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Planning
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Project and Construction Management

Project:	Queen Ka‘ahumanu Highway Widening, Phase 2 Project Underpass Feasibility Study Consultation Meeting
Date/Time:	Tuesday, July 25, 2017 10:00 a.m. to 2:30 pm
Location:	West Hawaii Civic Center Council Chambers 74-5044 Ane Keohokalole Highway, Building A Kailua-Kona, Hawaii 96740
Attendees:	See Below

Hawaii Department of Transportation (HDOT)
Scot Urada, P.E., Engineer
Donald Smith, P.E., Deputy Assistant Engineer
Hawai‘i Island
Natasha Soriano, P.E., Engineer

Federal Highway Administration (FHWA)
Lisa Powell, P.E., Transportation Engineer

State Historic Preservation Division (SHPD)
Amy Rubingh, Archaeologist

R. M. Towill Corp. (RMTC)
Brian Takeda, Project Coordinator
Jimmy Yamamoto, P.E., Snr. Project Manager
Jason Tateishi, P.E., Project Manager
Michelle Wong, Planner

Facilitators
Herb Lee (Mālama Waiwai)

National Park Service (NPS)
Aric Arakaki, Superintendent
Ala Kahakai National Historic Trail (AKNHT)
Rick Gmirkin, Community Archaeologist, AKNHT
Christopher Hawkins, Coordinator, AKNHT
Cayla Crivello, Intern, AKNHT

County of Hawaii Planning Department
Terry Dunlap, Planner
Keola Childs, Planner

Peoples Advocacy for Trails Hawaii (PATH)
Tina Clothier, Executive Director
Franz Weber, Board member

Makani Hou O Kaloko-Honokohau (Makani Hou)
Fred Cachola
(Also representing Royal Order of Kamehameha)

Royal Order of Kamehameha
Curtis Tyler, Former County of Hawai‘i Councilman

La‘i‘Ōpua Hawaiian Homestead Association
Bo Kahui, Executive Director

Kona Hawaiian Civic Club
Cynthia Nazara, President

E Mau Na Ala Hele
Deborah Chang

Kama‘aina Kekaha, Kona ‘Akau
Hannah Kihalani Springer

A. Opening Pule – Cynthia Nazara

B. Introductions (facilitated by Herb Lee)

C. Process Protocols (Facilitated by Herb)

1 Herb explained the process protocols using the word "ALOHA;" (1) Akahi as modesty, (2) Lokahi as Unity, (3) Oia i'o as honesty or trust, (4) Ha'aha'a as humility, and (5) Ahonui as patience. These cultural protocols should guide our discussions with one another.

2 The purpose of this meeting is to allow the community to share their thoughts and provide input on the Memorandum of Agreement (MOA), Stipulation 10B, Underpass Feasibility Study.

D. Presentation Discussion (Scot Urada, HDOT Engineer)

1 MOA Stipulation 10B: Scot U. thanked everyone for attending today's meeting. Stipulation 10B requires the Hawaii DOT (HDOT) to do a feasibility study to examine an at-grade crossing, underpass, and a modified culvert as highlighted on the slide. Then when this is completed, a copy of the study will be provided to the participants. A copy of Stipulation 10B was provided in a handout. The National Park Service (NPS) was consulted and parties identified to participate are provided in another handout.

The stipulation also requires the identification of a third party to maintain the underpass, and some examples will be shown later in the slide presentation.

Scot U. explained that before design details of the various alternatives are looked at, we should take a step back. For any improvement that HDOT considers, it must go through an evaluation process. For example, if we are told to put in a new runway at the Kamuela Airport, we do not automatically start designing for a 10,000 foot runway. We need to first evaluate and look at different factors to understand the project's Purpose and Need, and then understand the requirements. The Federal Highway Administration (FHWA) has guidance on Purpose and Need, and the HDOT goes through this process for any improvement.

Scot U. went over 11 items of the evaluation process that included: Purpose & Need, identification & examination of options, meeting objectives, fitting context (e.g. we probably would not want someone to put a 50 story tall building in Kamuela), need to consider environmental impacts, look at cost-benefit (as covered in later slides), HDOT needs to consider not only construction, but operation & maintenance, liability, the appropriate use of public funds, and design "warrants" (e.g. for various improvements, HDOT examines warrants to determine if certain improvements are justified, such as cross walks. If we look at Alii Drive in Kailua-Kona, if every home owner wanted a cross walk next to their driveway, then the roadway would not be able to perform its function).

Scot U. also explained that when an improvement is desired, that it could be for good intentions. Sometimes, however, that improvement may cause unplanned or unintended effects or consequences. The HDOT looked at the various options possible for this project and identified the potential items that everyone should be aware of and to consider. The HDOT feels that whatever is installed should be good for the entire community and that everyone was considered in the process.

Scot U. explained that when information is used for a design purpose, that data must be gathered to evaluate and design the improvements, and that this is where HDOT will need input from the participants. Also, in looking at data, the consideration for the trails is to ask, are we looking to preserve, or to increase their use? In addition, would it be for use by the general public or is it intended for the descendants? Certain improvements may increase or attract more people to the trails, and by itself may further impact the trail.

Fred C. and others felt offended by "Public vs. descendants" in the slide presentation. Scot U. explained that this was intended to explain that the improvements may attract other people (general public) to the trails. In the past, some Consulted Parties felt that they wanted to preserve trails.

2 Fred C. asked about Agenda Item 4: Terms and Intent of Stipulation 10B. Fred indicated that Native Hawaiian organizations (NHOs) recommended the construction of an underpass from previous discussion of the MOA, when the MOA was prepared several years ago. There seems to be a paradigm for a construction project rather than a paradigm of cultural restoration. Native Hawaiians would like one trail to be restored so they can walk in the footsteps of their ancestors. Fred questioned whether R. M. Towill (RMTC) is an independent party able to conduct the underpass feasibility study and that RMTC has had many contracts by the HDOT in Kona. Jason T. noted that RMTC was selected by the HDOT to assist them with the completion of the MOA stipulations, including today's discussion of Stipulation10B, and noted this was the first HDOT contract in over 10 years that RMTC had in Kona.

3 Curtis T. stated that it is important that all individual perspectives be shared and should not be debated.

4 Deborah C. asked when the current MOA expires. Herb stated that the current MOA was signed in 2015 and would expire after five years, in 2020. The MOA may be extended if agreed to by the signatories.

5 Fred C. asked why the HDOT will not take responsibility for the liability of the underpass and whether the liability could be given to a third party. Scot U. responded that the topic will be covered in more detail as this is addressed in the presentation.

6 Aric A. asked about Presentation Slide 6: Design Evaluation Process and why there was no mention of cultural impacts and that it should be considered in the design phase. Scot U. indicated that the cultural and environmental impacts were grouped together.

7 Keola C. asked if HDOT would allow for more discussion as each option is presented. Scot U. responded yes, such discussions can be done, however given the overall meeting time constraints, that such discussions be limited.

E. Option 1: At-Grade Highway Crossing Discussion

1 Scot U. showed a slide depicting the location of the future signalized intersection, the location of the existing 10 foot culvert that is being extended due to the widened highway, and a possible location for a separate underpass structure. The slide showed approximate distances from the existing trails to the various highway crossing options.

2 For the first option, Scot U. explained that the cross walks and signals are the more traditional approach, one that is familiar to drivers. There would be no additional adverse impacts to the trails, low construction maintenance costs, and no steep grades for users. For CONS, this was the furthest of options from the trails, and there were car-pedestrian conflict points. A slide showing the existing Queen Ka'ahumanu Highway at the Palani Road intersection was shown, and Scot U. explained that an at-grade crossing would look very similar to this.

3 Curtis T. asked if the existing crosswalks at Kealakehe Parkway and Hinalani Street will remain. Scot U. indicated that the existing crosswalks will remain.

4 Keola C. stated that the disadvantage of the at-grade crossing is that it does not account for the cultural context and purposes of the cultural practitioners needing to cross the highway, and requested that this somehow be shown.

5 Curtis T. noted another disadvantage relates to traffic. If another signalized intersection were constructed; there would be impacts to traffic movement in the area.

6 Tina C. had concerns with pedestrian safety while crossing the highway. The amount of time needed for people to cross the intersection may be longer than provided by a traffic signal. This is because the non-able bodied, such as Kupuna, may require more time to cross the road.

7 Aric A. asked for further discussion from the group on other alternatives to the at-grade highway crossing for future highway expansion projects.

8 Franz W. stated that the Makala Boulevard intersection gives pedestrians 30 seconds to cross. That intersection is not as wide as the proposed Queen Ka'ahumanu Highway at-grade crossing which could require as long as 45 seconds to cross. Both motorists and pedestrians may not also have the right attitude [or awareness] that there is an important historic trail at this location, and become frustrated by the wait.

9 Curtis T. stated that a traditional approach to pedestrians crossing the highway does not account for the current cultural landscape or psychology of motorists using the highway.

10 Chris H. commented that he felt the idea of an at-grade crossing being more traditional and familiar to drivers does not make sense at this location.

11 Bo K. asked where the trail would connect to. Will it go from the Kaloko-Honokohau National Historic Park and then to the industrial area on the mauka side of the highway? If this trail was historically a major roadway that led to a significant heiau or site, then restoration of the trail should be considered. However, Bo noted that he does not know of any significant history for the use of the trail, and has not seen anyone use the trail [to go to a particular place]. He stated he would opt for preservation instead.

12 Rick G. stated that the trail would provide a traditional connection to the surrounding community, the future regional park, Kealakehe High School, the remainder of the Honokohau Trail located in an archaeological preserve, and future mauka residential communities. The trail may not be the best for bikers though.

13 Hannah S. stated that it is up to the community to develop a use for the trail that is fitting for modern times so that community members can use it for recreational needs.

F. Option 2: Drainage Culvert Modification Discussion

1 Scot U. explained that there is an existing 10 foot culvert under the highway and this is being extended. In this location, the bottom of the culvert is over 20 feet from the highway surface, so if we need to consider pedestrians and bicycles, and Americans with Disabilities Act (ADA), long ramps need to be constructed. Another slide was shown from a mainland U.S. location, where a culvert was modified to accommodate both drainage and pedestrians. Scot U. explained that sometimes the "devil is in the details" and when the HDOT looked at this location, there were many things to be considered. Someone would need to operate this, so if there is rainfall, someone will need to monitor it, and if there is water running in the culvert, it may need to be closed to pedestrian traffic. This is a somewhat remote site and so this may have to be monitored 24/7.

2 Scot U. went over the PROS where this option: eliminates pedestrian / car conflicts; it is located closer to the trails; and it is a dual use of a structure. The CONS identified by HDOT included: the need for maintenance; the culvert size may need to be increased from its existing 10 feet to accommodate both uses (drainage and pedestrians); someone needs to monitor weather; there is the need to identify a capable third party to maintain and operate the culvert for pedestrians; the culvert may require lighting and ventilation, and this may attract more people (public) to the trails (which might be a source of further impact); the culvert may require further improvements such as paths or ramps to the adjacent trails that cause additional effects; and, modification may be costly.

3 Curtis T. stated that regarding the use of a drainage culvert for a pedestrian crossing, that the Hawaiian people have common sense as to when it is appropriate to use it (by avoiding use during storm events). The culvert is more than tall enough for pedestrians to use it. For pedestrians using the culvert, taxpayers should absorb the liability.

4 Chris H. stated that there are ways to construct the culvert so it resembles the trail. Chris also does not agree with Slide 12 CONS, Option 2, item 7, "May attract more people (Public) to natural resources", because as a Natural Resource Manager, the main goal is to get people out into nature.

5 Hannah S. asked if the culverts were placed based on weather patterns and topography. Scot stated that the culverts are located based on the surrounding topography and general observations by maintenance personnel involving rainfall events.

6 Amy R. noted that the PROS and CONS lists for the at-grade highway crossing would look much like the proposed Option 2, modified culvert, if it was presented as the less preferred option.

7 Fred C. feels like the modified culvert would be better than an at-grade highway crosswalk as it would allow for trail connectivity. He wants to make sure what is presented is not a declaration, but a discussion. Scot U. reemphasized that when HDOT looked at this, these were things that HDOT could identify as PROS, CONS, and with possible unanticipated or unintended effects, and that HDOT wanted to fully disclose this to all meeting participants for consideration.

8 Bo K. stated that if underpass construction is considered, then the culvert modification seems like the most cost effective option. It is closer to the trails than the at-grade highway crossing, but more research would need to be done to determine the best option. However given that the 10 feet culvert already exists, Bo K. felt that he would need to re-think the situation.

9 Franz W. does not feel the Options should be divided into PROS and CONS as this is a traditional approach and has been proven ineffective. He also agrees with Chris H., that the use of the trail should not be a CON.

10 Chris H. does not think that cost is a justified CON as the cost to modify the culvert could have been incorporated during the design phase. Scot responded that the original purpose of the culvert was for drainage. If the culvert were modified for pedestrian and bicycle traffic, construction standards and numerous design details would need to be followed. Chris H. clarified that if the design was done earlier and included in the project earlier, some of the anticipated retrofit costs could have been avoided.

11 Curtis T. explained that the National Historic Preservation Act (NHPA) states that the impact to NHOs and cultural properties must be considered. The list of CONS seems disingenuous as there should be more focus on cultural considerations and impacts as part of the discussion.

12 Aric A. does not agree with Slide 7, Information Used for Design, as the use of the trail should be inclusive of everyone in the community. Scot stated that the potential increased use of the trail could cause more damage to the trail. Herb added that the trail may not be able to handle increased pedestrian use due to carrying capacity.

13 Fred C. stated that there is a difference between cultural restoration and design engineering. Cultural restoration incorporates the public which includes the Hawaiian people.

14 Hannah S. stated that Option 1, At-Grade Highway Crossing, should be listed as “at-highway grade” and Options 2, Culvert Modification and 3, Underpass Construction, should be listed as “at-trail grade”.

15 Deborah C. asked whether there are variances to the design standards. Scot stated that it is something that can be looked at in more detail.

G. Option 3: Underpass Structure Discussion

1 Scot U. covered a slide showing PROS and CONS for underpass structures. PROS included such a structure would be located at the trails, it is a dedicated structure for pedestrians and cyclists, and it eliminates pedestrian / car conflicts. For CONS, it is the most costly of alternatives, will need a third party to maintain, may require lighting and ventilation, could cause additional negative effects to historic properties such as trails by attracting more people including the homeless, and similar to the modified culvert, may require ramps to provide a transition to the roadway.

Scot U. showed an example of an underpass structure on Kamehameha Highway in Mililani. Mililani is a “walled community” and in this location, the underpass structure provides access from a subdivision across

the highway to Mililani High School. Due to the enclosed community layout, people have to walk far to the intersections before they can cross, thus an underpass was installed, and this is maintained by the Mililani Town Association. In another location, due to the topography where the highway is lower than the surrounding development, there is an overpass structure installed as part of Mililani that provides access for school kids across the highway, that is also maintained by the Mililani Town Association.

Another slide was presented showing an underpass structure at Pali Highway on O'ahu next to the Hongwanji Mission. Similar to Mililani, this provides an undercrossing from the church to the school, and similar to Kamehameha Highway, the traffic volumes are very high, with multiple lanes, and long distances between intersections. The HDOT also does not maintain this underpass structure.

Scot U. showed a third example at North Kaniku Drive on the Big Island. This is an underpass structure for the golf course, and is for a specific purpose. In this example, this was installed as part of a masterplanned development, paid for and maintained by the developer. So in summary, underpasses are located for specific needs, giving consideration for the users, the roadway, and in many instances, provide safe crossings for children.

2 Aric A. stated that the homeless situation should not be discussed as this is a larger social issue and the appropriate departments and agencies who handle them should be included in the discussion. Scot U. explained that the homeless is an issue that greatly affects HDOT, and in this location, it could cause a concern. When asked, NPS stated that for the park property in the area, the homeless are not a problem.

3 Curtis T. stated that the Hawaiian people value and respect property and land. The use of the trail is a cultural practice that has been lost over the years. More effort could have been made from the beginning to incorporate the construction of the underpass into the design phase to allow for trail connectivity.

4 Hannah S. stated that the professional standards for these consultation conversations have recently allowed for discussions between government agencies and the community.

5 Fred C. stated that he feels that attracting more people to use the trail is a good thing.

6 Keola C. stated that Option 3, adding the construction of the underpass, is the best option for providing cultural restoration to the site.

7 Hannah S. agreed with Keola C. and understands the environmental impacts potentially created by constructing the underpass. She feels that the underpass would not increase the potential for environmental impacts as much as vehicular access has.

8 Franz W. disagrees with the need for a ramp to allow pedestrians to access the highway from the underpass. He feels that no one will want to walk up to the highway.

9 Tina C. does not understand the difference in design between a culvert and an underpass. Scot explained that there is an existing 10 foot drainage culvert that would need to be modified for pedestrian use. There is no existing structure that serves as a pedestrian underpass. Tina suggested that HDOT look at possible exceptions, such as perhaps bicyclists, who may not have to be able to ride through the structure.

10 Keola C. would like more information on design specifications for the underpass and feels the underpass should have a more humanistic design that is culturally appropriate, rather than just a box. Scot responded that there are examples of underpasses already used and located in Hawai'i.

11 Franz W. stated that the underpass does not necessarily have to be designed to allow bicyclists to ride through them. Rather the design should allow both pedestrians and bicyclists to walk their bicycles through the underpass.

12 Curtis T. agreed with Franz. The underpass could resemble a lava tube, for example, where murals could be painted on the walls representing the history of the area.

13 Rick G. asked if there are homeless issues in the Mililani Underpass. Scot stated that he is not aware of any homeless but the underpass does have issues with graffiti.

14 Tina C. asked if the Mililani Underpass is a safe route for children to get to school. Scot responded that the primary function of the Mililani Underpass is for the students to get to and from school.

15 Curtis T. asked if the Mililani Underpass was a culvert that was converted to an underpass. Scot stated that the structure is a concrete arch and is not a culvert.

16 Chris H. wanted to know what the Mililani community would say if the underpass was replaced with an at-grade highway crossing.

17 Fred C. asked if the underpass examples presented were paid for by private developers. If so, is it possible for a third party to maintain the underpass when the HDOT will not? Scot stated that many of the example underpasses, such as those shown on O'ahu and elsewhere, were paid for and designed by private developers and they have executed an agreement to maintain and assign responsibilities for liability, since the underpasses are in the HDOT right-of-way. The HDOT has executed similar agreements with other parties, such as when a party wants to put in a gateway sign, for example, that is not transportation related. So the party would submit plans to HDOT to show it can be built and is safe for the public, HDOT would review and approve the plans, and an agreement for the party to maintain the underpass would be executed. Fred asked, if a third party paid for the underpass, they can submit plans to HDOT, for review and approval, and the identification of the party to maintain it, and the HDOT could allow that? Scot U. responded yes, that is possible. Fred C. requested that this be placed in the meeting notes.

18 Curtis T. stated that if a private or third party developer makes improvements in connection with public roadways, those improvements should be dedicated to the jurisdiction responsible for the roadway. Scot U. responded that many times, in the case of county agencies and as a condition of development, developers design and build the roadways according to county standards, and comply with development conditions, and that once dedicated and built to applicable standards, maintenance of the roadway should become the responsibility of that government agency.

19 Franz W. stated that there has been no mention of an overpass option. Scot stated that the decision was made to not include consideration for an overpass during earlier discussions when the MOA was drafted.

20 Fred C. stated that earlier discussions would consider only an overpass or an underpass option, not both. Therefore at the time the MOA was negotiated, this stipulation for an underpass feasibility was included. Fred feels that an overpass option should be also considered.

21 Hannah S. stated that there is also an example of a vehicular underpass under the Queen Ka'ahumanu Highway near Kuhio (development).

H. Option 4: Other Non-Structural Options Discussion

1 Scot U. covered a fourth option where if events are known, maybe there are other options such has having the police or other escorts help with people crossing the highway.

2 Fred C. stated that this option was not discussed during the drafting of the earlier MOA and should be removed.

3 Scot U. said that the stipulation did specify "at-grade crossing", and this was an option that would be at-grade, therefore the HDOT looked at it.

4 Curtis T. stated that this option should be taken out and we do not need any option with the police involved.

5 Chris H. stated that Option 4 Other Non-Structural Options and Option 5 Overpass should remain with a note added to each stating that these options were "discussed but not analyzed".

I. Presentation Discussion Continued (Scot Urada, HDOT Engineer)

1 Scot U. covered benefit-cost, and how HDOT would use this in evaluating options. The slide presented is a very simplified example, and a benefit-cost analysis could include other things such as the cost of vehicular damage, fatalities, etc., based on historic data.

2 Scot covered slides on Maintenance and Operation, and explained various items that need to be considered for the various alternatives.

3 Appropriate use of Public Funds was presented, showing requirements that need to be met and complied with.

4 Scot covered Warrants – using nationally accepted standards and practices, how facilities are warranted. Warrants could apply to different things. What we put in should be consistent with design standards and what drivers or other road users can reasonably anticipate.

5 Other considerations, including potential unintended consequences was covered by Scot. Examples of some of the improvements could attract additional people to historic resources, possibly encourage undesired access to properties, attract the homeless, and result in possible negative effects to trails and other things.

6 Curtis T. stated that taxpayers should have a say on what is constructed as the money used to fund HDOT projects are paid for by the people. He asked how much money was saved when the proposed landscaping was removed from the project, and could those saved funds be used to construct the underpass instead. The proposed landscaping was a cultural improvement requested by the people. There is an intangible value of culture and the way HDOT perceives that, and implements their projects, needs to change. HDOT projects do not show the experience of "aloha" to visitors coming to Hawaii.

7 Tina C. stated that it would be hard to put a dollar value on quality of life. However, the health benefit created by facilities that promote walking and biking could be quantified.

8 Fred C. asked if a HDOT engineer could quantify the loss of Hawaiian culture over the years.

9 Rick G. stated that there is a Federal code that states that trails are not to be severed or bisected. HDOT has the responsibility to maintain trail connectivity when trails are bisected. Rick G. stated that the NPS has made comments to other projects, such as the Saddle Road Extension, to maintain trail connectivity.

10 Fred C. feels that the original construction and later widening of the Queen Kaʻahumanu Highway did not follow federal guidelines relating to Section 4(f) that states that the HDOT must mitigate when bisecting the trail. Scot responded that Section 4(f) would require an agency to avoid, minimize and mitigate. This was a long time ago and he would not be able to comment.

11 Curtis T. understands that there are rules and regulations that the HDOT needs to follow. However, if the rules were not followed, and trails were bisected during the construction of the highway, then mitigation for every bisected trail should be done. For example, an overpass should be built for every mauka-makai trail that was bisected by the highway. The bisections were a failure on HDOT's part to consider the cultural aspects of the trails. The proposed underpass is a compromise by the NHO's for the mitigation of the trail bisections.

12 Aric A. stated that according to the Highways Act of 1892, lands belonging to the Kingdom of Hawaiʻi are now the property of the State of Hawaiʻi; therefore trails are owned and should be maintained by the State.

13 Keola C. thought that the underpass was already warranted because it is stipulated in the MOA. There is a difference between a project that is warranted and one that is feasible. Scot U. stated that this project needs to study the feasibility of constructing the underpass per the MOA. When HDOT has a project, a process needs to be followed to determine the constructability of the project. Donald S. stated that if money were no

issue, then the engineering and construction is no problem. The crossing has been warranted, but not the underpass.

14 Fred C. stated that the Department of the Interior and the NHPA have laws for historic preservation design standards. National standards for historic preservation that affect this Project should be used during the design phase. Fred stated that it seems as if the HDOT is suggesting that the study is not warranted, but that he feels it is warranted.

15 Hannah S. asked if the Project would be warranted if evaluated using NHPA standards.

16 Tina C. asked if FHWA or HDOT makes the decision on what kind of facility is required. Doesn't HDOT have an influence on how the Federal Highways Administration spends funds? Scot stated that since federal money is being spent, HDOT will need to look at whether the design meet federal requirements. Scot U. agreed that HDOT has influence on how FHWA spends funds.

17 Keola C. asked if the construction of the underpass can be seen as a retroactive mitigation and act as a monument for the other bisected trails. The HDOT would not be able to mitigate for impacts to trail bisections outside of the project area.

18 Terry D. asked if the Federal Government knew about the portions of trail bisected by highway construction. Scot stated that he does not know what the environmental laws may have been when the highway was first constructed since it predates the current project.

An audience member suggested that to consider the value of trails bisected, the HDOT should look at all trails over the entire Queen Kaahumanu length, from Kailua to Kawaihae, and it could better support the feasibility. Scot U. responded that he was not sure how the county assesses impacts for its projects, but the HDOT assesses the impact caused by the undertaking. Based on this the HDOT would review the area of potential effect within the project limits and then evaluate the impact.

19 Fred C. stated that this project is being segmented rather than representing the entire highway in one project. The highway bisected hundreds of trails and this underpass could be used to mediate [mitigate] for all those trails that were bisected by the construction of the highway. There is a cost benefit to constructing this one underpass to mediate [mitigate] for the other bisected trails.

20 Scot explained that the intent of the presentation was to discuss the process that HDOT goes through, and when HDOT looked at it, HDOT wanted to present to all parties what HDOT could see as potential concerns and fully disclose this, and not to declare a decision regarding the underpass feasibility study. At this stage the HDOT is gathering input. Donald S. asked the participants if there was a standard outside of what HDOT is examining that would help to justify the underpass. He also asked that if the underpass were feasible, would the NHOs want it at the proposed location. Curtis and Fred both agreed yes, at the proposed location.

21 Rick G. would like to make sure that there is an understanding that the HDOT is not precluded from considering the construction of underpasses for other trails bisected by highway projects if this Project elects to construct the underpass.

22 Curtis T. feels the Benefit to Cost Ratio is flawed. Projects suggested by NHOs would never meet these standards of a benefit to cost ratio. He feels based on the example, the numbers will never justify the feasibility of an underpass, and that decisions have been made that do not consider NHO opinions.

23 Keola C. stated that there are no geotechnical reasons why the underpass is infeasible. The design of the underpass needs to have a humane solution. The Project should consider humane designs and feasibility, rather than arguing about the cost benefit of the construction of the underpass.

24 Fred C. stated that the feasibility rather than the cost of the underpass should be discussed. There is a cost benefit to culture. The cost should not be the main reason why the underpass is infeasible because if other

undertakings were able to find the necessary funding, then this project should be able to do the same. The meeting is biased to a conclusion and cultural aspects cannot be discussed in engineering terms.

25 Deborah C. asked if there will be additional meetings regarding this topic. HDOT appears to have a responsibility to design guidelines and protocols for the connectivity of the trails bisected.

26 Franz W. stated that the feedback from the meeting participants seem to agree with the construction of the underpass. He would like to see how HDOT can complete the underpass and feels that the funds can be found with the right justification.

27 Aric A. stated that Section 106, NEPA, and State HRS Chapter 6E are planning tools that HDOT can use to develop projects. HDOT should have consulted the community first and engineer solutions from their input into the design. How can HDOT avoid this in future design projects?

28 Fred C. stated that a terrain model is being done that will show the historical landscape present before the highway was constructed. HDOT should consider this project with everything else that is happening on the Project.

29 Deborah C. asked if there will be more information on design guidelines. Scot stated that all the input gathered in this meeting will be used during the underpass feasibility study process.

30 Curtis T. explained that the stipulation states there will be a community meeting to discuss design guidelines. Will the next presentation include the comments gathered today? Scot stated that the next presentation will incorporate the comments gathered from this meeting, and reflect a better understanding of what the community wants.

31 Hannah S. asked when the meeting will be held. Scot stated that due to the very large amount of feedback and information obtained today, the HDOT will have to review it all, further evaluate the information, and he will have a response within 30 days regarding the next meeting date.

32 Franz W. stated that there are two projects, the underpass and the highway expansion, that may overlap. It is important for HDOT to have clear context on what project is being discussed.

33 Cayla C. stated that the HDOT should recognize the intent of a [historic] feature and try to preserve, restore, and protect what was previously there. HDOT should try to create a safe environment that will allow the community to practice their culture.

34 Curtis T. stated that we should not repeat the mistakes that were made in the past.

E. Next Steps

1. DOT to provide a date when the public meeting will be held to the NHOs within 30 days (August 24, 2017).
2. DOT and RMTC to schedule the next Underpass Feasibility Study Meeting to discuss design guidelines.

Enclosures

1. Agenda
2. Attachment 1 Stipulation 10B Excerpt
3. Attachment 2 Stipulation 10B Consultation List
4. Examples of Underpasses
5. Development of Design Guidelines
6. Underpass Feasibility Study Presentation

The above represents R. M. Towill Corporation's understanding of the discussions held. Notifications of any clarifications or discrepancies would be appreciated within 30 calendar days.

Agenda

MOA Stipulation 10B – Underpass Feasibility Study
Queen Kaahumanu Highway Widening, Phase 2
Kailua-Kona, Hawaii

West Hawaii Civic Center, Council Chambers
74-5044 Ane Keohokalole Hwy, Kailua-Kona, HI 96740
Tuesday, July 25, 2017, 10:00 am – 2:30 pm

1.	Pule and Opening Remarks	10:00 – 10:10 am
2.	Overview and Focus for the Day	10:10 – 10:20 am
3.	Required Consultation with National Park Service to Identify Meeting Participants	10:20 – 10:30 am
4.	Terms and Intent of Stipulation 10B	10:30 – 10:45 am
5.	Design and Other Considerations	10:45 am – 1:00 pm
6.	Lunch (working)	12:00 pm – 1:00 pm
7.	Participant Questions and Input	1:00 – 2:00 pm
8.	Recap and Summary of Tasks	2:00 – 2:30 pm

Attachment 1

Stipulation 10B
MEMORANDUM OF AGREEMENT Among the
ADVISORY COUNCIL ON HISTORIC PRESERVATION, FEDERAL HIGHWAY ADMINISTRATION,
and the HAWAI'I STATE HISTORIC PRESERVATION OFFICER
Regarding the projects in the vicinity of the District of North Kona, Island of Hawai'i,
State of Hawai'i which are known as the Queen Ka'ahumanu Highway Intersection
Improvements for the Kaloko-Honokohau National Historical Park
and the Queen Ka'ahumanu Highway Widening, Kailua to Ke'ahole

B. UNDERPASS FEABILITY STUDY. The HOOT shall conduct a feasibility study with the objective of facilitating safe pedestrian access across the Queen Ka'ahumanu Highway at the "Trail to Honokohau." The study will examine at-grade crossing locations, the installation of a pedestrian tunnel crossing, and the modification of existing culverts for pedestrian-bicycle use. The study shall seek examples and policies regarding use of existing pedestrian tunnels and modified culverts in Hawai'i and other States. Subsurface crossing(s) shall include provisions for a third party organization to take responsibility for maintenance, security and liability for the crossing(s) as has been the policy of HOOT for more than a decade. The HDOT shall identify and select a qualified independent third party to conduct the study. As part of the study, HDOT shall consult with NPS to identify community organizations who may be invited to participate in the feasibility study. Organizations that may be invited to participate include: signatories to this MOA, NHOs, Peoples Advocacy Trails Hawai'i (PATH), County of Hawai'i, local primary and secondary school officials, universities, community groups, the Royal Order of Kamehameha, and the Association of Hawaiian Civic Clubs. As part of the feasibility study the HDOT shall convene a community meeting that has as its objective the development of design guidelines for future Queen Ka'ahumanu Highway expansion projects that includes provisions for trail connectivity and pedestrian crossings under the Queen Ka'ahumanu Highway as well as paralleling the highway. The HDOT shall transmit the findings of the feasibility study (inclusive of any documents or written testimony from the community meeting above) to parties participating in the feasibility study prior to the expiration of this MOA.

Attachment 2
QK Ph 2 MOA STIPULATION 10B Underpass Feasibility Study
Hawai'i Department of Transportation, Hawai'i District
Consultation List as of: July 2017

	Community Organization / Individuals	Contact Name		Title
Project Related Parties				
1	FHWA	Meesa	Otani	Environmental Engineer
		Lisa	Powell	Transportation Engineer
		Richelle	Takara	Senior Transportation Engineer
2	HDOT	Donald	Smith	Deputy Asst Engineer (Designate)
		Scott	Urada	DOT Hwys
		Sterling	Chow	Deputy Asst Engineer
		Natasha	Soriano	DOT Hwys
		Deona	Naboa	DOT Hwys Archaeologist
Community Organizations and NHOs				
3	Association of Hawaiian Civic Clubs*	Annelle	Amaral	President
4	Historic Hawai'i Foundation	Kiersten	Faulkner	Executive Director
5	Kona Hawaiian Civic Club	Cynthia	Nazara	President
		Hannah	Springer	
6	La'i'Ōpua 2020	Bo	Kahui	Executive Director
7	Makani Hou o Kaloko-Honokōhau	Isaac	Harp	
		Fred	Cachola	
8	Nakoa Foundation	Abel	Aquino	Director
9	People's Advocacy Trails Hawai'i (PATH)*	Monica	Scheel	President
		Franz	Weber	Board Member
10	Royal Order of Kamehameha, Chapter--7 Kona, West Hawai'i, Hawai'i Island*	Kuauhau Russ	Paio	
		Nainoa	Perry	
		Kalani	Nakoa	
11	Na Ala Hele**	Clement	Chang	Trails and Access Specialist
12	E Mau Na Ala Hele	Davis	Marcie	President
		Schaefer	Barbara	Board of Directors
13	Ruth Aloua**	Aloua	Ruth	
14	Office of Hawaiian Affairs	Keola	Lindsey	Compliance Monitoring Program
		Lauren	Morawski	Compiance Archaeologist, Advocacy
15	National Park Service			
	Kaloko-Honokohau NHP	Bill	Thompson	Superintendent
	Kaloko-Honokohau NHP	Tyler	Paikuli-Campbell	Cultural Resource Program Manager / Archaeologist
	Kaloko-Honokohau NHP	Jeff	Zimpfer	Environmental Protection Specialist
	Ala Kahakai National Historic Trail	Aric	Arakaki	Superintendent
	Ala Kahakai National Historic Trail	Rick	Gmirkin	Community Archaeologist
	Ala Kahakai National Historic Trail**	Alan	Brown	
	Ala Kahakai National Historic Trail**	Christopher	Hawkins	Coordinator

QK Ph 2 MOA STIPULATION 10B Underpass Feasibility Study
Hawai'i Department of Transportation, Hawai'i District
Consultation List as of: July 2017

	Community Organization / Individuals	Contact Name		Title
	Pu'ukohola Heiau National Historic Site	Daniel	Kawaiaea	Superintendent
Advisory Council on Hitoric Preservation				
16	ACHP	Mary Ann	Naber	Sr Program Analyst/FHWA Liaison
State Historic Preservation Division				
17	SHPD	Susan	Lebo	Archaeology Branch Chief
		Amy	Rubingh	Archaeologist
County of Hawai'i				
18	Office of the Mayor	Harry	Kim	Mayor
19	Department of Environmental Management	William A.	Kucharski	Director
20	Department of Parks and Recreation	Charmine L.	Kamaka	Director
21	Department of Planning (West Hawai'i)	Michael	Yee	Planning Director
Primary and Secondary Schools				
22	Department of Education (DOE), Hawai'i District-Honoka'a-Kealakehe-Kohala-Konawaena	Art	Souza	Superintendent
23	Kahakai Elementary School	James	Denight	Principal
24	DOE, Kealakehe High School	Wildred F.	Murakami	Principal
25	DOE, Kealakehe Elementary School	Nancy	Matsukawa	Principal
26	Makua Lani Christian Academy High School	Nancy	Begley	Principal
27	West Hawai'i Explorations Academy	Heather	Nakakura	Director
28	Hawai'i Montesory School	Angela	Geldhof	Executive Director
29	Innovations Public Charter School	Jennifer	Hiro	Teacher Director
30	Holualoa School	Glenn	Gray	
Universities				
31	University of Hawai'i at Hilo	Donald O.	Straney	Chancellor
32	SECE, University of Hawai'i Community College, Pālamanui	Kenneth	Fletcher	Director
33	University of the Nations - Flags	Steve	Foth	Drector of Security and Transportation

Notes: *Denotes specifically identified parties in the MOA.
**Names added by NPS.

Examples of Underpasses
State of Hawai‘i and Counties

Queen Ka‘ahumanu Highway, Phase 2
Stipulation 10B, Underpass Feasibility Study
Memorandum of Agreement (MOA)
Hawai‘i Department of Transportation

July 25, 2017

Examples of Underpasses

For roadways involving the Hawai‘i Department of Transportation

- **Farrington Highway Abandoned Cane Haul Road**
- **Fort Weaver Road Abandoned Cane Haul Road**

Examples of Underpasses

For roadways involving the Hawai'i Department of Transportation

- **Kamehameha Highway in Mililani**
- **Pali Highway in Nuuanu**
- **Fort Weaver Road (Honouliuli Stream Bridge) at the Westloch Golf Course**
- **Mamalahoa Highway (Bridge) at the Punaluu Golf Course**

Kamehameha Highway Underpass

Connects residential areas across Kamehameha Highway to Mililani High School

Mililani Town (enclosed community)

Kamehameha Highway Underpass

Mililani Town

Examples of Underpasses

For roadways involving the City and County of Honolulu

- **Kipapa Drive in Mililani**
- **Park Row and Mango Tree Road in Ewa**
- **Geiger Road on Ewa**
- **Keoneula Boulevard in Ocean Pointe (one with combined drainage box culvert)**
- **Golf Cart Underpasses**
  - Kealahou Road in Hawaii Kai (3)
  - Lumiaina Street in Waikele (3)

Kealahou Street Underpass
(Typical golf course application)
Hawaii Kai

Examples of Underpasses

For roadways involving the City and County of Honolulu

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Examples of Underpasses

For roadways involving Hawai'i County or other private roads

- **Alii Highway and Kaluna Street at Keauhou**
- **Kaniku Drive in Waikoloa (2)**
- **Abandoned Cane Haul Road in Puna**

North Kaniku Drive
(Golf Course)
Waikoloa

Examples of Underpasses

For roadways involving the County of Maui Streets and other private roads

- **Wailea Ike Drive in Wailea**
- **South Kamehameha Drive in Maui Lani**

Examples of Underpasses

For roadways involving the County of Kauai and other private roads

- **Nuhou Street and Makaa Street in Puakea**
- **Kahaku Road in Princeville (2)**
- **Poipu Road in Koloa**

Other states examples of underpasses

- Oregon Department of Transportation
  - **City of Milwaukie - Kellogg Creek Pedestrian/Bicycle Underpass and Multi-use Trail**
  - **City of Bend – Highway 372 Haul Trail Crossing**
  - **ODOT Bridge Inventory: 7C301.74 EB Columbia River Highway**

Other states examples of underpasses

- Portland Bureau of Transportation
  - **Southwest Barbur/Naito Parkway**
  - **Southwest Arthur Street/Kelley Avenue**
  - **Sullivan's Gulch Trail Undercrossing of I-205**
  - **Portland Road Underpass**
- City of Salem
  - **Pringle Parkway: Underpass on Mill Race Path**

Other states examples of underpasses

- Washington Department of Transportation
  - **SR 14 Cape Horn Pedestrian Undercossing: Skamania County**
  - **SR 14 Pedestrian Tunnel: Washougal**
- Connecticut Department of Transportation
  - **Skiff Street Pedestrian Tunnel**

Development of Design Guidelines

Queen Kaʻahumanu Highway, Phase 2
Stipulation 10B, Underpass Feasibility Study
Memorandum of Agreement (MOA)
Hawaiʻi Department of Transportation

July 25, 2017

Development of Design Guidelines

STIPULATION 10.B. UNDERPASS FEABILITY STUDY.

The HDOT shall conduct a feasibility study with the objective of facilitating safe pedestrian access across the Queen Kaʻahumanu Highway at the "Trail to Honokōhau." The study will examine at-grade crossing locations, the installation of a pedestrian tunnel crossing, and the modification of existing culverts for pedestrian-bicycle use. The ***study shall seek examples and policies regarding use of existing pedestrian tunnels and modified culverts in Hawaiʻi and other States****. Subsurface crossing(s) shall include provisions for a third party organization to take responsibility for maintenance, security and liability for the crossing(s) as has been the policy of HDOT for more than a decade. The HDOT shall identify and select a qualified independent third party to conduct the study. As part of the study, HDOT shall consult with NPS to identify community organizations who may be invited to participate in the feasibility study.*

- **Policies and guidelines set general principles in considering, locating, and installing underpasses**
- **Policy is "a course or principle of action adopted or proposed by a government, party, or business"**
- **Guidelines are generally recommended practices**
- **Various policies , guidelines, and examples are presented**

Federal Highway Administration (FHWA)

Pedestrian Facilities Users Guide (FHWA-RD-01-102)

- **One purpose of an underpass is to connect off-road trails and paths across major barriers such as a heavily traveled highways.**
- ***Underpasses work best when designed to feel open and accessible. Grade separation is most feasible and appropriate in extreme cases where pedestrians must cross roadways such as freeways and high speed, high volume arterials.***
- **Must be wheelchair accessible.**
- ***Lighting, drainage, graffiti removal, and security are also major concerns with underpasses.***

FHWA Guidance

FHWA PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System (FHWA-SA-04-003)

- ***Pedestrian overpasses and underpasses allow for the uninterrupted flow of pedestrian movement separate from vehicle traffic. However, they should be a measure of last resort....***
- ***Overpasses and underpasses must accommodate all persons, as required by the Americans with Disabilities Act (ADA).***
- ***The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities recommends ... minimal widths should be between 14 and 16 ft, but underpass width should be increased if the underpass is longer than 60 ft.***

Hawaii Department of Transportation

Statewide Pedestrian Master Plan, Hawaii Pedestrian Toolbox

- *"UNDERPASSES AND TUNNELS*
  Tunnels and underpasses provide a walkway for pedestrians underneath the roadway. Pedestrians are often more apt to use overpasses than underpasses or tunnels, and overpasses are easier to supervise and maintain. Tunnels are less desirable than bridges due to greater potential costs, reduced sense of security, challenges with monitoring, the possibility of drainage problems, and a perception of lack of safety."

- ***"Before choosing to install a tunnel, soil exploration is required to determine whether a tunnel can be feasibly constructed and whether drainage will be a problem. Wide openings are more inviting to pedestrians and let in more natural light. Tunnels should be easy to access and should be as short as possible. Approaches to the underpass should allow continuous vision through it."***

County Policies, Guidance & Manuals

City and County of Honolulu: Complete Streets Design Manual

Hawaii County: Complete Streets Resolution 171-11

Maui County: Complete Streets

Resolution 12-34

Kauai County: Complete Streets Resolution and Complete Streets Bill 2465

- **The Complete Streets manual does not include underpasses in the Design Toolbox**
- **Hawaii County does not have guidelines at this time, and presently does not have pedestrian underpasses identified in its Standards.**
- **The State Department of Health prepared the Central Maui Pedestrian and Bicycle Master Plan for 2030 with assistance from the County of Maui. This Master Plan does not include pedestrian underpasses in the design guidelines.**
- **A design manual for Kauai based on the Model Design Manual for Living Streets is being written. The Model Design Manual for Living Streets does not presently include pedestrian underpasses.**

Other States Policies
Oregon DOT

Oregon Department of Transportation *Oregon Bicycle and Pedestrian Plan*

- **This plan includes design guidelines for bicycle and pedestrians.**
- **"C.1.g. Grade Separation & Out-of-Direction Travel – Though grade-separation may seem to offer safety, excessive added travel distance will discourage pedestrians who want to take a more direct route."**
- **"A structure that is unused because of inconvenience creates a situation whereby pedestrians are at risk when they attempt to cross the road with no protection.+**

Oregon DOT

Multi-use Paths, D.5. Structures

- "The width of a multi-use path structures is the same as the approach paved path, plus 0.6 m (2ft) shy distance on both sides. For example, a 3m (10ft) wide path requires a 4.2, (14ft) wide structure. There a advantages to both overcrossings and under crossings"

Multi-use Paths – D.5.a. Under-crossings

- "Advantages: They provide an opportunity to reduce approach grades, as the required 3m (10ft) clearance is less than the clearance required for crossing over a roadway. If the roadway is elevated, an undercrossing can be constructed with little or no grade. They are often less expansive to build."
- "Disadvantages: They may present security problems, due to reduced visibility. An open, well-lighted structure may end up costing as much as an overcrossing. They may require drainage if the sag point is lower than the surrounding terrain."

Washington DOT

Washington Department of Transportation's *Pedestrian Facilities Guidebook*

- This guidebook includes design guidelines for pedestrian underpasses.
- "Grade separated pedestrian crossings are installed when it is necessary to physically separate the crossing of a heavy volume of pedestrians from a roadway with heavy vehicle traffic (including freeways and expressways)"
- "The effectiveness of grade separated crossings depends on their perceived ease of accessibility by pedestrians. An overpass or underpass will not necessarily be used simply because it improves safety. Because of the high cost of grade spearated facilities, they shoyld be incorporated in the early stages of new developments that are intended to generate substantial volumes of pedestrians."

Washington DOT

Washington Department of Transportation's *Pedestrian Facilities Guidebook*

According to a study by Zegeer and Zegeer, state and local agencies consider grade – separated crossings to be most beneficial under the following conditions:

- Moderate to high pedestrian demand to cross a freeway or expressway.
- Large number of young children (particularly near schools) who must regularly cross a high-speed or high-volume roadway.
- Streets with high vehicle and pedestrian crossing volumes where there is an extreme hazard for pedestrians (for example, wide streets with high speed traffic and poor sight distance)
- Where one of the above conditions exists in conjunction with a well-defined pedestrian origin and destination (residential neighborhood across a busy street from a school, a parking structure affiliated with a university, or an apartment complex near a shopping mall)

Other Places in the US

- There are other states such as Texas, Iowa, Montana, Colorado and Michigan and communities such as Los Angeles and Sacramento, CA, Scottsdale AZ, the City of Grants, NM and communities that have pedestrian underpass guidelines.
- **A review of the guidelines indicates they are generally similar to the Oregon and Washington Departments of Transportation.**

Examples of Underpasses: State of Hawaii and the Counties

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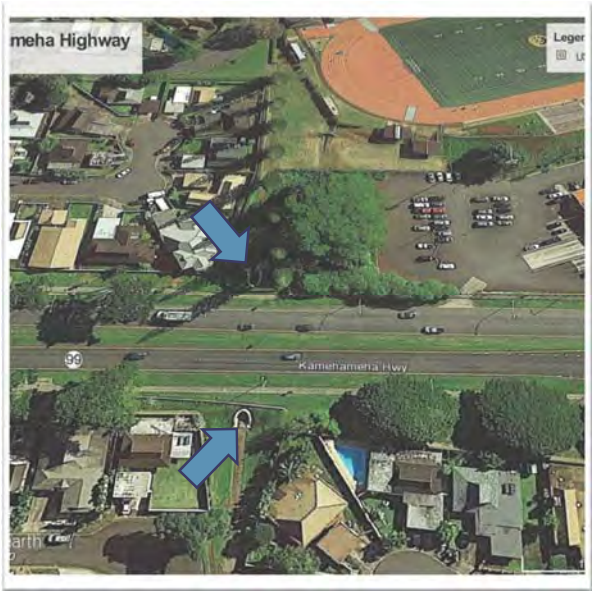

Mililani High School

Kamehameha Highway Underpass (connecting residential areas across Kamehameha Highway to Mililani High School in upper right of photo)

Kamehameha Highway Underpass (pedestrian can be seen at end of underpass)

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- **Portland Bureau of Transportation - Sullivan's Gulch Trail Undercrossing of I-205**
- **City of Sherwood - Cedar Creek Trail and Wildlife Undercrossing at Highway 99W**
- **Southwest Barbour/Naito Parkway, Pringle Parkway: Underpass on Mill Race Path, Portland Road Underpass**
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Queen Kaahumanu Highway Widening Project - Underpass Feasibility Study

Queen Kaahumanu Highway, Phase 2
Memorandum of Agreement, Stipulation 10B
Hawaii Department of Transportation

West Hawaii Civic Center
July 25, 2017 10:00 AM

MOA Stipulation 10B

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- *Organizations that may be invited to participate include: signatories to this MOA, NHOs, Peoples Advocacy Trails Hawai'i (PATH), County of Hawai'i, local primary and secondary school officials, universities, community groups, the Royal Order of Kamehameha, and the Association of Hawaiian Civic Clubs.* ***As part of the feasibility study the HDOT shall convene a community meeting that has as its objective the development of design guidelines for future Queen Ka'ahumanu Highway expansion projects that includes provisions for trail connectivity and pedestrian crossings under the Queen Ka'ahumanu Highway as well as paralleling the highway.*** *The HDOT shall transmit the findings of the feasibility study (inclusive of any documents or written testimony from the community meeting above) to parties participating in the feasibility study prior to the expiration of this MOA."*

Stipulation 10B (main points)

- *Stipulation 10B states: "The HDOT shall conduct a feasibility study with the objective of facilitating safe pedestrian access across the Queen Kaʻahumanu Highway at the "Trail to Honokōhau."*

The study will examine:

- At Grade Crossing
- Underpass
- Modification of Existing Culverts
- Identification of a third party to maintain the underpass
- (other)

Stipulation 10B

- *"…**objective the development of design guidelines for future Queen Kaʻahumanu Highway expansion projects that includes provisions for trail connectivity and pedestrian crossings under the Queen Kaʻahumanu Highway as well as paralleling the highway**"*
- ***"Subsurface crossing(s) shall include provisions for a third party organization to take responsibility for maintenance, security and liability for the crossing(s) as has been the policy of HDOT for more than a decade."***

- **A feasibility criteria for HDOT is an agreement with a responsible organization that can take responsibility for maintenance, security and liability**

  (An example is an existing agreement between HDOT and the Mililani Community Association for the Kamehameha Highway underpass (this underpass is included in the examples that follow)

Purpose and Need

REQUIREMENT

For any improvement, a **purpose and need** must be identified

1. "Essential in developing a basis of development for the development of reasonable alternatives.." (FHWA)
2. "specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (NEPA CEQ reg.)

ESTABLISHING PURPOSE

- Stipulation: "safe pedestrian crossing …for pedestrian-bicycle use"
- Stipulation implies the general public, and not only trail users

Design Evaluation Process

1. Determine purpose & need
2. Examine options
3. Meeting objectives
4. Fits context
5. Environmental impacts
6. Cost-benefit
7. Operations and maintenance
8. Liability
9. Appropriate use of public funds
10. Design warrants
11. Other considerations, unintended consequences

OTHER CONSIDERATIONS

- Expenditure of public funds require evaluation of alternatives
- Good business practice
- Need to consider ***everyone***: NHOs, NPS, DOT, surrounding businesses, adjoining landowners, general public, taxpayers

Information used for design

Data Gathering

1. Identification of users (bike, peds, age, etc.)
2. Travel destinations & frequency
3. Use of trails
4. Current and future situation
5. Access and restrictions to various lands

Other considerations

1. Preservation vs. use of resources
2. Public vs. descendants (users)
3. Effect to historic resources

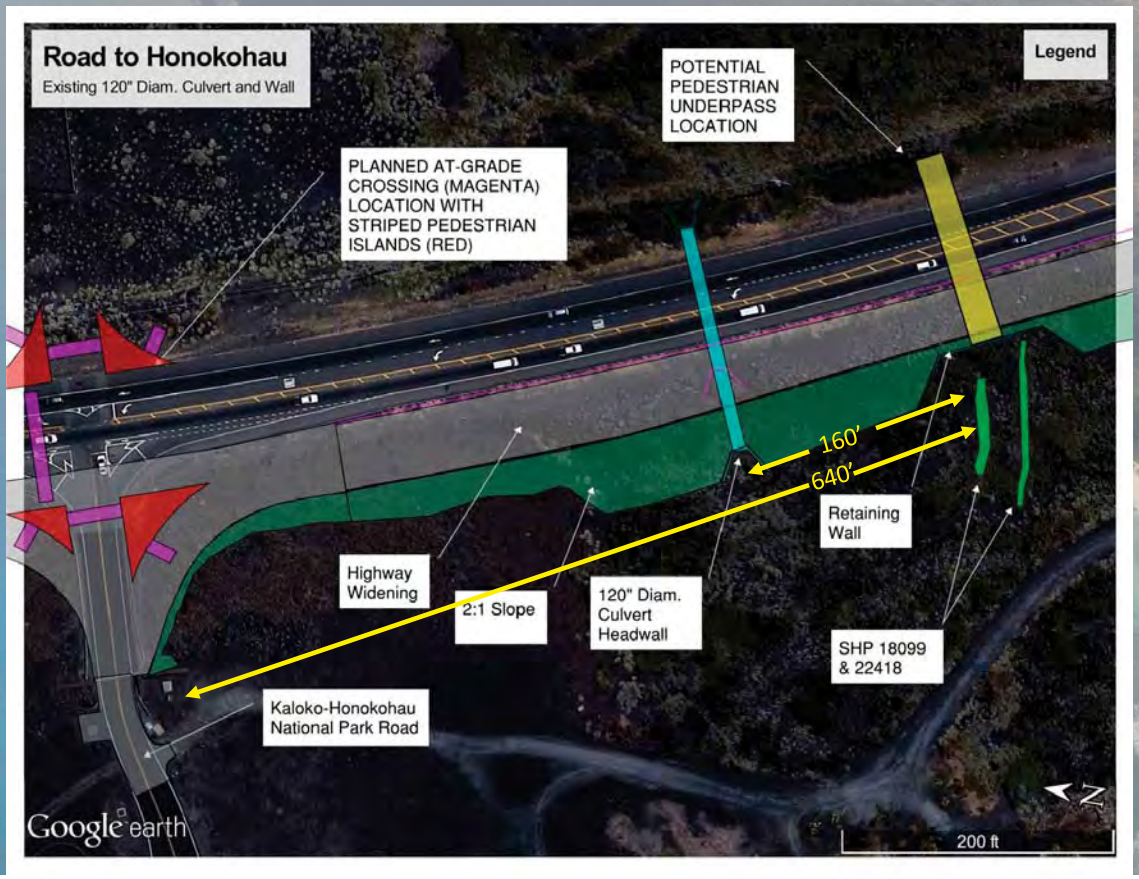
Crossing Options

POSSIBLE OPTIONS

1. At grade highway crossing
2. Drainage culvert modifications
3. Underpass structure
4. Other non-structural accommodations

- As part of design, all options should be considered and carefully weighed
- Factors used to weigh options include: purpose & need, technical factors, feasibility, cost-benefit, safety, maintenance, liability

Crossing Options at the Trail to Honokohau



Option 1. At grade highway crossing

PROS

1. More traditional approach, familiar by drivers
2. No additional adverse impact to historic resources
3. Low construction, maintenance and operational costs
4. No steep grades for users

CONS

1. Ped-car conflict points
2. Furthest distance of all options from the trails (if crossings are at signals)

Option 1 – Cross walk example at Queen Kaahumanu Hwy / Palani Rd Inters.

Option 2. Drainage Culvert Modification

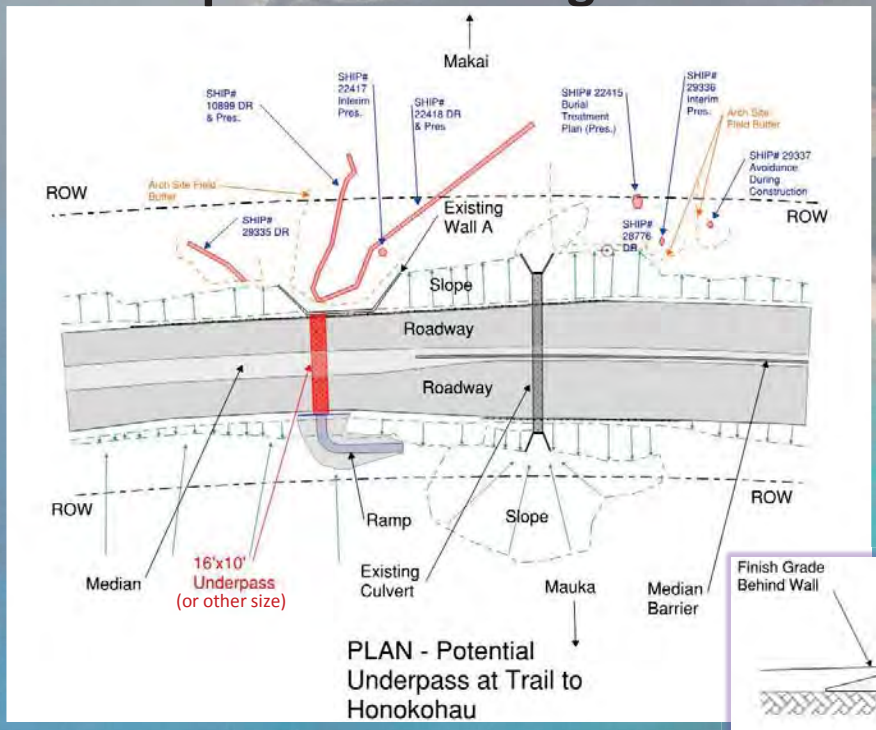
PROS

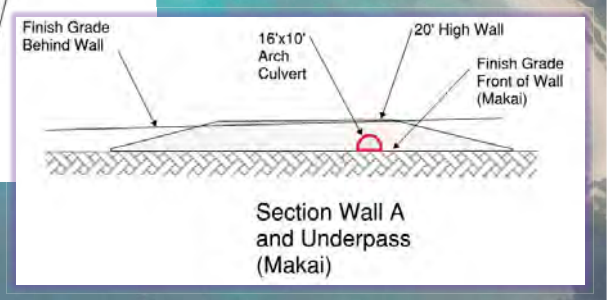
1. Dual use of a structure
2. Eliminates pedestrian / car conflicts
3. Relatively close to trail

CONS

1. Requires maintenance of walking surface inside the culvert
2. Requires larger culvert size, must satisfy both drainage and pedestrian access
3. Need to monitor weather and restrict pedestrian use for safety
4. Increased liability to third party and DOT
5. Need to identify capable third party to maintain
6. Requires lighting, ventilation; added cost and complexity to construct, maintain and operate
7. May attract more people (public) to natural resources
8. Possible additional effects to resources
9. Steep grades for users to climb to reach roadway elevation
10. Costly – will affect already constructed roadway and utility improvements and other adjustments

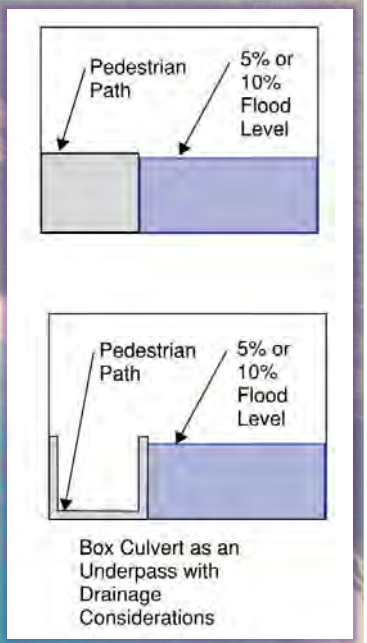
Option 2. Drainage Culvert Modification

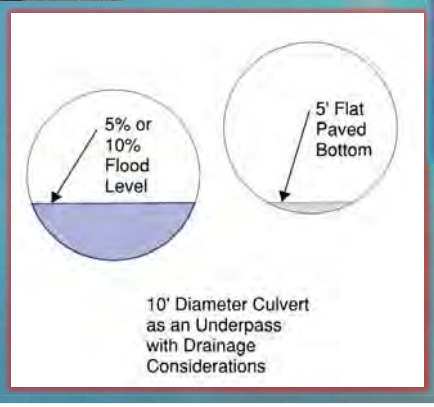




Option 2. Drainage Culvert Modification

Highway 30 Underpass concept Mount Vernon, Iowa DOT: Note drainage culverts beneath walkway and general dimensions of 10.4' x 10'





Option 3. Underpass structure

PROS

1. Eliminates pedestrian / car conflicts
2. Located at the trail
3. Dedicated structure for peds and cyclists

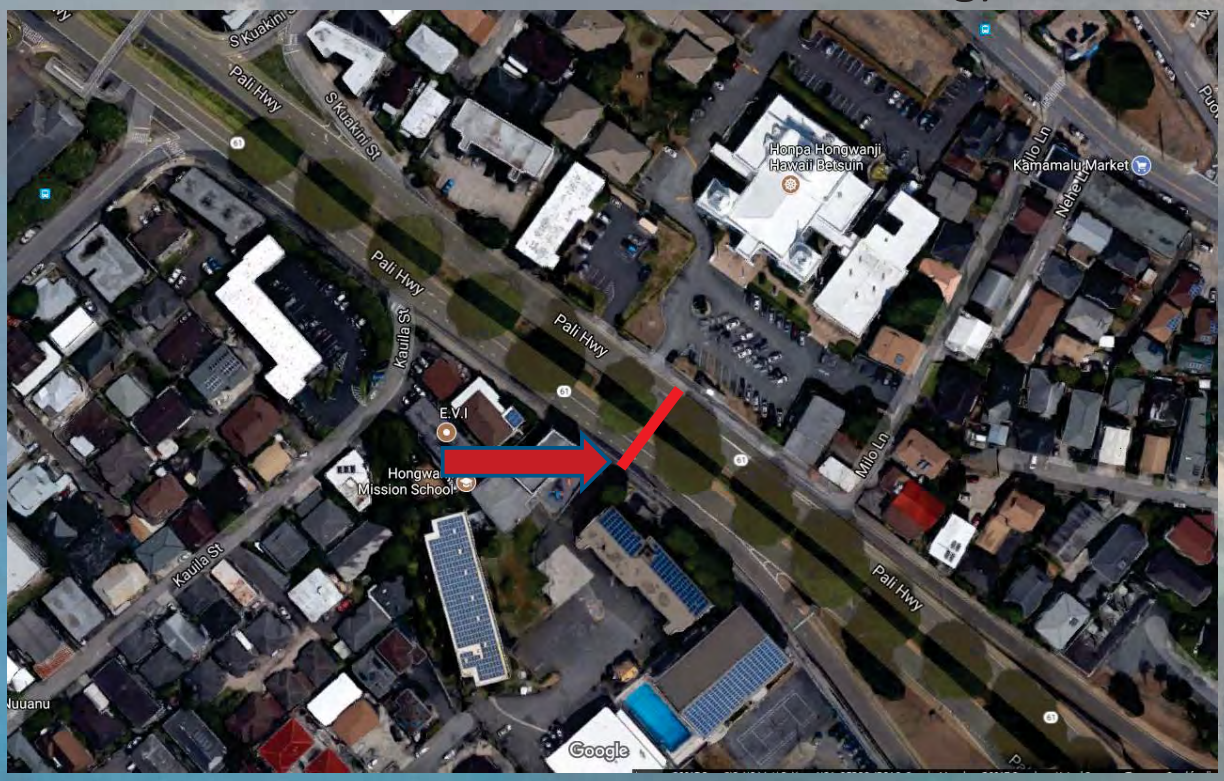
CONS

1. Most costly of all alternatives, including additional construction adjustments to roadway and utilities (many already constructed)
2. Need to identify capable third party to maintain
3. Requires lighting, ventilation; added cost to construct, maintain and operate
4. May attract more people (public) to natural resources
5. Possible additional effects to resources
6. Another possible facility that may attract homeless, negative effects to nearby businesses and safety
7. Steep grades for users to climb to reach roadway

Option 3. Example A. Underpass at Kamehameha Highway (Mililani High School undercrossing)

Option 3. Example A. Underpass at Kamehameha Highway (Mililani High School undercrossing)

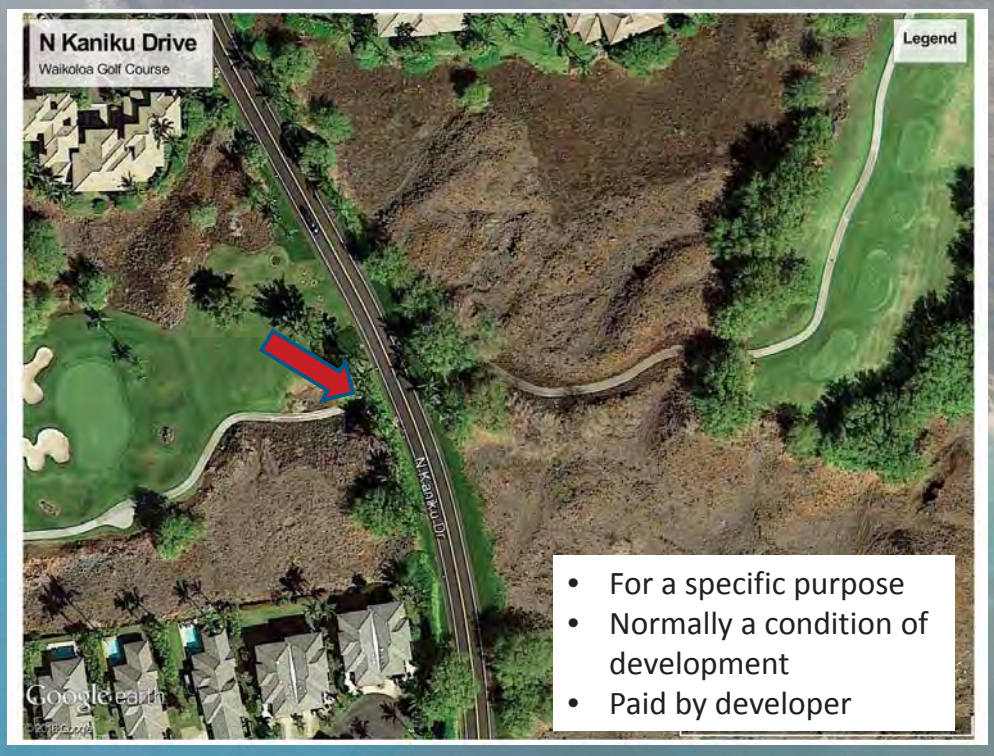
Option 3. Example B. Pali Highway (Hongwanji Mission School undercrossing)



Option 3. Example B. Pali Highway (Hongwanji Mission School undercrossing)

- High volume roadway
- Connecting school / church
- Lots of young children
- Long distance to next traffic signal / surface crossing

Option 3. Example C. North Kaniku Drive (Waikoloa Golf Course)



- For a specific purpose
- Normally a condition of development
- Paid by developer

Option 4. Other non structural options

POSSIBLE STRATEGY

Police or other escorts for crossings at agreed & planned dates / times

PROS

1. Can be performed safely
2. No additional construction costs or adjustments
3. No need for third party maintenance
4. No facility to attract additional people to historic resources, or create additional effects

CONS

1. Added operational costs and coordination to HDOT
2. Some up front planning & coordination required for each event

Benefit to Cost ("B-C Ratio")

1. If the estimated benefit of a project or improvement exceeds the cost, then generally it makes sense to do it. If the Benefit/cost ratio is less than one, the project should not be considered.
2. Benefits are usually quantified by a dollar value (time savings by a car, driver, or person; fuel savings; maintenance savings, etc.)

Simplified example: A highway widening will save drivers 5 minutes a day, with 20,000 drivers using this stretch of highway. Average annual income for drivers & occupants are $40,000/year; the hourly wage is $19.23. **Project cost is $20,000,000**; designed to last 20 years.

Benefit to car occupant per day: 5/60 x $19.23 = $1.60 / day

20,000 cars x 1.2 occupant/vehicle x $1.60 = $38,400 / day benefit, or

264 working days/year x $38,400/day = $1,137,600 / year

20 year design life of project x $1,137,600 = **$22,752,000 (Total Benefit)**

Benefit/Cost = $22,752,00 / $20,000,000 = 1.138 Therefore this example project can be considered

Maintenance and Operation

1. What is installed need to be maintained
   - Striping
   - Structural inspections
   - Culvert inspections & cleaning
   - Walking surfaces
   - Lighting
   - Graffiti control
   - Other damage to properties
2. Needs to be operated
   - Will it require power?
   - Does it need to be secured every night, or during storms?
   - Access restriction and how is this enforced?
   - Maintain agreement or contract
3. Liability – if something happens to a person using the facility, or other damage caused by the users, who is liable or responsible?
   - Personal injury
   - Flooding
   - Damage to historic resources
   - Assignment of responsibility

Appropriate use of public funds

1. Improvement on federal aid roadway
2. Used for appropriate federal improvement type
3. Improvement that will provide a public benefit
4. Used for purposes appropriated by State legislature
5. Evaluation must support selected improvement
6. Constructed within State Right-of-Way
7. Comply with appropriate procurement requirements
8. Must be maintained (Feds does not pay for routine maintenance)

Warrants

1. Based on data, using nationally accepted design standards and practices, is a particular improvement of facility warranted ?
2. This applies to crossings, traffic signals, etc.

We need to be consistent with design standards, also put in improvements consistent with what drivers or other road users can reasonably anticipate.

Other Considerations, potential unintended consequences

1. Attract additional people to historic resources
2. Encourage illegal or undesired access to properties
3. Attract homeless
4. Possible additional effects to trails, other resources, or nearby businesses

QUESTIONS AND INPUT FROM CPs

Data Gathering

1. Identification of users (bike, peds, age, etc.)
2. Travel destinations & frequency
3. Use of trails
4. Current and future situation
5. Access and restrictions to various lands

Other considerations

1. Preservation vs. use of resources
2. Public vs. descendants (users)
3. Effect to historic resources

MEETING RECAP & NEXT STEPS

1. Take and consider your input
2. Complete a draft of the feasibility study
3. Schedule another meeting to close the loop

THANK YOU FOR YOUR PARTICIPATION !