

**ROUTINE BRIDGE INSPECTION REPORT
FEDERAL-AID PROJECT NO. BRIS-NBIS(080)
CONTRACT NO. SC-DDC-2200014**

**FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM
BRIDGE NO. 902
STRUCTURE NO. 003902001100001**

DATE OF INSPECTION: September 3, 2021

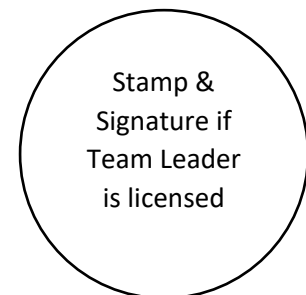


Prepared For:

City and County of Honolulu
Department of Design and Construction

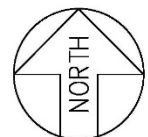
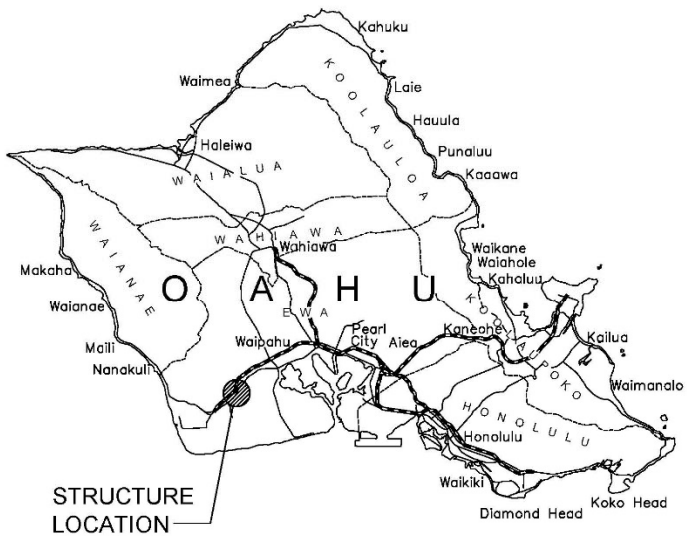
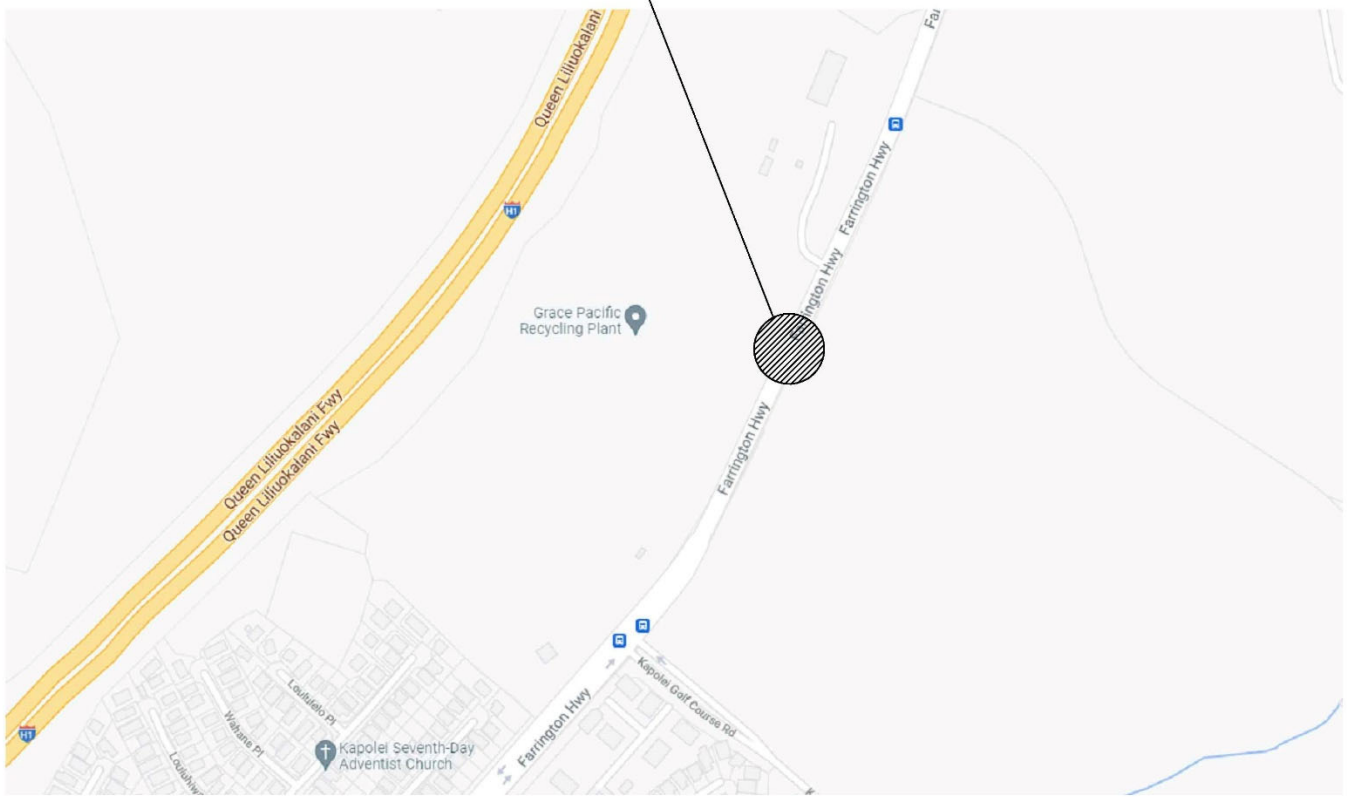
Prepared By:
Team Leader:
Glenn Miyasato
(Certification Date: 06/15/2017)

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Aiea, Hawaii 96701
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FARRINGTON HIGHWAY BRIDGE NO. 3
 BRIDGE NO. 902
 STRUCTURE NO. 003902001100001
 GPS: 21°21'07" N,
 158°03'47" W

FARRINGTON HIGHWAY BRIDGE NO. 3



NOT TO SCALE

LOCATION AND VICINITY MAP
 FARRINGTON HIGHWAY BRIDGE NO. 3

FIGURE
1

SCALE: NTS

DATE: SEPTEMBER 2021

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SECTION 1.0 – INSPECTION SUMMARY

1.1 BRIDGE DESCRIPTION

Year Built	1922
Lanes on Bridge	2 vehicle lanes
Sidewalk(s)	None
No. of Spans	1
Bridge Posting Sign(s)	None
Approach Slab Material and Location	N/A
Deck Wearing Surface	Asphalt Wearing Surface
Culvert Material and Type	N/A
Deck Material and Type	Reinforced concrete slab
Superstructure Material and Type	Reinforced concrete slab
Substructure Material and Type	Reinforced concrete abutments
Bearing Type	N/A
Bridge Railing Material	Reinforced concrete railing
Bridge Railing Height	2'-6"

Record drawings on file at the City and County of Honolulu, Department of Design and Construction, Civil Division, include the following:

- Job Number: N/A
- Structure Name: N/A
- Project Name: Waianae Road, Ewa Junction to Sta. 409+00, Concrete Slab Bridge Station 145+35
- Year Approved: 1922
- File Number: 4-10-1-36

Abutment 1 and Abutment 2 are at the south and north ends of the bridge, respectively.

1.2 PARKING, BRIDGE ACCESS, AND SAFETY HAZARDS

Parking to Perform Bridge Inspection	On shoulder along Farrington Highway
Access to Underside of Bridge	All sides of the bridge
Equipment Used to Access Underside of Bridge	None
Traffic Control	N/A
Water Depth at Time of Inspection	0"

1.3 OVERALL CONDITION

The bridge structure is in poor condition. Periodic bridge inspections are recommended to occur within 24-month intervals as specified in the National Bridge Inspection Standards (NBIS). National Bridge Inspection (NBI) Ratings for the previous inspection and the current inspection are as follows:

NBI ITEM		NBI RATINGS	
		PREVIOUS INSPECTION	CURRENT INSPECTION
#36	Traffic Safety Features (Bridge Railings, Transitions, Approach Guardrail, Approach Guardrail Ends) <small>(Per BrM Database)</small>	0, 0, 0, 0	0, 0, 0, 0
#58	Deck	4	4
#59	Superstructure	4	4
#60	Substructure	7	7
#61	Channel & Channel Protection	5	5
#62	Culvert	N	N
#67	Structural Evaluation	4	4
#71	Waterway Adequacy Comments: Observed conditions appear similar to the previous inspection. No analysis was performed to evaluate flood/overtopping risk.	6	6
#113	Scour Comments: No scour observed	8	8

SECTION 2.0 – LOAD RATING SUMMARY

The bridge is not posted for reduced load carrying capacity. Based on visual observations at the time of this inspection, there appears to be no immediate signs of overstress or increased distress for the bridge that would affect rating calculations since the last inspection report dated September 13, 2019 by Nagamine Okawa Engineers Inc. The most recent load rating was performed on July 15, 2014 by Nagamine Okawa Engineers Inc. See the following load rating summary sheet.

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF DESIGN AND CONSTRUCTION
CIVIL DESIGN AND ENGINEERING DIVISION

Existing Bridge Data

Bridge Load Rating Summary

Structure Number:	003902001100001	Last Load Rating Date:	1/21/2012
Bridge Name:	902-Farrington Hwy Bridge No. 3	Last Inspection Date:	2/6/2014
Bridge Number:	-	Inspected By:	Nagamine Okawa
District:	Ewa	Fracture Critical Member (Y/N):	N
Span Type:	RC-Slab Bridge	Item 58, Deck Rating:	5
Bridge Plans Available (Y/N):	Y	Item 59, Superstructure Rating:	5
Design Loading:	-	Item 60, Substructure Rating:	7
Past Inventory Rating (HL-93):	26.2	Bridge Load Posted (Y/N):	Y
Past Operating Rating (HL-93):	42.5	Posted Weight Limit:	-

Bridge Load Rating Summary

Dead Load Data		LRFR Evaluation Factors	
Overlay Type:	Asphalt	Surface Roughness Rating:	2
Overlay Depth (IN):	2'	Condition Factor:	0.90
Was Overlay Depth Measured (Y/N):	N	System Factor:	1.00
Weight of Utilities:	-	ADTT (one way):	n/a
Weight of other Non-Structural Attachments:	-		

Superstructure/Deck Rating Summary

	Vehicle Type	Vehicle GVW (Kips)	Rating Factor	Controlling Member	Controlling Load Effect	IM	Live Load Distribution Factor
Design Load	HL-93 (INV)	N/A	0.63	Ext Strip	Flexure	33%	0.179 (M)
	HL-93 (OPR)	N/A	0.82	Ext Strip	Flexure	33%	0.179 (M)
Legal Load	Type 3	50.0	1.41	Ext Strip	Flexure	33%	0.179 (M)
	Type 3S2	72.0	1.55	Ext Strip	Flexure	33%	0.179 (M)
	Type 3-3	80.0	1.72	Ext Strip	Flexure	33%	0.179 (M)
	NRL	80.0	1.06	Ext Strip	Flexure	33%	0.179 (M)
	SU4	54.0	1.20	Ext Strip	Flexure	33%	0.179 (M)
	SU5	62.0	1.13	Ext Strip	Flexure	33%	0.179 (M)
	SU6	69.5	1.06	Ext Strip	Flexure	33%	0.179 (M)
	SU7	77.5	1.06	Ext Strip	Flexure	33%	0.179 (M)

Substructure Rating Summary

Substructure Rated (Y/N):	N						
Vehicle Type	Vehicle GVW (Kips)	Rating Factor	Controlling Member	Controlling Load Effect	IM	Live Load Distribution Factor	
HL-93 (INV)	N/A	-	-	-	-	-	
HL-93 (OPR)	N/A	-	-	-	-	-	
Legal Load	N/A	-	-	-	-	-	
Permit Load	N/A	-	-	-	-	-	

Posting Analysis Summary

Governing Legal Load Rating Factor:	1.06
Governing Legal Load Model:	NRL,SU6,SU7
Posting Recommended (Y/N):	N
Recommended Posting Load:	-

Please check the following boxes that apply:

- Bridge load rating is not governed by deck rating
- Bridge load rating is not governed by substructure rating
- Connections do not control the bridge load rating
- Exterior girder controls the bridge load rating
- Bridge plans do not exist - Rating based on judgement and current loading

Quality Control/Quality Assurance

Load Rating Engineer

- Name: Norman Nagamine

- License No.: 5479-S

- Signature: *Norman Nagamine*

Load Rating Checked By: Joshua Tyau

Quality Assurance By: Karl Umemoto

Load Rating Date: 7/15/14

Remarks/Recommendations for Bridges without Plans

SECTION 3.0 – BrM ELEMENT AND SI&A REPORTS

BrM Element and SI&A Reports for this inspection cycle are provided on the following pages.

STATE OF HAWAII
CITY & COUNTY OF HONOLULU
BRIDGE INSPECTION REPORT

Inspection Date: September 03, 2021

Bridge Number: 003902001100001

Bridge Name: FARRINGTON HWY BRIDGE # 3

County Oahu

Route No: 09107

Milepost: 0

Facility: FARR HWY

NBI ITEM 36 - TRAFFIC SAFETY FEATURES		List any maintenance work required: (ie: defects, missing bolts, collision damage, etc.)
36A	Bridge Railings	36A: See Element Defects below. 36B, 36C, 36D: See Appendix A
36B	Transitions	
36C	Approach Guardrail	
36D	Approach Guardrail Ends	

ELEMENT INSPECTION								
ELEM NO.	ELEMENT / DEFECT DESCRIPTION	ENV.	TOTAL QUANTITY	UNIT	CS 1 (Good)	CS 2 (Fair)	CS 3 (Poor)	CS 4 (Severe)
DEFECT								
38	Re Concrete Slab	1	572	sq.ft	440	0	132	0
1080	Delamination/Spall/Patched		60	sq.ft	0	0	60	0
1090	Exposed Rebar		72	sq.ft	0	0	72	0
Defect No. 1080: - 3'x1' delamination (3SF CS3) on upstream face of slab adjacent to Abutment 1 (Photo 21) - 14'x2' delamination (28SF CS3) on slab soffit along Abutment 1 starting from upstream end (Photo 22) - 8'x2' delamination (16SF CS3) on slab soffit along Abutment 1, 5' from downstream end (Photo 23) - 2'x2' delamination and spall with exposed rebar (4SF CS3) on downstream face of slab at Abutment 2 (Photo 24) - 5'x1' delamination (5SF CS3) on slab soffit along Abutment 2, 12' from downstream end - 4'x1' delamination (4SF CS3) on slab soffit along Abutment 2, 22' from downstream end Defect No. 1090: - 2'x2' spall with exposed rebar with 0.0123 sq. in section loss (4SF CS3) on slab soffit at downstream end of slab soffit adjacent to Abutment 1 (Photo 25) - 12'x2' spall with exposed rebar with 0.0123 sq. in section loss (24SF CS3) on slab soffit along Abutment 1, 10' from downstream end (Photo 26) - 10'x2' spall with exposed rebar with 0.0123 sq. in section loss (20SF CS3) on slab soffit along Abutment 2 starting from upstream end (Photo 27) - 8'x3' spall with exposed rebar with 0.0123 sq. in section loss (24SF CS3) on slab soffit along Abutment 2 starting from downstream end (Photo 28)								
215	Re Conc Abutment	1	72	ft	71	1	0	0
1130	Cracking (RC and Other)		1	ft	0	1	0	0
Defect No. 1130: - Moderate width vertical crack (1FT CS2) on Abutment 2 (Photo 27)								
331	Re Conc Bridge Railing	1	44	ft	9	21	14	0
1080	Delamination/Spall/Patched		27	ft	0	16	11	0
1090	Exposed Rebar		3	ft	0	0	3	0
1130	Cracking (RC and Other)		5	ft	0	5	0	0

Defect No. 1080:

- 3'x3'x4" spall with exposed rebar (3FT CS3) on exterior face of upstream railing, 2' from north end (Photo 10)
- 9"x1'-8"x2-1/2" spall (1FT CS3) on interior face of upstream railing, 2' from north end (concurrent with 3'x3'x4" spall noted above) (Photo 11)
- 5'-3"x1'-6"x3" spall with exposed rebar (6FT CS3) on exterior face of upstream railing, 10' from north end (Photo 12)
- 4'x1'-6"x2" spall with exposed rebar (4FT CS3) on exterior face of upstream railing, 2' from south end (Photo 13)
- Delamination (8FT CS2) on exterior face of upstream railing (Photo 14)
- Typical sound concrete patches (8FT CS2) on exterior face of downstream railing (Photo 15)

Defect No. 1090:

- 1'x1'-6"x2" and 1'x1'x2" spalls with exposed rebar with 0.31 sq. in section loss (2 FT CS3) on interior face of upstream railing, 10' and 12' from north end (concurrent with 5'-3"x1'-6"x3" spall noted above) (Photos 16 & 17)
- 1'x1'-6"x2" spall with exposed rebar with 0.31 sq. in section loss (1 FT CS3) on interior face of upstream railing, 14' from north end (Photo 18)

Defect No. 1130:

- Moderate width cracks (5FT CS2) on both bridge railings (Photo 19)

NBI ITEM CONDITION RATINGS			Describe defects noted during bridge inspection. Provide sketches, diagrams, and photographs where possible. See bridge element/defect notes and descriptions listed for defects noted during inspection. See also report, photographs and figures for defects noted during inspection.
58	Deck	4	
59	Superstructure	4	
60	Substructure	7	
61	Channel and Channel Protection	5	
62	Culvert	N	
71	Waterway Adequacy	6	

NBI ITEM 93 - CRITICAL FEATURE INSPECTION		REQUIRED	FREQUENCY	CURRENT	NEXT
93A	Fracture Critical Details	N			1/1/01
93B	Underwater Inspection	N			1/1/01

OTHER FEATURES		REMARKS	
Posted Status (NBI Item 41)	A - Open, no restriction		
Posted Weight Limit	(Posted limit (Tons) or 'N' if not applicable) N		
Signing for Posting Legible/Visible? (Provide 2 pictures of signs. 1 on each end of bridge)	(Y or N)		
Riding Surface (Roughness) Rating	(3 - smooth, 2 - Avg, 1 - Poor) 3		

REPAIRS, IMPROVEMENTS AND RECOMMENDATIONS
List all work done to this bridge since last inspection (ie: structural repair work, cleaning, maintenance work, etc.)
List proposed and/or recommended work for this bridge including estimated cost (ie: structural repair work, cleaning, maintenance, etc.)

- Upgrade bridge railings to current acceptable standards (Est. Cost = \$90,000)
- Repair guardrail and install transitions and guardrail end treatments to current acceptable standards (Off-Bridge Repair Item)
- Repair spalls/delaminations/exposed rebars on bridge railings (Est. Cost = \$18,000)
- Repair spalls/delaminations/exposed rebars on slab soffit (Est. Cost = \$105,600)

Other comments or observations.

Inspector: **Signature:** _____ **Phone:** _____
Amar P Jaishi

Inspector: **Signature:** _____ **Phone:** _____
Noe Lum

Team Leader: **Signature:** _____ **Phone:** _____
Glenn Miyasato

Office: _____ **Certification Date:** _____
MKE Associates LLC 06/15/2017

BIP Leader: **Signature:** _____ **QC Date:** _____
Stanley Katsura

Office: _____
C&C Honolulu

Attachments:

Structural Inventory & Appraisal (SI&A) Sheet

Photos

State of Hawaii
Department of Transportation
Structure Inventory and Appraisal Sheet (English Units)

Name: **FARRINGTON HWY BRIDGE # 3** Bridge No: **003902001100001**

Inspection Date: 09/03/2021

IDENTIFICATION										
Rte.(On/Under)	5A:	Route On Structure	State	1:	15 Hawaii					
Rte. Signing Prefix	5B:	5 City Street	Facility Carried	7:	FARR HWY					
Level of Service	5C:	0 None of the below	Place Code	4:						
Route Number	5D:	09107	SHD District	2:	25 Oahu					
Directional Suffix	5E:	0 N/A (NBI)	Feature Intersected	6:	FARR HWY/PALEHUA STRM					
Border Bridge Code	98:	Unknown (P)	County Code	3:	Oahu					
Border Bridge Number	99:	NA	Location	9:	TMK=9-1-16					
Mile Post	11:	NA	Latitude	16:	21° 21' 07"					
Struc Num	8:	003902001100001	Longitude	17:	158° 03' 47"					
INSPECTION										
Inspection Date	90:	9/3/2021	Frequency	91:	24 months	Next Inspection:	9/3/2023			
FC Inspection Date	93A:	NA	FC Frequency	92A:		Next FC Inspection:	NA			
UW Inspection Date	93B:	NA	UW Frequency	92B:		Next UW Inspection:	NA			
CONDITION										
Deck	58:	4 Poor	Super	59:	4 Poor	Sub	60:	7 Good	SD/FO:	SD
Culvert	62:	N N/A (NBI)	Channel/Channel Protection	61:	5 Bank Prot Erode	SUFF RATE:	22.8			
LOAD RATING AND POSTING										
Inventory Rating Method	65:	8 LRFR (HL93)	Operating Rating Method	63:	8 LRFR (HL93)					
Inventory Rating	66:	0.63	Operating Rating	64:	0.82					
Design Load	31:	4 M 18 (H 20)	Posting	70:	5 At/Above Legal Loads					
Posting Status	41:	A - Open, no restriction								
GEOMETRIC DATA										
Length Max Span	48:	20.01 ft	Structure Length	49:	21.98 ft					
Width Curb to Curb	51:	23.95 ft	Curb/Sdwk Width L	50A:	0.00 ft					
Approach Roadway width (w/ shoulders)	32:	38.06 ft	Curb/Sidewalk Width R	50B:	0.00 ft					
Deck Area:		592.02 sq. ft	Width Out to Out	52:	26.90 ft					
Skew	34:	45.00°	Median	33:	0 No median					
Vertical Clearance	10:	99.99 ft	Structure Flared	35:	0 No flare					
Min. Vert. Cl. Over Bridge	53:	99.99 ft	Horizontal Clearance	47:	23.95 ft					
Min. Vert. Undercl. Ref.	54A:	N Feature not hwy	Min. Lat. Undercl. Ref. R	55A:	N Feature not hwy or RR					
Min. Vert. Undercl.	54B:	0.00 ft	Min. Lat. Undercl. R	55:	0.00 ft					
			Min. Lat. Undercl. L	56:	0.00 ft					
AGE AND SERVICE										
Year Built	27:	1922	ADT	29:	5,685					
Type of Service on	42A:	1 Highway	Year Reconstructed	106:	-1					
Type of Service under	42B:	5 Waterway	Detour Length	19:	9.9 mi					
Lanes on	28A:	2	Truck ADT	109:	0%					
Lanes under	28B:	0	Year of ADT	30:	1983					
STRUCTURE TYPE AND MATERIALS										
Deck Type	107:	1 Concrete-Cast-in-Place	Number of Spans Main Unit	45:	1					
Wearing Surface	108A:	6 Bituminous	Main Span Material Design	43A:	1 Concrete					
Membrane	108B:	0 None	Main Span Material Design	43B:	01 Slab					
Deck protection	108C:	None	Number of Approach Spans	46:	0					

State of Hawaii
 Department of Transportation
 Structure Inventory and Appraisal Sheet (English Units)

APPRAISAL					
Bridge Rail	36A:	0 Substandard	Approach Rail	36C:	0 Substandard
Transition	36B:	0 Substandard	Approach Rail Ends	36D:	0 Substandard
Str Evaluation	67:	4 Minimum Tolerable	Deck Geometry	68:	2 Intolerable - Replace
Waterway Adequacy	71:	6 Equal Minimum	Approach Alignment	72:	8 Equal Desirable Crit
Scour Critical	113:	8 Stable Above Footing	Vert. & Horiz. Undercl.	69:	N Not applicable (NBI)
CLASSIFICATION					
Defense Highway	100:	0 Not a STRAHNET hwy	Parallel Structure	101:	No bridge exists
Direction of Traffic	102:	2 2-way traffic	Temporary Structure	103:	Unknown (NBI)
Highway System	104:	3 On free road	NBIS Length	112:	Long Enough
Defense Hwy	110:	0 Not on NHS	Functional Class	26:	02 Rural Other Princ
Toll Facility	20:	0 Not a STRAHNET hwy	Historical Significance	37:	5 Not eligible for NRHP
Owner	22:	County Hwy Agency	Custodian	21:	County Hwy Agency
PROPOSED IMPROVEMENTS					
Bridge Cost	94:	\$0	Type of Work	75:	38 Other Structural
Roadway Cost	95:	\$10,000	Length of Improvement	76:	42.7 ft
Total Cost	96:	\$157,000	Future ADT	114:	7,106
Year of Cost Estimate	97:	2004	Year of Future ADT	115:	2025
NAVIGATION DATA					
Navigation Control	38:	Permit Not Required	Horizontal Clearance	40:	0.0 ft
Vertical Clearance	39:	0.0 ft	Lift Bridge Vert. Cl.	116:	
Pier Protection	111:	Unknown (NBI)			

APPENDIX A: PHOTOGRAPHS



PHOTO 1 NORTH APPROACH LOOKING SOUTH



PHOTO 2 SOUTH APPROACH LOOKING NORTH



PHOTO 3 UPSTREAM ELEVATION



PHOTO 4 DOWNSTREAM ELEVATION



PHOTO 5 UPSTREAM SOUTH APPROACH GUARDRAIL



PHOTO 6 UPSTREAM NORTH APPROACH GUARDRAIL



PHOTO 7 DOWNSTREAM SOUTH APPROACH GUARDRAIL



PHOTO 8 DOWNSTREAM NORTH APPROACH GUARDRAIL WITH VEGETATION



PHOTO 9 COLLISION DAMAGE TO UPSTREAM NORTH APPROACH
GUARDRAIL AND END TREATMENT



PHOTO 10 3'X3'X4" SPALL WITH EXPOSED REBAR (3FT 1080 CS3)
ON EXTERIOR FACE OF UPSTREAM RAILING, 2' FROM
NORTH END OF BRIDGE



PHOTO 11 9"X1'-8"X2-1/2" SPALL (1FT 1080 CS3) ON INTERIOR FACE OF UPSTREAM RAILING, 2' FROM NORTH END OF BRIDGE



PHOTO 12 5'-3"X1'-6"X3" SPALL WITH EXPOSED REBAR (6FT 1080 CS3) ON EXTERIOR FACE OF UPSTREAM RAILING, 10' FROM NORTH END OF BRIDGE



PHOTO 13 4'X1'-6"X2" SPALL WITH EXPOSED REBAR (4FT 1080 CS3)
ON EXTERIOR FACE OF UPSTREAM RAILING, 2' FROM
SOUTH END OF BRIDGE



PHOTO 14 DELAMINATION (8FT 1080 CS2) ON EXTERIOR FACE OF
UPSTREAM RAILING



PHOTO 15 TYPICAL SOUND CONCRETE PATCHES (8FT 1080 CS2)
ON EXTERIOR FACE OF DOWNSTREAM RAILING



PHOTO 16 1'X1'-6"X2" SPALL WITH EXPOSED REBAR WITH 0.31 SQ.
IN SECTION LOSS (1FT 1090 CS3) ON INTERIOR FACE OF
UPSTREAM RAILING, 10' FROM NORTH END OF BRIDGE



PHOTO 17 1'X1'X2" SPALL WITH EXPOSED REBAR WITH 0.31 SQ. IN SECTION LOSS (1FT 1090 CS3) ON INTERIOR FACE OF UPSTREAM RAILING, 12' FROM NORTH END OF BRIDGE



PHOTO 18 1'X1'-6"X2" SPALL WITH EXPOSED REBAR WITH 0.31 SQ. IN SECTION LOSS (1FT 1090 CS3) ON INTERIOR FACE OF UPSTREAM RAILING, 14' FROM NORTH END OF BRIDGE



PHOTO 19 TYPICAL MODERATE WIDTH CRACK (1130 CS2) ON BOTH BRIDGE RAILINGS



PHOTO 20 WEARING SURFACE



PHOTO 21 3'X1' DELAMINATION (3SF 1080 CS3) ON UPSTREAM FACE OF SLAB ADJACENT TO ABUTMENT 1



PHOTO 22 14'X2' DELAMINATION (28SF 1080 CS3) ON SLAB SOFFIT ALONG ABUTMENT 1 STARTING FROM UPSTREAM END



PHOTO 23 8'X2' DELAMINATION (16SF 1080 CS3) ON SLAB SOFFIT ALONG ABUTMENT 1, 5' FROM DOWNSTREAM END



PHOTO 24 2'X2' DELAMINATION AND SPALL WITH EXPOSED REBAR (4SF 1080 CS3) ON DOWNSTREAM FACE OF SLAB AT ABUTMENT 2



PHOTO 25 2'X2' SPALL WITH EXPOSED REBAR WITH 0.0123 SQ. IN SECTION LOSS (4SF 1090 CS3) ON SLAB SOFFIT AT DOWNSTREAM END OF SLAB SOFFIT ADJACENT TO ABUTMENT 1



PHOTO 26 12'X2' SPALL WITH EXPOSED REBAR WITH 0.0123 SQ. IN SECTION LOSS (24SF 1090 CS3) ON SLAB SOFFIT ALONG ABUTMENT 1, 10' FROM DOWNSTREAM END



PHOTO 27 10'X2' SPALL WITH EXPOSED REBAR WITH 0.0123 SQ. IN SECTION LOSS (20SF 1090 CS3) ON SLAB SOFFIT ALONG ABUTMENT 2 STARTING FROM UPSTREAM END



PHOTO 28 8'X3' SPALL WITH EXPOSED REBAR WITH 0.0123 SQ. IN SECTION LOSS (24SF 1090 CS3) ON SLAB SOFFIT ALONG ABUTMENT 2 STARTING FROM DOWNSTREAM END



PHOTO 29 ABUTMENT 1



PHOTO 30 ABUTMENT 2



PHOTO 31 MODERATE WIDTH VERTICAL CRACK (1FT 1130 CS2) ON ABUTMENT 2



PHOTO 32 UPSTREAM CHANNEL



PHOTO 33 DOWNSTREAM CHANNEL WITH VEGETATION GROWTH

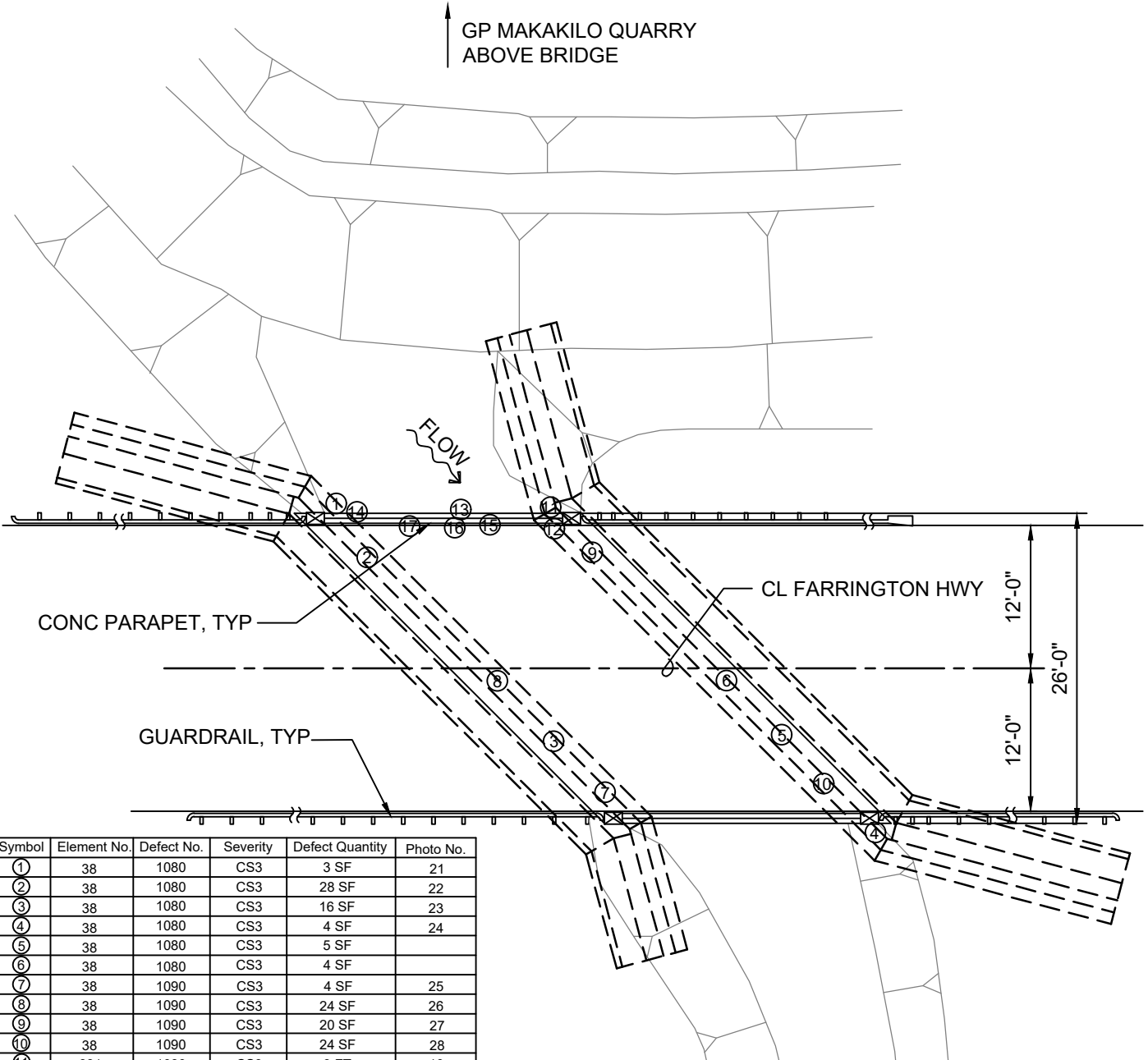
APPENDIX B: FIGURES

TO KAPOLEI
(SOUTH)



TO WAIPAHA
(NORTH)

GP MAKAKILO QUARRY
ABOVE BRIDGE



Symbol	Element No.	Defect No.	Severity	Defect Quantity	Photo No.
①	38	1080	CS3	3 SF	21
②	38	1080	CS3	28 SF	22
③	38	1080	CS3	16 SF	23
④	38	1080	CS3	4 SF	24
⑤	38	1080	CS3	5 SF	
⑥	38	1080	CS3	4 SF	
⑦	38	1090	CS3	4 SF	25
⑧	38	1090	CS3	24 SF	26
⑨	38	1090	CS3	20 SF	27
⑩	38	1090	CS3	24 SF	28
⑪	331	1080	CS3	3 FT	10
⑫	331	1080	CS3	1 FT	11
⑬	331	1080	CS3	6 FT	12
⑭	331	1080	CS3	4 FT	13
⑮	331	1090	CS3	1 FT	16
⑯	331	1090	CS3	1 FT	17
⑰	331	1090	CS3	1 FT	18

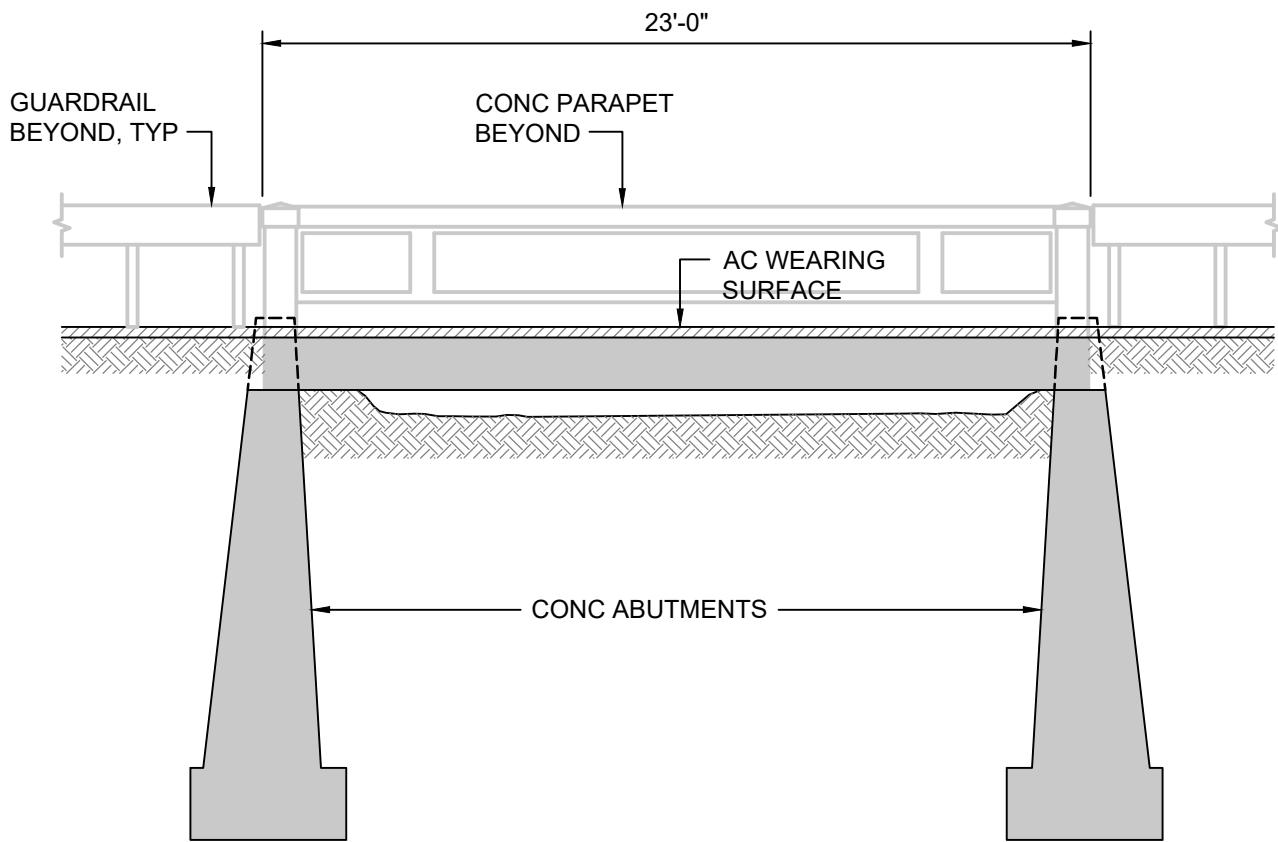
BRIDGE PLAN

NOT TO SCALE

Bridge Name: FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM

City Bridge No. 902

Structure No. 003902001100001



LONGITUDINAL SECTION

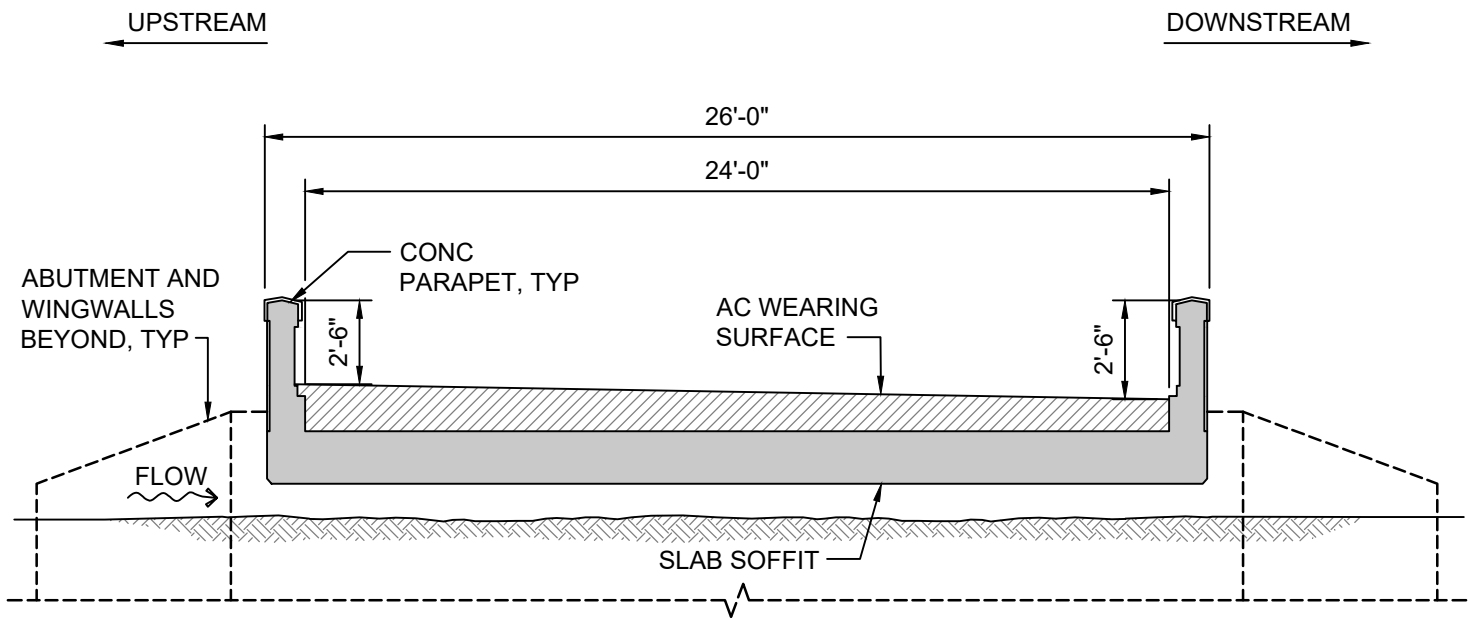
NOT TO SCALE

Bridge Name: FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM

City Bridge No. 902

Structure No. 003902001100001

NOTE:
 UPSTREAM PARAPET HEIGHT = 2'-6"
 DOWNSTREAM PARAPET HEIGHT = 2'-6"
 RAILING HEIGHT WAS TAKEN AT AN
 ARBITRARY LOCATION AND MAY VARY
 ALONG BRIDGE LENGTH.



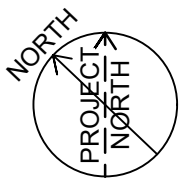
TRANSVERSE SECTION

NOT TO SCALE

Bridge Name: FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM

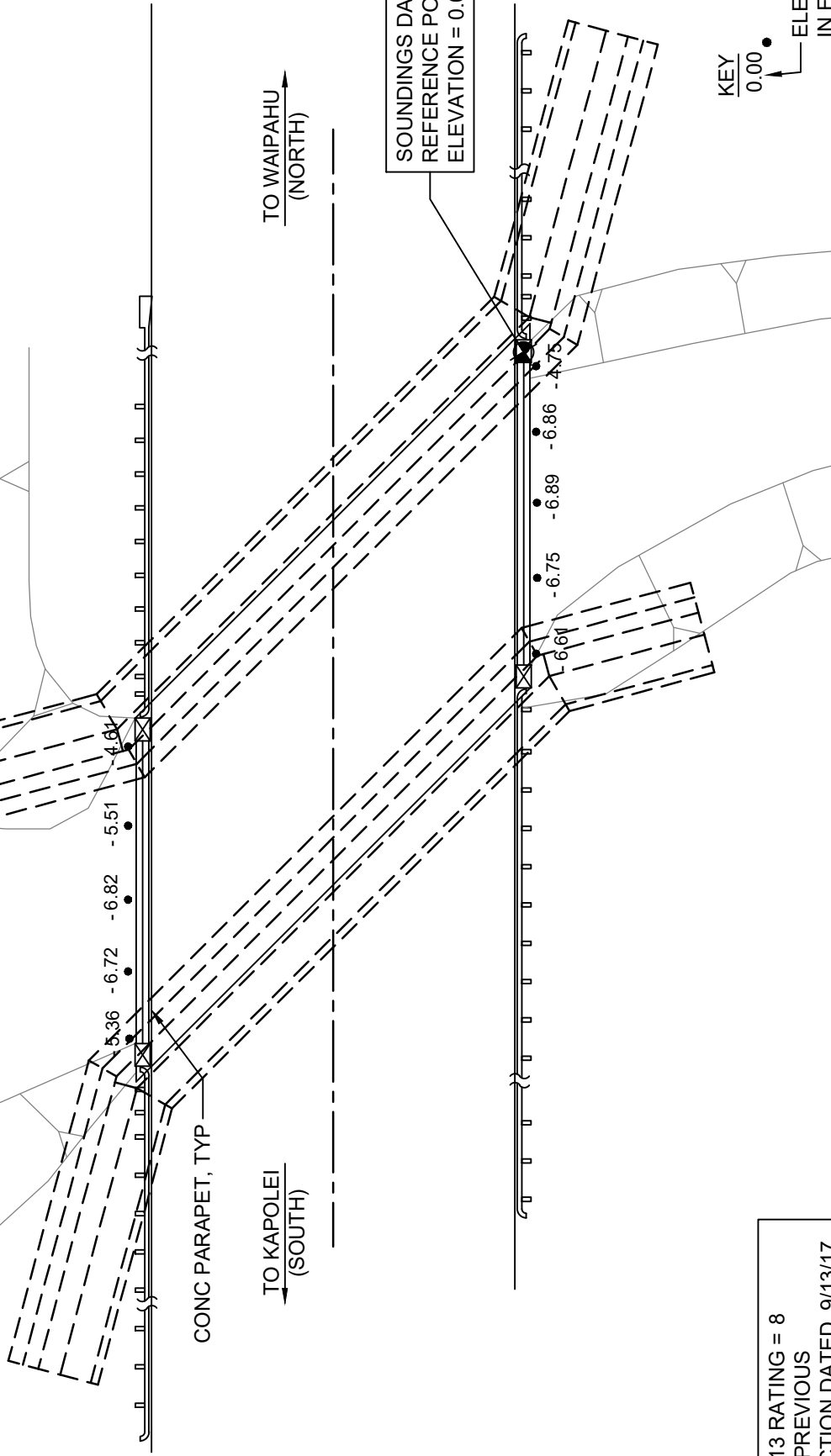
City Bridge No. 902

Structure No. 003902001100001



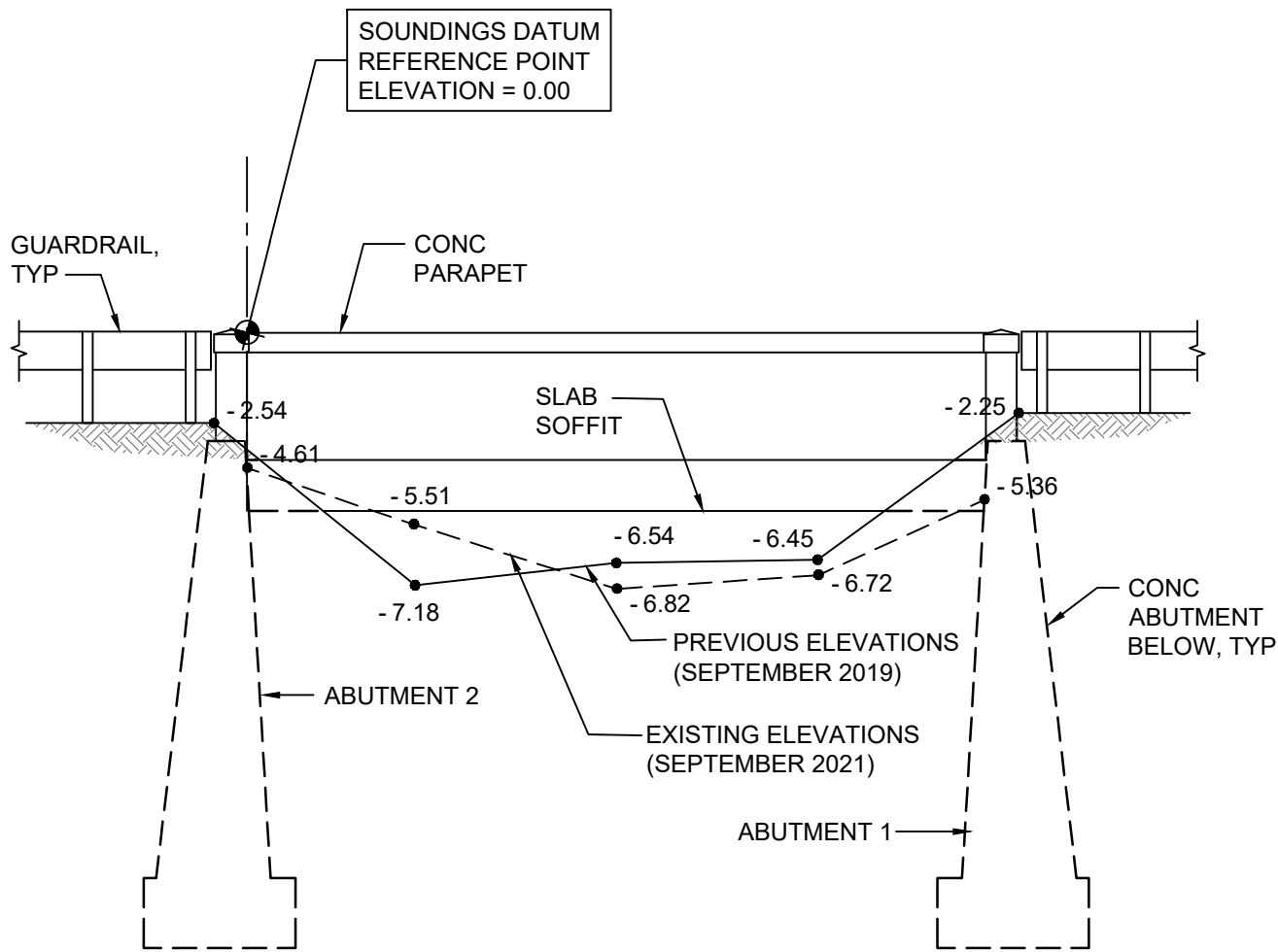
NOTE:
 ELEVATION 0.00 IS TAKEN AT
 TOP OF CONCRETE PARAPET
 DIRECTLY ABOVE LEFT
 ABUTMENT (LOOKING
 DOWNSTREAM) IN-LINE WITH
 FACE OF BREASTWALL.

FLOW →



ITEM 113 RATING = 8
 FROM PREVIOUS
 INSPECTION DATED 9/13/17

BRIDGE PLAN - SOUNDINGS	NOT TO SCALE
BRIDGE NAME: FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM	
City Bridge No. 902	Structure No. 003902001100001



AS-BUILTS COULD NOT PROVIDE SUFFICIENT FOUNDATION INFORMATION. THEREFORE, BRIDGE FOUNDATION ELEVATIONS ARE UNKNOWN.

KEY
 0.00 ———
 ↑ ELEVATION IN FEET (SEPTEMBER 2019 VALUES BY OTHERS)
 0.00 - - -
 ↑ ELEVATION IN FEET (SEPTEMBER 2021)

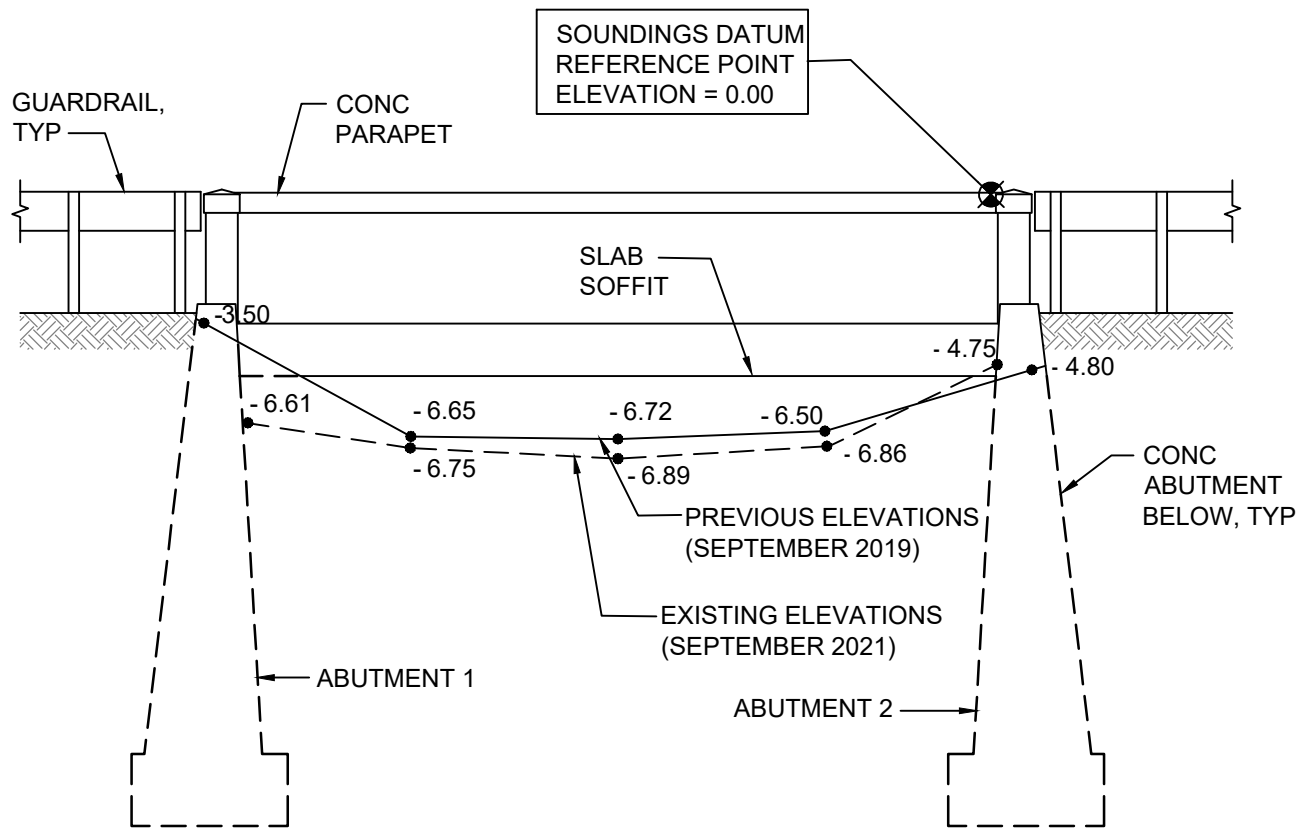
UPSTREAM ELEVATION - SOUNDINGS

NOT TO SCALE

Bridge Name: FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM

City Bridge No. 902

Structure No. 003902001100001



KEY

- 0.00 ——— ELEVATION IN FEET (SEPTEMBER 2019 VALUES BY OTHERS)
- 0.00 - - - ELEVATION IN FEET (SEPTEMBER 2021)

AS-BUILTS COULD NOT PROVIDE SUFFICIENT FOUNDATION INFORMATION. THEREFORE, BRIDGE FOUNDATION ELEVATIONS ARE UNKNOWN.

DOWNSTREAM ELEVATION - SOUNDINGS

NOT TO SCALE

Bridge Name: FARRINGTON HIGHWAY BRIDGE NO. 3 OVER PALEHUA STREAM

City Bridge No. 902

Structure No. 003902001100001