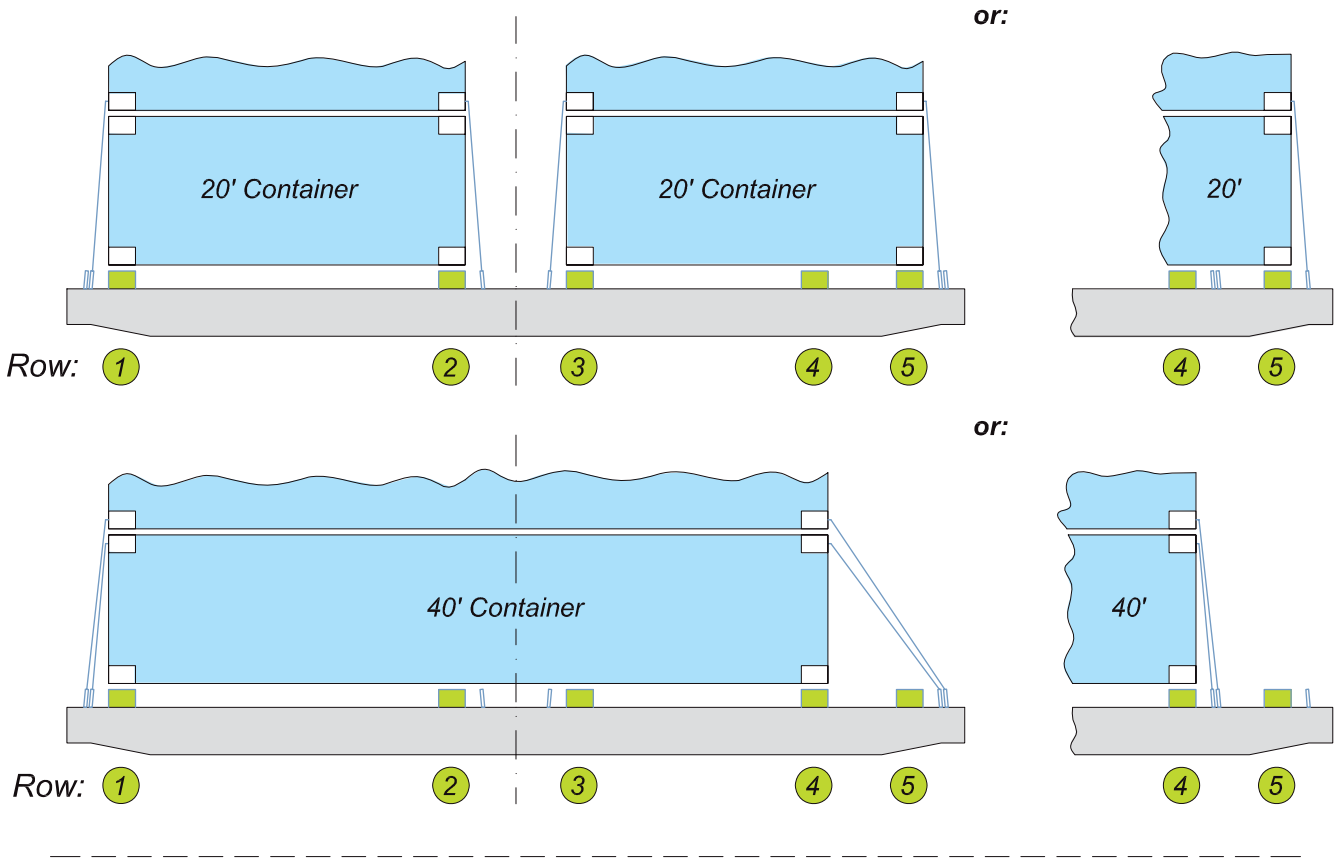
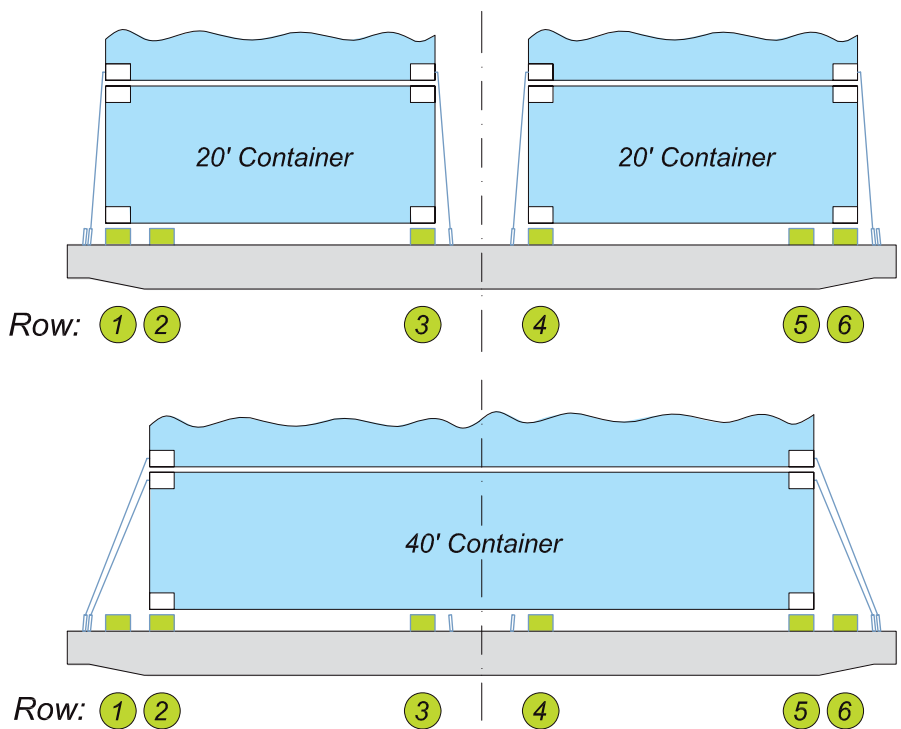


LONGITUDINAL ARRANGEMENT OF CONTAINERS ON DECK

Asymmetrical arrangement



Symmetrical arrangement



LONGITUDINAL ARRANGEMENT OF CONTAINERS ON DECK



In general there are two solutions for the longitudinal arrangement of containers when 20' containers shall be stowed with lashing gap in between.

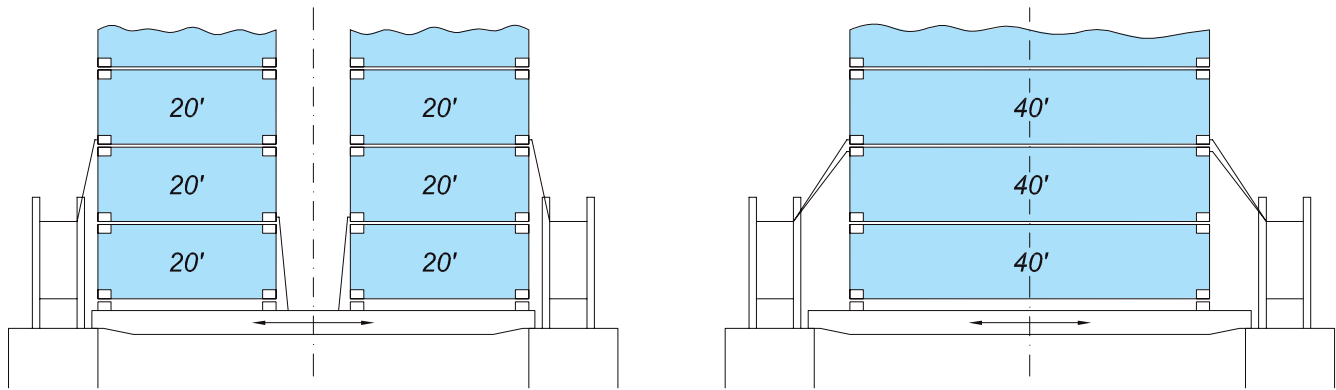
Very often it can be seen that containers are arranged asymmetrically with 5 rows of foundations per 40' bay only. Despite of the cost saving effect for a minimum quantity of foundations and reinforcements this solution has several disadvantages.

40' lashing at asymmetrical end has to be made 3-dimensional which can have negative effect on the efficiency of lashings. The lashing plates have to be inclined about 10° or even more in direction of containers. The wider the lashing gap between 20' containers is, the more difficult it is to cover all lashing positions with unified length of lashing rods. In some cases it might be necessary to install additional lashing plates at asymmetrical end between 20' and 40' foundations, if so stevedores have to shift turnbuckles each time when loading 20' instead of 40' and opposite.

For this reason we recommend to arrange the containers symmetrically in longitudinal direction resulting in 6 rows of foundation per 40' bay. This solution brings best results concerning the arrangement of lashing plates and unified lashing length. Even in case of large lashing gap between 20' containers no additional lashing plates have to be arranged and no shifting of turnbuckles by stevedores is required.

Australian Maritime Safety Authority (AMSA) specifies a minimum gap of 550 mm between 20' containers regardless of the lashing but at the same time they recommend a clear width of 550 mm between lashing plates. Despite of safety authorities SEC recommends a minimum gap of 750 mm between containers for proper lashing operation.

LONGITUDINAL ARRANGEMENT OF CONTAINERS ON DECK



In case that the vessel is equipped with lashing bridges the symmetrical arrangement of containers in longitudinal direction is even more important.

Shipowner's requirement for unified length of lashing rods is always extremely difficult to fulfil when the vessel has lashing bridges because a container height difference of at least 2 x 305 mm has to be considered for high cube container loading. It is very difficult to handle extension rods from lashing bridges therefore they should not be used.

The longitudinal gap between lashing bridges and 20' container end should be minimized as much as possible and 40' containers always to be arranged symmetrically in order to reduce 3D-effect of lashings.

During torsion of hull the container stack will shift together with the hatch cover panels in relation to the lashing points on lashing bridge creating additional forces in the lashings. This effect is increasing as more as the lashings are inclined in longitudinal direction.