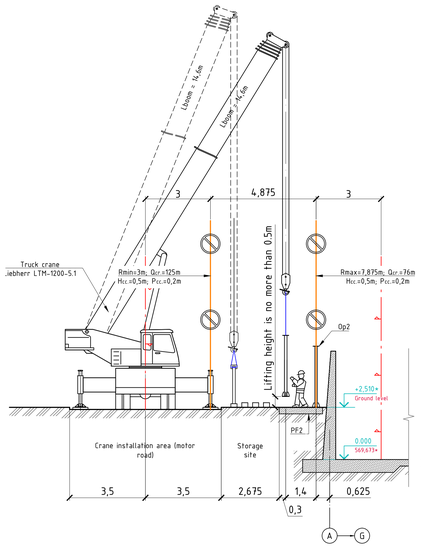
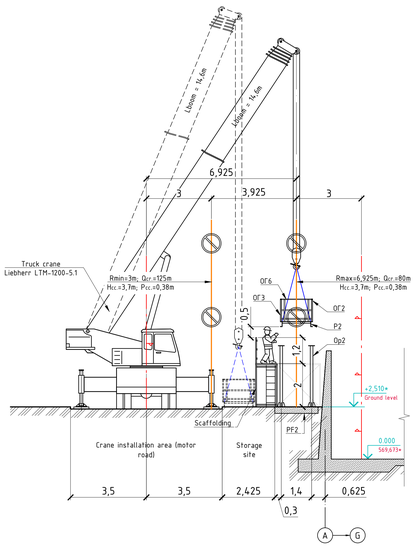
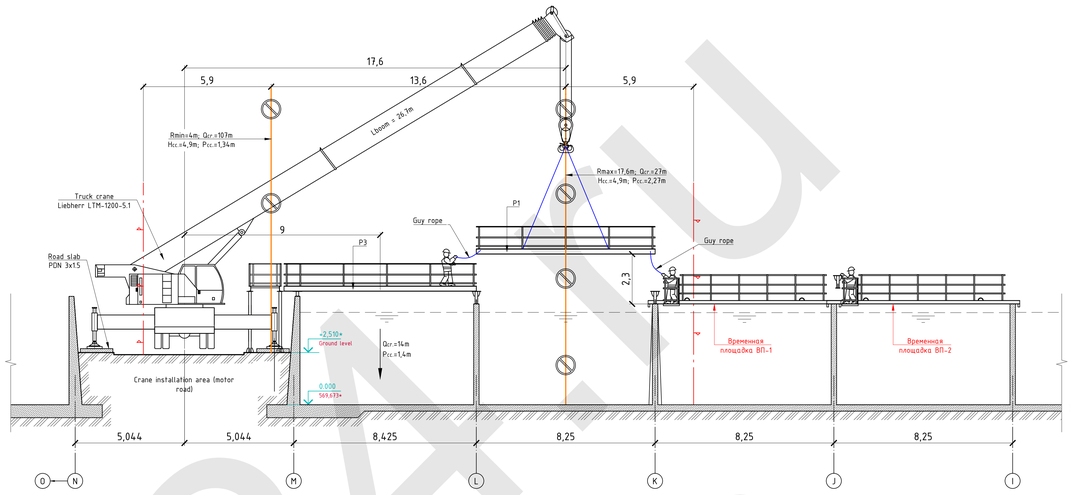
Installation of supports Op2



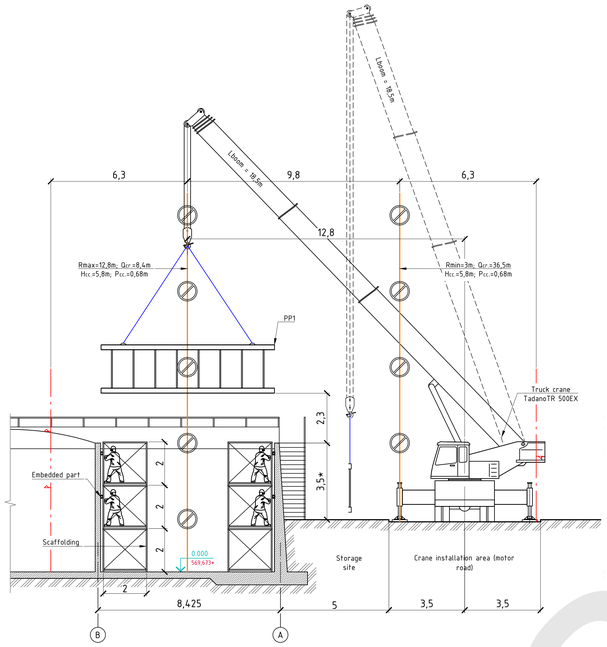
Installation of platforms P2



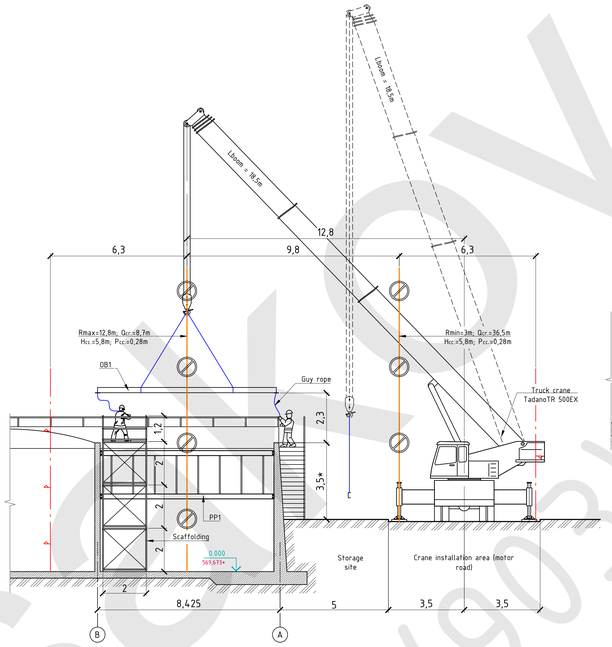
Installation of platforms P3 and P1



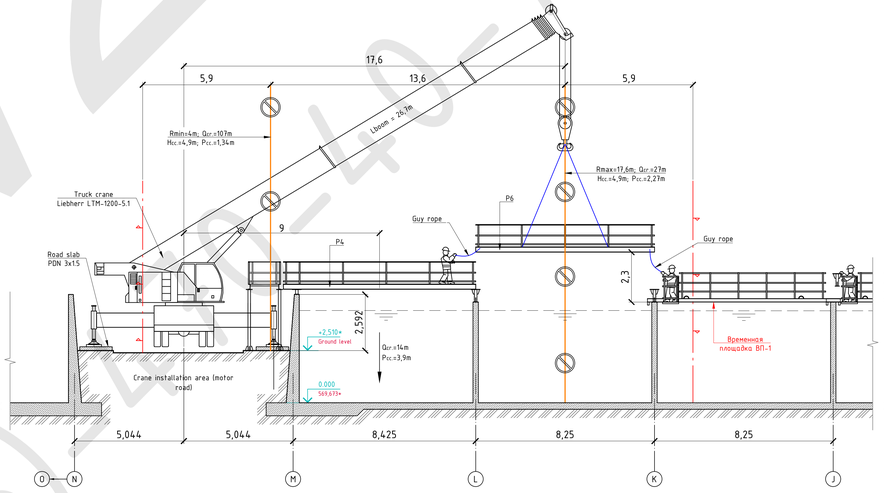
Installation of defoaming partitions PP1



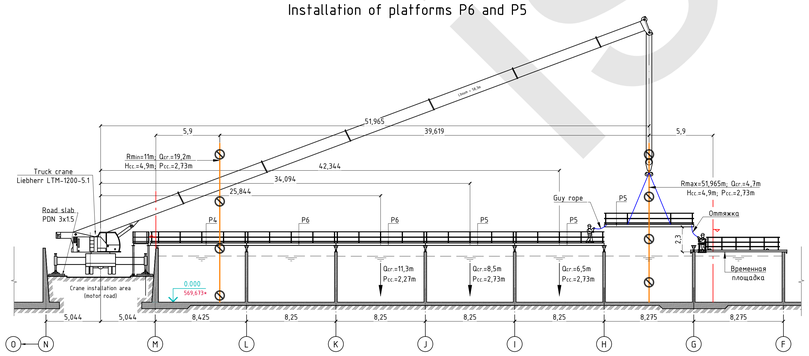
Installation of support beam OB1



Installation of platforms P4 and P6



Installation of platforms P6 and P5



Calculations of hazard zones in case of falling of transported cargoes

1. Determination of the hazard zone in case of movement of the support Op2 P2:
Hh.z.= L + X = 2.8 + 0.2 = 3m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

2. Determination of the hazard zone in case of movement of the platform P2:
Hh.z.= 0.5 x L + X = 0.5 x 3 + 1.5 = 3m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

3. Determination of the hazard zone in case of movement of ladder L1:
Hh.z.= 0.5 x L + X = 0.5 x 4.8 + 1 = 3.4m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

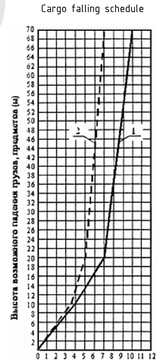
4. Determination of the hazard zone in case of movement of platforms P1, P3-P6:
Hh.z.= 0.5 x L + X = 0.5 x 8 + 1.8 = 5.9m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

5. Determination of the hazard zone in case of movement of defoaming partition PP1:
Hh.z.= 0.5 x L + X = 0.5 x 8 + 2.3 = 6.3m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

6. Determination of the hazard zone in case of movement of support beam OB1:
Hh.z.= 0.5 x L + X = 0.5 x 8.25 + 2.3 = 6.4m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

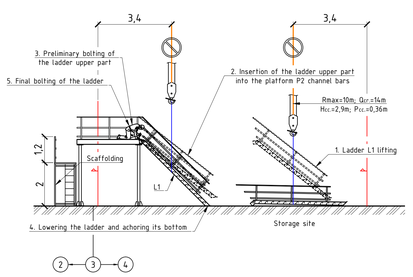
7. Determination of the hazard zone in case of movement of prestressed road slabs PDN 3x15:
Hh.z.= 0.5 x L + X = 0.5 x 3 + 1 = 2.5m, where:
- L - cargo length, m;
- X - cargo kickback minimum distance, determined by the cargo falling schedule.

Cargo falling schedule

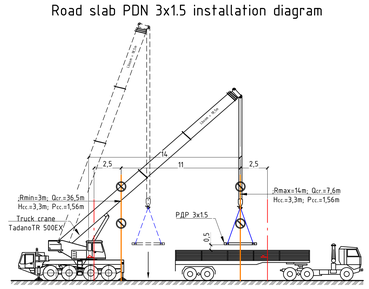


Cargo kickback minimum distance (m)
1 - when moving cargo by cranes;
2 - in case of falling objects from the building (is not used in this WEP).

Installation and manipulation of ladder L1



Road slab PDN 3x1.5 installation diagram



LEGEND:

- Boundaries of a truck crane work area
- Hazard zone of cargo falling when moving by a truck crane

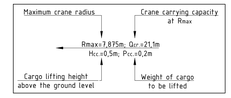


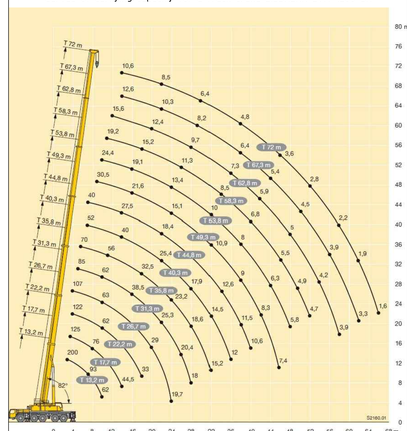
Table of carrying capacity for a truck crane TADANO TR-500EX

B \ A	10.7m	14.6m	18.5m	22.4m	26.3m	30.2m	34.1m
3.0m	50,000	40,000	38,500				
3.5m	50,000	40,000	34,800				
4.0m	48,000	40,000	33,200	25,000			
4.5m	42,500	39,000	31,700	24,000			
5.0m	38,200	37,500	30,400	22,900	20,500		
5.5m	34,600	34,800	29,200	21,900	19,500		
6.0m	31,500	31,800	28,100	20,800	18,500	17,000	
6.5m	28,900	29,200	27,100	19,900	17,400	16,100	
7.0m	26,600	26,900	26,200	18,800	16,400	15,300	14,000
8.0m	21,100	21,100	21,100	17,200	14,600	13,800	12,600
9.0m	16,400	17,000	17,000	15,900	13,200	12,500	11,500
10.0m		14,000	14,000	14,100	12,000	11,400	10,400
11.0m		11,700	11,800	11,900	11,000	10,300	9,500
12.0m		9,900	10,100	10,200	10,100	9,500	8,700
13.0m		8,500	8,700	8,800	8,800	8,700	8,000
14.0m			7,600	7,700	7,700	7,800	7,400
15.0m			6,600	6,700	6,800	6,900	6,800
16.0m			5,800	5,900	6,000	6,100	6,100
17.0m				5,200	5,300	5,400	5,400
18.0m				4,700	4,700	4,800	4,800
19.0m				4,200	4,200	4,300	4,300
20.0m				3,800	3,800	3,900	3,900
22.0m					3,000	3,100	3,100
24.0m					2,400	2,500	2,500
26.0m						2,000	2,000
28.0m						1,500	1,600
30.0m							1,200
32.0m							900

C \ E	9.8m		17.1m	
	5°	30°	5°	30°
80°	5,800	2,800	2,800	1,100
75°	5,000	2,500	2,300	1,000
70°	4,000	2,300	1,900	900
65°	3,200	2,150	1,600	850
60°	2,600	2,000	1,400	800
55°	2,150	1,750	1,200	750
50°	1,650	1,500	1,050	700
45°	1,100	1,000	800	650
40°	750	700	600	500

A : Boom length
B : Working radius
C : Jib length
D : Jib offset
E : Boom angle

Curves of carrying capacity for a truck crane LIEBHERR LTM-1200-5.1



0	ISSUED FOR APPROVAL		23.02.2014		
Rev.	Description of change		Date	Drawn	Approved

Architect.	Structural.	Electrical.	Mechanical.	QA/QC
sign:	sign:	sign:	sign:	sign:
date: 18.02.2014	date: 19.02.2014	date: 19.02.2014	date: 19.02.2014	date: 20.02.2014

CLIENT:
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Tel: 014409444 Fax: 014409202
www.nwc.com.sa

CONSULTANT:
CONSULTING ENGINEERS
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Fax: 0096614644616
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CONTRACTOR:
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AlAmir Mohammed Ben Abdulaziz Street,
Riyadh 11321 P.O.BOX 230183
Tel. 055 364 65 63; 055 847 72 21 ksa@ecos.ru; www.ecos.ru

PROJECT:
Improvement Of North And East Plants With Upgrading Its Capacity
Manfouha WWTP, Riyadh

DRAWING TITLE:
East Plant. Carousel-type aeration tanks. Детальные схемы монтажа металлоконструкций площадок обслуживания.

DRAWN BY:	PREPARED BY:	CHECKED BY:
Isakov		

DATE: February 2014
SHEET NO: MSTP-EAT-MS-BR-0007
SCALE: AS SHOWN

SHOP DRAWING
APPROVED ☐
REJECTED ☐
CS Signature_____
Date_____

Agreed
Rqst. rev. No
Sign. and date
Orig. rev. No

Size A0