



Precast concrete walls were also introduced in this project using

Polywall Expanded Polystyrene (EPS) Sandwich Panel

a lightweight, non-load bearing composite wall product which is generally 50% lighter than the traditional walls.

This made the overall structure lighter than conventional which prompted the design team to reduce the lateral load considerations requirement, thus making the structural column design elements smaller in section as compared to usual. The finish surface of the precast wall is also generally smooth, thus eliminating plastering requirement as compared to a conventional CHB wall design.

Artelia Philippines was tasked to design a modular lube bay facility with flexibility to transfer to a different site if necessary. The Engineering team proposed a general philosophy of having all the structural connection elements of the facility's frame to be bolted rather than the traditional welded connections for structural steel design or the cast-in-place concrete design.

The total construction cycle time of the project was also faster than usual due to utilization of modular elements. It took only a total of 26 days to put up the whole facility on this project, with modular components such as structural column, beams, rafters, roofing, and perimeter wall being completed within 7 days. This is the overall advantage of this design as compared to conventional on top of its flexibility of being able to transfer to a different site as necessary. A conventional 2 bay lube bay takes 60 days to completely construct as compared to a modular design which can be benchmarked at 30 days cycle time.

The total cost for construction and permits of stand-alone modular lube bay is at P23,400 per m² as compared to a conventional lube bay which costs at P36,700 per m². The design optimization and consideration of its service life is what attributed to the 36% cost savings. Overall, an innovation worth exploring further as the total man-hour exposure is also reduced due to the total 50% reduction in cycle time and use of prefabricated materials.

