

# Technical Memorandum

January 31, 2025

<b>To</b>	Roland Yip, PE, City of Pacifica	<b>Contact No.</b>	925 849 1019
<b>Copy to</b>	--	<b>Email</b>	satish.chilka@ghd.com
<b>From</b>	Satish Chilka, PE Madeline Mueller, EIT	<b>Project No.</b>	12599413
<b>Project Name</b>	Pacifica Pier Condition Assessment		
<b>Subject</b>	Post Storm Condition Assessment –January 2025		

## 1. Introduction

The Pacifica Municipal Pier, located at 2100 Beach Blvd. Pacifica, CA 94044, is an L-shaped concrete pier supported on concrete piles (Figure 1.1). The pier was originally designed to support an outfall extending from Beach Boulevard into the ocean. It is currently used for public recreation. The pier deck is prestressed concrete box girders with cast-in-place concrete handrails.

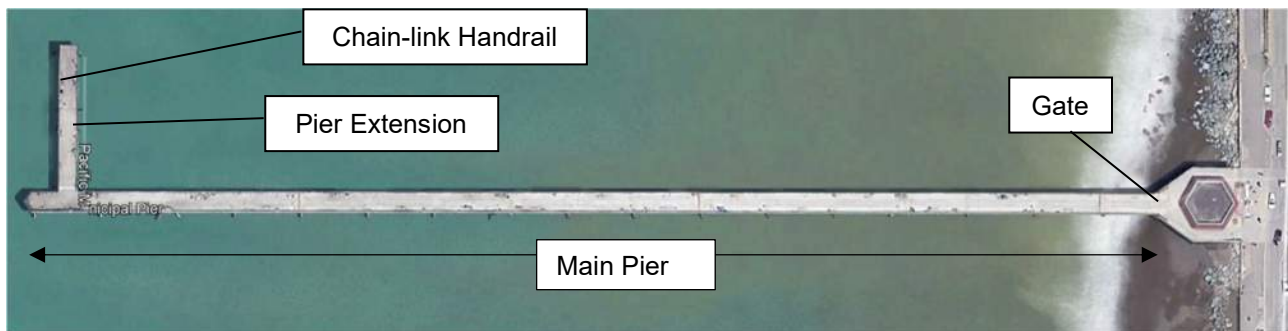


Figure 1.1 Pacifica Municipal Pier Layout

GHD conducted a post-storm event assessment in January 2025 following closure of the pier through multiple storm events in December 2024. GHD’s engineer reviewed the condition of the handrails and deck for immediate hazards. GHD’s subconsultant, New Age Aerial utilized an unmanned aerial vehicle (UAV) to capture the imagery of the structure that cannot be observed from the pier deck, including outboard side of the handrails, outboard sides of the deck, and the piles below deck. The images were reviewed by GHD to assess the overall condition of the pier. This memorandum summarizes the findings of the assessment and recommendation.

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## 1.1 Background

GHD conducted a detailed condition assessment of the structure between April and August 2023. The Pier Extension has remained closed to public access since the collapse of handrails since January 2021. The assessment included the handrails, the exterior sides of the deck and piles above water line using an Unmanned Aerial Vehicle (UAV), piles below water line using Remote Operated Vehicle (ROV) and qualified divers, and deck delamination survey.

The overall condition ratings for different segments of the Pier were reported as following based on the observed conditions of individual components of the Pier. The assessment report (issued January 2024) recommended annual routine inspection of the structure to monitor the damages.

- Main Pier rated as Poor, from Abutment to Bent Q.
- Main Pier rated as Serious, from Bent Q to Bent R.
- Pier Extension rated as Serious.

It was also recommended to close the Pier before and during anticipated storm events that subject the piles to high winds, swells and large waves and conduct a post-event assessment to identify any critical damages before re-opening the Pier.

The City of Pacifica had closed the Pier in December 2023 due to high winds and large swells. GHD reviewed condition of the handrails in January 2024 followed by utilizing an UAV to capture imagery of the structure for further assessment. Based on the recommendations provided by GHD in June 2024, the City installed a chain-link fence preventing access beyond Bent M (Figure 1.2), boarded up some handrails with exposed rebar and/or areas with openings greater than 4 inches between adjacent handrails, and opened the pier for public access.



Figure 1.2 Chain-link Fence on Main Pier near Bent M

## 2. Methodology

The methodology was consistent with the condition assessment performed in previous years.

### 2.1 Observation methods

A visual observation of inside faces of concrete handrails and deck surfaces was performed. An UAV operated by GHD's subconsultant New Age Aerial captured imagery of the exterior sides of the deck, handrails and the piles below deck. The images were reviewed to assess current condition and identify areas of significant damage.

### 2.2 Damage Ratings

The observed conditions of the guardrails are categorized in conformance with ASCE 130: Waterfront Facilities Inspection and Assessment. For reinforced concrete elements, damage can be described as either minor, moderate, major, or severe as described in Table 2.1.

Table 2.1: Damage Rating for Reinforced Concrete Elements - ASCE 130

Damage Rating	Existing Damage
Not Inspected	– Not inspected, inaccessible, or passed by
No Defects	– Good original hard surface, hard material, sound
Minor	– Mechanical abrasion or impact spalls up to 1-in in depth – Occasional corrosion stains or small pop-out corrosion spalls – General cracks up to 1/16-in in width
Moderate	– Structural cracks up to 1/16-in in width – Corrosion cracks up to 1/4-in in width – Chemical deterioration: Random cracks up to 1/16-in in width; “Soft” concrete and/or rounding of corners up to 1-in deep – Mechanical abrasion or impact spalls greater than 1-in in depth
Major	– Structural cracks 1/16-in to 1/4-in in width and partial breakage (through section cracking with structural spalls) – Corrosion cracks wider than 1/4-in and open or closed corrosion spalls (excluding pop-outs) – Multiple cracks and disintegration of surface layer due to chemical deterioration – Mechanical abrasion or impact spalls exposing the reinforcing
Severe	– Structural cracks wider than 1/4-in or complete breakage – Complete loss of concrete cover due to corrosion of reinforcing steel with more than 30% of diameter loss for any main reinforcing bar – Loss of bearing and displacement at connections – Loss of concrete cover (exposed steel) due to chemical deterioration – Loss of more than 30% of cross-section due to any cause

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### 3. Condition Assessment

The pier has continued to experience high winds and large waves in a harsh marine environment. The severe and major level damages are noted for piles on the offshore end of the pier and in handrails due to continue corrosion of rebar and spalling.

Continuous exposure to seawater or marine spray with recurring wet and dry conditions are detrimental to the concrete structure. Cracks in concrete allow seawater to access the reinforcement, initiating corrosion. As corrosion expands around the circumference of the reinforcement, the bond between concrete and reinforcement weakens and results in delamination. The progressive delamination eventually leads to concrete breaking off from the reinforcement i.e., spalling and leading to structural failure.

The revised damage ratings for the handrails are summarized in Table 3.1, and additional details, including ratings for the piles are provided in Attachment A.

Table 3.1 Summary of Handrail Damage Ratings

Assessment	Year 2025	Year 2024	Year 2022
No Damage	10	12	13
Minor Damage	24	27	29
Moderate Damage	29	28	29
Major Damage	57	57	56
Severe Damage	45	41	37

Several of the large open gaps between handrails along the portion of the Pier open for public access are covered by plywood after the 2024 assessment (Figure 3.1). Damage was also noted at several of the pile bent caps with large cracks, staining from corrosion, and spalling concrete (Figure 3.2 and Figure 3.3). The spalling at Bent R, also noted in 2024, has worsened, but since the damage was already rated as Severe, the rating does not change (Figure 3.4 and Figure 3.5).



Figure 3.1 Plywood over spalling damage on handrail.



Figure 3.2 Damage at Bent L Caps, View to South.

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**Figure 3.3** Damaged Bent O Cap, View to South.



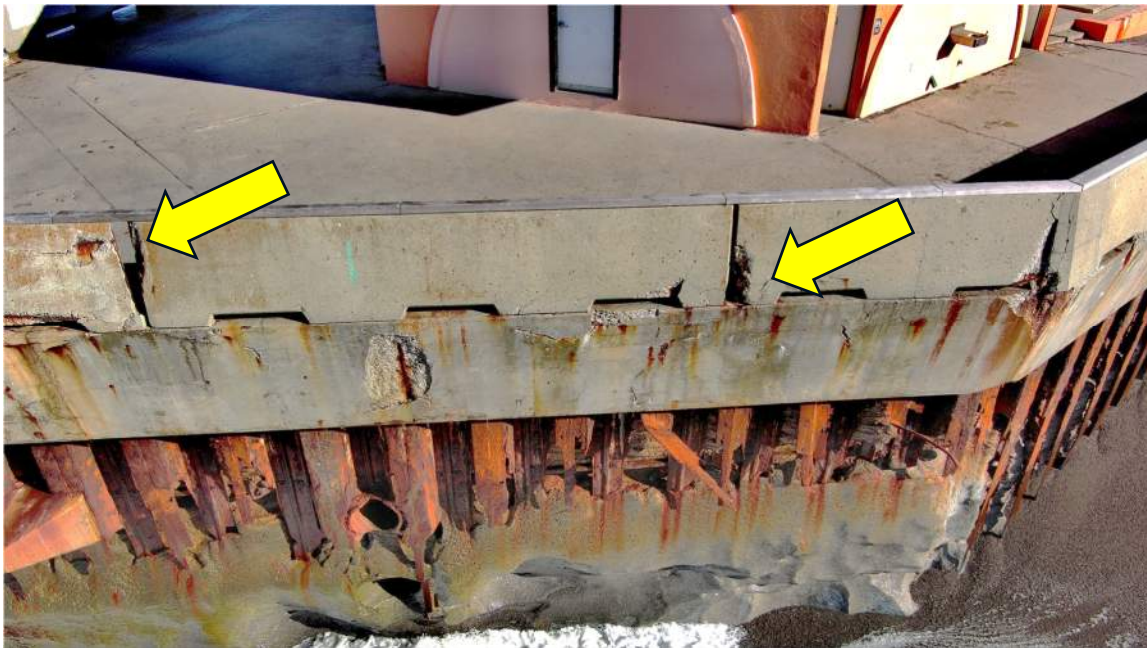
**Figure 3.4** Pile and Outfall Pipe at Bent R in January 2025

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**Figure 3.5** Pile and Outfall Pipe at Bent R in April 2024

A few large uncovered openings were noted along the handrails as shown in Figure 3.6. These openings have resulted from loss of previously spalled concrete. These damages do not impact the functionality of the handrails but the open spill, exposed reinforcement and size of the openings greater than 4-inches pose a hazardous condition.



**Figure 3.6** Large Gaps between Handrail near Gate on South side of Pier

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Between the storm assessment in 2024 and in 2025 the damage rating on one pile at Bent P changed from moderate to major. At the pier extension and Bent R several of the piles rated severe have additional spalling since the 2024 storm assessment. A summary of the pile damage ratings is shown in Figure 3.7 for 2025.

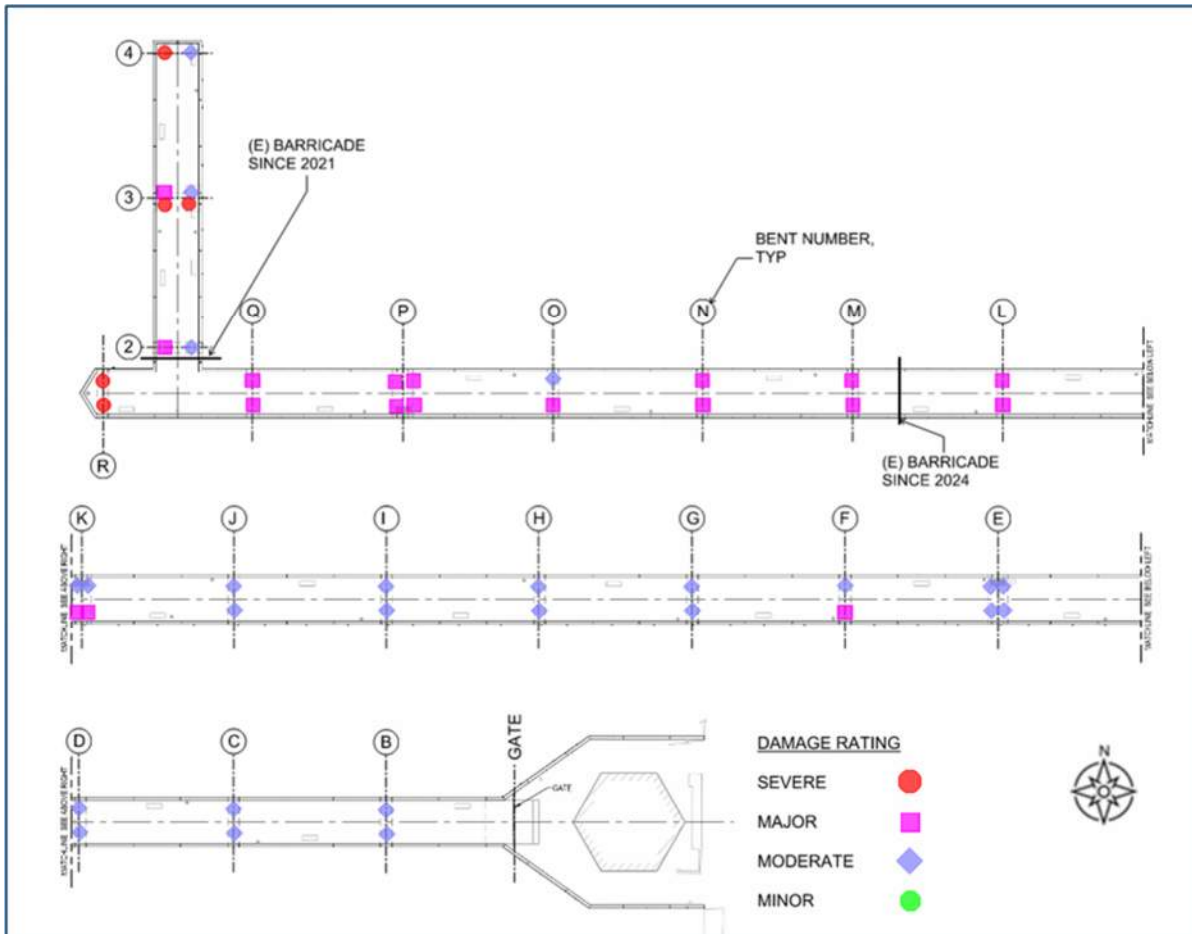


Figure 3.7 Damage Rating- Piles, Above Water Observations 2025.

## 4. Conclusions and Recommendations

The offshore end of the Main Pier and the Pier Extension are exposed to most severe impacts from the storm events. The damaged piles along Bent R, Bent 3 and Bent 4 are recommended for repairs in the near term. The open spalls on these piles have increased in size and exposed more of the underlying corroded reinforcement. Although the piles and deck are not subject to heavy loads during non-storm season, these conditions will worsen over time and pose a significant risk to the stability of the structure. Spalling has increased just over the course of two storm seasons.

The City should continue to limit public access to the offshore end of the Main Pier and the Pier Extension until the piles, handrails and deck are repaired. The current location of the chain link fence near Bent M should be maintained to prevent access to the areas beyond Bent M.

The large gaps in the handrails should be boarded with plywood or other means to reduce risk of injury from exposed reinforcement and rough concrete surfaces.

It is also recommended to remove the remaining portion of the outfall pipe under the deck near Bent R and prevent the pipe from falling into the water and potentially damaging the underside of the deck if the connection bracket is pulled out.

The City should continue to undertake annual condition assessment of the handrails and above deck components until the handrails are repaired, as necessary. The pier should continue to be closed to the public when high wind and wave conditions are anticipated in the area. The handrail panels should be visually checked before opening the pier.

## 5. Limitations

*This technical memorandum has been prepared by GHD for City of Pacifica. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose other than stated. It is not intended for circulation or incorporation into other documents in parts. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.*

*The opinions, conclusions and any recommendations in this memorandum are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.*

*Investigations undertaken in respect of this memorandum are constrained by the site conditions and location of the structural components limiting visual and physical access. As a result, not all relevant site features and conditions may have been identified in this memorandum.*

### **Accessibility of documents**

*If this Technical Memorandum is required to be accessible in any other format this can be provided by GHD upon request and at an additional cost if necessary.*

**Attachment A:** Field Notes – Damage Ratings January 2025.



Client City of Pacifica Job Number 12599413 Sheet \_\_\_\_\_  
 Project Pacifica Pier Condition Assessment Sheets By MM Date 01/27/2025  
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**LEGEND**

**PANEL ID INFO**

- N/S/E/W SIDE OF PIER (NORTH/SOUTH/EAST/WEST)
- # PANEL COUNT FROM ENTRANCE OF PIER (Negative # indicates panels shoreside of the gate)
- S SHORT PANEL
- A ABUTMENT WALL

**REPORT ITEM**

- RAT DAMAGE RATING
- ND NO DAMAGE
- MN MINOR DAMAGE
- MD MODERATE DAMAGE
- MJ MAJOR DAMAGE
- SV SEVERE DAMAGE



- MC(##) MINOR CRACK NOT EXCEEDING 1/16" (TOTAL LENGTH OF CRACK, INCHES)
- MS(##x##) MINOR SPALLING (APPROX. AREA, INCHES)
  - CR CRACKING WITH LOSS OF EFFECTIVE CONCRETE AREA AT SUPPORT
  - SP SPALLING WITH LOSS OF EFFECTIVE CONCRETE AREA AND REINFORCEMENT COVER
  - B BOTTOM CONNECTION DAMAGED
  - E DAMAGE LOCATED AT EDGE OF PANEL
- FW/FH DAMAGE SPREAD ACROSS FULL WIDTH / HEIGHT
- X# NUMBER OF INSTANCES OF DAMAGE
- TSP THROUGH SPALL / SECTION LOSS
- BIN TRASH RECEPTACLE IN THE VICINITY
- BENCH CONCRETE BENCH IN THE VICINITY
- LIGHT LIGHT POLE IN THE VICINITY
- STN FISH CLEANING STATION IN THE VICINITY
- WATER WATER FOUNTAIN IN THE VICINITY
- PLY PLYWOOD / TIMBER BOARD COVERING HANDRAIL
- SENS SENSOR EQUIPMENT INSTALLED BY OTHERS

**SUMMARY**

<b>TOTAL</b>	NO DAMAGE	10
	MINOR	24
	MODERATE	29
	MAJOR	57
	SEVERE	45



Client City of Pacifica Job Number 12599413 Sheet \_\_\_\_\_  
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MAIN PIER STRUCTURE - REVISED RATINGS JANUARY 2025								
PANEL ID	PIER SIDE - S				PIER SIDE - N			
	INSIDE	OUTSIDE	RAT	REMARK	INSIDE	OUTSIDE 2	RAT	REMARK
-5A		SP	MN		CR(90)	FW-SP	SV	
-4A	CR, B	SP,B	MD		CR	SP	MJ	B
-3A	CR	CR	MD			SP	MJ	B
-2A	CR(60)	SP(3)	MJ	B, 11'-2" (INSIDE), HUGE HOLE ON LEFT BOTTOM SIDE	CR(48)	SP	SV	11'-2" (INSIDE), EXPOSED REBAR / RUST AT EXTERIOR
-1A	E-SP	SP(3)	MJ	B	CR(30)	E-SPX2	SV	MJ-SV, EXPOSED REBAR / RUST AT EXTERIOR
0A	MC, CR, TSP	TSP @ FULL HEIGHT ON CAFÉ END	SV	GATE LOCATED 4' FROM END	CR(60)	CR, E-SP	MJ	GATE LOCATED 4' FROM END
1	MS(18X10)X2	TSP @ FULL HEIGHT ON CAFÉ END	SV	MJ-MD, STEEL BRACKET (7'-11")	B,TSP	TSP @ BOTTOM CORNER NEAR #2	SV	STEEL BRACKET (8'-3")
2	42" CR	E-MC	MN	VERTICAL	MC(42)	HZ CR	MN	RUST AT EXTERIOR
3			ND			MC	MN	
4S			ND			SP	MD	MD-MN
5			MN	DECK DAMAGED	MC(42)	HZ CR, MS AT TOP CORNER	MN	
6			ND	BENCH			ND	
7	MS(12X4)	MS	MN	BIN	MS	MS	MD	MD-MN
8S	MS		MJ	MD-MJ, LIGHT		MC, MS	MD	Deck damaged, rust at exterior
9	MC(90), MS	SP	MJ	MD-MJ, LARGE OPENING		MS(12X18)X2	MJ	MD-MJ, B, BIN
10		CR, SP	MJ	MD-MJ, ENDS, SENS		MS(12X12), MC	MD	BENCH
11	HZ-CR	MS	MJ	MD-MJ, EXPOSED REBAR / RUST AT EXTERIOR TOP	MS, MC(90)	MS	MD	MD-MN
12S		MC	ND		CR	MS	MD	MD-MN
13		MS(12X24)	MD	SPALLING CONCENTRATED NEAR ANCHORS, EXPOSED REBAR / RUST AT EXTERIOR TOP, BIN	MC(42)	MC	MD	MD-MN
14			MN	BENCH	SP	MC, FH-TSP	SV	SV-MJ, ENDS S/C LOSS,REBAR EXPOSED
15	MC(90)	SP	MD	CR IN DECK, MN-MD	MS(18X6), MC	MC	MJ	MJ-MD
16S			ND	LIGHT, CR IN DECK		MC	ND	CLEANING STA W/ SPALLING
17	CR(42)		MD	CORRODED DECK	MS, MC(30)	SP, MC	MJ	BIN
18		MS(12X12), CR	MD		MC, SP	MC, MS	MJ	MJ-MD, BENCH
19	TSP @ TOP	MS(6X12)X2, CR	SV	MINOR SECTION LOSS	SP(24X8)	MC, MS	SV	SV-MJ
20S		MS	MN	WATER	MS	MC	MN	MN-ND, BIN
21		SP,MC(42)	MJ	MJ-MD, BIN	MS	MS, CR	MD	MN-MD, B



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22	MS	SP,CR	MJ	SP ENDS, BENCH	PLY	SP, TSP	SV	
23	MC(30)	SP(2), MC	MJ		PLY, CR, FW-MC	SP, TSP	SV	SV, EXPOSED REBAR / RUST AT EXTERIOR
24S		MS, CR	MJ	DECK DAMAGE, DECK CORRODED AT BASE, LIGHT	HZ CR	SP, HZ CR	MJ	EXPOSED REBAR / RUST AT EXTERIOR
25	MC, MS	MS	MN	BIN, CRACKS AT DECK	SP	SP(4)	SV	SV-MJ @ INTERIOR, EXPOSED REBAR / RUST AT EXTERIOR
26		SP, CR	MJ		SP	SP	MJ	MJ-MD, BENCH
27		MC, SP AT END NEAR 28S	MD	SP END, Exposed REBAR/RUST	MC, MS		MN	
28S	SP NEAR #27		MN	MN-ND, NO JOINT GAP W/ #27			ND	NO JOINT GAP W/ #27, LARGE GAP W/ 29
29			ND	ND-MN, STEEL BRACKET LOST		MC	MN	ND-MN, CORRODED STEEL BRACKET, BIN
30	VERT CR	SP @ TOP CORNER	MD	BENCH	PLY	END LAND - SPALL	MJ	PLY INSTALLED AT END
31		MC, SP	MN		PLY, E-SP	MS, SP, CR	MJ	PLY INSTALLED AT END WITH 30
32S		SP	MD	LIGHT		MC, MS	MJ	MJ-MD
33	MC	FH-SP	MJ	MJ-MD, BIN	E-SP	SP, PLY	SV	SV-MJ, ENDS, PLY INSTALLED AT END
34	E-SP, CR, PLY	HZ CR AT TOP, RUST STAINS	SV	ROUGH SURFACE	CR(300), SP	FH-CR	SV	OFFSET WITH #33, BENCH, ROUGH SURFACE, SEVERAL HZ CRACKS ON EXTERIOR
35	MC(30)	TSP @ 34-35, PLY IN BAD CONDITION	MD	DECK CRACK		FH-SP	MJ	SPALL AT TOP CORNER EXT NEAR #36
36S		MC(42)	MD	ROUGH SURFACE, DECK CRACK	CR, PLY BETWEEN 36S and 37	CR, DECK DAMAGE	MD	WATERSIDE BASE DAMAGED
37	MC(42), SP	MS	MD	MD	PLY BETWEEN 36-36, 37-38, SP	MC	SV	BIN
38	MC(42)	HZ CR AT TOP, RUST STAINS	MJ	BIN	SP, PLY @ 37-38	SP	SV	
39	MC(42)	MS, HZ CR AT TOP	MJ	EXPOSED REBAR / RUST AT EXTERIOR TOP,	TSP @ BOTTOM CORNER NEAR #38	SP	MJ	SP AT ENDS
40S		HZ CR AT TOP	MN	LIGHT	Rusted bracket		ND	STN
41	SP, PLY	TSP, CR	SV	DECK DAMAGE, EXPOSED REBAR / RUST AT EXTERIOR TOP, FULL SECTION SPALL AT END	SP(24X12), TSP	E-SP, CR	SV	SV-MJ, DECK DAMAGE - MD
42	E-SP, FW-SP	TSP	SV	THROUGH SPALL AT ENDS	PLY, TSP @ BOTTOM CORNER NEAR #43	SP, EXPOSED REBAR	SV	SP ENDS, PLY AT END NEAR 43, BENCH
43	MC(42)	HZ CR AT TOP, SP	MJ		PLY, E-SP	MC	MJ	PLY AT END BETWEEN 42/43
44S		E-SP	SV	SV-MJ, WATER, DECK DAMAGED			MN	DAMAGED AT BASE WATERSIDE
45		MC, E-SP	MJ	MD-MJ, BIN	E-SP, PLY BETWEEN 45/46	SP	MJ	RUST AT CONNECTIONS
46	SP ACROSS TOP	MS, MC	MN	BENCH, BARRICADE	FW-SP	SP	SV	BARRICADE
47	MC		MD	MN-MD		CR, SP	SV	SV-MJ, DAMAGED BASE CONNECTION
48S			MN	LIGHT		DAMAGE AT DECK	MN	, DAMAGE AT DECK



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49		E-SP	MJ	MD-MJ, ENDS		E-SP	SV	SV-MJ, ENDS, BIN
50	MS(12X24)X2	E-SP	MJ	MD-MJ		E-SP	SV	SV-MJ, BENCH
51	SP @ CORNER		MD	MN-MD		E-SP	MJ	MD-MJ
52S		SP	MJ	MD-MJ		SP	MJ	MD-MJ
53	CR(42)	SP, MAJOR DECK CORROSION	MJ	CORRODED DECK, CR AT JT ALONG DECK, BIN	CR	MS	SV	SV-MJ, MD - DECK DAMAGE
54		RUST AT CONNECTION	MD	MN-MD, BENCH		E-MS	MJ	MJ-MD, RUST AT CONNECTION
55		SP	MJ	MD-MJ, EXPOSED REBAR / RUST AT MID-PANEL		E-SP	MJ	MJ-MD
56S		MS, DAMAGED DECK	MN	LIGHT, SV SPALL AT DECK EXT SIDE, EXPOSED REBAR	FW-CR	FW-CR	MD	CRACK AT JT ALONG DECK
57		E-SP	SV	SV-MJ		SP	MJ	MD-MJ, BIN
58	CR	E-SP	SV	SV-MJ, ENDS		E-SP	MJ	BENCH
59	CR(42)		MD	MN-MD, STEEL BRACKET MISSING	CR	E-SP	SV	MJ-SV, STEEL BRACKET, SPALL AT CONNEECTION
60S	CR		MN	STN, DECK DAMAGE	CR	FW-CR	MJ	MD-MJ
61	CR(42)		MJ	MD-MJ, DECK DAMAGE, BIN	MC(42)	MS	MJ	MD-MJ
62		MS, CR	MJ	MD-MJ		CR,MS	MJ	AT MID-PANEL
63	MC(60)	MS, CR	MJ	MD-MJ		SP	MJ	MD-MJ
64S		MS	MN	MJ SPALL AT DECK EXT SIDE			MN	MN-ND
65, L-SHAPE @ N		E-SP	SV	SV-MJ	SP, TSP @ TOP CORNER AT N/S PIER		SV	DAMAGE CONCENTRATED AT CORNER, BIN
66		FH-SP	MJ	MJ-MD, BIN, SENSOR				OPEN BAY, DECK DAMAGE
67		E-SP	MD	BENCH	MS, CR	MS	MD	BIN
68	CR, SP	FW-SP	SV	SV-MJ, END/CORNER WALL, LIGHT, EXPOSED REBAR / RUST AT MID HT, DECK DAMAGED	CR, SP	FW-SP	SV	END/CORNER WALL, BIN, SUPPORTS STEEL POLE BRACKET, EXPOSED REBAR / RUST AT EXTERIOR, DECK DAMAGED

SUBTOTAL	NO DAMAGE	6
	MINOR	15
	MODERATE	17
	MAJOR	25
	SEVERE	11

SUBTOTAL	NO DAMAGE	4
	MINOR	9
	MODERATE	11
	MAJOR	26
	SEVERE	23



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PIER N/S EXTENSION - (REVISED RATINGS JANUARY 2025)								
PANEL ID	PIER SIDE - W				PIER SIDE - E			
	INSIDE	OUTSIDE	RAT	REMARK	INSIDE	OUTSIDE 2	RAT	REMARK
1S		SP @ BOTTOM CORNER	SV	NEW PANEL, EXTENSIVE SPALL NEAR MAIN PIER	MC	CR, SP	MJ	HZ CR AT EXTERIOR TOP, RUST EXPOSED INTERIOR
2	CR(42)	SP, E-SP	SV	EXPOSED REBAR / RUST AT EXTERIOR	MC(42)	E-SP	SV	S/C LOSS AT TOP CORNERS
3	VERT CR, SP	FH-SP, HOR CR AT MULT LOC	MJ		SP	MC(30)	MJ	BENCH, EXPOSED REBAR / RUST AT EXTERIOR
4			SV	PARTIAL COLLAPSE, DAMAGE DUE TO ADJ COLLAPSE	MS, MC		MD	BIN
5S			SV	COLLAPSE	SP	SP	MJ	BENCH
6			SV	COLLAPSE	CR	E-SP	SV	BENCH
7			SV	COLLAPSE	TSP	E-SP	SV	BIN
8	SP	FW-SP	SV	DAMAGE DUE TO ADJ COLLAPSE	TSP, PLY	E-SP	SV	PLY ON INTERIOR FACE
9		SP, EXPOSED REBAR, RUST	MJ	L-SHAPED ENDPANEL		SP(24X12)X2	MJ	ENDPANEL, EXPOSED REBAR FULL HEIGHT ON CORNER
	SUBTOTAL	NO DAMAGE	0		SUBTOTAL	NO DAMAGE	0	
		MINOR	0			MINOR	0	
		MODERATE	0			MODERATE	1	
		MAJOR	2			MAJOR	4	
		SEVERE	7			SEVERE	4	



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**Deck / Bent Cap Damage Rating (JAN 2025)**

Deck / Bent Cap	Damage Rating	Comment
At Abutment	MJ	Large Spalls/Cracks
Deck between Abutment & Bent B	SV	Exposed rebar
Bent B	MJ	Large Spalls/Cracks
Deck between Bent B and C	MD	Cracks
Bent C	MJ	Large Spalls/Cracks
Deck between Bent C and D	SV	Exposed rebar
Bent D	SV	Exposed rebar
Deck between Bent D and E	SV	Exposed rebar
Bent E	MJ	Large Spalls/Cracks
Deck between Bent E and F	MJ	Large Spalls/Cracks
Bent F	MJ	Large Spalls/Cracks
Deck between Bent F and G	MJ	Large Spalls/Cracks
Bent G	SV	Exposed rebar
Deck between Bent G and H	MJ	Large Spalls/Cracks
Bent H	MJ	Large Spalls/Cracks
Deck between H and I	MD	Cracks
Bent I	MJ	Large Spalls/Cracks
Deck between Bent I and J	MJ	Large Spalls/Cracks
Bent J	MJ	Large Spalls/Cracks
Deck between Bent J and K	MJ	Large Spalls/Cracks
Bent K	MJ	Large Spalls/Cracks
Deck between Bent K and L	MJ	Large Spalls/Cracks
Bent L	SV	Exposed rebar
Deck between Bent L and M	SV	exposed rebar
Bent M	SV	Exposed rebar
Deck between Bent M and N	MJ	Large Spalls/Cracks
Bent N	MJ	Large Spalls/Cracks
Deck between Bent N and O	SV	Exposed rebar
Bent O	SV	Exposed rebar
Deck between Bent O and P	MJ	Large Spalls/Cracks
Bent P	SV	Exposed rebar
Deck between Bent P and Q	SV	Exposed rebar
Bent Q	SV	Exposed rebar
MAIN PIER STRUCTURE - REVISED RATIO	SV	Exposed rebar
Bent R	SV	Exposed rebar
Bent 2	SV	Exposed rebar
Deck between Bent 2 and 3	SV	Exposed rebar
Bent 3	SV	Exposed rebar
Deck between Bent 3 and 4	SV	Exposed rebar
Bent 4	SV	Exposed rebar

Priority Level Legend
1
2
3
4

\*Applicable for Deck/ Bent Cap Damage Rating (Above and Below Water)  
 \*Applicable for Pile Damage Rating (Above and Below Water)



Client City of Pacifica Job Number 12599413 Sheet \_\_\_\_\_  
 Project Pacifica Pier Condition Assessment Sheets By MM Date 01/27/2025  
 Subject Post Storm (2025) Assessment Checked By SC Date 01/27/2025

**Pile Damage Rating - Above Water Line (January 2025)**

**Water Level at approximately +2 ft (MLLV)**

Pile Location	Damage Rating
Bent B - N	MD
Bent B - S	MD
Bent C - N	MD
Bent C - S	MD
Bent D - N	MD
Bent D - S	MD
Bent E - NE	MD
Bent E - SE	MD
Bent E - NW	MD
Bent E - SW	MD
Bent F - N	MD
Bent F - S	MJ
Bent G - N	MD
Bent G - S	MD
Bent H - N	MD
Bent H - S	MD
Bent I - N	MD
Bent I - S	MD
Bent J - N	MD
Bent J - S	MD
Bent K - NE	MD
Bent K - SE	MJ
Bent K - NW	MD
Bent K - SW	MJ
Bent L - N	MJ
Bent L - S	MJ
Bent M - N	MJ

Pile Location	Damage Rating
Bent M - S	MJ
Bent N - N	MJ
Bent N - S	MJ
Bent O - N	MD
Bent O - S	MJ
Bent P - NE	MJ
Bent P - SE	MJ
Bent P - NW	MJ
Bent P - SW	MJ
Bent Q - N	MJ
Bent Q - S	MJ
Bent R - N	SV
Bent R - S	SV
Bent 2 - E	MD
Bent 2 - W	MJ
Bent 3 - NE	MJ
Bent 3 - SE	SV
Bent 3 - NW	MJ
Bent 3 - SW	SV
Bent 4 - E	MJ
Bent 4 - W	SV

**Pile Location Descriptor**

N - North Side  
 S - South Side  
 E - East Side  
 W - West Side