



When planning a newbuilding it is essential to consider the securing and handling of cargo from the very beginning. As earlier taking care of cargo securing/handling as better is the chance to influence ship's layout to improve cargo securing/handling. At later design stage many dimensions can not be changed any more and often tremendous disadvantages have to be accepted for cargo securing/handling. No matter if general cargo, timber, RoRo or especially containers are concerned the project engineers of SEC can work out an optimised solution for the cargo. A large range of subjects has to be considered for cargo securing/handling, such as:

- Optimised lashing system for the requested stackloads on deck under consideration of acceleration from classification society depending on ship size and GM value.
- Maximum stackload for 20' containers which can not be lashed at both ends.
- Maximum number of tiers especially at outermost positions where containers are exposed to wind forces in order to keep the guaranteed TEU capacity.
- Latest requirements from OSHA, AMSA, US Coast Guard, ISO, IMO, national safety authorities etc.
- Optimised arrangement of lashing plates in relation to containers for unrestricted loading of 8'6" and 9'6" containers with unified lashing length.
- Interference of loose lashing gear with hatch cover entry guides, crane pedestals or adjacent stacks.
- Stowage possibilities for special container sizes others than ISO, for example 30', 45', 48', 49' & EURO containers.
- Best securing solution for containers in hold depending on requested stackloads, loading flexibility and OSHA conformity.
- Design parameter, for example necessary spaces for the arrangement of lashing bridges and removable cellguides, levelling of tank steps in hold, strengthening of longitudinal bulkhead and arrangement of counter bearings for transversal stowage systems.
- Arrangement of sliding foundations for compensation of hatch cover movements with necessary sliding range and direction in co-operation with yard and hatch cover designers.
- Transversal spaces between containers considering deflection of hatches or minimum breadth of guide angles.
- Longitudinal arrangement of containers, for example symmetrical or asymmetrical arrangement of 40' containers when two 20' stacks are stowed with lashing gap in between or in combination with other container sizes.
- Advantages/disadvantages of different types of foundations, i. e. raised ISO, dovetail or flush foundations, welding plates or guide fittings.
- Necessary spaces and stowage factors for loose lashing gear.
- Acting forces on bulkheads, container stanchions etc.