ASI Marine | REPORT

Submitted to:

Parsons Corporation
625 Cochrane Drive, Suite 500
Markham, ON L3R 9R9

Underwater Bridge Inspection
Hamlet Swing Bridge
Hamlet, ON

Inspection Dates:

November 2-3, 2016

ASI Marine Proposal DH16-066

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Parsons Corporation

Underwater Inspection – Hamlet Swing Bridge
1641 Muskoka District Road 49
Hamlet, ON

March 8, 2017

1.0 INTRODUCTION

ASI Marine, a division of ASI Group Ltd. (ASI), has been retained by Parsons Corporation to perform an underwater condition inspection of the Hamlet Swing Bridge located in Hamlet, Ontario. The following report identifies defects, as well as general conditions, associated with swing bridge located at N44˚46'58.62", W79˚23'41.84".

Figure 1: Hamlet Swing Bridge, Hamlet, Ontario

2.0 SCOPE OF WORK

The scope of services as described in the correspondence with Parson Corporation was as follows:

- Mobilization and demobilization
- Underwater inspection, Rest Pier (north and south limits), Pivot Pier and East Pier
- Compilation of detailed inspection report including images and edited video.

3.0 QUALIFICATIONS

All commercial diving was performed in accordance with The Ministry of Labour (MOL) Diving Regulation O.Reg.629/94 amended to O. Reg. 32/14 and the Canadian Standards Association (CSA) Competency Standard for Diving Z275.4-12. A written 'Notice for Diving Operations' was submitted to the MOL prior to mobilizing to site.

ASI Commercial Divers are certified in accordance with Canadian Standards Association (CSA) Competency Standard for Diving Z275.4-12 and as legislated by The Ministry of Labour (MOL) Diving Regulation O.Reg.629/94 amended to O. Reg.32/14. Diving personnel hold a current Diver Certification Board of Canada (DCBC) recognition card.

4.0 METHODOLOGY

ASI provided a four-man commercially qualified dive crew equipped with surface-supplied diving equipment, helmet-mounted video/LED lighting and underwater camera system (for real-time monitoring) to conduct all in-water task requirements. Daily verbal reports of project progress were supplied to Parsons Corporation via an underwater inspection data sheet. Two hard copies of the final inspection videos edited in electronic format will be delivered to Parsons Corporation upon completion of the project.

The diving supervisor was able to monitor the inspection progress in real-time. The client representative (on-site engineer) communicated with the diver to ensure project objectives were achieved. A 19-inch video monitor will be available topside to observe diving operations.
Diving personnel were staged from a dive support vessel (ASI Niagara). Staging consisted of two complete surface supply diving systems along with high pressure/low pressure and redundant diver air supply, support equipment/tooling and first aid emergency response equipment. ASI ensured a means of diver extraction is at the dive site, allowing for prompt evacuation if required.

Figure 2: Diver performing underwater inspections

5.0 INSPECTION PROCEDURE

The inspection commenced at the north limit of the east side of the rest pier moving southward. Once the east limit was completed the dive crew began the inspection of the east pier moving in a clockwise direction. The inspection ended by inspecting the west side of the rest pier, commencing at the south limit moving north. The inspection of the piers included measurements and location of defects, as well as water depth, utilizing a measuring stick and 100’ cloth measuring tape. As marine growth was found on the majority of the piers, isolated areas were cleaned off and inspected further. Utilizing a probing tool, penetration depths of the timber were measured and recorded in order to determine the level of cross-sectional loss and rot.

6.0 OBSERVATIONS

Upon arrival, the dive team conducted a safety talk to review all safety procedures before commencing the inspection. The inspection found the Rest Pier to be in fair condition. The timber cribbing on the west side of the rest pier was found to be in better condition than that of the cribbing on the east side. The rest pier was found to be constructed of timber cribbing with precast concrete blocks located above the cribbing. Spalling was evident on the majority of concrete blocks at the inner edges where the adjoining blocks meet. Located on top of the concrete block was mass concrete that extends the full length of the pier. Inspection of the mass concrete was generally not included in this report other than severe areas of deterioration that extended to water surface. Located at the centre of the rest pier was the pivot pier which was found to be constructed of concrete. The inspection found the east pier to be completely encased in grout bags. Reference material indicated the east pier to be constructed of wood sheeting and steel sheet pile with a concrete deck. Due to the fact the east pier was encased in grout bags, inspection of the pier was not possible. The grout bags were found to be generally intact and in fair condition. Below are general descriptions of the findings, highlighting the major observations.

6.1 Rest Pier

6.1.1 East side (0+000E to 0+029E, 0+036.5E to 0+066.5E) excluding Pivot Pier

Chainage	Observations
0+000E	Marine growth on crib, more extensive near bottom
	Tiebacks found to have 0.03 m gap around circumference
	21 rows of timbers, no undermining of crib found
	0.38 m x 0.38 m screw bolt w/ washers securing timbers in good condition
	Gap between 7th and 8th timber from top, 0.5 m of penetration
	12th timber from top, end grain rotted
	14th timber from top, 0.15 m of penetration at end of timber
	15th timber from top, severely rotted corner tieback
	16th timber from top, 0.025 of cross-section loss on face of timber 0.3 m in length
0+002E	0.48 m long x 0.25 m high x 0.06 m deep spall on concrete block at surface
	0.12 m long x 0.1 m high x 0.06 m deep spall
	Gap between blocks approximately 0.07 m wide
0+003E	Top 3 tiebacks approximately 0.1 m of penetration into timber
0+005E	Top tieback timber severely rotted
	2nd timber from top 0.1 m penetration into timber
	3rd timber from top, severely rotted
0+006E	Concrete block overhangs timber crib to the east by 0.76 m (extends to 0+011)
0+008E	2nd tie back from the top, 20% cross-sectional loss
	No resistance at 0.76 m penetration between timbers
	3rd timber from the top, 0.15 m penetration
	4th timber from the top, rotted with 0.2 m penetration
	6th timber from the top, 50% cross-sectional loss, 0.1 m penetration
	Lake bottom 0.3 m deep sediment, hard bottom below sediment
0+009E	Severe spall, 0.74 m long x 0.46 m high x 0.1 m deep spall, 0.41 m below surface
	Concrete blocks spalled at corners
0+011E	Bottom 1/3 of top timber disintegrated (through pin exposed)
0+011E to 0+012E	Severe spall with exposed rebar at surface, 0.97 m long x 0.74 m high x 0.03 m deep
0+012E	Top tieback timber rotted 0.5 m deep
	4th timber from the top, 0.15 m penetration
	9th timber from the top, 0.1 m penetration
	12th timber from the top, 0.1 m penetration
	0.1 m penetration at lake bottom
0+015E	6th timber from the top, 0.2 m penetration
	0.2 m penetration on lake bottom
0+017E	Spall on concrete block at surface, 0.9 m long x 0.38 m high x 0.1 m deep
0+018E	1st tieback from top, 50% cross-sectional loss

Chainage	Observations
0+018E	7th tieback from top, 0.18 m penetration
	0.03 m penetration into lake bottom
	Split timber from 0+018 to 0+020, 3.1 m off lake bottom
0+020E	Top timber, 10% cross-sectional loss
	2nd timber from bottom, 0.15 m penetration
	Concrete from over pour found on bottom, 1.5 m long x 0.5 m high x 0.5 m high
	Severe rot just below waterline, 1st timber from top
	7th timber from top, excessive rot 0.61 m wide
	9th timber from top offset 0.08 m offshore
	Block corners rounded and spalled
0+022E	2nd tieback timber from top, sever rot, 0.3 m penetration
	Debris on lake bottom
0+023E	Pop out on concrete block, 0.9 m long x 0.3 m high x 0.56 m deep with exposed rebar
	Concrete spall, 3.5 m long x 0.15 m high x 0.1 m deep begins 0.13 m above waterline
0+038E	Spall and missing concrete on mass concrete, 2 m long x 0.18 m high x 0.46 m deep
	Concrete blocks overhand timber crib by 0.1 m
	Conduit protruding through timber crib then into lake bottom
	Concrete leaning against timber crib at lake bottom
0+040E	Spall on mass concrete ends
	Tieback timber flush with concrete blocks
	Bottom 4 timbers offset to the west by 0.1 m
0+041E	Spall on mass concrete 0.9 m long x 0.1 m high x 0.13 m deep
	5 timbers exposed, middle three offset towards west
0+047E	Spall on block corners
	Rip-rap on lake bottom
	Light sediment on lake bottom with cobbles
0+050E	Top timber 0.13 m offsets lower timbers to the west
	Lower timbers flush with blocks
0+052E to 0+053E	Top timber with severe rot for whole length of timber, 85% cross-sectional loss
0+053E	Crib joint in good condition
0+055E	Spalling on block corners continues
0+056E	Spall on blocks 0.3 m long x 0.38 m high x 0.18 m deep
	Spall on mass concrete continues
0+058E	Exposed steel on mass concrete 0.53 m long x 0.38 m high x 0.18 m deep

Chainage	Observations
0+058E	7th tieback from top, 0.18 m penetration
	Rip rap on lake bottom
0+062E	Spall on blocks 0.15 m long x 0.25 m high x 2 m deep
0+063E to 0+065E	Severe spall between mass concrete and concrete blocks with exposed rebar, 1.98 m long x 0.48 m high x 0.96 m deep
0+066.5E	Concrete block proud of timber crib 0.1 m
	Steel angled face at end of pier with 0.66 m long x 0.48 m high x 0.76 m deep long void behind, continues 0.28 m below surface. Steel face extends 1.37 m below surface at a 45° angle, then plumb to 1.83 m below surface
	Undermining of timber crib, beginning at chainage 0+064, 2.5 m long x 0.3 m high x 0.45 m deep

6.1.2 West side (0+000E to 0+029E, 0+039E to 0+069E) excluding Pivot Pier

Chainage	Observations
0+000W	Concrete spall on blocks with exposed aggregate 0.25 m long x 0.25 m high x 0.03 m deep, commencing 0.1 m below surface
0+001W	Top tieback timber, 10% cross-sectional loss
0+003W	Scour / spall on concrete block corners
0+004W	Spall on concrete block, 0.76 m long x 0.33 m high x 0.06 m deep
0+005W	Light scour and spalling on edge of concrete block corners
0+006W	Bottom timber, 50% cross-sectional loss
0+006W to 0+012W	Spalling on concrete block corners
0+012W	Top timber 30% cross-sectional loss
0+013W	Spall on bottom of concrete block, 0.33 m long x 0.13 m high x 0.04 m deep
0+014.5W	Spall at centre of concrete block, 0.45 m long to 0.43 m high x 0.06 m deep
0+015W to 0+020W	Spall at corner of blocks at bottom, 0.06 m wide separation of blocks
0+018W	Tie back timber missing approximately 0.3 m
0+021W	Top timber approx. 5% cross-sectional loss
0+024W	Spall on concrete blocks, 0.18 m long x 0.23 m high x 0.04 m deep
0+026W	Spall on corner of concrete blocks
0+027W	Top timber, 0.15 m rot at end of timber
0+030W	Spall on concrete block, 0.23 m long x 0.05 m high x 0.04 m deep, 0.05 m below surface

Chainage	Observations
0+030W	Spall on concrete block, 0.3 m long x 0.36 m high x 0.03 m deep, 0.05 m below surface extends 0.05 m above surface
	Spall mid-block, begins 0.18 m below surface, 0.66 m long x 0.2 m high x 0.04 m deep
0+039W to 0+043W	Severe spall above surface, 4 m long x 0.3 m high x 0.25 m deep Conduit protrudes from timber crib, extends into lake bottom
0+041W	Conduits protruding from timber crib, extends into lake bottom
0+043W	Top timber, 0.15 m penetration
0+045W	Concrete blocks overhang timber cribs by 0.11 m
0+046W	Top timber 20% cross-sectional loss
0+047W	Spall on corner of concrete block, 0.25 m long x 0.08 m high x 0.08 m deep
0+051W	Concrete blocks overhang timber crib by 0.15 m
0+055W	Top timber 30% missing
0+056W	Spall beginning at surface, 0.76 m long x 0.25 m high x 0.05 m deep
0+056.5W	Spall at bottom of concrete block, 0.23 m long x 0.15 m high x 0.05 m deep
0+059W	Spall above surface on concrete block adjacent to mass concrete, 0.36 m long x 0.43 m high x 0.076 m deep
0+062W	Scour at bottom of block
	Block overhangs timber crib by 0.17 m
0+064W	Block spall/ pop out, 0.18 m long x 0.28 m high x 0.2 m deep
0+064.3W	Spall on concrete block beginning at surface, 0.48 m long x 0.25 m high x 0.076 m deep
0+067W	Spall at surface, 0.53 m long x 0.41 m high x 0.05 m deep
	Top tieback timber, 50% rotted
	2nd timber from the top, 50% rotted
0+069W	Top timber 0.05 m proud on timbers below
	Steel plate at end of pier extends into water at 45° angle, heavily corroded, terminates 1.2 m above lake bottom
	Void under steel plate (similar to void at north end of pier), 0.17 m long x 0.69 m high x 0.48 m deep
	Pop out at bottom of block, 0.36 m long x 0.2 m high x 0.43 m deep

6.1.3 North face (0+000N to 0+004.8N)

Chainage	Observations
0+000N	0.075 m gap between north/south timbers and east/west timbers
	Top timber offset north approx. 0.05 m
0+001N	15th timber from top, 50% cross-sectional loss
	0.76 m penetration into lake bottom
0+004N	Top timber offset 0.18 m to the north
	Top tieback severely rotted with exposed connection pin, begins to improve 0.45 m towards south
0+004.8N	1 m penetration into lake bottom

6.1.4 South face (0+000S to 0+005S)

Chainage	Observations
0+000S	Bottom timber missing for full extent of south face
0+002.5	Undermining, 0.56 m long x 0.3 m high, begins to decrease heading west
0+005	Debris and large rock on lake bottom
	2nd timber from bottom, severe rot, 0.3 m, penetration into timber
	100% surface rust on steel plate, approx. 0.001 m pitting depth

6.2 Pivot Pier

6.2.1 East side (0+030E to 0+037.5E)

Chainage	Observations
0+030E	Concrete spall full length of pivot pier, starting at surface, 0.76 m high x 0.15 m deep
0+032	Vertical crack with efflorescence commencing above surface extends to lake bottom
0+037.8	0.2 m deep spall

6.2.2 West side (0+030W to 0+039W)

Chainage	Observations
0+030W	Concrete spall full length of pivot pier, starting at surface, 0.76 m high x 0.15 m deep
0+030.5W	0.18 m high crack with efflorescence, spall continues from 0+030W
0+033W	0.63 m below surface, 0.76 m long x 0.3 m high x 0.05 m deep, spall continues from 0+030.5W
0+034W	Spall, 1 m long x 0.28 m high x 0.05 m deep
0+035W	Spall, 1 m long x 0.36 m high x 0.05 m deep
0+036W	Spall, 1 m long x 0.18 m high x 0.05 m deep
0+039W	Spall continues from 0+036W, narrows to 0.08 m high

6.3 East Pier

The inspection of the east pier found the concrete cap to be subject to moderate spalling for the full circumference of the pier. The support structure was found to be encased by grout bags for the full circumference of the pier. The transition between the concrete cap and grout bags was found to range between 0.05 m to 0.25 m below surface. The grout bags continued to lake bottom with no undermining observed. As referenced in the previous inspection report, the grout bags were found to be brittle and easily broken therefore; the dive team did not penetrate the bags in order to avoid damage.

Appendix 1:

Site Photos

Image 1-1: East face of Rest Pier, looking west

Image 1-2: East face of Rest Pier, looking west

Image 1-3: East face of Pivot Pier, looking west

Image 1-4: East face of Rest Pier, looking west

Image 1-5: East face of Pivot Pier, looking west

Image 1-6: South face of Rest Pier, looking north, steel plates extending into water

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Image 1-7: West face of Rest Pier, looking east

Image 1-8: West face of Rest Pier, looking east

Image 1-9: West face of Pivot Pier, looking east

Image 1-10: West face of Pivot Pier, looking east

Image 1-11: West face of Rest Pier, looking east

Image 1-12: West face of Rest Pier, looking south east

Image 1-13: South face of East Pier, looking north

Image 1-14: East face of East Pier, looking west

Image 1-15: West face of East Pier, looking east

Image 1-16: South face of Pivot Pier, looking north

Image 1-17: South face of Pivot Pier, looking north

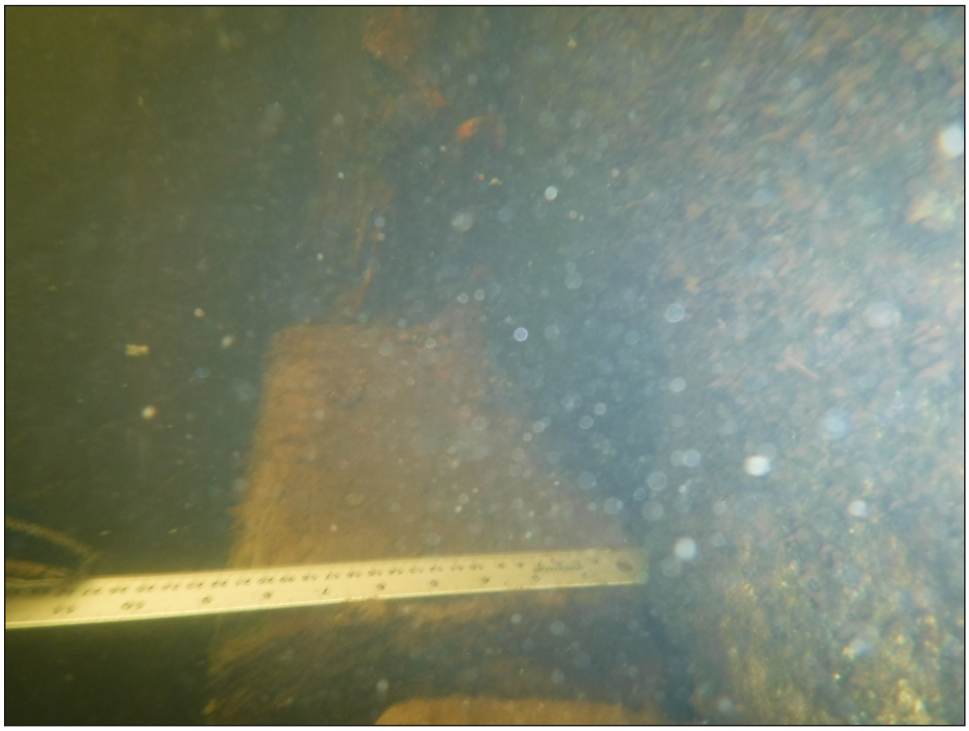

Image 1-18: Top timber offset at north limit of Rest Pier

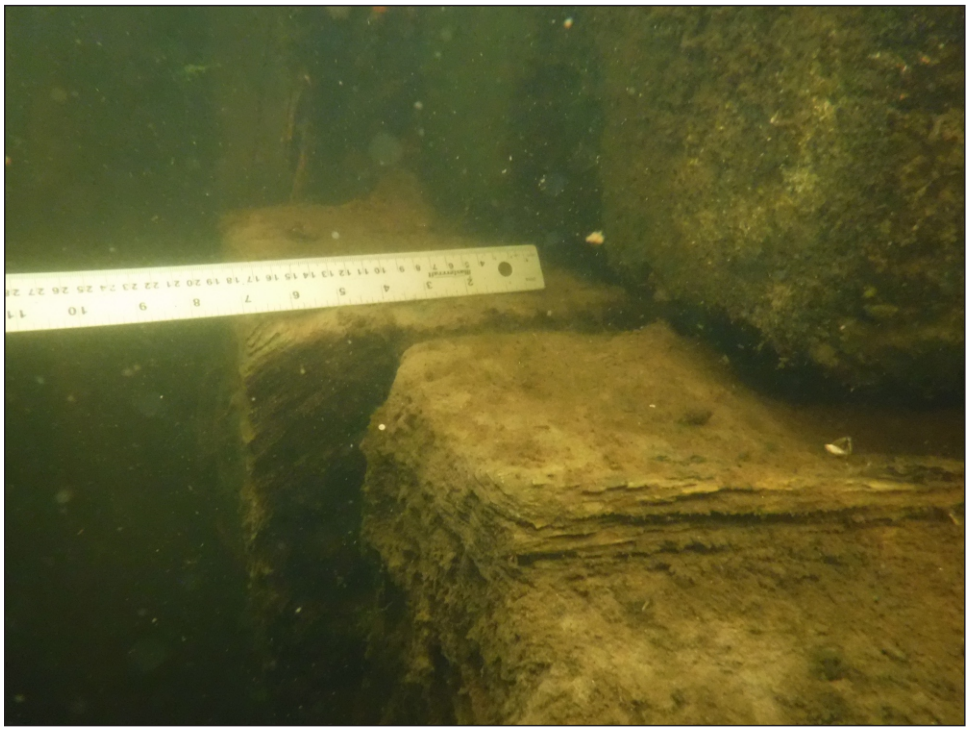

Image 1-19: Top timber offset at north limit of Rest Pier

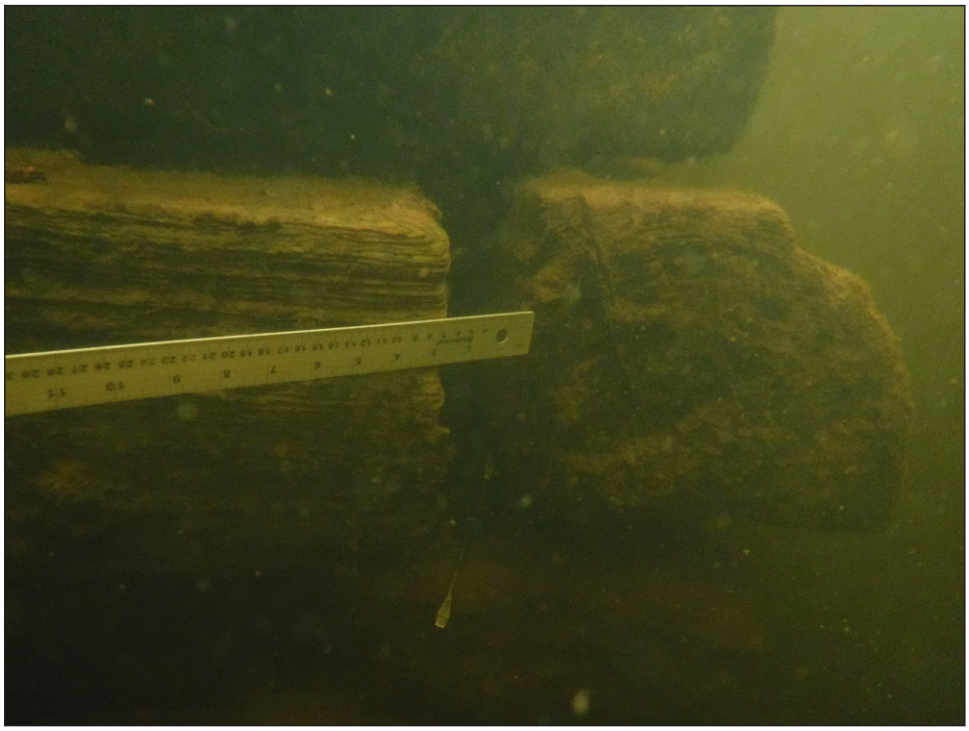

Image 1-20: North west corner of Rest Pier, looking south, gap between timbers

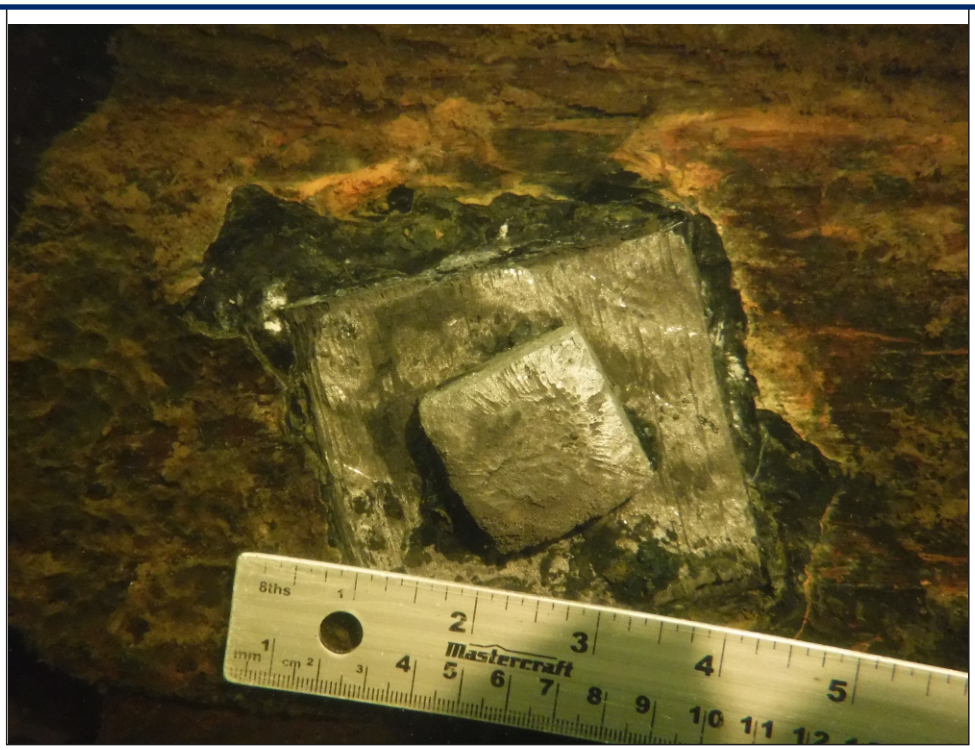

Image 1-21: Square head connection bolt, all bolts and washers in good condition, Rest Pier

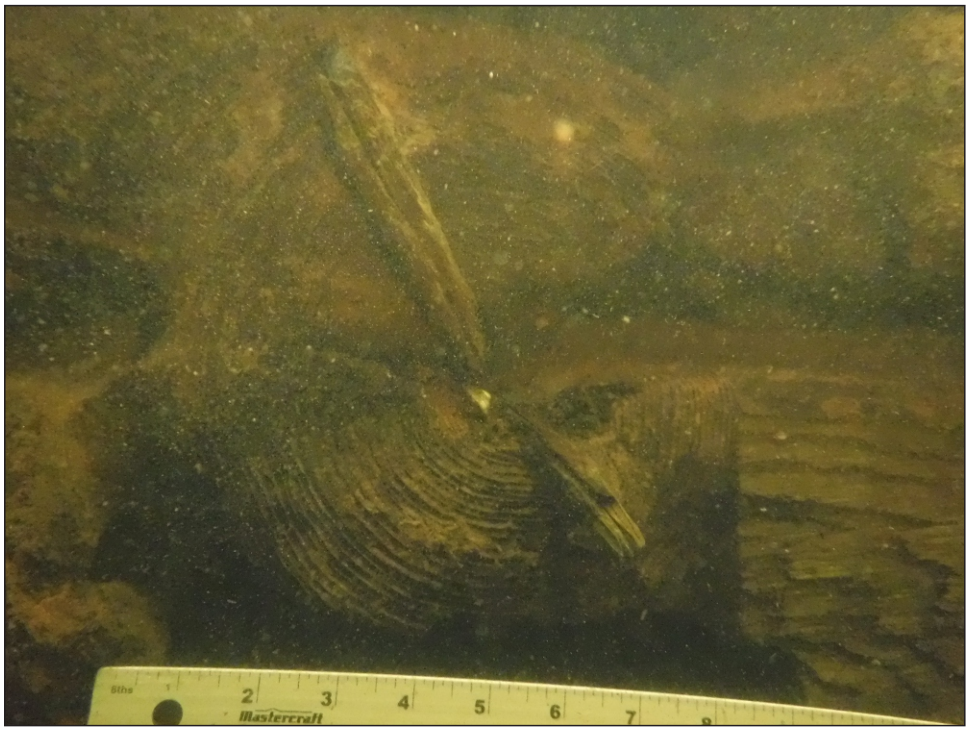

Image 1-22: Tieback timber, north end of Rest Pier

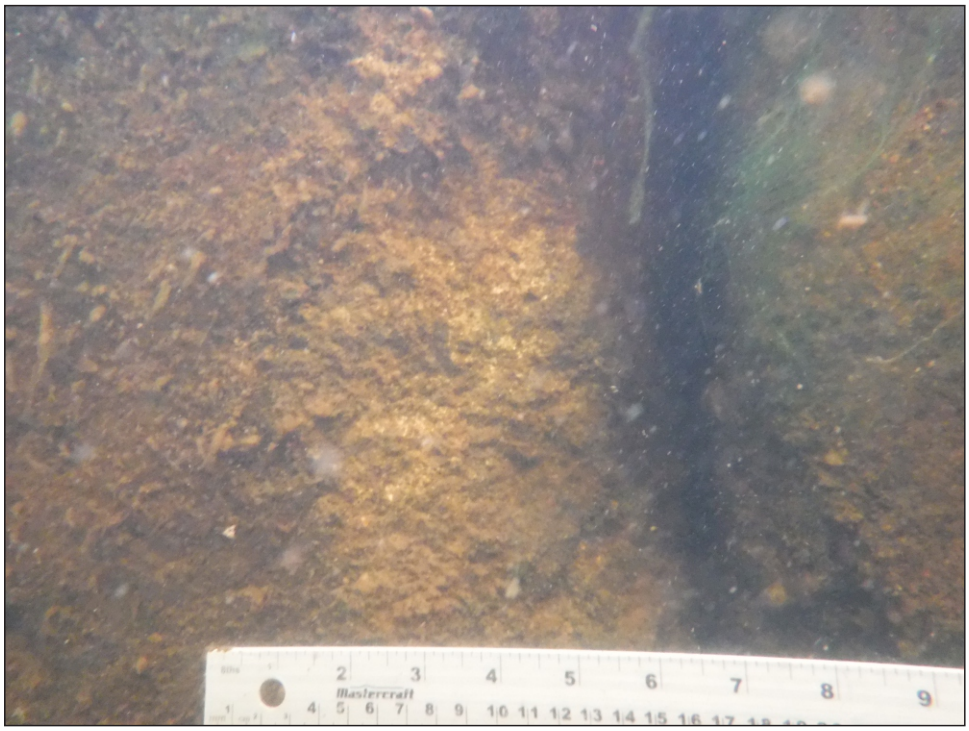

Image 1-23: Spall 1 m below surface at north end of Rest Pier, spall severity typical for Rest Pier

Image 1-24: Electrical conduit on east side of Rest Pier, extending into lake bottom

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Image 1-26: Interface between concrete base of Pivot Pier and lake bottom

Image 1-27: Gap between timber crib and Pivot Pier, east side of Rest Pier

Image 1-28: Gap between timbers, east side of Rest Pier

Image 1-29: End grain of tieback timber east side of Rest Pier

Image 1-30: Tieback timber in poor condition, east side of Rest Pier

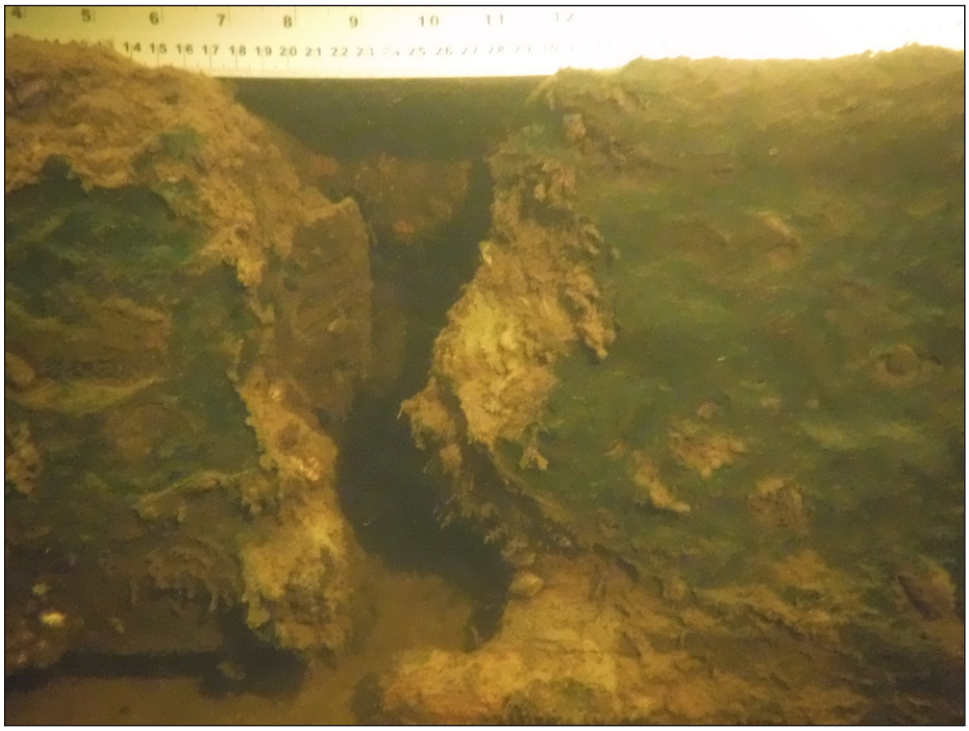


Image 1-31: Tieback timber, gap size typical on east side of Rest Pier

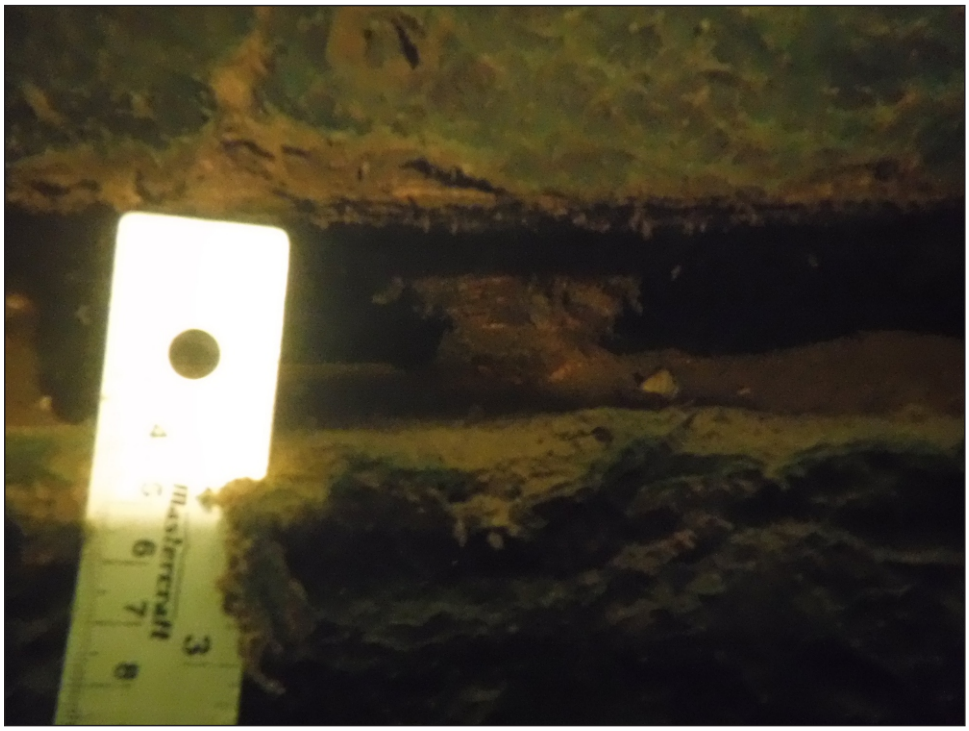


Image 1-32: Horizontal timbers, gap typical on east side of Rest Pier

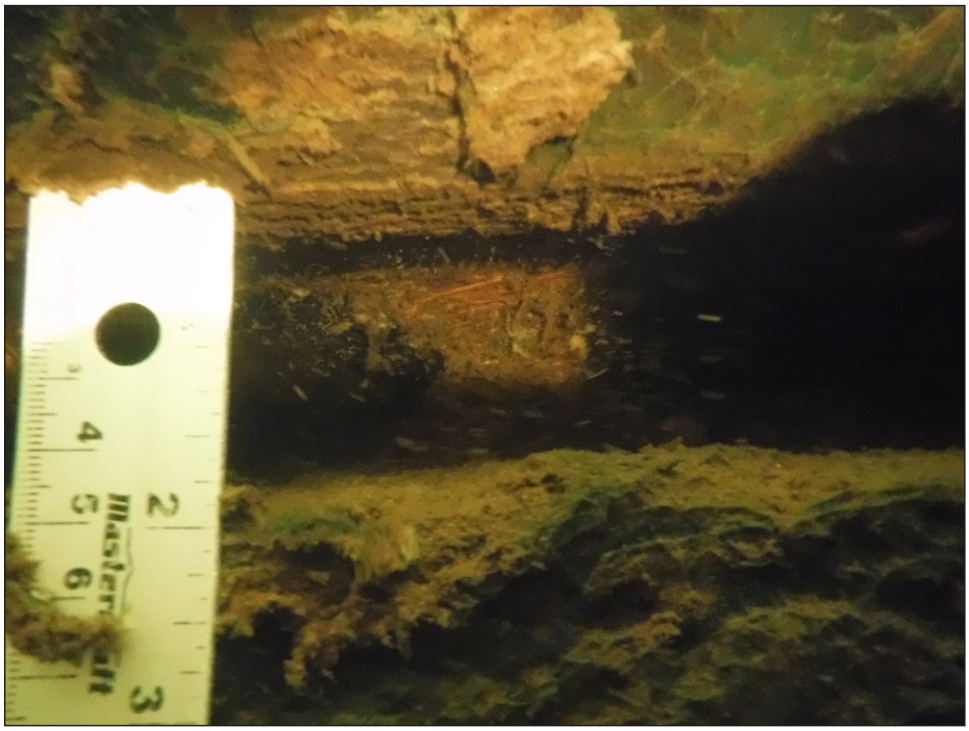


Image 1-33: Gap between horizontal timbers, east side of Rest Pier

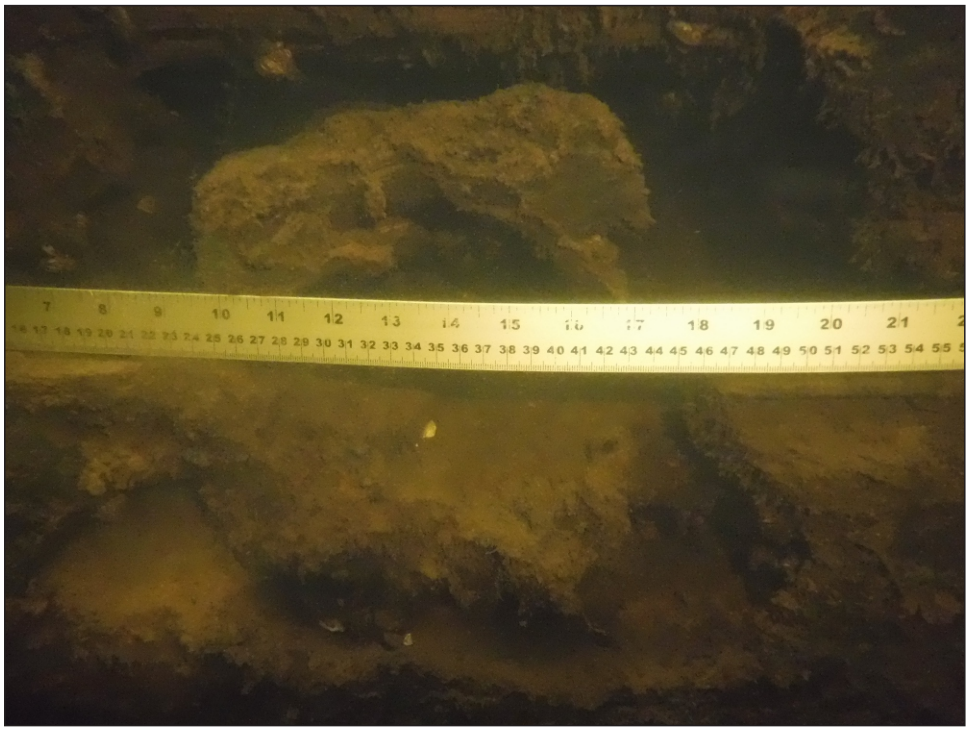


Image 1-34: Rotted tieback timber, east side of Rest Pier

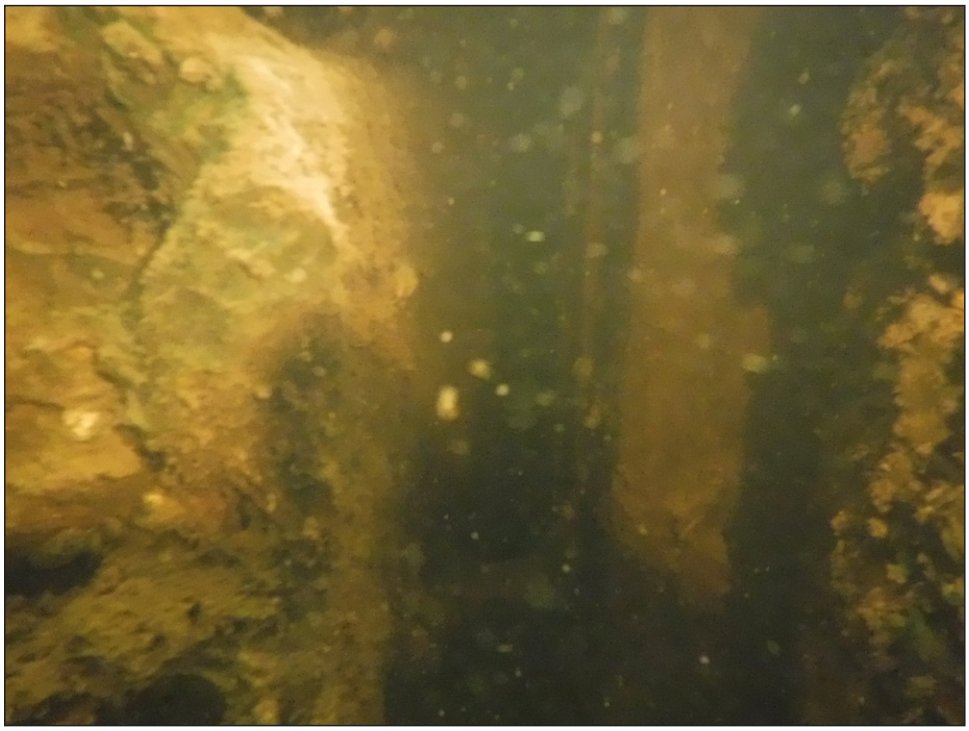


Image 1-35: Joint between timbers, north limit of Rest Pier

Image 1-36: Joint between timbers, north limit of Rest Pier

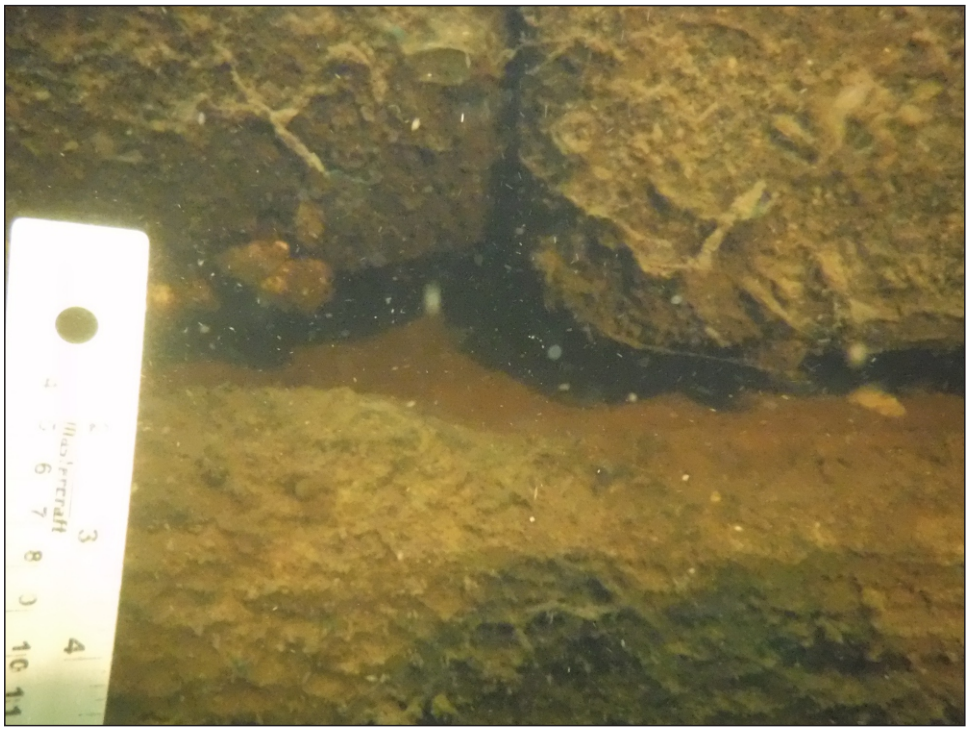


Image 1-37: Spall on concrete block, west side of Rest Pier. Gap/spall between blocks at corners typical throughout inspection

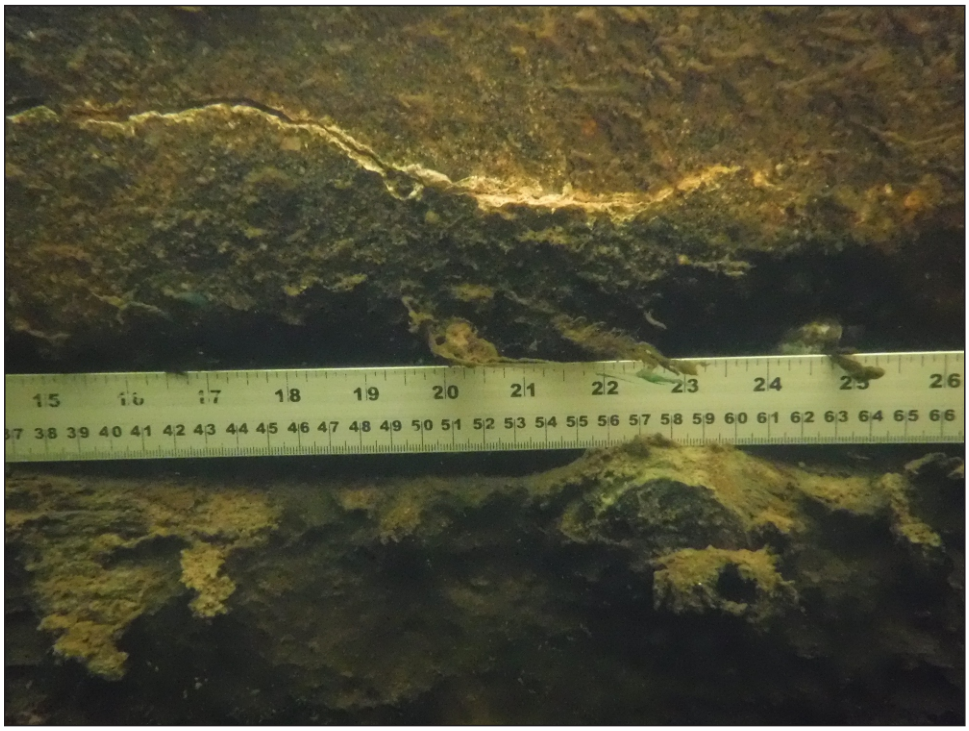


Image 1-38: Horizontal crack, west side of Rest Pier

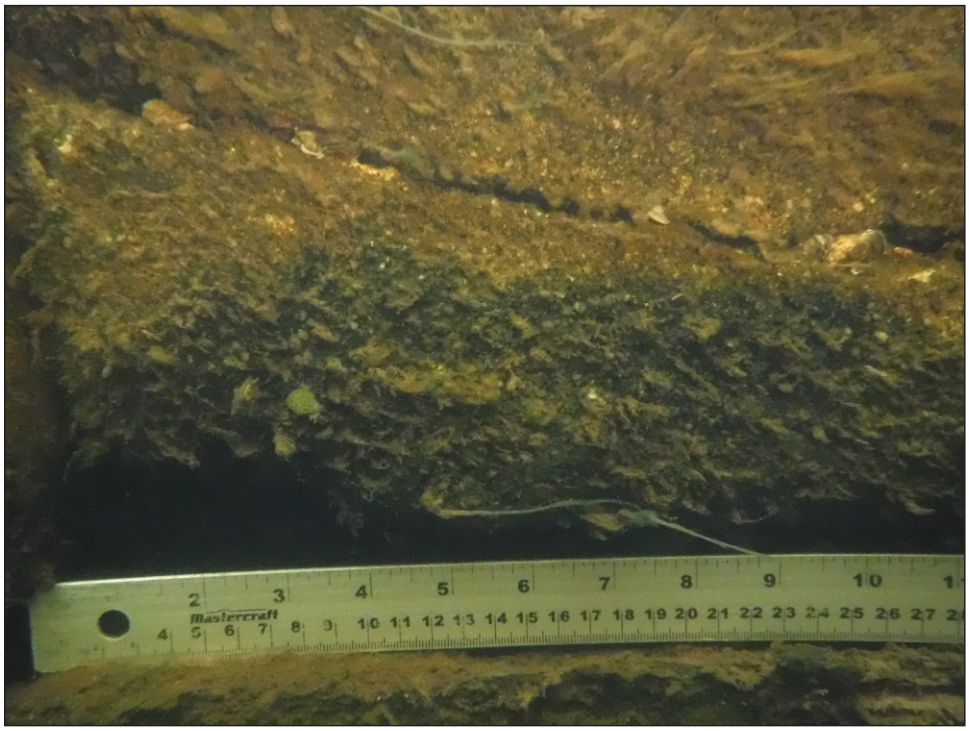


Image 1-39: Crack in concrete, west side of Rest Pier

Image 1-40: Tieback timber, end grain rotted, Rest Pier

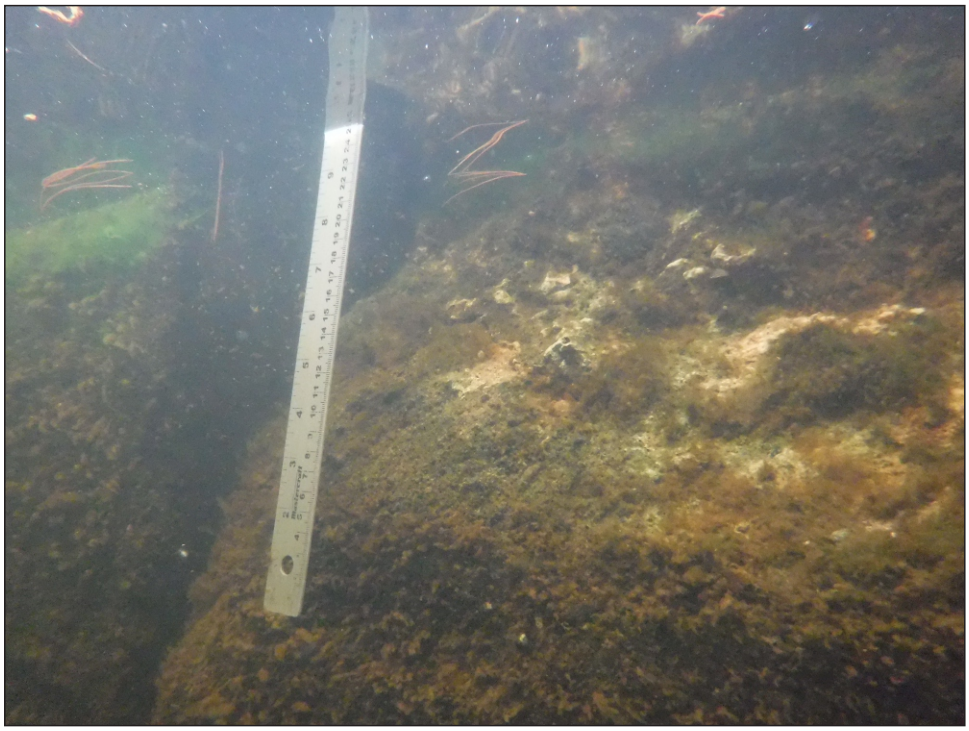


Image 1-41: Spall at waterline, west side of Rest Pier

Image 1-42: Tieback timber, end grain rotted, west side of Rest Pier

Image 1-43: Tieback timber end grain in good condition, Rest Pier

Image 1-44: Interface between timber crib and lake bottom, west side of Rest Pier

Image 1-45: Severe spall commencing above surface with exposed rebar, Rest Pier

Image 1-46: Gap between concrete blocks west side of rest pier, gap/spall condition typical on west side of Rest Pier

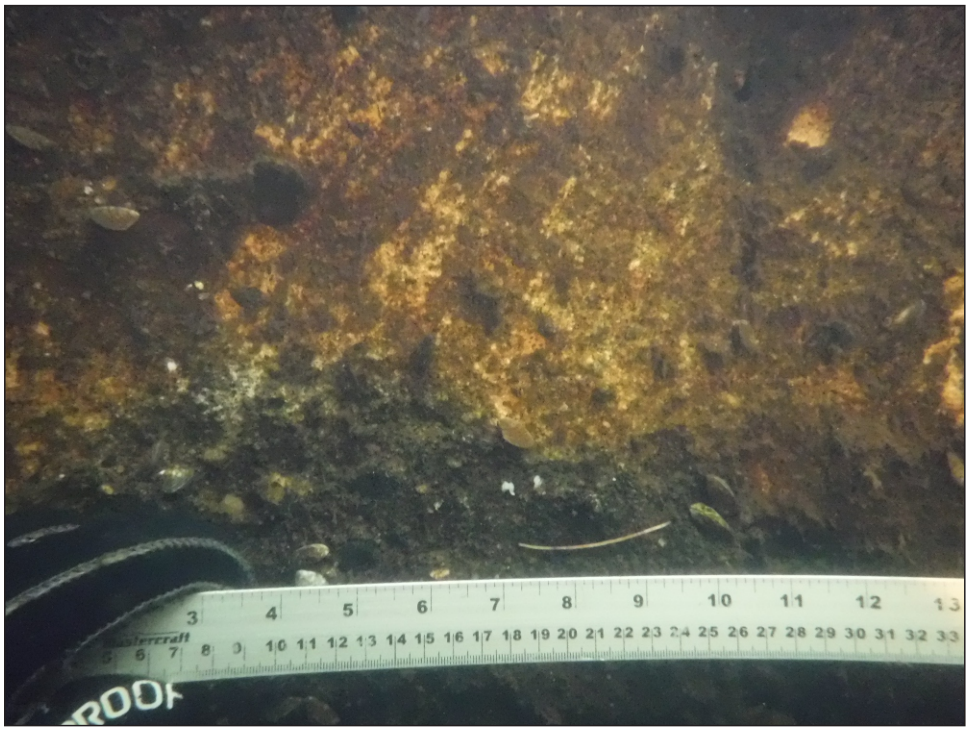


Image 1-47: Spall on concrete blocks, west side of Rest Pier

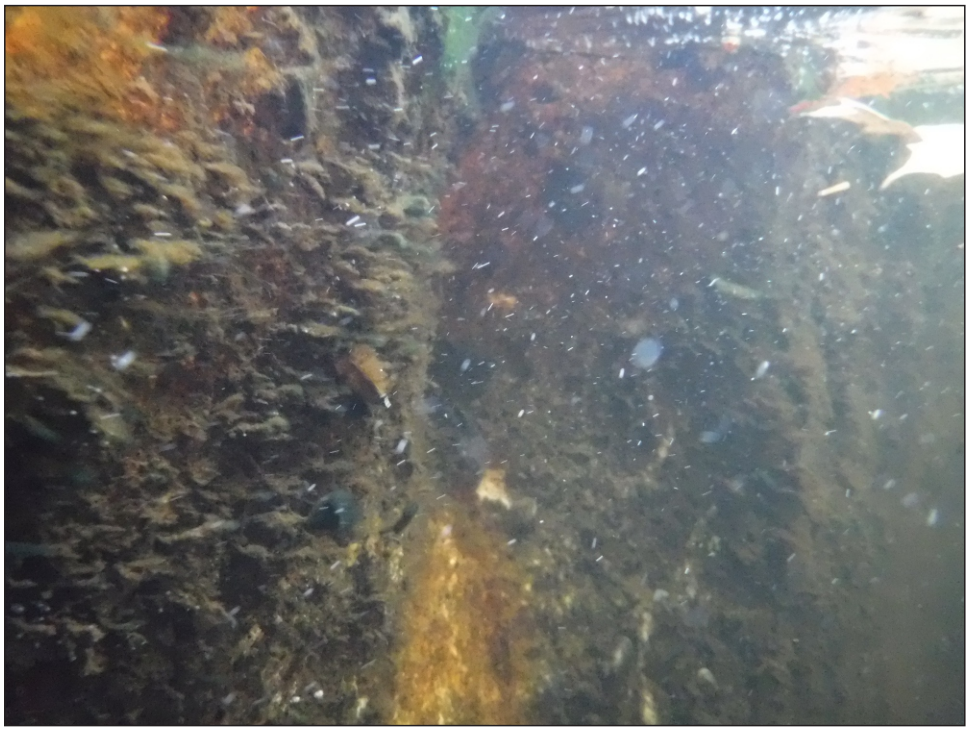


Image 1-48: Spall on concrete blocks, west side of Rest Pier

Image 1-49: Spall on concrete blocks, west side of Rest Pier

Image 1-50: North face of East Pier, looking south

Image 1-51: North face of East Pier, looking south

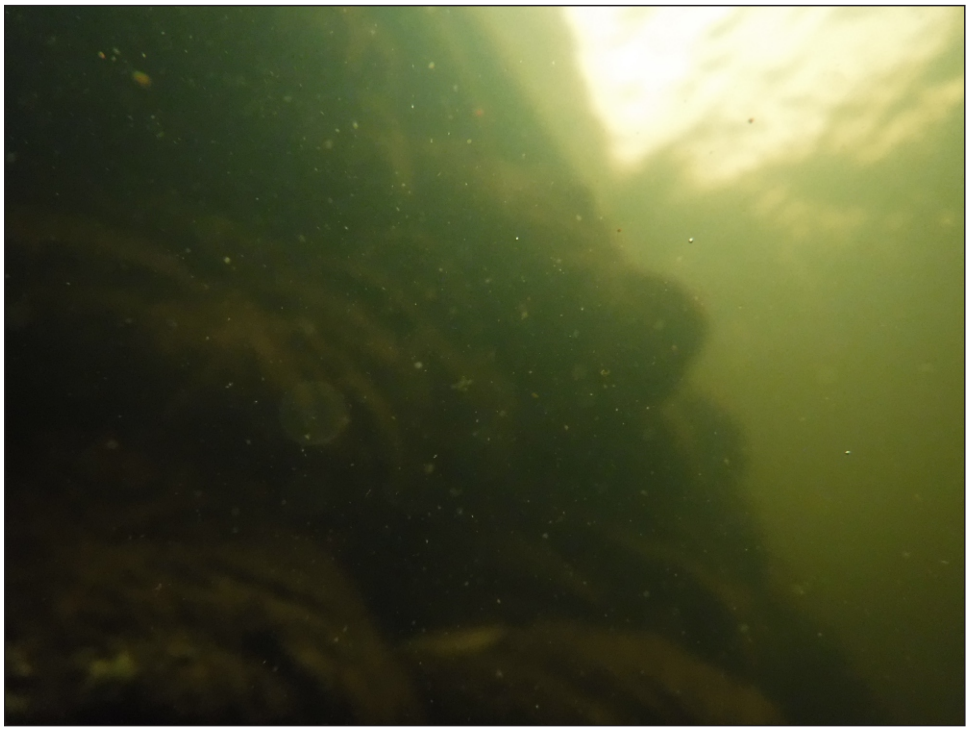


Image 1-52: Grout bags, east side of East Pier

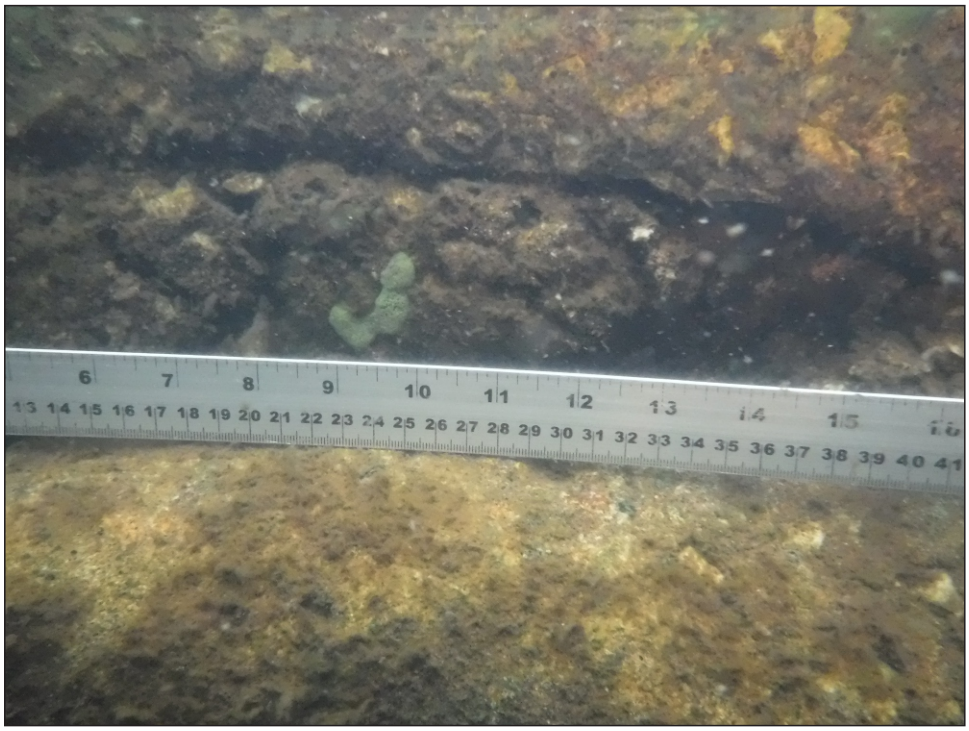


Image 1-53: Interface between concrete bag and concrete cap, East Pier

Image 1-54: Typical condition of grout bag, East Pier

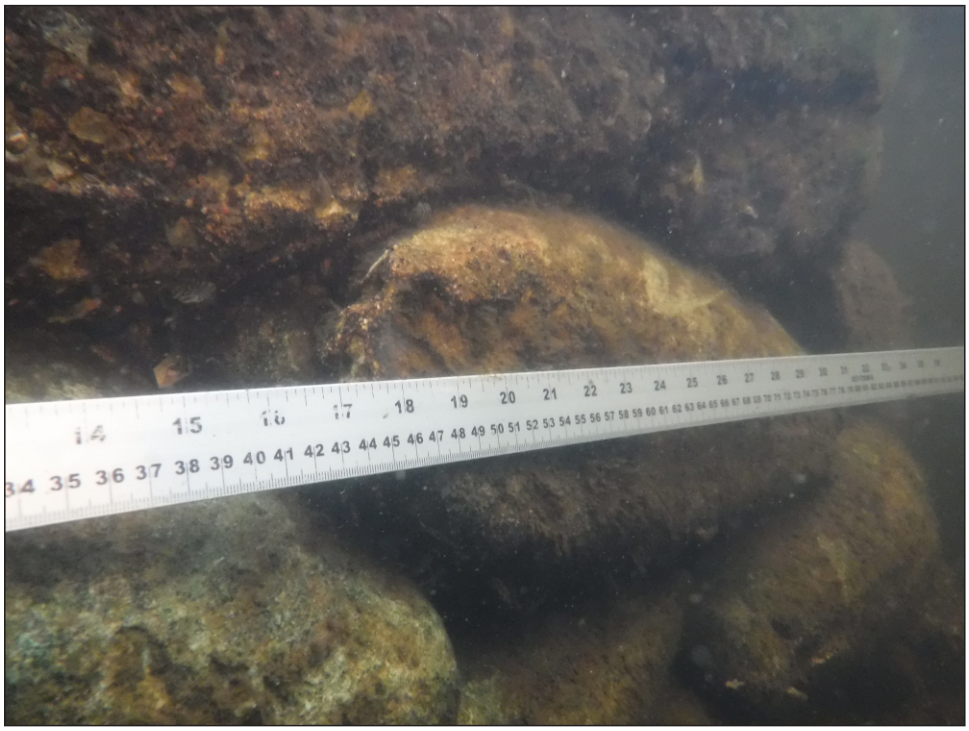


Image 1-55: Interface between grout bags and concrete cap, East Pier

Image 1-56: Grout bags at base of East Pier

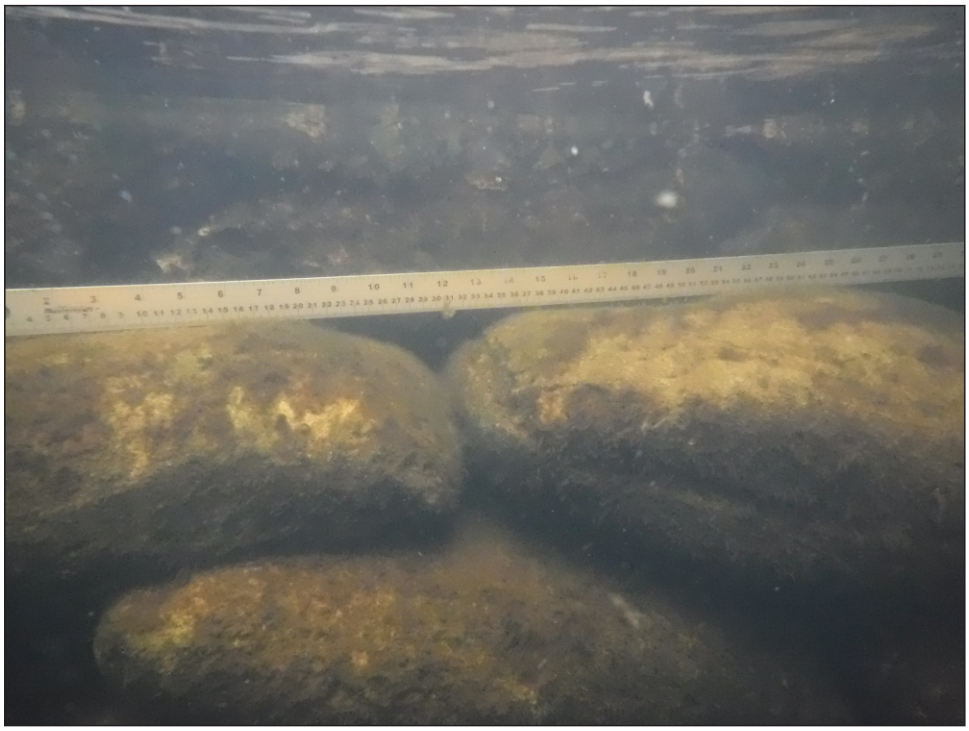


Image 1-57: Interface between grout bags and concrete cap at surface, East Pier

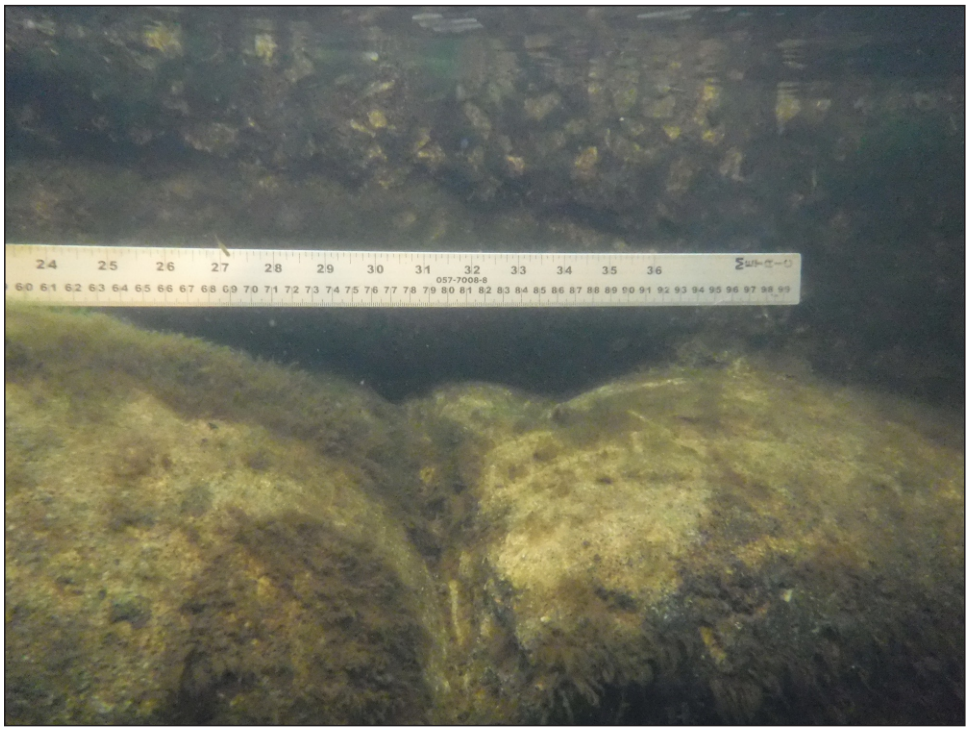


Image 1-58: Interface between grout bags and concrete cap at surface, East Pier

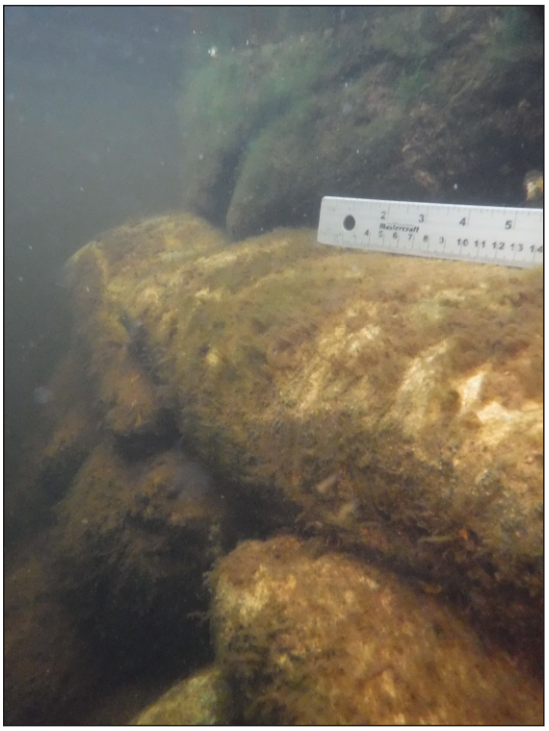


Image 1-59: Interface between grout bags and concrete cap at surface, west side of East Pier

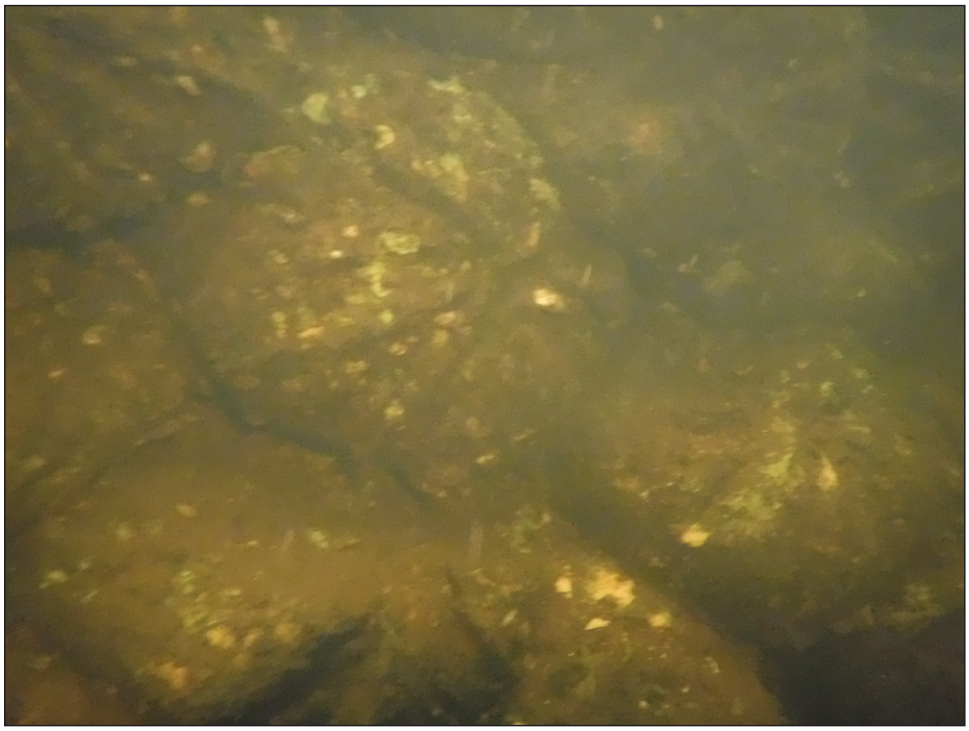


Image 1-60: Interface of grout bags and lakebed, East Pier

Image 1-61: Interface of grout bags and lakebed, East Pier

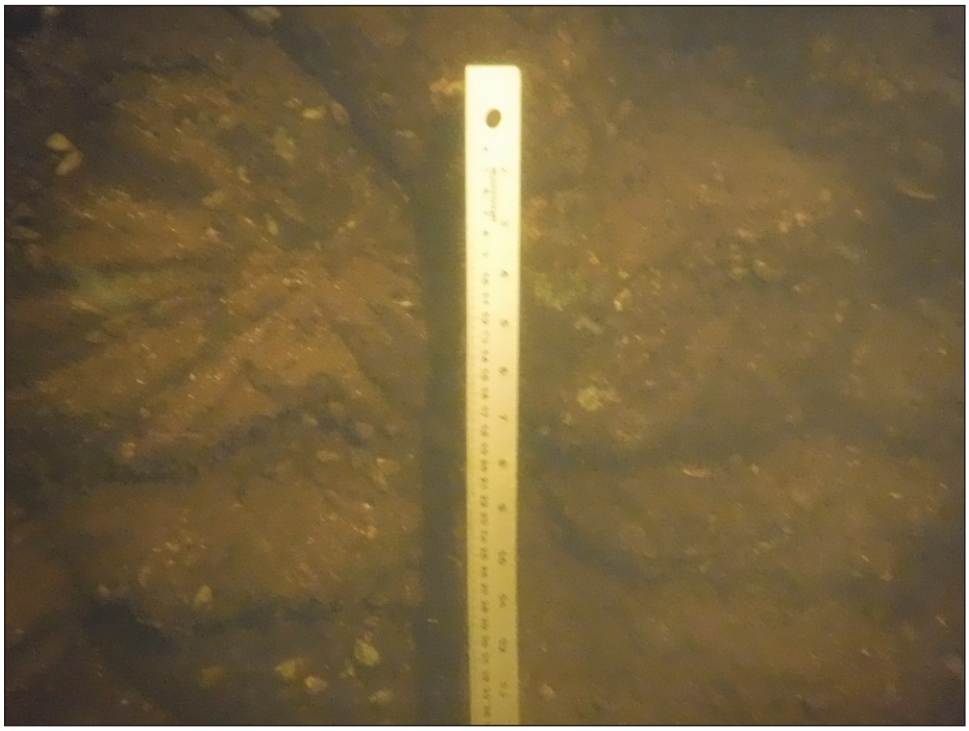


Image 1-62: Interface of grout bags and lakebed, East Pier

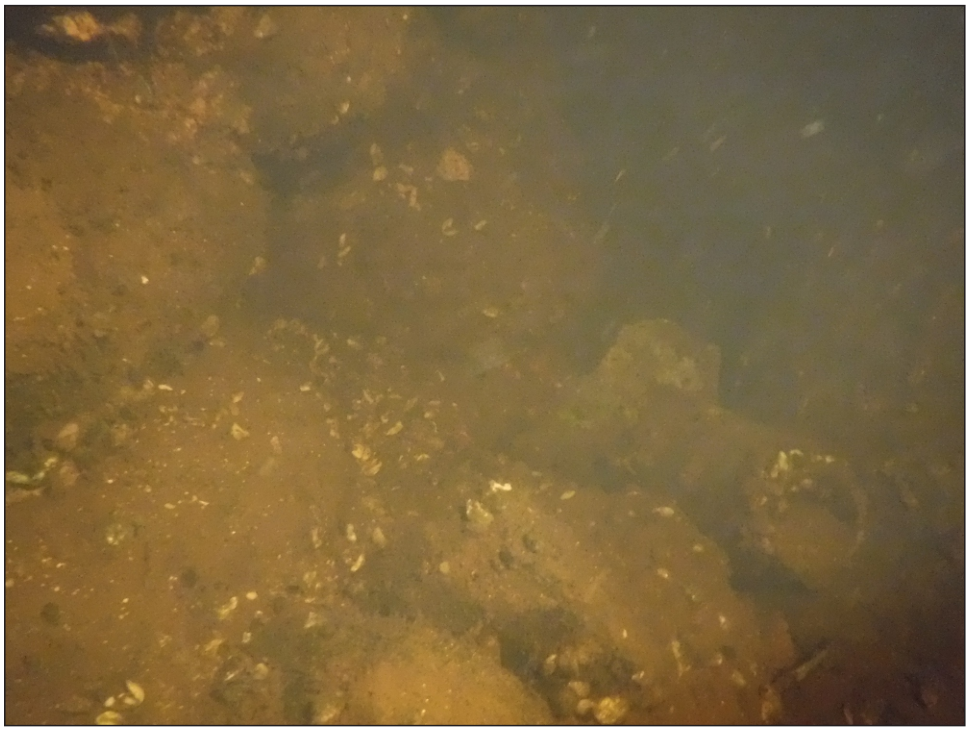
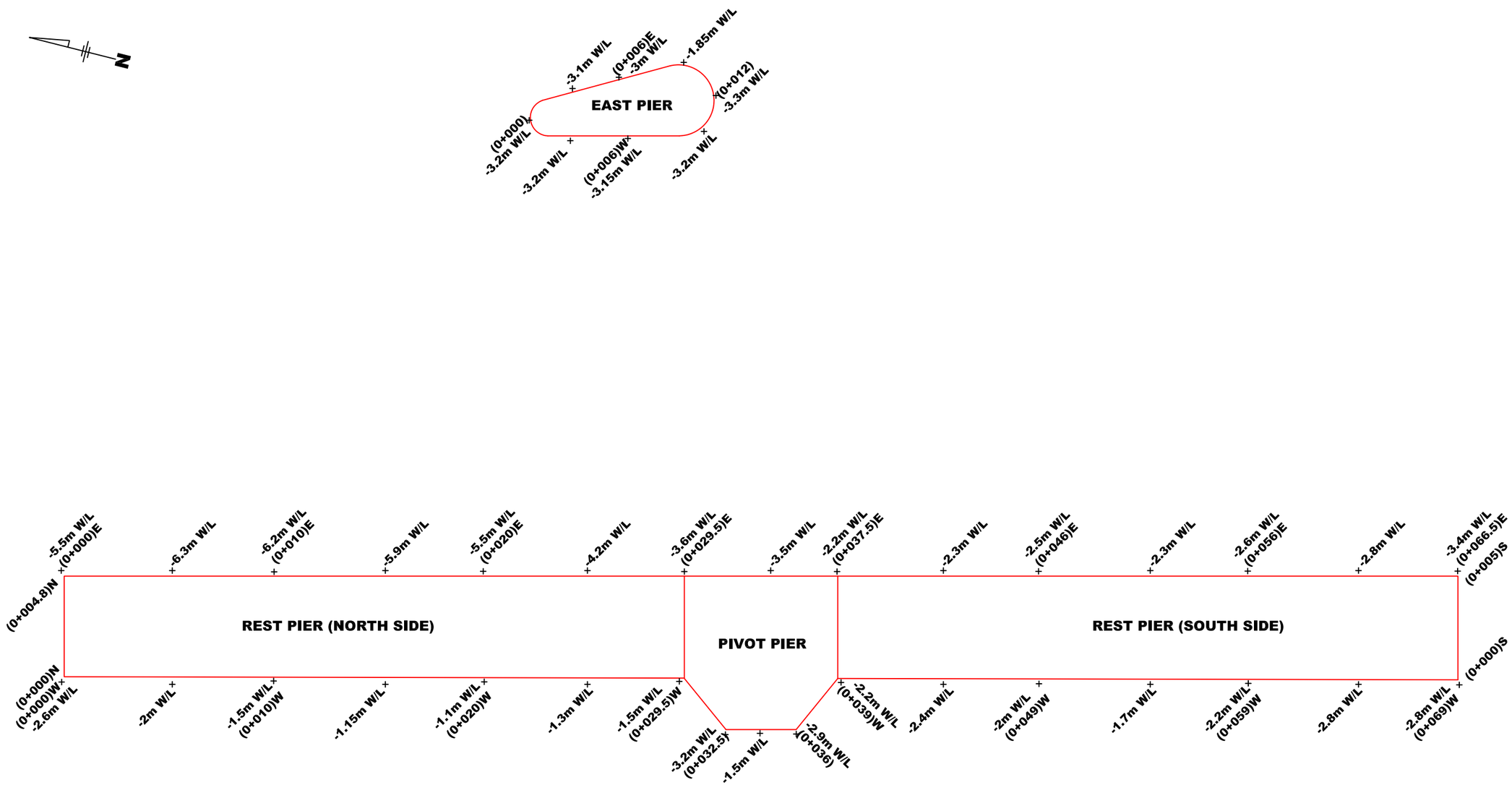


Image 1-63: Interface of grout bags and lakebed, East Pier

Appendix 2:

General Arrangement Drawings



SITE PLAN AND DEPTH SOUNDING

(Not to Scale)

LEGEND

(0+000)E	DENOTES	CHAINAGE (EAST SIDE OF WEST PIER)
(0+000)W	"	CHAINAGE (WEST SIDE OF WEST PIER)
(0+000)N	"	CHAINAGE (NORTH SIDE OF WEST PIER)
(0+000)S	"	CHAINAGE (SOUTH SIDE OF WEST PIER)
-0.00 W/L	"	WATER DEPTH

ASI Marine

PARSONS

Project No.: DH16-066

Date: February 28, 2016

Drawn By: D.V.

GENERAL ARRANGEMENT

HAMLET SWING BRIDGE
HAMLET, ONTARIO

Appendix Number:

2

Sheet 1 of 1

Appendix 3:

Inspection Data Sheets

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #: DH16-066
Client: PARSONS	
Location: HAMLET, ONT - WEST PIER (EAST SIDE)	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☑ Yes ☐ No	Video Unit #:
Digital Still Camera: ☑ Yes ☐ No	Camera Unit #:
Visual Inspection: ☑ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
01000		GROWTH ON CRIB, ALGAE AT BOTTOM.	
		0.03m GAP - TIEBACKS	
		TIMBERS (21), NO V/m	
		SCREW BOLT W/ WASHERS, GOOD	
		TIMBER GAP (7/8), 0.5m penetration	
		12-TIMBER - END ROT	
		14 - 0.5 PENETRATION	
		15 - ROTTED TIEBACK	
		16 - SPONGY - 0.025m	
01002		SPALL 0.48 L x 0.25 H 0.06 D.	
		" 0.12 L x 0.1 H 0.06 D	
		0.07 GAP.	
01003		0.1m penet., TOP 3 TIEBACKS	
01005		TOP - ROT SEVERE	
		2- 0.1m penetration	
		3- ROT! SEVERE	
01006		BLOCK OVERHANG CRIB 0.76m	
01006		2 tie back, APPROX. 20% c/s loss	
		0.76 penetration - NO RESISTANCE	
		3- 0.15m pene.	
		4- 0.2m pene/ROT	
		6 - 50% ROT, 0.1m penet.	
		0.3m SEDIMENT	

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #: DH16-066
Client: PARSONS	
Location: HAMLET, ONT - WEST PIER (EAST SIDE)	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☒ Yes ☐ No	Video Unit #:
Digital Still Camera: ☒ Yes ☐ No	Camera Unit #:
Visual Inspection: ☒ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
0to09		SPALL - 0.74 x .46 H x 0.1 H BLOCKS SPALLED AT CORNERS	
0to11		BOTTOM 1/3 DISINTIGRATED	
0to11 - 0to12		SPALL W/ EXP. REBAR., 0.97L x .74H x 0.03D	
0to12		TOP - 0.5 ROT 4 - 0.15 pene. 9 - 0.1 pene. 12 - 0.1 pen. 0.1 penet. @ BOTTOM.	
0to15		6 - 0.2m penet. 0.2m - BOTTOM pene.	
0to17		SPALL - 0.9L x .38H x 0.1 deep	
0to18		TOP - 50% LOSS 7 - 0.18 penet. 0.03 m penet. IN LIAKS TIMBER SPLIT, 0to18 - 0to20	
0to20		TOP - 10% c/s loss 2 - 0.15 m penet. OVERPOUR - ON BOTT., 1.5L x .5H x .5D ROT - SEVERE @ TOP 7 - 0.61 m WIDE ROT 9 - OFFSET .08 OFFSHORE BLOCKS - CORNERS ROUNDED	

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #: DH16-066
Client: PARSON'S	
Location: HAMLET, ONT	
Facility: HAMLET SWING BRIDGE - W. PIER, (EAST SIDE)	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☒ Yes ☐ No	Video Unit #:
Digital Still Camera: ☒ Yes ☐ No	Camera Unit #:
Visual Inspection: ☒ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
0+022		2 - TIEBALL, ROT / SEVERE, 0.3m prog. DEBRIS ON BOTTOM	
0+023		BLOCK - POPOUTS, .9L x .3H x .56 DEEP SPALL - 3.5L x .15H x .1D	
0+038		SPALL / MISSING CONC, 2L x .18H x .46D BLOCKS OVERHANG .1m CONDUIT THROUGH CRIB CONC. LEANING AGAINST TIMBER.	
0+040		SPALL ON MASS ENDS TIEBALL FLUSH BOTTOM 4 OFFSET .1 WEST	
0+041		SPALL, .9L x .1H x .13D 5 TIMBERS, MID - 3 O/S TO WEST	
0+047		SPALL ON BLOCKS (CORNERS) RIP - RAP SEDIMENT ON BOTTOM.	
0+050		~~TIE~~ TIMBER .13 offset (TOP) TIMBERS FLUSH W/ BLOCKS	
0+052			
0+053		SEVERE ROT, TOP, 85% LOSS	
0+053		CRIB GOOD	

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #: DH16-066
Client: PARSONS	
Location: HAMLET, ONT → WEST PIER (EAST SIDE)	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☑ Yes ☐ No	Video Unit #:
Digital Still Camera: ☑ Yes ☐ No	Camera Unit #:
Visual Inspection: ☐ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
0+055		SPALLING ON CORNERS	
0+056		SPALL ON BLOCKS, .3L x .38H x .18D SPALL ON MASS CONC. CONTINUES	
0+058		STEEL EXPOSED, .53L x .38H x .18D 7-.18 penetration	
0+062		SPALL ON BLOCKS, .15L x .25H x 2 DEEP.	
0+063 -065		SPALL BTWN CONC & BLOCKS W/ REBAR ~~[illegible]~~ 1.98L x .48H x .96 DEEP	
0+065		Conc. pour of Timber (:1m)	
		STEEL ANGLE @ END of PIER, VOID .66L x .48H x .76D, EXTEND 1.37 BELOW SURFACE	
		U/m OF CRIB, 2.5L x .3H x .45 DEEP.	

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #: DH16-066
Client: PARSONS	
Location: HAMLET, ONT - WEST PIER (N. SIDE)	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☑ Yes ☐ No	Video Unit #:
Digital Still Camera: ☑ Yes ☐ No	Camera Unit #:
Visual Inspection: ☑ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
0+000		SPALL ON BLOCKS, END, AGGREG, .25 L x .25 H x .03 D	
0+001		TIEBACK, 10% LOSS	
0+003		SCOUR/SPALL ON CONC.	
0+004		SPALL, .76 L x .33 H x .06 D	
0+005		SCOUR + SPALL AT CONC. EDGES.	
0+006		TIMBER @ BOTTOM, 50% LOSS	
0+006 - 0+012		SPALLING ON CORNERS	
0+013		SPALL ON CONC. @ BOT. .33 L x .13 H x 0.04 D	
0+014.5		SPALL, CONC., .45 L x .43 H x 0.06 D	
0+015 - 0+020		SPALL @ CORN., .06 WIDE	
0+018		TIEBACK TIMBER MISSING	
0+021		TOP TIM. 5% LOSS	
0+024		SPALL ON BLOCKS, .18 L x .23 H x 0.04 D	

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #:
Client: PARSONS	
Location: HAMLET, ONT - WEST PIER (W. SIDE)	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☐ Yes ☐ No	Video Unit #:
Digital Still Camera: ☐ Yes ☐ No	Camera Unit #:
Visual Inspection: ☐ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
0+026		SPALL ON BLOCK CORNERS	
0+027		TIMBER, .15m ROT AT END	
0+030		SPALL ON CONC., .23L x .05H x .04D	
		" ON CONC. .3L x .36H x .03D	
		SPALL, MID-BLOCK, .66L x .2H x .04D	
0+039 - 0+043		SPALL, 4L x .3H x .25 DEEP, W/ CONDUIT PROTRUDING	
0+041		CONDUIT PROTRUDING FROM CRIB	
0+043		.15 PENETRATION, TOP	
0+045		BLOCK OVERHANGS .11	
0+046		TOP, 20% LOSS	
0+047		SPALL ON CORN, .25L x .08H x .08D	
0+051		CONC. OVERHANG .15	
0+055		TOP, 30% MISSING	
0+056		SPALL, FROM SURFACE, .76L x .25H x .05D	
0+056.5		SPALL @ BOTTOM, .23L x .15H x .05D	

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #:
Client: PARSONS	
Location:	
Facility:	
Supervisor:	Diver:
Video: ☐ Yes ☐ No	Video Unit #:
Digital Still Camera: ☐ Yes ☐ No	Camera Unit #:
Visual Inspection: ☐ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
01059		SPALL ABOVE SURFACE, .36L x .43H x	.076D
01062		SCOUR AT BOTTOM	
		BLOCKS OVERHANG .17	
01064		SPALL / POP OUT, .18L x .28H x	.2D
01064.3		SPALL, .48L x .25H x	.076D
01067		SPALL, .53L x .41H x	.05D
		~~TOP ROTH~~ TOP 50% ROT	
		2- 50% ROT	
01069		PLATE @ END of PIER AT 45°, STOPS 1.2 BELOW	
		VOID UNDER PLATE, .17L x .69H x	.48D
		POP OUT, .36L x .2H x	.43D

ASI Group

Inspection Data Sheet

Date: NOV 2-3, 2016	ASI Project #:
Client: PARSONS	
Location: HAMLET, ONT - W. PIER (W. SIDE)	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☑ Yes ☐ No	Video Unit #:
Digital Still Camera: ☑ Yes ☐ No	Camera Unit #:
Visual Inspection: ☑ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
NORTH FACE			
0+000		.075 GAP BTWN N/S - E/W	
		TOP TIMBER O/S .05	
0+001		15th - 50% LOSS	
		.7b PENETRATION @ BOTTOM	
0+004		TIMBER O/S .18 NORTH	
		TIEBACK ROTTED W/ EXPOSED PIN	
0+004.8		1m PENETRATION	
SOUTH FACE 0+000		BOTTOM TIMBER MISSING	
0+002.5		U/M .56L x .3H	
0+005		DEBRIS @ BOTTOM	
		2 ROT, .3m PENETRATION	
		PLATE 100% CORROSION, .001 DEEP	

ASI Group

Inspection Data Sheet

Date: NOV 3 2016	ASI Project #: DH16-006
Client: PARSONS	
Location: HAMLET, ONT – PIVOT PIER	
Facility: HAMLET SWING BRIDGE	
Supervisor: DAVE GEORGE	Diver: COLE
Video: ☑ Yes ☐ No	Video Unit #:
Digital Still Camera: ☑ Yes ☐ No	Camera Unit #:
Visual Inspection: ☑ Yes ☐ No	

Note: be specific and clear with location, direction and use objects of known size for scale as required

Observations

		Description	
EAST			
SIDE			
0+030		SPALL - FULL LENGTH, .76H x .15D	
0+032		CRACK w/ EFFLORESCENCE	
0+037	.8	.2D SPALL	
W. SIDE			
0+030		SPALL FOR FULL LENGTH, .76H x .15D	
0+030	0.5	CRACK, .18m w/ EFFLOR.	
0+033		.76L x .3H x .05D	
0+034		1mL x .28H x .05D	
0+035		1mL x .36H x .05D	
0+036		1mx .18H x .05D	
0+039		SPALL CONT'S FROM 0+036	

Appendix 4:

Inspection Video (USB)