

Design of terminals for RoRo and RoPax vessels

1. Historical Background (definition of the problem)

RoRo and RoPax ships are widely used and are sailing on every ocean. Although these ships exist in many sizes, the trend continues for larger ships with more options for faster loading and unloading.

RoPax is an acronym used to describe ships that combine roll-on/roll-off features for the carriage of private cars and commercial vehicles with the provision of accommodation spaces for the carriage of large number of passengers, usually on short voyages. In this respect, the term "RoPax" is synonymous to "passenger RoRo vessel".

Such changes in size and concept lead to new challenges for terminal design, especially since these ships have a mix of both cargo and passenger handling.

Increasing size of ships results in increased stress on both quays and quay equipment, as well as sea floor erosion due to strong thrusters.

Continued growth of RoRo and RoPax traffic is predicted. There is a large potential for increased use of RoRo and RoPax vessels, and in Europe there is great focus on it especially to reduce road transport. The only "Highway" with no restriction is the "Highway at Sea" and this potential should be used in a better way.

2. Objectives of the Working Group

Today's RoRo terminals consist almost exclusively of large areas dedicated for storage of trailers and cars. RoPax ships can have both stern ramps and stern quarter ramps. These new RoPax ships can also have side ramps for better capacity of loading and discharge of vehicles.

With combined RoPax vessels, new terminal facilities and layouts will be required. In some cases terminal locations will have to be changed due to safety reasons for the passengers, both for walking and driving. Combined terminals need more space which also can be a challenge.

Increased focus on the use of RoRo and RoPax for multiple purposes both on domestic and international routes will bring new requirements for these facilities, with new risks that will need risk assessment focused on these combined terminals.

The WG report should provide guidance to owners, designers and operators of RoRo and RoPax terminals and infrastructure worldwide, in order to provide more safe, efficient and cost-effective operation of the terminals. The report will be considered as an addition to existing standards, but on this topic hardly any standards exist and this report will be very useful for design and operations.

1. Existing Reports

There is at least one report "Port facilities for ferries" PIANC 1995 which has to be evaluated and reviewed. However there are many other reports which contain important information related to the topic of RoRo terminals in a broad perspective. The ongoing WG 158, Master Plans for development of existing ports, may be an important reference for this new WG.

2. Matters to be Investigated

The matters to be investigated are: quays, ramps and access bridges for RoRo and passenger traffic, land installations including passenger facilities, areas for loading and unloading of vehicles, erosion due to propellers, impacts of future climate change, and technical design and safety and security requirements. Requirements for new terminals and for upgrading existing terminals should be considered.

3. Suggested Final Product of the Working Group

The final product will be recommendations and guidelines for design and operation of both RoRo terminals and combined RoPax terminals.

4. Desirable Disciplines of the Members of the Working Group

In addition to the owners and operators of RoRo and RoPax terminals, the Working Group members should represent all parties involved including consulting engineers, contractors and public authorities. Members with a research background, owners and operators of RoRo and RoPax vessels and Custom Agencies will also be welcome. Participation of IAPH will be very useful for this Working Group.

5. Relevance for Countries in Transition

The recommendations and guidelines will help countries in transition with increased knowledge about modern transport related to RoRo and RoPax vessels.