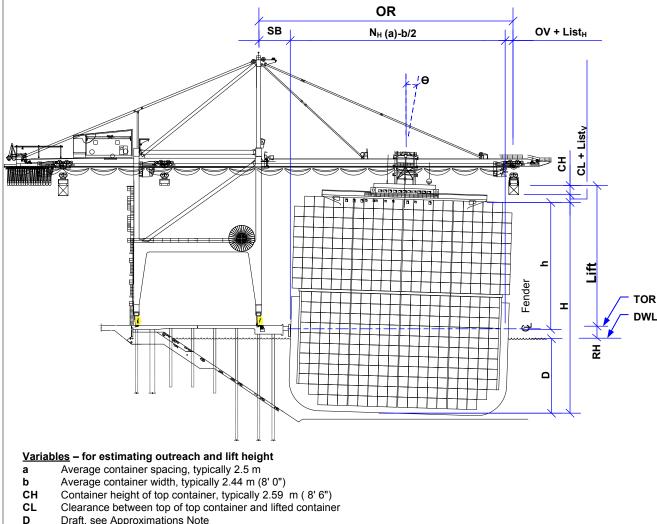
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## **Container Crane Outreach and Lift Height Guidelines**

Version 1 November 2013



- Draft, see Approximations Note
- DWL Design water level elevation
- h Height from fender centerline to top of top container
- н Height from keel to top of containers without list
- Lift Lift height above top of rail (TOR) = H + CL + CH + ( $N_H/2$ ) x a x sin  $\Theta$  – DD – RH
- Horizontal movement of top container due to ship list, approximately h x tan O List<sub>H</sub>
- Vertical movement of outermost top container due to ship list, approximately  $(N_H/2) \times a \times \sin \Theta$ Listv
- N<sub>H</sub> Number of containers horizontally across deck
- Nν Number of containers stacked vertically in hull and on deck Outreach
- OR ov
  - Overrun: additional distance to avoid trolley slowdown RH Distance from TOR to DWL
  - Setback, the typical range is from 2 m to 6 m SB
  - Θ Ship list design angle, degrees
  - TOR Top of waterside gantry rail

Approximate Outreach

		<b>SB</b> , m	2.0	4.0	6.0
		<b>e</b> , deg	1.0	1.0	1.0
		<b>OV</b> , m	1.0	1.0	1.0
N <sub>H</sub>	a x N <sub>H</sub> , m	<b>h</b> , m	Outreach, m		
13	32.5	30.0	34.8	36.8	38.8
14	35.0	32.9	37.4	39.4	41.4
15	37.5	32.9	39.9	41.9	43.9
16	40.0	32.9	42.4	44.4	46.4
17	42.5	35.8	44.9	46.9	48.9
18	45.0	35.8	47.4	49.4	51.4
19	47.5	38.7	50.0	52.0	54.0
20	50.0	38.7	52.5	54.5	56.5
21	52.5	38.7	55.0	57.0	59.0
22	55.0	38.7	57.5	59.5	61.5
23	57.5	38.7	60.0	62.0	64.0
24	60.0	41.6	62.5	64.5	66.5
25	62.5	41.6	65.0	67.0	69.0
26	65.0	41.6	67.5	69.5	71.5

## Approximate Lift Height

••		0				
		<b>RH</b> , m	2.0	3.0	4.0	
		<b>θ</b> , deg	1.0	1.0	1.0	
		<b>CL</b> , m	0.5	0.5	0.5	
Nv	<b>H</b> , m	<b>D</b> , m	LH, Lift Height, m			
14	41.4	10.7	32.1	31.1	30.1	
15	44.1	11.0	34.5	33.5	32.5	
16	46.9	11.4	36.9	35.9	34.9	
17	49.6	11.8	39.3	38.3	37.3	
18	52.4	12.1	41.7	40.7	39.7	
19	55.1	12.5	44.1	43.1	42.1	
20	57.9	12.9	46.5	45.5	44.5	
21	60.6	13.2	48.9	47.9	46.9	
22	63.4	13.6	51.3	50.3	49.3	

## Approximations Note

Approximate values are provided for general understanding. Variables used are estimates based on a variety of projects. Actual values will vary for a particular location, ship, crane, and operation.

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