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KAPOLEI PROPERTY DEVELOPMENT, LLC

BEFORE THE LAND USE COMMISSION

OF THE STATE OF HAWAI'I

In the Matter of the Petition of

KAPOLEI PROPERTY DEVELOPMENT, LLC

To Amend the Agricultural Land Use District  
Boundaries into the Urban Land Use District for  
Approximately 344.519 Acres in Ewa District,  
Island of Oahu, Tax Map Key Nos. (1) 9-1-  
014:033 (por.), 034, 035 and (1) 9-1-015:020  
(por.)

DOCKET NO. A06-763

**KAPOLEI PROPERTY DEVELOPMENT, LLC'S  
WRITTEN DIRECT TESTIMONY OF BRYANT TERRY BROTHERS, P.E.**

**EXHIBIT "18"**

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**WRITTEN DIRECT TESTIMONY OF  
BRYANT TERRY BROTHERS, P. E.**

**BACKGROUND QUESTIONS**

1. *Please state your name and business address for the record.*

Bryant Terry Brothers  
Wilbur Smith Associates  
421 Fayetteville Street, Suite 1303  
Raleigh, NC 27601

2. *What is your current occupation?*

I am a civil engineer.

3. *Do you have a specialty area?*

I specialize in transportation planning and traffic engineering.

4. *How long have you been a transportation engineer by profession?*

37 years.

5. *Could you briefly describe your educational background?*

I received a B.S. in Civil Engineering in 1965 and a M.S. in Transportation Engineering in 1967, both degrees from North Carolina State University.

6. *Did you provide a copy of your curriculum vitae for purposes of this hearing?*

Yes.

7. *Is Petitioner's Exhibit "19" a true and accurate copy of your curriculum vitae?*

Yes.

8. *Could you briefly describe your training and your work experience as a transportation engineer?*

I have worked on a broad variety of projects and studies for both government and private clients during my 37 years of work experience, as well as worked in a number of different geographic areas. I have worked in Wilbur Smith Associates offices in Columbia, SC; Los Angeles, CA; San Francisco, CA; Phoenix, AZ; Singapore; Honolulu, HI; and Raleigh, NC.

1  
2 I was based in Honolulu from 1987 through 2000, but I have continued to work  
3 on Hawaii projects since relocating to North Carolina, where I am originally from.  
4

5 My experience for government clients has included projects ranging from a  
6 regional planning study for the roadway system on Oahu; roadway corridor  
7 studies on the Big Island and in Honolulu as well as Sri Lanka and Phoenix;  
8 public transit studies in Honolulu, Los Angeles, and Phoenix; airport access  
9 studies in Honolulu, Maui, Los Angeles, Bangkok, and Singapore; and area traffic  
10 studies in Honolulu, Los Angeles, Phoenix, and Knoxville.  
11

12 I have prepared traffic circulation plans and traffic impact studies for a number of  
13 major development projects for private clients, which have included Kapolei  
14 West, Ko Olina Phase 2, Hawaii Kai, Koa Ridge in Central Oahu, and the Queen  
15 Liliuokalani Trust lands in the Kailua-Kona area. I have also prepared traffic  
16 impact studies for several dozen smaller private and public projects on Oahu,  
17 Maui, the Big Island, and Kauai.  
18

19 **9. Do you belong to any professional organizations or associations?**

20  
21 Yes.  
22

23 **10. Could you please list them?**

24  
25 Institute of Transportation Engineers ("ITE").  
26

27 **11. Where are you currently employed?**

28  
29 Wilbur Smith Associates.  
30

31 **12. How long have you been employed at Wilbur Smith Associates?**

32  
33 37 years.  
34

35 **13. What is your title or position?**

36  
37 Senior Transportation Engineer.  
38

39 **14. Could you briefly describe what Wilbur Smith Associates does?**

40  
41 The firm is an international engineering and planning firm specializing in  
42 transportation projects and studies. Wilbur Smith Associates' involvement on  
43 transportation projects extends from the development of long-range transportation  
44 plans through the design and construction management for individual projects.  
45 The firm has about 1,000 employees located in 40 offices in the United States and  
46 overseas.

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**15. Could you briefly describe your duties and responsibilities?**

I manage and work on transportation planning and traffic engineering projects for public and private clients.

**16. Could you briefly describe to us the types of projects in which you have performed traffic impact assessments over your career?**

I have prepared traffic impact assessments for projects ranging from large land developments to individual buildings. The larger developments have included a mix of residential, commercial, and public uses, with these projects encompassing development areas of several hundred acres to several thousand acres.

I have previously prepared traffic assessments for projects including:

- Industrial uses
- Office buildings
- Recreational uses such as water parks, amusement parks, amphitheaters, and playfields
- Public schools and colleges
- Hotels
- Single- and multi-family residential developments
- Mixed-use developments.

**17. Do you possess specialized knowledge regarding traffic engineering in Hawaii?**

Yes.

**18. How did you attain such knowledge?**

Through my personal experience working on dozens of projects for different types of uses and in different locations within Hawaii.

**19. Were you previously qualified and/or did you previously testify as an expert witness in the field of traffic engineering?**

Yes.

**20. On how many occasions have you qualified to testify as an expert in the field of transportation engineering?**

I have testified as an expert before the State Land Use Commission on the following developments:

- 1 • Queen Liliuokalani Trust lands in Kailua-Kona;
- 2 • Ko Olina Phase 2;
- 3 • Koa Ridge development in Central Oahu;
- 4 • Robinson Estate on Kauai; and
- 5 • Kapolei West.

6  
7  
8 **KAPOLEI HARBORSIDE CENTER DEVELOPMENT PROJECT**

9  
10 **21. *Are you familiar with the Kapolei area located in the ‘Ewa District on the***  
11 ***island of Oahu?***

12  
13 Yes.

14  
15 **22. *Are you familiar with the Kapolei Harborside Center (“Project”) located within***  
16 ***the ‘Ewa District on the island of Oahu?***

17  
18 Yes.

19  
20 **23. *How did you first become involved in the Project?***

21  
22 I previously worked on a traffic planning study for the City of Kapolei area as  
23 well as traffic impact assessments for a number of projects located in the Kalaeloa  
24 Boulevard corridor. Due to my previous experience and knowledge of the area,  
25 the Kapolei Property Development LLC retained Wilbur Smith Associates to  
26 prepare the traffic assessment for the Project.

27  
28 **24. *Could you please describe your involvement in the Project?***

29  
30 I was project manager for the traffic assessment study as well as worked on  
31 portions of the traffic forecasts, traffic conditions analysis, and report preparation.

32  
33  
34 **TRAFFIC IMPACT REPORT**

35  
36 **25. *Did you prepare a traffic impact assessment report (“TIAR”) about the Project?***

37  
38 Yes.

39  
40 **26. *What did the report consist of?***

41  
42 The TIAR consisted of an assessment of existing traffic conditions, future  
43 conditions without the Project, and future conditions with the Project. The TIAR  
44 identifies mitigation actions to address those locations where the Project is  
45 forecast to substantially affect traffic conditions.

1 **27. Was this report prepared by you or under your supervision?**

2  
3 Yes.

4  
5 **28. Is Petitioner's Exhibit "20" a true and correct copy of your report?**

6  
7 Yes.

8  
9 **29. Could you please summarize the scope of your report?**

10  
11 We prepared traffic forecasts and conducted traffic analyses for the elements of  
12 the area roadway system that would be most directly affected by the Project  
13 traffic. These included:

- 14  
15 1. The planned intersections of the Project on-site circulation roadways with  
16 the adjacent major roadways;  
17 2. The key existing and planned intersections along the major roadways  
18 connecting the Project to the H-1 Freeway, including those along Kalaeloa  
19 Boulevard, Hanua Street Extension, and the Kapolei Parkway; and  
20 3. The on-ramps and off-ramps providing access to the H-1 Freeway.

21  
22 The forecasts and analyses were prepared for year 2018 when the Project is  
23 expected to be fully built out and occupied.

24  
25 Mitigative actions were identified as appropriate to address those locations that  
26 would be adversely affected by the Project traffic.

27  
28 **30. Could you describe the methodology used to conduct your report?**

29  
30 Future vehicle trips generated by each individual new development in the City of  
31 Kapolei-Ko Olina area were estimated by use of standard trip generation rates  
32 developed by ITE. The origins and destinations of the vehicle trips for each  
33 development were estimated based on the distribution of the City of Kapolei trips  
34 developed from the long-range forecasts previously prepared by the Oahu  
35 Metropolitan Planning Organization ("OMPO").

36  
37 A traffic assignment model developed for the area by Wilbur Smith Associates  
38 was used to estimate the numbers of trips using each roadway and traveling  
39 through the major intersections, freeway ramps, and sections of the freeway  
40 within the Kapolei-Ko Olina area during the weekday morning and afternoon  
41 commute peak hours. The procedure was used to estimate the peak hour traffic  
42 volumes both without the Project and with the Project in 2018.

43  
44 The peak hour traffic conditions at the key locations were analyzed using standard  
45 Highway Capacity Manual procedures implemented with McTrans HCS computer

1 software for the freeway ramps and Synchro simulation model software for the  
2 intersections.

3  
4 **31. Could you explain what Level of Service and the corresponding scale mean?**

5  
6 Level of Service is the standardized method for describing the quality of service  
7 and traffic flow along a roadway. Six levels of service are identified ranging from  
8 Level of Service (LOS) A through F. LOS A is defined as little or no delay while  
9 each subsequent letter indicates worsening traffic conditions. LOS F indicates  
10 traffic conditions that may experience substantial delays and may exceed the  
11 capacity of the roadway. LOS D is usually considered acceptable for peak hour  
12 conditions and LOS E and F are undesirable.

13  
14 **32. Is the methodology you employed consistent with accepted industry practices?**

15  
16 Yes.

17  
18 **33. Mr. Brothers, I'm showing you what has been previously marked as Petitioner's**  
19 **Exhibit "21". Do you recognize it?**

20  
21 Yes.

22  
23 **34. What is it?**

24  
25 Figure S-1 from my report (page S-9), "Proposed Roadway Lanes and Traffic  
26 Control".

27  
28 **35. Does Petitioner's Exhibit "21" fairly and accurately depict the current street**  
29 **system and proposed roadway improvements?**

30  
31 Yes.

32  
33 **36. Could you briefly describe the existing local and regional traffic infrastructure**  
34 **in and around the Project area?**

35  
36 Kalaeloa Boulevard is a four-lane divided highway that connects the Campbell  
37 Industrial Park area to the H-1 Freeway at the Palailai Interchange, and will be  
38 used as the initial access to the Project site. Its connection to the H-1 Freeway  
39 provides regional access to both the central Honolulu area and to the Waianae  
40 Coast area.

41 The Kapolei Parkway is partially completed in the Kapolei area as a four- to six-  
42 lane divided roadway. The roadway will be extended westward from Kalaeloa  
43 Boulevard during the development of the Kapolei Commons and Kapolei West  
44 developments. At present, the Kapolei Parkway connects with Kamokila  
45 Boulevard one block Kokohead of Kalaeloa Boulevard to provide access to the  
46 City of Kapolei area. Design and construction work is underway to complete the

1 Kapolei Parkway sections Kokohead of Kamokila Boulevard to connect to Fort  
2 Barrette Road and to extend to the communities in the Fort Weaver Road corridor.

3  
4 Malakole Street is a two-lane east-west roadway that currently extends from the  
5 Kalaeloa (Barbers Point) Harbor area along the southern boundary of the Project  
6 site to Kalaeloa Boulevard with the roadway currently ending just west of the  
7 Kalaeloa Redevelopment Area boundary.

8  
9 Hanua Street is a two-lane collector street in the Campbell Industrial Park. Plans  
10 are to extend this street as a four-lane divided roadway parallel to Kalaeloa  
11 Boulevard to connect to the H-1 Freeway with new ramp connections at the  
12 Palailai Interchange. A portion of the extension would pass through Project area.

13  
14 **37. *What are the existing traffic volumes and conditions in the Project area?***

15  
16 In 2005, weekday peak hour traffic along Kalaeloa Boulevard ranged between  
17 about 1,500 and 2,100 vehicles, both in the morning and afternoon commute  
18 periods. The short existing section of the Kapolei Parkway was used by about  
19 700 and 1,200 vehicles in the morning and afternoon peak hours, respectively.

20  
21 As a result of the existing commercial and industrial uses in the Kalaeloa  
22 Boulevard corridor, the traffic volumes are very directional in the peak hours. In  
23 the morning peak hour, about 75% of the traffic is makai-bound along Kalaeloa  
24 Boulevard with commuters enroute to work in the City of Kapolei and Campbell  
25 Industrial Park. In the afternoon peak hour, approximately 75% is mauka-bound  
26 towards the freeway.

27  
28 At the intersection of Kalaeloa Boulevard and the Kapolei Parkway, the afternoon  
29 peak hour traffic approximates 94% of the intersection capacity with the average  
30 delay at LOS E. Long queues form on the mauka-bound approach of Kalaeloa  
31 Boulevard for a portion of the peak hour. In the morning peak hour, traffic  
32 operates at an acceptable 74% of capacity with average delay at LOS D. In the  
33 morning peak hour the high volume of through traffic is makai-bound and  
34 “overlaps” with the high volume of makai-bound traffic turning left onto the  
35 Kapolei Parkway. In the afternoon peak hour, the high volume of through traffic  
36 is mauka-bound and conflicts with the left-turn from makai-bound Kalaeloa  
37 Boulevard, thus resulting in the longer delays and queuing of traffic at the  
38 intersection.

39  
40 The mauka-bound commuter traffic also results in long delays during the  
41 afternoon peak hour at the Kalaeloa Boulevard STOP sign-controlled approach to  
42 the Farrington Highway/Westbound On-ramp intersection. Average delay is at  
43 LOS F for the mauka-bound traffic turning left onto the entrance to the  
44 Westbound On-ramp to the H-1 Freeway towards Waianae.

45



1 Traffic at the signal-controlled Kalaeloa Boulevard intersection with Malakole  
2 Street operates with acceptable conditions in both peak hours.

3  
4 In the morning peak hour, the Westbound Loop Off-ramp from H-1 Freeway to  
5 Kalaeloa Boulevard accommodates about 1,000 vehicles. In the afternoon peak  
6 hour, the Eastbound On-ramp is used by over 1,000 vehicles, with the Westbound  
7 On-ramp also heavily used with about 960 vehicles.

8  
9  
10 **FUTURE TRAFFIC CONDITIONS**

11  
12 **38. *Are you aware of the potential traffic impacts related to the Project?***

13  
14 Yes.

15  
16 **39. *How did your study analyze the traffic impacts from potential reclassification***  
17 ***and development of the Project area?***

18  
19 In our analyses, we initially forecast area peak hour traffic volumes for year 2018  
20 without the Project and analyzed the resultant traffic conditions.

21  
22 We then forecast the Project traffic volumes and analyzed the key locations to  
23 identify conditions with the addition of the Project traffic. The comparison of the  
24 Without Project and With Project conditions was used to identify Project impacts.

25  
26 **40. *Are you able to discuss how the proposed land uses will affect potential traffic***  
27 ***impacts?***

28  
29 Yes. The Project land uses (light industrial, warehouse, and related business) are  
30 employment generators, which affect the traffic impacts in two ways:

- 31  
32 1. The Project would add more employment within the Kalaeloa Boulevard  
33 corridor which would produce directional flows similar to the existing  
34 conditions with most traffic inbound (makai-bound) in the morning and  
35 outbound (mauka-bound) in the afternoon. On a local basis, this would in  
36 some respects exacerbate current problem traffic conditions within the  
37 Kalaeloa Boulevard corridor.
- 38 2. On a regional scale, the residential emphasis of the existing land uses in  
39 the 'Ewa and Waianae Districts result in directional flows of traffic  
40 Kokohead-bound on the H-1 Freeway into the central Honolulu area in the  
41 morning and 'Ewa-bound in the afternoon. The Project would increase  
42 employment within the 'Ewa District, with these jobs attracting many of  
43 the 'Ewa residents who might otherwise have to commute into Honolulu  
44 to work. So the Project may attract some trips that would otherwise add to  
45 the peak directional flow, and most of the Project trips on the regional  
46 roadways are in the "off-peak" travel direction.

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**41. Will the Project have a cumulative impact on traffic in and around the Project area?**

The Project will add about 2,100 vehicle trips to the area roadways during both the morning and afternoon peak hours. This would increase traffic volumes along the existing and planned roadways and contribute towards increased delays at some locations.

**42. Are you aware of planned regional transportation improvements proposed for the 'Ewa region?**

Yes.

**43. Could you discuss these improvements?**

OMPO has identified transportation projects for addressing anticipated travel needs on Oahu through year 2030, with these set forth in the OMPO Regional Transportation Plan 2030. The planned projects have been grouped into a list of "Mid-range" improvements, those planned for implementation during the period between 2006 and 2015, and a list of "Long range" projects planned between 2016 and 2030. These projects have been identified as being within the projected financial resources of the State and City transportation programs within the 2030 time horizon.

OMPO also identifies a set of near-term transportation improvements within a Transportation Improvement Plan, which provides a listing of projects for which the transportation agencies have committed funding during the next three fiscal years.

In addition, the City and State, in coordination with the major 'Ewa District landowners and developers, have developed an 'Ewa Highway Master Plan that addressed transportation improvements through year 2010. The Master Plan projects are funded in part through impact fees assessed as properties are developed within the 'Ewa area.

**44. Could you identify the regional transportation improvements that would affect the Project area?**

The 2030 Regional Transportation Plan includes a number of new transportation facilities and improved roadways that will provide access to the Project. Most of these are included within the list of Mid-range projects that would be implemented within the same general time frame as the development of the Project. These Mid-range projects planned within the 2007-2015 period include:

- 1           1. Construction of the Hanua Street Extension from Malakole Street to  
2           connect to the H-1 Freeway at the Palailai Interchange, which will provide  
3           Project access to the freeway and to Kapolei Parkway in addition to that  
4           presently provided by Kalaeloa Boulevard.
- 5           2. Construction of new H-1 Freeway on- and off-ramps at Palailai  
6           Interchange to serve Hanua Street connection, which will provide the most  
7           direct Project access to the freeway.
- 8           3. Construction of the Kapolei Interchange Complex, which will divert some  
9           traffic away from Kalaeloa Boulevard and the Palailai Interchange ramps.
- 10          4. Extension of Kapolei Parkway eastward through City of Kapolei and  
11          westward to connect with Aliinui Drive to provide a major east-west route  
12          for use by Project traffic to/from other areas of the 'Ewa District.

13  
14          The Regional Transportation Plan also includes a key area project in the list of  
15          Long-range projects (2016-2030) that would directly improve access to the  
16          Project area. The planned widening of Farrington Highway to six lanes between  
17          the Palailai Interchange and the Hakimo Road would improve access to the  
18          Project for workers and visitors from the Waianae Coast areas.

19  
20          The highway projects identified in the 'Ewa highway master plan include the  
21          Kapolei Parkway and Kapolei Interchange projects. At present most of the  
22          resources available through the highway impact fee program are being applied  
23          towards other projects such as the widening of Fort Weaver Road, construction of  
24          the North-South Road, and widening of Fort Barrette Road. These do not directly  
25          improve access to the Project, but would improve overall connectivity and  
26          roadway capacity within the 'Ewa area.

27  
28          The present Transportation Improvement Plan for Fiscal Years 2006-2008  
29          includes funding for design and construction of Phase 1 of the Kapolei  
30          Interchange as well as the extension of Kamokila Boulevard to connect to  
31          Roosevelt Avenue.

32  
33          There are a number of roadway projects planned as part of other developments  
34          that would also improve access to the Project. These include:

- 35  
36           • The opening of the Malakole Street connection to the roadway system  
37           within the Kalaeloa Redevelopment Area which will provide a secondary  
38           route for some Campbell Industrial Park and Project traffic to use this  
39           connection to travel to/from the City of Kapolei and to/from the Fort  
40           Weaver Road communities instead of using Kalaeloa Boulevard.
- 41           • The widening of the mauka section of Kalaeloa Boulevard to six lanes,  
42           including additional turn lanes at the intersection with the Kapolei  
43           Parkway, which would increase capacity for the Kalaeloa Boulevard  
44           linkage to the freeway.

- The construction of westward extensions of Opakapaka Street and the makai end of Lauwiliwili Street from Kalaeloa Boulevard to Hanua Street.

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3  
4 **45. *How will the regional transportation improvements you identified impact the***  
5 ***Project area?***  
6

7 The planned Hanua Street extension and Palailai Interchange improvements will  
8 provide direct access to the Project from the H-1 Freeway. The Hanua Street  
9 connection and new ramps will increase capacity in the Kalaeloa Boulevard  
10 corridor and attract use by some of the traffic currently using Kalaeloa Boulevard.

11  
12 The improvements to Kalaeloa Boulevard would increase the capacity at the key  
13 traffic “bottleneck” (the Kapolei Parkway intersection) in this corridor.

14  
15 The completion of the missing Kapolei Parkway sections and the Malakole Street  
16 linkage to the Kalaeloa Redevelopment Area roadways will provide new routes  
17 for travel to/from the Project without using the H-1 Freeway or Farrington  
18 Highway/Kamokila Boulevard route.

19  
20 The Opakapaka and Lauwiliwili Street connections to Kalaeloa Boulevard will  
21 provide improved roadway connectivity within the Project vicinity and avoid  
22 concentration of Project traffic at potential problem intersections.

23  
24 Overall these new connections would increase area roadway capacity and allow  
25 greater flexibility to drivers in selecting routes to/from the Project to reduce the  
26 potential for development of problem locations.

27  
28 **46. *Did you study traffic conditions with and without the Project at full build-out?***  
29

30 Yes.

31  
32 **47. *Could you briefly explain your findings regarding traffic conditions without***  
33 ***and with the Project at full build-out?***  
34

35 The addition of the Project traffic would adversely impact several of the key  
36 intersections as described in the following paragraphs:

- The projected traffic would exceed capacity of the Kapolei Parkway-Kalaeloa Boulevard intersection by 8% in the afternoon peak hour, with average traffic delays at LOS E.
  - The increased Project traffic along Malakole Street would result in traffic congestion and delays at the Kalaeloa Boulevard-Malakole Street intersection with the traffic volumes in the afternoon peak hour exceeding the estimated intersection capacity.
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- 1           • The forecast morning peak hour traffic would exceed estimated capacity at the  
2           Hanua Street intersection with the Kapolei Parkway by 14%.
- 3
- 4           • Traffic on the Opakapaka Street approaches to Hanua Street would experience  
5           extremely long delays with STOP sign controls. The estimated peak hour  
6           volumes and delays satisfy warrants to allow consideration for installation of a  
7           traffic signal. The intersection would operate at acceptable conditions with the  
8           installation of a traffic signal.
- 9
- 10          • Traffic on the westbound approach of Lauwiliwili Street at the mauka  
11          intersection with Kalaeloa Boulevard would experience extremely long delays  
12          with STOP sign controls. The estimated peak hour volumes and delays do not  
13          satisfy warrants to allow consideration for installation of a traffic signal.
- 14
- 15          • The forecast traffic at the Malakole Street intersection with Hanua Street  
16          would exceed the estimated capacity for both peak traffic hours with traffic  
17          experiencing very long delays (LOS F) and with the volumes and delays  
18          meriting additional modifications.
- 19

20          The traffic analysis indicated that the planned ramps and section of freeway at the  
21          Palailai Interchange should operate at acceptable conditions with the addition of  
22          the Project traffic.

23

24   **48.    Do you recommend mitigation measures to address the specific traffic impacts**  
25   **of the Project?**

26

27          Yes.

28

29   **49.    Could you discuss your recommendations?**

30

31          The proposed roadway improvements to address the forecast traffic impacts at the  
32          area intersections are:

33

34          **Kalaeloa Boulevard-Kapolei Parkway Intersection**

- 35           • Add a right-turn lane to eastbound approach
- 36           • Construct a second (double) right-turn lane if warranted by future traffic  
37           volumes and conditions

38

39          **Kalaeloa Boulevard-Malakole Street Intersection**

- 40           • Add westbound left-turn lane
- 41           • Add makai-bound second (double) left-turn lane
- 42           • Widen Malakole Street to provide two eastbound lanes for a distance of  
43           about 400 feet from Kalaeloa Boulevard intersection
- 44           • Modify signal phasing and timing to reflect geometric changes

45

46          **Hanua Street-Kapolei Parkway Intersection**

- Add right-turn lane on eastbound Kapolei Parkway approach
- Convert right-turn lane on makai-bound approach to shared through/right-turn lane to increase capacity for through traffic

Hanua Street-Malakole Street Intersection

- Provide second (double) left-turn lane on makai-bound approach
- Widen Malakole Street east of intersection for distance of about 400 feet to provide two eastbound lanes to receive double left-turn lanes
- Signal Controls at Intersections

**50. *Did you make recommendations regarding Project access to Hanua Street?***

Install conduit and pull boxes for potential future signal control at:

- Hanua Street and Areas 1 & 2 Access Roads
- Hanua Street and Opakapaka Street
- Hanua Street and Area 5 Access Road/I-2 Access Road
- Hanua Street and Lauwiliwili Street Makai
- Hanua Street and Area 6/7 Access Road
- Hanua Street and Malakole Street.

The plan proposed Project access via seven intersections with Hanua Street. We initially analyzed conditions based on STOP sign control of the side street connections. The mauka five intersections would likely have very long delays for traffic turning from the Project roadways onto Hanua Street with STOP control, with the Project conditions at levels that merit installation of traffic signals.

We proposed that the makai T-intersections be relocated to a single four-leg intersection. This single four-leg intersection could potentially also need signal control. The six access intersections would reduce the traffic volumes turning to/from Hanua Street at each intersection, thus minimizing the amount of signal green time that would be needed by the side streets, while providing a spacing between signals that should allow coordination of timing between the signals.

**51. *Are you familiar with the Kalaeloa Harbor?***

Yes.

**52. *Are any improvements necessary for Project access to Kalaeloa Harbor?***

No. Project traffic could continue to use existing access via Malakole Street.

**53. *Does your report make any recommendations regarding public transit?***

A transit center is planned as part of the mixed-use development on the southeast corner of the future intersection of the Hanua Street extension with the Kapolei

1 Parkway. Bus routes should be added along Hanua Street to provide the Project  
2 access to the transit center to allow transfer to the regional and community routes  
3 that would operate through the transit center.  
4

5 The location of potential bus stops should be coordinated with City planners to  
6 facilitate transit usage by Project employees and visitors, and shelter and seating  
7 should be provided at the stops to encourage use.  
8

9 The Project should be planned to provide convenient and safe pedestrian linkages  
10 to/from the bus stops.  
11

12 **54. *In your professional opinion and based upon your study, will the Project area***  
13 ***have a significant adverse impact on traffic after taking into account your***  
14 ***recommendations?***  
15

16 Our analyses indicated several locations near the Project that would be  
17 substantially impacted by the Project traffic, with the forecast traffic increases  
18 from the Project as well as other area development either exceeding roadway  
19 planned roadway capacity or resulting in long traffic delays at key intersections.  
20 We have identified mitigative actions to increase roadway capacity to  
21 accommodate the forecast volumes and to reduce estimated traffic delays at key  
22 intersections to LOS D or better, which is generally considered acceptable for  
23 peak commute hour conditions.  
24

25 On a regional basis, the Project's employment would serve as an attractor of  
26 commuter trips during the peak traffic hours. This would attract trips traveling in  
27 the off-peak direction on the H-1 Freeway (westbound in morning and eastbound  
28 in afternoon) as well as attract trips that would otherwise travel from 'Ewa into  
29 the central Honolulu area, thus minimizing any potential impacts on the major  
30 regional roadways.  
31