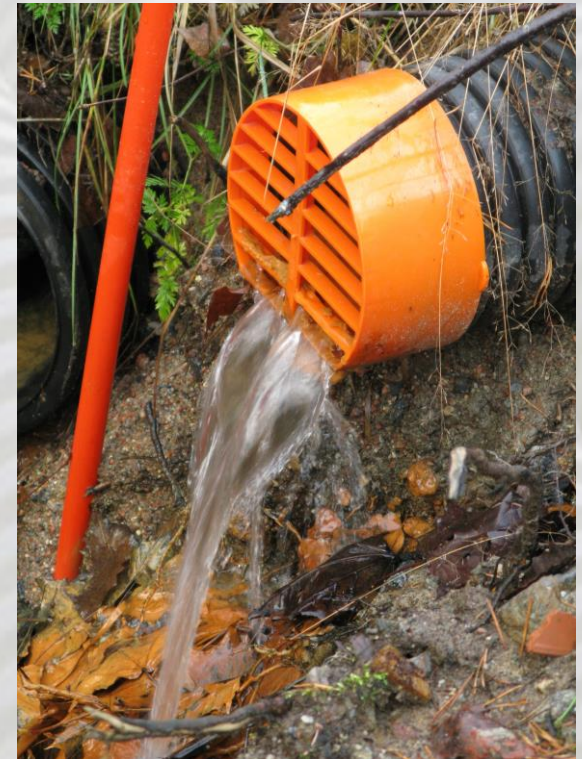


IMPLEMENTATION OF SUBSURFACE DRAINAGE



CONTRACTOR SELECTION

Once the drainage design has been drawn up, the farmer may send a call for tenders to the contractors of her/his choice

Sopimuksen osapuolet

Tilaja _____
Osoite _____
Kunta _____

Urakoitsija _____
Osoite _____
Tilaja _____

Urakoitavan kohteen tiedot

Viljelijä _____
Tila _____
Peruslohkonumero(t) _____
Suunnitelman toimitusnumero(t) _____

Omistaja _____
Pelion koko _____
Ojasto numero(t) _____
Työpaalutuksen suorittaa _____
 salaajasuunnittelija

Työpaalutuksen tilaa _____
 tilaaja urakoitsija

Paalutus _____
Ellei toisin sovita, tehdään työpaalutus GPS/laser laitteistolla ja työt suoritetaan paalutuksen mukaisesti.

Urakoitsijan suoritusvelvollisuus

Urakoitsija sitoutuu suorittamaan edellä mainitut työt jäljempänä mainitun hinnan ja ehtojen salaajasuunnitelman mukaisesti. Salaajasuunnitelman oleellinen muutos edellyttää suunnittelijan ja tilaajan hyväksyntää. Muutokset merkitään salaajakarttaan ja toimitetaan suunnittelijalle.

[Contact information of the drainage contractors](#) and [the contract template](#) can be found on [the Field Drainage Association's website](#)

The tender may be based on either the total contract price, the unit price or a combination of these

CONTRACT

The pricing criteria and payment terms must be stated in the contract

It is a good idea to mention in the contract that the contractor undertakes to comply with the drainage design, the quality requirements for field drainage set by the Finnish Association of Civil Engineers RIL and the General Terms and Conditions of the Construction Contract (YSE)

DRAINAGE NOTIFICATIONS

Usually, the landowner does not have to make a drainage notification about subsurface drainage

However, notification should be made if drained in acid sulphate soils or groundwater areas

The farmer must notify the ELY Center at least 60 days before starting the work

The drainage notification form (Ilmoitus ojituksesta -lomake) and instructions for filling it out can be found on the website of [the Field Drainage Association](#)

ILMOITUS OJITUKSESTA

ELYkeskus
Elinkeino-, liikenne- ja ympäristökeskus
Hälsinge-, trafik- och miljöcentralen

Lisätietoja
Ympäristökeskuksen asiakaspalvelu
P. 0200 220 200 (päänumero)
ympariston.asiakaspalvelu@ely.fi

Lomakkeen palautus
Sähköinen ilmoittaminen: www.ely.fi/ely/ilm/ohje/ohje_ojitus
Kirjallisen yhteyshenkilön: www.ely.fi/ely/ilm/ohje/ohje_ojitus

A. YHTEYSTIEDOT

Hankevastavien nimi	Puhelinnumero
Osoite	Sähköposti

B. HANKKEEN YLEISKUVAUS JA SIJANTI

Hankkeen nimi	Kunta
Ojitusalueen keskeiset tiedot (kirstestönumerus, kunta-kylä-tila-talo)	
Onko kyseessä (rastita oikeat vaihtoehdot kohdista 1-4)	
1. <input type="checkbox"/> pelto- <u>o</u> jitus <input type="checkbox"/> metsä- <u>o</u> jitus <input type="checkbox"/> muu, mikä:	
2. <input type="checkbox"/> tilakohtainen <u>o</u> jitus <input type="checkbox"/> yhteinen <u>o</u> jitus	
3. <input type="checkbox"/> uuden ojan tekeminen <input type="checkbox"/> ojan peruskorjaus <input type="checkbox"/> ojan kunnossapito <input type="checkbox"/> täydennys <u>o</u> jitus	
4. <input type="checkbox"/> hulevesien johtaminen <input type="checkbox"/> suoja- <u>o</u> jituksen tai pumppusaman tekeminen <input type="checkbox"/> ojan tekeminen yksiyksitysen tien poikki <input type="checkbox"/> ojan suunnan muuttaminen <input type="checkbox"/> veden johtaminen toisen maalla olevaan ojaan tai puroon <input type="checkbox"/> <u>o</u> jitus, jonka seurauksena tulva-alue poistuu tai vesien virtaamissuunta muuttuu huomattavasti <input type="checkbox"/> ojan, noron tai puron suurentaminen tai oikaiseminen <input type="checkbox"/> ojan, noron tai puron siirtäminen <input type="checkbox"/> sala- <u>o</u> jitus <input type="checkbox"/> muu <u>o</u> jitus, mikä:	
Ojitusyhteisö, jos on olemassa (nimi ja toimitusnumero)	
Lähin alajuokseva vesistö (joki, järvi, puro ym.)	Etäisyys vesistöä ohittavaan alueeseen (m)
Perustelut ojituksen toteutukselle	
Onko kaikkien maanomistajien suostumukset saatu ojituksen?	
<input type="checkbox"/> kyllä <input type="checkbox"/> ei <input type="checkbox"/> ei tietoa	Ovella toteuttajat yksimielisiä?
<input type="checkbox"/> kyllä <input type="checkbox"/> ei <input type="checkbox"/> ei tietoa	

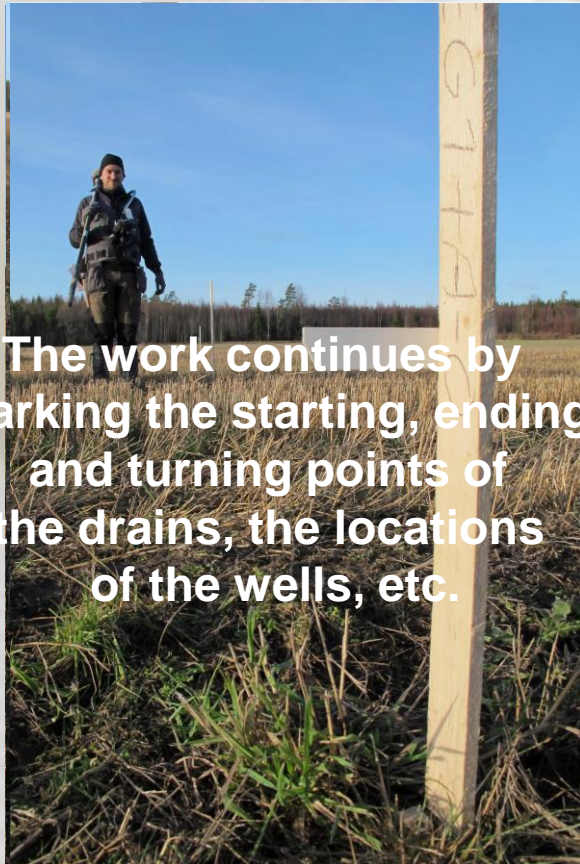
1 (2)

SITE STAKING OF THE DRAINAGE DESIGN

The site staking of the drainage plan is usually done by the drainage designer



[WATCH THE VIDEO](#)



The work continues by marking the starting, ending and turning points of the drains, the locations of the wells, etc.



The elevation of the drain bottom and the sight board stick are marked with a slat

To ensure that the subsurface drainage functions, it is advisable to do the drainage work in sufficiently dry conditions

The grass or stubble of the drainage year are the best “preceding crops” for drainage. The abundance of roots makes the drainage trench filled with topsoil airy and well conductive

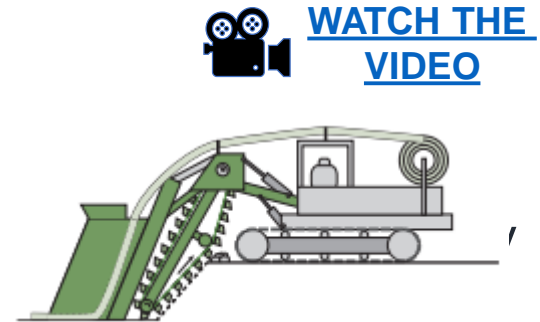


INSTALLATION TECHNIQUE

Subsurface drainage is done with different types of drainage machines

Drainage trencher

- Digs an open trench all the way to the surface and raises the ground to the surface of the field
- Gravelling does not need to follow the drainage and gravel inlets can also be retrofitted



Drainage plow

- Pulls a plow below the ground that raises the ground, creating space for the pipe
- The trench closes after gravelling



LASER CONTROL



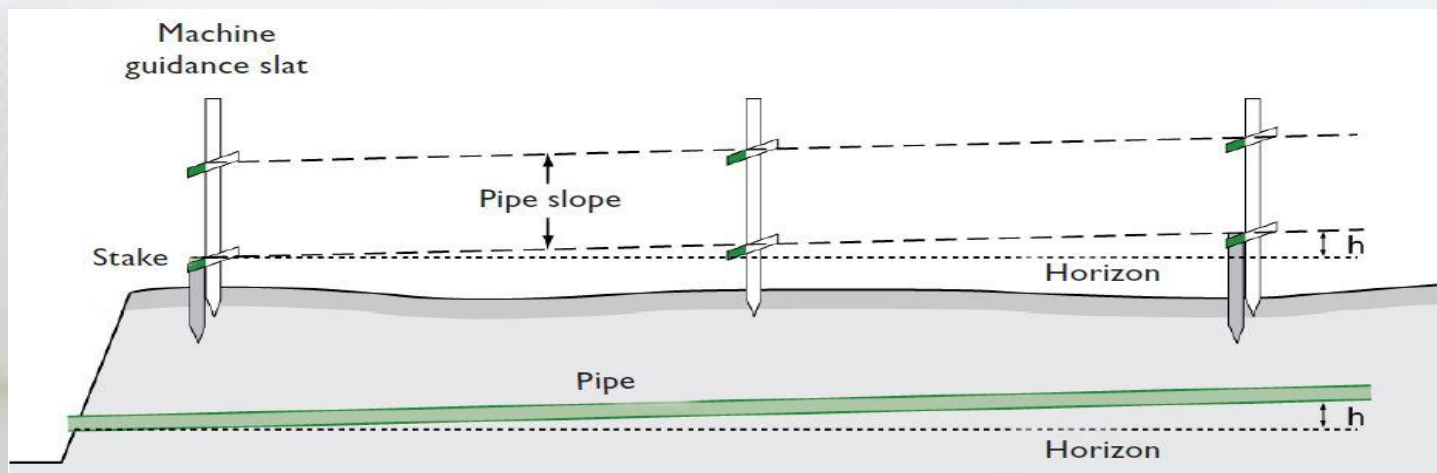
GPS CONTROL

Most drainage machines are equipped with laser depth control technology and some also use GPS satellite positioning technology

The GPS locator records the track that the farmer can use as a basis for a guidance display



DRAINAGE PIPE INSTALLATION METHODS



WELL INSTALLATION

- A place for the well is dug
- The installation well's depth and the elevations of the incoming and outgoing pipes are measured
- The well is installed at the measured location and elevation
- The inlet and outlet pipes are connected to the well with a rigid pipe



[WATCH THE VIDEO OF
CONCRETE WELL
INSTALLATION](#)



INSTALLATION OF COUPLINGS

Lateral drains can be connected to the collector with different types of couplings

- side coupling
- flushable saddle coupling
- flushable quick coupling



[WATCH THE VIDEO](#)

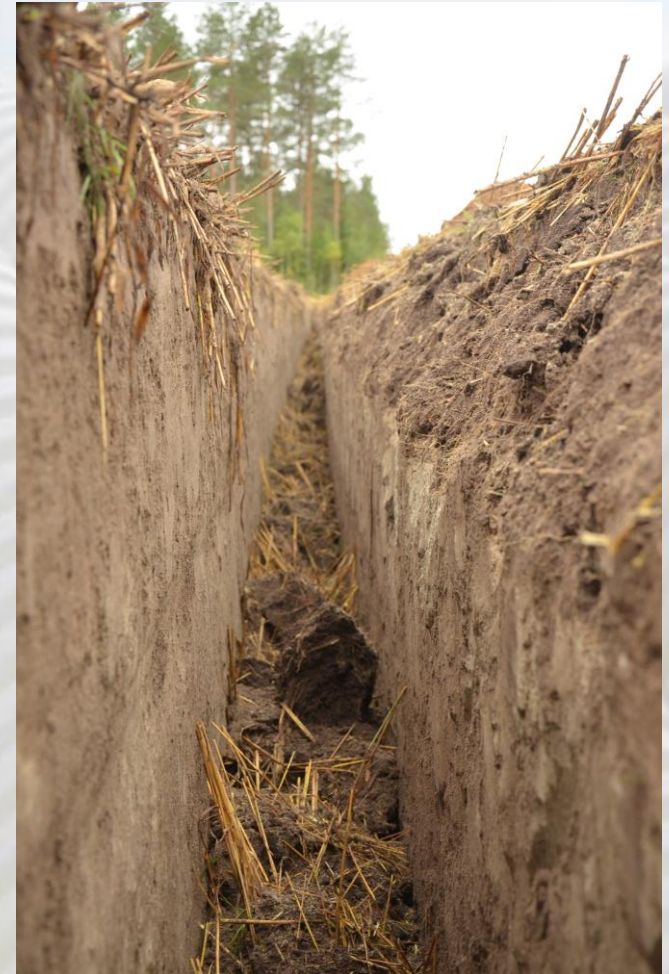


SUBSURFACE DRAIN GRAVELLING AND FILLING

The drainage trench must remain well permeable to water throughout the life of the drainage

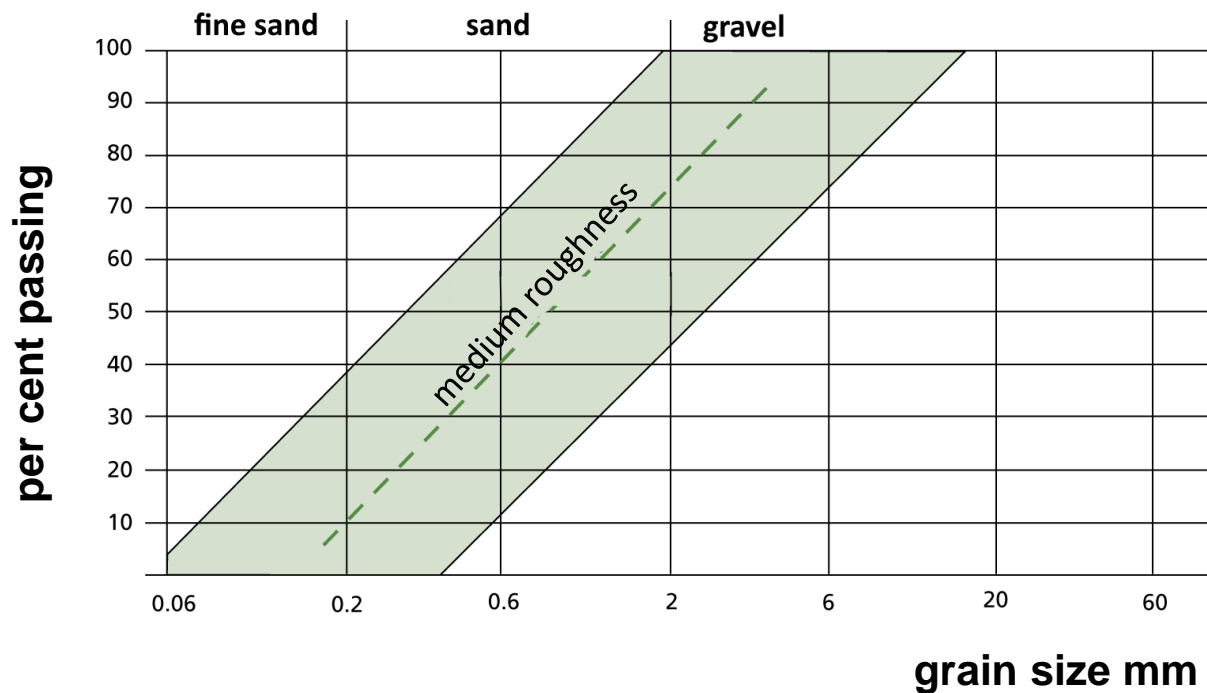
The water permeability of the trench is especially important for compact soil types. In them, the entire drainage trench can be filled with gravel, wood chips, crushed stone, or other highly water-permeable material

Usually, topsoil, which is more permeable to water than compact subsoil, is dropped into the trench on top of the envelope material



QUALITY OF DRAIN GRAVEL

Granularity range of gravel or crushed stone to be installed as a drain filter



WORK SUPERVISION

The farmer or her/his representative acts as the supervisor of the drainage work

Site supervision ensures that drainage is properly implemented and functions

When the drainage contract is completed,
a final Inspection will be carried out.

If the contractor has had to make changes to the plan, the
drainage designer will update the drainage map.

The designer submits the drainage map to
the map-archive of the Field Drainage Association.

Drainage designer, contractor, and farmer will
complete the site record as the work progresses.
The record, together with the completion certificate
prepared by the designer, will be sent to
the ELY Center to collect the subsidy.

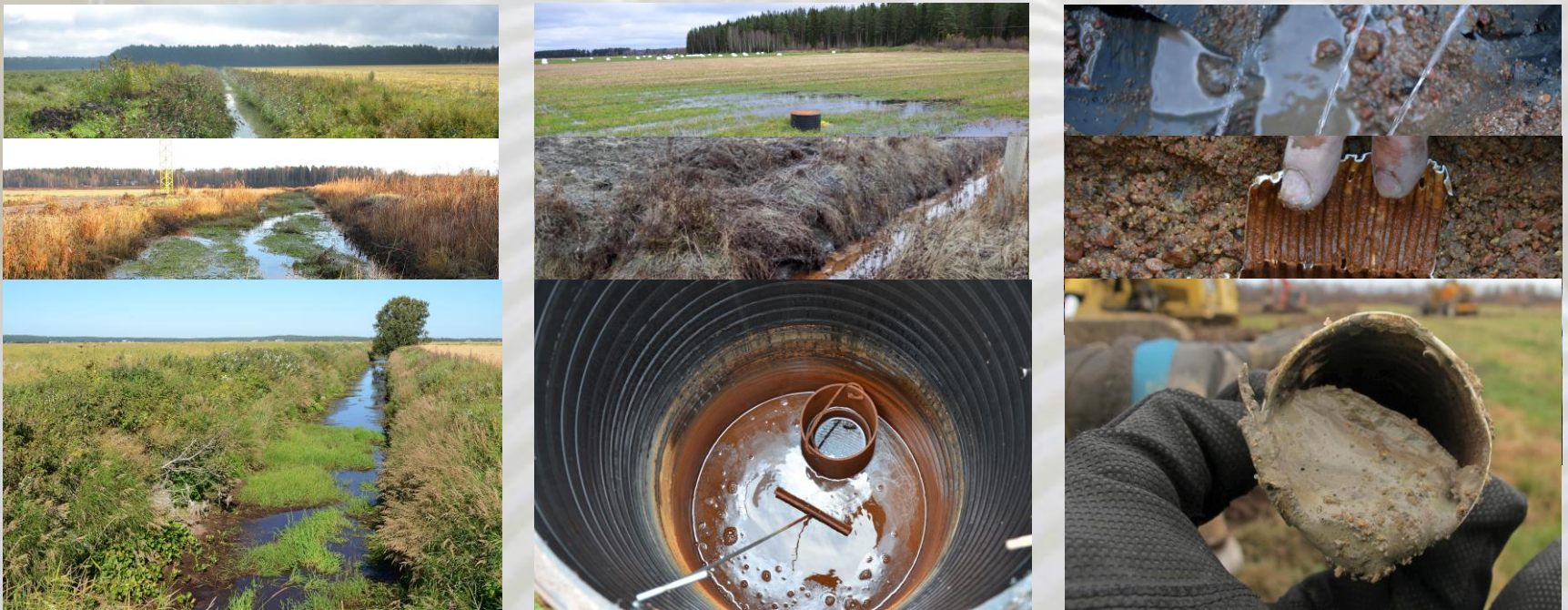
MAINTENANCE OF SUBSURFACE DRAINS

It is advisable to check the functionality of subsurface drains, surrounding ditches, wells, and main ditches regularly and take the necessary maintenance measures

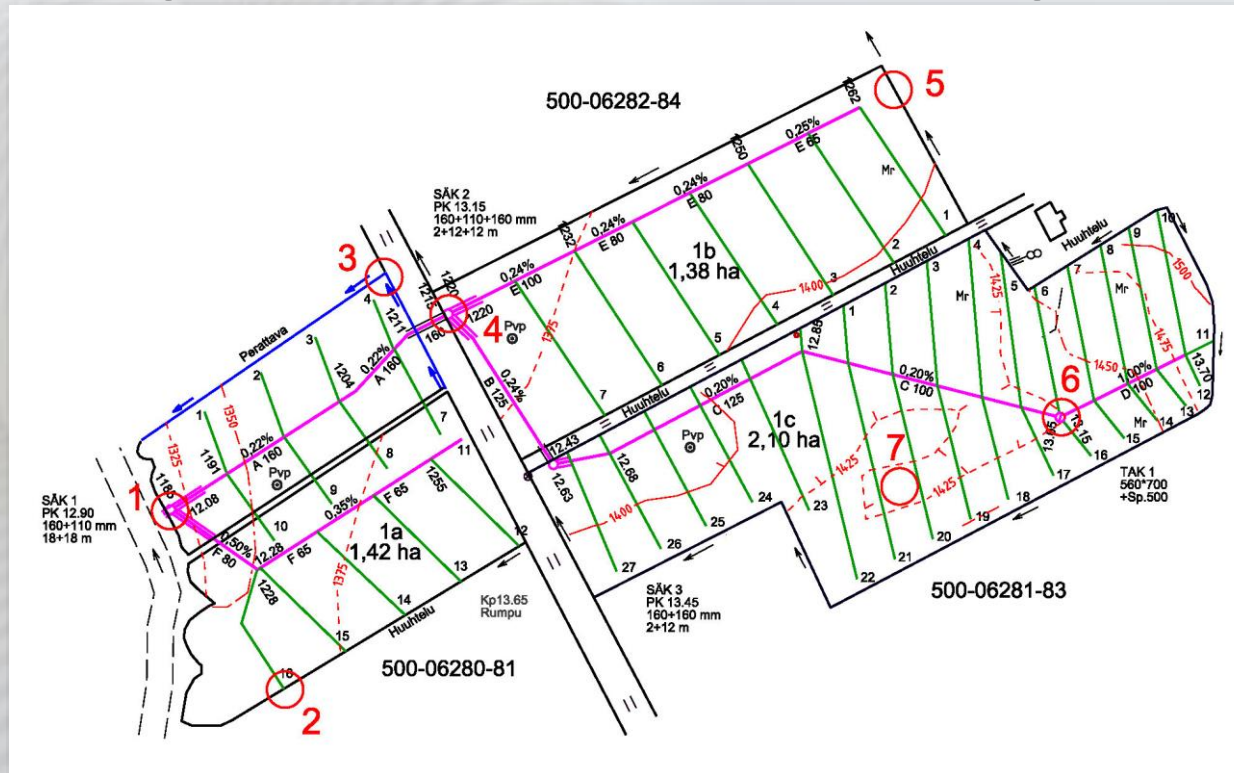


The most common reasons for drainage failure are related to arterial drainage, soil structure, rust deposits caused by the iron content of groundwater, and roots blocking pipes.

Good maintenance can reduce the risk of malfunction



It is a good idea to mark the key spots on the ground and check them regularly



1. outlet ditch,
drain outlet and
control well

2. flushing
extensions
3. roadside and
partition ditch

4. underpass,
culvert
and well

5. catching ditch
6. inspection well
7. depression

MAINTENANCE OF SUBSURFACE DRAINS

- Check drain outlets, remove sludge and vegetation around them
- Check the surface inlets and clean from sludge
- Check the drainage pipes for sludge and rust, and order flushing if needed
- Check that the underpasses and culverts are intact and clean of sludge
- If necessary, clear the surrounding ditches



 [WATCH THE VIDEO](#)



Finnish subsurface drainage has a long and meritorious tradition in terms of both design and contracting



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FIELD DRAINAGE ASSOCIATION

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