

FDR+

Reinforced Raft Foundation

The FDR+ application allows the design of eccentrically loaded boundary foundations that are connected to a reinforced concrete slab with a rigid joint. In the design, the centring moment, the centring tensile force and the soil pressure are determined with consideration to deformations.

Standards

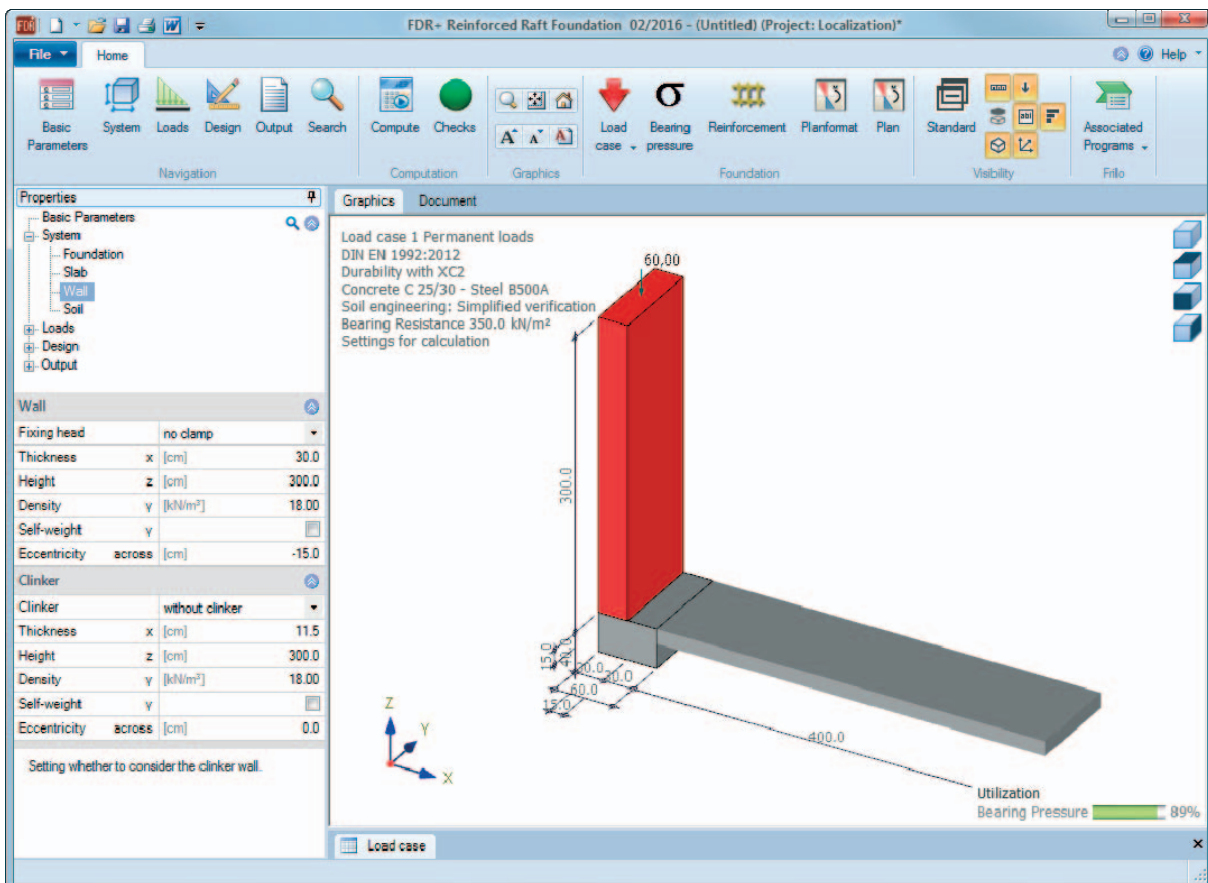
Calculation according to J. Kanya / Bautechnik 05/1969 in conjunction with:

- DIN EN 1992-1-1: 2011/2012/2013
- ÖNORM EN 1992-1-1:2011
- BS EN 1992-1-1:2009
- EN 1992:2010
- DIN EN 1997-1, ÖNORM EN 1997-1, BS EN 1997-1

Properties

- Selection options concerning the durability requirements
- Loads: moments, axial forces, horizontal loads
- Up to 50 load cases, optionally acting alternatively, are automatically superimposed.
- Determination of the existing base pressure and the design value of soil pressure resistance according to the tables of the selected standards or user-defined tables.
- Examination and consideration of a gaping joint
- Consideration of the accidental design situation and earthquake loads
- Interface to the FRILO Building Model (GEO).

- The self-weights of the wall, the facing masonry and the foundation can be selected independently of each other
- Optional calculation of the connecting reinforcement of the rising wall to the foundation
- Bending design of the foundation and verification whether reinforcement could be dispensed with in the lower layer of the foundation
- Centring in the rigidly connected reinforced concrete slab in accordance with J. Kanya Bautechnik 05/1969.
- Simultaneous restraint in the wall and the slab is optionally selectable
- Bending design at the connection between the foundation and the reinforced concrete slab



- Calculation of the settlement
- Calculation of the foundation's deformation
- Verification of the concrete compression stress and the tensile steel stress at the connection to the slab
- Crack width verification at the connection to the slab
- Ground failure verification with consideration to berms and the embedment depth of the foundation
- Simplified verification, normally based on to the design value of soil pressure resistance
- Reinforcing steel fabric, bar steel or user-defined A_s values are available as reinforcement options

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Reinforced Raft Foundation FDR- 01/2016 (Frib R-2016-1)

System Graphics

Reinforced raft foundation acc. to Kenya (Bautechnik 5/1969) in conjunction with DIN EN 1992-1-1/NA Berichtigung 1:2012:06 and DIN EN 1997-1/NA:2010-12

System Values

Member	Concrete	Steel	Width (x) cm	Height (z) cm
wall (MasconV)	C 25/30	B500A	30.0	300.0
Foundation	C 25/30	B500A	60.0	40.0
Plate	C 25/30	B500A	400.0	15.0

Eccentricity wall $e_x = 15.0$ cm, using rigidities in state I x reduction factor I Plate restrain: $1.00 \times 4 \times 0.90 / 4.00$. To accommodate the friction to avoid the use of insulation and the like under the base plate. Stiffness value $E_s = 11.50$ MN/m². Anchor ing. depth $d = 40.0$ cm.

Action (Act)

Act	Name	ϕ_1	ϕ_2	ϕ_3	simultaneous load cases
A	Cat. A: domestic, residential areas	0.70	0.50	0.30	2
B	Permanent loads	1.00	1.00	1.00	1

characteristic load cases

No.	Act	Description	N kN	M _x kNm	M _y kNm	SIM	ALT
1	B	Load case 1	60.0	0.0	0.0	0	0
2	A	Load case 2	60.0	0.0	0.0	0	0

Horizontal loads according at upper edge of foundation. Foundation 6.00 kN (considered), wall 16.20 kN (unconsidered).

Superpositions

No.	DS	Superposition
1	P	1.35 x (1) + 1.5 x (2)
2	P	1.0 x (1)
3	P	1.0 x (1) + 1.0 x (2)
4	P	Eigengewicht
5	P	1.0 x (1) + 0.3 x (2)

DS: design situation P: dead
The load case numbers are listed in parentheses.

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Result Overview Proofs

Proof	Superposition	η
The stability is ensured by the connected reinforced concrete slab.		
Gapping joint only dead loads	2	0.11
Gapping joint dead and live loads	3	0.00
Base pressure	1	0.89

Stability : Lateral buckling analysis (EQU) Superposition

The stability is ensured by the connected reinforced concrete slab.

Gapping joint only dead loads Graphics