

MOORING GUIDANCE FOR TANKERS

calling in Muuga Harbour



General

Muuga Harbour is situated at 59° 29' 30" N, 24° 57' 30" E in the Bay of Muuga.

Pre-arrival information

Vessels bound for Muuga Harbour should provide pre-arrival notices and documents according to Estonian regulations and Port Rules at least 24 hours before arrival or immediately upon departure from last port – including (but not limited to) ETA, vessel's data from the tonnage certificate (ITC) and arrival draft. In addition, the vessel should provide information about assistance required (if needed).

When possible, pre-arrival information according to ISGOTT Chapter 22.2.3 should be submitted to the terminal via the agent at least 24 hours prior arrival or upon departure from the last port.

- *Name and call sign of vessel.*
- *Country of registration.*
- *Overall length and beam of vessel and draught on arrival.*
- *Estimated time of arrival at designated arrival point, for example, pilot station or fairway buoy.*
- *Ship's displacement on arrival. If loaded, type of cargo and disposition.*
- *Maximum draught expected during and upon completion of cargo handling.*
- *If fitted with an inert gas system, confirmation that the ship's tanks are in an inert condition and that the system is fully operational.*
- *Any requirement for tank cleaning and/or gas freeing.*
- *Any defects that could adversely affect safe operations or delay commencement of cargo handling.*
- *Whether crude oil washing is to be employed and, if so, confirmation that the pre-arrival checklist has been satisfactorily completed.*
- *Ship's manifold details, including type, size, number, distance between centres of connections to be presented. Also products to be handled at each manifold, numbered from forward.*
- *Advance information on proposed cargo handling operations, including grades, sequence, quantities and any rate restrictions.*
- *Information, as required, on quantity and nature of slops and dirty ballast and of any contamination by chemical additives. Such information must include identification of any toxic components, such as H₂S.*
- *Quantities and specifications of bunkers required, if applicable.*

Port Control

„MUUGA RADIO 5“ or „MUUGA PORT CONTROL“ – VHF channel 87.

„MUUGA RADIO 2“ – VHF channel 67.

Approaching the port

The approach from pilot boarding position to the terminals has depth of over 17,0 m. Distance to terminals is approx. 7 NM from the NW pilot station and 10 NM from the NE pilot station.

Pilotage

A pilot for a vessel shall be requested through an agent via e-mail from a superintendent of AS Eesti Loots. Communication with the superintendent will be held via telephones +372 605 3888, mob. +372 52 68 432 and VHF channels 13, 16 and 72.

A pilot shall be requested on board:

arrival

- 24 hours prior to the vessel's arrival to the pilot station the latest;
- in case the time of departure from the previous harbour is less than 24 hours prior to the arrival, then upon departing from the previous harbour;
- the request has to be confirmed 6 hours and then 2 hours prior to the vessel's arrival to the pilot station.

departure

- 4 hours prior to leaving the latest, the request shall be confirmed 1 hour prior to departure.

The pilot boarding positions: NE - Lat. 59°39'·0 N; Lon. 25°09'·0 E
NW - Lat. 59°36'·0 N; Lon. 24°52'·0 E

Pilotage can be suspended due to the weather condition.

Anchorage areas

Bay of Muuga:

Anchorage	Central position	Ground	Depth	Pilotage
I (india)	59° 35'·20 N 24° 49'·20 E	Sand, gravel, mud	26 – 60 m	Not compulsory
K (kilo)	59° 35'·50 N 25° 01'·50 E	Sand	20 – 60 m	Compulsory
J (juliet)	59° 32'·00 N 24° 58'·50 E	Sand, mud	26 – 45 m	Compulsory
L (lima)	59° 32'·20 N 25° 03'·00 E	Mud	45 – 60 m	Compulsory
M (mike)	59° 31'·00 N 24° 59'·50 E	Sand, clay	13 – 35 m	Compulsory
N (november)	59° 30'·70 N 25° 06'·70 E	Sand, clay	19 – 38 m	Compulsory

Bay of Tallinn:

Anchorage	Central position	Ground	Depth	Pilotage
H (hotel)	59° 31'·20 N 24° 30'·70 E	Sand, clay, mud	34 – 37 m	Not compulsory
G (golf)	59° 29'·20 N 24° 31'·60 E	Clay, sand	30 - 37 m	Not compulsory
E (echo)	59° 29'·30 N 24° 36'·00 E	Sand, clay	30 – 34 m	Compulsory
F (foxtrot)	59° 33'·30 N 24° 35'·30 E	Mud, sand	22 – 35 m	Compulsory
D (delta)	59° 27'·40 N 24° 37'·40 E	Mud, sand	19 – 26 m	Compulsory

Anchorage	Central position	Ground	Depth	Pilotage
C (charlie)	59° 29'·05 N 24° 44'·20 E	Sand, clay	21 – 28 m	Compulsory
B (bravo)	59° 27'·60 N 24° 45'·20 E	Sand, clay	19 – 27 m	Compulsory
A (alfa)	59° 28'·60 N 24° 48'·00 E	Sand, clay	15 – 29 m	Compulsory

Anchorage information: VHF ch. 13 „TALLINN VTS“.

Anchorage with compulsory pilotage: contact pilots on VHF ch. 13 or ch. 67.

Pilot ordering must be done via agent.

Tugs

Tug company: Alfons Håkans.

Name (type)	Power (bhp)	Bollard pull (t)	Dimensions	Rope
H. Kanter (ASD)	4450	55	L = 31,36 m B = 12,1 m T = 3,78 m	48 mm Marlow Steelite, 150 m 53 mm steel rope, 150 m 450 kN escort winch
Triton (ASD)	4000	48	L = 26,0 m B = 8,2 m T = 3,5 m	44 mm Samson Steelite Blue, 170 m
Vega (ASD)	3340	40	L = 33,3 m B = 10,0 m T = 4,2 m	96 mm, 110 m, MBL 126 t
Protector (conventional)	3685	38	L = 40,43m B = 9,8 m T = 4,3 m	44 mm, 590 m, MBL 122 t
Apollon (ASD)	3600	45	L = 30,0 m B = 10,02 m T = 4,5 m	-
Atlas (conventional)	3410	33	L = 32,5 m B = 9,5 m T = 4,5 m	38 mm, 900 m
Arkturus (ASD)	2850	35	L = 19,0 m B = 9,0 m T = 3,8 m	44 mm Marlow Steelite, 200 m
Mars (ASD)	3650	45	L = 32,7 m B = 10,5 m T = 4,1 m	44 mm Marlow Steelite, 75 m
Helios (Voith)	3000	35	L = 34,15 m B = 9,22 m T = 5,2 m	40 mm, 1000 m

Requests for towage must be submitted via agent.

For more information about tug boats please contact with pilot or tug company.

Berthing arrangements

The vessels moored at the terminals are required as a minimum, to comply with the OCIMF mooring recommendations.

The Master is responsible for ensuring that the ship remains securely moored throughout the stay. The Master must ensure that all moorings are regularly tended and maintained in a taut condition. Emergency towing pennant/fire wires should be applied in accordance with OCIMF recommendations.

Unless the terminal specifically advises to the contrary, emergency towing-off pennants (fire wires) should be positioned both on the off-shore bow and quarter of the ship, as per ISGOTT 26.4.4. and 26.5.5.

Vessels should preferably be moored with heading “bow out”.

Maximum berthing speed

Maximum berthing speed should be minimized in order to reduce the forces on the jetty and fenders. Special conditions apply to oversized vessels, see pg. 6.

Bollards, fenders and forces

Quay	Quay and bollards	Type of bollards	Number of bollards	SWL	Fendering
1A	1A-1	PTT 1000	1	1000 kN	TRELLEX 78-1-FX SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0 SPC1300 G2.0
		MAMPAEY	1	2x1000 kN	
	1A-2	TCO-40	1	400 kN	
		TCO-63	1	630 kN	
	1A-3	TCO-40	1	400 kN	
		+ winch			
	1A-4	TCO-40	1	400 kN	
	1A-5	TCO-40	1	400 kN	
		+ winch			
	1A-6	TCO-40	1	400 kN	
	1A-7	MAMPAEY	1	2x750 kN	
		TCO-100	1	1000 kN	
	1A-8, 1A-9	TCO-40	2	400 kN	
	1A-10, 1A-11	MAMPAEY	2	2x500 kN	
	1A-12	PTT 1000	1	1000 kN	
2A		TCO-40	1	400 kN	
	1A-13	PTT 1000	1	1000 kN	
		TCO-40	1	400 kN	
	1A-14	MAMPAEY	1	2x500 kN	
	1A-15	MAMPAEY	1	3x500 kN	
2A	2A-1/2A-6	TCO-25	6	250 kN	Cylindrical fenders
	2A-7	TCO-63	1	630 kN	
	2A-8	TCO-40	1	400 kN	
1	1-1, 1-8	MAMPAEY	2	2x600 kN	SUMITOMO Lambda type
	1-2/1-7	PTT 750	6	750 kN	

Quay	Quay and bollards	Type of bollards	Number of bollards	SWL	Fendering
2	2-1, 2-8 2-2/2-7	MAMPAEY PTT 750	2 6	2x600 kN 750 kN	SUMITOMO Lambda type
3	3-1 3-2/3-5 3-6	TCO-63 TCO-40 TCO-63	1 4 1	630 kN 400 kN 630 kN	Cylindrical fenders
3A	3A-1/3A-3, 3A-6/3A-8 3A-4, 3A-5	MAMPAEY PTT 1000	6 2	2x1000 kN 1000 kN	SUMITOMO Pi type – CP1 V type – HYPER ACE Lambda type
7	7-1 7-2/7-12 8-1 Special	MAMPAEY TCO-100 MAMPAEY + winch	1 11 1 1	2x500 kN 1000 kN 4x500 kN 4x500 kN	Cylindrical fenders
9	9-3/9-15 9-16, 9-17 9-1, 9-2, 9-18, 9-19	TCC- 125 MAMPAEY MAMPAEY	13 2 4	1250 kN 4x600 kN 2x500 kN	YOKOHAMA Pneumatic rubber fenders
10	10-3/10-15 10-16, 10-17 10-1, 10-2, 10-18, 10-19	TCC- 125 MAMPAEY MAMPAEY	13 2 4	1250 kN 4x600 kN 2x500 kN	YOKOHAMA Pneumatic rubber fenders
9A	9A-1/9A-4, 9A-11/9A-13 9A-5/9A-10	MAMPAEY PTT 1000	7 6	2x1500 kN 1000 kN	FENTEK SCN 1300, 1200, 1600
10A	10A-1/10A-4, 10A-11/10A-13 10A-5/10A-10	MAMPAEY PTT 1000	7 6	2x1500 kN 1000 kN	FENTEK SCN 1300, 1200, 1600

During the mooring operation the safe working load (SWL) to the bollards should not be exceeded. Port's mooring gangs have the information about bollards' SWL at hand.

Berth limitations

Berth	LOA (m)	Depth from BK77 zero water level (m)	Max. draft at BK77 zero water level (m)	Depth from EH2000 zero water level (m)	Max. draft at EH2000 zero water level (m)
1A	275 *	14,4	14,0	14,2	13,8
2A	77,5	6,6	6,2	6,4	6,0
1	170	11,4	11,0	11,2	10,8
2	170	11,2	10,8	11,0	10,6
3	100	8,2	7,8	8,0	7,6
3A	190	13,0	12,6	12,8	12,4
7	220	14,4	14,0	14,2	13,8
9A	295	18,0	17,1	17,8	16,9
10A	295	18,0	17,1	17,8	16,9

* Since 2017 reconstruction the structural strength of berth no. 1A allows to accommodate vessels up to 275 m by default, but limitations for manoeuvring in Western Basin remain (see next page).

A vessel with dimensions exceeding the permissible size requires an explicit permit in writing issued by the Harbour Master separately for each berthing as per Port Rules 1.5.2 and 3.1.4. Various constructional surveys have been carried out in order to determine allowances for berthing big and oversized vessels.

Minimum conditions for berthing large and oversized vessels

Berth no. 1A

- Tanker's LOA from 250 to 270 m – wind speed must not exceed 6 m/s during manoeuvring in the Western Basin, berthing operation must be carried out during daylight hours and berths no. 1, 6, 6A must be unoccupied.
- If tanker's LOA exceeds 270 m then wind speed must not exceed 6 m/s during manoeuvring in the Western Basin, berthing operation must be carried out during daylight hours, berths no. 1, 6, 6A must be unoccupied and the corner of berth no. 7 must be unoccupied at least in the length of 100 metres.

Berth no. 1

- Tanker's LOA exceeds 170 m – required to have Harbour Master's permission in writing.

Berth no. 2

- Tanker's LOA exceeds 170 m – required to have Harbour Master's permission in writing.

Berth no. 3

- Tanker's LOA exceeds 100 m – required to have Harbour Master's permission in writing, which is issued upon receiving the written confirmation by vessel's Master about readiness to berth his oversized vessel to berth no. 3 and that arrival/departure drafts correspond to Port Rule 1.5.2.

Berth no. 7

- Tanker's LOA exceeds 220 m – required to have Harbour Master's permission in writing.
- Tanker's LOA exceeds 252 m – required to have Harbour Master's permission in writing and confirmation from neighbouring terminal AS DBT in order to secure the vessel's mooring lines to berth no. 8 bollards.
- Tanker of DWT = 300'000 t, LOA = 330 m, B = 60 m, T = 15 m – required to have Harbour Master's permission in writing and approval from neighbouring terminal AS DBT due to vessel extending to berth no. 8. Mooring speed ≤ 90 mm/s (5,4 m/min or 0,17 knots), mooring angle less than 5°. Wind speed must not exceed 10 m/s during vessel's stay.

Berth no. 9A/10A

- Tanker's LOA exceeds 280 m – required to have Harbour Master's permission in writing.
- Tanker of DWT = 300'000 t, LOA = 330 m, B = 60 m, T = 15 m – required to have Harbour Master's permission in writing and approval from neighbouring terminal MGT AS due to vessel extending

to the area of berth no. 9/10. Mooring speed ≤ 90 mm/s (5,4 m/min or 0,17 knots), mooring angle less than 5° . Wind speed must not exceed 10 m/s during vessel's stay.

- Tanker of DWT = 400'000 t, LOA = 380 m, B = 68 m (TI-class tankers) – theoretical possibility only. According to berth designer analysis 29.12.2014 the mooring speed in ballast must be ≤ 75 mm/s (4,5 m/min or 0,15 knots), mooring angle less than 5° . Wind speed must not exceed 10 m/s during vessel's stay and additional requirements apply regarding mooring lines' arrangement. If the vessel has part-cargo on board, additional analysis has to be carried out, taking into account vessel's actual displacement.

Largest tankers berthed * :

- Berth no. 1A: LOA = 275 m, B = 50 m, DWT = 164'533 t
- Berth no. 2A: LOA = 114 m, B = 13 m, DWT = 3280 t
- Berth no. 1: LOA = 196 m, B = 32 m, DWT = 54'500 t
- Berth no. 2: LOA = 192 m, B = 27 m, DWT = 32'290 t
- Berth no. 3: LOA = 142 m, B = 18 m, DWT = 12'723 t
- Berth no. 3A: LOA = 229 m, B = 36 m, DWT = 72'365 t
- Berth no. 7: LOA = 337 m, B = 60 m, DWT = 299'164 t
- Berth no. 9A: LOA = 333 m, B = 60 m, DWT = 321'234 t
LOA = 344 m, B = 56 m, DWT = 298'900 t
- Berth no. 10A: LOA = 334 m, B = 58 m, DWT = 299'500 t

** always extremely case-specific and subject to approval by Muuga Harbour Master.*

Weather limitations

Wind force and direction – moorage of vessels at berths no. 7, 9A, 10A is allowed only in cases when Northwest, North and Northeast wind speeds do not exceed 12 m/s, and at berth no. 7 only in case of favourable weather forecast for the next 24 hours. In all other cases, decision to berth shall rest with local Pilot in cooperation with tug Captains and Muuga Harbour Master's Office.

Wave height and direction – if the height of waves exceeds 1.5 m, the use of tug boats will be restricted. Berthing will be decided by local Pilot in cooperation with tug Captains and Muuga Harbour Master's Office.

Visibility – in case of poor visibility, the Master of a vessel together with the Harbour Master's Department will make a decision regarding the vessel's entering or leaving the port. Navigation or berthing operations may be suspended due to low visibility, depending on vessel's equipment and/or cargo.

Water level – depending on the weather conditions, the sea level in the harbours may differ by +157 to -95 cm from BK77 level. Upon transition to EH2000 vertical reference system the water level amplitude will be defined as between +181 cm and -71 cm. Information regarding the sea level is available at the Harbour Master's Department (Muuga Port Control).

Upon receiving a storm warning (wind speed of 25 m/s and above) the Master of the vessel or Chief Officer will have to board the vessel. In such case, the vessels must be unplugged from the on-shore power supply. The warning shall be forwarded by the Harbour Master's Department, which will establish the procedure for vessels leaving the harbour.

The water area of Muuga harbour and inner roadsteads are not protected from Northwest, North and Northeast winds. If the speed of such winds exceeds 17 m/s, the stay of vessels, especially at berth no. 7, will become dangerous due to the high sea. If the height of waves exceeds 1.5 m, the use of tugboats will be restricted. In such case, the Master of the vessel will decide whether to leave port, in cooperation with Muuga Port Control Shift Manager.

Under keel clearance policy

The minimum underkeel clearance of a vessel manoeuvring in the port has to be at least 5% of the vessel draught.

In case the underkeel clearance of 5% calculation yields:

- less than 20 cm, the minimum underkeel clearance for manoeuvring shall be determined as 20 cm;
- more than 40 cm, the minimum underkeel clearance for manoeuvring shall be determined as 40 cm.

Provision of ship/shore access

Vessels moored at the terminals are required to provide a suitable gangway to enable safe access between ship and shore, complete with suitable safety net and lifebuoy.

ISGOTT 26.4 Guidelines for Completing the Ship/Shore Safety Check List to be observed.

Mooring diagrams

See Addendum at the end of this booklet.

Sources:

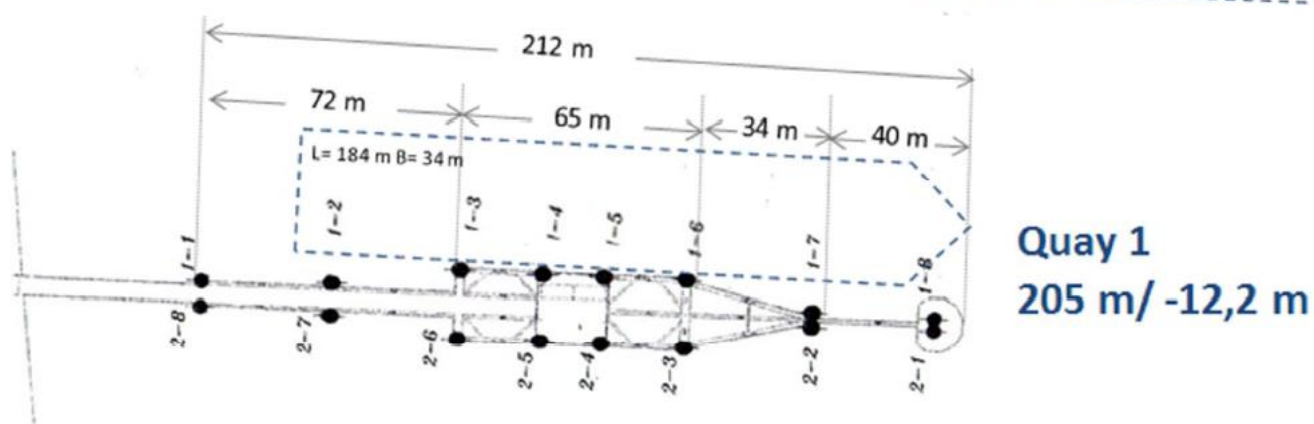
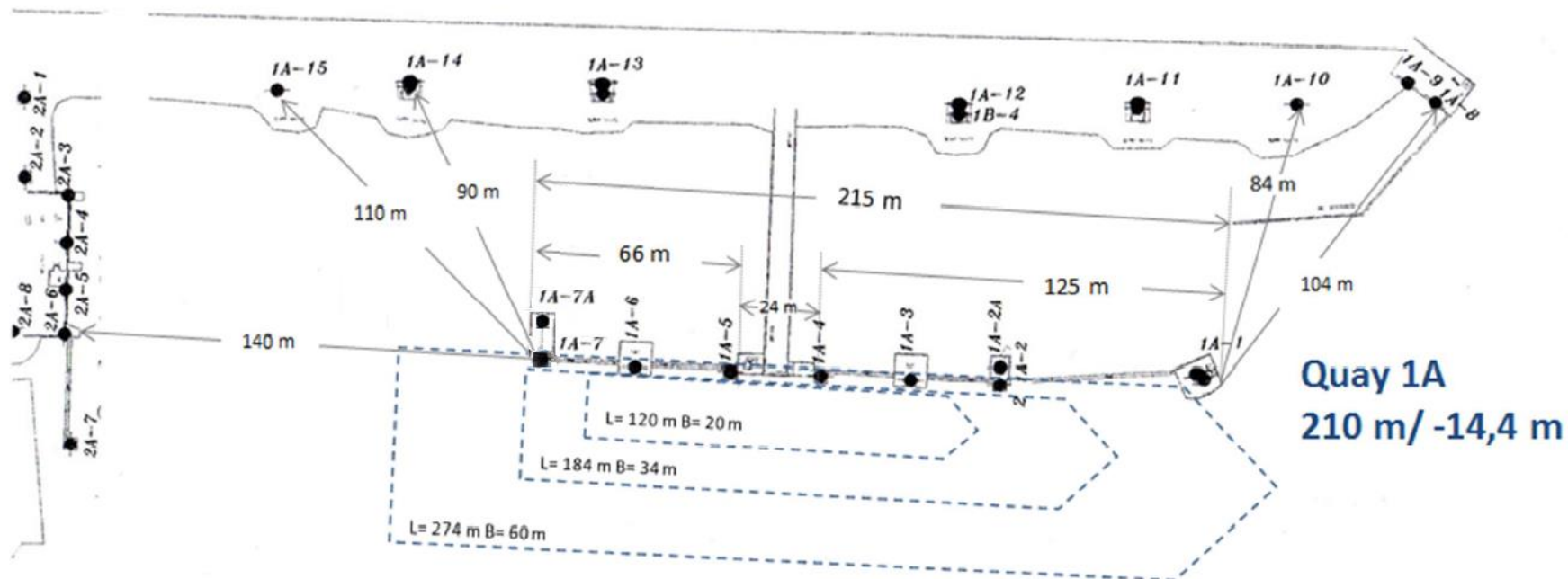
Port of Tallinn Port Rules
The International Safety Guide for Oil Tankers and Terminals (ISGOTT)
Quay projects, construction specifications, surveys and drawings

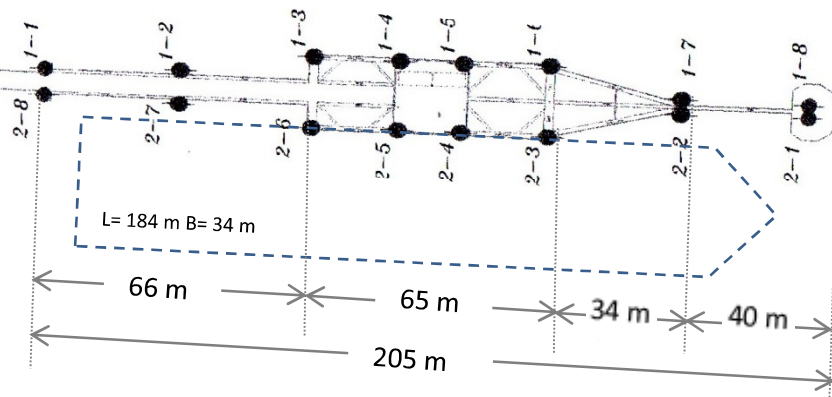
The guidance was created by Estonian Maritime Academy of TUT in cooperation with Port of Tallinn Harbour Master's Department and Estonian Pilot.

*Head of the workgroup: **Capt. Olev Tõnismaa**
Revised by: **Mihkel Abe**
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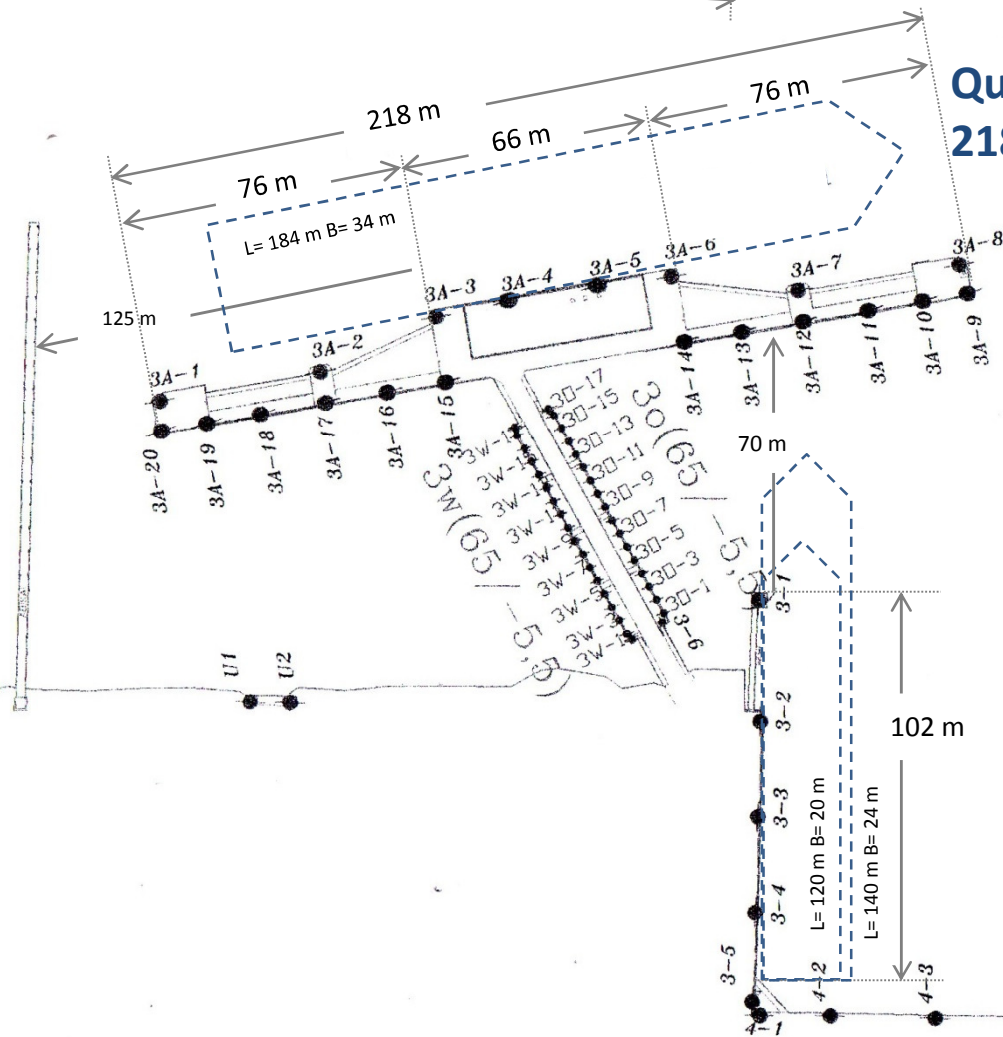
ADDENDUM

Mooring diagrams





Quay 2
205 m/ -11,2 m



Quay 3A
218 m/ -13,0 m

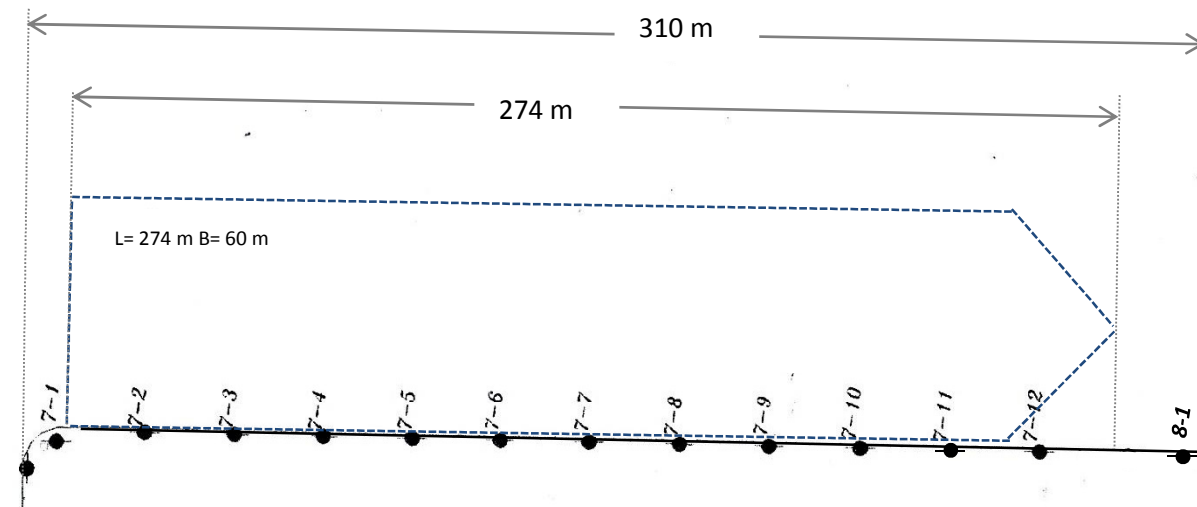
Quay 3
111 m/ -8,2 m

4.kai 278 m/ -7,5 m

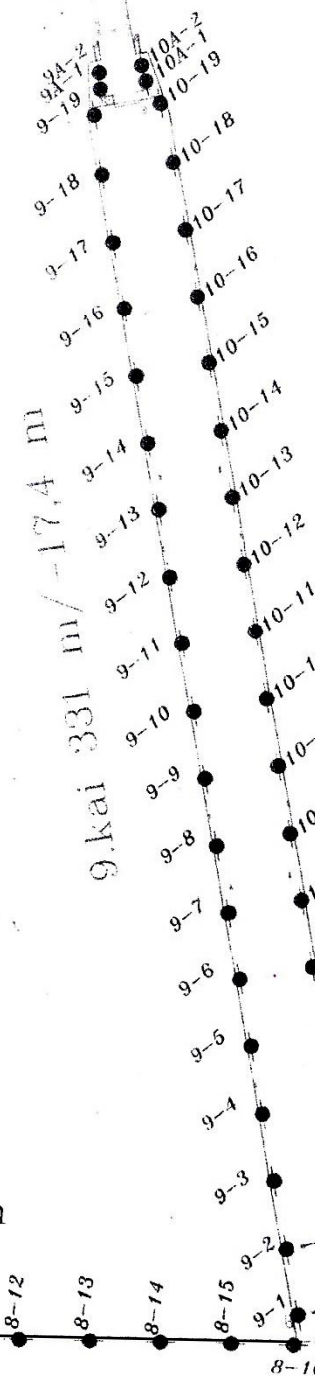
5.kai 103 m/ -7,1m 6.kai 157 m/ -9.5m



Quay 7
310 m/ -14,4 m



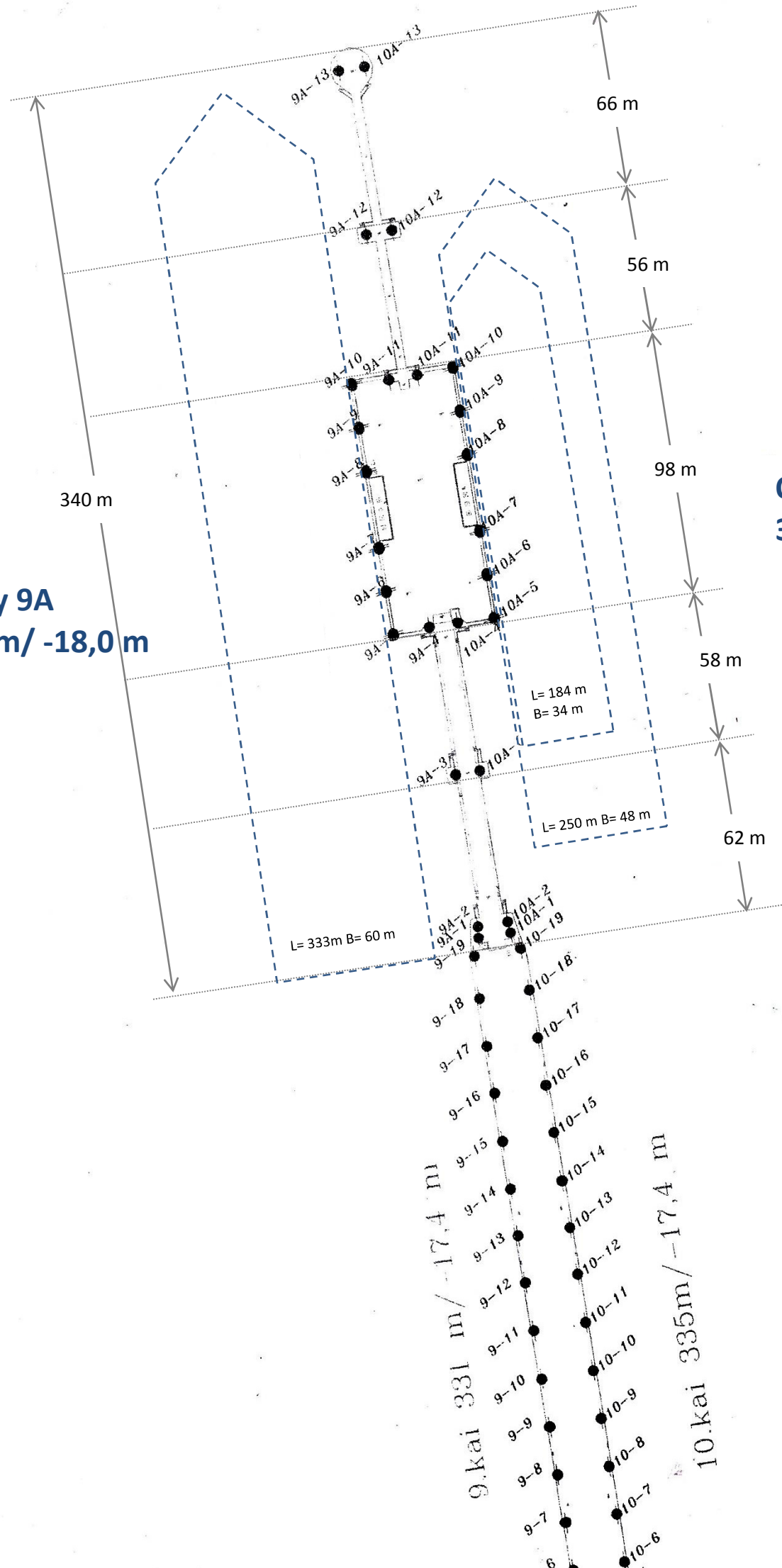
8.kai 280 m/ -14,4 m



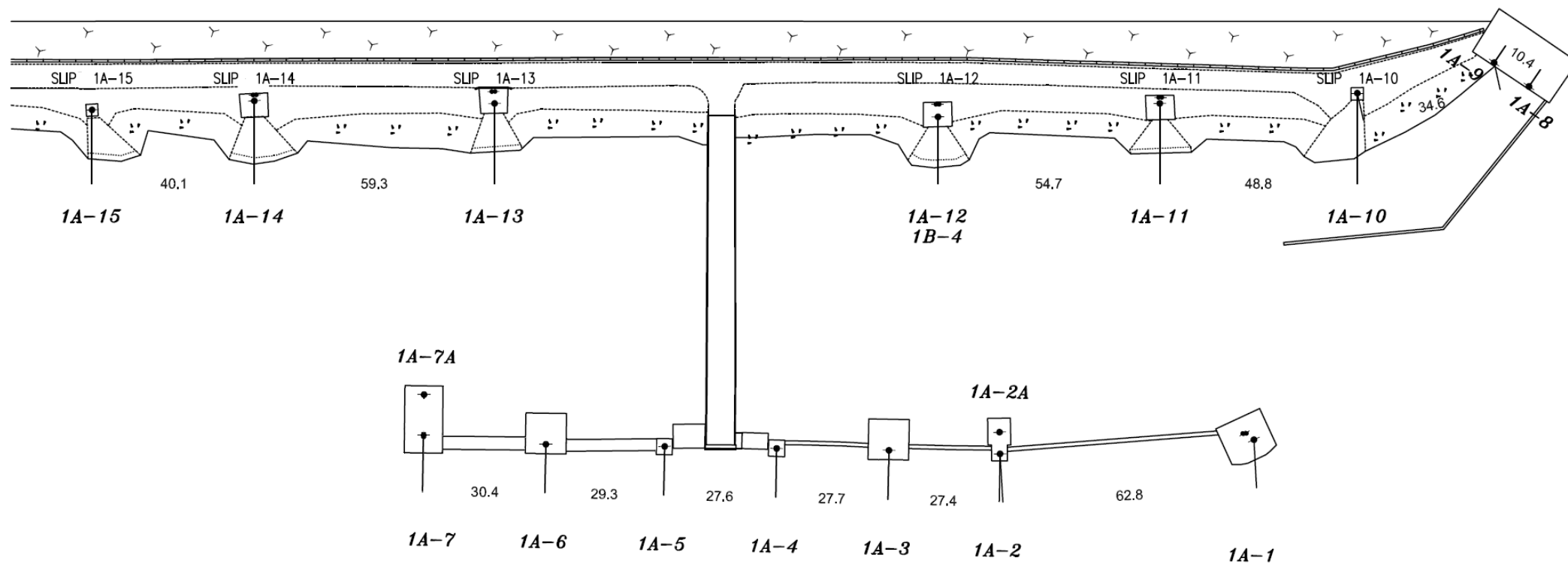
Quay 9A
340 m/ -18,0 m

Quay 10A
340 m/ -18,0 m

Mooring velocity
 $\leq 150 \text{ mm/s}$
9 m/min
0,29 knt



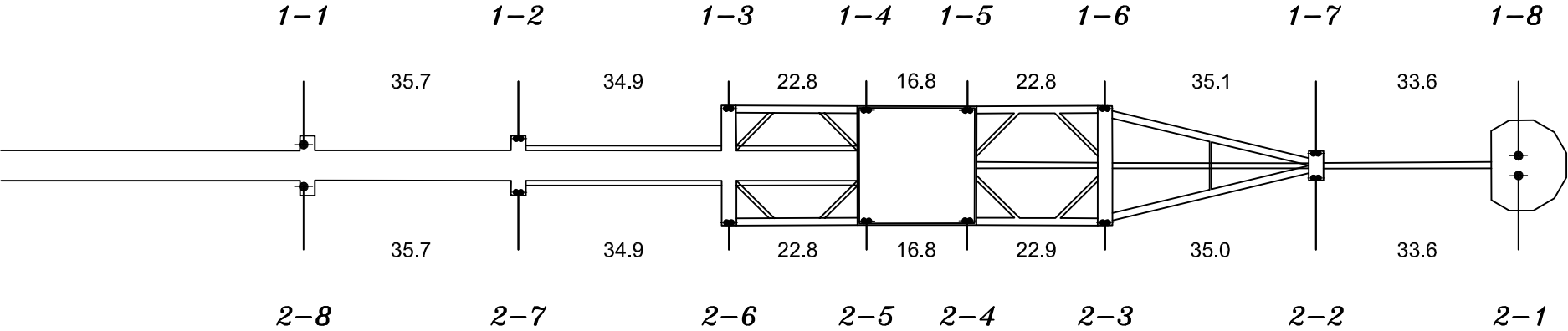
Distance between bollards



Quay 1A 215 m/-14,4 m

Distance between the bollards

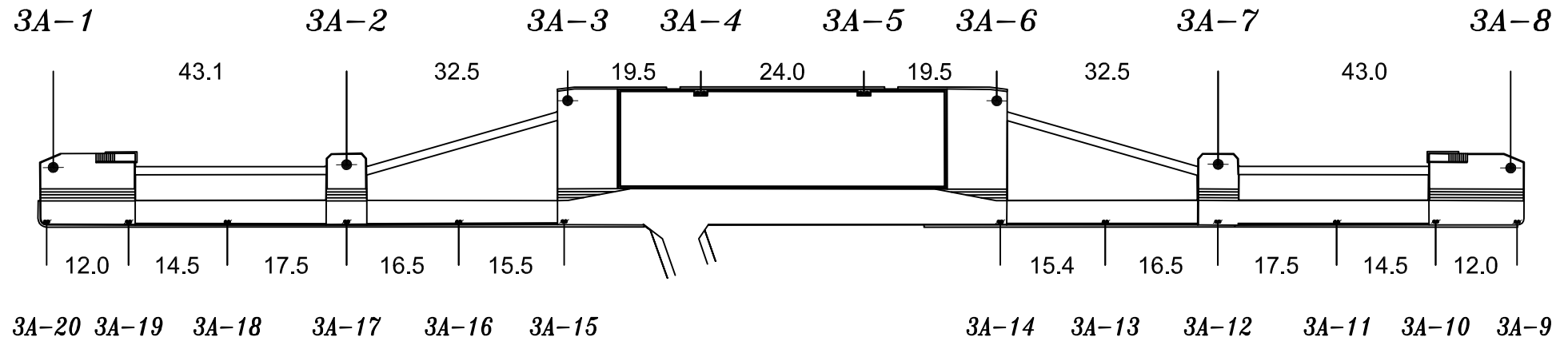
Quay 1 205 m/−11,4 m



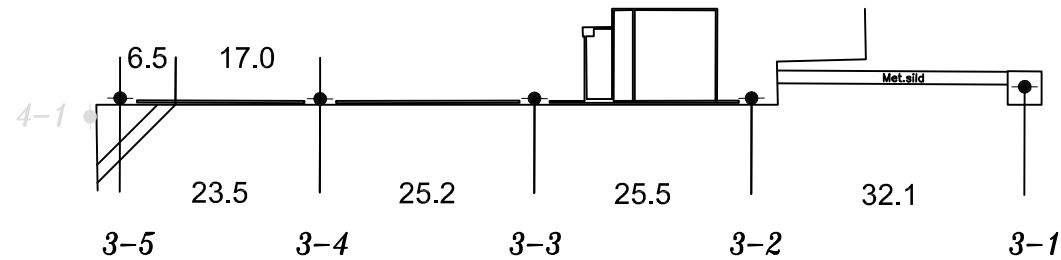
Quay 2 205 m/−11,2 m

Distance between the bollards

Quay 3A 218 m / -13,0 m

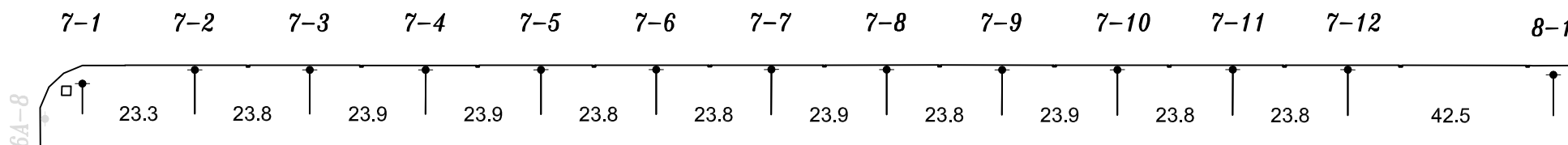


Quay 3 111m / -8,2m



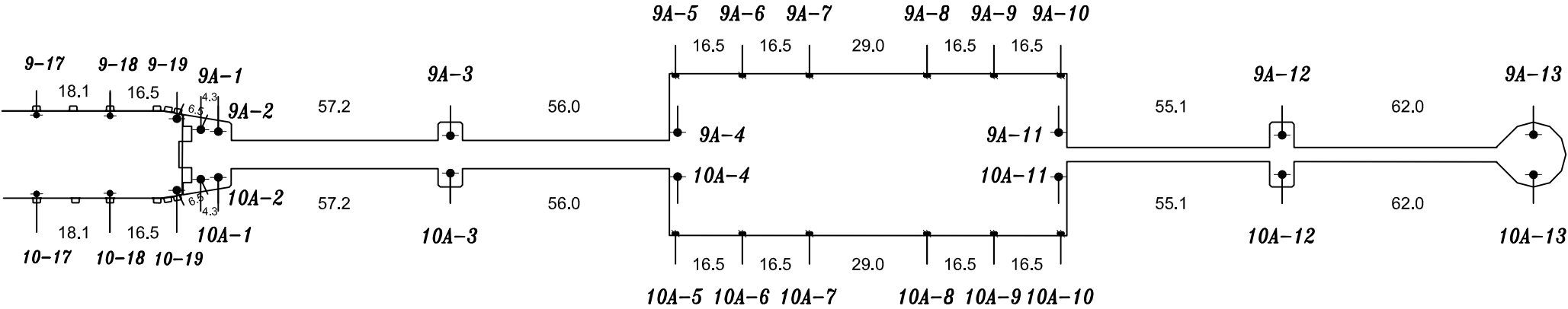
Distance between the bollards

Quay 7 310m / -14,4 m



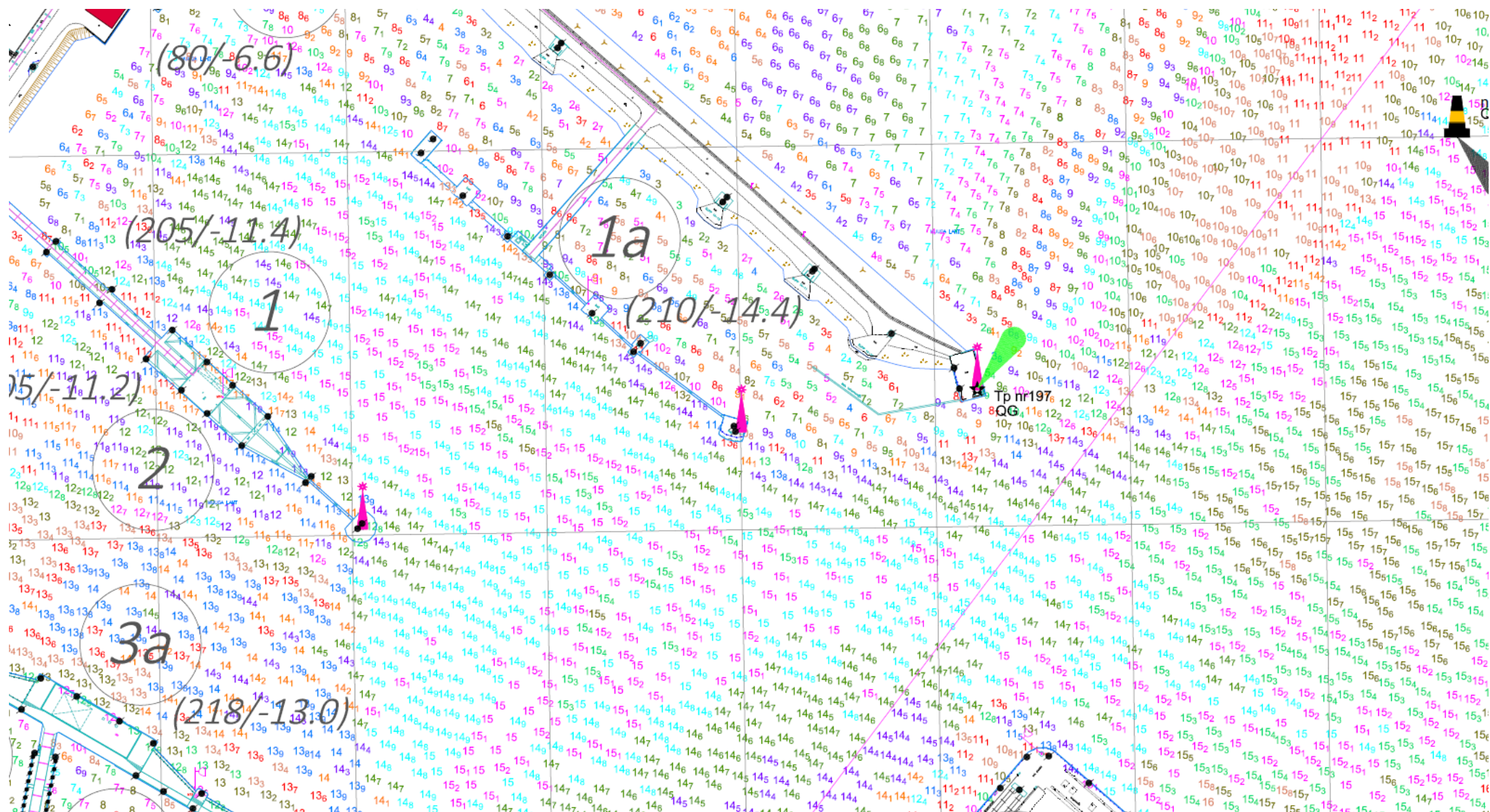
Distance between the bollards

Quay 9A 340 m/−18,0 m

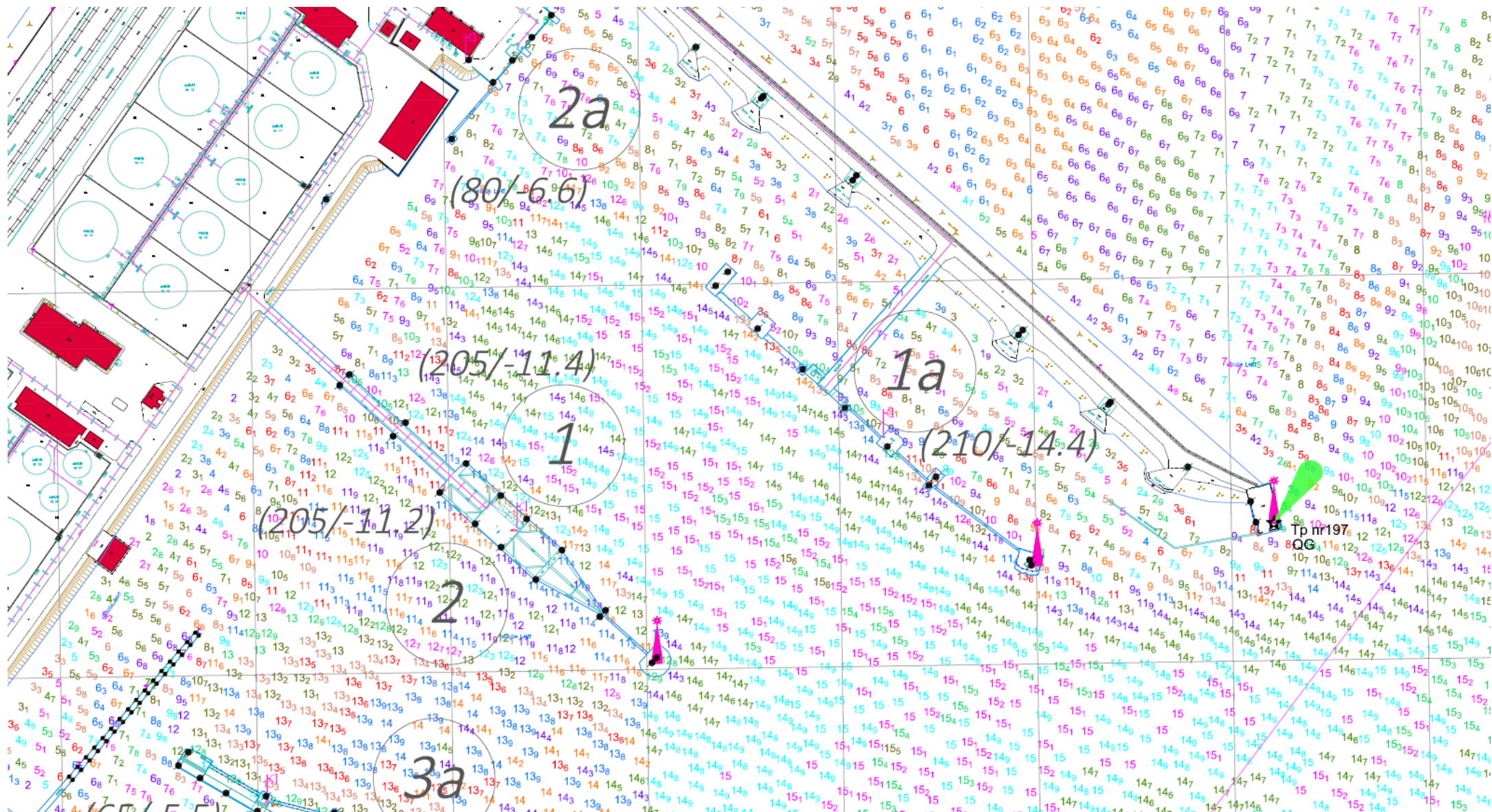


Quay 10A 340 m/−18,0 m

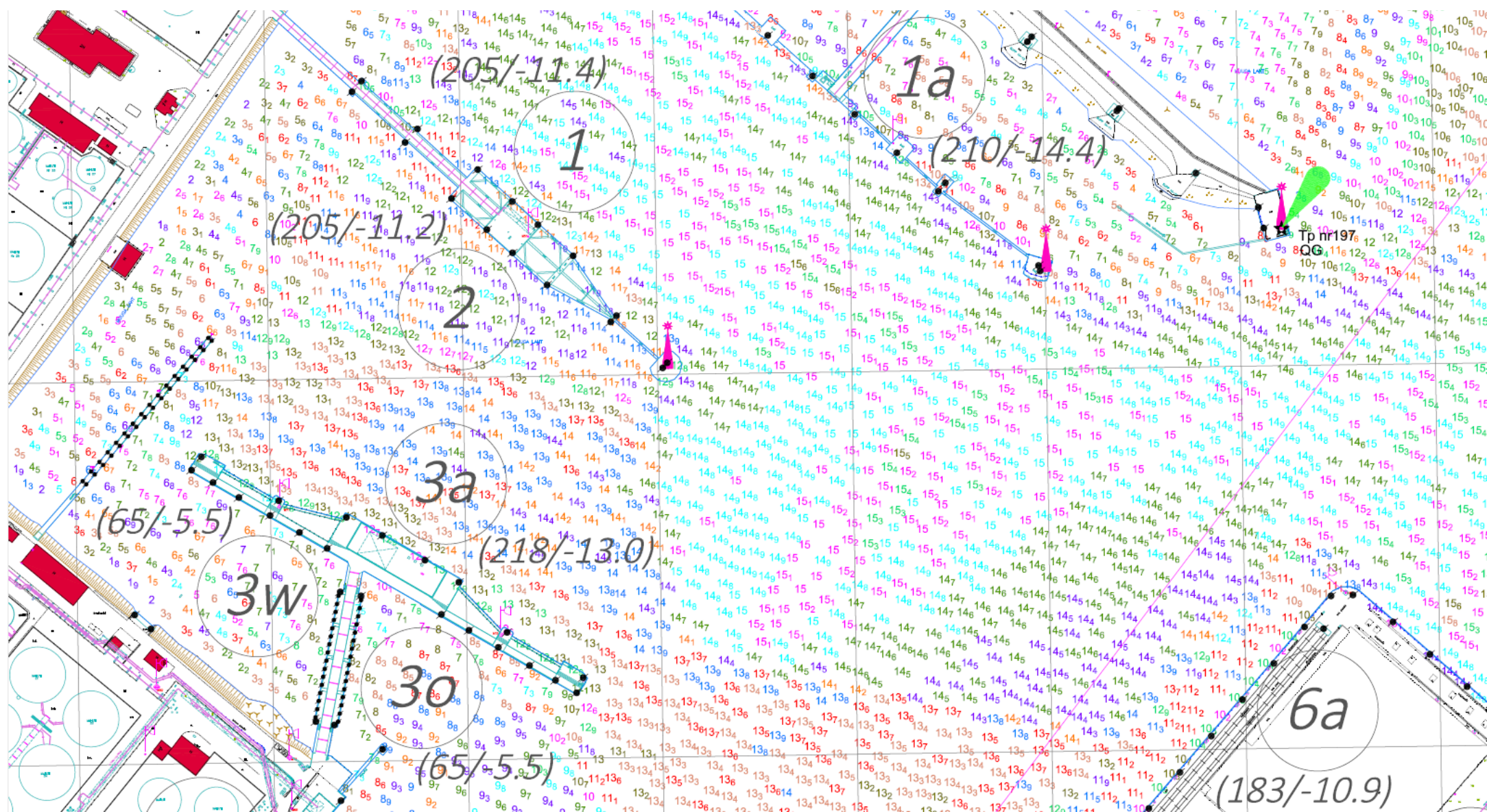
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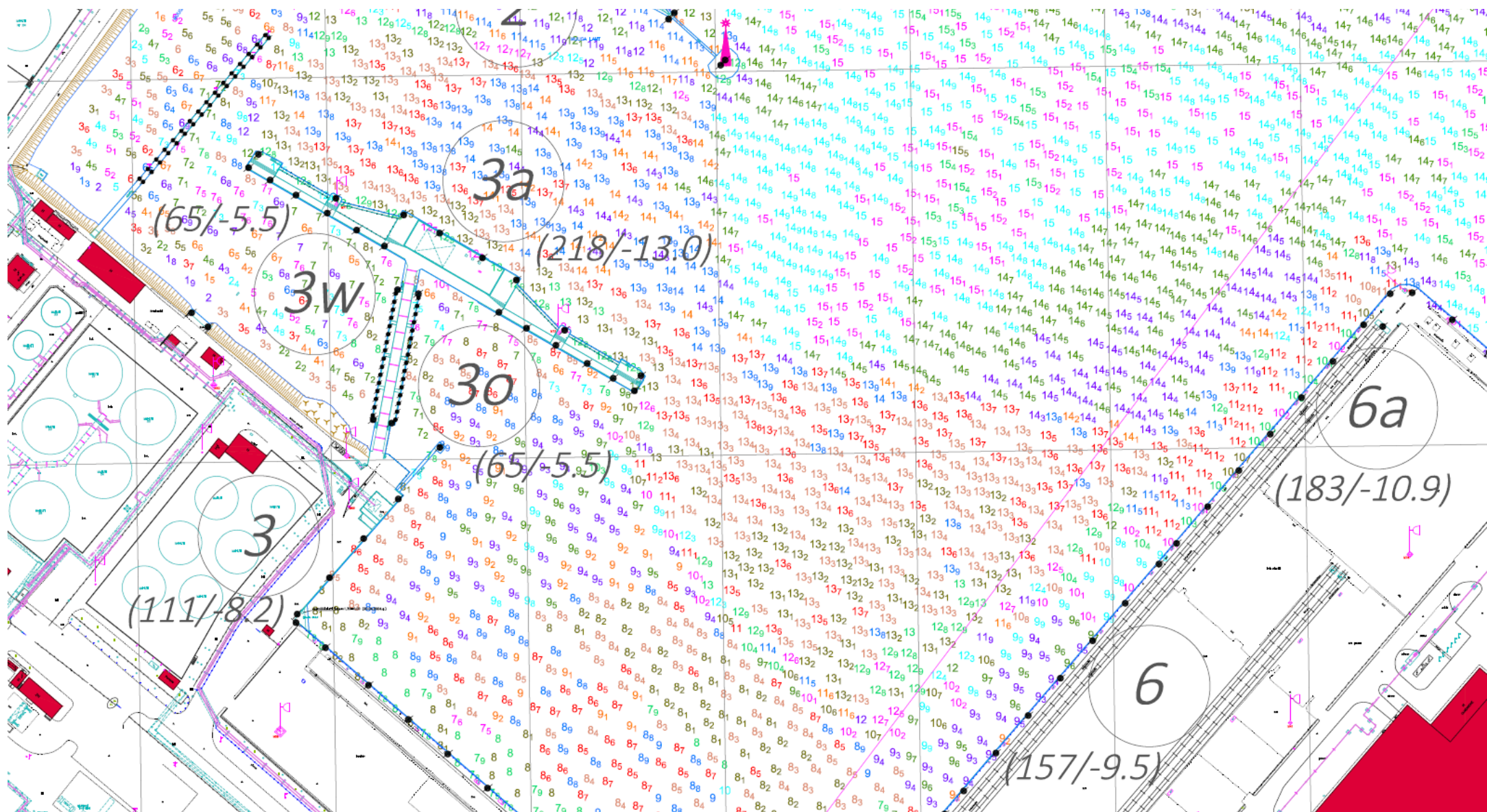
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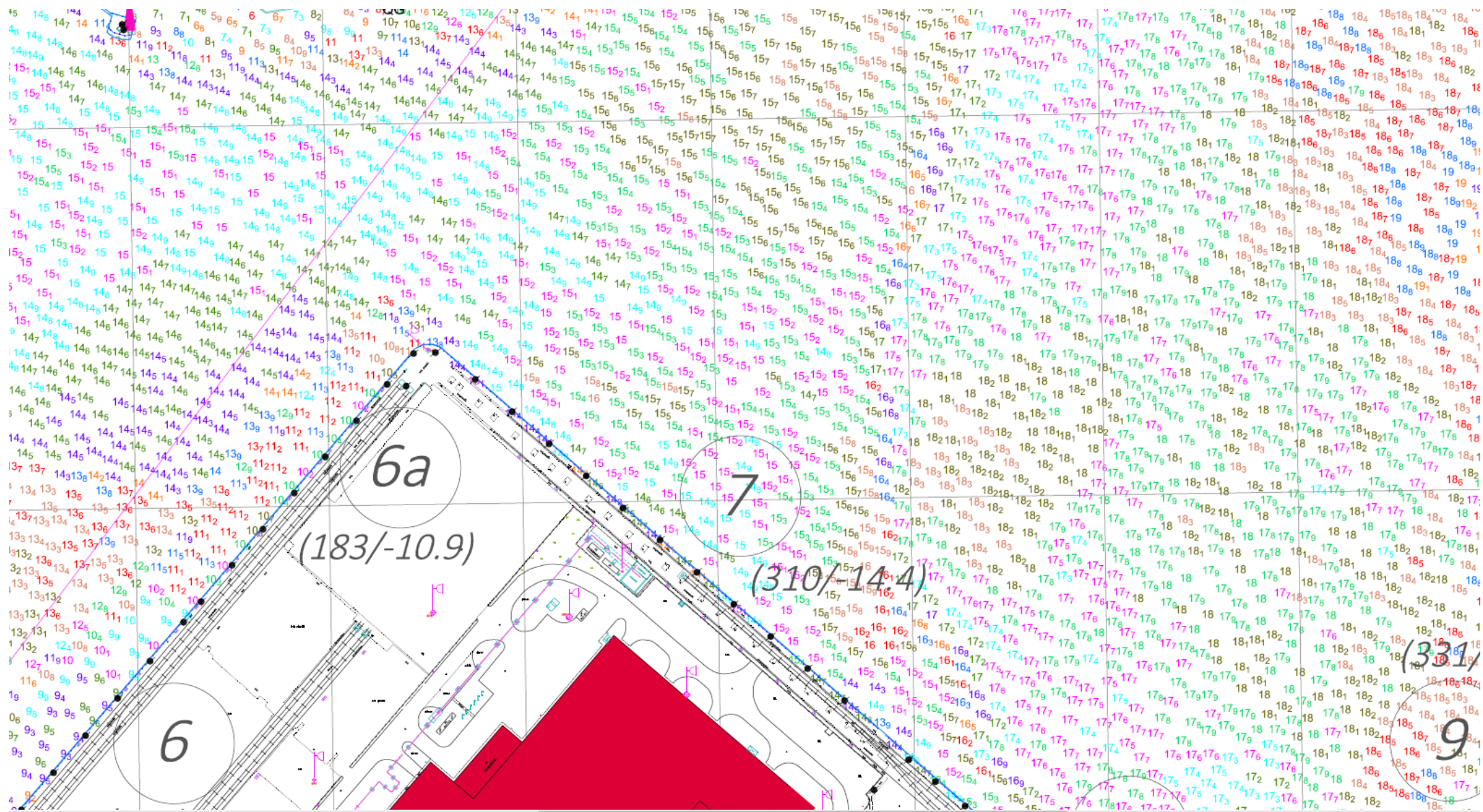
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