HIRSCH Porozell GmbH

TYPE STATICS
for
SWIMMING POOL BLOCKS

Rev.00

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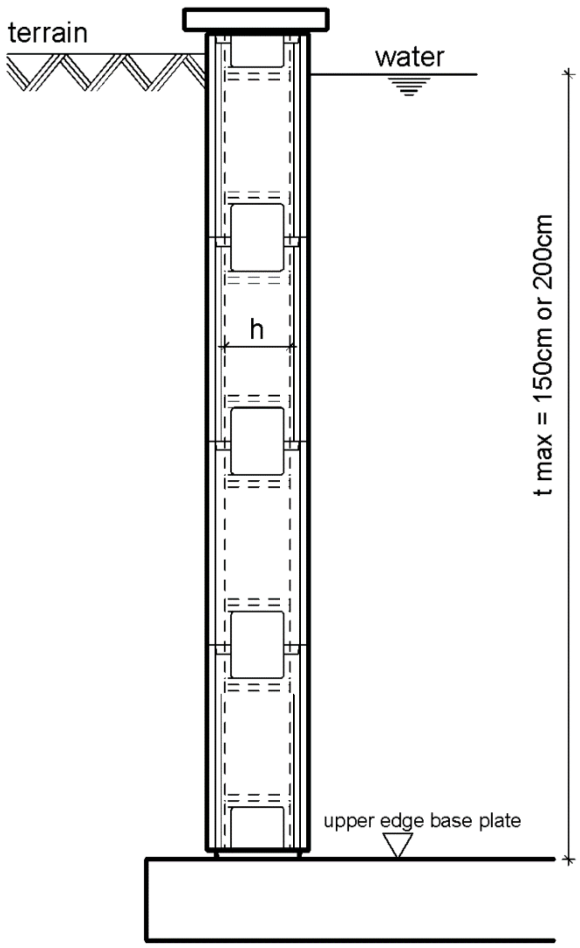
2. IN GENERAL

The company HIRSCH Porozell Gmbh, located in A-9555 Glanegg 58, produces hollow blocks out of styropor, which can be used for the building of swimming pools. This present type statics regulates the needed static-constructive work for the building of swimming pools using these blocks.

The following picture shows schematically the possibility of application of these blocks at building swimming pools. The possible depth of water lies between 150 cm and 200cm.



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3. BASICS

3.1. Types of Swimming pool blocks

The different types of swimming pool blocks differ only slightly in shape, so that this type statics can be used for all present types of bricks. The following classification of the static parameters of the blocks serves to differentiate the applicability of this type statics, what means the calculation is valid for all types of blocks, that fulfill the following criteria.

3.1.1. Height of blocks

The type statics refer to three possible heights of blocks, which affect the horizontal distribution reinforcement. In case of deviating block heights, the reinforcement must be checked.
.

Possible heights of blocks: **H = 250 mm**
H = 300 mm
H = 500 mm

This type statics is designed for walls with a height of 1500mm and 2000mm, when using bricks with a height of 300mm at walls with a height of 2000mm, the first row of bricks must be shortened to 200mm.
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3.1.2. Efficient wall length

The static-efficient length of a wall results from the length of the wall minus the number of crossbars multiplied with the thickness of the bars. The calculation refers to a wall with a length of one meter:

$$\mathbf{L = 1000 - n \cdot t_s \geq 620\ mm/m}$$

with n = Number of crossbars per meter
t_s = thickness of bars in mm

The type statics has been designed for L=620mm/m (this corresponds to four bars per meter with a thickness of 95mm) and is valid for all blocks, that fulfill these criteria.

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3.1.3. Core thickness

The bricks are by default produced with a width of 250mm, wherein the inner core must be made slightly conical due to production. That leads – depending on the type of brick – to a core thickness of 135 mm to 160 mm. As a limit for the application of this type statics, therefore, the following core thickness is set:

Core thickness h ≥ 135 mm

3.2. Calculation basis

The calculation is based on the currently applicable standards and regulations. Especially, these are:

Dsingnation	Content
ÖN EN 1990	Eurocode 0: Basis of structural design
ÖN EN 1990/A1	Eurocode 0: Basis of structural design, (amendments)
ÖN B 1990-1	Eurocode 0: Basis of structural design, part 1: buildings - National Annex
ÖN EN 1991-1-1	Eurocode 1: Actions on structures, part 1-1: General actions. Densities, self-weight, imposed loads for buildings
ÖN B 1991-1-1	Eurocode 1: Actions on structures, part 1-1: General actions. Densities, self-weight, imposed loads for buildings, National Annex
ÖN EN 1992-1-1	Eurocode 2: Design of concrete structures, part 1-1: General rules and rules for buildings
ÖN B 1992-1-1	Eurocode 2: Design of concrete structures, part 1-1: General rules and rules for buildings, National Annex

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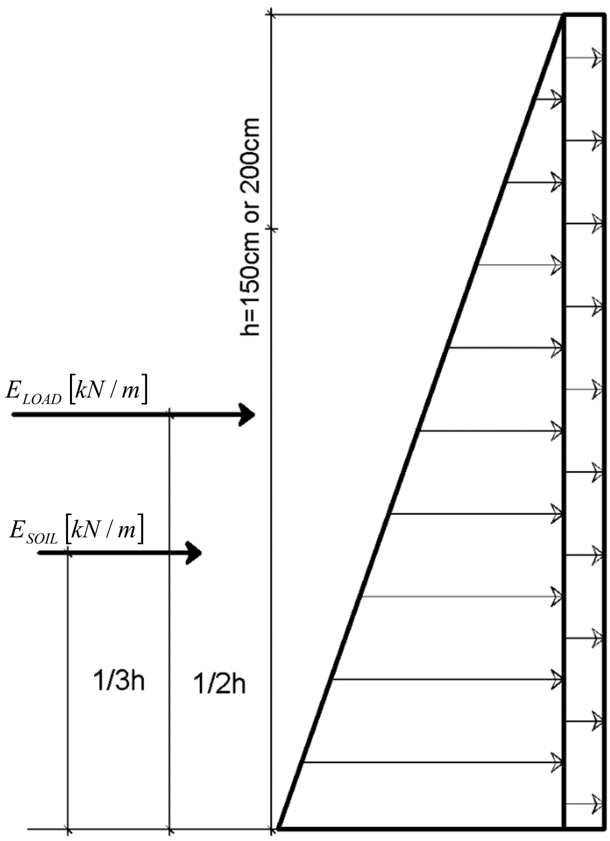
4. TYPE STATICS

<u>Parameters of the wall of the swimming pool:</u>

Concrete core		h = 135 mm
Crosssection per meter		L = 620 mm
Material	Concrete	C20/25 XC 2
	Steel	BST 550 B

<u>Load data:</u>

Coefficient for earth pressure at rest	$K_0 = 0{,}5$
specific weight of the soil	γ = 22 kN/m³
Load	q = 2,0 kN/m²
Water depth	$t \leq 1{,}50$m bzw. $t \leq 2{,}00$m



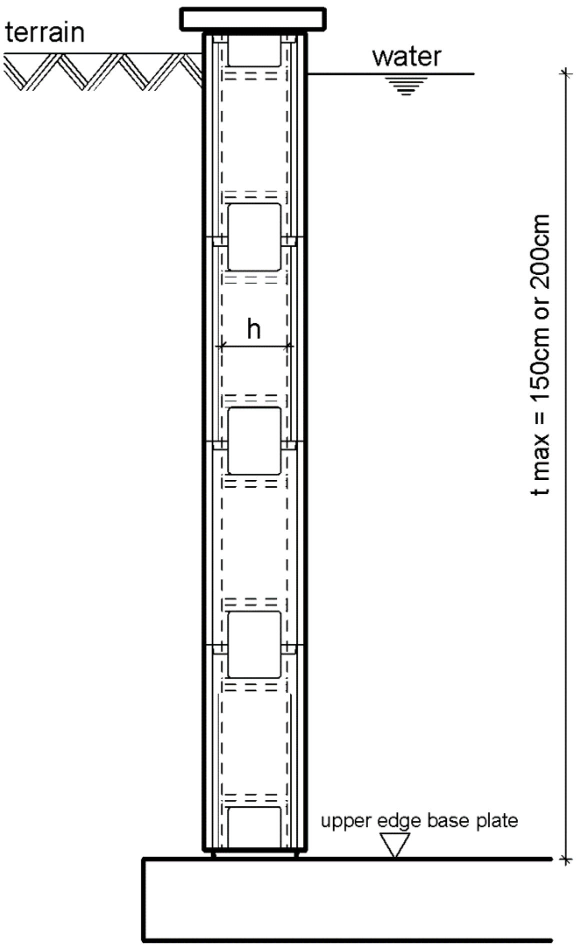


Plate thickness and reinforcement in dependence of soil conditions and according to structural calculation respectively.

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4.1. STATIC CALCULATION for embedding h=1,50m

Load data:

the decisive factor is the earth pressure

$E_{Soil} = \gamma \cdot K_0 \cdot h^2 \cdot 1/2 = 22 \cdot 0{,}5 \cdot 1{,}50^2 \cdot 1/2 = 12{,}38$ kN/m

$E_{Load} = q \cdot K_0 \cdot h = 2{,}0 \cdot 0{,}5 \cdot 1{,}50 = 1{,}50$ kN/m

Determination of the design moment:

$m_G = E_{Soil} \cdot 1/3 \cdot h = 12{,}38 \cdot 1/3 \cdot 1{,}5 = 6{,}19$ kN/m

$m_Q = E_{Load} \cdot 1/2 \cdot h = 1{,}50 \cdot 1/2 \cdot 1{,}5 = 1{,}13$ kN/m

$m_{Ed} = \gamma_G \cdot m_G + \gamma_Q \cdot m_Q = 1{,}35 \cdot 6{,}19 + 1{,}50 \cdot 1{,}13 = 10{,}05$ kNm/m

Parameters of material:

$f_{cd} = \alpha_{cc} \cdot f_{ck} / \gamma_c = 1{,}0 \cdot 2{,}0/1{,}5 = 1{,}33$ kN/cm²

$f_{yd} = f_{yk} / \gamma_s = 55{,}0/1{,}15 = 47{,}83$ kN/cm²

Assumption: Ø10 $c_{nom} = c_{min} + \Delta c_{dev} = 30$mm

with $c_{min} = \max\{c_{min,b}; c_{min,dur}; 10\text{mm}\}$

$c_{min} = \max\{10;20;10\text{mm}\}$, $\Delta c_{dev} = 10$mm

$d = h - c_{nom} - ø \cdot 1/2 = 13{,}5-3{,}0-1{,}0/2 = 10{,}00$cm

$N_c = \eta \cdot f_{cd} \cdot \lambda \cdot x \cdot L = 1{,}0 \cdot 1{,}33 \cdot 0{,}8 \cdot x \cdot 62{,}0 = 65{,}87 \cdot x$

$z = d - \lambda \cdot x \cdot 1/2 = 10{,}0-0{,}8 \cdot x \cdot 1/2 = 10{,}0-0{,}4 \cdot x$

$N_c \cdot z = m_{Ed} \rightarrow x = 1{,}63$cm $\rightarrow z = 9{,}35$cm

$(|\varepsilon_{CU3}| + \varepsilon_s)/d = |\varepsilon_{CU3}|/x = (3{,}5+\varepsilon_s)/12{,}0 = 3{,}5/1{,}33 \rightarrow \varepsilon_s = 28{,}08‰$

$\mathbf{a_{s,erf}} = m_{Ed}/(z \cdot f_{yd}) = 10{,}05/(0{,}0935 \cdot 47{,}83) =$ **2,25 cm²/m**

$a_{s,min} = \max\{0{,}27 \cdot f_{ctm}/f_{yk} \cdot b_t \cdot d; 0{,}0013 \cdot b_t \cdot d\}$

$= \max\{0{,}27 \cdot 0{,}22/55 \cdot 62 \cdot 10{,}0; 0{,}0013 \cdot 62 \cdot 12{,}0\} = 0{,}806$ cm²/m

$a_{s,max} = 0{,}04 \cdot A_c = 0{,}04 \cdot 62 \cdot 13{,}5 = 33{,}48$ cm²/m

chosen: ø10/25 $a_{s,vorh} = 3{,}14$ cm²/m

$l_{b,min} \geq \max\{0{,}3 \cdot l_{b,rqd}; 10ø; 100\text{mm}\}$ mit $l_{b,rqd} = 53/0{,}7 = 76$cm

$l_{b,min} \geq \max\{22{,}8;10;10\} \geq 22{,}80$cm

$l_{bd} = \alpha_1 \cdot \alpha_2 \cdot \alpha_3 \cdot \alpha_4 \cdot \alpha_5 \cdot \alpha_6 \cdot l_{b,rqd} = 0{,}7 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}5 \cdot 76 = = 79{,}8$ cm

Reinforcement arrangement see SYSTEM SHEET in the appendix

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4.2. STATIC CALCULATION for embedding h = 2,0m

Load data:

the decisive factor is the earth pressure

$E_{Soil} = \gamma \cdot K_0 \cdot h^2 \cdot 1/2 \quad = 22 \cdot 0{,}5 \cdot 2{,}0^2 \cdot 1/2 \quad = 22{,}0$ kN/m

$E_{Load} = q \cdot K_0 \cdot h \quad = 2{,}0 \cdot 0{,}5 \cdot 2{,}0 \quad = 2{,}0$ kN/m

Determination of the design moment:

$m_G = E_{Soil} \cdot 1/3 \cdot h \quad = 22{,}0 \cdot 1/3 \cdot 2{,}0 \quad = 14{,}67$ kN/m

$m_Q = E_{Load} \cdot 1/2 \cdot h \quad = 2{,}0 \cdot 1/2 \cdot 2{,}0 \quad = 2{,}0$ kN/m

$m_{Ed} = \gamma_G \cdot m_G + \gamma_Q \cdot m_Q \quad = 1{,}35 \cdot 14{,}67 + 1{,}50 \cdot 2{,}0 \quad = 22{,}80$ kNm/m

Parameters of material:

$f_{cd} = \alpha_{cc} \cdot f_{ck} / \gamma_c \quad = 1{,}0 \cdot 2{,}0/1{,}5 = 1{,}33$ kN/cm²

$f_{yd} = f_{yk} / \gamma_s \quad = 55{,}0/1{,}15 = 47{,}83$ kN/cm²

Assumption: Ø10 $\quad c_{nom} = c_{min} + \Delta c_{dev} = 30$mm

with $c_{min} = \max\{c_{min,b}; c_{min,dur}; 10mm\}$

$c_{min} = \max\{10;20;10mm\}$, $\Delta c_{dev} = 10mm$

$d = h - c_{nom} - ø \cdot 1/2 = 13{,}5-3{,}0-1{,}00/2 = 10{,}00$cm

$N_c = \eta \cdot f_{cd} \cdot \lambda \cdot x \cdot L = 1{,}0 \cdot 1{,}33 \cdot 0{,}8 \cdot x \cdot 62{,}0 = 65{,}87 \cdot x$

$z = d - \lambda \cdot x \cdot 1/2 = 10{,}0-0{,}8 \cdot x \cdot 1/2 = 10{,}0-0{,}4 \cdot x$

$N_c \cdot z = m_{Ed} \quad \rightarrow \quad x = 4{,}15cm \quad \rightarrow \quad z = 8{,}34cm$

$(|\varepsilon_{CU3}| + \varepsilon_s)/d = |\varepsilon_{CU3}|/x = (3{,}5+\varepsilon_s)/10{,}0 = 3{,}5/4{,}15 \rightarrow \varepsilon_s = 4{,}93‰$

$\mathbf{a_{s,erf}} = m_{Ed}/(z \cdot f_{yd}) = 22{,}80/(0{,}0834 \cdot 47{,}83) = \mathbf{5{,}72}$ **cm²/m**

$a_{s,min} = \max\{0{,}27 \cdot f_{ctm}/f_{yk} \cdot b_t \cdot d; 0{,}0013 \cdot b_t \cdot d\}$

$= \max\{0{,}27 \cdot 0{,}22/55 \cdot 62 \cdot 10{,}0; 0{,}0013 \cdot 62 \cdot 10{,}0\} \quad = 0{,}806$ cm²/m

$a_{s,max} = 0{,}04 \cdot A_c = 0{,}04 \cdot 62 \cdot 13{,}5 \quad = 33{,}48$ cm²/m

chosen: ø10/12,5 $a_{s,vorh} = 6{,}28$ cm²/m

$l_{b,min} \geq \max\{0{,}3 \cdot l_{b,rqd}; 10ø; 100mm\}$ mit $l_{b,rqd} = 53/0{,}7 = 76$cm

$l_{b,min} \geq \max\{22{,}8;10;10\} \quad \geq 22{,}80$cm

$l_{bd} = \alpha_1 \cdot \alpha_2 \cdot \alpha_3 \cdot \alpha_4 \cdot \alpha_5 \cdot \alpha_6 \cdot l_{b,rqd} = 0{,}7 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}5 \cdot 76 = = 79{,}8$ cm

Reinforcement arrangement see SYSTEM SHEET in the appendix

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4.3. STATIC CALCULATION without embedding, t=1,50m

Load data:

the decisive factor is the water pressure

$W = \gamma \cdot h^2 \cdot 1/2 \quad = 10 \cdot 1{,}5^2 \cdot 1/2 \quad = 11{,}25$ kN/m

Determination of the design moment:

$m_G = W_1 \cdot 1/3 \cdot h \quad = 11{,}25 \cdot 1/3 \cdot 1{,}5 \quad = 5{,}63$ kN/m

$m_{Ed} = \gamma_G \cdot m_G \quad = 1{,}35 \cdot 5{,}63 \quad = 7{,}6$ kNm/m

Parameters of material:

$f_{cd} = \alpha_{cc} \cdot f_{ck}/\gamma_c \quad = 1{,}0 \cdot 2{,}0/1{,}5 = 1{,}33$ kN/cm²

$f_{yd} = f_{yk}/\gamma_s \quad = 55{,}0/1{,}15 = 47{,}83$ kN/cm²

Assumption: Ø10 $\quad c_{nom} = c_{min} + \Delta c_{dev} = 30$mm

with $\quad c_{min} = \max\{c_{min,b}; c_{min,dur}; 10mm\}$

$c_{min} = \max\{10;20;10mm\}, \quad \Delta c_{dev} = 10mm$

$d = h - c_{nom} - ø \cdot 1/2 = 13{,}5-3{,}0-1{,}0/2 = 10{,}0cm$

$N_c = \eta \cdot f_{cd} \cdot \lambda \cdot x \cdot L = 1{,}0 \cdot 1{,}33 \cdot 0{,}8 \cdot x \cdot 62{,}0 = 65{,}87 \cdot x$

$z = d - \lambda \cdot x \cdot 1/2 = 10{,}0-0{,}8 \cdot x \cdot 1/2 = 10{,}0-0{,}4 \cdot x$

$N_c \cdot z = m_{Ed} \quad \rightarrow \quad x = 1{,}21cm \quad \rightarrow \quad z = 9{,}52cm$

$(|\varepsilon_{cu3}| + \varepsilon_s)/d = |\varepsilon_{cu3}|/x = (3{,}5+\varepsilon_s)/10{,}0 = 3{,}5/1{,}21 \rightarrow \varepsilon_s = 25{,}43‰$

$\mathbf{a_{s,erf}} = m_{Ed}/(z \cdot f_{yd}) = 7{,}60/(0{,}0952 \cdot 47{,}83) = \mathbf{1{,}67}$ **cm²/m**

$a_{s,min} = \max\{0{,}27 \cdot f_{ctm}/f_{yk} \cdot b_t \cdot d; 0{,}0013 \cdot b_t \cdot d\}$

$= \max\{0{,}27 \cdot 0{,}22/55 \cdot 62 \cdot 10{,}0; 0{,}0013 \cdot 62 \cdot 10{,}0\} \quad = 0{,}806$ cm²/m

$a_{s,max} = 0{,}04 \cdot A_c = 0{,}04 \cdot 62 \cdot 13{,}5 \quad = 33{,}48$ cm²/m

chosen: ø10/25 $a_{s,vorh} = 3{,}14$ cm²/m

$l_{b,min} \geq \max\{0{,}3 \cdot l_{b,rqd}; 10ø; 100mm\} \quad$ mit $l_{b,rqd} = 53/0{,}7 = 76cm$

$l_{b,min} \geq \max\{22{,}8;10;10\} \quad \geq 22{,}80cm$

$l_{bd} = \alpha_1 \cdot \alpha_2 \cdot \alpha_3 \cdot \alpha_4 \cdot \alpha_5 \cdot \alpha_6 \cdot l_{b,rqd} = 0{,}7 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}5 \cdot 76 = 79{,}8$ cm

Reinforcement arrangement see SYSTEM SHEET in the appendix

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4.4. STATIC CALCULATION without embedding, t=2,0m

Load data:

the decisive factor is the water pressure

$W = \gamma \cdot h^2 \cdot 1/2$ = $10 \cdot 2{,}0^2 \cdot 1/2$ = 20,0 kN/m

Determination of the design moment:

$m_G = W_2 \cdot 1/3 \cdot h$ = $20{,}0 \cdot 1/3 \cdot 2{,}0$ = 13,33 kN/m

$m_{Ed} = \gamma_G \cdot m_G$ = $1{,}35 \cdot 13{,}33$ = 17,8 kNm/m

Parameters of material:

$f_{cd} = \alpha_{cc} \cdot f_{ck} / \gamma_c$ = $1{,}0 \cdot 2{,}0/1{,}5 = 1{,}33$ kN/cm²

$f_{yd} = f_{yk} / \gamma_s$ = $55{,}0/1{,}15 = 47{,}83$ kN/cm²

Assumption: Ø12 $c_{nom} = c_{min} + \Delta c_{dev}$ = 30mm

with $c_{min} = \max\{c_{min,b}; c_{min,dur}; 10mm\}$

$c_{min} = \max\{12;20;10mm\}$, Δc_{dev}=10mm

$d = h - c_{nom} - ø \cdot 1/2 = 13{,}5-3{,}0-1{,}2/2 = 9{,}9$cm

$N_c = \eta \cdot f_{cd} \cdot \lambda \cdot x \cdot L = 1{,}0 \cdot 1{,}33 \cdot 0{,}8 \cdot x \cdot 62{,}0 = 65{,}87 \cdot x$

$z = d - \lambda \cdot x \cdot 1/2 = 9{,}9-0{,}8 \cdot x \cdot 1/2 = 9{,}9-0{,}4 \cdot x$

$N_c \cdot z = m_{Ed}$ → x = 3,13cm → z = 8,65cm

$(|\varepsilon_{CU3}| + \varepsilon_s)/d = |\varepsilon_{CU3}|/x = (3{,}5+\varepsilon_s)/9{,}9 = 3{,}5/3{,}13$ → ε_s = 7,57‰

$\mathbf{a_{s,erf}} = m_{Ed}/(z \cdot f_{yd}) = 17{,}80/(0{,}0865 \cdot 47{,}83) =$ **4,31 cm²/m**

$a_{s,min}$ = $\max\{0{,}27 \cdot f_{ctm}/f_{yk} \cdot b_t \cdot d; 0{,}0013 \cdot b_t \cdot d\}$

= $\max\{0{,}27 \cdot 0{,}22/55 \cdot 62 \cdot 9{,}9; 0{,}0013 \cdot 62 \cdot 9{,}9\}$ = 0,800 cm²/m

$a_{s,max}$ = $0{,}04 \cdot A_c = 0{,}04 \cdot 62 \cdot 13{,}5$ = 33,48 cm²/m

chosen: ø12/25 $a_{s,vorh}$ = 4,52 cm²/m

$l_{b,min}$ ≥ $\max\{0{,}3 \cdot l_{b,rqd}; 10ø; 100mm\}$ mit $l_{b,rqd}$ =64/0,7 =92cm

$l_{b,min}$ ≥ max{27,6;12;10} ≥ 27,60cm

l_{bd} = $\alpha_1 \cdot \alpha_2 \cdot \alpha_3 \cdot \alpha_4 \cdot \alpha_5 \cdot \alpha_6 \cdot l_{b,rqd} = 0{,}7 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}0 \cdot 1{,}5 \cdot 92 = 96{,}6$ cm

Reinforcement arrangement see SYSTEM SHEET in the appendix

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5. MINIMUM REINFORCEMENT OF BASE PLATES

Depending on the plate thickness and the concret quality

Eurocode EN 1992	Thickness of plate d [cm]		
	d = 20 cm	d = 25 cm	d = 30 cm
	cm²/m	cm²/m	cm²/m
C20/25	2,21	2,86	3,51
C25/30	2,21	2,86	3,51

The specified minimum reinforcement must be inserted in both direction (#) in the upper and lower reinforcement layer. In the edge area, the reinforcement is to be anchored with an edge bar (minimum reinforcement) with a corresponding overlap.

The minimum reinforcement of the base plate is to be done at good conditions (none-cohesive and without groundwater). At bad conditions (cohesive or none-cohesive with groundwater), it is recommended to consult an authorized expert to determine the required base plate thickness and base plate reinforcement.

Reinforcement arrangement see SYSTEM SHEET in the appendix

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6. BUILDING PHYSICAL PROPERTIES

The thermal conductivity at 10 degrees depends on the gross density. The measured values are listed in the second table. The calculated value for polystyrene according to DIN 4108 is 0,04 W/mk or 0,035 W/mk, depending on the thermal conductivity group.

Determination of the heat transfer coefficient:

Component layer	λ (W/mK)	d (cm)	d/λ (m²K/W)
Protector (e.g.dimpled membrane)	---	1,00	0
Polystyrene block wall	0,04	4,50	1,125
Core concrete C20/25	2,30	16,00	0,07
Polystyrene block wall	0,04	4,50	1,125
Protection fleece	---	0,20	0
Smwimming pool liner	---	0,50	0

The transfer coefficients $1/\alpha_i$ und $1/\alpha_a$ (water and soil) are set to zero.

Thus the result is the maximum heat transfer coefficient U

U =0,431 W/m²K

(respectively U=0,379W/m²K for λ=0,035)

According to the measured thermal conductivity at 10 degrees the gross density results the following.

Gross density kg/m³	λ (W/mK)	U W/m²K
15	0,036-0,038	0,4085
20	0,033-0,035	0,3762
25	0,032-0,034	0,3655
30	0,031-0,033	0,3546

DIE KÄRNTNER SPARKASSE AG
BIC: KSPKAT2KXXX IBAN: AT61 2070 6044 0001 0569

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7. APPENDIX

On the following six system sheets, the constructional details for the design of the swimming pool construction are given according to block height and water depth.
Subsequently, two system sheets for execution without embedding and one system sheet for the corner construction are included

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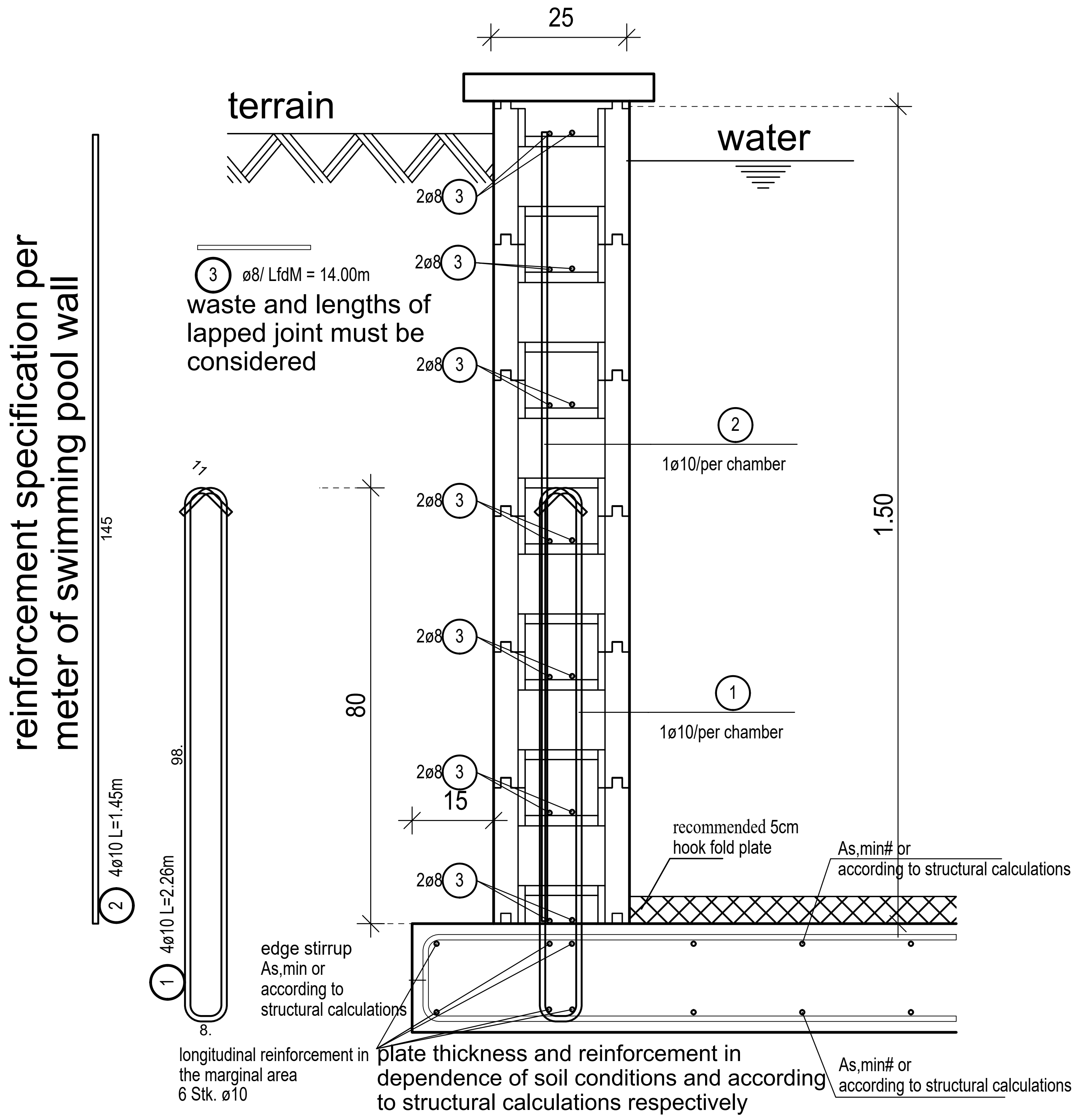
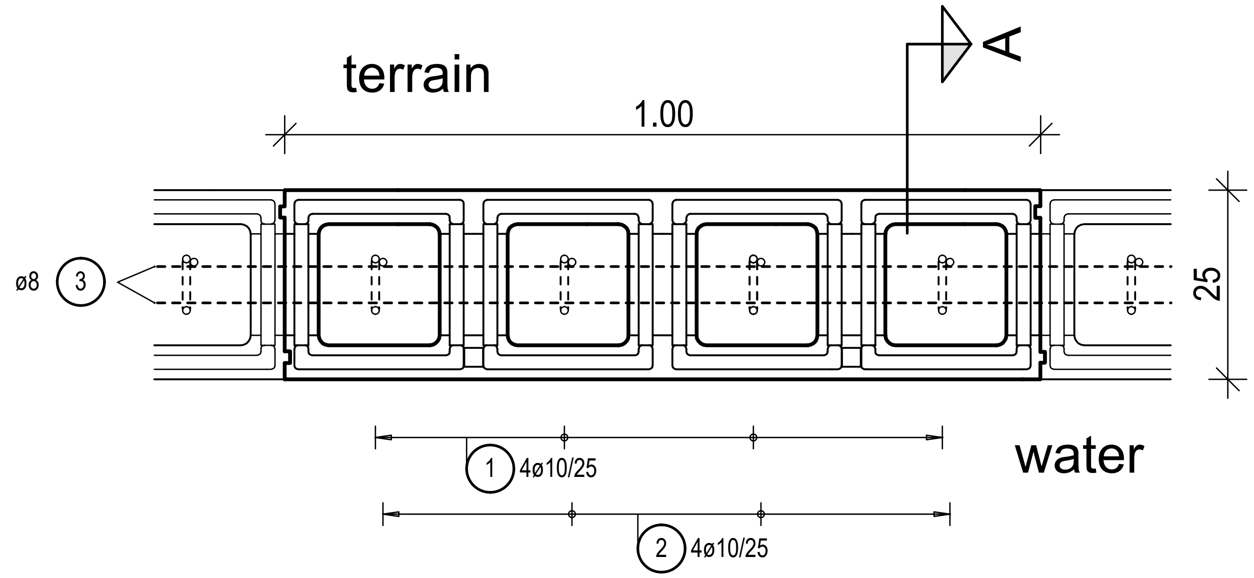
Section A - reinforcement
Swimming pool wall



Floor plan - reinforcement
Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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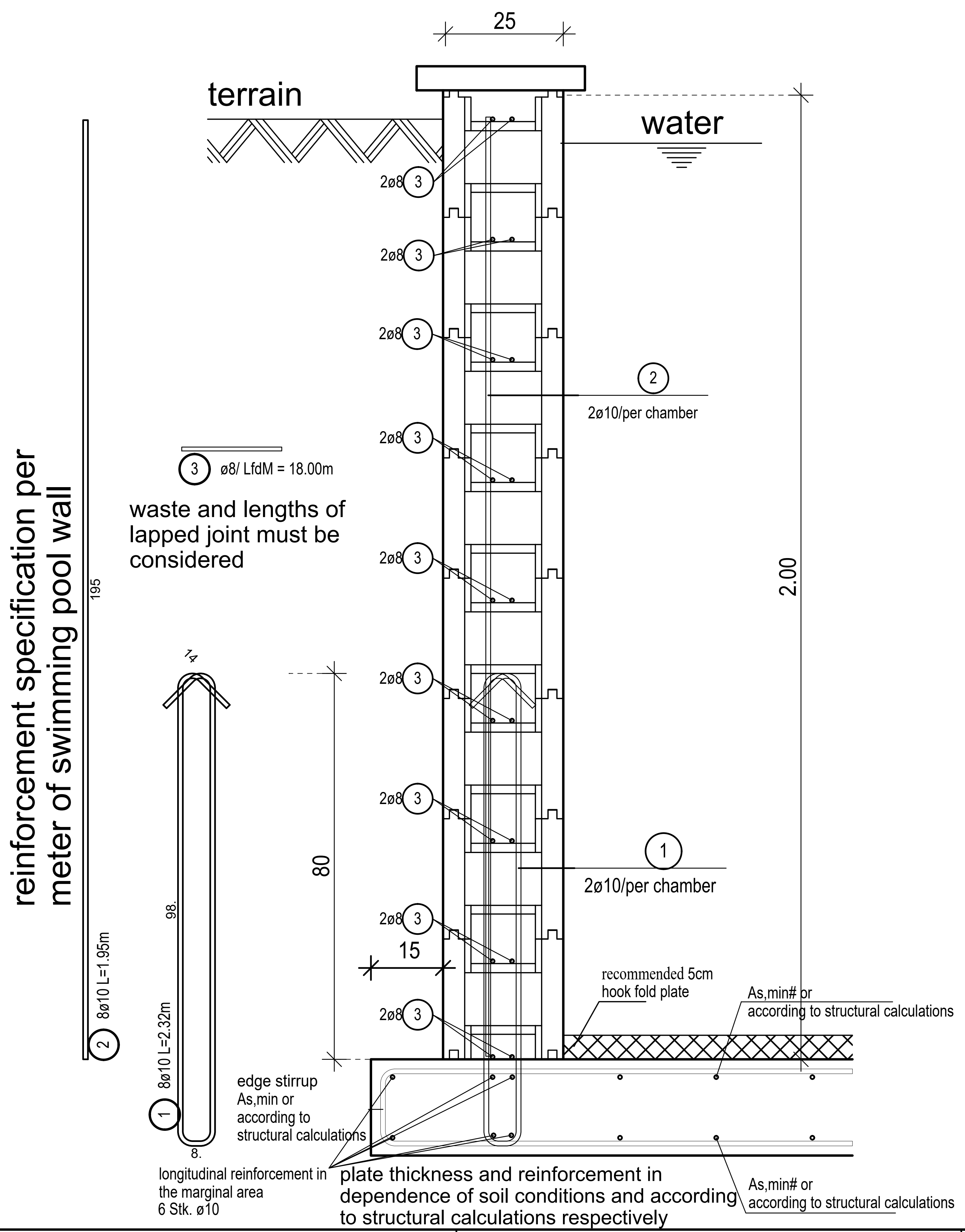
11.05.2020

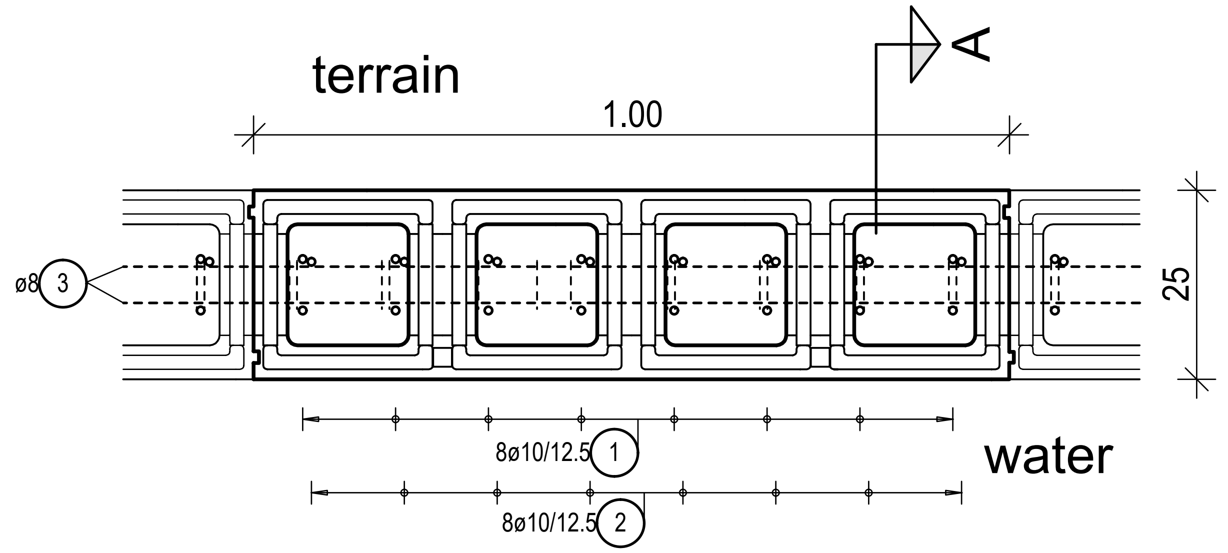
SCALE
1:10

Block height 25cm
System sheet - reinforcement
Swimming pool wall t ≤ 150cm

Section A - reinforcement
Swimming pool wall



Floor plan - reinforcement
Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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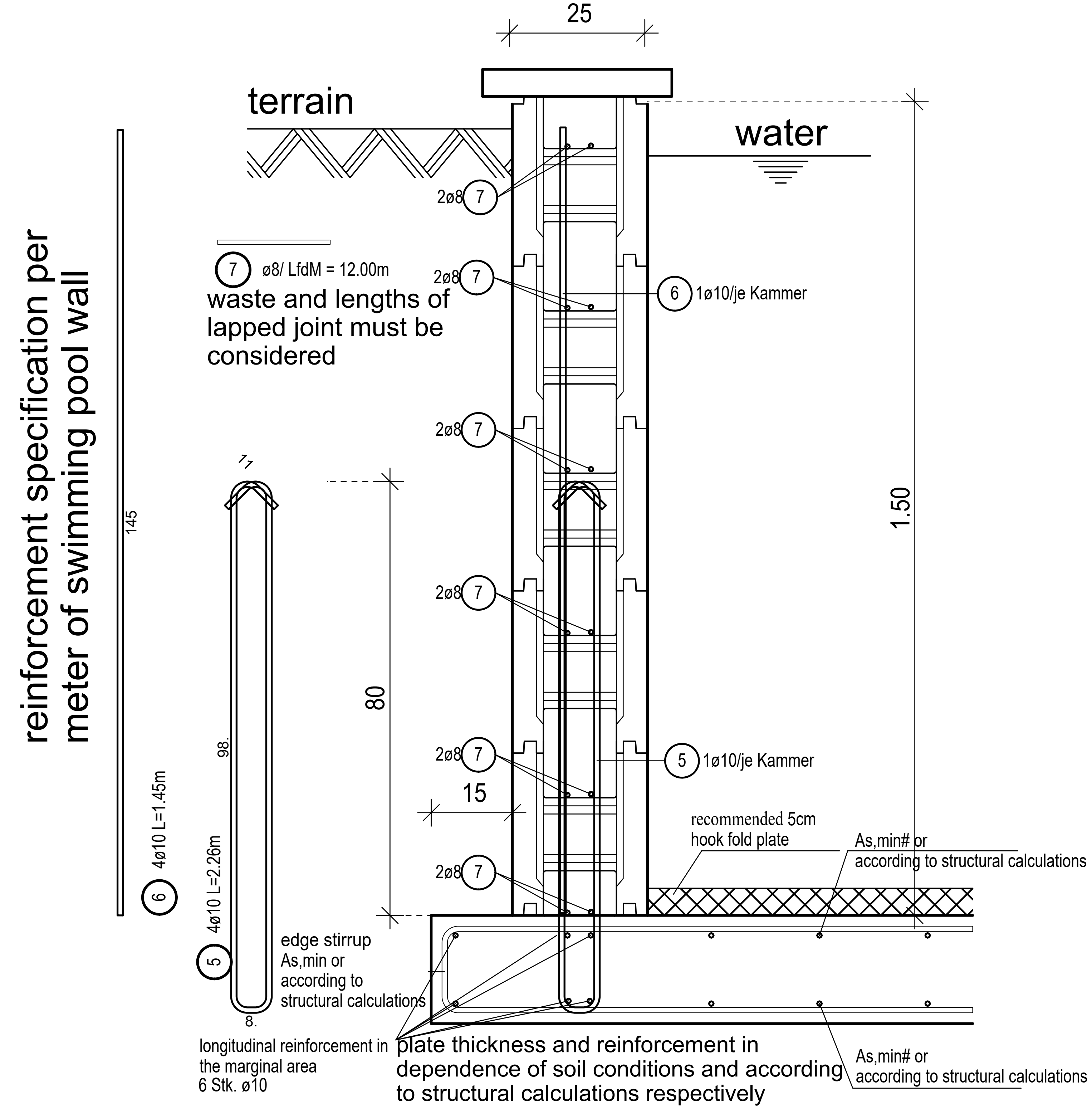
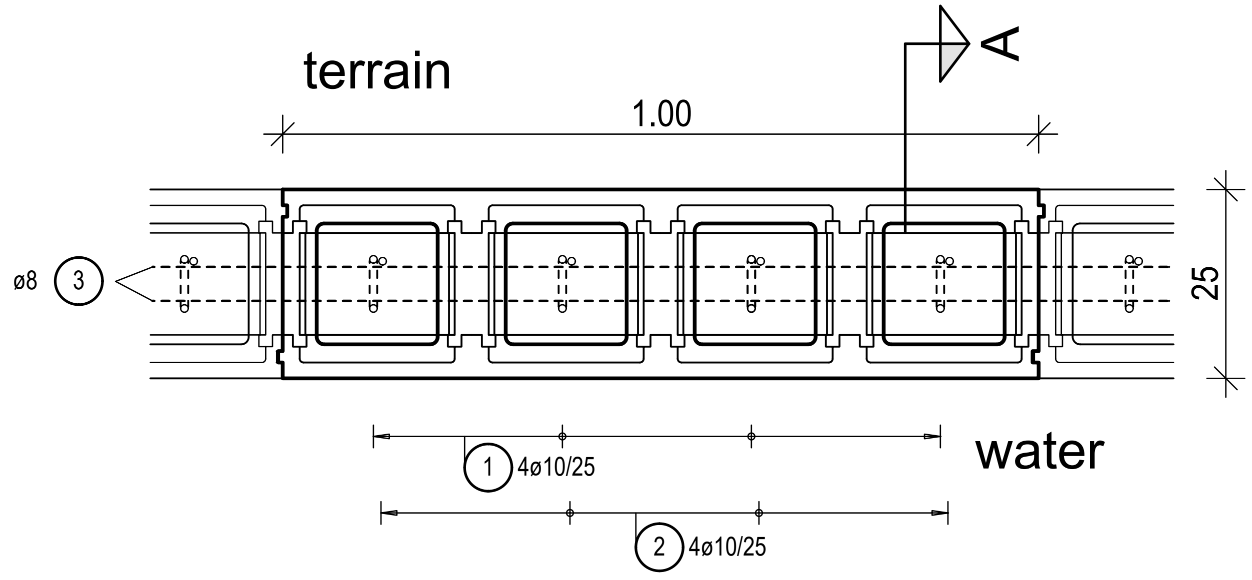
SCALE 1:10

Block height 25cm
System sheet - reinforcement
Swimming pool wall t ≤ 200cm

Section A - reinforcement Swimming pool wall



Floor plan - reinforcement Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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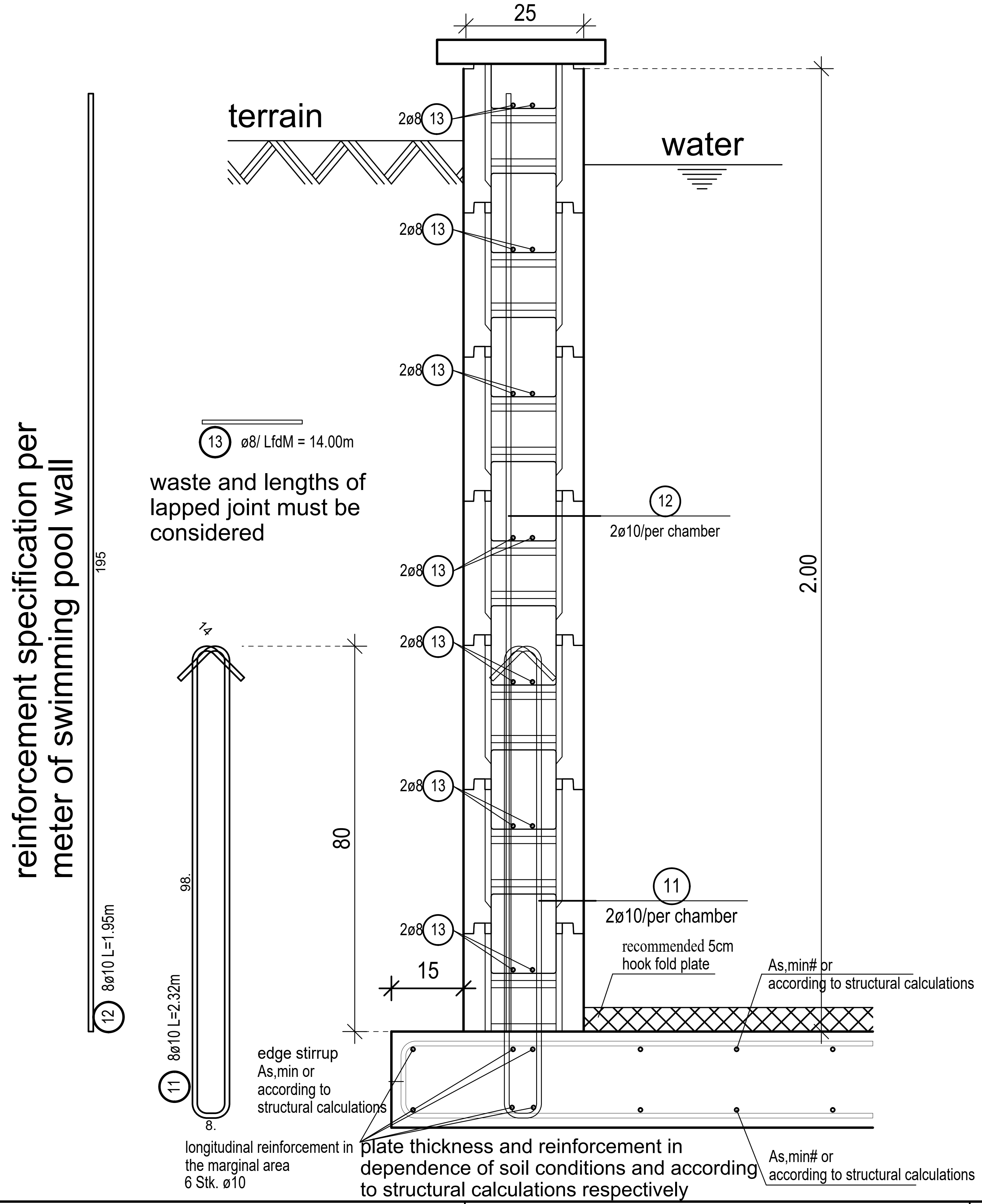
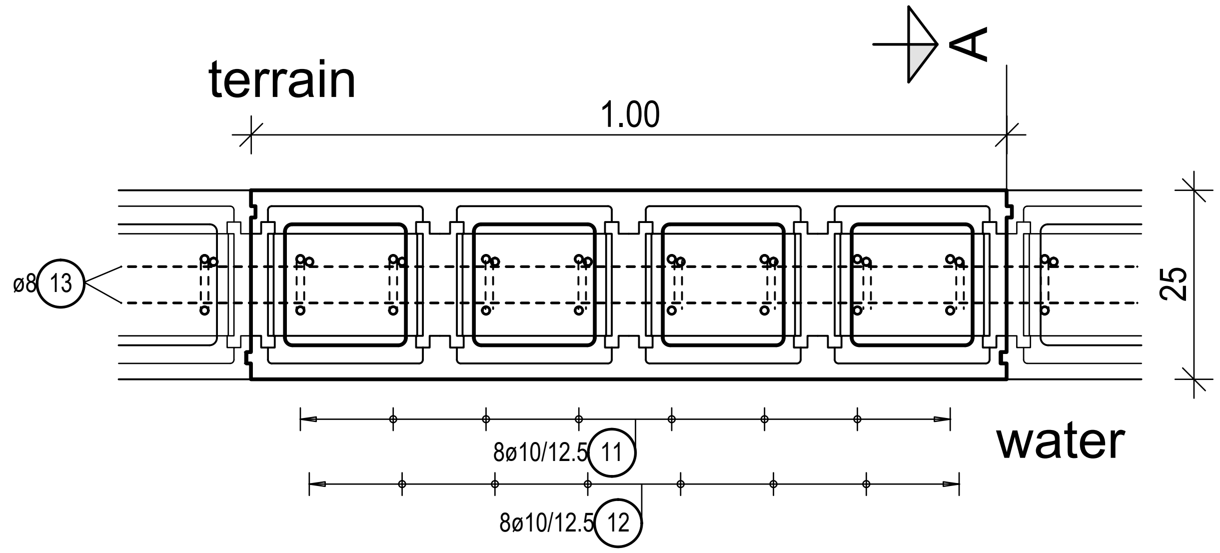
SCALE 1:10

Block height 30cm
System sheet - reinforcement
Swimming pool wall t ≤ 150cm

Section A - reinforcement Swimming pool wall



Floor plan - reinforcement Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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SCALE
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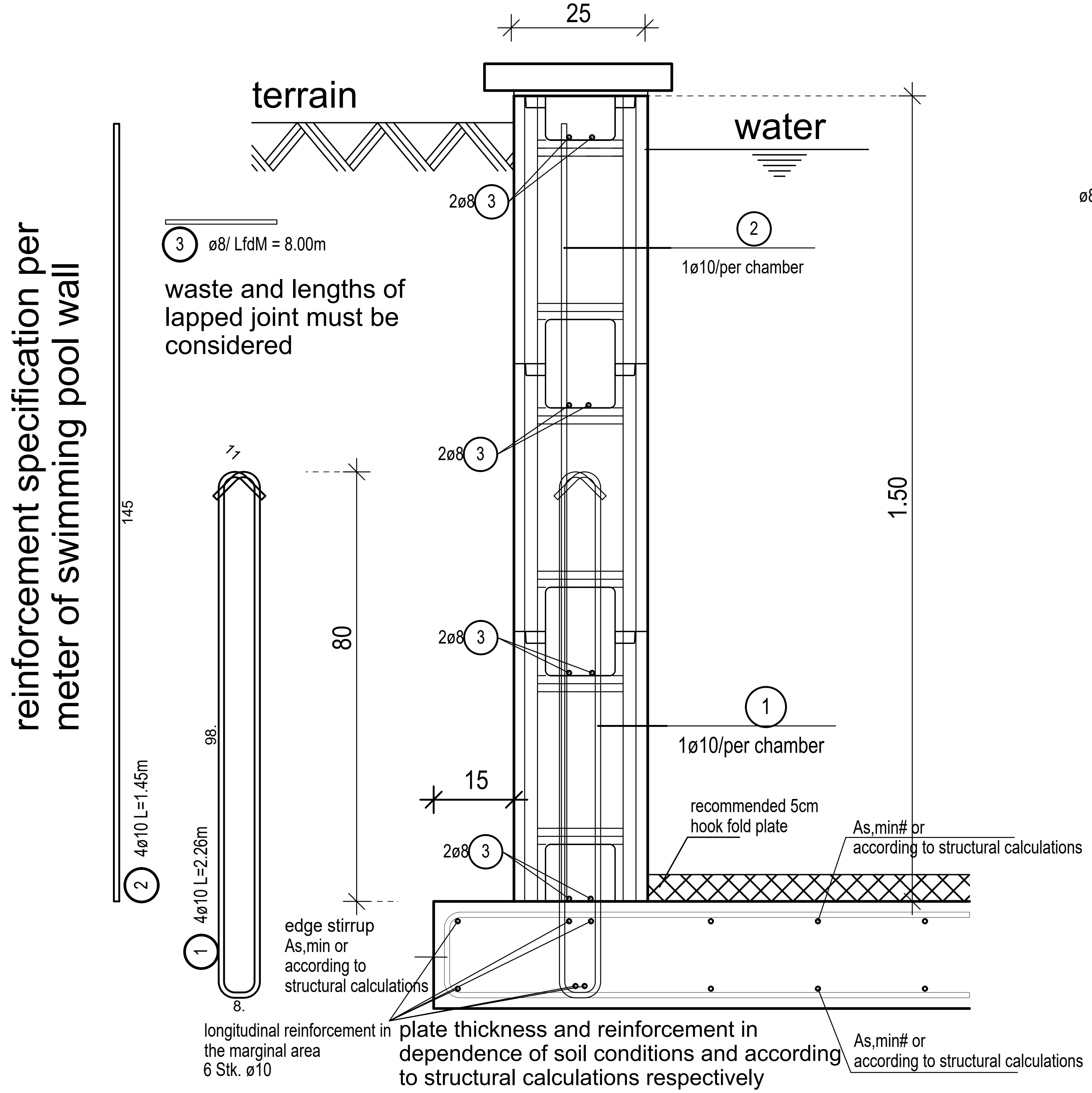
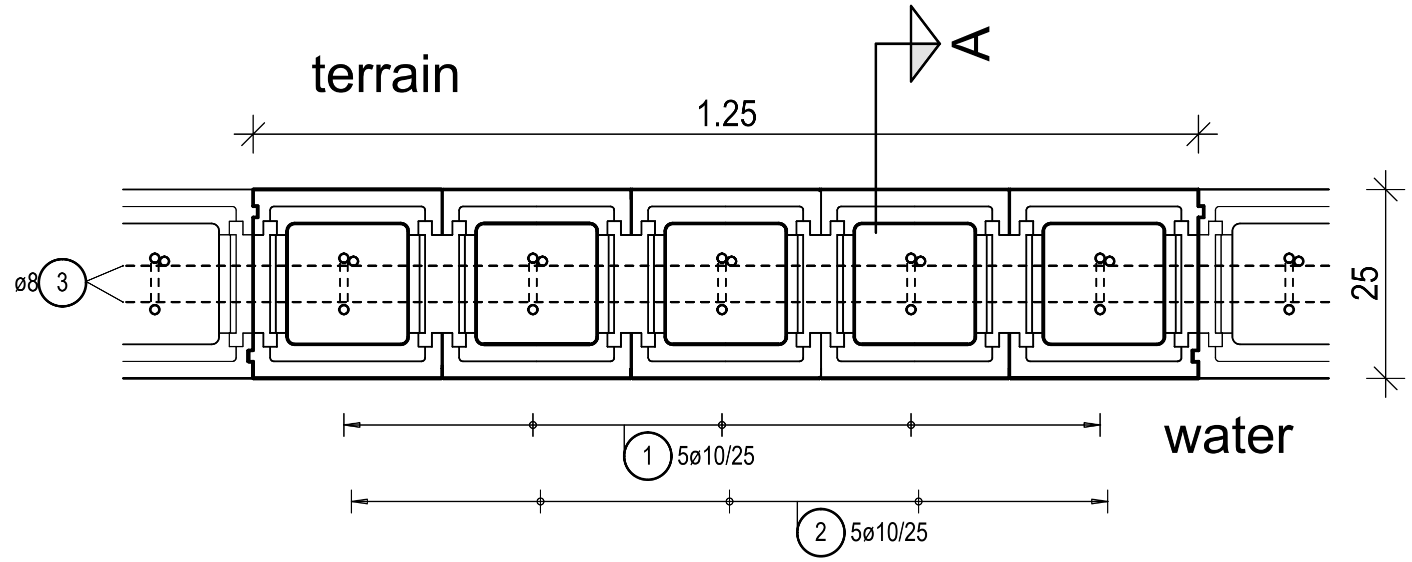
Block height 30cm
System sheet - reinforcement
Swimming pool wall t ≤ 200cm

Section A - reinforcement
Swimming pool wall



Floor plan - reinforcement
Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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SCALE
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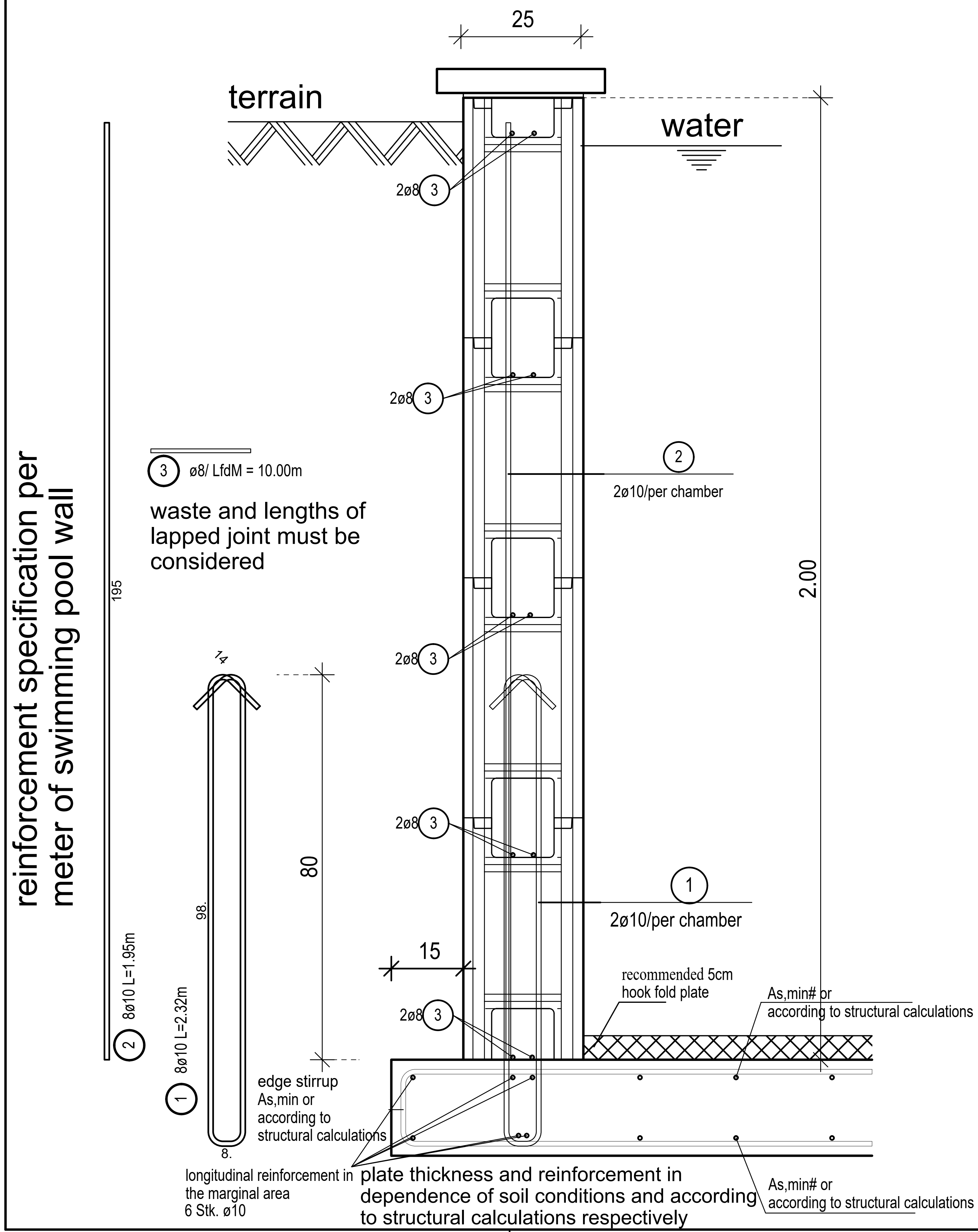
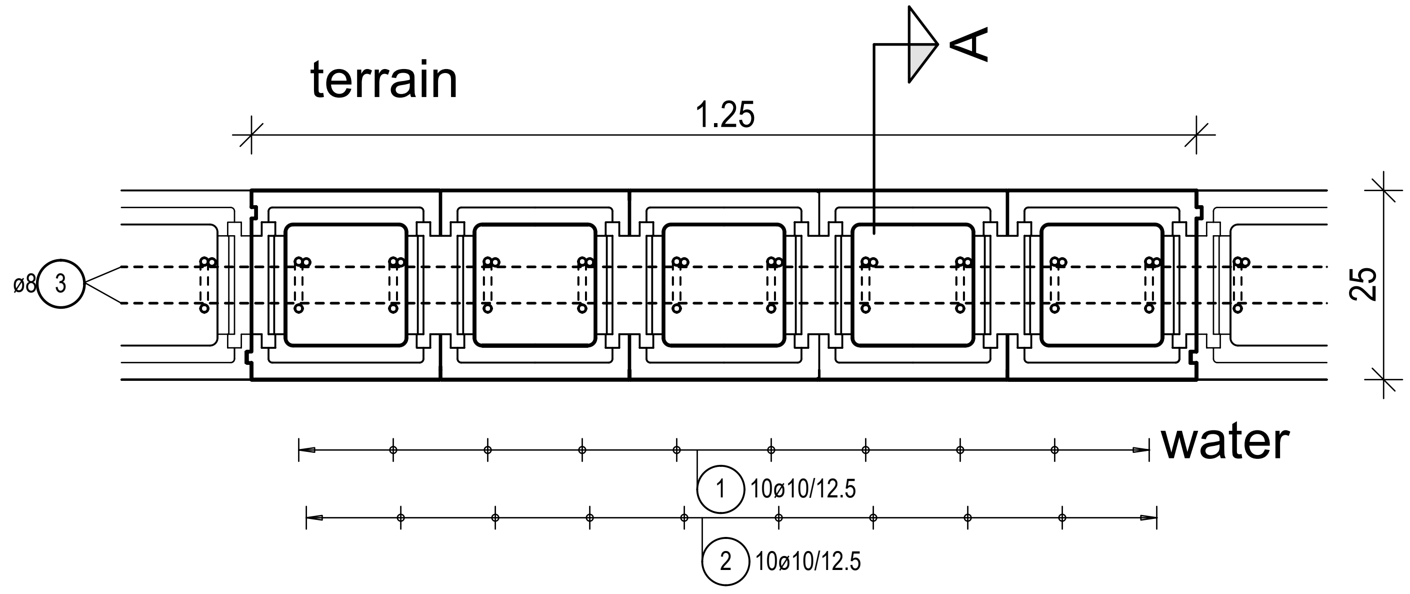
Block height 50cm
System sheet - reinforcement
Swimming pool wall t ≤ 150cm

Section A - reinforcement
Swimming pool wall



Floor plan - reinforcement
Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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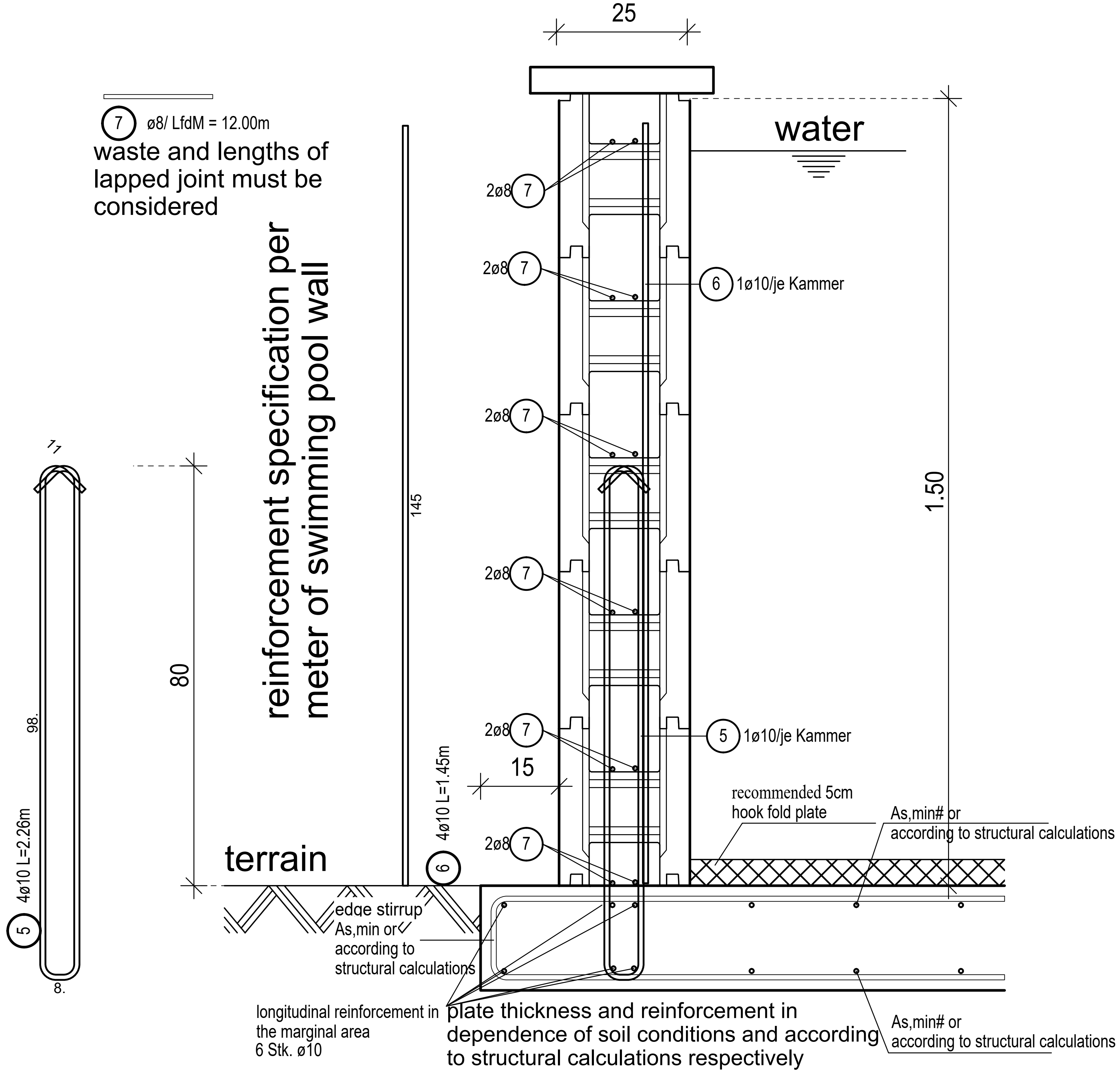
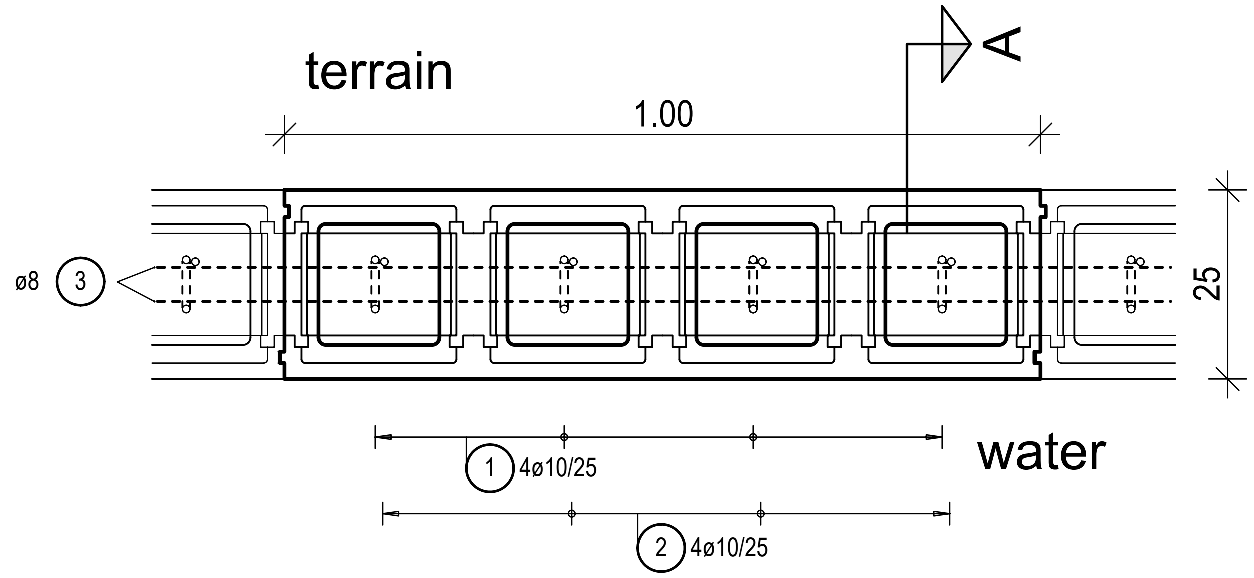
DATE: 11.05.2020
SCALE: 1:10

Block height 50cm
System sheet - reinforcement
Swimming pool wall t ≤ 200cm

Section A - reinforcement Swimming pool wall



Floor plan - reinforcement Swimming pool wall



Concrete quality: min. C20/25 | Steel quality: B550 B

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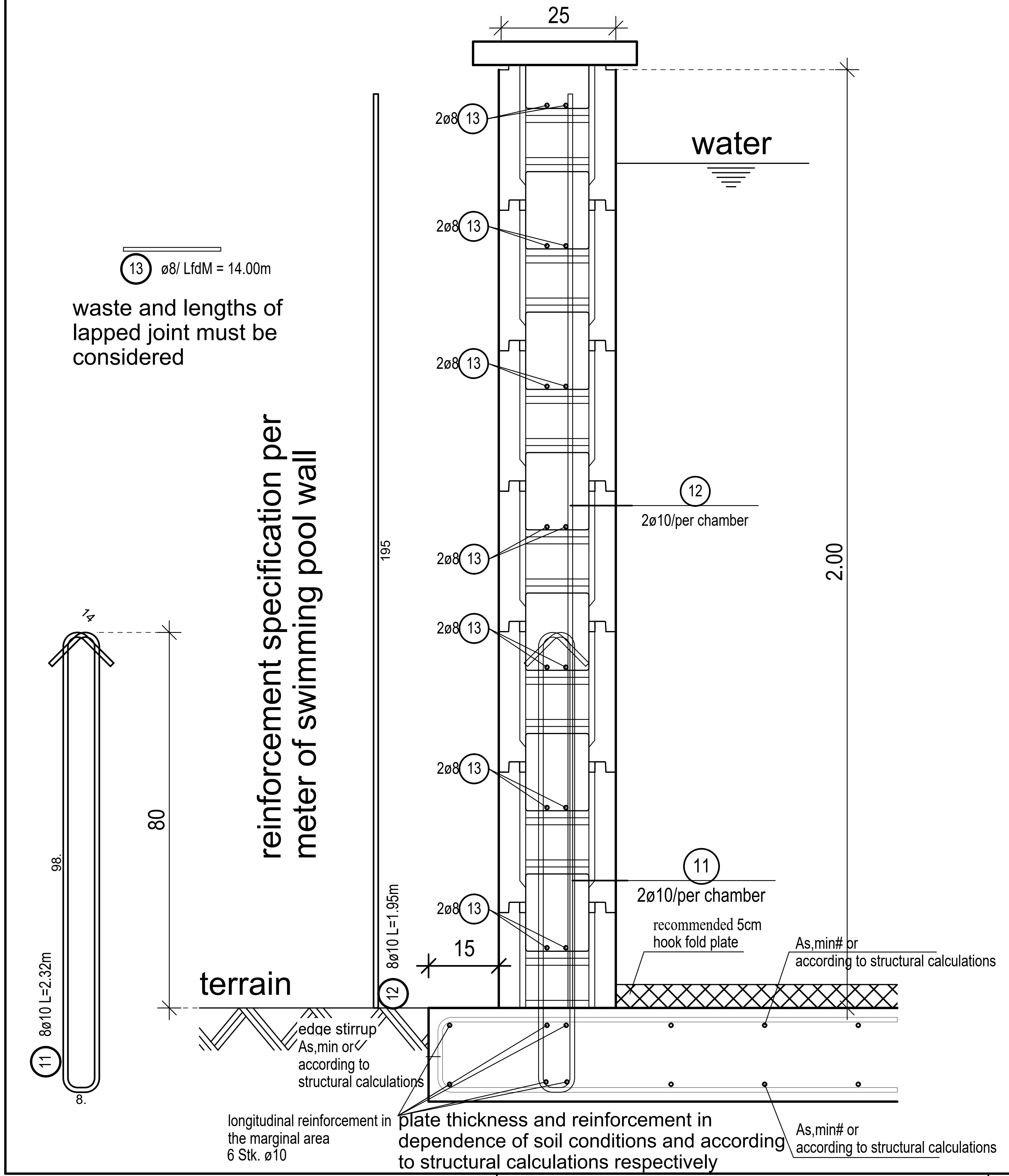
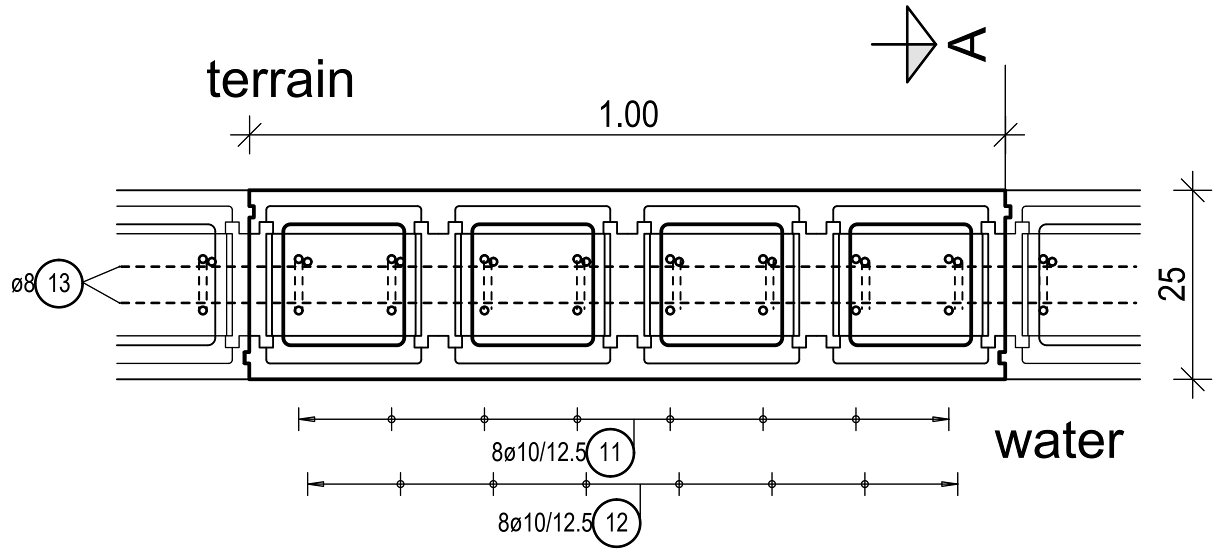
SCALE 1:10

without embedding
System sheet - reinforcement
Swimming pool wall t ≤ 150cm

Section A - reinforcement Swimming pool wall



Floor plan - reinforcement Swimming pool wall



Concrete quality: min. C20/25	Steel quality: B550 B

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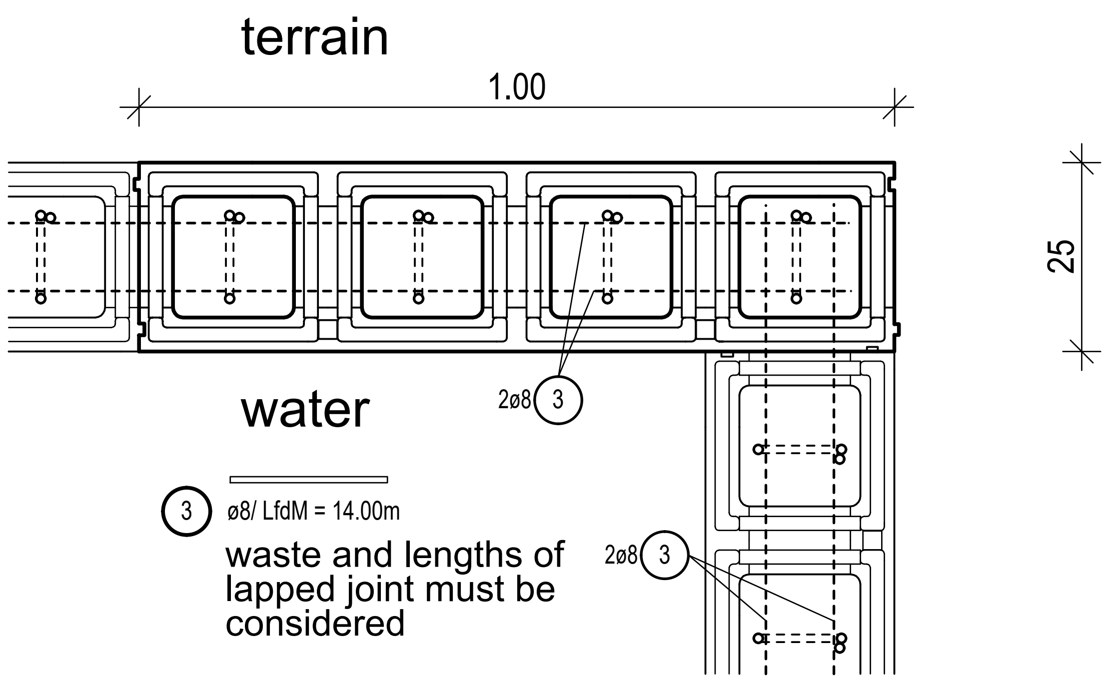
SCALE 1:10

without embedding
System sheet - reinforcement
Swimming pool wall t ≤ 200cm

Floor plan - corner construction
Swimming pool wall



3 ø8/ LfdM = 14.00m
waste and lengths of lapped joint must be considered

Concrete quality: min. C20/25	Steel quality: B550 B

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DATUM
11.05.2020

MASZSTAB
1:10

Corner construction
System sheet - reinforcement
Swimming pool wall t ≤ 150cm