

KAHOLOPO'O BRIDGE

(HANE'O STREAM BRIDGE)
1917



Preliminary Recommendation: Demolish and construct new bridge in the same location.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	3 tons (posted)	20 tons	
Sufficiency Rating	2.0	--	
Structure			
Width (between railings)	15.1 feet	16 feet (widen mauka side)	
Type	Reinforced Concrete Flat Slab	Concrete slab	
Railing			
Style	Steel rail	Solid concrete parapet	
Height	32"	32"	
Color	N/A	Untreated concrete	
Inscription	None	"Kaholopo AD 200X" center outside makai	Inscription content/location flexible
Approach Guardrail			
Rail	None	Rock Wall design	
End treatment	None	Free-standing adjacent to railing	
Abutment	CRM	Concrete faced with original rubble	
Bridge Supports	1 CRM	Retain as non-load bearing	Depends on storm flow capacity
Wing Walls	CRM	Concrete faced with original rubble	
Construction Access		Detour available	Via Hamoa
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-feet each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

KAHAWAIOKAPI'A BRIDGE

(KAPI'A STREAM BRIDGE)

1915



Preliminary Recommendation: Demolish and construct new bridge in the same location.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	8 tons (posted)	20 tons	
Sufficiency Rating	15.9	--	
Structure			
Width (between railings)	15.4 feet	16 feet (widen both sides)	
Type	Concrete tee beam and slab	Concrete girders and slab	
Railing			
Style	Solid concrete parapet	Solid concrete parapet resembling original	
Height	43" (original) 40" (from existing pavement)	43"	
Color	White paint	Untreated concrete	
Inscription	"AD 1915" on inside of upstream rail	"Kahawaiokapi'a AD 200X" center outside makai	Inscription content/location flexible
Guardrail			
Rail	None	Rock Wall design	
End treatment	None	Free-standing adjacent to railing	
Abutment	CRM	Concrete faced with original rubble	
Bridge Supports	2	Retain as non-load bearing	Depends on storm flow capacity
Wing Walls	CRM	Concrete faced with original rubble	
Construction Access		Temporary bypass bridge or ford	If feasible
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-foot each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

WAIOHONU BRIDGE

1915



Preliminary Recommendation: Demolish and construct new bridge in the same location.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	12 tons (posted)	20 tons	
Sufficiency Rating	14.0	--	
Structure			
Width (between railings)	15.4 feet	16 feet (widen both sides)	
Type	Concrete tee beam and slab	Concrete girders and slab	
Railing			
Style	Open concrete balustrade	Open concrete balustrade resembling original	
Height	30" (original)	32"	
Color	White paint	Untreated concrete	
Inscription		"Waiohonu AD 200X" end pier, inside	Inscription content/location flexible
Guardrail			
Rail	None	Rock Wall design	
End treatment	None	Free-standing adjacent to railing	
Abutment	CRM	Concrete faced with original rubble	
Bridge Supports	1 CRM, 3 concrete	Replace center support with concrete and retain 3 as non-load bearing	Depends on storm flow capacity
Wing Walls	CRM	Concrete faced with original rubble	If feasible
Construction Access		Temporary bypass bridge or ford	
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-feet each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

PAPAHAWAHAWA BRIDGE

(PAPA'AHAWAHAWA STREAM BRIDGE)

1915



Preliminary Recommendation: Demolish and construct new bridge in the same location.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	5 tons (posted)	20 tons	
Sufficiency Rating	2.0	--	
Structure			
Width (between railings)	14.4 feet	16 feet (widen makai)	
Type	Concrete tee beam and slab	Concrete girders and slab	
Railing			
Style	Solid concrete parapet	Solid concrete parapet resembling original	
Height	18" (original) 24" (from existing pavement)	32"	
Color	White paint	Untreated concrete	
Inscription	"AD 1913" on outside of rail at slab span	"Papahawahawa AD 200X" center outside makai	Inscription content/location flexible
Guardrail			
Rail	None	Rock Wall design	
End treatment	None	Free-standing adjacent to railing	
Abutment	CRM	Concrete faced with original rubble	
Bridge Supports	1 CRM	Retain as non-load bearing	Depends on storm flow capacity
Wing Walls	CRM	Concrete faced with original rubble	
Construction Access		Temporary bypass bridge or ford	
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-feet each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

'ALAALAU LA BRIDGE

1915



ALTERNATIVE A:

Preliminary Recommendation: Demolish and reconstruct new bridge in same location.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	7 tons (posted)	20 tons	
Sufficiency Rating	3.0	--	
Structure			
Width (between railings)	12.5 feet	16 feet (widen makai)	
Type	Concrete tee beam and slab	Concrete girders and slab with makai elevation resembling original	
Railing			
Style	Solid concrete parapet	Solid concrete parapet resembling original	
Height	24" (original)	32"	
Color	White paint	Untreated concrete	
Inscription		"Alaalaula AD 200X" center outside makai	Inscription content/location flexible
Approach Guardrails			
Rail	CRM	Rock Wall design	Reuse original rubble in replacement if feasible
End treatment	CRM	Free-standing adjacent to railing	
Abutment	Formed concrete	Formed concrete resembling original	
Bridge Supports	0		
Wing Walls	None	Rock veneer, as needed	
Construction Access		Temporary bypass bridge	If feasible
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-feet each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

'ALAALAU LA BRIDGE

1915



ALTERNATIVE B:

Preliminary Recommendation: If feasible, rehabilitate understructure and makai railing using composite materials. Widen bridge on mauka side.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	7 tons (posted)	15 tons	
Sufficiency Rating	3.0	--	
Structure			
Width (between railings)	12.5 feet	16 feet (widen mauka)	
Type	Concrete tee beam and slab	Rehabilitate in place. Widen mauka	
Railing			
Style	Solid concrete parapet	Solid concrete parapet resembling original (mauka) and free-standing steel railing inside existing (makai)	
Height	24" (original)	32"	
Color	White paint	Untreated concrete	
Inscription		"Alaalaula AD 200X" center outside makai	Inscription content/location flexible
Guardrail			
Rail	CRM	Rock Wall design	Reuse original rubble in replacement if feasible
End treatment	CRM	Free-standing adjacent to railing	
Abutment	Formed concrete	Rehabilitate	
Bridge Supports	0		
Wing Walls	None	Rock veneer, as needed	
Construction Access		Temporary bypass bridge	If feasible
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-feet each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

WAIKAKOI BRIDGE

1911



Preliminary Recommendation: Maintain for continued vehicular use.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	N/A		
Sufficiency Rating	34.2		
Structure			
Width (between railings)	15.0 feet		
Type	Concrete tee beam and slab		
Railing			
Style	Solid concrete parapet		
Height	25" (original) 21" (from existing pavement)		
Color	White paint		
Inscription			
Guardrail			
Rail	Steel		
End treatment			
Abutment	CRM		
Bridge Supports	1, arched concrete central pier		
Wing Walls	CRM		
Construction Access			
Traffic Control			
Traffic Lane	Single (unstriped)		
Aprons	--		
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)		

PAIHĪ BRIDGE

1911



Preliminary Recommendation: Demolish and reconstruct new bridge in same location.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	8 tons (posted)	20 tons	
Sufficiency Rating	4.0	--	
Structure			
Width (between railings)	13.8	16 feet (widen makai)	
Type	Concrete slab with concrete floor beam and girders	Concrete girders and slab with makai elevation resembling original	
Railing			
Style	Solid concrete parapet	Solid concrete parapet resembling original	
Height	30" (original)	32"	
	24" (from existing pavement)		
Color	White paint	Untreated concrete	
Inscription	"AD 1911" on end piers	"Paint AD 200X" center outside makai	Inscription content/location flexible
Guardrail			
Rail	Steel and CRM	Rock Wall design	Reuse original rubble in replacement if feasible
End treatment		Free-standing adjacent to railing	
Abutment	Formed concrete	New abutments resembling original in makai elevation	
Bridge Supports	0	0	
Wing Walls	None	Rock veneer, as needed	
Construction Access		Temporary bypass bridge	If feasible
Traffic Control			
Traffic Lane	Single (unstriped)	Single (striped 12-ft)	
Aprons	--	2-feet each side	
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)	For single lane operation.	To be determined during design.

WAILUA BRIDGE

1947



Preliminary Recommendation: Maintain for continued vehicular use.

	EXISTING	PRELIMINARY RECOMMENDATION	COMMENTS
Load Rating	N/A		
Sufficiency Rating	57.0		
Structure			
Width (between railings)	14.0		
Type	Reinforced Concrete Deck Girder		
Railing			
Style	Concrete post and beam		
Height	30" (original)		
Color	White paint		
Inscription	"Wailua 1947" on end of piers		
Guardrail			
Rail	Steel		
End treatment	None		
Abutment	Formed concrete		
Bridge Supports	0		
Wing Walls	Concrete		
Construction Access			
Traffic Control			
Traffic Lane	Single (unstriped)		
Aprons	--		
Signage	Single-lane (2), Yield (2) Load limit (2), Reflectors (4)		