

Input Data for structural analysis

of application buried pipes in open trench condition,
calculation acc. DWA-A 127

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<p>Text input.</p> <p>project</p> <p>Text input.</p> <p>company</p> <p>Text input.</p> <p>street</p> <p>Text input.</p> <p>postcode</p> <p>Text input.</p> <p>city</p>	<p>Text input.</p> <p>contact person</p> <p>Text input.</p> <p>phone/Fax:</p> <p>Text input.</p> <p>signature:</p> <p>Text input.</p> <p>date/stamp</p>
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Pipe Details:

nominal diameter DN	Text input.	sewer pipe	<input type="checkbox"/>
pressure class PN	Text input.	sewer pressure pipe	<input type="checkbox"/>
nominal stiffness SN	Text input.	pressure pipe	<input type="checkbox"/>
pipe material	GRP	potable water pipe	<input type="checkbox"/>
		installation in protective water area	<input type="checkbox"/>
		air pipe	<input type="checkbox"/>
		storage sewer	<input type="checkbox"/>
		others	Text input.

Types of native soil: acc. ATV-DVWK-A 127; DIN 18196 (please subsoil expertise ad)

	Native soil	backfilling	Pipe zone
G1 Non cohesive soils (gravel, sand) (GE, GW, GI, SE, SW, SI)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G2 Slightly cohesive soils (GU, GT, SU, ST)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G3 Cohesive mixed soils, silt (GÜ, GŤ, SÜ, SŤ, UL, UM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G4 Cohesive soils, except silts (TL, TM, TA, OU, OT, OH, UA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other types of soil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Proctor density for native soil
(Proctor density 85 – 100 %)

Text input. %

Foundation of pipeline

- On native soil
- very hard and rocky
- Weak soil, not stable for foundation

Soil replacement: thickness Text input. m

material Text input.

Proctor density D_{Pr} Text input. %

Specification of loads:

Depth of earth cover h

Min. cover depth

Max. cover depth

min. Ground water h_w above pipe invert

max. Ground water h_w above pipe invert

Text input. m

Text input. m

Text input. m

Other surface loads

Text input. kN/m^2

For pressure pipes

Short term Text input. bar, e.g. system test pressure; hydrostatic pressure, water hammer

Long term Text input. bar, e.g. operating pressure (OP), system pressure (PN, DP)

Traffic load

no traffic

street

- HCL 60
- HCL 30
- HGV 12
- DIN EN 1991-2, TS und UDL
 - LM1-lane 3,00 m
 - LM1-lane 2,70 m
 - LM1-green field area

railway

- one track, UIC
- two tracks, UIC
- one track, LM 71
- two tracks, LM 71

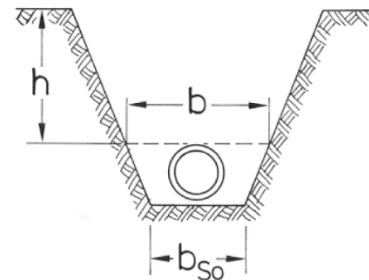
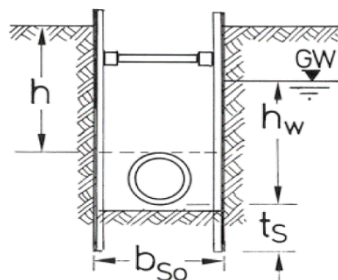
aircraft

- BFZ 90
- BFZ 180
- BFZ 350
- BFZ 550
- BFZ 750

Other loads, e.g. special vehicle (please add load scheme with axle, wheels and wheel loads):

Text input.

Building construction:



Type of trench

- embankment
- single trench
- double trench ¹⁾
- stepped trench ¹⁾

¹⁾ For special shapes add a sketch

Trench angel

- 90°
- 60°
- 45°
-

Text input.

Width of trench $b =$ m at pipe crown

$b_{so} =$ m at pipe trench bottom inclusive planks

Trench planking

- no planks
- Horizontal planks, also applies to plank walls (Berlin lining)
- Planking with plates
- Vertical plank with light weight
- Vertical plank with boards *
- Vertical plank with light weight *
- Vertical plank with sheet piling *

- bedding**
- on native soil (acc. EN 1610)
- on gravel, sand
- on concrete ²⁾

²⁾ only as spezial construction in agreement with the pipe producer

- bedding angle 2α**
- 90° 120°
- 180°

* Depth of sheeting below pipe invert

$t_s =$ m

*thickness of plank (one-side)

$b_s =$ m

Cover condition for backfilling:

- A1** Backfilling compacted in layers against the native soil (without proof of compaction degree); also applies to plank walls, Berlin lining
- A2** Vertical pipe trench lining with boards that are not removed before backfilling. Lining boards or devices that are removed step by step during backfilling. Non-compacted backfilling/ backfilling with slurry (only suitable for soils of group G1).
- A3** Vertical trench lining with sheet piling, light weight sheet connection, wooden planks, lining boards or devices that are not removed before backfilling.
- A4** Backfilling compacted in layers against the native soil with proof of the required compaction degree to ZTVE-StB ; also applies to plank walls (Berlin lining). Cover condition A4 is not applicable to soils of group G4.

Bedding condition for pipe:

- B1** Bedding compacted in layers against the native soil or in the embankment (without proof of compaction degree); also applies to plank walls, Berlin lining
- B2** Vertical lining in the pipe zone with planks that reach down to the trench bottom and are not removed before backfilling and compaction. Lining boards or devices provided that the soil is compacted after the linings are removed.
- B3** Vertical lining in the pipe zone with sheet piling or lightweight sheeting and compaction against the lining reaching down below the trench bottom. There is no safe calculation model for determining vertical lining with wooden planks, boards or devices that are not removed before backfilling and compaction the pipe zone.
- B4** Bedding compacted in layers against the native soil or in the embankment with proof of the required compaction degree to ZTVE-StB. Bedding condition B4 does not apply to soils of group G4.