Summary of Coordination with OIBC

Beginning in July 2009, the City and FTA conducted consulting party meetings regarding the Programmatic Agreement (PA) for the Project. The OIBC made several comments, including that the project did not coordinate with them early enough, concern that an elevated system would disturb more resources than at-grade, and that an archaeological inventory survey should have been completed prior to selection of the LPA. Following is a summary of OIBC's comments and the City's responses.

Early Coordination

The Honolulu High-Capacity Transit Corridor Project planning process has included considerable outreach to the public and agencies beginning with the highly-publicized Alternatives Analysis scoping process in December of 2005 that included a request to all interested parties to provide input. The Alternatives Analysis was completed during 2006 considering all of the input received from individuals and organizations. The process followed the Federal project development process for transit projects and evaluated and balanced a broad range of factors, including the potential to encounter Native Hawaiian Burials. The Alternatives Analysis Process resulted in the identification of a Locally Preferred Alternative.

Through the public outreach and media coverage for the Project's Alternatives Analysis, the Oahu Island Burial Council (OIBC) contacted the City to request a specific briefing to the council. The City attended the December 2006 OIBC meeting and provided an informational briefing about the project.

In March and April of 2007, the City conducted a broadly publicized scoping process for the National Environmental Policy Act Environmental Impact Statement process. Again the City requested any input on issues related to the Project. The OIBC elected not to comment during the scoping period. Once the input from the scoping process had been considered, FTA and the City initiated the consultation process under Section 106 of the National Historic Preservation Act of 1966. The City provided the council a project update at their October 2007 meeting. The OIBC was notified that Project would follow a phased approach for the identification of resources as outlined in 36 CFR 800.4(b)(2). The OIBC was invited in December 2007 to be a consulting party to the Section 106 process.

In August 2008, the OIBC was provided drafts of the Archaeological and Cultural studies that had been completed for the project. The City attended the September 2008 OIBC meeting, and the project became a standing agenda item. The OIBC decided to established a taskforce to work with the City. In November 2008, the City provided a corridor tour and briefing to the OIBC and continued to work with the OIBC to develop the process for investigation for Native Hawaiian Burials and the treatment of any burials, should they be found during project investigations.

At-grade vs Elevated Disturbance of Resources

The OIBC was provided a technical presentation by project engineers to respond to this issue. The OIBC invited the American Institute of Architects (AIA), and Kamehameha Schools (KS) to comment on the City's presentation. Both groups provided the following comments to the OIBC:

- at-grade track construction excavation does not have to be deeper than 17 inches and in some places can be as little as 12 inches
- over excavation (below 17" or 12") to remove "softer" or less compact material under city streets is not needed as heavy traffic on the streets has already consolidated the subgrade material
- there would be very little impacts to utilities since only 12" to 17" of excavation is needed
- track slabs only need to be 8 ft wide for a single track
- HHCTCP representatives grossly exaggerated the impacts of at-grade LRT excavation/construction

The following are the City's responses to the issues raised by representatives of the AIA and Kamehameha Schools.

AIA and KS comment: at-grade track construction excavation does not have to be deeper than 17 inches and in some places can be as little as 12 inches:

Response: The track slabs (the concrete support for the rails) for various at-grade systems vary between 12 inches (for low capacity Streetcar circulators) and 17 to 24 inches for more typical LRT systems. However, the track slab thickness is only for the concrete slab supporting the track and is not the total amount of excavation needed for at-grade track construction. The concrete track slab is only one component of the total support needed for the transit vehicle. The other critical components needed for proper support of the rail bed are:

- an engineered sub-base placed directly below the track slab (generally six to twelve inches thick), and
- competent natural soils below the sub-base.

Based on this, the minimum amount of excavation required for an urban in-street LRT system is generally approximately 2 feet, consisting of 17" for the track slab plus 6" for the engineered sub-base. Attachment A - "LRT At-Grade Track Construction Details from Various Cities" includes actual track construction details from cities with modern at-grade LRT systems including Phoenix, Seattle, and Jersey City.

Along with the excavation for the track bed, additional excavation is needed below the track bed for power distribution to power the transit vehicles. While this does not occur along every foot of the track construction, this requires a significant amount of additional excavation below the two feet already discussed to support the track bed. Excavations greater than two feet depths are quite common, very necessary and unavoidable.

Also, if the natural soils are not sufficiently stiff to support the track slab and base, then the sub-base thickness needs to be increased or the softer natural soils need to be

removed and replaced with stiffer soils. Either way, the depth of excavation increases. There are instances in other urban at-grade LRT systems where, due to the nature of the soils below the transit line, excavations of up to four to five feet deep have been necessary.

AIA and KS comment: over excavation (below 17" or 12") to remove "softer" or less compact material in city streets is not needed as heavy traffic on the streets has already consolidated the subgrade material:

Response: Much of the soils below streets in Honolulu (as in many other cities) include layers of softer material, including jaucas sand in which Native Hawaiian burials are most often found. These materials have been documented over the years by many different subsurface investigations and are partly evidenced by the ongoing filling of dips and depressions in pavements. With the exception of the section of Dillingham Boulevard between Pu'uhale Rd and Waiakamilo Rd., much of the proposed at-grade alignment has varying amounts of softer materials below the roadways.

Roadway pavement settlement caused by heavy traffic on pavement sections over softer soils can be dealt with by periodic filling or repairing of dips and depressions in the pavement while traffic is detoured to other streets. This is not an option for an urban at-grade rail transit system. If the track settles, the rail services have to be shut down (there is no detour route) while costly, time consuming repairs are made to relevel the track.

The need for a track bed with minimal soft soils below it becomes even more important because the weight of many of the modern Light Rail Vehicles currently used in most of the recently constructed at-grade Light Rail Transit systems in the US is twice (2X) that of the heaviest bus currently used in Honolulu. Based on this, it is likely that excavations over the minimum 2 ft noted above will be needed to achieve a stable track support system.

AIA and KS comment: there would be very little impacts to utilities since only 12" to 17" of excavation needed:

Response: Excavations for an at-grade LRT trackway would likely be a minimum of 2 ft and could be upwards of 4 ft deep if softer soils need to be removed. This would impact any utility in at least the upper 5 ft and likely cause it to be relocated. But this is not the only (or even main) reason utilities below at-grade LRT tracks are being relocated in many modern at-grade LRT systems. Utilities such as water supply, power transmission and distribution, communications, storm and sanitary sewers and other essential utilities, generally require the ability to be periodically inspected, maintained, repaired and replaced. More and more, utilities are finding it increasingly difficult (and in some instances unsafe for their workers) to continue these functions if their utilities are left below the LRT tracks that have crowded trains running every 3 to 15 minutes above the utilities. It is now more the norm than the exception for many of these utilities that would be located below the track to have them relocated.

In Honolulu, all of the main arterials that the Kamehameha Schools Report recommends as good candidates for at-grade LRT alignments (Dillingham Boulevard, Hotel Street, King St., Queen St., Ward Ave, and Kapi'olani Boulevard) contain many of these vital utilities. Figures 7 and 8 illustrate the possible impacts to underground utilities along Dillingham Boulevard and Kapiolani Boulevard should an at-grade LRT system be configured as suggested in the Kamehameha Schools Report.

In Dillingham Boulevard, water, gas, storm drains and sanitary sewer lines would need to be abandoned from below the LRT track slabs and relocated to an area below the traffic pavement that is clear of any existing utilities. This will require considerable amounts of excavation in the upper ten feet of Dillingham Boulevard. Conditions along Kapiolani Boulevard would be similar with regards to utility relocations.

AIA and KS comment: track slabs only need to be 8 ft wide (for a single track):

Response: Eight foot. wide track slabs have been used for single track slabs for low capacity Streetcar circulators in cities such as Portland and Seattle. However, these low capacity Streetcar circulator vehicles are only about 2/3 of the weight of modern Light Rail Vehicles. Typical single track slabs used for Light Rail Systems in Seattle, Phoenix, Jersey City and other cities vary from 8 ft wide to 12 ft wide as illustrated in Attachment A. If a twin track LRT system is used, the track slab would be at least 24 ft wide and is generally wider (up to 30 ft wide) to accommodate a safety walk between the tracks and space for the overhead contact system support poles. If the track way is used as a traffic lane for bus traffic, which is often the case, then the track slab is usually 12 ft to 13 ft wide to accommodate bus traffic also.

AIA and KS comment: HHCTCP representatives grossly exaggerated the impacts of at-grade LRT excavation/construction:

Response: All of the above points lead to a few observations where at-grade LRT is proposed along Dillingham Boulevard from Middle Street and Pu'uhale Road through downtown Honolulu to Ala Moana Center (approx 4.5 miles) as described in the "Light Rail Transit Report" provided to Kamehameha Schools:

Amount of excavated material and potential impact to burial sites:

The amount of excavated material in the area ten feet below the surface street (the area most likely to contain burial sites) for an at-grade LRT system consisting of two 12 ft. wide track slabs with only two feet of excavation is approximately TEN TIMES the amount of material that would be excavated for an elevated transit system with columns spaced between 100 ft and 150 ft apart. Therefore, one might surmise that the odds of disturbing a burial site in the 4.5 miles between Middle St. and Ala Moana Center are ten times greater if an at-grade system is built than if an elevated system is built. If the at-grade track excavation is deeper than 2 ft, as it may well be for reasons cited above, the potential impacts to burial sites increase beyond the ten times amount noted for just two feet of excavation.

Impacts on Utilities and additional excavation required to relocate utilities otherwise not affected that could affect burial sites:

For an at-grade system with two single track slabs, the minimum "zone" of impacted utilities below the track slabs would be 12 ft X 2 = 24 ft wide. For an elevated transit facility, the foundations would be approx 8 ft in diameter. Allowing 4 ft on both sides of the foundation as an area within which utilities would need to be relocated if encountered, that "zone" of impacted utilities becomes 16 ft. Considerably more utilities would be impacted and need to be relocated due to at-grade LRT construction than would be anticipated for elevated guideway construction. The additional excavation that would be required for utility relocations would further exacerbate the impact on burial sites.

An Early Archaeological Inventory Survey Should have been Completed

Completing an Archaeological Inventory Survey requires excavation to a depth of approximately five feet. At an early date, the City committed to explore each individual column location in areas of highest risk for encountering resources. During the Alternatives Analysis, the City completed an archaeological review of all alignments that included evaluation of soils, prior habitation, and literature review of prior finds. To have completed archaeological sampling at that time would have required excavation within several urban roadways, which could not be justified based on either cost or disturbance to residents. Based on the archaeological review, the City selected an LPA that included the alignment that served the Kakaako neighborhood with the lowest risk of encountering native Hawaiian burials.

At an early time, the City communicated the intent to complete the archaeological inventory survey during Final Design so that only areas intended for disturbance by the project would be excavated. The OIBC expressed concern that such an approach would provide information too late to be able to decide how to treat the resources. In response to this concern, the City agreed to accelerate the sampling to the PE phase. The City also added language to the PA that stated that if native Hawaiian burials are found, and the OIBC determines that they should be preserved in place, then the guideway columns may be relocated a limited distance along the guideway at most column locations, straddle-bent supports may be used, or special sections developed to modify span length allowing for preservation in-place to be viable in those locations. If the OIBC determines that a burial is to be relocated, the City will consult with the OIBC to determine appropriate reinterment, which may include relocation to Project property in the vicinity of the discovery.

The OIBC's statutory authority is limited to determining how previously-identified native Hawaiian burials should be treated, and must consider the views of recognized decedents of families with ties to an area in making the determination. In the past several years, the vast majority of determinations have been to remove the burial from the disturbed site, as many families prefer not to leave remains below active roadways or other such uses. Any resources discovered after completion of the Archaeological Inventory Survey are treated as inadvertent discoveries, which are the sole responsibility of the state historic preservation division.