WATERFRONT FACILITIES INSPECTION AND DESIGN OF REPAIRS
AT NAVAL AIR STATION KEY WEST

Key West, FL

The Scope of Architect-Engineer (A-E) Services (SAES) for this Task Order (T.O.) is described below and elsewhere in the referenced contract.

SAES OUTLINE: This SAES is comprised of the following sections and attachments -

Reference List
Attachment List

A. General Contract Information
B. Project Points of Contact
C. A-E Services (General)
D. Design Service Deliverables
E. Engineering Service Deliverables
F. Meeting/Conferences/Conference Calls
G. Specialty Engineering and Testing Deliverables.

REFERENCES: The guidance and requirements provided in the references listed below form the basis for this T.O. scope. Unless noted otherwise, use the latest versions of these references as of the award date of this T.O. as the basis for providing the required products. In the event of conflict between this document and any documents referenced herein, the requirements of this document govern.

(a) MIL-STD-3007, DEPARTMENT OF DEFENSE, Standard Practice for Unified Facilities Criteria, May 2000
(b) UFC 4-150-07: O&M – Maintenance of Waterfront Facilities, June 2001; change 1, 1 September 2012
(c) UFC 4-150-08: O&M – Inspection of Mooring Hardware, April 2001
(d) UFC 4-152-01: Design of Piers and Wharves
(e) ASCE, Waterfront Facilities Inspection and Assessment, 2015
(f) US Army Corps of Engineers (USACE) "Safety and Health Requirements Manual" (EM 385-1-1) located at http://www.publications.usace.army.mil/USACEPublications/EngineerManuals.aspx
(g) Department of Defense (DoD) Facilities Criteria (FC) 1-300-09N ("Design Procedures") located at http://www.wbdg.org/ccb/DOD/UFC/fc_1_300_09n.pdf
(h) Waterfront Facilities Inspection Data Requirements Rev 2.1
(i) Unified Facilities Guide Specifications (UFGS) located at http://www.wbdg.org/ccb/browse_org.php?o=70
(j) NAVFAC Regional Specifications located at http://www.wbdg.org/ccb/browse_cat.php?o=3&c=43
(k) UFC 1-200-01: DoD Building Code (General Building Requirements), 20 June 2016
(l) UFC 3-301-01: Structural Engineering, with Change 3, 01 June 2016

ATTACHMENTS: The attachment listed below provides additional guidance and/or requirements for this T.O. Unless noted otherwise, use the latest versions as of the award date of this T.O. as the basis for providing the products under this T.O.

1) Project Facility List
2) Location of Project Site

3) Childs' Engineering Summary of Findings
4) Additional Photos

A. GENERAL CONTRACT INFORMATION:

Perform all A-E Services that are required for this T.O. in accordance with this document and the guidance provided in the references and attachments listed above.

a) Background

The purpose of this task order is to provide a design of repairs and construction solicitation package for the repair of a section of the facility titled "Breakwater 442" at NAS Key West.

On September 10, 2021, a large cavity was revealed in the approximate area shown in attachment (2) of this document. Childs Engineering was onsite beginning September 13, 2021 to perform a routine inspection of the facility, and was able to determine the likely cause of the cavity, and determined that there are likely other areas of concern along this section of the facility. Childs' initial findings following their routine inspection of the facility can be found in attachment (4).

This effort will include onsite engineering survey work to include the removal of existing steel panels that are covering holes in the sheet pile to provide inspection ports at the areas where more cavities are expected. These panels will then need to be reinstalled appropriately.

Based on the discovery of this cavity, and the additional information provided by Childs, the area approximately 20' back from the seawall has been blocked off to pedestrian loading only until the extent of damage can be further investigated.

b) Project Scope:

i. This Task Order requires engineering services, in accordance with References (b) through (m), to create a design of repairs package with full plans and specifications. Additionally, underwater work to include welding will be required to facilitate the removal and reinstallation of the steel panels to create inspection ports. The facilities with any special instructions per facility are listed in Table 1. Assessment and design repairs of the waterfront facilities includes but is not limited to the following:

- Underwater and above water design level inspection of structural, electrical and mechanical system components
- Generation of documents to support environmental permit documentation
- Proper permit approval to perform underwater welding and cutting
- Engineering analysis of existing conditions
- Engineering calculations
- Recommendation of appropriate remediation actions
- Documentation of assessments
- Generation of construction drawings and specifications directing recommended repairs
- Generation of detailed cost estimates of design repairs
- Review of existing facility drawings
- Review of existing facility work orders or maintenance plans
- Review of Base Facility Requirements
- Review and implementation of most recent soil and concrete boring samples

c) Design Criteria:

This T.O. will require the contractor to generate full plans and specifications.

B. A-E SERVICES (GENERAL): Perform all A-E Services that are required under this T.O. in accordance with reference (a) and this T.O. SAES.

a) Responsibility of the A-E:

i. The A-E is responsible for all drawings, and other services to be provided under this contract in accordance with reference (a).

ii. Members of the engineering team assigned to this T.O. must meet the professional requirements identified by discipline in the Whole Building Design Guide, and appropriate dive schooling, outlined in reference (g).

iii. Immediately upon award, apply for all the necessary passes for A-E personnel and vehicles to enter military areas in accordance with the latest applicable requirements. While performing the required engineering services, the A-E inspection team will be required to conform with security requirements prior to entry into the installation and into restricted areas therein. The Defense Biometric Identification System (DBIDS) program is the primary process for obtaining pass/IDs for installation access. Obtaining DBIDS capability may take upwards of five weeks from time of document submittal. The Navy Public Works Department will identify any special requirements prior to commencement of work. Escort by activity personnel may be required for access into critical security areas or spaces. Each vehicle operator from the A-E inspection team shall possess and provide a valid/current driver's license, vehicle registration, and proof of insurance. The A-E contractor shall not publicly disclose any information concerning any aspect of the services related to the Task Order without the prior written approval/permission from the Contracting Officer.

b) Field Investigations/Site Visits:

i. The design commencement date and the time period shall be established by mutual agreement between the City of Key West and the Contractor.

ii. A-E Safety Plan/Accident Prevention Plan (APP) and Dive Operations Plan (DOP): The A-E Contractor shall submit a site specific APP in accordance with reference (g) at least three (3) weeks prior to starting any on-site work.

iii. Inspection: Systems and Components: Perform an above and underwater design level inspection of the structural systems and components (e.g. deck, beams, pile caps, piles, fendering system, mooring hardware and fasteners) per references (c), (d) and (f) to identify and quantify deficiencies affecting the facility's capabilities and requiring repair.

iv. Permit Requirements: The contractor shall procure all required permits to support the underwater work required to remove and appropriately reinstall the steel panels to create inspection ports in the sheet pile.

v. Security Requirements of Inspection Contracts: The military areas of work expected under this T.O. may or may not allow the entry of foreign nationals/non-US residents. The A-E's inspection team and field crews must be comprised of personnel who can qualify for access to these areas. The A-E must adhere to the latest applicable base access requirements prior to and during all meetings, site visits, and field investigations.

vi. Plans and Specifications: As per References (b), (c), (d), (e), (h), (j), (k), (l) and (m) the A&E contractor shall prepare plans and specifications for the repairs of the facilities listed in Table 1. The A-E contractor shall prepare design drawings, engineering calculations, and construction cost estimates. Field notes along with other pertinent reference documents will form the basis from which plans and specifications will be written.

vii. Permit Support: Obtaining environmental permits for the proposed repairs is NOT part of this scope of work. The A-E contractor shall provide summaries of the design of the repairs,

including drawings and sketches, as required, to NAVFAC. The design should minimize any environmental disturbance to the mudline which would require extensive environmental review and permitting. Concept drawings will be required for submission to regulatory agencies at 35%. The A/E should plan to attend an "over-the-shoulder" design review with the permit authority after the 65% design in order to expedite the permit approval process.

viii. Design Review Meetings: The A&E shall attend design review meetings with City of Key West staff and Navy PWD staff after the 35% design is prepared.

C. DESIGN SERVICE DELIVERABLES: The following Engineering Service Deliverables are required for this T.O.:

- Design Submittals
- Drawings/Plans
- Specifications
- Project Cost Estimate

a) Design Submittals:

i. 35% Design: The submittal shall be the 35% plans and specifications and will include preliminary construction cost estimates, and documentation for permits as required, and the initial berthing and mooring analysis.

ii. 65% Design: The submittal shall be the 65% plans and specification and cost estimate.

iii. 100% Design: The submittal shall be the 100% plans and specification with cost estimate and the finalized berthing and mooring analysis.

iv. Final Design: The submittal shall be the final repair contract bid documentation and construction cost estimates, and be in accordance with references (k,l).

Submissions for the design reviews shall be made as outlined in Attachment 3, "Schedule and Distribution of Design Submittals".

b) Drawings/Plans: For specific requirements, refer to Reference (h)/FC 1-300-09N.

i. Soft Metric Units Design: The project drawings and specifications will be prepared in English/inch-pound (I-P) units with the equivalent metric units displayed in adjacent brackets.

ii. Computer Graphics: All drawings to be provided for this T.O. must be accomplished and developed using computer-aided design and drafting (CADD) software and procedures in accordance with Reference (h)/FC 1-300-09N.

c) Specifications: For specific requirements, refer to Reference (j)/ Unified Facilities Guide Specifications (UFGS) and Reference (k)/NAVFAC Regional Specifications. All project specifications must be prepared in the SPECSINTACT SGML format. Contact the Navy PWD Staff, to verify the latest guide specification, specification format, clauses, etc. that are to be used for this T.O.

d) Project Cost Estimate: Provide the cost estimate for this T.O. in accordance with Reference (h)/FC 1-300-09N. Prepare all detailed cost estimates in the NAVFAC Work Breakdown Structure (WBS) to the Assembly level using the SuccessEstimator™ (SUCCESS) estimating program. For projects over $500,000, use the latest SUCCESS version and submit both hard and electronic copies of cost estimates with each submittal. Use of the latest Tri-Service database or commercially available data for use with SUCCESS is highly recommended. The detail for each cost estimate submittal must be commensurate with the level of design required for that submittal.

D. ENGINEERING SERVICE DELIVERABLES: The following Engineering Service Deliverables are required for this T.O.:

- Inspection Execution Schedule
- Accident Prevention Plan
- Dive Operations Plan
- Preliminary Assessment Letter
- Exit Brief Meeting

a) Inspection Execution Schedule: The A-E Contractor shall submit a site specific inspection schedule within two (2) weeks of task order award to the Navy PWD Staff. Inspection schedule shall be provided in MSProject format, updated as required and at minimum include the following line items:

- Task Order Award (milestone)
- Project Planning
- Mobilization
- In-Brief Meeting
- Project Execution
- Exit Brief Meeting

b) Accident Prevention Plan (APP):

The A-E Contractor shall submit a site specific APP in accordance with reference (g) at least three (3) weeks prior to starting any on-site work. An electronic copy (Adobe PDF) shall be sent and a paper copy of the accepted APP shall be retained and producible by the A-E contractor at all times while on-site activities are underway. The Contractor shall evaluate the tasking and site conditions to determine which APP supplemental plans are required; see attachment (2) for specific instructions. As part of the APP, the A-E contractor shall meet the requirements in accordance with reference (g) for one person to be Site Safety and Health Officer (SSHO) qualified and designated as the SSHO at all times.

i. This person cannot be the diver or standby diver.
ii. If the primary SSHO will be the diver or standby diver, then an alternate SSHO must be designated in writing and must meet all SSHO requirements of reference (g) and (a) above.

c) Dive Operations Plan Submittal:

As part of the APP, but as a standalone document, the A-E Contractor shall submit a site specific Dive Operations Plan in accordance with reference (g) to Navy PWD Staff at least three (3) weeks prior to starting any on-site work. An electronic copy (Adobe PDF) shall be sent to Navy PWD Staff and a paper copy of the accepted Dive Operations Plan shall be retained and producible by the A-E contractor at all times while on-site dive operations are underway. See attachment (2) for specific instructions.

d) Contractor Daily Reports:

Complete a Contractor Daily Report for each day at the installation and provide the following day to the COR. Required information includes date, environmental conditions, hours on site, facility(s) inspected, crew size, equipment used, activities performed. Reports are to be signed and dated by the supervisor. The Navy PWD Staff, upon request, shall provide a Contractor Daily Report template prior to commencement of the job.

E. MEETINGS/CONFERENCES/CONFERENCE CALLS:

a) Meeting/Conference/Conference Call Minutes:

Record all meeting/conference/conference call minutes and provide an electronic copy of these minutes in Adobe PDF format to the Navy PWD Staff within five (5) working days after each meeting.

F. SPECIALTY ENGINEERING AND TESTING DELIVERABLES:

a) Underwater Cutting and Welding: Underwater cutting and welding may be required to remove and appropriately reinstall the steel panels to create inspection ports to view additional voids.

b) Soil Borings: Two soil bore specimens shall be collected and tested in accordance with local building codes. Results shall be incorporated into the engineering analysis and report.

ATTACHMENT (1)

Table 1: Facility List

Mole Pier Gate	NFA200000148323	241510	OUTER MOLE PIER #2 (Breakwater 442)	Length	2355	Inspection Type	Routine	Project area to include approximately 600 linear feet of seawall shown in Attachment (2)
				Piles	0	Drawings	Update 2D	
				Max Water Depth	36	Asset Inventory	Update	
				Year Built	1942 / 2003	Hydrographic Survey	No	
				Previous CI	60	Dive	Yes	

ATTACHMENT (2)

Location of Project Site

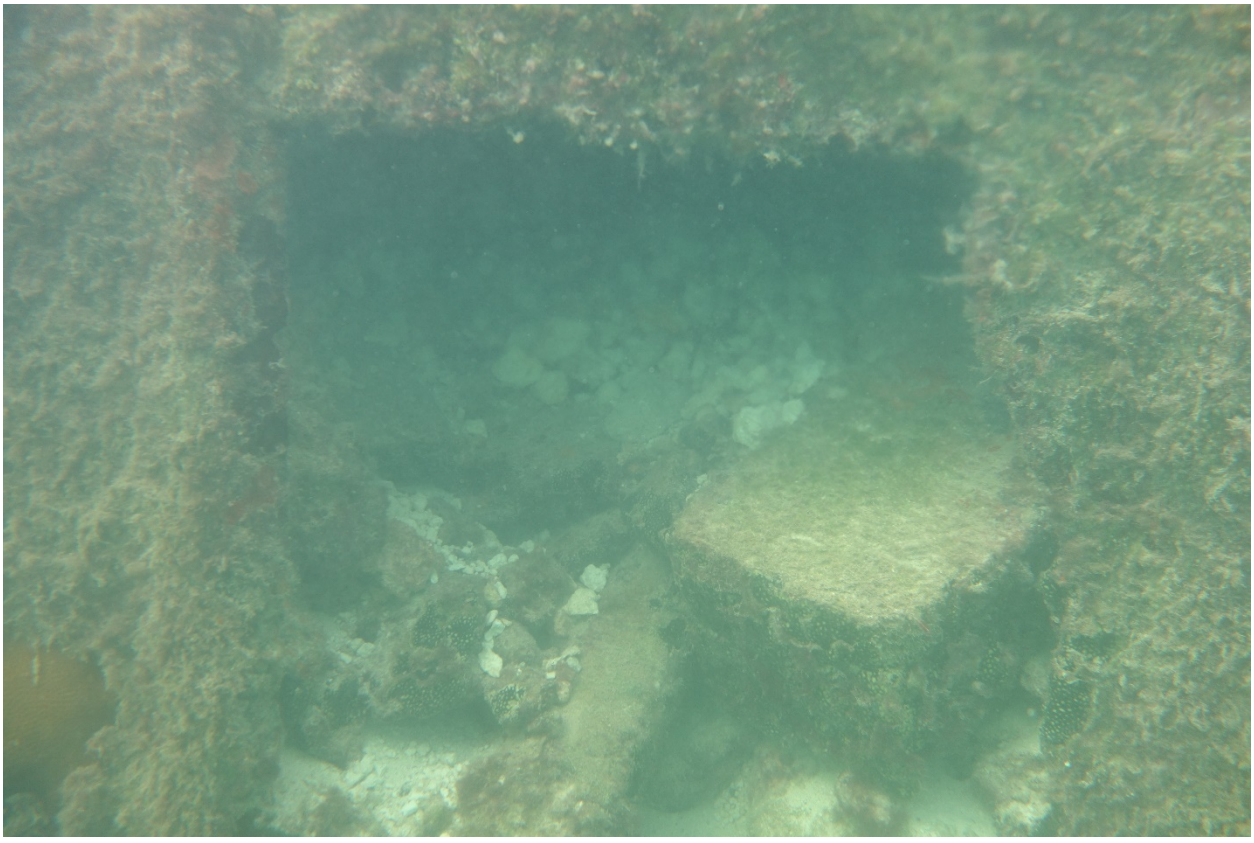
ATTACHMENT (3)

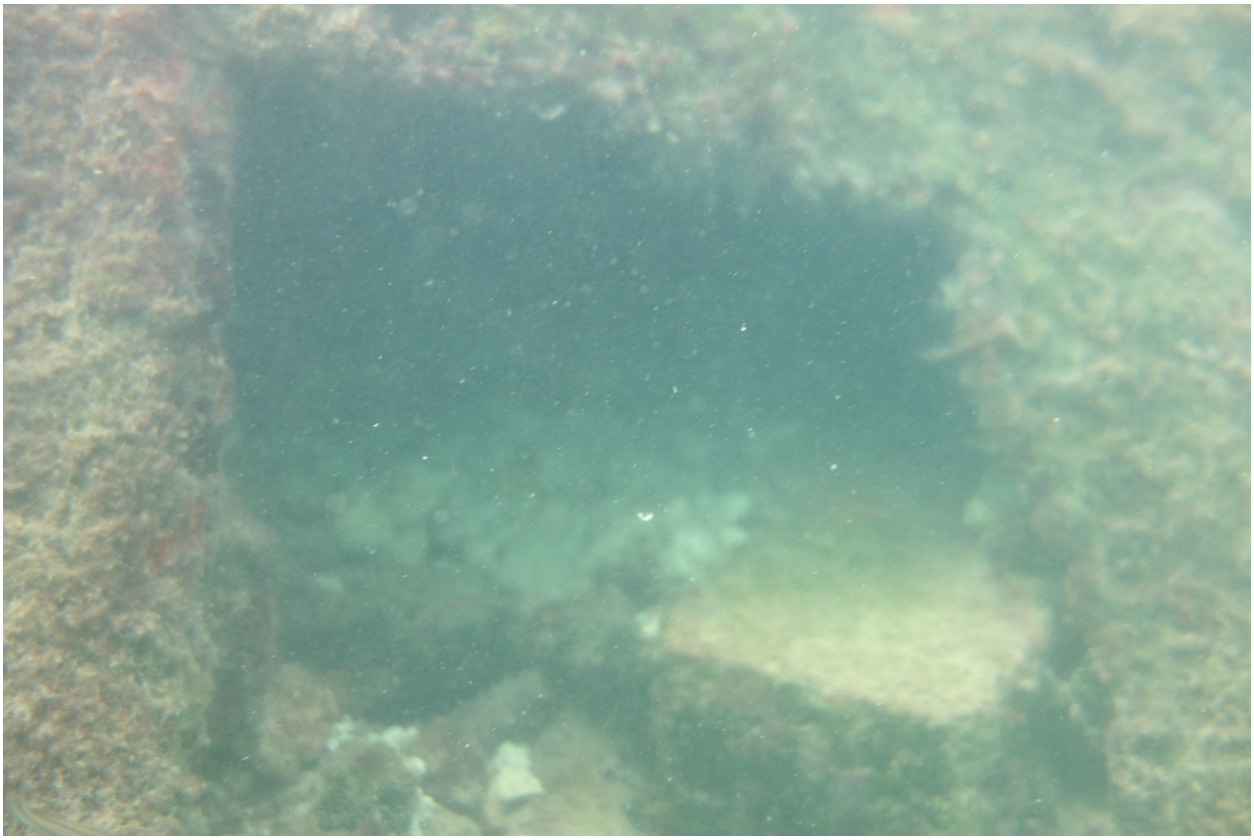
The following is a short summary of the condition of the steel sheet pile bulkhead at Outer Mole Pier 2.

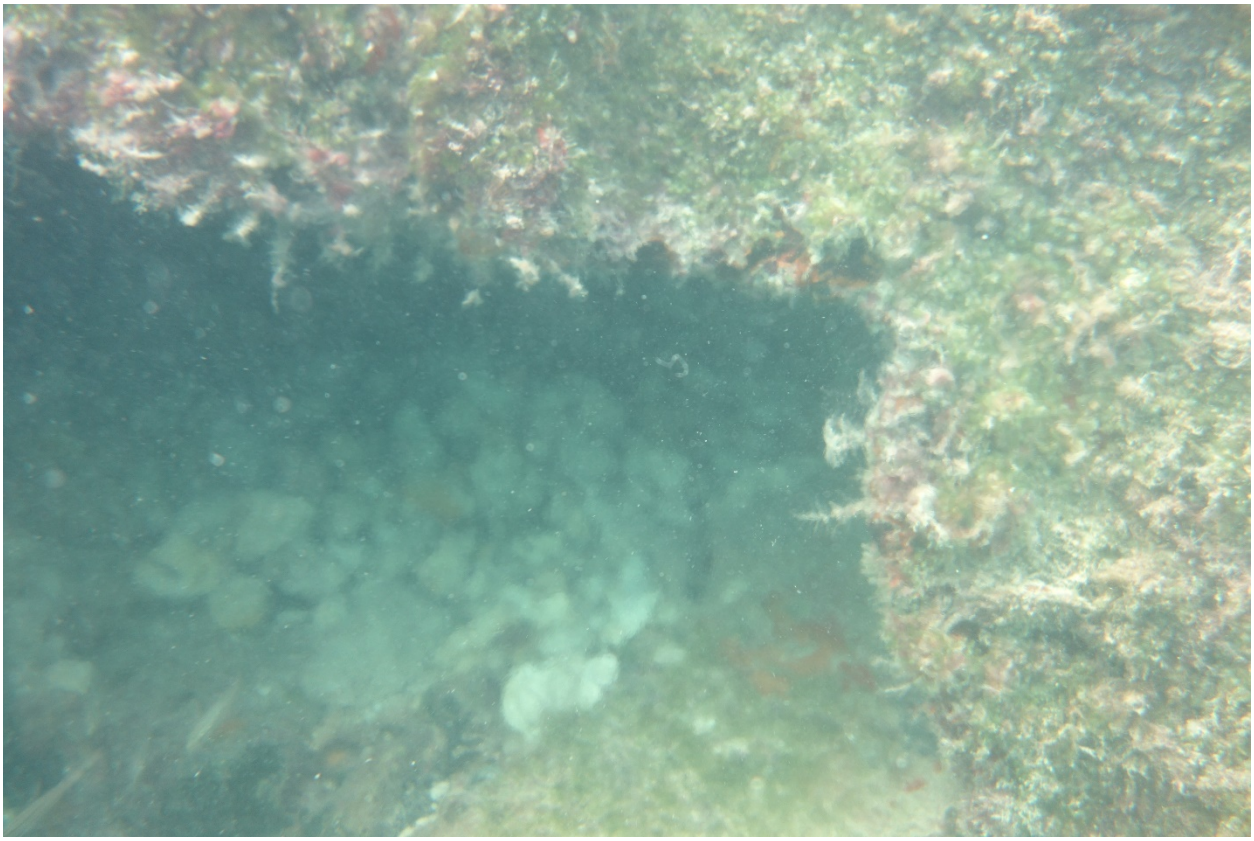
There are four different types of sheet pile located along the facility which are in satisfactory condition overall. The section of sheet pile, however, from 0+00 to 9+55 is in fair conditions with localized areas of failures due to poor construction or past repair failures. This section is comprised of flat sheets and has no coating or cathodic protection system protecting the steel from corrosion. There is typically up to 1/2 inch thick corrosion by product but exposed steel does not exhibit significant section loss and has only minor pitting. There are seven locations where plates were welded onto the sheets, at these locations the welds are in poor condition or the plates were sized incorrectly. At 1+18, a void in the sheet pile exists due to a missing plate. The void is 2 feet wide and 3 feet tall. The fill material is exposed behind the seawall and significant loss of fill material has occurred. This was made evident by a breach in the ground from the topside during a recent small excavation project. The loss of fill has caused a sinkhole roughly 30 feet long along the sheet pile, 15 feet wide behind the sheet pile and up to 17 feet deep. The loss of material is estimated to be greater than 200 cubic yards. The void in the backfill has exposed 3 piles supporting the concrete encasements on top of the sheet pile and 2 tie rods which appears to have corrosion. These items are not currently accessible for further inspection. Below this void, an 18 inch high plate is welded to the sheet pile, the welds are in poor condition with significant section loss. At station 1+26, an additional hole in the sheet pile roughly 18 inches wide and 2 feet high exhibits loss of fill and is expected to be contributing to the large sinkhole. Additional plates with poor quality welds or improper sizing causing small voids in the sheet pile are located at 1+02, 1+24, 1+44, 1+60, and 5+01. At station 1+44, an 8 foot long section of the bulkhead has a void along the mudline up to 1/2 inch tall. This void is visible through the sheet pile knuckles as well as the sheet pile webs indicating that it may be the bottom of the sheets that have become exposed due to the lowering of the mudline from previous dredging project.

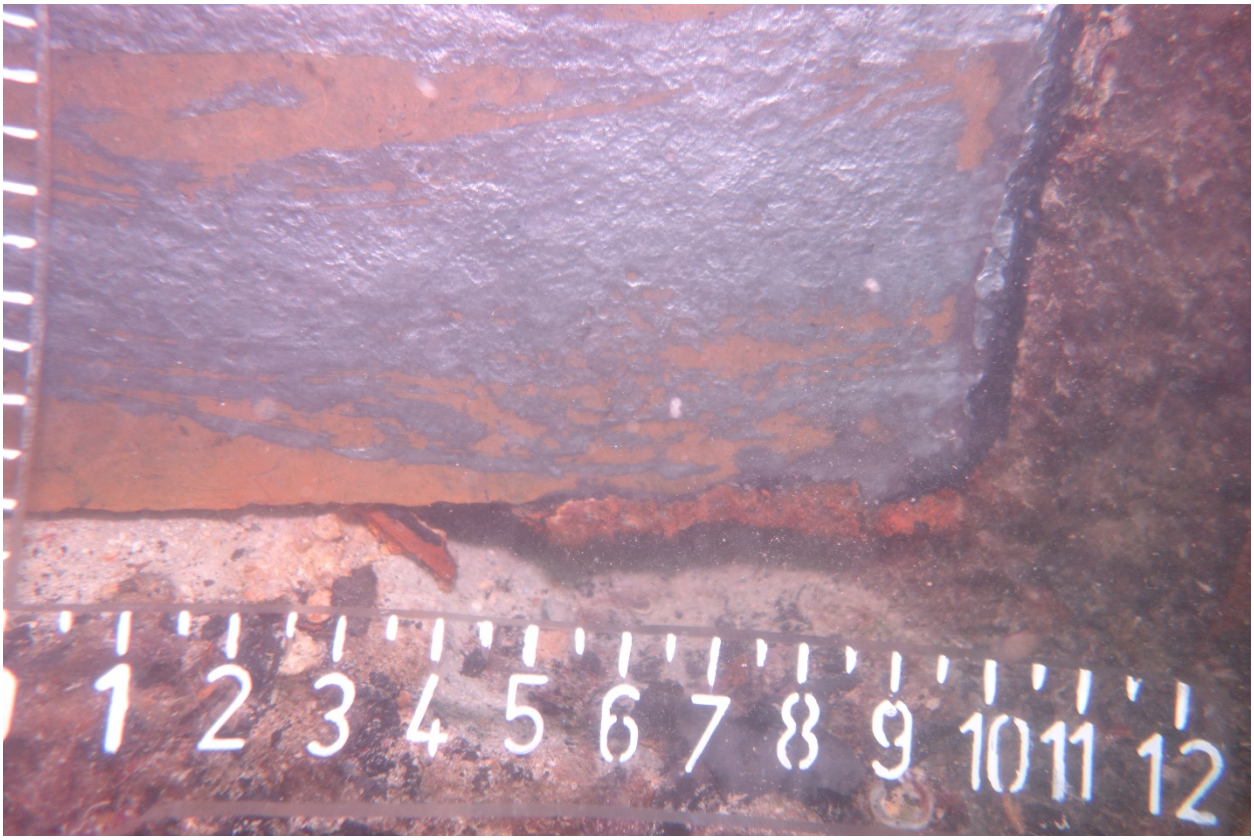
The sheet pile is split due to obstructions during construction in 2 locations, station 6+85 and 9+05, fine fill material is seen coming out of the narrow sheet pile splits but no major loss of fill is currently evident. The sheet pile from 9+55 to the end at 23+55 is comprised of four different section types. No major issues were seen along this length of the facility. The sheet pile beyond 9+55 is generally satisfactory with less than 10% coating loss, exposed steel is smooth and does not exhibit section loss. Electrical potential testing confirm that no cathodic protection system is in place on the sheet pile.

ATTACHMENT (4)





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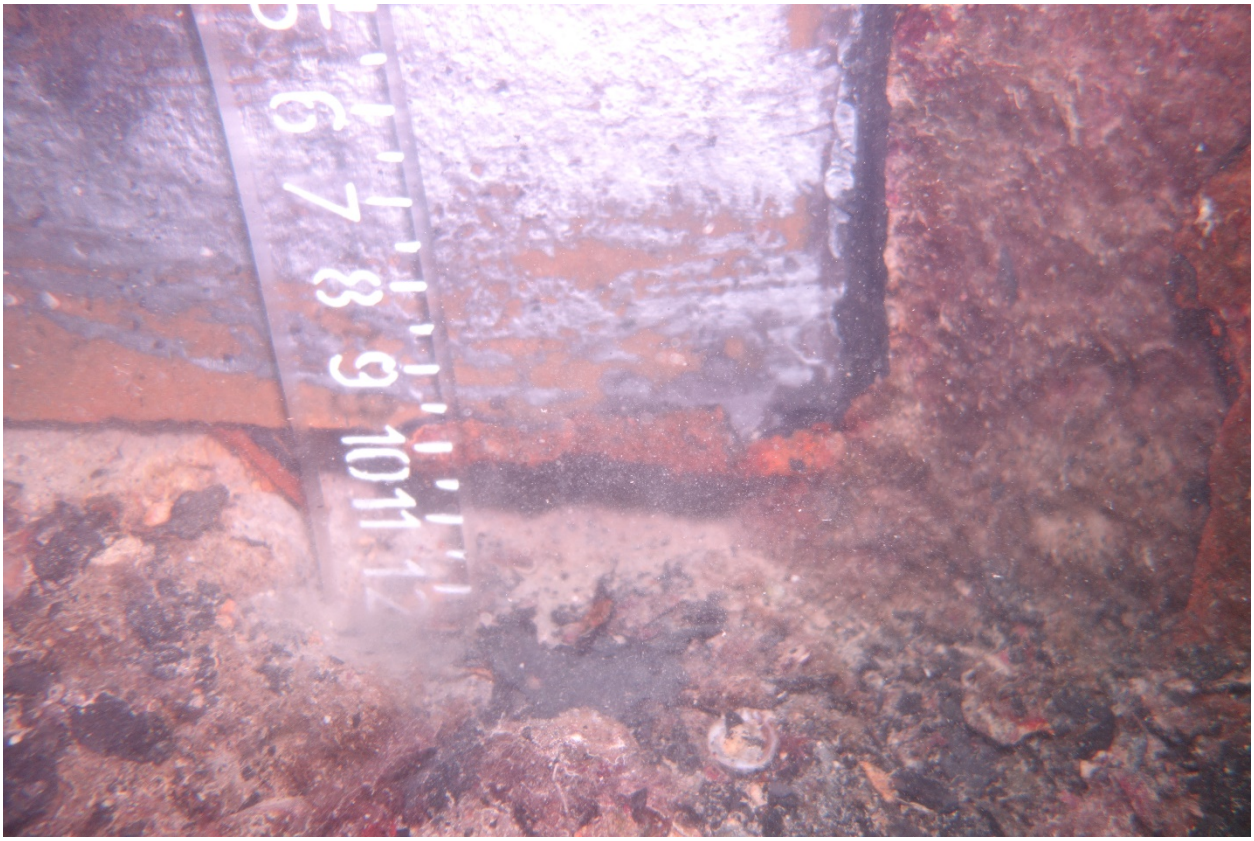

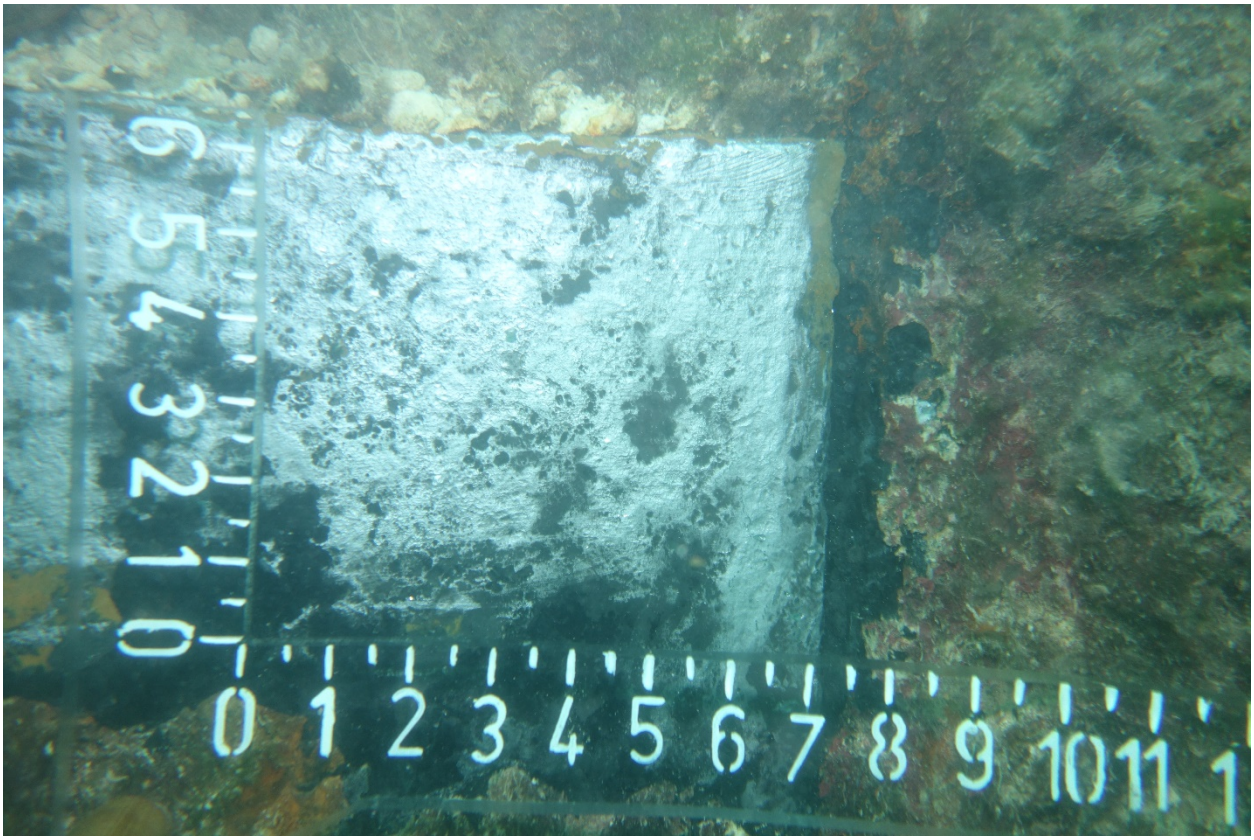
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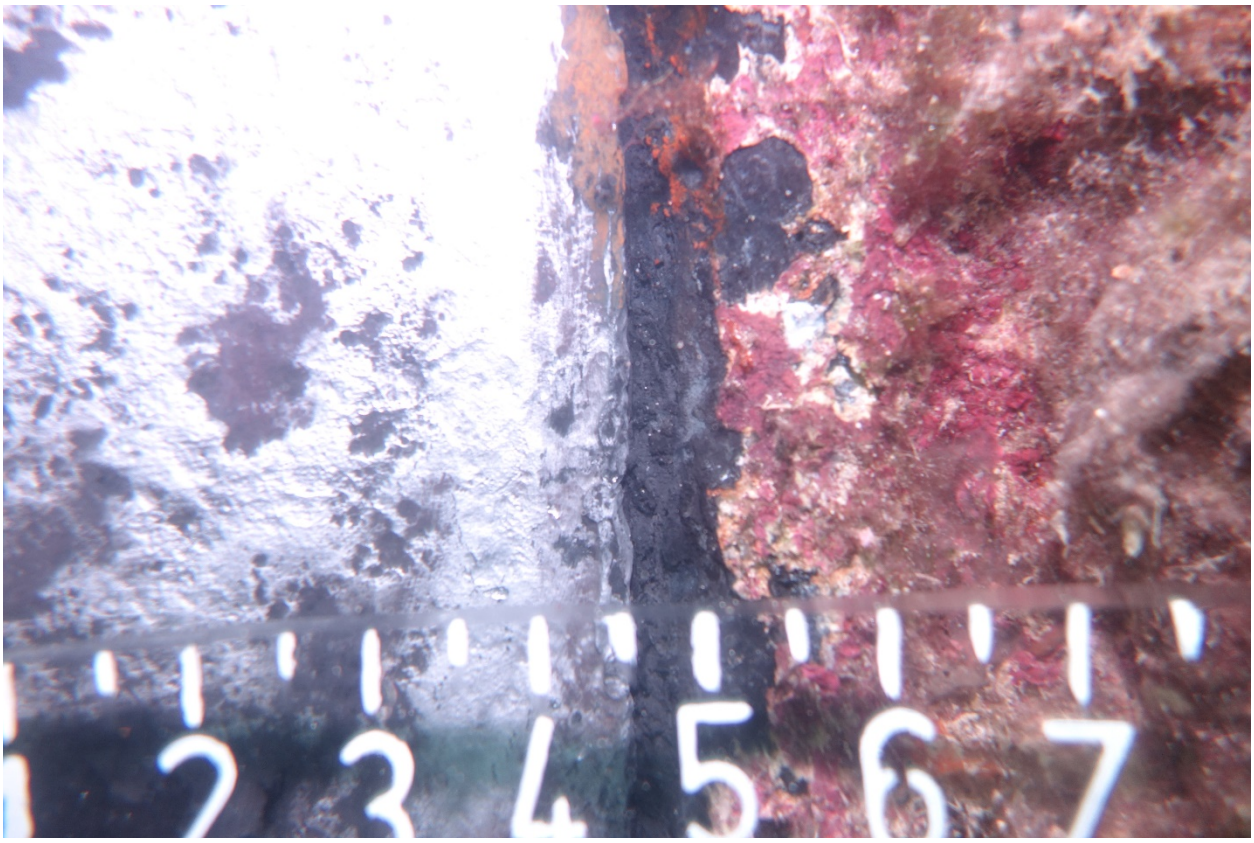
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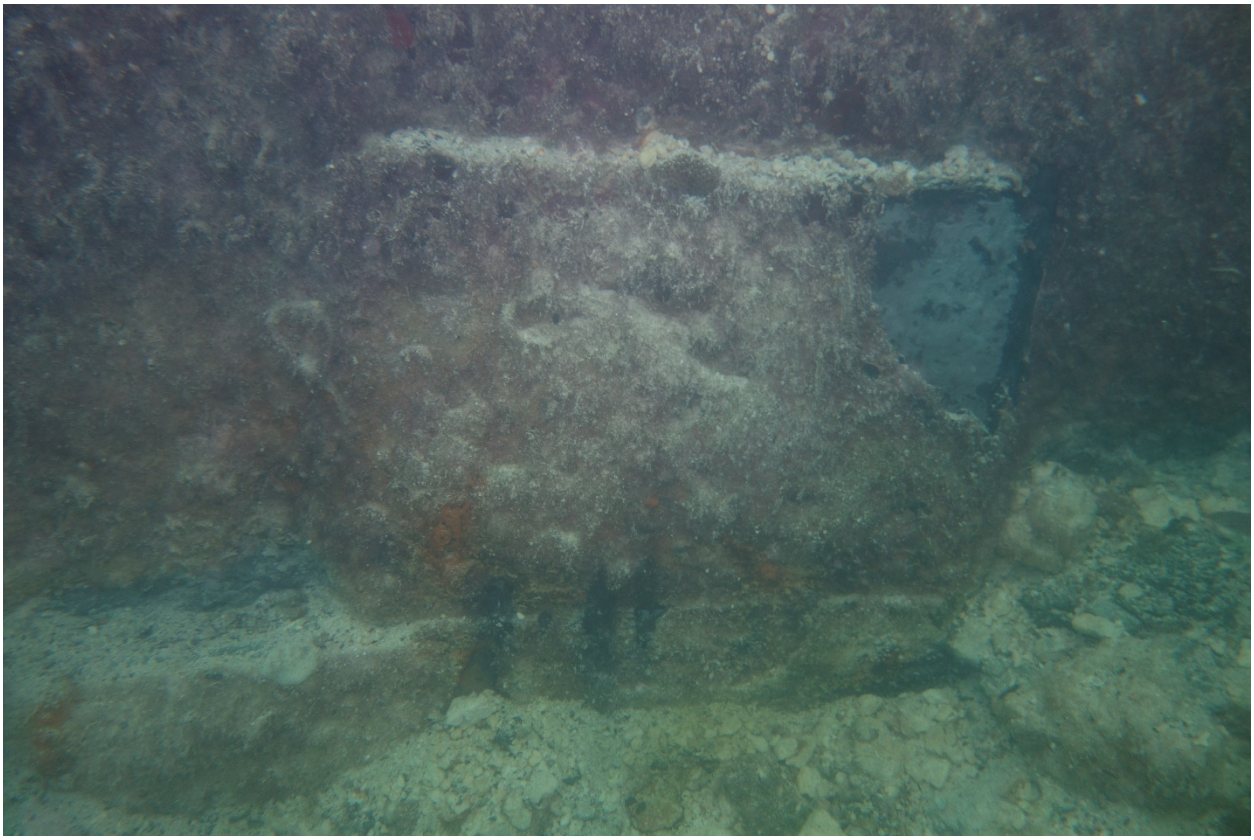

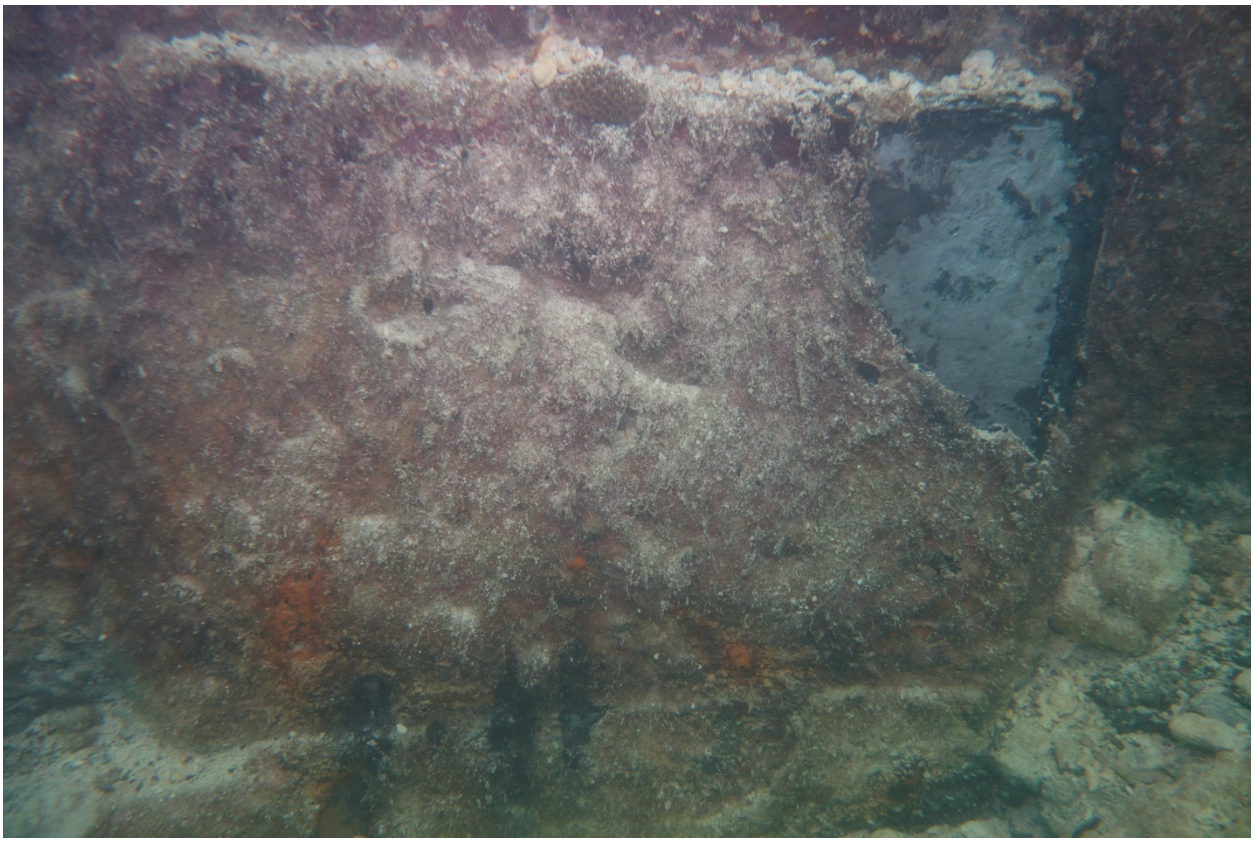

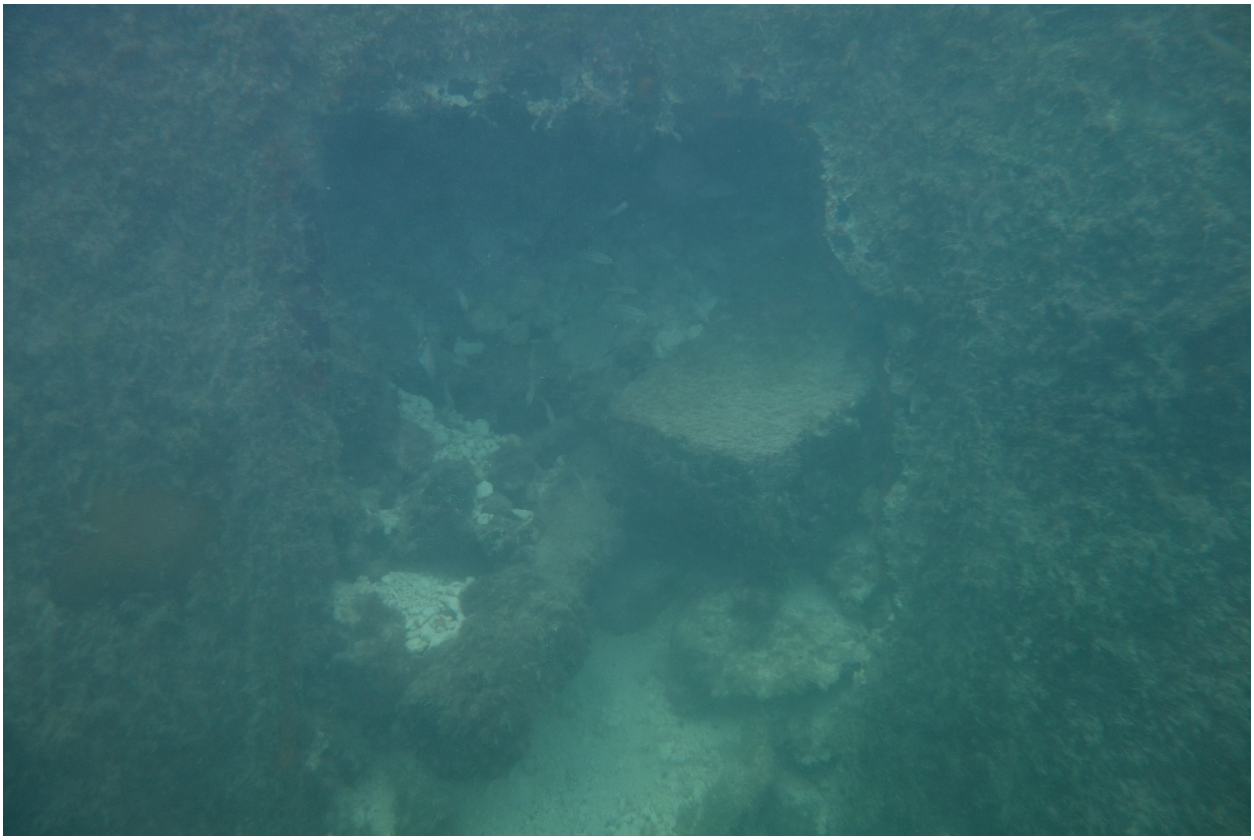

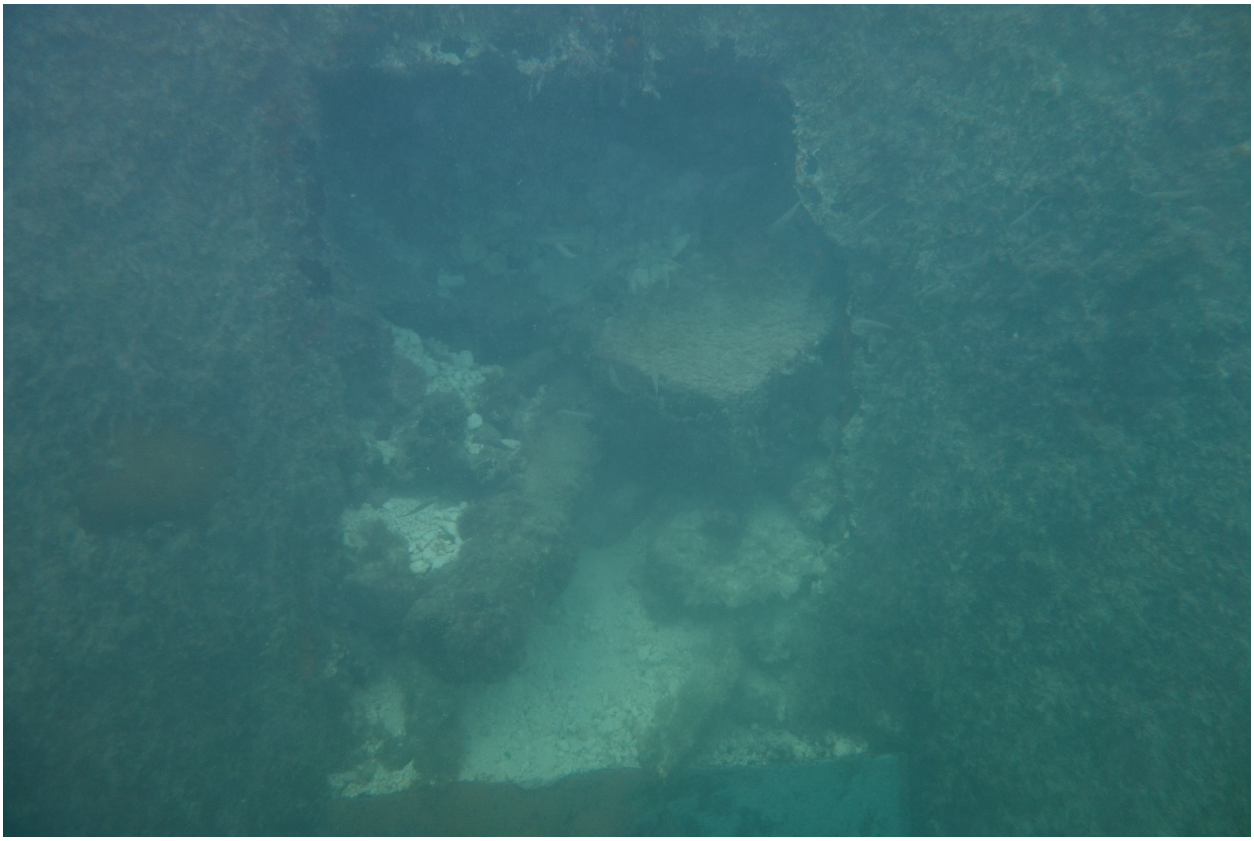

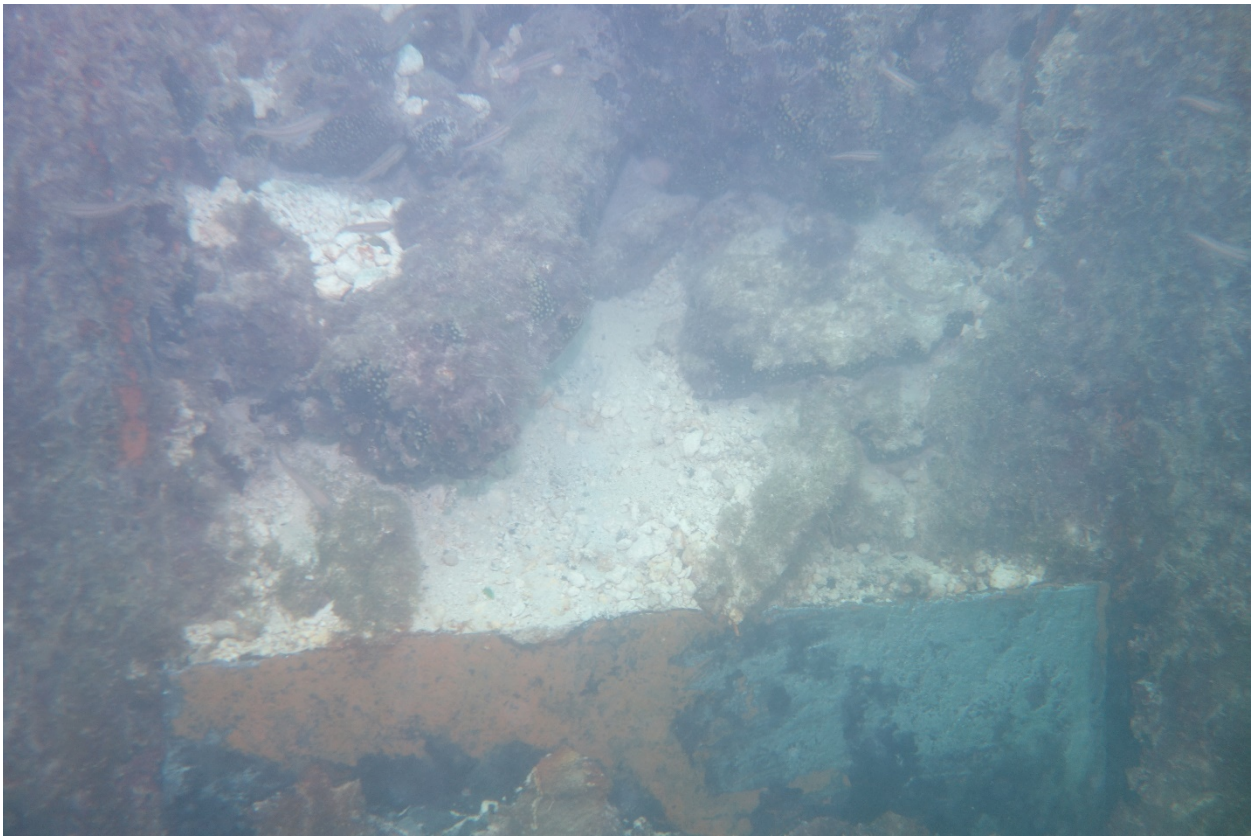

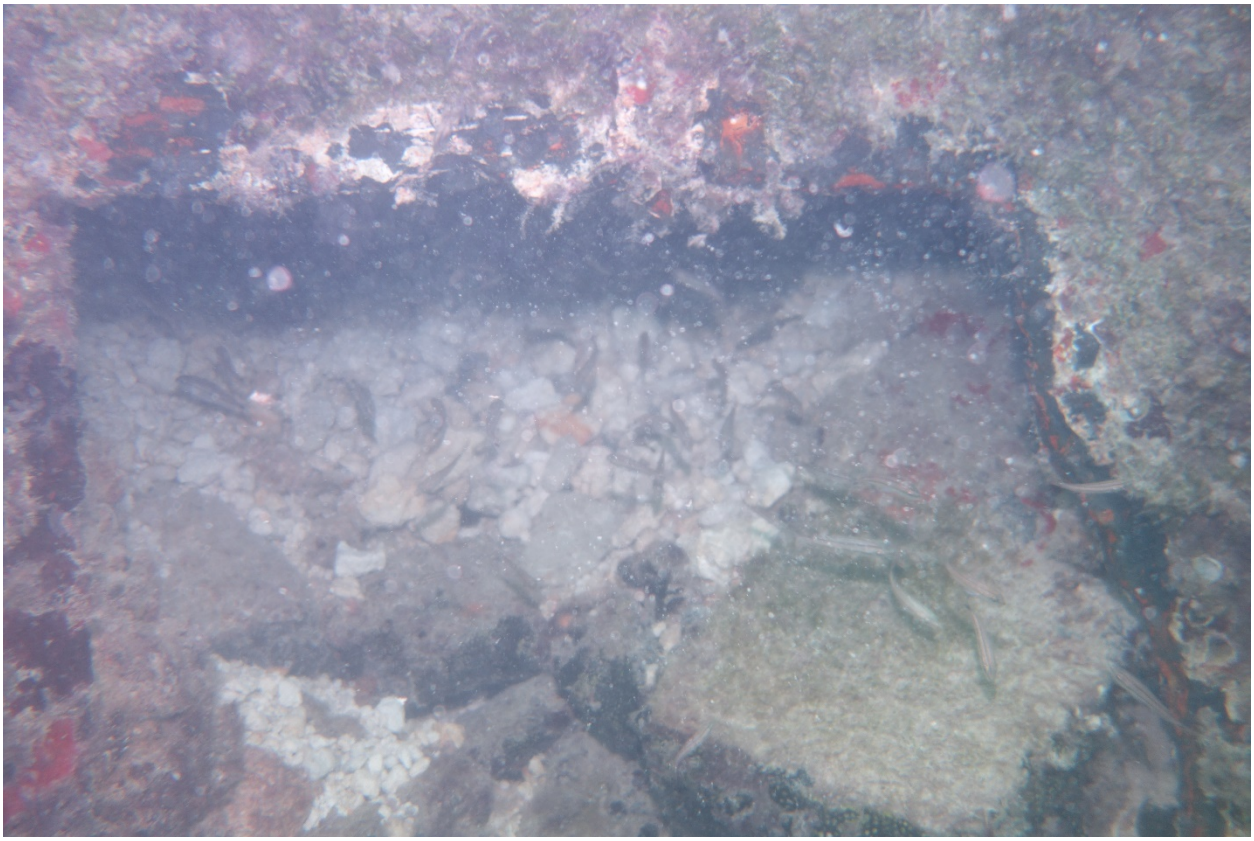

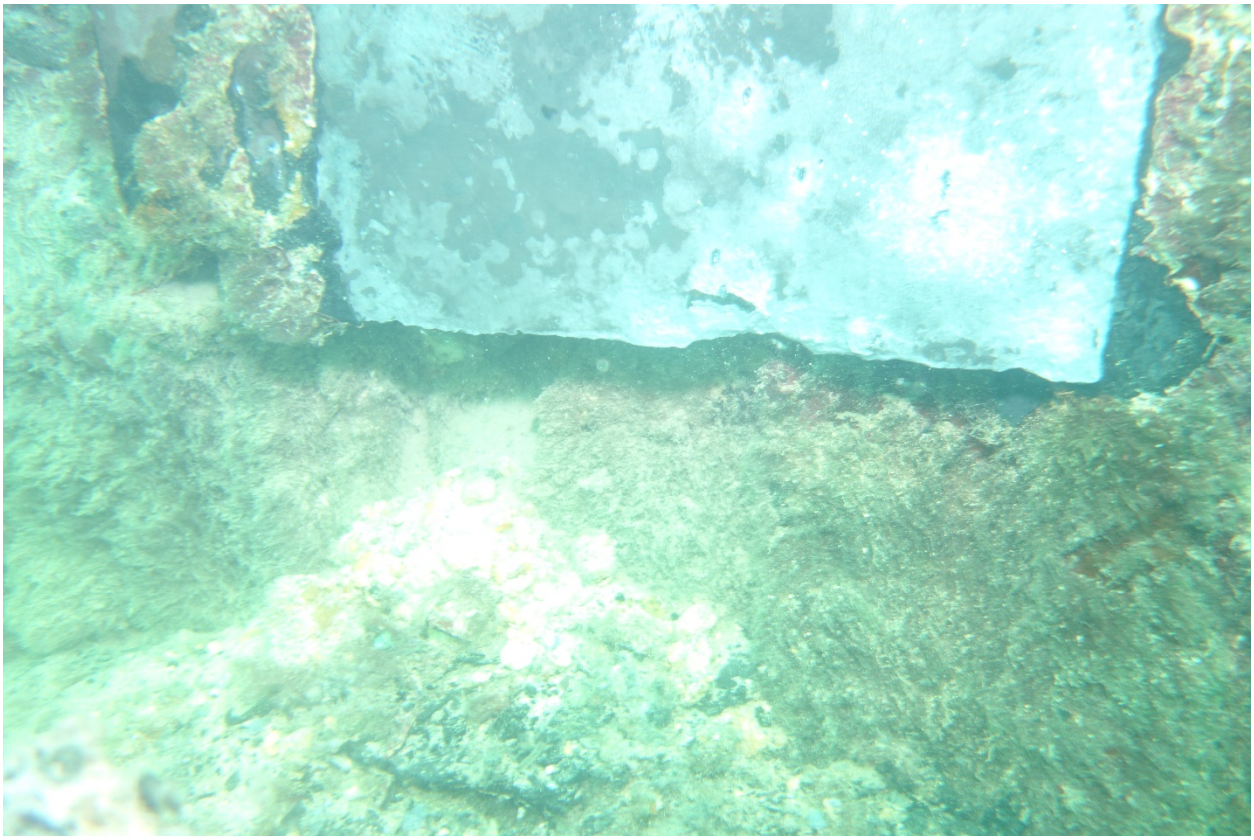

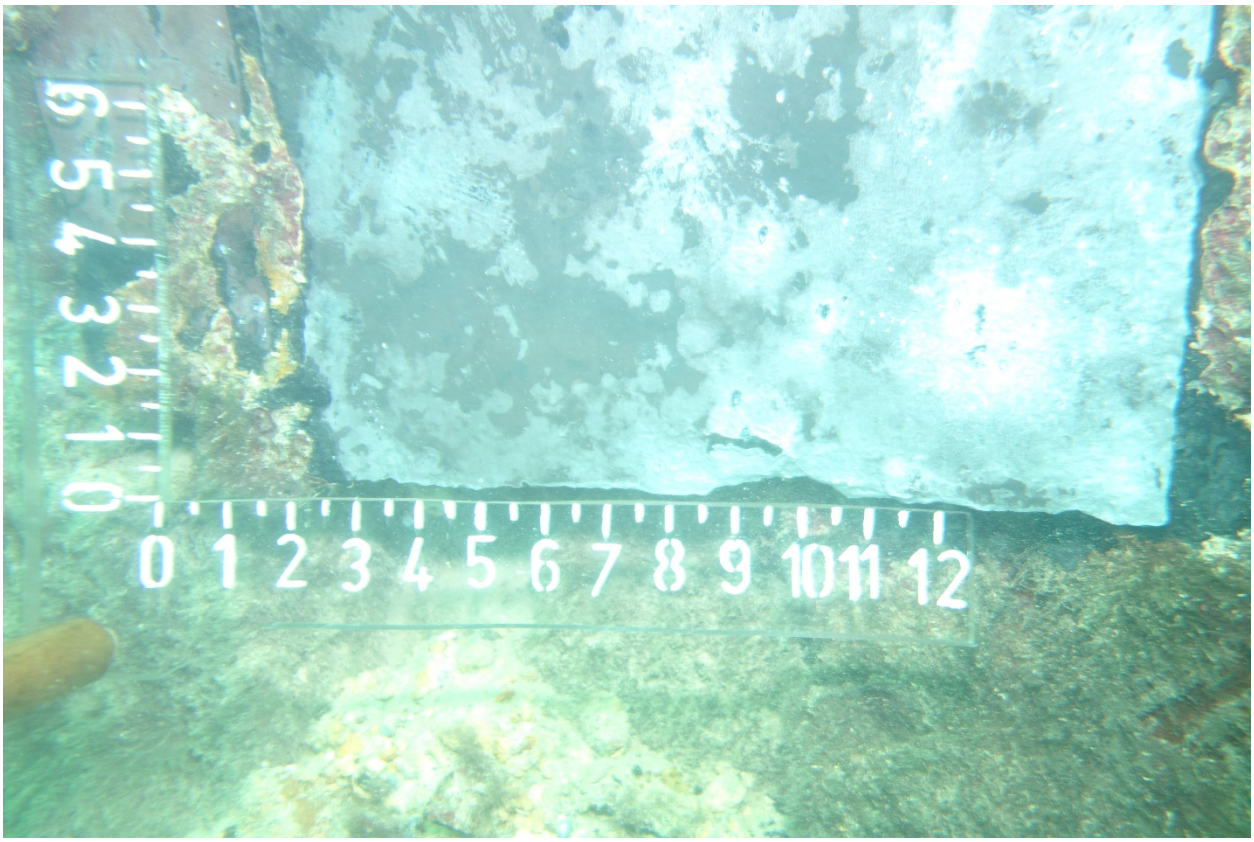
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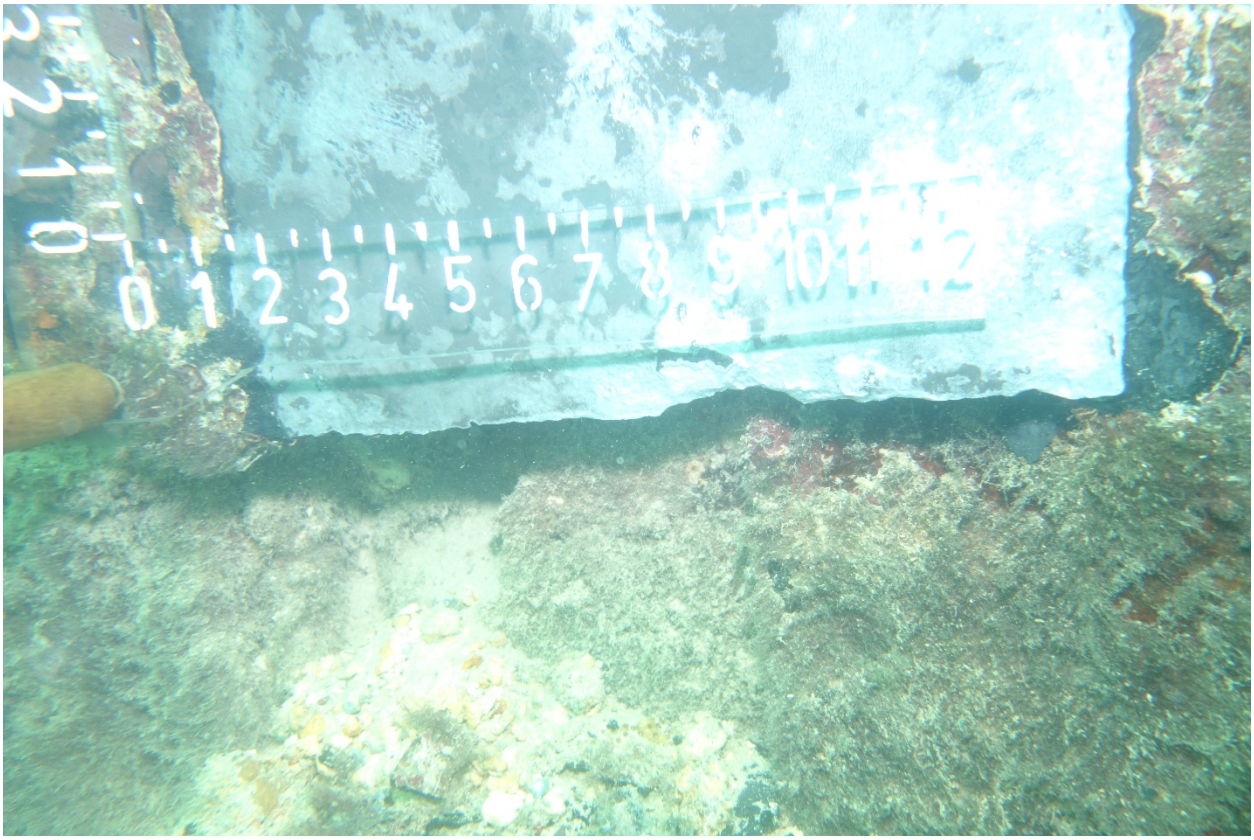
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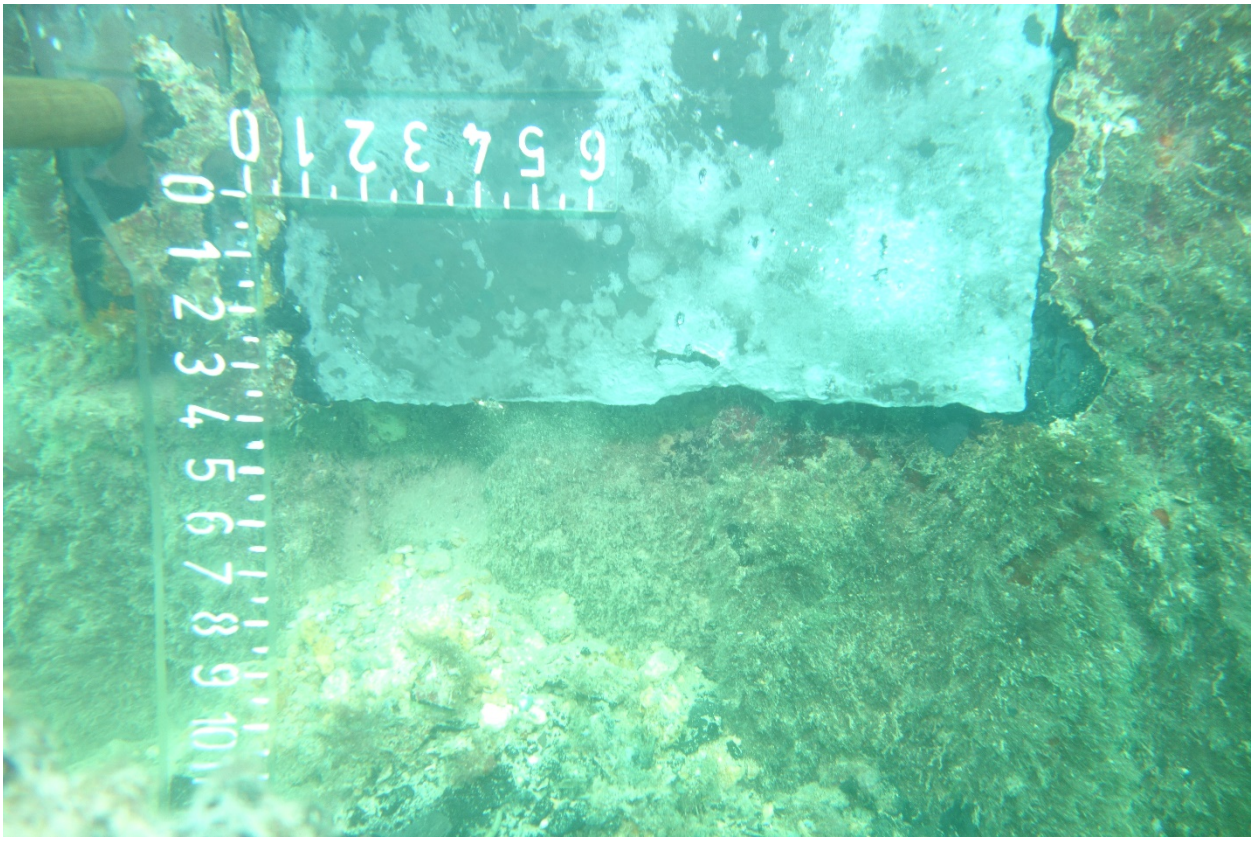
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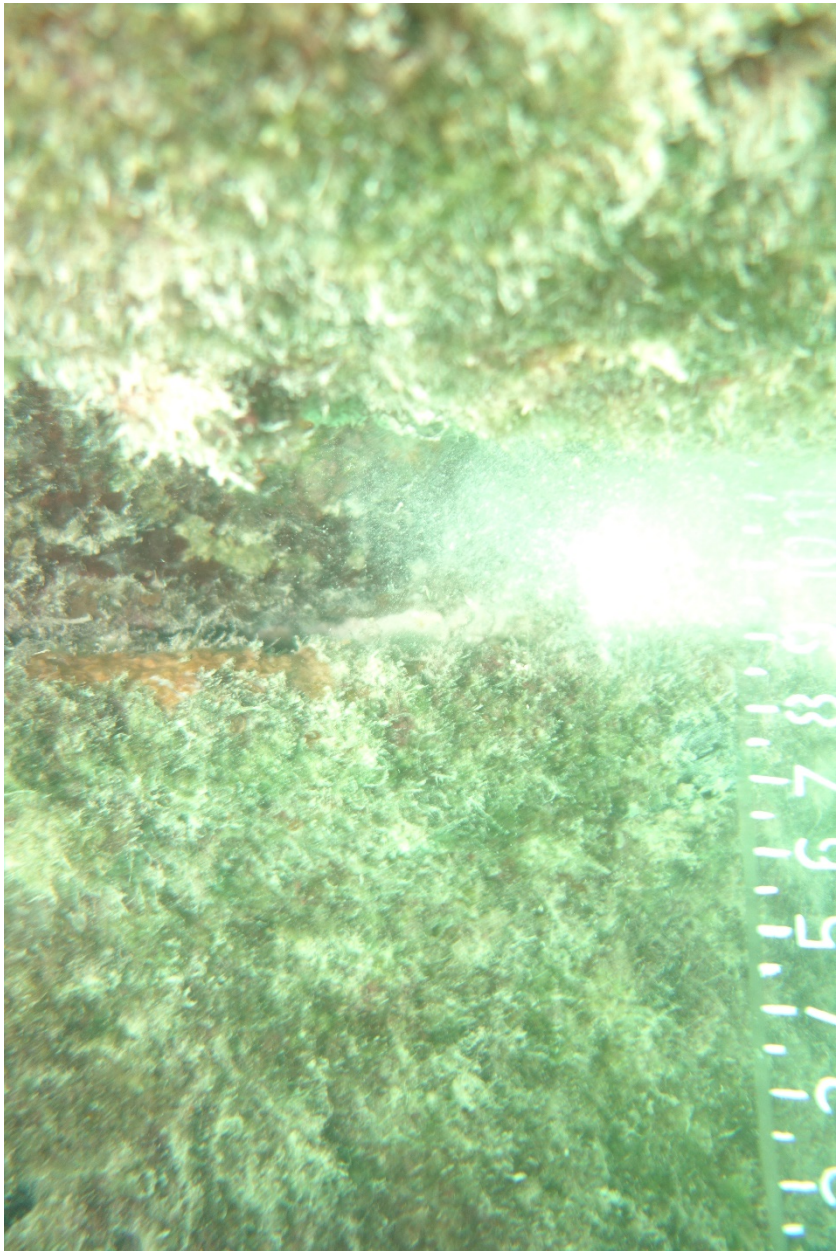

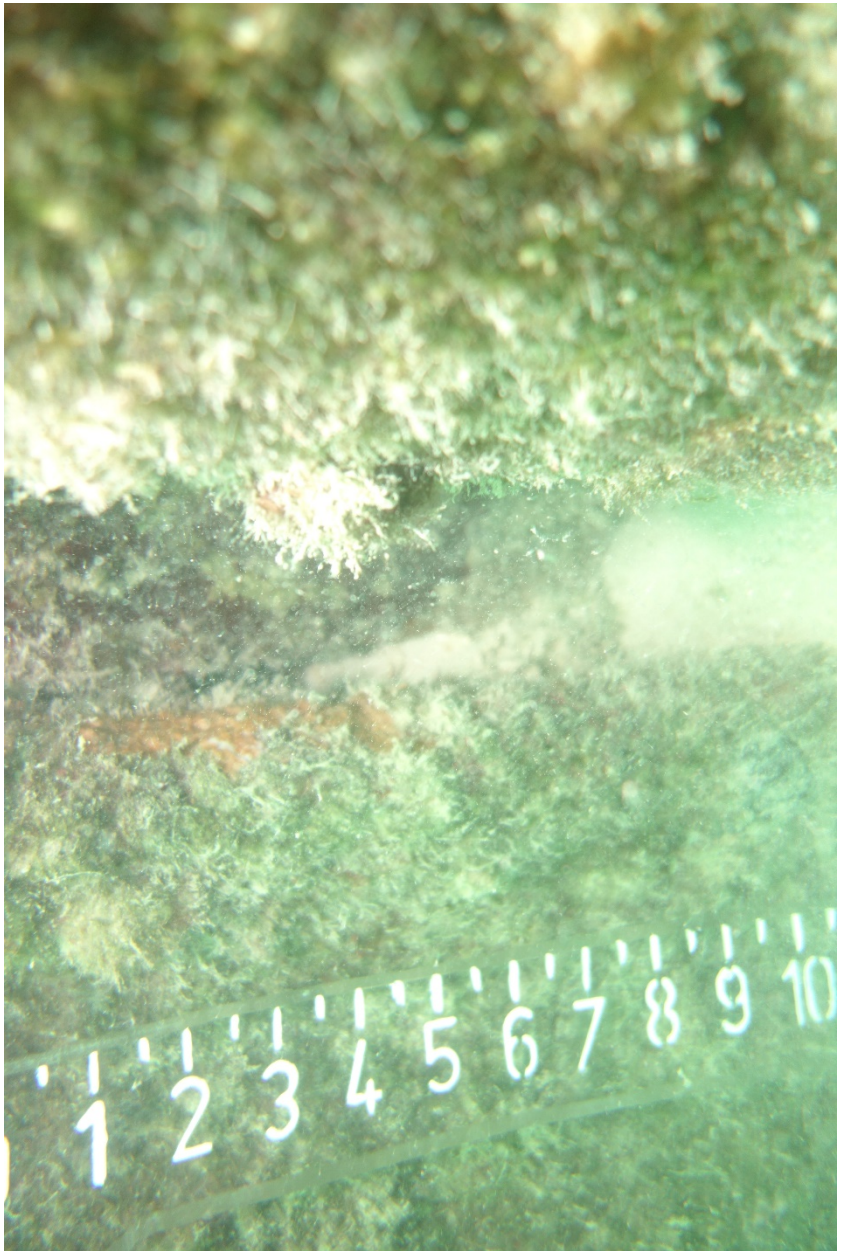
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