Completion of new hydraulic laboratory building

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A new hydraulic laboratory building, designed to provide "on campus" space for studying the various laws governing water in motion, has been completed at the University of California's Scripps Institution of Oceanography.

The redwood laboratory building has been kept as simple as possible to provide., for the first time at Scripps, open laboratory floor space with sufficient room in which to conduct large scale hydraulic experiments.

The building is entirely of wooden post-and-beam construction, eliminating the problem of corrosion on steel bean by the salt air and cutting costs to a minimum. It is located on La Jolla Shores Drive just above the Institute of Geophysics and Planetary Physics building and overlooking the La Jolla beaches and the Pacific Ocean.

The building was designed by Frank L. Hope and Associates and built by the C. A. Larsen Construction company. A grant of $350,000 was issued by the National Science Foundation for construction.

From the inside, the 100-by-150-foot laboratory building resembles a large convention hall. It contains 15,000 square feet of floor space on a single level with the ceiling, resembling a giant wave of wood, towering 26 feet above at its highest point. A small, single story office and shop enclosure with storage space above is located in the northwest corner of the main floor. Located in the basement are facilities for chilling and holding sea water. A 160-by-260-foot paved service yard adjoins the north end of the building.

The unique roof line was achieved by the use of glue-laminated beams covered with 100,000 board feet of two-by-fours set side by side on their narrow edge. Some 41000 pounds of nails were used to fasten the boards to the beams. To weatherproof the roof, the boards were covered with thin plywood sheeting and then with a tar and gravel compound.

According to Dr. Douglas Inman, Associate Professor of Marine Geology, the interior of the building is divided by drainage canals into three working areas. The eastern portion of the building, along the entire 150-foot back wall, will house wind and wave channels. The southwest corner will house studies of wave currents and wave interference. The northwest corner will be reserved for smaller hydraulic studies and as a working area for the laboratory shop.

The laboratory will be equipped to make use of both fresh and salt water in experiments.

Dr. Inman said only three permanent hydraulic structures will be initially included in the laboratory. They will be a wave-current channel, a wave basin, and a deep tank. The 120-foot-long glass-walled wave-current channel, able to generate waves, currents, or both,, will primarily provide a two-dimensional profile of waves and currents. Through its use, the scientists can study wave attenuation, transportation of sediments by waves and currents, and changes in the wave form as it travels.

The wave basin, to be located in the southwest corner of the building, is a 50-by-60-foot pond that will provide a three dimensional look at waves and currents. To be studied are wave-generated currents, the action of waves against inclined slopes, and the interaction of waves traveling from different directions.

The deep tank is sunk into the ground immediately outside the northwest corner of the building. It is a 30-foot-deep well with an inside diameter of six feet. It is surrounded by a larger cement casing which provides working space and viewing ports at various levels throughout the tank. The deep tank will be used in both mechanical and biological experiments. One of its main functions will be to set up a two layer system such as the thermal clime that exists in the ocean-- that is, cold water on the bottom and warmer water on the top. Desired temperature changes will be made through the use of heating and cooling equipment.

The tank will allow for the study of diffusion and migration across thermal boundaries and will be available for testing experimental deep water sampling equipment, and human diving equipment. According to Dr. Inman, the deep tank is the only one of its type in operation in the United States.

Dr. Inman said it is not intended that the hydraulic laboratory have many of the permanent conventional facilities or that it be staffed with numerous personnel. Rather, it is intended that the laboratory be a facility where individual oceanographers can design and test their own hypotheses.

"Our intention is that when a concept can be tested by means of fluid mechanics, the scientist will build the needed equipment to test it. He will have the space to carry out the experiment in the laboratory," Dr. Inman said.

Dr. Inman is chairman of the hydraulics facilities panel which will advise on the use of the laboratory. The other members of the panel are: Dr. Robert S. Arthur, Professor of Oceanography; Dr. Charles S. Cox, Associate Professor of Oceanography; Mr. Jeffery Frautschy, Assistant Director of Scripps; Dr. William G. Van Dorn, Associate Research Oceanographer; and Dr. Milner B. Schaefer, Professor of Oceanography and Director of the Institute of Marine Resources.