ROUTINE (PERIODIC) BRIDGE INSPECTION REPORT

NUAAILUA STREAM BRIDGE
BRIDGE NO. 009003600501540
MAUI, HAWAII

For

State of Hawaii
Department of Transportation
Highways Division

Prepared by

Nagamine Okawa Engineers Inc.
1003 Bishop Street
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Honolulu, Hawaii 96813
Telephone: (808) 536-2626

FEBRUARY 2010

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NBI BRIDGE INSPECTION REPORT

Date of Inspection	2/18/10				
Bridge Number	009003600501540	Bridge Name	Nuaailua Stream Bridge		
Number of Spans	1				
Location: Island	Maui	Route No.	360	Highway	Hana Highway
Feature Intersected	Nuaailua Stream			Milepost	15.39
Bridge Material:	Superstructure Reinforced Concrete			Substructure	Reinforced Concrete

		Condition Rating	Remarks
36	TRAFFIC SAFETY FEATURES		Indicate if feature meets currently acceptable standards. 0 - No 1 - Yes N - Not Applicable
1.	Bridge Railings	0	
2.	Transitions	0	
3.	Approach Guardrail	0	RM-4 signs are damaged at the Kahului approach.
4.	Approach Guardrail Ends	0	
58	DECK		
1.	Wearing Surface	7	
2.	Decks - Structural Condition	6	2. Downstream half of soffit has efflorescence and dark water stains.
3.	Curbs	N	
4.	Median	N	
5.	Sidewalks	N	
6.	Parapet	6	6. Minor collision damage to upstream parapet.
7.	Railing	6	
8.	Paint	5	8. Paint is faded and weathered on parapet and railing.
9.	Drains	N	
10.	Lighting Standards	N	
11.	Utilities	N	
12.	Joint Leakage	N	
13.	Expansion Joints or Devices	N	
	Inspector's Condition Rating	6	
59	SUPERSTRUCTURE		
1.	Bearing Devices	N	
2.	Stringers	N	
3.	Girders, Beams, or Arches	5	3. Hairline crack and delamination on bottom of girder G5 (from upstream) near Hana abutment. Girder G8 has several small spalls with exposed rebar and its upstream face is delaminated throughout. Gunite patches on girders G1 to G3.
4.	Floor Beams and Diaphragms	N	
5.	Trusses -General	N	
	-Portals	N	
	-Bracing	N	
6.	Paint	N	
7.	Machinery (Moveable Spans)	N	
8.	Rivets and/or Bolts	N	
9.	Welds - Cracks	N	
10.	Rust	N	
11.	Timber Decay	N	
12.	Concrete Cracking and/or Spalling	5	
13.	Collision Damage	7	
14.	Deflection Under Load	7	
15.	Alignment of Members	6	
16.	Vibrations Under Load	6	
17.	Flat Slab	N	
	Inspector's Condition Rating	6	

Date of Inspection 2/18/10 Bridge name Nuaailua Stream Bridge
Bridge Number 009003600501540

60 SUBSTRUCTURE

			Condition Rating
1.	Abutment	-Wings	6
		-Backwall/Breastwall	6/6
		-Footing	6
		-Piles	N
		-Erosion	7
		-Settlement	7
2.	Piers or Bents	-Caps	N
		-Column/Wall	N
		-Footing	N
		-Piles	N
		-Scour	N
		-Settlement	N
3.	Pile bents		N
4.	Concrete Cracking and/or Spalling		6
5.	Steel Corrosion		N
6.	Timber Decay, etc.		N
7.	Debris on Seats		7
8.	Paint		N
9.	Collision Damage		8
	Inspector's Condition Rating		6

Remarks

1a. Wingwalls are covered with vegetation and moss.
1b. Honeycombing between girders G6 and G7 (from upstream) and delamination between girders G7 and G8 on backwall of Kahului abutment. Dark water stains on the downstream half of Kahului abutment.
1c. Abutments bear directly on bedrock. Unsound cement wash patch on upstream / Hana abutment.

61 CHANNEL & CHANNEL PROTECTION

		Condition Rating
1.	Channel Scour	6
2.	Embankment Erosion	6
3.	Drift	6
4.	Vegetation	5
5.	Channel Change	7
6.	Fender System	N
7.	Spur Dikes & Jetties	N
8.	Rip Rap	N
9.	Adequacy of Opening	6
	Inspector's Condition Rating	6

4. Heavy vegetation growth in upstream channel.

62 CULVERT & RETAINING WALLS

			Condition Rating
1.	Barrel	-Concrete	N
		-Steel	N
		-Timber	N
2.	Headwall		N
3.	Cutoff Wall		N
4.	Adequacy		N
5.	Debris		N
	Inspector's Condition Rating		N

Date of Inspection 2/18/10 Bridge Name Nuaailua Stream Bridge
Bridge Number 009003600501540

93 CRITICAL FEATURE INSPECTION DATE

Provide date if applicable.
If not applicable, indicate with N.

1.	Fracture Critical Details	N
2.	Underwater Inspection	N
3.	Other Special Inspection	N

[If applicable, submit Underwater Inspection Report]

OTHER FEATURES

Remarks

Y - Yes N - No

1.	Bridge Posted?	Y
2.	Signage for Posting Legible/Visible?	N
3.	Riding Surface (Roughness) Rating	3

Posted Limit = 10 Ton weight limit
Load posting sign is located near mile post 0.0 Route 360, and is used as a notice for all Hana bridges.
3 - Smooth, 2 - Average, 1 - Poor

REPAIRS AND IMPROVEMENTS

1. List all work done to this bridge since the last inspection including cost.
   a) Repaved A.C. overlay

2. Indicate proposed and/or recommended improvements including estimated cost.
   a) Install guardrail transitions, approach guardrails, and end treatments to meet current acceptable standards (Cost Est. = $50,000).
   b) Upgrade railing and parapet to meet current acceptable standards (Cost Est. = $120,000).
   c) Repair cracks, delaminations, and spalls in girders (Cost Est. = $50,000).
   d) Clear vegetation from bridge and upstream of channel (Maintenance Item).
   e) Repair Kahului approach RM-4 signs (Maintenance Item).

3. List any existing temporary conditions.

REMARKS AND RECOMMENDATIONS

1. Does this bridge require inspection by Bridge Design Section? Yes - No -
   [This should only be addressed by in-house inspectors who are not structural engineers.]

2. Remarks: Describe defects. Use sketches, diagrams and/or photographs where possible.

Inspected by: Name (printed): Erik-Jon Cabbab / Cody Aihara Title: Certified Bridge Inspectors
Signature:
Phone Number: 808.536.2626

Supervised by: Name (printed): Dwight M. Okawa, S.E. Title: V.P./Team Leader
Signature: Dwight M. Okawa
Phone Number: 808.536.2626

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

PONTIS BRIDGE INSPECTION REPORT

r10/8/07

Date of Inspection	2/18/10	Bridge Name	Nuaailua Stream Bridge
Bridge Number	009003600501540	Route No.	360
Number of Spans	1	Highway	Hana Highway
Location: Island	Maui	Feature Intersected	Nuaailua Stream

ELEM NO.	ELEMENT DESCRIPTION	ENV. (Note 1)	TOTAL QUANT.	UNIT	ST 1	ST 2	ST 3	ST 4	ST 5
013	DECK OR SLAB (Note 2)	2	735	SF.	735				
110	GIRDERS	2	248	LFT.	89	124	31		
215	ABUTMENTS	2	76	LFT.		76			
*	COLUMNS			EA.					
*	PIER WALL			LFT.					
*	PIER CAPS			LFT.					
301	JOINTS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)	2	42	LFT.		42			
331	BRIDGE RAILING	2	70	LFT.		70			
*	APPROACH SLABS			EA.					
*	BEARINGS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)			EA.					
*	CULVERT			LFT.					
*	SMART FLAG: STEEL FATIGUE			EA.					
*	SMART FLAG: PACK RUST			EA.					
*	SMART FLAG: DECK CRACKING (ON TOP OF DECK ONLY)			EA.					
359	SMART FLAG: SOFFIT OF CONC. DECK OR SLAB (THIS SMART FLAG IS MANDATORY IF DECK OR SLAB HAS AN A.C. OVERLAY).	2	1	EA.		1			
*	SMART FLAG: SETTLEMENT			EA.					
*	SMART FLAG: SCOUR			EA.					
*	SMART FLAG: TRAFFIC IMPACT (TRAFFIC IMPACT TO SUPERSTRUCTURE ONLY)			EA.					
*	SMART FLAG: SECTION LOSS			EA.					
OTHERS:									

COMMENTS:

Note 1: For each element, the inspector shall code the type of environment from the following key:

Env 1: Benign & Low Env: Little or no env. conditions affecting deterioration. Past bridge inspections show that env. has caused little or no deterioration.

Env 2: Moderate: Moderate level of environmental influence or deterioration. Past bridge inspections show that environment has caused some deterioration.

Env 3: Severe: Severe level of environmental influence or deterioration. Past bridge inspections show that environment has caused significant.

Note 2: For DECKS ONLY: All quantity in one ST only. Deck/slab is rated from top of deck/slab only. Use soffit smart flag (elem 359) to rate soffit.

Use these revised Condition States for rating Concrete Decks/Slabs	
CS1	No patched areas, no potholes, no spalls and delams, etc.
CS2	Distressed areas are less than 2% of the total deck area.
CS3	Distressed areas are more than 2% but 10% or less of the total deck area.
CS4	Distressed areas are more than 10% but 25% or less of the total deck area.
CS5	Distressed areas are 25% or more of the total deck area.

Inspector's Name (printed): Erik-Jon Cabbab / Cody Aihara — Title: Certified Bridge Inspectors

Inspector's Name (signature): Erik Cabbab Cody Aihara

Inspector's phone number: 808.536.2626

Supervisor's Name (printed): Dwight M. Okawa, S.E. — Title: V.P. / Team Leader

Supervisor's Name (signature): Dwight M. Okawa

HAWAII DEPARTMENT OF TRANSPORTATION — STRUCTURAL INVENTORY AND APPRAISAL — DATE PRINTED: 01/22/2010

Structure Number: 009003600501540

Geographic and Route Data

(1)	State	Hawaii
(2)	District	20
(3)	County	Maui
(4)	Place	99999
(6)	Feature Under	NUAAILUA STRM
(7)	Facility on	HANA HWY
(9)	Location	1.18MI W/KEANAE HMSTD RD
(16)	Latitude	20° 51' 30.00"
(17)	Longitude	156° 09' 48.00"
(98)	Border Bridge	
(99)	Border Brdige Str No	
(103)	Temportary Str	

On and Under Record Data

		Route On
(5)	Inventory Route	121003602
(10)	Min Vert Clr	99.99 M
(11)	Kilometerpoint	0024.751
(19)	Detour Length	199 km
(20)	Toll	3
(26)	Func Class	07
(28)	Lanes on/under	0200
(29)	ADT	1720
(30)	Year of ADT	2007
(47)	Total Horz Clearance	06.4 M
(100)	Defense Hwy	0
(101)	Parallel Str	N
(102)	Direction of Traffic	2
(104)	Hwy System	0
(109)	Truck Traffic	00%
(110)	Natl Truck Network	No

General Data

(21)	Maintenance Responsibility	01
(22)	Owner	01
(31)	Design Load	0
(33)	Bridge Median	0
(34)	Skew	00 deg
(35)	Str Flared	No
(37)	Hist Significance	3
(38)	Navigation Control	0
(42)	Type of Service	15
(43)	Structure Type Main	104
(44)	Structure Type Approach	000
(45)	No of Span Main	001
(46)	No of Approach Spans	0000
(27)	Year Built	1911
(106)	Year Reconstructed	1940
(107)	Deck Str Type	1
(108)	Wear Surf/Protv Sys	600
(111)	Nav Pier/Abut Protection	

Dimensional Data

(32)	Approach Rdwy Width	9.4 M
(39)	Navigation Vert Clr	000.0 M
(40)	Navigation Horz clr	0000.0 M
(48)	Max Span Length	0009.1 M
(49)	Str Length	00010.7 M
(50)	Curb/Sidewalk Width	Left 00.0 M
		Right 00.0 M
(51)	Brg Rdwy Width,curb-curb	006.4 M
(52)	Deck Width out-out	008.4 M
(53)	Min Vert Clr over	99.99 M
(54)	Min Vert Clr under	N 00.00 M
(55)	Min Lat Underclr R	N 00.0 M
(56)	Min Lat Underclr L	99.9 M
(112)	NBIS Bridge Length	Y
(116)	Navigation Min Vert Clr	M

Proposed Improvements

(75)	Type of Work	311
(76)	Improvement Length	000171 M
(94)	Bridge Improv Cost	1142
(95)	Rdwy Improv Cost	0
(96)	Total Proj Cost	1800
(97)	Year of Cost Est	1999
(114)	Future ADT	2400
(115)	Year of Future ADT	2027

Condition Rating

(58)	Deck	6 ~~5~~
(59)	Superstructure	6
(60)	Substructure	6
(61)	Channel & Channel Protect	6
(62)	Culverts	N

Appraisal Rating

(67)	Structure Evaluation	4
(68)	Deck Geometry	2
(69)	Underclrn Vert & Horz	N
(71)	Waterway Adequacy	5
(72)	Approach Rdwy Alignment	3
(36)	Traffic Safety Features	0000

Scour Data

(113)	Scour Critical Bridges	8
(202)	Foundation Type	
(220)	Foundation Embedment	0.0 M
(221)	Scour Countermeasures	

Load Rate and Post

(41)	Str Open/Post/Close	Posted
(64)	Operating Rating	39.0 ton
(66)	Inventory Rating	16.3 ton
(70)	Bridge Posting	4
(211)	Posted Limit	

(209) Str Name:

Princ Rte: 360 Milepost: 0.000

Proposed Maintenance

(212)	Repair Priority	
(213)	Proposed Maint Type	
(215)	Maintn Date Completed	/ /
(216)	Actual Maint Cost	0

Inspection Data

(90)	Inspection Date (MoYr)	0210 ~~0108~~
(91)	Inspection Frequency	24 Mo
(92)	Critical Feature Insp	(93)Date
	Frac Crit Insp : N	/
	Underwater Insp: N	/
	Other Spec Insp: N	/
(207)	Inspection Quarter	4
(208)	Inspection Number	
(210)	Date of Inspection	~~12/15/1996~~ 02/10/2010

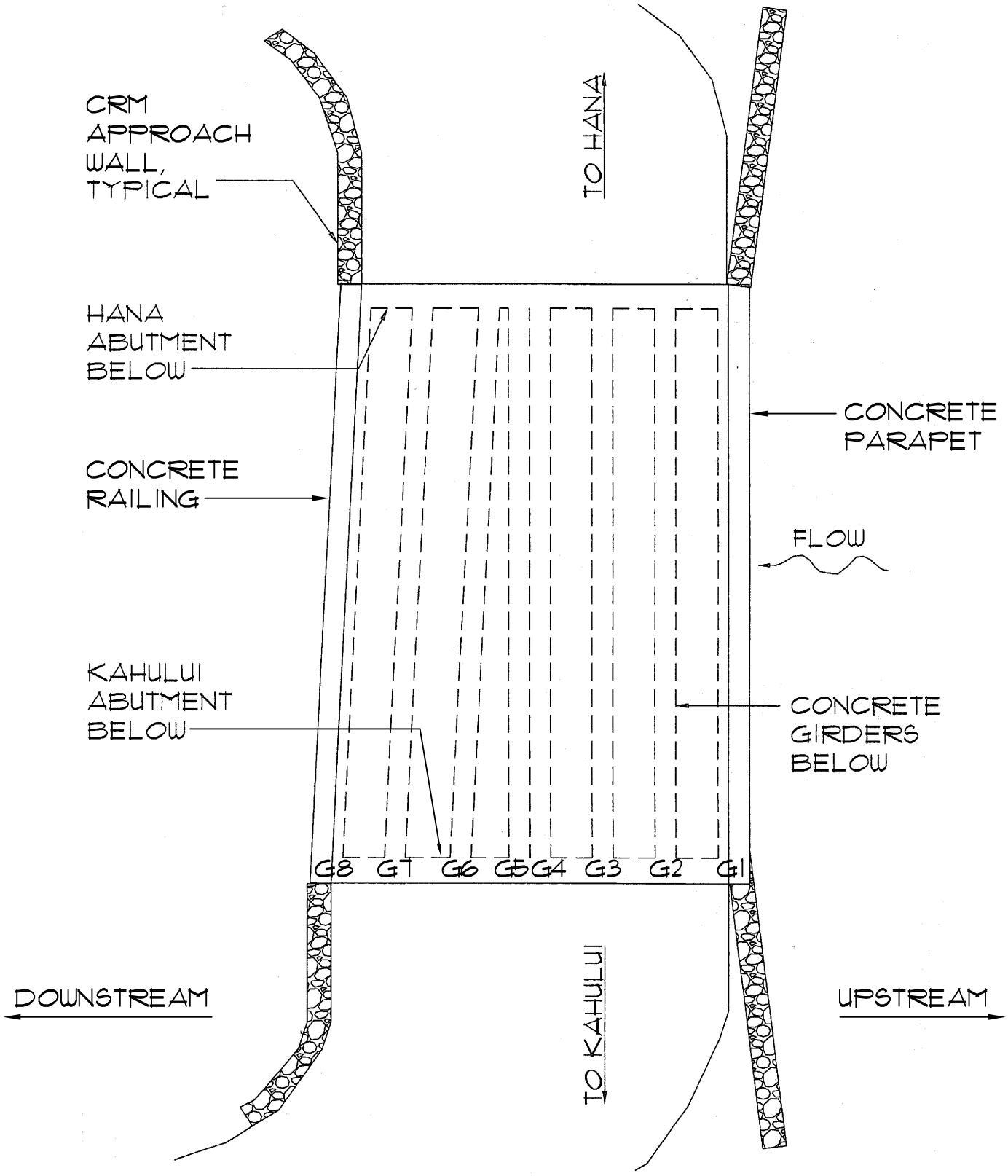
Over 200 Items

(200)	Princ Route Location	
(201)	Wear Surface Thickness	0.0 mm
(203)	District Maint Org	
(204)	Original Proj #	
(205)	Station Princ Rte	0.000
(206)	Bridge Rail Type	
(217)	Culvert Bbl Height	0.0 M
(218)	Culvert Bbl Length	0.0 M
(219)	Culvert Fill Height	0.0 M
(222)	Date of Load Rating	/ /
(223)	Tracs No	
(224)	Bridge Crew Region	
(225)	Total Deck Area (M^2)	0.0
(226)	Superstr Unit Cost	0.00
(227)	Substr Unit Cost	0.00
(228)	Next Insp Due Date (QuartYr)	498
(229)	Agency	
(230)	Principal Route Number	360
(231)	Principal Route Letter	
(232)	Principal Route Milepost	0.000

(300) Comments:

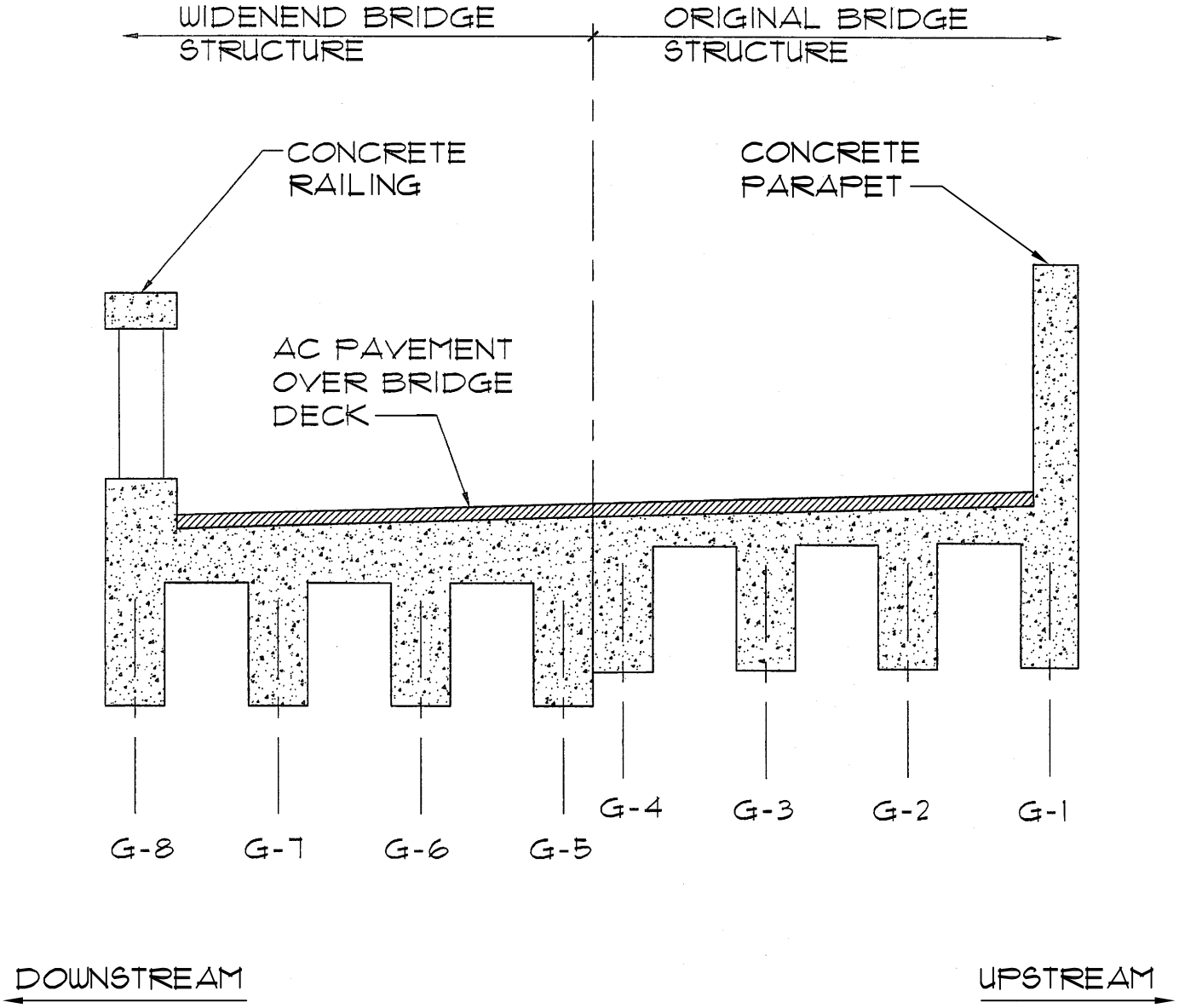
Sufficiency Rating = 037.0

Functionly Obsolete



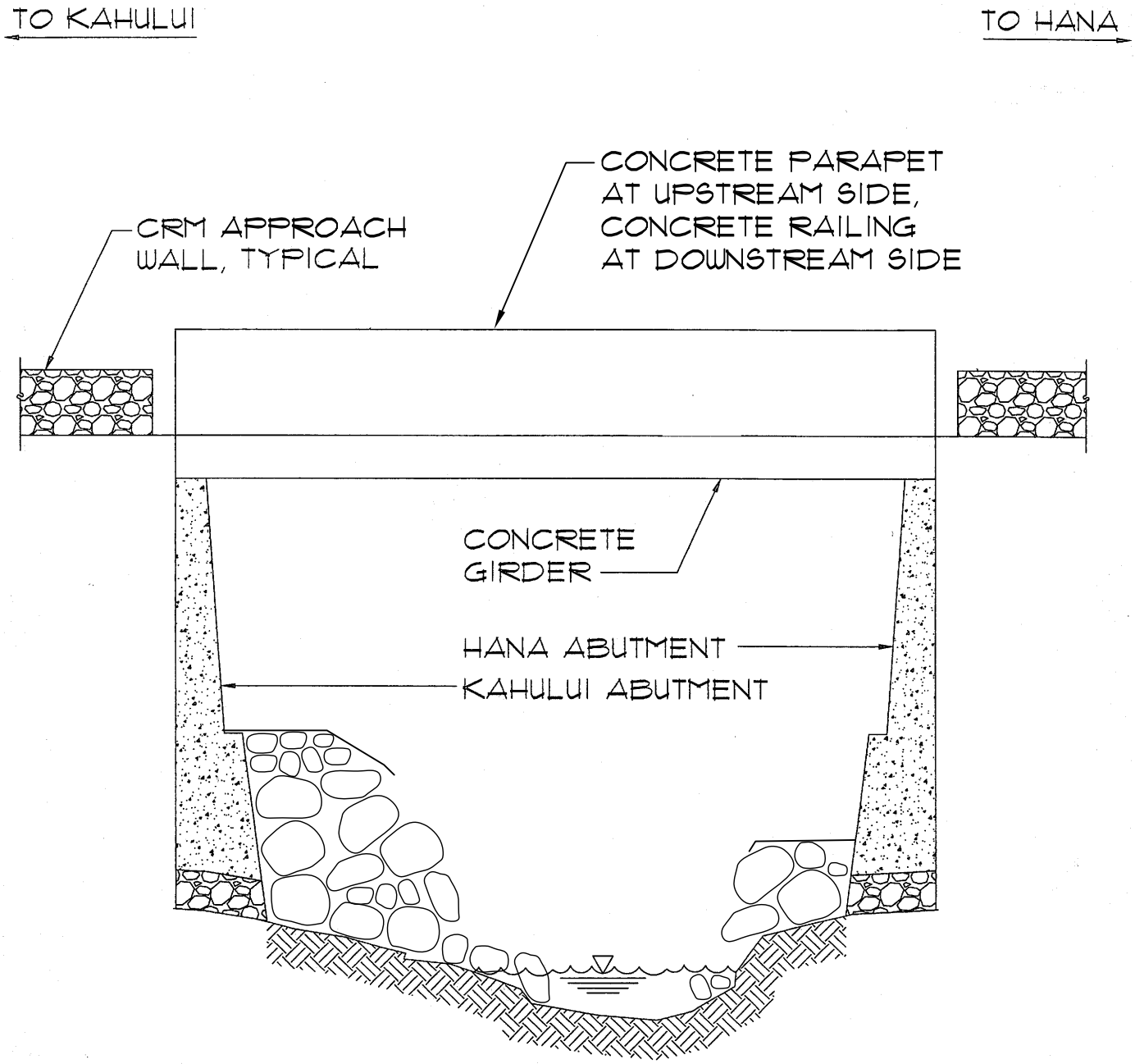
BRIDGE PLAN

NUAAILUA BRIDGE
BRIDGE NO. 009003600501540



SECTION LOOKING TOWARDS HANA

NUAAILUA BRIDGE
BRIDGE NO. 009003600501540



UPSTREAM ELEVATION

NUAAILUA BRIDGE
BRIDGE NO. 009003600501540

NUAAILUA STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501540

PHOTO NO.	DESCRIPTION
1	KAHULUI APPROACH LOOKING TOWARD HANA
2	HANA APPROACH LOOKING TOWARD KAHULUI
3	UPSTREAM / KAHULUI CRM WALL WITH COLLISION DAMAGE
4	DOWNSTREAM / KAHULUI GUARDRAIL AND CRM WALL
5	UPSTREAM / HANA CRM WALL
6	DOWNSTREAM / HANA GUARDRAIL AND CRM WALL
7	UPSTREAM PARAPET ELEVATION. NOTE: PARAPET HT = 42”
8	BACKSIDE UPSTREAM PARAPET ELEVATION
9	CLOSE UP OF SCRAPES ON UPSTREAM PARAPET NEAR HANA SIDE
10	DOWNSTREAM RAILING ELEVATION. NOTE: RAILING HT = 40”
11	BACKSIDE DOWNSTREAM RAILING ELEVATION. NOTE: DAMAGED RM-4 SIGN AT THE KAHULUI END OF RAILING
12	OVERALL A.C. PAVEMENT LOOKING TOWARD HANA
13	UPSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI
14	DOWNSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENCE AND WATER STAINS. NOTE: DECK DRAINS HAVE BEEN PAVED OVER
15	DELAMINATION AND HAIRLINE CRACK (8’ LONG) IN BOTTOM OF GIRDER G5 NEAR HANA ABUTMENT
16	OVERALL VIEW OF GIRDER G8 LOOKING DOWNSTREAM WITH SEVERAL SMALL SPALLS WITH EXPOSED REBAR AND DELAMINATION THROUGHOUT THE UPSTREAM FACE
17	CLOSE UP OF LARGE SPALL WITH EXPOSED REBAR IN BOTTOM OF GIRDER G8 NEAR KAHULUI ABUTMENT
18	KAHULUI ABUTMENT WITH DARK WATER STAINS
19	HANA ABUTMENT
20	HONEYCOMBING BETWEEN GIRDERS G6 AND G7 AND DELAMINATION BETWEEN GIRDERS G7 AND G8 ON BACKWALL OF KAHULUI ABUTMENT
21	UPSTREAM VIEW FROM TOP OF BRIDGE
22	UPSTREAM VIEW FROM UNDER BRIDGE

NUAAILUA STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501540

PHOTO NO.	DESCRIPTION
23	DOWNSTREAM VIEW FROM TOP OF BRIDGE
24	DOWNSTREAM VIEW FROM UNDER BRIDGE

PHOTO 1 KAHULUI APPROACH LOOKING TOWARD HANA

PHOTO 2 HANA APPROACH LOOKING TOWARD KAHULUI

PHOTO 3 UPSTREAM / KAHULUI CRM WALL WITH COLLISION DAMAGE

PHOTO 4 DOWNSTREAM / KAHULUI GUARDRAIL AND CRM WALL

PHOTO 5 UPSTREAM / HANA CRM WALL

PHOTO 6 DOWNSTREAM / HANA GUARDRAIL END TREATMENT AND CRM WALL. NOTE: GUARDRAIL END TREATMENT HT = 26”

PHOTO 7 UPSTREAM PARAPET ELEVATION. NOTE: PARAPET HT = 42”

PHOTO 8 BACKSIDE UPSTREAM PARAPET ELEVATION

PHOTO 9 CLOSE UP OF SCRAPES ON UPSTREAM PARAPET NEAR HANA SIDE

PHOTO 10 DOWNSTREAM RAILING ELEVATION. NOTE: RAILING HT = 40”

PHOTO 11 **BACKSIDE DOWNSTREAM RAILING ELEVATION. NOTE: DAMAGED RM-4 SIGN AT THE KAHULUI END OF RAILING**

PHOTO 12 **OVERALL A.C. PAVEMENT LOOKING TOWARD HANA**

PHOTO 13 UPSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI

PHOTO 14 DOWNSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENCE AND WATER STAINS. NOTE: DECK DRAINS HAVE BEEN PAVED OVER

PHOTO 15 **DELAMINATION AND HAIRLINE CRACK (8’ LONG) IN BOTTOM OF GIRDER G5 NEAR HANA ABUTMENT**

PHOTO 16 **OVERALL VIEW OF GIRDER G8 LOOKING DOWNSTREAM WITH SEVERAL SMALL SPALLS WITH EXPOSED REBAR AND DELAMINATION THROUGHOUT THE UPSTREAM FACE**

PHOTO 17 CLOSE UP OF LARGE SPALL WITH EXPOSED REBAR IN BOTTOM OF GIRDER G8 NEAR KAHULUI ABUTMENT

PHOTO 18 KAHULUI ABUTMENT WITH DARK WATER STAINS

PHOTO 19 HANA ABUTMENT

PHOTO 20 HONEYCOMBING BETWEEN GIRDERS G6 AND G7 AND DELAMINATION BETWEEN GIRDERS G7 AND G8 ON BACKWALL OF KAHULUI ABUTMENT

PHOTO 21 UPSTREAM VIEW FROM TOP OF BRIDGE

PHOTO 22 UPSTREAM VIEW FROM UNDER BRIDGE

PHOTO 23 DOWNSTREAM VIEW FROM TOP OF BRIDGE

PHOTO 24 DOWNSTREAM VIEW FROM UNDER BRIDGE

ROUTINE (PERIODIC) BRIDGE INSPECTION REPORT

PIINAAU STREAM BRIDGE
BRIDGE NO. 009003600501662
MAUI, HAWAII

For

State of Hawaii
Department of Transportation
Highways Division

Prepared by

Nagamine Okawa Engineers Inc.
1003 Bishop Street
Suite 2025
Honolulu, Hawaii 96813
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FEBRUARY 2010

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NBI BRIDGE INSPECTION REPORT

Date of Inspection	2/18/10				
Bridge Number	009003600501662	Bridge Name	Piinaau Stream Bridge		
Number of Spans	1				
Location: Island	Maui	Route No.	360	Highway	Hana Highway
Feature Intersected	Piinaau Stream			Milepost	16.60
Bridge Material:	Superstructure	Reinforced Concrete		Substructure	Reinforced Concrete

		Condition Rating	Remarks
36	TRAFFIC SAFETY FEATURES		Indicate if feature meets currently acceptable standards. 0 - No 1 - Yes N - Not Applicable
1.	Bridge Railings	0	1. Bridge railings do not meet acceptable height standards.
2.	Transitions	0	
3.	Approach Guardrail	0	
4.	Approach Guardrail Ends	0	
58	DECK		
1.	Wearing Surface	N	
2.	Decks - Structural Condition	6	2. Water stains on soffit and minor edge spalls along upstream side of bridge.
3.	Curbs	N	
4.	Median	N	
5.	Sidewalks	N	
6.	Parapet	6	
7.	Railing	N	
8.	Paint	4	8. This rating is for paint on the bridge railings.
9.	Drains	N	
10.	Lighting Standards	N	
11.	Utilities	6	
12.	Joint Leakage	6	12. Efflorescense and water stains on soffit and girders.
13.	Expansion Joints or Devices	N	
	Inspector's Condition Rating	6	
59	SUPERSTRUCTURE		
1.	Bearing Devices	N	
2.	Stringers	N	
3.	Girders, Beams, or Arches	5	3. Delaminations and cracks in girders.
4.	Floor Beams and Diaphragms	N	
5.	Trusses -General	N	
	-Portals	N	
	-Bracing	N	
6.	Paint	N	
7.	Machinery (Moveable Spans)	N	
8.	Rivets and/or Bolts	N	
9.	Welds - Cracks	N	
10.	Rust	N	
11.	Timber Decay	N	
12.	Concrete Cracking and/or Spalling	5	12. See Item 59.3
13.	Collision Damage	7	
14.	Deflection Under Load	7	
15.	Alignment of Members	7	
16.	Vibrations Under Load	7	
17.	Flat Slab	N	
	Inspector's Condition Rating	5	

Date of Inspection 2/18/10 Bridge name Piinaau Stream Bridge
Bridge Number 009003600501662

			Condition Rating	Remarks
60	**SUBSTRUCTURE**			
1.	Abutment	-Wings	7	
		-Backwall/Breastwall	7	
		-Footing	-	Abutment is bearing directly on bedrock.
		-Piles	N	
		-Erosion	7	
		-Settlement	7	
2.	Piers or Bents	-Caps	N	
		-Column/Wall	N	
		-Footing	N	
		-Piles	N	
		-Scour	N	
		-Settlement	N	
3.	Pile bents		N	
4.	Concrete Cracking and/or Spalling		7	
5.	Steel Corrosion		N	
6.	Timber Decay, etc.		N	
7.	Debris on Seats		N	
8.	Paint		N	
9.	Collision Damage		8	
	Inspector's Condition Rating		7	

61	**CHANNEL & CHANNEL PROTECTION**		
1.	Channel Scour	7	
2.	Embankment Erosion	7	
3.	Drift	7	
4.	Vegetation	7	
5.	Channel Change	7	
6.	Fender System	N	
7.	Spur Dikes & Jetties	N	
8.	Rip Rap	N	
9.	Adequacy of Opening	7	
	Inspector's Condition Rating	7	

62	**CULVERT & RETAINING WALLS**		
1.	Barrel -Concrete	N	
	-Steel	N	
	-Timber	N	
2.	Headwall	N	
3.	Cutoff Wall	N	
4.	Adequacy	N	
5.	Debris	N	
	Inspector's Condition Rating	N	

Date of Inspection 2/18/10 Bridge Name Piinaau Stream Bridge
Bridge Number 009003600501662

93 CRITICAL FEATURE INSPECTION DATE

Provide date if applicable.
If not applicable, indicate with N.

1. Fracture Critical Details	N	
2. Underwater Inspection	N	[If applicable, submit Underwater Inspection Report]
3. Other Special Inspection	N	

OTHER FEATURES

Remarks

Y - Yes N - No

1. Bridge Posted?	Y	Posted Limit = 10 Tons (See Comment Below)
2. Signage for Posting Legible/Visible?	N	
3. Riding Surface (Roughness) Rating	2	3 - Smooth, 2 - Average, 1 - Poor

1. 10-ton posted load limit on Hana Bridges at both ends of Hana Hwy. No posting at the bridge.

REPAIRS AND IMPROVEMENTS

1. List all work done to this bridge since the last inspection including cost.
   None.

2. Indicate proposed and/or recommended improvements including estimated cost.
   a. Close off openings in CRM walls (Est. Cost = $22,000).
   b. Repair cracks, spalls, and delaminations in girders (Est. Cost = $30,000).
   c. Upgrade bridge railings and approach guardrails (Est. Cost = $48,000).
   d. Seal joint between original and widened portion of bridge (Maintenance Item).

3. List any existing temporary conditions.
   None.

REMARKS AND RECOMMENDATIONS

1. Does this bridge require inspection by Bridge Design Section? Yes _____ No X
   [This should only be addressed by in-house inspectors who are not structural engineers.]

2. Remarks: Describe defects. Use sketches, diagrams and/or photographs where possible.

Inspected by: Name (printed): Garrett Nago & Robin Okawa Title: Certified Bridge Inspector
Signature:
Phone Number: 808.536.2626

Supervised by: Name (printed): Dwight Okawa, S.E. Title: V.P.
Signature:
Phone Number: 808.536.2626

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

PONTIS BRIDGE INSPECTION REPORT

r10/8/07

Date of Inspection	2/18/10	Bridge Name	Piinaau Stream Bridge
Bridge Number	009003600501662	Route No.	360
Number of Spans	1	Highway	Hana Highway
Location: Island	Maui	Feature Intersected	Piinaau Stream

ELEM NO.	ELEMENT DESCRIPTION	ENV. (Note 1)	TOTAL QUANT.	UNIT	ST 1	ST 2	ST 3	ST 4	ST 5
13	DECK OR SLAB (Note 2)	2	560	SF.	560				
110	GIRDERS	2	196	LFT.		196			
215	ABUTMENTS	2	48	LFT.	45	3			
*	COLUMNS			EA.					
*	PIER WALL			LFT.					
*	PIER CAPS			LFT.					
301	JOINTS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)	2	40	LFT.		40			
331	BRIDGE RAILING	2	56	LFT.	55	1			
*	APPROACH SLABS			EA.					
*	BEARINGS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)			EA.					
*	CULVERT			LFT.					
*	SMART FLAG: STEEL FATIGUE			EA.					
*	SMART FLAG: PACK RUST			EA.					
*	SMART FLAG: DECK CRACKING (ON TOP OF DECK ONLY)			EA.					
359	SMART FLAG: SOFFIT OF CONC. DECK OR SLAB (THIS SMART FLAG IS MANDATORY IF DECK OR SLAB HAS AN A.C. OVERLAY).	2	1	EA.		1			
*	SMART FLAG: SETTLEMENT			EA.					
*	SMART FLAG: SCOUR			EA.					
*	SMART FLAG: TRAFFIC IMPACT (TRAFFIC IMPACT TO SUPERSTRUCTURE ONLY)			EA.					
*	SMART FLAG: SECTION LOSS			EA.					
OTHERS									

COMMENTS:

Note 1: For each element, the inspector shall code the type of environment from the following key:

Env 1: Benign & Low Env: Little or no env. conditions affecting deterioration. Past bridge inspections show that env. has caused little or no deterioration.

Env 2: Moderate: Moderate level of environmental influence or deterioration. Past bridge inspections show that environment has caused some deterioration.

Env 3: Severe: Severe level of environmental influence or deterioration. Past bridge inspections show that environment has caused significant.

Note 2: For DECKS ONLY: All quantity in one ST only. Deck/slab is rated from top of deck/slab only. Use soffit smart flag (elem 359) to rate soffit.

Use these revised Condition States for rating Concrete Decks/Slabs	
CS1	No patched areas, no potholes, no spalls and delams, etc.
CS2	Distressed areas are less than 2% of the total deck area.
CS3	Distressed areas are more than 2% but 10% or less of the total deck area.
CS4	Distressed areas are more than 10% but 25% or less of the total deck area.
CS5	Distressed areas are 25% or more of the total deck area.

Inspector's Name (printed): Garrett Nago & Robin Okawa — Title: Cert. Bridge Inspector

Inspector's Name (signature):

Inspector's phone number: 808.536.2626

Supervisor's Name (printed): Dwight Okawa, S.E. — Title: V.P.

Supervisor's Name (signature): Dwight Okawa

HAWAII DEPARTMENT OF TRANSPORTATION — STRUCTURAL INVENTORY AND APPRAISAL — DATE PRINTED: 01/22/2010

Structure Number: 009003600501662

Geographic and Route Data

(1)	State	Hawaii
(2)	District	20
(3)	County	Maui
(4)	Place	99999
(6)	Feature Under	PIINAAU STRM
(7)	Facility on	HANA HWY
(9)	Location	0.04MI E/KEANAE HMSTD RD
(16)	Latitude	20° 51' 42.00"
(17)	Longitude	156° 09' 00.00"
(98)	Border Bridge	
(99)	Border Brdige Str No	
(103)	Temportary Str	

On and Under Record Data

		Route On
(5)	Inventory Route	121003602
(10)	Min Vert Clr	99.99 M
(11)	Kilometerpoint	0026.714
(19)	Detour Length	199 km
(20)	Toll	3
(26)	Func Class	07
(28)	Lanes on/under	0200
(29)	ADT	1515
(30)	Year of ADT	2007
(47)	Total Horz Clearance	05.9 M
(100)	Defense Hwy	0
(101)	Parallel Str	N
(102)	Direction of Traffic	2
(104)	Hwy System	0
(109)	Truck Traffic	00%
(110)	Natl Truck Network	No

General Data

(21)	Maintenance Responsibility	01
(22)	Owner	01
(31)	Design Load	0
(33)	Bridge Median	0
(34)	Skew	00 deg
(35)	Str Flared	No
(37)	Hist Significance	3
(38)	Navigation Control	0
(42)	Type of Service	15
(43)	Structure Type Main	104
(44)	Structure Type Approach	000
(45)	No of Span Main	001
(46)	No of Approach Spans	0000
(27)	Year Built	1916
(106)	Year Reconstructed	1940
(107)	Deck Str Type	1
(108)	Wear Surf/Protv Sys	000
(111)	Nav Pier/Abut Protection	

Dimensional Data

(32)	Approach Rdwy Width	6.1 M
(39)	Navigation Vert Clr	000.0 M
(40)	Navigation Horz clr	0000.0 M
(48)	Max Span Length	0008.2 M
(49)	Str Length	00008.5 M
(50)	Curb/Sidewalk Width	Left 00.0 M
		Right 00.0 M
(51)	Brg Rdwy Width,curb-curb	005.9 M
(52)	Deck Width out-out	006.2 M
(53)	Min Vert Clr over	99.99 M
(54)	Min Vert Clr under	N 00.00 M
(55)	Min Lat Underclr R	N 00.0 M
(56)	Min Lat Underclr L	99.9 M
(112)	NBIS Bridge Length	Y
(116)	Navigation Min Vert Clr	M

Proposed Improvements

(75)	Type of Work	311
(76)	Improvement Length	000149 M
(94)	Bridge Improv Cost	1000
(95)	Rdwy Improv Cost	0
(96)	Total Proj Cost	1575
(97)	Year of Cost Est	1999
(114)	Future ADT	2150
(115)	Year of Future ADT	2027

Condition Rating

(58)	Deck	6
(59)	Superstructure	5 ~~6~~
(60)	Substructure	7 ~~6~~
(61)	Channel & Channel Protect	7
(62)	Culverts	N

Appraisal Rating

(67)	Structure Evaluation	6
(68)	Deck Geometry	2
(69)	Underclrn Vert & Horz	N
(71)	Waterway Adequacy	7
(72)	Approach Rdwy Alignment	3
(36)	Traffic Safety Features	0000

Scour Data

(113)	Scour Critical Bridges	8
(202)	Foundation Type	
(220)	Foundation Embedment	0.0 M
(221)	Scour Countermeasures	

Load Rate and Post

(41)	Str Open/Post/Close	Posted
(64)	Operating Rating	30.8 ton
(66)	Inventory Rating	22.7 ton
(70)	Bridge Posting	4
(211)	Posted Limit	

(209) Str Name:

Princ Rte: 360 Milepost: 0.000

Proposed Maintenance

(212)	Repair Priority	
(213)	Proposed Maint Type	
(215)	Maintn Date Completed	/ /
(216)	Actual Maint Cost	0

Inspection Data

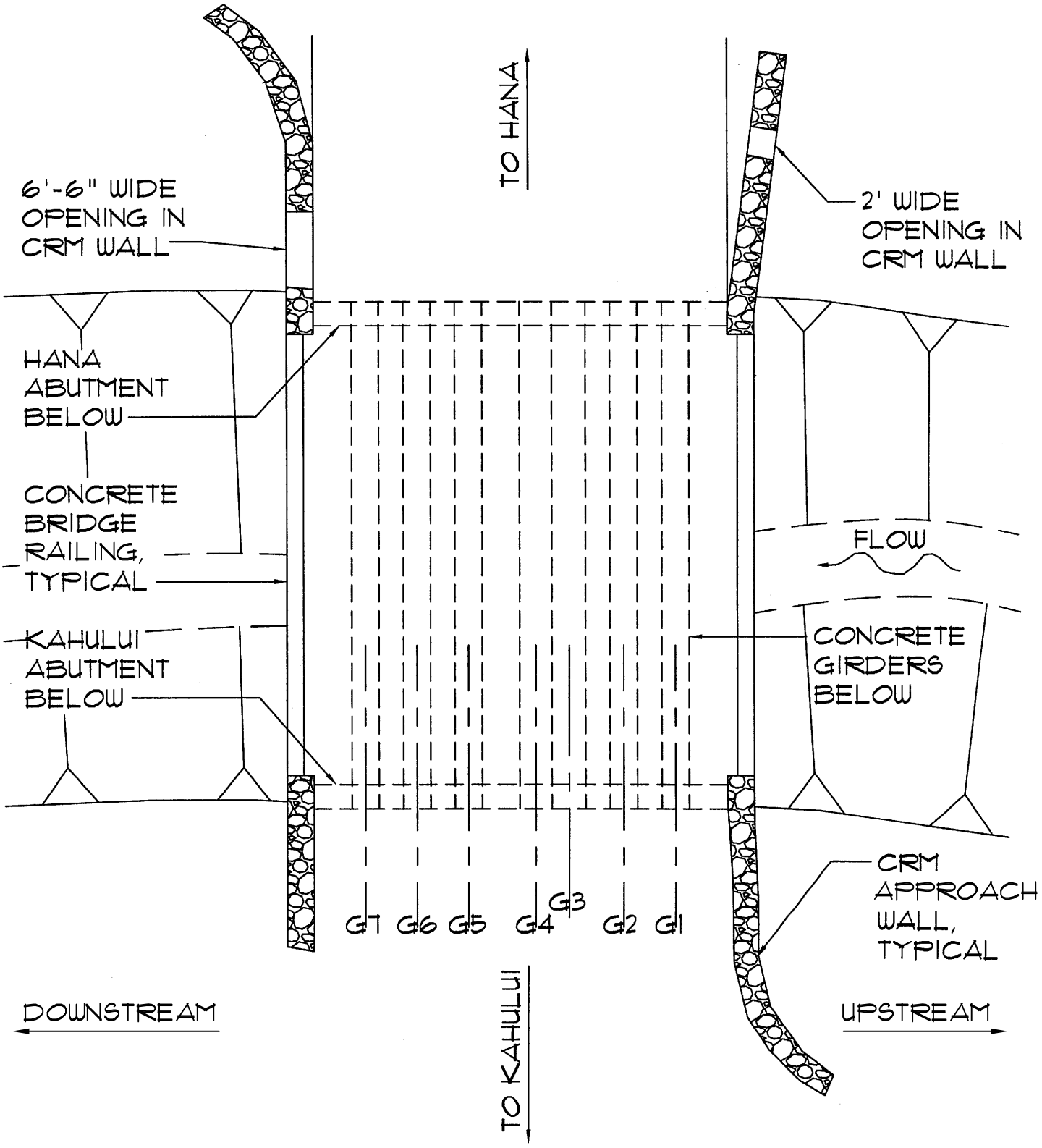
(90)	Inspection Date (MoYr)	0210 ~~0108~~
(91)	Inspection Frequency	24 Mo
(92)	Critical Feature Insp	(93)Date
	Frac Crit Insp : N	/
	Underwater Insp: N	/
	Other Spec Insp: N	/
(207)	Inspection Quarter	4
(208)	Inspection Number	
(210)	Date of Inspection	~~12/15/1996~~ 02/18/2010

Over 200 Items

(200)	Princ Route Location	
(201)	Wear Surface Thickness	0.0 mm
(203)	District Maint Org	
(204)	Original Proj #	
(205)	Station Princ Rte	0.000
(206)	Bridge Rail Type	
(217)	Culvert Bbl Height	0.0 M
(218)	Culvert Bbl Length	0.0 M
(219)	Culvert Fill Height	0.0 M
(222)	Date of Load Rating	/ /
(223)	Tracs No	
(224)	Bridge Crew Region	
(225)	Total Deck Area (M^2)	0.0
(226)	Superstr Unit Cost	0.00
(227)	Substr Unit Cost	0.00
(228)	Next Insp Due Date (QuartYr)	498
(229)	Agency	
(230)	Principal Route Number	360
(231)	Principal Route Letter	
(232)	Principal Route Milepost	0.000
(300)	Comments:	

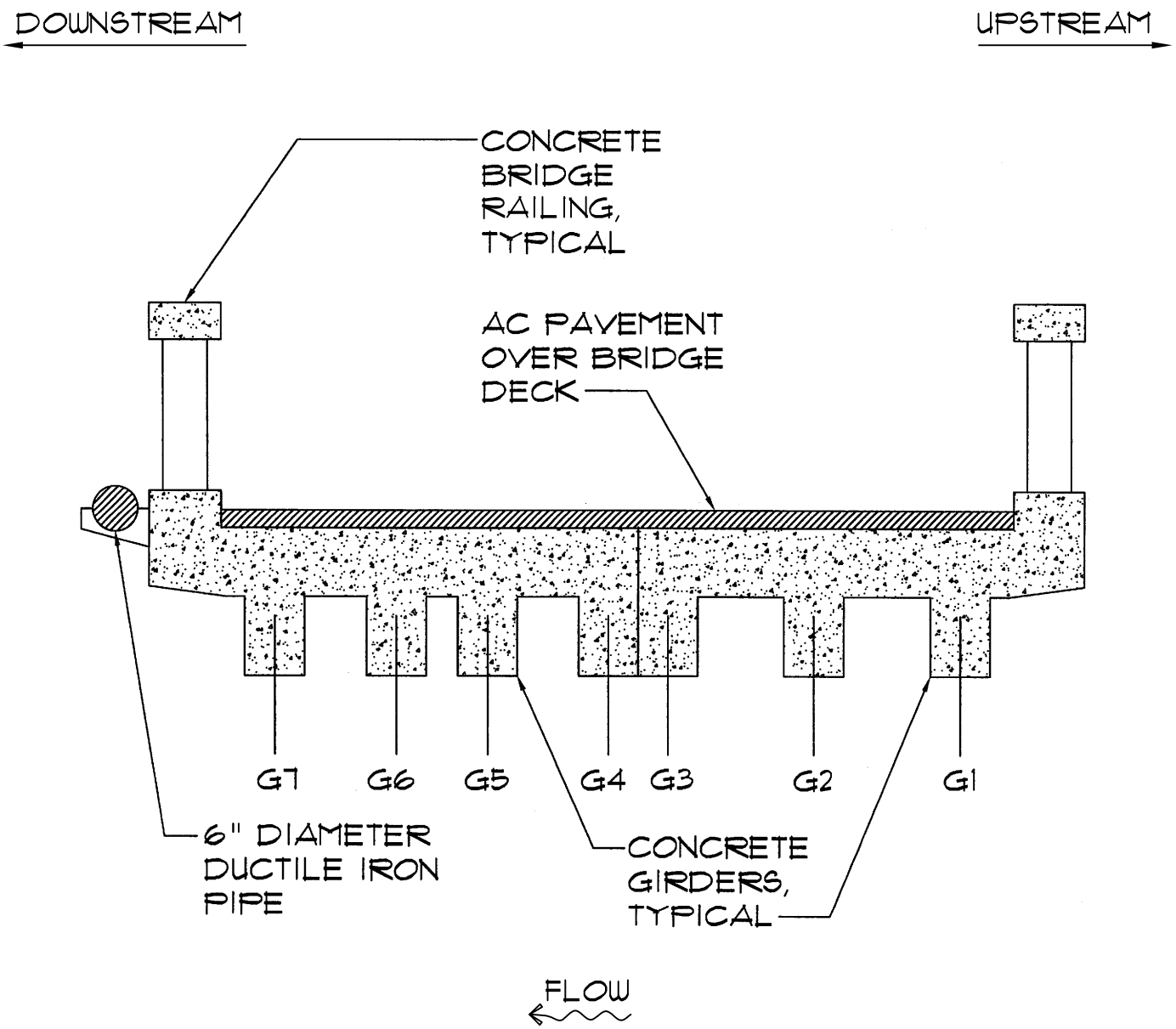
Sufficiency Rating = 044.2

Functionly Obsolete



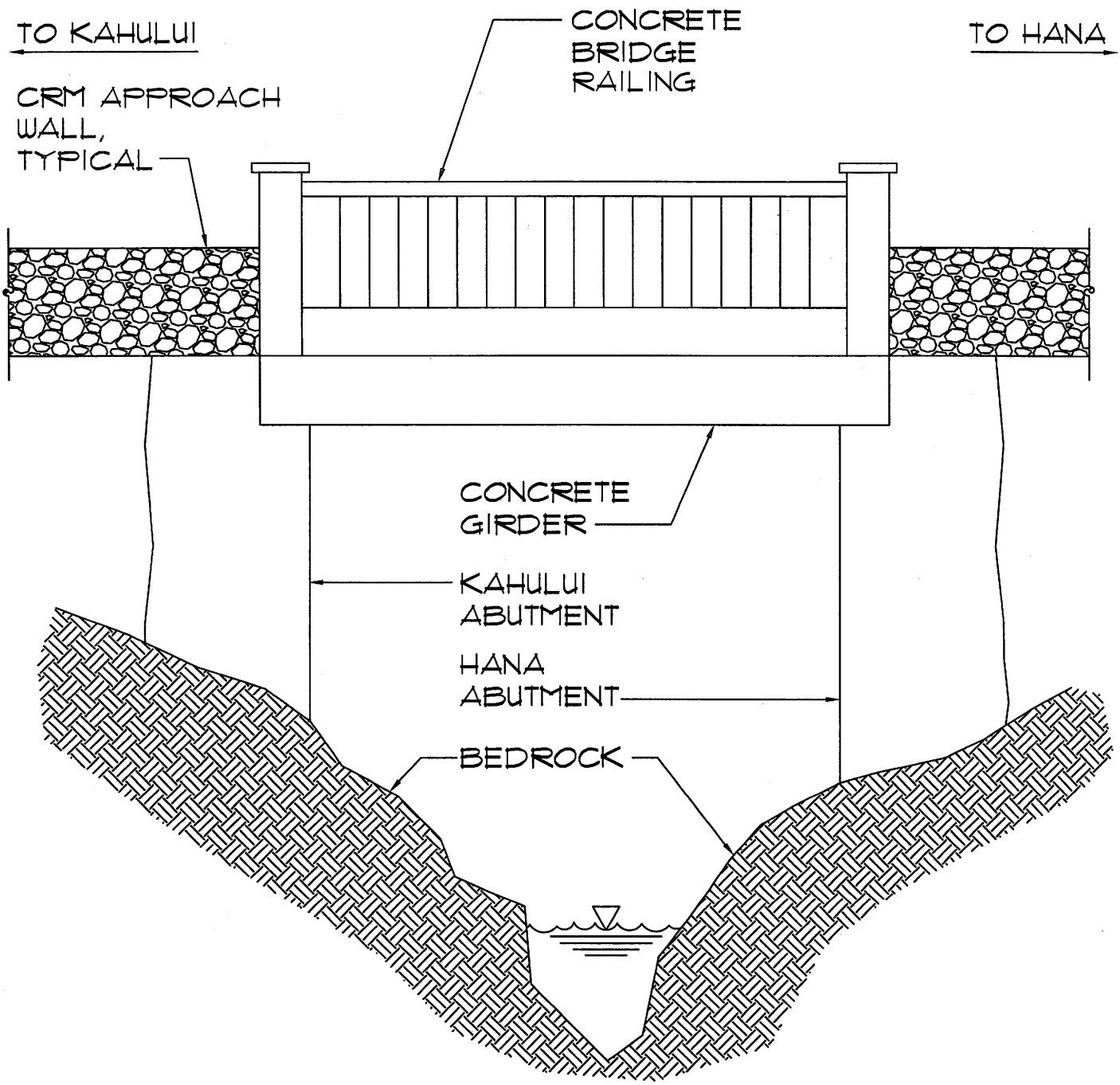
BRIDGE PLAN

PIINAAU STREAM BRIDGE
BRIDGE NO. 009003600501662



SECTION LOOKING TOWARD HANA

PIINAAU STREAM BRIDGE
BRIDGE NO. 009003600501662



UPSTREAM ELEVATION

PIINAAU STREAM BRIDGE
BRIDGE NO. 009003600501662

PIINAAU STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501662

PHOTO NO.	DESCRIPTION
1	APPROACH TO BRIDGE LOOKING TOWARD KAHULUI
2	ARRPOACH TO BRIDGE LOOKING TOWARD HANA
3	UPSTREAM HANA CRM WALL
4	UPSTREAM BRIDGE RAILING LOOKING TOWARD KAHULUI
5	DAMAGE TO END OF DOWNSTREAM KAHULUI CRM WALL
6	DOWNSTREAM BRIDGE RAILING LOOKING TOWARD KAHULUI
7	OPENING IN DOWNSTREAM HANA CRM WALL
8	BACK SIDE VIEW OF DOWNSTREAM END WITH UTILITIES
9	OVERALL VIEW OF AC PAVEMENT
10	UPSTREAM BRIDGE ELEVATION
11	DOWNSTREAM BRIDGE ELEVATION
12	OVERALL SOFFIT LOOKING DOWNSTREAM
13	UPSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENSE AND MOSS. DELAMINATION IN GIRDER G4 NEAR HANA ABUTMENT AND VERTICAL CRACKS.
14	JOINT LEAKAGE IN SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENSE AND MOSS
15	DOWNSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENSE AND MOSS. DELAMINATION IN GIRDER G6 DOWNSTREAM FACE NEAR KAHULUI ABUTMENT.
16	HONEYCOMBING IN CANTELEIVERED SOFFIT UPSTREAM END
17	UPSTREAM KAHULUI CRM WINGWALL
18	KAHULUI ABUTMENT
19	SOLID ROCK STREAM CHANNEL FRONTING KAHULUI ABUTMENT
20	DOWNSTREAM HANA CRM WINGWALL ABD UTILITY PIPE
21	HANA ABUTMENT
22	SOLID ROCK STREAM CHANNEL FRONTING HANA ABUTMENT
23	UPSTREAM VIEW OF STREAM CHANNEL
24	DOWNSTREAM VIEW OF STREAM CHANNEL

PIINAAU STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501662

PHOTO NO.	DESCRIPTION
25	EROSION 2'x3' AT BASE OF KAHULUI CRM WALL

PHOTO 1 APPROACH TO BRIDGE LOOKING TOWARD KAHULUI

PHOTO 2 ARRPOACH TO BRIDGE LOOKING TOWARD HANA

PHOTO 3 UPSTREAM HANA CRM WALL

PHOTO 4 UPSTREAM BRIDGE RAILING LOOKING TOWARD KAHULUI

PHOTO 5 DAMAGE TO END OF DOWNSTREAM KAHULUI CRM WALL

PHOTO 6 DOWNSTREAM BRIDGE RAILING LOOKING TOWARD KAHULUI

PHOTO 7 OPENING IN DOWNSTREAM HANA CRM WALL

PHOTO 8 BACK SIDE VIEW OF DOWNSTREAM END WITH UTILITIES

PHOTO 9 OVERALL VIEW OF AC PAVEMENT

PHOTO 10 UPSTREAM BRIDGE ELEVATION

PHOTO 11 DOWNSTREAM BRIDGE ELEVATION

PHOTO 12 OVERALL SOFFIT LOOKING DOWNSTREAM

PHOTO 13 UPSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENSE AND MOSS. DELAMINATION IN GIRDER G4 NEAR HANA ABUTMENT AND VERTICAL CRACKS.

PHOTO 14 JOINT LEAKAGE IN SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENSE AND MOSS

PHOTO 15 DOWNSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI WITH EFFLORESCENSE AND MOSS. DELAMINATION IN GIRDER G6 DOWNSTREAM FACE NEAR KAHULUI ABUTMENT.

PHOTO 16 HONEYCOMBING IN CANTELEIVERED SOFFIT UPSTREAM END

PHOTO 17 UPSTREAM KAHULUI CRM WINGWALL

PHOTO 18 KAHULUI ABUTMENT

PHOTO 19 SOLID ROCK STREAM CHANNEL FRONTING KAHULUI ABUTMENT

PHOTO 20 DOWNSTREAM HANA CRM WINGWALL ABD UTILITY PIPE

PHOTO 21 HANA ABUTMENT

PHOTO 22 SOLID ROCK STREAM CHANNEL FRONTING HANA ABUTMENT

PHOTO 23 UPSTREAM VIEW OF STREAM CHANNEL

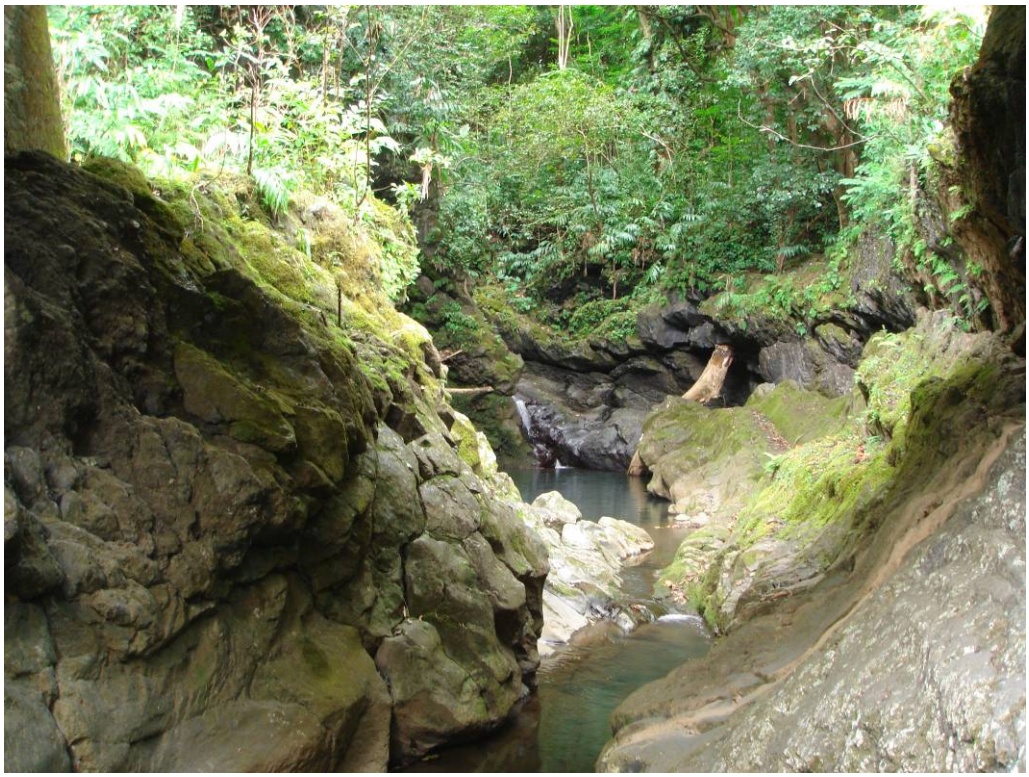


PHOTO 24 DOWNSTREAM VIEW OF STREAM CHANNEL

PHOTO 25 EROSION 2'x3' AT BASE OF KAHULUI CRM WALL

ROUTINE (PERIODIC) BRIDGE INSPECTION REPORT

PALAUHULU STREAM BRIDGE
BRIDGE NO. 009003600501679
MAUI, HAWAII

For

State of Hawaii
Department of Transportation
Highways Division

Prepared by

Nagamine Okawa Engineers Inc.
1003 Bishop Street
Suite 2025
Honolulu, Hawaii 96813
Telephone: (808) 536-2626

FEBRUARY 2010

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NBI BRIDGE INSPECTION REPORT

Date of Inspection	2/18/10				
Bridge Number	009003600501679	Bridge Name	Palauhulu Stream Bridge		
Number of Spans	1				
Location: Island	Maui	Route No.	360	Highway	Hana Highway
Feature Intersected	Palauhulu Stream			Milepost	16.77
Bridge Material:	Superstructure Reinforced Concrete			Substructure	Reinforced Concrete

		Condition Rating	Remarks
36	TRAFFIC SAFETY FEATURES		Indicate if feature meets currently acceptable standards. 0 - No 1 - Yes N - Not Applicable
1.	Bridge Railings	0	Bridge railings and guardrails do not meet current standards.
2.	Transitions	0	
3.	Approach Guardrail	0	
4.	Approach Guardrail Ends	0	
58	DECK		
1.	Wearing Surface	7	
2.	Decks - Structural Condition	6	
3.	Curbs	N	
4.	Median	N	
5.	Sidewalks	N	
6.	Parapet	N	
7.	Railing	7	
8.	Paint	N	
9.	Drains	0	9. Deck drains have been paved over.
10.	Lighting Standards	N	
11.	Utilities	6	11. Surface corrosion on utility hangers.
12.	Joint Leakage	6	12. Water stains on both Hana and Kahului abutments.
13.	Expansion Joints or Devices	N	
	Inspector's Condition Rating	6	
59	SUPERSTRUCTURE		
1.	Bearing Devices	N	
2.	Stringers	N	
3.	Girders, Beams, or Arches	5	3. Spalls and cracks in girder G1.
4.	Floor Beams and Diaphragms	N	
5.	Trusses -General	N	
	-Portals	N	
	-Bracing	N	
6.	Paint	N	
7.	Machinery (Moveable Spans)	N	
8.	Rivets and/or Bolts	N	
9.	Welds - Cracks	N	
10.	Rust	N	
11.	Timber Decay	N	
12.	Concrete Cracking and/or Spalling	5	12. See Item 59.3.
13.	Collision Damage	7	
14.	Deflection Under Load	7	
15.	Alignment of Members	7	
16.	Vibrations Under Load	7	
17.	Flat Slab	N	
	Inspector's Condition Rating	5	

Date of Inspection 2/18/10 Bridge name Palauhulu Stream Bridge
Bridge Number 009003600501679

		Condition Rating	Remarks
60	**SUBSTRUCTURE**		
1.	Abutment -Wings	6	
	-Backwall/Breastwall	6	1b. Minor hairline cracks in both Hana and Kahului abutments.
	-Footing	N	1c. Abutment bears directly on bedrock.
	-Piles	N	
	-Erosion	7	
	-Settlement	7	
2.	Piers or Bents -Caps	N	
	-Column/Wall	N	
	-Footing	N	
	-Piles	N	
	-Scour	N	
	-Settlement	N	
3.	Pile bents	N	
4.	Concrete Cracking and/or Spalling	6	4. See Item 60.1.
5.	Steel Corrosion	N	
6.	Timber Decay, etc.	N	
7.	Debris on Seats	7	
8.	Paint	N	
9.	Collision Damage	7	
	Inspector's Condition Rating	6	

61	**CHANNEL & CHANNEL PROTECTION**		
1.	Channel Scour	7	
2.	Embankment Erosion	7	
3.	Drift	7	
4.	Vegetation	6	4. Vegetation along embankments upstream and downstream of bridge.
5.	Channel Change	7	
6.	Fender System	N	
7.	Spur Dikes & Jetties	N	
8.	Rip Rap	N	
9.	Adequacy of Opening	7	
	Inspector's Condition Rating	7	

62	**CULVERT & RETAINING WALLS**		
1.	Barrel -Concrete	N	
	-Steel	N	
	-Timber	N	
2.	Headwall	N	
3.	Cutoff Wall	N	
4.	Adequacy	N	
5.	Debris	N	
	Inspector's Condition Rating	N	

Date of Inspection 2/18/10 Bridge Name Palauhulu Stream Bridge
Bridge Number 009003600501679

93 CRITICAL FEATURE INSPECTION DATE		Provide date if applicable. If not applicable, indicate with N.
1. Fracture Critical Details	N	
2. Underwater Inspection	N	[If applicable, submit Underwater Inspection Report]
3. Other Special Inspection	N	

OTHER FEATURES		Y - Yes N - No Remarks
1. Bridge Posted?	Y	Posted Limit = 10 Ton weight limit
2. Signage for Posting Legible/Visible?	N	Load posting sign is located near mile post 0.0 Route 360, and is used as a notice for all Hana bridges.
3. Riding Surface (Roughness) Rating	2	3 - Smooth, 2 - Average, 1 - Poor

REPAIRS AND IMPROVEMENTS

1. List all work done to this bridge since the last inspection including cost.

2. Indicate proposed and/or recommended improvements including estimated cost.
   a) Replace missing RM-4 markers at both Hana and Kahului ends of bridge(Maintenance Item).
   b) Repair spall and delamination in deck soffit (Est. Cost = $19,000).
   c) Install guardrail transitions, approach guardrails, and end treatments to meet current acceptable standards (Cost Est. = $50,000)
   d) Upgrade railings to meet current acceptable standards (Cost Est. = $118,000).

3. List any existing temporary conditions.

REMARKS AND RECOMMENDATIONS

1. Does this bridge require inspection by Bridge Design Section? Yes - No -
   [This should only be addressed by in-house inspectors who are not structural engineers.]

2. Remarks: Describe defects. Use sketches, diagrams and/or photographs where possible.

Inspected by: Name (printed): Erik-Jon Cabbab / Cody Aihara Title: Certified Bridge Inspector
Signature:
Phone Number: 808.536.2626

Supervised by: Name (printed): Dwight M. Okawa, S.E. Title: V.P./Team Leader
Signature:
Phone Number: 808.536.2626

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

PONTIS BRIDGE INSPECTION REPORT

r10/8/07

Date of Inspection	2/18/10	Bridge Name	Palauhulu Stream Bridge
Bridge Number	009003600501679	Route No.	360
Number of Spans	1	Highway	Hana Highway
Location: Island	Maui	Feature Intersected	Palauhulu Stream

ELEM NO.	ELEMENT DESCRIPTION	ENV. (Note 1)	TOTAL QUANT.	UNIT	ST 1	ST 2	ST 3	ST 4	ST 5
13	DECK OR SLAB (Note 2)	2	620	SF.	620				
110	GIRDERS	2	124	LFT.	106	18			
215	ABUTMENTS	2	50	LFT.	50				
*	COLUMNS			EA.					
*	PIER WALL			LFT.					
*	PIER CAPS			LFT.					
301	JOINTS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)	2	40	LFT.		40			
331	BRIDGE RAILING	2	69	LFT.	69				
*	APPROACH SLABS			EA.					
*	BEARINGS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)			EA.					
*	CULVERT			LFT.					
*	SMART FLAG: STEEL FATIGUE			EA.					
*	SMART FLAG: PACK RUST			EA.					
*	SMART FLAG: DECK CRACKING (ON TOP OF DECK ONLY)			EA.					
359	SMART FLAG: SOFFIT OF CONC. DECK OR SLAB (THIS SMART FLAG IS MANDATORY IF DECK OR SLAB HAS AN A.C. OVERLAY)	2	1	EA.	1				
*	SMART FLAG: SETTLEMENT			EA.					
*	SMART FLAG: SCOUR			EA.					
*	SMART FLAG: TRAFFIC IMPACT (TRAFFIC IMPACT TO SUPERSTRUCTURE ONLY)			EA.					
*	SMART FLAG: SECTION LOSS			EA.					
OTHERS:									

COMMENTS:

Note 1: For each element, the inspector shall code the type of environment from the following key:

Env 1: Benign & Low Env: Little or no env. conditions affecting deterioration. Past bridge inspections show that env. has caused little or no deterioration.

Env 2: Moderate: Moderate level of environmental influence or deterioration. Past bridge inspections show that environment has caused some deterioration.

Env 3: Severe: Severe level of environmental influence or deterioration. Past bridge inspections show that environment has caused significant.

Note 2: For DECKS ONLY: All quantity in one ST only. Deck/slab is rated from top of deck/slab only. Use soffit smart flag (elem 359) to rate soffit.

Use these revised Condition States for rating Concrete Decks/Slabs	
CS1	No patched areas, no potholes, no spalls and delams, etc.
CS2	Distressed areas are less than 2% of the total deck area.
CS3	Distressed areas are more than 2% but 10% or less of the total deck area.
CS4	Distressed areas are more than 10% but 25% or less of the total deck area.
CS5	Distressed areas are 25% or more of the total deck area.

Inspector's Name (printed): Erik-Jon Cabbab / Cody Aihara — Title: Certified Bridge Inspector

Inspector's Name (signature): Erik Cabbab Cody Aihara

Inspector's phone number: 808.536.2626

Supervisor's Name (printed): Dwight M. Okawa, S.E. — Title: V.P. / Team Leader

Supervisor's Name (signature): Dwight M. Okawa

HAWAII DEPARTMENT OF TRANSPORTATION — STRUCTURAL INVENTORY AND APPRAISAL — DATE PRINTED: 01/22/2010

Structure Number: 009003600501679

(209) Str Name:

Princ Rte: 360 Milepost: 0.000

Geographic and Route Data

(1)	State	Hawaii
(2)	District	20
(3)	County	Maui
(4)	Place	99999
(6)	Feature Under	PALAUHULU STRM
(7)	Facility on	HANA HWY
(9)	Location	0.21MI E/KEANAE HMSTD RD
(16)	Latitude	20° 51' 36.00"
(17)	Longitude	156° 08' 54.00"
(98)	Border Bridge	
(99)	Border Brdige Str No	
(103)	Temportary Str	

On and Under Record Data

		Route On
(5)	Inventory Route	121003602
(10)	Min Vert Clr	99.99 M
(11)	Kilometerpoint	0026.988
(19)	Detour Length	199 km
(20)	Toll	3
(26)	Func Class	07
(28)	Lanes on/under	0200
(29)	ADT	1515
(30)	Year of ADT	2007
(47)	Total Horz Clearance	06.2 M
(100)	Defense Hwy	0
(101)	Parallel Str	N
(102)	Direction of Traffic	2
(104)	Hwy System	0
(109)	Truck Traffic	00%
(110)	Natl Truck Network	No

General Data

(21)	Maintenance Responsibility	01
(22)	Owner	01
(31)	Design Load	0
(33)	Bridge Median	0
(34)	Skew	00 deg
(35)	Str Flared	No
(37)	Hist Significance	3
(38)	Navigation Control	0
(42)	Type of Service	15
(43)	Structure Type Main	104
(44)	Structure Type Approach	000
(45)	No of Span Main	001
(46)	No of Approach Spans	0000
(27)	Year Built	1916
(106)	Year Reconstructed	0000
(107)	Deck Str Type	1
(108)	Wear Surf/Protv Sys	600
(111)	Nav Pier/Abut Protection	

Dimensional Data

(32)	Approach Rdwy Width	7.6 M
(39)	Navigation Vert Clr	000.0 M
(40)	Navigation Horz clr	0000.0 M
(48)	Max Span Length	0009.1 M
(49)	Str Length	00009.4 M
(50)	Curb/Sidewalk Width	Left 00.0 M
		Right 00.0 M
(51)	Brg Rdwy Width,curb-curb	006.2 M
(52)	Deck Width out-out	006.6 M
(53)	Min Vert Clr over	99.99 M
(54)	Min Vert Clr under	N 00.00 M
(55)	Min Lat Underclr R	N 00.0 M
(56)	Min Lat Underclr L	99.9 M
(112)	NBIS Bridge Length	Y
(116)	Navigation Min Vert Clr	M

Proposed Improvements

(75)	Type of Work	311
(76)	Improvement Length	000158 M
(94)	Bridge Improv Cost	1061
(95)	Rdwy Improv Cost	0
(96)	Total Proj Cost	1672
(97)	Year of Cost Est	1999
(114)	Future ADT	2150
(115)	Year of Future ADT	2027

Condition Rating

(58)	Deck	6
(59)	Superstructure	~~5~~ ~~6~~
(60)	Substructure	6
(61)	Channel & Channel Protect	7 ~~6~~
(62)	Culverts	N

Appraisal Rating

(67)	Structure Evaluation	5
(68)	Deck Geometry	2
(69)	Underclrn Vert & Horz	N
(71)	Waterway Adequacy	6
(72)	Approach Rdwy Alignment	3
(36)	Traffic Safety Features	0000

Scour Data

(113)	Scour Critical Bridges	8
(202)	Foundation Type	
(220)	Foundation Embedment	0.0 M
(221)	Scour Countermeasures	

Load Rate and Post

(41)	Str Open/Post/Close	Posted
(64)	Operating Rating	29.0 ton
(66)	Inventory Rating	20.9 ton
(70)	Bridge Posting	4
(211)	Posted Limit	

Proposed Maintenance

(212)	Repair Priority	
(213)	Proposed Maint Type	
(215)	Maintn Date Completed	/ /
(216)	Actual Maint Cost	0

Inspection Data

(90)	Inspection Date (MoYr)	0210 ~~0108~~
(91)	Inspection Frequency	24 Mo
(92)	Critical Feature Insp	(93)Date
	Frac Crit Insp : N	/
	Underwater Insp: N	/
	Other Spec Insp: N	/
(207)	Inspection Quarter	4
(208)	Inspection Number	
(210)	Date of Inspection	~~12/15/1996~~ 02/18/2010

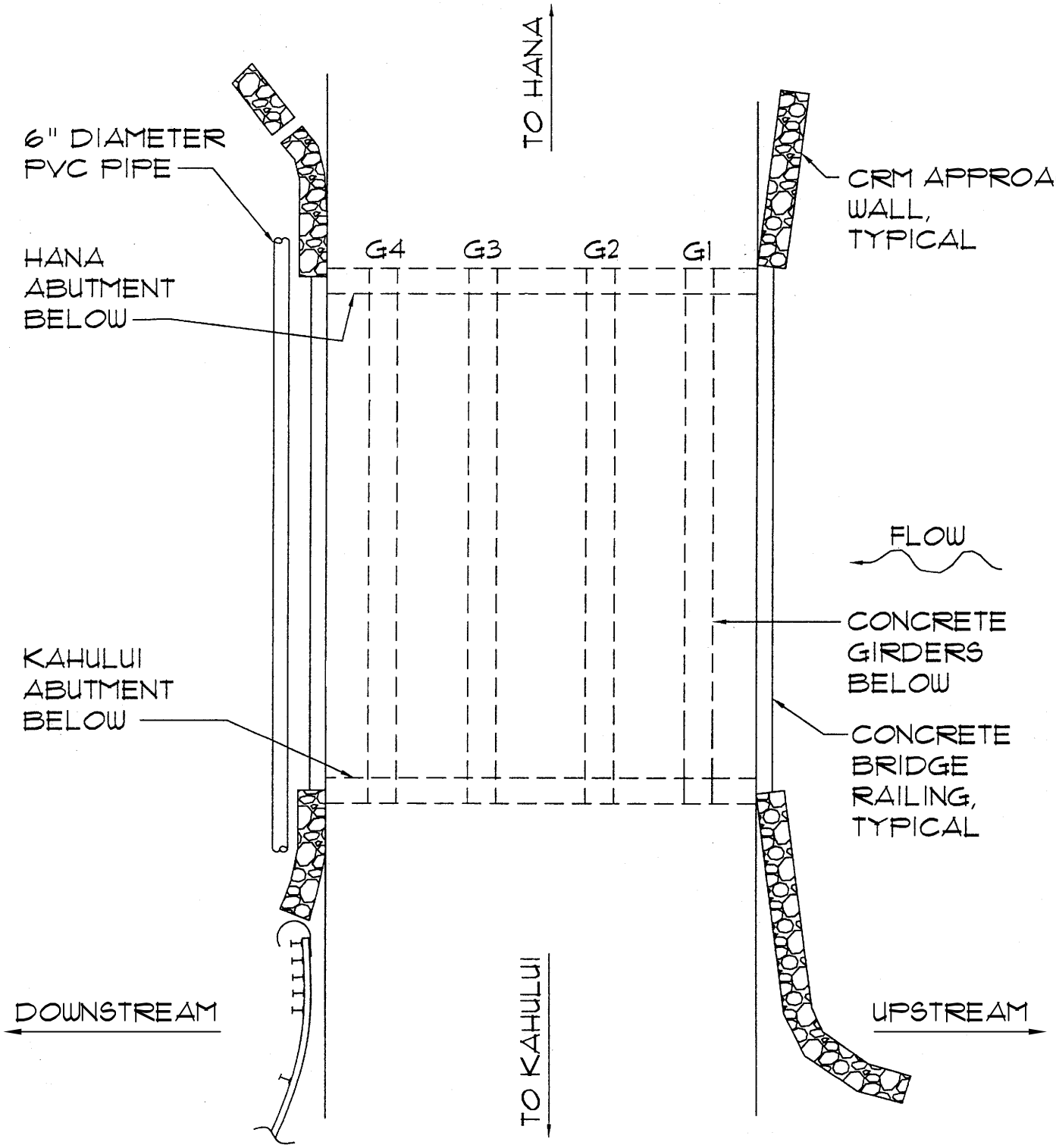
Over 200 Items

(200)	Princ Route Location	
(201)	Wear Surface Thickness	0.0 mm
(203)	District Maint Org	
(204)	Original Proj #	
(205)	Station Princ Rte	0.000
(206)	Bridge Rail Type	
(217)	Culvert Bbl Height	0.0 M
(218)	Culvert Bbl Length	0.0 M
(219)	Culvert Fill Height	0.0 M
(222)	Date of Load Rating	/ /
(223)	Tracs No	
(224)	Bridge Crew Region	
(225)	Total Deck Area (M^2)	0.0
(226)	Superstr Unit Cost	0.00
(227)	Substr Unit Cost	0.00
(228)	Next Insp Due Date (QuartYr)	498
(229)	Agency	
(230)	Principal Route Number	360
(231)	Principal Route Letter	
(232)	Principal Route Milepost	0.000

(300) Comments:

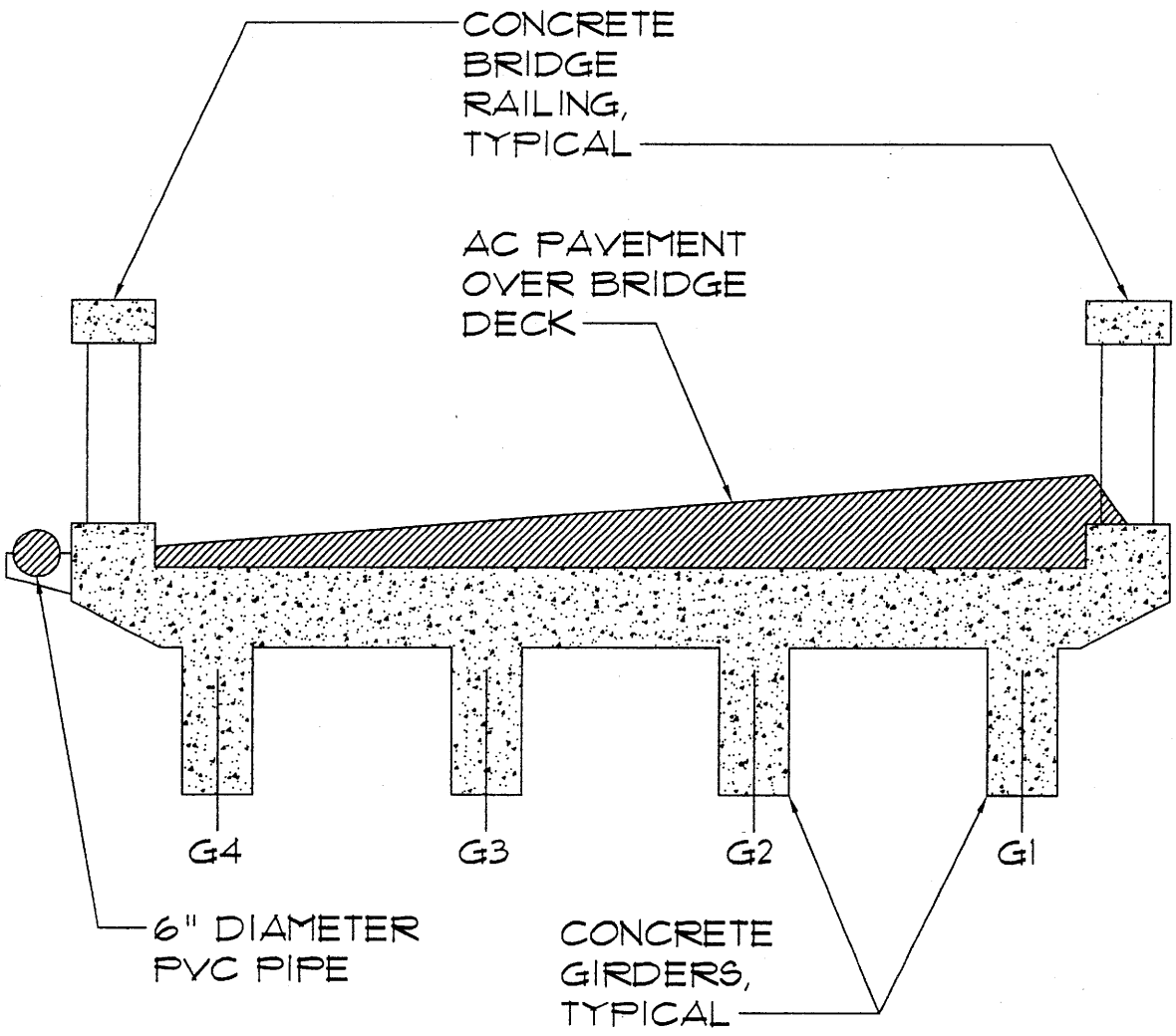
Sufficiency Rating = 048.3

Functionly Obsolete



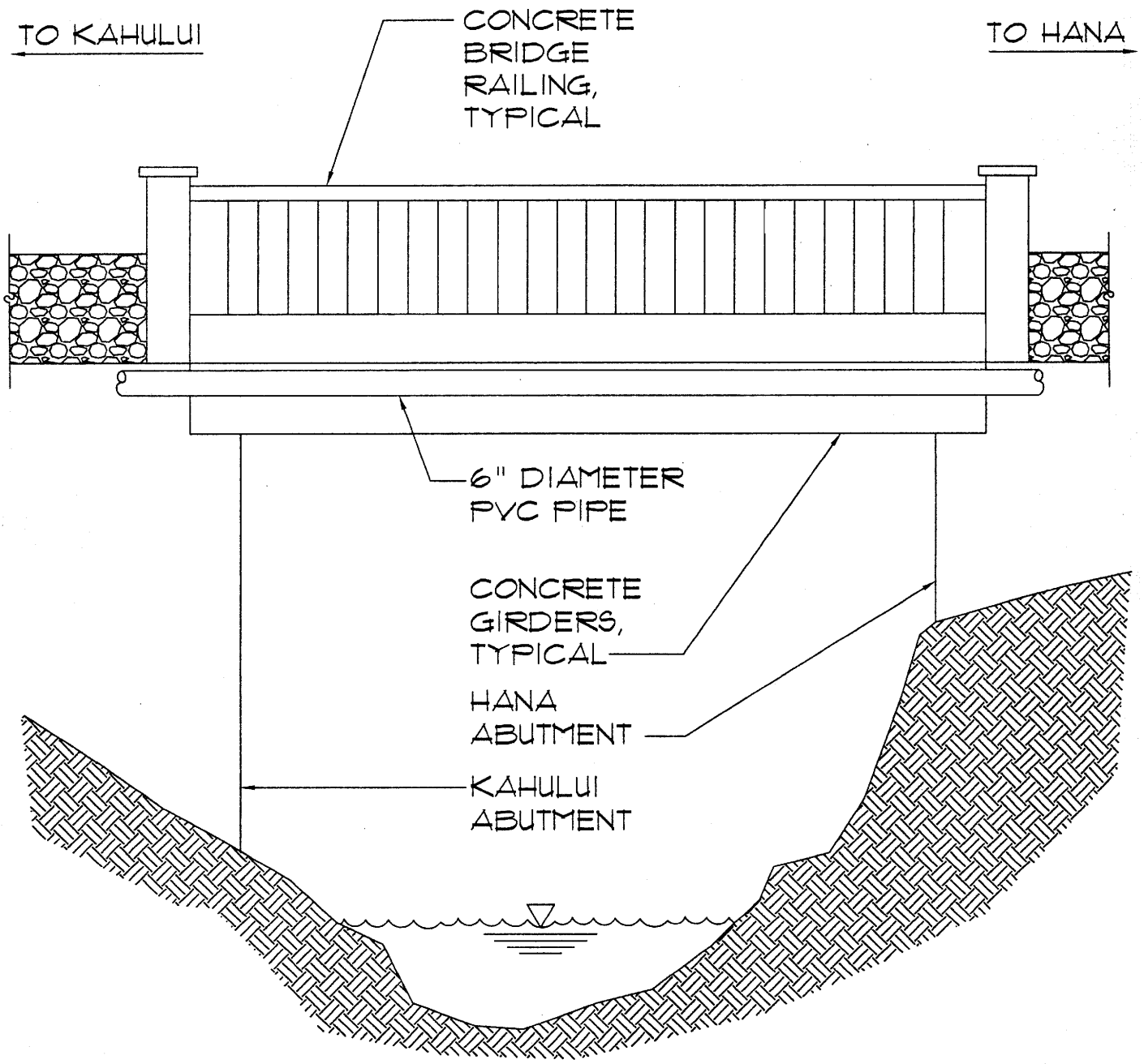
BRIDGE PLAN

PALAUHULU STREAM BRIDGE
BRIDGE NO. 009003600501679



SECTION LOOKING TOWARD HANA

PALAUHULU STREAM BRIDGE
BRIDGE NO. 009003600501679



UPSTREAM ELEVATION

PALAUHULU STREAM BRIDGE
BRIDGE NO. 009003600501679

PALAUHULU STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501679

PHOTO NO.	DESCRIPTION
1	KAHULUI APPROACH TO BRIDGE LOOKING TOWARD HANA
2	HANA APPROACH TO BRIDGE LOOKING TOWARD KAHULUI
3	UPSTREAM / KAHULUI CRM WALL
4	DOWNSTREAM / KAHULUI GUARDRAIL END TREATMENT AND CRM WALL. NOTE: GUARDRAIL END TREATMENT HT = 36”
5	UPSTREAM / HANA CRM WALL
6	DOWNSTREAM / HANA CRM WALL
7	UPSTREAM BRIDGE RAILING. NOTE: RAILING HT = 24”
8	BACKSIDE UPSTREAM / KAHULUI BRIDGE RAILING ELEVATION
9	BACKSIDE UPSTREAM / HANA BRIDGE RAILING
10	DOWNSTREAM BRIDGE RAILING. NOTE: RAILING HT = 33”
11	OVERALL A.C. PAVEMENT LOOKING TOWARD HANA
12	UPSTREAM BRIDGE ELEVATION
13	DOWNSTREAM BRIDGE ELEVATION, BACKSIDE OF DOWNSTREAM BRIDGE RAILING AND CRM WALLS, AND UTILITY LINES ATTACHED TO SIDE OF BRIDGE
14	SUPPORTS FOR PVC PIPELINE ARE CORRODED ON THE DOWNSTREAM SIDE OF BRIDGE (SEE PHOTO 13)
15	OVERALL DECK SOFFIT VIEW LOOKING DOWNSTREAM
16	DELAMINATION IN DECK SOFFIT BETWEEN GIRDERS G3 AND G4 NEAR MID-SPAN
17	HAIRLINE LONGITUDINAL CRACK ALONG BOTTOM OF GIRDER G1
18	SMALL SPALL WITH EXPOSED REBAR IN BOTTOM OF GIRDER G1 NEAR HANA ABUTMENT
19	KAHULUI ABUTMENT
20	HANA ABUTMENT
21	UPSTREAM VIEW OF STREAM CHANNEL
22	DOWNSTREAM VIEW OF STREAM CHANNEL

PHOTO 1 KAHULUI APPROACHTO BRIDGE LOOKING TOWARD HANA

PHOTO 2 HANA APPROACH TO BRIDGE LOOKING TOWARD KAHULUI

PHOTO 3 UPSTREAM / KAHULUI CRM WALL

PHOTO 4 DOWNSTREAM / KAHULUI GUARDRAIL END TREATMENT AND CRM WALL.
NOTE: GUARDRAIL END TREATMENT HT = 36”

PHOTO 5 UPSTREAM / HANA CRM WALL

PHOTO 6 DOWNSTREAM / HANA CRM WALL

PHOTO 7 UPSTREAM BRIDGE RAILING. NOTE: RAILING HT = 24”

PHOTO 8 BACKSIDE UPSTREAM / KAHULUI BRIDGE RAILING ELEVATION

PHOTO 9 BACKSIDE UPSTREAM / HANA BRIDGE RAILING

PHOTO 10 DOWNSTREAM BRIDGE RAILING. NOTE: RAILING HT = 33”

PHOTO 11 OVERALL A.C. PAVEMENT LOOKING TOWARD HANA

PHOTO 12 UPSTREAM BRIDGE ELEVATION

PHOTO 13 **DOWNSTREAM BRIDGE ELEVATION, BACKSIDE OF DOWNSTREAM BRIDGE RAILING AND CRM WALLS, AND UTILITY LINES ATTACHED TO SIDE OF BRIDGE**

PHOTO 14 **SUPPORTS FOR PVC PIPELINE ARE CORRODED ON THE DOWNSTREAM SIDE OF BRIDGE (SEE PHOTO 13)**

PHOTO 15 OVERALL DECK SOFFIT VIEW LOOKING DOWNSTREAM

PHOTO 16 DELAMINATION IN DECK SOFFIT BETWEEN GIRDERS G3 AND G4 NEAR MID-SPAN

PHOTO 17 HAIRLINE LONGITUDINAL CRACK ALONG BOTTOM OF GIRDER G1

PHOTO 18 SMALL SPALL WITH EXPOSED REBAR IN BOTTOM OF GIRDER G1 NEAR HANA ABUTMENT

PHOTO 19 KAHULUI ABUTMENT

PHOTO 20 HANA ABUTMENT

PHOTO 21 UPSTREAM VIEW OF STREAM CHANNEL

PHOTO 22 DOWNSTREAM VIEW OF STREAM CHANNEL

ROUTINE (PERIODIC) BRIDGE INSPECTION REPORT

WAIKANI STREAM BRIDGE
BRIDGE NO. 009003600501942
MAUI, HAWAII

For

State of Hawaii
Department of Transportation
Highways Division

Prepared by

Nagamine Okawa Engineers Inc.
1003 Bishop Street
Suite 2025
Honolulu, Hawaii 96813
Telephone: (808) 536-2626

FEBRUARY 2010

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NBI BRIDGE INSPECTION REPORT

Date of Inspection	2/18/10				
Bridge Number	009003600501942	Bridge Name	Waikani Stream Bridge		
Number of Spans	1				
Location: Island	Maui	Route No.	360	Highway	Hana Highway
Feature Intersected	Waikani Stream			Milepost	19.39
Bridge Material:	Superstructure Reinforced Concrete			Substructure	Reinforced Concrete

		Condition Rating	Remarks
36	TRAFFIC SAFETY FEATURES		Indicate if feature meets currently acceptable standards. 0 - No 1 - Yes N - Not Applicable
1.	Bridge Railings	0	
2.	Transitions	0	
3.	Approach Guardrail	0	
4.	Approach Guardrail Ends	0	
58	DECK		
1.	Wearing Surface	6	1. Potholes and wear occurring in A.C. overlay.
2.	Decks - Structural Condition	6	2. Patches observed in several soffit spans.
3.	Curbs	N	
4.	Median	N	
5.	Sidewalks	N	
6.	Parapet	4	6. Collision damage with exposed rebar at the upstream / Hana parapet. Collision damage at upstream / Kahului parapet with CRM parapet built in front of damage.
7.	Railing	6	7. Delamination and spalls in pickets and railing cap.
8.	Paint	5	8. Paint is faded and weathered on railings.
9.	Drains	6	9. Most deck drains clear. Vegetation growth in some drains.
10.	Lighting Standards	N	
11.	Utilities	3	11. Utility line along the upstream face of the bridge has corroded and damaged supports.
12.	Joint Leakage	N	
13.	Expansion Joints or Devices	N	
	Inspector's Condition Rating	6	
59	SUPERSTRUCTURE		
1.	Bearing Devices	N	
2.	Stringers	N	
3.	Girders, Beams, or Arches	6	3. Delamination in downstream face of arch under first downstream / Hana column. Dark water stains on arch members.
4.	Floor Beams and Diaphragms	6	4. Patches observed on several floor beams.
5.	Trusses -General	N	
	-Portals	N	
	-Bracing	N	
6.	Paint	N	
7.	Machinery (Moveable Spans)	N	
8.	Rivets and/or Bolts	N	
9.	Welds - Cracks	N	
10.	Rust	N	
11.	Timber Decay	N	
12.	Concrete Cracking and/or Spalling	6	
13.	Collision Damage	7	
14.	Deflection Under Load	7	
15.	Alignment of Members	7	
16.	Vibrations Under Load	7	
17.	Flat Slab	N	
	Inspector's Condition Rating	6	

Date of Inspection 2/18/10 Bridge name Waikani Stream Bridge
Bridge Number 009003600501942

		Condition Rating	Remarks
60	**SUBSTRUCTURE**		
1.	Abutment -Wings	6	
	-Backwall/Breastwall	6/6	1b. Hairline cracks and water stains on abutments.
	-Footing	7	1c. Abutments bear directly on bedrock.
	-Piles	N	
	-Erosion	7	
	-Settlement	7	
2.	Piers or Bents -Caps	N	
	-Column/Wall	6	2b. Small spalls with exposed rebar in first upstream / Hana column. Delaminated patches on columns.
	-Footing	N	
	-Piles	N	
	-Scour	N	
	-Settlement	N	
3.	Pile bents	N	
4.	Concrete Cracking and/or Spalling	7	
5.	Steel Corrosion	N	
6.	Timber Decay, etc.	N	
7.	Debris on Seats	N	
8.	Paint	N	
9.	Collision Damage	8	
	Inspector's Condition Rating	6	

61	**CHANNEL & CHANNEL PROTECTION**		
1.	Channel Scour	7	
2.	Embankment Erosion	6	
3.	Drift	6	
4.	Vegetation	6	4. Heavy vegetation growth along channel embankments.
5.	Channel Change	7	
6.	Fender System	N	
7.	Spur Dikes & Jetties	N	
8.	Rip Rap	N	
9.	Adequacy of Opening	7	
	Inspector's Condition Rating	7	

62	**CULVERT & RETAINING WALLS**		
1.	Barrel -Concrete	N	
	-Steel	N	
	-Timber	N	
2.	Headwall	N	
3.	Cutoff Wall	N	
4.	Adequacy	N	
5.	Debris	N	
	Inspector's Condition Rating	N	

Date of Inspection 2/18/10 Bridge Name Waikani Stream Bridge
Bridge Number 009003600501942

93 CRITICAL FEATURE INSPECTION DATE		Provide date if applicable. If not applicable, indicate with N.
1. Fracture Critical Details	N	
2. Underwater Inspection	N	[If applicable, submit Underwater Inspection Report]
3. Other Special Inspection	N	

OTHER FEATURES		Remarks Y - Yes N - No
1. Bridge Posted?	Y	Posted Limit = 10 Ton weight limit
2. Signage for Posting Legible/Visible?	N	Load posting sign is located near mile post 0.0 Route 360, and is used as a notice for all Hana bridges.
3. Riding Surface (Roughness) Rating	2	3 - Smooth, 2 - Average, 1 - Poor

REPAIRS AND IMPROVEMENTS

1. List all work done to this bridge since the last inspection including cost.

2. Indicate proposed and/or recommended improvements including estimated cost.
   a) Install guardrail transitions, approach guardrails, and end treatments to meet current acceptable standards (Cost Est. = $50,000).
   b) Upgrade railings to meet current acceptable standards (Cost Est. = $376,000).
   c) Repair collision damage to upstream / Hana parapet (Cost Est. = $8,000).
   d) Repair cracks, delaminations, and spalls in railings, arch, and columns (Cost Est. = $50,000).
   e) Replace corroded and damaged pipe supports (Maintenance Item).
   f) Repair potholes in A.C. overlay (Cost Est. = $50,000).

3. List any existing temporary conditions.

REMARKS AND RECOMMENDATIONS

1. Does this bridge require inspection by Bridge Design Section? Yes - No -
   [This should only be addressed by in-house inspectors who are not structural engineers.]

2. Remarks: Describe defects. Use sketches, diagrams and/or photographs where possible.

Inspected by: Name (printed): Erik-Jon Cabbab / Cody Aihara Title: Certified Bridge Inspectors
Signature:
Phone Number: 808.536.2626

Supervised by: Name (printed): Dwight M. Okawa, S.E. Title: V.P./Team Leader
Signature:
Phone Number: 808.536.2626

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

PONTIS BRIDGE INSPECTION REPORT

r10/8/07

Date of Inspection	2/18/10	Bridge Name	Waikani Stream Bridge
Bridge Number	009003600501942	Route No.	360
Number of Spans	1	Highway	Hana Highway
Location: Island	Maui	Feature Intersected	Waikani Stream

ELEM NO.	ELEMENT DESCRIPTION	ENV. (Note 1)	TOTAL QUANT.	UNIT	ST 1	ST 2	ST 3	ST 4	ST 5
013	DECK OR SLAB (Note 2): UNPROTECTED DECK W/ A.C. OVERLAY	2	1836	SF.		1836			
155	FLOOR BEAM: REINF CONC	2	180	LFT.	180				
215	ABUTMENTS: REINF CONC	2	58	LFT.	58				
205	COLUMNS: REINF CONC	2	18	EA.	16	2			
*	PIER WALL			LFT.					
*	PIER CAPS			LFT.					
144	ARCH: REINF CONC	2	152	LFT.	149	3			
301	JOINTS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.): POURABLE JOINT SEAL	2	34	LFT.		34			
331	BRIDGE RAILING: REINF CONC	2	221	LFT.	171	50			
*	APPROACH SLABS			EA.					
*	BEARINGS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)			EA.					
*	CULVERT			LFT.					
*	SMART FLAG: STEEL FATIGUE			EA.					
*	SMART FLAG: PACK RUST			EA.					
*	SMART FLAG: DECK CRACKING (ON TOP OF DECK ONLY)			EA.					
359	SMART FLAG: SOFFIT OF CONC. DECK OR SLAB (THIS SMART FLAG IS MANDATORY IF DECK OR SLAB HAS AN A.C. OVERLAY).	2	1	EA.	1				
*	SMART FLAG: SETTLEMENT			EA.					
*	SMART FLAG: SCOUR			EA.					
*	SMART FLAG: TRAFFIC IMPACT (TRAFFIC IMPACT TO SUPERSTRUCTURE ONLY)			EA.					
*	SMART FLAG: SECTION LOSS			EA.					
OTHERS:									

COMMENTS:

Note 1: For each element, the inspector shall code the type of environment from the following key:

Env 1: Benign & Low Env: Little or no env. conditions affecting deterioration. Past bridge inspections show that env. has caused little or no deterioration.

Env 2: Moderate: Moderate level of environmental influence or deterioration. Past bridge inspections show that environment has caused some deterioration.

Env 3: Severe: Severe level of environmental influence or deterioration. Past bridge inspections show that environment has caused significant.

Note 2: For DECKS ONLY: All quantity in one ST only. Deck/slab is rated from top of deck/slab only. Use soffit smart flag (elem 359) to rate soffit.

Use these revised Condition States for rating Concrete Decks/Slabs	
CS1	No patched areas, no potholes, no spalls and delams, etc.
CS2	Distressed areas are less than 2% of the total deck area.
CS3	Distressed areas are more than 2% but 10% or less of the total deck area.
CS4	Distressed areas are more than 10% but 25% or less of the total deck area.
CS5	Distressed areas are 25% or more of the total deck area.

Inspector's Name (printed): Erik-Jon Cabbab / Cody Aihara — Title: Certified Bridge Inspectors

Inspector's Name (signature):

Inspector's phone number: 808.536.2626

Supervisor's Name (printed): Dwight M. Okawa, S.E. — Title: V.P. / Team Leader

Supervisor's Name (signature):

HAWAII DEPARTMENT OF TRANSPORTATION — STRUCTURAL INVENTORY AND APPRAISAL — DATE PRINTED: 01/22/2010

Structure Number: 009003600501942

Geographic and Route Data

(1)	State	Hawaii
(2)	District	20
(3)	County	Maui
(4)	Place	11350
(6)	Feature Under	WAIKANI STRM
(7)	Facility on	HANA HWY
(9)	Location	0.33MI E/WAILUA VLLY LO R
(16)	Latitude	20° 50' 06.00"
(17)	Longitude	156° 08' 30.00"
(98)	Border Bridge	
(99)	Border Brdige Str No	
(103)	Temportary Str	

On and Under Record Data

		Route On
(5)	Inventory Route	121003602
(10)	Min Vert Clr	99.99 M
(11)	Kilometerpoint	0031.204
(19)	Detour Length	199 km
(20)	Toll	3
(26)	Func Class	07
(28)	Lanes on/under	0100
(29)	ADT	1515
(30)	Year of ADT	2007
(47)	Total Horz Clearance	05.2 M
(100)	Defense Hwy	0
(101)	Parallel Str	N
(102)	Direction of Traffic	3
(104)	Hwy System	0
(109)	Truck Traffic	00%
(110)	Natl Truck Network	No

General Data

(21)	Maintenance Responsibility	01
(22)	Owner	01
(31)	Design Load	0
(33)	Bridge Median	0
(34)	Skew	00 deg
(35)	Str Flared	Yes
(37)	Hist Significance	5
(38)	Navigation Control	0
(42)	Type of Service	15
(43)	Structure Type Main	211
(44)	Structure Type Approach	000
(45)	No of Span Main	001
(46)	No of Approach Spans	0000
(27)	Year Built	1926
(106)	Year Reconstructed	0000
(107)	Deck Str Type	1
(108)	Wear Surf/Protv Sys	600
(111)	Nav Pier/Abut Protection	

Dimensional Data

(32)	Approach Rdwy Width	8.2 M
(39)	Navigation Vert Clr	000.0 M
(40)	Navigation Horz clr	0000.0 M
(48)	Max Span Length	0025.3 M
(49)	Str Length	00032.9 M
(50)	Curb/Sidewalk Width	Left 00.0 M
		Right 00.0 M
(51)	Brg Rdwy Width,curb-curb	005.2 M
(52)	Deck Width out-out	006.1 M
(53)	Min Vert Clr over	99.99 M
(54)	Min Vert Clr under	N 00.00 M
(55)	Min Lat Underclr R	N 00.0 M
(56)	Min Lat Underclr L	99.9 M
(112)	NBIS Bridge Length	Y
(116)	Navigation Min Vert Clr	M

Proposed Improvements

(75)	Type of Work	311
(76)	Improvement Length	000399 M
(94)	Bridge Improv Cost	2774
(95)	Rdwy Improv Cost	0
(96)	Total Proj Cost	4732
(97)	Year of Cost Est	1999
(114)	Future ADT	2150
(115)	Year of Future ADT	2027

Condition Rating

(58)	Deck	6
(59)	Superstructure	6
(60)	Substructure	6
(61)	Channel & Channel Protect	7
(62)	Culverts	N

Appraisal Rating

(67)	Structure Evaluation	4
(68)	Deck Geometry	2
(69)	Underclrn Vert & Horz	N
(71)	Waterway Adequacy	5
(72)	Approach Rdwy Alignment	2
(36)	Traffic Safety Features	0000

Scour Data

(113)	Scour Critical Bridges	8
(202)	Foundation Type	
(220)	Foundation Embedment	0.0 M
(221)	Scour Countermeasures	

Load Rate and Post

(41)	Str Open/Post/Close	Posted
(64)	Operating Rating	29.0 ton
(66)	Inventory Rating	17.2 ton
(70)	Bridge Posting	4
(211)	Posted Limit	

(209) Str Name:

Princ Rte: 360 Milepost: 0.000

Proposed Maintenance

(212)	Repair Priority	
(213)	Proposed Maint Type	
(215)	Maintn Date Completed	/ /
(216)	Actual Maint Cost	0

Inspection Data

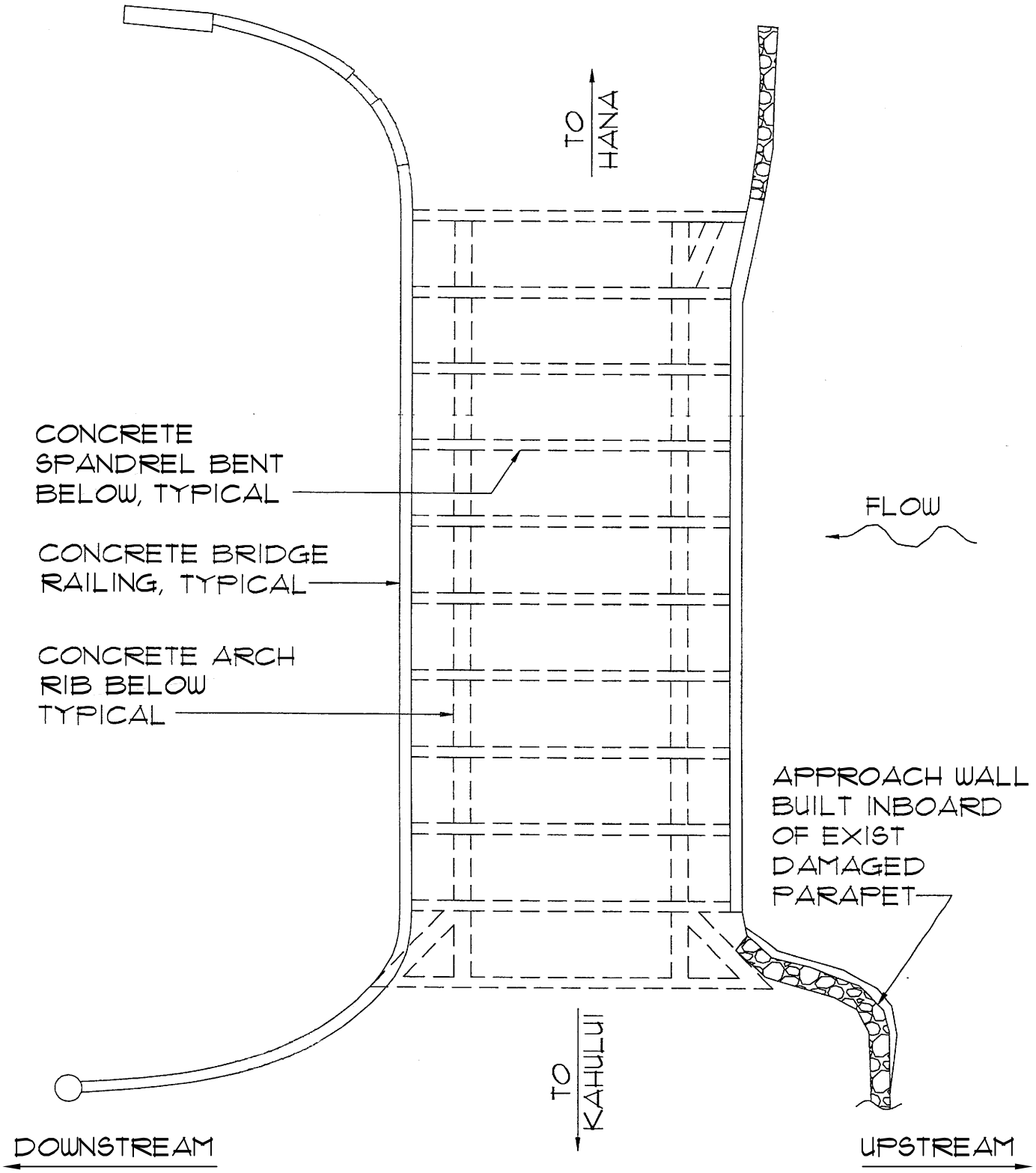
(90)	Inspection Date (MoYr)	0210 ~~0108~~
(91)	Inspection Frequency	24 Mo
(92)	Critical Feature Insp	(93)Date
	Frac Crit Insp : N	/
	Underwater Insp: N	/
	Other Spec Insp: N	/
(207)	Inspection Quarter	4
(208)	Inspection Number	
(210)	Date of Inspection	~~12/15/1996~~ 02/18/2010

Over 200 Items

(200)	Princ Route Location	
(201)	Wear Surface Thickness	0.0 mm
(203)	District Maint Org	
(204)	Original Proj #	
(205)	Station Princ Rte	0.000
(206)	Bridge Rail Type	
(217)	Culvert Bbl Height	0.0 M
(218)	Culvert Bbl Length	0.0 M
(219)	Culvert Fill Height	0.0 M
(222)	Date of Load Rating	/ /
(223)	Tracs No	
(224)	Bridge Crew Region	
(225)	Total Deck Area (M^2)	0.0
(226)	Superstr Unit Cost	0.00
(227)	Substr Unit Cost	0.00
(228)	Next Insp Due Date (QuartYr)	498
(229)	Agency	
(230)	Principal Route Number	360
(231)	Principal Route Letter	
(232)	Principal Route Milepost	0.000
(300)	Comments:	

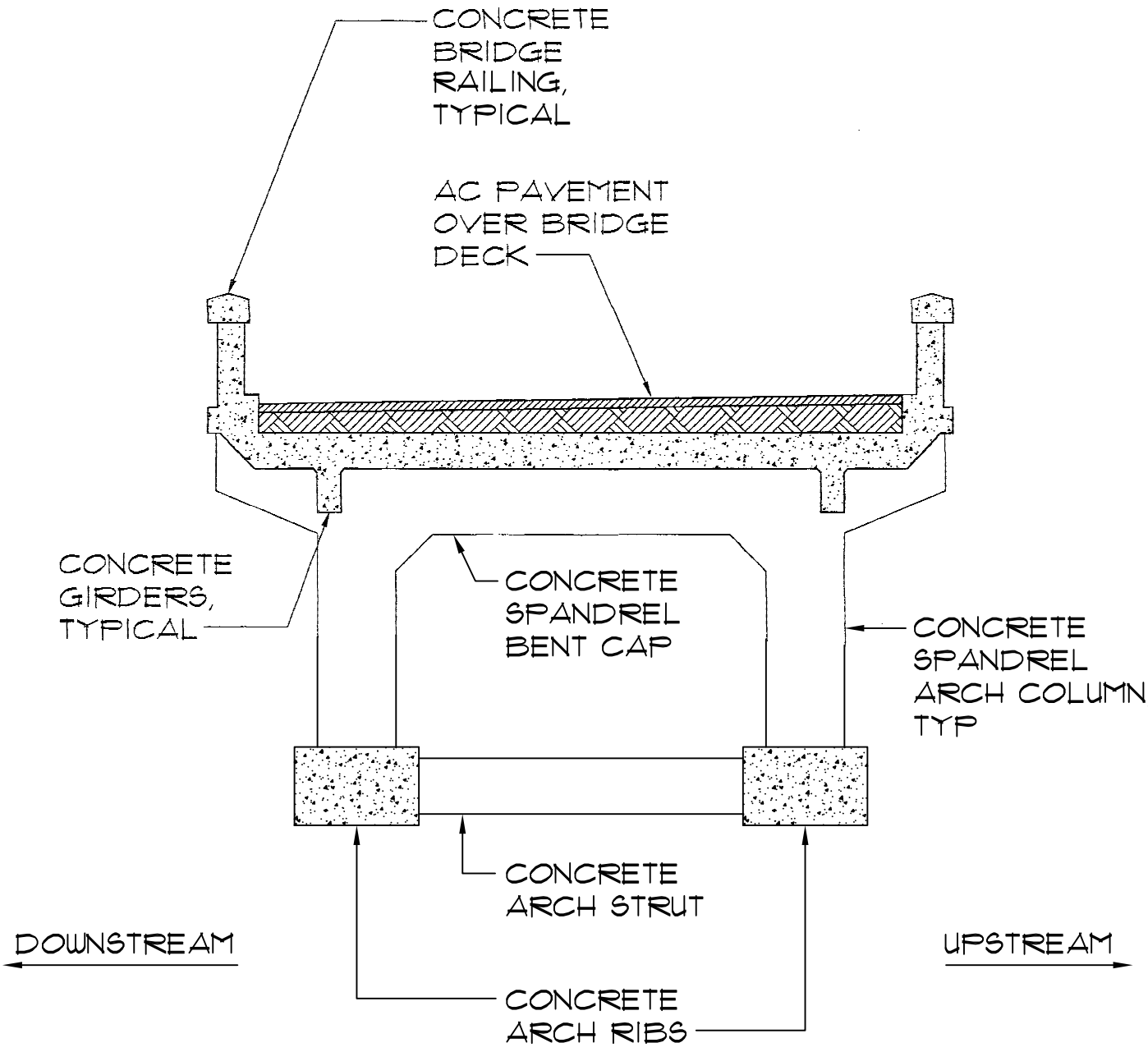
Sufficiency Rating = 046.0

Functionly Obsolete



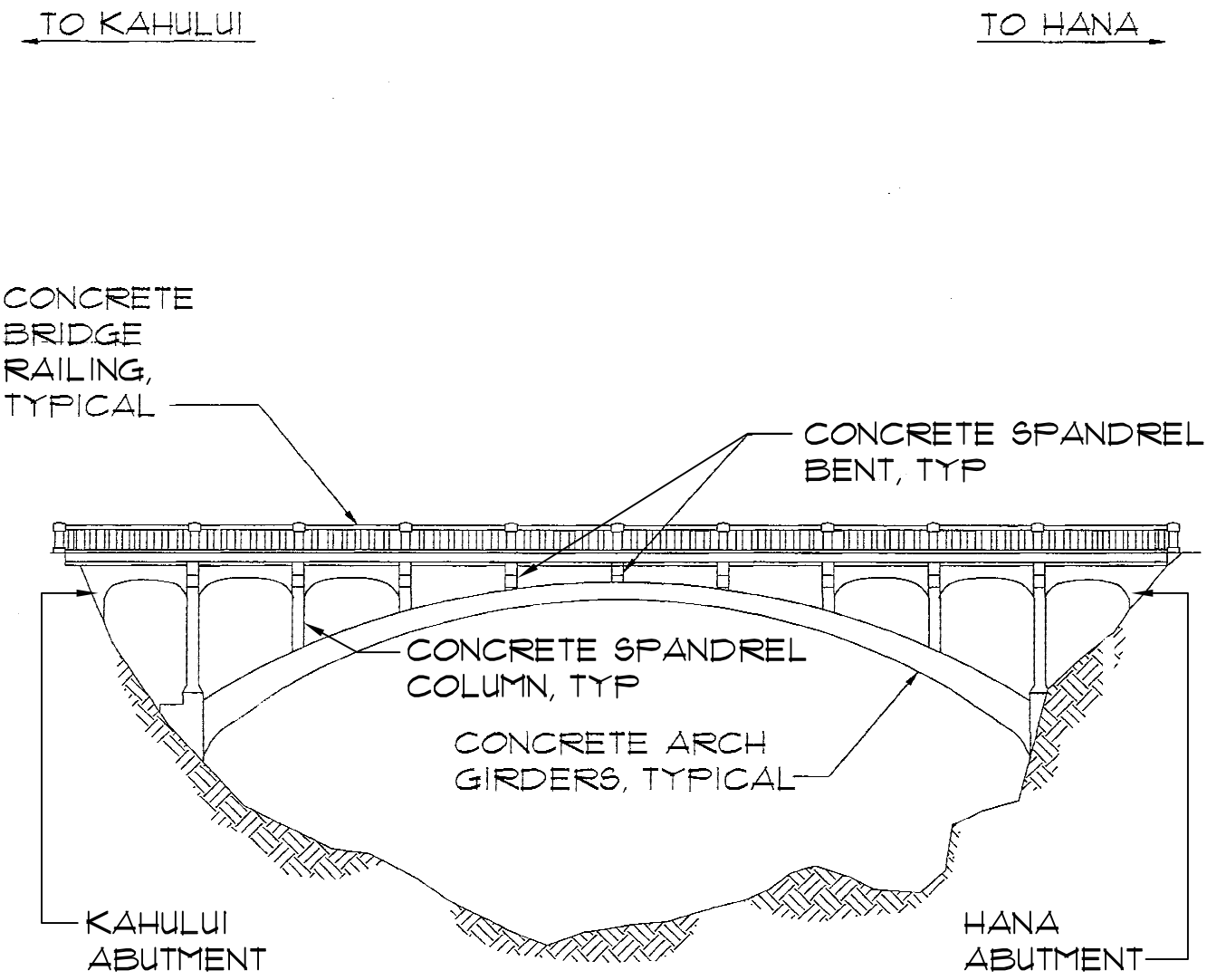
BRIDGE PLAN

WAIKANI STREAM BRIDGE
BRIDGE NO. 009003600501942



TYPICAL BRIDGE SECTION

WAIKANI STREAM BRIDGE
BRIDGE NO. 009003600501942



UPSTREAM ELEVATION

WAIKANI STREAM BRIDGE
BRIDGE NO. 009003600501942

WAIKANI STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501942

PHOTO NO.	DESCRIPTION*
1	KAHULUI APPROACH LOOKING TOWARD HANA
2	HANA APPROACH LOOKING TOWARD KAHULUI
3	UPSTREAM / KAHULUI CRM WALL
4	COLLISION DAMAGE WITH EXPOSED REBAR AT FORMER CONCRETE BRIDGE RAILING AT UPSTREAM / KAHULUI SIDE
5	DOWNSTREAM / KAHULUI GUARDRAIL TRANSITION AND CRM WALL. NOTE: GUARDRAIL TRANSITION HT = 34”
6	UPSTREAM / HANA CONCRETE PARAPET WITH COLLISION DAMAGE AND EXPOSED REBAR. NOTE: PARAPET HEIGHT VARIES DUE TO COLLISION DAMAGE
7	CLOSE UP OF COLLISION DAMAGE AT UPSTREAM / HANA CONCRETE PARAPET
8	DOWNSTREAM / HANA GUARDRAIL AND CRM WALL. NOTE: GUARDRAIL HT = 27”
9	UPSTREAM RAILING ELEVATION. NOTE: RAILING HT = 29”
10	PARTIAL VIEW OF DOWNSTREAM RAILING ELEVATION NEAR KAHULUI. NOTE: RAILING HT = 33”
11	PARTIAL VIEW OF DOWNSTREAM RAILING ELEVATION LOOKING TOWARD HANA
12	PARTIAL VIEW OF DOWNSTREAM RAILING ELEVATION NEAR HANA
13	CLOSE UP OF SPALL WITH EXPOSED REBAR IN DOWNSTREAM RAILING CAP
14	DELAMINATION ON SECOND PICKET AT DOWNSTREAM / KAHULUI RAILING
15	OVERALL A.C. PAVEMENT LOOKING TOWARD HANA
16	DECK DRAIN ALONG DOWNSTREAM RAILING
17	UPSTREAM ELEVATION AND UTILITY LINE ALONG BASE OF RAILING
18	DOWNSTREAM ELEVATION
19	DELAMINATION (1’ (H) X 3’ (W)) IN DOWNSTREAM FACE OF ARCH RIB UNDER DOWNSTREAM / HANA SPANDREL COLUMN
20	OVERALL SOFFIT VIEW LOOKING TOWARD KAHULUI
21	SOFFIT VIEW NEAR KAHULUI END OF BRIDGE
22	SOFFIT VIEW OF CENTER OF BRIDGE

WAIKANI STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501942

PHOTO NO.	DESCRIPTION*
23	SOFFIT VIEW NEAR HANA END OF BRIDGE
24	PATCHES IN SOFFIT NEAR HANA END
25	PATCHES IN SOFFIT BETWEEN SPANDREL BENT 1 AND 2. NOTE: SPANDREL COUNT STARTS FROM HANA ABUTMENT.
26	KAHULUI ABUTMENT
27	HANA ABUTMENT
28	SMALL SPALL WITH EXPOSED REBAR ON HANA FACE OF UPSTREAM SPANDREL COLUMN IN SPANDREL BENT 1.
29	UPSTREAM VIEW FROM TOP OF BRIDGE
30	UPSTREAM VIEW FROM UNDER BRIDGE
31	DOWNSTREAM VIEW FROM TOP OF BRIDGE
32	DOWNSTREAM VIEW FROM UNDER BRIDGE

NOTE: * (H) = HEIGHT; (W) = WIDTH

PHOTO 1 KAHULUI APPROACH LOOKING TOWARD HANA

PHOTO 2 HANA APPROACH LOOKING TOWARD KAHULUI

PHOTO 3 **UPSTREAM / KAHULUI CRM WALL**

PHOTO 4 **COLLISION DAMAGE WITH EXPOSED REBAR AT FORMER CONCRETE BRIDGE RAILING AT UPSTREAM / KAHULUI SIDE**

PHOTO 5 **DOWNSTREAM / KAHULUI GUARDRAIL TRANSITION AND CRM WALL. NOTE: GUARDRAIL TRANSITION HT = 34”**

PHOTO 6 **UPSTREAM / HANA CONCRETE PARAPET WITH COLLISION DAMAGE AND EXPOSED REBAR. NOTE: PARAPET HEIGHT VARIES DUE TO COLLISION DAMAGE**

PHOTO 7 **CLOSE UP OF COLLISION DAMAGE AT UPSTREAM / HANA CONCRETE PARAPET**

PHOTO 8 **DOWNSTREAM / HANA GUARDRAIL AND CRM WALL. NOTE: GUARDRAIL HT = 27”**

PHOTO 9 UPSTREAM RAILING ELEVATION. NOTE: RAILING HT = 29”

PHOTO 10 PARTIAL VIEW OF DOWNSTREAM RAILING ELEVATION NEAR KAHULUI. NOTE: RAILING HT = 33”

PHOTO 11 PARTIAL VIEW OF DOWNSTREAM RAILING ELEVATION LOOKING TOWARD HANA

PHOTO 12 PARTIAL VIEW OF DOWNSTREAM RAILING ELEVATION NEAR HANA

PHOTO 13 CLOSE UP OF SPALL WITH EXPOSED REBAR IN DOWNSTREAM RAILING CAP

PHOTO 14 DELAMINATION ON SECOND PICKET AT DOWNSTREAM / KAHULUI RAILING

PHOTO 15 OVERALL A.C. PAVEMENT LOOKING TOWARD HANA

PHOTO 16 DECK DRAIN ALONG DOWNSTREAM RAILING

PHOTO 17 UPSTREAM ELEVATION AND UTILITY LINE ALONG BASE OF RAILING

PHOTO 18 DOWNSTREAM ELEVATION

PHOTO 19 DELAMINATION (1’ (H) X 3’ (W)) IN DOWNSTREAM FACE OF ARCH RIB UNDER DOWNSTREAM / HANA SPANDREL COLUMN

PHOTO 20 OVERALL SOFFIT VIEW LOOKING TOWARD KAHULUI

PHOTO 21 SOFFIT VIEW NEAR KAHULUI END OF BRIDGE

PHOTO 22 SOFFIT VIEW OF CENTER OF BRIDGE

PHOTO 23 SOFFIT VIEW NEAR HANA END OF BRIDGE

PHOTO 24 PATCHES IN SOFFIT NEAR HANA END

PHOTO 25 PATCHES IN SOFFIT BETWEEN SPANDREL BENT 1 AND 2. NOTE: SPANDREL COUNT STARTS FROM HANA ABUTMENT.

PHOTO 26 KAHULUI ABUTMENT

PHOTO 27 HANA ABUTMENT

PHOTO 28 SMALL SPALL WITH EXPOSED REBAR ON HANA FACE OF UPSTREAM SPANDREL COLUMN IN SPANDREL BENT 1.

PHOTO 29 UPSTREAM VIEW FROM TOP OF BRIDGE

PHOTO 30 UPSTREAM VIEW FROM UNDER BRIDGE

PHOTO 31 DOWNSTREAM VIEW FROM TOP OF BRIDGE

PHOTO 32 DOWNSTREAM VIEW FROM UNDER BRIDGE

ROUTINE (PERIODIC) BRIDGE INSPECTION REPORT

WAIOKAMILO STREAM BRIDGE
BRIDGE NO. 009003600501811
MAUI, HAWAII

For

State of Hawaii
Department of Transportation
Highways Division

Prepared by

Nagamine Okawa Engineers Inc.
1003 Bishop Street
Suite 2025
Honolulu, Hawaii 96813
Telephone: (808) 536-2626

FEBRUARY 2010

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NBI BRIDGE INSPECTION REPORT

Date of Inspection	2/18/10				
Bridge Number	009003600501811	Bridge Name	Waiokamilo Stream Bridge		
Number of Spans	1				
Location: Island	Maui	Route No.	360	Highway	Hana Highway
Feature Intersected	Waiokamilo Stream			Milepost	18.07
Bridge Material:	Superstructure	Reinforced Concrete		Substructure	Reinf Conc / CRM

		Condition Rating	Remarks
36	TRAFFIC SAFETY FEATURES		Indicate if feature meets currently acceptable standards. 0 - No 1 - Yes N - Not Applicable
1.	Bridge Railings	0	1. Bridge railing does not meet acceptable standards.
2.	Transitions	0	
3.	Approach Guardrail	0	3. No approach guardrails Wailuku end of bridge.
4.	Approach Guardrail Ends	0	
58	DECK		
1.	Wearing Surface	7	
2.	Decks - Structural Condition	7	
3.	Curbs	N	
4.	Median	N	
5.	Sidewalks	N	
6.	Parapet	N	
7.	Railing	7	
8.	Paint	4	8. This rating is for paint on railings.
9.	Drains	N	
10.	Lighting Standards	N	
11.	Utilities	7	
12.	Joint Leakage	N	
13.	Expansion Joints or Devices	N	
	Inspector's Condition Rating	7	
59	SUPERSTRUCTURE		
1.	Bearing Devices	N	
2.	Stringers	N	
3.	Girders, Beams, or Arches	5	3. Delaminations, spalls with exposed rebar, water stains, and vegetation growing from girders.
4.	Floor Beams and Diaphragms	N	
5.	Trusses -General	N	
	-Portals	N	
	-Bracing	N	
6.	Paint	N	
7.	Machinery (Moveable Spans)	N	
8.	Rivets and/or Bolts	N	
9.	Welds - Cracks	N	
10.	Rust	N	
11.	Timber Decay	N	
12.	Concrete Cracking and/or Spalling	5	12. See Item 59.3
13.	Collision Damage	8	
14.	Deflection Under Load	7	
15.	Alignment of Members	8	
16.	Vibrations Under Load	7	
17.	Flat Slab	N	
	Inspector's Condition Rating	5	

Date of Inspection 2/18/10 Bridge name Waiokamilo Stream Bridge
Bridge Number 009003600501811

			Condition Rating	Remarks
60	**SUBSTRUCTURE**			
1.	Abutment	-Wings	6	Minor cracks in abutment wingwalls.
		-Backwall/Breastwall	7	
		-Footing	N	Abutment bears on solid rock base.
		-Piles	N	
		-Erosion	6	Roadway run-off has undermined upstream Hana wingwall.
		-Settlement	7	
2.	Piers or Bents	-Caps	N	
		-Column/Wall	N	
		-Footing	N	
		-Piles	N	
		-Scour	N	
		-Settlement	N	
3.	Pile bents		N	
4.	Concrete Cracking and/or Spalling		6	4. See Item 60.1
5.	Steel Corrosion		N	
6.	Timber Decay, etc.		N	
7.	Debris on Seats		7	
8.	Paint		N	
9.	Collision Damage		8	
	Inspector's Condition Rating		7	

61	**CHANNEL & CHANNEL PROTECTION**		
1.	Channel Scour	7	
2.	Embankment Erosion	7	
3.	Drift	7	
4.	Vegetation	7	
5.	Channel Change	7	
6.	Fender System	N	
7.	Spur Dikes & Jetties	N	
8.	Rip Rap	N	
9.	Adequacy of Opening	7	
	Inspector's Condition Rating	7	

62	**CULVERT & RETAINING WALLS**		
1.	Barrel	-Concrete	N
		-Steel	N
		-Timber	N
2.	Headwall		N
3.	Cutoff Wall		N
4.	Adequacy		N
5.	Debris		N
	Inspector's Condition Rating		N

Date of Inspection 2/18/10 Bridge Name Waiokamilo Stream Bridge
Bridge Number 009003600501811

93 CRITICAL FEATURE INSPECTION DATE — Provide date if applicable. If not applicable, indicate with N.

1. Fracture Critical Details	N	
2. Underwater Inspection	N	[If applicable, submit Underwater Inspection Report]
3. Other Special Inspection	N	

OTHER FEATURES — Y - Yes N - No — Remarks

1. Bridge Posted?	Y	Posted Limit = 10 Tons (See comment below)
2. Signage for Posting Legible/Visible?	N	
3. Riding Surface (Roughness) Rating	N	3 - Smooth, 2 - Average, 1 - Poor

1. 10-ton posted load limit on Hana Bridges at both ends of Hana Hwy. No posting at the bridge.

REPAIRS AND IMPROVEMENTS

1. List all work done to this bridge since the last inspection including cost.
   None.

2. Indicate proposed and/or recommended improvements including estimated cost.
   a. Remove vegetation from bridge and shoulder (Maintenance Item)
   b. Upgrade bridge railing and provide guardrails (Est. cost = $11,000)
   c. Repair delamination and spalls on girders (Est. cost = $9,000)
   d. Repair honeycombing in abutment walls (Est. cost = $4,000)
   e. Repair undermined CRM wall footing and divert roadway run-off away from CRM wingwall footing (Est. cost = $11,000)
   f. Seal crack in girder (Est. cost = $6,000)

3. List any existing temporary conditions.
   None.

REMARKS AND RECOMMENDATIONS

1. Does this bridge require inspection by Bridge Design Section? Yes _____ No X
   [This should only be addressed by in-house inspectors who are not structural engineers.]

2. Remarks: Describe defects. Use sketches, diagrams and/or photographs where possible.

Inspected by: Name (printed): Garrett Nago & Robin Okawa Title: Certified Bridge Inspector
Signature:
Phone Number: 808.536.2626

Supervised by: Name (printed): Dwight Okawa, S.E. Title: V.P.
Signature:
Phone Number: 808.536.2626

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

PONTIS BRIDGE INSPECTION REPORT

r10/8/07

Date of Inspection	2/18/10	Bridge Name	Waiokamilo Stream Bridge
Bridge Number	009003600501811	Route No.	360
Number of Spans	1	Highway	Hana Highway
Location: Island	Maui	Feature Intersected	Waiokamilo Stream

ELEM NO.	ELEMENT DESCRIPTION	ENV. (Note 1)	TOTAL QUANT.	UNIT	ST 1	ST 2	ST 3	ST 4	ST 5
13	DECK OR SLAB (Note 2)	2	864	SF.	864				
110	GIRDERS	2	192	LFT.	152	25	15		
215	ABUTMENTS	2	72	LFT.	62	10			
*	COLUMNS			EA.					
*	PIER WALL			LFT.					
*	PIER CAPS			LFT.					
301	JOINTS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)	2	72	LFT.		72			
331	BRIDGE RAILING	2	48	LFT.	48				
*	APPROACH SLABS			EA.					
*	BEARINGS (INSPECTOR NEEDS TO INPUT ELEM NO. & QTY.)			EA.					
*	CULVERT			LFT.					
*	SMART FLAG: STEEL FATIGUE			EA.					
*	SMART FLAG: PACK RUST			EA.					
*	SMART FLAG: DECK CRACKING (ON TOP OF DECK ONLY)			EA.					
359	SMART FLAG: SOFFIT OF CONC. DECK OR SLAB (THIS SMART FLAG IS MANDATORY IF DECK OR SLAB HAS AN A.C. OVERLAY).	2	1	EA.	1				
*	SMART FLAG: SETTLEMENT			EA.					
361	SMART FLAG: SCOUR	2	1	EA.	1				
*	SMART FLAG: TRAFFIC IMPACT (TRAFFIC IMPACT TO SUPERSTRUCTURE ONLY)			EA.					
*	SMART FLAG: SECTION LOSS			EA.					
OTHERS									

COMMENTS:

Note 1: For each element, the inspector shall code the type of environment from the following key:

Env 1: Benign & Low Env: Little or no env. conditions affecting deterioration. Past bridge inspections show that env. has caused little or no deterioration.

Env 2: Moderate: Moderate level of environmental influence or deterioration. Past bridge inspections show that environment has caused some deterioration.

Env 3: Severe: Severe level of environmental influence or deterioration. Past bridge inspections show that environment has caused significant.

Note 2: For DECKS ONLY: All quantity in one ST only. Deck/slab is rated from top of deck/slab only. Use soffit smart flag (elem 359) to rate soffit.

Use these revised Condition States for rating Concrete Decks/Slabs	
CS1	No patched areas, no potholes, no spalls and delams, etc.
CS2	Distressed areas are less than 2% of the total deck area.
CS3	Distressed areas are more than 2% but 10% or less of the total deck area.
CS4	Distressed areas are more than 10% but 25% or less of the total deck area.
CS5	Distressed areas are 25% or more of the total deck area.

Inspector's Name (printed): Garrett Nago & Robin Okawa — Title: Cert. Bridge Inspector

Inspector's Name (signature): Garrett Nago R.O.

Inspector's phone number: 808.536.2626

Supervisor's Name (printed): Dwight Okawa, S.E. — Title: V.P.

Supervisor's Name (signature): Dwight Okawa

HAWAII DEPARTMENT OF TRANSPORTATION — STRUCTURAL INVENTORY AND APPRAISAL — DATE PRINTED: 01/22/2010

Structure Number: 009003600501811

Geographic and Route Data

(1)	State	Hawaii
(2)	District	20
(3)	County	Maui
(4)	Place	99999
(6)	Feature Under	WAIOKAMILO STRM
(7)	Facility on	HANA HWY
(9)	Location	0.02MI W/WAILUA HMSTD RD
(16)	Latitude	20° 51' 06.00"
(17)	Longitude	156° 08' 18.00"
(98)	Border Bridge	
(99)	Border Brdige Str No	
(103)	Temportary Str	

On and Under Record Data

		Route On
(5)	Inventory Route	121003602
(10)	Min Vert Clr	99.99 M
(11)	Kilometerpoint	0029.080
(19)	Detour Length	199 km
(20)	Toll	3
(26)	Func Class	07
(28)	Lanes on/under	0200
(29)	ADT	1515
(30)	Year of ADT	2007
(47)	Total Horz Clearance	06.8 M
(100)	Defense Hwy	0
(101)	Parallel Str	N
(102)	Direction of Traffic	2
(104)	Hwy System	0
(109)	Truck Traffic	00%
(110)	Natl Truck Network	No

General Data

(21)	Maintenance Responsibility	01
(22)	Owner	01
(31)	Design Load	0
(33)	Bridge Median	0
(34)	Skew	00 deg
(35)	Str Flared	No
(37)	Hist Significance	3
(38)	Navigation Control	0
(42)	Type of Service	15
(43)	Structure Type Main	104
(44)	Structure Type Approach	000
(45)	No of Span Main	001
(46)	No of Approach Spans	0000
(27)	Year Built	1921
(106)	Year Reconstructed	0000
(107)	Deck Str Type	1
(108)	Wear Surf/Protv Sys	600
(111)	Nav Pier/Abut Protection	

Dimensional Data

(32)	Approach Rdwy Width	8.2 M
(39)	Navigation Vert Clr	000.0 M
(40)	Navigation Horz clr	0000.0 M
(48)	Max Span Length	0006.1 M
(49)	Str Length	00007.3 M
(50)	Curb/Sidewalk Width	Left 00.0 M
		Right 00.0 M
(51)	Brg Rdwy Width,curb-curb	010.4 M
(52)	Deck Width out-out	011.0 M
(53)	Min Vert Clr over	99.99 M
(54)	Min Vert Clr under	N 00.00 M
(55)	Min Lat Underclr R	N 00.0 M
(56)	Min Lat Underclr L	99.9 M
(112)	NBIS Bridge Length	Y
(116)	Navigation Min Vert Clr	M

Proposed Improvements

(75)	Type of Work	311
(76)	Improvement Length	000134 M
(94)	Bridge Improv Cost	898
(95)	Rdwy Improv Cost	0
(96)	Total Proj Cost	1415
(97)	Year of Cost Est	1999
(114)	Future ADT	2150
(115)	Year of Future ADT	2027

Condition Rating

(58)	Deck	~~7~~ 6
(59)	Superstructure	5 ~~6~~
(60)	Substructure	7
(61)	Channel & Channel Protect	7
(62)	Culverts	N

Appraisal Rating

(67)	Structure Evaluation	6
(68)	Deck Geometry	6
(69)	Underclrn Vert & Horz	N
(71)	Waterway Adequacy	5
(72)	Approach Rdwy Alignment	4
(36)	Traffic Safety Features	0000

Scour Data

(113)	Scour Critical Bridges	8
(202)	Foundation Type	
(220)	Foundation Embedment	0.0 M
(221)	Scour Countermeasures	

Load Rate and Post

(41)	Str Open/Post/Close	Posted
(64)	Operating Rating	53.5 ton
(66)	Inventory Rating	27.2 ton
(70)	Bridge Posting	4
(211)	Posted Limit	

(209) Str Name:

Princ Rte: 360 Milepost: 0.000

Proposed Maintenance

(212)	Repair Priority	
(213)	Proposed Maint Type	
(215)	Maintn Date Completed	/ /
(216)	Actual Maint Cost	0

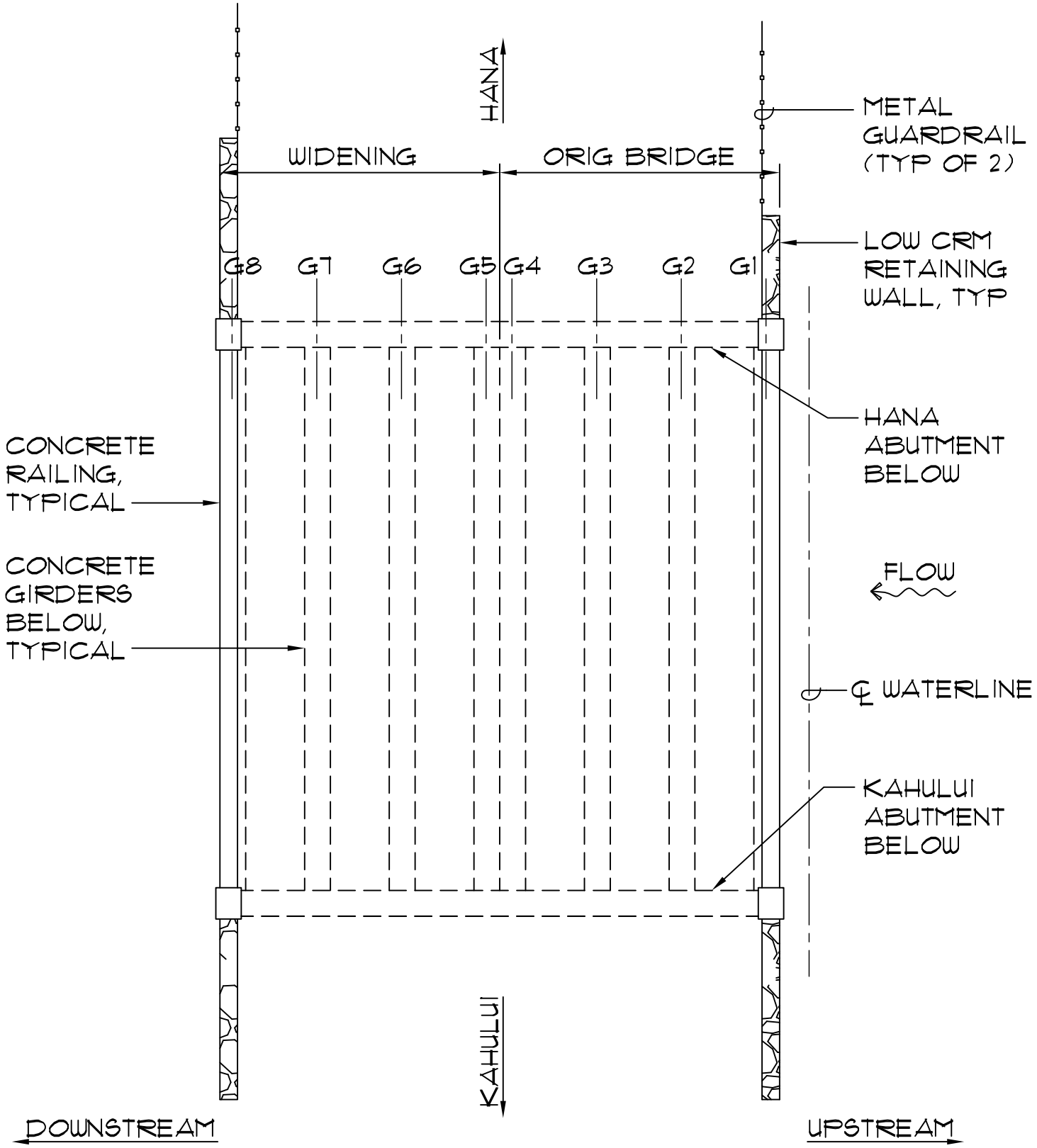
Inspection Data

(90)	Inspection Date (MoYr)	0210 ~~0200~~
(91)	Inspection Frequency	24 Mo
(92)	Critical Feature Insp	(93)Date
	Frac Crit Insp : N	/
	Underwater Insp: N	/
	Other Spec Insp: N	/
(207)	Inspection Quarter	4
(208)	Inspection Number	
(210)	Date of Inspection	~~12/15/1996~~ 02/18/2010

Over 200 Items

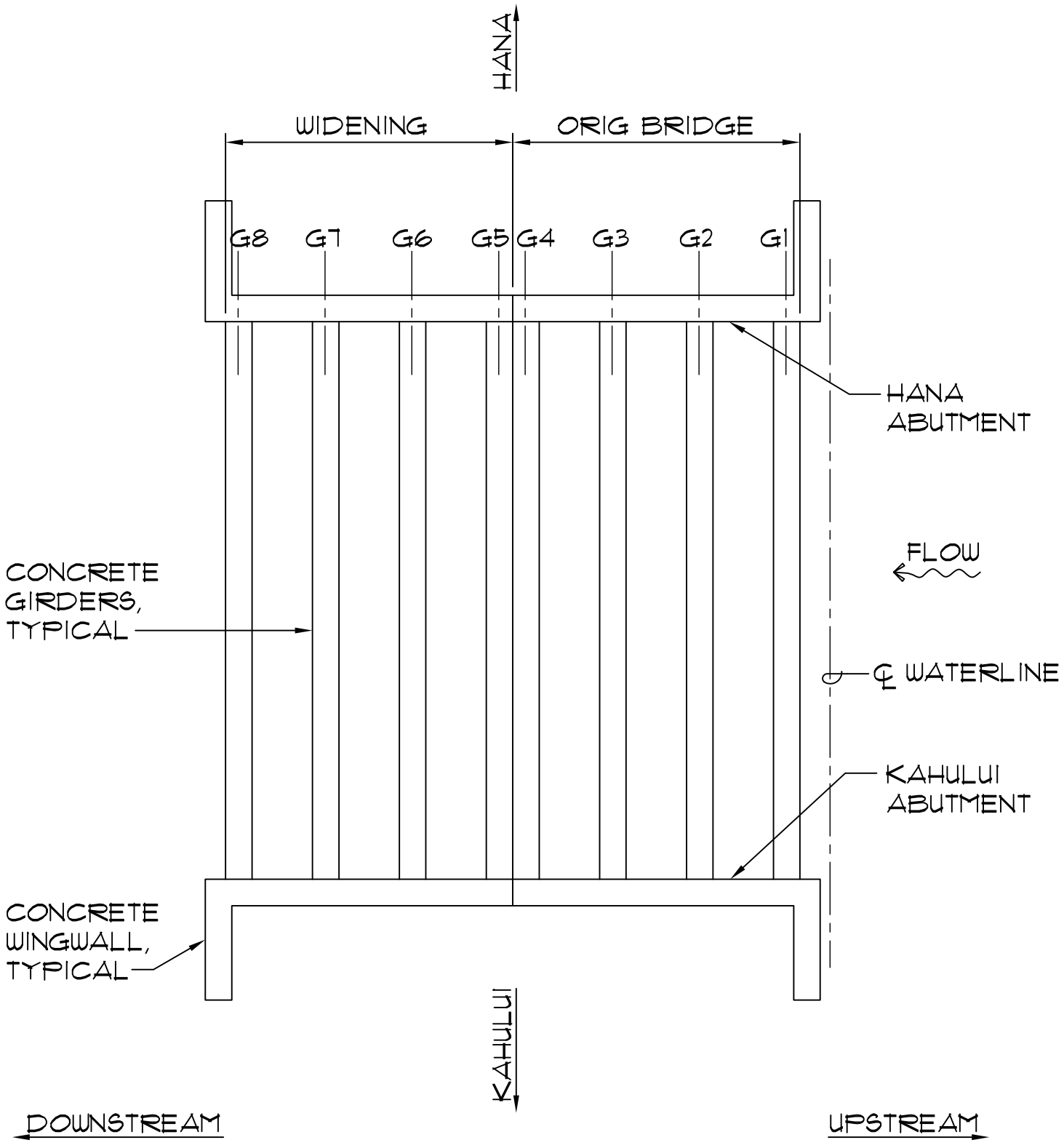
(200)	Princ Route Location	
(201)	Wear Surface Thickness	0.0 mm
(203)	District Maint Org	
(204)	Original Proj #	
(205)	Station Princ Rte	0.000
(206)	Bridge Rail Type	
(217)	Culvert Bbl Height	0.0 M
(218)	Culvert Bbl Length	0.0 M
(219)	Culvert Fill Height	0.0 M
(222)	Date of Load Rating	/ /
(223)	Tracs No	
(224)	Bridge Crew Region	
(225)	Total Deck Area (M^2)	0.0
(226)	Superstr Unit Cost	0.00
(227)	Substr Unit Cost	0.00
(228)	Next Insp Due Date (QuartYr)	498
(229)	Agency	
(230)	Principal Route Number	360
(231)	Principal Route Letter	
(232)	Principal Route Milepost	0.000
(300)	Comments:	

Sufficiency Rating = 070.1



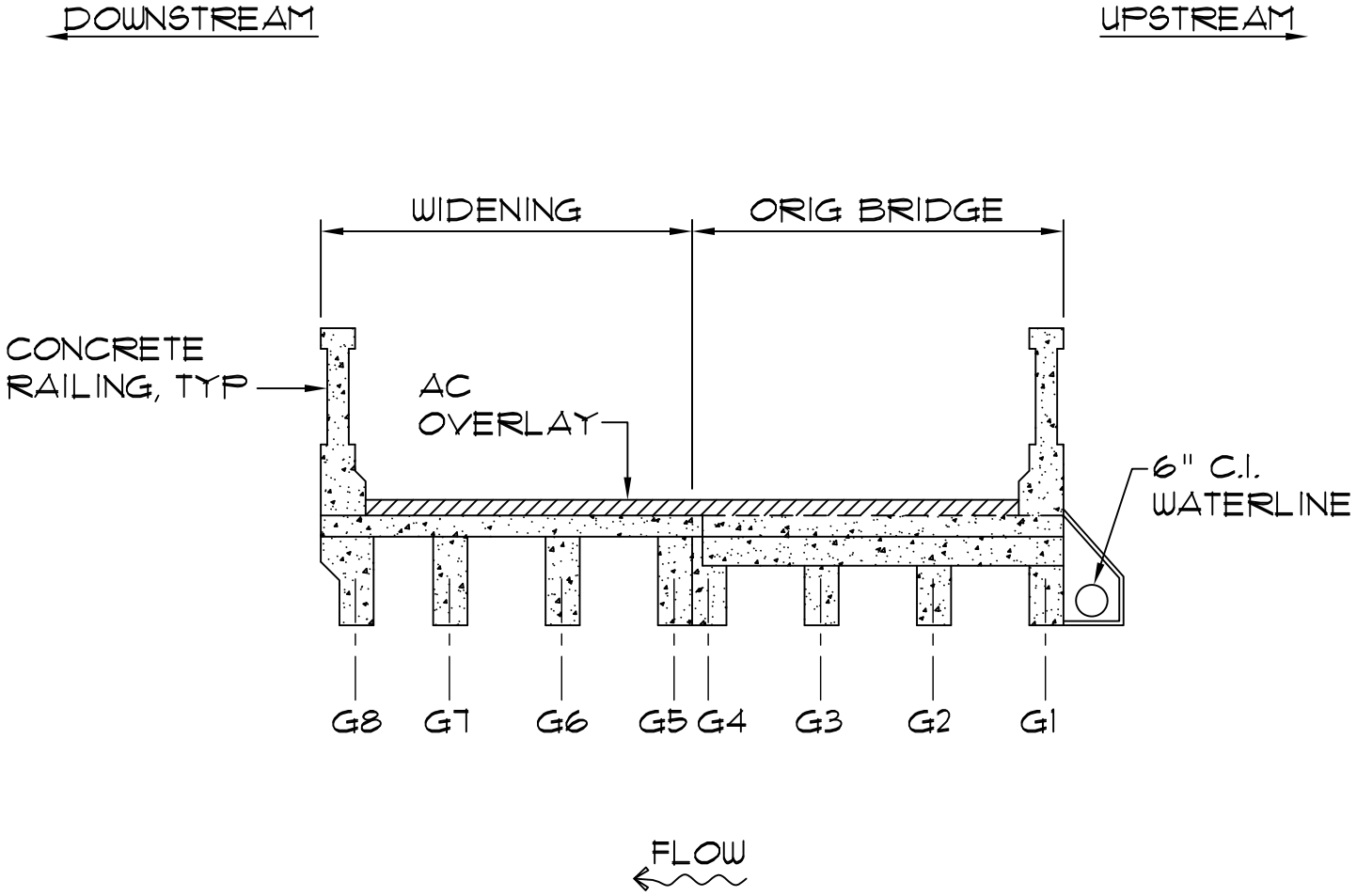
BRIDGE DECK PLAN

WAIOKAMILO STREAM BRIDGE
BRIDGE NO. 009003600501811



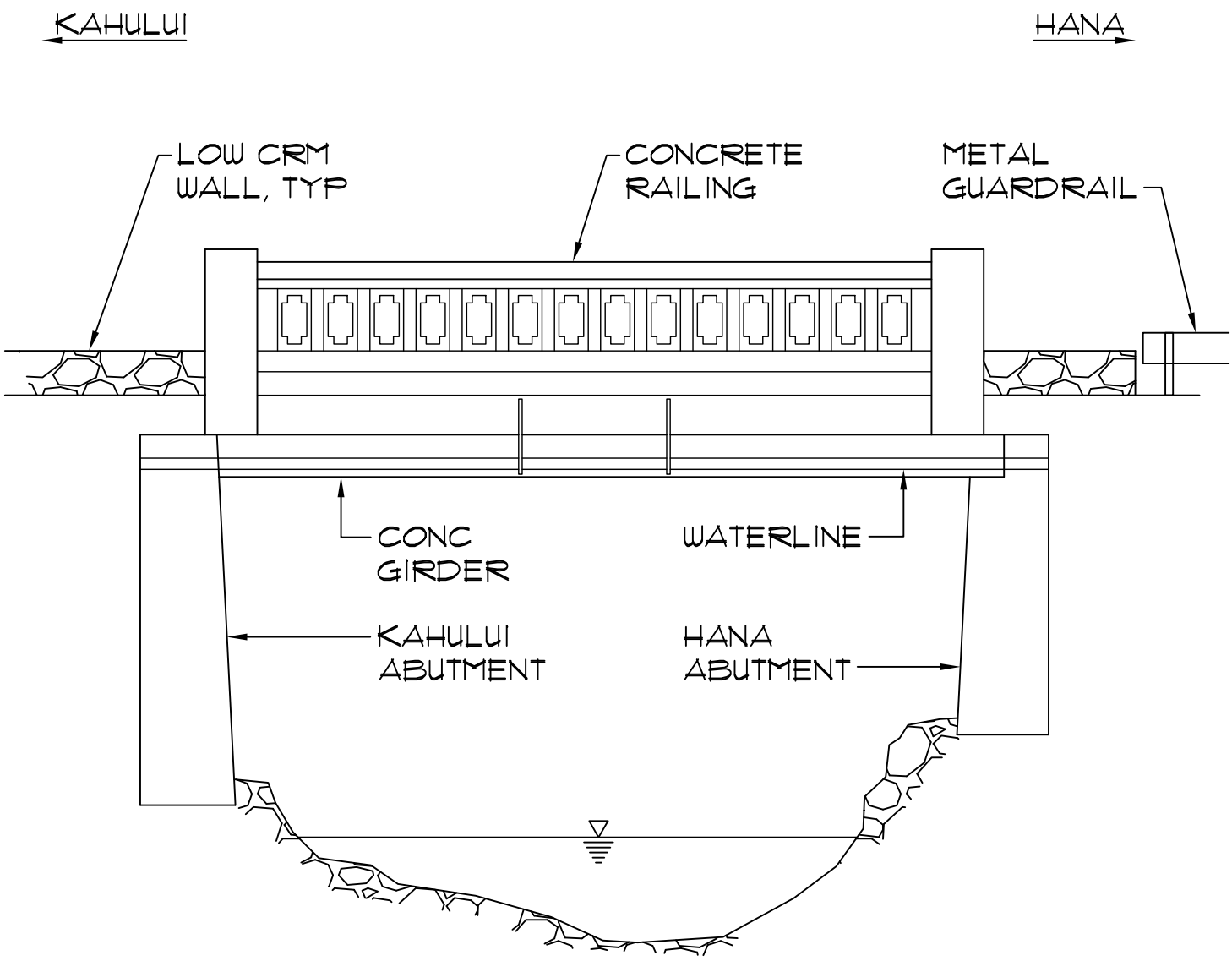
BRIDGE SOFFIT PLAN

WAIOKAMILO STREAM BRIDGE
BRIDGE NO. 009000360050181I



BRIDGE SECTION
LOOKING TOWARD HANA

WAIOKAMILO STREAM BRIDGE
BRIDGE NO. 009003600501811



UPSTREAM ELEVATION

WAIOKAMILO STREAM BRIDGE
BRIDGE NO. 009003600501811

WAIOKAMILO STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501811

PHOTO NO.	DESCRIPTION
1	APPROACH TO BRIDGE LOOKING TOWARD KAHULUI
2	APPROACH TO BRIDGE LOOKING TOWARD HANA
3	UPSTREAM HANA CRM WALL
4	UPSTREAM BRIDGE RAILING LOOKING TOWARD HANA
5	UPSTREAM KAHULUI CRM WALL
6	DOWNSTREAM KAHULUI CRM WALL
7	DOWNSTREAM BRIDGE RAILING LOOKING TOWARD HANA
8	DOWNSTREAM HANA CRM WALL
9	OVERALL VIEW OF AC PAVEMENT OVER BRIDGE
10	BACKSIDE OF UPSTREAM RAILING AND UTILITY PIPE
11	CLOSE UP OF UTILITY PIPE AND HANGERS ON UPSTREAM SIDE OF BRIDGE
12	UPSTREAM BRIDGE ELEVATION
13	DOWNSTREAM BRIDGE ELEVATION
14	DOWNSTREAM HALF OF SOFFIT LOOKING TOWARD HANA
15	JOINT IN SOFFIT
16	UPSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI
17	6’ DELAMINATION IN GIRDER G8
18	DELAMINATION AND UNSOUND PATCH IN GIRDERS G5 AND G6 NEAR KAHULUI ABUTMENT
19	SPALL WITH EXPOSED REBAR AND UNSOUND PATCH IN GRIDER G4
20	DELAMINATION AND VEGETATION GORWING IN GIRDERS G4 AND G5
21	DOWNSTREAM HALF OF KAHULUI ABUTMENT GIRDER SEAT
22	DOWNSTREAM HALF OF HANA ABUTMENT
23	UPSTREAM HALF OF HANA ABUTMENT
24	UNDERMINING AT UPSTREAM HANA CRM WALL
25	UPSTREAM HANA ABUTMENT GIRDER SEAT
26	LOOSE ROCKS IN UPSTREAM KAHULUI CRM WALL

WAIOKAMILO STREAM BRIDGE
PHOTO LOG
Bridge No. 009003600501811

PHOTO NO.	DESCRIPTION
27	UPSTREAM HALF OF KAHULUI ABUTMENT
28	DOWNSTREAM HALF OF KAHULUI ABUTMENT
29	MINOR UNDERMINING AT DOWNSTREAM END OF KAHULUI ABUTMENT
30	SPALL IN KAHULUI ABUTMENT UNDER GIRDERS G4 AND G5
31	UPSTREAM VIEW OF STREAM CHANNEL
32	DOWNSTREAM VIEW OF STREAM CHANNEL

PHOTO 1 APPROACH TO BRIDGE LOOKING TOWARD KAHULUI

PHOTO 2 APPROACH TO BRIDGE LOOKING TOWARD HANA

PHOTO 3 UPSTREAM HANA CRM WALL

PHOTO 4 UPSTREAM BRIDGE RAILING LOOKING TOWARD HANA

PHOTO 5 UPSTREAM KAHULUI CRM WALL

PHOTO 6 DOWNSTREAM KAHULUI CRM WALL

PHOTO 7 DOWNSTREAM BRIDGE RAILING LOOKING TOWARD HANA

PHOTO 8 DOWNSTREAM HANA CRM WALL

PHOTO 9 OVERALL VIEW OF AC PAVEMENT OVER BRIDGE

PHOTO 10 BACKSIDE OF UPSTREAM RAILING AND UTILITY PIPE

PHOTO 11 CLOSE UP OF UTILITY PIPE AND HANGERS ON UPSTREAM SIDE OF BRIDGE

PHOTO 12 UPSTREAM BRIDGE ELEVATION

PHOTO 13 DOWNSTREAM BRIDGE ELEVATION

PHOTO 14 DOWNSTREAM HALF OF SOFFIT LOOKING TOWARD HANA

PHOTO 15 JOINT IN SOFFIT

PHOTO 16 UPSTREAM HALF OF SOFFIT LOOKING TOWARD KAHULUI

PHOTO 17 6’ DELAMINATION IN GIRDER G8

PHOTO 18 DELAMINATION AND UNSOUND PATCH IN GIRDERS G5 AND G6 NEAR KAHULUI ABUTMENT

PHOTO 19 SPALL WITH EXPOSED REBAR AND UNSOUND PATCH IN GRIDER G4

PHOTO 20 DELAMINATION AND VEGETATION GORWING IN GIRDERS G4 AND G5

PHOTO 21 DOWNSTREAM HALF OF KAHULUI ABUTMENT GIRDER SEAT

PHOTO 22 DOWNSTREAM HALF OF HANA ABUTMENT

PHOTO 23 UPSTREAM HALF OF HANA ABUTMENT

PHOTO 24 UNDERMINING AT UPSTREAM HANA CRM WALL

PHOTO 25 UPSTREAM HANA ABUTMENT GIRDER SEAT

PHOTO 26 LOOSE ROCKS IN UPSTREAM KAHULUI CRM WALL

PHOTO 27 UPSTREAM HALF OF KAHULUI ABUTMENT

PHOTO 28 DOWNSTREAM HALF OF KAHULUI ABUTMENT

PHOTO 29 MINOR UNDERMINING AT DOWNSTREAM END OF KAHULUI ABUTMENT

PHOTO 30 SPALL IN KAHULUI ABUTMENT UNDER GIRDERS G4 AND G5

PHOTO 31 UPSTREAM VIEW OF STREAM CHANNEL

PHOTO 32 DOWNSTREAM VIEW OF STREAM CHANNEL