

APPENDIX D

THE ISLAND OF HAWAII

1. Hawaii 2024 Updated State and County Bridge Matrix
2. Hawaii 2013 State Bridge Matrix
3. Hawaii 2013 County Bridge Matrix

HAWAII HISTORY

The biggest island, Hawaii (also called The Big Island), has a land area of 4,038 square miles and comprises two-thirds of the land area of the state. It is composed of five mountain masses; the highest peaks are Mauna Loa and Mauna Kea at 13,680 feet and 13,796 feet, respectively. Kilauea Crater on Mauna Loa is the world's most active volcano. Sheer sea cliffs, as well as deep valleys and gulches, grace the rugged, meandering coastline of the island.

Hawaii Island contains by far the greatest concentration of historic bridges, perhaps due to its rural nature and consequent lack of development, and an abundance of land for alternate transportation routes without the destruction of older bridges and roads. Most of the Big Island's bridges are located along the Hamakua Coast, north of Hilo, due to its abundant rainfall and innumerable streams and gulches. In the 42.5-mile stretch from Hilo to Honokaa on Federal Aid Primary Route (FAP) 19, there are fifty-one bridges, more than one bridge per mile. Remnants of the Mamalahoa Highway, the former belt road which runs parallel to the new highway, serve as a sort of "bridge museum" with examples of almost every remaining bridge type in the islands, including some of the oldest and rarest bridges found in the islands. A number of early masonry (lava rock) arch bridges dating from 1894-1903 are located along the Mamalahoa Highway and are the oldest remaining bridges in the state. A second major area of bridges is in the Kau District, south of the Volcano National Park, albeit with considerably fewer than on the Hamakua Coast. In Kau, eleven bridges are lined up in a row along the FAP 11 within twelve miles of each other. In addition, numerous small county bridges were constructed over streams along the early twentieth-century homestead roads.



FIGURE 1. MAP OF HAWAII (SOURCE: [HTTPS://HISTATEGIS.MAPS.ARCGIS.COM/](https://histategis.maps.arcgis.com/)).

Hawaii 2024 Updated State and County Bridge Matrix

State-Owned									
Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001000110310346	2-Metal Pipe Culvert	Double Pipe Culvert (Volcano)	Hawaii Belt Road (Volcano Road)	1966	Metal Corrugated Culvert	No Parapet/Railing	No	Not Eligible**	Research did not indicate significance under NRHP Criteria A, B, C, or D or HRS 6E criteria a, b, c, d, or e.
001000110310424	2-Metal Pipe Culvert	Double Pipe Culvert (Volcano)	Hawaii Belt Road (Volcano Road)	1966	Metal Corrugated Culvert	No Parapet/Railing	No	Not Eligible**	Research did not indicate significance under NRHP Criteria A, B, C, or D or HRS 6E criteria a, b, c, d, or e.
001000110310410	3-Metal Pipe Culvert	Triple Pipe Culvert (Volcano)	Hawaii Belt Road (Volcano Road)	1966	Metal Corrugated Culvert	No Parapet/Railing	No	Not Eligible**	Research did not indicate significance under NRHP Criteria A, B, C, or D or HRS 6E criteria a, b, c, d, or e.
001000191108426	Hakalau Plantation Road Overpass	Hawaii Belt Road (Hakalau Plantation Road Overpass)	Plantation Road	1953	Steel Stringer	Concrete Open Horizontal	No	Eligible	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • Uncommon use of steel material in Hawaii's extreme marine environment • Associated with the railroad and Hilo-Hamakua Heritage Coastline • Associated with development of the Hawaii Belt Road, particularly as part of the mid-century "Seismic Wave Damage Rehabilitation Project" • Representative of the work of a master: William R. Bartels • See Hawaii Belt Road historic context Chapter 2.5
001000190308410	Hakalau Stream Bridge	Hakalau Stream	Hawaii Belt Road	1953	Steel Trestle	Concrete Open Horizontal	Yes	Eligible***	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • One of six registered steel trestle bridges on the Hamakua coast • Uncommon use of steel material in Hawaii's extreme marine environment • Engineering significance of the trestle structure of the early twentieth century • Associated with the sugar plantation industry • Associated with the Hilo Railroad Company • Associated with three founders of the Hilo railroad company • Longest steel bridge built postwar (1945) on the island of Hawaii in the historic study period prior to 1977 • Associated with postwar Hawaii Belt Road District • See Hawaii Belt Road historic context Chapter 2.5 • See National Register of Historic Places Nomination Form in appendices
001001900503405	Kamakoa Bridge No. 1	Kamakoa Stream No. 1	Mamalahoa Highway	1930	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • Very modest concrete slab bridge with solid parapets • Typical of its period in its design, materials, methods of construction, and craftsmanship
001000190308549	Kolekole Stream Bridge	Kolekole Stream	Hawaii Belt Road	1950	Steel Truss	Concrete Open Horizontal	Yes	Eligible***	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • One of six registered steel trestle bridges on the Hamakua coast • Uncommon use of steel material in Hawaii's extreme marine environment • Engineering significance of the trestle structure of the early twentieth century • Associated with the sugar plantation industry • Associated with the Hilo Railroad Company • Associated with three founders of the Hilo railroad company • See National Register of Historic Places Nomination Form in appendices • Associated with postwar Hawaii Belt Road District • See Hawaii Belt Road historic context Chapter 2.5
001000190409696	Wailuku River Bridge	Wailuku Stream	Hawaii Belt Road	1950	Steel Stringer	Metal Horizontal	No	Eligible***	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • Uncommon use of steel material in Hawaii's extreme marine environment • Associated with the railroad, and specific federal funding of the U.S. Works Program Grade Crossing Program • Associated with development of the Hawaii Belt Road, particularly as part of the mid-20th-century "Seismic Wave Damage Rehabilitation Project" • Representative of the work of a master: William R. Bartels • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
County-Owned									
Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001002700502390	Niulii Stream Bridge	Niulii Stream	Akoni Pule Highway	1918	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1910s reinforced concrete bridge
001002700502386	Waikane Stream Bridge	Waikane Stream	Akoni Pule Highway	1918	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> • NRHP/HRS 6E Criteria A/a, C/c • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1910s reinforced concrete bridge

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.



** Historic resources adjacent to resource.


*** Formerly "High Preservation Value."

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Bridge Inventory Form

General Information

Bridge Number: 001000110310346		TMK: 318007999, 318008010 (adjacent)	
Common Name: 2-Metal Pipe Culvert			
Historic Name: 2-Metal Pipe Culvert			
Feature Crossed: Unnamed Stream			
Feature Carried: Mamalahoa Highway/Hawaii Belt Road/Volcano Road/Route 11			
Island: Hawaii		Milepost: 19.239	
Latitude: 19.49361		Longitude: -155.1476	
Ownership: State		Image Date: 11/01/2023	



Bridge Inventory Form

Construction Information

Bridge Type: Steel Culvert	Construction Date: 1966
Designer/Engineer:	
Builder/Contractor: J.M. Tanaka Construction, Inc.	
Alteration Date(s):	
Alterations:	

Design Information

Number of Spans: 2	Max Span: 16.1 ft.	Total Length: 43.0 ft.	Deck Width: 71.9 ft.
Superstructure:			
Substructure: Metal Corrugated Steel Culvert			
Floor/Decking: Asphalt Concrete (AC) Pavement			
Parapets/Railings: No Parapets or Railings			
Other Features:			

Historic Information

NRHP Status: Not Eligible	Criteria: A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Not Significant	Criteria: a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input type="checkbox"/> Design <input type="checkbox"/> Setting <input type="checkbox"/> Materials <input type="checkbox"/> Workmanship <input type="checkbox"/> Feeling <input type="checkbox"/> Association <input type="checkbox"/>		
Historic District:		Contributing:
Current Function: Culvert	Historic Function: Culvert	
Areas of Significance: Engineering		
Period of Significance:		
Supplemental Documentation: HAER No. HI-47		
Narrative Description: The culvert, comprising of two identical corrugated steel pipes, carries a two-lane roadway across an unnamed stream. The pipes are enclosed within an earthen embankment and there is one lava rock (concrete rubble masonry or CRM) headwall on the north side of the culvert, all of which support the asphalt concrete (AC) two-lane roadway. The culvert lacks parapets/railings and pedestrian walkways.		

Bridge Inventory Form

Statement of Significance:

The 2-Metal Pipe Culvert carries a reconstructed portion of the Mamalahoa Highway, a part of the Hawaii Belt Road, and provides road access from Hilo to Volcanoes National Park. The Mamalahoa Highway is named after King Kamehameha I's "the way or law of the broken canoe paddle" edict, popularly known as the "Law of the Splintered Paddle" that guaranteed the safety of all highways to travelers. The Mamalahoa Highway is also associated with Volcano Road, which was originally promoted by Minister of the Interior Lorrin Thurston in 1888 to link Hilo with Volcano House at the edge of Kilauea Crater, supporting tourism and connecting coffee and sugar plantations to Hilo. Completed in 1894 as a carriage road, Volcano Road was reconstructed to automobile standards as tourism to Hawaii National Park increased in the first half of the 20th-century. By 1947, roadside development encroached on fern-*ohia* forests and lead the National Parks Service (NPS) to begin planning for a bypass road and new entrance to the park to divert commercial traffic while preserving and enhancing the area's natural features for park visitors. The bypass road's construction began in 1961 and was completed by 1962. In 1964, the State of Hawaii took over maintenance responsibility for the Mamalahoa Highway, though the NPS has authority to review and approve any plans or changes to this stretch of road. The 2-Metal Pipe Culvert was part of HDOT's Volcano Road – Glenwood Section (Federal-Aid Project No. F-011-2(5)) project and indicated as Sta. 438+77.30 in diagrams. This project rebuilt a 4-mile-long section of Volcano Road for \$1.8 million and was completed between 1967 and 1970 by J.M. Tanaka Construction, Inc.

This culvert was previously determined eligible in the 2013 SHBIE as a "unique lava rock culvert." As a result of additional research, the culvert has been determined to be not eligible.

The culvert was constructed after the Mamalahoa Highway bypass was completed in 1962 and after the State of Hawaii took over maintenance from the National Parks Service. It is not associated with earlier transportation improvements or with the transition from Hawaii's agricultural plantation economy to tourism. Therefore, the culvert is not significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past and is therefore not significant under Criterion B.

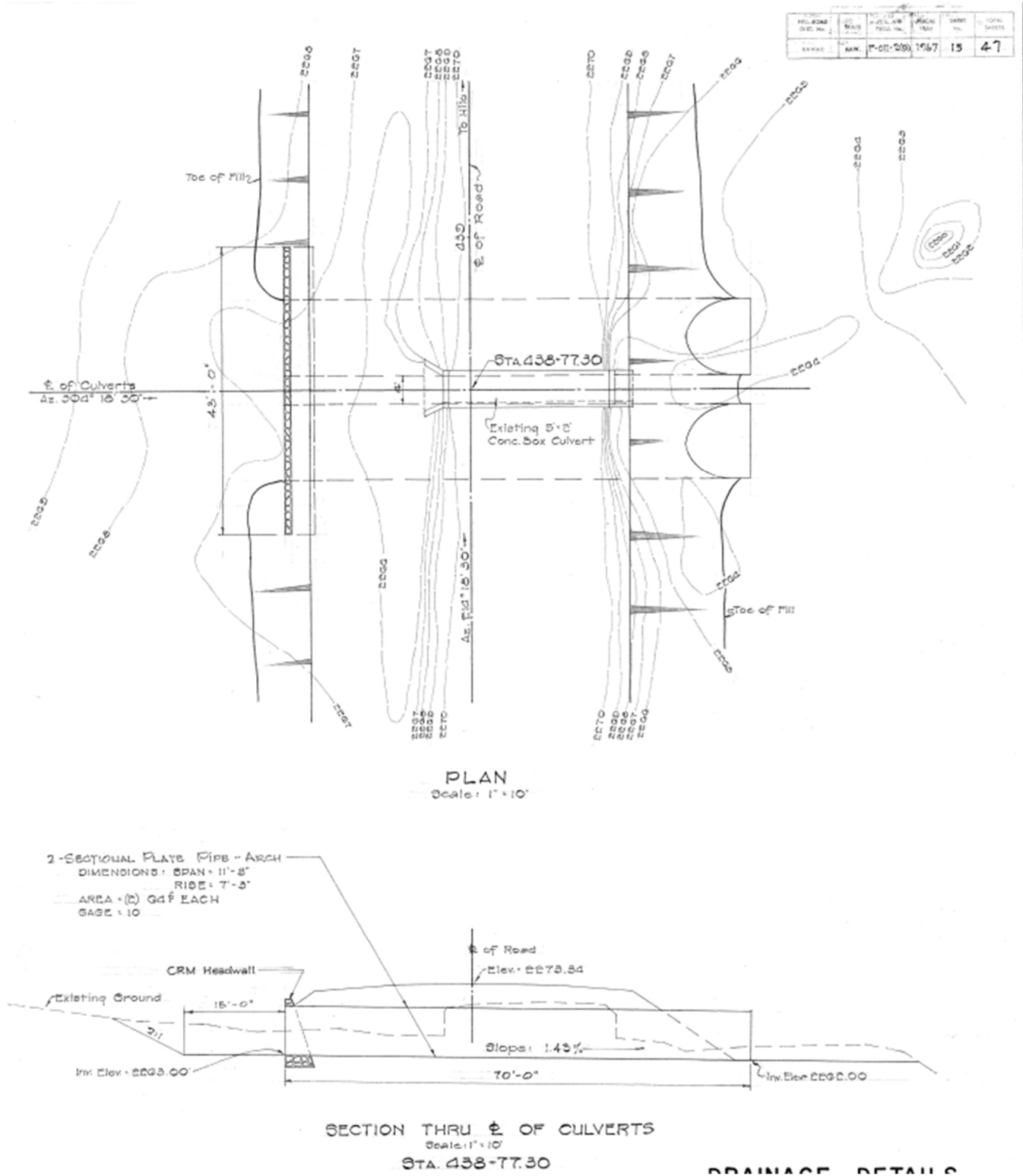
The culvert makes use of local basalt rock (lava rock) on one headwall and prefabricated corrugated steel tubes. It is typical of its period in its use of materials, method of construction, craftsmanship, and design. The culvert is therefore not significant under Criterion C.

The culvert was not evaluated under Criterion D as part of this assessment.

Therefore, the 2-Metal Pipe Culvert is not eligible for the NRHP.

Bridge Inventory Form

Historic Images and Drawings



Source: State of Hawaii. Department of Transportation. "As Built" Plans of Volcano Road – Glenwood Section: Federal Aid Primary Project F-011-2(5), District of Puna, Island of Hawaii. July 27, 1967. Sheet 15. Accessed May 12, 2023. <http://162.221.244.142:8080/As-Built/res/Hawaii/Route%200011/0011-044/DRAINAGE%20DETAILS.pdf>.

Bridge Inventory Form

References

- Duensing, Dawn E. *Hawaii's Scenic Roads: Paving the Way for Tourism in the Islands*. Honolulu: University of Hawai'i Press, 2015. <http://www.jstor.org/stable/j.ctt13x1jdz>.
- Duensing, Dawn E. "Hawaii Volcano National Park Roads, Volcano Vicinity, Hawaii County, Hawaii, HAER No. HI-47." Historic American Engineering Record, National Park Service, U.S. Department of the Interior, Washington, DC, 1999.
- State of Hawaii. Department of Transportation. *"As Built" Plans of Volcano Road – Glenwood Section: Federal Aid Primary Project F-011-2(5), District of Puna, Island of Hawaii*. July 27, 1967. Accessed May 12, 2023, <http://162.221.244.142:8080/As-Built/res/Hawaii/Route%200011/0011-044/0011-044.htm>.
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
- State of Hawaii. Department of Transportation. *[Annual Report] Year Ending June 30, 1971*. N.p., n.d. Retrieved from <https://catalog.hathitrust.org/Record/000548436>.
- U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. Culvert, facing southeast.



Image 2. Culvert, facing northeast.

Bridge Inventory Form





Image 3. View from roadway, facing northeast.



Image 4. Interior view of culvert.

Bridge Inventory Form

General Information

Bridge Number: 001000110310424		TMK: 318007016 (adjacent)	
Common Name: 2-Metal Pipe Culvert			
Historic Name: 2-Metal Pipe Culvert			
Feature Crossed: Unnamed Stream			
Feature Carried: Mamalahoa Highway/Hawaii Belt Road/Volcano Road/Route 11			
Island: Hawaii		Milepost: 18.37	
Latitude: 19.50464		Longitude: -155.1422	
Ownership: State			
			Image Date: 11/01/2023



Bridge Inventory Form

Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1966
Designer/Engineer:	
Builder/Contractor: J.M. Tanaka Construction, Inc.	
Alteration Date(s):	
Alterations: None	

Design Information

Number of Spans: 2	Max Span: 17.1 ft.	Total Length: 42 ft.	Deck Width: 69.9 ft.
Superstructure: N/A			
Substructure: Metal Corrugated Culvert			
Floor/Decking: Asphalt Concrete (AC) Pavement			
Parapets/Railings: No Parapets/Railings			
Other Features:			

Historic Information

NRHP Status: Not Eligible	Criteria: A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Not Significant	Criteria: a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input type="checkbox"/> Design <input type="checkbox"/> Setting <input type="checkbox"/> Materials <input type="checkbox"/> Workmanship <input type="checkbox"/> Feeling <input type="checkbox"/> Association <input type="checkbox"/>		
Historic District:		Contributing:
Current Function: Culvert	Historic Function: Culvert	
Areas of Significance:		
Period of Significance:		
Supplemental Documentation: HAER No. HI-47		
Narrative Description: The culvert, comprised of two identical corrugated steel pipes, carries the roadway across an unnamed stream. The pipes are enclosed within an earthen embankment and there is one lava rock (concrete rubble masonry or CRM) headwall on the north side of the culvert, all of which support a deck of asphalt concrete pavement. The culvert lacks parapets and railings.		

Bridge Inventory Form

Statement of Significance:

The 2-Metal Pipe Culvert carries a reconstructed portion of the Mamalahoa Highway, a part of the Hawaii Belt Road, and provides road access from Hilo to Volcanoes National Park. The Mamalahoa Highway is named after King Kamehameha I's "the way or law of the broken canoe paddle" edict, popularly known as the "Law of the Splintered Paddle" that guaranteed the safety of all highways to travelers. The Mamalahoa Highway is also associated with Volcano Road, which was originally promoted by Minister of the Interior Lorrin Thurston in 1888 to link Hilo with Volcano House at the edge of Kilauea Crater, supporting tourism and connecting coffee and sugar plantations to Hilo. Completed in 1894 as a carriage road, Volcano Road was reconstructed to automobile standards as tourism to Hawaii National Park increased in the first half of the 20th-century. By 1947, roadside development encroached on fern-*ohia* forests and lead the National Parks Service (NPS) to begin planning for a bypass road and new entrance to the park to divert commercial traffic while preserving and enhancing the area's natural features for park visitors. The bypass road's construction began in 1961 and was completed by 1962. In 1964, the State of Hawaii took over maintenance responsibility for the Mamalahoa Highway, though the NPS has authority to review and approve any plans or changes to this stretch of road. The 2-Metal Pipe Culvert was part of HDOT's Volcano Road – Glenwood Section (Federal-Aid Project No. F-011-2(5)) project and indicated as Sta. 484+16 in diagrams. This project rebuilt a 4-mile-long section of Volcano Road for \$1.8 million and was completed between 1967 and 1970 by J.M. Tanaka Construction, Inc.

This culvert was previously determined eligible in the 2013 SHBIE as a "unique lava rock culvert." As a result of additional research, the culvert has been determined to be not eligible.

The culvert was constructed after the Mamalahoa Highway bypass was completed in 1962 and after the State of Hawaii took over maintenance from the National Parks Service. It is not associated with earlier transportation improvements or with the transition from Hawaii's agricultural plantation economy to tourism. Therefore, the culvert is not significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past and is therefore not significant under Criterion B.

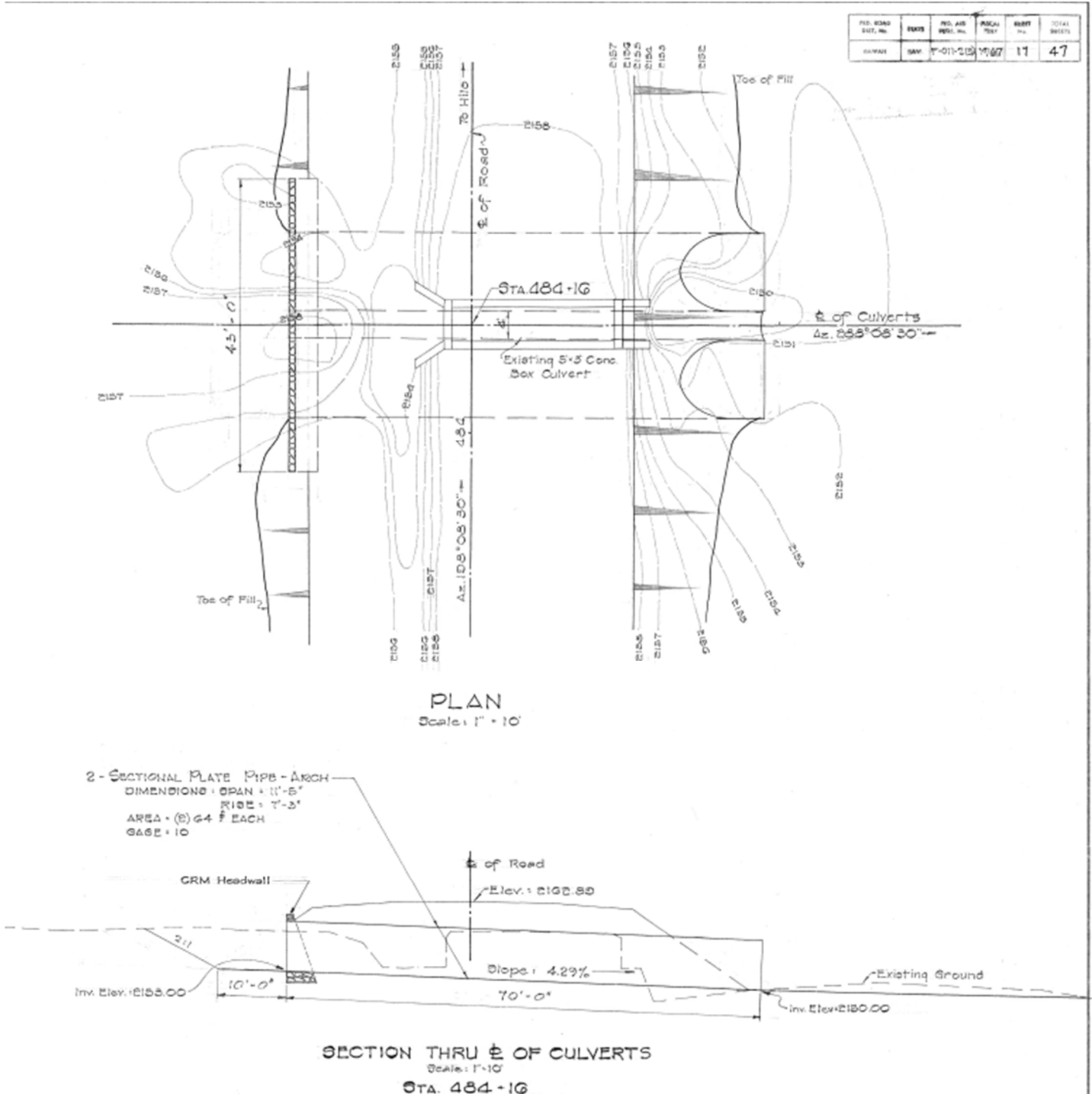
The culvert makes use of local basalt rock (lava rock) on one headwall and prefabricated corrugated steel tubes. It is typical of its period in its use of materials, method of construction, craftsmanship, and design. The culvert is therefore not significant under Criterion C.

The culvert was not evaluated under Criterion D as part of this assessment.

Therefore, the 2-Metal Pipe Culvert is not eligible for the NRHP.

Bridge Inventory Form

Historic Images and Drawings



(Source: State of Hawaii. Department of Transportation. "As Built" Plans of Volcano Road – Glenwood Section: Federal Aid Primary Project F-011-2(5), District of Puna, Island of Hawaii. July 27, 1967. Sheet 17. Accessed May 12, 2023. <http://162.221.244.142:8080/As-Built/res/Hawaii/Route%200011/0011-044/DRAINAGE%20DETAILS.pdf>).

Bridge Inventory Form

References

- Duensing, Dawn E. *Hawaii's Scenic Roads: Paving the Way for Tourism in the Islands*. Honolulu: University of Hawai'i Press, 2015. <http://www.jstor.org/stable/j.ctt13x1jdz>.
- Duensing, Dawn E. "Hawaii Volcano National Park Roads, Volcano Vicinity, Hawaii County, Hawaii, HAER No. HI-47." Historic American Engineering Record, National Park Service, U.S. Department of the Interior, Washington, DC, 1999.
- State of Hawaii. Department of Transportation. "As Built" Plans of Volcano Road – Glenwood Section: Federal Aid Primary Project F-011-2(5), District of Puna, Island of Hawaii. July 27, 1967. Accessed May 12, 2023. <http://162.221.244.142:8080/As-Built/res/Hawaii/Route%200011/0011-044/0011-044.htm>.
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
- State of Hawaii. Department of Transportation. *Year Ending June 30, 1971*. N.p., n.d. Retrieved from <https://catalog.hathitrust.org/Record/000548436>.
- U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of culvert, facing southeast.



Image 2. General view of culvert, facing northwest.

Bridge Inventory Form




Image 3. View from road, facing northeast.



Image 4. Interior view of culvert cell.

Bridge Inventory Form

General Information

Bridge Number: 001000110310410		TMK: 318007016 (adjacent)	
Common Name: 3-Metal Pipe Culvert			
Historic Name: 3-Metal Pipe Culvert			
Feature Crossed: Unnamed Stream			
Feature Carried: Mamalahoa Highway/Hawaii Belt Road/Volcano Road/Route 11			
Island: Hawaii		Milepost: 18.46	Image Date: 11/01/2023
Latitude: 19.50337		Longitude: -155.1427	
Ownership: State			



Bridge Inventory Form

Construction Information

Bridge Type: Metal Corrugated Steel Culvert	Construction Date: 1966
Designer/Engineer:	
Builder/Contractor: J.M. Tanaka Construction, Inc.	
Alteration Date(s):	
Alterations: None	

Design Information

Number of Spans: 3	Max Span: 15.1 ft.	Total Length: 59.1 ft.	Deck Width: 71.9 ft.
Superstructure:			
Substructure: Metal Corrugated Steel Culvert			
Floor/Decking: Asphalt Concrete (AC) Pavement			
Parapets/Railings: No Parapets/Railings			
Other Features:			

Historic Information

NRHP Status: Not Eligible	Criteria: A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Not Significant	Criteria: a <input type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input type="checkbox"/> Design <input type="checkbox"/> Setting <input type="checkbox"/> Materials <input type="checkbox"/> Workmanship <input type="checkbox"/> Feeling <input type="checkbox"/> Association <input type="checkbox"/>		
Historic District:		Contributing:
Current Function: Culvert	Historic Function: Culvert	
Areas of Significance:		
Period of Significance:		
Supplemental Documentation: HAER No. HI-47		
Narrative Description: The culvert, comprised of three identical corrugated steel pipes, carries the roadway across an unnamed stream. The pipes are enclosed within an earthen embankment and there is one lava rock (concrete rubble masonry or CRM) headwall on the north side of the culvert, all of which support the asphalt concrete two-lane road. The culvert lacks parapets/railings and pedestrian walkways.		

Bridge Inventory Form

Statement of Significance:

The 3-Metal Pipe Culvert carries a reconstructed portion of the Mamalahoa Highway, a part of the Hawaii Belt Road, and provides road access from Hilo to Volcanoes National Park. The Mamalahoa Highway is named after King Kamehameha I's "the way or law of the broken canoe paddle" edict, popularly known as the "Law of the Splintered Paddle" that guaranteed the safety of all highways to travelers. The Mamalahoa Highway is also associated with Volcano Road, which was originally promoted by Minister of the Interior Lorrin Thurston in 1888 to link Hilo with Volcano House at the edge of Kilauea Crater, supporting tourism and connecting coffee and sugar plantations to Hilo. Completed in 1894 as a carriage road, Volcano Road was reconstructed to automobile standards as tourism to Hawaii National Park increased in the first half of the 20th-century. By 1947, roadside development encroached on fern-*ohia* forests and lead the National Parks Service (NPS) to begin planning for a bypass road and new entrance to the park to divert commercial traffic while preserving and enhancing the area's natural features for park visitors. The bypass road's construction began in 1961 and was completed by 1962. In 1964, the State of Hawaii took over maintenance responsibility for the Mamalahoa Highway, though the NPS has authority to review and approve any plans or changes to this stretch of road. The 3-Metal Pipe Culvert was part of HDOT's Volcano Road – Glenwood Section (Federal-Aid Project No. F-011-2(5)) project and indicated as Sta. 479+50 in diagrams. This project rebuilt a 4-mile-long section of Volcano Road for \$1.8 million and was completed between 1967 and 1970 by J.M. Tanaka Construction, Inc.

This culvert was previously determined eligible in the 2013 SHBIE as a "unique lava rock culvert." As a result of additional research, the culvert has been determined to be not eligible.

The culvert was constructed after the Mamalahoa Highway bypass was completed in 1962 and after the State of Hawaii took over maintenance from the National Parks Service. It is not associated with earlier transportation improvements or with the transition from Hawaii's agricultural plantation economy to tourism. Therefore, the culvert is not significant under Criterion A.

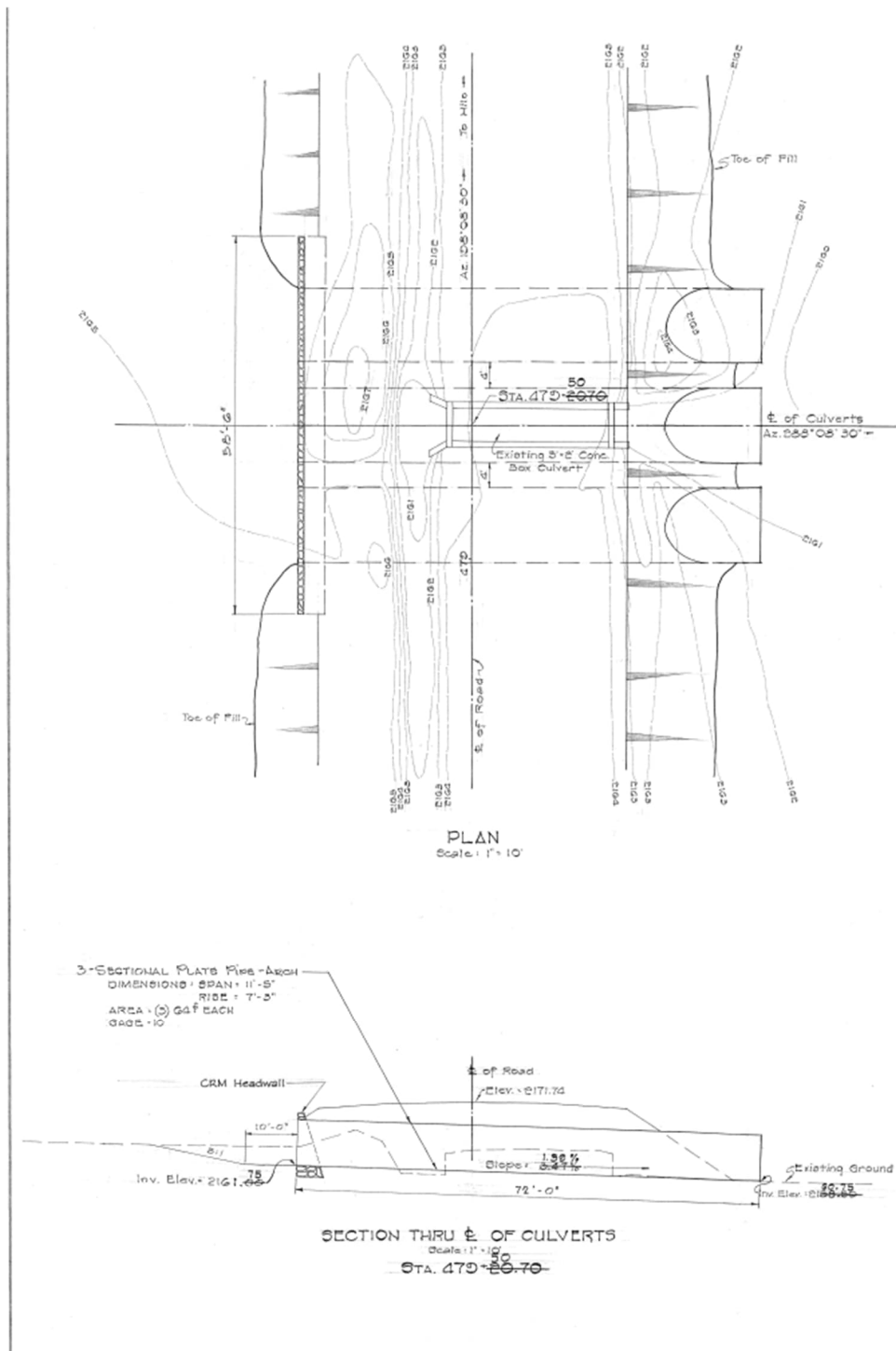
Research did not indicate an association with the lives of persons significant in our past and is therefore not significant under Criterion B.

The culvert makes use of local basalt rock (lava rock) on one headwall and prefabricated corrugated steel tubes. It is typical of its period in its use of materials, method of construction, craftsmanship, and design. The culvert is therefore not significant under Criterion C.

The culvert was not evaluated under Criterion D as part of this assessment.

Therefore, the 3-Metal Pipe Culvert is not eligible for the NRHP.

Historic Images and Drawings



(Source: State of Hawaii. Department of Transportation. *“As Built” Plans of Volcano Road – Glenwood Section: Federal Aid Primary Project F-011-2(5), District of Puna, Island of Hawaii*. July 27, 1967. Sheet 17. Accessed May 12, 2023. <http://162.221.244.142:8080/As-Built/res/Hawaii/Route%200011/0011-044/DRAINAGE%20DETAILS.pdf>).

Bridge Inventory Form

References

- Duensing, Dawn E. *Hawaii's Scenic Roads: Paving the Way for Tourism in the Islands*. Honolulu: University of Hawai'i Press, 2015. <http://www.jstor.org/stable/j.ctt13x1jdz>.
- Duensing, Dawn E. "Hawaii Volcano National Park Roads, Volcano Vicinity, Hawaii County, Hawaii, HAER No. HI-47." Historic American Engineering Record, National Park Service, U.S. Department of the Interior, Washington, DC, 1999.
- State of Hawaii. Department of Transportation. *"As Built" Plans of Volcano Road – Glenwood Section: Federal Aid Primary Project F-011-2(5), District of Puna, Island of Hawaii*. July 27, 1967. Accessed May 12, 2023. <http://162.221.244.142:8080/As-Built/res/Hawaii/Route%200011/0011-044/0011-044.htm>.
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
- State of Hawaii. Department of Transportation. *Year Ending June 30, 1971*. N.p., n.d. Retrieved from <https://catalog.hathitrust.org/Record/000548436>.
- U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of culvert, facing northeast.



Image 2. General view of culvert, facing southwest.

Bridge Inventory Form



Image 3. General view of culvert area, facing northeast.


Bridge Inventory Form



Image 4. View inside culvert cell.

Bridge Inventory Form

General Information

Bridge Number: 001000191108426	TMK: 329006021	
Common Name: Hakalau Plantation Road Overpass		
Historic Name: Hakalau Plantation Road Overpass		
Feature Crossed: Hawaii Belt Road/Route 19		
Feature Carried: Hakalau Plantation Road		
Island: Hawaii	Milepost: 15.289	
Latitude: 19.89818	Longitude: -155.1292	
Ownership: State		Image Date: 11/01/2023



Bridge Inventory Form

Construction Information

Bridge Type: Steel Stringer	Construction Date: 1953
Designer/Engineer: William R. Bartels	
Builder/Contractor:	
Alteration Date(s):	
Alterations:	

Design Information

Number of Spans: 1	Max Span: 79.1 ft.	Total Length: 83.0 ft.	Deck Width: 16.4 ft.
Superstructure: Steel Two-Girder			
Substructure: Reinforced Concrete Abutment			
Floor/Decking: Reinforced Concrete Deck with Asphalt Concrete (AC) Overlay			
Parapets/Railings: Concrete Open Horizontal			
Other Features:			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Bridge	Historic Function: Bridge	
Areas of Significance: Transportation, Engineering		
Period of Significance: 1953		
Narrative Description: The Hakalau Plantation Road Overpass carries the Hakalau Plantation Road over the Hawaii Belt Road. This single-span steel stringer bridge rests on reinforced concrete abutments. The reinforced concrete deck, supported by steel I-beam girders with a truss support structure, carries a one-lane roadway paved in asphalt concrete (AC) overlay. Flanking the roadway are concrete open horizontal railings.		

Bridge Inventory Form

Statement of Significance:

The Hakalau Plantation Road Overpass is part of the 1950 "Seismic Wave Damage Rehabilitation Project" that followed the 1946 tsunami. This tsunami caused irreparable damage to the Hilo Railroad Company which sold its bridges for scrap and its right-of-way was repurposed into the Hawaii Belt Road, itself constructed between 1932 and 1958. William R. Bartels, the Territorial Highway Department director, drew up plans for the belt road's bridges and repurposed components of rail bridges into the new belt road. The Hakalau Plantation Road Overpass used steel girders salvaged from the 80-foot span of the Maulua Gulch Railroad Bridge as lateral cross-bracing members. Since 2015, the bridge has not been in service.

Because the bridge is associated with major transportation improvements, as well as Hawaii's sugar plantation economy and reconstruction efforts following the 1946 tsunami, it is therefore significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past. National Register Bulletin 15, How to Apply the National Register Criteria for Evaluation, provides additional guidance for evaluating individuals under Criterion B. While the bridge is associated with William R. Bartels, master engineers are represented by their works and evaluated under Criterion C. Therefore, the bridge is not significant under Criterion B.

The bridge's steel construction is an example of a distinctive and rare structural type as the extreme marine environment of Hawaii precluded widespread use of steel. Its later adaptation into a highway bridge is illustrative of changing travel patterns of the mid-20th century. The bridge is also associated with master engineer William R. Bartels. For these reasons, the bridge is significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location. It retains integrity of design, materials, and workmanship. Its integrity of setting is intact as development surrounding the bridge is limited and its lush, semi-rural surroundings remains. The bridge retains integrity of feeling and association as a mid-twentieth century highway structure associated with the Hawaii Belt Road and the "Seismic Wave Damage Rehabilitation Project."

Therefore, the Hakalau Plantation Road Overpass is eligible for the NRHP.

Bridge Inventory Form

References

State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.

U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of bridge, facing southeast.



Image 2. View of deck and parapets.


Bridge Inventory Form



Image 3. Underside of bridge superstructure.

Bridge Inventory Form

General Information

Bridge Number: 001000190308410		TMK: 331001999	
Common Name: Hakalau Stream Bridge			
Historic Name: Hakalau Stream Bridge			
Feature Crossed: Hakalau Stream			
Feature Carried: Hawaii Belt Road/Route 19			
Island: Hawaii		Milepost: 15.299	
Latitude: 19.89928		Longitude: -155.1298	
Ownership: State			Image Date: 11/01/2023



Bridge Inventory Form

Construction Information

Bridge Type: Steel Trestle	Construction Date: 1953
Designer/Engineer: John Mason Young (1911)/William R. Bartels (1953)	
Builder/Contractor: W. W. Beers (1911) – Fabricator: Hamilton and Chambers, NY (1911)/Independent Iron Works, CA (1953)	
Alteration Date(s):	
Alterations: Thrie beams have been added to the bridge's end posts at an unknown date.	

Design Information

Number of Spans: 14	Max Span: 71.9	Total Length: 774.9	Deck Width: 38.4
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Steel Trestle			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Other Features: Concrete end piers with incised bridge name and date of construction (added 1953)			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Listed	SIHP No.: 50-10-16-09090	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Highway Bridge	Historic Function: Railroad Bridge	
Areas of Significance: Engineering, Transportation, Commerce		
Period of Significance: 1911, 1953		
Narrative Description: The Hakalau Stream Bridge carries the Hawaii Belt Road over the Hakalau Stream. At 171 feet in height, it is a six-span, steel trestle bridge featuring a reinforced concrete deck supported by steel girders/beams. Six steel truss piers support the bridge and feature reinforced concrete pile footings. The bridge substructure includes reinforced concrete abutments. Along the bridge are open horizontal concrete railings and end piers, which were added in 1953. Thrie beams have been attached to the bridge end posts.		

Bridge Inventory Form

Statement of Significance:

Originally constructed for Benjamin Dillingham's Hilo Railroad Company in 1911-1912 following plans drawn up by engineer John Mason Young, the Hakalau Stream Bridge figured among the longest and tallest structures on the line. When in service as a railroad bridge for the Hilo Railroad Company, the structure contributed to Hawaii's sugar plantation economy and emerging tourism industry along the Hamakua Coast. Following the 1946 tsunami that caused irreparable damage to the railroad, the company sold the railroad for scrap. The Territorial Highway Department, under the direction of William R. Bartels and in accordance with the "Seismic Wave Damage Rehabilitation Project," decided to relocate the Hawaii Belt Road along the railroad right-of-way in 1950. When converted to carry the Hawaii Belt Road, the widened Hakalau Stream Bridge used steel girders salvaged from other railroad structures (Kealakaha, Laupahoehoe, and Kaula trestles). This is evident in the bridge piers where the original steel truss piers are joined to outer truss piers to support the additional width of the highway bridge. The Hawaii Belt Road, constructed by the Territorial Highway Department between 1932 and 1958, replaced the circuitous Old Mamalahoa Highway. During the Fall of 2023 the bridge underwent a rehabilitation project. The scope of the project involved foundation replacement for scour, replacement or rehabilitation of columns and trusses, deck rehabilitation, and painting.

Because the bridge is associated with major transportation improvements in both rail and road infrastructure, as well as Hawaii's sugar plantation economy and the important "Seismic Wave Damage Rehabilitation Project," it is significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past. National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation*, provides additional guidance for evaluating individuals under Criterion B. While the bridge is associated with John Mason Young and William R. Bartels, master engineers are represented by their works and evaluated under Criterion C. Additionally, the individual bridge does not best represent Benjamin Dillingham's productive life when compared to the numerous other examples of Dillingham's prolific business ventures in Hawaii. Therefore, the bridge is not significant under Criterion B.

The bridge's steel construction is an example of a distinctive and rare structural type, as the extreme marine environment of Hawaii precluded widespread use of steel. Its later adaptation into a highway bridge is illustrative of changing travel patterns of the early and mid-20th century. The bridge is also associated with masters John Mason Young, who designed the original structure, and William R. Bartels, who worked with Young when adapting the bridge in 1953. This bridge is therefore significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location, situated over Hakalau Stream. Its integrity of setting is intact, as development surrounding the bridge is limited, and its lush, rural surroundings remain. It retains integrity of design, materials, and workmanship demonstrating its conversion from a rail to road bridge. The bridge retains integrity of feeling as a railroad trestle turned roadway bridge and integrity of association with mid-twentieth century roadway improvements in Hawaii, particularly the Hawaii Belt Road, and the "Seismic Wave Damage Rehabilitation Project."

Therefore, the Hakalau Stream Bridge is eligible for the NRHP.

The bridge is documented in the 2009 NRHP Multiple Property Documentation Form for the "Steel Trestle Bridges on the Hamakua Coast" and on an individual NRHP Registration Form. However, the bridge is not currently listed in the NRHP.

Bridge Inventory Form

References

Leineweber, Spencer. "Hakalau Stream Bridge, National Register of Historic Places Registration Form." U.S. National Park Service, U.S. Department of the Interior, n.d. (Hawai'i SHPD).

Leineweber, Spencer. "Steel Trestle Bridges on the Hamakua Coast, National Register of Historical Places, Multiple Property Documentation Form." U.S. National Park Service, U.S. Department of the Interior, 2009. (Hawai'i SHPD).

"Repair Plans for Hamakua Coast Bridges." State of Hawaii Department of Transportation. September 27, 2021. Accessed October 13, 2022, <https://hidot.hawaii.gov/highways/repair-plans-for-hamakua-coast-bridges/>.

State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.

U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National Register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of bridge, facing southwest.



Image 2. General view of bridge, facing northeast.

Bridge Inventory Form




Image 3. General view of bridge deck and railings, facing southeast.

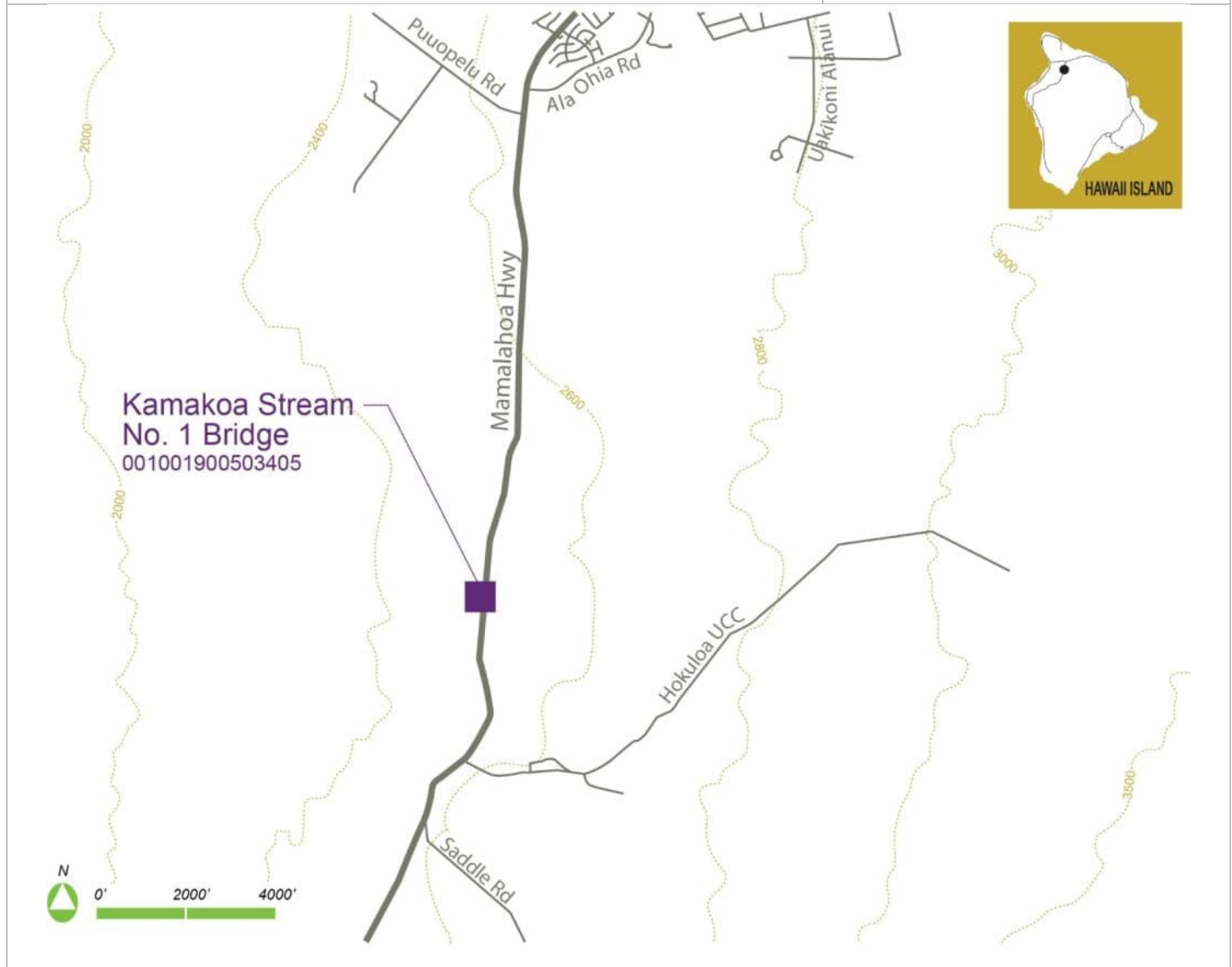


Image 4. View of piers and superstructure, facing west.

Bridge Inventory Form

General Information

Bridge Number: 001001900503405		TMK: 367001025	
Common Name: Kamakoa Bridge No. 1			
Historic Name: Kamakoa Bridge No. 1			
Feature Crossed: Kamakoa Stream No. 1			
Feature Carried: Mamalahoa Highway/Route 190			
Island: Hawaii		Milepost: 3.45	
Latitude: 19.95603		Longitude: -155.681	
Ownership: State			Image Date: 11/01/2023



Bridge Inventory Form

Construction Information

Bridge Type: Concrete Slab	Construction Date: 1930
Designer/Engineer:	
Builder/Contractor:	
Alteration Date(s): 2021	
Alterations: East parapet fracture has been stabilized with steel plating reinforcement and new overlay placed over the bridge deck and approach roadways. Thrie beams have been added to the bridge.	

Design Information

Number of Spans: 1	Max Span: 18.0 ft.	Total Length: 21.0 ft.	Deck Width: 26.6 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with Asphalt Concrete (AC) Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Other Features:			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Bridge	Historic Function: Bridge	
Areas of Significance: Transportation, Engineering		
Period of Significance: 1930		
Narrative Description: The Kamakoa Bridge No. 1 carries the Mamalahoa Highway over the Kamakoa Stream. This single-span concrete slab bridge rests on reinforced concrete abutments. The concrete deck carries a two-lane roadway paved in asphalt concrete (AC) overlay. Flanking the roadway are concrete solid panel with cap railings. The east parapet has suffered fracture damage that has been stabilized with steel plating reinforcement in 2021. Thrie beams have been attached to the end posts.		

Bridge Inventory Form

Statement of Significance:

The current Mamalahoa Highway originated in 1927 with Federal Aid Project money to construct the North Kona Belt Road between Kailua and South Kohala at Waimea. This belt road formed one of the belt and defense roads constructed by the Territorial Highway Department that was established following the passage of the 1924 Bill of Rights and the 1925 Federal Road Program. The bridge's design, a concrete slab with solid panel with cap railing, was a common type of bridge found in Hawaii prior to World War II.

Because the bridge is associated with major transportation improvements in Hawaii during the Territorial period, it is therefore significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past and is therefore not significant under Criterion B.

The bridge is a result of early developments in concrete bridge design and construction in Hawaii. It is a good example of a 1930s reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design. In particular, the use of solid concrete panels with cap parapets represent a typical rail pattern used by the Territorial Highway Department. This bridge is therefore significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location, situated over a waterway. It retains a diminished integrity of design, materials, and workmanship due to alterations to improve vehicular safety through the use of three beams and repairs undertaken in 2021 to stabilize the original parapet. Its integrity of setting is intact as development surrounding the bridge is limited and its lush, semi-rural surroundings remains. The bridge retains integrity of feeling and association as a pre-World War II bridge type and its association with Territorial roadway improvements during the 1930s.

Therefore, Kamakoa Bridge No. 1 is eligible for the NRHP.

Bridge Inventory Form

References

Duensing, Dawn E. *Hawaii's Scenic Roads: Paving the Way for Tourism in the Islands*. Honolulu: University of Hawai'i Press, 2015. <http://www.jstor.org/stable/j.ctt13x1jdz>.

Territory of Hawaii. Superintendent of Public Works. *Report to the Governor for the Year Ending June 30, 1929*. N.p.: The Printshop Company, Ltd., 1929. Retrieved from <https://catalog.hathitrust.org/Record/100157967>.

State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.

U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National Register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of bridge, facing west.



Image 2. General setting of bridge, facing south.

Bridge Inventory Form





Image 3. Detail of east parapet, facing northeast.



Image 4. Detail of west parapet, facing northwest.

Bridge Inventory Form

General Information

Bridge Number: 001000190308549		TMK: 328015999	
Common Name: Kolekole Stream Bridge			
Historic Name: Kolekole Stream Bridge			
Feature Crossed: Kolekole Stream			
Feature Carried: Hawaii Belt Road/Route 19			
Island: Hawaii		Milepost: 13.97	
Latitude: 19.88271		Longitude: -155.119	
Ownership: State			Image Date: 11/01/2023



Bridge Inventory Form

Construction Information

Bridge Type: Steel Truss	Construction Date: 1950
Designer/Engineer: John Mason Young (1911)/William R. Bartels (1950), Bureau of Public Roads	
Builder/Contractor: James W. Glover, Ltd.	
Alteration Date(s): 2001-2002, 2021, 2022	
Alterations: A seismic retrofit occurred in 2001-2002 that included fiber reinforced polymer (FRP) wrap on the columns, longitudinal restrainers, link beams, hinge restrainers, shear connectors, and seat extenders at hinges and abutments. In-kind repair work to bridge members occurred in 2021. Emergency repairs in 2022 with steel bolting and ACROW structure.	

Design Information

Number of Spans: 6	Max Span: 130.9 ft.	Total Length: 497.0 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Deck Truss			
Substructure: Reinforced Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with Asphalt Concrete (AC) Overlay			
Parapets/Railings: Concrete Open Horizontal			
Other Features: Pedestrian Walkways each side			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Listed	SIHP No.: 50-10-16-09090	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Highway Bridge		Historic Function: Railroad Bridge
Areas of Significance: Transportation, Commerce, Engineering		
Period of Significance: 1911, 1950		
Supplemental Documentation: HAER No. HI-164		
Narrative Description: The Kolekole Stream Bridge carries the Hawaii Belt Road over the Kolekole Stream. It is a steel truss bridge that carries a concrete deck over six spans. The road deck, featuring two traffic lanes flanked by pedestrian walkways with		

Bridge Inventory Form

concrete open horizontal parapets, rests on six concrete double column piers. Unique to the bridge are three distinct spanning structures, steel trusses for spans 3 and 4, steel girders for spans 2, 5, and 6, and a concrete slab for span 1. Parts of the bridge's construction materials came from repurposed materials of railroad bridges, including two steel truss spans from the Wailuku River Bridge.

Statement of Significance:

Originally constructed for Benjamin Dillingham's Hilo Railroad Company in 1911-1912 following plans drawn up by engineer John Mason Young, the Kolekole Stream contributed to Hawaii's sugar plantation economy and emerging tourism industry along the Hamakua Coast. Following the 1946 tsunami that caused irreparable damage to the railroad, including washing out the Kolekole Stream Bridge's center piers, the company sold the railroad for scrap. The Territorial Highway Department, under the direction of William R. Bartels and in accordance with the "Seismic Wave Damage Rehabilitation Project," decided to relocate the Hawaii Belt Road along the railroad right-of-way in 1950. During the bridge's reconstruction, materials from other railroad bridges, including two steel truss spans from the Wailuku River Bridge, were repurposed. Original components of the 1950 reconstruction included reinforced concrete double column piers. The Hawaii Belt Road, constructed by the Territorial Highway Department between 1932 and 1958, replaced the circuitous Old Mamalahoa Highway. In the early 2000s, the bridge underwent a seismic refit as part of a larger Hawaii State Department of Transportation Seismic Retrofit Program that included small scale modifications, as well as the addition of a cable system threaded through the bottom truss chords and girder plates and attached to rock piers at the bridge's extremities. In 2021 and 2022, the bridge underwent emergency repairs with steel bolting and an ACROW support system added in anticipation of permanent repairs scheduled to start in July 2027.

Because the bridge is associated with major transportation improvements in both rail and road infrastructure, as well as Hawaii's sugar plantation economy and the important "Seismic Wave Damage Rehabilitation Project," it is significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past. National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation*, provides additional guidance for evaluating individuals under Criterion B. While the bridge is associated with John Mason Young and William R. Bartels, master engineers are represented by their works and evaluated under Criterion C. Additionally, the individual bridge does not best represent Benjamin Dillingham's productive life when compared to the numerous other examples of Dillingham's prolific business ventures in Hawaii. Therefore, the bridge is not significant under Criterion B.

The bridge's steel construction is an example of a distinctive and rare structural type, as the extreme marine environment of Hawaii precluded widespread use of steel. Its later adaptation into a highway bridge is illustrative of changing travel patterns of the early and mid-20th century. The bridge's reconstruction, while repurposing materials and using typical mid-20th century materials such as concrete, is a unique assemblage of new and old. The bridge is also associated with masters John Mason Young, who designed the original structure, and William R. Bartels, who worked with Young when adapting the bridge in 1950. This bridge is therefore significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location, situated over a waterway. Its integrity of setting is intact, as development surrounding the bridge is limited, and its lush, rural surroundings remain. It retains integrity of design, materials, and workmanship from its 1950 conversion from a rail to a road bridge, and the bridge still retains its mid-20th century appearance following a seismic refit in 2001-2002. While components of the railroad bridge construction techniques are present, the structure has lost its association with the Hilo Railroad era; however, it retains its association with the Hawaii Belt Road. The bridge retains integrity of feeling and association as a 1950s bridge constructed using repurposed railroad bridge materials and for its association with the "Seismic Wave Damage Rehabilitation Project" along the Hamakua Coast.

Therefore, the Kolekole Stream Bridge is eligible for the NRHP.

Bridge Inventory Form

The bridge is documented in the 2009 NRHP Multiple Property Documentation Form for the “Steel Trestle Bridges on the Hamakua Coast” and on an individual NRHP Registration Form. However, the bridge is not currently listed in the NRHP.

Bridge Inventory Form

References

- Hakalau Our Home. "Bridges." Accessed September 29, 2022, <https://www.hakalauhome.com/bridges.html>.
- Hakalau Our Home. "New Highway Bridges Hakalau 1950-1953." Accessed September 29, 2022, <https://www.hakalauhome.com/new-highway-bridges-hakalau-1950-1953.html>.
- Hamda, Harold, David Fujiwara, and Chad Nakamoto. 1999. "Seismic Retrofit of Historical Kolekole Bridge." In *Structural Engineering in the 21st Century: Proceedings of the 1999 Structures Congress, April 18-21, 1999, New Orleans, Louisiana*, 268-271. Reston, Virginia: American Society of Civil Engineers.
- KSF Inc. "Kolekole Stream Bridge." Accessed September 29, 2022, <https://ksfinc.us/kolekole-stream-bridge/>.
- Leineweber, Spencer. "Kolekole Stream Bridge, National Register of Historic Places Registration Form." U.S. National Park Service, U.S. Department of the Interior, n.d. (Hawai'i SHPD).
- Leineweber, Spencer. "Steel Trestle Bridges on the Hamakua Coast, National Register of Historical Places, Multiple Property Documentation Form." U.S. National Park Service, U.S. Department of the Interior, 2009. (Hawai'i SHPD).
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
- U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of bridge, facing northeast. Temporary trusses visible while bridge undergoes repair work.



Image 2. General view of bridge, facing southwest.

Bridge Inventory Form



Image 3. View of bridge deck, railings, and piers, facing northwest. Temporary trusses visible while bridge undergoes repair work.


Bridge Inventory Form



Image 4. General view of approach and deck, facing northwest.

Bridge Inventory Form

General Information

Bridge Number: 001000190409696		TMK: 326001999, 326002888 (adjacent)	
Common Name: Wailuku River Bridge			
Historic Name: Wailuku River Bridge			
Feature Crossed: Wailuku River			
Feature Carried: Hawaii Belt Road/Route 19			
Island: Hawaii	Milepost: 2.49		Image Date: 11/01/2023
Latitude: 19.72826	Longitude: -155.0875		
Ownership: State			



Bridge Inventory Form

Construction Information

Bridge Type: Steel Stringer	Construction Date: 1950
Designer/Engineer: William R. Bartels	
Builder/Contractor: M. B. Sheik	
Alteration Date(s): 1973, 2015, 2020, 2021	
Alterations: Open steel deck replaced with decking of galvanized mesh with serrated bars (1973), Some repairs to beams and some support beams have been repaired (2015), Span 1 median was widened to push traffic wheel path over the girders (2020), Span 1 was rehabilitated. Work included patching the underdeck concrete, cleaning all steel members, and painting of all steel members (2021).	

Design Information

Number of Spans: 5	Max Span: 133.9 ft.	Total Length: 421.9 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Girder			
Substructure: Reinforced Concrete Abutment, Reinforced Concrete Pier Wall			
Floor/Decking: Reinforced Concrete Deck, Steel Deck Open Grid			
Parapets/Railings: Metal Horizontal			
Other Features: Bridge name and construction date incised on end piers, wooden walkways flank both sides of the deck.			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Bridge	Historic Function: Bridge	
Areas of Significance: Transportation, Engineering		
Period of Significance: 1950		
Narrative Description:		
The Wailuku River Bridge carries the Hawaii Belt Road over the Wailuku River on the northern edge of downtown Hilo. It is a five-span steel stringer bridge that rests on reinforced concrete piers and abutments. The deck consists of both reinforced concrete sections as well as a steel deck open grid. The steel deck open grid design is intended to withstand		

Bridge Inventory Form

tsunami impacts by having tsunami waves surge through the structure without lifting action. Flanking the two-lane roadway are wooden walkways and horizontal metal parapets. The bridge name and construction date are incised on the end piers.

Statement of Significance:

Originally constructed for the Hilo Railroad Company in 1911-1912, following plans drawn up by engineer John Mason Young, the structure contributed to Hawaii's sugar plantation economy and emerging tourism industry along the Hamakua Coast. Following the 1946 tsunami that caused irreparable damage to the railroad, including washing away the Wailuku River Bridge's steel truss span, the company sold the railroad for scrap. The Territorial Highway Department, under the direction of William R. Bartels and as part of the "Seismic Wave Damage Rehabilitation Project," decided to relocate the Hawaii Belt Road along the railroad right-of-way in 1950. Two truss spans from the original Wailuku River Bridge were used in the Kolekole Highway bridge while a new Wailuku River Bridge was built on the piers of the old railroad bridge. In 1973 the open steel decking was replaced by galvanized steel mesh with bars to prevent skidding.

Because the bridge is associated with major transportation improvements in Hawaii as well as the "Seismic Wave Damage Rehabilitation Project," it is significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past. National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation*, provides additional guidance for evaluating individuals under Criterion B. While the bridge is associated with William R. Bartels, master engineers are represented by their works and evaluated under Criterion C. Therefore, the bridge is not significant under Criterion B.

The bridge's steel construction is an example of a distinctive and rare structural type as the extreme marine environment of Hawaii precluded widespread use of steel. It is also a noteworthy example of postwar bridge construction that accounted for tsunami impacts and is associated with master engineer William R. Bartels, who was responsible for all major territorial bridge projects from 1932-56. For these reasons, the bridge is significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location, situated over a waterway. Its integrity of setting is intact as development surrounding the bridge is reflective of the urban environment outside of Hilo. Its integrity of design, materials, and workmanship have been slightly diminished through deck alterations made in 1973 that replaced the open steel deck with a galvanized steel mesh in order to improve vehicular safety. However, the original open deck design to prevent lifting action from tsunami waves by passing through the deck remains and repairs to steel over time appear to have been made largely in-kind. The structure retains its integrity of association with the Hawaii Belt Road and the "Seismic Wave Damage Rehabilitation Project" and its integrity of feeling as a mid-twentieth century steel bridge.

Therefore, the Wailuku River Bridge is eligible for the NRHP.

Bridge Inventory Form

References

- State of Hawaii. Department of Transportation. *Annual Report, 1972-1973*. Honolulu, Hawaii: n.p., 1973. Retrieved from <https://catalog.hathitrust.org/Record/000548436>.
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
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Bridge Inventory Form



Image 1. General view of bridge, facing north.



Image 2. Bridge deck and piers, facing northwest.

Bridge Inventory Form



Image 3. Bridge deck, facing northwest.

Bridge Inventory Form




Image 4. Underside of bridge deck.

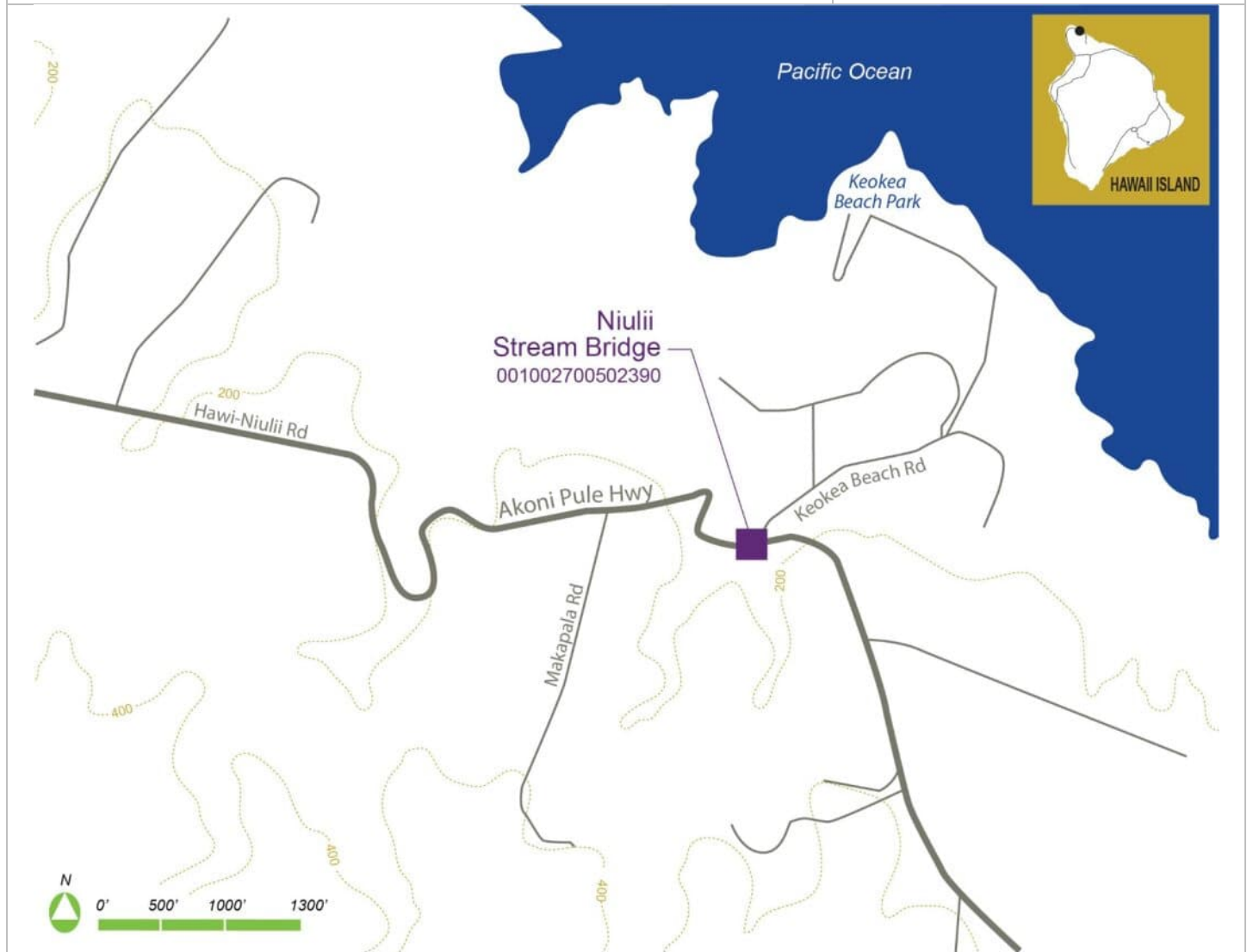


Image 5. Detail of bridge pier.

Bridge Inventory Form

General Information

Bridge Number: 001002700502390		TMK: 352008013 (adjacent)	
Common Name: Niulii Stream Bridge			
Historic Name: Niulii Stream Bridge			
Feature Crossed: Niulii Stream			
Feature Carried: Akoni Pule Highway/Route 270			
Island: Hawaii		Milepost: 23.899	
Latitude: 20.2203		Longitude: -155.7476	
Ownership: County			Image Date: 09/28/2023



Bridge Inventory Form

Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1918
Designer/Engineer:	
Builder/Contractor:	
Alteration Date(s):	
Alterations: Pedestrian walkway added to mauka side of bridge at unspecified date.	

Design Information

Number of Spans: 1	Max Span: 29.9 ft.	Total Length: 33.1 ft.	Deck Width: 25.3 ft.
Superstructure: Reinforced Concrete Tee Beam			
Substructure: Reinforced Concrete Abutment			
Floor/Decking: Concrete Deck with Asphalt Concrete (AC) Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Other Features: Construction date incised on makai end post			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Bridge	Historic Function: Bridge	
Areas of Significance: Transportation, Engineering		
Period of Significance: 1918		
Narrative Description: The Niulii Stream Bridge carries the Akoni Pule Highway over the Niulii Stream. This single-span concrete tee beam bridge rests on reinforced concrete abutments. The concrete deck carries a narrow roadway paved in asphalt concrete (AC) overlay. Flanking the roadway are concrete solid panel with cap railing with the bridge construction date incised on the makai end post. The parapets appear to have been painted white at one point. Along the mauka side of the bridge is a wooden pedestrian walkway with horizontal wood railings.		

Bridge Inventory Form

Statement of Significance:

Posthumously named after state representative Akoni Pule, Route 270 connects the North Kohala District with the Hawaii Belt Road and was formerly known as the Kawaihae-Mahukona Highway. The highway's location in the North Kohala District is associated with the area's sugar plantation economy and the Hawaiian Railroad Company. The bridge is an early example of a concrete tee beam bridge and its solid capped railing was a typical design used by the Territorial Highway Department.

Because the bridge is associated with major transportation improvements in Hawaii during the Territorial period, it is therefore significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past and is therefore not significant under Criterion B.

The bridge is a result of early developments in concrete bridge design and construction in Hawaii. It is a good example of a 1910s reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design. In particular, the use of concrete solid with caps parapets represents a typical rail pattern used by the Territorial Highway Department. This bridge is therefore significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location, situated over a waterway. It retains integrity of design, materials, and workmanship despite modest alterations to improve pedestrian safety through construction of a wood walkway. Its integrity of setting is intact as development surrounding the bridge is limited and its lush, semi-rural surroundings remains. The bridge retains integrity of feeling as a pre-World War II bridge type and its association with Territorial roadway improvements during the 1910s.

Therefore, Niulii Stream Bridge is eligible for the NRHP.

Bridge Inventory Form

References

- Duensing, Dawn E. *Hawaii's Scenic Roads: Paving the Way for Tourism in the Islands*. Honolulu: University of Hawai'i Press, 2015. <http://www.jstor.org/stable/j.ctt13x1jdz>.
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
- State of Hawaii. Legislature. House of Representatives. *Journal of the House of Representatives of the House of Representatives of the Seventh Legislature: Regular Session of 1973, Convened Wednesday, January 17, 1973, Adjourned Friday, April 13, 1973*.
- U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of bridge, facing north.



Image 2. West abutment and girder structure.

Bridge Inventory Form



Image 3. General view of bridge deck and setting, facing east.



Image 4. Concrete solid parapet, facing northeast.


Bridge Inventory Form

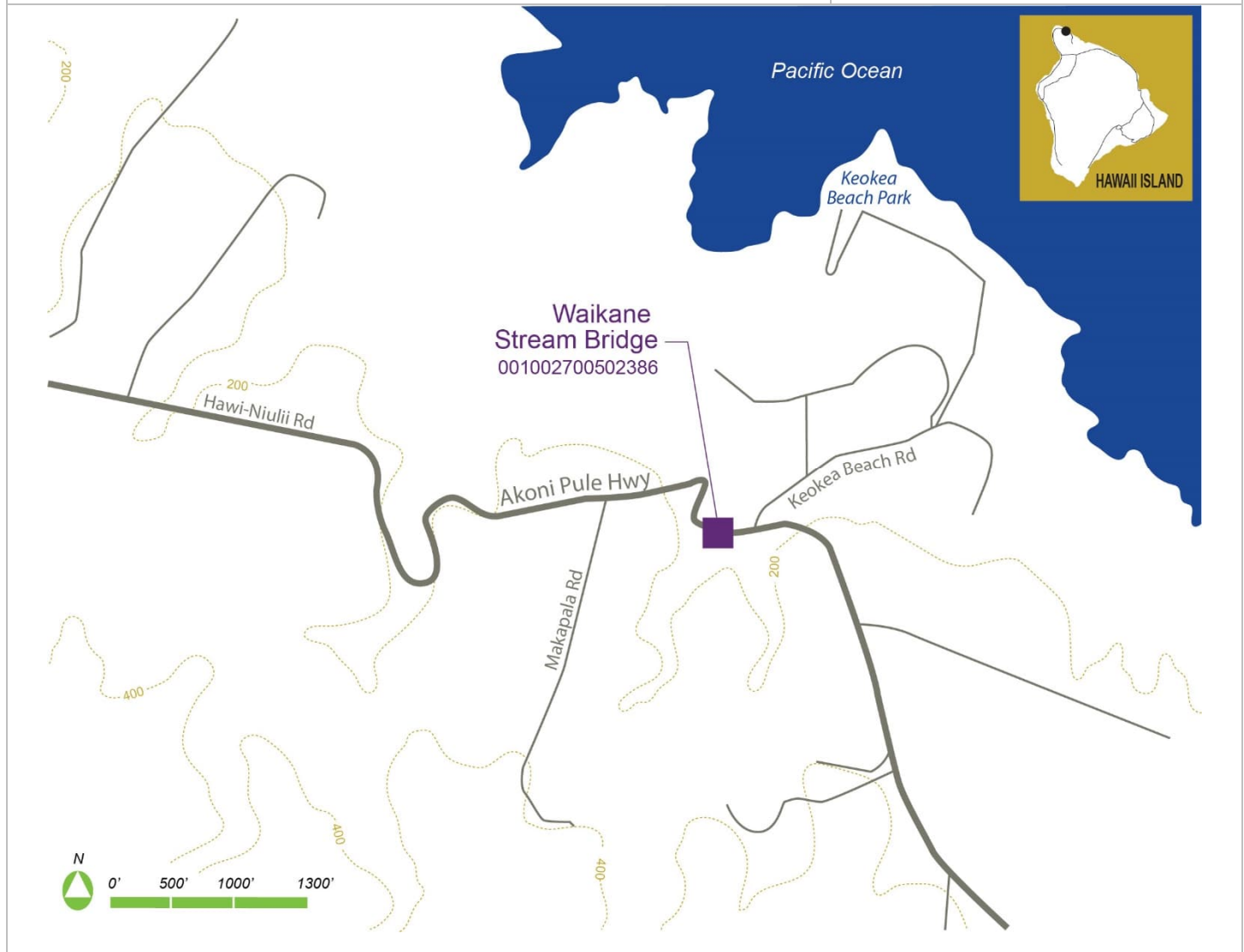


Image 5. Detail of parapet with construction date, facing east.

Bridge Inventory Form

General Information

Bridge Number: 001002700502386		TMK: 352008999, 352009027 (adjacent)	
Common Name: Waikane Stream Bridge			
Historic Name: Waikane Stream Bridge			
Feature Crossed: Waikane Stream			
Feature Carried: Akoni Pule Highway/Route 270			
Island: Hawaii	Milepost: 27.234		
Latitude: 20.22033	Longitude: -155.7483		
Ownership: County			Image Date: 09/28/2023



Bridge Inventory Form

Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1918
Designer/Engineer:	
Builder/Contractor:	
Alteration Date(s): 2014	
Alterations: Pedestrian walkway added to mauka side of bridge at unspecified date. In 2014, four vertical cracks running the total height of abutment at all four corners were repaired; the repairs did not affect the bridge's integrity.	

Design Information

Number of Spans: 1	Max Span: 20.0 ft.	Total Length: 22.0 ft.	Deck Width: 25.6 ft.
Superstructure: Reinforced concrete tee beam			
Substructure: Reinforced concrete abutment			
Floor/Decking: Concrete deck with AC overlay			
Parapets/Railings: Concrete solid panel with cap			
Other Features: Date of construction incised on parapet			

Historic Information

NRHP Status: Eligible	Criteria: A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/> D <input type="checkbox"/>	NRHP No.: N/A
HRHP Status: Not Listed	SIHP No.: N/A	
6E Status: Significant Historic Property	Criteria: a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input checked="" type="checkbox"/> d <input type="checkbox"/> e <input type="checkbox"/>	
Integrity: Location <input checked="" type="checkbox"/> Design <input checked="" type="checkbox"/> Setting <input checked="" type="checkbox"/> Materials <input checked="" type="checkbox"/> Workmanship <input checked="" type="checkbox"/> Feeling <input checked="" type="checkbox"/> Association <input checked="" type="checkbox"/>		
Historic District: N/A		Contributing: N/A
Current Function: Bridge	Historic Function: Bridge	
Areas of Significance: Transportation, Engineering		
Period of Significance: 1918		
Narrative Description: The Waikane Stream Bridge carries the Akoni Pule Highway over the Waikane Stream. It is a single-span concrete tee beam bridge that features solid concrete parapets with caps. The concrete deck carries a single lane and is supported by concrete abutments. The parapets appear to have been painted white at some point and the bridge's construction date has been incised on the makai parapet. The number 407 is incised on the opposite parapet. Along the bridge's mauka side is a wood pedestrian walkway with wooden horizontal railings.		

Bridge Inventory Form

Statement of Significance:

Posthumously named after state representative Akoni Pule, Route 270 connects the North Kohala District with the Hawaii Belt Road and was formerly known as the Kawaihae-Mahukona Highway. The highway's location in the North Kohala District is associated with the area's sugar plantation economy and the Hawaiian Railroad Company. The bridge is an early example of a concrete tee beam bridge, and its solid capped railing was a typical design used by the Territorial Highway Department.

Because the bridge is associated with major transportation improvements in Hawaii during the Territorial period, it is therefore significant under Criterion A.

Research did not indicate an association with the lives of persons significant in our past and is therefore not significant under Criterion B.

The bridge is a result of early developments in concrete bridge design and construction in Hawaii. It is a good example of a 1910s reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design. In particular, the use of a concrete solid panel with cap parapet design represents a typical rail pattern used by the Territorial Highway Department. This bridge is therefore significant under Criterion C.

The bridge was not evaluated under Criterion D as part of this assessment.

The bridge remains in its original location, situated over a waterway. It retains integrity of design, materials, and workmanship despite modest alterations to improve pedestrian safety through construction of a wood walkway. Its integrity of setting is intact as development surrounding the bridge is limited and its lush, semi-rural surroundings remains. The bridge retains integrity of feeling and association as a pre-World War II bridge type and its association with Territorial roadway improvements during the 1910s.

Therefore, Waikane Stream Bridge is eligible for the NRHP.

Bridge Inventory Form

References

- Duensing, Dawn E. *Hawai'i's Scenic Roads: Paving the Way for Tourism in the Islands*. Honolulu: University of Hawai'i Press, 2015. <http://www.jstor.org/stable/j.ctt13x1jdz>.
- State of Hawaii. Department of Transportation. Highways Division. *Hawaii State Historic Bridge Inventory and Evaluation*. MKE Associates, LLC and Fung Associates, Inc. November, 2013.
- State of Hawaii. Legislature. House of Representatives. *Journal of the House of Representatives of the House of Representatives of the Seventh Legislature: Regular Session of 1973, Convened Wednesday, January 17, 1973, Adjourned Friday, April 13, 1973*.
- U.S. Department of the Interior. National Park Service. Cultural Resources. *National Register Bulletin no. 15: How to Apply the National register Criteria for Evaluation*. Washington, DC: 1997.

Bridge Inventory Form



Image 1. General view of bridge, facing south.



Image 2. General view of setting facing east. Note wooden walkway and railings as well as Niulii Stream Bridge (001002700502390) in background.

Bridge Inventory Form



Image 3. Detail of west abutment and deck girders.



Image 4. Detail of concrete solid parapet and wooden walkway railing, facing north.

Hawaii 2013 State Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001002700500304	2-Cell Metal Pipe Culvert	Unnamed Stream (Twin Metal Culvert)	Akoni Pule Highway	1966	Metal Corrugated Culvert	Metal Thrie Beam	No	Eligible	<ul style="list-style-type: none"> • Unique masonry culvert in Hawaii • Good example of a masonry culvert, and is typical of its period in its use of materials, method of construction, craftsmanship, and design
001002700500915	2-Cell Metal Pipe Culvert	Unnamed Stream (Double Metal Culvert)	Akoni Pule Highway	1966	Metal Corrugated Culvert	Metal Thrie Beam	No	Eligible	<ul style="list-style-type: none"> • Unique lava rock culvert • Good example of a lava rock culvert that uses local material, and is typical of its period in its use of materials, method of construction, craftsmanship, and design
001002400500733	2-Cell Pipe Culvert-Ahualoa Stream	Ahualoa Stream	Honokaa-Waipio Road	1966	Metal Corrugated Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001002500500937	3-cell Concrete Box Culvert-Kawaihae Uka	Kawaihae Stream (Triple Box)	Kohala Mountain Road	1953	Concrete Box Culvert	Concrete Solid	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001002700500655	3-Cell Metal Pipe Culvert	Unnamed Stream (Triple Metal Culvert)	Akoni Pule Highway	1966	Metal Corrugated Culvert	No Parapet/Railing	No	Eligible	<ul style="list-style-type: none"> • Unique lava rock culvert • Good example of a lava rock culvert that uses local material, and is typical of its period in its use of materials, method of construction, craftsmanship, and design
001002400500487	3-Cell Pipe Culvert-Honokaia Stream	Honokaia Stream	Honokaa-Waipio Road	1966	Metal Corrugated Culvert	Metal Thrie Beam	No	Eligible	<ul style="list-style-type: none"> • Unique lava rock culvert • Good example of a culvert that uses local material, and is typical of its period in its use of materials, method of construction, craftsmanship, and design
001002400500691	3-Cell Pipe Culvert-Kainapohoa Stream	Kainapohoa Stream	Honokaa-Waipio Road	1966	Metal Corrugated Culvert	Metal Thrie Beam	No	Eligible	<ul style="list-style-type: none"> • Unique lava rock culvert • Good example of a culvert that uses local material, and is typical of its period in its use of materials, method of construction, craftsmanship, and design
001001900503111	3-Cell Pipe Culvert-Kamakoa Bridge No. 2	Kamakoa Stream No. 2	Mamalahoa Highway	1930	Metal Corrugated Culvert	Metal Thrie Beam	No	Eligible	<ul style="list-style-type: none"> • Distinctive lava rock head walls and wing walls • Good example of a culvert that uses vernacular material
001000110307485	3-Concrete Box Culvert	Panaewa Stream	Hawaii Belt Road (Mamalahoa Highway)	1945	Concrete Box Culvert	Concrete Solid	No	Not Eligible	This culvert does not have distinctive engineering or architectural features that depart from standard culvert design.
001000110307506	3-Concrete Box Culvert	Panaewa Stream	Hawaii Belt Road (Mamalahoa Highway)	1945	Concrete Box Culvert	Concrete Solid	No	Not Eligible	This culvert does not have distinctive engineering or architectural features that depart from standard culvert design.
001000110307307	4-Concrete Box Culvert (Piikea)	Piikea Stream	Hawaii Belt Road (Mamalahoa Highway)	1938	Concrete Box Culvert	Concrete Open Horizontal	No	Not Eligible	This culvert does not have distinctive engineering or architectural features that depart from standard culvert design.
001002700502318	Aamakoa Stream Bridge	Aamakoa Gulch	Akoni Pule Highway	1918	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete bridge construction in Hawaii • Although the structure was seismically retrofitted in 2009, original parapets remain intact
001000190307917	Ahole Stream Bridge	Ahole Stream	Hawaii Belt Road	1934	Concrete Rigid Frame	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Example of Federal Aid bridges constructed by the Territory in the 1930s • Significant element of the Territorial Belt Road Plan and contributed to the economic development of the region • Good example of federally-funded tee-beam bridge constructed in the 1930s • 20th century example of advanced bridge engineering and construction • Representative of the work of a master: William R. Bartels • One of the first major concrete tee-beam highway bridges constructed during the upgrading of the Hawaii Belt Road in the 1930s, with an emphasis on aesthetics
001000110311539	Cane Haul Road Underpass	Canehaul Road Underpass	Hawaii Belt Road (Volcano Road)	1956	Concrete Slab	Concrete Solid	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190008461	Chin Chuck Pedestrian Overpass	Hawaii Belt Road (Chin Chuck Pedestrian Overpass)	Pedestrian	1961	Concrete Tee Beam	Metal Chain Link	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190309124	Hanawi Stream Bridge	Hanawi Stream	Hawaii Belt Road	1968	Concrete Girder	Concrete and Metal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • See Hawaii Belt Road historic context Chapter 2.5 • Longest concrete bridge built postwar (1945) on the island of Hawaii in the historic study period prior to 1977
001000110306490	Hilea Stream Bridge	Hilea Stream	Hawaii Belt Road (Mamalahoa Highway)	2021	Prestressed Concrete Stringer	Steel Bridge Rail, Reinforced Concrete Bridge Rail	No	Not Eligible	Replaced 1940 Bridge (001000110306489)
001000190009643	Hilo Plantation Flume Overpass	Hilo Plantation Flume (Highway Underpass)	Waterway	1949	Concrete Girder	Concrete Solid	No	Eligible	<ul style="list-style-type: none"> • Associated with the sugar plantation industry • Earliest concrete flume bridge built postwar (1945) on the island of Hawaii in the historic study period prior to 1977
001000191109626	Hilo Plantation Road Overpass	Hawaii Belt Road (Hilo Plantation Road Overpass)	Plantation Road	1949	Concrete Tee Beam	Concrete Open Horizontal	No	Eligible	<ul style="list-style-type: none"> • Associated with the sugar plantation industry • Bridge maintained by State although not in use and ownership is unknown
001000110306996	Hionomoa Stream Bridge	Hionomoa Stream	Hawaii Belt Road (Mamalahoa Highway)	1938	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible***	<ul style="list-style-type: none"> • Example of Federal Aid bridges constructed by the Territory in the 1930s • Significant element of the Territorial Belt Road Plan • Associated with sugar plantation industry and economic development • Significant for innovative engineering developments and aesthetic merit • One of the first reinforced-concrete rigid-frame bridges constructed in the islands • One of only five of this type built prior to World War II • One of the most sophisticated of the pre-World War II bridges from an engineering perspective • Representative of the work of a master: William R. Bartels

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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Hawaii 2013 State Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001002700500114	Honokoa Stream Bridge	Honokoa Stream	Akoni Pule Highway	1965	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190309493	Honolii Stream Bridge	Honolii Stream	Hawaii Belt Road	1936	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible***	<ul style="list-style-type: none"> • Example of Federal Aid bridges constructed by the Territory in the 1930s • Significant element of the Territorial Belt Road Plan and contributed to the economic development of the region • Excellent example of federally-funded tee-beam bridge construction in the 1930s • 20th century example of advanced bridge engineering and construction • Significant for complex technological engineering developments exhibited in its design • One of the last major concrete tee-beam highway bridges constructed along the Hawaii Belt Road prior to World War II • Representative of the work of a master: James O. Yapp
001000110306199	Honuapo Bridge	Railroad (Honuapo)	Hawaii Belt Road (Mamalahoa Highway)	1940	Concrete Slab	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Associated with developments in concrete bridge construction in Hawaii • Good example of a 1940s concrete bridge
001000190306695	Kaala Stream Bridge	Kaala Stream	Hawaii Belt Road	1935	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1930s reinforced concrete bridge
001000190307644	Kaaluu Stream Bridge	Kaalau Stream	Hawaii Belt Road	1933	Concrete Tee Beam	Concrete Open Horizontal	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1930s reinforced concrete bridge
001000190305755	Kahaupu Stream Culvert	Kahaupu Stream	Hawaii Belt Road	1953	Concrete Box Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001002400500949	Kahaupu Stream Culvert	Kahaupu Stream	Honokaa-Waipio Road	1953	Concrete Box Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190305863	Kahawaiilili Stream Bridge	Kahawaiilili Stream	Hawaii Belt Road	1959	Concrete Girder	Concrete and Metal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001000190306865	Kaholo Stream Bridge	Kaholo Stream	Hawaii Belt Road	1935	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1930s reinforced concrete bridge
001000190309220	Kaieie Stream Bridge	Kaieie Stream	Hawaii Belt Road	1967	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190307555	Kaiwilahilahi Stream Bridge	Kaiwilahilahi Stream	Hawaii Belt Road	1956	Concrete Tee Beam	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190309172	Kalaoa Stream Bridge	Kalaoa Stream	Hawaii Belt Road	1967	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001430001100009	Kalopa Aliipali Gulch Bridge	Aliipali Gulch	Kalopa Pohakea Road	2003	Concrete Tee Beam	Concrete and Metal Picket	No	Not Eligible	The bridge has lost integrity due to the complete replacement of the original 1939 bridge in 2003.
001430001100008	Kalopa Kaumoali Gulch Bridge	Kaumoali Gulch	Kalopa Pohakea Road	2003	Concrete Tee Beam	Concrete and Metal Picket	No	Not Eligible	The bridge has lost integrity due to the complete replacement of the original 1930 bridge in 2003.
001000190306021	Kalopa Stream Bridge	Kalopa Stream	Hawaii Belt Road	1959	Concrete Girder	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • Longest concrete span built postwar (1945) on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001250001100004	Kaluiiki Bridge	Kaluiiki Stream	Akolea Road	1940	Timber Stringer	Metal Thrie Beam	No	Not Eligible	This bridge has lost integrity due to replacement of the railings with thrie beams in 2005. The deck was also replaced in-kind.
001000190302911	Kamakoa Gulch	Kamakoa Gulch	Queen Kaahumanu Highway	1974	Steel Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000110306913	Kanenelu Stream Bridge	Kanenelu Stream	Hawaii Belt Road (Mamalahoa Highway)	1938	Concrete Slab	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Associated with developments in concrete bridge construction in Hawaii • Good example of a 1930s reinforced concrete bridge
001000190307673	Kapehu Stream Bridge	Kapehu Stream	Hawaii Belt Road	1933	Concrete Tee Beam	Concrete Open Horizontal	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1930s reinforced concrete bridge
001000190309317	Kapue Stream Bridge	Kapue Stream	Hawaii Belt Road	1950	Steel Trestle	Concrete Open Horizontal	Yes	Eligible***	<ul style="list-style-type: none"> • One of six registered steel trestle bridges on the Hamakua coast • Uncommon use of steel material in Hawaii's extreme marine environment • Engineering significance of the trestle structure of the early twentieth century • Associated with the sugar plantation industry • Associated with the Hilo Railroad Company • Associated with three founders of the Hilo railroad company • Associated with postwar Hawaii Belt Road District • See Hawaii Belt Road historic context Chapter 2.5
001000190306944	Kaula Stream Bridge	Kaula Stream	Hawaii Belt Road	1959	Concrete Girder	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001000190306165	Kaumoalii Stream Bridge	Kaumoalii Stream	Hawaii Belt Road	1959	Concrete Tee Beam	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000270300326	Kawaihae Stream Bridge	Kawaihae Stream	Kawaihae Road	1960	Concrete Slab	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
0010024005000410	Kawaikalia Stream Bridge	Kawaikalia Stream	Honokaa-Waipio Road	1967	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

Greyed-out cells have no form.

Hawaii 2013 State Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001240001100002	Kawailani Street Bridge	Waiakea Stream	Kawailani Street	2005	Concrete Slab	Concrete and Metal	No	Not Eligible	The bridge has lost integrity due to the complete replacement of the original 1930 bridge in 2005.
001000190306458	Kawaili Stream Bridge	Kawaili Stream	Hawaii Belt Road	2011	Concrete Slab	Concrete and Metal	No	Not Eligible	This bridge has lost integrity due to the complete replacement of the original 1938 bridge in 2011.
001000190309043	Kawainui Stream Bridge	Kawainui Stream	Hawaii Belt Road	1948	Steel Stringer	Concrete Open Greek Cross	No	Eligible***	<ul style="list-style-type: none"> • Uncommon use of steel material in Hawaii's extreme marine environment • Contributes to postwar Hawaii Belt Road • See Hawaii Belt Road historic context Chapter 2.5 • Earliest steel bridge built postwar (1945) on the island of Hawaii in the historic study period prior to 1977 • One of six bridges listed under 2000 MOA
001000190306756	Kealakaha Stream Bridge	Kealakaha Stream	Hawaii Belt Road	1935	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Example of Federal Aid bridges constructed by the Territory in the 1930s • Significant element of the Territorial Belt Road Plan and contributed to the economic development of the region • Excellent example of federally-funded tee-beam bridge constructed in the 1930s • 20th century example of advanced bridge engineering and construction • Significant for complex technological engineering developments exhibited in its design • One of the last major concrete tee-beam highway bridges constructed along the Hawaii Belt Road prior to World War II • Representative of the work of a master: William R. Bartels
001001900502561	Keamuku Stream Bridge	Keamuku Stream	Mamalahoa Highway	1940	Concrete Slab	Concrete Solid	No	Not Eligible	This bridge has lost integrity due to alterations and resemblance to box culverts. It does not have distinctive engineering or architectural features that depart from standard culvert design.
001002500500844	Keawewai Stream (Honokoa Bridge)	Keawewai Stream (Honokoa)	Kohala Mountain Road	1961	Concrete Slab	Concrete Solid Decorative	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190306656	Kekualele Stream Bridge	Kekualele Stream	Hawaii Belt Road	1935	Concrete Rigid Frame	Concrete and Metal	No	Not Eligible	This bridge has lost integrity due to alterations. In 2004, the bridge railings were completely replaced. It does not have distinctive engineering or architectural features that depart from standard bridge design.
001000190307519	Kihalani Stream Bridge	Kihalani Stream	Hawaii Belt Road	1956	Concrete Girder	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001000190307387	Kilau Stream Bridge	Kilau Stream	Hawaii Belt Road	1953	Concrete Tee Beam	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001019401400180	Komohana Street Bridge	Waiakea Stream	Komohana Street	1966	Concrete Slab	Concrete and Metal	No	Not Eligible	The bridge has lost integrity resulting from the extension of both sides of the bridge in 2005.
001000190306590	Kukaiau Stream Bridge	Kukaiau Stream	Hawaii Belt Road	1951	Steel Stringer	Concrete and Metal	No	Eligible***	<ul style="list-style-type: none"> • Uncommon use of steel material in Hawaii's extreme marine environment • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001000190306876	Kupapaulua Stream Bridge	Kupapaulua Stream	Hawaii Belt Road	1935	Open Spandrel Arch	Concrete and Metal	No	Not Eligible	This bridge has lost integrity due to significant alterations. In 2004, the bridge was rehabilitated and widened. The existing arch structure was built-up with concrete to increase load capacity and the bridge railings were replaced with solid concrete rails with aesthetic indentations.
001000190307474	Kuwaikahi Stream Bridge	Kuwaikahi Stream	Hawaii Belt Road	1957	Steel Stringer	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Uncommon use of steel material in Hawaii's extreme marine environment • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001000270300281	Makahuna Stream Bridge	Makahuna Stream	Kawaihae Road	1960	Concrete Slab	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000270300275	Makeahua Stream Bridge	Makeahua Stream	Kawaihae Road	1934	Concrete Tee Beam	Concrete and Metal Decorative	No	Not Eligible	The bridge has lost integrity due to modifications. The three beams are placed in front of the original parapets and metal railings were added on top of it.
001000190307981	Manoloa Stream Bridge	Manoloa Stream	Hawaii Belt Road	1951	Concrete Tee Beam	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190307457	Manowaiopae Stream Bridge	Manowaiopae Stream	Hawaii Belt Road	1957	Concrete Girder	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190307799	Maulua Stream Bridge	Maulua Stream	Hawaii Belt Road	1953	Steel Stringer	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190307585	Moanalulu Stream Bridge	Moanalulu Stream	Hawaii Belt Road	1956	Concrete Tee Beam	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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Hawaii 2013 State Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001000110306986	Moaula Stream Bridge	Moaula Stream	Hawaii Belt Road (Mamalahoa Highway)	1938	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible***	<ul style="list-style-type: none"> • Example of Federal Aid bridges constructed by the Territory in the 1930s • Significant element of the Territorial Belt Road Plan • Associated with sugar plantation industry and economic development • Significant for innovative engineering developments and aesthetic merit • One of the first reinforced-concrete rigid-frame bridges constructed in the islands • One of only five of this type built prior to World War II • One of the most sophisticated of the pre-World War II bridges from an engineering perspective • Representative of the work of a master: William R. Bartels
001000190306612	Mohuna Stream Bridge	Mohuna Stream	Hawaii Belt Road	1951	Concrete Tee Beam	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001950001100003	Naalehu Box Culvert	Flood Control Channel	Hawaii Belt Road (Mamalahoa Highway)	1966	Concrete Box Culvert	Metal Horizontal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190308146	Nanue Stream Bridge	Nanue Stream	Hawaii Belt Road	1952	Steel Trestle	Concrete Open Horizontal	Yes	Eligible***	<ul style="list-style-type: none"> • One of six registered steel trestle bridges on the Hamakua coast • Uncommon use of steel material in Hawaii's extreme marine environment • Engineering significance of the trestle structure of the early twentieth century • Associated with the sugar plantation industry • Associated with the Hilo Railroad Company • Associated with three founders of the Hilo railroad company • See National Register of Historic Places Nomination Form in appendices • Associated with postwar Hawaii Belt Road District • See Hawaii Belt Road historic context Chapter 2.5
001000190305585	Nienie Stream Bridge	Nienie Stram	Hawaii Belt Road	1963	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001002400500771	Nienie Stream Bridge	Nienie Stream	Honokaa-Waipio Road	1967	Concrete Tee Beam	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000110306601	Ninole Stream Bridge	Ninole Stream	Hawaii Belt Road (Mamalahoa Highway)	2021	Prestressed Concrete Stringer	Steel Bridge Rail, Reinforced Concrete Bridge Rail	No	Not Eligible	Replaced 1940 Ninole Stream Bridge (001000110306600)
001000190308012	Ninole Stream Bridge	Ninole Stream	Hawaii Belt Road	1951	Steel Stringer	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001270001100010	Onomea Camp Road Bridge	Railroad Crossing	Onomea Camp Road	2002	Concrete Box Culvert	Masonry Rock	No	Not Eligible**	This culvert has lost integrity due to the complete replacement of the original 1930 culvert in 2002. The rock abutments are a potentially eligible historic resource.
001000191106953	Ookala Plantation Road Overpass	Hawaii Belt Road (Ookala Plantation Road Overpass)	Plantation Road	1959	Steel Stringer	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190308189	Opea Stream Bridge	Opea Stream	Hawaii Belt Road	1952	Steel Stringer	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001180001100004	Oshiro Road Bridge	Relief	Oshiro Road	2003	Concrete Tee Beam	Concrete and Metal Picket	No	Not Eligible	The bridge has lost integrity due to the complete replacement of the original 1940 bridge in 2003.
001000190006359	Paaulo Pedestrian Overpass	Hawaii Belt Road (Paaulo Pedestrian Overpass)	Pedestrian	1962	Concrete Tee Beam	Metal Chain Link	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001002200500040	Paheehee Mauka Bridge	Paheehee Gulch (Akaka Falls)	Akaka Falls Road	1927	Concrete Slab	Metal Thrie Beam	No	Not Eligible**	This bridge has lost integrity due to alterations and seismic retrofitting. Thrie beams were placed in front of the original parapets and metal pipe railings were added on top of the original. This bridge has a 10 inch water line on the inlet side. Seismic retrofit was completed in 2003. The bridge abutments are a potentially eligible historic resource.
001000190308619	Paheehee Stream Bridge	Paheehee Stream	Hawaii Belt Road	1950	Steel Trestle	Concrete Open Horizontal	Yes	Eligible***	<ul style="list-style-type: none"> • One of six registered steel trestle bridges on the Hamakua coast • Uncommon use of steel material in Hawaii's extreme marine environment • Engineering significance of the trestle structure of the early twentieth century • Associated with the sugar plantation industry • Associated with the Hilo Railroad Company • Associated with three founders of the Hilo railroad company • See National Register of Historic Places Nomination Form in appendices • Associated with postwar Hawaii Belt Road District • See Hawaii Belt Road historic context Chapter 2.5
001000190309368	Pahoehe Stream Bridge	Pahoehe Stream	Hawaii Belt Road	1912	Closed Spandrel Arch	Metal Thrie Beam	No	Eligible	<ul style="list-style-type: none"> • Arch bridges are an uncommon bridge type • Good example of 1910s closed spandrel arch typical of its period in its use of materials, method of construction, craftsmanship, and design
001000110411925	Panaewa Stream Bridge	Panaewa Stream	Hawaii Belt Road (Kanoehua Avenue)	1950	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190007529	Papaaloa Pedestrian Overpass	Hawaii Belt Road (Papaaloa Pedestrian Overpass)	Pedestrian	1964	Concrete Tee Beam	Metal Chain Link	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000191108812	Pepeekeo Plantation Road	Hawaii Belt Road (Pepeekeo Plantation Road Overpass)	Plantation Road	1950	Concrete Tee Beam	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.

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** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

Greyed-out cells have no form.

Hawaii 2013 State Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001000190307887	Pohakupuka Stream Bridge	Pohakupuka Stream	Hawaii Belt Road	1953	Concrete Rigid Frame	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001000190409666	Pukihae Stream Bridge	Pukihae Stream	Hawaii Belt Road	1949	Concrete Tee Beam	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001001300502441	Puna Sugar Truck Underpass	Puna Plantation Truck Underpass (Highway Overpass)	Keaau-Pahoa Road	1968	Concrete Slab	Metal Thrie Beam	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000110306805	Punaluu Stream Bridge	Punaluu Stream	Hawaii Belt Road (Mamalahoa Highway)	1940	Concrete Tee Beam	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Associated with developments in concrete bridge construction in Hawaii • Good example of a 1940s reinforced concrete bridge
001230001100003	Reeds Island Bridge	Wailuku River	Kaiulani Street	2013	Timber Stringer	Wood	No	Not Eligible	This bridge has lost integrity due to the complete replacement of the original 1940 bridge in 2013. It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaia, Opea, Kalopa, Inoio, Waikaalulu, and Kaahakini.
001000190308346	Umauma Stream Bridge	Umauma Stream	Hawaii Belt Road	1952	Steel Stringer	Concrete Open Horizontal	Yes	Eligible***	<ul style="list-style-type: none"> • One of six registered steel trestle bridges on the Hamakua coast • Uncommon use of steel material in Hawaii's extreme marine environment • Engineering significance of the trestle structure of the early twentieth century • Associated with the sugar plantation industry • Associated with the Hilo Railroad Company • Associated with three founders of the Hilo railroad company • See National Register of Historic Places Nomination Form in appendices • Associated with postwar Hawaii Belt Road District • See Hawaii Belt Road historic context Chapter 2.5
001000190302754	Unnamed Gulch Auwaiakeakua	Unnamed Gulch Auwaiakeakua	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190300831	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190301371	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190301550	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190301572	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190301682	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190302111	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190302173	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190302653	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190302795	Unnamed Gully	Unnamed Gully	Queen Kaahumanu Highway	1974	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001002700501199	Unnamed Stream	Unnamed Stream	Kawaihae-Mahukona Road	1972	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001000190308983	Waiaama Stream Bridge	Waiaama Stream	Hawaii Belt Road	1968	Concrete Girder	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001001800700484	Waiaha Bridge	Intermittent Stream	Mamalahoa Highway	1920	Concrete Slab	Metal Horizontal	No	Not Eligible	This bridge has lost integrity due to railing replacement in 2008. The original qualities have not been retained and there is insufficient distinction to mitigate the loss of integrity to its railing. In 2006 the bridge was damaged in an earthquake and the wing walls were replaced in 2007. More research is needed in the future.
001002500500053	Waiaka Stream Bridge	Waiaka Stream	Kohala Mountain Road	1932	Concrete Slab	Concrete Solid Panel with Cap	No	Eligible	• Good example of a 1930s reinforced concrete bridge
001000190308092	Waikaumalo Stream Bridge	Waikaumalo Stream	Hawaii Belt Road	1952	Steel Stringer	Concrete Open Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190308038	Waikolu Stream Bridge	Waikolu Stream	Hawaii Belt Road	1934	Concrete Rigid Frame	Concrete Open Greek Cross	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete and steel bridge construction in Hawaii • Uncommon use of steel material in Hawaii's extreme marine environment • Good example of a 1930s reinforced concrete and steel bridge
001000190409828	Wailoa River Bridge	Wailoa Stream	Kamehameha Avenue	1993	Concrete Girder	Metal Horizontal	No	Not Eligible	This bridge has lost integrity due to the complete replacement of the original 1938 bridge in 1993.
001001300502182	Waipahoehoe Stream Bridge	Waipahoehoe Stream	Keaau-Pahoa Road	1968	Concrete Slab	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001000190306280	Waipunahina Stream Bridge	Waipunahina Stream	Hawaii Belt Road	1959	Concrete Girder	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> • Contributes to postwar Hawaii Belt Road • One of the best examples of a program comment bridge built postwar (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1977 • See Hawaii Belt Road historic context Chapter 2.5
001480001100002	Waiulili Stream Bridge	Waiulili Stream	Old Honokaa-Waipio Road	1979	Concrete Slab	Metal Thrie Beam	No	Not Eligible	The bridge has lost integrity due to the complete replacement of the original 1920 bridge in 1979.

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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Hawaii 2013 State Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001002700502266	Walaohia Stream Bridge	Walaohia Gulch	Akoni Pule Highway	1919	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> • Associated with early developments in concrete bridge construction in Hawaii • Good example of a 1910s reinforced concrete bridge

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

Greyed-out cells have no form.

Inventory Form

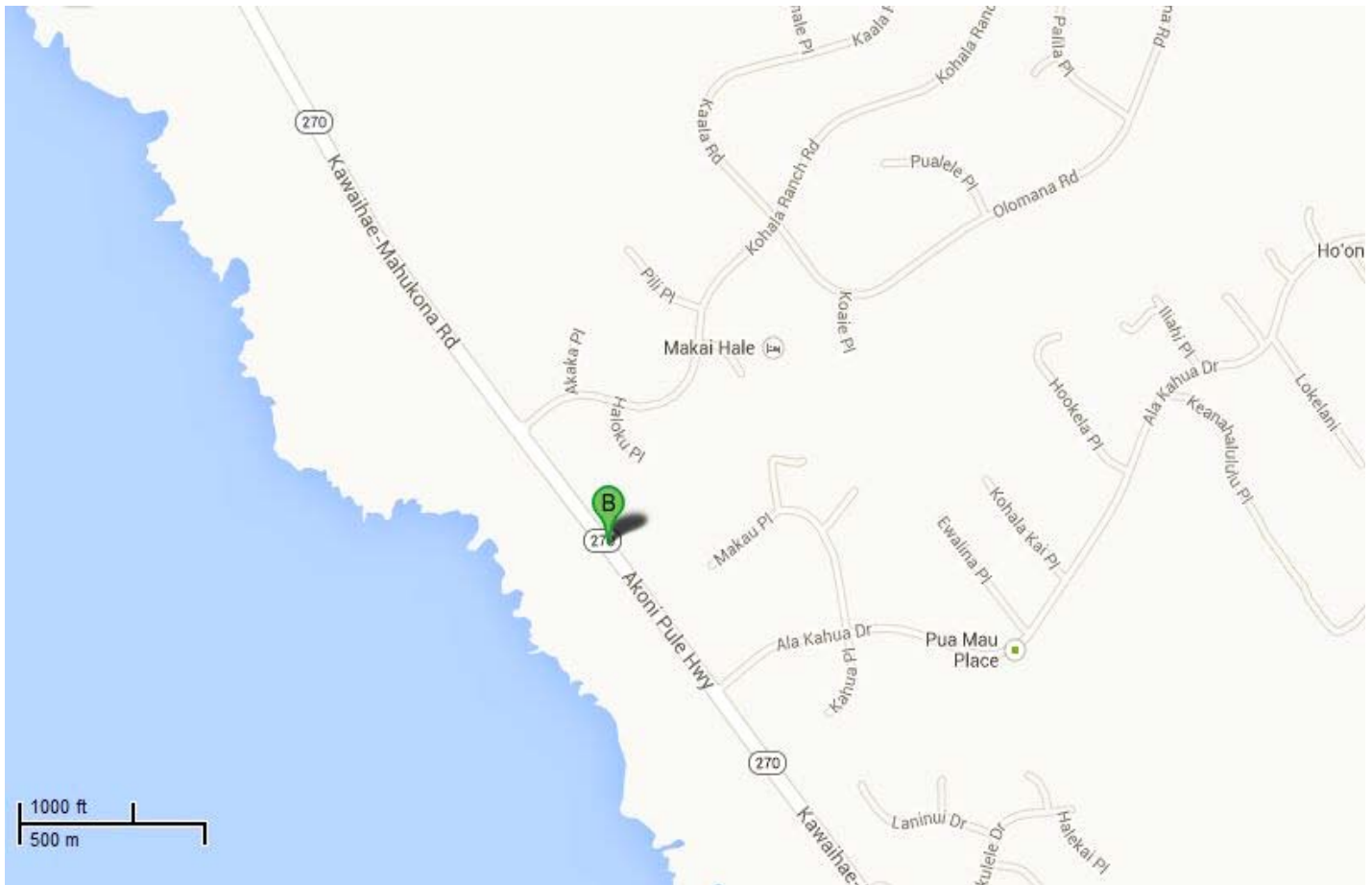
(State)

General Information

Bridge Number: 001002700500304	Route No: 270
Popular Name: 2-cell Metal Pipe Culvert	
Feature Crossed: Unnamed Stream (Twin Metal Culvert)	
Feature Carried: Akoni Pule Highway	
Milepost: 6.45 mi.	Island: Hawaii
Longitude: 155d-51m-21.89s	Latitude: 20d-04m-26.28s
Location: 2.09 Miles North of Maluokalani Street	
Historic Name: 2-cell Metal Pipe Culvert	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1966	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 9.8 ft.	Total Length: 23.0 ft.	Deck Width: 102.7 ft.
Superstructure:			
Substructure: Metal Corrugated Culvert			
Floor/Decking: AC Pavement			
Parapets/Railings: Metal Thrie Beam			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Culvert	Historic Function: Culvert	
Area of Significance: Engineering		
Narrative Description: <p>The Double pipe culvert carries Kawaihae-Mahukona across the stream. This masonry culvert is in its original location, is generally in good condition, and its materials remain intact. The culvert has two metal pipes though the culvert. The workmanship of the bridge has not been obscured by addition or repair. The simple design of the culvert retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for unique masonry culvert in Hawaii. It is a good example of a masonry culvert, is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

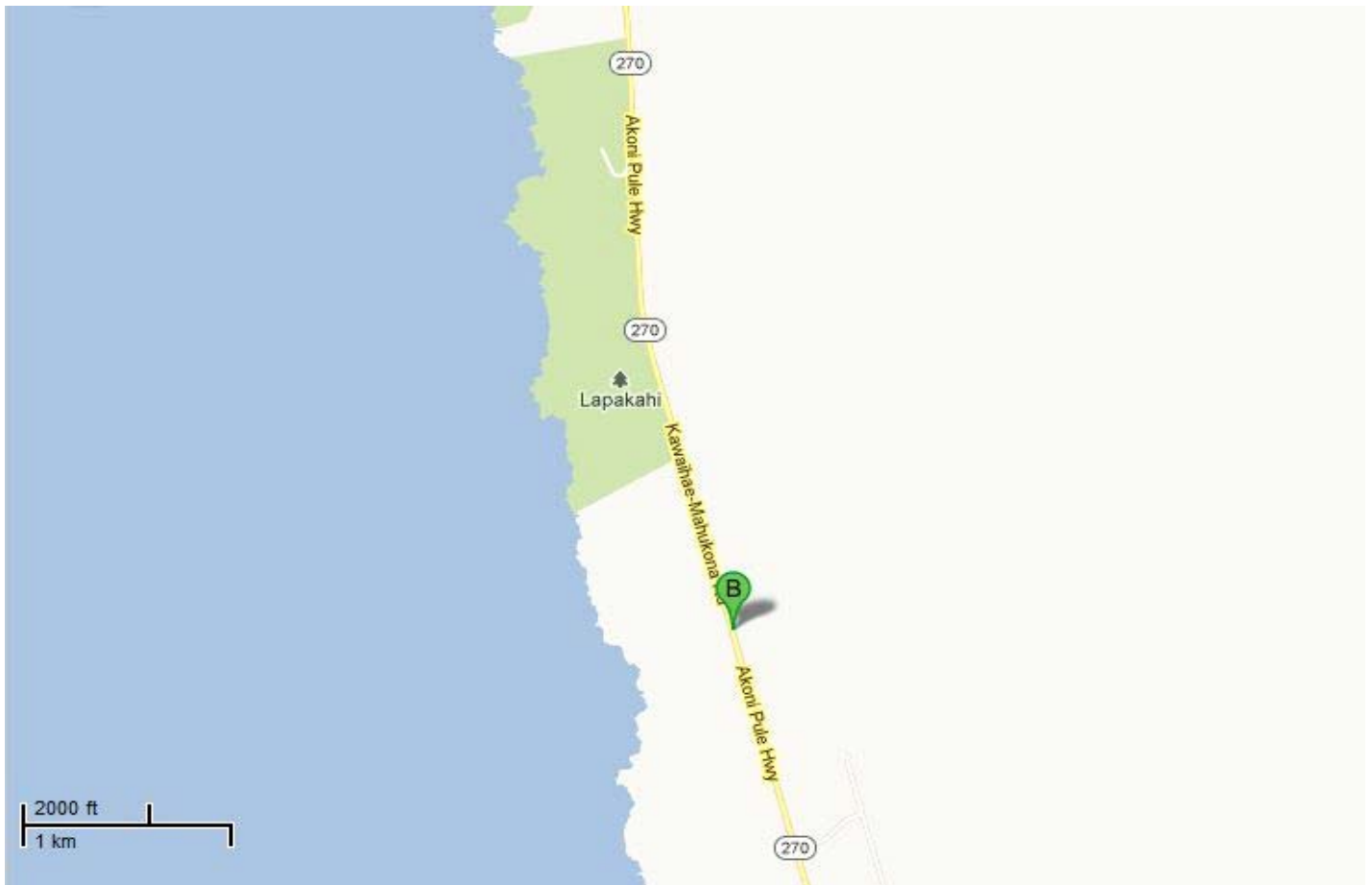
(State)

General Information

Bridge Number: 001002700500915	Route No: 270
Popular Name: 2-cell Metal Pipe Culvert	
Feature Crossed: Unnamed Stream (Double Metal Culvert)	
Feature Carried: Akoni Pule Highway	
Milepost: 12.55 mi.	Island: Hawaii
Longitude: 155d-53m-30.15s	Latitude: 20d-09m-18.61s
Location: 8.17 Miles North of Maluokalani Street	
Historic Name: 2-cell Metal Pipe Culvert	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1966	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 13.1 ft.	Total Length: 28.9 ft.	Deck Width: 64.0 ft.
Superstructure:			
Substructure: Metal Corrugated Culvert			
Floor/Decking: AC Pavement			
Parapets/Railings: Metal Thrie Beam			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Culvert	Historic Function: Culvert	
Area of Significance: Engineering		
Narrative Description: <p>The twin corrugated metal pipe culvert carries Kawaihae Mahukona Road across the stream. This steel and masonry culvert is in its original location, is generally in good condition, and its materials remain intact. The culvert has two metal pipes though the culvert. The workmanship of the bridge has not been obscured by addition or repair. The simple design of the culvert retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for unique lava rock culvert in Hawaii. It is a good example of a culvert that uses local material, is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

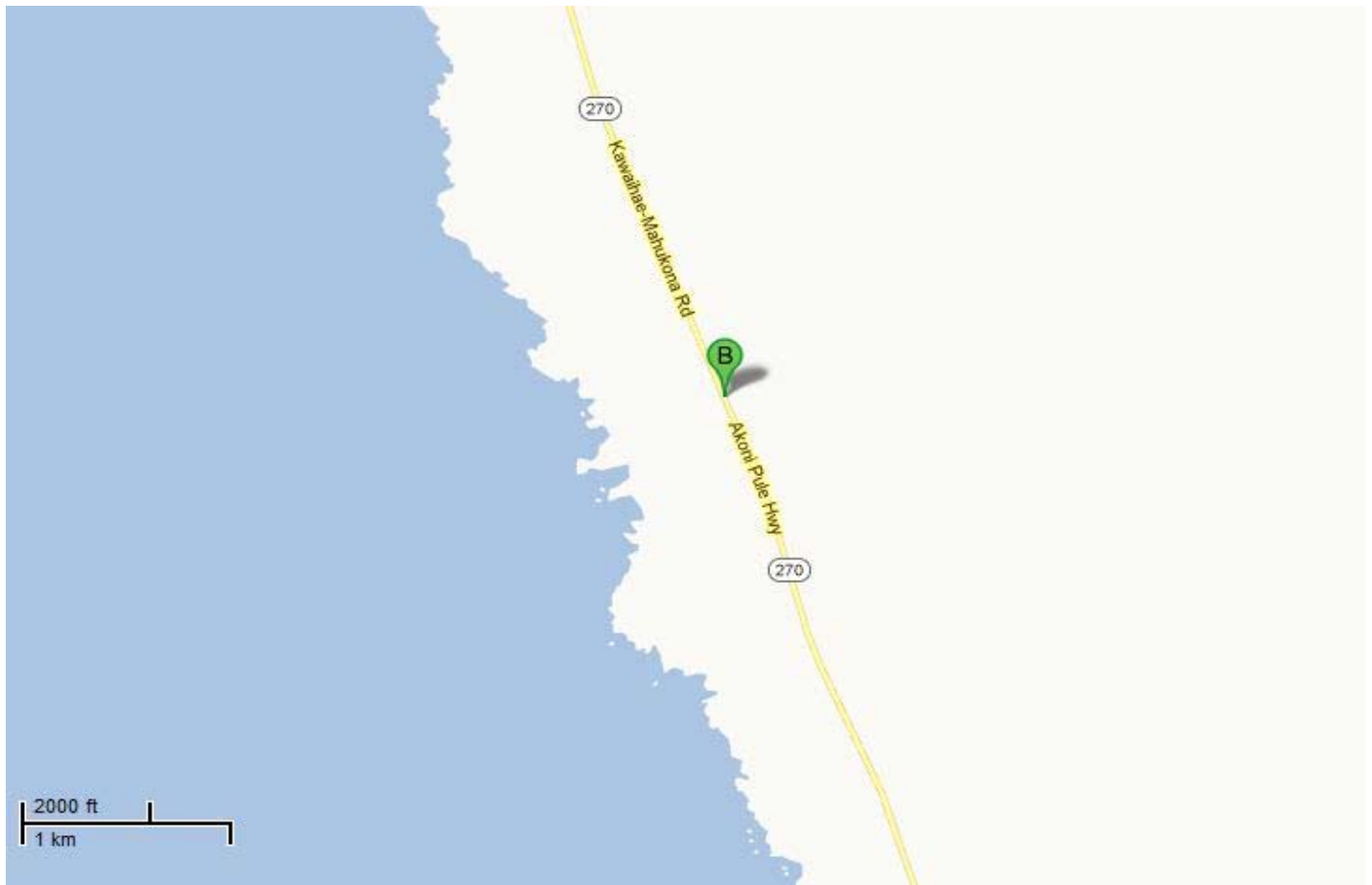
(State)

General Information

Bridge Number: 001002700500655	Route No: 270
Popular Name: 3-cell Metal Pipe Culvert	
Feature Crossed: Unnamed Stream (Triple Metal Culvert)	
Feature Carried: Akoni Pule Highway	
Milepost: 9.94 mi.	Island: Hawaii
Longitude: 155d-52m-47.12s	Latitude: 20d-07m-08.93s
Location: 5.60 Miles North of Maluokalani Street	
Historic Name: 3-cell Metal Pipe Culvert	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1966	Replaced? No
Altered? Yes Alteration Date(s): 2000		
Alteration Type(s):		
Alteration Description(s): Culvert was cleaned and painted. Riprap apron was constructed.		

Bridge Information

Number of Spans: 3	Max Span: 8.9 ft.	Total Length: 34.1 ft.	Deck Width: 56.4 ft.
Superstructure:			
Substructure: Metal Corrugated Culvert			
Floor/Decking: AC Pavement			
Parapets/Railings: No Parapet/Railing			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Culvert	Historic Function: Culvert	
Area of Significance: Engineering		
Narrative Description: <p>The triple pipe arch culvert carries Kawaihae Mahukona Road across the stream. This steel and masonry culvert is in its original location, is generally in good condition, and its materials remain intact. The culvert has three metal pipes and a lava rock head wall and wing walls. Repair work has been done by a bridge crew in 2000. The simple design of the culvert retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for unique lava rock culvert in Hawaii. It is a good example of a culvert that uses local material, is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

(State)

General Information

Bridge Number: 001002400500487	Route No: 240
Popular Name: 3-Cell Pipe Culvert-Honokaia Stream	
Feature Crossed: Honokaia Stream	
Feature Carried: Honokaa-Waipio Road	
Milepost: 4.81 mi.	Island: Hawaii
Longitude: 155d-30m-54.74s	Latitude: 20d-05m-48.18s
Location: 4.87 Miles East of Waipio Valley Lookout	
Historic Name: 3-Cell Pipe Culvert-Honokaia Stream	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1966	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 15.1 ft.	Total Length: 50.9 ft.	Deck Width: 39.4 ft.
Superstructure:			
Substructure: Metal Corrugated Culvert			
Floor/Decking: AC Pavement			
Parapets/Railings: Metal Thrie Beam			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Culvert	Historic Function: Culvert	
Area of Significance: Engineering		
Narrative Description: <p>The three cell corrugated metal pipe culvert carries Hawaii Belt Road across the Honokaia stream. This masonry culvert is in its original location, in generally in good condition, and its materials remain intact. The culvert has three metal pipes and features lava rock head walls. The workmanship of the bridge has not been obscured by addition or repair. The simple design of the culvert retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for unique lava rock culvert in Hawaii. It is a good example of a culvert that uses local material, is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

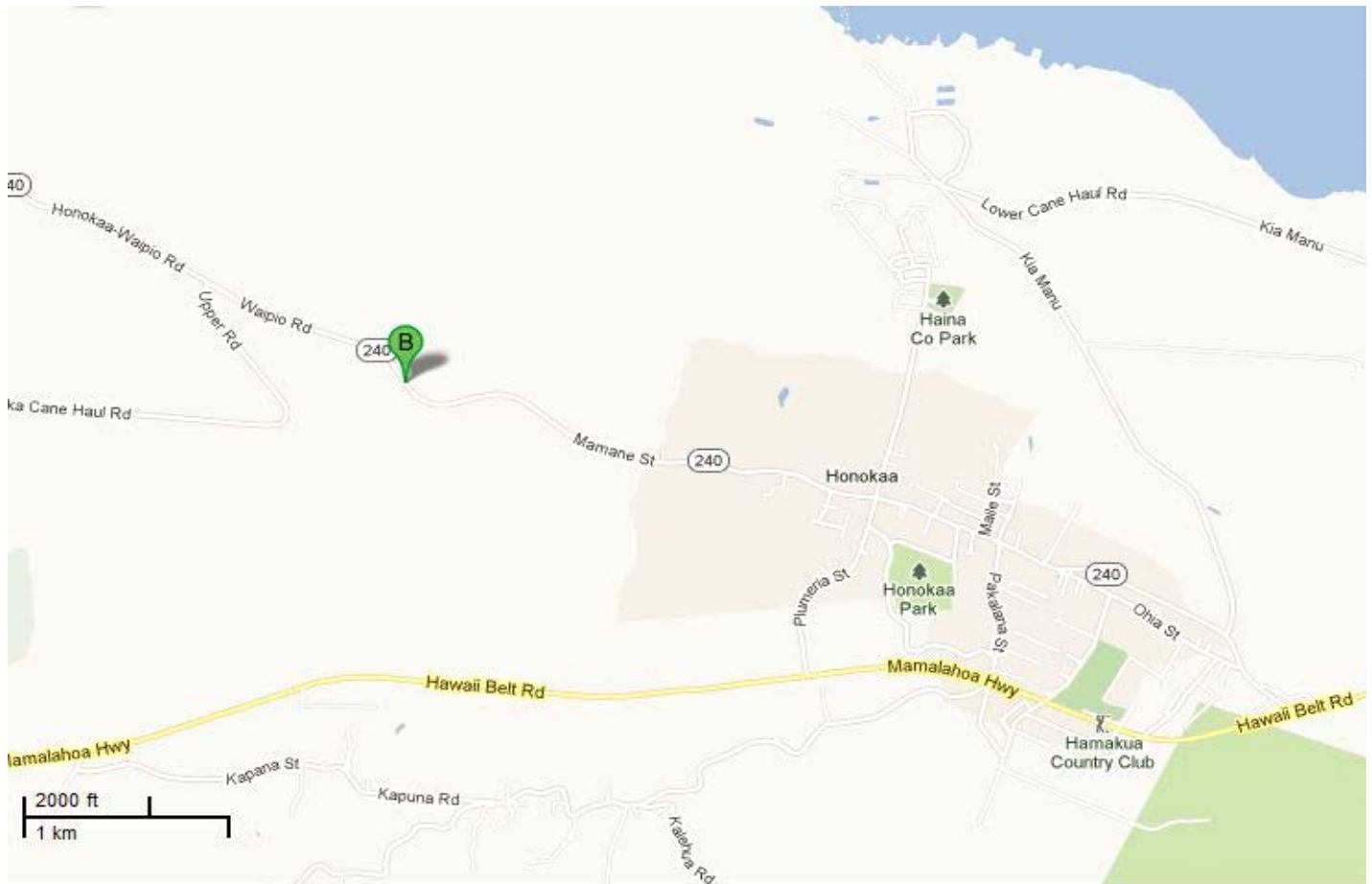
(State)

General Information

Bridge Number: 001002400500691	Route No: 240
Popular Name: 3-Cell Pipe Culvert-Kainapahoa Stream	
Feature Crossed: Kainapahoa Stream	
Feature Carried: Honokaa-Waipio Road	
Milepost: 2.99 mi.	Island: Hawaii
Longitude: 155d-29m-28.15s	Latitude: 20d-05m-03.89s
Location: 1.14 Miles West of Kahili Street	
Historic Name: 3-Cell Pipe Culvert-Kainapahoa Stream	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1966	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 14.1 ft.	Total Length: 50.9 ft.	Deck Width: 39.4 ft.
Superstructure:			
Substructure: Metal Corrugated Culvert			
Floor/Decking: AC Pavement			
Parapets/Railings: Metal Thrie Beam			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Culvert	Historic Function: Culvert	
Area of Significance: Engineering		
Narrative Description: <p>The Kainapahoa Stream triple cell, corrugated metal pipe culvert carries Hawaii Belt Road across the Kainapahoa Stream. This steel and masonry culvert is in its original location, is generally in good condition, and its materials remain intact. The culvert has three metal pipes which had been lined with concrete. The culvert contains an angled rock masonry head wall design depicting adaptation within the locale. The workmanship of the bridge has not been obscured by addition or repair. The simple design of the culvert retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for unique lava rock culvert in Hawaii. It is a good example of a culvert that uses local material, is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

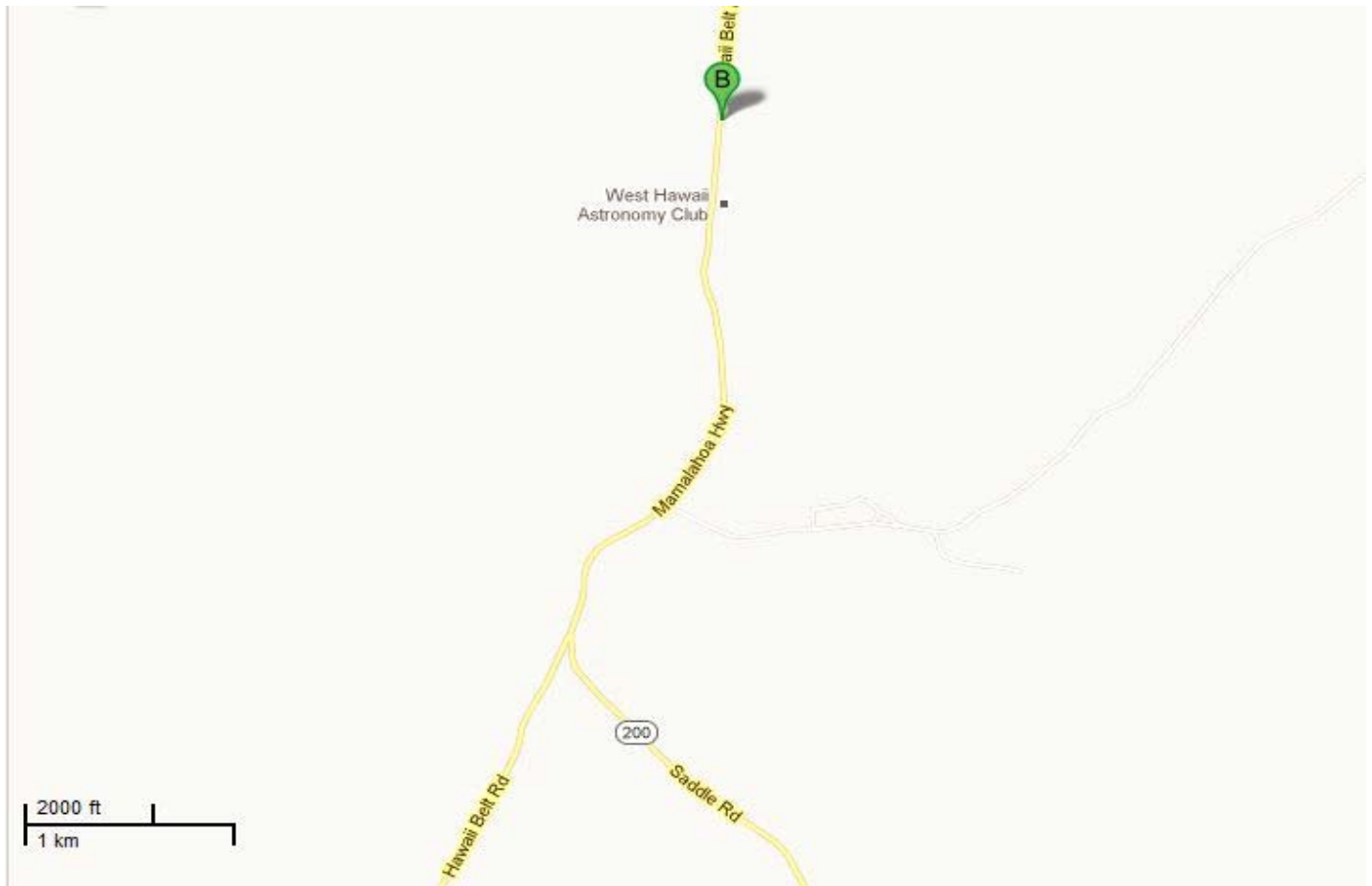
(State)

General Information

Bridge Number: 001001900503111	Route No: 190
Popular Name: 3-Cell Pipe Culvert-Kamakoa Bridge No. 2	
Feature Crossed: Kamakoa Stream No. 2	
Feature Carried: Mamalahoa Highway	
Milepost: 7.58 mi.	Island: Hawaii
Longitude: 155d-41m-48.07s	Latitude: 19d-55m-06.50s
Location: 1.35 Miles South of Saddle Road (Route 200)	
Historic Name: 3-Cell Pipe Culvert-Kamakoa Bridge No. 2	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Metal Corrugated Culvert	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 11.2 ft.	Total Length: 36.1 ft.	Deck Width: 65.0 ft.
Superstructure:			
Substructure: Metal Corrugated Culvert			
Floor/Decking: AC Pavement			
Parapets/Railings: Metal Thrie Beam			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Culvert	Historic Function: Culvert	
Area of Significance: Engineering		
Narrative Description: <p>The Kamakoa #2 three cell corrugated metal pipe culvert carries Hawaii Belt Road across the Kamakoa Stream. This steel and masonry culvert is in its original location, is generally in good condition, and its materials remain intact. The culvert has three metal pipes and lava rock head walls and wing walls. The workmanship of the bridge has not been obscured by addition or repair. The simple design of the culvert retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for distinctive lava rock head walls and wing walls. It is a good example of a culvert that uses local material, is typical of its period in its use of materials, method of construction, craftsmanship, and design.

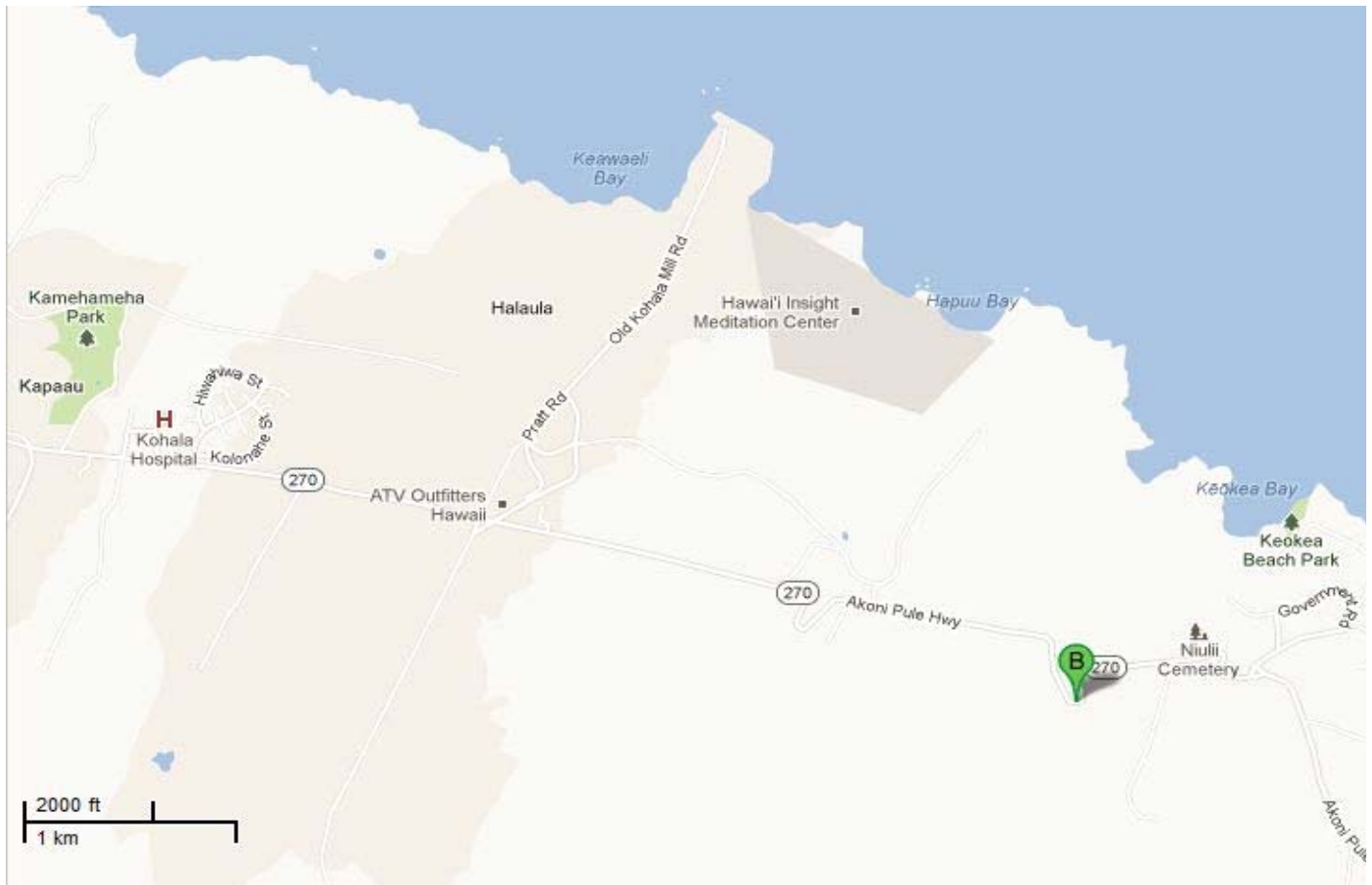
Inventory Form

(State)

General Information

Bridge Number: 001002700502318	Route No: 270	
Popular Name: Aamakoa Stream Bridge		
Feature Crossed: Aamakoa Gulch		
Feature Carried: Akoni Pule Highway		
Milepost: 26.58 mi.	Island: Hawaii	
Longitude: 155d-45m-19.34s	Latitude: 20d-13m-08.95s	
Location: 0.76 Miles East of Akana Place		
Historic Name: Aamakoa Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1918	Replaced? No
Altered? Yes	Alteration Date(s): 2009	
Alteration Type(s): Seismic Retrofit		
Alteration Description(s): Bridge abutments and pier seismic retrofitted.		

Bridge Information

Number of Spans: 2	Max Span: 39.0 ft.	Total Length: 80.1 ft.	Deck Width: 20.3 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Aamakoa Gulch Bridge carries Hawi Niulii Road across the Asmakoa Gulch. This concrete bridge is in its original location and is generally in good condition. The bridge has concrete solid panel parapets with flat caps. One of the end parapets has the bridge name engraved. The masonry wall approach is attached to the curved solid parapet end. The concrete deck is supported by concrete piers and abutments which look to be new. The simple design of the parapet retains its historic feeling. The bridge was seismically retrofitted in 2009.</p>		

Significance Statement:

The bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. Although the structure looks to be replaced, the original parapets remain intact.

Inventory Form

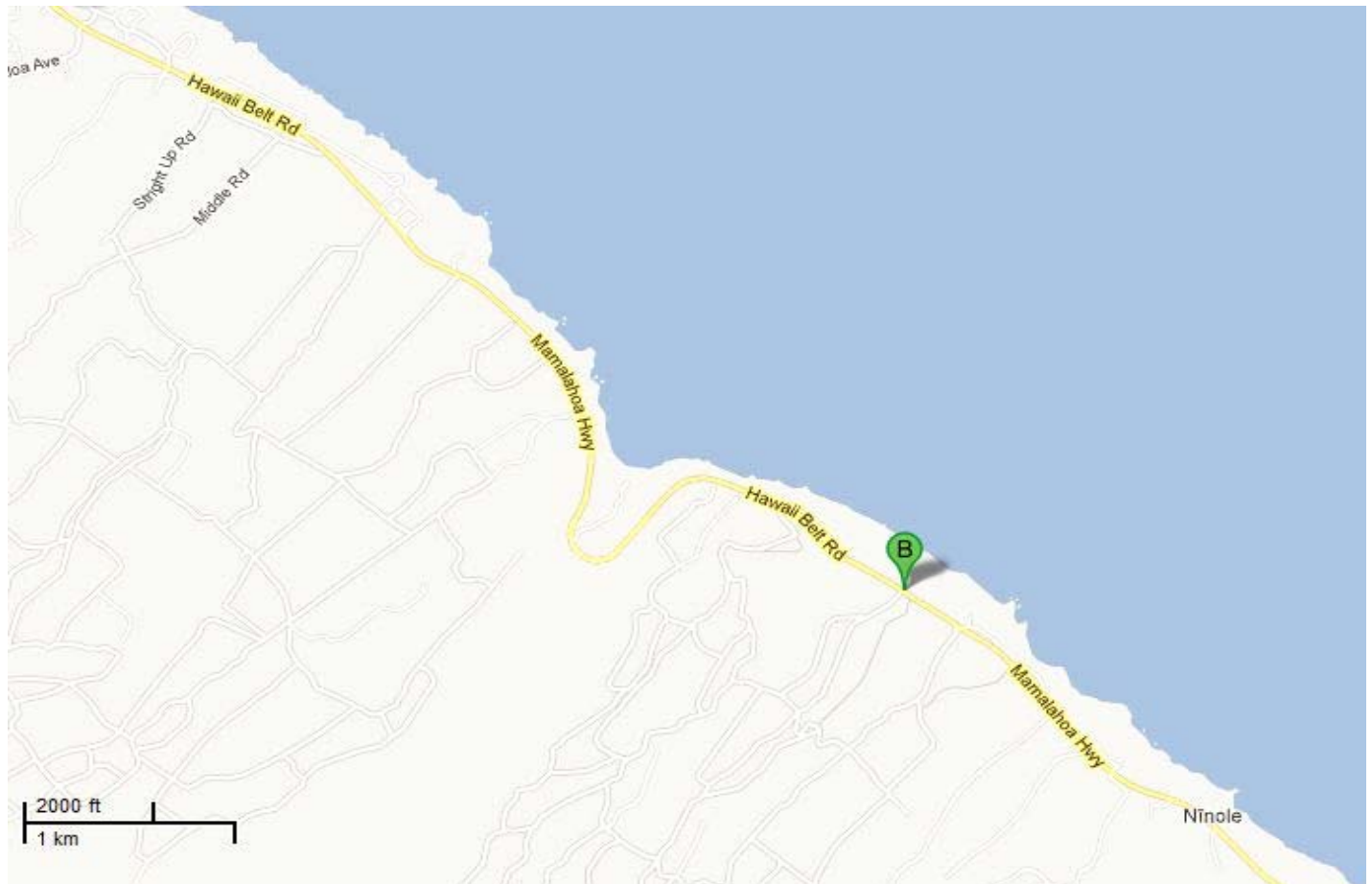
(State)

General Information

Bridge Number: 001000190307917	Route No: 19
Popular Name: Ahole Stream Bridge	
Feature Crossed: Ahole Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 20.36 mi.	Island: Hawaii
Longitude: 155d-10m-58.07s	Latitude: 19d-56m-57.13s
Location: 3.95 Miles West of Kauniho Road	
Historic Name: Ahole Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor: Henry Freitas	



Location Map:



Construction Information

Bridge Type: Concrete Rigid Frame	Construction Date: 1934	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 65.0 ft.	Total Length: 137.1 ft.	Deck Width: 29.5 ft.
Superstructure: Concrete Rigid Frame			
Substructure: Concrete Integral Abutment and Concrete Multi-Column Bent			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction; brackets at rail and arched pier columns			

Historic Association

Eligibility Status: Eligible	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Ahole Bridge carries the Hawaii Belt Road (FAP 19) across the Ahole Stream on the island of Hawaii. The structure is a two-span reinforced-concrete tee beam bridge. The Ahole Bridge retains its original location and setting at the mouth of Ahole Stream. The bridge's original continuous tee beam design and reinforced-concrete materials remain intact. The workmanship of the bridge has not been obscured by additions or repairs. The bridge is the work of Hawaii Island contractor, Henry Freitas. The continuous tee beam bridge was structurally innovative at the time of its construction. The bridge is readily visible from the adjacent Pohakupuka Church. The bridge's historic associations with Territorial efforts to upgrade the belt road and advances in concrete technology are apparent to informed observers.</p>		

Significance Statement:

The Ahole Bridge is significant for its contributions to the fields of engineering and transportation in Hawaii. The bridge is eligible under Criterion A for its associations with important public works project initiated by the territorial government and constructed with federal work relief programs funds during the Depression era. The bridge was a significant element of the Territorial Belt Road Plan and contributed to the economic development of the region. The Ahole Bridge is eligible under Criterion C as a good example of federally-funded tee beam bridge constructed in the 1930s. Further, the bridge is representative of the "work of a master": William R. Bartels of the Territorial Highways Department.

Between 1932 and 1958, the Territory of Hawaii began to construct a modern highway, called the Hawaii Belt Road (FAP 19), around the island. The new road and a series of large, steel-reinforced concrete bridges straightened out, bisected, and often bypassed, the circuitous old government road. These bridges spanned gulches high above sea level and enabled the belt road to run a straighter course. The new road is an extraordinary engineering feat; it contains fifty-six bridges in forty-two miles, took twenty-two years to build, cost \$54 million, and reduced the driving time between Hilo and Honokaa from over two hours to forty minutes.

The Ahole Bridge is an excellent example of the substantial yet attractive bridges built with Federal Aid funds. The Ahole Bridge was one of the first major concrete tee beam highway bridges constructed during the upgrading of the Hawaii Belt Road in the 1930s. These Federal Aid bridges did not scrimp on ornament, and every attempt was made to add beauty to utility. Ahole's girders were haunched to give the impression of an arch, and brackets were added under the railings at each pier column. Adjacent to the bridge is the historic Pohakupuka Congregational Church, built in the early-twentieth century to serve the Christian congregation on the nearby sugar plantations.

The contractor on the Ahole Bridge was Henry Freitas, who built St. Louis College in Honolulu. Freitas and his son George, founder of the Pacific Construction Company, built many other Federal Aid bridges of this era.

(1) Russell Apple, *Ala Kahakai: A phrase in the Hawaiian language meaning Trail by the Sea...a walk through one Hundred and Fifty Years of History on the Island of Hawaii* (Hawaii National Park, Hawaii: Macapville Press, 1994), 57.

(2) Patricia Alvarez, *Historic Bridge Inventory and Evaluation: Island of Hawaii*, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 230.

(3) Patricia Alvarez, *Historic Bridge Inventory and Evaluation: Island of Hawaii*, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 248.

Inventory Form

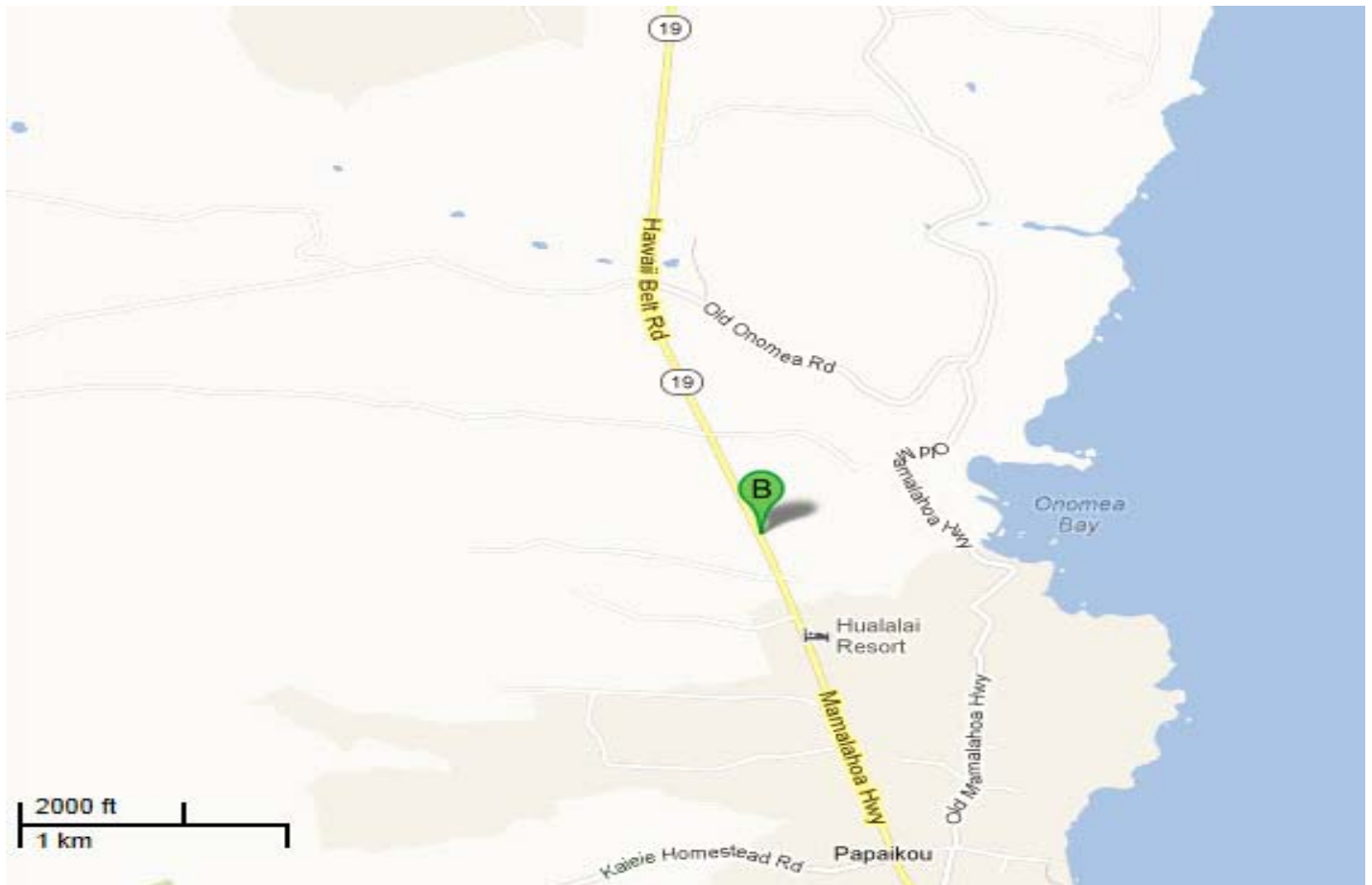
(State)

General Information

Bridge Number: 001000190309124	Route No: 19
Popular Name: Hanawi Stream Bridge	
Feature Crossed: Hanawi Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 8.21 mi.	Island: Hawaii
Longitude: 155d-06m-03.51s	Latitude: 19d-48m-26.25s
Location: 1.23 Miles West of Kaieie Road	
Historic Name: Hanawi Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1968	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 6	Max Span: 82.0 ft.	Total Length: 423.9 ft.	Deck Width: 34.4 ft.
Superstructure: Prestressed Concrete I-Girder			
Substructure: Concrete Abutment Wall and Concrete T-Shaped Pier			
Floor/Decking: Concrete Deck			
Parapets/Railings: Concrete and Metal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Hanawi Stream Bridge is a concrete girder bridge, constructed in 1968 to carry the Hawaii Belt Road over Hanaw Stream from Honokaa to Hilo in Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. The original design and materials are mostly intact however, three beams are attached to the ends of the parapets. The parapets are solid concrete with horizontal metal rails which are a common parapet type of post-war bridges. The rural setting contributes to the historic character of the bridge.</p>		

Significance Statement:

This bridge is eligible under Criterion C for being the longest concrete bridge built post-war (1945) on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

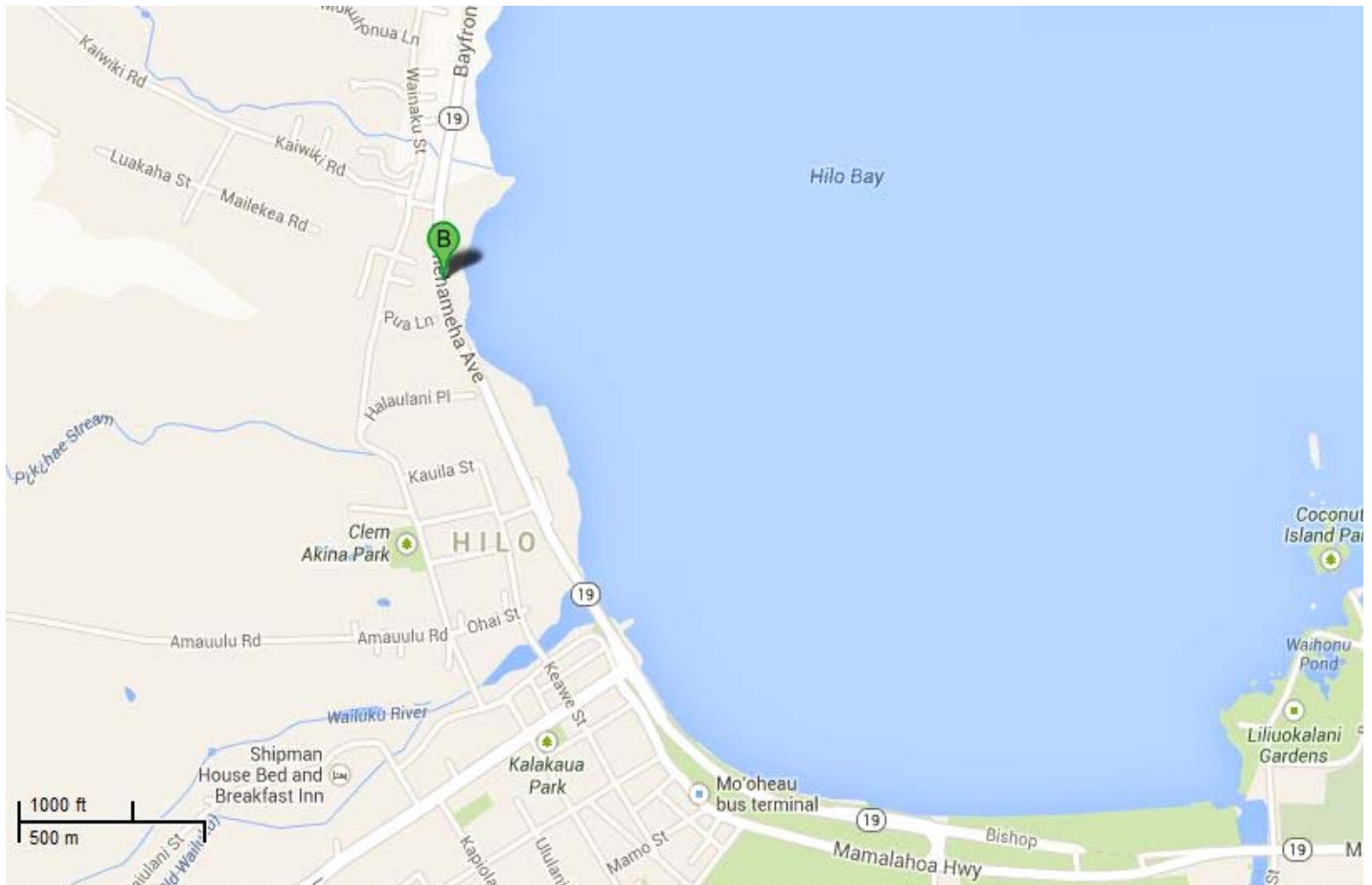
(State)

General Information

Bridge Number: 001000190009643	Route No: 19
Popular Name: Hilo Plantation Flume Overpass	
Feature Crossed: Hawaii Belt Road	
Feature Carried: Hilo Plantation Flume	
Milepost: 3.10 mi.	Island: Hawaii
Longitude: 155d-05m-28.73s	Latitude: 19d-44m-08.92s
Location: 0.35 Miles West of Pukihae Street	
Historic Name: Hilo Plantation Flume Overpass	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1949	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 4	Max Span: 74.1 ft.	Total Length: 182.1 ft.	Deck Width: 15.1 ft.
Superstructure: Concrete Through Girder			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck			
Parapets/Railings: Concrete Solid			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: A, C	State/National Registered? No
Current Function: Flume	Historic Function: Flume	
Area of Significance: Agriculture, Engineering		
Narrative Description: <p>The Hilo Flume Overpass Hawaii Belt Road. This reinforced concrete flume is in its original location but in poor condition. The concrete box flume is supported by concrete pier and abutments. The workmanship of the flume has not been obscured by addition or repair and the simple design of the flume retains its historic feeling. The state of Hawaii maintains the bridge however it is not in use and the ownership is unknown.</p>		

Significance Statement:

The design of the flume does not have much character defining features but its associated with the plantation industry. The flume looks to be used to transport merely water. This region is Hawaii's wet district, starting at Upolu Point, the northern tip of the island, and running through Hamakua and into the Hilo District, which supported many large sugar plantations.

The flume is eligible under Criterion C for being the earliest concrete flume bridge built post-war (1945) on the island of Hawaii in the historic study period prior to 1969.

Inventory Form

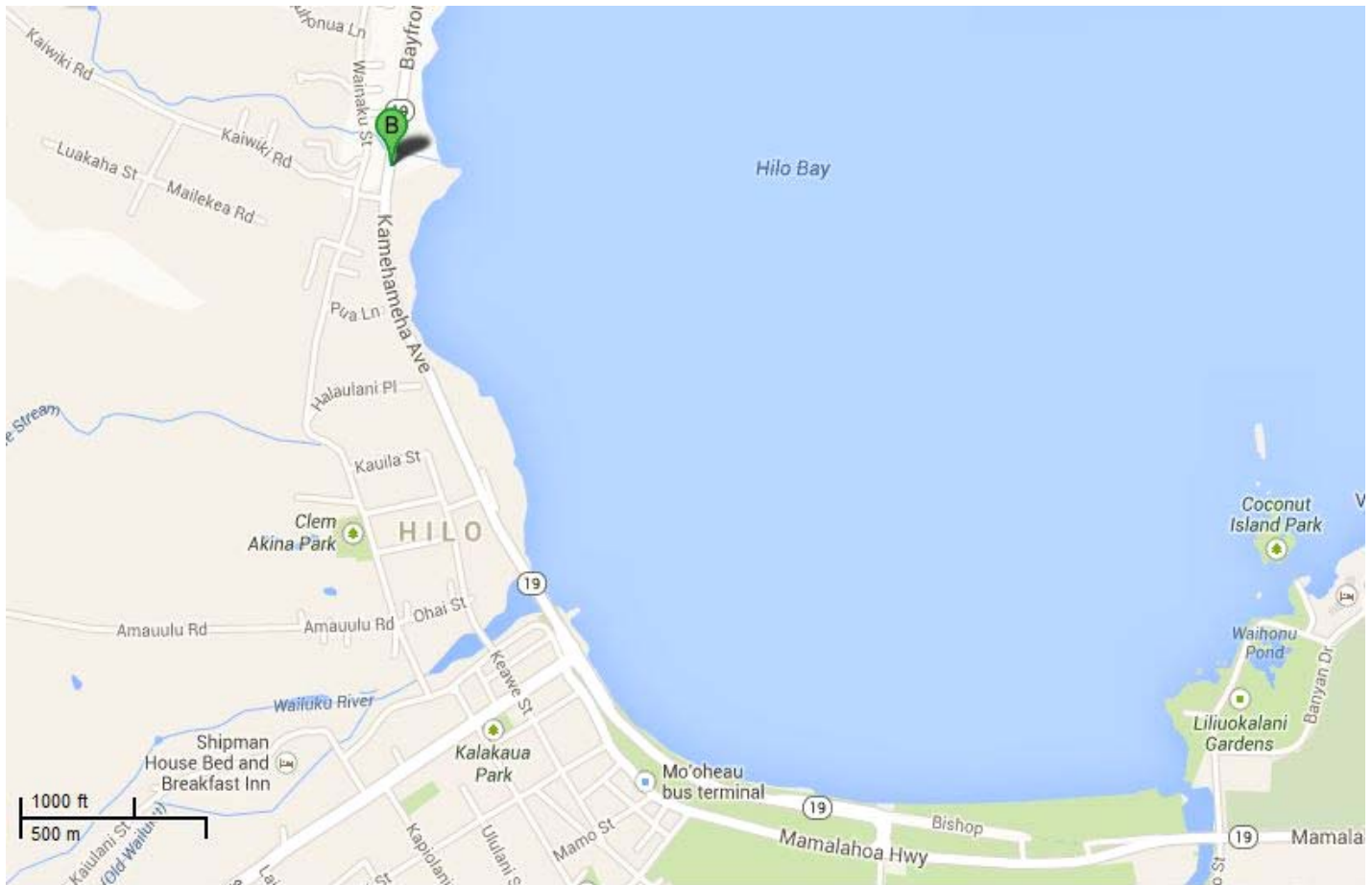
(State)

General Information

Bridge Number: 001000191109626	Route No: 19
Popular Name: Hilo Plantation Road Overpass	
Feature Crossed: Hawaii Belt Road (Hilo Plantation Road Overpass)	
Feature Carried: Plantation Road	
Milepost: 3.28 mi.	Island: Hawaii
Longitude: 155d-05m-28.67s	Latitude: 19d-44m-17.73s
Location: 0.05 Miles West of Hau Street	
Historic Name: Hilo Plantation Road Overpass	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1949	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 4	Max Span: 45.9 ft.	Total Length: 126.0 ft.	Deck Width: 37.1 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: A	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Agriculture		
Narrative Description: <p>The Hilo Plantation Road Overpass carries Hawaii Belt Road across Plantation Road. This reinforced concrete bridge is in its original location but in poor condition. The bridge has concrete open horizontal parapets, concrete deck, and concrete piers and abutments. The workmanship of the bridge has not been obscured by addition or repair. The state of Hawaii maintains the bridge however it is not in use and the ownership is unknown.</p>		

Significance Statement:

The design of the bridge does not have much character defining features but its associated with the plantation industry. This region is Hawaii's wet district, starting at Upolu Point, the northern tip of the island, and running through Hamakua and into the Hilo District, which supported many large sugar plantations. From Niulii in North Kohala, the coast is a series of canyons with rivers pouring out of the Kohala Mountains or off of Mauna Kea. Travel was problematic closer to the coast. However, the towns were situated along the coast so one could stay on higher trails if the main purpose was to get from Waimea to Hilo or stop at one of the sheep stations in the uplands.

Inventory Form

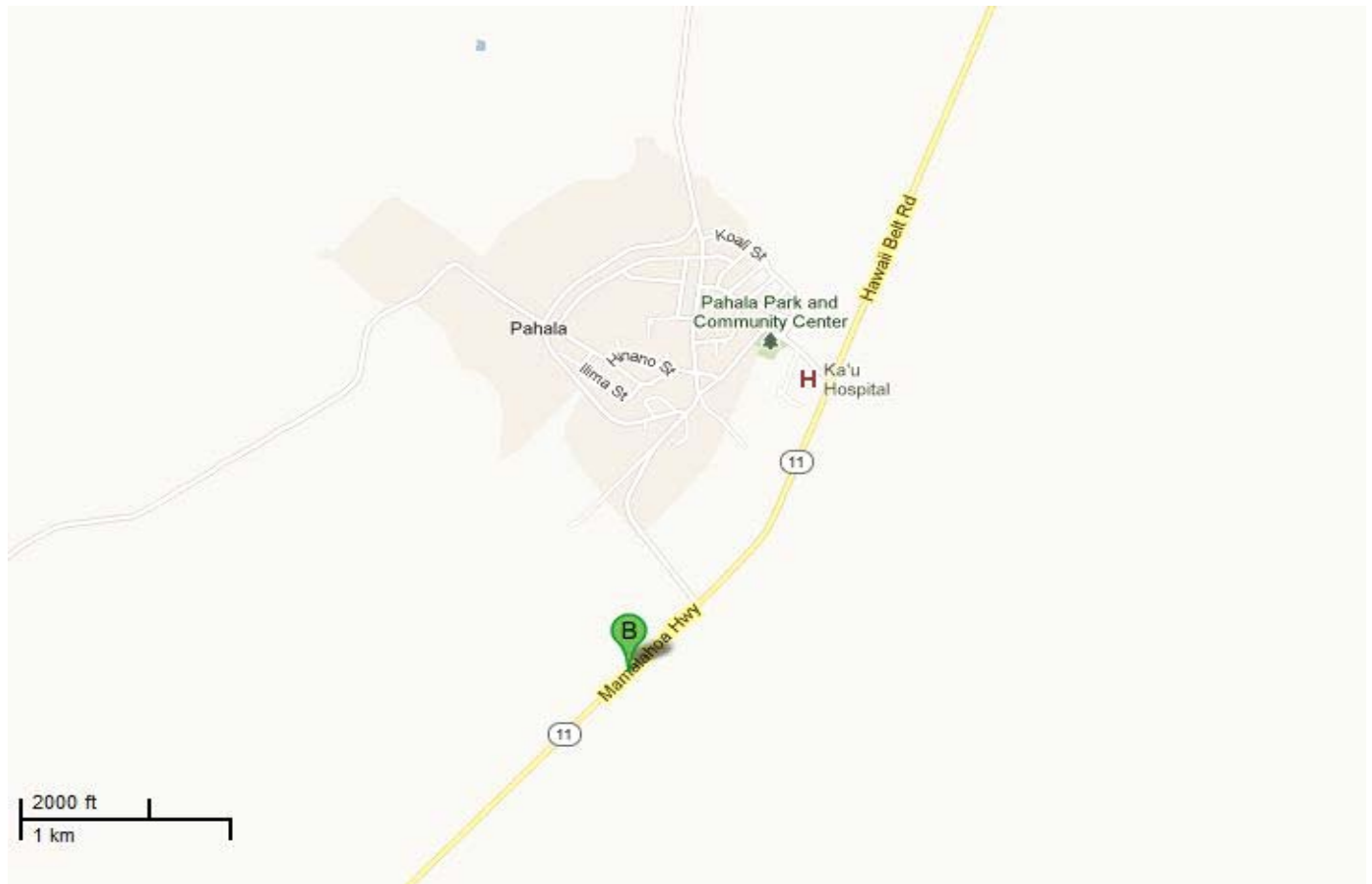
(State)

General Information

Bridge Number: 001000110306996	Route No: 11
Popular Name: Hionomoa Stream Bridge	
Feature Crossed: Hionomoa Stream	
Feature Carried: Hawaii Belt Road (Mamalahoa Highway)	
Milepost: 52.61 mi.	Island: Hawaii
Longitude: 155d-28m-54.87s	Latitude: 19d-11m-04.57s
Location: 0.43 Miles South of Maile Street	
Historic Name: Hionomoa Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor: George Freitas	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1938	Replaced? No
Altered? Yes	Alteration Date(s): 2003	
Alteration Type(s):		
Alteration Description(s): Metal thrie beam railing added in front of existing concrete bridge railing		

Bridge Information

Number of Spans: 1	Max Span: 69.9 ft.	Total Length: 82.0 ft.	Deck Width: 27.6 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features: Incised bridge name and date of construction on end piers			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering and transportation		
Narrative Description: <p>The Hionomoa Bridge carries the Hawaii Belt Road (FAP 11) across the Hionomoa Stream within the Kau District of the island of Hawaii. The bridge is one of five reinforced-concrete rigid frame structures built in the pre-World War II period in Hawaii.</p> <p>The bridge is in its original location and its rural setting has remained unchanged. The original concrete material of the bridge is in generally good condition and has not been altered by major repairs. Overall, the bridge exhibits a high degree of workmanship, particularly the attention given to the rail and the masonry (lava-rock) abutments. The rigid-frame bridge was technologically innovative for its time. The bridge's historic associations, as a product of the Territorial Highways Department effort to upgrade the belt road in the 1930s, is apparent to informed observers. The bridge's historic feeling is primarily evident through its rail style which was typical of the 1930s.</p>		

Significance Statement:

The Hionomoa Bridge has made significant contributions to the areas of engineering and transportation in Hawaii. The bridge is eligible under Criterion A for its associations with important public works project initiated by the territorial government and constructed with federal work relief programs funds during the Depression era. The bridge was a significant facet of the Territorial Belt Road Plan and contributed to the economic development of Kau by providing economical transportation to the harbor for the sugar plantations located in that district. The reinforced-concrete rigid-frame bridge is eligible under Criterion C as an innovative example of bridge design utilizing new engineering technology, as well as for its aesthetic merit. The Hionomoa Bridge is representative of the "work of a master": William R. Bartels of the Territorial Highways Department (THD).

Between 1932 and 1958, the Territory of Hawaii began to construct a modern highway, called the Hawaii Belt Road (FAP 11). The bridge is one of seven (Hionomoa, Kaalaala, Kananelu, Keaiwa, Moaula, Paaauau and Piikea) bridges constructed along the highway in 1937 to serve the sugar plantations near Pahala in the Kau district.

This bridge is one of the first reinforced-concrete rigid-frame bridges constructed in the islands, and one of only five of this type built prior to WW II. The reinforced-concrete rigid-frame bridge demonstrates the rapid advances in engineering technology in the early decades of the twentieth century and are the most sophisticated of the pre-WWII bridges from an engineering perspective. The abutments and deck of rigid-frame bridges are constructed as one solid piece of concrete enabling the slab to double or triple the previous achievable span of twenty feet. This technology was not used in Hawaii until 1936, when William R. Bartels of the Territorial Highways Department developed the plans for the Wahiawa Bridge on Kauai and the Kaahumanu Avenue-Naniloa Drive Overpass in Wailuku, Maui. These were followed by two concrete rigid-frame bridges on Hawaii Island (including the Moaula Bridges) and one on Oahu.

Bartels work characteristically utilized the latest technology and involved a high degree of engineering complexity. Nonetheless, his bridges evidence a refined aesthetic sensibility which makes them distinctive from the works of other engineers. Contractor George Freitas constructed both the Kealakaha and the Honolii Highway Bridges on the Hawaiisi Belt Road, which were also designed by the THD.

Inventory Form

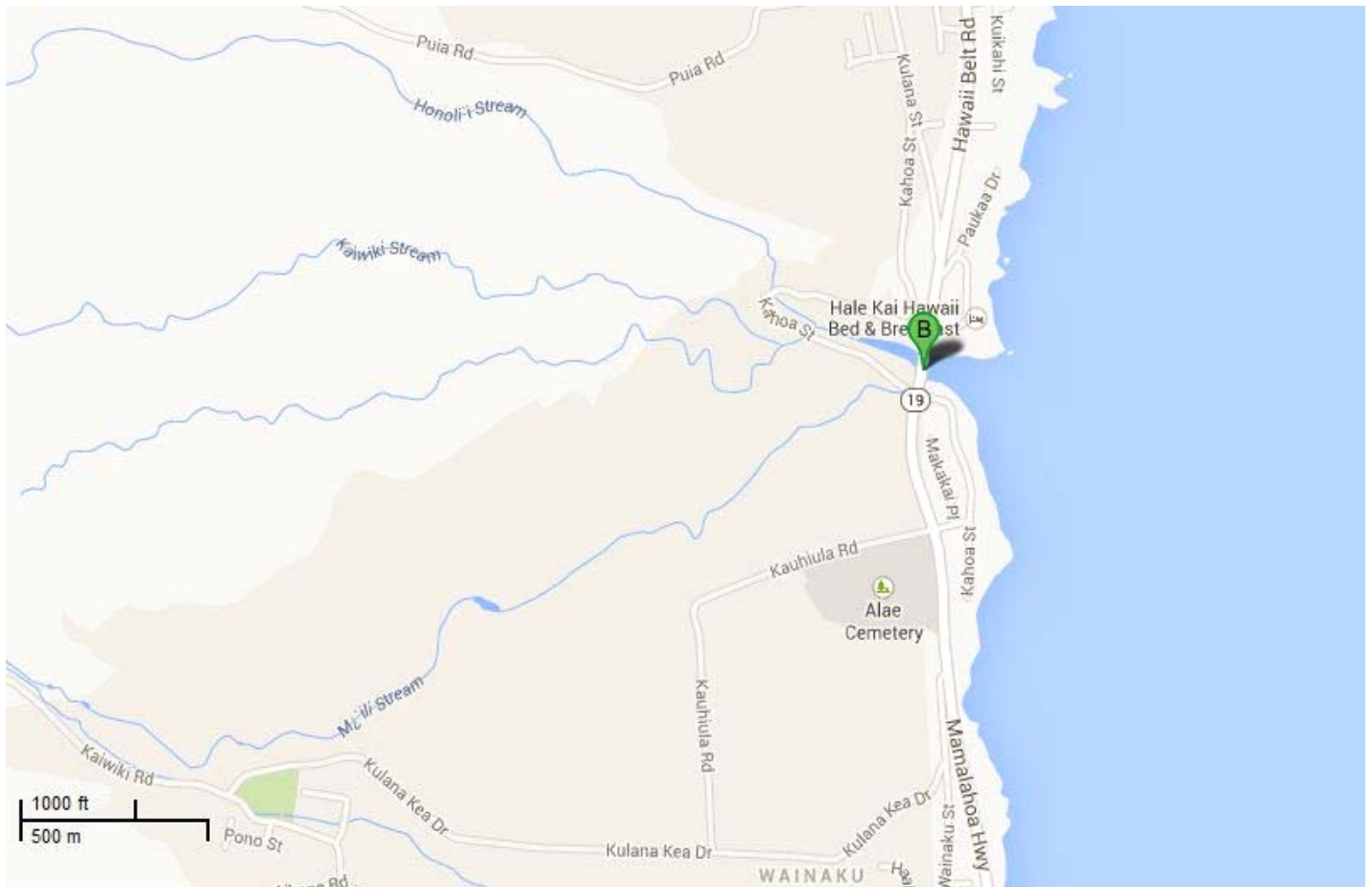
(State)

General Information

Bridge Number: 001000190309493	Route No: 19
Popular Name: Honolii Stream Bridge	
Feature Crossed: Honolii Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 4.50 mi.	Island: Hawaii
Longitude: 155d-05m-31.90s	Latitude: 19d-45m-23.28s
Location: 0.11 Miles East of Paukaa Drive	
Historic Name: Honolii Stream Bridge	
Designer/Engineer: James O. Yapp	
Builder/Contractor: George Freitas	



Location Map:



Construction Information

Bridge Type:	Concrete Tee Beam	Construction Date:	1936	Replaced?	No
Altered?	Yes	Alteration Date(s):	2002, 2009		
Alteration Type(s):	Seismic Retrofit				
Alteration Description(s):	Bridge piers and pier cap beams retrofitted with built-up concrete to increase size and strength. Concrete columns altered from T-shaped sections to square sections with chamfered corners.				

Bridge Information

Number of Spans: 8	Max Span: 98.1 ft.	Total Length: 544.0 ft.	Deck Width: 31.5 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction; brackets at rail and arched pier columns			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering and transportation		
Narrative Description: <p>The Honolii Bridge carries the Hawaii Belt Road (FAP 19) across the Honolii Stream north of Hilo on the island of Hawaii. The structure is a multi-span reinforced-concrete tee beam bridge. The Honolii Bridge retains its original setting at the mouth of Honolii Stream, downstream of the Mamalahoa-Honolii Bridge and the Mamalahoa-Maili Bridge (both constructed on the old Mamalahoa Highway in 1911). The bridge's original continuous tee beam design and reinforced-concrete materials remain intact. The bridge pier's columns were originally T-shaped but were seismically retrofitted in 2002 and 2009 and are now rectangular. The bridge is the work of skilled builders, who constructed the massive concrete bridge. The large continuous tee beam bridge was structurally innovative at the time of its construction. The bridge is highly visible from the old Mamalahoa Highway, which runs under the bridge. The bridge's historic associations with territorial efforts to upgrade the belt road and advances in concrete technology are readily apparent to all observers due to the juxtaposition of the 1936 bridge with the two adjacent older bridges on the old Mamalahoa Highway.</p>		

Significance Statement:

The Honolii Bridge is significant for its contributions to the fields of engineering and transportation in Hawaii. The bridge is eligible under Criterion A for its associations with important public works project initiated by the territorial government and constructed with federal work relief programs funds during the Depression era. The bridge was a significant element of the Territorial Belt Road Plan and contributed to the economic development of the region. The Honolii Bridge is eligible under Criterion C as an excellent example of federally-funded tee beam bridge construction in the 1930s and is indicative of the advances in bridge technology in the early twentieth-century. Further, the bridge is representative of the "work of a master": James O. Yapp of the Territorial Highways Department (THD).

Between 1932 and 1958, the Territory of Hawaii began to construct a modern highway, called the Hawaii Belt Road (FAP 19), around the island of Hawaii. The new road and a series of large, steel-reinforced concrete bridges straightened out, bisected, and often bypassed, the circuitous old government road. The new road is an extraordinary engineering feat; it contains fifty-six bridges in forty-two miles, took twenty-two years to build, cost \$54 million, and reduced the driving time between Hilo and Honokaa from over two hours to forty minutes. (1)

The Honolii Bridge is an excellent example of the substantial, yet attractive, bridges built with Federal Aid funds. These bridges spanned gulches high above sea level and enabled the belt road to run a straighter course. Several bridges had previously been erected over the stream at its mouth, but a major restructuring of the road, which the Hilo Tribune called the "magnum opus of the County of Hawaii," brought it away from the beach and back into the valley in 1911. (2) The Honolii Bridge bypassed the long road into and out of the valley, which had previously necessitated three separate bridges. The caissons of the former railroad bridge, taken down in the late 1940s, are evident in the water near the pier footings of the concrete bridge.

The bridge's continuous concrete tee-beam design was technically ambitious, particularly due to its extraordinary height and long spans; the construction of the bridge was considered to be a major engineering feat. It was one of the last major concrete tee beam highway bridges constructed along the Hawaii Belt Road prior to WWII. The Honolii Bridge was designed by James O. Yapp, the Hawaii District Engineer for the THD. He served in this capacity from 1930 to 1947 and also designed the Kapehu and Kaaluu Bridges. The contractor was George Freitas, founder of Pacific Construction Company, who built several other Federal Aid bridges. (3)

(1) Russell Apple, *Ala Kahakai: A phrase in the Hawaiian language meaning Trail by the Sea...a walk through one Hundred and Fifty Years of History on the Island of Hawaii* (Hawaii National Park, Hawaii: Macapleville Press, 1994), 57.

(2) Hilo Tribune (April 11, 1911), 2.

(3) Pacific Business News (September 8, 1986), 2.

Inventory Form

(State)

General Information

Bridge Number: 001000110306199	Route No: 11
Popular Name: Honuapo Bridge	
Feature Crossed: Railroad (Honuapo)	
Feature Carried: Hawaii Belt Road (Mamalahoa Highway)	
Milepost: 60.60 mi.	Island: Hawaii
Longitude: 155d-32m-58.76s	Latitude: 19d-05m-20.88s
Location: 0.06 Miles South of Honuapo Wharf Road	
Historic Name: Honuapo Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1940	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 20.0 ft.	Total Length: 44.0 ft.	Deck Width: 44.0 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Railroad (Honuapo) Bridge carries the Hawaii Belt Road across a railroad crossing. This concrete bridge is in its original location, is generally in good condition, and its materials remain mostly intact with some patches on the railing starting to crack and a few transverse hairline cracks at the soffit. This bridge contains an aesthetically pleasing Greek cross rail that has been kept intact over the years. Reinforced concrete open arched balustrade with "Greek-cross" voids and concrete rail caps is a significant characteristic of this bridge.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with the development of concrete bridge construction in Hawaii. It is a good example of a 1940's concrete bridge that is typical of its period in its use of materials, method of constructions, craftsmanship, and design.

Inventory Form

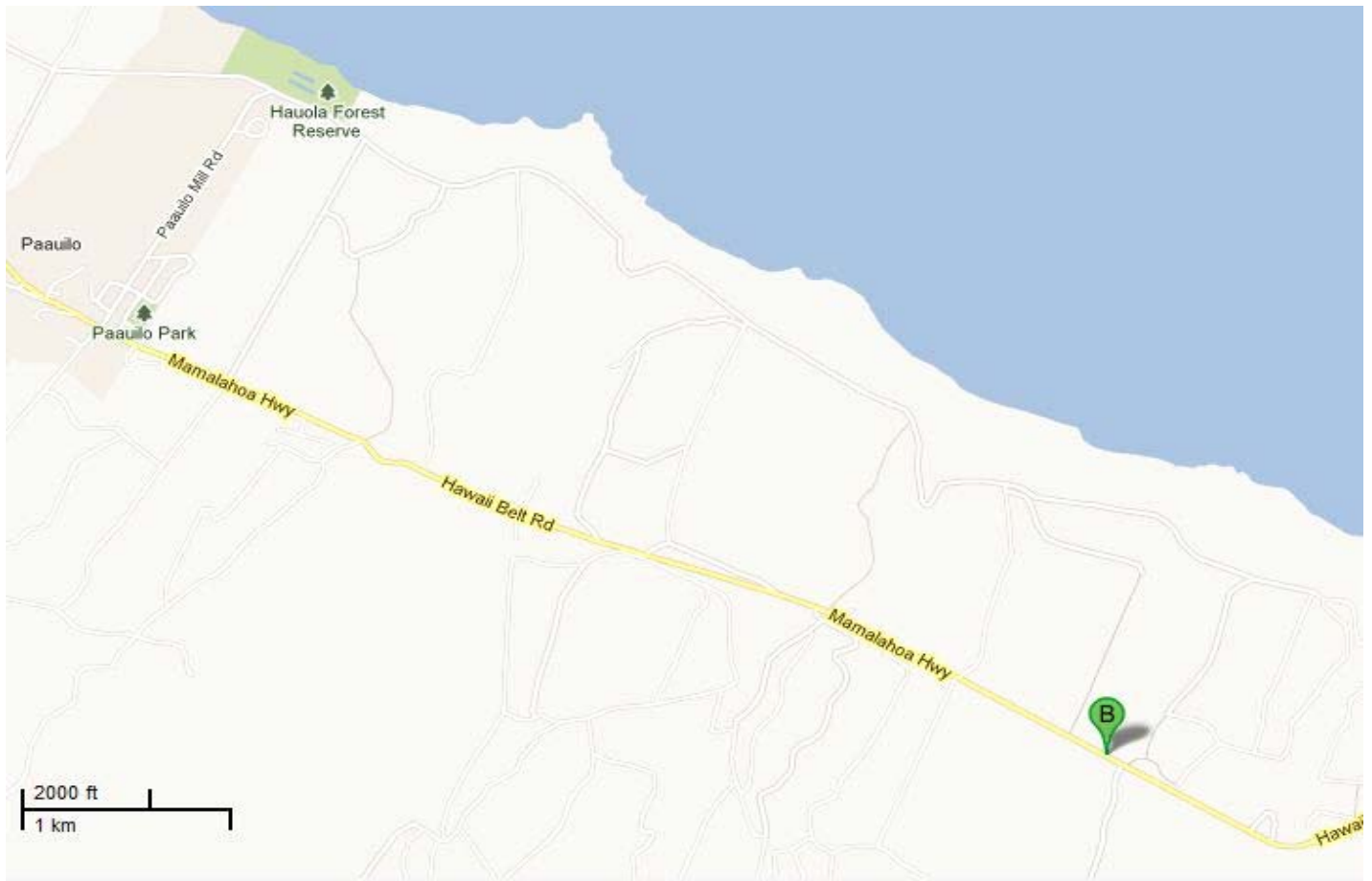
(State)

General Information

Bridge Number: 001000190306695	Route No: 19
Popular Name: Kaala Stream Bridge	
Feature Crossed: Kaala Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 32.60 mi.	Island: Hawaii
Longitude: 155d-19m-19.77s	Latitude: 20d-01m-08.46s
Location: 3.93 Miles East of Paauilo Plantation Road	
Historic Name: Kaala Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1935	Replaced? No
Altered? Yes	Alteration Date(s): 2001	
Alteration Type(s): Seismic Retrofit		
Alteration Description(s): Bridge abutments seismic retrofitted.		

Bridge Information

Number of Spans: 3	Max Span: 86.0 ft.	Total Length: 214.9 ft.	Deck Width: 29.9 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaaka Stream Bridge carries Hawaii Belt Road across the Kaala Stream. This reinforced concrete bridge is in its original location but in poor condition. The bridge has concrete open Greek cross parapets with stepped caps and curved wide solid end posts. End posts consist of stepped profile and one of the posts has the bridge name engraved. The concrete deck is supported by concrete piers and masonry abutments. Thrie beams were bolted to the end posts and small triangular concrete blocks were attached to the posts to create a flat surface. The simple design of the parapet retains its historic feeling. In 2001 the abutments were seismically retrofitted.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with the development of concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

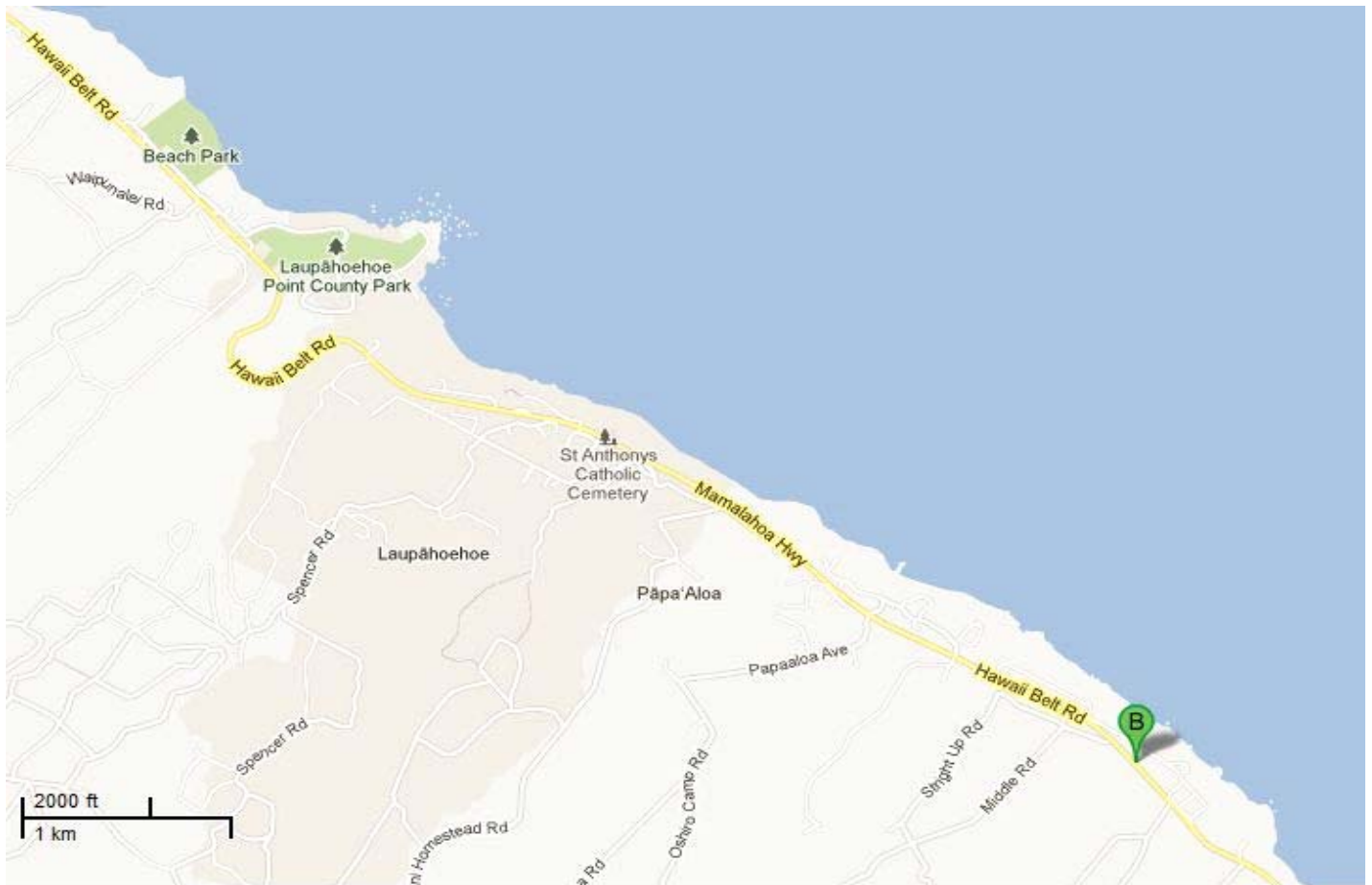
(State)

General Information

Bridge Number: 001000190307644	Route No: 19
Popular Name: Kaaluu Stream Bridge	
Feature Crossed: Kaalau Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 23.10 mi.	Island: Hawaii
Longitude: 155d-12m-29.50s	Latitude: 19d-58m-07.83s
Location: 6.11 Miles East of Ookala Access Road	
Historic Name: Kaaluu Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1933	Replaced? No
Altered? Yes Alteration Date(s): Unknown		
Alteration Type(s):		
Alteration Description(s): Abutments and piers seismic retrofitted.		

Bridge Information

Number of Spans: 3	Max Span: 39.0 ft.	Total Length: 132.9 ft.	Deck Width: 28.9 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaaluu Stream Bridge carries Hawaii Belt Road across the Kaaluu Stream. This concrete bridge features two double arch piers. It is in its original location, is generally in good condition, and its materials remain intact. It is aesthetically similar to its neighbor, Kapehu Stream Bridge. The original concrete pier wall on both sides contains double arches that house a recessed alcove within. The original concrete diaphragm is cast between the girders at both pier walls, which are still in good condition. The original railings are concrete open arched and have been kept in their original state with deterioration over the years due to regular use. This bridge has an existing 8 inch waterline with surface rusting on the side of the bridge. Seismic retrofitting was done previously on this bridge by a private contractor.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship and design.

Inventory Form

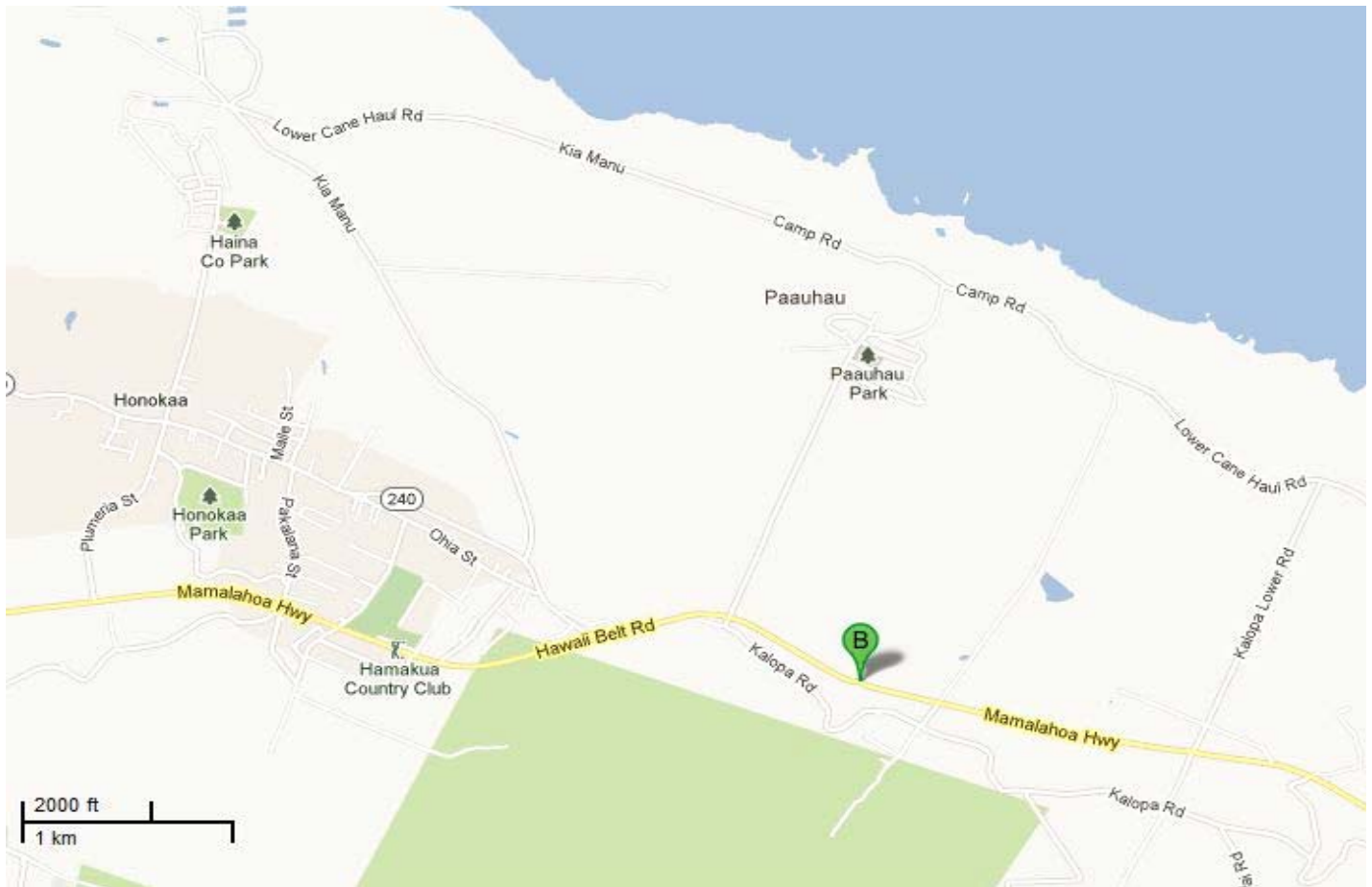
(State)

General Information

Bridge Number: 001000190305863	Route No: 19
Popular Name: Kahawailiili Stream Bridge	
Feature Crossed: Kahawailiili Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 40.92 mi.	Island: Hawaii
Longitude: 155d-26m-17.01s	Latitude: 20d-04m-02.35s
Location: 0.83 Miles East of Mamane Street	
Historic Name: Kahawailiili Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1959	Replaced? No
Altered? Yes	Alteration Date(s): 1999	
Alteration Type(s):		
Alteration Description(s): End posts upgraded		

Bridge Information

Number of Spans: 3	Max Span: 107.0 ft.	Total Length: 216.9 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Box Girder			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete and Metal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kahawailiili Stream Bridge is a continuous concrete box beam/multiple girder bridge, constructed in 1959 to carry the Hawaii Belt Road over Kahawailiili Gulch from Honokaa to Hilo in Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. An old horse trail remains along-side the bridge. The original design and materials are mostly intact although the end posts of the bridge were upgraded in 1999. The parapets are concrete open horizontal which is a common type of the post-war bridge. The elliptical ornaments on the end posts add to the bridge's artistic value and workmanship. The rural setting contributes to the historic character of the bridge. Interpretation is eased by the date of construction incised on the end piers.</p>		

Significance Statement:

This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

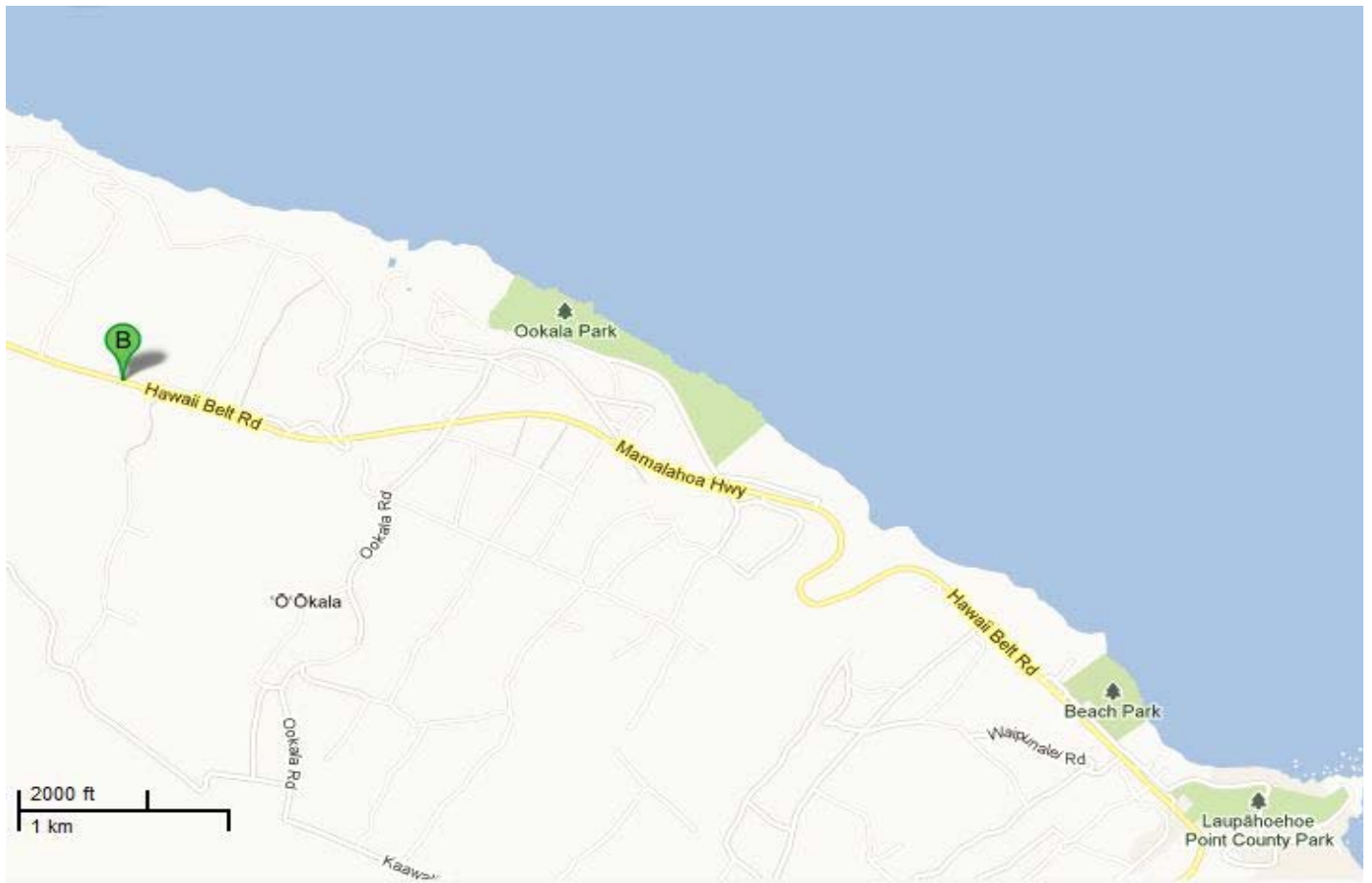
(State)

General Information

Bridge Number: 001000190306865	Route No: 19
Popular Name: Kaholo Stream Bridge	
Feature Crossed: Kaholo Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 30.89 mi.	Island: Hawaii
Longitude: 155d-17m-54.46s	Latitude: 20d-00m-47.64s
Location: 1.68 Miles West of Ookala Access Road	
Historic Name: Kaholo Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1935	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 89.9 ft.	Total Length: 225.1 ft.	Deck Width: 29.5 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaholo Stream Bridge carries Hawaii Belt Road across the Kaholo Stream. This concrete bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has open Greek cross parapets with stepped caps and curved wide end posts. One of the end posts have the the bridge name engraved. The concrete deck is supported by concrete abutments. Thrie beams approaches were bolted to the end posts but the workmanship of the bridge has not been obscured by addition or repair and retains its historic feeling.</p>		

Significance Statement:


This bridge is eligible under Criterion C for its association with the development of concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

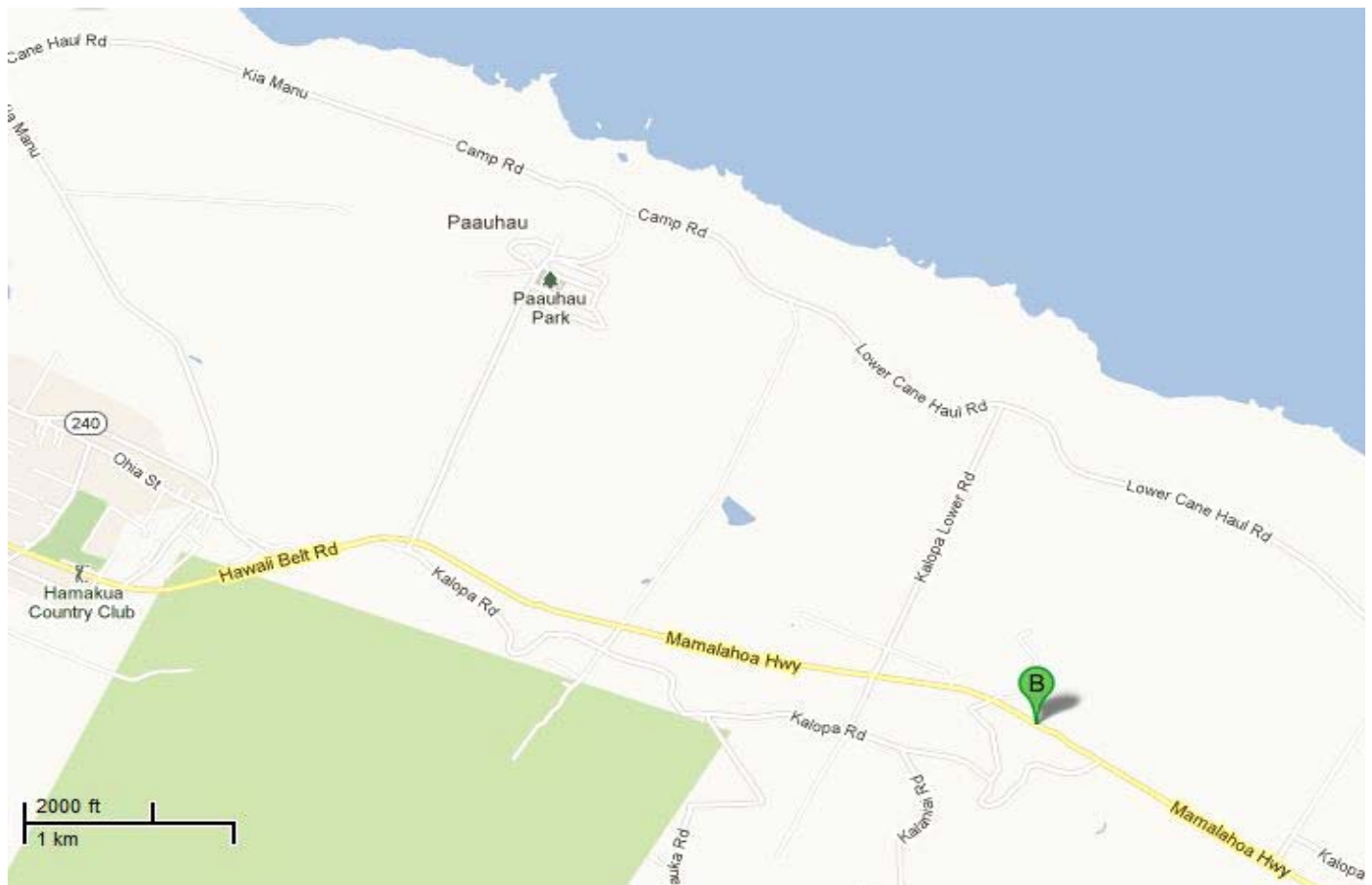
(State)

General Information

Bridge Number: 001000190306021	Route No: 19
Popular Name: Kalopa Stream Bridge	
Feature Crossed: Kalopa Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 39.33 mi.	Island: Hawaii
Longitude: 155d-24m-53.13s	Latitude: 20d-03m-41.30s
Location: 2.41 Miles East of Mamane Street	
Historic Name: Kalopa Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1959	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 125.0 ft.	Total Length: 331.0 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Box Girder			
Substructure: Concrete Abutment Wall and Concrete T-Shaped Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kalopa Stream Bridge is a continuous concrete bridge, constructed in 1959 to carry the Hawaii Belt Road over Kalopa Stream from Honokaa to Hilo in Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. The balustrade is a typical rectilinear post-war style, composed of a reinforced concrete balustrade penetrated with horizontal rectilinear voids with a concrete rail cap, common in the post-war era. The elliptical ornaments on the end posts add to the bridge's artistic value and workmanship. The rural setting contributes to the historic character of the bridge.</p>		

Significance Statement:

This bridge is eligible under Criterion C for having the longest concrete span built post-war (1945) on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

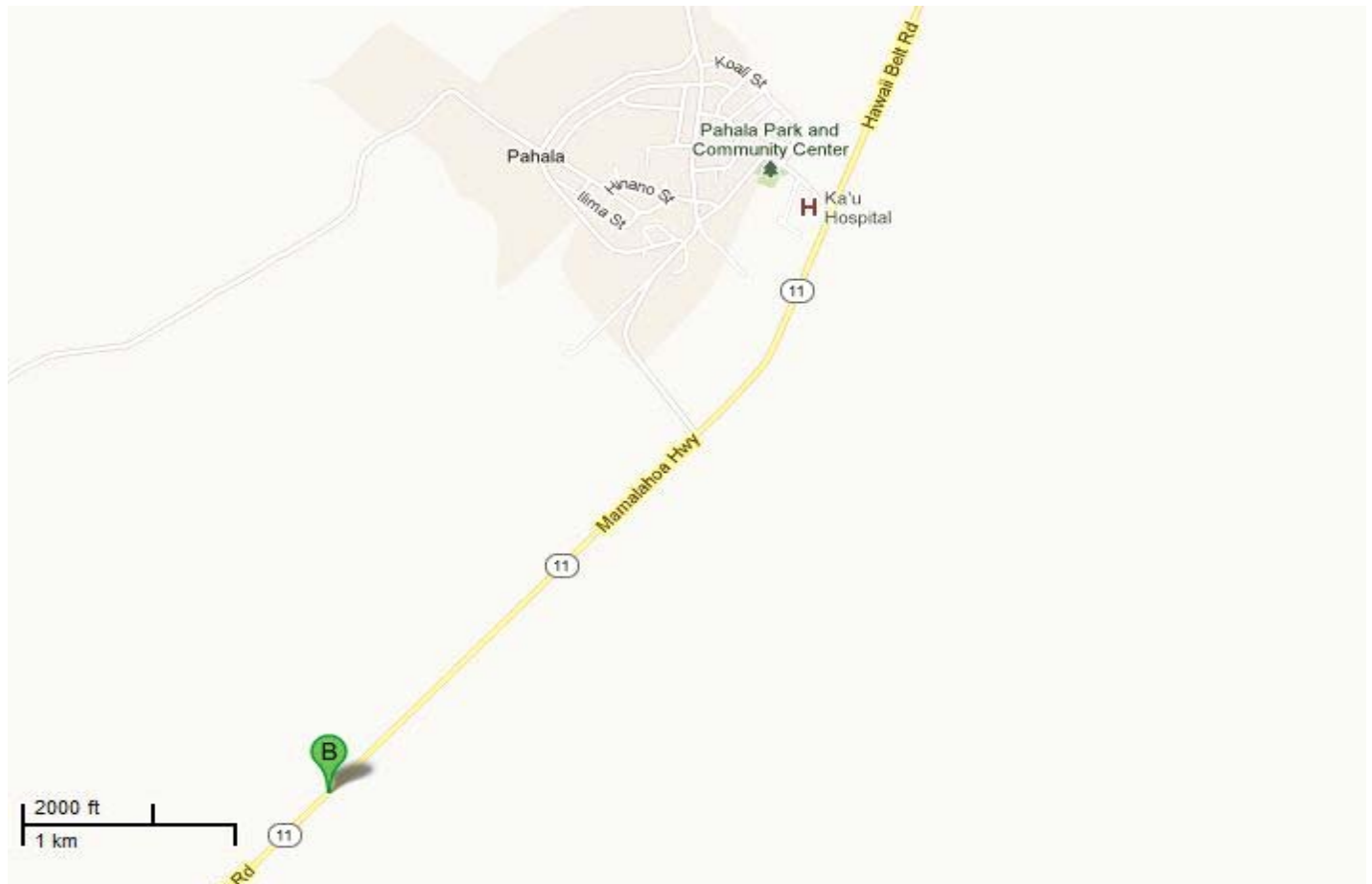
(State)

General Information

Bridge Number: 001000110306913	Route No: 11
Popular Name: Kananelu Stream Bridge	
Feature Crossed: Kananelu Stream	
Feature Carried: Hawaii Belt Road (Mamalahoa Highway)	
Milepost: 53.46 mi.	Island: Hawaii
Longitude: 155d-29m-26.10s	Latitude: 19d-10m-33.34s
Location: 1.26 Miles South of Maile Street	
Historic Name: Kananelu Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1938	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 20.0 ft.	Total Length: 43.0 ft.	Deck Width: 27.6 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kananelu Stream Bridge carries Hawaii Belt Road across the Kananelu Stream. This reinforced concrete bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has open Greek cross parapets with stepped caps and curved wide end posts. Two of the end posts have the construction date and the bridge name engraved. The concrete deck is supported by concrete abutments. The parapets have been painted white only on the surface facing the road. The workmanship of the bridge has not been obscured by addition or repair and retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with the development of concrete bridge construction in Hawaii. It is a good example of a 1940's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

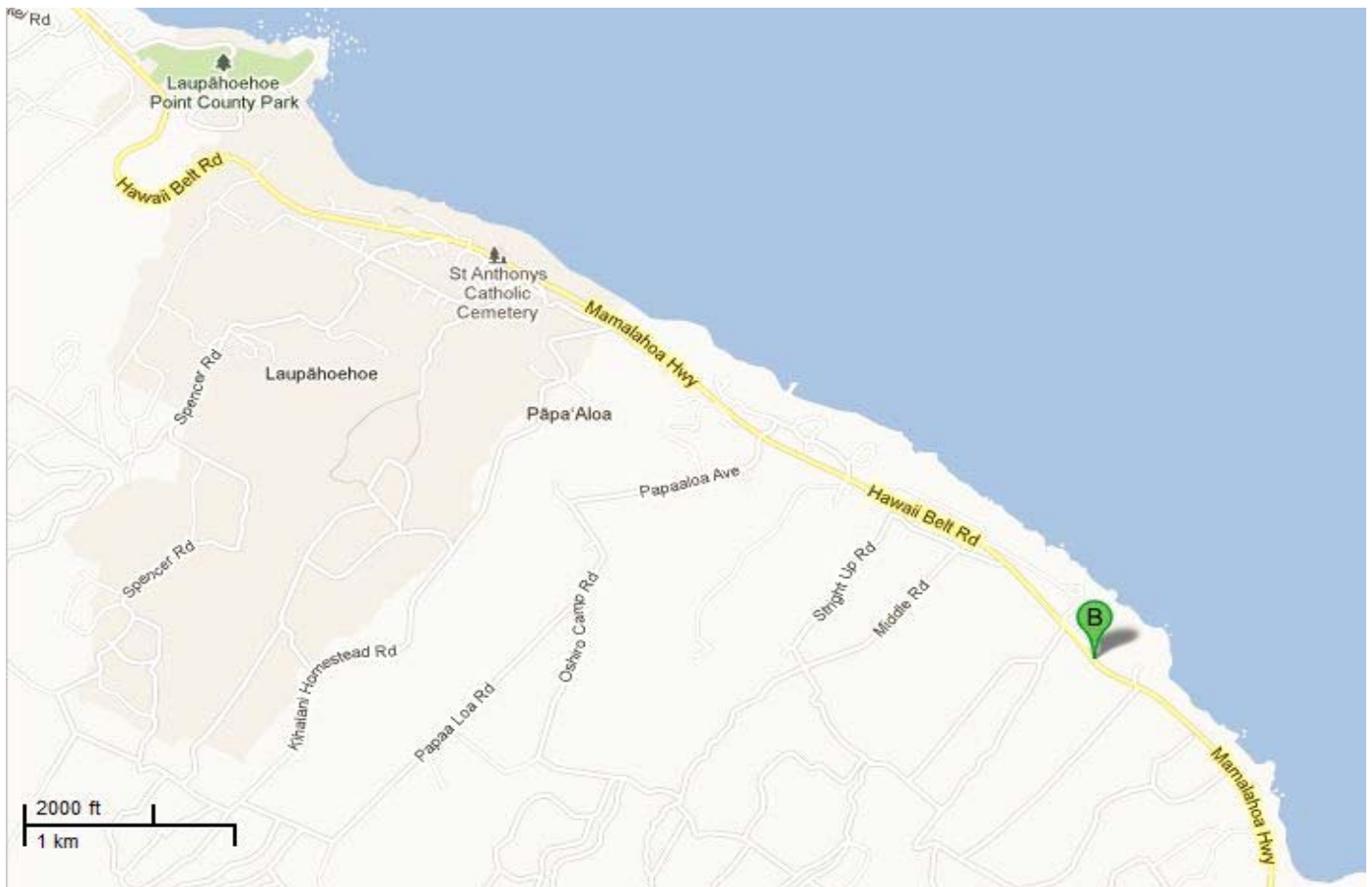
Inventory Form

(State)

General Information

Bridge Number: 001000190307673	Route No: 19	
Popular Name: Kapehu Stream Bridge		
Feature Crossed: Kapehu Stream		
Feature Carried: Hawaii Belt Road		
Milepost: 22.79 mi.	Island: Hawaii	
Longitude: 155d-12m-18.48s	Latitude: 19d-57m-55.24s	
Location: 6.43 Miles East of Ookala Access Road		
Historic Name: Kapehu Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1933	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 39.0 ft.	Total Length: 130.9 ft.	Deck Width: 28.9 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kapehu Stream Bridge carries Hawaii Belt Road across the Kapehu Stream. This concrete bridge is in its original location, is generally in good condition, and its materials remain intact. It is aesthetically similar to its neighbor, Kaaluu Stream Bridge. The original concrete pier wall on both sides contains double arches that house a recessed alcove within. The original concrete diaphragm is cast between the girders at both pier walls, which are still in good condition. Seismic retrofitting was done previously on this bridge by a private contractor.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship and design.

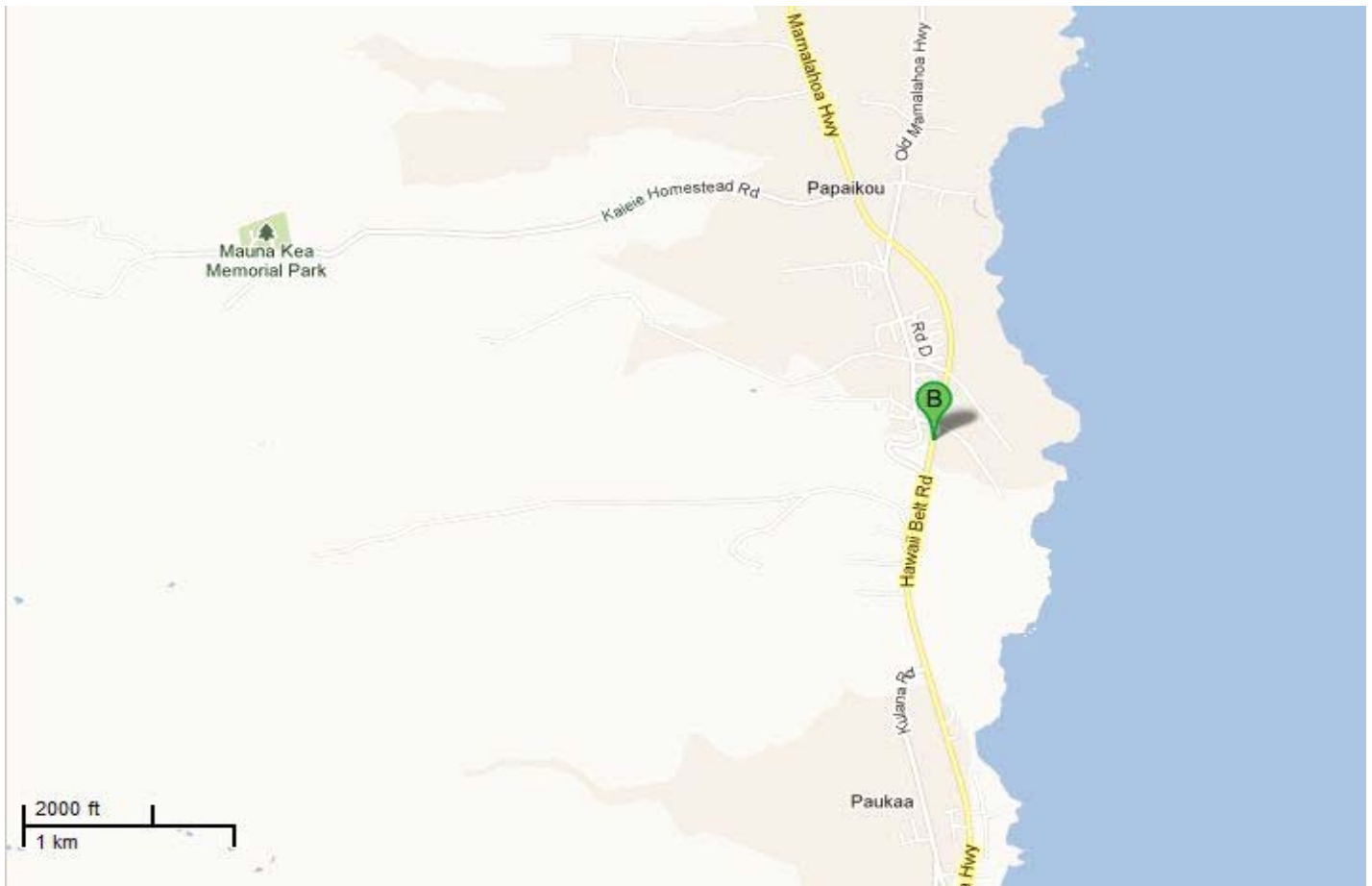
Inventory Form

(State)

General Information

Bridge Number: 001000190309317	Route No: 19	
Popular Name: Kapue Stream Bridge		
Feature Crossed: Kapue Stream		
Feature Carried: Hawaii Belt Road		
Milepost: 6.28 mi.	Island: Hawaii	
Longitude: 155d-05m-34.06s	Latitude: 19d-46m-53.35s	
Location: 0.70 Miles East of Kaieie Road		
Historic Name: Kapue Stream Bridge		
Designer/Engineer: John Mason Young (1911) / William R. Bartels (1950)		
Builder/Contractor: W. W. Beers (1911) - Fabricator: Hamilton and Chambers, N.Y. (1911) / Independent Iron Works, Ca. (1953)		

Location Map:



Construction Information

Bridge Type: Steel Trestle	Construction Date: 1950	Replaced? No
Altered? Yes Alteration Date(s): 1950		
Alteration Type(s):		
Alteration Description(s): The highway bridge is a reconstructed railroad trestle		

Bridge Information

Number of Spans: 8	Max Span: 65.9 ft.	Total Length: 415.0 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Steel Trestle			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction (added 1950)			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? Yes
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: See National Register of Historic Places Nomination Form.		

Significance Statement:

See National Register of Historic Places Nomination Form and see Hawaii Belt Road significance statement.

Inventory Form

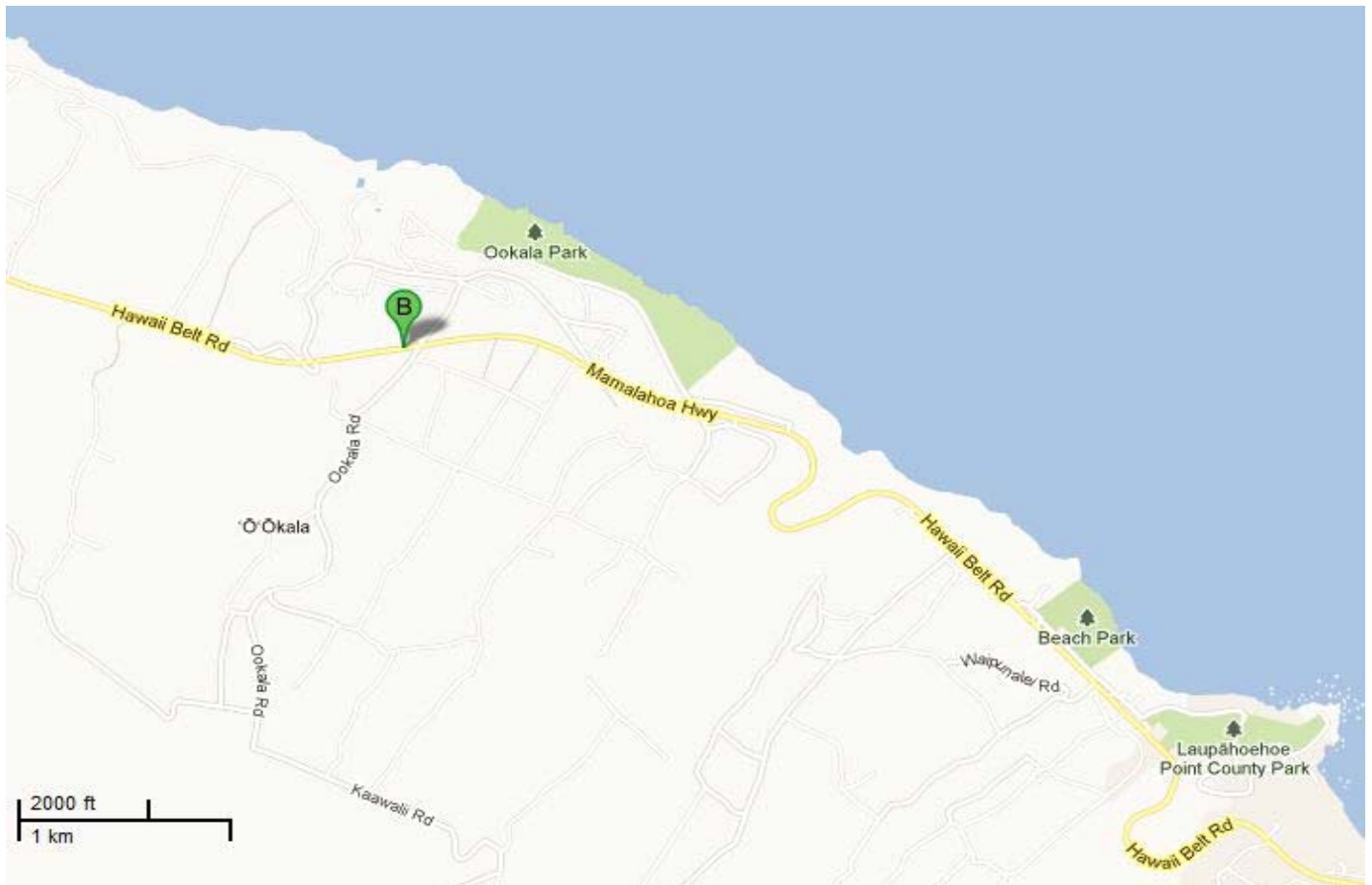
(State)

General Information

Bridge Number: 001000190306944	Route No: 19
Popular Name: Kaula Stream Bridge	
Feature Crossed: Kaula Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 30.07 mi.	Island: Hawaii
Longitude: 155d-17m-11.19s	Latitude: 20d-00m-35.52s
Location: 0.89 Miles West of Ookala Access Road	
Historic Name: Kaula Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1959	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 124.0 ft.	Total Length: 356.0 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Box Girder			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kaula Stream Bridge is a continuous concrete multiple box beam/girder structure, constructed in 1959, to carry the Hawaii Belt Road over Kaula Gulch from Honokaa to Hilo in the Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location with the Kaula Gulch roadway still underneath. There is a concrete retaining wall at the left footing pier and dry rubble protective walls at both piers. The original design and materials are mostly intact. The parapets are concrete open horizontal which is a common parapet type of post-war bridges. The elliptical ornaments at the end posts add to the bridge's artistic value. The workmanship is evident in the rocker column above the top of the pier. The rural/coastal setting has not changed and, along with the existing roadway, contributes to the historic character of the bridge. Interpretation is aided by the name and date of construction incised on the end piers.</p>		

Significance Statement:

This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.


See Post-War Hawaii Belt Road significance statement.

Inventory Form

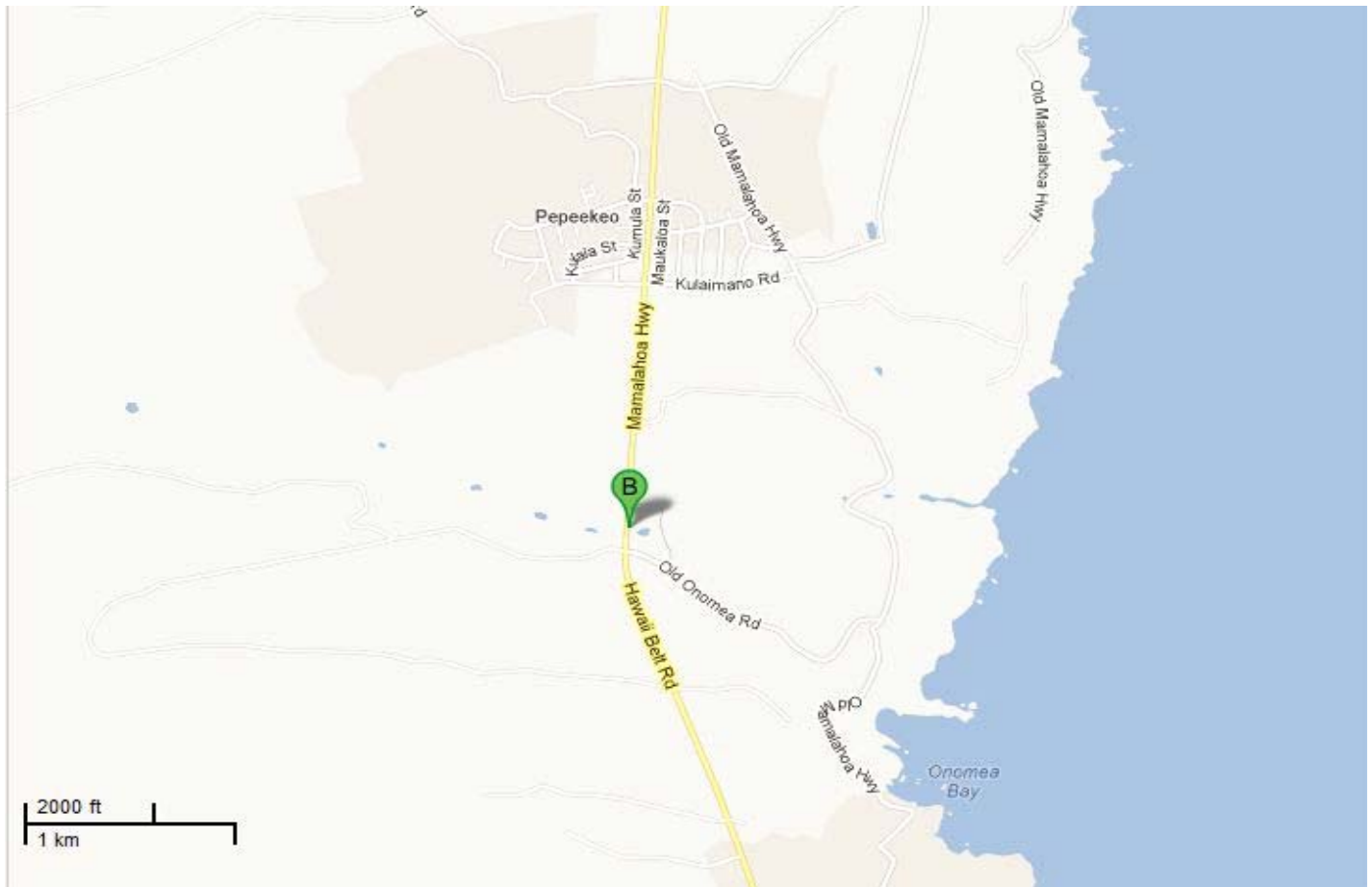
(State)

General Information

Bridge Number: 001000190309043	Route No: 19
Popular Name: Kawainui Stream Bridge	
Feature Crossed: Kawainui Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 9.09 mi.	Island: Hawaii
Longitude: 155d-06m-17.80s	Latitude: 19d-49m-08.18s
Location: 0.80 Miles East of Kulaimano Road	
Historic Name: Kawainui Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Steel Stringer	Construction Date: 1948	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span:	Total Length: 70.9 ft.	Deck Width: 32.5 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features: Walkways each side			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kawainui Stream Bridge was constructed in 1948 to carry the upgraded Hawaii Belt Road over the Kawainui Stream. The bridge remains in its original location. The rural setting remains unchanged. The ornate design and materials of this structure are intact. There are sidewalks on both sides of the bridge that are flanked with concrete "Greek cross" style parapets which terminate in curved, stepped end piers. Significant skill and craftsmanship are evident on this structure. The unique style of parapet seen in earlier eras makes the bridge one of only two that remain from this post-war period (the Kaukonahua Bridge on Oahu is the other). The abandoned concrete supports nearby of a previous bridge can also be observed. The bridge's design, materials and workmanship are good and have not been obscured by additions or repairs. The setting, late use of the style, and material contribute to the historic character of the bridge.</p>		

Significance Statement:

The use of steel was uncommon in Hawaii due to the extreme marine environment. Since very little steel is used for bridge construction in Hawaii, this bridge is eligible under Criterion C for its distinctive structural type. This bridge is also eligible under Criterion C for being the earliest steel bridge built post-war (1945) on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

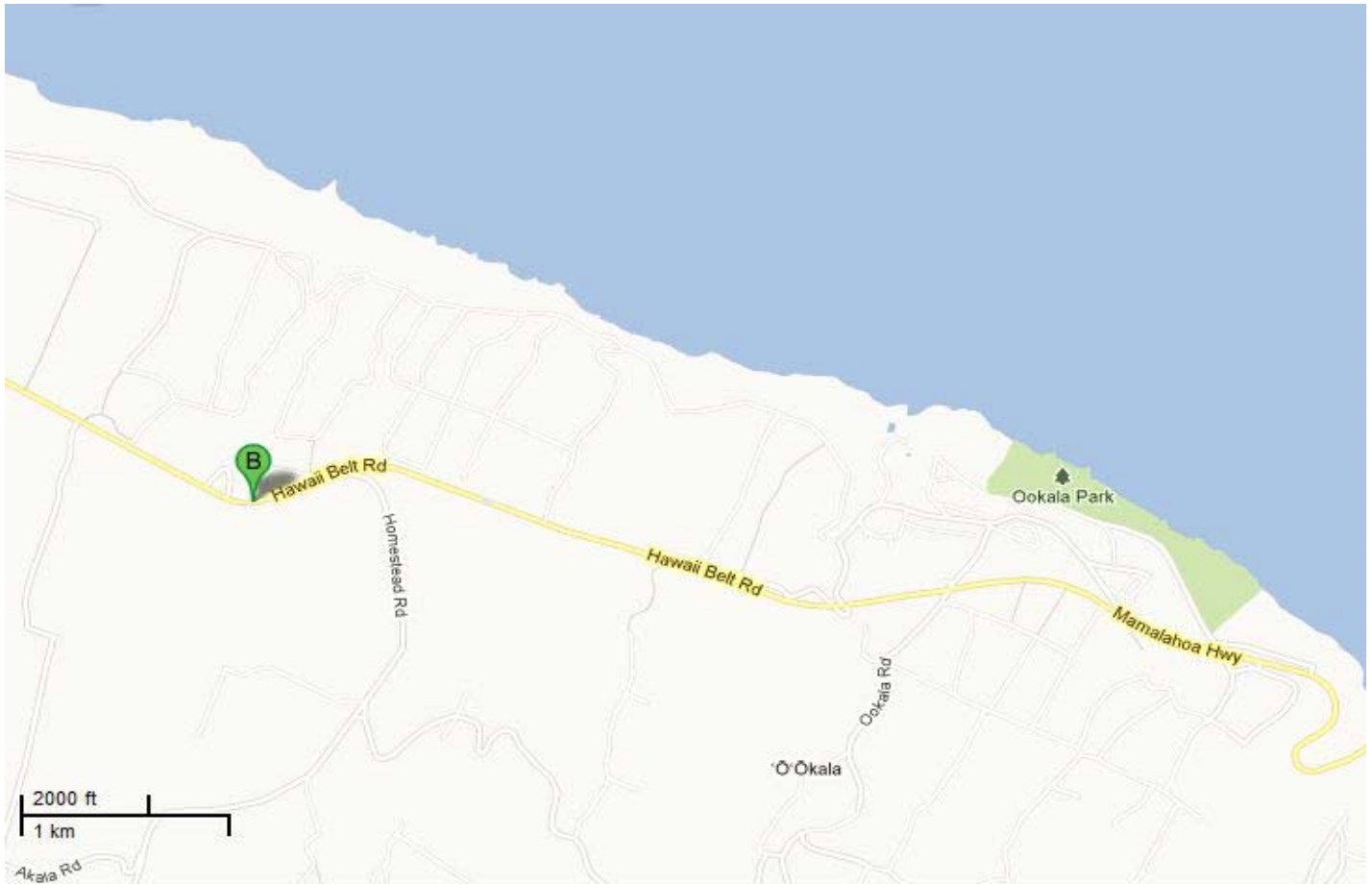
(State)

General Information

Bridge Number: 001000190306756	Route No: 19
Popular Name: Kealakaha Stream Bridge	
Feature Crossed: Kealakaha Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 31.94 mi.	Island: Hawaii
Longitude: 155d-18m-48.89s	Latitude: 20d-00m-52.79s
Location: 4.54 Miles East of Paauilo Plantation Road	
Historic Name: Kealakaha Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor: George Freitas	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam		Construction Date: 1935		Replaced? No
Altered? No	Alteration Date(s):			
Alteration Type(s):				
Alteration Description(s):				

Bridge Information

Number of Spans: 6	Max Span: 98.1 ft.	Total Length: 486.9 ft.	Deck Width: 29.5 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction; brackets at rail and arched pier columns			

Historic Association

Eligibility Status: Eligible	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: <p>A new bridge was built recently parallel to this old bridge with the same name. This information pertains to the older historic bridge rather than the newly built structure. The old historic bridge is currently closed and gated with no access to vehicles or pedestrians and there have been talks about demolishing the bridge in the future.</p> <p>The Kealakaha Bridge carries the Hawaii Belt Road (FAP 19) across the Kealakaha Stream on the Hamakua coast of the island of Hawaii. The structure is a curved multi-span reinforced-concrete tee-beam bridge. The Kealakaha Bridge is in its original location and the rural setting has remained unchanged. The bridge's original continuous tee beam design and reinforced-concrete materials remain intact. The workmanship of the bridges has not been obscured by additions or repairs. The bridge is the work of local contractor George Freitas, who constructed the massive concrete bridge. The bridge was structurally innovative at the time of its construction since the calculations for a curved structure, such as this one, were done in long hand. (1) Due to its length and curvature, the bridge is easily visible from roadway. The bridge has retained its historic feeling, primarily due to its relatively narrow width and the appearance of the railings which are typical of 1930s Federal Aid bridges. The bridge's historic associations with territorial efforts to upgrade the belt road and advances in concrete technology are readily apparent to informed observers.</p> <p>(1) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 229.</p>		

Significance Statement:

The Kealakaha Bridge is significant for its contributions to the fields of engineering and transportation in Hawaii. The bridge is eligible under Criterion A for its associations with important public works project initiated by the territorial government and constructed with federal work relief programs funds during the Depression era. The bridge was a significant element of the Territorial Belt Road Plan and contributed to the economic development of the region. The Kealakaha Bridge is eligible under Criterion C as an excellent example of federally-funded tee-beam bridge construction in the 1930s and is indicative of the advances in bridge technology in the early twentieth-century. Further, the bridge is representative of the “work of a master”: William R. Bartels of the Territorial Highways Department.

Between 1932 and 1958, the Territory of Hawaii began to construct a modern highway, called the Hawaii Belt Road (FAP 19), around the island. The new road and bridges straightened out, bisected, and often bypassed, the circuitous old government road. The new road is an extraordinary engineering feat; it contains fifty-six bridges in forty-two miles, took twenty-two years to build, cost \$54 million, and reduced the driving time between Hilo and Honokaa from over two hours to forty minutes. (1)

The Kealakaha Bridge is an excellent example of the substantial yet attractive bridges built with Federal Aid funds. These bridges spanned gulches high above sea level and enabled the belt road to run a straighter course. Federal Aid bridges did not scrimp on ornament, and every attempt was made to add beauty to utility. (2) The bridge was one of the last major concrete tee beam highway bridges constructed along the Hawaii Belt Road prior to WW II. The bridge’s continuous concrete tee beam design was technically ambitious, particularly due to its extraordinary height and long spans; the construction of the bridge was considered to be a major engineering feat. Bartels was responsible for the design of all major territorial bridge projects between 1932 and his retirement from the department in 1956. The contractor on the Kealakaha Bridge was George Freitas, founder of Pacific Construction Company, who built the Honolulu Advertiser Building and several other Federal Aid bridges.

In 1995, the State Department of Transportation (DOT) determined that the bridge did not meet current federal highway standards due to its narrow width and curvature of the roadway. In consultation with the SHPO, the DOT developed roadway improvement plans to preserve the bridge in-place for pedestrian use.

(1) Russell Apple, *Ala Kahakai: A phrase in the Hawaiian language meaning Trail by the Sea...a walk through one Hundred and Fifty Years of History on the Island of Hawaii* (Hawaii National Park, Hawaii: Macapleville Press, 1994), 57.

(2) Patricia Alvarez, *Historic Bridge Inventory and Evaluation: Island of Hawaii*, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 230.

Inventory Form

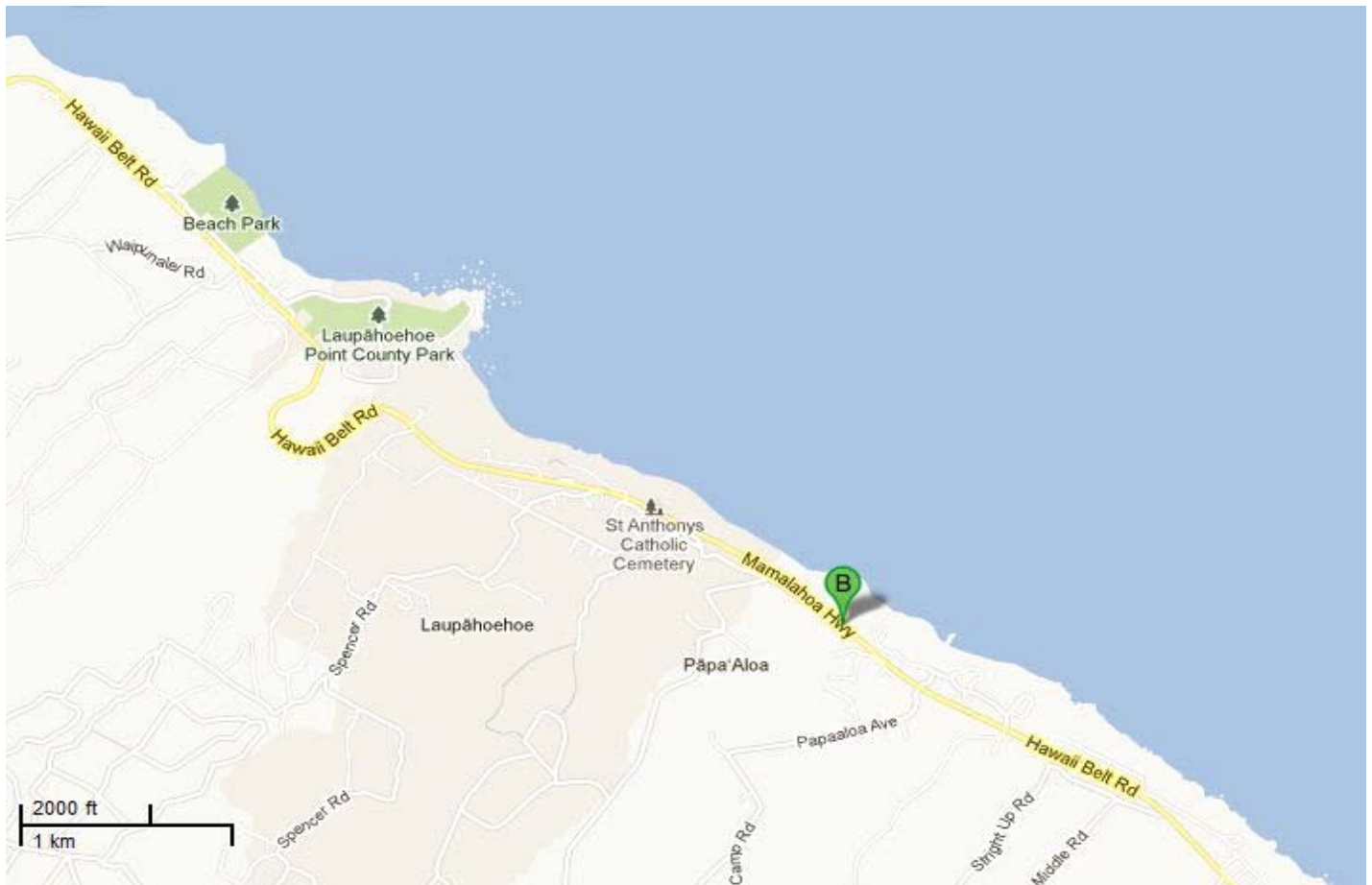
(State)

General Information

Bridge Number: 001000190307519	Route No: 19
Popular Name: Kihalani Stream Bridge	
Feature Crossed: Kihalani Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 24.31 mi.	Island: Hawaii
Longitude: 155d-13m-25.26s	Latitude: 19d-58m-42.72s
Location: 4.86 Miles East of Ookala Access Road	
Historic Name: Kihalani Stream Bridge	
Designer/Engineer: William R. Bartels and R. Kawamura	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1956	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 125.0 ft.	Total Length: 331.0 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Box Girder			
Substructure: Concrete Abutment Wall and Concrete T-Shaped Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kihalani Stream Bridge is a continuous concrete box beam/multiple girder structure, constructed in 1956, to carry Hawaii Belt Road over Kihalani Gulch from Honokaa to Hilo in the Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. The original design and materials are mostly intact. The parapets are concrete open horizontal which is a common parapet type of post-war bridges. The elliptical ornaments at the end posts add to the bridge's artistic value. The rural setting contributes to the historic character of the bridge. Interpretation is aided by the name and date of construction incised on the end piers.</p>		

Significance Statement:

This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

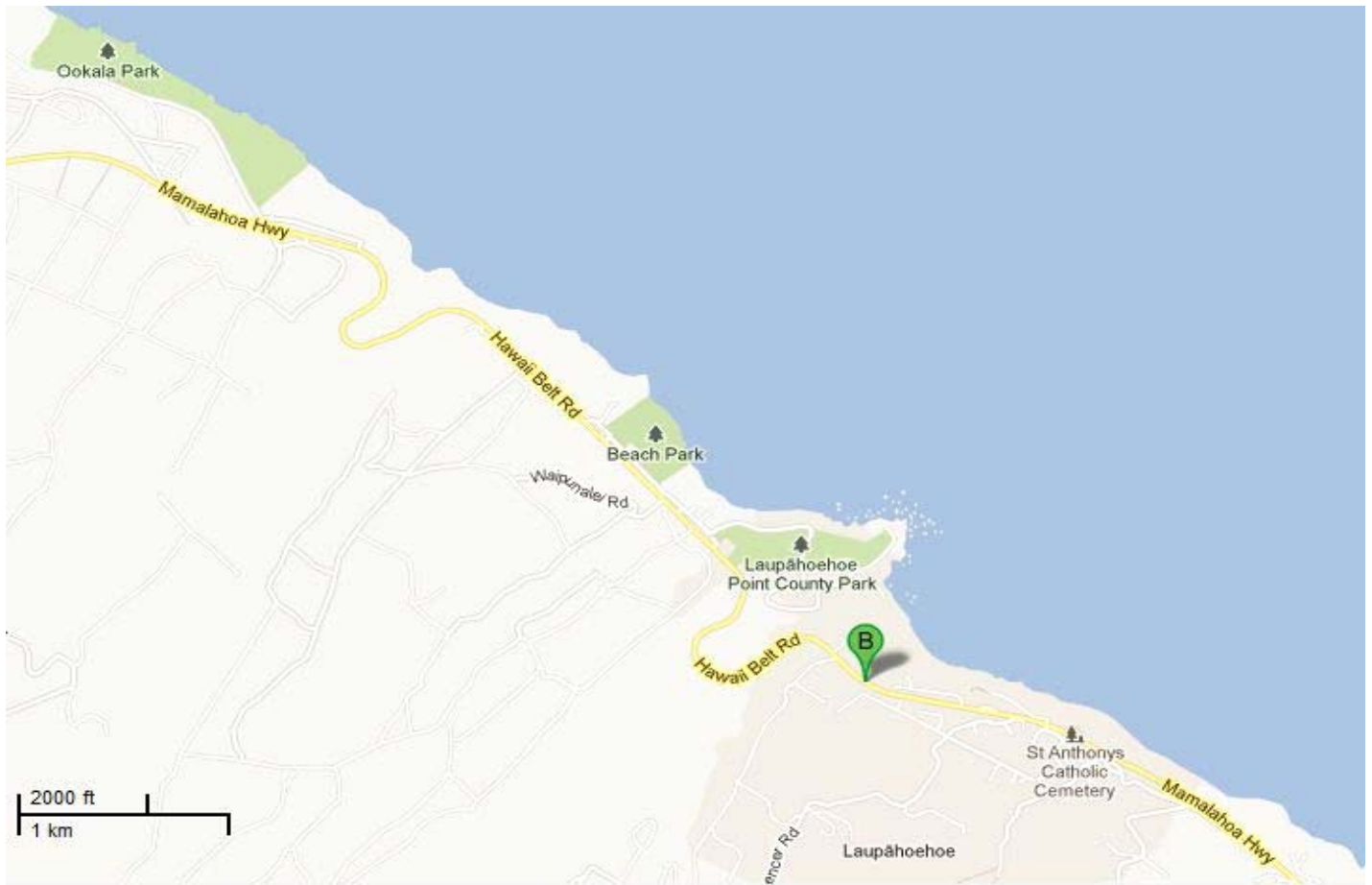
(State)

General Information

Bridge Number: 001000190307387	Route No: 19
Popular Name: Kilau Stream Bridge	
Feature Crossed: Kilau Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 25.65 mi.	Island: Hawaii
Longitude: 155d-14m-29.88s	Latitude: 19d-59m-11.03s
Location: 3.54 Miles East of Ookala Access Road3.54MI W/OOKALA ACC RD	
Historic Name: Kilau Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1953	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 84.0 ft.	Total Length: 225.1 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kilau Stream Bridge is a continuous concrete and tee beam structure, constructed in 1953, to carry Hawaii Belt Road over Kilau Stream from Honokaa to Hilo in the Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. Ditches are found at the ends of the bridge. The original design and materials are mostly intact. The parapets are concrete open horizontal which is a common parapet type of post-war bridges. The rural setting and the concrete rubble masonry wall contribute to the historic character of the bridge. Interpretation is aided by the name and date of construction incised on the end piers.</p>		

Significance Statement:

This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

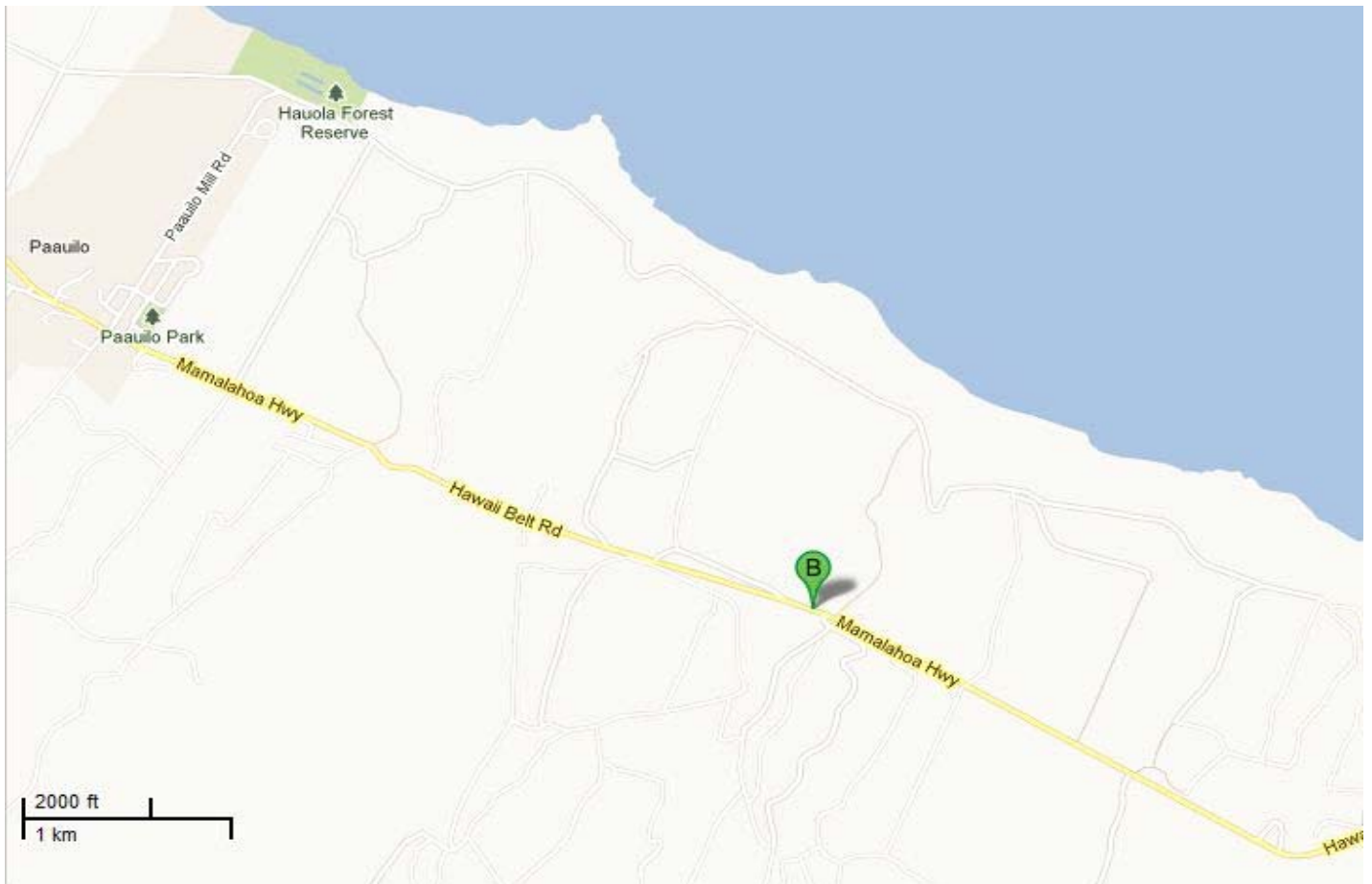
(State)

General Information

Bridge Number: 001000190306590	Route No: 19
Popular Name: Kukaiau Stream Bridge	
Feature Crossed: Kukaiau Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 33.62 mi.	Island: Hawaii
Longitude: 155d-20m-10.15s	Latitude: 20d-01m-34.71s
Location: 2.88 Miles East of Paauilo Plantation Road	
Historic Name: Kukaiau Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type:	Steel Stringer	Construction Date:	1951	Replaced?	No
Altered?	Yes	Alteration Date(s):	2001		
Alteration Type(s):	Seismic Retrofit				
Alteration Description(s):	Piers #1, #2, #4 and #5 seismic retrofitted.				

Bridge Information

Number of Spans: 7	Max Span: 77.1 ft.	Total Length: 380.9 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete and Metal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kukaiau Stream Bridge was constructed in 1951 to carry the Hawaii Belt Road over the stream in the Hamakua region of the Big Island of Hawaii. The bridge remains in its original location and the rural/coastal setting has not changed. The parapets are concrete and metal which is a typical post-war style. The original design and materials are mostly intact, and workmanship is visible in the concrete work. Metal guardrails have been added that detract slightly from the overall historic impression of the structure. The bridge was seismically retrofitted in 2001.</p>		

Significance Statement:

The use of steel was uncommon in Hawaii due to the extreme marine environment. Since very little steel is used for bridge construction in Hawaii, this bridge is eligible under Criterion C for its distinctive structural type. This bridge is of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.


See Post-War Hawaii Belt Road significance statement.

Inventory Form

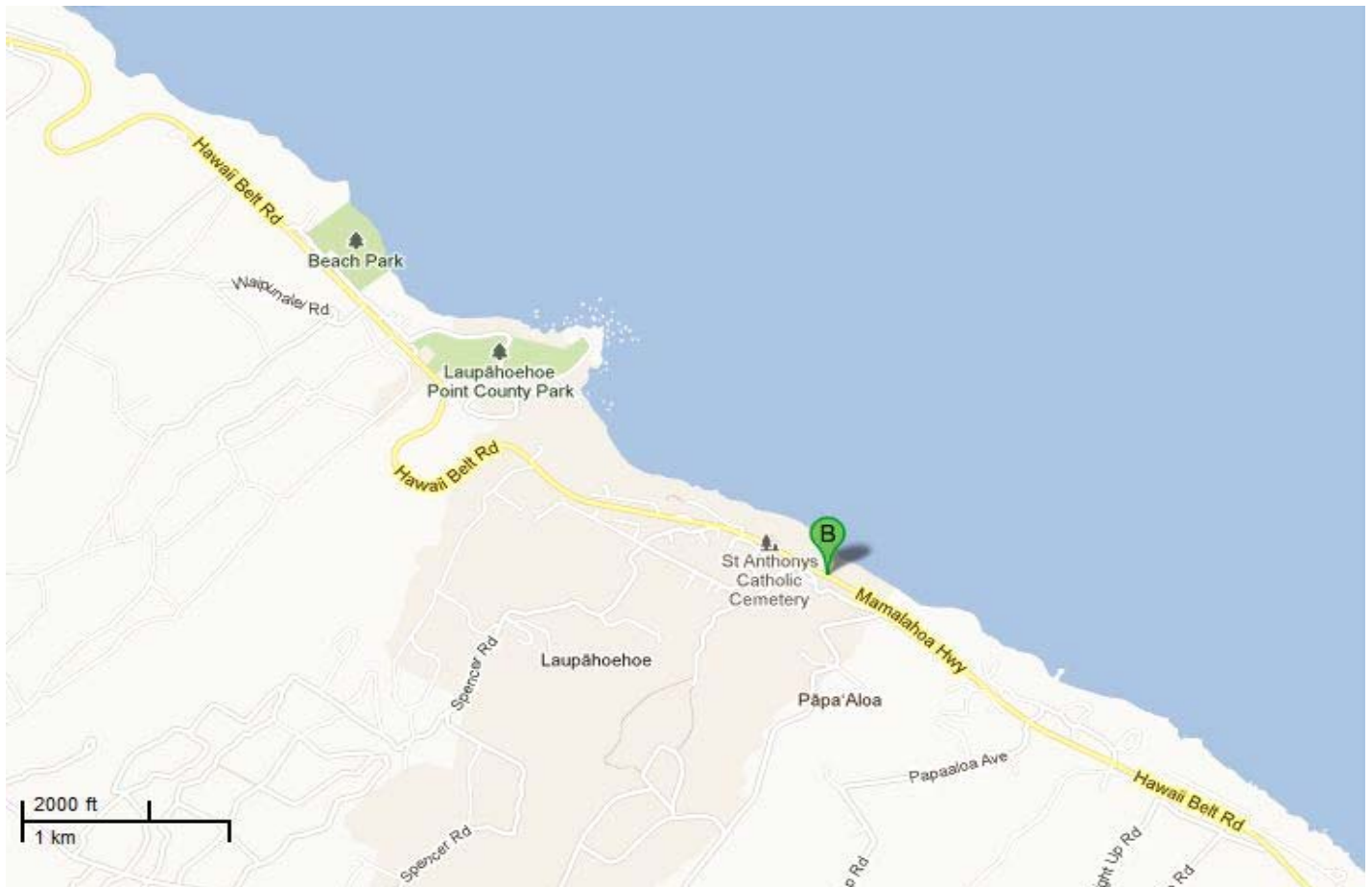
(State)

General Information

Bridge Number: 001000190307474	Route No: 19
Popular Name: Kuwaikahi Stream Bridge	
Feature Crossed: Kuwaikahi Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 24.78 mi.	Island: Hawaii
Longitude: 155d-13m-45.11s	Latitude: 19d-58m-56.16s
Location: 4.41 Miles East of Ookala Access Road4.41MI E/OOKALA ACC RD	
Historic Name: Kuwaikahi Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Steel Stringer	Construction Date: 1957	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 82.0 ft.	Total Length: 193.9 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Kuwaikahi Stream Bridge is a steel and stringer multi-beam girder structure, which was constructed in 1957 to carry the Hawaii Belt Road over Kuwaikahi Gulch from Honokaa to Hilo in the Hilo-Hamakua Heritage Coastline that was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. The original design and materials are mostly intact. The workmanship and engineering complexity is evident in the frame of the steel plate girder. The balustrade is a typical rectilinear post-war style, composed of a reinforced concrete balustrade penetrated with horizontal rectilinear voids with a concrete rail cap, common in the post-war era. The elliptical ornaments at the end posts add to the bridge's artistic value. The rural setting and the design contribute to the historic character of the bridge. Interpretation is aided by the name and date of construction incised on the end piers.</p>		

Significance Statement:

The use of steel was uncommon in Hawaii due to the extreme marine environment. Since very little steel is used for bridge construction in Hawaii, this bridge is eligible under Criterion C for its distinctive structural type. This bridge is of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

(State)

General Information

Bridge Number: 001000190307585	Route No: 19
Popular Name: Moanalulu Stream Bridge	
Feature Crossed: Moanalulu Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 23.66 mi.	Island: Hawaii
Longitude: 155d-12m-55.69s	Latitude: 19d-58m-23.67s
Location: 5.52 Miles East of Ookala Access Road	
Historic Name: Moanalulu Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1956	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 94.2 ft.	Total Length: 246.1 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Moanalulu Stream Bridge is a continuous concrete and tee beam structure, constructed in 1956, as part of a "Seismic Wave Damage Rehabilitation Project". This bridge carries the Hawaii Belt Road over Moanalulu Stream from Honokaa to Hilo and remains in its original location, where the rural/coastal setting has not changed. The original design and materials are mostly intact. The parapets are concrete open horizontal which was a common in the post-war era with metal railings addition on the top. The elliptical ornaments at the end posts add to the bridge's artistic value. The rural setting contributes to the historic character of the bridge. Interpretation is aided by the name and date of construction incised on the end piers.</p>		

Significance Statement:

This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

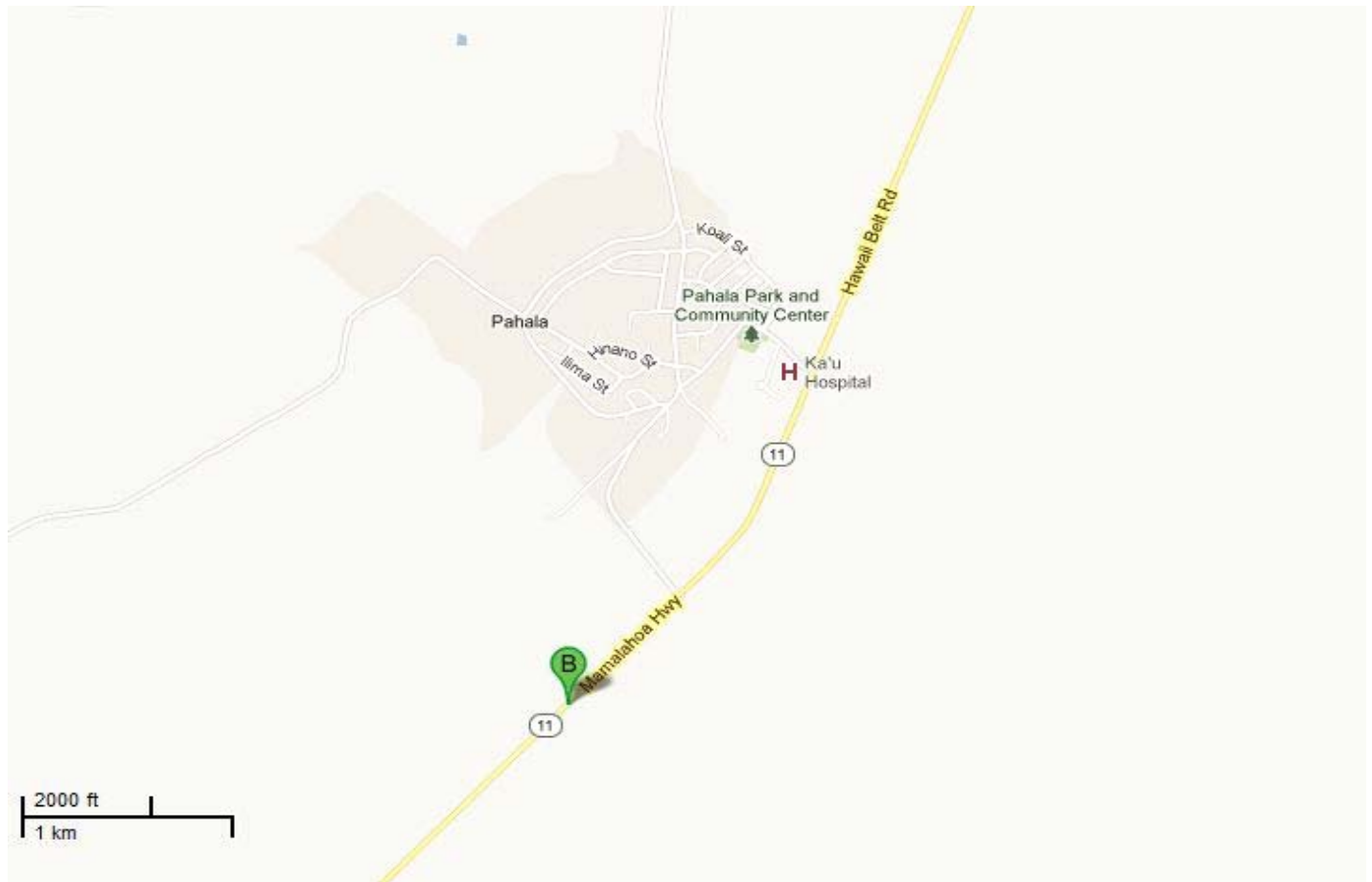
(State)

General Information

Bridge Number: 001000110306986	Route No: 11
Popular Name: Moaula Stream Bridge	
Feature Crossed: Moaula Stream	
Feature Carried: Hawaii Belt Road (Mamalahoa Highway)	
Milepost: 52.72 mi.	Island: Hawaii
Longitude: 155d-28m-58.58s	Latitude: 19d-11m-00.87s
Location: 0.52 Miles South of Maile Street	
Historic Name: Moaula Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor: George Freitas	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1938	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 60.0 ft.	Total Length: 69.9 ft.	Deck Width: 27.6 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features: Incised bridge name and date of construction on end piers			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering and transportation		
Narrative Description: <p>The Moaula Bridge carries the Hawaii Belt Road (FAP 11) across the Moaula Stream within the Kau District of the island of Hawaii. The bridge is one of five reinforced-concrete rigid frame structures built in the pre-World War II period in Hawaii.</p> <p>The bridge is in its original location and its rural setting has remained unchanged. The original concrete material of the bridge is in generally good condition and has not been altered by major repairs or additions. Overall, the bridge exhibits a high degree of workmanship, particularly the attention given to the rail. The rigid-frame bridge was technologically innovative for its time. The bridge is the work of Hawaii Island contractor George Freitas. The bridge's historic associations, as a product of the Territorial Highways Department effort to upgrade the belt road in the 1930s, is apparent to informed observers. The bridge's historic feeling is primarily evident through its rail style which was typical of the 1930s.</p>		

Significance Statement:

The Moaula Bridge has made significant contributions to the areas of engineering and transportation in Hawaii. The bridge is eligible under Criterion A for its associations with important public works project initiated by the territorial government and constructed with federal work relief programs funds during the Depression era. The bridge was a significant component of the Territorial Belt Road Plan and contributed to the economic development of Kau by providing economical transportation to the harbor for the sugar plantations located in that district. The reinforced-concrete rigid-frame bridge is eligible under Criterion C as an innovative example of bridge design utilizing new engineering technology, as well as for its aesthetic merit. The Moaula Bridge is representative of the "work of a master": William R. Bartels of the Territorial Highways Department.

Between 1932 and 1958, the Territory of Hawaii began to construct a modern highway, called the Hawaii Belt Road (FAP 19). The bridge is one of seven (Hionomoa, Kaalaala, Kanenelu, Keaiwa, Moaula, Paauau and Piikea) bridges constructed along the highway in 1937 to serve the sugar plantations near Pahala in the Kau district.

This bridge is one of the first reinforced-concrete rigid-frame bridges constructed in the islands, and one of only five of this type built prior to WW II. The reinforced-concrete rigid-frame bridge demonstrates the rapid advances in engineering technology in the early decades of the twentieth century and are the most sophisticated of the pre-WWII bridges from an engineering perspective. The abutments and deck of rigid-frame bridges are constructed as one solid piece of concrete enabling the slab to double or triple the previous achievable span of twenty feet. This technology was not used in Hawaii until 1936, when William R. Bartels of the Territorial Highways Department developed the plans for the Wahiawa Bridge on Kauai and the Kaahumanu Avenue-Naniloa Drive Overpass in Wailuku, Maui. (1) These were followed by the construction of two concrete rigid-frame bridges on Hawaii Island and one on Oahu. (2)

Bartels was responsible for the design of virtually all major territorial bridge projects between 1932 and his retirement from the department in 1956. His bridges evidence a refined aesthetic sensibility which makes them distinctive from the works of other engineers. Contractor George Freitas constructed both the Kealakaha and the Honolii Bridges on the Hawaii Belt Road, which were also designed by the Territorial Highways Department.

(1) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highway Administration (Honolulu, 1987b), 341.


(2) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highway Administration (Honolulu, 1987b), 341.

Inventory Form

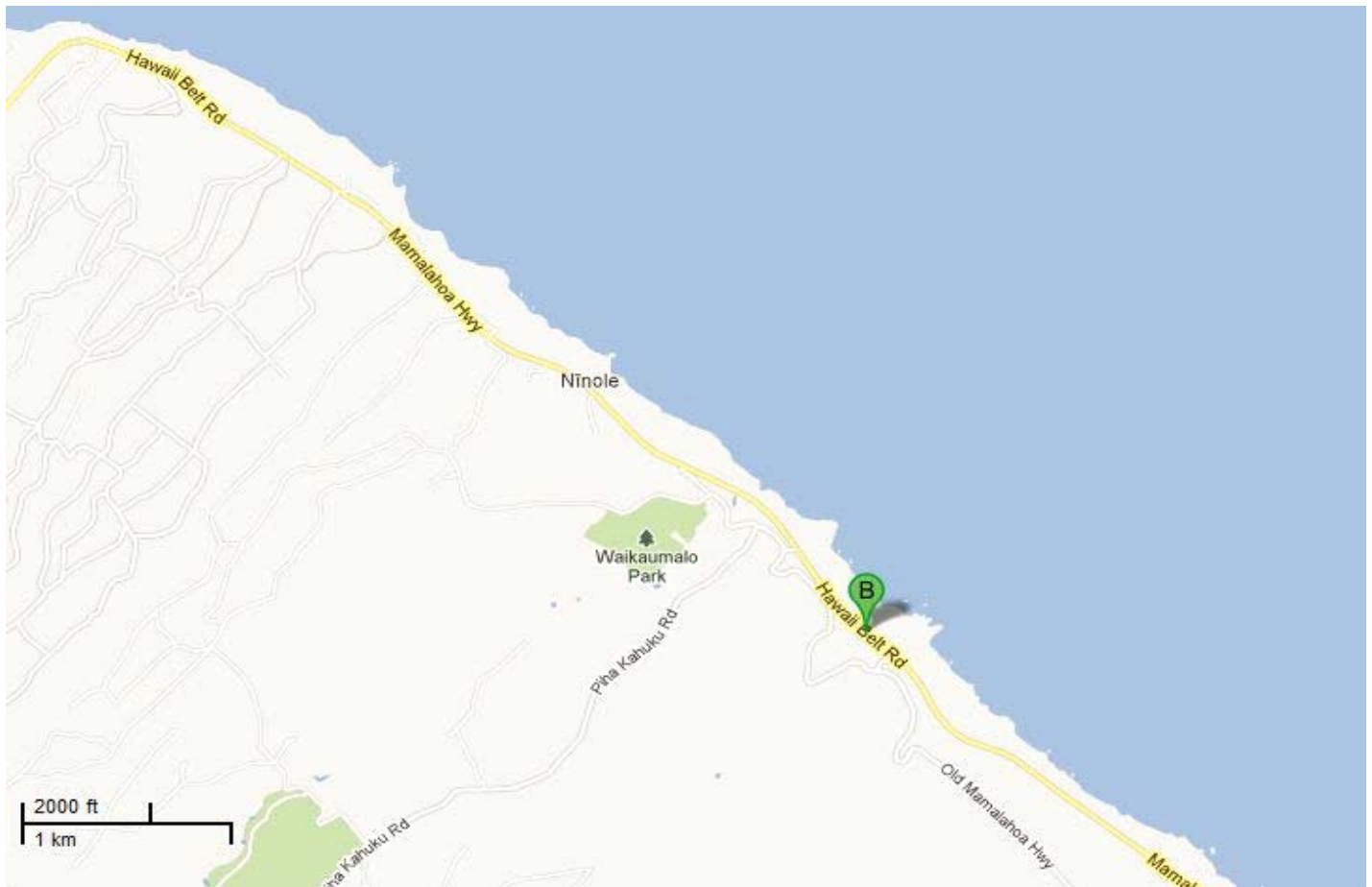
(State)

General Information

Bridge Number: 001000190308146	Route No: 19
Popular Name: Nanue Stream Bridge	
Feature Crossed: Nanue Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 17.99 mi.	Island: Hawaii
Longitude: 155d-09m-22.55s	Latitude: 19d-55m-38.30s
Location: 1.56 Miles West of Kauniho Road	
Historic Name: Nanue Stream Bridge	
Designer/Engineer: John Mason Young (1911) / William R. Bartels (1952)	
Builder/Contractor: W. W. Beers (1911) - Fabricator: Hamilton and Chambers, N.Y. (1911) / Independent Iron Works, Ca. (1952)	



Location Map:



Construction Information

Bridge Type: Steel Trestle	Construction Date: 1952	Replaced? No
Altered? Yes Alteration Date(s): 1952		
Alteration Type(s):		
Alteration Description(s): The highway bridge is a reconstructed railroad trestle		

Bridge Information

Number of Spans: 10	Max Span: 71.9 ft.	Total Length: 530.8 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Steel Trestle			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction (added 1952)			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? Yes
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: See National Register of Historic Places Nomination Form.		


Significance Statement:

See National Register of Historic Places Nomination Form and see Hawaii Belt Road significance statement.

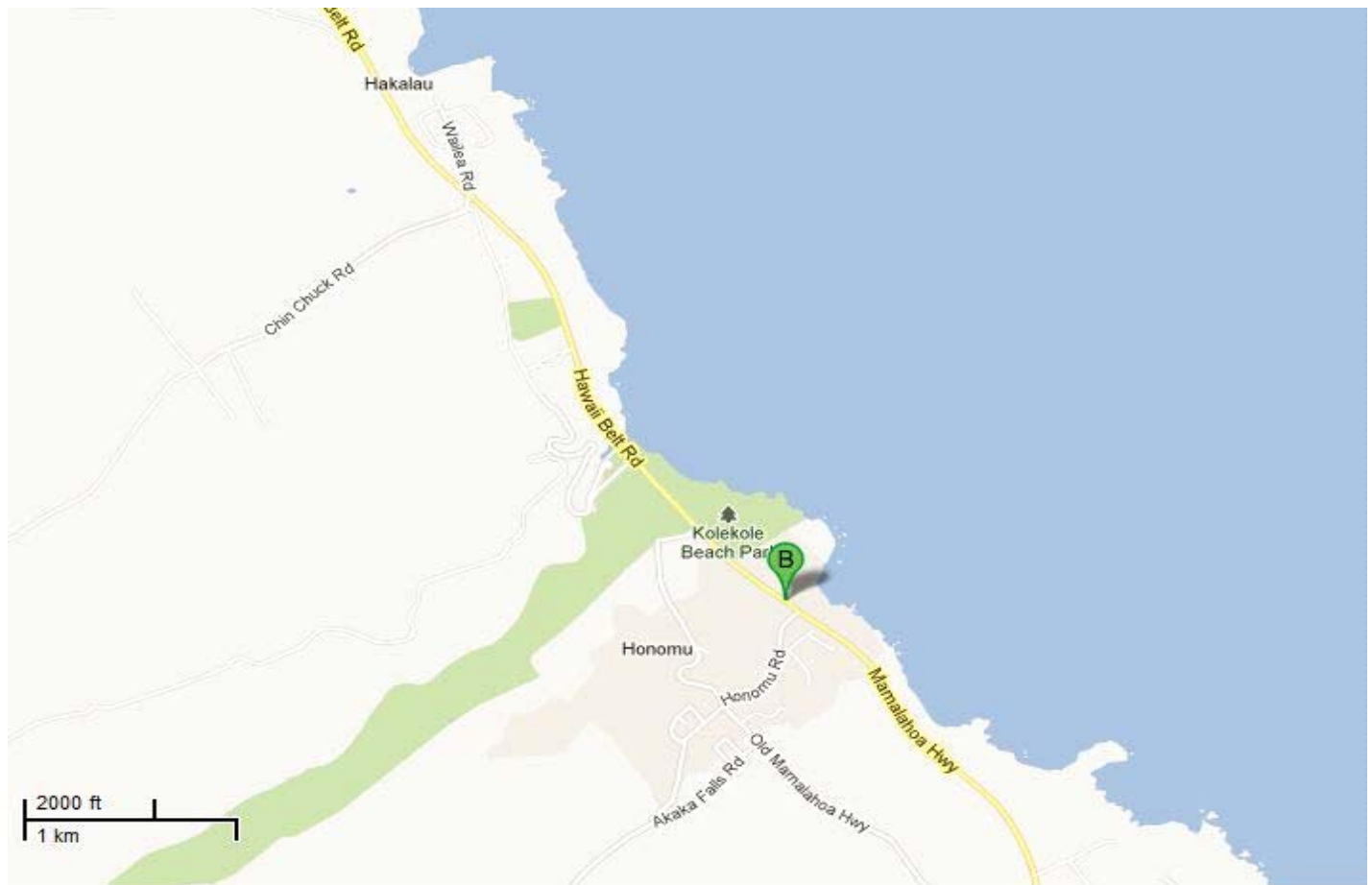
Inventory Form

(State)

General Information

Bridge Number: 001000190308619	Route No: 19	
Popular Name: Paheehee Stream Bridge		
Feature Crossed: Paheehee Stream		
Feature Carried: Hawaii Belt Road		
Milepost: 13.31 mi.	Island: Hawaii	
Longitude: 155d-06m-42.57s	Latitude: 19d-52m-31.96s	
Location: 0.09 Miles West of Honomu Road to Akaka Falls (Route 220)		
Historic Name: Paheehee Stream Bridge		
Designer/Engineer: John Mason Young		
Builder/Contractor: W. W. Beers		

Location Map:



Construction Information

Bridge Type: Steel Trestle	Construction Date: 1950	Replaced? No
Altered? Yes Alteration Date(s): 1950		
Alteration Type(s):		
Alteration Description(s): The highway bridge is a reconstructed railroad trestle		

Bridge Information

Number of Spans: 5	Max Span: 65.9 ft.	Total Length: 254.9 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Steel Trestle			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction (added 1950)			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? Yes
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: See National Register of Historic Places Nomination Form.		

Significance Statement:

See National Register of Historic Places Nomination Form and see Hawaii Belt Road significance statement.

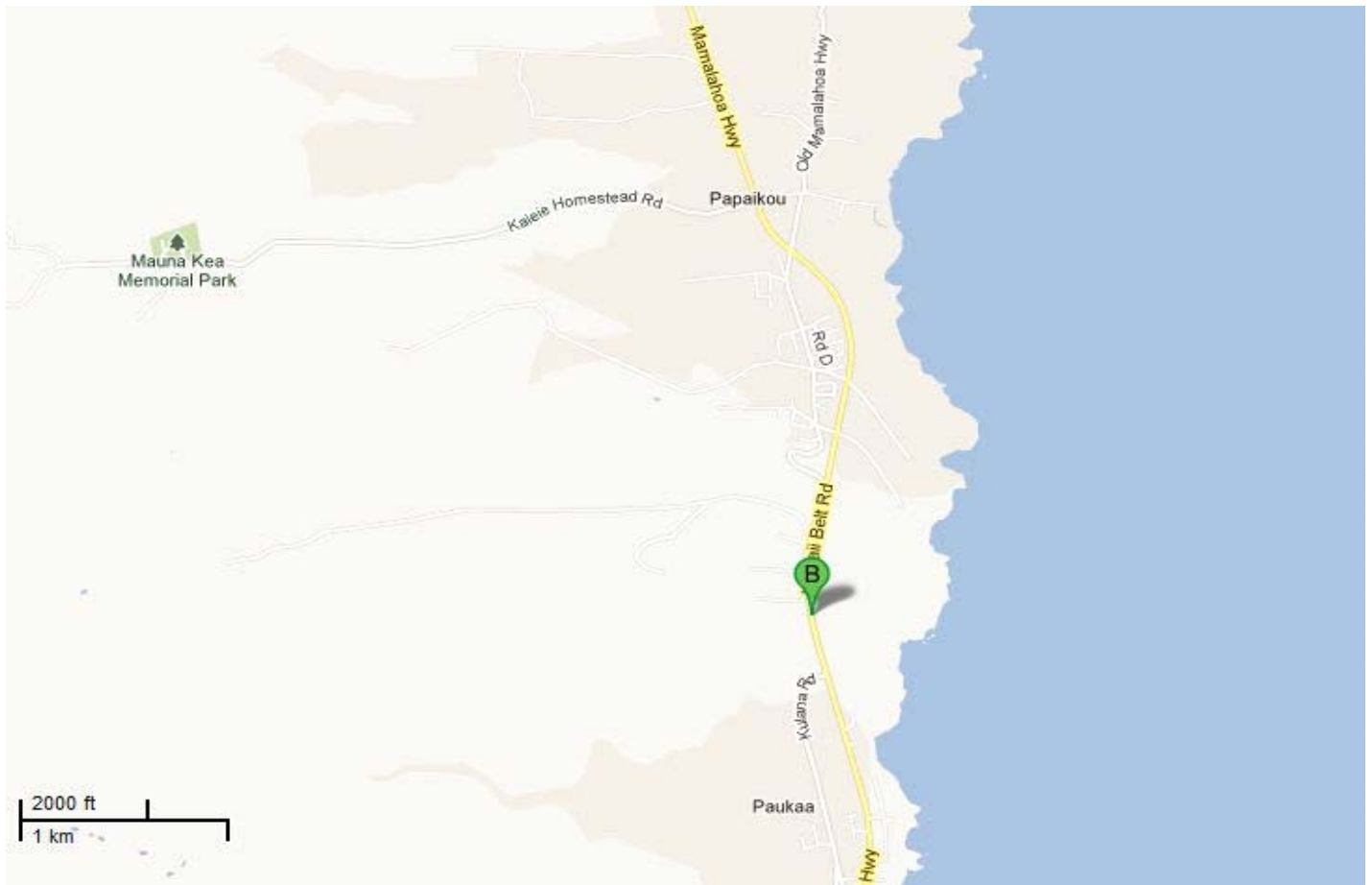
Inventory Form

(State)

General Information

Bridge Number: 001000190309368	Route No: 19	
Popular Name: Pahoehe Stream Bridge		
Feature Crossed: Pahoehe Stream		
Feature Carried: Hawaii Belt Road		
Milepost: 5.84 mi.	Island: Hawaii	
Longitude: 155d-05m-37.56s	Latitude: 19d-46m-29.15s	
Location: 0.62 Miles West of Kuikahi Road		
Historic Name: Pahoehe Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1912	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 45.9 ft.	Total Length: 48.9 ft.	Deck Width: 44.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Metal Thrie Beam			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Pahoehe Stream Bridge carries Hawaii Belt Road across the Pahoehe Stream. This closed spandrel arch is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete abutments however the original railings were replaced with thrie beams. In 2013 the bridge was scheduled to be replaced.</p>		

Significance Statement:

This bridge is eligible for being a good example of an early closed spandrel arch bridge. Although the original railings do not remain, the early original arched structure is unusual in Hawaii. It is a good example of a 1910's closed spandrel arch that is typical of its period in its use of materials, method of construction, craftsmanship, and design. Arch bridges are also an uncommon bridge type.

Inventory Form

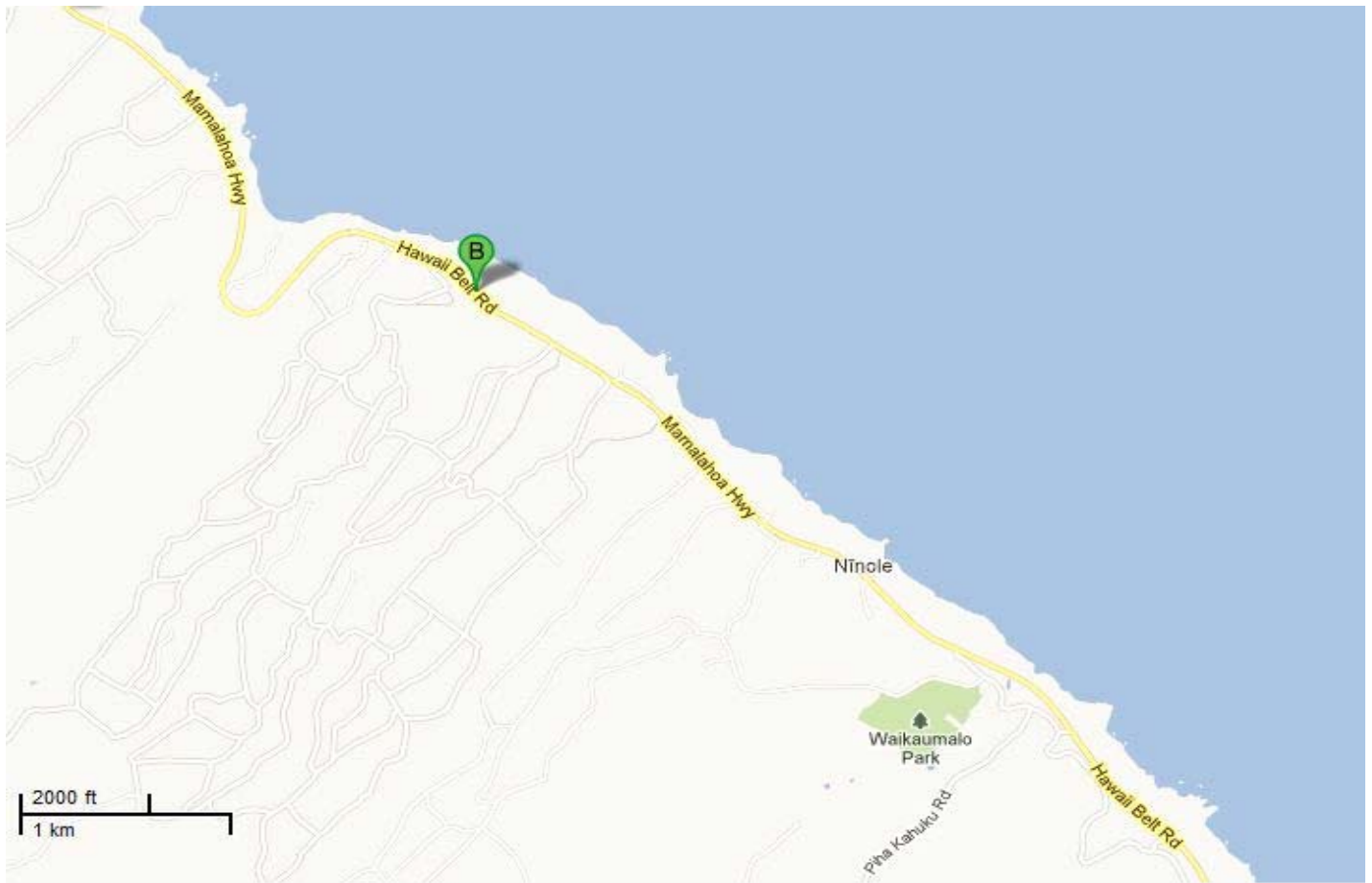
(State)

General Information

Bridge Number: 001000190307887	Route No: 19
Popular Name: Pohakupuka Stream Bridge	
Feature Crossed: Pohakupuka Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 20.67 mi.	Island: Hawaii
Longitude: 155d-11m-11.89s	Latitude: 19d-57m-06.11s
Location: 4.25 Miles West of Kauniho Road	
Historic Name: Pohakupuka Stream Bridge	
Designer/Engineer: William R. Bartels	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Rigid Frame	Construction Date: 1953	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 60.0 ft.	Total Length: 65.0 ft.	Deck Width: 37.1 ft.
Superstructure: Concrete Rigid Frame			
Substructure: Concrete Integral Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Pohakupuka Stream Bridge is a continuous concrete frame bridge, constructed in 1953, to carry Hawaii Belt Road over a concrete channel taking Holiilii stream from Honokaa to Hilo along the Hamakua Coast of the island of Hawaii. This bridge is part of the "Seismic Wave Damage Rehabilitation Project". This bridge remains in its original location and the abandoned Maulua railroad Tunnel and an old road still in existence is found nearby. The integrity of whole structure remains intact. Workmanship can be seen in the concrete formwork. The parapets are concrete open horizontal that were common in the post-war era but the three beams are bolted over the original parapets and invisible from the road side. The incised name and date on the end post aid interpretation of the bridge.</p>		

Significance Statement:

This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

Inventory Form

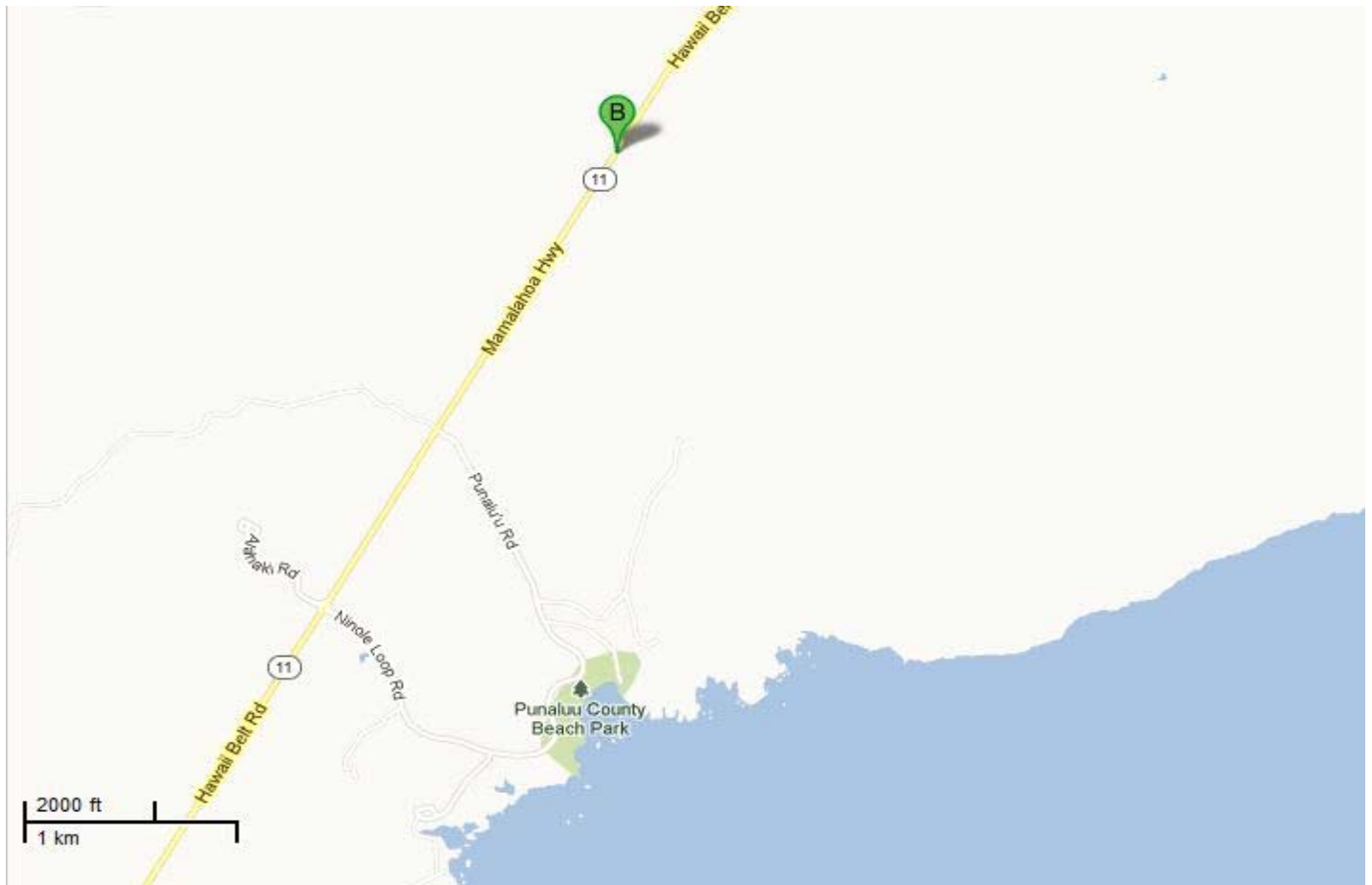
(State)

General Information

Bridge Number: 001000110306805	Route No: 11
Popular Name: Punaluu Stream Bridge	
Feature Crossed: Punaluu Stream	
Feature Carried: Hawaii Belt Road (Mamalahoa Highway)	
Milepost: 54.53 mi.	Island: Hawaii
Longitude: 155d-30m-05.35s	Latitude: 19d-09m-51.81s
Location: 1.29 Miles North of Road to Punaluu Black Sand Beach	
Historic Name: Punaluu Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1940	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 28.9 ft.	Total Length: 30.8 ft.	Deck Width: 27.6 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Punaluu Stream Bridge carries Hawaii Belt Road across the Punaluu Stream. This reinforced concrete bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has open Greek cross parapets with stepped caps and curved wide end posts. Two of the end posts have the construction date and the bridge name engraved. The concrete deck is supported by concrete abutments. The parapets have been painted white only on the surface facing the road. The workmanship of the bridge has not been obscured by addition or repair and retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with the development of concrete bridge construction in Hawaii. It is a good example of a 1940's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

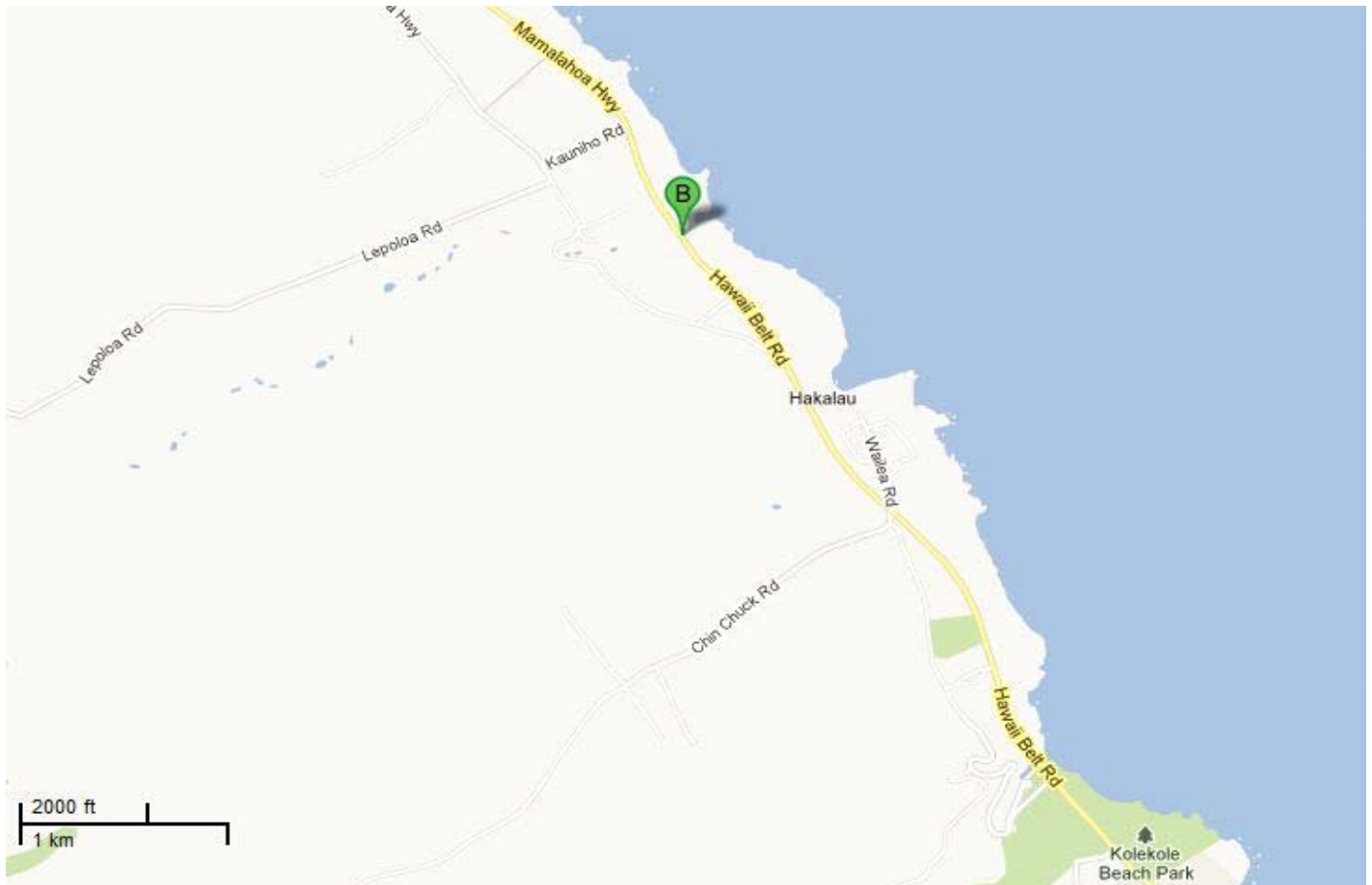
(State)

General Information

Bridge Number: 001000190308346	Route No: 19
Popular Name: Umauma Stream Bridge	
Feature Crossed: Umauma Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 16.02 mi.	Island: Hawaii
Longitude: 155d-08m-08.77s	Latitude: 19d-54m-26.10s
Location: 0.34 Miles East of Kauniho Road	
Historic Name: Umauma Stream Bridge	
Designer/Engineer: John Mason Young (1911) / William R. Bartels (1953)	
Builder/Contractor: W. W. Beers (1911) - Fabricator: Hamilton and Chambers, N. Y. (1911) / Independent Iron Works, Ca. (1953)	



Location Map:



Construction Information

Bridge Type: Steel Stringer	Construction Date: 1952	Replaced? No
Altered? Yes Alteration Date(s): 1952, 2013		
Alteration Type(s):		
Alteration Description(s): The highway bridge is a reconstructed railroad trestle, added concrete pillars inside of trestles in 2013		

Bridge Information

Number of Spans: 6	Max Span: 65.9 ft.	Total Length: 280.8 ft.	Deck Width: 38.4 ft.
Superstructure: Steel Multi-Girder			
Substructure: Concrete Abutment Wall and Steel Trestle			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Concrete end piers with incised bridge name and date of construction (added 1952)			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? Yes
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: In 2013 concrete pillars were placed inside of the trestles. See National Register of Historic Places Nomination Form.		

Significance Statement:

See National Register of Historic Places Nomination Form and see Hawaii Belt Road significance statement.

Inventory Form

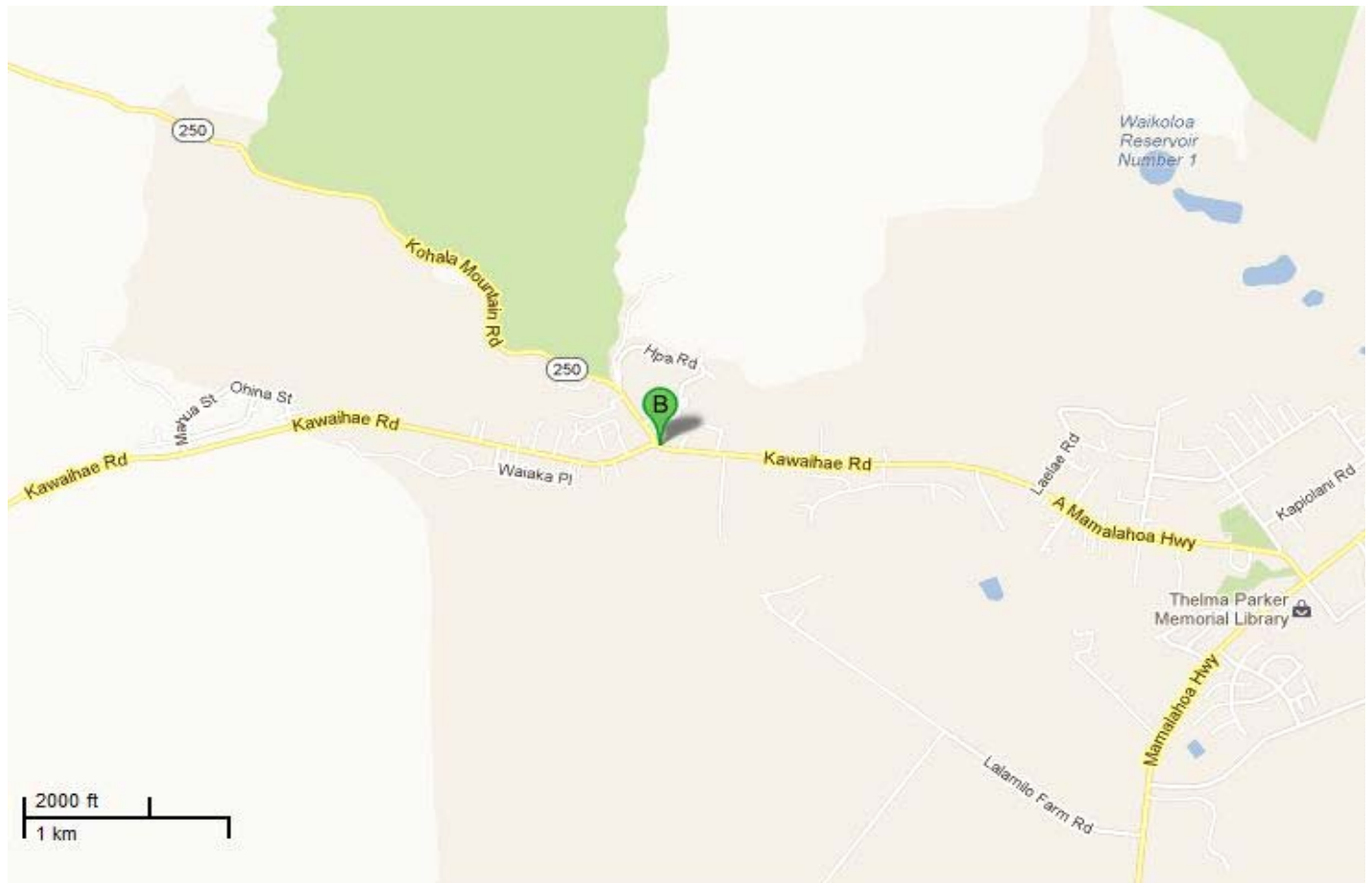
(State)

General Information

Bridge Number: 001002500500053	Route No: 19
Popular Name: Waiaka Stream Bridge	
Feature Crossed: Waiaka Stream	
Feature Carried: Kawaihae Road	
Milepost: 0.53 mi.	Island: Hawaii
Longitude: 155d-41m-56.06s	Latitude: 20d-01m-35.97s
Location: 0.08 Miles East of Lindsey Road	
Historic Name: Waiaka Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1932	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 15.1 ft.	Total Length: 38.1 ft.	Deck Width: 26.9 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waiaka Stream Bridge carries Hawaii Belt Road across the Waiaka Stream. This reinforced concrete and masonry bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete, solid panel parapets. This bridge's name which is engraved on the parapet is obscured by three beams. It contains arch piers and the middle support is a double arch. The workmanship of the bridge has not been obscured by addition or repair and retains its historic feeling. The MOA between DOT and the Central Federal Lands considering the bridge for replacement in 2013 was completed. Per the MOA, the bridge is scheduled for replacement and road re-alignment.</p>		

Significance Statement:

This bridge is eligible under Criterion C as a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship and design.

Inventory Form

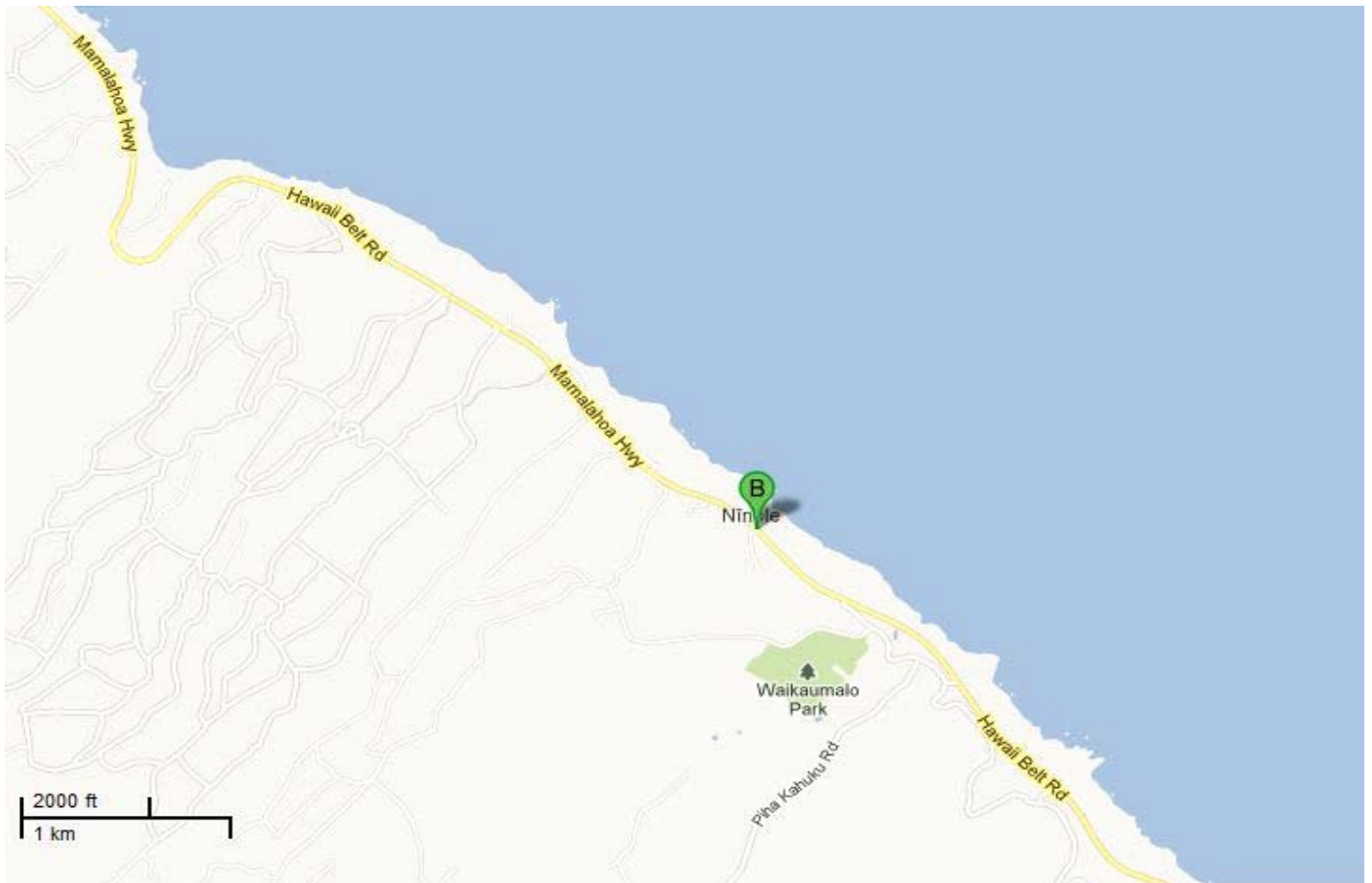
(State)

General Information

Bridge Number: 001000190308038	Route No: 19
Popular Name: Waikolu Stream Bridge	
Feature Crossed: Waikolu Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 19.16 mi.	Island: Hawaii
Longitude: 155d-10m-07.32s	Latitude: 19d-56m-17.91s
Location: 2.74 Miles West of Kauniho Road	
Historic Name: Waikolu Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Rigid Frame	Construction Date: 1934	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 28.9 ft.	Total Length: 34.1 ft.	Deck Width: 29.5 ft.
Superstructure: Concrete Rigid Frame			
Substructure: Concrete Integral Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Greek Cross			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waikolu Stream Bridge carries Hawaii Belt Road across the Waikolu Stream. This reinforced concrete bridge is in its original location, is generally in good condition, and its materials remain intact. Reinforced concrete open arched balustrades with "Greek-cross" voids and concrete rail caps are significant characteristics of this bridge. The end posts have the construction date and the bridge name engraved. There has been an addition of a pedestrian bridge on the side of the bridge. An 8 inch cast iron water line is located on the mauka side of the bridge. The workmanship of the bridge has not been obscured by addition or repair and retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete and steel bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete and steel bridge that is typical of its period in its use of materials, method of construction, craftsmanship and design.

Inventory Form

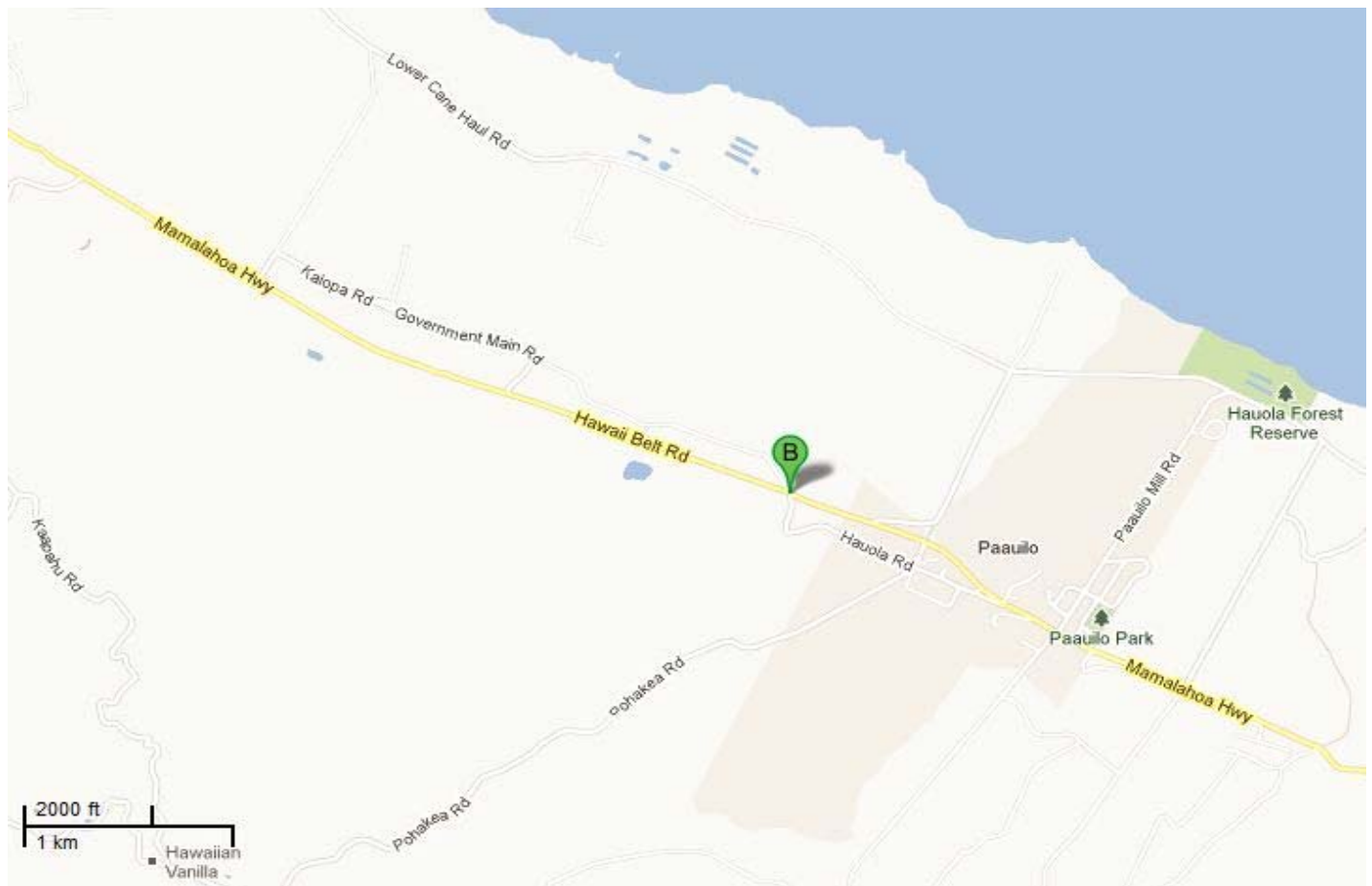
(State)

General Information

Bridge Number: 001000190306280	Route No: 19
Popular Name: Waipunahina Stream Bridge	
Feature Crossed: Waipunahina Stream	
Feature Carried: Hawaii Belt Road	
Milepost: 36.75 mi.	Island: Hawaii
Longitude: 155d-22m-45.63s	Latitude: 20d-02m-42.55s
Location: 5.00 Miles East of Mamane Street	
Historic Name: Waipunahina Stream Bridge	
Designer/Engineer: William R. Bartels and J. Okamoto	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1959	Replaced? No
Altered? Yes	Alteration Date(s): 1999	
Alteration Type(s):		
Alteration Description(s): End posts upgraded		

Bridge Information

Number of Spans: 2	Max Span: 91.9 ft.	Total Length: 190.0 ft.	Deck Width: 38.4 ft.
Superstructure: Concrete Box Girder			
Substructure: Concrete Abutment Wall and Concrete T-Shaped Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features: Walkways both sides			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, B, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Commerce, Engineering		
Narrative Description: <p>The Waipunahina Stream Bridge is a continuous concrete box beam/multiple girder structure, constructed in 1959, to carry Hawaii Belt Road over Waipunahina Gulch. The Hilo-Hamakua corridor was once vital to the sugar industry. The bridge remains in its original location and the rural/coastal setting has not changed. Parts of the plantation railroad are still kept at the both sides of the Hawaii Belt Road and the Hamakua Mill is located not far away from the bridge. There are ditches at the ends of the bridge. Some boulders can also be found along the stream side. The original design and materials are mostly intact although the end posts of the bridge were upgraded in 1999. The parapets are concrete open horizontal which is a common type of the post-war bridge. The elliptical ornaments at the end posts add to the bridge's artistic value and workmanship. The rural setting contributes to the historic character of the bridge. Interpretation is eased by the date and name of construction incised on the end piers.</p>		

Significance Statement:


This bridge is one of the best examples of a program comment bridge built post-war (1945) along the Hawaii Belt Road on the island of Hawaii in the historic study period prior to 1969.

See Post-War Hawaii Belt Road significance statement.

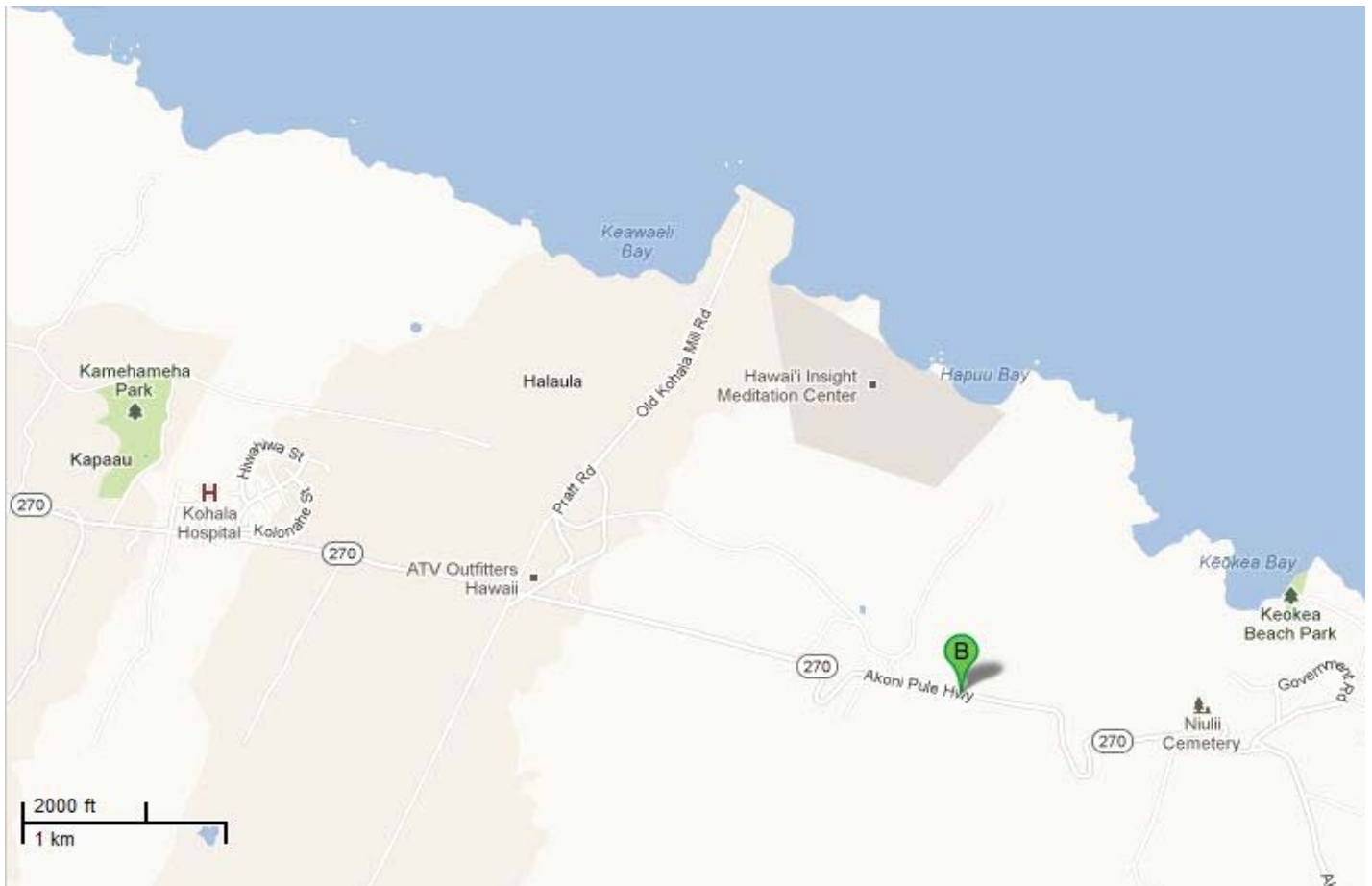
Inventory Form

(State)

General Information

Bridge Number: 001002700502266	Route No: 270	
Popular Name: Walaohia Stream Bridge		
Feature Crossed: Walaohia Gulch		
Feature Carried: Akoni Pule Highway		
Milepost: 26.04 mi.	Island: Hawaii	
Longitude: 155d-45m-39.85s	Latitude: 20d-13m-22.79s	
Location: 0.22 Miles East of Akana Place		
Historic Name: Walaohia Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1919	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 4	Max Span: 40.0 ft.	Total Length: 160.1 ft.	Deck Width: 20.3 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Walaohia Gulch/Stream Bridge carries Hawi-Niulii Road across the Walaohia Stream. This reinforced concrete bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete, solid panel parapets. The end posts have the construction date and the bridge name engraved. The workmanship of the bridge has not been obscured by addition or repair and retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1910's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship and design.

Hawaii 2013 County Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001019201400400	4 Mile Creek Bridge	4-Mile Creek	Kilauea Avenue	1916	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	• Fair example of a 1910s reinforced concrete tee beam bridge
001002010900998	51 Mile Bridge	Unnamed Stream	Saddle Road	1942	Concrete Slab	Concrete Solid	No	Eligible	• Good example of a 1940s reinforced concrete slab bridge • Rock abutments are a potentially eligible historic resource
001002010901164	53 Mile Bridge	Unnamed Stream	Saddle Road	1942	Concrete Slab	Concrete Solid	No	Eligible	• Good example of a 1940s reinforced concrete slab bridge
001020001400006	7 Mile Saddle Road Crossing	Intermittent Stream	Saddle Road	1976	Steel Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001460001100009	Ahualoa Gulch No. 1 Bridge	Ahualoa No. 1 Gulch	Kahana Drive	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001460001100007	Ahualoa Gulch No. 2 Bridge	Ahualoa No. 2 Gulch	Kumupele Road	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001460001100002	Ahualoa No. 2 Gulch Bridge	Ahualoa No. 2 Gulch	Mamalahoa Highway	1923	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001240001100005	Ainalako Road-4Mi Creek	4Mi Creek	Ainalako Road	1972	Steel Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001680001100003	Auwaiakeakua Gulch	Auwaiakeakua Gulch	Laukula Street	1970	Concrete Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001680001100002	Auwaiakeakua Gulch	Auwaiakeakua Gulch	Paniolo Street	1970	Concrete Culvert	Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001680001100001	Auwaiakeakua Gulch	Auwaiakeakua Gulch	Waikoloa Road	1970	Concrete Slab	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001440001100002	Between Kaapahu and Waikaalulu Gulch Bridge	Kaapahu and Waikaalulu Gulch	Paauilo Mauka Road	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001440001100003	Between Kaapahu and Waikaalulu Gulch Bridge	Kaapahu and Waikaalulu Gulch	Paauilo Mauka Road	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001440001100004	Between Waikaalulu and Kaapahu Gulch Bridge	Kaapahu and Waikaalulu Gulch	Paauilo Mauka Road	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001210001100001	Coconut Island Bridge	Pacific Ocean	Pedestrian Walkway	1967	Concrete Tee Beam	Metal Picket	No	Eligible	• Typical post war bridge type with a unique bridge function • Good example of a modest interisland pedestrian bridge that connects the small offshore Coconut Island to the main island of Hawaii
001220001100004	Elm Street Bridge	4-Mile Creek	Elm Street	1963	Concrete Box Culvert	Metal Horizontal	No	Program Comments**	This is a typical postwar culvert and falls under Program Comments. The rock abutments are a potentially eligible historic resource.
001290001100003	Hakalau Stream Bridge	Hakalau Stream	Old Mamalahoa Highway	1930	Closed Spandrel Arch	Concrete Open Decorative	No	Eligible***	• Arch bridges are an uncommon bridge type • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001270001100005	Hanawi Stream Bridge	Hanawi Stream	Old Mamalahoa Highway	1922	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001240001100004	Hoaka Road-Waiakea Stream	Waiakea Strea	Hoaka Road	1970	Concrete Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001470001100001	Honokaia Gulch East Branch Bridge	Honokaia Gulch	Mamalahoa Highway	1924	Concrete Tee Beam	No Parapet/Railing	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001470001100002	Honokaia Gulch West Branch Bridge	Honokaia Gulch	Mamalahoa Highway	1924	Concrete Tee Beam	Metal Horizontal	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001260001100006	Honolii Stream Bridge	Honolii Stream	Old Mamalahoa Highway	1911	Open Spandrel Arch	Concrete Solid with Cap	No	Eligible***	• Arch bridges are an uncommon bridge type • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001280001100002	Honomu Stream Bridge	Honomu Stream	Old Mamalahoa Highway	2002	Concrete Girder	Concrete Solid Panel with Cap	No	Non-Contributing	• Bridge is a non-contributing feature in the Mamalahoa Historic District due to complete replacement of the original 1935 bridge in 2002 • See Old Mamalahoa historic context Chapter 2.4 • One of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaea, Opea, Kalopa, Inono, Waikaalulu, and Kaahakini
001460001100005	Inoino Gulch Bridge	Inoino Gulch	Mamalahoa Highway	1924	Concrete Girder	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4 • One of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaea, Opea, Kalopa, Inono, Waikaalulu, and Kaahakini
001001800700643	Intermittent Stream	Intermittent Stream	Mamalahoa Highway	1971	Concrete Culvert	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001001800700604	Intermittent Stream	Intermittent Stream	Roadway	1972	Concrete Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001001800700270	Intermittent Stream	Intermittent Stream	Roadway	1969	Concrete Culvert	None	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001001800700263	Intermittent Stream	Intermittent Stream	Mamalahoa Highway	1969	Concrete Stringer/Multi beam or Girder	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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Hawaii 2013 County Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001290001100001	Kaahakini Stream Bridge	Kaahakini Stream	Old Mamalahoa Highway	1929	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4 One of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inono, Waikaaululu, and Kaahakini
001440001100001	Kaapahu Gulch Bridge	Kaapahu Gulch	Paauiio Mauka Road	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in timber bridge construction in Hawaii Good example of the 1930s timber bridge
001270001100006	Kahalii Stream Bridge	Kahalii Stream	Old Mamalahoa Highway	1929	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001440001100010	Kahawaiiliii Gulch Bridge	Kahawaiiliii Gulch	Old Mamalahoa Highway	1919	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001750001100004	Kahului Bridge	Relief	Alii Drive	1937	Concrete Slab	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in concrete bridge construction in Hawaii Good example of the 1930s reinforced concrete bridge Rock abutments are a potentially eligible historic resource
001270001100003	Kaieie Stream Bridge	Kaieie Stream	Old Mamalahoa Highway	1929	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001260001100005	Kaiwiki Bridge No. 1	Kaiwiki Stream	Old Mamalahoa Highway	1920	Concrete Tee Beam	Metal Horizontal	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001260001100007	Kaiwiki Homestead Road Bridge	Unnamed Stream	Kaiwiki Homestead Road	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Good example of the timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design
001350001100001	Kaiwihalahi Stream Bridge	Kaiwihalahi Stream	Old Mamalahoa Highway	1923	Open Spandrel Arch	Concrete Open Vertical	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001260001100002	Kalalau Stream Bridge	Kalalau Stream	Old Mamalahoa Highway	1920	Masonry Arch	Masonry Rock with Cap	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001270001100004	Kalaoa Stream Bridge	Kalaoa Stream	Old Mamalahoa Highway	1929	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4 One of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inono, Waikaaululu, and Kaahakini
001440001100007	Kalopa Gulch Bridge	Kalopa Gulch	Kaapahu Road	1919	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in concrete bridge construction in Hawaii Good example of the 1910s cast in place concrete bridge
001440001100009	Kalopa Gulch Bridge	Kalopa Gulch	Kalopa Road	1930	Timber Stringer	Wood	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4 One of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inono, Waikaaululu, and Kaahakini
001270001100001	Kapue Stream Bridge	Kapue Stream	Old Mamalahoa Highway	1935	Closed Spandrel Arch	Concrete Solid	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001002400500337	Kapulena Gulch	Kapulena Gulch	Honokaa-Waipio Road	1970	Steel Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001410001100001	Kaula Gulch Bridge	Kaula Gulch	Old Mamalahoa Highway	1928	Steel Stringer	Wood	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001430001100002	Kaumoali Gulch Bridge	Kaumoali Gulch	Old Mamalahoa Highway	1932	Masonry Arch	Concrete Open Horizontal	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001270001100007	Kawainui Stream Bridge	Kawainui Stream	Old Mamalahoa Highway	1900	Timber Stringer	Wood	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001460001100004	Keaakaukau Gulch Bridge	Keaakaukau Gulch	Mamalahoa Highway	1925	Concrete Slab	Concrete Solid Panel with Cap	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001460001100008	Keaakaukau Stream Bridge	Keaakaukau Gulch	Kahana Drive	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in timber bridge construction in Hawaii Good example of the 1930s timber bridge
001230001100001	Keawe-Wailuku Bridge	Wailuku River	Keawe Street	1938	Rainbow Arch	Concrete Open Decorative	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Significant in the areas of engineering and transportation in Hawaii Associated with public works efforts by the County of Hawaii, and as an important civic structure associated with the development of Hilo One of two remaining "rainbow" or Marsh arch bridges in the state Representative of the work of a master: William Hoy Chun The only bridge on Hawaii Island that received Public Works Administration moneys from the U.S. government during the Great Depression
001360001100002	Kilau Stream Bridge	Kilau Stream	Manowaiopae Homestead Road	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in timber bridge construction in Hawaii Good example of the 1930s timber bridge
001019201400370	Kilauea Avenue Bridge	Palai Stream	Kilauea Avenue	1968	Concrete Box Culvert	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001019301400110	Kinoole Street Bridge-Waiakea Stream	Waiakea Stream	Kinoole Street	1964	Concrete Box Culvert	Metal Chain Link	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001280001100004	Kolekole Stream Bridge	Kolekole Stream	Old Mamalahoa Highway	1929	Closed Spandrel Arch	Concrete Open Arched	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001450001100001	Kukuiaonanihau Gulch Bridge	Kukuiaonanihau Gulch	Ohia Street	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in timber bridge construction in Hawaii Good example of the 1930s timber bridge

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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Hawaii 2013 County Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001240001100003	Kupulau Bridge	Waiakea Stream	Kupulau Street	1967	Concrete Slab	Metal Thrie Beam	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001240001100001	Lanikaula Street Bridge	Waiakea Stream	Lanikaula Street	1968	Concrete Tee Beam	Concrete and Metal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001640001100001	Lanimaumau Stream Culvert	Lanimaumau Stream	Kamamalu Street	1977	Concrete Box Culvert	Metal Chain Link	No	Program Comments	This is a typical postwar culvert and falls under Program Comments. It replaced Lanimaumau Stream Culvert 001640001100001 built in 1955.
001420001100001	Lauhala Gulch Bridge	Lauhala Gulch	Old Mamalahoa Highway	1930	Timber Stringer	Wood	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001360001100001	Laupahoe Gulch Bridge	Laupahoe Gulch	Old Mamalahoa Highway	1930	Masonry Arch	Masonry Rock	No	Eligible***	• Arch bridges are an uncommon bridge type • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001420001100002	Mahuna Gulch Bridge	Mahuna Gulch	Old Mamalahoa Highway	1930	Timber Stringer	Wood	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001260001100003	Mali Stream Bridge	Mali Stream	Kaiwiki Road	1900	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1910s timber bridge
001260001100004	Mali Stream Bridge	Mali Stream	Old Mamalahoa Highway	1916	Concrete Tee Beam	Concrete Solid	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001430001100006	Manienie Gulch Bridge	Manienie Gulch	Pohakea Mauka Road	1930	Timber Stringer	Wood	No	Eligible	• Good example of the 1930s reinforced concrete bridge
001430001100007	Manienie Gulch Bridge	Manienie Gulch	Manienie Road	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001320001100001	Nanue Stream Bridge	Nanue Stream	Old Mamalahoa Highway	1930	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001460001100001	Nienie Gulch Bridge	Nienie Gulch	Mamalahoa Highway	1923	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001180001100003	North Peck Road Bridge	Relief	North Peck Road	1940	Timber Stringer	Wood	No	Eligible	• Significant for construction type built in Hawaii in this period • Unique single span timber bridge type during a period consisting primarily of concrete bridge construction • Good example of the 1940s timber bridge
001290001100002	Old Railroad Crossing Bridge	Railroad Crossing	Old Mamalahoa Highway	1930	Closed Spandrel Arch	Concrete Solid Panel with Cap	No	Eligible***	• Arch bridges are an uncommon bridge type • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4 • Rock abutments are a potentially eligible historic resource
001310001100002	Opea Stream Bridge	Opea Stream	Old Mamalahoa Highway	1912	Concrete Tee Beam	Metal Horizontal	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4 • One of the seven bridges listed under the 2000 MOA which includes: Hononu, Kalaoa, Opea, Kalopa, Inono, Waikaaulu, and Kaahakini
001280001100003	Paheehee Stream Bridge	Paheehee Stream	Old Mamalahoa Highway	1929	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001220001100002	Pauahi Bridge	Waiolama Canal	Pauahi Street	1949	Steel Stringer	Metal Picket	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001250001100003	Piihonua-Wailuku River	Piihonua-Wailuku River	Piihonua Road	1973	Concrete Culvert	Metal Thrie Beam	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001250001100002	Piihonua-Wailuku River	Piihonua-Wailuku River	Piihonua Road	1970	Concrete Box Beam or Girder	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001430001100005	Pohakuhaku Gulch Bridge	Pohakuhaku Gulch	Paaulo Pohakea Road	1936	Concrete Tee Beam	Concrete Open Vertical	No	Eligible	• Associated with early developments in concrete bridge construction in Hawaii • Good example of the 1930s reinforced concrete bridge
001260001100001	Pukihae Stream Bridge	Pukihae Stream	Old Mamalahoa Highway	1904	Masonry Arch	Masonry Rock with Cap	No	Eligible***	• Arch bridges are an uncommon bridge type • One of the oldest masonry bridges remaining in Hawaii • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001270001100002	Puukalepa Bridge No. 1	Puukalepa Stream	Old Mamalahoa Highway	1904	Closed Spandrel Arch	Concrete Solid with Cap	No	Eligible***	• Arch bridges are an uncommon bridge type • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001470001100003	Relief Elevation 2760 Bridge	Relief	Mamalahoa Highway	1924	Concrete Tee Beam	Metal Horizontal	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001180001100001	Relief South Kulani Road	Relief South Kulani Road	South Kulani Road	1969	Concrete Slab	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001460001100010	Relief Stream Bridge	Relief	Kahana Drive	1930	Timber Stringer	Wood	No	Eligible	• Associated with early developments in timber bridge construction in Hawaii • Good example of the 1930s timber bridge
001310001100001	Umauma Stream Bridge	Umauma Stream	Old Mamalahoa Highway	1920	Concrete Tee Beam	Concrete Solid Panel with Cap	No	Eligible***	• Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001250001100001	Upper Piihonua Bridge	Wailuku River	Piihonua Road	1976	Prestressed Concrete Box Beam	Metal Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001270001100008	Waiaama Stream Bridge	Waiaama Stream	Old Mamalahoa Highway	1930	Closed Spandrel Arch	Concrete Solid with Cap	No	Eligible***	• Arch bridges are an uncommon bridge type • Contributes to the Mamalahoa Historic District • See Old Mamalahoa historic context Chapter 2.4
001960001100001	Waiaakaloa Gulch Bridge	Waiaakaloa Gulch	Wood Valley Homestead Road	1935	Concrete Slab	No Parapet/Railing	No	Eligible	• Associated with early developments in concrete bridge construction in Hawaii • Good example of the 1930s reinforced concrete bridge

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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Hawaii 2013 County Bridge Matrix

Bridge Number	Bridge Name	Feature Crossed	Feature Carried	Construction Date	Bridge Type	Parapet/Railing Type	Listed on National/Hawaii Register	Eligibility Status*	Character Defining Feature (Significance)
001960001100002	Waiaikaloo Gulch Bridge	Waiaikaloo Gulch	Wood Valley Homestead Road	1935	Concrete Slab	No Parapet/Railing	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in concrete bridge construction in Hawaii Good example of the 1930s reinforced concrete bridge
001027201400020	Waianuenue Bridge	Ainako Stream	Waianuenue Avenue	1924	Closed Spandrel Arch	Concrete Open Decorative	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Significant for its contributions to the fields of engineering and transportation in Hawaii Excellent example of reinforced-concrete solid-spandrel arch construction in the Italianate style Associated with public works efforts by the County of Hawaii, and as an important civic structure associated with the development of Hilo Rare remaining example of this once common bridge type, as well as for its aesthetic merit Representative of early 20th century neoclassical architectural style and exhibits influence of the City Beautiful Movement Representative of design by En Leong Wung Earliest of the decorative arch bridges built by the county in the 1920s and 1930s
001440001100005	Waikaalulu Gulch Bridge	Waikaalulu Gulch	Paauilo Mauka Road	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in timber bridge construction in Hawaii Good example of a 1930s timber bridge
001440001100006	Waikaalulu Gulch Bridge	Waikaalulu Gulch	Kaapahu Road	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Associated with early developments in timber bridge construction in Hawaii Good example of a 1930s timber bridge
001440001100008	Waikaalulu Gulch Bridge	Waikaalulu Gulch	Kalopa Road	1930	Timber Stringer	Wood	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4 One of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaea, Opea, Kalopa, Inono, Waikaalulu, and Kaahakini
001002400500282	Waikaloo Stream	Waikaloo Stream	Honokaa-Paahau Road	1971	Concrete Stringer/Multi beam or Girder	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001320001100002	Waikaumalo Stream Bridge	Waikaumalo Stream	Old Mamalahoa Highway	1920	Timber Stringer	Wood	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001320001100003	Waikaumalo Stream Bridge	Waikaumalo Stream	Unnamed Road off Piha Kahuku Homestead Road	1930	Timber Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Good example of a 1930s timber bridge
001650001100001	Waikoloa Stream	Waikoloa Stream	Lindsey Road	1970	Concrete Slab	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001019201400100	Wailoa Bridge	Wailoa Stream	Kilauea Avenue	1964	Concrete Slab	Metal Horizontal	No	Program Comments	This is a typical postwar bridge and falls under Program Comments.
001230001100002	Wailuku Bridge No.1	Wailuku River	Wainaku Street	1919	Concrete Tee Beam	Concrete Open Decorative	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001280001100001	Waimaau Stream Bridge	Waimaau Stream	Old Mamalahoa Highway	1930	Concrete Slab	Concrete Solid Panel	No	Eligible***	<ul style="list-style-type: none"> Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001020001400450	Waipahoehoe Stream Bridge	Waipahoehoe Stream	Kaumana Drive	1924	Closed Spandrel Arch	Concrete Solid with Cap	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Rare example of a 1920s reinforced concrete round arch bridge
001430001100001	Waipunahina Gulch Bridge	Waipunahina Gulch	Old Mamalahoa Highway	1928	Open Spandrel Arch	Concrete Open Decorative	No	Eligible***	<ul style="list-style-type: none"> Arch bridges are an uncommon bridge type Contributes to the Mamalahoa Historic District See Old Mamalahoa historic context Chapter 2.4
001002400500194	Waipunahoe Stream	Waipunahoe Stream	Honokaa-Paahau Road	1972	Concrete Stringer/Multi beam or Girder	Concrete and Metal	No	Program Comments	This is a typical postwar culvert and falls under Program Comments.
001620001100001	Waiulaula Gulch Bridge	Waiulaula Gulch	Old Puako Road	1951	Steel Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Uncommon use of steel material in Hawaii's extreme marine environment Associated with the railroad Good example of a 1950s steel stringer bridge
001620001100002	Waiulaula Gulch Bridge	Waiulaula Gulch	Old Puako Road	1951	Steel Stringer	Wood	No	Eligible	<ul style="list-style-type: none"> Uncommon use of steel material in Hawaii's extreme marine environment Associated with the railroad Good example of a 1950s steel stringer bridge

* NRHP or HRS 6E Listed, Eligible, Not Eligible, Contributing, Non-Contributing, or Program Comments.

** Historic resources adjacent to resource.

*** Formerly "High Preservation Value."

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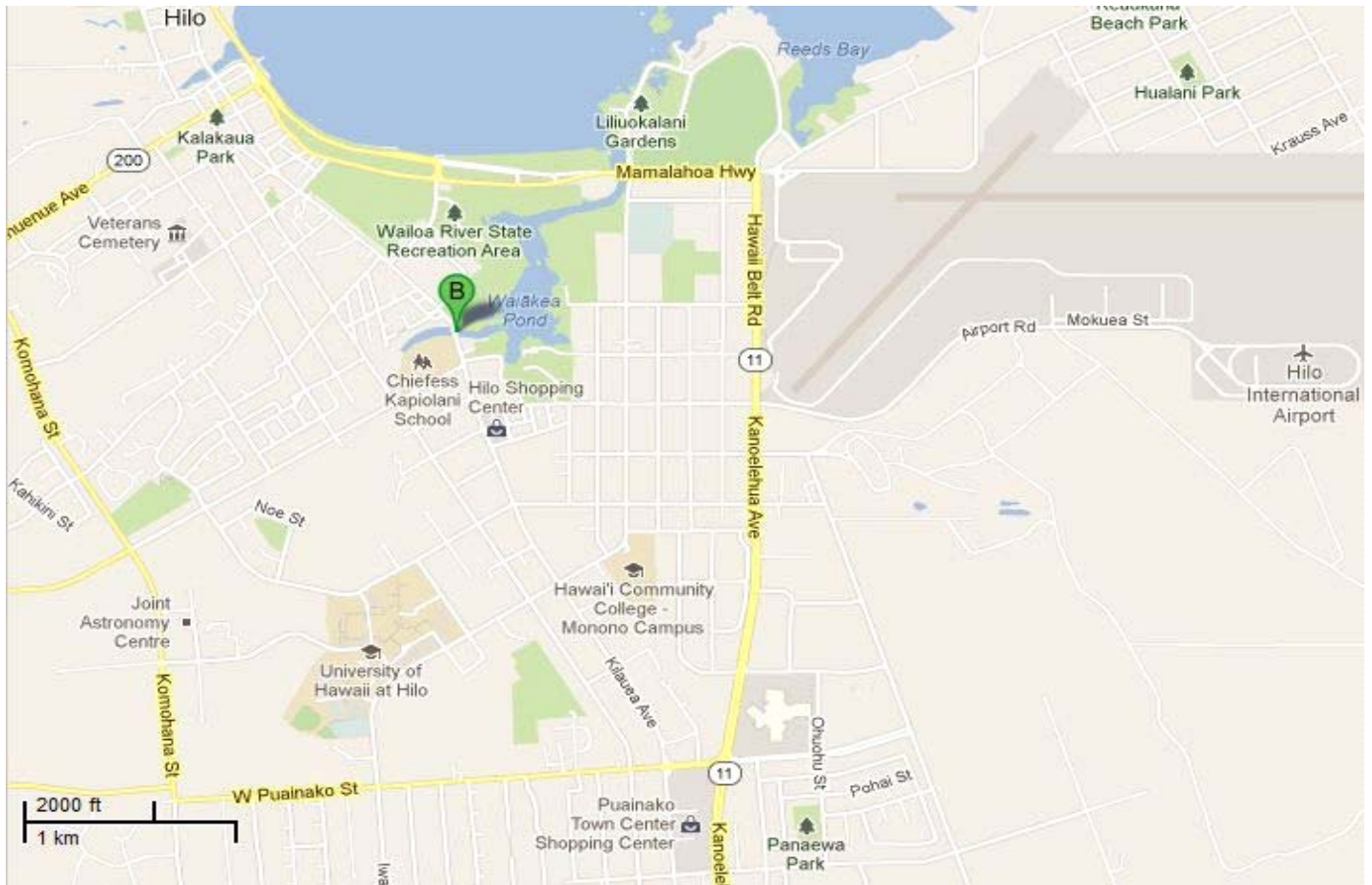
Inventory Form

(County/Private)

General Information

Bridge Number: 001019201400400		
Popular Name: 4 Mile Creek Bridge		
Feature Crossed: 4-Mile Creek		
Feature Carried: Kilauea Avenue		
Milepost: 4.00 mi.	County Private: Hawaii	
Longitude: 155d-03m-59.69s		Latitude: 19d-40m-26.23s
Location: TMK: 2-4-45:02		
Historic Name: 4 Mile Creek Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1916	Replaced? No
Altered? Yes Alteration Date(s): 1964		
Alteration Type(s):		
Alteration Description(s): Deck altered with tee beams		

Bridge Information

Number of Spans: 2	Max Span: 23.0 ft.	Total Length: 49.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The 4 Mile Creek Bridge carries Kilauea Avenue across 4 Mile Creek. This concrete tee beam slab bridge is in its original location, is generally in fair condition, and its materials remain intact. The bridge has solid concrete panel parapets with caps, reinforced concrete pier wall, and reinforced concrete abutments. The workmanship of the bridge has not been obscured by additions or repairs.</p>		

Significance Statement:

This bridge is eligible under Criterion C as a good example of a 1910's reinforced concrete tee beam bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

(County/Private)

General Information

Bridge Number: 001002010900998	
Popular Name: 51 Mile Bridge	
Feature Crossed: Unnamed Stream	
Feature Carried: Saddle Road	
Milepost:	County Private: Hawaii
Longitude: 155d-40m-29.92s	Latitude: 19d-54m-19.10s
Location: TMK: 6-7-001	
Historic Name: 51 Mile Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1942	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 17.0 ft.	Total Length: 21.0 ft.	Deck Width: 26.0 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck			
Parapets/Railings: Concrete Solid			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The 51 Mile Bridge carries Saddle Road across a watercourse. This single-span reinforced concrete slab bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has solid parapets, timber shoring at its mid-span, and reinforced concrete abutments. The workmanship of the bridge has not been obscured by additions or repairs.</p>		

Significance Statement:

This bridge is eligible under Criterion C as a good example of a 1940's reinforced concrete slab bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design. The rock abutments are a potentially eligible historic resource.

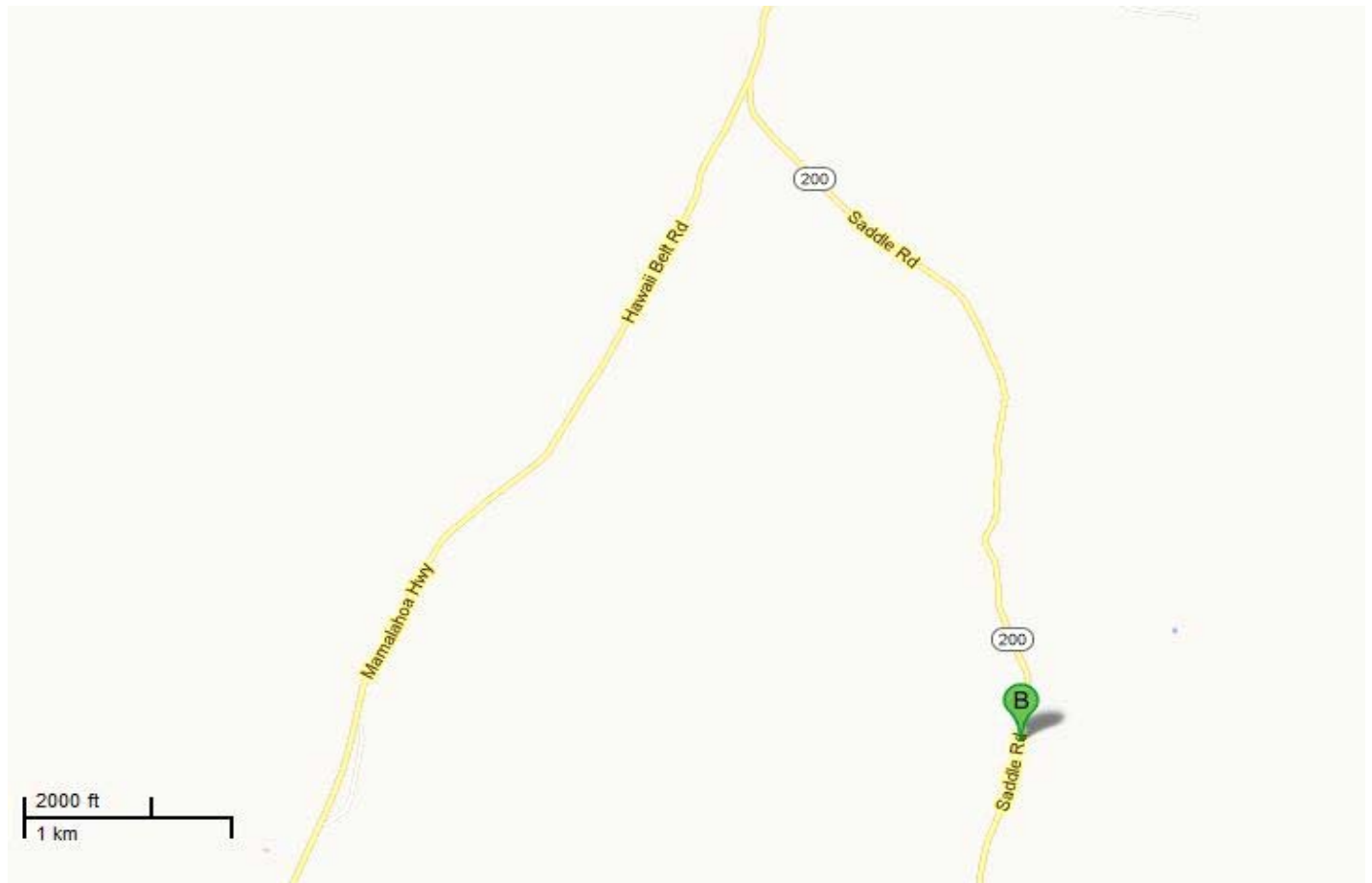
Inventory Form

(County/Private)

General Information

Bridge Number: 001002010901164	
Popular Name: 53 Mile Bridge	
Feature Crossed: Unnamed Stream	
Feature Carried: Saddle Road	
Milepost: County Private: Hawaii	
Longitude: 155d-40m-47.62s Latitude: 19d-55m-39.06s	
Location: TMK: 6-7-01	
Historic Name: 53 Mile Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1942	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 18.0 ft.	Total Length: 39.0 ft.	Deck Width: 28.0 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck			
Parapets/Railings: Concrete Solid			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The 53 Mile Bridge carries Saddle Road across a watercourse. This two-span reinforced concrete slab bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has solid parapets, reinforced concrete pier wall, and reinforced concrete abutments. The workmanship of the bridge has not been obscured by additions or repairs.</p>		

Significance Statement:

This bridge is eligible under Criterion C as a good example of a 1940's reinforced concrete slab bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

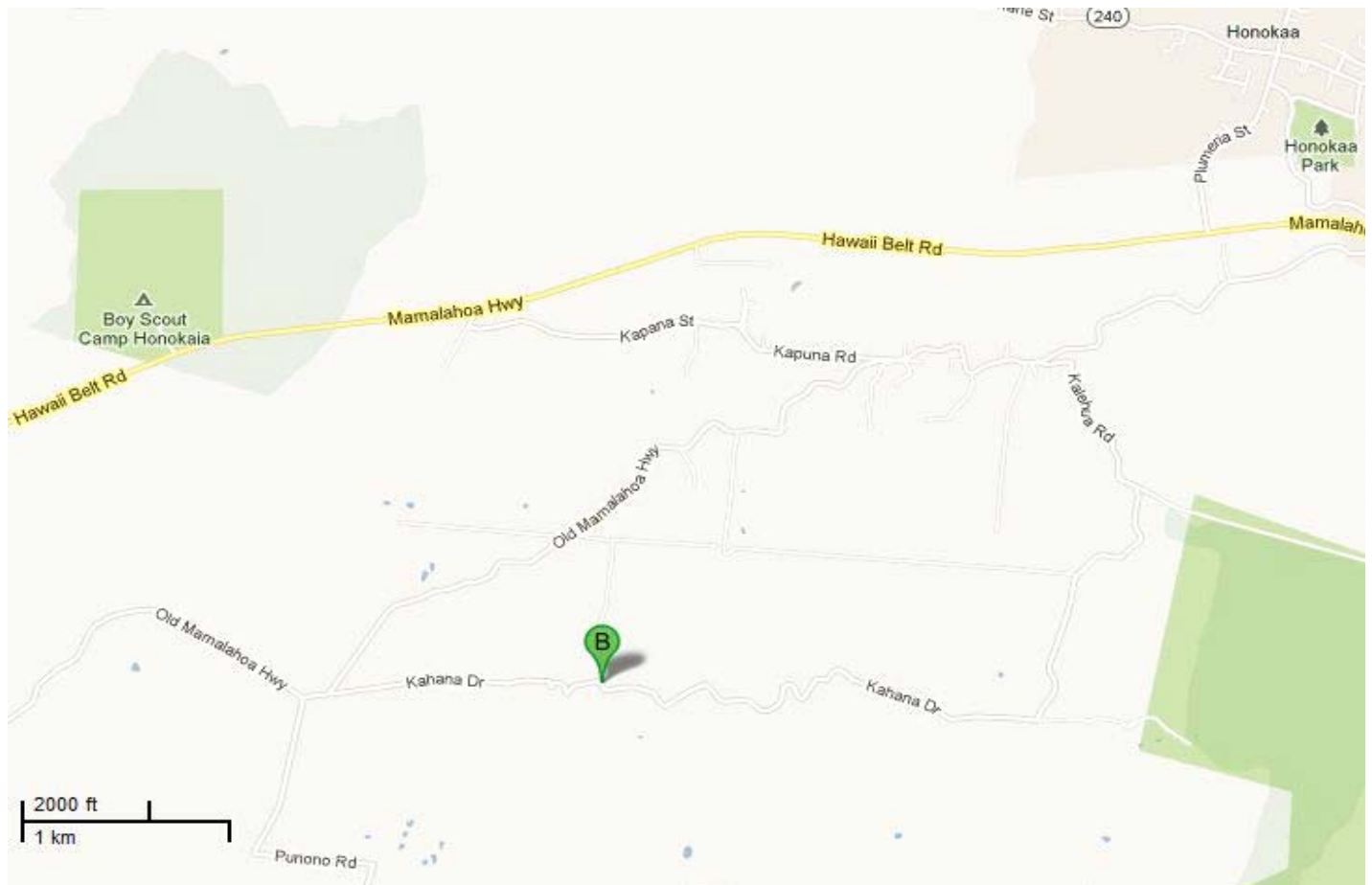
Inventory Form

(County/Private)

General Information

Bridge Number: 001460001100009		
Popular Name: Ahualoa Gulch No. 1 Bridge		
Feature Crossed: Ahualoa No. 1 Gulch		
Feature Carried: Kahana Drive		
Milepost:	County Private: Hawaii	
Longitude: 155d-30m-04.65s	Latitude: 20d-03m-00.72s	
Location: TMK: 4-6-09:006		
Historic Name: Ahualoa Gulch No. 1 Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 15.0 ft.	Total Length: 22.0 ft.	Deck Width: 17.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Ahualoa Gulch #1 Bridge carries Kahana Drive across Ahualoa Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

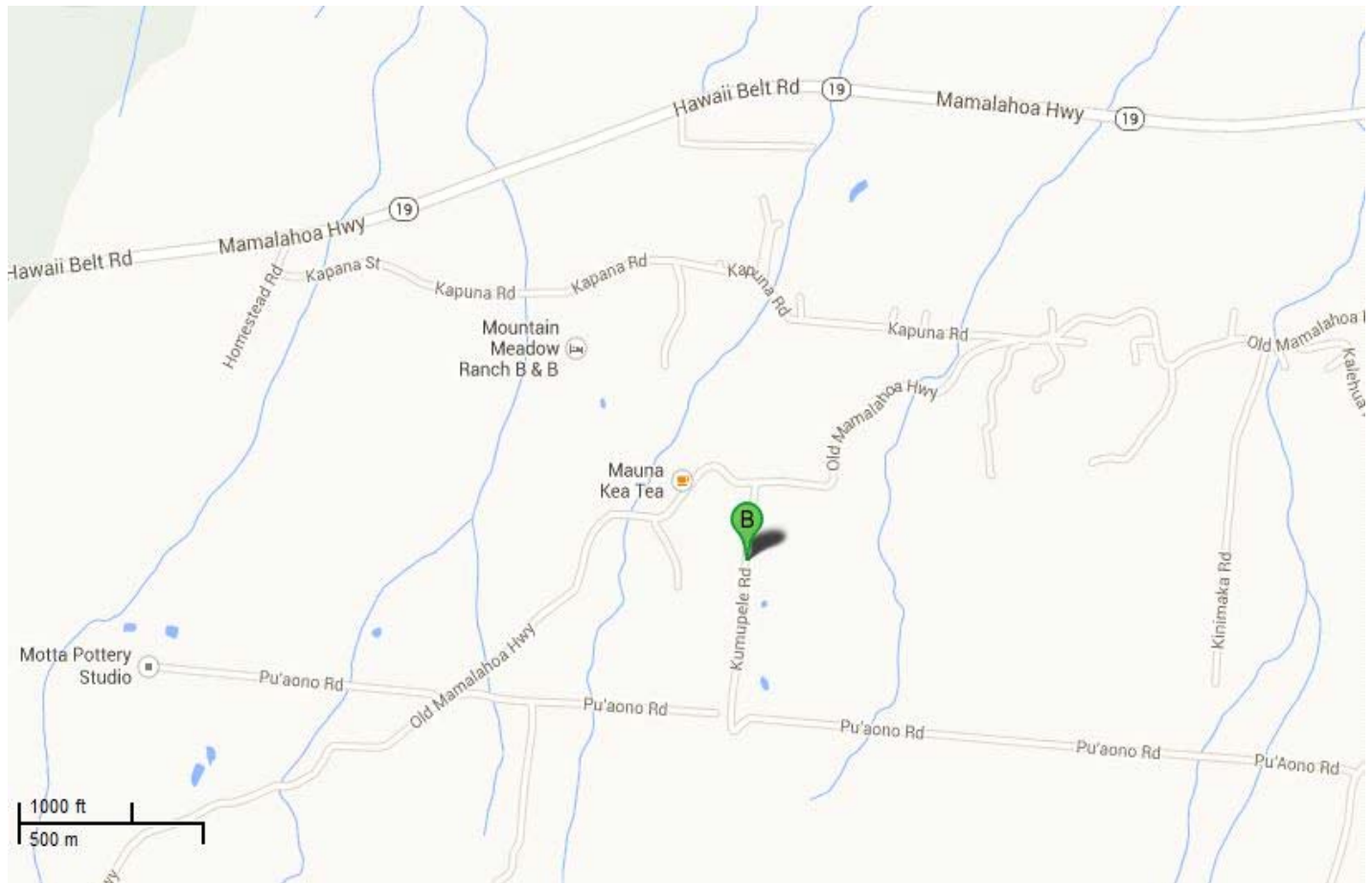
Inventory Form

(County/Private)

General Information

Bridge Number: 001460001100007		
Popular Name: Ahualoa Gulch No. 2 Bridge		
Feature Crossed: Ahualoa No. 2 Gulch		
Feature Carried: Kumupele Road		
Milepost:	County Private: Hawaii	
Longitude: 155d-29m-40.73s	Latitude: 20d-03m-36.49s	
Location: TMK: 4-6-07:024		
Historic Name: Ahualoa Gulch No. 2 Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 18.0 ft.	Total Length: 21.0 ft.	Deck Width: 14.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Ahualoa #2 Gulch Bridge carries Kumupele Homestead Road across Ahualoa #2 Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

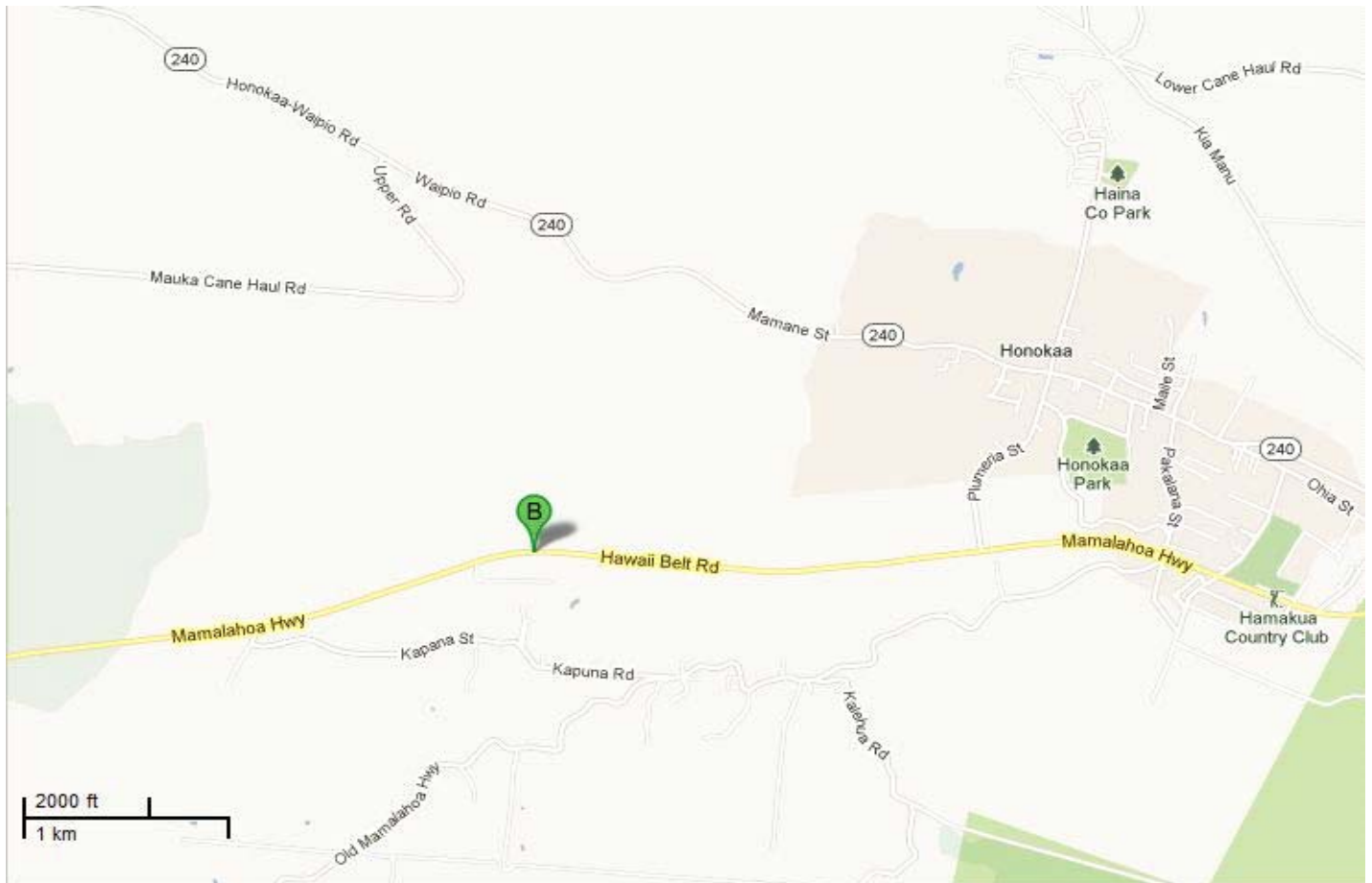
Inventory Form

(County/Private)

General Information

Bridge Number: 001460001100002	
Popular Name: Ahualoa No. 2 Gulch Bridge	
Feature Crossed: Ahualoa No. 2 Gulch	
Feature Carried: Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-29m-35.03s Latitude: 20d-03m-42.99s	
Location: TMK: 4-6-007:025	
Historic Name: Ahualoa No. 2 Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1923	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 22.0 ft.	Total Length: 25.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

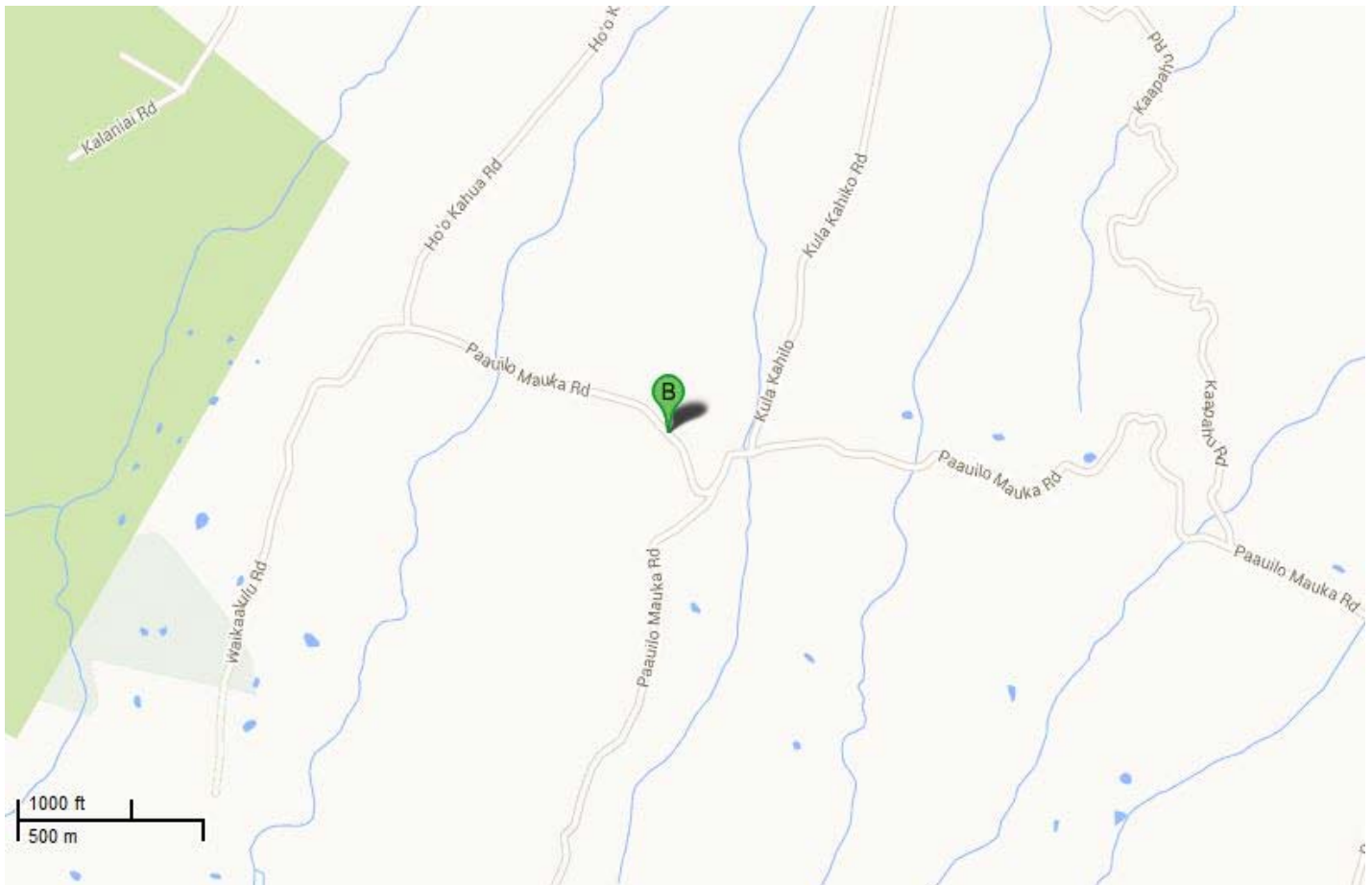
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100002	
Popular Name: Between Kaapahu and Waikaalulu Gulch Bridge	
Feature Crossed: Kaapahu and Waikaalulu Gulch	
Feature Carried: Paauiio Mauka Road	
Milepost: County Private: Hawaii	
Longitude: 155d-25m-23.92s Latitude: 20d-01m-51.29s	
Location: TMK: 4-4-11:12	
Historic Name: Between Kaapahu and Waikaalulu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 18.0 ft.	Total Length: 22.0 ft.	Deck Width: 14.6 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>Between Kaapahu and Waikaalulu Gulch Bridge carries Paauilo Mauka Road across Kaapahu and Waikaalulu Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

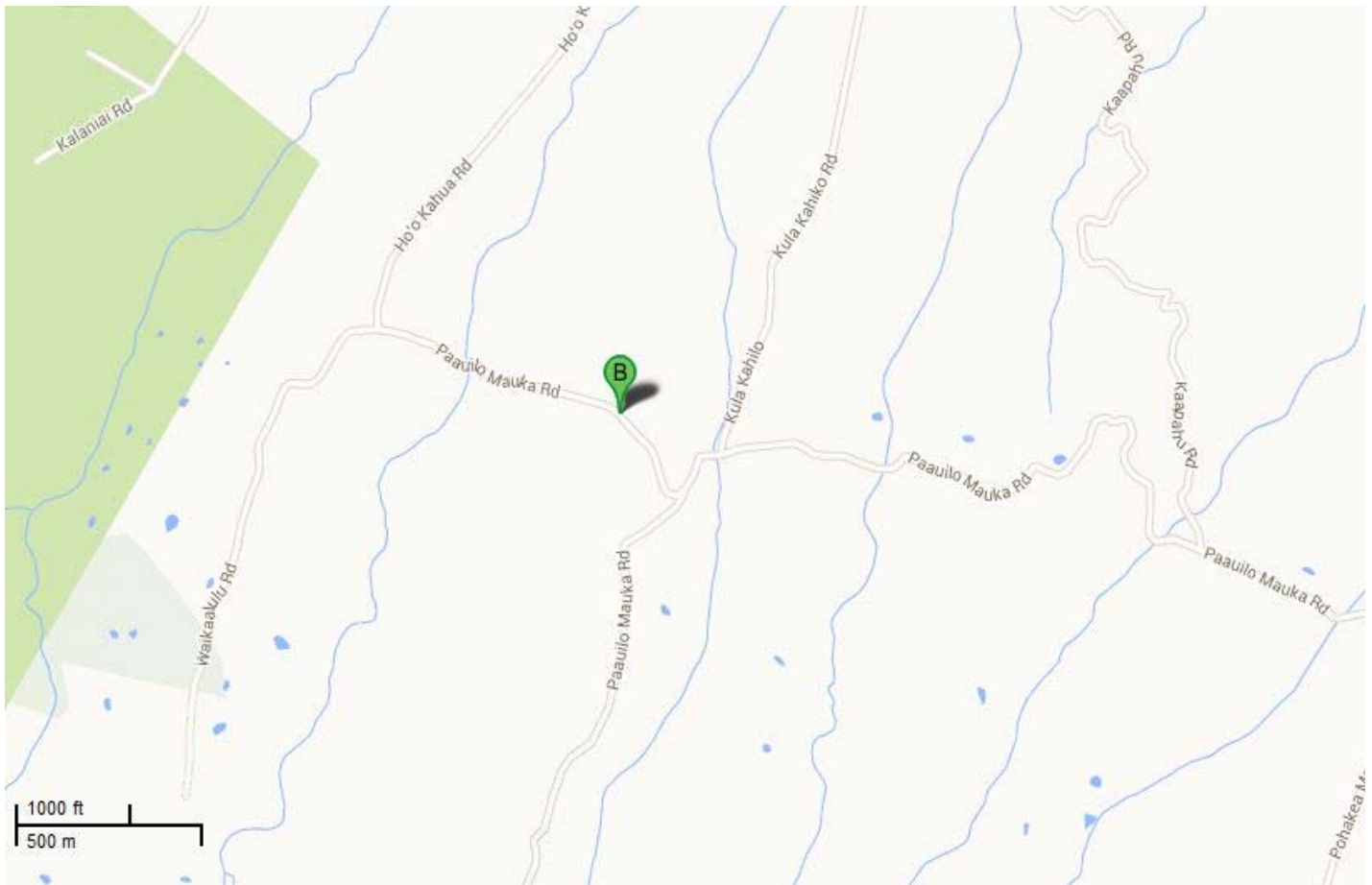
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100003	
Popular Name: Between Kaapahu and Waikaalulu Gulch Bridge	
Feature Crossed: Kaapahu and Waikaalulu Gulch	
Feature Carried: Paauilo Mauka Road	
Milepost: County Private: Hawaii	
Longitude: 155d-25m-25.69s Latitude: 20d-01m-53.10s	
Location: TMK: 4-4-11:12	
Historic Name: Between Kaapahu and Waikaalulu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 10.0 ft.	Total Length: 13.0 ft.	Deck Width: 14.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaapahu and Waikaalulu Gulch Bridge carries Paauilo Mauka Road across Kaapahu and Waikaalulu Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

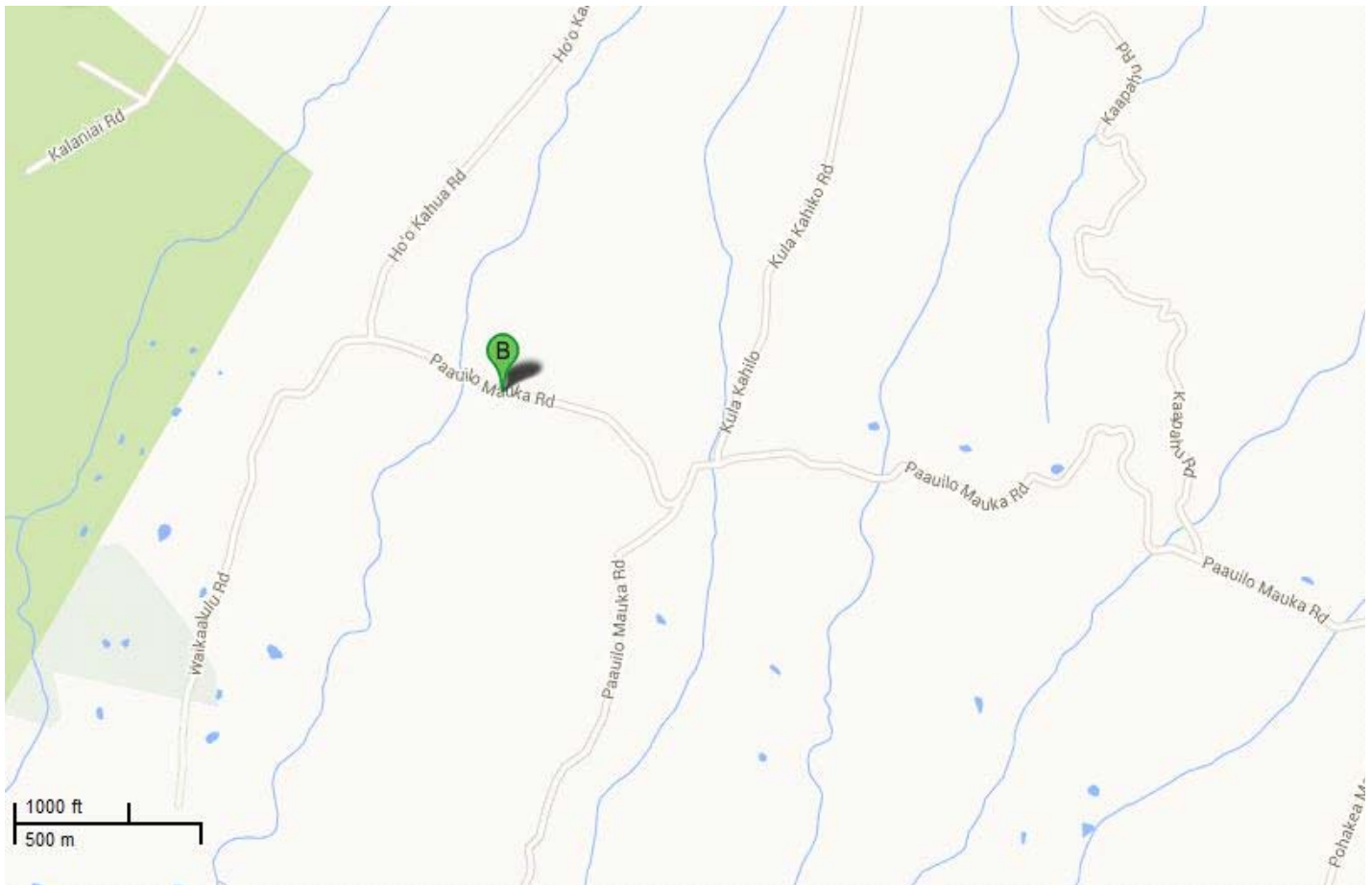
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100004	
Popular Name: Between Waikaalulu and Kaapahu Gulch Bridge	
Feature Crossed: Kaapahu and Waikaalulu Gulch	
Feature Carried: Paauiio Mauka Road	
Milepost: County Private: Hawaii	
Longitude: 155d-25m-36.10s Latitude: 20d-01m-55.78s	
Location: TMK: 4-4-11:12	
Historic Name: Between Waikaalulu and Kaapahu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 20.0 ft.	Total Length: 22.0 ft.	Deck Width: 12.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waikaaluku and Kaapahu Gulch Bridge carries Paauilo Mauka Road across Waikaaluku and Kaapahu Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

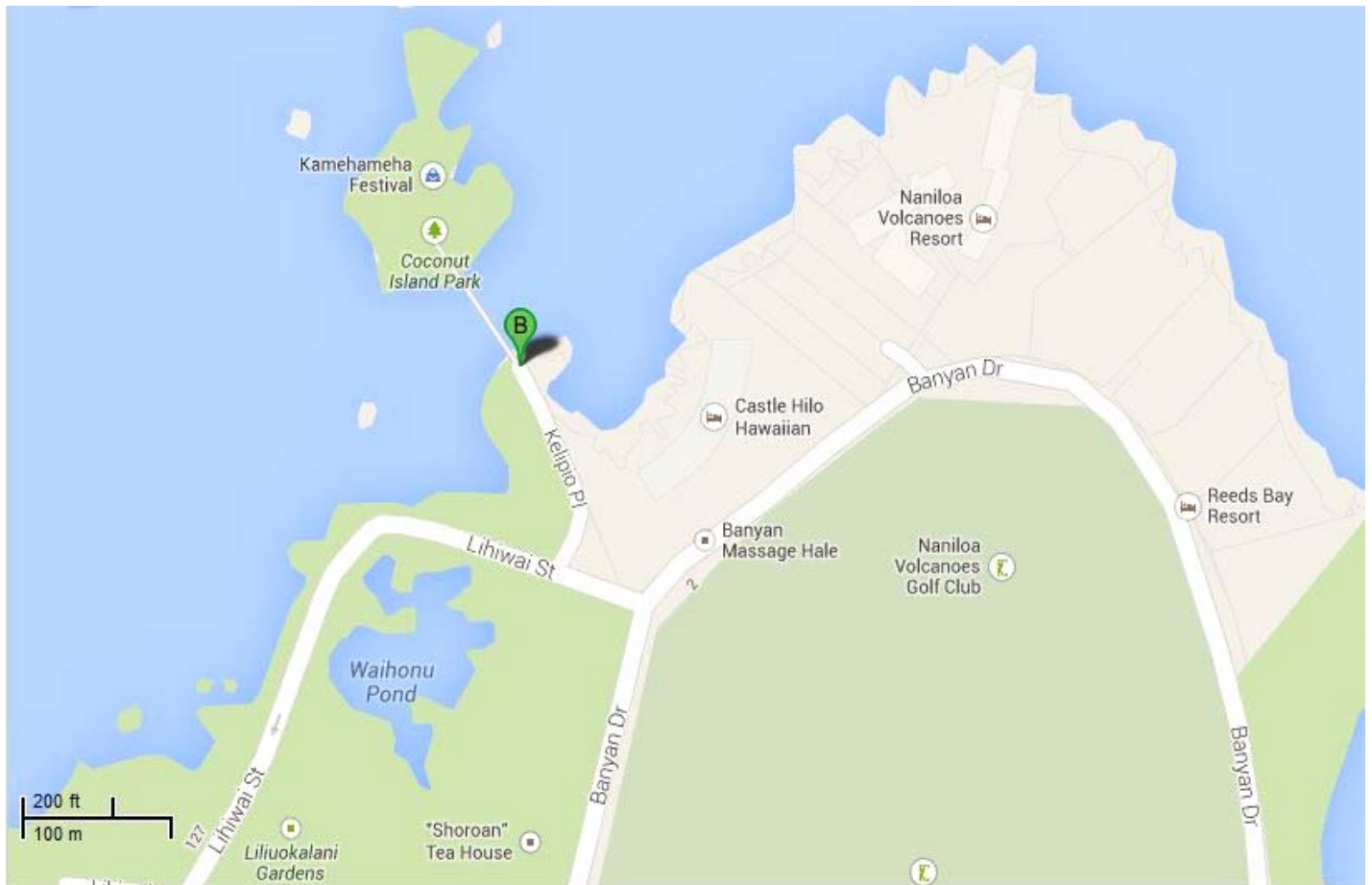
(County/Private)

General Information

Bridge Number: 001210001100001	
Popular Name: Coconut Island Bridge	
Feature Crossed: Pacific Ocean	
Feature Carried: Pedestrian Walkway	
Milepost:	County Private: Hawaii
Longitude: 155d-04m-05.45s	Latitude: 19d-43m-43.56s
Location: TMK: 2-1-03:19	
Historic Name: Coconut Island Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1967	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 80.0 ft.	Total Length: 240.0 ft.	Deck Width: 9.0 ft.
Superstructure: Prestressed Concrete Single-Tee			
Substructure: Concrete Abutment Wall and Concrete Single Column Pier			
Floor/Decking: Concrete Deck			
Parapets/Railings: Metal Picket			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Pedestrian Walkway Bridge	Historic Function: Pedestrian Walkway Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Coconut Island Bridge is a pedestrian walkway that connects the small island off the coast of Hawaii with the Big Island. This reinforced concrete tee beam walkway is in its original location, is generally in good condition, and its materials remain intact. The bridge has metal railings, a concrete deck, and concrete abutments. It has tall masonry posts with tapered caps at the beginning of the walkway that leads to the bridge.</p>		


Significance Statement:

This bridge is a typical post war bridge however, the Coconut Island Bridge is eligible under Criterion C for unique bridge function. This is a good example of an interisland pedestrian bridge that connects a small outer island to a main island Hawaii.

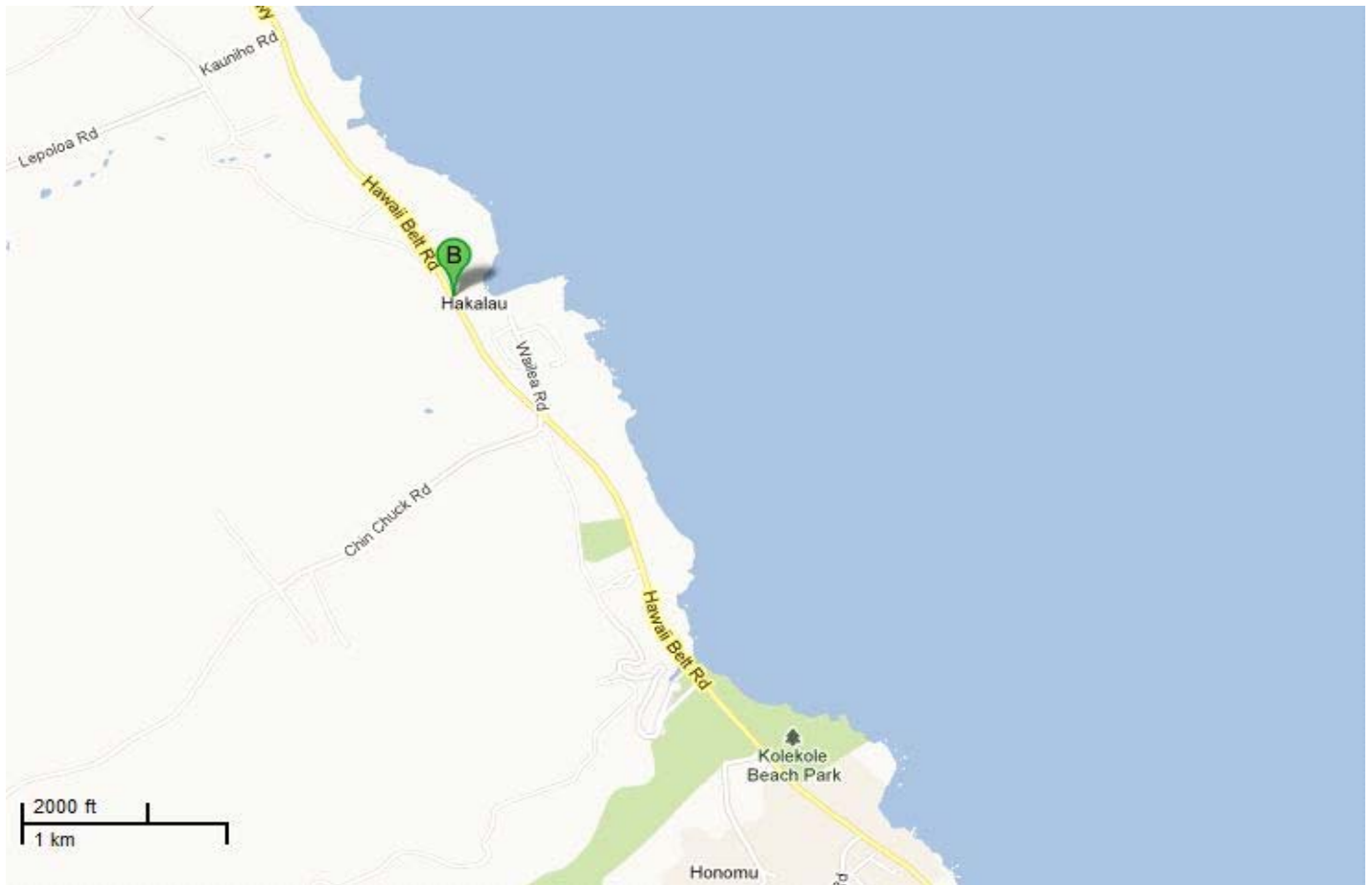
Inventory Form

(County/Private)

General Information

Bridge Number: 001290001100003	
Popular Name: Hakalau Stream Bridge	
Feature Crossed: Hakalau Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-07m-56.19s Latitude: 19d-53m-49.96s	
Location: TMK: 2-9-002:025	
Historic Name: Hakalau Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 67.0 ft.	Total Length: 67.0 ft.	Deck Width: 22.4 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Open Decorative			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

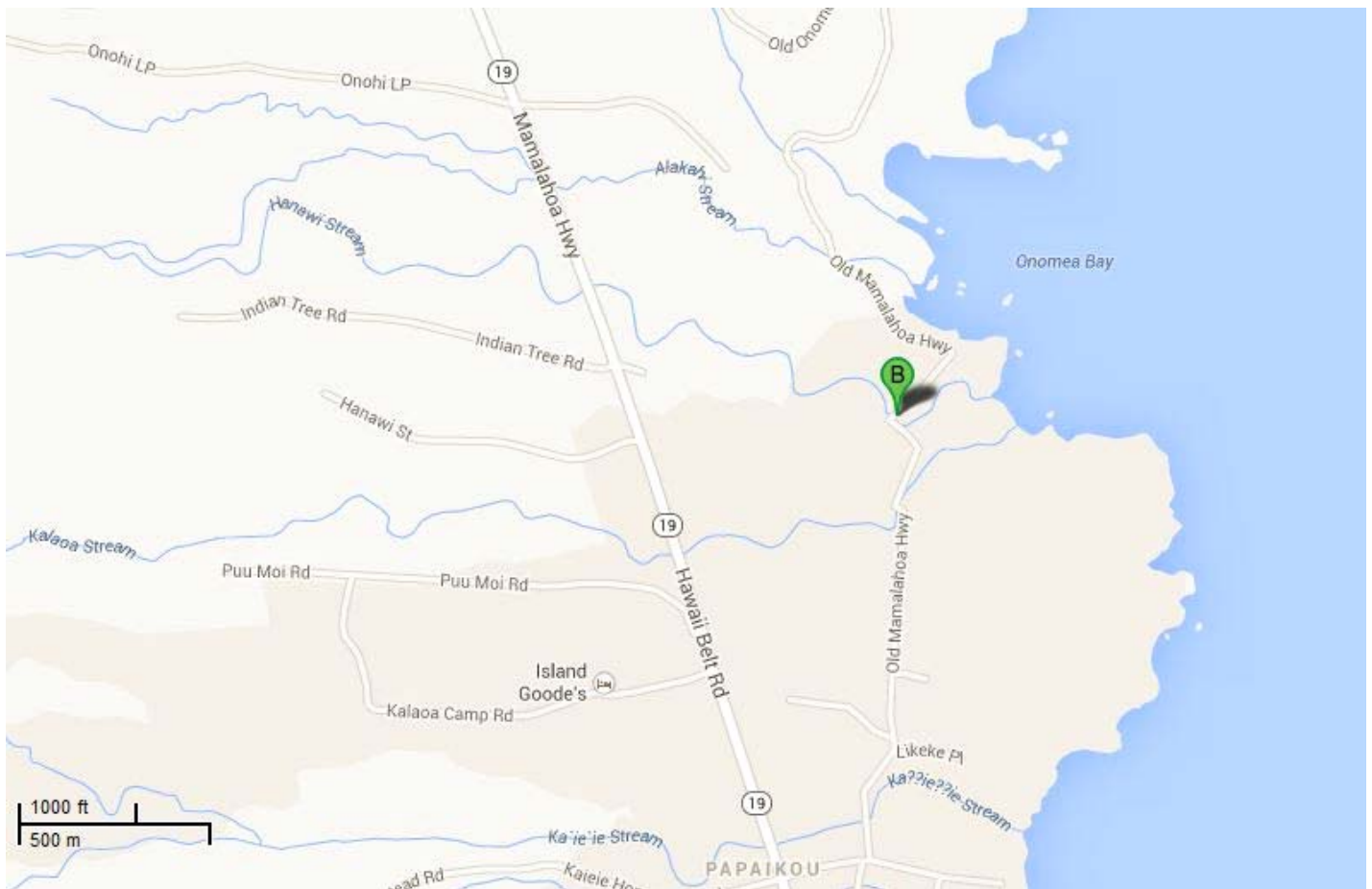
Inventory Form

(County/Private)

General Information

Bridge Number: 001270001100005	
Popular Name: Hanawi Stream Bridge	
Feature Crossed: Hanawi Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-35.95s Latitude: 19d-48m-15.98s	
Location: TMK: 2-7-09:13	
Historic Name: Hanawi Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1922	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 39.0 ft.	Total Length: 79.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

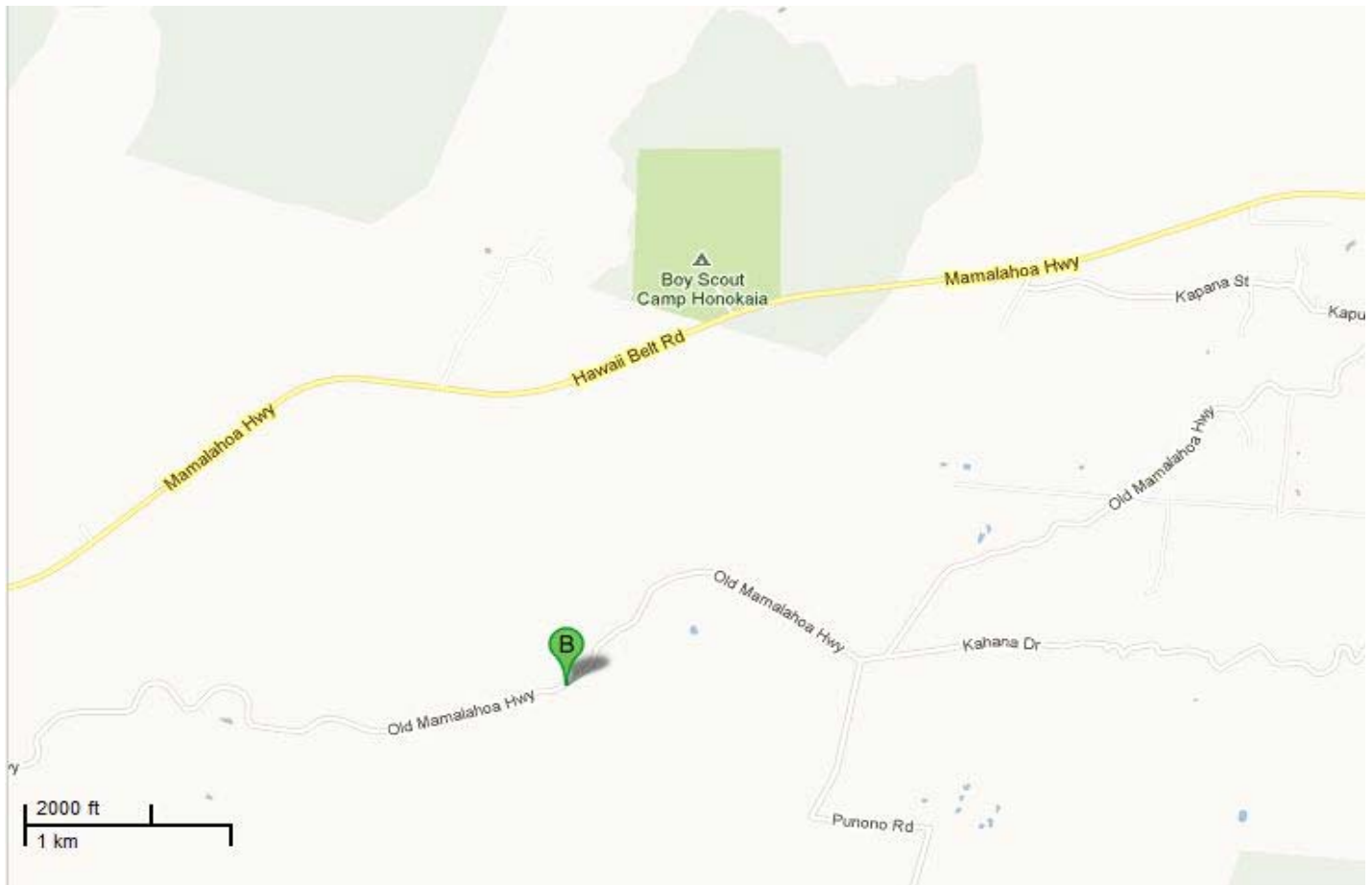
(County/Private)

General Information

Bridge Number: 001470001100001	
Popular Name: Honokaia Gulch East Branch Bridge	
Feature Crossed: Honokaia Gulch	
Feature Carried: Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-31m-37.33s	Latitude: 20d-02m-57.00s
Location: TMK: 4-6-011:013	
Historic Name: Honokaia Gulch East Branch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1924	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 30.0 ft.	Total Length: 33.0 ft.	Deck Width: 17.7 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: No Parapet/Railing			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: Concrete girders were repaired in 2010. See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

(County/Private)

General Information

Bridge Number: 001470001100002	
Popular Name: Honokaia Gulch West Branch Bridge	
Feature Crossed: Honokaia Gulch	
Feature Carried: Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-32m-14.67s	Latitude: 20d-02m-46.78s
Location: TMK: 4-6-007:010	
Historic Name: Honokaia Gulch West Branch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1924	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 21.0 ft.	Total Length: 28.0 ft.	Deck Width: 18.5 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Metal Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: Concrete girders were repaired in 2010. See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

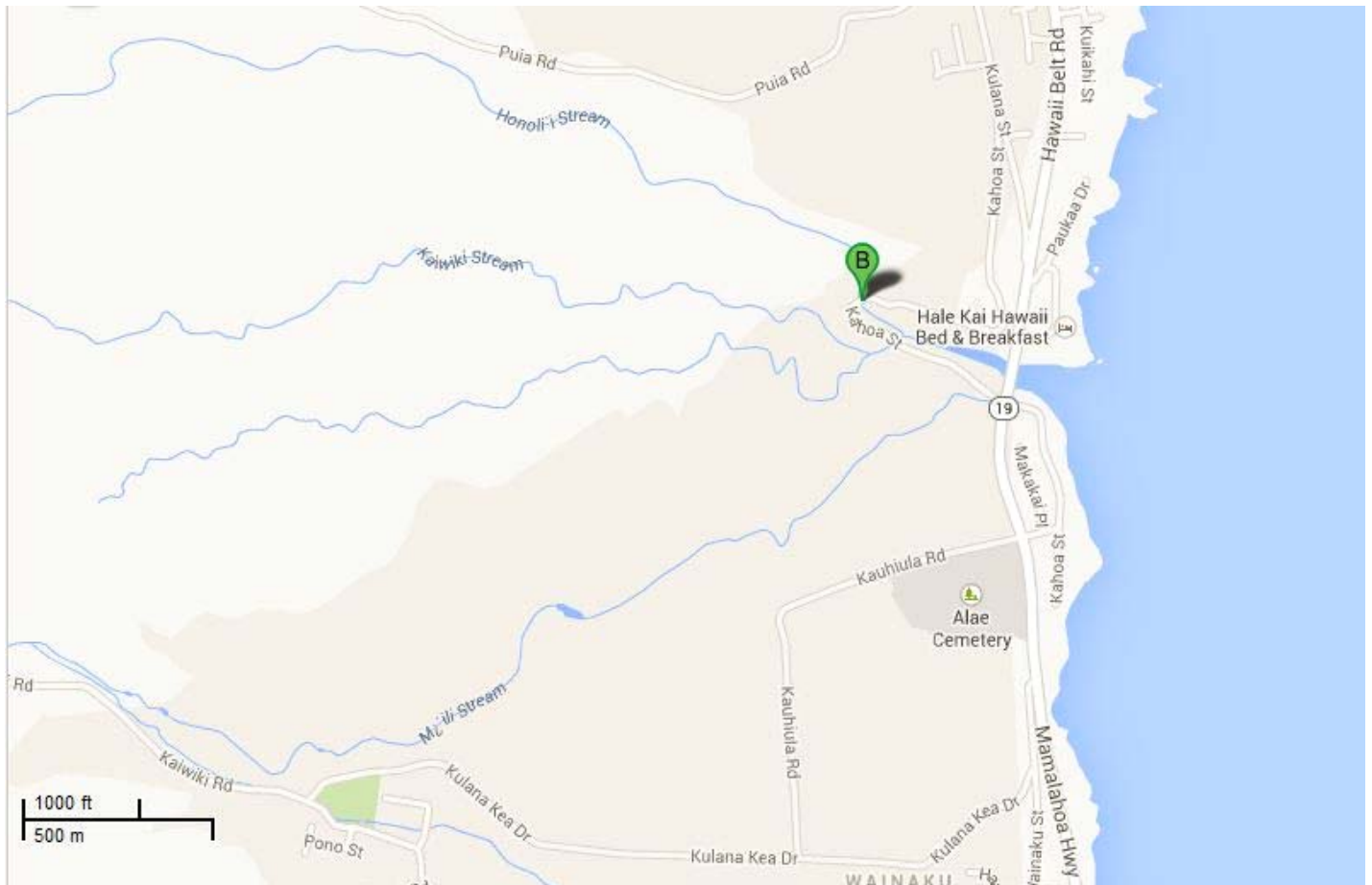
Inventory Form

(County/Private)

General Information

Bridge Number: 001260001100006		
Popular Name: Honolii Stream Bridge		
Feature Crossed: Honolii Stream		
Feature Carried: Kahoa Street		
Milepost:	County Private: Hawaii	
Longitude: 155d-05m-45.44s Latitude: 19d-45m-29.80s		
Location: TMK: 2-6-12:34		
Historic Name: Honolii Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Open Spandrel Arch	Construction Date: 1911	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 6	Max Span: 70.0 ft.	Total Length: 203.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Open Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

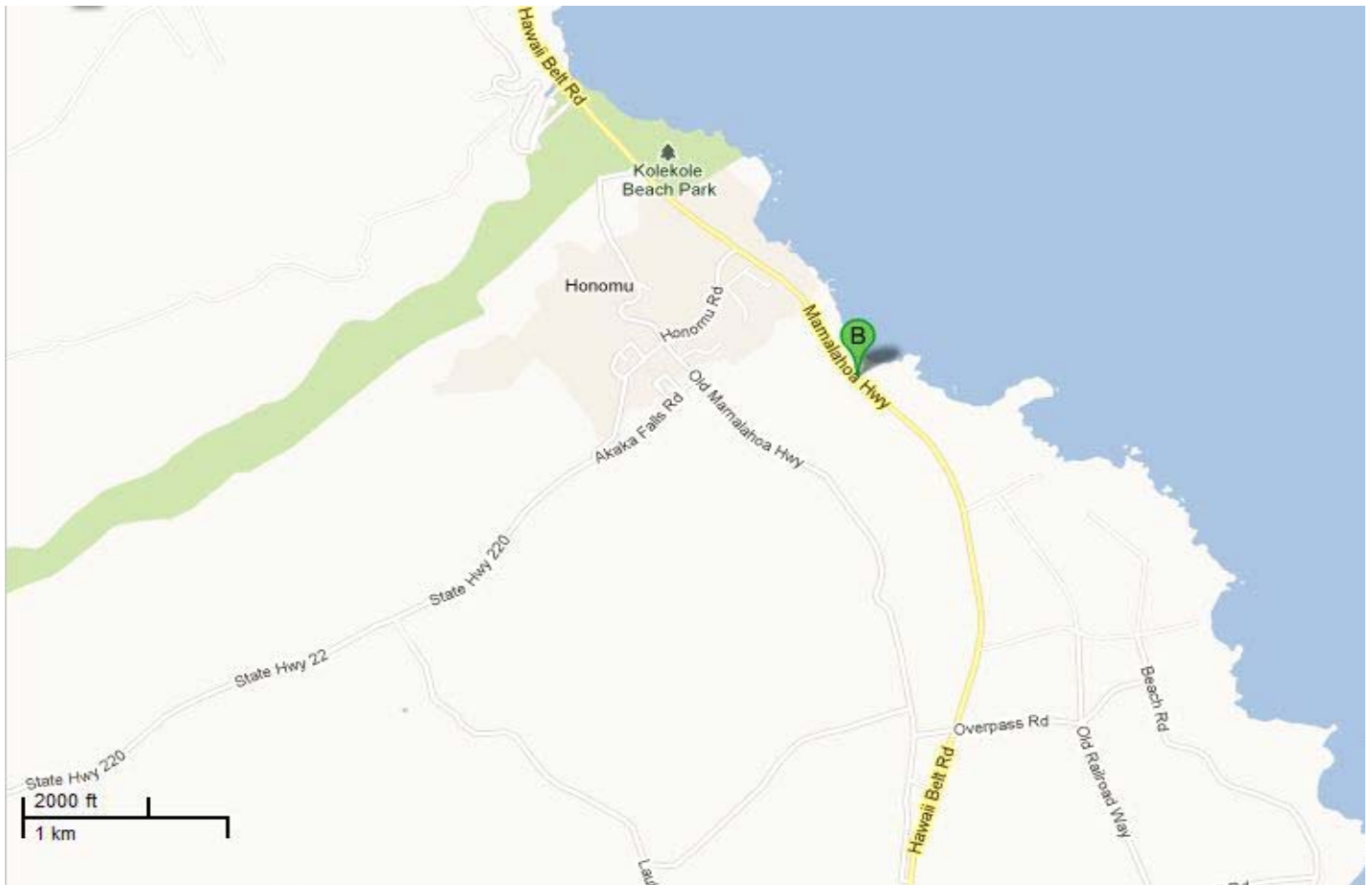
Inventory Form

(County/Private)

General Information

Bridge Number: 001280001100002	
Popular Name: Honomu Stream Bridge	
Feature Crossed: Honomu Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-06m-37.93s Latitude: 19d-51m-58.63s	
Location: TMK: 2-8-013:003	
Historic Name: Honomu Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 2002	Replaced? Yes
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 92.0 ft.	Total Length: 95.0 ft.	Deck Width: 30.0 ft.
Superstructure: Concrete Box Girder			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Non-Contributing	Criteria: n/a	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: n/a		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is a non-contributing feature of the Mamalahoa Historic District due to complete replacement of the original 1935 bridge in 2002. It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

Inventory Form

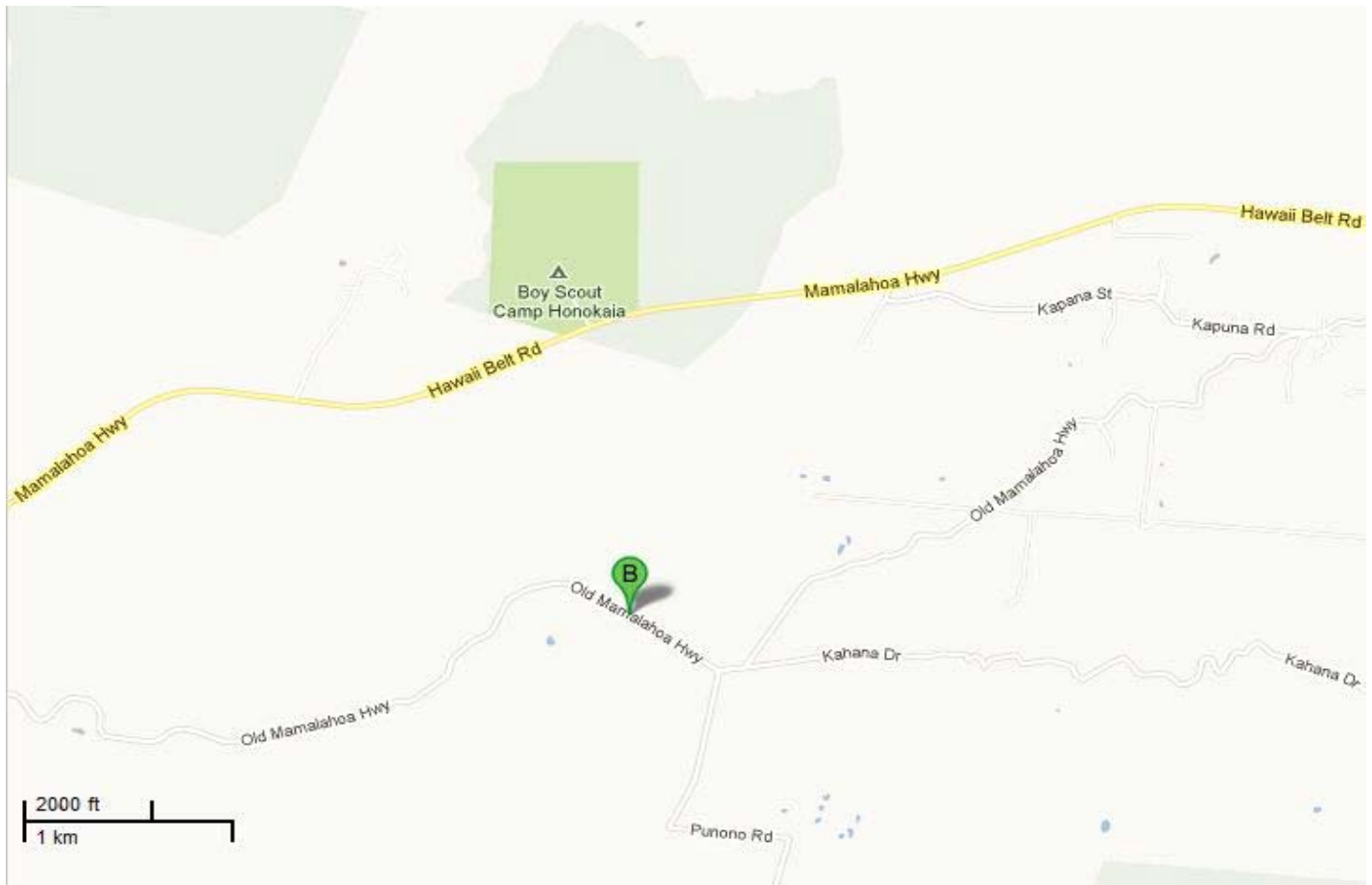
(County/Private)

General Information

Bridge Number: 001460001100005	
Popular Name: Inoino Gulch Bridge	
Feature Crossed: Inoino Gulch	
Feature Carried: Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-31m-03.02s	Latitude: 20d-03m-05.64s
Location: TMK: 4-6-011:035	
Historic Name: Inoino Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Girder	Construction Date: 1924	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 56.0 ft.	Total Length: 60.0 ft.	Deck Width: 31.0 ft.
Superstructure: Prestressed Concrete I-Girder			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:


It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

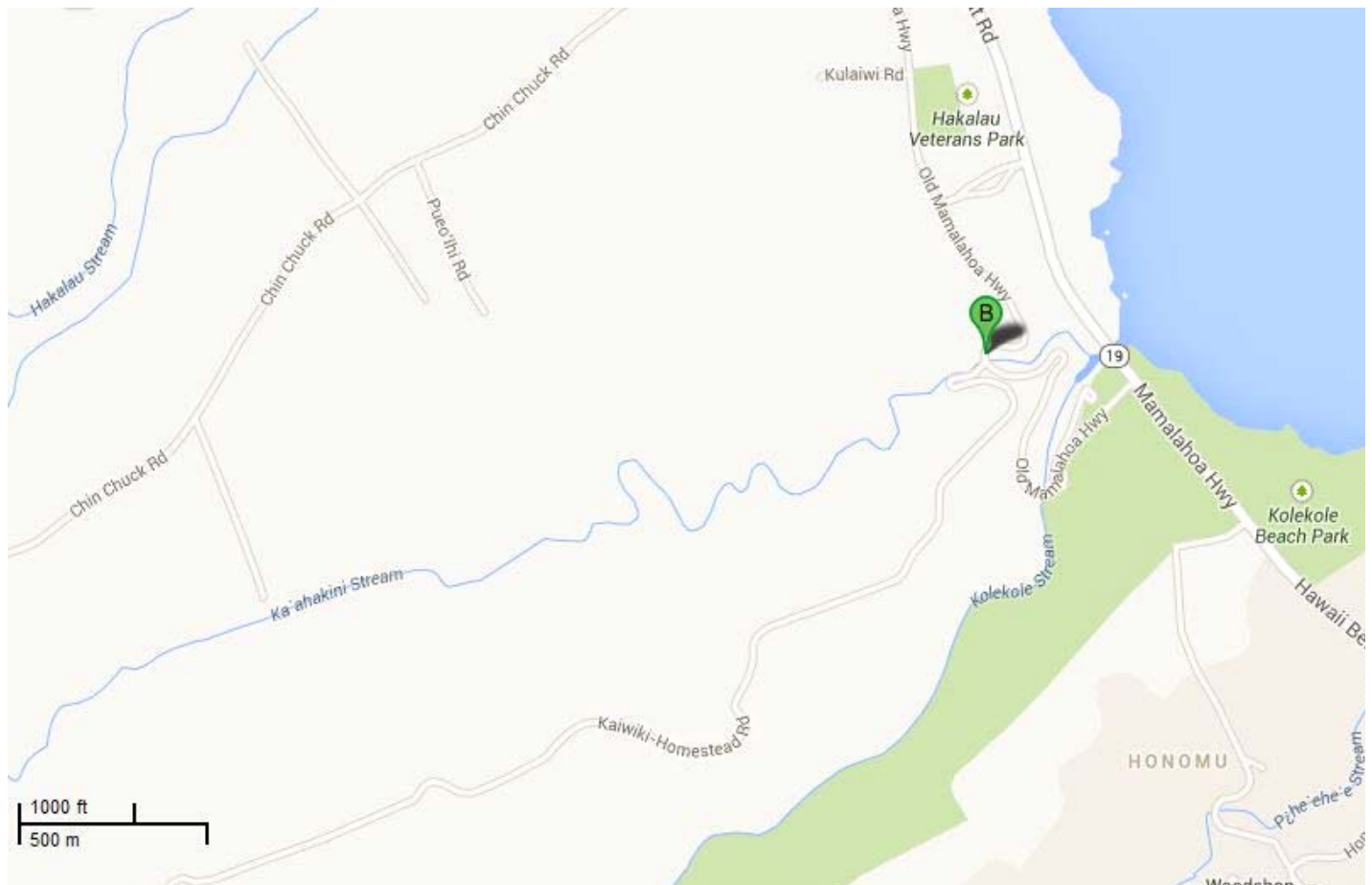
Inventory Form

(County/Private)

General Information

Bridge Number: 001290001100001	
Popular Name: Kaahakini Stream Bridge	
Feature Crossed: Kaahakini Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-07m-20.67s Latitude: 19d-52m-58.08s	
Location: TMK: 2-9-03:39	
Historic Name: Kaahakini Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1929	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 49.0 ft.	Total Length: 50.0 ft.	Deck Width: 22.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

Inventory Form

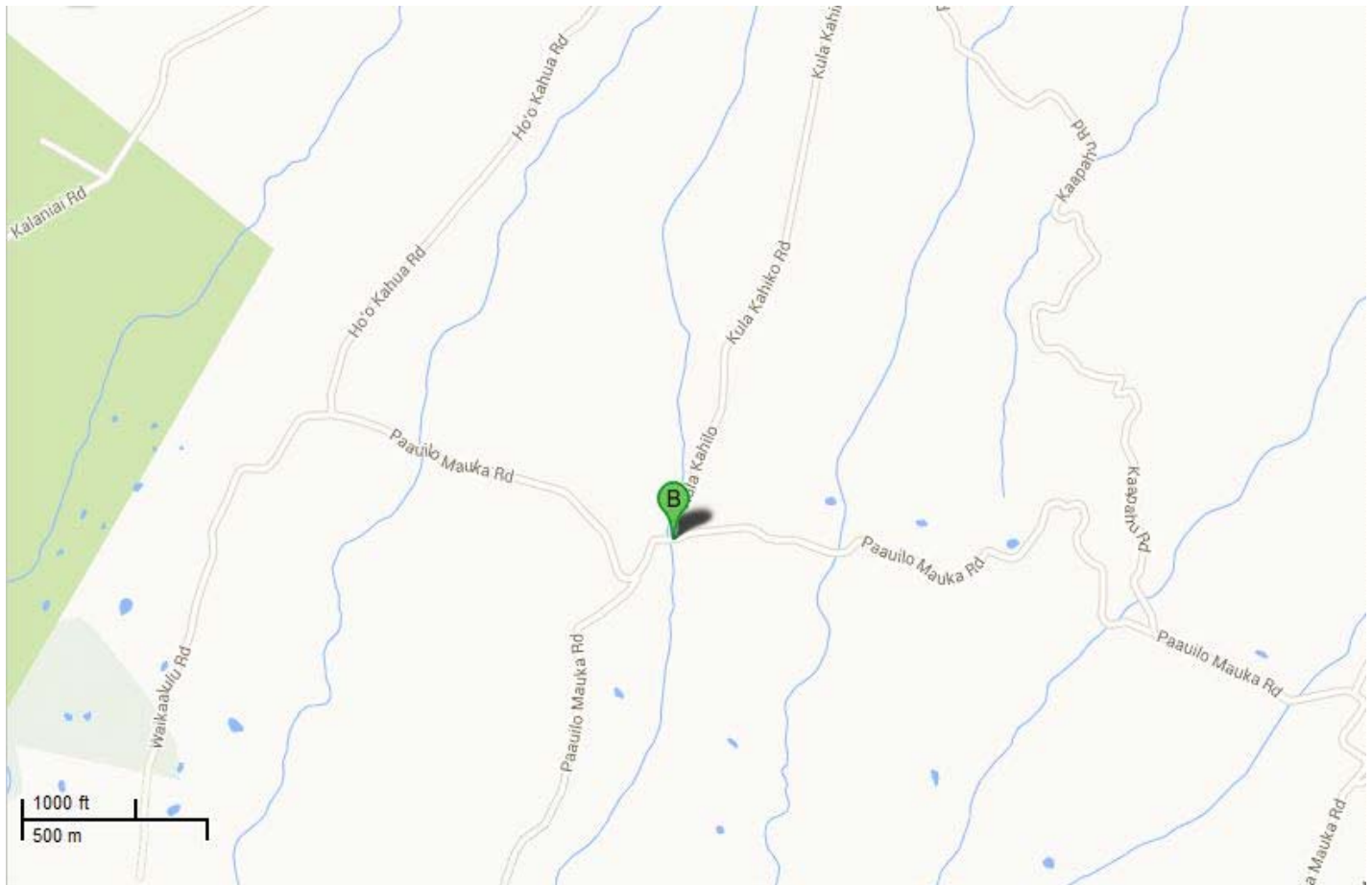
(County/Private)

General Information

Bridge Number: 001440001100001	
Popular Name: Kaapahu Gulch Bridge	
Feature Crossed: Kaapahu Gulch	
Feature Carried: Paauilo Mauka Road	
Milepost:	County Private: Hawaii
Longitude: 155d-25m-16.47s	Latitude: 20d-01m-49.61s
Location: TMK: 4-4-11:12	
Historic Name: Kaapahu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 17.0 ft.	Total Length: 20.0 ft.	Deck Width: 14.0 ft.
Superstructure: Timber Stringer			
Substructure: Concrete Abutment Wall			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaapahu Gulch Bridge carries Paauilo Mauka Road across Kaapahu Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and reinforced concrete abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

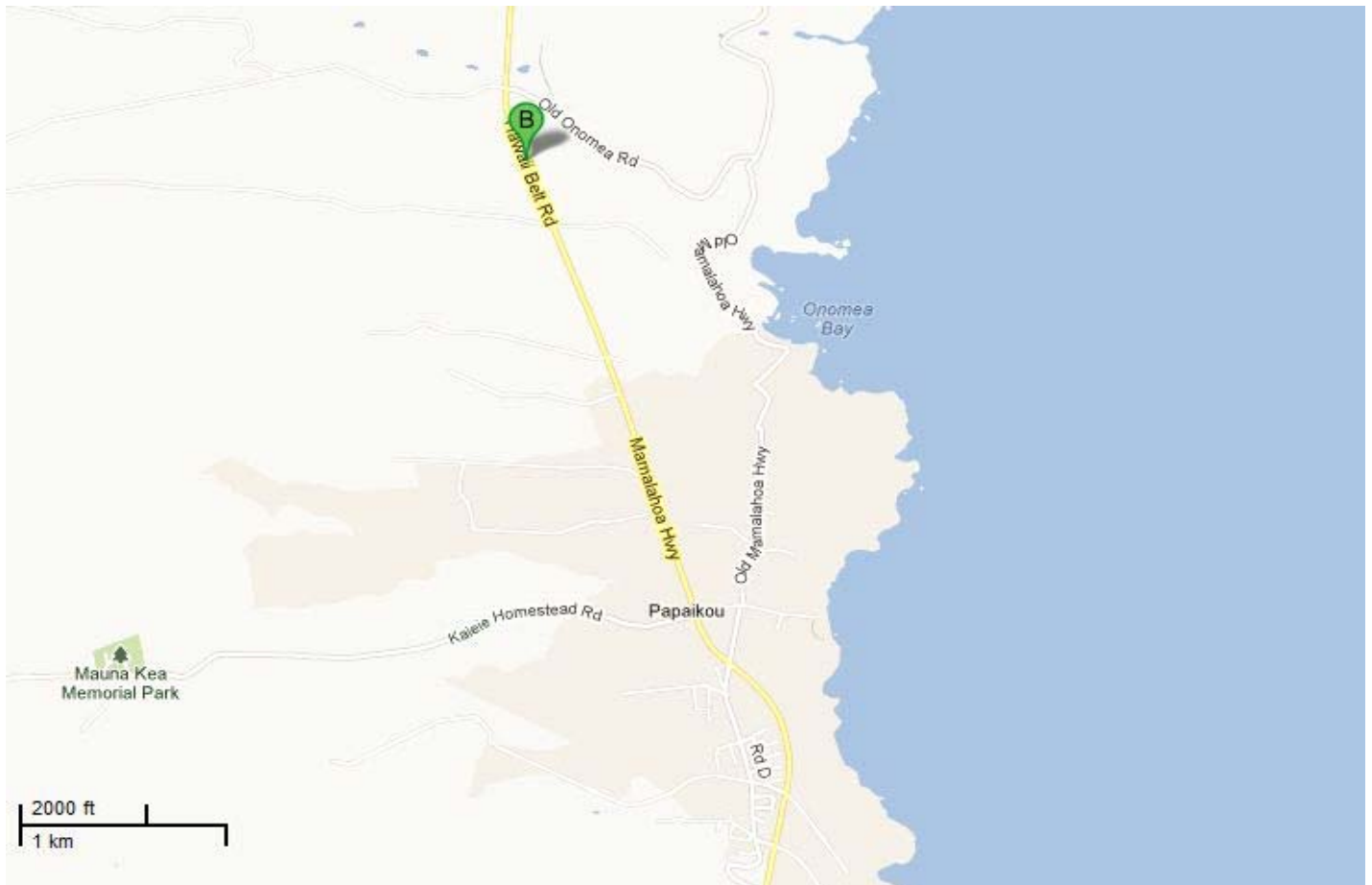
Inventory Form

(County/Private)

General Information

Bridge Number: 001270001100006		
Popular Name: Kahalii Stream Bridge		
Feature Crossed: Kahalii Stream		
Feature Carried: Old Mamalahoa Highway		
Milepost:	County Private: Hawaii	
Longitude: 155d-05m-44.87s	Latitude: 19d-48m-39.29s	
Location: TMK: 2-7-010:014		
Historic Name: Kahalii Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1929	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 36.0 ft.	Total Length: 40.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

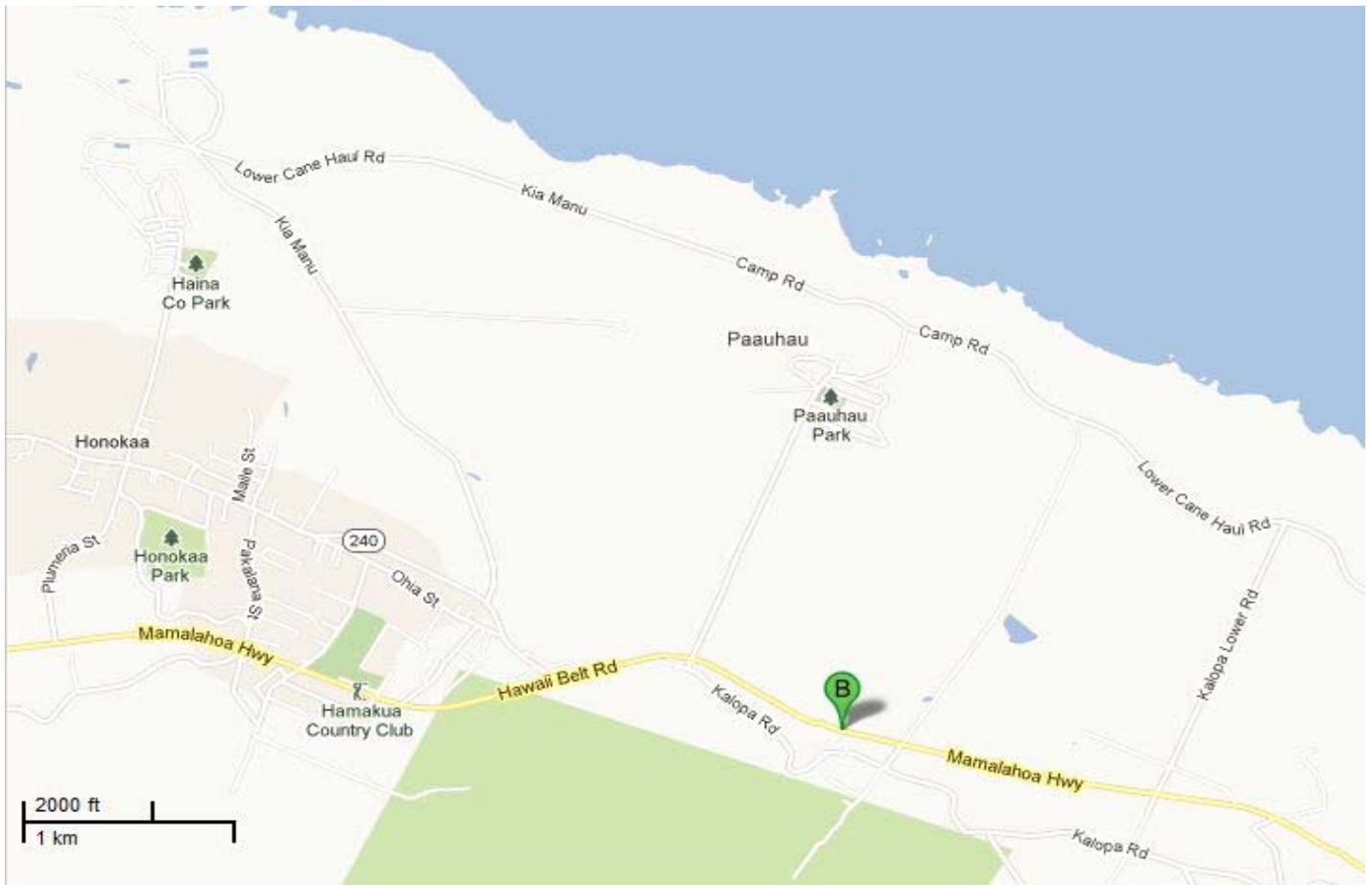
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100010	
Popular Name: Kahawailiili Gulch Bridge	
Feature Crossed: Kahawailiili Gulch	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-26m-21.32s Latitude: 20d-03m-54.71s	
Location: TMK: 4-4-004:004	
Historic Name: Kahawailiili Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1919	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 26.0 ft.	Total Length: 32.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:


See Mamalahoa historic district description.

Inventory Form

(County/Private)

General Information

Bridge Number: 001750001100004	
Popular Name: Kahului Bridge	
Feature Crossed: Relief	
Feature Carried: Alii Drive	
Milepost:	County Private: Hawaii
Longitude: 155d-59m-09.04s	Latitude: 19d-37m-26.27s
Location: TMK: 7-5-019:008	
Historic Name: Kahului Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1937	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 8.0 ft.	Total Length: 20.0 ft.	Deck Width: 30.7 ft.
Superstructure: Concrete Slab			
Substructure: Masonry Abutment and Concrete Rubble Masonry Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kahului Bridge carries Alii Drive across the relief for the waterway. This cast in place concrete bridge is in its original location but in poor condition. The bridge has concrete solid panel parapets with flat caps. The concrete deck is supported by concrete masonry rubble pier wall and abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling. The bridge is programmed for replacement in 2016.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design. The rock abutments are a potentially eligible historic resource.

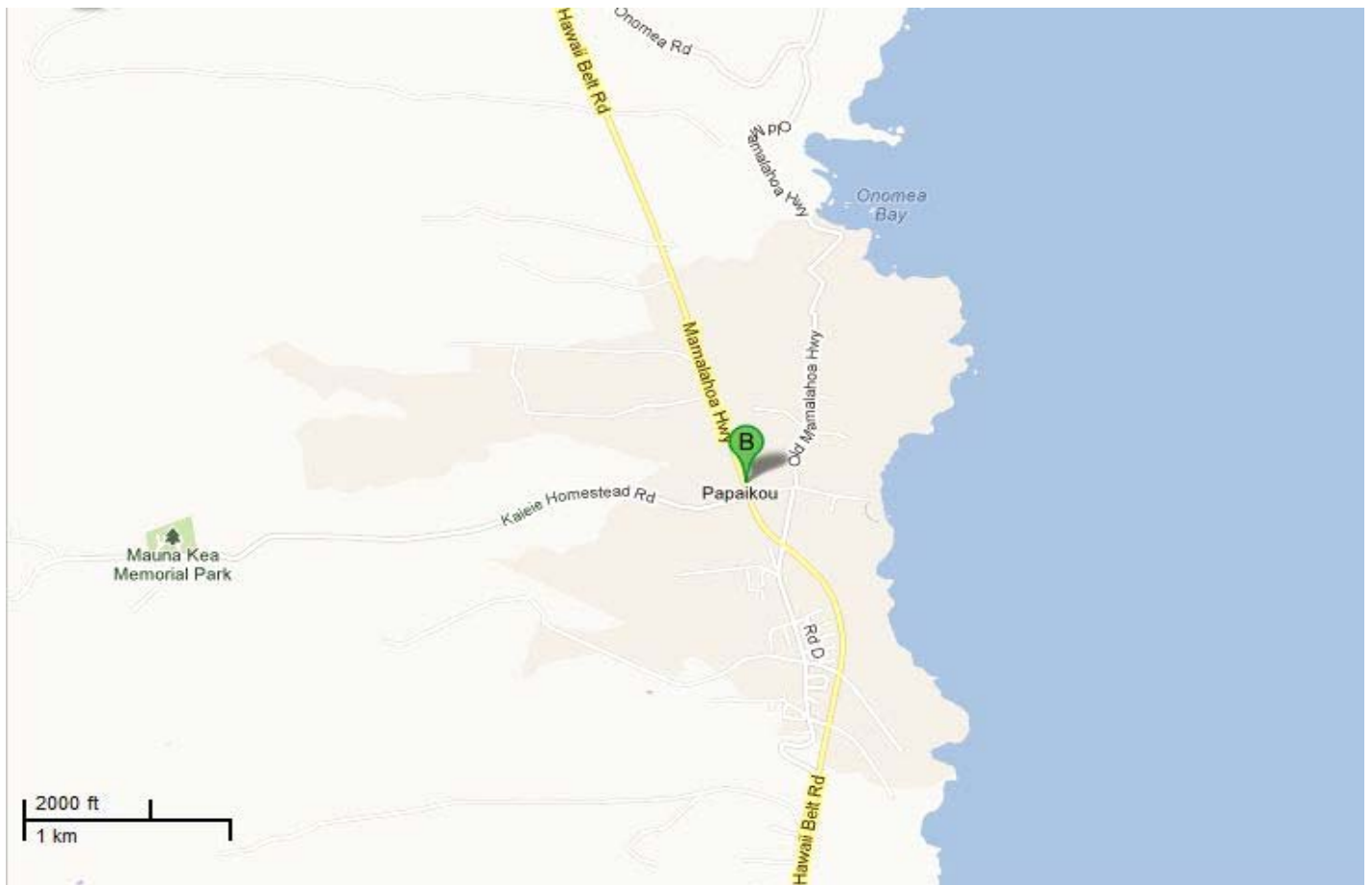
Inventory Form

(County/Private)

General Information

Bridge Number: 001270001100003		
Popular Name: Kaieie Stream Bridge		
Feature Crossed: Kaieie Stream		
Feature Carried: Old Mamalahoa Highway		
Milepost:	County Private: Hawaii	
Longitude: 155d-05m-38.62s	Latitude: 19d-47m-41.97s	
Location: TMK: 2-7-035:012		
Historic Name: Kaieie Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1929	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 45.0 ft.	Total Length: 49.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

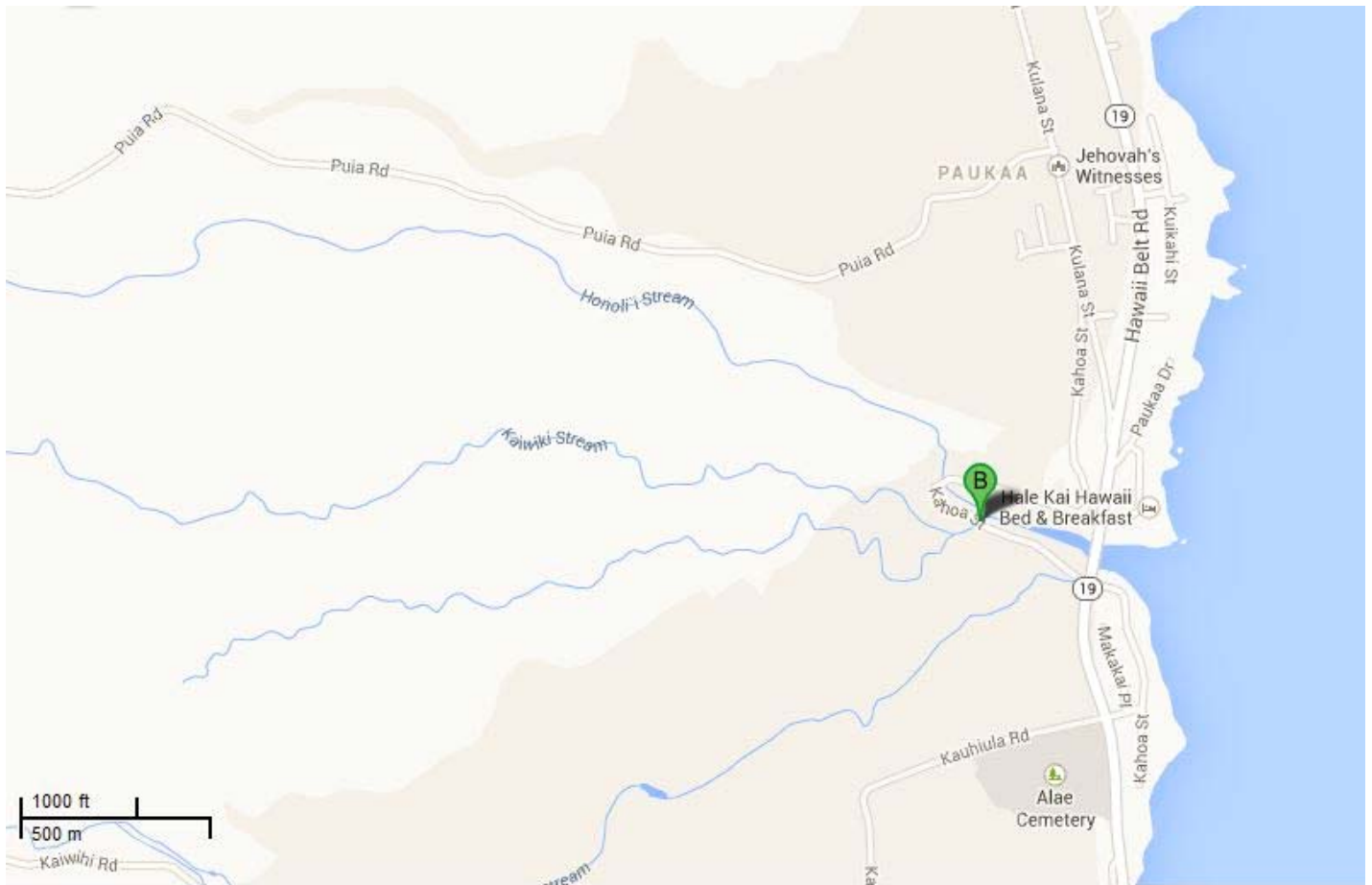
Inventory Form

(County/Private)

General Information

Bridge Number: 001260001100005	
Popular Name: Kaiwiki Bridge No. 1	
Feature Crossed: Kaiwiki Stream	
Feature Carried: Kahoa Street	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-42.41s Latitude: 19d-45m-26.48s	
Location: TMK: 2-6-12:33	
Historic Name: Kaiwiki Bridge No. 1	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1920	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 32.0 ft.	Total Length: 66.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Metal Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

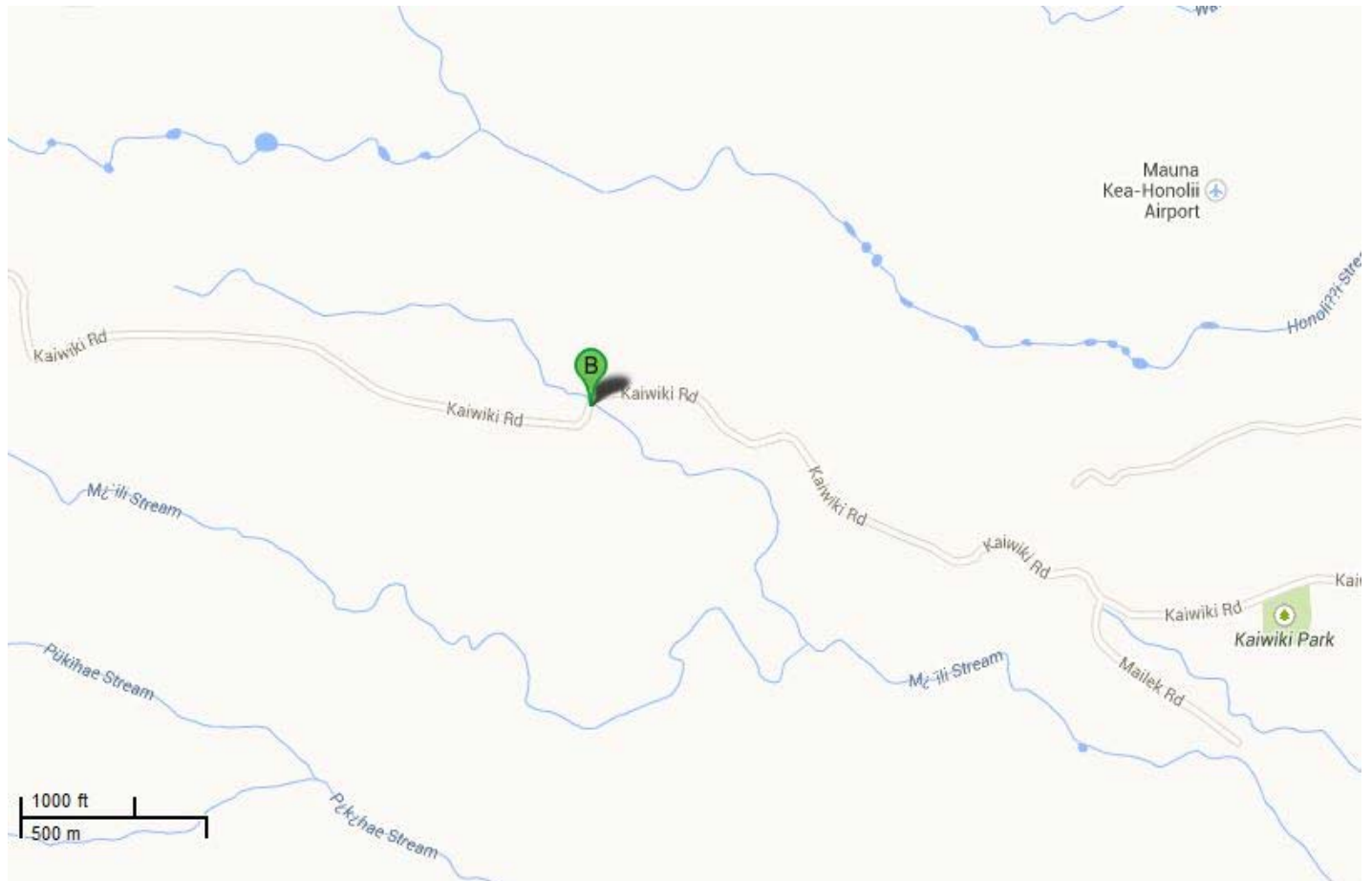
(County/Private)

General Information

Bridge Number: 001260001100007	
Popular Name: Kaiwiki Homestead Road Bridge	
Feature Crossed: Unnamed Stream	
Feature Carried: Kaiwiki Homestead Road	
Milepost:	County Private: Hawaii
Longitude: 155d-09m-27.94s	Latitude: 19d-45m-32.69s
Location: TMK: 2-6-011:015	
Historic Name: Kaiwiki Homestead Road Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? Yes Alteration Date(s): 2010		
Alteration Type(s):		
Alteration Description(s): The timber deck, stringers and railings were replaced. The north abutment was reconstructed and the south abutment was repaired.		

Bridge Information

Number of Spans: 4	Max Span: 21.0 ft.	Total Length: 71.0 ft.	Deck Width: 13.0 ft.
Superstructure: Timber Stringer			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaiwiki Homestead Road Bridge carries Kaiwiki Homestead Road across Unnamed Stream. This timber bridge is in its original location and is generally in good condition. The bridge was rehabilitated in 2010, only the elements of the bridge was replaced. The bridge has wood railings, wood deck and concrete abutments. According to the inspection report, the north concrete abutment was rebuilt. The simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C as a good example of the timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

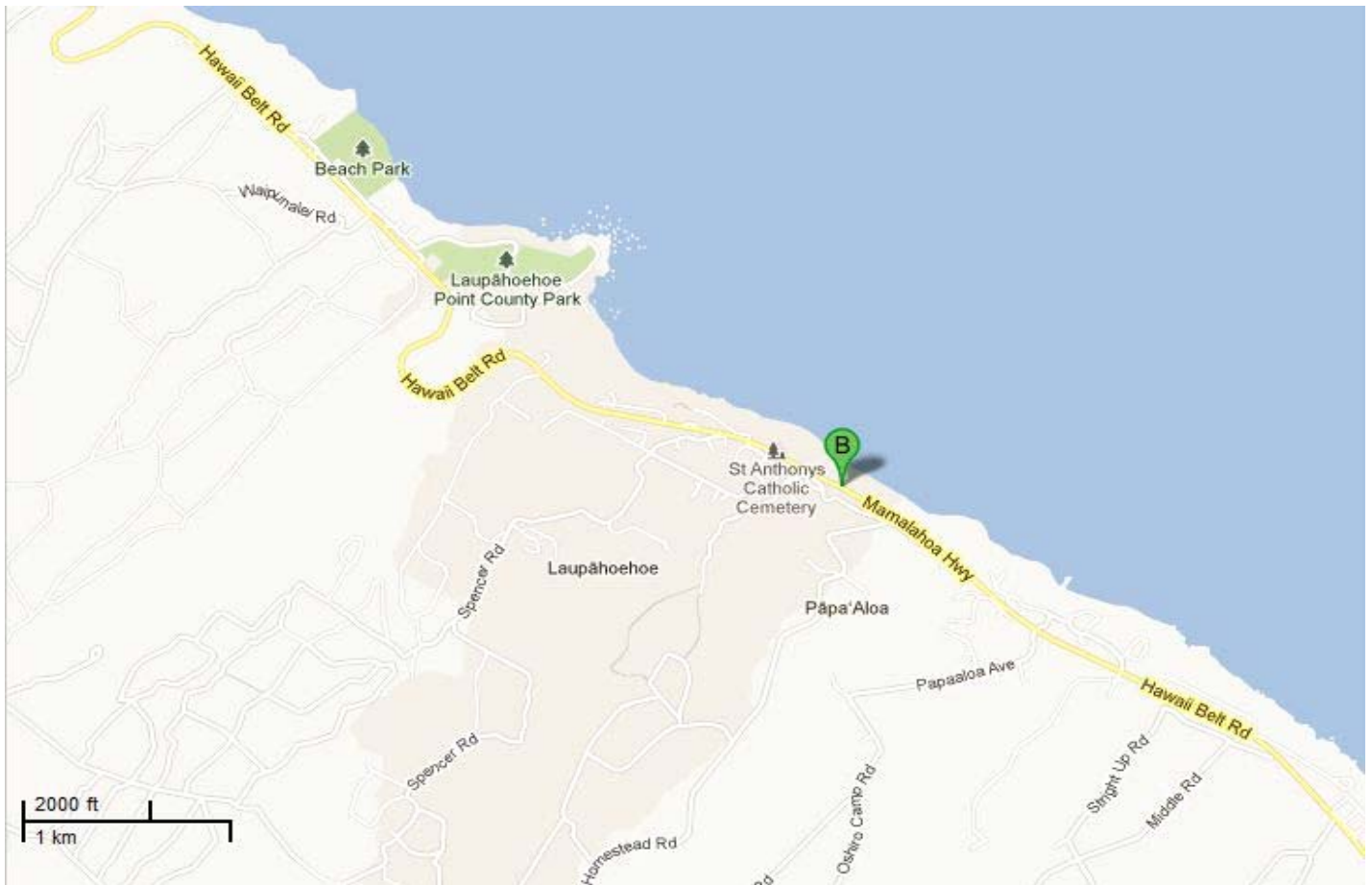
Inventory Form

(County/Private)

General Information

Bridge Number: 001350001100001	
Popular Name: Kaiwilahilahi Stream Bridge	
Feature Crossed: Kaiwilahilahi Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-13m-08.88s Latitude: 19d-58m-34.24s	
Location: TMK: 3-5-003:073	
Historic Name: Kaiwilahilahi Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Open Spandrel Arch	Construction Date: 1923	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 110.0 ft.	Total Length: 162.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Open Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Vertical			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

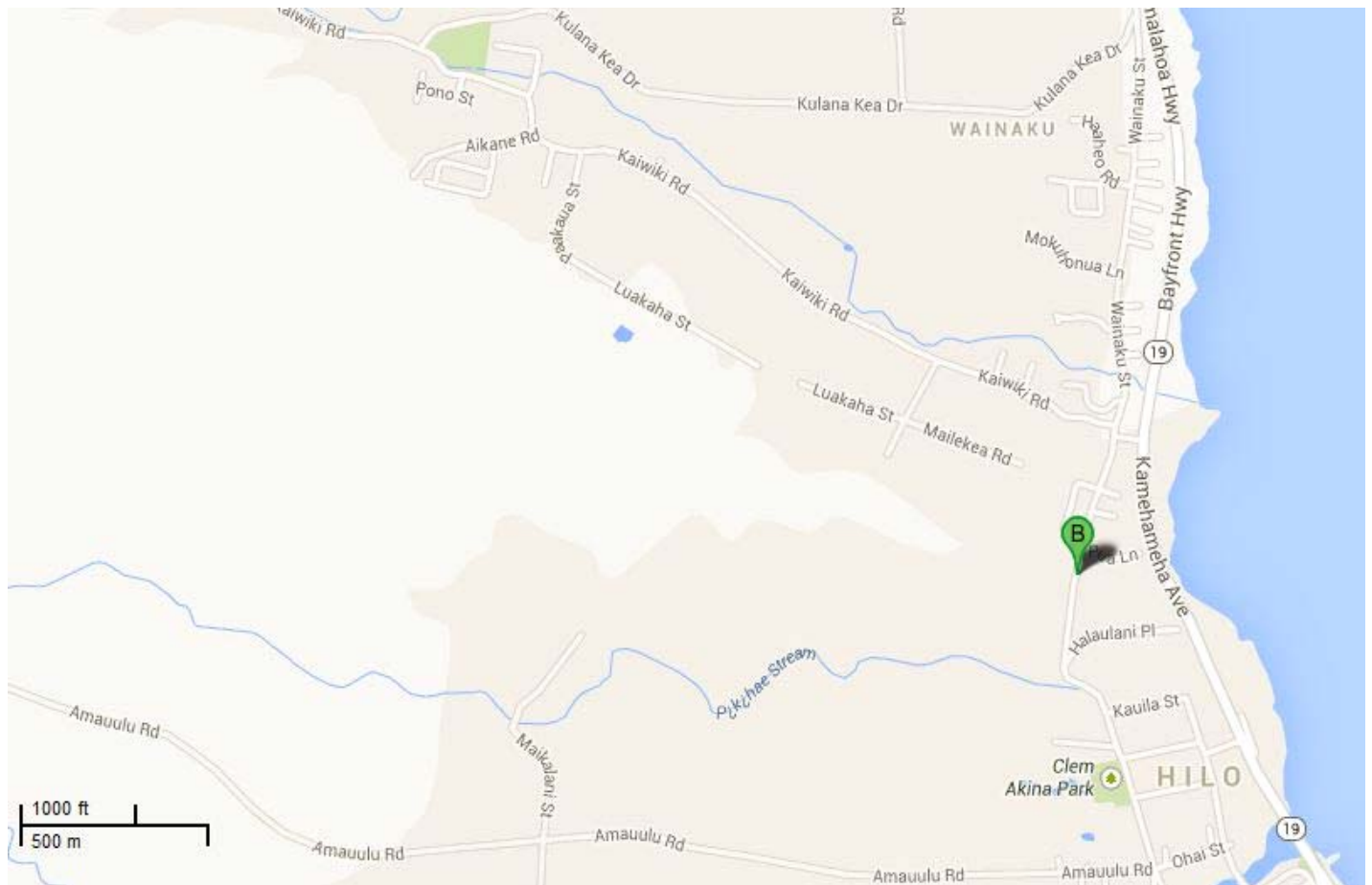
Inventory Form

(County/Private)

General Information

Bridge Number: 001260001100002		
Popular Name: Kalalau Stream Bridge		
Feature Crossed: Kalalau Stream		
Feature Carried: Wainaku Street		
Milepost:	County Private: Hawaii	
Longitude: 155d-05m-35.14s	Latitude: 19d-44m-03.74s	
Location: TMK: 2-6-06:22		
Historic Name: Kalalau Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Masonry Arch	Construction Date: 1920	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 20.0 ft.	Total Length: 64.0 ft.	Deck Width: 33.0 ft.
Superstructure: Masonry Closed Spandrel Arch			
Substructure: Masonry Abutment			
Floor/Decking: AC Pavement			
Parapets/Railings: Masonry Rock with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

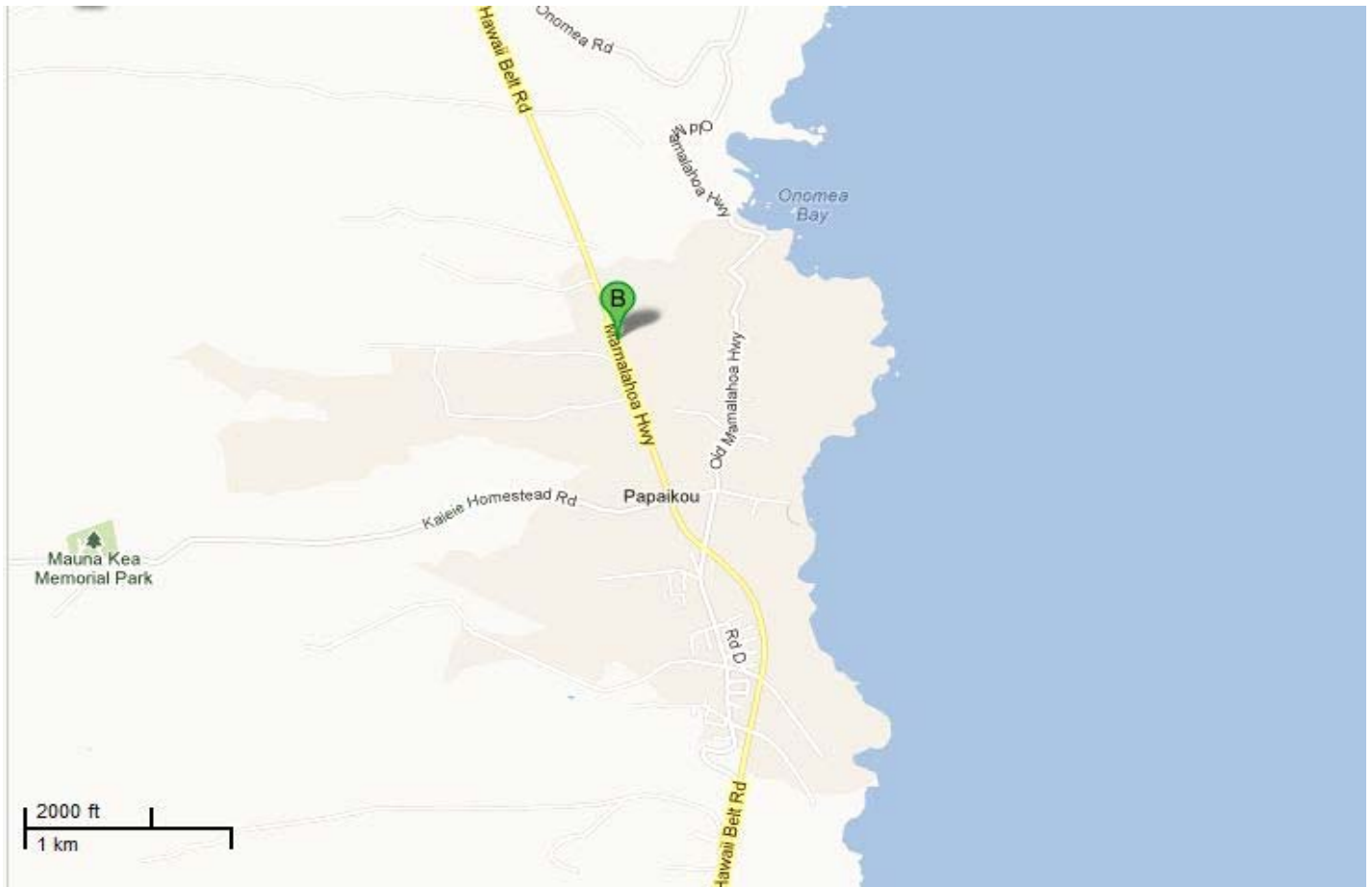
Inventory Form

(County/Private)

General Information

Bridge Number: 001270001100004	
Popular Name: Kalaoa Stream Bridge	
Feature Crossed: Kalaoa Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-35.36s Latitude: 19d-48m-05.94s	
Location: TMK: 2-7-008:013	
Historic Name: Kalaoa Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1929	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 40.0 ft.	Total Length: 40.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

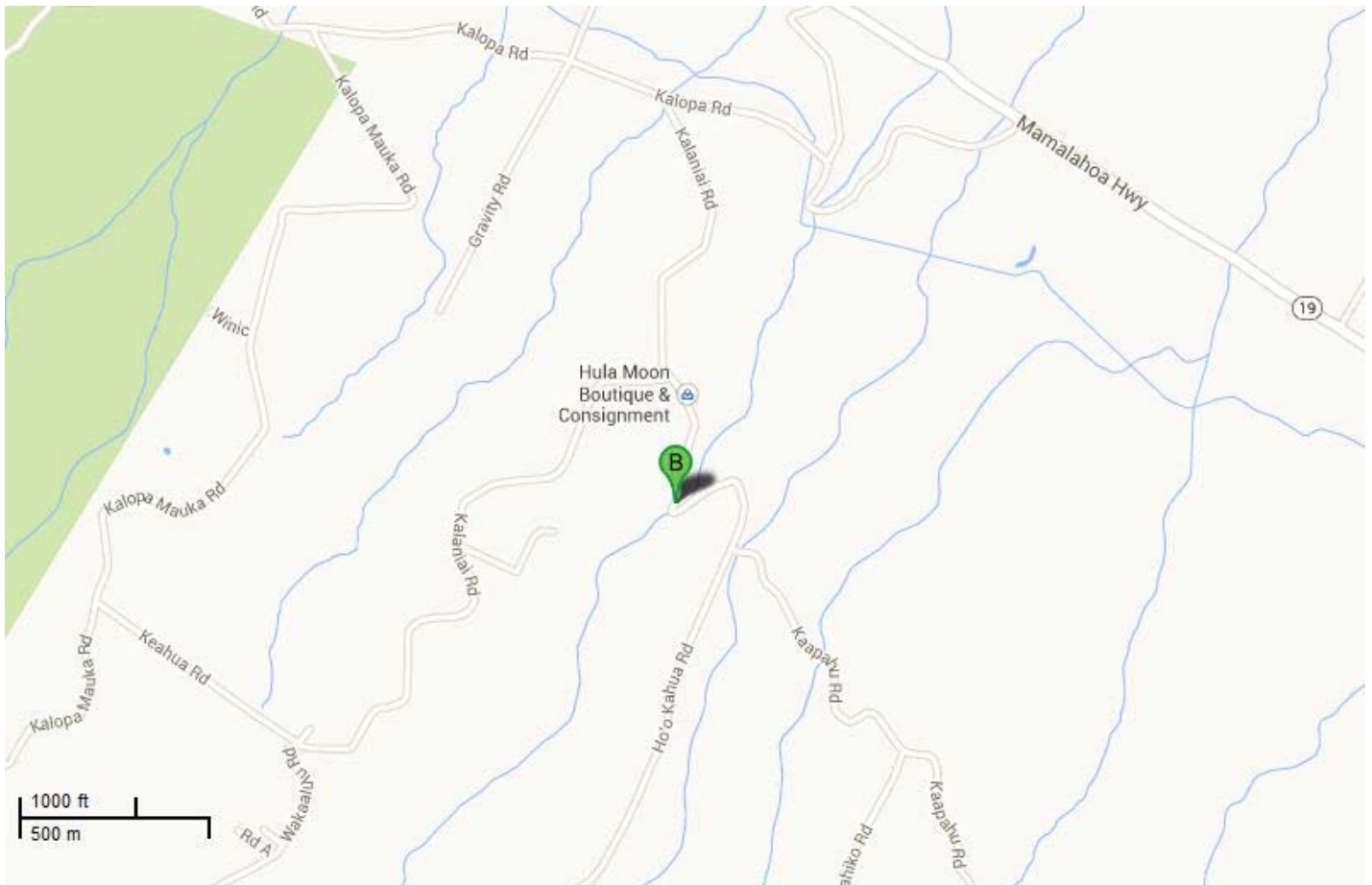
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100007	
Popular Name: Kalopa Gulch Bridge	
Feature Crossed: Kalopa Gulch	
Feature Carried: Kaapahu Road	
Milepost: County Private: Hawaii	
Longitude: 155d-25m-17.15s Latitude: 20d-03m-04.61s	
Location: TMK: 4-4-08:02	
Historic Name: Kalopa Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1919	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 20.0 ft.	Total Length: 48.0 ft.	Deck Width: 16.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kalopa Gulch Bridge carries Kaapahu Road across the Kalopa Gulch. This cast in place concrete tee beam bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete solid panel parapets with flat caps. The workmanship of the bridge has not been obscured by addition or repair and the simple design of the parapet retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1910's cast in place concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

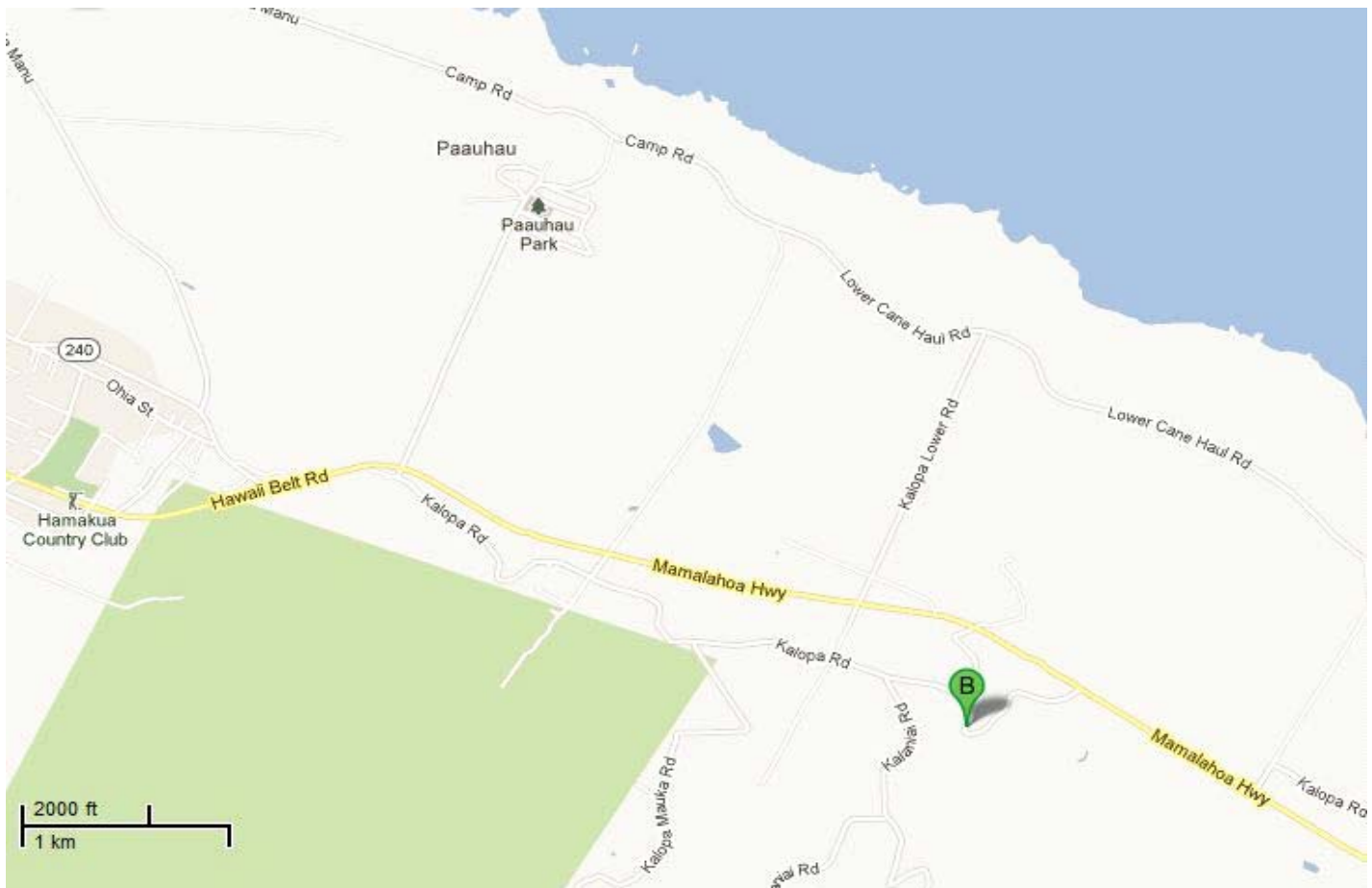
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100009	
Popular Name: Kalopa Gulch Bridge	
Feature Crossed: Kalopa Gulch	
Feature Carried: Kalopa Road	
Milepost: County Private: Hawaii	
Longitude: 155d-25m-04.43s Latitude: 20d-03m-29.36s	
Location: TMK: 4-4-02:07	
Historic Name: Kalopa Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? Yes Alteration Date(s): 2009		
Alteration Type(s):		
Alteration Description(s): Bridge was replaced in-kind in 2009.		

Bridge Information

Number of Spans: 3	Max Span: 15.0 ft.	Total Length: 53.0 ft.	Deck Width: 16.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Concrete Double Column Pier			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description. This timber bridge was reconstructed in-kind in 2009.		

Significance Statement:


It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

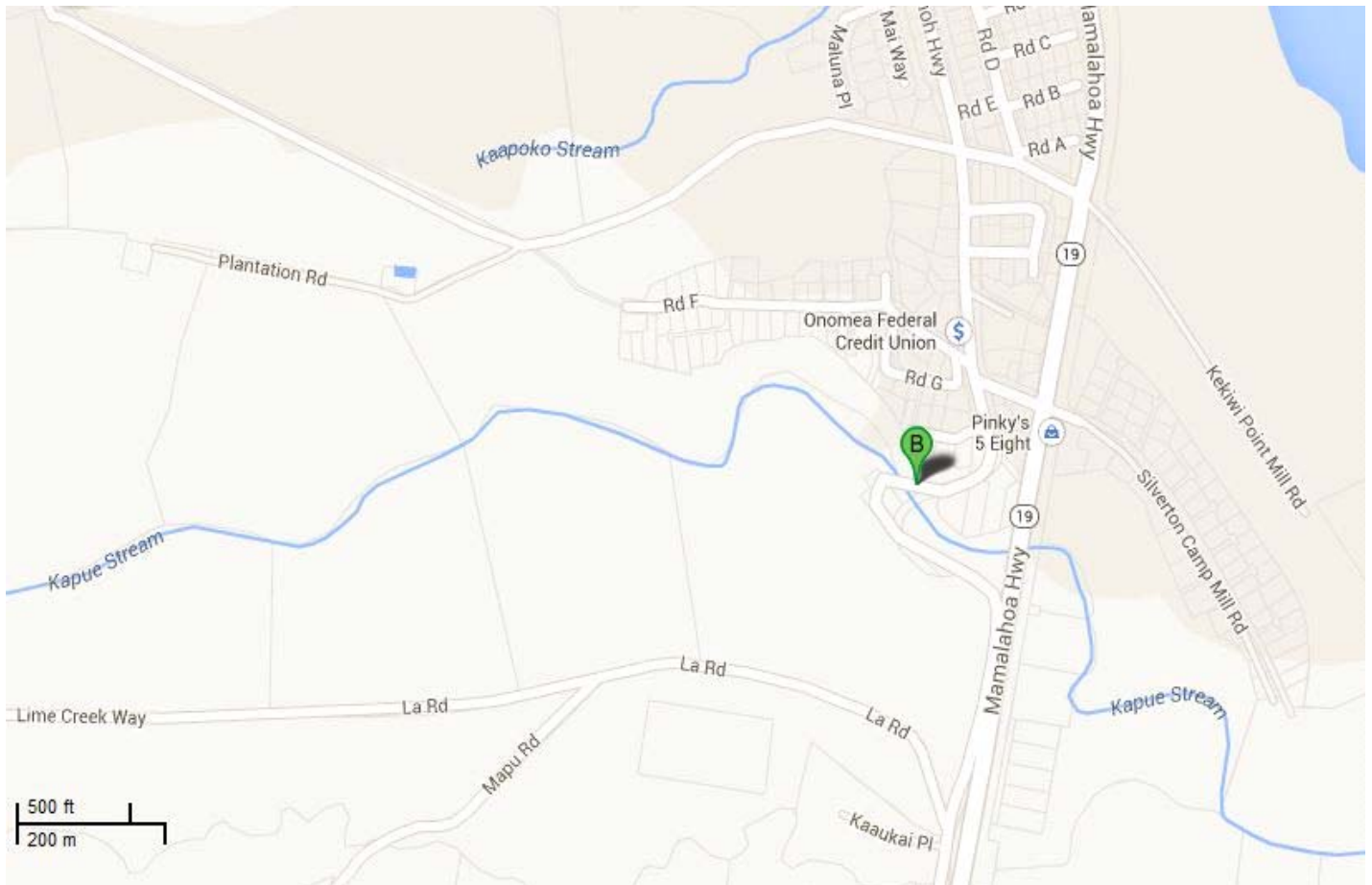
Inventory Form

(County/Private)

General Information

Bridge Number: 001270001100001	
Popular Name: Kapue Stream Bridge	
Feature Crossed: Kapue Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-39.12s Latitude: 19d-46m-55.14s	
Location: TMK: 2-7-04:23	
Historic Name: Kapue Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1935	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 55.0 ft.	Total Length: 68.0 ft.	Deck Width: 18.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Solid			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

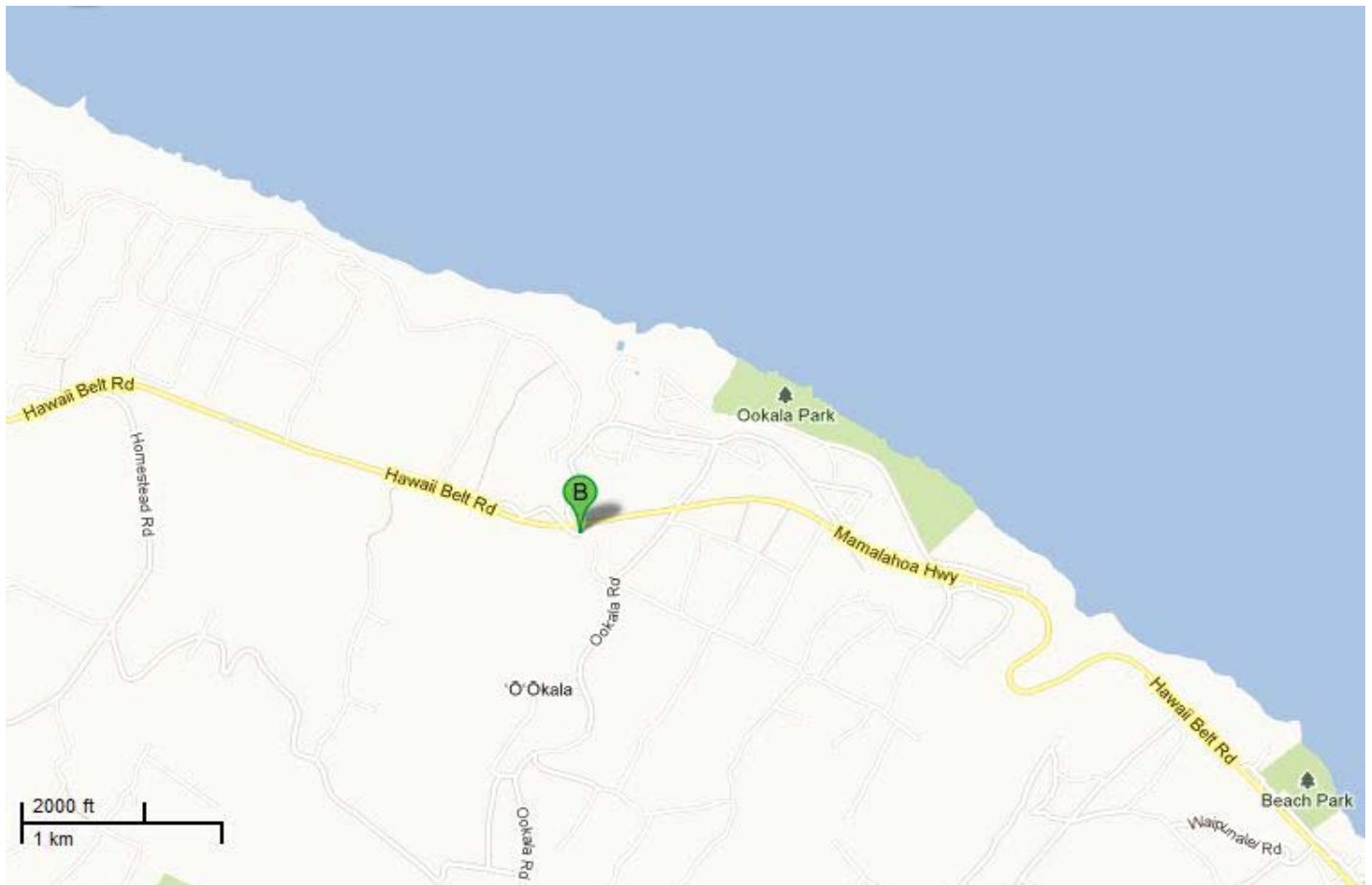
(County/Private)

General Information

Bridge Number: 001410001100001	
Popular Name: Kaula Gulch Bridge	
Feature Crossed: Kaula Gulch	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-17m-09.65s	Latitude: 20d-00m-34.08s
Location: TMK: 4-1-01:15	
Historic Name: Kaula Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Steel Stringer	Construction Date: 1928	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 17.0 ft.	Total Length: 52.0 ft.	Deck Width: 17.0 ft.
Superstructure: Steel Multi-Girder			
Substructure: Masonry Abutment and Timber Multi-Column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

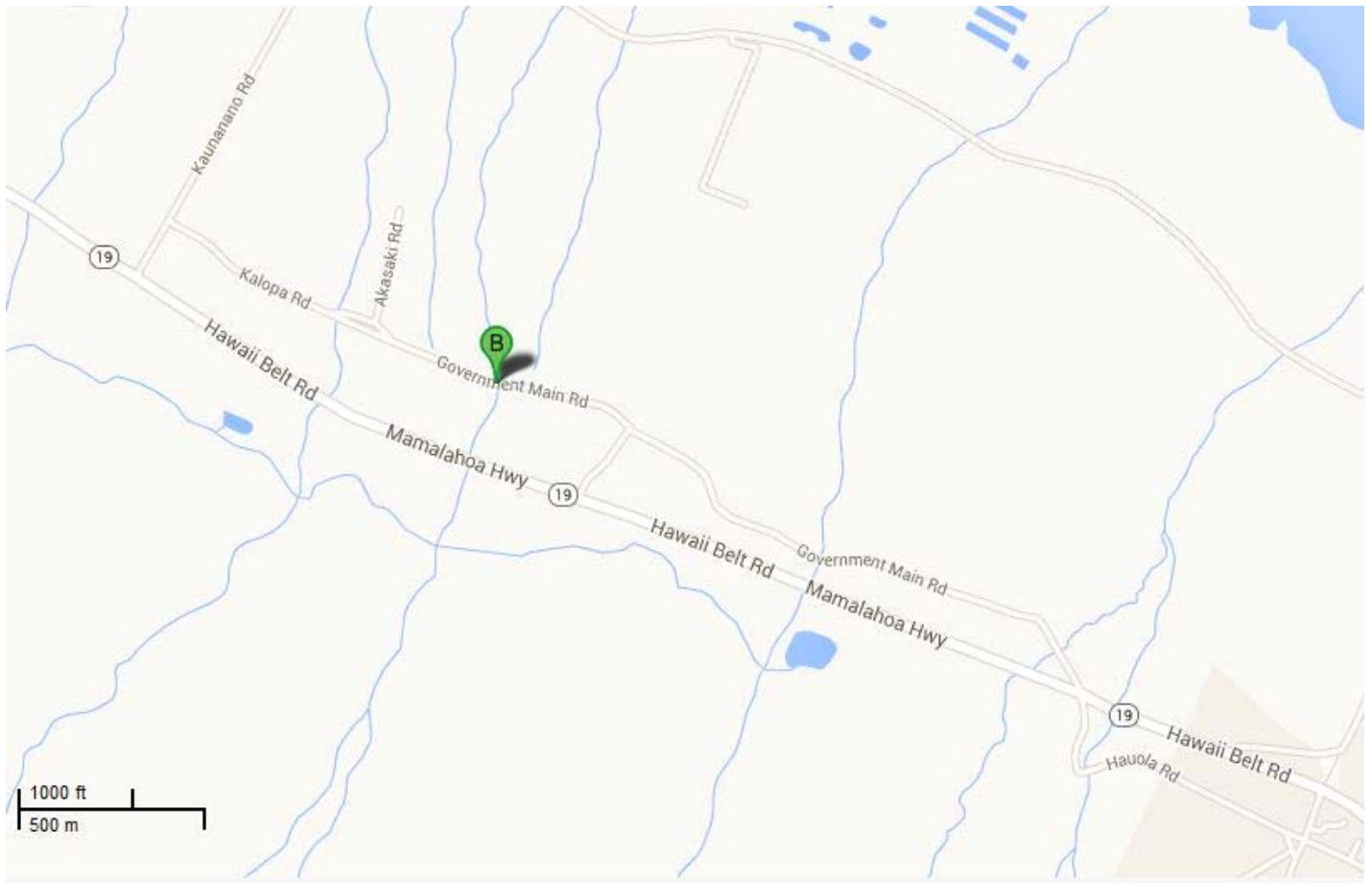
Inventory Form

(County/Private)

General Information

Bridge Number: 001430001100002	
Popular Name: Kaumoali Gulch Bridge	
Feature Crossed: Kaumoali Gulch	
Feature Carried: Old Government Road	
Milepost: County Private: Hawaii	
Longitude: 155d-23m-43.50s Latitude: 20d-03m-10.29s	
Location: TMK: 4-3-05:07	
Historic Name: Kaumoali Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Masonry Arch	Construction Date: 1932	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 15.0 ft.	Total Length: 55.0 ft.	Deck Width: 24.0 ft.
Superstructure: Masonry Closed Spandrel Arch			
Substructure: Masonry Abutment			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Open Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

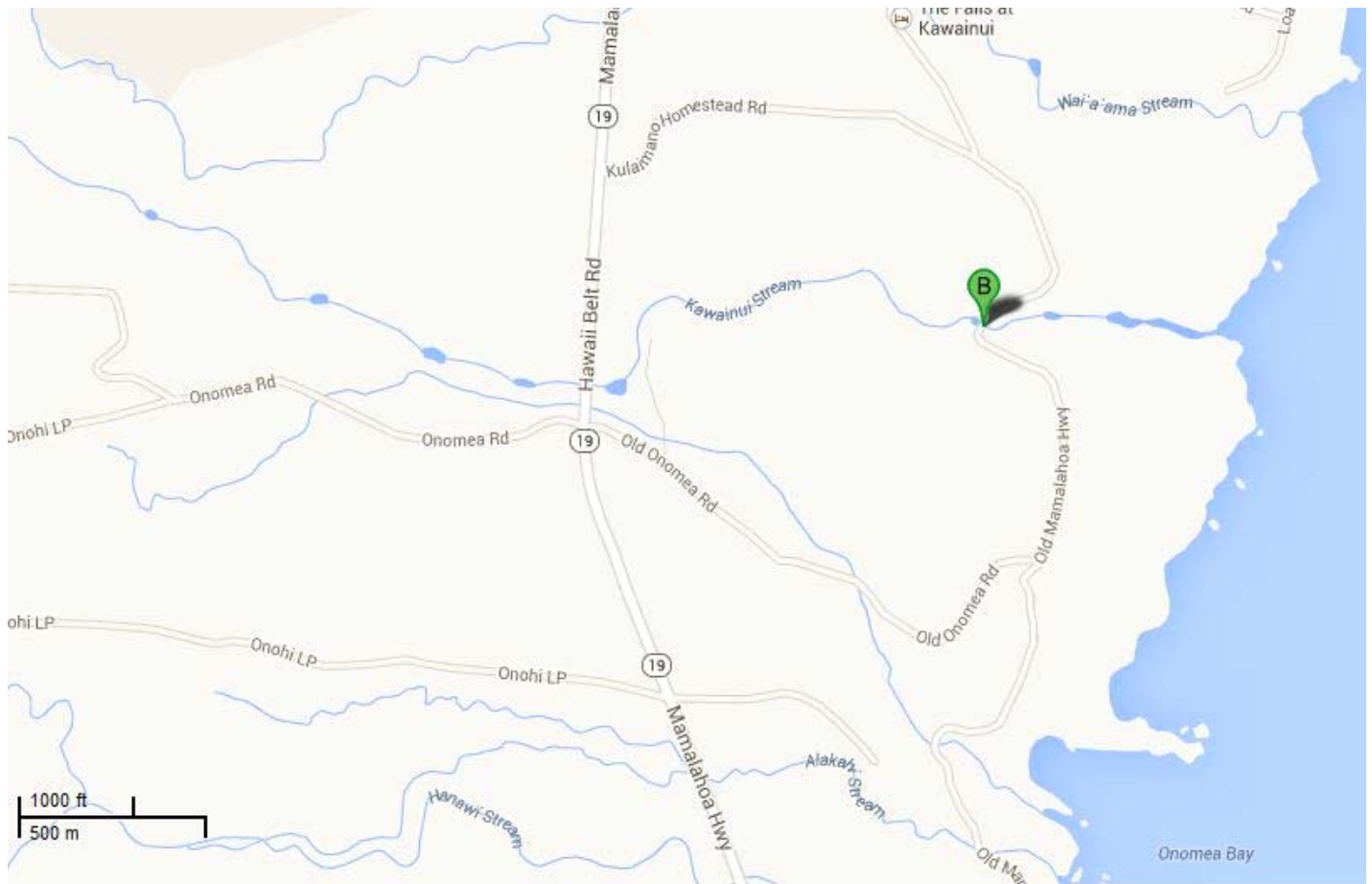
(County/Private)

General Information

Bridge Number: 001270001100007	
Popular Name: Kawainui Stream Bridge	
Feature Crossed: Kawainui Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-05m-41.32s	Latitude: 19d-49m-13.18s
Location: TMK: 2-7-011:002	
Historic Name: Kawainui Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1900	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 4	Max Span: 20.0 ft.	Total Length: 79.0 ft.	Deck Width: 15.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Concrete Double Column Pier			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description. This bridge is scheduled to be replaced in-kind.		

Significance Statement:

See Mamalahoa historic district description.

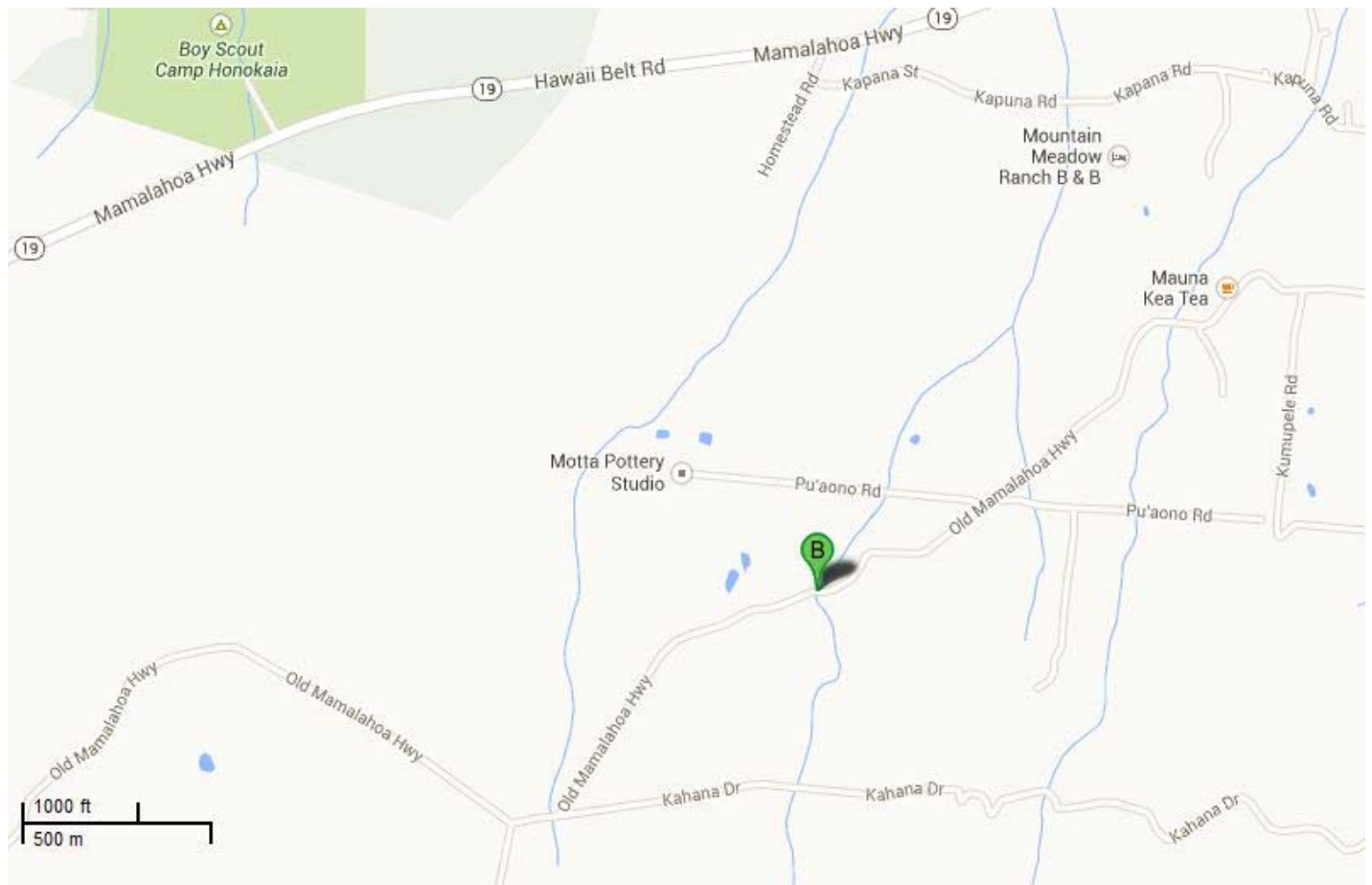
Inventory Form

(County/Private)

General Information

Bridge Number: 001460001100004	
Popular Name: Keaakaukau Gulch Bridge	
Feature Crossed: Keaakaukau Gulch	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-30m-24.20s Latitude: 20d-03m-17.75s	
Location: TMK: 4-6-009:036	
Historic Name: Keaakaukau Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1925	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 12.0 ft.	Total Length: 24.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Slab			
Substructure: Masonry Abutment and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

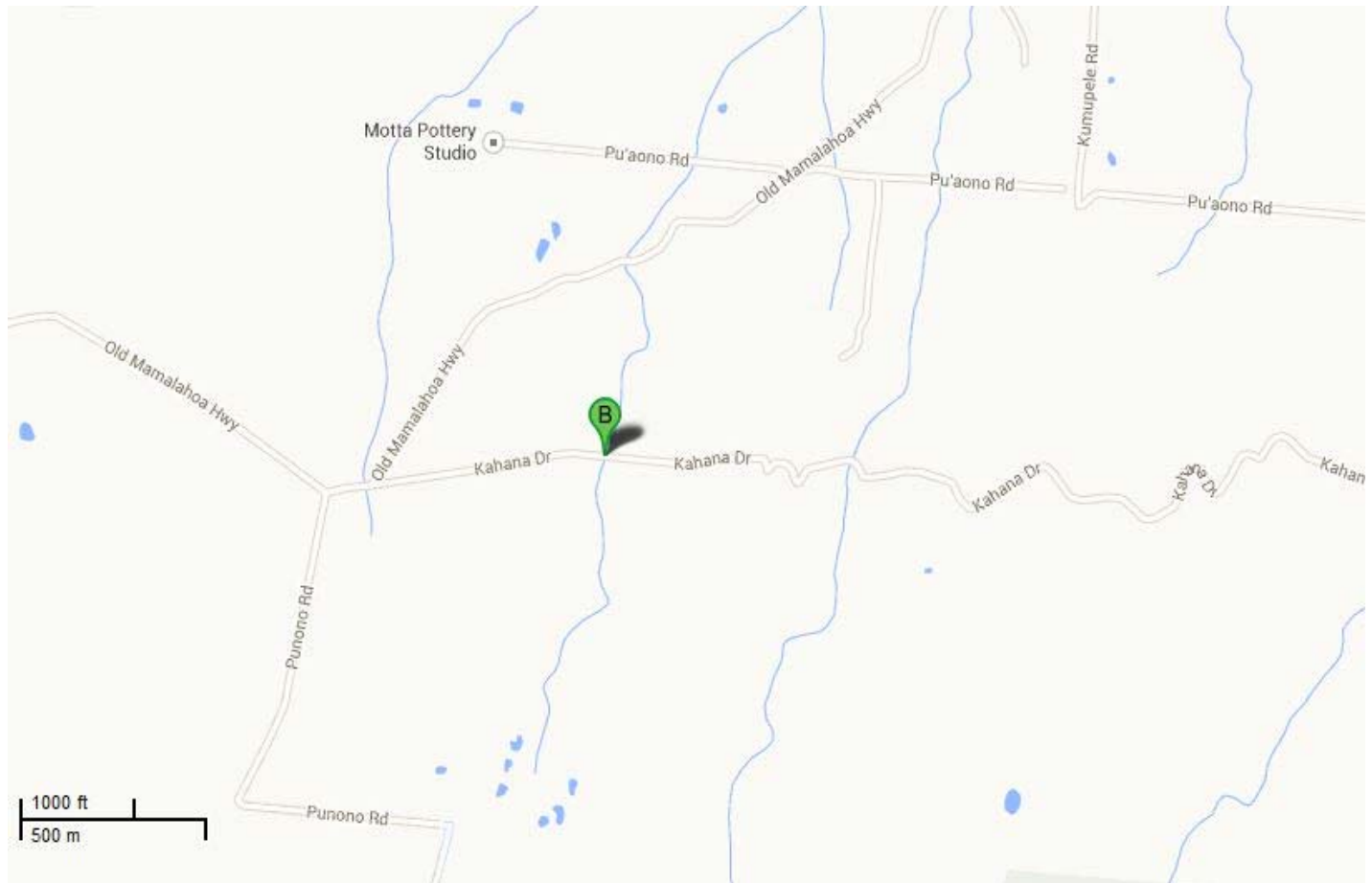
Inventory Form

(County/Private)

General Information

Bridge Number: 001460001100008	
Popular Name: Keaakaukau Stream Bridge	
Feature Crossed: Keaakaukau Gulch	
Feature Carried: Kahana Drive	
Milepost: County Private: Hawaii	
Longitude: 155d-30m-26.22s Latitude: 20d-03m-01.25s	
Location: TMK: 4-6-09:044	
Historic Name: Keaakaukau Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 22.0 ft.	Total Length: 25.0 ft.	Deck Width: 12.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Keaa Kaukau Stream Bridge carries Kahana Drive across Keaa Kaukau Stream. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

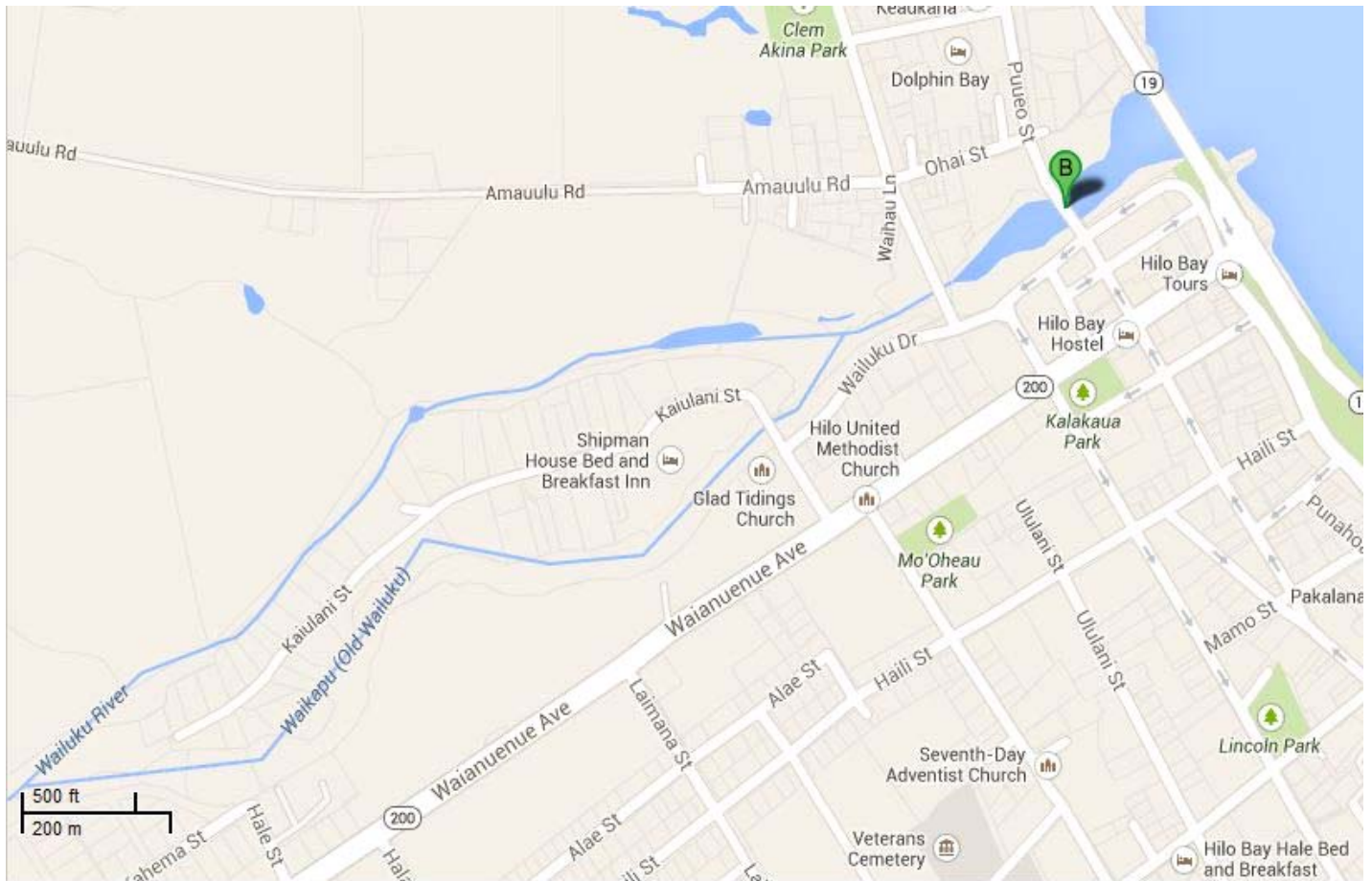
Inventory Form

(County/Private)

General Information

Bridge Number: 001230001100001		
Popular Name: Keawe-Wailuku Bridge		
Feature Crossed: Wailuku River		
Feature Carried: Keawe Street / Puueo Street		
Milepost:	County Private: Hawaii	
Longitude: 155d-05m-19.99s	Latitude: 19d-43m-37.93s	
Location: TMK: 2-3-05:4		
Historic Name: Keawe-Wailuku Bridge		
Designer/Engineer: William Hoy Chun		
Builder/Contractor: H. Isemoto Contracting Co.		

Location Map:



Construction Information

Bridge Type: Rainbow Arch		Construction Date: 1938	Replaced? No
Altered? Yes	Alteration Date(s):		
Alteration Type(s):			
Alteration Description(s): Original street lamps replaced			

Bridge Information

Number of Spans: 1	Max Span: 171.0 ft.	Total Length: 171.0 ft.	Deck Width: 51.5 ft.
Superstructure: Concrete Through Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Decorative			
Setting:			
Other Features: Sidewalk on both sides; decorative concrete end piers with incised bridge name and date of construction; raised concrete medallions at outside of pier columns; metal commemorative plaques and street lamps(replaced) on four ends of arch			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: <p>The Keawe Street-Wailuku River Bridge crosses the Wailuku River at the north border of downtown Hilo, historically a busy shipping port and the center of commerce on the island of Hawaii. The Keawe Street Bridge is located at the site of the first major bridge built on the island of Hawaii and is only the third bridge at this location. The bridge is a concrete open spandrel through-deck arch, also known as a "Rainbow" or Marsh arch. It is one of two remaining examples of this bridge type in the state.</p> <p>The bridge remains in its original location. Its setting in historic downtown Hilo also remains essentially unchanged. With the exception of the replacement of the original street lamps, the bridge retains its original design features and materials. The bridge is the product of successful partnership between William Hoy Chun, master designer for the Hawaii County Department of Public Works and H. Isemoto, Contractor of Hilo. The workmanship is of an exceptionally high caliber, and the bridge is the pride of downtown Hilo. The bridge's historic associations, as an important civic structure associated with the development of Hilo, are readily apparent to all observers. Interpretation is aided by commemorative plaques announcing the engineer's and contractor's names and date of construction. The bridge retains its historic feeling due to the picturesque appearance.</p>		

Significance Statement:

The Keawe Street-Wailuku River Bridge is significant in the areas of engineering and transportation in Hawaii. The Keawe Street Bridge is eligible under Criterion A for its associations with public works efforts by the County of Hawaii, and as an important civic structure associated with the development of Hilo. The bridge is eligible under Criterion C since it is one of two remaining "rainbow" or Marsh arch bridges in the state. Further, the bridge is representative of the "work of a master": William Hoy Chun with the Hawaii County Department of Public Works.

By the mid-nineteenth century the town of Hilo was well-established at Hilo Bay, the island's best port. Yet communications between Hilo and the rich agricultural land to the north were hampered by the formidable and treacherous Wailuku River. The Kingdom's Ministry of the Interior, established in 1846, set as one of its first priorities the spanning of this river.(1) The first bridge built was constructed in 1859 by R.A.S. Wood, Superintendent of the Bureau of Internal Improvements.(2) It was an "experimental" suspension bridge and certainly the most impressive bridge on the island during its lifetime, when most other bridges were timber or stone, small in size and too often temporary in nature. Unfortunately, the bridge collapsed seven weeks after its completion. The suspension bridge was rebuilt with double the strength and served the community faithfully for forty years, with one major reconstruction in 1884. The road leading to it (Keawe Street) was known for fifty years as Bridge Street. The bridge's success was a spur to bridge building throughout the islands.(3)

The second bridge at this site, a steel through-truss, was completed in 1903. Between 1884 to 1904, several American-manufactured steel or iron truss bridges were erected in the islands. The bridge was constructed by contractors Louis M. Whitehouse and Robert Hawxhurst. A Hilo Tribune writer called it "the biggest and best in the Hawaiian Islands."(4) Steel truss bridges proved very expensive to maintain since the salt water spray from the ocean caused them to rust quickly. The Wailuku steel truss bridge was replaced by the current reinforced-concrete through-arch or "rainbow" bridge in 1938. It is the only bridge on Hawaii Island that received Public Works Administration moneys from the U.S. government during the Great Depression.(5)

Rainbow arches are also known as "Marsh Arches" after their designer and patentee, James B. Marsh. This distinctive form of reinforced-concrete bridge construction was used extensively in portions of the mid-west from 1912 (the patent date) through the early 1930s.(6) In Hawaii, only two examples of this type remain - the Anahulu Bridge on Oahu, built in 1921,(7) and the Keawe Street Bridge. Other known examples, since destroyed, include two over Nuuanu Stream in downtown Honolulu and a six-arch rainbow bridge over the Wailua River on Kauai.(8) Arch bridges are also an uncommon bridge type.

The Keawe Street-Wailuku River Bridge was designed by William "Cappy" Chun, the project engineer and the designer of the Wailoa bridge in Hilo (previously listed on the National Register of Historic Places and since demolished). Chun was a graduate of the Illinois Institute of Technology. He also designed the sewer system of Hilo in the 1930s and served as the chief engineer for the Hilo Water Works until 1961.(9) The contractor, H. Isemoto, was a Japanese immigrant who apprenticed in stone masonry and, in 1925, began his own contracting company. He worked on some of the territorial highway bridges near Papaikou before securing this contract. His son Arthur, later a Deputy County Engineer, remembers that his father constructed the concrete forms for the Keawe Street Bridge on the beach next to the Wailoa Bridge, because there was no place to do this near the steep slopes of the Wailuku worksite and then floated the pieces around Hilo Bay and up the river.(10)

(1) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 150.

(2) Pacific Commercial Advertiser (June 23, 1859), 1.

(3) Honolulu Advertiser (September 17, 1859), 2.

(4) Honolulu Advertiser (March 18, 1904), 5.

(5) Patricia Alvarez, HAER Inventory: Keawe Street/ Wailuku River Bridge, prepared for the State of Hawaii, Department of Transportation and the U.S. Department of the Interior, Historic American Engineering Record (HAER) (Honolulu, 1987c).

(6) William P. Chamberlin, Historic Bridges – Criteria for Decision Making, National Cooperative Highway Research Program, Synthesis of Highway Practice 101 (Washington, D.C.: Transportation Research Board, 1983), 21.

(7) Bethany Thompson, Historic Bridge Inventory, Island of Oahu, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highway Administration (Honolulu, 1983).

(8) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 153.

(9) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 153.

(10) Patricia Alvarez, Historic Bridge Inventory and Evaluation: Island of Hawaii, prepared for the State of Hawaii, Department of Transportation, Highways Division in cooperation with the U.S. Department of Transportation, Federal Highways Administration (Honolulu, 1987b), 153.

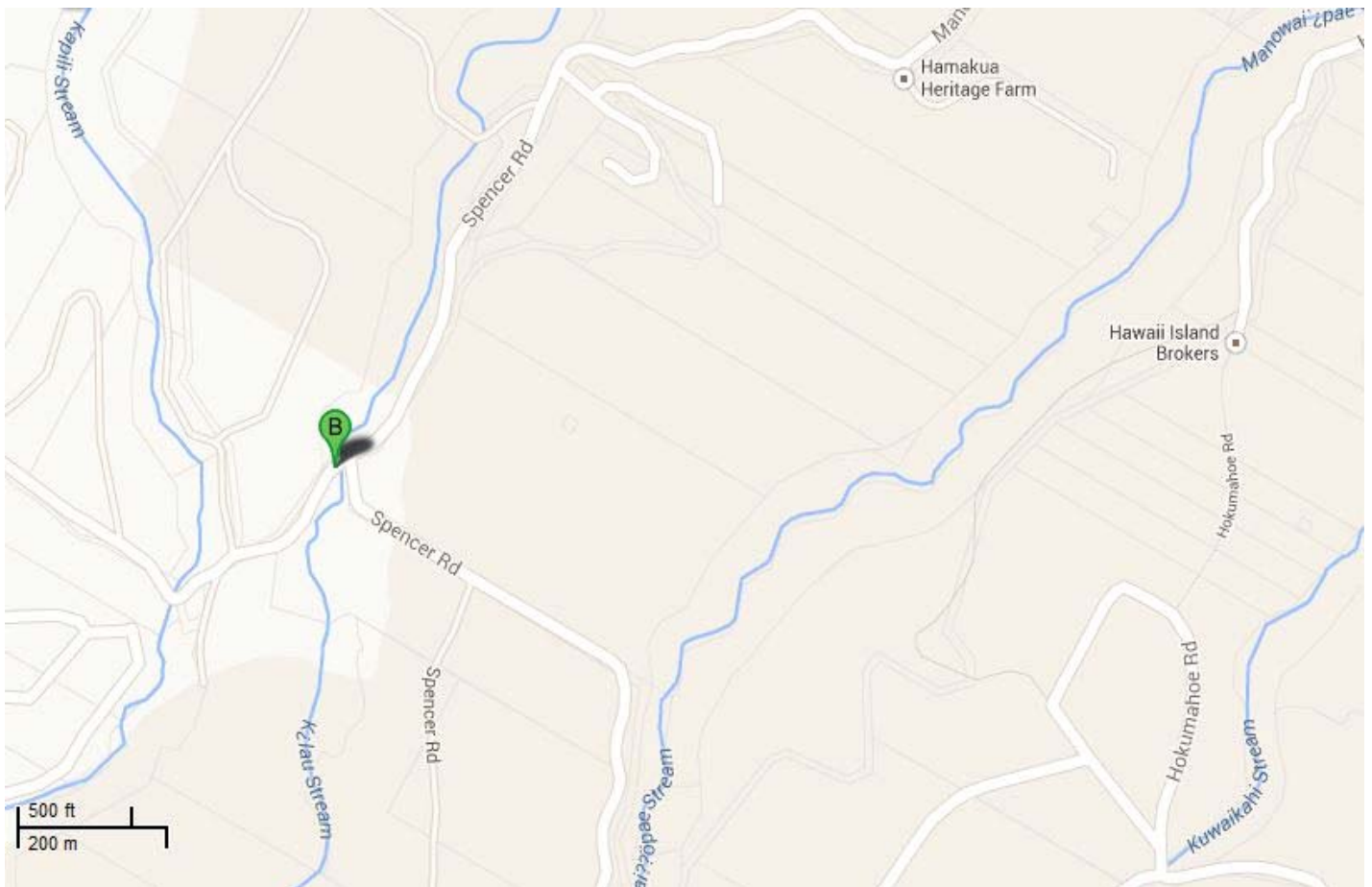
Inventory Form

(County/Private)

General Information

Bridge Number: 001360001100002	
Popular Name: Kilau Stream Bridge	
Feature Crossed: Kilau Stream	
Feature Carried: Manowaiopae Homestead Road	
Milepost: County Private: Hawaii	
Longitude: 155d-14m-49.87s Latitude: 19d-58m-33.25s	
Location: TMK: 3-6-003:012	
Historic Name: Kilau Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 4	Max Span: 16.0 ft.	Total Length: 65.0 ft.	Deck Width: 16.0 ft.
Superstructure: Timber Stringer			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kilau Stream Bridge carries Manowaiopae Highway Road across Kilau Stream. This timber girder bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and reinforced concrete pier and abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

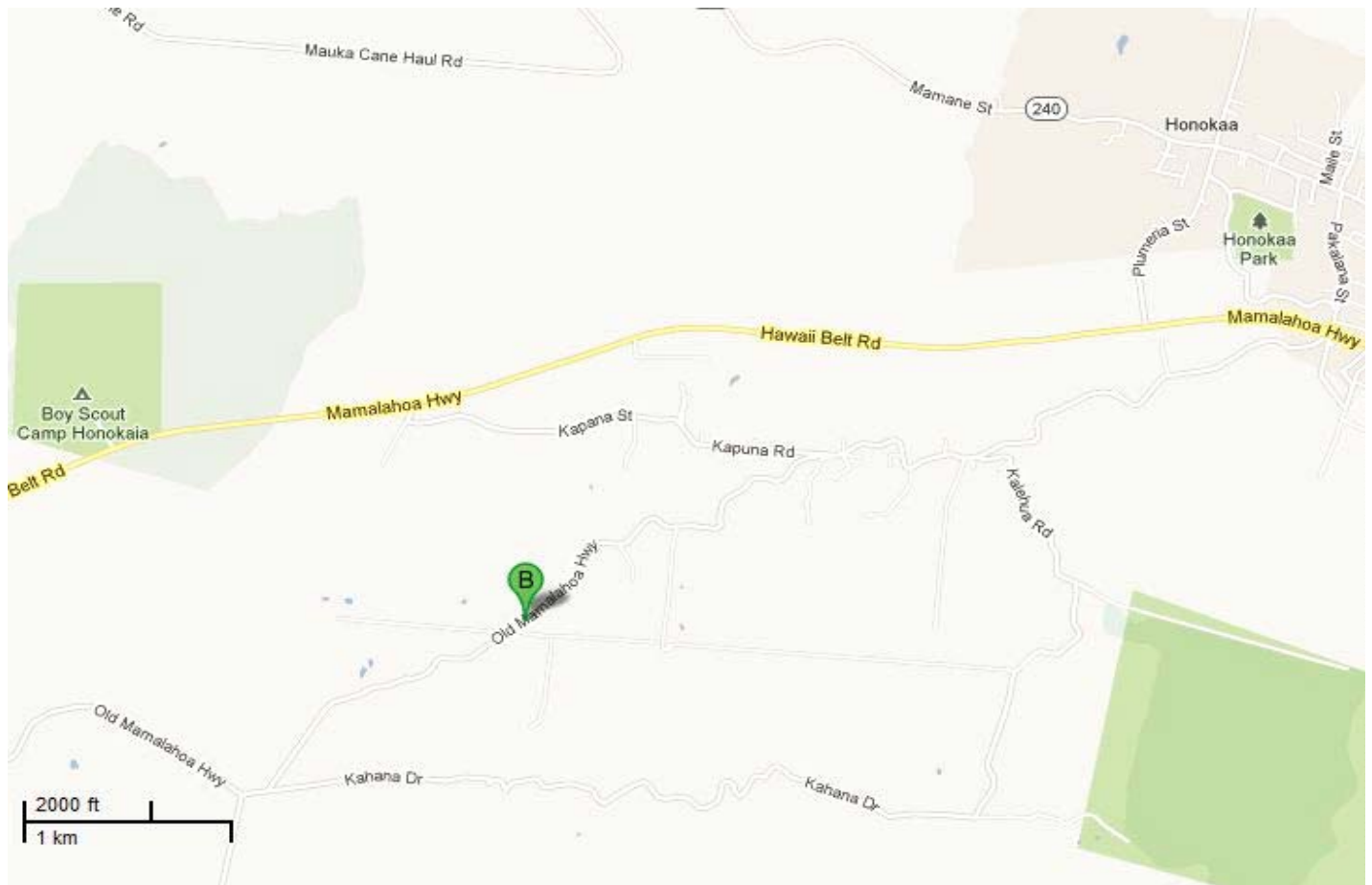
Inventory Form

(County/Private)

General Information

Bridge Number: 001280001100004	
Popular Name: Kolekole Stream Bridge	
Feature Crossed: Kolekole Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-07m-15.25s Latitude: 19d-52m-46.52s	
Location: TMK: 2-8-15:16	
Historic Name: Kolekole Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1929	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 62.0 ft.	Total Length: 91.0 ft.	Deck Width: 23.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Open Arched			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

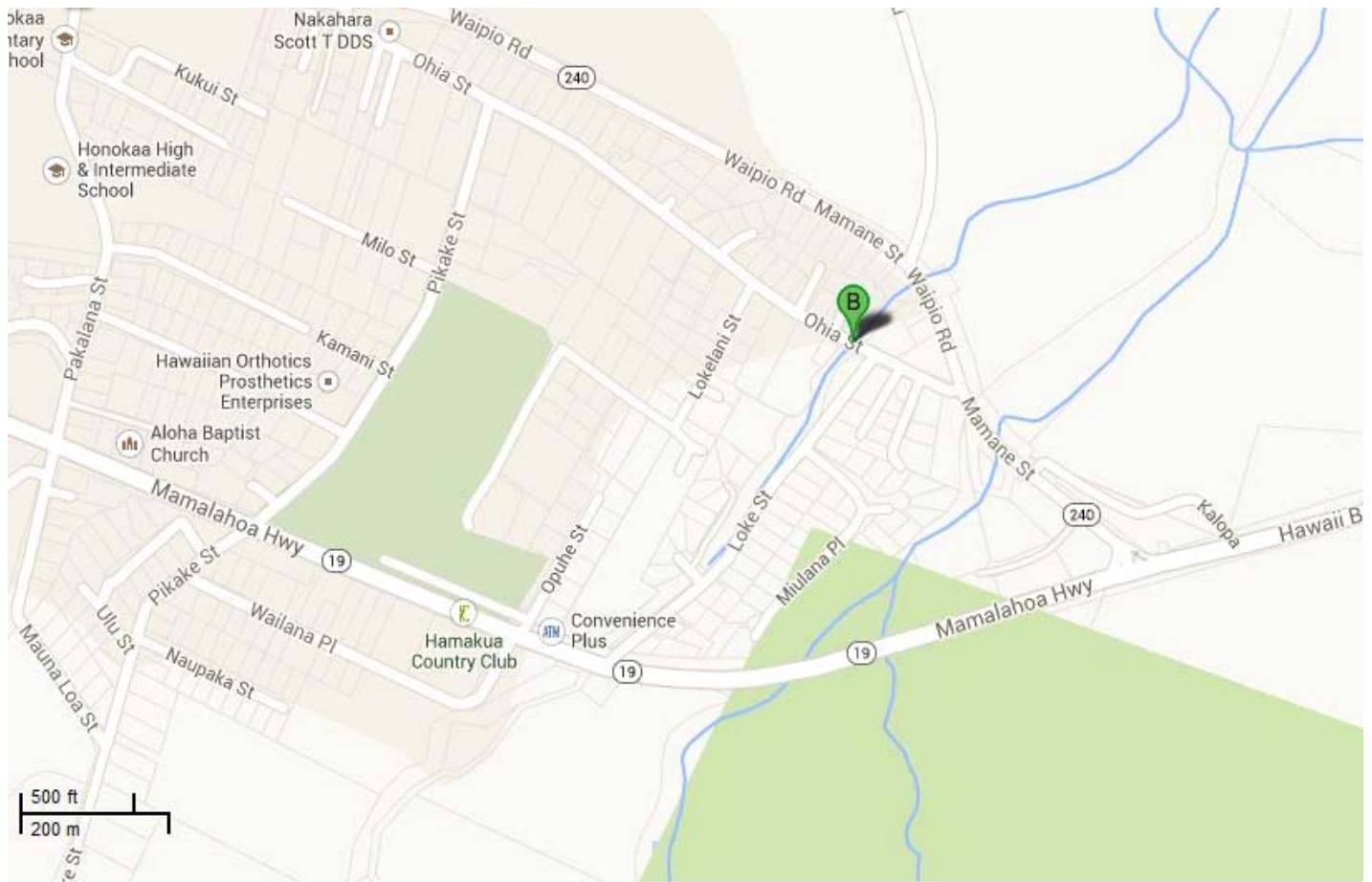
(County/Private)

General Information

Bridge Number: 001450001100001	
Popular Name: Kukuiaonanipahu Gulch Bridge	
Feature Crossed: Kukuiaonanipahu Gulch	
Feature Carried: Ohia Street	
Milepost:	County Private: Hawaii
Longitude: 155d-27m-14.18s	Latitude: 20d-04m-19.80s
Location: TMK: 4-5-20:041	
Historic Name: Kukuiaonanipahu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 12.0 ft.	Total Length: 17.0 ft.	Deck Width: 20.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kukuiaonanipahu Gulch Bridge carries Ohia Street across Kukuiaonanipahu Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

The bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

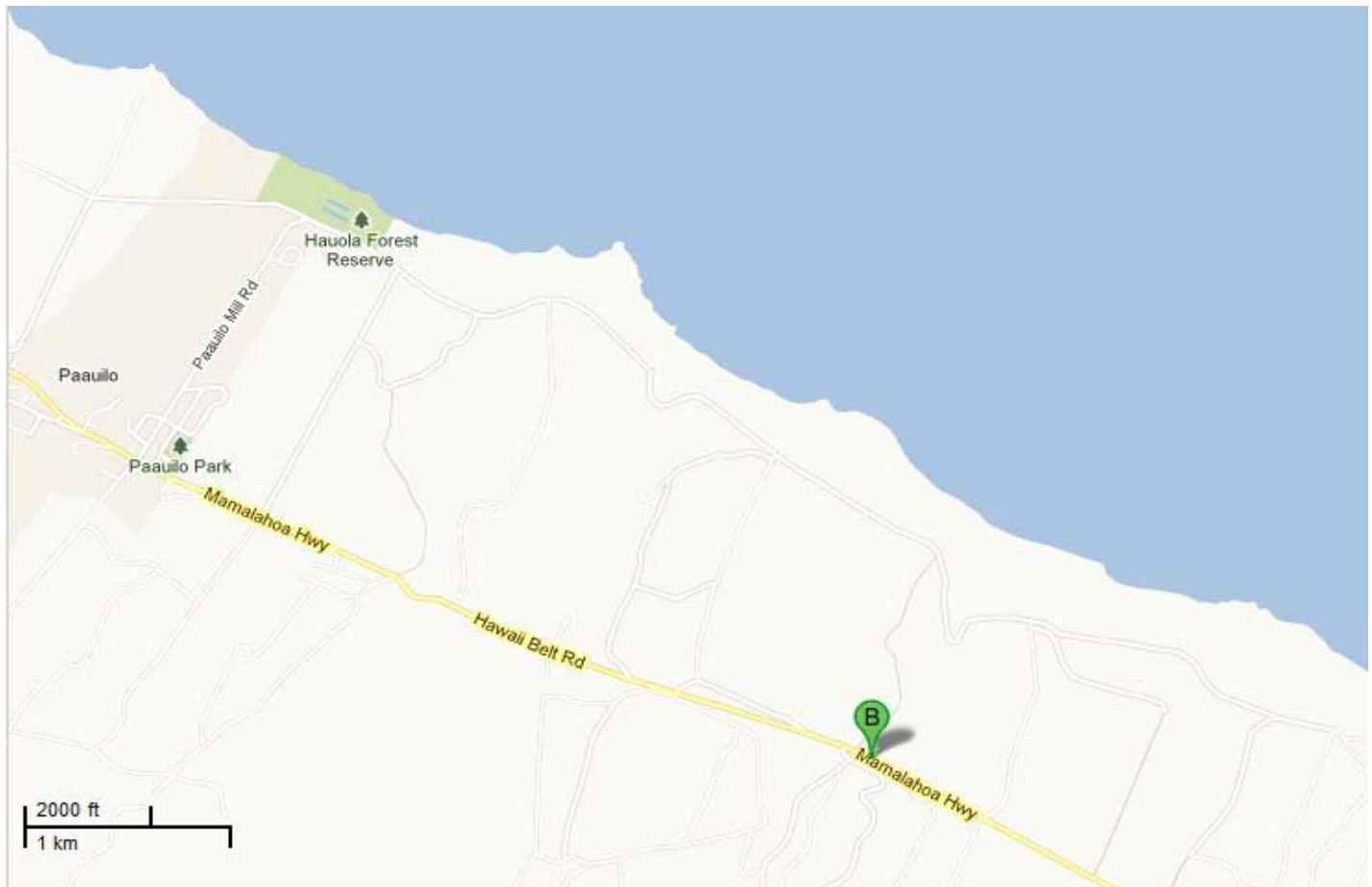
Inventory Form

(County/Private)

General Information

Bridge Number: 001420001100001	
Popular Name: Lauhala Gulch Bridge	
Feature Crossed: Lauhala Gulch	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-20m-01.04s Latitude: 20d-01m-28.59s	
Location: TMK: 4-2-002:020	
Historic Name: Lauhala Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 11.0 ft.	Total Length: 36.0 ft.	Deck Width: 16.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Timber Multi-Column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

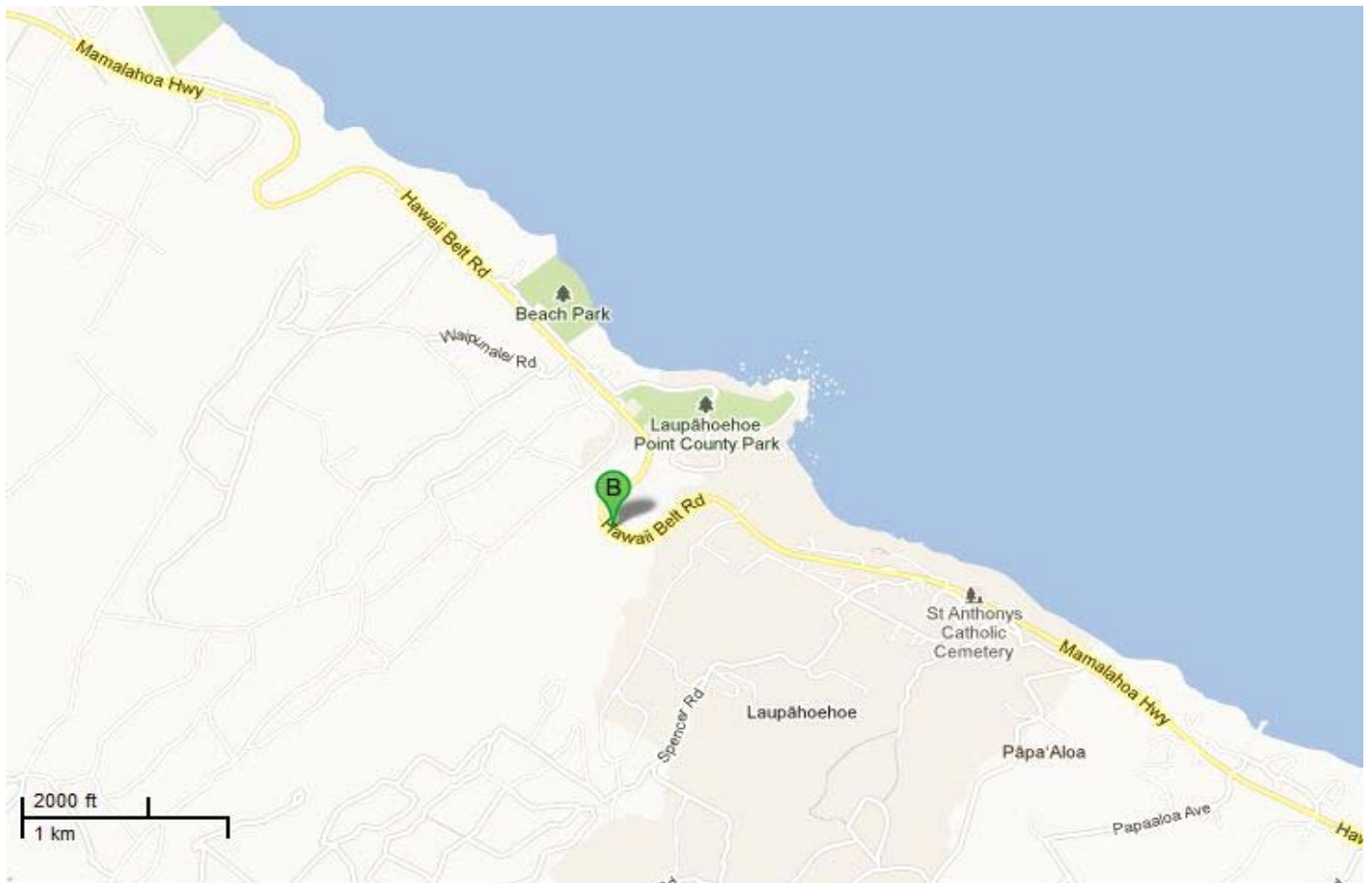
Inventory Form

(County/Private)

General Information

Bridge Number: 001360001100001	
Popular Name: Laupahoehoe Gulch Bridge	
Feature Crossed: Laupahoehoe Gulch	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-14m-44.45s Latitude: 19d-59m-23.90s	
Location: TMK: 3-6-002:012	
Historic Name: Laupahoehoe Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Masonry Arch	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 15.0 ft.	Total Length: 39.0 ft.	Deck Width: 18.0 ft.
Superstructure: Masonry Closed Spandrel Arch			
Substructure: Masonry Abutment			
Floor/Decking: AC Pavement			
Parapets/Railings: Masonry Rock			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

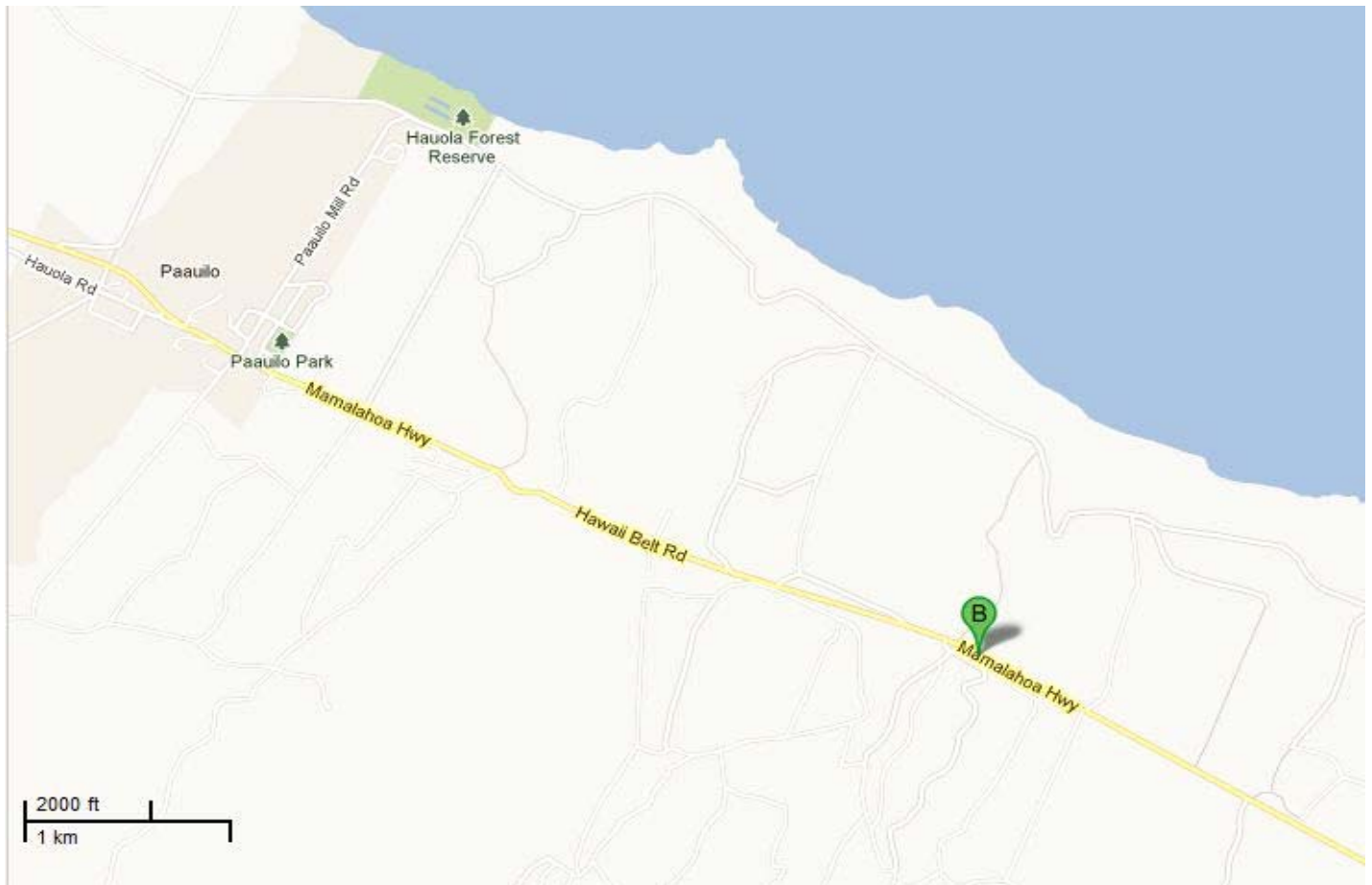
(County/Private)

General Information

Bridge Number: 001420001100002	
Popular Name: Mahuna Gulch Bridge	
Feature Crossed: Mahuna Gulch	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-20m-04.73s	Latitude: 20d-01m-30.55s
Location: TMK: 4-2-02:19	
Historic Name: Mahuna Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 4	Max Span: 16.0 ft.	Total Length: 44.0 ft.	Deck Width: 16.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Timber Multi-Column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

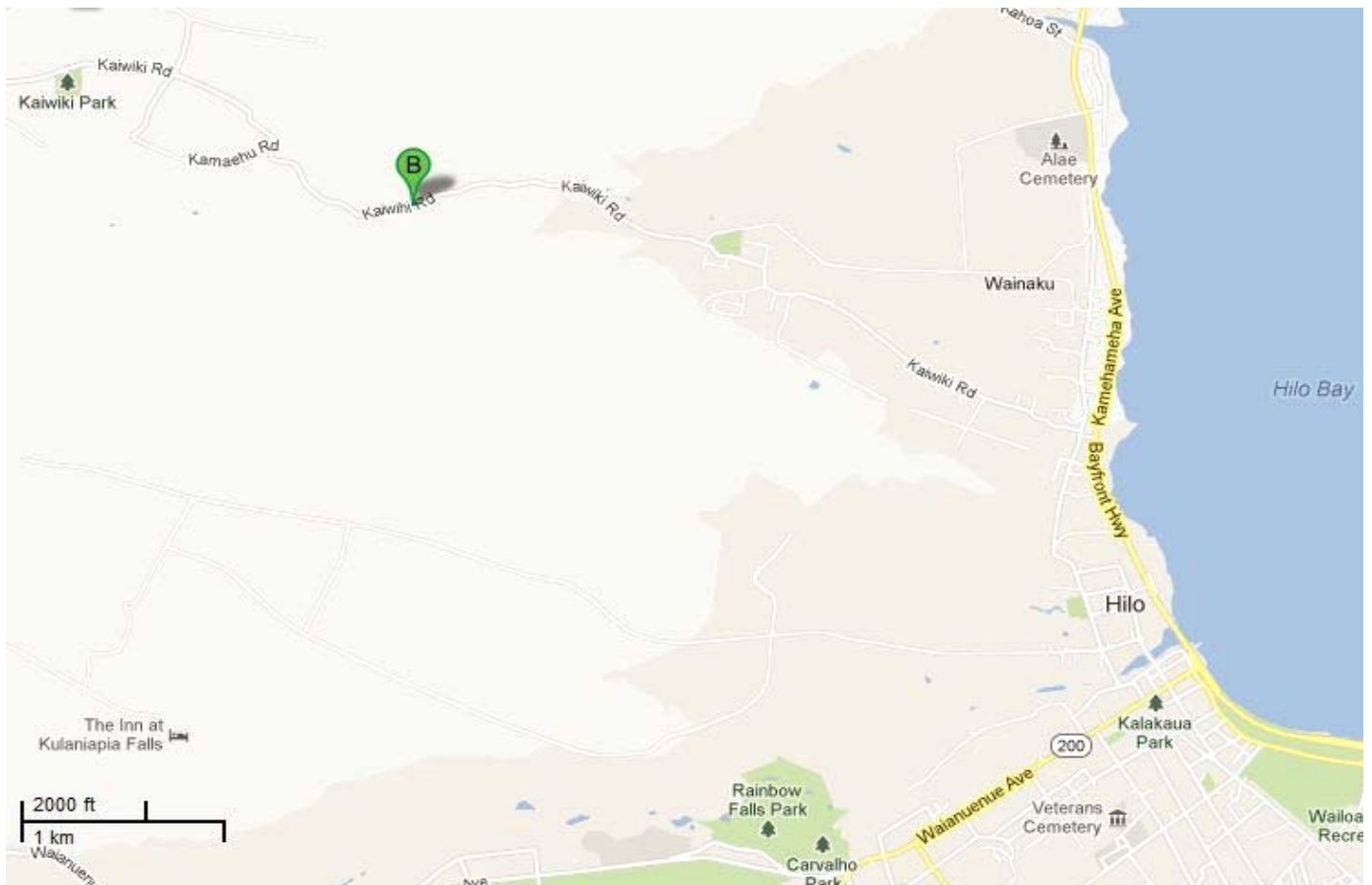
Inventory Form

(County/Private)

General Information

Bridge Number: 001260001100003		
Popular Name: Maili Stream Bridge		
Feature Crossed: Maili Stream		
Feature Carried: Kaiwiki Road		
Milepost:	County Private: Hawaii	
Longitude: 155d-07m-23.86s		Latitude: 19d-44m-54.40s
Location: TMK: 2-6-009:010		
Historic Name: Maili Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1900	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 18.0 ft.	Total Length: 49.0 ft.	Deck Width: 14.4 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Concrete Multi-Column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Kaiwiki Road Bridge carries Kaiwiki road across Maili Stream. This timber bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings and the timber deck is supported by a concrete pier and concrete rubble masonry abutments. The concrete pier looks to be added later but the workmanship of the bridge has not been obscured. The simple design of the bridge retains its historic feeling. This bridge is scheduled to be replaced in-kind.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1910's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

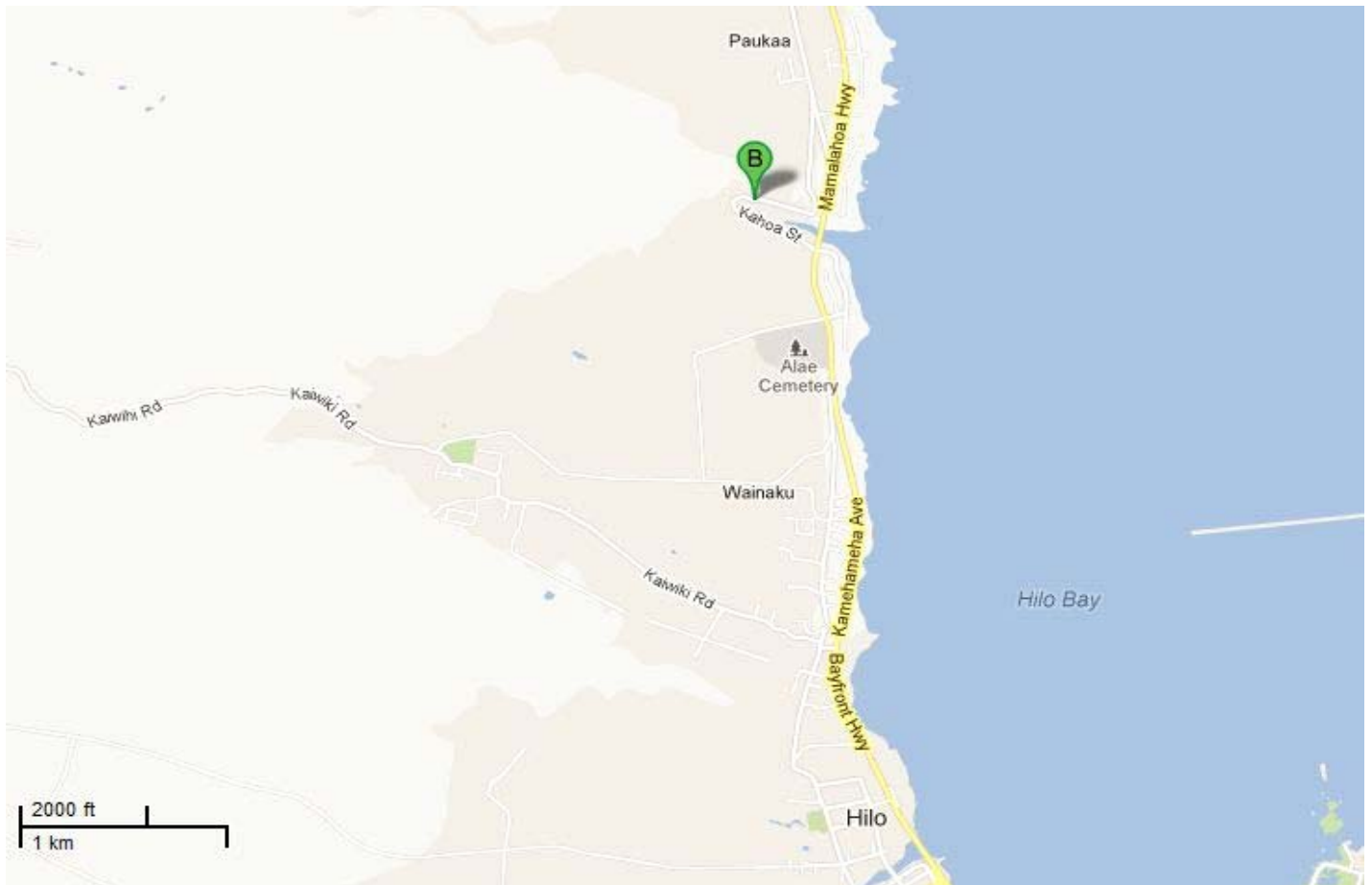
Inventory Form

(County/Private)

General Information

Bridge Number: 001260001100004	
Popular Name: Maili Stream Bridge	
Feature Crossed: Maili Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-33.20s Latitude: 19d-45m-21.50s	
Location: TMK: 2-6-12:45	
Historic Name: Maili Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1916	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 37.0 ft.	Total Length: 69.0 ft.	Deck Width: 20.6 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

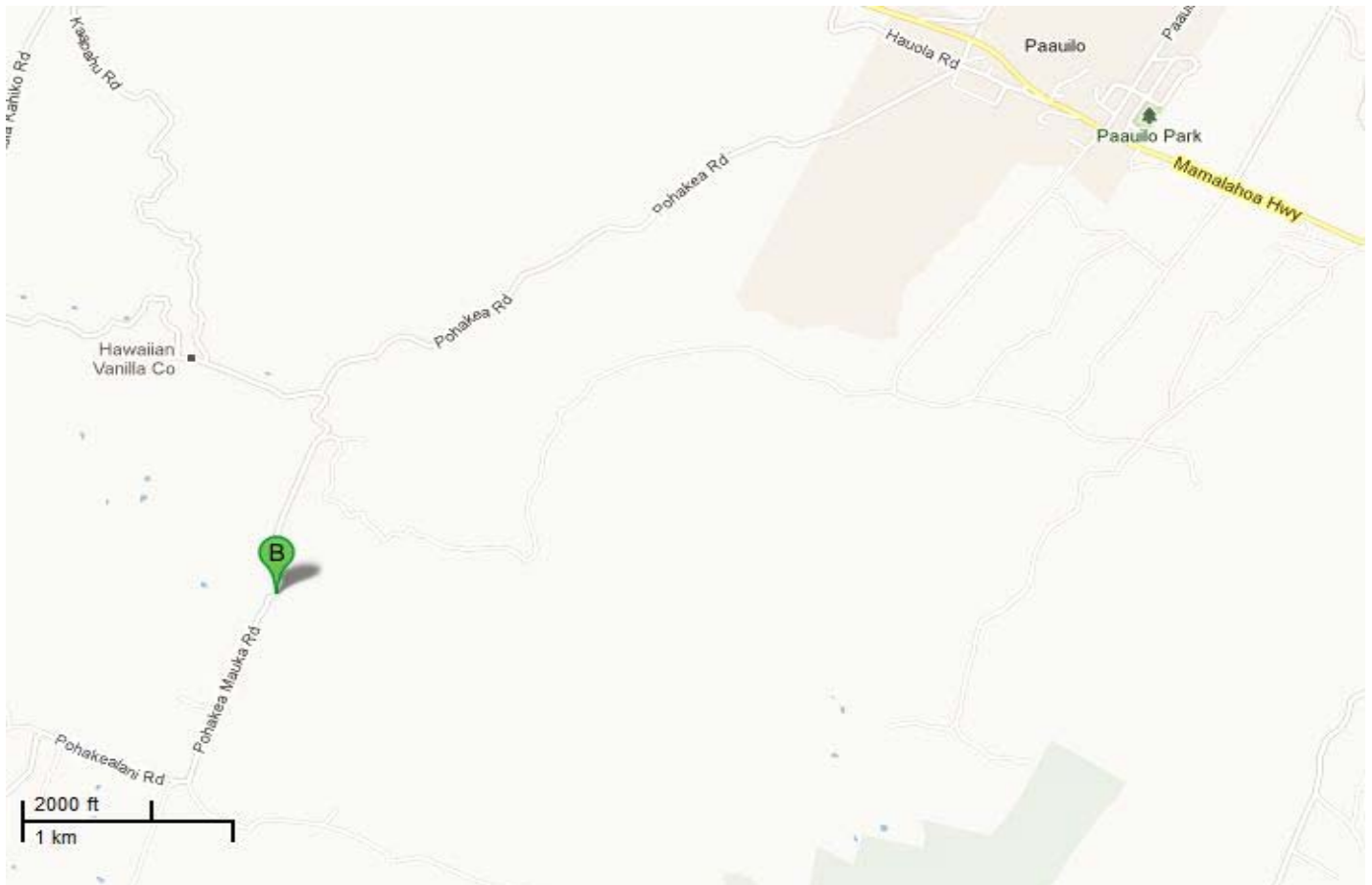
Inventory Form

(County/Private)

General Information

Bridge Number: 001430001100006	
Popular Name: Manienie Gulch Bridge	
Feature Crossed: Manienie Gulch	
Feature Carried: Pohakea Mauka Road	
Milepost: County Private: Hawaii	
Longitude: 155d-24m-19.49s Latitude: 20d-01m-04.09s	
Location: TMK: 4-3-12:13	
Historic Name: Manienie Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? Yes Alteration Date(s): 2012		
Alteration Type(s):		
Alteration Description(s): Timber deck was replaced and the abutments and center pier were rehabilitated.		

Bridge Information

Number of Spans: 2	Max Span: 11.0 ft.	Total Length: 24.0 ft.	Deck Width: 16.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Timber Multi-Column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Manienie Gulch Bridge carries Pohakea Mauka Road across Manienie Gulch. This timber girder bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and concrete rubble masonry and reinforced concrete abutments. In 2012, several planks were replaced and the abutments were rehabilitated. The simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C as a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

(County/Private)

General Information

Bridge Number: 001430001100007	
Popular Name: Manienie Gulch Bridge	
Feature Crossed: Manienie Gulch	
Feature Carried: Manienie Road	
Milepost: County Private: Hawaii	
Longitude: 155d-24m-02.28s Latitude: 20d-01m-12.26s	
Location: TMK: 4-3-12:03	
Historic Name: Manienie Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 20.0 ft.	Total Length: 25.0 ft.	Deck Width: 15.5 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Manienie Gulch Bridge carries Manienie Road across Manienie Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks and concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:


This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

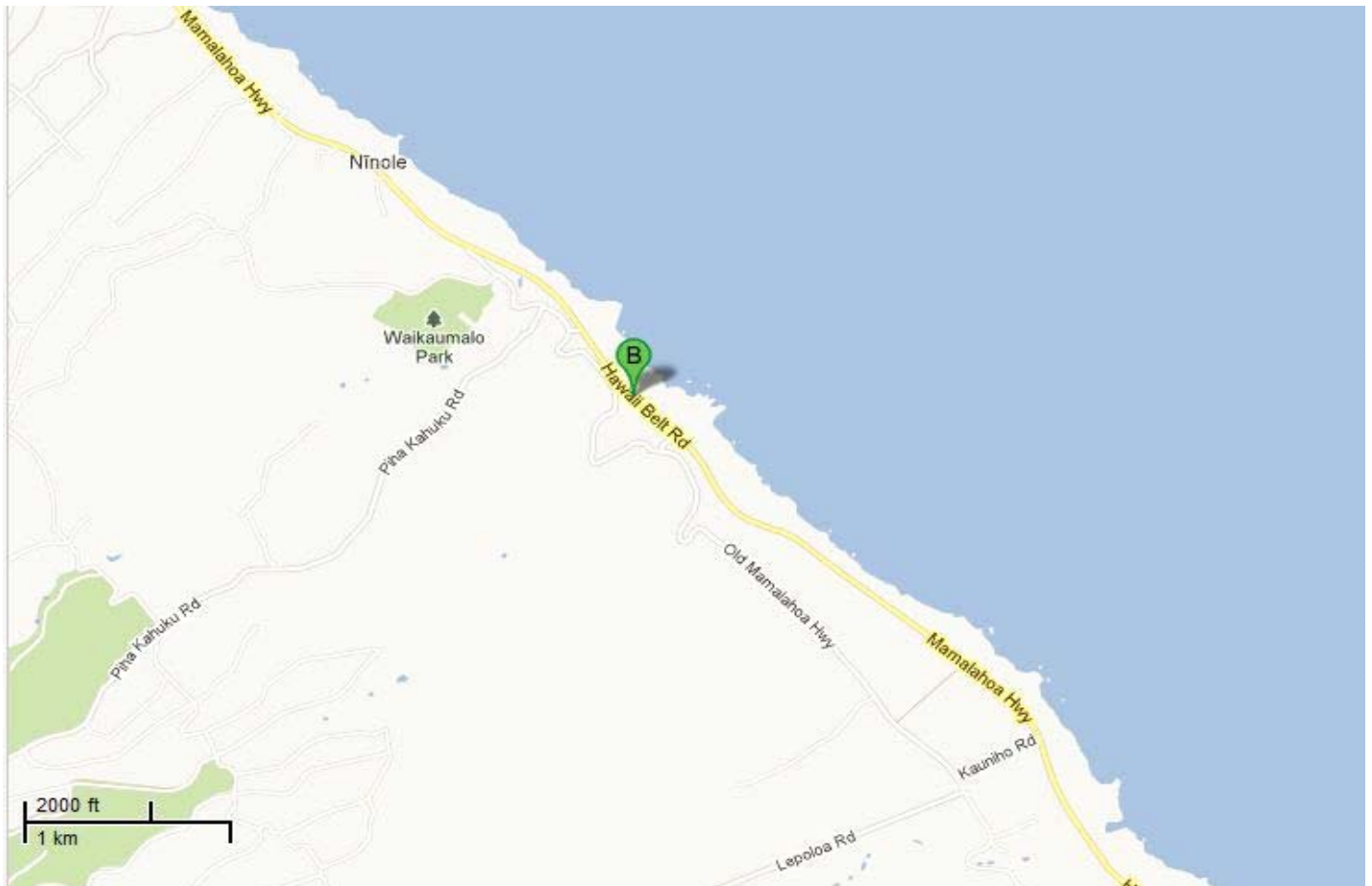
(County/Private)

General Information

Bridge Number: 001320001100001	
Popular Name: Nanue Stream Bridge	
Feature Crossed: Nanue Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-09m-31.82s	Latitude: 19d-55m-29.67s
Location: TMK: 3-2-001:017	
Historic Name: Nanue Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 36.0 ft.	Total Length: 73.0 ft.	Deck Width: 22.4 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

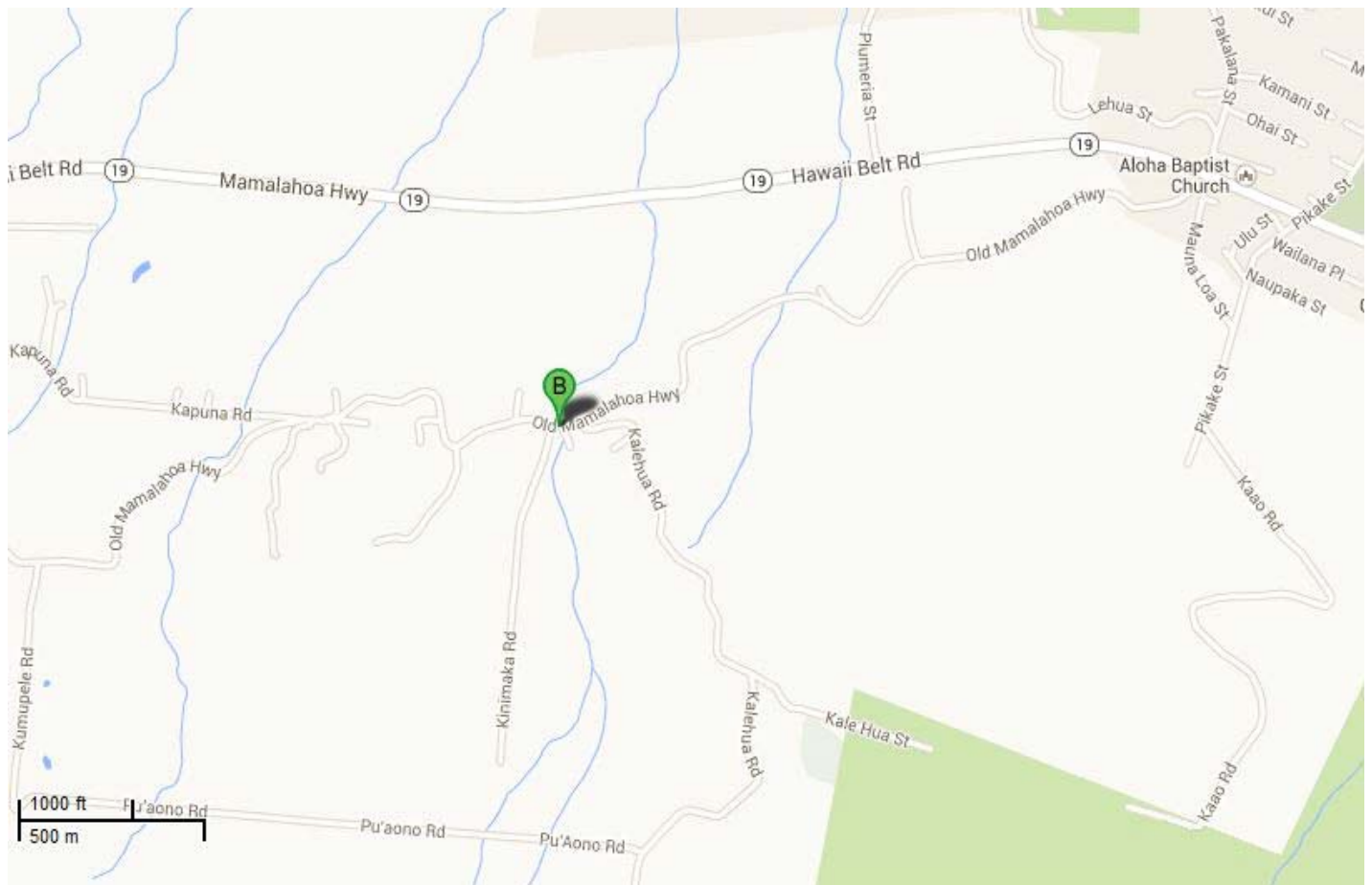
(County/Private)

General Information

Bridge Number: 001460001100001	
Popular Name: Nienie Gulch Bridge	
Feature Crossed: Nienie Gulch	
Feature Carried: Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-28m-51.69s	Latitude: 20d-03m-54.28s
Location: TMK: 4-6-007:049	
Historic Name: Nienie Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1923	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 25.0 ft.	Total Length: 50.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

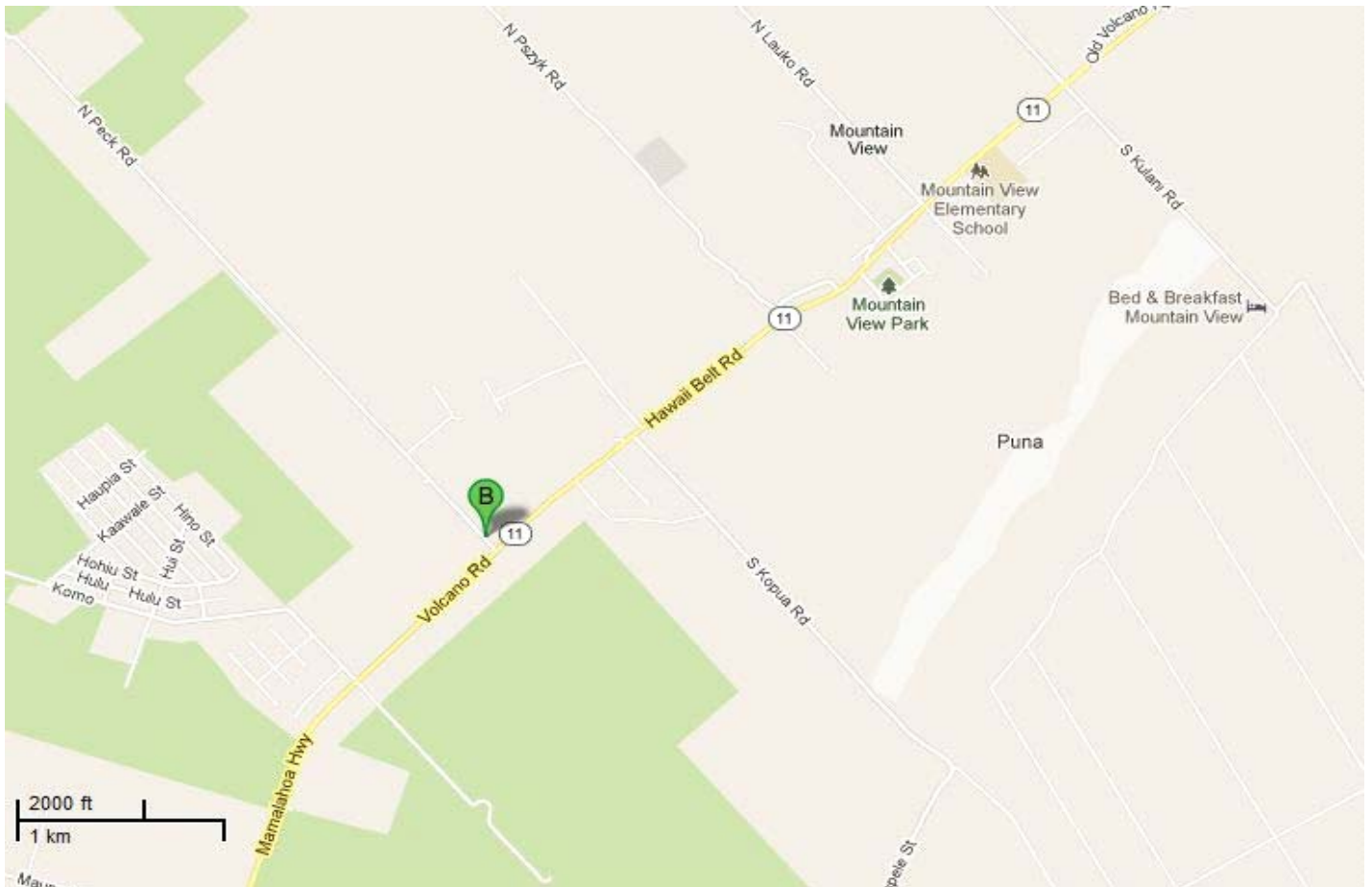
(County/Private)

General Information

Bridge Number: 001180001100003	
Popular Name: North Peck Road Bridge	
Feature Crossed: Relief	
Feature Carried: North Peck Road	
Milepost:	County Private: Hawaii
Longitude: 155d-07m-32.97s	Latitude: 19d-32m-14.46s
Location: TMK: 1-8-005:021	
Historic Name: North Peck Road Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1940	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 18.0 ft.	Total Length: 22.0 ft.	Deck Width: 15.5 ft.
Superstructure: Timber Stringer			
Substructure: Concrete Abutment Wall			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The North Peck Road Bridge carries North Peck Road. This timber bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has a timber deck and wood railings. The timber deck is supported by concrete abutments. The workmanship of the bridge has not been obscured by addition or repair and the simple design of the parapet retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its construction type built in Hawaii in this period. Most of the bridges built during the 40's are the concrete bridges however, this bridge is a single span timber bridge. It is a good example of a 1940's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

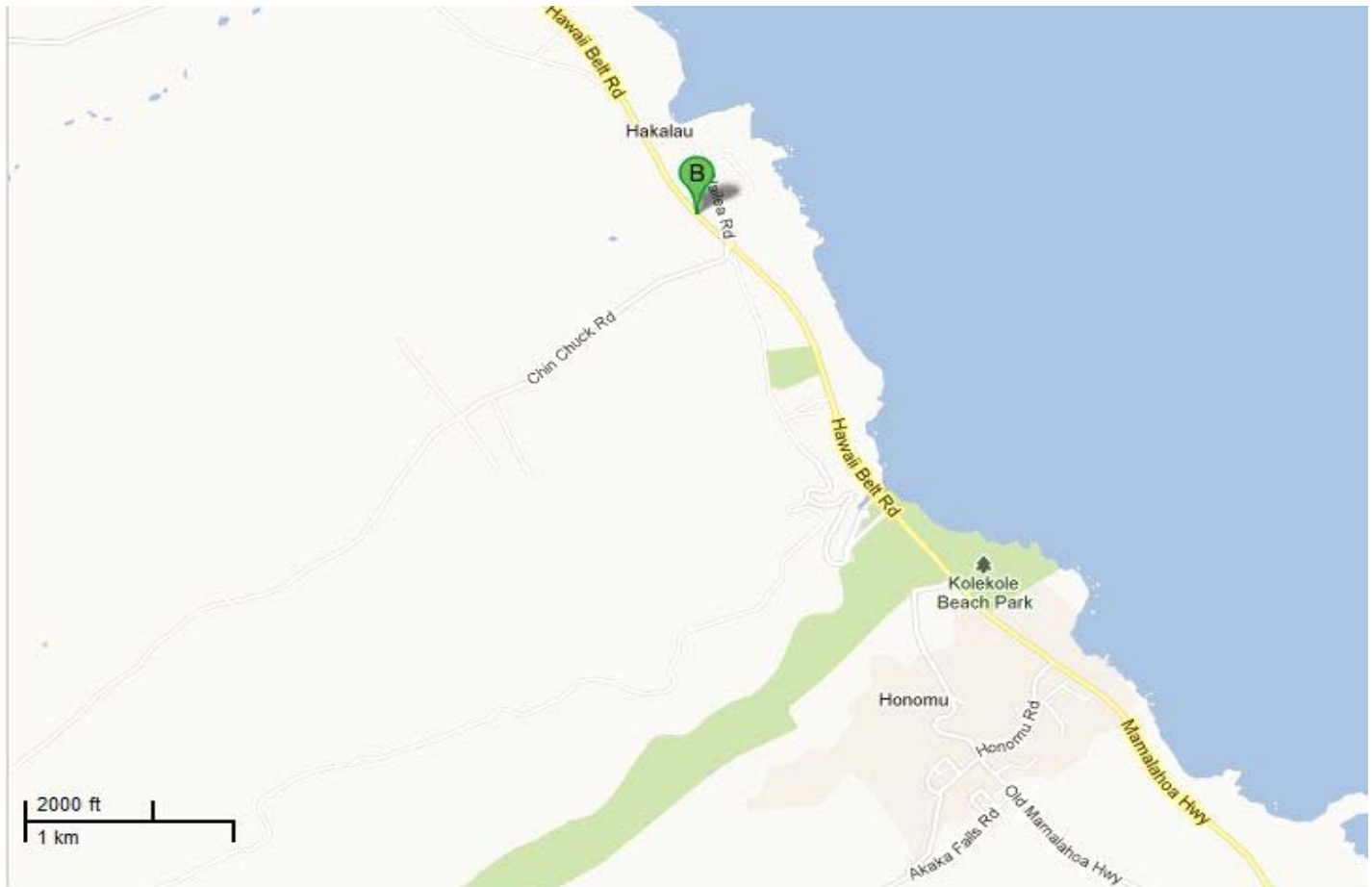
Inventory Form

(County/Private)

General Information

Bridge Number: 001290001100002	
Popular Name: Old Railroad Crossing Bridge	
Feature Crossed: Railroad Crossing	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-07m-34.14s Latitude: 19d-53m-43.70s	
Location: TMK: 2-9-002:024	
Historic Name: Old Railroad Crossing Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 24.0 ft.	Total Length: 24.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

The rock abutments are a potentially eligible historic resource.

Inventory Form

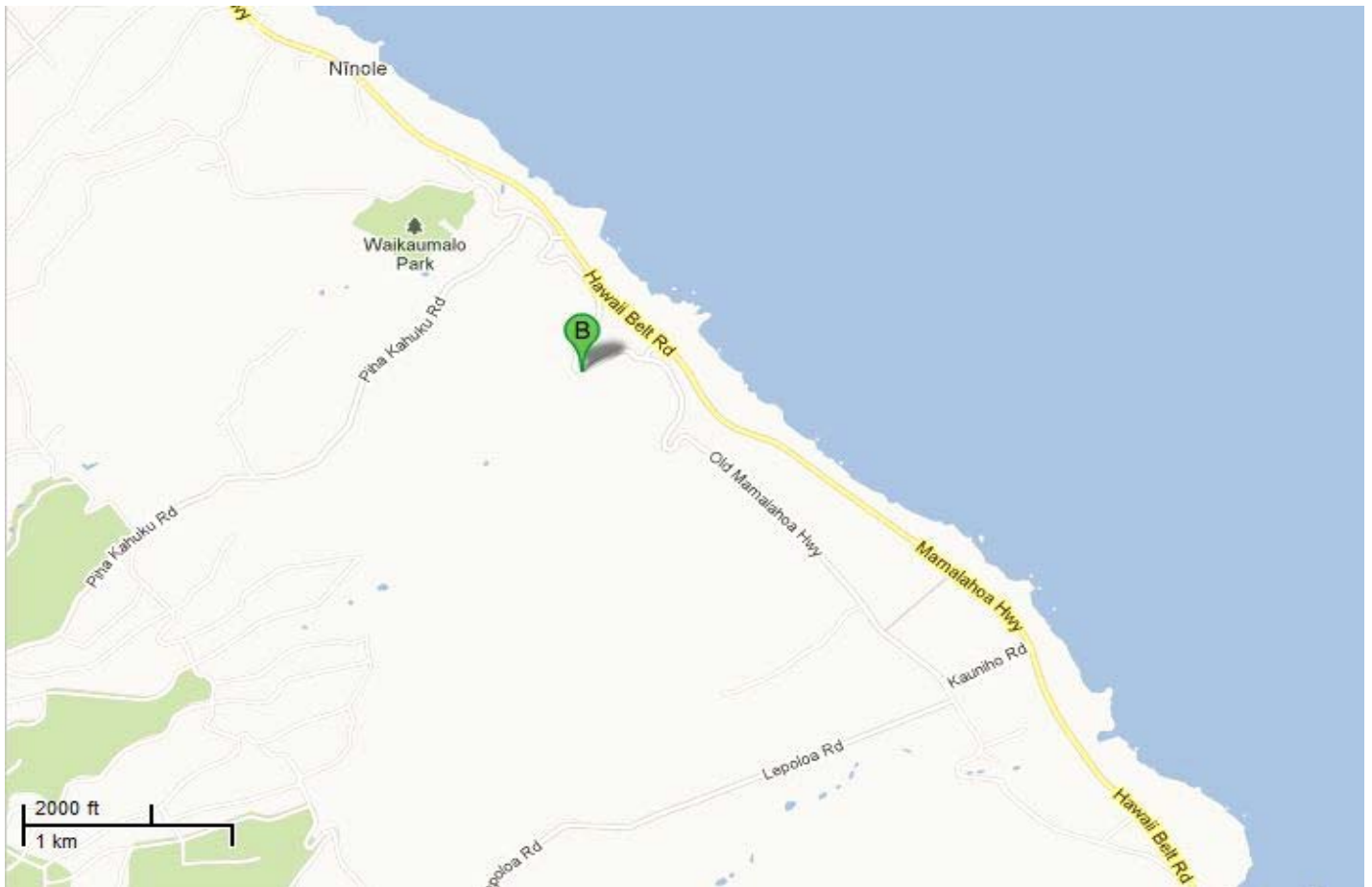
(County/Private)

General Information

Bridge Number: 001310001100002	
Popular Name: Opea Stream Bridge	
Feature Crossed: Opea Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-09m-17.44s	Latitude: 19d-55m-16.78s
Location: TMK: 3-1-03:17	
Historic Name: Opea Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1912	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 40.0 ft.	Total Length: 40.0 ft.	Deck Width: 18.6 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Metal Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:


It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

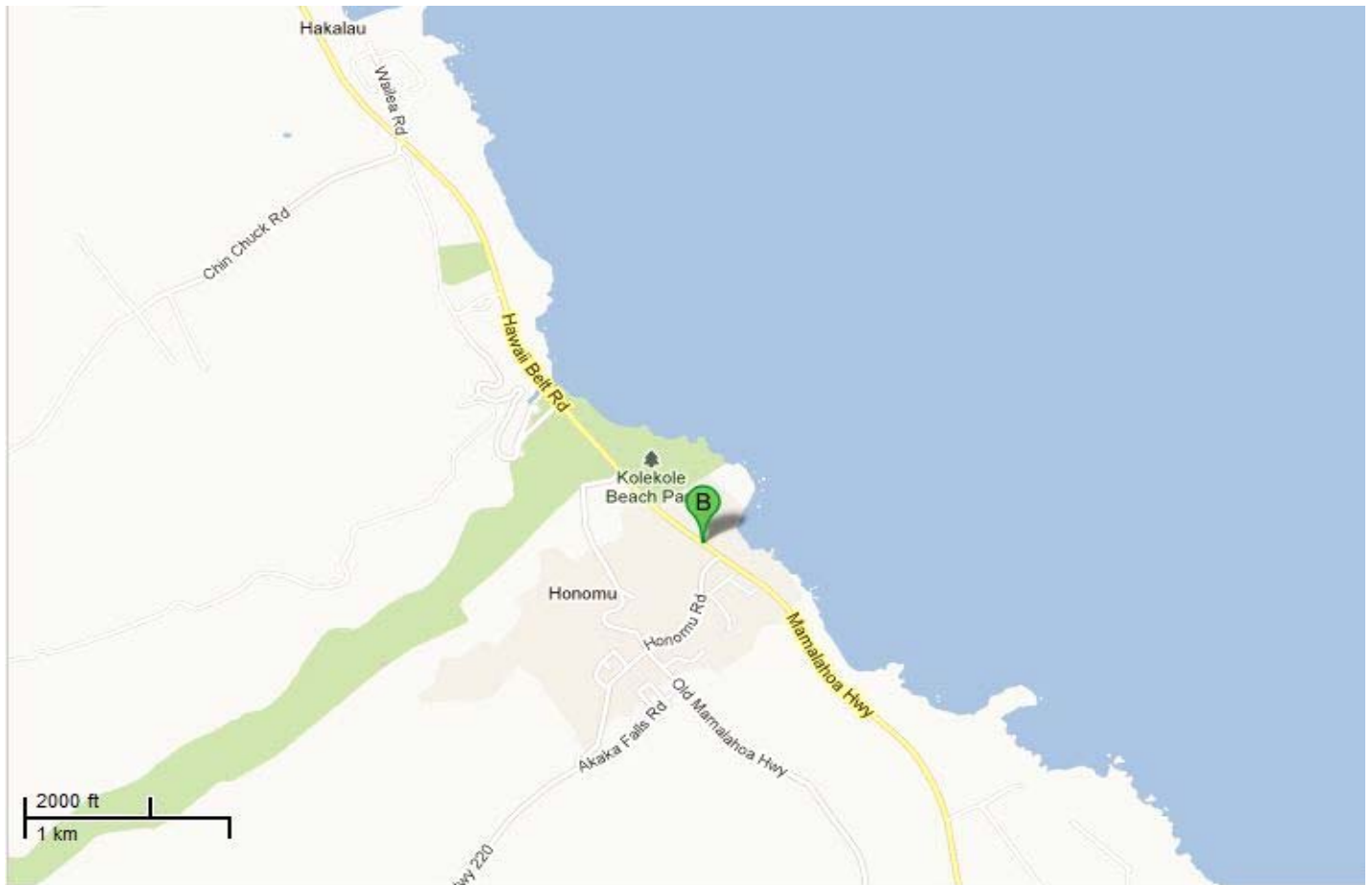
Inventory Form

(County/Private)

General Information

Bridge Number: 001280001100003	
Popular Name: Paheehee Stream Bridge	
Feature Crossed: Paheehee Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-06m-59.34s Latitude: 19d-52m-20.38s	
Location: TMK: 2-8-015:004	
Historic Name: Paheehee Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1929	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 30.0 ft.	Total Length: 61.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

Inventory Form

(County/Private)

General Information

Bridge Number: 001430001100005	
Popular Name: Pohakuhaku Gulch Bridge	
Feature Crossed: Pohakuhaku Gulch	
Feature Carried: Paauiio Pohakea Road	
Milepost: County Private: Hawaii	
Longitude: 155d-23m-39.26s Latitude: 20d-01m-56.86s	
Location: TMK: 4-3-06:10	
Historic Name: Pohakuhaku Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1936	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 37.0 ft.	Total Length: 39.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Vertical			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Pohakuhaku Gulch Bridge carries Paauilo-Pohakea Road across Pohakuhaku Gulch. This reinforced concrete tee beam bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete open vertical parapets with flat caps and wide end posts. The concrete deck is supported by concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the parapet retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

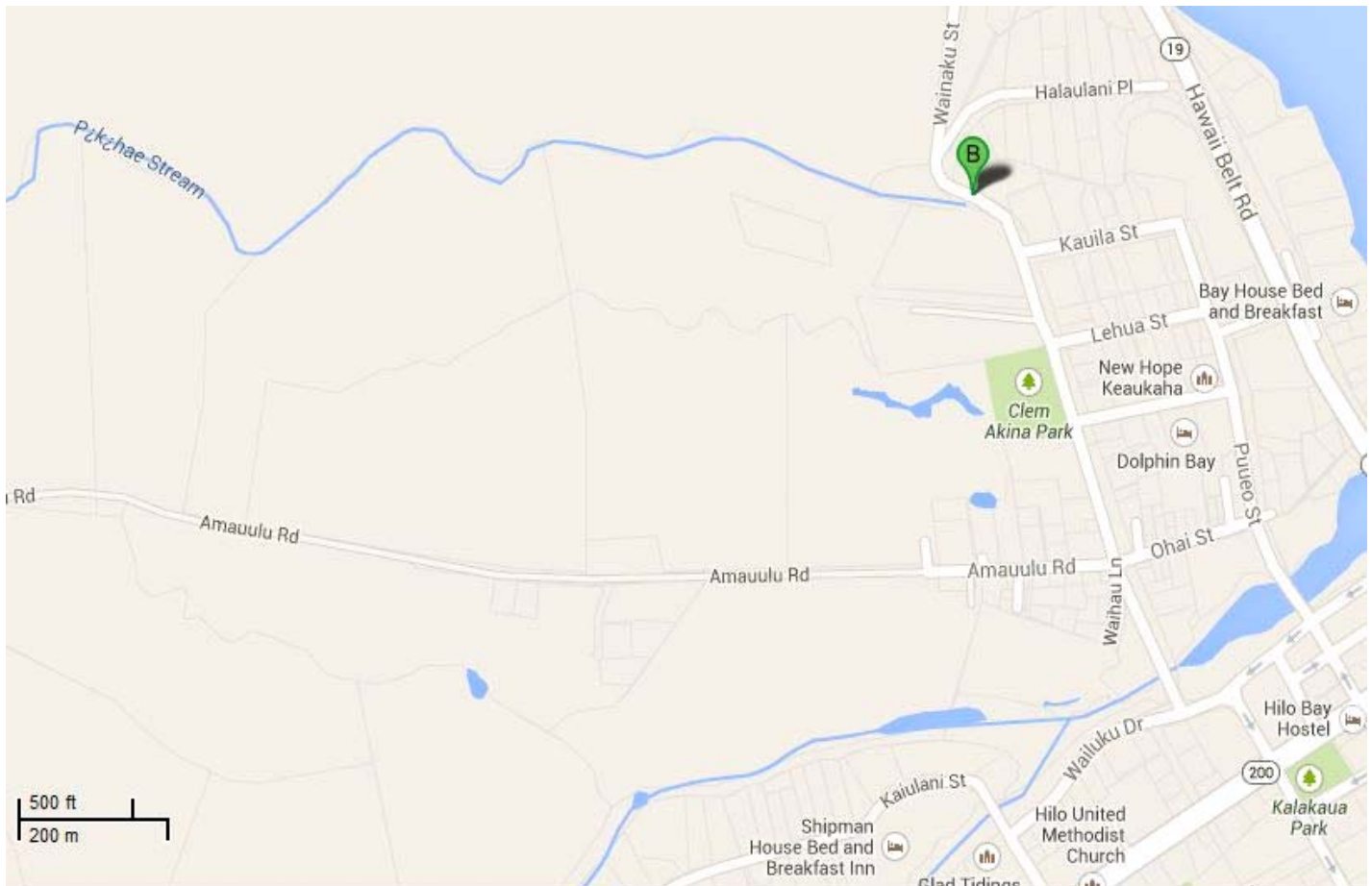
Inventory Form

(County/Private)

General Information

Bridge Number: 001260001100001	
Popular Name: Pukihae Stream Bridge	
Feature Crossed: Pukihae Stream	
Feature Carried: Wainaku Street	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-34.75s Latitude: 19d-43m-54.59s	
Location: TMK: 2-6-05:19	
Historic Name: Pukihae Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Masonry Arch	Construction Date: 1904	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 35.0 ft.	Total Length: 65.0 ft.	Deck Width: 33.0 ft.
Superstructure: Masonry Closed Spandrel Arch			
Substructure: Masonry Abutment			
Floor/Decking: AC Pavement			
Parapets/Railings: Masonry Rock with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is one of the oldest masonry bridges remaining in Hawaii. Arch bridges are also an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

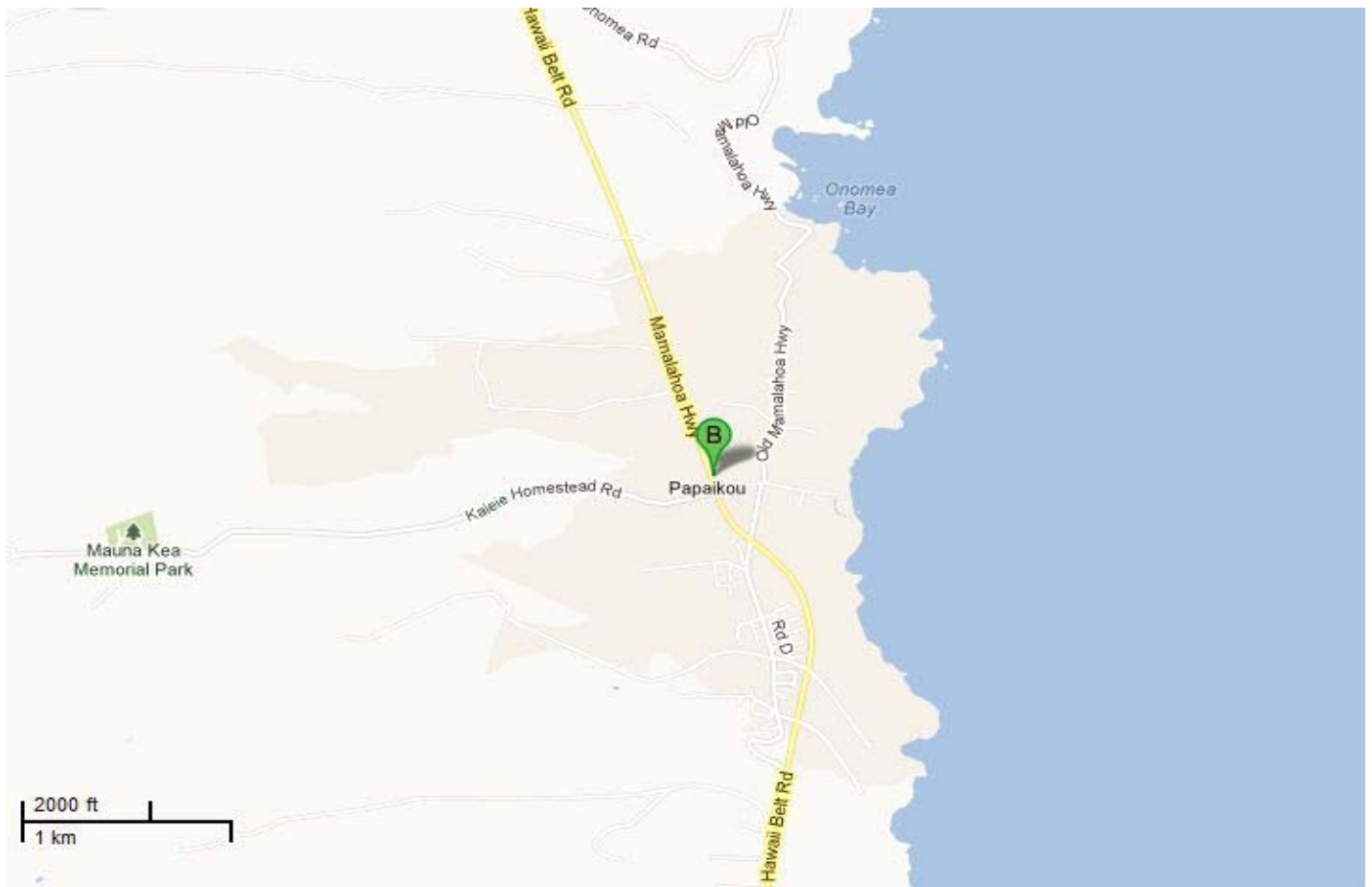
(County/Private)

General Information

Bridge Number: 001270001100002	
Popular Name: Puuokalepa Bridge No. 1	
Feature Crossed: Puuokalepa Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-05m-39.20s	Latitude: 19d-47m-36.65s
Location: TMK: 2-7-035:013	
Historic Name: Puuokalepa Bridge No. 1	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1904	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 32.0 ft.	Total Length: 76.0 ft.	Deck Width: 17.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Solid with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

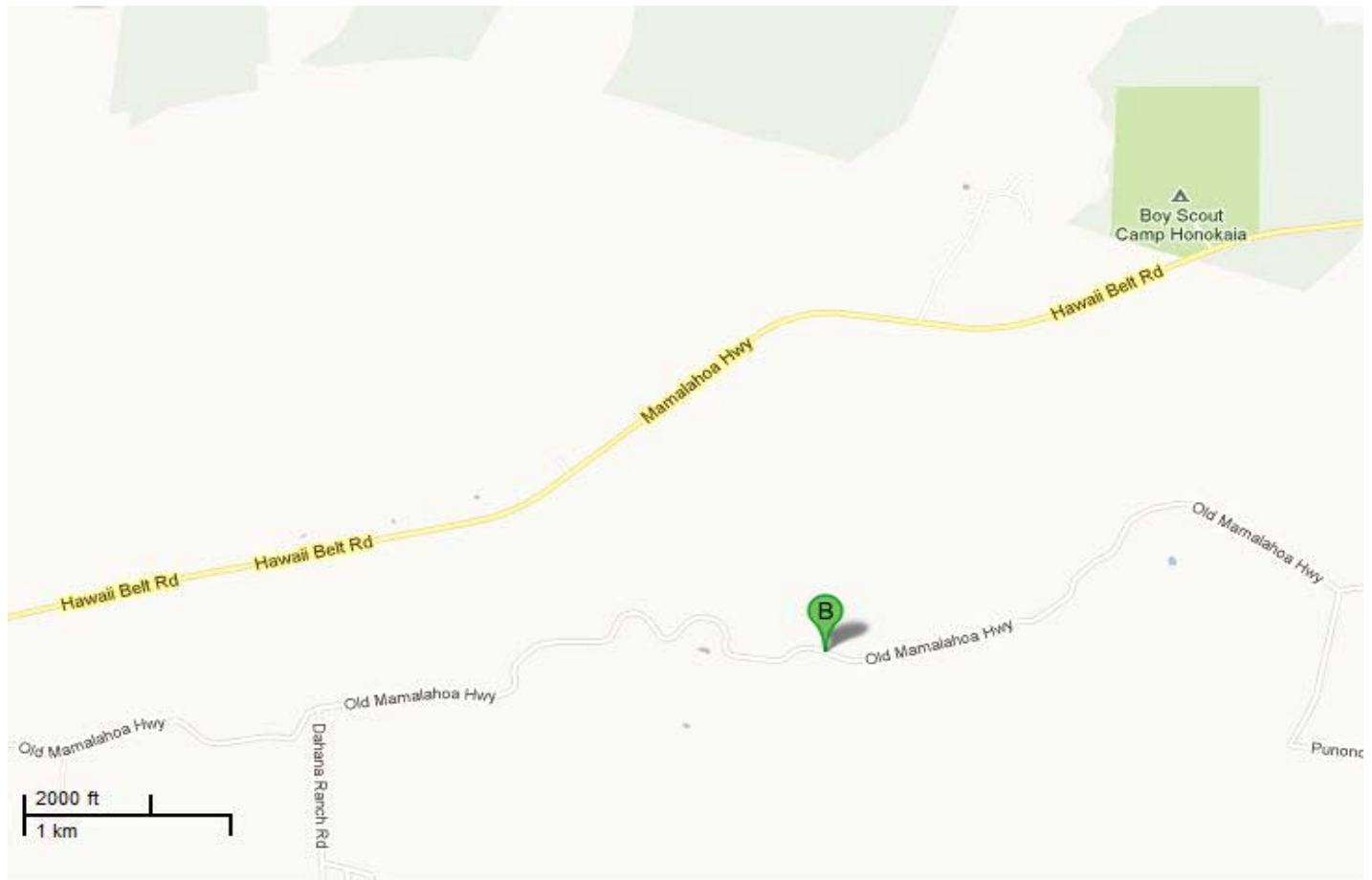
(County/Private)

General Information

Bridge Number: 001470001100003	
Popular Name: Relief Elevation 2760 Bridge	
Feature Crossed: Relief	
Feature Carried: Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-32m-17.74s	Latitude: 20d-02m-48.06s
Location: TMK: 4-7-007:010	
Historic Name: Relief Elevation 2760 Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1924	Replaced? No
Altered? Yes Alteration Date(s): Unknown		
Alteration Type(s):		
Alteration Description(s): New galvanized pipe railing		

Bridge Information

Number of Spans: 3	Max Span: 28.0 ft.	Total Length: 76.0 ft.	Deck Width: 18.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Metal Horizontal			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description. The railings have been replaced.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

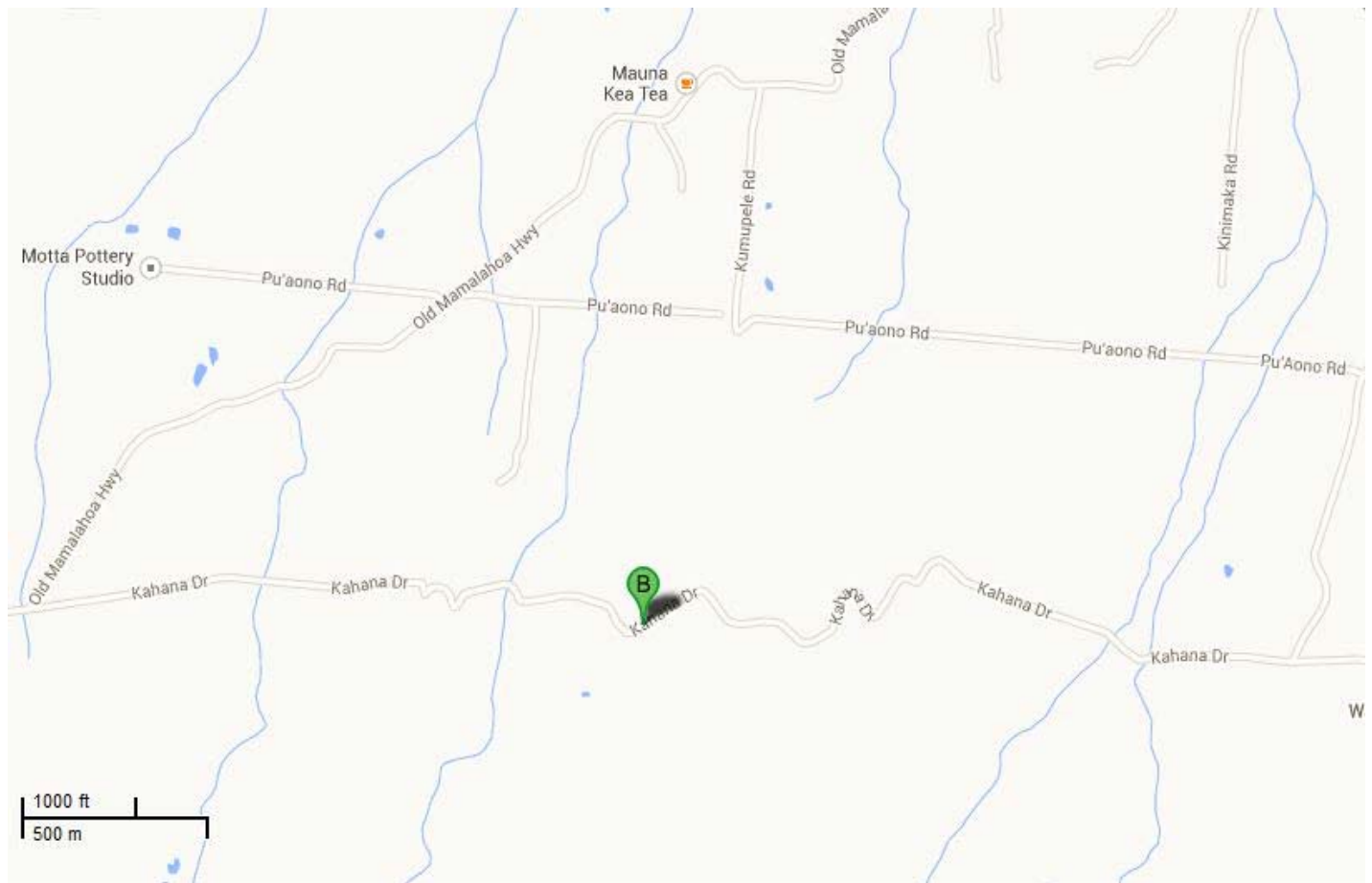
(County/Private)

General Information

Bridge Number: 001460001100010	
Popular Name: Relief Stream Bridge	
Feature Crossed: Relief	
Feature Carried: Kahana Drive	
Milepost:	County Private: Hawaii
Longitude: 155d-29m-50.76s	Latitude: 20d-02m-57.59s
Location: TMK: 4-6-009:002	
Historic Name: Relief Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 11.0 ft.	Total Length: 17.0 ft.	Deck Width: 14.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Relief Stream Bridge carries Kahana Drive across Relief Stream. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

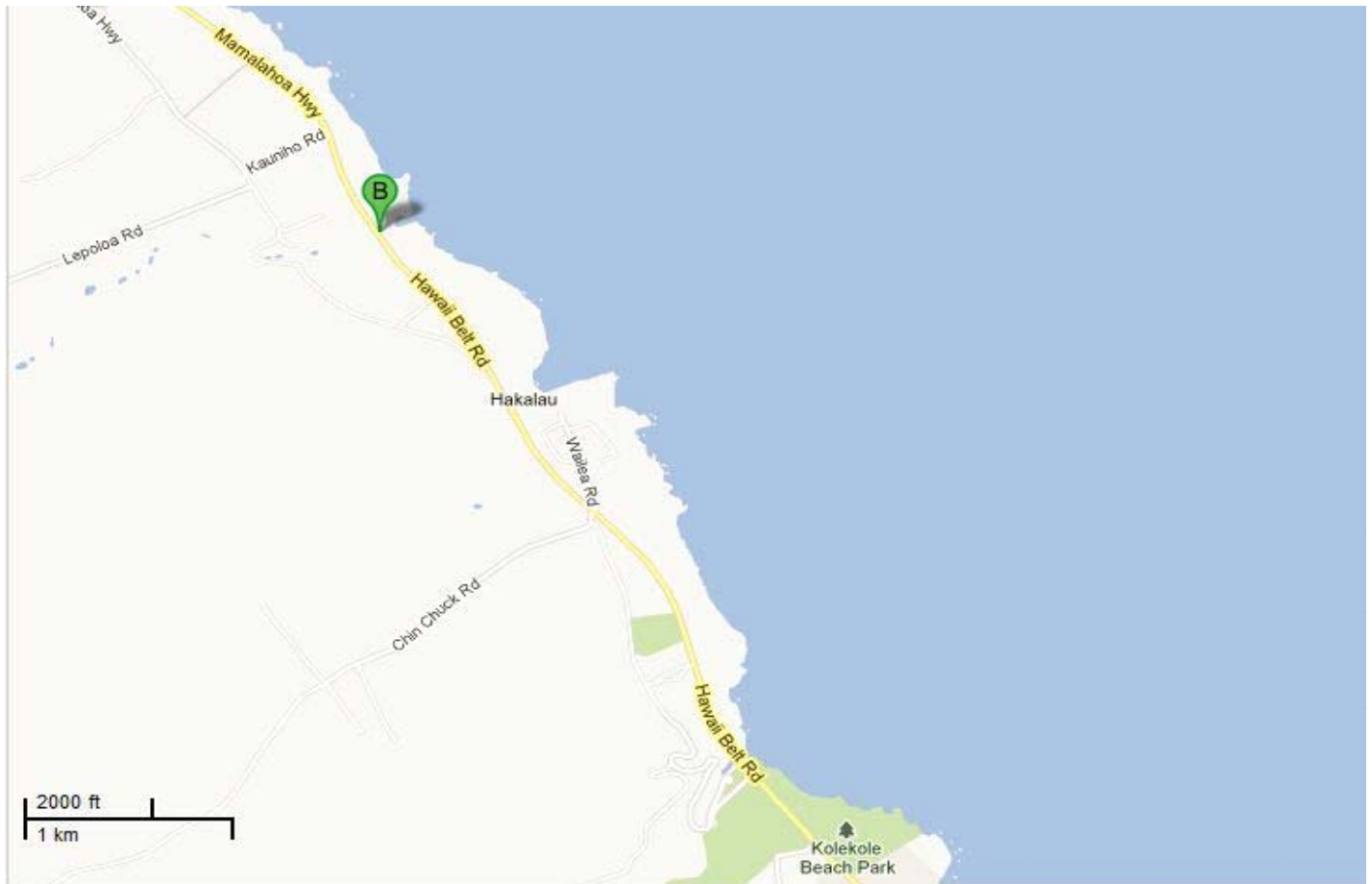
Inventory Form

(County/Private)

General Information

Bridge Number: 001310001100001	
Popular Name: Umauma Stream Bridge	
Feature Crossed: Umauma Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-08m-28.01s Latitude: 19d-54m-22.07s	
Location: TMK: 3-1-01:27	
Historic Name: Umauma Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1920	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 33.0 ft.	Total Length: 110.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Tee Beam			
Substructure: Masonry Abutment and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

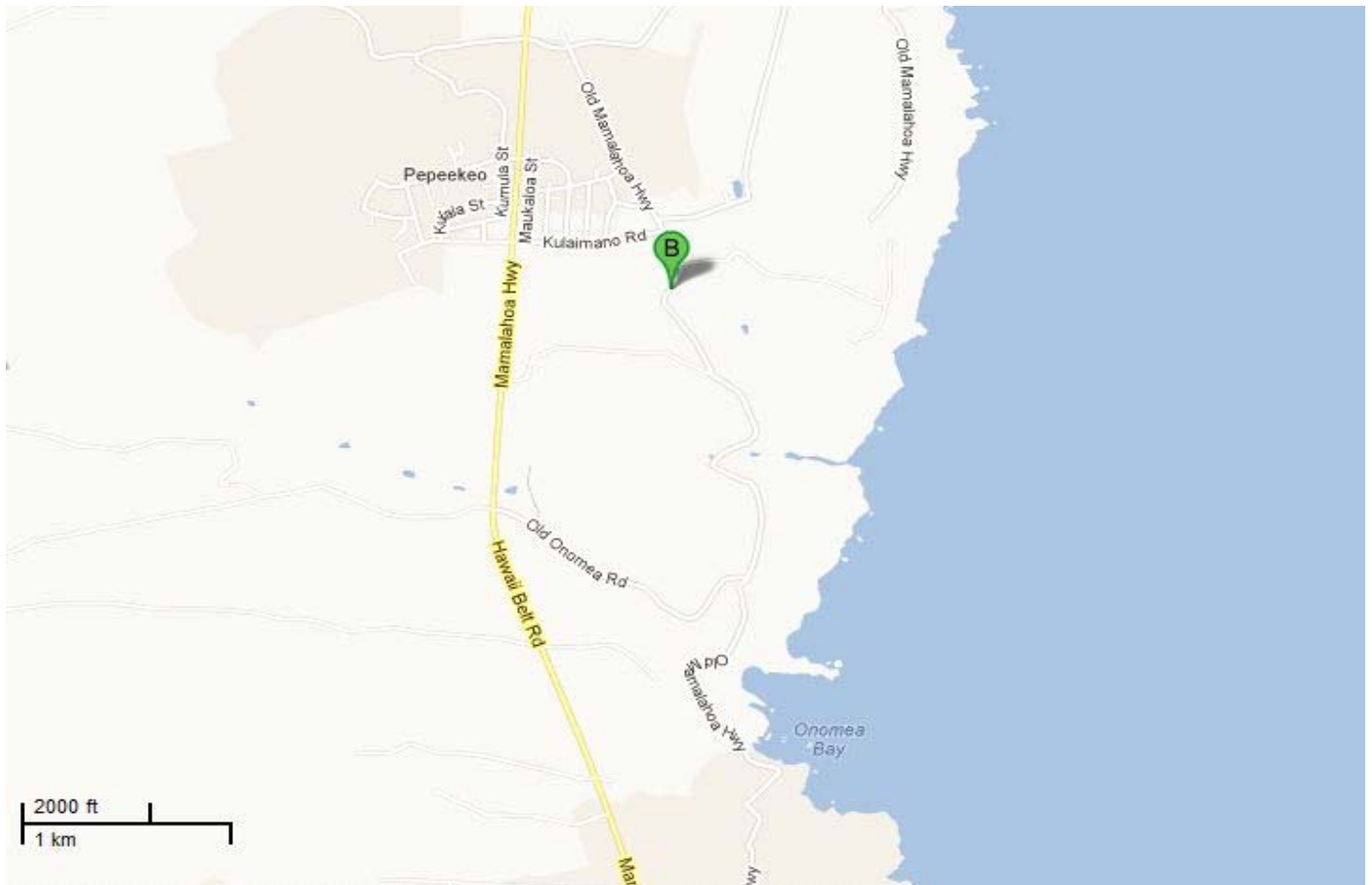
Inventory Form

(County/Private)

General Information

Bridge Number: 001270001100008	
Popular Name: Waiaama Stream Bridge	
Feature Crossed: Waiaama Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-48.62s Latitude: 19d-49m-42.04s	
Location: TMK: 2-7-11:04	
Historic Name: Waiaama Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 40.0 ft.	Total Length: 72.0 ft.	Deck Width: 17.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Solid with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		

Significance Statement:


This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

Inventory Form

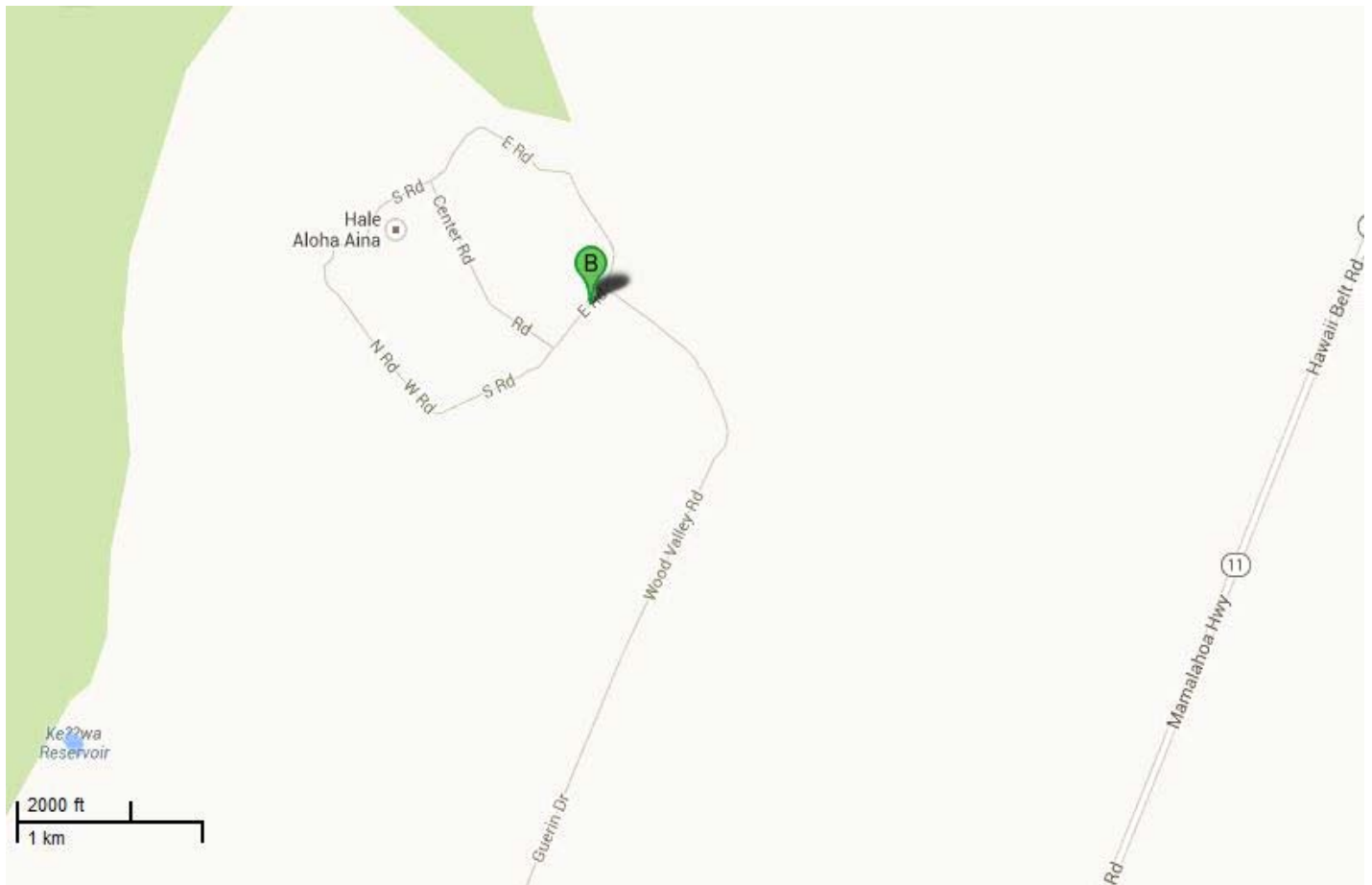
(County/Private)

General Information

Bridge Number: 001960001100001	
Popular Name: Waiakaloa Gulch Bridge	
Feature Crossed: Waiakaloa Gulch	
Feature Carried: Wood Valley Homestead Road	
Milepost:	County Private: Hawaii
Longitude: 155d-28m-25.52s	Latitude: 19d-16m-08.96s
Location: TMK: 9-6-008:002	
Historic Name: Waiakaloa Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1935	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 21.0 ft.	Total Length: 22.0 ft.	Deck Width: 16.0 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck			
Parapets/Railings: No Parapet/Railing			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waiakaloa Gulch Bridge carries Wood Valley Homestead Road across the Waiakaloa Gulch. This reinforced concrete bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete solid panels. The concrete deck is supported by concrete abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		


Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

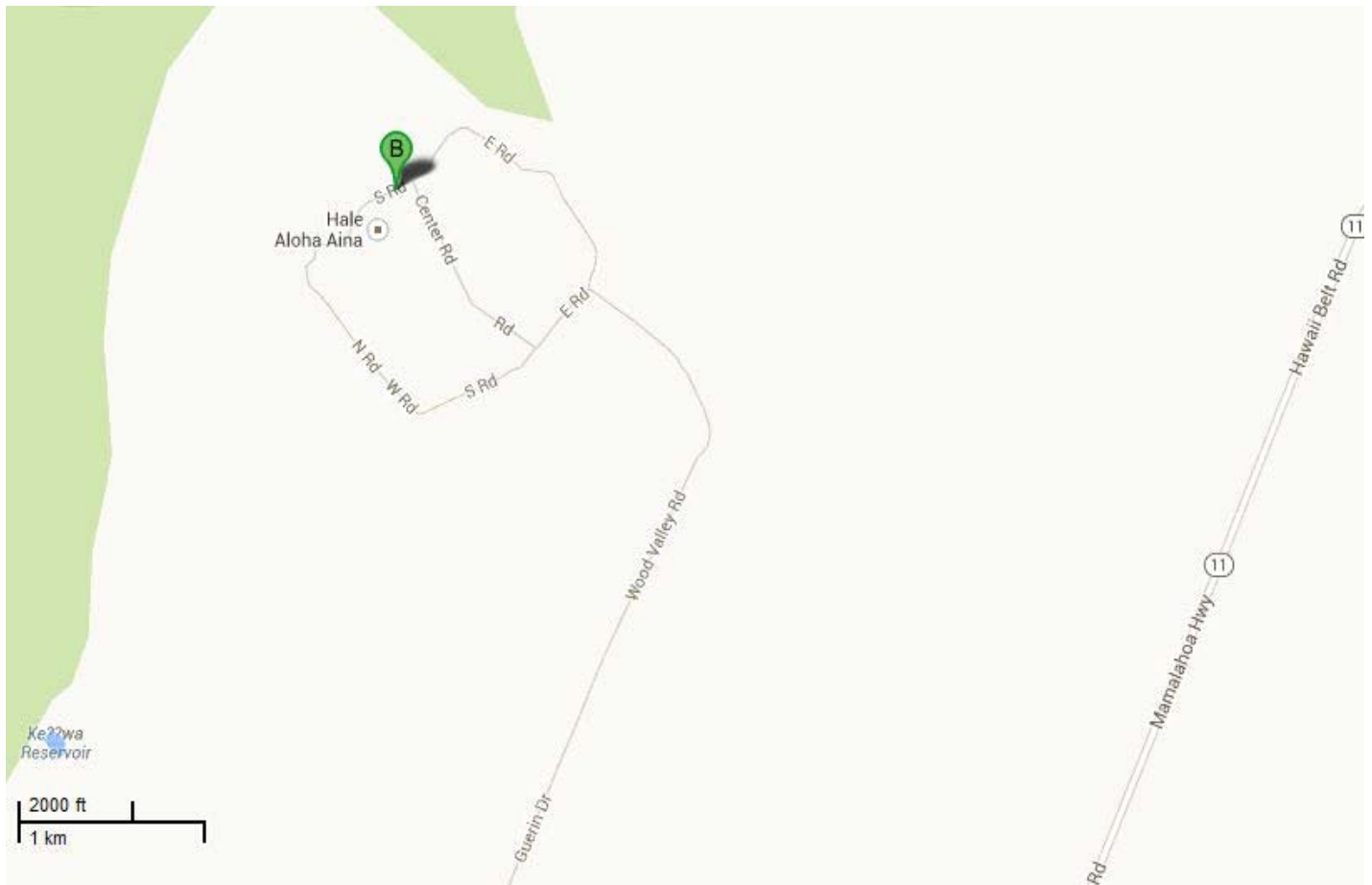
Inventory Form

(County/Private)

General Information

Bridge Number: 001960001100002	
Popular Name: Waiakaloa Gulch Bridge	
Feature Crossed: Waiakaloa Gulch	
Feature Carried: Wood Valley Homestead Road	
Milepost: County Private: Hawaii	
Longitude: 155d-28m-58.50s Latitude: 19d-16m-28.25s	
Location: TMK: 9-6-08:009	
Historic Name: Waiakaloa Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1935	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 18.0 ft.	Total Length: 20.0 ft.	Deck Width: 16.0 ft.
Superstructure: Concrete Slab			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: No Parapet/Railing			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waiakaloa Gulch Bridge carries Wood Valley Homestead Road across the Waiakaloa Gulch. This reinforced concrete bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete solid bottom with metal railings on top which were bent and no longer functional. The concrete deck is supported by concrete rubble masonry abutments. Except the railings, the workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in concrete bridge construction in Hawaii. It is a good example of a 1930's reinforced concrete bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

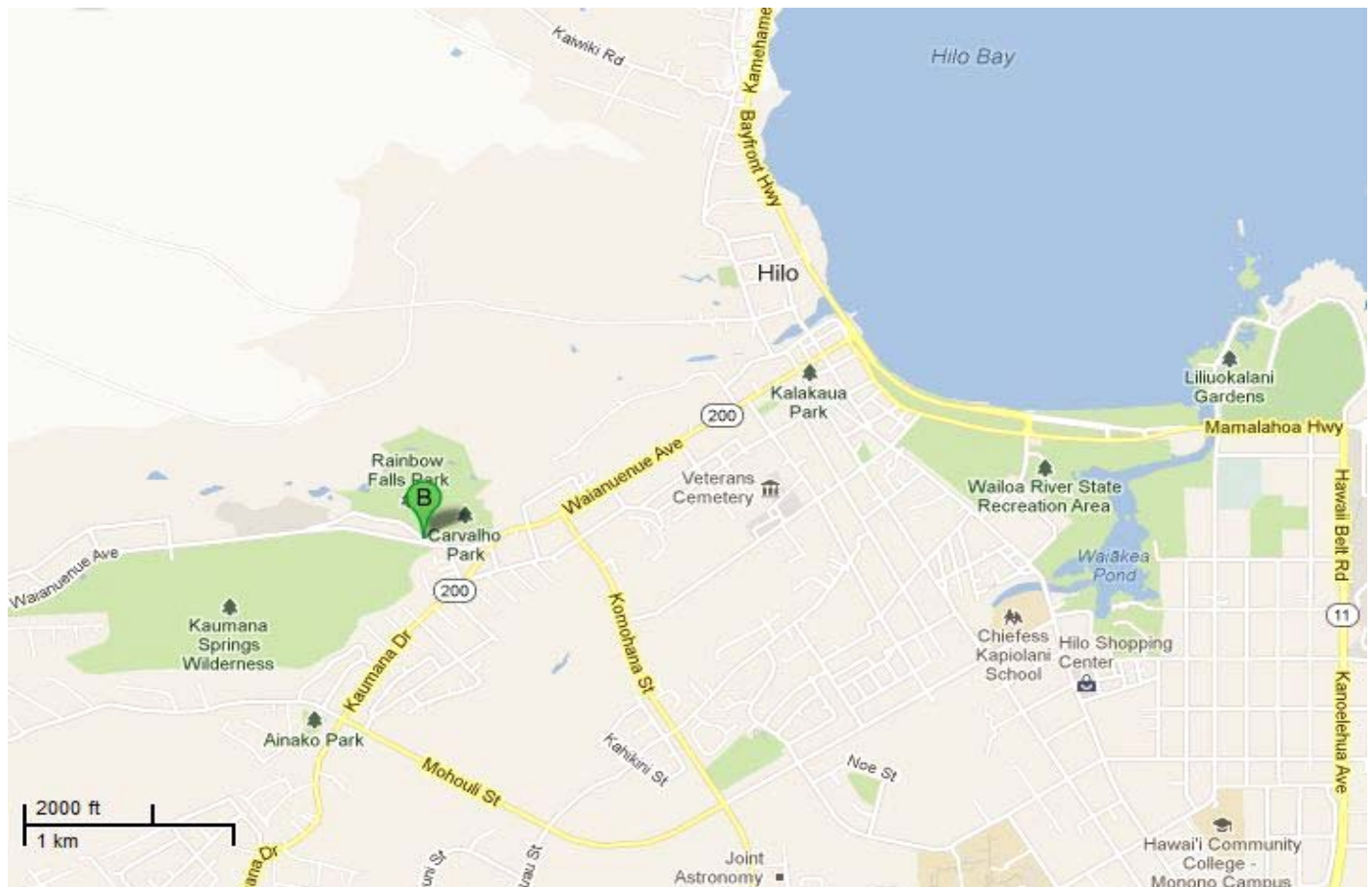
Inventory Form

(County/Private)

General Information

Bridge Number: 001027201400020		
Popular Name: Waianuenue Bridge		
Feature Crossed: Ainako Stream		
Feature Carried: Waianuenue Avenue		
Milepost: 0.20 mi.	County Private: Hawaii	
Longitude: 155d-06m-20.52s	Latitude: 19d-43m-01.36s	
Location: TMK: 2-3-32		
Historic Name: Waianuenue Bridge		
Designer/Engineer: En Leong Wung		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1924	Replaced? No
Altered? Yes Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s): Street lamps on each of four end piers removed sometime after 1951		

Bridge Information

Number of Spans: 1	Max Span: 45.0 ft.	Total Length: 45.0 ft.	Deck Width: 33.4 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Open Decorative			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering, Transportation		
Narrative Description: <p>The Ainako Stream-Waianuenue Avenue Bridge was constructed in 1924 to carry Waianuenue Avenue across the Ainako Stream in Hilo on the island of Hawaii. The bridge is a reinforced-concrete, single-span, parabolic-shaped solid-spandrel arch. The neo-classical or "Italianate" design and graceful concrete elliptical arch of the Ainako Stream-Waianuenue Avenue Bridge make it one of the most decorative bridges on the island of Hawaii.</p> <p>The Ainako Stream-Waianuenue Avenue Bridge is in its original location and its residential setting has continued to develop. The bridge's original solid-spandrel arch design and reinforced-concrete materials remain intact, with the exception of minor spalling concrete on the parapets. The bridge is obviously the work of skilled builders, who constructed the ornate concrete bridge. The workmanship of the bridge has not been obscured by additions or repairs. The bridge's superstructure is highly visible from the roadway. The bridge's historic association, as a significant civic statement reflecting Hawaii County's aspirations for Hilo as a beautiful and urbane city, are readily apparent to informed observers; the bridge retains its historic feeling due to its ornamental nature and now uncommon structural type.</p>		

Significance Statement:

The Ainako Stream-Waianuenue Avenue Bridge is significant for its contributions to the fields of engineering and transportation in Hawaii. The 1924 bridge is an excellent example of reinforced-concrete solid-spandrel arch construction in the Italianate style. The Ainako Stream-Waianuenue Avenue Bridge is eligible under Criterion A for its associations with public works efforts by the County of Hawaii, and as an important civic structure associated with the development of Hilo. Moreover, the bridge contributed to the development of Hilo by providing reliable vehicular access to the recently established residential area along the banks of the Wailuku River. It is eligible under Criterion C as a rare remaining example of this once common bridge type, as well as for its aesthetic merit. Arch bridges are also an uncommon bridge type.

The bridge is representative of County Engineer En Leong Wung's work. The design of the bridge reflects the popular neo-classical architectural style of the early twentieth-century. The design of public improvements in the mode popular on the United States mainland reflects Hawaii's striving for legitimacy as an American territory. The World's Columbian Exposition in Chicago in 1893 served as the inspiration for the City Beautiful movement and the ensuing neo-classical revival in the United States. The City Beautiful movement reached its height on the U.S. mainland between 1900-1910, but affected Hawaii somewhat later. This movement is characterized by an attempt to create beautiful and functional cities. Aesthetic principles such as beauty, order, system, and harmony found physical realization in urban design. Architecture and public works projects, such as road and sewer systems, became civic statements which strengthened the identification of Hawaii to the U.S. mainland. The improved physical environment would persuade urban dwellers, many of them recent immigrants to Hawaii from Asia, to become imbued with civic patriotism and better disposed toward community needs.

The Ainako Stream-Waianuenue Avenue Bridge is the earliest of the decorative arch bridges built by the county in the 1920s and 30s. The bridge was designed by En Leong Wung of the County Engineers office. Little is known of Leong, however much of the work done during this time was in collaboration with another County Engineer, William Hoy Chun. Chun was educated as an engineer at the Illinois Institute of Technology.

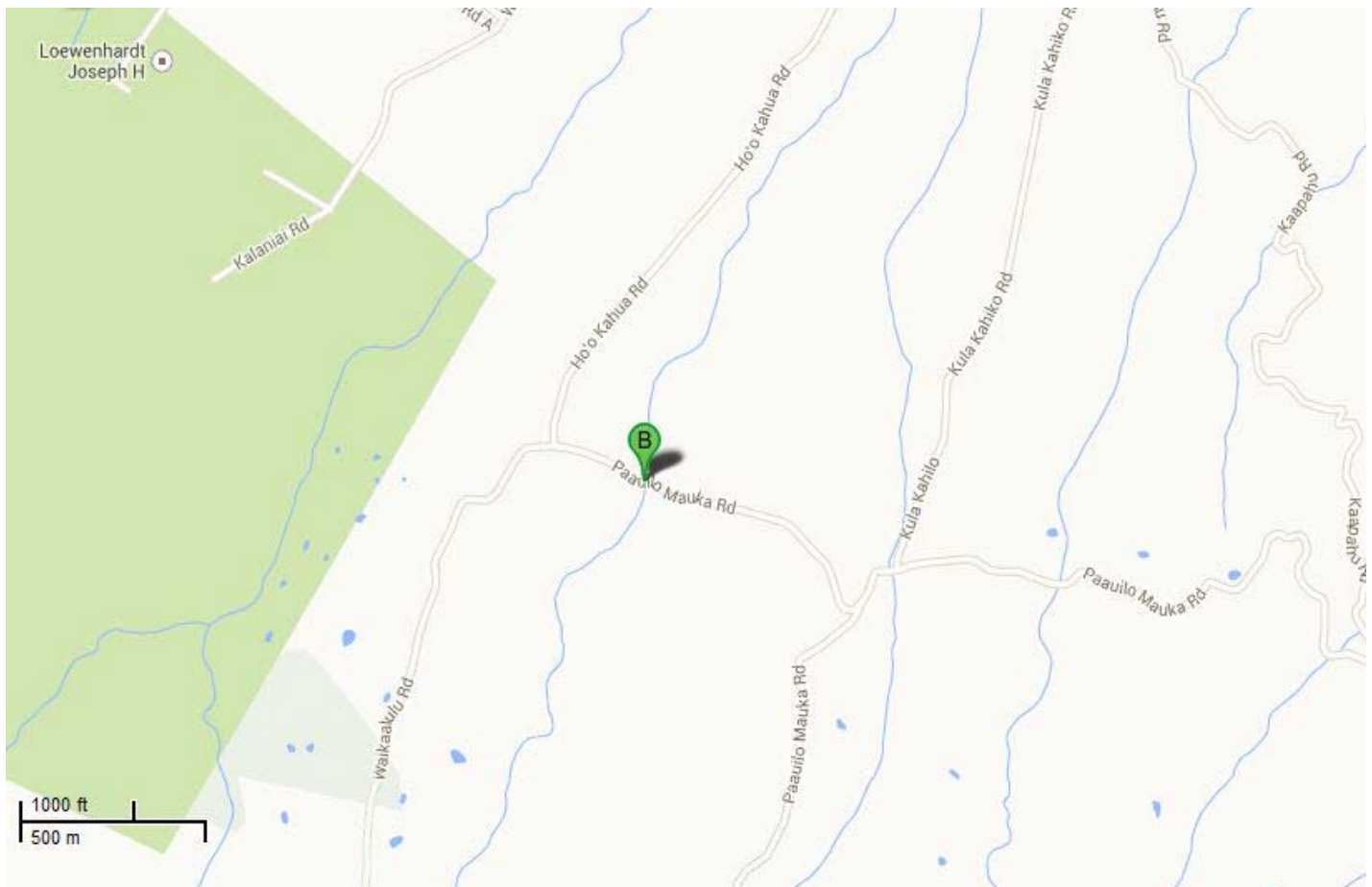
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100005	
Popular Name: Waikaalulu Gulch Bridge	
Feature Crossed: Waikaalulu Gulch	
Feature Carried: Paauilo Mauka Road	
Milepost: County Private: Hawaii	
Longitude: 155d-25m-39.65s Latitude: 20d-01m-56.99s	
Location: TMK: 4-4-11:13	
Historic Name: Waikaalulu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 18.0 ft.	Total Length: 22.0 ft.	Deck Width: 14.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waikaaluku Gulch Bridge carries Paauilo Mauka Road across Waikaaluku Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, and reinforced concrete abutment on east side and concrete rubble masonry abutment on west side. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

Inventory Form

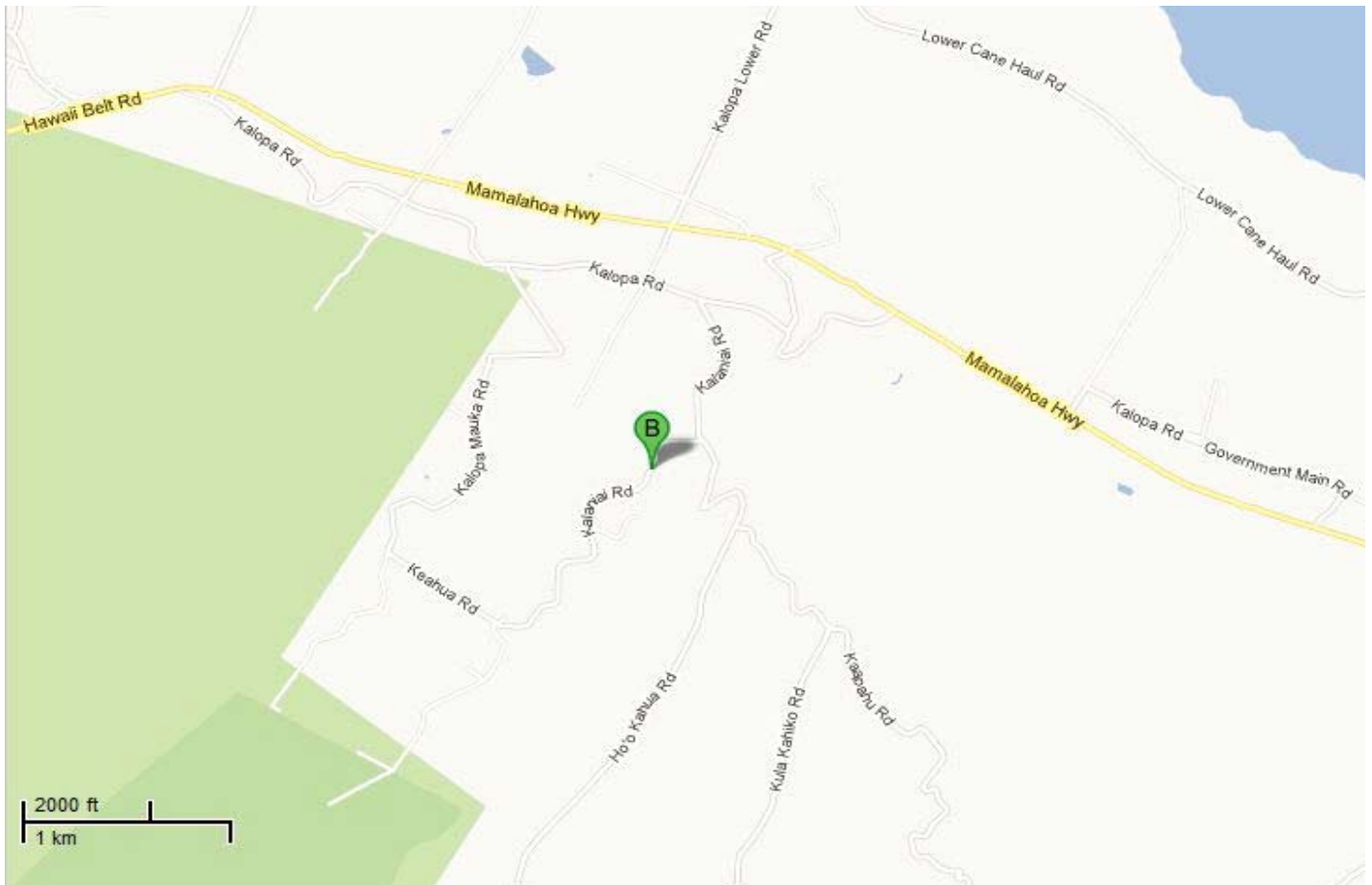
(County/Private)

General Information

Bridge Number: 001440001100006	
Popular Name: Waikaalulu Gulch Bridge	
Feature Crossed: Waikaalulu Gulch	
Feature Carried: Kaapahu Road	
Milepost:	County Private: Hawaii
Longitude: 155d-25m-11.50s	Latitude: 20d-03m-00.67s
Location: TMK: 4-4-09:09	
Historic Name: Waikaalulu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 20.0 ft.	Total Length: 24.0 ft.	Deck Width: 16.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waikaaluku Gulch Bridge carries Kaapahu Road across Waikaaluku Gulch. This timber stringer bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has timber railings, timber planks, concrete rubble masonry abutments. The workmanship of the bridge has not been obscured and the simple design of the bridge retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C for its association with early developments in timber bridge construction in Hawaii. It is a good example of a 1930's timber bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design.

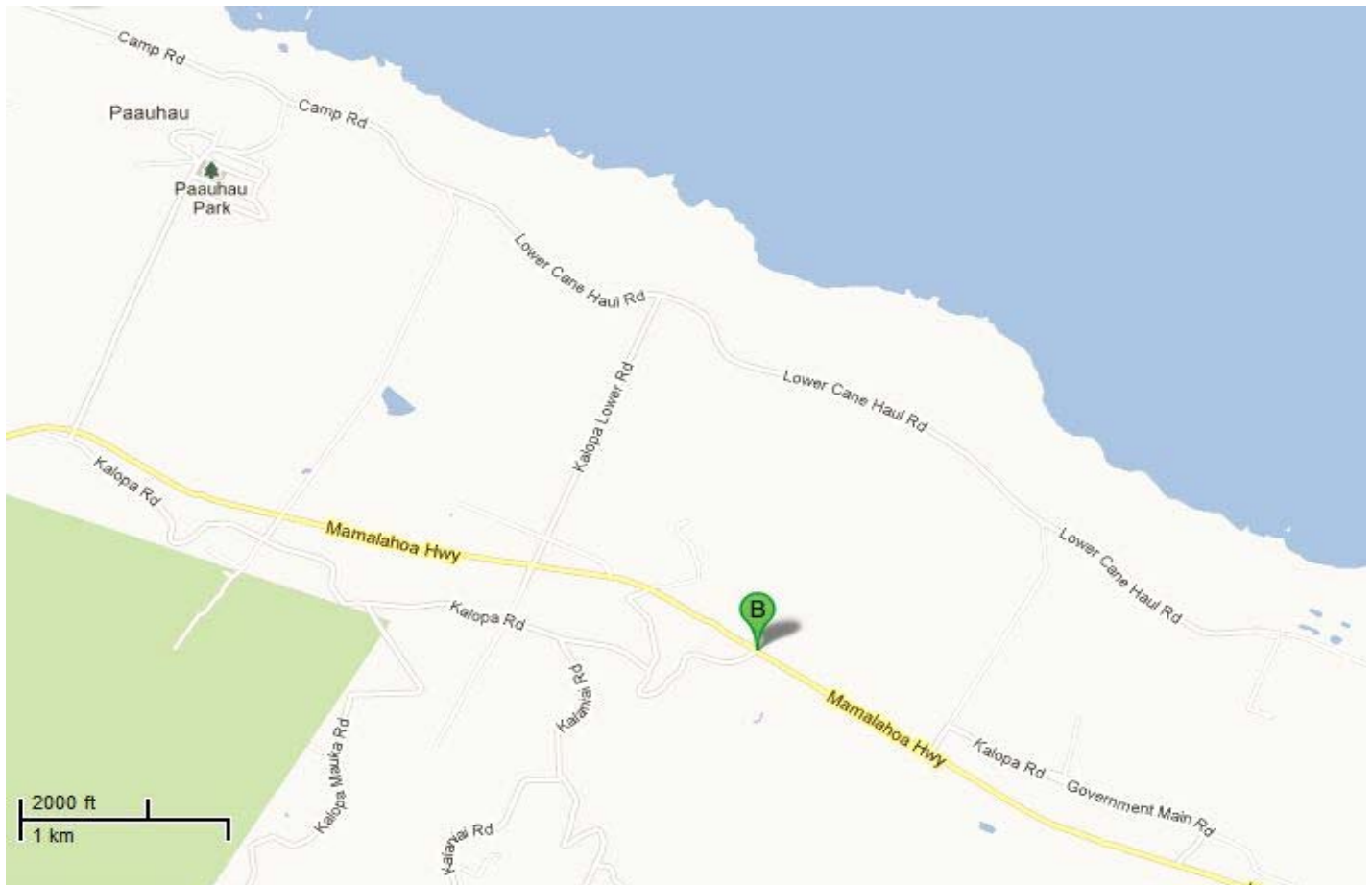
Inventory Form

(County/Private)

General Information

Bridge Number: 001440001100008	
Popular Name: Waikaalulu Gulch Bridge	
Feature Crossed: Waikaalulu Gulch	
Feature Carried: Kalopa Road	
Milepost: County Private: Hawaii	
Longitude: 155d-24m-49.05s Latitude: 20d-03m-34.90s	
Location: TMK: 4-4-02:06	
Historic Name: Waikaalulu Gulch Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? Yes Alteration Date(s): 2009		
Alteration Type(s):		
Alteration Description(s): Bridge was replaced in-kind in 2009.		

Bridge Information

Number of Spans: 3	Max Span: 20.0 ft.	Total Length: 51.0 ft.	Deck Width: 18.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Concrete Multi-column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description. This timber bridge was reconstructed in-kind in 2009.		

Significance Statement:

It is one of the seven bridges listed under the 2000 MOA which includes: Honomu, Kalaoa, Opea, Kalopa, Inoino, Waikaalulu, and Kaahakini.

See Mamalahoa historic district description.

Inventory Form

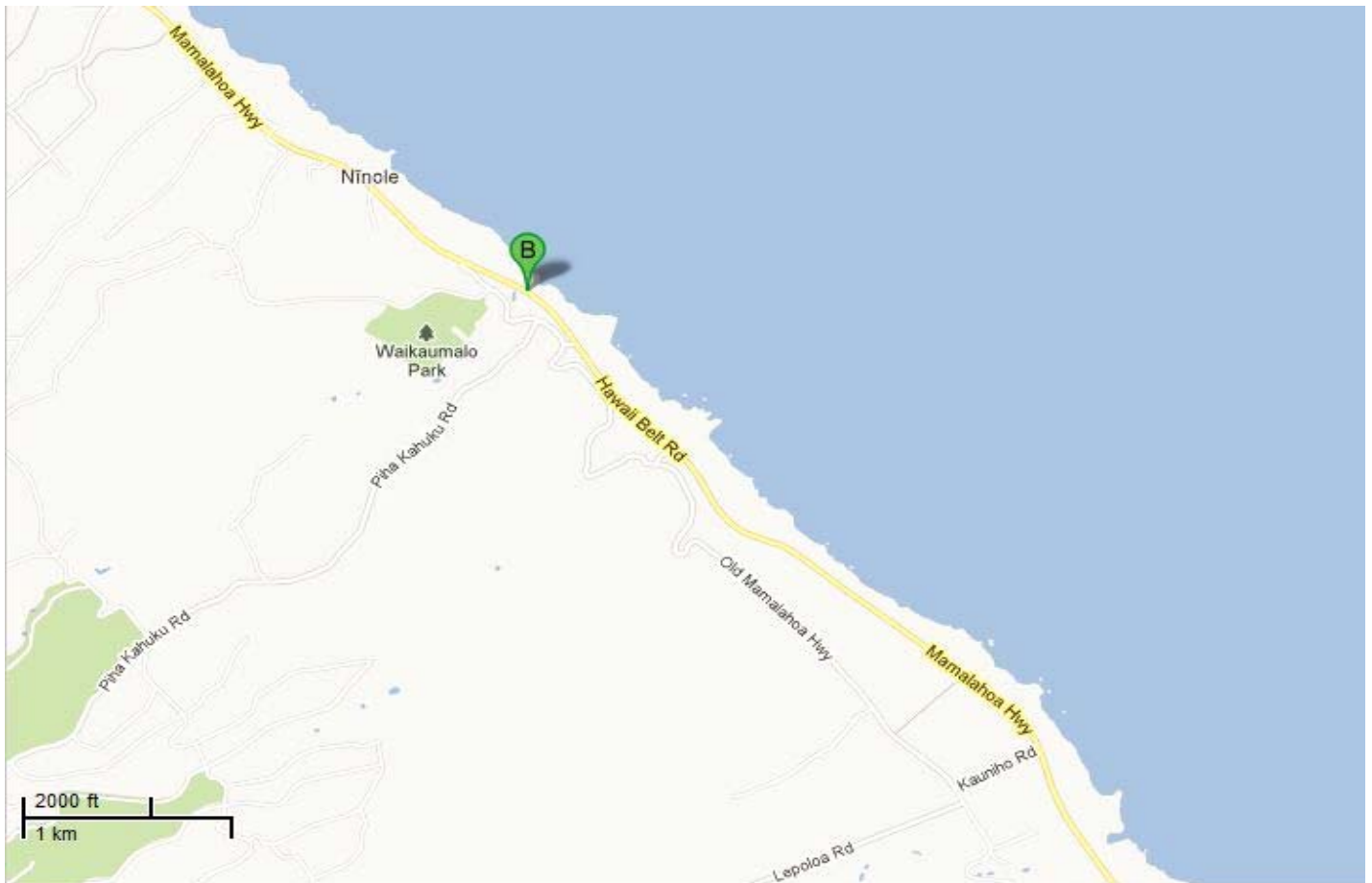
(County/Private)

General Information

Bridge Number: 001320001100002	
Popular Name: Waikaumalo Stream Bridge	
Feature Crossed: Waikaumalo Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost:	County Private: Hawaii
Longitude: 155d-09m-45.26s	Latitude: 19d-55m-57.08s
Location: TMK: 3-2-002:062	
Historic Name: Waikaumalo Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1920	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 5	Max Span: 30.0 ft.	Total Length: 109.0 ft.	Deck Width: 20.0 ft.
Superstructure: Timber Stringer			
Substructure: Masonry Abutment and Timber Multi-Column Bent			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description. Parts of the bridge were replaced in kind throughout the years as a way to preserve the integrity of the wooden structure.		

Significance Statement:

See Mamalahoa historic district description.

Inventory Form

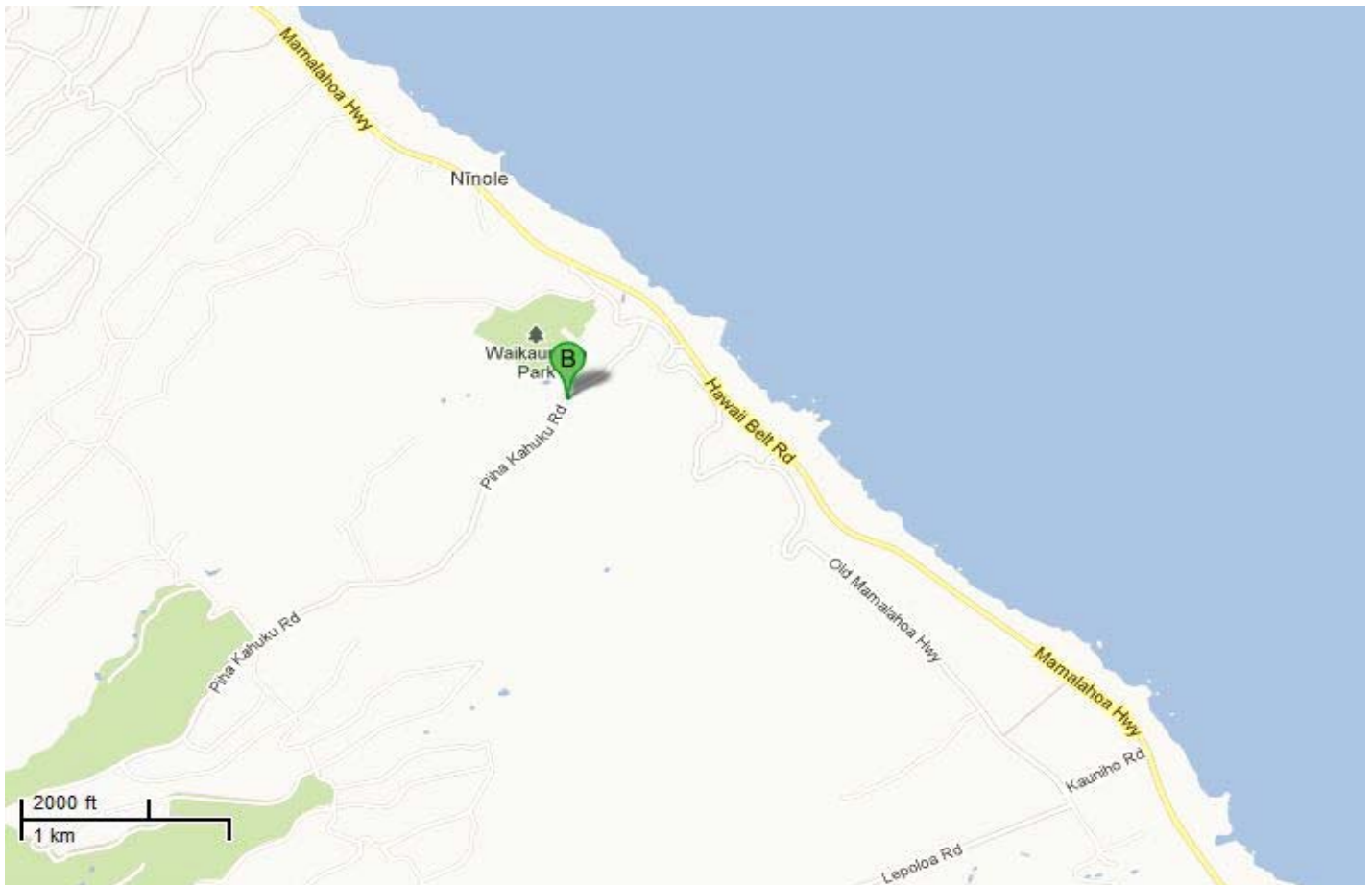
(County/Private)

General Information

Bridge Number: 001320001100003	
Popular Name: Waikaumalo Stream Bridge	
Feature Crossed: Waikaumalo Stream	
Feature Carried: Unnamed Road off Piha Kahuku Homestead Road	
Milepost:	County Private: Hawaii
Longitude: 155d-10m-51.04s	Latitude: 19d-55m-06.68s
Location: TMK: 3-2-004:027	
Historic Name: Waikaumalo Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	



Location Map:



Construction Information

Bridge Type: Timber Stringer	Construction Date: 1930	Replaced? No
Altered? Yes Alteration Date(s): 2011		
Alteration Type(s):		
Alteration Description(s): Half the bridge replaced in-kind		

Bridge Information

Number of Spans: 2	Max Span: 21.0 ft.	Total Length: 41.0 ft.	Deck Width: 14.0 ft.
Superstructure: Timber Stringer			
Substructure: Concrete Abutment Wall and Concrete Double Column Pier			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waikaumalo Stream Bridge carries unnamed road off Piha Kahuku Road across Waikaumalo Stream. This two span timber stringer bridge is in its original location and is generally in good condition. The bridge has timber railings, timber deck, concrete columns and abutments. One span (half of the bridge) was replaced in-kind in 2011 as part of routine maintenance.</p>		

Significance Statement:

This bridge is eligible under Criterion C as a good example of a 1930's timber bridge. Although half the bridge was replaced in 2011, the materials were replaced in-kind allowing the bridge to retain its historic character.

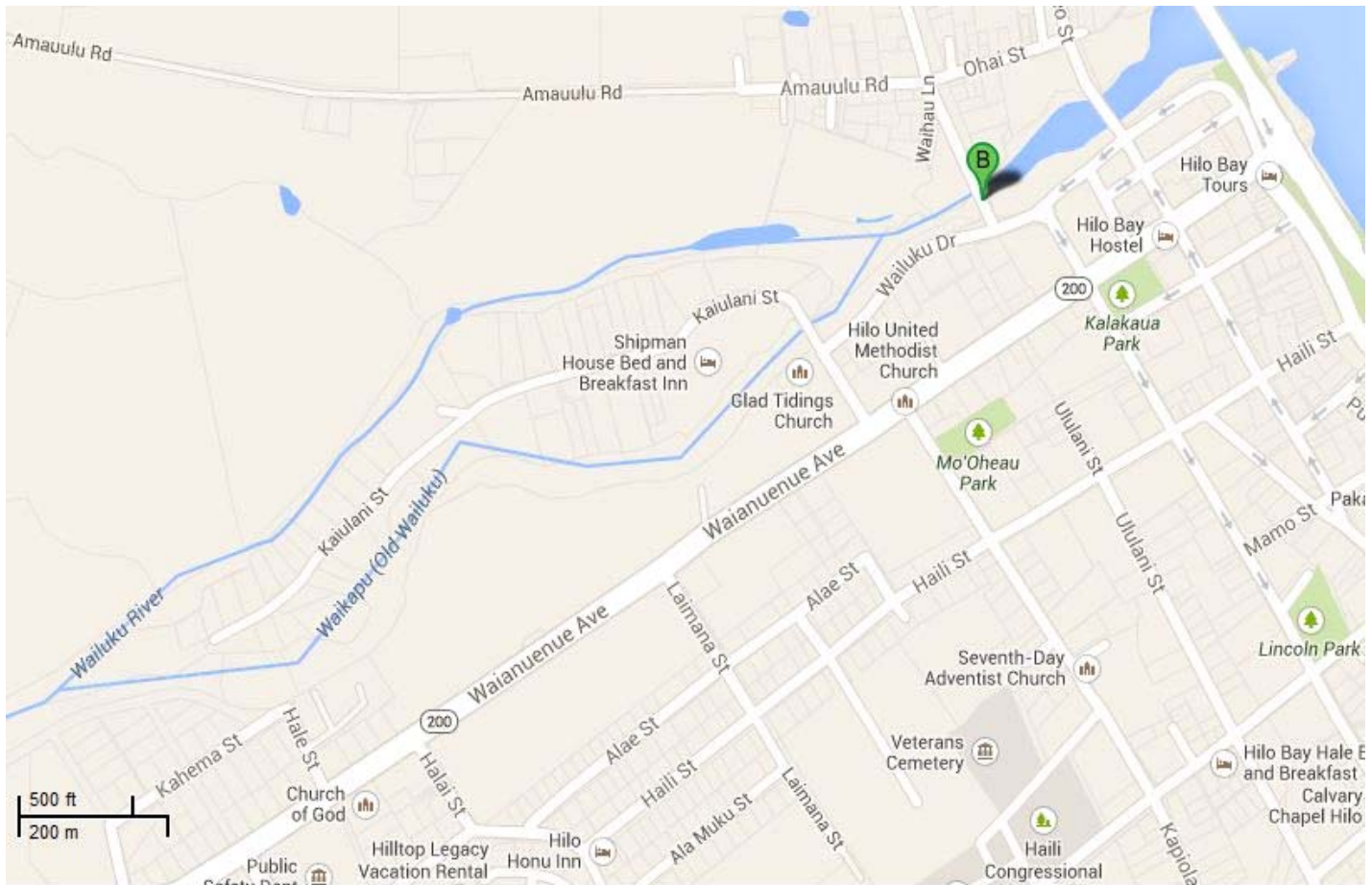
Inventory Form

(County/Private)

General Information

Bridge Number: 001230001100002	
Popular Name: Wailuku Bridge No.1	
Feature Crossed: Wailuku River	
Feature Carried: Wainaku Street	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-25.63s Latitude: 19d-43m-34.24s	
Location: TMK: 2-3-14:4	
Historic Name: Wailuku Bridge No.1	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Tee Beam	Construction Date: 1919	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 2	Max Span: 63.0 ft.	Total Length: 129.0 ft.	Deck Width: 41.2 ft.
Superstructure: Concrete Tee Beam			
Substructure: Concrete Abutment Wall and Concrete Wall Pier			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Decorative			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

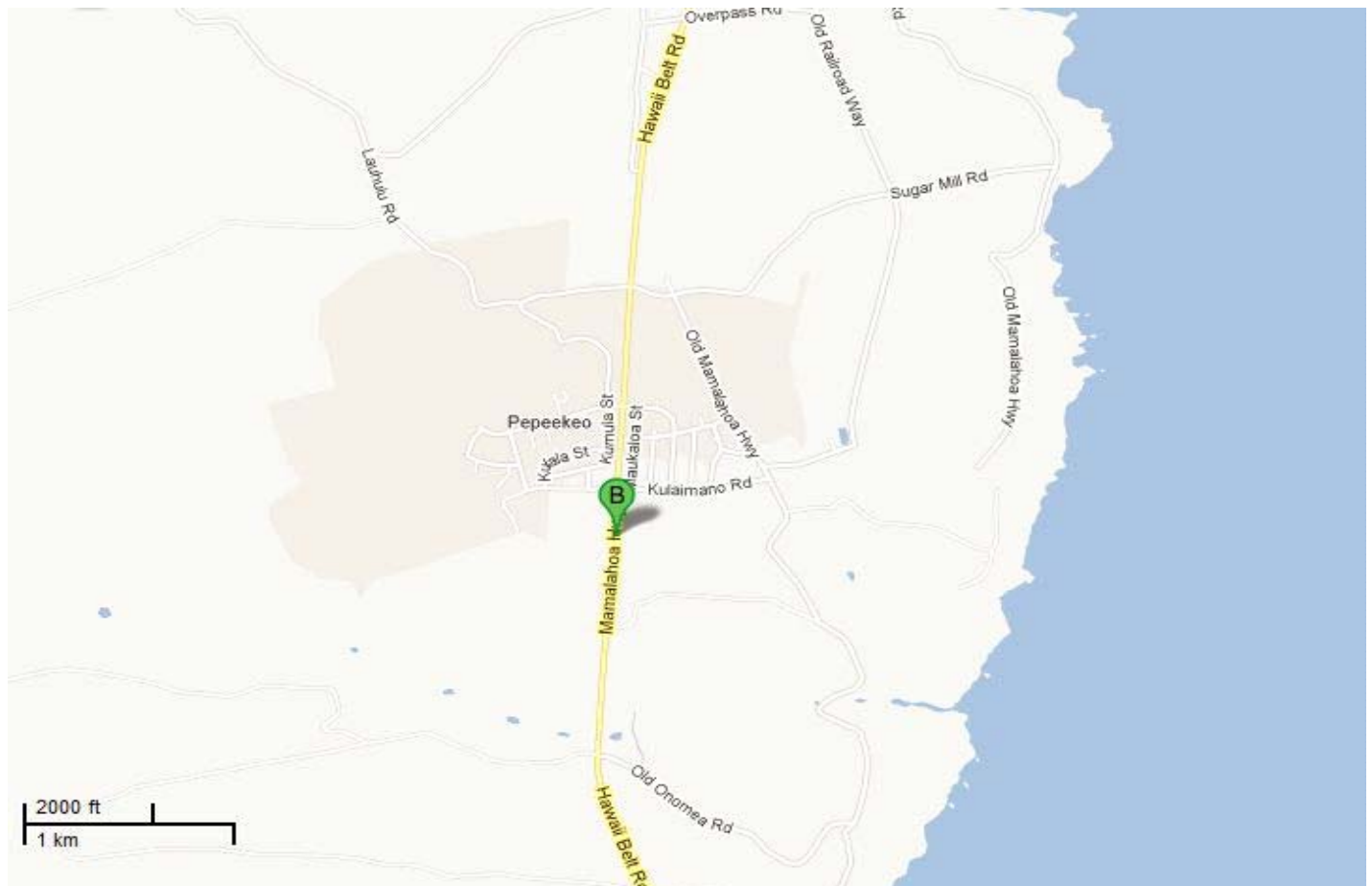
Inventory Form

(County/Private)

General Information

Bridge Number: 001280001100001	
Popular Name: Waimaauau Stream Bridge	
Feature Crossed: Waimaauau Stream	
Feature Carried: Old Mamalahoa Highway	
Milepost: County Private: Hawaii	
Longitude: 155d-05m-57.66s Latitude: 19d-50m-03.53s	
Location: TMK: 2-8-07:06	
Historic Name: Waimaauau Stream Bridge	
Designer/Engineer:	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Concrete Slab	Construction Date: 1930	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 17.0 ft.	Total Length: 20.0 ft.	Deck Width: 20.0 ft.
Superstructure: Concrete Slab			
Substructure: Masonry Abutment			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Solid Panel			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description.		


Significance Statement:

See Mamalahoa historic district description.

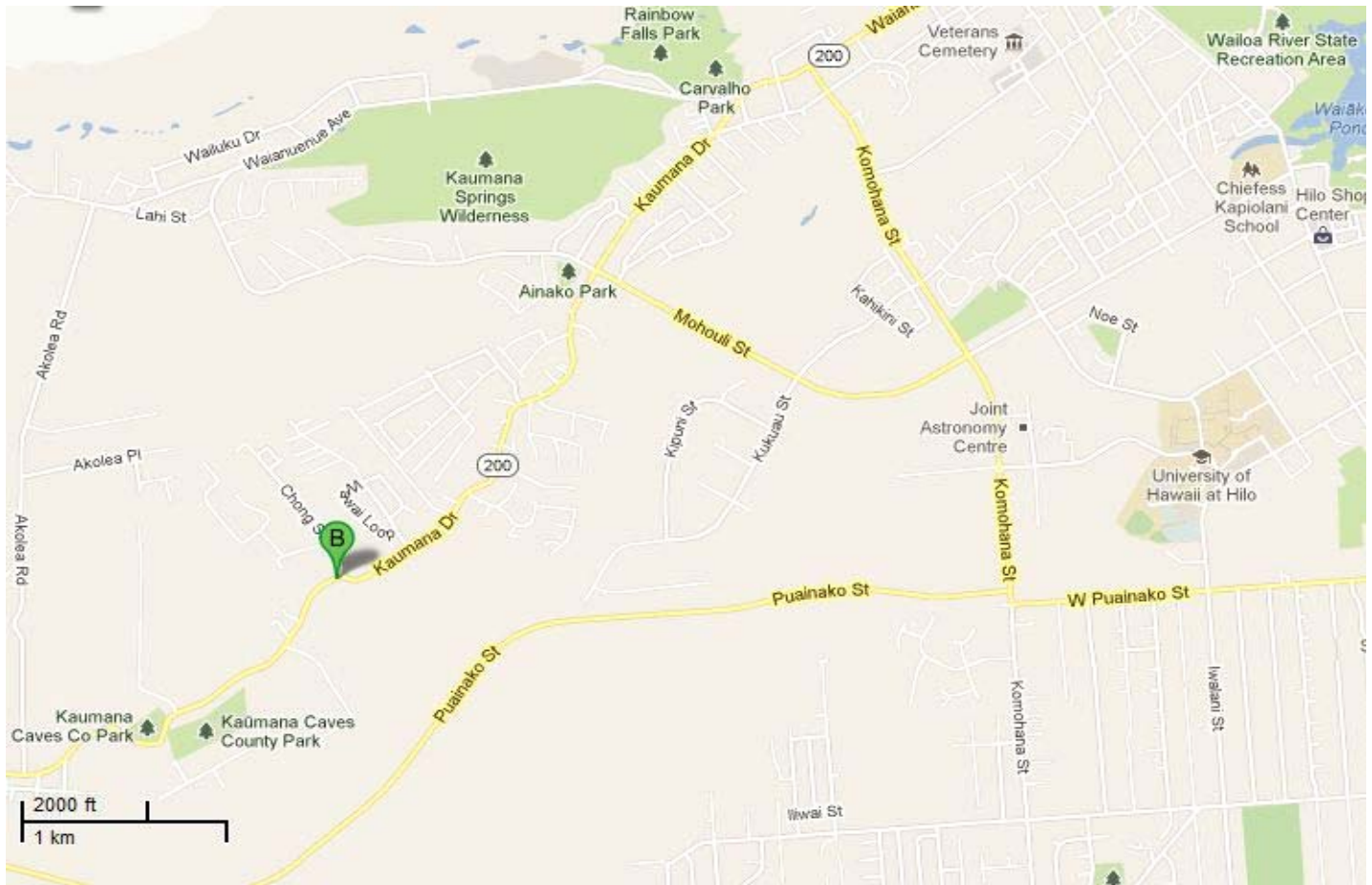
Inventory Form

(County/Private)

General Information

Bridge Number: 001020001400450		
Popular Name: Waipahoehoe Stream Bridge		
Feature Crossed: Waipahoehoe Stream		
Feature Carried: Kaumana Drive		
Milepost: 4.60 mi.	County Private: Hawaii	
Longitude: 155d-07m-18.49s	Latitude: 19d-41m-40.46s	
Location: TMK: 2-5-011:016		
Historic Name: Waipahoehoe Stream Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Closed Spandrel Arch	Construction Date: 1924	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 24.0 ft.	Total Length: 34.0 ft.	Deck Width: 30.0 ft.
Superstructure: Concrete Closed Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: AC Pavement			
Parapets/Railings: Concrete Solid with Cap			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Engineering		
Narrative Description: <p>The Waipahoehoe Stream Bridge carries Kaumana Drive across Waipahoehoe Stream. This cast in place concrete arch bridge is in its original location, is generally in good condition, and its materials remain intact. The bridge has concrete solid parapets with curved caps. The concrete deck is supported by concrete abutments. The workmanship of the bridge has not been obscured by additions or repairs. The simple design of the parapet retains its historic feeling.</p>		

Significance Statement:

This bridge is eligible under Criterion C as a rare example of a 1920's reinforced concrete round arch bridge that is typical of its period in its use of materials, method of construction, craftsmanship, and design. Arch bridges are also an uncommon bridge type.

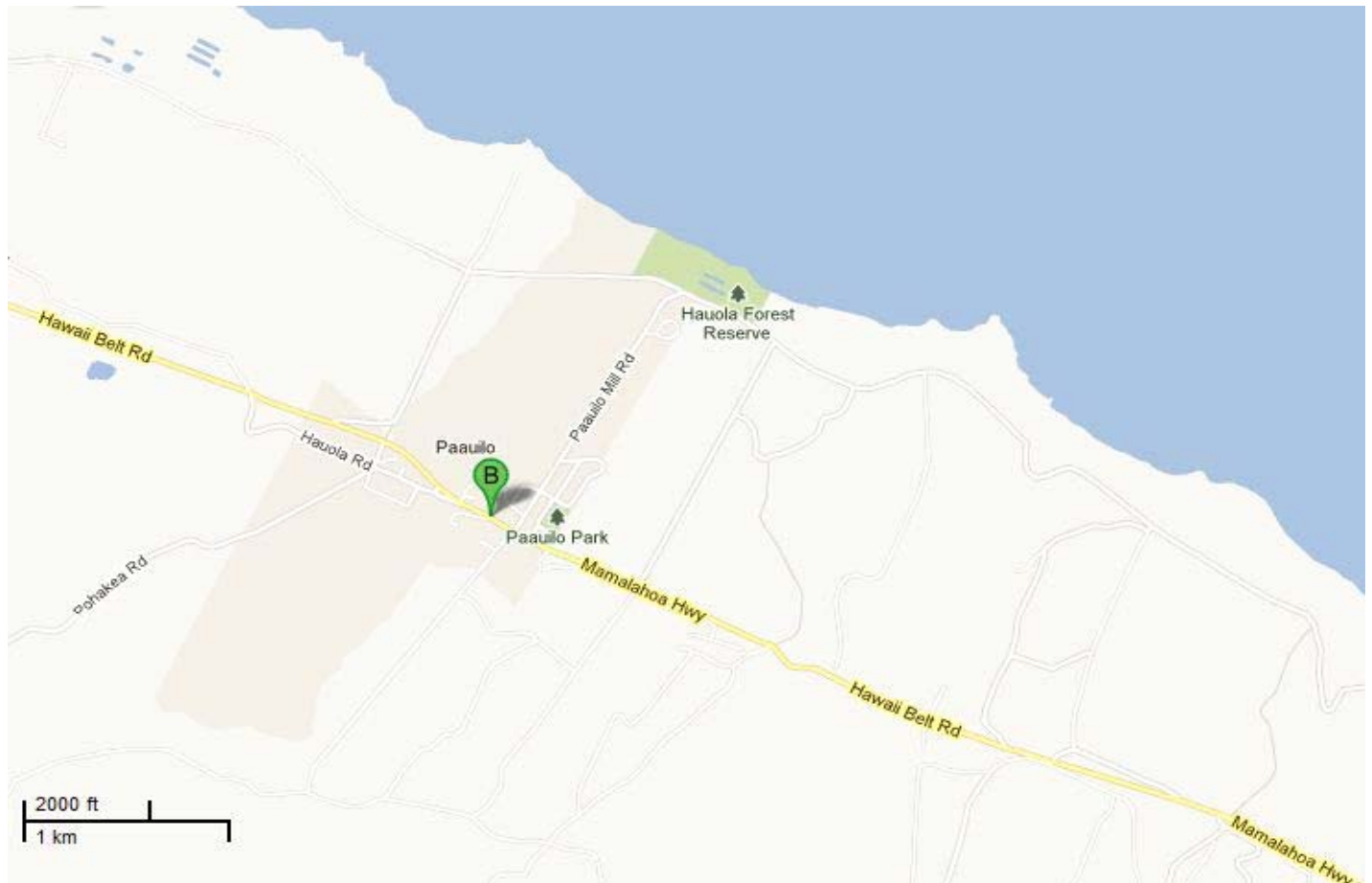
Inventory Form

(County/Private)

General Information

Bridge Number: 001430001100001		
Popular Name: Waipunahina Gulch Bridge		
Feature Crossed: Waipunahina Gulch		
Feature Carried: Old Mamalahoa Highway		
Milepost:	County Private: Hawaii	
Longitude: 155d-22m-48.63s	Latitude: 20d-02m-37.42s	
Location: TMK: 4-3-03:31		
Historic Name: Waipunahina Gulch Bridge		
Designer/Engineer:		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Open Spandrel Arch	Construction Date: 1928	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 3	Max Span: 80.0 ft.	Total Length: 118.0 ft.	Deck Width: 23.0 ft.
Superstructure: Concrete Open Spandrel Arch			
Substructure: Concrete Abutment Wall			
Floor/Decking: Concrete Deck with AC Overlay			
Parapets/Railings: Concrete Open Decorative			
Setting:			
Other Features:			

Historic Association

Eligibility Status: High Preservation Value	Criteria: A, C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Transportation, Engineering		
Narrative Description: See Mamalahoa historic district description. In 2006 the Kiholo Bay Earthquake damaged the Hamakua side of the bridge. Repairs made in-kind were completed in September 2010.		


Significance Statement:

This bridge is an arch bridge which is an uncommon bridge type. See Mamalahoa historic district description.

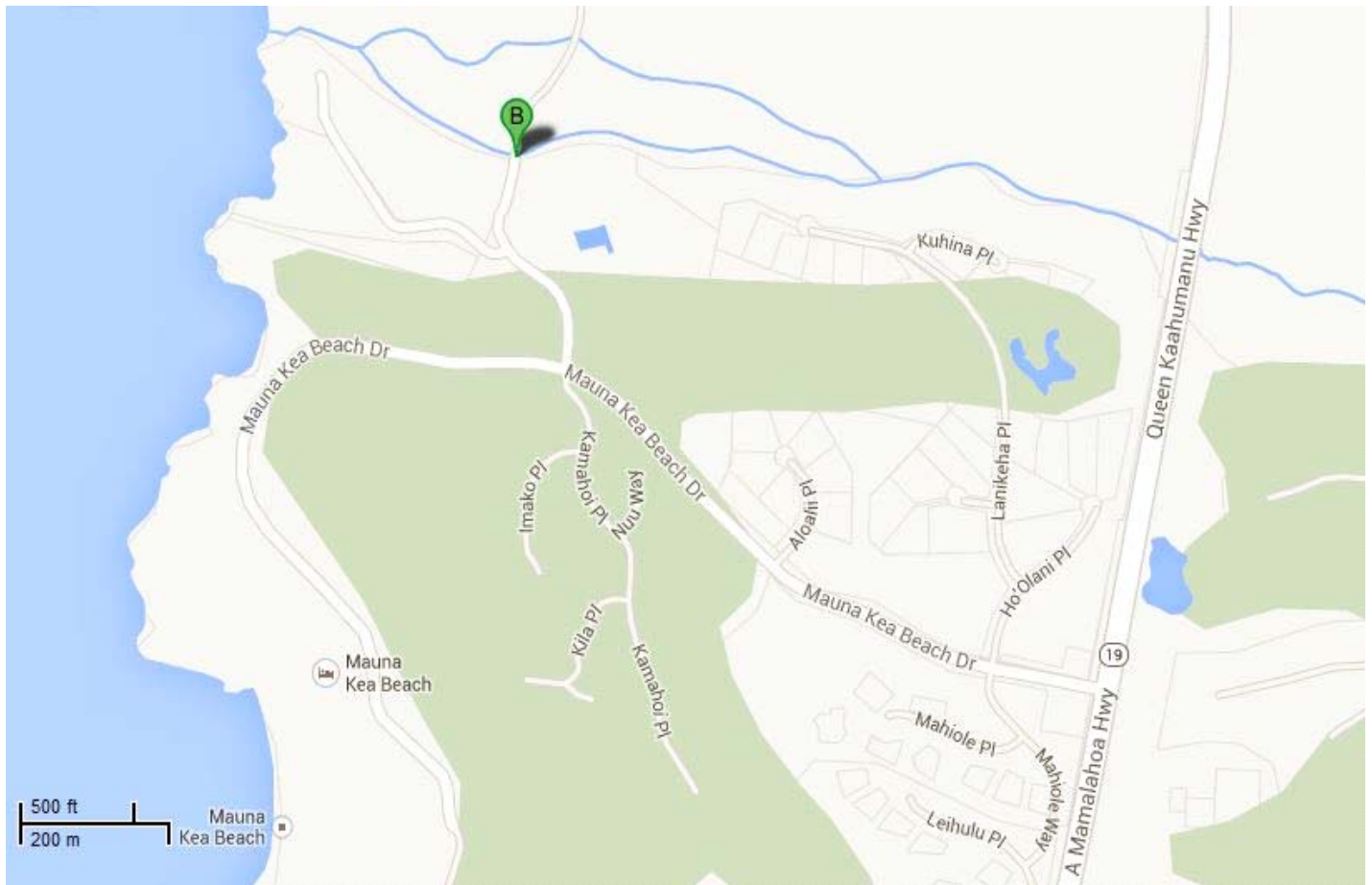
Inventory Form

(County/Private)

General Information

Bridge Number: 001620001100001		
Popular Name: Waiulaula Gulch Bridge		
Feature Crossed: Waiulaula Gulch		
Feature Carried: Old Puako Road		
Milepost:	County Private: Hawaii	
Longitude: 155d-49m-18.99s	Latitude: 20d-00m-44.51s	
Location: TMK: 6-2-02:005		
Historic Name: Waiulaula Gulch Bridge		
Designer/Engineer: Y. Inaba and A. W. Bryie		
Builder/Contractor:		

Location Map:



Construction Information

Bridge Type: Steel Stringer	Construction Date: 1951	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 37.0 ft.	Total Length: 42.0 ft.	Deck Width: 19.0 ft.
Superstructure: Steel Multi-Girder			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Structural type		
Narrative Description: <p>The Waiulaula Gulch Structure #1 is a steel girder structure, constructed in 1951 to carry Old Puako Road (Kawaihae-Puako Road) over Wailaula Gulch. It was planned to assist with the construction of Kawaihae-Puako Road from Kawaihae Park through the Puako Beach Subdivision. The rural setting is surrounded by the lush vegetation at the Mauna Kea Resort and Puako subdivision nearby. There has been no change to the original design or materials. The engineering of the bridge is neither complex nor typical for the era, but the workmanship of the bridge is good, and is not obscured by repairs or additions. The superstructure consists of stringers laid on the diagonal. The guardrails are painted wood and the decking is made up to 3x12 timbers. The timber decking is consistent with the original design and materials and is an important element of this bridge's rating. Nuts and washers securing the planks to the steel stringers are missing in places. The rustic setting along with the painted wood railing, unfinished wood decking and narrow width contribute greatly to the overall historic feeling of the bridge.</p> <p>This bridge is located on private land and in 2013 the County of Hawaii was in the process of turning over the ownership to the private property owner.</p>		


Significance Statement:

The Waiulaula Gulch Structure #1 is eligible under Criterion C due to its distinct structural type for the area. Steel stringers were constructed in Hawaii primarily for industrial and railroad bridges. Ornamentation, if any, was usually limited to the pattern of the railings. The use of steel was uncommon in Hawaii due to the extreme marine environment. Since very little steel is used for bridge construction in Hawaii, this bridge is eligible under Criterion C for its distinctive structural type.

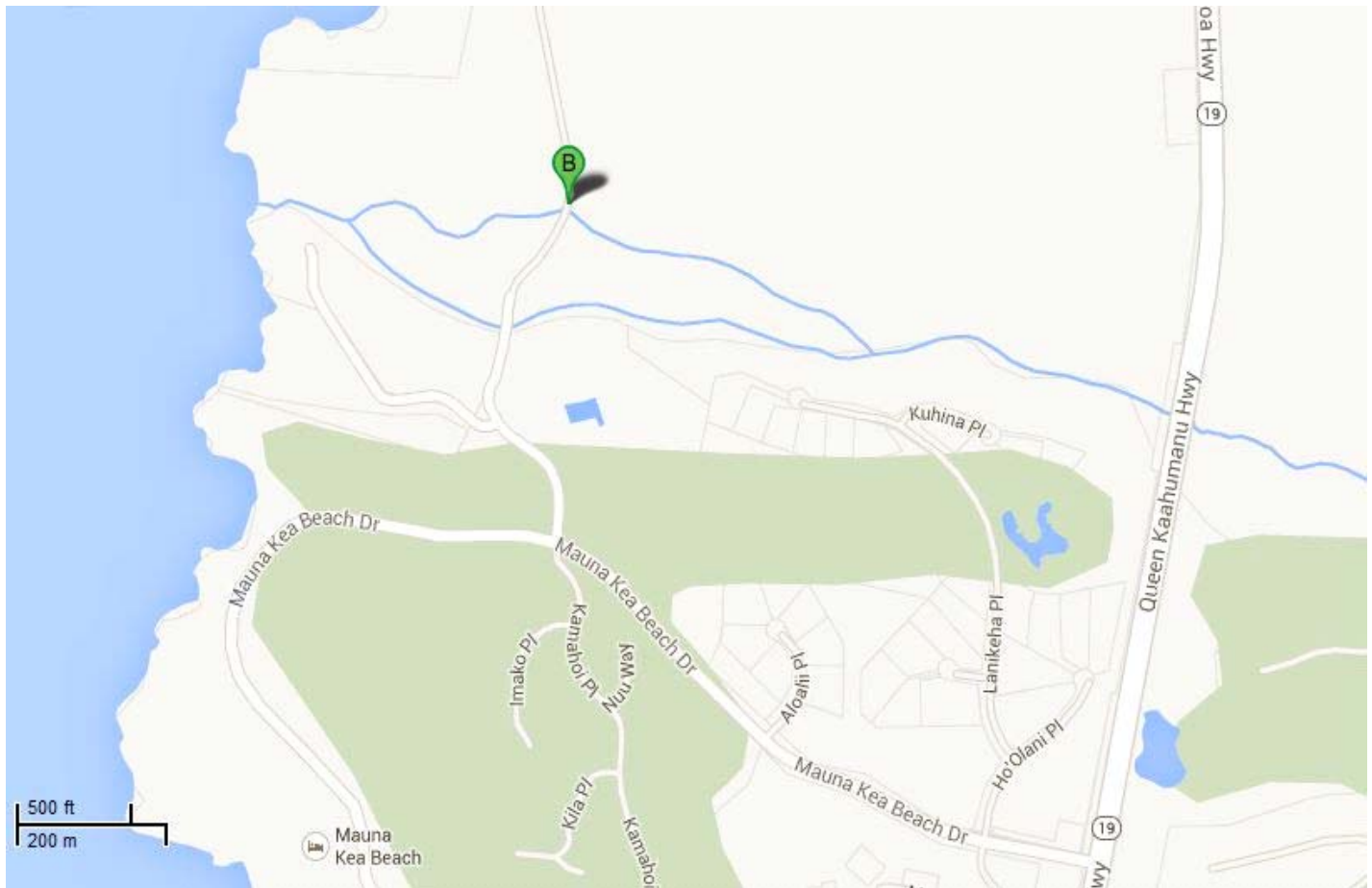
Inventory Form

(County/Private)

General Information

Bridge Number: 001620001100002	
Popular Name: Waiulaula Gulch Bridge	
Feature Crossed: Waiulaula Gulch	
Feature Carried: Old Puako Road	
Milepost: County Private: Hawaii	
Longitude: 155d-49m-16.25s Latitude: 20d-00m-49.78s	
Location: TMK: 6-2-002:006	
Historic Name: Waiulaula Gulch Bridge	
Designer/Engineer: Y. Inaba and A. W. Bryie	
Builder/Contractor:	

Location Map:



Construction Information

Bridge Type: Steel Stringer	Construction Date: 1951	Replaced? No
Altered? No Alteration Date(s):		
Alteration Type(s):		
Alteration Description(s):		

Bridge Information

Number of Spans: 1	Max Span: 37.0 ft.	Total Length: 42.0 ft.	Deck Width: 20.0 ft.
Superstructure: Steel Multi-Girder			
Substructure: Masonry Abutment			
Floor/Decking: Timber Deck			
Parapets/Railings: Wood			
Setting:			
Other Features:			

Historic Association

Eligibility Status: Eligible	Criteria: C	State/National Registered? No
Current Function: Bridge	Historic Function: Bridge	
Area of Significance: Structural type		
Narrative Description: <p>The Waiulaula Gulch Structure #2 is a steel girder structure, constructed in 1951 to carry Old Puako Road (Kawaihae-Puako Road) over Wailaula Gulch. It was planned to assist with the construction of Kawaihae-Puako Road from Kawaihae Park through the Puako Beach Subdivision. The rural setting is surrounded by the lush vegetation at the Mauna Kea Resort and Puako subdivision nearby. There has been no change to the original design or materials. The engineering of the bridge is neither complex nor typical for the era, but the workmanship of the bridge is good, and is not obscured by repairs or additions. The superstructure consists of stringers laid on the diagonal. The guardrails are painted wood and the decking is made up to 3x12 timbers. The timber decking is consistent with the original design and materials and is an important element of this bridge's rating. Nuts and washers securing the planks to the steel stringers are missing in places. The rustic setting along with the painted wood railing, unfinished wood decking and narrow width contribute greatly to the overall historic feeling of the bridge.</p> <p>This bridge is located on private land and in 2013 the County of Hawaii was in the process of turning over the ownership to the private property owner.</p>		

Significance Statement:

The Waiulaula Gulch Structure #2 is eligible under Criterion C due to its distinct structural type for the area. Steel stringers were constructed in Hawaii primarily for industrial and railroad bridges. Ornamentation, if any, was usually limited to the pattern of the railings. The use of steel was uncommon in Hawaii due to the extreme marine environment. Since very little steel is used for bridge construction in Hawaii, this bridge is eligible under Criterion C for its distinctive structural type.