downtown Honolulu ("CONSULTANT project office"). This office is conveniently located across the street from the HART office and has the facilities to house all project coordination meetings with HART and other program staff. This CONSULTANT project office will be the work location for the following Key Personnel:

1. Project Director – Rudy Mina
2. Project Manager – Brian Dodson
3. Design Manager – Neil Harris
4. Civil Manager – Barry Muranaka
5. Design Interface Manager – James Statser
6. Structural Manager – John (Wally) Wallace Jordan

Also located at the CONSULTANT project office will be a majority of the project design staff. Other project design staff will be located at specific subconsultant offices located in Hawaii, while others will be located on the Mainland (estimated to be 30%). Work performed on the Mainland will be limited to specialty items, such as structural design, track design, constructability review and Intelligent Transportation Systems (ITS). As necessary, task designers will travel to or temporarily relocate to Hawaii to ensure coordination and communication.

All subconsultants' offices are located in Oahu, Hawaii, within close proximity of both the CONSULTANT project office, as well as HART's office.

The attached (Chart 1) is an updated organization chart identifying the location of all Project Team Leaders.

**Brian Dodson**, the Project Manager, will be the single point of contact for the CONSULTANT Project Team and will represent the CONSULTANT Project Team for all technical and contractual matters. Brian will be located full-time in Honolulu in the CONSULTANT project office.

**Neil Harris**, the Design Manger, will oversee the technical aspects of the project. Neil will be located in Honolulu in the CONSULTANT project office. However, his responsibilities will require extensive travel to coordinate with activities on the Island and on the Mainland.

**Courtney Gonzalez**, the Quality Assurance Manager, will be responsible for the development of the Quality Assurance Plan and conducting quality audits (the CONSULTANT and subconsultants). During the execution of the project, Courtney will be stationed out of the CONSULTANT's Oakland office, and will travel to Hawaii as necessary to ensure Quality Assurance. Supporting Courtney will be the CONSULTANT project office's QA Manager and Glenn Kunze (the CONSULTANT's Texas QA Manager), who will primarily be responsible for reviewing deliverables for QA compliance prior to submittal. Courtney will report directly to **Rudy Mina**, the Project Director.

**Barry Muranaka**, the Civil Task Manager, will oversee the various civil disciplines including track, utilities, MOT, roadway, drainage, survey, electrical, environmental, landscape and ITS. Barry is currently assigned to the CONSULTANT project office. The vast majority of this design effort will be performed out of the CONSULTANT project office, with support from Wilson Okamoto Corp.'s **Pete Pascua**, **Lance Oyama** and **Michael Fujita**. Their office is located within 3 miles of the CONSULTANT project office. Electrical design support will be performed by Ronald N.S. Ho & Associates, led by **Steven Sakai**. Their office is located within 3 miles of the CONSULTANT project office. Landscape design support will be performed by PBR Hawaii and led by **Stan Duncan**. Their office is located in the same building as the CONSULTANT project office. The ITS design function will be headed by **James Eden** from the CONSULTANT's Texas office.

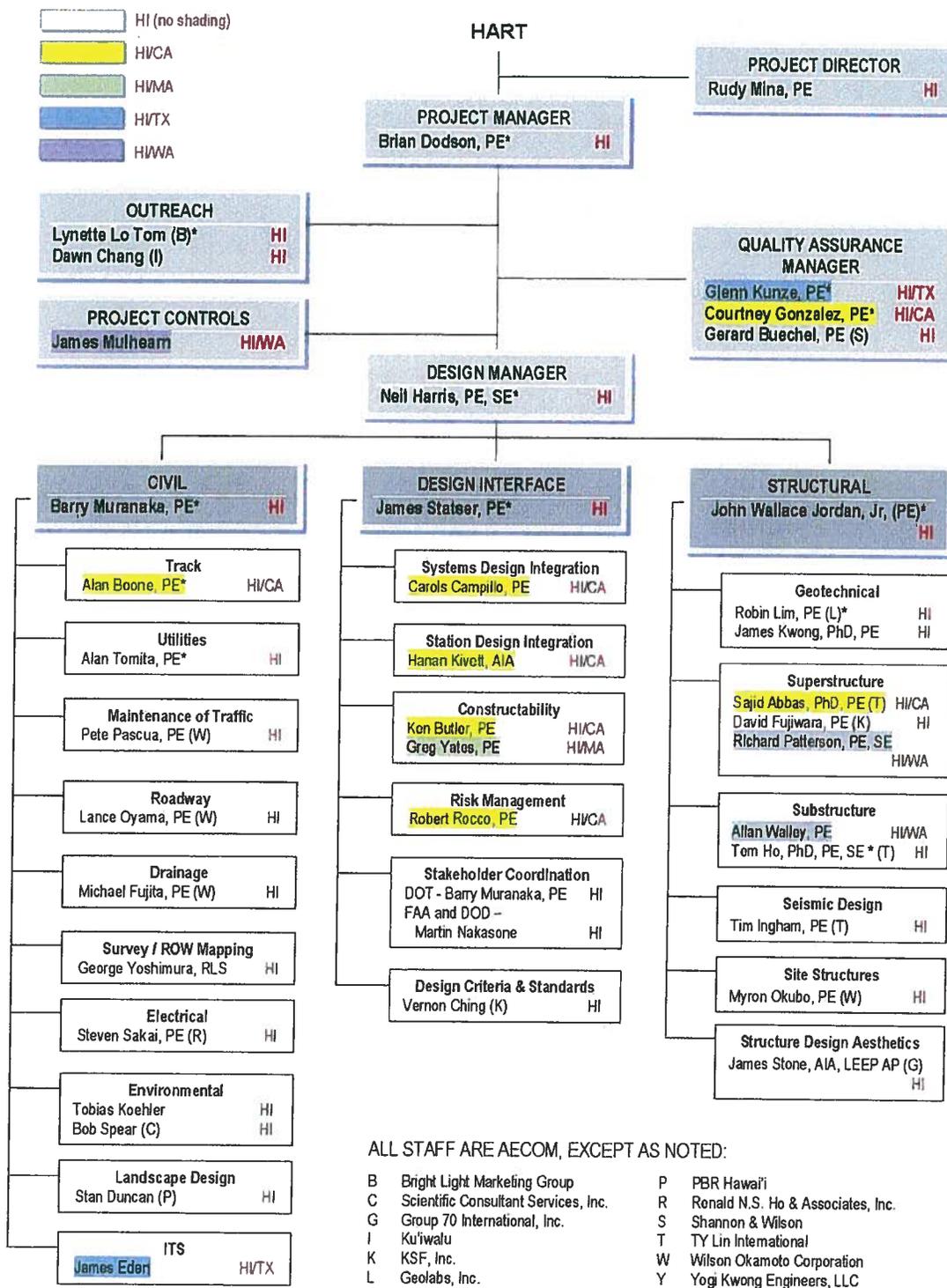
**James Statser**, the Design Interface Manager, will be responsible for the coordination of the various design teams and stakeholders. On-island presence is critical for this activity. James will be located full time in Honolulu in the CONSULTANT project office.

**John (Wally) Jordan**, the Structural Manager, will be responsible for the coordination of the structural design teams. Wally will be assigned to the CONSULTANT project office; however, as much of the structural design activity (about 60%) will be performed on the Mainland, it is anticipated that his time will be split between the Mainland and Hawaii. The structural production areas on the Mainland are located in California. The CONSULTANT project office will house a staff of structural engineers. These engineers will be assembled from the CONSULTANT and TY Lin International. This design team will be further supported by the on Island structural staff from KSF, Inc. led by **David Fujiwara**.

Outreach will be performed by Bright Light Marketing Group's **Lynette Lo Tom** and Ku'iwalu's **Dawn Chang**. Both of these firms are located in Honolulu across the street from the HART office and in the same building complex as the CONSULTANT project office. Both have a deep knowledge of local issues key to the success of the PROJECT.

In addition, the project controls staff and the CADD Manager will be located in the CONSULTANT project office.

Chart 1



Airport Segment Guideway and Utilities Contract

### **Scope of Work – Detailed Description by Task**

The activity description sheets on the following pages describe the work to be performed by the CONSULTANT Project Team under the proposed design assignment.

The Airport Segment Guideway and Utilities SOW includes the design and preparation of final construction plans, detailed specifications and quantity take-offs for the Airport Segment as described. One set of bid documents will be prepared that address construction of the Airport Segment Guideway and the Airport Segment Utility Relocations. The design work will be based upon the existing PE Design documents and HART's Standard Documents. All plans will be prepared in accordance with the Plans Standards and CADD procedures. All work will be performed under the supervision of professional engineers licensed by the State of Hawai'i Department of Commerce and Consumer Affairs.

The following documents (provided by HART on DVD) will be utilized in preparation of the design:

- PE Drawings
  - Airport Segment
  - Pearl Harbor Naval Base Station
  - Honolulu International Airport Station
  - Lagoon Drive Station
  - Middle Street Transit Center Station
- Rapid Transit Division (RTD) Standard Documents
  - Standard and Directive Drawings
  - Compendium of Design Criteria
  - Plans Standards and Project CADD Procedures
  - Standard Specifications
- Systemwide Sustainability Report
- Airport Segment Drainage Report
- Geotechnical Data Report and associated technical memorandum
- RTD Interface Control Manual
- RTD Quality Management Plan
- Contract Management System (CMS) Requirements
- Final Environmental Impact Statement
- Record of Decision with the attached Section 106 of the National Historic Preservation Act (hereinafter, Section 106) Programmatic Agreement (PA)

Airport Segment Guideway and Utilities Contract

- FAA ROD
- Utilities Agreements (examples from other projects provided)
- VE Report (Stations)
- Draft VE Report (Guideway)
- Structures Workshop Summary Report (January 7-10, 2008)
- Soil Resistivity Report

**Specific Tasks Performed by the CONSULTANT Include:**

The tasks performed by the CONSULTANT have been broken down into nineteen (19) different activities. A listing of the nineteen (19) activities is found below. These activities have been broken down further into specific task items, Work Breakdown Structure (WBS). A listing of the task WBS items is found in Appendix A. For each task item, a task description has been developed and can be found in Appendix B.

Specific activities include:

- 0100 Project Management and Administration
- 0200 Design Workshop
- 0300 Interface and Coordination with Others
- 0400 Topographic Survey
- 0500 Civil Design
- 0600 Structural Design
- 0700 Geotechnical Exploration and Design
- 0800 Architectural Design
- 0900 Utility Design
- 1000 Traffic Signal Design
- 1100 Electrical Design
- 1200 Intelligent Transportation Systems (ITS) Design
- 1300 Environmental
- 1400 Maintenance of Traffic (MOT) Plans
- 1500 Public Involvement

- 1600 Quantity Take-Offs
- 1700 Specifications
- 1800 Design Support during Bidding (NTP #4)
- 1900 Design Support during Construction (NTP #5)

Key to the successful on-time competition of this PROJECT, the CONSULTANT recommends the following activities:

- During NTP #1b, the CONSULTANT will conduct a Contract Packaging Workshop with HART. The purpose of this workshop will be to determine the best method of packaging the design in order to optimize both the delivery schedule and project construction cost.
- The preliminary design update is a critical step in the design development and is the opportunity to resolve outstanding design issues with the community and project stakeholders:
  - The CONSULTANT will review the approved Station Value Engineering recommendations.
  - The CONSULTANT will review the approved Guideway Value Engineering recommendations, previously completed Structures Workshop information and the track layout for opportunities to optimize and refine the PE design. Specific emphasis will be placed on the western entrance into the airport, where the Guideway crosses over H1, and the Middle Street Transit Center Station. Refined optimization studies for span lengths, superstructure cross section dimensions and substructure dimensions will be conducted. The goal is to obtain clarification on optimum span length and pier placement as early as possible so that the geotechnical and utility investigation locations can be finalized.

### **Description of Design Submittals**

#### **PE Submittals**

The PE Submittal consists of the updated PE Documents. These documents will be updated showing incorporation of HART-approved revisions from various Value Engineering reports, conclusions reached at the Design Workshop and results of optimization studies. Basis of Design reports will be updated to reflect decisions reached and any changes in codes/standards/regulations and/or direction from HART. The submittal will incorporate revised topographic background/utility information based on field surveys completed to date and include updated:

- Structural Drawings – Advanced to show final pier placement and configuration; typical sections; update of Structural Plans and Profiles; basic typical post-tensioning layout and construction sequence; pier configuration.
- Track Alignment Drawings – Updated based on studies conducted and verification that design meets the Basis of Design

- Drawings for all other disciplines included in the PE — Updated to be compatible with the changes to the structural and track alignment sheets and consistent with the updated Basis of Design. Accepted Value Engineering recommendations impacting the various disciplines will be incorporated as appropriate.
- Quantity Take-off – Updated to reflect the changes described above to the PE quantity take-off.
- Specification Index – Developed based on the anticipated Specification sections to be provided.

### **Interim Design Submittal**

Drawings produced for the Interim Design Submittal will be approximately 90% complete and will incorporate revisions identified in the HART/outside agency review of the PE Update and all available design/details from the ASG and Core Systems Contract designers. New topographic survey and utility information will be incorporated. Calculation packages will be indexed and completed for all disciplines, except that the structures Independent Design Check will not be finalized until the Final Design NTP. Baseline specification sections will be edited to address the requirements of the design. Cost estimate quantity take-offs will be updated.

### **Draft Final Design Submittal**

The Draft Final Design documents shall consist of complete design drawings, specifications and updated cost estimate quantity take-offs.

Drawings will be updated to resolve comments by HART and other outside agencies. Changes to the structure calculations/drawings resulting from the Independent Design Check will be implemented.

### **Final Design Submittal**

The CONSULTANT will resolve and incorporate all HART comments and submit the Final Design documents. The Final Design documents are advertisement-ready (“ad-ready”) construction documents. Submittal of the Final Design document represents conclusion of NTP #3.

### **Scope of Work (Assumptions and Exclusions)**

In developing the WBS, detailed element SOW statements and cost proposal, the CONSULTANT has made the following assumptions:

- System element design will proceed such that information necessary for completion of the CONSULTANT’s work will be available when needed.
- Station designs will proceed such that information necessary for completion of the CONSULTANT’s work will be available as follows:
  - Loads to be carried by Guideway structural members will be provided by the start of NTP #2
  - Aesthetic features to be incorporated into the Guideway structural members in the vicinity of each Station will be provided by the start of NTP #3.

- Support requirements for Station structural elements (details of members to be supported) will be available at the start of NTP #3.
- HART has not approved Guideway VE recommendations at this point; the CONSULTANT assumes that basic alignment and structure type will be in accordance with the PE documents.
- The CONSULTANT's work is envisioned to be an evolution of this design, rather than development of a completely new design. While PE elements incorporated into the design and basis of design will be verified, the CONSULTANT assumes that all disciplines of PE work have been coordinated and that the design is in basic conformance with the approved Environmental Document.
- The CONSULTANT will incorporate revisions to address HART/Agency comments into the following milestone's deliverables rather than resubmit interim deliverables.
- The CONSULTANT will develop details compatible with the developed contact rail system and reference those plans within the deliverables. Note that the CONSULTANT does not run the load analysis to determine the contact rail and cable sizes/type; this will be performed by others. Design for the layout and support/mounting will be the CONSULTANT's responsibility. Connections from the cables to the contact rail will be done by the Core Systems Contractor in coordination with the CONSULTANT. Sleeves for connections of contact rails will be designed by the CONSULTANT.
- Drainage
  - The PE indicates that additional runoff quantities due to the PROJECT are minimal with respect to the overall drainage basin. The CONSULTANT assumes that design of drainage improvements will be limited to elements within or adjacent to the PROJECT area, and that downstream improvements to the overall drainage system will not be required.
  - HART will obtain the NPDES permit for runoff associated with construction activities. The CONSULTANT will provide engineering data required for the permit.

The following items are not included in the CONSULTANT's SOW and are specifically excluded:

- Station Design and Station Contract Documents except for structural design of pier caps supporting both Guideway and Station platforms.
- Traction Power Sub Stations (TPSS)/(GBS) electrical design except for coordinating power drops, and providing duct bank, vault or piles to support TPSS/GBS, manholes/handholes, Grounding Grid and stub ups for bonding to pre-fabricated structure grounding bus bar, and concrete/conduit duct bank between Guideway column and TPSS/GBS site.
- Traction power load analysis (train power demands) will be performed by the Core Systems Contractor.
- Core Systems design and contract documents for communications and control, traction electrification, train control and signaling, passenger vehicle and fare vending systems are by others except conduit duct banks for Communication, Fiber Optics, SCADA, Train Control from the Guideway to a manhole at passenger Station from both ends of the Station and then to TCCR room.

- Systemwide Wayfinding and Transit-related Signage design and contract documents, including specifications and quantities, will be prepared by others, but will be included in the Airport Segment Guideway and Utilities Contract.
- Only system Sites #19, 25, 27 and 28 are included in the Scope of Work. Foundations for site #19 and site #27 are excluded from this Contract.

Additional roadway Design Exceptions for roadway improvements requiring HDOT/FHWA approval are not required.

**APPENDIX A**

**LISTING OF WBS NUMBERS**

HHCTCP WBS NUMBERS							
Task No.	Sub Task No.	Description	NTP				
			#1a	#1b	#2	#3	#4
<b>100</b>	<b>Project Management and Administration</b>						
	<b>0110</b>	<b>Project Management and Administration</b>					
	.0010	General Management	X	X	X	X	
	.0020	Design Management	X	X	X	X	
	.0030	Constructability Reviews		X	X		
	.0040	Quality Assurance and Management	X	X	X	X	
	<b>0120</b>	<b>Management Documents</b>					
	.0010	Development of Design Schedule (Primavera P6)		X			
	.0020	Development of Schedule of Milestones (SM)	X				
	.0030	Development of Project Work Plan		X			
	.0040	Development of Management Plan		X			
	.0050	Development of Basis of Design Report (Initial Development)		X			
	.0060	Development of Quality Assurance Plan		X			
	.0070	Development of Interface Management Plan		X			
	.0080	Development of Safety and Security Manual		X			
<b>200</b>	<b>Design Workshop</b>						
	<b>0200</b>	<b>Design Workshop</b>					
	.0010	Conduct Two-Day Stakeholder Workshops	X				
	.0020	Conduct Contract Packaging Workshop		X			
<b>300</b>	<b>Interface and Coordination with Others</b>						
	<b>0300</b>	<b>Interface and coordination with Others</b>					
	.0010	Design Teams and Stakeholders	X	X	X	X	
	.0020	Section 106		X	X	X	
<b>400</b>	<b>Survey</b>						
	<b>0400</b>	<b>Interface and coordination with Others</b>					
	.0010	Develop Right of Entry Permits	X	X	X	X	
	.0020	Topographic Survey		X	X	X	
	.0030	ROW Mapping and Plans		X	X	X	
	.0040	Construction Easements		X	X	X	

Task No.	Sub Task No.	Description	NTP					
			#1a	#1b	#2	#3	#4	#5
<b>500</b>	<b>Civil Design</b>							
	<b>0510</b>	<b>Track Design</b>						
	.0010	Track alignment design refinements (including revise current PE to incorporate the Guideway VE)		X				
	.0020	Development of Guideway Track Design		X	X	X		
	<b>0520</b>	<b>Roadway Design</b>						
	.0010	Site and Roadway – Construction Plans and Details (Geometric)		X	X	X		
	.0020	Site and Roadway Pavement Markings and Roadway Signs		X	X	X		
	<b>0530</b>	<b>Drainage Design</b>						
	.0010	Drainage Report	X	X	X	X		
	.0020	Development of Guideway and Surface Drainage Design	X	X	X	X		
	.0030	Moanalua Stream "No Rise" Mitigative Measure - Design		X	X	X		
	.0040	Erosion Control Plans - Design		X	X	X		
	<b>0540</b>	<b>Site Design</b>						
	.0010	TPSS		X	X	X		
	<b>0550</b>	<b>Landscape Design</b>						
	.0010	Landscape		X	X	X		
	<b>0560</b>	<b>Demolition Plans</b>						
	.0010	Demolition Plans		X	X	X		
	<b>0570</b>	<b>QC/QA</b>						
	.0010	QC Review - Discipline and Inter-Discipline Review of Documents		X	X	X		

<b>600</b>	<b>Structural Design</b>							
	<b>0610</b>	<b>Preliminary Studies</b>						
	.0010	Evaluate/Implement Guideway VE Recommendations	X	X				
	.0020	Span Optimization Study	X	X				
	.0030	Substructure Cross-Section Optimization Study	X	X				
	.0040	Finalize Project Footprint		X				
	<b>0620</b>	<b>Superstructure</b>						
	.0010	Longitudinal Design/Details		X	X	X		
	.0020	Superstructure Transverse Design Details		X	X	X		
	.0030	Pedestrian Span Supports		X	X	X		
	<b>0630</b>	<b>Substructure Design/Detailing</b>						
	.0010	Typical Column Bent		X	X	X		
	.0020	Straddle Bent		X	X	X		
	.0030	Cantilever Pier		X	X	X		
	.0040	CIP Long Span Pier		X	X			

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	.0050	Station Pier	X	X	X
	.0060	Analysis for Lateral and Gravity Loads	X	X	
<b>0640</b>		<b>Structural Seismic Analysis</b>			
	.0010	Structural Seismic Analysis	X	X	
<b>0650</b>		<b>Site Structures</b>			
	.0010	Site Structures	X	X	X
<b>0660</b>		<b>Structure Design Aesthetics</b>			
	.0010	Structure Design Aesthetics	X	X	X
<b>0670</b>		<b>QA/QC</b>			
	.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X
	.0020	Independent Design Check		X	X

Task No.	Sub Task No.	Description	NTP					
			#1a	#1b	#2	#3	#4	#5
<b>700</b>		<b>Geotechnical Exploration and Design</b>						
	<b>0710</b>	<b>Geotechnical Exploration and Design</b>						
	.0010	Development of Boring Plan	X	X				
	.0020	Obtain Necessary Permits		X				
	.0030	Geotechnical Investigation and Soils Testing		X	X			
	.0040	Development of Reports and Design Technical Memoranda		X	X	X		
	.0050	Quality/Peer Review	X	X	X			
	<b>0720</b>	<b>Load Test</b>						
	.0010	Load Test			X			

<b>800</b>		<b>Architectural Design</b>						
	<b>0810</b>	<b>Architectural Design</b>						
	.0010	Station, Pier, TSSS, and Pedestrian Pathway Aesthetics		X	X	X		
	<b>0820</b>	<b>Systemwide Sustainability Report</b>						
	.0010	Sustainability Report Complication and Preparation of Report		X	X	X		
	<b>0830</b>	<b>QA/QC</b>						
	.0010	QC Review - Discipline and Inter-Discipline Review of Documents		X	X	X		

Task No.	Sub Task No.	Description	NTP				
			#1a	#1b	#2	#3	#4

Airport Segment Guideway and Utilities Contract

<b>900</b>	<b>Utility Design</b>					
	<b>0910</b>	<b>As-Built Research &amp; Sub-Surface Investigation</b>				
		.0010	Development of Composite Utility Plans	X	X	
		.0020	Sub-surface investigation (GPR & Potholing)	X	X	
	<b>0920</b>	<b>Design and Plan Development for Utilities</b>				
		.0010	Design and Plan Development for Utilities (Non-electrical)	X	X	X
		.0020	Design and Plan Development for Electrical and Communications Utilities	X	X	X
	<b>0930</b>	<b>QA/QC</b>				
		.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X

<b>1000</b>	<b>Traffic Signal Design</b>					
	<b>1010</b>	<b>Traffic Signal System Design</b>				
		.0010	Development of Interim Traffic Signal Plans	X	X	X
		.0020	Development of Final Traffic Signal Plans	X	X	X
	<b>1020</b>	<b>QA/QC</b>				
			QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X

<b>1100</b>	<b>Electrical Design</b>					
	<b>1110</b>	<b>Guideway Alignment</b>				
		.0010	Illumination and Traffic Signal Design	X	X	X
		.0020	Pearl Harbor Naval Base Station Connections	X	X	X
		.0030	Honolulu International Airport Station Connections	X	X	X
		.0040	Lagoon Drive Station Connections	X	X	X
		.0050	Middle Street Station Connections	X	X	X
	<b>1120</b>	<b>System Site</b>				
		.0010	Site #25	X	X	X
		.0020	Site #27	X	X	X
		.0030	Site #28	X	X	X
		.0040	Site #19	X	X	X
	<b>1130</b>	<b>QA/QC</b>				
		.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X

Task No.	Sub Task No.	Description	NTP					
			#1a	#1b	#2	#3	#4	#5
<b>1200</b>		<b>Intelligent Transportation Systems (ITS) Design</b>						

<b>1210</b>	<b>Intelligent Transportation Systems (ITS) Design</b>				
.0010	Development of Intelligent Transportation System Design	X	X	X	
<b>1220</b>	<b>QA/QC</b>				
.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X	

<b>1300</b>	<b>Environmental</b>					
<b>1310</b>	<b>Hazardous Waste and Materials</b>					
.0010	Investigate and Provide Remedial Design for Hazardous Waste and Materials	X	X	X		
.0020	Prepare and Update Environmental Compliance Plan (ECP)	X	X	X	X	
.0030	Conduct Environmental Compliance Reviews During the Design Phase	X	X	X	X	
.0040	Prepare environmental planning documents and permits		X	X	X	
.0050	Prepare Other Permits and Clearances		X	X	X	
<b>1320</b>	<b>QA/QC</b>					
.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X		

<b>1400</b>	<b>Maintenance of Traffic (MOT) Plans</b>					
<b>1410</b>	<b>Development of MOT Plans</b>					
.0010	Station 988+60 to Station 1190+00	X	X	X		
.0020	Station 1190+00 to End Station (Phase 1)	X	X	X		
.0030	Station 1190+00 to End Station (Phase 2)	X	X	X		
<b>1420</b>	<b>TMP / MOT Reports</b>					
.0010	TMP Work Plan Schedule Coordination	X	X	X		
.0020	TMP Analysis and Coordination and Plan	X	X	X		
<b>1430</b>	<b>QA/QC</b>					
.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X		

<b>1500</b>	<b>Public Involvement</b>						
<b>1510</b>	<b>Public Involvement</b>						
.0010	Meetings and Development of Material in Support of Meetings	X					
.0020	Coordinate/Provide Public Involvement Support to HART		X	X	X		

Task No.	Sub Task No.	Description	NTP				
			#1a	#1b	#2	#3	#4
<b>1600</b>	<b>Quantity Take-off</b>						
<b>1610</b>	<b>Development of Quantities and Cost Estimate</b>						

Airport Segment Guideway and Utilities Contract

	.0010	Review and Development	X	X	X
<b>1620</b>		<b>QA/QC</b>			
	.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X

<b>1700</b>	<b>Specifications</b>				
	<b>1710</b>	<b>Specifications - Review and Development</b>			
	.0010	Review and Development	X	X	X
	<b>1720</b>	<b>QA/QC</b>			
	.0010	QC Review - Discipline and Inter-Discipline Review of Documents	X	X	X

<b>1800</b>	<b>Design Support During Bidding (NTP #4)</b>				
	<b>1810</b>	<b>Design Support During Bidding</b>			
	.0010	Guideway and Utility Package			X

<b>1900</b>	<b>Design Support During Construction (NTP #5)</b>				
	<b>1910</b>	<b>Management</b>			
	.0010	Management and Administration			X
	.0020	Shop Drawing Review			X
	.0030	As-Built Drawings			X
	.0040	Request For Information and Additional Support Activities			X

**APPENDIX B**

**WBS LISTING AND TASK DESCRIPTION**

**TASK 0100 - Project Management and Administration**

Provide management and administration resources to provide day-to-day oversight of the design of the Airport Segment Guideway and Utilities Contract including preparation of a Project Management Plan (PMP), hosting and recording coordination meetings, design cost monitoring and control, design schedule monitoring and control, subconsultant management and coordination, document control, monthly progress reporting and invoicing, and quality management and assurance. Regular interfacing and coordination with HART will be required.

The CONSULTANT's services will conform with the RTD Quality Management Plan (QMP) and the CONSULTANT shall prepare a specific Quality Assurance Plan (QAP) for the Airport Segment Guideway and Utilities Contract which meets the requirements of the FTA Quality Assurance/Quality Control (QA/QC) Guidelines. The QAP will be submitted to HART for acceptance prior to its use.

Prepare design schedule and provide updates to HART using Primavera P6. Non-CADD project correspondence and other documentation shall be controlled using the Primavera Contract Management System. HART's web-based file collaboration tool SharePoint shall be used for CADD drawings.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Project Management And Administration</b> <b>1.1 General Management</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS – 0110.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Project Management and Administration support during the design phase of the Project (NTP #1a, NTP #1b, NTP #2, and NTP #3). General Management for NTP #4 and NTP #5 are under a separate WBS number.</li> <li>2) Attendance and participation as required in meetings with HART for design and management.</li> <li>3) Management activities associated with coordination and communication with HART, including development of progress reports and invoices.</li> <li>4) Design progress and cost monitoring.</li> <li>5) CONSULTANT management activities, including internal design team coordination and management.</li> <li>6) Interface with HART via Contract Management System (CMS).</li> <li>7) Document Control.</li> <li>8) Management of subconsultants .</li> <li>9) Review and tracking of Design Schedule and Schedule of Milestones utilizing Primavera P6 Attendance and recording of various meetings with HART.</li> <li>10) Preparation for, attendance and production of minutes at Technical Work Group Meetings with HART (NTP #1b, NTP #2, NTP #3). Meetings are assumed to occur at least biweekly as described in the assumptions below. The meetings will focus on technical issues including: <ol style="list-style-type: none"> <li>a) Update HART regarding Design assumptions and approach.</li> <li>b) Seek HART’s input regarding design issues.</li> <li>c) Identify technical issues which are on the critical path.</li> </ol> </li> <li>11) Preparation for, attendance and production of minutes for monthly Project Review Meetings with HART (NTP #1b, NTP #2, NTP #3). The meetings will focus on management issues, including: <ol style="list-style-type: none"> <li>a) Provide updates regarding status of design and billing.</li> <li>b) Submittal of Status Set of Drawings.</li> <li>c) Identify quality issues.</li> <li>d) Identify items impacting the schedule.</li> </ol> </li> <li>12) Administration of the ProjectWise system for control of design documents and CADD files for the Airport Segment Guideway. Task includes: <ol style="list-style-type: none"> <li>a) Establishment and maintenance of directories and access restrictions.</li> <li>b) Establishment and maintenance of ProjectWise users.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Management and administration activities will vary based on NTP. Full management activities will not start until NTP #1b.</li> </ol>		

- 2) No deliverable or milestones are associated with General Management activities; rather the effort is distributed over a duration of time.
- 3) Design Team Review Meetings are anticipated to occur at least biweekly.
- 4) Meeting agendas and meeting minutes will be prepared by the CONSULTANT.
- 5) Agendas to be submitted two (2) days before meeting and minutes distributed through CMS two (2) days after the meeting.
- 6) NTP #1a – Schedule of Milestones – No HART Team Meetings.
- 7) NTP #1b – Preliminary Design:
  - a) Weekly design team review meetings.
  - b) Duration 115 days.
- 8) NTP #2 – Interim Design:
  - a) Biweekly design team review meetings.
  - b) Duration 170 days.
- 9) NTP #3 – Final Design:
  - a) Biweekly design team review meetings.
  - b) Duration 60 days.
- 10) For Project Controls:
  - a) The Design Schedule and Schedule of Milestones will be developed under a separate task item.
  - b) Tracking will be based on the Project Work Plan.
  - c) Monthly reports will be issued to HART.
  - d) Monthly Deliverable (Status Set of Drawings) will be utilized for tracking purposes.
  - e) Reports will be issued starting with NTP #1b.

**C) Inputs:**

- 1) Management activities are based off the Project Work Plan (Plan is developed under separate task item).
- 2) Project Controls activities are based off the Project Work Plan (Plan is developed under separate task item).

**D) Deliverables:**

	NTP #
1) Meeting Minutes / Management Reporting	1a
2) Meeting Minutes / Management Reporting	1b
3) Meeting Minutes / Management Reporting	2
4) Meeting Minutes / Management Reporting	3

<b>Activity:</b>	<b>Activity Responsibility:</b>	<b>Issue Date:</b>
Project Management And Administration	AECOM	09/20/2011
1.2 Design Management	<b>Task No. / Sub Task No.</b>	<b>Revision No:</b>
	WBS – 0110.0020	Conformed

**A) Activity Description:**

This task is associated with Design Management, CADD Management and ProjectWise Administration during the design phase of the project (NTP #1a, NTP #1b, NTP #2, and NTP #3). Design Management for NTP #4 and NTP #5 are under a separate WBS number.

## 1) Design Manager:

- a) Design Manager will provide overall technical management of the Project.
- b) Design Manager will coordinate/communicate between design disciplines and monitor progress of the technical work.
- c) Design Manager will Interface with HART regarding technical issues.

## 2) Discipline Managers:

- a) Discipline Managers will manage specific discipline designs, including:
  - i). Civil Design Manager
  - ii). Design Interface Manager
  - iii). Structure Design Manager
  - iv). Other discipline leads (efforts are included within each task)
- b) Each discipline lead will be responsible to ensure their discipline submittals undergo the proper QA reviews.

## 3) CADD Management:

- a) CADD Management will provide overall management of CONSULTANT and subconsultant plans preparation and compliance with CADD Manual and standards.
- b) Interface with HART regarding CADD standards.

## 4) ProjectWise Administration:

- a) Administration of the ProjectWise system for control of design documents and CADD files for the Airport Segment Guideway.
- b) Establishment and maintenance of directories and access restrictions.
- c) Establishment and maintenance of ProjectWise users.

**B) Assumptions:**

- 1) No deliverable or milestones are associated with Design Management; rather the effort is distributed over a duration of time.

**C) Inputs:**

- 1) Basis of Design Report.
- 2) Preliminary Engineering Design.
- 3) Quality Assurance Plan.
- 4) Honolulu High-Capacity Transit Corridor Project – CADD Procedures dated October 16<sup>th</sup>, 2009 and future updates.
- 5) Honolulu High-Capacity Transit Corridor Project – Plans Standards; dated October 16<sup>th</sup>, 2009 and future updates.

**D) Deliverables:**

**NTP #**

- 1) N/A

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration 1.3 Constructability Reviews	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 0110.0030	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> Activity includes the coordination of Constructability Review for submittals for major submittals. Review will focus on, but not limited to: <ol style="list-style-type: none"> <li>1) Structural constructability and staging review.</li> <li>2) Civil, traffic, systems, geotechnical and other disciplines.</li> <li>3) Constructability Reviews will be performed during the Preliminary Engineering and Interim Design phases and documented as part of the Quality Control Reviews.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) One constructability review will be performed during Preliminary Engineering; two reviews are anticipated during Interim Design, though additional partial reviews may be performed after substantial development of specific design concepts. These reviews will take place earlier than the submittal QC reviews to provide adequate time for implementation of design considerations.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Basis of Design Report.</li> <li>2) Preliminary Engineering Drawings.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Constructability Review – Preliminary Engineering</li> <li>2) Constructability Review – Interim Design</li> </ol>		<b>NTP #</b> 1b 2

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration 1.4 Quality Assurance and Management	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0110.0040	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance and Management support during the design phase of the Project (NTP #1a, NTP #1b, NTP #2, and NTP #3). Quality Assurance and Management for NTP #4 and NTP #5 are under a separate WBS number.</li> <li>2) This task item is associated with the enforcement of the Quality Assurance Plan.</li> <li>3) All submittals must undergo a Quality Control procedure or review. This review will be documented as described in the Quality Assurance Plan. As part of the Plan, all submittals will be reviewed by Quality Assurance Personnel to ensure the proper Quality Control procedures have been followed.</li> <li>4) Task includes Management (scheduling and assignment) of the Quality Control Personnel.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) All submittals will be reviewed by Quality Assurance Personnel.</li> <li>2) Quality Assurance Personnel will be independent of the design process.</li> <li>3) No deliverable or milestones are associated with Quality Assurance and Management; rather the effort is distributed over a duration of time.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance – Schedule of Milestones</li> <li>2) Quality Assurance – Preliminary Engineering</li> <li>3) Quality Assurance – Interim Design</li> <li>4) Quality Assurance – Final Design</li> </ol>		<b>NTP #</b> 1a 1b 2 3

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Project Management And Administration Management Documents 1.5 Development of Design Schedule (Primavera P6)	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0120.0010	<b>Revision No:</b> Conformed

**A) Activity Description:**

- 1) Development of a Primavera P6 schedule for the design activities and interface of the Airport Segment Guideway.

**B) Assumptions:**

- 1) The schedule will be broken down based on the Task activities developed in the Scope of Work.
- 2) Four basic Notices to Proceed will be issued by HART:
  - a) NTP #1a – Schedule of Milestones (22 calendar days).
  - b) NTP #1b – Preliminary Engineering (115 calendar days).
  - c) NTP #2 – Interim Design (170 calendar days).
  - d) NTP #3 – Final Design (60 calendar days).
- 3) The schedule will include NTP #4 (120 calendar days for each bid package).
- 4) The schedule will not include NTP #5.
- 5) The Draft Design Schedule will be issued with the start of NTP #1b.

**C) Inputs:**

- 1) Schedule found in the Honolulu High-Capacity Transit Corridor Project Airport Segment Guideway and Utilities Professional Service Contract Request for Qualifications.
- 2) WBS Codes and activities found in the Scope of Work.

<b>D) Deliverables:</b> 1) Draft Design Schedule 2) Final Design Schedule	<b>NTP #</b> 1b 1b
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ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration Management Documents 1.6 Development of Schedule of Milestones (SM)	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0120.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) Development of the Schedule of Milestones will be based off the design schedule.		
<b>B) Assumptions:</b> 1) The schedule will be broken down based on the Task activities developed in the Scope of Work. 2) Four basic Notices to Proceed will be issued by HART: a) NTP #1a – Schedule of Milestones (22 calendar days). b) NTP #1b – Preliminary Engineering (115 calendar days). c) NTP #2 – Interim Design (170 calendar days). d) NTP #3 – Final Design (60 calendar days). 3) The schedule will not include NTP #4 or NTP #5. 4) The Schedule will be issued during NTP #1a.		
<b>C) Inputs:</b> 1) Schedule found in the Honolulu High-Capacity Transit Corridor Project Airport Segment Guideway and Utilities Professional Service Contract Request for Qualifications.		
<b>D) Deliverables:</b> 1) Draft Design Schedule of Milestones 2) Final Design Schedule of Milestones		<b>NTP #</b> 1a 1a

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration Management Documents 1.7 Development of Project Work Plan	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0120.0030	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Development of a Project Work Plan.</li> <li>2) Plan will:               <ol style="list-style-type: none"> <li>a) Provide HART and project basic information.</li> <li>b) Define project organization and contact.</li> <li>c) Define communication and meeting.</li> <li>d) Overview of project goals.</li> <li>e) Define HART goals and objects.</li> <li>f) Outline scope of work.</li> <li>g) List project deliverables.</li> <li>h) List key milestones.</li> <li>i) Project Schedule (developed under separate task item).</li> <li>j) Define project budget and cost schedule.</li> <li>k) Define file index and filing procedures.</li> <li>l) Contain the Quality Assurance Plan (the QAP will be developed under a separate task item) .</li> <li>m) Contain the Project Basis of Design Report (developed under a separate task item).</li> <li>n) Project Safety and Health Plan (developed under a separate task item).</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Format will follow the CONSULTANT's typical Project Work Plan.</li> <li>2) The Draft Project Work Plan will be issued with the start of NTP #1b.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Draft Project Work Plan</li> <li>2) Final Project Work Plan</li> </ol>		<b>NTP #</b> 1b 1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration Management Documents 1.8 Development of Management Plan	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0120.0040	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) Development of a Management Plan. 2) Plan will include: a) Project Management Overview. b) Management organization, approach and responsibilities. c) Contracting approach. d) Basis of Design. e) Design Management. f) Financial Management. g) Cost and Schedule Control. h) Change Management. i) Document Management System. j) Management forms and procedures. k) Establishment of lines of communication.		
<b>B) Assumptions:</b> 1) The Draft Management Plan will be issued with the start of NTP #1b.		
<b>C) Inputs:</b> 1) N/A		
<b>D) Deliverables:</b> 1) Draft Management Plan 2) Final Management Plan		<b>NTP #</b> 1b 1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration Management Document 1.9 Development of Basis of Design Report (Initial Development)	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0120.0050	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Development of Basis of Design Report.</li> <li>2) The updated Basis of Design Report is the base document for which the Preliminary, Interim and Final design will be developed.</li> <li>3) As the design is developed, it may be necessary to update the Basis of Design Report. If this is the case, this effort will be performed under a different task and will not be done without the consent of HART.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Development of Initial Basis of Design Report. This document will be based on the Honolulu High-Capacity Transit Corridor Project, Compendium of Design Criteria, dated February 22<sup>nd</sup> 2010, documents provided by HART and input received during the Design Workshop.</li> <li>2) The Draft Basis of Design Report will be issued with the start of NTP #1b.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Based off the Honolulu High-Capacity Transit Corridor Project, Compendium of Design Criteria, dated February 22<sup>nd</sup> 2010.</li> <li>2) Architectural Outline Specifications.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Draft Basis of Design Report</li> <li>2) Final Basis of Design Report</li> </ol>		<b>NTP #</b> 1b 1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Project Management And Administration</b> <b>Management Document</b> <b>1.10 Development of Quality Assurance Plan</b>	<b>Activity Responsibility:</b> <p style="text-align: right;">AECOM</p>	<b>Issue Date:</b> <p style="text-align: center;">09/20/2011</p>
	<b>Task No. / Sub Task No.</b> <p style="text-align: center;">WBS – 0120.0060</p>	<b>Revision No:</b> <p style="text-align: center;">Conformed</p>

**A) Activity Description:**

- 1) Development of a project Quality Assurance Plan.
- 2) The Quality Assurance Plan will be utilized throughout all phases of the project.
- 3) The Quality Assurance Plan will outline the procedures for both QA and QC.
- 4) The Quality Assurance Plan establishes the applicable top-level quality control and quality assurance program requirements, identifies or references detailed implementing procedures, practices, and plans for the project activities to be performed by the CONSULTANT.
- 5) The quality system is based on the four fundamental principles adhered to by the Project:
  - a) The achievement of quality is of the highest priority where each designer and supervisor is accountable for the quality of the work assigned to them. This applies to all persons performing work on this Project.
  - b) The quality organization maintains a strong overview of the work in order to give additional assurance that specified requirements are met. This is done by performing reviews and approvals of documents; by conducting quality inspections, surveillances and audits.
  - c) The degree of the application of the established quality criteria is dependent on the importance of the system or structure to the overall project, i.e., criticality, of the structure, system, or component to the safety and mission of the project.
  - d) The review and approval of quality documents is at a management level commensurate with the importance of the item under consideration.

**B) Assumptions:**

- 1) A project specific Quality Assurance Plan will be developed.
- 2) All submittals will undergo the following reviews:
  - a) Discipline review – Performed by a qualified engineer not associated with the development of the design.
  - b) Inter-Discipline review – All submittals will be reviewed by each discipline to ensure inter-ordination of design.
  - c) All Final Guideway structural submittals will have an independent design check. This check will be performed by qualified engineers not associated with the development of the specific design element.
- 3) The Quality Assurance Plan will outline specific form required for the review process.
- 4) The Quality Assurance Plan will outline the QA review procedure to ensure all submittals have been properly reviewed. The task of QA review will be performed under a separate task item.
- 5) The Quality Assurance Plan will be utilized by the CONSULTANT and all subconsultants.

6) The Draft Quality Assurance Plan will be issued with the start of NTP #1b.	
<b>C) Inputs:</b> 1) AECOM QA/QC Manual. 2) Based off the Honolulu High-Capacity Transit Corridor Project Quality Management Plan, dated January 11, 2011.	
<b>D) Deliverables:</b> 1) Draft Quality Assurance Plan 2) Final Quality Assurance Plan	<b>NTP #</b> 1b 1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Project Management And Administration Management Document 1.11 Development of Interface Management Plan	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0120.0070	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Development of an Interface Management Plan and Interface Control Manual.</li> <li>2) The purpose of this document is to establish protocols for interface and design coordination with other Contracts or stakeholders.</li> <li>3) The Interface Management Plan will:               <ol style="list-style-type: none"> <li>a) Define interface organization.</li> <li>b) Identify points of contact for key stakeholders, other contract teams, HART and CONSULTANT discipline leads.</li> <li>c) Define communication and meetings.</li> <li>d) Define matrix of stakeholder needs.</li> <li>e) Define procedures for oversight of environmental compliance.</li> <li>f) Establish tracking and verification of implementation of stakeholder needs in design activities.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) It is anticipated this will be a “living document” with frequent updates throughout the project.</li> <li>2) Records of previous/on-going communications with stakeholders will be provided by HART.</li> <li>3) The Draft Interface Management Plan will be issued with the start of NTP #1b.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Summary of prior stakeholder communications from HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Draft Interface Management Plan</li> <li>2) Final Interface Management Plan</li> </ol>		<b>NTP #</b> 1b 1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Project Management And Administration</b> <b>Management Documents</b> <b>1.12 Development of Safety and Security</b> <b>Manual</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS -- 0120.0080</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Development of a project Safety and Security Manual in order to address safety at both the office and field.</li> <li>2) The Safety and Security Manual will be developed such that it complies with HART safety and health programs and with applicable local, state and federal occupational safety and health regulations.</li> <li>3) The Safety and Security Manual shall include, but not be limited to the following:               <ol style="list-style-type: none"> <li>a) Title, signature and phone number of the Safety and Security Manual Preparer, Company Officer and Safety and Security Representative.</li> <li>b) Background information: Designer name, contact name and number, description of work to be performed.</li> <li>c) Responsibilities and lines of authority.</li> <li>d) Safety policy statement.</li> <li>e) Training.</li> <li>f) Emergency Planning.</li> <li>g) First aid and CPR training.</li> <li>h) Personal Protective Equipment.</li> <li>i) Hazardous substance.</li> <li>j) Description of how traffic control will be accomplished.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The Draft Safety and Security Manual will be issued with the start of NTP #1b.</li> <li>2) The CONSULTANT is responsible for employee and subconsultant compliance with applicable regulations and Security Plan (SSSP).</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) AECOM Safety Manual.</li> <li>2) Honolulu High-Capacity Transit Corridor Construction Safety and Security Plan (CSSP), dated 6/1/2011.</li> <li>3) Various State and Federal occupational safety and health regulations.</li> <li>4) Hawaii Administrative Rules, Title 12, Department of Labor and Industrial Relations Subtitle 8, Division of Occupational Safety and Health Part 3.</li> </ol>		
<b>D) Deliverables:</b>		<b>NTP #</b>

1) Draft Safety and Security Manual	1b
2) Final Safety and Security Manual	1b

### **TASK 0200 - Design Workshop**

Commence design with one, two (2)-day workshop to review segment concepts previously completed and, if necessary, update PE Design based on HART input. Participants shall include the CONSULTANT's Project Manager, Design Manager, Structural Manager, Environmental Compliance Manager, HART Engineering Staff, United States Navy, State of Hawai'i Department of Transportation (HDOT) Highways and Airports Divisions, Hawaiian Electric Company (HECO) and other key utility owners, and the Federal Aviation Administration (FAA). Representatives of adjacent section designers will also be invited to participate.

#### **Key Activities:**

During NTP #1b, the CONSULTANT proposes to conduct a Contract Packaging Workshop with HART. The purpose of this workshop would be to determine the best method of packaging the design in order to optimize both the delivery schedule and project construction cost.

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b>	<b>Activity Responsibility:</b>	<b>Issue Date:</b>
Design Workshops	AECOM	09/20/2011
<b>2.1 Conduct Two-day Stakeholder Workshop</b>	<b>Task No. / Sub Task No.</b>	<b>Revision No:</b>
	WBS – 0200.0010	Conformed

**A) Activity Description:**

- 1) The CONSULTANT will hold one two-day design workshop to review previously completed design concepts:
  - a) The first day will identify challenges and existing design solutions, and will solicit input from attendees for alternative solutions.
  - b) The second day will present an evaluation of alternatives by the design team with recommendations for the preferred solution.
  
- 2) Key stakeholders participating shall include:
  - a) The CONSULTANT's Project Manager, Design Manager, Structural Manager, and Environmental Compliance Manager.
  - b) HART staff.
  - c) United States Navy.
  - d) State of Hawai'i Department of Transportation Highways and Airports Divisions.
  - e) Hawaiian Electric Company.
  - f) Federal Aviation Administration.
  - g) Other key utility owners.
  - h) Other stakeholders identified by HART.

**B) Assumptions:**

- 1) Prior to workshops, HART staff will update the CONSULTANT regarding ongoing stakeholder discussions and outstanding issues.

**C) Inputs:**

- 1) Preliminary Engineering documents.
- 2) Preliminary Guideway Value Engineering Study Report prepared by Value Management Strategies, Inc., dated April 2011.
- 3) Basis of Preliminary Design Report, dated October 2010.

**D) Deliverables:**

- |  |              |
|--|--------------|
|  | <b>NTP #</b> |
| 1) Design Workshop Review Meeting                    | 1a           |
| 2) Conduct Two-Day Design Workshop with Stakeholders | 1a           |

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Design Workshops 2.2 Conduct Contract Packaging Workshop	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0200.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) In association with preliminary structure optimization studies, the CONSULTANT will consider appropriate means in the plans and specifications to allow flexibility and increase opportunity for competitive construction bids. 2) After identifying options, the CONSULTANT will conduct a Contract Packaging Workshop with HART staff to explore opportunities to increase competitive construction bids.		
<b>B) Assumptions:</b> 1) It is anticipated the Contract Packaging Workshop will take place after initial two-day stakeholder workshop and structure optimization studies in the early part of NTP #1b.		
<b>C) Inputs:</b> 1) Structure optimization studies. 2) Evaluation of Contractor capabilities and capacities. 3) Preliminary design of Guideway sections.		
<b>D) Deliverables:</b> 1) Conduct Contract Packaging Workshop		<b>NTP #</b> 1b

### **TASK 0300 - Interface and Coordination with Others**

Extensive and continual interface and design coordination with other Contracts or entities is essential for the Airport Segment Guideway and Utilities Contract. This interface includes, but is not limited to, the following:

- Interface and coordinate with HART on issues related to work performed by others, such as flood hazard analysis, coordinated communication with various stakeholders, and other systemwide issues.
- Core Systems Contract (CSC) - Interface with the CSC for the communications and control, traction electrification, train control and signaling, passenger vehicle and fare vending systems. Guideway design will include the embedded conduits and other embedded components, blockouts, structural supports and mountings, and other enclosures and finishes as needed.
- Airport Stations Group (ASG) Contract - Interface with the ASG Contract in the Station areas. The design of the Guideway superstructure, columns and foundations, Station platform support structures and concourse support structures within the limit of the Guideway structure is part of this scope of work. Also, any roadway, drainage and other features in the Station areas are part of the Airport Segment Guideway design Scope of Work.
- Systemwide Landscaping Design Contract - Interface with the Systemwide Landscaping Design Contract for proposed permanent irrigation and landscaping along the H RTP alignment in median areas occurring under and adjacent to the Guideway and other selected areas.
- Systemwide Signage Design - Interface with the Systemwide Signage Designer who will furnish construction drawings for H RTP signage, along the Guideway, on streets and intersections under or adjacent to the Guideway and signage for identification, directional or restrictive purposes at or approaching all Stations and facility sites, for inclusion in the Airport Segment Guideway and Utilities Contract.
- HDOT - Because of the Guideway alignment's location on or proximity to Kamehameha Highway, the H-1 freeway and the Honolulu International Airport, close coordination with HDOT Highways Division and HDOT Airports Division will be required.
- U.S. Departments of Navy and Air Force - The Guideway alignment encroaches onto property under the jurisdiction of the U.S. Navy between Valkenburgh and Elliott Streets. The Guideway also crosses over access ramps servicing Pearl Harbor Naval Base and Hickam Air Force Base. Coordination design and construction staging plan traffic impacts with the U.S. Navy and the U.S. Air Force.
- FAA - Because of the Guideway alignment, the Airport Station and Lagoon Drive Station's support structure's close proximity to the Honolulu International Airport and its surrounding infrastructure will require close coordination with FAA during design progression.
- Public and Private Utilities - Coordinate points of service, utility relocation, sizing and connection points, etc.
- Public and Private Property owners and businesses - Coordinate design and construction staging plan traffic impacts with adjacent or affected property owners and businesses.
- Consulting Parties to the Programmatic Agreement among the U.S. Department of Transportation Federal Transit Administration, the Hawai'i State Historic Preservation Officer, the United States Navy, and the Advisory Council on Historic Preservation regarding the Honolulu High-Capacity Transit Corridor Project in the City and County of Honolulu, Hawai'i (Section 106 Programmatic Agreement).

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Interface and coordination with Others 3.1 Design Teams and Stakeholders	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 0300.0010	<b>Revision No:</b> Conformed

**A) Activity Description:**

Interface and coordination within the design team and stakeholders, including:

## 1) Interface with Outside Design Teams:

- 1) Interface with HART regarding work by others, such as flood hazard analyses, communications with various stakeholders and other systemwide issues.
- 2) Interface with the CSC design team for the Communication and Control, Traction Electrification, Train Control and Signaling, Passenger Vehicle and Fare Vending systems. Communicate and coordinate Guideway design team's requirements for embedded conduits and other embedded components, blockouts, structural supports and mountings, and other enclosures and finishes as needed.
- 3) Interface with the ASG Contract design team in the four Station areas. Communicate and coordinate with the Guideway design team such that the Guideway superstructure, columns and foundations provide the necessary structural support for Station platforms and concourse structures as applicable. Communicate and coordinate roadway, drainage, utility conduits and other features in the Station areas as a part of this scope of work.
- 4) Systemwide Landscaping Design Contract - Communicate and coordinate with the Systemwide Landscaping Design Contract for proposed permanent irrigation and landscaping along the H RTP alignment in median areas occurring under and adjacent to the Guideway and other selected areas as shown in the PE plans.
- 5) Systemwide Signage Design - Communicate and coordination with the Systemwide Signage Designer who will furnish Station informational signage construction drawings for identification, directional or restrictive purposes at or approaching all Stations and facility sites, for inclusion in the Airport Segment Guideway and Utilities Contract .
- 6) Communicate and coordinate with Kamehameha Highway DB contract design team.
- 7) Communicate and coordinate with City Center DBB contract design team.

## 2) Interface with Government Agencies:

- a) Coordination of Guideway, Station support structures, and utility design with:
  - b) U.S. Navy.
  - c) U.S. Air Force.
  - d) U.S. Army.
  - e) State of Hawaii, Department of Transportation, Highways Division.
  - f) State of Hawaii, Department of Transportation, Airports Division.
  - g) Federal Aviation Administration (FAA).
  - h) U.S. Postal Service.
  - i) State of Hawaii, Department of Accounting and General Services.
  - j) City and County of Honolulu (Department of Planning & Permitting, Department of Design

Airport Segment Guideway and Utilities Contract

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Interface and coordination with Others 3.1 Design Teams and Stakeholders	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 0300.0010	<b>Revision No:</b> Conformed

and Construction, Department of Transportation Services).

k) Others as identified by HART.

3) Interface with Public and Private Utilities:

a) Oversight of the coordination with various utility owners, including (note that technical day-to-day coordination will be covered in task 0900):

i) Hawaiian Electric Company (HECO).

ii) Board of Water Supply.

iii) Sandwich Isles Communications.

iv) Hawaiian Telecom.

v) Oceanic Time Warner Cable.

vi) AT&T.

vii) Wavecom Solutions (aka Pacific Lightnet).

viii) The Gas Company.

ix) Chevron.

x) Tesoro.

xi) Network Enterprise Center.

xii) U.S. Navy.

xiii) TW Telecom.

4) Coordination with Public and Private Property Owners and Businesses:

a). Coordinate design and construction staging plan traffic impacts with adjacent or affected property owners and businesses.

b). Coordinate Guideway and utility design with other known projects along the segment, including:

i) Ford Island Master Plan

ii) Honolulu International Airport Modernization Plan (including proposed Mauka Interisland Terminal Expansion and proposed Consolidated Rent-A-Car Facility)

iii) Ke'ehi Community Resource Center

iv) Redevelopment of Makalapa Navy Housing Area

**B) Assumptions:**

1) CSC design, ASG Contract design, and Systemwide Landscaping design is by others. All electrical conduits from Guideway to Stations and systems sites will be provided by Guideway designers, but wiring connections will be by others.

2) Systemwide Signage Design is by others. In addition to providing contract drawings, other design teams will also provide specifications, and quantity estimates to the CONSULTANT.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Interface and coordination with Others</b> <b>3.1 Design Teams and Stakeholders</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS- 0300.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<p>Quality Control for these deliverables is responsibility of other design team. This is expected to only include signage by others in the areas of civil improvements at the Stations and systems sites and any attachment and conduit requirements (if any) on the Guideway or Station supports included in this contract. All other signage improvements/modifications relating to the construction items within this contract are included in this contract under other activities.</p> <p>3) Timely responses to requests for information /comments from respective owners. We are assuming a 30-day review period for all formal submittals.</p> <p>4) Coordination with utility owners will be performed in conjunction with Utility Design tasks.</p> <p>5) All property owner and business communications will be handled by HART.</p>		
<p><b>C) Inputs:</b></p> <p>1) Preliminary Engineering drawings.</p> <p>2) Basis of Preliminary Design Report.</p> <p>3) Interim and Final Core Systems designs/plans.</p> <p>4) Interim and Final Station designs/plans.</p> <p>5) Corridor Landscape Design criteria and concepts.</p> <p>6) PS&amp;E for Systemwide Signage provided by others for inclusion in CONSULTANT ID and FD submittals.</p>		
<p><b>D) Deliverables:</b></p> <p>1) Interface and Coordination – Workshop</p> <p>2) Interface and Coordination – Preliminary Engineering</p> <p>3) Interface and Coordination – Interim Design</p> <p>4) Interface and Coordination – Final Design</p>		<p><b>NTP #</b></p> <p>1a</p> <p>1b</p> <p>2</p> <p>3</p>

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Interface and coordination with Others 3.2 Section 106	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0300.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Interface with Environmental and Public Involvement tasks to coordinate project compliance with Section 106 of the National Historic Preservation Act.</li> <li>2) Communicate and coordinate with Guideway and utility designers to incorporate environmental commitments and mitigation requirements into the Project plans, specifications and contract documents.</li> <li>3) Communicate and coordinate between historical/archeological specialists and design team to assist with questions related to archaeological issues and Section 106.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Mitigation monitoring will be based in accordance with the ROD Mitigation Monitoring Plan (MMP).</li> <li>2) All communication regarding Section 106 issues will be through HART.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Final Environmental Impact Statement (FEIS).</li> <li>2) Environmental Record of Decision (ROD).</li> <li>3) Section 106 Programmatic Agreement.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Interface and Coordination – Preliminary Engineering</li> <li>2) Interface and Coordination – Interim Design</li> <li>3) Interface and Coordination – Final Design</li> </ol>		<b>NTP #</b> 1b 2 3

**TASK 0400 - Survey**

Provide additional topographic survey as required to supplement the HART provided topographic survey and controls. Prepare site controls and property Right-of-Way (ROW) plans to identify right-of-way or easements required, as identified in the Preliminary Engineering drawings and any additional ROW or easements required.

**ACTIVITY DESCRIPTION** Form SOW 01

<b>Activity:</b> Survey 4.1 Develop Right of Entry Permits	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0400.0010	<b>Revision No:</b> Conformed

**A) Activity Description:**

- 1) Provide HART Real Estate with sufficient detail of required work on each parcel to enable HART Real Estate to request access from property owners. The information should be bundled as not to disrupt or unduly burden the property owners with multiple requests of entry.
- 2) Provide schedule of proposed work. The requests for access should be made to allow sufficient time to acquire the consents.
- 3) For properties that are not identified in the FEIS as being impacted, the CONSULTANT will identify lot ownership and addresses for those affected parcels.
- 4) All permits (consents) for work within public right-of-way will be obtained by the CONSULTANT.
- 5) Distribute copies of letters to field survey crews conducting the topographic surveys.

**B) Assumptions:**

- 1) HART will work with the property owners to gain access to the property.
- 2) Right of Entry will be granted in approximately forty-five (45) days of submittal of the request to HART.

**C) Inputs:**

- 1) Preliminary Engineering Plans.

<b>D) Deliverables:</b>	<b>NTP #</b>
1) Right of Entry Request	1a
2) Right of Entry Request	1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Survey 4.2 Topographic Survey	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0400.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Obtain primary survey control data from HART.</li> <li>2) Research and obtain as-built utilities information from appropriate sources/agencies.</li> <li>3) Obtain rights-of-way information from appropriate City/State agencies.</li> <li>4) Determine Topographic Survey Limits based on design needs.</li> <li>5) Transfer horizontal and vertical controls to the project route. These fixed horizontal control points and vertical benchmarks are then used as starting points for the topographic survey.</li> <li>6) Supplement topographic survey of right-of-way to ten (10) feet outside the project limits. Locate all buildings, walls, fences, hedges, mail boxes, driveways, sidewalks, signs, street light poles, utilities, pavements, pavement markings, traffic signals, traffic signs, curbing, curb cuts, ADA ramps, ornamental trees, and other topographic details. Locate existing boundary pins, street survey monuments.</li> <li>7) Verify utilities locations, sizes, inverts, and directions from field observations. Locate/verify underground utility lines as located/identified thru utility design as-built research and sub-surface investigation.</li> <li>8) Prepare topographic map from field data in AutoCAD 2009 format at 1"=20' scale with 1-ft. contour intervals.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Assumed primary survey controls have been established along proposed transit corridor. These fixed horizontal control points and vertical benchmarks are to be used as starting points for the rights-of-way mapping and topographic surveys.</li> <li>2) Assumed primary survey control is seamlessly tied in to adjoining H RTP sections.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Obtain primary survey control data sheets/recovery sheets.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Topographic Mapping File and DTM</li> </ol>		<b>NTP #</b> 1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <p style="text-align: center;">Survey 4.3 ROW Mapping and Plans</p>	<b>Activity Responsibility:</b> <p style="text-align: center;">AECOM</p>	<p style="text-align: center;">09/20/2011</p>
	<b>Task No. / Sub Task No.</b> <p style="text-align: center;">WBS – 0400.0030</p>	<b>Revision No:</b> <p style="text-align: center;">Conformed</p>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Research/acquisition of boundary information of properties in and adjacent to alignment area to update, review and augment boundary and survey performed earlier for HART.  Research/acquisition of right-of-way information including, but not limited to centerline information and the extent/edge of right-of-way left/right of said centerline from both City &amp; State agencies. Plot &amp; match boundaries and right-of-way to assure a seamless connection of boundaries and baselines with adjoining sections. Coordinate with adjacent sections to match boundaries to continue the seamless boundary. Convert boundaries to NAD 83 from known "local" coordinate system if required. Conversion to NAD 83 to be done after culmination of any additional boundary work required.</li> <li>2) Development of ROW Plans.</li> <li>3) Provide delineation of right-of-way or easements required in addition to those shown in Preliminary Engineering drawings.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Permanent right-of-way acquisition and subdivision to be performed by others.</li> <li>2) Identification of construction easements or other temporary easements/rights-of-way are the responsibility of the CONSULTANT.</li> <li>3) Title searches, Land Court documents and deeds to be provided by HART.</li> <li>4) Boundaries, rights-of-way, baseline information of adjacent sections to be provided by HART.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Engineering Design Documents.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> <p style="text-align: center;">1b 2 3 3</p>

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <p style="text-align: center;">Survey 4.4 Construction Easements</p>	<b>Activity Responsibility:</b> <p style="text-align: center;">AECOM</p>	<b>Issue Date:</b> <p style="text-align: center;">09/20/2011</p>
	<b>Task No. / Sub Task No.</b> <p style="text-align: center;">Survey 0400.0040</p>	<b>Revision No:</b> <p style="text-align: center;">Conformed</p>
<b>A) Activity Description:</b> <p>1) Construction parcels/easements will be identified and prepared to provide contractors the incidental rights of ingress and egress and the right to use the designated land for construction purposes and/or staging. The duration of these construction easements will be for a definite period of time or term. Initially a plot location of the required construction parcel/easements from information provided by engineers based on their proposed engineering design. Perform calculations, locate and prepare precise and accurate metes and bounds descriptions to ensure construction parcels/easements can be located with certainty. Create ROW Maps for HDOT for those areas where construction parcels/easements are adjacent to HDOT jurisdiction rights-of-way. Prepare exhibits for all other areas not adjacent to HDOT right-of-way.</p>		
<b>B) Assumptions:</b> <p>1) Assume construction easements will be required where construction of improvements will be outside of designated H RTP right-of-way and/or affecting adjacent private properties.</p>		
<b>C) Inputs:</b> <p>1) Engineering design documents.</p>		
<b>D) Deliverables:</b> <p>1) Interim Construction Easement Maps 2) Final Construction Easement Maps</p>		<b>Submittal NTP</b> <p style="text-align: center;">2 3</p>



### **TASK 0500 - Civil Design**

Design and develop civil plans showing alignment data, street or roadway restoration details, trackwork, grading, drainage and paving plans, and details for roadway and other facility sites, right-of-way plans, demolition plans (including tree removal), roadway and intersection signing and striping plans, and prepare hydrology and drainage reports as necessary.

#### **Key Activities:**

The Preliminary Design update is a critical step in the design development and is the opportunity to resolve any outstanding design issue with the community and project stakeholders; as well as to review and incorporate the Value Engineering recommendations.

**ACTIVITY DESCRIPTION**

Form SOW 01

**Activity:**Civil Design  
Track Design**Activity Responsibility:**

AECOM

**Issue Date:**

09/20/2011

**Task No. / Sub Task No.****Revision No:**5.1 Track Alignment Design  
Refinements (including revise  
current PE to incorporate the  
Guideway VE)

WBS - 0510.0010

Conformed

**A) Activity Description:**

- 1) Coordinate with other design disciplines to verify the adequacy of the previously developed alignment.

**B) Assumptions:**

- 1) Plinthless track shall be designed except at Stations, special trackwork (i.e. crossovers), and balanced cantilever segmental bridge areas.
- 2) EB track (and stationing) shall serve as the primary alignment for project reference and stationing.

**C) Inputs:**

- 1) Approval of previously developed alignment design by HART.
- 2) Identification of approved Guideway VE recommendations.
- 3) Input from other design disciplines (structures, communication, train control, traction power and distribution).
- 4) Input from HART operations & maintenance staff.
- 5) Input from previous design segments (Contractor, Designer, HART) to maintain consistency.
- 6) All plan sheets shall follow the HART Plan Standards.

**D) Deliverables:**

- |  | NTP # |
|--|-------|
| 1) Presentation at two-day workshop (Graphic display of recommended alignment changes) | 1a    |
| 2) White paper report (summary of recommendations to be incorporated)                  | 1b    |

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Civil Design Track Design 5.2 Development of Guideway Track Design	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0510.0020	<b>Revision No:</b> Conformed

**A) Activity Description:**

1) Alignment Design

Prepare track alignment plan & profile drawings at a scale of 1"=40' Horizontal and 1"=10' Vertical on full size (22" by 34") sheets. Prepare tabulated alignment data sheets for each track.

- a) Track alignment plans will include alignment control points (TS, SC, CS, ST, PS, PITO) with applicable stationing, station equations, length of spiral, and all other relevant data needed to define the track alignment.
- b) Track profile sheets will include alignment control points (BVC, EVC and PIVC with corresponding station and elevation information), as well, as vertical curve lengths.
- c) Track plans will include locations of insulated rail joints and other facilities needed for train control and traction power including cross bonds, impedance bonds, and traction power negative return connections, guard rail locations, friction bumper locations.
- d) Prepare track superelevation diagrams.
- e) Prepare contact rail drawings showing bridgeable and non-bridgeable gaps as needed for safe rail operations.

2) Wheel/Rail Study

- a) Review transit vehicle truck/wheel parameters including wheel base, wheel gauge, wheel profile, and propulsion characteristics.
- b) Review HART-furnished track design criteria & standards for standard and special trackwork. Identify key parameters including track gauge through curves, restraining rail requirements, and flange way widths through applicable special trackwork.
- c) Conduct wheel/rail interaction modeling studies for any curves with radius under 200 ft and double cross over with track centerline spacing less than 14 feet using HART-provided vehicle & trackwork parameters and NYTRAM performance plots.
- d) Prepare report documenting results of wheel/rail interaction study and provide recommendations for adjustments to HART-provided track & vehicle criteria.

3) Typical Track Sections:

- a) Coordinate with Core Systems Contractor to verify the adequacy of the previously developed alignment including clearances to systems elements (third rail including support brackets) and structures.
- b) Prepare typical track sections for all conditions including tangent and curved (superelevated) double track, double track at Stations, and special trackwork.
- c) Typical sections will include track centerline spacing; distance to systems facilities including third rail and support brackets, distance to edge of structures including safety railings, sound barriers; and emergency walkway widths and offset from track centerlines.
- d) Typical sections will include track stationing limits for each section.

- 4) Track Material Details (rail fasteners, special trackwork, bumping post):
  - a) Review procurement specifications and details for direct fixation rail fasteners and special trackwork (turnouts and diamond crossings).
  - b) Identify additional track components needed for the project including but not limited to bumping posts, insulated rail joints, switch stands and rail lubricators.
  - c) Prepare details of additional track components or provide catalog cuts of off-the-shelf components as appropriate.
- 5) Track Installation Details:
  - a) Review procurement specifications, plans and details of direct fixation rail fasteners and special trackwork (diamond crossings).
  - b) Prepare plans and details depicting installation of all track components including rail fasteners, rail, bumping posts, insulated rail joints, and rail lubricators.
- 6) Track /System Interface Details (impedance bonds, cross bonds, negative return connections):
  - a) Meet with Core Systems engineering staff to identify location of cross bonds, impedance bonds, traction power negative return connection points, and other systems interface locations.
  - b) Obtain details of systems elements that interface or will be connected to track components.
  - c) Include details of these components in the track installation plans that will be installed by the track installation contractor.
  - d) Platform Screen Gates to track ground conductor bonding.

**B) Assumptions:**

- 1) Transit vehicle selection specifications will be finalized prior to start of activity.
- 2) Revisions to the Track Alignment Design and or Project design criteria will be identified early in NTP #1b.
- 3) Procurement specifications and details for rail (115RE), direct fixation rail fasteners and special trackwork (turnouts and diamond crossings) will be available prior to start of activities.
- 4) Systems engineering design work will be provided for the items requiring integration in the track plans.
- 5) Shop drawings, plans and details of previously procured track material (rail, direct fixation rail fasteners and special trackwork) will be provided as they become available.
- 6) Core Systems Contractor or HART representation will be available to coordinate interface items.

**C) Inputs:**

- 1) Transit vehicle selection specifications.
- 2) Project design criteria and Technical Specifications.
- 3) Input from HART operations & maintenance staff if available.
- 4) Approval of previously developed alignment design by HART.

5) Identification of approved Guideway VE recommendations. 6) Input from Core Systems engineering design disciplines including train control, traction power and traction power distribution.	
<b>D) Deliverables:</b> 1) Preliminary Engineering Submittal 2) Interim Design Submittal 3) Draft Final Design Submittal 4) Final Design Submittal	<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: <b>Civil Design</b>	Activity Responsibility: <b>Wilson Okamoto Corporation</b>	Issue Date: <b>09/20/2011</b>
<b>5.3 Site and Roadway –Construction Plans and Details (Geometric)</b>	Task No. / Sub Task No. <b>WBS – 0520.0010</b>	Revision No: <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) NTP #1a: Review of design and possible impacts based on VE reports.</li> <li>2) NTP #1b: Revise site and roadways design drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable and other HART preferences. Ensure compliance of all site and roadway design with the standards of the agency having jurisdiction.</li> <li>3) NTP #2: Prepare plans for the construction, widening, resurfacing, and reconstruction of all site and roadways, medians, sidewalks, parking lots, etc., for the interim design.</li> <li>4) NTP #3: Finalize the interim design and prepare the construction contract documents for all site and roadway improvements.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) While HART is the applying agency on the permit, the CONSULTANT shall prepare and provide input to the NPDES permit applications.</li> <li>2) Prepare NPDES NOI includes site-specific BMP's, submit NPDES NOI, and complete NPDES NOI until NGPC is obtained.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Geotechnical Investigation Report with recommendations of pavement design.</li> <li>2) PE drawings.</li> <li>3) Draft VE Report.</li> <li>4) HDOT Highway Division Design Standards.</li> <li>5) City's Traffic Standards.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3



**ACTIVITY DESCRIPTION**

Form SOW 01

<p><b>Activity:</b> Civil Design</p> <p>5.4 Site and Roadway Pavement Markings and Roadway Signs</p>	<p><b>Activity Responsibility:</b> Wilson Okamoto Corporation</p>	<p><b>Issue Date:</b> 09/20/2011</p>
	<p><b>Task No. / Sub Task No.</b> WBS – 0520.0020</p>	<p><b>Revision No:</b> Conformed</p>
<p><b>A) Activity Description:</b></p> <ol style="list-style-type: none"> <li>1) NTP #1b: Revise signing and striping design drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable, and other HART preferences. Ensure compliance of all site and roadway design with the standards of the agency having jurisdiction.</li> <li>2) NTP #2: Prepare detailed interim design plans of pavement markings and signage for all site and roadway improvements.</li> <li>3) NTP #3: Finalize the interim design and prepare the construction contract documents for all site and roadway improvements.</li> </ol>		
<p><b>B) Assumptions:</b></p> <ol style="list-style-type: none"> <li>1) Number of traffic lanes within the roadways will match existing.</li> <li>2) Number of traffic lanes approaching the intersections will match existing.</li> <li>3) Design shall be verified against the FEIS.</li> </ol>		
<p><b>C) Inputs:</b></p> <ol style="list-style-type: none"> <li>1) City's standards for pavement markings and traffic signage for work within City's Right-of-Way.</li> <li>2) HDOT Highway Division Standards for pavement markings and traffic signage for work within State's Right-of-Way.</li> <li>3) Draft VE Report.</li> <li>4) PE Drawings.</li> </ol>		
<p><b>D) Deliverables:</b></p> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> </ol>	<p><b>NTP #</b></p> <p>1b</p> <p>2</p>	

3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Civil Design  5.5 Drainage Report	<b>Activity Responsibility:</b> Wilson Okamoto Corporation	<b>Issue Date:</b>  09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0530.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) NTP #1a: Review existing drainage reports and VE reports in preparation for Design Workshop.</li> <li>2) NTP #1b: Update drainage report to include the shift in alignment to Ualena Street and Waiwai Loop. Revise drainage report to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable and other HART preferences. Ensure compliance with City and State drainage standards, as applicable. Include conceptual Guideway drainage details and conceptual permanent BMP reports.</li> <li>3) NTP #2: Update drainage report as required. Update permanent BMP report as required.</li> <li>4) NTP #3: Finalize the interim design and prepare the construction contract documents for the site and roadway drainage improvements.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The Preliminary Engineering (PE) indicates that additional runoff quantities due to the project are minimal with respect to the overall drainage basin. The CONSULTANT assumes that design of drainage improvements will be limited to elements within or adjacent to the project area, and that downstream improvements to the overall drainage system will not be required.</li> <li>2) HART will obtain the NPDES permit for runoff associated with construction activities.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Airport Guideway &amp; Utilities Airport Stations - Preliminary Drainage Report.</li> <li>2) PE drawings.</li> <li>3) Draft VE Report.</li> <li>4) HDOT Highway Division Design Standards.</li> <li>5) City and State Drainage Standards.</li> <li>6) Mitigation Monitoring Program.</li> <li>7) City and State Storm Water Management Plans.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

**Activity:**

Civil Design

**Activity Responsibility:**Wilson Okamoto  
Corporation**Issue Date:**

09/20/2011

**5.6 Development of Guideway and  
Surface Drainage Design****Task No. / Sub Task No.**

WBS - 0530.0020

**Revision No:**

Conformed

**A) Activity Description:**

- 1) NTP #1a & NTP #1b: Assist in preparing design schedule and schedule milestone for the Drainage Plans. Revise drainage plan drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable and other HART preferences. Ensure compliance of storm water design with City, State, and FEIS storm water requirements.
- 2) NTP #2: Prepare plans for site and roadway drainage improvements including plan and profile for the interim design. Prepare detailed working drawings and specifications for drainage system improvements including plan and details for the interim design. Coordinate Guideway drainage design with Guideway designers.
- 3) NTP #3: Finalize the interim design and prepare the construction contract plans for the site and roadway drainage improvements. Finalize the interim design and prepare the construction contract documents for the drainage plans.

**B) Assumptions:**

- 1) HART will obtain the NPDES permit for runoff associated with construction activities.

**C) Inputs:**

- 1) Geotechnical Investigation Report with recommendations for trench backfill and restoration design.
- 2) Airport Guideway & Utilities Airport Stations - Preliminary Drainage Report.
- 3) PE drawings.
- 4) Draft VE Report.
- 5) HDOT Highway Division Design Standards.
- 6) City and State Drainage Standards.
- 7) City and State Storm Water Management Plans.
- 8) Mitigation Monitoring Programs.

**D) Deliverables:**

- |  | <b>NTP #</b> |
|--|--------------|
| 1) Presentation at two-day workshop (Graphic display of drainage issues and recommendations) | 1a           |
| 2) White paper report (summary of recommendations to be incorporated)                        | 1b           |
| 3) Preliminary Engineering Submittal   | 1b           |
| 4) Interim Design Submittal  | 2            |
| 5) Draft Final Design Submittal  | 3            |
| 6) Final Design Submittal  | 3            |

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Civil Design 5.7 Moanalua Stream "No Rise" Mitigative Measure – Design	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBDS - 0530.0030	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) NTP #1b: Revise Moanalua Stream "No Rise" Mitigative Measure design drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable and other HART preferences. Conduct existing condition hydraulic analysis incorporating new survey cross-sections.</li> <li>2) NTP #2: Conduct hydraulic analysis incorporating proposed mitigation measures. Conduct scour analysis to provide input to foundation designer. Prepare detailed working drawings and specifications for Moanalua Stream "No Rise" Mitigative Measure improvements including plan and profile for the interim design.</li> <li>3) NTP #3: Finalize the interim design and prepare the construction contract documents for the Moanalua Stream "No Rise" Mitigative Measure improvements.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) HART will provide the existing hydraulic analysis.</li> <li>2) The CONSULTANT will obtain approval from FEMA and DPP for the hydraulic model used in the assessment and for the proposed mitigative measures.</li> <li>3) HART will review the hydraulic analysis for no-rise, scour, and selection of the recommended mitigative measure for design.</li> <li>4) The CONSULTANT will perform the final design of the selected mitigative measures.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Geotechnical Investigation Report with recommendations for design as required for the selected mitigative measure.</li> <li>2) PE drawings.</li> <li>3) Draft VE Report.</li> <li>4) HDOT Highway Division Design Standards.</li> <li>5) City and State Drainage Standards.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: Civil Design	Activity Responsibility: Wilson Okamoto Corporation	Issue Date: 09/20/2011
5.8 Erosion Control Plans – Design	Task No. / Sub Task No. WBS - 0530.0040	Revision No: Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) NTP #1b: Create base erosion control design drawings incorporating the approved Station and Guideway Value Engineering (VE) recommendations, as applicable, and other HART preferences.</li> <li>2) NTP #2: Prepare detailed drawings and specifications for erosion control improvements including plans and details for the interim design.</li> <li>3) NTP #3: Finalize the interim design and prepare the construction contract documents for the erosion control improvements.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) HART will obtain the NPDES permit for runoff associated with construction activities.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Geotechnical Investigation Report with recommendations.</li> <li>2) PE drawings.</li> <li>3) Draft VE Report.</li> <li>4) HDOT Highway Division Design Standards.</li> <li>5) City and State Erosion Control Standards.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Civil Design  5.9 Site Design – TPSS	<b>Activity Responsibility:</b> Wilson Okamoto Corporation	<b>Issue Date:</b>  09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0540.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) NTP #1b: Revise access road design drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable, and other HART preferences.</li> <li>2) NTP #2: Prepare plans and profiles of access road, grading plan of for TPSS vault foundation pad, typical access road section, pavement details for the interim design.</li> <li>3) NTP #3: Finalize the interim design and prepare the construction contract documents for the roadway improvements.</li> <li>4) TPSS site civil work is limited to substation sites 25 and 28. This will include HECO switchgear pads (TPSS/GBS vault foundations) and the ductbanks and manholes for all sites noted leading up to switchgear in the pre-fab structure. The CONSULTANT is also responsible for the conduit duct banks and manholes/handholes located at the appropriate columns. Landscaping, grounding grid for TPSS and 10 - 15 feet of ground conductor stub up at two locations for connection to ground plate in TPSS/GBS and bonding for all fences is also part of the CONSULTANT's scope.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) HECO Utilities will terminate five (5) feet away from TPSS pad.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Geotechnical Investigation Report with recommendations of pavement design.</li> <li>2) Drainage Report.</li> <li>3) PE drawings.</li> <li>4) Draft VE Report.</li> <li>5) HDOT Highway Division Design Standards.</li> <li>6) City's Traffic Standards.</li> <li>7) Soil Resistivity Report.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3



ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Civil Design  5.10 Landscape	<b>Activity Responsibility:</b> PBR Hawaii & Associates, Inc.	<b>Issue Date:</b>  09/20/2011
	<b>Task No. / Sub Task No.</b> Civil - 0550.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Coordinate with HART Systemwide Landscape Designer.</li> <li>2) Prepare preliminary design development level tree disposition, temporary erosion control planting and irrigation plans.</li> <li>3) Prepare final tree disposition, temporary erosion control planting and irrigation plans.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) In conjunction with the Systemwide Landscape Architect, provide information to be used in developing sustainability opportunities.</li> <li>2) No perspective renderings.</li> <li>3) No separate community presentations.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Systemwide landscape design concepts.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> </ol>		<b>NTP #</b> 1b 2

3) Draft Final Design Submittal	3
4) Final Design Submittal	3

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Civil Design 5.11 Demolition Plans	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> Civil - 0560.0010	<b>Revision No:</b> Conformed

**A) Activity Description:**

- 1) NTP #1b: Create base demolition design drawings from information on Preliminary Roadway Construction and System Site Plans.
- 2) NTP #2: Prepare detailed drawings and specifications for existing facility demolition including plans and details for the interim design.
- 3) NTP #3: Finalize the interim design and prepare the construction contract documents for existing facility demolition.

**B) Assumptions:**

- 1) Tree removal will be addressed in landscape plans.
- 2) Limits of work will be shown on the demolition plans, but most details of demolition (including handling of potentially hazardous materials) will be addressed by specification.
- 3) Roadway removal plans are not included in this task.

**C) Inputs:**

- 1) Preliminary Engineering Drawings.

**D) Deliverables:**

- 1) Preliminary Engineering Submittal
- 2) Interim Design Submittal

**NTP #**  
 1b  
 2

3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: <b>Civil Design</b>	Activity Responsibility: <b>AECOM</b>	Issue Date: <b>09/20/2011</b>
<b>5.12 QC Review - Discipline and Inter-Discipline Review of Documents</b>	Task No. / Sub Task No. <b>Civil - 0570.0010</b>	Revision No: <b>Conformed</b>

**A) Activity Description:**

- 1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.
- 2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.
- 3) Discipline Review is performed by staff not associated with the development of the original design.
- 4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.
- 5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.
- 6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.
- 7) QA/QC review will be performed prior to every formal submittal.

**B) Assumptions:**

- 1) N/A

**C) Inputs:**

- 1) Quality Assurance Plan.

**D) Deliverables:**

	NTP #
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

**TASK 0600 - Structural Design**

Perform Load and Resistance Factor Design (LRFD) structural analysis and design and develop structural plans showing foundations, substructure, superstructure and structural details for the Guideway and all Station support structures. Scour/hydraulic analysis will also be required at the Guideway stream crossings. Coordinate with the ASG designers and evaluate requirements to protect adjacent buildings or existing structures that may be affected by the Guideway or Station support construction.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b>	<b>Activity Responsibility:</b>	<b>Issue Date:</b>
Structures	AECOM	09/20/2011
<b>6.1 Evaluate/Implement Guideway VE Recommendations</b>	<b>Task No. / Sub Task No.</b>	<b>Revision No:</b>
	WBS - 0610.0010	Conformed
<b>A) Activity Description:</b>		
<ol style="list-style-type: none"> <li>1) Evaluate and implement the viable alternatives outlined in the Guideway Preliminary Value Engineering (VE) Study Report prepared by Value Management Strategies, Inc., dated April 2011 and additional VE alternatives identified in an internal design team workshop to be conducted during NTP #1a. The VMS study, sponsored by DTS Rapid Transit Division, City and County of Honolulu, was conducted April 11-15, 2011.</li> <li>2) Implement approved VE recommendations as identified in Stations Final Value Engineering Study Report dated September 2010 as they impact the Guideway design and the Structure Workshop Summary Report dated January 7, 2008. Approved VE recommendations will be determined in the two-day stakeholder workshop.</li> </ol>		
<b>B) Assumptions:</b>		
<ol style="list-style-type: none"> <li>1) Focus of the study will be opportunities to improve the constructability and reduce costs associated with the design-bid-build Guideway and utilities construction packages for the Airport Segment Guideway and Utilities Contract.</li> </ol>		
<b>C) Inputs:</b>		
<ol style="list-style-type: none"> <li>1) Preliminary Value Engineering Study Report Corridor – Guideway prepared by Value Management Strategies, Inc., dated April 2011.</li> <li>2) Final Value Engineering Study Report Transit Corridor – Stations prepared by Value Management Strategies, Inc., dated September 2010.</li> <li>3) Internal Value Engineering Workshop – members of H RTP Design Team</li> <li>4) Preliminary Engineering Plans.</li> <li>5) Structure Workshop Summary Report, dated January 7, 2008.</li> </ol>		
<b>D) Deliverables</b>		<b>NTP #</b>
1) Presentation at two-day workshop (Graphic display of recommended structural changes)		1a
2) White paper report (summary of recommendations to be incorporated)		1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.2 Span Optimization Study</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0610.0020</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) Span Optimization Study - Determine optimal span layout and optimum superstructure cross-section, for both the segmental and precast girder sections. The goals of the study are to:
  - a) Reduce number and types of special piers and straddle bents.
  - b) Ease transition to specialized units over Halawa Stream and Kalihi Stream.
  - c) Find opportunities to improve the constructability and reduce costs associated with the design-bid-build Guideway and utilities construction packages for the Airport Segment Guideway and Utilities Contract.
- 2) Superstructure Cross-Section Optimization Study – the CONSULTANT will perform an economic optimization study of superstructure cross-section with the goal of:
  - a) Maximizing structural efficiency while meeting functional requirements.
  - b) Maximizing the usage and efficiency of span by span precast segmental casting and erection procedures.
  - c) Simplifying casting and erection procedures.
- 3) Develop basic post-tensioning geometry workpoints:
  - a) Develop post-tensioning geometry workpoints based on optimal span study to ensure consistency between design teams.
  - b) Deviation block geometry will be developed.
  - c) Pier segment diaphragm geometry will be developed.
  - d) Expansion Joint diaphragm geometry will be developed.

**B) Assumptions:**

- 1) N/A

**C) Inputs:**

- 1) Preliminary Value Engineering Study Report prepared by Value Management Strategies, Inc., dated April 2011.
- 2) Representative historical project plans from the CONSULTANT's files.
- 3) HRTP Guideway Segments under construction using design/build procurement.
- 4) AIS Report.
- 5) Structure Workshop Summary Report, dated January 7, 2008.

**D) Deliverables:**

- |   |             |
|---|-------------|
| 1) Presentation at two-day workshop (Graphic display of recommended structural changes) | NTP #<br>1a |
| 2) White paper report (summary of recommendations to be incorporated)                   | 1b          |

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.3 Substructure Cross-Section Optimization Study</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0610.0030</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) The CONSULTANT will perform economic optimization study of substructure types and cross-sections (typical pier, cantilever pier and straddle bents) for design development.

**B) Assumptions:**

- 1) Optimal use of span-by-span precast segmental casting and erection procedures.
- 2) Reduce number and types of special piers and straddle bents.
- 3) Emphasize consistency of details between pier types and aesthetic harmony with Stations.

**C) Inputs:**

- 1) Optimized superstructure cross-section.
- 2) Optimized span layout Task.
- 3) Internal Value Engineering Workshop – members of H RTP Design Team.
- 4) H RTP Guideway Segments Plans previously under construction using design/build procurement.
- 5) Preliminary Engineering Plans.
- 6) Structure Workshop Summary Report, dated January 7, 2008.
- 7) Geotechnical data.

**D) Deliverables:**

- |   |             |
|---|-------------|
| 1) Presentation at two-day workshop (Graphic display of recommended structural changes) | NTP #<br>1a |
| 2) White paper report (summary of recommendations to be incorporated)                   | 1b          |

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.4 Finalize Project Footprint</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0610.0040</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) Based on the results of the Value Engineering implementation and optimization studies, fix the pier and foundation locations throughout the alignment.
- 2) Validate with other disciplines that proposed pier/foundation locations are acceptable.
- 3) Perform site visits to confirm topographic information in Preliminary Plans matches current conditions at proposed pier/foundation locations.

**B) Assumptions:**

- 1) Minor variations in span layout/pier locations may occur as design develops, but footprint developed in this task is expected to form the basis of design for Interim and Final Design phases.

**C) Inputs:**

- 1) Interdisciplinary Workshop – members of H RTP Design Team – Utilities, Traffic Control, and Station Design, etc.
- 2) Preliminary Engineering Plans.
- 3) Additional topographic survey acquired.
- 4) Results and conclusions from the Span Optimization Study.
- 5) Results and conclusions from the Substructure cross-section optimization study.
- 6) Results from the AIS (Archaeological Inventory Survey Plan).
- 7) Geotechnical data.

**D) Deliverables:**

- 1) Preliminary Engineering Submittal

**NTP #**  
**1b**

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.5 Superstructure Longitudinal Design / Details</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0620.0010</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) Perform superstructure longitudinal analysis to determine bending moments, torsion, and shear in superstructure box section under imposed loads.
- 2) Determine required longitudinal post-tensioning and web reinforcing requirements.
- 3) Determine post-tensioning pier reactions for substructure/foundation design.
- 4) Check potential conflicts between longitudinal tendon and transverse reinforcing and utilities.

**B) Assumptions:**

Design task includes the superstructure design of all structural elements including:

- 1) Typical spans – Segmental.
- 2) Station spans - Segmental.
- 3) Drop in spans.
- 4) Precast beam spans.
- 5) Halawa Stream Crossing.
- 6) Kalihi Stream Crossing.

**C) Inputs:**

- 1) Optimized superstructure cross-section.
- 2) Optimized substructure cross-section.
- 3) Final project footprint.
- 4) Post-Tensioning Geometry workpoints.

<b>D) Deliverables:</b>	<b>NTP #</b>
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b>  <b>6.6 Superstructure Transverse Design / Details</b>	<b>Activity Responsibility:</b>  <b>AECOM</b>	<b>Issue Date:</b>  <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b>  <b>WBS - 0620.0020</b>	<b>Revision No.:</b>  <b>Conformed</b>
<b>A) Activity Description</b>		
<ol style="list-style-type: none"> <li>1) Perform superstructure transverse analysis to determine transverse bending moments in superstructure box section due to imposed loads.</li> <li>2) Determine required transverse post-tensioning requirements in the top slab.</li> <li>3) Determine required reinforcing requirements in the webs, top slab and bottom slab to resist transverse bending, torsion and vertical shear.</li> <li>4) Develop segment reinforcing details and plans.</li> </ol>		
<b>B) Assumptions:</b>		
<ol style="list-style-type: none"> <li>1) Separate design sub-tasks for each of the following sections: <ol style="list-style-type: none"> <li>a) Typical Box Section.</li> <li>b) Tight Curvature Section near Airport Station.</li> <li>c) Deviator Segments (typically 2 per span).</li> <li>d) Pier Diaphragm (1 for each independent PT layout).</li> <li>e) Expansion Joint Pier Diaphragm (1 for each independent PT layout).</li> <li>f) Variable Depth CIP Long Span Typical, Deviators and Diaphragms (variable number based on final span configuration and post-tensioning layout).</li> </ol> </li> </ol>		
<b>C) Inputs:</b>		
<ol style="list-style-type: none"> <li>1) Optimized superstructure cross-section.</li> <li>2) Optimized substructure cross-section.</li> <li>3) Final project footprint.</li> <li>4) Post-Tensioning Geometry workpoints.</li> <li>5) Dead Load and Live Load web shear.</li> <li>6) Tensional Loads.</li> </ol>		
<b>D) Deliverables:</b>		<b>NTP #</b>
<ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<ol style="list-style-type: none"> <li>1b</li> <li>2</li> <li>3</li> <li>3</li> </ol>

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.7 Pedestrian Span Supports</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0620.0030</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> 1) Design and detail intermediate span supports for Middle Street Transit Center Station platforms. 2) Design Pier supports for Middle Street Transit Center Station Platforms. 3) Design Pedestrian Bridge bent at Guideway station 1265+00 +/-		
<b>B) Assumptions:</b> 1) Pedestrian bridge configuration as defined in Preliminary Plans. 2) Intermediate span and pier brackets are steel truss structures. 3) Station platforms and pedestrian bridge superstructure design are by others. Coordination is required with the Station designers.		
<b>C) Inputs:</b> 1) Preliminary Engineering Plans. 2) Station Platform Layout and Support Loads. 3) Pedestrian Bridge Layout and Support Loads.		
<b>D) Deliverables:</b> 1) Preliminary Engineering Submittal 2) Interim Design Submittal 3) Draft Final Design Submittal 4) Final Design Submittal		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.8 Substructure Design/Detailing</b> <b>Typical Column Bent</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0630.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Develop typical column design methodology to be used in the development of final substructure.</li> <li>2) Categorize column shafts based on pier heights, geotechnical conditions, and loads.</li> <li>3) Prepare standard column designs/details and tabulate.</li> <li>4) Prepare standard cap designs/details and tabulate.</li> <li>5) Prepare standard foundation designs/details and tabulate.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The "typical" column bent is the single symmetrical bent utilized in the support of the majority of the structure.</li> <li>2) Designs for foundations, columns and caps will be standardized as appropriate for maintaining economy of design and construction. To ensure consistency of detailing and design, columns will design and grouped together bases on the structural demand (i.e. 1.0% reinforcing, 1.2% reinforcing, etc.).</li> <li>3) Includes footing, pier cap, and deep foundation analysis.</li> </ol>		

**C) Inputs:**

- 1) Optimized substructure cross-section.
- 2) Loads for superstructure longitudinal analysis.
- 3) Representative loads for superstructure transverse analysis.
- 4) Loads from substructure analysis.
- 5) Geotechnical data.

<b>D) Deliverables:</b>	<b>NTP #</b>
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Structures 6.9 Substructure Design/Detailing Straddle Bent	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0630.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) Develop straddle column design methodology. 2) Develop design and details for straddle bents.		
<b>B) Assumptions:</b> 1) Evaluate straddle bents for varying column heights, span lengths, geotechnical conditions, and skew configurations focusing on reduction of number of differing conditions and standardization of design details. 2) Includes footing, pier cap, and deep foundation analysis.		
<b>C) Inputs:</b> 1) Optimized substructure cross-section. 2) Loads for superstructure longitudinal analysis. 3) Representative loads for superstructure transverse analysis. 4) Loads from substructure analysis. 5) Geotechnical data.		
<b>D) Deliverables:</b> 1) Preliminary Engineering Submittal 2) Interim Design Submittal 3) Draft Final Design Submittal 4) Final Design Submittal		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Structures 6.10 Substructure Design/Detailing Cantilever Pier	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0630.0030	<b>Revision No:</b> Conformed

**A) Activity Description:**

- 1) Develop typical cantilever pier design methodology to be used in the development of final substructure design.
- 2) Develop cantilever pier designs/details, including cap, column and foundation.

**B) Assumptions:**

- 1) Evaluate cantilever pier for varying column heights, span lengths, geotechnical conditions, and skew configurations focusing on reduction of number of differing conditions and standardization of design details.
- 2) Includes footing, pier cap, and deep foundation analysis.

**C) Inputs:**

- 1) Optimized substructure cross-section.
- 2) Loads for superstructure longitudinal analysis.
- 3) Representative loads for superstructure transverse analysis.
- 4) Loads from substructure analysis.
- 5) Geotechnical data.

**D) Deliverables:**

- |                                      |             |
|--------------------------------------|-------------|
| 1) Preliminary Engineering Submittal | NTP #<br>1b |
| 2) Interim Design Submittal          | 2           |
| 3) Draft Final Design Submittal      | 3           |
| 4) Final Design Submittal            | 3           |

ACTIVITY DESCRIPTION		Form SOW 01
Activity:  Structures 6.11 Substructure Design/Detailing CIP Long Span Pier	Activity Responsibility:  AECOM	Issue Date:  09/20/2011
	Task No. / Sub Task No.  WBS - 0630.0040	Revision No.:  Conformed
<b>A) Activity Description:</b> 1) Develop column design methodology for Halawa and Kalihi Stream crossings to be used in the development of final substructure design. 2) Develop design and details for piers.		

**B) Assumptions:**

- 1) Includes footing, pier cap, and deep foundation analysis.

**C) Inputs**

- 1) Optimized substructure cross-section.
- 2) Loads for superstructure longitudinal analysis.
- 3) Representative loads for superstructure transverse analysis.
- 4) Loads from substructure analysis.
- 5) Geotechnical data.

D) Deliverables:	NTP #
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.12 Substructure Design/Detailing</b> <b>Station Pier</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0630.0050</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Develop Station column design methodology to be used in the development of final substructure design.</li> <li>2) Develop design and details for Station piers.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Evaluate columns for varying height conditions, span lengths, geotechnical conditions, and Station loading demands emphasizing aesthetic harmony with Station design.</li> <li>2) Includes footing, pier cap, and deep foundation analysis.</li> <li>3) Coordination is required with the Station designers.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Optimized substructure cross-section.</li> <li>2) Loads from superstructure longitudinal analysis.</li> <li>3) Representative loads for superstructure transverse analysis.</li> <li>4) Loads from substructure analysis.</li> <li>5) Typical column bent details.</li> <li>6) Station architectural design details and loads.</li> <li>7) Geotechnical data.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: <b>Structures</b>	Activity Responsibility: <b>AECOM</b>	Issue Date: <b>09/20/2011</b>
<b>6.13 Substructure Design/Detailing Analysis for Lateral and Gravity Loads</b>	Task No. / Sub Task No. <b>WBS - 0630.0060</b>	Revision No: <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Produce structural analyses of various continuous span units on the project, for the development of vertical and lateral loadings acting on the substructure. Spreadsheets and/or hand calculations will be utilized to determine column loads for simple span units. These loads will be used to develop individual column loads.</li> <li>2) Column loads will be provided to the engineers producing the individual bent designs.</li> <li>3) Modify substructure gravity, longitudinal and lateral load models to address proper seismic boundary conditions and conduct global demand analysis.</li> <li>4) Conduct push-over analyses to verify that column designs have the proper level of ductility.</li> <li>5) Modifications will be made to column/foundation design as required by seismic analysis.</li> </ol>		

**B) Assumptions:**

- 1) Task includes the structural analysis of all Guideway spans.

**C) Inputs:**

- 1) Optimized superstructure cross-section.
- 2) Model geometry from superstructure longitudinal analysis.
- 3) Geotechnical data.

**D) Deliverables:**

	NTP #
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.14 Structural Seismic Analysis</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0640.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> 1) Develop consistent approach to seismic modeling to ensure consistency of design for all individual units, including: <ul style="list-style-type: none"> <li>a) Boundary Conditions.</li> <li>b) Model Types to be considered.</li> <li>c) Cracked section properties to utilize for columns.</li> </ul>		
<b>B) Assumptions:</b> 1) Design will be in accordance with the HART Design Criteria. 2) Seismic analysis will be produced after initial substructure analysis and interim column designs are complete. In most cases, these loads are not expected to govern the design. If it is determined that that seismic does control, the design will be adjusted accordingly and is considered part of this SOW. 3) Seismic analysis engineer will work with substructure design engineers to provide any modifications to gravity/lateral load design required to meet seismic requirements.		
<b>C) Inputs:</b> 1) HART Design Criteria. 2) Geotechnical data.		
<b>D) Deliverables:</b> 1) Preliminary Engineering Submittal 2) Interim Design Submittal 3) Draft Final Design Submittal 4) Final Design Submittal		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.15 Site Structures</b>	<b>Activity Responsibility:</b> <b>Wilson Okamoto Corporation</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task:</b> <b>WBS- 0650.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Coordinate with other disciplines for the design requirements of the site structures. Prepare structural drawings, cost estimates, and specifications for the following site structures:               <ol style="list-style-type: none"> <li>a) Retaining walls required for Roadway Construction.</li> <li>b) TPSS System Sites (excluding building).</li> <li>c) Wastewater Site Structure.</li> <li>d) Drainage Site Structures.</li> <li>e) Water Site Structures.</li> <li>f) Supports for Electrical and Communications.</li> <li>g) Traffic Signal Site Structures.</li> <li>h) Traffic Signage Site Structures.</li> <li>i) Street Lighting Structures.</li> <li>j) Site walls required for Landscaping.</li> </ol> </li> <li>2) Review CITY/Other Agency comments on the interim design and finalize the interim design. Prepare contract documents and construction cost estimates for bidding and construction.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Project elements that require structural supports and are attached to the Guideway will be considered part of the Guideway structural design.</li> <li>2) Approximate locations of site structures are based on the Preliminary Engineering drawings and will be further developed through the design process.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Geotechnical engineer to provide soils related design and construction information required to design foundations, retaining walls, and other site structures.</li> <li>2) Required design criteria, dimensions, configurations, and control elevations will be provided for structural design of non-standard manholes, catch basins, inlets, concrete pads, reaction bocks, and other site structures.</li> <li>3) Requirements of private utility companies (HECO, Hawaiian Telcom, etc.).</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Structures 6.16 Structure Design Aesthetics	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task:</b> WBS – 0660.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) Coordination with the architects to ensure project theme is correctly applied to the various structural elements, including (but not limited to): <ul style="list-style-type: none"> <li>a) Typical piers.</li> <li>b) Cantilever piers.</li> <li>c) Station piers.</li> <li>d) Straddle bents.</li> <li>e) Precast girder pier between Stations 1196+00 and 1205+00 (approx).</li> </ul>		
<b>B) Assumptions:</b> 1) Concepts would be developed and approved 30 days prior to Interim Design Submittal (NTP #2).		
<b>C) Inputs:</b> 1) Input from architectural design.		
<b>D) Deliverables:</b>		<b>NTP #</b>
1) Preliminary Engineering Submittal		1b
2) Interim Design Submittal		2
3) Draft Final Design Submittal		3
4) Final Design Submittal		3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Structures	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
<b>6.17 QC Review - Discipline and Inter-Discipline Review of Documents</b>	<b>Task No. / Sub Task No.</b> WBS - 0670 .0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b>		
<ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed. Independent Design Check (see 670.0020) will be utilized in lieu of direct line-by-line calculation checking for Guideway elements and non-gravity retaining structures. Other structural elements, such as TPSS foundations and traffic signal poles/foundations, will be checked by line-by-line calculation review under this task.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal, and addressing all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b>		
<ol style="list-style-type: none"> <li>1) All Guideway structural elements undergo two reviews: <ol style="list-style-type: none"> <li>a) A senior engineer review of the calculations developed for design, covered under this sub task number. Note that this is not a line-by-line check.</li> <li>b) An independent design check. The independent design check is performed by a qualified engineer who was not involved in the initial development of the design. This sub task is covered under a separate sub task number. This review occurs at or near the conclusion of the initial design (NTP #3).</li> </ol> </li> </ol>		
<b>C) Inputs:</b>		
<ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b>		<b>NTP #</b>
1) Preliminary Engineering Submittal		1b
2) Interim Design Submittal		2
3) Draft Final Design Submittal		3
4) Final Design Submittal		3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Structures</b> <b>6.18 Independent Design Check</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0670.0020</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) Provide design plans to engineers not involved in the design. The independent engineer will review the drawings and develop independent analyses and calculations which document that the design meets the design criteria.
- 2) Any discrepancies between the designer and independent engineer will be resolved and the plans will be updated accordingly.

**B) Assumptions:**

- 1) All Guideway structural elements and non-gravity retaining structures will undergo an Independent Design Check.
- 2) Independent Design Check of various components may begin before design is entirely complete, to allow time for preparation of check analysis models.
- 3) All Guideway structural elements undergo two reviews:
  - a) A senior engineer check of the calculations developed for design. This is covered under a separate sub task number. Note that this is not a line-by-line check.
  - b) An independent design check. The independent design check is performed by a qualified engineer who was not involved in the initial development of the design. This sub task is covered under this sub task number. This review occurs at or near the conclusion of the initial design (NTP #3).
- 4) All Independent Design Checks will be conducted under the Responsible Charge of a Structural Engineer registered in the State of Hawaii.

**C) Inputs:**

- 1) Completed Interim Structural Design Drawings.
- 2) Approved Design Criteria.

**D) Deliverables:**

- 1) Final Design Submittal

**NTP #**

**3**

**TASK 0700 - Geotechnical Exploration and Design**

Geotechnical exploration will be conducted for all Guideway and site improvements within the Guideway right-of-way and for the Station support foundations. Coordination with the ASG designers for that information will be required to the extent practicable, Geotechnical data from previous investigations for the Guideway prepared by HART and from other readily available soils reports for other projects in the vicinity will be used to plan the exploration program. Geotechnical design will be based on LRFD design and based on the understanding that drilled shafts are per the FEIS and initial engineering studies preferred foundation type. Alternative foundations types will be considered as needed to meet project specific constraints and conditions.

ACTIVITY DESCRIPTION		Form SOW 01
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<b>Activity:</b> Geotechnical Exploration and Design 7.1 Development of Boring Plan	<b>Activity Responsibility:</b> Geolabs, Inc.	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0710.0010	<b>Revision No:</b> Conformed

- A) Activity Description:**
- 1) Review and synthesize available geotechnical data.
  - 2) Review PE design substructure locations and compare existing data locations with CDC requirements for reuse/applicability.
  - 3) Reconnaissance of the alignment to review bent locations and access considerations.
  - 4) Develop geotechnical exploration plan [CDC Chapter 9; 02 32 00: §3.02 Work Plans].
    - a) Geotechnical Planning Report (GPR) [Article 3.02.A - GPR]
    - b) Geotechnical Investigations Work Plan (GIWP) [Article 3.02.B - GIWP]
    - c) Geotechnical Investigations Health and Safety Plan
    - d) Drilling Qualifications
    - e) Laboratory Qualifications
    - f) QA/QC Plan
  - 5) Review existing utilities plan to check for obvious conflicts.
  - 6) Identify locations where grading would be required for access for drilling and sampling.
  - 7) Site and pavement borings.

- B) Assumptions:**
- 1) All record or as-built drawings of existing utilities and facilities to be provide by others.
  - 2) Grading permits as required would be procured by the CONSULTANT.
  - 3) All Rights-of-Entry to private properties will be provided by HART.
  - 4) Approximately 240 (structural) foundation locations comprise the alignment (approximately 31,000 LF).
  - 5) Approximately 40 site and pavement boring locations.
  - 6) Negligible number of previously completed borings satisfy CDC requirement for re-use.
  - 7) Drilling qualifications, laboratory qualifications, QA/QC Plan will be finalized prior to the actual start of field explorations.

- C) Inputs:**
- 1) PE Documents (substructure type and locations).
  - 2) HART review comments to required work plans and submittals in accordance with project review schedules except as mutually agreed to the contrary for expedited reviews.

<b>D) Deliverables:</b>	<b>NTP #</b>
1) Develop Boring Plan	1b
2) Geotechnical QA/QC Plan	1b

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> <b>Geotechnical Exploration and Design</b> <b>7.2 Obtain Necessary Permits</b>	<b>Activity Responsibility:</b> <b>Geolabs, Inc.</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0710.0020</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) NPDES Permits for Boring Activities (Ground Disturbance):
  - a) HART will obtain the NPDES permit for geotechnical work, however the CONSULTANT will have to submit site-specific BMP's for various locations prior to geotechnical work. The CONSULTANT will provide the information required for HART to prepare the NPDES permit application.
  - b) Evaluate site access clearance and the need for trail clearing or platform construction for access.
  - c) Grading permits as required.
  - d) Evaluate the need for in-water borings and access considerations.
  - e) Develop traffic control plans for borings requiring lane closures.
  
- 2) Utility Clearance and Excavation Permits:
  - a) Apply for all required excavation permits & street usage permits for drilling activities.
  - b) Apply for One Call Center permit.
  - c) Coordinate utility toning activities with various utility agencies and owners.
  - d) Perform utility toning and verifications including geophysical survey and potholing, where necessary.

**B) Assumptions:**

- 1) All record or as-built drawings of existing utilities and facilities to be provided by others.
- 2) A Section 404 U.S. Army Corps of Engineers permit will not be required for in-water borings utilizing a platform or raft.
- 3) Revisions necessitated by design substructure configuration changes will be addressed as they become available.
- 4) All Rights-of-Entry to private properties will be provided by HART.
- 5) Trail clearing associated with geotechnical investigation is typically exempt from a Grading Permit; however, given the large quantity of borings, it is recognized that some permits may be required.
- 6) NPDES permit for geotechnical work will be obtained by HART.
- 7) Nominal revised substructure locations that have been already drilled may need to be re-drilled. It is estimated that as many as 10% of the structural borings will have to be re-drilled.
- 8) Right-of-entry will be granted within 45 days of submittal of the request to HART.
- 9) The following permits may be needed, depending on the specific locations:

PERMIT	AGENCY
A. Permit to Perform Work Upon State Highways	Hawaii DOT – Highways
B. Application & Permit for the Occupancy & Use of State Highway Right-of-Way	Hawaii DOT – Highways
C. Permit to Perform Work Upon Airport Roadways	Hawaii DOT – Airports
D. Site Development Division Master Application Form To obtain the "Permit to Excavate Public Right-of-Way"	CCHNL – Dept. Planning & Permitting
E. Application/Permit for Street Usage	CCHNL – Dept. of Transportation Services
F. Application for Right-of-Entry To Parks	CCHNL – Dept. of Parks & Recreation
G. Grading Permit, if extensive grading/earthwork required to provide boring access	CCHNL – Dept. of Planning & Permitting
H. Nationwide Permit Verification for In-Water Borings NOTE: This is not the Section 404 Corps of Engineers Permit	US Army Corps of Engineers – Honolulu District
I. Excavation Permit for Pearl Harbor NOTE: This is not an actual permit, but it is a series of protocols necessary for the utility clearance process within the Pearl Harbor Complex including personnel base access	US Dept. of the Navy
J. One-Call Center	Notification of agencies in accordance with Hawaii Revised Statutes § 269E

**C) Inputs:**

- 1) Up-to-date column/substructure locations.
- 2) Field revised geotechnical investigation locations.

**D) Deliverables:**

- 1) Obtain Permits

**NTP #**  
1b

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> <b>Geotechnical Exploration and Design</b> <b>7.3 Geotechnical Investigation and Soils</b> <b>Testing</b>	<b>Activity Responsibility:</b> <b>Geolabs, Inc.</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0710.0030</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) Boring:
  - a) Mobilize drill rig(s), support truck(s), water truck(s), SCPT equipment, & personnel.
  - b) Set-up for traffic control and conduct borings.
  - c) Set-up for traffic control and conduct CPT.
  - d) Set-up BMP's for drilling activities at each boring location, as required.
  - e) Backfilling borings with bentonite and/or cement grout.
  - f) Collect surface soil samples for lab CBR and Proctor compaction tests.
  - g) Perform trail clearing to provide access to difficult access boring locations; coordinate tree removals with HART.
  - h) Construct platforms and/or rafts for borings in water conditions.
  - i) Install silt curtains and other BMPs for any water borings.
  - j) Coordinate archeological oversight with designated HART representative.
  - k) Install stand pipe/vibrating wire piezometers at selected locations.
- 2) Shear Wave Velocity Profile Testing:
  - a) Mobilize drill rig with SCPT equipment & personnel.
  - b) Set-up for traffic control and conduct SWV tests at selected locations.
- 3) Lab Testing:
  - a) Review and select soil and rock samples for testing.
  - b) Take photographs of core samples.
  - c) Perform geotechnical laboratory tests.
  - d) Test water samples for corrosivity, salinity, and disposal considerations.

**B) Assumptions:**

- 1) Boring:
  - a) Trail clearing associated with geotechnical investigation is exempt from a Grading Permit.
  - b) A U.S. Army Corps of Engineers permit will not be required for in-water borings utilizing a platform or raft.
  - c) All Rights-of-Entry to private properties will be provided by HART.
  - d) HART to provide Archeological Monitors (AM); one week advance notice will be provided to the AM.
  - e) It is anticipated that not all of the geotechnical investigations will be performed during the day. For borings that have to occur at night, the CONSULTANT will obtain the necessary

permits.

- f) CPT calibration will occur at each "site" where CPTs are used as basis for design.
  - g) Substructure locations that are shifted after being drilled and sampled will be evaluated on case by case basis in consultation with HART to determine if the revised location will need to be drilled and sampled.
  - h) Chemical tests for hazardous materials will not be required of geotechnical borings.
  - i) Approximately 240 (structural) foundation locations comprise the alignment (approximately 31,000 LF). Up to 6 additional borings due to bent location refinements are assumed.
  - j) Approximately 40 site and pavement boring locations.
- 2) Shear Wave Velocity Profile Testing:
- a) Approximately ten (10) SWVP test planned.
  - b) Borings completed and backfilled with bentonite can remain open until SWVP testing can be completed.
  - c) SWVP testing will not require any special BMPs such as are required for drilling and sampling activities.
- 3) Lab Testing:
- a) Chemical tests for hazardous materials will not be required of geotechnical borings.
  - b) Lab testing can begin once the samples are procured.

**C) Inputs:**

- 1) N/A

**D) Deliverables:**

- 1) N/A

**NTP #**

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Geotechnical Exploration and Design 7.4 Development of Reports and Design Technical Memoranda	<b>Activity Responsibility:</b> Geolabs, Inc.	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0710.0040	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Site Specific Response Spectrum Analysis with Time History:               <ol style="list-style-type: none"> <li>a) Review subsurface information and evaluate dynamic soil properties.</li> <li>b) Review and evaluate available time histories.</li> <li>c) Plot and evaluate all time histories to be used for response spectrum analyses.</li> <li>d) Modify selected time histories for use in site-specific response spectrum analyses.</li> <li>e) Conduct site-specific seismic response spectrum analyses with developed time histories.</li> <li>f) Prepare technical memorandum with recommended seismic design parameters.</li> </ol> </li> <li>2) Development of Design Technical Memoranda:               <ol style="list-style-type: none"> <li>a) Perform preliminary geotechnical evaluation.</li> <li>b) Evaluate drilled shaft size and depth &amp; lateral load analyses, etc.</li> <li>c) Develop and prepare interim geotechnical design technical memoranda.</li> </ol> </li> <li>3) Development of Reports (GDR and Geotechnical Final Design Report (GFDR)):               <ol style="list-style-type: none"> <li>a) Review field boring logs and soil samples and edit boring logs.</li> <li>b) Review laboratory test data and edit boring logs for conformance with test results.</li> <li>c) Review and evaluate soil properties at each bent location based on the borings.</li> <li>d) Perform additional drill shaft analyses for each bent location.</li> <li>e) Develop and prepare draft GDR.</li> <li>f) Review design drawings for compliance with the intent of geotechnical recommendations.</li> </ol> </li> <li>4) Pavement Justification Report.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Site Specific Response Spectrum Analysis with Time History:               <ol style="list-style-type: none"> <li>a) Some critical borings will have been completed to allow an estimate of soil properties and from these an empirically-based determination of seismic site class will be made.</li> <li>b) Site-specific response spectrum analyses most critical with design of foundations in Seismic Design Category (SDC) 3, e.g. seismic site class E and F.</li> <li>c) Site-specific response spectrum analyses not critical/required for design of foundations in Seismic Design Category (SDC) 1 and 2, e.g. seismic site classes B through D.</li> </ol> </li> <li>2) Development of Design Technical Memoranda:               <ol style="list-style-type: none"> <li>a) Existing generalized soil parameters provided in the reference Foundation TMs will require nominal validation and modification for these analyses.</li> <li>b) Findings of Interim Design Memo would be applied to planned geotechnical investigations</li> </ol> </li> </ol>		

within each work area.

- 3) Development of Reports (GDR and Geotechnical Final Design Report (GFDR)):
  - a) Substructure locations that have been revised subsequent to completion of drilling/investigation will be coordinated with HART and re-drilled as necessary.

**C) Inputs:**

- 1) Loading demands per LRFD for typical bent for foundation-specific analyses.
- 2) Bent Locations will need to be finalized early on for geotechnical borings to proceed.

**D) Deliverables:**

- 1) Submittal of Draft Reports/Memos
- 2) Submittal of Final Reports/Memos

**NTP #**

1b

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**ACTIVITY DESCRIPTION**

Form SOW 01

Activity:  Geotechnical 7.5 Quality/Peer Review	Activity Responsibility: SHANNON & WILSON	Issue Date: 09/20/2011
	Task No. / Sub Task No. WBS – 0710.0050	Revision No: Conformed

**A) Activity Description:**

- 1) Shannon & Wilson will perform an independent Quality/Peer Review of the geotechnical program that will be accomplished for the project. This will include participation in monthly geotechnical progress meetings and reviewing the following documents that will be prepared by GeoLabs/YKE for completion of the work. The review would focus on the exploration program and engineering analyses so that a safe and cost effective final design is provided without increased risk.
- 2) The following documents that will be prepared by GeoLabs/YKE, will be reviewed:
  - a) Geotechnical Planning Report and Drilling and Sampling Plan. The Geotechnical Planning Report and Drilling and Sampling Plan will outline the Geotechnical Team's approach to the geotechnical exploration program and engineering analyses. These documents will include the proposed exploration plan (including a description of all drilling and sampling methods), laboratory testing program, and any other field testing proposed for the project. They will also outline how the subsurface conditions (soil, rock, and groundwater) will be characterized; and based on this characterization, how foundation recommendations will be developed for the project. It is anticipated that the exploration work will be accomplished in two phases. The initial phase will include completing explorations where there are data gaps in the available subsurface information. This work will be accomplished as preliminary recommendations are developed for design of the foundations. These will also allow the structural design team to fix the location of the piers to avoid existing utilities and traffic considerations. Based on the "final" location of the pier foundations, a second phase of explorations will be accomplished at each of the pier locations where explorations do not exist to develop final design recommendations for each pier foundation. Shannon & Wilson will review both Draft and Final reports.
  - b) Geotechnical Data Reports. Based on a two phase exploration program, there will be two Geotechnical Data Reports that would be prepared, one for each phase. These documents will include the results of all explorations, field testing, and laboratory testing. Shannon & Wilson would review both Draft and Final reports for each phase.
  - c) Technical Memoranda. Based on the schedule, geotechnical design memoranda will be prepared prior to the Draft and Final Geotechnical Engineering reports. Shannon & Wilson will review these documents.
  - d) Geotechnical Engineering Reports. The Geotechnical Engineering Report will summarize the geotechnical foundation design recommendations developed for the project. Shannon & Wilson will review these Draft and Final reports and supporting calculations.

<b>B) Assumptions:</b>	
<ol style="list-style-type: none"> <li>1) A Shannon &amp; Wilson representative will participate in monthly geotechnical progress meetings.</li> <li>2) Draft and Final Drilling and Sampling Plans will be reviewed.</li> <li>3) Draft and Final Geotechnical Planning Reports will be reviewed.</li> <li>4) Draft and Final Data Reports will be reviewed.</li> <li>5) Draft and Final Engineering Reports will be reviewed.</li> <li>6) Interim Technical Memoranda will be reviewed.</li> </ol>	
<b>C) Inputs:</b>	
<ol style="list-style-type: none"> <li>1) Pier locations developed by Structural Designer.</li> <li>2) Preliminary and Final foundation demands developed by Structural Designer.</li> <li>3) Lateral movement and allowable settlement criteria developed by Structural Designer.</li> </ol>	
<b>D) Deliverables:</b>	<b>NTP #</b>
1) Perform Review – Draft	1b
2) Perform Review – Final	2

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Geotechnical Exploration and Design 7.6 Load Test	<b>Activity Responsibility:</b> Geolabs, Inc.	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0720.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) A foundation load test(s) will be performed on the selected foundation type(s) for the project. The load tests will be used to confirm the final design, allow the use of a higher resistance factor, and therefore increase the cost effectiveness of the final design without increasing risk to the project. Tasks required to implement a foundation load test program into the project include the following: 2) Identification and Development of Load Test Specifications: a) Review the foundation design and the subsurface conditions to evaluate the most appropriate foundation load tests, which may include both axial and lateral load considerations. b) Once the nature of the test is developed, evaluate areas/locations where the tests can be performed. c) Develop planning documents for the test program, including permit considerations.		
<b>B) Assumptions:</b> 1) The CONSULTANT will evaluate the permit requirements for performing the load test. 2) The CONSULTANT will determine available load test sites along the contract corridor. 3) The CONSULTANT will prepare and provide quantity take-offs for performance of the load tests. 4) The CONSULTANT will prepare the contract documents, including CADD drawings.		
<b>C) Inputs:</b> 1) Final Design loads and controlling load cases will be provided by the structural designers.		
<b>D) Deliverables:</b> 1) Load Test Specifications		<b>NTP #</b> 2

**TASK 0800 - Architectural Design**

Develop aesthetic treatment of selected Guideway columns in the vicinity of the Stations. An aesthetic design concept report shall be prepared to permit discussion of the ideas with HART prior to initiating and completing final design.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Architectural Design 8.1 Station, Piers, TPSS and Pedestrian Pathway Aesthetics	<b>Activity Responsibility:</b> Group 70 International Inc.	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0810.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Review HART provided documents to be used in developing aesthetic design concepts for the Guideway.</li> <li>2) Interface with HART Architectural staff, Station Design Consultant, Art-in-Transit Administrator, Structural engineer, Landscape Architect, civil engineer, Cultural Consultant and other disciplines as required.</li> <li>3) Prepare studies, renderings and graphics to display the integration of aesthetic treatment into the engineered elements of the Guideway structure.</li> <li>4) Research constructability and concrete form options, hardscapes options.</li> <li>5) Prepare conference notes pertaining to scope for coordination and workshop meetings attended.</li> <li>6) Based on comments from interim design submittal, prepare final design drawings.</li> <li>7) Comprehensive review of PE design, H RTP design guidelines and preparation of design narrative.</li> <li>8) Preparation of conceptual design studies of options and location plans.</li> <li>9) Prepare at Interim design conceptual options for cost estimating and peer review.</li> <li>10) Final design option detail design documents, plans, elevations sections and outline specification for any aesthetic elements, such as concrete form liners, concrete treatment/finishes and architectural hardscapes finishes.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) System Art Program, project cultural guidelines and principles developed in the PE and previous Guideway segments will guide the development of Guideway aesthetics.</li> <li>2) Work will include Station areas and other areas identified in the aesthetic design study.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) H RTP design guidelines and government provided documents.</li> <li>2) Understanding of design elements used at other segment locations.</li> <li>3) Design Language Pattern Book.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Design</li> <li>2) Interim Design</li> <li>3) Draft Final Design</li> <li>4) Final Design</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Architectural Design 8.2 Sustainability Report Compilation and Preparation of Report	<b>Activity Responsibility:</b> Group 70 International Inc.	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0810.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Preparation of draft/outline of potential sustainable opportunities for review and final determination of a list of opportunities to pursue.</li> <li>2) Coordinate with Architectural, Landscape, Structural, Civil and Electrical and other disciplines for Contributing Sections.</li> <li>3) Prepare draft report with summary, overview and draft definition of each sustainable strategy pursued, submit as part of interim design submittal.</li> <li>4) Receive, comment on, and finalize systemwide report for final submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) HART guidance on format or base document expectations.</li> <li>2) Architectural, Landscape, Structural, Civil and Electrical, and other disciplines for Contributing Sections.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) HHCTCP Systemwide Sustainability Report, dated May 22, 2009.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Submittal of Preliminary Engineering Design</li> <li>2) Submittal of Interim Design</li> <li>3) Submittal of Draft Final Design</li> <li>4) Submittal of Final Design</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Architectural Design 8.3 Discipline and Inter-Discipline Review of Documents	<b>Activity Responsibility:</b> Group 70 International Inc.	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0820.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline Review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Disciplinary Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to ensure adequacy of the QC review verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) HHCTCP Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Design</li> <li>2) Interim Design</li> <li>3) Draft Final Design</li> <li>4) Final Design</li> </ol>		<b>NTP #</b> 1b 2 3 3

### **TASK 0900 - Utility Design**

Design and develop the composite existing utilities plans and the utility relocation and electrical service reconnection plans, profiles, and details within the Airport Segment Guideway and Utilities Contract. Perform sufficient additional pothole investigations to ensure no damage to the existing active utilities from the construction of drilled shafts and foundations and all other aspects of the work. Obtain HDOT waiver to retire abandoned underground utilities in place with the exception of fuel lines.

Note that traffic engineering design for the relocation of signals will be performed under task 1000, Traffic Signal Design. Electrical engineering associated with traffic signal design will be performed under task 1100, Electrical Design. Except at signalized intersections, relocation of existing traffic signal conduits impacted by construction activities will be accomplished under this task.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>As-Built Research &amp; Sub-Surface Investigation</b> <b>9.1 Development of Composite Utility Plans</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 0910.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Request as-built plan/mapping information from respective utility companies, HDOT, City, NAVFAC, NCTAMS and NEC.</li> <li>2) Research available plans, including electronic files compiled for the preliminary engineering drawing set, to verify utility locations indicated on the Composite Plan – Existing Utilities.</li> <li>3) Review Composite Plan – Existing Utilities and coordinate locations for sub-surface investigation to locate civil utility lines and electrical and communications ductlines.</li> <li>4) Tabulate depth information gleaned from sub-surface investigation for use with civil utility and ductline profiles.</li> <li>5) Conduct site visits along proposed track alignment and note any additional overhead or underground impacts.</li> <li>6) The CONSULTANT will update the composite utility plans from the PE drawing set based on the information obtained through as-built research and sub-surface investigation.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) As-built utility, HDOT and City plans compiled during the Preliminary Engineering stage will be made available in electronic CADD format to the CONSULTANT.</li> <li>2) Utility agencies will be allowed to discuss/assist the CONSULTANT with research (Utility agreements with HART in place).</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Proposed adjustments to the track alignment or column support locations indicated in the Preliminary Engineering Plans.</li> <li>2) Proposed adjustments to the transit Station site and/or system site footprints indicated in the Preliminary Engineering Plans.</li> <li>3) Topographic survey.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

**ACTIVITY DESCRIPTION**

Form SOW.01

<b>Activity:</b> <b>As-Built Research &amp; Sub-Surface Investigation</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
<b>9.2 Sub-Surface Investigation (GPR &amp; Potholing)</b>	<b>Task No. / Sub Task No.</b> <b>WBS- 0910.0020</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) The CONSULTANT will review existing utility layout and determine potential conflicts with pier locations and other improvements.
- 2) The CONSULTANT will determine which utilities need to be physically located.
- 3) The CONSULTANT will perform preliminary sub-surface investigation, possibly utilizing Ground Penetrating Radar (GPR) and other technology to determine where potholing should be performed.
- 4) The CONSULTANT will perform sub-surface investigation by potholing to locate existing utilities.
- 5) The CONSULTANT will survey the exposed utility for documentation.
- 6) Input utilities into the utility CADD files.

**B) Assumptions:**

- 1) The CONSULTANT will work with utility owners and HART to follow the guiding principle of minimizing relocations wherever possible.

**C) Inputs:**

- 1) Rights-of-entry will be granted in approximately forty-five (45) days of submittal of the request to HART.

**D) Deliverables:**

- 1) Right of Entry Requests and other Permit Applications required

NTP #

1b

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Utility Design 9.3 Design and Plan Development for Utilities (Non-Electrical)	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 0920.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Includes:               <ol style="list-style-type: none"> <li>a) Gas Line.</li> <li>b) Sewer Line.</li> <li>c) Irrigation Water Line.</li> <li>d) Storm Drain.</li> <li>e) Water Line.</li> <li>f) Fuel or Oil Line.</li> <li>g) Relocated utilities will be placed to avoid conflicts with proposed Guideway piers.</li> <li>h) Utilities will be relocated when they are within the clear zone (a 6-foot clearance to the face of the drilled shaft) of proposed Guideway piers. For water line 16" or greater, BWS requires a minimum 10-foot clearance to the face of drilled shaft.</li> <li>i) The CONSULTANT will propose utility relocation to avoid conflicts with other utilities.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) HART will provide the CADD files for the Utility Relocation Plans from the PE drawings.</li> <li>2) HART will provide any previous correspondence with HART, the City, or Navy regarding relocation design.</li> <li>3) The CONSULTANT will work with the utility owners and HART to follow the guiding principle of minimizing utility relocations wherever possible.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Revised Preliminary Engineering Plans.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Utility Design 9.4 Design and Plan Development for Electrical and Communication Utilities	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 0920.0020	<b>Revision No:</b> Conformed
<p><b>A) Activity Description:</b></p> <p>1) Relocation Design and Plans.</p> <p>a) Based on the updated Composite Existing Utility Plans, relocation design of the proposed electric and communications duct systems to replace existing utility facilities that are in conflict with the Guideway columns, proposed roadway improvements and relocated civil utilities.</p> <p>b) Coordination of betterments proposed by the respective utility companies with the proposed relocation designs.</p> <p>c) Based on the updated Composite Existing Utility Plans, relocation design of the proposed highway lights and street lights to replace existing State and City owned facilities that are in conflict with the Guideway columns, proposed roadway improvements and relocated civil utilities.</p> <p>d) Coordinate with utility agencies to provide data for Utility Agreements to be developed by HART.</p> <p>2) Demolition Plans (Depending on amount of information on Relocation Plans, this information may be incorporated into the Relocation Plans rather than a separate set).</p> <p>a) For areas under HDOT jurisdiction in accordance with the policy indicated in HWY-O 2.11-0781, plans indicating the demolition/removal of underground utility, street light and traffic signal interconnect duct systems that are in conflict with the Guideway column locations, system sites and Station sites. Plans will also include demolition of highway light foundations in accordance with HDOT requirements.</p> <p>b) For areas under City and County of Honolulu jurisdiction in accordance with City policy, plans indicating the demolition/removal of underground utility, street light and traffic signal interconnect duct systems that are to be relocated, in accordance with City policy. Plans will also include demolition of street light foundations.</p> <p>c) Plans indicating removal of City-owned overhead lines that are in conflict with the track alignment.</p>		

**B) Assumptions:**

- 1) Relocation Design and Plans.
  - a) The CONSULTANT will work with the utility owners and HART to follow the guiding principle of minimizing utility relocations wherever possible.
  - b) Incorporation of any proposed utility betterments will be subject to the approval of HART. Any fees associated with the design of these betterments will be negotiated directly with the requesting utility company.
  - c) Relocation designs will be based on approved adjustments to the track alignment, column locations, Station site footprint and system Station footprint.
- 2) Demolition Plans:
  - a) Overhead utility lines requiring removal/relocation due to conflict with the track alignment will be removed by their respective owners.
  - b) Traffic signal duct systems and traffic signal standard foundations at signalized intersections will be demolished/removed under the respective traffic signal plans for those intersections.
  - c) It is understood that HART will be processing the Utility Construction Agreements for utilities and Use and Occupancy Agreements for State rights-of-way, but the CONSULTANT will provide data for input into each.

**C) Inputs:**

- 1) Revised Preliminary Engineering Plans.
- 2) Review of the proposed duct system alignment by Hawaiian Electric Co., Hawaiian Telcom, and Oceanic Time Warner Cable.
- 3) Where applicable, review of the proposed duct system alignment by: AT&T; Sandwich Isle Communications; Wavecom; TW Telcom; Pacific LightNet; Naval Computer and Telecommunications Master Station; and Network Enterprise Center.
- 4) Review by C & C Dept. of Planning and Permitting, C & C Dept. of Design and Construction and C & C Dept. of Transportation Services and State of Hawaii Department of Transportation for work within their respective jurisdictions.

**D) Deliverables:**

- 1) Preliminary Engineering Submittal
- 2) Interim Design Submittal
- 3) Draft Final Design Submittal
- 4) Final Design Submittal

**NTP #**

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ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Utility Design	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
9.5 QC Review - Discipline and Inter-Discipline Review of Documents	<b>Task No. / Sub Task No.</b> WBS - 0930.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b>		
<ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline Review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> </ol>		
<b>B) Assumptions:</b>		
<ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b>		
<ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b>		<b>NTP #</b>
1) Preliminary Engineering Submittal		1b
2) Interim Design Submittal		2
3) Draft Final Design Submittal		3

**TASK 1000 - Traffic Signal Design**

Design and develop traffic signal plans for one (1) new intersection and seven (7) existing intersections required by the Guideway construction. The new intersection is at Ualena Street/Lagoon Drive and the seven (7) existing intersections are along Kamehameha Highway at various locations, noted below:

- Kalaloa Street
- Arizona Street
- Radford Drive / Makalapa Road
- Center Drive
- Valkenburg Street
- Middle Street
- Gaspro Driveway

Traffic engineering design for the relocation of signals will be performed under task 1000, Traffic Signal Design, including wiring/conduit between the controllers and signals. Electrical engineering associated with tying the controllers into the City's traffic network will be performed under task 1100, Electrical Design.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Traffic Signal Design</b> <b>10.1 Development of Interim Traffic Signal Plans</b>	<b>Activity Responsibility:</b> <b>Wilson Okamoto Corporation</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 1010.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Identify MOT Work Zones – coordinate with TMP and MOT reports.</li> <li>2) Identify applicable geometrics and traffic movement restrictions associated with work activity time periods as applicable.</li> <li>3) Review TMP and MOT Plans/Documents.</li> <li>4) Confirm maintenance of traffic operations at intersections and other conflicting vehicular or multi-modal movements.</li> <li>5) NTP #1b: Revise and develop interim traffic signal design drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable and other HART preferences. Ensure compliance of interim traffic signal system design with City’s roadway standards.</li> <li>6) NTP #2: Prepare detailed working drawings and specifications of interim traffic signal design for the interim design phase.</li> <li>7) NTP #3: Finalize the interim design and prepare the construction contract documents for the interim traffic signal design improvements.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The City will provide signal timing plans associated with interim traffic signals during construction activities.</li> <li>2) Number of traffic lanes within the roadways will match plans in MOT.</li> <li>3) Number of traffic lanes approaching the intersections will match plans in MOT.</li> <li>4) The available number of travel lanes will remain as existing during non-work periods.</li> <li>5) Permitted traffic movements based on TMP and MOT.</li> <li>6) Construction zone requirements as preliminary plans.</li> <li>7) Excludes integration with offsite traffic control plans.</li> <li>8) Signal phasing as identified in PE drawings and revised as required by MOT plans.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) City’s standards for traffic signage and traffic signal appurtenances for work within City’s Right-of-Way.</li> <li>2) HDOT Highway Division Standards for intersection and roadway work within State’s Right-of-Way.</li> <li>3) Final Station and Guideway VE Reports.</li> <li>4) PE Drawings and MOT plans.</li> <li>5) Preliminary plans and specifications for maintenance of traffic plans.</li> </ol>		

6) Construction work activities, work flow, and schedule. 7) Level III TMP and MOT reports.	
<b>D) Deliverables:</b> 1) Preliminary Engineering Submittal 2) Interim Design Submittal 3) Draft Final Design Submittal 4) Final Design Submittal	<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Traffic Signal Design</b> <b>10.2 Development of Final Traffic Signal Plans</b>	<b>Activity Responsibility:</b> <b>Wilson Okamoto Corporation</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 1010.0020</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) NTP #1b: Revise and develop final traffic signal design drawings to incorporate the approved Station and Guideway Value Engineering (VE) recommendations, as applicable and other City preferences. Ensure compliance of final traffic signal system design with City's design standards.</li> <li>2) NTP #2: Prepare detailed working drawings and specifications of the final traffic signal design for the interim design phase.</li> <li>3) NTP #3: Finalize the interim design and prepare the construction contract documents for the final traffic signal design improvements.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The City will provide signal timing plans associated with final traffic signals.</li> <li>2) Number of traffic lanes within the roadways will match plans in MOT.</li> <li>3) Number of traffic lanes approaching the intersections will match plans in MOT.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) City's standards for traffic signage and traffic signal appurtenances for work within City's Right-of-Way.</li> <li>2) HDOT Highway Division Standards for intersection and roadway work within State's Right-of-Way.</li> <li>3) Final Station and Guideway VE Reports.</li> <li>4) PE Drawings.</li> <li>5) EIS Mitigation requirements.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3

4) Final Design Submittal	3
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ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Traffic Signal Design 10.3 QC Review - Discipline and Inter-Discipline Review of Documents	<b>Activity Responsibility:</b> Wilson Okamoto Corporation	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 1020.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Review will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3



**TASK 1100 - Electrical Design**

Design and develop electrical plans for street lighting, Guideway lighting, and traffic signals, and power distribution, and coordinate with the Airport Station Group (ASG) designers and the Core Systems Contract (CSC) designers for the design of electric service connections to four (4) Stations and the Traction Power Sub-Stations (TPSS) located at the four (4) Stations along the Airport Segment Guideway.

Traffic engineering design for the relocation of signals and new intersection signalization will be performed under task 1000, Traffic Signal Design. Task 1100 includes electrical and communication wiring/conduit interconnect design between intersection traffic signal controllers and tie-ins to the City's traffic signal and ITS network.

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Electrical Design 11.1 Guideway Alignment Illumination and Traffic Signal Design	<b>Activity Responsibility:</b> Ronald Ho and Associates <b>Task No. / Sub Task No.</b> WBS - 1110.0010	<b>Issue Date:</b> 09/20/2011 <b>Revision No:</b> Conformed
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**A) Activity Description:**

- 1) Illumination and Guideway Lighting:
  - a) The CONSULTANT will provide illumination calculations for the roadway segments where the street/highway lights are being relocated and/or replaced to avoid conflicts with the track alignment and columns and where the roadways are being widened or realigned to accommodate the track alignment.
  - b) Illumination will be designed for the parking lot at approximate Station 1217+00.
  - c) Guideway lighting as required.
- 2) Traffic Signals.
  - a) Based on the approved interim traffic signal plans, the CONSULTANT will submit the request for electric and telephone service at those intersections where the traffic signal controller is being relocated or replaced or for new traffic signal controller installations, and obtain the service agreements from the electric company and the service acknowledgment from the telephone company.
  - b) Based on the ITS System Design, the CONSULTANT will provide support structures and power connections for implementation of the temporary and permanent ITS equipment deployments.

**B) Assumptions:**

- 1) Illumination:
  - a) Illumination calculations will be based on AASHTO illumination criteria for roadways under State jurisdiction and on Department of Design and Construction criteria for roadways under City jurisdiction.
  - b) Standard mounting heights, pole heights, bracket/truss arm lengths and light sources will be utilized for the illumination calculations unless previously approved by the State or City, respectively.
  - c) For widened or realigned roadways, illumination calculations will be prepared based on the roadway geometry approved by the State or City, respectively.
  - d) If the CONSULTANT plans to replace any lights or poles with different make and model from City approved materials and if the existing make and model are out of production, the CONSULTANT shall obtain the approval of the City/ County before specification.
- 2) Traffic Signals:
  - a) For intersections under State jurisdiction, the electric and telephone service will be requested on behalf of Oahu District Office. For intersections under City jurisdiction, the electric and telephone service will be requested on behalf of the City Department of Transportation Services, Traffic Signals and Technology Division.

**C) Inputs:**

1) Illumination:

- a) Review and approval by the State Department of Transportation for roadways under State jurisdiction and the City Department of Design and Construction, Mechanical/Electrical Division for roadways under City jurisdiction.

2) Traffic Signals:

- a) Review by HDOT, City Department of Transportation Services, Hawaiian Electric Co. and Hawaiian Telcom.

**D) Deliverables:**

- 1) Preliminary Engineering Submittal
- 2) Interim Design Submittal
- 3) Draft Final Design Submittal
- 4) Final Design Submittal

**NTP #**

- 1b
- 2
- 3
- 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Electrical Design</b> <b>11.2 Guideway Alignment Pearl Harbor</b> <b>Naval Base Station Connections</b>	<b>Activity Responsibility:</b> <b>Ronald Ho and Associates</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b>  <b>WBS- 1110.0020</b>	<b>Revision No:</b>  <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated Pearl Harbor Naval Base Station site plan, the CONSULTANT will coordinate the location of the electric transformer pad to a manhole/handhole, from the utility point of connection then to TCCR room in the transit Station. The CONSULTANT will coordinate with the Station Designer and prepare plans for the power utility duct system connections from the utility infrastructure to the Station site handhole/manhole and then to TCCR room in the Station.</li> <li>2) All system concrete duct design, installation for Core Systems communication (i.e. non-utility), fiber optics, SCADA and train control, etc. from the Guideway columns (non-decorative columns) from both sides of the Station to the nearest manhole at the Station and from the manhole to TCCR room.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The electrical and communications service request for the Pearl Harbor Naval Base Station will be made by the ASG Designer.</li> <li>2) Extension of the electrical conductors from utility point of contact to the electrical transformer pad and then to the transit Station site electrical room/rooms will be provided under the ASG design.</li> <li>3) Number of conduits, size and inner ducts in the system concrete duct bank for communication, train control, SCADA and fiber optics will be provided by the Core Systems designers to ASG Group.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and approval by Hawaiian Electric Co., Hawaiian Telcom and Oceanic Time Warner Cable, if required.</li> <li>2) Pearl Harbor Naval Base Station site plan from the ASG Designer.</li> <li>3) Number of conduits, sizes and inner ducts for communication, train control, SCADA and fiber optics will be provided by Core Systems Designer and design approval by HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Electrical Design 11.3 Guideway Alignment Honolulu International Airport Station Connections	<b>Activity Responsibility:</b> Ronald Ho and Associates	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b>  WBS- 1110.0030	<b>Revision No:</b>  Conformed

**A) Activity Description:**

- 1) Based on the updated Honolulu International Airport Station site plan, the CONSULTANT will coordinate the location of the electric transformer pad to a manhole/handhole, from the utility point of connection then to TCCR room in the transit Station. The CONSULTANT will coordinate with the Station Designer and prepare plans for the power utility duct system connections from the utility infrastructure to the Station site handhole/manhole and then to TCCR room in the Station.
- 2) All system concrete duct design, installation for Core Systems communication (i.e. non-utility), fiber optics, SCADA and train control, etc. from the Guideway columns (non-decorative columns) from both side of the Station to the nearest manhole at the Station and from the manhole to TCCR room.

**B) Assumptions:**

- 1) The electrical and communications service request for the Honolulu International Airport Station will be made by the ASG Designer.
- 2) Extension of the electrical conductors from utility point of contact to the electrical transformer pad and then to the transit Station site electrical room/rooms will be provided under the ASG design.
- 3) Number of conduits, size and inner ducts in the system concrete duct bank for communication, train control, SCADA and fiber optics will be provided by the Core Systems Designer to ASG Group.

**C) Inputs:**

- 1) Review and approval by Hawaiian Electric Co., Hawaiian Telcom and Oceanic Time Warner Cable, if required.
- 2) Honolulu International Airport Station site plan from the ASG Designer.
- 3) Number of conduits, sizes and inner ducts for communication, train control, SCADA and fiber optics will be provided by Core Systems Designer and design approval by HART.

<b>D) Deliverables:</b>	<b>NTP #</b>
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Electrical Design 11.4 Guideway Alignment Lagoon Drive Station Connections	<b>Activity Responsibility:</b> Ronald Ho and Associates	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 1110.0040	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated Lagoon Drive Station site plan, the CONSULTANT will coordinate the location of the electric transformer pad to a manhole/handhole, from the utility point of connection then to TCCR room in the transit Station. The CONSULTANT will coordinate with the Station Designer and prepare plans for the power utility duct system connections from the utility infrastructure to the Station site handhole/manhole and then to TCCR room in the Station.</li> <li>2) All system concrete duct design, installation for Core Systems communication (i.e. non-utility), fiber optics, SCADA and train control, etc. from the Guideway columns (non-decorative columns) from both side of the Station to the nearest manhole at the Station and from the manhole to TCCR room.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The electrical and communications service request for the Lagoon Drive Station will be made by the ASG Designer.</li> <li>2) Extension of the electrical conductors from utility point of contact to the electrical transformer pad and then to the transit Station site electrical room/rooms will be provided under the ASG design.</li> <li>3) Number of conduits, size and inner ducts in the system concrete duct bank for communication, train control, SCADA and fiber optics will be provided by the Core Systems Designer to ASG Group.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and approval by Hawaiian Electric Co., Hawaiian Telcom and Oceanic Time Warner Cable, if required.</li> <li>2) Lagoon Drive Station site plan from the ASG Designer.</li> <li>3) Number of conduits, sizes and inner ducts for Communication, train control, SCADA and fiber optics will be provided by Core Systems Designer and design approval by HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: Electrical Design	Activity Responsibility: Ronald Ho and Associates	Issue Date: 09/20/2011
11.5 Guideway Alignment Middle Street Transit Center Station Connections	Task No. / Sub Task No. WBS- 1110.0050	Revision No: Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated Middle Street Transit Center Station site plan, the CONSULTANT will coordinate the location of the electric transformer pad to a manhole/handhole, from the utility point of connection then to TCCR room in the transit Station. The CONSULTANT will coordinate with the Station Designer and prepare plans for the power utility duct system connections from the utility infrastructure to the Station site handhole/manhole and then to TCCR room in the Station.</li> <li>2) All system concrete duct design, installation for Core Systems communication (i.e. non-utility), fiber optics, SCADA and train control, etc. from the Guideway columns (non-decorative columns) from both side of the Station to the nearest manhole at the Station and from the manhole to TCCR room</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The electrical and communications service request for the Middle Street Transit Center Station will be made by the ASG Designer.</li> <li>2) Extension of the electrical conductors from utility point of contact to the electrical transformer pad and then to the transit Station site electrical room/rooms will be provided under the ASG design.</li> <li>3) Number of conduits, size and inner ducts in the system concrete duct bank for communication, train control, SCADA and fiber optics will be provided by the Core Systems Designer to ASG Group.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and approval by Hawaiian Electric Co., Hawaiian Telcom and Oceanic Time Warner Cable, if required.</li> <li>2) Middle Street Transit Center Station site plan from the ASG Designer.</li> <li>3) Number of conduits, sizes and inner ducts for communication, train control, SCADA and fiber optics will be provided by Core Systems Designer and design approval by HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Electrical Design 11.6 System Site - Site #25	<b>Activity Responsibility:</b> Ronald Ho and Associates	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 1120.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated System Site #25 site plan, the CONSULTANT will coordinate the location of HECO Switchgear concrete pad for TPSS/GBS and the electric transformer pad with the Core Systems Designer and prepare plans for the utility duct system connections from the connection point of the existing HECO system to the proposed HECO switchgear for utility infrastructure to the system site. The CONSULTANT to coordinate and provide plans for concrete duct banks with spare conduits from HECO utility connection point to system site complete with manholes, handholes, transformer/switchgear pads and conduit stub ups.</li> <li>2) Coordinate subsystem site foundation design, design of vault/piles required to set up pre-fabricated building of TPSS and GBS, grounding mat installation and test, soil resistivity test and all connecting conduits to system site, from the closest manhole to equipments inside the system site.</li> <li>3) Design and install all duct banks for positive and negative communication from system site to Guideway piers avoiding aesthetic impacts to columns with necessary manholes, handholes, and conduit stubs.</li> <li>4) Design and install duct bank and handholes/pull box within system site for negative drainage cables.</li> <li>5) Number of conduits and sizes for all duct banks shall be coordinated with Core Systems Designer.</li> <li>6) Design and install fence, fence grounding, gates, concrete pavement for maintenance vehicles and all necessary improvements for normal functioning of the TPSS/GBS within system site.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Extension of the electrical conductors from HECO utility connection pole/manhole to the electrical transformer pad then to the system site equipment will be provided under the System Site Plans.</li> <li>2) Conduits from the electric transformer pad will be stubbed to the border of the System Site.</li> <li>3) Electric service request will be submitted with all necessary technical specifications and the CONSULTANT will coordinate the service connection and solicit the service proposal for System Site #25.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and input by Hawaiian Electric Co.</li> <li>2) Review by Core Systems Designer for System Site #25 and design approval by HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Electrical Design 11.7 System Sites - Site #27	<b>Activity Responsibility:</b> Ronald Ho and Associates	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 1120.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated System Site #27 site plan, the CONSULTANT will coordinate the location of HECO Switchgear concrete pad for TPSS/GBS and the electric transformer pad with the Core Systems Designer and prepare plans for the utility duct system connections from the connection point of the existing HECO system to the proposed HECO switchgear for utility infrastructure to the system site. The CONSULTANT to coordinate and provide plans for concrete duct banks with spare conduits from HECO utility connection point to system site complete with manholes, handholes, transformer/switchgear pads and conduit stub ups.</li> <li>2) Coordinate subsystem site foundation design, design of vault/piles required to set up pre-fabricated building of TPSS and GBS, grounding mat installation and test, soil resistivity test and all connecting conduits to system site, from the closest manhole to equipments inside the system site.</li> <li>3) Design and install all duct banks for positive and negative communication from system site to Guideway piers avoiding aesthetic impacts to columns with necessary manholes, handholes, and conduit stubs.</li> <li>4) Design and install duct bank and handholes/pull box within system site for negative drainage cables.</li> <li>5) Number of conduits and sizes for all duct banks shall be coordinated with Core Systems Designer.</li> <li>6) Design and install fence, fence grounding, gates, concrete pavement for maintenance vehicles and all necessary improvements for normal functioning of the TPSS/GBS within system site.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Extension of the electrical conductors from HECO utility connection pole/manhole to the electrical transformer pad then to the system site equipment will be provided under the System Site Plans.</li> <li>2) Conduits from the electric transformer pad will be stubbed to the border of the System Site. See Activity Description.</li> <li>3) Submit the electric service request with all necessary technical specifications and coordinate the service connection and solicit the service proposal for System Site #27.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and coordination approval by Hawaiian Electric Co.</li> <li>2) Review by Core Systems Designer for System Site #27 and design approval by HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Electrical Design</b> <b>11.8 Systems Site - Site #28</b>	<b>Activity Responsibility:</b> <b>Ronald Ho and Associates</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 1120.0030</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated System Site #28 site plan, the CONSULTANT will coordinate the location of HECO Switchgear concrete pad for TPSS/GBS and the electric transformer pad with the Core Systems Designer and prepare plans for the utility duct system connections from the connection point of the existing HECO system to the proposed HECO switchgear for utility infrastructure to the system site. The CONSULTANT to coordinate and provide plans for concrete duct banks with spare conduits from HECO utility connection point to system site complete with manholes, handholes, transformer/switchgear pads and conduit stub ups.</li> <li>2) Coordinate subsystem site foundation design, design of vault/piles required to set up pre-fabricated building of TPSS and GBS, and all connecting conduits to system site, from the closest manhole to equipments inside the system site.</li> <li>3) Design and install all duct banks for positive and negative communication from system site to Guideway piers avoiding aesthetic impacts to columns with necessary manholes, handholes, and conduit stubs.</li> <li>4) Design and install duct bank and handholes/pull box within system site for negative drainage cables.</li> <li>5) Number of conduits and sizes for all duct banks shall be coordinated with Core Systems Designer.</li> <li>6) Design and install fence, fence grounding, gates, concrete pavement for maintenance vehicles and all necessary improvements for normal functioning of the TPSS/GBS within system site.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Extension of the electrical conductors from HECO utility connection pole/manhole to the electrical transformer pad then to the system site equipment will be provided under the System Site Plans.</li> <li>2) Conduits from the electric transformer pad will be stubbed to the border of the System Site.</li> <li>3) Submit the electric service request with all necessary technical specifications and coordinate the service connection and solicit the service proposal for System Site #28.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and input by Hawaiian Electric Co.</li> <li>2) Review by Core Systems Designer for System Site #28 and design approval by HART.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Electrical Design 11.9 System Site - Site #19	<b>Activity Responsibility:</b> Ronald Ho and Associates	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 1120.0040	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Based on the updated System Site #19 site plan, the CONSULTANT will coordinate the location of HECO Switchgear concrete pad for TPSS/GBS and the electric transformer pad with the Core Systems Designer and prepare plans for the utility duct system connections from the connection point of the existing HECO system to the proposed HECO switchgear for utility infrastructure to the system site. The CONSULTANT to coordinate and provide plans for concrete duct banks with spare conduits from HECO utility connection point to system site complete with manholes, handholes, transformer/switchgear pads and conduit stub ups.</li> <li>2) Coordinate subsystem site foundation design, design of vault/piles required to set up pre-fabricated building of TPSS and GBS, and all connecting conduits to system site, from the closest manhole to equipments inside the system site.</li> <li>3) Design and install all duct banks for positive and negative communication from system site to Guideway piers avoiding aesthetic impacts to columns with necessary manholes, handholes, and conduit stubs.</li> <li>4) Design and install duct bank and handholes/pull box within system site for negative drainage cables.</li> <li>5) Number of conduits and sizes for all duct banks shall be coordinated with Core Systems Designer.</li> <li>6) Design and install fence, fence grounding, gates, concrete pavement for maintenance vehicles and all necessary improvements for normal functioning of the TPSS/GBS within system site.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Extension of the electrical conductors from HECO utility connection pole/manhole to the electrical transformer pad then to the system site equipment will be provided under the System Site Plans.</li> <li>2) Design of the improvements within the System Site will be by others.</li> <li>3) Conduits from the electric transformer pad will be stubbed to the border of the System Site. See Activity Description.</li> <li>4) Submit the electric service request with all necessary technical specifications and coordinate the service connection and solicit the service proposal for System Site #19.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Review and input and coordination approval by Hawaiian Electric Co.</li> <li>2) Review by Core Systems Designer for System Site #19 and design approval by HART.</li> <li>3) System Site #19 site plan from the Core Systems Designer.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: Electrical Design	Activity Responsibility: AECOM	Issue Date: 09/20/2011
11.10 QC Review - Discipline and Inter-Discipline Review of Documents	Task No. / Sub Task No. WBS - 1130.0010	Revision No: Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline Review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

### **TASK 1200 - Intelligent Transportation Systems (ITS) Design**

Design and develop ITS plans for Closed Circuit Television (CCTV) cameras, Portable Dynamic Message Signs (PDMS), and License Plate Recognition (LPR) devices at selected intersections along the alignment. Interconnection with the City's CCTV camera system will be required. Also, travel time information gathered from LPR devices will be connected to HDOT's Traveler Information System.

ITS work defined under task 1200 addresses both the temporary and permanent ITS deployments. The temporary ITS project will include CCTV cameras and LPR devices to provide surveillance and travel time messaging on PDMS during construction while the permanent construction does not include new Dynamic Message Sign (DMS) installations.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <p style="text-align: center;">ITS</p> <b>12.1 Development of Intelligent Transportation System Design</b>	<b>Activity Responsibility:</b> <p style="text-align: center;">AECOM</p>	<b>Issue Date:</b> <p style="text-align: center;">09/20/2011</p>
	<b>Task No. / Sub Task No.</b> <p style="text-align: center;">WBS - 1210.0010</p>	<b>Revision No:</b> <p style="text-align: center;">Conformed</p>
<b>A) Activity Description:</b>		
<p>1) ITS Design Document:</p> <ul style="list-style-type: none"> <li>a) Review existing preliminary engineering drawings and make appropriate adjustments to support the temporary and permanent ITS deployments.</li> <li>b) Prepare ITS design documentation that defines the assumptions and design approach for the deployment of CCTV cameras, Portable Dynamic Message Signs and Travel Time Detection (e.g., LPR) devices and associated communication systems included in the temporary project (i.e., during construction) and only CCTV cameras and LPR devices after construction.</li> <li>c) Conduct one work session with HART, City Department of Transportation Services (DTS), and HDOT to review ITS elements designed for previous H RTP corridors; design approach to be used for the Airport segment; as well as any relevant ongoing City and HDOT TS/communication/signal projects.</li> <li>d) Develop preliminary engineering documentation detailing device type and locations for both temporary and permanent systems. CCTV camera systems and Travel Time Detection systems, including associated communication systems, will be included in subsequent stages of the ITS design. Portable DMS for the temporary deployment, if identified in preliminary engineering, will be coordinated with the Maintenance of Traffic plans.</li> </ul> <p>2) CCTV Design:</p> <ul style="list-style-type: none"> <li>a) Prepare plans, specifications, and estimates (PS&amp;E) for the design of a CCTV system that would interconnect with the City's CCTV camera system and Traffic Management Center (TMC).</li> <li>b) Conduct a design field review with HART, DTS, and HDOT to determine and agree upon CCTV locations.</li> <li>c) Conduct bucket truck survey in the field to verify potential line-of-sight wireless communication options as well as to confirm that the height of each CCTV camera provides adequate viewing of areas to be covered (e.g., H-1 Freeway, arterials and intersections, activity centers involving high pedestrian activity, areas to be impacted by Guideway superstructure, columns and foundations, dynamic message signs, etc.).</li> <li>d) Prepare specifications to comply with adopted standards and system architecture. These requirements may include the following components: camera mounts on signal poles or mast arms; separate camera poles; camera assembly, including vendor supplied cables; camera lowering system; video encoder; Ethernet switch; pole-mounted cabinet; electrical service; lightning protection; camera control software; software drivers for TMC software; etc.</li> <li>e) Define power requirements and interface points with existing facilities.</li> <li>f) Define communication requirements and interface points to transmit CCTV camera images to the TMC.</li> </ul>		

- g) Prepare PS&E packages for the design of temporary and permanent ITS deployments of CCTV camera at ID, Draft FD, and FD submittals.
- 3) License Plate Recognition (LPR) Design:
- a) Develop the design of a Travel Time detection system (i.e., LPR) that would interconnect with HDOT's Traveler Information System.
  - b) Conduct field survey to define LPR locations and potential PDMS locations.
  - c) Prepare specifications to comply with adopted standards and system architecture.
  - d) Define power requirements and interface points with existing facilities.
  - e) Define communication requirements and interface points to transmit LPR data to HDOT's Traveler Information System.
  - f) Prepare PS&E packages for the design of temporary and permanent ITS deployments of LPR's design at the ID, Draft FD, and FD submittals.
- 4) Communication Design:
- a) Develop the design of a communications system that would interconnect the CCTV cameras and Travel Time Detection system (i.e., LPRs) with the City's CCTV system and HDOT's Traveler Information System.
  - b) Review existing communications infrastructure to be used to integrate the proposed CCTV camera and Travel Time Detection systems as part of this project.
  - c) Conduct a gap analysis to determine additional communication links required to satisfy the project's requirements in accordance with the approved ITS Design Document.
  - d) Conduct a bandwidth analysis of the CCTV camera and Travel Time Detection systems to determine improvements required to upgrade the existing communications infrastructure.
  - e) Review committed improvements in the communications infrastructure that will be available in the timeframe needed for the temporary and permanent construction of the H RTP project.
  - f) Develop schematic layout of the communications infrastructure.
  - g) Define communication requirements and interface points to transmit LPR data to the HDOT Traveler Information System and CCTV camera images to the TMC located adjacent to the H-1 at 740 Kinalau Place.
  - h) Review how the communications lines cross utilities (e.g., water, gas, electric); determine the requirements for spacing of handholes to ensure accessibility during future maintenance; and review general cable routing (e.g., does it cross the mainline several times thereby resulting in maintenance of traffic problems during future maintenance).
  - i) Prepare PS&E packages for the communications design at the ID, Draft FD, and FD submittals to address the needs of the temporary and permanent ITS deployments.

**B) Assumptions:**

- 1) Neither a Concept of Operations or Systems Engineering Management Plan document is required as part of this scope.
- 2) HART will provide all relevant information associated with LPR systems developed for other segments of the rapid transit system.

- 3) CCTV camera design will comply with HDOT and DTS standards. HART approvals will be directed at maintaining consistency with the ITS Document's findings.
- 4) HDOT's Traveler Information System already provides reliable information utilizing the PIPS' Technology (Federal Signal Corporation) LPR; the H RTP system will only plug into the existing system without significant software/hardware upgrades required.
- 5) All temporary deployment field devices will be solar powered with battery backup providing 72-hours of autonomous power.
- 6) Communication for the temporary deployment during construction will be wireless.
- 7) The LPR design will comply with existing HDOT and H RTP systems.
- 8) The communications design will comply with the ITS Design Document. HART approvals will be directed at maintaining consistency with the ITS Document's findings.
- 9) Information/access to existing points of service for power drops will be provided.

**C) Inputs:**

- 1) HART will provide any relevant documentation regarding the City's and HDOT's existing and proposed upgrades to their CCTV systems; Traveler Information System; communications infrastructure; dynamic message sign system; vehicle detection system; etc.
- 2) HART will provide interface requirements with adjacent sections of the H RTP, including LPR and CCTV camera systems.
- 3) Apply approved QC process for the review of the ITS Design Document as well as ITS plans, specifications and estimates.

**D) Deliverables:**

- 1) Preliminary Engineering Submittal
- 2) Interim Design Submittal
- 3) Draft Final Design Submittal
- 4) Final Design Submittal

**NTP #**

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ACTIVITY DESCRIPTION		Form SOW 01
Activity:	Activity Responsibility:	Issue Date:
ITS	AECOM	09/20/2011
12.2 QC Review - Discipline and Inter-Discipline Review of Documents	Task No. / Sub Task No. WBS - 1220.0010	Revision No: Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans, and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline Review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing of the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawings by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Apply approved QC process for the review of the ITS Design Document as well as ITS plans, specifications and estimates.</li> <li>2) Inter-disciplinary reviews will be conducted at the PE, ID and FD milestones.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> <li>2) HART will provide review comments in accordance with the approved project schedule.</li> <li>3) Plans and specifications for other related disciplines will be available for review at the PE, ID and FD milestones.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

**TASK 1300 - Environmental**

Prepare an Environmental Compliance Plan (ECP) that addresses how compliance and documentation of compliance will be achieved in design and construction, including the design review process to address pertinent mitigation measures and permits specified in the H RTP's FEIS, the Record of Decision (ROD), the Federal Aviation Administration (FAA) ROD, and the Section 106 Programmatic Agreement (PA). The CONSULTANT will prepare environmental constraint maps as directed by HART as part of the ECP. These maps will be produced in GIS and/or CADD for use in Guideway design and field activities during construction. Prepare application(s) for pertinent environmental permits and related design plans that reflect achievement of environmental compliance. The CONSULTANT will update the ECP, as needed, when new or modified mitigation or environmental compliance conditions are developed during the term of the Contract. The CONSULTANT will be responsible for preparing the environmental documents as specified in the Scope of Work, and ensuring that they are in compliance with the FEIS, ROD, FAA ROD and Section 106 PA.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Environmental <b>13.1 Investigate and Provide Remedial Design for Hazardous Waste and Materials</b>	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 1310.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Conduct eight Phase 1 Environmental Site Assessments (ESAs).</li> <li>2) Conduct three Phase 2 Environmental Site Assessments.</li> <li>3) Conduct Building Hazardous Materials Survey of up to twelve structures to be disturbed by the project.</li> <li>4) Prepare Mitigation Design Documents.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Per the FEIS, 12 sites will require Phase 2 ESAs; however, the scope of the Phase 2 ESAs is not known. Additionally, pending the results of the Phase 1 ESAs, more or less than 12 sites may actually require Phase 2 ESAs. Therefore, the necessity, number, and scope of Phase 2 ESAs will be determined during the execution of the Phase 1 ESAs. Three Phase 2 ESAs are assumed for estimating purposes.</li> <li>2) HART will secure Rights-of-Entry where applicable, and provide site owner/operator contact information.</li> <li>3) The Hazardous Waste Abatement Plans and Specifications will incorporate mitigation provisions as detailed in the Mitigation Monitoring Plan dated January 2011 (MMP), FEIS, FAA ROD, ROD and their attachments. Any changes to these documents may require a modification to this scope of work. These mitigations will be included in the ECP prepared by the CONSULTANT.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) FEIS.</li> <li>2) ROD.</li> <li>3) FAA ROD.</li> <li>4) MMP.</li> <li>5) Programmatic Agreement.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> <li>5) Draft Building Hazardous Material Survey Report</li> <li>6) Final Building Hazardous Material Survey Report</li> <li>7) Draft Phase 1 Environmental Site Assessment Report</li> <li>8) Final Phase 1 Environmental Site Assessment Report</li> <li>9) Draft Phase 2 Environmental Site Assessment Report</li> <li>10) Final Phase 2 Environmental Site Assessment Report</li> </ol>		<b>NTP #</b> 1b 2 3 3 3 3 3 3 3 3

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> <b>Environmental</b> <b>13.2 Prepare and Update the</b> <b>Environmental Compliance Plan (ECP)</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 1310.0020</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) The CONSULTANT will include requirements for environmental compliance throughout the design development. The CONSULTANT team will complete the Environmental Compliance Plan (ECP) at the conclusion of NTP #1b for design as the first task of work prior to beginning design efforts. The ECP will detail the project's environmental objectives and targets for design, with the goal of executing the work in an environmentally-sound manner in compliance with all federal, state, and local laws, regulations, permit conditions and commitments recorded in the FEIS, ROD, FAA ROD and PA for the project.
- 2) The ECP will outline procedures and protocols for achieving environmental compliance, including environmental controls, training, monitoring, description of environmental team meetings, and documentation of compliance during the design and subsequent construction phases.
- 3) The ECP will describe the roles and responsibilities and reporting relationships for both the CONSULTANT and HART environmental staff, including how coordination will occur.
- 4) The ECP will detail protocols and reviews that occur during the design phase. Environmental compliance staff will collaborate with design teams to ensure that all environmental permit conditions and FEIS, ROD, FAA ROD, and mitigation provisions are adequately incorporated into the designs.
- 5) The ECP will also establish a procedure to ensure that environmental compliance objectives and targets are carried forward through the bidding and construction phases, including, but not limited to, ensuring that all environmental compliance conditions are incorporated into the contract special provisions.
- 6) The ECP will summarize and graphically depict environmental resources present at and near the Stations and Guideway segment and identify past impacts and uses at the site that may impact the site development during the project, including figures and data, as required.
- 7) The ECP will include environmental constraint maps produced in GIS and/or CADD for use in design development, design reviews, and field activities during construction. The ECP will describe all actions and BMPs required for environmental compliance, and detail investigation and inspection requirements, including frequencies, while listing the corresponding documentation requirements. Procedural and documentation requirements of applicable permits, as well as, the FEIS, FAA ROD, and ROD commitments and mitigation measures and other project environmental constraints, will be incorporated into the ECP.
- 8) The ECP will contain a list of potentially required environmental permits, waivers, and approvals.
- 9) The ECP will also list regulatory agencies with an interest in the project, describe their reporting requirements, and provide points of contact.
- 10) The ECP will establish and describe a record system for tracking all environmental commitments.
- 11) The ECP will serve to update the implementation and reporting of the overall MMP (being overseen by HART).

<b>B) Assumptions:</b>	
<ul style="list-style-type: none"> <li>1) The ECP will not consider Health and Safety requirements of construction contractors.</li> <li>2) The ECP will incorporate mitigation provisions as detailed in the MMP, FEIS, FAA ROD, ROD and their attachments. Any changes to these documents may require a modification to the ECP Scope-of-Work.</li> </ul>	
<b>C) Inputs:</b>	
<ul style="list-style-type: none"> <li>1) FEIS.</li> <li>2) ROD.</li> <li>3) MMP.</li> <li>4) PA.</li> <li>5) FAA ROD.</li> <li>6) PE, ID and FD plan sets.</li> <li>7) AISP Survey.</li> <li>8) Phase 1 and Phase 2 ESAs.</li> <li>9) Permits received by HART.</li> <li>10) List of permits applied for by HART including status and permit conditions of each.</li> </ul>	
<b>D) Deliverables:</b>	<b>NTP #</b>
1) Preliminary Draft ECP Submittal	1b
2) Draft ECP Submittal	1b
3) Final ECP Submittal	3
4) ECP Update Submittals (2)	3

ACTIVITY DESCRIPTION		Form SOW.01
<b>Activity:</b> Environmental	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
<b>13.3 Conduct Environmental Compliance Reviews During the Design Phase</b>	<b>Task No. / Sub Task No.</b> WBS- 1310.0030	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b>		
<ol style="list-style-type: none"> <li>1) The CONSULTANT will conduct environmental compliance reviews per the Environmental Compliance Plan (ECP).</li> <li>2) Implementation of the ECP will commence with a review of PE designs. This review will include identification/ reconfirmation of project impacts, critical design elements pertaining to environmental compliance, avoidance/ minimization/ mitigation options, and possible field reviews. Participants will include the project design and environmental compliance staff.</li> <li>3) The CONSULTANT will track all environmental commitments in a record system designed to support HART's database of mitigation commitments detailed in the MMP.</li> </ol>		
<b>B) Assumptions:</b>		
<ol style="list-style-type: none"> <li>1) Station designs and contract documents, with the exception of Guideway superstructure, columns and foundations, Station platform support structures and concourse support structures within the limit of the Guideway, are by others.</li> <li>2) Environmental compliance reviews of PE designs will occur prior to submittal of PE, ID and FD plan sets.</li> </ol>		
<b>C) Inputs:</b>		
<ol style="list-style-type: none"> <li>1) Meetings with designers.</li> <li>2) Updated PE, ID, draft FD and final FD complete plan sets.</li> </ol>		
<b>D) Deliverables:</b>		<b>NTP #</b>
1) Preliminary Engineering Submittal		1b
2) Interim Design Submittal		2
3) Draft Final Design Submittal		3
4) Final Design Submittal		3

ACTIVITY DESCRIPTION		Form SOW.01
Activity: Environmental	Activity Responsibility: AECOM	Issue Date: 09/20/2011
13.4 Prepare environmental planning documents and permits	Task No. / Sub Task No. WBS - 1310.0040	Revision No: Conformed
<b>A) Activity Description:</b> 1) The CONSULTANT to prepare applications for the following permits: a) NPDES NOI-C(NGPOC) from DOH CWB.		
<b>B) Assumptions:</b> 1) The CONSULTANT assumes that existing information and studies prepared for the FEIS, ROD, FAA ROD, MMP, PA and two (2) design documents prepared as part of this specific SOW will satisfy the permit application requirements. Additional studies (beyond those planned as part of this SOW) arising from permit application requirements may require contract modifications. 2) Section 401 Water Quality Certification (WQC) from the DOH CWB: The CONSULTANT assumes that HART is securing this permit. 3) Section 404 U.S. Army Corps of Engineers Permit: The CONSULTANT assumes that HART is securing this permit and conducting any associated consultations. 4) Section 402 NPDES NOI-F (Hydrotesting): Assume no discharge to drainage system or water body, therefore no permit is required. 5) Section 402 NPDES NOI-G (Construction Site Dewatering Effluent): Assume no discharge to drainage system or water body, therefore no permit is required. 6) Stream Channel Alteration Permit (SCAP) from DLNR CWRM: The CONSULTANT assumes that HART is securing or has secured this permit. 7) NPDES NOI-C (Construction Site Stormwater Management) for construction from DOH CWB. The CONSULTANT is responsible for preparing Site Specific BMP Plans. 8) Special Management Area (SMA) Permit will be in place along with any shoreline certification and/or shoreline setback variances prior to draft of ECP. 9) Section 9 of the River and Harbors Act: USCG has provided advanced approval dated December 23, 2008. The CONSULTANT will confirm that the advanced approval conditions are being met. 10) No underground injection is required as part of this Guideway segment. HART to secure Agreement from State DOT-Airports, State DOT-Highways, and U.S. Department of the Navy for storm drain connection to existing MS4s prior to construction.		
<b>C) Inputs:</b> 1) The CONSULTANT will furnish data, plans, engineering drawings and other project details for inclusion into permit applications. 2) For the NPDES NOI-C, the CONSULTANT will provide plans and estimated discharge volumes. 3) HART to provide copy of Section 9 of the River and Harbors Act approvals from USCG and dated December 23, 2008. 4) Archaeological Inventory Survey results.		
<b>D) Deliverables:</b> 1) Draft NPDES NOI-C Application 2) Final NPDES NOI-C Application		<b>NTP #</b> 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Environmental</b> <b>13.5 Prepare other permits and clearances</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS - 1310.0050</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b>		
1) The CONSULTANT to prepare applications for the following permits and clearances: <ul style="list-style-type: none"> <li>a) Storm drain connections (other than those associated with MS4 connection agreements with HDOT-Highways &amp; HDOT-Airports and the U.S. Department of the Navy easement acquisition).</li> <li>b) Interstate airspace use approvals for H-1 Freeway Lanes Koko Head-bound near Honolulu Airport, H-1 Freeway Access ramps near Pearl Harbor Naval Base, and Freeway Access Ramps at Keehi Interchange (Design input only, HART to prepare application).</li> <li>c) Interstate access modification (Design input only, HART to prepare application).</li> <li>d) Form 7460.1 Notice of Proposed Construction or Alteration of Impacts to the Airport and FAA Facilities.</li> <li>e) Waiver to construction in runway protection zone.</li> <li>f) Flood Hazard District Compliance.</li> <li>g) Permit to perform work upon state highways from HDOT.</li> <li>h) Coordination for construction to cross or enter the State Energy Corridor.</li> <li>i) Grading, Grubbing, Stockpiling, Trenching from DPP.</li> <li>j) Landscaping Plans affecting HDOT roadways.</li> <li>k) Input for Utility Use &amp; Occupancy Agreements as required.</li> <li>l) Noise Variance Permit.</li> </ul>		
<b>B) Assumptions:</b>		
1) The CONSULTANT assumes that existing information and studies prepared for the FEIS, ROD, FAA ROD, MMP, PA and two (2) design documents prepared as part of this specific SOW will satisfy the permit application and clearance requirements. 2) HART will establish any necessary utility engineering and/or construction agreements. 3) Construction Contractor will be responsible for Street Usage Permit for City Streets and Use and Occupancy of State Highways.		
<b>C) Inputs:</b>		
1) The CONSULTANT will furnish data, plans, engineering drawings and other project details for inclusion into permit applications and/or clearances.		
<b>D) Deliverables:</b>		<b>NTP #</b>
1) Draft Permit/Clearance Applications		2
2) Final Permit/Clearance Applications		3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Environmental 13.6 QC Review - Discipline and Inter-Discipline Review of Documents	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS- 1320.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline Review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3



**TASK 1400 - Maintenance of Traffic (MOT) Plans**

Develop Maintenance of Traffic (MOT) plans to maximize the area available for all Guideway, Roadway-related and Utility relocation construction, minimize traffic disruption for both vehicular and pedestrian movement and maximize accessibility to adjacent properties and businesses. Prepare MOT plans for construction and identify where permits are required for access. MOT plans will be developed for both the utility and Guideway construction.

Note: Design of temporary ITS systems utilized in the maintenance of traffic is included in Task 1200, and not part of this task.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Maintenance of Traffic	<b>Activity Responsibility:</b> Wilson Okamoto Corporation	<b>Issue Date:</b> 09/20/2011
<b>14.1 Development of MOT Plans Station 988+60 to Station 1190+00</b>	<b>Task No. / Sub Task No.</b> WBS – 1410.0010	<b>Revision No:</b> Conformed
<b>Activity Description:</b>		
<p>1) Work Zone Investigation/Coordination:</p> <ul style="list-style-type: none"> <li>a) Identify/confirm work zone requirements.</li> <li>b) Identify work activity time periods as applicable.</li> <li>c) Identify anticipated work flow.</li> <li>d) Ensure MOT operations at intersections and other conflicting vehicular or multi-modal movements.</li> </ul> <p>2) Development of MOT Plans:</p> <ul style="list-style-type: none"> <li>a) NTP #1a - Prepare for and attend design workshop.</li> <li>b) NTP #1b - Assist in preliminary design schedule and schedule milestone for the MOT design for Station 988+60.43 to 1190+00. Revise MOT design drawings to incorporate the approved VE recommendations, as applicable, and other HART preferences. Ensure compliance of MOT design with applicable standards.</li> <li>c) NTP #2 - Prepare detailed working drawings and specifications for MOT-related components. Interface interim traffic signal design, roadway and signage improvements, and other work affecting traffic flow. Prepare MOT plans for the interim design phase.</li> <li>d) NTP #3 - Finalize interim design and prepare contract documents for MOT design.</li> <li>e) Site-specific TCPs for utility relocations, roadway improvements, traffic signal and intersection improvements, and other work outside of rail alignment.</li> </ul>		
<b>Assumptions:</b>		
<ul style="list-style-type: none"> <li>1) The available number of travel lanes will remain as existing during non-work periods.</li> <li>2) Lane closures during off-peak periods only.</li> <li>3) Maintain same number of travel lanes on roadway when all lanes are open during non-construction activity periods.</li> <li>4) Excludes site-specific TCPs for utility relocations, roadway improvements, traffic signal and intersection improvements, and other work outside of rail alignment.</li> </ul>		

**Inputs:**

- 1) Preliminary plans and specifications for MOT plans.
- 2) Construction work activities, work flow, and schedule.
- 3) Construction activity staging.
- 4) HDOT Level III TMP standards.
- 5) Work zone coordination including phasing, schedule, and work flow.
- 6) Plans and specifications for MOT work.

**Deliverables:**

- |   | <b>NTP #</b> |
|---|--------------|
| 1) Presented at two-day workshop (Graphic display of MOT recommendations) | 1a           |
| 2) White paper report (summary of recommendations to be incorporated)     | 1b           |
| 3) Preliminary Engineering Submittal                                      | 1b           |
| 4) Interim Design Submittal   | 2            |
| 5) Draft Final Design Submittal - Guideway                                | 3            |
| 6) Final Design Submittal - Guideway                                      | 3            |

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Maintenance of Traffic 14.2 Development of MOT Plans Station 1190+00 to End (Phase 1)	<b>Activity Responsibility:</b> Wilson Okamoto Corporation	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1410.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Work Zone Investigation/Coordination:               <ol style="list-style-type: none"> <li>a) Identify/confirm work zone requirements.</li> <li>b) Identify work activity time periods as applicable.</li> <li>c) Identify anticipated work flow.</li> <li>d) Ensure MOT operations at intersections and other conflicting vehicular or multi-modal movements.</li> </ol> </li> <li>2) Development of MOT Plans:               <ol style="list-style-type: none"> <li>a) NTP #1b - Assist in preliminary design schedule and schedule milestone for the MOT design for Station 988+60.43 to 1190+00. Revise MOT design drawings to incorporate the approved VE recommendations, as applicable and other HART preferences. Ensure compliance of MOT design with applicable standards.</li> <li>b) NTP #2 - Prepare detailed working drawings and specifications for MOT-related components. Interface interim traffic signal design, roadway and signage improvements, and other work affecting traffic flow. Prepare MOT plans for the interim design phase.</li> <li>c) NTP #3 - Finalize interim design and prepare contract documents for MOT design.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The available number of travel lanes will remain as existing during non-work periods.</li> <li>2) Lane closures during off-peak periods only.</li> <li>3) Maintain same number of travel lanes on roadway when all lanes are open during non-construction activity periods.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Preliminary plans and specifications for MOT plans.</li> <li>2) Construction work activities, work flow, and schedule.</li> <li>3) Construction activity staging.</li> <li>4) HDOT Level III TMP standards.</li> <li>5) Work zone coordination including phasing, schedule, and work flow.</li> <li>6) Plans and specifications for MOT work.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal - Guideway</li> <li>4) Final Design Submittal - Guideway</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Maintenance of Traffic	<b>Activity Responsibility:</b> Wilson Okamoto Corporation	<b>Issue Date:</b> 09/20/2011
<b>14.3 Development of MOT Plans Station 1190+00 to End (Phase 2)</b>	<b>Task No. / Sub Task No.</b> WBS- 1410.0030	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Work Zone Investigation/Coordination: <ol style="list-style-type: none"> <li>a) Identify/confirm work zone requirements.</li> <li>b) Identify work activity time periods as applicable.</li> <li>c) Identify anticipated work flow.</li> <li>d) Ensure MOT operations at intersections and other conflicting vehicular or multi-modal movements.</li> </ol> </li> <li>2) Development of MOT Plans: <ol style="list-style-type: none"> <li>a) NTP #1b - Assist in preliminary design schedule and schedule milestone for the MOT design for Station 988+60.43 to 1190+00. Revise MOT design drawings to incorporate the approved VE recommendations, as applicable and other HART preferences. Ensure compliance of MOT design with applicable standards.</li> <li>b) NTP #2 - Prepare detailed working drawings and specifications for MOT-related components. Interface interim traffic signal design, roadway and signage improvements, and other work affecting traffic flow. Prepare MOT plans for the interim design phase.</li> <li>c) NTP #3 - Finalize interim design and prepare contract documents for MOT design.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The available number of travel lanes will remain as existing during non-work periods.</li> <li>2) Lane closures during off-peak periods only.</li> <li>3) Maintain same number of travel lanes on roadway when all lanes are open during non-construction activity periods.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Preliminary plans and specifications for MOT plans.</li> <li>2) Construction work activities, work flow, and schedule.</li> <li>3) Construction activity staging.</li> <li>4) HDOT Level III TMP standards.</li> <li>5) Work zone coordination including phasing, schedule, and work flow.</li> <li>6) Plans and specifications for MOT work.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal – Guideway</li> <li>4) Final Design Submittal - Guideway</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity: Maintenance of Traffic	Activity Responsibility: Wilson Okamoto Corporation	Issue Date: 09/20/2011
14.4 TMP / MOT Reports TMP Work Plan Schedule Coordination	Task No. / Sub Task No. WBS - 1420.0010	Revision No: Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Identify/confirm work zone requirements.</li> <li>2) Identify work activity time periods as applicable.</li> <li>3) Identify anticipated work flow and schedule.</li> <li>4) Confirm MOT operations at intersections and other conflicting vehicular or multi-modal movements.</li> <li>5) Obtain information from others including community concerns, stakeholder issues, and other public awareness information.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) The available number of travel lanes will remain as existing during non-work periods.</li> <li>2) HART will identify off-site staging areas.</li> <li>3) Construction zone requirements are as shown in the preliminary plans.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Preliminary plans and specifications for MOT plans.</li> <li>2) Construction work activities, work flow, and schedule.</li> <li>3) Construction activity staging.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal – Guideway</li> <li>4) Final Design Submittal - Guideway</li> </ol>		<b>NTP #</b> 1b 2 3 3

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Maintenance of Traffic 14.5 TMP/MOT Reports TMP Analysis and Coordination and Plan	<b>Activity Responsibility:</b> Wilson Okamoto Corporation  <b>Task No. / Sub Task No.</b> WBS - 1420.0020	<b>Issue Date:</b> 09/20/2011  <b>Revision No:</b> Conformed
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**A) Activity Description:**

- 1) Coordinate and obtain necessary information for Level III TMP.
- 2) Review any available MOT reports from Preliminary Engineering phase of project.
- 3) Collect traffic data.
- 4) Develop methodology to model existing and future traffic operational conditions.
- 5) Develop traffic projections based on historical trends and other relevant data sources as deemed appropriate by HART.
- 6) Identify and obtain approval for analysis methodology and tools used for analysis.
- 7) Establish traffic flow and delay standards for TMP.
- 8) Establish appropriate measures of effectiveness to assess compliance with standards.
- 9) Conduct queuing and volume analysis and using approved methodology for existing and projected conditions.
- 10) Conduct LOS analysis for existing and projected conditions.
- 11) Conduct analysis of traffic operations during construction.
- 12) Review incident and crash data and provide assessment on potential issues that need to be addressed in TMP.
- 13) Develop road network model for analysis using agreed upon methodology and tools.
- 14) Develop Traffic Management Plan Report.
- 15) Identify demand management strategies.
- 16) Conduct work zone impact analysis.
- 17) Prepare Traffic Management Plan Report including strategies, assessment of effectiveness, monitoring program, enforcement program, and contingency plan.

**B) Assumptions:**

- 1) Crash data will be provided by HDOT.
- 2) Synchro will be used as an analysis tool.
- 3) Other tools may be used in addition to or instead of Synchro based on agreed upon methodology.
- 4) The report will satisfy DOT Level III standards.

<b>C) Inputs:</b>	
<ol style="list-style-type: none"> <li>1) Preliminary plans and specifications for MOT plans.</li> <li>2) Construction work activities, work flow, and schedule.</li> <li>3) Construction activity staging and description of innovative construction strategies.</li> <li>4) Acceptable Operational Levels of Service – to be jointly developed by HART and the CONSULTANT.</li> <li>5) Community concerns and business impacts jointly developed by HART and the CONSULTANT.</li> <li>6) Potential issues of seasonal impacts jointly identified by HART and the CONSULTANT.</li> <li>7) Roadway classification, available existing traffic volumes, lane configuration and geometrics, actual roadway design designation, incident and crash data, signage and intersection controls, roadway capacity ratios, speed characteristics, and information on nearby projects.</li> <li>8) TCPs.</li> <li>9) Public awareness plan and strategies.</li> <li>10) Non-project detours.</li> </ol>	
<b>D) Deliverables:</b>	<b>NTP #</b>
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Maintenance of Traffic 14.6 QC Review - Discipline and Inter-Discipline Review of Documents	<b>Activity Responsibility:</b> AECOM <b>Task No. / Sub Task No.</b> WBS - 1430.0010	<b>Issue Date:</b> 09/20/2011 <b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities (checking of calculations, plans and specifications) will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of drawing packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline Review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-Discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal – Guideway &amp; Utility</li> <li>4) Final Design Submittal – Guideway &amp; Utility</li> </ol>		<b>NTP #</b> 1b 2 3 3

**TASK 1500 - Public Involvement**

The CONSULTANT will support HART's Public Involvement efforts. Anticipated roles include supporting and participating in community workshops or meetings hosted by HART to present Guideway final design and features to the community as needed. The CONSULTANT will provide illustrative materials, such as plans and other pertinent documents, as needed to help convey information to the public.

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> Public Involvement 15.1 Meetings and Development of Material in Support of Meetings	<b>Activity Responsibility:</b> Bright Light Marketing	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 1510.0010	<b>Revision No:</b> Conformed

**A) Activity Description:**

- 1) The CONSULTANT will attend public involvement meetings and provide information and materials as requested by HART.
  - a) The CONSULTANT will attend and meet with HART Public Involvement representatives to provide information and relevant updates as requested by HART.
  - b) Prepare for HART meetings - The CONSULTANT will prepare agenda, minutes and debrief after HART meetings as directed. Follow up on requests, coordinate with team members (internal) and external partners.
  - c) Meeting with Neighborhood Boards – The CONSULTANT will attend Neighborhood Board meetings. Present or speak at Neighborhood Board meetings when needed.
  - d) Prep for Neighborhood Board meetings - The CONSULTANT will write minutes/debrief after the Neighborhood Board meetings as requested. Follow up on items related to the CONSULTANT’s work for Neighborhood Board meetings when applicable.
  - e) Meeting with Public Organizations - The CONSULTANT will meet with public organizations, as directed by HART. The CONSULTANT will provide materials for these meetings as directed and support HART with logistics as needed. The CONSULTANT will also provide follow-up response or action when needed.
  - f) The CONSULTANT will provide informational materials on the CONSULTANT’s Guideway final design and features, which are subject to HART’s approval.
  - g) The CONSULTANT will provide support to HART as needed for up to three community meetings a year:
    - i) Coordinate location – logistics.
    - ii) Capture questions from audience. Follow up response.
    - iii) Possible advertising for community meetings.
  - h) Assist with general public involvement
    - i) Participate in internal coordinating meetings with BLM and HART communication’s staff, when appropriate.
    - ii) Assist where appropriate in the review and comment of news releases, fact sheets, and other communication materials.
    - iii) Assist with support with public involvement, as needed.

**B) Assumptions:**

- 1) HART Meetings - Two-hour meetings once a month, up to a maximum of ten (10) for the design phase. Allow two hours to prepare for meeting. Allow two hours to write minutes/debrief after meeting.
- 2) Neighborhood board meetings. Allow three hours to attend each meeting. The CONSULTANT will attend meetings only as directed. Allow two hours to prepare and two hours to write minutes/debrief for each meeting. Assumes one meeting every three months.
- 3) Meeting with Public Organizations – Twenty (20) hours of meetings each month. The CONSULTANT will instigate meetings. The CONSULTANT will respond to requests for meetings.
- 4) News release - The CONSULTANT will prepare drafts for the HART to approve. Assume one every other month.
- 5) Informational materials – Five (5) hours a month. The CONSULTANT will prepare drafts for HART approval.
- 6) Review HART’s media distribution list, and make recommendations to additions to HART’s list.

**C) Inputs:**

- 1) Media and community relations materials.

**D) Deliverables:**

- 1) Public Involvement Support
- 2) Public Involvement Support
- 3) Public Involvement Support
- 4) Public Involvement Support

**NTP #**

- 1a
- 1b
- 2
- 3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Public Involvement 15.2 Coordinate/Provide Public Involvement to Support HART	<b>Activity Responsibility:</b> Kuiwalu	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS - 1510.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> 1) The CONSULTANT will provide public involvement support for HART as requested. a) Respond to HART data calls, as requested. b) Assist HART as needed with the formulation of public relations messages as it pertains to the design of the Airport Segment. c) Prepare summary letter reports of project progress.		
<b>B) Assumptions:</b> 1) N/A		
<b>C) Inputs:</b> 1) FEIS, ROD, PA, MMP. 2) Project Design.		
<b>D) Deliverables:</b> 1) Summary letter reports 2) Summary letter reports 3) Summary letter reports		<b>NTP #</b> 1b 2 3

**TASK 1600 - Quantity Take-offs**

At each submittal, prepare material quantity take-offs to allow HART to perform a construction cost estimate. Format for the material quantity take-offs will be provided by HART.

**ACTIVITY DESCRIPTION**

Form SOW 01

<b>Activity:</b> <b>Quantity Take-Off</b> <b>16.1 Review and Development</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS – 1610.0010</b>	<b>Revision No:</b> <b>Conformed</b>

**A) Activity Description:**

- 1) For each submittal, the CONSULTANT will prepare material quantity take-offs to support HART in their development of a construction cost estimate.
- 2) Disciplines involved in the development of the Quantity take-off include:
  - a) Track.
  - b) Roadway.
  - c) Drainage.
  - d) Electrical.
  - e) Structural.
  - f) Utilities.
  - g) ITS.
  - h) Environmental.
  - i) MOT.
  - j) And others.

**B) Assumptions:**

- 1) Format for the Preliminary Engineering submittal material quantity takes-offs will be provided by HART.

**C) Inputs:**

- 1) Project Work Plan.
- 2) Quality Assurance Plan.

**D) Deliverables:**

	<b>NTP #</b>
1) Preliminary Engineering Submittal	1b
2) Interim Design Submittal	2
3) Draft Final Design Submittal	3
4) Final Design Submittal	3

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Quantity Take-Off 16.2 QC Review	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1620.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Coordination of the Discipline Review of the Quantity Take-Off.</li> <li>2) Formal quality control reviews of quantity take-off packages will be conducted prior to the submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) The Discipline Review is performed by staff not associated with the initial development of the Quantity Take-Off.</li> <li>4) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>5) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) N/A</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Project Work Plan.</li> <li>2) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverable:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

**TASK 1700 - Specifications**

At each submittal, prepare outline and/or detailed specifications, depending on the design completeness for the submittal.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> <b>Specifications</b> <b>17.1 Review and Development</b>	<b>Activity Responsibility:</b> <b>AECOM</b>	<b>Issue Date:</b> <b>09/20/2011</b>
	<b>Task No. / Sub Task No.</b> <b>WBS – 1710.0010</b>	<b>Revision No:</b> <b>Conformed</b>
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) For the specifications, at each submittal, the CONSULTANT will prepare an outline and/or detailed specifications, depending on the design completeness for the submittal.</li> <li>2) Disciplines involved in the development of the specifications are: <ol style="list-style-type: none"> <li>a) Track.</li> <li>b) Roadway.</li> <li>c) Drainage.</li> <li>d) Electrical.</li> <li>e) Structural.</li> <li>f) Utilities.</li> <li>g) ITS.</li> <li>h) Environmental.</li> <li>i) MOT.</li> <li>j) Geotechnical.</li> <li>k) And others.</li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Outlines will be developed for the Preliminary submittal.</li> <li>2) Detailed specifications will be developed for the Final submittal.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Project Work Plan.</li> <li>2) Quality Assurance Plan.</li> <li>3) H RTP Standard Specifications.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

ACTIVITY DESCRIPTION		Form SOW 01
Activity:	Activity Responsibility:	Issue Date:
Specifications	AECOM	09/20/2011
17.2 QC Review - Discipline and Inter-Discipline Review of Documents	Task No. / Sub Task No. WBS – 1720.0010	Revision No: Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Discipline quality control activities will be initiated at the earliest possible opportunities as design tasks are completed.</li> <li>2) Formal quality control reviews of specification packages will be conducted prior to submittal of each deliverable. The review includes verifying the submittal addresses of all previous internal and external comments in accordance with the comment resolution matrices.</li> <li>3) Discipline review is performed by staff not associated with the development of the original design.</li> <li>4) Task discipline leads will be responsible for periodically reviewing the plans of other interfacing disciplines throughout each design phase.</li> <li>5) Inter-Discipline Review is a review of the design drawing by all the other disciplines. This review is performed to ensure and verify interface of design. Formal Inter-discipline Design Reviews will be conducted prior to each submittal.</li> <li>6) Once all the QC reviews are complete, a QA review is performed to verify that all QC activities have been completed.</li> <li>7) QA/QC review will be performed prior to every formal submittal.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) Final Specifications in their entirety will be reviewed by each of the major disciplines.</li> <li>2) Review is to verify coordination of design between disciplines in order to avoid, overlaps and possible errors.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Preliminary Engineering Submittal</li> <li>2) Interim Design Submittal</li> <li>3) Draft Final Design Submittal</li> <li>4) Final Design Submittal</li> </ol>		<b>NTP #</b> 1b 2 3 3

**TASK 1800 - Design Support during Bidding (NTP #4)**

For the Airport Segment Guideway and Utilities Contract bidding period, provide support for the bidding process, prepare addenda if necessary, and assist HART in evaluating bids received.

ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Design Support During Bidding 18.1 Guideway and Utility Package	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1810.0010	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Management, administration, and design support during Design Support During Bidding (NTP #4).</li> <li>2) Attendance at Pre-Bid Conference.</li> <li>3) As requested, assist HART in the construction solicitation process.</li> <li>4) As requested, assist HART during the solicitation of the construction contract including provision of technical design support for questions or RFI's posed by potential bidders.</li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) An amount will be provided with justification and an amendment will be issued for NTP #4.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Final Design Bid Packages.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Response to RFI's</li> <li>2) Preparation of Addendum</li> </ol>		<b>NTP #</b> 4 4

**TASK 1900 - Design Support during Construction (NTP #5)**

One construction contract for the Guideway and utility relocations will be advertised for all of the work designed under this Scope of Work. The construction period is to be determined. Upon issuance of NTP #5, the CONSULTANT will provide design support during the construction phase including, but not limited to, shop drawing review and approval, material samples review and approval, responding to contractor Requests for Information, periodic inspections, development of punchlists, and preparation of as-built drawings based on mark-ups from the contractor(s). Construction Management is not included in this Scope of Work.

**ACTIVITY DESCRIPTION** Form SOW 01

<b>Activity:</b> Design Support During Construction 19.1 Management and Administration	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1910.0010	<b>Revision No:</b> Conformed

- A) Activity Description:**
- 1) Management and Administration support during Design Support During Construction (DSDC).
  - 2) Attendance and participation as required in meetings with HART and or the Contractor for design support and management.
  - 3) Management activities associated with coordination and communication with HART, including development of progress reports and invoices.
  - 4) Design progress and cost monitoring.
  - 5) CONSULTANT management activities, including internal design team coordination and management.
  - 6) Interface with HART via Contract Management System (CMS).
  - 7) Document Control.
  - 8) Management of subconsultants.
  - 9) Administration of the ProjectWise system for control of design documents and CADD files.
  - 10) Quality Assurance Management.

- B) Assumptions:**
- 1) No deliverable or milestones are associated with Design Support During Construction: Management and Administration; rather the effort is distributed over the duration of time associated with NTP #5.
  - 2) An amount will be provided with justification and an amendment will be issued for NTP #5.

- C) Inputs:**
- 1) Project Work Plan.
  - 2) Quality Assurance Plan.
  - 3) Project Schedule.

<b>D) Deliverables:</b> 1) Meeting Minutes/Management Reporting	<b>NTP #</b> 5
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ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Design Support During Construction 19.2 Shop Drawing Review	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1910.0020	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Structural: Review of Structural (bridge) shop drawings to ensure conformance to the design documents.</li> <li>2) Drainage: Review of Drainage shop drawings to ensure conformance to the design documents.</li> <li>3) Traffic: Review of Traffic shop drawings to ensure conformance to the design documents.</li> <li>4) Rail: Review of Rail shop drawings to ensure conformance to the design documents.</li> <li>5) Others: Review of shop drawings and other submittals as required to ensure conformance to the design documents for ITS, Environmental, Roadway and Utilities (or those not associated with Structural, Drainage, Traffic and Rail).</li> <li>6) Grounding of rebars for corrosion protection.</li> <li>7) Stray current test facilities.</li> <li>8) Concrete mixture for stray current leakage protection.</li> </ol>		

**B) Assumptions:**

- 1) With regard to task tracking and budgeting, no deliverable or milestones are associated with Design Support During Construction: Shop Drawing Review; rather the effort is distributed over the duration of time associated with NTP #5.
- 2) An amount will be provided with justification and an amendment will be issued for NTP #5.
- 3) Structural - Review includes, but is not limited to:
  - a) Segment shop drawing.
  - b) Post-tensioning layout shop drawings.
  - c) Pre-tensioning detail shop drawings.
  - d) Bearing shop drawing.
  - e) Expansion joint shop drawings.
  - f) Precast beam shop drawings.
  - g) Post-tensioning substructure element bent shop drawing.
  - h) Reinforcement shop drawings.
- 4) Drainage - Review includes, but not limited to:
  - a) Culvert drawings.
  - b) Bridge deck inlets shop drawings.
  - c) Pipe runs shop drawings.
- 5) Traffic - Review includes, but not limited to:
  - a) Large signs shop drawings.
  - b) Small signs shop drawings.
  - c) Sign support structures shop drawing.

- 6) Rail - Review includes, all shop drawing associated with the rail.
- 7) Others - Review includes, all shop drawing associated with ITS, Environmental, Roadway, and Utilities (or those not associated with Structural, Drainage, Traffic and Rail).
- 8) Duration is based on the HART approved construction schedule.

**C) Inputs:**

- 1) Project Work Plan.
- 2) Quality Assurance Plan.
- 3) Schedule.

<b>D) Deliverables:</b> 1) Reviewed Shop Drawings	<b>NTP #</b> 5
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ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Design Support During Construction 19.3 As-Built Drawings	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1910.0030	<b>Revision No:</b> Conformed

**A) Activity Description:**

- 1) Structural : Development of as-built structural (bridge) drawings.
- 2) Drainage: Development of as-built drainage drawings.
- 3) Traffic: Development of as-built traffic drawings.
- 4) Rail: Development of as-built rail drawings.
- 5) Others: Development of as-built drawing associated with ITS, environmental, roadway, and utilities (or those not associated with structural, drainage, traffic and rail).

**B) Assumptions:**

- 1) With regard to task tracking and budgeting, no deliverable or milestones are associated with Design Support During Construction: As-Built Drawings; rather the effort is distributed over the duration of time associated with NTP #5.
- 2) A nominal amount will be provided and an amendment will be issued for NTP #5.
- 3) Structural - Development of as-built structural drawings based on information received from the Contractor. The CONSULTANT is not responsible for the development of as-built data; rather the CONSULTANT is responsible only for the transcribing of Contractor-provided as-built data onto the drawings.
- 4) Drainage - Development of as-built drainage drawings based on information received from the Contractor. The CONSULTANT is not responsible for the development of as-built data; rather the CONSULTANT is responsible only for the transcribing of Contractor-provided as-built data onto the drawings.
- 5) Traffic - Development of as-built traffic drawings based on information received from the Contractor. The CONSULTANT is not responsible for the development of as-built data; rather the CONSULTANT is responsible only for the transcribing of Contractor-provided as-built data onto the drawings.
- 6) Rail - Development of as-built rail drawings based on information received from the Contractor. The CONSULTANT is not responsible for the development of as-built data; rather the CONSULTANT is responsible only for the transcribing of Contractor-provided as-built data onto the drawings.
- 7) Others - Development of as-built drawings based on information received from the Contractor. The CONSULTANT is not responsible for the development of as-built data; rather the CONSULTANT is responsible only for the transcribing of Contractor-provided as-built data onto the drawings.
- 8) Duration is based on the HART approved construction schedule.

**C) Inputs:**

- 1) Project Work Plan.
- 2) Quality Assurance Plan.

<b>D) Deliverables:</b> 1) As-Built Drawings	<b>NTP #</b> 5
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ACTIVITY DESCRIPTION		Form SOW 01
<b>Activity:</b> Design Support During Construction 19.4 Request For Information and Additional Support Activities	<b>Activity Responsibility:</b> AECOM	<b>Issue Date:</b> 09/20/2011
	<b>Task No. / Sub Task No.</b> WBS – 1910.0040	<b>Revision No:</b> Conformed
<b>A) Activity Description:</b> <ol style="list-style-type: none"> <li>1) Request for Information through HART:               <ol style="list-style-type: none"> <li>a) Structural: Respond to queries from the Contractor associated with the Structural design.</li> <li>b) Drainage: Respond to queries from the Contractor associated with the Drainage design.</li> <li>c) Traffic: Respond to queries from the Contractor associated with the Traffic design.</li> <li>d) Rail: Respond to queries from the Contractor associated with the Rail design.</li> <li>e) Others: Respond to queries from the Contractor associated with ITS, Environmental, Roadway and Utilities (or those not associated with Structural, Drainage, Traffic and Rail).</li> </ol> </li> <li>2) Other Support Activities:               <ol style="list-style-type: none"> <li>a) Review of Contractor initiated Change Orders, including:                   <ol style="list-style-type: none"> <li>i) Technical review and analysis.</li> <li>ii) Quantity review.</li> <li>iii) Cost review.</li> </ol> </li> <li>b) Respond to Contractor Non-Conformance Reports, including:                   <ol style="list-style-type: none"> <li>i) Technical review and analysis of as-built condition.</li> <li>ii) Possible redesign to accommodate as-built conditions.</li> <li>iii) Development of replacement design.</li> </ol> </li> </ol> </li> </ol>		
<b>B) Assumptions:</b> <ol style="list-style-type: none"> <li>1) With regard to task tracking and budgeting, no deliverable or milestones are associated with Design Support During Construction: Request for Information and Additional Support Activities; rather the effort is distributed over the duration of time associated with NTP #5.</li> <li>2) An amount will be provided and an amendment will be issued for NTP #5.</li> <li>3) Duration is based on the HART approved construction schedule.</li> </ol>		
<b>C) Inputs:</b> <ol style="list-style-type: none"> <li>1) Project Work Plan.</li> <li>2) Quality Assurance Plan.</li> </ol>		
<b>D) Deliverables:</b> <ol style="list-style-type: none"> <li>1) Respond to Requests for Information</li> <li>2) Provide Change Order Evaluation</li> <li>3) Respond to Contractor Non-Conformance Reports</li> </ol>		<b>NTP #</b> 5 5 5

**SPECIAL PROVISIONS  
EXHIBIT 2A**

**HONOLULU RAIL TRANSIT PROJECT  
AIRPORT SEGMENT GUIDEWAY AND UTILITIES CONTRACT  
  
CONTRACT COST ESTIMATE**

**EXHIBIT 2A  
CONTRACT COST ESTIMATE**

<u>Notice to Proceed</u>	<u>Cost</u>
1a: PREPARE SCHEDULE OF MILESTONES	\$784,136
1b: REVISION TO PRELIMINARY ENGINEERING (PE)	\$13,233,957
2: INTERIM DESIGN (ID)	\$17,048,698
3: FINAL DESIGN (FD)	\$6,186,155
4: DESIGN SUPPORT DURING BIDDING	TBD
5: DESIGN SUPPORT DURING CONSTRUCTION	<u>TBD</u>
Total Contract Amount	\$37,252,946
Allowance for Extra Work	<u>\$1,588,014</u>
Total Aggregate Amount	\$38,840,960

**SPECIAL PROVISIONS  
EXHIBIT 2B**

**HONOLULU RAIL TRANSIT PROJECT  
AIRPORT SEGMENT GUIDEWAY AND UTILITIES CONTRACT**

**COMPENSATION AND INVOICING**

## EXHIBIT 2B COMPENSATION AND INVOICING

1. Subject to the provisions set forth in this Agreement, the CONSULTANT will be paid periodically by HART for authorized and satisfactorily completed Work under this Agreement based on an approved Schedule of Milestones. Such payment shall be full compensation for Work performed, for all supervision, labor, supplies, materials, equipment or use thereof, taxes, and for all other necessary incidentals. The amount to be paid to the CONSULTANT shall be computed as hereinafter set forth; provided that such payment shall not exceed the amount of THIRTY-SEVEN MILLION TWO HUNDRED FIFTY-TWO THOUSAND NINE HUNDRED FORTY-SIX AND 00/100 DOLLARS (\$37,252,946.00), which includes all costs and fees associated with this Agreement, subject only to authorized adjustments as specifically provided for in this Agreement. In the event the CONSULTANT incurs costs or fees in excess of the Total Contract Amount, adjusted as provided herein, the CONSULTANT shall pay such excess from its own funds and shall have no claim against HART for payment of such excess.

2. The CONSULTANT shall submit a proposed Schedule of Milestones within twenty-two (22) working days after receipt of NTP #1a. The Schedule of Milestones is to be organized by NTP and will identify the Scope of Work ("SOW") activity code, describe the activity, specify the associated fixed-price amount and specify the estimated completion date. The CONSULTANT's Baseline Design Schedule must be conformed to the Schedule of Milestones. HART and the CONSULTANT shall reach agreement on the proposed Schedule of Milestones at which time HART will approve the Schedule of Milestones. HART's approved Schedule of Milestones shall be added to the Agreement by contract amendment and become part of the Agreement by amending Exhibit 2B-1 to these Special Provisions. In no event shall compensation exceed the amounts listed in the Schedule of Milestones or the Total Contract Amount.

3. **Payment Schedule.** Upon completion of Milestones for which NTP has been issued, the CONSULTANT shall submit to HART invoices for payment for Project Work completed on a schedule to be determined by HART and CONSULTANT in a form and in reasonable detail as determined by HART. Within thirty (30) days of receipt of invoice, and upon approval of the work satisfactorily completed and amount billed, HART will pay the invoice as approved. At no time shall the total cumulative amount paid for the Project Work exceed the Total Contract Amount. **The CONSULTANT shall notify HART in writing no later than ten (10) days after expending seventy five percent (75%) of the Total Contract Amount or whenever the CONSULTANT believes the Project Work cannot be completed for the Total Contract Amount.**

**EXHIBIT 2B-1  
PROJECT PAYMENT SCHEDULE**

APPROVED SCHEDULE OF MILESTONES\*

<u>Milestone</u>	<u>Amount</u>
NTP #1a Schedule of Milestones	\$784,136
NTP #1b: Revision to Preliminary Engineering	\$13,233,957
NTP #2 Interim Design (ID)	\$17,048,698
NTP #3 Final Design (FD)	<u>\$6,186,155</u>
Total Contract Amount	\$37,252,946
Allowance for Extra Work	<u>\$1,588,014</u>
Total Aggregate Amount	\$38,840,960

\*Upon issuance of NTP #1a, the CONSULTANT is to provide a Schedule of Milestones to HART within twenty-two (22) working days. HART's approved Schedule of Milestones shall be added to the Agreement by contract amendment and become part of the Agreement by amending this Exhibit 2B-1.



Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
Yogi Kwong Engineers, LLC

(Name of Subcontractor/Consultant)

to perform the following type of work:

Yogi Kwong is one of two firms responsible for the geotechnical exploration in support of aerial guideway foundation  
design. In addition, Yogi Kwong will be responsible for the development of geotechnical recommendations for  
pavement reconstruction and civil retaining structures.

The minimum value of the Subcontract is \$2,250,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is  is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_. Include a name and telephone  
number for certifying entity \_\_\_\_\_.

**For the Consultant:**

  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

  
Confirmed by: (Signature)

David R. Yogi, Jr.  
(Printed Name)

Manager  
(Title)

Nov. 21, 2011  
(Date)

Honolulu High-Capacity Transit Corridor Project

EXHIBIT 4
LETTER OF SUBCONTRACT INTENT

AECOM Technical Services, Inc. intends to subcontract Work for the
Airport Segment Guideway and Utilities Contract to
Group 70 International, Inc.

(Name of Subcontractor/Consultant)

to perform the following type of work:

Group 70 will develop the plan set, quantities and specification for the project architectural design.

The minimum value of the Subcontract is \$100,000.00.

The Subcontractor/Consultant Group 70 is X is not a certified DBE firm.

If certified, indicate certifying entity: . Include a name and telephone
number for certifying entity .

For the Consultant:

(Signature)

Rudolph Mina
(Printed Name)

District Manager
(Title)

December 13, 2011
(Date)

For the Subcontractor/Subconsultant:

(Signature)

James L. Stone
(Printed Name)

Principal
(Title)

12-2-2011
(Date)

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
Wilson Okamoto Corporation

(Name of Subcontractor/Consultant)

to perform the following type of work:

Design will include the project's roadway design, drainage design, traffic signal design, maintenance of traffic (MOT)  
plans, and structural design of the site structures. In addition to development of the plan set for the disciplines listed,  
Wilson Okamoto will be responsible for the development of quantities and the specification for these disciplines.

The minimum value of the Subcontract is \$4,500,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is  is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_. Include a name and telephone  
number for certifying entity \_\_\_\_\_.

**For the Consultant:**

  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

  
Confirmed by: (Signature)

Gary T. Okamoto  
(Printed Name)

President  
(Title)

11/17/11  
(Date)

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to

Ronald N. S. Ho & Associates, Inc.

(Name of Subcontractor/Consultant)

to perform the following type of work:

Design will include the project's electrical design and design of electrical utility relocations. In addition to the  
development of the plan set for the disciplines listed, Ronald N. S. Ho will be responsible for the development of  
quantities and specification for these disciplines.

The minimum value of the Subcontract is \$1,000,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is  is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_. Include a name and telephone  
number for certifying entity \_\_\_\_\_.

**For the Consultant:**

  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

  
Confirmed by: (Signature)

Ronald N.S. Ho  
(Printed Name)

President  
(Title)

11/17/11  
(Date)

Exhibit 4 – Letter of Subcontract Intent

SPECIAL PROVISIONS  
Airport Segment Guideway  
and Utilities Contract

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. \_\_\_\_\_ intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
KSF, Inc. \_\_\_\_\_

(Name of Subcontractor/Consultant)

to perform the following type of work:

Three firms will participate in the viaduct structural design. KSF will assist in the design. In addition, KSF will be responsible for the development of quantities and specification or their design elements.

The minimum value of the Subcontract is \$500,000.00 \_\_\_\_\_.

The Subcontractor/Consultant \_\_\_\_\_ is  is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_ . Include a name and telephone  
number for certifying entity \_\_\_\_\_.

**For the Consultant:**



\_\_\_\_\_  
(Signature)

Rudolph Mina  
\_\_\_\_\_  
(Printed Name)

District Manager  
\_\_\_\_\_  
(Title)

December 13, 2011  
\_\_\_\_\_  
(Date)

**For the Subcontractor/Subconsultant:**



\_\_\_\_\_  
Confirmed by: (Signature)

David K. Fujiwara  
\_\_\_\_\_  
(Printed Name)

President  
\_\_\_\_\_  
(Title)

11/17/2011  
\_\_\_\_\_  
(Date)

Exhibit 4 – Letter of Subcontract Intent

SPECIAL PROVISIONS  
Airport Segment Guideway  
and Utilities Contract

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
TY Lin International

(Name of Subcontractor/Consultant)

to perform the following type of work:

The firms will participate in the viaduct structural design. T.Y. Lin International will assist in the design. In addition,  
T.Y. Lin International will be responsible for the development of quantities and specification for their design elements.

The minimum value of the Subcontract is \$3,000,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is \_\_\_\_\_ x \_\_\_\_\_ is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_. Include a name and telephone  
number for certifying entity \_\_\_\_\_.

**For the Consultant:**

h —  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

Mirek Olmer  
Confirmed by: (Signature)

Mirek Olmer  
(Printed Name)

Vice President, Project Director  
(Title)

11/21/2011  
(Date)

Exhibit 4 – Letter of Subcontract Intent

SPECIAL PROVISIONS  
Airport Segment Guideway  
and Utilities Contract

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to

PBR Hawaii & Associates, Inc.

(Name of Subcontractor/Consultant)

to perform the following type of work:

PBR Hawaii & Associates, Inc. will develop the plan set, quantities and specification for the  
project landscape design.

The minimum value of the Subcontract is \$250,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is  is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_ Include a name and telephone  
number for certifying entity \_\_\_\_\_.

**For the Consultant:**

  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

  
Confirmed by: (Signature)

R. Stan Duncan  
(Printed Name)

Executive Vice President  
(Title)

November 11, 2011  
(Date)

Exhibit 4 – Letter of Subcontract Intent

SPECIAL PROVISIONS  
Airport Segment Guideway  
and Utilities Contract

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
Geolabs, Inc.

(Name of Subcontractor/Consultant)

to perform the following type of work:

Geolabs is one of two firms responsible for the geotechnical exploration and design. In addition, Geolabs will be responsible for the development of geotechnical related specifications.

The minimum value of the Subcontract is \$4,750,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is X is not a certified DBE firm.

If certified, indicate certifying entity: Not Applicable. Include a name and telephone number for certifying entity Not Applicable.

**For the Consultant:**



(Signature)

Rudolph Mina

(Printed Name)

District Manager

(Title)

December 13, 2011

(Date)

**For the Subcontractor/Subconsultant:**



Confirmed by: (Signature)

Robin M. Lim

(Printed Name)

Vice President

(Title)

11/11/11

(Date)

Exhibit 4 – Letter of Subcontract Intent

SPECIAL PROVISIONS  
Airport Segment Guideway  
and Utilities Contract

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
Shannon & Wilson

(Name of Subcontractor/Consultant)

to perform the following type of work:

Shannon & Wilson is responsible for the quality oversight of the two geotechnical exploration and design firms.

The minimum value of the Subcontract is \$150,000.00.

The Subcontractor/Consultant, Shannon & Wilson, Inc., is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_ . Include a name and telephone  
number for certifying entity \_\_\_\_\_ .

**For the Consultant:**

  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

  
Confirmed by: (Signature)

Gerard J. Buechel  
(Printed Name)

President  
(Title)

November 10, 2011  
(Date)

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to

Bright Light Marketing Group, Inc.

(Name of Subcontractor/Consultant)

to perform the following type of work:

Bright Light Marketing Group, Inc. will assist HART with regards to public involvement for the project.

The minimum value of the Subcontract is \$150,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is \_\_\_\_\_ x \_\_\_\_\_ is not\* a certified DBE firm.

\*Bright Light Marketing Group, Inc. has submitted the forms for DBE certification, but has not yet received it.

If certified, indicate certifying entity: \_\_\_\_\_ . Include a name and telephone  
number for certifying entity \_\_\_\_\_ .

**For the Consultant:**

  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

  
Confirmed by: (Signature)

Lynette Lo Kanda, aka Lynette Lo Tom  
(Printed Name)

President & CEO  
(Title)

November 15, 2011  
(Date)

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 4**  
**LETTER OF SUBCONTRACT INTENT**

AECOM Technical Services, Inc. intends to subcontract Work for the  
Airport Segment Guideway and Utilities Contract to  
Ku'iwalu

(Name of Subcontractor/Consultant)

to perform the following type of work:

Ku'iwalu will assist HART with regards to public involvement for the project, focusing on the Hawai'ian communities.

The minimum value of the Subcontract is \$30,000.00.

The Subcontractor/Consultant \_\_\_\_\_ is  is not a certified DBE firm.

If certified, indicate certifying entity: \_\_\_\_\_. Include a name and telephone number for certifying entity \_\_\_\_\_.

**For the Consultant:**

[Signature]  
(Signature)

Rudolph Mina  
(Printed Name)

District Manager  
(Title)

December 13, 2011  
(Date)

**For the Subcontractor/Subconsultant:**

[Signature]  
Confirmed by: (Signature)

DAWN N. S. CHANG  
(Printed Name)

MANAGER  
(Title)

11/10/11  
(Date)

**EXHIBIT 5**  
**CERTIFICATE REGARDING INELIGIBLE CONTRACTORS**

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER  
INELIGIBILITY AND VOLUNTARY EXCLUSION FROM TRANSACTIONS  
FINANCED IN PART BY THE U.S. GOVERNMENT**

I, Rudolph Mina, District Manager, hereby  
(Name of Certifying Officer) (Title of Certifying Officer)

certify that AECOM Technical Services, Inc.:  
(Name of Contractor/Consultant)

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any Federal department or agency or from participation in Project No. \_\_\_\_\_;
2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in Paragraph 2 of this certification; and
4. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

If any Principal Participant is unable to certify to any of the statements in this certification, such prospective Principal Participant shall attach an explanation to this certification.

I hereby certify and affirm the truthfulness and accuracy of the above statement, and I understand that the provisions of 31 United States Code (U.S.C.) §3801 et seq., (Administrative Remedies for False Claims and Statements) are applicable hereto.

AECOM Technical Services, Inc.  
Name of Consultant

1001 Bishop Street, Suite 1600  
Street Address

Honolulu, HI 96813

City, State, Zip  
808.521.3051

Telephone Number

  
\_\_\_\_\_  
Signature of Certifying Officer

(Note: The above certification merely certifies that the Consultant and its subcontractors are not declared by the Federal Government or have not voluntarily declared themselves debarred, suspended, or declared ineligible from doing transactions with the Federal Government or any of its agencies.)

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-42T-1200028 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

David R. Yogi, Jr.

Signed

David R Yogi, Jr

Typed or Printed Name

Yogi Kwong Engineers, LLC

Company Name

11/18/2011

Date

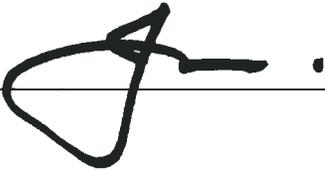
**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-421-120038 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

Signed



James L. Stone

Typed or Printed Name

Group 70 International inc.

Company Name

12-2-2011

Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-421-120038 by any federal department or agency.
  
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)



\_\_\_\_\_  
Signed

Gary T. Okamoto

\_\_\_\_\_  
Typed or Printed Name

Wilson Okamoto Corporation

\_\_\_\_\_  
Company Name

November 17, 2011

\_\_\_\_\_  
Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC 487-1200038 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

  
Signed \_\_\_\_\_

Ronald N.S. Ho  
\_\_\_\_\_  
Typed or Printed Name

Ronald N.S. Ho & Associates, Inc.  
\_\_\_\_\_  
Company Name

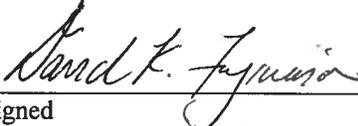
11/17/11  
\_\_\_\_\_  
Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-425-120038 by any federal department or agency.
  
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

  
\_\_\_\_\_  
Signed

David K. Fujiwara  
\_\_\_\_\_  
Typed or Printed Name

KSF, Inc.  
\_\_\_\_\_  
Company Name

November 14, 2011  
\_\_\_\_\_  
Date

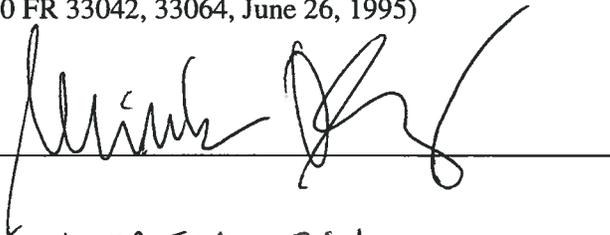
**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. HNL RT 3<sup>rd</sup> SEG, by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

Signed



MIREK OMER

Typed or Printed Name

T.-Y. LIN INTERNATIONAL

Company Name

11/11/2011

Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-HRT-1200030 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)



Signed

R. Stan Duncan  
Typed or Printed Name

PBR Hawaii & Associates, Inc.  
Company Name

November 11, 2011  
Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-42T-120038 by any federal department or agency.
  
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)



Signed \_\_\_\_\_

Robin M. Lim

Typed or Printed Name \_\_\_\_\_

Geolabs, Inc.

Company Name \_\_\_\_\_

November 11, 2011

Date \_\_\_\_\_

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-427-120038 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

  
Signed \_\_\_\_\_

**Gerard J. Buechel**

Typed or Printed Name

**Shannon & Wilson, Inc.**

Company Name

**November 10, 2011**

Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC H&T-1200038 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)

  
Signed \_\_\_\_\_

Lynette Lo Kanda, aka Lynette Lo Tom, President & CEO

\_\_\_\_\_  
Typed or Printed Name

Bright Light Marketing Group, Inc.

\_\_\_\_\_  
Company Name

November 15, 2011

\_\_\_\_\_  
Date

**EXHIBIT 6**  
**CERTIFICATE REGARDING INELIGIBLE SUBCONTRACTORS**

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion  
Lower Tier Covered Transactions**

- 1) The prospective lower tier participant (Subcontractor/Subconsultant) certifies, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in Contract No. SC-HDT-1200030 by any federal department or agency.
- 2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation.

(60 FR 33042, 33064, June 26, 1995)



Signed

DAWN N.S. CHANG

Typed or Printed Name

HO'AKEA LLC DBA KU'IWALU

Company Name

11/10/11

Date

Honolulu High-Capacity Transit Corridor Project

**EXHIBIT 7**

**CERTIFICATION REGARDING LOBBYING**

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) **No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned,** to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

(2) **If any funds other than Federal appropriated funds have been paid or will be paid** to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Federal Regulations 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)].

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

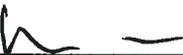
This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. §1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each expenditure or failure.]

AECOM Technical

The CONSULTANT, Services, Inc., certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the CONSULTANT understands and agrees that the provisions of 31 U.S.C. §3801, et seq., apply to this certification and disclosure, if any.

Company Name: AECOM Technical Services, Inc.

Signature: 

Print Name: Rudolph Mina

Title: District Manager

Date: December 13, 2011

**NOTE: THE CONSULTANT IS REQUIRED PURSUANT TO FEDERAL LAW, TO INCLUDE THE ABOVE LANGUAGE IN SUBCONTRACTS OVER \$100,000 AND TO OBTAIN THIS LOBBYING CERTIFICATE FROM EACH SUBCONTRACTOR BEING PAID \$100,000 OR MORE UNDER THIS CONTRACT.**

Exhibit 7 – Certification Regarding Lobbying

SPECIAL PROVISIONS  
Airport Segment Guideway  
and Utilities Contract

**SPECIAL PROVISIONS  
EXHIBIT 8**

**HONOLULU RAIL TRANSIT PROJECT  
AIRPORT SEGMENT GUIDEWAY AND UTILITIES CONTRACT**

**FEDERAL REQUIREMENTS**

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## **FEDERAL REQUIREMENTS**

### **1.0 GENERAL**

The CONSULTANT understands that Federal laws, regulations, policies, and related administrative practices applicable to this Agreement on the date signed may be modified from time to time. The CONSULTANT agrees that the most recent of such Federal requirements will govern the administration of the Agreement at any particular point in time, except if HART issues a written determination otherwise. To achieve compliance with changing Federal requirements, the CONSULTANT agrees to include notice in each subcontract that Federal requirements may change and that the changed requirements will apply to the subcontract as required.

#### **1.1 No Government Obligation to Third Parties**

(a) HART and the CONSULTANT acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Agreement, absent the express written consent by the Federal Government, the Federal Government is not a party to this Agreement and shall not be subject to any obligations or liabilities to HART, the CONSULTANT, or any other party (whether or not a party to that Agreement) pertaining to any matter resulting from the underlying Agreement.

(b) The CONSULTANT agrees to include the above clause in each subcontract. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

#### **1.2 Program Fraud and False or Fraudulent Statements and Related Acts**

(a) The CONSULTANT acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. §§ 3801 *et seq.* and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying Agreement, the CONSULTANT certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying Agreement or the Federal Transit Administration (FTA) assisted project for which this Agreement work is being performed. In addition to other penalties that may be applicable, the CONSULTANT further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the CONSULTANT to the extent the Federal Government deems appropriate.

(b) The CONSULTANT also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under an Agreement connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. Chapter 53, the Federal Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the CONSULTANT, to the extent the Federal Government deems appropriate.

(c) The CONSULTANT shall include the above two clauses in each subcontract. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

#### **1.3 Access to Records and Reports**

(a) The CONSULTANT shall provide HART, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the CONSULTANT which are directly pertinent to this Agreement for the purposes of making

audits, examinations, excerpts and transcriptions. The CONSULTANT shall, pursuant to 49 C.F.R. § 633.17, provide the FTA Administrator or his authorized representatives, including any Project Management Oversight Contractor, access to the CONSULTANT's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. § 5302(a)(I), which is receiving federal financial assistance through the programs described at 49 U.S.C. §§ 5307, 5309 or 5311.

(b) The CONSULTANT shall permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(c) The CONSULTANT shall maintain all books, records, accounts and reports required under this Agreement for a period of not less than three years after the date of termination or expiration of this Agreement, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case the CONSULTANT shall maintain the same until HART, the FTA Administrator, the Comptroller General of the United States, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto.

#### **1.4 Federal Changes**

The CONSULTANT shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between the City and the FTA, as they may be amended or promulgated from time to time during the term of this Agreement. The CONSULTANT's failure to so comply shall constitute a material breach of this Agreement.

#### **1.5 Civil Rights Requirements**

The CONSULTANT shall comply with the following requirements and include the following requirements in each subcontract, modified only if necessary to identify the affected parties:

(a) Nondiscrimination. In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the CONSULTANT shall not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the CONSULTANT shall comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

(b) Equal Employment Opportunity. The following equal employment opportunity requirements apply to the underlying Agreement:

(1) Race, Color, Creed, National Origin, Sex. In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the CONSULTANT shall comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Agreement Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 *et seq.*, (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The CONSULTANT shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other

forms of compensation; and selection for training, including apprenticeship. In addition, the CONSULTANT shall comply with any implementing requirements FTA may issue.

(2) Age. In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623 and Federal transit law at 49 U.S.C. § 5332, the CONSULTANT shall refrain from discrimination against present and prospective employees for reason of age. In addition, the CONSULTANT shall comply with any implementing requirements FTA may issue.

(3) Disabilities. In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the CONSULTANT shall comply with the requirements of the U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the CONSULTANT shall comply with any implementing requirements FTA may issue.

(4) Access for Individuals with Disabilities. The CONSULTANT shall comply with 49 U.S.C. § 5301(d), which states the Federal policy that elderly individuals and individuals with disabilities have the same right as other individuals to use public transportation services and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement transportation accessibility rights for elderly individuals and individuals with disabilities.

#### **1.6 Disadvantaged Business Enterprises (DBE)**

(a) DBE Assurances. The CONSULTANT and its subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Agreement. The CONSULTANT shall carry out applicable requirements of 49 C.F.R. Part 26 in the award and administration of U.S. DOT-assisted Agreements. Failure by the CONSULTANT to carry out these requirements is a material breach of this Agreement, which may result in termination of this Agreement or such other remedy, as HART deems appropriate.

The above paragraph shall be included in each subcontract the CONSULTANT signs with a subcontractor.

(b) Prompt Payment. The CONSULTANT shall pay all subcontractors (DBEs and non-DBEs) for satisfactory performance of their subcontracts no later than ten (10) days from receipt of payment by HART. Full and prompt payment by the CONSULTANT to all subcontractors shall include retainage, if applicable.

(c) DBE Goal. The City has established a race neutral overall DBE goal of 3.83% for fiscal year 2011-2013. Although HART has not established a DBE Agreement goal for this Project, DBE firms and small businesses shall have an equal opportunity to participate in the Agreement. The CONSULTANT shall adhere to the following requirements:

(1) Take affirmative steps to use as many of the race-neutral means of achieving DBE participation identified at 49 C.F.R. § 26.51(b) as practicable to afford opportunities to DBEs to participate in the Agreement. A race-neutral measure is one that is, or can be, used to assist all small businesses.

(2) A DBE firm must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work; and

(3) A DBE firm must be certified by the Hawai'i State Department of Transportation before its participation is reportable under paragraph (d) below;

(d) Reports to HART. The CONSULTANT shall report its DBE participation obtained through race-neutral means throughout the period of performance. The CONSULTANT shall submit the "DBE PARTICIPATION REPORT" reflecting payments made by the CONSULTANT to DBE subcontractors. Payments to the CONSULTANT will not be processed if the DBE PARTICIPATION REPORT is not properly completed and attached. The DBE PARTICIPATION REPORT shall be prepared in the format set forth in ATTACHMENT 1.6 a) to this Exhibit.

(e) Records. On request, the CONSULTANT shall make available for inspection, and assure that its subcontractors make available for inspection:

(1) Records of prompt payments made in accordance with Section 1.6(b), above;

(2) The names and addresses of DBE subcontractors, vendors, and suppliers under this Agreement;

(3) The dollar amount and nature of work of each DBE subcontractor;

(4) The social/economic disadvantaged category of the DBE firms, i.e. Black American, Hispanic American, Native American, Subcontinent Asian American, Asian Pacific American, Non-Minority Women, or Other; and

(5) Other related materials and information.

(f) The CONSULTANT shall promptly notify HART, whenever a DBE subcontractor performing work related to this Agreement is terminated or fails to complete its work. The CONSULTANT shall also promptly notify HART of a DBE subcontractor's inability or unwillingness to perform and provide reasonable documentation.

### **1.7 Government-Wide Debarment and Suspension (Non-procurement)**

(a) This Agreement is a covered transaction for purposes of 2 C.F.R. § 180.220(b) and 2 C.F.R. § 1200.220. As such, the CONSULTANT is required to verify that none of the CONSULTANT, its principals, as defined at 2 C.F.R. § 180.995, or affiliates, as defined at 2 C.F.R. § 180.905, are excluded or disqualified as defined at 2 C.F.R. § 180.940 and 2 C.F.R. § 180.935.

(b) The CONSULTANT is required to comply with 2 C.F.R. § 180, Subpart C, as supplemented by 2 C.F.R. § 1200, Subpart C, and must include the requirement to comply with 2 C.F.R. § 180, Subpart C, as supplemented by 2 C.F.R. § 1200, Subpart C, in any lower tier covered transaction equal to or exceeding \$25,000 it enters into. By signing the Agreement, the CONSULTANT certifies as follows:

The certification in this clause is a material representation of fact relied upon by HART. If it is later determined that the CONSULTANT knowingly rendered an erroneous certification, in addition to remedies available to HART, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The CONSULTANT agrees to comply with the requirements of 2 C.F.R. § 180, Subpart C, as supplemented by 2 C.F.R. § 1200, Subpart C, throughout the Agreement period. The CONSULTANT further agrees to include a provision requiring such compliance in its lower tier covered transactions equal to or exceeding \$25,000.

## **1.8 Lobbying**

The "CERTIFICATION REGARDING LOBBYING," as executed by the CONSULTANT in Exhibit 7 of the Special Provisions is incorporated herein by reference. The CONSULTANT and its subcontractors at every tier shall comply with U.S. DOT regulations, "New Restrictions on Lobbying," 49 C.F.R. Part 20, modified as necessary by 31 U.S.C. § 1352, which requires that no Federal appropriated funds shall be used to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal Agreement, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal Agreement, grant, or award covered by 31 U.S.C. § 1352. Such disclosures are forwarded from tier to tier up to HART.

## **1.9 Clean Air Requirements**

(a) The CONSULTANT shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The CONSULTANT shall report each violation to HART and understands and agrees that HART will, in turn, report each violation as required to FTA and the appropriate EPA Regional Office.

(b) The CONSULTANT shall include the above clause in each subcontract exceeding \$100,000.

## **1.10 Clean Water Requirements**

(a) The CONSULTANT shall comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251 et seq. The CONSULTANT shall report each violation to HART and understands and agrees that HART will, in turn, report each violation as required to FTA and the appropriate EPA Regional Office.

(b) The CONSULTANT shall include the above clause in each subcontract exceeding \$100,000.

## **1.11 Fly America Requirements**

(a) The CONSULTANT shall comply with 49 U.S.C. § 40118 (the "Fly America Act") in accordance with the General Services Administration's regulations at 41 C.F.R. Parts 301-10, which provide that HART and sub-recipients of Federal funds and their consultants are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The CONSULTANT shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. Flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements.

(b) The CONSULTANT shall include the requirements of this section in all subcontracts that may involve international air transportation.

## **1.12 Energy Conservation Requirements**

(a) The CONSULTANT shall comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

(b) The CONSULTANT shall include the above clause in each subcontract at every tier. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to the provisions.

### **1.13 Recycled Products**

The CONSULTANT agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act as amended (42 U.S.C. § 6962), including but not limited to the regulatory provisions of 40 C.F.R. Part 247, and Executive Order No. 12873, as they apply to the procurement of the items designated in Subpart B of 40 C.F.R. Part 247.

### **1.14 ADA Access**

The CONSULTANT shall comply with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 et seq., which requires that accessible facilities and services be made available to individuals with disabilities; and with the Architectural Barriers Act of 1968, as amended, 42 U.S.C. §§ 4151 et seq., which requires that buildings and public accommodations be accessible to individuals with disabilities, and any subsequent amendments to these laws. In addition, the CONSULTANT agrees to comply with all applicable implementing Federal regulations and directives and any subsequent amendments thereto.

### **1.15 Seismic Safety**

The CONSULTANT shall ensure that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in the U.S. Department of Transportation's Seismic Safety Regulations (49 C.F.R. Part 41) and shall certify to compliance to the extent required by the regulation. The CONSULTANT also agrees to ensure that all work performed under this Agreement including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the Project.

### **1.16 Text Messaging While Driving**

In accordance with Executive Order No. 13513, Federal Leadership on Reducing Text Messaging While Driving, October 1, 2009, 23 U.S.C.A. § 402 note, and U.S. DOT Order 3902.10, Text Messaging While Driving December 30, 2009, the CONSULTANT is encouraged to comply with the terms of the following:

(a) Definitions.

(1) "Driving" means operating a motor vehicle on a roadway, including while temporarily stationary because of traffic, a traffic light, stop sign, or otherwise. "Driving" does not include being in your vehicle (with or without the motor running) in a location off the roadway where it is safe and legal to remain stationary.

(2) "Text Messaging" means reading from or entering data into any handheld or other electronic device, including for the purpose of short message service texting, e-mailing, instant messaging, obtaining navigational information, or engaging in any other form of electronic data retrieval or electronic data communication. The term does not include the use of a cell phone or other electronic device for the limited purpose of entering a telephone number to make an outgoing call or answer an incoming call, unless the practice is prohibited by State or local law.

(b) Safety. The CONSULTANT is encouraged to:

(1) Adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers including policies to ban text messaging while driving:

(i) CONSULTANT -owned or CONSULTANT -rented vehicles or Government-owned, leased or rented vehicles;

(ii) Privately-owned vehicles when on official Project related business or when performing any work for or on behalf of the Project; or

(iii) Any vehicle, on or off duty, and using an employer supplied electronic device.

(2) Conduct workplace safety initiatives in a manner commensurate with the CONSULTANT's size, such as:

(i) Establishment of new rules and programs or re-evaluation of existing programs to prohibit text messaging while driving; and

(ii) Education, awareness, and other outreach to employees about the safety risks associated with text messaging while driving.

(3) Include this Special Provision in its subagreements with its subrecipients and third party contracts and also encourage its subrecipients, lessees, and third party contractors to comply with the terms of this Special Provision and include this clause in each subagreement, lease, and subcontract at each tier financed with Federal assistance provided by the Federal Government.

### **1.17 Sensitive Security Information**

The CONSULTANT, as a third party contractor must protect, and take measures to ensure that its subcontractors at each tier protect, "sensitive security information" made available during the administration of a third party contract or subcontract to ensure compliance with 49 U.S.C. § 40119(b) and implementing U.S. DOT regulations, "Protection of Sensitive Security Information," 49 C.F.R. Part 15, and with 49 U.S.C. § 114(r) and implementing Department of Homeland Security regulations, "Protection of Sensitive Security Information", 49 C.F.R. Part 1520.

### **1.18 Incorporation of FTA Terms**

(a) The Special Provisions to the Agreement are to include, in part, certain Standard Terms and Conditions required by the U.S. DOT, whether or not expressly set forth in the preceding provisions. All contractual provisions required by the U.S. DOT, as set forth in FTA Circular 4220.1F are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The CONSULTANT shall not perform any act, fail to perform any act, or refuse to comply with any HART requests which would cause HART to be in violation of the FTA terms and conditions.

(b) The CONSULTANT shall include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

# ATTACHMENT 1.6 a) – DBE PARTICIPATION REPORT

## DBE PARTICIPATION REPORT

This report shall be submitted with each invoice as a condition of payment under this Contract.

<b>Project Name:</b>		<b>Consultant Name:</b>	
<b>Contract No.:</b>	<b>Contract Amount (including amendments):</b> \$		
<b>Federal ID No.:</b> (OWP WE #, FTA Grant #, FHWA Project #)	<b>Total to Date</b>		
<b>Period Covered By This Report:</b>	<b>Current</b> (Invoice # _____)		
<b>Total Invoice Amount</b>	(A) \$	(B) \$	
<b>Payment Requested:</b>	<b>DBE?</b> (Yes/No) <b>DBE Code</b> (if "Yes")	<b>Prior Amount*</b>	<b>Total Amount to Date*</b>
<b>Prime Consultant</b>		\$	\$
<b>Subcontractors (attach additional sheets as needed):</b>		\$	\$
<b>Name:</b>		\$	\$
<b>Type of Work:</b>		\$	\$
<b>Name:</b>		\$	\$
<b>Type of Work:</b>		\$	\$
<b>Name:</b>		\$	\$
<b>Type of Work:</b>		\$	\$
<b>TOTALS</b>		\$	(C) \$
<b>DBE Participation to Date (C/B)</b>			%

*\*Insert dollar amounts for DBEs only*

**ATTACHMENT 1.6 b) - FINAL REPORT OF DBE PARTICIPATION**

This report must be submitted by the Consultant with the final invoice or request for payment under this contract.

Project Title: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

Project No.: \_\_\_\_\_ Contract No.: \_\_\_\_\_

Period Covered by this Report: \_\_\_\_\_

Contract Amount (including amendments): \$ \_\_\_\_\_

Final Payment Amount: \$ \_\_\_\_\_ Invoice No.: \_\_\_\_\_

Total Payment to DBE: \$ \_\_\_\_\_

All Subcontractors (DBE and non-DBE) & DBE Suppliers or Manufacturers	Type of Service or Materials Provided	Subcontract Amount
Name Address Telephone No.		

Add additional sheets as necessary.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name & Title

**ATTACHMENT 1.6 b) - INSTRUCTIONS FOR COMPLETING THE  
FINAL REPORT OF DBE PARTICIPATION**

All subcontractors, suppliers and manufacturers should be listed on the FINAL REPORT OF DBE PARTICIPATION in the same order as listed in the proposal.

Project Title:	Self Explanatory
Project No.:	Self Explanatory
Period Covered by this Report:	Same period as invoice period
Consultant Name:	Self-Explanatory
Contractor No:	Self-Explanatory
Contract Amount (including amendments):	Less Mobilization, Force Account Items and Allowance Items Amendments should be listed separately with an explanation of how it was allocated to DBEs and non-DBEs
Invoice No.:	Self-Explanatory
Final Payment Amount:	Self-Explanatory
Total Payment to DBE	Total \$ amount paid to DBE