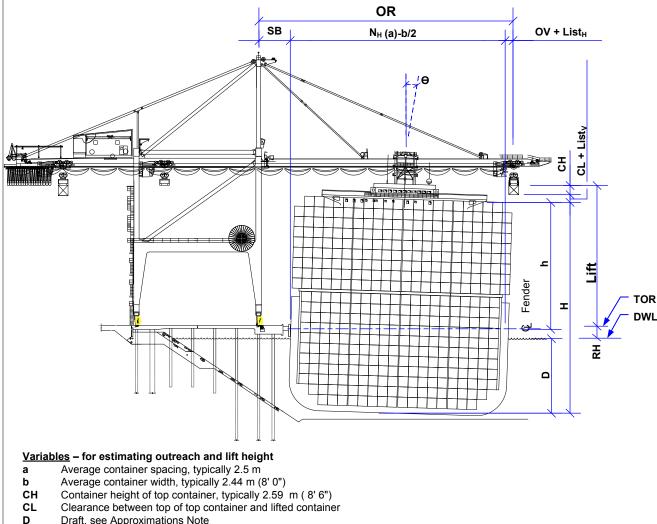
iftech

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 Θ – DD – RH
- Horizontal movement of top container due to ship list, approximately h x tan O List_H
- Vertical movement of outermost top container due to ship list, approximately $(N_H/2) \times a \times \sin \Theta$ Listv
- N_H 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

		SB , m	2.0	4.0	6.0
		e , deg	1.0	1.0	1.0
		OV , m	1.0	1.0	1.0
N _H	a x N _H , m	h , 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				
		RH , m	2.0	3.0	4.0	
		θ , deg	1.0	1.0	1.0	
		CL , m	0.5	0.5	0.5	
Nv	H , m	D , 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.

Disclaimer: This guide has been prepared in accordance with recognized engineering principles and is intended for use only by competent persons who, by education, experience, and expert knowledge, are qualified to understand the limitations of the guide. The publication of the information is not intended as a representation or warranty by Liftech Consultants Inc. Liftech Consultants Inc. does not guarantee that the guide is error free.

Anyone making use of the information assumes all liability arising from such use.

Copyright ©2013 by Liftech Consultants Inc. A California Corporation. All rights reserved.

vsd