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# **Detailed Structural Inspection**

Van Anda dock Texada Island, British Columbia



Inspection Dates: March 8<sup>th</sup> and 9<sup>th</sup>, 2021

**Reference file number: P-9248** 

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## 1. Introduction

The inspection was performed on March 8<sup>th</sup> and 9<sup>th</sup>, 2021 at the Van Anda Public Dock located in Van Anda Cove on Texada Island, BC. The inspection team consisted of Sam Tasker, Sarah Frioult and Matt Hughes. The previous inspection was performed by Foreshore Technologies Inc. in 2017.

The following scope of work was performed:

- Above-water visual, sounding, and coring inspection of harbour components including piles, superstructure and floats.
- Underwater visual inspection of piles and bracing.

For the purpose of defining damage estimates, the following levels are used in the report.

Light < 10% cross-section loss Moderate 10% to 50% cross-section loss Heavy > 50% cross-section loss

## 2. Facility Description

The Van Anda Public Dock is located in Van Anda Cove south of Sturt Bay on Texada Island, BC. The facility consists of a timber approach, running east to west, leading to a timber wharfhead; see Photograph 1. The wharfhead provides access to a single float located on the north side of the approach that is accessed by an aluminum gangway; see Photograph 2. The float is anchored by three pile clusters, one at the east end and two at the west end.

The approach is 83.5m long; see Photograph 3. There is no loading rating for the approach however its design limits it to pedestrian use only. The approach is supported by timber stringers and caps on timber bearing piles with timber cross-bracing and horizontal walers; see Photograph 4. Individual components in the approach are as follows:

- Handrail Post (90mm x 90mm)
- Handrail Top Rail (38mm x 140mm)
- Handrail Top and Mid Side Rail (38mm x 90mm)
- Curbs (190mm x 127mm)
- Curb Risers (50mm x 190mm)
- Decking (50mm x 300mm)
- Stringers (330mm x 150mm) creosote treated.
- Caps (330mm x 305mm) creosote treated.
- Braces (180mm x 150mm) creosote treated.
- Walers (180mm x 150mm) creosote treated.
- Timber Piling (305mm diameter) creosote treated.

The wharfhead is 15.4m long by 21.5m wide; see Photograph 5. The wharfhead is supported by timber stringers and caps on timber bearing piles with timber brace piles and cross-bracing. Individual components in the wharfhead are as follows:

- Handrail Post (90mm x 90mm)
- Handrail Top Rail (38mm x 140mm)
- Handrail Top and Mid Side Rail (38mm x 90mm)
- Curbs (290mm x 280mm)
- Curb Risers (50mm x 290mm)
- Decking (50mm x 300mm)
- Stringers (330mm x 150mm) creosote treated.
- Caps (330mm x 305mm) creosote treated.
- Braces (180mm x 150mm) creosote treated.
- Walers (180mm x 150mm) creosote treated.



The gangway is 11m long by 1.4m wide and is suspended from the deck at Bent 19 in the wharfhead; see Photograph 6.

The float is 14.0m long by 4.3m wide. The float is anchored by three clusters of piles. Two piles at the northwest corner, two piles at the southwest corner and six piles at the east end. Individual above-water components of the float are as follows:

- Bull Rails (90mm x 140mm) treated.
- Risers (90mm x 140mm) treated.
- Decking (38mm x 290mm) treated.
- Timber Piling (320mm diameter) creosote treated.

### 3. Inspection Results

The following summarizes the inspected condition of each component type within each structure. The inspection confirmed that many of the recommendations from the 2017 inspection had not been addressed.

### 3.1 Approach

#### Handrails and Posts:

Handrails were visually inspected. The rail timbers and posts are in good condition with light weathering and abrasion wear from use; see Photograph 7.

#### Curb and Curb Riser:

Curb and curb risers were visually inspected. It was confirmed that the curb and curb risers are in good condition with weathering and checking on their upper surface.

#### Decking:

Decking was visually inspected. The decking is in good condition with light weathering and abrasion wear.

#### Stringers:

Stringers were inspected visually and selectively hammer sounded where accessible. They are in good condition.



#### Caps:

All caps were visually inspected, selectively hammer sounded and cored when suspected to have internal decay. The caps are generally in good condition with light weathering and checking; see Photograph 8. The caps in Bent 11 and Bent 16 were confirmed to still have heavy fungal damage that was identified in the 2017 report. The caps located at Bents 9 and 21 had light to moderate fungal decay. See Table 2 List of Damaged Sub-structure Timbers.

#### **Bearing Piles**:

All bearing piles were visually inspected above and underwater, hammer sounded and probed where accessible.

The creosote treated piles are in fair to good condition. Four piles were confirmed from the 2017 report as having significant damage (Bent 5 – Row C, Bent 9 – Rows A and B and Bent 10 – Row B). Another 2 bearing piles were discovered to have significant damage to them (Bent 14 Row A and Bent 17 Row B). See Table 1, Inspection Results of piles located in the Van Anda Dock Approach, Wharfhead and Float.

#### **Cross-Bracing and Spacer Blocks**:

Creosote treated cross-bracing is present throughout the approach. Cross-bracing runs between the piles in each Bent. Seven braces have significant marine borer damage at their lower ends, see Photograph 9. Four spacer blocks (used to take up space between the crossbrace and the pile) have heavy marine borer damage. See Table 2 for details.

#### Walers:

Creosote treated horizontal walers are present throughout the approach. Walers extend between piles in successive bents along the same pile row. Significant marine borer and mechanical damage was found in five walers mostly along Row C. One of these walers is not attached to its pile (Bent 16 to 17 at Bent 16 - Row A). These findings are reconfirmed from the 2017 report. See Table 2 for details.

Services: There are no services.

### 3.2 Wharfhead

#### Handrails:

Handrails were visually inspected. These are located along the west, south and east sides of the structure. The rail timbers and posts are in good condition with some being slightly loose.

#### Curb and Curb Riser:

Curb and curb risers were visually inspected. The curb and curb risers are in good condition. Light weathering is present in the tops of the curbs.



#### Decking:

Decking was visually inspected. The decking is in good condition with light weathering and checking; see Photograph 10.

#### Stringers:

Stringers were inspected visually. The stringers appear to be in good condition.

#### Caps and Corbels:

All caps and corbels were inspected visually and selectively hammer sounded and cored where accessible. The caps are in good condition; see Photograph 11. One cap has light mechanical damage at its end; see Photograph 12.

#### **Bearing and Brace Piles**:

The creosote-treated bearing and brace piles were visually inspected both above and underwater, and probed where accessible; See Table 1 Approach, Wharfhead and Float Piles for detailed results.

#### Fender Piles:

The creosote-treated fender piles are located along the north side of the wharfhead. They are grouped in clusters of three piles except at the north end of Bent 19 which has five piles. Moderate cross-sectional loss located in the intertidal zone has occurred as a result of abrasion damage to the pile surface combined with marine borer attack; see Photograph 13.

#### **Cross-Bracing and Spacer Blocks**:

There is cross-bracing in five of the six bents in the wharfhead. See Table 2 for damaged member location.

#### Ladder:

There is one ladder on the north side of the wharfhead. It is in poor condition as one side has failed; see Photograph 14.

#### **Tie-off Bollards:**

Three tie-off bollards are located along the north and northeast sides of the wharfhead. These are in good condition.

**Services**: There are no services.



## 3.3 Gangway

#### Body:

The aluminum gangway is in good condition. There are no safety chains between the top of the gangway and the wharfhead railing leaving a gap; this was previously noted in the 2017 report; see Photograph 15.

**Deck**: The deck is in good condition.

**Upper Hinge**: The upper hinge consists of aluminum hinge pieces bolted to the wharfhead. Suspended from the upper brackets are four aluminum hangers (2 on each side) secured with lubricated hinge pins. The gangway is secured to the lower end of the hangers with additional lubricated hinge pins. All components are in good condition.

**Upper Transition**: The hinged aluminum tread plate is in good condition, with light wear due to abrasion.

**Lower Transition**: The lower transition is in serviceable condition. The leading edge abrades with the gangway pad and the nails that secure the gangway pad timbers; see Photograph 16. The lower transition remains functional.

**Sliders & Guide Rails**: The guiderails, sliders and wear surfaces located under the gangway are in serviceable condition with moderate weathering to the timber guide frames; see Photograph 17.

#### 3.4 Float

#### **Bull-Rails and Risers**:

Bull-rails were visually inspected. Rails are located on all four sides of the float. The north rail continues to have moderate mechanical damage. The risers are in good condition with light weathering and abrasion.

#### Decking:

Decking was inspected visually. The decking is in good condition.

#### Stringers and Cross-ties:

Stringers and cross-ties were inspected visually where accessible. All stringers and cross-ties are in good condition.



#### Flanges:

Flanges were inspected visually where accessible. All inspected flanges are in good condition.

#### Mooring Piles:

Piles were inspected visually. See Table 1 Approach, Wharfhead and Float Piles for detailed results.

Abrasion damage has taken place to seven of the 10 piles. Generally, this has resulted in a cross-section loss of 10% or less to the piles. One pile (East Cluster SW corner) has more significant damage with marine borers creating additional internal damage to the pile; see Photograph 18.

#### Pile Wells and Well-liners:

Pile wells were inspected visually. The pile wells around the three pile clusters are in fair to good condition. The well liners continue to abrade and should be replaced regularly; see Photograph 19.

#### Freeboard:

Freeboard was measured to the top of the stringers at the corners of the float. The float sits higher at its west end (ramp end) with a freeboard ranging from 375mm to 400mm. At the east end (inshore end) the freeboard is 300mm. There is more flotation at the west end of the float that probably accounts for the difference in freeboard measurements. This remains unchanged from the previous inspection; see Photograph 20.

## 3.5 Upland foreshore

#### **Erosion**:

There is continuing erosion and undercutting of the slope on the north and south sides of the approach. This is more extensive on the north side.



## 4. Recommendation for Repair

Recommendations found in this table include items from the previous report in 2017 that have not been addressed along with new items found from this inspection.

MAINTENANCE / REPAIR WORK
APPROACH:
Replace Piles : 5C, 9A, 9B, 10B, 14A, and 17B
Multiple Piles. Plug and patch open bolt holes
Replace 6 Cross-braces (Bents 5, 8, 9, 12, 14 & 15)
Replace 5 Walers
Replace 2 brace spacer blocks (Bents 14 & 16)
Tighten bolts securing handrail post various locations
WHARFHEAD:
Tighten bolts securing curb along Bent 19
Tighten bolts securing handrail posts along Bent 24
Replace section of deck at top of gangway
Replace 4 Bearing Piles (19H, 20G, 22E & 24 H)
Replace four Cross-braces (Bents 20, 22 & 24)
Replace three brace spacer blocks (Bent 20)
Replace 6 Fender Piles (Bent 19 – H Fr 4, Bent 20 – H Fr 1, Bent 23 – H Fr 1 & 3, & Bent 24 – H Fr 3)
Replace Ladder
Tighten Tie-off bollard bolts.
GANGWAY:
Replace/ Repair lower transfer plate
Gangway Sliders abrasion
Replace Guide Timbers at lower wear surface.
Install safety chains between handrail and top of gangway
FLOAT & FLOAT ANCHOR PILES:
Pile Cluster Well Liners. Install strips on piles & replace well liners as required
Replace Float Anchor Pile (E. Cluster – Pile 2 SW and pile 5 NE)(SW cluster pile 1W)
Tighten bull-rail bolts as required
Replace northeast bull-rail
Add Flotation to shore end of float
UPLAND FORESHORE:

Install armour rock to protect bank from further erosion



## 5. Conclusion and Recommendations

The Van Anda Dock has been in use for many years and was designed for commercial loading. Inspections of the structure have been undertaken by Foreshore Technologies Inc. in 2017 and 2021 and have included recommendations for repair. It does not appear that any significant repairs have been completed since the 2017 inspection.

With the structure now being limited to pedestrian use only, its load bearing capacity should be reviewed by an engineering consultant. This inspection identified deficiencies in the piling, bracing, caps and float and gangway elements typical of structures of this age. Marine borer damage to the piles and bracing is present in both the approach and wharfhead and is developing in the float anchor piles.

The main purpose of this inspection was to confirm findings of the previous report as well as report any new damage to be included in a repair RFP being issued by the district. Repair recommendations can be found in Section 4. The recommendations include those previously identified in the 2017 and findings from this inspection. There are some elements that are still in serviceable condition and maintenance on these are not listed in the recommendations and can be found in Tables 1 and 2.

Erosion of the foreshore continues on the north side of the approach and to a lesser extent on the south side. Storm events are likely to continue this erosion and undermining of the bank with the risk of collapse. As mentioned, in the previous report armouring of the slope with riprap is a possible solution.

On-going detailed inspections on a five-year cycle are recommended along with general maintenance and reporting of new deficiencies by district staff.



## 6. Photographs



Photograph 1: General arrangement of structure.



Photograph 2: General arrangement of landing float and gangway.





Photograph 3: Approach looking inshore.



Photograph 4: General arrangement of approach looking offshore.





Photograph 5: General arrangement of wharfhead.



Photograph 6: Gangway to landing float at high tide.





Photograph 7: Light weathering of wharfhead deck.



Photograph 8: Weathering of caps, stringers, and piles of approach.





Photograph 9: Typical marine borer damage to cross bracing.



Photograph 10: Wharfhead decking.





Photograph 11: Weathering of caps, stringers and piles in wharfhead.



Photograph 12: Light mechanical damage to wharfhead cap.





Photograph 13: Damage to fender pile bent 19.



Photograph 14: Failed ladder north end of wharfhead.





Photograph 15: Safety chains missing from top of gangway.



Photograph 16: Lower transition plate knife edging.





Photograph 17: Moderate deterioration of timber guide frames.



Photograph 18: Fender pile abrasion and marine borer attack.





Photograph 19: Typical well and pile abrasion.



Photograph 20: Landing float low on the east end.



## 7. Table 1

Inspection Results of piles located in the Van Anda Dock Approach, Wharfhead and Float.



TABLE 1

### INSPECTION RESULTS OF THE PILES LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT

TEXADA ISLAND, BRITISH COLUMBIA

Pile Location		Dating	Pile Hat/	Dementer
Bent	Row	Rating	Straps	Remarks
				Table note: TH = Tar Hat, AH = Aluminum Hat, SS = Steel Strap
Ар	proach			
1	А	100%		Bottom 1.5m encased in steel culvert pipe
1	В	100%		Bottom 1.5m encased in steel culvert pipe
1	С	100%		Bottom 1.5m encased in steel culvert pipe
2	А	100%		Light mechanical damage <1m,
2	В	90%		10% Cross Sectional Loss (csl), top and bottom 1m of pile
2	С	100%		
3	А	100%		
3	В	100%		
3	С	100%		
4	А	100%		
4	В	100%		
4	С	100%		
5	А	100%	TH	
5	В	100%	AH,SS	
5	C	75%	тц	Moderate mechanical damage 2m from bottom of pile, 25% marine borer
5		1370		cavity in open bolt hole 1.8m from mudline
6	А	100%		
6	В	95%		Light mechanical damage @ cross brace 5% csl
6	С	100%		
7	A	100%	TH	
7	В	100%	TH	
7	С	100%	TH	
8	А	100%	TH	
8	В	100%	TH	
8	C	100%	TH	
9	A	70%		30% marine borer cavity in open bolt hole 1m above mudline
9	В	30%		70% marine borer cavity 6m from top of pile
9	С	100%	AH, SS	



#### INSPECTION RESULTS OF THE PILES LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT TEXADA ISLAND, BRITISH COLUMBIA

Pile Location		Dation	Hat/	Pomarka
Bent	Row	Rating	Straps	Remarks
10	А	100%	AH, SS	
10	P	50%	тц	50% marine borer cavity in open bolt hole (intertidal zone),
10	В	50%	IΠ	20% marine borer cavity 1m from mudline.
10	С	100%	TH	Concrete footing
11	А	100%		Partially bearing
11	В	100%	TH	
11	С	95%	TH	Open bolt hole 1m from mudline
12	A (N)	95%	TH	5% marine borer cavity intertidal zone
12	A (S)	100%	TH	
12	В	95%		5% marine borer cavity 2.5m from mudline
12	C (N)	95%	TH	5% marine borer cavity intertidal zone
12	C (S)	100%	TH	Open bolt hole 4.6m from top of pile
13	A	100%	AH, SS	
13	В	100%	AH, SS	
13	C	100%	AH, SS	
14	А	70%		Moderate fungal decay top 0.5m 30% csl, open bolt hole 2.7m from mudline
14	В	100%	AH, SS	
14	С	100%		
15	А	100%	AH, SS	
15	В	100%	AH, SS	
15	С	100%		
16	A (N)	90%	AH, SS	10% marine borer cavity in bolt hole 4.6m from mudline
16	A (S)	0%		Derelict, large hole in intertidal zone. Replaced by Pile A(N)
16	В	100%		
16	С	100%	AH	
16	C.5	100%		
17	А	100%	AH, SS	
17	В	65%		35% marine borer cavity 0.3m from mudline
17	C	100%	AH, SS	
17	D	100%	TH	



### INSPECTION RESULTS OF THE PILES LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT

### TEXADA ISLAND, BRITISH COLUMBIA

Pile	Location	Rating	Hat/	Remarks
Bent	Row		Straps	
18	А	100%		
18	В	100%		
18	С	100%		
18	D	100%	AH, SS	
Wh	arfhead			
19	A (N)	100%		
19	A (S)	0%		Derelict, replaced by Pile A(N)
19	B (N)	100%		
19	B (S)	0%		Derelict, replaced by Pile B(N)
19	C (N)	80%		20% marine borer cavity 3m from mudline
19	C (S)	0%		Derelict, replaced by C(N)
19	D	80%		20% marine borer cavity 3m from mudline in 2 holes
19	E	100%	AH, SS	
19	E.5 Br (S)	100%		
19	F	100%	AH, SS	
19	G (N)	100%	TH	4x 3/4" plywood wedges
19	G (S)	100%	TH	
19	G Br (S)	100%		
19	H (N)	0%		Derelict, replaced by Pile H(S)
19	H (S)	60%	AH	40% Marine borer cavity intertidal zone
19	H Br (S)	70%	AH	Moderate marine borer damage in top of pile (limited access)
19	H Br (W)	100%		
19	H Fr - 1	100%		Fender Pile (SE)
19	H Fr - 2	100%		Fender Pile (Middle)
19	H Fr - 3	100%		Fender Pile (SW)
19	H Fr - 4	20%		80% Marine borer cavity in intertidal zone
19	H Fr - 5	100%		Fender Pile (NW)
20	A (N)	100%		
20	A (S)	100%		Non bearing
20	B (N)	100%		
20	B (S)	10%		Derelict, Replaced by Pile B (N)
20	С	85%	TH	15% marine borer activity in open bolt hole 4m from mudline
20	D	85%		Moderate decay in open bolt hole 1m from top of pile, 15% csl



#### INSPECTION RESULTS OF THE PILES LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT TEXADA ISLAND, BRITISH COLUMBIA

**Pile Location** Hat/ Rating Remarks Bent Row Straps 20 100% TH Е 20 F 100% ΤH 80% marine borer cavity intertidal zone, 2 derelict piles north, pile not 20 G 20% TH bearing 20 Н 100% ΤH H Fr - 1 90% mechanical and marine borer damage top to mudline 20 10% 20 H Fr - 2 Fender pile (SW) 100% 20 H Fr - 3 Fender pile (N) 100% 21 А 100% AH, TH, SS 21 В 100% TH С 21 100% AH, TH, SS ΤH 21 D 95% 5% marine borer damage at mudline Ε 90% TH check repaired at mudline with tar and banding 21 21 E Br (S) 100% AH, TH 21 F 100% ΤH 5% csl from check 0.5m from top of pile 21 G 100% TΗ 21 G Br (S) 100% AH, TH 21 Н 100% TH 21 H Br (S) 100% AH H Fr - 1 21 100% 21 H Fr - 2 100% 21 H Fr - 3 95% 5% csl mechanical damage intertidal zone 22 5% mechanical damage 1.5m from top of pile А 95% TH 22 В 100% ΤH 22 С 100% ΤH 22 D 100% AH, TH, SS 22 Е 25% TH 75% marine borer cavity in open bolt hole 0.5m from top of pile F 22 100% AH, TH, SS G 22 100% TH 22 G Br (W) 100% 22 Н 100% ΤH 22 H Fr - 1 100% Fender pile (SE)



Table 1 continued

#### TEXADA ISLAND, BRITISH COLUMBIA INSPECTION RESULTS OF THE PILES LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT TEXADA ISLAND, BRITISH COLUMBIA

Pile Location		Dutin	Hat/	Demonster
Bent	Row	Rating	Straps	Remarks
22	H Fr - 3	100%		Fender pile (N)
22	H Fr - 2	100%		Fender pile (SW)
23	А	100%	TH	
23	В	100%	SS	Plywood wedges on top of pile
23	С	100%	TH	
23	D	100%	TH	
23	E	100%	TH	
23	E Br (S)	100%	AH	
23	F	95%	TH	5% marine borer cavity in 2 holes 4m from mudline
22	C	0.00/		10% csl in crack 10cm long, 0.25m from mudline, multiple marine borer holes
23	G	90%		in intertidal zone.
23	G Br (S)	100%		
23	Н	100%		
23	H Br (S)	100%		
23	H Fr - 1	70%		Fender pile (SE) 30% marine borer cavity 5.5m from top of pile, 5% csl crack
23		1070		10cm from top of pile
23	H Fr - 2	90%		Fender pile (SW) 10% borer cavity 5.5m from top
23	H Fr - 3	10%		Fender pile (N) 90% marine borer cavity intertidal zone
24	А	100%	AH, SS	
24	В	5%		Fender pile 95% marine borer cavity
24	С	100%		
24	C Br (E)	100%		
24	D	100%		
24	E	100%		
24	F	100%	AH, SS	
24	G	95%		5% csl in crack 3m from mudline 15 cm in length
24	Н	10%		90% csl in 1.8m split, not bearing
24	H Fr - 1	100%		Fender pile (SE)
24	H Fr - 2	100%		Fender pile (Sw)
24	H Fr - 3	40%		Fender pile. 60% Marine borer cavity 2.0m from mudline



#### INSPECTION RESULTS OF THE PILES LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT TEXADA ISLAND, BRITISH COLUMBIA

Pile Location		Dation	Hat/	Demestre
Pile		Rating	Straps	Kemarks
Land	ing Float			
Nort	nwest Cluste	er		
1	W	90%		10% csl abrasion in intertidal zone
2	E	80%		20% csl abrasion in intertidal zone
Sout	nwest Cluste	er		
1	W	75%		25% csl abrasion in intertidal zone
2	E	90%		10% csl abrasion in intertidal zone
East	Cluster			
1	NW	85%		15% csl abrasion in intertidal zone
2	SW			10% csl abrasion in intertidal zone
3	N (middle)	100%		Light abrasion in intertidal zone
4	S (middle)	95%		5% csl abrasion in intertidal zone
5	NE	70%		30% csl abrasion in intertidal zone
6	SE	100%		



## 8. Table 2

Damaged Sub and Superstructure Timbers



#### TABLE 2

#### LIST OF DAMAGED SUB-STRUCTURE TIMBERS LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT TEXADA ISLAND, BRITISH COLUMBIA

Location		Dating	Demorko
Bent	Row/Pile	Rating	Remarks
Cross-	Bracing		
4	C to A	90%	Light mechanical impact damage bottom 0.3m at Row A
5	C to A	10%	Heavy marine borer damage over bottom 0.6m at Row A
6	A to C	95%	Light mechanical impact damage bottom 0.3m at Row C
8	A to C	70%	5% Mechanical damage @ bolt, 30% csl at bolt at Row C
9	A to C	80%	20% csl around bolt at C
11	C to A	90%	Light marine borer damage bottom 0.3m at Row A
12	A to C	10%	Heavy marine borer damage over bottom 0.9m at Row C, Checking throughout
12	C to A	95%	5% csl checking between Rows C and B
14	A to C	20%	Light marine borer damage bottom 0.3m at Row C, 80% csl at C
14	C to A	90%	Light mechanical impact damage bottom 0.15m at Row A, 5% csl mech damage at Row C
15	A to C	90%	10% csl marine borer damage in crack at Row C
15	C to A	10%	Heavy marine borer damage over bottom 0.6m at Row A
20	E to G	5%	Heavy marine borer damage along length
20	F to D	90%	Light marine borer damage bottom 0.6m at Row D
22	A to D	90%	Split at Row B, disconnected at Row C bolt missing.
22	D to F	0%	Heavy marine borer damage Row E to row F cross beam hanging
24	D to G	10%	Heavy marine borer damage Row D to row E
24	H to F	0%	Failed at Row G, hanging from H
Spacer Blocks			
14	С	0%	Heavy marine borer damage at Row C (between x-brace & pile)
16	A	0%	Heavy marine borer damage at Row A (between x-brace & pile)
20	В	0%	Missing at Row B
20	С	0%	Missing & heavy marine borer damage at Row C



#### Table 2 continued

#### LIST OF DAMAGED SUB-STRUCTURE TIMBERS LOCATED IN THE VAN ANDA DOCK APPROACH, WHARFHEAD & FLOAT TEXADA ISLAND, BRITISH COLUMBIA

Location		Poting	Pomarka			
Bent	Row/Pile	Raung	I Temains			
Wa	lers					
6 to 8	С	75%	Moderate marine borer damage at Bent 7 - Row C			
8 to 10	С	5%	Heavy marine borer damage along length			
12 to 14	С	0%	Disconnected at bent 12, broken at Bent 14			
15 to 16	С	90%	Marine borer damage on end @ Row 16			
16 to 17	А	100%	Not attached at Bent 16			
16 to 18	С	10%	Heavy marine borer damage over 1.2m at Bent 18			
Ca	aps					
9	C to End	95%	5% csl mechanical damage 1.5m length			
11	A to C	50%	Heavy fungal damage from Row A to rRow B			
12	A to C	90%	Light fungal damage at Row C			
16	A to D	30%	Heavy fungal damage from Row A to Row D			
21	A to D	85%	Light mechanical damage at Row A			