

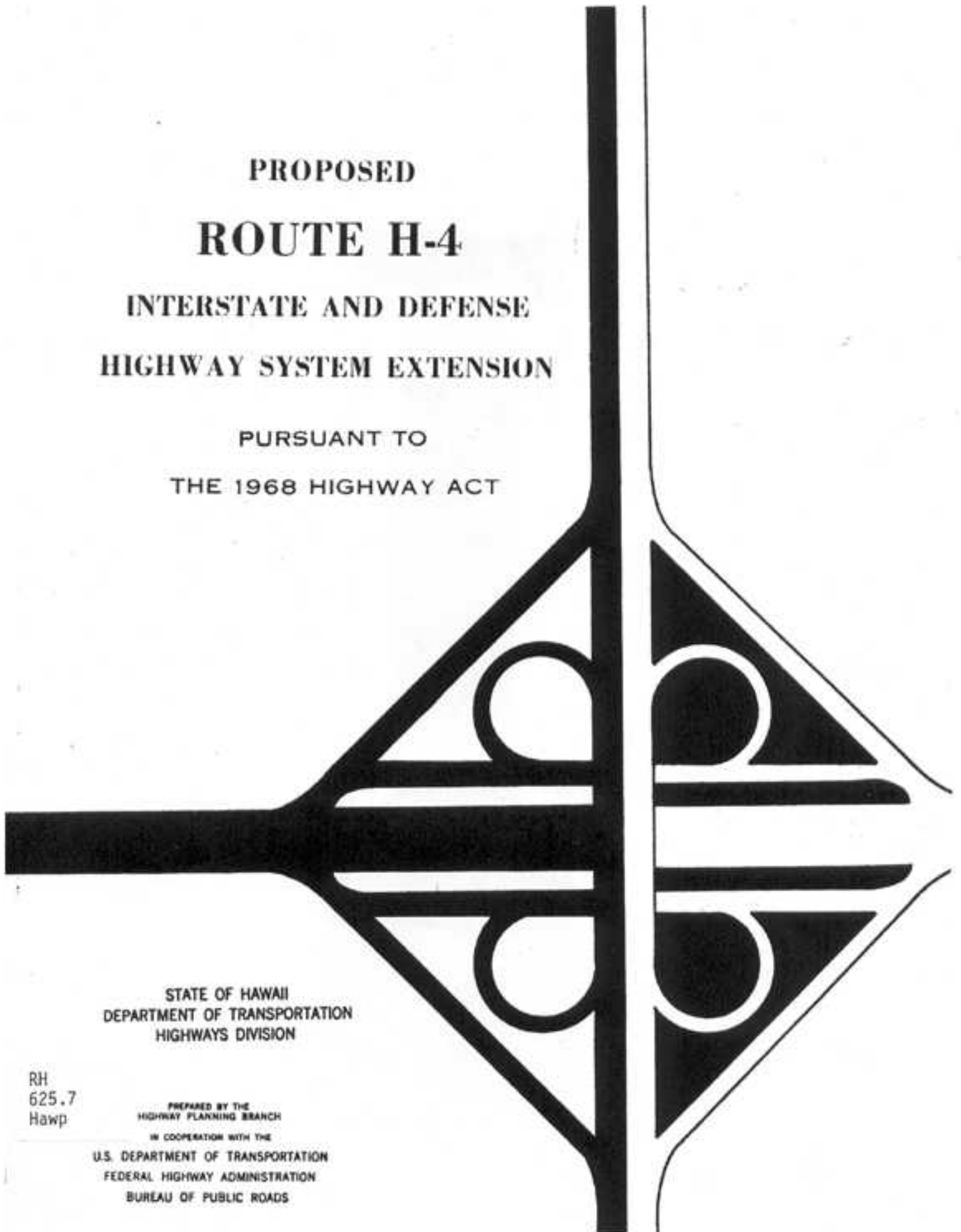
PROPOSED
ROUTE H-4
INTERSTATE AND DEFENSE
HIGHWAY SYSTEM EXTENSION

PURSUANT TO
THE 1968 HIGHWAY ACT

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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PREPARED BY THE
HIGHWAY PLANNING BRANCH
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS



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Highway Planning Branch

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U. S. Department of Transportation
Federal Highway Administration
Bureau of Public Roads

October, 1968

FOREWORD

This report was prepared in response to the 1968 Federal Highway Act provision of expanding the present Interstate System by 1,500 miles. The intent of the 1968 Federal Highway Act, in turn, was further amplified by the Federal Highway Administration through its Bureau of Public Roads' directive IM 10-3-68.

This report recommends the extension of the present 51.3-mile Interstate System for Hawaii by inclusion of new Route H-4.

Route H-4 is not a new concept. It is, in essence, the original Makai Arterial, a new freeway to complement the Mauka Arterial (Lunalilo Freeway).

The Makai Arterial was originally conceived in the late 1940's or early 1950's. However, no planning was done due to lack of funding.

Its need was confirmed through the studies conducted for the cross-town section of H-1. It was therefore considered as a major alternate to Lunalilo Freeway.

It is anticipated that the implementation of this proposal through the Interstate program will be of milestone significance in the early mitigation of traffic overload problems through metropolitan Honolulu.

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I. INTRODUCTION

A. AUTHORITY

The authority for this proposal is a direct result of Public Law 90-495, cited as the Federal-Aid Highway Act of 1968.

Section 14 of Public Law 90-495 amended section 103(d) of Title 23, U. S. Code by authorizing a mileage extension to the Interstate and Defense Highways to an amount not to exceed 1500 miles. The intent of the amendment is " . . . to improve the efficiency and service of the Interstate System to better accomplish the purpose of that System."

B. COORDINATION

Coordination with all affected agencies and individuals for any proposal of such magnitude as this Route H-4 is a necessity.

The Policy Committee of the continuing urban planning process, and the State Civil Defense office have endorsed this proposal.

In addition, the Hawaii Division of the U. S. Bureau of Public Roads has coordinated this proposal with the local Department of Defense group.

C. RELATION TO MASS TRANSIT

The traffic data contained elsewhere in this report reflect the net person trips after modal split as developed through the Oahu Transportation Study (OTS).

II. DESCRIPTION OF PROPOSAL

The proposed route (H-4) is approximately 6.5 miles in length, skirting the southern edge of the city, and having its western terminus at the Keehi Interchange (which is programmed to be constructed as a part of the H-1 Interstate Freeway). Its eastern terminus is the recently constructed H-1 Kapiolani Interchange. (Please refer to MAPS A and B).

Definitively, the proposed route (H-4) begins at the Keehi Interchange and proceeds in the easterly direction "mid-block" between Dillingham Boulevard and Nimitz Highway; thence, southeasterly along the waterfront from the proposed Liliha Street Interchange to the vicinity of the marine cargo-container yard south of Ala Moana Boulevard. The facility continues in the easterly direction, parallel to Ala Moana Boulevard, to its intersection with Atkinson Drive; thence northerly along Ala Wai Canal to its junction with the Manoa-Palolo Drainage Canal. The facility will then parallel this drainage canal in approaching the eastern terminus--Kapiolani Interchange.

In order to adequately service the varying land use areas located along the southern half of the city, interchanges will be provided at the following locations: Waiakamilo Road; Liliha Street; South Street; Ward Avenue; Piikoi Street; Atkinson Drive; in the vicinity of University Avenue Extension; and Date Street.

The described routing of the proposed facility (H-4) generally traverses areas of level terrain and no major topographic restraints are anticipated.

III. JUSTIFICATION OF NEED

A. GENERAL

In order to cope with the potential growth of activities in all facets of Oahu's economy, the Oahu Transportation Study (OTS) has through its comprehensive planning process, developed an integrated transportation plan including both the highways and mass transit elements. The proposed route (H-4) is in full consonance with the Study's plan and logic. It was concluded by the Study that the corridor through Honolulu would experience severe congestion, even with a rapid transit system carrying its reasonable share, if another parallel high capacity highway facility were not considered.

It is therefore expected that this proposed freeway (H-4) would serve to alleviate the otherwise extreme overload on the H-1 freeway and the corridor in general. This overload reduction for H-1 will enable H-1 to function more efficiently. More specifically, the total benefits to be derived from this facility are many.

B. BENEFITS

Among the many benefits, the primary beneficial function, of course, is to provide the vehicular traffic traversing the city proper with an efficient bypass route of the urban radial type. Associated with this movement are the thousands of work trips made daily by the residents of East Honolulu to the

employment centers located west of Keehi Interchange. Definitely included in this beneficial function would be the service provided in the trip transfers between the Honolulu International Airport and Waikiki. With a projected annual air passenger movement of 15.8 million for 1985, the majority of this being tourists, the vehicular volume between these two points would be formidable. The by-product of this function, although no less important, is the removal of "through" trips from the City's major streets and arterials, which should rightfully serve as distributors and provide land service for other traffic.

In addition to accommodating trips originating from and destined to the various land use activities fringing southern Honolulu, this facility would provide the much needed express service and direct access which H-1 is unable to adequately provide because of the latter's northerly location.

Still another benefit is that of serving the surrounding land uses. The areas to be serviced by the facility display a complete spectrum of land uses and intensities of use. The functional relationships and generalized activity patterns within Honolulu are as follows:

In the vicinity of the western terminus are the major employment centers of Hickam AFB, the Pearl Harbor Naval Complex and Fort Shafter. Also included are the Honolulu International Airport and its adjacent Airport Industrial Park. Another area of in-between

importance is the Kalihi area. Connected in part to the CBD and the Kapalama industrial complex and to a certain extent an area within itself, it is the most deteriorated section of mixed residential, industrial and commercial uses.

The Kakaako and the Kapalama industrial districts are the sources of major industrial activity and employment for light manufacturing activities. Their relationship is to the harbor primarily, but also to all parts of Honolulu, in terms of trucks and person trips.

The Civic Center and Central Business District are the hub of Oahu, as the center of financial and office service functions and the seat of all governmental activities, both City/County and State. Hence, this area is a major trip attraction center for the entire Island of Oahu as well as for the Honolulu District and the tourist population.

Ala Moana Center has emerged as the retail center of Honolulu and has set off a chain of related expansion into the office and apartment categories. Thus, while it, too, bears a relationship to all of Honolulu and, to a lesser extent, the whole of Oahu, it is becoming somewhat an area unto itself.

Waikiki is as much an area related to itself as well as to the Airport, Civic Center, CBD, Ala Moana Center and the windward side of Oahu. Its shoreline is devoted

to an intense development of hotels which stretch from the Ala Wai Canal to Diamond Head. Its northern portion is devoted to a mixture of apartment hotels, hotels and some single family dwelling units. These two parts are in turn focused upon the commercial uses--bars, restaurants, shops, night clubs, etc., along Kalakaua Avenue.

At the eastern terminus of the proposed route is another specialized area--the University of Hawaii. As the major center of higher education in the State, it is the generator of movement from the entire Island. Also, it is projected to become a significant employment center, probably heavily devoted to research. This eastern terminus is also located at the fringe or at the beginning of the predominantly residential districts of East Honolulu.

In terms of national and civil defense requirements, the proposed freeway will provide an alternate, if not a more direct, linkage between military establishments on West Oahu and Fort Ruger, and Fort DeRussy. It is to be noted that the civil defense control center is situated within Diamond Head center and is therefore most essential that it be efficiently served by an additional high speed freeway. Also, through the reduction of vehicular traffic on Nimitz Highway, military cargo movement to and from the military ports at Honolulu Harbor will be facilitated.

C. CRITERIA FOR SELECTION OF INTERSTATE SYSTEM ROUTE

The following itemized discussion relates directly to those of Enclosure C, IM-10-3-68.

1. Service to cities of various population groups.

This item is not applicable as the proposed route does not provide service between cities but provides service to metropolitan areas as noted in Item 2 below.

2. Service to principal metropolitan areas.

The proposed route is envisioned to provide maximum service to the distinctly different metropolitan areas of Honolulu. This would encompass service to industrial, central business and civic centers, major retail outlets, resort, and residential areas. Aside from the benefits provided the various major transportation terminals (airport and harbor), which are discussed in another section of this report, the route offers complete integration of the transportation system with land use, enabling individuals to travel from their homes to places of employment, recreation and trade along the Honolulu waterfront.

3. Density of rural population.

This item is not applicable since the proposed route, in entirety, falls within the city of Honolulu proper.

4. Distribution of the whole population.

This item is not totally applicable for the same reason stated in Item 3 above. It is noted, however, that with the termini of the proposed route located at the fringes of the dense residential lands or doorways to the commercial activities, it

provides the populace with an efficient alternative route to and through the city proper.

5. Relation to manufacturing activity.

The proposed facility will provide the much needed service to the light industrial complexes clustered along the Honolulu waterfront area. More specifically, the proposed route will not only provide the efficient movement of goods from these industries by by-passing the congested roadways through the city but will also provide an efficient connection to the other Interstate facilities servicing the rural areas of the island.

6. Relation to agricultural production.

This item is not applicable to the proposed route for the same reason presented in Item 3 above.

7. Relation to concentration of motor vehicle ownership.

Although the proposed route will not traverse areas of high density of vehicle ownership, the facility will, because of its termini location, provide the complementary service; i.e., provide the much needed access to the major traffic generating areas of Oahu.

8. Relation to routes of strategic importance from the standpoint of national defense.

Alleviation of traffic on Nimitz Highway as a result of this proposed facility will aid in the movement of military vehicles to and from the military ports at Honolulu Harbor. The route also serves as a linkage between military installations located at the fringes of the termini.

9. Relation to military and naval establishments and war industry.

Not directly applicable for the same reason given in Item 8, above.

10. Relation to routes of highest traffic volumes.

As evidence of the anticipated vehicular volume across the Honolulu corridor, five screen lines were established. (see Map C)

Kalihi Screen line

Kapalama Screen line

Nuuanu Screen line

Piikoi Screen line

Manoa-Palolo Drainage Canal Screen line

The 1990 equivalent vehicular trips were assigned to two (2) highway networks; (1) a basic network which assumes the H-1 freeway to be fully completed without the proposed H-4 facility; (2) up-dated network which assumes the H-1 freeway to be completed with H-4 facility included. The 1990 assigned volumes (ADT), capacities and v/c ratios are tabulated on the attached listing titled "Screenline Analysis - Interstate H-4." Facilities having assigned volumes falling below their practical capacities are considered adequate in their ability to serve the travel demands. Conversely, facilities having assigned volumes greater than the capacities ($v/c > 1.00$) are considered inadequate. The v/c ratio also gives an indication of the relative efficiency of the facility. Thus an inspection of all

facilities across a screen line will reveal the relative ability of the network to satisfy the travel demands in the sector which the screen line represents.

It is to be emphasized again that the 1990 vehicular trip table used in the above work was developed subsequent to the modal split and therefore is comprised of only those trips committed to automobiles and trucks. The OTS modal split resulted in 12 - 13% of the total person - trips being diverted to mass transit.

In evaluating the traffic assignments across the screen lines, the following observations are made:

A. Basic Scheme

1. Heavy overload of the major highway (Nimitz) and H-1 freeway is indicated at the Kalihi and Kapalama Screen lines.
2. In addition to the overloaded facilities indicated for (1) above, it is anticipated that Vineyard Boulevard will also be accommodating assigned volumes in excess of its capacity at the Nuuanu Screen line.
3. At the Piikoi Screen line the H-1 freeway and two lesser facilities will be overloaded in 1990. Remaining arterials crossing this sector would have sufficient roadway capacities to satisfy the travel demands.

4. The H-1 freeway again shows heavy overload at the Manoa-Palolo Drainage Canal Screen line. Also, Ala Moana Boulevard and King Street, both east-west arterials, would be overloaded.

In summary of the traffic assignment for the Basic Scheme, the results reveal that if H-4 were not considered, the volumes on the Keehi Interchange to Kapiolani Interchange, portion of H-1 will be accommodating travel demands far in excess of its roadway capacity. Please note that this analysis is based on ADT's. It is reasonable to anticipate that the v/c ratio during peak hours would most certainly be much worse. Relief from this situation on H-1 is not anticipated as the major parallel facilities providing travel through the corridor will also be faced with an overload condition. Surplus capacities at the various screen lines could not be expected to relieve the overloaded condition for reasons that most of the arterials are relatively short in length and/or are not provided to serve through traffic.

B. Up-dated Scheme (H-4)

1. There will be traffic relief on almost all east-west arterials at all screen lines.
2. The proposed freeway (H-4) would generally accommodate travel demands almost equally^{ing} its roadway capacity.

In conclusion, the results of this traffic assignment study show that the proposed facility (H-4) can provide the

necessary service to relieve the heavy congestion through the Honolulu corridor. Although the H-1 Freeway is indicated as being faced with travel demands beyond its satisfactory carrying capacity, it is not unreasonable to expect additional relief from Nimitz Highway and the proposed facility - H-4.

Relative to the overall operation of the networks it is to be noted that, in the Basic Scheme, approximately 33% of the total vehicle miles of travel (8,804,910 VMT) was attributable to the committed Interstate Freeways -- H-1, H-2, and H-3. With the inclusion of the proposed facility (H-4), the total freeway VMT commitment increased by approximately 4% or 37% of the total network VMT (8,882,297).

11. Relation to principal topographic features.

Topographic constraint is recognized as being an item of prime concern in route selection. However, due to the very narrow corridor available through the city of Honolulu, imposed by the mountain range and the sea, alternative routings are highly limited. Fortunately, the terrain traversed by the proposed route is level and no major natural constraints are in evidence.

12. Cooperation with Dept. of Defense.

The Hawaii Division Office of the U. S. Bureau of Public Roads has informed the local office of the Department of Defense of this proposal and will further coordinate our activities with them as required.

13. Cooperative studies.

(1) Connection with city approach routes

This item is not applicable as the proposed route is located totally within the metropolitan area. Service compatible with the system, as a whole, is discussed in the following items.

(2) & (4) Penetration of city: Circumferential and distributing routes

The proposed facility has been generally located to provide the much needed added highway capacity in the east-west directions through the city corridor where most needed, and is destined to parallel the service being presently provided by the H-1 Freeway located on the northern edge of the city. This proposed facility, located along the southern edge of the city, will not only augment the H-1 by providing the through trips with an alternate route to by-pass the city but will provide an efficient approach to the lower half of the city. In this respect, access to the various areas of the city is envisioned to be effectuated through judicious selection of interchange locations. The Oahu Transportation Study, through its comprehensive planning process, has already concluded the need for such a highway. As determined earlier, this freeway facility will be serviced by several major arterials leading directly into and around the city, including service to the Waikiki resort area. The aforementioned study has already cited the need for the improvement of lesser

facilities to accommodate the heavy traffic volumes resulting from the proposed interchanges.

(3) Location on undeveloped land

This item is not applicable as the proposed route traverses the major developed areas of Honolulu with no appreciable undeveloped land areas.

(5) Relation to traffic-generating focal points and transportation terminals

The proposed route is so located to maximize its service potential to major trip attraction areas and transportation terminals. As discussed earlier, the facility will serve the various metropolitan areas through connections with improved arterials. In addition, relative to the Honolulu waterfront activities--such as, container-facilities yard, food-distribution center, oceanographic research center, commercial fishing etc., this highway facility will provide the direct express linkage with the already established interstate highway system on the Island of Oahu. In addition to the resultant rapid distribution of perishable goods to the economic welfare of the businesses, H-4 will further provide for the removal of trucks from the normal stream of traffic on the city on the city's arterials. This will certainly constitute a major contribution to the efficiency of the total highway system.

Of no less importance is the service to be provided by this route in the trip transfer between the Honolulu International

Airport and the Waikiki resort area. With the current and impending growth in tourist travel associated with increased air carrier movement via the "jumbo" jets and ultimately, the SST's, it is envisioned that this facility will play a positive role in providing the millions of tourists to Hawaii with a highly efficient means of travel to their prime destination area -- Waikiki.

(6) Relation to Urban Planning

Initial effort in the planning of a balance transportation system for Oahu was expanded by the Oahu Transportation Study. Reflected in its recommended highway plan is the cooperative nature, considered to be one of the vital elements in any planning study.

It was concluded by the study that a highway facility in addition to H-1 capable of carrying heavy traffic volume through the Honolulu corridor would be required, and therefore recommended that a freeway be considered along the southern edge of the city. The proposed facility (H-4) meets this objective.

(7) Civil Defense

This proposal has received the full support of the Civil Defense office.

IV. TRAFFIC AND OTHER DATA

A. LANEAGE

1. Six lanes from Keehi Interchange to the University Avenue Extension Interchange.

2. Four lanes from University Avenue Extension Interchange to Kapiolani Interchange.

B. INTERCHANGES

Eight additional interchanges located at:

- a. Waiakamilo Road
- b. Liliha Street
- c. South Street
- d. Ward Avenue
- e. Piikoi Street
- f. Atkinson Drive
- g. In the Vicinity of University Avenue Extension
- h. Date Street

C. ADT

Non-directional ADT's are shown on attached Map C. 1990 weighted ADT for entire route - 70,000 vpd.

D. VEHICLE-MILES

Vehicle Miles of travel per day - 456,500.

E. LANE-MILES

Total lane miles - 37.1.

V. COST ESTIMATE

Cost estimates have been developed for two schemes, viaduct and at-grade. The "viaduct" scheme assumes that the entire route will be a viaduct. The "at-grade" scheme assumes an at-grade condition from the Ward Avenue Interchange to the interchange in the vicinity of the University Avenue Extension, the remaining portions being elevated. Laneage for the two schemes were held constant.

The estimated costs are as follows:

Viaduct Scheme (\$1,000):

Plans	\$ 19,662
Rights-of-way	69,623
Construction	<u>211,399</u>
TOTAL	\$300,684

At-Grade Scheme (\$1,000):

Plans	\$ 18,265
Rights-of-way	69,623
Construction	<u>196,390</u>
TOTAL	\$284,278

As indicated elsewhere in the report, the final location and configuration of this facility will depend on the results of a multi-disciplinary effort - the design concept team. Of course, the costs associated with such results will vary from the above.

VI. SCHEDULING PROBLEMS

The State of Hawaii is considering an urban design concept team approach to plan and conceptually design this proposed route. Although the need for this facility is urgent and the engagement of such a team will delay the final construction of this facility, the necessity for such an approach is readily apparent. This route will be located in the heavily developed areas of the City of Honolulu, and the total impact of a new freeway within such an area must be recognized and reckoned with early in the planning stage.

Some of the more obvious critical time problems related to the scheduling of construction are:

1. the formulation of the location and configuration of H-4 through the urban design concept team;
2. planning and designing the facility to reflect the City's needs and its plans for future growth. (This includes achievement of a balanced transportation system, removal of slums, elimination of poverty, stimulation of recreational and economic development, etc.;
3. rights-of-way acquisition as related to the Federal Highway Act of 1968 for relocation assistance;
4. phasing of construction to effect least disruption to the daily functions of the existing facilities, etc.

VII. CONCLUSIONS & RECOMMENDATION

It is concluded that the proposed route will:

1. provide the much needed highway capacity in the east-west direction through the city corridor;
2. consequently enable H-1 to function more efficiently;
3. integrate the transportation system with land use activities along the Honolulu waterfront;
4. provide the vehicular traffic traversing the city proper with an efficient by-pass of the urban radial type;
5. afford a more direct linkage between the military establishments on West Oahu with Fort Ruger and Fort DeRussy;
6. provide an additional high-speed facility to serve the Civil Defense control center located in Diamond Head Crater;
7. facilitate military cargo movements to and from the military ports at Honolulu Harbor through the reduction of vehicular traffic on Nimitz Highway;
8. maximize its service potential relative to major trip attraction areas and transportation terminals; and
9. provide the Full Freeway component of the total transportation needs of Oahu consistent with the results of the comprehensive planning process.

It is therefore recommended by the Department of Transportation, State of Hawaii, that the proposed Route H-4 be approved as an addition to Hawaii's Interstate and Defense Highway System.

DEPARTMENT OF TRANSPORTATION
MEMORANDUM FOR THE RECORD HWY-P 2.63995

HIGHWAYS

DIVISION

PLANNING

BRANCH OR SECTION

OCT 23 1968
Date:

PURPOSE OF MEETING:

1. To inform DIR of cost estimate on the H-4 Tube Route;
2. To solicit further directions.

DATE, TIME & PLACE:

October 18, 1968; 8:00 A.M.; DIR's Office

PARTICIPANTS:

Dr. Matsuda
H. Uehara

BRIEF SUMMARY OF MEETING:

1. We reported that the cost exceeded \$600 million, with approximately \$400 million of it attributed to the tubes. Unit cost used is \$13,000/ft./3-lane bore. (This is considered reasonable in terms of the \$5,000/ft./3-lane bore for the H-3 tunnels.)
2. In view of the astronomical cost, we recommended against this submission on the following bases:
 - a. the \$600 million figure appears excessive in view of the \$425-450 million total estimated cost for the 51.3-mile I-System;
 - b. consequently our chances of securing its acceptance would probably be very poor.
3. DIR agreed, and suggested we do the following:
 - a. drop the Tube Route;
 - b. develop the Makai Arterial Alternate;
 - c. develop the mauka skyway (viaduct over Lunalilo Fwy) alternate;

(SIGNATURE)

- d. consider an alternate even further mauka of Lunalilo Freeway. (This was dropped due to the imminency of the deadline);
 - e. consider means of minimizing the cost of the Tube Route alternate; i.e., constructing a causeway across the western mouth of Honolulu Harbor, and running the Freeway on this causeway, etc. (This is being evaluated by HAR, but we will not be able to develop this alternate due to lack of time.)
4. The results of 3b and 3c will be furnished DIR before the Policy Committee meeting on Monday, October 31, 1968.

Henry U.

HENRY UEHARA

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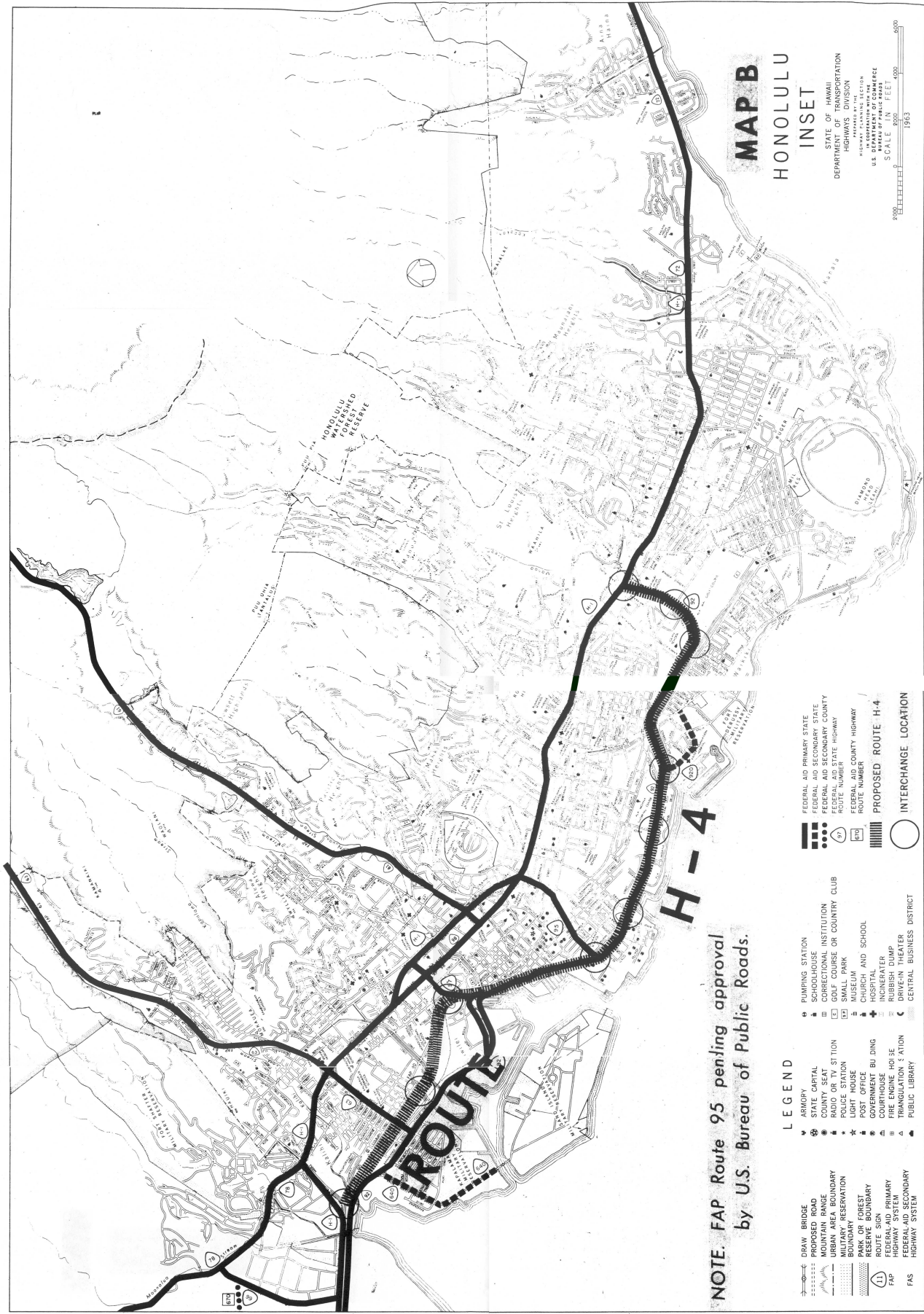
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CHIEF
HWY-D
-PA
-PS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS PLANNING OFFICE
SCREENLINE ANALYSIS - INTERSTATE H-4
1990 TRAFFIC

October 22, 1966

SCREENLINE	FACILITY	CAPACITY (NON-DIRECTIONAL)	ASSIGNED VOLUME (NON-DIRECTIONAL) H-4 NETWORK	ASSIGNED VOLUME (NON-DIRECTIONAL) BASIC NETWORK	H-4 NETWORK VOL. CAPACITY	BASIC NETWORK VOL. CAPACITY
1. Kailhi	Interstate H-4 Almitz Hwy. Dillingham Blvd. King St. Interstate H-1 School St.	75,000 54,000 28,078 23,004 74,000 25,000	66,000 52,000 13,000 8,700 89,000 9,000	86,800 17,000 10,700 110,700 10,100	0.880 0.953 0.403 0.378 1.193 0.360	--- 1.607 0.427 0.465 1.484 0.404
	TOTAL	279,882	227,700	230,300	0.814	1.125
2. Kapalama	Interstate H-4 Wimlitz Hwy. Dillingham Blvd. King St. Frontage → Interstate H-1 Frontage ← School St.	75,000 54,000 28,078 30,000 5,400 74,000 5,400 25,000	67,900 54,600 24,700 21,400 --- 99,000 5,300 16,100	75,600 30,900 19,400 530 120,100 6,000 73,600	0.905 1.011 0.880 0.713 --- 1.327 0.981 0.644	--- 1.400 1.101 0.647 --- 1.610 1.111 0.944
	TOTAL	297,478	289,000	276,130	0.972	1.241
3. Huanu	Interstate H-4 Wimlitz Hwy. King St. Beretania St. Kukui St. Vineyard Blvd. Interstate H-1 School St. ← Kuakini St. Judd St. Wyllie St.	75,000 50,000 30,000 30,000 5,020 30,000 74,000 7,500 14,500 13,320 13,320	67,900 56,900 31,000 10,900 3,400 22,500 116,100 11,200 3,000 1,100 7,400	76,100 27,200 17,400 2,700 34,000 136,300 14,100 9,500 1,600 8,800	0.905 1.138 1.033 0.363 0.677 1.750 1.556 1.493 0.207 0.083 0.556	--- 1.562 0.917 0.580 0.538 1.133 1.827 1.680 0.379 0.120 0.661
	TOTAL	343,260	331,400	326,000	0.965	1.215
4. Piikoi	Interstate H-4 Ala Moana Blvd. Kapiolani Blvd. King St. Beretania St. Kinau St. → Interstate H-1 Lunalilo St. ← Wilder Ave. Nehoa St.	75,000 54,000 37,178 30,000 30,000 18,000 74,000 8,300 20,000 13,320	59,300 47,200 30,800 13,300 6,200 8,900 119,700 12,100 11,800 20,500	49,500 26,900 22,600 16,300 14,700 145,600 14,100 10,000 25,100	0.791 0.874 0.828 0.443 0.207 0.494 1.605 1.458 0.590 1.539	--- 0.917 0.724 0.753 0.543 0.817 1.952 1.699 0.500 1.884
	TOTAL	360,398	329,800	324,800	0.915	1.138
5. Manoa-Palolo	Ala Moana Blvd. Interstate H-4 Kalakaua Ave. McCully St. University Ext. Date St. Kapiolani Blvd. Kapiolani Ramp Interstate H-1 Old Wai'alae Rd. ← Dole St.	54,000 75,000 19,422 11,858 15,000 30,000 48,000 --- 20,000 74,000 26,700 12,375	70,800 98,400 13,100 8,000 26,800 28,700 16,300 11,700 14,500 86,000 21,600 2,100	80,300 17,200 19,000 29,900 17,000 12,300 41,300 108,300 21,600 2,300	1.321 1.312 0.674 0.692 1.787 0.957 0.340 --- 0.725 1.161 0.498 0.170	1.487 --- 0.886 1.644 1.993 0.567 0.256 --- 2.065 1.452 0.809 0.186
	TOTAL	386,655	390,300	349,200	1.009	1.120

(Map A omitted)



NOTE. FAP Route 95 pending approval by U.S. Bureau of Public Roads.

- LEGEND**
- ARMORY
 - STATE CAPITAL
 - RADIO OR TV STATION
 - POLICE STATION
 - LIGHT HOUSE
 - POST OFFICE
 - GOVERNMENT BUILDING
 - FIRE ENGINE HOUSE
 - TRANQUILLIZATION STATION
 - PUBLIC LIBRARY
 - DRAW BRIDGE
 - PROPOSED ROAD
 - URBAN AREA BOUNDARY
 - MILITARY RESERVATION
 - BOUNDARY
 - INSET
 - POST OFFICE
 - ROUTE SIGN
 - FEDERAL AID PRIMARY HIGHWAY SYSTEM
 - FAP
 - FAS

- PUMPING STATION
- SCHOOLHOUSE
- INSTITUTION
- GOLF COURSE OR COUNTRY CLUB
- SMALL PARK
- MUSEUM
- CHURCH AND SCHOOL
- HOSPITAL
- RUBBER DUMP
- DRIVE-IN THEATER
- CENTRAL BUSINESS DISTRICT
- FEDERAL AID PRIMARY STATE HIGHWAY
- FEDERAL AID SECONDARY STATE HIGHWAY
- FEDERAL AID COUNTY HIGHWAY
- ROUTE NUMBER
- PROPOSED ROUTE H-4
- INTERCHANGE LOCATION

MAP B HONOLULU INSET

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HONOLULU
PRINTED BY THE
U.S. DEPARTMENT OF COMMERCE
IN COOPERATION WITH THE
HAWAIIAN GOVERNMENT
SCALE IN FEET
0 1000 2000 4000 6000
1963

Data Released	
APRIL 15, 1964	
Revised	
83067	
10267	
70706	

(Map C omitted)