U.S. Coastal Research Program 2023 Request for Proposals
Additional Information

General

Q. Are collaborations with federal partners allowed or encouraged?

- USCRP always encourages collaboration with any/all federal agencies, as USCRP is a multi-agency organization and the funding for this program is specifically directed for academic researchers to address prioritized gaps in Federal research and to collaborate with federal researchers.
- Any collaborations with Federal researchers should be detailed in the proposal and should outline the role of the Federal collaborator and time commitment. If the Federal collaborator has a significant time commitment to the project, USCRP can provide a limited amount of funding to Federal researchers which will be negotiated in the award process. Funding for Federal researchers should not be included in the budget, but role and time commitment should be detailed. Please note USCRP can only provide a certain amount of funds per fiscal year to our federal partners.

Q. Do I have to have received an award for a past USCRP research proposal to participate in this RFP?

- No, researchers do not have to be a previous USCRP proposal awardee, but they must be in good standing with a U.S. university.

Q. What is the time limit for performing the laboratory experiments?

- There is no set time limit for performing the laboratory experiments, however, keep in mind the longer the time the more costly it will be, and will be reflected in the budget. A CHL technician must be present to operate the equipment, therefore all work should be planned during normal operation hours (8-hour days). Selected proposals will work together to coordinate time in the lab based on types of projects, as well as working together to share resources and equipment as possible.

Q. Will lodging be provided for researchers or students during their time executing the laboratory experiments?

- All lodging and meals should be budgeted in the research proposal. The ERDC Visitors Guide can be used to explore hotels and restaurants in the area.

Q. Please clarify as a limit of 4 MB is mentioned in the RFP and the webpage says 280MB as 3 separate files.

- Although the RFP says a limit of 4MB upload, for the submission page, we separated out the 3 pieces of submissions to be clearer on the pieces of information that are required/optional, to allow proposers to submit more information, and to streamline the review process.
- The 3 separate file uploads include:
    a. 1. (Required) Upload Proposal named [Lastname_University.pdf] eg. Smith_Purdue.pdf *This document, referring to sections 1-10 of the RFP, are required to be no more than 10 pages as a single file. *
    b. 2. (Required) Upload required supporting documents named [Lastname_University_document.pdf] eg. Smith_Purdue_CV.pdf -- CVs (2-page limit per CV) and Works Cited. *These documents, referring to sections 12 & 13 of the RFP, do not count toward the 10-page limit. Please still submit as a single PDF.
    c. 3. (Optional) Upload any additional supporting documents named [Lastname_University_document.pdf] eg. Smith_Purdue_CV.pdf -- Cross-Team Collaboration (1 page limit) or Letters of Support (2-page limit). *These documents, referring to sections 11 & 14 of the RFP, do not count toward the 10-page limit. Please still submit as a single PDF.

ERDC-CHL Facility

General

Q. What are the ways ERDC-CHL can measure bathymetry in the CHL facilities?

- Lidar - requires draining water, obtain 3D surface
- Atkinson and Baldock (2016) - in-situ measurements along transects with water (no waves), only provides profiles
- Seatek Acoustic based sensor - in water use only and provides profiles
- Digital Level and Rod - provides profiles

Q. Are there any in-house ways to measure the bathymetry of a sandy beach (2D or 3D), without having to drain the flume?

- In-situ bathymetry technology (based on Atkinson and Baldock (2016) has been developed for the 3ft flume to measure profiles. The in-situ bathymetry measurement system is a capability for the larger flumes that presently does not exist but there are plans to add this capability. Right now, our process to measure bathymetry is to slowly drain the flume and use lidar.

Instruments

Q. Are PIs allowed to bring in their own instruments?

- Yes, PIs can bring their own fully operational instruments. It is recommended PIs plan to bring their own computers and software to run their instruments in case ERDC computers are not able to integrate the PIs' instruments.

Q. Can a UAS be used in the facility?

- Yes, however there are strict Department of Defense (DoD) limitations on the type of UAS platforms that can be used within the facilities (i.e., no drones manufactured in China or containing Chinese parts, such as DJI). If you are unsure if your UAS meets the requirements, we recommend you check by sending your UAS platform type to contact.uscrp@gmail.com.

Q. Can instruments that use GPS technology be used in the facilities?

- There is no global GPS in the laboratory as you cannot get signal because the building is a metal hanger, anything needing GPS would have to use a local coordinate system.

Materials

Q. Are rocks allowed to be placed in flumes?

- Yes, rocks can be used. If you have questions regarding other materials with sharp points which could damage the glass, please send questions to contact.uscrp@gmail.com.

Q. Can silt be used in the facility?

- Yes, silt will be allowed.

Q. Can dye be used in the basins/flumes?

- Yes, however no dyes that are considered an environmental or health hazard can be used. In the past, food grade and rhodamine dye has been used. Dye would need to be supplied by the researchers.

Wave Basins

Q. Can the directional wave basins be entirely filled with sand?

- Yes, the facility has enough sediment on hand to fill an entire basin given its current setup. The basin is 1.4 m deep from the floor in front of the wave generators to the top of the sidewall. Typical operation depth does not exceed 1.0 m and is usually 0.3 to 0.9 m. There is a 1:30 concrete slope in the basin upon which the sand layer sits. A detailed description of the facility layout can be found here: https://apps.dtic.mil/sti/citations/ADA399451. Some of the material in this report is no longer relevant, such as the sections on the wave generators, data collection/analysis, and the bridge instrumentation, but the information related to the basin layout, the sediment type, and the pumps are still valid.

Q. Is there a method to measure sediment flux into and out of the basin?

- There are 20 gravity-feed rectangular sediment traps that trap the sediment moving in the downdrift direction. However, these sediment traps are currently only used to capture the sediment and not for any type of analyses. The change in the basin is now calculated using before and after lidar scans. In the past, load cells were used on the traps, and this could be set up again.

Q. Is there anything above the basin?

- Yes, a movable bridge extends from the shallow to deep end of the basin (i.e., in the cross-shore) and can move across the basin. The bridge can be moved relatively quickly to locations mechanically.

Q. How long does it take to drain and refill the basin?

- Please plan for an entire 8-hour day for draining the basin, making measurements, and refilling.

Q. What is the wave generation capacity for the basin?

- Please see the following **theoretical** performance curves for the wave generator.

Predicted Performance – 1.0m Water Depth

The predicted wave generation performance curve for the proposed basin wavemaker at the primary performance criteria, as defined in the DOR, at a water level of 1.0m is shown in Figure 2.3. This performance curve takes 2nd order correction into account where the theory is valid.

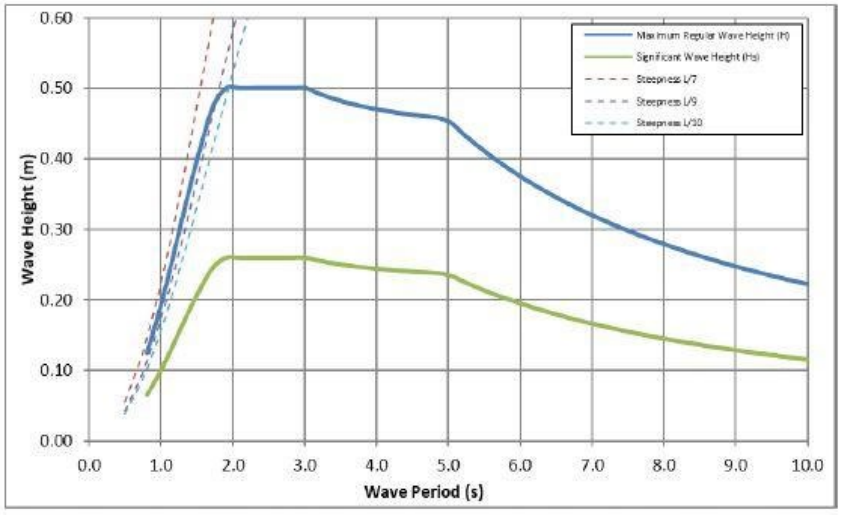


Figure 2.3: Wave generation performance curve – piston box type basin wavemaker, with water depth at 1.0m

Note 1: The solid blue (regular waves) and solid green (irregular waves) curves shows the maximum achievable wave height over a flat-bed.

Note 2: In order to obtain the predicted performance of Criteria 2 from Table 2.2 it has been necessary to modify the steepness limiting criteria from L/9 to L/8. This will increase the likelihood of waves breaking at this requirement.

Source: HR Wallingford Ltd

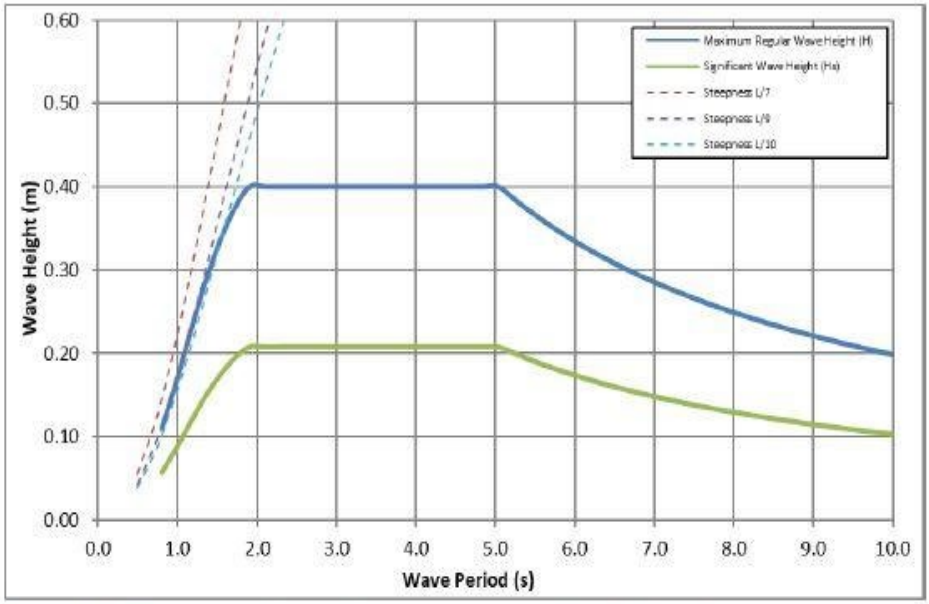


Figure 2.4: Wave generation performance curve – piston box type basin wavemaker, with water depth at 0.8m

Note: The solid blue (regular waves) and solid green (irregular waves) curves shows the maximum achievable wave height over a flat-bed.

Source: HR Wallingford Ltd

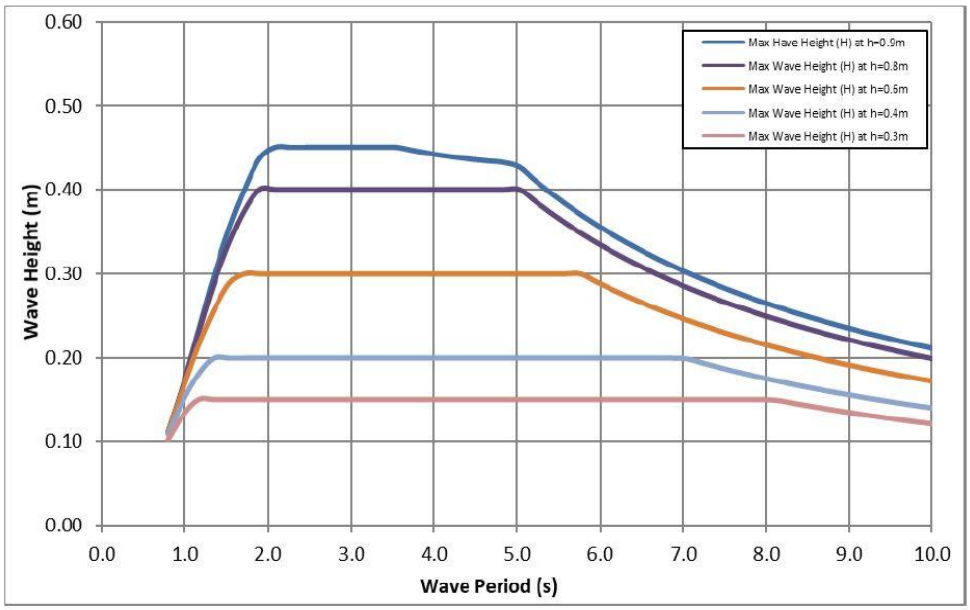


Figure 2.5: Wave generation performance curve – piston box type basin wavemaker, across various other water depths

Source: HR Wallingford Ltd

Flumes

Q. Does the wave flume include second order wave maker theory?

- Yes.

Q. Does the wave absorption work for all conditions?

- Not equally, it does better at absorbing smaller waves than longer waves.

Q. Are all the flumes indoors or are they outdoors?

- All flumes are indoors, in metal hangers without climate control which can lead to condensation and high temperatures in the summer.

Q. Can PIV be set up in any of the flumes?

- PIV is usually set up in the 3-foot flume because it has glass along the whole flume and the flume is in its own building. There are limited glass viewing sections in the 5-foot and 10-foot flumes located in a building with other services which could limit the times PIV is able to be used.

Q. What is the wave generation capacity in the Flumes?

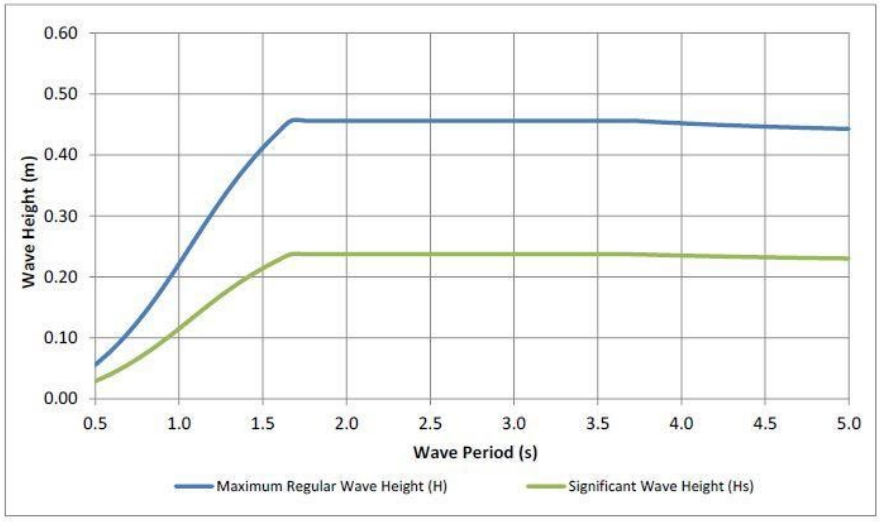
- Please see the following graphs for **theoretical** performance curves. Note that the 1.5 m and 3.0 m flumes predictions are at the wave generators – there is a 1:44 slope from the wave generator to the flat testing area so these waves will most certainly be subjected to shoaling/transformation up the slope.

0.9-m Flume

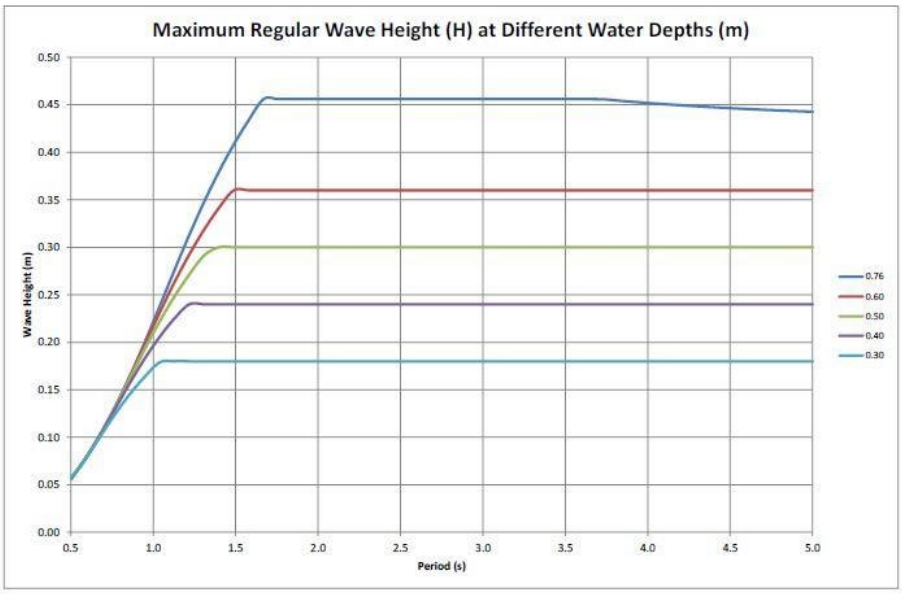
B. Theoretical performance

The performance curves are not providing a spectra of energy but instead gives the predicted theoretical wave height performance of the wavemaker at a given time period for the generation of regular and irregular waves at the specified operating mean water depth.

B.1. Maximum operating water depth 0.76m (2½ft)



B.2. Various water depths



1.5-m and 3.0-m Flume

The performance capabilities of the wave generation system is essential information for any facility. The predicted wave generation performance curve for the proposed flume wavemaker at a water level of 1.6m is shown in Figure 2.6.

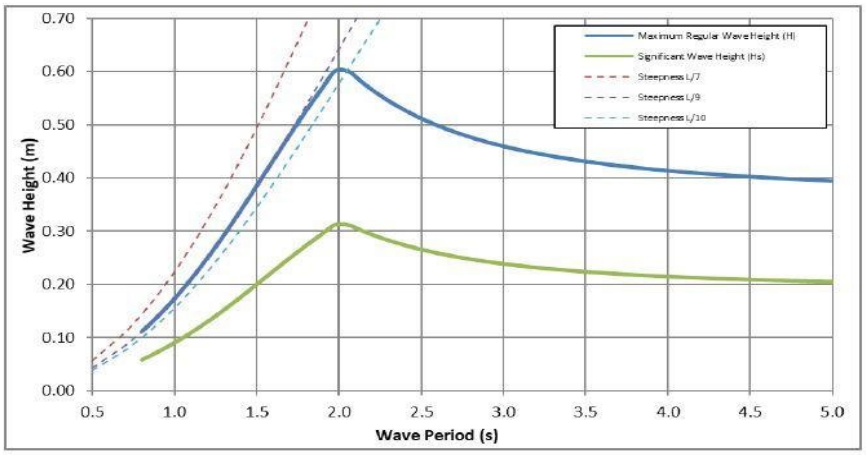


Figure 2.6: Wave generation performance curve – piston type flume wavemaker

Note: The blue (regular waves) and green (irregular waves) curves shows the maximum achievable wave height over a flat-bed.

As can be seen in Figure 2.6 the predicted maximum wave height that can be generated with the proposed motor and drive combination matches that of the smaller flume and is 0.6m between at a wave period of 2.0 seconds and 0.4m up to 4.5 seconds.

The performance capabilities of the wave generation system is essential information for any facility. The predicted wave generation performance curve for the proposed flume wavemaker at a water level of 1.6m is shown in Figure 2.3.

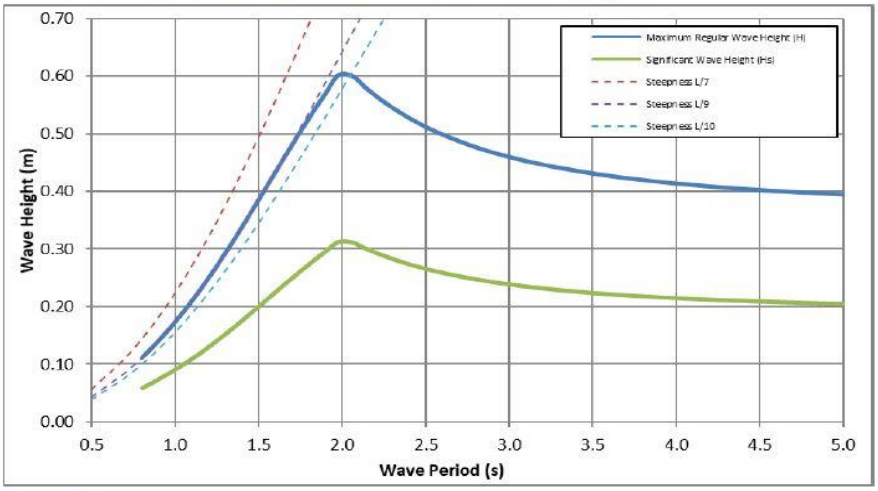
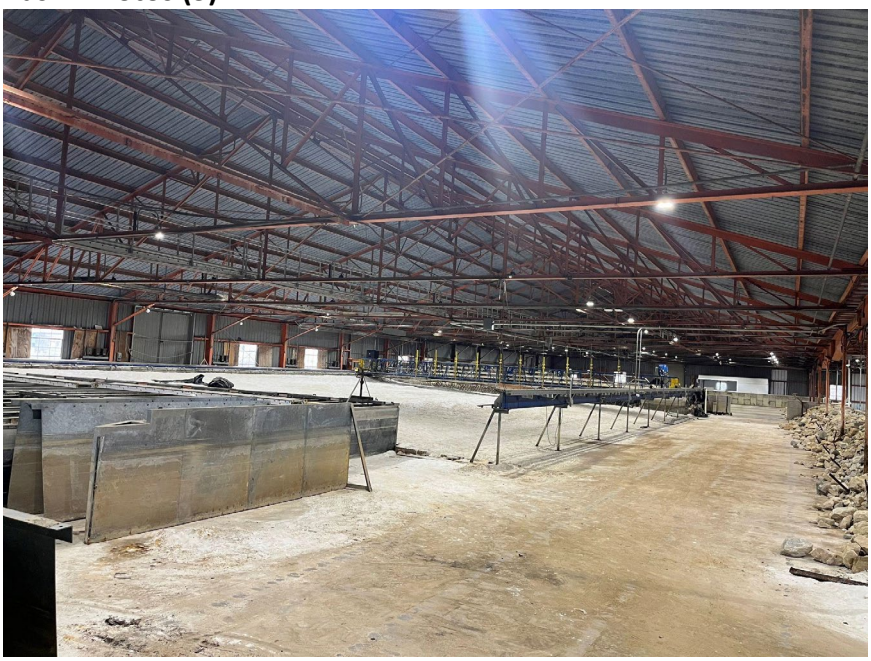


Figure 2.3: Wave generation performance curve – piston type flume wavemaker

Note: The blue (regular waves) and green (irregular waves) curves shows the maximum achievable wave height over a flat-bed.

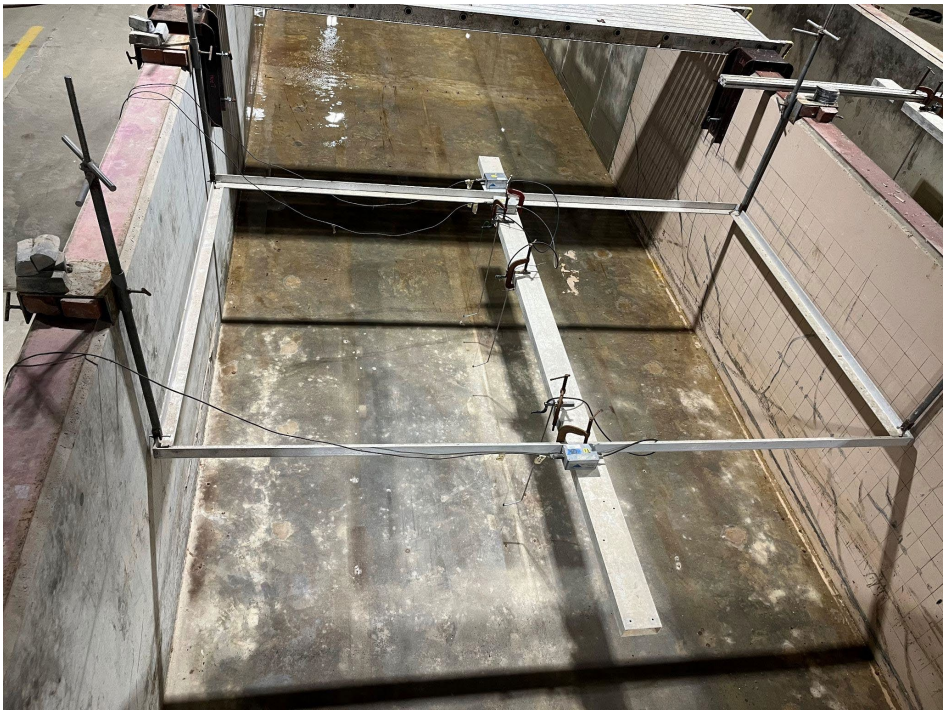
As can be seen in Figure 2.3 the predicted maximum wave height that can be generated with the proposed motor and drive combination is 0.6m between at a wave period of 2.0 seconds and 0.4m up to 4.5 seconds.

Basin Photos (3)



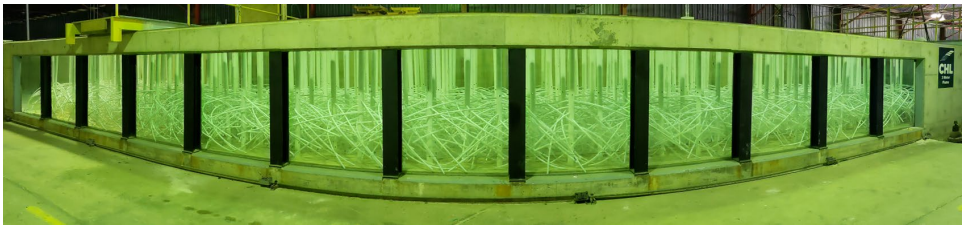
80/20 mounts to allow for instrumentation pairing

Another mount type to suspend instruments in the direction of wave propagation



Weight-based mount that we can attach to

Viewing window on 10-ft flume (mirrored on 5-ft)



Rubble beach in 10-ft flume (mirrored in 5-ft)